



ZC
Raider® Rooftop Units
60 HZ

PRODUCT SPECIFICATIONS

Bulletin No. 210748
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Supersedes March 2015

RAIDER®
Value Without Compromise™

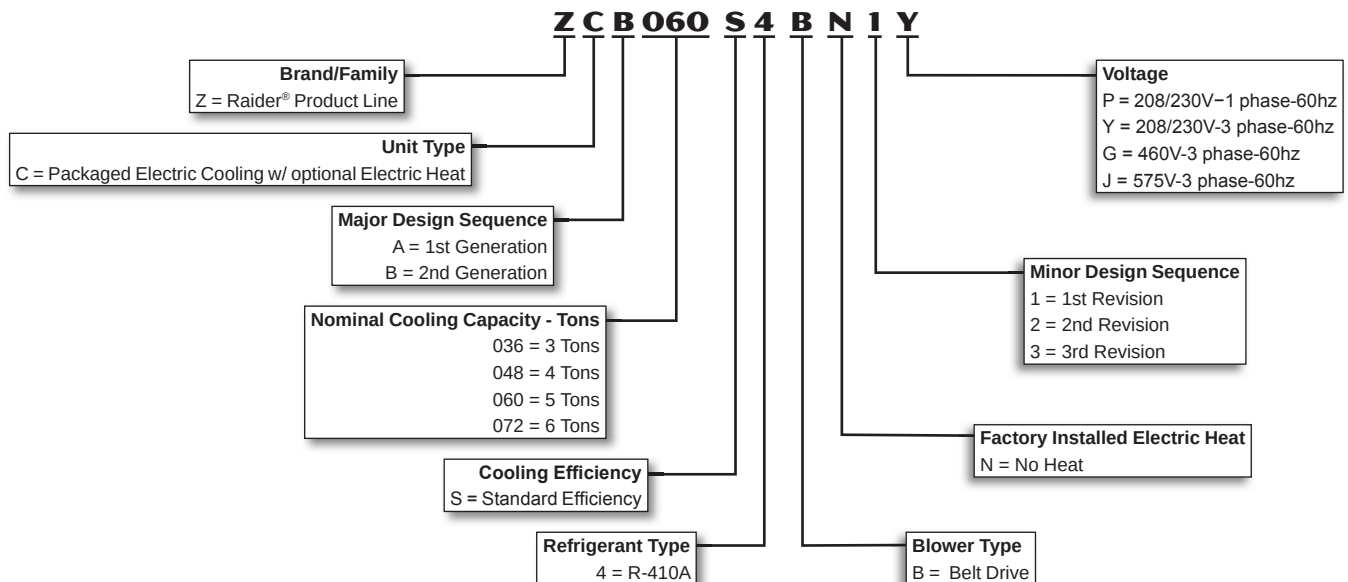


**ASHRAE 90.1
COMPLIANT**

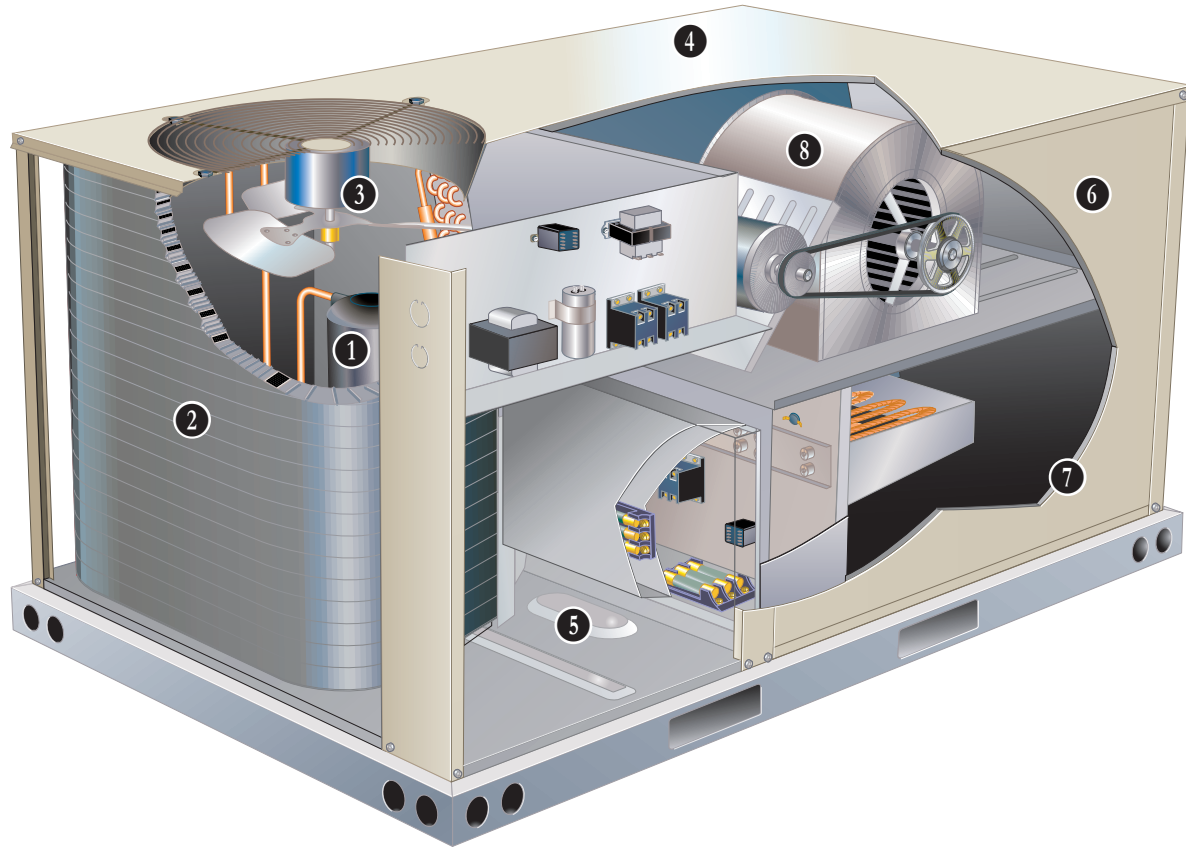
3 to 6 Tons

Net Cooling Capacity – 34,600 to 68,000 Btuh
Optional Electric Heat – 5 to 30 kW

MODEL NUMBER IDENTIFICATION



FEATURES AND BENEFITS



Raider® rooftop units from Lennox are the new standard for cost efficient, reliable rooftop units built for long-lasting performance that can significantly improve indoor environments. Raider rooftop units feature:

- **Quick and Easy Retrofit** - Fast installation for replacement of many existing rooftop units - fits high volume competitor's roof curbs.
- **R-410A Refrigerant** - Environmentally friendly.
- **Scroll Compressors** - Single speed scroll compressor is furnished on all models.
- **Lennox' Environ™ Coil System** - Smaller, lighter condenser coil.
- **High Pressure Switch** - Protects compressor.
- **Belt Drive Blower Motor** - To maximize air performance.
- **Downflow or Horizontal Airflow** - Easy field conversion.
- **Two Fork Lift Slots on Three Sides** - Easy to pick up and transport units from almost any angle.
- **Corrosion-Resistant Drain Pan** - Provides application flexibility, durability, improved serviceability and meets ASHRAE 62.1 requirements for drain pan slope.

FEATURES AND BENEFITS

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APPROVALS

AHRI Certified to AHRI Standard 210/240-2008 (3 - 5 ton models) and AHRI Standard 340/360-2007 (6 ton models).

CSA listed.

Units are Certified by CSA.

Components bonded for grounding to meet safety standards for servicing required by UL, ULC and National and Canadian Electrical Codes.

All models are ASHRAE 90.1 compliant.

ISO 9001 Registered Manufacturing Quality System.

WARRANTY

Limited five years on compressors.

Limited three years on the Lennox' Environ™ Coil System.

Limited five years optional High Performance Economizers.

Limited one year all other covered components.

COOLING SYSTEM

Designed to maximize sensible and latent cooling performance at design conditions.

System can operate from 35°F to 125°F without any additional controls.

R-410A Refrigerant

Non-chlorine, ozone friendly, R-410A.



Unit is factory pre-charged with refrigerant. See Specifications Table.

1 Compressor

Scroll compressors for high performance, reliability and quiet operation.

Resiliently mounted on rubber grommets for quiet operation.

Compressor Crankcase Heater

Protects against refrigerant migration that can occur during low ambient operation.

Refrigerant Metering Orifice

Accurately meters refrigerant in system.

Refrigerant control is accomplished by exact sizing of refrigerant metering orifice.

High Pressure Switch

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

Automatic reset.

Filter/Drier

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

2 Lennox' Environ™ Coil System

Condenser coil features lightweight, all aluminum brazed fin construction.

Constructed of three components:



a flat extrusion tube, fins in-between the flat extrusion tube and two refrigerant manifolds.

Environ™ Coil System Features:

- Improved heat transfer performance due to high primary surface area (flat tubes) versus secondary surface (fins).
- Smaller internal volume (reduced refrigerant charge).
- High durability (all aluminum construction).
- Fewer brazed joints.
- Compact design (reduces unit weight).
- Easy maintenance/cleaning.

Mounting brackets with rubber inserts secure coil to unit providing vibration dampening and corrosion protection

Evaporator Coil

Copper tube construction, enhanced rippled-edge aluminum fins, flared shoulder tubing connections, silver soldered construction for improved heat transfer. Factory leak tested. Cross row circuiting with rifled tubing optimizes both sensible and latent cooling capacity.

Condensate Drain Pan

Plastic pan, sloped to meet drainage requirements of ASHRAE 62.1.

End drain connection.

FEATURES AND BENEFITS

COOLING SYSTEM **(continued)**

- 3 Outdoor Coil Fan Motor**
Thermal overload protected, totally enclosed, permanently lubricated bearings, shaft down, fan guard mount.

Outdoor Coil Fan Guard
PVC coated fan guard furnished.

Required Selections

Cooling Capacity
Specify nominal cooling capacity of the unit.

Options/Accessories

Field Installed

Condensate Drain Trap
Field installed only.
Available in copper or PVC.

Drain Pan Overflow Switch
Monitors condensate level in drain pan, shuts down unit if drain becomes clogged.

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. A crankcase heater must be installed on the compressor.

CABINET

- 4 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.

Airflow Choice

Units are shipped in downflow (vertical) configuration, can be field converted to horizontal air flow configuration without the need of a kit.

- 5 Power Entry**
Electrical lines can be brought through the unit base or through horizontal access knock-outs.
Optional Bottom Power Entry Kit is available.

- 6 Exterior Panels**
Constructed of heavy-gauge, galvanized steel with a two-layer enamel paint finish.

- 7 Insulation**
All panels adjacent to conditioned air are fully insulated with non-hygroscopic fiberglass insulation.

Access Panels

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

Options/Accessories

Factory Installed

Corrosion Protection

A completely flexible immersed coating with an electro-deposited dry film process. (AST ElectroFin E-Coat) Meets Mil Spec MIL-P-53084, ASTM B117 Standard Method Salt Spray Testing.

Indoor Corrosion Protection:

- Coated coil

Outdoor Corrosion Protection:

- Coated coil

Field Installed

Coil/Hail Guards

Constructed of heavy gauge steel, painted to match cabinet, helps protect outdoor coil from damage on all three sides of cabinet.

FEATURES AND BENEFITS

CONTROLS

Unit Control

All control voltage is provided via a 24V (secondary) transformer with inline fuse protection.

Heat/Cool Staging

Capable of up to 1 heat / 2 cool staging with a thermostat.

Night Setback Mode

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

Smoke Detectors

NOTE - Smoke detectors are not available and must be field provided by installer.

Options/Accessories

Field Installed

Commercial Control Systems

L Connection® Network

Complete building automation control system for single or multi-zone applications. Options include local interface, software for local or remote communication, and hardware for networking other control functions.

See L Connection (Network Thermostat Controller version) Product Specifications Bulletin for details.

Thermostats

Control system and thermostat options, see page 34.

8 BLOWER

A wide selection of supply air blower options are available to meet a variety of air flow requirements.

Motor

Overload protected, equipped with ball bearings. Belt drive motors are offered on all models and are available in several different sizes to maximize air performance.

Supply Air Blower

Forward curved blades, blower wheel is statically and dynamically balanced.

Equipped with ball bearings and adjustable pulley (allows speed change).

Required Selections

Supply Air Blower

Order blower motor horsepower and drive kit number required when base unit is ordered, see Drive Kit Specifications Table.

INDOOR AIR QUALITY

Air Filters

Disposable 2 inch filters furnished as standard.

Options/Accessories

Field Installed

Indoor Air Quality (CO₂) Sensor

Monitors CO₂ levels adjusts economizer dampers as needed for Demand Control Ventilation.

ELECTRICAL

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.

Required Selections

Voltage Choice

Specify when ordering base unit.

Field Installed

Electric Heat

Helix wound nichrome elements, individual element limit controls, wiring harness. See Options / Accessories tables for ordering information.

NOTE - Unit Fuse Block is required and must be ordered separately. See Electrical/Electric Heat tables for ordering information.

ECONOMIZER OPTIONS

Factory or Field Installed

Economizer (Downflow or Horizontal) (Standard and High Performance Common Features)

Outdoor Air Hood is furnished.

Economizer includes Barometric Relief Dampers with Exhaust Hood.

Barometric Relief Dampers allow relief of excess air, aluminum blade dampers prevent blow back and outdoor air infiltration during off cycle, bird screen furnished. Hood is furnished.

Single Sensible Temperature Control is furnished with the economizer

Outdoor air sensor enables Economizer if the outdoor temperature is less than the setpoint of the control.

Demand Control Ventilation (DCV) ready using optional CO₂ sensors.

NOTE - Horizontal Economizer is field installed only.

Standard Economizer Features (Not for Title 24)

Gear-driven action, return air and outdoor air dampers, plug-in connections to unit, neoprene seals, 24-volt, fully-modulating spring return motor.

Standard Economizer Control Module

The Standard Economizer Control Module can be adjusted to operate based on outdoor air temperatures.



Economizer Controls:

- Damper Minimum Position - Can be set lower than traditional minimum air requirements resulting in cost savings.
- IAQ Sensor - Signals dampers to modulate and maintain 55°F when CO₂ is higher than the CO₂ setpoint.
- Demand Control Ventilation (DCV) LED - A steady green Demand Control Ventilation LED indicates the IAQ reading is higher than setpoint and requires more fresh air.
- Free Cool LED - A steady green LED indicates outdoor air is suitable for free cooling.

Free Cooling runs when outdoor air temperature is lower than the set temperature on the economizer control.

NOTE: The Free Cooling default setting for outdoor air temperature sensor is 55°F.

High Performance Economizer Features

Approved for California Title 24 building standards.

ASHRAE 90.1-2010 compliant.

Gear-driven action, high torque 24-volt fully-modulating spring return damper motor, return air and outdoor air dampers, plug-in connections to unit, nylon bearings, enhanced neoprene blade edge seals and flexible stainless steel jamb seals to minimize air leakage.

NOTE - High Performance Economizers are not approved for use with enthalpy controls in Title 24 applications.

High Performance Economizer Control Module

Module provides inputs and outputs to control economizer based on parameter settings.



Module automatically detects sensors by polling to determine which sensors are installed in system.

Module displays any alarm messages (fault detection and diagnostics) as an aid in troubleshooting.

Non-volatile memory retains parameter settings in case of power failure.

Keypad with four navigation buttons and LCD screen is furnished for setting economizer parameters.

- Menu Up/Exit  button returns to the main menu.
- Arrow Up  button moves to the previous or next parameter within the selected menu.
- Arrow Down  button moves to the next parameter within the selected menu.
- Select (enter)  button confirms parameter selection.

Main Menu Structure:

- STATUS (economizer and system operation status)
- SETPOINTS (settings for various setpoint parameters)
- SYSTEM SETUP (settings/information about the system)
- ADVANCED SETUP (freeze protection, CO₂ settings, stage 3 delay and additional calibration settings)
- CHECKOUT (damper positions)
- ALARMS (output signal that can be configured for remote alarm monitoring)

NOTE - The Free Cooling setpoint for Title 24 applications must be set based on the Climate Zone where the system is installed. See Section 140.4 "Prescriptive Requirements for Space Conditioning Systems" of the California Energy Commission's 2013 Building Energy Efficiency Standards.

Refer to Installation Instructions for complete setup information and menu parameters available.

OPTIONS / ACCESSORIES

ECONOMIZER OPTIONS

(continued)

Field Installed

Single Enthalpy Temperature Control

(Not for Title 24)

Outdoor air enthalpy sensor enables Economizer if the outdoor enthalpy is less than the setpoint of the control.

EXHAUST OPTIONS

Field Installed

Power Exhaust Fan - Downflow or Horizontal

Installs external to unit for 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.

Fan is 12 in. diameter with 5 fan blades. 1/2 hp motor.

OUTDOOR AIR OPTIONS

Field Installed

Outdoor Air Dampers - Downflow

Linked mechanical dampers, 0 to 35% (fixed) outdoor air adjustable, installs in unit.

Automatic model features fully modulating spring return damper motor with plug-in connection.

Manual model features a slide damper. Maximum mixed air temperature in cooling mode: 100°F.

ROOF CURBS

Hybrid Roof Curbs, Downflow

Nailer strip furnished, mates to unit, US National Roofing Contractors Approved, shipped knocked down.

Roof curb can be assembled using interlocking tabs to fasten corners together. No tools required.

Curb can also be fastened together with furnished hardware.

Available in 8, 14, 18, and 24 inch heights.

Adaptor Curbs (not shown)

Curbs are regionally sourced. Dimensions will vary based upon the source. Contact your local sales representative for a detailed cut sheet with applicable dimensions.

CEILING DIFFUSERS

Ceiling Diffusers

(Flush and Step-Down)

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)

NOTE - Ceiling Diffuser Transitions are not furnished and must be field fabricated.

OPTIONS / ACCESSORIES

Item		Catalog No.	ZCA ZCB 036	ZCA ZCB 048	ZCA ZCB 060	ZCA 072
COOLING SYSTEM						
Condensate Drain Trap	PVC - C1TRAP20AD2	76W26	X	X	X	X
	Copper - C1TRAP10AD2	76W27	X	X	X	X
Drain Pan Overflow Switch	Z1SNSR90A1	99W59	X	X	X	X
Low Ambient Kit	Z1SNSR33A-1	99W67	X	X	X	X
BLOWER - SUPPLY AIR						
Motors	¹ Belt Drive - 1 hp Standard Efficiency	Factory	O	O	O	O
	Belt Drive - 1.5 hp Standard Efficiency	Factory	O	O	O	O
	Belt Drive - 2 hp Standard Efficiency	Factory				O
Drive Kits See Blower Data Tables for selection	Kit #ZA01 - 678-1035 rpm	Factory	O			
	Kit #ZA02 - 803-1226 rpm	Factory		O		
	Kit #ZA03 - 906-1383 rpm	Factory			O	
	Kit #ZA04 - 964-1471 rpm	Factory	O			
	² Kit #ZA05 - 1098-1490 rpm	Factory		O		
	² Kit #ZA06 - 1262-1634 rpm	Factory			O	
	Kit #ZAA02 - 632-875 rpm	Factory				O
	Kit #ZAA03 - 798-1105 rpm	Factory				O
	³ Kit #ZAA04 - 921-1226 rpm	Factory				O
CABINET						
Coil/Hail Guards	ZCA/ZCB036, ZCA/ZCB048, ZCA060 models - Z1GARD52A-1	12X19	X	X	X	
	ZCA072 and ZCB060 models - Z1GARD52AT1	12X20			X	X
Corrosion Protection		Factory	O	O	O	O
ELECTRICAL						
Voltage 60 hz	208/230V - 1 phase	Factory	⁴ O	⁴ O	⁴ O	
	208/230V - 3 phase	Factory	O	O	O	O
	460V - 3 phase	Factory	O	O	O	O
	575V - 3 phase	Factory	O	O	O	O
Bottom Power Entry Kit	Z1PEKT01A-1	98W08	X	X	X	X
¹ 1 hp blower motor is not available for 208/230V-1ph applications. ² 1.5 hp blower motor is required with the ZA05 and ZA06 drive kits. ³ 2 hp blower motor is required with the ZAA04 drive kit. ⁴ ZCB models only.						
NOTE - The catalog and model numbers that appear here are for ordering field installed accessories only. OX - Field Installed or Configure to Order (factory installed) O - Configure to Order (Factory Installed) X - Field Installed.						

OPTIONS / ACCESSORIES						
Item		Catalog No.	ZCA ZCB 036	ZCA ZCB 048	ZCA ZCB 060	ZCA 072
ELECTRIC HEAT						
5 kW	208/230V-1ph - Z1EH0050AN1P	98W96	¹ X	¹ X	¹ X	
	208/230V-3ph - Z1EH0050AN1Y	99W01	X	X	X	
	460V-3ph - Z1EH0050AN1G	99W06	X	X	X	
	575V-3ph - Z1EH0050AN1J	99W11	X	X	X	
7.5 kW	208/230V-1ph - Z1EH0075AN1P	98W97	¹ X	¹ X	¹ X	
	208/230V-3ph - Z1EH0075AN1Y	99W02	X	X	X	X
	460V-3ph - Z1EH0075AN1G	99W07	X	X	X	X
	575V-3ph - Z1EH0075AN1J	99W12	X	X	X	X
10 kW	208/230V-1ph - Z1EH0100AN1P	98W98	¹ X	¹ X	¹ X	
	208/230V-3ph - Z1EH0100AN1Y	99W03	X	X	X	X
	460V-3ph - Z1EH0100AN1G	99W08	X	X	X	X
	575V-3ph - Z1EH0100AN1J	99W13	X	X	X	X
15 kW	208/230V-1ph - Z1EH0150AN1P	98W99	¹ X	¹ X	¹ X	
	208/230V-3ph - Z1EH0150AN1Y	99W04	X	X	X	X
	460V-3ph - Z1EH0150AN1G	99W09	X	X	X	X
	575V-3ph - Z1EH0150AN1J	99W14	X	X	X	X
22.5 kW	208/230V-1ph - Z1EH0225AN1P	99W00		¹ X	¹ X	
	208/230V-3ph - Z1EH0225AN1Y	99W05		X	X	X
	460V-3ph - Z1EH0225AN1G	99W10		X	X	X
	575V-3ph - Z1EH0225AN1J	99W15		X	X	X
30 kW	208/230V-3ph - Z1EH0300AN1Y	13U01				X
	460V-3ph - Z1EH0300AN1G	13U02				X
	575V-3ph - Z1EH0300AN1J	13U03				X
ELECTRIC HEAT ACCESSORIES						
Unit Fuse Block (required) - See Electrical/Electric Heat Tables for Selection			X	X	X	X

¹ ZCB models only.

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

O - Configure to Order (Factory Installed)

X - Field Installed.

OPTIONS / ACCESSORIES

Item		Catalog No.	ZCA ZCB 036	ZCA ZCB 048	ZCA ZCB 060	ZCA 072
ECONOMIZER						
Standard Economizer With Outdoor Air Hood (Not for Title 24)						
Standard Economizer (Downflow) Includes Barometric Relief Dampers and Exhaust Hood	Z1ECON30A-1	98W09	OX	OX	OX	OX
Standard Economizer (Horizontal) Includes Barometric Relief Dampers and Exhaust Hood	Z1ECON16A-1	98W68	X	X	X	X
Standard Economizer Controls (Not for Title 24)						
Single Enthalpy Control	C1SNSR64FF1	53W64	X	X	X	X
High Performance Economizer With Outdoor Air Hood (Approved for California Title 24 Building Standards)						
High Performance Economizer (Downflow) Includes Barometric Relief Dampers and Exhaust Hood	Z1ECON32A-1	10U51	OX	OX	OX	OX
High Performance Economizer (Horizontal) Includes Barometric Relief Dampers and Exhaust Hood	Z1ECON33A-1	10U52	X	X	X	X
High Performance Economizer Controls (Not for Title 24)						
Single Enthalpy Control	C1SNSR61FF1	11G21	X	X	X	X
OUTDOOR AIR						
Outdoor Air Dampers With Outdoor Air Hood						
Motorized	Z1DAMP21A-1	95W74	X	X	X	X
Manual	Z1DAMP11A-1	95W73	X	X	X	X
POWER EXHAUST FAN						
Standard Static (Downflow)	208/230V-1 or 3ph - Z1PWRE10A-1P	21E01	X	X	X	X
	460V-3ph - Z1PWRE10A-1G	23E01	X	X	X	X
Standard Static (Horizontal)	208/230V-1 or 3ph - Z1PWRE15A-1P	24E01	X	X	X	X
	460V-3ph - Z1PWRE15A-1G	28E01	X	X	X	X
575V Transformer Kit	575V-3ph - Z1TRFM20A-1J	59E02	X	X	X	X
NOTE - Order 575V Transformer Kit with 208/230V Power Exhaust Fan for 575V applications.						
INDOOR AIR QUALITY						
Indoor Air Quality (CO₂) Sensors						
Sensor - Wall-mount, off-white plastic cover with LCD display	C0SNSR50AE1L	77N39	X	X	X	X
Sensor - Wall-mount, black plastic case, no display, rated for plenum mounting	C0SNSR53AE1L	87N54	X	X	X	X
CO ₂ Sensor Duct Mounting Kit - for downflow applications	C0MISC19AE1	85L43	X	X	X	X
Aspiration Box - for duct mounting non-plenum rated CO ₂ sensor (77N39)	C0MISC16AE1	90N43	X	X	X	X
ROOF CURBS						
Hybrid Roof Curbs, Downflow						
8 in. height	Z1CURB70A-1	11F76	X	X	X	X
14 in. height	Z1CURB71A-1	11F77	X	X	X	X
18 in. height	Z1CURB72A-1	11F78	X	X	X	X
24 in. height	Z1CURB73A-1	11F79	X	X	X	X
CEILING DIFFUSERS						
Step-Down - Order one	RTD9-65-R	27G87	X	X	X	
	RTD11-95	29G04				X
Flush - Order one	FD9-65-R	27G86	X	X	X	
	FD11-95	29G08				X

NOTE - Ceiling Diffuser Transitions are not furnished and must be field fabricated.

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

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

O - Configure to Order (Factory Installed)

X - Field Installed.

SPECIFICATIONS - ZCA

General Data		Nominal Tonnage	3 Ton	4 Ton	5 Ton	6 Ton
		Model No.	ZCA036S4B	ZCA048S4B	ZCA060S4B	ZCA072S4B
		Efficiency Type	Standard	Standard	Standard	Standard
Cooling Performance	Gross Cooling Capacity - Btuh	36,100	47,000	58,900	69,700	
	Net Cooling Capacity - Btuh	¹ 34,600	¹ 45,000	¹ 57,000	² 68,000	
	AHRI Rated Air Flow - cfm	1200	1550	1650	2025	
	³ Sound Rating Number (SRN) (dBA)	77	80	83	84	
	Total Unit Power - kW	3.0	4.3	5.3	6.1	
	SEER (Btuh/Watt)	¹ 13.00	¹ 13.00	¹ 13.00	- - -	
	IEER (Btuh/Watt)	- - -	- - -	- - -	² 12.00	
	EER (Btuh/Watt)	¹ 11.50	¹ 10.60	¹ 10.70	² 11.20	
Refrigerant	Type	R-410A	R-410A	R-410A	R-410A	
	Charge Furnished	4 lbs. 1 oz.	4 lbs. 6 oz.	5 lbs. 6 oz.	7 lbs. 0 oz.	
Electric Heat Available - See page 8		5, 7.5, 10, 15 kW	5, 7.5, 10, 15, 22.5 kW		7.5, 10, 15, 22.5, 30 kW	
Compressor Type (one per unit)		Scroll	Scroll	Scroll	Scroll	
Outdoor Coil	Net face area - sq. ft.	12.8	12.8	15.2	19.9	
	Number of rows	1	1	1	1	
	Fins / inch	23	23	23	23	
Outdoor Coil Fan	Motor HP	(1) 1/6 (PSC)	(1) 1/4 (PSC)	(1) 1/3 (PSC)	(1) 1/3 (PSC)	
	Motor rpm	825	825	1075	1075	
	Total motor watts	200	310	360	350	
	Diameter - in.	(1) 22	(1) 22	(1) 22	(1) 22	
	Number of blades	4	4	3	3	
	Total air volume - cfm	2700	3300	3800	4270	
Indoor Coil	Net face area - sq. ft.	8.4	8.4	8.4	10.8	
	Tube diameter - in.	3/8	3/8	3/8	3/8	
	Number of rows	2	2	3	3	
	Fins per inch	14	14	14	14	
	Drain Connection (no.and size) - in.	(1) 1 NPT	(1) 1 NPT	(1) 1 NPT	(1) 1 NPT	
	Expansion device type	Fixed Orifice	Fixed Orifice	Fixed Orifice	Fixed Orifice	
³ Indoor Blower & Drive Selection	Nominal Motor HP	1 hp, 1.5 hp	1 hp, 1.5 hp	1 hp, 1.5 hp	1 hp, 1.5 hp, 2 hp	
	Maximum Usable Motor HP	1.15 hp, 1.7 hp	1.15 hp, 1.7 hp	1.15 hp, 1.7 hp	1.15 hp, 1.7 hp, 2.3 hp	
	Available Drive Kits	Kit #ZA01 678-1035 rpm	Kit #ZA02 803-1226 rpm	Kit #ZA03 906-1383 rpm	Kit #ZAA02 632-875 rpm	
		Kit #ZA04 964-1471 rpm	⁴ Kit #ZA05 1098-1490 rpm	⁴ Kit #ZA06 1262-1634 rpm	Kit #ZAA03 798-1105 rpm ⁵ ZAA04 921-1228 rpm	
Wheel nominal diameter x width - in.		10 x 10	10 x 10	10 x 10	15 x 9	
Filters	Type	Disposable				
	Number and size - in.	(4) 14 x 20 x 2			(2) 16 X 20 X 2 (2) 20 X 20 X 2	
Electrical Characteristics - 60 Hz		208/230V, 460V & 575V 3 phase	208/230V 460V & 575V 3 phase	208/230V 460V & 575V 3 phase	208/230V 460V & 575V 3 phase	

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

¹, ² AHRI Certified to AHRI Standard ¹ 210/240 or ² 340/360: 95°F outdoor air temperature and 80°F db/67°F wb entering evaporator air; minimum external duct static pressure.

³ Sound Rating Number (SRN) rated in accordance with test conditions included in ANSI/AHRI Standard 270-2008.

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

⁴ 1.5 hp motor is required with the ZA05 and ZA06 drive kits.

⁵ 2 hp blower motor is required with the ZAA04 drive kit.

SPECIFICATIONS - ZCB

General Data		Nominal Tonnage	3 Ton	4 Ton	5 Ton
		Model No.	ZCB036S4B	ZCB048S4B	ZCB060S4B
		Efficiency Type	Standard	Standard	Standard
Cooling Performance	Gross Cooling Capacity - Btuh	36,200	46,700	58,300	
	¹ Net Cooling Capacity - Btuh	35,000	45,500	57,000	
	AHRI Rated Air Flow - cfm	1190	1380	1725	
	² Sound Rating Number (SRN) (dBA)	77	80	78	
	Total Unit Power - kW	3.0	4.1	5.1	
	¹ SEER (Btuh/Watt)	14.00	14.00	14.00	
	¹ EER (Btuh/Watt)	11.70	11.20	11.20	
Refrigerant	Type	R-410A	R-410A	R-410A	
	Charge Furnished	5 lbs. 2 oz.	5 lbs. 4 oz.	7 lbs. 5 oz.	
Electric Heat Available - See page 8		5, 7.5, 10, 15 kW	5, 7.5, 10, 15, 22.5 kW		
Compressor Type (one per unit)		Scroll	Scroll	Scroll	
Outdoor Coil	Net face area - sq. ft.	15.2	15.2	19.9	
	Number of rows	1	1	1	
	Fins / inch	23	23	23	
Outdoor Coil Fan	Motor HP	(1) 1/4	(1) 1/4	(1) 1/4	
	Motor rpm	825	825	825	
	Total motor watts	315	315	315	
	Diameter - in.	(1) 22	(1) 22	(1) 22	
	Number of blades	4	4	4	
	Total air volume - cfm	3700	3700	3700	
Indoor Coil	Net face area - sq. ft.	8.4	8.4	10.8	
	Tube diameter - in.	3/8	3/8	3/8	
	Number of rows	3	3	3	
	Fins per inch	14	14	14	
	Drain Connection (no.and size) - in.	(1) 1 NPT	(1) 1 NPT	(1) 1 NPT	
	Expansion device type	Fixed Orifice	Fixed Orifice	Fixed Orifice	
³ Indoor Blower & Drive Selection	Nominal Motor HP	⁴ 1 hp, 1.5 hp	⁴ 1 hp, 1.5 hp	⁴ 1 hp, 1.5 hp	
	Maximum Usable Motor HP	1.15 hp, 1.7 hp	1.15 hp, 1.7 hp	1.15 hp, 1.7 hp	
	Available Drive Kits	Kit #ZA01 678-1035 rpm	Kit #ZA02 803-1226 rpm	Kit #ZA03 906-1383 rpm	
		Kit #ZA04 964-1471 rpm	⁵ Kit #ZA05 1098-1490 rpm	⁵ Kit #ZA06 1262-1634 rpm	
Wheel nominal diameter x width - in.		10 x 10	10 x 10	10 x 10	
Filters	Type	Disposable			
	Number and size - in.	(4) 14 x 20 x 2		(2) 16 X 20 X 2 (2) 20 X 20 X 2	
Electrical Characteristics - 60 Hz		208/230V 1 phase	208/230V, 1 phase	208/230V, 1 phase	
		208/230V, 460V & 575V 3 phase	208/230V 460V & 575V 3 phase	208/230V 460V & 575V 3 phase	

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

¹ AHRI Certified to AHRI Standard 210/240: 95°F outdoor air temperature and 80°F db/67°F wb entering evaporator air; minimum external duct static pressure.

² Sound Rating Number (SRN) rated in accordance with test conditions included in ANSI/AHRI Standard 270-2008.

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

⁴ 1 hp blower motor is not available for 208/230V-1ph applications.

⁵ 1.5 hp motor is required with the ZA05 and ZA06 drive kits.

RATINGS - ZCA

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

3 TON STANDARD EFFICIENCY ZCA036S4

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
	cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F
63°F	960	33.5	2.11	.69	.84	.97	31.0	2.40	.69	.84	.99	27.8	2.71	.69	.86	1.00	23.6	3.04	.70	.90	1.00
	1200	36.0	2.11	.75	.91	1.00	33.4	2.41	.75	.92	1.00	30.0	2.73	.75	.95	1.00	25.5	3.05	.78	.99	1.00
	1440	38.0	2.12	.79	.97	1.00	35.2	2.42	.80	.98	1.00	31.8	2.74	.81	1.00	1.00	27.3	3.06	.85	1.00	1.00
67°F	960	36.0	2.11	.53	.67	.81	33.4	2.41	.52	.67	.81	30.1	2.73	.50	.67	.83	25.6	3.05	.49	.68	.87
	1200	38.6	2.12	.57	.73	.87	35.8	2.42	.56	.73	.89	32.2	2.74	.55	.74	.91	27.3	3.06	.55	.77	.96
	1440	40.5	2.13	.60	.77	.94	37.4	2.43	.60	.78	.95	33.6	2.74	.59	.80	.98	28.7	3.07	.60	.84	1.00
71°F	960	38.4	2.12	.38	.53	.65	35.6	2.42	.36	.52	.65	32.2	2.74	.34	.50	.65	27.5	3.06	.31	.49	.67
	1200	41.1	2.13	.41	.57	.71	38.1	2.43	.40	.56	.71	34.4	2.75	.37	.55	.72	29.4	3.07	.35	.55	.75
	1440	43.0	2.14	.43	.60	.76	39.9	2.44	.42	.59	.76	36.0	2.76	.40	.59	.78	30.6	3.08	.35	.60	.82

4 TON STANDARD EFFICIENCY ZCA048S4

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
	cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F
63°F	1280	46.0	3.09	.71	.85	.97	42.9	3.48	.71	.86	.99	39.5	3.93	.71	.87	1.00	34.3	4.48	.73	.91	1.00
	1600	49.1	3.09	.76	.91	1.00	45.7	3.48	.77	.93	1.00	41.9	3.94	.78	.95	1.00	36.3	4.50	.81	.99	1.00
	1920	51.5	3.09	.81	.97	1.00	47.8	3.49	.82	.99	1.00	43.9	3.96	.83	1.00	1.00	38.4	4.51	.87	1.00	1.00
67°F	1280	49.2	3.09	.55	.69	.81	45.9	3.49	.54	.69	.83	42.3	3.94	.53	.69	.84	36.9	4.50	.53	.71	.88
	1600	52.5	3.10	.58	.74	.88	48.9	3.49	.58	.75	.89	44.9	3.96	.58	.76	.92	38.9	4.52	.58	.79	.97
	1920	55.0	3.10	.62	.79	.94	51.1	3.50	.61	.80	.96	46.8	3.98	.62	.81	.99	40.4	4.53	.63	.86	1.00
71°F	1280	52.3	3.10	.41	.54	.67	48.8	3.49	.40	.54	.67	44.9	3.96	.38	.53	.68	39.2	4.52	.36	.53	.70
	1600	55.8	3.11	.42	.58	.72	51.9	3.50	.42	.58	.73	47.6	3.97	.40	.57	.74	41.4	4.54	.38	.58	.77
	1920	58.3	3.11	.44	.61	.77	54.2	3.51	.43	.61	.78	49.6	3.99	.42	.62	.80	42.9	4.55	.41	.64	.84

5 TON STANDARD EFFICIENCY ZCA060S4

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
	cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F
63°F	1600	56.5	3.67	.73	.87	1.00	52.4	4.13	.74	.90	1.00	48.0	4.65	.76	.93	1.00	43.0	5.26	.78	.97	1.00
	2000	59.4	3.70	.78	.95	1.00	55.1	4.16	.80	.98	1.00	50.5	4.69	.83	1.00	1.00	45.9	5.31	.86	1.00	1.00
	2400	61.7	3.72	.84	1.00	1.00	57.7	4.19	.86	1.00	1.00	53.4	4.72	.89	1.00	1.00	48.5	5.36	.94	1.00	1.00
67°F	1600	60.3	3.71	.57	.70	.84	56.0	4.16	.57	.72	.86	51.4	4.70	.57	.73	.89	46.2	5.32	.58	.76	.94
	2000	63.3	3.73	.60	.76	.92	58.8	4.20	.61	.78	.95	53.8	4.74	.62	.81	.99	48.4	5.36	.63	.84	1.00
	2400	65.6	3.76	.64	.82	.99	60.8	4.22	.65	.84	1.00	55.7	4.76	.66	.87	1.00	49.7	5.38	.68	.92	1.00
71°F	1600	64.0	3.74	.42	.55	.68	59.5	4.20	.42	.56	.70	54.7	4.75	.41	.56	.71	49.3	5.37	.40	.57	.74
	2000	67.2	3.77	.44	.59	.74	62.4	4.24	.44	.60	.76	57.3	4.79	.43	.61	.78	51.7	5.42	.43	.63	.82
	2400	69.6	3.80	.45	.63	.80	64.7	4.27	.45	.64	.82	59.3	4.82	.45	.66	.85	53.2	5.45	.45	.68	.90

6 TON STANDARD EFFICIENCY ZCA072S4

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	
63°F	2000	67.6	4.48	0.74	0.89	1.00	62.3	5.03	0.75	0.90	1.00	56.3	5.64	0.76	0.93	1.00	50.0	6.34	0.78	0.96	1.00
	2400	71.1	4.53	0.79	0.94	1.00	65.3	5.07	0.81	0.96	1.00	59.2	5.68	0.82	0.99	1.00	52.9	6.38	0.84	1.00	1.00
	2800	73.7	4.56	0.84	0.99	1.00	67.8	5.10	0.85	1.00	1.00	62.1	5.72	0.87	1.00	1.00	55.9	6.43	0.90	1.00	1.00
67°F	2000	72.5	4.54	0.57	0.72	0.86	66.8	5.09	0.57	0.73	0.87	60.6	5.70	0.57	0.75	0.90	53.9	6.40	0.57	0.76	0.93
	2400	75.8	4.58	0.61	0.78	0.91	69.7	5.13	0.61	0.79	0.94	63.3	5.74	0.61	0.80	0.96	56.2	6.44	0.61	0.83	1.00
	2800	78.2	4.61	0.64	0.82	0.96	72.1	5.16	0.64	0.83	0.99	65.3	5.78	0.64	0.85	1.00	58.1	6.46	0.65	0.88	1.00
71°F	2000	77.2	4.59	0.43	0.57	0.70	71.3	5.14	0.41	0.56	0.71	65.0	5.77	0.40	0.56	0.72	58.1	6.46	0.38	0.56	0.74
	2400	80.7	4.64	0.44	0.60	0.75	74.4	5.19	0.43	0.60	0.77	67.7	5.81	0.41	0.61	0.79	60.2	6.50	0.40	0.61	0.81
	2800	83.2	4.68	0.45	0.63	0.80	76.6	5.23	0.45	0.64	0.82	69.6	5.84	0.44	0.65	0.84	62.0	6.54	0.42	0.65	0.87

RATINGS - ZCB

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

3 TON STANDARD EFFICIENCY ZCB036S4

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	
63°F	960	34.5	2.06	0.70	0.84	0.99	32.4	2.31	0.71	0.86	1.00	30.2	2.60	0.73	0.90	1.00	27.7	2.94	0.75	0.94	1.00
	1200	36.3	2.07	0.75	0.93	1.00	34.2	2.32	0.77	0.96	1.00	31.8	2.61	0.79	0.99	1.00	29.3	2.94	0.83	1.00	1.00
	1440	37.8	2.07	0.80	1.00	1.00	35.6	2.33	0.83	1.00	1.00	33.5	2.62	0.86	1.00	1.00	30.9	2.95	0.91	1.00	1.00
67°F	960	36.7	2.07	0.55	0.67	0.80	34.5	2.32	0.56	0.69	0.83	32.1	2.61	0.57	0.71	0.86	29.5	2.95	0.58	0.73	0.90
	1200	38.6	2.08	0.58	0.73	0.89	36.2	2.33	0.59	0.75	0.92	33.6	2.62	0.60	0.77	0.95	30.8	2.95	0.62	0.81	1.00
	1440	39.9	2.09	0.61	0.78	0.97	37.4	2.34	0.63	0.81	0.99	34.7	2.63	0.65	0.84	1.00	31.8	2.96	0.66	0.89	1.00
71°F	960	38.7	2.08	0.42	0.54	0.65	36.5	2.33	0.41	0.54	0.67	34.0	2.62	0.41	0.55	0.69	31.3	2.95	0.42	0.57	0.71
	1200	40.7	2.09	0.43	0.57	0.71	38.3	2.35	0.43	0.58	0.73	35.6	2.63	0.43	0.59	0.75	32.7	2.96	0.44	0.61	0.78
	1440	42.1	2.10	0.45	0.60	0.76	39.6	2.35	0.44	0.61	0.78	36.9	2.64	0.45	0.64	0.82	33.7	2.97	0.46	0.65	0.86

4 TON STANDARD EFFICIENCY ZCB048S4

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	
63°F	1280	44.5	2.93	0.72	0.85	0.99	43.1	3.30	0.74	0.88	1.00	41.7	3.74	0.76	0.91	1.00	40.0	4.25	0.79	0.95	1.00
	1600	46.2	2.94	0.76	0.94	1.00	44.7	3.32	0.79	0.97	1.00	43.1	3.76	0.82	1.00	1.00	41.5	4.27	0.85	1.00	1.00
	1920	47.6	2.96	0.82	1.00	1.00	46.1	3.34	0.85	1.00	1.00	44.6	3.78	0.88	1.00	1.00	42.9	4.30	0.92	1.00	1.00
67°F	1280	46.5	2.95	0.58	0.69	0.82	45.1	3.33	0.59	0.71	0.84	43.5	3.76	0.61	0.74	0.88	41.7	4.28	0.63	0.76	0.92
	1600	48.4	2.97	0.60	0.74	0.90	46.7	3.35	0.62	0.76	0.93	45.0	3.79	0.64	0.79	0.97	42.9	4.30	0.66	0.83	1.00
	1920	49.6	2.98	0.63	0.79	0.98	47.8	3.36	0.65	0.82	1.00	45.9	3.80	0.67	0.86	1.00	43.7	4.32	0.70	0.90	1.00
71°F	1280	48.4	2.97	0.44	0.56	0.67	46.9	3.35	0.46	0.58	0.69	45.1	3.79	0.47	0.60	0.71	43.3	4.31	0.49	0.62	0.74
	1600	50.4	2.99	0.45	0.59	0.72	48.6	3.38	0.47	0.61	0.74	46.7	3.82	0.48	0.63	0.77	44.6	4.34	0.51	0.65	0.80
	1920	51.9	3.01	0.47	0.62	0.76	49.8	3.39	0.48	0.64	0.80	47.8	3.84	0.50	0.66	0.83	45.7	4.36	0.52	0.69	0.88

5 TON STANDARD EFFICIENCY ZCB060S4

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
	cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F
63°F	1600	55.3	3.63	0.74	0.88	0.99	50.8	4.08	0.74	0.89	1.00	45.8	4.61	0.75	0.91	1.00	40.6	5.23	0.76	0.94	1.00
	2000	58.8	3.65	0.80	0.95	1.00	53.9	4.10	0.81	0.97	1.00	48.9	4.64	0.82	0.99	1.00	43.6	5.27	0.84	1.00	1.00
	2400	61.7	3.66	0.85	1.00	1.00	56.9	4.12	0.86	1.00	1.00	52.1	4.67	0.89	1.00	1.00	46.9	5.32	0.91	1.00	1.00
67°F	1600	59.7	3.65	0.57	0.72	0.85	54.9	4.11	0.56	0.72	0.86	49.9	4.65	0.55	0.73	0.88	44.4	5.28	0.54	0.74	0.91
	2000	63.3	3.67	0.61	0.78	0.92	58.3	4.14	0.60	0.79	0.94	52.9	4.68	0.60	0.81	0.96	47.0	5.31	0.60	0.82	0.99
	2400	66.0	3.69	0.65	0.83	0.98	60.6	4.15	0.65	0.85	1.00	55.1	4.71	0.65	0.87	1.00	49.0	5.35	0.66	0.90	1.00
71°F	1600	63.9	3.67	0.41	0.56	0.70	58.9	4.14	0.39	0.55	0.70	53.8	4.69	0.38	0.55	0.71	48.0	5.33	0.35	0.54	0.72
	2000	67.8	3.70	0.44	0.60	0.76	62.6	4.17	0.42	0.60	0.77	56.9	4.72	0.40	0.60	0.79	50.9	5.37	0.38	0.60	0.81
	2400	70.7	3.72	0.45	0.64	0.82	65.0	4.19	0.44	0.64	0.83	59.2	4.75	0.43	0.65	0.85	53.0	5.40	0.41	0.66	0.88

BLOWER DATA - BELT DRIVE - ZCA036

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.

FOR ALL UNITS ADD:

1 - Any factory installed options air resistance (heat section, economizer, wet coil, etc.).

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

See page 23 for blower motors and drives and wet coil and options/accessory air resistance data.

DOWNFLOW

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished				Kit ZA01											
900	555	0.16	621	0.17	691	0.19	763	0.20	832	0.22	897	0.24	956	0.26	1010	0.29
1000	577	0.18	644	0.19	715	0.21	786	0.23	855	0.24	919	0.27	976	0.29	1028	0.32
1100	601	0.20	670	0.22	741	0.23	812	0.25	879	0.28	941	0.30	996	0.33	1047	0.37
1200	629	0.22	698	0.24	770	0.26	840	0.28	905	0.31	965	0.34	1018	0.38	1066	0.41
1300	659	0.25	729	0.27	800	0.30	869	0.32	932	0.35	989	0.39	1040	0.43	1087	0.47
1400	692	0.28	763	0.31	833	0.34	899	0.37	960	0.40	1014	0.44	1063	0.48	1108	0.52
1500	728	0.32	798	0.35	866	0.38	930	0.41	987	0.45	1039	0.50	1086	0.54	1130	0.58

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZA04															
900	1060	0.31	1108	0.34	1154	0.37	1197	0.40	1239	0.44	1279	0.47	1319	0.51	1359	0.55
1000	1077	0.35	1123	0.38	1168	0.42	1211	0.45	1252	0.49	1291	0.52	1330	0.56	1370	0.60
1100	1094	0.40	1139	0.43	1183	0.46	1225	0.50	1266	0.54	1305	0.58	1343	0.62	1382	0.66
1200	1112	0.45	1156	0.48	1199	0.52	1241	0.55	1281	0.59	1319	0.64	1357	0.68	1394	0.72
1300	1131	0.50	1174	0.54	1216	0.57	1257	0.61	1296	0.66	1334	0.70	1371	0.74	1408	0.78
1400	1151	0.56	1193	0.60	1234	0.64	1274	0.68	1313	0.72	1351	0.77	1387	0.81	1423	0.86
1500	1172	0.62	1213	0.66	1253	0.71	1293	0.75	1331	0.79	1368	0.84	1404	0.89	1440	0.93

HORIZONTAL

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished				Kit ZA01											
900	572	0.14	641	0.16	712	0.19	785	0.22	860	0.24	931	0.27	991	0.29	1039	0.32
1000	602	0.16	671	0.19	742	0.22	815	0.24	887	0.27	954	0.30	1010	0.33	1055	0.36
1100	636	0.19	706	0.22	776	0.25	847	0.28	916	0.31	977	0.34	1028	0.37	1070	0.41
1200	674	0.23	744	0.26	813	0.29	881	0.32	944	0.35	999	0.38	1045	0.42	1087	0.45
1300	716	0.26	784	0.29	851	0.33	914	0.36	971	0.40	1020	0.43	1064	0.47	1106	0.50
1400	759	0.30	824	0.34	888	0.37	946	0.41	998	0.45	1043	0.49	1086	0.52	1129	0.55
1500	803	0.35	865	0.39	925	0.43	979	0.47	1027	0.52	1070	0.55	1113	0.58	1156	0.61

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZA04															
900	1085	0.35	1135	0.38	1183	0.40	1227	0.42	1268	0.45	1305	0.49	1342	0.53	1379	0.57
1000	1099	0.39	1148	0.42	1195	0.44	1239	0.47	1279	0.50	1316	0.54	1352	0.58	1389	0.62
1100	1114	0.44	1163	0.46	1210	0.49	1253	0.52	1292	0.55	1329	0.59	1364	0.64	1401	0.68
1200	1131	0.48	1180	0.51	1226	0.54	1269	0.57	1308	0.61	1343	0.66	1378	0.70	1414	0.75
1300	1151	0.53	1199	0.56	1245	0.59	1287	0.63	1324	0.68	1359	0.72	1394	0.77	1429	0.82
1400	1175	0.58	1222	0.62	1266	0.66	1306	0.70	1342	0.75	1376	0.80	1410	0.85	1446	0.89
1500	1201	0.65	1246	0.68	1289	0.73	1327	0.78	1362	0.83	1395	0.88	1429	0.93	1464	0.98

BLOWER DATA - BELT DRIVE - ZCA048

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.

FOR ALL UNITS ADD:

1 - Any factory installed options air resistance (heat section, economizer, wet coil, etc.).

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

See page 23 for blower motors and drives and wet coil and options/accessory air resistance data.

DOWNFLOW

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished						Kit ZA02									
1200	629	0.22	698	0.24	770	0.26	840	0.28	905	0.31	965	0.34	1018	0.38	1066	0.41
1300	659	0.25	729	0.27	800	0.30	869	0.32	932	0.35	989	0.39	1040	0.43	1087	0.47
1400	692	0.28	763	0.31	833	0.34	899	0.37	960	0.40	1014	0.44	1063	0.48	1108	0.52
1500	728	0.32	798	0.35	866	0.38	930	0.41	987	0.45	1039	0.50	1086	0.54	1130	0.58
1600	766	0.37	835	0.40	900	0.43	960	0.47	1015	0.51	1065	0.55	1110	0.60	1152	0.65
1700	806	0.42	871	0.45	934	0.48	991	0.52	1043	0.56	1091	0.61	1134	0.66	1176	0.71
1800	845	0.47	908	0.50	967	0.54	1021	0.58	1071	0.63	1117	0.68	1159	0.73	1200	0.78
1900	884	0.53	944	0.56	1000	0.60	1051	0.64	1099	0.69	1143	0.75	1185	0.80	1225	0.86
2000	923	0.59	979	0.63	1032	0.67	1082	0.72	1128	0.77	1171	0.83	1211	0.89	1251	0.95

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZA02						Kit ZA05									
1200	1112	0.45	1156	0.48	1199	0.52	1241	0.55	1281	0.59	1319	0.64	1357	0.68	1394	0.72
1300	1131	0.50	1174	0.54	1216	0.57	1257	0.61	1296	0.66	1334	0.70	1371	0.74	1408	0.78
1400	1151	0.56	1193	0.60	1234	0.64	1274	0.68	1313	0.72	1351	0.77	1387	0.81	1423	0.86
1500	1172	0.62	1213	0.66	1253	0.71	1293	0.75	1331	0.79	1368	0.84	1404	0.89	1440	0.93
1600	1193	0.69	1234	0.73	1273	0.78	1313	0.82	1350	0.87	1387	0.92	1422	0.97	1457	1.01
1700	1216	0.76	1255	0.81	1295	0.86	1333	0.90	1370	0.95	1406	1.00	1441	1.05	1475	1.10
1800	1239	0.84	1279	0.89	1317	0.94	1355	0.99	1391	1.04	1426	1.09	1461	1.14	1494	1.19
1900	1264	0.92	1303	0.98	1341	1.03	1378	1.08	1413	1.14	1448	1.19	1481	1.24	1514	1.29
2000	1290	1.01	1328	1.07	1366	1.13	1402	1.19	1436	1.24	1470	1.29	1503	1.35	1535	1.40

HORIZONTAL

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished						Kit ZA02									
1200	674	0.23	744	0.26	813	0.29	881	0.32	944	0.35	999	0.38	1045	0.42	1087	0.45
1300	716	0.26	784	0.29	851	0.33	914	0.36	971	0.40	1020	0.43	1064	0.47	1106	0.50
1400	759	0.30	824	0.34	888	0.37	946	0.41	998	0.45	1043	0.49	1086	0.52	1129	0.55
1500	803	0.35	865	0.39	925	0.43	979	0.47	1027	0.52	1070	0.55	1113	0.58	1156	0.61
1600	847	0.40	905	0.45	961	0.50	1013	0.54	1058	0.58	1100	0.62	1142	0.65	1185	0.68
1700	890	0.47	944	0.52	997	0.57	1047	0.62	1091	0.66	1132	0.69	1173	0.72	1216	0.76
1800	930	0.54	982	0.60	1033	0.65	1081	0.70	1124	0.74	1165	0.77	1206	0.80	1248	0.84
1900	970	0.62	1020	0.68	1069	0.73	1116	0.78	1158	0.81	1199	0.85	1239	0.89	1280	0.93
2000	1009	0.71	1058	0.76	1106	0.81	1151	0.86	1193	0.9	1233	0.94	1273	0.98	1312	1.04

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZA02						Kit ZA05									
1200	1131	0.48	1180	0.51	1226	0.54	1269	0.57	1308	0.61	1343	0.66	1378	0.70	1414	0.75
1300	1151	0.53	1199	0.56	1245	0.59	1287	0.63	1324	0.68	1359	0.72	1394	0.77	1429	0.82
1400	1175	0.58	1222	0.62	1266	0.66	1306	0.70	1342	0.75	1376	0.80	1410	0.85	1446	0.89
1500	1201	0.65	1246	0.68	1289	0.73	1327	0.78	1362	0.83	1395	0.88	1429	0.93	1464	0.98
1600	1229	0.72	1273	0.76	1313	0.81	1350	0.86	1384	0.92	1416	0.97	1450	1.02	1485	1.07
1700	1258	0.80	1300	0.85	1338	0.90	1374	0.96	1407	1.02	1440	1.07	1473	1.12	1508	1.17
1800	1289	0.89	1328	0.94	1365	1.00	1399	1.06	1432	1.13	1465	1.18	1498	1.23	1532	1.28
1900	1319	0.99	1357	1.05	1392	1.11	1426	1.18	1459	1.24	1491	1.30	1524	1.35	1558	1.39
2000	1350	1.10	1387	1.16	1421	1.23	1454	1.30	1486	1.36	1518	1.42	1551	1.47	1584	1.51

BLOWER DATA - BELT DRIVE - ZCA060

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.

FOR ALL UNITS ADD:

1 - Any factory installed options air resistance (heat section, economizer, wet coil, etc.).

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

See page 23 for blower motors and drives and wet coil and options/accessory air resistance data.

DOWNFLOW

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished				Kit ZA03											
1600	787	0.38	854	0.41	918	0.44	976	0.48	1030	0.52	1078	0.56	1123	0.61	1164	0.66
1700	827	0.43	892	0.46	952	0.49	1007	0.53	1058	0.58	1105	0.63	1148	0.68	1189	0.73
1800	868	0.48	929	0.52	986	0.55	1038	0.59	1087	0.64	1132	0.69	1174	0.75	1214	0.80
1900	907	0.54	966	0.58	1019	0.62	1069	0.66	1116	0.71	1160	0.77	1200	0.82	1240	0.88
2000	946	0.60	1001	0.65	1053	0.69	1101	0.74	1146	0.79	1188	0.85	1228	0.91	1267	0.98
2100	984	0.68	1037	0.72	1086	0.77	1132	0.83	1176	0.89	1217	0.95	1256	1.01	1295	1.08
2200	1021	0.75	1072	0.81	1120	0.86	1165	0.92	1207	0.99	1247	1.05	1286	1.12	1324	1.19
2300	1059	0.84	1108	0.90	1154	0.96	1197	1.03	1239	1.10	1278	1.17	1316	1.24	1354	1.32
2400	1097	0.95	1144	1.01	1188	1.08	1231	1.15	1271	1.22	1310	1.30	1348	1.38	1385	1.45

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZA03								Kit ZA06							
1600	1205	0.70	1245	0.75	1284	0.79	1323	0.84	1361	0.88	1397	0.93	1432	0.98	1467	1.03
1700	1228	0.78	1268	0.82	1307	0.87	1345	0.92	1382	0.97	1417	1.02	1452	1.07	1486	1.11
1800	1253	0.85	1292	0.91	1331	0.96	1368	1.01	1404	1.06	1439	1.11	1473	1.16	1506	1.21
1900	1279	0.94	1317	1.00	1355	1.05	1392	1.10	1427	1.16	1461	1.21	1494	1.26	1527	1.31
2000	1305	1.04	1343	1.10	1380	1.15	1416	1.21	1450	1.26	1484	1.32	1516	1.37	1549	1.42
2100	1333	1.14	1370	1.21	1407	1.26	1442	1.32	1475	1.38	1508	1.43	1540	1.48	1572	1.53
2200	1361	1.26	1398	1.32	1434	1.38	1468	1.44	1501	1.50	1533	1.55	1564	1.61	1596	1.66
2300	1391	1.39	1427	1.45	1462	1.51	1495	1.57	1527	1.63	1559	1.68	1590	1.73	1622	1.78
2400	1421	1.52	1456	1.59	1490	1.65	1523	1.71	1555	1.76	1586	1.82	1617	1.87	1649	1.92

HORIZONTAL

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furn.		Kit ZA03													
1600	864	0.42	921	0.46	976	0.51	1027	0.56	1072	0.60	1113	0.63	1155	0.66	1198	0.69
1700	907	0.48	961	0.53	1013	0.58	1061	0.63	1105	0.67	1146	0.70	1187	0.73	1230	0.77
1800	948	0.56	999	0.61	1049	0.66	1096	0.71	1139	0.75	1180	0.78	1221	0.82	1262	0.86
1900	987	0.64	1037	0.69	1086	0.74	1132	0.79	1174	0.83	1214	0.86	1255	0.90	1295	0.95
2000	1028	0.73	1076	0.78	1123	0.83	1168	0.87	1210	0.91	1250	0.96	1289	1.00	1328	1.06
2100	1071	0.81	1117	0.86	1163	0.91	1206	0.96	1247	1.01	1286	1.06	1324	1.12	1362	1.18
2200	1116	0.91	1160	0.96	1204	1.01	1245	1.07	1285	1.12	1323	1.18	1360	1.25	1396	1.31
2300	1161	1.02	1204	1.07	1245	1.13	1285	1.19	1323	1.25	1360	1.32	1396	1.38	1432	1.45
2400	1207	1.14	1248	1.20	1288	1.26	1326	1.32	1362	1.39	1398	1.46	1433	1.53	1468	1.60

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZA03								Kit ZA06							
1600	1242	0.73	1284	0.77	1324	0.82	1360	0.88	1394	0.93	1426	0.99	1460	1.04	1495	1.08
1700	1272	0.81	1312	0.86	1350	0.92	1385	0.98	1418	1.04	1451	1.09	1485	1.14	1519	1.19
1800	1302	0.90	1341	0.96	1377	1.02	1411	1.08	1444	1.15	1477	1.20	1510	1.25	1544	1.30
1900	1334	1.01	1371	1.07	1406	1.13	1439	1.20	1471	1.26	1504	1.32	1537	1.37	1571	1.41
2000	1365	1.12	1401	1.19	1435	1.25	1468	1.32	1500	1.38	1532	1.44	1565	1.49	1598	1.53
2100	1398	1.25	1433	1.31	1466	1.38	1497	1.45	1529	1.51	1561	1.56	1594	1.61	1626	1.65
2200	1431	1.38	1465	1.45	1497	1.52	1528	1.58	1560	1.64	1591	1.69	1623	1.73	1656	1.77
2300	1466	1.52	1498	1.59	1529	1.66	1560	1.72	1591	1.77	1623	1.82	1654	1.86	1686	1.90
2400	1500	1.67	1532	1.74	1563	1.80	1593	1.86	1624	1.91	1655	1.96	1686	2.00	1718	2.04

BLOWER DATA - BELT DRIVE - ZCA072

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.

FOR ALL UNITS ADD:

1 - Any factory installed options air resistance (heat section, economizer, wet coil, etc.).

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

See page 23 for blower motors and drives and wet coil and options/accessory air resistance data.

DOWNFLOW

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished				Kit ZAA02											
1900	578	0.44	610	0.49	643	0.54	678	0.60	714	0.65	749	0.70	785	0.76	819	0.82
2000	600	0.50	632	0.56	665	0.61	699	0.66	734	0.71	769	0.77	803	0.83	837	0.90
2100	623	0.57	655	0.62	688	0.68	721	0.73	755	0.79	789	0.84	822	0.91	854	0.98
2200	647	0.65	678	0.70	711	0.75	743	0.81	776	0.86	809	0.93	841	1.00	872	1.06
2300	671	0.73	702	0.78	734	0.83	766	0.89	798	0.95	829	1.02	860	1.09	890	1.16
2400	696	0.81	726	0.87	757	0.92	788	0.98	819	1.04	850	1.11	880	1.19	909	1.26
2500	720	0.90	750	0.95	780	1.01	811	1.07	841	1.14	871	1.22	900	1.30	929	1.37
2600	745	0.99	774	1.05	804	1.11	834	1.17	864	1.25	893	1.33	921	1.41	949	1.49
2700	770	1.09	799	1.15	828	1.21	858	1.28	887	1.36	916	1.44	943	1.53	969	1.61
2800	795	1.19	824	1.25	853	1.33	882	1.40	911	1.48	939	1.56	965	1.65	990	1.73
2900	820	1.30	849	1.37	878	1.45	907	1.53	935	1.61	962	1.70	988	1.78	1012	1.86

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZAA03															
1900	853	0.88	885	0.94	915	0.99	944	1.05	971	1.11	996	1.17	1021	1.23	1045	1.29
2000	869	0.96	899	1.01	929	1.07	957	1.13	984	1.19	1009	1.25	1033	1.31	1058	1.38
2100	885	1.04	915	1.10	944	1.15	971	1.22	997	1.28	1022	1.34	1046	1.40	1070	1.46
2200	902	1.13	931	1.19	959	1.24	986	1.31	1012	1.37	1036	1.43	1060	1.50	1084	1.56
2300	920	1.23	948	1.29	975	1.35	1001	1.41	1027	1.47	1051	1.53	1075	1.60	1098	1.66
2400	938	1.33	965	1.39	992	1.45	1017	1.52	1042	1.58	1066	1.64	1090	1.70	1113	1.77
2500	956	1.44	983	1.51	1009	1.57	1034	1.63	1059	1.69	1082	1.75	1105	1.82	1128	1.88
2600	975	1.56	1001	1.63	1026	1.69	1051	1.75	1075	1.81	1098	1.87	1121	1.93	1143	2.00
2700	995	1.68	1020	1.75	1044	1.81	1069	1.87	1092	1.93	1114	1.99	1136	2.06	1158	2.13
2800	1015	1.81	1039	1.87	1063	1.94	1086	2.00	1109	2.06	1131	2.12	1152	2.19	1174	2.26
2900	1035	1.94	1058	2.00	1081	2.07	1104	2.13	1126	2.19	1147	2.26	1168	2.33	1189	2.40

HORIZONTAL

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished				Kit ZAA02											
1900	581	0.44	618	0.49	655	0.54	692	0.59	729	0.64	765	0.69	800	0.75	833	0.80
2000	602	0.50	639	0.55	676	0.61	713	0.66	749	0.71	784	0.76	818	0.82	850	0.88
2100	625	0.57	661	0.62	698	0.67	735	0.73	770	0.78	804	0.84	837	0.90	868	0.96
2200	648	0.64	685	0.69	721	0.75	757	0.80	791	0.86	824	0.92	856	0.98	886	1.05
2300	673	0.71	709	0.77	745	0.83	780	0.88	813	0.94	845	1.01	876	1.08	905	1.15
2400	699	0.79	734	0.85	769	0.91	803	0.97	835	1.04	866	1.11	896	1.18	924	1.25
2500	725	0.88	759	0.94	793	1.00	826	1.07	857	1.14	887	1.21	916	1.28	944	1.36
2600	752	0.97	785	1.04	818	1.10	850	1.17	880	1.25	909	1.32	937	1.40	964	1.48
2700	779	1.07	811	1.14	843	1.21	873	1.29	902	1.37	931	1.44	958	1.52	984	1.60
2800	805	1.18	837	1.26	868	1.33	897	1.41	925	1.49	952	1.57	979	1.66	1004	1.74
2900	832	1.30	863	1.38	892	1.46	921	1.54	948	1.63	974	1.71	1000	1.80	1024	1.88

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	ZAA02		Kit ZAA03													
1900	864	0.87	895	0.93	924	0.99	953	1.06	980	1.12	1007	1.18	1032	1.25	1056	1.31
2000	881	0.95	911	1.01	940	1.08	967	1.14	994	1.21	1020	1.27	1044	1.34	1068	1.40
2100	898	1.03	927	1.10	955	1.17	982	1.23	1008	1.30	1033	1.37	1057	1.43	1080	1.50
2200	916	1.12	944	1.19	971	1.26	998	1.33	1023	1.40	1047	1.47	1071	1.54	1093	1.60
2300	934	1.22	961	1.29	988	1.36	1014	1.43	1038	1.50	1062	1.58	1085	1.65	1107	1.71
2400	952	1.32	979	1.40	1005	1.47	1030	1.54	1054	1.62	1077	1.69	1099	1.76	1121	1.83
2500	971	1.43	997	1.51	1022	1.59	1046	1.66	1069	1.74	1092	1.81	1114	1.88	1135	1.95
2600	990	1.55	1015	1.63	1039	1.71	1063	1.79	1086	1.86	1108	1.94	1129	2.01	1150	2.07
2700	1009	1.68	1034	1.76	1057	1.84	1080	1.92	1102	1.99	1124	2.07	1145	2.14	1166	2.21
2800	1028	1.82	1052	1.9	1075	1.98	1097	2.06	1119	2.13	1140	2.21	1161	2.28	1182	2.34
2900	1048	1.96	1071	2.04	1093	2.12	1115	2.20	1136	2.28	1157	2.35	1177	2.42	1198	2.48

BLOWER DATA - BELT DRIVE - ZCBO36

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.

