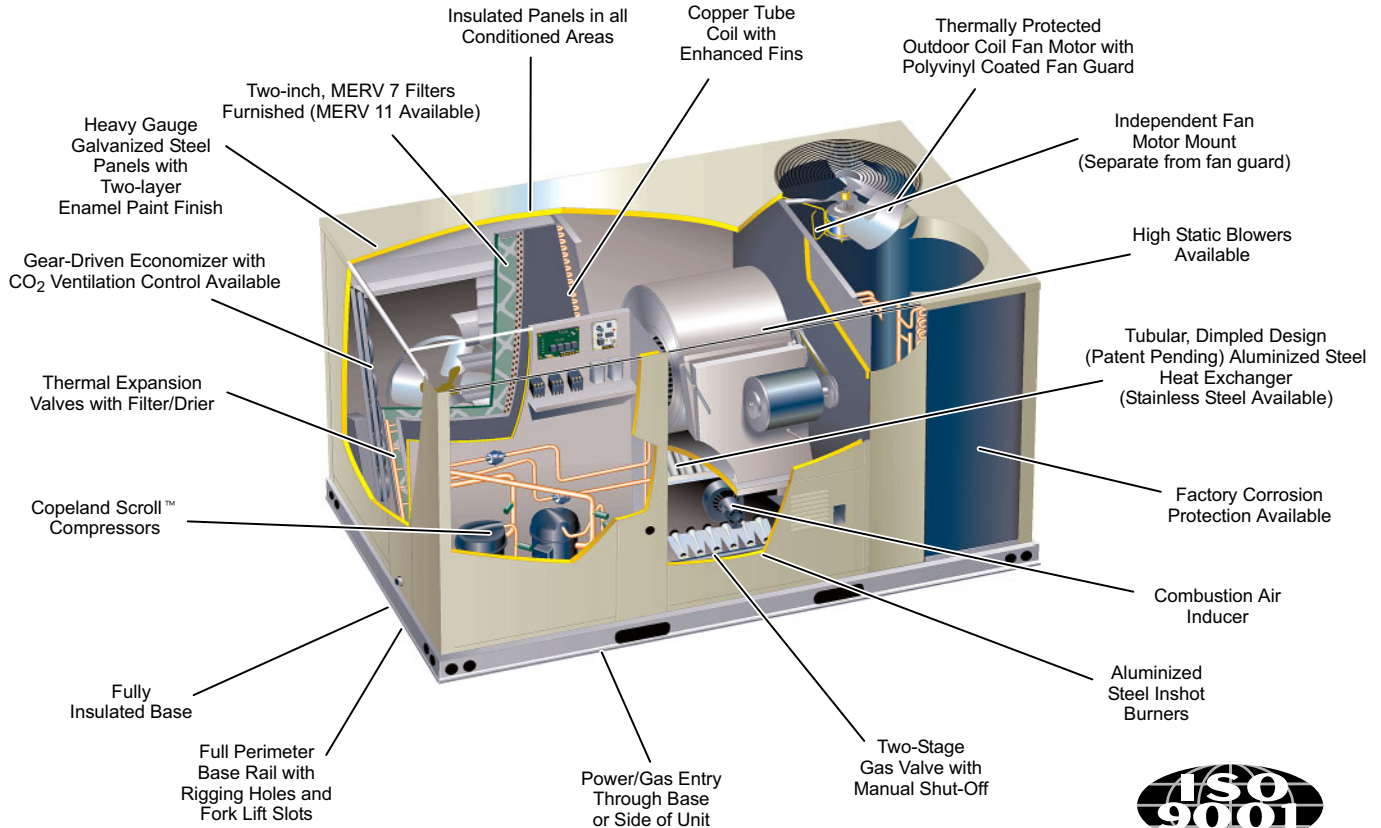


T-CLASS™ ROOFTOP UNIT - 50HZ 24.8 to 38.8 kW (84,800 to 132,700 Btuh)

Bulletin No. 490107

August 2005

Supersedes December 2004



TGA120
Shown With Optional Economizer

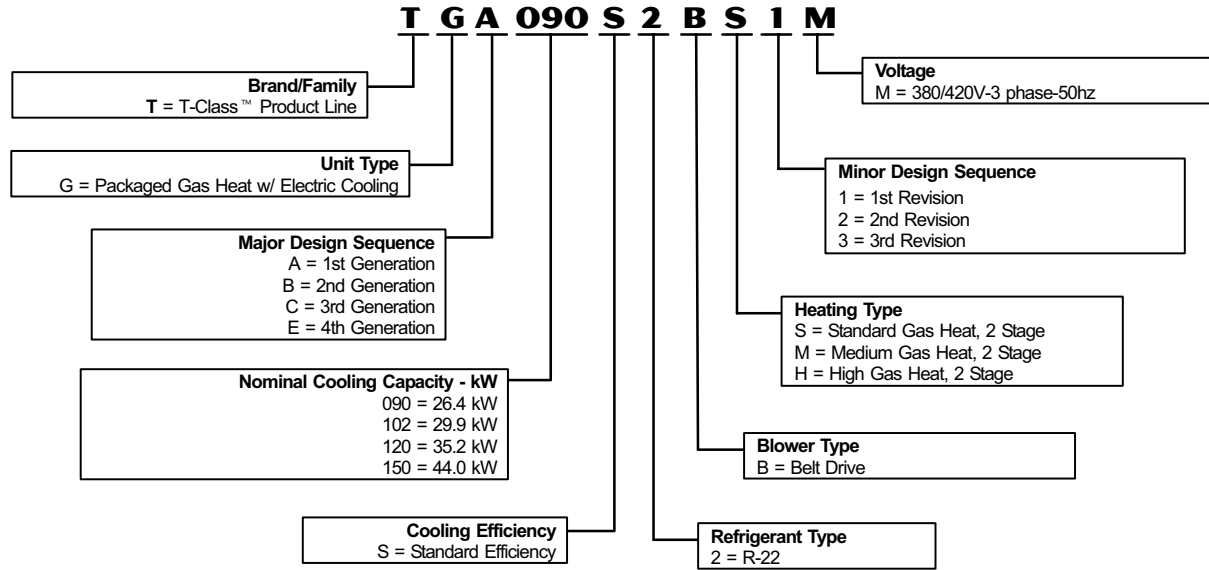


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NOTE - Due to Lennox' ongoing commitment to quality, Specifications, Ratings and Dimensions subject to change without notice and without incurring liability. Improper installation, adjustment, alteration, service or maintenance can cause property damage or personal injury. Installation and service must be performed by a qualified installer and servicing agency.

MODEL NUMBER IDENTIFICATION



FEATURES AND BENEFITS

PERFORMANCE/QUALITY

Components bonded for grounding to meet safety standards for servicing required by Underwriters Laboratories (UL) and the International Electrotechnical Commission (IEC). Cooling performance is rated at test conditions included in Air-Conditioning and Refrigeration Institute (ARI) Standard 340/360-2000 while operating at rated voltage and air volumes. International Organization for Standardization (ISO) 9001 Registered Manufacturing Quality System.

COOLING SYSTEM

Designed to maximize sensible and latent cooling performance at design conditions. System can operate from -1°C (30°F) to 52°C (125°F) without any additional controls.

Compressors

Resiliently mounted on rubber grommets for quiet operation. Copeland Scroll™ compressors on all models for high performance, reliability and quiet operation.

Thermal Expansion Valves

Assures optimal performance throughout the application range. Removable element head.

Freezestats

Protects the evaporator coil from damaging ice build-up due to conditions such as low/no air flow, or low/no refrigerant charge.

Filter/Driers

High capacity filter/drier protects the system from dirt and moisture.

Coil Construction

Copper tube construction, enhanced rippled-edge aluminum fins, flared shoulder tubing connections, silver soldered construction for improved heat transfer. Factory leak tested.

Evaporator Coil

Face split with separate circuits. Each circuit has its separate expansion valve, compressor and refrigerant charge. Enhanced aluminum fins and copper tube coils with cross row circuiting optimizes both sensible and latent cooling capacity.

Condenser Coil

Formed type on all models. Ripple-edged, enhanced aluminum fin and copper tube construction maximizes heat transfer capability.

Condensate Drain Pan

Painted, galvanized pan with positive slope. Drain connection extends outside unit.

Outdoor Coil Fan Motors

Thermal overload protected, totally enclosed, permanently lubricated ball bearings, shaft up, independent motor mount.

Outdoor Coil Fans

Polyvinyl Chloride (PVC) coated fan guard furnished.

REQUIRED SELECTIONS

Cooling Capacity - Specify the nominal cooling capacity of the unit.

ACCESSORIES

Field Installed

High Pressure Switches - Protects the compressor from overload conditions such as dirty condenser coils, blocked refrigerant flow, or loss of outdoor fan operation.

Compressor Crankcase Heaters - Protects against refrigerant migration that can occur during low ambient operation.

Condensate Drain Trap - Available in copper or polyvinyl chloride (PVC).

Low Ambient Kit - Cycles the outdoor fan while allowing compressor operation in the cooling cycle. This intermittent fan operation allows the system to operate without icing the evaporator coil and losing capacity. Designed for use in ambient temperatures no lower than -17.8°C (0°F).

HEATING SYSTEM

Aluminized steel inshot burners, direct spark ignition, electronic flame sensor, combustion air inducer, redundant automatic dual stage gas valve with manual shut-off.

Fan & Limit Controls

Factory installed, limit controls with fixed temperature setting. Heat limit controls protect against overheating.

Safety Switches

Flame roll-out switches, flame sensor switches and combustion air inducer proving switches protect system operation. All safety switches are monitored by the ignition control board.

Heat Exchanger

Tubular construction, aluminized steel, life cycle tested. Stainless Steel Heat Exchanger is required if mixed air temperature is less than 7°C (45°F).

Electronic Pilot Ignition

Solid-state electronic spark igniter provides positive direct ignition of burners on each operating cycle. The system permits main gas valve to stay open only when the burners are proven to be lit. Should a loss of flame occur, the gas valve closes, shutting of the gas to the burners. Ignition module has LED to indicate status and aid in troubleshooting.

Watchguard circuit on module automatically resets ignition controls after one hour of continuous thermostat demand after unit lockout, eliminating nuisance service calls. Ignition control is factory installed in the controls section.

REQUIRED SELECTIONS

Gas Input - Order one:

Standard Heat Gas Input:
21.7/33.3 kW (74,000/113,500 Btuh).
Medium Heat Gas Input:
30.2/46.1 kW (103,000/157,500 Btuh).
High Heat Gas Input:
40.0/61.5 kW (136,500/170,000 Btuh).

OPTIONS / ACCESSORIES

Factory Installed

Stainless Steel Heat Exchanger - Required if mixed air temperature is below 7°C (45°F).

Optional Heat Size - Extends heat input beyond standard offering.

Field Installed

Combustion Air Intake Extensions - recommended for use with existing flue extension kits in areas where high snow drifts can block intake air.

Vertical Vent Extension Kit - for high snow areas or when vent is too close to fresh air intake.

Through Curb Gas Piping Kit - The gas piping kit is used to make gas piping connections through the roof curb.

Unit Base Gas Piping Kit - The gas piping kit is used to make gas piping connections through the unit base.

LPG/Propane Kit - conversion kit to field changeover units from Natural Gas to LPG/Propane.

BLOWER

Supply air fan provides a wide range of air flow capability. Special order high and low static motor and drive options are available offering an even wider range of capability.

Supply Air Motor

Overload protected with permanently lubricated ball bearings ensures durable operation. Special order high and low static motors provide a higher level of air performance for demanding applications.

Supply Air Blower

A double inlet wheel with forward curve blades provide maximum air performance and quiet operation. Dynamically balanced with permanently lubricated ball bearings assure long, reliable operation. Adjustable pulleys allow air to be precisely tuned to the needs of the application.

OPTIONS

Factory Installed

High and Low Static Supply Fan - Extends air flow external static range.

