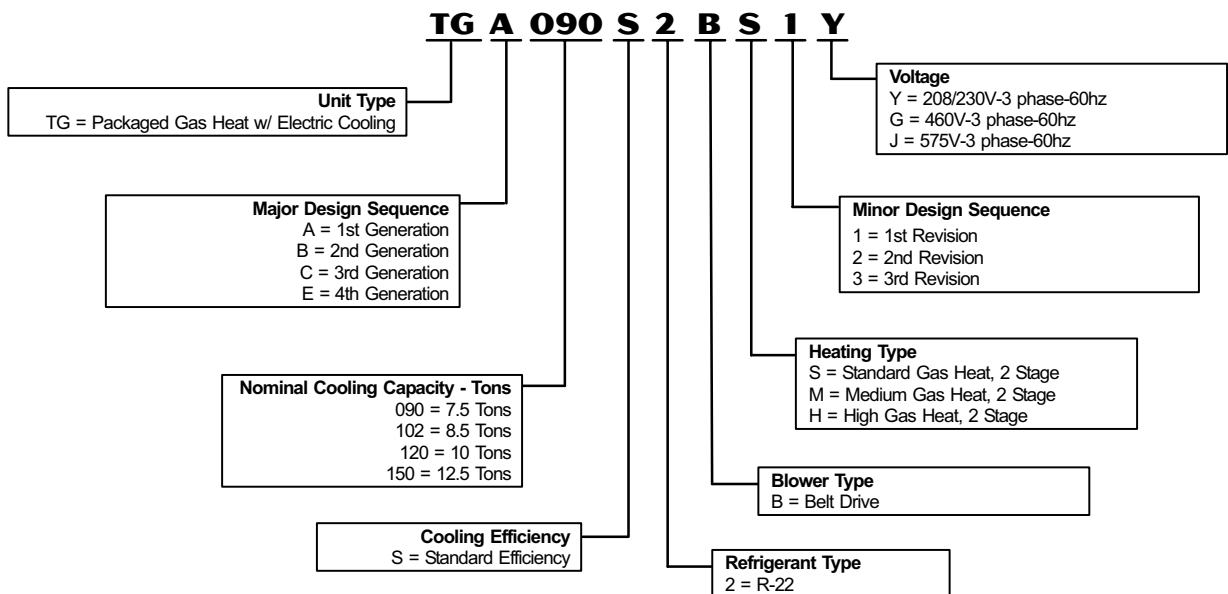


ASHRAE 90.1  
COMPLIANT

**7.5 to 12.5 Tons**  
**Net Cooling Capacity - 90,000 to 140,000 Btuh**  
**Gas Heat Input - 84,500 to 180,000 Btuh**

**MODEL NUMBER IDENTIFICATION**



## FEATURES AND BENEFITS

### CONTENTS

Accessory Air Resistance . . . .	Page 12
Blower Performance . . . . .	Page 11
Cooling Ratings . . . . .	Pages 8-9
Dimensions . . . . .	Pages 18-24
Electrical Data . . . . .	Page 16
Features and Benefits . . . . .	Pages 2-3
High Altitude Information . . . .	Page 10
Installation Clearances . . . . .	Page 15
Model Number Identification . . .	Page 1
Optional Accessories . . . . .	Pages 4-6
Specifications . . . . .	Page 7
Sound Data . . . . .	Page 10
Weights . . . . .	Page 17

### CERTIFICATIONS

ETL and CSA listed. Components bonded for grounding to meet safety standards for servicing required by UL, CSA and National and Canadian Electrical Codes. Gas efficiency ratings verified by CSA. Cooling performance certified in accordance with the ULE certification program, which is based on ARI Standard 340/360-2000.

### 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 - 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, ASTM B117 Standard Method Salt Spray Testing, ASTM 1153 Standard Specification for Methyl Isobutyl Ketone.

### ACCESSORIES - 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.

### COOLING SYSTEM

Designed to maximize sensible and latent cooling performance at design conditions. System can operate from 30°F (-1°C) to 125°F (52°C) 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 circulant 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

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 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 0°F (-17.8°C).

### 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.

## FEATURES AND BENEFITS

### **HEATING SYSTEM - CONTINUED**

#### **Heat Exchanger**

Tubular construction, aluminized steel, life cycle tested.

#### **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 off 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**

(see Specification table for available sizes)

84,500/130,000 Btuh (24.7/38.1 kW)

Standard Heat Gas Input.

117,000/180,000 Btuh (34.3/52.7 kW)

Medium Heat Gas Input

156,000/240,000 Btuh (45.7/70.3 kW)

High Heat Gas Input.

### **ACCESSORIES - 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.

### **ELECTRICAL**

### **REQUIRED SELECTIONS**

#### **Voltage Choice**

Specify when ordering base unit.

### **ACCESSORIES - Field Installed**

#### **Circuit Breakers**

HACR circuit breaker without power distribution lugs. Accessible from outside of unit, but mounted within the cabinet. Weatherproof cover furnished. Main power to the unit is field connected to the circuit breaker which allows all power to be shutoff for service. Circuit breaker is sized to the unit maximum overcurrent protection (MOCP) size.

#### **Disconnect Switch**

Accessible from outside of unit, but mounted within the cabinet. Weatherproof cover furnished.

#### **GFI Service Outlets (2)**

115v ground fault circuit interrupter (GFI) type, field wired. Mounted internal within the cabinet.

### **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.

#### **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.

### **AIR FILTERS**

Disposable 2 inch (51 mm) filters furnished as standard.

### **BLOWER**

Supply air fan provides a wide range of air flow capability.

#### **Supply Air Motor**

Overload protected with permanently lubricated ball bearings ensures durable operation. Belt drive motors that meet EPACT efficiency requirements maximize air performance and save energy.

#### **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.

### **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 (7.5-12.5 tons), 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.

### **WARRANTY**

Limited ten years on aluminized steel heat exchanger. Limited five years on compressors. Limited one year all other covered components.

## **OPTIONAL ACCESSORIES**

### **ECONOMIZER/OUTDOOR AIR/EXHAUST ACCESSORIES**

**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 55°F (13°C) discharge air temperature.

#### **Economizer Control**

**Supply Air Temperature Control** - Senses outdoor air temperature and enables the economizer if the temperature is less than the set point of the control.

**Differential Air Temperature Control** - Two temperature sensors allow the control to select between outdoor air or return air, whichever has lower temperature.

**Outdoor Enthalpy Control** - Senses outdoor air enthalpy and enables economizer if the 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 55°F (13°C) discharge air temperature, while in free-cooling.

**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 Damper Section**

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

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

#### **Economizer and Outdoor Air Damper Application Note**

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

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

**Outdoor Air Hood** - Required with Economizer and Outdoor Air Damper Sections. Two cleanable aluminum mesh fresh air filter furnished.

**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 4200 cfm (1980 L/s) at 0 in. wg. (0 Pa). 1/3 hp (249 W) motor. 300 Watts total input.

**Indoor Air Quality (CO<sub>2</sub>) Sensor** - Monitors CO<sub>2</sub> 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 14 inch (356 mm) and 24 inch (610 mm) heights.

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

**OPTIONS / ACCESSORIES**

Item		090	102	120	150
<b>COOLING SYSTEM</b>					
Compressor Crankcase Heater	208/230V - <b>76M34</b>	x	x	x	x
	460V - <b>76M35</b>	x	x	x	x
	575V - <b>76M36</b>	x	x	x	x
Condensate Drain Trap	PVC - <b>37K90</b>	x	x	x	x
	Copper - <b>48K14</b>	x	x	x	x
Corrosion Protection		○	○	○	○
Efficiency	Standard	○	○	○	○
High Pressure Switch	<b>73M75</b>	x	x	x	x
Low Ambient Kit	<b>73M76</b>	x	x	x	x
Refrigerant Type	R-22	○	○	○	○
<b>HEATING SYSTEM</b>					
Combustion Air Intake Extensions	<b>89L97</b>	x	x	x	x
Gas Heat Input	Standard - 130/260 kBtuh input	○	○	○	○
	Medium - 180/360 kBtuh input	○	○	○	○
	High - 240/480 kBtuh input	○	○	○	○
Gas Piping Kit	Thru roof curb - <b>76M16</b>	x	x	x	x
	Thru unit base - <b>76M17</b>	x	x	x	x
	180/360 kBtuh input - <b>72M95</b>	x	x	x	x
	240/480 kBtuh input - <b>72M96</b>	x	x	x	x
Stainless Steel Heat Exchanger		○	○	○	○
Vertical Vent Extension	<b>73M72</b>	x	x	x	x
<b>BLOWER - SUPPLY AIR</b>					
Constant Air Volume	2 hp Standard Efficiency	○	○	○	
	3 hp Standard Efficiency	○	○	○	○
	5 hp Standard Efficiency			○	○
<b>CABINET</b>					
Coil Guards	<b>69M44</b>	x	x	x	x
Hail Guards	<b>69M45</b>	x	x	x	x
Horizontal Discharge Conversion Kit	<b>56K53</b>	x	x	x	x
<b>CONTROLS</b>					
Blower Proving Switch	<b>30K49</b>	x	x	x	x
Dirty Filter Switch	<b>30K48</b>	x	x	x	x
Smoke Detector - Supply	<b>70K87</b>	x	x	x	x
Smoke Detector - Return	<b>70K86</b>	x	x	x	x
<b>Indoor Air Quality (CO<sub>2</sub>) Sensors</b>					
CO <sub>2</sub> Sensor Duct Mounting Kit	<b>85L43</b>	x	x	x	x
Sensor - white case CO <sub>2</sub> display	<b>77N39</b>	x	x	x	x
Sensor - white case no display	<b>87N53</b>	x	x	x	x
Sensor - black case CO <sub>2</sub> display	<b>87N52</b>	x	x	x	x
Sensor - black case, no display	<b>87N54</b>	x	x	x	x
Aspiration Box for duct mounting	<b>90N43</b>	x	x	x	x
Handheld CO <sub>2</sub> Monitor	<b>70N93</b>	x	x	x	x
<b>ELECTRICAL</b>					
Voltage 60 hz	208/230V - 3 phase	○	○	○	○
	460V - 3 phase	○	○	○	○
	575V - 3 phase	○	○	○	○
HACR Circuit Breakers	25 to 80 Amp size available	x	x	x	x
Disconnect Switch	80 Amp - <b>84M13</b>	x	x	x	x
GFI Service Outlets	<b>74M70</b>	⊗	⊗	⊗	⊗

**NOTE** - The catalog and part numbers that appear here are for ordering field installed accessories only.

⊗ - Field Installed or Configure to Order (factory installed)

○ - Configure to Order (Factory Installed)

x - Field Installed.

