PACKAGED HEAT PUMP

KHC

Xion™ Rooftop Units
Standard Efficiency - 60 HZ

Bulletin No. 210996
October 2023
Supersedes August 2023

COMMERCIAL
PRODUCT SPECIFICATIONS

XION

MSAV™ MULTI-STAGE AIR VOLUME

ASHRAE 90.1 COMPLIANT

7.5 to 10 Tons
Net Cooling Capacity – 89,000 to 116,000 Btuh
Net Heating Capacity - 88,000 to 115,000 Btuh
Optional Electric Heat - 7.5 to 60 kW

MODEL NUMBER IDENTIFICATION

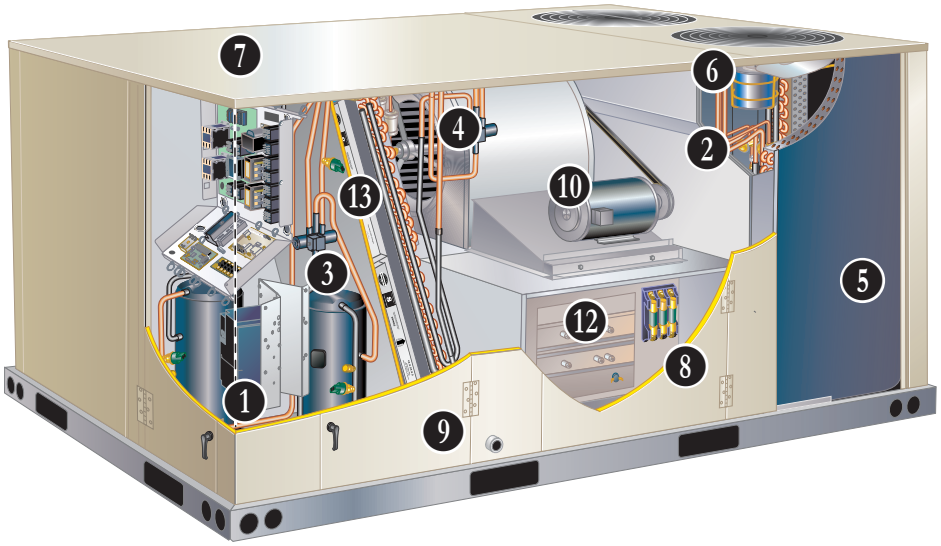
K H C 120 S 4 M N 1 Y

- **Brand/Family**: K = Xion™
- **Unit Type**: H = Packaged Heat Pump
- **Major Design Sequence**: C = 3rd Generation
- **Nominal Cooling Capacity - Tons**: 092 = 7.5 Tons; 102 = 8.5 Tons; 120 = 10 Tons
- **Cooling Efficiency**: S = Standard Efficiency
- **Refrigerant Type**: 4 = R-410A
- **Blower Type**: M = MSAV® Multi-Stage Air Volume, Belt Drive
- **Factory Installed Electric Heat**: N = No Heat
- **Minor Design Sequence**: 1 = 1st Revision
- **Voltage**: Y = 208/230V-3 phase-60Hz; G = 460V-3 phase-60Hz; J = 575V-3 phase-60Hz

FEATURE HIGHLIGHTS

Xion™ rooftop units are engineered with the right technologies and options to meet standard efficiency requirements while delivering reliable performance and year-round comfort.

1. Scroll Compressors
2. Check/Thermal Expansion Valves
3. Reversing Valves
4. Filter/Driers
5. Copper Tube Outdoor Coil
6. Outdoor Coil Fan Motors
7. Heavy Gauge Steel Cabinet
8. Insulation
9. Hinged Access Panels (option)
10. MSAV Multi-Stage Air Volume Blower
11. Unit Control
12. Electric Heat (option)
13. Air Filters



CONTENTS

APPROVALS AND WARRANTY

APPROVALS

- AHRI Standard 340/360 certified
- ETL and CSA listed
- CSA certified energy ratings
- Unit and components ETL, NEC and CEC bonded for grounding to meet safety standards for servicing
- All models are ASHRAE 90.1 energy efficiency compliant and meet or exceed requirements of Section 6.8
- All models meet DOE 2023 energy efficiency standards
- All models meet California Code of Regulations, Title 24 and ASHRAE 90.1 Section 6.4.3.10 requirements for staged airflow
- ISO 9001 Registered Manufacturing Quality System

WARRANTY

- Compressors - Limited five years
- Variable-Frequency Drive (VFD) - Limited five years
- High Performance Economizers (optional) - Limited five years
- All other covered components - Limited one year

FEATURES AND BENEFITS

COOLING/HEATING SYSTEM

- Designed to maximize sensible and latent cooling performance at design conditions
- System can operate in the cooling mode from 45°F to 125°F without any additional controls

R-410A Refrigerant
- Non-chlorine based
- Ozone friendly

1 Compressor System
- System consists of one two-stage scroll compressor and one single stage scroll compressor
- Resiliently mounted on rubber grommets for quiet operation

Compressor Crankcase Heaters
- Protects against refrigerant migration that can occur during low ambient operation or during extended off cycles

2 Check/Thermal Expansion Valves
- Assures optimal performance throughout the application range
- Removable element head

3 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

4 Filter/Driers
- High capacity filter/drier protects the system from dirt and moisture

High Pressure Switches
- Protects the compressor from overload conditions
- Auto-reset

Indoor Coil Freeze Protection
- Protects the evaporator coil from damaging ice build-up due to conditions such as low/no airflow, or low refrigerant charge

5 Coil Construction
- Copper tube construction
- Enhanced rippled-edge aluminum fins
- Flared shoulder tubing connections
- Silver soldered construction
- Factory leak tested
- Two independent formed outdoor coils allow separation for cleaning
- Cross-row circuiting of indoor coil with rifled copper tubing optimizes both sensible and latent cooling capacity

Antimicrobial Condensate Drain Pan
- Composite pan, sloped to meet drainage requirements of ASHRAE 62.1
- Antimicrobial additive resists growth of mold and mildew on drain pan, which improves indoor air quality and reduces drain line blockage
- Side or bottom drain connections
- Reversible to allow connection at back of unit

6 Outdoor Coil Fan Motors
- Single speed PSC fan motor
- Thermal overload protected
- Totally enclosed
- Permanently lubricated sleeve bearings
- Shaft up
- Wire basket mount

Outdoor Coil Fans
- PVC coated fan guards furnished

Required Selections

Cooling Capacity
- Specify nominal cooling capacity

COOLING / HEATING SYSTEM (continued)

Options/Accessories

Field Installed

Condensate Drain Trap
- Available in copper or PVC

Drain Pan Overflow Switch
- Monitors condensate level in drain pan
- Shuts down unit if drain becomes clogged

Low Ambient Kit (0°F)
- Cycles the outdoor fan while allowing compressor operation in the cooling cycle
- Includes field installed pressure switch on the liquid line to determine when to operate the outdoor fan
- This intermittent fan operation allows the system to operate without icing the indoor coil and losing capacity
- Designed for use in ambient temperatures no lower than 0°F
- If liquid line pressure drops below 240 psig outdoor fan stops until main pressure switch has reset to 450 psig to resume normal cooling operation
- If pressure drops below 180 psig outdoor fan stops until pressure rises to 300 psig, then fan operates at 25% normal fan speed unless main pressure switch has reset to 450 psig to resume normal cooling operation and full fan speed operation

CABINET

7 Construction
- Heavy-gauge steel panels
- Full perimeter heavy-gauge galvanized steel base rail
- 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 for water protection

Airflow Choice
- Units are shipped in downflow (vertical) configuration
- Can be field converted to horizontal airflow with optional Horizontal Discharge Kit

Duct Flanges
- Provided for horizontal duct attachment

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

Exterior Panels
- Constructed of heavy-gauge, galvanized steel
- Textured pre-paint with polyurethane finish
- Cyclic salt fog and UV exposure up to 1,680 hours per ASTM D5894

8 Insulation
- Fully insulated with non-hygroscopic fiberglass insulation (conditioned areas)
- Unit base is fully insulated
- Base insulation serves as an air seal to the roof curb, eliminating the need to add a seal during installation

Access Panels
- Filter section
- Heating/blower section
- Compressor/controls section

Options/Accessories

Factory Installed

9 Hinged Access Panels
- Tool-less access
- Filter/Compressor section
- Controls section
- Heating/Blower section
- Panel seals and quarter-turn latching handles provide a tight air and water seal

Factory or Field Installed

Combination Coil/Hail Guards
- Heavy gauge steel frame
- Painted to match cabinet
- Expanded metal mesh protects outdoor coil

Field Installed

Horizontal Discharge Kit
- Consists of duct covers to block off downflow supply and return air openings for horizontal applications
- Also includes return air duct flanges for end return air when economizer is used in horizontal applications

NOTE - When configuring unit for horizontal application with economizer, a separate Horizontal Barometric Relief Damper with Hood must be ordered separately for installation in the return air duct.

Return Air Adaptor Plate
- For same size LC/LG/LH and TC/TG/TH unit replacement
- Installs on return air opening in unit to match return air opening on existing roof curbs

FEATURES AND BENEFITS

BLOWER

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

10 Blower Motor
- Overload protected
- Ball bearings
- Available in several different sizes to maximize air performance

Supply Air Blower
- Forward curved blades
- Double inlet
- Blower wheel statically and dynamically balanced
- Ball bearings
- Adjustable pulley (allows speed change).
- Blower assembly slides out of unit for servicing

MSAV Multi-Stage Air Volume Operation
- MSAV Multi-Stage Air Volume stages the amount of airflow according to compressor stages, heating demand, and ventilation demand
- Units utilize a Variable Frequency Drive (VFD) to stage the supply air blower airflow
- VFD alters the frequency and voltage of the power supply to the blower to control blower speed
- The supply air blower has three speeds:
  1. Low Speed - 1st Stage Cooling
  2. Medium Speed - 2nd Stage Cooling
  3. High Speed - Full load cooling and all heat modes
- Full speed blower operation is set by adjusting the motor pulley to deliver the desired air volume
- Ventilation speed is selectable between high and low speed

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

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

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

NOTE - Variable Frequency Drive (VFD) is designed to operate on balanced, three-phase power. Operating units on unbalanced three-phase power will reduce the reliability of all electrical components in the unit. Unbalanced power is a result of the power delivery system supplied by the local utility company. Factory-installed inverters are sized to drive blower motors with an equivalent current rating using balanced three-phase power. If unbalanced three-phase power is supplied the installer must replace the existing factory-installed inverter with an inverter that has a higher current rating to allow for the imbalance. Refer to the installation instructions for additional information and replacement information.
Required Selections

Required Selections

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

Options/Accessories

Field Installed

VFD Manual Bypass Kit
- Bypass Kit can be used to operate the unit in single speed (CAV) blower mode if the inverter needs to be serviced or replaced
- VFD Manual Bypass Control is a manual bypass and is set by re-configuring the wiring on the unit

FEATURES AND BENEFITS

CONTROLS

11 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 / 3 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

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

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)

Thermostats
- Control system and thermostat options, see page 11

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

Phase Monitor
- Phase monitor located in the control compartment detects the phasing of incoming power
- If incoming power is out of phase or if any of the three phases are lost, an indicator LED on the phase monitor will turn red and the unit will not start
- In normal operation with correct incoming power phasing, the LED will be green

Required Selections

Voltage Choice
- Specify when ordering base unit

Options/Accessories

Factory or Field Installed

12 Disconnect Switch
- Accessible from outside of unit
- Spring loaded weatherproof cover furnished

GFI Service Outlets (2)
- 115V ground fault circuit interrupter (GFCI) type options:
  - Factory installed, non-powered, field wired
  - Field installed, non-powered, field wired

Field Installed

13 Electric Heat
- Helix wound nichrome elements
- Individual element limit controls
- Wiring harness
- Unit fuse block
- See Options / Accessories tables for ordering information

GFI Weatherproof Cover
- Single-gang cover
- Heavy-duty UV-resistant polycarbonate case construction
- Hinged base cover with gasket

FEATURES AND BENEFITS

INDOOR AIR QUALITY

14 Air Filters
- Disposable 2-inch MERV 4 filters furnished as standard

Options/Accessories

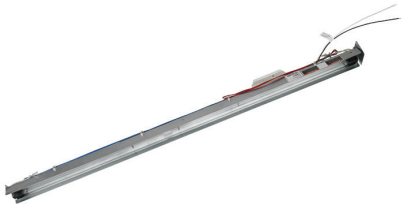
Field Installed

Healthy Climate® High Efficiency Air Filter
- Disposable MERV 8, MERV 13, or MERV 16 (Minimum Efficiency Reporting Value based on ASHRAE 52.2) efficiency 2-inch pleated filters

Replacement Filter Media Kit With Frame
- Replaces existing pleated filter media
- Washable metal mesh screen and metal frame with clip for holding replaceable non-pleated filter

Indoor Air Quality (CO_2) Sensors
- Monitors CO_2 levels
- Reports to the Unit Controller which adjusts economizer dampers as needed

Healthy Climate® UVC Germicidal Lamps



- Germicidal lamps emit ultra-violet (UV-C) energy, which has been proven to be effective in reducing microbes such as viruses, bacteria, yeasts, and molds
- This process either destroys the organism or controls its ability to reproduce
- UV-C energy greatly reduces the growth and proliferation of mold and other bioaerosols (bacteria and viruses) on illuminated surfaces (particularly coil and drain pan)
- Field installed in the blower/evaporator coil section
- Magnetic safety interlock terminates power when access panels are removed
- All necessary hardware for installation is included
- Lamps operate on 110/230V-1ph power supply

NOTE - Step-down transformer may be ordered separately for 460V and 575V units.
- Approved by ETL

Needlepoint Bipolar Ionization (NPBI) Kit
- NPBI technology has been shown to effectively reduce harmful pathogens, pollutants and odors

NOTE - Please visit www.sciencedirect.com for additional information.
- Brush-type ionizer introduces a high concentration of both positive and negative ions into the air stream
- These bipolar ions are then dispersed into the occupied space through the duct system proactively reducing the airborne contaminants
- Ions travel within the building air stream and attach to particles, pathogens, and gas molecules, making them larger and easier to capture in the filtration system
- UL 2998 certified for zero ozone emission

OPTIONS / ACCESSORIES

ECONOMIZER

Economizer Features
(Standard and High Performance Common Features)

- Downflow or Horizontal with Outdoor Air Hood and 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

NOTE - Optional Horizontal Low Profile Barometric Relief Dampers with Exhaust Hood are available for field installation in a reduced space.

