LENNOX L SERIES™

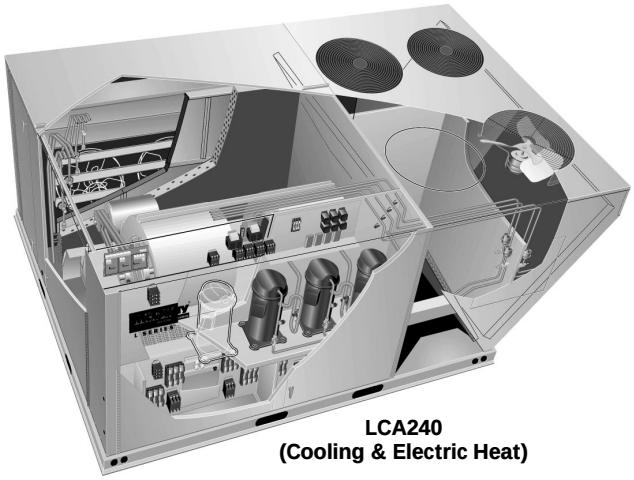
180, 210, AND 240 MODELS
"LCA" PACKAGED COOLING & ELECTRIC HEAT
"LGA" PACKAGED COOLING & GAS HEAT
"LHA" PACKAGED HEAT PUMP

LCA/LGA/LHA

15, 17.5 & 20 Ton (52.8, 61.5 & 70.3 kW)

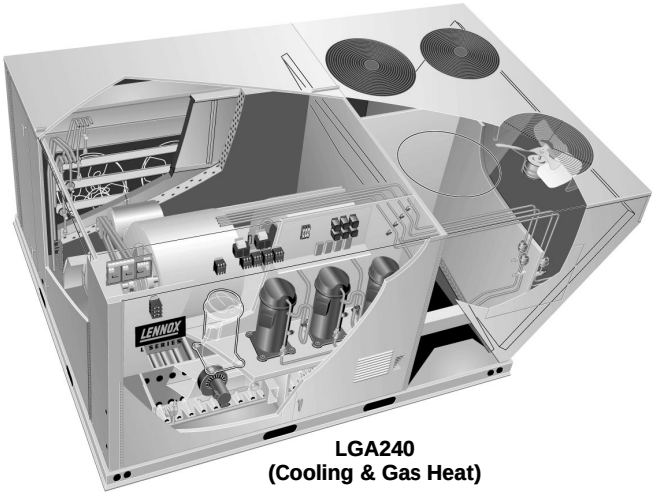
Bulletin #490069
July 1996
Supersedes
March 1996

***Net Cooling Capacity – 156 000 to 206 000 Btuh (45.7 to 60.4 kW) (39 300 to 51 900 kcal)**
Gas Output Heating Capacity – 121 500 and 338 400 Btuh (35.5 and 99.1 kW) (30 600 and 85 300 kcal)
***Heat Pump Heating Capacity 165 000 to 194 000 Btuh (48.3 to 56.8 kW) (41 600 to 48 900 kcal)**
Optional Electric Heat – 51 200 to 307 100 Btuh (15.0 to 90.0 kW) (12 900 to 77 400 kcal)

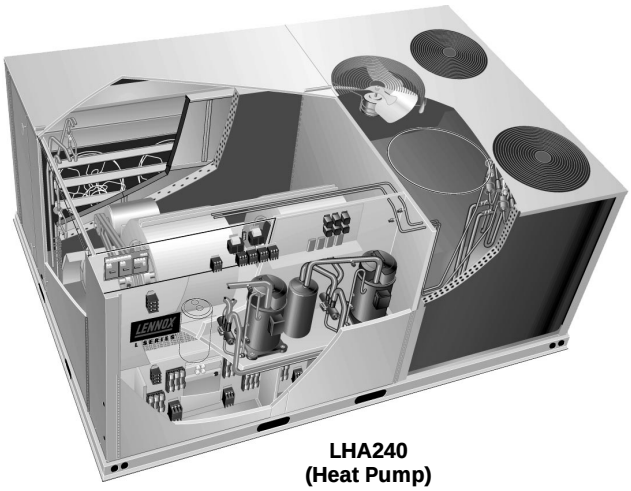


LCA240
(Cooling & Electric Heat)

ISO 9002 REGISTERED
WORLD CLASS QUALITY



LGA240
(Cooling & Gas Heat)



LHA240
(Heat Pump)

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

Item	LCA/LGA/LHA180	LCA/LGA210	LCA/LGA/LHA240
Air Flow Choice — Bottom (down-flow) or †horizontal (side) supply and return air	Standard	Standard	Standard
Bottom Power Electrical/Gas Entry	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) — 2 compressor/controls/heating area access panels, 1 blower access panel and 1 air filter/economizer access panel hinged with tool-less access handles, gaskets on all edges for tight seal, access panels have steel panel inner liner with insulation sandwiched in-between	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 Heaters	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** – **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 – **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 Thermostat Compatible** – **Warm-up Mode,** (four modes of operation)	Standard	Standard	Standard
Outdoor Coil Fans — Polyvinyl chloride (PVC) coated fan guards furnished	Standard	Standard	Standard
Outdoor Coil Fan Motors — Overload protected, permanently lubricated, equipped with ball bearings, shaft up, wire basket mount	Standard	Standard	Standard
Supply Air Blower — Belt drive, forward curved blades with double inlet, blower wheel statically and dynamically balanced, sleeve bearings, grease fittings furnished, adjustable pulley (allows speed change), blower assembly slides out of unit for servicing	Standard	Standard	Standard
Supply Air Motor — Overload protected, equipped with ball bearings	Standard	Standard	Standard

†With optional Horizontal Roof Mounting Frame.

FEATURES — LCA MODELS

Item	LCA180	LCA210	LCA240
Compressors — Reciprocating type	"S" Models	"S" Models	"S" Models
Outdoor Coil Construction — Slab type, angled design of coil (33°) inherently protects it from possible hail damage	Standard	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), independent refrigerant circuits (allows staging)	Standard	Standard	Standard

FEATURES — LGA MODELS

Item	LGA180	LGA210	LGA240
Compressors — Reciprocating type	"S" Models	"S" Models	"S" Models
Outdoor Coil Construction — Slab type, angled design of coil (33°) inherently protects it from possible hail damage	Standard	Standard	Standard
Fan and Limit Controls — Factory installed, 90 second fan "on" time delay, dual limit controls (primary and secondary) with fixed temperature setting	Standard	Standard	Standard
Heat Exchanger — Tubular construction, aluminized steel, life cycle tested	Standard	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	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	Standard

FEATURES — LHA MODELS

Item	LHA180	LHA240
Compressors — Advanced reciprocating type for high efficiency	"H" Models	"H" Models
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	Standard
Outdoor Coil Construction — Formed wrap around construction	Standard	Standard
Refrigeration System — Consists of: compressors, outdoor coils and direct drive fans, indoor coil and belt drive blowers, check and expansion valves (indoor and outdoor), high capacity driers, high pressure switches, low pressure switches, reversing valves, defrost control, full refrigerant charge, crankcase heaters, freezestats (prevent coil freeze-up during low ambient operation or loss of air), independent refrigerant circuits (allows staging)	Standard	Standard

FACTORY INSTALLED ONLY OPTIONS — ALL MODELS

Item	LCA/LGA/LHA180	LCA/LGA210	LCA/LGA/LHA240
Blower Proving Switch — Monitors blower operation, locks out unit in case of blower failure	Factory	Factory	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	Factory	Factory
Dirty Filter Switch — Pressure switch indicates dirty filter, relays information to Integrated Module Control (furnished with unit)	Factory	Factory	Factory
***Service Valves** — Fully serviceable brass valves installed in discharge and liquid lines	*Factory	Factory	*Factory
Smoke Detector — Photoelectric type, factory installed in supply air section or return air section or both sections	Factory	Factory	Factory

*Not available for LHA heat pump models.

FACTORY INSTALLED ONLY OPTIONS — LGA

Item	LGA180	LGA210	LGA240
Standard Heat Gas Input — Factory installed (low fire/high fire) 169,000 and 260,000 Btuh (49.5 and 76.2 kW) input two stage heating capacity	Factory	Factory	Factory
High Heat Gas Input — Factory installed (low fire/high fire) 305,000 and 470,000 Btuh (89.4 and 137.7 kW) input two stage heating capacity	Factory	Factory	Factory

FIELD INSTALLED ONLY ACCESSORIES — ALL MODELS

Item	LCA/LGA/LHA180	LCA/LGA210	LCA/LGA/LHA240
Control System — Electro-mechanical Thermostat	Optional	Optional	Optional
Control System — Electronic Thermostat	Optional	Optional	Optional
Control System — Honeywell T7300 Thermostat	Optional	Optional	Optional
Diffusers (Step-Down) — Aluminum grilles, double deflection louvers, 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	RTD11-185	RTD11-275	RTD11-275
Diffusers (Flush) — Aluminum grilles, fixed blade louvers, 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	FD11-185	FD11-275	FD11-275
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 furnished		LAGEDH18/24	
Indoor Air Quality (CO_2) Sensor — Monitors CO_2 levels, reports to Integrated Modular Control (IMC) board which adjusts economizer dampers as needed		**18K51**	
Transitions (Supply and Return) — Used with diffusers, installs in roof mounting frame, galvanized steel construction, flanges furnished for duct connection, fully insulated	LASRT18	LASRT21/24	LASRT21/24
Roof Mounting Frame — Nailer strip furnished, mates to unit, U.S. National Roofing Contractors Approved, shipped knocked down		LARMF18/36-14 — 14 inch (356 mm) height or LARMF18/36-24 — 24 inch (610 mm) height	
Roof Mounting Frame (Horizontal) — Nailer strip furnished, mates to unit, converts unit from down-flow to horizontal (side) air flow, shipped completely assembled NOTE — return air is on unit, supply air is on frame, see dimension drawings, shipped knocked down		LARMFH18/24	

FIELD INSTALLED ONLY ACCESSORIES — LGA

Item	LGA180	LGA210	LGA240
Cold Weather Kit — Electric heater automatically controls minimum temperature in gas burner compartment when temperature is below –40°C (–40°F) to allow operation down to –50°C (–60°C)	Optional	Optional	Optional
LPG/Propane Kits	Optional	Optional	Optional

FACTORY OR FIELD INSTALLED ACCESSORIES — ALL MODELS

Item	LCA/LGA/LHA180	LCA/LGA210	LCA/LGA/LHA240
Control System — Novar	Optional	Optional	Optional
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, mixed air controller, damper assembly slides in unit, outdoor air hood must be ordered separately (see below), optional down-flow gravity exhaust dampers available (see below), choice of economizer controls (see below)		LAREMD18/24	
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 with unit	Furnished with unit	Furnished with unit
Outdoor Enthalpy Control — Adjustable enthalpy sensor, senses outdoor air enthalpy for economizer control**,** 0 to 100% outdoor air, adjustable minimum positioner	Optional	Optional	Optional
Differential Enthalpy Control — Two solid-state return air sensors allow selection between outdoor air and return air (whichever has lowest enthalpy)	Optional	Optional	Optional
Global Control — Furnished on IMC board in unit, used with Direct Digital Control (DDC) systems, uses global air sensor to control damper position	Furnished with unit	Furnished with unit	Furnished with unit
Down-Flow Gravity Exhaust Dampers — Aluminum blade dampers prevent blow back and outdoor air infiltration during off cycle, bird screen furnished		LAGED18/24	
Outdoor Air Damper Section (Manual Operation) — 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)		LAOAD18/24	
Outdoor Air Damper Section (Automatic Operation) — Linked mechanical dampers, 0 to 25% (fixed) outdoor air adjustable, 3 position damper actuator, plug-in connection, installs in unit for down-flow applications, outdoor air hood must be ordered separately (see below)		LAOADM18/24	
Outdoor Air Hood — Required with LAREMD18/24 Economizer, LAOAD18/24 and LAOADM18/24 Outdoor Air Damper Sections, three cleanable aluminum mesh fresh air filters furnished		LAOAH18/24	
Power Exhaust Fans — Install in unit for down-flow applications only with economizer option, provide exhaust air pressure relief, interlocked to run when return air dampers are closed and supply air blowers are operating, overload protected, requires optional down-flow gravity exhaust dampers (see above)		LAPEF18/24	

FACTORY OR FIELD INSTALLED ACCESSORIES — LCA/LHA

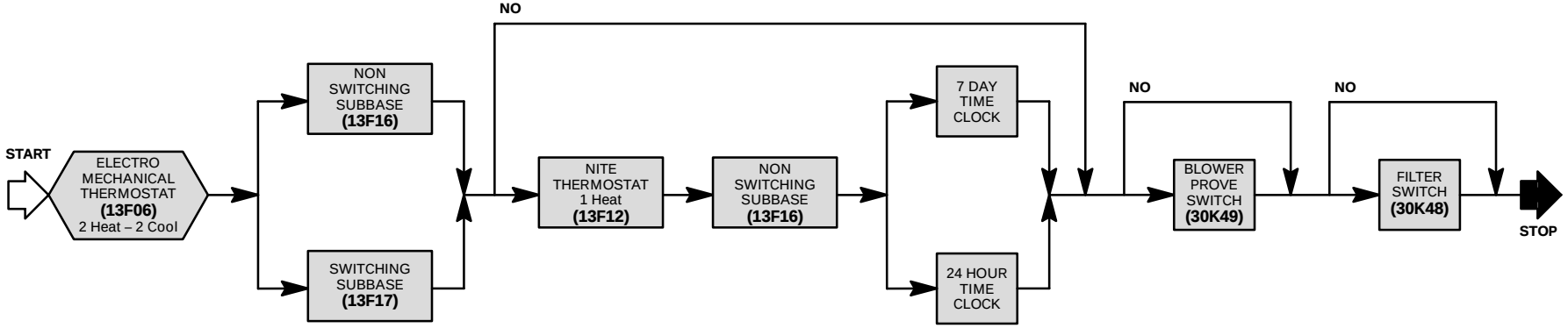
Item	LCA/LHA180	LCA210	LCA/LHA240
Electric Heat — Factory or field installed, helix wound nichrome elements, time delay for element staging, individual element limit controls, may be two-stage controlled, requires optional Fuse Block and Electric Heat Control Module	Optional	Optional	Optional
Electric Heat Control Module — Required with 45, 60 and 90 kW electric heaters, provides control of second stage heating	Required	Required	Required
Electric Heat Fuse Block — Wiring harness and mounting screws furnished	Required	Required	Required
Electric Heat LTB2 Terminal Block — Required with electric heat, see Optional Electric Heat Accessories Table	Required	Required	Required

OPTIONAL TEMPERATURE CONTROL SYSTEMS (See Flow Charts on Page 7) ALL MODELS

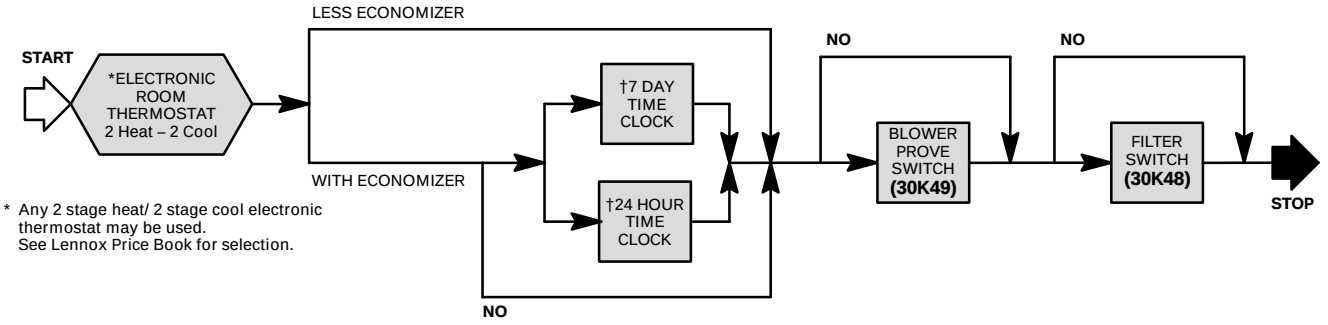
System and Component Description	Field Installed Catalog No.
ELECTRO-MECHANICAL THERMOSTAT CONTROL SYSTEM	—
Thermostat — Two stage heat & two stage cool with dual temperature levers, subbase choice	**13F06**
Subbase — Manual system switch (Off-Heat-Auto-Cool), fan switch (Auto-On)	**13F17**
Subbase — 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**
Dirty Filter Switch — Senses static pressure increase indicating a dirty filter condition	**30K48**
ELECTRONIC THERMOSTAT CONTROL SYSTEM	—
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**
Dirty Filter Switch — Senses static pressure increase indicating a dirty filter condition	**30K48**
HONEYWELL T7300 THERMOSTAT CONTROL SYSTEM	—
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	**81G59**
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	**81G60**
Sensor — Room temperature	**58C92**
Sensor — Room temperature with 3 hour override and setpoint adjustment	**86G67**
Sensor — Return air temperature	**27C40**
Dirty Filter Switch — Senses static pressure increase indicating a dirty filter condition	**30K48**
NOVAR ETM–2050 KIT	—
Control Module/Blower Proving Switch/Return Air Sensor/Discharge Air Sensor/Wiring Harness — Control 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, failsafe 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	**16K91**
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

TEMPERATURE CONTROL SELECTION FLOWCHARTS

ELECTRO-MECHANICAL THERMOSTAT CONTROL SYSTEM



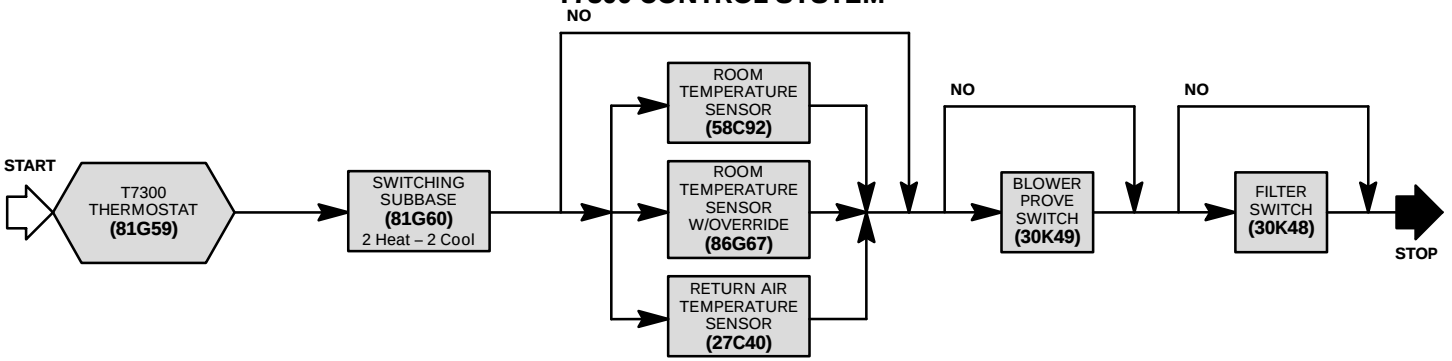
ELECTRONIC THERMOSTAT CONTROL SYSTEM



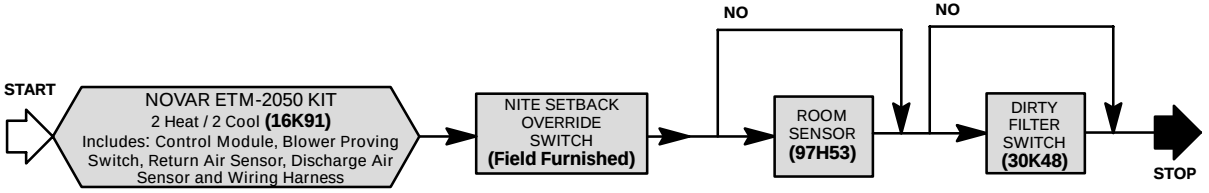
* Any 2 stage heat/ 2 stage cool electronic thermostat may be used. See Lennox Price Book for selection.

