

LSA

L SERIES™ HEAT PUMP UNITS

7.5 and 10 Ton (26.4 and 35.2 kW)

Cooling Capacity - 91,000 and 119,000 Btuh (26.6 and 34.9 kW)

Heating Capacity - 86,000 and 119,000 Btuh (25.2 and 34.9 kW)

Bulletin No. 210283

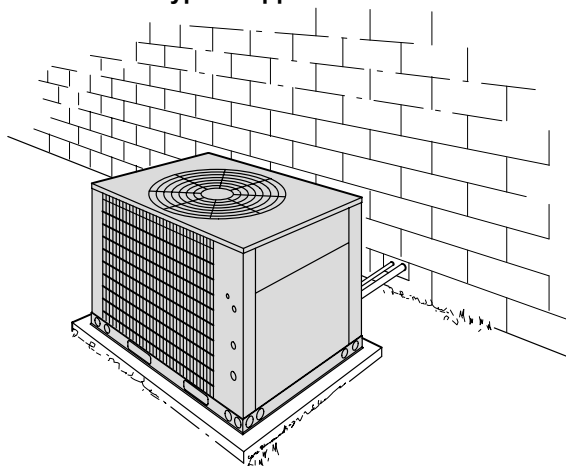
May 2000

Supersedes #210164

February 1997



Typical Application

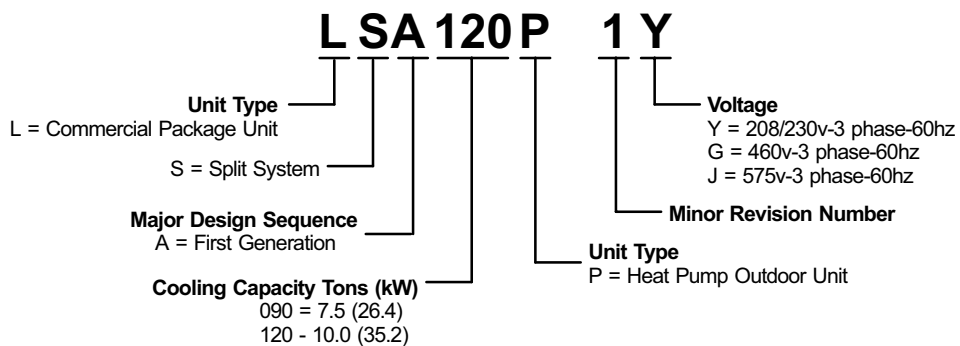


Unit on a slab at grade level



CERTIFICATION APPLIES ONLY
WHEN THE COMPLETE
SYSTEM IS LISTED
WITH ARI

MODEL NUMBER IDENTIFICATION



FEATURES

Applications

- Heat pump units available in 7.5 and 10 ton (26.4 and 35.2 kW) nominal sizes.
- Designed for applications with remotely located blower-coil unit.
- See ARI rating tables for efficiencies and capacities. For blower coil unit data, see bulletins indexed in tab section Coils-Blower Coil Units.
- All units shipped factory assembled, piped and wired.
- Test operated at factory to ensure dependable operation.

Approvals

- All units tested in Lennox Research Laboratory environmental test room.
- Units rated in accordance with ARI Standard 210/240-94.
- Sound tested in Lennox reverberant sound test room in accordance with test conditions included in ARI Standard 270-95
- Units and components within are bonded for grounding to meet safety standards for servicing required by UL, ULC, NEC and CEC.
- All units are UL listed and ULC certified.

Equipment Warranty

- Compressor - limited warranty for five years.
- All other covered components - limited warranty for one year.
- Refer to Lennox Equipment Limited Warranty included with unit for details.

Compressor

- Hermetically sealed steel shell.
- Cast iron compressor housing for long life.
- Internal overload protection assures protection from excessive current and temperature. Automatic reset.
- Aluminum pistons and connecting rods.
- Ringed valves.
- Stainless steel discharge valves.
- Large internal muffler for quiet operation.
- Patented internal spring mounting for vibration free operation.
- Compressor installed in unit on resilient rubber mounts for quiet, vibration free operation.