**OPTIONS / ACCESSORIES**

Item		090	102	120	150
<b>ECONOMIZER</b>					
<b>Economizer</b>					
Economizer - Order LAOAH Hood Separately	TAREMD10/15 - <b>73M73</b>	⊗	⊗	⊗	⊗
<b>Economizer Controls</b>					
Differential Enthalpy	C1SNSR07AE - <b>86M33</b>	x	x	x	x
Single Enthalpy	C1SNSR06AE - <b>86M32</b>	x	x	x	x
Single Sensible	<b>76M37</b>	x	x	x	x
Differential Sensible	Furnished factory installed	○	○	○	○
Differential Sensible	order two kits - <b>76M37</b>	x	x	x	x
Modulating Sensor Kit	<b>73M77</b>	x	x	x	x
<b>Barometric Relief</b>					
Down-Flow Barometric Relief Dampers - Order Hood Separately	LAGED10/15 - <b>53K03</b>	⊗	⊗	⊗	⊗
Hood for Down-Flow LAGED	LAGEH09/15 - <b>88K79</b>	x	x	x	x
Horizontal Barometric Relief Dampers - Hood Furnished	LAGEDH03/15 - <b>53K04</b>	x	x	x	x
<b>OUTDOOR AIR</b>					
<b>Outdoor Air Dampers</b>					
Damper Section (down-flow) - Motorized Operation Order LAOAH Hood Separately	TAOADM10/15 - <b>73M74</b>	⊗	⊗	⊗	⊗
Damper Section (down-flow) - Manual Operation Order LAOAH Hood Separately	LAOAD10/15 - <b>66K69</b>	⊗	⊗	⊗	⊗
<b>Outdoor Air Hoods for Economizers and Outdoor Air Dampers</b>					
Outdoor Air Hood (Number of Filters) 16 x 25 x 1 in. (406 x 635 x 25 mm)	LAOAH10/15 (2) - <b>53K05</b>	⊗	⊗	⊗	⊗
<b>POWER EXHAUST FANS</b>					
Standard Static	208/230V - LAPEF10/15 - <b>73M32</b>	⊗	⊗	⊗	⊗
	460V - LAPEF10/15 - <b>73M33</b>	⊗	⊗	⊗	⊗
	575V - LAPEF10/15 - <b>73M35</b>	⊗	⊗	⊗	⊗
<b>ROOF CURBS - CLIPLOCK 1000</b>					
<b>Down-Flow</b>					
14 in. (356 mm) height	LARMF10/15S-14 - <b>65K34</b>	x	x	x	x
18 in. (457 mm) height	LARMF10/15S-18 - <b>65K35</b>	x	x	x	x
24 in. (610 mm) height	LARMF10/15S-24 - <b>65K36</b>	x	x	x	x
<b>ROOF CURBS - STANDARD</b>					
<b>Down-Flow</b>					
14 in. (356 mm) height	LARMF10/15-14 - <b>53K50</b>	x	x	x	x
24 in. (610 m) height	LARMF10/15-24 - <b>49K54</b>	x	x	x	x
<b>CEILING DIFFUSERS</b>					
Step-Down Order one	RTD11-95 - <b>29G04</b>	x			
	RTD11-135 - <b>29G05</b>		x	x	
	RTD11-185 - <b>29G06</b>				x
Flush Order one	FD11-95 - <b>29G08</b>	x			
	FD11-135 - <b>29G09</b>		x	x	
	FD11-185 - <b>29G10</b>				x
Transitions (Supply and Return) Order one	LASRT08/10 - <b>24L14</b>	x			
	LASRT10/12 - <b>49K55</b>		x	x	
	LASRT15 - <b>49K56</b>				x

**NOTE** - The catalog and part numbers that appear here are for ordering field installed accessories only.

X - Field Installed

## SPECIFICATIONS

General Data		Nominal Tonnage	7.5 Ton	8.5 Ton	10 Ton	12.5 Ton
		Model No.	TGA090S2B	TGA102S2B	TGA120S2B	TGA150S2B
		Efficiency Type	Standard	Standard	Standard	Standard
<b>Cooling Performance</b>	Gross Cooling Capacity - Btuh (kW)		93,000 (27.2)	104,000 (30.5)	126,000 (36.6)	145,000 (42.5)
	<sup>1</sup> Net Cooling Capacity - Btuh (kW)		90,000 (26.4)	100,000 (29.3)	120,000 (35.2)	138,000 (40.4)
	ARI Rated Airflow - cfm (L/s)		3000 (1415)	3400 (1605)	3800 (1795)	4250 (2005)
	<sup>3</sup> Sound Rating Number (dB)		88	88	88	88
	Total Unit Power (kW)		8.9	9.9	11.8	14.5
	<sup>1</sup> EER (Btuh/Watt)		10.1	10.1	10.1	9.5
<sup>2</sup> Integrated Part Load Value (Btuh/Watt)		10.5	10.5	10.5	9.2	
Refrigerant Charge Furnished (HCFC-22)	Circuit 1		7 lbs. 0 oz. (3.18 kg)	7 lbs. 8 oz. (3.40 kg)	10 lbs. 0 oz. (4.53 kg)	13 lbs. 0 oz. (5.90 kg)
	Circuit 2		6 lbs. 8 oz. (2.95 kg)	7 lbs. 0 oz. (3.18 kg)	10 lbs. 0 oz. (4.53 kg)	12 lbs. 0 oz. (5.44 kg)
<b>Compressor - Number &amp; Type</b>			(2) Scroll	(2) Scroll	(2) Scroll	(2) Scroll
<b>Condenser Coil</b>	Net face area - sq. ft. (m <sup>2</sup> )		29.3 (2.72) total	29.3 (2.72) total	29.3 (2.72) total	29.3 (2.72) total
	Tube diameter - in. (mm)		3/8 (9.5)	3/8 (9.5)	3/8 (9.5)	3/8 (9.5)
	Number of rows		1	1	2	3
	Fins per inch (m)		20 (787)	20 (787)	20 (787)	20 (787)
<b>Condenser Fans</b>	Motor horsepower (W)		(2) 1/3 (249)	(2) 1/3 (249)	(2) 1/3 (249)	(2) 1/2 (372)
	Motor rpm		1075	1075	1075	1075
	Total Motor watts		700	700	700	1150
	Diameter - in. (mm) - no. of blades		(2) 24 (610) - 3	(2) 24 (610) - 3	(2) 24 (610) - 3	(2) 24 (610) - 3
	Total air volume - cfm (L/s)		8000 (3775)	8000 (3775)	8000 (3775)	9000 (4245)
<b>Evaporator Coil</b>	Net face area - sq. ft. (m <sup>2</sup> )		10.5 (0.98) total	10.5 (0.98) total	10.5 (0.98) total	10.5 (0.98) total
	Tube diameter - in. (mm)		3/8 (9.5)	3/8 (9.5)	3/8 (9.5)	3/8 (9.5)
	Number of rows		3	3	4	4
	Fins per inch (m)		14 (551)	14 (551)	14 (551)	14 (551)
	Drain Connection - no. & size		(1) 1 in. NPT coupling		(1) 1 in. NPT coupling	
Expansion device type		Balanced Port Thermostatic Expansion Valve, removeable power head				
<b>Standard Indoor Blower and Drive</b>	<sup>4</sup> Belt Drive - Nominal motor output		2 hp (1.5 kW)	2 hp (1.5 kW)	3 hp (2.2 kW)	5 hp (3.7 kW)
	Maximum usable output (US Only)		2.3 hp (1.7 kW)	2.3 hp (1.7 kW)	3.45 hp (2.6 kW)	5.75 hp (4.3 kW)
	Drive kit - rpm range		kit #1 - 680-925	kit #1 - 680-925	kit #3 - 895-1120	kit #6 - 1100-1395
	Wheel nominal diameter x width - in. (mm)		(1) 15 x 15 (381 x 381)		(1) 15 x 15 (381 x 381)	
<b>Filters</b>	Type of filter		Disposable			
	Number and size - in. (mm)		(4) 18 x 24 x 2 (457 x 610 x 51)	(4) 18 x 24 x 2 (457 x 610 x 51)	(4) 18 x 24 x 2 (457 x 610 x 51)	(4) 18 x 24 x 2 (457 x 610 x 51)
<b>Electrical characteristics</b>			208/230V, 460V or 575V - 60 hertz - 3 phase			

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

<sup>1</sup> Certified in accordance with the ULE certification program, which is based on ARI Standard 340/360, 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.

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

<sup>3</sup> Sound Rating Number rated in accordance with test conditions included in ARI Standard 270.

