


**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****Z H A 120 S 4 B N 2 M**

Brand/Family
Z = Raider®

Voltage
M = 380/420V-3 phase-50hz

Unit Type
H = Packaged Heat Pump

Minor Design Sequence
1 = 1st Revision
2 = 2nd Revision
3 = 3rd Revision

Major Design Sequence
A = 1st Generation

Factory Installed Electric Heat
N = No Heat

Nominal Cooling Capacity - Tons
092 = 26 kW
102 = 30 kW
120 = 35 kW

Blower Type
B = Belt Drive

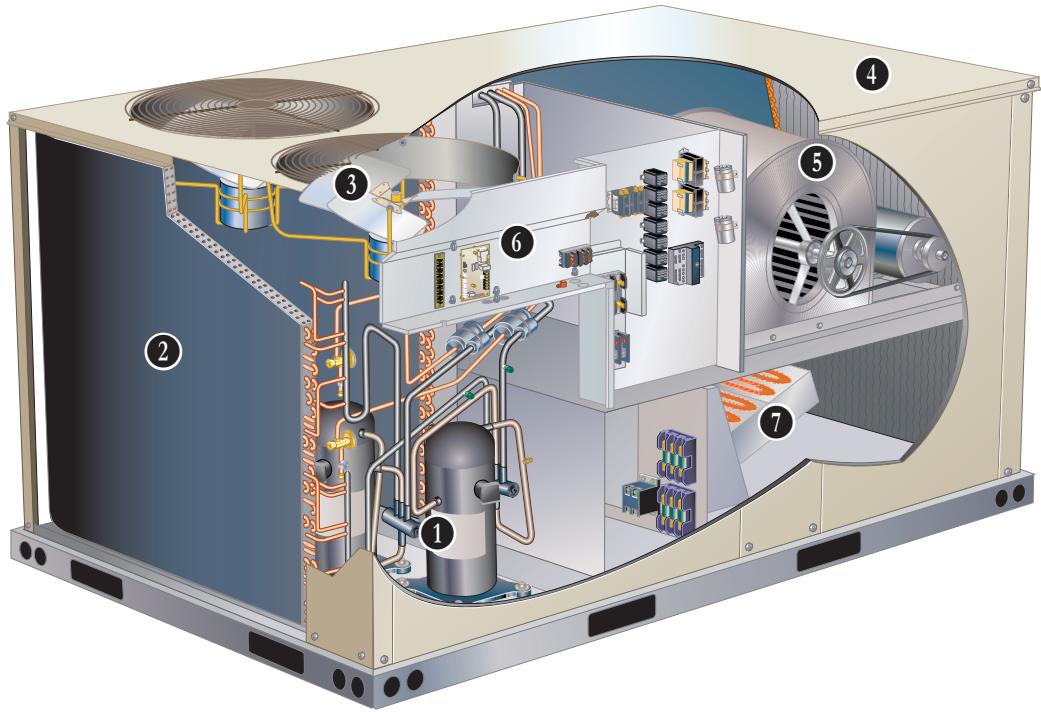
Cooling Efficiency
S = Standard Efficiency

Refrigerant Type
4 = R-410A

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)



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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

- 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 (CO₂) Sensors

- Monitors CO₂ 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 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

- 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 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, CO₂ 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
- 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



Description	Model No.	Catalog No.
Comfortsense® 7500 7-Day Programmable	C0STAT06FF2L	17G74
Universal thermostat locking guard (clear)	C0MISC15AE1-	39P21
Temperature Sensors	1 Remote non-adjustable wall-mount 20k	47W36
	1 Remote non-adjustable wall-mount 10k	47W37
Remote non-adjustable discharge air (duct mount)	C0SNDC00AE1-	19L22
Outdoor temperature sensor	C0SNSR03AE1-	X2658
^ 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		
Comfortsense® 3000 5-2 Day Programmable	C0STAT05FF1L	11Y05
Thermostat wall mounting plate	C0MISC17AE1-	X2659
Temperature Sensor	Remote non-adjustable wall mount 10k	47W37
	averaging	
7-Day Programmable - Bacnet Compatible	---	Y8241
BACnet Controls	BACnet® Module (factory or field installed)	K0CTRL31B-2
	BACnet® Room Sensor with Display (field)	K0SNSR01FF1
	BACnet® Room Sensor without Display (field)	K0SNSR00FF1
Optional Accessories	Plenum Cable (RJ45/CAT5 75 ft.)	97W25