Crankcase Heater (All Models)

- Assures proper compressor lubrication at all times.

Cabinet

- Heavy gauge steel cabinet with five station metal wash process.
- Pre-painted panels provides superior rust and corrosion protection.
- Removeable panels allow access for unit servicing. See dimension drawings.
- Heavy duty steel base channels raise the unit off of mounting surface away from damaging moisture.
- Unit lifting holes and forklift slots furnished in base rails. See dimension drawings.

Control Box

- Control box located in separate compartment in unit cabinet.
- Hinged panel with quarter turn fastener for easy access.
- All controls are pre-wired at the factory.

Copper Tube/Enhanced Fin Coil(s)

- LSA090P equipped with single "U" shaped coil.
- LSA120P equipped with two slab coils.
- Lennox designed and fabricated coils constructed of precisely spaced ripple-edge aluminum fins machine fitted to copper tubes.
- Lanced fins provide maximum exposure of fin surface to air stream resulting in excellent heat transfer.
- Fins equipped with collars that grip tubing for maximum contact area.
- Flared shoulder tubing connections and silver soldering provide tight, leakproof joints.
- Long life copper tubing is corrosion-resistant and easy to field service.
- Thoroughly factory tested under high pressure to insure leakproof construction.
- Completely accessible for cleaning.

Coil Guard

- Corrosion resistant PVC (polyvinyl chloride) coated steel wire guard(s) furnished as standard.

Outdoor Fan(s)

- LSA090P units have one outdoor fan.
- LSA120P units have two outdoor fans.
- Direct drive fan(s) moves large volumes of air uniformly through entire outdoor coil(s) for high refrigerant cooling capacity.
- Upward discharge of air reduces operating sound levels and prevents damage to lawns, shrubs and walkways.
- Fan motors are totally enclosed, inherently protected and equipped with a rain shield.
- Fan service access is accomplished by removal of fan guards.

Defrost Control/Timed-Off Control

- Solid-state time/temperature defrost control is furnished as standard equipment.
- Control initiates a defrost cycle every 30, 60 or 90 minutes of compressor "on" time at outdoor temperatures below 35° F (2°C) (factory setting 60 minutes).
- Maximum defrost cycle 14 minutes.
- Defrost thermostat mounted on liquid line determines when defrost cycle is required.
- Pressure switch mounted on discharge line determines when defrost cycle is terminated.
- Timed off function prevents compressor short cycling.
- Provides 5 minute delay between compressor shutoff and start-up.
- Allows suction and discharge pressure to equalize, permitting compressor to start in unloaded condition.
- Automatic reset.
- Connections for ambient compensating thermistor and service light thermostat.

Reversing Valve

- Factory installed 4-way reversing valve provides rapid change in refrigerant flow direction resulting in quick changeover from cooling to heating and vice-versa.
- Valve operates on pressure differential between outdoor unit and indoor unit.

FEATURES

Refrigerant Lines and Service Valves

- Sweat connections.
- Fully serviceable liquid and suction line service valves provide complete service access to refrigerant system. Suction valve can be fully shut off, while liquid valve can be front seated to manage refrigerant charge while servicing system.
- Refrigerant lines and field wiring inlets are located in one central area of the unit cabinet.

Hi-Capacity Drier

- Furnished for field installation. Drier traps any moisture or dirt that could contaminate the refrigerant system.

High Pressure Switch

- Shuts off unit if abnormal operating conditions cause discharge pressure to rise above setting.
- Protects the compressor from excessive condensing pressure.
- Manual reset.

Low Pressure Switch

- Shuts off unit if suction pressure falls below setting.
- Provides loss of charge and freeze-up protection.
- Automatic reset.

Low Ambient Operation

- Units will operate satisfactorily down to 0°F (-18°C) outdoor air temperature without any additional controls.