†May be included as a function of electronic thermostat.

T7300 CONTROL SYSTEM



NOVAR CONTROL SYSTEM



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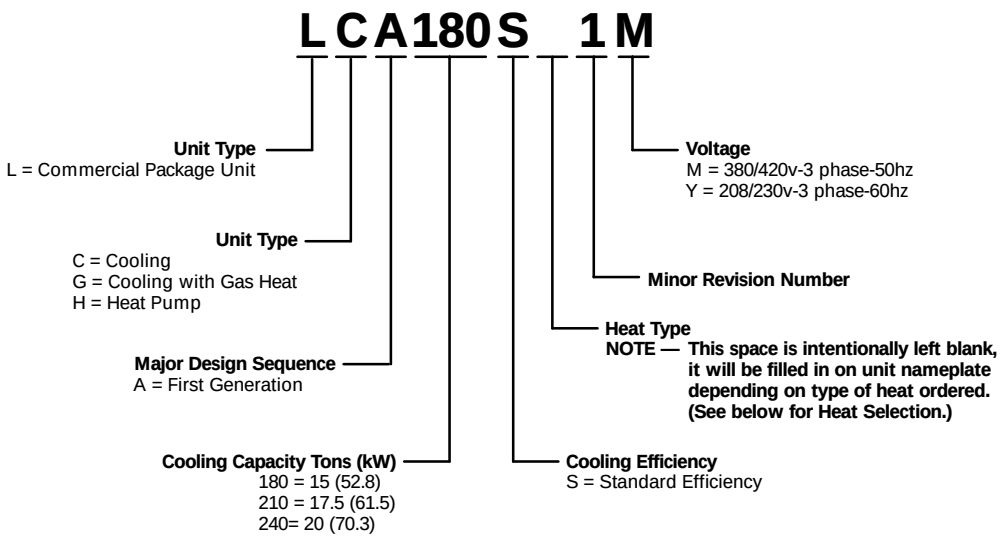


FACTORY INSTALLED OPTIONS

BLOWER MOTORS
- 3 hp (2.2 kW)
- 5 hp (3.7 k W)
- 7.5 hp (5.6 kW)

***BLOWER DRIVES**
- Drive #1 option 3 hp (2.2 kW)
- Drive #2, 3 and 4 option 5 hp (3.7 k W) motor
- Drive #5 option 7.5 hp (5.6 kW) motor

*See Blower Performance table for specifications.

TECHNICOAT CORROSION PROTECTION
- Condenser Coils and Base Section
- Evaporator Coils, Base Section and Blower Housings

ECONOMIZER

ECONOMIZER CONTROLS
- Sensible Control
- Outdoor Enthalpy Control
- Differential Enthalpy Control
- Global Control

OUTDOOR AIR DAMPERS
- Manual Control
- Automatic Control

POWER EXHAUST FANS

GRAVITY EXHAUST DAMPERS (Down-Flo Applications Only)

ELECTRICAL
- Single Point Power Supply
- Unit Disconnect

HEAT SELECTION

GAS HEAT (Two Stage)
- Standard Heat Input (low fire/high fire) 152 000 and 234 000 Btuh (44.5 and 68.6 kW) (38 300 and 59 000 kcal)
- High Heat Input (low fire/high fire) 274 500 and 423 000 Btuh (80.4 and 123.9 kW) (69 200 and 106 600 kcal)

ELECTRIC HEAT
- 15 kW
- 30 kW
- 45 kW
- 60 kW
- 90 kW (210 & 240 models only)

REFRIGERATION SYSTEM
- Service Valves (Not Available for LHA Models)

***CONTROL SYSTEMS**
- Novar

*See The Lennox Price Book for additional control systems available.

DIRTY FILTER SWITCH

BLOWER PROVING SWITCH

SMOKE DETECTORS
- Smoke Detector (Return Air)
- Smoke Detector (Supply Air)

SPECIFICATIONS — 180 AND 210 SIZES — LCA/LGA

Model Number			LCA180S and LGA180S	LCA210S and LGA210S
Evaporator Blower and Drive Selection	Blower wheel nominal diameter x width — in. (mm)		(2) 15 x 15 (381 x 381)	
	3 hp (2.2 kW) Motor and Drives	Motor output — hp (kW)	3 (2.2)	
		Voltage and phase	380/420v-50hz-3 phase with neutral	
		Rev/min (Drive 1 option)	570 — 755	
	5 hp (3.7 kW) Motor and Drives	Motor horsepower (kW)	5 (3.7)	
		Voltage and phase	380/420v-50hz-3 phase with neutral	
		Rev/min (Drive 2, 3 and 4 options)	570 – 755, 710 – 870 or 790 – 990	
	7.5 hp (5.6 kW) Motor and Drives	Motor output — hp (kW)	7.5 (5.6)	
		Voltage and phase	380/420v-50hz-3 phase with neutral	
		Rev/min (Drive 5 option)	790 – 990	
Evaporator Coil	Net face area — sq. ft. (m^2)		22.3 (2.07) total	
	Tube outside diameter — in. (mm) and number of rows		3/8 (9.5) — 3	
	Fins per inch (m)		14 (551)	
	Drain connection number and size – in. (mm)		(1) 1 (25.4) female pipe thread	
	Expansion device type		Balanced Port Thermostatic Expansion Valve, removeable power head	
Condenser Coil	Net face area — sq. ft. (m^2)		56.5 (5.25) total	
	Tube outside diameter — in. (mm) and number of rows		3/8 (9.5) — 1	
	Fins per inch (m)		20 (787)	
Condenser Fans	Diameter — in. (mm) and number of blades		(4) 24 (610) — 3	
	Total Air volume — cfm (m^3/s)		13 210 (6.25)	
	Motor output – horsepower (W)		(4) 1/3 (249)	
	Motor rev/min		895	
	Total motor watts		1045	
Filters (furnished)	Type of filter		Disposable, commercial grade, pleated	
	Number and size — in. (mm)		(6) 24 x 24 x 2 (610 x 610 x 51)	
Electrical characteristics			380/420v-50hz-3 phase with neutral	

COOLING CAPACITY — 180 AND 210 SIZES — LCA/LGA

Model Number		LCA180S and LGA180S	LCA210S and LGA210S
Cooling Ratings	Gross Cooling Capacity — Btuh (kW) (kcal)	162 000 (47.5) (40 800)	186 000 (54.5) (46 900)
	*Net Cooling Capacity — Btuh (kW) (kcal)	156 000 (45.7) (39 300)	178 000 (52.2) (44 900)
	Total Unit Power Input (kW)	16.6	19.4
	Coefficient of Performance – Output/Input	2.8	2.7
	*Energy Efficiency Ratio (Btuh/Watt)	9.4	9.2
	*†Integrated Part Load Value (Btuh/Watt)	10.8	9.8
Refrigerant Charge Furnished (HCFC-22)	Circuit 1	9 lbs. (0 oz. (4.08 kg)	7 lbs. 8 oz. (3.4 kg)
	Circuit 2	9 lbs. (0 oz. (4.08 kg)	7 lbs. 8 oz. (3.4 kg)
	Circuit 3	9 lbs. (0 oz. (4.08 kg)	7 lbs. 8 oz. (3.4 kg)
	Circuit 4	- - - -	7 lbs. 8 oz. (3.4 kg)

*Rated test conditions are those included in in Air Conditioning and Refrigeration Institute (ARI) Standard 360-86 while operating at rated voltage and air volumes.
Cooling Ratings: 95°F (35°C) outdoor air temperature and 80°F (27°C) db/67°F (19°C) wb entering evaporator air; minimum external duct static pressure.
†Integrated Part Load Value rated at 80°F (27°C) outdoor air temperature.
NOTE — Net capacity includes evaporator blower motor heat deduction. Gross capacity does not include evaporator blower motor heat deduction.

GAS HEATING CAPACITY — 180 AND 210 SIZES — LGA

Model Number		LGA180		LGA210	
Heat Input Type		Standard	High	Standard	High
Two Stage Heating Capacity (Natural or LPG/Propane Gas (at Sea Level)	Input (low) — Btuh (kW) (kcal)	152 000 (44.5) (38 300)	274 500 (80.4) (69 200)	152 000 (44.5) (38 300)	274 500 (80.4) (69 200)
	Output (low) — Btuh (kW) (kcal)	121 500 (35.6) (30 600)	219 500 (64.3) (55 300)	121 500 (35.6) (30 600)	219 500 (64.3) (55 300)
	Input (High) — Btuh (kW) (kcal)	234 000 (68.6) (59 000)	423 000 (123.9) (106 600)	234 000 (68.6) (59 000)	423 000 (123.9) (106 600)
	Output (High) — Btuh (kW) (kcal)	187 000 (54.8) (47 000)	338 500 (99.2) (85 300)	187 000 (54.8) (47 000)	338 500 (99.2) (85 300)
	Thermal Efficiency	80.0%	80.0%	80.0%	80.0%
Gas Supply Connections nominal pipe thread — in.	Natural	1			
	*LPG/Propane	1			
Recommended Gas Supply Pressure — wc. in. (kPa)	Natural	7 (1.7)			
	*LPG/Propane	11 (2.7)			

*For LPG/Propane units a field conversion kit is required and must be ordered extra.
High Altitude Derate — For elevations higher than 2000 ft. (600 m) above sea level, unit must be derated 4% per 1000 ft. (300 m) above sea level.

SPECIFICATIONS — 240 SIZES — LCA/LGA

Model Number			LCA240 and LGA240S
Evaporator Blower and Drive Selection	Blower wheel nominal diameter x width — in. (mm)		(2) 15 x 15 (381 x 381)
	3 hp (2.2 kW) Motor and Drives	Motor output — hp (kW)	3 (2.2)
		Voltage and phase	380/420v-50hz-3 phase with neutral
		Rev/min range (Drive 1 option)	570 – 755
	5 hp (3.7 kW) Motor and Drives	Motor output — hp (kW)	5 (3.7)
		Voltage and phase	380/420v-50hz-3 phase with neutral
		Rev/min range (Drive 2, 3 and 4 options)	570 – 755, 710 – 870 or 790 – 990
	7.5 hp (5.6 kW) Motor and Drives	Motor horsepower (kW)	7.5 (5.6)
		Voltage and phase	380/420v-50hz-3 phase with neutral
		Rev/min range (Drive 5 option)	790 – 990
Evaporator Coil	Net face area — sq. ft. (m^2)		22.3 (2.07) total
	Tube diameter — in. (mm) and number of rows		3/8 (9.5) — 3
	Fins per inch (m)		14 (551)
	Drain connection number and size – in. (mm)		(1) 1 (25.4) male pipe thread
	Expansion device type		Balanced Port Thermostatic Expansion Valve, removeable power head
Condenser Coil	Net face area — sq. ft. (m^2)		56.5 (5.25) total
	Tube diameter — in. (mm) and number of rows		3/8 (9.5) — 2
	Fins per inch (m)		20 (787)
Condenser Fans	Diameter — in. (mm) and number of blades		(4) 24 (610) — 3
	Total Air volume — cfm (m^3/s)		12 875 (6075)
	Motor output – horsepower (W)		(4) 1/3 (249)
	Motor rev/min		895
	Total motor watts		1065
Filters (furnished)	Type of filter		Disposable, commercial grade, pleated
	Number and size — in. (mm)		(6) 24 x 24 x 2 (610 x 610 x 51)
Electrical characteristics			380/420v-50hz-3 phase with neutral

COOLING CAPACITY — 240 SIZE — LCA/LGA

Model Number		LCA240S and LGA240S
Cooling Ratings	Gross Cooling Capacity — Btuh (kW) (kcal)	217 000 (63.6) (54 700)
	*Net Cooling Capacity — Btuh (kW) (kcal)	206 000 (60.4) (51 900)
	Total Unit Power Input (kW)	22.9
	Coefficient of Performance – Output/Input	2.6
	*Energy Efficiency Ratio (Btuh/Watt)	9.0
	*†Integrated Part Load Value (Btuh/Watt)	9.7
Refrigerant Charge Furnished (HCFC-22)	Circuit 1	10 lbs. 0 oz. (4.54 kg)
	Circuit 2	10 lbs. 0 oz. (4.54 kg)
	Circuit 3	10 lbs. 0 oz. (4.54 kg)
	Circuit 4	10 lbs. 0 oz. (4.54 kg)

*Rated test conditions are those included in in Air Conditioning and Refrigeration Institute (ARI) Standard 360-86 while operating at rated voltage and air volumes.
Cooling Ratings: 95°F (35°C) outdoor air temperature and 80°F (27°C) db/67°F (19°C) wb entering evaporator air; minimum external duct static pressure.
†Integrated Part Load Value rated at 80°F (27°C) outdoor air temperature.
NOTE — Net capacity includes evaporator blower motor heat deduction. Gross capacity does not include evaporator blower motor heat deduction.

GAS HEATING CAPACITY — 240 SIZE — LCA/LGA

Model Number		LGA240	
Heat Input Type		Standard	High
Two Stage Heating Capacity (Natural or LPG/Propane Gas) (at sea level)	Input (low) — Btuh (kW) (kcal)	152 000 (44.5) (38 300)	274 500 (80.4) (69 200)
	Output (low) — Btuh (kW) (kcal)	121 500 (35.6) (30 600)	219 500 (64.3) (55 300)
	Input (High) — Btuh (kW) (kcal)	234 000 (68.6) (59 000)	423 000 (123.9) (106 600)
	Output (High) — Btuh (kW) (kcal)	187 000 (54.8) (47 100)	338 500 (99.2) (85 300)
	Thermal Efficiency	80%	80%
Gas Supply Connections nominal pipe thread — in.	Natural	1	
	*LPG/Propane	1	
Recommended Gas Supply Pressure — wc. in. (kPa)	Natural	7 (1.7)	
	*LPG/Propane	11 (2.7)	

*For LPG/Propane units a field conversion kit is required and must be ordered extra.
High Altitude Derate — For elevations higher than 2000 ft. (600 m) above sea level, unit must be derated 4% per 1000 ft. (300 m) above sea level.

Model Number			LHA180H	LHA240H
Cooling Ratings	Gross Cooling Capacity — Btuh (kW) (kcal)		162 000 (47.5) (40 800)	205 000 (60.1) (51 700)
	*Net Cooling Capacity — Btuh (kW) (kcal)		157 000 (46.0) (39 600)	197 000 (57.7) (49 600)
	Total Unit Power Input (kW)		15.3	18.3
	*Energy Efficiency Ratio (Btuh/Watt)		10.3	10.7
	Coefficient of Performance – Output/Input		3.0	3.1
	*†Integrated Part Load Value (Btuh/Watt)		11.1	11.4
High Temperature Heating Ratings	*Total Heating Capacity — Btuh (kW) (kcal)		165 000 (48.3) (41 600)	194 000 (56.8) (48 900)
	Total Unit Power Input (kW)		13.9	17.1
	Coefficient of Performance – Output/Input		3.5	3.3
Low Temperature Heating Ratings	*Total Heating Capacity — Btuh (kW) (kcal)		95 000 (27.8) (23 900)	117 000 (34.3) (29 500)
	Total Unit Power Input (kW)		11.2	11.8
	Coefficient of Performance – Output/Input		2.5	2.9
Refrigerant Charge Furnished (HCFC-22)	Circuit 1		24 lbs. (8 oz. (11.11 kg)	26 lbs. (0 oz. (11.79 kg)
	Circuit 2		24 lbs. (8 oz. (11.11 kg)	26 lbs. (0 oz. (11.79 kg)
Indoor Coil Blower and Drive Selection	Blower wheel nominal diameter x width — in. (mm)		(2) 15 x 15 (381 x 381)	
	3 hp (2.2 kW) *Motor & Drives	Nominal motor output — hp (kW)	3 (2.2)	
		Voltage and phase	380/420v-50hz-3 phase with neutral	
		Rev/min range (Drive 1 option)	570 – 755	
	5 hp (3.7 kW) *Motor & Drives	Nominal motor horsepower (kW)	5 (3.7)	
		Voltage and phase	380/420v-50hz-3 phase with neutral	
		Rev/min range (Drive 2, 3 and 4 options)	570 – 755, 710 – 870 or 790 – 990	
	7.5 hp (5.6 kW) *Motor & Drives	Nominal motor horsepower (kW)	7.5 (5.6)	
		Voltage and phase	380/420v-50hz-3 phase with neutral	
		Rev/min range (Drive 5 option)	790 – 990	
Indoor Coil	Net face area — sq. ft. (m^2)		22.3 (2.07)	
	Tube diameter — in. (mm) and number of rows		3/8 (9.5) — 3	3/8 (9.5) — 4
	Fins per inch (m)		14 (551)	
	Drain connection number and size – in. (mm)		(1) 1 (25.4) female pipe thread	
	Expansion device type		Balanced Port Thermostatic Expansion Valve, removeable power head	
Outdoor Coil	Net face area — sq. ft. (m^2)		57.0 (5.30)	
	Tube diameter — in. (mm) and number 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) & number of blades		(4) 24 (610) — 3	
	Total air volume — cfm (m^3/s)		12 875 (6075)	
	Motor output – horsepower (W)		(4) 1/3 (249)	
	Motor rev/min		895	
	Total motor watts		1065	
Filters (furnished)	Type of filter		Disposable, commercial grade, pleated	
	Number and size — in. (mm)		(6) 24 x 24 x 2 (610 x 610 x 51)	
Electrical characteristics			380/420v-50hz-3 phase with neutral	

*Rated test conditions are those included in in Air Conditioning and Refrigeration Institute (ARI) Standard 340-86 while operating at rated voltage and air volumes.
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.
†Integrated Part Load Value rated at 80°F (27°C) outdoor air temperature.
NOTE — Net capacity includes evaporator blower motor heat deduction. Gross capacity does not include evaporator blower motor heat deduction.