- 7-Day Programmable
- 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

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
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
CABINET					
Coil/Hail Guards	Z1GARD10B-1	10Y09	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)

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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 508 x 610 x 51 mm (Order 4 per unit)	MERV 8 - Z1FLTR15B-1 MERV 13 - Z1FLTR40B-1	11H62 11H63	X	X	X
Replacement Media Filter With Metal Mesh Frame (includes non-pleated filter media)	C1FLTR30B-1-	Y3063	X	X	X
Indoor Air Quality (CO₂) 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 50 hz with neutral	380/420V - 3 phase	Factory	O	O	O
Bottom Power Entry Kit	Z1PEKT01B-1	11H66	X	X	X
¹ELECTRIC HEAT					
5.7 kW	380/420V-3ph - Z1EH0075B-1G	10Y98	X	X	X
11.5 kW	380/420V-3ph - Z1EH0150B-1G	10Z03	X	X	X
17.2 kW	380/420V-3ph - Z1EH0225B-1G	10Z06	X	X	X
23 kW	380/420V-3ph - Z1EH0300B-1G	10Z09	X	X	X
34.5 kW	380/420V-3ph - Z1EH0450B-1G	10Z12	X	X	X
45.9 kW	380/420V-3ph - Z1EH0600B-1G	10Z15			X
ELECTRIC HEAT ACCESSORIES					
Unit Fuse Block (required) - See Electrical/Electric Heat Tables for Selection			X	X	X

¹ Nominal kW at 420V-3ph-50hz.

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OPTIONS / ACCESSORIES

Item Description	Model Number	Catalog Number	Unit Model No
			092 102 120
ECONOMIZER			
Standard Economizer			
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			
Single Enthalpy Control	C1SNSR64FF1	53W64	X X X
Differential Enthalpy Control (order 2)	C1SNSR64FF1	53W64	X X X
High Performance Economizer			
High Performance Downflow Economizer with Single Temperature Control - With Barometric Relief Dampers and Air Hoods	Z1ECON32B-2	16X73	OX OX OX
High Performance Economizer Controls			
Single Enthalpy Control	C1SNSR61FF1	11G21	X X X
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-2	14G36	X X X
Manual Dampers with outdoor air hood	Z1DAMP10B-2	14G37	X X X
POWER EXHAUST			
Standard Static (Downflow)	380/420V-3ph - Z1PWRE10B-1G	10Z71	X X X
Standard Static (Horizontal)	380/420V-3ph - Z1PWRE15A-1G	28E01	X X X
ROOF CURBS			
Hybrid Roof Curbs, Downflow			
203 mm height	Z1CURB40B-1	10Z25	X X X
356 mm height	Z1CURB41B-1	10Z26	X X X
457 mm height	Z1CURB42B-1	10Z27	X X X
610 mm height	Z1CURB43B-1	10Z28	X X X
CEILING DIFFUSERS			
Step-Down - Order one		RTD11-95S RTD11-135S	13K61 13K62
			X X X
Flush - Order one		FD11-95S FD11-135S	13K56 13K57
			X X 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)
Cooling Performance	Gross Cooling Capacity - kW (Btu/h)	22.9 (78 200)	26.7 (91 100)	31.3 (106 900)	
	¹ Net Cooling Capacity - kW (Btu/h)	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	
	¹ EER (Btuh/Watt)	11.5	11.3	11.1	
	² 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.)
Heating Performance	¹ Total High Heat Capacity - kW (Btu/h)	23.6 (80 400)	25.1 (85 700)	29.0 (98 900)	
	Total Unit Power - kW	6.4	6.8	7.8	
	¹ Coefficient of Performance	3.7	3.7	3.7	
	¹ Total Low Heat Capacity - kW (Btu/h)	13.0 (44 200)	13.7 (46 900)	17.1 (58 300)	
	Total Unit Power (kW)	5.9	6.0	6.6	
	¹ Coefficient of Performance	2.2	2.3	2.5	
Electric Heat Available - See page 20		5.7, 11.5, 17.2, 23, 34.5 kW	11.5, 17.2, 23, 34.5, 45.9 kW		
Compressor Type (number)		Scroll (2)	Scroll (2)	Scroll (2)	
Outdoor Coils	Net face area (total) - m ² (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)	
Outdoor Coil Fans	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	
Indoor Coils	Total Air volume - L/s (cfm)	3460 (7333)	3460 (7333)	3540 (7500)	
	Net face area (total) - m ² (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)	
³ Indoor Blower and Drive Selection	Drain connection - Number and size	(1) 1 in. NPT coupling			
	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) Kit 1 490 - 740 rev/min Kit 2 665 - 920 rev/min Kit 3 660 - 995 rev/min			
		2.2 kW (3 hp) Kit 7 610 - 810 rev/min Kit 8 780 - 1000 rev/min Kit 9 845 - 1085 rev/min			
		3.7 kW (5 hp) Kit 10 750 - 945 rev/min Kit 11 865 - 1095 rev/min Kit 12 940 - 1190 rev/min			
	Blower wheel nominal diameter x width - mm (in.)	(1) 381 x 381 (15 X 15)			
	Type of filter	Disposable			
	Number and size - mm (in.)	(4) 508 x 610 x 51 (20 x 24 x 2)			
Electrical characteristics		380/420V - 50 hertz - 3 phase with neutral			