REQUIRED OPTIONS - ITEMS MUST BE ORDERED AND FACTORY INSTALLED

Voltage — Specify when ordering base unit.

OPTIONAL ACCESSORIES - MUST BE ORDERED EXTRA

FACTORY INSTALLED

Corrosion Protection

- Phenolic epoxy coating applied to condenser coils and painted base section.

Service Outlets

- Dual 115v ground fault circuit interrupter (GFCI) type.
- Field wired.

Disconnect Switch

- Accessible from outside of unit.
- Spring loaded weatherproof cover.

FIELD INSTALLED

Thermostat

- Thermostat is not furnished with unit and must be ordered extra.
- See Thermostats bulletin and Lennox Price Book.

Hail Guard Protection

- Heavy duty field installed coil guard protects coils from damage.
- LSA090P uses (83K37).
- LSA120P uses (79K91).

SPECIFICATIONS

Model No.			LSA090P			LSA120P		
Nominal Size - Tons (kW)			7.5 (26.4)			10 (35.2)		
Liquid line (o.d.) — in. (mm) connection (sweat)			5/8 (15.9)					
Vapor line (o.d.) — in. (mm) connection (sweat)			1-3/8 (34.9)					
Outdoor Coil	Net face area — sq. ft. (m ²)	Outer coil	21.80 (2.03)			(2) 29.34 (2.73)		
		Inner coil	20.94 (1.95)			- - - -		
	Tube diameter — in. (mm) & no. of rows	3/8 (9.5) - 2						
Fins per inch (m)			20 (787)					
Outdoor Coil Fan(s)	Diameter — in. (mm) & no. of blades		(1) 24 (610) - 4			(2) 24 (610) - 3		
	Motor hp (W)		(1) 1/2 (373)			(2) 1/3 (249)		
	Cfm (L/s) total air volume		5300 (2500)			8200 (3870)		
	Rpm		1075			1100		
	Watts		600			740		
Refrigerant charge			dry air					
Shipping weight — lbs. (kg) 1 package			490 (222)			604 (274)		

ELECTRICAL DATA

Model No.		LSA090P			LSA120P		
Line voltage data — 60 hz - 3 phase		208/230v	460v	575v	208/230v	460v	575v
Rec. max. fuse or □ circuit breaker size (amps)		60	25	20	80	30	25
†Minimum circuit ampacity		36	16	12	48	20	16
Compressor (1)	Rated load amps	25.9	10.9	8.5	34.4	13.9	11.1
	Locked rotor amps	164	79	63	195	98	78
Outdoor Coil Fan Motor (1 phase)	Full load amps (total)	3	1.5	1.2	2.4 (4.8)	1.3 (2.6)	1 (2)
	Locked rotor amps (total)	6	3	2.9	4.7 (9.4)	2.4 (4.8)	1.9 (3.8)

†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.

□ HACR type (under 100 amps). U.S. only.

ARI RATINGS

Unit Size & Model No. *Sound Rating Number (db)	Gross Cool. Cap. Btuh (kW)	★ARI Standard 210/240 Ratings										Blower Coil Unit		Check Valve Kit Required
		Net Cool. Cap. Btuh (kW)	High Temp. Htg. Cap. Btuh (kW)	Low Temp. Htg. Cap. Btuh (kW)	Total Unit Cool. Watts	EER (Btuh/Watt)	Cool. C.O.P.	Total Unit High Temp. Htg. Watts	High Temp. Htg. C.O.P.	Total Unit Low Temp. Htg. Watts	Low Temp. Htg. C.O.P.	Up-Flow	Horizontal	
(7.5T) LSA090P (92)	94,000 (27.5)	91,000 (26.6)	86,000 (25.2)	44,000 (12.9)	9680	9.4	2.8	7875	3.2	5920	2.2	CB17-95V	CBH17-95V	☐LB-51486CA
(10T) LSA120P (90)	123,000 (36.0)	119,000 (34.9)	119,000 (34.9)	67,000 (19.6)	12,800	9.3	2.7	11,250	3.1	8325	2.3	CB17-135V	CBH17-135V	☐LB-51486CA

*Sound Rating Number in accordance with ARI Standard 270.

