



**COMMERCIAL  
PRODUCT SPECIFICATIONS**

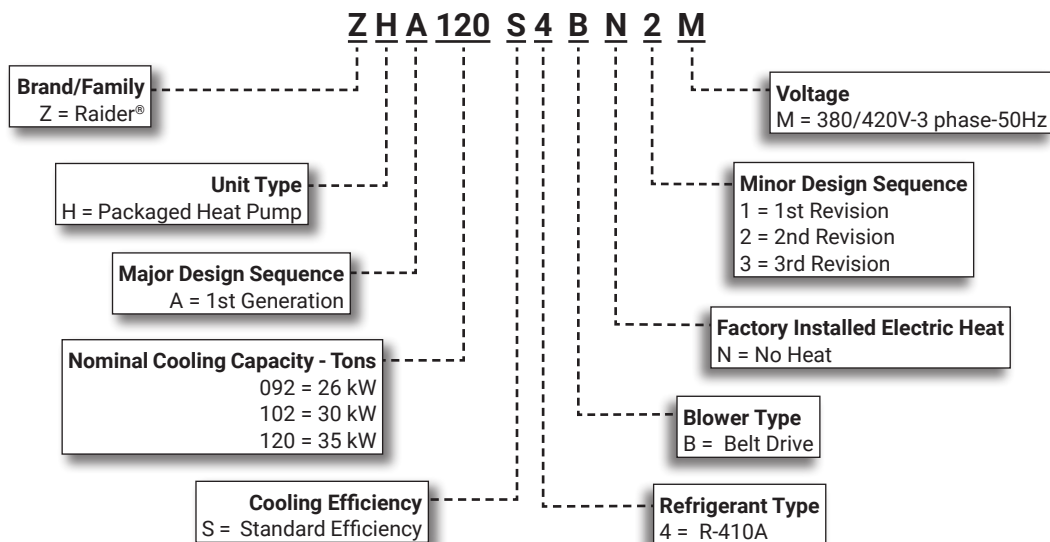
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**RAIDER®**  
Value Without Compromise®

**26 to 35 kW**  
**Net Cooling Capacity – 22.6 to 30.6 kW (77 100 to 104 600 Btuh)**  
**Net Heating Capacity – 23.6 to 29.0 kW (80 400 to 98 900 Btuh)**  
**Optional Electric Heat - 5.7 to 45.9 kW**

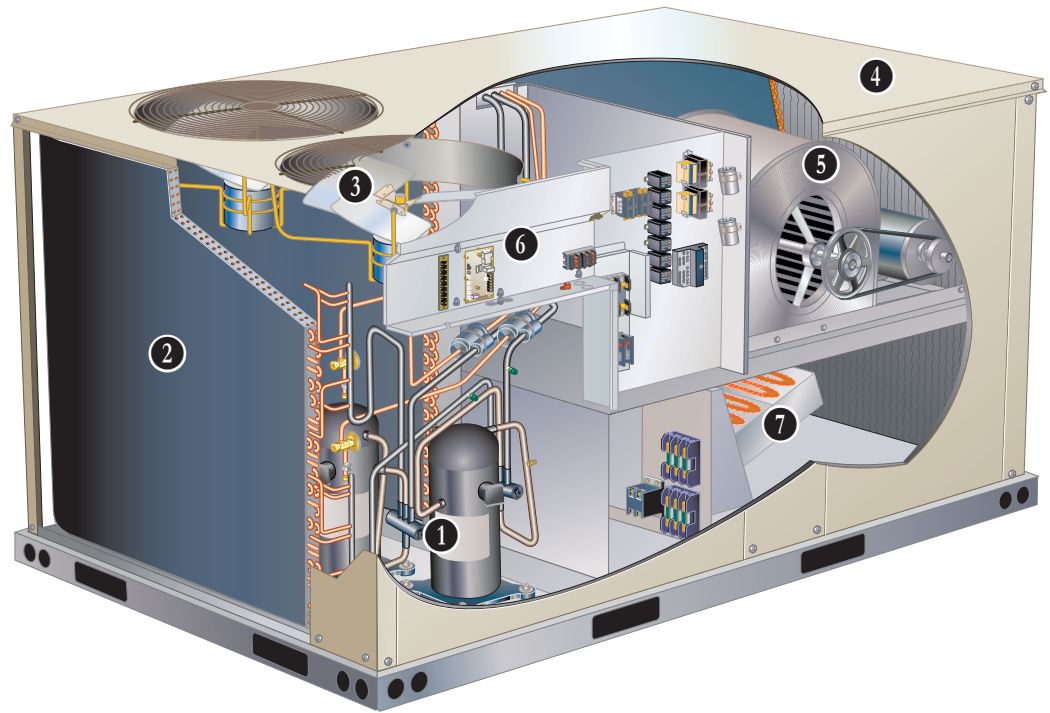
**MODEL NUMBER IDENTIFICATION**



## FEATURE HIGHLIGHTS

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

1. Scroll Compressors
2. Copper Tube Coil Construction
3. Outdoor Coil Fans
4. Heavy Gauge Steel Cabinet
5. Supply Air Blower
6. Unit Control
7. Electric Heat (option)



## CONTENTS

Blower Data . . . . .	16
Cooling / Heating Ratings . . . . .	13
Dimensions - Accessories . . . . .	24
Dimensions - Unit . . . . .	23
Electrical/Electric Heat Data . . . . .	20
Electric Heat Capacities . . . . .	21
Features And Benefits . . . . .	3
Model Number Identification . . . . .	1
Optional Conventional Temperature Control Systems . . . . .	8
Options / Accessories . . . . .	9
Outdoor Sound Data . . . . .	21
Performance / Quality . . . . .	3
Specifications . . . . .	12
Unit Clearances . . . . .	21
Weight Data . . . . .	22

## PERFORMANCE / QUALITY

- Components bonded for grounding to meet safety standards for servicing required by Underwriters Laboratories (UL) and the International Electrotechnical Commission (IEC)
- Cooling performance is rated at test conditions included in Air- Conditioning, Heating and Refrigeration Institute (AHRI) Standard 340/360-2007 while operating at rated voltage and air volumes
- International Organization for Standardization (ISO) 9001 Registered Manufacturing Quality System

## FEATURES AND BENEFITS

### **COOLING SYSTEM**

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

### **R-410A Refrigerant**

- Non-chlorine based
- Ozone friendly

### **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 2°C
- Pressure and temperature switches terminate defrost cycle

### **High Pressure Switches**

- Protects the compressor from overload conditions
- Auto-reset

### **Coil Construction**

- 2** • Copper tube construction
- Enhanced rippled-edge aluminum fins
- Flared shoulder tubing connections
- Silver soldered construction
- 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**

- Polyvinyl Chloride (PVC) coated fan guards

### **Required Selections**

#### **Cooling Capacity**

- Specify nominal cooling capacity

### **Options/Accessories**

#### **Field Installed**

##### **Condensate Drain Trap**

- Available in copper or Polyvinyl Chloride (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
- 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 -18°C

## FEATURES AND BENEFITS

### CABINET

#### Construction

- 4 • Heavy-gauge steel panels
- Full perimeter heavy-gauge galvanized steel base rail
- 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 for water protection

#### Airflow Choice

- Units are shipped in downflow (vertical) return air flow configuration

#### Duct Flanges

- Provided for horizontal duct attachment

#### Power Entry

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

**NOTE** - Optional Bottom Power Entry Kit is available.

#### Exterior Panels

- Constructed of heavy-gauge, galvanized steel
- Two-layer enamel paint finish

#### Insulation

- Fully insulated with non-hygroscopic fiberglass insulation (conditioned areas)

#### Access Panels

- Filter section
- Blower/heating section
- Compressor/controls section
- Recessed handles for easy service access

### Options/Accessories

#### Factory Installed

##### Corrosion Protection

- Completely flexible immersed coating
- 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
- Expanded metal mesh protects outdoor coil

### BLOWER

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

#### Constant Air Volume Blower (CAV)

- Supply air blower provides a constant volume of air

#### Motor

- Overload protected
- Ball bearings
- Belt drive motors are offered on all models and are available in several different sizes to maximize air performance

#### 5 Supply Air Blower

- Forward curved blades
- Double inlet
- Blower wheel statically and dynamically balanced
- Ball bearings
- Adjustable pulley (allows speed change)

### Required Selections

- Order blower motor output and drive kit number required when base unit is ordered
- See Drive Kit Specifications Table

### CONTROLS

#### 6 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

### Options/Accessories

#### Field Installed

##### Smoke Detectors

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

##### Thermostats

- Control system and thermostat options, see page 8

## 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**

- Reduces the number of penetrations in the roof
- Includes bulkhead connectors to provide power and control wiring routing through the roof curb

### **INDOOR AIR QUALITY**

#### **Air Filters**

- Disposable 51 mm 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 51 mm 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 (CO<sub>2</sub>) Sensors**

- Monitors CO<sub>2</sub> levels, reports to the Unit Controller which adjusts economizer dampers as needed

## OPTIONS / ACCESSORIES

### ECONOMIZER

#### **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 CO<sub>2</sub> 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

- 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 CO<sub>2</sub> is higher than the CO<sub>2</sub> 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 13°C.

#### High Performance Economizer Features

- 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
- Flexible stainless steel jamb seals to minimize air leakage

#### 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, CO<sub>2</sub> settings, stage 3 delay and additional calibration settings)
- CHECKOUT (damper positions)
- ALARMS (output signal that can be configured for remote alarm monitoring)

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

#### 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

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

- Order two Single Enthalpy Controls
- 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

## OPTIONS / ACCESSORIES

### **EXHAUST**

#### **Field Installed**

##### **Horizontal Low Profile Barometric Relief Dampers**

- 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 508 mm diameter
- Five blades (K1PWRE10B)
- 0.25 kW motor

### **OUTDOOR AIR**

#### **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

**NOTE** - Maximum mixed air temperature in cooling mode: 38°C.

### **ROOF CURBS**

#### **Field Installed**

##### **Hybrid Roof Curbs, Downflow**

- Nailer strip furnished, mates to unit
- U.S. National Roofing Contractors Approved
- Shipped knocked down
- Interlocking tabs to fasten corners together; no tools required
- Can also be fastened together with furnished hardware
- Available in 203, 356, 457, and 610 mm heights

### **CEILING DIFFUSERS**

#### **Field Installed**

(Flush or Step-Down)

- White powder coat finish on diffuser face and grilles
- Insulated UL listed duct liner
- Diffuser box has collars for duct connection
- Step-down diffusers have double deflection blades
- Flush diffusers have fixed blades
- Provisions for suspending
- Internally sealed to prevent recirculation
- Removable return air grille
- 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.

## OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS

### Comfortsense® 7500 Commercial 7-Day Programmable Thermostat



- Four-Stage Heating / Two-Stage Cooling
- Universal Multi-Stage
- Intuitive Touchscreen Interface
- Automatic Changeover between Heating and Cooling
- Full Seven-Day Programming
- Four Time Periods Per Day
- Temperature and Humidity Control
- One-Touch 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
- FDD, ASHRAE and IECC Compliant

### 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

### BACnet Compatible Thermostat With Reheat Function



- 7-Day Programmable
- For units with or without Humiditrol®
- BTL listed MS/TP ensures compatibility with any BACnet system
- Built-in control programs for conventional and heat pump applications
- Conventional systems up to 3-stage heat and 3-stage cool
- Heat pumps with 1 or 2 compressors and up to 2-stage auxiliary heat
- On-board temperature and humidity sensor
- Multiple configurable inputs and outputs enable advanced control strategies
- Set-up Wizard enables rapid system configuration
- No special tools required for installation or commissioning
- Seven-day (2, 4 or 6 event) occupancy scheduling per day
- Backlit 5-inch LCD touchscreen

Description	Model No.	Catalog No.
<b>Comfortsense® 7500 7-Day Programmable</b>	C0STAT06FF2L	<b>17G74</b>
Universal thermostat locking guard (clear)	C0MISC15AE1-	<b>39P21</b>
<b>Temperature Sensors</b>	<sup>1</sup> Remote non-adjustable wall-mount 20k	<b>C0SNZN01AE2- 47W36</b>
	<sup>1</sup> Remote non-adjustable wall-mount 10k	<b>C0SNZN73AE1- 47W37</b>
	Remote non-adjustable discharge air (duct mount)	<b>C0SND00AE1- 19L22</b>
	Outdoor temperature sensor	<b>C0SNSR03AE1- X2658</b>
<sup>1</sup> Remote wall-mount 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		
<b>Comfortsense® 3000 5-2 Day Programmable</b>	C0STAT05FF1L	<b>11Y05</b>
Thermostat wall mounting plate	C0MISC17AE1-	<b>X2659</b>
<b>Temperature Sensor</b>	Remote non-adjustable wall mount 10k averaging	<b>C0SNZN73AE1- 47W37</b>
<b><sup>1</sup> 7-Day Programmable - Bacnet Compatible</b>	---	<b>Y8241</b>
<sup>1</sup> BACnet Thermostat (Y8241) will control units with and without the Humiditrol® option. If there is a mix of units equipped with and without Humiditrol on the same site, this thermostat can be used for all units if desired.		
<b>BACnet Controls (no reheat)</b>	BACnet® Module (factory or field installed)	<b>K0CTRL31A-2 16X70</b>
	BACnet® Room Sensor with Display (field)	<b>K0SNSR01FF1 97W23</b>
	BACnet® Room Sensor without Display (field)	<b>K0SNSR00FF1 97W24</b>



## OPTIONS / ACCESSORIES

Item Description	Catalog Number	Unit Model No			
		092	102	120	
<b>COOLING SYSTEM</b>					
Condensate Drain Trap	PVC	<b>22H54</b>	X	X	X
	Copper	<b>76W27</b>	X	X	X
Corrosion Protection	Factory		O	O	O
Drain Pan Overflow Switch		<b>99W59</b>	X	X	X
Low Ambient Kit		<b>10Z34</b>	X	X	X
Refrigerant Type		R-410A	O	O	O
<b>BLOWER - SUPPLY AIR</b>					
Blower Option	CAV (Constant Air Volume)	Factory	O	O	O
Blower Motors	Belt Drive - 1.5 kW	Factory	O	O	O
	Belt Drive - 2.2 kW	Factory	O	O	O
	Belt Drive - 3.7 kW	Factory	O	O	O
Drive Kits	Kit #1 490-740 rev/min	Factory	O	O	O
See Blower Data Tables for selection	Kit #2 665-920 rev/min	Factory	O	O	O
	Kit #3 660-995 rev/min	Factory	O	O	O
	Kit #7 610-810 rev/min	Factory	O	O	O
	Kit #8 780-1000 rev/min	Factory	O	O	O
	Kit #9 845-1085 rev/min	Factory	O	O	O
	Kit #10 750-945 rev/min	Factory	O	O	O
	Kit #11 865-1095 rev/min	Factory	O	O	O
	Kit #12 940-1190 rev/min	Factory	O	O	O
	<b>CABINET</b>				
	Coil/Hail Guards		<b>10Y09</b>	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	Catalog Number	Unit Model No			
		092	102	120	
<b>INDOOR AIR QUALITY</b>					
<b>Air Filters</b>					
Healthy Climate® High Efficiency Air Filters 508 x 610 x 51 mm (Order 4 per unit)	MERV 8	<b>11H62</b>	X	X	X
	MERV 13	<b>11H63</b>	X	X	X
Replacement Media Filter With Metal Mesh Frame (includes non-pleated filter media)		<b>Y3063</b>	X	X	X
<b>Indoor Air Quality (CO<sub>2</sub>) Sensors</b>					
Sensor - Wall-mount, off-white plastic cover with LCD display		<b>77N39</b>	X	X	X
Sensor - Wall-mount, off-white plastic cover, no display		<b>87N53</b>	X	X	X
Sensor - Black plastic case with LCD display, rated for plenum mounting		<b>87N52</b>	X	X	X
Sensor - Wall-mount, black plastic case, no display, rated for plenum mounting		<b>87N54</b>	X	X	X
CO <sub>2</sub> Sensor Duct Mounting Kit - for downflow applications		<b>85L43</b>	X	X	X
Aspiration Box - for duct mounting non-plenum rated CO <sub>2</sub> sensors ( <b>87N53</b> or <b>77N39</b> )		<b>90N43</b>	X	X	X
<b>ELECTRICAL</b>					
Voltage 50 Hz with neutral	380/420V-3ph	Factory	O	O	O
Bottom Power Entry Kit		<b>11H66</b>	X	X	X
<b><sup>1</sup> ELECTRIC HEAT</b>					
5.7 kW	380/420V-3ph	<b>10Y98</b>	X	X	
11.5 kW	380/420V-3ph	<b>10Z03</b>	X	X	X
17.2 kW	380/420V-3ph	<b>10Z06</b>	X	X	X
23 kW	380/420V-3ph	<b>10Z09</b>	X	X	X
34.5 kW	380/420V-3ph	<b>10Z12</b>	X	X	X
45.9 kW	380/420V-3ph	<b>10Z15</b>			X
<b>ELECTRIC HEAT ACCESSORIES</b>					
Unit Fuse Block (required) - See Electrical/Electric Heat Tables for Selection			X	X	X

<sup>1</sup> Nominal kW at 420V-3ph-50Hz.

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## OPTIONS / ACCESSORIES

Item Description	Catalog Number	Unit Model No		
		092	102	120
<b>ECONOMIZER</b>				
<b>Standard Economizer</b>				
Standard Downflow Economizer with Single Temperature Control - With Barometric Relief Dampers and Air Hoods	10Z29	OX	OX	OX
Standard Horizontal Economizer with Single Temperature Control - With Barometric Relief Dampers and Air Hoods	11G98	X	X	X
<b>Standard Economizer Controls</b>				
Single Enthalpy Control	53W64	X	X	X
Differential Enthalpy Control (order 2)	53W64	X	X	X
<b>High Performance Economizer</b>				
High Performance Downflow Economizer with Single Temperature Control - With Barometric Relief Dampers and Air Hoods	16X73	OX	OX	OX
<b>High Performance Economizer Controls</b>				
Single Enthalpy Control	11G21	X	X	X
Differential Enthalpy Control (order 2)	11G21	X	X	X
<b>Horizontal Low Profile Barometric Relief Dampers With Exhaust Hood</b>				
Horizontal Low Profile Barometric Relief Dampers With Exhaust Hood	53K04	X	X	X
<b>OUTDOOR AIR</b>				
<b>Outdoor Air Dampers</b>				
Motorized Dampers with outdoor air hood	14G36	X	X	X
Manual Dampers with outdoor air hood	14G37	X	X	X
<b>POWER EXHAUST</b>				
Standard Static (Downflow)	380/420V-3ph	10Z71	X	X
Standard Static (Horizontal)	380/420V-3ph	28E01	X	X
<b>ROOF CURBS</b>				
<b>Hybrid Roof Curbs, Downflow</b>				
203 mm height		10Z25	X	X
356 mm height		10Z26	X	X
457 mm height		10Z27	X	X
610 mm height		10Z28	X	X
<b>CEILING DIFFUSERS</b>				
Step-Down - Order one	RTD11-95S	13K61	X	
	RTD11-135S	13K62		X
Flush - Order one	FD11-95S	13K56	X	
	FD11-135S	13K57		X

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

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## SPECIFICATIONS

General Data		Nominal kW (Tons)	26 (7.5)	30 (8.5)	35 (10)
		Model Number	ZHA092S4B	ZHA102S4B	ZHA120S4B
		Efficiency Type	Standard	Standard	Standard
		Blower Type	Constant Air Volume (CAV)	Constant Air Volume (CAV)	Constant Air Volume (CAV)
<b>Cooling Performance</b>	Gross Cooling Capacity - kW (Btuh)		22.9 (78 200)	26.7 (91 100)	31.3 (106 900)
	<sup>1</sup> Net Cooling Capacity - kW (Btuh)		22.6 (77 100)	26.5 (90 300)	30.6 (104 600)
	AHRI Rated Air Flow - L/s (cfm)		1321 (2800)	1487 (3150)	1699 (3600)
	Total Unit Power - kW		6.7	8.0	9.4
	<sup>1</sup> EER (Btuh/Watt)		11.5	11.3	11.1
	<sup>2</sup> IEER (Btuh/Watt)		12.3	12.3	11.8
	Refrigerant Type		R-410A	R-410A	R-410A
Refrigerant Charge Furnished	Circuit 1		5.3 kg (11 lbs. 12 oz.)	5.0 kg (11 lbs. 10 oz.)	7.3 kg (16 lbs. 0 oz.)
	Circuit 2		4.8 kg (10 lbs. 8 oz.)	4.5 kg (9 lbs. 14 oz.)	6.7 kg (14 lbs. 12 oz.)
<b>Heating Performance</b>	<sup>1</sup> Total High Heat Capacity - kW (Btuh)		23.6 (80 400)	25.1 (85 700)	29.0 (98 900)
	Total Unit Power - kW		6.4	6.8	7.8
	<sup>1</sup> Coefficient of Performance		3.7	3.7	3.7
	<sup>1</sup> Total Low Heat Capacity - kW (Btuh)		13.0 (44 200)	13.7 (46 900)	17.1 (58 300)
	Total Unit Power (kW)		5.9	6.0	6.6
	<sup>1</sup> Coefficient of Performance		2.2	2.3	2.5
<b>Electric Heat Available - See page 20</b>			5.7, 11.5, 17.2, 23, 34.5 kW		11.5, 17.2, 23, 34.5, 45.9 kW
<b>Compressor Type (number)</b>			Scroll (2)	Scroll (2)	Scroll (2)
<b>Outdoor Coils</b>	Net face area (total) - m <sup>2</sup> (sq. ft.)		2.4 (26.2)	2.4 (26.2)	2.4 (26.2)
	Tube diameter - mm (in.)		9.5 (3/8)	9.5 (3/8)	9.5 (3/8)
	Number of rows		2	2	3
	Fins per m (inch)		787 (20)	787 (20)	787 (20)
<b>Outdoor Coil Fans</b>	Motor - (No.) W (hp)		(2) 249 (1/3)	(2) 249 (1/3)	(2) 373 (1/2)
	Motor rev/min		896	896	896
	Total Motor watts		497	497	734
	Diameter - (No.) mm (in.)		(2) 610 (24)	(2) 610 (24)	(2) 610 (24)
	Number of blades		3	3	3
	Total Air volume - L/s (cfm)		3460 (7333)	3460 (7333)	3540 (7500)
<b>Indoor Coils</b>	Net face area (total) - m <sup>2</sup> (sq. ft.)		1.19 (12.8)	1.19 (12.8)	1.25 (13.5)
	Tube diameter - mm (in.)		9.5 (3/8)	9.5 (3/8)	9.5 (3/8)
	Number of rows		3	4	4
	Fins per m (inch)		551 (14)	551 (14)	551 (14)
	Drain connection - Number and size		(1) 1 in. NPT coupling		
<sup>3</sup> <b>Indoor Blower and Drive Selection</b>	Expansion device type		Balance port TXV, removable head		
	Nominal motor output		1.5 kW, 2.2 kW, 3.7 kW (2 hp, 3 hp, 5 hp)		
	Maximum usable motor output		1.7 kW, 2.6 kW, 4.3 kW (2.3 hp, 3.45 hp, 5.75 hp)		
	Motor - Drive kit number		1.5 kW (2 hp) <b>Kit 1</b> 490 - 740 rev/min <b>Kit 2</b> 665 - 920 rev/min <b>Kit 3</b> 660 - 995 rev/min 2.2 kW (3 hp) <b>Kit 7</b> 610 - 810 rev/min <b>Kit 8</b> 780 - 1000 rev/min <b>Kit 9</b> 845 - 1085 rev/min 3.7 kW (5 hp) <b>Kit 10</b> 750 - 945 rev/min <b>Kit 11</b> 865 - 1095 rev/min <b>Kit 12</b> 940 - 1190 rev/min		
	Blower wheel nominal diameter x width - mm (in.)		(1) 381 x 381 (15 X 15)		
<b>Filters</b>	Type of filter		Disposable		
	Number and size - mm (in.)		(4) 508 x 610 x 51 (20 x 24 x 2)		
<b>Electrical characteristics</b>			380/420V - 50 hertz - 3 phase with neutral		

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

<sup>1</sup> Tested at conditions included in the ULE certification program, which is based on AHRI Standard 340/360 while operating at rated voltage and air volumes:

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

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

**Low Temperature Heating Ratings** - -8°C (17°F) db/-9°C (15°F) wb outdoor air temperature and 21°C (70°F) entering indoor coil air.