OPTIONAL FIELD INSTALLED ACCESSORIES — ALL MODELS

Unit Model Number		LCA/LGA/LHA180	LCA/LGA210 and LCA/LGA/LHA240
LPG/Propane Conversion Kit (LGA models only)		**19K52** (2 kits required)	
Down-Flow Roof Mounting Frame (Net Weight)	14 inch (356 mm) height	LARMF18/36-14 (160 lbs.) (73 kg) **(16K87)**	
	24 inch (610 mm) height	LARMF18/36-24 (220 lbs.) (100 kg) **(16K88)**	
Horizontal Roof Mounting Frame — (Net Weight)		LARMFH18/24 (300 lbs.) (136 kg) **(97J33)**	
Economizer (Outdoor Air Hood Required – Order Separately)	Model Number — (Net Weight)	LAREMD18/24 (73 lbs.) (33 kg) **(16K95)**	
Outdoor Air Hood — (Net Weight) Number, size and type of filters — in. (mm)		LAOAH18/24 **(19K37)** (45 lbs.) (20 kg) required with Economizer (3) 16 x 25 x 1 (406 x 635 x 25) aluminum mesh	
Outdoor Enthalpy Control		**16K96**	
Differential Enthalpy Control		**16K97**	
Gravity Exhaust Dampers (Required With Economizer)	Down-Flow — (Net Weight)	LAGED18/24 (20 lbs.) (9 kg) **(16K98)**	
	*Horizontal — (Net Weight)	LAGEDH18/24 (16 lbs.) (7 kg) **(16K99)**	
Power Exhaust Fans (Down-Flo Only) (Available With Economizer Only, Down-flow Gravity Exhaust Dampers Required)	Model Number (Net Weight)	LAPEF18/24 (66 lbs.) (30 kg) **(25K68)**	
	Diameter — in. (mm) & number of blades	(2) 20 (508) — 5	
	Total air volume — cfm (m^3/s)	7190 (3.4) @ 0 in. w.g. (0 Pa)	
	Motor output – horsepower (W)	(2) 1/3 (249)	
	Total watts input	575	
Ceiling Supply and Return Air Diffusers (Net Weight)	Step-Down	RTD11-185 (392 lbs.) (178 kg) **(29G06)**	RTD11-275 (403 lbs.) (183 kg) **(29G07)**
	Flush	FD11-185 (289 lbs.) (131 kg) **(29G10)**	FD11-275 (363 lbs.) (165 kg) **(29G11)**
	Transition	LASRT18 (80 lbs.) (36 kg) **(19K01)**	LASRT21/24 (75 lbs.) (34 kg) **(19K02)**
Outdoor Air Damper (Manual Operation) — (Net Weight) (Outdoor Air Hood Required – Order Separately)		LAOAD18/24 (40 lbs.) (18 kg) **(16K93)**	
Outdoor Air Damper (Automatic Operation) — (Net Weight) (Outdoor Air Hood Required – Order Separately)		LAOADM18/24 (45 lbs.) (20 kg) **(16K94)**	
Outdoor Air Hood — (Net Weight) Number, size and type of filters — in. (mm)		LAOAH18/24 **(19K37)** (45 lbs.) (20 kg) required with Outdoor Air Damper (3) 16 x 25 x 1 (406 x 635 x 25) aluminum mesh	
Indoor Air Quality (CO_2) Sensor		**18K51**	

*Field installs in return air duct. Two dampers furnished per order number.

WEIGHT DATA — ALL MODELS

Model Number	Description	Weight lbs.	Weight kg
Net Weights			
LCA180S	Net weight (Base unit)	2200	1000
LCA210S	Net weight (Base unit)	2285	1035
LCA240S	Net weight (Base unit)	2415	1095
LGA180S	Net weight (Base unit with low fire heat exchanger)	2255	1025
LGA210S	Net weight (Base unit with low fire heat exchanger)	2340	1060
LGA240S	Net weight (Base unit with low fire heat exchanger)	2470	1120
LHA180H	Net weight (Base unit)	2355	1070
LHA240H	Net weight (Base unit)	2400	1090
Shipping Weights (Add Factory Installed Options Weights To Base Unit Weights For Total Shipping Weight)			
LCA180S	Base unit	2485	1125
LCA210S	Base unit	2570	1165
LCA240S	Base unit	2700	1225
LHA180H	Base unit	2655	1205
LHA240H	Base unit	2700	1225
LCA/LHA Models Only	Electric Heat (add to Base unit)	See Electric Heat Rating Tables	
LGA180S	Base unit with low fire heat exchanger	2540	1150
LGA210S	Base unit with low fire heat exchanger	2625	1190
LGA240S	Base unit with low fire heat exchanger	2755	1250
LGA Models Only	High Fire Heat Exchanger (add to Base unit)	30	14
All Models	Economizer (add to Base unit)	73	33
	Outdoor Air Damper (add to Base unit)	45	20
	Power Exhaust (add to Base unit)	62	19

ELECTRIC HEAT CONTROL MODULE AND UNIT FUSE BLOCKS

Unit Model Number			LCA180S	LCA210S	LCA240S	LHA180H	LHA240H
Electric Heat	Model Number		EHA (see Electric Heat Data tables for additional information)				
	kW Input Range		15–30–45–60	15–30–45–60–90	15–30–45–60–90	15–30–45–60	15–30–45–60–90
Electric Heat Control Module (45, 60 and 90 kW)			**37K11**				
Unit Fuse Block (3 phase)	**Without** Power Exhaust Fans	3 hp (2.2 kW)	**25K11**	**25K11**	**25K13**	**25K10**	**25K13**
		5 hp (3.7 kW)	**25K11**	**25K13**	**25K13**	**25K11**	**25K13**
		7.5 hp (5.6 kW)	**25K13**	**25K13**	**25K14**	**25K13**	**25K14**
	With Power Exhaust Fans	3 hp (2.2 kW)	**25K11**	**25K12**	**25K13**	**25K11**	**25K13**
		5 hp (3.7 kW)	**25K13**	**25K13**	**25K14**	**25K11**	**25K14**
		7.5 hp (5.6 kW)	**25K13**	**25K13**	**25K14**	**25K13**	**25K14**

LTB2 ELECTRIC HEAT TERMINAL BLOCK
LTB2-175 (30K75) 175 amps**, LBT2-335 (30K76)** 335 amps
(Required For Units <u>Without</u> Disconnect/Circuit Breaker But <u>With</u> Single Point Power Source)

Unit Model Number			LCA180S	LCA210S	LCA240S	LHA180H	LHA240H
LTB2 Terminal Block (3 phase)	12 kW	3 hp (2.2 kW)	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**
		5 hp (3.7 kW)	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**
		7.5 hp (5.6 kW)	**30K75**	**30K75**	**30K75**	**30K75**	**30K75**
	25 kW	3 hp (2.2 kW)	**30K75**	**30K75**	**30K75**	**30K75**	**30K76**
		5 hp (3.7 kW)	**30K75**	**30K75**	**30K75**	**30K75**	**30K76**
		7.5 hp (5.6 kW)	**30K75**	**30K75**	**30K75**	**30K76**	**30K76**
	35 kW	3 hp (2.2 kW)	**30K75**	**30K75**	**30K75**	**30K76**	**30K76**
		5 hp (3.7 kW)	**30K75**	**30K75**	**30K75**	**30K76**	**30K76**
		7.5 hp (5.6 kW)	**30K75**	**30K75**	**30K75**	**30K76**	**30K76**
	45 kW	3 hp (2.2 kW)	**30K75**	**30K75**	**30K75**	**30K76**	**30K76**
		5 hp (3.7 kW)	**30K75**	**30K75**	**30K75**	**30K76**	**30K76**
		7.5 hp (5.6 kW)	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**
	70 kW	3 hp (2.2 kW)	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**
		5 hp (3.7 kW)	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**
		7.5 hp (5.6 kW)	**30K76**	**30K76**	**30K76**	**30K76**	**30K76**

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.

ELECTRICAL DATA — 180 SIZE — LCA/LGA

Model Number			LCA180 and LGA180		
Line voltage data — 50 Hz — 3 phase with neutral			380/420V		
Compressors (3)	Rated load (A) each (total)		8.6 (25.8)		
	Locked rotor (A) each (total)		55.0 (165.0)		
Condenser Fan Motors (4)	Full load (A) (total)		7.2		
	Locked rotor (A) (total)		9.6		
Evaporator Blower Motor	Motor Output	hp	3	5	7.5
		kW	2.2	3.7	5.6
	Full load (A)		4.7	7.4	11.6
	Locked rotor (A)		27	41	92
Optional Power Exhaust Fans	(No.) Horsepower (W)		(2) 1/3 (249)		
	Full load (A) (total)		2.6		
	Locked rotor (A) (total)		4.8		
Electric Heat — Per Element (A)			15.7		

*Refer to local electrical codes to determine wire, fuse and disconnect size requirements. Use wires suitable for at least 167°F (75°C).

ELECTRICAL DATA — 210 SIZE — LCA/LGA

Model Number			LCA210 and LGA210		
Line voltage data — 50 Hz — 3 phase with neutral			380/420V		
Compressors (4)	Rated load (A) each (total)		5.7 (22.8)		
	Locked rotor (A) each (total)		52.5 (210.0)		
Condenser Fan Motors (4)	Full load (A) (total)		7.2		
	Locked rotor (A) (total)		9.6		
Evaporator Blower Motor	Motor Output	hp	3	5	7.5
		kW	2.2	3.7	5.6
	Full load (A)		4.7	7.4	11.6
	Locked rotor (A)		27	41	92
Optional Power Exhaust Fans	(No.) Horsepower (W)		(2) 1/3 (249)		
	Full load (A) (total)		2.6		
	Locked rotor (A) (total)		4.8		
Electric Heat — Per Element (A)			15.7		

*Refer to local electrical codes to determine wire, fuse and disconnect size requirements. Use wires suitable for at least 167°F (75°C).

ELECTRICAL DATA — 240 SIZE — LCA/LGA

Model Number			LCA240 and LGA240		
Line voltage data — 50 Hz — 3 phase with neutral			380/420V		
Compressors (4)	Rated load (A) each (total)		8.6 (34.4)		
	Locked rotor (A) each (total)		55.0 (220.0)		
Condenser Fan Motors (4)	Full load (A) (total)		7.2		
	Locked rotor (A) (total)		9.6		
Evaporator Blower Motor	Motor Output	hp	3	5	7.5
		kW	2.2	3.7	5.6
	Full load (A)		4.7	7.4	44.6
	Locked rotor (A)		27	41	92
Optional Power Exhaust Fans	(No.) Horsepower (W)		(2) 1/3 (249)		
	Full load (A) (total)		2.6		
	Locked rotor (A) (total)		4.8		
Electric Heat — Per Element (A)			15.7		

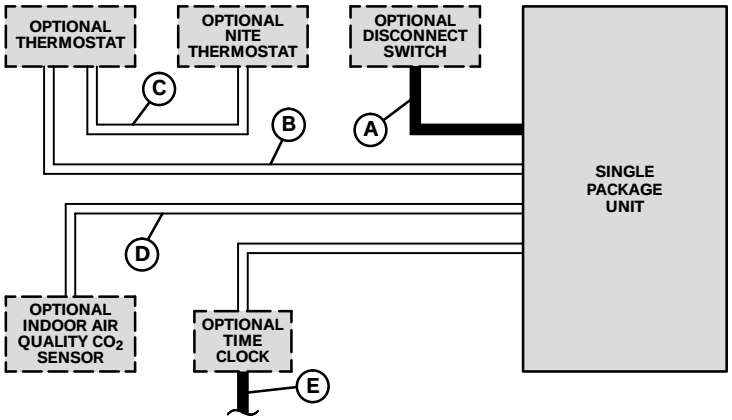
*Refer to local electrical codes to determine wire, fuse and disconnect size requirements. Use wires suitable for at least 167°F (75°C).

ELECTRICAL DATA — 180 AND 240 SIZE — LHA

Model Number			LHA180			LHA240		
Line voltage data — 60 Hz — 3 phase			380/420V			380/420V		
Compressors (2)	Rated load (A) each (total)		9.9 (19.8)			11.9 (23.8)		
	Locked rotor (A) each (total)		89.0 (178.0)			104.0 (208.0)		
Outdoor Coil Fan Motors (4)	Full load (A) (total)		7.2			7.2		
	Locked rotor (A) (total)		9.6			9.6		
Indoor Coil Blower Motor	Motor Output	hp	3	5	7.5	3	5	7.5
		kW	2.2	3.7	5.6	2.2	3.7	5.6
	Full load (A)		4.7	7.4	11.6	4.7	7.4	11.6
	Locked rotor (A)		27	41	92	27	41	92
Optional Power Exhaust Fans	(No.) Horsepower (W)		(2) 1/3 (249)					
	Full load (A) (total)		2.6			2.6		
	Locked rotor (A) (total)		4.8			4.8		
Electric Heat — Per Element (A)			15.7			15.7		

*Refer to local electrical codes to determine wire, fuse and disconnect size requirements. Use wires suitable for at least 167°F (75°C).

ELECTRO-MECHANICAL, ELECTRONIC OR T7300 THERMOSTAT CONTROL SYSTEM



A — Three phase with neutral (See Electrical Data Table)

B — Six wire 24V (Electro-Mechanical)

Seven wire 24V (Electronic)

Nine wire 24V (T7300)

C — Two wire 24V (Electro-Mechanical Only)

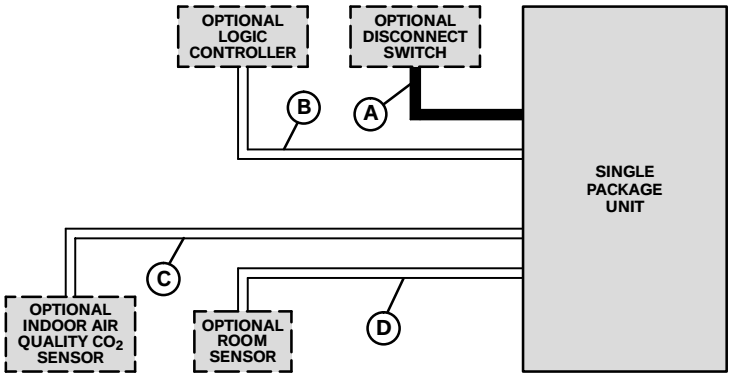
D — Four wire 24V (All Systems)

E — Two wire 24V

— Field wiring not furnished —

NOTE — All wiring must conform to local electrical codes.

NOVAR ETM–2050 CONTROL SYSTEM



A — Three wire power (See Electrical Data Table)

B — Two wire shielded cable 24V

C — Four wire 24V

D — Two wire 24V

— Field wiring not furnished —

NOTE — All wiring must conform to local electrical codes.

180 SIZE

kW Size	Electric Heat Model Number (see footnote) & Net Weight	Number of Elements	Volts Input	Heating Capacity – 50hz		
				kW	kcal	Btuh
12 kW	●(1) EHA240-7.5 **(99J18)** and ●(1) EHA240S-7.5 **(99J19)** 59 lbs. (27 kg) (total weight)	1	380	9.4	8090	32 100
		1	400	10.4	8970	35 600
		1	420	11.5	9880	39 200
25 kW	●(1) EHA360-15 **(99J24)** and ●(1) EHA360S-15 **(99J25)** 59 lbs. (27 kg) (total weight)	1	380	18.8	16 200	64 200
		1	400	20.8	17 900	71 100
		1	420	23.0	19 800	78 400
35 kW	★(2) EHA360-22.5 **(99J29)** 76 lbs. (35 kg) (total weight)	*2	380	28.2	24 300	96 300
		*2	400	31.2	26 900	106 700
		*2	420	34.4	26 600	117 600
45 kW	★(2) EHA150-30 **(99J08)** 76 lbs. (35 kg) (total weight)	*2	380	37.6	32 400	128 400
		*2	400	41.6	35 800	142 200
		*2	420	45.9	39 500	156 800

●NOTE – For field installed electric heat, order (1) of each heater shown to make up heater size required.
★NOTE – For field installed electric heat, order (2) of same heater shown to make up heater size required.
*May be used with two stage control.
NOTE — Fuse block must be ordered extra. Factory installed heaters will have the fuse block factory installed. Fuse block must be installed in field installed heaters. Also requires LTB2 Terminal Block. See Optional Electric Heat Accessories tables.
†Electric Heat Control Module required on 45 and 60 kW sizes only (module furnished with factory installed electric heaters). See Optional Electric Heat Accessories tables.

210 AND 240 SIZE

kW Size	Electric Heat Model Number (see footnote) & Net Weight	Number of Elements	Volts Input	Heating Capacity – 50hz		
				kW	kcal	Btuh
12 kW	●(1) EHA240-7.5 **(99J18)** and ●(1) EHA240S-7.5 **(99J19)** 59 lbs. (27 kg) (total weight)	1	380	9.4	8090	32 100
		1	400	10.4	8970	35 600
		1	420	11.5	9880	39 200
25 kW	●(1) EHA360-15 **(99J24)** and ●(1) EHA360S-15 **(99J25)** 59 lbs. (27 kg) (total weight)	1	380	18.8	16 200	64 200
		1	400	20.8	17 900	71 100
		1	420	23.0	19 800	78 400
35 kW	★(2) EHA360-22.5 **(99J29)** 76 lbs. (35 kg) (total weight)	*2	380	28.2	24 300	96 300
		*2	400	31.2	26 900	106 700
		*2	420	34.4	26 600	117 600
45 kW	★(2) EHA150-30 **(99J08)** 76 lbs. (35 kg) (total weight)	*2	380	37.6	32 400	128 400
		*2	400	41.6	35 800	142 200
		*2	420	45.9	39 500	156 800
70 kW	★(2) EHA360-45 **(99J32)** 84 lbs. (38 kg) (total weight)	*2	380	56.4	48 500	192 500
		*2	400	62.5	53 700	213 200
		*2	420	68.9	59 200	235 100

●NOTE – For field installed electric heat, order (1) of each heater shown to make up heater size required.
★NOTE – For field installed electric heat, order (2) of same heater shown to make up heater size required.
*May be used with two stage control.
NOTE — Fuse block must be ordered extra. Factory installed heaters will have the fuse block factory installed. Fuse block must be installed in field installed heaters. Also requires LTB2 Terminal Block. See Optional Electric Heat Accessories tables.
†Electric Heat Control Module required on 45, 60 and 90 kW sizes only (module furnished with factory installed electric heaters). See Optional Electric Heat Accessories tables.