★Rated in accordance with ARI Standard 210/240;

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

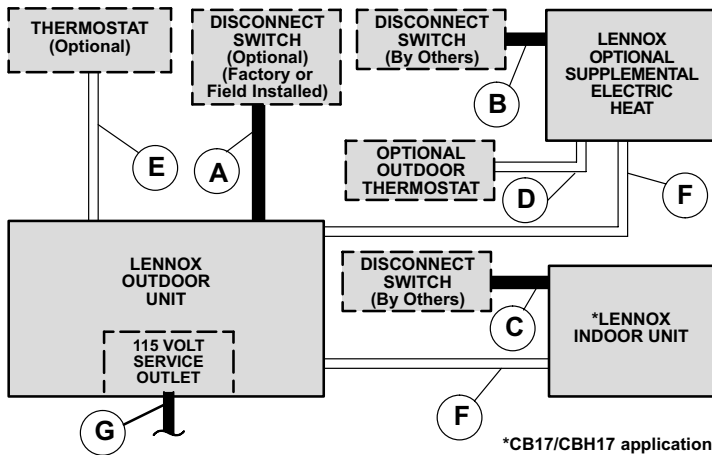
High Temperature Heating Ratings — 47°F (8°C) db/43°F (6°C) wb outdoor air temperature and 70°F (21°C) db entering indoor coil air.

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

☐Kit contains two valves, must be ordered extra.

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

FIELD WIRING



- A - Three Wire Power (see Electrical Data)
- B - Three Wire Power (size to heater capacity)
- C - Three Wire Power (size to indoor coil blower motor)
- D - Two Wire Low Voltage - 18 ga. minimum
- E - Seven Wire Low Voltage - 18 ga. minimum - with Electric Heat
 - Nine Wire Low Voltage with Optional Outdoor Thermostat
- F - Five Wire Low Voltage - 18 ga. minimum
- G - Two Wire Power (115 volt)

- Field Wiring Not Furnished -

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

*CB17/CBH17 applications without electric heat required a separate 70VA (minimum rating) transformer.

GUIDE SPECIFICATIONS

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

General — Furnish and install an air cooled heat pump outdoor unit. The unit shall be shipped completely factory assembled, piped and wired internally ready for field connections. In addition, manufacturer shall test operate unit at the factory before shipment. The outdoor 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 United States 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).

Approvals — All wiring shall be in compliance with NEC and CEC. Shall be rated in accordance with ARI Standard 210/240-94. All models shall have UL listing and be ULC certified.

Equipment Warranty — The compressor shall have a limited warranty for five years. All other covered components shall have a limited warranty for one year. Refer to Lennox Equipment Limited Warranty Certificate furnished with unit for details.

Cooling Capacity — The total cooling capacity shall be Btuh (kW) at °F (°C) evaporating temperature and outdoor air temperature of °F (°C). The compressor power input shall not exceed kw at the above conditions. All models shall have low ambient cooling operation down to 0°F (-18°C).

Heating Capacity — The total certified heating capacity shall be Btuh (kW) at °F (°C) condensing temperature and °F (°C) outdoor air temperature. The compressor watts input shall not be more than watts at the above conditions.

Outdoor Coil(s) — Coil(s) shall be non-ferrous construction with aluminum enhanced fins mechanically bonded to rifled copper tubes. Coil(s) shall be pressure leak tested. Coil face area shall be not less than sq. ft. (m²) Coil(s) shall be protected with steel guard(s).

Compressor — Shall have single speed reciprocating compressor. Compressor shall be resiliently mounted, suction cooled, overload protected, and have internal excessive current and temperature protection. Compressor shall have crankcase heater.

