ALLIED™ Commercial

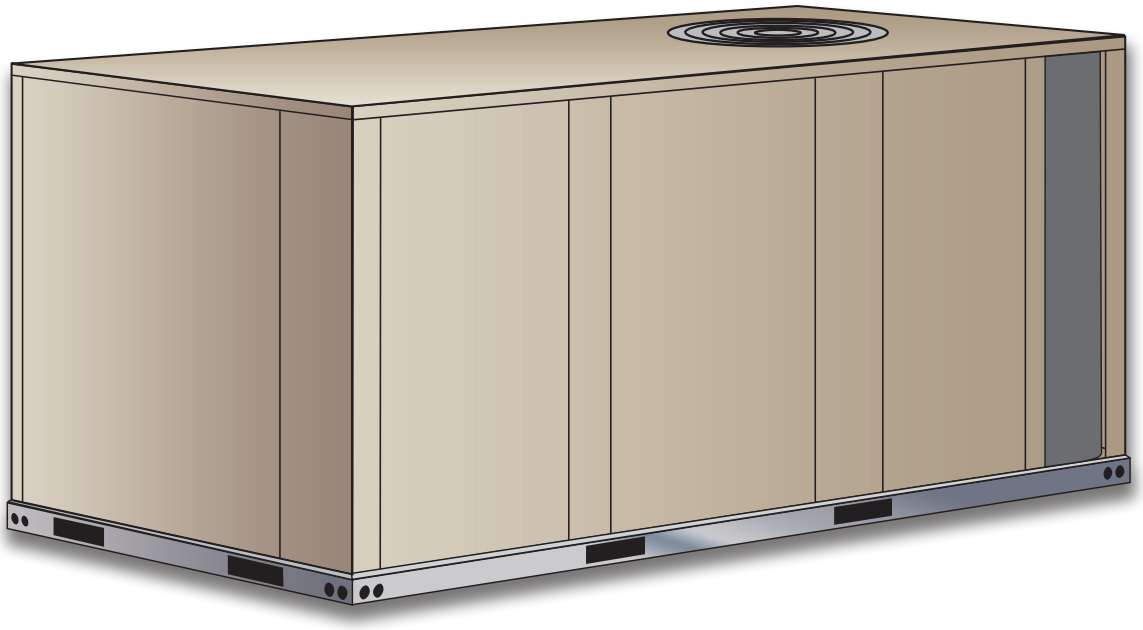
PACKAGED HEAT PUMP

KHA072

K-Series™ Rooftop Units
Standard Efficiency - 50 HZ

Bulletin No. KHA072-50hz (1/2019)

PRODUCT SPECIFICATIONS



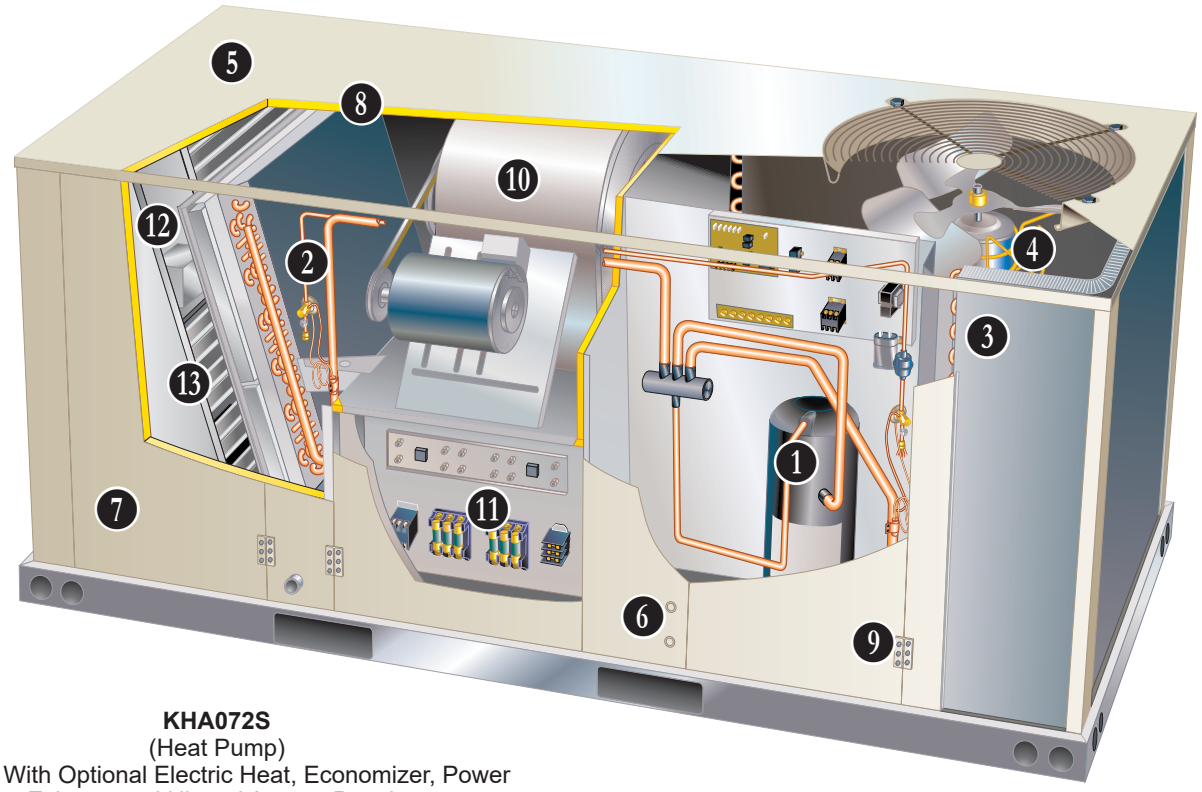
21 kW (6 Tons)
Net Cooling Capacity - 9.0 to 17.4 kW (30 600 to 59 300 Btuh)
Net Heating Capacity - 9.6 to 18.4 kW (32 700 to 63 000 Btuh)
Optional Electric Heat - 5.7 to 23 kW

MODEL NUMBER IDENTIFICATION

K H A 072 S 4 B N 3 M

- **Brand/Family**: K = K-Series™ Product Line
- **Unit Type**: H = Packaged Heat Pump w/ optional Electric Heat
- **Major Design Sequence**: A = 1st Generation
- **Nominal Cooling Capacity - Tons**: 072 = 21.1 kW (6 Ton)
- **Cooling Efficiency**: S = Standard Efficiency
- **Refrigerant Type**: 4 = R-410A
- **Blower Type**: B = Belt Drive
- **Factory Installed Electric Heat**: N = No Heat
- **Minor Design Sequence**: 3 = 3rd Revision
- **Voltage**: M = 380/420V-3 phase-50hz

FEATURES AND BENEFITS



KHA072S
(Heat Pump)
Shown With Optional Electric Heat, Economizer, Power Exhaust and Hinged Access Panels

K-Series™ rooftop units from Allied are the new standard for reliable, efficient rooftop units built for long-lasting performance that can significantly improve indoor environments. K-Series™ rooftop units feature:

- **R-410A Refrigerant -** Environmentally friendly.
- **Scroll Compressors -** Single speed scroll compressors are furnished on all models.
- **High Pressure Switches -** Protects compressor.
- **Isolated Compressor Compartment -** Allows performance check during normal compressor operation without disrupting airflow.
- **Belt Drive Blower Motors -** Belt drive motors maximize air performance.
- **Independent Motor Mounts -** Allows for easy and efficient service access without removing the top panel.
- **Downflow or Horizontal Airflow -** Easy field conversion.
- **Two Fork Lift Slots on Three Sides -** Easy to pick up and transport units from almost any angle.
- **Corrosion-Resistant Removable, Reversible Drain Pan -** Provides application flexibility, durability and improved serviceability.
- **Thermostatic Expansion Valves -** Provide peak cooling performance across the entire application range.
- **Common Components -** Many maintenance items are standard throughout the entire product line, reducing the need to carry different parts to the job or maintain in inventory.

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TESTING

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.

CE MARK OPTION

The CE mark has been added to our rooftop product line as a configure to order (CTO) option. This optional construction allows units to be sold into countries requiring CE marking for rooftop products.

CE marked units meet the requirements of the Machinery Directive 2006/42/EC, Low Voltage Directive 73/23/EEC, EMC Directive 89/336/EEC, and Gas Directive 90/396/EEC. Declaration of conformity certificates will be provided for each CE marked unit on demand.

Key features of this over and above standard product features are:

- Touch-proof electrical components meeting the requirements of EN 60529.
- Branch circuits over 0.5 kW load have overcurrent protection.
- Rotary style/finger safe disconnect switch with locking handle prevents disconnect door from being opened with the power on. Padlock can be applied to lock the disconnect switch in the OFF position.
- The factory wiring has been redesigned for separation of high and low voltage circuits.

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, ozone friendly, R-410A.

Unit pre-charged with refrigerant. See Specification table.

1 Scroll Compressor
Scroll compressors for high performance, reliability and quiet operation.

Resiliently mounted on rubber grommets for quiet operation.

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

2 Check/Thermal Expansion Valve
Assures optimal performance throughout the application range.

Removable element head.

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

Reversing Valves
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, 60, or 90 minutes (adjustable) of compressor on" time at outdoor coil temperature below 2°C. Temperature switch mounted on outdoor coil liquid line terminates defrost cycle.

COOLING SYSTEM (continued)

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

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

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

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

Condensate Drain Pan
Plastic pan, sloped to meet drainage requirements of American Society of Heating Refrigeration and Air Conditioning Engineers 62.1.

Side or bottom drain connections.

Reversible to allow connection at back of unit.

4 Outdoor Coil Fan Motor
Thermal overload protected, totally enclosed, permanently lubricated ball bearings, shaft up, wire basket mount.

Outdoor Coil Fan
Polyvinyl chloride (PVC) coated fan guard furnished.

Required Selections

Cooling Capacity
Specify nominal cooling capacity of the unit.

Options / Accessories

Field Installed

Condensate Drain Trap
Field installed only.

Available in copper or 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. This intermittent fan operation allows the system to operate without icing the evaporator coil and losing capacity. Designed for use in ambient temperatures no lower than -18°C.

CABINET

5 Construction
Heavy-gauge steel panels and full perimeter heavy-gauge galvanized steel base rail provides structural integrity for transportation, handling, and installation.

Base rails have rigging holes. Three sides of the base rail have fork slots.

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

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

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

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

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

Unit base is fully insulated.

The insulation also serves as an air seal to the roof curb, eliminating the need to add a seal during installation.

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

A filler panel for proper cabinet fit for optional accessories (Economizers, Power Exhaust, Outdoor Air Dampers and Barometric Relief Dampers).