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

LCA/LGA180S — TWO COMPRESSORS OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Temperature																					
			18°C (65°F)						24°C (75°F)						29° C (85°F)						35°C (95°F)			
			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb		
	m^3/s	cfm	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F
17.2°C (63°F)	2.25	4800	36.8	125 500	6.98	.70	.84	.97	34.3	117 100	7.50	.70	.86	.99	31.7	108 300	8.10	.71	.87	1.00	29.0	98 900	8.77	.72	.90	1.00
	2.85	6000	38.2	130 200	7.05	.75	.92	1.00	35.6	121 600	7.59	.76	.94	1.00	33.0	112 600	8.23	.77	.96	1.00	30.3	103 300	8.93	.79	.98	1.00
	3.40	7200	39.4	134 300	7.10	.81	.98	1.00	36.8	125 700	7.67	.82	.99	1.00	34.2	116 700	8.35	.84	1.00	1.00	31.6	107 700	9.10	.86	1.00	1.00
19.4°C (67°F)	2.25	4800	39.1	133 300	7.09	.56	.68	.80	36.5	124 600	7.65	.55	.68	.82	33.8	115 200	8.30	.55	.69	.84	30.9	105 400	9.01	.54	.70	.86
	2.85	6000	40.3	137 500	7.14	.58	.73	.88	37.6	128 400	7.73	.58	.73	.90	34.8	118 700	8.40	.58	.75	.93	31.9	108 700	9.13	.58	.77	.95
	3.40	7200	41.2	140 500	7.18	.61	.78	.95	38.5	131 200	7.78	.61	.80	.97	35.5	121 200	8.48	.62	.82	.99	32.5	111 000	9.22	.62	.84	1.00
21.7°C (71°F)	2.25	4800	41.6	142 100	7.20	.43	.54	.65	38.9	132 900	7.82	.41	.53	.66	36.1	123 100	8.52	.40	.53	.66	33.1	112 900	9.29	.39	.53	.67
	2.85	6000	42.8	146 100	7.24	.43	.57	.70	40.0	136 600	7.89	.43	.57	.71	37.0	126 400	8.62	.42	.57	.72	34.0	116 000	9.40	.40	.57	.74
	3.40	7200	43.6	148 900	7.28	.45	.60	.76	40.8	139 100	7.94	.44	.60	.77	37.7	128 700	8.68	.43	.61	.79	34.6	118 000	9.48	.42	.62	.82

LCA/LGA180S — ALL COMPRESSORS OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Temperature																					
			29°C (85°F)						35°C (95°F)						41° C (105°F)						46°C (115°F)			
			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb		
	m^3/s	cfm	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F
17.2°C (63°F)	2.25	4800	46.9	160 000	12.25	.73	.88	1.00	43.4	148 100	13.26	.74	.91	1.00	39.9	136 000	14.31	.76	.94	1.00	36.3	124 000	15.37	.78	.97	1.00
	2.85	6000	48.8	166 400	12.44	.79	.96	1.00	45.3	154 400	13.51	.81	.99	1.00	41.8	142 600	14.64	.83	1.00	1.00	38.4	131 100	15.80	.86	1.00	1.00
	3.40	7200	50.6	172 600	12.64	.85	1.00	1.00	47.2	161 000	13.77	.88	1.00	1.00	43.7	149 000	14.95	.91	1.00	1.00	40.2	137 000	16.15	.94	1.00	1.00
19.4°C (67°F)	2.25	4800	49.9	170 200	12.57	.56	.70	.85	46.2	157 600	13.63	.56	.72	.87	42.4	144 600	14.74	.57	.73	.90	38.6	131 800	15.85	.57	.75	.93
	2.85	6000	51.4	175 400	12.72	.60	.77	.93	47.6	162 300	13.82	.60	.78	.96	43.6	148 900	14.96	.61	.81	.99	39.8	135 800	16.09	.62	.84	1.00
	3.40	7200	52.5	179 100	12.84	.63	.83	.99	48.6	165 700	13.96	.64	.85	1.00	44.6	152 300	15.12	.66	.88	1.00	40.7	139 000	16.28	.67	.92	1.00
21.7°C (71°F)	2.25	4800	53.3	181 700	12.91	.41	.55	.68	49.4	168 500	14.06	.41	.55	.69	45.4	155 000	15.25	.40	.55	.71	41.5	141 600	16.43	.39	.56	.73
	2.85	6000	54.7	186 500	13.06	.43	.59	.74	50.7	173 000	14.23	.42	.59	.76	46.6	159 000	15.45	.41	.60	.78	42.5	145 100	16.64	.41	.61	.81
	3.40	7200	55.7	189 900	13.16	.44	.63	.81	51.6	175 900	14.36	.44	.64	.83	47.4	161 600	15.58	.43	.65	.86	43.3	147 600	16.79	.43	.67	.90

LCA/LGA210S — TWO COMPRESSORS OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Temperature																					
			18°C (65°F)						24°C (75°F)						29° C (85°F)						35°C (95°F)			
			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb		
	m^3/s	cfm	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F
17.2°C (63°F)	2.65	5600	30.0	102 200	5.56	.71	.85	.99	27.7	94 500	6.03	.71	.87	1.00	25.4	86 800	6.58	.72	.89	1.00	23.2	79 000	7.18	.72	.92	1.00
	3.30	7000	31.1	106 000	5.63	.76	.93	1.00	28.8	98 200	6.14	.77	.95	1.00	26.5	90 400	6.72	.78	.98	1.00	24.2	82 700	7.37	.80	1.00	1.00
	3.95	8400	32.0	109 300	5.70	.82	.99	1.00	29.8	101 600	6.23	.83	1.00	1.00	27.6	94 100	6.86	.85	1.00	1.00	25.3	86 300	7.57	.88	1.00	1.00
19.4°C (67°F)	2.65	5600	31.7	108 300	5.68	.56	.68	.82	29.4	100 400	6.20	.55	.69	.83	27.1	92 300	6.79	.55	.69	.85	24.6	84 100	7.45	.54	.70	.88
	3.30	7000	32.7	111 500	5.74	.59	.73	.90	30.3	103 400	6.29	.59	.74	.92	27.8	95 000	6.90	.59	.76	.94	25.4	86 700	7.59	.58	.78	.97
	3.95	8400	33.4	113 900	5.79	.62	.79	.97	30.9	105 600	6.35	.62	.81	.99	28.5	97 100	6.99	.62	.83	1.00	26.0	88 600	7.69	.63	.85	1.00
21.7°C (71°F)	2.65	5600	33.8	115 400	5.82	.43	.54	.66	31.4	107 200	6.40	.41	.54	.66	28.9	98 700	7.06	.40	.53	.67	26.5	90 300	7.78	.38	.53	.68
	3.30	7000	34.7	118 400	5.89	.44	.57	.71	32.2	110 000	6.49	.43	.57	.72	29.7	101 300	7.17	.41	.57	.73	27.1	92 600	7.92	.40	.57	.75
	3.95	8400	35.3	120 600	5.94	.45	.61	.77	32.8	111 900	6.55	.44	.61	.78	30.2	103 100	7.25	.43	.61	.80	27.6	94 200	8.02	.42	.62	.83

LCA/LGA210S — ALL COMPRESSORS OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Temperature																					
			29°C (85°F)						35°C (95°F)						41° C (105°F)						46°C (115°F)			
			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb		
	m^3/s	cfm	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F
17.2°C (63°F)	2.65	5600	53.5	182 500	13.54	.73	.89	1.00	49.8	169 900	14.79	.74	.92	1.00	46.1	157 300	16.14	.75	.95	1.00	42.4	144 600	17.56	.77	.98	1.00
	3.30	7000	55.7	189 900	13.83	.79	.98	1.00	52.0	177 300	15.18	.81	1.00	1.00	48.4	165 100	16.68	.83	1.00	1.00	44.8	152 800	18.29	.86	1.00	1.00
	3.95	8400	57.9	197 400	14.13	.86	1.00	1.00	54.2	184 800	15.59	.88	1.00	1.00	50.4	172 100	17.19	.91	1.00	1.00	46.7	159 200	18.89	.95	1.00	1.00
19.4°C (67°F)	2.65	5600	56.8	193 700	14.00	.56	.70	.85	52.9	180 400	15.35	.56	.71	.88	48.9	166 800	16.80	.56	.73	.91	44.9	153 100	18.32	.57	.75	.94
	3.30	7000	58.5	199 500	14.23	.59	.76	.94	54.4	185 600	15.64	.60	.78	.97	50.3	171 700	17.15	.61	.81	.99	46.2	157 600	18.74	.62	.84	1.00
	3.95	8400	59.7	203 600	14.41	.63	.83	1.00	55.6	189 600	15.87	.64	.86	1.00	51.4	175 500	17.43	.65	.89	1.00	47.3	161 300	19.07	.67	.92	1.00
21.7°C (71°F)	2.65	5600	60.7	207 000	14.56	.41	.54	.68	56.5	192 900	16.06	.40	.55	.69	52.4	178 800	17.67	.39	.55	.71	48.2	164 300	19.36	.39	.56	.72
	.3.30	7000	62.2	212 300	14.79	.42	.58	.74	58.0	197 900	16.34	.42	.59	.76	53.7	183 100	18.01	.41	.60	.78	49.3	168 300	19.74	.41	.61	.81
	3.95	8400	63.3	216 000	14.96	.44	.62	.81	58.9	201 100	16.55	.43	.63	.83	54.5	186 100	18.24	.43	.65	.86	50.1	171 100	20.01	.43	.66	.90

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

LCA/LGA240S — TWO COMPRESSORS OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Temperature																					
			18°C (65°F)						24°C (75°F)						29° C (85°F)						35°C (95°F)					
			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb		
	m^3/s	cfm	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F
17.2°C (63°F)	3.00	6400	34.6	118 100	6.72	.70	.85	.97	32.6	111 100	7.18	.71	.86	.99	30.3	103 400	7.74	.71	.88	1.00	27.9	95 300	8.37	.72	.90	1.00
	3.80	8000	35.9	122 500	6.77	.75	.92	1.00	33.8	115 200	7.26	.76	.94	1.00	31.5	107 400	7.84	.78	.96	1.00	29.1	99 300	8.51	.80	.98	1.00
	4.55	9600	37.0	126 200	6.82	.81	.98	1.00	34.8	118 900	7.33	.82	.99	1.00	32.6	111 100	7.95	.84	1.00	1.00	30.3	103 300	8.65	.86	1.00	1.00
19.4°C (67°F)	3.00	6400	36.8	125 400	6.81	.55	.68	.81	34.6	117 900	7.31	.55	.68	.82	32.2	109 800	7.91	.55	.69	.84	29.7	101 200	8.58	.55	.70	.86
	3.80	8000	37.8	129 100	6.85	.58	.73	.89	35.5	121 300	7.37	.58	.74	.90	33.1	113 000	7.99	.58	.75	.93	30.5	104 200	8.68	.59	.77	.95
	4.55	9600	38.6	131 800	6.88	.61	.78	.95	36.3	123 900	7.42	.61	.80	.97	33.8	115 400	8.05	.62	.82	.99	31.2	106 400	8.76	.63	.84	1.00
21.7°C (71°F)	3.00	6400	39.1	133 500	6.89	.42	.54	.65	36.8	125 700	7.45	.41	.54	.66	34.3	117 200	8.10	.40	.54	.67	31.8	108 400	8.82	.39	.53	.68
	3.80	8000	40.2	137 200	6.93	.43	.57	.70	37.8	129 100	7.51	.42	.57	.71	35.3	120 300	8.18	.42	.57	.73	32.6	111 100	8.91	.41	.58	.74
	4.55	9600	41.0	139 800	6.95	.44	.60	.76	38.5	131 500	7.54	.44	.60	.77	35.9	122 400	8.23	.43	.61	.79	33.1	113 000	8.98	.42	.62	.82

LCA/LGA240S — ALL COMPRESSORS OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Temperature																					
			29°C (85°F)						35°C (95°F)						41° C (105°F)						46°C (115°F)					
			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb		
	m^3/s	cfm	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F
17.2°C (63°F)	3.00	6400	62.2	212 100	15.73	.72	.88	1.00	58.2	198 500	17.01	.73	.90	1.00	54.1	184 600	18.38	.75	.93	1.00	50.0	170 700	19.78	.77	.96	1.00
	3.80	8000	64.5	220 200	15.95	.77	.96	1.00	60.5	206 600	17.30	.79	.98	1.00	56.5	192 800	18.75	.82	1.00	1.00	52.6	179 600	20.26	.85	1.00	1.00
	4.55	9600	66.8	227 800	16.16	.84	1.00	1.00	62.9	214 700	17.58	.86	1.00	1.00	58.9	201 000	19.10	.89	1.00	1.00	54.8	187 100	20.66	.93	1.00	1.00
19.4°C (67°F)	3.00	6400	66.0	225 200	16.08	.55	.69	.84	61.7	210 700	17.44	.56	.71	.86	57.4	195 700	18.88	.56	.72	.89	53.0	180 700	20.33	.57	.74	.93
	3.80	8000	67.9	231 700	16.25	.59	.75	.92	63.5	216 700	17.65	.59	.77	.95	59.0	201 300	19.12	.60	.79	.98	54.5	185 900	20.61	.62	.83	1.00
	4.55	9600	69.3	236 600	16.38	.62	.81	.99	64.8	221 200	17.81	.63	.84	1.00	60.3	205 600	19.31	.65	.87	1.00	55.7	190 000	20.83	.66	.90	1.00
21.7°C (71°F)	3.00	6400	70.4	240 200	16.47	.41	.54	.67	66.0	225 100	17.93	.40	.54	.68	61.4	209 500	19.47	.40	.55	.70	56.7	193 600	21.02	.40	.56	.72
	3.80	8000	72.2	246 400	16.62	.42	.57	.73	67.6	230 700	18.12	.42	.58	.75	62.9	214 600	19.69	.42	.59	.77	58.1	198 200	21.27	.42	.61	.80
	4.55	9600	73.5	250 700	16.74	.43	.61	.79	68.8	234 600	18.25	.43	.62	.82	63.9	218 000	19.85	.43	.64	.85	59.0	201 400	21.44	.44	.66	.88

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

LHA180H — COOLING CAPACITY — ONE COMPRESSOR OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Temperature																					
			18°C (65°F)						24°C (75°F)						29° C (85°F)						35°C (95°F)			
			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb		
	m^3/s	cfm	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F
17.2°C (63°F)	2.25	4800	26.8	91 400	4.63	.71	.84	.97	24.7	84 300	5.13	.71	.85	.98	22.6	77 100	5.65	.71	.87	1.00	20.5	69 800	6.18	.71	.88	1.00
	2.85	6000	27.8	95 000	4.65	.76	.91	1.00	25.7	87 800	5.16	.76	.93	1.00	23.6	80 400	5.70	.77	.95	1.00	21.4	72 900	6.26	.78	.97	1.00
	3.40	7200	28.7	98 000	4.66	.81	.97	1.00	26.6	90 800	5.19	.82	.99	1.00	24.4	83 400	5.75	.83	1.00	1.00	22.3	76 100	6.34	.85	1.00	1.00
19.4°C (67°F)	2.25	4800	28.5	97 400	4.66	.57	.68	.81	26.4	90 100	5.19	.56	.68	.82	24.2	82 500	5.73	.55	.68	.83	21.9	74 800	6.31	.53	.68	.84
	2.85	6000	29.5	100 600	4.67	.59	.73	.88	27.3	93 000	5.22	.59	.74	.89	25.0	85 200	5.78	.58	.74	.91	22.7	77 300	6.37	.57	.75	.94
	3.40	7200	30.2	102 900	4.68	.62	.78	.94	27.9	95 200	5.23	.62	.79	.96	25.6	87 300	5.81	.61	.81	.98	23.2	79 200	6.41	.61	.82	1.00
21.7°C (71°F)	2.25	4800	30.5	104 000	4.69	.44	.55	.66	28.3	96 400	5.24	.42	.54	.66	26.0	88 600	5.83	.40	.53	.66	23.6	80 600	6.44	.38	.52	.66
	2.85	6000	31.4	107 100	4.70	.45	.58	.71	29.1	99 400	5.27	.43	.57	.71	26.8	91 300	5.87	.41	.57	.72	24.3	83 000	6.49	.39	.56	.73
	3.40	7200	32.0	109 300	4.71	.46	.61	.76	29.7	101 400	5.29	.44	.60	.77	27.3	93 100	5.90	.43	.60	.78	24.8	84 700	6.53	.41	.60	.80

LHA180H — COOLING CAPACITY — ALL COMPRESSORS OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Temperature																					
			29°C (85°F)						35°C (95°F)						41° C (105°F)						46°C (115°F)			
			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb		
	m^3/s	cfm	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F
17.2°C (63°F)	2.25	4800	46.2	157 500	11.14	.73	.88	1.00	42.9	146 500	12.20	.73	.89	1.00	39.6	135 100	13.33	.75	.92	1.00	36.2	123 600	14.50	.76	.94	1.00
	2.85	6000	48.1	164 100	11.25	.78	.95	1.00	44.8	152 900	12.36	.80	.97	1.00	41.5	141 600	13.52	.82	.99	1.00	38.2	130 200	14.80	.84	1.00	1.00
	3.40	7200	49.9	170 200	11.35	.84	1.00	1.00	46.7	159 300	12.51	.86	1.00	1.00	43.4	148 200	13.74	.88	1.00	1.00	40.0	136 600	15.06	.91	1.00	1.00
19.4°C (67°F)	2.25	4800	49.3	168 300	11.32	.56	.70	.84	45.9	156 600	12.44	.56	.71	.86	42.4	144 600	13.63	.56	.72	.88	38.7	132 200	14.88	.56	.73	.91
	2.85	6000	51.0	173 900	11.40	.60	.76	.92	47.4	161 800	12.56	.60	.77	.94	43.8	149 300	13.78	.60	.79	.96	40.0	136 500	15.07	.61	.81	.99
	3.40	7200	52.1	177 900	11.47	.63	.82	.98	48.5	165 600	12.65	.64	.84	1.00	44.8	152 800	13.89	.64	.86	1.00	41.0	139 800	15.20	.65	.89	1.00
21.7°C (71°F)	2.25	4800	52.9	180 500	11.50	.41	.54	.67	49.3	168 300	12.71	.40	.54	.68	45.6	155 700	13.98	.39	.54	.69	41.8	142 500	15.32	.38	.54	.71
	2.85	6000	54.5	186 000	11.58	.43	.58	.73	50.8	173 300	12.82	.42	.58	.75	46.9	160 100	14.12	.41	.59	.76	42.9	146 400	15.49	.40	.60	.79
	3.40	7200	55.6	189 700	11.64	.44	.62	.79	51.8	176 600	12.89	.43	.63	.81	47.8	163 100	14.21	.43	.63	.84	43.7	149 000	15.60	.42	.65	.87

LHA180H — HEATING PERFORMANCE — ALL COMPRESSORS OPERATING

Indoor Coil Air Volume 70°F db (21°C db)		*Outdoor Temperature											
		65°F (18°C)			45°F (7°C)			25°F (minus4°C)			5°F (minus15°C)			minus15°F (minus28°C)		
		Total Heating Capacity		Compressor Motor kW	Total Heating Capacity		Compressor Motor kW	Total Heating Capacity		Compressor Motor kW	Total Heating Capacity		Compressor Motor kW	Total Heating Capacity		Compressor Motor kW
m3/s	cfm	kW	Btuh		kW	Btuh		kW	Btuh		kW	Btuh		kW	Btuh	
2.25	4800	60.1	205,000	13.4	45.7	156,000	11.4	31.3	106,900	9.4	20.9	71,200	7.5	10.4	35,500	5.6
2.85	6000	60.5	206,600	13.5	46.2	157,600	11.5	31.8	108,500	9.5	21.3	72,800	7.6	10.9	37,100	5.7
3.40	7200	61.0	208,300	13.6	46.7	159,400	11.6	32.3	110,200	9.6	21.8	74,500	7.7	11.4	38,900	5.8

*At 70% relative humidity.
NOTE — Heating performance includes the effect of defrost cycles in the temperature range where they occur.