FOR ALL UNITS ADD:

1 - Any factory installed options air resistance (heat section, economizer, wet coil, etc.).

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

See page 23 for blower motors and drives and wet coil and options/accessory air resistance data.

DOWNFLOW

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished				Kit ZA01											
900	562	0.16	629	0.18	699	0.19	771	0.20	840	0.22	904	0.24	962	0.26	1015	0.29
1000	586	0.18	654	0.20	725	0.21	796	0.23	864	0.25	927	0.27	983	0.30	1034	0.33
1100	612	0.20	681	0.22	752	0.24	823	0.26	890	0.28	950	0.31	1004	0.34	1054	0.37
1200	641	0.23	711	0.25	783	0.27	852	0.29	917	0.32	975	0.35	1027	0.39	1074	0.42
1300	673	0.25	744	0.28	815	0.30	882	0.33	944	0.36	1000	0.40	1050	0.44	1096	0.48
1400	709	0.29	779	0.32	849	0.34	914	0.37	973	0.41	1026	0.45	1074	0.49	1118	0.53
1500	747	0.33	816	0.36	883	0.39	945	0.42	1001	0.46	1052	0.51	1098	0.55	1141	0.59

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZA04															
900	1065	0.32	1112	0.35	1158	0.38	1202	0.41	1243	0.44	1284	0.48	1323	0.52	1364	0.55
1000	1082	0.36	1128	0.39	1173	0.42	1216	0.45	1257	0.49	1297	0.53	1336	0.57	1375	0.60
1100	1100	0.40	1145	0.44	1189	0.47	1231	0.51	1272	0.54	1311	0.58	1349	0.62	1388	0.66
1200	1119	0.45	1163	0.49	1206	0.52	1247	0.56	1287	0.60	1326	0.64	1364	0.68	1402	0.72
1300	1139	0.51	1182	0.55	1224	0.58	1265	0.62	1304	0.66	1342	0.71	1379	0.75	1416	0.79
1400	1160	0.57	1202	0.61	1243	0.65	1283	0.69	1322	0.73	1359	0.78	1396	0.82	1432	0.87
1500	1182	0.64	1223	0.68	1263	0.72	1303	0.76	1341	0.81	1378	0.85	1414	0.90	1449	0.94

HORIZONTAL

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished				Kit ZA01										Kit ZA04	
900	580	0.14	649	0.17	721	0.19	794	0.22	868	0.24	938	0.27	998	0.30	1045	0.33
1000	612	0.17	681	0.19	752	0.22	825	0.25	897	0.27	963	0.30	1017	0.33	1061	0.37
1100	647	0.20	717	0.23	788	0.26	858	0.28	926	0.31	986	0.34	1036	0.38	1077	0.41
1200	687	0.23	757	0.26	826	0.29	893	0.32	955	0.35	1008	0.39	1054	0.42	1095	0.46
1300	730	0.27	798	0.30	864	0.33	926	0.37	982	0.40	1030	0.44	1073	0.47	1116	0.51
1400	775	0.31	840	0.34	902	0.38	959	0.42	1009	0.46	1054	0.50	1096	0.53	1140	0.56
1500	820	0.36	881	0.40	939	0.44	993	0.49	1039	0.53	1082	0.56	1124	0.59	1168	0.62

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZA04															
900	1091	0.36	1140	0.38	1188	0.40	1232	0.43	1272	0.46	1309	0.49	1346	0.53	1383	0.57
1000	1105	0.40	1154	0.42	1201	0.45	1245	0.47	1284	0.50	1321	0.54	1357	0.58	1394	0.62
1100	1121	0.44	1169	0.47	1216	0.49	1259	0.52	1298	0.56	1335	0.60	1370	0.64	1406	0.69
1200	1139	0.49	1187	0.52	1234	0.54	1276	0.58	1314	0.62	1350	0.66	1385	0.71	1421	0.75
1300	1161	0.54	1208	0.57	1254	0.60	1295	0.64	1332	0.69	1366	0.73	1401	0.78	1436	0.83
1400	1185	0.59	1232	0.63	1276	0.67	1315	0.71	1351	0.76	1384	0.81	1419	0.86	1454	0.90
1500	1212	0.66	1257	0.70	1299	0.74	1337	0.79	1371	0.84	1404	0.89	1438	0.94	1473	0.99

BLOWER DATA - BELT DRIVE - ZCB048

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.

FOR ALL UNITS ADD:

1 - Any factory installed options air resistance (heat section, economizer, wet coil, etc.).

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

See page 23 for blower motors and drives and wet coil and options/accessory air resistance data.

DOWNFLOW

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished						Kit ZA02									
1200	641	0.23	711	0.25	783	0.27	852	0.29	917	0.32	975	0.35	1027	0.39	1074	0.42
1300	673	0.25	744	0.28	815	0.30	882	0.33	944	0.36	1000	0.40	1050	0.44	1096	0.48
1400	709	0.29	779	0.32	849	0.34	914	0.37	973	0.41	1026	0.45	1074	0.49	1118	0.53
1500	747	0.33	816	0.36	883	0.39	945	0.42	1001	0.46	1052	0.51	1098	0.55	1141	0.59
1600	787	0.38	854	0.41	918	0.44	976	0.48	1030	0.52	1078	0.56	1123	0.61	1164	0.66
1700	827	0.43	892	0.46	952	0.49	1007	0.53	1058	0.58	1105	0.63	1148	0.68	1189	0.73
1800	868	0.48	929	0.52	986	0.55	1038	0.59	1087	0.64	1132	0.69	1174	0.75	1214	0.80
1900	907	0.54	966	0.58	1019	0.62	1069	0.66	1116	0.71	1160	0.77	1200	0.82	1240	0.88
2000	946	0.60	1001	0.65	1053	0.69	1101	0.74	1146	0.79	1188	0.85	1228	0.91	1267	0.98

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZA02						Kit ZA05									
1200	1119	0.45	1163	0.49	1206	0.52	1247	0.56	1287	0.60	1326	0.64	1364	0.68	1402	0.72
1300	1139	0.51	1182	0.55	1224	0.58	1265	0.62	1304	0.66	1342	0.71	1379	0.75	1416	0.79
1400	1160	0.57	1202	0.61	1243	0.65	1283	0.69	1322	0.73	1359	0.78	1396	0.82	1432	0.87
1500	1182	0.64	1223	0.68	1263	0.72	1303	0.76	1341	0.81	1378	0.85	1414	0.9	1449	0.94
1600	1205	0.70	1245	0.75	1284	0.79	1323	0.84	1361	0.88	1397	0.93	1432	0.98	1467	1.03
1700	1228	0.78	1268	0.82	1307	0.87	1345	0.92	1382	0.97	1417	1.02	1452	1.07	1486	1.11
1800	1253	0.85	1292	0.91	1331	0.96	1368	1.01	1404	1.06	1439	1.11	1473	1.16	1506	1.21
1900	1279	0.94	1317	1.00	1355	1.05	1392	1.10	1427	1.16	1461	1.21	1494	1.26	1527	1.31
2000	1305	1.04	1343	1.10	1380	1.15	1416	1.21	1450	1.26	1484	1.32	1516	1.37	1549	1.42

HORIZONTAL

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished						Kit ZA02									
1200	687	0.23	757	0.26	826	0.29	893	0.32	955	0.35	1008	0.39	1054	0.42	1095	0.46
1300	730	0.27	798	0.30	864	0.33	926	0.37	982	0.40	1030	0.44	1073	0.47	1116	0.51
1400	775	0.31	840	0.34	902	0.38	959	0.42	1009	0.46	1054	0.50	1096	0.53	1140	0.56
1500	820	0.36	881	0.40	939	0.44	993	0.49	1039	0.53	1082	0.56	1124	0.59	1168	0.62
1600	864	0.42	921	0.46	976	0.51	1027	0.56	1072	0.6	1113	0.63	1155	0.66	1198	0.69
1700	907	0.48	961	0.53	1013	0.58	1061	0.63	1105	0.67	1146	0.70	1187	0.73	1230	0.77
1800	948	0.56	999	0.61	1049	0.66	1096	0.71	1139	0.75	1180	0.78	1221	0.82	1262	0.86
1900	987	0.64	1037	0.69	1086	0.74	1132	0.79	1174	0.83	1214	0.86	1255	0.90	1295	0.95
2000	1028	0.73	1076	0.78	1123	0.83	1168	0.87	1210	0.91	1250	0.96	1289	1.00	1328	1.06

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZA02						Kit ZA05									
1200	1139	0.49	1187	0.52	1234	0.54	1276	0.58	1314	0.62	1350	0.66	1385	0.71	1421	0.75
1300	1161	0.54	1208	0.57	1254	0.60	1295	0.64	1332	0.69	1366	0.73	1401	0.78	1436	0.83
1400	1185	0.59	1232	0.63	1276	0.67	1315	0.71	1351	0.76	1384	0.81	1419	0.86	1454	0.90
1500	1212	0.66	1257	0.70	1299	0.74	1337	0.79	1371	0.84	1404	0.89	1438	0.94	1473	0.99
1600	1242	0.73	1284	0.77	1324	0.82	1360	0.88	1394	0.93	1426	0.99	1460	1.04	1495	1.08
1700	1272	0.81	1312	0.86	1350	0.92	1385	0.98	1418	1.04	1451	1.09	1485	1.14	1519	1.19
1800	1302	0.90	1341	0.96	1377	1.02	1411	1.08	1444	1.15	1477	1.20	1510	1.25	1544	1.30
1900	1334	1.01	1371	1.07	1406	1.13	1439	1.20	1471	1.26	1504	1.32	1537	1.37	1571	1.41
2000	1365	1.12	1401	1.19	1435	1.25	1468	1.32	1500	1.38	1532	1.44	1565	1.49	1598	1.53

BLOWER DATA - BELT DRIVE - ZCBO60

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.

FOR ALL UNITS ADD:

1 - Any factory installed options air resistance (heat section, economizer, wet coil, etc.).

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

See page 23 for blower motors and drives and wet coil and options/accessory air resistance data.

DOWNFLOW

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished						Kit ZA03									
1600	764	0.46	823	0.51	882	0.56	940	0.60	997	0.65	1048	0.69	1094	0.72	1140	0.75
1700	806	0.53	863	0.58	919	0.62	975	0.67	1028	0.71	1075	0.75	1119	0.78	1164	0.81
1800	849	0.60	903	0.65	957	0.69	1010	0.74	1058	0.78	1102	0.82	1145	0.85	1189	0.88
1900	892	0.68	944	0.72	995	0.77	1045	0.82	1089	0.86	1131	0.89	1174	0.92	1217	0.95
2000	935	0.76	984	0.81	1033	0.86	1079	0.91	1122	0.95	1163	0.97	1204	1.00	1247	1.03
2100	977	0.85	1024	0.90	1070	0.95	1114	1.00	1155	1.03	1196	1.06	1237	1.09	1278	1.12
2200	1018	0.95	1063	0.99	1107	1.04	1149	1.09	1190	1.12	1230	1.15	1270	1.18	1310	1.22
2300	1057	1.04	1100	1.09	1143	1.14	1185	1.18	1225	1.22	1264	1.25	1303	1.29	1342	1.33
2400	1096	1.14	1137	1.18	1179	1.23	1220	1.27	1260	1.31	1299	1.35	1337	1.40	1375	1.45

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZA03								Kit ZA06							
1600	1185	0.79	1229	0.81	1271	0.84	1313	0.86	1354	0.90	1393	0.94	1431	0.98	1468	1.03
1700	1208	0.84	1252	0.87	1294	0.90	1335	0.94	1375	0.98	1413	1.02	1449	1.07	1485	1.12
1800	1233	0.91	1276	0.94	1318	0.98	1358	1.02	1397	1.06	1434	1.11	1469	1.16	1504	1.21
1900	1261	0.98	1303	1.02	1343	1.06	1382	1.11	1420	1.16	1455	1.21	1490	1.26	1525	1.31
2000	1289	1.07	1330	1.11	1370	1.16	1407	1.21	1444	1.27	1478	1.32	1513	1.37	1547	1.42
2100	1319	1.16	1359	1.21	1397	1.27	1433	1.32	1468	1.38	1502	1.44	1536	1.49	1570	1.53
2200	1350	1.27	1388	1.32	1424	1.38	1459	1.45	1494	1.51	1527	1.56	1561	1.61	1594	1.65
2300	1380	1.38	1417	1.45	1452	1.51	1486	1.58	1520	1.63	1553	1.68	1587	1.73	1620	1.78
2400	1411	1.51	1446	1.58	1480	1.65	1514	1.71	1547	1.77	1580	1.81	1614	1.86	1648	1.90

HORIZONTAL

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished						Kit ZA03									
1600	752	0.40	818	0.45	882	0.50	943	0.55	999	0.59	1050	0.62	1097	0.66	1142	0.69
1700	792	0.46	855	0.52	917	0.56	975	0.61	1028	0.64	1077	0.68	1123	0.72	1166	0.75
1800	832	0.53	894	0.58	952	0.63	1007	0.67	1058	0.70	1105	0.74	1149	0.78	1192	0.82
1900	873	0.60	932	0.65	988	0.69	1040	0.73	1088	0.77	1134	0.81	1177	0.85	1219	0.90
2000	914	0.67	970	0.72	1023	0.76	1073	0.80	1120	0.85	1163	0.89	1205	0.94	1246	0.99
2100	955	0.74	1009	0.79	1059	0.84	1107	0.89	1152	0.93	1194	0.98	1235	1.03	1275	1.09
2200	995	0.83	1047	0.88	1095	0.93	1141	0.98	1184	1.03	1225	1.08	1265	1.14	1304	1.20
2300	1036	0.92	1085	0.97	1132	1.02	1175	1.08	1217	1.13	1257	1.19	1296	1.26	1334	1.32
2400	1077	1.01	1124	1.07	1168	1.13	1210	1.19	1251	1.25	1290	1.32	1328	1.39	1365	1.46

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZA03								Kit ZA06							
1600	1185	0.72	1228	0.75	1270	0.79	1310	0.83	1349	0.88	1387	0.93	1423	0.98	1459	1.03
1700	1209	0.78	1251	0.82	1292	0.87	1331	0.92	1370	0.97	1407	1.02	1443	1.07	1478	1.12
1800	1234	0.86	1275	0.91	1315	0.96	1354	1.01	1391	1.06	1428	1.11	1463	1.17	1498	1.22
1900	1260	0.95	1300	1.00	1340	1.05	1377	1.11	1414	1.16	1450	1.22	1485	1.27	1519	1.32
2000	1287	1.04	1326	1.10	1365	1.16	1402	1.21	1437	1.27	1472	1.33	1507	1.38	1541	1.43
2100	1314	1.15	1353	1.21	1391	1.27	1427	1.33	1462	1.39	1496	1.44	1530	1.50	1564	1.55
2200	1343	1.26	1381	1.33	1417	1.39	1453	1.45	1487	1.51	1521	1.56	1555	1.62	1589	1.67
2300	1372	1.39	1409	1.45	1445	1.52	1480	1.58	1513	1.64	1547	1.69	1580	1.75	1614	1.80
2400	1402	1.52	1438	1.59	1473	1.65	1507	1.71	1541	1.77	1574	1.83	1607	1.88	1641	1.93

BLOWER DATA

DRIVE KIT SPECIFICATIONS

Model No.	Blower Motor Choice (HP)						Drive Kit No.	RPM Range
	Nominal	Maximum	Nominal	Maximum	Nominal	Maximum		
ZCA/ZCB036	¹ 1	¹ 1.15	1.5	1.7	---	---	ZA01	678 - 1035
							ZA04	964 - 1471
ZCA/ZCB048	¹ 1	¹ 1.15	1.5	1.7	---	---	ZA02	803 - 1226
							² ZA05	1098 - 1490
ZCA/ZCB060	¹ 1	¹ 1.15	1.5	1.7	---	---	ZA03	906 - 1383
							² ZA06	1262 - 1634
ZCA072	1	1.15	1.5	1.7	2	2.3	ZAA02	632 - 875
							ZAA03	798 - 1105
							³ ZAA04	921 - 1228

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

¹ 1 hp blower motor is not available for 208/230V-1ph applications.

² 1.5 hp blower motor is required with the ZA05 and ZA06 drive kits.

³ 2 hp blower motor is required with the ZAA04 drive kit.

POWER EXHAUST FAN PERFORMANCE

Return Air System Static Pressure - in. w.g.	Air Volume Exhausted cfm
0.00	1865
0.05	1785
0.10	1710
0.15	1630
0.20	1545
0.25	1450
0.30	1350
0.35	1240

BLOWER DATA

OPTIONS / ACCESSORIES AIR RESISTANCE - in. w.g.

Air Volume cfm	Wet Indoor Coil				Electric Heat	Economizer	
	ZCA036, ZCA048	ZCB036, ZCB048	ZCA060	ZCB060, ZCA072		Downflow	Horizontal
900	0.01	0.01	---	---	0.05	0.03	0.04
1000	0.01	0.02	---	---	0.06	0.03	0.05
1100	0.02	0.02	---	---	0.08	0.04	0.05
1200	0.02	0.02	---	---	0.09	0.05	0.06
1300	0.02	0.03	---	---	0.12	0.05	0.07
1400	0.03	0.03	---	---	0.17	0.06	0.08
1500	0.03	0.04	---	---	0.22	0.07	0.08
1600	0.03	0.04	0.04	0.03	0.26	0.08	0.09
1700	0.04	0.05	0.05	0.03	0.30	0.09	0.10
1800	0.04	0.05	0.05	0.03	0.33	0.10	0.11
1900	0.04	0.06	0.06	0.04	0.33	0.11	0.12
2000	0.05	0.06	0.06	0.04	0.31	0.12	0.13
2100	---	---	0.07	0.05	0.27	0.13	0.14
2200	---	---	0.08	0.05	0.29	0.14	0.15
2300	---	---	0.08	0.05	0.31	0.15	0.16
2400	---	---	0.09	0.06	0.32	0.16	0.18
2500	---	---	---	0.06	0.34	0.18	0.19
2600	---	---	---	0.07	0.38	0.19	0.20
2700	---	---	---	0.07	0.42	0.20	0.21
2800	---	---	---	0.07	0.45	0.22	0.23
2900	---	---	---	0.08	0.49	0.23	0.24

BLOWER DATA

CEILING DIFFUSERS AIR RESISTANCE (in. w.g.)

Air Volume cfm	RTD9-65 Step-Down Diffuser			FD9-65 Flush Diffuser	RTD11-95 Step-Down Diffuser			FD11-95 Flush Diffuser
	2 Ends Open	1 Side & 2 Ends Open	All Ends & Sides Open		2 Ends Open	1 Side & 2 Ends Open	All Ends & Sides Open	
800	0.15	0.13	0.11	0.11	---	---	---	---
1000	0.19	0.16	0.14	0.14	---	---	---	---
1200	0.25	0.20	0.17	0.17	---	---	---	---
1400	0.33	0.26	0.20	0.20	---	---	---	---
1600	0.43	0.32	0.20	0.24	---	---	---	---
1800	0.56	0.40	0.30	0.30	0.13	0.11	0.09	0.09
2000	0.73	0.50	0.36	0.36	0.15	0.13	0.11	0.10
2200	0.95	0.63	0.44	0.44	0.18	0.15	0.12	0.12
2400	---	----	---	---	0.21	0.18	0.15	0.14
2600	---	----	---	---	0.24	0.21	0.18	0.17
2800	---	----	---	---	0.27	0.24	0.21	0.20
3000	---	----	---	---	0.32	0.29	0.25	0.25
3200	---	----	---	---	0.41	0.37	0.32	0.31
3400	---	----	---	---	0.50	0.45	0.39	0.37
3600	---	----	---	---	0.61	0.54	0.48	0.44

CEILING DIFFUSER AIR THROW DATA

Air Volume - cfm	¹ Effective Throw - ft.	
Model No.	RTD9-65	FD9-65
800	10 - 17	14 - 18
1000	10 - 17	15 - 20
1200	11 - 18	16 - 22
1400	12 - 19	17 - 24
1600	12 - 20	18 - 25
1800	13 - 21	20 - 28
2000	14 - 23	21 - 29
2200	16 - 25	22 - 30
Model No.	RTD11-95	FD11-95
2600	24 - 29	19 - 24
2800	25 - 30	20 - 28
3000	27 - 33	21 - 29
3200	28 - 35	22 - 29
3400	30 - 37	22 - 30
3600	25 - 33	22 - 24

¹ Effective throw based on terminal velocities of 75 ft. per minute.

ELECTRICAL/ELECTRIC HEAT DATA - ZCA**3 TON****ZCA036S4**

¹ Voltage - 60hz		208/230V - 3 Ph		460V - 3 Ph		575V - 3 Ph	
Compressor	Rated Load Amps	8.7		4		3.6	
	Locked Rotor Amps	70		31		27	
Outdoor Fan Motor	Full Load Amps	1		0.6		0.45	
Power Exhaust (1) 0.5 HP	Full Load Amps	1.5		0.6		0.6	
Indoor Blower Motor	Horsepower	1	1.5	1	1.5	1	1.5
	Full Load Amps	4.6	6.6	2.1	3	1.7	2.4
² Maximum Overcurrent Protection	Unit Only	25	25	15	15	15	15
	With (1) 0.5 HP Power Exhaust	25	25	15	15	15	15
³ Minimum Circuit Ampacity	Unit Only	17	19	8	9	7	8
	With (1) 0.5 HP Power Exhaust	18	20	9	10	8	8

ELECTRIC HEAT DATA

Electric Heat Voltage			208V	240V	208V	240V	480V	480V	600V	600V
² Maximum Overcurrent Protection	Unit+ Electric Heat	5 kW	25	25	25	25	15	15	15	15
		7.5 kW	30	30	30	35	15	20	15	15
		10 kW	35	40	35	40	20	20	15	20
		15 kW	45	60	50	60	30	30	25	25
³ Minimum Circuit Ampacity	Unit+ Electric Heat	5 kW	19	21	22	24	11	12	9	10
		7.5 kW	26	29	28	31	14	16	12	13
		10 kW	32	36	35	39	18	19	15	16
		15 kW	45	51	48	54	26	27	21	22
² Maximum Overcurrent Protection	Unit+ Electric Heat and (1) 0.5 HP Power Exhaust	5 kW	25	25	25	30	15	15	15	15
		7.5 kW	30	35	30	35	15	20	15	15
		10 kW	35	40	40	45	20	20	15	20
		15 kW	50	60	50	60	30	30	25	25
³ Minimum Circuit Ampacity	Unit+ Electric Heat and (1) 0.5 HP Power Exhaust	5 kW	21	23	24	26	11	13	9	10
		7.5 kW	28	31	30	33	15	16	12	13
		10 kW	34	38	37	41	19	20	15	16
		15 kW	47	53	50	56	26	28	21	22

ELECTRIC HEAT ACCESSORIES

Unit Fuse Block	Unit Only	10A27	10A27	10A29	10A29	10A29	10A29
	Unit + Power Exhaust	10A27	10A27	10A29	10A29	10A29	10A29

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.

¹ Extremes of operating range are plus and minus 10% of line voltage.² HACR type breaker or fuse.³ Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

ELECTRICAL/ELECTRIC HEAT DATA - ZCA

4 TON

ZCA048S4

¹ Voltage - 60hz		208/230V - 3 Ph		460V - 3 Ph		575V - 3 Ph	
Compressor	Rated Load Amps	11		5.5		4.7	
	Locked Rotor Amps	86		37		34	
Outdoor Fan Motor	Full Load Amps	1.7		0.9		0.7	
Power Exhaust (1) 0.5 HP	Full Load Amps	1.5		0.6		0.6	
Indoor Blower Motor	Horsepower	1	1.5	1	1.5	1	1.5
	Full Load Amps	4.6	6.6	2.1	3	1.7	2.4
² Maximum Overcurrent Protection	Unit Only	30	30	15	15	15	15
	With (1) 0.5 HP Power Exhaust	30	30	15	15	15	15
³ Minimum Circuit Ampacity	Unit Only	21	23	10	11	9	9
	With (1) 0.5 HP Power Exhaust	22	24	11	12	9	10

ELECTRIC HEAT DATA

Electric Heat Voltage			208V	240V	208V	240V	480V	480V	600V	600V
² Maximum Overcurrent Protection	Unit+ Electric Heat	5 kW	30	30	30	30	15	15	15	15
		7.5 kW	30	30	30	35	15	20	15	15
		10 kW	35	40	35	40	20	20	15	20
		15 kW	45	60	50	60	30	30	25	25
		22.5 kW	70	80	70	80	40	40	30	35
³ Minimum Circuit Ampacity	Unit+ Electric Heat	5 kW	21	21	23	24	11	12	9	10
		7.5 kW	26	29	28	31	14	16	12	13
		10 kW	32	36	35	39	18	19	15	16
		15 kW	45	51	48	54	26	27	21	22
		22.5 kW	65	74	67	76	37	38	30	31
² Maximum Overcurrent Protection	Unit+ Electric Heat and (1) 0.5 HP Power Exhaust	5 kW	30	30	30	30	15	15	15	15
		7.5 kW	30	35	30	35	15	20	15	15
		10 kW	35	40	40	45	20	20	15	20
		15 kW	50	60	50	60	30	30	25	25
		22.5 kW	70	80	70	80	40	40	30	35
³ Minimum Circuit Ampacity	Unit+ Electric Heat and (1) 0.5 HP Power Exhaust	5 kW	22	23	24	26	11	13	9	10
		7.5 kW	28	31	30	33	15	16	12	13
		10 kW	34	38	37	41	19	20	15	16
		15 kW	47	53	50	56	26	28	21	22
		22.5 kW	67	76	69	78	38	39	30	31

ELECTRIC HEAT ACCESSORIES

Unit Fuse Block	Unit Only	10A27	10A27	10A29	10A29	10A29	10A29
	Unit + Power Exhaust	10A27	10A27	10A29	10A29	10A29	10A29

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.

¹ Extremes of operating range are plus and minus 10% of line voltage.

² HACR type breaker or fuse.

³ Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

ELECTRICAL/ELECTRIC HEAT DATA - ZCA**5 TON****ZCA060S4**

¹ Voltage - 60hz		208/230V - 3 Ph		460V - 3 Ph		575V - 3 Ph	
Compressor	Rated Load Amps	13.5		8		5	
	Locked Rotor Amps	109		59		40	
Outdoor Fan Motor	Full Load Amps	1.7		1		0.9	
Power Exhaust (1) 0.5 HP	Full Load Amps	1.5		0.6		0.6	
Indoor Blower Motor	Horsepower	1	1.5	1	1.5	1	1.5
	Full Load Amps	4.6	6.6	2.1	3	1.7	2.4
² Maximum Overcurrent Protection	Unit Only	35	35	20	20	15	15
	With (1) 0.5 HP Power Exhaust	35	40	20	20	15	15
³ Minimum Circuit Ampacity	Unit Only	24	26	14	14	9	10
	With (1) 0.5 HP Power Exhaust	25	27	14	15	10	11

ELECTRIC HEAT DATA

Electric Heat Voltage			208V	240V	208V	240V	480V	480V	600V	600V
² Maximum Overcurrent Protection	Unit+ Electric Heat	5 kW	35	35	35	35	20	20	15	15
		7.5 kW	35	35	35	35	20	20	15	15
		10 kW	35	40	35	40	20	20	15	20
		15 kW	45	60	50	60	30	30	25	25
		22.5 kW	70	80	70	80	40	40	30	35
³ Minimum Circuit Ampacity	Unit+ Electric Heat	5 kW	24	24	26	26	14	14	9	10
		7.5 kW	26	29	28	31	14	16	12	13
		10 kW	32	36	35	39	18	19	15	16
		15 kW	45	51	48	54	26	27	21	22
		22.5 kW	65	74	67	76	37	38	30	31
² Maximum Overcurrent Protection	Unit+ Electric Heat and (1) 0.5 HP Power Exhaust	5 kW	35	35	40	40	20	20	15	15
		7.5 kW	35	35	40	40	20	20	15	15
		10 kW	35	40	40	45	20	20	15	20
		15 kW	50	60	50	60	30	30	25	25
		22.5 kW	70	80	70	80	40	40	30	35
³ Minimum Circuit Ampacity	Unit+ Electric Heat and (1) 0.5 HP Power Exhaust	5 kW	25	25	27	27	14	15	10	11
		7.5 kW	28	31	30	33	15	16	12	13
		10 kW	34	38	37	41	19	20	15	16
		15 kW	47	53	50	56	26	28	21	22
		22.5 kW	67	76	69	78	38	39	30	31

ELECTRIC HEAT ACCESSORIES

Unit Fuse Block	Unit Only	10A28	10A28	10A29	10A29	10A29	10A29
	Unit + Power Exhaust	10A28	10A28	10A29	10A29	10A29	10A29

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.

¹ Extremes of operating range are plus and minus 10% of line voltage.² HACR type breaker or fuse.³ Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

ELECTRICAL/ELECTRIC HEAT DATA - ZCA

6 TON

ZCA072S4

¹ Voltage - 60hz		208/230V - 3 Ph			460V - 3 Ph			575V - 3 Ph		
Compressor	Rated Load Amps	19.6			8.2			6.6		
	Locked Rotor Amps	136			66.1			55.3		
Outdoor Fan Motors	Full Load Amps	1.7			1			0.9		
Power Exhaust (1) 0.5 HP	Full Load Amps	1.5			0.6			0.6		
Indoor Blower Motor	Horsepower	1	1.5	2	0.6	1.5	2	0.6	1.5	2
	Full Load Amps	4.6	6.6	7.5	2.1	3	3.4	1.7	2.4	2.7
² Maximum Overcurrent Protection	Unit Only	50	50	50	20	20	20	15	15	15
	with (1) 0.5 HP Power Exhaust	50	50	50	20	20	20	15	15	15
³ Minimum Circuit Ampacity	Unit Only	31	33	34	14	15	15	11	12	12
	with (1) 0.5 HP Power Exhaust	33	35	36	14	15	16	12	13	13

ELECTRIC HEAT DATA

Electric Heat Voltage			208V	240V	208V	240V	208V	240V	480V	480V	480V	600V	600V	600V
² Maximum Overcurrent Protection	Unit + Electric Heat	7.5 kW	50	50	50	50	50	50	20	20	20	15	15	15
		10 kW	50	50	50	50	50	50	20	20	20	15	20	20
		15 kW	50	60	50	60	50	60	30	30	30	25	25	25
		22.5 kW	70	80	70	80	70	80	40	40	40	30	35	35
		30 kW	90	100	90	100	90	100	50	50	50	40	40	40
³ Minimum Circuit Ampacity	Unit + Electric Heat	7.5 kW	31	31	33	33	34	34	14	16	16	12	13	13
		10 kW	32	36	35	39	36	40	18	19	20	15	16	16
		15 kW	45	51	48	54	49	55	26	27	27	21	22	22
		22.5 kW	65	74	67	76	69	78	37	38	39	30	31	31
		30 kW	84	96	87	99	88	100	48	49	50	39	40	40
² Maximum Overcurrent Protection	Unit+ Electric Heat and (1) 0.5 HP Power Exhaust	7.5 kW	50	50	50	50	50	50	20	20	20	15	15	15
		10 kW	50	50	50	50	50	50	20	20	25	15	20	20
		15 kW	50	60	50	60	60	60	30	30	30	25	25	25
		22.5 kW	70	80	70	80	70	80	40	40	40	30	35	35
		30 kW	90	100	90	110	90	110	50	50	60	40	40	45
³ Minimum Circuit Ampacity	Unit+ Electric Heat and (1) 0.5 HP Power Exhaust	7.5 kW	33	33	35	35	36	36	15	16	17	12	13	14
		10 kW	34	38	37	41	38	42	19	20	21	15	16	17
		15 kW	47	53	50	56	51	57	26	28	28	21	22	23
		22.5 kW	67	76	69	78	70	79	38	39	39	30	31	32
		30 kW	86	98	89	101	90	102	49	50	51	39	40	41

ELECTRICAL ACCESSORIES

Unit Fuse Block	Unit Only	10A28	10A28	10A28	10A29	10A29
	Unit + Power Exhaust	10A28	10A28	10A28	10A29	10A29

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.

¹ Extremes of operating range are plus and minus 10% of line voltage.

² HACR type breaker or fuse.

³ Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

ELECTRICAL/ELECTRIC HEAT DATA - ZCB**3 TON****ZCB036S4**

¹ Voltage - 60hz		208/230V - 1 Ph	208/230V - 3 Ph		460V - 3 Ph		575V - 3 Ph	
Compressor	Rated Load Amps	15.3	8.7		4		3.6	
	Locked Rotor Amps	70	70		31		27	
Outdoor Fan Motor	Full Load Amps	1.7	1.7		0.9		0.7	
Power Exhaust (1) 0.5 HP	Full Load Amps	1.5	1.5		0.6		0.6	
Indoor Blower Motor	Horsepower	1.5	1	1.5	1	1.5	1	1.5
	Full Load Amps	11	4.6	6.6	2.1	3	1.7	2.4
² Maximum Overcurrent Protection	Unit Only	45	25	25	15	15	15	15
	With (1) 0.5 HP Power Exhaust	45	25	25	15	15	15	15
³ Minimum Circuit Ampacity	Unit Only	32	18	20	8	9	7	8
	With (1) 0.5 HP Power Exhaust	34	19	21	9	10	8	9

ELECTRIC HEAT DATA

Electric Heat Voltage			208V	240V	208V	240V	208V	240V	480V	480V	600V	600V
² Maximum Overcurrent Protection	Unit+ Electric Heat	5 kW	45	45	25	25	25	25	15	15	15	15
		7.5 kW	50	60	30	30	30	35	15	20	15	15
		10 kW	60	70	35	40	35	40	20	20	15	20
		15 kW	90	100	45	60	50	60	30	30	25	25
³ Minimum Circuit Ampacity	Unit+ Electric Heat	5 kW	37	40	19	21	22	24	11	12	9	10
		7.5 kW	48	53	26	29	28	31	14	16	12	13
		10 kW	59	66	32	36	35	39	18	19	15	16
		15 kW	82	92	45	51	48	54	26	27	21	22
² Maximum Overcurrent Protection	Unit+ Electric Heat and (1) 0.5 HP Power Exhaust	5 kW	45	45	25	25	25	30	15	15	15	15
		7.5 kW	50	60	30	35	30	35	15	20	15	15
		10 kW	70	70	35	40	40	45	20	20	15	20
		15 kW	90	100	50	60	50	60	30	30	25	25
³ Minimum Circuit Ampacity	Unit+ Electric Heat and (1) 0.5 HP Power Exhaust	5 kW	39	42	21	23	24	26	11	13	9	10
		7.5 kW	50	55	28	31	30	33	15	16	12	13
		10 kW	61	68	34	38	37	41	19	20	15	16
		15 kW	84	94	47	53	50	56	26	28	21	22

ELECTRIC HEAT ACCESSORIES

Unit Fuse Block	Unit Only	10A26	10A27	10A27	10A29	10A29	10A29	10A29
	Unit + Power Exhaust	10A26	10A27	10A27	10A29	10A29	10A29	10A29

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.

¹ Extremes of operating range are plus and minus 10% of line voltage.² HACR type breaker or fuse.³ Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

ELECTRICAL/ELECTRIC HEAT DATA - ZCB

4 TON

ZCB048S4

¹ Voltage - 60hz		208/230V - 1 Ph	208/230V - 3 Ph		460V - 3 Ph		575V - 3 Ph	
Compressor	Rated Load Amps	20	11		5.5		4.7	
	Locked Rotor Amps	99	86		37		34	
Outdoor Fan Motor	Full Load Amps	1.7	1.7		0.9		0.7	
Power Exhaust (1) 0.5 HP	Full Load Amps	1.5	1.5		0.6		0.6	
Indoor Blower Motor	Horsepower	1.5	1	1.5	1	1.5	1	1.5
	Full Load Amps	11	4.6	6.6	2.1	3	1.7	2.4
² Maximum Overcurrent Protection	Unit Only	50	30	30	15	15	15	15
	With (1) 0.5 HP Power Exhaust	50	30	30	15	15	15	15
³ Minimum Circuit Ampacity	Unit Only	38	21	23	10	11	9	9
	With (1) 0.5 HP Power Exhaust	40	22	24	11	12	9	10

ELECTRIC HEAT DATA

Electric Heat Voltage			208V	240V	208V	240V	208V	240V	480V	480V	600V	600V
² Maximum Overcurrent Protection	Unit+ Electric Heat	5 kW	50	50	30	30	30	30	15	15	15	15
		7.5 kW	50	60	30	30	30	35	15	20	15	15
		10 kW	60	70	35	40	35	40	20	20	15	20
		15 kW	90	100	45	60	50	60	30	30	25	25
		22.5 kW	125	150	70	80	70	80	40	40	30	35
³ Minimum Circuit Ampacity	Unit+ Electric Heat	5 kW	38	40	21	21	23	24	11	12	9	10
		7.5 kW	48	53	26	29	28	31	14	16	12	13
		10 kW	59	66	32	36	35	39	18	19	15	16
		15 kW	82	92	45	51	48	54	26	27	21	22
		22.5 kW	116	131	65	74	67	76	37	38	30	31
² Maximum Overcurrent Protection	Unit+ Electric Heat and (1) 0.5 HP Power Exhaust	5 kW	50	50	30	30	30	30	15	15	15	15
		7.5 kW	50	60	30	35	30	35	15	20	15	15
		10 kW	70	70	35	40	40	45	20	20	15	20
		15 kW	90	100	50	60	50	60	30	30	25	25
		22.5 kW	125	150	70	80	70	80	40	40	30	35
³ Minimum Circuit Ampacity	Unit+ Electric Heat and (1) 0.5 HP Power Exhaust	5 kW	40	42	22	23	24	26	11	13	9	10
		7.5 kW	50	55	28	31	30	33	15	16	12	13
		10 kW	61	68	34	38	37	41	19	20	15	16
		15 kW	84	94	47	53	50	56	26	28	21	22
		22.5 kW	118	133	67	76	69	78	38	39	30	31

ELECTRIC HEAT ACCESSORIES

Unit Fuse Block	Unit Only	10A26	10A27	10A27	10A29	10A29	10A29	10A29
	Unit + Power Exhaust	10A26	10A27	10A27	10A29	10A29	10A29	10A29

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.

¹ Extremes of operating range are plus and minus 10% of line voltage.

² HACR type breaker or fuse.

³ Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

ELECTRICAL/ELECTRIC HEAT DATA - ZCB**5 TON****ZCB060S4**

¹ Voltage - 60hz		208/230V - 1 Ph	208/230V - 3 Ph		460V - 3 Ph		575V - 3 Ph	
Compressor	Rated Load Amps	22.1	13.5		8		5	
	Locked Rotor Amps	125	109		59		40	
Outdoor Fan Motor	Full Load Amps	1.7	1.7		0.9		0.7	
Power Exhaust (1) 0.5 HP	Full Load Amps	1.5	1.5		0.6		0.6	
Indoor Blower Motor	Horsepower	1.5	1	1.5	1	1.5	1	1.5
	Full Load Amps	11	4.6	6.6	2.1	3	1.7	2.4
² Maximum Overcurrent Protection	Unit Only	60	35	35	20	20	15	15
	With (1) 0.5 HP Power Exhaust	60	35	40	20	20	15	15
³ Minimum Circuit Ampacity	Unit Only	41	24	26	13	14	9	10
	With (1) 0.5 HP Power Exhaust	42	25	27	14	15	10	10

ELECTRIC HEAT DATA

Electric Heat Voltage			208V	240V	208V	240V	208V	240V	480V	480V	600V	600V
² Maximum Overcurrent Protection	Unit+ Electric Heat	5 kW	60	60	35	35	35	35	20	20	15	15
		7.5 kW	60	60	35	35	35	35	20	20	15	15
		10 kW	60	70	35	40	35	40	20	20	15	20
		15 kW	90	100	45	60	50	60	30	30	25	25
		22.5 kW	125	150	70	80	70	80	40	40	30	35
³ Minimum Circuit Ampacity	Unit+ Electric Heat	5 kW	41	41	24	24	26	26	13	14	9	10
		7.5 kW	48	53	26	29	28	31	14	16	12	13
		10 kW	59	66	32	36	35	39	18	19	15	16
		15 kW	82	92	45	51	48	54	26	27	21	22
		22.5 kW	116	131	65	74	67	76	37	38	30	31
² Maximum Overcurrent Protection	Unit+ Electric Heat and (1) 0.5 HP Power Exhaust	5 kW	60	60	35	35	40	40	20	20	15	15
		7.5 kW	60	60	35	35	40	40	20	20	15	15
		10 kW	70	70	35	40	40	45	20	20	15	20
		15 kW	90	100	50	60	50	60	30	30	25	25
		22.5 kW	125	150	70	80	70	80	40	40	30	35
³ Minimum Circuit Ampacity	Unit+ Electric Heat and (1) 0.5 HP Power Exhaust	5 kW	42	42	25	25	27	27	14	15	10	10
		7.5 kW	50	55	28	31	30	33	15	16	12	13
		10 kW	61	68	34	38	37	41	19	20	15	16
		15 kW	84	94	47	53	50	56	26	28	21	22
		22.5 kW	118	133	67	76	69	78	38	39	30	31

ELECTRIC HEAT ACCESSORIES

Unit Fuse Block	Unit Only	10A26	10A28	10A28	10A29	10A29	10A29	10A29
	Unit + Power Exhaust	10A26	10A28	10A28	10A29	10A29	10A29	10A29

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.

¹ Extremes of operating range are plus and minus 10% of line voltage.² HACR type breaker or fuse.³ Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

ELECTRIC HEAT CAPACITIES

Input Voltage	5 kW			7.5 kW			10 kW		
	No of Stages	kW input	Btuh Output	No of Stages	kW input	Btuh Output	No of Stages	kW input	Btuh Output
208	1	3.8	12,800	1	5.6	19,200	1	7.5	25,600
220	1	4.2	14,300	1	6.3	21,500	1	8.4	28,700
230	1	4.6	15,700	1	6.9	23,500	1	9.2	31,400
240	1	5.0	17,100	1	7.5	25,600	1	10.0	34,200
440	1	4.2	14,300	1	6.3	21,500	1	8.4	28,700
460	1	4.6	15,700	1	6.9	23,500	1	9.2	31,400
480	1	5.0	17,100	1	7.5	25,600	1	10.0	34,200
550	1	4.2	14,300	1	6.3	21,500	1	8.4	28,700
575	1	4.6	15,700	1	6.9	23,500	1	9.2	31,400
600	1	5.0	17,100	1	7.5	25,600	1	10.0	34,200
Input Voltage	15 kW			22.5 kW			30 kW		
	No of Stages	kW input	Btuh Output	No of Stages	kW input	Btuh Output	No of Stages	kW input	Btuh Output
208	1	11.2	38,400	1	16.9	57,700	1	22.5	76,800
220	1	12.6	43,000	1	18.9	64,500	1	25.2	86,000
230	1	13.8	47,000	1	20.7	70,700	1	27.5	93,900
240	1	15.0	51,200	1	22.5	76,800	1	30.0	102,400
440	1	12.6	43,000	1	18.9	64,500	1	25.2	86,000
460	1	13.8	47,000	1	20.7	70,700	1	27.5	93,900
480	1	15.0	51,200	1	22.5	76,800	1	30.0	102,400
550	1	12.6	43,000	1	18.9	64,500	1	25.2	86,000
575	1	13.8	47,000	1	20.7	70,700	1	27.5	93,900
600	1	15.0	51,200	1	22.5	76,800	1	30.0	102,400

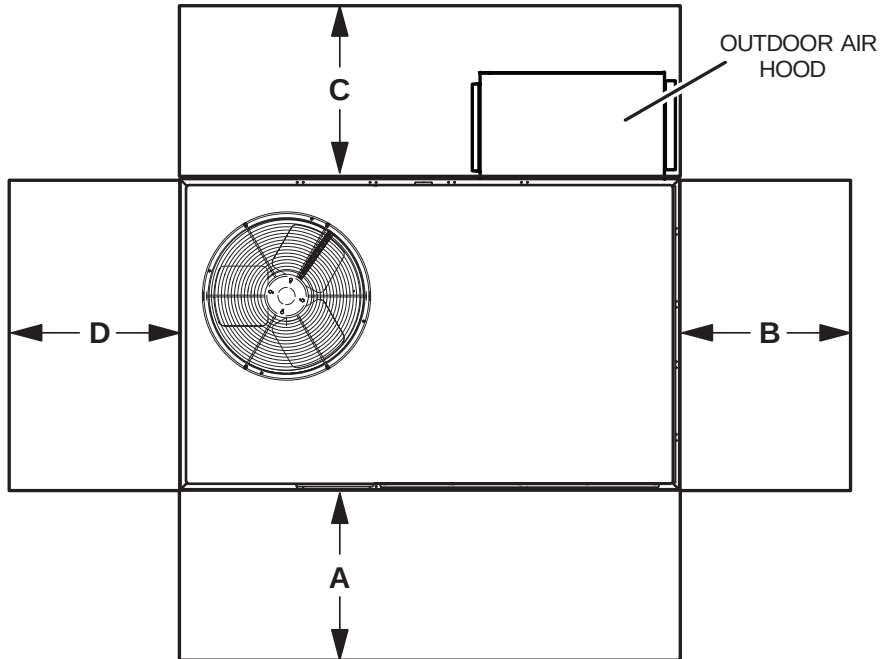
OUTDOOR SOUND DATA

Unit Model No.	Octave Band Linear Sound Power Levels dB, re 10 ⁻¹² Watts - Center Frequency - Hz							¹ Sound Rating Number (SRN) (dBA)
	125	250	500	1000	2000	4000	8000	
ZCA036	81	78	77	72	68	66	61	77
ZCA048	84	80	79	74	70	67	63	80
ZCA060	86	82	82	78	74	68	65	83
ZCB036	81	78	77	72	68	66	61	77
ZCB048	84	80	79	74	70	67	63	80
ZCB060	80	76	76	73	68	66	64	78
ZCA072	88	85	84	79	72	66	64	84

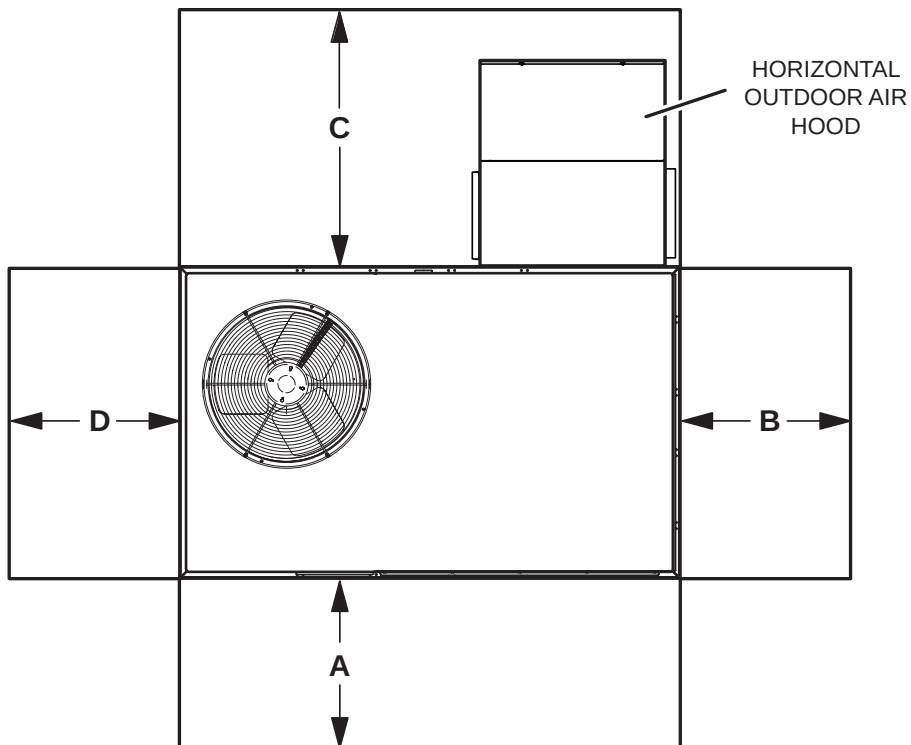
¹ Sound Rating Number according to ANSI/AHRI Standard 270-2008. "SRN" is the overall A-Weighted Sound Power Level, (LWA), dB (100 Hz to 10,000 Hz).

UNIT CLEARANCES - INCHES (MM)

UNIT WITH DOWNFLOW ECONOMIZER



UNIT WITH HORIZONTAL ECONOMIZER



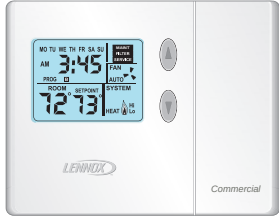
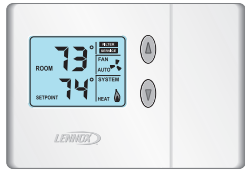
¹ Unit Clearance	A		B		C Downflow		C Horizontal		D		Top Clearance
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	
Service Clearance	36	914	36	914	36	914	60	1524	36	914	Unobstructed
Minimum Operation Clearance	36	914	36	914	36	914	60	1524	36	914	

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

¹ Service Clearance - Required for removal of serviceable parts.

Minimum Operation Clearance - Required clearance for proper unit operation.

OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS

Item	Model No.	Catalog No.
COMFORTSENSE® 7500 COMMERCIAL 7-DAY PROGRAMMABLE THERMOSTAT		
 • Four-Stage Heating / Two-Stage Cooling Universal Multi-Stage • Intuitive Touchscreen Interface • Remote Indoor Temperature Sensing with Averaging • Outside or Discharge Air Temperature Display • Full Seven-Day Programming • Four Time Periods Per Day • Occupancy Scheduling with Economizer Relay Control • Away Mode • Holiday Scheduling • Smooth Setback Recovery (SSR) • Performance Reports • Notifications/Reminders • Dehumidification/Humiditrol® Control for Split Systems and Rooftop Units • Economizer Relay Control • Backlit Display • Wallplate Furnished	C0STAT06FF1L	13H15
Optional Accessories		
¹ Remote non-adjustable wall mount 20k temperature sensor	C0SNZN01AE2-	47W36
¹ Remote non-adjustable wall mount 10k temperature sensor	C0SNZN73AE1-	47W37
Remote non-adjustable discharge air (duct mount) temperature sensor	C0SNDC00AE1-	19L22
Outdoor temperature sensor	C0SNSR03AE1-	X2658
Locking cover (clear)	C0MISC15AE1-	39P21
¹ Remote sensors can be applied in any of the following combinations: One Sensor - (1) 47W36 Two Sensors - (2) 47W37 Three Sensors - (2) 47W36 and (1) 47W37 Four Sensors - (4) 47W36 Five Sensors - (3) 47W36 and (2) 47W37		
COMFORTSENSE® 3000 COMMERCIAL 5-2 DAY PROGRAMMABLE THERMOSTAT		
 • Two-Stage Heating / Two-Stage Cooling Conventional Systems • Intuitive Interface • 5-2 Day Programming • Program Hold • Remote Indoor Temperature Sensing • Smooth Setback Recovery (SSR) • Economizer Relay Control • Maintenance/Filter/Service Reminders • Backlit Display • Wallplate Furnished • Simple Up and Down Temperature Control.	C0STAT05FF1L	11Y05
Optional Accessories		
Remote non-adjustable wall mount 10k averaging temperature sensor	C0SNZN73AE1-	47W37
Optional wall mounting plate	C0MISC17AE1-	X2659
DIGITAL NON-PROGRAMMABLE THERMOSTAT		
 • One-Stage Heating / Cooling Conventional Systems • Intuitive Interface • Automatic Changeover • Backlit Display • Simple Up and Down Temperature Control.	C0STAT12AE1L	51M32
Optional Accessories		
Outdoor temperature sensor	C0SNSR04AE1-	X2658
Optional wall mounting plate	C0MISC17AE1-	X2659

WEIGHT DATA

Model Number	Net				Shipping			
	Base		Max.		Base		Max.	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
ZCA036S	451	205	502	228	456	207	507	230
ZCB036S	474	215	544	247	479	217	549	249
ZCA048S	465	211	516	234	470	213	521	236
ZCB048S	483	219	553	251	488	221	558	253
ZCA060S	497	225	550	249	502	228	555	252
ZCB060S	568	258	640	290	573	260	645	293
ZCA072S	568	258	621	282	573	260	626	284

Base Unit - The unit with NO OPTIONS.

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

OPTIONS / ACCESSORIES

		Shipping Weights	
		lbs.	kg
ECONOMIZER			
Economizer, Includes Outdoor Air Hood and Barometric Relief Dampers with Hood	Downflow	75	34
	Horizontal	102	46
OUTDOOR AIR			
Outdoor Air Dampers			
Motorized		30	14
Manual		23	10
POWER EXHAUST			
Standard Static	Downflow	54	24
	Horizontal	41	19
ELECTRIC HEAT			
5 kW		25	11
7.5 kW		26	12
10 kW		27	12
15 kW		27	12
22.5 kW		29	13
30 kW		30	14
ROOF CURBS			
Hybrid Roof Curbs, Downflow			
8 in. height	Z1CURB70A-1	63	29
14 in. height	Z1CURB71A-1	83	38
18 in. height	Z1CURB72A-1	93	42
24 in. height	Z1CURB73A-1	113	51
CEILING DIFFUSERS			
Step-Down	RTD9-65-R	67	30
	RTD11-95	88	40
Flush	FD9-65-R	37	17
	FD11-95	75	34

DIMENSIONS - UNIT - INCHES (MM) - ZCA

Model No.	CORNER WEIGHTS																CENTER OF GRAVITY							
	AA				BB				CC				DD				EE				FF			
	Base		Max.		Base		Max.		Base		Max.		Base		Max.		Base		Max.		Base		Max.	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	in.	mm	in.	mm	in.	mm	in.	mm
036	116	53	132	60	107	49	135	61	109	50	119	54	118	54	116	53	39.5	1003	37.5	953	23.25	591	25	635
048	120	54	135	61	110	50	139	63	113	51	122	55	122	55	119	54	39.5	1003	37.5	953	23.25	591	25	635
060	128	58	144	65	118	54	148	67	121	55	130	59	131	59	127	58	39.5	1003	37.5	953	23.25	591	25	635
072	136	62	149	68	136	62	149	68	148	67	162	73	148	67	162	73	38	965	36	914	22.5	572	24	610

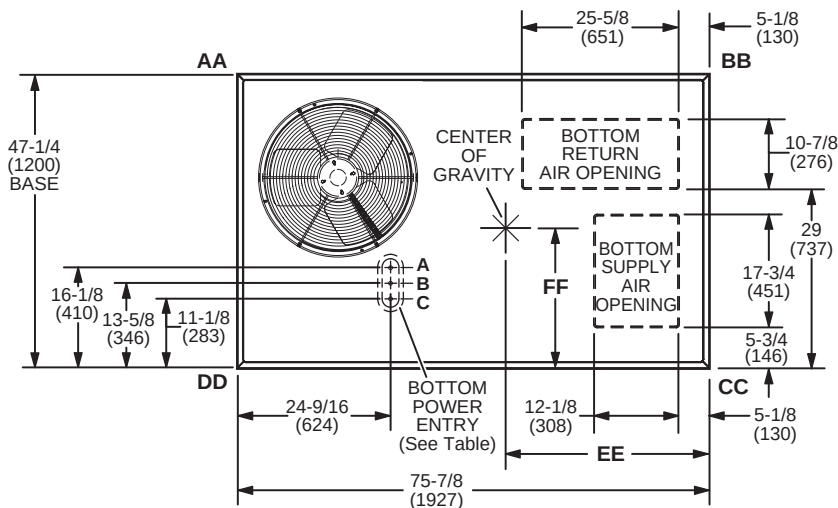
Base Unit - The unit with NO OPTIONS.

Max. Unit - The unit with ALL OPTIONS Installed. (Economizer, largest blower motor, etc.).

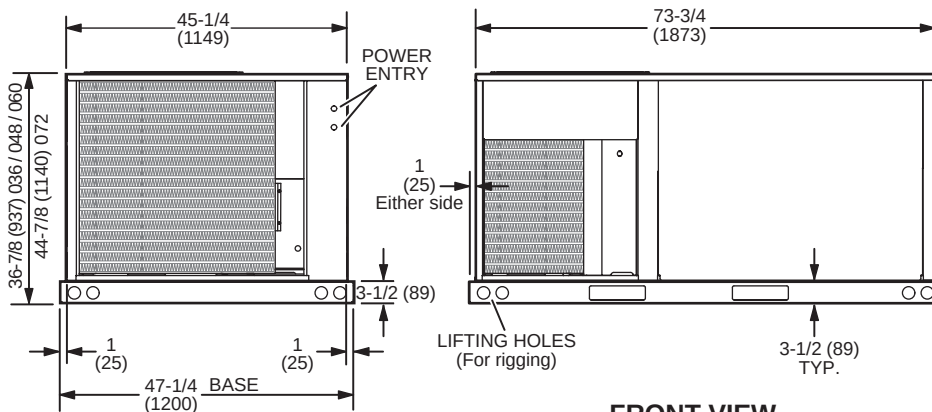
BOTTOM POWER ENTRY

Holes required for Optional Bottom Power Entry Kit

	Threaded Conduit Fittings (Provided in Kit)	Wire Use	Hole Diameter Required in Unit Base (Max.)
A	1/2	ACC	7/8 (23)
B	1/2	24V	7/8 (23)
C	3/4	POWER	1-1/8 (29)

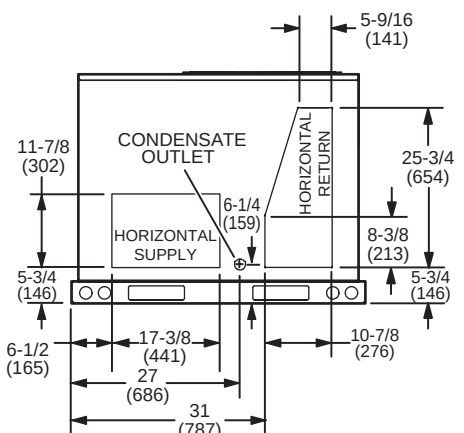


TOP VIEW (Base)



END VIEW

FRONT VIEW



END VIEW

DIMENSIONS - UNIT - INCHES (MM) - ZCB

Model No.	CORNER WEIGHTS																CENTER OF GRAVITY							
	AA				BB				CC				DD				EE				FF			
	Base		Max.		Base		Max.		Base		Max.		Base		Max.		Base		Max.		Base		Max.	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	in.	mm	in.	mm	in.	mm	in.	mm
036	117	53	134	61	112	51	129	59	120	54	138	63	125	57	143	65	38.75	984	36.75	933	22.75	578	24.5	622
048	119	54	136	62	115	52	131	59	122	55	140	64	127	58	145	66	38.75	984	36.75	933	22.75	578	24.5	622
060	156	71	176	80	140	64	158	72	129	59	145	66	143	65	161	73	40	1016	38	965	24.5	622	26	660

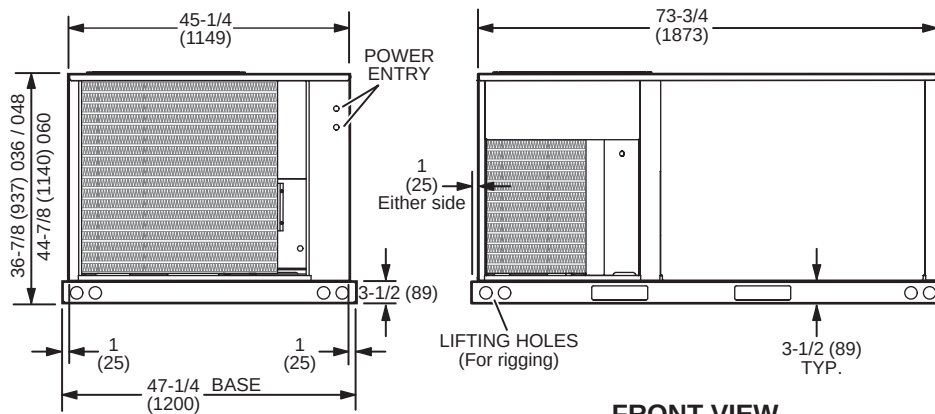
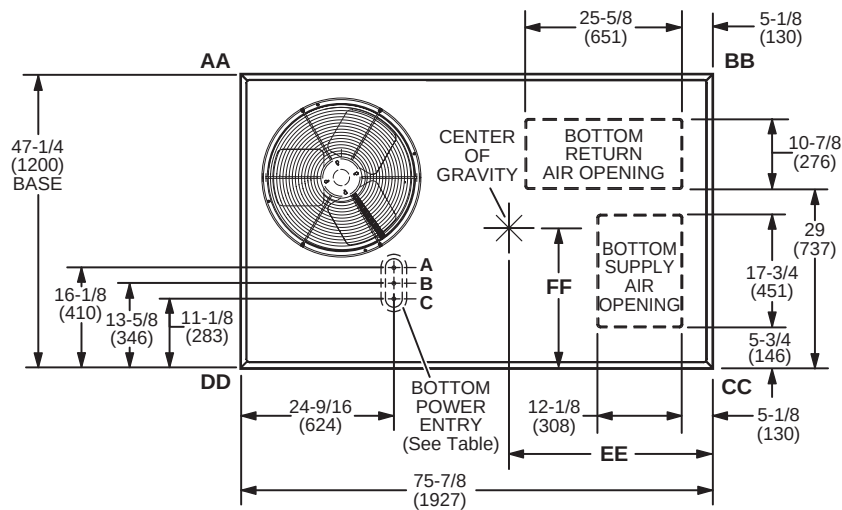
Base Unit - The unit with NO OPTIONS.

Max. Unit - The unit with ALL OPTIONS Installed. (Economizer, largest blower motor, etc.).