Options / Accessories

Factory Installed

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

Indoor Corrosion Protection:

- Coated coil
- Painted blower housing
- Painted base

Outdoor Corrosion Protection:

- Coated coil
- Painted base

9 Hinged Access Panels
Large access panels are hinged and have quarter-turn latches for quick and easy access to maintenance areas (economizer / filter, compressor / controls, heating / blower).

Field Installed

Combination Coil/Hail Guards
Heavy gauge steel frame painted to match cabinet with expanded metal mesh to protect the outdoor coil from damage.

FEATURES AND BENEFITS

CONTROLS

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

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

Low Voltage Terminal Block - Provides screw terminal connections for thermostat or controller wiring.

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

Options / Accessories

Field Installed

Smoke Detector
Photoelectric type, installed in supply air section, return air section or both sections. Available with power board and single sensor (supply or return) or power board and two sensors (supply and return). Power board located in unit control compartment.

10 BLOWER

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

Motor
Overload protected, equipped with ball bearings.

Belt drive motors are offered on all models.

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

Motors have adjustable pulley for speed change.

Ordering Information
Specify drive kit number when base unit is ordered.

Required Selections

Supply Air Blower
Order one drive kit, see Drive Kit Specifications Table.

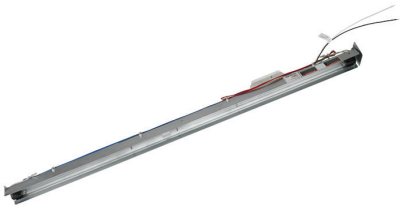
INDOOR AIR QUALITY

Air Filters
Disposable 51 mm filters furnished as standard.

Options / Accessories

Field Installed

UVC Germicidal Lamps



Helps eliminate mold and bacterial growth on the evaporator and drain pans. Improves indoor air quality and maintains efficiency of system by reducing fouling of evaporator coil.

Indoor Air Quality (CO_2) Sensor
Monitors CO_2 levels adjusts economizer dampers as needed for Demand Control Ventilation.

ELECTRICAL

Marked & Color-Coded Wiring
All electrical wiring is color-coded and marked to identify which components it is connecting.

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

Unit Sub-Fuse Blocks
Furnished as standard on all units.

Required Selections

Voltage Choice
Specify when ordering base unit.

Options / Accessories

Field Installed

11 Electric Heat
Electric Heat is CE marked.

Helix wound nichrome elements, individual element limit controls, wiring harness. Unit fuse block is furnished as standard.

ECONOMIZER OPTIONS

Factory or Field Installed

⓬ Economizer

(Standard and High Performance Common Features)
Outdoor Air Hood is furnished.

Factory installed Economizer can be ordered with two exhaust options:

- Barometric Relief Dampers and Exhaust Hood.
- No Exhaust.

Field installed Economizer includes Barometric Relief Dampers with Exhaust Hood.

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

Occupied/Unoccupied mode with field furnished setback thermostat.

Demand Control Ventilation (DCV) ready using optional CO_2 sensors.

Mixed Air Sensor is furnished for field installation in the rooftop unit. Sensor is factory installed when Economizers are factory installed.

Single sensible sensor is furnished with Economizer and enables economizer operation if the outdoor temperature is less than the setpoint of the control.

Horizontal Economizer Conversion kit is available for field installation.

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

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

Economizer Controls:

- Damper Minimum Position - Can be set lower than traditional minimum air requirements resulting in cost savings.
- Indoor Air Quality (IAQ) Sensor - Signals dampers to modulate and maintain 13°C when CO_2 is higher than the CO_2 setpoint.
- Demand Control Ventilation (DCV) light-emitting diode (LED) - A steady green DCV 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
Gear-driven action, high torque 24-volt fully-modulating spring return damper motor, return air and outdoor air dampers, plug-in connections to unit, nylon bearings, enhanced neoprene blade edge seals and flexible stainless steel jamb seals to minimize air leakage.

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_2 settings, stage 3 delay and additional calibration settings)
- CHECKOUT (damper positions)
- ALARMS (output signal that can be configured for remote alarm monitoring)

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

ECONOMIZER OPTIONS (continued)

Factory or Field Installed

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

Field Installed

Differential Enthalpy Control
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.

Horizontal Economizer Conversion Kit
Insulated panel covers the bottom return air opening on the unit base to convert downflow Economizer to horizontal airflow.

EXHAUST OPTION

Field Installed

13 **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.

Fan is 406 mm diameter with 4 fan blades and a 0.25 kW motor.

NOTE - If Power Exhaust is field installed with a factory installed Economizer, the Economizer must be ordered with the "No Exhaust" option and the Barometric Relief Dampers with Exhaust Hood must also be ordered separately for field installation.

OUTDOOR AIR OPTIONS

Factory or Field Installed

Outdoor Air Dampers - Downflow or Horizontal
Single blade damper, 0 to 25% (fixed) outdoor air adjustable, installs in unit.

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

Manual model features a slide damper. Maximum mixed air temperature in cooling mode: 38°C.

Outdoor Air Hood is furnished.

ROOF CURBS

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

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

Curb can also be fastened together with furnished hardware.

Available in 203, 356, 457, and 610 mm heights.

NOTE - 072 models can be used on smaller 2026 mm Hybrid Roof Curbs (not full perimeter) with 400 mm overhang at condenser end of unit. See dimension drawing on page 24.

Full Perimeter Curbs, Downflow
Hybrid roof curbs can be assembled using interlocking tabs to fasten corners together. No tools required.

Hybrid roof curb can also be fastened together with furnished hardware.

Available in 203, 356, 457, and 610 mm heights.

Adjustable Pitch Curb
Fully adjustable pitch curb provides a level platform for rooftop units allowing flexible installations on roofs with uneven or sloped angles.

Maximum slope is 19 mm per 300 mm in any direction.

Uses interlocking tabs to fasten corners together. No tools required.

Hardware is furnished to connect upper curb with lower curb.

Available in 356 mm height.

Adaptor Curbs (not shown)
Curbs are regionally sourced. Dimensions will vary based upon the source. Contact your local sales for a detailed cut sheet with applicable dimensions.

CEILING DIFFUSERS

Ceiling Diffusers (Flush and Step-Down)
Diffuser face and grilles with white powder coat finish, insulated (UL listed duct liner), diffuser box with collars for duct connection, fixed blades (flush diffusers) and double deflection blades (step-down diffusers), provisions for suspending, internally sealed (prevents recirculation), removable return air grille, adapts to T-bar ceiling grids or plaster ceilings.

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

OPTIONS / ACCESSORIES

Item	Model No.	Catalog No.	Unit Model Number KHA072
CE MARK			
CE Marked Unit			O
COOLING SYSTEM			
Condensate Drain Trap	Polyvinyl Chloride (PVC) - C1TRAP20AD2	**76W26**	X
	Copper - C1TRAP10AD2	**76W27**	X
Drain Pan Overflow Switch	K1SNSR71AB1-	**74W42**	X
Low Ambient Kit	K1SNSR13A-2	**14D96**	X
Efficiency		Standard	O
Refrigerant Type		R-410A	O
BLOWER - SUPPLY AIR			
Motor	Belt Drive - 1.5 kW Standard Efficiency		O
Drive Kits See Blower Data Tables for selection	Kit A04 - T1DRKT004-1 - 807 - 1117 rev/min		O
	Kit A08 - T1DRKT008-1 - 994 - 1326 rev/min		O
	Kit A09 - T1DRKT009-1 - 1193 - 1524 rev/min		O
CABINET			
Combination Coil Hail Guards	K1GARD50AP1	**13T17**	X
Corrosion Protection			O
Hinged Access Panels			O
CONTROLS			
NOTE - Also see Conventional Thermostat Control Systems on page 17 for Additional Options.			
Smoke Detector - Supply or Return (Power board and one sensor)	C1SNSR44AP1	**53W78**	X
Smoke Detector - Supply and Return (Power board and two sensors)	C1SNSR43AP1	**53W79**	X
ECONOMIZER			
Standard Economizer With Outdoor Air Hood (Sensible Control)			
Standard Economizer - Includes Barometric Relief Dampers and Exhaust Hood	K1ECON30A-3-	**14D90**	OX
Economizer - No Exhaust		Factory	O
Standard Economizer Controls			
Single Enthalpy Control	C1SNSR64FF1	**53W64**	OX
Differential Enthalpy Control (order 2)	C1SNSR64FF1	**53W64**	X
High Performance Economizer With Outdoor Air Hood (Sensible Control)			
High Performance Economizer - Includes Barometric Relief Dampers and Exhaust Hood	K1ECON32A-3	**16X75**	OX
High Performance Economizer - No Exhaust		Factory	O
High Performance Economizer Controls			
Single Enthalpy Control	C1SNSR60FF1	**10Z75**	OX
Differential Enthalpy Control (order 2)	C1SNSR60FF1	**10Z75**	X
Economizer Accessories			
Horizontal Economizer Conversion Kit	T1HECK00AN1	**17W45**	X
OUTDOOR AIR			
Outdoor Air Dampers - Includes Outdoor Air Hood			
Manual	C1DAMP11A-2	**15D18**	OX
Motorized	C1DAMP21A-1	**15D17**	OX
POWER EXHAUST FAN			
Standard Static *NOTE - Order Barometric Relief Dampers with Exhaust Hood below if unit is ordered with factory installed Economizer with "No Exhaust" option*	380/420V-3ph - C1PWRE10A-1M	**79W93**	X
[1] BAROMETRIC RELIEF			
Barometric Relief Dampers with Exhaust Hood	C1DAMP50A-1-	**74W38**	X

[1] Required when Economizer is factory installed (no exhaust option) with field installed Power Exhaust Fan option.

NOTE - The catalog and model numbers that appear here are for ordering field installed accessories only.
OX - Field Installed or Configure to Order (Factory installed)
O - Configure to Order (Factory Installed)
X - Field Installed.