<sup>2</sup> Integrated Energy Efficiency Ratio tested at conditions included in AHRI Standard 340/360 while operating at rated voltage and air volumes.

<sup>3</sup> Using total air volume and system static pressure requirements determine from blower performance tables rev/min and motor output required. Maximum usable output of motors furnished are shown. If motors of comparable output are used, be sure to keep within the service factor limitations outlined on the motor nameplate.

# COOLING / HEATING RATINGS

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

## 26 KW COOLING STANDARD EFFICIENCY ZHA092S4 (1ST STAGE)

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																							
		18.3°C						23.9°C						29.4°C						35°C					
		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						
L/s	kW	kW	24°C	27°C	29°C	kW	kW	24°C	27°C	29°C	kW	kW	24°C	27°C	29°C	kW	kW	24°C	27°C	29°C					
17.2°C	1135	13.6	2.26	0.6	1	1	12.9	2.62	0.62	1	1	12.2	3	0.63	1	1	11.5	3.42	0.65	1	1				
	1415	14.5	2.27	0.66	1	1	13.7	2.62	0.67	1	1	12.9	3.01	0.68	1	1	12.2	3.43	0.89	1	1				
	1700	15.1	2.26	0.79	1	1	14.3	2.62	0.98	1	1	13.5	3	1	1	1	12.7	3.43	1	1	1				
19.4°C	1135	14.4	2.26	0.46	0.59	0.84	13.6	2.62	0.47	0.6	1	12.7	3.01	0.47	0.62	1	11.9	3.43	0.48	0.63	1				
	1415	14.9	2.26	0.5	0.64	1	14.1	2.62	0.5	0.66	1	13.2	3	0.51	0.67	1	12.3	3.43	0.53	0.69	1				
	1700	15.3	2.26	0.53	0.68	1	14.4	2.62	0.54	0.82	1	13.6	3.01	0.55	0.99	1	12.7	3.43	0.57	1	1				
21.7°C	1135	15.3	2.26	0.33	0.46	0.57	14.5	2.62	0.33	0.46	0.58	13.6	3.01	0.33	0.47	0.6	12.7	3.43	0.33	0.48	0.62				
	1415	15.9	2.25	0.35	0.49	0.63	15	2.61	0.35	0.5	0.64	14	3	0.35	0.51	0.66	13.1	3.43	0.35	0.52	0.67				
	1700	16.2	2.24	0.36	0.53	0.67	15.3	2.61	0.37	0.54	0.68	14.4	3	0.37	0.55	0.87	13.4	3.42	0.37	0.56	1				

## 26 KW COOLING STANDARD EFFICIENCY ZHA092S4 (2ND STAGE)

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																							
		26.7°C						35°C						43.3°C						51.7°C					
		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						
L/s	kW	kW	24°C	27°C	29°C	kW	kW	24°C	27°C	29°C	kW	kW	24°C	27°C	29°C	kW	kW	24°C	27°C	29°C					
17.2°C	1135	22.6	4.42	0.74	0.9	0.98	20.4	5.42	0.76	0.91	0.99	18.1	6.59	0.79	0.94	1	15.4	7.93	0.84	0.97	1				
	1415	24	4.44	0.8	0.94	1	21.8	5.44	0.83	0.96	1	19.3	6.61	0.87	0.99	1	16.6	7.96	0.91	1	1				
	1700	25.2	4.45	0.86	0.98	1	22.8	5.45	0.89	1	1	20.4	6.63	0.92	1	1	17.6	7.97	0.95	1	1				
19.4°C	1135	24.1	4.44	0.58	0.72	0.86	21.8	5.44	0.58	0.74	0.89	19.2	6.61	0.59	0.77	0.92	16.3	7.95	0.6	0.81	0.95				
	1415	25.4	4.45	0.61	0.78	0.92	22.9	5.46	0.62	0.81	0.94	20.2	6.63	0.64	0.85	0.97	17.2	7.97	0.66	0.89	1				
	1700	26.3	4.45	0.65	0.84	0.96	23.8	5.46	0.66	0.87	0.98	21	6.64	0.69	0.9	1	18	7.98	0.72	0.93	1				
21.7°C	1135	25.7	4.45	0.43	0.57	0.7	23.3	5.46	0.42	0.57	0.72	20.7	6.63	0.41	0.58	0.74	17.6	7.97	0.39	0.59	0.79				
	1415	27	4.46	0.44	0.6	0.76	24.5	5.47	0.44	0.61	0.78	21.7	6.65	0.43	0.63	0.82	18.5	7.98	0.43	0.66	0.87				
	1700	28	4.46	0.46	0.64	0.82	25.4	5.47	0.46	0.66	0.85	22.4	6.65	0.45	0.68	0.88	19.2	7.99	0.45	0.72	0.85				

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		46°C						48°C						50°C							
		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							
L/s	kW	kW	24°C	27°C	29°C	kW	kW	24°C	27°C	29°C	kW	kW	24°C	27°C	29°C	kW	kW	24°C	27°C	29°C	
17.2°C	1135	17.2	7.01	0.8	0.95	1	16.6	7.32	0.82	0.96	1	15.9	7.65	0.83	0.97	1					
	1415	18.4	7.03	0.88	1	1	17.8	7.34	0.89	1	1	17.1	7.67	0.9	1	1					
	1700	19.5	7.06	0.93	1	1	18.9	7.36	0.93	1	1	18.2	7.68	0.94	1	1					
19.4°C	1135	18.3	7.04	0.59	0.78	0.93	17.6	7.34	0.59	0.79	0.93	16.9	7.67	0.6	0.8	0.94					
	1415	19.3	7.05	0.64	0.86	0.98	18.6	7.35	0.65	0.87	0.98	17.8	7.68	0.66	0.88	0.99					
	1700	20	7.06	0.7	0.91	1	19.4	7.37	0.71	0.92	1	18.6	7.7	0.72	0.93	1					
21.7°C	1135	19.7	7.06	0.4	0.58	0.75	19	7.36	0.4	0.59	0.76	18.3	7.69	0.4	0.59	0.78					
	1415	20.7	7.07	0.43	0.64	0.84	20	7.37	0.43	0.64	0.85	19.2	7.7	0.43	0.65	0.86					
	1700	21.4	7.08	0.45	0.69	0.89	20.7	7.39	0.45	0.7	0.9	19.8	7.71	0.46	0.71	0.91					

## 26 KW HEATING STANDARD EFFICIENCY ZHA092S4

Indoor Coil Air Volume 21°C Dry Bulb	Air Temperature Entering Outdoor Coil									
	18°C		7°C		-4°C		-15°C		-28°C	
	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
L/s	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
1135	28.6	5.9	21.8	5.5	14.7	5.1	9.6	4.4	4.8	3.3
1415	29.1	5.5	22.3	5.2	15.2	4.8	10.1	4.0	5.3	3.0
1700	29.5	5.3	22.7	4.9	15.7	4.6	10.6	3.8	5.7	2.7

## COOLING / HEATING RATINGS

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

### 30 KW COOLING STANDARD EFFICIENCY ZHA102S4 (1ST STAGE)

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		18.3°C					23.9°C					29.4°C					35°C				
		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		
L/s	kW	kW	24°C	27°C	29°C	kW	kW	24°C	27°C	29°C	kW	kW	24°C	27°C	29°C	kW	kW	24°C	27°C	29°C	
17.2°C	1285	15.8	2.3	0.66	1	1	15	2.66	0.67	1	1	14.3	3.06	0.69	1	1	13.5	3.49	0.71	1	1
	1605	16.7	2.29	0.71	1	1	16	2.66	0.73	1	1	15.1	3.05	0.74	1	1	14.3	3.49	1	1	1
	1925	17.4	2.29	0.97	1	1	16.6	2.66	1	1	1	15.8	3.05	1	1	1	14.9	3.49	1	1	1
19.4°C	1285	16.4	2.29	0.5	0.64	1	15.6	2.66	0.51	0.66	1	14.7	3.05	0.51	0.67	1	13.8	3.49	0.52	0.69	1
	1605	17.1	2.29	0.54	0.7	1	16.1	2.66	0.55	0.72	1	15.3	3.06	0.56	0.73	1	14.3	3.49	0.57	0.74	1
	1925	17.5	2.29	0.58	0.74	1	16.6	2.65	0.59	0.96	1	15.7	3.05	0.6	1	1	14.9	3.49	0.61	1	1
21.7°C	1285	17.4	2.29	0.36	0.5	0.63	16.6	2.65	0.36	0.51	0.64	15.6	3.05	0.36	0.51	0.66	14.7	3.48	0.35	0.52	0.67
	1605	18	2.28	0.37	0.54	0.68	17	2.65	0.37	0.54	0.7	16.1	3.05	0.38	0.56	0.72	15.1	3.49	0.38	0.57	0.73
	1925	18.3	2.28	0.39	0.58	0.73	17.4	2.65	0.39	0.59	0.74	16.4	3.05	0.39	0.6	1	15.4	3.49	0.4	0.62	1