- 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
- Mixed Air Sensor is factory installed when High Performance 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

Field Installed

Standard Economizer Features
(Not for Title 24)

- Gear-driven action
- Return air and outdoor air dampers
- Plug-in connections to unit
- Neoprene seals
- 24-volt, fully-modulating spring return motor

Standard Economizer Control Module

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

Economizer Controls:

- Damper Minimum Position - Can be set lower than traditional minimum air requirements resulting in cost savings
- IAQ Sensor - Signals dampers to modulate and maintain 55°F when CO_2 is higher than the CO_2 setpoint
- Demand Control Ventilation (DCV) LED - A steady green Demand Control Ventilation LED indicates the IAQ reading is higher than setpoint and requires more fresh air
- Free Cool LED - A steady green LED indicates outdoor air is suitable for free cooling
  - Free Cooling runs when outdoor air temperature is lower than the set temperature on the economizer control

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

Factory or Field Installed

High Performance Economizer Features

- Approved for California Title 24 building standards
- Low leakage dampers are Air Movement and Control Association International (AMCA) Class 1A Certified - Maximum 3 cfm per sq. ft. leakage at 1 in. w.g.
- ASHRAE 90.1 compliant
- Linked damper action
- High torque 24-volt fully-modulating spring return damper motor
- Return air and outdoor air dampers
- Plug-in connections to unit
- Single sensible sensor is furnished with Field installed Economizer and enables economizer operation if the outdoor temperature is less than the setpoint of the control

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

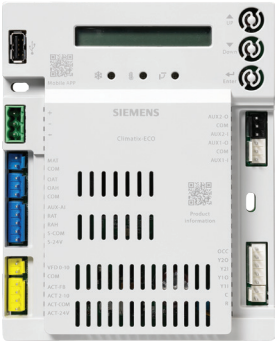
NOTE - The Free Cooling setpoint for Title 24 applications must be set based on the Climate Zone where the system is installed. See Section 140.4 "Prescriptive Requirements for Space Conditioning Systems" of the California Energy Commission's 2013 Building Energy Efficiency Standards. Refer to Installation Instructions for complete setup information and menu parameters available.

ECONOMIZER (continued)

Factory or Field Installed

High Performance Economizer Control Module

- Provides inputs and outputs to control economizer based on parameter settings
- Free cooling based on single dry bulb temperature, or combination temperature + humidity sensors
- Automatic switchover for different control modes
- Parameter settings based on climate zone, using GPS functionality in the Climatix Mobile application
- LED indication for free cooling operation, sensor operation and damper operation
- Quick installation and easy commissioning with the Climatix Mobile App on a mobile device



Download on the App Store

ANDROID APP ON Google play

NOTE - WLAN Stick is required for App connection to module(s).

- Module displays any alarm messages (fault detection and diagnostics) as an aid in troubleshooting
- RS485 port for BACnet MSTP or Modbus RTU communication
- USB port for firmware updates and WLAN connection for setup and commissioning
- QR codes on module for quick access to download Climatix Mobile App and user documentation
- User Interface for normal operation, parameter setup and alarm notifications with an LCD display and three operation buttons:
  1. Up Button - Move to the previous value, step or category
  2. Down Button - Move to the next value, step or category
  3. Enter Button -
     - Press to edit the current value or option
     - Press to confirm a newly selected value or option
     - Press Enter + Up to jump up one category
     - Press Enter + Down to jump down one category

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

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

Field Installed

Single Enthalpy Control

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

NOTE - The factory installed economizer option comes preset for Single Enthalpy control but can be easily field converted to Single Sensible Temperature control by changing a parameter on the economizer control module.

Differential Enthalpy Control (Not for Title 24)

- Order one for factory installed economizer
- Order two for field installed economizer
  - One is field installed in the return air section
  - One in the outdoor air section
- Allows the economizer control board to select between outdoor air or return air, whichever has lower enthalpy

WLAN Stick

- Required for Climatix Mobile App usage
- Plugs into USB port on Module to provide a temporary WLAN connection for setup, commissioning and servicing

NOTE - Only one WLAN Stick is required and can be used on multiple modules.

EXHAUST

Field Installed

Horizontal Low Profile Barometric Relief Dampers

- Replaces barometric relief dampers furnished with Economizer
- For use when unit is configured for horizontal applications in a reduced space requiring an economizer
- Allows relief of excess air
- Aluminum blade dampers prevent blow back and outdoor air infiltration during off cycle
- Field installed in return air duct
- Exhaust hood with bird screen furnished

NOTE - Requires Horizontal Discharge Kit.

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
- 20 in. diameter fan
- 5 blades
- 1/3 hp motor

NOTE - Requires Economizer with Outdoor Air Hood and Barometric Relief Dampers.

OPTIONS / ACCESSORIES

OUTDOOR AIR

Field Installed

Outdoor Air Damper
- Downflow or Horizontal
- 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 is 100°F

ROOF CURBS

Field Installed
- Nailer strip furnished (downflow only)
- Mates to unit
- US National Roofing Contractors Approved
- Shipped knocked down

Hybrid Roof Curbs, Downflow
- Interlocking tabs fasten corners together
- No tools required for assembly
- Can also be fastened together with furnished hardware
- Available in 8, 14, 18, and 24 inch heights

Adjustable Pitch Curb
- Fully adjustable pitch curbs (3/4 in. per foot in any direction) provide a level platform for rooftop units allowing flexible installations on roofs with uneven or sloped angles
- Interlocking tabs fasten corners together
- No tools required for assembly
- Hardware is furnished to connect upper curb with lower curb
- Available in 14 inch height

Adaptor Curbs (not shown)
- Curbs are regionally sourced
- Dimensions vary based upon the source

NOTE - Contact your local sales representative for a detailed cut sheet with applicable dimensions.

CEILING DIFFUSERS

Field Installed

Ceiling Diffusers
(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

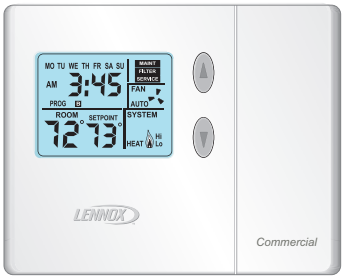
Transitions (Supply and Return)
- Used with diffusers
- Installs in roof curb
- Galvanized steel construction
- Flanges furnished for duct connection to diffusers
- Fully insulated

OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS

CS7500 Commercial 7-Day Programmable Thermostat

- Premium Universal Thermostat
- Full Color Touchscreen Interface
- Up To 4 Heat / 3 Cool
- Built-In Sensors For Temperature and Humidity
- Remote Sensors Options For Temperature, Discharge Air, Outdoor Air
- 5-2 or 7-Day Scheduling
- Smooth Setback Recovery
- Heat/Cool Auto-Changeover
- FDD, ASHRAE, IECC Compliant

CS3000 Commercial 5-2 Day Programmable Thermostat



- Conventional Multi-Stage Thermostat
- Intuitive Display
- Push-Button Operation
- Up To 2 Heat / 2 Cool
- Built-In Temperature Sensor
- Remote Temperature Sensing
- Up to 5-2 Day Scheduling
- Smooth Setback Recovery
- Heat/Cool Auto-changeover

Optional Accessories

Cooling Stage-Up Timer Relay

- Allows the unit to attain an additional stage of cooling without the need for extra thermostat connections
- Adjustable - 1 to 1023 seconds
- Mounts internal to unit

OPTIONAL CONVENTIONAL TEMPERATURE CONTROL SYSTEMS

BACnet Compatible Thermostat With Reheat

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

Description		Catalog No.
CS7500 Commercial 7-Day Programmable Thermostat		
CS7500 7-Day Thermostat		**24K41**
Sensors/Accessories	[1] Remote non-adjustable wall-mount 20k	**47W36**
	[1] Remote non-adjustable wall-mount 10k	**47W37**
	Remote non-adjustable discharge air (duct mount)	**19L22**
	Outdoor temperature sensor	**X2658**
CS3000 5-2 Day Programmable Thermostat		
CS3000 5-2 Day Thermostat		**11Y05**
Sensor/Accessories	Remote non-adjustable wall mount 10k averaging	**47W37**
	Thermostat wall mounting plate	**X2659**
Optional Accessory		
	Cooling Stage-Up Timer Relay	**24G40**
BACnet 7-Day Programmable Thermostat		
BACnet Controls	[2] 7-Day BACnet Thermostat	**24C57**
	[3] BACnet Module (factory or field)	**16X71**
[4] BACnet Room Sensors	With Display	**97W23**
	Without Display	**97W24**
Universal Thermostat Guard with Lock (clear)		
	Inside Dimensions (H x W x D) 5-7/8 x 8-3/8 x 3 in.	**39P21**

[1] 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

[2] BACnet Thermostat (24C57) will control units with and without the Humiditrol® option. If there is a mix of units equipped with and without Humiditrol on the same site, this thermostat can be used for all units if suitable.

[3] Not compatible with units equipped with Humiditrol® option.

[4] Only compatible with BACnet Module (16X71).

OPTIONS / ACCESSORIES

Item Description		Catalog Number	Unit Model No 092	102	120
COOLING SYSTEM					
Condensate Drain Trap	PVC	**22H54**	X	X	X
	Copper	**76W27**	X	X	X
Drain Pan Overflow Switch		**74W42**	X	X	X
Low Ambient Kit		**54W16**	X	X	X
Refrigerant Type		R-410A	O	O	O
BLOWER - SUPPLY AIR					
Blower Motors	Belt Drive - 2 hp	Factory	O	O	O
	Belt Drive - 3 hp	Factory	O	O	O
	Belt Drive - 5 hp	Factory	O	O	O
VFD Manual Bypass Kit		**90W53**	X	X	X
Drive Kits	Kit #1 590-890 rpm	Factory	O	O	O
See Blower Data Tables for selection	Kit #2 800-1105 rpm	Factory	O	O	O
	Kit #3 795-1195 rpm	Factory	O	O	O
	Kit #4 730-970 rpm	Factory	O	O	O
	Kit #5 940-1200 rpm	Factory	O	O	O
	Kit #6 1015-1300 rpm	Factory	O	O	O
	Kit #10 900-1135 rpm	Factory	O	O	O
	Kit #11 1040-1315 rpm	Factory	O	O	O
	Kit #12 1125-1425 rpm	Factory	O	O	O
CABINET					
Combination Coil/Hail Guards		**13T24**	X	X	X
Hinged Access Panels		Factory	O	O	O
Horizontal Discharge Kit		**51W25**	X	X	X
Return Air Adaptor Plate (for LC/LG/LH and TC/TG/TH unit replacement)		**54W96**	OX	OX	OX
CONTROLS					
NOTE - Also see Conventional Thermostat Control Systems on page 11 for Additional Options.					
Smoke Detector - Supply or Return (Power board and one sensor)		**11K76**	X	X	X
Smoke Detector - Supply and Return (Power board and two sensors)		**11K80**	X	X	X

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

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

O = Configure To Order (Factory Installed)