OPTIONS / ACCESSORIES

Item	Model No.	Catalog No.	Unit Model Number KHA072
ELECTRICAL			
Voltage 50 hz with neutral (No neutral on CE marked models)	380/420V - 3 phase		O
[1] ELECTRIC HEAT			
5.7 kW	K1EH0057AN1M	**67W92**	X
11.5 kW	K1EH0115AN1M	**67W93**	X
17.2 kW	K1EH0172AN1M	**67W94**	X
23 kW	K1EH0230N-1M	**67W95**	X
INDOOR AIR QUALITY			
Air Filters			
High Efficiency Air Filters Order 4 per unit — MERV 8 (406 x 508 x 51)	C1FLTR15A-1-	**54W20**	
High Efficiency Air Filters Order 4 per unit — MERV 13 (406 x 508 x 51)	T1FLTR40A-1-	**52W37**	
High Efficiency Air Filters Order 4 per unit — MERV 8 (508 x 508 x 51)	C1FLTR15D-1-	**54W21**	X
High Efficiency Air Filters Order 4 per unit — MERV 13 (508 x 508 x 51)	C1FLTR40D-1-	**52W39**	X
Indoor Air Quality (CO_2) Sensors			
Sensor - Wall-mount, off-white plastic cover with LCD display	C0SNSR50AE1L	**77N39**	X
Sensor - Wall-mount, black plastic case, no display, rated for plenum mounting	C0SNSR53AE1L	**87N54**	X
CO_2 Sensor Duct Mounting Kit - for downflow applications	C0MISC19AE1-	**85L43**	X
Aspiration Box - for duct mounting non-plenum rated CO_2 sensor (**77N39**)	C0MISC16AE1-	**90N43**	X
UVC Germicidal Lamps			
[2] UVC Light Kit (220V-1ph)	E1UVCL10AN1-	**50W90**	X
ROOF CURBS			
Hybrid Roof Curbs, Downflow			
203 mm height	C1CURB70A-1	**11F50**	[2] X
356 mm height	C1CURB71A-1	**11F51**	[2] X
457 mm height	C1CURB72A-1	**11F52**	[2] X
610 mm height	C1CURB73A-1	**11F53**	[2] X
Hybrid Roof Curbs, Full Perimeter, Downflow			
203 mm height	K1CURB70AP1	**11S47**	X
356 mm height	K1CURB71AP1	**11S48**	X
457 mm height	K1CURB72AP1	**11T01**	X
610 mm height	K1CURB73AP1	**11T06**	X
Adjustable Pitch Curb, Downflow			
356 mm height	C1CURB55AT1	**43W27**	[3] X
CEILING DIFFUSERS			
Step-Down - Order one	RTD11-95S	**13K61**	X
Flush - Order one	FD11-95S	**13K56**	X
Transitions (Supply and Return) - Order one	T1TRAN20N-1	**17W54**	X

[1] Nominal kW at 420V-3ph-50hz.

[2] Lamps operate on 110-230V single-phase power supply. Step-down transformer may be ordered separately for 460V and 575V units. Alternately, 110V power supply may be used to directly power the UVC ballast(s).

[3] KHA072 model will fit smaller roof curbs with overhang. See dimension drawing.

NOTE - The catalog and model numbers that appear here are for ordering field installed accessories only.
OX - Field Installed or Configure to Order (Factory installed)
O - Configure to Order (Factory Installed)
X - Field Installed.

SPECIFICATIONS

General Data	**Nominal Size**	**21 kW (6 Ton)**
	Model No.	**KHA072S4B**
	Efficiency Type	**Standard**
	Blower Type	Single Speed Belt Drive
Cooling Performance	Gross Cooling Capacity - kW (Btuh)	18.1 (61 800)
	[1] Net Cooling Capacity - kW (Btuh)	17.4 (59 300)
	AHRI Rated Air Flow - L/s (cfm)	970 (2060)
	[2] Sound Rating Number (dB)	83
	Total Unit Power - kW	5.6
	[1] EER (Btuh/Watt)	11.0
	[1] IEER (Btuh/Watt)	12.1
Refrigerant	Type	R-410A
	Charge Furnished	9.30 kg (20 lbs. 8 oz.)
Heating Performance	Total High Heating Capacity - kW (Btuh)	18.4 (63 000)
	Total Unit Power - kW	5.8
	[1] COP	3.3
	Total Low Heating Capacity - kW (Btuh)	10.5 (36 000)
	Total Unit Power - kW	4.7
	[1] COP	2.25
Electric Heating Options		See Electric Heat, page 15
Compressor Type (no.)		Scroll (1)
Outdoor Coil	Net face area - m^2 (sq. ft.)	2.6 (28.00)
	Tube diameter - mm (in.)	9.5 (3/8)
	Number of rows	2
	Fins per meter (Fins / inch)	788 (20)
Outdoor Coil Fan	Motor W (HP)	374 (1/2)
	Motor rev/min	900
	Total motor watts	520
	Diameter - mm (in.) / No. of blades	610 (24) - 4
	Total air volume - L/s (cfm)	2260 (4780)
Indoor Coil	Net face area - m^2 (sq. ft.)	0.90 (9.7)
	Tube diameter - mm (in.)	9.5 (3/8)
	Number of rows	4
	Fins per meter (Fins / inch)	552 (14)
	Drain Connection (no. and size) - in.	(1) 1 NPT
	Expansion device type	Balanced Port Thermostatic Expansion Valve, removeable power head
[3] **Indoor Blower & Drive Selection**	Nominal Motor kW (HP)	1.5 (2)
	Maximum Usable Motor kW (HP)	1.7 (2.3)
	Wheel nom. diameter x width - mm (in.)	254 x 254 (10 x 10)
	Drive Kit (rev/min range)	A04 - (807 - 1117) A08 - (994-1326) A09 - (1193 - 1524)
Filters	Type	Disposable
	Number and size - mm (in.)	(4) 20 x 20 x 2
Electrical Characteristics - 50 hz		380/420V - 50 hertz - 3 phase with neutral (No neutral on CE marked models)

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

[1] Rating test conditions are those included in Air-Conditioning, Heating and Refrigeration Institute (AHRI) Standard [1]340/360 while operating at rated voltage and air volumes:
Cooling Ratings - 35°C (95°F) outdoor air temperature and 27°C (80°F) dry bulb/19°C (67°F) wet bulb entering indoor coil air.
High Temperature Heating Ratings - 8°C (47°F) dry bulb/6°C (43°F) wet bulb outdoor air temperature and 21°C (70°F) entering indoor coil air.
Low Temperature Heating Ratings - –8°C (17°F) dry bulb/–9°C (15°F) wet bulb outdoor air temperature and 21°C (70°F) entering indoor coil air.

[2] Sound Rating Number rated in accordance with test conditions included in AHRI Standard 270.

[3] Using total air volume and system static pressure requirements determine from blower performance tables rev/min and motor size required. Maximum usable size of motors furnished is shown. If motors of comparable size 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.

21 KW - KHA072S4 - COOLING CAPACITY

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		26.7°C					35°C					43.3°C					46°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	905	18.5	3.55	0.72	0.9	1	16.7	4.16	0.74	0.95	1	14.7	4.88	0.77	1	1	14.1	5.14	0.82	1	1
	1135	19.5	3.56	0.78	1	1	17.8	4.16	0.81	1	1	15.9	4.88	0.87	1	1	15.3	5.15	0.92	1	1
	1360	20.6	3.56	0.86	1	1	18.9	4.17	0.9	1	1	16.9	4.89	0.97	1	1	16.2	5.14	0.99	1	1
19.4°C	905	19.8	3.56	0.55	0.7	0.85	17.9	4.16	0.56	0.72	0.9	15.8	4.89	0.57	0.75	0.97	15.0	5.15	0.59	0.80	0.99
	1135	20.7	3.56	0.6	0.76	0.96	18.7	4.16	0.6	0.78	1	16.5	4.89	0.62	0.84	1	15.8	5.14	0.65	0.89	1
	1360	21.4	3.57	0.63	0.83	1	19.4	4.16	0.64	0.88	1	17.1	4.89	0.67	0.94	1	16.4	5.14	0.71	0.97	1
21.7°C	905	21.1	3.56	0.41	0.54	0.68	19.1	4.16	0.4	0.55	0.7	17	4.89	0.38	0.56	0.72	16.2	5.14	0.39	0.59	0.77
	1135	22.1	3.57	0.43	0.59	0.74	20	4.17	0.42	0.6	0.77	17.7	4.89	0.41	0.61	0.81	17.0	5.14	0.42	0.64	0.87
	1360	22.8	3.57	0.45	0.63	0.81	20.7	4.17	0.44	0.64	0.85	18.3	4.89	0.44	0.67	0.91	17.5	5.15	0.45	0.71	0.95

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil														
		48°C					50°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)		
				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	905	13.6	5.35	0.84	1	1	13.1	5.57	0.85	1	1	12.7	5.76	0.83	1	1
	1135	14.8	5.35	0.93	1	1	14.2	5.57	0.95	1	1	13.8	5.76	0.96	1	1
	1360	15.7	5.35	1	1	1	15.2	5.57	1	1	1	14.7	5.76	1	1	1
19.4°C	905	14.4	5.35	0.59	0.81	1	13.8	5.56	0.60	0.82	1	13.4	5.76	0.58	0.8	1
	1135	15.2	5.35	0.66	0.91	1	14.6	5.56	0.67	0.92	1	14.1	5.76	0.65	0.92	1
	1360	15.7	5.35	0.72	0.99	1	15.2	5.57	0.73	1	1	14.7	5.76	0.7	1	1
21.7°C	905	15.6	5.35	0.39	0.59	0.78	15.0	5.56	0.38	0.59	0.80	14.5	5.76	0.37	0.57	0.77
	1135	16.4	5.35	0.42	0.65	0.88	15.7	5.57	0.42	0.66	0.90	15.2	5.76	0.41	0.64	0.89
	1360	16.8	5.35	0.45	0.72	0.97	16.2	5.57	0.45	0.73	0.98	15.6	5.76	0.44	0.7	0.99

21 KW - KHA072S4 - HEATING CAPACITY

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
906	22.9	4.65	17.4	4.14	11.9	3.59	7.3	3.22	3.5	2.43
1133	23.5	4.42	18.1	3.91	12.5	3.37	7.9	3.00	4.1	2.21
1359	24.0	4.28	18.5	3.78	13.0	3.23	8.4	2.86	4.6	2.07

BLOWER DATA - BELT DRIVE - KHA072 - DOWNFLOW

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.
FOR ALL UNITS ADD:
1 - Any factory installed options air resistance (heat section, economizer, etc.).
2 - Any field installed accessories air resistance (duct resistance, diffuser, etc.).
See page 14 for blower motors and drives and wet coil and options/accessory air resistance data.