FEATURES AND BENEFITS

CONTROLS

UNIT CONTROLLER

Solid-state microprocessor-based control board that provides flexible control of cooling functions. All control voltage is provided via a 24V (secondary) transformer with built-in circuit breaker protection. Built-in functions include:

Blower On/Off Delay - Time delay between blower on and off cycles provides a more even supply air temperature during heating.

Built-in Control Parameters - Saves installation time as no programming is required.

Minimum Compressor Run Time - Ensures proper oil return to the compressor.

Night Setback Mode - Saves energy by closing outdoor air dampers and operating supply fan on thermostat demand only.

Heat/Cool Staging - Capable of up to 2 heat / 2 cool staging with a third party DDC control system or thermostat.

Thermostat Bounce Delay - Protects compressor from short cycling when a mechanical thermostat is used.

ACCESSORIES

Field Installed

Blower Proving Switch - Uses a static pressure sensor to monitor blower operation and shuts down unit if blower fails.

Control Systems - See Page 16.

Dirty Filter Switch - Senses static pressure increase indicating dirty filter condition.

Smoke Detector - Photoelectric type, installed in supply air section or return air section or both sections.

CABINET

Construction

Heavy-gauge steel panels and full perimeter heavy-gauge galvanized steel base rail provides structural integrity for transportation, handling, and installation. Base rails have rigging holes. Three sides of the base rail have fork slots. Raised edges around duct and power entry openings in the bottom of the unit provide additional protection against water entering the building.

Air-Flow Choice

Units are available in down-flow (vertical) or horizontal air flow configuration with optional field installed Horizontal Conversion Kit.

Duct Flanges

Horizontal supply duct flange is standard on all units.

Power/Gas Entry

Electrical and gas lines can be brought through the unit base or through horizontal access knock-outs.

Exterior Panels

Constructed of heavy-gauge, galvanized steel with a two-layer enamel paint finish. Large removable panels provide service access.

Insulation

All panels adjacent to conditioned air are fully insulated with non-hygroscopic fiberglass insulation. Unit base is fully insulated. The insulation also serves as an air seal to the roof curb, eliminating the need to add a seal during installation.

Access Panels

Access panels are provided for the economizer/filter section, blower section, heating section and the compressor/controls section.

REQUIRED SELECTIONS

Air Flow Configuration - Specify horizontal or down-flow.

OPTIONS / ACCESSORIES

Factory Installed

Corrosion Protection - A completely flexible immersed coating with an electrodeposited dry film process. (AST ElectroFin™ E-Coat). Meets Mil-spec MIL-P-53084, American Society for Testing and Materials (ASTM) B117 Standard Method Salt Spray Testing, ASTM 1153 Standard Specification for Methyl Isobutyl Ketone. Shall be available as an option for enhanced corrosion protection.

Field Installed

Coil Guards - Painted, galvanized steel wire guards to protect outdoor coil. Not used with Hail Guards.

Hail Guards - Constructed of heavy gauge steel, painted to match cabinet, helps protect outdoor coils from hail damage. Not used with Coil Guards.

Horizontal Conversion Kit - Two piece duct cover kit blocks off unit down flow supply air opening, horizontal return air opening panel (on unit) is moved to block off down flow return air opening for horizontal applications.

AIR FILTERS

Disposable 51 mm (2 inch) pleated MERV 7 filters (Minimum Efficiency Reporting Value based on American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) 52.2) meet the requirements for ASHRAE 62 for improved indoor air quality.

ACCESSORIES

Field Installed

MERV 11 Filters - Disposable 51 mm (2 inch) pleated, high-efficiency MERV 11 filters (Minimum Efficiency Reporting Value based on ASHRAE 52.2).

SERVICEABILITY

Designed to streamline general maintenance and decrease troubleshooting time.

Marked & Color-Coded Wiring

All electrical wiring is color-coded and marked to identify which components it is connecting.

Electrical Plugs

Positive connection electrical plugs are used to connect common accessories or maintenance parts for easy removal or installation.

Access Panels

Large access panels are provided for quick and easy access to maintenance areas.

Blower Access

Blower assembly slides out of the unit for easy access.

TXV Access

Thermal expansion valves are located near the perimeter of the unit for easier access.

Thermal Expansion Valves

Removable element head allows change out of element and bulb without removing the TXV.

Standard Components

A large number of common maintenance parts are standard throughout the entire range of sizes (26 to 44 kW), reducing the need to carry a lot of different parts to the job or in inventory.

Compressor Access

Compressors are located near the perimeter of the unit for easier access.

Compressor Compartment

Compressors are isolated from the condenser air flow allowing system operation checks to be done without changing the air flow across the outdoor coils.

OPTIONS / ACCESSORIES

ECONOMIZER / OUTDOOR AIR / EXHAUST AIR

Factory or Field Installed

Economizer - Parallel, gear-driven action return air and outdoor air dampers, plug-in connections to unit, nylon bearings, neoprene seals, 24 volt, spring return motor, adjustable minimum damper position, damper assembly slides in unit, outdoor air hood must be ordered separately, choice of economizer controls. Three-position economizer opens fully to use outdoor air for free cooling when outdoor air is suitable and opens to minimum position during the occupied time period. Optional Modulating Economizer Sensor Kit may be used to modulate dampers to maintain a 13°C (55°F) discharge air temperature.

Down-Flow Barometric Relief Dampers - Allows relief of excess return air static when economizer is near full open. Aluminum blade dampers prevent blow back and outdoor air infiltration during off cycle. Bird screen furnished.

Outdoor Air Hood - Required with Economizer and Outdoor Air Damper Sections. Two cleanable aluminum mesh fresh air filter furnished. Available factory installed when ordered with a factory installed single enthalpy economizer or field installed with all other economizer and outdoor air damper selections.

Field Installed

Economizer Controls

Single Sensible Control - Senses outdoor air temperature and enables the economizer if the temperature is less than the set point of the control.

Differential Sensible Control - Two temperature sensors allow the control to compare the outdoor air and return air and using setpoints, enables the economizer when the outdoor air is cooler than the return air.

Single Enthalpy Control - Outdoor air enthalpy sensor enables economizer if the outdoor enthalpy is less than the setpoint of the control.

Differential Enthalpy Control - Two solid-state enthalpy sensors allow the control to select between outdoor air or return air, whichever has lower enthalpy.

Economizer Modulating Sensor Kit - Sensor that allows the economizer damper to modulate to maintain 13°C (55°F) discharge air temperature, while in free-cooling.

Outdoor Air Damper Section

25% Motorized Outdoor Air Damper - Parallel blade, gear-driven dampers are automatically adjusted with a two-position damper motor.

25% Manual Outdoor Air Dampers - Parallel blade dampers are manually adjustable to a fixed position.

Economizer and Outdoor Air Damper Application Note

Minimum mixed air temperature in heating mode -1°C (30°F)

Maximum mixed air temperature in cooling mode: 32°C (90°F)

Down-Flow Barometric Relief Damper Hood

- Protects exhaust air from recirculating into outdoor air stream.

Horizontal Barometric Relief Dampers

- Allows relief of excess air when economizer is near full open. Aluminum blade dampers prevent blow back and outdoor air infiltration during off cycle. Field installed in return air duct. Bird screen and hood furnished. Two dampers per order number.

Power Exhaust Fan - Installs internal to unit for down-flow applications with economizer option. Provides exhaust air pressure relief. Interlocked to run when supply air blower is operating. Fan runs when outdoor air dampers are 50% open (adjustable). Motor is overload protected. Galvanized steel cabinet and hood painted to match unit. Total air volume is 1980 L/s (4200 cfm) at 0 Pa (0 in. wg.). 249 W (1/3 hp) motor. 300 Watts total input.

Indoor Air Quality (CO₂) Sensor - Monitors CO₂ levels opens economizer dampers to setpoint as needed for Demand Control Ventilation.

CEILING DIFFUSERS

Ceiling Diffusers (Flush and Step-Down models) - Aluminum grilles, large center grille, insulated diffuser box with flanges, hanging rings furnished, interior transition (even air flow), internally sealed (prevents recirculation), adapts to T-bar ceiling grids or plaster ceilings.

Transitions (Supply and Return) - Used with diffusers, installs in roof curb, galvanized steel construction, flanges furnished for duct connection to diffusers, fully insulated.

ROOF CURBS

Standard Roof Curb - Nail strip furnished, mates to unit, US National Roofing Contractors Approved, shipped knocked down. Available in 356 mm (14 inch) and 2610 mm (4 inch) heights.

Cliplock 1000 Roof Curb - Interlocking curb pieces speed assembly. Nail strip furnished. Supports full perimeter of unit. Shipped knocked down. Available in 356 mm (14 inch), 457 mm (18 inch) and 610 mm (24 inch) heights.

OPTIONS / ACCESSORIES

Item	Size Model	26 kW 090	30 kW 102	35 kW 120	44 kW 150
Cabinet	Coil Guards	TACGKGC10/15			
	Hail Guards	TAHGKGC10/15			
	Horizontal Discharge Conversion Kit	LTHSDKGC10/15			
Ceiling Diffusers	Step-Down - Net Weight	RTD11-95 40 kg (88 lbs.)	RTD11-135 93 kg (205 lbs.)	RTD11-185 178 kg (392 lbs.)	
	Flush - Net Weight	FD11-95 34 kg (75 lbs.)	FD11-135 79 kg (174 lbs.)	FD11-185 131 kg (289 lbs.)	
	Transitions (Supply and Return) - Net Weight	LASRT08/10 14 kg (30 lbs.)	LASRT10/12 15 kg (32 lbs.)	LASRT15 16 kg (36 lbs.)	
Controls	Blower Proving Switch	LTABPSK			
	Dirty Filter Switch	LTADFSK			
	Smoke Detector - Supply	LTASASDK10/36			
	Smoke Detector - Return	LTRASDK-10/30			
Cooling	PVC Condensate Drain Trap	LTACDKP03/36			
	Compressor Crankcase Heater	380/420V - TACHK10/15-M			
	Copper Condensate Drain Trap	LTACDKC03/36			
	High Pressure Switch	TAHPK10/15			
	Low Ambient Kit	TALAK10/15			
Economizer	Economizer - Net Weight	TAREMD10/15 - 21 kg (47 lbs.)			
	Economizer Outdoor Air Hood - Net Weight Number and Size of Filters	LAOAH10/15 - 5 kg (11 lbs.) (2) 406 x 635 x 25 mm (16 x 25 x 1 in.)			
Economizer Controls	Single Sensible (for Differential Sensible control, order two kits)	TASEK03/36			
	Differential Enthalpy	LTADEK03/36			
	Outdoor Enthalpy	LTASEK03/36			
	Economizer Modulating Sensor Kit	TAMEK03/36			
Barometric Relief	Down-Flow Barometric Relief Dampers - Net Weight	LAGED10/15 - 4 kg (8 lbs.)			
	Hood for Down-Flow LAGED	LAGEH09/15			
	Horizontal Barometric Relief Dampers - Net Weight	LAGEDH03/15 - 4 kg (8 lbs.)			
Outdoor Air Dampers	Damper Section (down-flow) - Motorized - Net Weight	TAOADM10/15 - 14 kg (31 lbs.)			
	Damper Section (down-flow) - Manual - Net Weight	LAOAD10/15 - 12 kg (26 lbs.)			
	Outdoor Air Hood (down-flow) Net Weight Number and Size of Filters	LAOAH10/15 - 5 kg (11 lbs.) (2) 406 x 635 x 25 mm (16 x 25 x 1 in.)			
Power Exhaust	Power Exhaust Fan - Net Weight	LAPEF10/15 - 13 kg (28 lbs.)			
Filters	MERV 11 High Efficiency	AFK-11 457 x 610 x 52 mm (18 x 24 x 2 in.) specify four per unit)			
Gas Heating	Combustion Air Intake Extensions	LTACA1K10/15			
	Gas Piping Kit	LTAGPSK10/15 (Through Curb), LTAGPB10/15 (Through Unit Base)			
	LPG/Propane Kits	LTALPGK-130 - Standard Heat LTALPGK-180 - Medium Heat LTALPGK-240 - High Heat			
	Vertical Vent Extension Kit	LTAWEK10/15			
Indoor Air Quality (CO₂) Sensors	CO ₂ Sensor Duct Mounting Kit	LTIAQSDMK03/36			
	Sensor - white case CO ₂ display	LTAIAQSWDK03/36			
	Sensor - white case no display	LTAIAQSWN03/36			
	Sensor - black case CO ₂ display	LTAIAQSN03/36			
	Sensor - duct mount, black, no display	LTAIAQSDMBN03/36			
	Aspiration Box for duct mounting	LTIAQABD03/36			
	Handheld CO ₂ Monitor	LTAIAQSHM03/36			
Standard Roof Curbs	14 in. (356 mm) height - Net Weight	LARMF10/15-14 - 57 kg (126 lbs.)			
	24 in. (610 mm) height - Net Weight	LARMF10/15-24 - 79 kg (174 lbs.)			
Cliplock 1000 Roof Curbs	356 mm (14 in.) height - Net Weight	LARMF10/15S-14 - 57 kg (126 lbs.)			
	457 mm (18 in.) height - Net Weight	LARMF10/15S-18 - 71 kg (156 lbs.)			
	610 mm (24 in.) height - Net Weight	LARMF10/15S-24 - 79 kg (174 lbs.)			