### 30 KW COOLING STANDARD EFFICIENCY ZHA102S4 (2ND STAGE)

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		26.7°C					35°C					43.3°C					51.7°C				
		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		
L/s	kW	kW	24°C	27°C	29°C	kW	kW	24°C	27°C	29°C	kW	kW	24°C	27°C	29°C	kW	kW	24°C	27°C	29°C	
17.2°C	1285	26.6	5.31	0.71	0.89	1	23.5	6.46	0.73	0.93	1	20.3	7.83	0.76	0.97	1	16.8	9.46	0.81	1	1
	1605	28.3	5.33	0.78	0.97	1	25.2	6.49	0.81	0.99	1	22	7.86	0.86	1	1	18.4	9.49	0.93	1	1
	1925	29.8	5.34	0.85	1	1	26.8	6.52	0.9	1	1	23.5	7.89	0.95	1	1	19.7	9.52	0.99	1	1
19.4°C	1285	28.7	5.33	0.55	0.69	0.84	25.4	6.49	0.54	0.71	0.89	21.9	7.86	0.55	0.73	0.94	17.9	9.48	0.55	0.78	0.99
	1605	30.1	5.34	0.59	0.76	0.94	26.7	6.51	0.59	0.78	0.97	23	7.88	0.6	0.83	1	18.9	9.5	0.63	0.91	1
	1925	31.2	5.35	0.63	0.83	0.99	27.7	6.53	0.64	0.87	1	23.9	7.89	0.66	0.93	1	19.8	9.52	0.7	0.98	1
21.7°C	1285	30.8	5.35	0.4	0.54	0.67	27.4	6.52	0.38	0.53	0.69	23.9	7.9	0.37	0.54	0.71	19.7	9.51	0.34	0.55	0.76
	1605	32.4	5.35	0.42	0.58	0.73	28.8	6.53	0.41	0.58	0.76	25	7.91	0.39	0.6	0.8	20.6	9.53	0.37	0.63	0.88
	1925	33.4	5.36	0.44	0.62	0.8	29.8	6.55	0.43	0.63	0.84	25.9	7.92	0.42	0.66	0.9	21.3	9.54	0.41	0.7	0.91

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil														
		46°C					48°C					50°C				
		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		
L/s	kW	kW	24°C	27°C	29°C	kW	kW	24°C	27°C	29°C	kW	kW	24°C	27°C	29°C	
17.2°C	1285	19.2	8.330	.77	.98	1	18.4	8.71	.78	.99	1	17.5	9.10	0.80	1	1
	1605	20.9	8.37	0.88	1	1	20.1	8.74	0.90	1	1	19.2	9.14	0.92	1	1
	1925	22.3	8.40	0.96	1	1	21.4	8.77	0.97	1	1	20.5	9.17	0.98	1	1
19.4°C	1285	20.7	8.36	0.55	0.75	0.95	19.8	8.73	0.55	0.76	0.96	18.7	9.13	0.55	0.77	0.97
	1605	21.7	8.38	0.61	0.86	1	20.8	8.75	0.61	0.87	1	19.8	9.15	0.62	0.89	1
	1925	22.7	8.40	0.67	0.94	1	21.7	8.77	0.68	0.95	1	20.7	9.17	0.69	0.96	1
21.7°C	1285	22.6	8.40	0.36	0.55	0.73	21.6	8.77	0.35	0.54	0.73	20.6	9.16	0.34	0.55	0.75
	1605	23.7	8.42	0.39	0.61	0.82	22.7	8.78	0.38	0.61	0.84	21.6	9.18	0.38	0.62	0.86
	1925	24.4	8.42	0.42	0.67	0.92	23.4	8.79	0.42	0.68	0.93	22.3	9.19	0.41	0.69	0.94

### 30 KW HEATING STANDARD EFFICIENCY ZHA102S4

Indoor Coil Air Volume 21°C Dry Bulb	Air Temperature Entering Outdoor Coil									
	18°C		7°C		-4°C		-15°C		-28°C	
	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
L/s	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
1285	32.5	6.3	24.6	5.8	16.3	5.3	10.5	4.6	5.3	3.5
1605	33.0	5.9	25.0	5.4	16.8	4.9	10.9	4.3	5.7	3.1
1925	33.6	5.7	25.6	5.2	17.3	4.7	11.5	4.0	6.3	2.9

# COOLING / HEATING RATINGS

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

## 35 KW COOLING STANDARD EFFICIENCY ZHA120S4 (1ST STAGE)

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																							
		18.3°C						23.9°C						29.4°C						35°C					
		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						
L/s	kW	kW	24°C	27°C	29°C	kW	kW	24°C	27°C	29°C	kW	kW	24°C	27°C	29°C	kW	kW	24°C	27°C	29°C					
17.2°C	1510	17.5	2.37	1	0.94	0.95	16.4	2.69	1	0.94	0.94	15.3	3.04	1	0.93	0.94	14	3.44	0.92	0.93	0.93				
	1888	18.4	2.4	0.96	0.93	0.94	17.3	2.72	0.92	0.93	0.93	16.1	3.07	0.91	0.92	0.93	14.8	3.46	0.91	0.91	0.92				
	2265	19.1	2.42	0.91	0.92	0.93	17.9	2.74	0.91	0.91	0.92	16.6	3.09	0.91	0.91	0.91	15.3	3.48	0.91	0.91	0.91				
19.4°C	1510	17.9	2.38	1	1	0.95	16.7	2.7	1	1	0.94	15.4	3.05	1	1	0.94	14.1	3.44	1	1	0.93				
	1888	18.6	2.41	1	1	0.94	17.3	2.73	1	0.99	0.93	16.1	3.07	1	0.92	0.93	14.8	3.47	1	0.91	0.92				
	2265	19.1	2.42	1	0.92	0.93	17.9	2.74	1	0.91	0.92	16.6	3.09	1	0.91	0.91	15.3	3.49	1	0.91	0.91				
21.7°C	1510	19	2.42	1	1	1	17.7	2.74	1	1	1	16.4	3.08	1	1	1	14.9	3.47	1	1	1				
	1888	19.5	2.44	1	1	1	18.2	2.75	1	1	0.93	16.8	3.10	1	1	0.93	15.4	3.49	1	1	0.92				
	2265	19.8	2.45	1	1	0.95	18.5	2.77	1	1	0.92	17.1	3.11	1	1	0.91	15.6	3.50	1	1	0.91				

## 35 KW COOLING STANDARD EFFICIENCY ZHA120S4 (2ND STAGE)

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																							
		26.7°C						35°C						43.3°C						51.7°C					
		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						
L/s	kW	kW	24°C	27°C	29°C	kW	kW	24°C	27°C	29°C	kW	kW	24°C	27°C	29°C	kW	kW	24°C	27°C	29°C					
17.2°C	1510	31.5	5.97	0.72	0.89	1	27.6	7.19	0.74	0.94	1	23.4	8.66	0.77	0.99	1	19.3	10.48	0.82	1	1				
	1888	33.3	6.03	0.79	0.99	1	29.5	7.25	0.82	1	1	25.6	8.73	0.87	1	1	21.1	10.54	0.96	1	1				
	2265	35.3	6.08	0.86	1	1	31.4	7.31	0.91	1	1	27.3	8.79	0.97	1	1	22.6	10.6	1	1	1				
19.4°C	1510	34	6.04	0.55	0.7	0.85	29.9	7.26	0.55	0.72	0.9	25.4	8.72	0.55	0.75	0.96	20.5	10.52	0.55	0.8	1				
	1888	35.6	6.1	0.6	0.77	0.95	31.3	7.31	0.6	0.8	1	26.7	8.76	0.61	0.85	1	21.6	10.55	0.63	0.93	1				
	2265	36.9	6.13	0.64	0.84	1	32.4	7.34	0.65	0.88	1	27.7	8.81	0.67	0.95	1	22.6	10.59	0.71	1	1				
21.7°C	1510	36.4	6.11	0.4	0.54	0.68	32.2	7.33	0.39	0.54	0.7	27.7	8.8	0.36	0.54	0.73	22.5	10.59	0.33	0.56	0.77				
	1888	38.2	6.18	0.43	0.59	0.75	33.7	7.38	0.41	0.59	0.78	28.9	8.85	0.39	0.61	0.82	23.6	10.62	0.37	0.64	0.91				
	2265	39.4	6.22	0.45	0.64	0.82	34.8	7.43	0.43	0.65	0.86	29.8	8.88	0.42	0.67	0.92	24.3	10.66	0.41	0.71	1				

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																	
		46°C						48°C						50°C					
		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					
L/s	kW	kW	24°C	27°C	29°C	kW	kW	24°C	27°C	29°C	kW	kW	24°C	27°C	29°C				
17.2°C	1285	19.2	8330	.77	.98	1	18.4	8710	.78	.99	1	17.5	9.10	0.80	1	1			
	1605	20.9	8.37	0.88	1	1	20.1	8.74	0.90	1	1	19.2	9.14	0.92	1	1			
	1925	22.3	8.40	0.96	1	1	21.4	8.77	0.97	1	1	20.5	9.17	0.98	1	1			
19.4°C	1285	20.7	8.36	0.55	0.75	0.95	19.8	8.73	0.55	0.76	0.96	18.7	9.13	0.55	0.77	0.97			
	1605	21.7	8.38	0.61	0.86	1	20.8	8.75	0.61	0.87	1	19.8	9.15	0.62	0.89	1			
	1925	22.7	8.40	0.67	0.94	1	21.7	8.77	0.68	0.95	1	20.7	9.17	0.69	0.96	1			
21.7°C	1285	22.6	8.40	0.36	0.55	0.73	21.6	8.77	0.35	0.54	0.73	20.6	9.16	0.34	0.55	0.75			
	1605	23.7	8.42	0.39	0.61	0.82	22.7	8.78	0.38	0.61	0.84	21.6	9.18	0.38	0.62	0.86			
	1925	24.4	8.42	0.42	0.67	0.92	23.4	8.79	0.42	0.68	0.93	22.3	9.19	0.41	0.69	0.94			

## 35 KW HEATING STANDARD EFFICIENCY ZHA120S4

Indoor Coil Air Volume 21°C Dry Bulb	Air Temperature Entering Outdoor Coil									
	18°C		7°C		-4°C		-15°C		-28°C	
	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
L/s	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
1510	37.2	7.8	28.7	7.2	19.9	6.5	13.7	5.7	6.6	4.3
1890	38.0	7.3	29.6	6.7	20.8	6.1	14.6	5.3	7.5	3.9
2265	38.8	7.0	30.4	6.4	21.6	5.8	15.4	5.0	8.3	3.6

## BLOWER DATA

### 092 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 18 for blower motors and drives.

See page 18 for wet coil and option/accessory air resistance data.

### MINIMUM AIR VOLUME REQUIRED FOR USE WITH OPTIONAL ELECTRIC HEAT (Maximum Static Pressure - 500 Pa (2.0 in. w.g.):

5.7 kW, 11.5 kW, 17.2 kW - 975 L/s (2065 cfm)

23 kW - 1060 L/s (2250 cfm)

34.5 kW - 1240 L/s (2625 cfm)

Air Volume		TOTAL STATIC PRESSURE - Pa (Inches Water Gauge)																				
		50 (0.20)			100 (0.40)			150 (0.60)			200 (0.80)			250 (1.00)			300 (1.20)			350 (1.40)		
L/s	cfm	rev/min	kW	BHP	rev/min	kW	BHP	rev/min	kW	BHP	rev/min	kW	BHP	rev/min	kW	BHP	rev/min	kW	BHP	rev/min	kW	BHP
825	1750	494	0.08	0.11	562	0.25	0.34	632	0.42	0.56	702	0.55	0.74	771	0.63	0.85	838	0.72	0.96	902	0.80	1.07
945	2000	514	0.19	0.26	581	0.37	0.49	650	0.52	0.70	719	0.65	0.87	786	0.73	0.98	852	0.81	1.09	915	0.90	1.20
1060	2250	533	0.31	0.41	599	0.46	0.62	667	0.61	0.82	735	0.74	0.99	802	0.82	1.10	866	0.90	1.21	928	0.99	1.33
1180	2500	553	0.41	0.55	619	0.57	0.76	685	0.71	0.95	753	0.82	1.10	818	0.91	1.22	881	1.00	1.34	942	1.10	1.47
1300	2750	573	0.52	0.70	638	0.67	0.90	705	0.81	1.08	771	0.91	1.22	835	1.01	1.35	897	1.11	1.49	957	1.22	1.63
1415	3000	594	0.63	0.85	659	0.78	1.05	725	0.91	1.22	791	1.01	1.36	853	1.12	1.50	915	1.23	1.65	973	1.35	1.81
1535	3250	617	0.75	1.01	682	0.90	1.20	747	1.02	1.37	812	1.13	1.52	873	1.25	1.67	934	1.37	1.83	990	1.50	2.01
1650	3500	640	0.87	1.17	706	1.01	1.36	771	1.14	1.53	834	1.27	1.70	895	1.39	1.86	954	1.51	2.03	1008	1.66	2.23
1770	3750	665	1.00	1.34	731	1.15	1.54	796	1.28	1.72	857	1.41	1.89	917	1.54	2.07	975	1.69	2.26	1027	1.85	2.48
1890	4000	692	1.15	1.54	758	1.31	1.75	822	1.44	1.93	882	1.57	2.11	940	1.72	2.30	996	1.87	2.51	1047	2.06	2.76
2005	4250	722	1.31	1.76	787	1.47	1.97	849	1.60	2.15	908	1.75	2.35	965	1.91	2.56	1018	2.08	2.79	1067	2.28	3.06