<sup>4</sup> Maximum usable output of motors furnished by Ducane are shown. In Canada, nominal motor output is also maximum usable motor output. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

## GAS HEATING DATA

Use with Model No.		TGA090S2B TGA102S2B	TGA090S2B, TGA102S2B TGA120S2B, TGA150S2B	TGA120S2B TGA150S2B
Heat Input Type		<b>Standard (S)</b>	<b>Medium (M)</b>	<b>High (H)</b>
Input - Btuh (kW)	First Stage	84,500 (24.8)	117,000 (34.3)	156,000 (45.7)
	Second Stage	130,000 (38.1)	180,000 (52.7)	240,000 (70.3)
Output - Btuh (kW)	Second Stage	104,000 (30.5)	144,000 (42.2)	192,000 (56.3)
CSA Thermal Efficiency		80.0%		
Gas Supply Connections		3/4 in. npt		
Gas Supply Pressure	Natural	7 in. w.c. (1.7 kPa)		
	LPG/Propane	11 in. w.c. (2.7 kPa)		

# 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.

## 7.5 TON STANDARD EFFICIENCY - COOLING CAPACITY - ONE COMPRESSOR OPERATING

TGA090S

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			65°F (18°C)						75°F (24°C)						85°F (29°C)						95°F (35°C)					
	Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb				
	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C		
63°F (17°C)	2400	1135	48.5	14.2	2.49	.63	.77	.91	47.0	13.8	2.77	.64	.78	.93	45.5	13.3	3.10	.64	.80	.95	43.9	12.9	3.47	.65	.81	.97
	3000	1415	50.3	14.7	2.53	.67	.85	.99	48.8	14.3	2.81	.68	.86	1.00	47.2	13.8	3.13	.70	.88	1.00	45.6	13.4	3.51	.71	.90	1.00
	3600	1700	51.8	15.2	2.55	.73	.92	1.00	50.3	14.7	2.84	.74	.94	1.00	48.6	14.2	3.17	.76	.96	1.00	46.9	13.7	3.54	.77	.97	1.00
67°F (19°C)	2400	1135	51.5	15.1	2.55	.50	.61	.73	50.0	14.7	2.83	.50	.61	.74	48.4	14.2	3.16	.51	.62	.76	46.6	13.7	3.53	.51	.63	.77
	3000	1415	53.2	15.6	2.58	.52	.65	.81	51.6	15.1	2.87	.53	.66	.83	49.8	14.6	3.20	.53	.67	.84	48.1	14.1	3.57	.54	.68	.87
	3600	1700	54.4	15.9	2.61	.54	.70	.88	52.7	15.4	2.90	.55	.72	.90	50.9	14.9	3.22	.56	.73	.92	49.1	14.4	3.60	.57	.75	.94
71°F (22°C)	2400	1135	54.8	16.1	2.62	.38	.48	.58	53.1	15.6	2.90	.38	.49	.59	51.4	15.1	3.23	.38	.49	.60	49.6	14.5	3.61	.38	.50	.61
	3000	1415	56.5	16.6	2.65	.39	.51	.63	54.8	16.1	2.94	.39	.51	.64	52.9	15.5	3.27	.39	.52	.65	51.0	14.9	3.65	.39	.53	.66
	3600	1700	57.7	16.9	2.68	.40	.53	.68	55.8	16.4	2.97	.40	.54	.69	53.9	15.8	3.30	.40	.55	.71	52.0	15.2	3.67	.41	.56	.73

## 7.5 TON STANDARD EFFICIENCY - COOLING CAPACITY - ALL COMPRESSORS OPERATING

TGA090S

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			85°F (29°C)						95°F (35°C)						105°F (41°C)						115°F (46°C)					
	Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb				
	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C		
63°F (17°C)	2400	1135	88.0	25.8	6.29	.65	.79	.94	84.9	24.9	7.04	.65	.81	.96	81.7	23.9	7.92	.66	.83	.98	78.2	22.9	8.93	.67	.85	.99
	3000	1415	91.3	26.8	6.36	.69	.87	1.00	88.1	25.8	7.13	.71	.89	1.00	84.7	24.8	8.00	.72	.92	1.00	81.2	23.8	9.02	.75	.94	1.00
	3600	1700	94.0	27.5	6.43	.75	.94	1.00	90.7	26.6	7.18	.77	.96	1.00	87.4	25.6	8.07	.79	.98	1.00	83.9	24.6	9.10	.81	1.00	1.00
67°F (19°C)	2400	1135	93.5	27.4	6.41	.51	.62	.75	90.2	26.4	7.17	.51	.63	.77	86.7	25.4	8.06	.52	.64	.79	83.0	24.3	9.07	.53	.65	.81
	3000	1415	96.4	28.3	6.49	.53	.67	.83	93.0	27.3	7.25	.54	.68	.86	89.3	26.2	8.13	.55	.70	.88	85.4	25.0	9.16	.56	.72	.90
	3600	1700	98.5	28.9	6.54	.56	.73	.91	95.0	27.8	7.31	.57	.74	.93	91.2	26.7	8.19	.58	.76	.96	87.2	25.6	9.23	.59	.79	.98
71°F (22°C)	2400	1135	99.4	29.1	6.55	.39	.49	.60	95.9	28.1	7.33	.39	.50	.61	92.2	27.0	8.22	.39	.50	.62	88.3	25.9	9.25	.39	.51	.63
	3000	1415	102.3	30.0	6.63	.39	.52	.65	98.7	28.9	7.41	.40	.53	.66	94.7	27.8	8.30	.40	.54	.67	90.6	26.6	9.33	.40	.55	.69
	3600	1700	104.3	30.6	6.70	.40	.55	.70	100.6	29.5	7.46	.41	.56	.72	96.5	28.3	8.36	.41	.57	.74	92.1	27.0	9.39	.42	.58	.76

## 8.5 TON STANDARD EFFICIENCY - COOLING CAPACITY - ONE COMPRESSOR OPERATING

TGA102S

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			65°F (18°C)						75°F (24°C)						85°F (29°C)						95°F (35°C)					
	Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb				
	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C		
63°F (17°C)	2720	1285	51.6	15.1	2.71	.57	.73	.92	49.9	14.6	3.01	.58	.76	.94	48.2	14.1	3.35	.58	.78	.97	46.4	13.6	3.73	.59	.80	.99
	3400	1605	53.5	15.7	2.75	.61	.84	1.00	51.8	15.2	3.05	.63	.86	1.00	50.0	14.7	3.39	.65	.89	1.00	48.2	14.1	3.77	.67	.91	1.00
	4080	1925	55.1	16.1	2.78	.69	.93	1.00	53.3	15.6	3.08	.70	.95	1.00	51.5	15.1	3.42	.73	.98	1.00	49.7	14.6	3.81	.75	.99	1.00
67°F (19°C)	2720	1285	54.8	16.1	2.78	.45	.55	.69	53.0	15.5	3.07	.45	.56	.70	51.2	15.0	3.41	.46	.56	.72	49.2	14.4	3.80	.46	.57	.75
	3400	1605	56.5	16.6	2.81	.47	.59	.79	54.6	16.0	3.11	.48	.60	.81	52.7	15.4	3.45	.48	.62	.84	50.7	14.9	3.84	.49	.64	.87
	4080	1925	57.7	16.9	2.84	.49	.65	.89	55.8	16.4	3.14	.50	.67	.91	53.8	15.8	3.48	.51	.70	.94	51.7	15.2	3.87	.52	.72	.96
71°F (22°C)	2720	1285	58.3	17.1	2.85	.34	.43	.53	56.4	16.5	3.15	.34	.44	.54	54.5	16.0	3.49	.34	.44	.54	52.4	15.4	3.88	.34	.45	.55
	3400	1605	60.0	17.6	2.88	.35	.46	.57	58.0	17.0	3.18	.35	.46	.58	55.9	16.4	3.53	.35	.47	.59	53.8	15.8	3.92	.35	.48	.61
	4080	1925	61.1	17.9	2.91	.36	.49	.62	59.1	17.3	3.21	.36	.49	.64	57.0	16.7	3.55	.36	.50	.67	54.7	16.0	3.94	.36	.51	.69

## 8.5 TON STANDARD EFFICIENCY - COOLING CAPACITY - ALL COMPRESSORS OPERATING

TGA102S

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			85°F (29°C)						95°F (35°C)						105°F (41°C)						115°F (46°C)					
	Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb				
	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C		
63°F (17°C)	2720	1285	98.8	29.0	6.86	.67	.83	.99	95.2	27.9	7.64	.68	.85	1.00	91.2	26.7	8.56	.69	.87	1.00	87.1	25.5	9.58	.71	.90	1.00
	3400	1605	102.5	30.0	6.94	.72	.92	1.00	98.8	29.0	7.73	.74	.94	1.00	94.7	27.8	8.64	.76	.97	1.00	90.4	26.5	9.68	.78	.99	1.00
	4080	1925	105.6	30.9	7.00	.78	.99	1.00	101.8	29.8	7.80	.81	1.00	1.00	97.9	28.7	8.72	.83	1.00	1.00	93.7	27.5	9.78	.86	1.00	1.00
67°F (19°C)	2720	1285	105.0	30.8	6.99	.52	.64	.78	101.0	29.6	7.78	.53	.66	.80	96.7	28.3	8.69	.54	.67	.83	92.2	27.0	9.74	.54	.68	.86
	3400	1605	108.1	31.7	7.06	.55	.70	.88	104.0	30.5	7.87	.56	.71	.90	99.6	29.2	8.78	.57	.73	.93	94.8	27.8	9.82	.58	.75	.96
	4080	1925	110.4	32.4	7.13	.58	.76	.96	106.1	31.1	7.92	.59	.78	.98	101.6	29.8	8.83	.60	.80	1.00	96.7	28.3	9.88	.61	.83	1.00
71°F (22°C)	2720	1285	111.7	32.7	7.15	.39	.51	.62	107.5	31.5	7.95	.39	.51	.63	103.1	30.2	8.87	.40	.52	.64	98.2	28.8	9.91	.40	.53	.66
	3400	1605	114.8	33.6	7.23	.40	.54	.67	110.4	32.4	8.03	.41	.55	.69	105.8	31.0	8.95	.41	.56	.70	100.6	29.5	9.99	.41	.57	.73
	4080	1925	117.0	34.3	7.28	.41	.57	.73	112.4	32.9	8.08	.42	.58	.75	107.5	31.5	9.00	.42	.59	.78	102.2	30.0	10.05	.43	.61	.81