Air Volume		External Static - Pa (in. w.g.)																							
		25 (0.10)			50 (0.20)			75 (0.30)			100 (0.40)			125 (0.50)			150 (0.60)			175 (0.70)			200 (0.80)		
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	Rev/ min	kW	BHP
897	1900	826	0.27	0.36	859	0.31	0.41	894	0.34	0.45	928	0.37	0.50	964	0.42	0.56	1000	0.46	0.61	1036	0.49	0.66	1072	0.52	0.70
944	2000	857	0.31	0.42	889	0.35	0.47	920	0.39	0.52	952	0.43	0.57	986	0.46	0.62	1020	0.51	0.68	1055	0.54	0.73	1091	0.57	0.77
991	2100	878	0.37	0.49	909	0.40	0.54	940	0.44	0.59	973	0.48	0.64	1006	0.52	0.70	1041	0.56	0.75	1076	0.60	0.80	1112	0.63	0.85
1038	2200	897	0.41	0.55	929	0.46	0.61	961	0.49	0.66	994	0.54	0.72	1028	0.58	0.78	1063	0.62	0.83	1099	0.66	0.89	1134	0.69	0.93
1085	2300	918	0.46	0.62	950	0.51	0.68	983	0.55	0.74	1017	0.60	0.80	1052	0.64	0.86	1087	0.69	0.92	1122	0.72	0.97	1157	0.76	1.02
1133	2400	941	0.52	0.70	974	0.57	0.77	1008	0.62	0.83	1042	0.67	0.90	1077	0.72	0.96	1111	0.75	1.01	1146	0.79	1.06	1181	0.83	1.11
1180	2500	966	0.59	0.79	1000	0.64	0.86	1034	0.69	0.93	1068	0.75	1.00	1103	0.79	1.06	1137	0.83	1.11	1171	0.87	1.16	1205	0.90	1.20
1227	2600	994	0.67	0.90	1028	0.72	0.97	1062	0.78	1.04	1096	0.82	1.10	1130	0.87	1.16	1164	0.90	1.21	1197	0.94	1.26	1231	0.97	1.30
1274	2700	1023	0.75	1.01	1057	0.81	1.08	1091	0.86	1.15	1125	0.91	1.22	1159	0.95	1.27	1192	0.98	1.32	1225	1.02	1.37	1258	1.05	1.41
1321	2800	1053	0.84	1.13	1088	0.90	1.21	1122	0.95	1.27	1155	0.99	1.33	1188	1.04	1.39	1221	1.07	1.43	1253	1.10	1.48	1286	1.14	1.53
1369	2900	1085	0.94	1.26	1119	0.99	1.33	1153	1.04	1.40	1186	1.08	1.45	1218	1.13	1.51	1250	1.16	1.55	1281	1.20	1.61	1313	1.24	1.66

Air Volume		External Static - Pa (in. w.g.)																							
		225 (0.90)			250 (1.00)			275 (1.10)			300 (1.20)			325 (1.30)			350 (1.40)			375 (1.50)			400 (1.60)		
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	Rev/ min	kW	BHP	Rev/ min	kW	BHP
897	1900	1109	0.56	0.75	1146	0.59	0.79	1183	0.61	0.82	1221	0.64	0.86	1260	0.67	0.90	1294	0.70	0.94	1323	0.73	0.98	1349	0.76	1.02
944	2000	1128	0.61	0.82	1164	0.64	0.86	1201	0.66	0.89	1239	0.69	0.93	1276	0.72	0.97	1310	0.75	1.01	1336	0.79	1.06	1362	0.82	1.10
991	2100	1148	0.66	0.89	1185	0.69	0.93	1221	0.72	0.97	1258	0.75	1.01	1294	0.78	1.05	1325	0.81	1.09	1351	0.85	1.14	1376	0.89	1.19
1038	2200	1170	0.72	0.97	1206	0.75	1.01	1242	0.78	1.05	1277	0.81	1.09	1311	0.85	1.14	1341	0.88	1.18	1365	0.92	1.23	1390	0.95	1.28
1085	2300	1193	0.79	1.06	1228	0.81	1.09	1262	0.85	1.14	1295	0.89	1.19	1327	0.93	1.24	1355	0.96	1.29	1380	0.99	1.33	1406	1.02	1.37
1133	2400	1216	0.86	1.15	1250	0.89	1.19	1282	0.93	1.24	1313	0.97	1.30	1343	1.01	1.36	1371	1.04	1.40	1396	1.07	1.44	1423	1.10	1.48
1180	2500	1240	0.93	1.24	1273	0.96	1.29	1302	1.01	1.36	1331	1.06	1.42	1360	1.10	1.48	1388	1.13	1.52	1414	1.16	1.55	1441	1.18	1.58
1227	2600	1265	1.00	1.34	1296	1.04	1.40	1324	1.10	1.47	1352	1.15	1.54	1381	1.19	1.60	1408	1.22	1.64	1434	1.25	1.67	1460	1.27	1.70
1274	2700	1291	1.09	1.46	1321	1.13	1.52	1347	1.19	1.60	1374	1.25	1.67	1403	1.28	1.72	1429	1.31	1.76	1455	1.34	1.79	1481	1.36	1.82
1321	2800	1317	1.18	1.58	1346	1.24	1.66	1372	1.30	1.74	1399	1.34	1.80	1426	1.38	1.85	1451	1.41	1.89	1477	1.43	1.92	1503	1.45	1.95
1369	2900	1343	1.28	1.72	1371	1.34	1.80	1397	1.40	1.88	1424	1.45	1.95	1450	1.48	1.99	1475	1.51	2.02	1500	1.53	2.05	1526	1.55	2.08

BLOWER DATA - BELT DRIVE - KHA072 - HORIZONTAL

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE.
FOR ALL UNITS ADD:
1 - Any factory installed options air resistance (heat section, economizer, etc.).
2 - Any field installed accessories air resistance (duct resistance, diffuser, etc.).
See page 14 for blower motors and drives and wet coil and options/accessory air resistance data.

Air Volume		External Static - Pa (in. w.g.)																							
		25 (0.10)			50 (0.20)			75 (0.30)			100 (0.40)			125 (0.50)			150 (0.60)			175 (0.70)			200 (0.80)		
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	Rev/ min	kW	BHP
897	1900	853	0.31	0.41	886	0.34	0.46	919	0.37	0.50	952	0.41	0.55	986	0.45	0.60	1021	0.48	0.64	1056	0.51	0.69	1091	0.54	0.73
944	2000	883	0.36	0.48	913	0.40	0.53	944	0.43	0.57	976	0.46	0.62	1009	0.50	0.67	1043	0.53	0.71	1078	0.57	0.76	1112	0.60	0.80
991	2100	906	0.42	0.56	936	0.45	0.60	967	0.48	0.65	999	0.52	0.70	1033	0.56	0.75	1067	0.59	0.79	1101	0.63	0.84	1135	0.66	0.88
1038	2200	930	0.48	0.64	960	0.51	0.68	991	0.54	0.73	1024	0.58	0.78	1058	0.62	0.83	1092	0.66	0.88	1126	0.69	0.92	1160	0.72	0.96
1085	2300	954	0.54	0.72	985	0.57	0.77	1017	0.61	0.82	1051	0.65	0.87	1085	0.69	0.92	1119	0.72	0.96	1152	0.75	1.00	1186	0.78	1.04
1133	2400	981	0.60	0.81	1013	0.64	0.86	1046	0.68	0.91	1079	0.72	0.96	1113	0.75	1.00	1146	0.78	1.05	1180	0.81	1.09	1213	0.84	1.13
1180	2500	1010	0.68	0.91	1042	0.72	0.96	1075	0.75	1.00	1109	0.78	1.05	1142	0.81	1.09	1175	0.85	1.14	1207	0.88	1.18	1239	0.92	1.23
1227	2600	1040	0.75	1.01	1073	0.78	1.05	1106	0.82	1.10	1139	0.85	1.14	1171	0.89	1.19	1203	0.92	1.23	1235	0.95	1.28	1266	0.99	1.33
1274	2700	1072	0.82	1.10	1104	0.86	1.15	1137	0.90	1.20	1169	0.93	1.24	1201	0.96	1.29	1232	1.00	1.34	1263	1.04	1.40	1293	1.09	1.46
1321	2800	1105	0.90	1.21	1137	0.93	1.25	1168	0.97	1.30	1200	1.01	1.35	1231	1.04	1.40	1261	1.09	1.46	1291	1.13	1.52	1321	1.19	1.59
1369	2900	1138	0.98	1.32	1169	1.02	1.37	1200	1.06	1.42	1231	1.10	1.47	1261	1.14	1.53	1291	1.19	1.60	1321	1.24	1.66	1350	1.29	1.73

Air Volume		External Static - Pa (in. w.g.)																							
		225 (0.90)			250 (1.00)			275 (1.10)			300 (1.20)			325 (1.30)			350 (1.40)			375 (1.50)			400 (1.60)		
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	Rev/ min	kW	BHP	Rev/ min	kW	BHP
897	1900	1126	0.57	0.77	1163	0.60	0.81	1200	0.63	0.85	1237	0.66	0.88	1273	0.69	0.92	1306	0.72	0.96	1339	0.75	1.00	1371	0.78	1.04
944	2000	1148	0.63	0.84	1183	0.66	0.88	1220	0.69	0.92	1257	0.72	0.96	1291	0.75	1.00	1323	0.78	1.04	1354	0.81	1.08	1385	0.84	1.12
991	2100	1170	0.69	0.92	1206	0.72	0.96	1242	0.75	1.00	1277	0.78	1.04	1310	0.81	1.08	1340	0.84	1.13	1371	0.87	1.17	1401	0.90	1.21
1038	2200	1195	0.75	1.00	1230	0.78	1.04	1265	0.81	1.08	1299	0.84	1.13	1330	0.88	1.18	1359	0.92	1.23	1388	0.95	1.27	1418	0.98	1.31
1085	2300	1220	0.81	1.08	1254	0.84	1.13	1288	0.87	1.17	1320	0.92	1.23	1350	0.95	1.28	1378	1.00	1.34	1406	1.03	1.38	1435	1.06	1.42
1133	2400	1245	0.88	1.18	1278	0.91	1.22	1311	0.95	1.28	1341	0.99	1.33	1370	1.04	1.40	1397	1.08	1.45	1425	1.12	1.50	1454	1.15	1.54
1180	2500	1271	0.95	1.28	1303	0.99	1.33	1334	1.04	1.39	1363	1.08	1.45	1391	1.13	1.52	1418	1.17	1.57	1446	1.21	1.62	1474	1.24	1.66
1227	2600	1297	1.04	1.39	1328	1.08	1.45	1357	1.13	1.52	1385	1.18	1.58	1412	1.22	1.64	1439	1.27	1.70	1467	1.30	1.74	1495	1.33	1.78
1274	2700	1323	1.13	1.52	1353	1.18	1.58	1382	1.23	1.65	1409	1.28	1.72	1435	1.32	1.77	1462	1.36	1.82	1490	1.39	1.86	1517	1.42	1.90
1321	2800	1351	1.23	1.65	1380	1.28	1.72	1407	1.33	1.78	1434	1.38	1.85	1460	1.42	1.90	1486	1.45	1.95	1513	1.48	1.99	1541	1.51	2.02
1369	2900	1379	1.34	1.79	1407	1.39	1.86	1434	1.43	1.92	1460	1.48	1.98	1485	1.52	2.04	1511	1.55	2.08	1538	1.58	2.12	1565	1.60	2.15

BLOWER DATA

BELT DRIVE KIT SPECIFICATIONS

Model No.	Motor kW (HP)		No. of Speeds	Drive Kits and Rev/Min Range		
	Nominal	Max		A04	A08	A09
072	1.5 (2)	1.7 (2.3)	1	807 - 1117	994 - 1326	1193 - 1524