Air Volume		TOTAL STATIC PRESSURE - Pa (Inches Water Gauge)																	
		400 (1.60)			450 (1.80)			500 (2.00)			550 (2.20)			600 (2.40)			650 (2.60)		
L/s	cfm	rev/min	kW	BHP	rev/min	kW	BHP	rev/min	kW	BHP	rev/min	kW	BHP	rev/min	kW	BHP	rev/min	kW	BHP
825	1750	961	0.89	1.19	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
945	2000	972	0.98	1.32	1026	1.10	1.47	1076	1.23	1.65	---	---	---	---	---	---	---	---	---
1060	2250	984	1.09	1.46	1037	1.22	1.63	1085	1.35	1.81	1132	1.50	2.01	1178	1.65	2.21	1226	1.81	2.43
1180	2500	997	1.21	1.62	1048	1.34	1.80	1096	1.48	1.99	1142	1.64	2.20	1188	1.80	2.41	1237	1.97	2.64
1300	2750	1011	1.34	1.80	1061	1.48	1.99	1108	1.63	2.19	1154	1.80	2.41	1200	1.96	2.63	1249	2.14	2.87
1415	3000	1026	1.48	1.99	1075	1.64	2.20	1121	1.81	2.42	1167	1.97	2.64	1213	2.14	2.87	1262	2.33	3.12
1535	3250	1042	1.65	2.21	1089	1.81	2.43	1135	1.98	2.66	1181	2.16	2.90	1228	2.33	3.13	1277	2.52	3.38
1650	3500	1058	1.84	2.46	1105	2.01	2.69	1150	2.19	2.93	1196	2.36	3.17	1243	2.54	3.41	1293	2.72	3.65
1770	3750	1076	2.03	2.72	1121	2.22	2.97	1166	2.40	3.22	1212	2.58	3.46	1261	2.77	3.71	1311	2.95	3.96
1890	4000	1094	2.25	3.02	1139	2.44	3.27	1184	2.63	3.52	1230	2.81	3.77	1280	3.01	4.03	1330	3.20	4.29
2005	4250	1113	2.48	3.33	1157	2.68	3.59	1202	2.87	3.85	1250	3.07	4.11	1300	3.27	4.38	1352	3.47	4.65



## BLOWER DATA

### 102 AND 120 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 18 for blower motors and drives.

See page 18 for wet coil and option/accessory air resistance data.

### MINIMUM AIR VOLUME REQUIRED FOR USE WITH OPTIONAL ELECTRIC HEAT (Maximum Static Pressure - 500 Pa (2.0 in. w.g.)

5.7 kW, 11.5 kW, 17.2 kW - 975 L/s (2065 cfm)

23 kW - 1060 L/s (2250 cfm)

34.5 kW - 1240 L/s (2625 cfm)

45.9 kW - 1890 L/s (4000 cfm)

Total Air Volume		TOTAL STATIC PRESSURE - Pa (Inches Water Gauge)																				
		50 (0.20)			100 (0.40)			150 (0.60)			200 (0.80)			250 (1.00)			300 (1.20)			350 (1.40)		
L/s	cfm	rev/min	kW	BHP	rev/min	kW	BHP	rev/min	kW	BHP	rev/min	kW	BHP	rev/min	kW	BHP	rev/min	kW	BHP	rev/min	kW	BHP
945	2000	542	0.32	0.43	602	0.45	0.60	664	0.56	0.75	732	0.66	0.89	802	0.76	1.02	869	0.86	1.15	927	0.95	1.27
1060	2250	560	0.41	0.55	619	0.53	0.71	681	0.64	0.86	748	0.75	1.00	817	0.85	1.14	882	0.95	1.27	939	1.05	1.41
1180	2500	579	0.51	0.68	637	0.62	0.83	699	0.73	0.98	766	0.84	1.12	834	0.94	1.26	897	1.05	1.41	953	1.17	1.57
1300	2750	599	0.60	0.81	657	0.72	0.97	719	0.83	1.11	785	0.93	1.25	851	1.05	1.41	913	1.17	1.57	968	1.30	1.74
1415	3000	620	0.71	0.95	678	0.83	1.11	741	0.93	1.25	806	1.04	1.40	870	1.18	1.58	930	1.31	1.75	985	1.45	1.94
1535	3250	643	0.82	1.10	701	0.94	1.26	764	1.05	1.41	828	1.17	1.57	891	1.31	1.76	950	1.45	1.95	1003	1.61	2.16
1650	3500	667	0.94	1.26	726	1.07	1.43	788	1.18	1.58	851	1.32	1.77	913	1.47	1.97	970	1.62	2.17	1023	1.80	2.41
1770	3750	693	1.07	1.44	752	1.20	1.61	813	1.33	1.78	876	1.48	1.98	936	1.64	2.20	992	1.81	2.43	1043	2.00	2.68
1890	4000	720	1.23	1.65	779	1.36	1.82	840	1.49	2.00	902	1.66	2.22	961	1.84	2.46	1015	2.02	2.71	1064	2.22	2.98
2005	4250	748	1.39	1.86	807	1.52	2.04	868	1.67	2.24	929	1.85	2.48	986	2.05	2.75	1038	2.25	3.02	1086	2.46	3.30
2125	4500	778	1.56	2.09	837	1.70	2.28	898	1.87	2.51	957	2.07	2.78	1012	2.29	3.07	1062	2.51	3.37	1108	2.72	3.65
2240	4750	809	1.75	2.34	868	1.91	2.56	929	2.10	2.82	986	2.33	3.12	1038	2.56	3.43	1087	2.79	3.74	1132	3.01	4.03
2360	5000	841	1.95	2.62	901	2.14	2.87	960	2.36	3.17	1015	2.61	3.50	1065	2.86	3.83	1112	3.09	4.14	1157	3.30	4.43
2475	5250	875	2.19	2.93	935	2.41	3.23	992	2.66	3.56	1044	2.92	3.91	1092	3.18	4.26	1138	3.41	4.57	1182	3.62	4.85
2595	5500	911	2.46	3.30	969	2.71	3.63	1024	2.98	4.00	1074	3.26	4.37	1120	3.51	4.71	1165	3.74	5.02	1208	3.95	5.29
2715	5750	948	2.77	3.71	1004	3.04	4.08	1056	3.34	4.48	1104	3.62	4.85	1148	3.87	5.19	1192	4.10	5.49	1235	4.28	5.74
2830	6000	985	3.12	4.18	1039	3.42	4.59	1088	3.73	5.00	1134	4.01	5.37	1177	4.24	5.69	---	---	---	---	---	---
2950	6250	1022	3.51	4.70	1073	3.83	5.14	1120	4.13	5.54	---	---	---	---	---	---	---	---	---	---	---	---

Total Air Volume		TOTAL STATIC PRESSURE - Pa (Inches Water Gauge)																		
		400 (1.60)			450 (1.80)			500 (2.00)			550 (2.20)			600 (2.40)			650 (2.60)			
L/s	cfm	rev/min	kW	BHP	rev/min	kW	BHP	rev/min	kW	BHP	rev/min	kW	BHP	rev/min	kW	BHP	rev/min	kW	BHP	
945	2000	979	1.05	1.41	1029	1.17	1.57	1079	1.31	1.75	1129	1.45	1.95	1179	1.60	2.15	1230	1.77	2.37	
1060	2250	991	1.17	1.57	1041	1.30	1.74	1090	1.44	1.93	1140	1.59	2.13	1190	1.75	2.35	1241	1.92	2.57	
1180	2500	1005	1.30	1.74	1054	1.43	1.92	1103	1.58	2.12	1152	1.74	2.33	1202	1.90	2.55	1254	2.08	2.79	
1300	2750	1020	1.44	1.93	1068	1.59	2.13	1116	1.75	2.34	1165	1.91	2.56	1215	2.07	2.78	1268	2.25	3.01	
1415	3000	1036	1.60	2.14	1084	1.76	2.36	1131	1.92	2.58	1180	2.09	2.80	1230	2.25	3.02	1283	2.43	3.26	
1535	3250	1053	1.78	2.38	1100	1.95	2.61	1148	2.11	2.83	1196	2.28	3.06	1246	2.45	3.29	1299	2.63	3.52	
1650	3500	1071	1.98	2.65	1118	2.15	2.88	1165	2.32	3.11	1213	2.48	3.33	1264	2.66	3.57	1317	2.84	3.81	
1770	3750	1091	2.19	2.93	1137	2.36	3.17	1183	2.54	3.40	1232	2.72	3.64	1284	2.89	3.88	1338	3.08	4.13	
1890	4000	1111	2.42	3.24	1156	2.60	3.48	1203	2.78	3.72	1253	2.95	3.96	1305	3.15	4.22	1359	3.34	4.48	
2005	4250	1132	2.66	3.57	1177	2.84	3.81	1224	3.02	4.05	1274	3.22	4.31	1327	3.41	4.57	1382	3.62	4.85	
2125	4500	1154	2.92	3.92	1199	3.11	4.17	1247	3.29	4.41	1297	3.48	4.67	1350	3.69	4.94	1405	3.89	5.22	
2240	4750	1177	3.20	4.29	1223	3.39	4.54	1270	3.57	4.79	1321	3.76	5.04	1374	3.96	5.31	1428	4.16	5.58	
2360	5000	1201	3.50	4.69	1247	3.69	4.94	1295	3.86	5.18	1345	4.04	5.42	1398	4.24	5.68	---	---	---	
2475	5250	1226	3.80	5.10	1272	3.98	5.34	1320	4.16	5.57	---	---	---	---	---	---	---	---	---	
2595	5500	1253	4.13	5.53	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

## BLOWER DATA

### FACTORY INSTALLED BELT DRIVE KIT SPECIFICATIONS

Nominal		Maximum		Drive Kit Number	rev/min Range
kW	hp	kW	hp		
1.5	2	1.7	2.3	1	490 - 740
1.5	2	1.7	2.3	2	665 - 920
1.5	2	1.7	2.3	3	660 - 995
2.2	3	2.6	3.45	7	610 - 810
2.2	3	2.6	3.45	8	780 - 1000
2.2	3	2.6	3.45	9	845 - 1085
3.7	5	4.3	5.75	10	750 - 945
3.7	5	4.3	5.75	11	865 - 1095
3.7	5	4.3	5.75	12	940 - 1190

### POWER EXHAUST FAN PERFORMANCE

Return Air System Static Pressure		Air Volume Exhausted	
Pa	in. w.g.	L/s	cfm
0	0	1685	3575
12	0.05	1605	3405
25	0.10	1675	3550
37	0.15	1530	3245
50	0.20	1470	3115
62	0.25	1425	3020
75	0.30	1370	2900
87	0.35	1315	2785