Refrigerant System — Shall include fully serviceable liquid and vapor line service valves, gauge ports, hi-capacity driers, thermometer well, high pressure switch, low pressure switch, suction line accumulator, expansion valve, reversing valve and defrost/timed-off control. Control options available shall include thermostat and outdoor thermostat.

Cabinet — Shall be constructed of galvanized steel which has been through a metal wash preparation and have a pre-painted finish. Openings shall be provided for refrigerant lines and power connection entry.

Air Mover — Shall be direct drive blade type fan(s). Motor(s) shall have inherent protection devices and shall be protected from moisture. Motor(s) shall be hp (W) with not more than watts input. Fan(s) shall be protected with steel guard(s).

OPTIONS

Corrosion Protection - Furnish and factory apply phenolic epoxy coating to outdoor coils and painted base section.

Disconnect Switch - Furnish and factory install unit disconnect switch. Shall have spring loaded weatherproof cover.

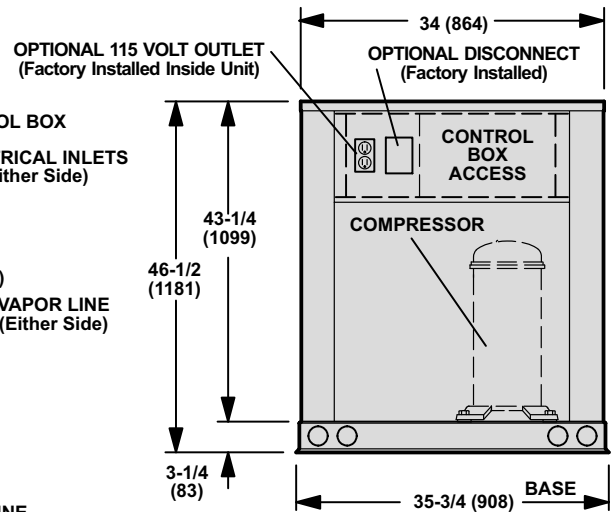
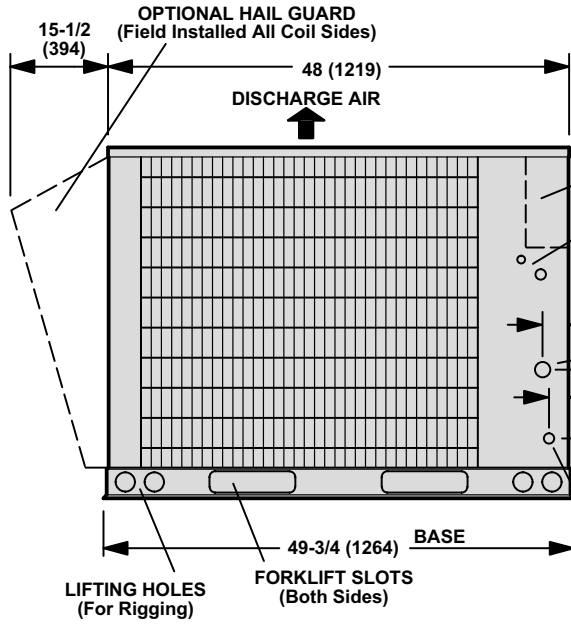
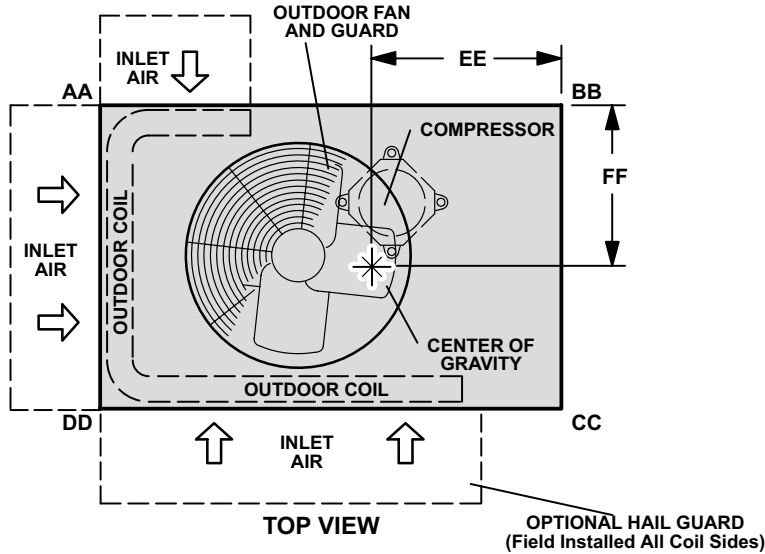
Service Outlets - Furnish and factory install dual 115v ground fault circuit interrupter (GFCI) type. Shall have spring loaded weatherproof cover. Power wiring shall be field provided.