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

OPTIONS / ACCESSORIES AIR RESISTANCE

Air Volume		Wet Indoor Coil		Economizer		Electric Heat		Filters			
								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.
850	1800	7	0.04	12	0.05	37	0.15	12	0.05	17	0.07
945	2000	12	0.05	12	0.05	45	0.18	12	0.05	20	0.08
1040	2200	15	0.06	12	0.05	50	0.20	12	0.05	20	0.08
1130	2400	17	0.07	12	0.05	55	0.22	12	0.05	20	0.08
1225	2600	20	0.08	15	0.06	60	0.24	12	0.05	20	0.08
1320	2800	22	0.09	15	0.06	65	0.26	12	0.05	20	0.08
1415	3000	25	0.10	15	0.06	70	0.28	12	0.05	20	0.08

POWER EXHAUST FAN PERFORMANCE

Return Air System Static Pressure		Air Volume Exhausted	
Pa	in. w.g.	L/s	cfm
0	0.00	944	2000
12	0.05	939	1990
25	0.10	908	1924
37	0.15	854	1810
50	0.20	785	1664
62	0.25	711	1507
75	0.30	637	1350
87	0.35	571	1210

CEILING DIFFUSERS AIR RESISTANCE

Air Volume		RTD11-95S Step–Down Diffuser						FD11-95S Flush Diffuser	
		2 Ends Open		1 Side & 2 Ends Open		All Ends & Sides Open			
L/s	cfm	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.	Pa	in. w.g.
850	1800	32	0.13	27	0.11	22	0.09	22	0.09
945	2000	37	0.15	32	0.13	27	0.11	25	0.10
1040	2200	45	0.18	37	0.15	30	0.12	30	0.12
1130	2400	52	0.21	45	0.18	37	0.15	35	0.14
1225	2600	60	0.24	52	0.21	45	0.18	42	0.17
1320	2800	67	0.27	60	0.24	52	0.21	50	0.20
1415	3000	80	0.32	72	0.29	62	0.25	62	0.25

CEILING DIFFUSER AIR THROW DATA

Air Volume		[1] Effective Throw			
Model No.		RTD11-95S		FD11-95S	
1225	2600	7 - 9	24 - 29	6 - 7	19 - 24
1320	2800	8 - 9	25 - 30	6 - 9	20 - 28
1415	3000	8 - 10	27 - 33	6 - 9	21 - 29

[1] Effective throw based on terminal velocities of 23 m per minute (75 ft. per minute).

ELECTRICAL / ELECTRIC HEAT DATA

Model No.		KHA072S4
[1] Voltage - 50hz with Neutral		380/420V - 3 Ph
Compressor	Rated Load Amps	9.7
	Locked Rotor Amps	64
Outdoor Fan Motor	Full Load Amps	1.5
Power Exhaust (1) 0.25 kW	Full Load Amps	1.3
Indoor Blower Motor	kW	1.5
	Full Load Amps	3.6
[2] Maximum Overcurrent Protection	Unit Only	25
	With (1) 0.25 kW Power Exhaust	25
[3] Minimum Circuit Ampacity	Unit Only	18
	With (1) 0.25 kW Power Exhaust	19

ELECTRIC HEAT DATA

Electric Heat Voltage			420V
[2] Maximum Overcurrent Protection	Unit+ [4] Electric Heat	5.7 kW	30
		11.5 kW	40
		17.2 kW	50
		23 kW	60
[3] Minimum Circuit Ampacity	Unit+ [4] Electric Heat	5.7 kW	28
		11.5 kW	37
		17.2 kW	47
		23 kW	57
[2] Maximum Overcurrent Protection	Unit+ [4] Electric Heat and (1) 0.25 kW Power Exhaust	5.7 kW	35
		11.5 kW	40
		17.2 kW	50
		23 kW	60
[3] Minimum Circuit Ampacity	Unit+ [4] Electric Heat and (1) 0.25 kW Power Exhaust	5.7 kW	29
		11.5 kW	39
		17.2 kW	49
		23 kW	58

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

[2] Heating, Air Conditioning, Refrigeration type breaker or fuse.

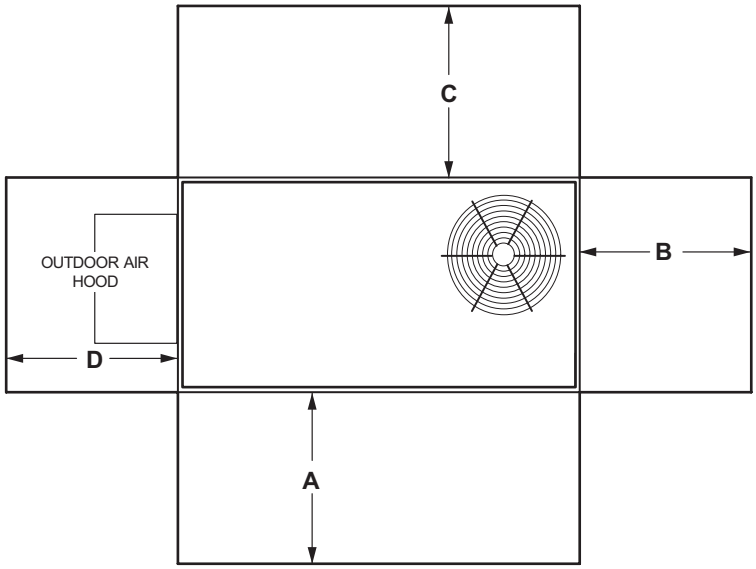
[3] Refer to local electrical code to determine wire, fuse and disconnect size requirements.

[4] Nominal kW based on 420V-3ph-50hz.

ELECTRIC HEAT CAPACITIES

	5.7 kW			11.5 kW			17.2 kW			23 kW		
Input Voltage	No of Steps	kW input	Btuh Output	No of Steps	kW input	Btuh Output	No of Steps	kW input	Btuh Output	No of Steps	kW input	Btuh Output
380	1	4.7	16 100	1	9.4	32 100	1	14.1	48 200	1	18.8	64 200
400	1	5.2	17 800	1	10.4	35 500	1	15.6	53 300	1	20.9	71 400
420	1	5.7	19 500	1	11.5	39 300	1	17.2	58 800	1	23.0	78 500

UNIT CLEARANCES - MM (INCHES)



[1] Unit Clearance	A		B		C		D		Top Clearance
	mm	in.	mm	in.	mm	in.	mm	in.	
Service Clearance	914	36	914	36	914	36	914	36	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

[1] Unit Model No.	Octave Band Linear Sound Power Levels dBA, re 10^{-12} Watts - Center Frequency - Hz							[1] Sound Rating Number (SRN) (dBA)
	125	250	500	1000	2000	4000	8000	
KHA072	67	75	78	78	75	68	59	83

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

[1] Sound Rating Number according to ARI Standard 270-95 (includes pure tone penalty). “SRN” is the overall A-Weighted Sound Power Level, (LWA), dBA (100 Hz to 10,000 Hz).

OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS

Item		Model No.	Catalog No.
7-DAY PROGRAMMABLE THERMOSTAT - BACNET COMPATIBLE WITH REHEAT FUNCTION			
	• For units with or without [1] Dehumidification Option • 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	- - -	**Y8241**

[1] BACnet Thermostat (**Y8241**) will control units with and without dehumidification. If there is a mix of units equipped with and without dehumidification on the same site, this thermostat can be used for all units if desired.

BACnet Controls (no reheat capability)	BACnet® Module (factory or field installed)	K0CTRL31A-2	**16X70**
	BACnet® Room Sensor with Display (field installed)	K0SNSR01FF1	**97W23**
	BACnet® Room Sensor without Display (field installed)	K0SNSR00FF1	**97W24**
Optional Accessories	Plenum Cable (RJ45/CAT5 75 ft.)	K0MISC00FF1	**97W25**

WEIGHT DATA

Model Number	Net				Shipping			
	Base		Max.		Base		Max.	
	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.
KHA072S	340	750	391	862	367	810	422	931

Base Unit - The unit with NO OPTIONS.
Max. Unit - The unit with ALL OPTIONS Installed (Economizer, etc.)

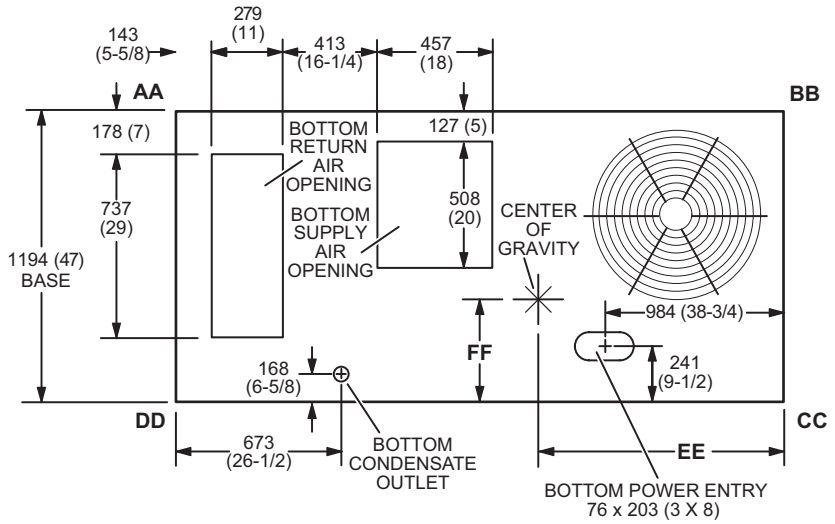
OPTIONS / ACCESSORIES

		Shipping Weights	
		kg	lbs.
ECONOMIZER			
Economizer			
Economizer, Includes Outdoor Air Hood and Barometric Relief Dampers with Hood		59	131
OUTDOOR AIR			
Outdoor Air Dampers			
Motorized		18	40
Manual		14	30
POWER EXHAUST			
Standard Static		16	35
ELECTRIC HEAT			
5.7 kW		14	31
11.5 kW		14	31
17.2 kW		16	35
23 kW		16	35
ROOF CURBS			
Hybrid Roof Curbs, Downflow			
203 mm height		23	50
356 mm height		32	70
457 mm height		36	80
610 mm height		45	100
Hybrid Curbs, Full Perimeter, Downflow			
203 mm height		26	57
356 mm height		27	60
457 mm height		41	91
610 mm height		52	114
Adjustable Pitch Curb, Downflow			
356 mm height		51	113
CEILING DIFFUSERS			
Step-Down	RTD11-95S	54	118
Flush	FD11-95S	54	118
Transitions (Supply and Return)	T1TRAN20N-1	10	21