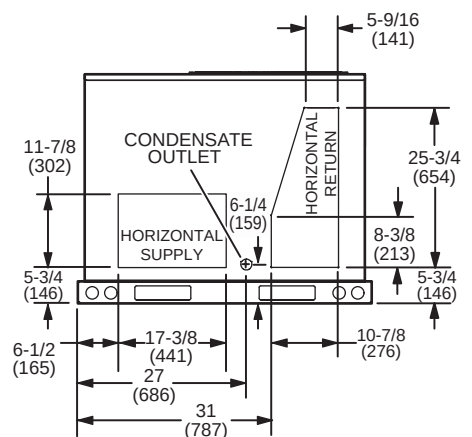
BOTTOM POWER ENTRY

Holes required for Optional Bottom Power Entry Kit

	Threaded Conduit Fittings (Provided in Kit)	Wire Use	Hole Diameter Required in Unit Base (Max.)
A	1/2	ACC	7/8 (23)
B	1/2	24V	7/8 (23)
C	3/4	POWER	1-1/8 (29)

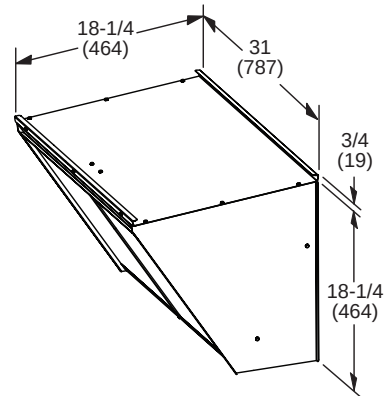
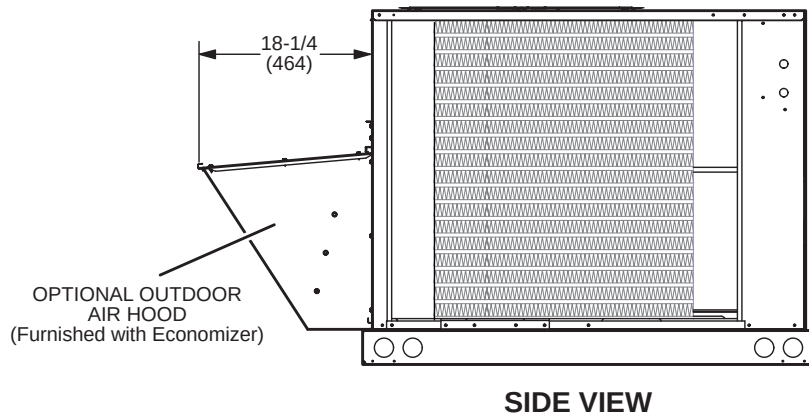


END VIEW

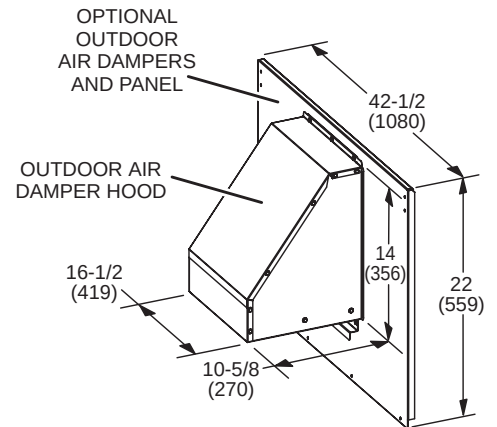
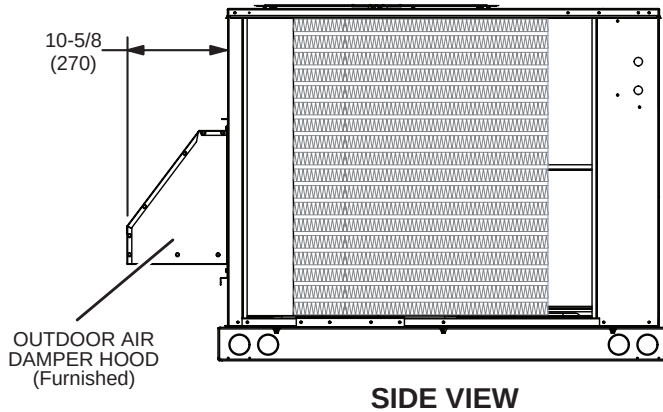


DIMENSIONS - ACCESSORIES - INCHES (MM)

OUTDOOR AIR HOOD DETAIL FOR OPTIONAL ECONOMIZER (Downflow Applications)

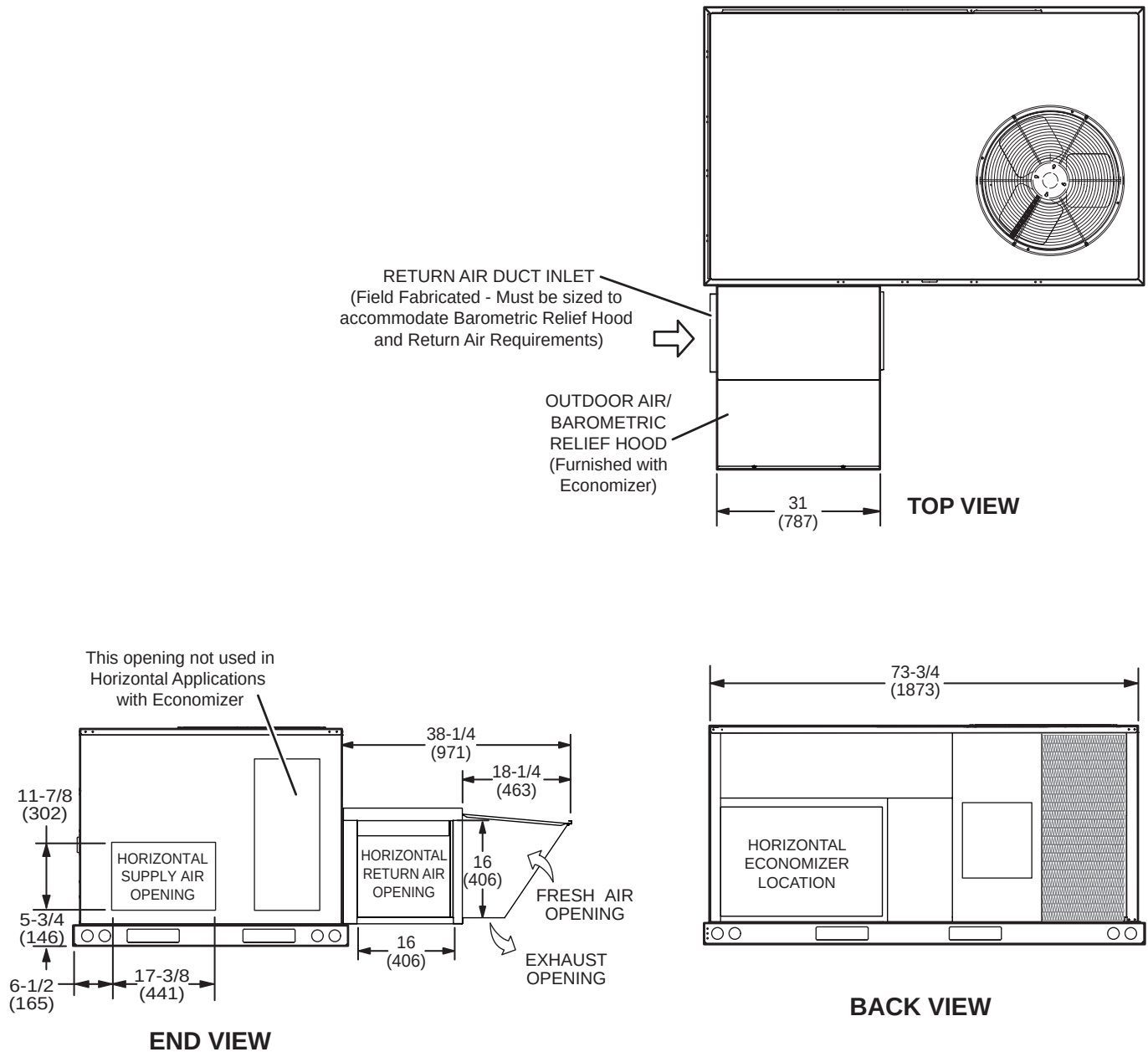


OUTDOOR AIR DAMPER HOOD DETAIL FOR OPTIONAL MANUAL OR MOTORIZED OUTDOOR AIR DAMPERS (Downflow or Horizontal Applications)



DIMENSIONS - ACCESSORIES - INCHES (MM)

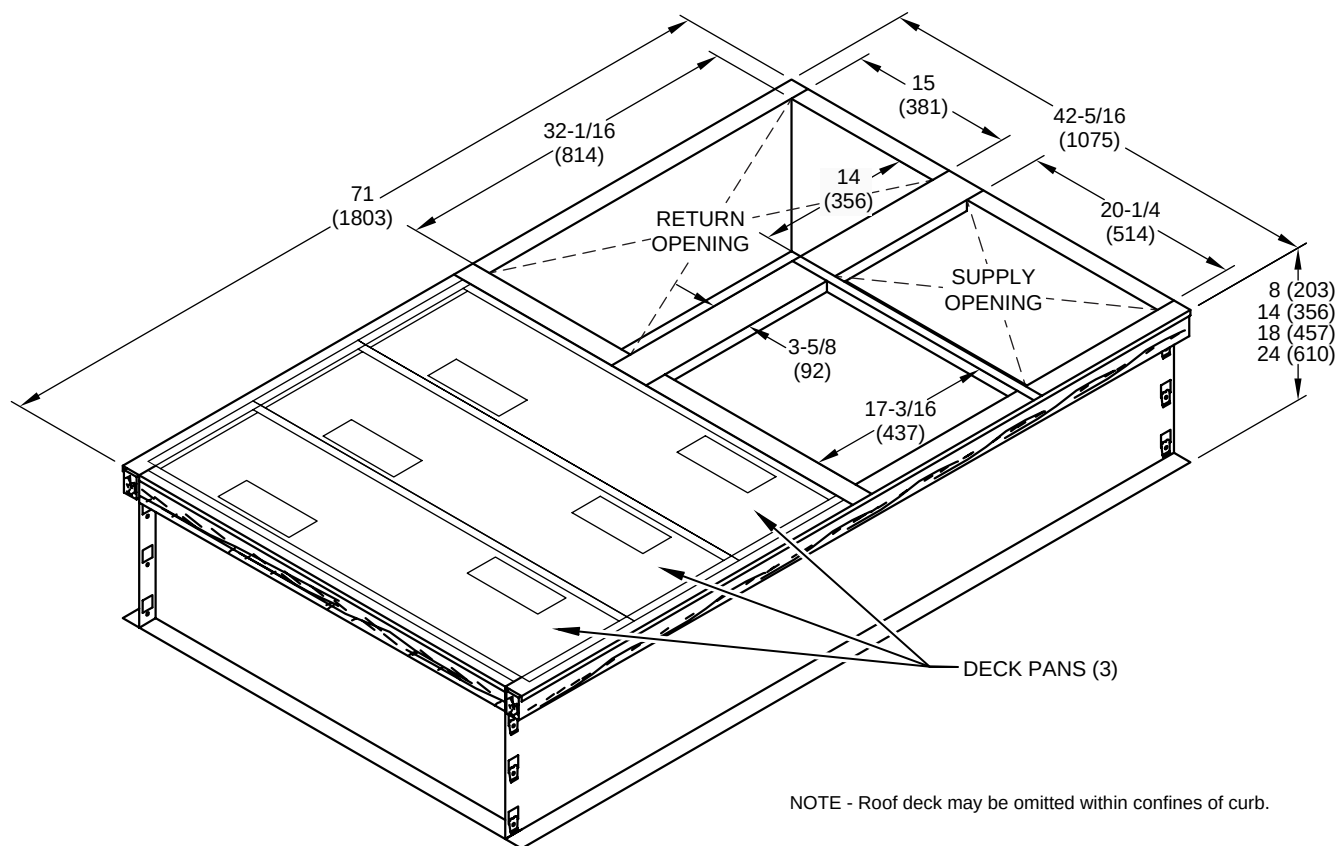
OUTDOOR AIR HOOD DETAIL WITH OPTIONAL ECONOMIZER AND BAROMETRIC RELIEF DAMPERS (Horizontal Applications)



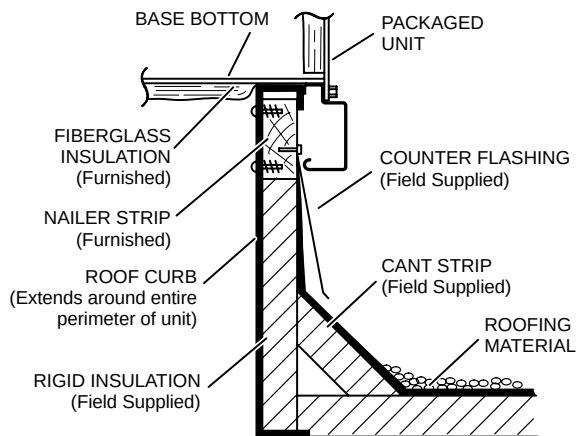
Note - Return Air Duct and Transition must be supported.

DIMENSIONS - ACCESSORIES - INCHES (MM)

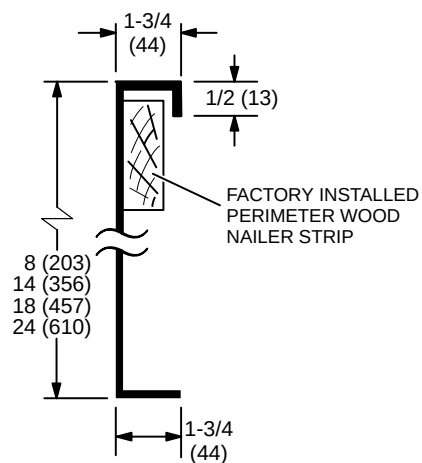
HYBRID ROOF CURBS - DOUBLE DUCT OPENING



TYPICAL FLASHING DETAIL FOR ROOF CURB



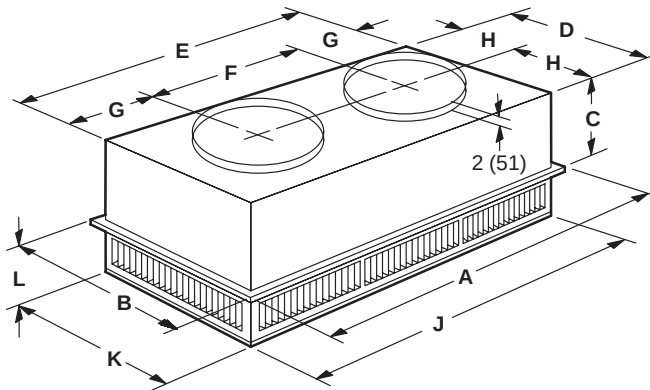
DETAIL ROOF CURB



DIMENSIONS - ACCESSORIES - INCHES (MM)

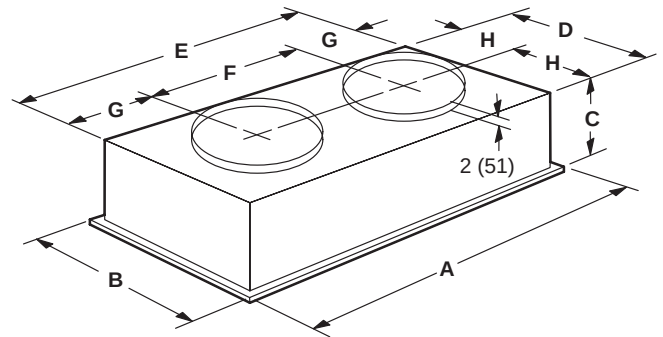
COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

STEP-DOWN CEILING DIFFUSER



Model Number		RTD9-65	RTD11-95
A	in.	47-5/8	47-5/8
	mm	1159	1159
B	in.	23-5/8	29-5/8
	mm	600	752
C	in.	11-3/8	14-3/8
	mm	289	365
D	in.	21-1/2	27-1/2
	mm	546	699
E	in.	45-1/2	45-1/2
	mm	1156	1158
F	in.	22-1/2	22-1/2
	mm	572	572
G	in.	11-1/2	11-1/2
	mm	292	292
H	in.	10-3/4	13-3/4
	mm	273	349
J	in.	45-1/2	45-1/2
	mm	1156	1156
K	in.	21-1/2	27-1/2
	mm	546	699
L	in.	7-1/8	8-1/8
	mm	181	206
Duct Size	in.	18 round	20 round
	mm	457 round	508 round

FLUSH CEILING DIFFUSER



Model Number		FD9-65	FD11-95
A	in.	47-5/8	47-5/8
	mm	1159	1159
B	in.	23-5/8	29-5/8
	mm	600	752
C	in.	13-1/2	16-5/8
	mm	343	422
D	in.	21	27
	mm	533	686
E	in.	45	45
	mm	1143	1143
F	in.	22-1/2	22-1/2
	mm	572	572
G	in.	11-1/4	11-1/4
	mm	286	286
H	in.	10-1/2	13-1/2
	mm	267	343
Duct Size	in.	18 round	20 round
	mm	457 round	508 round

REVISIONS

Section	Description
Conventional Control Systems	Added new CS7500 and CS3000 Commercial Thermostats.
Options/Accessories	Added new Combination Coil/Hail Guards.



HRAI
✓ MEMBER COMPANY



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Contact us at 1-800-4-LENNOX

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.

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ZC **Raider® Rooftop Units** **60 HZ**

PRODUCT SPECIFICATIONS

RAIDER®

Value Without Compromise®

Bulletin No. 210674

July 2015

Supersedes November 2014



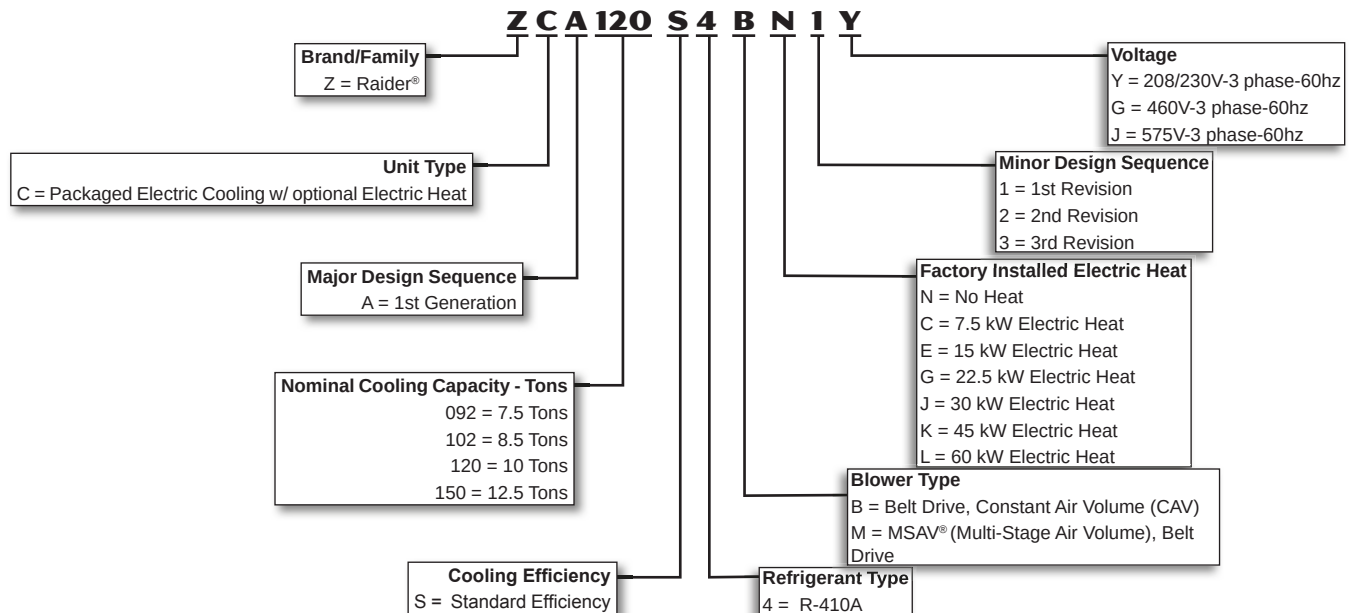
**ASHRAE 90.1
COMPLIANT**

7.5 to 12.5 Tons

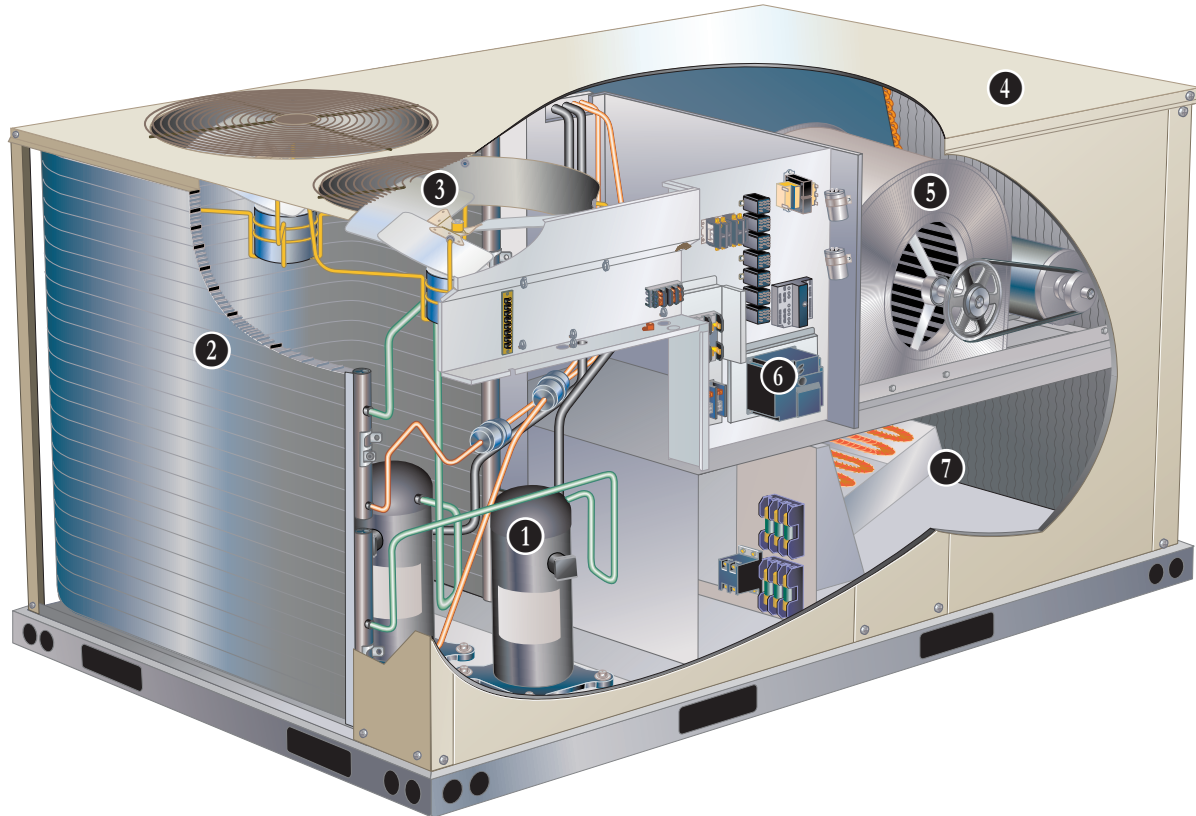
Net Cooling Capacity – 86,000 to 136,000 Btuh

Optional Electric Heat - 7.5 to 60 kW

MODEL NUMBER IDENTIFICATION



FEATURES AND BENEFITS



Raider® rooftop units from Lennox Commercial are the new standard for reliable, efficient rooftop units built for long-lasting performance that can significantly improve indoor environments.

Raider® Rooftop Units Feature:

- **Quick and Easy Retrofit** - Fast installation for replacement of many existing rooftop units - fits high volume competitor's roof curbs
- **R-410A Refrigerant** - Environmentally friendly
- **Scroll Compressors** - Single speed scroll compressors are furnished on all models.
- **Lennox' Environ™ Coil System** - Smaller, lighter condenser coil.
- **High Pressure Switches** - Protect compressor.
- **Independent Outdoor Fan Motor Mounts** - Allows for easy and efficient service access without removing the top panel.
- **Constant Air Volume (CAV) or MSAV® (Multi-Stage Air Volume) Supply Air Blower Option** - Allows constant or multi-staged air delivery.
- **Downflow or Horizontal Airflow** - Easy field conversion.
- **Two Fork Lift Slots on Three Sides** - Easy to pick up and transport units from almost any angle.
- **Corrosion-Resistant Drain Pan** - Provides durability and improved serviceability and meets ASHRAE 62.1 requirements for drain pan slope..
- **MERV 8 or MERV 13 Filters** - Available as field installed option, provide an enhanced level of indoor air quality, and can help the building qualify for additional LEED credits.
- **Common Components** - Many maintenance items are standard throughout the entire product line, reducing the need to carry different parts to the job or maintain in inventory.

FEATURES AND BENEFITS

CONTENTS

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Ratings	.14
Specifications	.12
Unit Clearances	.28
Weight Data	.30

APPROVALS

AHRI Certified to AHRI Standard 340/360-2007.

ETL Intertek listed.

Components bonded for grounding to meet safety standards for servicing required by UL, ULC and National and Canadian Electrical Codes.

All models are ASHRAE 90.1-2010 energy efficiency compliant and meet or exceed requirements of Section 6.8.

Models equipped with the MSAV option meet California Code of Regulations, Title 24 and ASHRAE 90.1-2010 Section 6.4.3.10 requirements for staged airflow.

ISO 9001 Registered Manufacturing Quality System.

WARRANTY

Limited five years on compressors.

Limited three years on the Lennox' Environ™ Coil System.

Limited five years on Optional High Performance Economizers.

Limited one year all other covered components.

COOLING SYSTEM

Designed to maximize sensible and latent cooling performance at design conditions.

System can operate from 30°F to 125°F without any additional controls.

R-410A Refrigerant

Non-chlorine based, ozone friendly, R-410A.



1 Scroll Compressors

Scroll compressors on all models for high performance, reliability and quiet operation.

Resiliently mounted on rubber grommets for quiet operation.

Refrigerant Metering Orifice

Accurately meters refrigerant in system.

Refrigerant control is accomplished by exact sizing of refrigerant metering orifice.

Filter/Driers

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

High Pressure Switches

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

2 Lennox' Environ™ Coil System

Condenser coil features lightweight, all aluminum brazed fin construction.

Constructed of three components:

a flat extrusion tube, fins in-between the flat extrusion tube and two refrigerant manifolds.



Environ™ Coil System Features:

- Improved heat transfer performance due to high primary surface area (flat tubes) versus secondary surface (fins).
- Smaller internal volume (reduced refrigerant charge).
- High durability (all aluminum construction).
- Fewer brazed joints.
- Compact design (reduces unit weight).
- Easy maintenance/cleaning.

Face-split design.

Mounting brackets with rubber inserts secure coil to unit providing vibration dampening and corrosion protection.

Evaporator Coil

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

Cross row circuiting with rifled copper tubing optimizes both sensible and latent cooling capacity.

FEATURES AND BENEFITS

COOLING SYSTEM **(continued)**

Condensate Drain Pan

Plastic pan, sloped to meet drainage requirements of ASHRAE 62.1.

Side drain connections.

Outdoor Coil Fan Motors

Thermal overload protected, totally enclosed, permanently lubricated ball bearings, shaft up, wire basket mount.

3 Outdoor Coil Fans

PVC coated fan guard furnished.

Required Selections

Cooling Capacity

Specify nominal cooling capacity of the unit.

Options/Accessories

Field Installed

Condensate Drain Trap

Available in copper or PVC.

Drain Pan Overflow Switch

Monitors condensate level in drain pan, shuts down unit if drain becomes clogged.

Low Ambient Kit (Includes Compressor Crankcase Heater)

Cycles the outdoor fans 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.

Low Ambient Kit also controls the compressor crankcase heaters.

Compressor crankcase heater is furnished with kit. Protects against refrigerant migration that can occur during low ambient operation.

CABINET

4 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 forklift slots.

Raised edges around duct and power entry openings in the bottom of the unit provide additional protection against water entering the building.

Airflow Choice

Units are shipped in downflow (vertical) configuration, can be field converted to horizontal airflow.

Duct Flanges

Provided for horizontal duct attachment.

Power Entry

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

Optional Bottom Power Entry Kit is available.

Exterior Panels

Constructed of heavy-gauge, galvanized steel with a two-layer enamel paint finish.

Insulation

All panels adjacent to conditioned air are fully insulated with non-hygroscopic fiberglass insulation.

Access Panels

Access panels are provided for the filter section, heating/blower section, and the compressor/controls section. Recessed handles allow easy access for servicing.

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, ASTM B117 Standard Method Salt Spray Testing.

Indoor Corrosion Protection:

- Coated coil

Outdoor Corrosion Protection:

- Coated coil

Field Installed

Combination Coil/Hail Guards

Heavy gauge steel frame painted to match cabinet with expanded metal mesh to protect the outdoor coil from damage.

FEATURES AND BENEFITS

5 BLOWER

A wide selection of supply air blower options are available to meet a variety of airflow requirements.

Motor

Overload protected, equipped with ball bearings. Belt drive motors are offered on all models and are available in several different sizes to maximize air performance.

Supply Air Blower

Forward curved blades, double inlet, blower wheel is statically and dynamically balanced. Equipped with ball bearings and adjustable pulley (allows speed change).

Blower assembly slides out of unit for servicing.

Required Selections

Select Constant Air Volume (CAV) or MSAV® (Multi-Stage Air Volume) Supply Air Blower Option

Order blower motor horsepower and drive kit number required when base unit is ordered, see Drive Kit Specifications Table.

CAV Operation

On units ordered with the Constant Air volume (CAV) option, the supply air blower will provide a constant volume of air.

6 MSAV Operation

Units ordered with the MSAV option utilize a Variable Frequency Drive (VFD) to stage the supply air blower airflow. The VFD alters the frequency and voltage of the power supply to the blower to control blower speed.

The supply air blower has two speeds:

1. Low speed for part-load cooling operation. Note - Low speed is 67% of high speed.
2. High speed for full load cooling and all heat modes.

Full speed blower operation is set by adjusting the motor pulley to deliver the desired air volume.

The ventilation speed is selectable between high and low speed.

NOTE - Part load airflow in cooling mode on MSAV units should not be set below 220 cfm/nominal full load ton to reduce the risk of evaporator coil freeze-up.

The VFD has an operational range of -40 to 125° F outdoor air ambient temperature.

Lower operating costs are obtained when the blower is operated on lower speeds.

MSAV Sequence of Operation

Blower operates in low speed for mechanical cooling mode (Y1), ventilation mode (G), or free cooling mode.

Blower operates in high speed for any other mode - mechanical cooling (Y1+Y2), free cooling + Y2 or heating (W1 and W1+W2).

Economizer damper minimum position is fully closed in unoccupied mode.

In occupied mode, the economizer damper minimum position is determined by the setting of the economizer control.

Note - Two-minimum fresh-air settings are only available on MSAV with the High Performance Economizer option.

CONTROLS

Unit Control

All control voltage is provided via a 24V (secondary) transformer with built-in circuit breaker protection.

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

Low Voltage Terminal Block -

Provides screw terminal connections for thermostat or controller wiring.

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

Smoke Detectors

NOTE - Smoke detectors are not available and must be field provided by installer.

Options/Accessories

Field Installed

Commercial Control Systems

L Connection® Network

Complete building automation control system for single or multi-zone applications. Options include local interface, software for local or remote communication, and hardware for networking other control functions.

See L Connection Network Product Specifications Bulletin for details.

Thermostats

Control system and thermostat options, see page 29.

Aftermarket unit controller options, see Options/Accessories table.

FEATURES AND BENEFITS

ELECTRICAL

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.

Required Selections

Voltage Choice

Specify when ordering base unit.

Options/Accessories

Field Installed

7 Electric Heat

Helix wound nichrome elements, individual element limit controls, wiring harness. See Options / Accessories tables for ordering information.

NOTE - Unit Fuse Block is required and must be ordered separately. See Electrical / Electric Heat tables for ordering information.

Bottom Power Entry Kit

Kit reduces the number of penetrations in the roof.

Kit includes bulkhead connectors to provides power and control wiring routing through the roof curb.

INDOOR AIR QUALITY

Air Filters

Disposable 2 inch filters furnished as standard.

Options/Accessories

Field Installed

Healthy Climate® High Efficiency Air Filters

Disposable MERV 8 or MERV 13 (Minimum Efficiency Reporting Value based on ASHRAE 52.2) efficiency 2 inch pleated filters.

Replacement Filter Media Kit With Frame

Replaces existing pleated filter media. Includes washable metal mesh screen and metal frame with clip for holding replaceable non-pleated filter.

Indoor Air Quality (CO₂) Sensors

Monitors CO₂ levels, reports to the Unit Controller which adjusts economizer dampers as needed.

ECONOMIZER OPTIONS

Factory or Field Installed

NOTE - Downflow Economizer is factory or field installed. Horizontal Economizer is field installed only.

Economizer

(Standard and High Performance Common Features)

Barometric Relief Dampers allow relief of excess air, aluminum blade dampers prevent blow back and outdoor air infiltration during off cycle, Exhaust hood with bird screen furnished.

NOTE - Outdoor Air and Barometric Relief Exhaust Hoods are included when economizer is factory installed and are furnished with economizer when ordered for field installation.

Occupied/Unoccupied mode with field furnished setback thermostat.

Demand Control Ventilation (DCV) ready using optional CO₂ sensors.

Single temperature control is furnished with Economizer.

Outdoor air temperature sensor enables economizer if the outdoor temperature is less than the setpoint of the control.

Standard Economizer Features (Not for Title 24)

Downflow or Horizontal models with Barometric Relief Dampers and Hoods.

Parallel gear-driven action, return air and outdoor air dampers, plug-in connections to unit, nylon bearings, neoprene seals, 24-volt, fully-modulating spring return motor.

Standard Economizer Control Module

The Standard Economizer Control Module can be adjusted to operate based on outdoor air temperatures.



Economizer Controls:

- Damper Minimum Position
- Can be set lower than traditional minimum air requirements resulting in cost savings.

- IAQ Sensor - Signals dampers to modulate and maintain 55°F when CO₂ is higher than the CO₂ setpoint.
- Demand Control Ventilation (DCV) LED - A steady green Demand Control Ventilation LED indicates the IAQ reading is higher than setpoint and requires more fresh air.
- Free Cool LED - A steady green LED indicates outdoor air is suitable for free cooling.

Free Cooling runs when outdoor air temperature is lower than the set temperature on the economizer control.

NOTE: The Free Cooling default setting for outdoor air temperature sensor is 55°F.

High Performance Economizer Features

Approved for California Title 24 building standards.

ASHRAE 90.1-2010 compliant.

Downflow models with Barometric Relief Dampers and Hoods.

Parallel gear-driven action, high torque 24-volt fully-modulating spring return damper motor, return air and outdoor air dampers, plug-in connections to unit, stainless steel bearings, enhanced neoprene blade edge seals and flexible stainless steel jamb seals to minimize air leakage.

NOTE - High Performance Economizers are not approved for use with enthalpy controls in Title 24 applications.

High Performance Economizer Control Module

Module provides inputs and outputs to control economizer based on parameter settings.

Module automatically detects sensors by polling to determine which sensors are installed in system.

Module displays any alarm messages (fault detection and diagnostics) as an aid in troubleshooting.



Non-volatile memory retains parameter settings in case of power failure.

Keypad with four navigation buttons and LCD screen is furnished for setting economizer parameters.

- Menu Up/Exit (↑) button returns to the main menu.
- Arrow Up (▲) button moves to the previous or next parameter within the selected menu.
- Arrow Down (▼) button moves to the next parameter within the selected menu.
- Select (enter) (↵) button confirms parameter selection.

Main Menu Structure:

- STATUS (economizer and system operation status)
- SETPOINTS (settings for various setpoint parameters)
- SYSTEM SETUP (settings/information about the system)
- ADVANCED SETUP (freeze protection, CO₂ settings, stage 3 delay and additional calibration settings)
- CHECKOUT (damper positions)
- ALARMS (output signal that can be configured for remote alarm monitoring)

NOTE - The free cooling setpoint for Title 24 applications must be set based on the Climate Zone where the system is installed. See Section 140.4 "Prescriptive Requirements for Space Conditioning Systems" of the California Energy Commission's 2013 Building Energy Efficiency Standards.

Refer to Installation Instructions for complete setup information and menu parameters available.

OPTIONS / ACCESSORIES

ECONOMIZER OPTIONS **(continued)**

Factory or Field Installed

Single Enthalpy Temperature Control

(Not for Title 24)

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

Field Installed

Differential Enthalpy Control **(Not for Title 24)**

Order two Single Enthalpy Control Kits. One is field installed in the return air section, the other in the outdoor air section. Allows the economizer control board to select between outdoor air or return air, whichever has lower enthalpy.

EXHAUST OPTIONS

Field Installed

Horizontal Low Profile

Barometric Relief Dampers

For use when unit is configured for horizontal applications in a reduced space requiring an economizer.

Allows relief of excess air.

Aluminum blade dampers prevent blow back and outdoor air infiltration during off cycle.

Field installed in return air duct.

Exhaust hood with bird screen furnished.

Power Exhaust Fan

Installs internal to unit for downflow applications only 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. Requires Economizer with Outdoor Air Hood and Barometric Relief Dampers. Fan is 20 in. diameter with 5 blades (K1PWRE10B) WITH 1/3 hp motor.

OUTDOOR AIR OPTIONS

Field Installed

Outdoor Air Damper - Downflow or Horizontal With Air Hood

Linked mechanical dampers, 0 to 25% (fixed) outdoor air adjustable, installs in unit. Includes outdoor air hood.

Automatic model features fully modulating spring return damper motor with plug-in connection.

Manual model features a slide damper.

Maximum mixed air temperature in cooling mode: 100°F.

ROOF CURBS

Hybrid Roof Curbs, Downflow

Nailer strip furnished, mates to unit, US National Roofing Contractors Approved, shipped knocked down.

Roof curb can be assembled using interlocking tabs to fasten corners together. No tools required.

Curb can also be fastened together with furnished hardware.

Available in 8, 14, 18, and 24 inch heights.

CEILING DIFFUSERS

Ceiling Diffusers

(Flush or Step-Down)

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)

NOTE - Ceiling Diffuser Transitions are not furnished and must be field fabricated.

OPTIONS / ACCESSORIES

Item Description	Model Number	Catalog Number	Unit Model No			
			092	102	120	150
COOLING SYSTEM						
Condensate Drain Trap	PVC - C1TRAP20AD2	76W26	X	X	X	X
	Copper - C1TRAP10AD2	76W27	X	X	X	X
Corrosion Protection		Factory	O	O	O	O
Drain Pan Overflow Switch	Z1SNSR90A1	99W59	X	X	X	X
Low Ambient Kit (Includes Compressor Crankcase Heater)	208/230V-3ph - Z1LOAM02B-1Y	10Z35	X	X		
	460V-3ph - Z1LOAM02B-1G	10Z36	X	X		
	575V-3ph - Z1LOAM02B-1J	10Z37	X	X		
	208/230V-3ph - Z1LOAM12B-1Y	10Z50			X	X
	460V-3ph - Z1LOAM12B-1G	10Z51			X	X
	575V-3ph - Z1LOAM12B-1J	10Z52			X	X
Refrigerant Type		R-410A	O	O	O	O
BLOWER - SUPPLY AIR						
Blower Option	CAV (Constant Air Volume)	Factory	O	O	O	O
	MSAV (Multi-Stage Air Volume)	Factory	O	O	O	O
Blower Motors	Belt Drive - 2 hp	Factory	O	O	O	O
	Belt Drive - 3 hp	Factory	O	O	O	O
	Belt Drive - 5 hp	Factory	O	O	O	O
Drive Kits See Blower Data Tables for selection	Kit #1 590-890 rpm	Factory	O	O	O	O
	Kit #2 800-1105 rpm	Factory	O	O	O	O
	Kit #3 795-1195 rpm	Factory	O	O	O	O
	Kit #4 730-970 rpm	Factory	O	O	O	O
	Kit #5 940-1200 rpm	Factory	O	O	O	O
	Kit #6 1015-1300 rpm	Factory	O	O	O	O
	Kit #10 900-1135 rpm	Factory	O	O	O	O
	Kit #11 1040-1315 rpm	Factory	O	O	O	O
	Kit #12 1125-1425 rpm	Factory	O	O	O	O
CABINET						
Combination Coil/Hail Guards	Z1GARD52B-1	12X21	X	X	X	X
CONTROLS						
	L Connection® Building Automation System	- - -	X	X	X	X
BACnet®	K0CTRL31B-1	96W15	OX	OX	OX	OX
BACnet® Thermostat with Display	K0SNSR01FF1	97W23	X	X	X	X
BACnet® Thermostat without Display	K0SNSR00FF1	97W24	X	X	X	X
Novar® 2051	K0CTRL30B-1	96W12	OX	OX	OX	OX
Plenum Cable (75 ft.)	K0MISC00FF1	97W25	X	X	X	X

NOTE - Catalog and model numbers shown are for ordering field installed accessories.

OX - Configure To Order (Factory Installed) or Field Installed

O = Configure To Order (Factory Installed)

X = Field Installed

OPTIONS / ACCESSORIES

Item Description	Model Number	Catalog Number	Unit Model No			
			092	102	120	150
INDOOR AIR QUALITY						
Air Filters						
Healthy Climate® High Efficiency Air Filters 20 x 24 x 2 (Order 4 per unit)	MERV 8 - Z1FLTR15B-1	14C35	X	X	X	X
	MERV 13 - Z1FLTR40B-1	14C36	X	X	X	X
Replacement Media Filter With Metal Mesh Frame (includes non-pleated filter media)	C1FLTR30B-1-	Y3063	X	X	X	X
Indoor Air Quality (CO ₂) Sensors						
Sensor - Wall-mount, off-white plastic cover with LCD display	C0SNSR50AE1L	77N39	X	X	X	X
Sensor - Wall-mount, off-white plastic cover, no display	C0SNSR52AE1L	87N53	X	X	X	X
Sensor - Black plastic case with LCD display, rated for plenum mounting	C0SNSR51AE1L	87N52	X	X	X	X
Sensor - Wall-mount, black plastic case, no display, rated for plenum mounting	C0MISC19AE1	87N54	X	X	X	X
CO ₂ Sensor Duct Mounting Kit - for downflow applications	C0MISC19AE1-	85L43	X	X	X	X
Aspiration Box - for duct mounting non-plenum rated CO ₂ sensors (87N53 or 77N39)	C0MISC16AE1-	90N43	X	X	X	X
ELECTRICAL						
Voltage 60 hz	208/230V - 3 phase	Factory	O	O	O	O
	460V - 3 phase	Factory	O	O	O	O
	575V - 3 phase	Factory	O	O	O	O
Bottom Power Entry Kit	Z1PEKT01B-1	11H66	X	X	X	X
ELECTRIC HEAT						
7.5 kW	208/230V-3ph - Z1EHO075B-1Y	10Y97	X	X		
	460V-3ph - Z1EHO075B-1G	10Y98	X	X		
	575V-3ph - Z1EHO075B-1J	10Y99	X	X		
15 kW	208/230V-3ph - Z1EHO150B-1Y	10Z01	X	X	X	X
	460V-3ph - Z1EHO150B-1G	10Z03	X	X	X	X
	575V-3ph - Z1EHO150B-1J	10Z04	X	X	X	X
22.5 kW	208/230V-3ph - Z1EHO225B-1Y	10Z05	X	X	X	X
	460V-3ph - Z1EHO225B-1G	10Z06	X	X	X	X
	575V-3ph - Z1EHO225B-1J	10Z07	X	X	X	X
30 kW	208/230V-3ph - Z1EHO300B-1Y	10Z08	X	X	X	X
	460V-3ph - Z1EHO300B-1G	10Z09	X	X	X	X
	575V-3ph - Z1EHO300B-1J	10Z10	X	X	X	X
45 kW	208/230V-3ph - Z1EHO450B-1Y	10Z11	X	X	X	X
	460V-3ph - Z1EHO450B-1G	10Z12	X	X	X	X
	575V-3ph - Z1EHO450B-1J	10Z13	X	X	X	X
60 kW	208/230V-3ph - Z1EHO600B-1Y	10Z14			X	X
	460V-3ph - Z1EHO600B-1G	10Z15			X	X
	575V-3ph - Z1EHO600B-1J	10Z16			X	X
ELECTRIC HEAT ACCESSORIES						
Unit Fuse Block (required) - See Electrical/Electric Heat Tables for Selection			X	X	X	X

NOTE - Catalog and model numbers shown are for ordering field installed accessories.

OX - Configure To Order (Factory Installed) or Field Installed

O = Configure To Order (Factory Installed)

X = Field Installed

OPTIONS / ACCESSORIES

Item Description	Model Number	Catalog Number	Unit Model No			
			092	102	120	150
ECONOMIZER						
Standard Economizer (Not for Title 24)						
Standard Downflow Economizer with Single Temperature Control - With Barometric Relief Dampers and Air Hoods	Z1ECON30B-1	10Z29	OX	OX	OX	OX
Standard Horizontal Economizer with Single Temperature Control - With Barometric Relief Dampers and Air Hoods	Z1ECON16B-1	11G98	X	X	X	X
Standard Economizer Controls (Not for Title 24)						
Single Enthalpy Control	C1SNSR64FF1	53W64	OX	OX	OX	OX
Differential Enthalpy Control (order 2)	C1SNSR64FF1	53W64	X	X	X	X
High Performance Economizer (Approved for California Title 24 Building Standards)						
High Performance Downflow Economizer with Single Temperature Control - With Barometric Relief Dampers and Air Hoods	Z1ECON32B-1	12B44	OX	OX	OX	OX
High Performance Economizer Controls (Not for Title 24)						
Single Enthalpy Control	C1SNSR61FF1	11G21	OX	OX	OX	OX
Differential Enthalpy Control (order 2)	C1SNSR61FF1	11G21	X	X	X	X
Horizontal Low Profile Barometric Relief Dampers With Exhaust Hood						
Horizontal Low Profile Barometric Relief Dampers With Exhaust Hood	LAGEDH03/15	53K04	X	X	X	X
OUTDOOR AIR						
Outdoor Air Dampers						
Motorized Dampers with outdoor air hood	Z1DAMP20B-1	10Z33	X	X	X	X
Manual Dampers with outdoor air hood	Z1DAMP10B-1	10Z32	X	X	X	X
POWER EXHAUST						
Standard Static (Downflow)	208/230V-3ph - Z1PWRE10B-1Y	10Z70	X	X	X	X
	460V-3ph - Z1PWRE10B-1G	10Z71	X	X	X	X
Standard Static (Horizontal)	208/230V-3ph - Z1PWRE15A-1P	24E01	X	X	X	X
	460V-3ph - Z1PWRE15A-1G	28E01	X	X	X	X
575V Transformer Kit	575V-3ph - Z1TRFM20A-1J	59E02	X	X	X	X
NOTE - Order 575V Transformer Kit with 208/230V Power Exhaust Fan for 575V applications. Order two kits for downflow models, order one kit for horizontal models.						
ROOF CURBS						
Hybrid Roof Curbs, Downflow						
8 in. height	Z1CURB40B-1	10Z25	X	X	X	X
14 in. height	Z1CURB41B-1	10Z26	X	X	X	X
18 in. height	Z1CURB42B-1	10Z27	X	X	X	X
24 in. height	Z1CURB43B-1	10Z28	X	X	X	X
CEILING DIFFUSERS						
Step-Down - Order one	RTD11-95	29G04	X			
	RTD11-135	29G05		X	X	
	RTD11-185	29G06				X
Flush - Order one	FD11-95	29G08	X			
	FD11-135	29G09		X	X	
	FD11-185	29G10				X
NOTE - Ceiling Diffuser Transitions are not furnished and must be field fabricated.						
NOTE - Catalog and model numbers shown are for ordering field installed accessories.						
OX - Configure To Order (Factory Installed) or Field Installed						
O = Configure To Order (Factory Installed)						
X = Field Installed						

SPECIFICATIONS			7.5 - 8.5 TON			
General Data	Nominal Tonnage		7.5 Ton	7.5 Ton	8.5 Ton	8.5 Ton
	Model Number		ZCA092S4B	ZCA092S4M	ZCA102S4B	ZCA102S4M
	Efficiency Type		Standard	Standard	Standard	Standard
	Blower Type		Constant Air Volume (CAV)	MSAV (Multi-Stage Air Volume)	Constant Air Volume (CAV)	MSAV (Multi-Stage Air Volume)
Cooling Performance	Gross Cooling Capacity - Btuh		88,200	88,200	99,900	99,900
	¹ Net Cooling Capacity - Btuh		86,000	86,000	97,000	97,000
	AHRI Rated Air Flow - cfm		2,800	2,800	3,250	3,250
	Total Unit Power - kW		7.7	7.7	8.7	8.7
	¹ EER (Btuh/Watt)		11.2	11.2	11.2	11.2
	¹ IEER (Btuh/Watt)		12.0	13.2	12.0	13.2
	Refrigerant Type		R-410A	R-410A	R-410A	R-410A
	Refrigerant Charge Furnished	Circuit 1	4 lbs. 7 oz.	4 lbs. 7 oz.	4 lbs. 13 oz.	4 lbs. 13 oz.
		Circuit 2	3 lbs. 1 oz.	3 lbs. 1 oz.	4 lbs. 10 oz.	4 lbs. 10 oz.
Electric Heat Available - See page 10			7.5,15,22.5,30 & 45 kW			
Compressor Type (number)			Scroll (2)	Scroll (2)	Scroll (2)	Scroll (2)
Outdoor Coils	Net face area (total) - sq. ft.		20.9	20.9	20.9	20.9
	Number of rows		1	1	1	1
	Fins per inch		23	23	23	23
Outdoor Coil Fans	Motor - (No.) hp		(2) 1/3	(2) 1/3	(2) 1/3	(2) 1/3
	Motor rpm		1075	1075	1075	1075
	Total Motor watts		740	740	740	740
	Diameter - (No.) in.		(2) 24	(2) 24	(2) 24	(2) 24
	Number of blades		3	3	3	3
	Total Air volume - cfm		8800	8800	8800	8800
Indoor Coils	Net face area (total) - sq. ft.		12.78	12.78	12.78	12.78
	Tube diameter - in.		3/8	3/8	3/8	3/8
	Number of rows		2	2	3	3
	Fins per inch		14	14	14	14
Drain connection - Number and size			(1) 1 in. NPT coupling			
Expansion device type			Refrigerant Metering Orifice (RFC)			
² Indoor Blower and Drive Selection	Nominal motor output		2 hp, 3 hp, 5 hp			
	Maximum usable motor output (US Only)		2.3 hp, 3.45 hp, 5.75 hp			
	Motor - Drive kit number		2 hp Kit 1 590-890 rpm Kit 2 800-1105 rpm Kit 3 795-1195 rpm 3 hp Kit 4 730-970 rpm Kit 5 940-1200 rpm Kit 6 1015-1300 rpm 5 hp Kit 10 900-1135 rpm Kit 11 1040-1315 rpm Kit 12 1125-1425 rpm			
	Blower wheel nominal diameter x width - in.		(1) 15 X 15	(1) 15 X 15	(1) 15 X 15	(1) 15 X 15
	Type of filter		Disposable			
Filters			(4) 20 x 24 x 2			
Electrical characteristics			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.

¹ AHRI Certified to AHRI Standard 340/360; 95°F outdoor air temperature and 80°F db/67°F wb entering evaporator air; minimum external duct static pressure.

² Using total air volume and system static pressure requirements determine from blower performance tables rpm and motor output required. Maximum usable output of motors furnished are shown. In Canada, nominal motor output is also maximum usable motor output. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

NOTE – Units equipped with MSAV® (Multi-Stage Air Volume) option are limited to a motor service factor of 1.0.

SPECIFICATIONS			10 - 12.5 TON			
General Data	Nominal Tonnage		10 Ton	10 Ton	12.5 Ton	12.5 Ton
	Model Number		ZCA120S4B	ZCA120S4M	ZCA150S4B	ZCA150S4M
	Efficiency Type		Standard	Standard	Standard	Standard
	Blower Type		Constant Air Volume (CAV)	MSAV (Multi-Stage Air Volume)	Constant Air Volume (CAV)	MSAV (Multi-Stage Air Volume)
Cooling Performance	Gross Cooling Capacity - Btuh		118,400	118,400	142,000	142,000
	¹ Net Cooling Capacity - Btuh		115,000	115,000	136,000	136,000
	AHRI Rated Air Flow - cfm		3,800	3,800	4,400	4,400
	Total Unit Power - kW		10.3	10.3	12.4	12.4
	¹ EER (Btuh/Watt)		11.2	11.2	11.0	11.0
	¹ IEER (Btuh/Watt)		12.0	13.2	11.6	12.2
	Refrigerant Type		R-410A	R-410A	R-410A	R-410A
	Refrigerant Charge Furnished	Circuit 1	5 lbs 0 oz.	5 lbs 0 oz.	7 lbs 0 oz.	7 lbs 0 oz.
		Circuit 2	5 lbs 4 oz.	5 lbs 4 oz.	6 lbs 12 oz.	6 lbs 12 oz.
Electric Heat Available - See page 10			15, 22.5, 30, 45 and 60 KW			
Compressor Type (number)			Scroll (2)	Scroll (2)	Scroll (2)	Scroll (2)
Outdoor Coils	Net face area (total) - sq. ft.		28.0	28.0	28.0	28.0
	Number of rows		1	1	1	1
	Fins per inch		23	23	20	20
Outdoor Coil Fans	Motor - (No.) hp		(2) 1/3	(2) 1/3	(2) 1/2	(2) 1/2
	Motor rpm		1075	1075	1075	1075
	Total Motor watts		700	700	950	950
	Diameter - (No.) in.		(2) 24	(2) 24	(2) 24	(2) 24
	Number of blades		3	3	3	3
	Total Air volume - cfm		9000	9000	9600	9600
Indoor Coils	Net face area (total) - sq. ft.		13.54	13.54	13.54	13.54
	Tube diameter - in.		3/8	3/8	3/8	3/8
	Number of rows		3	3	4	4
	Fins per inch		14	14	14	14
Drain connection - Number and size			(1) 1 in. NPT coupling			
Expansion device type			Refrigerant Metering Orifice (RFC)			
² Indoor Blower and Drive Selection	Nominal motor output		2 hp, 3 hp, 5 hp			
	Maximum usable motor output (US Only)		2.3 hp, 3.45 hp, 5.75 hp			
	Motor - Drive kit number		2 hp Kit 1 590-890 rpm Kit 2 800-1105 rpm Kit 3 795-1195 rpm 3 hp Kit 4 730-970 rpm Kit 5 940-1200 rpm Kit 6 1015-1300 rpm 5 hp Kit 10 900-1135 rpm Kit 11 1040-1315 rpm Kit 12 1125-1425 rpm			
	Blower wheel nominal diameter x width - in.		(1) 15 X 15	(1) 15 X 15	(1) 15 X 15	(1) 15 X 15
Filters	Type of filter		Disposable			
	Number and size - in.		(4) 20 x 24 x 2			
Electrical characteristics			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.

¹ AHRI Certified to AHRI Standard 340/360; 95°F outdoor air temperature and 80°F db/67°F wb entering evaporator air; minimum external duct static pressure.

² Using total air volume and system static pressure requirements determine from blower performance tables rpm and motor output required. Maximum usable output of motors furnished are shown. In Canada, nominal motor output is also maximum usable motor output. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

NOTE – Units equipped with MSAV® (Multi-Stage Air Volume) option are limited to a motor service factor of 1.0.

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 ZCA092S4B (1ST STAGE) - CONSTANT AIR VOLUME

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		65°F					75°F					85°F					95°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	
63°F	2400	63.6	2.73	0.66	0.77	0.9	60.9	3.06	0.66	0.78	0.91	57.8	3.43	0.67	0.8	0.93	54.5	3.86	0.68	0.82	0.96
	3000	67.1	2.76	0.69	0.83	0.96	64.3	3.08	0.7	0.84	0.98	61.1	3.45	0.71	0.86	0.99	57.6	3.88	0.72	0.88	1
	3600	70.2	2.78	0.72	0.88	1	67.1	3.1	0.73	0.89	1	63.7	3.47	0.74	0.91	1	60	3.9	0.76	0.94	1
67°F	2400	66.8	2.76	0.53	0.64	0.74	64	3.08	0.54	0.64	0.75	60.9	3.45	0.54	0.65	0.76	57.4	3.88	0.54	0.66	0.78
	3000	70.7	2.79	0.55	0.67	0.79	67.5	3.1	0.56	0.67	0.81	64.1	3.47	0.56	0.68	0.82	60.5	3.91	0.56	0.7	0.85
	3600	73.5	2.8	0.57	0.7	0.84	70.2	3.12	0.57	0.71	0.86	66.6	3.49	0.58	0.72	0.88	62.6	3.92	0.58	0.74	0.9
71°F	2400	69.7	2.78	0.42	0.52	0.61	66.8	3.1	0.42	0.52	0.62	63.6	3.47	0.41	0.52	0.63	60.1	3.9	0.4	0.53	0.64
	3000	73.9	2.81	0.43	0.54	0.65	70.6	3.12	0.43	0.54	0.65	67.1	3.5	0.42	0.55	0.66	63.3	3.93	0.41	0.55	0.68
	3600	77	2.83	0.44	0.56	0.68	73.5	3.14	0.44	0.56	0.69	69.6	3.51	0.41	0.57	0.7	65.6	3.95	0.42	0.57	0.72

7.5 TON STANDARD EFFICIENCY ZCA092S4B (2ND STAGE) - CONSTANT AIR VOLUME

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	
63°F	2400	86	5.76	0.68	0.82	0.96	80.6	6.5	0.69	0.84	0.98	74.8	7.36	0.71	0.87	1	68.6	8.33	0.73	0.9	1
	3000	90.8	5.8	0.73	0.89	1	85	6.54	0.74	0.92	1	78.8	7.4	0.76	0.95	1	72.2	8.38	0.79	0.98	1
	3600	94.4	5.82	0.77	0.95	1	88.3	6.57	0.79	0.98	1	82	7.43	0.82	0.99	1	75.5	8.42	0.85	1	1
67°F	2400	90.7	5.79	0.54	0.66	0.78	85.2	6.54	0.54	0.67	0.8	79.3	7.4	0.55	0.69	0.83	72.7	8.38	0.56	0.7	0.86
	3000	96	5.83	0.57	0.7	0.85	89.9	6.58	0.57	0.72	0.88	83.5	7.45	0.58	0.74	0.91	76.7	8.43	0.59	0.77	0.95
	3600	99.7	5.85	0.59	0.75	0.92	93.4	6.61	0.6	0.77	0.95	86.6	7.48	0.61	0.79	0.98	79.3	8.47	0.63	0.83	1
71°F	2400	95	5.82	0.41	0.53	0.64	89.5	6.58	0.41	0.53	0.65	83.3	7.44	0.4	0.54	0.66	76.7	8.43	0.4	0.55	0.68
	3000	100.7	5.86	0.43	0.56	0.68	94.5	6.62	0.42	0.56	0.7	87.9	7.49	0.41	0.57	0.72	80.8	8.48	0.41	0.58	0.74
	3600	104.7	5.89	0.43	0.58	0.72	98.1	6.65	0.43	0.59	0.74	91.2	7.52	0.43	0.6	0.77	83.8	8.52	0.43	0.62	0.8

8.5 TON STANDARD EFFICIENCY ZCA102S4B (1ST STAGE) - CONSTANT AIR VOLUME

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		65°F					75°F					85°F					95°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	
63°F	2720	66.4	2.72	0.68	0.8	0.92	63.8	3.1	0.68	0.81	0.94	61	3.52	0.69	0.83	0.95	58.1	3.98	0.7	0.84	0.97
	3400	69.8	2.74	0.7	0.85	0.97	67.1	3.13	0.71	0.86	0.97	64.1	3.55	0.72	0.88	0.97	60.9	4.01	0.74	0.9	0.96
	4080	72.5	2.75	0.73	0.9	0.96	69.5	3.15	0.74	0.91	0.96	66.3	3.57	0.75	0.93	0.96	62.8	4.03	0.77	0.95	0.96
67°F	2720	69.5	2.74	0.53	0.65	0.76	66.8	3.12	0.53	0.65	0.78	63.9	3.55	0.54	0.67	0.79	60.8	4.01	0.54	0.68	0.81
	3400	73.1	2.76	0.54	0.68	0.81	70.2	3.15	0.54	0.69	0.83	67.1	3.57	0.55	0.7	0.84	63.7	4.04	0.56	0.71	0.86
	4080	75.8	2.77	0.55	0.71	0.86	72.7	3.16	0.55	0.72	0.87	69.3	3.59	0.56	0.73	0.89	65.6	4.05	0.56	0.74	0.91
71°F	2720	72.9	2.76	0.39	0.5	0.62	69.6	3.15	0.39	0.51	0.63	66.5	3.57	0.39	0.52	0.64	63.3	4.03	0.39	0.52	0.65
	3400	76.1	2.77	0.38	0.52	0.65	73.1	3.17	0.38	0.53	0.66	69.8	3.59	0.39	0.53	0.67	66	4.06	0.39	0.54	0.68
	4080	78.7	2.78	0.38	0.53	0.68	75.4	3.18	0.38	0.54	0.69	71.7	3.6	0.38	0.54	0.7	67.8	4.07	0.38	0.55	0.72

8.5 TON STANDARD EFFICIENCY ZCA102S4B (2ND STAGE) - CONSTANT AIR VOLUME

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
	cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F
63°F	2720	95.7	6.57	0.75	0.87	0.97	90.6	7.42	0.77	0.89	0.98	85.2	8.37	0.78	0.91	0.99	79.2	9.44	0.8	0.94	0.98
	3400	100.3	6.62	0.8	0.92	0.98	94.8	7.47	0.81	0.94	0.98	89.2	8.42	0.83	0.96	0.98	83.1	9.5	0.85	0.98	0.98
	4080	104	6.66	0.83	0.96	0.98	98.6	7.51	0.85	0.97	0.98	92.9	8.47	0.87	0.98	0.98	87.1	9.56	0.9	0.97	0.98
67°F	2720	101.3	6.63	0.59	0.72	0.84	96	7.48	0.6	0.74	0.86	90.3	8.44	0.61	0.76	0.88	84	9.51	0.62	0.78	0.91
	3400	106.4	6.68	0.61	0.77	0.9	100.5	7.54	0.62	0.79	0.92	94.4	8.5	0.64	0.81	0.94	87.7	9.57	0.65	0.83	0.96
	4080	109.9	6.72	0.64	0.81	0.94	103.9	7.57	0.65	0.83	0.96	97.3	8.53	0.66	0.85	0.97	90.2	9.6	0.68	0.88	0.97
71°F	2720	106.8	6.69	0.44	0.57	0.69	101.3	7.54	0.44	0.58	0.71	95.5	8.51	0.44	0.59	0.73	88.8	9.58	0.45	0.6	0.75
	3400	112.2	6.74	0.44	0.59	0.74	106.2	7.59	0.44	0.6	0.76	99.7	8.56	0.45	0.62	0.78	92.7	9.63	0.45	0.64	0.81
	4080	116.1	6.77	0.45	0.62	0.79	109.9	7.64	0.45	0.63	0.81	103.1	8.6	0.46	0.65	0.83	95.6	9.67	0.46	0.67	0.86

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 ZCA120S4B (1ST STAGE) - CONSTANT AIR VOLUME

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		65°F					75°F					85°F					95°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)							
				Dry Bulb					Dry Bulb					Dry Bulb							
				75°F	80°F	85°F			75°F	80°F	85°F	75°F		80°F	85°F	75°F	80°F	85°F			
cfm	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW					
63°F	3200	62.2	2.85	0.66	0.8	0.94	58.1	3.21	0.66	0.81	0.96	53.6	3.62	0.66	0.82	0.98	49	4.09	0.66	0.84	1
	4000	66.2	2.86	0.71	0.87	1	61.8	3.23	0.71	0.88	1	57.2	3.65	0.71	0.9	1	52.4	4.12	0.73	0.93	1
	4800	69.2	2.89	0.75	0.94	1	64.7	3.24	0.76	0.96	1	60	3.66	0.78	0.98	1	54.9	4.14	0.79	1	1
67°F	3200	66.8	2.87	0.53	0.64	0.76	62.4	3.23	0.52	0.64	0.77	57.9	3.65	0.51	0.64	0.78	53.1	4.12	0.5	0.64	0.8
	4000	70.8	2.88	0.55	0.69	0.83	66.2	3.25	0.55	0.69	0.85	61.3	3.67	0.54	0.69	0.86	56.3	4.15	0.54	0.7	0.89
	4800	73.7	2.89	0.58	0.73	0.9	68.8	3.27	0.57	0.74	0.92	63.9	3.69	0.58	0.75	0.94	58.7	4.17	0.57	0.77	0.97
71°F	3200	71.3	2.89	0.41	0.52	0.62	66.9	3.26	0.39	0.51	0.62	62.1	3.68	0.37	0.5	0.62	57.1	4.16	0.36	0.49	0.63
	4000	75.4	2.9	0.42	0.55	0.67	70.7	3.28	0.4	0.54	0.67	65.7	3.7	0.39	0.54	0.68	60.3	4.18	0.37	0.53	0.68
	4800	78.4	2.92	0.43	0.58	0.71	73.4	3.29	0.42	0.57	0.72	68.2	3.72	0.41	0.57	0.73	62.8	4.2	0.4	0.57	0.75

10 TON STANDARD EFFICIENCY ZCA120S4B (2ND STAGE) - CONSTANT AIR VOLUME

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)							
				Dry Bulb					Dry Bulb					Dry Bulb							
				75°F	80°F	85°F			75°F	80°F	85°F	75°F		80°F	85°F	75°F	80°F	85°F	75°F	80°F	85°F
cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F						
63°F	3200	114	7.38	0.68	0.83	0.98	104.2	8.32	0.68	0.85	1	93.9	9.38	0.68	0.87	1	83.2	10.57	0.69	0.91	1
	4000	121	7.42	0.73	0.92	1	111.1	8.38	0.74	0.94	1	100.5	9.44	0.76	0.97	1	89.4	10.64	0.78	1	1
	4800	126.9	7.46	0.79	0.99	1	116.4	8.42	0.81	1	1	106.5	9.5	0.83	1	1	96	10.71	0.86	1	1
67°F	3200	123.1	7.43	0.52	0.66	0.79	113	8.39	0.51	0.66	0.81	102.5	9.46	0.5	0.67	0.83	91.5	10.66	0.49	0.67	0.87
	4000	130.6	7.48	0.55	0.71	0.88	120	8.44	0.55	0.72	0.9	108.8	9.52	0.55	0.74	0.93	97	10.73	0.55	0.76	0.98
	4800	136	7.51	0.59	0.77	0.95	124.9	8.48	0.59	0.78	0.98	113.3	9.56	0.59	0.81	1	101.2	10.77	0.6	0.84	1
71°F	3200	131.9	7.49	0.38	0.51	0.64	121.6	8.45	0.36	0.5	0.64	110.7	9.53	0.34	0.5	0.65	99.4	10.75	0.32	0.49	0.65
	4000	139.7	7.54	0.4	0.55	0.69	128.7	8.5	0.39	0.55	0.7	117.5	9.6	0.37	0.55	0.72	105.4	10.82	0.35	0.55	0.74
	4800	145.4	7.58	0.42	0.58	0.75	134	8.56	0.41	0.59	0.76	122.3	9.65	0.39	0.59	0.78	109.7	10.88	0.38	0.6	0.82

12.5 TON STANDARD EFFICIENCY ZCA150S4B (1ST STAGE) - CONSTANT AIR VOLUME

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		65°F					75°F					85°F					95°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)							
				Dry Bulb					Dry Bulb					Dry Bulb							
				75°F	80°F	85°F			75°F	80°F	85°F	75°F		80°F	85°F	kBtuh	kW	75°F	80°F	85°F	
cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F						
63°F	3800	78.9	3.34	0.64	0.78	0.94	73.8	3.75	0.64	0.79	0.96	68.4	4.2	0.64	0.81	0.99	62.7	4.72	0.64	0.84	1
	4400	82.2	3.37	0.66	0.83	1	76.7	3.78	0.67	0.85	1	71.2	4.23	0.67	0.87	1	65.4	4.74	0.69	0.91	1
	5000	84.8	3.39	0.69	0.88	1	79.3	3.8	0.71	0.91	1	73.4	4.25	0.72	0.94	1	67.5	4.76	0.74	0.98	1
67°F	3800	84.4	3.38	0.51	0.62	0.74	79.1	3.79	0.5	0.62	0.75	73.5	4.25	0.49	0.62	0.77	67.7	4.76	0.49	0.63	0.79
	4400	87.6	3.41	0.52	0.64	0.79	82.1	3.82	0.52	0.65	0.81	76.4	4.28	0.52	0.65	0.83	70.3	4.79	0.51	0.67	0.87
	5000	90.3	3.43	0.54	0.67	0.84	84.7	3.84	0.54	0.68	0.87	78.6	4.3	0.54	0.69	0.9	72.4	4.81	0.54	0.72	0.93
71°F	3800	89.9	3.42	0.39	0.5	0.6	84.4	3.84	0.38	0.49	0.6	78.6	4.3	0.37	0.49	0.6	72.5	4.81	0.35	0.48	0.61
	4400	93.3	3.45	0.39	0.51	0.62	87.4	3.87	0.39	0.51	0.63	81.5	4.33	0.38	0.51	0.64	75.3	4.84	0.36	0.51	0.65
	5000	95.9	3.48	0.4	0.53	0.65	90	3.89	0.39	0.53	0.66	83.8	4.35	0.38	0.53	0.67	77.4	4.87	0.38	0.54	0.69