# 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.

## 10 TON STANDARD EFFICIENCY - COOLING CAPACITY - ONE COMPRESSOR OPERATING

TGA120S

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			65°F (18°C)						75°F (24°C)						85°F (29°C)						95°F (35°C)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
			kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C
63°F (17°C)	3200	1510	62.7	18.4	3.27	.65	.80	.95	61.2	17.9	3.58	.65	.81	.97	59.3	17.4	3.94	.66	.82	.98	57.2	16.8	4.35	.67	.85	1.00
	4000	1890	65.0	19.0	3.32	.70	.89	1.00	63.5	18.6	3.62	.71	.90	1.00	61.6	18.1	3.98	.72	.92	1.00	59.4	17.4	4.40	.74	.94	1.00
	4800	2265	67.0	19.6	3.35	.76	.96	1.00	65.5	19.2	3.66	.77	.98	1.00	63.6	18.6	4.01	.79	.99	1.00	61.5	18.0	4.44	.81	1.00	1.00
67°F (19°C)	3200	1510	66.4	19.5	3.34	.51	.62	.76	64.8	19.0	3.65	.51	.63	.77	62.8	18.4	4.01	.52	.64	.78	60.6	17.8	4.42	.52	.65	.80
	4000	1890	68.4	20.0	3.39	.54	.67	.85	66.8	19.6	3.68	.54	.68	.86	64.8	19.0	4.04	.55	.69	.88	62.4	18.3	4.46	.55	.71	.91
	4800	2265	69.9	20.5	3.41	.57	.74	.94	68.2	20.0	3.71	.57	.75	.95	66.1	19.4	4.07	.58	.77	.96	63.7	18.7	4.49	.59	.79	.98
71°F (22°C)	3200	1510	70.5	20.7	3.43	.38	.49	.60	68.9	20.2	3.72	.38	.50	.61	66.8	19.6	4.08	.38	.50	.61	64.5	18.9	4.50	.39	.51	.63
	4000	1890	72.4	21.2	3.47	.39	.52	.65	70.8	20.7	3.76	.39	.53	.66	68.7	20.1	4.12	.40	.53	.67	66.2	19.4	4.53	.40	.54	.68
	4800	2265	73.7	21.6	3.49	.40	.56	.71	72.0	21.1	3.79	.41	.56	.73	69.8	20.5	4.14	.41	.57	.74	67.4	19.8	4.56	.41	.58	.76

## 10 TON STANDARD EFFICIENCY - COOLING CAPACITY - ALL COMPRESSORS OPERATING

TGA120S

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			85°F (29°C)						95°F (35°C)						105°F (41°C)						115°F (46°C)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
			kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C
63°F (17°C)	3200	1510	120.4	35.3	8.29	.68	.83	.98	116.1	34.0	9.16	.69	.85	.99	111.5	32.7	10.16	.70	.87	1.00	106.7	31.3	11.28	.71	.89	1.00
	4000	1890	125.1	36.7	8.37	.73	.92	1.00	120.6	35.3	9.26	.75	.94	1.00	115.8	33.9	10.25	.77	.96	1.00	111.1	32.6	11.40	.79	.98	1.00
	4800	2265	129.0	37.8	8.44	.80	.99	1.00	124.7	36.5	9.33	.81	1.00	1.00	120.1	35.2	10.35	.84	1.00	1.00	115.5	33.8	11.50	.86	1.00	1.00
67°F (19°C)	3200	1510	127.6	37.4	8.43	.53	.65	.79	123.1	36.1	9.31	.54	.66	.81	118.2	34.6	10.31	.54	.68	.83	113.0	33.1	11.45	.55	.69	.85
	4000	1890	131.6	38.6	8.50	.56	.71	.88	126.8	37.2	9.38	.57	.72	.90	121.7	35.7	10.39	.58	.74	.92	116.3	34.1	11.55	.59	.76	.95
	4800	2265	134.4	39.4	8.56	.59	.77	.96	129.5	38.0	9.45	.60	.79	.98	124.2	36.4	10.45	.61	.81	.99	118.8	34.8	11.61	.63	.84	1.00
71°F (22°C)	3200	1510	135.7	39.8	8.58	.40	.51	.63	131.0	38.4	9.47	.40	.52	.64	125.8	36.9	10.48	.40	.53	.65	120.4	35.3	11.64	.40	.54	.67
	4000	1890	139.6	40.9	8.67	.41	.55	.69	134.6	39.4	9.54	.41	.56	.70	129.1	37.8	10.57	.42	.57	.72	123.5	36.2	11.72	.42	.58	.74
	4800	2265	142.0	41.6	8.71	.42	.58	.75	137.0	40.2	9.60	.42	.59	.77	131.3	38.5	10.62	.43	.61	.79	125.5	36.8	11.77	.44	.62	.81

## 12.5 TON STANDARD EFFICIENCY - COOLING CAPACITY - ONE COMPRESSOR OPERATING

TGA150S

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			65°F (18°C)						75°F (24°C)						85°F (29°C)						95°F (35°C)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
			kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C
63°F (17°C)	3800	1795	71.7	21.0	3.91	.60	.76	.92	69.5	20.4	4.40	.61	.77	.94	67.3	19.7	4.93	.61	.79	.95	65.0	19.0	5.51	.63	.81	.97
	4400	2075	73.5	21.5	3.93	.63	.81	.98	71.2	20.9	4.44	.64	.83	.99	68.9	20.2	4.97	.66	.85	1.00	66.6	19.5	5.55	.67	.87	1.00
	5000	2360	75.1	22.0	3.96	.67	.87	1.00	72.8	21.3	4.46	.68	.89	1.00	70.4	20.6	4.99	.70	.91	1.00	68.0	19.9	5.58	.71	.93	1.00
67°F (19°C)	3800	1795	76.1	22.3	3.97	.47	.58	.71	73.7	21.6	4.47	.48	.58	.73	71.3	20.9	5.01	.48	.59	.74	68.8	20.2	5.59	.49	.60	.76
	4400	2075	77.8	22.8	3.99	.49	.60	.77	75.3	22.1	4.50	.49	.61	.79	72.8	21.3	5.04	.50	.63	.81	70.2	20.6	5.63	.50	.64	.83
	5000	2360	79.1	23.2	4.01	.50	.64	.82	76.6	22.4	4.52	.51	.65	.84	74.0	21.7	5.06	.51	.67	.87	71.3	20.9	5.66	.52	.69	.89
71°F (22°C)	3800	1795	81.0	23.7	4.04	.36	.46	.56	78.5	23.0	4.56	.36	.46	.56	75.9	22.2	5.10	.36	.47	.57	73.2	21.5	5.69	.36	.47	.58
	4400	2075	82.7	24.2	4.06	.36	.47	.58	80.0	23.4	4.58	.37	.48	.59	77.3	22.7	5.13	.37	.48	.60	74.5	21.8	5.73	.37	.49	.61
	5000	2360	84.0	24.6	4.08	.37	.49	.61	81.2	23.8	4.60	.37	.50	.63	78.5	23.0	5.15	.37	.50	.64	75.6	22.2	5.76	.38	.51	.66

## 12.5 TON STANDARD EFFICIENCY - COOLING CAPACITY - ALL COMPRESSORS OPERATING

TGA150S

Entering Wet Bulb Temperature	Total Air Volume		Outdoor Air Temperature Entering Outdoor Coil																							
			85°F (29°C)						95°F (35°C)						105°F (41°C)						115°F (46°C)					
			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cooling Capacity		Comp Motor kW Input	Sensible To Total Ratio (S/T) Dry Bulb		
			kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C	kBtuh	kW		75°F 24°C	80°F 27°C	85°F 29°C
63°F (17°C)	3800	1795	139.4	40.9	9.95	.66	.81	.95	134.8	39.5	11.12	.67	.83	.97	129.7	38.0	12.43	.68	.85	.99	124.3	36.4	13.92	.70	.87	1.00
	4400	2075	142.8	41.9	10.02	.70	.87	.99	138.1	40.5	11.20	.71	.88	1.00	132.9	38.9	12.51	.72	.90	1.00	127.5	37.4	13.99	.74	.93	1.00
	5000	2360	145.9	42.8	10.08	.73	.91	1.00	141.0	41.3	11.26	.75	.93	1.00	135.9	39.8	12.58	.77	.95	1.00	130.2	38.2	14.07	.79	.97	1.00
67°F (19°C)	3800	1795	147.8	43.3	10.11	.52	.64	.77	142.7	41.8	11.29	.53	.65	.79	137.3	40.2	12.62	.53	.66	.81	131.5	38.5	14.12	.54	.67	.83
	4400	2075	150.9	44.2	10.17	.54	.67	.83	145.7	42.7	11.36	.55	.68	.85	140.0	41.0	12.69	.55	.70	.87	134.0	39.3	14.20	.56	.72	.89
	5000	2360	153.4	45.0	10.22	.56	.71	.88	148.0	43.4	11.42	.56	.72	.90	142.3	41.7	12.75	.57	.74	.92	136.2	39.9	14.24	.58	.76	.94
71°F (22°C)	3800	1795	157.3	46.1	10.29	.39	.51	.62	151.9	44.5	11.49	.40	.51	.63	146.1	42.8	12.84	.40	.52	.64	139.9	41.0	14.35	.40	.53	.65
	4400	2075	160.3	47.0	10.36	.40	.53	.65	154.6	45.3	11.56	.40	.53	.66	148.7	43.6	12.90	.40	.54	.67	142.3	41.7	14.42	.41	.55	.69
	5000	2360	162.7	47.7	10.40	.41	.55	.68	156.9	46.0	11.62	.41	.55	.70	150.7	44.2	12.96	.41	.56	.72	144.2	42.3	14.47	.42	.57	.74

## OUTDOOR SOUND DATA

Unit Model No.	Octave Band Sound Power Levels dB, re 10 <sup>-12</sup> Watts							<sup>1</sup> 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

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

## HIGH ALTITUDE DERATE

NOTE - Units may be installed at altitudes up to 2000 ft. above sea level without any modifications. At altitudes above 2000 ft. units must be derated to match information in the table shown. At altitudes above 4500 ft. unit must be derated 2% for each 1000 ft. above sea level.