Hail Guard Protection - Furnish and field install heavy duty coil guard to protect coils.

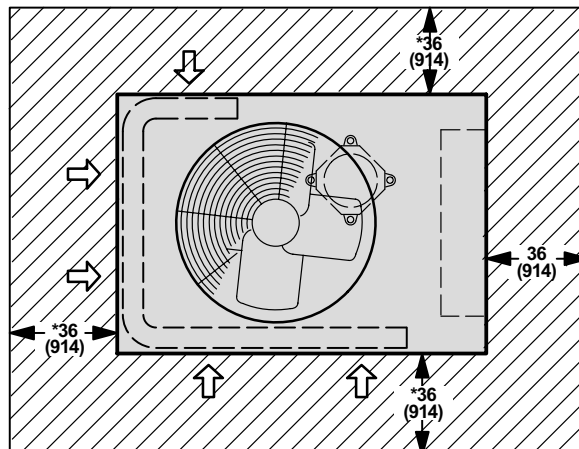
DIMENSIONS - LSA090P

CORNER WEIGHT								
Model No.	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
LSA090P	93	42	109	50	132	60	117	53

CENTER OF GRAVITY				
Model No.	EE		FF	
	inch	mm	inch	mm
LSA090P	22-1/8	562	15-3/4	400



INSTALLATION CLEARANCES - INCHES (MM) - LSA090P



NOTE—48 inches (1219 mm) clearance required on top of unit.
 *NOTE—One side of coil may be 12 inches (305 mm).