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

¹ 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.

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

³ 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 Temper- ature	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 Temper- ature	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
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 Temper- ature	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			
17.2°C	1135	17.2	7010	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 Temper- ature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																							
		18.3°C						23.9°C						29.4°C						35°C					
		Total Cool Cap. Input	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 Temper- ature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																							
		26.7°C						35°C						43.3°C						51.7°C					
		Total Cool Cap. Input	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 Temper- ature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		46°C						48°C						50°C							
		Total Cool Cap. Input	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	19.2	8330	.77	.98	1	18.4	8.71	.78	.99	1	17.5	9.10	0.80	1	1	17.2	9.14	0.92	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	19.4	9.17	0.98	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	21.7	9.20	0.99	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	19.4	9.17	0.62	0.89	1
	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	20.7	9.17	0.69	0.96	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	22.6	9.20	0.73	0.99	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	21.7	9.20	0.42	0.66	0.94
	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	22.7	9.22	0.5	0.7	1
	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	23.4	9.24	0.57	0.71	1

Indoor Coil Air Volume 21°C Dry Bulb	Air Temperature Entering Outdoor Coil																	
	18°C																	

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 Temper- ature	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 Temper- ature	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 Temper- ature	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	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															
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												
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		¹ 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

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

ELECTRICAL/ELECTRIC HEAT DATA

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

ELECTRIC HEAT DATA

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

ELECTRIC HEAT ACCESSORIES

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

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

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

³ Refer to local codes to determine wire, fuse and disconnect size requirements.

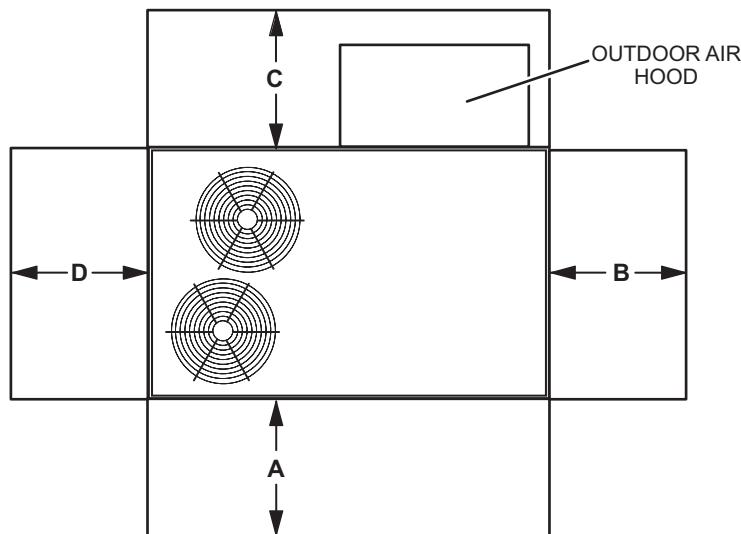
⁴ Nominal kW based on 420V-3ph-50hz.

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															
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



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

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

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

¹ 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, (L_{WA}), 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
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

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.					
	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	mm	in.	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.