SPECIFICATIONS - STANDARD EFFICIENCY COOLING
26 AND 30 kW

General Data		Nominal kW	26 kW		30 kW	
		Model Number	TGA090S2B		TGA102S2B	
Cooling Performance	Gross Cooling Capacity - kW (Btuh)		24.8 (84,800)		27.8 (94,900)	
	¹ Net Cooling Capacity - kW (Btuh)		23.7 (81,000)		26.7 (91,000)	
		Total Unit Power (kW)	8.0		8.7	
		Coefficient of Performance Output/Input)	2.97		3.06	
		¹ Energy Efficiency Ratio (Btuh/Watt)	10.1		10.5	
		² Integrated Part Load Value (Btuh/Watt)	10.6		10.5	
	Refrigerant Charge	Circuit 1	3.1 kg (7 lbs. 0 oz.)		3.4 kg (7 lbs. 8 oz.)	
	Furnished (R-22)	Circuit 2	2.9 kg (6 lbs. 8 oz.)		3.1 kg (7 lbs. 0 oz.)	
³ Sound Rating Number (dB)			88		88	
Gas Heating Performance	Heat Input Type		Standard (S)	Medium (M)	Standard (S)	Medium (M)
	Input - kW (Btuh)	First Stage	21.7 (74,000)	30.2 (103,000)	21.7 (74,000)	30.2 (103,000)
		Second Stage	33.3 (113,500)	46.1 (157,500)	33.3 (113,500)	46.1 (157,500)
	Output - kW (Btuh)	Second Stage	27.0 (92,000)	37.4 (127,500)	27.0 (92,000)	37.4 (127,500)
		CSA Thermal Efficiency	81.0%		81.0%	
		Gas Supply Connections	3/4 in. npt		3/4 in. npt	
	Gas Supply Pressure	Natural	1.7 kPa (7 in. w.c.)		1.7 kPa (7 in. w.c.)	
		LPG/Propane	2.7 kPa (11 in. w.c.)		2.7 kPa (11 in. w.c.)	
Compressor - Number & Type			(2) Scroll		(2) Scroll	
Condenser Coil	Net face area - m ² (sq. ft.)		2.72 (29.3) total		2.72 (29.3) total	
	Tube diameter - mm (in.)		9.5 (3/8)		9.5 (3/8)	
	Number of rows		1		1	
	Fins per m (inch)		787 (20)		787 (20)	
Condenser Fans	Motor output - (number) Watt (horsepower)		(2) 249 (1/3)		(2) 249 (1/3)	
	Motor rev/min		896		896	
	Total motor watts		535		535	
	Diameter - (number) mm (in.) - number of blades		(2) 610 (24) - 3		(2) 610 (24) - 3	
	Total air volume - L/s (cfm)		3145 (6665)		3145 (6665)	
Evaporator Coil	Net face area - m ² (sq. ft.)		0.98 (10.5) total		0.98 (10.5) total	
	Tube diameter - mm (in.)		9.5 (3/8)		9.5 (3/8)	
	Number of rows		3		3	
	Fins per m (inch)		551 (14)		551 (14)	
	Drain Connection - number and size		(1) 1 in. NPT coupling		(1) 1 in. NPT coupling	
Expansion device type		Balanced Port Thermostatic Expansion Valve, removeable power head				
Standard Indoor Blower and Drive	Belt Drive - Nominal motor output		1.5 kW (2 hp)		1.5 kW (2 hp)	
	Drive kit		kit #1 - 562 - 764 rev/min		kit #1 - 562 - 764 rev/min	
	Wheel nominal diameter x width - mm (in.)		(1) 15 x 15 (381 x 381)		(1) 15 x 15 (381 x 381)	
Filters	Type of filter		Disposable, pleated MERV 7 (standard) or MERV 11 (accessory)			
	Number and size - mm (in.)		(4) 457 x 610 x 51 (18 x 24 x 2)		(4) 18 x 24 x 2 (457 x 610 x 51)	
Electrical characteristics			380/420V - 50 hertz - 3 phase with neutral			

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

¹ Rating test conditions are those included in Air-Conditioning and Refrigeration Institute (ARI) Standard 340/360 while operating at rated voltage and air volumes, 35°C (95°F) outdoor air temperature and 27°C (80°F) db/19°C (67°F) wb entering evaporator air; minimum external duct static pressure.

² Integrated Part Load Value rated at 27°C (80°F) outdoor air temperature, 27°C (80°F) db/19°C (67°F) wb indoor air temperature.

³ Sound Rating Number rated in accordance with test conditions included in Air-Conditioning and Refrigeration Institute (ARI) Standard 270.

SPECIFICATIONS - STANDARD EFFICIENCY COOLING
35 AND 44 kW

General Data		Nominal kW	35 kW		44 kW	
		Model No.	TGA120S2B		TGA150S2B	
Cooling Performance	Gross Cooling Capacity - kW (Btuh)		33.8 (115,200)		38.8 (132,700)	
	¹ Net Cooling Capacity - kW (Btuh)		32.2 (110,000)		37.2 (127,000)	
		Total Unit Power (kW)	10.3		12.6	
		Coefficient of Performance Output/Input	3.13		2.95	
		¹ EER (Btuh/Watt)	10.7		10.1	
		² Integrated Part Load Value (Btuh/Watt)	10.9		10.2	
	Refrigerant Charge Furnished (R-22)	Circuit 1	4.5 kg (10 lbs. 0 oz.)		5.9 kg (13 lbs. 0 oz.)	
		Circuit 2	4.5 kg (10 lbs. 0 oz.)		5.4 kg (12 lbs. 0 oz.)	
³ Sound Rating Number (dB)			88		88	
Gas Heating Performance	Heat Input Type		Medium (M)	High (H)	Medium (M)	High (H)
	Input - kW (Btuh)	First Stage	30.2 (103,000)	40.0 (136,500)	30.2 (103,000)	40.0 (136,500)
		Second Stage	46.1 (157,500)	61.5 (210,000)	46.1 (157,500)	61.5 (210,000)
	Output - kW (Btuh)	Second Stage	37.4 (127,500)	49.8 (170,000)	37.4 (127,500)	49.8 (170,000)
	CSA Thermal Efficiency		80.0%		80.0%	
	Gas Supply Connections		3/4 in. NPT		3/4 in. NPT	
Gas Supply Pressure	Natural	1.7 kPa (7 in. w.c.)		1.7 kPa (7 in. w.c.)		
	LPG/Propane	2.7 kPa (11 in. w.c.)		2.7 kPa (11 in. w.c.)		
Compressor - Number and Type			(2) Scroll		(2) Scroll	
Condenser Coil	Net face area - m ² (sq. ft.)		2.72 (29.3) total		2.72 (29.3) total	
	Tube diameter - mm (in.)		9.5 (3/8)		9.5 (3/8)	
	Number of rows		2		3	
	Fins per m (inch)		787 (20)		787 (20)	
Condenser Fans	Motor output - (number) Watt (horsepower)		(2) 249 (1/3)		(2) 372 (1/2)	
	Motor rev/min		896		896	
	Total Motor watts		535		878	
	Diameter - (number) mm (in.) - number of blades		(2) 610 (24) - 3		(2) 610 (24) - 3	
	Total air volume - L/s (cfm)		3145 (6665)		3540 (7500)	
Evaporator Coil	Net face area - m ² (sq. ft.)		0.98 (10.5) total		0.98 (10.5) total	
	Tube diameter - mm (in.)		9.5 (3/8)		9.5 (3/8)	
	Number of rows		4		4	
	Fins per m (inch)		551 (14)		551 (14)	
	Drain Connection - number and size		(1) 1 in. NPT coupling		(1) 1 in. NPT coupling	
Expansion device type		Balanced Port Thermostatic Expansion Valve, removeable power head				
Standard Indoor Blower and Drive	Belt Drive - Nominal motor output		2.2 kW (3 hp)		3.7 kW (5 hp)	
	Motor - Drive kit		kit #3 - 739 - 925 rev/min		kit #6 - 917 - 1152 rev/min	
	Wheel nominal diameter x width - mm (in.)		(1) 381 x 381 (15 x 15)		(1) 381 x 381 (15 x 15)	
Filters	Type of filter		Disposable, pleated MERV 7 (standard) or MERV 11 (accessory)			
	Number and size - mm (in.)		(4) 457 x 610 x 51 (18 x 24 x 2)		(4) 457 x 610 x 51 (18 x 24 x 2)	
Electrical characteristics		380/420V - 50 hertz - 3 phase with neutral				

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

¹ Rating test conditions are those included in Air-Conditioning and Refrigeration Institute (ARI) Standard 340/360 while operating at rated voltage and air volumes, 35°C (95°F) outdoor air temperature and 27°C (80°F) db/19°C (67°F) wb entering evaporator air; minimum external duct static pressure.

² Integrated Part Load Value rated at 27°C (80°F) outdoor air temperature, 27°C (80°F) db/19°C (67°F) wb indoor air temperature.

³ Sound Rating Number rated in accordance with test conditions included in Air-Conditioning and Refrigeration Institute (ARI) Standard 270.

COOLING RATINGS

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

35 KW STANDARD EFFICIENCY - TGA120S - COOLING CAPACITY - ONE COMPRESSOR OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			18°C (65°F)						24°C (75°F)						29°C (85°F)						35°C (95°F)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
			kW	kBtu/h		24°C 75°F	27°C 80°F	29°C 85°F	kW	kBtu/h		24°C 75°F	27°C 80°F	29°C 85°F	kW	kBtu/h		24°C 75°F	27°C 80°F	29°C 85°F	kW	kBtu/h		24°C 75°F	27°C 80°F	29°C 85°F
17°C (63°F)	1.51	3200	16.8	57.2	2.92	.67	.84	1.00	16.4	55.8	3.19	.68	.85	1.00	15.9	54.1	3.51	.69	.87	1.00	15.3	52.1	3.88	.70	.89	1.00
	1.89	4000	17.4	59.3	2.96	.73	.94	1.00	17.0	57.9	3.23	.74	.95	1.00	16.5	56.2	3.55	.76	.97	1.00	15.9	54.3	3.91	.78	.99	1.00
	2.26	4800	17.9	61.2	3.00	.80	1.00	1.00	17.6	60.0	3.27	.82	1.00	1.00	17.1	58.3	3.59	.84	1.00	1.00	16.5	56.4	3.96	.86	1.00	1.00
19°C (67°F)	1.51	3200	17.7	60.4	2.99	.52	.65	.80	17.3	59.0	3.25	.52	.66	.81	16.8	57.2	3.57	.53	.66	.83	16.1	55.1	3.93	.54	.68	.85
	1.89	4000	18.2	62.1	3.02	.55	.71	.91	17.8	60.7	3.29	.56	.71	.92	17.2	58.8	3.60	.57	.73	.94	16.6	56.6	3.96	.58	.75	.96
	2.26	4800	18.6	63.3	3.05	.59	.78	.99	18.1	61.9	3.31	.60	.79	.99	17.6	60.0	3.62	.60	.81	1.00	16.9	57.8	3.99	.61	.84	1.00
22°C (71°F)	1.51	3200	18.8	64.1	3.06	.39	.51	.63	18.3	62.6	3.32	.39	.51	.63	17.8	60.8	3.63	.39	.52	.64	17.2	58.6	4.00	.39	.53	.65
	1.89	4000	19.2	65.6	3.09	.40	.54	.69	18.8	64.2	3.35	.40	.55	.70	18.2	62.2	3.66	.41	.56	.71	17.6	60.0	4.03	.41	.57	.72
	2.26	4800	19.5	66.7	3.11	.41	.58	.76	19.1	65.2	3.37	.42	.59	.77	18.5	63.2	3.68	.42	.60	.79	17.8	60.9	4.05	.42	.61	.81