X = Field Installed

OPTIONS / ACCESSORIES

Item Description		Catalog Number	Unit Model No 092	102	120
INDOOR AIR QUALITY					
Healthy Climate® High Efficiency Air Filters 20 x 25 x 2 (Order 4 per unit)	MERV 8	**50W61**	X	X	X
	MERV 13	**52W41**	X	X	X
	MERV 16	**21U41**	X	X	X
Replacement Media Filter With Metal Mesh Frame (includes non-pleated filter media)		**Y3063**	X	X	X
Indoor Air Quality (CO_2) Sensors					
Sensor - Wall-mount, off-white plastic cover with LCD display		**77N39**	X	X	X
Sensor - Wall-mount, off-white plastic cover, no display		**23V86**	X	X	X
Sensor - Black plastic case with LCD display, rated for plenum mounting		**87N52**	X	X	X
Sensor - Wall-mount, black plastic case, no display, rated for plenum mounting		**87N54**	X	X	X
CO_2 Sensor Duct Mounting Kit - for downflow applications		**85L43**	X	X	X
Aspiration Box - for duct mounting non-plenum rated CO_2 sensors (**77N39**)		**90N43**	X	X	X
Needlepoint Bipolar Ionization (NPBI)					
Needlepoint Bipolar Ionization Kit		**22U15**	X	X	X
UVC Germicidal Lamps					
[1] Healthy Climate® UVC Light Kit (110/230V-1ph)		**21A93**	X	X	X
Step-Down Transformers	460V primary, 230V secondary	**10H20**	X	X	X
	575V primary, 230V secondary	**10H21**	X	X	X
ELECTRICAL					
Voltage 60 Hz	208/230V - 3 phase	Factory	O	O	O
	460V - 3 phase	Factory	O	O	O
	575V - 3 phase	Factory	O	O	O
Disconnect Switch - See Electrical/Electric Heat tables for selection	80 amp	**54W56**	OX	OX	OX
	150 amp	**54W57**	OX	OX	OX
GFI Service Outlets	15 amp non-powered, field-wired (208/230V, 460V only)	**74M70**	OX	OX	OX
	[2] 20 amp non-powered, field-wired (208/230V, 460V, 575V)	**67E01**	X	X	X
	[2] 20 amp non-powered, field-wired (575V)	Factory	O	O	O
Weatherproof Cover for GFI		**10C89**	X	X	X
ELECTRIC HEAT					
7.5 kW	208/240V-3ph	**56W38**	X	X	
	460V-3ph	**56W39**	X	X	
	575V-3ph	**56W40**	X	X	
15 kW	208/240V-3ph	**56W41**	X	X	X
	460V-3ph	**56W42**	X	X	X
	575V-3ph	**56W43**	X	X	X
22.5 kW	208/240V-3ph	**56W44**	X	X	X
	460V-3ph	**56W45**	X	X	X
	575V-3ph	**56W46**	X	X	X
30 kW	208/240V-3ph	**56W47**	X	X	X
	460V-3ph	**56W48**	X	X	X
	575V-3ph	**56W49**	X	X	X
45 kW	208/240V-3ph	**56W50**	X	X	X
	460V-3ph	**56W51**	X	X	X
	575V-3ph	**56W52**	X	X	X
60 kW	208/240V-3ph	**55W02**			X
	460V-3ph	**55W03**			X
	575V-3ph	**55W04**			X

[1] 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).

[2] Canada requires a minimum 20 amp circuit. Select 20 amp, non-powered, field wired GFI.

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

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

O = Configure To Order (Factory Installed)

X = Field Installed

OPTIONS / ACCESSORIES

Item Description		Catalog Number	Unit Model No 092	102	120
ECONOMIZER					
Standard Economizer (Not for Title 24)					
Standard Downflow Economizer with Single Temperature Control - With Integral Downflow Barometric Relief Dampers and Combination Air Hood		**13U45**	X	X	X
NOTE: Horizontal Applications in Reduced Spaces - Order Horizontal Low Profile Barometric Relief Dampers with Exhaust Hood					
Standard Economizer Controls (Not for Title 24)					
Single Enthalpy Control		**21Z09**	X	X	X
Differential Enthalpy Control (order 2)		**21Z09**	X	X	X
High Performance Economizer (Approved for California Title 24 Building Standards / AMCA Class 1A Certified)					
High Performance Economizer (Downflow or Horizontal) - With Outdoor Air Hood and Barometric Relief Dampers with Exhaust Hood		**23G23**	OX	OX	OX
NOTES:					
Horizontal Applications in Reduced Spaces - Order Horizontal Low Prpfile Barometric Relief Dampers with Exhaust Hood					
Factory Installed - Enthalpy control furnished as standard. Field programmable for Sensible Control without additional hardware					
Field Installed - Single Sensible Sensor furnished as standard					
High Performance Economizer Controls					
Single Enthalpy Control		**23G26**	X	X	X
Differential Enthalpy Control (order 1 for factory; order 2 for field) (Not for Title 24)		**23G26**	X	X	X
Economizer Accessories					
WLAN Stick (For High Performance Economizer only)		**23K58**	X	X	X
Horizontal Low Profile Barometric Relief Dampers With Exhaust Hood					
Horizontal Low Profile Barometric Relief Dampers With Exhaust Hood		**53K04**	X	X	X
OUTDOOR AIR					
Outdoor Air Dampers with Outdoor Air Hood					
Motorized		**14G28**	X	X	X
Manual		**14G29**	X	X	X
POWER EXHAUST					
Standard Static	208/230V-3ph	**53W44**	X	X	X
	460V-3ph	**53W45**	X	X	X
	575V-3ph	**53W46**	X	X	X
ROOF CURBS					
Hybrid Roof Curbs, Downflow					
8 in. height	C1CURB70B-1	**11F54**	X	X	X
14 in. height	C1CURB71B-1	**11F55**	X	X	X
18 in. height	C1CURB72B-1	**11F56**	X	X	X
24 in. height	C1CURB73B-1	**11F57**	X	X	X
Adjustable Pitch Curb, Downflow					
14 in. height	C1CURB55B-1	**54W50**	X	X	X
CEILING DIFFUSERS					
Step-Down - Order one	RTD11-95S	**13K61**	X		
	RTD11-135S	**13K62**		X	X
Flush - Order one	FD11-95S	**13K56**	X		
	FD11-135S	**13K57**		X	X
Transitions (Supply and Return) - Order one	C1DIFF30B-1	**12X65**	X		
	C1DIFF31B-1	**12X66**		X	X

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

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

O = Configure To Order (Factory Installed)

X = Field Installed

SPECIFICATIONS

General Data	Nominal Tonnage	7.5 Ton	8.5 Ton	10 Ton
	Model Number	**KHC092S4M**	**KHC102S4M**	**KHC120S4M**
	Efficiency Type	**Standard**	**Standard**	**Standard**
	Blower Type	MSAV® (Multi-Stage Air Volume)	MSAV® (Multi-Stage Air Volume)	MSAV® (Multi-Stage Air Volume)
Cooling Performance	Gross Cooling Capacity - Btuh	91,600	103,400	119,500
	[1] Net Cooling Capacity - Btuh	89,000	100,000	116,000
	[1] AHRI Rated Air Flow - cfm	2800	3200	3400
	Total Unit Power - kW	8.1	9.1	10.7
	[1] EER (Btuh/Watt)	11.0	11.0	11.0
	[1] IEER (Btuh/Watt)	14.1	14.1	14.1
	Refrigerant Type	R-410A	R-410A	R-410A
	Refrigerant Charge Furnished Circuit 1	12 lbs. 8 oz.	14 lbs. 8 oz.	15 lbs. 0 oz.
	Refrigerant Charge Furnished Circuit 2	13 lbs. 8 oz.	15 lbs. 0 oz.	15 lbs. 0 oz.
Heating Performance	[1] Total High Heat Capacity - Btuh	88,000	99,000	115,000
	Total Unit Power - kW	7.6	8.5	9.9
	[1] C.O.P.	3.4	3.4	3.4
	[1] Total Low Heat Capacity - Btuh	53,000	59,000	70,000
	Total Unit Power (kW)	6.9	7.8	9.1
	[1] C.O.P.	2.25	2.2	2.25
Electric Heat Available - See page 14		7.5, 15, 22.5, 30 & 45 kW		15, 22.5, 30, 45 & 60 kW
Compressor Type (number)		(1) Two-Stage Scroll (1) Single-Stage Scroll		
Outdoor Coils	Net face area (total) - sq. ft.	28.8	28.8	28.8
	Tube diameter - in.	3/8	3/8	3/8
	Number of rows	2	3	3
	Fins per inch	20	20	20
Outdoor Coil Fans	Motor - (No.) horsepower	(2) 1/3 PSC	(2) 1/2 PSC	(2) 1/2 PSC
	Motor rpm	1075	1075	1075
	Total Motor watts	665	806	806
	Diameter - (No.) in.	(2) 24	(2) 24	(2) 24
	Number of blades	3	3	3
	Total Air volume - cfm	8200	8800	8800
Indoor Coils	Net face area (total) - sq. ft.	12.8	12.8	12.8
	Tube diameter - in.	3/8	3/8	3/8
	Number of rows	3	4	4
	Fins per inch	14	14	14
	Drain connection - Number and size	(1) 1 in. NPT coupling		
	Expansion device type	Balance port TXV, removable head		
[2] Indoor Blower and Drive Selection	Nominal motor output	2 hp, 3 hp, 5 hp		
	Maximum usable motor output (US Only)	2.3 hp, 3.45 hp, 5.75 hp		
	Motor - Drive kit number	2 hp [3] **Kit 1** 590-890 rpm **Kit 2** 800-1105 rpm **Kit 3** 795-1195 rpm 3 hp **Kit 4** 730-970 rpm **Kit 5** 940-1200 rpm **Kit 6** 1015-1300 rpm 5 hp **Kit 10** 900-1135 rpm **Kit 11** 1040-1315 rpm **Kit 12** 1125-1425 rpm		
	Blower wheel nominal diameter x width - in.	(1) 15 X 15		
Filters	Type of filter	MERV 4, Disposable		
	Number and size - in.	(4) 20 x 25 x 2		
Electrical characteristics		208/230V, 460V or 575V - 60 hertz - 3 phase		

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

[1] AHRI Certified to AHRI Standard 340/360:
Cooling Ratings - 95°F outdoor air temperature and 80°F db/67°F wb entering indoor coil air.
High Temperature Heating Ratings - 47°F db/43°F wb outdoor air temperature and 70°F entering indoor coil air.
Low Temperature Heating Ratings - 17°F db/15°F wb outdoor air temperature and 70°F entering indoor coil air.

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

[3] Standard motor and drive kit furnished with unit.

NOTE – Motor service factor limit - 1.0

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.

7.5 TON COOLING - KHC092S4M (1 COMPRESSOR - PART LOAD)

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		65°F					75°F					85°F					95°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb		
	cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F
63°F	1600	37.4	1280	0.8	1	1	43.9	1260	0.59	0.59	0.59	43.9	1260	0.59	0.59	0.59	43.9	1260	0.59	0.59	0.59
	1980	39.8	1270	0.88	1	1	43.9	1260	0.59	0.59	0.59	43.9	1260	0.59	0.59	0.59	43.9	1260	0.59	0.59	0.59
	2360	42.7	1260	1	1	1	43.9	1260	0.59	0.59	0.59	43.9	1260	0.59	0.59	0.59	43.9	1260	0.59	0.59	0.59
67°F	1600	39.8	1270	0.56	0.77	0.97	43.9	1260	0.59	0.59	0.59	43.9	1260	0.59	0.59	0.59	43.9	1260	0.59	0.59	0.59
	1980	41.2	1270	0.6	0.85	1	43.9	1260	0.59	0.59	0.59	43.9	1260	0.59	0.59	0.59	43.9	1260	0.59	0.59	0.59
	2360	42.8	1260	1	1	1	43.9	1260	0.59	0.59	0.59	43.9	1260	0.59	0.59	0.59	43.9	1260	0.59	0.59	0.59
71°F	1600	42.5	1270	0.36	0.55	0.74	43.9	1260	0.59	0.59	0.59	43.9	1260	0.59	0.59	0.59	43.9	1260	0.59	0.59	0.59
	1980	43.9	1260	0.37	0.59	0.59	43.9	1260	0.59	0.59	0.59	43.9	1260	0.59	0.59	0.59	43.9	1260	0.59	0.59	0.59
	2360	43.9	1260	0.59	0.59	0.59	43.9	1260	0.59	0.59	0.59	43.9	1260	0.59	0.59	0.59	43.9	1260	0.59	0.59	0.59

7.5 TON COOLING - KHC092S4M (2 COMPRESSORS - PART LOAD / FULL LOAD)

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb		
	cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F
63°F	1800	70	4860	0.66	0.8	0.92	64	5600	0.67	0.82	0.93	57.5	6440	0.68	0.84	0.95	51.1	7400	0.69	0.86	0.97
	2250	75.2	4860	0.72	0.87	0.97	69	5600	0.73	0.89	0.99	62.7	6430	0.75	0.9	1	55.8	7390	0.77	0.93	1
	2700	79.6	4860	0.77	0.92	1	73.3	5590	0.79	0.94	1	66.6	6430	0.81	0.96	1	59.4	7370	0.84	0.99	1
67°F	1800	76	4860	0.51	0.64	0.77	69.7	5600	0.51	0.64	0.78	63.1	6440	0.5	0.65	0.8	56	7380	0.5	0.67	0.83
	2250	81.3	4870	0.55	0.69	0.84	74.6	5600	0.54	0.7	0.86	67.5	6440	0.54	0.72	0.88	59.9	7380	0.55	0.74	0.9
	2700	85	4870	0.58	0.75	0.9	78.1	5600	0.58	0.76	0.91	70.7	6440	0.59	0.79	0.93	62.8	7380	0.6	0.82	0.96
71°F	1800	82.1	4860	0.38	0.5	0.62	75.7	5600	0.37	0.5	0.62	68.9	6430	0.35	0.49	0.63	61.5	7370	0.33	0.49	0.64
	2250	87.5	4860	0.4	0.54	0.67	80.7	5610	0.39	0.54	0.68	73.3	6440	0.38	0.54	0.7	65.5	7370	0.36	0.54	0.72
	2700	91.5	4880	0.41	0.57	0.72	84.3	5610	0.41	0.57	0.74	76.7	6440	0.4	0.58	0.76	68.4	7380	0.38	0.59	0.79