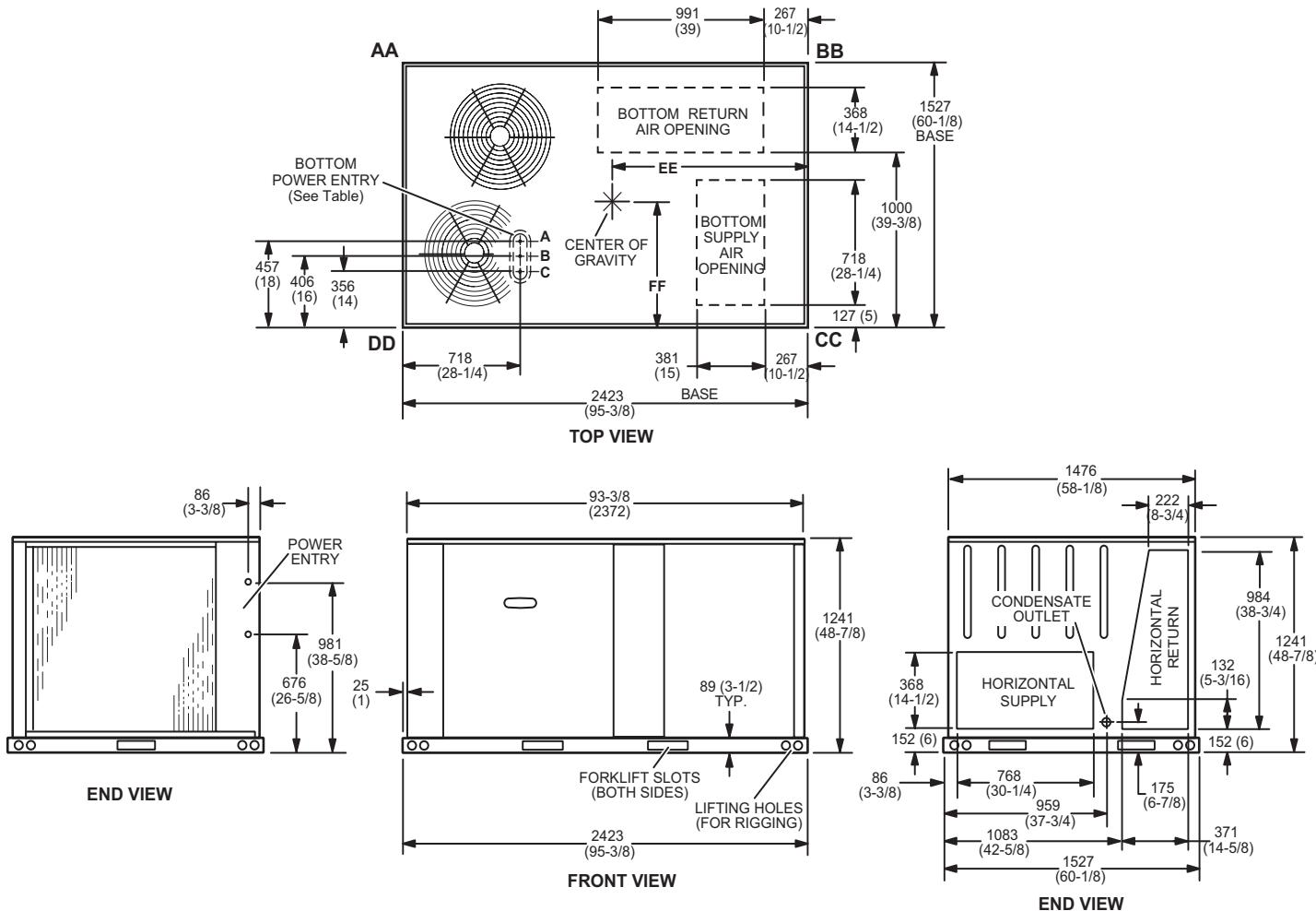
Max. Unit - The unit with ALL OPTIONS Installed. (Economizer, etc.)