35 KW STANDARD EFFICIENCY - TGA120S - COOLING CAPACITY - ALL COMPRESSORS OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			29°C (85°F)						35°C (95°F)						41°C (105°F)						46°C (115°F)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
			kW	kBtu/h		24°C 75°F	27°C 80°F	29°C 85°F	kW	kBtu/h		24°C 75°F	27°C 80°F	29°C 85°F	kW	kBtu/h		24°C 75°F	27°C 80°F	29°C 85°F	kW	kBtu/h		24°C 75°F	27°C 80°F	29°C 85°F
17°C (63°F)	1.51	3200	32.2	110.0	7.38	.70	.87	1.00	31.0	105.9	8.16	.72	.89	1.00	29.8	101.7	9.03	.73	.92	1.00	28.5	97.3	10.04	.74	.94	1.00
	1.89	4000	33.5	114.2	7.46	.76	.97	1.00	32.3	110.3	8.23	.78	.98	1.00	31.1	106.1	9.12	.81	1.00	1.00	29.9	101.9	10.15	.83	1.00	1.00
	2.26	4800	34.7	118.3	7.54	.84	1.00	1.00	33.6	114.5	8.32	.86	1.00	1.00	32.4	110.4	9.22	.89	1.00	1.00	31.1	106.0	10.25	.91	1.00	1.00
19°C (67°F)	1.51	3200	34.1	116.3	7.50	.55	.68	.83	32.8	112.0	8.27	.55	.69	.85	31.5	107.4	9.17	.56	.71	.88	30.1	102.8	10.18	.57	.72	.90
	1.89	4000	35.1	119.6	7.57	.58	.74	.93	33.8	115.2	8.34	.59	.76	.95	32.4	110.5	9.24	.60	.78	.98	30.9	105.5	10.25	.61	.81	1.00
	2.26	4800	35.8	122.0	7.62	.62	.82	1.00	34.4	117.5	8.39	.63	.84	1.00	33.0	112.7	9.29	.64	.86	1.00	31.6	107.7	10.30	.66	.89	1.00
22°C (71°F)	1.51	3200	36.2	123.6	7.64	.40	.53	.66	34.9	119.2	8.42	.41	.54	.67	33.5	114.4	9.32	.41	.55	.69	32.0	109.3	10.35	.41	.56	.70
	1.89	4000	37.1	126.6	7.70	.42	.57	.72	35.8	122.0	8.49	.42	.58	.74	34.3	117.0	9.38	.42	.59	.75	32.8	111.8	10.41	.43	.60	.78
	2.26	4800	37.7	128.6	7.75	.43	.61	.79	36.3	124.0	8.53	.44	.62	.81	34.8	118.9	9.42	.44	.64	.84	33.2	113.4	10.45	.45	.65	.87

44 KW STANDARD EFFICIENCY - TGA150S - COOLING CAPACITY - ONE COMPRESSOR OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			18°C (65°F)						24°C (75°F)						29°C (85°F)						35°C (95°F)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
			kW	kBtu/h		24°C 75°F	27°C 80°F	29°C 85°F	kW	kBtu/h		24°C 75°F	27°C 80°F	29°C 85°F	kW	kBtu/h		24°C 75°F	27°C 80°F	29°C 85°F	kW	kBtu/h		24°C 75°F	27°C 80°F	29°C 85°F
17°C (63°F)	1.79	3800	19.3	65.7	3.49	.62	.79	.96	18.6	63.6	3.93	.63	.81	.98	18.0	61.5	4.41	.64	.83	.99	17.4	59.4	4.92	.65	.85	1.00
	2.07	4400	19.7	67.3	3.52	.65	.86	1.00	19.1	65.2	3.96	.67	.88	1.00	18.5	63.0	4.43	.69	.90	1.00	17.8	60.8	4.95	.70	.93	1.00
	2.36	5000	20.2	68.8	3.53	.70	.92	1.00	19.5	66.7	3.98	.72	.94	1.00	18.9	64.4	4.46	.74	.96	1.00	18.2	62.2	4.98	.76	.98	1.00
19°C (67°F)	1.79	3800	20.4	69.6	3.54	.48	.60	.75	19.8	67.4	4.00	.49	.61	.77	19.1	65.1	4.48	.49	.61	.79	18.4	62.7	5.00	.50	.63	.81
	2.07	4400	20.8	71.0	3.56	.50	.63	.81	20.1	68.7	4.02	.51	.64	.84	19.4	66.3	4.50	.51	.66	.86	18.7	63.9	5.02	.52	.67	.88
	2.36	5000	21.2	72.2	3.58	.52	.67	.88	20.5	69.8	4.04	.53	.69	.90	19.8	67.4	4.52	.53	.71	.92	19.0	64.9	5.05	.54	.73	.95
22°C (71°F)	1.79	3800	21.7	74.1	3.61	.36	.47	.58	21.0	71.6	4.07	.36	.48	.59	20.3	69.2	4.55	.37	.48	.60	19.5	66.7	5.09	.37	.49	.61
	2.07	4400	22.1	75.4	3.62	.37	.49	.61	21.4	72.9	4.09	.37	.50	.62	20.6	70.4	4.58	.37	.50	.63	19.9	67.8	5.11	.38	.51	.64
	2.36	5000	22.4	76.5	3.64	.38	.51	.64	21.7	73.9	4.11	.38	.52	.66	20.9	71.3	4.60	.38	.52	.68	20.1	68.7	5.13	.39	.53	.70

44 KW STANDARD EFFICIENCY - TGA150S - COOLING CAPACITY - ALL COMPRESSORS OPERATING

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			29°C (85°F)						35°C (95°F)						41°C (105°F)						46°C (115°F)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
			kW	kBtu/h		24°C 75°F	27°C 80°F	29°C 85°F	kW	kBtu/h		24°C 75°F	27°C 80°F	29°C 85°F	kW	kBtu/h		24°C 75°F	27°C 80°F	29°C 85°F	kW	kBtu/h		24°C 75°F	27°C 80°F	29°C 85°F
17°C (63°F)	1.79	3800	37.4	127.6	8.89	.69	.85	.99	36.1	123.3	9.93	.70	.87	1.00	34.8	118.7	11.08	.71	.89	1.00	33.3	113.6	12.41	.73	.91	1.00
	2.07	4400	38.3	130.8	8.94	.72	.91	1.00	37.0	126.3	9.99	.74	.93	1.00	35.6	121.5	11.15	.76	.95	1.00	34.2	116.6	12.49	.78	.97	1.00
	2.36	5000	39.2	133.6	9.00	.77	.96	1.00	37.8	129.1	10.05	.78	.98	1.00	36.5	124.4	11.23	.81	.99	1.00	35.0	119.4	12.56	.83	1.00	1.00
19°C (67°F)	1.79	3800	39.6	135.1	9.03	.54	.66	.81	38.2	130.3	10.08	.54	.68	.83	36.7	125.2	11.25	.55	.69	.85	35.1	119.8	12.58	.56	.70	.88
	2.07	4400	40.4	137.7	9.08	.56	.70	.87	38.9	132.7	10.14	.56	.71	.89	37.4	127.5	11.31	.57	.73	.92	35.7	121.9	12.65	.58	.75	.94
	2.36	5000	41.0	139.9	9.12	.58	.74	.93	39.5	134.8	10.18	.59	.76	.95	37.9	129.4	11.36	.60	.78	.97	36.3	123.7	12.70	.61	.81	.99
22°C (71°F)	1.79	3800	42.1	143.6	9.19	.40	.52	.64	40.6	138.5	10.27	.40	.53	.65	39.0	133.0	11.45	.40	.54	.67	37.3	127.2	12.80	.41	.55	.68
	2.07	4400	42.8	146.1	9.24	.41	.54	.68	41.3	140.8	10.32	.41	.55	.69	39.6	135.2	11.52	.41	.56	.71	37.8	129.1	12.86	.42	.57	.73
	2.36	5000	43.4	148.0	9.29	.41	.57	.72	41.8	142.7	10.36	.42	.58	.74	40.1	136.9	11.56	.42	.59	.76	38.3	130.8	12.90	.43	.60	.78

BLOWER DATA

BELT DRIVE BLOWER - BASE UNIT

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY (NO HEAT SECTION) WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE. FOR ALL UNITS ADD:

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

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

See below for blower motors and drives. See page 14 for wet coil and option/accessory air resistance data.

BOLD INDICATES FIELD FURNISHED DRIVE.