12.5 TON STANDARD EFFICIENCY ZCA150S4B (2ND STAGE) - CONSTANT AIR VOLUME

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)							
				Dry Bulb					Dry Bulb					Dry Bulb							
				75°F	80°F	85°F			75°F	80°F	85°F	75°F		80°F	85°F	75°F	80°F	85°F			
cfm	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW					
63°F	3800	138.4	8.53	0.7	0.85	1	126.7	9.57	0.7	0.87	1	114.7	10.76	0.71	0.9	1	102.2	12.13	0.73	0.94	1
	4400	143.8	8.58	0.74	0.91	1	132	9.62	0.75	0.93	1	119.5	10.81	0.77	0.97	1	106.6	12.19	0.79	1	1
	5000	148.6	8.63	0.77	0.96	1	136.3	9.67	0.79	0.99	1	124	10.86	0.82	1	1	111.8	12.24	0.85	1	1
67°F	3800	148.6	8.63	0.54	0.68	0.82	136.8	9.67	0.54	0.69	0.84	124.2	10.86	0.53	0.7	0.86	111.2	12.23	0.53	0.71	0.9
	4400	154.2	8.68	0.56	0.72	0.87	142	9.72	0.56	0.73	0.89	129	10.92	0.56	0.74	0.93	115.4	12.29	0.56	0.77	0.97
	5000	158.9	8.73	0.58	0.75	0.92	146.1	9.77	0.59	0.77	0.95	132.8	10.96	0.59	0.79	0.99	118.9	12.33	0.6	0.82	1
71°F	3800	159.6	8.73	0.4	0.53	0.66	147.1	9.78	0.38	0.53	0.67	134.1	10.97	0.37	0.52	0.68	120.5	12.34	0.35	0.52	0.69
	4400	164.9	8.79	0.41	0.56	0.7	152.1	9.83	0.4	0.55	0.71	138.6	11.03	0.38	0.55	0.72	124.4	12.39	0.37	0.56	0.75
	5000	169.3	8.83	0.42	0.58	0.73	156	9.88	0.41	0.58	0.75	142.2	11.07	0.4	0.59	0.77	127.9	12.44	0.39	0.6	0.8

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 ZCA092S4M (1ST STAGE) - MSAV (Multi-Stage Air Volume) SUPPLY AIR BLOWER

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																				
		65°F						75°F					85°F					95°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb			
				cfm	kBtuh	kW			75°F	80°F	85°F			kBtuh	kW	75°F			80°F	85°F	kBtuh	kW
63°F	1680	55.5	2.71	0.63	0.73	0.82	53.2	3.05	0.63	0.73	0.83	50.8	3.42	0.64	0.74	0.84	48	3.86	0.64	0.75	0.86	
	2100	59.7	2.75	0.66	0.76	0.87	57.2	3.08	0.66	0.77	0.88	54.3	3.45	0.66	0.78	0.9	51.3	3.88	0.67	0.8	0.92	
	2520	62.7	2.77	0.68	0.8	0.92	60	3.1	0.69	0.81	0.93	57	3.47	0.69	0.82	0.95	53.7	3.9	0.7	0.84	0.97	
67°F	1680	58.2	2.73	0.51	0.61	0.7	55.8	3.06	0.51	0.61	0.7	53.2	3.44	0.52	0.61	0.71	50.4	3.88	0.52	0.62	0.72	
	2100	62.5	2.77	0.53	0.63	0.73	59.9	3.09	0.54	0.64	0.74	57.1	3.47	0.54	0.64	0.75	53.9	3.9	0.54	0.65	0.76	
	2520	65.9	2.79	0.55	0.65	0.77	63	3.12	0.55	0.66	0.78	59.9	3.49	0.55	0.67	0.79	56.5	3.93	0.56	0.68	0.81	
71°F	1680	60.8	2.75	0.41	0.49	0.58	58.4	3.08	0.4	0.49	0.59	55.6	3.46	0.4	0.5	0.59	52.6	3.89	0.4	0.5	0.6	
	2100	65.3	2.79	0.42	0.52	0.61	62.6	3.11	0.42	0.52	0.61	59.6	3.49	0.42	0.52	0.62	56.3	3.92	0.41	0.53	0.63	
	2520	68.8	2.81	0.43	0.53	0.63	65.9	3.14	0.43	0.54	0.64	62.6	3.51	0.43	0.54	0.65	59.1	3.95	0.42	0.55	0.66	

7.5 TON STANDARD EFFICIENCY ZCA092S4M (2ND STAGE) - MSAV (Multi-Stage Air Volume) SUPPLY AIR BLOWER

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																				
		85°F					95°F					105°F					115°F					
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb			
				cfm	kBtuh	kW			75°F	80°F	85°F			kBtuh	kW	75°F			80°F	85°F	kBtuh	kW
63°F	2400	86	5.76	0.68	0.82	0.96	80.6	6.5	0.69	0.84	0.98	74.8	7.36	0.71	0.87	1	68.6	8.33	0.73	0.9	1	1
	3000	90.8	5.8	0.73	0.89	1	85	6.54	0.74	0.92	1	78.8	7.4	0.76	0.95	1	72.2	8.38	0.79	0.98	1	1
	3600	94.4	5.82	0.77	0.95	1	88.3	6.57	0.79	0.98	1	82	7.43	0.82	0.99	1	75.5	8.42	0.85	1	1	1
67°F	2400	90.7	5.79	0.54	0.66	0.78	85.2	6.54	0.54	0.67	0.8	79.3	7.4	0.55	0.69	0.83	72.7	8.38	0.56	0.7	0.86	0.86
	3000	96	5.83	0.57	0.7	0.85	89.9	6.58	0.57	0.72	0.88	83.5	7.45	0.58	0.74	0.91	76.7	8.43	0.59	0.77	0.95	0.95
	3600	99.7	5.85	0.59	0.75	0.92	93.4	6.61	0.6	0.77	0.95	86.6	7.48	0.61	0.79	0.98	79.3	8.47	0.63	0.83	1	1
71°F	2400	95	5.82	0.41	0.53	0.64	89.5	6.58	0.41	0.53	0.65	83.3	7.44	0.4	0.54	0.66	76.7	8.43	0.4	0.55	0.68	0.68
	3000	100.7	5.86	0.43	0.56	0.68	94.5	6.62	0.42	0.56	0.7	87.9	7.49	0.41	0.57	0.72	80.8	8.48	0.41	0.58	0.74	0.74
	3600	104.7	5.89	0.43	0.58	0.72	98.1	6.65	0.43	0.59	0.74	91.2	7.52	0.43	0.6	0.77	83.8	8.52	0.43	0.62	0.8	0.8

8.5 TON STANDARD EFFICIENCY ZCA102S4M (1ST STAGE) - MSAV (Multi-Stage Air Volume) SUPPLY AIR BLOWER

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		65°F					75°F					85°F					95°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	
63°F	1920	61.5	2.67	0.65	0.75	0.85	59.2	3.05	0.65	0.76	0.86	56.9	3.47	0.66	0.77	0.87	54.2	3.93	0.67	0.78	0.89
	2400	65.5	2.7	0.67	0.78	0.89	63.1	3.09	0.68	0.8	0.91	60.4	3.51	0.68	0.81	0.93	57.4	3.97	0.7	0.82	0.95
	2880	68.7	2.73	0.69	0.82	0.94	66	3.11	0.7	0.83	0.96	63.1	3.53	0.71	0.85	0.97	60	4	0.72	0.87	0.97
67°F	1920	64.9	2.7	0.52	0.62	0.71	62.6	3.08	0.52	0.63	0.72	59.9	3.5	0.52	0.63	0.73	57.1	3.96	0.53	0.64	0.74
	2400	69.1	2.73	0.53	0.64	0.75	66.3	3.12	0.53	0.65	0.76	63.3	3.53	0.53	0.65	0.77	60.4	4	0.54	0.67	0.79
	2880	71.9	2.75	0.53	0.66	0.78	69.2	3.14	0.54	0.67	0.8	66.2	3.56	0.54	0.68	0.81	62.9	4.03	0.55	0.69	0.83
71°F	1920	68.2	2.73	0.4	0.5	0.59	65.7	3.11	0.4	0.5	0.6	63	3.53	0.39	0.5	0.6	60.1	4	0.4	0.51	0.61
	2400	72.6	2.75	0.39	0.51	0.62	69.8	3.14	0.39	0.51	0.62	66.7	3.56	0.39	0.51	0.63	63.4	4.03	0.39	0.52	0.64
	2880	75.8	2.77	0.39	0.52	0.63	72.7	3.16	0.39	0.52	0.65	69.5	3.59	0.39	0.53	0.66	65.8	4.05	0.39	0.53	0.67

8.5 TON STANDARD EFFICIENCY ZCA102S4M (2ND STAGE) - MSAV (Multi-Stage Air Volume) SUPPLY AIR BLOWER

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
				cfm	kBtuh	kW			75°F	80°F	85°F			kBtuh	kW	75°F			80°F	85°F	kBtuh
63°F	2720	95.7	6.57	0.75	0.87	0.97	90.6	7.42	0.77	0.89	0.98	85.2	8.37	0.78	0.91	0.99	79.2	9.44	0.8	0.94	0.98
	3400	100.3	6.62	0.8	0.92	0.98	94.8	7.47	0.81	0.94	0.98	89.2	8.42	0.83	0.96	0.98	83.1	9.5	0.85	0.98	0.98
	4080	104	6.66	0.83	0.96	0.98	98.6	7.51	0.85	0.97	0.98	92.9	8.47	0.87	0.98	0.98	87.1	9.56	0.9	0.97	0.98
67°F	2720	101.3	6.63	0.59	0.72	0.84	96	7.48	0.6	0.74	0.86	90.3	8.44	0.61	0.76	0.88	84	9.51	0.62	0.78	0.91
	3400	106.4	6.68	0.61	0.77	0.9	100.5	7.54	0.62	0.79	0.92	94.4	8.5	0.64	0.81	0.94	87.7	9.57	0.65	0.83	0.96
	4080	109.9	6.72	0.64	0.81	0.94	103.9	7.57	0.65	0.83	0.96	97.3	8.53	0.66	0.85	0.97	90.2	9.6	0.68	0.88	0.97
71°F	2720	106.8	6.69	0.44	0.57	0.69	101.3	7.54	0.44	0.58	0.71	95.5	8.51	0.44	0.59	0.73	88.8	9.58	0.45	0.6	0.75
	3400	112.2	6.74	0.44	0.59	0.74	106.2	7.59	0.44	0.6	0.76	99.7	8.56	0.45	0.62	0.78	92.7	9.63	0.45	0.64	0.81
	4080	116.1	6.77	0.45	0.62	0.79	109.9	7.64	0.45	0.63	0.81	103.1	8.6	0.46	0.65	0.83	95.6	9.67	0.46	0.67	0.86

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 ZCA120S4M (1ST STAGE) - MSAV (Multi-Stage Air Volume) SUPPLY AIR BLOWER

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		65°F					75°F					85°F					95°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
				cfm	kBtuh	kW			75°F	80°F	85°F	kBtuh		kW	75°F	80°F	85°F		kBtuh	kW	75°F
63°F	2240	56.7	2.72	0.62	0.73	0.84	53	3.05	0.62	0.73	0.85	49	3.43	0.61	0.73	0.86	44.7	3.87	0.6	0.74	0.88
	2800	61.6	2.73	0.66	0.78	0.9	57.5	3.06	0.66	0.79	0.92	53.2	3.45	0.65	0.8	0.93	48.5	3.9	0.65	0.81	0.96
	3360	65.1	2.74	0.69	0.83	0.96	60.8	3.08	0.7	0.84	0.98	56.2	3.47	0.7	0.85	1	51.5	3.92	0.7	0.87	1
67°F	2240	61.1	2.73	0.5	0.6	0.7	57.2	3.06	0.49	0.6	0.7	53.1	3.45	0.48	0.59	0.7	48.7	3.9	0.46	0.58	0.71
	2800	66.1	2.74	0.53	0.64	0.75	61.9	3.09	0.51	0.64	0.75	57.5	3.48	0.51	0.63	0.76	52.7	3.93	0.49	0.63	0.77
	3360	69.8	2.75	0.55	0.67	0.8	65.4	3.11	0.54	0.67	0.8	60.7	3.5	0.53	0.68	0.82	55.7	3.95	0.52	0.68	0.84
71°F	2240	65.5	2.73	0.4	0.49	0.58	61.4	3.08	0.38	0.48	0.58	57.2	3.48	0.36	0.47	0.57	52.7	3.93	0.34	0.45	0.56
	2800	70.6	2.76	0.41	0.51	0.62	66.3	3.1	0.39	0.51	0.61	61.7	3.5	0.38	0.5	0.61	56.8	3.96	0.35	0.49	0.61
	3360	74.5	2.76	0.42	0.54	0.65	69.8	3.12	0.4	0.53	0.65	65	3.52	0.39	0.52	0.66	59.9	3.98	0.37	0.52	0.66

10 TON STANDARD EFFICIENCY ZCA120S4M (2ND STAGE) - MSAV (Multi-Stage Air Volume) SUPPLY AIR BLOWER

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
				75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F
cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	
63°F	3200	114	7.38	0.68	0.83	0.98	104.2	8.32	0.68	0.85	1	93.9	9.38	0.68	0.87	1	83.2	10.57	0.69	0.91	1
	4000	121	7.42	0.73	0.92	1	111.1	8.38	0.74	0.94	1	100.5	9.44	0.76	0.97	1	89.4	10.64	0.78	1	1
	4800	126.9	7.46	0.79	0.99	1	116.4	8.42	0.81	1	1	106.5	9.5	0.83	1	1	96	10.71	0.86	1	1
67°F	3200	123.1	7.43	0.52	0.66	0.79	113	8.39	0.51	0.66	0.81	102.5	9.46	0.5	0.67	0.83	91.5	10.66	0.49	0.67	0.87
	4000	130.6	7.48	0.55	0.71	0.88	120	8.44	0.55	0.72	0.9	108.8	9.52	0.55	0.74	0.93	97	10.73	0.55	0.76	0.98
	4800	136	7.51	0.59	0.77	0.95	124.9	8.48	0.59	0.78	0.98	113.3	9.56	0.59	0.81	1	101.2	10.77	0.6	0.84	1
71°F	3200	131.9	7.49	0.38	0.51	0.64	121.6	8.45	0.36	0.5	0.64	110.7	9.53	0.34	0.5	0.65	99.4	10.75	0.32	0.49	0.65
	4000	139.7	7.54	0.4	0.55	0.69	128.7	8.5	0.39	0.55	0.7	117.5	9.6	0.37	0.55	0.72	105.4	10.82	0.35	0.55	0.74
	4800	145.4	7.58	0.42	0.58	0.75	134	8.56	0.41	0.59	0.76	122.3	9.65	0.39	0.59	0.78	109.7	10.88	0.38	0.6	0.82

12.5 TON STANDARD EFFICIENCY ZCA150S4M (1ST STAGE) - MSAV (Multi-Stage Air Volume) SUPPLY AIR BLOWER

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		65°F					75°F					85°F					95°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)							
				Dry Bulb					Dry Bulb					Dry Bulb							
cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	
63°F	2560	67.1	3.22	0.63	0.73	0.84	62.6	3.61	0.62	0.73	0.84	58	4.05	0.62	0.74	0.86	53.1	4.55	0.61	0.74	0.87
	3200	72.7	3.25	0.66	0.78	0.9	68	3.65	0.66	0.79	0.91	62.9	4.09	0.66	0.8	0.93	57.8	4.59	0.66	0.81	0.96
	3840	76.9	3.28	0.69	0.83	0.95	71.8	3.68	0.7	0.84	0.97	66.6	4.12	0.7	0.85	1	61	4.62	0.7	0.87	1
67°F	2560	72.2	3.25	0.51	0.61	0.7	67.7	3.64	0.5	0.6	0.7	62.8	4.09	0.49	0.59	0.7	57.8	4.59	0.47	0.59	0.71
	3200	77.9	3.29	0.53	0.64	0.75	73	3.69	0.52	0.64	0.76	67.9	4.13	0.52	0.64	0.76	62.3	4.64	0.5	0.64	0.77
	3840	82.2	3.32	0.55	0.67	0.79	76.9	3.72	0.55	0.68	0.8	71.5	4.17	0.54	0.68	0.82	65.7	4.67	0.53	0.68	0.84
71°F	2560	77.7	3.28	0.4	0.49	0.59	73	3.68	0.39	0.48	0.58	68	4.13	0.37	0.48	0.58	62.8	4.64	0.35	0.46	0.57
	3200	83.3	3.32	0.41	0.52	0.62	78.3	3.73	0.4	0.51	0.62	73	4.18	0.39	0.51	0.62	67.3	4.69	0.37	0.5	0.62
	3840	87.6	3.36	0.42	0.54	0.65	82	3.77	0.42	0.53	0.65	76.4	4.21	0.4	0.53	0.66	70.4	4.72	0.38	0.53	0.67

12.5 TON STANDARD EFFICIENCY ZCA150S4M (2ND STAGE) - MSAV (Multi-Stage Air Volume) SUPPLY AIR BLOWER

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)							
				Dry Bulb					Dry Bulb					Dry Bulb							
				75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F					
cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	
63°F	3800	138.4	8.53	0.7	0.85	1	126.7	9.57	0.7	0.87	1	114.7	10.76	0.71	0.9	1	102.2	12.13	0.73	0.94	1
	4400	143.8	8.58	0.74	0.91	1	132	9.62	0.75	0.93	1	119.5	10.81	0.77	0.97	1	106.6	12.19	0.79	1	1
	5000	148.6	8.63	0.77	0.96	1	136.3	9.67	0.79	0.99	1	124	10.86	0.82	1	1	111.8	12.24	0.85	1	1
67°F	3800	148.6	8.63	0.54	0.68	0.82	136.8	9.67	0.54	0.69	0.84	124.2	10.86	0.53	0.7	0.86	111.2	12.23	0.53	0.71	0.9
	4400	154.2	8.68	0.56	0.72	0.87	142	9.72	0.56	0.73	0.89	129	10.92	0.56	0.74	0.93	115.4	12.29	0.56	0.77	0.97
	5000	158.9	8.73	0.58	0.75	0.92	146.1	9.77	0.59	0.77	0.95	132.8	10.96	0.59	0.79	0.99	118.9	12.33	0.6	0.82	1
71°F	3800	159.6	8.73	0.4	0.53	0.66	147.1	9.78	0.38	0.53	0.67	134.1	10.97	0.37	0.52	0.68	120.5	12.34	0.35	0.52	0.69
	4400	164.9	8.79	0.41	0.56	0.7	152.1	9.83	0.4	0.55	0.71	138.6	11.03	0.38	0.55	0.72	124.4	12.39	0.37	0.56	0.75
	5000	169.3	8.83	0.42	0.58	0.73	156	9.88	0.41	0.58	0.75	142.2	11.07	0.4	0.59	0.77	127.9	12.44	0.39	0.6	0.8

BLOWER DATA

092S STANDARD EFFICIENCY 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 required.

See page 22 for blower motors and drives.

See page 22 for wet coil and option/accessory air resistance data.

MINIMUM AIR VOLUME REQUIRED FOR USE WITH OPTIONAL ELECTRIC HEAT (Maximum Static Pressure - 2.0 in. w.g.):

7.5 kW, 15 kW, 22.5 kW - 2065 cfm

30 kW - 2250 cfm

45 kW - 2625 cfm

Total Air Volume cfm	Total Static Pressure – in. w.g.																											
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2		2.2		2.4		2.6			
	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		
1750	498	0.08	565	0.25	633	0.50	701	0.71	768	0.87	830	0.99	890	1.08	946	1.16	998	1.27	1049	1.41	1098	1.58	---	---	---	---		
2000	512	0.12	578	0.37	645	0.60	713	0.81	780	0.97	842	1.10	901	1.19	955	1.28	1007	1.40	1057	1.56	1105	1.74	1153	1.94	1201	2.16		
2250	527	0.24	592	0.49	659	0.72	727	0.92	793	1.08	855	1.21	913	1.32	966	1.42	1017	1.55	1066	1.72	1114	1.92	1162	2.13	1210	2.35		
2500	543	0.37	608	0.61	675	0.84	743	1.04	809	1.21	869	1.35	926	1.45	978	1.57	1028	1.72	1076	1.90	1124	2.11	1171	2.33	1221	2.57		
2750	560	0.51	625	0.75	693	0.98	761	1.18	826	1.35	885	1.49	939	1.60	990	1.73	1039	1.90	1087	2.10	1135	2.32	1183	2.55	1232	2.80		
3000	579	0.66	645	0.90	713	1.13	781	1.34	844	1.51	901	1.65	954	1.77	1004	1.92	1052	2.11	1100	2.32	1147	2.56	1195	2.80	1245	3.05		
3250	600	0.82	666	1.06	735	1.30	803	1.51	864	1.69	918	1.82	969	1.95	1018	2.12	1066	2.34	1113	2.57	1161	2.81	1209	3.06	1259	3.31		
3500	622	0.98	690	1.24	760	1.49	826	1.70	883	1.87	936	2.01	985	2.16	1033	2.35	1081	2.59	1128	2.84	1176	3.09	1224	3.34	1275	3.60		
3750	646	1.17	716	1.45	786	1.70	849	1.91	903	2.07	953	2.21	1002	2.38	1049	2.61	1097	2.87	1144	3.12	1192	3.38	1241	3.64	1292	3.91		
4000	674	1.38	746	1.68	814	1.93	872	2.12	923	2.28	971	2.43	1019	2.64	1067	2.90	1114	3.17	1161	3.43	1209	3.69	1259	3.96	1311	4.24		
4250	705	1.63	777	1.94	841	2.17	894	2.34	943	2.50	990	2.69	1038	2.93	1085	3.21	1132	3.49	1179	3.76	1228	4.03	1279	4.31	1332	4.60		

BLOWER DATA

102S STANDARD EFFICIENCY 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 required.

See page 22 for blower motors and drives.

See page 22 for wet coil and option/accessory air resistance data.

MINIMUM AIR VOLUME REQUIRED FOR USE WITH OPTIONAL ELECTRIC HEAT (Maximum Static Pressure - 2.0 in. w.g.):

7.5 kW, 15 kW, 22.5 kW - 2065 cfm

30 kW - 2250 cfm

45 kW - 2625 cfm

Total Air Volume cfm	Total Static Pressure – in. w.g.																											
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0		2.2		2.4		2.6			
	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		
1750	494	0.11	562	0.34	632	0.56	702	0.74	771	0.85	838	0.96	902	1.07	961	1.19	---	---	---	---	---	---	---	---	---	---		
2000	514	0.26	581	0.49	650	0.70	719	0.87	786	0.98	852	1.09	915	1.20	972	1.32	1026	1.47	1076	1.65	---	---	---	---	---	---		
2250	533	0.41	599	0.62	667	0.82	735	0.99	802	1.10	866	1.21	928	1.33	984	1.46	1037	1.63	1085	1.81	1132	2.01	1178	2.21	1226	2.43		
2500	553	0.55	619	0.76	685	0.95	753	1.10	818	1.22	881	1.34	942	1.47	997	1.62	1048	1.80	1096	1.99	1142	2.20	1188	2.41	1237	2.64		
2750	573	0.70	638	0.90	705	1.08	771	1.22	835	1.35	897	1.49	957	1.63	1011	1.80	1061	1.99	1108	2.19	1154	2.41	1200	2.63	1249	2.87		
3000	594	0.85	659	1.05	725	1.22	791	1.36	853	1.50	915	1.65	973	1.81	1026	1.99	1075	2.20	1121	2.42	1167	2.64	1213	2.87	1262	3.12		
3250	617	1.01	682	1.20	747	1.37	812	1.52	873	1.67	934	1.83	990	2.01	1042	2.21	1089	2.43	1135	2.66	1181	2.90	1228	3.13	1277	3.38		
3500	640	1.17	706	1.36	771	1.53	834	1.70	895	1.86	954	2.03	1008	2.23	1058	2.46	1105	2.69	1150	2.93	1196	3.17	1243	3.41	1293	3.65		
3750	665	1.34	731	1.54	796	1.72	857	1.89	917	2.07	975	2.26	1027	2.48	1076	2.72	1121	2.97	1166	3.22	1212	3.46	1261	3.71	1311	3.96		
4000	692	1.54	758	1.75	822	1.93	882	2.11	940	2.30	996	2.51	1047	2.76	1094	3.02	1139	3.27	1184	3.52	1230	3.77	1280	4.03	1330	4.29		
4250	722	1.76	787	1.97	849	2.15	908	2.35	965	2.56	1018	2.79	1067	3.06	1113	3.33	1157	3.59	1202	3.85	1250	4.11	1300	4.38	1352	4.65		

BLOWER DATA

120S STANDARD EFFICIENCY 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 required.

See page 22 for blower motors and drives.

See page 22 for wet coil and option/accessory air resistance data.

MINIMUM AIR VOLUME REQUIRED FOR USE WITH OPTIONAL ELECTRIC HEAT (Maximum Static Pressure - 2.0 in. w.g.)

15 kW, 22.5 kW- 2065 cfm

30 kW - 2250 cfm

45 kW - 2625 cfm

60 kW - 3500 cfm

Total Air Volume cfm	Total Static Pressure – in. w.g.																											
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2		2.2		2.4		2.6			
	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		
2000	535	0.28	596	0.49	660	0.69	724	0.87	788	1.00	851	1.11	913	1.23	971	1.37	1025	1.52	1076	1.69	1124	1.86	---	---	---	---		
2250	552	0.43	613	0.63	675	0.81	738	0.98	802	1.11	864	1.22	925	1.36	982	1.51	1036	1.68	1085	1.85	1133	2.04	1180	2.23	1228	2.44		
2500	570	0.57	630	0.76	692	0.94	754	1.10	817	1.22	879	1.35	939	1.51	995	1.67	1047	1.85	1096	2.04	1143	2.23	1190	2.43	1239	2.65		
2750	589	0.72	648	0.91	709	1.08	772	1.22	833	1.36	894	1.50	954	1.67	1009	1.85	1059	2.04	1108	2.24	1154	2.44	1202	2.65	1251	2.87		
3000	608	0.87	668	1.05	729	1.22	791	1.37	852	1.51	912	1.67	970	1.85	1023	2.05	1073	2.25	1120	2.46	1167	2.67	1215	2.89	1265	3.11		
3250	629	1.03	688	1.21	749	1.37	811	1.52	871	1.68	930	1.86	987	2.06	1039	2.27	1088	2.49	1134	2.70	1181	2.92	1229	3.14	1279	3.37		
3500	651	1.20	710	1.38	772	1.54	833	1.70	892	1.88	950	2.07	1004	2.28	1055	2.51	1103	2.74	1150	2.96	1196	3.19	1245	3.42	1295	3.65		
3750	674	1.36	734	1.56	796	1.73	856	1.90	914	2.10	970	2.30	1023	2.53	1072	2.78	1120	3.02	1166	3.25	1213	3.47	1262	3.71	1313	3.95		
4000	699	1.55	761	1.76	822	1.94	880	2.12	936	2.33	991	2.56	1042	2.81	1090	3.07	1137	3.31	1183	3.55	1231	3.78	1281	4.03	1333	4.28		
4250	726	1.77	789	1.98	849	2.16	904	2.37	959	2.59	1012	2.84	1062	3.11	1109	3.38	1156	3.63	1202	3.87	1251	4.11	1302	4.37	1354	4.63		
4500	756	2.01	818	2.22	875	2.41	929	2.63	983	2.88	1034	3.15	1082	3.44	1129	3.71	1175	3.96	1222	4.21	1271	4.46	1323	4.72	1376	5.00		
4750	788	2.27	848	2.47	902	2.68	955	2.92	1006	3.20	1056	3.50	1104	3.79	1150	4.06	1196	4.32	1243	4.57	1293	4.83	1345	5.09	1399	5.37		
5000	822	2.54	878	2.75	929	2.98	980	3.25	1031	3.56	1079	3.87	1126	4.16	1172	4.44	1218	4.70	1266	4.95	1315	5.20	1367	5.47	1421	5.74		

BLOWER DATA

150S STANDARD EFFICIENCY 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 required.

See page 22 for blower motors and drives.

See page 22 for wet coil and option/accessory air resistance data.

MINIMUM AIR VOLUME REQUIRED FOR USE WITH OPTIONAL ELECTRIC HEAT (Maximum Static Pressure - 2.0 in. w.g.)

15 kW, 22.5 kW- 2065 cfm

30 kW - 2250 cfm

45 kW - 2625 cfm

60 kW - 3500 cfm

Total Air Volume cfm	Total Static Pressure – in. w.g.																											
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0		2.2		2.4		2.6			
	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		
2000	542	0.43	602	0.60	664	0.75	732	0.89	802	1.02	869	1.15	927	1.27	979	1.41	1029	1.57	1079	1.75	1129	1.95	1179	2.15	1230	2.37		
2250	560	0.55	619	0.71	681	0.86	748	1.00	817	1.14	882	1.27	939	1.41	991	1.57	1041	1.74	1090	1.93	1140	2.13	1190	2.35	1241	2.57		
2500	579	0.68	637	0.83	699	0.98	766	1.12	834	1.26	897	1.41	953	1.57	1005	1.74	1054	1.92	1103	2.12	1152	2.33	1202	2.55	1254	2.79		
2750	599	0.81	657	0.97	719	1.11	785	1.25	851	1.41	913	1.57	968	1.74	1020	1.93	1068	2.13	1116	2.34	1165	2.56	1215	2.78	1268	3.01		
3000	620	0.95	678	1.11	741	1.25	806	1.40	870	1.58	930	1.75	985	1.94	1036	2.14	1084	2.36	1131	2.58	1180	2.80	1230	3.02	1283	3.26		
3250	643	1.10	701	1.26	764	1.41	828	1.57	891	1.76	950	1.95	1003	2.16	1053	2.38	1100	2.61	1148	2.83	1196	3.06	1246	3.29	1299	3.52		
3500	667	1.26	726	1.43	788	1.58	851	1.77	913	1.97	970	2.17	1023	2.41	1071	2.65	1118	2.88	1165	3.11	1213	3.33	1264	3.57	1317	3.81		
3750	693	1.44	752	1.61	813	1.78	876	1.98	936	2.20	992	2.43	1043	2.68	1091	2.93	1137	3.17	1183	3.40	1232	3.64	1284	3.88	1338	4.13		
4000	720	1.65	779	1.82	840	2.00	902	2.22	961	2.46	1015	2.71	1064	2.98	1111	3.24	1156	3.48	1203	3.72	1253	3.96	1305	4.22	1359	4.48		
4250	748	1.86	807	2.04	868	2.24	929	2.48	986	2.75	1038	3.02	1086	3.30	1132	3.57	1177	3.81	1224	4.05	1274	4.31	1327	4.57	1382	4.85		
4500	778	2.09	837	2.28	898	2.51	957	2.78	1012	3.07	1062	3.37	1108	3.65	1154	3.92	1199	4.17	1247	4.41	1297	4.67	1350	4.94	1405	5.22		
4750	809	2.34	868	2.56	929	2.82	986	3.12	1038	3.43	1087	3.74	1132	4.03	1177	4.29	1223	4.54	1270	4.79	1321	5.04	1374	5.31	1428	5.58		
5000	841	2.62	901	2.87	960	3.17	1015	3.50	1065	3.83	1112	4.14	1157	4.43	1201	4.69	1247	4.94	1295	5.18	1345	5.42	1398	5.68	---	---		
5250	875	2.93	935	3.23	992	3.56	1044	3.91	1092	4.26	1138	4.57	1182	4.85	1226	5.10	1272	5.34	1320	5.57	---	---	---	---	---	---		
5500	911	3.30	969	3.63	1024	4.00	1074	4.37	1120	4.71	1165	5.02	1208	5.29	1253	5.53	---	---	---	---	---	---	---	---	---	---		
5750	948	3.71	1004	4.08	1056	4.48	1104	4.85	1148	5.19	1192	5.49	1235	5.74	---	---	---	---	---	---	---	---	---	---	---	---		
6000	985	4.18	1039	4.59	1088	5.00	1134	5.37	1177	5.69	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
6250	1022	4.70	1073	5.14	1120	5.54	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		

BLOWER DATA

FACTORY INSTALLED BELT DRIVE KIT SPECIFICATIONS

Nominal hp	Maximum hp	Drive Kit Number	RPM Range
2	2.3	1	590 - 890
2	2.3	2	800 - 1105
2	2.3	3	795 - 1195
3	3.45	4	730 - 970
3	3.45	5	940 - 1200
3	3.45	6	1015 - 1300
5	5.75	10	900 - 1135
5	5.75	11	1040 - 1315
5	5.75	12	1125 - 1425

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 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.

NOTE – Units equipped with MSAV® (Multi-Stage Air Volume) option are limited to a motor service factor of 1.0.

POWER EXHAUST FAN PERFORMANCE

Return Air System Static Pressure	Air Volume Exhausted
in. w.g.	cfm
0	3575
0.05	3405
0.10	3550
0.15	3245
0.20	3115
0.25	3020
0.30	2900
0.35	2785

FACTORY INSTALLED OPTIONS/FIELD INSTALLED ACCESSORY AIR RESISTANCE - in. w.g.

Air Volume cfm	Wet Indoor Coil			Electric Heat	Economizer	Filters	
	092	102, 120	150			MERV 8	MERV 13
1750	0.02	0.03	0.04	0.03	0.03	0.01	0.03
2000	0.02	0.04	0.05	0.03	0.05	0.01	0.03
2250	0.03	0.05	0.06	0.04	0.06	0.01	0.04
2500	0.03	0.05	0.07	0.04	0.08	0.01	0.05
2750	0.04	0.06	0.08	0.05	0.09	0.02	0.05
3000	0.05	0.07	0.09	0.06	0.11	0.02	0.06
3250	0.05	0.08	0.10	0.06	0.13	0.02	0.06
3500	0.06	0.09	0.11	0.09	0.15	0.03	0.07
3750	0.07	0.10	0.13	0.09	0.17	0.03	0.08
4000	0.07	0.11	0.14	0.09	0.19	0.04	0.08
4250	0.08	0.13	0.15	0.13	0.21	0.04	0.09
4500	0.09	0.14	0.17	0.14	0.24	0.04	0.09
4750	0.10	0.15	0.18	0.17	0.26	0.05	0.10
5000	0.10	0.16	0.20	0.20	0.29	0.06	0.10
5250	0.11	0.17	0.22	0.22	0.32	0.06	0.11
5500	0.12	0.19	0.23	0.25	0.34	0.07	0.12
5750	0.13	0.20	0.25	0.31	0.37	0.07	0.12
6000	0.14	0.22	0.27	0.33	0.40	0.08	0.13

BLOWER DATA

CEILING DIFFUSERS AIR RESISTANCE - in. w.g.

Unit Size	RTD11 Step-Down Diffuser				FD11 Flush Diffuser
	Air Volume cfm	2 Ends Open	1 Side, 2 Ends Open	All Ends & Sides Open	
092 Models	2400	0.21	0.18	0.15	0.14
	2600	0.24	0.21	0.18	0.17
	2800	0.27	0.24	0.21	0.20
	3000	0.32	0.29	0.25	0.25
	3200	0.41	0.37	0.32	0.31
	3400	0.50	0.45	0.39	0.37
	3600	0.61	0.54	0.48	0.44
	3800	0.73	0.63	0.57	0.51
102 & 120 Models	3600	0.36	0.28	0.23	0.15
	3800	0.40	0.32	0.26	0.18
	4000	0.44	0.36	0.29	0.21
	4200	0.49	0.40	0.33	0.24
	4400	0.54	0.44	0.37	0.27
	4600	0.60	0.49	0.42	0.31
	4800	0.65	0.53	0.46	0.35
	5000	0.69	0.58	0.50	0.39
150 Models	5200	0.75	0.62	0.54	0.43
	4200	0.22	0.19	0.16	0.10
	4400	0.28	0.24	0.20	0.12
	4600	0.34	0.29	0.24	0.15
	4800	0.40	0.34	0.29	0.19
	5000	0.46	0.39	0.34	0.23
	5200	0.52	0.44	0.39	0.27
	5400	0.58	0.49	0.43	0.31
	5600	0.64	0.54	0.47	0.35
	5800	0.70	0.59	0.51	0.39

CEILING DIFFUSER AIR THROW DATA

Model No.	Air Volume cfm	¹ Effective Throw Range	
		RTD11 Step-Down	FD11 Flush
		ft.	ft.
092 Models	2600	24 - 29	19 - 24
	2800	25 - 30	20 - 28
	3000	27 - 33	21 - 29
	3200	28 - 35	22 - 29
	3400	30 - 37	22 - 30
102, 120 Models	3600	25 - 33	22 - 29
	3800	27 - 35	22 - 30
	4000	29 - 37	24 - 33
	4200	32 - 40	26 - 35
	4400	34 - 42	28 - 37
150 Models	5600	39 - 49	28 - 37
	5800	42 - 51	29 - 38
	6000	44 - 54	40 - 50
	6200	45 - 55	42 - 51
	6400	46 - 55	43 - 52
	6600	47 - 56	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 50 ft. per minute. Four sides open.

ELECTRICAL/ELECTRIC HEAT DATA**7.5 TON****7.5 TON STANDARD EFFICIENCY****ZCA092S4**

¹ Voltage - 60hz		208/230V - 3 Ph			460V - 3 Ph			575V - 3 Ph		
Compressor 1	Rated Load Amps	13.5			8			5		
	Locked Rotor Amps	109			59			40		
Compressor 2	Rated Load Amps	8.7			4			3.6		
	Locked Rotor Amps	70			31			27		
Outdoor Fan Motors (2)	Full Load Amps	2.4			1.3			1		
	(total)	(4.8)			(2.6)			(2)		
Power Exhaust (2) 0.5 HP	Full Load Amps	4.4			1.7			1.7		
	(total)	(8.8)			(3.4)			(3.4)		
Indoor Blower Motor	Horsepower	2	3	5	2	3	5	2	3	5
	Full Load Amps	7.5	10.5	16.7	3.4	4.8	7.6	2.7	3.9	6.1
² Maximum Overcurrent Protection	Unit Only	50	50	60	25	25	30	15	20	20
	With (2) 0.5 HP Power Exhaust	60	60	70	30	30	35	20	20	25
³ Minimum Circuit Ampacity	Unit Only	38	41	48	20	22	25	15	16	19
	With (2) 0.5 HP Power Exhaust	47	50	57	24	25	28	18	20	22

ELECTRIC HEAT DATA

Electric Heat Voltage				208V	240V	208V	240V	208V	240V	480V	480V	480V	600V	600V	600V
² Maximum Overcurrent Protection	Unit+ Electric Heat	7.5 kW	7.5 kW	50	50	50	50	60	60	25	25	30	15	20	20
		15 kW	15 kW	50	60	60	60	60	70	30	30	35	25	25	30
		22.5 kW	22.5 kW	70	80	80	90	80	90	40	40	45	35	35	35
		30 kW	30 kW	90	100	100	110	100	125	50	60	60	40	45	45
		45 kW	45 kW	150	150	150	150	150	175	80	80	80	60	60	70
³ Minimum Circuit Ampacity	Unit+ Electric Heat	7.5 kW	7.5 kW	38	38	41	41	48	48	20	22	25	15	16	19
		15 kW	15 kW	49	55	53	59	60	66	27	29	33	22	23	26
		22.5 kW	22.5 kW	69	78	72	81	80	89	39	40	44	31	32	35
		30 kW	30 kW	88	100	92	104	100	112	50	52	55	40	41	44
		45 kW	45 kW	127	145	131	149	139	157	72	74	78	58	60	62
² Maximum Overcurrent Protection	Unit+ Electric Heat and (2) 0.5 HP Power Exhaust	7.5 kW	7.5 kW	60	60	60	60	70	70	30	30	35	20	20	25
		15 kW	15 kW	60	70	70	70	80	80	35	35	40	30	30	30
		22.5 kW	22.5 kW	80	90	90	100	100	100	45	45	50	35	40	40
		30 kW	30 kW	100	125	110	125	125	125	60	60	60	45	50	50
		45 kW	45 kW	150	175	150	175	150	175	80	80	90	70	70	70
³ Minimum Circuit Ampacity	Unit+ Electric Heat and (2) 0.5 HP Power Exhaust	7.5 kW	7.5 kW	47	47	50	50	57	57	24	25	28	18	20	22
		15 kW	15 kW	60	66	64	70	71	77	32	33	37	26	28	30
		22.5 kW	22.5 kW	80	89	83	92	91	100	43	45	48	35	37	39
		30 kW	30 kW	99	111	103	115	111	123	54	56	59	44	46	48
		45 kW	45 kW	138	156	142	160	150	168	77	78	82	62	64	67

ELECTRIC HEAT ACCESSORIES

Unit Fuse Block	Unit Only	10Z41	10Z41	10Z41	10Z41	10Z41	10Z41	10Z39	10Z39	10Z39	10Z38	10Z38	10Z38
	Unit + Power Exhaust	10Z41	10Z41	10Z41	10Z41	10Z42	10Z42	10Z39	10Z39	10Z40	10Z38	10Z38	10Z39

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.

¹ Extremes of operating range are plus and minus 10% of line voltage.² HACR type breaker or fuse.³ Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

ELECTRICAL/ELECTRIC HEAT DATA**8.5 TON****8.5 TON STANDARD EFFICIENCY****ZCA102S4**

¹ Voltage - 60hz		208/230V - 3 Ph			460V - 3 Ph			575V - 3 Ph		
Compressor 1	Rated Load Amps	13.5			8			5		
	Locked Rotor Amps	109			59			40		
Compressor 2	Rated Load Amps	11			5.5			4.7		
	Locked Rotor Amps	86			37			34		
Outdoor Fan Motors (2)	Full Load Amps	2.4			1.3			1		
	(total)	(4.8)			(2.6)			(2)		
Power Exhaust (2) 0.5 HP	Full Load Amps	4.4			1.7			1.7		
	(total)	(8.8)			(3.4)			(3.4)		
Indoor Blower Motor	Horsepower	2	3	5	2	3	5	2	3	5
	Full Load Amps	7.5	10.5	16.7	3.4	4.8	7.6	2.7	3.9	6.1
² Maximum Overcurrent Protection	Unit Only	50	50	60	25	30	30	20	20	25
	With (2) 0.5 HP Power Exhaust	60	60	70	30	30	35	20	25	25
³ Minimum Circuit Ampacity	Unit Only	41	44	51	22	23	26	16	17	20
	With (2) 0.5 HP Power Exhaust	49	53	59	25	27	30	20	21	23

ELECTRIC HEAT DATA

Electric Heat Voltage			208V	240V	208V	240V	208V	240V	480V	480V	480V	600V	600V	600V
² Maximum Overcurrent Protection	Unit+ Electric Heat	7.5 kW	50	50	50	50	60	60	25	30	30	20	20	25
		15 kW	50	60	60	60	60	70	30	30	35	25	25	30
		22.5 kW	70	80	80	90	80	90	40	40	45	35	35	35
		30 kW	90	100	100	110	100	125	50	60	60	40	45	45
		45 kW	150	150	150	150	150	175	80	80	80	60	60	70
³ Minimum Circuit Ampacity	Unit+ Electric Heat	7.5 kW	41	41	44	44	51	51	22	23	26	16	17	20
		15 kW	49	55	53	59	60	66	27	29	33	22	23	26
		22.5 kW	69	78	72	81	80	89	39	40	44	31	32	35
		30 kW	88	100	92	104	100	112	50	52	55	40	41	44
		45 kW	127	145	131	149	139	157	72	74	78	58	60	62
² Maximum Overcurrent Protection	Unit+ Electric Heat and (2) 0.5 HP Power Exhaust	7.5 kW	60	60	60	60	70	70	30	30	35	20	25	25
		15 kW	60	70	70	70	80	80	35	35	40	30	30	30
		22.5 kW	80	90	90	100	100	100	45	45	50	35	40	40
		30 kW	100	125	110	125	125	125	60	60	60	45	50	50
		45 kW	150	175	150	175	150	175	80	80	90	70	70	70
³ Minimum Circuit Ampacity	Unit+ Electric Heat and (2) 0.5 HP Power Exhaust	7.5 kW	49	49	53	53	59	59	25	27	30	20	21	23
		15 kW	60	66	64	70	71	77	32	33	37	26	28	30
		22.5 kW	80	89	83	92	91	100	43	45	48	35	37	39
		30 kW	99	111	103	115	111	123	54	56	59	44	46	48
		45 kW	138	156	142	160	150	168	77	78	82	62	64	67

ELECTRIC HEAT ACCESSORIES

Unit Fuse Block	Unit Only	10Z41	10Z41	10Z41	10Z41	10Z41	10Z41	10Z39	10Z39	10Z39	10Z38	10Z38	10Z39
	Unit + Power Exhaust	10Z41	10Z41	10Z41	10Z41	10Z42	10Z42	10Z39	10Z39	10Z40	10Z38	10Z39	10Z39

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.

¹ Extremes of operating range are plus and minus 10% of line voltage.² HACR type breaker or fuse.³ Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

ELECTRICAL/ELECTRIC HEAT DATA**10 TON****10 TON STANDARD EFFICIENCY****ZCA120S4**

¹ Voltage - 60hz		208/230V - 3 Ph			460V - 3 Ph			575V - 3 Ph		
Compressor 1	Rated Load Amps	13.5			8			5		
	Locked Rotor Amps	109			59			40		
Compressor 2	Rated Load Amps	13.5			8			5		
	Locked Rotor Amps	109			59			40		
Outdoor Fan Motors (2)	Full Load Amps	2.4			1.3			1		
	(total)	(4.8)			(2.6)			(2)		
Power Exhaust (2) 0.5 HP	Full Load Amps	4.4			1.7			1.7		
	(total)	(8.8)			(3.4)			(3.4)		
Indoor Blower Motor	Horsepower	2	3	5	2	3	5	2	3	5
	Full Load Amps	7.5	10.5	16.7	3.4	4.8	7.6	2.7	3.9	6.1
² Maximum Overcurrent Protection	Unit Only	50	50	60	30	30	35	20	20	25
	With (2) 0.5 HP Power Exhaust	60	60	70	35	35	35	20	25	25
³ Minimum Circuit Ampacity	Unit Only	43	46	53	24	26	29	16	18	20
	With (2) 0.5 HP Power Exhaust	52	55	62	28	29	32	20	21	24

ELECTRIC HEAT DATA

Electric Heat Voltage			208V	240V	208V	240V	208V	240V	480V	480V	480V	600V	600V	600V
² Maximum Overcurrent Protection	Unit+ 15 kW		50	60	60	60	60	70	30	30	35	25	25	30
	Electric Heat 22.5 kW		70	80	80	90	80	90	40	40	45	35	35	35
	30 kW		90	100	100	110	100	125	50	60	60	40	45	45
	45 kW		150	150	150	150	150	175	80	80	80	60	60	70
	60 kW		150	175	150	175	150	175	80	80	90	70	70	70
³ Minimum Circuit Ampacity	Unit+ 15 kW		49	55	53	59	60	66	27	29	33	22	23	26
	Electric Heat 22.5 kW		69	78	72	81	80	89	39	40	44	31	32	35
	30 kW		88	100	92	104	100	112	50	52	55	40	41	44
	45 kW		127	145	131	149	139	157	72	74	78	58	60	62
	60 kW		135	154	139	158	146	166	77	79	82	62	63	66
² Maximum Overcurrent Protection	Unit+ 15 kW		60	70	70	70	80	80	35	35	40	30	30	30
	Electric Heat and (2) 0.5 HP Power Exhaust 22.5 kW		80	90	90	100	100	100	45	45	50	35	40	40
	30 kW		100	125	110	125	125	125	60	60	60	45	50	50
	45 kW		150	175	150	175	150	175	80	80	90	70	70	70
	60 kW		150	175	150	175	175	200	90	90	90	70	70	70
³ Minimum Circuit Ampacity	Unit+ 15 kW		60	66	64	70	71	77	32	33	37	26	28	30
	Electric Heat and (2) 0.5 HP Power Exhaust 22.5 kW		80	89	83	92	91	100	43	45	48	35	37	39
	30 kW		99	111	103	115	111	123	54	56	59	44	46	48
	45 kW		138	156	142	160	150	168	77	78	82	62	64	67
	60 kW		146	165	150	169	157	177	81	83	86	66	67	70

ELECTRIC HEAT ACCESSORIES

Unit Fuse Block	Unit Only	10Z41	10Z41	10Z41	10Z41	10Z41	10Z41	10Z39	10Z39	10Z40	10Z38	10Z38	10Z39
	Unit + Power Exhaust	10Z41	10Z41	10Z41	10Z41	10Z42	10Z42	10Z40	10Z40	10Z40	10Z38	10Z39	10Z39

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.

¹ Extremes of operating range are plus and minus 10% of line voltage.² HACR type breaker or fuse.³ Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

ELECTRICAL/ELECTRIC HEAT DATA**12.5 TON****12.5 TON STANDARD EFFICIENCY****ZCA150S4**

¹ Voltage - 60hz		208/230V - 3 Ph			460V - 3 Ph			575V - 3 Ph		
Compressor 1	Rated Load Amps	19.6			8.2			6.6		
	Locked Rotor Amps	136			66.1			55.3		
Compressor 2	Rated Load Amps	19.6			8.2			6.6		
	Locked Rotor Amps	136			66.1			55.3		
Outdoor Fan Motors (2)	Full Load Amps	3			1.5			1.2		
	(total)	(6)			(3)			(2.4)		
Power Exhaust (2) 0.5 HP	Full Load Amps	4.4			1.7			1.7		
	(total)	(8.8)			(3.4)			(3.4)		
Indoor Blower Motor	Horsepower	2	3	5	2	3	5	2	3	5
	Full Load Amps	7.5	10.5	16.7	3.4	4.8	7.6	2.7	3.9	6.1
² Maximum Overcurrent Protection	Unit Only	70	80	80	30	30	35	25	25	25
	With (2) 0.5 HP Power Exhaust	80	80	90	35	35	40	25	30	30
³ Minimum Circuit Ampacity	Unit Only	58	61	68	25	27	30	20	22	24
	With (2) 0.5 HP Power Exhaust	61	70	76	29	30	33	24	25	27

ELECTRIC HEAT DATA

Electric Heat Voltage		208V	240V	208V	240V	208V	240V	480V	480V	480V	600V	600V	600V
² Maximum Overcurrent Protection	Unit+ 15 kW	70	70	80	80	80	80	30	30	35	25	25	30
	Electric Heat 22.5 kW	70	80	80	90	80	90	40	40	45	35	35	35
	30 kW	90	100	100	110	100	125	50	60	60	40	45	45
	45 kW	150	150	150	150	150	175	80	80	80	60	60	70
	60 kW	150	175	150	175	150	175	80	80	90	70	70	70
³ Minimum Circuit Ampacity	Unit+ 15 kW	58	58	61	61	67	67	27	29	33	22	23	26
	Electric Heat 22.5 kW	69	78	72	81	80	89	39	40	44	31	32	35
	30 kW	88	100	92	104	100	112	50	52	55	40	41	44
	45 kW	127	145	131	149	139	157	72	74	78	58	60	62
	60 kW	135	154	139	158	146	166	77	79	82	62	63	66
² Maximum Overcurrent Protection	Unit+ 15 kW	80	80	80	80	90	90	35	35	40	30	30	30
	Electric Heat and (2) 0.5 HP Power Exhaust 22.5 kW	80	90	90	100	100	100	45	45	50	35	40	40
	30 kW	100	125	110	125	125	125	60	60	60	45	50	50
	45 kW	150	175	150	175	150	175	80	80	90	70	70	70
	60 kW	150	175	150	175	175	200	90	90	90	70	70	70
³ Minimum Circuit Ampacity	Unit+ 15 kW	67	67	70	70	76	77	32	33	37	26	28	30
	Electric Heat and (2) 0.5 HP Power Exhaust 22.5 kW	80	89	83	92	91	100	43	45	48	35	37	39
	30 kW	99	111	103	115	111	123	54	56	59	44	46	48
	45 kW	138	156	142	160	150	168	77	78	82	62	64	67
	60 kW	146	165	150	169	157	177	81	83	86	66	67	70

ELECTRIC HEAT ACCESSORIES

Unit Fuse Block	Unit Only	10Z42	10Z42	10Z42	10Z42	10Z42	10Z42	10Z39	10Z39	10Z40	10Z39	10Z39	10Z39
	Unit + Power Exhaust	10Z42	10Z42	10Z42	10Z42	10Z42	10Z42	10Z40	10Z40	10Z40	10Z39	10Z39	10Z39

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.

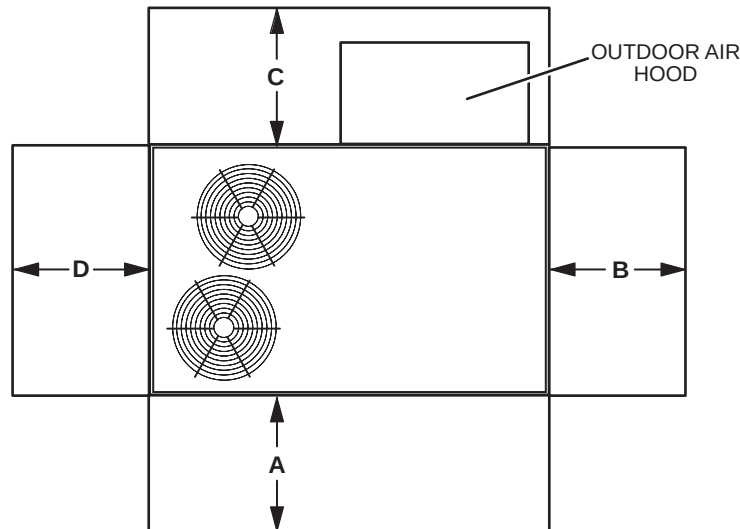
¹ Extremes of operating range are plus and minus 10% of line voltage.² HACR type breaker or fuse.³ Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

ELECTRIC HEAT CAPACITIES

Volts Input	7.5 kW			15 kW			22.5 kW			30 kW			45 kW			60 kW		
	kW Input	Btuh Output	No. of Stages	kW Input	Btuh Output	No. of Stages	kW Input	Btuh Output	No. of Stages	kW Input	Btuh Output	No. of Stages	kW Input	Btuh Output	No. of Stages	kW Input	Btuh Output	No. of Stages
208	5.6	19,100	1	11.3	38,600	1	16.9	57,700	2	22.5	76,800	2	33.8	115,300	2	45.0	153,600	2
220	6.3	21,500	1	12.6	43,000	1	18.9	64,500	2	25.2	86,000	2	37.8	129,000	2	50.4	172,000	2
230	6.9	23,600	1	13.8	47,100	1	20.7	70,700	2	27.5	93,900	2	41.3	141,000	2	55.1	188,000	2
240	7.5	25,600	1	15.0	51,200	1	22.5	76,800	2	30.0	102,400	2	45.0	153,600	2	60.0	204,800	2
440	6.9	21,500	1	12.6	43,000	1	18.9	64,500	2	25.2	86,000	2	37.8	129,000	2	50.4	172,000	2
460	6.9	23,600	1	13.8	47,100	1	20.7	70,700	2	27.5	93,900	2	41.3	141,000	2	55.1	188,000	2
480	7.5	25,600	1	15.0	51,200	1	22.5	76,800	2	30.0	102,400	2	45.0	153,600	2	60.0	204,800	2
550	6.3	21,500	1	12.6	43,000	1	18.9	64,500	2	25.2	86,000	2	37.8	129,000	2	50.4	172,000	2
575	6.9	23,600	1	13.8	47,100	1	20.7	70,700	2	27.5	93,900	2	41.3	141,000	2	55.1	188,000	2
600	7.5	25,600	1	15.0	51,200	1	22.5	76,800	2	30.0	102,400	2	45.0	153,600	2	60.0	204,800	2

UNIT CLEARANCES - INCHES (MM)

UNIT WITH ECONOMIZER



¹ Unit Clearance	A		B		C		D		Top Clearance
	in.	mm	in.	mm	in.	mm	in.	mm	
Service Clearance	60	1524	36	914	36	914	60	1524	Unobstructed
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.

¹ Service Clearance - Required for removal of serviceable parts.

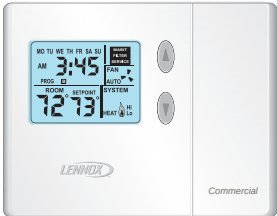
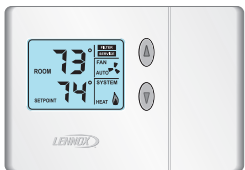
Minimum Operation Clearance - Required clearance for proper unit operation.

OUTDOOR SOUND DATA

Unit Model Number	Octave Band Linear Sound Power Levels dB, re 10 ⁻¹² Watts - Center Frequency - Hz							¹ Sound Rating Number (SRN) (dBA)
	125	250	500	1000	2000	4000	8000	
092, 102 and 120	72	74	79	80	76	70	63	84
150	76	81	87	86	80	77	76	91

¹ Sound Rating Number according to ARI Standard 270-2008. "SRN" is the overall A-Weighted Sound Power Level, (LWA), dB (100 Hz to 10,000 Hz).

OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS

Item		Model No.	Catalog No.
COMFORTSENSE® 7500 COMMERCIAL 7-DAY PROGRAMMABLE THERMOSTAT			
 • Four-Stage Heating / Two-Stage Cooling Universal Multi-Stage • Intuitive Touchscreen Interface • Remote Indoor Temperature Sensing with Averaging • Outside or Discharge Air Temperature Display • Full Seven-Day Programming • Four Time Periods Per Day • Occupancy Scheduling with Economizer Relay Control • Away Mode • Holiday Scheduling • Smooth Setback Recovery (SSR) • Performance Reports • Notifications/Reminders • Dehumidification/Humiditrol® Control for Split Systems and Rooftop Units • Economizer Relay Control • Backlit Display • Wallplate Furnished		C0STAT06FF1L	13H15
Optional Accessories			
¹ Remote non-adjustable wall mount 20k temperature sensor		C0SNZN01AE2-	47W36
¹ Remote non-adjustable wall mount 10k temperature sensor		C0SNZN73AE1-	47W37
Remote non-adjustable discharge air (duct mount) temperature sensor		C0SNDC00AE1-	19L22
Outdoor temperature sensor		C0SNSR03AE1-	X2658
Locking cover (clear)		C0MISC15AE1-	39P21
¹ Remote sensors can be applied in any of the following combinations: One Sensor - (1) 47W36 Two Sensors - (2) 47W37 Three Sensors - (2) 47W36 and (1) 47W37 Four Sensors - (4) 47W36 Five Sensors - (3) 47W36 and (2) 47W37			
COMFORTSENSE® 3000 COMMERCIAL 5-2 DAY PROGRAMMABLE THERMOSTAT			
 • Two-Stage Heating / Two-Stage Cooling Conventional Systems • Intuitive Interface • 5-2 Day Programming • Program Hold • Remote Indoor Temperature Sensing • Smooth Setback Recovery (SSR) • Economizer Relay Control • Maintenance/Filter/Service Reminders • Backlit Display • Wallplate Furnished • Simple Up and Down Temperature Control.		C0STAT05FF1L	11Y05
Optional Accessories			
Remote non-adjustable wall mount 10k averaging temperature sensor		C0SNZN73AE1-	47W37
Optional wall mounting plate		C0MISC17AE1-	X2659
DIGITAL NON-PROGRAMMABLE THERMOSTAT			
 • One-Stage Heating / Cooling Conventional Systems • Intuitive Interface • Automatic Changeover • Backlit Display • Simple Up and Down Temperature Control.		C0STAT12AE1L	51M32
Optional Accessories			
Outdoor temperature sensor		C0SNSR04AE1-	X2658
Optional wall mounting plate		C0MISC17AE1-	X2659

WEIGHT DATA

Model Number	Net		Shipping	
	lbs.	kg	lbs.	kg
092S Base Unit	854	387	939	426
092S Max. Unit	1011	459	1096	497
102S Base Unit	874	396	959	435
102S Max. Unit	1031	468	1116	506
120S Base Unit	914	415	999	453
120S Max. Unit	1078	489	1163	528
150S Base Unit	1004	455	1089	494
150S Max. Unit	1168	530	1253	568

OPTIONS / ACCESSORIES

Model Number	Shipping Weight	
	lbs.	kg
CABINET		
Coil/Hail Guard	50	23
CEILING DIFFUSERS		
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

ECONOMIZER / OUTDOOR AIR / EXHAUST**Economizer**

Downflow with Barometric Relief Dampers and Hoods	90	41
Horizontal with Barometric Relief Dampers and Hoods	95	43
Horizontal Low Profile Barometric Relief Dampers with Hood	8	4

Outdoor Air Dampers

Outdoor Air Damper Section with Hood - Automatic	58	26
Outdoor Air Damper Section with Hood - Manual	50	23

Power Exhaust

Downflow	60	27
Horizontal	41	19

ELECTRIC HEAT

7.5 kW	90	41
15 kW	90	41
22.5 kW	90	41
30 kW	90	41
45 kW	90	41
60 kW	90	41

MSAV (MULTI-STAGE AIR VOLUME) SUPPLY AIR BLOWER OPTION

Variable Frequency Drive (VFD) and associated components	10	5
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ROOF CURBS**Hybrid Roof Curbs, Downflow**

8 in. height	79	36
14 in. height	104	47
18 in. height	120	54
24 in. height	145	66

PACKAGING

LTL Packaging (less than truck load)	105	48
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DIMENSIONS - INCHES (MM)

Model No.	CORNER WEIGHTS																CENTER OF GRAVITY							
	AA				BB				CC				DD				EE				FF			
	Base		Max.		Base		Max.		Base		Max.		Base		Max.		Base		Max.		Base		Max.	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	in.	mm	in.	mm	in.	mm	in.	mm
092S	244	111	287	130	181	82	227	103	182	83	220	100	247	112	278	126	47.5	1207	48.5	1232	25.5	648	26.5	673
102S	250	113	293	133	185	84	231	105	187	85	224	102	252	114	283	128	47.5	1207	48.5	1232	25.5	648	26.5	673
120S	262	119	306	139	193	88	242	110	195	88	234	106	264	120	296	134	47.5	1207	48.5	1232	25.5	648	26.5	673
150S	287	130	332	150	212	96	262	119	214	97	254	115	290	131	321	145	47.5	1207	48.5	1232	25.5	648	26.5	673

Base Unit - The unit with NO OPTIONS.

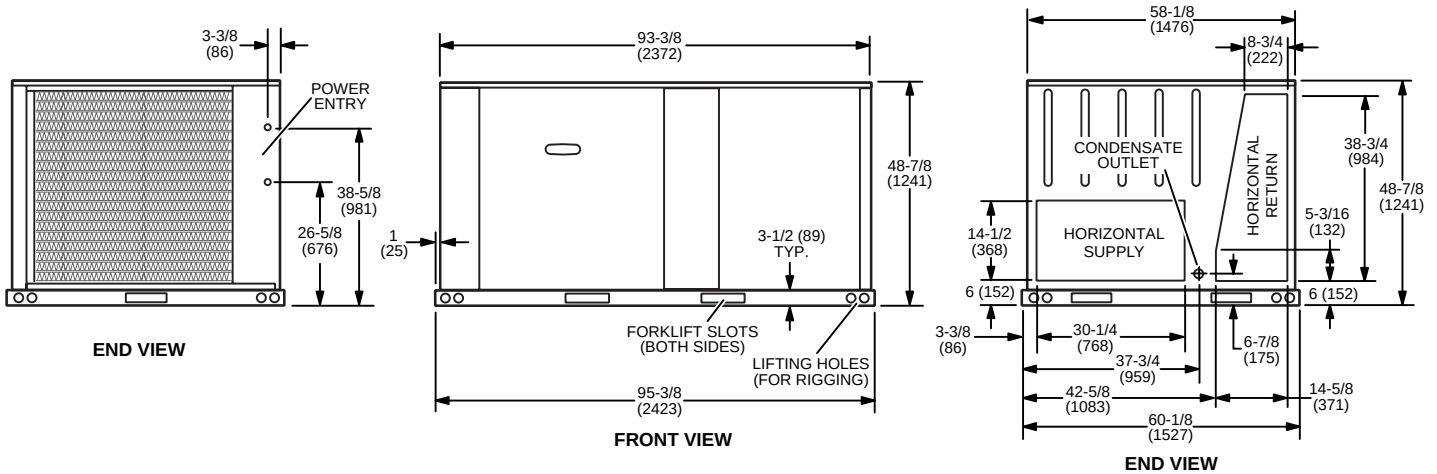
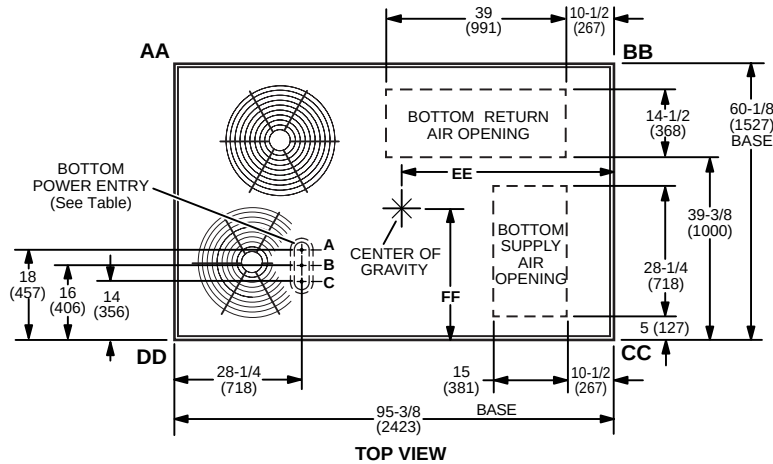
Max. Unit - The unit with ALL OPTIONS Installed. (Economizer, etc.)

BOTTOM POWER ENTRY

Holes required for Optional Bottom Power Entry Kit

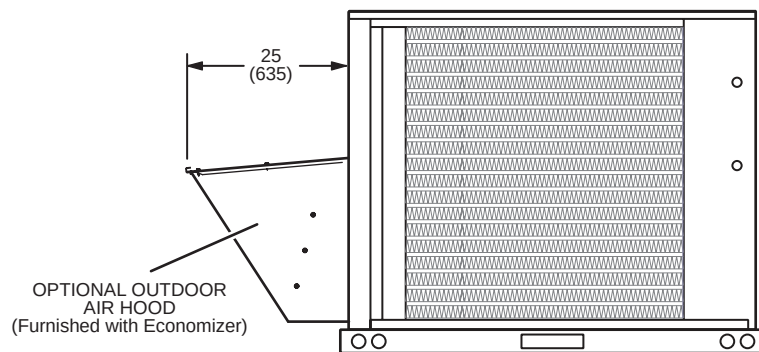
	Threaded Conduit Fittings (Provided in Kit)	Wire Use	Hole Diameter Required in Unit Base (Max.)
A	¹ 1/2	ACC	7/8 (23)
B	1/2	24V	7/8 (23)
C	1-1/4	POWER	1-3/4 (44)

¹ Field provided.