BOTTOM POWER ENTRY

Holes required for Optional Bottom Power Entry Kit

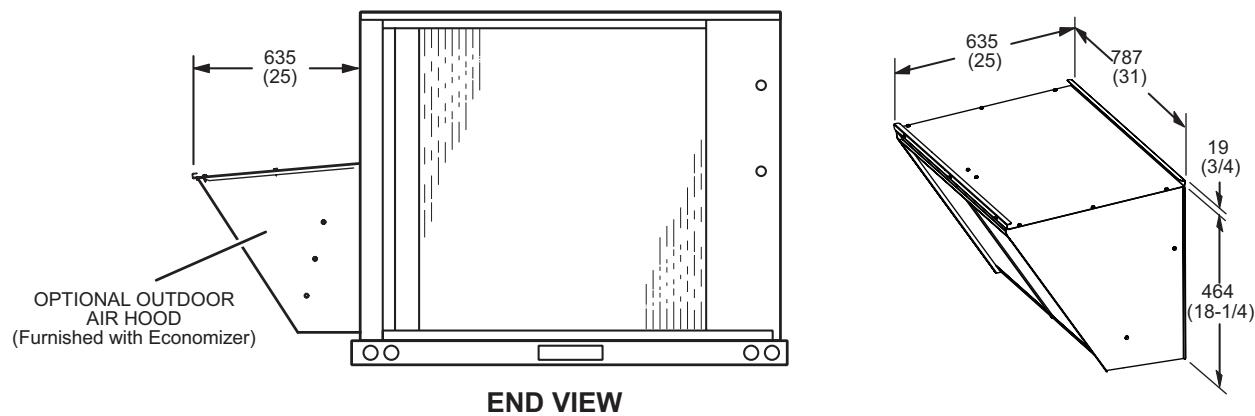
	Threaded Conduit Fittings (Provided in Kit)	Wire Use	Hole Diameter Required in Unit Base (Max.)
A	¹ 1/2	ACC	23 (7/8)
B	1/2	24V	23 (7/8)
C	1-1/4	POWER	44 (1-3/4)

¹ Field provided.

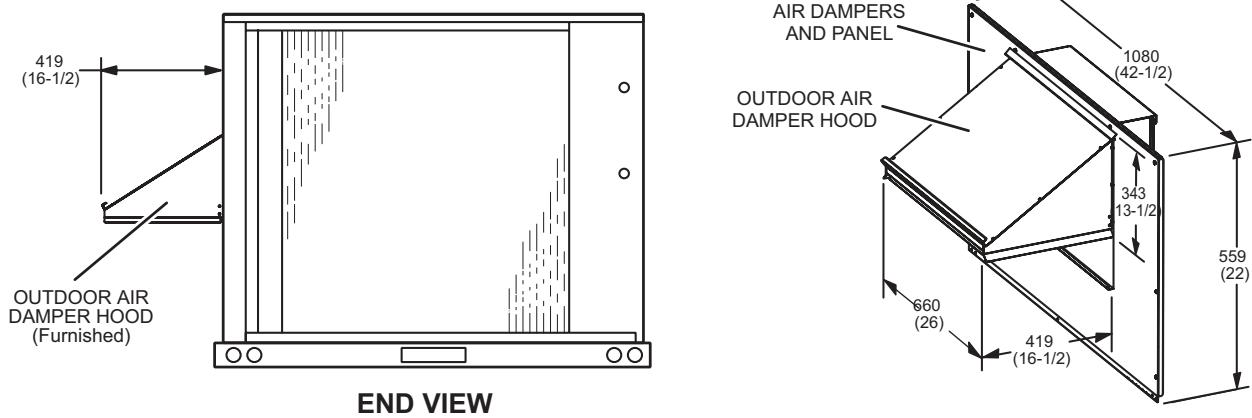


DIMENSIONS - ACCESSORIES

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

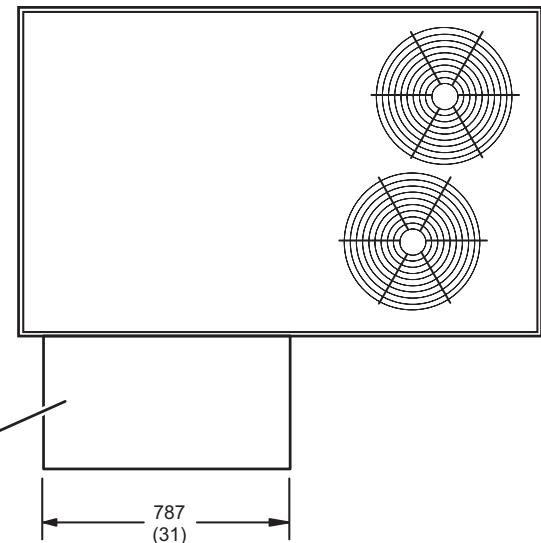


OUTDOOR AIR DAMPER HOOD DETAIL FOR OPTIONAL MANUAL OR MOTORIZED OUTDOOR AIR DAMPERS (Downflow or Horizontal Applications)