Air Volume cfm (L/s)	Total Static Pressure - in. w.g. (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)									
	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)	RPM	BHP (kW)				
2250 (1060)	455	0.30 (0.22)	555	0.45 (0.34)	640	0.60 (0.45)	720	0.80 (0.60)	790	1.00 (0.75)	855	1.20 (0.90)	915	1.40 (1.04)	975	1.60 (1.19)	1030	1.85 (1.38)	1080	2.05 (1.53)	1130	2.30 (1.72)	1175	2.55 (1.90)	1220	2.80 (2.09)								
2500 (1180)	475	0.40 (0.30)	575	0.55 (0.41)	660	0.70 (0.52)	735	0.90 (0.67)	805	1.10 (0.82)	870	1.30 (0.97)	930	1.55 (1.16)	985	1.75 (1.31)	1040	2.00 (1.49)	1090	2.25 (1.68)	1140	2.50 (1.87)	1185	2.75 (2.05)	1230	3.00 (2.24)								
2750 (1300)	495	0.45 (0.34)	595	0.65 (0.48)	675	0.85 (0.63)	750	1.05 (0.78)	820	1.25 (0.93)	885	1.45 (1.08)	940	1.70 (1.27)	995	1.90 (1.42)	1050	2.20 (1.64)	1100	2.45 (1.83)	1145	2.65 (1.98)	1195	2.95 (2.20)	1240	3.25 (2.42)								
3000 (1415)	525	0.55 (0.41)	615	0.75 (0.56)	695	0.95 (0.71)	770	1.20 (0.90)	835	1.40 (1.04)	895	1.60 (1.19)	955	1.85 (1.38)	1010	2.10 (1.57)	1060	2.35 (1.75)	1110	2.65 (1.98)	1160	2.90 (2.16)	1205	3.20 (2.39)	1250	3.45 (2.57)								
3250 (1535)	550	0.65 (0.48)	640	0.90 (0.67)	715	1.10 (0.82)	790	1.35 (1.01)	855	1.60 (1.19)	915	1.80 (1.34)	970	2.05 (1.53)	1025	2.35 (1.75)	1075	2.60 (1.94)	1125	2.85 (2.13)	1170	3.15 (2.35)	1215	3.40 (2.54)	1260	3.70 (2.76)								
3500 (1650)	580	0.80 (0.60)	665	1.05 (0.78)	740	1.25 (0.93)	810	1.50 (1.12)	870	1.75 (1.31)	930	2.00 (1.49)	985	2.25 (1.68)	1040	2.55 (1.90)	1090	2.85 (2.13)	1135	3.10 (2.31)	1185	3.40 (2.54)	1230	3.70 (2.76)	1270	4.00 (2.98)								
3750 (1770)	605	0.95 (0.71)	690	1.20 (0.90)	760	1.45 (1.08)	830	1.70 (1.27)	890	1.95 (1.45)	950	2.25 (1.68)	1005	2.50 (1.87)	1055	2.80 (2.09)	1105	3.10 (2.31)	1150	3.35 (2.50)	1195	3.65 (2.72)	1240	3.95 (2.95)	1285	4.30 (3.21)								
4000 (1890)	635	1.10 (0.82)	715	1.40 (1.04)	785	1.65 (1.23)	850	1.90 (1.42)	910	2.20 (1.64)	965	2.45 (1.83)	1020	2.75 (2.05)	1070	3.05 (2.28)	1120	3.35 (2.50)	1165	3.65 (2.72)	1210	3.95 (2.95)	1255	4.30 (3.21)	1295	4.60 (3.43)								
4250 (2005)	665	1.30 (0.97)	740	1.60 (1.19)	810	1.85 (1.38)	870	2.15 (1.60)	930	2.45 (1.83)	985	2.75 (2.05)	1040	3.05 (2.28)	1090	3.35 (2.50)	1135	3.65 (2.72)	1185	4.00 (2.98)	1225	4.30 (3.21)	1270	4.65 (3.47)	1310	4.95 (3.69)								
4500 (2125)	695	1.50 (1.12)	770	1.80 (1.34)	835	2.10 (1.57)	895	2.40 (1.79)	955	2.70 (2.01)	1005	3.00 (2.24)	1060	3.35 (2.50)	1105	3.65 (2.72)	1155	4.00 (2.98)	1200	4.30 (3.21)	1245	4.65 (3.47)	1285	5.00 (3.73)	1325	5.30 (3.95)								
4750 (2240)	725	1.75 (1.31)	795	2.05 (1.53)	860	2.40 (1.79)	920	2.70 (2.01)	975	3.00 (2.24)	1030	3.35 (2.50)	1080	3.65 (2.72)	1125	3.95 (2.95)	1175	4.35 (3.25)	1215	4.65 (3.47)	1260	5.00 (3.73)	1300	5.35 (3.99)	1340	5.70 (4.25)								
5000 (2360)	760	2.05 (1.53)	825	2.35 (1.75)	885	2.65 (1.98)	945	3.00 (2.24)	1000	3.35 (2.50)	1050	3.65 (2.72)	1100	4.00 (2.98)	1145	4.35 (3.25)	1190	4.70 (3.51)	1235	5.05 (3.77)	1280	5.45 (4.07)	---	---	---	---								
5250 (2475)	790	2.30 (1.72)	855	2.65 (1.98)	910	2.95 (2.20)	970	3.35 (2.50)	1020	3.65 (2.72)	1070	4.00 (2.98)	1120	4.35 (3.25)	1165	4.70 (3.51)	1210	5.10 (3.80)	1255	5.45 (4.07)	---	---	---	---	---	---								
5500 (2595)	820	2.60 (1.94)	880	2.95 (2.20)	940	3.30 (2.46)	995	3.70 (2.76)	1045	4.05 (3.02)	1095	4.40 (3.28)	1145	4.80 (3.58)	1190	5.15 (3.84)	1230	5.50 (4.10)	---	---	---	---	---	---	---	---								
5750 (2715)	850	2.95 (2.20)	910	3.30 (2.46)	965	3.70 (2.76)	1020	4.05 (3.02)	1070	4.45 (3.32)	1120	4.80 (3.58)	1165	5.20 (3.88)	1210	5.60 (4.18)	---	---	---	---	---	---	---	---	---	---								
6000 (2830)	885	3.35 (2.50)	940	3.70 (2.76)	995	4.10 (3.06)	1045	4.45 (3.32)	1095	4.85 (3.62)	1145	5.25 (3.92)	1190	5.65 (4.21)	---	---	---	---	---	---	---	---	---	---	---	---								

FACTORY INSTALLED DRIVE KIT SPECIFICATIONS

Motor Outputs Nominal kW	Motor Outputs Nominal hp	REV/MIN Range					
		Drive 1	Drive 2	Drive 3	Drive 4	Drive 5	Drive 6
1.5	2	562 - 764	---	739 - 925	---	917 - 1152	---
2.2	3	---	561 - 776	---	750 - 938	---	930 - 1169
3.7	5	---	---	---	739 - 925	---	917 - 1152

NOTE - Using total air volume and system static pressure requirements determine from blower performance tables rev/min and motor output required.

BLOWER DATA

ACCESSORY AIR RESISTANCE

Air Volume		Wet Indoor Coil				Gas Heat Exchanger						Economizer		MERV 11 Filter	
		090, 102		120, 150		Standard Heat		Medium Heat		High Heat					
L/s	cfm	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.
1060	2250	15	.06	25	.10	12	.05	17	.07	22	.09	9	.035	2	.01
1180	2500	20	.08	30	.12	12	.05	22	.09	27	.11	10	.04	2	.01
1325	2750	22	.09	35	.14	15	.06	25	.10	32	.13	11	.045	5	.02
1420	3000	25	.10	40	.16	17	.07	30	.12	40	.16	12	.05	5	.02
1535	3250	27	.11	47	.19	20	.08	37	.15	47	.19	15	.06	5	.02
1650	3500	32	.13	52	.21	22	.09	42	.17	55	.22	17	.07	7	.03
1770	3750	35	.14	57	.23	25	.10	50	.20	65	.26	19	.075	7	.03
1890	4000	40	.16	65	.26	27	.11	55	.22	75	.30	20	.08	10	.04
2005	4250	42	.17	70	.28	30	.12	62	.25	85	.34	22	.09	10	.04
2125	4500	45	.18	77	.31	32	.13	70	.28	94	.38	25	.10	10	.04
2240	4750	50	.20	82	.33	35	.14	77	.31	104	.42	27	.11	12	.05
2360	5000	55	.22	90	.36	40	.16	87	.35	117	.47	30	.12	15	.06
2475	5250	60	.24	97	.39	45	.18	94	.38	129	.52	32	.13	15	.06
2595	5500	65	.26	104	.42	50	.20	104	.42	142	.57	35	.14	17	.07
2715	5750	70	.28	112	.45	55	.22	114	.46	154	.62	37	.15	17	.07
2830	6000	75	.30	119	.48	60	.24	124	.50	169	.68	40	.16	20	.08

AIR RESISTANCE - CEILING DIFFUSERS

Unit Size	Air Volume		RTD11 Step-Down Diffuser						FD11 Flush Diffuser	
			2 Ends Open		1 Side, 2 Ends Open		All Ends & Sides Open			
	L/s	cfm	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.
090 Models	1135	2400	52	0.21	45	0.18	37	0.15	35	0.14
	1225	2600	60	0.24	52	0.21	45	0.18	42	0.17
	1320	2800	67	0.27	60	0.24	52	0.21	50	0.20
	1415	3000	80	0.32	72	0.29	62	0.25	62	0.25
	1510	3200	102	0.41	92	0.37	80	0.32	77	0.31
	1605	3400	124	0.50	112	0.45	97	0.39	92	0.37
	1700	3600	152	0.61	134	0.54	119	0.48	109	0.44
1795	3800	182	0.73	157	0.63	142	0.57	127	0.51	
102 & 120 Models	1700	3600	90	0.36	70	0.28	57	0.23	37	0.15
	1795	3800	99	0.40	80	0.32	65	0.26	45	0.18
	1890	4000	109	0.44	90	0.36	72	0.29	52	0.21
	1980	4200	122	0.49	99	0.40	82	0.33	60	0.24
	2075	4400	134	0.54	109	0.44	92	0.37	67	0.27
	2170	4600	149	0.60	122	0.49	104	0.42	77	0.31
	2265	4800	162	0.65	132	0.53	114	0.46	87	0.35
2360	5000	172	0.69	144	0.58	124	0.50	97	0.39	
2455	5200	186	0.75	154	0.62	134	0.54	107	0.43	
150 Models	1980	4200	55	0.22	47	0.19	40	0.16	25	0.10
	2075	4400	70	0.28	60	0.24	50	0.20	30	0.12
	2170	4600	85	0.34	72	0.29	60	0.24	37	0.15
	2265	4800	99	0.40	85	0.34	72	0.29	47	0.19
	2360	5000	114	0.46	97	0.39	85	0.34	57	0.23
	2455	5200	129	0.52	109	0.44	97	0.39	67	0.27
	2550	5400	144	0.58	122	0.49	107	0.43	77	0.31
2645	5600	159	0.64	134	0.54	117	0.47	87	0.35	
2735	5800	174	0.70	147	0.59	127	0.51	97	0.39	

BLOWER DATA

CEILING DIFFUSER AIR THROW DATA

Model Number	Air Volume		¹ Effective Throw Range			
			RTD11 Step-Down		FD11 Flush	
	L/s	cfm	m	ft.	m	ft.
090	1225	2600	7 - 9	24 - 29	6 - 7	19 - 24
	1320	2800	8 - 9	25 - 30	6 - 9	20 - 28
	1415	3000	8 - 10	27 - 33	6 - 9	21 - 29
	1510	3200	9 - 11	28 - 35	7 - 9	22 - 29
	1605	3400	9 - 11	30 - 37	7 - 9	22 - 30
102 120	1700	3600	8 - 10	25 - 33	7 - 9	22 - 29
	1795	3800	8 - 11	27 - 35	7 - 9	22 - 30
	1885	4000	9 - 11	29 - 37	7 - 10	24 - 33
	1980	4200	10 - 12	32 - 40	8 - 11	26 - 35
	2075	4400	10 - 13	34 - 42	9 - 11	28 - 37
150	2645	5600	12 - 15	39 - 49	9 - 11	28 - 37
	2740	5800	13 - 16	42 - 51	9 - 12	29 - 38
	2830	6000	13 - 17	44 - 54	12 - 15	40 - 50
	2925	6200	14 - 17	45 - 55	13 - 16	42 - 51
	3020	6400	14 - 17	46 - 55	13 - 16	43 - 52
	3115	6600	14 - 17	47 - 56	14 - 17	45 - 56

¹ Throw is the horizontal or vertical distance an air stream travels on leaving the outlet or diffuser before the maximum velocity is reduced to 15 m (50 ft) per minute. Four sides open.

POWER EXHAUST FANS PERFORMANCE

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

OUTDOOR SOUND DATA

Unit Model No.	Octave Band Sound Power Levels dB, re 10 ⁻¹² Watts							¹ Sound Rating Number (dB)
	Center Frequency - HZ							
	125	250	500	1000	2000	4000	8000	
090, 102, and 120	92	88	87	83	78	72	67	88
150	93	89	88	84	78	73	67	88

¹ Tested according to ARI Standard 270-95 test conditions and ANSI Standard S1.32-1981.

HIGH ALTITUDE DERATE

Units may be installed at altitudes up to 610 m (2000 feet) above sea level without any modification. At altitudes above 610 m (2000 feet), units must be derated to match gas manifold pressures shown in table below. NOTE - This is the only permissible derate for these units.