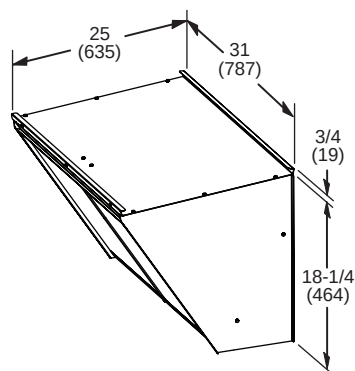


ACCESSORY DIMENSIONS - INCHES (MM)

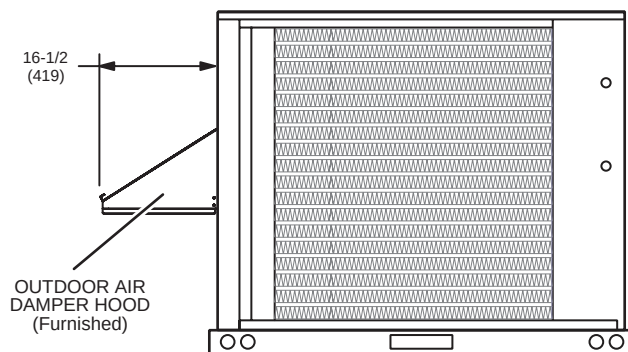
OUTDOOR AIR HOOD DETAIL FOR OPTIONAL DOWNFLOW ECONOMIZER (Downflow Applications)



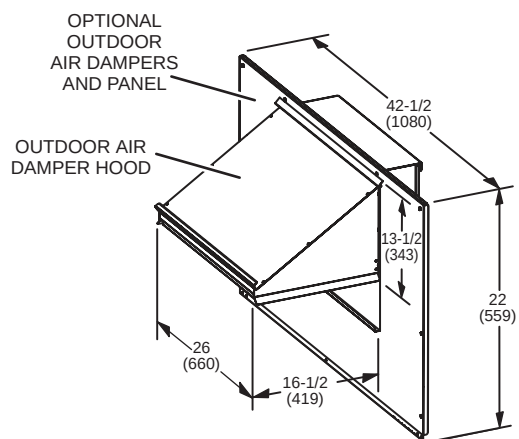
END VIEW



OUTDOOR AIR DAMPER HOOD DETAIL FOR OPTIONAL MANUAL OR MOTORIZED OUTDOOR AIR DAMPERS (Downflow or Horizontal Applications)

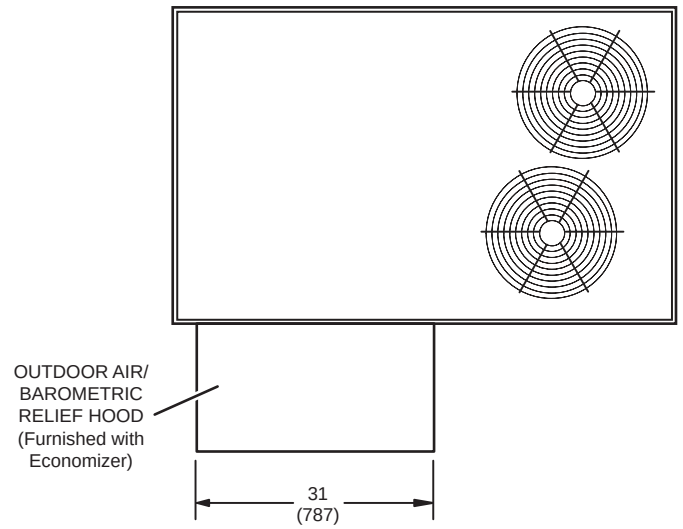


END VIEW

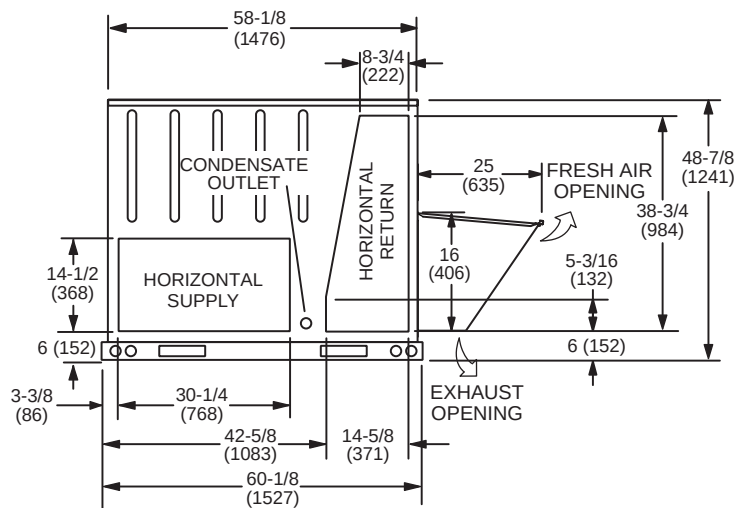


ACCESSORY DIMENSIONS - INCHES (MM)

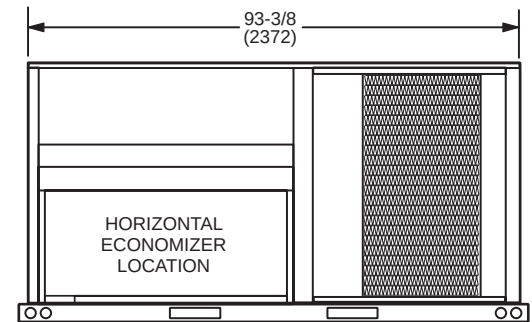
OUTDOOR AIR HOOD DETAIL WITH OPTIONAL HORIZONTAL ECONOMIZER AND BAROMETRIC RELIEF DAMPERS (Horizontal Applications)



TOP VIEW



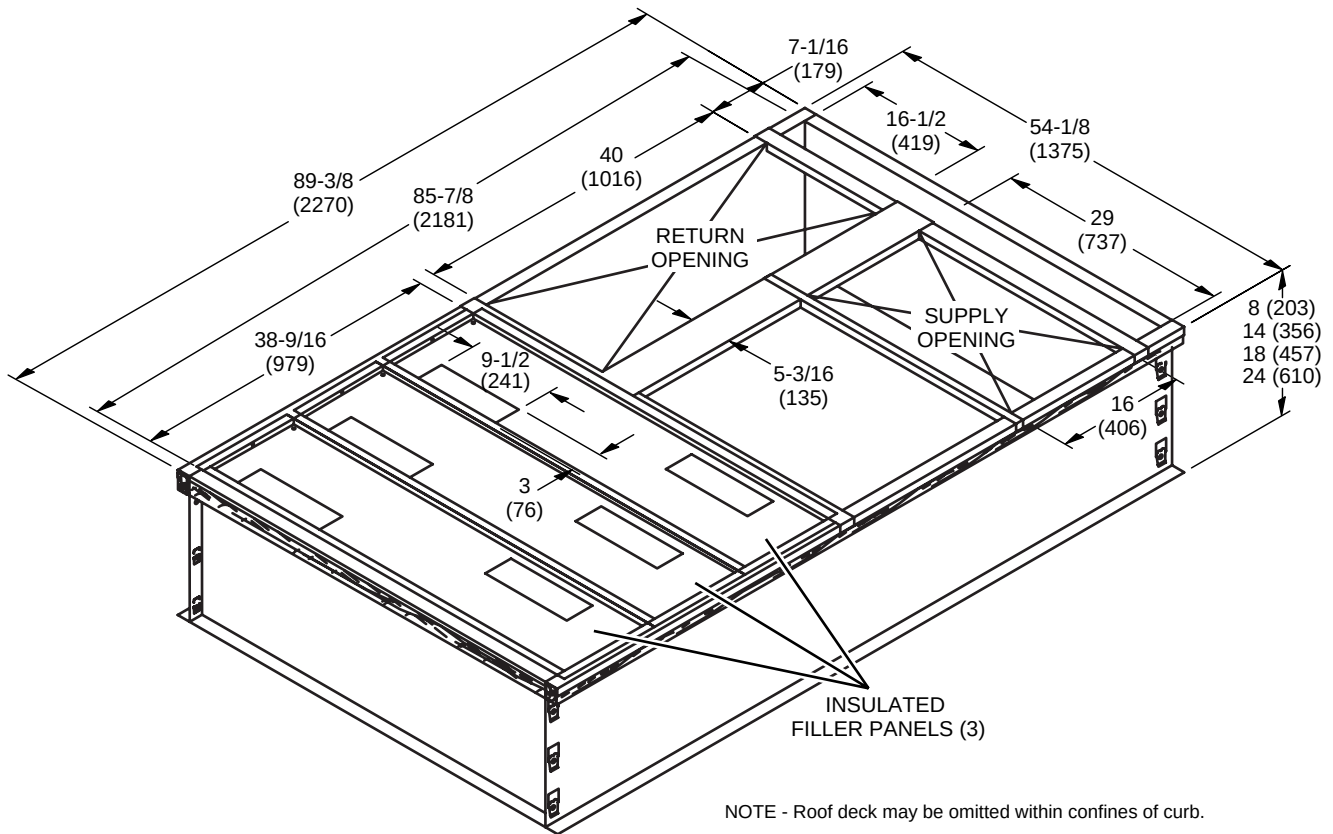
END VIEW



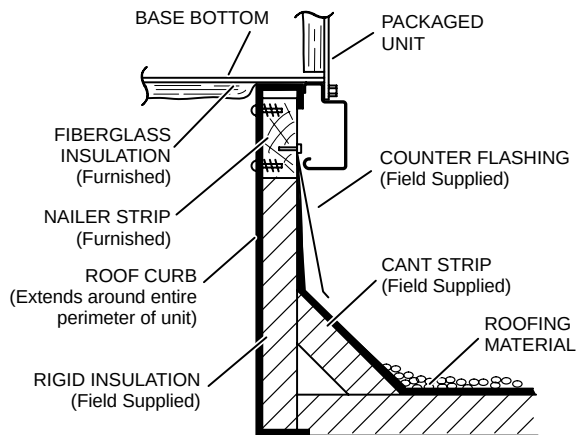
BACK VIEW

Note - Supply and Return Air Ducts must be supported.

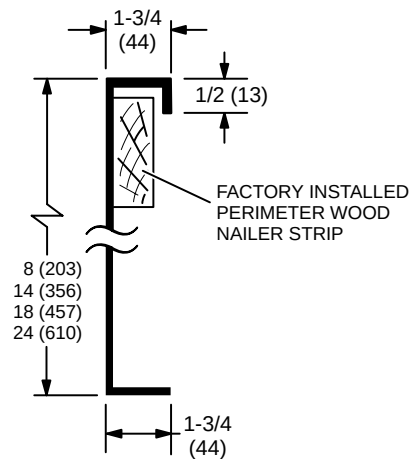
HYBRID CURBS - DOUBLE DUCT OPENING



TYPICAL FLASHING DETAIL FOR ROOF CURB



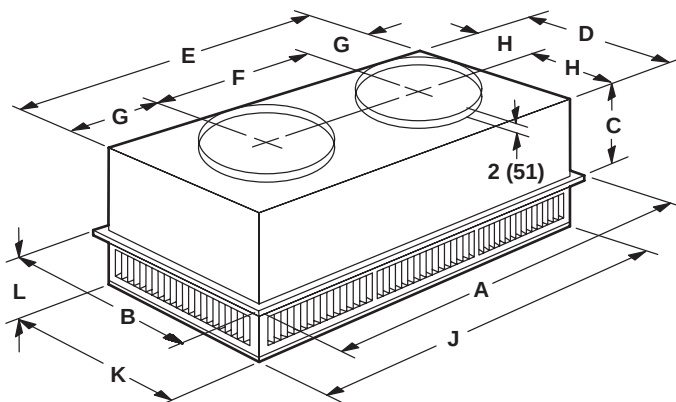
DETAIL ROOF CURB



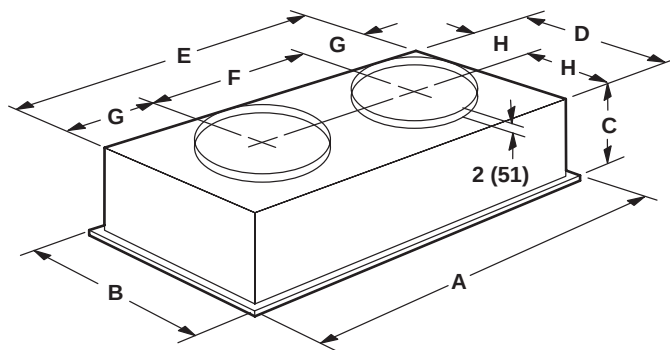
ACCESSORY DIMENSIONS - INCHES (MM)

COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

STEP-DOWN CEILING DIFFUSER



FLUSH CEILING DIFFUSER



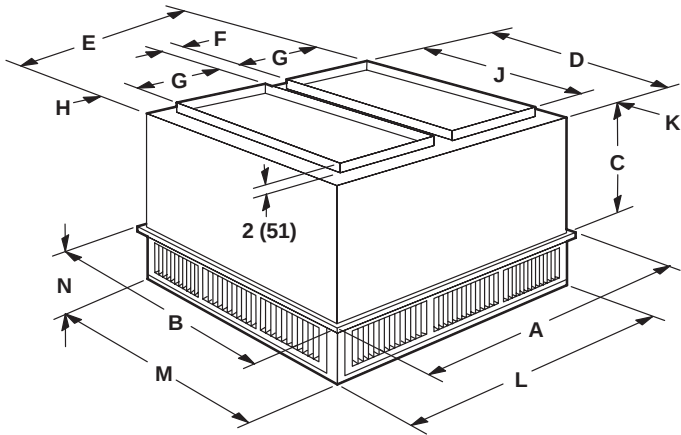
Model Number		RTD11-95
A	in.	47-5/8
	mm	1159
B	in.	29-5/8
	mm	752
C	in.	14-3/8
	mm	365
D	in.	27-1/2
	mm	699
E	in.	45-1/2
	mm	1158
F	in.	22-1/2
	mm	572
G	in.	11-1/2
	mm	292
H	in.	13-3/4
	mm	349
J	in.	45-1/2
	mm	1156
K	in.	27-1/2
	mm	699
L	in.	8-1/8
	mm	206
Duct Size	in.	20 round
	mm	508 round

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

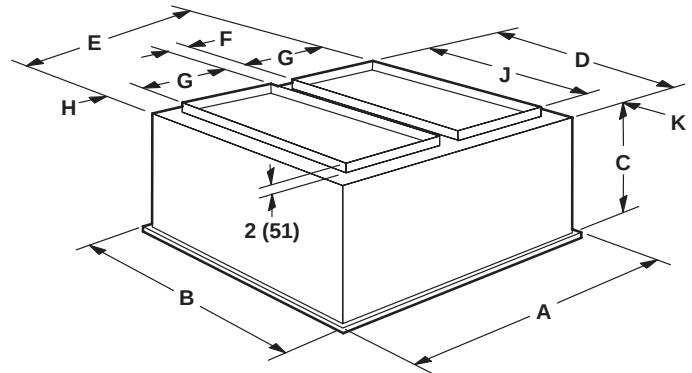
ACCESSORY DIMENSIONS - INCHES (MM)

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

Section	Description
Conventional Control Systems	Added new CS7500 and CS3000 Commercial Thermostats.
Options/Accessories	Added new Combination Coil/Hail Guards.



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Contact us at 1-800-4-LENNOX

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.

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ZH
Raider® Rooftop Units
60 HZ

PRODUCT SPECIFICATIONS

Bulletin No. 210749
July 2015
Supersedes March 2015

RAIDER®
Value Without Compromise™

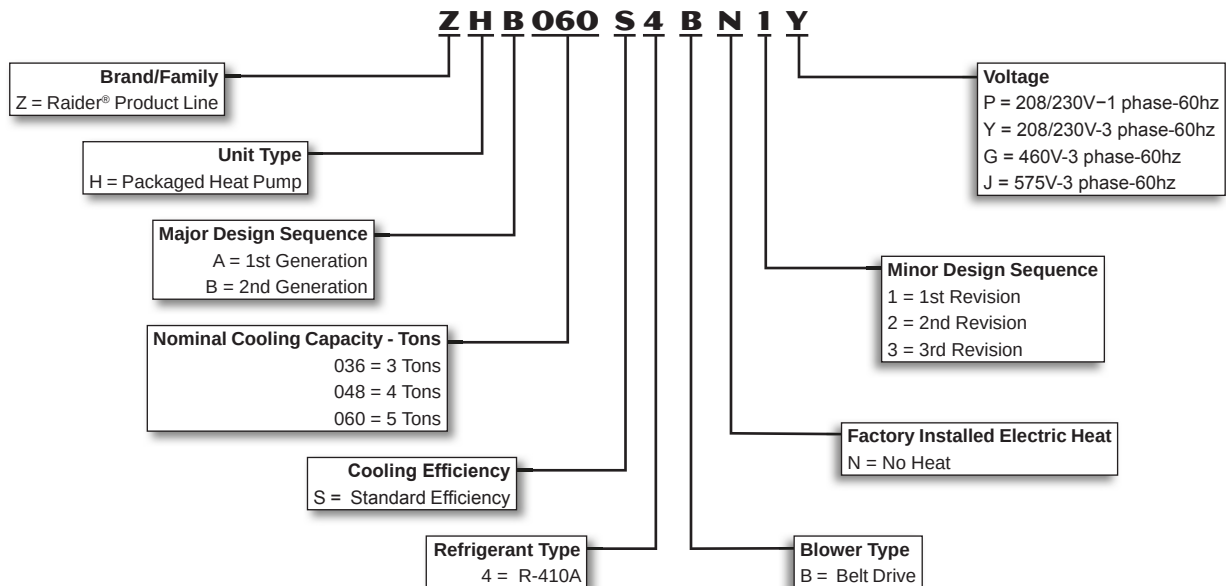


L Connection®
N E T W O R K

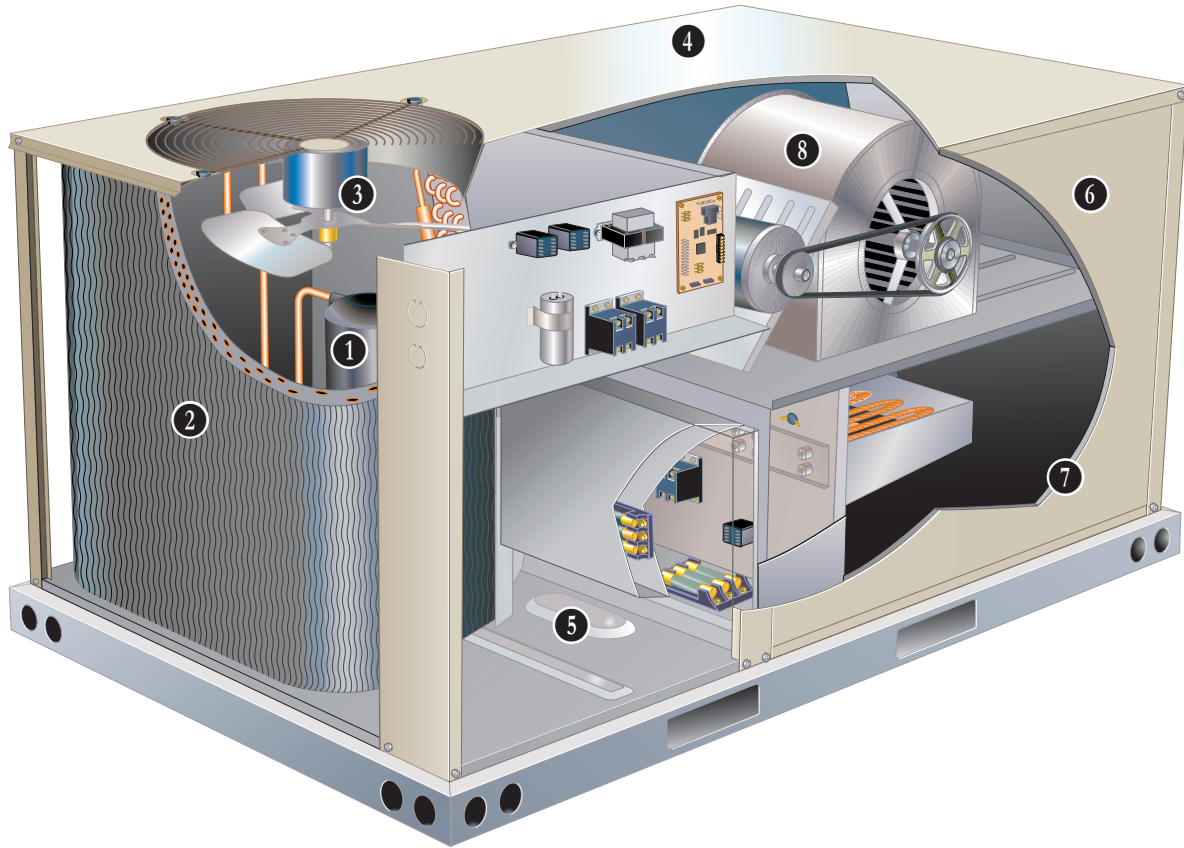
**ASHRAE 90.1
COMPLIANT**

3 to 5 Tons
Net Cooling Capacity – 36,200 to 58,000 Btuh
Net Heating Capacity – 34,200 to 58,500 Btuh
Optional Electric Heat – 5 to 22.5 kW

MODEL NUMBER IDENTIFICATION



FEATURES AND BENEFITS



Raider® rooftop units from Lennox are the new standard for cost efficient, reliable rooftop units built for long-lasting performance that can significantly improve indoor environments. Raider rooftop units feature:

- **Quick and Easy Retrofit** - Fast installation for replacement of many existing rooftop units - fits high volume competitor's roof curbs
- **R-410A Refrigerant** - Environmentally friendly
- **Scroll Compressors** - Single speed scroll compressor is furnished on all models.
- **High Pressure Switch** - Protects compressor.
- **Belt Drive Blower Motor** - To maximize air performance.
- **Downflow or Horizontal Airflow** - Easy field conversion.
- **Two Fork Lift Slots on Three Sides** - Easy to pick up and transport units from almost any angle.
- **Corrosion-Resistant Drain Pan** - Provides application flexibility, durability, improved serviceability and meets ASHRAE 62.1 requirements for drain pan slope.
- **Thermostatic Expansion Valve** - Provides peak heating performance across the entire application range.

FEATURES AND BENEFITS

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APPROVALS

AHRI Certified to AHRI Standard 210/240-2008.
 CSA listed.
 Units are Certified by CSA.
 Components bonded for grounding to meet safety standards for servicing required by UL, ULC and National and Canadian Electrical Codes.
 All models are ASHRAE 90.1 compliant.
 ISO 9001 Registered Manufacturing Quality System.

WARRANTY

Limited five years on compressors.
 Limited five years optional High Performance Economizers.
 Limited one year all other covered components.

COOLING / HEATING SYSTEM

Designed to maximize sensible and latent cooling performance at design conditions.

System can operate from 35°F to 125°F without any additional controls.

R-410A Refrigerant

Non-chlorine, ozone friendly, R-410A.



Unit is factory pre-charged with refrigerant. See Specifications Table.

1 Compressor

Scroll compressors for high performance, reliability and quiet operation.

Resiliently mounted on rubber grommets for quiet operation.

Compressor Crankcase Heater

Protects against refrigerant migration that can occur during low ambient operation.

Refrigerant Metering Orifice

Accurately meters refrigerant in system.

Refrigerant control is accomplished by exact sizing of refrigerant metering orifice.

High Pressure Switch

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

Automatic reset.

Reversing Valve

4-way interchange reversing valve effects a rapid change in direction of refrigerant flow resulting in quick changeover from cooling to heating and vice versa.

Defrost Control

Provides a defrost cycle, if needed, every 30 or 60 or 90 minutes (adjustable) of compressor "on" time at outdoor coil temperature below 35°F. Temperature switch mounted on outdoor coil liquid line terminates defrost cycle.

Filter/Drier

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

2 Coil Construction

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

Indoor Coil

Cross row circuiting with rifled tubing optimizes both sensible and latent cooling capacity.

Condensate Drain Pan

Plastic pan, sloped to meet drainage requirements of ASHRAE 62.1.

End drain connection.

3 Outdoor Coil Fan Motor

Thermal overload protected, totally enclosed, permanently lubricated bearings, shaft down, fan guard mount.

Outdoor Coil Fan Guard

PVC coated fan guard furnished.

FEATURES AND BENEFITS

COOLING / HEATING SYSTEM (continued)

Required Selections

Cooling Capacity

Specify nominal cooling capacity of the unit.

Options/Accessories

Field Installed

Condensate Drain Trap

Field installed only.

Available in copper or PVC.

Drain Pan Overflow Switch

Monitors condensate level in drain pan, shuts down unit if drain becomes clogged.

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.

CABINET

4 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.

Airflow Choice

Units are shipped in downflow (vertical) configuration, can be field converted to horizontal airflow configuration without the need of a kit.

5 Power Entry

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

Optional Bottom Power Entry Kit is available.

6 Exterior Panels

Constructed of heavy-gauge, galvanized steel with a two-layer enamel paint finish.

7 Insulation

All panels adjacent to conditioned air are fully insulated with non-hygroscopic fiberglass insulation.

Access Panels

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

Options/Accessories

Factory Installed

Corrosion Protection

A completely flexible immersed coating with an electro-deposited dry film process. (AST ElectroFin E-Coat) Meets Mil Spec MIL-P-53084, ASTM B117 Standard Method Salt Spray Testing.

Indoor Corrosion Protection:

- Coated coil

Outdoor Corrosion Protection:

- Coated coil

Field Installed

Coil/Hail Guards

Constructed of heavy gauge steel, painted to match cabinet, helps protect outdoor coil from damage on all three sides of cabinet.

FEATURES AND BENEFITS

CONTROLS

Unit Control

All control voltage is provided via a 24V (secondary) transformer with inline fuse protection.

Heat/Cool Staging - Capable of up to 2 heat / 2 cool staging with a thermostat.

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

Smoke Detectors

NOTE - Smoke detectors are not available and must be field provided by installer.

Options / Accessories

Field Installed

Commercial Control Systems

L Connection® Network

Complete building automation control system for single or multi-zone applications. Options include local interface, software for local or remote communication, and hardware for networking other control functions.

See L Connection (Network Thermostat Controller version) Product Specifications Bulletin for details.

Thermostats

Control system and thermostat options, see page 31.

8 BLOWER

A wide selection of supply air blower options are available to meet a variety of air flow requirements.

Motor

Overload protected, equipped with ball bearings. Belt drive motors are offered on all models and are available in several different sizes to maximize air performance.

Supply Air Blower

Forward curved blades, blower wheel is statically and dynamically balanced.

Equipped with ball bearings and adjustable pulley (allows speed change).

Required Selections

Supply Air Blower

Order blower motor horsepower and drive kit number required when base unit is ordered, see Drive Kit Specifications Table.

INDOOR AIR QUALITY

Air Filters

Disposable 2 inch filters furnished as standard.

Options / Accessories

Field Installed

Indoor Air Quality (CO₂) Sensor

Monitors CO₂ levels adjusts economizer dampers as needed for Demand Control Ventilation.

ELECTRICAL

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.

Required Selections

Voltage Choice

Specify when ordering base unit.

Field Installed

Electric Heat

Helix wound nichrome elements, individual element limit controls, wiring harness. See Options / Accessories tables for ordering information.

NOTE - Unit Fuse Block is required and must be ordered separately. See Electrical/Electric Heat tables for ordering information.

ECONOMIZER OPTIONS

Factory or Field Installed

Economizer (Downflow or Horizontal) (Standard and High Performance Common Features)

Outdoor Air Hood is furnished.

Economizer includes Barometric Relief Dampers with Exhaust Hood.

Barometric Relief Dampers allow relief of excess air, aluminum blade dampers prevent blow back and outdoor air infiltration during off cycle, bird screen furnished. Hood is furnished.

Single Sensible Temperature Control is furnished with the economizer

Outdoor air sensor enables Economizer if the outdoor temperature is less than the setpoint of the control.

Demand Control Ventilation (DCV) ready using optional CO₂ sensors.

NOTE - Horizontal Economizer is field installed only.

Standard Economizer Features (Not for Title 24)

Gear-driven action, return air and outdoor air dampers, plug-in connections to unit, neoprene seals, 24-volt, fully-modulating spring return motor.

Standard Economizer Control Module

The Standard Economizer Control Module can be adjusted to operate based on outdoor air temperatures.



Economizer Controls:

- Damper Minimum Position - Can be set lower than traditional minimum air requirements resulting in cost savings.
- IAQ Sensor - Signals dampers to modulate and maintain 55°F when CO₂ is higher than the CO₂ setpoint.
- Demand Control Ventilation (DCV) LED - A steady green Demand Control Ventilation LED indicates the IAQ reading is higher than setpoint and requires more fresh air.
- Free Cool LED - A steady green LED indicates outdoor air is suitable for free cooling.

Free Cooling runs when outdoor air temperature is lower than the set temperature on the economizer control.

NOTE: The Free Cooling default setting for outdoor air temperature sensor is 55°F.

High Performance Economizer Features

Approved for California Title 24 building standards.

ASHRAE 90.1-2010 compliant.

Gear-driven action, high torque 24-volt fully-modulating spring return damper motor, return air and outdoor air dampers, plug-in connections to unit, nylon bearings, enhanced neoprene blade edge seals and flexible stainless steel jamb seals to minimize air leakage.

NOTE - High Performance Economizers are not approved for use with enthalpy controls in Title 24 applications.

High Performance Economizer Control Module

Module provides inputs and outputs to control economizer based on parameter settings.



Module automatically detects sensors by polling to determine which sensors are installed in system.

Module displays any alarm messages (fault detection and diagnostics) as an aid in troubleshooting.

Non-volatile memory retains parameter settings in case of power failure.

Keypad with four navigation buttons and LCD screen is furnished for setting economizer parameters.

- Menu Up/Exit  button returns to the main menu.
- Arrow Up  button moves to the previous or next parameter within the selected menu.
- Arrow Down  button moves to the next parameter within the selected menu.
- Select (enter)  button confirms parameter selection.

Main Menu Structure:

- STATUS (economizer and system operation status)
- SETPOINTS (settings for various setpoint parameters)
- SYSTEM SETUP (settings/information about the system)
- ADVANCED SETUP (freeze protection, CO₂ settings, stage 3 delay and additional calibration settings)
- CHECKOUT (damper positions)
- ALARMS (output signal that can be configured for remote alarm monitoring)

NOTE - The Free Cooling setpoint for Title 24 applications must be set based on the Climate Zone where the system is installed. See Section 140.4 "Prescriptive Requirements for Space Conditioning Systems" of the California Energy Commission's 2013 Building Energy Efficiency Standards.

Refer to Installation Instructions for complete setup information and menu parameters available.

OPTIONS / ACCESSORIES

ECONOMIZER OPTIONS **(continued)**

Field Installed

Single Enthalpy Temperature Control

(Not for Title 24)

Outdoor air enthalpy sensor enables Economizer if the outdoor enthalpy is less than the setpoint of the control.

EXHAUST OPTIONS

Field Installed

Power Exhaust Fan - Downflow or Horizontal

Installs external to unit for 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.

Fan is 12 in. diameter with 5 fan blades. 1/2 hp motor.

OUTDOOR AIR OPTIONS

Field Installed

Outdoor Air Dampers - Downflow

Linked mechanical dampers, 0 to 35% (fixed) outdoor air adjustable, installs in unit.

Automatic model features fully modulating spring return damper motor with plug-in connection.

Manual model features a slide damper. Maximum mixed air temperature in cooling mode: 100°F.

ROOF CURBS

Hybrid Roof Curbs, Downflow

Nailer strip furnished, mates to unit, US National Roofing Contractors Approved, shipped knocked down.

Roof curb can be assembled using interlocking tabs to fasten corners together. No tools required.

Curb can also be fastened together with furnished hardware.

Available in 8, 14, 18, and 24 inch heights.

Adaptor Curbs (not shown)

Curbs are regionally sourced. Dimensions will vary based upon the source. Contact your local sales representative for a detailed cut sheet with applicable dimensions.

CEILING DIFFUSERS

Ceiling Diffusers

(Flush and Step-Down)

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)

NOTE - Ceiling Diffuser Transitions are not furnished and must be field fabricated.

OPTIONS / ACCESSORIES					
Item		Catalog No.	ZHA ZHB 036	ZHA ZHB 048	ZHA ZHB 060
COOLING SYSTEM					
Condensate Drain Trap	PVC - C1TRAP20AD2	76W26	X	X	X
	Copper - C1TRAP10AD2	76W27	X	X	X
Drain Pan Overflow Switch	Z1SNSR90A1	99W59	X	X	X
Low Ambient Kit	Z1SNSR34A-1	99W68	X	X	X
BLOWER - SUPPLY AIR					
Motors	¹ Belt Drive - 1 hp Standard Efficiency	Factory	O	O	O
	Belt Drive - 1.5 hp Standard Efficiency	Factory	O	O	O
Drive Kits See Blower Data Tables for selection	Kit #ZA01 - 678-1035 rpm	Factory	O		
	Kit #ZA02 - 803-1226 rpm	Factory		O	
	Kit #ZA03 - 906-1383 rpm	Factory			⁴ O
	Kit #ZA04 - 964-1471 rpm	Factory	O		
	² Kit #ZA05 -1098-1490 rpm	Factory		O	
	² Kit #ZA06 -1262-1634 rpm	Factory			⁴ O
	Kit #ZAA01 - 522-784 rpm	Factory			³ O
	Kit #ZAA02 - 632-875 rpm	Factory			³ O
	Kit #ZAA03 - 798-1105 rpm	Factory			³ O
CABINET					
Coil/Hail Guards	ZHA models only - Z1GARD52A-1	12X19	X	X	
	ZHA060 and ZHB models only - Z1GARD52AT1	12X20	X	X	X
Corrosion Protection		Factory	O	O	O
ELECTRICAL					
Voltage 60 hz	208/230V - 1 phase	Factory	³ O	³ O	³ O
	208/230V - 3 phase	Factory	O	O	O
	460V - 3 phase	Factory	O	O	O
	575V - 3 phase	Factory	O	O	O
Bottom Power Entry Kit	Z1PEKT01A-1	98W08	X	X	X
ELECTRIC HEAT					
5 kW	208/230V-1ph - Z1EH0050AN1P	98W96	¹ X	¹ X	¹ X
	208/230V-3ph - Z1EH0050AN1Y	99W01	X	X	X
	460V-3ph - Z1EH0050AN1G	99W06	X	X	X
	575V-3ph - Z1EH0050AN1J	99W11	X	X	X
7.5 kW	208/230V-1ph - Z1EH0075AN1P	98W97	¹ X	¹ X	¹ X
	208/230V-3ph - Z1EH0075AN1Y	99W02	X	X	X
	460V-3ph - Z1EH0075AN1G	99W07	X	X	X
	575V-3ph - Z1EH0075AN1J	99W12	X	X	X
10 kW	208/230V-1ph - Z1EH0100AN1P	98W98	¹ X	¹ X	¹ X
	208/230V-3ph - Z1EH0100AN1Y	99W03	X	X	X
	460V-3ph - Z1EH0100AN1G	99W08	X	X	X
	575V-3ph - Z1EH0100AN1J	99W13	X	X	X
15 kW	208/230V-1ph - Z1EH0150AN1P	98W99	¹ X	¹ X	¹ X
	208/230V-3ph - Z1EH0150AN1Y	99W04	X	X	X
	460V-3ph - Z1EH0150AN1G	99W09	X	X	X
	575V-3ph - Z1EH0150AN1J	99W14	X	X	X
22.5 kW	208/230V-1ph - Z1EH0225AN1P	99W00		¹ X	¹ X
	208/230V-3ph - Z1EH0225AN1Y	99W05		X	X
	460V-3ph - Z1EH0225AN1G	99W10		X	X
	575V-3ph - Z1EH0225AN1J	99W15		X	X
ELECTRIC HEAT ACCESSORIES					
Unit Fuse Block (required) - See Electrical/Electric Heat Tables for Selection			X	X	X

¹ 1 hp blower motor is not available for 208/230V-1ph applications.

² 1.5 hp motor is required with ZA05 and ZA06 drive kits.

³ ZHB models only.

⁴ ZHA models only.

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

OX - Field Installed or Configure to Order (Factory Installed)

O - Configure to Order (Factory Installed)

X - Field Installed.

OPTIONS / ACCESSORIES

Item		Catalog No.	ZHA ZHB 036	ZHA ZHB 048	ZHA ZHB 060
ECONOMIZER					
Standard Economizer With Outdoor Air Hood (Not for Title 24)					
Standard Economizer (Downflow) Includes Barometric Relief Dampers and Exhaust Hood	Z1ECON30A-1	98W09	OX	OX	OX
Standard Economizer (Horizontal) Includes Barometric Relief Dampers and Exhaust Hood	Z1ECON16A-1	98W68	X	X	X
Standard Economizer Controls (Not for Title 24)					
Single Enthalpy Control	C1SNSR64FF1	53W64	X	X	X
High Performance Economizer With Outdoor Air Hood (Approved for California Title 24 Building Standards)					
High Performance Economizer (Downflow) Includes Barometric Relief Dampers and Exhaust Hood	Z1ECON32A-1	10U51	OX	OX	OX
High Performance Economizer (Horizontal) Includes Barometric Relief Dampers and Exhaust Hood	Z1ECON33A-1	10U52	X	X	X
High Performance Economizer Controls (Not for Title 24)					
Single Enthalpy Control	C1SNSR61FF1	11G21	X	X	X
OUTDOOR AIR					
Outdoor Air Dampers - Includes Outdoor Air Hood					
Motorized	Z1DAMP21A-1	95W74	X	X	X
Manual	Z1DAMP11A-1	95W73	X	X	X
POWER EXHAUST FAN					
Standard Static (Downflow)	208/230V-1 or 3ph - Z1PWRE10A-1P	21E01	X	X	X
	460V-3ph - Z1PWRE10A-1G	23E01	X	X	X
Standard Static (Horizontal)	208/230V-1 or 3ph - Z1PWRE15A-1P	24E01	X	X	X
	460V-3ph - Z1PWRE15A-1G	28E01	X	X	X
575V Transformer Kit	575V-3ph - Z1TRFM20A-1J	59E02	X	X	X
NOTE - Order 575V Transformer Kit with 208/230V Power Exhaust Fan for 575V applications.					
INDOOR AIR QUALITY					
Indoor Air Quality (CO₂) Sensors					
Sensor - Wall-mount, off-white plastic cover with LCD display	C0SNSR50AE1L	77N39	X	X	X
Sensor - Wall-mount, black plastic case, no display, rated for plenum mounting	C0SNSR53AE1L	87N54	X	X	X
CO ₂ Sensor Duct Mounting Kit - for downflow applications	C0MISC19AE1	85L43	X	X	X
Aspiration Box - for duct mounting non-plenum rated CO ₂ sensor (77N39)	C0MISC16AE1	90N43	X	X	X
ROOF CURBS					
Hybrid Roof Curbs, Downflow					
8 in. height	Z1CURB70A-1	11F76	X	X	X
14 in. height	Z1CURB71A-1	11F77	X	X	X
18 in. height	Z1CURB72A-1	11F78	X	X	X
24 in. height	Z1CURB73A-1	11F79	X	X	X
CEILING DIFFUSERS					
Step-Down - Order one	RTD9-65-R	27G87	X	X	X
Flush - Order one	FD9-65-R	27G86	X	X	X

NOTE - Ceiling Diffuser Transitions are not furnished and must be field fabricated.

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

OX - Field Installed or Configure to Order (Factory Installed)

O - Configure to Order (Factory Installed)

X - Field Installed.

SPECIFICATIONS - ZHA

General Data		Nominal Tonnage	3 Ton	4 Ton	5 Ton
		Model No.	ZHA036S4B	ZHA048S4B	ZHA060S4B
		Efficiency Type	Standard	Standard	Standard
Cooling Performance	Gross Cooling Capacity - Btuh		37,600	48,500	60,700
	¹ Net Cooling Capacity - Btuh		36,200	46,500	58,000
	AHRI Rated Air Flow - cfm		1310	1610	1940
	² Sound Rating Number (SRN) (dBA) Cooling		79	79	83
	Heating		80	80	83
	Total Unit Power - kW		3.1	4.3	5.3
	¹ SEER (Btuh/Watt)		13.00	13.00	13.00
	¹ EER (Btuh/Watt)		11.3	10.8	10.9
Refrigerant		Type	R-410A	R-410A	R-410A
		Charge Furnished	11 lbs. 12 oz.	12 lbs. 8 oz.	15 lbs. 3 oz.
Heating Performance	Total High Heating Capacity - Btuh		34,200	45,000	58,500
	Total Unit Power - kW		2.9	3.9	4.9
	¹ COP		3.42	3.40	3.50
	HSPF - Region IV (Region V)		7.70 (6.70)	7.70 (6.70)	7.70 (6.70)
	Total Low Heating Capacity - Btuh		20,400	27,400	33,400
	Total Unit Power - kW		2.8	3.6	4.5
	COP		2.18	2.24	2.20
Electric Heat Available - See page 8			5, 7.5, 10, 15 kW	5, 7.5, 10, 15, 22.5 kW	
Compressor Type (one per unit)			Scroll	Scroll	Scroll
Outdoor Coil	Net face area - sq. ft.		16.1	16.1	19.9
	Tube diameter - in.		3/8	3/8	3/8
	Number of rows		2	2	2
	Fins / inch		20	20	20
	Expansion device type		Balanced port TXV, removable head		
Outdoor Coil Fan	Motor HP		(1) 1/4 (PSC)	(1) 1/4 (PSC)	(1) 1/3 (PSC)
	Motor rpm		825	825	1075
	Total motor watts		300	300	340
	Diameter - in.		(1) 22	(1) 22	(1) 22
	Number of blades		4	4	3
	Total air volume - cfm		3200	3200	3600
Indoor Coil	Net face area - sq. ft.		8.4	8.4	9.6
	Tube diameter - in.		3/8	3/8	3/8
	Number of rows		3	3	3
	Fins per inch		14	14	14
	Drain Connection (no. and size) - in.		(1) 1 NPT	(1) 1 NPT	(1) 1 NPT
	Expansion device type		Fixed Orifice	Fixed Orifice	Fixed Orifice
³ Indoor Blower & Drive Selection	Nominal Motor HP		1 hp, 1.5 hp	1 hp, 1.5 hp	1 hp, 1.5 hp
	Maximum Usable Motor HP		1.15 hp, 1.7 hp	1.15 hp, 1.7 hp	1.15 hp, 1.7 hp
	Available Drive Kits		Kit #ZA01 678-1035 rpm	Kit #ZA02 803-1226 rpm	Kit #ZA03 906-1383 rpm
			Kit #ZA04 964-1471 rpm	⁵ Kit #ZA05 1098-1490 rpm	⁵ Kit #ZA06 1262-1634 rpm
	Wheel nominal diameter x width - in.		10 x 10	10 x 10	10 x 10
Filters		Type	Disposable		
		Number and size - in.	(4) 14 x 20 x 2	(4) 14 x 20 x 2	(4) 16 x 20 x 2
Electrical Characteristics - 60 Hz			208/230V, 460V & 575V 3 phase	208/230V 460V & 575V 3 phase	208/230V 460V & 575V 3 phase

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

¹ AHRI Certified to AHRI Standard 210/240:

Cooling Ratings - 95°F outdoor air temperature and 80°F db/67°F wb entering indoor coil air.

High Temperature Heating Ratings - 47°F db/43°F wb outdoor air temperature and 70°F entering indoor coil air.

Low Temperature Heating Ratings - 17°F db/15°F wb outdoor air temperature and 70°F entering indoor coil air.

² Sound Rating Number (SRN) rated in accordance with test conditions included in ANSI/AHRI Standard 270-2008.

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

⁵ 1.5 hp motor is required with ZA05 and ZA06 drive kits.

SPECIFICATIONS - ZHB

General Data		Nominal Tonnage	3 Ton	4 Ton	5 Ton
		Model No.	ZHB036S4B	ZHB048S4B	ZHB060S4B
		Efficiency Type	Standard	Standard	Standard
Cooling Performance	Gross Cooling Capacity - Btuh		36,300	47,900	59,700
	¹ Net Cooling Capacity - Btuh		35,000	46,500	58,000
	AHRI Rated Air Flow - cfm		1260	1520	2015
	² Sound Rating Number (SRN) (dBA) Cooling		79	77	82
	Heating		80	78	82
	Total Unit Power - kW		3.1	4.2	5.2
	¹ SEER (Btuh/Watt)		14.00	14.00	14.00
	¹ EER (Btuh/Watt)		11.40	11.20	11.20
Refrigerant		Type	R-410A	R-410A	R-410A
		Charge Furnished	14 lbs. 8 oz.	16 lbs. 5 oz.	14 lbs. 4 oz.
Heating Performance	Total High Heating Capacity - Btuh		34,200	45,000	55,000
	Total Unit Power - kW		2.9	3.8	4.5
	¹ COP		3.50	3.50	3.60
	HSPF - Region IV (Region V)		8.00 (6.70)	8.00 (6.70)	8.00 (6.70)
	Total Low Heating Capacity - Btuh		20,000	26,100	32,500
	Total Unit Power - kW		2.7	3.5	4.2
	COP		2.20	2.20	2.25
Electric Heat Available - See page 8			5, 7.5, 10, 15 kW	5, 7.5, 10, 15, 22.5 kW	
Compressor Type (one per unit)			Scroll	Scroll	Scroll
Outdoor Coil	Net face area - sq. ft.		19.9	19.9	19.9
	Tube diameter - in.		3/8	3/8	3/8
	Number of rows		2	2	2
	Fins / inch		20	20	20
	Expansion device type		Balanced port TXV, removable head		
Outdoor Coil Fan	Motor HP		(1) 1/4	(1) 1/4	(1) 1/3
	Motor rpm		825	825	1075
	Total motor watts		300	300	350
	Diameter - in.		(1) 22	(1) 22	(1) 22
	Number of blades		4	4	3
	Total air volume - cfm		3335	3335	3600
Indoor Coil	Net face area - sq. ft.		9.6	10.8	10.8
	Tube diameter - in.		3/8	3/8	3/8
	Number of rows		3	3	3
	Fins per inch		12	12	12
	Drain Connection (no. and size) - in.		(1) 1 NPT	(1) 1 NPT	(1) 1 NPT
	Expansion device type		Fixed Orifice	Fixed Orifice	Fixed Orifice
³ Indoor Blower & Drive Selection	Nominal Motor HP		⁴ 1 hp, 1.5 hp	⁴ 1 hp, 1.5 hp	⁴ 1 hp, 1.5 hp
	Maximum Usable Motor HP		1.15 hp, 1.7 hp	1.15 hp, 1.7 hp	1.15 hp, 1.7 hp
	Available Drive Kits		Kit #ZA01 678-1035 rpm	Kit #ZA02 803-1226 rpm	Kit #ZAA01 522-784 rpm
			Kit #ZA04 964-1471 rpm	⁵ Kit #ZA05 1098-1490 rpm	Kit #ZAA02 632-875 rpm
					⁵ Kit #ZAA03 798-1105 rpm
Wheel nominal diameter x width - in.			10 x 10	10 x 10	15 x 9
Filters	Type		Disposable		
	Number and size - in.		(4) 16 x 20 x 2	(4) 16 x 20 x 2	(2) 16 X 20 X 2 (2) 20 X 20 X 2
Electrical Characteristics - 60 Hz			208/230V 1 phase	208/230V, 1 phase	208/230V, 1 phase
			208/230V, 460V & 575V 3 phase	208/230V 460V & 575V 3 phase	208/230V 460V & 575V 3 phase

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

¹ AHRI Certified to AHRI Standard 210/240:

Cooling Ratings - 95°F outdoor air temperature and 80°F db/67°F wb entering indoor coil air.

High Temperature Heating Ratings - 47°F db/43°F wb outdoor air temperature and 70°F entering indoor coil air.

Low Temperature Heating Ratings - 17°F db/15°F wb outdoor air temperature and 70°F entering indoor coil air.

² Sound Rating Number (SRN) rated in accordance with test conditions included in ANSI/AHRI Standard 270-2008.

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

⁴ 1 hp blower motor is not available for 208/230V-1ph applications.

⁵ 1.5 hp motor is required with ZA05 and ZAA03 drive kits.

COOLING / HEATING RATINGS - ZHA

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

3 TON COOLING STANDARD EFFICIENCY ZHA036S4

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
				75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F
cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	
63°F	960	34.6	2.05	0.74	0.88	1	33.2	2.35	0.75	0.89	1	31.4	2.68	0.76	0.92	1	28.6	3.01	0.79	0.96	1
	1200	36.5	2.06	0.79	0.95	1	35.1	2.36	0.81	0.97	1	33	2.68	0.83	1	1	30.3	3.03	0.86	1	1
	1440	38	2.06	0.85	1	1	36.6	2.36	0.86	1	1	34.7	2.7	0.89	1	1	31.8	3.04	0.94	1	1
67°F	960	36.8	2.06	0.58	0.71	0.84	35.4	2.36	0.59	0.72	0.86	33.4	2.69	0.59	0.74	0.88	30.3	3.02	0.61	0.77	0.93
	1200	38.7	2.07	0.61	0.77	0.92	37.1	2.37	0.62	0.78	0.94	34.9	2.7	0.63	0.81	0.97	31.6	3.03	0.66	0.85	1
	1440	40	2.07	0.65	0.82	0.99	38.2	2.37	0.66	0.84	1	35.9	2.7	0.67	0.87	1	32.4	3.04	0.7	0.92	1
71°F	960	38.9	2.07	0.44	0.56	0.69	37.3	2.37	0.44	0.57	0.7	35.2	2.7	0.44	0.58	0.72	31.9	3.04	0.45	0.6	0.75
	1200	40.9	2.08	0.45	0.6	0.74	39.1	2.38	0.45	0.61	0.76	36.7	2.71	0.46	0.62	0.78	33.2	3.05	0.47	0.65	0.83
	1440	42.4	2.08	0.47	0.64	0.8	40.4	2.39	0.47	0.65	0.82	37.8	2.72	0.47	0.67	0.85	34.1	3.05	0.49	0.7	0.9

3 TON HEATING STANDARD EFFICIENCY ZHA036S4

Indoor Coil Air Volume 70°F Dry Bulb cfm	Air Temperature Entering Outdoor Coil									
	65°F		45°F		25°F		5°F		-15°F	
	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input
	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW
960	42.2	2.55	32.7	2.39	23.1	2.23	15.1	2.01	7.8	1.51
1200	42.4	2.37	32.9	2.21	23.3	2.04	15.3	1.82	7.9	1.32
1440	42.6	2.27	33.2	2.11	23.6	1.95	15.5	1.72	8.2	1.23

4 TON COOLING STANDARD EFFICIENCY ZHA048S4

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																							
		85°F						95°F						105°F						115°F					
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)						
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb						
				75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F				
cfm	kBtu/h	kW	75°F	80°F	85°F	kBtu/h	kW	75°F	80°F	85°F	kBtu/h	kW	75°F	80°F	85°F	kBtu/h	kW	75°F	80°F	85°F					
63°F	1280	46.3	2.99	0.73	0.88	1	41.9	3.39	0.73	0.9	1	37.3	3.85	0.74	0.93	1	32.5	4.39	0.76	0.97	1				
	1600	49.4	3.01	0.79	0.96	1	44.8	3.41	0.81	0.98	1	40.2	3.87	0.83	1	1	35.6	4.41	0.86	1	1				
	1920	52	3.03	0.85	1	1	47.7	3.42	0.87	1	1	43.2	3.89	0.9	1	1	38.4	4.44	0.94	1	1				
67°F	1280	50.1	3.01	0.56	0.71	0.85	45.6	3.41	0.55	0.71	0.87	40.9	3.87	0.54	0.72	0.89	35.7	4.41	0.53	0.74	0.93				
	1600	53.2	3.03	0.6	0.77	0.93	48.4	3.43	0.6	0.79	0.95	43.4	3.9	0.6	0.81	0.98	38	4.43	0.6	0.84	1				
	1920	55.3	3.05	0.64	0.84	0.99	50.4	3.45	0.64	0.86	1	45.1	3.91	0.65	0.88	1	39.5	4.45	0.66	0.92	1				
71°F	1280	53.8	3.03	0.4	0.55	0.69	49.3	3.43	0.39	0.54	0.69	44.3	3.9	0.36	0.54	0.71	39.1	4.44	0.33	0.53	0.72				
	1600	57	3.06	0.43	0.59	0.75	52.1	3.46	0.41	0.59	0.77	47	3.93	0.39	0.6	0.79	41.5	4.47	0.37	0.6	0.82				
	1920	59.5	3.08	0.45	0.64	0.82	54.3	3.48	0.43	0.64	0.84	48.8	3.95	0.42	0.65	0.86	43	4.49	0.4	0.67	0.9				

4 TON HEATING STANDARD EFFICIENCY ZHA048S4

Indoor Coil Air Volume 70°F Dry Bulb cfm	Air Temperature Entering Outdoor Coil									
	65°F		45°F		25°F		5°F		-15°F	
	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input
	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW
1280	54.5	3.33	42.3	3.12	29.7	2.91	20	2.64	9.9	1.98
1600	55.2	3.12	43.1	2.91	30.5	2.7	20.8	2.43	10.7	1.77
1920	55.9	3	43.8	2.79	31.2	2.58	21.5	2.31	11.4	1.64

COOLING / HEATING RATINGS - ZHA

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

5 TON COOLING STANDARD EFFICIENCY ZHA060S4

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
				75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F
cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	
63°F	1600	58.4	3.7	0.73	0.88	1	53.3	4.17	0.74	0.9	1	47.8	4.72	0.75	0.93	1	42.1	5.37	0.77	0.96	1
	2000	62	3.72	0.79	0.95	1	56.8	4.2	0.81	0.98	1	51.1	4.75	0.83	1	1	45.7	5.42	0.86	1	1
	2400	65.2	3.74	0.85	1	1	60.2	4.22	0.87	1	1	54.7	4.79	0.9	1	1	49	5.46	0.94	1	1
67°F	1600	62.9	3.72	0.56	0.71	0.84	57.7	4.21	0.55	0.71	0.86	51.9	4.76	0.55	0.73	0.89	45.9	5.42	0.54	0.75	0.93
	2000	66.7	3.75	0.6	0.77	0.92	61.2	4.23	0.6	0.79	0.95	55.1	4.79	0.6	0.81	0.98	48.7	5.46	0.6	0.84	1
	2400	69.5	3.77	0.64	0.83	0.98	63.5	4.25	0.64	0.85	1	57.3	4.81	0.65	0.88	1	50.7	5.48	0.66	0.91	1
71°F	1600	67.4	3.75	0.41	0.55	0.68	62.1	4.24	0.39	0.55	0.69	56.1	4.8	0.38	0.54	0.71	50	5.47	0.35	0.54	0.73
	2000	71.3	3.78	0.43	0.59	0.75	65.7	4.27	0.42	0.59	0.77	59.5	4.84	0.4	0.6	0.79	52.8	5.5	0.39	0.6	0.82
	2400	74.4	3.8	0.45	0.63	0.81	68.3	4.29	0.44	0.64	0.83	61.7	4.86	0.43	0.65	0.86	54.9	5.54	0.42	0.67	0.89

5 TON HEATING STANDARD EFFICIENCY ZHA060S4

Indoor Coil Air Volume 70°F Dry Bulb cfm	Air Temperature Entering Outdoor Coil									
	65°F		45°F		25°F		5°F		-15°F	
	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input
1600	72.9	4.28	55.2	3.98	36.8	3.68	23.8	3.28	12.1	2.45
2000	73.7	4.04	56	3.74	37.6	3.44	24.6	3.04	13	2.21
2400	74.4	3.9	56.7	3.6	38.3	3.29	25.3	2.9	13.6	2.07

COOLING / HEATING RATINGS - ZHB

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

3 TON COOLING STANDARD EFFICIENCY ZHB036S4

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
				75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F
cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	
63°F	960	34.7	2.11	0.7	0.85	1	31.7	2.38	0.7	0.88	1	28.6	2.7	0.72	0.92	1	25.4	3.08	0.74	0.96	1
	1200	36.9	2.12	0.76	0.95	1	33.8	2.39	0.78	0.98	1	30.7	2.71	0.8	1	1	27.7	3.09	0.84	1	1
	1440	38.9	2.13	0.83	1	1	36	2.4	0.85	1	1	33	2.73	0.89	1	1	29.7	3.09	0.93	1	1
67°F	960	37.3	2.12	0.54	0.68	0.82	34.3	2.4	0.53	0.68	0.84	31.1	2.71	0.53	0.7	0.87	27.7	3.08	0.53	0.72	0.92
	1200	39.6	2.13	0.58	0.74	0.91	36.3	2.4	0.58	0.76	0.94	32.9	2.73	0.58	0.78	0.98	29.4	3.09	0.59	0.81	1
	1440	41.2	2.14	0.61	0.8	0.99	37.8	2.41	0.62	0.83	1	34.3	2.73	0.63	0.86	1	30.5	3.09	0.64	0.91	1
71°F	960	40	2.13	0.39	0.53	0.66	36.8	2.41	0.38	0.52	0.66	33.6	2.72	0.37	0.52	0.68	30	3.09	0.35	0.52	0.7
	1200	42.4	2.15	0.41	0.57	0.72	39	2.42	0.4	0.57	0.73	35.5	2.73	0.39	0.58	0.75	31.8	3.1	0.38	0.58	0.79
	1440	44	2.16	0.43	0.61	0.78	40.5	2.43	0.42	0.62	0.81	36.9	2.74	0.42	0.62	0.84	33	3.11	0.41	0.64	0.88

3 TON HEATING STANDARD EFFICIENCY ZHB036S4

Indoor Coil Air Volume 70°F Dry Bulb cfm	Air Temperature Entering Outdoor Coil									
	65°F		45°F		25°F		5°F		-15°F	
	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input
	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW
960	41.2	2.49	32	2.38	22.6	2.27	15.1	2.07	7.5	1.54
1200	41.9	2.32	32.7	2.22	23.3	2.11	15.9	1.91	8.2	1.38
1440	42.5	2.23	33.3	2.13	23.8	2.02	16.4	1.82	8.7	1.29

4 TON COOLING STANDARD EFFICIENCY ZHB048S4

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
	cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F
63°F	1280	45.5	2.92	0.69	0.85	1	41.9	3.32	0.7	0.87	1	38.2	3.78	0.71	0.9	1	34.1	4.32	0.73	0.95	1
	1600	48.4	2.93	0.75	0.94	1	44.7	3.32	0.77	0.97	1	40.9	3.78	0.79	1	1	37	4.32	0.82	1	1
	1920	50.9	2.93	0.81	1	1	47.4	3.35	0.84	1	1	43.7	3.81	0.87	1	1	39.7	4.32	0.91	1	1
67°F	1280	49	2.93	0.53	0.67	0.81	45.3	3.33	0.53	0.68	0.83	41.3	3.78	0.52	0.69	0.86	37.1	4.33	0.53	0.71	0.9
	1600	51.7	2.93	0.57	0.73	0.9	47.8	3.35	0.57	0.74	0.93	43.7	3.79	0.57	0.76	0.97	39.2	4.33	0.58	0.79	1
	1920	53.8	2.94	0.6	0.79	0.98	49.7	3.35	0.61	0.81	1	45.4	3.8	0.62	0.84	1	40.8	4.33	0.63	0.88	1
71°F	1280	52.3	2.93	0.39	0.52	0.65	48.5	3.35	0.38	0.52	0.66	44.5	3.8	0.37	0.52	0.67	40.1	4.35	0.35	0.52	0.69
	1600	55.3	2.94	0.41	0.56	0.71	51.3	3.35	0.4	0.56	0.72	47	3.82	0.39	0.57	0.74	42.3	4.35	0.38	0.58	0.77
	1920	57.4	2.95	0.43	0.6	0.77	53.1	3.37	0.42	0.6	0.79	48.8	3.84	0.41	0.62	0.82	43.8	4.35	0.41	0.63	0.86

4 TON HEATING STANDARD EFFICIENCY ZHB048S4

Indoor Coil Air Volume 70°F Dry Bulb cfm	Air Temperature Entering Outdoor Coil									
	65°F		45°F		25°F		5°F		-15°F	
	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input
	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW
1280	50.8	3.58	43.4	3.18	36.2	2.77	25.6	2.42	12.2	1.85
1600	51.8	3.35	44.3	2.95	37.1	2.55	26.5	2.19	13.1	1.62
1920	52.5	3.21	45	2.82	37.9	2.41	27.3	2.06	13.9	1.48

COOLING / HEATING RATINGS - ZHB

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

5 TON COOLING STANDARD EFFICIENCY ZHB060S4

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	
63°F	1600	56.7	3.61	0.68	0.86	1	50.2	4.08	0.68	0.87	1	43.5	4.65	0.68	0.9	1	36.6	5.32	0.68	0.94	1
	2000	61.2	3.63	0.75	0.95	1	54.6	4.11	0.76	0.98	1	47.7	4.68	0.78	1	1	41.2	5.36	0.8	1	1
	2400	65.3	3.66	0.82	1	1	58.9	4.14	0.84	1	1	52.4	4.7	0.86	1	1	45.4	5.38	0.9	1	1
67°F	1600	62.3	3.64	0.51	0.67	0.82	55.6	4.12	0.49	0.66	0.84	48.7	4.69	0.46	0.66	0.86	41.3	5.34	0.43	0.67	0.9
	2000	66.8	3.66	0.56	0.74	0.91	59.7	4.14	0.54	0.74	0.94	52.4	4.71	0.53	0.76	0.97	44.7	5.38	0.51	0.78	1
	2400	69.9	3.68	0.6	0.8	0.99	62.7	4.16	0.59	0.82	1	55.1	4.72	0.59	0.84	1	47.1	5.39	0.58	0.88	1
71°F	1600	67.9	3.66	0.36	0.51	0.65	61.2	4.15	0.33	0.49	0.65	53.9	4.71	0.28	0.47	0.65	46.5	5.4	0.24	0.45	0.65
	2000	72.6	3.69	0.39	0.56	0.72	65.4	4.18	0.36	0.55	0.73	57.8	4.74	0.33	0.54	0.74	49.8	5.41	0.28	0.52	0.76
	2400	75.9	3.71	0.41	0.6	0.78	68.4	4.19	0.39	0.6	0.8	60.5	4.76	0.36	0.59	0.82	52.2	5.44	0.32	0.6	0.86

5 TON HEATING STANDARD EFFICIENCY ZHB060S4

Indoor Coil Air Volume 70°F Dry Bulb cfm	Air Temperature Entering Outdoor Coil									
	65°F		45°F		25°F		5°F		-15°F	
	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input
1600	61.7	3.84	52.8	3.65	44.4	3.46	31.7	3.14	15.1	2.34
2000	62.7	3.59	53.9	3.4	45.5	3.21	32.8	2.9	16.2	2.1
2400	63.7	3.45	54.8	3.26	46.4	3.07	33.7	2.75	17.1	1.95

BLOWER DATA - BELT DRIVE - ZHA036

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.

FOR ALL UNITS ADD:

1 - Any factory installed options air resistance (heat section, economizer, wet coil, etc.).

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

See page 22 for blower motors and drives and wet coil and options/accessory air resistance data.

DOWNFLOW

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished				Kit ZA01											
900	562	0.16	629	0.18	699	0.19	771	0.2	840	0.22	904	0.24	962	0.26	1015	0.29
1000	586	0.18	654	0.2	725	0.21	796	0.23	864	0.25	927	0.27	983	0.3	1034	0.33
1100	612	0.2	681	0.22	752	0.24	823	0.26	890	0.28	950	0.31	1004	0.34	1054	0.37
1200	641	0.23	711	0.25	783	0.27	852	0.29	917	0.32	975	0.35	1027	0.39	1074	0.42
1300	673	0.25	744	0.28	815	0.3	882	0.33	944	0.36	1000	0.4	1050	0.44	1096	0.48
1400	709	0.29	779	0.32	849	0.34	914	0.37	973	0.41	1026	0.45	1074	0.49	1118	0.53
1500	747	0.33	816	0.36	883	0.39	945	0.42	1001	0.46	1052	0.51	1098	0.55	1141	0.59

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZA04															
900	1065	0.32	1112	0.35	1158	0.38	1202	0.41	1243	0.44	1284	0.48	1323	0.52	1364	0.55
1000	1082	0.36	1128	0.39	1173	0.42	1216	0.45	1257	0.49	1297	0.53	1336	0.57	1375	0.6
1100	1100	0.4	1145	0.44	1189	0.47	1231	0.51	1272	0.54	1311	0.58	1349	0.62	1388	0.66
1200	1119	0.45	1163	0.49	1206	0.52	1247	0.56	1287	0.6	1326	0.64	1364	0.68	1402	0.72
1300	1139	0.51	1182	0.55	1224	0.58	1265	0.62	1304	0.66	1342	0.71	1379	0.75	1416	0.79
1400	1160	0.57	1202	0.61	1243	0.65	1283	0.69	1322	0.73	1359	0.78	1396	0.82	1432	0.87
1500	1182	0.64	1223	0.68	1263	0.72	1303	0.76	1341	0.81	1378	0.85	1414	0.9	1449	0.94

HORIZONTAL

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished				Kit ZA01											
900	580	0.14	649	0.17	721	0.19	794	0.22	868	0.24	938	0.27	998	0.3	1045	0.33
1000	612	0.17	681	0.19	752	0.22	825	0.25	897	0.27	963	0.3	1017	0.33	1061	0.37
1100	647	0.2	717	0.23	788	0.26	858	0.28	926	0.31	986	0.34	1036	0.38	1077	0.41
1200	687	0.23	757	0.26	826	0.29	893	0.32	955	0.35	1008	0.39	1054	0.42	1095	0.46
1300	730	0.27	798	0.3	864	0.33	926	0.37	982	0.4	1030	0.44	1073	0.47	1116	0.51
1400	775	0.31	840	0.34	902	0.38	959	0.42	1009	0.46	1054	0.5	1096	0.53	1140	0.56
1500	820	0.36	881	0.4	939	0.44	993	0.49	1039	0.53	1082	0.56	1124	0.59	1168	0.62

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZA04															
900	1091	0.36	1140	0.38	1188	0.4	1232	0.43	1272	0.46	1309	0.49	1346	0.53	1383	0.57
1000	1105	0.4	1154	0.42	1201	0.45	1245	0.47	1284	0.5	1321	0.54	1357	0.58	1394	0.62
1100	1121	0.44	1169	0.47	1216	0.49	1259	0.52	1298	0.56	1335	0.6	1370	0.64	1406	0.69
1200	1139	0.49	1187	0.52	1234	0.54	1276	0.58	1314	0.62	1350	0.66	1385	0.71	1421	0.75
1300	1161	0.54	1208	0.57	1254	0.6	1295	0.64	1332	0.69	1366	0.73	1401	0.78	1436	0.83
1400	1185	0.59	1232	0.63	1276	0.67	1315	0.71	1351	0.76	1384	0.81	1419	0.86	1454	0.9
1500	1212	0.66	1257	0.7	1299	0.74	1337	0.79	1371	0.84	1404	0.89	1438	0.94	1473	0.99

BLOWER DATA - BELT DRIVE - ZHA048

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.

FOR ALL UNITS ADD:

1 - Any factory installed options air resistance (heat section, economizer, wet coil, etc.).

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

See page 22 for blower motors and drives and wet coil and options/accessory air resistance data.