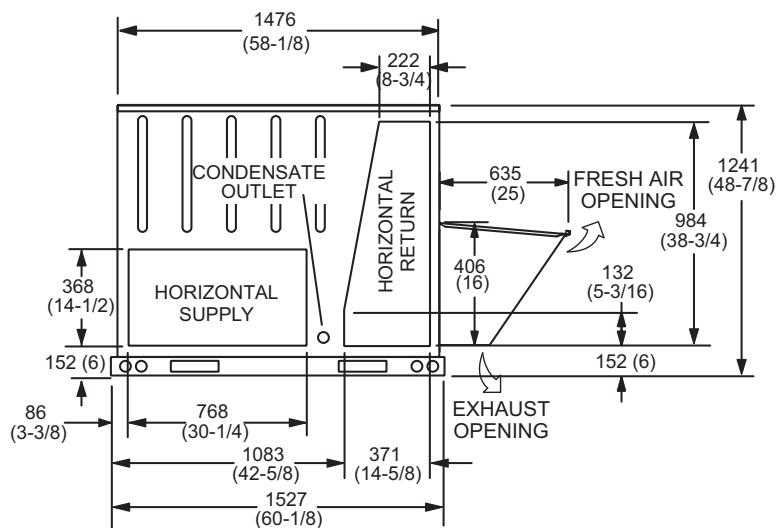


DIMENSIONS - ACCESSORIES

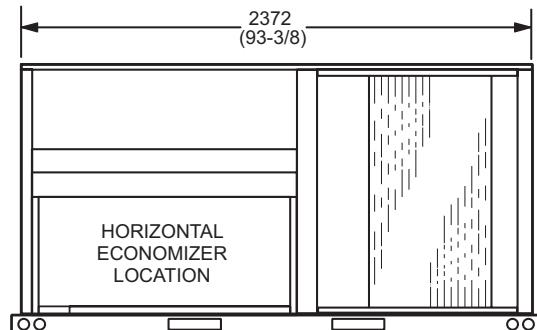
OUTDOOR AIR HOOD DETAIL WITH OPTIONAL HORIZONTAL ECONOMIZER AND BAROMETRIC RELIEF DAMPERS
(Horizontal Applications)