7.5 TON COOLING - KHC092S4M (2 COMPRESSOR - FULL LOAD)

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb		
	cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F
63°F	2400	88.8	5760	0.69	0.84	0.97	82.1	6520	0.7	0.85	0.99	75.2	7380	0.71	0.88	1	67.6	8390	0.73	0.92	1
	3000	94.2	5790	0.75	0.92	1	87.2	6540	0.76	0.94	1	79.9	7410	0.78	0.97	1	72.4	8410	0.81	1	1
	3600	98.5	5820	0.81	0.98	1	91.7	6580	0.83	1	1	84.7	7440	0.85	1	1	77.4	8440	0.89	1	1
67°F	2400	95.7	5810	0.53	0.67	0.8	88.8	6550	0.53	0.68	0.82	81.5	7420	0.53	0.69	0.84	73.6	8410	0.53	0.7	0.88
	3000	101.1	5850	0.57	0.73	0.88	93.8	6590	0.57	0.74	0.91	86	7450	0.58	0.76	0.94	77.6	8440	0.58	0.79	0.98
	3600	104.9	5880	0.61	0.79	0.96	97.3	6620	0.61	0.81	0.98	89.2	7460	0.62	0.83	1	80.5	8470	0.63	0.87	1
71°F	2400	102.6	5850	0.4	0.52	0.65	95.4	6600	0.39	0.52	0.65	87.9	7450	0.38	0.52	0.67	79.7	8450	0.36	0.52	0.68
	3000	108.1	5900	0.41	0.56	0.71	100.6	6650	0.41	0.56	0.72	92.6	7500	0.4	0.57	0.74	83.9	8490	0.39	0.58	0.76
	3600	112.3	5940	0.43	0.6	0.76	104.3	6670	0.42	0.61	0.78	95.9	7510	0.42	0.61	0.81	86.8	8520	0.41	0.63	0.84

7.5 TON HEATING - KHC092S4M

Indoor Coil Air Volume 70°F Dry Bulb cfm	Air Temperature Entering Outdoor Coil									
	65°F		45°F		25°F		5°F		-15°F	
	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input
	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW
2400	113.4	7.04	83.1	6.30	59.4	5.74	40.3	5.26	26.7	4.91
3000	116.0	6.42	84.3	5.86	59.9	5.45	40.5	5.07	26.8	4.83
2600	117.8	6.05	85.1	5.58	60.3	5.28	40.7	4.97	26.8	4.78

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.

8.5 TON COOLING - KHC102S4M (1 COMPRESSOR - PART LOAD)

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		65°F					75°F					85°F					95°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb		
	cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F
63°F	1920	47.7	1640	0.77	0.97	1	45.1	1980	0.79	0.99	1	42.3	2320	0.81	1	1	39.2	2680	0.84	1	1
	2400	50.6	1620	0.84	1	1	48.1	1960	0.86	1	1	45.1	2300	0.89	1	1	41.8	2660	0.94	1	1
	2880	53	1600	0.9	1	1	50.3	1940	0.94	1	1	47.1	2270	0.97	1	1	43.7	2640	1	1	1
67°F	1920	50.7	1620	0.55	0.74	0.93	47.8	1960	0.56	0.76	0.96	44.5	2300	0.56	0.78	0.99	40.8	2660	0.57	0.81	1
	2400	52.7	1600	0.59	0.82	1	49.6	1950	0.6	0.84	1	46.2	2280	0.62	0.87	1	42.5	2650	0.63	0.9	1
	2880	54.2	1600	0.63	0.88	1	51.1	1930	0.65	0.91	1	47.6	2270	0.66	0.95	1	43.9	2640	0.69	0.98	1
71°F	1920	54.1	1590	0.35	0.53	0.71	51.2	1930	0.34	0.54	0.73	47.8	2270	0.34	0.55	0.75	44	2640	0.33	0.56	0.78
	2400	56.1	1580	0.36	0.58	0.79	52.9	1920	0.35	0.59	0.81	49.3	2260	0.35	0.6	0.84	45.5	2630	0.35	0.62	0.87
	2880	57.5	1570	0.37	0.62	0.85	54.1	1900	0.37	0.64	0.88	50.5	2240	0.37	0.66	0.91	46.5	2610	0.38	0.68	0.96

8.5 TON COOLING - KHC102S4M (2 COMPRESSORS - PART LOAD / FULL LOAD)

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb		
	cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F
63°F	2040	79.6	5020	0.67	0.81	0.94	73.3	5760	0.68	0.82	0.95	66.5	6590	0.69	0.85	0.97	59.2	7540	0.7	0.88	0.99
	2550	85.1	5010	0.72	0.88	0.99	78.4	5740	0.74	0.9	1	71.3	6570	0.75	0.93	1	64.1	7510	0.78	0.96	1
	3060	89.5	5010	0.77	0.94	1	82.8	5730	0.79	0.96	1	75.8	6550	0.82	0.98	1	68.2	7480	0.85	1	1
67°F	2040	86.2	5010	0.52	0.65	0.77	79.7	5740	0.52	0.65	0.79	72.6	6560	0.51	0.66	0.81	65	7510	0.51	0.67	0.84
	2550	91.9	5000	0.55	0.7	0.84	84.9	5730	0.55	0.71	0.87	77.3	6550	0.55	0.73	0.9	69.3	7490	0.56	0.75	0.93
	3060	96	4990	0.58	0.75	0.91	88.7	5720	0.59	0.77	0.94	80.9	6540	0.6	0.79	0.96	72.3	7480	0.61	0.83	0.98
71°F	2040	93	5000	0.39	0.51	0.62	86.1	5720	0.38	0.51	0.63	78.8	6550	0.37	0.5	0.64	71	7480	0.35	0.5	0.65
	2550	98.8	4980	0.41	0.54	0.68	91.6	5710	0.4	0.54	0.69	83.8	6530	0.39	0.55	0.7	75.4	7460	0.37	0.55	0.73
	3060	103.1	4970	0.42	0.58	0.73	95.6	5700	0.41	0.58	0.74	87.4	6520	0.41	0.59	0.77	78.6	7440	0.4	0.6	0.8

8.5 TON COOLING - KHC102S4M (2 COMPRESSORS - FULL LOAD)

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb		
	cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F
63°F	2720	100.2	6070	0.7	0.84	0.98	93.1	6870	0.71	0.86	1	85.5	7760	0.72	0.89	1	77.5	8800	0.74	0.92	1
	3400	106.1	6100	0.76	0.92	1	98.5	6900	0.77	0.95	1	90.7	7800	0.79	0.98	1	82.6	8840	0.82	1	1
	4080	110.8	6130	0.81	0.99	1	103.3	6920	0.83	1	1	96.1	7820	0.86	1	1	88.2	8860	0.9	1	1
67°F	2720	107.7	6110	0.54	0.67	0.81	100.3	6910	0.54	0.69	0.83	92.6	7800	0.54	0.7	0.85	84.1	8840	0.54	0.71	0.88
	3400	113.6	6130	0.58	0.73	0.89	105.8	6940	0.58	0.75	0.91	97.4	7830	0.59	0.77	0.94	88.5	8860	0.59	0.79	0.98
	4080	117.9	6160	0.61	0.79	0.96	109.6	6950	0.62	0.81	0.99	100.9	7850	0.63	0.84	1	91.6	8880	0.64	0.87	1
71°F	2720	115.2	6150	0.41	0.53	0.65	107.6	6940	0.4	0.53	0.66	99.5	7840	0.39	0.53	0.67	90.8	8870	0.38	0.54	0.69
	3400	121.6	6170	0.42	0.57	0.71	113.3	6970	0.41	0.57	0.73	104.7	7870	0.41	0.58	0.75	95.4	8890	0.4	0.59	0.77
	4080	125.7	6190	0.44	0.61	0.77	117.2	6990	0.43	0.61	0.79	108.3	7890	0.43	0.62	0.82	98.6	8910	0.42	0.64	0.85

8.5 TON HEATING - KHC102S4M

Indoor Coil Air Volume 70°F Dry Bulb cfm	Air Temperature Entering Outdoor Coil									
	65°F		45°F		25°F		5°F		-15°F	
	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input
	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW
2720	126.6	7.48	92.5	6.69	66.8	6.09	45.3	5.68	29.0	5.48
3400	129.1	6.82	94.0	6.24	67.4	5.81	45.5	5.53	29.1	5.40
4080	130.6	6.42	94.8	5.97	67.5	5.64	45.4	5.46	29.1	5.36

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.

10 TON COOLING - KHC120S4M (1 COMPRESSOR - PART LOAD)

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		65°F					75°F					85°F					95°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb		
	cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F
63°F	2110	48.2	1620	0.8	1	1	45.7	1960	0.82	1	1	42.9	2300	0.85	1	1	39.8	2660	0.88	1	1
	2640	51.3	1600	0.88	1	1	48.6	1940	0.9	1	1	45.6	2270	0.93	1	1	42.2	2630	0.97	1	1
	3170	53.5	1590	0.94	1	1	50.7	1920	0.97	1	1	47.6	2260	1	1	1	44.1	2610	1	1	1
67°F	2110	50.9	1610	0.57	0.78	0.96	47.9	1940	0.58	0.79	0.99	44.6	2280	0.59	0.82	1	40.9	2640	0.6	0.85	1
	2640	52.8	1590	0.61	0.85	1	49.8	1930	0.63	0.88	1	46.3	2270	0.65	0.9	1	42.5	2630	0.66	0.94	1
	3170	54.2	1580	0.66	0.92	1	51.1	1910	0.68	0.94	1	47.7	2260	0.7	0.98	1	44.1	2620	0.73	1	1
71°F	2110	54.3	1580	0.35	0.56	0.75	51.3	1920	0.35	0.56	0.77	47.8	2260	0.34	0.57	0.79	43.9	2620	0.33	0.59	0.82
	2640	56.1	1570	0.37	0.6	0.83	52.9	1900	0.36	0.61	0.85	49.6	2250	0.36	0.63	0.88	45.3	2600	0.36	0.66	0.92
	3170	57.4	1560	0.39	0.65	0.89	54	1890	0.38	0.67	0.92	50.3	2230	0.38	0.69	0.95	46.4	2600	0.39	0.72	0.99

10 TON COOLING - KHC120S4M (2 COMPRESSORS - PART LOAD / FULL LOAD)

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb		
	cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F
63°F	2400	97.8	6530	0.67	0.81	0.91	90.8	7450	0.68	0.82	0.92	82.9	8480	0.69	0.84	0.94	74.8	9680	0.71	0.86	0.96
	3000	104.8	6560	0.72	0.87	0.96	97.4	7470	0.74	0.88	0.98	89.4	8490	0.75	0.9	1	81	9700	0.78	0.92	1
	3600	109.8	6580	0.77	0.93	1	102.9	7480	0.79	0.93	1	94.5	8510	0.81	0.95	1	85.4	9690	0.84	0.97	1
67°F	2400	105.6	6550	0.53	0.65	0.77	98	7470	0.53	0.66	0.79	90	8510	0.52	0.67	0.81	81.1	9690	0.52	0.68	0.83
	3000	112.3	6570	0.56	0.7	0.84	104.3	7490	0.56	0.71	0.86	95.6	8520	0.56	0.73	0.87	86.2	9710	0.57	0.75	0.89
	3600	117.3	6600	0.59	0.75	0.89	108.7	7510	0.59	0.77	0.9	99.7	8540	0.6	0.79	0.92	89.8	9720	0.61	0.82	0.95
71°F	2400	113.3	6570	0.4	0.51	0.63	105.5	7470	0.39	0.51	0.63	97.2	8520	0.38	0.51	0.64	88	9690	0.37	0.51	0.66
	3000	120.2	6600	0.41	0.55	0.68	111.9	7510	0.41	0.55	0.69	102.9	8540	0.4	0.55	0.71	93.1	9710	0.39	0.56	0.73
	3600	125.5	6620	0.43	0.58	0.73	116.7	7530	0.44	0.58	0.74	107.2	8560	0.42	0.59	0.77	96.9	9740	0.41	0.6	0.8