NOTE - This is the only permissible derate for these units.

Heat Input Type	Altitude Feet	Gas Manifold Pressure in. w.g.		Input Rate (Btuh)
		Natural Gas	LPG/ Propane	
Standard (2 stage)	2001 - 4500	3.4/1.6	9.6/5.5	124,000/ 84,500
Medium (2 stage)	2001 - 4500	3.4/1.6	9.6/5.5	172,000/ 117,000
High (2 stage)	2001 - 4500	3.4/1.6	9.6/5.5	230,000/ 156,000

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

### DRIVE KIT SPECIFICATIONS

Nominal hp	Motor Outputs			RPM Range		
	Maximum hp	Nominal kW	Maximum kW	Drive 1	Drive 3	Drive 6
2	2.3	1.5	1.7	680 - 925	---	---
3	3.45	2.2	2.6	---	895 - 1120	---
5	5.75	3.7	4.3	---	---	1110 - 1395

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

## BLOWER DATA

### ACCESSORY AIR RESISTANCE

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

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

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

### DRIVE KIT SPECIFICATIONS

Nominal hp	Motor Outputs			RPM Range		
	Maximum hp	Nominal kW	Maximum kW	Drive 1	Drive 3	Drive 6
2	2.3	1.5	1.7	680 - 925	---	---
3	3.45	2.2	2.6	---	895 - 1120	---
5	5.75	3.7	4.3	---	---	1110 - 1395

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

## BLOWER DATA

### ACCESSORY AIR RESISTANCE

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

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

## BLOWER DATA

### CEILING DIFFUSER AIR THROW DATA

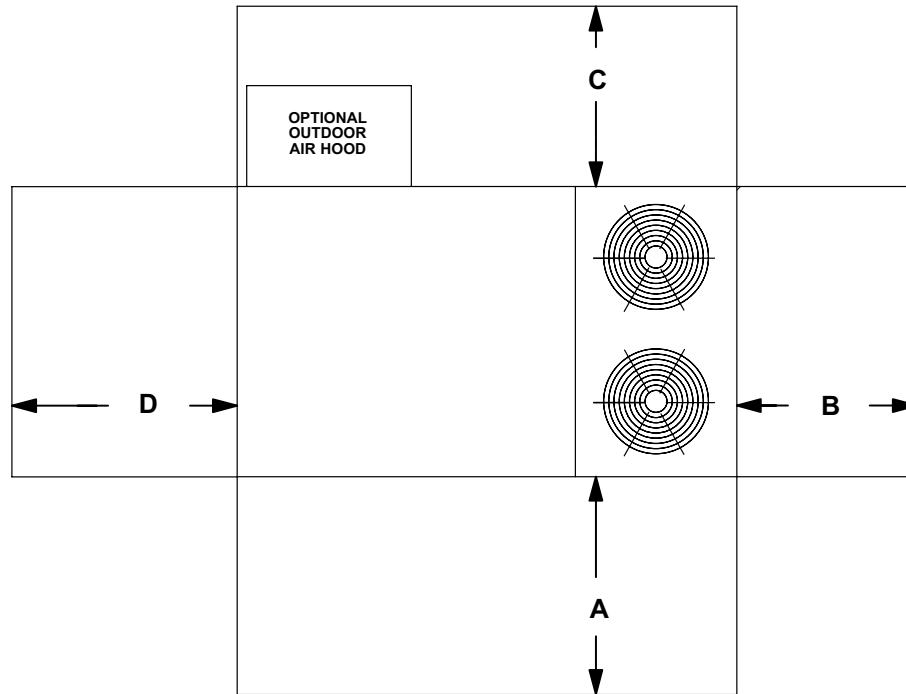
Model No.	Air Volume		<sup>1</sup> Effective Throw Range			
			RTD11 Step-Down		FD11 Flush	
	cfm	L/s	ft.	m	ft.	m
090	2600	1225	24 - 29	7 - 9	19 - 24	6 - 7
	2800	1320	25 - 30	8 - 9	20 - 28	6 - 9
	3000	1415	27 - 33	8 - 10	21 - 29	6 - 9
	3200	1510	28 - 35	9 - 11	22 - 29	7 - 9
	3400	1605	30 - 37	9 - 11	22 - 30	7 - 9
102 120	3600	1700	25 - 33	8 - 10	22 - 29	7 - 9
	3800	1795	27 - 35	8 - 11	22 - 30	7 - 9
	4000	1885	29 - 37	9 - 11	24 - 33	7 - 10
	4200	1980	32 - 40	10 - 12	26 - 35	8 - 11
	4400	2075	34 - 42	10 - 13	28 - 37	9 - 11
150	5600	2645	39 - 49	12 - 15	28 - 37	9 - 11
	5800	2740	42 - 51	13 - 16	29 - 38	9 - 12
	6000	2830	44 - 54	13 - 17	40 - 50	12 - 15
	6200	2925	45 - 55	14 - 17	42 - 51	13 - 16
	6400	3020	46 - 55	14 - 17	43 - 52	13 - 16
	6600	3115	47 - 56	14 - 17	45 - 56	14 - 17

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

### POWER EXHAUST FANS PERFORMANCE

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

## UNIT CLEARANCES - INCHES (MM)



<sup>1</sup> Unit Clearance	A		B		C		D		Top Clearance
	in.	mm	in.	mm	in.	mm	in.	mm	
Service Clearance	60	1524	36	914	36	914	36	914	Unobstructed
Clearance to Combustibles	36	914	1	25	1	25	1	25	
Minimum Operation Clearance	36	914	36	914	36	914	36	914	

NOTE - Entire perimeter of unit base requires support when elevated above the mounting surface.

<sup>1</sup> Service Clearance - Required for removal of serviceable parts.

Clearance to Combustibles - Required clearance to combustible material.

Minimum Operation Clearance - Required clearance for proper unit operation.

## ELECTRICAL DATA

Model No.		TGA090S			TGA102S		
<b>Line voltage data - 60 Hz - 3 phase</b>		208/230V	460V	575V	208/230V	460V	575V
<b>Compressors (2)</b>	Rated load amps - each (total)	12.8 (25.6)	6.4 (12.8)	5.1 (10.2)	14.7 (29.4)	7.1 (14.2)	5.8 (11.6)
	Locked rotor amps - each (total)	91 (182)	46 (92)	37 (74)	91 (182)	50 (100)	37 (74)
<b>Condenser Fan Motors (2)</b>	Full load amps - each (total)	2.4 (4.8)	1.3 (2.6)	1.0 (2.0)	2.4 (4.8)	1.3 (2.6)	1.0 (2.0)
	Locked rotor amps - each (total)	4.7 (9.4)	2.4 (4.8)	1.9 (3.8)	4.7 (9.4)	2.4 (4.8)	1.9 (3.8)
<b>Evaporator Blower Motor</b>	Motor Output - hp	2	2	2	2	2	2
	kW	1.5	1.5	1.5	1.5	1.5	1.5
	Full load amps	7.5	3.4	2.7	7.5	3.4	2.7
	Locked rotor amps	46.9	20.4	16.2	46.9	20.4	16.2
<b><sup>1</sup> Maximum Overcurrent Protection (amps)</b>	With Exhaust Fan	50	25	20	60	30	20
	Less Exhaust Fan	50	25	20	60	25	20
<b><sup>2</sup> Minimum Circuit Ampacity</b>	With Exhaust Fan	44	22	18	48	24	19
	Less Exhaust Fan	42	21	17	46	22	18
<b>Optional Power Exhaust Fan</b>	(Number) Horsepower (W)	(1) 1/3 (249)	(1) 1/3 (249)	(1) 1/3 (249)	(1) 1/3 (249)	(1) 1/3 (249)	(1) 1/3 (249)
	Full load amps	2.4	1.3	1.0	2.4	1.3	1.0
	Locked rotor amps	4.7	2.4	1.9	4.7	2.4	1.9
<b>Service Outlet (2) 115 volt GFCI (amp rating)</b>		15	15	15	15	15	15
Model No.		TGA120S			TGA150S		
<b>Line voltage data - 60 Hz - 3 phase</b>		208/230V	460V	575V	208/230V	460V	575V
<b>Compressors (2)</b>	Rated load amps - each (total)	15.4 (30.8)	7.4 (14.8)	5.9 (11.8)	18.6 (37.2)	9 (18)	7.4 (14.8)
	Locked rotor amps - each (total)	124 (248)	59.6 (119.2)	49.4 (98.8)	156 (312)	75 (150)	54 (108)
<b>Condenser Fan Motors (2)</b>	Full load amps - each (total)	2.4 (4.8)	1.3 (2.6)	1.0 (2.0)	3.0 (6.0)	1.5 (3.0)	1.2 (2.4)
	Locked rotor amps - each (total)	4.7 (9.4)	2.4 (4.8)	1.9 (3.8)	6.0 (12.0)	3.0 (6.0)	2.9 (5.8)
<b>Evaporator Blower Motor</b>	Motor Output - hp	3	3	3	5	5	5
	kW	2.2	2.2	2.2	3.7	3.7	3.7
	Full load amps	10.6	4.8	3.9	16.7	7.6	6.1
	Locked rotor amps	66	26.8	23.4	105	45.6	36.6
<b><sup>1</sup> Maximum Overcurrent Protection (amps)</b>	With Exhaust Fan	60	30	25	80	40	30
	Less Exhaust Fan	60	30	25	80	35	30
<b><sup>2</sup> Minimum Circuit Ampacity</b>	With Exhaust Fan	53	26	21	67	33	27
	Less Exhaust Fan	51	25	20	65	31	26
<b>Optional Power Exhaust Fan</b>	(Number) Horsepower (W)	(1) 1/3 (249)	(1) 1/3 (249)	(1) 1/3 (249)	(1) 1/3 (249)	(1) 1/3 (249)	(1) 1/3 (249)
	Full load amps	2.4	1.3	1.0	2.4	1.3	1.0
	Locked rotor amps	4.7	2.4	1.9	4.7	2.4	1.9
<b>Service Outlet (2) 115 volt GFCI (amp rating)</b>		15	15	15	15	15	15