TOP VIEW



END VIEW

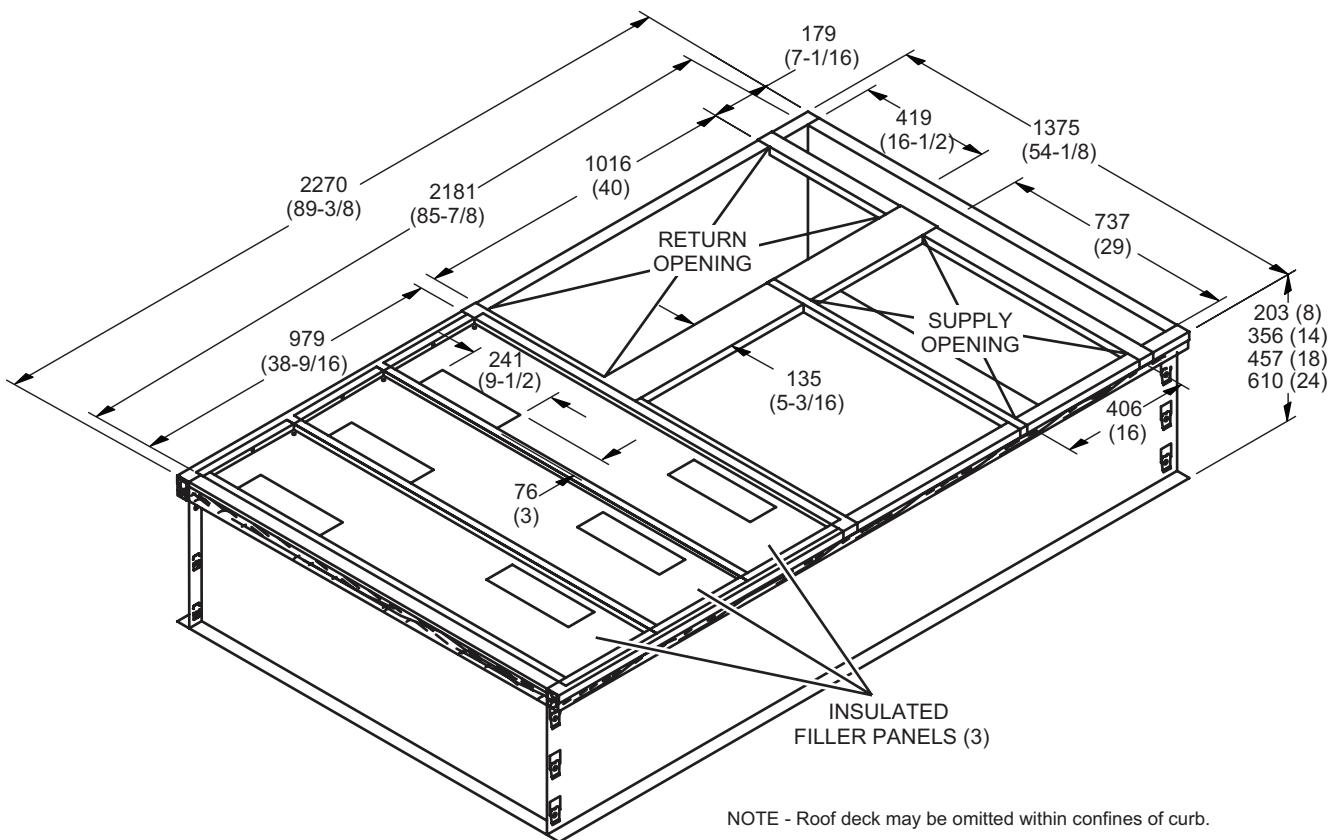


BACK VIEW

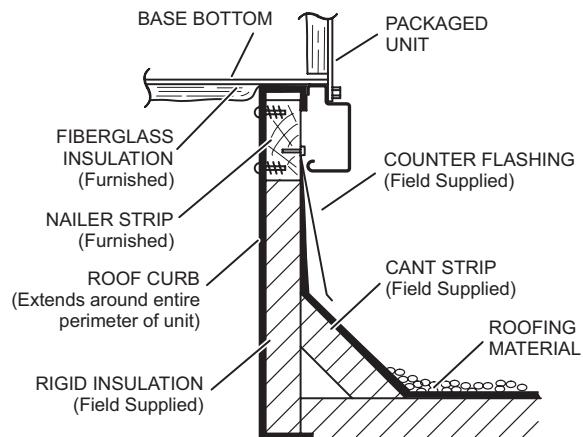
Note - Supply and Return Air Ducts must be supported.