### FACTORY INSTALLED OPTIONS/FIELD INSTALLED ACCESSORY AIR RESISTANCE

Air Volume		Wet Indoor Coil				Electric Heat		Economizer		Filters			
		092		102, 120						MERV 8		MERV 13	
L/s	cfm	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.
825	1750	7	0.03	10	0.04	7	0.03	7	0.03	2	0.01	7	0.03
945	2000	10	0.04	12	0.05	7	0.03	12	0.05	2	0.01	7	0.03
1060	2250	12	0.05	15	0.06	10	0.04	15	0.06	2	0.01	10	0.04
1180	2500	12	0.05	17	0.07	10	0.04	20	0.08	2	0.01	12	0.05
1300	2750	15	0.06	20	0.08	12	0.05	22	0.09	5	0.02	12	0.05
1415	3000	17	0.07	22	0.09	15	0.06	27	0.11	5	0.02	15	0.06
1535	3250	20	0.08	25	0.10	15	0.06	32	0.13	5	0.02	15	0.06
1650	3500	22	0.09	27	0.11	22	0.09	37	0.15	7	0.03	17	0.07
1770	3750	25	0.10	32	0.13	22	0.09	42	0.17	7	0.03	20	0.08
1890	4000	27	0.11	35	0.14	22	0.09	47	0.19	10	0.04	20	0.08
2005	4250	32	0.13	37	0.15	32	0.13	52	0.21	10	0.04	22	0.09
2125	4500	35	0.14	42	0.17	35	0.14	60	0.24	10	0.04	22	0.09
2240	4750	37	0.15	45	0.18	42	0.17	65	0.26	12	0.05	25	0.10
2360	5000	40	0.16	50	0.20	50	0.20	72	0.29	15	0.06	25	0.10
2475	5250	42	0.17	55	0.22	55	0.22	80	0.32	15	0.06	27	0.11
2595	5500	47	0.19	57	0.23	62	0.25	85	0.34	17	0.07	30	0.12
2715	5750	50	0.20	62	0.25	77	0.31	92	0.37	17	0.07	30	0.12
2830	6000	55	0.22	67	0.27	82	0.33	99	0.40	20	0.08	32	0.13

## BLOWER DATA

### CEILING DIFFUSERS AIR RESISTANCE

Unit Size	RTD11 Step-Down Diffuser								FD11 Flush Diffuser	
	Air Volume		2 Ends Open		1 Side, 2 Ends Open		All Ends & Sides Open			
	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.
092 Models	1133	2400	52	0.21	45	0.18	37	0.15	35	0.14
	1227	2600	60	0.24	52	0.21	45	0.18	42	0.17
	1321	2800	67	0.27	60	0.24	52	0.21	50	0.20
	1416	3000	80	0.32	72	0.29	62	0.25	62	0.25
	1510	3200	102	0.41	92	0.37	80	0.32	77	0.31
	1604	3400	124	0.50	112	0.45	97	0.39	92	0.37
	1699	3600	152	0.61	134	0.54	119	0.48	109	0.44
	1793	3800	182	0.73	157	0.63	142	0.57	127	0.51
102 & 120 Models	1699	3600	90	0.36	70	0.28	57	0.23	37	0.15
	1793	3800	99	0.40	80	0.32	65	0.26	45	0.18
	1888	4000	109	0.44	90	0.36	72	0.29	52	0.21
	1982	4200	122	0.49	99	0.40	82	0.33	60	0.24
	2076	4400	134	0.54	109	0.44	92	0.37	67	0.27
	2171	4600	149	0.60	122	0.49	104	0.42	77	0.31
	2265	4800	162	0.65	132	0.53	114	0.46	87	0.35
	2360	5000	172	0.69	144	0.58	124	0.50	97	0.39
2454	5200	186	0.75	154	0.62	134	0.54	107	0.43	

### CEILING DIFFUSER AIR THROW DATA

Model No.	Air Volume		<sup>1</sup> Effective Throw Range			
			RTD11 Step-Down		FD11 Flush	
	L/s	cfm	m	ft.	m	ft.
092 Models	1227	2600	7 - 9	24 - 29	6 - 7	19 - 24
	1321	2800	8 - 9	25 - 30	6 - 9	20 - 28
	1416	3000	8 - 10	27 - 33	6 - 9	21 - 29
	1510	3200	9 - 11	28 - 35	7 - 9	22 - 29
	1604	3400	9 - 11	30 - 37	7 - 9	22 - 30
102, 120 Models	1699	3600	8 - 10	25 - 33	7 - 9	22 - 29
	1793	3800	8 - 11	27 - 35	7 - 9	22 - 30
	1888	4000	9 - 11	29 - 37	7 - 10	24 - 33
	1982	4200	10 - 12	32 - 40	8 - 11	26 - 35
	2076	4400	10 - 13	34 - 42	9 - 11	28 - 37

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

## ELECTRICAL/ELECTRIC HEAT DATA

Model No.		ZHA092S4	ZHA102S4	ZHA120S4
<sup>1</sup> Voltage - 50Hz 3 Phase with neutral		380/420V	380/420V	380/420V
Compressor 1	Rated Load Amps	8	8	7.8
	Locked Rotor Amps	59	59	51.5
Compressor 2	Rated Load Amps	4	5.5	8
	Locked Rotor Amps	31	37	59
Outdoor Fan Motors (2)	Full Load Amps	1.3	1.3	1.5
	(total)	(2.6)	(2.6)	(3)
Power Exhaust (1) 0.25 kW	Full Load Amps	1.3	1.3	1.3
Indoor Blower Motor	kW	1.5	2.2	3.7
	Full Load Amps	3.6	5.3	8.2
<sup>2</sup> Maximum Overcurrent Protection	Unit Only	25	25	30
	With (1) 0.25 kW Power Exhaust	25	30	30
<sup>3</sup> Minimum Circuit Ampacity	Unit Only	21	22	25
	With (1) 0.25 kW Power Exhaust	22	24	27

## ELECTRIC HEAT DATA

Electric Heat Voltage			420V	420V	420V	420V	420V	420V	420V	420V	
<sup>2</sup> Maximum Overcurrent Protection	<sup>4</sup> Electric Heat	Unit+ 5.7 kW	35	35	40	35	35	40	---	---	---
		11.5 kW	40	45	45	45	45	50	45	50	50
		17.2 kW	50	60	60	60	60	60	60	60	60
		23 kW	60	70	70	70	70	70	70	70	70
		34.5 kW	80	90	90	90	90	90	90	90	90
		45.9 kW	---	---	---	---	---	---	90	90	100
<sup>3</sup> Minimum Circuit Ampacity	<sup>4</sup> Electric Heat	Unit+ 5.7 kW	31	32	35	32	34	37	---	---	---
		11.5 kW	40	42	45	42	44	47	45	46	49
		17.2 kW	50	52	55	52	54	56	55	56	59
		23 kW	60	62	65	62	63	66	64	66	69
		34.5 kW	80	82	85	81	83	86	84	86	89
		45.9 kW	---	---	---	---	---	---	88	90	93
<sup>2</sup> Maximum Overcurrent Protection	<sup>4</sup> Electric Heat and (1) 0.25 kW Power Exhaust	Unit+ 5.7 kW	35	35	40	35	40	40	---	---	---
		11.5 kW	45	45	50	45	45	50	50	50	60
		17.2 kW	60	60	60	60	60	60	60	60	60
		23 kW	70	70	70	70	70	70	70	70	70
		34.5 kW	90	90	90	90	90	90	90	90	90
		45.9 kW	---	---	---	---	---	---	90	100	100
<sup>3</sup> Minimum Circuit Ampacity	<sup>4</sup> Electric Heat and (1) 0.25 kW Power Exhaust	Unit+ 5.7 kW	32	34	37	33	35	38	---	---	---
		11.5 kW	42	43	46	43	45	48	46	48	51
		17.2 kW	52	53	56	53	55	58	56	58	60
		23 kW	61	63	66	63	65	68	66	67	70
		34.5 kW	81	83	86	83	84	87	85	87	90
		45.9 kW	---	---	---	---	---	---	89	91	94

## ELECTRIC HEAT ACCESSORIES

Unit Fuse Block	Unit Only	11M10	11M10	11M10	11M10	11M10	11M10	11M10	11M10	11M11
	Unit + Power Exhaust	11M10	11M10	11M11	11M10	11M10	11M11	11M11	11M11	11M11

<sup>1</sup> Extremes of operating range are plus and minus 10% of line voltage.

<sup>2</sup> Heating / Air Conditioning / Refrigeration (HACR) type breaker or fuse.

<sup>3</sup> Refer to local codes to determine wire, fuse and disconnect size requirements.

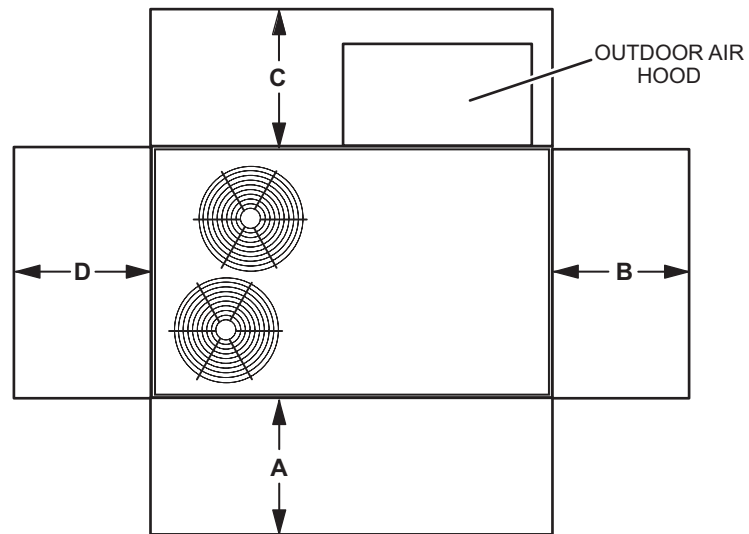
<sup>4</sup> Nominal kW based on 420V-3ph-50Hz.

## ELECTRIC HEAT CAPACITIES

Volts Input	5.7 kW			11.5 kW			17.2 kW			23 kW			34.5 kW			45.9 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
380	4.7	16 000	1	9.4	32 100	1	14.1	48 200	1	18.8	64 200	2	28.2	96 300	2	37.6	128 400	2
400	5.2	17 800	1	10.4	35 500	1	15.6	53 300	1	20.9	71 400	2	31.2	106 600	2	41.6	142 100	2
420	5.7	19 500	1	11.5	39 300	1	17.2	58 700	1	23	78 500	2	34.5	117 500	2	45.9	156 800	2

## UNIT CLEARANCES

### UNIT WITH ECONOMIZER



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

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

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

Minimum Operation Clearance - Required clearance for proper unit operation.

## OUTDOOR SOUND DATA

Unit Model Number	Octave Band Linear Sound Power Levels dB, re 10 <sup>-12</sup> Watts - Center Frequency - Hz							<sup>1</sup> 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

Note - The octave sound power data does not include tonal corrections.

<sup>1</sup> Sound Rating Number according to ARI Standard 270-95 or ARI Standard 370-2001 (includes pure tone penalty). "SRN" is the overall A-Weighted Sound Power Level, (LWA), dB (100 Hz to 10,000 Hz).