DOWNFLOW

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished						Kit ZA02									
1200	641	0.23	711	0.25	783	0.27	852	0.29	917	0.32	975	0.35	1027	0.39	1074	0.42
1300	673	0.25	744	0.28	815	0.30	882	0.33	944	0.36	1000	0.40	1050	0.44	1096	0.48
1400	709	0.29	779	0.32	849	0.34	914	0.37	973	0.41	1026	0.45	1074	0.49	1118	0.53
1500	747	0.33	816	0.36	883	0.39	945	0.42	1001	0.46	1052	0.51	1098	0.55	1141	0.59
1600	787	0.38	854	0.41	918	0.44	976	0.48	1030	0.52	1078	0.56	1123	0.61	1164	0.66
1700	827	0.43	892	0.46	952	0.49	1007	0.53	1058	0.58	1105	0.63	1148	0.68	1189	0.73
1800	868	0.48	929	0.52	986	0.55	1038	0.59	1087	0.64	1132	0.69	1174	0.75	1214	0.80
1900	907	0.54	966	0.58	1019	0.62	1069	0.66	1116	0.71	1160	0.77	1200	0.82	1240	0.88
2000	946	0.60	1001	0.65	1053	0.69	1101	0.74	1146	0.79	1188	0.85	1228	0.91	1267	0.98

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZA02						Kit ZA05									
1200	1119	0.45	1163	0.49	1206	0.52	1247	0.56	1287	0.60	1326	0.64	1364	0.68	1402	0.72
1300	1139	0.51	1182	0.55	1224	0.58	1265	0.62	1304	0.66	1342	0.71	1379	0.75	1416	0.79
1400	1160	0.57	1202	0.61	1243	0.65	1283	0.69	1322	0.73	1359	0.78	1396	0.82	1432	0.87
1500	1182	0.64	1223	0.68	1263	0.72	1303	0.76	1341	0.81	1378	0.85	1414	0.90	1449	0.94
1600	1205	0.70	1245	0.75	1284	0.79	1323	0.84	1361	0.88	1397	0.93	1432	0.98	1467	1.03
1700	1228	0.78	1268	0.82	1307	0.87	1345	0.92	1382	0.97	1417	1.02	1452	1.07	1486	1.11
1800	1253	0.85	1292	0.91	1331	0.96	1368	1.01	1404	1.06	1439	1.11	1473	1.16	1506	1.21
1900	1279	0.94	1317	1.00	1355	1.05	1392	1.10	1427	1.16	1461	1.21	1494	1.26	1527	1.31
2000	1305	1.04	1343	1.10	1380	1.15	1416	1.21	1450	1.26	1484	1.32	1516	1.37	1549	1.42

HORIZONTAL

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished						Kit ZA02									
1200	687	0.23	757	0.26	826	0.29	893	0.32	955	0.35	1008	0.39	1054	0.42	1095	0.46
1300	730	0.27	798	0.30	864	0.33	926	0.37	982	0.40	1030	0.44	1073	0.47	1116	0.51
1400	775	0.31	840	0.34	902	0.38	959	0.42	1009	0.46	1054	0.50	1096	0.53	1140	0.56
1500	820	0.36	881	0.40	939	0.44	993	0.49	1039	0.53	1082	0.56	1124	0.59	1168	0.62
1600	864	0.42	921	0.46	976	0.51	1027	0.56	1072	0.60	1113	0.63	1155	0.66	1198	0.69
1700	907	0.48	961	0.53	1013	0.58	1061	0.63	1105	0.67	1146	0.70	1187	0.73	1230	0.77
1800	948	0.56	999	0.61	1049	0.66	1096	0.71	1139	0.75	1180	0.78	1221	0.82	1262	0.86
1900	987	0.64	1037	0.69	1086	0.74	1132	0.79	1174	0.83	1214	0.86	1255	0.90	1295	0.95
2000	1028	0.73	1076	0.78	1123	0.83	1168	0.87	1210	0.91	1250	0.96	1289	1.00	1328	1.06

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZA02						Kit ZA05									
1200	1139	0.49	1187	0.52	1234	0.54	1276	0.58	1314	0.62	1350	0.66	1385	0.71	1421	0.75
1300	1161	0.54	1208	0.57	1254	0.60	1295	0.64	1332	0.69	1366	0.73	1401	0.78	1436	0.83
1400	1185	0.59	1232	0.63	1276	0.67	1315	0.71	1351	0.76	1384	0.81	1419	0.86	1454	0.90
1500	1212	0.66	1257	0.70	1299	0.74	1337	0.79	1371	0.84	1404	0.89	1438	0.94	1473	0.99
1600	1242	0.73	1284	0.77	1324	0.82	1360	0.88	1394	0.93	1426	0.99	1460	1.04	1495	1.08
1700	1272	0.81	1312	0.86	1350	0.92	1385	0.98	1418	1.04	1451	1.09	1485	1.14	1519	1.19
1800	1302	0.90	1341	0.96	1377	1.02	1411	1.08	1444	1.15	1477	1.20	1510	1.25	1544	1.30
1900	1334	1.01	1371	1.07	1406	1.13	1439	1.20	1471	1.26	1504	1.32	1537	1.37	1571	1.41
2000	1365	1.12	1401	1.19	1435	1.25	1468	1.32	1500	1.38	1532	1.44	1565	1.49	1598	1.53

BLOWER DATA - BELT DRIVE - ZHA060

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.

FOR ALL UNITS ADD:

1 - Any factory installed options air resistance (heat section, economizer, wet coil, etc.).

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

See page 22 for blower motors and drives and wet coil and options/accessory air resistance data.

DOWNFLOW

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished						Kit ZA03									
1600	764	0.35	822	0.39	880	0.42	936	0.46	991	0.51	1042	0.55	1091	0.60	1136	0.64
1700	801	0.40	857	0.44	913	0.48	968	0.52	1020	0.57	1070	0.61	1117	0.66	1162	0.71
1800	838	0.46	893	0.50	947	0.54	1000	0.58	1051	0.63	1099	0.68	1145	0.73	1188	0.78
1900	876	0.52	929	0.56	982	0.61	1033	0.65	1082	0.70	1129	0.75	1173	0.80	1215	0.85
2000	914	0.59	966	0.63	1017	0.68	1067	0.72	1115	0.77	1160	0.83	1203	0.88	1244	0.94
2100	953	0.66	1004	0.71	1054	0.76	1102	0.81	1148	0.86	1192	0.92	1233	0.98	1273	1.04
2200	993	0.74	1042	0.79	1090	0.85	1137	0.90	1181	0.96	1224	1.02	1264	1.09	1303	1.15
2300	1033	0.83	1081	0.89	1128	0.94	1173	1.01	1216	1.07	1257	1.14	1296	1.20	1334	1.27
2400	1074	0.93	1120	0.99	1166	1.05	1209	1.12	1251	1.19	1291	1.26	1329	1.33	1366	1.41

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZA03												Kit ZA06			
1600	1180	0.68	1222	0.72	1263	0.76	1303	0.80	1341	0.85	1378	0.90	1414	0.94	1449	0.99
1700	1204	0.75	1245	0.79	1285	0.84	1325	0.88	1362	0.93	1398	0.98	1434	1.03	1468	1.08
1800	1229	0.83	1270	0.87	1309	0.92	1347	0.97	1384	1.02	1420	1.07	1454	1.12	1488	1.17
1900	1256	0.91	1296	0.96	1334	1.01	1371	1.07	1407	1.12	1442	1.17	1476	1.23	1509	1.28
2000	1284	1.00	1322	1.06	1360	1.11	1396	1.17	1431	1.23	1465	1.28	1498	1.33	1531	1.38
2100	1312	1.10	1350	1.16	1386	1.22	1422	1.28	1456	1.34	1489	1.40	1521	1.45	1554	1.50
2200	1341	1.22	1378	1.28	1414	1.34	1448	1.41	1481	1.46	1513	1.52	1546	1.57	1578	1.62
2300	1371	1.34	1407	1.41	1442	1.47	1475	1.54	1507	1.59	1539	1.65	1571	1.70	1602	1.75
2400	1402	1.48	1436	1.55	1470	1.61	1503	1.67	1535	1.73	1566	1.79	1597	1.84	1628	1.89

HORIZONTAL

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished						Kit ZA03									
1600	783	0.38	844	0.41	902	0.44	957	0.48	1008	0.52	1056	0.56	1100	0.60	1142	0.64
1700	825	0.44	882	0.47	938	0.50	989	0.54	1038	0.57	1083	0.62	1126	0.66	1166	0.71
1800	866	0.50	921	0.53	973	0.56	1021	0.60	1067	0.64	1111	0.68	1152	0.73	1191	0.78
1900	907	0.56	959	0.59	1008	0.63	1054	0.66	1098	0.71	1139	0.75	1179	0.80	1217	0.86
2000	948	0.63	996	0.66	1042	0.70	1086	0.74	1128	0.78	1168	0.83	1207	0.89	1244	0.94
2100	987	0.70	1033	0.74	1077	0.78	1119	0.82	1159	0.87	1198	0.93	1235	0.99	1272	1.05
2200	1026	0.78	1070	0.82	1112	0.87	1152	0.92	1191	0.98	1228	1.03	1265	1.10	1301	1.16
2300	1064	0.88	1106	0.92	1147	0.97	1186	1.03	1223	1.09	1260	1.15	1295	1.22	1331	1.28
2400	1102	0.98	1143	1.03	1182	1.08	1220	1.15	1256	1.21	1292	1.28	1327	1.35	1362	1.42

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZA03												Kit ZA06			
1600	1183	0.68	1223	0.72	1263	0.76	1302	0.81	1340	0.86	1377	0.91	1413	0.95	1448	1.00
1700	1205	0.75	1245	0.79	1284	0.84	1322	0.89	1360	0.94	1396	0.99	1431	1.04	1465	1.09
1800	1230	0.83	1268	0.87	1306	0.92	1344	0.98	1380	1.03	1416	1.08	1450	1.13	1483	1.19
1900	1255	0.91	1292	0.96	1330	1.02	1367	1.07	1402	1.13	1437	1.18	1470	1.24	1503	1.29
2000	1281	1.00	1318	1.06	1355	1.12	1391	1.18	1425	1.23	1459	1.29	1492	1.35	1524	1.40
2100	1308	1.11	1345	1.17	1381	1.23	1416	1.29	1450	1.35	1482	1.41	1514	1.46	1546	1.52
2200	1337	1.23	1372	1.29	1408	1.35	1442	1.42	1475	1.47	1507	1.53	1538	1.59	1569	1.64
2300	1366	1.35	1401	1.42	1435	1.49	1469	1.55	1501	1.61	1532	1.67	1563	1.72	1594	1.77
2400	1396	1.49	1431	1.56	1464	1.63	1496	1.69	1528	1.75	1559	1.81	1589	1.86	1619	1.91

BLOWER DATA - BELT DRIVE - ZHBO36

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.

FOR ALL UNITS ADD:

1 - Any factory installed options air resistance (heat section, economizer, wet coil, etc.).

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

See page 22 for blower motors and drives and wet coil and options/accessory air resistance data.

DOWNFLOW

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished				Kit ZA01											
900	562	0.11	621	0.13	685	0.16	752	0.18	818	0.21	883	0.24	944	0.27	1001	0.30
1000	584	0.13	644	0.16	707	0.18	773	0.21	838	0.24	901	0.27	960	0.3	1015	0.33
1100	609	0.16	669	0.18	732	0.21	796	0.24	860	0.27	921	0.30	978	0.34	1031	0.37
1200	635	0.19	696	0.21	758	0.24	821	0.27	883	0.31	942	0.34	997	0.38	1049	0.42
1300	664	0.22	725	0.25	786	0.28	848	0.31	908	0.35	965	0.39	1018	0.43	1068	0.47
1400	696	0.26	756	0.29	816	0.32	876	0.36	935	0.40	989	0.44	1041	0.48	1089	0.52
1500	729	0.30	788	0.33	848	0.37	906	0.41	962	0.45	1015	0.50	1065	0.54	1112	0.58

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZA04															
900	1053	0.32	1103	0.35	1149	0.38	1193	0.41	1234	0.43	1274	0.47	1312	0.50	1351	0.53
1000	1066	0.36	1114	0.39	1160	0.42	1204	0.45	1245	0.48	1284	0.51	1322	0.54	1361	0.58
1100	1081	0.40	1128	0.43	1173	0.46	1216	0.49	1257	0.53	1296	0.56	1334	0.60	1372	0.63
1200	1097	0.45	1144	0.48	1188	0.51	1231	0.54	1271	0.58	1310	0.62	1347	0.66	1385	0.69
1300	1115	0.50	1161	0.53	1204	0.56	1246	0.60	1286	0.64	1325	0.68	1362	0.72	1399	0.76
1400	1135	0.56	1179	0.59	1222	0.62	1264	0.66	1303	0.70	1341	0.75	1378	0.79	1415	0.83
1500	1157	0.62	1200	0.65	1242	0.69	1282	0.73	1321	0.77	1359	0.82	1396	0.86	1431	0.91

HORIZONTAL

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished				Kit ZA01											
900	560	0.16	624	0.18	692	0.20	761	0.21	830	0.23	896	0.25	956	0.27	1012	0.29
1000	583	0.18	647	0.20	715	0.22	783	0.24	850	0.25	914	0.27	972	0.30	1025	0.33
1100	609	0.20	673	0.22	740	0.24	808	0.26	873	0.28	934	0.31	990	0.34	1041	0.37
1200	637	0.23	702	0.25	769	0.27	835	0.29	898	0.32	956	0.35	1009	0.38	1058	0.41
1300	669	0.26	734	0.28	800	0.30	863	0.33	924	0.36	979	0.39	1030	0.43	1077	0.46
1400	704	0.29	768	0.32	832	0.35	894	0.37	951	0.41	1004	0.44	1052	0.48	1097	0.52
1500	742	0.33	805	0.36	867	0.39	925	0.42	980	0.46	1030	0.50	1076	0.54	1119	0.58

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZA04															
900	1064	0.32	1114	0.35	1162	0.38	1208	0.41	1251	0.45	1293	0.49	1333	0.52	1373	0.56
1000	1076	0.36	1124	0.39	1170	0.42	1216	0.46	1259	0.49	1300	0.53	1340	0.57	1379	0.61
1100	1089	0.40	1136	0.43	1181	0.46	1225	0.50	1268	0.54	1308	0.58	1347	0.62	1386	0.66
1200	1104	0.45	1150	0.48	1194	0.51	1237	0.55	1279	0.59	1319	0.63	1357	0.67	1394	0.71
1300	1121	0.5	1165	0.53	1209	0.57	1251	0.61	1292	0.65	1331	0.69	1368	0.73	1405	0.78
1400	1140	0.56	1183	0.59	1225	0.63	1266	0.67	1306	0.71	1345	0.76	1382	0.8	1417	0.85
1500	1161	0.62	1202	0.65	1243	0.69	1284	0.73	1323	0.78	1360	0.83	1396	0.87	1432	0.92

BLOWER DATA - BELT DRIVE - ZHBO48

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.

FOR ALL UNITS ADD:

1 - Any factory installed options air resistance (heat section, economizer, wet coil, etc.).

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

See page 22 for blower motors and drives and wet coil and options/accessory air resistance data.

DOWNFLOW

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished						Kit ZA02									
1200	620	0.23	681	0.29	744	0.34	809	0.39	875	0.43	941	0.47	1004	0.51	1060	0.54
1300	652	0.28	713	0.34	775	0.39	839	0.44	903	0.48	967	0.51	1025	0.55	1078	0.59
1400	687	0.33	747	0.39	809	0.44	871	0.49	934	0.53	994	0.57	1048	0.61	1098	0.64
1500	724	0.40	784	0.45	844	0.50	905	0.54	965	0.59	1021	0.62	1071	0.66	1118	0.70
1600	764	0.46	823	0.51	882	0.56	940	0.60	997	0.65	1048	0.69	1094	0.72	1140	0.75
1700	806	0.53	863	0.58	919	0.62	975	0.67	1028	0.71	1075	0.75	1119	0.78	1164	0.81
1800	849	0.60	903	0.65	957	0.69	1010	0.74	1058	0.78	1102	0.82	1145	0.85	1189	0.88
1900	892	0.68	944	0.72	995	0.77	1045	0.82	1089	0.86	1131	0.89	1174	0.92	1217	0.95
2000	935	0.76	984	0.81	1033	0.86	1079	0.91	1122	0.95	1163	0.97	1204	1.00	1247	1.03

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZA02						Kit ZA05									
1200	1111	0.58	1156	0.60	1199	0.62	1241	0.63	1284	0.65	1326	0.67	1367	0.71	1408	0.74
1300	1127	0.62	1172	0.65	1214	0.66	1256	0.68	1299	0.70	1341	0.73	1381	0.77	1421	0.81
1400	1145	0.68	1189	0.70	1231	0.72	1274	0.74	1316	0.76	1357	0.79	1397	0.83	1436	0.88
1500	1164	0.73	1208	0.75	1251	0.78	1293	0.80	1334	0.83	1374	0.86	1413	0.91	1451	0.95
1600	1185	0.79	1229	0.81	1271	0.84	1313	0.86	1354	0.90	1393	0.94	1431	0.98	1468	1.03
1700	1208	0.84	1252	0.87	1294	0.90	1335	0.94	1375	0.98	1413	1.02	1449	1.07	1485	1.12
1800	1233	0.91	1276	0.94	1318	0.98	1358	1.02	1397	1.06	1434	1.11	1469	1.16	1504	1.21
1900	1261	0.98	1303	1.02	1343	1.06	1382	1.11	1420	1.16	1455	1.21	1490	1.26	1525	1.31
2000	1289	1.07	1330	1.11	1370	1.16	1407	1.21	1444	1.27	1478	1.32	1513	1.37	1547	1.42

HORIZONTAL

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Field Furnished						Kit ZA02									
1200	614	0.21	681	0.25	752	0.30	821	0.34	888	0.39	950	0.43	1006	0.46	1057	0.49
1300	644	0.24	712	0.29	782	0.34	850	0.39	915	0.43	974	0.47	1027	0.51	1076	0.53
1400	677	0.29	746	0.34	814	0.39	880	0.44	942	0.48	998	0.52	1049	0.55	1097	0.58
1500	714	0.34	781	0.40	848	0.45	911	0.49	970	0.53	1023	0.57	1072	0.60	1119	0.63
1600	752	0.40	818	0.45	882	0.50	943	0.55	999	0.59	1050	0.62	1097	0.66	1142	0.69
1700	792	0.46	855	0.52	917	0.56	975	0.61	1028	0.64	1077	0.68	1123	0.72	1166	0.75
1800	832	0.53	894	0.58	952	0.63	1007	0.67	1058	0.70	1105	0.74	1149	0.78	1192	0.82
1900	873	0.60	932	0.65	988	0.69	1040	0.73	1088	0.77	1134	0.81	1177	0.85	1219	0.90
2000	914	0.67	970	0.72	1023	0.76	1073	0.80	1120	0.85	1163	0.89	1205	0.94	1246	0.99

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZA02						Kit ZA05									
1200	1105	0.51	1152	0.53	1197	0.55	1240	0.58	1280	0.61	1320	0.64	1358	0.68	1395	0.72
1300	1123	0.55	1169	0.57	1213	0.60	1255	0.63	1295	0.67	1334	0.70	1372	0.74	1409	0.79
1400	1142	0.60	1187	0.63	1230	0.66	1272	0.69	1312	0.73	1350	0.77	1388	0.82	1424	0.86
1500	1163	0.66	1207	0.69	1249	0.72	1290	0.76	1330	0.80	1368	0.85	1405	0.90	1441	0.94
1600	1185	0.72	1228	0.75	1270	0.79	1310	0.83	1349	0.88	1387	0.93	1423	0.98	1459	1.03
1700	1209	0.78	1251	0.82	1292	0.87	1331	0.92	1370	0.97	1407	1.02	1443	1.07	1478	1.12
1800	1234	0.86	1275	0.91	1315	0.96	1354	1.01	1391	1.06	1428	1.11	1463	1.17	1498	1.22
1900	1260	0.95	1300	1.00	1340	1.05	1377	1.11	1414	1.16	1450	1.22	1485	1.27	1519	1.32
2000	1287	1.04	1326	1.10	1365	1.16	1402	1.21	1437	1.27	1472	1.33	1507	1.38	1541	1.43

BLOWER DATA - BELT DRIVE - ZHB060

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.

FOR ALL UNITS ADD:

1 - Any factory installed options air resistance (heat section, economizer, wet coil, etc.).

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

See page 22 for blower motors and drives and wet coil and options/accessory air resistance data.

DOWNFLOW

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZAA01								Kit ZAA02							
1600	522	0.27	552	0.32	585	0.37	619	0.43	656	0.48	693	0.53	732	0.59	771	0.64
1700	539	0.32	570	0.37	603	0.43	638	0.48	674	0.53	711	0.59	749	0.64	787	0.69
1800	558	0.38	589	0.43	623	0.48	658	0.54	694	0.59	730	0.64	767	0.70	803	0.75
1900	578	0.44	610	0.49	643	0.54	678	0.60	714	0.65	749	0.70	785	0.76	819	0.82
2000	600	0.50	632	0.56	665	0.61	699	0.66	734	0.71	769	0.77	803	0.83	837	0.90
2100	623	0.57	655	0.62	688	0.68	721	0.73	755	0.79	789	0.84	822	0.91	854	0.98
2200	647	0.65	678	0.70	711	0.75	743	0.81	776	0.86	809	0.93	841	1.00	872	1.06
2300	671	0.73	702	0.78	734	0.83	766	0.89	798	0.95	829	1.02	860	1.09	890	1.16
2400	696	0.81	726	0.87	757	0.92	788	0.98	819	1.04	850	1.11	880	1.19	909	1.26

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZAA02								Kit ZAA03							
1600	809	0.69	844	0.74	877	0.80	908	0.85	936	0.91	963	0.97	989	1.02	1014	1.08
1700	823	0.75	857	0.80	889	0.86	919	0.92	947	0.97	973	1.03	999	1.09	1024	1.14
1800	838	0.81	870	0.87	901	0.92	931	0.98	958	1.04	984	1.10	1009	1.16	1034	1.22
1900	853	0.88	885	0.94	915	0.99	944	1.05	971	1.11	996	1.17	1021	1.23	1045	1.29
2000	869	0.96	899	1.01	929	1.07	957	1.13	984	1.19	1009	1.25	1033	1.31	1058	1.38
2100	885	1.04	915	1.10	944	1.15	971	1.22	997	1.28	1022	1.34	1046	1.40	1070	1.46
2200	902	1.13	931	1.19	959	1.24	986	1.31	1012	1.37	1036	1.43	1060	1.50	1084	1.56
2300	920	1.23	948	1.29	975	1.35	1001	1.41	1027	1.47	1051	1.53	1075	1.60	1098	1.66
2400	938	1.33	965	1.39	992	1.45	1017	1.52	1042	1.58	1066	1.64	1090	1.70	1113	1.77

HORIZONTAL

Air Volume cfm	External Static - in. w.g.															
	0.10		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZAA01								Kit ZAA02							
1600	525	0.30	561	0.34	597	0.39	635	0.43	673	0.47	711	0.51	748	0.56	784	0.61
1700	543	0.34	578	0.39	615	0.43	653	0.48	691	0.52	728	0.57	765	0.62	800	0.67
1800	561	0.39	597	0.44	635	0.49	672	0.53	710	0.58	746	0.63	782	0.68	816	0.73
1900	581	0.44	618	0.49	655	0.54	692	0.59	729	0.64	765	0.69	800	0.75	833	0.80
2000	602	0.50	639	0.55	676	0.61	713	0.66	749	0.71	784	0.76	818	0.82	850	0.88
2100	625	0.57	661	0.62	698	0.67	735	0.73	770	0.78	804	0.84	837	0.90	868	0.96
2200	648	0.64	685	0.69	721	0.75	757	0.80	791	0.86	824	0.92	856	0.98	886	1.05
2300	673	0.71	709	0.77	745	0.83	780	0.88	813	0.94	845	1.01	876	1.08	905	1.15
2400	699	0.79	734	0.85	769	0.91	803	0.97	835	1.04	866	1.11	896	1.18	924	1.25

Air Volume cfm	External Static - in. w.g.															
	0.90		1.00		1.10		1.20		1.30		1.40		1.50		1.60	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
	Kit ZAA02								Kit ZAA03							
1600	819	0.66	851	0.72	883	0.77	913	0.83	943	0.89	971	0.95	998	1.01	1024	1.07
1700	833	0.72	865	0.78	896	0.84	926	0.90	954	0.96	982	1.02	1009	1.08	1034	1.14
1800	848	0.79	880	0.85	910	0.92	939	0.98	967	1.04	994	1.10	1020	1.16	1045	1.23
1900	864	0.87	895	0.93	924	0.99	953	1.06	980	1.12	1007	1.18	1032	1.25	1056	1.31
2000	881	0.95	911	1.01	940	1.08	967	1.14	994	1.21	1020	1.27	1044	1.34	1068	1.40
2100	898	1.03	927	1.10	955	1.17	982	1.23	1008	1.30	1033	1.37	1057	1.43	1080	1.50
2200	916	1.12	944	1.19	971	1.26	998	1.33	1023	1.40	1047	1.47	1071	1.54	1093	1.60
2300	934	1.22	961	1.29	988	1.36	1014	1.43	1038	1.50	1062	1.58	1085	1.65	1107	1.71
2400	952	1.32	979	1.40	1005	1.47	1030	1.54	1054	1.62	1077	1.69	1099	1.76	1121	1.83

BLOWER DATA

DRIVE KIT SPECIFICATIONS

Model No.	Blower Motor Choice (HP)				Drive Kit No.	RPM Range
	Nominal	Maximum	Nominal	Maximum		
ZHA/ZHB036	¹ 1	¹ 1.15	1.5	1.7	ZA01	678 - 1035
					ZA04	964 - 1471
ZHA/ZHB048	¹ 1	¹ 1.15	1.5	1.7	ZA02	803 - 1226
					² ZA05	1098 - 1490
ZHA060	¹ 1	¹ 1.15	1.5	1.7	ZA03	906-1383
					² ZA06	1262-1634
ZHB060	¹ 1	¹ 1.15	1.5	1.7	ZAA01	522 - 784
					ZAA02	632 - 875
					² ZAA03	798 - 1105

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

¹ 1 hp blower motor is not available for 208/230V-1ph applications.

² 1.5 hp motor is required with ZA05, ZA06 and ZAA03 drive kits.

POWER EXHAUST FAN PERFORMANCE

Return Air System Static Pressure - in. w.g.	Air Volume Exhausted cfm
0.00	1865
0.05	1785
0.10	1710
0.15	1630
0.20	1545
0.25	1450
0.30	1350
0.35	1240

OPTIONS / ACCESSORIES AIR RESISTANCE - in. w.g.

Air Volume cfm	Wet Indoor Coil			Electric Heat	Economizer	
	ZHA036, ZHA048	ZHA060, ZHB036	ZHB048, ZHB060		Downflow	Horizontal
900	0.01	0.01	- - -	0.05	0.03	0.04
1000	0.02	0.01	- - -	0.06	0.03	0.05
1100	0.02	0.02	- - -	0.08	0.04	0.05
1200	0.02	0.02	0.01	0.09	0.05	0.06
1300	0.03	0.02	0.02	0.12	0.05	0.07
1400	0.03	0.03	0.02	0.17	0.06	0.08
1500	0.04	0.03	0.02	0.22	0.07	0.08
1600	0.04	0.03	0.03	0.26	0.08	0.09
1700	0.05	0.04	0.03	0.30	0.09	0.10
1800	0.05	0.04	0.03	0.33	0.10	0.11
1900	0.06	0.05	0.04	0.33	0.11	0.12
2000	0.06	0.05	0.04	0.31	0.12	0.13
2100	- - -	0.06	0.05	0.27	0.13	0.14
2200	- - -	0.06	0.05	0.29	0.14	0.15
2300	- - -	0.07	0.05	0.31	0.15	0.16
2400	- - -	0.07	0.06	0.32	0.16	0.18

CEILING DIFFUSERS AIR RESISTANCE (in. w.g.)

Air Volume cfm	RTD9-65 Step-Down Diffuser			FD9-65 Flush Diffuser
	2 Ends Open	1 Side & 2 Ends Open	All Ends & Sides Open	
800	0.15	0.13	0.11	0.11
1000	0.19	0.16	0.14	0.14
1200	0.25	0.20	0.17	0.17
1400	0.33	0.26	0.20	0.20
1600	0.43	0.32	0.20	0.24
1800	0.56	0.40	0.30	0.30
2000	0.73	0.50	0.36	0.36
2200	0.95	0.63	0.44	0.44

CEILING DIFFUSER AIR THROW DATA

Air Volume - cfm	¹ Effective Throw - ft.	
Model No.	RTD9-65	FD9-65
800	10 - 17	14 - 18
1000	10 - 17	15 - 20
1200	11 - 18	16 - 22
1400	12 - 19	17 - 24
1600	12 - 20	18 - 25
1800	13 - 21	20 - 28
2000	14 - 23	21 - 29
2200	16 - 25	22 - 30

¹ Effective throw based on terminal velocities of 75 ft. per minute.

ELECTRICAL/ELECTRIC HEAT DATA - ZHA**3 TON****ZHA036S4**

¹ Voltage - 60hz		208/230V - 3 Ph		460V - 3 Ph		575V - 3 Ph	
Compressor	Rated Load Amps	8.7		4		3.6	
	Locked Rotor Amps	70		31		27	
Outdoor Fan Motor	Full Load Amps	1.7		0.9		0.7	
Power Exhaust (1) 0.5 HP	Full Load Amps	1.5		0.6		0.6	
Indoor Blower Motor	Horsepower	1	1.5	1	1.5	1	1.5
	Full Load Amps	4.6	6.6	2.1	3	1.7	2.4
² Maximum Overcurrent Protection	Unit Only	25	25	15	15	15	15
	With (1) 0.5 HP Power Exhaust	25	25	15	15	15	15
³ Minimum Circuit Ampacity	Unit Only	18	20	8	9	7	8
	With (1) 0.5 HP Power Exhaust	19	21	9	10	8	9

ELECTRIC HEAT DATA

Electric Heat Voltage			208V	240V	208V	240V	480V	480V	600V	600V
² Maximum Overcurrent Protection	Unit+ Electric Heat	5 kW	35	35	35	35	20	20	15	15
		7.5 kW	40	40	40	45	20	25	20	20
		10 kW	45	50	50	50	25	25	20	20
		15 kW	60	70	60	70	35	35	25	30
³ Minimum Circuit Ampacity	Unit+ Electric Heat	5 kW	31	33	33	35	16	17	13	14
		7.5 kW	37	40	39	42	20	21	16	17
		10 kW	44	48	46	50	24	24	19	20
		15 kW	57	63	59	65	31	32	25	26
² Maximum Overcurrent Protection	Unit+ Electric Heat and (1) 0.5 HP Power Exhaust	5 kW	35	35	35	40	20	20	15	15
		7.5 kW	40	45	45	45	20	25	20	20
		10 kW	45	50	50	60	25	25	20	25
		15 kW	60	70	60	70	35	35	30	30
³ Minimum Circuit Ampacity	Unit+ Electric Heat and (1) 0.5 HP Power Exhaust	5 kW	32	34	34	36	17	18	14	15
		7.5 kW	39	42	41	44	20	21	17	18
		10 kW	45	49	47	51	24	25	20	21
		15 kW	58	64	60	66	32	33	26	27

ELECTRIC HEAT ACCESSORIES

Unit Fuse Block	Unit Only	10A27	10A27	10A29	10A29	10A29	10A29
	Unit + Power Exhaust	10A27	10A27	10A29	10A29	10A29	10A29

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.

¹ Extremes of operating range are plus and minus 10% of line voltage.² HACR type breaker or fuse.³ Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

ELECTRICAL/ELECTRIC HEAT DATA - ZHA

4 TON

ZHA048S4

¹ Voltage - 60hz		208/230V - 3 Ph		460V - 3 Ph		575V - 3 Ph	
Compressor	Rated Load Amps	11		5.5		4.7	
	Locked Rotor Amps	86		37		34	
Outdoor Fan Motor	Full Load Amps	1.7		0.9		0.7	
Power Exhaust (1) 0.5 HP	Full Load Amps	1.5		0.6		0.6	
Indoor Blower Motor	Horsepower	1	1.5	1	1.5	1	1.5
	Full Load Amps	4.6	6.6	2.1	3	1.7	2.4
² Maximum Overcurrent Protection	Unit Only	30	30	15	15	15	15
	With (1) 0.5 HP Power Exhaust	30	30	15	15	15	15
³ Minimum Circuit Ampacity	Unit Only	21	23	10	11	9	9
	With (1) 0.5 HP Power Exhaust	22	24	11	12	9	10

ELECTRIC HEAT DATA

Electric Heat Voltage			208V	240V	208V	240V	480V	480V	600V	600V
² Maximum Overcurrent Protection	Unit+ Electric Heat	5 kW	40	40	40	45	20	20	15	15
		7.5 kW	45	45	45	50	25	25	20	20
		10 kW	50	60	50	60	25	30	25	25
		15 kW	60	70	70	70	35	35	30	30
		22.5 kW	80	90	90	90	45	45	40	40
³ Minimum Circuit Ampacity	Unit+ Electric Heat	5 kW	34	36	36	38	18	19	15	15
		7.5 kW	40	43	42	45	22	23	18	18
		10 kW	47	51	49	53	25	26	21	22
		15 kW	60	66	62	68	33	34	27	28
		22.5 kW	79	88	81	90	44	45	36	37
² Maximum Overcurrent Protection	Unit+ Electric Heat and (1) 0.5 HP Power Exhaust	5 kW	40	40	40	45	20	20	15	20
		7.5 kW	45	50	50	50	25	25	20	20
		10 kW	50	60	50	60	30	30	25	25
		15 kW	70	70	70	70	35	35	30	30
			90	90	90	100	45	50	40	40
³ Minimum Circuit Ampacity	Unit+ Electric Heat and (1) 0.5 HP Power Exhaust	5 kW	35	37	37	39	18	19	15	16
		7.5 kW	42	45	44	47	22	23	18	19
		10 kW	48	52	50	54	26	27	21	22
		15 kW	61	67	63	69	34	34	27	28
		22.5 kW	81	90	83	92	45	46	36	37

ELECTRIC HEAT ACCESSORIES

Unit Fuse Block	Unit Only	10A27	10A27	10A29	10A29	10A29	10A29
	Unit + Power Exhaust	10A27	10A27	10A29	10A29	10A29	10A29

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.

¹ Extremes of operating range are plus and minus 10% of line voltage.

² HACR type breaker or fuse.

³ Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

ELECTRICAL/ELECTRIC HEAT DATA - ZHA**5 TON****ZHA060S4**

¹ Voltage - 60hz		208/230V - 3 Ph		460V - 3 Ph		575V - 3 Ph	
Compressor	Rated Load Amps	13.5		8		5	
	Locked Rotor Amps	109		59		40	
Outdoor Fan Motor	Full Load Amps	1.7		1		0.9	
Power Exhaust (1) 0.5 HP	Full Load Amps	1.5		0.6		0.6	
Indoor Blower Motor	Horsepower	1	1.5	1	1.5	1	1.5
	Full Load Amps	4.6	6.6	2.1	3	1.7	2.4
² Maximum Overcurrent Protection	Unit Only	35	35	20	20	15	15
	With (1) 0.5 HP Power Exhaust	35	40	20	20	15	15
³ Minimum Circuit Ampacity	Unit Only	24	26	14	14	9	10
	With (1) 0.5 HP Power Exhaust	25	27	14	15	10	11

ELECTRIC HEAT DATA

Electric Heat Voltage			208V	240V	208V	240V	480V	480V	600V	600V
² Maximum Overcurrent Protection	Unit+ Electric Heat	5 kW	45	45	45	50	25	25	15	20
		7.5 kW	50	50	50	50	30	30	20	20
		10 kW	50	60	60	60	30	30	25	25
		15 kW	70	70	70	80	40	40	30	30
		22.5 kW	90	100	90	100	50	50	40	40
³ Minimum Circuit Ampacity	Unit+ Electric Heat	5 kW	37	39	39	41	21	22	15	16
		7.5 kW	43	46	45	48	25	26	18	19
		10 kW	50	54	52	56	29	30	21	22
		15 kW	63	69	65	71	36	37	27	28
		22.5 kW	82	91	84	93	47	48	36	37
² Maximum Overcurrent Protection	Unit+ Electric Heat and (1) 0.5 HP Power Exhaust	5 kW	45	50	50	50	25	25	20	20
		7.5 kW	50	50	50	50	30	30	20	20
		10 kW	60	60	60	60	30	30	25	25
		15 kW	70	70	70	80	40	40	30	30
		22.5 kW	90	100	90	100	50	50	40	40
³ Minimum Circuit Ampacity	Unit+ Electric Heat and (1) 0.5 HP Power Exhaust	5 kW	38	40	40	42	22	23	16	17
		7.5 kW	45	48	47	50	25	26	19	20
		10 kW	51	55	53	57	29	30	22	23
		15 kW	64	70	66	72	37	38	28	29
		22.5 kW	84	93	86	95	48	49	37	38

ELECTRIC HEAT ACCESSORIES

Unit Fuse Block	Unit Only	10A28	10A28	10A29	10A29	10A29	10A29
	Unit + Power Exhaust	10A28	10A28	10A29	10A29	10A29	10A29

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.

¹ Extremes of operating range are plus and minus 10% of line voltage.² HACR type breaker or fuse.³ Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

ELECTRICAL/ELECTRIC HEAT DATA - ZHB

3 TON

ZHB036S4

¹ Voltage - 60hz		208/230V - 1 Ph	208/230V - 3 Ph		460V - 3 Ph		575V - 3 Ph	
Compressor	Rated Load Amps	15.3	8.7		4		3.6	
	Locked Rotor Amps	70	70		31		27	
Outdoor Fan Motor	Full Load Amps	1	1		0.6		0.45	
Power Exhaust (1) 0.5 HP	Full Load Amps	1.5	1.5		0.6		0.6	
Indoor Blower Motor	Horsepower	1.5	1	1.5	1	1.5	1	1.5
	Full Load Amps	11	4.6	6.6	2.1	3	1.7	2.4
² Maximum Overcurrent Protection	Unit Only	45	25	25	15	15	15	15
	With (1) 0.5 HP Power Exhaust	45	25	25	15	15	15	15
³ Minimum Circuit Ampacity	Unit Only	32	17	19	8	9	7	8
	With (1) 0.5 HP Power Exhaust	33	18	20	9	10	8	8

ELECTRIC HEAT DATA

Electric Heat Voltage				208V	240V	208V	240V	208V	240V	480V	480V	600V	600V
² Maximum Overcurrent Protection	Unit+ Electric Heat	5 kW		60	60	35	35	35	35	20	20	15	15
		7.5 kW		70	80	40	40	40	45	20	20	20	20
		10 kW		80	90	45	50	45	50	25	25	20	20
		15 kW		100	110	60	70	60	70	35	35	25	30
³ Minimum Circuit Ampacity	Unit+ Electric Heat	5 kW		54	58	30	32	32	34	16	17	13	14
		7.5 kW		65	71	37	40	39	42	19	20	16	17
		10 kW		77	84	43	47	45	49	23	24	19	20
		15 kW		99	110	56	62	58	64	31	32	25	26
² Maximum Overcurrent Protection	Unit+ Electric Heat and (1) 0.5 HP Power Exhaust	5 kW		60	60	35	35	35	40	20	20	15	15
		7.5 kW		70	80	40	45	40	45	20	25	20	20
		10 kW		80	90	45	50	50	60	25	25	20	20
		15 kW		110	125	60	70	60	70	35	35	30	30
³ Minimum Circuit Ampacity	Unit+ Electric Heat and (1) 0.5 HP Power Exhaust	5 kW		56	59	32	34	34	36	16	17	14	14
		7.5 kW		67	72	38	41	40	43	20	21	17	17
		10 kW		78	85	45	49	47	51	24	25	20	20
		15 kW		101	111	58	64	60	66	31	32	26	26

ELECTRIC HEAT ACCESSORIES

Unit Fuse Block	Unit Only	10A26	10A27	10A27	10A29	10A29	10A29	10A29
	Unit + Power Exhaust	10A26	10A27	10A27	10A29	10A29	10A29	10A29

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.

¹ Extremes of operating range are plus and minus 10% of line voltage.

² HACR type breaker or fuse.

³ Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

ELECTRICAL/ELECTRIC HEAT DATA - ZHB**4 TON****ZHB048S4**

¹ Voltage - 60hz		208/230V - 1 Ph	208/230V - 3 Ph		460V - 3 Ph		575V - 3 Ph	
Compressor	Rated Load Amps	20	11		5.5		4.7	
	Locked Rotor Amps	99	86		37		34	
Outdoor Fan Motor	Full Load Amps	1.7	1.7		0.9		0.7	
Power Exhaust (1) 0.5 HP	Full Load Amps	1.5	1.5		0.6		0.6	
Indoor Blower Motor	Horsepower	1.5	1	1.5	1	1.5	1	1.5
	Full Load Amps	11	4.6	6.6	2.1	3	1.7	2.4
² Maximum Overcurrent Protection	Unit Only	50	30	30	15	15	15	15
	With (1) 0.5 HP Power Exhaust	50	30	30	15	15	15	15
³ Minimum Circuit Ampacity	Unit Only	38	21	23	10	11	9	9
	With (1) 0.5 HP Power Exhaust	40	22	24	11	12	9	10

ELECTRIC HEAT DATA

Electric Heat Voltage			208V	240V	208V	240V	208V	240V	480V	480V	600V	600V
² Maximum Overcurrent Protection	Unit+ Electric Heat	5 kW	70	70	40	40	40	45	20	20	15	15
		7.5 kW	80	80	45	45	45	50	25	25	20	20
		10 kW	90	90	50	60	50	60	25	30	25	25
		15 kW	110	125	60	70	70	70	35	35	30	30
		22.5 kW	150	175	80	90	90	90	45	45	40	40
³ Minimum Circuit Ampacity	Unit+ Electric Heat	5 kW	61	64	34	36	36	38	18	19	15	15
		7.5 kW	72	77	40	43	42	45	22	23	18	18
		10 kW	83	90	47	51	49	53	25	26	21	22
		15 kW	106	116	60	66	62	68	33	34	27	28
		22.5 kW	140	155	79	88	81	90	44	45	36	37
² Maximum Overcurrent Protection	Unit+ Electric Heat and (1) 0.5 HP Power Exhaust	5 kW	70	80	40	40	40	45	20	20	15	20
		7.5 kW	80	90	45	50	50	50	25	25	20	20
		10 kW	90	100	50	60	50	60	30	30	25	25
		15 kW	110	125	70	70	70	70	35	35	30	30
		22.5 kW	150	175	90	90	90	100	45	50	40	40
³ Minimum Circuit Ampacity	Unit+ Electric Heat and (1) 0.5 HP Power Exhaust	5 kW	62	66	35	37	37	39	18	19	15	16
		7.5 kW	74	79	42	45	44	47	22	23	18	19
		10 kW	85	92	48	52	50	54	26	27	21	22
		15 kW	107	118	61	67	63	69	34	34	27	28
		22.5 kW	141	157	81	90	83	92	45	46	36	37

ELECTRIC HEAT ACCESSORIES

Unit Fuse Block	Unit Only	10A26	10A27	10A27	10A29	10A29	10A29	10A29
	Unit + Power Exhaust	10A26	10A27	10A27	10A29	10A29	10A29	10A29

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.

¹ Extremes of operating range are plus and minus 10% of line voltage.² HACR type breaker or fuse.³ Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

ELECTRICAL/ELECTRIC HEAT DATA - ZHB

5 TON

ZHB060S4

¹ Voltage - 60hz		208/230V - 1 Ph	208/230V - 3 Ph		460V - 3 Ph		575V - 3 Ph	
Compressor	Rated Load Amps	22.1	13.5		8		5	
	Locked Rotor Amps	125	109		59		40	
Outdoor Fan Motor	Full Load Amps	1.7	1.7		1		0.9	
Power Exhaust (1) 0.5 HP	Full Load Amps	1.5	1.5		0.6		0.6	
Indoor Blower Motor	Horsepower	1.5	1	1.5	1	1.5	1	1.5
	Full Load Amps	11	4.6	6.6	2.1	3	1.7	2.4
² Maximum Overcurrent Protection	Unit Only	60	35	35	20	20	15	15
	With (1) 0.5 HP Power Exhaust	60	35	40	20	20	15	15
³ Minimum Circuit Ampacity	Unit Only	41	24	26	14	14	9	10
	With (1) 0.5 HP Power Exhaust	42	25	27	14	15	10	11

ELECTRIC HEAT DATA

Electric Heat Voltage			208V	240V	208V	240V	208V	240V	480V	480V	600V	600V
² Maximum Overcurrent Protection	Unit+ Electric Heat	5 kW	80	80	45	45	45	50	25	25	15	20
		7.5 kW	80	90	50	50	50	50	30	30	20	20
		10 kW	90	100	50	60	60	60	30	30	25	25
		15 kW	110	125	70	70	70	80	40	40	30	30
		22.5 kW	150	175	90	100	90	100	50	50	40	40
³ Minimum Circuit Ampacity	Unit+ Electric Heat	5 kW	63	67	37	39	39	41	21	22	15	16
		7.5 kW	75	80	43	46	45	48	25	26	18	19
		10 kW	86	93	50	54	52	56	29	30	21	22
		15 kW	109	119	63	69	65	71	36	37	27	28
		22.5 kW	142	158	82	91	84	93	47	48	36	37
² Maximum Overcurrent Protection	Unit+ Electric Heat and (1) 0.5 HP Power Exhaust	5 kW	80	80	45	50	50	50	25	25	20	20
		7.5 kW	90	90	50	50	50	50	30	30	20	20
		10 kW	100	100	60	60	60	60	30	30	25	25
		15 kW	110	125	70	70	70	80	40	40	30	30
		22.5 kW	150	175	90	100	90	100	50	50	40	40
³ Minimum Circuit Ampacity	Unit+ Electric Heat and (1) 0.5 HP Power Exhaust	5 kW	65	68	38	40	40	42	22	23	16	17
		7.5 kW	76	81	45	48	47	50	25	26	19	20
		10 kW	87	94	51	55	53	57	29	30	22	23
		15 kW	110	120	64	70	66	72	37	38	28	29
		22.5 kW	144	160	84	93	86	95	48	49	37	38

ELECTRIC HEAT ACCESSORIES

Unit Fuse Block	Unit Only	10A26	10A28	10A28	10A29	10A29	10A29	10A29
	Unit + Power Exhaust	10A26	10A28	10A28	10A29	10A29	10A29	10A29

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.

¹ Extremes of operating range are plus and minus 10% of line voltage.

² HACR type breaker or fuse.

³ Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

ELECTRIC HEAT CAPACITIES

Input Voltage	5 kW			7.5 kW			10 kW			15 kW			22.5 kW		
	No of Stages	kW input	Btuh Output	No of Stages	kW input	Btuh Output	No of Stages	kW input	Btuh Output	No of Stages	kW input	Btuh Output	No of Stages	kW input	Btuh Output
208	1	3.8	12,800	1	5.6	19,200	1	7.5	25,600	1	11.2	38,400	1	16.9	57,700
220	1	4.2	14,300	1	6.3	21,500	1	8.4	28,700	1	12.6	43,000	1	18.9	64,500
230	1	4.6	15,700	1	6.9	23,500	1	9.2	31,400	1	13.8	47,000	1	20.7	70,700
240	1	5.0	17,100	1	7.5	25,600	1	10.0	34,200	1	15.0	51,200	1	22.5	76,800
440	1	4.2	14,300	1	6.3	21,500	1	8.4	28,700	1	12.6	43,000	1	18.9	64,500
460	1	4.6	15,700	1	6.9	23,500	1	9.2	31,400	1	13.8	47,000	1	20.7	70,700
480	1	5.0	17,100	1	7.5	25,600	1	10.0	34,200	1	15.0	51,200	1	22.5	76,800
550	1	4.2	14,300	1	6.3	21,500	1	8.4	28,700	1	12.6	43,000	1	18.9	64,500
575	1	4.6	15,700	1	6.9	23,500	1	9.2	31,400	1	13.8	47,000	1	20.7	70,700
600	1	5.0	17,100	1	7.5	25,600	1	10.0	34,200	1	15.0	51,200	1	22.5	76,800

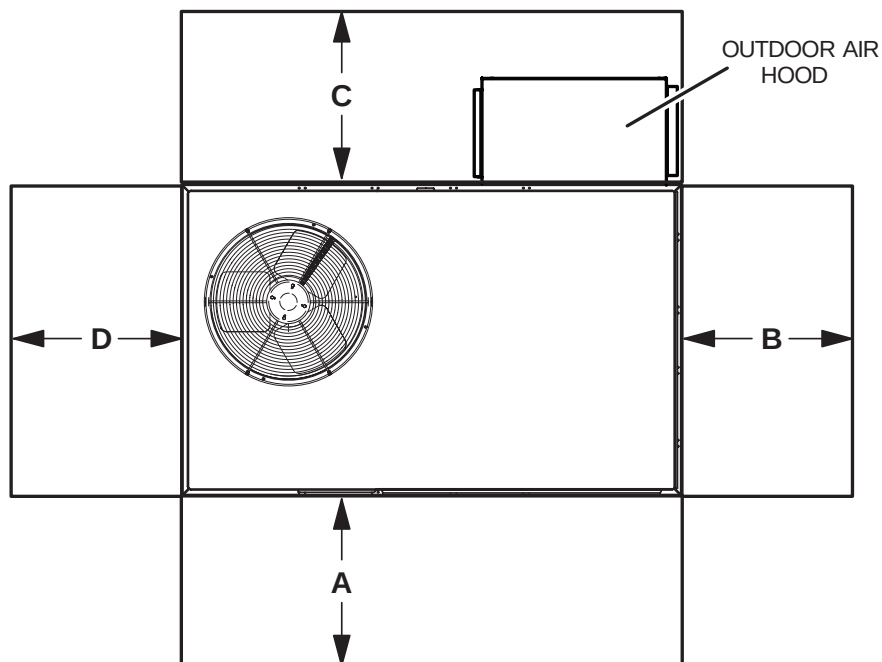
OUTDOOR SOUND DATA

Unit Model No.		Octave Band Linear Sound Power Levels dB, re 10 ⁻¹² Watts - Center Frequency - Hz							¹ Sound Rating Number (SRN) (dBA)
		125	250	500	1000	2000	4000	8000	
ZHA036	Cooling	82	79	78	74	70	66	61	79
	Heating	82	79	79	74	71	67	63	80
ZHA048	Cooling	82	79	78	74	70	66	61	79
	Heating	82	79	79	74	71	67	63	80
ZHA060	Cooling	86	83	82	77	73	70	67	83
	Heating	85	83	82	78	73	70	66	83
ZHB036	Cooling	82	79	78	74	70	66	61	79
	Heating	82	79	79	74	71	67	63	80
ZHB048	Cooling	77	77	76	72	67	63	57	77
	Heating	78	78	77	72	68	66	60	78
ZHB060	Cooling	85	81	81	76	71	69	67	82
	Heating	83	81	82	77	71	67	66	82

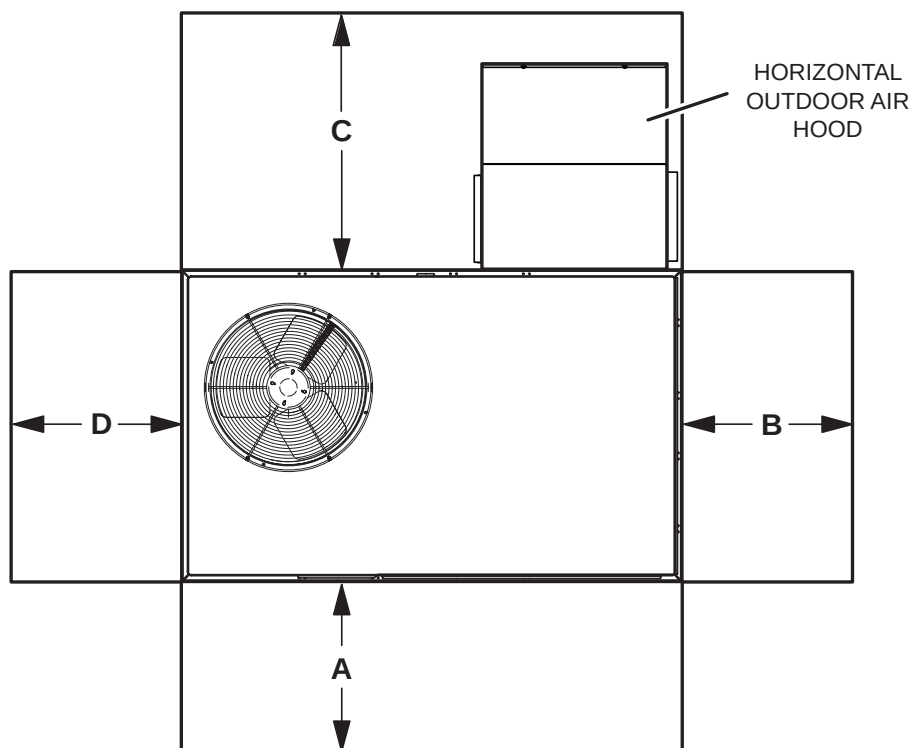
¹ Sound Rating Number according to ANSI/AHRI Standard 270-2008. "SRN" is the overall A-Weighted Sound Power Level, (LWA), dB (100 Hz to 10,000 Hz).

UNIT CLEARANCES - INCHES (MM)

UNIT WITH DOWNFLOW ECONOMIZER



UNIT WITH HORIZONTAL ECONOMIZER



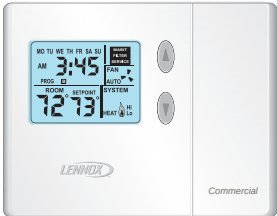
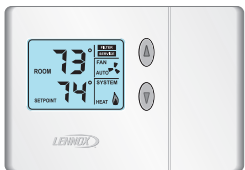
¹ Unit Clearance	A		B		C Downflow		C Horizontal		D		Top Clearance
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	
Service Clearance	36	914	36	914	36	914	60	1524	36	914	Unobstructed
Minimum Operation Clearance	36	914	36	914	36	914	60	1524	36	914	

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

¹ Service Clearance - Required for removal of serviceable parts.

Minimum Operation Clearance - Required clearance for proper unit operation.

OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS

Item		Model No.	Catalog No.
COMFORTSENSE® 7500 COMMERCIAL 7-DAY PROGRAMMABLE THERMOSTAT			
 • Four-Stage Heating / Two-Stage Cooling Universal Multi-Stage • Intuitive Touchscreen Interface • Remote Indoor Temperature Sensing with Averaging • Outside or Discharge Air Temperature Display • Full Seven-Day Programming • Four Time Periods Per Day • Occupancy Scheduling with Economizer Relay Control • Away Mode • Holiday Scheduling • Smooth Setback Recovery (SSR) • Performance Reports • Notifications/Reminders • Dehumidification/Humiditrol® Control for Split Systems and Rooftop Units • Economizer Relay Control • Backlit Display • Wallplate Furnished		C0STAT06FF1L	13H15
Optional Accessories			
¹ Remote non-adjustable wall mount 20k temperature sensor		C0SNZN01AE2-	47W36
¹ Remote non-adjustable wall mount 10k temperature sensor		C0SNZN73AE1-	47W37
Remote non-adjustable discharge air (duct mount) temperature sensor		C0SNDC00AE1-	19L22
Outdoor temperature sensor		C0SNSR03AE1-	X2658
Locking cover (clear)		C0MISC15AE1-	39P21
¹ Remote sensors can be applied in any of the following combinations: One Sensor - (1) 47W36 Two Sensors - (2) 47W37 Three Sensors - (2) 47W36 and (1) 47W37 Four Sensors - (4) 47W36 Five Sensors - (3) 47W36 and (2) 47W37			
COMFORTSENSE® 3000 COMMERCIAL 5-2 DAY PROGRAMMABLE THERMOSTAT			
 • Two-Stage Heating / Two-Stage Cooling Conventional Systems • Intuitive Interface • 5-2 Day Programming • Program Hold • Remote Indoor Temperature Sensing • Smooth Setback Recovery (SSR) • Economizer Relay Control • Maintenance/Filter/Service Reminders • Backlit Display • Wallplate Furnished • Simple Up and Down Temperature Control.		C0STAT05FF1L	11Y05
Optional Accessories			
Remote non-adjustable wall mount 10k averaging temperature sensor		C0SNZN73AE1-	47W37
Optional wall mounting plate		C0MISC17AE1-	X2659
DIGITAL NON-PROGRAMMABLE THERMOSTAT			
 • One-Stage Heating / Cooling Conventional Systems • Intuitive Interface • Automatic Changeover • Backlit Display • Simple Up and Down Temperature Control.		C0STAT12AE1L	51M32
Optional Accessories			
Outdoor temperature sensor		C0SNSR04AE1-	X2658
Optional wall mounting plate		C0MISC17AE1-	X2659

WEIGHT DATA

Model Number	Net				Shipping			
	Base		Max.		Base		Max.	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg
ZHA036S	530	240	581	264	535	243	586	266
ZHB036S	580	263	634	288	585	265	639	290
ZHA048S	539	244	590	268	544	247	595	270
ZHB048S	585	265	639	290	590	268	644	292
ZHA060S	585	265	639	290	590	268	644	292
ZHB060S	610	277	664	301	615	279	669	303

Base Unit - The unit with NO OPTIONS.

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

OPTIONS / ACCESSORIES

				Shipping Weights	
				lbs.	kg
ECONOMIZER					
Economizer					
Economizer, Includes Outdoor Air Hood and Barometric Relief Dampers with Hood			Downflow	62	28
			Horizontal	92	42
OUTDOOR AIR					
Outdoor Air Dampers					
Motorized				30	14
Manual				23	10
POWER EXHAUST					
Standard Static			Downflow	54	24
			Horizontal	41	19
ELECTRIC HEAT					
5 kW - Z1EH0050AN1				25	11
7.5 kW - Z1EH0075AN1				26	12
10 kW - Z1EH0100AN1				27	12
15 kW - Z1EH0150AN1				27	12
22.5 kW - Z1EH0225AN1				29	13
ROOF CURBS					
Hybrid Roof Curbs, Downflow					
8 in. height			Z1CURB70A-1	63	29
14 in. height			Z1CURB71A-1	83	38
18 in. height			Z1CURB72A-1	93	42
24 in. height			Z1CURB73A-1	113	51
CEILING DIFFUSERS					
Step-Down			RTD9-65-R	67	30
Flush			FD9-65-R	37	17

DIMENSIONS - INCHES (MM) - ZHA

Model No.	CORNER WEIGHTS																CENTER OF GRAVITY							
	AA				BB				CC				DD				EE				FF			
	Base		Max.		Base		Max.		Base		Max.		Base		Max.		Base		Max.		Base		Max.	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	in.	mm	in.	mm	in.	mm	in.	mm
036	136	62	152	69	126	57	157	71	129	58	138	62	139	63	134	61	39.5	1003	37.5	953	23.25	591	25	635
048	139	63	155	70	128	58	159	72	131	59	140	63	142	64	136	62	39.5	1003	37.5	953	23.25	591	25	635
060	172	78	190	86	139	63	171	77	123	56	132	60	151	69	147	67	42	1067	40	1016	25	635	26.5	673

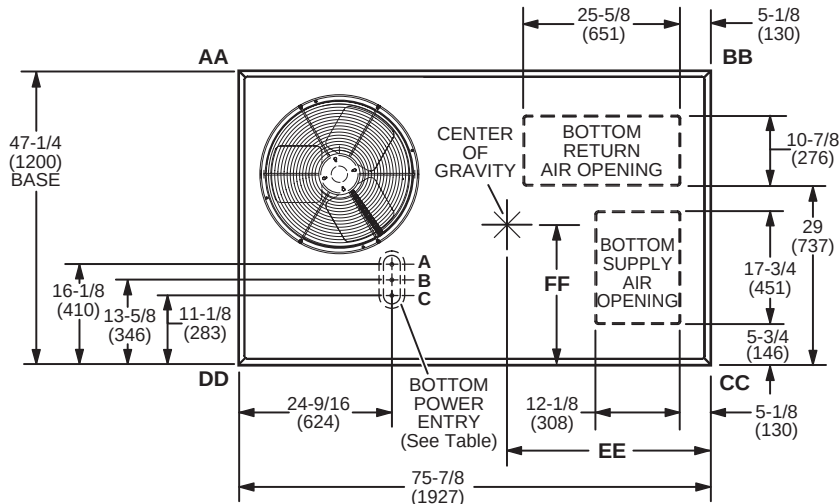
Base Unit - The unit with NO OPTIONS.

Max. Unit - The unit with ALL OPTIONS Installed. (Economizer, largest blower motor, etc.).

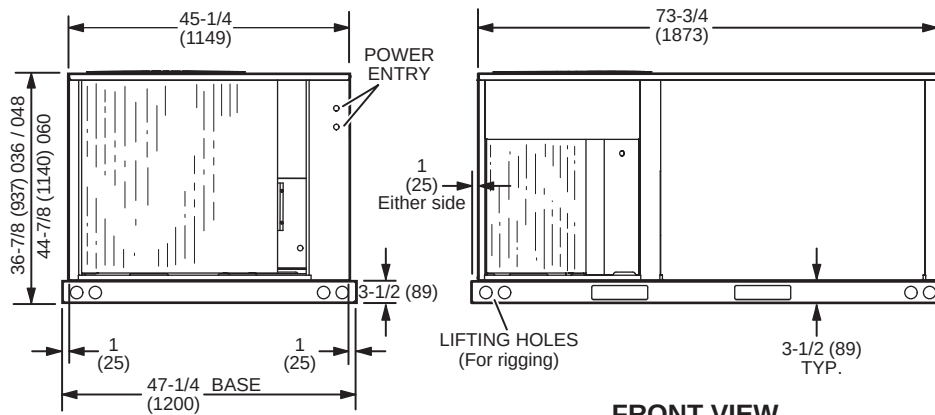
BOTTOM POWER ENTRY

Holes required for Optional Bottom Power Entry Kit

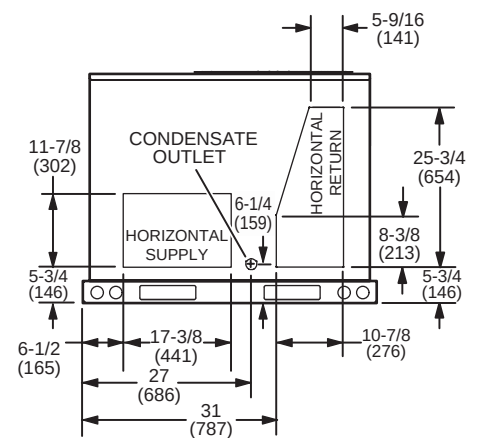
	Threaded Conduit Fittings (Provided in Kit)	Wire Use	Hole Diameter Required in Unit Base (Max.)
A	1/2	ACC	7/8 (23)
B	1/2	24V	7/8 (23)
C	3/4	POWER	1-1/8 (29)



TOP VIEW (Base)



END VIEW



END VIEW

DIMENSIONS - INCHES (MM) - ZHB

Model No.	CORNER WEIGHTS																CENTER OF GRAVITY							
	AA				BB				CC				DD				EE				FF			
	Base		Max.		Base		Max.		Base		Max.		Base		Max.		Base		Max.		Base		Max.	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	in.	mm	in.	mm	in.	mm	in.	mm
036	158	72	173	78	133	60	145	66	124	56	135	61	147	67	160	73	41.25	1048	39.25	997	24.5	622	25.75	654
048	168	76	183	83	136	62	148	67	120	54	130	59	148	67	161	73	42	1067	40	1016	25	635	26.5	673
060	163	74	177	80	142	64	155	70	142	64	155	70	163	74	177	80	40.5	1029	38.5	978	23.5	597	25	635

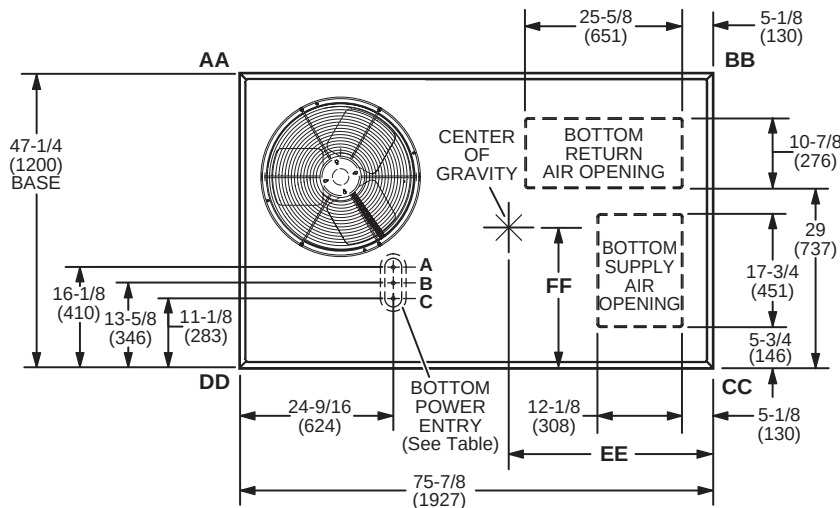
Base Unit - The unit with NO OPTIONS.

Max. Unit - The unit with ALL OPTIONS Installed. (Economizer, largest blower motor, etc.).