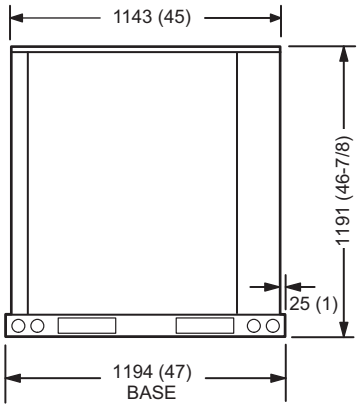
DIMENSIONS - UNIT - MM (INCHES)

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.
072	73	160	84	185	82	180	94	208	106	233	122	269	94	207	109	239	1174	46-1/4	1174	46-1/4	521	20-1/2	521	20-1/2

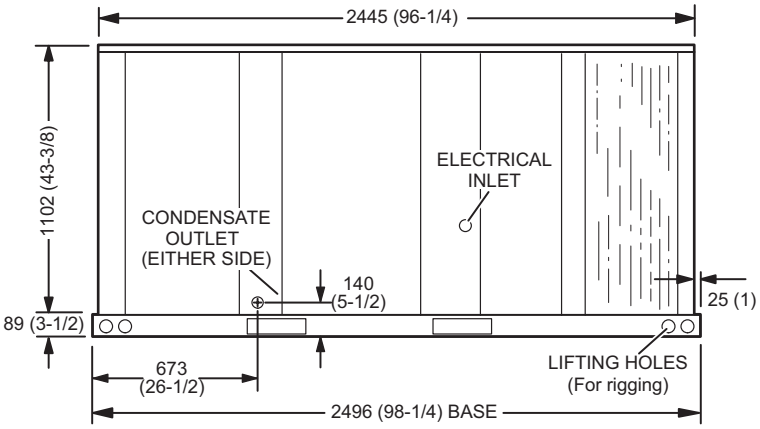
Base Unit - The unit with standard heat exchanger NO OPTIONS.
Max. Unit - The unit with ALL OPTIONS Installed (Economizer, etc.).



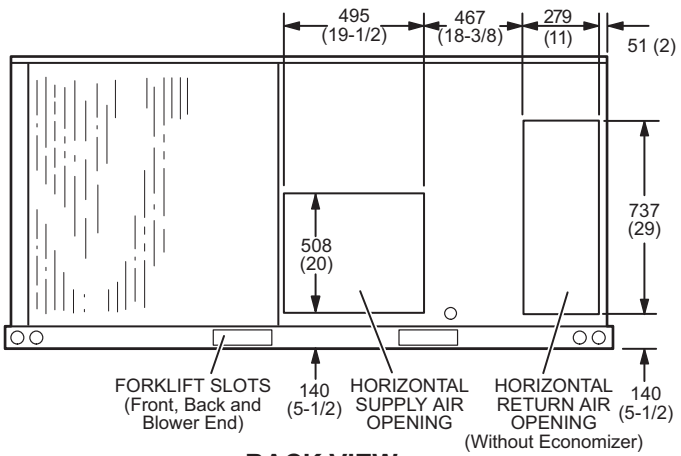
TOP VIEW (Base)



END VIEW



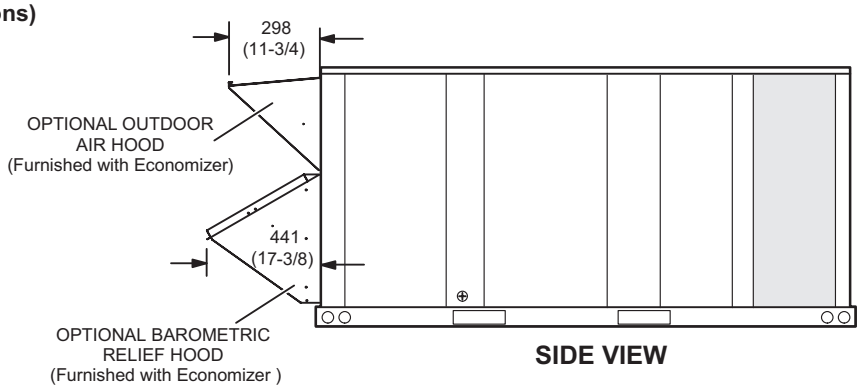
SIDE VIEW



BACK VIEW

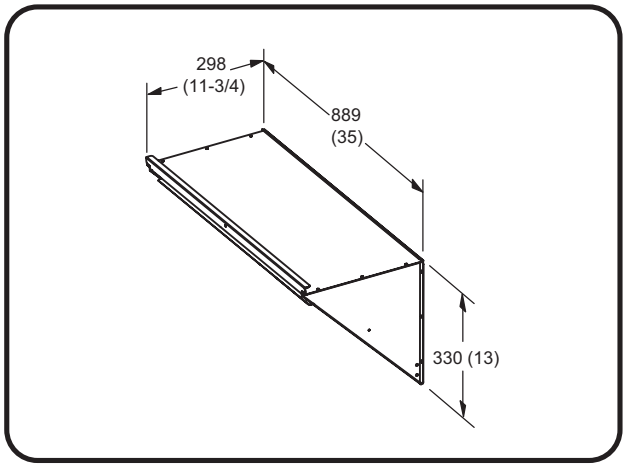
DIMENSIONS - ACCESSORIES - MM (INCHES)

OUTDOOR AIR HOOD DETAIL FOR OPTIONAL ECONOMIZER AND BAROMETRIC RELIEF DAMPERS (Downflow Applications)

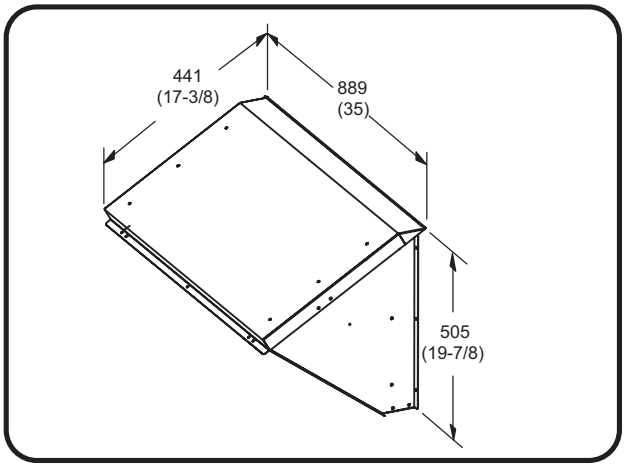


SIDE VIEW

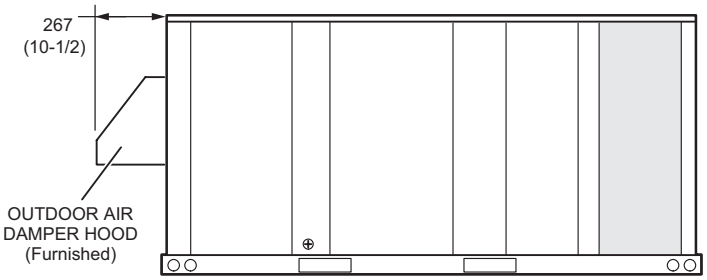
OUTDOOR AIR HOOD FOR ECONOMIZER (Furnished)



BAROMETRIC RELIEF HOOD FOR ECONOMIZER (Furnished)

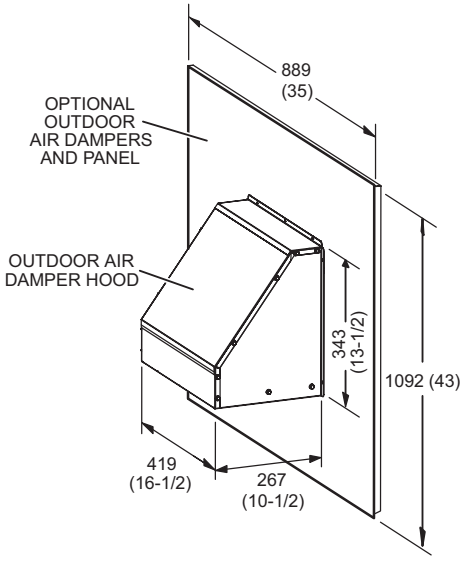


OUTDOOR AIR DAMPER HOOD DETAIL (Downflow or Horizontal Applications)