**WEIGHT DATA**

Model Number	Net		Shipping	
	kg	lbs.	kg	lbs.
092 Base Unit	470	1036	508	1121
092 Max. Unit	541	1193	580	1278
102 Base Unit	484	1068	523	1153
102 Max. Unit	556	1225	594	1310
120 Base Unit	511	1126	549	1211
120 Max. Unit	585	1290	624	1375

**OPTIONS / ACCESSORIES**

Model Number	Shipping Weight	
	kg	lbs.

**CABINET**

Coil/Hail Guard	23	50
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**CEILING DIFFUSERS****Step-Down**

RTD11-95S	118	54
RTD11-135S	135	61

**Flush**

FD11-95S	118	54
FD11-135S	135	61

**ECONOMIZER / OUTDOOR AIR / EXHAUST****Economizer**

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

**Outdoor Air Dampers**

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

**Power Exhaust**

Downflow	27	60
Horizontal	19	41

**ELECTRIC HEAT**

5.7 kW	41	90
11.5 kW	41	90
17.2 kW	41	90
23 kW	41	90
34.5 kW	41	90
45.9 kW	41	90

**ROOF CURBS****Hybrid Roof Curbs, Downflow**

203 mm height	36	79
356 mm height	47	104
457 mm height	54	120
610 mm height	66	145

**PACKAGING**

LTL Packaging (less than truck load)	48	105
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# DIMENSIONS - UNIT

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.	
	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	mm	in.	mm	in.	mm	in.	mm	in.
092	125	276	143	315	103	226	125	276	109	240	127	281	133	294	146	321	1174	46.25	1200	47.25	686	27	711	28
102	129	285	147	324	106	233	128	283	112	248	131	289	137	303	150	330	1174	46.25	1200	47.25	686	27	711	285
120	128	283	146	322	103	228	126	277	124	274	145	320	155	341	169	372	1099	43.25	1099	43.25	679	26.75	705	27.75

Base Unit - The unit with NO OPTIONS.

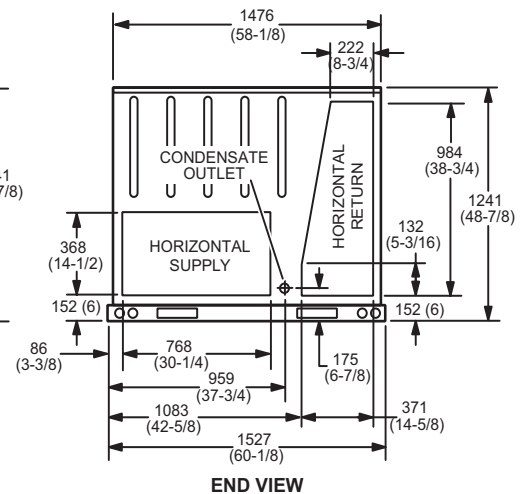
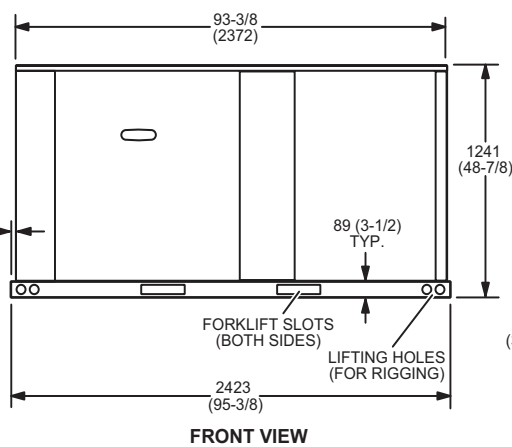
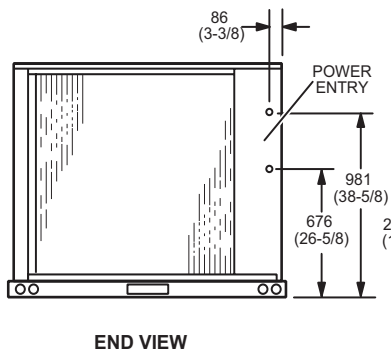
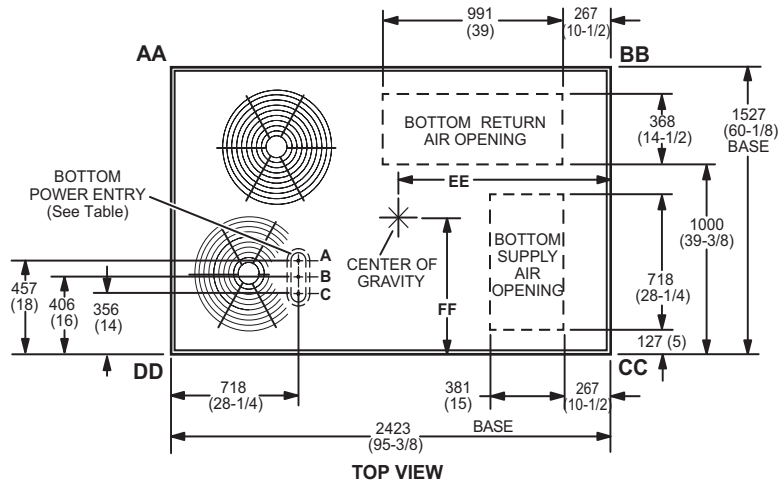
Max. Unit - The unit with ALL OPTIONS Installed. (Economizer, etc.)

## BOTTOM POWER ENTRY

Holes required for Optional Bottom Power Entry Kit

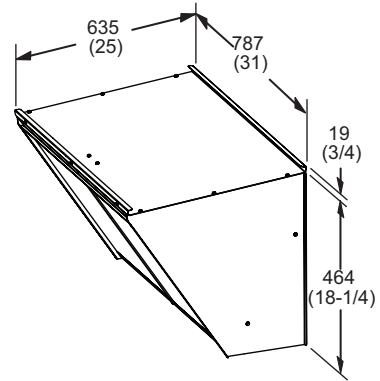
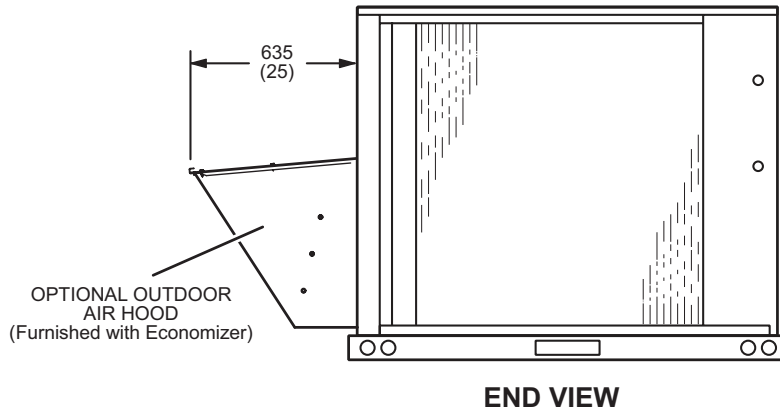
	Threaded Conduit Fittings (Provided in Kit)	Wire Use	Hole Diameter Required in Unit Base (Max.)
<b>A</b>	1 1/2	ACC	23 (7/8)
<b>B</b>	1/2	24V	23 (7/8)
<b>C</b>	1-1/4	POWER	44 (1-3/4)

<sup>1</sup> Field provided.

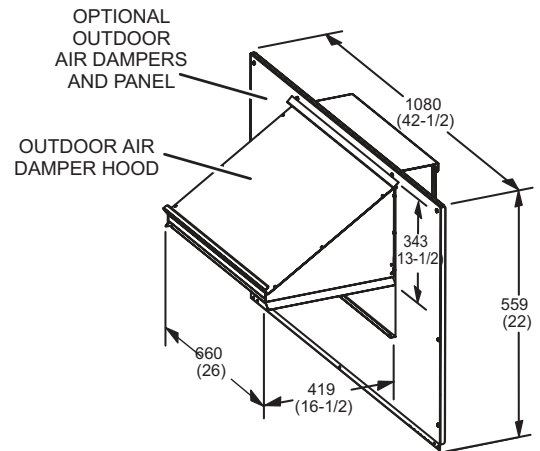
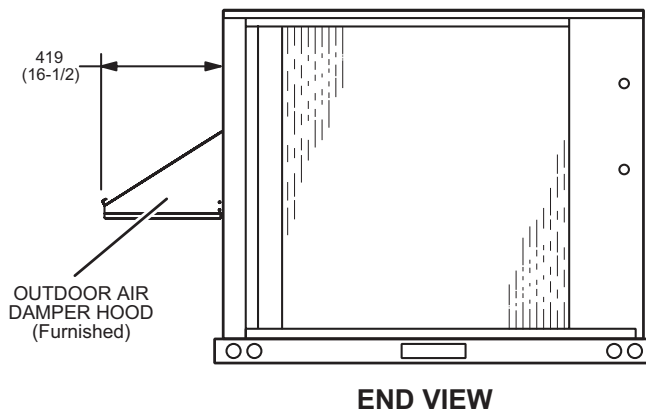


## DIMENSIONS - ACCESSORIES

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



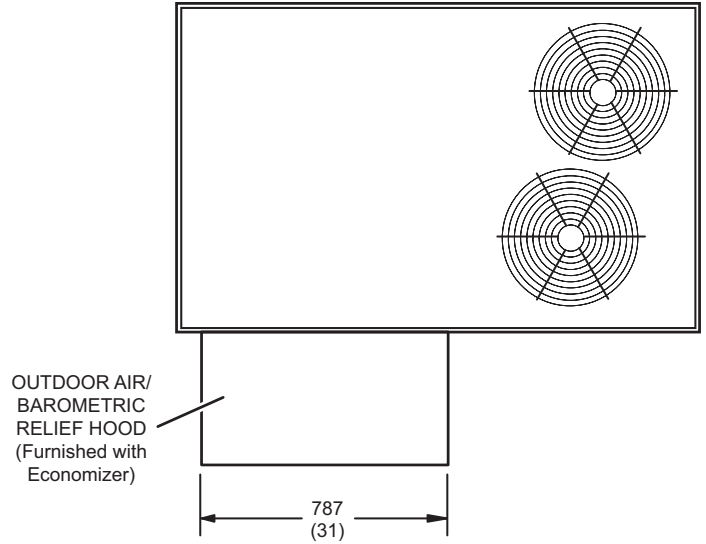
### OUTDOOR AIR DAMPER HOOD DETAIL FOR OPTIONAL MANUAL OR MOTORIZED OUTDOOR AIR DAMPERS (Downflow or Horizontal Applications)



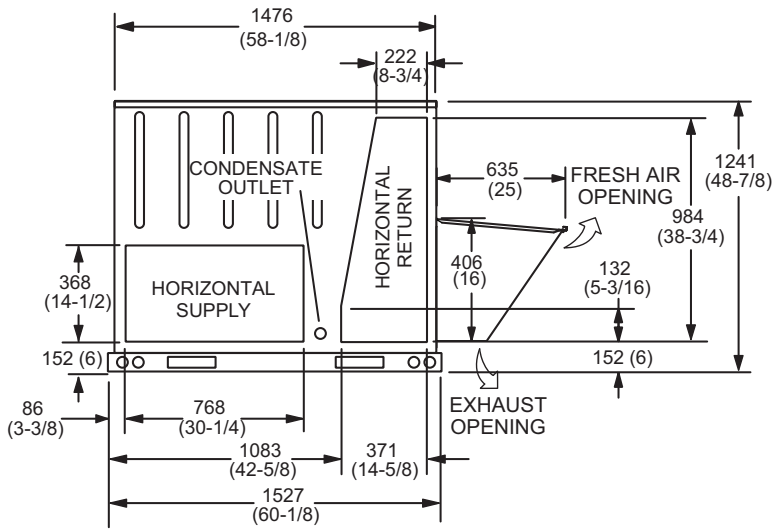


## DIMENSIONS - ACCESSORIES

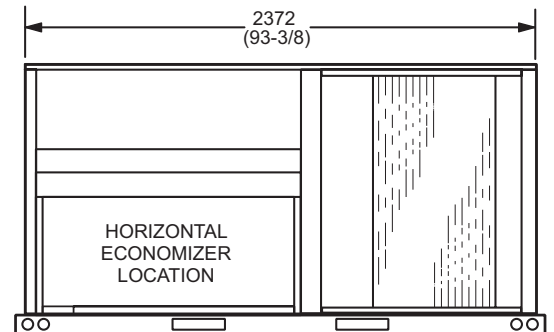
### OUTDOOR AIR HOOD DETAIL WITH OPTIONAL HORIZONTAL ECONOMIZER AND BAROMETRIC RELIEF DAMPERS (Horizontal Applications)