10 TON COOLING - KHC120S4M (2 COMPRESSORS - FULL LOAD)

Entering Wet Bulb Temperature	Total Air Volume	Outdoor Air Temperature Entering Outdoor Coil																			
		85°F					95°F					105°F					115°F				
		Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb			Total Cool Cap.	Comp. Motor Input	Sensible To Total Ratio (S/T) Dry Bulb		
	cfm	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F	kBtuh	kW	75°F	80°F	85°F
63°F	3200	118.6	7450	0.7	0.85	0.97	110.4	8400	0.71	0.87	0.98	102.1	9480	0.73	0.89	1	92.7	10720	0.74	0.92	1
	4000	125.2	7510	0.76	0.92	1	116.8	8460	0.78	0.95	1	107.9	9540	0.79	0.97	1	98.7	10780	0.82	0.99	1
	4800	130.7	7550	0.81	0.97	1	122.2	8500	0.84	0.99	1	113.6	9590	0.86	1	1	104.4	10840	0.9	1	1
67°F	3200	126.9	7520	0.55	0.68	0.81	118.6	8470	0.55	0.69	0.83	109.6	9560	0.55	0.7	0.85	100.1	10800	0.55	0.72	0.89
	4000	133.6	7580	0.58	0.74	0.89	124.7	8530	0.59	0.75	0.91	115.2	9610	0.59	0.77	0.94	104.8	10850	0.6	0.8	0.97
	4800	138.5	7620	0.62	0.79	0.95	129	8570	0.62	0.81	0.97	119.1	9660	0.64	0.84	0.99	108.5	10890	0.65	0.88	1
71°F	3200	135.5	7590	0.41	0.53	0.66	126.7	8540	0.4	0.54	0.67	117.5	9640	0.4	0.54	0.68	107.5	10880	0.39	0.54	0.7
	4000	142.4	7650	0.43	0.57	0.71	133.1	8610	0.42	0.58	0.73	123.2	9690	0.42	0.58	0.75	112.5	10930	0.41	0.6	0.78
	4800	147.3	7700	0.44	0.61	0.77	137.7	8660	0.44	0.62	0.79	127.1	9730	0.44	0.63	0.82	116.2	10980	0.43	0.65	0.85

10 TON HEATING - KHC120S4M

Indoor Coil Air Volume 70°F Dry Bulb cfm	Air Temperature Entering Outdoor Coil									
	65°F		45°F		25°F		5°F		-15°F	
	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input	Total Heating Capacity	Comp. Motor Input
	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW	kBtuh	kW
3200	149.1	9.16	109.4	8.15	78.4	7.39	53.3	6.87	34.5	6.52
4000	152.2	8.36	110.7	7.59	79.0	7.05	53.6	6.67	34.6	6.43
4800	153.7	7.87	111.4	7.25	79.3	6.83	53.7	6.57	34.6	6.39

KHC092S4M - BASE UNIT

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY (NO HEAT SECTION) WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE. FOR ALL UNITS ADD:

1 − Wet indoor coil air resistance of selected unit.

2 − Any factory installed options air resistance (heat section, economizer, etc.)

3 − Any field installed accessories air resistance (duct resistance, diffuser, etc.)

Then determine from blower table blower motor output required.

See page 22 for blower motors and drives.

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

Minimum Air Volume Required For Use With Optional Electric Heat (Maximum Static Pressure - 2.0 in. w.g.):

7.5 kW, 15 kW, 22.5 kW, 30 kW and 45 kW - 2800 cfm

Total Air Volume cfm	Total Static Pressure − in. w.g.													
	0.2		0.4		0.6		0.8		1.0		1.2		1.4	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1750	583	0.09	627	0.06	673	0.09	723	0.06	777	0.45	834	0.82	892	1.13
2000	593	0.11	636	0.07	682	0.10	731	0.22	784	0.60	840	0.96	898	1.26
2250	604	0.15	645	0.11	690	0.15	739	0.39	790	0.74	846	1.08	901	1.34
2500	615	0.19	655	0.15	699	0.20	747	0.55	797	0.89	851	1.20	906	1.44
2750	626	0.23	666	0.19	709	0.37	755	0.71	805	1.03	858	1.32	912	1.55
3000	637	0.27	677	0.24	719	0.55	764	0.87	813	1.18	866	1.45	920	1.67
3250	650	0.31	688	0.43	730	0.73	775	1.04	823	1.34	875	1.60	930	1.81
3500	663	0.35	700	0.63	741	0.92	786	1.22	834	1.50	886	1.76	942	1.96
3750	676	0.57	714	0.84	754	1.12	798	1.41	846	1.68	899	1.93	956	2.14

Total Air Volume cfm	Total Static Pressure − in. w.g.											
	1.6		1.8		2		2.2		2.4		2.6	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1750	943	1.28	990	1.38	1038	1.44	1084	1.60	1131	1.79	1179	2.25
2000	948	1.38	996	1.47	1045	1.57	1092	1.71	1140	1.92	1188	2.32
2250	953	1.48	1002	1.57	1052	1.70	1100	1.86	1149	2.09	1197	2.42
2500	959	1.58	1009	1.68	1059	1.83	1108	2.01	1158	2.26	1206	2.52
2750	966	1.70	1017	1.81	1067	1.97	1117	2.17	1166	2.44	1215	2.71
3000	975	1.82	1026	1.96	1076	2.13	1126	2.35	1176	2.63	1225	2.92
3250	985	1.97	1036	2.12	1086	2.31	1136	2.54	1186	2.83	1235	3.13
3500	997	2.14	1048	2.31	1097	2.51	1147	2.75	1196	3.04	1245	3.35
3750	1010	2.32	1060	2.51	1109	2.72	1158	2.98	1207	3.27	1255	3.58

KHC102S4M, KHC120S4M - BASE UNIT

BLOWER TABLE INCLUDES RESISTANCE FOR BASE UNIT ONLY (NO HEAT SECTION) WITH DRY INDOOR COIL AND AIR FILTERS IN PLACE. FOR ALL UNITS ADD:

1 − Wet indoor coil air resistance of selected unit.

2 − Any factory installed options air resistance (heat section, economizer, etc.)

3 − Any field installed accessories air resistance (duct resistance, diffuser, etc.)

Then determine from blower table blower motor output required.

See page 22 for blower motors and drives.

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

Minimum Air Volume Required For Use With Optional Electric Heat (Maximum Static Pressure - 2.0 in. w.g.):

7.5 kW, 15 kW, 22.5 kW, 30 kW and 45 kW - 2800 cfm; 60 kW - 4000 cfm

Total Air Volume cfm	Total Static Pressure − in. w.g.													
	0.2		0.4		0.6		0.8		1.0		1.2		1.4	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1750	480	0.19	548	0.39	618	0.57	689	0.70	758	0.81	824	0.92	885	1.07
2000	492	0.27	560	0.47	629	0.64	700	0.77	768	0.88	832	1.00	892	1.16
2250	505	0.35	573	0.55	643	0.72	713	0.85	780	0.97	842	1.10	900	1.25
2500	520	0.45	588	0.64	658	0.81	727	0.94	793	1.07	853	1.21	909	1.37
2750	536	0.55	604	0.74	674	0.91	743	1.05	806	1.19	865	1.34	919	1.50
3000	553	0.66	622	0.85	692	1.02	760	1.17	821	1.32	878	1.48	930	1.64
3250	572	0.77	641	0.98	712	1.15	778	1.32	837	1.48	892	1.64	942	1.81
3500	592	0.90	663	1.12	733	1.31	798	1.48	854	1.65	907	1.82	955	1.99
3750	614	1.04	687	1.28	756	1.48	818	1.66	872	1.83	922	2.01	969	2.19
4000	639	1.22	712	1.47	780	1.67	838	1.85	890	2.03	939	2.22	983	2.42
4250	666	1.42	740	1.68	804	1.88	859	2.06	909	2.25	956	2.45	998	2.67
4500	697	1.65	769	1.91	829	2.10	881	2.28	929	2.48	973	2.71	1013	2.95
4750	729	1.91	798	2.15	854	2.34	903	2.53	948	2.75	991	3.00	1030	3.27
5000	763	2.18	826	2.41	878	2.60	925	2.81	968	3.05	1009	3.33	1046	3.61

Total Air Volume cfm	Total Static Pressure − in. w.g.											
	1.6		1.8		2		2.2		2.4		2.6	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1750	941	1.23	992	1.40	1039	1.55	1084	1.70	1128	1.85	1156	2.08
2000	946	1.32	995	1.48	1041	1.65	1085	1.81	1127	1.97	1160	2.13
2250	952	1.42	999	1.59	1044	1.76	1087	1.93	1127	2.10	1164	2.27
2500	959	1.54	1005	1.71	1048	1.89	1089	2.07	1127	2.25	1166	2.42
2750	968	1.67	1012	1.86	1053	2.04	1092	2.23	1129	2.41	1167	2.60
3000	977	1.83	1020	2.02	1059	2.21	1096	2.41	1133	2.60	1170	2.79
3250	988	2.00	1028	2.20	1066	2.41	1102	2.61	1138	2.81	1174	3.01
3500	999	2.19	1038	2.41	1074	2.63	1109	2.84	1144	3.04	1180	3.24
3750	1010	2.41	1048	2.64	1084	2.87	1118	3.09	1152	3.29	1188	3.50
4000	1023	2.65	1060	2.90	1095	3.14	1128	3.36	1162	3.57	1198	3.77
4250	1036	2.92	1072	3.18	1106	3.42	1139	3.65	1172	3.86	1208	4.07
4500	1050	3.22	1085	3.48	1118	3.73	1151	3.96	1184	4.17	1221	4.39
4750	1065	3.55	1099	3.81	1132	4.06	1164	4.29	1198	4.51	1235	4.74
5000	1081	3.90	1114	4.17	1146	4.42	1178	4.65	1212	4.87	1250	5.09

BLOWER DATA

FACTORY INSTALLED BELT DRIVE KIT SPECIFICATIONS

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

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

NOTE – Motor service factor limit - 1.0.

POWER EXHAUST FAN PERFORMANCE

Return Air System Static Pressure	Air Volume Exhausted
in. w.g.	cfm
0	3175
0.05	2955
0.10	2685
0.15	2410
0.20	2165
0.25	1920
0.30	1420
0.35	1200

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

Air Volume cfm	Wet Indoor Coil		Electric Heat	Economizer	Filters			Return Air Adaptor Plate
	092	102,120			MERV 8	MERV 13	MERV 16	
1750	0.03	0.04	0.03	0.05	0.01	0.03	0.06	0.00
2000	0.04	0.05	0.03	0.06	0.01	0.03	0.08	0.00
2250	0.05	0.06	0.04	0.08	0.01	0.04	0.09	0.00
2500	0.05	0.07	0.04	0.11	0.01	0.05	0.10	0.00
2750	0.06	0.08	0.05	0.12	0.02	0.05	0.11	0.00
3000	0.07	0.10	0.06	0.13	0.02	0.06	0.12	0.02
3250	0.08	0.11	0.06	0.15	0.02	0.06	0.13	0.02
3500	0.09	0.12	0.09	0.15	0.03	0.07	0.15	0.04
3750	0.10	0.14	0.09	0.15	0.03	0.08	0.16	0.07
4000	0.11	0.15	0.09	0.19	0.04	0.08	0.17	0.09
4250	0.13	0.17	0.13	0.19	0.04	0.09	0.19	0.11
4500	0.14	0.19	0.14	0.22	0.04	0.09	0.20	0.12
4750	0.15	0.20	0.17	0.25	0.05	0.10	0.21	0.16
5000	0.16	0.22	0.20	0.29	0.06	0.10	0.23	0.18
5250	0.17	0.24	0.22	0.32	0.06	0.11	0.24	0.19
5500	0.19	0.25	0.25	0.34	0.07	0.12	0.25	0.22
5750	0.20	0.27	0.31	0.45	0.07	0.12	0.27	0.25
6000	0.22	0.29	0.33	0.52	0.08	0.13	0.28	0.27

BLOWER DATA

CEILING DIFFUSERS AIR RESISTANCE - in. w.g.