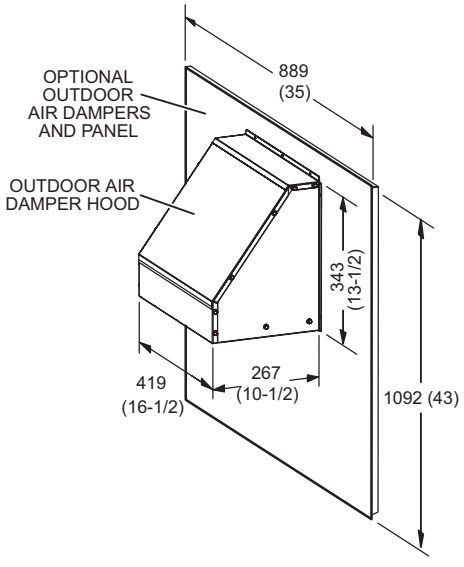


SIDE VIEW

MANUAL OUTDOOR AIR HOOD

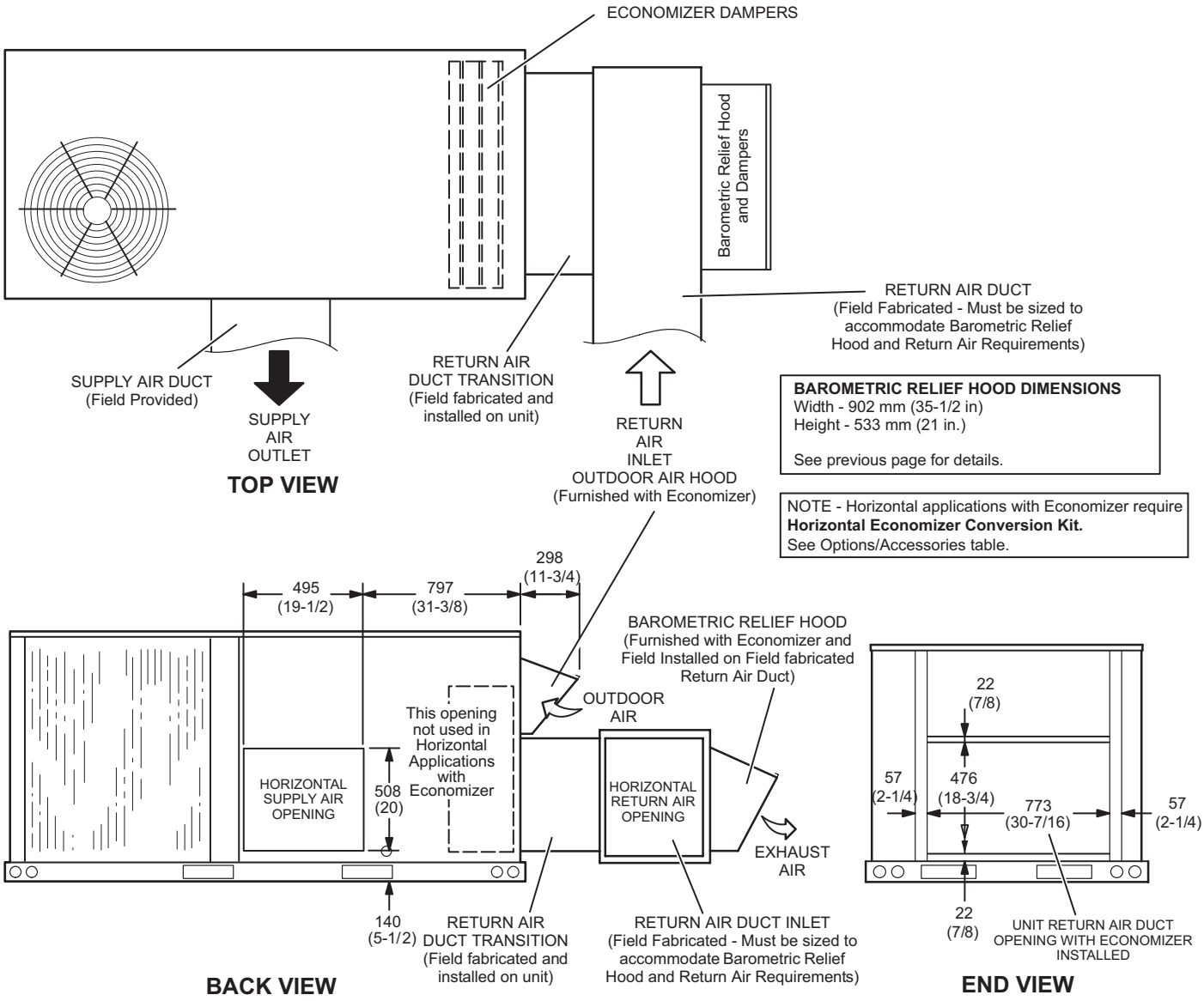


MOTORIZED OUTDOOR AIR HOOD



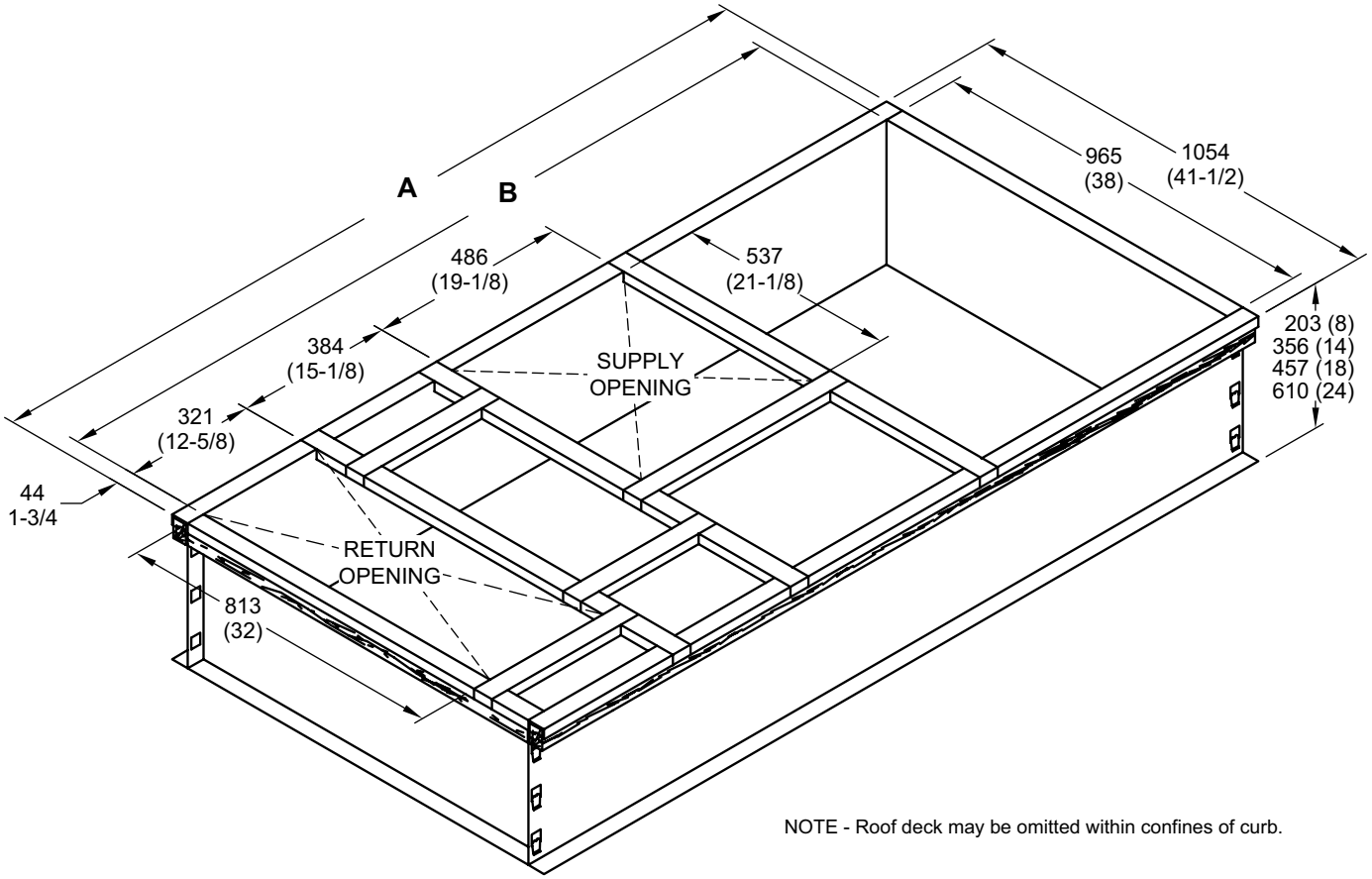
DIMENSIONS - ACCESSORES - MM (INCHES)

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



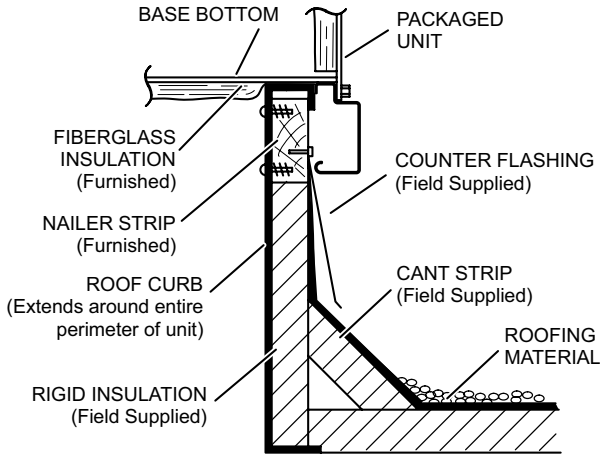
NOTE - Return Air Duct and Transition must be supported.

HYBRID ROOF CURBS - DOUBLE DUCT OPENING - STANDARD AND FULL PERIMETER

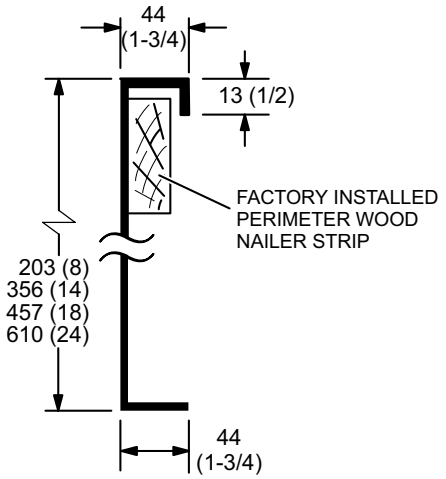


NOTE - Roof deck may be omitted within confines of curb.

TYPICAL FLASHING DETAIL FOR ROOF CURB



DETAIL ROOF CURB

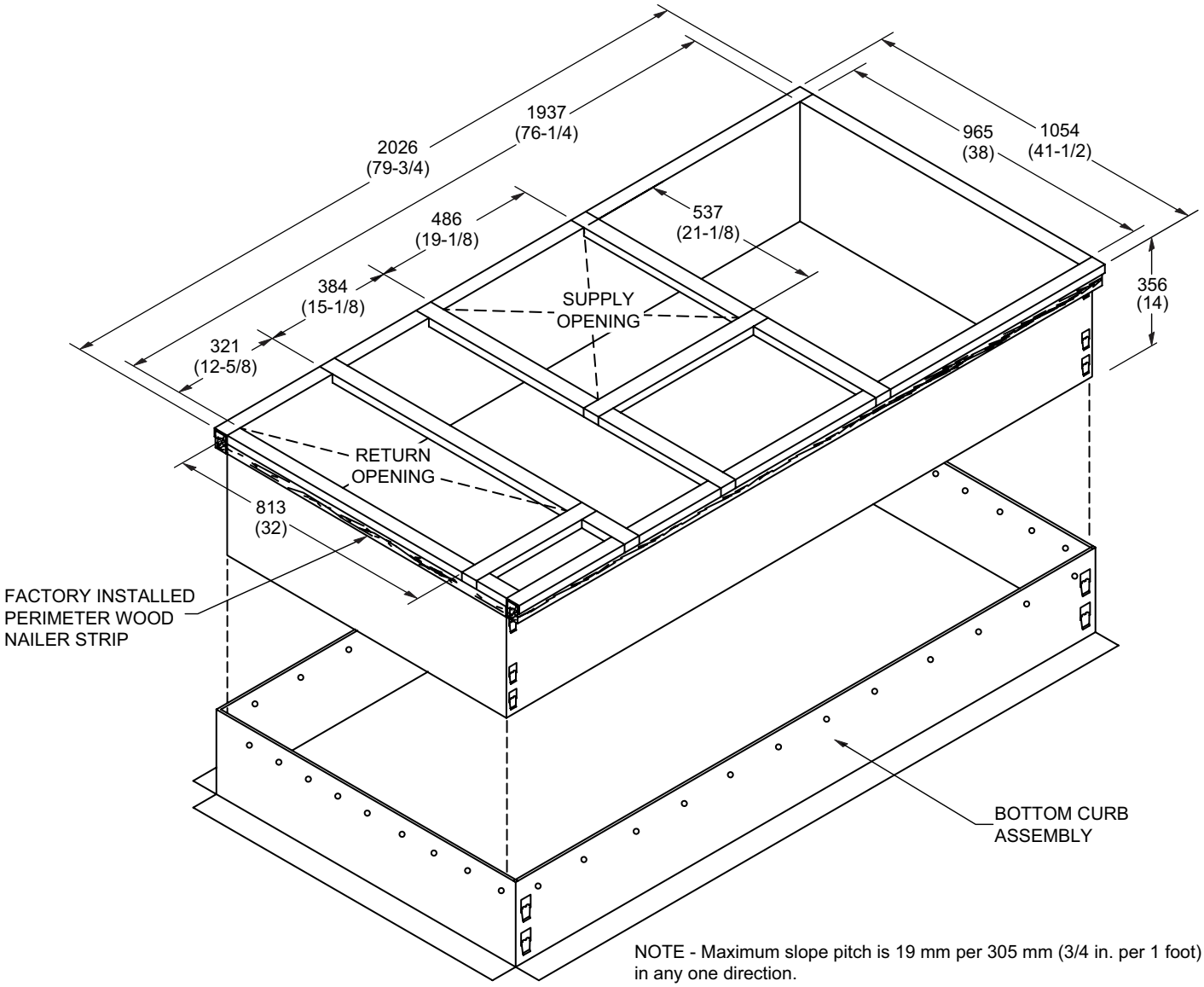


Model No.	A		B	
	mm	in.	mm	in.
Standard - [1] 072	2026	79-3/4	1937	76-1/4
Full Perimeter - 072	2356	92-3/4	2267	89-1/4

[1] 072 models can be used on smaller 2026 mm (79-3/4 in.) roof curbs (not full perimeter) with 400 mm (15-3/4 in.) overhang at condenser end of unit. See dimension drawing on page 24.