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

<sup>1</sup> HACR type breaker or fuse.

<sup>2</sup> Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

## WEIGHT DATA

Model Number	Net				Shipping			
	Base		Max.		Base		Max.	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
090/102	1300	590	1525	692	1385	628	1610	730
120	1355	615	1580	717	1440	653	1665	755
150	1390	630	1615	733	1475	669	1700	771

Base Unit - The unit with NO OPTIONS.

Max. Unit - The unit with ALL OPTIONS installed (Economizer, etc.).

## OPTIONS / ACCESSORIES

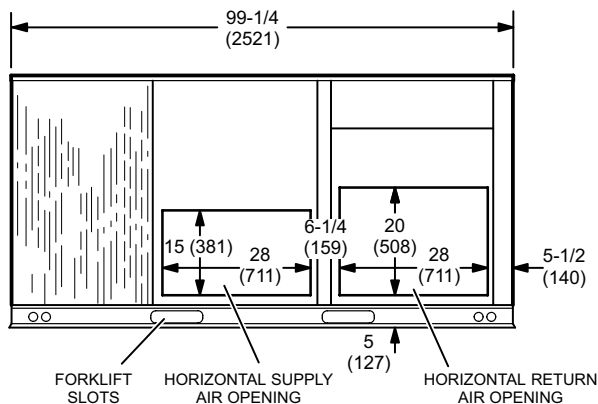
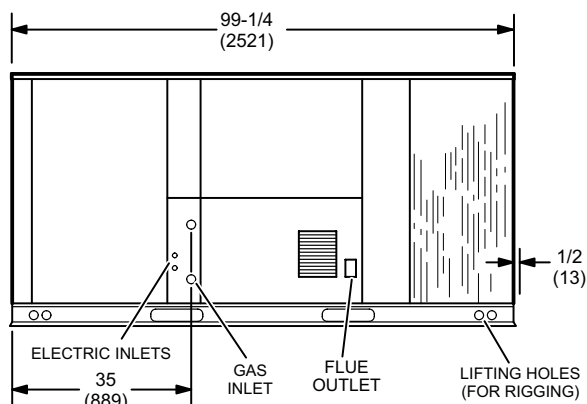
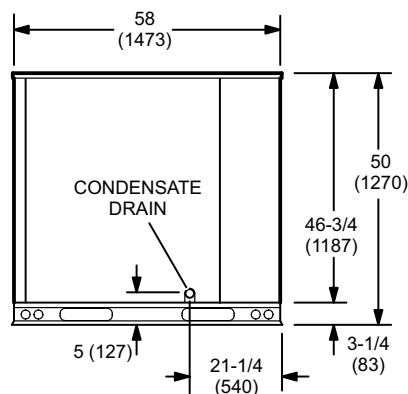
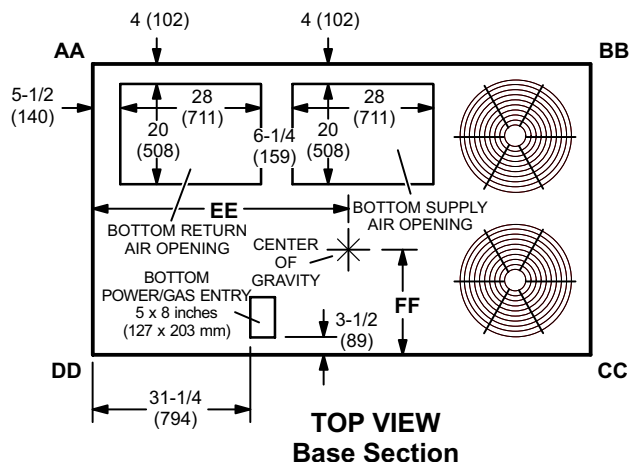
		Shipping Weights	
		lbs.	kg
<b>ECONOMIZER / OUTDOOR AIR</b>			
<b>Economizer</b>			
Economizer	TAREMD10/15	131	59
<b>Outdoor Air Hood</b>			
Outdoor Air Hood	LAOAH10/15	30	14
<b>OUTDOOR AIR</b>			
<b>Outdoor Air Dampers</b>			
Outdoor Air Damper Motorized Kit	TAOADM10/15	117	53
	LAOAD10/15	11	5
<b>Power Exhaust</b>			
Standard Static	LAPEF10/15	82	37
<b>ROOF CURBS - STANDARD</b>			
<b>Down-Flow</b>			
14 in. height	LARMF10/15-14	126	57
24 in. height	LARMF10/15-24	174	79
<b>ROOF CURBS - CLIPLOCK 1000</b>			
<b>Down-Flow</b>			
14 in. height	LARMF10/15S-14	115	52
18 in. height	LARMF10/15S-28	156	71
24 in. height	LARMF10/15S-24	189	86
<b>CEILING DIFFUSERS</b>			
Step-Down	RTD11-95	88	40
	RTD11-135	205	93
	RTD11-185	392	178
Flush	FD11-95	75	34
	FD11-135	174	79
	FD11-185	289	131
Transitions	LASRT08/10	30	14
	LASRT10/12	32	15
	LASRT15	36	16
<b>PACKAGING</b>			
LTL Packaging (less than truck load)		105	48

## DIMENSIONS - INCHES (MM)

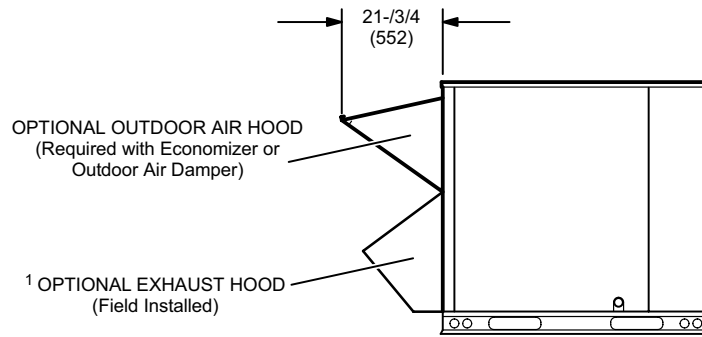
Model Number	WEIGHTS				CORNER WEIGHTS								CENTER OF GRAVITY			
	Net		Shipping		AA		BB		CC		DD		EE		FF	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	inch	mm	inch	mm
090/102 Base Unit	1300	590	1385	628	314	142	289	131	329	149	368	167	47	1194	21-1/2	546
090/102 Max. Unit	1525	692	1610	730	381	173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

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)

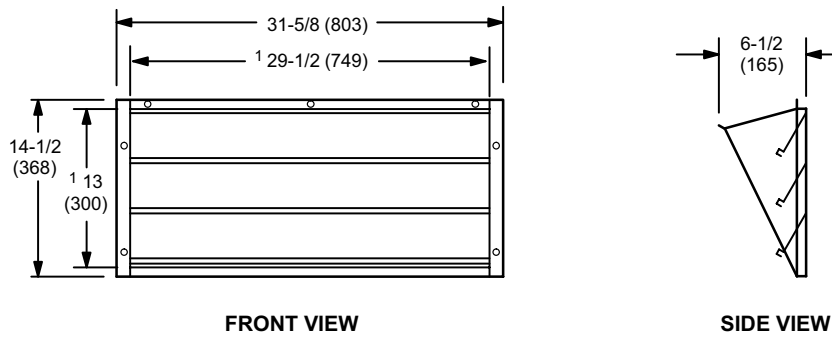


**OPTIONAL OUTDOOR AIR HOOD DETAIL**



<sup>1</sup> NOTE — Field Installed in Return Air Duct for Horizontal Applications.