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

LHA240H — COOLING CAPACITY — ONE COMPRESSOR OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Temperature																							
			18°C (65°F)						24°C (75°F)						29° C (85°F)						35°C (95°F)					
			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb		
	m^3/s	cfm	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F
17.2°C (63°F)	2.85	6000	33.4	114 100	5.47	.70	.85	.99	31.0	105 900	6.06	.70	.87	1.00	28.6	97 500	6.67	.71	.89	1.00	26.1	88 900	7.31	.72	.91	1.00
	3.55	7500	34.8	118 700	5.50	.76	.94	1.00	32.4	110 400	6.12	.77	.96	1.00	29.9	101 900	6.76	.78	.98	1.00	27.3	93 300	7.43	.80	1.00	1.00
	4.25	9000	36.0	122 800	5.53	.82	1.00	1.00	33.6	114 700	6.17	.84	1.00	1.00	31.2	106 400	6.84	.86	1.00	1.00	28.7	97 800	7.54	.88	1.00	1.00
19.4°C (67°F)	2.85	6000	35.5	121 300	5.52	.55	.68	.81	33.0	112 700	6.14	.55	.68	.83	30.4	103 900	6.79	.54	.68	.85	27.8	94 800	7.47	.54	.69	.87
	3.55	7500	36.7	125 100	5.54	.59	.73	.90	34.1	116 200	6.19	.58	.74	.92	31.4	107 200	6.85	.58	.75	.95	28.7	97 900	7.55	.58	.77	.98
	4.25	9000	37.5	127 900	5.57	.62	.80	.98	34.8	118 900	6.22	.62	.81	.99	32.1	109 700	6.90	.62	.83	1.00	29.4	100 200	7.61	.62	.86	1.00
21.7°C (71°F)	2.85	6000	37.9	129 300	5.58	.42	.54	.65	35.3	120 500	6.23	.41	.53	.66	32.6	111 200	6.92	.39	.53	.66	29.8	101 800	7.65	.38	.52	.67
	3.55	7500	38.9	132 900	5.60	.43	.57	.71	36.3	123 900	6.27	.42	.57	.72	33.5	114 300	6.98	.41	.57	.73	30.6	104 500	7.72	.39	.57	.74
	4.25	9000	39.7	135 400	5.62	.45	.61	.77	37.0	126 100	6.30	.44	.61	.78	34.1	116 400	7.02	.43	.61	.80	31.2	106 400	7.77	.41	.62	.83

LHA240H — COOLING CAPACITY — ALL COMPRESSORS OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Temperature																							
			29°C (85°F)						35°C (95°F)						41° C (105°F)						46°C (115°F)					
			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Compressor Motor kW	Sensible To Total Ratio (S/T) Dry Bulb		
	m^3/s	cfm	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F	kW	Btuh		24°C 75°F	27°C 80°F	29°C 85°F
17.2°C (63°F)	2.85	6000	58.5	199 700	13.30	.74	.90	1.00	54.6	186 300	14.57	.75	.93	1.00	50.6	172 700	15.91	.77	.95	1.00	46.6	158 900	17.33	.79	.98	1.00
	3.55	7500	61.1	208 500	13.47	.80	.98	1.00	57.2	195 200	14.80	.82	1.00	1.00	53.4	182 100	16.24	.85	1.00	1.00	49.4	168 500	17.78	.88	1.00	1.00
	4.25	9000	63.8	217 700	13.63	.87	1.00	1.00	59.9	204 400	15.03	.90	1.00	1.00	55.8	190 500	16.52	.93	1.00	1.00	51.6	175 900	18.13	.96	1.00	1.00
19.4°C (67°F)	2.85	6000	62.3	212 600	13.54	.57	.72	.86	58.1	198 400	14.88	.57	.73	.89	53.8	183 700	16.29	.57	.74	.91	49.4	168 500	17.77	.58	.76	.95
	3.55	7500	64.3	219 500	13.66	.61	.78	.95	60.0	204 600	15.04	.61	.80	.98	55.5	189 400	16.48	.62	.82	1.00	50.9	173 700	18.02	.63	.85	1.00
	4.25	9000	65.8	224 400	13.75	.65	.85	1.00	61.3	209 300	15.16	.66	.87	1.00	56.8	193 800	16.64	.67	.90	1.00	52.1	177 900	18.21	.69	.94	1.00
21.7°C (71°F)	2.85	6000	66.7	227 500	13.81	.42	.55	.69	62.3	212 500	15.24	.41	.56	.70	57.7	197 000	16.75	.40	.56	.72	53.0	180 700	18.34	.39	.57	.74
	3.55	7500	68.5	233 700	13.92	.43	.60	.76	63.9	218 200	15.39	.43	.60	.78	59.1	201 800	16.93	.42	.61	.80	54.2	185 100	18.55	.42	.62	.83
	4.25	9000	69.8	238 100	14.00	.45	.64	.83	65.0	221 900	15.49	.45	.65	.85	60.2	205 300	17.05	.44	.66	.88	55.2	188 200	18.70	.44	.68	.92

LHA240H — HEATING PERFORMANCE — ALL COMPRESSORS OPERATING

Indoor Coil Air Volume 70°F db (21°C db)		*Outdoor Temperature															
		65°F (18°C)			45°F (7°C)			25°F (minus4°C)			5°F (minus15°C)			minus15°F (minus28°C)		
		Total Heating Capacity		Compressor Motor kW	Total Heating Capacity		Compressor Motor kW	Total Heating Capacity		Compressor Motor kW	Total Heating Capacity		Compressor Motor kW	Total Heating Capacity		Compressor Motor kW
m3/s	cfm	kW	Btuh		kW	Btuh		kW	Btuh		kW	Btuh		kW	Btuh	
2.85	6000	70.0	238,800	15.5	53.3	181,900	13.3	36.4	124,300	10.9	24.1	82,300	8.7	11.9	40,700	6.5
3.55	7500	70.8	241,500	15.7	54.1	184,500	13.4	37.2	126,900	11.0	24.9	84,900	8.9	12.7	43,300	6.7
4.25	9000	71.4	243,600	15.8	54.7	186,700	13.5	37.8	129,100	11.1	25.5	87,100	9.0	13.3	45,500	6.8

*At 70% relative humidity.
NOTE — Heating performance includes the effect of defrost cycles in the temperature range where they occur.

BLOWER DATA — BASE UNITS — LCA180/210/240, LGA180/210/240 and LHA180/240

Air Volume cfm (m3/s)	TOTAL STATIC PRESSURE EXTERNAL TO UNIT — 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)		2.20 (545)		2.40 (595)		2.60 (645)	
	Rev/ Min	BHP (kW)	Rev/ Min	BHP (kW)	Rev/ Min	BHP (kW)	Rev/ Min	BHP (kW)	Rev/ Min	BHP (kW)	Rev/ Min	BHP (kW)	Rev/ Min	BHP (kW)	Rev/ Min	BHP (kW)	Rev/ Min	BHP (kW)	Rev/ Min	BHP (kW)	Rev/ Min	BHP (kW)	Rev/ Min	BHP (kW)	Rev/ Min	BHP (kW)
4500 (2.10)	***405***	***0.55 (0.41)***	***510***	***0.80 (0.60)***	***605***	***1.10 (0.82)***	690	1.40 (1.04)	760	1.70 (1.27)	825	2.05 (1.53)	885	2.35 (1.75)	***945***	***2.70 (2.01)***	***995***	***3.00 (2.24)***	1045	3.35 (2.50)	1095	3.70 (2.76)	1140	4.05 (3.02)	1185	4.45 (3.32)
4750 (2.25)	***410***	***0.60 (0.45)***	***515***	***0.85 (0.63)***	***610***	***1.20 (0.90)***	690	1.50 (1.12)	765	1.85 (1.38)	830	2.15 (1.60)	890	2.50 (1.87)	***945***	***2.85 (2.13)***	1000	3.20 (2.39)	1050	3.55 (2.65)	1100	3.90 (2.91)	1145	4.30 (3.21)	1185	4.60 (3.43)
5000 (2.35)	***415***	***0.65 (0.48)***	***520***	***0.95 (0.71)***	***615***	***1.25 (0.93)***	695	1.60 (1.19)	770	1.95 (1.45)	835	2.30 (1.72)	895	2.65 (1.98)	***950***	***3.00 (2.24)***	1005	3.40 (2.54)	1055	3.75 (2.80)	1100	4.10 (3.06)	1145	4.45 (3.32)	1190	4.85 (3.62)
5250 (2.50)	***415***	***0.70 (0.52)***	***525***	***1.00 (0.75)***	***620***	***1.35 (1.01)***	700	1.70 (1.27)	775	2.10 (1.57)	840	2.45 (1.83)	900	2.80 (2.09)	955	3.15 (2.35)	1010	3.55 (2.65)	1060	3.95 (2.95)	1105	4.30 (3.21)	1150	4.70 (3.51)	1195	5.10 (3.81)
5500 (2.60)	***420***	***0.75 (0.56)***	***525***	***1.05 (0.78)***	***625***	***1.45 (1.08)***	705	1.85 (1.38)	775	2.20 (1.64)	845	2.60 (1.94)	905	2.95 (2.20)	960	3.35 (2.50)	1010	3.70 (2.76)	1060	4.10 (3.06)	1110	4.55 (3.39)	1155	4.95 (3.69)	- - - -	
5750 (2.70)	***425***	***0.80 (0.60)***	***535***	***1.15 (0.86)***	***630***	***1.55 (1.16)***	710	1.95 (1.45)	780	2.35 (1.75)	845	2.70 (2.01)	905	3.10 (2.31)	965	3.55 (2.65)	1015	3.90 (2.91)	1065	4.35 (3.25)	1115	4.75 (3.54)	1160	5.15 (3.84)	- - - -	
6000 (2.85	***430***	***0.85 (0.63)***	***540***	***1.25 (0.93)***	***630***	***1.65 (1.23)***	715	2.05 (1.53)	785	2.45 (1.83)	850	2.85 (2.13)	910	3.30 (2.46)	965	3.70 (2.76)	1020	4.10 (3.06)	1070	4.55 (3.39)	1120	5.00 (3.73)	1185	5.40 (4.03)	- - - -	
6250 (2.95)	***435***	***0.95 (0.71)***	***545***	***1.35 (1.01)***	***635***	***1.75 (1.31)***	720	2.20 (1.64)	790	2.60 (1.94)	855	3.05 (2.28)	915	3.45 (2.57)	970	3.90 (2.91)	1025	4.35 (3.25)	1075	4.75 (3.54)	1120	5.20 (3.88)	1165	5.65 (4.21)	- - - -	
6500 (3.05)	***440***	***1.00 (0.75)***	***550***	***1.45 (1.08)***	***640***	***1.85 (1.38)***	720	2.30 (1.72)	795	2.75 (2.05)	860	3.20 (2.39)	920	3.65 (2.72)	975	4.10 (3.06)	1030	4.55 (3.39)	1080	5.00 (3.73)	1125	5.45 (4.07)	1170	5.90 (4.40)	- - - -	
6750 (3.20)	***445***	***1.10 (0.82)***	***555***	***1.55 (1.16)***	***645***	***2.00 (1.49)***	725	2.45 (1.83)	800	2.90 (2.16)	865	3.45 (2.57)	925	3.85 (2.87)	980	4.30 (3.21)	1030	4.75 (3.54)	1080	5.20 (3.88)	1130	5.70 (4.25)	1175	6.15 (4.59)	- - - -	
7000 (3.30)	***450***	***1.15 (0.86)***	***560***	***1.65 (1.23)***	***650***	***2.10 (1.57)***	730	2.60 (1.94)	805	3.10 (2.30)	870	3.55 (2.65)	930	4.05 (3.02)	985	4.50 (3.36)	1035	4.95 (3.69)	1085	5.45 (4.07)	1135	5.95 (4.44)	1180	6.45 (4.81)	- - - -	
7250 (3.40)	***460***	***1.25 (0.93)***	***565***	***1.75 (1.31)***	***655***	***2.25 (1.68)***	735	2.75 (2.05)	810	3.25 (2.42)	870	3.70 (2.76)	930	4.20 (3.13)	990	4.70 (3.51)	1040	5.20 (3.88)	1090	5.70 (4.25)	1140	6.20 (4.63)	1185	6.70 (5.00)	- - - -	
7500 (3.55)	***465***	***1.35 (1.01)***	***570***	***1.85 (1.38)***	***660***	***2.35 (1.75)***	740	2.90 (2.16)	810	3.40 (2.54)	875	3.90 (2.91)	935	4.40 (3.28)	990	4.90 (3.66)	1045	5.45 (4.07)	1095	5.95 (4.44)	1140	6.45 (4.81)	1185	6.95 (5.19)	- - - -	
7750 (3.65)	***470***	***1.45 (1.08)***	***575***	***2.00 (1.49)***	***665***	***2.50 (1.87)***	745	3.05 (2.28)	815	3.55 (2.65)	880	4.10 (3.06)	940	4.60 (3.43)	995	5.15 (3.84)	1050	5.70 (4.25)	1100	6.20 (4.63)	1145	6.70 (5.00)	1190	7.25 (5.41)	- - - -	
8000 (3.80)	***480***	***1.60 (1.19)***	***585***	***2.15 (1.60)***	***675***	***2.70 (2.01)***	750	3.20 (2.39)	820	3.75 (2.80)	885	4.30 (3.21)	945	4.85 (3.62)	1000	5.35 (3.99)	1055	5.95 (4.44)	1105	6.50 (4.85)	1150	7.00 (5.22)	1195	7.55 (5.63)	- - - -	
8250 (3.90)	***485***	***1.70 (1.27)***	***590***	***2.25 (1.68)***	***680***	***2.85 (2.15)***	755	3.35 (2.50)	825	3.95 (2.95)	890	4.50 (3.36)	950	5.05 (3.76)	1005	5.60 (4.18)	1060	6.20 (4.63)	1105	6.70 (5.00)	1155	7.30 (5.45)	1200	7.85 (5.86)	- - - -	
8500 (4.00)	***490***	***1.80 (1.34)***	***595***	***2.40 (1.79)***	685	3.00 (2.24)	760	3.55 (2.65)	830	4.10 (3.06)	895	4.70 (3.51)	955	5.30 (3.96)	1010	5.85 (4.36)	1060	6.40 (4.77)	1110	7.00 (5.22)	1160	7.60 (5.67)	- - - -		- - - -	
8750 (4.15)	***500***	***1.90 (1.42)***	***600***	***2.50 (1.87)***	690	3.15 (2.35)	765	3.75 (2.80)	835	4.30 (3.21)	900	4.95 (3.69)	960	5.55 (4.14)	1015	6.10 (4.55)	1065	6.70 (5.00)	1115	7.30 (5.45)	1165	7.90 (5.89)	- - - -		- - - -	
9000 (4.25)	***505***	***2.05 (1.53)***	***610***	***2.70 (2.01)***	695	3.30 (2.46)	770	3.90 (2.91)	840	4.55 (3.39)	905	5.15 (3.84)	965	5.75 (4.29)	1020	6.40 (4.77)	1070	6.95 (5.18)	1120	7.60 (5.67)	1165	8.15 (6.08)	- - - -		- - - -	
9250 (4.35)	***515***	***2.20 (1.64)***	***615***	***2.85 (2.15)***	700	3.50 (2.60)	775	4.10 (3.06)	845	4.75 (3.54)	910	5.40 (4.03)	970	6.00 (4.48)	1025	6.65 (4.96)	1075	7.25 (5.41)	1125	7.90 (5.89)	1170	8.50 (6.34)	- - - -		- - - -	
9500 (4.50)	***525***	***2.35 (1.75)***	***620***	***3.00 (2.24)***	705	3.65 (2.72)	785	4.35 (3.25)	850	4.95 (3.69)	915	5.60 (4.18)	975	6.30 (4.70)	1030	6.90 (5.14)	1080	7.55 (5.63)	1130	8.20 (6.12)	- - - -		- - - -		- - - -	
9750 (4.60)	***530***	***2.50 (1.87)***	***630***	***3.20 (2.39)***	715	3.85 (2.87)	790	4.55 (3.39)	855	5.20 (3.88)	***920***	***5.85 (4.36)***	980	6.55 (4.89)	1030	7.15 (5.33)	1085	7.85 (5.86)	1135	8.50 (6.34)	- - - -		- - - -		- - - -	
10,000 (4.70)	***540***	***2.65 (1.98)***	***635***	***3.35 (2.50)***	720	4.05 (3.02)	795	4.75 (3.54)	860	5.40 (4.03)	***925***	***6.10 (4.55)***	980	6.75 (5.04)	1035	7.45 (5.56)	1090	8.15 (6.08)	- - - -		- - - -		- - - -		- - - -	

NOTE — All data is measured external to the unit with dry coil and air filters in place. See Pages 23 and 24 for Accessory Air Resistance data.
NOTE — Blower Performance Table includes internal resistance for base unit only. To determine Total Static Pressure: for design air volume, add static pressure drop of options/accessories to the total system static pressure drop.
Unshaded area denotes 3 hp (2.2 kW) drive kit. Light shaded area denotes 5 hp (3.7 kW) drive kit. Dark shaded area denotes 7.5 hp (5.6 kW) drive kit.
NOTE — Bold italics indicates field furnished drive.