**TOP VIEW**



**END VIEW**

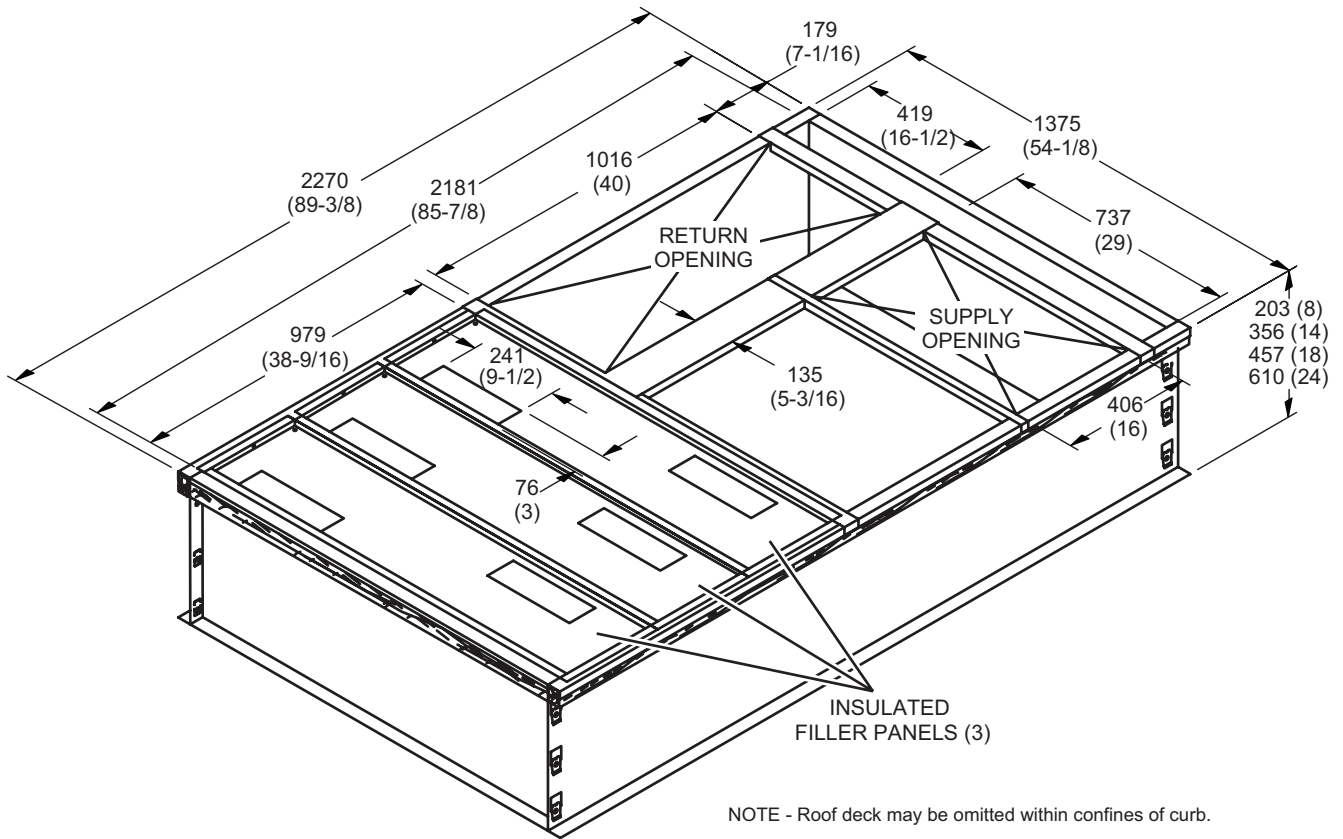


**BACK VIEW**

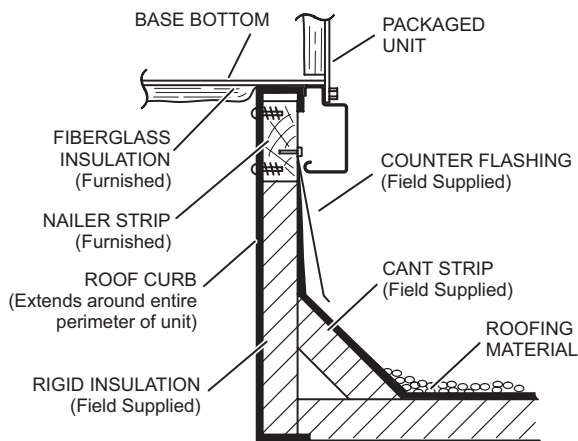
Note - Supply and Return Air Ducts must be supported.

# DIMENSIONS - ACCESSORIES

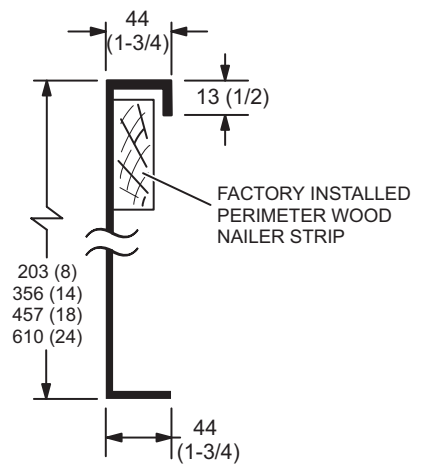
## HYBRID CURBS - DOUBLE DUCT OPENING



**TYPICAL FLASHING DETAIL FOR ROOF CURB**



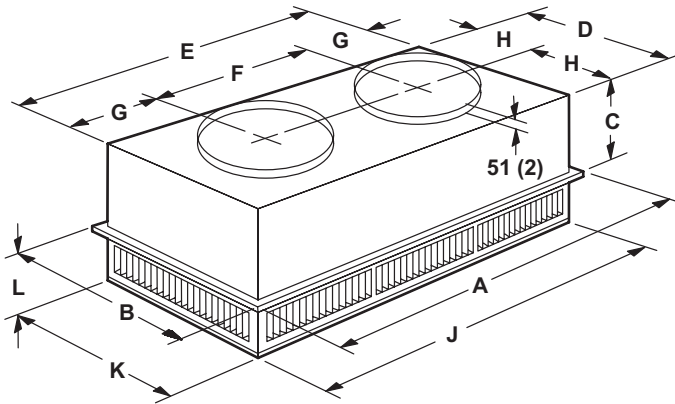
**DETAIL ROOF CURB**



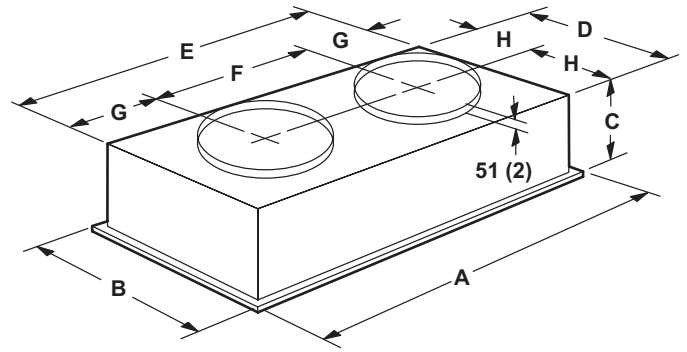
## DIMENSIONS - ACCESSORIES

### COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

#### STEP-DOWN CEILING DIFFUSER



#### FLUSH CEILING DIFFUSER



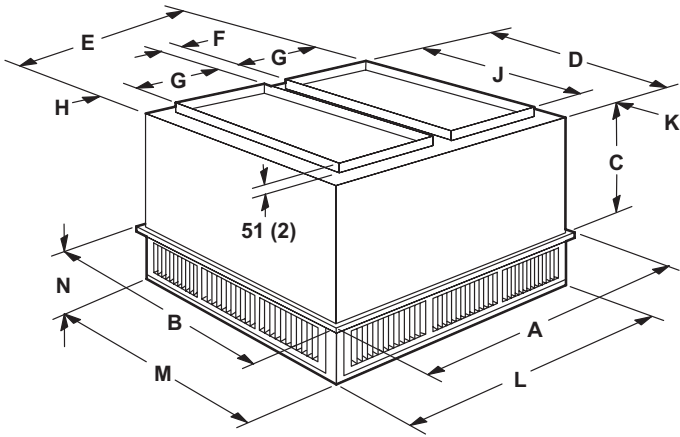
Model Number		RTD11-95S
A	mm	1159
	in.	47-5/8
B	mm	752
	in.	29-5/8
C	mm	365
	in.	14-3/8
D	mm	699
	in.	27-1/2
E	mm	1158
	in.	45-1/2
F	mm	572
	in.	22-1/2
G	mm	292
	in.	11-1/2
H	mm	349
	in.	13-3/4
J	mm	1156
	in.	45-1/2
K	mm	699
	in.	27-1/2
L	mm	206
	in.	8-1/8
Duct Size	mm	508 round
	in.	20 round

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

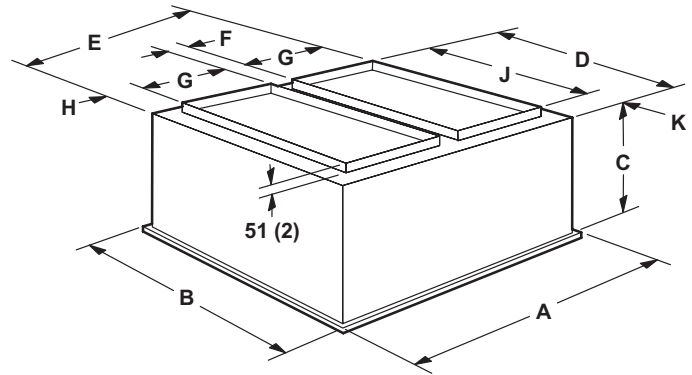
## DIMENSIONS - ACCESSORIES

### COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

#### STEP-DOWN CEILING DIFFUSER



#### FLUSH CEILING DIFFUSER



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

Model Number		FD11-135S	FD11-185S
A	mm	1210	1210
	in.	47-5/8	47-5/8
B	mm	905	1210
	in.	35-5/8	47-5/8
C	mm	591	743
	in.	23-1/4	29-1/4
D	mm	838	1143
	in.	33	45
E	mm	1143	1143
	in.	45	45
F	mm	112	112
	in.	4-1/2	4-1/2
G	mm	457	457
	in.	18	18
H	mm	57	57
	in.	2-1/4	2-1/4
J	mm	711	914
	in.	28	36
K	mm	64	114
	in.	2-1/2	4-1/2
Duct Size	mm	457 x 711	457 x 914
	in.	18 x 28	18 x 36







## REVISIONS

Section	Description
Options/Accessories	Updated catalog number for Condensate Drain Trap (PVC option)



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