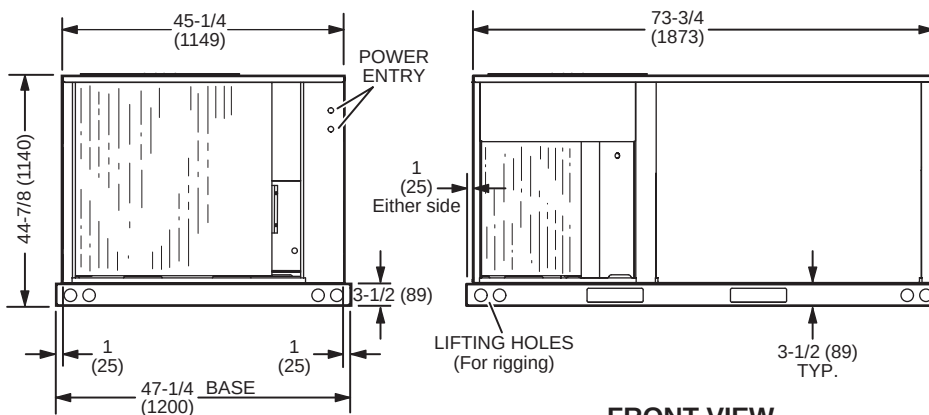
BOTTOM POWER ENTRY

Holes required for Optional Bottom Power Entry Kit

	Threaded Conduit Fittings (Provided in Kit)	Wire Use	Hole Diameter Required in Unit Base (Max.)
A	1/2	ACC	7/8 (23)
B	1/2	24V	7/8 (23)
C	3/4	POWER	1-1/8 (29)

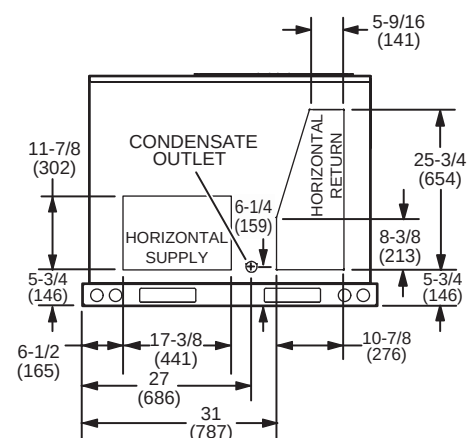


TOP VIEW (Base)



FRONT VIEW

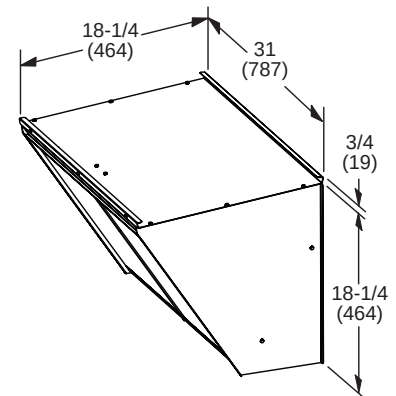
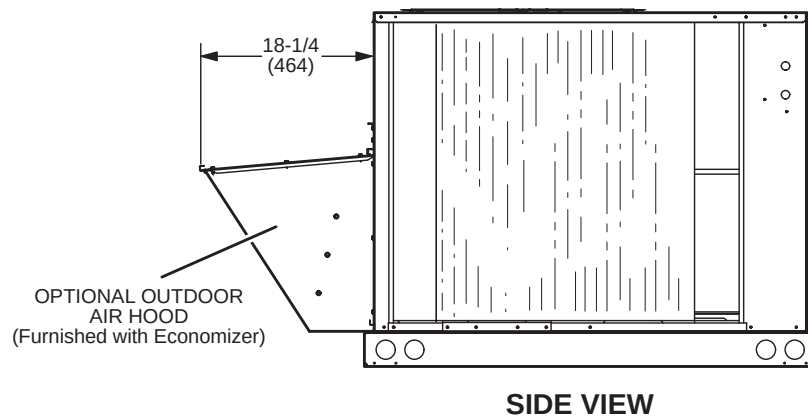
END VIEW



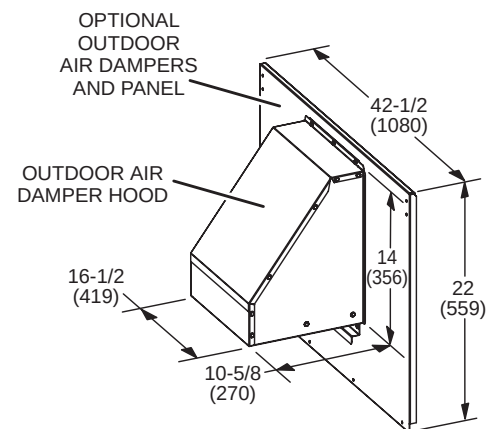
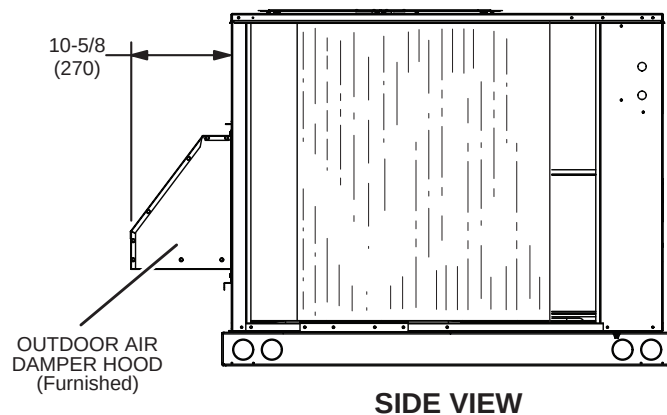
END VIEW

ACCESSORY DIMENSIONS - INCHES (MM)

OUTDOOR AIR HOOD DETAIL FOR OPTIONAL ECONOMIZER (Downflow Applications)

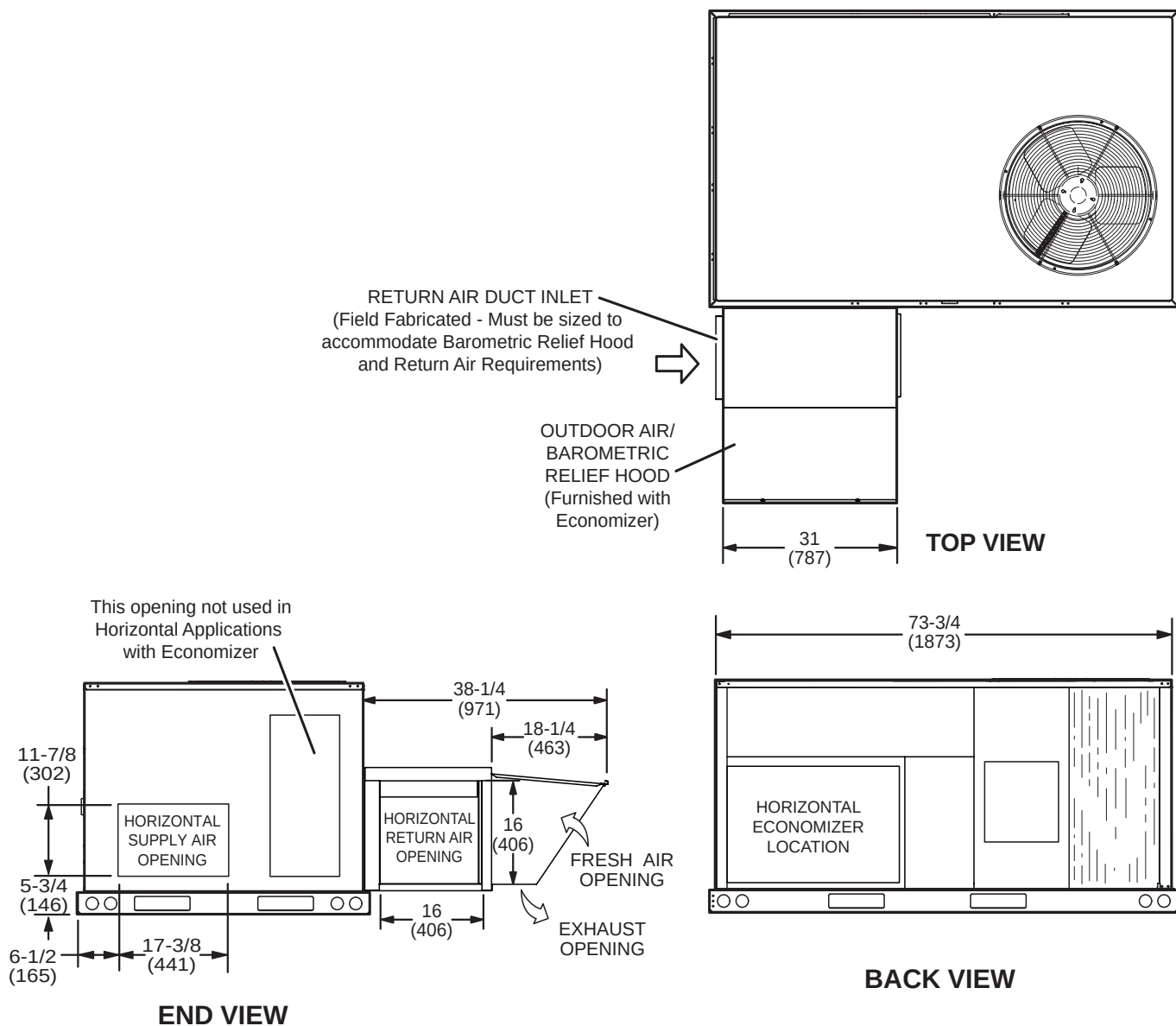


OUTDOOR AIR DAMPER HOOD DETAIL FOR OPTIONAL MANUAL OR MOTORIZED OUTDOOR AIR DAMPERS (Downflow or Horizontal Applications)



ACCESSORY DIMENSIONS - INCHES (MM)

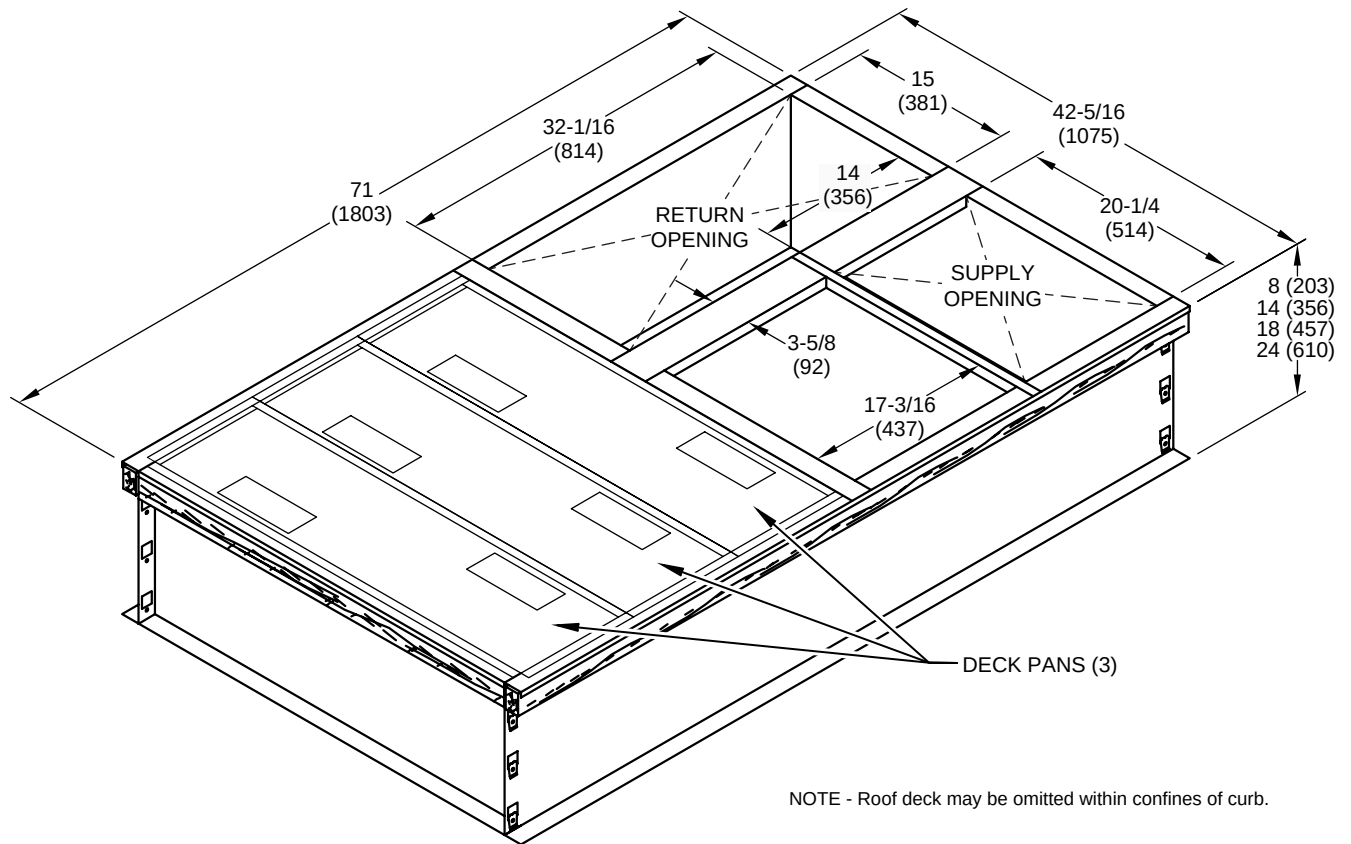
OUTDOOR AIR HOOD DETAIL WITH OPTIONAL ECONOMIZER AND BAROMETRIC RELIEF DAMPERS (Horizontal Applications)



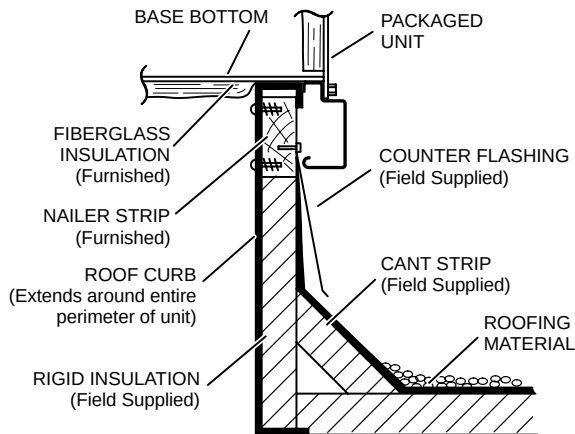
Note - Return Air Duct and Transition must be supported.

ACCESSORY DIMENSIONS - INCHES (MM)

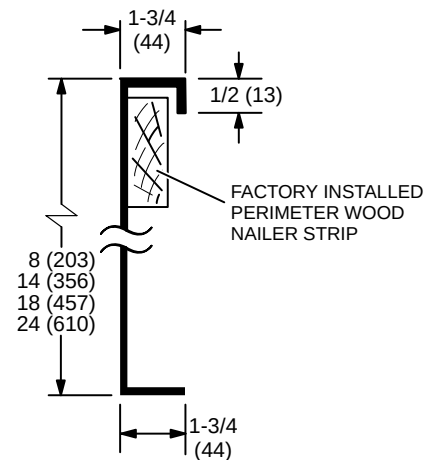
HYBRID ROOF CURBS - DOUBLE DUCT OPENING



TYPICAL FLASHING DETAIL FOR ROOF CURB



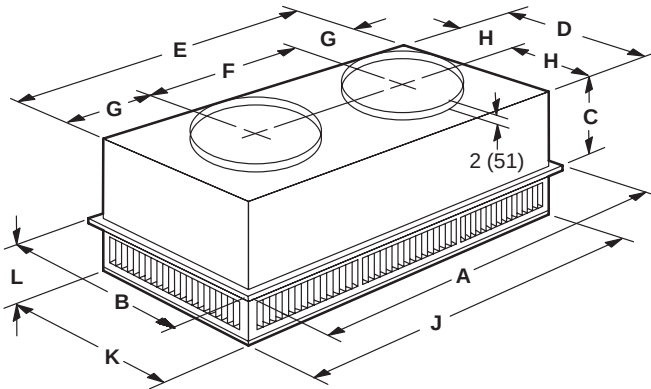
DETAIL ROOF CURB



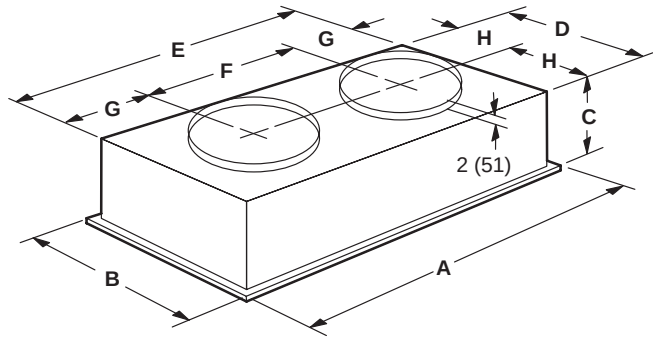
ACCESSORY DIMENSIONS - INCHES (MM)

COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

STEP-DOWN CEILING DIFFUSER



FLUSH CEILING DIFFUSER



Model Number		RTD9-65
A	in.	47-5/8
	mm	1159
B	in.	23-5/8
	mm	600
C	in.	11-3/8
	mm	289
D	in.	21-1/2
	mm	546
E	in.	45-1/2
	mm	1156
F	in.	22-1/2
	mm	572
G	in.	11-1/2
	mm	292
H	in.	10-3/4
	mm	273
J	in.	45-1/2
	mm	1156
K	in.	21-1/2
	mm	546
L	in.	7-1/8
	mm	181
Duct Size	in.	18 round
	mm	457 round

Model Number		FD9-65
A	in.	47-5/8
	mm	1159
B	in.	23-5/8
	mm	600
C	in.	13-1/2
	mm	343
D	in.	21
	mm	533
E	in.	45
	mm	1143
F	in.	22-1/2
	mm	572
G	in.	11-1/4
	mm	286
H	in.	10-1/2
	mm	267
Duct Size	in.	18 round
	mm	457 round

REVISIONS

Section	Description
Conventional Control Systems	Added new CS7500 and CS3000 Commercial Thermostats.
Options/Accessories	Added new Combination Coil/Hail Guards.



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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.

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ZH
Raider® Rooftop Units
60 HZ

PRODUCT SPECIFICATIONS

RAIDER®

Value Without Compromise®

Bulletin No. 210724

July 2015

Supersedes November 2014



**ASHRAE 90.1
COMPLIANT**

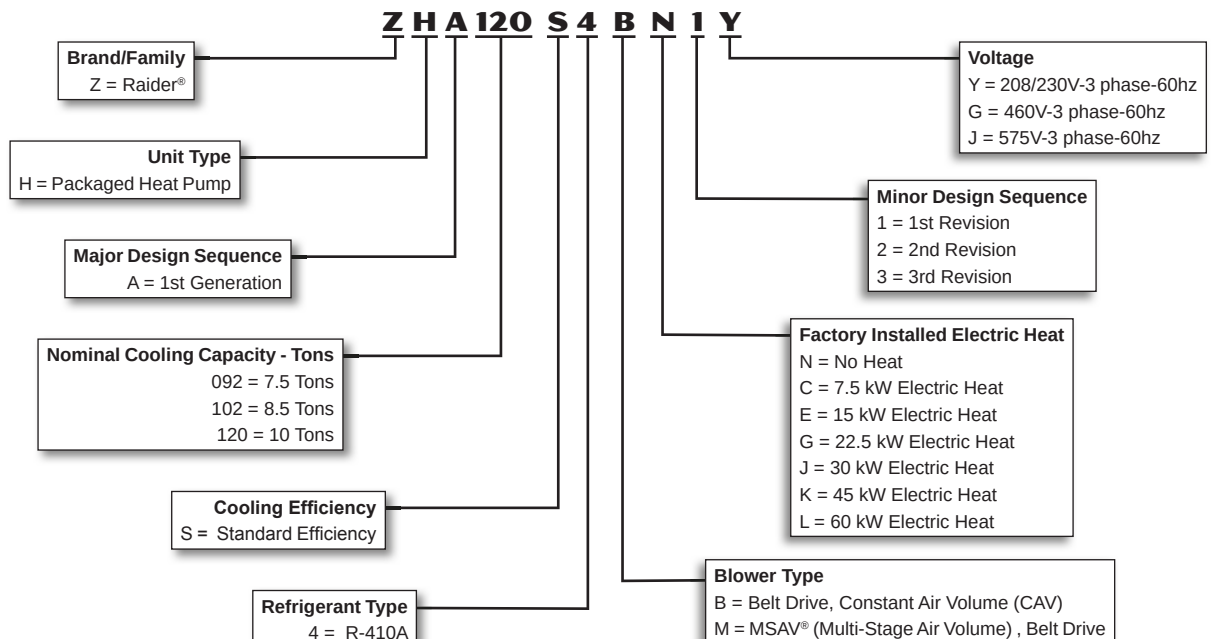
7.5 to 10 Tons

Net Cooling Capacity - 87,000 to 118,000 Btuh

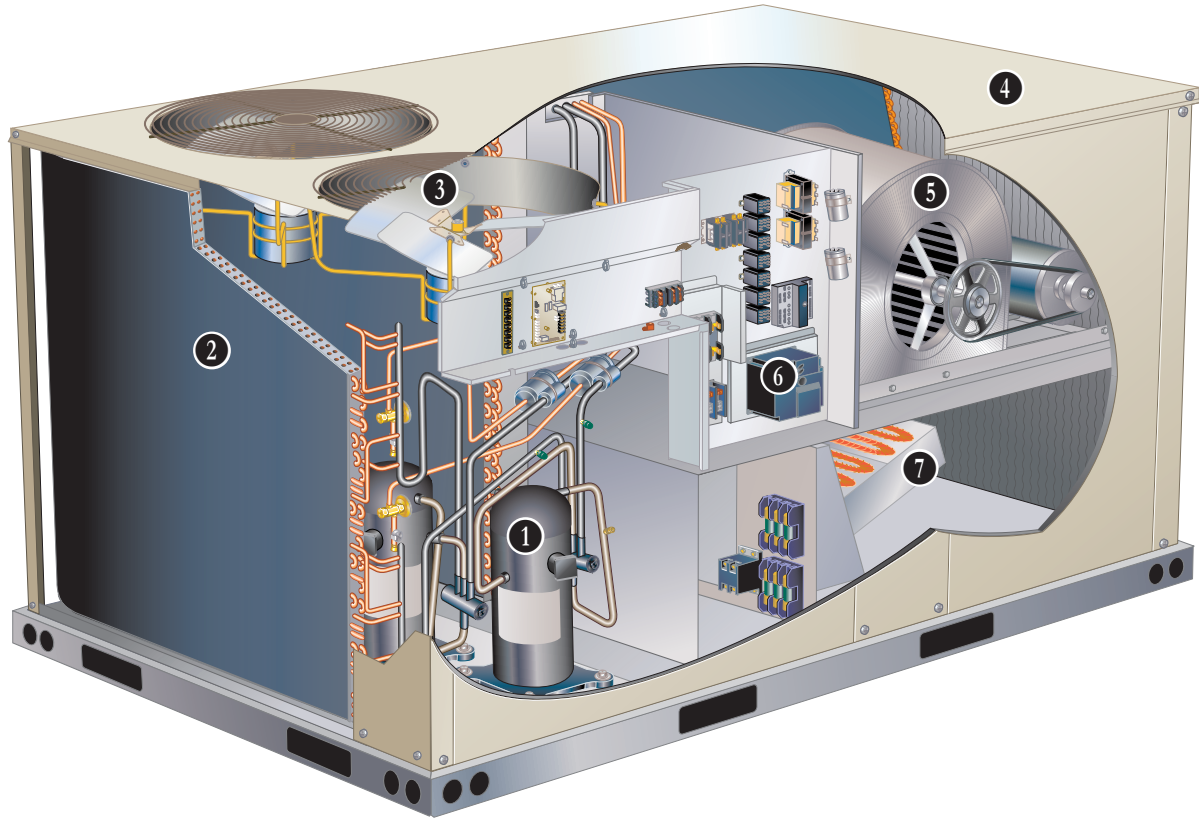
Net Heating Capacity - 89,000 to 116,000 Btuh

Optional Electric Heat - 7.5 to 60 kW

MODEL NUMBER IDENTIFICATION



FEATURES AND BENEFITS



Raider® rooftop units from Lennox Commercial are the new standard for reliable, efficient rooftop units built for long-lasting performance that can significantly improve indoor environments.

Raider® Rooftop Units Feature:

- **Quick and Easy Retrofit** - Fast installation for replacement of many existing rooftop units - fits high volume competitor's roof curbs
- **R-410A Refrigerant** - Environmentally friendly
- **Scroll Compressors** - Single speed scroll compressors are furnished on all models.
- **High Pressure Switches** - Protect compressor.
- **Independent Outdoor Fan Motor Mounts** - Allows for easy and efficient service access without removing the top panel.
- **Constant Air Volume (CAV) or MSAV® (Multi-Stage Air Volume) Supply Air Blower Option** - Allows constant or multi-staged air delivery.
- **Downflow or Horizontal Airflow** - Easy field conversion.
- **Two Fork Lift Slots on Three Sides** - Easy to pick up and transport units from almost any angle.
- **Corrosion-Resistant Drain Pan** - Provides durability and improved serviceability and meets ASHRAE 62.1 requirements for drain pan slope..
- **MERV 8 or MERV 13 Filters** - Available as field installed option, provide an enhanced level of indoor air quality, and can help the building qualify for additional LEED credits.
- **Common Components** - Many maintenance items are standard throughout the entire product line, reducing the need to carry different parts to the job or maintain in inventory.

FEATURES AND BENEFITS

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APPROVALS

AHRI Certified to AHRI Standard 340/360-2007.

ETL Intertek listed.

Components bonded for grounding to meet safety standards for servicing required by UL, ULC and National and Canadian Electrical Codes.

All models are ASHRAE 90.1-2010 energy efficiency compliant and meet or exceed requirements of Section 6.8.

Models equipped with the MSAV option meet California Code of Regulations, Title 24 and ASHRAE 90.1-2010 Section 6.4.3.10 requirements for staged airflow.

ISO 9001 Registered Manufacturing Quality System.

WARRANTY

Limited five years on compressors.

Limited five years on Optional High Performance Economizers.

Limited one year all other covered components.

COOLING SYSTEM

Designed to maximize sensible and latent cooling performance at design conditions.

System can operate from 30°F to 125°F without any additional controls.

R-410A Refrigerant

Non-chlorine based, ozone friendly, R-410A.



1 Scroll Compressors

Scroll compressors on all models for high performance, reliability and quiet operation.

Resiliently mounted on rubber grommets for quiet operation.

Refrigerant Metering Orifice

Accurately meters refrigerant in system.

Refrigerant control is accomplished by exact sizing of refrigerant metering orifice.

Filter/Driers

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

Reversing Valve

4-way interchange reversing valve effects a rapid change in direction of refrigerant flow resulting in quick changeover from cooling to heating and vice versa.

Defrost Control

Provides a defrost cycle, if needed, every 30 or 60 or 90 minutes (adjustable) of compressor "on" time at outdoor coil temperature below 35°F. Pressure and temperature switches terminate defrost cycle.

High Pressure Switches

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

2 Coil Construction

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

Indoor Coil

Cross row circuiting with rifled tubing optimizes both sensible and latent cooling capacity.

Condensate Drain Pan

Plastic pan, sloped to meet drainage requirements of ASHRAE 62.1.

Side drain connections.

Outdoor Coil Fan Motors

Thermal overload protected, totally enclosed, permanently lubricated ball bearings, shaft up, wire basket mount.

3 Outdoor Coil Fans

PVC coated fan guard furnished.

FEATURES AND BENEFITS

COOLING SYSTEM **(continued)**

Required Selections

Cooling Capacity

Specify nominal cooling capacity of the unit.

Options/Accessories

Field Installed

Condensate Drain Trap

Available in copper or PVC.

Drain Pan Overflow Switch

Monitors condensate level in drain pan, shuts down unit if drain becomes clogged.

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 indoor coil and losing capacity. Designed for use in ambient temperatures no lower than 0°F.

CABINET

4 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 forklift slots.

Raised edges around duct and power entry openings in the bottom of the unit provide additional protection against water entering the building.

Airflow Choice

Units are shipped in downflow (vertical) configuration, can be field converted to horizontal airflow.

Duct Flanges

Provided for horizontal duct attachment.

Power Entry

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

Optional Bottom Power Entry Kit is available.

Exterior Panels

Constructed of heavy-gauge, galvanized steel with a two-layer enamel paint finish.

Insulation

All panels adjacent to conditioned air are fully insulated with non-hygroscopic fiberglass insulation.

Access Panels

Access panels are provided for the filter section, heating/blower section, and the compressor/controls section. Recessed handles allow easy access for servicing.

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, ASTM B117 Standard Method Salt Spray Testing.

Indoor Corrosion Protection:

- Coated coil

Outdoor Corrosion Protection:

- Coated coil

Field Installed

Combination Coil/Hail Guards

Heavy gauge steel frame painted to match cabinet with expanded metal mesh to protect the outdoor coil from damage.

FEATURES AND BENEFITS

5 BLOWER

A wide selection of supply air blower options are available to meet a variety of airflow requirements.

Motor

Overload protected, equipped with ball bearings. Belt drive motors are offered on all models and are available in several different sizes to maximize air performance.

Supply Air Blower

Forward curved blades, double inlet, blower wheel is statically and dynamically balanced. Equipped with ball bearings and adjustable pulley (allows speed change).

Blower assembly slides out of unit for servicing.

Required Selections

Select Constant Air Volume (CAV) or MSAV® (Multi-Stage Air Volume) Supply Air Blower Option

Order blower motor horsepower and drive kit number required when base unit is ordered, see Drive Kit Specifications Table.

CAV Operation

On units ordered with the Constant Air volume (CAV) option, the supply air blower will provide a constant volume of air.

6 MSAV Operation

Units ordered with the MSAV option utilize a Variable Frequency Drive (VFD) to stage the supply air blower airflow. The VFD alters the frequency and voltage of the power supply to the blower to control blower speed.

The supply air blower has two speeds:

1. Low speed for part-load cooling operation. Note - Low speed is 67% of high speed.
2. High speed for full load cooling and all heat modes.

Full speed blower operation is set by adjusting the motor pulley to deliver the desired air volume.

The ventilation speed is selectable between high and low speed.

NOTE - Part load airflow in cooling mode on MSAV units should not be set below 220 cfm/nominal full load ton to reduce the risk of evaporator coil freeze-up.

The VFD has an operational range of -40 to 125° F outdoor air ambient temperature.

Lower operating costs are obtained when the blower is operated on lower speeds.

MSAV Sequence of Operation

Blower operates in low speed for mechanical cooling mode (Y1), ventilation mode (G), or free cooling mode.

Blower operates in high speed for any other mode - mechanical cooling (Y1+Y2), free cooling + Y2 or heating (W1 and W1+W2).

Economizer damper minimum position is fully closed in unoccupied mode.

In occupied mode, the economizer damper minimum position is determined by the setting of the economizer control.

Note - Two-minimum fresh-air settings are only available on MSAV with the High Performance Economizer option.

CONTROLS

Unit Control

All control voltage is provided via a 24V (secondary) transformer with built-in circuit breaker protection.

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

Low Voltage Terminal Block -

Provides screw terminal connections for thermostat or controller wiring.

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

Smoke Detectors

NOTE - Smoke detectors are not available and must be field provided by installer.

Options/Accessories

Field Installed

Commercial Control Systems

L Connection® Network

Complete building automation control system for single or multi-zone applications. Options include local interface, software for local or remote communication, and hardware for networking other control functions.

See L Connection Network Product Specifications Bulletin for details.

Thermostats

Control system and thermostat options, see page 28.

Aftermarket unit controller options, see Options/Accessories table.

FEATURES AND BENEFITS

ELECTRICAL

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.

Required Selections

Voltage Choice

Specify when ordering base unit.

Options/Accessories

Field Installed

7 Electric Heat

Helix wound nichrome elements, individual element limit controls, wiring harness. See Options / Accessories tables for ordering information.

NOTE - Unit Fuse Block is required and must be ordered separately. See Electrical / Electric Heat tables for ordering information.

Bottom Power Entry Kit

Kit reduces the number of penetrations in the roof.

Kit includes bulkhead connectors to provides power and control wiring routing through the roof curb.

INDOOR AIR QUALITY

Air Filters

Disposable 2 inch filters furnished as standard.

Options/Accessories

Field Installed

Healthy Climate® High Efficiency

Air Filters

Disposable MERV 8 or MERV 13 (Minimum Efficiency Reporting Value based on ASHRAE 52.2) efficiency 2 inch pleated filters.

Replacement Filter Media Kit With Frame

Replaces existing pleated filter media. Includes washable metal mesh screen and metal frame with clip for holding replaceable non-pleated filter.

Indoor Air Quality (CO₂) Sensors

Monitors CO₂ levels, reports to the Unit Controller which adjusts economizer dampers as needed.

ECONOMIZER OPTIONS

Factory or Field Installed

NOTE - Downflow Economizer is factory or field installed. Horizontal Economizer is field installed only.

Economizer

(Standard and High Performance Common Features)

Barometric Relief Dampers allow relief of excess air, aluminum blade dampers prevent blow back and outdoor air infiltration during off cycle, Exhaust hood with bird screen furnished.

NOTE - Outdoor Air and Barometric Relief Exhaust Hoods are included when economizer is factory installed and are furnished with economizer when ordered for field installation.

Occupied/Unoccupied mode with field furnished setback thermostat.

Demand Control Ventilation (DCV) ready using optional CO₂ sensors.

Single temperature control is furnished with Economizer.

Outdoor air temperature sensor enables economizer if the outdoor temperature is less than the setpoint of the control.

Standard Economizer Features (Not for Title 24)

Downflow or Horizontal models with Barometric Relief Dampers and Hoods.

Parallel gear-driven action, return air and outdoor air dampers, plug-in connections to unit, nylon bearings, neoprene seals, 24-volt, fully-modulating spring return motor.

Standard Economizer Control Module

The Standard Economizer Control Module can be adjusted to operate based on outdoor air temperatures.



Economizer Controls:

- Damper Minimum Position
- Can be set lower than traditional minimum air requirements resulting in cost savings.

- IAQ Sensor - Signals dampers to modulate and maintain 55°F when CO₂ is higher than the CO₂ setpoint.
- Demand Control Ventilation (DCV) LED - A steady green Demand Control Ventilation LED indicates the IAQ reading is higher than setpoint and requires more fresh air.
- Free Cool LED - A steady green LED indicates outdoor air is suitable for free cooling.

Free Cooling runs when outdoor air temperature is lower than the set temperature on the economizer control.

NOTE: The Free Cooling default setting for outdoor air temperature sensor is 55°F.

High Performance Economizer Features

Approved for California Title 24 building standards.

ASHRAE 90.1-2010 compliant.

Downflow models with Barometric Relief Dampers and Hoods.

Parallel gear-driven action, high torque 24-volt fully-modulating spring return damper motor, return air and outdoor air dampers, plug-in connections to unit, stainless steel bearings, enhanced neoprene blade edge seals and flexible stainless steel jamb seals to minimize air leakage.

NOTE - High Performance Economizers are not approved for use with enthalpy controls in Title 24 applications.

High Performance Economizer Control Module

Module provides inputs and outputs to control economizer based on parameter settings.

Module automatically detects sensors by polling to determine which sensors are installed in system.

Module displays any alarm messages (fault detection and diagnostics) as an aid in troubleshooting.



Non-volatile memory retains parameter settings in case of power failure.

Keypad with four navigation buttons and LCD screen is furnished for setting economizer parameters.

- Menu Up/Exit (↑) button returns to the main menu.
- Arrow Up (▲) button moves to the previous or next parameter within the selected menu.
- Arrow Down (▼) button moves to the next parameter within the selected menu.
- Select (enter) (↵) button confirms parameter selection.

Main Menu Structure:

- STATUS (economizer and system operation status)
- SETPOINTS (settings for various setpoint parameters)
- SYSTEM SETUP (settings/information about the system)
- ADVANCED SETUP (freeze protection, CO₂ settings, stage 3 delay and additional calibration settings)
- CHECKOUT (damper positions)
- ALARMS (output signal that can be configured for remote alarm monitoring)

NOTE - The free cooling setpoint for Title 24 applications must be set based on the Climate Zone where the system is installed. See Section 140.4 "Prescriptive Requirements for Space Conditioning Systems" of the California Energy Commission's 2013 Building Energy Efficiency Standards.

Refer to Installation Instructions for complete setup information and menu parameters available.

OPTIONS / ACCESSORIES

ECONOMIZER OPTIONS

(continued)

Factory or Field Installed

Single Enthalpy Temperature Control

(Not for Title 24)

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

Field Installed

Differential Enthalpy Control (Not for Title 24)

Order two Single Enthalpy Control Kits. One is field installed in the return air section, the other in the outdoor air section. Allows the economizer control board to select between outdoor air or return air, whichever has lower enthalpy.

EXHAUST OPTIONS

Field Installed

Horizontal Low Profile

Barometric Relief Dampers

For use when unit is configured for horizontal applications in a reduced space requiring an economizer.

Allows relief of excess air.

Aluminum blade dampers prevent blow back and outdoor air infiltration during off cycle.

Field installed in return air duct.

Exhaust hood with bird screen furnished.

Power Exhaust Fan

Installs internal to unit for downflow applications only 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. Requires Economizer with Outdoor Air Hood and Barometric Relief Dampers. Fan is 20 in. diameter with 5 blades (K1PWRE10B) WITH 1/3 hp motor.

OUTDOOR AIR OPTIONS

Field Installed

Outdoor Air Damper - Downflow or Horizontal With Air Hood

Linked mechanical dampers, 0 to 25% (fixed) outdoor air adjustable, installs in unit. Includes outdoor air hood.

Automatic model features fully modulating spring return damper motor with plug-in connection.

Manual model features a slide damper.

Maximum mixed air temperature in cooling mode: 100°F.

ROOF CURBS

Hybrid Roof Curbs, Downflow

Nailer strip furnished, mates to unit, US National Roofing Contractors Approved, shipped knocked down.

Roof curb can be assembled using interlocking tabs to fasten corners together. No tools required.

Curb can also be fastened together with furnished hardware.

Available in 8, 14, 18, and 24 inch heights.

CEILING DIFFUSERS

Ceiling Diffusers

(Flush or Step-Down)

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)

NOTE - Ceiling Diffuser Transitions are not furnished and must be field fabricated.

OPTIONS / ACCESSORIES

Item Description	Model Number	Catalog Number	Unit Model No		
			092	102	120
COOLING SYSTEM					
Condensate Drain Trap	PVC - C1TRAP20AD2	76W26	X	X	X
	Copper - C1TRAP10AD2	76W27	X	X	X
Corrosion Protection		Factory	O	O	O
Drain Pan Overflow Switch	Z1SNSR90A1	99W59	X	X	X
Low Ambient Kit	Z1SNSR33B-1	10Z34	X	X	X
Refrigerant Type		R-410A	O	O	O
BLOWER - SUPPLY AIR					
Blower Option	CAV (Constant Air Volume)	Factory	O	O	O
	MSAV (Multi-Stage Air Volume)	Factory	O	O	O
Blower Motors	Belt Drive - 2 hp	Factory	O	O	O
	Belt Drive - 3 hp	Factory	O	O	O
	Belt Drive - 5 hp	Factory	O	O	O
Drive Kits	Kit #1 590-890 rpm	Factory	O	O	O
See Blower Data Tables for selection	Kit #2 800-1105 rpm	Factory	O	O	O
	Kit #3 795-1195 rpm	Factory	O	O	O
	Kit #4 730-970 rpm	Factory	O	O	O
	Kit #5 940-1200 rpm	Factory	O	O	O
	Kit #6 1015-1300 rpm	Factory	O	O	O
	Kit #10 900-1135 rpm	Factory	O	O	O
	Kit #11 1040-1315 rpm	Factory	O	O	O
	Kit #12 1125-1425 rpm	Factory	O	O	O
CABINET					
Combination Coil/Hail Guards	Z1GARD52B-1	12X21	X	X	X
CONTROLS					
	L Connection® Building Automation System	- - -	X	X	X
BACnet®	K0CTRL31B-1	96W15	OX	OX	OX
BACnet® Thermostat with Display	K0SNSR01FF1	97W23	X	X	X
BACnet® Thermostat without Display	K0SNSR00FF1	97W24	X	X	X
Novar® 2051	K0CTRL30B-1	96W12	OX	OX	OX
Plenum Cable (75 ft.)	K0MISC00FF1	97W25	X	X	X

NOTE - Catalog and model numbers shown are for ordering field installed accessories.

OX - Configure To Order (Factory Installed) or Field Installed

O = Configure To Order (Factory Installed)

X = Field Installed

OPTIONS / ACCESSORIES

Item Description	Model Number	Catalog Number	Unit Model No		
			092	102	120
INDOOR AIR QUALITY					
Air Filters					
Healthy Climate® High Efficiency Air Filters 20 x 24 x 2 in. (Order 4 per unit)	MERV 8 - Z1FLTR15B-1	14C35	X	X	X
	MERV 13 - Z1FLTR40B-1	14C36	X	X	X
Replacement Media Filter With Metal Mesh Frame (includes non-pleated filter media)	C1FLTR30B-1-	Y3063	X	X	X
Indoor Air Quality (CO ₂) Sensors					
Sensor - Wall-mount, off-white plastic cover with LCD display	C0SNSR50AE1L	77N39	X	X	X
Sensor - Wall-mount, off-white plastic cover, no display	C0SNSR52AE1L	87N53	X	X	X
Sensor - Black plastic case with LCD display, rated for plenum mounting	C0SNSR51AE1L	87N52	X	X	X
Sensor - Wall-mount, black plastic case, no display, rated for plenum mounting	C0MISC19AE1	87N54	X	X	X
CO ₂ Sensor Duct Mounting Kit - for downflow applications	C0MISC19AE1-	85L43	X	X	X
Aspiration Box - for duct mounting non-plenum rated CO ₂ sensors (87N53 or 77N39)	C0MISC16AE1-	90N43	X	X	X
ELECTRICAL					
Voltage 60 hz	208/230V - 3 phase	Factory	O	O	O
	460V - 3 phase	Factory	O	O	O
	575V - 3 phase	Factory	O	O	O
Bottom Power Entry Kit	Z1PEKT01B-1	11H66	X	X	X
ELECTRIC HEAT					
7.5 kW	208/230V-3ph - Z1EHO075B-1Y	10Y97	X	X	
	460V-3ph - Z1EHO075B-1G	10Y98	X	X	
	575V-3ph - Z1EHO075B-1J	10Y99	X	X	
15 kW	208/230V-3ph - Z1EHO150B-1Y	10Z01	X	X	X
	460V-3ph - Z1EHO150B-1G	10Z03	X	X	X
	575V-3ph - Z1EHO150B-1J	10Z04	X	X	X
22.5 kW	208/230V-3ph - Z1EHO225B-1Y	10Z05	X	X	X
	460V-3ph - Z1EHO225B-1G	10Z06	X	X	X
	575V-3ph - Z1EHO225B-1J	10Z07	X	X	X
30 kW	208/230V-3ph - Z1EHO300B-1Y	10Z08	X	X	X
	460V-3ph - Z1EHO300B-1G	10Z09	X	X	X
	575V-3ph - Z1EHO300B-1J	10Z10	X	X	X
45 kW	208/230V-3ph - Z1EHO450B-1Y	10Z11	X	X	X
	460V-3ph - Z1EHO450B-1G	10Z12	X	X	X
	575V-3ph - Z1EHO450B-1J	10Z13	X	X	X
60 kW	208/230V-3ph - Z1EHO600B-1Y	10Z14			X
	460V-3ph - Z1EHO600B-1G	10Z15			X
	575V-3ph - Z1EHO600B-1J	10Z16			X
ELECTRIC HEAT ACCESSORIES					
Unit Fuse Block (required) - See Electrical/Electric Heat Tables for Selection			X	X	X

NOTE - Catalog and model numbers shown are for ordering field installed accessories.

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O = Configure To Order (Factory Installed)

X = Field Installed

OPTIONS / ACCESSORIES

Item Description	Model Number	Catalog Number	Unit Model No		
			092	102	120
ECONOMIZER					
Standard Economizer (Not for Title 24)					
Standard Downflow Economizer with Single Temperature Control - With Barometric Relief Dampers and Air Hoods	Z1ECON30B-1	10Z29	OX	OX	OX
Standard Horizontal Economizer with Single Temperature Control - With Barometric Relief Dampers and Air Hoods	Z1ECON16B-1	11G98	X	X	X
Standard Economizer Controls (Not for Title 24)					
Single Enthalpy Control	C1SNSR64FF1	53W64	OX	OX	OX
Differential Enthalpy Control (order 2)	C1SNSR64FF1	53W64	X	X	X
High Performance Economizer (Approved for California Title 24 Building Standards)					
High Performance Downflow Economizer with Single Temperature Control - With Barometric Relief Dampers and Air Hoods	Z1ECON32B-1	12B44	OX	OX	OX
High Performance Economizer Controls (Not for Title 24)					
Single Enthalpy Control	C1SNSR61FF1	11G21	OX	OX	OX
Differential Enthalpy Control (order 2)	C1SNSR61FF1	11G21	X	X	X
Horizontal Low Profile Barometric Relief Dampers With Exhaust Hood					
Horizontal Low Profile Barometric Relief Dampers With Exhaust Hood	LAGEDH03/15	53K04	X	X	X
OUTDOOR AIR					
Outdoor Air Dampers					
Motorized Dampers with outdoor air hood	Z1DAMP20B-1	10Z33	X	X	X
Manual Dampers with outdoor air hood	Z1DAMP10B-1	10Z32	X	X	X
POWER EXHAUST					
Standard Static (Downflow)	208/230V-3ph - Z1PWRE10B-1Y	10Z70	X	X	X
	460V-3ph - Z1PWRE10B-1G	10Z71	X	X	X
Standard Static (Horizontal)	208/230V-3ph - Z1PWRE15A-1P	24E01	X	X	X
	460V-3ph - Z1PWRE15A-1G	28E01	X	X	X
575V Transformer Kit	575V-3ph - Z1TRFM20A-1J	59E02	X	X	X
NOTE - Order 575V Transformer Kit with 208/230V Power Exhaust Fan for 575V applications. Order two kits for downflow models, order one kit for horizontal models.					
ROOF CURBS					
Hybrid Roof Curbs, Downflow					
8 in. height	Z1CURB40B-1	10Z25	X	X	X
14 in. height	Z1CURB41B-1	10Z26	X	X	X
18 in. height	Z1CURB42B-1	10Z27	X	X	X
24 in. height	Z1CURB43B-1	10Z28	X	X	X
CEILING DIFFUSERS					
Step-Down - Order one	RTD11-95	29G04	X		
	RTD11-135	29G05		X	X
Flush - Order one	FD11-95	29G08	X		
	FD11-135	29G09		X	X

NOTE - Ceiling Diffuser Transitions are not furnished and must be field fabricated.

NOTE - Catalog and model numbers shown are for ordering field installed accessories.

OX - Configure To Order (Factory Installed) or Field Installed

O = Configure To Order (Factory Installed)

X = Field Installed

SPECIFICATIONS			7.5 - 8.5 TON			
General Data		Nominal Tonnage	7.5 Ton	7.5 Ton	8.5 Ton	8.5 Ton
		Model Number	ZHA092S4B	ZHA092S4M	ZHA102S4B	ZHA102S4M
		Efficiency Type	Standard	Standard	Standard	Standard
		Blower Type	Constant Air Volume (CAV)	MSAV (Multi-Stage Air Volume)	Constant Air Volume (CAV)	MSAV (Multi-Stage Air Volume)
Cooling Performance	Gross Cooling Capacity - Btuh	89,400	89,400	103,200	103,200	
	¹ Net Cooling Capacity - Btuh	87,000	87,000	100,000	100,000	
	AHRI Rated Air Flow - cfm	2800	2800	3150	3150	
	Total Unit Power - kW	7.9	7.9	9.1	9.1	
	¹ EER (Btuh/Watt)	11.0	11.0	11.0	11.0	
	¹ IEER (Btuh/Watt)	12.2	12.5	12.2	12.5	
	Refrigerant Type	R-410A	R-410A	R-410A	R-410A	
	Refrigerant Charge Furnished	Circuit 1	11 lbs. 12 oz.	11 lbs. 12 oz.	11 lbs. 10 oz.	11 lbs. 10 oz.
	Circuit 2	10 lbs. 8 oz.	10 lbs. 8 oz.	9 lbs. 14 oz.	9 lbs. 14 oz.	
Heating Performance	¹ Total High Heat Capacity - Btuh	89,000	89,000	100,000	100,000	
	Total Unit Power - kW	7.9	7.9	8.9	8.9	
	¹ C.O.P.	3.3	3.3	3.3	3.3	
	¹ Total Low Heat Capacity - Btuh	53,000	53,000	55,000	55000	
	Total Unit Power (kW)	6.9	6.9	7.2	7.2	
	¹ C.O.P.	2.25	2.25	2.25	2.25	
Electric Heat Available - See page 10		7.5,15,22.5,30 & 45 kW				
Compressor Type (number)		Scroll (2)	Scroll (2)	Scroll (2)	Scroll (2)	
Outdoor Coils	Net face area (total) - sq. ft.	26.2	26.2	26.2	26.2	
	Tube diameter - in.	3/8	3/8	3/8	3/8	
	Number of rows	2	2	2	2	
	Fins per inch	20	20	20	20	
	Expansion device type	Balance port TXV, removable head				
Outdoor Coil Fans	Motor - (No.) hp	(2) 1/3	(2) 1/3	(2) 1/3	(2) 1/3	
	Motor rpm	1075	1075	1075	1075	
	Total Motor watts	650	650	650	650	
	Diameter - (No.) in.	(2) 24	(2) 24	(2) 24	(2) 24	
	Number of blades	3	3	3	3	
	Total Air volume - cfm	8800	8800	8800	8800	
Indoor Coils	Net face area (total) - sq. ft.	12.8	12.8	12.8	12.8	
	Tube diameter - in.	3/8	3/8	3/8	3/8	
	Number of rows	3	3	4	4	
	Fins per inch	14	14	14	14	
	Drain connection - Number and size	(1) 1 in. NPT coupling				
	Expansion device type	Refrigerant Metering Orifice (RFC)				
² Indoor Blower and Drive Selection	Nominal motor output	2 hp, 3 hp, 5 hp				
	Maximum usable motor output (US Only)	2.3 hp, 3.45 hp, 5.75 hp				
	Motor - Drive kit number	2 hp Kit 1 590-890 rpm Kit 2 800-1105 rpm Kit 3 795-1195 rpm 3 hp Kit 4 730-970 rpm Kit 5 940-1200 rpm Kit 6 1015-1300 rpm 5 hp Kit 10 900-1135 rpm Kit 11 1040-1315 rpm Kit 12 1125-1425 rpm				
	Blower wheel nominal diameter x width - in.	(1) 15 X 15	(1) 15 X 15	(1) 15 X 15	(1) 15 X 15	
	Filters	Type of filter	Disposable			
	Number and size - in.	(4) 20 x 24 x 2				
Electrical characteristics		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.

¹ AHRI Certified to AHRI Standard 340/360:

Cooling Ratings - 95°F outdoor air temperature and 80°F db/67°F wb entering indoor coil air.

High Temperature Heating Ratings - 47°F db/43°F wb outdoor air temperature and 70°F entering indoor coil air.

Low Temperature Heating Ratings - 17°F db/15°F wb outdoor air temperature and 70°F entering indoor coil air.

² Using total air volume and system static pressure requirements determine from blower performance tables rpm and motor output required. Maximum usable output of motors furnished are shown. In Canada, nominal motor output is also maximum usable motor output. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

NOTE - Units equipped with MSAV® (Multi-Stage Air Volume) option are limited to a motor service factor of 1.0.

SPECIFICATIONS			10 TON
General Data	Nominal Tonnage	10 Ton	10 Ton
	Model Number	ZHA120S4B	ZHA120S4M
	Efficiency Type	Standard	Standard
	Blower Type	Constant Air Volume (CAV)	MSAV (Multi-Stage Air Volume)
Cooling Performance	Gross Cooling Capacity - Btuh	121,900	121,900
	¹ Net Cooling Capacity - Btuh	118,000	118,000
	AHRI Rated Air Flow - cfm	3600	3600
	Total Unit Power - kW	10.7	10.7
	¹ EER (Btuh/Watt)	11.0	11.0
	¹ IEER (Btuh/Watt)	11.3	12.5
	Refrigerant Type	R-410A	R-410A
	Refrigerant Charge Furnished		
	Circuit 1	16 lbs. 0 oz.	16 lbs. 0 oz.
	Circuit 2	14 lbs. 12 oz.	14 lbs. 12 oz.
Heating Performance	¹ Total High Heat Capacity - Btuh	116,000	116,000
	Total Unit Power - kW	10.3	10.3
	¹ C.O.P.	3.3	3.3
	¹ Total Low Heat Capacity - Btuh	70,000	70,000
	Total Unit Power (kW)	9.1	9.1
	¹ C.O.P.	2.25	2.25
Electric Heat Available - See page 10		15, 22.5, 30, 45 and 60 KW	
Compressor Type (number)		Scroll (2)	Scroll (2)
Outdoor Coils	Net face area (total) - sq. ft.	26.2	26.2
	Tube diameter - in.	3/8	3/8
	Number of rows	3	3
	Fins per inch	20	20
	Expansion device type	Balance port TXV, removable head	
Outdoor Coil Fans	Motor - (No.) hp	(2) 1/2	(2) 1/2
	Motor rpm	1075	1075
	Total Motor watts	960	960
	Diameter - (No.) in.	(2) 24	(2) 24
	Number of blades	3	3
	Total Air volume - cfm	9000	9000
Indoor Coils	Net face area (total) - sq. ft.	13.54	13.54
	Tube diameter - in.	3/8	3/8
	Number of rows	4	4
	Fins per inch	14	14
	Drain connection - Number and size	(1) 1 in. NPT coupling	
² Indoor Blower and Drive Selection	Nominal motor output	2 hp, 3 hp, 5 hp	
	Maximum usable motor output (US Only)	2.3 hp, 3.45 hp, 5.75 hp	
	Motor - Drive kit number	2 hp Kit 1 590-890 rpm Kit 2 800-1105 rpm Kit 3 795-1195 rpm 3 hp Kit 4 730-970 rpm Kit 5 940-1200 rpm Kit 6 1015-1300 rpm 5 hp Kit 10 900-1135 rpm Kit 11 1040-1315 rpm Kit 12 1125-1425 rpm	
	Blower wheel nominal diameter x width - in.	(1) 15 X 15	(1) 15 X 15
Filters	Type of filter	Disposable	
	Number and size - in.	(4) 20 x 24 x 2	
Electrical characteristics		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.

¹ AHRI Certified to AHRI Standard 340/360:

Cooling Ratings - 95°F outdoor air temperature and 80°F db/67°F wb entering indoor coil air.

High Temperature Heating Ratings - 47°F db/43°F wb outdoor air temperature and 70°F entering indoor coil air.

Low Temperature Heating Ratings - 17°F db/15°F wb outdoor air temperature and 70°F entering indoor coil air.

² Using total air volume and system static pressure requirements determine from blower performance tables rpm and motor output required. Maximum usable output of motors furnished are shown. In Canada, nominal motor output is also maximum usable motor output. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

NOTE – Units equipped with MSAV® (Multi-Stage Air Volume) option are limited to a motor service factor of 1.0.

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 COOLING STANDARD EFFICIENCY ZHA092S4 (1ST STAGE) - CONSTANT AIR VOLUME

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																							
		65°F						75°F						85°F						95°F					
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)						
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb						
				75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F				
cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F					
63°F	2400	52.4	2.75	0.57	0.85	1	49.6	3.17	0.58	0.92	1	46.7	3.63	0.59	0.99	1	43.9	4.14	0.61	1	1				
	3000	54.9	2.76	0.61	1	1	52.4	3.18	0.63	1	1	49.5	3.64	0.64	1	1	46.6	4.15	0.74	1	1				
	3600	57.5	2.76	0.71	1	1	54.7	3.19	0.79	1	1	51.8	3.65	0.87	1	1	48.7	4.16	0.96	1	1				
67°F	2400	55.6	2.76	0.44	0.55	0.73	52.6	3.18	0.44	0.56	0.8	49.6	3.64	0.45	0.57	0.89	46.3	4.15	0.45	0.59	0.97				
	3000	57.9	2.76	0.47	0.6	0.99	54.7	3.19	0.47	0.61	1	51.4	3.65	0.48	0.63	1	48.1	4.16	0.49	0.64	1				
	3600	59.5	2.76	0.5	0.64	1	56.2	3.19	0.5	0.71	1	52.8	3.65	0.51	0.8	1	49.4	4.16	0.53	0.89	1				
71°F	2400	59	2.76	0.32	0.43	0.54	56	3.19	0.32	0.44	0.55	52.7	3.65	0.32	0.44	0.56	49.3	4.16	0.32	0.45	0.57				
	3000	61.3	2.76	0.34	0.46	0.58	58.1	3.19	0.34	0.47	0.6	54.7	3.65	0.34	0.48	0.61	51.2	4.17	0.34	0.49	0.63				
	3600	63.1	2.76	0.35	0.49	0.63	59.6	3.19	0.35	0.5	0.64	56.2	3.66	0.35	0.51	0.72	52.6	4.17	0.35	0.52	0.81				

7.5 TON COOLING STANDARD EFFICIENCY ZHA092S4 (2ND STAGE) - CONSTANT AIR VOLUME

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																							
		85°F						95°F						105°F						115°F					
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)						
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb						
				75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F				
cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F					
63°F	2400	84.6	5.72	0.71	0.85	0.95	79	6.54	0.72	0.87	0.96	73.1	7.45	0.73	0.89	0.98	66.7	8.45	0.75	0.91	0.99				
	3000	89.8	5.74	0.76	0.91	0.99	84.2	6.57	0.78	0.93	1	78.1	7.48	0.8	0.94	1	71.6	8.49	0.83	0.96	1				
	3600	94.4	5.76	0.82	0.95	1	88.4	6.59	0.84	0.96	1	82.1	7.51	0.86	0.98	1	75.4	8.51	0.89	1	1				
67°F	2400	90.4	5.74	0.56	0.69	0.82	84.6	6.56	0.56	0.7	0.84	78.4	7.49	0.56	0.71	0.86	71.7	8.49	0.56	0.73	0.89				
	3000	95.6	5.77	0.59	0.74	0.89	89.4	6.59	0.59	0.76	0.91	82.9	7.52	0.6	0.77	0.92	75.6	8.52	0.61	0.8	0.94				
	3600	99.4	5.79	0.62	0.79	0.93	93	6.61	0.63	0.81	0.94	86.1	7.53	0.64	0.84	0.96	78.6	8.54	0.65	0.87	0.98				
71°F	2400	96	5.77	0.42	0.54	0.66	90.2	6.6	0.41	0.54	0.67	84	7.52	0.4	0.55	0.69	77	8.53	0.4	0.55	0.7				
	3000	101.7	5.79	0.43	0.58	0.72	95.5	6.62	0.43	0.58	0.73	88.7	7.54	0.42	0.59	0.75	81.2	8.54	0.42	0.6	0.78				
	3600	105.7	5.8	0.45	0.61	0.77	99.2	6.63	0.44	0.62	0.79	92.2	7.55	0.44	0.63	0.81	84.4	8.56	0.44	0.64	0.84				

7.5 TON HEATING STANDARD EFFICIENCY ZHA092S4 - CONSTANT AIR VOLUME

Indoor Coil Air Volume 70°F Dry Bulb cfm	Air Temperature Entering Outdoor Coil									
	65°F		45°F		25°F		5°F		-15°F	
	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input
	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW
2400	119.7	7.82	90.9	7.27	61.7	6.72	37.4	5.98	18.9	4.51
3000	121.6	7.26	92.8	6.71	63.6	6.16	39.3	5.41	20.8	3.95
3600	123	6.92	94.2	6.37	65	5.82	40.7	5.08	22.2	3.61

RATINGS

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

8.5 TON COOLING STANDARD EFFICIENCY ZHA102S4 (1ST STAGE) - CONSTANT AIR VOLUME

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		65°F					75°F					85°F					95°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)							
				Dry Bulb					Dry Bulb					Dry Bulb							
				75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F					
cfm	kBtu/h	kW	75°F	80°F	85°F	kBtu/h	kW	75°F	80°F	85°F	kBtu/h	kW	75°F	80°F	85°F	kBtu/h	kW	75°F	80°F	85°F	
63°F	2720	59.4	2.7	0.63	1	1	56.5	3.12	0.65	1	1	53.5	3.57	0.66	1	1	50.3	4.07	0.68	1	1
	3400	63.2	2.7	0.69	1	1	60	3.12	0.71	1	1	56.8	3.58	0.72	1	1	53.5	4.08	0.92	1	1
	4080	66	2.7	0.83	1	1	62.8	3.12	0.99	1	1	59.4	3.58	1	1	1	55.8	4.08	1	1	1
67°F	2720	62.7	2.7	0.48	0.62	0.83	59.4	3.12	0.49	0.63	1	55.7	3.58	0.5	0.65	1	52	4.07	0.5	0.66	1
	3400	65	2.7	0.52	0.67	1	61.4	3.12	0.53	0.69	1	57.8	3.58	0.54	0.71	1	53.9	4.08	0.55	0.73	1
	4080	66.9	2.7	0.56	0.72	1	63.2	3.12	0.57	0.87	1	59.4	3.58	0.58	1	1	55.8	4.08	0.6	1	1
71°F	2720	66.9	2.7	0.35	0.48	0.6	63.5	3.12	0.35	0.48	0.61	59.8	3.58	0.35	0.49	0.63	55.9	4.08	0.35	0.5	0.65
	3400	69.2	2.69	0.37	0.52	0.66	65.7	3.11	0.37	0.53	0.67	61.7	3.58	0.37	0.54	0.69	57.7	4.08	0.37	0.55	0.71
	4080	71.1	2.69	0.38	0.55	0.71	67.1	3.11	0.39	0.56	0.72	63.1	3.57	0.39	0.58	0.91	58.9	4.08	0.39	0.6	1

8.5 TON COOLING STANDARD EFFICIENCY ZHA102S4 (2ND STAGE) - CONSTANT AIR VOLUME

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
				75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F
cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	
63°F	2720	99.6	6.85	0.68	0.83	0.97	92	7.8	0.68	0.86	0.99	83.9	8.85	0.69	0.89	1	75.3	10.04	0.71	0.93	1
	3400	106	6.89	0.73	0.92	1	97.9	7.83	0.75	0.95	1	89.8	8.9	0.77	0.97	1	81.3	10.1	0.81	0.99	1
	4080	111.4	6.91	0.8	0.98	1	103.5	7.87	0.82	0.99	1	95.2	8.94	0.86	1	1	86.7	10.13	0.9	1	1
67°F	2720	107.6	6.89	0.52	0.66	0.79	99.5	7.84	0.52	0.66	0.82	91.4	8.91	0.52	0.67	0.84	82.2	10.1	0.52	0.69	0.88
	3400	113.7	6.92	0.56	0.71	0.89	105.2	7.88	0.56	0.73	0.92	96.3	8.94	0.57	0.74	0.94	86.7	10.13	0.57	0.78	0.97
	4080	118.2	6.94	0.6	0.77	0.96	109.4	7.89	0.6	0.8	0.97	100.1	8.97	0.61	0.83	0.99	90	10.15	0.62	0.87	1
71°F	2720	115.5	6.93	0.39	0.51	0.63	107.4	7.89	0.38	0.51	0.64	98.9	8.96	0.37	0.51	0.65	89.3	10.15	0.35	0.51	0.67
	3400	122.1	6.95	0.41	0.55	0.69	113.3	7.91	0.4	0.55	0.7	104	8.98	0.39	0.56	0.72	94.1	10.18	0.38	0.57	0.75
	4080	126.5	6.96	0.42	0.58	0.75	117.6	7.93	0.41	0.59	0.77	108	9.01	0.41	0.6	0.8	97.5	10.2	0.4	0.62	0.85

8.5 TON HEATING STANDARD EFFICIENCY ZHA102S4 - CONSTANT AIR VOLUME

Indoor Coil Air Volume 70°F Dry Bulb cfm	Air Temperature Entering Outdoor Coil									
	65°F		45°F		25°F		5°F		-15°F	
	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input
2720	127.2	7.97	95.8	7.33	63.7	6.67	38.8	5.97	19.6	4.5
3400	129.4	7.45	98	6.81	65.9	6.15	41	5.44	21.7	3.98
4080	131.1	7.12	99.7	6.48	67.6	5.82	42.7	5.11	23.4	3.65

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 COOLING STANDARD EFFICIENCY ZHA120S4 (1ST STAGE) - CONSTANT AIR VOLUME

Entering Wet Bulb Temper- ature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		65°F					75°F					85°F					95°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
				75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F
63°F	3200	67.1	2.84	1	0.93	0.94	62.9	3.22	1	0.93	0.93	58.6	3.65	1	0.92	0.93	54	4.12	1	0.92	0.92
	4000	71	2.88	1	0.92	0.93	66.6	3.26	1	0.91	0.92	61.9	3.68	1	0.91	0.91	57.3	4.16	0.91	0.91	0.91
	4800	73.9	2.91	0.91	0.91	0.91	69.2	3.29	0.91	0.91	0.91	64.5	3.71	0.91	0.91	0.91	59.6	4.19	0.91	0.91	0.91
67°F	3200	69.8	2.87	1	1	0.96	65.1	3.24	1	1	0.93	60.1	3.66	1	1	0.93	55.1	4.13	1	1	0.92
	4000	72.3	2.89	1	1	0.93	67.3	3.27	1	1	0.92	62.3	3.69	1	1	0.91	57.3	4.16	1	0.91	0.91
	4800	74.1	2.9	1	1	0.91	69.3	3.29	1	0.95	0.91	64.6	3.72	1	0.91	0.91	59.5	4.19	1	0.91	0.91
71°F	3200	74.3	2.91	1	1	1	69.3	3.29	1	1	1	64.2	3.71	1	1	1	58.9	4.18	1	1	1
	4000	76.4	2.94	1	1	1	71.4	3.32	1	1	1	66.1	3.73	1	1	1	60.5	4.2	1	1	0.93
	4800	77.9	2.95	1	1	1	72.7	3.33	1	1	1	67.4	3.75	1	1	0.92	61.7	4.22	1	1	0.91

10 TON COOLING STANDARD EFFICIENCY ZHA120S4 (2ND STAGE) - CONSTANT AIR VOLUME

Entering Wet Bulb Temper- ature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
				75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F
63°F	cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F
	3200	118	7.62	0.68	0.84	0.99	108.4	8.63	0.69	0.86	1	98.3	9.77	0.7	0.89	1	87.3	11.08	0.72	0.94	1
	4000	125.3	7.68	0.75	0.93	1	115.3	8.69	0.76	0.96	1	104.8	9.83	0.79	0.99	1	94.1	11.14	0.81	1	1
67°F	4800	131.2	7.74	0.81	1	1	121.4	8.75	0.83	1	1	111.7	9.9	0.86	1	1	101.1	11.23	0.9	1	1
	3200	127.3	7.71	0.53	0.66	0.81	117.4	8.71	0.53	0.67	0.83	106.7	9.86	0.52	0.69	0.85	95.4	11.16	0.52	0.7	0.89
	4000	134.4	7.77	0.57	0.72	0.89	123.9	8.78	0.57	0.74	0.92	112.6	9.91	0.57	0.76	0.96	100.5	11.21	0.57	0.79	1
71°F	4800	139.7	7.82	0.6	0.79	0.97	128.4	8.82	0.61	0.81	1	116.9	9.96	0.62	0.84	1	104.4	11.25	0.63	0.88	1
	3200	136.7	7.79	0.39	0.52	0.64	126.4	8.8	0.38	0.52	0.65	115.4	9.94	0.36	0.52	0.66	103.7	11.24	0.34	0.52	0.68
	4000	143.9	7.86	0.41	0.56	0.7	133.1	8.86	0.4	0.56	0.72	121.5	10.01	0.39	0.57	0.74	109	11.29	0.37	0.58	0.77
	4800	149.1	7.92	0.43	0.6	0.77	137.8	8.92	0.42	0.6	0.79	125.4	10.05	0.41	0.61	0.82	112.4	11.35	0.4	0.63	0.86

10 TON HEATING STANDARD EFFICIENCY ZH120S4 - CONSTANT AIR VOLUME

Indoor Coil Air Volume 70°F Dry Bulb cfm	Air Temperature Entering Outdoor Coil									
	65°F		45°F		25°F		5°F		-15°F	
	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input
	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW
3200	145.4	9.22	112.8	8.29	79.6	7.31	51.1	6.44	25.3	4.9
4000	147.9	8.64	115.2	7.7	82.1	6.73	53.6	5.85	27.8	4.31
4800	149.8	8.28	117.1	7.34	84	6.37	55.5	5.49	29.7	3.95