FACTORY INSTALLED DRIVE KIT SPECIFICATIONS

Motor Outputs		Rev/Min Range				
hp	kW	Drive 1	Drive 2	Drive 3	Drive 4	Drive 5
3 std. eff.	2.2	570/755	- - - -	- - - -	- - - -	- - - -
5	3.7	- - - -	570/755	710/870	790/990	- - - -
7.5	5.6	- - - -	- - - -	- - - -	- - - -	790/990

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	Horizontal Roof Mounting Frame
cfm	m^3/s	180S 180H 210S 240S	240H	Low Fire	High Fire			
4500	2.10	.04 (10)	.08 (20)	.05 (12)	.09 (22)	.01 (2)	.05 (12)	.07 (170
4750	2.25	.05 (12)	.09 (22)	.05 (12)	.10 (25)	.01 (2)	.05 (12)	.08 (20)
5000	2.35	.05 (12)	.10 (25)	.05 (12)	.11 (27)	.01 (2)	.06 (15)	.08 (20)
5250	2.50	.06 (15)	.10 (25)	.06 (15)	.12 (30)	.02 (5)	.06 (15)	.09 (22)
5500	2.60	.06 (15)	.11 (27)	.06 (15)	.13 (32)	.02 (5)	.06 (15)	.10 (25)
5750	2.70	.06 (15)	.12 (30)	.06 (15)	.14 (35)	.02 (5)	.07 (17)	.11 (27)
6000	2.85	.07 (17)	.13 (32)	.07 (17)	.15 (37)	.02 (5)	.07 (17)	.11 (27)
6250	2.95	.07 (17)	.14 (35)	.07 (17)	.16 (40)	.02 (5)	.08 (20)	.12 (30)
6500	3.05	.08 (20)	.14 (35)	.08 (20)	.17 (42)	.03 (7)	.08 (20)	.13 (32)
6750	3.20	.08 (20)	.15 (37)	.08 (20)	.18 (45)	.03 (7)	.08 (20)	.14 (35)
7000	3.30	.09 (22)	.16 (40)	.09 (22)	.19 (47)	.03 (7)	.09 (22)	.15 (37)
7250	3.40	.09 (22)	.17 (42)	.09 (22)	.20 (50)	.03 (7)	.09 (22)	.16 (40)
7500	3.55	.10 (25)	.18 (45)	.10 (25)	.21 (52)	.03 (7)	.10 (25)	.17 (42)
7750	3.65	.10 (25)	.19 (47)	.10 (25)	.23 (57)	.04 (10)	.10 (25)	.18 (45)
8000	3.80	.11 (27)	.20 (50)	.11 (27)	.24 (60)	.04 (10)	.11 (27)	.19 (47)
8250	3.90	.11 (27)	.21 (52)	.11 (27)	.25 (62)	.04 (10)	.11 (27)	.20 (50)
8500	4.00	.12 (30)	.22 (55)	.12 (30)	.26 (65)	.04 (10)	.12 (30)	.21 (52)
8750	4.15	.12 (30)	.23 (57)	.12 (30)	.28 (70)	.05 (12)	.12 (30)	.22 (55)
9000	4.25	.13 (32)	.24 (60)	.13 (32)	.29 (72)	.05 (12)	.13 (32)	.24 (60)
9250	4.35	.14 (35)	.25 (62)	.14 (35)	.31 (77)	.05 (12)	.14 (35)	.25 (62)
9500	4.50	.14 (35)	.26 (65)	.14 (35)	.32 (80)	.05 (12)	.14 (35)	.26 (65)
9750	4.60	.15 (37)	.27 (67)	.15 (37)	.34 (85)	.06 (15)	.15 (37)	.27 (67)
10,000	4.70	.15 (37)	.28 (70)	.16 (40)	.35 (87)	.06 (15)	.16 (40)	.29 (72)

CEILING DIFFUSER AIR RESISTANCE

Unit Size	Air Volume		Total Resistance — inches water gauge (Pa)			
			RTD11 Step-Down Diffuser			FD11 Flush Diffuser
	cfm	m^3/s	2 Ends Open	1 Side 2 Ends Open	All Ends & Sides Open	
180 Models	5000	2.35	.51 (127)	.44 (109)	.39 (97)	.27 (67)
	5200	2.45	.56 (139)	.48 (119)	.42 (104)	.30 (75)
	5400	2.55	.61 (152)	.52 (129)	.45 (112)	.33 (82)
	5600	2.65	.66 (164)	.56 (139)	.48 (119)	.36 (90)
	5800	2.75	.71 (177)	.59 (147)	.51 (127)	.39 (97)
	6000	2.85	.76 (189)	.63 (157)	.55 (137)	.42 (104)
	6200	2.95	.80 (199)	.68 (169)	.59 (147)	.46 (114)
	6400	3.00	.86 (214)	.72 (179)	.63 (157)	.50 (124)
	6600	3.10	.92 (229)	.77 (191)	.67 (167)	.54 (134)
	6800	3.20	.99 (246)	.83 (206)	.72 (174)	.58 (144)
	7000	3.30	1.03 (256)	.87 (216)	.76 (189)	.62 (154)
	7200	3.40	1.09 (271)	.92 (229)	.80 (199)	.66 (164)
	7400	3.50	1.15 (286)	.97 (241)	.84 (209)	.70 (174)
	7600	3.60	1.20 (301)	1.02 (254)	.88 (219)	.74 (184)
210 & 240 Models	6000	2.85	.36 (90)	.31 (77)	.27 (67)	.29 (72)
	6500	3.05	.42 (104)	.36 (90)	.31 (77)	.34 (85)
	7000	3.30	.49 (122)	.41 (102)	.36 (90)	.40 (99)
	7500	3.55	.51 (127)	.46 (114)	.41 (102)	.45 (112)
	8000	3.80	.59 (147)	.49 (122)	.43 (107)	.50 (124)
	8500	4.00	.69 (172)	.58 (144)	.50 (124)	.57 (142)
	9000	4.25	.79 (196)	.67 (167)	.58 (144)	.66 (164)
	9500	4.50	.89 (221)	.75 (186)	.65 (162)	.74 (184)
	10,000	4.70	1.00 (249)	.84 (209)	.73 (182)	.81 (201)

POWER EXHAUST FANS PERFORMANCE

Return Air System Static Pressure		Air Volume Exhausted	
in. w.g.	Pa	cfm	m^3/s
0	0	7190	3.40
0.05	12	6540	3.10
0.10	25	5925	2.80
0.15	37	5200	2.45
0.20	50	4215	2.00
0.25	62	3490	1.65
0.30	75	2500	1.80
0.35	87	1490	0.70

CEILING DIFFUSER AIR THROW DATA

Model Number	Air Volume		*Effective Throw Range			
			RTD11 Step-Down		FD11 Flush	
	cfm	m^3/s	feet	m	feet	m
180 Models	6000	2.85	45 – 55	14 – 17	48 – 55	15 – 17
	6750	3.20	47 – 56	14 – 17	50 – 58	15 – 18
	7500	3.55	49 – 58	15 – 18	55 – 66	17 – 20
210 Models 240 Models	8000	3.80	39 – 44	12 – 13	53 – 62	16 – 19
	9000	4.25	47 – 56	14 – 17	55 – 64	17 – 20
	10,000	4.70	49 – 58	15 – 18	57 – 67	17 – 20

*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.

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

General — *Furnish and install a single package air to air direct expansion 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 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-flo) or side (horizontal) handling of conditioned air. Horizontal air shall require optional horizontal roof mounting frame. All air distribution ducts shall be fiberglass or galvanized steel insulated with . . . . . inch (mm) thick . . . . . lb./ft.^{3} (kg/m^3) density fiberglass or equivalent.*

Cooling System — *The total cooling capacity shall not be less than . . . . . Btuh (kW) with an evaporator air volume of . . . . . cfm (m^3/s), an entering wet bulb air temperature of . . . . . °F (°C), an entering dry bulb air temperature of . . . . . °F (°C) and a condenser 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) (evaporator) and . . . . . .sq. ft. (m^2) (condenser). Condenser coils shall be slab coil construction.

Multiple compressors shall be resiliently mounted, have overload protection and crankcase heaters. The refrigeration system shall have discharge suction and liquid line gauge ports, high pressure switches, low pressure switches, driers, freezestat and full refrigerant charge. All models shall have low ambient operation down to 15°F (–9.4°C). Optional service valves shall be available.

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. Evaporator coil condensate drain extended outside cabinet shall be provided. Lifting holes shall be provided for rigging. Bottom power 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 Blowers — *Centrifugal supply air blower shall have sleeve 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 (m^3/s) at an external static pressure of . . . . . .inches water gauge (Pa) requiring . . . . . bhp (kW) and . . . . . rev/min.*

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

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

OPTIONAL ACCESSORIES

Additive Electric Heaters — *The certified total heating capacity output shall be . . . . . Btuh (kW) 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. Optional fuse block shall be required on electric heaters. Optional heater control module shall be required on 45, 60 and 90 kW models. Optional terminal block shall be required on all models.

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.*

Horizontal Roof Mounting Frame — *Furnish and install a steel roof mounting frame for side discharge and unit 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. Flashing shall be the responsibility of the roofing contractor.*

Economizer Section — *Furnish and install complete with recirculated air dampers, outside air dampers, air filters, damper actuator and controls. Low leakage dampers shall ride in nylon bearings. The economizer section shall provide for the introduction of 100% outdoor air for minimum ventilation and free cooling. Integrated economizer cycle shall allow compressors to cycle for dehumidification and additional cooling, as needed, with 100% outdoor air intake. Damper actuator shall be 24 volt, fully modulating spring return. Controls shall include fixed 55°F (13°C) mixed air controller, damper actuator and adjustable minimum positioner. Optional outdoor air hood (required) with filters shall be galvanized steel with a powdered enamel paint finish electrostatically bonded to the metal. Control option shall consist of single enthalpy control, differential enthalpy control (return air sensor) or global control. 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.*

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

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.*

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. 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.*

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.*

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.*

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

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

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

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.*

Service Valves — *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.*

Corrosion Protection — *Furnish and factory apply phenolic epoxy coating to either or both of the following:*
Condenser coils with painted condensing base section. Evaporator coil with painted evaporator base section and painted blower housings.

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

General — *Furnish and install a single package air to air direct expansion mechanical cooling system and gas fired heating 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 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-flo) or side (horizontal) handling of conditioned air. Horizontal air shall require optional horizontal roof mounting frame. All air distribution ducts shall be fiberglass or galvanized steel insulated with . . . . . inch (mm) thick . . . . . lb./ft.^{3} (kg/m^3) density fiberglass or equivalent.*

Cooling System — *The total cooling capacity shall not be less than . . . . . Btuh (kW) with an evaporator air volume of . . . . . cfm (m^3/s), an entering wet bulb air temperature of . . . . . °F (°C), an entering dry bulb air temperature of . . . . . °F (°C) and a condenser 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) (evaporator) and . . . . . .sq. ft. (m^2) (condenser). Condenser coils shall be slab coil construction.

Multiple compressors shall be resiliently mounted, have overload protection and crankcase heaters. The refrigeration system shall have discharge suction and liquid line gauge ports, high pressure switches, low pressure switches, driers, freezestat and full refrigerant charge. All models shall have low ambient operation down to 15°F (–9.4°C). Optional service valves shall be available.

Heating System — *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.

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. Evaporator coil condensate drain extended outside cabinet shall be provided. Lifting holes shall be provided for rigging. Bottom power electrical/gas 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 Blowers — *Centrifugal supply air blower shall have sleeve 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 (m^3/s) at an external static pressure of . . . . . .inches water gauge (Pa) requiring . . . . . bhp (kW) and . . . . . rev/min.*

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

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

OPTIONAL ACCESSORIES

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.*

Horizontal Roof Mounting Frame — *Furnish and install a steel roof mounting frame for side discharge and unit 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. Flashing shall be the responsibility of the roofing contractor.*

Economizer Section — *Furnish and install complete with recirculated air dampers, outside air dampers, air filters, damper actuator and controls. Low leakage dampers shall ride in nylon bearings. The economizer section shall provide for the introduction of 100% outdoor air for minimum ventilation and free cooling. Integrated economizer cycle shall allow compressors to cycle for dehumidification and additional cooling, as needed, with 100% outdoor air intake. Damper actuator shall be 24 volt, fully modulating spring return. Controls shall include fixed 55°F (13°C) mixed air controller, damper actuator and adjustable minimum positioner. Optional outdoor air hood (required) with filters shall be galvanized steel with a powdered enamel paint finish electrostatically bonded to the metal. Control option shall consist of single enthalpy control, differential enthalpy control (return air sensor) or global control. 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.*

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

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.*

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. 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.*

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.*

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.*

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

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

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

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.*

Service Valves — *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 return air section and supply air section.*

Corrosion Protection — *Furnish and factory apply phenolic epoxy coating to either or both of the following:*
Condenser coils with painted condensing base section. Evaporator coil with painted evaporator base section and painted blower housings.

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

General — *Furnish and install a single package air to air direct expansion mechanical 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 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-flo) or side (horizontal) handling of conditioned air. Horizontal air shall require optional horizontal roof mounting frame. All air distribution ducts shall be fiberglass or galvanized steel insulated with . . . . . inch (mm) thick . . . . . lb./ft.^{3} (kg/m^3) density fiberglass or equivalent.*

Cooling System — *The total cooling capacity shall not be less than . . . . . Btuh (kW) with an indoor coil air volume of . . . . . cfm (m^3/s), an entering wet bulb air temperature of . . . . . °F (°C), an entering dry bulb air temperature of . . . . . °F (°C) and a outdoor coil entering temperature of . . . . . °F (°C). The compressor power input shall not exceed . . . . . kW at these conditions.*

Heating System — *The total heating capacity shall not be less than . . . . . Btuh (kW) with an indoor coil air volume of . . . . . cfm (m^3/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.*

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 formed coil construction.

Multiple compressors shall be resiliently mounted, have overload protection and crankcase heaters. The refrigeration system shall have discharge suction and liquid line gauge ports, high pressure switches, low pressure switches, driers, defrost control, check and expansion valves, reversing valves, accumulators and full refrigerant charge. All models shall have low ambient cooling operation down to 15° F (–9.4° C).

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 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 Blowers — *Centrifugal supply air blower shall have sleeve 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 (m^3/s) at an external static pressure of . . . . . .inches water gauge (Pa) requiring . . . . . bhp (kW) and . . . . . rpm.*

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

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

OPTIONAL ACCESSORIES

Supplemental Electric Heaters — *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. Optional fuse block shall be required on electric heaters. Optional heater control module shall be required on 45, 60 and 90 kW models. Optional terminal block shall be required on all models.

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.*

Horizontal Roof Mounting Frame — *Furnish and install a steel roof mounting frame for side discharge and unit 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. Flashing shall be the responsibility of the roofing contractor.*

Economizer Section — *Furnish and install complete with recirculated air dampers, outside air dampers, air filters, damper actuator and controls. Low leakage dampers shall ride in nylon bearings. The economizer section shall provide for the introduction of 100% outdoor air for minimum ventilation and free cooling. Integrated economizer cycle shall allow compressors to cycle for dehumidification and additional cooling, as needed, with 100% outdoor air intake. Damper actuator shall be 24 volt, fully modulating spring return. Controls shall include fixed 55° F (13° C) mixed air controller, damper actuator and adjustable minimum positioner. Optional outdoor air hood (required) with filters shall be galvanized steel with a powdered enamel paint finish electrostatically bonded to the metal. Control option shall consist of single enthalpy control, differential enthalpy control (return air sensor) or global control. 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.*

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

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.*

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. 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.*

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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.*

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

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

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.*

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

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.