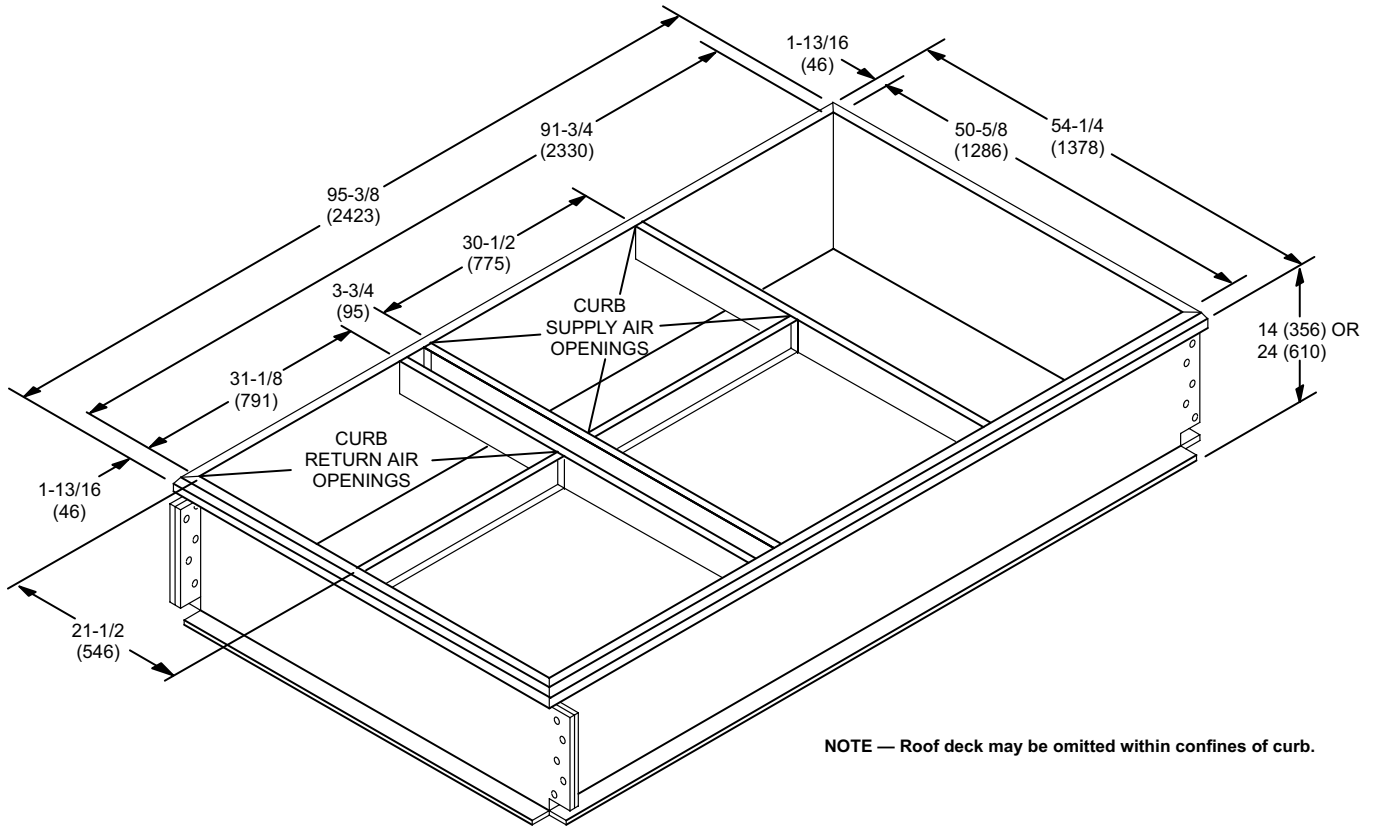
**HORIZONTAL BAROMETRIC RELIEF DAMPERS**  
(Field installed in horizontal return air duct adjacent to unit)



<sup>1</sup> NOTE - Opening size required in return air duct.

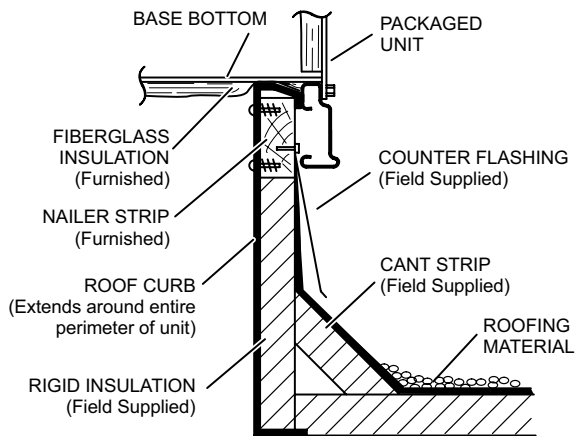
# ACCESSORY DIMENSIONS - INCHES (MM)

## STANDARD ROOF CURBS - DOUBLE DUCT OPENING

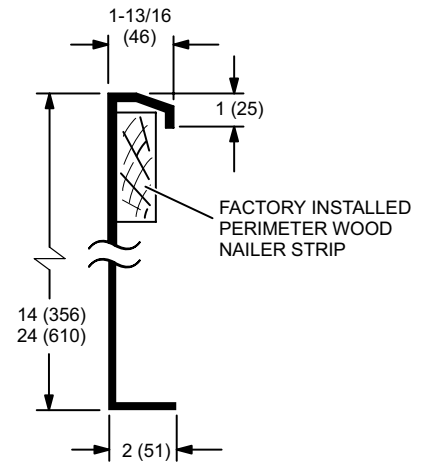


NOTE — Roof deck may be omitted within confines of curb.

### TYPICAL FLASHING DETAIL FOR ROOF CURB

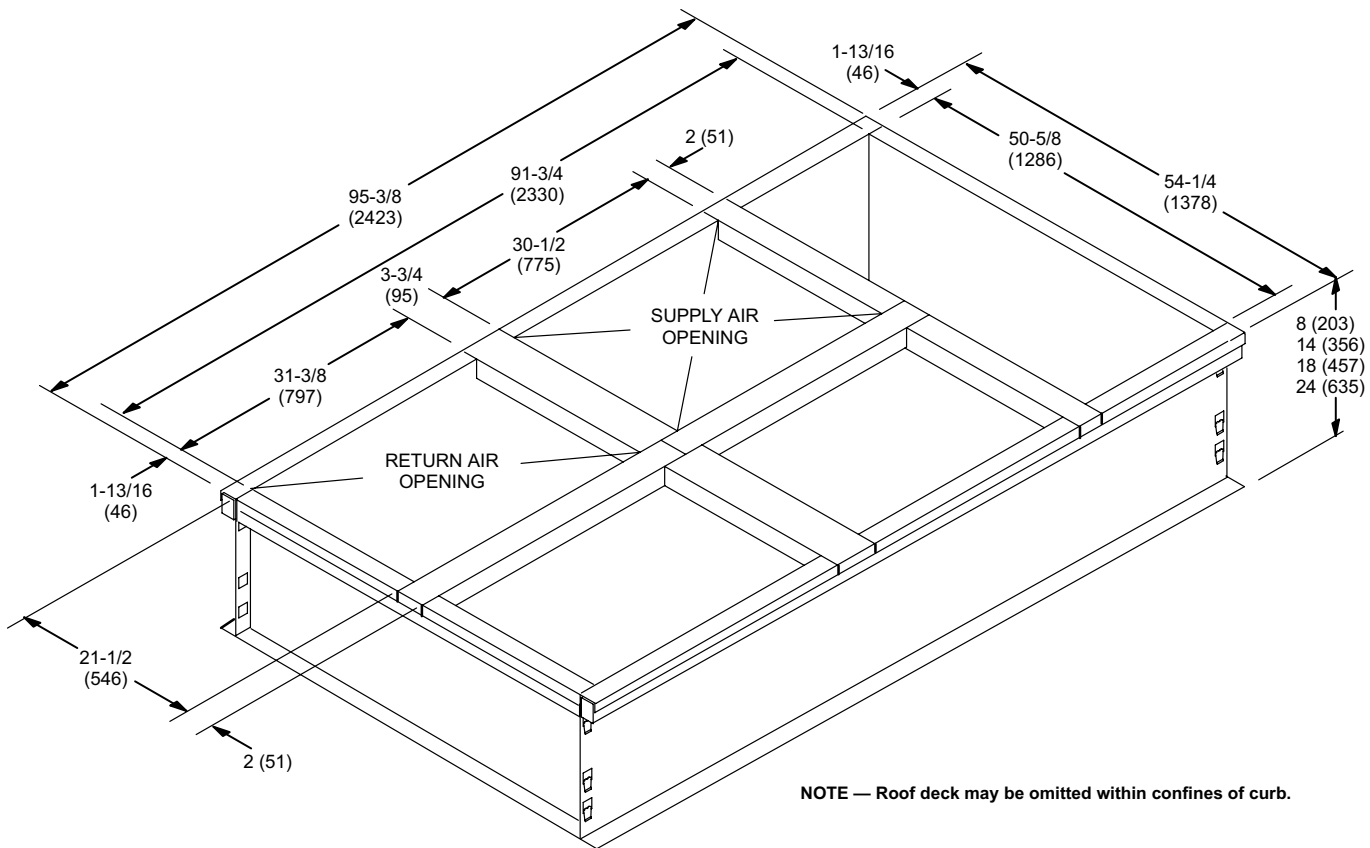


### DETAIL ROOF CURB



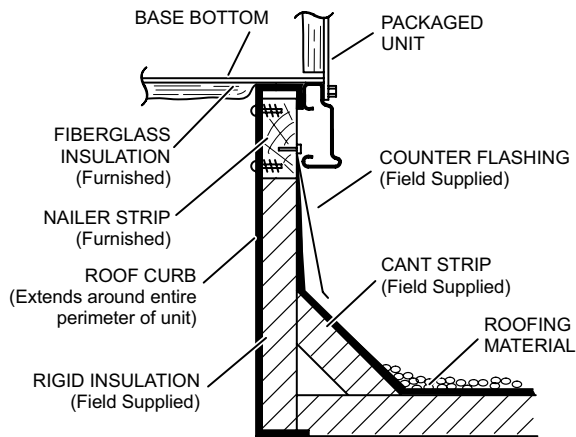
# ACCESSORY DIMENSIONS - INCHES (MM)

## CLIPLOCK 1000 ROOF CURBS - DOUBLE DUCT OPENING

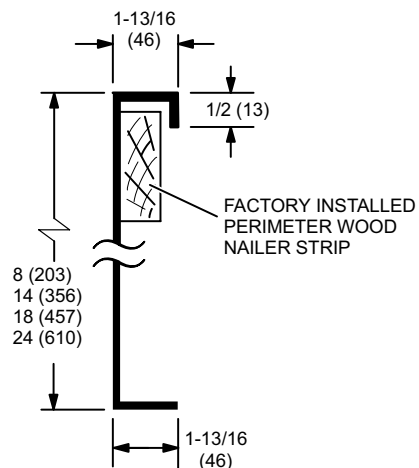


NOTE — Roof deck may be omitted within confines of curb.