Altitude m	Altitude ft.	Gas Manifold Pressure Natural Gas	
		kPa	in. w.g.
610 - 915	2001 - 3000	0.67	2.7
915 - 1220	3001 - 4000	0.65	2.6
1220 - 1525	4001 - 5000	0.62	2.5
1525 - 1830	5001 - 6000	0.60	2.4
1830 - 2135	6001 - 7000	0.57	2.3
2135 - 2440	7001 - 8000	0.55	2.2
2440 - 3048	8001 - 10,000	Contact Technical Support	

ELECTRICAL DATA

26 KW / 30 KW STANDARD EFFICIENCY

Model No.		TGA090S		TGA102S	
Line voltage data - 50 Hz - 3 phase		380/420V		380/420V	
Compressors (2)	Rated load amps - each (total)	6.4 (12.8)		7.1 (14.2)	
	Locked rotor amps - each (total)	46 (92)		50 (100)	
Condenser Fan Motors (2)	Full load amps - each (total)	1.3 (2.6)		1.3 (2.6)	
	Locked rotor amps - each (total)	2.4 (4.8)		2.4 (4.8)	
Evaporator Blower Motor	Motor Output - kW	1.5	2.2	1.5	2.2
	hp	2	3	2	3
	Full load amps	3.5	5	3.5	5
	Locked rotor amps	22.1	27	22.1	27
¹ Maximum Overcurrent Protection (amps)	With Exhaust Fan	25	25	30	30
	Less Exhaust Fan	25	25	25	24
² Minimum Circuit Ampacity	With Exhaust Fan	22	24	24	25
	Less Exhaust Fan	21	22	22	24
Optional Power Exhaust Fan	(Number) W (hp)	(1) 249 (1/3)		(1) 249 (1/3)	
	Full load amps	1.3		1.3	
	Locked rotor amps	2.4		2.4	

35 KW / 44 KW STANDARD EFFICIENCY

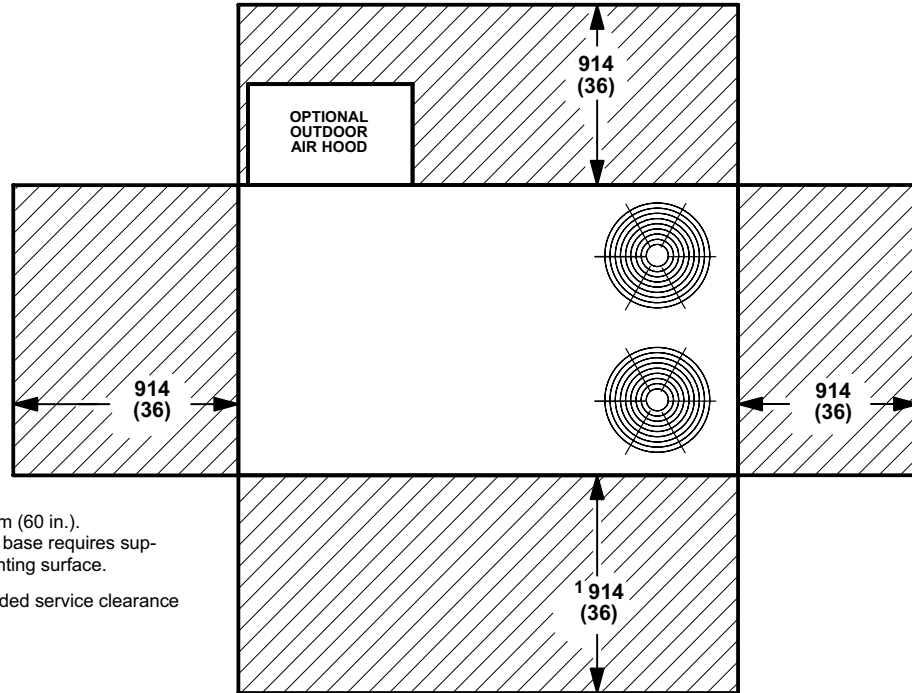
Model No.		TGA120S			TGA150S	
Line voltage data - 50 Hz - 3 phase		380/420V			380/420V	
Compressors (2)	Rated load amps - each (total)	7.4 (14.8)			9 (18)	
	Locked rotor amps - each (total)	59.6 (119.2)			75 (150)	
Condenser Fan Motors (2)	Full load amps - each (total)	1.3 (2.6)			1.5 (3.0)	
	Locked rotor amps - each (total)	2.4 (4.8)			3.0 (6.0)	
Evaporator Blower Motor	kW	1.5	2.2	3.7	2.2	3.7
	Motor Output - hp	2	3	5	3	5
	Full load amps	3.5	5	7.8	5	7.8
	Locked rotor amps	22.1	27	41	27	41
¹ Maximum Overcurrent Protection (amps)	With Exhaust Fan	30	30	35	40	40
	Less Exhaust Fan	30	30	30	40	40
² Minimum Circuit Ampacity	With Exhaust Fan	25	26	29	30	33
	Less Exhaust Fan	23	25	28	29	31
Optional Power Exhaust Fan	(Number) W (hp)	(1) 249 (1/3)			(1) 249 (1/3)	
	Full load amps	1.3			1.3	
	Locked rotor amps	2.4			2.4	

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

1 HACR type breaker or fuse.

2 Refer to local codes to determine wire, fuse and disconnect size requirements.

INSTALLATION CLEARANCES - MM (INCHES)



NOTE - Top Clearance 1524 mm (60 in.).
NOTE - Entire perimeter of unit base requires support when elevated above mounting surface.

¹ 1524 mm (60 in.) recommended service clearance for blower deck removal

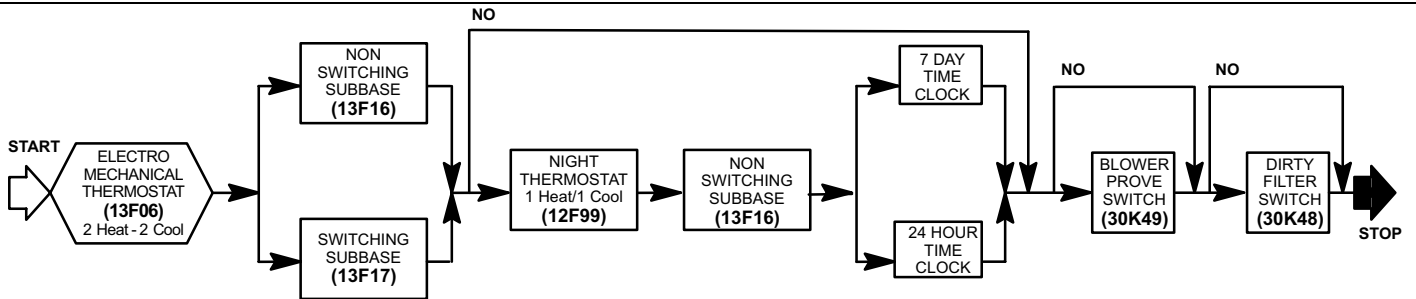
OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS - FIELD INSTALLED

System and Component Description

Field Installed
Catalog No.

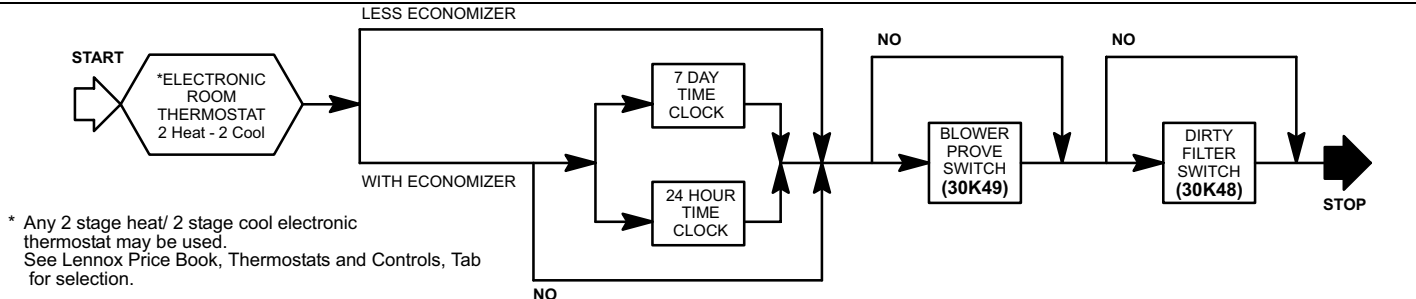
ELECTRO-MECHANICAL THERMOSTAT

Thermostat - Two stage heat & two stage cool with dual temperature levers, subbase choice	13F06
Subbase - Manual system switch (Off-Heat-Auto-Cool), fan switch (Auto-On)	13F17
Subbase - Non-switching	13F16
Night Setback Operation - Order components below	
Heating Thermostat - Single stage heat / Single stage cool	12F99
Subbase - Non-switching	13F16
Time Clock - 7 day operation, indicates day and night periods, 2 hour increments, battery back-up	See Price Book
Time Clock - 24 hour night setback operation, 15 minute increments, battery back-up	See Price Book
Blower Proving Switch - Monitors blower operation, locks out unit in case of blower failure	30K49
Dirty Filter Switch - Senses static pressure increase indicating a dirty filter condition	30K48



ELECTRONIC THERMOSTAT

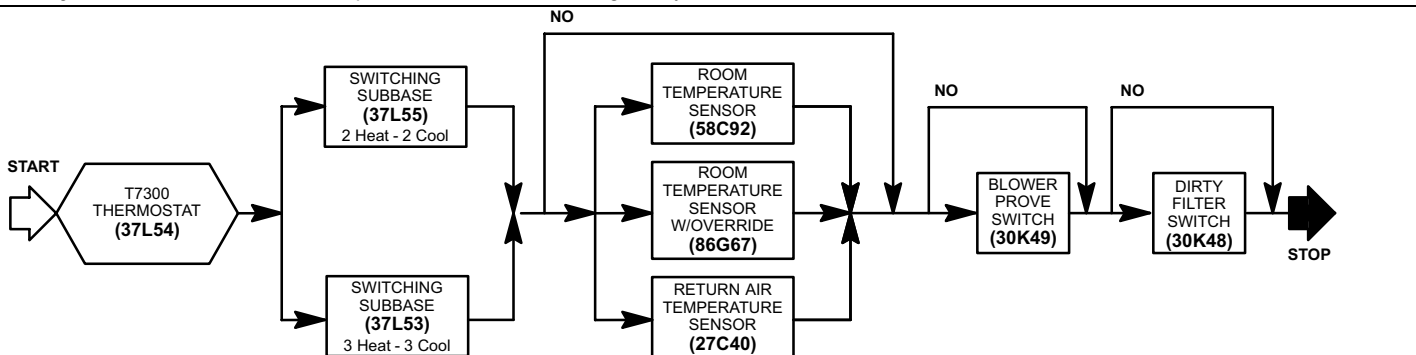
Electronic Thermostat - Any two stage heat/ two stage cool electronic thermostat may be used.	See Price Book
Time Clock - 7 day operation, indicates day and night periods, 2 hour increments, battery back-up	See Price Book
Time Clock - 24 hour night setback operation, 15 minute increments, battery back-up	See Price Book
Blower Proving Switch - Monitors blower operation, locks out unit in case of blower failure	30K49
Dirty Filter Switch - Senses static pressure increase indicating a dirty filter condition	30K48



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

PROGRAMMABLE COMMERCIAL THERMOSTAT

Thermostat - Programmable, internal or optional remote temperature sensing (sensor required), touch sensitive keyboard, automatic switching, °F or °C readout, no anticipator, droop/no droop selection, indicator LED's, hour/day programming, override capabilities, time and operational mode readout, stage status indicators, battery back-up, subbase choice, manual system switch (Heat-Off-Auto-Cool), fan switch (Auto-On)	59N27
Subbase - Selectable staging, indicator LED's, auxiliary relay output for economizer operation	
2 Heat / 2 Cool	37L55
3 Heat / 3 Cool	37L53
Sensor - Room temperature	58C92
Sensor - Room temperature with 3 hour override and setpoint adjustment	86G67
Sensor - Return air temperature	27C40
Blower Proving Switch - Monitors blower operation, locks out unit in case of blower failure	30K49
Dirty Filter Switch - Senses static pressure increase indicating a dirty filter condition	30K48



DIMENSIONS AND WEIGHTS - MM (INCHES)