LCA180, 210 AND 240 UNITS SHOWN WITH OPTIONAL ECONOMIZER DAMPERS, POWER EXHAUST FANS, CONVENIENCE OUTLET, UNIT DISCONNECT

CORNER WEIGHTS — lbs. (kg)

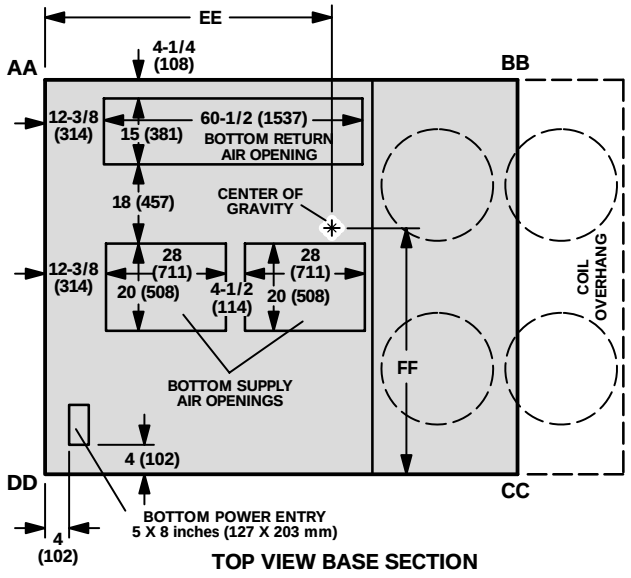
Model Number	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
LCA180 Base Unit	450	204	460	209	620	281	600	272
LCA180 Maximum Unit	570	259	580	263	680	308	660	299
LCA210 Base Unit	470	213	460	209	640	290	650	295
LCA210 Maximum Unit	600	272	590	268	700	318	730	331
LCA240 Base Unit	480	218	510	231	700	318	660	299
LCA240 Maximum Unit	600	272	600	272	730	331	740	336

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

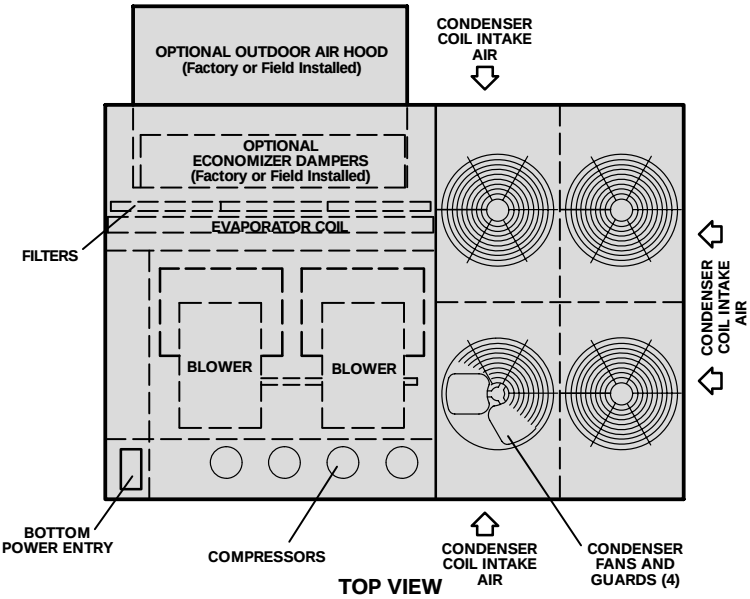
CENTER OF GRAVITY — inches (mm)

Model Number	EE		FF	
	inch	mm	inch	mm
LCA180 Base Unit	54-1/2	1384	39	991
LCA180 Maximum Unit	54-1/2	1384	42	1067
LCA210 Base Unit	53	1346	38	965
LCA210 Maximum Unit	53	1346	41-1/2	1054
LCA240 Base Unit	55-1/2	1410	38	965
LCA240 Maximum Unit	53-1/2	1359	41	1041

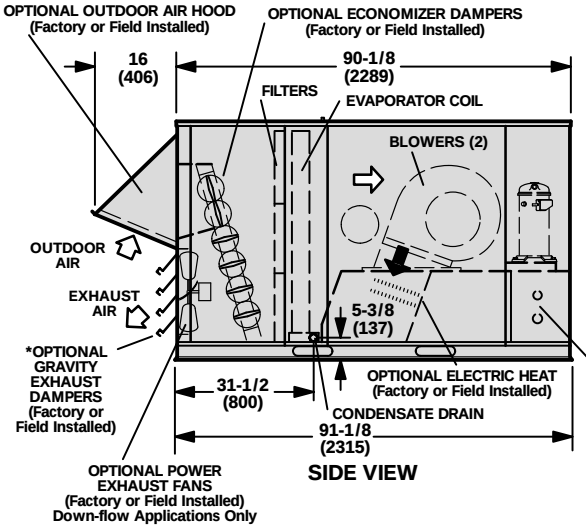
Base Unit — The standard unit with NO OPTIONS.
Maximum Unit — The standard unit with ALL OPTIONS Installed. (Economizer, Power Exhaust Fans, Controls)



TOP VIEW BASE SECTION

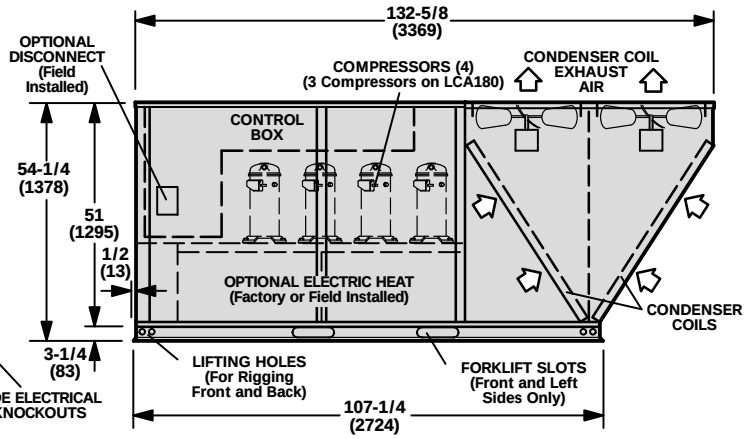


TOP VIEW

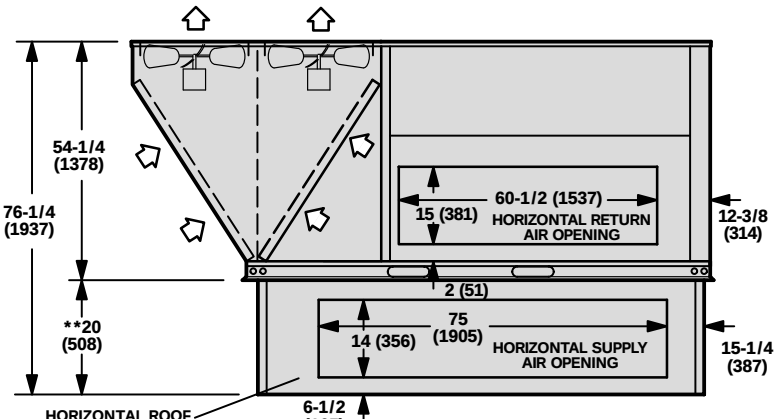


SIDE VIEW

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



FRONT VIEW



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

BACK VIEW (Horizontal Supply and Return Air Opening)

LGA180, 210 AND 240 UNITS SHOWN WITH OPTIONAL ECONOMIZER DAMPERS, POWER EXHAUST FANS, CONVENIENCE OUTLET, UNIT DISCONNECT

CORNER WEIGHTS — lbs. (kg)

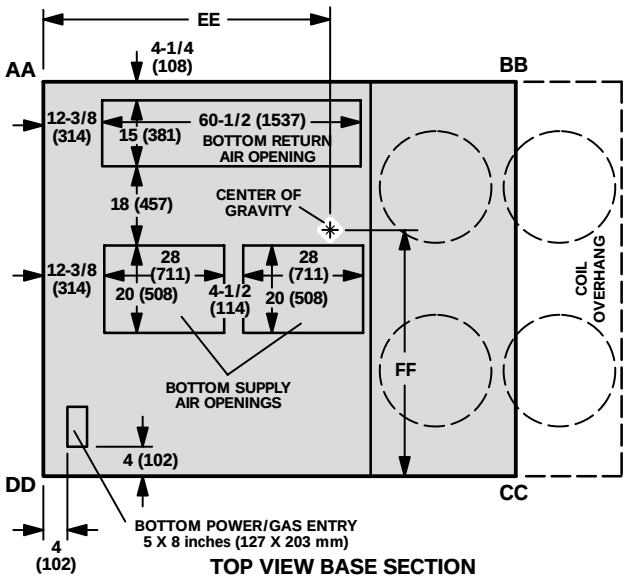
Model Number	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
LGA180 Base Unit	470	213	470	213	650	295	650	295
LGA180 Maximum Unit	580	263	590	268	700	318	690	313
LGA210 Base Unit	480	218	460	209	680	308	710	322
LGA210 Maximum Unit	610	277	590	268	730	331	750	304
LGA240 Base Unit	490	222	520	236	740	336	710	322
LGA240 Maximum Unit	610	277	610	277	750	304	770	349

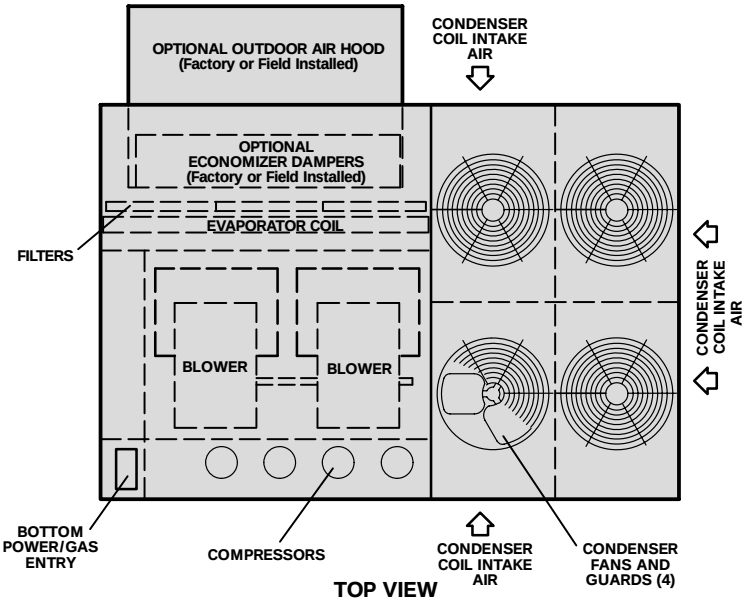
Base Unit — The standard unit with NO OPTIONS.
Maximum Unit — The standard unit with ALL OPTIONS Installed. (Economizer, Power Exhaust Fans, Controls)

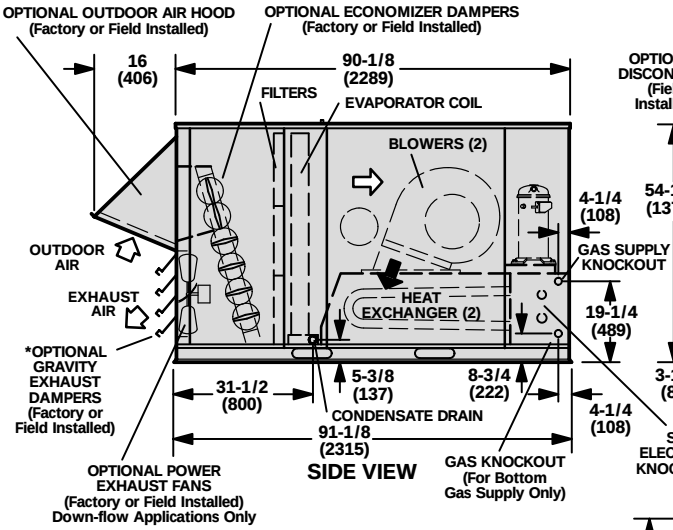
CENTER OF GRAVITY — inches (mm)

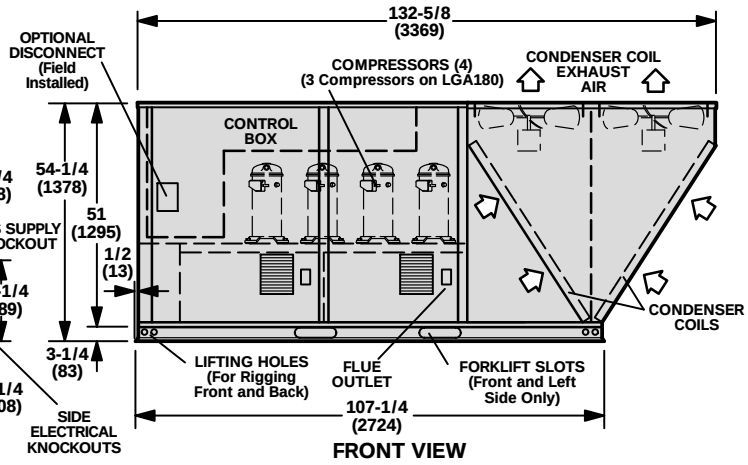
Model Number	EE		FF	
	inch	mm	inch	mm
LGA180 Base Unit	53-1/2	1359	38	965
LGA180 Maximum Unit	54	1372	41-1/2	1054
LGA210 Base Unit	52-1/2	1334	37	940
LGA210 Maximum Unit	52-1/2	1334	41	1041
LGA240 Base Unit	54-1/2	1384	37-1/2	953
LGA240 Maximum Unit	53	1346	40-1/2	1029

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

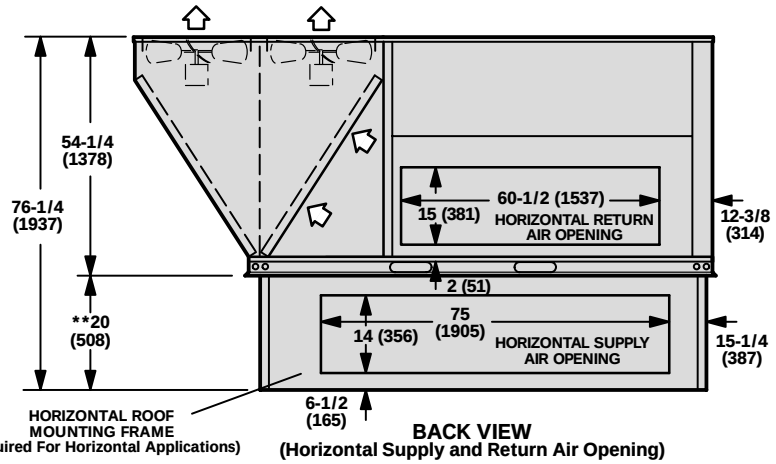








*NOTE — Field Installed in Return Air Duct for Horizontal Applications.



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

LHA180 AND 240 UNITS SHOWN WITH OPTIONAL ECONOMIZER DAMPERS, POWER EXHAUST FANS, CONVENIENCE OUTLETS, UNIT DISCONNECT

CORNER WEIGHTS — lbs. (kg)

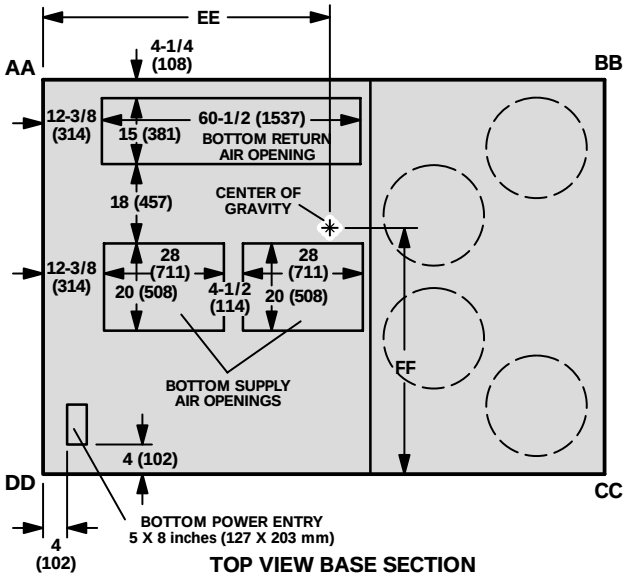
Model Number	AA		BB		CC		DD	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
LHA180 Base Unit	550	249	440	200	580	263	720	327
LHA180 Maximum Unit	670	304	510	231	590	268	790	358
LHA240 Base Unit	570	259	460	209	580	263	730	331
LHA240 Maximum Unit	690	313	520	236	600	272	790	358

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

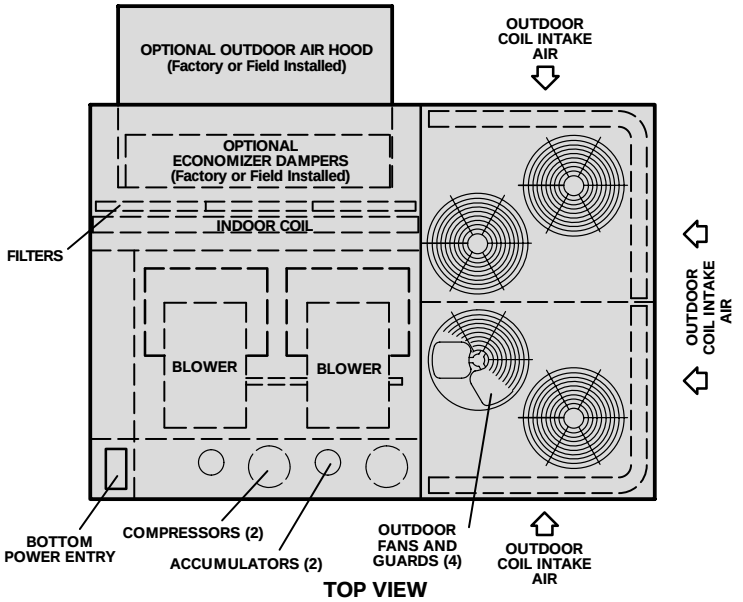
CENTER OF GRAVITY — inches (mm)

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

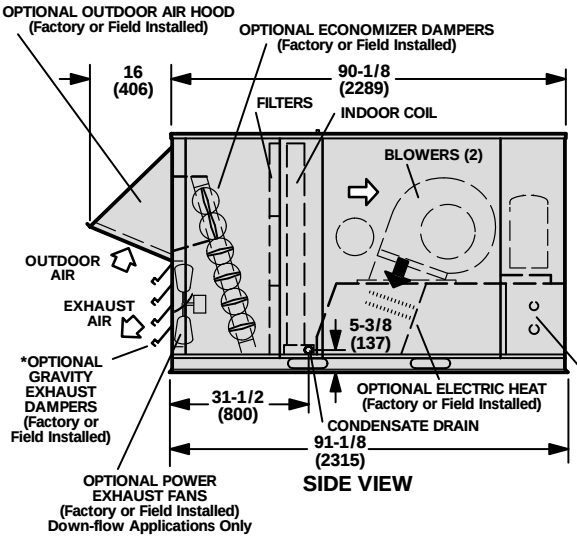
Base Unit — The standard unit with NO OPTIONS.
Maximum Unit — The standard unit with ALL OPTIONS Installed. (Economizer, Power Exhaust Fans, Controls)