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 COOLING STANDARD EFFICIENCY ZHA092S4 (1ST STAGE) - MSAV (Multi-Stage Air Volume) SUPPLY AIR BLOWER

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		65°F					75°F					85°F					95°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
				cfm	kBtuh	kW			75°F	80°F	85°F			kBtuh	kW	75°F			80°F	85°F	kBtuh
63°F	1680	47.6	2.68	0.57	0.73	0.96	45	3.09	0.58	0.76	0.99	42.3	3.54	0.58	0.8	1	39.5	4.03	0.59	0.83	1
	2100	50	2.69	0.61	0.86	1	47.3	3.11	0.62	0.89	1	44.5	3.56	0.63	0.93	1	41.5	4.05	0.66	0.97	1
	2520	51.9	2.7	0.67	0.96	1	49.2	3.12	0.69	0.99	1	46.4	3.57	0.73	1	1	43.6	4.07	0.77	1	1
67°F	1680	50.5	2.7	0.45	0.55	0.68	48	3.11	0.45	0.56	0.7	45.1	3.56	0.45	0.57	0.73	42.2	4.06	0.46	0.58	0.77
	2100	53.2	2.71	0.48	0.59	0.8	50.4	3.12	0.48	0.6	0.83	47.5	3.58	0.48	0.61	0.87	44.3	4.07	0.49	0.63	0.92
	2520	55.1	2.71	0.5	0.63	0.91	52.2	3.12	0.5	0.66	0.94	49.1	3.59	0.51	0.69	0.97	45.8	4.08	0.52	0.73	1
71°F	1680	53.6	2.71	0.35	0.44	0.53	50.8	3.12	0.34	0.44	0.54	48	3.58	0.34	0.44	0.55	45.1	4.08	0.33	0.45	0.56
	2100	56.4	2.71	0.36	0.47	0.57	53.4	3.13	0.35	0.47	0.58	50.4	3.59	0.35	0.47	0.59	47.2	4.09	0.35	0.48	0.61
	2520	58.4	2.71	0.37	0.49	0.61	55.4	3.13	0.36	0.5	0.62	52.1	3.59	0.36	0.5	0.65	48.8	4.09	0.36	0.51	0.69

7.5 TON COOLING STANDARD EFFICIENCY ZHA092S4 (2ND STAGE) - MSAV (Multi-Stage Air Volume) SUPPLY AIR BLOWER

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
				cfm	kBtuh	kW			75°F	80°F	85°F			kBtuh	kW	75°F			80°F	85°F	kBtuh
63°F	2400	84.6	5.72	0.71	0.85	0.95	79	6.54	0.72	0.87	0.96	73.1	7.45	0.73	0.89	0.98	66.7	8.45	0.75	0.91	0.99
	3000	89.8	5.74	0.76	0.91	0.99	84.2	6.57	0.78	0.93	1	78.1	7.48	0.8	0.94	1	71.6	8.49	0.83	0.96	1
	3600	94.4	5.76	0.82	0.95	1	88.4	6.59	0.84	0.96	1	82.1	7.51	0.86	0.98	1	75.4	8.51	0.89	1	1
67°F	2400	90.4	5.74	0.56	0.69	0.82	84.6	6.56	0.56	0.7	0.84	78.4	7.49	0.56	0.71	0.86	71.7	8.49	0.56	0.73	0.89
	3000	95.6	5.77	0.59	0.74	0.89	89.4	6.59	0.59	0.76	0.91	82.9	7.52	0.6	0.77	0.92	75.6	8.52	0.61	0.8	0.94
	3600	99.4	5.79	0.62	0.79	0.93	93	6.61	0.63	0.81	0.94	86.1	7.53	0.64	0.84	0.96	78.6	8.54	0.65	0.87	0.98
71°F	2400	96	5.77	0.42	0.54	0.66	90.2	6.6	0.41	0.54	0.67	84	7.52	0.4	0.55	0.69	77	8.53	0.4	0.55	0.7
	3000	101.7	5.79	0.43	0.58	0.72	95.5	6.62	0.43	0.58	0.73	88.7	7.54	0.42	0.59	0.75	81.2	8.54	0.42	0.6	0.78
	3600	105.7	5.8	0.45	0.61	0.77	99.2	6.63	0.44	0.62	0.79	92.2	7.55	0.44	0.63	0.81	84.4	8.56	0.44	0.64	0.84

7.5 TON HEATING STANDARD EFFICIENCY ZHA092S4 - MSAV (Multi-Stage Air Volume) SUPPLY AIR BLOWER

Indoor Coil Air Volume 70°F Dry Bulb cfm	Air Temperature Entering Outdoor Coil									
	65°F		45°F		25°F		5°F		-15°F	
	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input
	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW
2400	119.7	7.82	90.9	7.27	61.7	6.72	37.4	5.98	18.9	4.51
3000	121.6	7.26	92.8	6.71	63.6	6.16	39.3	5.41	20.8	3.95
3600	123	6.92	94.2	6.37	65	5.82	40.7	5.08	22.2	3.61

RATINGS

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

8.5 TON COOLING STANDARD EFFICIENCY ZHA102S4 (1ST STAGE) - MSAV (Multi-Stage Air Volume) SUPPLY AIR BLOWER

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																							
		65°F						75°F						85°F						95°F					
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)						
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb						
				75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F				
cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F					
63°F	1920	56.1	2.69	0.6	0.79	1	53.1	3.1	0.61	0.83	1	49.9	3.55	0.62	0.87	1	46.6	4.04	0.64	0.93	1				
	2400	59	2.69	0.65	0.95	1	55.9	3.11	0.67	0.99	1	52.7	3.57	0.69	1	1	49.7	4.06	0.73	1	1				
	2880	61.7	2.7	0.73	1	1	58.8	3.12	0.77	1	1	55.7	3.57	0.81	1	1	52.4	4.07	0.87	1	1				
67°F	1920	60	2.7	0.47	0.59	0.72	56.9	3.11	0.47	0.59	0.75	53.5	3.57	0.48	0.61	0.8	49.9	4.06	0.48	0.62	0.85				
	2400	62.7	2.7	0.5	0.63	0.88	59.4	3.12	0.51	0.65	0.93	55.9	3.58	0.51	0.66	0.97	52.1	4.07	0.52	0.68	1				
	2880	64.8	2.7	0.53	0.69	1	61.3	3.12	0.54	0.72	1	57.6	3.58	0.55	0.77	1	53.8	4.08	0.56	0.82	1				
71°F	1920	64	2.7	0.35	0.46	0.57	60.7	3.12	0.35	0.47	0.58	57.3	3.58	0.35	0.47	0.59	53.6	4.07	0.34	0.47	0.6				
	2400	67	2.7	0.37	0.49	0.62	63.5	3.12	0.37	0.5	0.62	59.9	3.58	0.37	0.51	0.64	56	4.08	0.36	0.51	0.66				
	2880	69.2	2.7	0.38	0.53	0.66	65.5	3.12	0.38	0.53	0.68	61.6	3.58	0.38	0.54	0.72	57.7	4.08	0.38	0.55	0.77				

8.5 TON COOLING STANDARD EFFICIENCY ZHA102S4 (2ND STAGE) - MSAV (Multi-Stage Air Volume) SUPPLY AIR BLOWER

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																							
		85°F						95°F						105°F						115°F					
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)						
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb						
				75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F				
cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F					
63°F	2720	99.6	6.85	0.68	0.83	0.97	92	7.8	0.68	0.86	0.99	83.9	8.85	0.69	0.89	1	75.3	10.04	0.71	0.93	1				
	3400	106	6.89	0.73	0.92	1	97.9	7.83	0.75	0.95	1	89.8	8.9	0.77	0.97	1	81.3	10.1	0.81	0.99	1				
	4080	111.4	6.91	0.8	0.98	1	103.5	7.87	0.82	0.99	1	95.2	8.94	0.86	1	1	86.7	10.13	0.9	1	1				
67°F	2720	107.6	6.89	0.52	0.66	0.79	99.5	7.84	0.52	0.66	0.82	91.4	8.91	0.52	0.67	0.84	82.2	10.1	0.52	0.69	0.88				
	3400	113.7	6.92	0.56	0.71	0.89	105.2	7.88	0.56	0.73	0.92	96.3	8.94	0.57	0.74	0.94	86.7	10.13	0.57	0.78	0.97				
	4080	118.2	6.94	0.6	0.77	0.96	109.4	7.89	0.6	0.8	0.97	100.1	8.97	0.61	0.83	0.99	90	10.15	0.62	0.87	1				
71°F	2720	115.5	6.93	0.39	0.51	0.63	107.4	7.89	0.38	0.51	0.64	98.9	8.96	0.37	0.51	0.65	89.3	10.15	0.35	0.51	0.67				
	3400	122.1	6.95	0.41	0.55	0.69	113.3	7.91	0.4	0.55	0.7	104	8.98	0.39	0.56	0.72	94.1	10.18	0.38	0.57	0.75				
	4080	126.5	6.96	0.42	0.58	0.75	117.6	7.93	0.41	0.59	0.77	108	9.01	0.41	0.6	0.8	97.5	10.2	0.4	0.62	0.85				

8.5 TON HEATING STANDARD EFFICIENCY ZHA102S4 - MSAV (Multi-Stage Air Volume) SUPPLY AIR BLOWER

Indoor Coil Air Volume 70°F Dry Bulb cfm	Air Temperature Entering Outdoor Coil									
	65°F		45°F		25°F		5°F		-15°F	
	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input
2720	127.2	7.97	95.8	7.33	63.7	6.67	38.8	5.97	19.6	4.5
3400	129.4	7.45	98	6.81	65.9	6.15	41	5.44	21.7	3.98
4080	131.1	7.12	99.7	6.48	67.6	5.82	42.7	5.11	23.4	3.65

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 COOLING STANDARD EFFICIENCY ZHA120S4 (1ST STAGE) - MSAV (Multi-Stage Air Volume) SUPPLY AIR BLOWER

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		65°F					75°F					85°F					95°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
				75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F
cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	
63°F	2240	61.6	2.77	0.62	0.82	1	57.3	3.14	0.62	0.87	1	52.9	3.56	0.64	0.94	1	48.4	4.03	0.65	1	1
	2800	64.8	2.8	0.67	1	1	60.8	3.18	0.68	1	1	56.5	3.6	0.7	1	1	52.2	4.07	0.75	1	1
	3360	68.2	2.83	0.75	1	1	63.9	3.21	0.8	1	1	59.5	3.63	0.87	1	1	54.9	4.1	0.95	1	1
67°F	2240	65.8	2.81	0.48	0.6	0.74	61.3	3.19	0.48	0.61	0.8	56.7	3.6	0.48	0.62	0.86	51.8	4.07	0.48	0.63	0.94
	2800	68.4	2.83	0.51	0.65	0.96	63.8	3.21	0.52	0.67	1	58.9	3.63	0.52	0.69	1	53.9	4.09	0.53	0.71	1
	3360	70.4	2.86	0.55	0.71	1	65.7	3.23	0.55	0.76	1	60.8	3.65	0.56	0.82	1	55.6	4.11	0.57	0.91	1
71°F	2240	70.1	2.85	0.36	0.47	0.58	65.5	3.23	0.35	0.47	0.59	60.8	3.65	0.34	0.47	0.6	55.7	4.11	0.33	0.48	0.62
	2800	72.9	2.88	0.37	0.51	0.64	68.2	3.26	0.37	0.51	0.65	63.2	3.68	0.36	0.52	0.67	57.9	4.14	0.35	0.53	0.69
	3360	74.8	2.9	0.39	0.54	0.69	70	3.28	0.38	0.55	0.71	64.8	3.69	0.38	0.56	0.78	59.5	4.16	0.37	0.57	0.86

10 TON COOLING STANDARD EFFICIENCY ZHA120S4 (2ND STAGE) - MSAV (Multi-Stage Air Volume) SUPPLY AIR BLOWER

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T)		
				Dry Bulb					Dry Bulb					Dry Bulb					Dry Bulb		
				75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F			75°F	80°F	85°F
cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	
63°F	3200	118	7.62	0.68	0.84	0.99	108.4	8.63	0.69	0.86	1	98.3	9.77	0.7	0.89	1	87.3	11.08	0.72	0.94	1
	4000	125.3	7.68	0.75	0.93	1	115.3	8.69	0.76	0.96	1	104.8	9.83	0.79	0.99	1	94.1	11.14	0.81	1	1
	4800	131.2	7.74	0.81	1	1	121.4	8.75	0.83	1	1	111.7	9.9	0.86	1	1	101.1	11.23	0.9	1	1
67°F	3200	127.3	7.71	0.53	0.66	0.81	117.4	8.71	0.53	0.67	0.83	106.7	9.86	0.52	0.69	0.85	95.4	11.16	0.52	0.7	0.89
	4000	134.4	7.77	0.57	0.72	0.89	123.9	8.78	0.57	0.74	0.92	112.6	9.91	0.57	0.76	0.96	100.5	11.21	0.57	0.79	1
	4800	139.7	7.82	0.6	0.79	0.97	128.4	8.82	0.61	0.81	1	116.9	9.96	0.62	0.84	1	104.4	11.25	0.63	0.88	1
71°F	3200	136.7	7.79	0.39	0.52	0.64	126.4	8.8	0.38	0.52	0.65	115.4	9.94	0.36	0.52	0.66	103.7	11.24	0.34	0.52	0.68
	4000	143.9	7.86	0.41	0.56	0.7	133.1	8.86	0.4	0.56	0.72	121.5	10.01	0.39	0.57	0.74	109	11.29	0.37	0.58	0.77
	4800	149.1	7.92	0.43	0.6	0.77	137.8	8.92	0.42	0.6	0.79	125.4	10.05	0.41	0.61	0.82	112.4	11.35	0.4	0.63	0.86

10 TON HEATING STANDARD EFFICIENCY ZHA120S4 - MSAV (Multi-Stage Air Volume) SUPPLY AIR BLOWER

Indoor Coil Air Volume 70°F Dry Bulb cfm	Air Temperature Entering Outdoor Coil									
	65°F		45°F		25°F		5°F		-15°F	
	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input
	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW
3200	145.4	9.22	112.8	8.29	79.6	7.31	51.1	6.44	25.3	4.9
4000	147.9	8.64	115.2	7.7	82.1	6.73	53.6	5.85	27.8	4.31
4800	149.8	8.28	117.1	7.34	84	6.37	55.5	5.49	29.7	3.95

BLOWER DATA

092S STANDARD EFFICIENCY 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 required.

See page 22 for blower motors and drives.

See page 22 for wet coil and option/accessory air resistance data.

MINIMUM AIR VOLUME REQUIRED FOR USE WITH OPTIONAL ELECTRIC HEAT (Maximum Static Pressure - 2.0 in. w.g.):

7.5 kW, 15 kW, 22.5 kW - 2065 cfm

30 kW - 2250 cfm

45 kW - 3000 cfm

Total Air Volume cfm	Total Static Pressure – in. w.g.																											
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0		2.2		2.4		2.6			
	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		
1750	494	0.11	562	0.34	632	0.56	702	0.74	771	0.85	838	0.96	902	1.07	961	1.19	---	---	---	---	---	---	---	---	---	---		
2000	514	0.26	581	0.49	650	0.70	719	0.87	786	0.98	852	1.09	915	1.20	972	1.32	1026	1.47	1076	1.65	---	---	---	---	---	---		
2250	533	0.41	599	0.62	667	0.82	735	0.99	802	1.10	866	1.21	928	1.33	984	1.46	1037	1.63	1085	1.81	1132	2.01	1178	2.21	1226	2.43		
2500	553	0.55	619	0.76	685	0.95	753	1.10	818	1.22	881	1.34	942	1.47	997	1.62	1048	1.80	1096	1.99	1142	2.20	1188	2.41	1237	2.64		
2750	573	0.70	638	0.90	705	1.08	771	1.22	835	1.35	897	1.49	957	1.63	1011	1.80	1061	1.99	1108	2.19	1154	2.41	1200	2.63	1249	2.87		
3000	594	0.85	659	1.05	725	1.22	791	1.36	853	1.50	915	1.65	973	1.81	1026	1.99	1075	2.20	1121	2.42	1167	2.64	1213	2.87	1262	3.12		
3250	617	1.01	682	1.20	747	1.37	812	1.52	873	1.67	934	1.83	990	2.01	1042	2.21	1089	2.43	1135	2.66	1181	2.90	1228	3.13	1277	3.38		
3500	640	1.17	706	1.36	771	1.53	834	1.70	895	1.86	954	2.03	1008	2.23	1058	2.46	1105	2.69	1150	2.93	1196	3.17	1243	3.41	1293	3.65		
3750	665	1.34	731	1.54	796	1.72	857	1.89	917	2.07	975	2.26	1027	2.48	1076	2.72	1121	2.97	1166	3.22	1212	3.46	1261	3.71	1311	3.96		
4000	692	1.54	758	1.75	822	1.93	882	2.11	940	2.30	996	2.51	1047	2.76	1094	3.02	1139	3.27	1184	3.52	1230	3.77	1280	4.03	1330	4.29		
4250	722	1.76	787	1.97	849	2.15	908	2.35	965	2.56	1018	2.79	1067	3.06	1113	3.33	1157	3.59	1202	3.85	1250	4.11	1300	4.38	1352	4.65		

BLOWER DATA

102 AND 120S STANDARD EFFICIENCY 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 required.

See page 22 for blower motors and drives.

See page 22 for wet coil and option/accessory air resistance data.

MINIMUM AIR VOLUME REQUIRED FOR USE WITH OPTIONAL ELECTRIC HEAT (Maximum Static Pressure - 2.0 in. w.g.)

15 kW, 22.5 kW- 2065 cfm

30 kW - 2250 cfm

45 kW - 3000 cfm

60 kW - 4000 cfm

Total Air Volume cfm	Total Static Pressure – in. w.g.																											
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2		2.2		2.4		2.6			
	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		
2000	542	0.43	602	0.60	664	0.75	732	0.89	802	1.02	869	1.15	927	1.27	979	1.41	1029	1.57	1079	1.75	1129	1.95	1179	2.15	1230	2.37		
2250	560	0.55	619	0.71	681	0.86	748	1.00	817	1.14	882	1.27	939	1.41	991	1.57	1041	1.74	1090	1.93	1140	2.13	1190	2.35	1241	2.57		
2500	579	0.68	637	0.83	699	0.98	766	1.12	834	1.26	897	1.41	953	1.57	1005	1.74	1054	1.92	1103	2.12	1152	2.33	1202	2.55	1254	2.79		
2750	599	0.81	657	0.97	719	1.11	785	1.25	851	1.41	913	1.57	968	1.74	1020	1.93	1068	2.13	1116	2.34	1165	2.56	1215	2.78	1268	3.01		
3000	620	0.95	678	1.11	741	1.25	806	1.40	870	1.58	930	1.75	985	1.94	1036	2.14	1084	2.36	1131	2.58	1180	2.80	1230	3.02	1283	3.26		
3250	643	1.10	701	1.26	764	1.41	828	1.57	891	1.76	950	1.95	1003	2.16	1053	2.38	1100	2.61	1148	2.83	1196	3.06	1246	3.29	1299	3.52		
3500	667	1.26	726	1.43	788	1.58	851	1.77	913	1.97	970	2.17	1023	2.41	1071	2.65	1118	2.88	1165	3.11	1213	3.33	1264	3.57	1317	3.81		
3750	693	1.44	752	1.61	813	1.78	876	1.98	936	2.20	992	2.43	1043	2.68	1091	2.93	1137	3.17	1183	3.40	1232	3.64	1284	3.88	1338	4.13		
4000	720	1.65	779	1.82	840	2.00	902	2.22	961	2.46	1015	2.71	1064	2.98	1111	3.24	1156	3.48	1203	3.72	1253	3.96	1305	4.22	1359	4.48		
4250	748	1.86	807	2.04	868	2.24	929	2.48	986	2.75	1038	3.02	1086	3.30	1132	3.57	1177	3.81	1224	4.05	1274	4.31	1327	4.57	1382	4.85		
4500	778	2.09	837	2.28	898	2.51	957	2.78	1012	3.07	1062	3.37	1108	3.65	1154	3.92	1199	4.17	1247	4.41	1297	4.67	1350	4.94	1405	5.22		
4750	809	2.34	868	2.56	929	2.82	986	3.12	1038	3.43	1087	3.74	1132	4.03	1177	4.29	1223	4.54	1270	4.79	1321	5.04	1374	5.31	1428	5.58		
5000	841	2.62	901	2.87	960	3.17	1015	3.50	1065	3.83	1112	4.14	1157	4.43	1201	4.69	1247	4.94	1295	5.18	1345	5.42	1398	5.68	---	---		
5250	875	2.93	935	3.23	992	3.56	1044	3.91	1092	4.26	1138	4.57	1182	4.85	1226	5.10	1272	5.34	1320	5.57	---	---	---	---	---	---		
5500	911	3.30	969	3.63	1024	4.00	1074	4.37	1120	4.71	1165	5.02	1208	5.29	1253	5.53	---	---	---	---	---	---	---	---	---	---		
5750	948	3.71	1004	4.08	1056	4.48	1104	4.85	1148	5.19	1192	5.49	1235	5.74	---	---	---	---	---	---	---	---	---	---	---	---		
6000	985	4.18	1039	4.59	1088	5.00	1134	5.37	1177	5.69	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
6250	1022	4.70	1073	5.14	1120	5.54	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		

BLOWER DATA

FACTORY INSTALLED BELT DRIVE KIT SPECIFICATIONS

Nominal hp	Maximum hp	Drive Kit Number	RPM Range
2	2.3	1	590 - 890
2	2.3	2	800 - 1105
2	2.3	3	795 - 1195
3	3.45	4	730 - 970
3	3.45	5	940 - 1200
3	3.45	6	1015 - 1300
5	5.75	10	900 - 1135
5	5.75	11	1040 - 1315
5	5.75	12	1125 - 1425

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 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.

NOTE – Units equipped with MSAV® (Multi-Stage Air Volume) option are limited to a motor service factor of 1.0.

POWER EXHAUST FAN PERFORMANCE

Return Air System Static Pressure	Air Volume Exhausted
in. w.g.	cfm
0	3575
0.05	3405
0.10	3550
0.15	3245
0.20	3115
0.25	3020
0.30	2900
0.35	2785

FACTORY INSTALLED OPTIONS/FIELD INSTALLED ACCESSORY AIR RESISTANCE - in. w.g.

Air Volume cfm	Wet Indoor Coil		Electric Heat	Economizer	Filters	
	092	102, 120			MERV 8	MERV 13
1750	0.03	0.04	0.03	0.03	0.01	0.03
2000	0.04	0.05	0.03	0.05	0.01	0.03
2250	0.05	0.06	0.04	0.06	0.01	0.04
2500	0.05	0.07	0.04	0.08	0.01	0.05
2750	0.06	0.08	0.05	0.09	0.02	0.05
3000	0.07	0.09	0.06	0.11	0.02	0.06
3250	0.08	0.10	0.06	0.13	0.02	0.06
3500	0.09	0.11	0.09	0.15	0.03	0.07
3750	0.10	0.13	0.09	0.17	0.03	0.08
4000	0.11	0.14	0.09	0.19	0.04	0.08
4250	0.13	0.15	0.13	0.21	0.04	0.09
4500	0.14	0.17	0.14	0.24	0.04	0.09
4750	0.15	0.18	0.17	0.26	0.05	0.10
5000	0.16	0.20	0.20	0.29	0.06	0.10
5250	0.17	0.22	0.22	0.32	0.06	0.11
5500	0.19	0.23	0.25	0.34	0.07	0.12
5750	0.20	0.25	0.31	0.37	0.07	0.12
6000	0.22	0.27	0.33	0.40	0.08	0.13

BLOWER DATA

CEILING DIFFUSERS AIR RESISTANCE - in. w.g.

Unit Size	RTD11 Step-Down Diffuser				FD11 Flush Diffuser
	Air Volume cfm	2 Ends Open	1 Side, 2 Ends Open	All Ends & Sides Open	
092 Models	2400	0.21	0.18	0.15	0.14
	2600	0.24	0.21	0.18	0.17
	2800	0.27	0.24	0.21	0.20
	3000	0.32	0.29	0.25	0.25
	3200	0.41	0.37	0.32	0.31
	3400	0.50	0.45	0.39	0.37
	3600	0.61	0.54	0.48	0.44
	3800	0.73	0.63	0.57	0.51
102 & 120 Models	3600	0.36	0.28	0.23	0.15
	3800	0.40	0.32	0.26	0.18
	4000	0.44	0.36	0.29	0.21
	4200	0.49	0.40	0.33	0.24
	4400	0.54	0.44	0.37	0.27
	4600	0.60	0.49	0.42	0.31
	4800	0.65	0.53	0.46	0.35
	5000	0.69	0.58	0.50	0.39
	5200	0.75	0.62	0.54	0.43

CEILING DIFFUSER AIR THROW DATA

Model No.	Air Volume	¹ Effective Throw Range	
		RTD11 Step-Down	FD11 Flush
	cfm	ft.	ft.
092 Models	2600	24 - 29	19 - 24
	2800	25 - 30	20 - 28
	3000	27 - 33	21 - 29
	3200	28 - 35	22 - 29
	3400	30 - 37	22 - 30
102, 120 Models	3600	25 - 33	22 - 29
	3800	27 - 35	22 - 30
	4000	29 - 37	24 - 33
	4200	32 - 40	26 - 35
	4400	34 - 42	28 - 37

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 50 ft. per minute. Four sides open.

ELECTRICAL/ELECTRIC HEAT DATA**7.5 TON****7.5 TON STANDARD EFFICIENCY****ZHA092S4**

¹ Voltage - 60hz		208/230V - 3 Ph			460V - 3 Ph			575V - 3 Ph		
Compressor 1	Rated Load Amps	13.5			8			5		
	Locked Rotor Amps	109			59			40		
Compressor 2	Rated Load Amps	8.7			4			3.6		
	Locked Rotor Amps	70			31			27		
Outdoor Fan Motors (2)	Full Load Amps	2.4			1.3			1		
	(total)	(4.8)			(2.6)			(2)		
Power Exhaust (2) 0.5 HP	Full Load Amps	3			1.5			1.2		
	(total)	(6)			(3)			(2.4)		
Indoor Blower Motor	Horsepower	2	3	5	2	3	5	2	3	5
	Full Load Amps	7.5	10.5	16.7	3.4	4.8	7.6	2.7	3.9	6.1
² Maximum Overcurrent Protection	Unit Only	50	50	60	25	25	30	15	20	20
	With (2) 0.5 HP Power Exhaust	50	60	70	30	30	35	20	20	25
³ Minimum Circuit Ampacity	Unit Only	38	41	48	20	22	25	15	16	19
	With (2) 0.5 HP Power Exhaust	44	47	54	23	25	28	17	19	21

ELECTRIC HEAT DATA

Electric Heat Voltage				208V	240V	208V	240V	208V	240V	480V	480V	480V	600V	600V	600V
² Maximum Overcurrent Protection	Unit+ Electric Heat	7.5 kW	7.5 kW	60	70	70	70	80	80	35	35	40	25	25	30
		15 kW	15 kW	80	90	90	90	90	100	45	45	50	35	35	40
		22.5 kW	22.5 kW	100	110	100	110	110	125	60	60	60	45	45	50
		30 kW	30 kW	125	150	125	150	150	150	70	70	70	60	60	60
		45 kW	45 kW	175	175	175	200	175	200	90	90	100	70	70	80
³ Minimum Circuit Ampacity	Unit+ Electric Heat	7.5 kW	7.5 kW	58	61	61	64	68	71	32	33	36	24	25	28
		15 kW	15 kW	77	83	81	87	87	93	43	44	47	33	34	37
		22.5 kW	22.5 kW	97	106	100	109	107	116	54	56	59	42	43	46
		30 kW	30 kW	117	129	120	132	127	139	66	67	70	51	52	55
		45 kW	45 kW	156	174	159	177	166	184	88	90	92	69	70	73
² Maximum Overcurrent Protection	Unit+ Electric Heat and (2) 0.5 HP Power Exhaust	7.5 kW	7.5 kW	70	70	70	70	80	80	40	40	40	30	30	30
		15 kW	15 kW	90	90	90	100	100	100	50	50	50	35	40	40
		22.5 kW	22.5 kW	110	125	110	125	125	125	60	60	70	45	50	50
		30 kW	30 kW	125	150	150	150	150	150	70	70	80	60	60	60
		45 kW	45 kW	175	200	175	200	175	200	100	100	100	80	80	80
³ Minimum Circuit Ampacity	Unit+ Electric Heat and (2) 0.5 HP Power Exhaust	7.5 kW	7.5 kW	64	67	67	70	74	77	35	36	39	26	28	30
		15 kW	15 kW	83	89	87	93	93	99	46	47	50	35	37	39
		22.5 kW	22.5 kW	103	112	106	115	113	122	57	59	62	45	46	48
		30 kW	30 kW	123	135	126	138	133	145	69	70	73	54	55	57
		45 kW	45 kW	162	180	165	183	172	190	91	93	95	72	73	75

ELECTRIC HEAT ACCESSORIES

Unit Fuse Block	Unit Only	11M12	11M12	11M12	11M12	11M12	11M12	11M12	11M10	11M10	11M10	11M09	11M09	11M09
	Unit + Power Exhaust	11M12	11M12	11M12	11M12	11M13	11M13	11M13	11M10	11M10	11M11	11M09	11M09	11M10

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.

¹ Extremes of operating range are plus and minus 10% of line voltage.² HACR type breaker or fuse.³ Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

ELECTRICAL/ELECTRIC HEAT DATA**8.5 TON****8.5 TON STANDARD EFFICIENCY****ZHA102S4**

¹ Voltage - 60hz		208/230V - 3 Ph			460V - 3 Ph			575V - 3 Ph		
Compressor 1	Rated Load Amps	13.5			8			5		
	Locked Rotor Amps	109			59			40		
Compressor 2	Rated Load Amps	11			5.5			4.7		
	Locked Rotor Amps	86			37			34		
Outdoor Fan Motors (2)	Full Load Amps	2.4			1.3			1		
	(total)	(4.8)			(2.6)			(2)		
Power Exhaust (2) 0.5 HP	Full Load Amps	3			1.5			1.2		
	(total)	6			3			2.4		
Indoor Blower Motor	Horsepower	2	3	5	2	3	5	2	3	5
	Full Load Amps	7.5	10.5	16.7	3.4	4.8	7.6	2.7	3.9	6.1
² Maximum Overcurrent Protection	Unit Only	50	50	60	25	30	30	20	20	25
	With (2) 0.5 HP Power Exhaust	50	60	70	30	30	35	20	20	25
³ Minimum Circuit Ampacity	Unit Only	41	44	51	22	23	26	16	17	20
	With (2) 0.5 HP Power Exhaust	47	50	57	25	26	29	19	20	22

ELECTRIC HEAT DATA

Electric Heat Voltage			208V	240V	208V	240V	208V	240V	480V	480V	480V	600V	600V	600V
² Maximum Overcurrent Protection	Unit+ Electric Heat	7.5 kW	60	70	70	70	80	80	35	35	40	25	30	30
		15 kW	80	90	90	90	90	100	45	50	50	35	35	40
		22.5 kW	100	110	110	125	110	125	60	60	60	45	45	50
		30 kW	125	150	125	150	150	150	70	70	80	60	60	60
		45 kW	175	200	175	200	175	200	90	100	100	70	80	80
³ Minimum Circuit Ampacity	Unit+ Electric Heat	7.5 kW	60	63	63	66	70	73	33	35	37	25	26	29
		15 kW	80	86	83	89	90	96	45	46	49	34	35	38
		22.5 kW	99	108	102	111	109	118	56	57	60	43	44	47
		30 kW	119	131	122	134	129	141	67	69	71	52	53	56
		45 kW	158	176	161	179	168	186	90	91	94	70	71	74
² Maximum Overcurrent Protection	Unit+ Electric Heat and (2) 0.5 HP Power Exhaust	7.5 kW	70	70	70	80	80	90	40	40	45	30	30	35
		15 kW	90	100	90	100	100	110	50	50	60	40	40	40
		22.5 kW	110	125	110	125	125	125	60	60	70	50	50	50
		30 kW	125	150	150	150	150	150	70	80	80	60	60	60
		45 kW	175	200	175	200	175	200	100	100	100	80	80	80
³ Minimum Circuit Ampacity	Unit+ Electric Heat and (2) 0.5 HP Power Exhaust	7.5 kW	66	69	69	72	76	79	36	38	40	28	29	31
		15 kW	86	92	89	95	96	102	48	49	52	37	38	40
		22.5 kW	105	114	108	117	115	124	59	60	63	46	47	49
		30 kW	125	137	128	140	135	147	70	72	74	55	56	58
		45 kW	164	182	167	185	174	192	93	94	97	73	74	76

ELECTRIC HEAT ACCESSORIES

Unit Fuse Block	Unit Only	11M12	11M12	11M12	11M12	11M12	11M12	11M10	11M10	11M10	11M09	11M09	11M10
	Unit + Power Exhaust	11M12	11M12	11M12	11M12	11M13	11M13	11M10	11M10	11M11	11M09	11M10	11M10

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.

¹ Extremes of operating range are plus and minus 10% of line voltage.² HACR type breaker or fuse.³ Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

ELECTRICAL/ELECTRIC HEAT DATA**10 TON****10 TON STANDARD EFFICIENCY****ZHA120S4**

¹ Voltage - 60hz		208/230V - 3 Ph			460V - 3 Ph			575V - 3 Ph		
Compressor 1	Rated Load Amps	15.6			7.8			5.8		
	Locked Rotor Amps	110			52			38.9		
Compressor 2	Rated Load Amps	15.6			7.8			5.8		
	Locked Rotor Amps	110			52			38.9		
Outdoor Fan Motors (2)	Full Load Amps	3			1.5			1.2		
	(total)	(6)			(3)			(2.4)		
Power Exhaust (2) 0.5 HP	Full Load Amps	3			1.5			1.2		
	(total)	(6)			(3)			(2.4)		
Indoor Blower Motor	Horsepower	2	3	5	2	3	5	2	3	5
	Full Load Amps	7.5	10.5	16.7	3.4	4.8	7.6	2.7	3.9	6.1
² Maximum Overcurrent Protection	Unit Only	60	60	70	30	30	35	20	25	25
	With (2) 0.5 HP Power Exhaust	70	70	80	30	35	35	25	25	30
³ Minimum Circuit Ampacity	Unit Only	49	52	59	24	26	29	19	20	22
	With (2) 0.5 HP Power Exhaust	55	58	65	27	29	32	21	22	25

ELECTRIC HEAT DATA

Electric Heat Voltage			208V	240V	208V	240V	208V	240V	480V	480V	480V	600V	600V	600V
² Maximum Overcurrent Protection	Unit+ Electric Heat	15 kW	90	100	100	100	100	110	50	50	60	40	40	40
		22.5 kW	110	125	125	125	125	150	60	60	70	50	50	50
		30 kW	150	150	150	150	150	150	70	80	80	60	60	60
		45 kW	175	200	175	200	200	200	100	100	100	80	80	80
		60 kW	175	200	200	200	200	225	100	100	110	80	80	80
³ Minimum Circuit Ampacity	Unit+ Electric Heat	15 kW	88	94	91	97	98	104	47	48	51	37	38	40
		22.5 kW	108	117	111	120	117	126	58	60	62	46	47	49
		30 kW	127	139	130	142	137	149	70	71	74	55	56	58
		45 kW	166	184	169	188	176	194	92	94	96	73	74	76
		60 kW	174	193	177	197	184	203	97	98	101	76	78	80
² Maximum Overcurrent Protection	Unit+ Electric Heat and (2) 0.5 HP Power Exhaust	15 kW	100	100	100	110	110	110	50	60	60	40	40	45
		22.5 kW	125	125	125	150	125	150	70	70	70	50	50	60
		30 kW	150	150	150	150	150	175	80	80	80	60	60	70
		45 kW	175	200	175	200	200	200	100	100	100	80	80	80
		60 kW	200	200	200	225	200	225	100	110	110	80	80	90
³ Minimum Circuit Ampacity	Unit+ Electric Heat and (2) 0.5 HP Power Exhaust	15 kW	94	100	97	103	104	110	50	51	54	39	40	43
		22.5 kW	114	123	117	126	123	132	61	63	65	48	49	52
		30 kW	133	145	136	148	143	155	73	74	77	57	58	61
		45 kW	172	190	175	194	182	200	95	97	99	75	76	79
		60 kW	180	199	183	203	190	209	100	101	104	79	80	82

ELECTRIC HEAT ACCESSORIES

Unit Fuse Block	Unit Only	11M12	11M12	11M12	11M12	11M12	11M12	11M12	11M10	11M10	11M11	11M09	11M09	11M10
	Unit + Power Exhaust	11M12	11M12	11M12	11M12	11M13	11M13	11M13	11M11	11M11	11M11	11M09	11M10	11M10

NOTE - All units have a minimum Short Circuit Current Rating (SCCR) of 5000 amps.

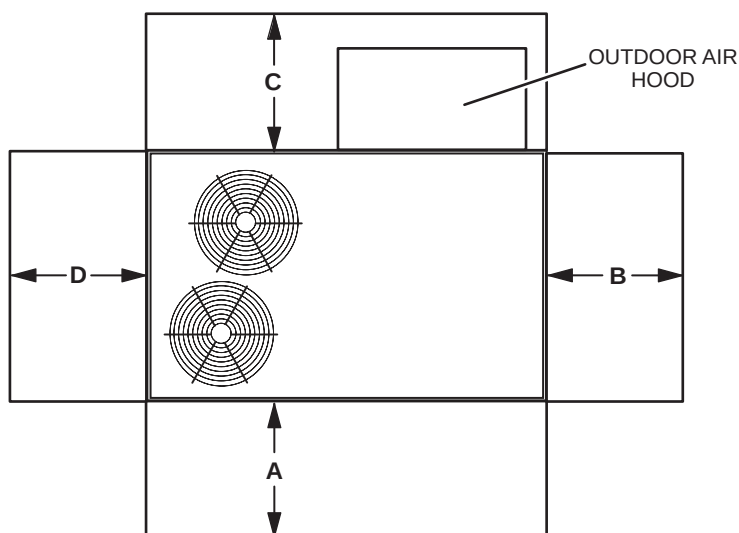
¹ Extremes of operating range are plus and minus 10% of line voltage.² HACR type breaker or fuse.³ Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.

ELECTRIC HEAT CAPACITIES

Volts Input	7.5 kW			15 kW			22.5 kW			30 kW			45 kW			60 kW		
	kW Input	Btuh Output	No. of Stages	kW Input	Btuh Output	No. of Stages	kW Input	Btuh Output	No. of Stages	kW Input	Btuh Output	No. of Stages	kW Input	Btuh Output	No. of Stages	kW Input	Btuh Output	No. of Stages
208	5.6	19,100	1	11.3	38,600	1	16.9	57,700	1	22.5	76,800	1	33.8	115,300	1	45.0	153,600	1
220	6.3	21,500	1	12.6	43,000	1	18.9	64,500	1	25.2	86,000	1	37.8	129,000	1	50.4	172,000	1
230	6.9	23,600	1	13.8	47,100	1	20.7	70,700	1	27.5	93,900	1	41.3	141,000	1	55.1	188,000	1
240	7.5	25,600	1	15.0	51,200	1	22.5	76,800	1	30.0	102,400	1	45.0	153,600	1	60.0	204,800	1
440	6.9	21,500	1	12.6	43,000	1	18.9	64,500	1	25.2	86,000	1	37.8	129,000	1	50.4	172,000	1
460	6.9	23,600	1	13.8	47,100	1	20.7	70,700	1	27.5	93,900	1	41.3	141,000	1	55.1	188,000	1
480	7.5	25,600	1	15.0	51,200	1	22.5	76,800	1	30.0	102,400	1	45.0	153,600	1	60.0	204,800	1
550	6.3	21,500	1	12.6	43,000	1	18.9	64,500	1	25.2	86,000	1	37.8	129,000	1	50.4	172,000	1
575	6.9	23,600	1	13.8	47,100	1	20.7	70,700	1	27.5	93,900	1	41.3	141,000	1	55.1	188,000	1
600	7.5	25,600	1	15.0	51,200	1	22.5	76,800		30.0	102,400	2	45.0	153,600	2	60.0	204,800	1

UNIT CLEARANCES - INCHES (MM)

UNIT WITH ECONOMIZER



¹ Unit Clearance	A		B		C		D		Top Clearance
	in.	mm	in.	mm	in.	mm	in.	mm	
Service Clearance	60	1524	36	914	36	914	60	1524	Unobstructed
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.

¹ Service Clearance - Required for removal of serviceable parts.

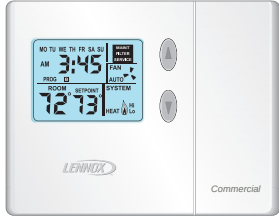
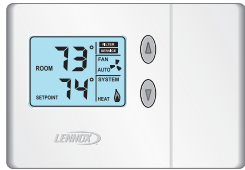
Minimum Operation Clearance - Required clearance for proper unit operation.

OUTDOOR SOUND DATA

Unit Model Number	Octave Band Linear Sound Power Levels dB, re 10 ⁻¹² Watts - Center Frequency - Hz							¹ Sound Rating Number (SRN) (dBA)
	125	250	500	1000	2000	4000	8000	
092, 102	76	79	84	83	79	73	66	88
120	77	80	85	84	79	74	66	88

¹ Sound Rating Number according to ARI Standard 270-2008. "SRN" is the overall A-Weighted Sound Power Level, (LWA), dB (100 Hz to 10,000 Hz).

OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS

Item		Model No.	Catalog No.
COMFORTSENSE® 7500 COMMERCIAL 7-DAY PROGRAMMABLE THERMOSTAT			
 • Four-Stage Heating / Two-Stage Cooling Universal Multi-Stage • Intuitive Touchscreen Interface • Remote Indoor Temperature Sensing with Averaging • Outside or Discharge Air Temperature Display • Full Seven-Day Programming • Four Time Periods Per Day • Occupancy Scheduling with Economizer Relay Control • Away Mode • Holiday Scheduling • Smooth Setback Recovery (SSR) • Performance Reports • Notifications/Reminders • Dehumidification/Humiditrol® Control for Split Systems and Rooftop Units • Economizer Relay Control • Backlit Display • Wallplate Furnished		C0STAT06FF1L	13H15
Optional Accessories			
¹ Remote non-adjustable wall mount 20k temperature sensor		C0SNZN01AE2-	47W36
¹ Remote non-adjustable wall mount 10k temperature sensor		C0SNZN73AE1-	47W37
Remote non-adjustable discharge air (duct mount) temperature sensor		C0SNDC00AE1-	19L22
Outdoor temperature sensor		C0SNSR03AE1-	X2658
Locking cover (clear)		C0MISC15AE1-	39P21
¹ Remote sensors can be applied in any of the following combinations: One Sensor - (1) 47W36 Two Sensors - (2) 47W37 Three Sensors - (2) 47W36 and (1) 47W37 Four Sensors - (4) 47W36 Five Sensors - (3) 47W36 and (2) 47W37			
COMFORTSENSE® 3000 COMMERCIAL 5-2 DAY PROGRAMMABLE THERMOSTAT			
 • Two-Stage Heating / Two-Stage Cooling Conventional Systems • Intuitive Interface • 5-2 Day Programming • Program Hold • Remote Indoor Temperature Sensing • Smooth Setback Recovery (SSR) • Economizer Relay Control • Maintenance/Filter/Service Reminders • Backlit Display • Wallplate Furnished • Simple Up and Down Temperature Control.		C0STAT05FF1L	11Y05
Optional Accessories			
Remote non-adjustable wall mount 10k averaging temperature sensor		C0SNZN73AE1-	47W37
Optional wall mounting plate		C0MISC17AE1-	X2659
DIGITAL NON-PROGRAMMABLE THERMOSTAT			
 • One-Stage Heating / Cooling Conventional Systems • Intuitive Interface • Automatic Changeover • Backlit Display • Simple Up and Down Temperature Control.		C0STAT12AE1L	51M32
Optional Accessories			
Outdoor temperature sensor		C0SNSR04AE1-	X2658
Optional wall mounting plate		C0MISC17AE1-	X2659

WEIGHT DATA

Model Number	Net		Shipping	
	lbs.	kg	lbs.	kg
092S Base Unit	1036	470	1121	508
092S Max. Unit	1193	541	1278	580
102S Base Unit	1068	484	1153	523
102S Max. Unit	1225	556	1310	594
120S Base Unit	1126	511	1211	549
120S Max. Unit	1290	585	1375	624

OPTIONS / ACCESSORIES

Model Number	Shipping Weight	
	lbs.	kg
CABINET		
Coil/Hail Guard	50	23
CEILING DIFFUSERS		
Step-Down		
RTD11-95	88	40
RTD11-135	205	93
Flush		
FD11-95	75	34
FD11-135	174	79
ECONOMIZER / OUTDOOR AIR / EXHAUST		
Economizer		
Downflow with Barometric Relief Dampers and Hoods	90	41
Horizontal with Barometric Relief Dampers and Hoods	95	43
Horizontal Low Profile Barometric Relief Dampers with Hood	8	4
Outdoor Air Dampers		
Outdoor Air Damper Section with Hood - Automatic	58	26
Outdoor Air Damper Section with Hood - Manual	50	23
Power Exhaust		
Downflow	60	27
Horizontal	41	19
ELECTRIC HEAT		
7.5 kW	90	41
15 kW	90	41
22.5 kW	90	41
30 kW	90	41
45 kW	90	41
60 kW	90	41
MSAV (MULTI-STAGE AIR VOLUME) SUPPLY AIR BLOWER OPTION		
Variable Frequency Drive (VFD) and associated components	10	5
ROOF CURBS		
Hybrid Roof Curbs, Downflow		
8 in. height	79	36
14 in. height	104	47
18 in. height	120	54
24 in. height	145	66
PACKAGING		
LTL Packaging (less than truck load)	105	48

DIMENSIONS - UNIT - INCHES (MM)

Model No.	CORNER WEIGHTS																CENTER OF GRAVITY							
	AA				BB				CC				DD				EE				FF			
	Base		Max.		Base		Max.		Base		Max.		Base		Max.		Base		Max.		Base		Max.	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	in.	mm	in.	mm	in.	mm	in.	mm
092S	276	125	315	143	226	103	276	125	240	109	281	127	294	133	321	146	46.25	1174	47.25	1200	27	686	28	711
102S	285	129	324	147	233	106	283	128	248	112	289	131	303	137	330	150	46.25	1174	47.25	1200	27	686	28.5	711
120S	283	128	322	146	228	103	277	126	274	124	320	145	341	155	372	169	43.25	1099	43.25	1099	26.75	679	27.75	705

Base Unit - The unit with NO OPTIONS.

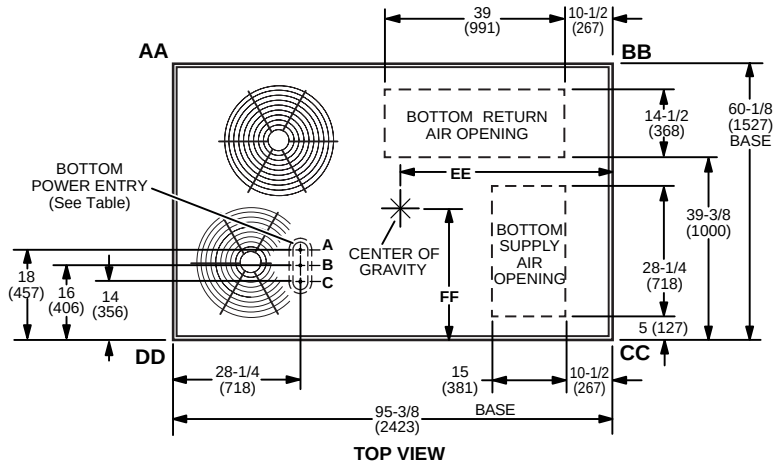
Max. Unit - The unit with ALL OPTIONS Installed. (Economizer, etc.)

BOTTOM POWER ENTRY

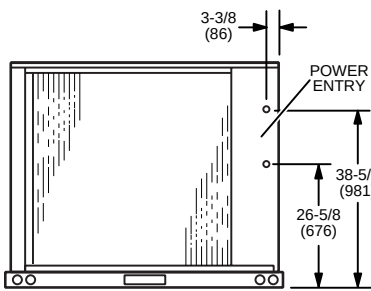
Holes required for Optional Bottom Power Entry Kit

	Threaded Conduit Fittings (Provided in Kit)	Wire Use	Hole Diameter Required in Unit Base (Max.)
A	¹ 1/2	ACC	7/8 (23)
B	1/2	24V	7/8 (23)
C	1-1/4	POWER	1-3/4 (44)

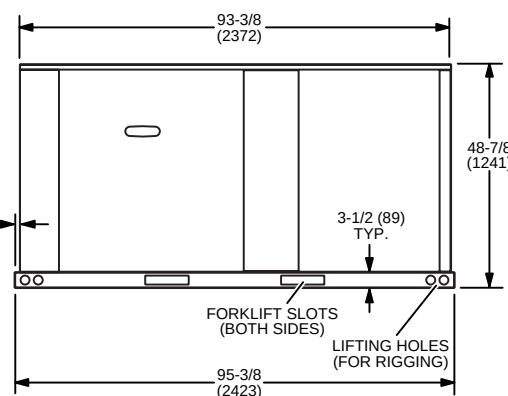
¹ Field provided.



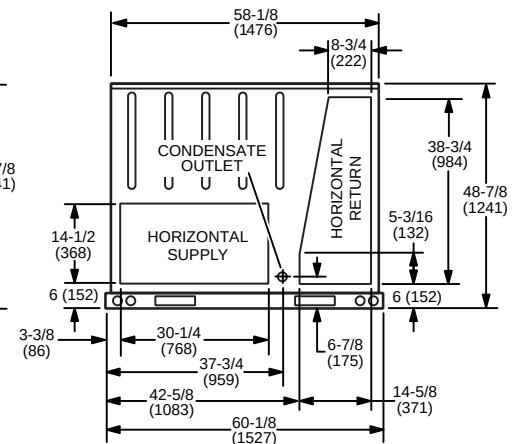
TOP VIEW



END VIEW



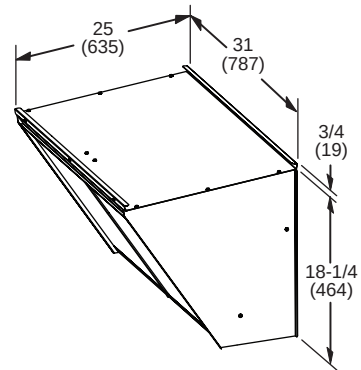
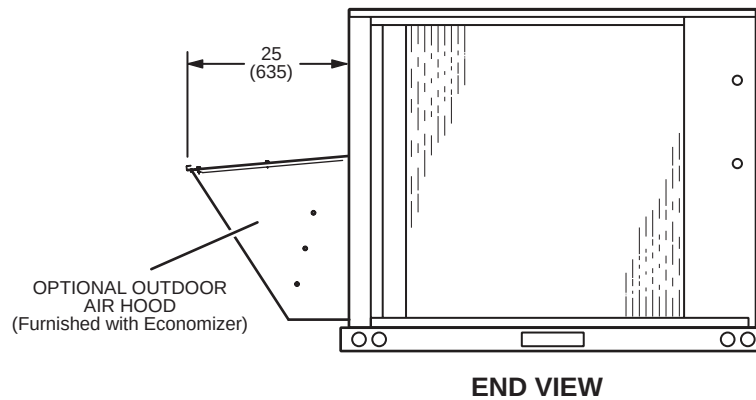
FRONT VIEW



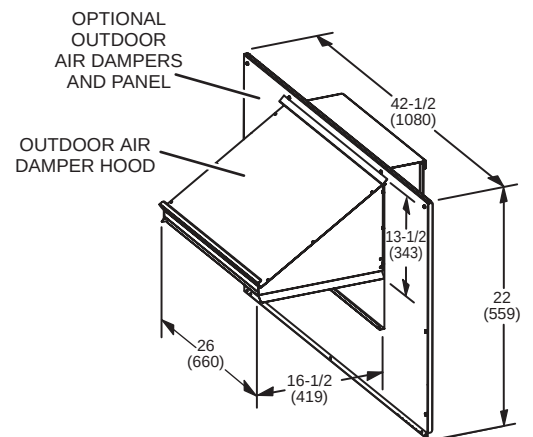
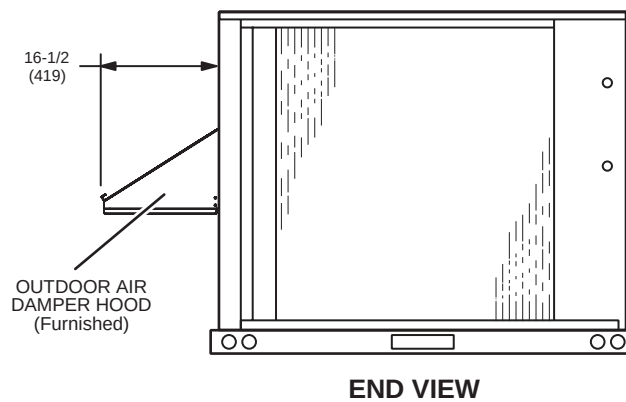
END VIEW

DIMENSIONS - ACCESSORIES - INCHES (MM)

OUTDOOR AIR HOOD DETAIL FOR OPTIONAL DOWNFLOW ECONOMIZER (Downflow Applications)

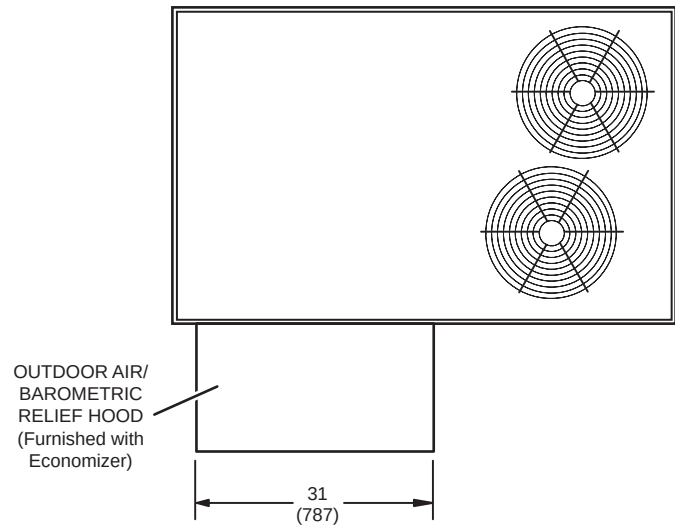


OUTDOOR AIR DAMPER HOOD DETAIL FOR OPTIONAL MANUAL OR MOTORIZED OUTDOOR AIR DAMPERS (Downflow or Horizontal Applications)

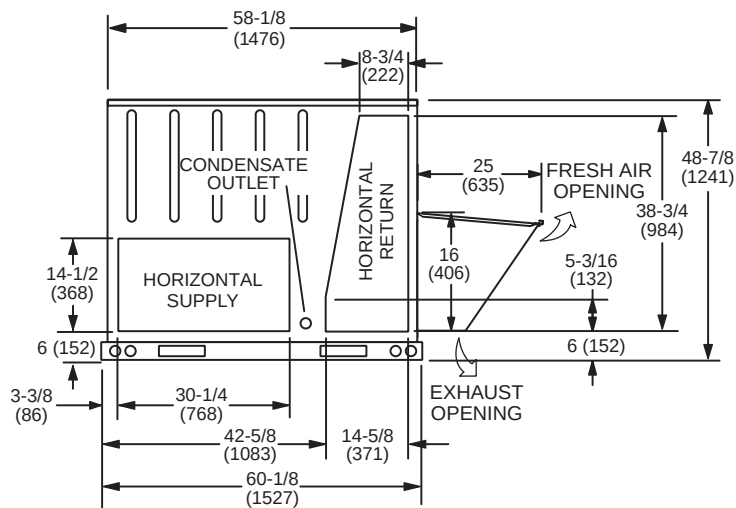


DIMENSIONS - ACCESSORIES - INCHES (MM)

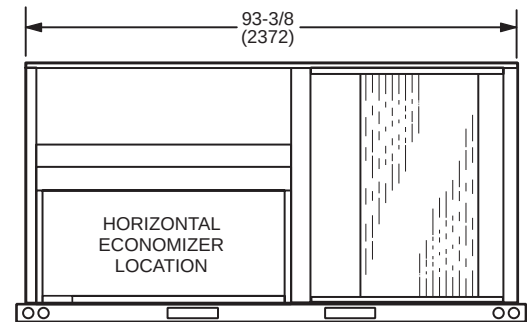
OUTDOOR AIR HOOD DETAIL WITH OPTIONAL HORIZONTAL ECONOMIZER AND BAROMETRIC RELIEF DAMPERS (Horizontal Applications)



TOP VIEW



END VIEW

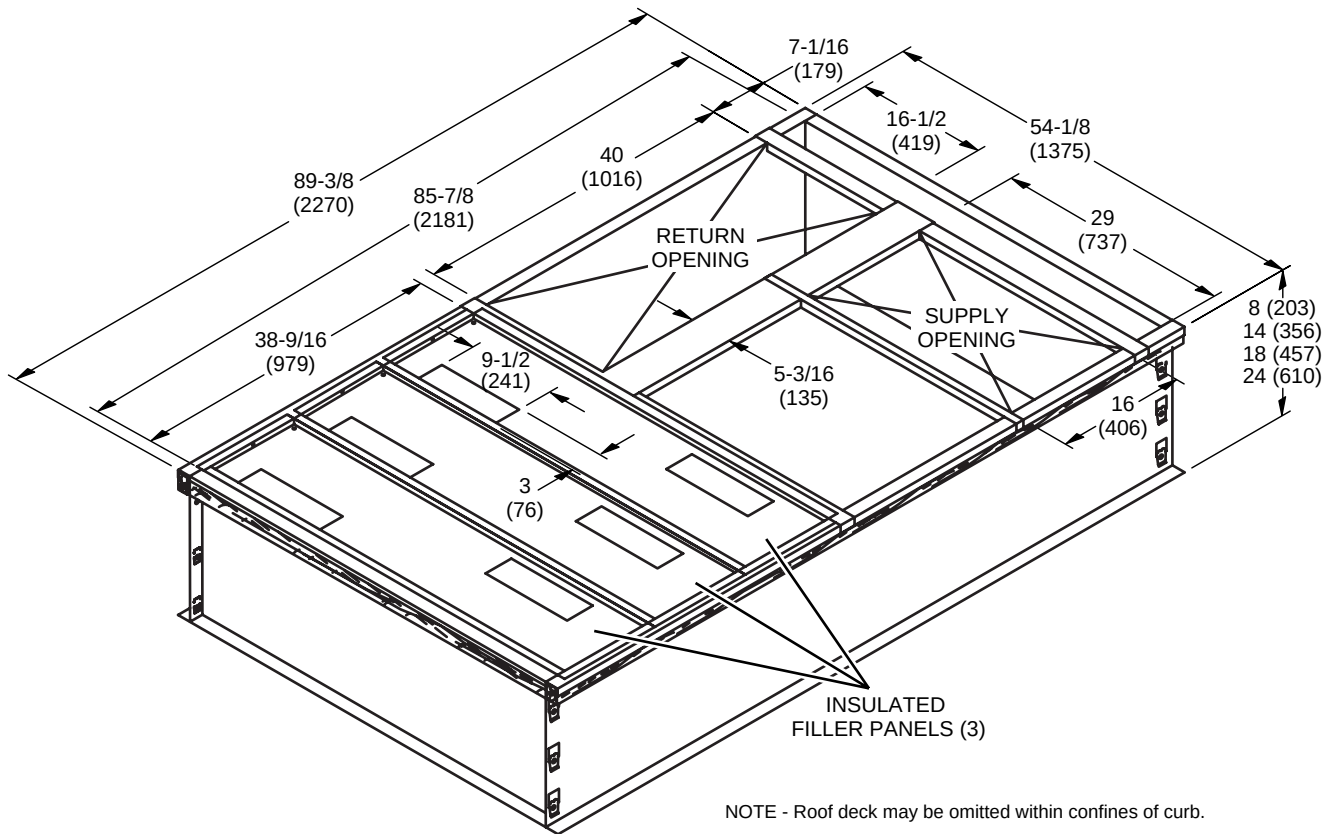


BACK VIEW

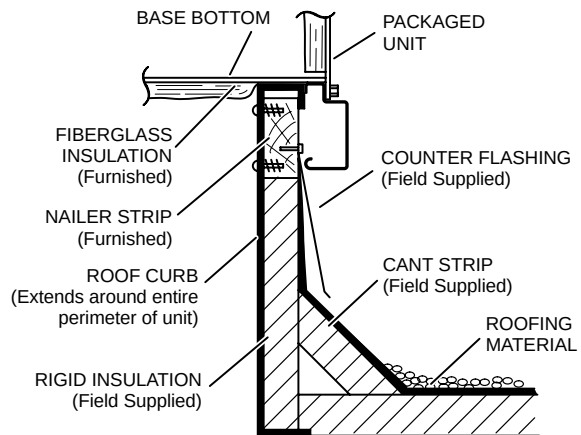
Note - Supply and Return Air Ducts must be supported.

DIMENSIONS - ACCESSORIES - INCHES (MM)

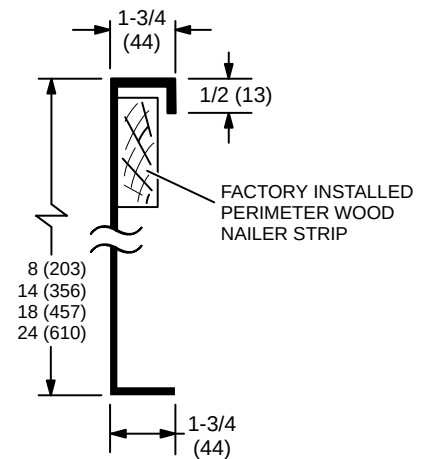
HYBRID CURBS - DOUBLE DUCT OPENING



TYPICAL FLASHING DETAIL FOR ROOF CURB



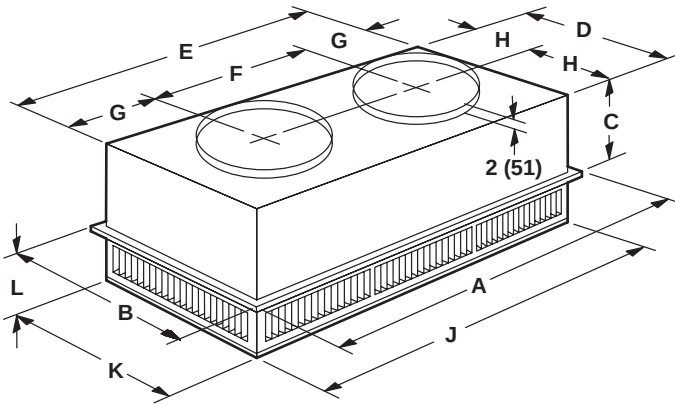
DETAIL ROOF CURB



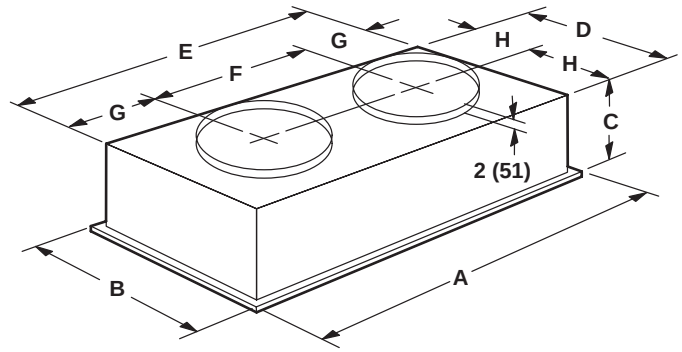
DIMENSIONS - ACCESSORIES - INCHES (MM)

COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

STEP-DOWN CEILING DIFFUSER



FLUSH CEILING DIFFUSER



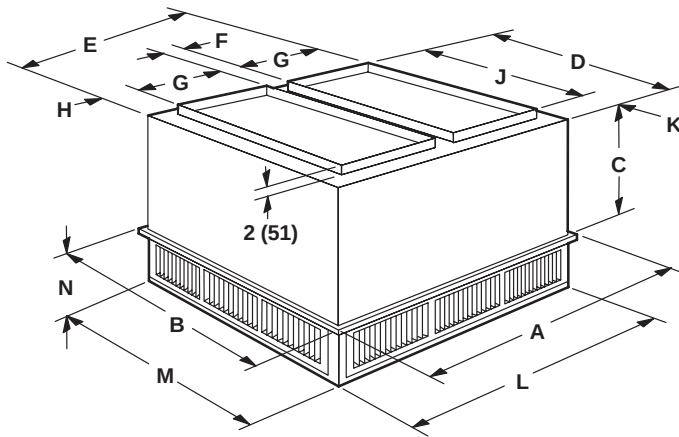
Model Number		RTD11-95
A	in.	47-5/8
	mm	1159
B	in.	29-5/8
	mm	752
C	in.	14-3/8
	mm	365
D	in.	27-1/2
	mm	699
E	in.	45-1/2
	mm	1158
F	in.	22-1/2
	mm	572
G	in.	11-1/2
	mm	292
H	in.	13-3/4
	mm	349
J	in.	45-1/2
	mm	1156
K	in.	27-1/2
	mm	699
L	in.	8-1/8
	mm	206
Duct Size	in.	20 round
	mm	508 round

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

DIMENSIONS - ACCESSORIES - INCHES (MM)

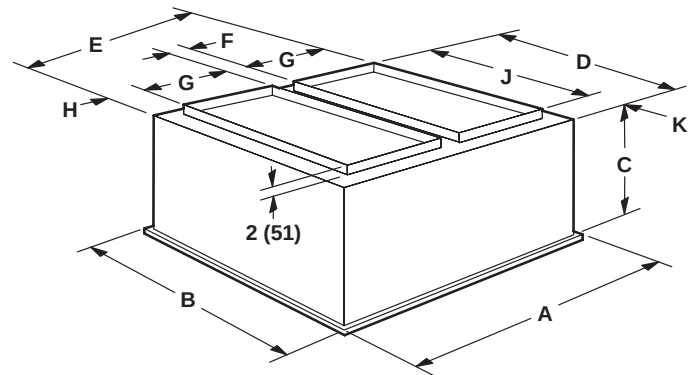
COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

STEP-DOWN CEILING DIFFUSER



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

FLUSH CEILING DIFFUSER



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

REVISIONS

Section	Description
Conventional Control Systems	Added new CS7500 and CS3000 Commercial Thermostats.
Options/Accessories	Added new Combination Coil/Hail Guards.



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