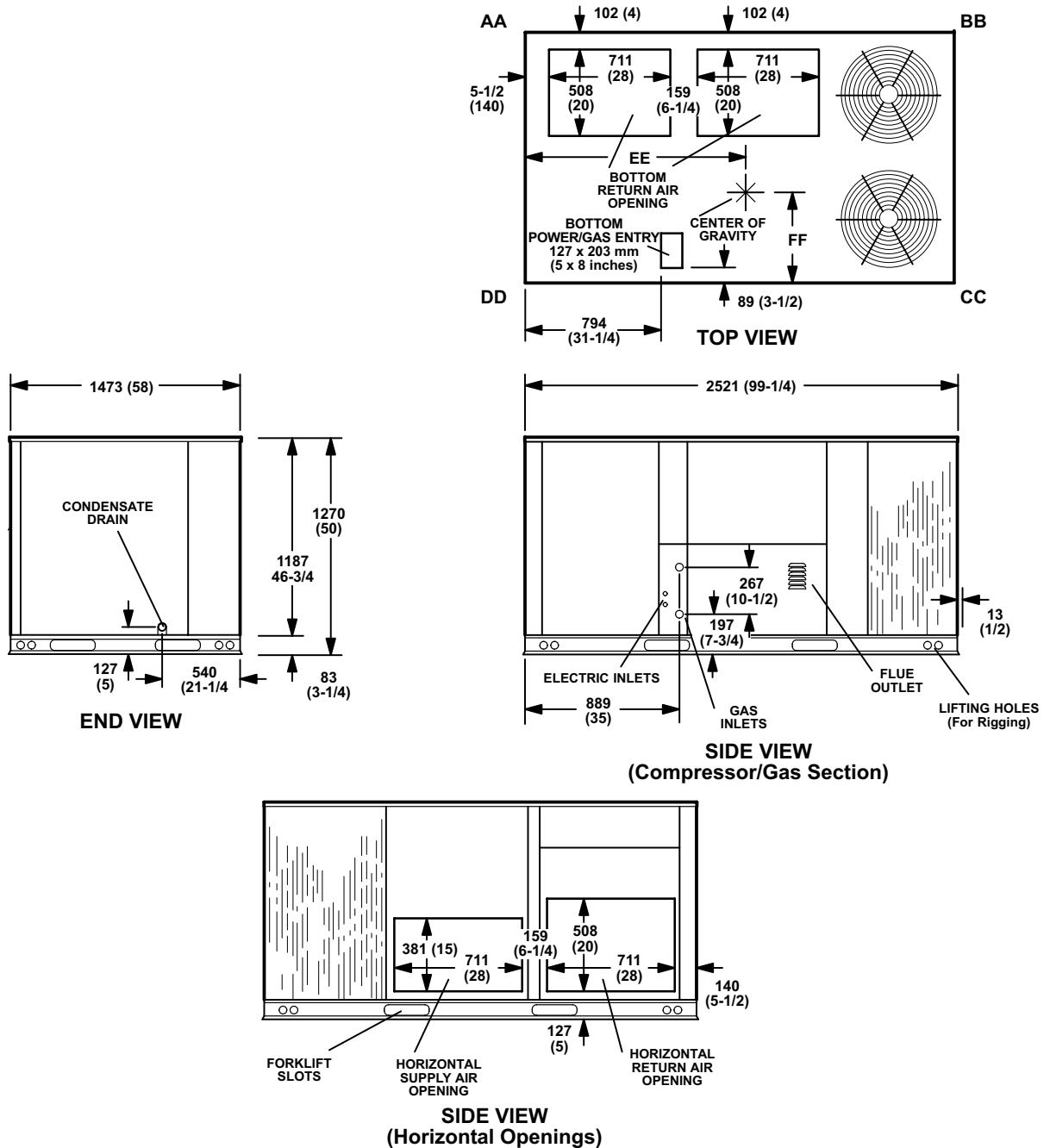
Model Number	WEIGHTS				CORNER WEIGHTS								CENTER OF GRAVITY			
	Net		Shipping		AA		BB		CC		DD		EE		FF	
	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	mm	inch	mm	inch
090/102 Base Unit	590	1300	628	1385	142	314	131	289	149	329	167	368	1194	47	546	21-1/2
090/102 Max. Unit	692	1525	730	1610	173	381	154	339	170	374	195	431	1168	46	597	23-1/2
120 Base Unit	615	1355	653	1440	149	328	136	300	156	343	174	384	1194	47	546	21-1/2
120 Max. Unit	717	1580	755	1665	179	394	160	352	176	387	203	447	1168	46	597	23-1/2
150 Base Unit	630	1390	669	1475	152	336	152	312	160	353	176	389	1207	47-1/2	559	22
150 Max. Unit	733	1615	771	1700	183	403	165	364	181	398	204	450	1181	46-1/2	610	24

ACCESSORY SHIPPING WEIGHTS (add to base unit weight)

High Fire Heat Exchanger	18 kg	40 lbs.	Outdoor Air Damper + Hood	19 kg	42 lbs.
Economizer + Hood	26 kg	58 lbs.	Less than container load	48 kg	105 lbs.

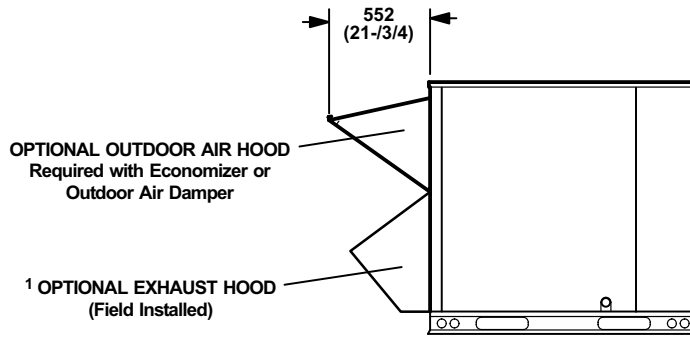
Base Unit - The unit with low fire heat exchanger NO OPTIONS.

Max. Unit - The unit with ALL OPTIONS Installed. (Economizer, High Input Heating and Controls)



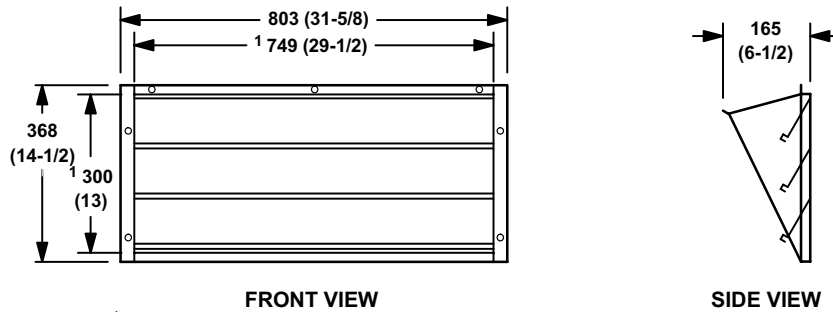
ACCESSORY DIMENSIONS - MM (INCHES)

OPTIONAL OUTDOOR AIR HOOD DETAIL



¹ NOTE — Field Installed in Return Air Duct for Horizontal Applications.

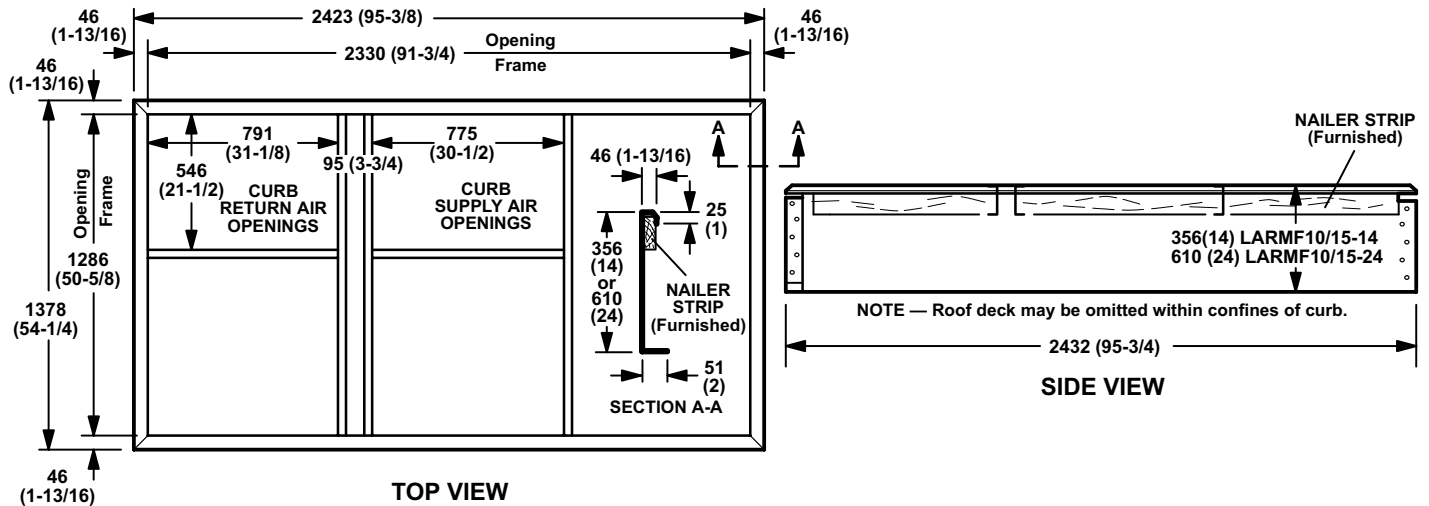
HORIZONTAL BAROMETRIC RELIEF DAMPERS (Field installed in horizontal return air duct adjacent to unit)



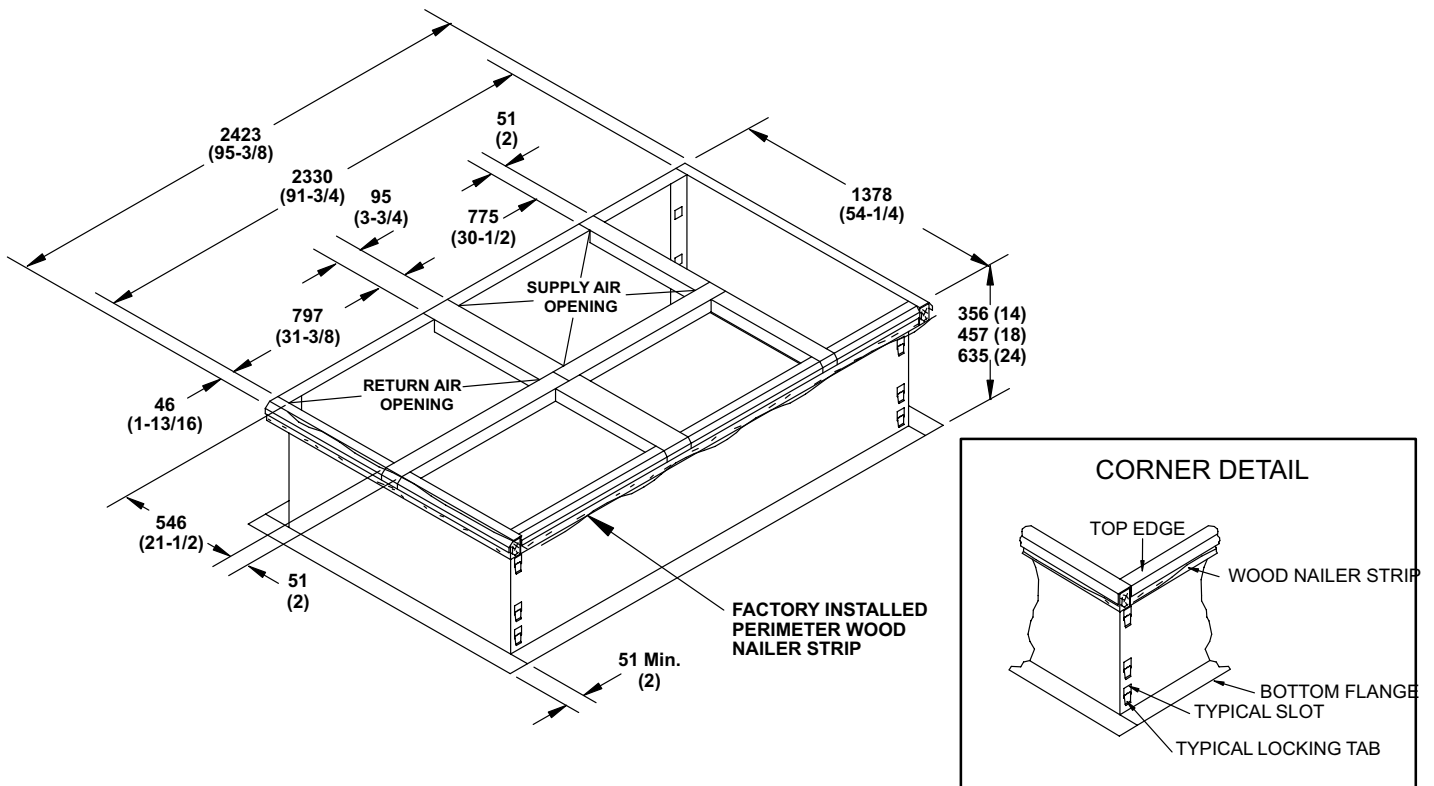
¹ NOTE - Opening size required in return air duct.