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

CEILING DIFFUSER AIR THROW DATA

Model No.	Air Volume	[1] Effective Throw Range	
		RTD11 Step-Down	FD11 Flush
	cfm	ft.	ft.
092 Models	2600	24 - 29	19 - 24
	2800	25 - 30	20 - 28
	3000	27 - 33	21 - 29
	3200	28 - 35	22 - 29
	3400	30 - 37	22 - 30
102 & 120 Models	3600	25 - 33	22 - 29
	3800	27 - 35	22 - 30
	4000	29- 37	24 - 33
	4200	32 - 40	26 - 35
	4400	34 - 42	28 - 37

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

ELECTRICAL/ELECTRIC HEAT DATA — 7.5 TON

		Model No.	KHC092S4M								
[1] Voltage - 60Hz			208/230V - 3 Ph			460V - 3 Ph			575V - 3 Ph		
Compressor 1 (Non-Inverter)	Rated Load Amps		12.9			7.1			4.6		
	Locked Rotor Amps		105			62			39		
Compressor 2 (Non-Inverter)	Rated Load Amps		13.7			6.1			4.8		
	Locked Rotor Amps		83.1			43			33		
Outdoor Fan Motors (2)	Full Load Amps (2 Non-ECM)		2.4			1.3			1		
	Total		4.8			2.6			2		
Power Exhaust (1) 0.33 HP	Full Load Amps		2.4			1.3			1		
Service Outlet 115V GFI (amps)			15			15			20		
Indoor Blower Motor	Horsepower		2	3	5	2	3	5	2	3	5
	Full Load Amps		7.5	10.6	16.7	3.4	4.8	7.6	2.7	3.9	6.1
[2] Maximum Overcurrent Protection (MOCP)	Unit Only		50	50	60	25	25	30	20	20	25
	With (1) 0.33 HP Power Exhaust		50	60	70	25	30	30	20	20	25
[3] Minimum Circuit Ampacity (MCA)	Unit Only		43	46	53	21	23	26	16	17	20
	With (1) 0.33 HP Power Exhaust		45	48	55	23	24	27	17	18	21

ELECTRIC HEAT DATA

Electric Heat Voltage			208V	240V	208V	240V	208V	240V	480V	480V	480V	600V	600V	600V
[2] Maximum Overcurrent Protection (MOCP)	Unit+ Electric Heat	**7.5 kW**	70	70	70	70	80	80	35	35	40	25	30	30
		15 kW	90	90	90	100	100	100	45	45	50	35	35	40
		22.5 kW	110	110	110	125	125	125	60	60	60	45	45	50
		30 kW	125	150	125	150	150	150	70	70	80	60	60	60
		45 kW	175	200	175	200	175	200	90	100	100	70	80	80
[3] Minimum Circuit Ampacity (MCA)	Unit+ Electric Heat	**7.5 kW**	62	65	65	68	72	75	33	34	37	25	26	29
		15 kW	82	88	85	91	92	98	44	45	48	34	35	38
		22.5 kW	101	110	105	114	111	120	55	57	60	43	44	47
		30 kW	121	133	124	136	131	143	67	68	71	52	53	56
		45 kW	160	178	163	181	170	188	89	91	93	70	71	74
[2] Maximum Overcurrent Protection (MOCP)	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	**7.5 kW**	70	70	70	80	80	80	35	35	40	30	30	30
		15 kW	90	90	90	100	100	100	45	50	50	35	40	40
		22.5 kW	110	125	110	125	125	125	60	60	70	45	45	50
		30 kW	125	150	150	150	150	150	70	70	80	60	60	60
		45 kW	175	200	175	200	175	200	90	100	100	80	80	80
[3] Minimum Circuit Ampacity (MCA)	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	**7.5 kW**	65	68	68	71	75	78	34	35	38	26	27	30
		15 kW	84	90	87	93	94	100	45	47	50	35	36	39
		22.5 kW	104	113	107	116	114	123	57	58	61	44	45	48
		30 kW	123	135	127	139	133	145	68	69	72	53	54	57
		45 kW	162	181	166	184	172	190	90	92	95	71	72	75

ELECTRICAL ACCESSORIES

Disconnect	**7.5 kW**	**54W56**	**54W56**	**54W56**
	15 kW	**54W57**	**54W56**	**54W56**
	22.5 kW	**54W57**	**54W56**	**54W56**
	30 kW	**54W57**	**54W56**	**54W56**
	45 kW	**Not Available**	**54W57**	**54W56**

Disconnects - 54W56 - 80A
54W57 - 150A

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

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

[2] HACR type breaker or fuse.

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

ELECTRICAL/ELECTRIC HEAT DATA — 8.5 TON

		Model No.	KHC102S4M								
[1] Voltage - 60Hz			208/230V - 3 Ph			460V - 3 Ph			575V - 3 Ph		
Compressor 1 (Non-Inverter)	Rated Load Amps		16.7			7.1			5.7		
	Locked Rotor Amps		110			54.7			47.8		
Compressor 2 (Non-Inverter)	Rated Load Amps		13.7			6.1			4.8		
	Locked Rotor Amps		83.1			43			33		
Outdoor Fan Motors (2)	Full Load Amps (2 Non-ECM)		3			1.5			1.2		
	Total		6			3			2.4		
Power Exhaust (1) 0.33 HP	Full Load Amps		2.4			1.3			1		
Service Outlet 115V GFI (amps)			15			15			20		
Indoor Blower Motor	Horsepower		2	3	5	2	3	5	2	3	5
	Full Load Amps		7.5	10.6	16.7	3.4	4.8	7.6	2.7	3.9	6.1
[2] Maximum Overcurrent Protection (MOCP)	Unit Only		60	60	70	30	30	35	20	20	25
	With (1) 0.33 HP Power Exhaust		60	60	70	30	30	35	20	20	25
[3] Minimum Circuit Ampacity (MCA)	Unit Only		47	50	56	24	25	28	17	19	21
	With (1) 0.33 HP Power Exhaust		49	52	59	25	26	29	18	20	22

ELECTRIC HEAT DATA

Electric Heat Voltage			208V	240V	208V	240V	208V	240V	480V	480V	480V	600V	600V	600V
[2] Maximum Overcurrent Protection (MOCP)	Unit+ Electric Heat	**7.5 kW**	80	80	80	80	80	90	35	35	40	30	30	30
		15 kW	90	100	100	100	100	110	45	50	50	40	40	40
		22.5 kW	110	125	110	125	125	125	60	60	60	45	50	50
		30 kW	150	150	150	150	150	150	70	70	80	60	60	60
		45 kW	175	200	175	200	175	200	90	100	100	80	80	80
[3] Minimum Circuit Ampacity (MCA)	Unit+ Electric Heat	**7.5 kW**	68	71	71	74	77	80	33	35	37	27	28	30
		15 kW	88	94	91	97	97	103	44	46	49	36	37	39
		22.5 kW	107	116	110	119	116	125	56	57	60	45	46	48
		30 kW	127	139	130	142	136	148	67	68	71	54	55	57
		45 kW	166	184	169	187	175	193	90	91	94	72	73	75
[2] Maximum Overcurrent Protection (MOCP)	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	**7.5 kW**	80	80	80	80	90	90	35	40	40	30	30	35
		15 kW	90	100	100	100	100	110	50	50	50	40	40	40
		22.5 kW	110	125	125	125	125	150	60	60	70	50	50	50
		30 kW	150	150	150	150	150	150	70	70	80	60	60	60
		45 kW	175	200	175	200	200	200	100	100	100	80	80	80
[3] Minimum Circuit Ampacity (MCA)	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	**7.5 kW**	71	74	74	77	80	83	34	36	39	28	29	31
		15 kW	90	96	93	99	99	105	46	47	50	37	38	40
		22.5 kW	110	119	113	122	119	128	57	58	61	46	47	49
		30 kW	129	141	132	144	138	150	68	70	73	55	56	58
		45 kW	168	186	171	189	177	195	91	92	95	73	74	76

ELECTRICAL ACCESSORIES

		208/230V - 3 Ph	460V - 3 Ph	575V - 3 Ph
Disconnect	**7.5 kW**	**54W56**	**54W56**	**54W56**
	15 kW	**54W57**	**54W56**	**54W56**
	22.5 kW	**54W57**	**54W56**	**54W56**
	30 kW	**54W57**	**54W56**	**54W56**
	45 kW	**Not Available**	**54W57**	**54W56**

Disconnects - 54W56 - 80A
54W57 - 150A

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

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

[2] HACR type breaker or fuse.

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

ELECTRICAL/ELECTRIC HEAT DATA — 10 TON

		Model No.	KHC120S4M								
[1] Voltage - 60Hz			208/230V - 3 Ph			460V - 3 Ph			575V - 3 Ph		
Compressor 1 (Non-Inverter)	Rated Load Amps		16.7			7.1			5.7		
	Locked Rotor Amps		110			54.7			47.8		
Compressor 2 (Non-Inverter)	Rated Load Amps		19.6			8.2			6.6		
	Locked Rotor Amps		136			66.1			55.3		
Outdoor Fan Motors (2)	Full Load Amps (2 Non-ECM)		3			1.5			1.2		
	Total		6			3			2.4		
Power Exhaust (1) 0.33 HP	Full Load Amps		2.4			1.3			1		
Service Outlet 115V GFI (amps)			15			15			20		
Indoor Blower Motor	Horsepower		2	3	5	2	3	5	2	3	5
	Full Load Amps		7.5	10.6	16.7	3.4	4.8	7.6	2.7	3.9	6.1
[2] Maximum Overcurrent Protection (MOCP)	Unit Only		70	70	80	30	30	35	25	25	25
	With (1) 0.33 HP Power Exhaust		70	70	80	30	30	35	25	25	30
[3] Minimum Circuit Ampacity (MCA)	Unit Only		55	58	64	24	26	28	20	21	23
	With (1) 0.33 HP Power Exhaust		58	61	67	26	27	30	21	22	24

ELECTRIC HEAT DATA

Electric Heat Voltage			208V	240V	208V	240V	208V	240V	480V	480V	480V	600V	600V	600V
[2] Maximum Overcurrent Protection (MOCP)	Unit+ Electric Heat	**15 kW**	100	110	100	110	110	110	50	50	60	40	40	45
		22.5 kW	125	125	125	150	125	150	60	60	70	50	50	50
		30 kW	150	150	150	150	150	175	70	80	80	60	60	60
		45 kW	175	200	200	200	200	200	100	100	100	80	80	80
		60 kW	200	200	200	225	200	225	100	100	110	80	80	90
[3] Minimum Circuit Ampacity (MCA)	Unit+ Electric Heat	**15 kW**	94	100	97	103	103	110	47	48	51	38	39	41
		22.5 kW	114	123	117	126	123	132	58	59	62	47	48	50
		30 kW	133	145	136	149	143	155	69	71	74	56	57	59
		45 kW	172	191	176	194	182	200	92	93	96	74	75	77
		60 kW	180	200	183	203	189	209	96	98	101	77	78	81
[2] Maximum Overcurrent Protection (MOCP)	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	**15 kW**	100	110	110	110	110	125	50	50	60	40	40	45
		22.5 kW	125	125	125	150	125	150	60	70	70	50	50	60
		30 kW	150	150	150	175	150	175	80	80	80	60	60	60
		45 kW	175	200	200	200	200	225	100	100	100	80	80	80
		60 kW	200	225	200	225	200	225	100	100	110	80	80	90
[3] Minimum Circuit Ampacity (MCA)	Unit+ Electric Heat and (1) 0.33 HP Power Exhaust	**15 kW**	97	103	100	106	106	112	48	50	52	39	40	42
		22.5 kW	116	125	119	128	125	134	59	61	64	48	49	51
		30 kW	136	148	139	151	145	157	71	72	75	57	58	60
		45 kW	175	193	178	196	184	202	93	95	97	75	76	78
		60 kW	183	202	186	205	192	211	98	99	102	78	79	82

ELECTRICAL ACCESSORIES

Disconnect								
	15 kW	**54W57**			**54W56**		**54W56**	
	22.5 kW	**54W57**			**54W56**		**54W56**	
	30 kW	**54W57**			**54W56**		**54W56**	
	45 kW	**Not Available**			**54W57**		**54W56**	
	60 kW	**Not Available**			**54W57**		**54W56**	

Disconnects - 54W56 - 80A
54W57 - 150A

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

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

[2] HACR type breaker or fuse.

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

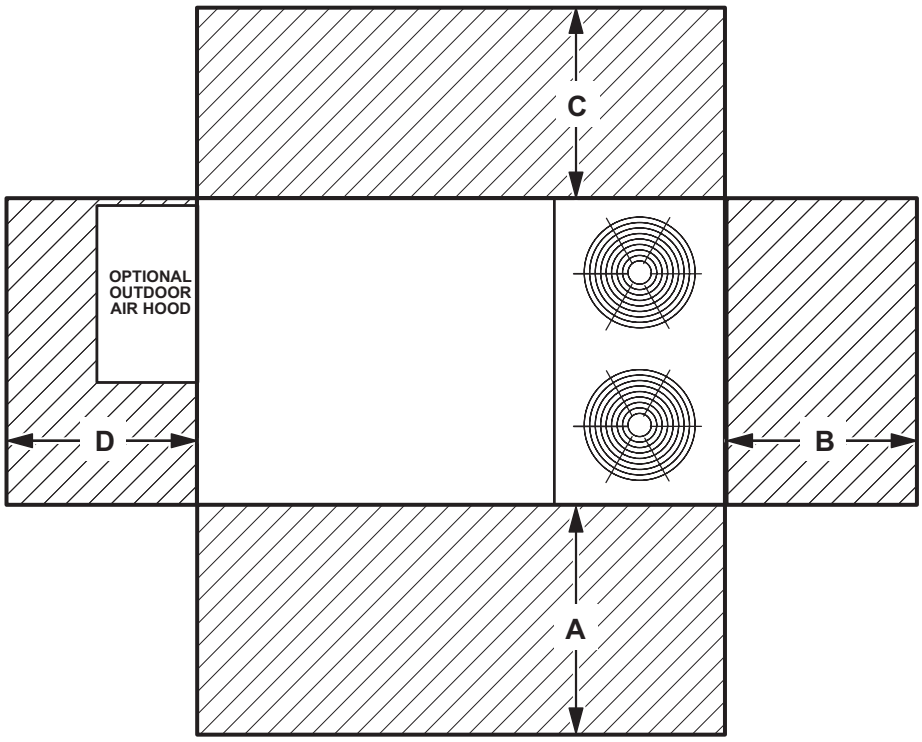
ELECTRIC HEAT CAPACITIES

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

FIELD WIRING NOTES

- For use with copper wiring only
- Field wiring not furnished
- All wiring must conform to NEC or CEC and local electrical codes
- For specific wiring information, please refer to the installation instructions

UNIT CLEARANCES



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

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

[1] **Service Clearance** - Required for removal of serviceable parts.
Minimum Operation Clearance - Required clearance for proper unit operation.