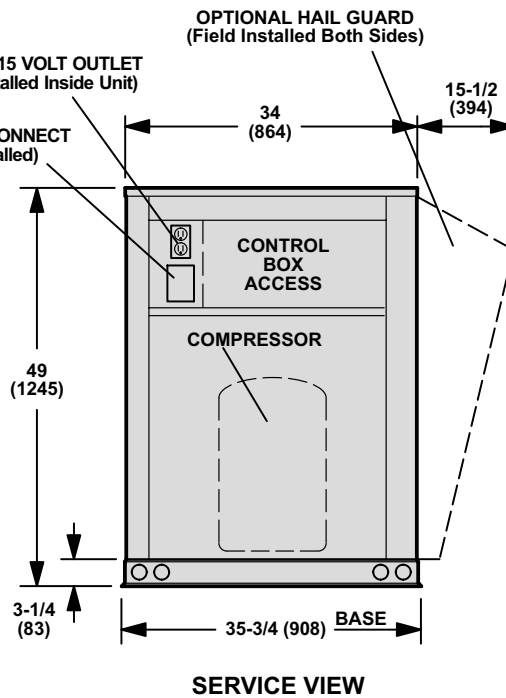
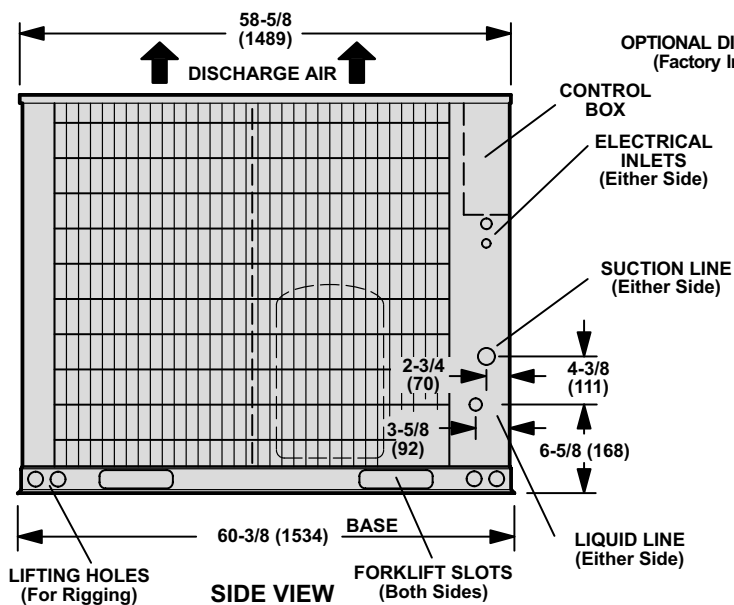
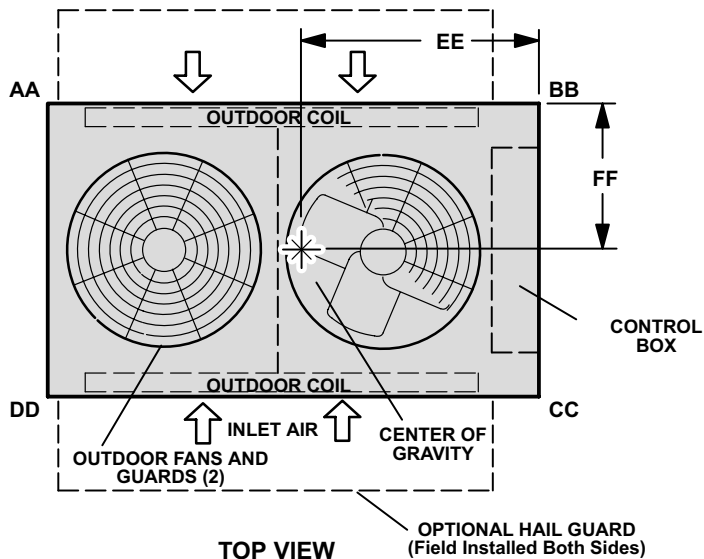
DIMENSIONS - LSA120P

CORNER WEIGHT

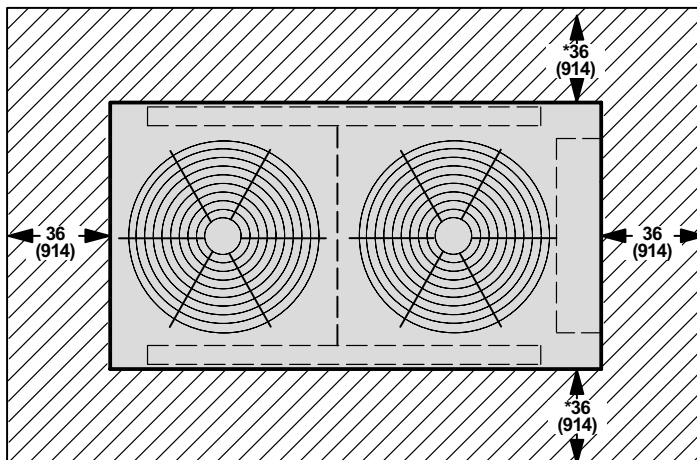
Model No.	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
LSA120P	138	63	156	71	165	75	128	58

CENTER OF GRAVITY

Model No.	EE		FF	
	inch	mm	inch	mm
LSA120P	27-1/2	699	16-3/8	162



INSTALLATION CLEARANCES - INCHES (MM) - LSA120P



NOTE— 48 inches (1219 mm) clearance required on top of unit.
 *NOTE— One side of coil may be 12 inches (305 mm).