DIMENSIONS - ACCESSORIES

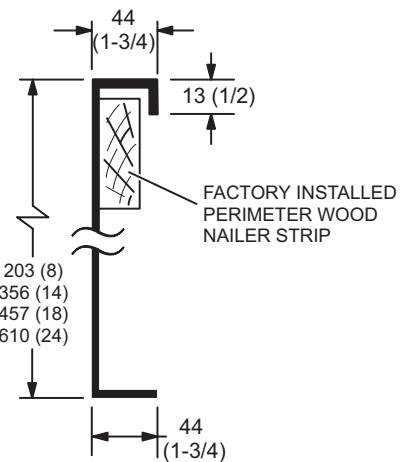
HYBRID CURBS - DOUBLE DUCT OPENING



TYPICAL FLASHING DETAIL FOR ROOF CURB



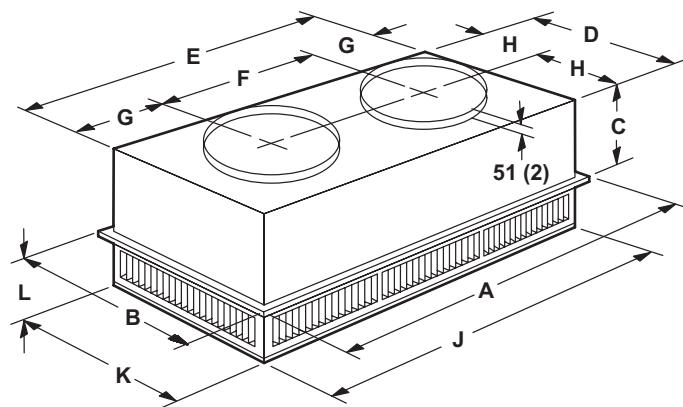
DETAIL ROOF CURB



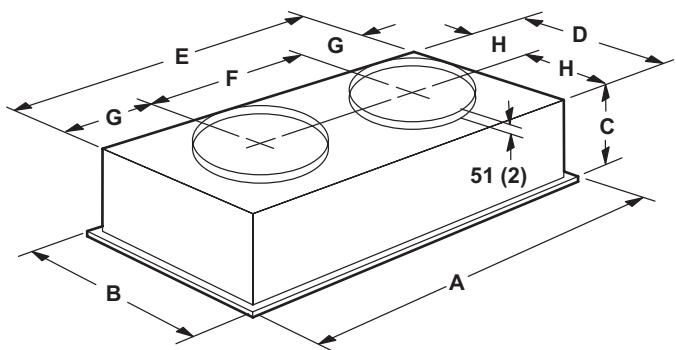
DIMENSIONS - ACCESSORIES

COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

STEP-DOWN CEILING DIFFUSER



FLUSH CEILING DIFFUSER



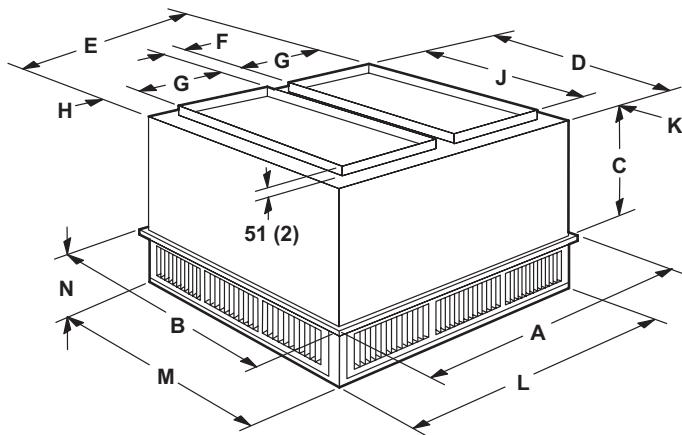
Model Number		RTD11-95S	
A	mm	1159	
	in.	47-5/8	
B	mm	752	
	in.	29-5/8	
C	mm	365	
	in.	14-3/8	
D	mm	699	
	in.	27-1/2	
E	mm	1158	
	in.	45-1/2	
F	mm	572	
	in.	22-1/2	
G	mm	292	
	in.	11-1/2	
H	mm	349	
	in.	13-3/4	
J	mm	1156	
	in.	45-1/2	
K	mm	699	
	in.	27-1/2	
L	mm	206	
	in.	8-1/8	
Duct Size	mm	508 round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

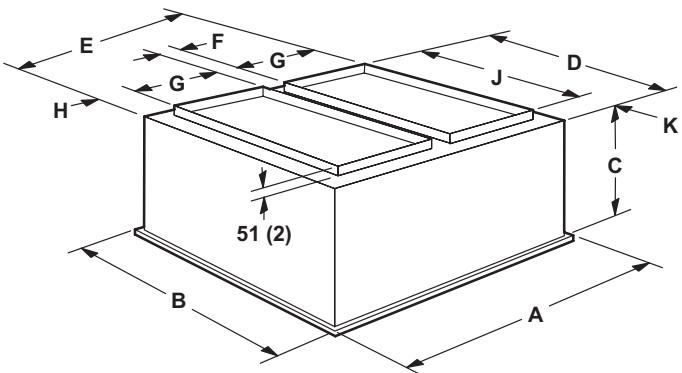
DIMENSIONS - ACCESSORIES

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 Outdoor Air Damper catalog and model numbers. Removed Novar 20151 option.
Optional Conventional Temperature Control Systems	Updated to reflect latest features.



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