ACCESSORY DIMENSIONS - MM (INCHES)

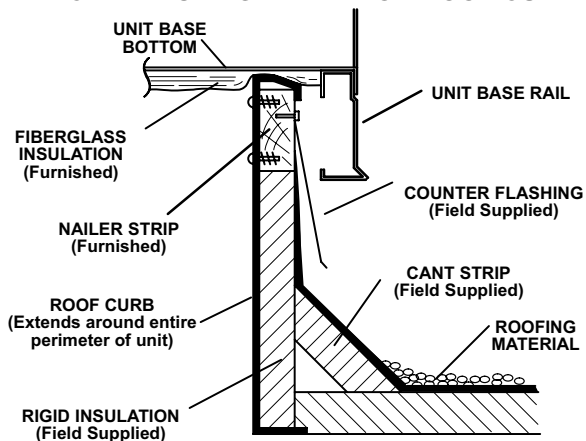
STANDARD ROOF CURBS - DOUBLE DUCT OPENING



CLIPLOCK 1000 ROOF CURBS - DOUBLE DUCT OPENING



TYPICAL FLASHING DETAIL FOR ROOF CURB



ROOF CURB SPECIFICATIONS

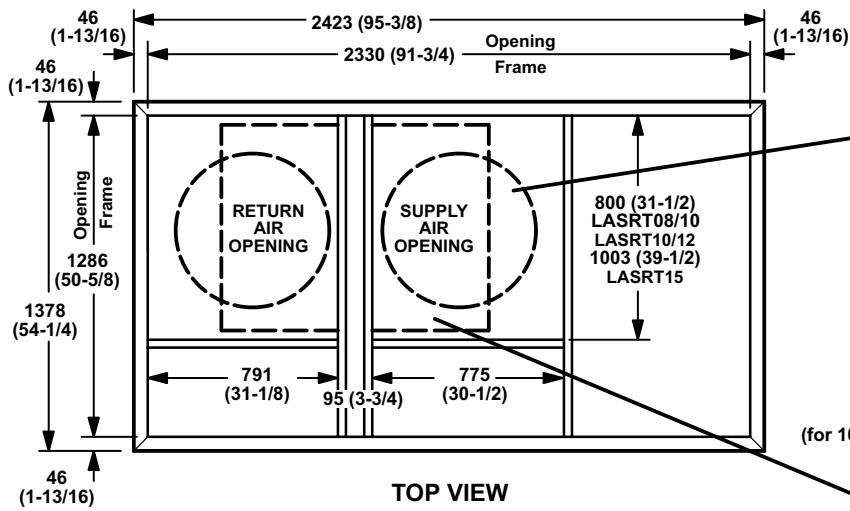
Roof Curb is rigid enough to be spanned over its entire length or cantilevered if supported on both sides of center of gravity.

Roof Curb	LARMF10/15-14	LARMF10/15-24
¹ Moment of inertia (I) (cm ⁴) (in. ⁴)	1634 (39)	6639 (160)
¹ Section modulus $\frac{I}{C}$ (cm ³) (in ³)	90 (5.5)	512 (13.1)
Curb weight. (kg/m) (lb/ft.) of length	8.2 (5.5)	12.7 (8.5)
Design strength (kPa) (psi)	137,900 (20,000)	137,900 (20,000)

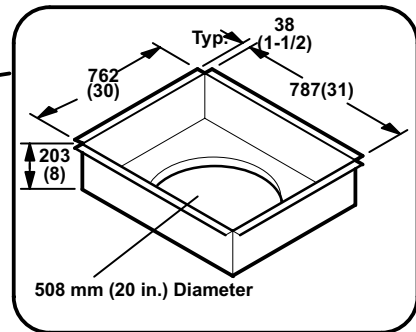
¹ Includes both sides of curb.

ACCESSORY DIMENSIONS - MM (INCHES)

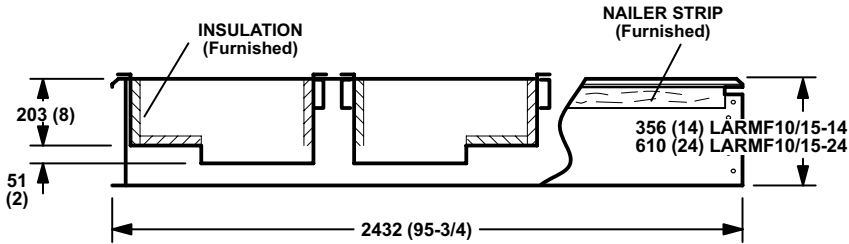
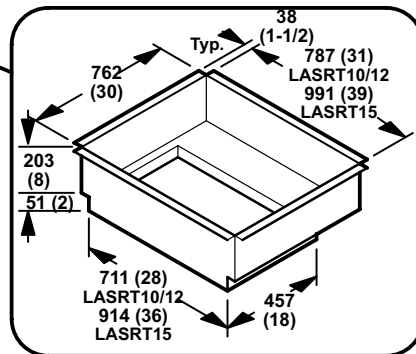
STANDARD ROOF CURBS WITH SUPPLY & RETURN AIR TRANSITIONS FOR CEILING DIFFUSERS



ROUND TRANSITIONS (for 090 models with FD11-95, RTD11-95 Diffusers)



RECTANGULAR TRANSITIONS (for 102 thru 150 models with FD11-135-185, RTD11-135-185 Diffusers)



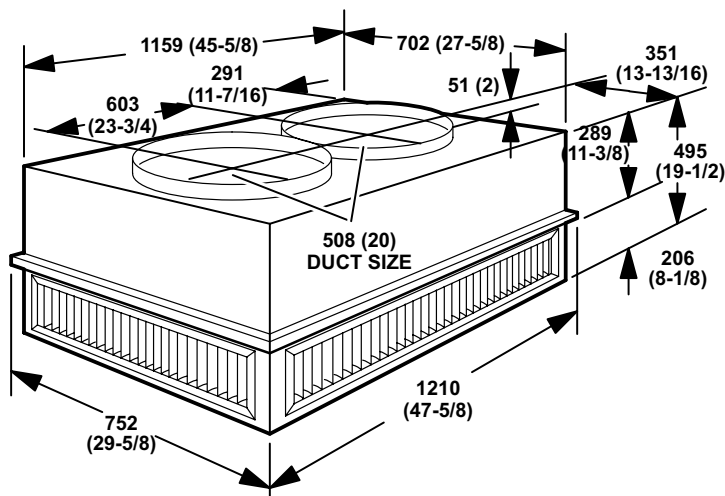
NOTE — Roof deck may be omitted within confines of curb.

SIDE VIEW

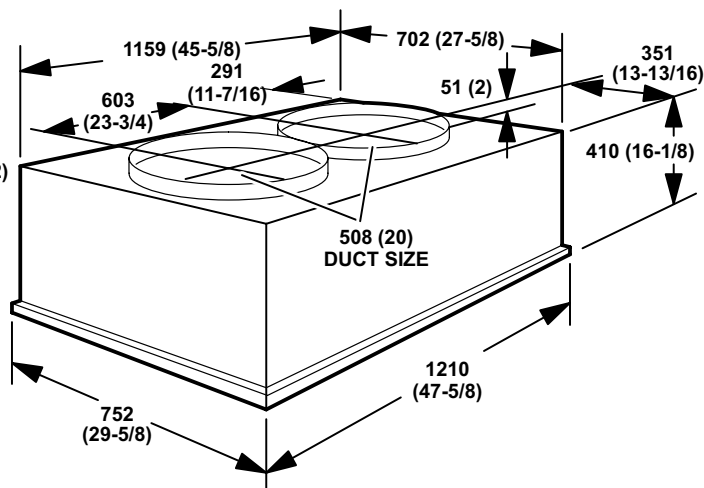
ACCESSORY DIMENSIONS - MM (INCHES)

COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

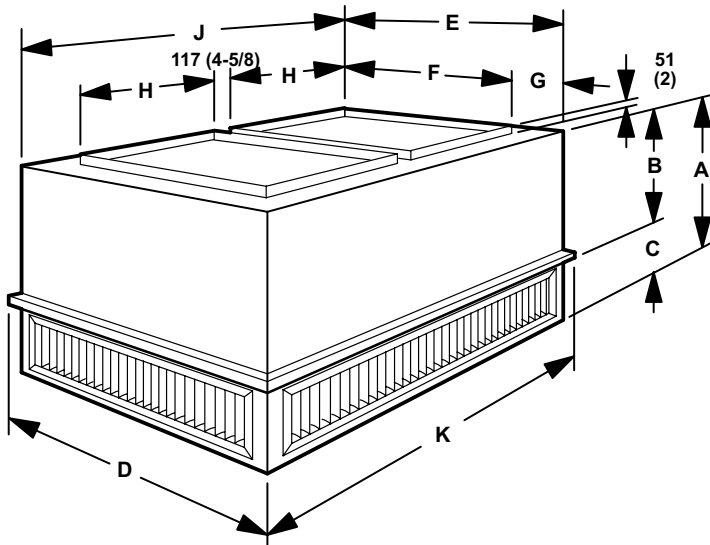
RTD11-95 STEP-DOWN CEILING DIFFUSER



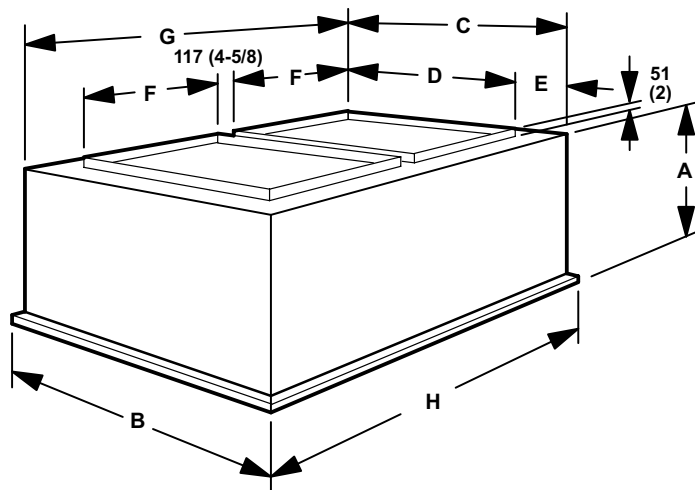
FD11-95 FLUSH CEILING DIFFUSER



**RTD11-135 & RTD11-185
STEP-DOWN CEILING DIFFUSER**



**FD11-135 & FD11-185
FLUSH CEILING DIFFUSER**



Model Number	A		B		C		D		E	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
RTD11-135	711	28	479	18-7/8	232	9-1/8	905	35-5/8	854	33-5/8
RTD11-185	864	34	606	23-7/8	257	10-1/8	1210	47-5/8	1159	45-5/8

Model Number	A		B		C		D	
	mm	inch	mm	inch	mm	inch	mm	inch
FD11-135	613	24-1/8	905	35-5/8	854	33-5/8	711	28
FD11-185	613	30-1/8	1210	47-5/8	1159	45-5/8	914	36

Model Number	F		G		H		J		K	
	mm	inch	mm	inch	mm	inch	mm	inch	mm	inch
RTD11-135	711	28	71	2-13/16	457	18	1159	45-5/8	1210	47-5/8
RTD11-185	914	36	122	4-13/16	457	18	1159	45-5/8	1210	47-5/8

Model Number	E		F		G		H	
	mm	inch	mm	inch	mm	inch	mm	inch
FD11-135	71	2-13/16	457	18	1159	45-5/8	1210	47-5/8
FD11-185	122	4-13/16	457	18	1159	45-5/8	1210	47-5/8



- Lennox Industries Inc.
- 2100 Lake Park Boulevard
- Richardson , Texas, U.S. A. 75080-2254
- Phone 972-497-5000
- Visit us at www.lennox.com