OUTDOOR SOUND DATA

Unit Model Number	Octave Band Sound Power Levels dBA, re 10^{-12} Watts Center Frequency - Hz							[1] Sound Rating Number (dBA)
	125	250	500	1000	2000	4000	8000	
092, 102 and 120	76	79	84	83	79	73	66	88

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

[1] Sound Rating Number according to AHRI Standard 270-95 or AHRI Standard 370-2001 (includes pure tone penalty). Sound Rating Number is the overall A-Weighted Sound Power Level, (Lwa), dB (100 Hz to 10,000 Hz).

WEIGHT DATA — UNIT

Model Number	Net		Shipping	
	lbs.	kg	lbs.	kg
KHC092S Base Unit	1052	477	1137	516
KHC092S Max. Unit	1209	548	1294	587
KHC102S Base Unit	1084	492	1169	530
KHC102S Max. Unit	1241	563	1326	601
KHC120S Base Unit	1150	522	1235	560
KHC120S Max. Unit	1314	596	1399	635

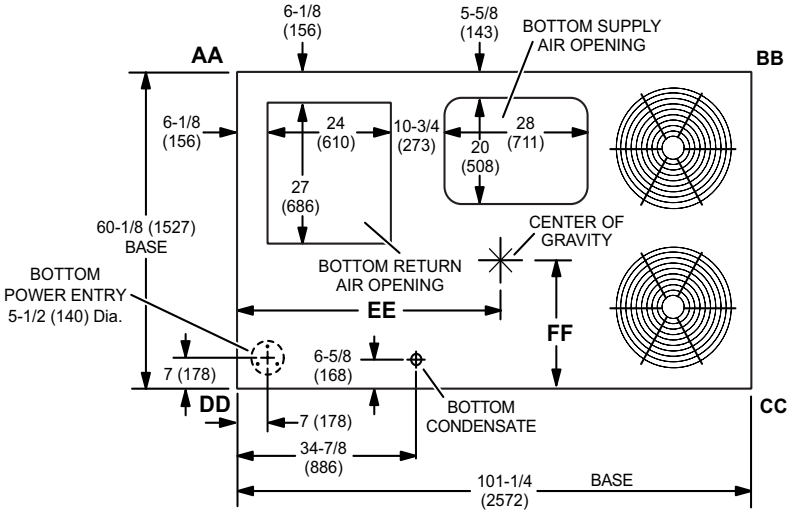
OPTIONS / ACCESSORIES

		Shipping Weight	
		lbs.	kg
ECONOMIZER / OUTDOOR AIR / POWER EXHAUST			
Economizer			
Economizer Dampers		60	27
Barometric Relief Dampers (downflow)		8	4
Barometric Relief Damper Hood (downflow)		25	11
Outdoor Air Hood (downflow)		23	10
Outdoor Air Dampers			
Motorized		51	23
Manual		39	18
Power Exhaust		31	14
ELECTRIC HEAT			
7.5 kW		50	23
15 kW		50	23
22.5 kW		57	26
30 kW		57	26
45 kW		59	27
60 kW		68	31
COIL/HAIL GUARDS			
All models		45	20
ROOF CURBS			
Hybrid Roof Curbs, Downflow			
8 in. height		103	47
14 in. height		125	57
18 in. height		147	67
24 in. height		169	77
Adjustable Pitch Curb, Downflow			
14 in. height		169	77
CEILING DIFFUSERS			
Step-Down	RTD11-95S	118	54
	RTD11-135S	135	61
	RTD11-185S	168	76
Flush	FD11-95S	118	54
	FD11-135S	135	61
	FD11-185S	168	76
Transitions	C1DIFF30B-1	30	14
	C1DIFF31B-1	32	15
	C1DIFF32B-1	36	16

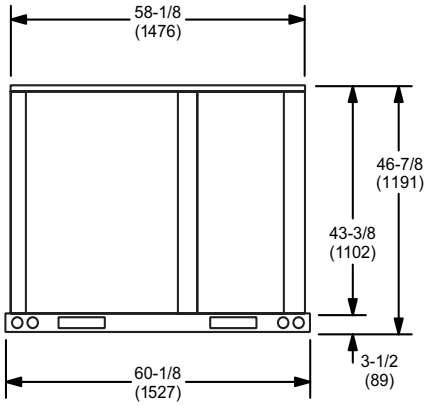
DIMENSIONS — UNIT

Model No.	CORNER WEIGHTS																CENTER OF GRAVITY							
	AA				BB				CC				DD				EE				FF			
	Base		Max.		Base		Max.		Base		Max.		Base		Max.		Base		Max.		Base		Max.	
	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	lbs.	kg	in.	mm	in.	mm	in.	mm	in.	mm
KHC092	264	120	310	140	237	108	271	123	258	117	290	131	293	133	339	154	46.5	1181	45.5	1156	24.5	622	25.5	648
KHC102	272	123	318	144	244	111	278	126	266	121	297	135	302	137	348	158	46.5	1181	45.5	1156	24.5	622	25.5	648
KHC120	284	129	333	151	264	120	298	135	288	131	320	145	315	143	363	165	46.5	1181	45.5	1156	24.5	622	25.5	648

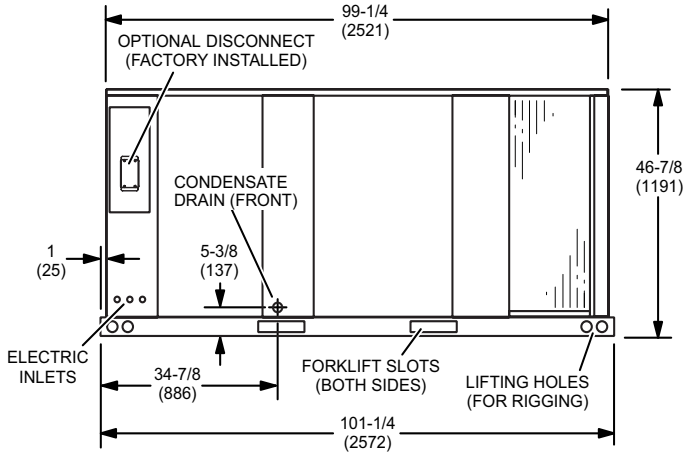
Base Unit - The unit with NO OPTIONS.
Max. Unit - The unit with ALL OPTIONS Installed (Economizer, etc.).



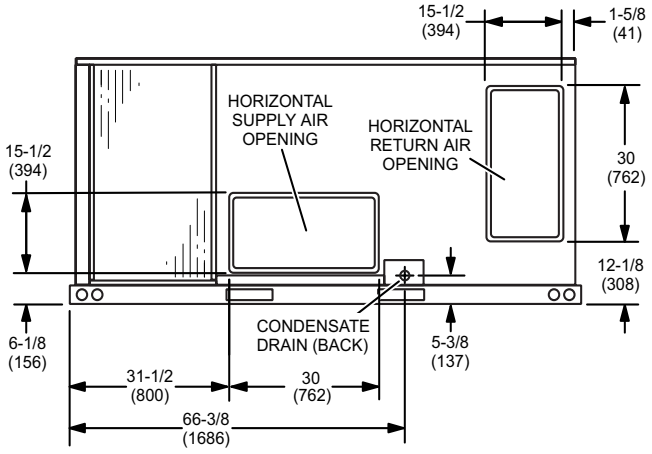
TOP VIEW



END VIEW

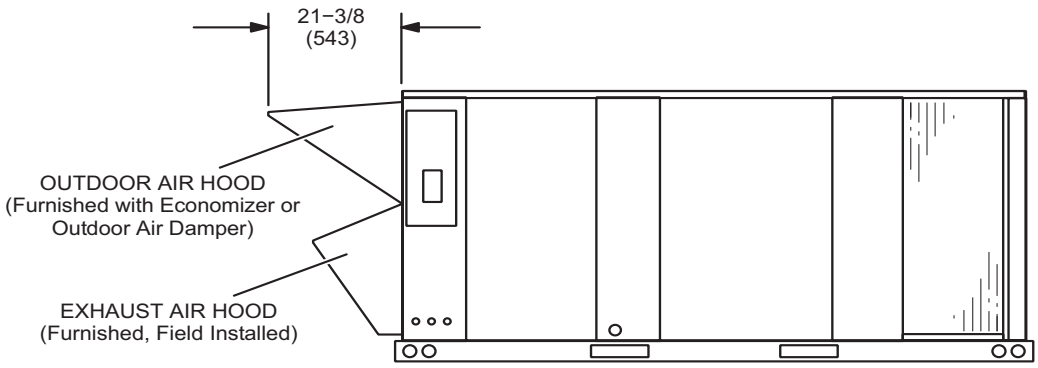


SIDE VIEW

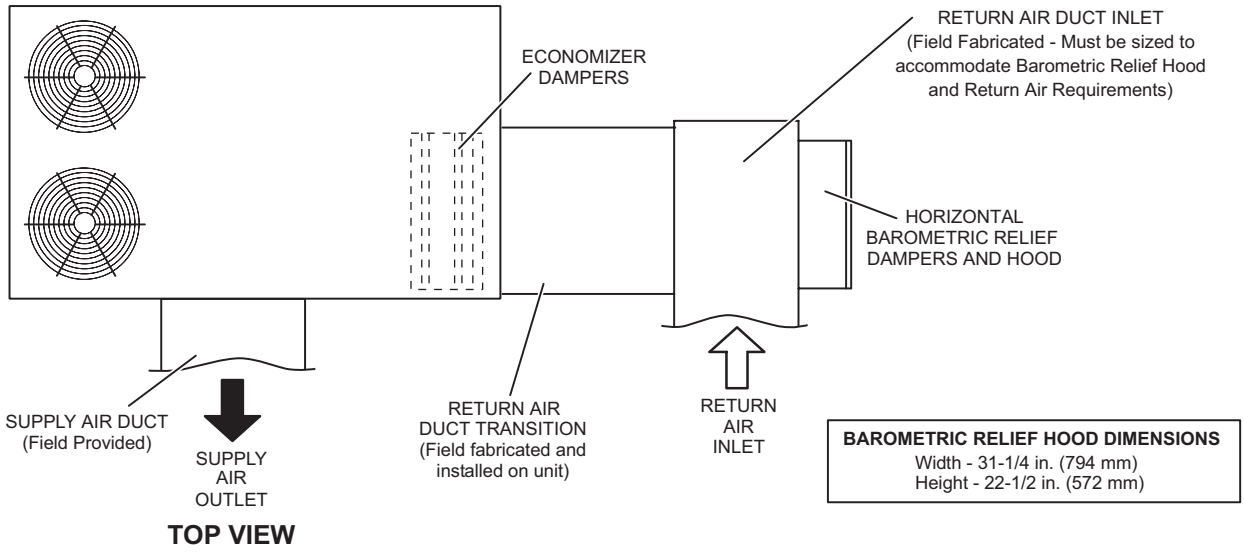


SIDE VIEW
(Horizontal Openings)

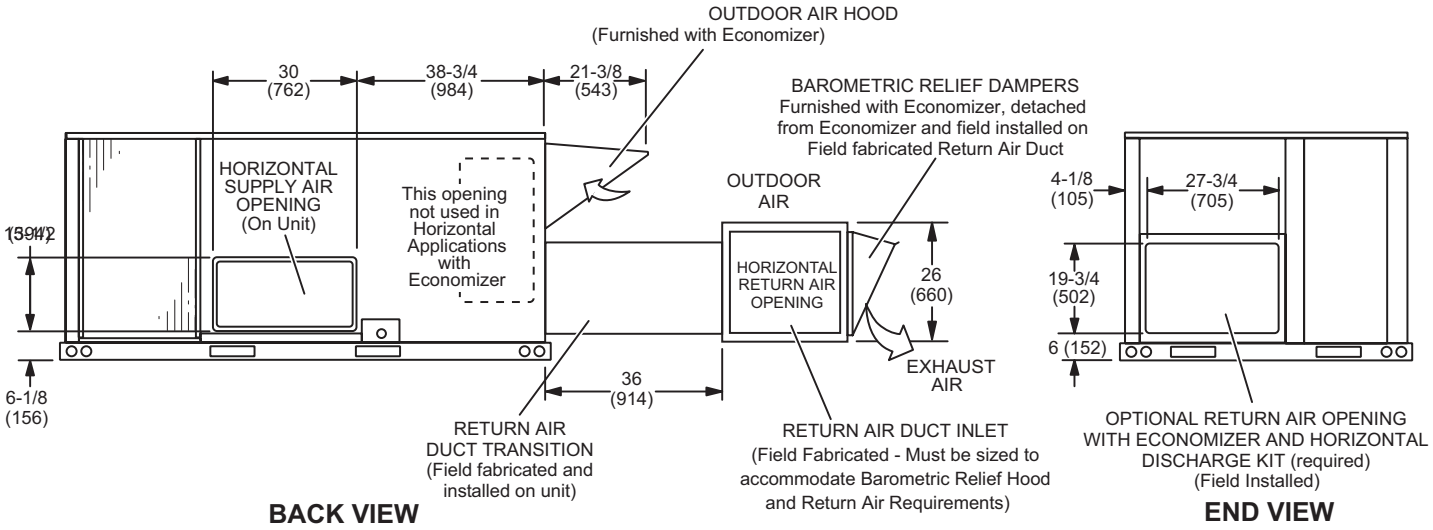
OUTDOOR AIR HOOD DETAIL



HORIZONTAL ECONOMIZER APPLICATION
(With Furnished Barometric Relief Dampers and Optional Horizontal Discharge Kit - Required)



TOP VIEW

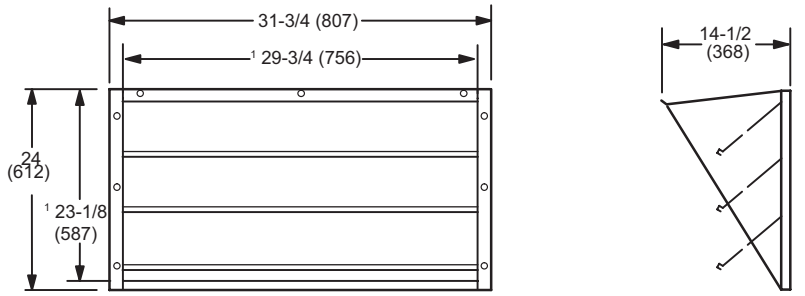


BACK VIEW **END VIEW**

NOTE - Return Air Duct and Transition must be supported.