### TYPICAL FLASHING DETAIL FOR ROOF CURB

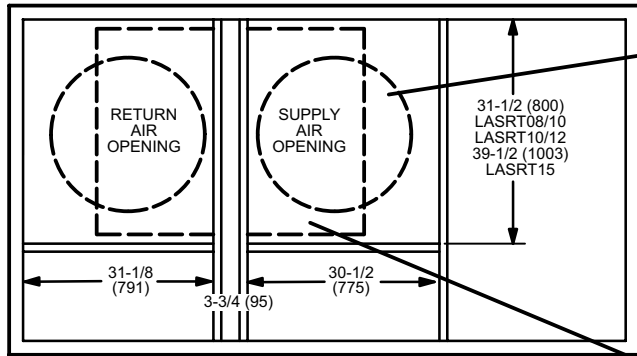


### DETAIL ROOF CURB



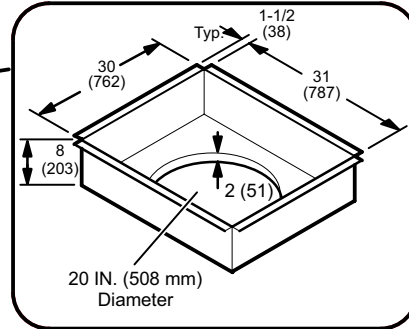
**ACCESSORY DIMENSIONS - INCHES (MM)**

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

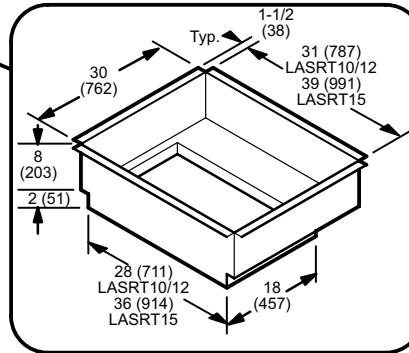


**TOP VIEW**

**LASRT08/10 ROUND TRANSITIONS**  
(for 090 models with FD11-95, RTD11-95 Diffusers)



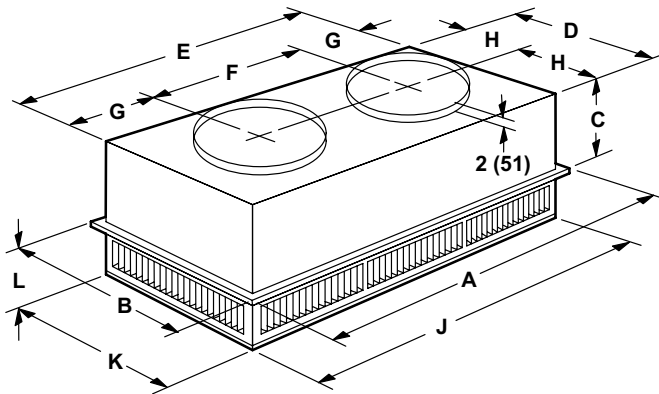
**LASRT10/12 & LASRT15 RECTANGULAR TRANSITIONS**  
(for 102 thru 150 models with FD11-135-185, RTD11-135-185 Diffusers)



## ACCESSORY DIMENSIONS - INCHES (MM)

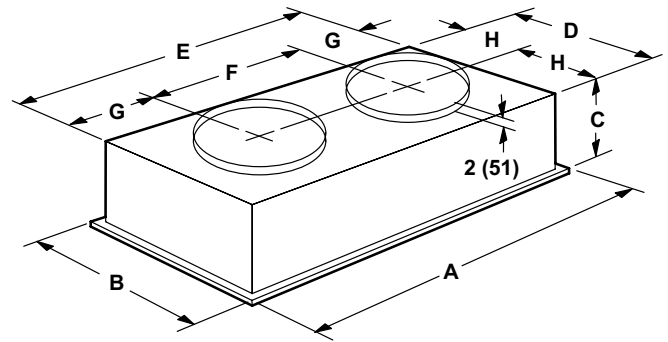
### COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

#### STEP-DOWN CEILING DIFFUSER



Model Number		RTD11-95
A	in.	47-5/8
	mm	1159
B	in.	29-5/8
	mm	752
C	in.	14-3/8
	mm	365
D	in.	27-1/2
	mm	699
E	in.	45-1/2
	mm	1158
F	in.	22-1/2
	mm	572
G	in.	11-1/2
	mm	292
H	in.	13-3/4
	mm	349
J	in.	45-1/2
	mm	1156
K	in.	27-1/2
	mm	699
L	in.	8-1/8
	mm	206
Duct Size	in.	20 round
	mm	508 round

#### FLUSH CEILING DIFFUSER

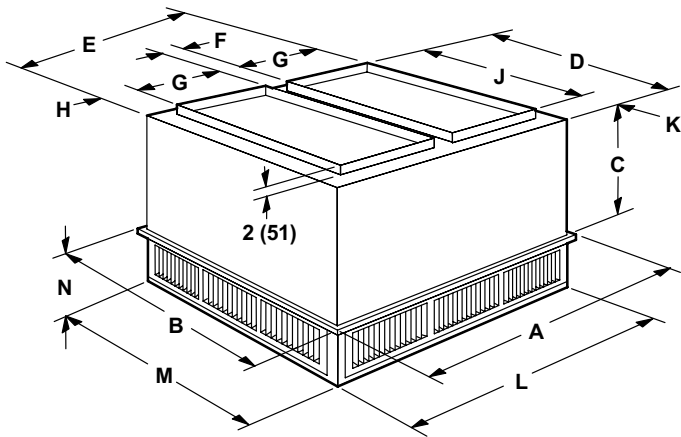


Model Number		FD11-95
A	in.	47-5/8
	mm	1159
B	in.	29-5/8
	mm	752
C	in.	16-5/8
	mm	422
D	in.	27
	mm	686
E	in.	45
	mm	1143
F	in.	22-1/2
	mm	572
G	in.	11-1/4
	mm	286
H	in.	13-1/2
	mm	343
Duct Size	in.	20 round
	mm	508 round

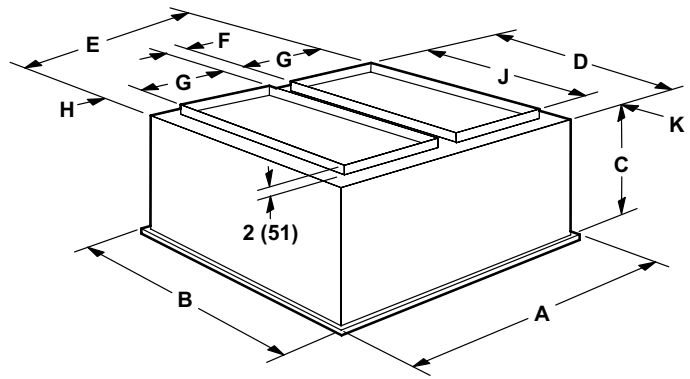
## ACCESSORY DIMENSIONS - INCHES (MM)

### COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

#### STEP-DOWN CEILING DIFFUSER



#### FLUSH CEILING DIFFUSER



Model Number		RTD11-135	RTD11-185
A	in.	47-5/8	47-5/8
	mm	1210	1210
B	in.	35-5/8	47-5/8
	mm	905	1210
C	in.	20-5/8	24-5/8
	mm	524	625
D	in.	33-1/2	45-1/2
	mm	851	1156
E	in.	45-1/2	45-1/2
	mm	1156	1156
F	in.	4-1/2	4-1/2
	mm	114	114
G	in.	18	18
	mm	457	457
H	in.	2-1/2	2-1/2
	mm	64	64
J	in.	28	36
	mm	711	914
K	in.	2-3/4	4-3/4
	mm	70	121
L	in.	45-1/2	45-1/2
	mm	1156	1156
M	in.	33-1/2	45-1/2
	mm	851	1156
N	in.	9-1/8	10-1/8
	mm	232	257
Duct Size	in.	18 x 28	18 x 36
	mm	457 x 711	457 x 914

Model Number		FD11-135	FD11-185
A	in.	47-5/8	47-5/8
	mm	1210	1210
B	in.	35-5/8	47-5/8
	mm	905	1210
C	in.	23-1/4	29-1/4
	mm	591	743
D	in.	33	45
	mm	838	1143
E	in.	45	45
	mm	1143	1143
F	in.	4-1/2	4-1/2
	mm	114	114
G	in.	18	18
	mm	457	457
H	in.	2-1/4	2-1/4
	mm	57	57
J	in.	28	36
	mm	711	914
K	in.	2-1/2	4-1/2
	mm	64	114
Duct Size	in.	18 x 28	18 x 36
	mm	457 x 711	457 x 914







## REVISIONS

Sections	Description of Change
Options/Accessories	Removed filter options.
High Altitude Information	Data revised.
Installation Clearances	New drawing.
Dimensions	All new drawings.



**ALLIED**  
Commercial

NOTE - Due to our 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.

©2007 Armstrong Air Enterprises