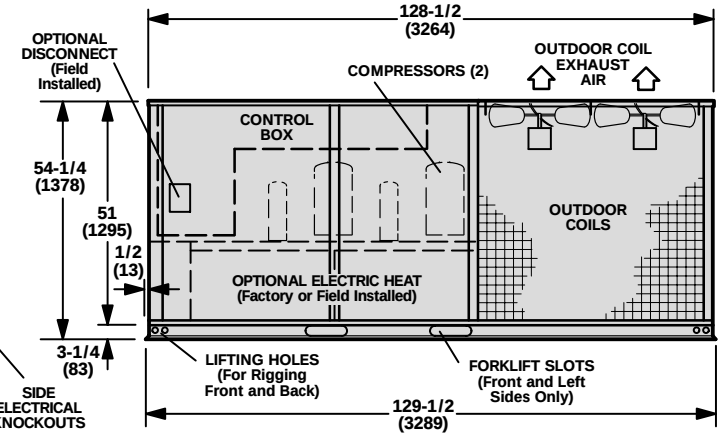
TOP VIEW BASE SECTION



TOP VIEW

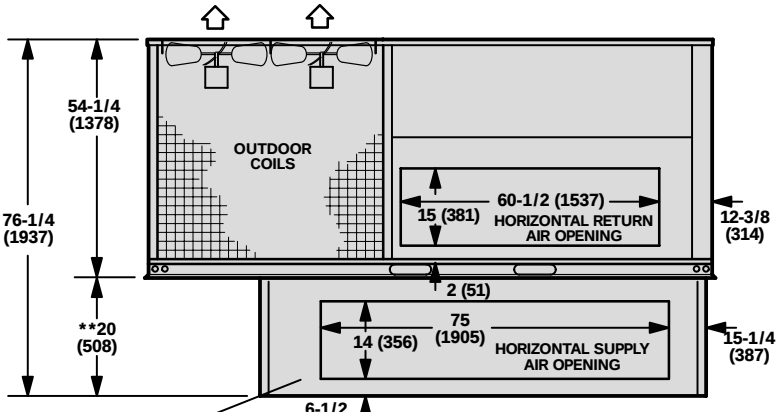


SIDE VIEW



FRONT VIEW

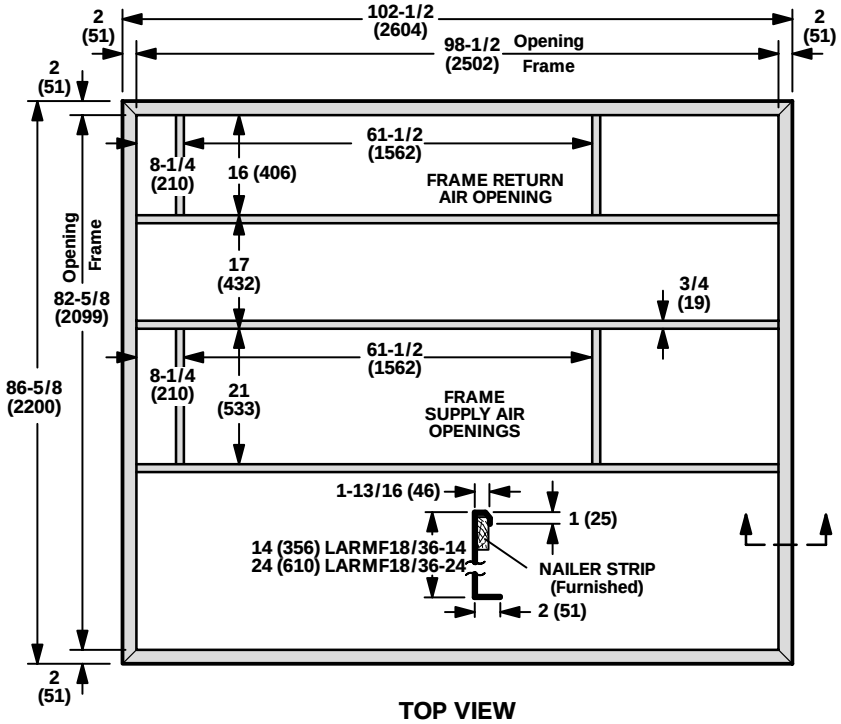
*NOTE — Field Installed in Return Air Duct for Horizontal Applications.



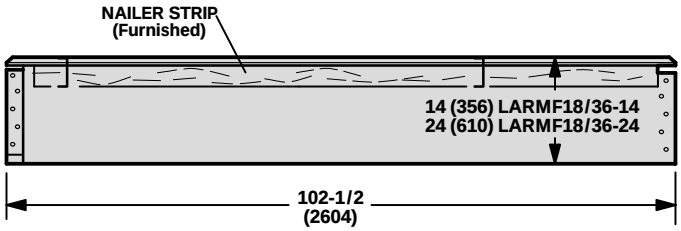
**NOTE — Mounting Frame extends 4 inch (102 mm) inside of unit base. See Typical flashing detail.

BACK VIEW
(Horizontal Supply and Return Air Opening)

LARMF18/36-14 AND LARMF18/36-24 ROOF MOUNTING FRAMES WITH DOUBLE DUCT OPENING



TOP VIEW



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

SIDE VIEW

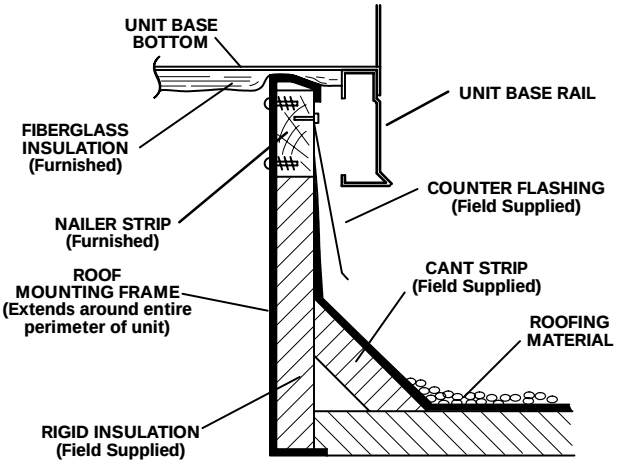
ROOF MOUNTING FRAME SPECIFICATIONS

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

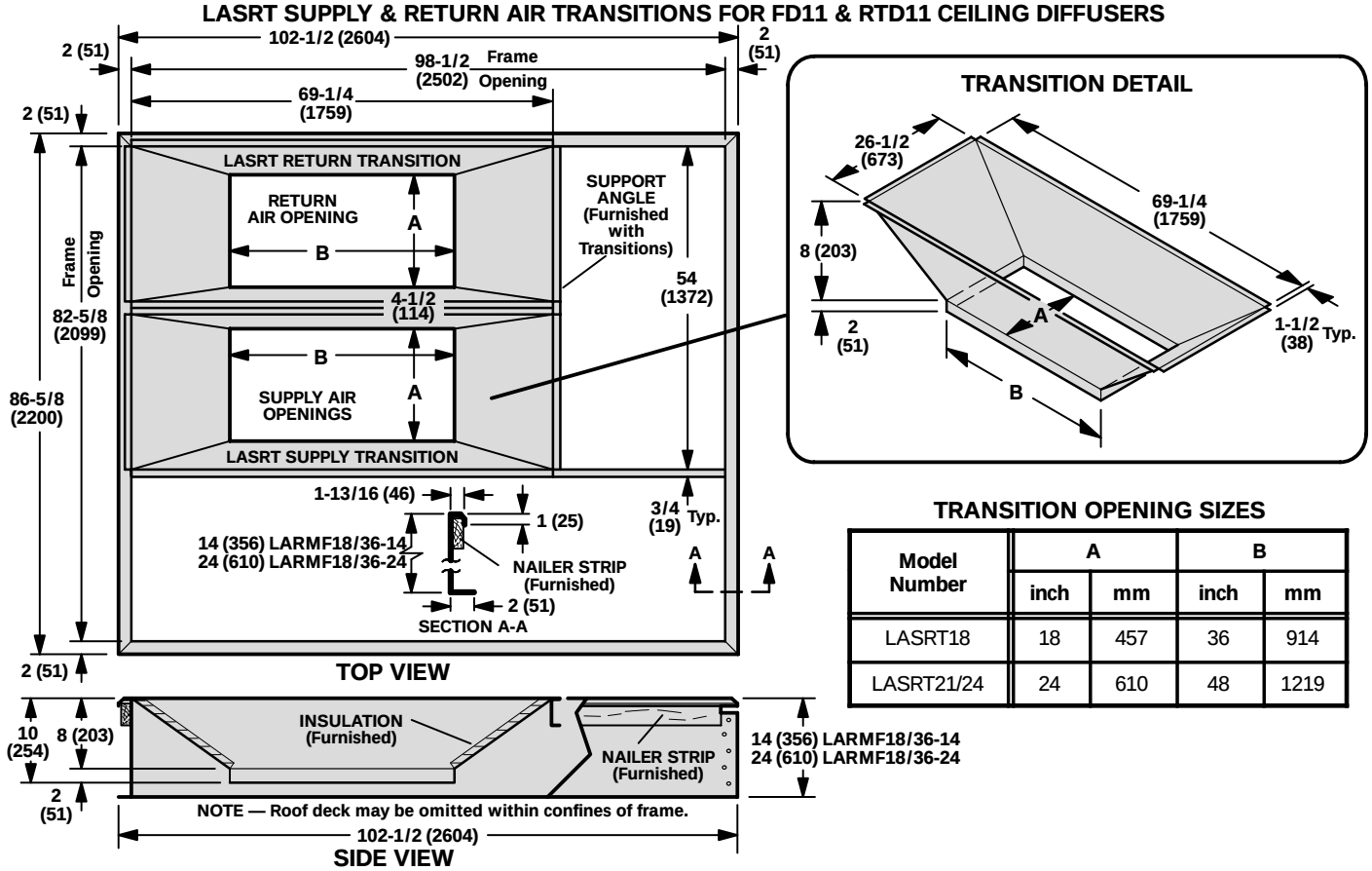
Roof Mounting Frame	LARMF18/36-14	LARMF18/36-24
*Moment of inertia (I) (in.^{4}) (cm^4)	39 (1634)	160 (6639)
*Section modulus $\frac{I}{C}$ (in.^{3}) (cm^3)	5.5 (90)	13.1 (512)
Frame weight. (lb/ft) (kg/m) of length	5.5 (8.2)	8.5 (12.7)
Design strength (psi) (kPa)	20,000 (137,900)	

*Includes both sides of frame.

TYPICAL FLASHING DETAIL FOR LARMF18/36 ROOF MOUNTING FRAMES



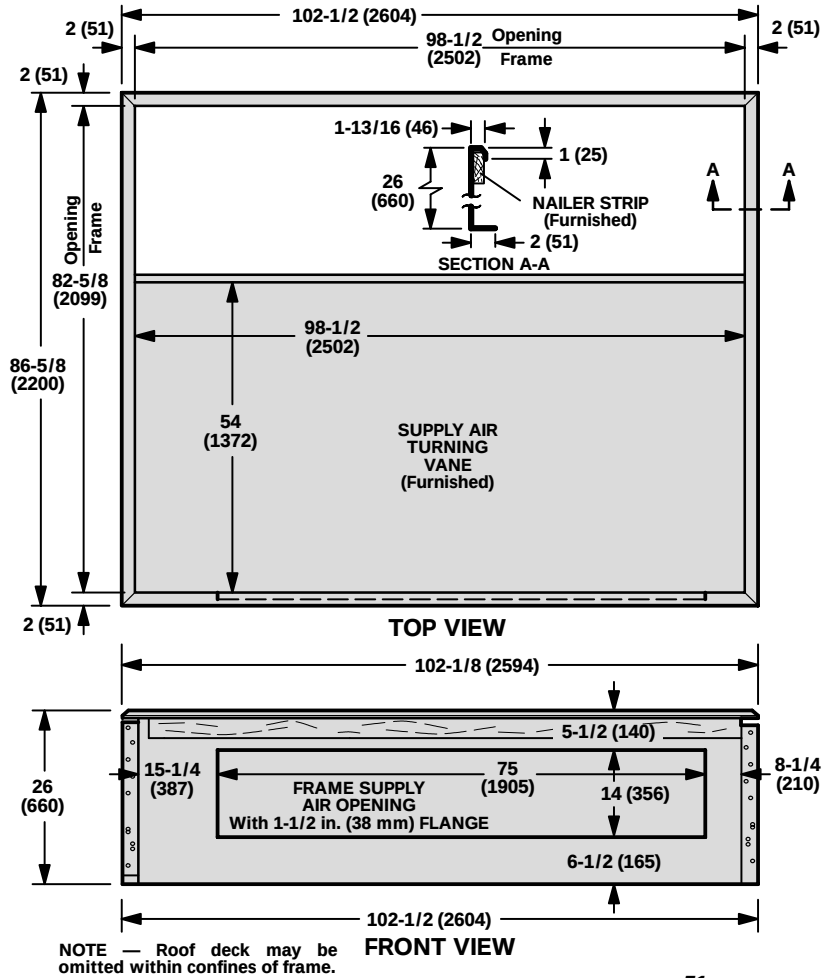
LARMF18/36-14 AND LARMF18/36-24 ROOF MOUNTING FRAMES WITH LASRT SUPPLY & RETURN AIR TRANSITIONS FOR FD11 & RTD11 CEILING DIFFUSERS

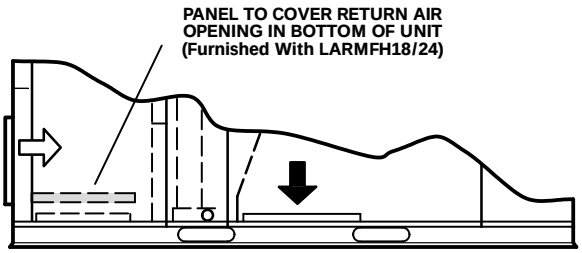


TRANSITION OPENING SIZES

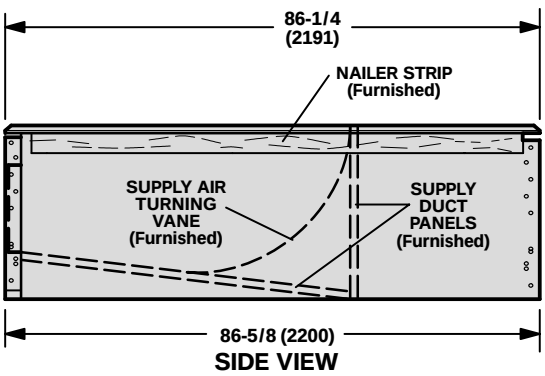
Model Number	A		B	
	inch	mm	inch	mm
LASRT18	18	457	36	914
LASRT21/24	24	610	48	1219

LARMFH18/24 HORIZONTAL ROOF MOUNTING FRAME



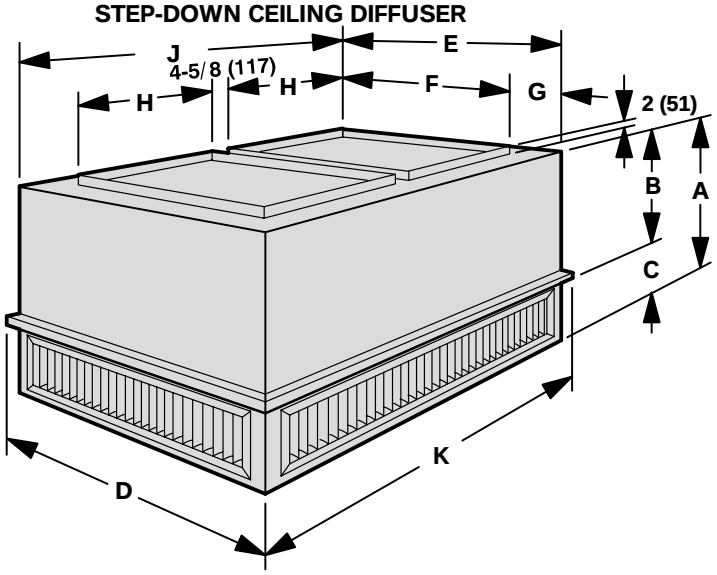


SIDE VIEW
(PACKAGED UNIT)



COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

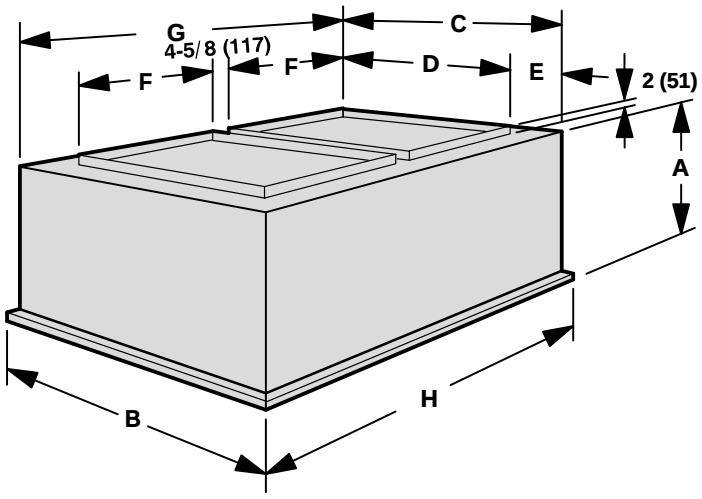
RTD11-185 & RTD11-275
STEP-DOWN CEILING DIFFUSER



Model Number	A		B		C		D		E	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
RTD11-185	34	864	23-7/8	606	10-1/8	257	47-5/8	1210	45-5/8	1159
RTD11-275	40	1016	28-7/8	225	11-1/8	283	59-5/8	1514	57-7/8	1470

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

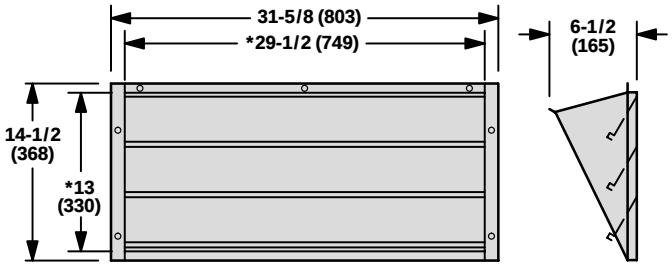
FD11-185 & FD11-275
FLUSH CEILING DIFFUSER



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

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

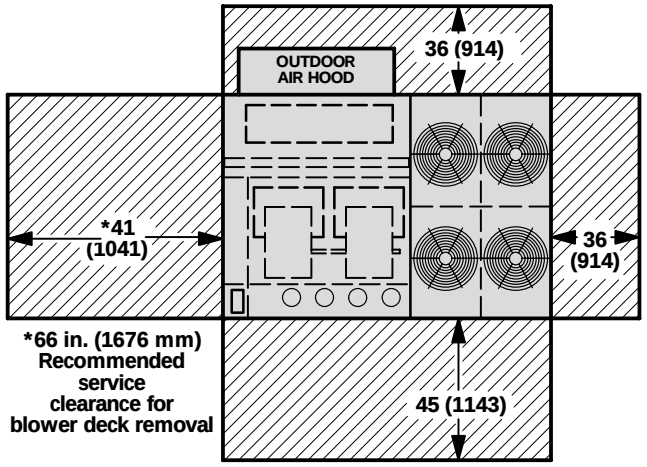
LAGEDH18/24 HORIZONTAL GRAVITY EXHAUST DAMPERS
(Two Furnished Per Order Number)
Field Installed In Return Air Duct



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 requires support when elevated above mounting surface.