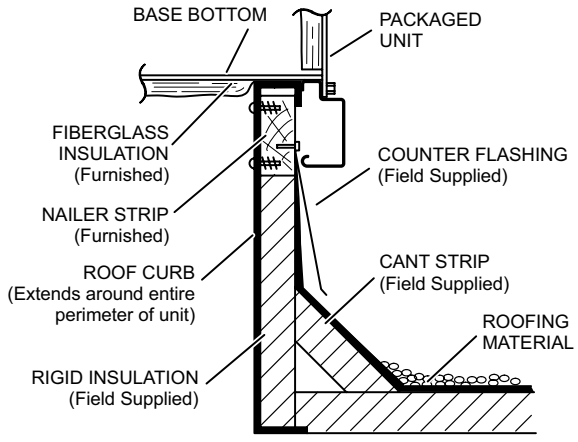
DIMENSIONS - ADJUSTABLE PITCH CURB - MM (INCHES)

ADJUSTABLE PITCH CURBS - DOUBLE DUCT OPENING

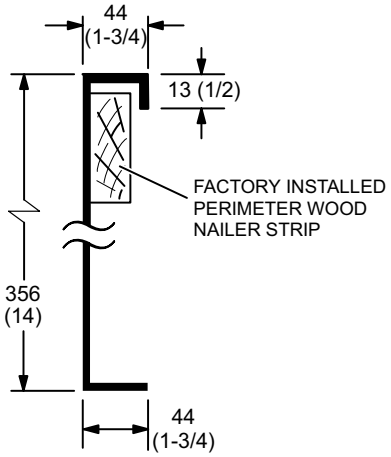


NOTE - Maximum slope pitch is 19 mm per 305 mm (3/4 in. per 1 foot) in any one direction.

TYPICAL FLASHING DETAIL FOR ROOF CURB

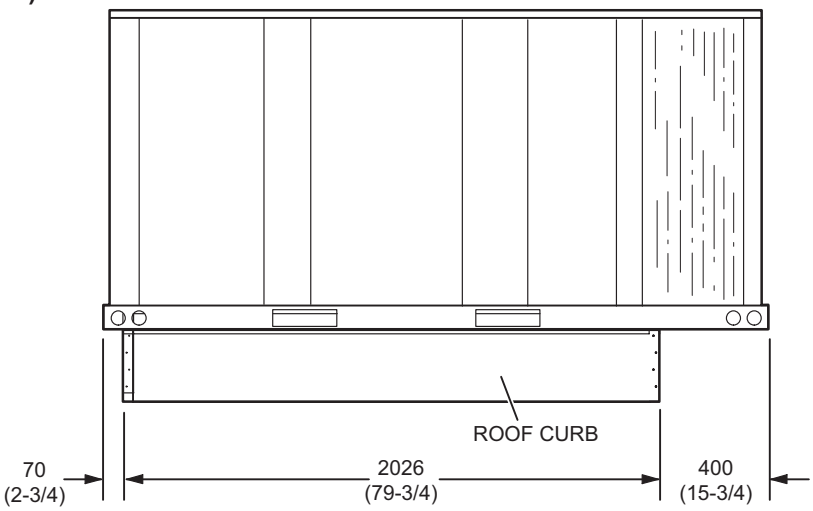


DETAIL ROOF CURB



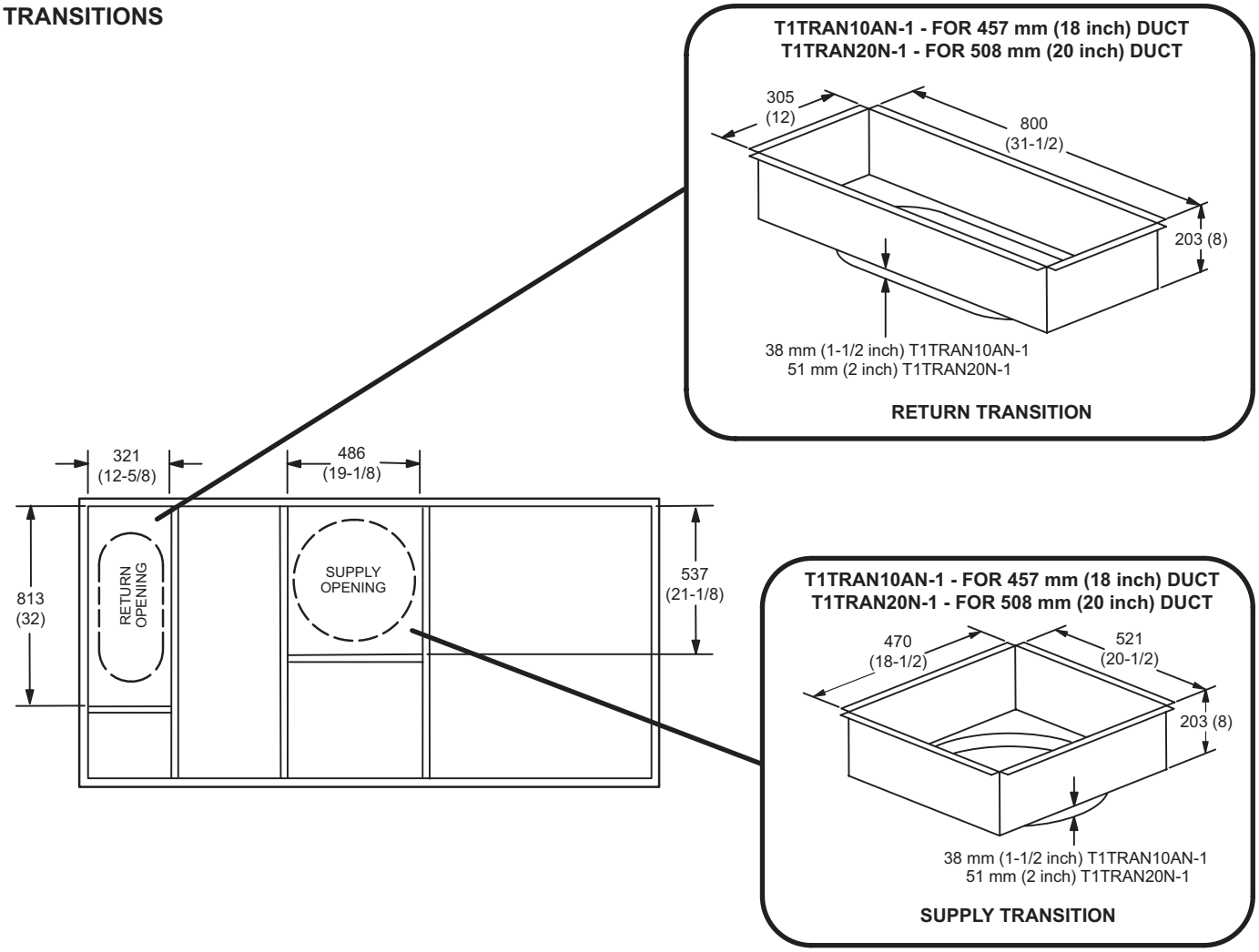
DIMENSIONS - ACCESSORIES - MM (INCHES)

072 MODELS - SHOWING OVERHANG ON SMALLER 2026 MM LENGTH ROOF CURBS (Not Full Perimeter)



SIDE VIEW

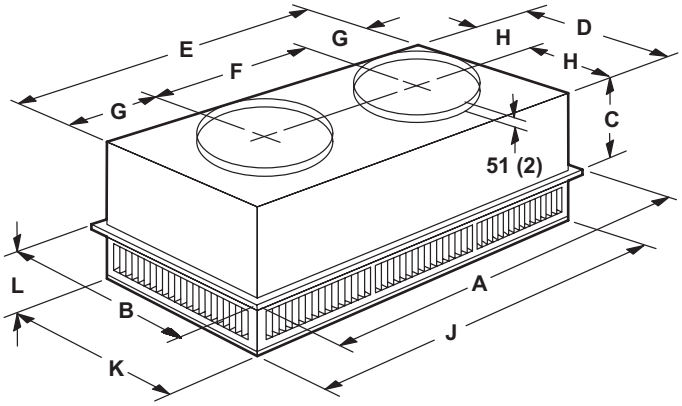
TRANSITIONS



DIMENSIONS - ACCESSORIES - MM (INCHES)

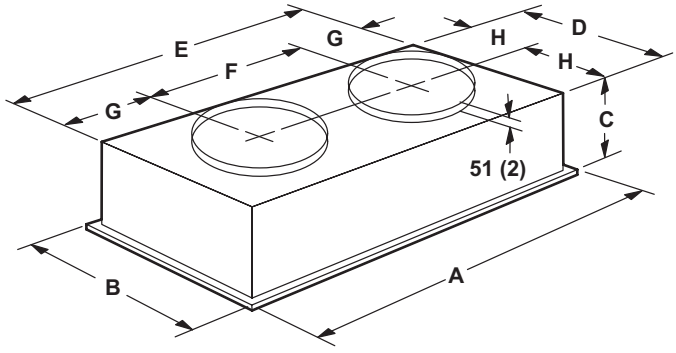
COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

STEP-DOWN 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

FLUSH CEILING DIFFUSER



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	572
	in.	22-1/2
G	mm	286
	in.	11-1/4
H	mm	343
	in.	13-1/2
Duct Size	mm	508 round
	in.	20 round

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