BAROMETRIC RELIEF DAMPERS
(Furnished with Economizer)

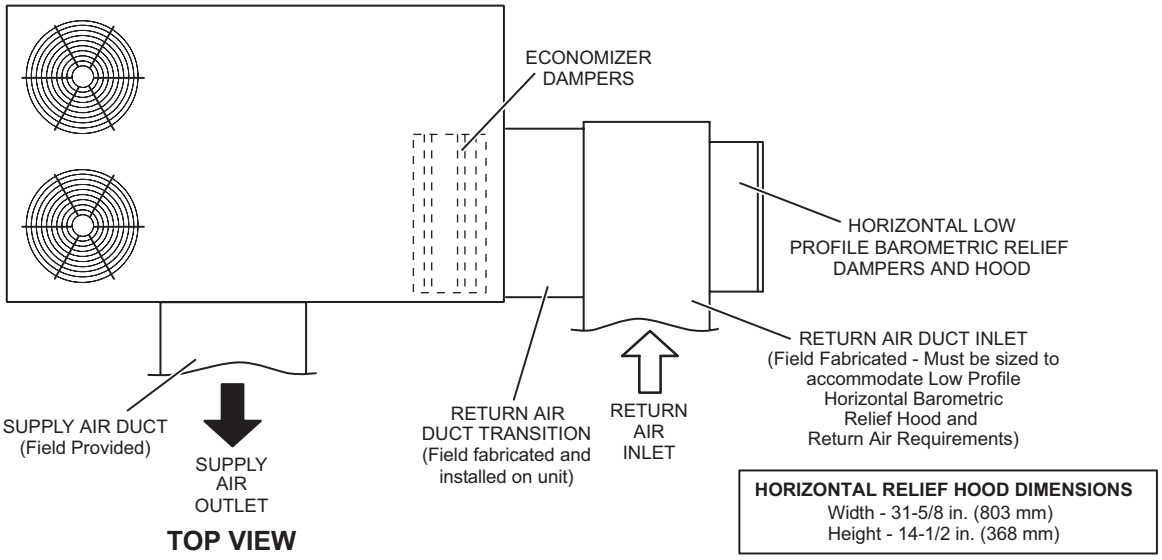
(Field installed in horizontal return air duct adjacent to unit)



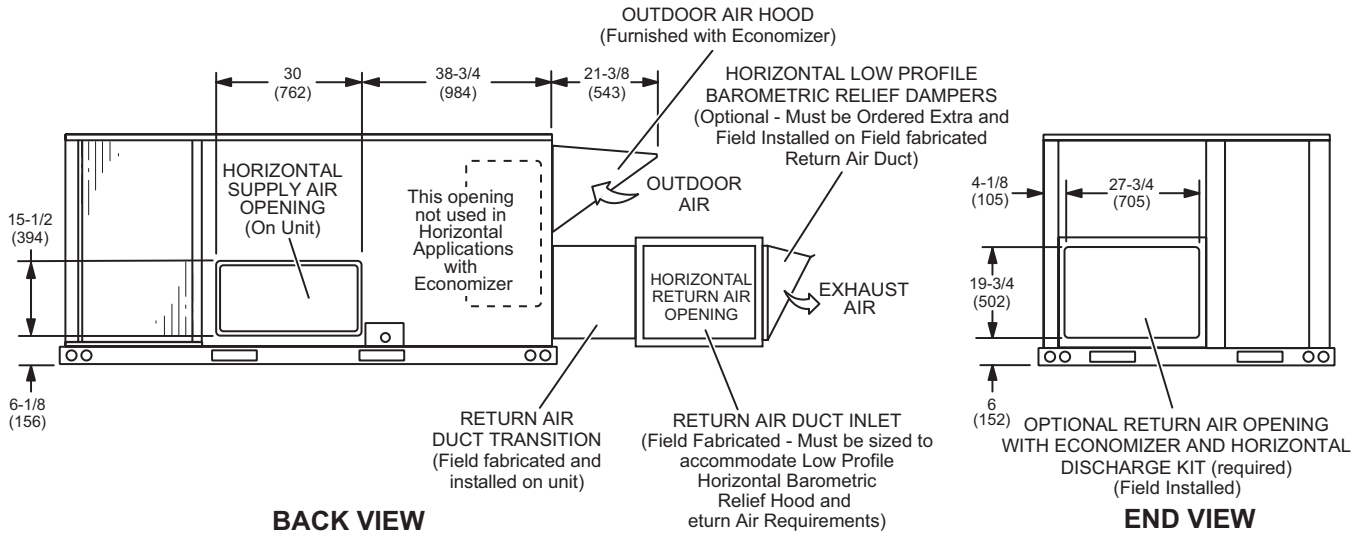
FRONT VIEW **SIDE VIEW**

[1] NOTE - Opening size required in return air duct.

HORIZONTAL ECONOMIZER APPLICATION
(with Optional Low Profile Horizontal Barometric Relief Dampers and Horizontal Discharge Kit - Required)



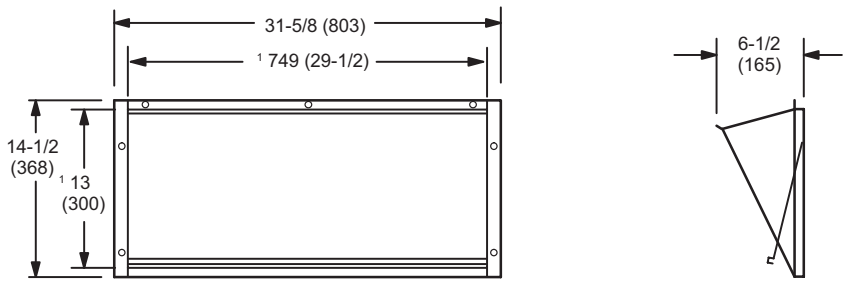
TOP VIEW



BACK VIEW **END VIEW**

NOTE - Return Air Duct and Transition must be supported.

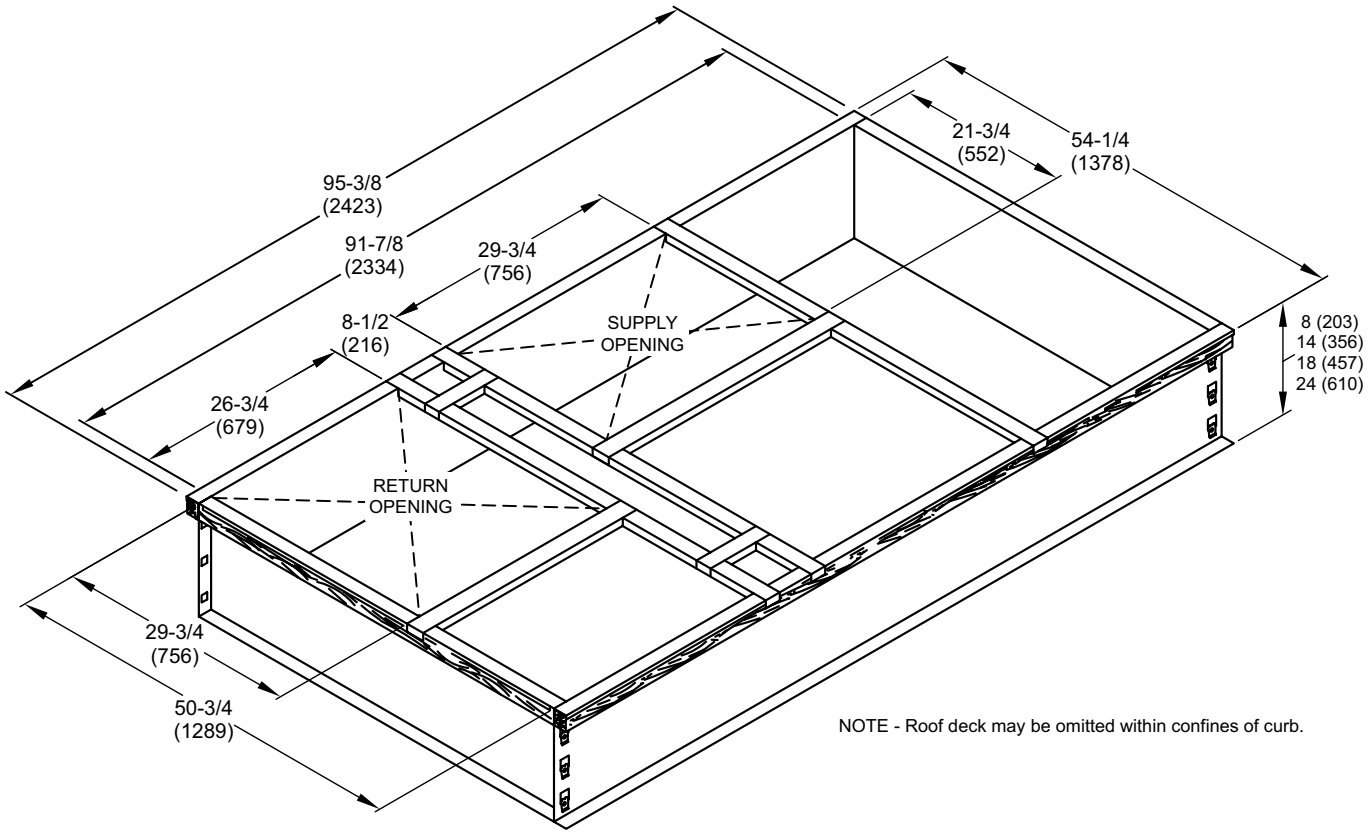
HORIZONTAL LOW PROFILE BAROMETRIC RELIEF DAMPERS
(Field installed in horizontal return air duct adjacent to unit)



FRONT VIEW **SIDE VIEW**

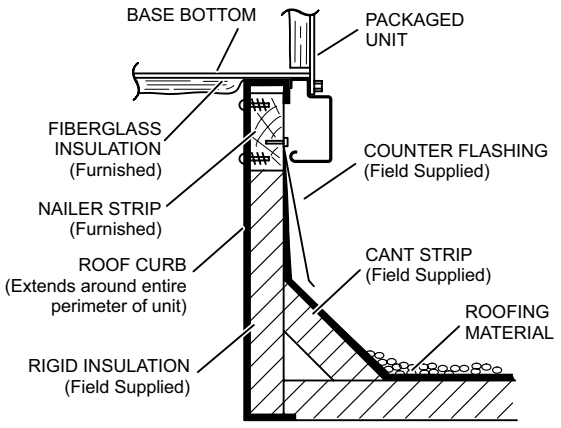
[1] NOTE - Opening size required in return air duct.

HYBRID ROOF CURBS - DOUBLE DUCT OPENING

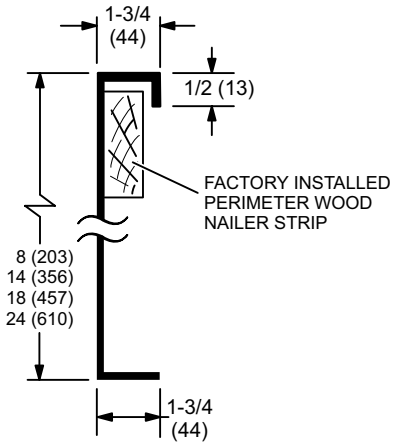


NOTE - Roof deck may be omitted within confines of curb.

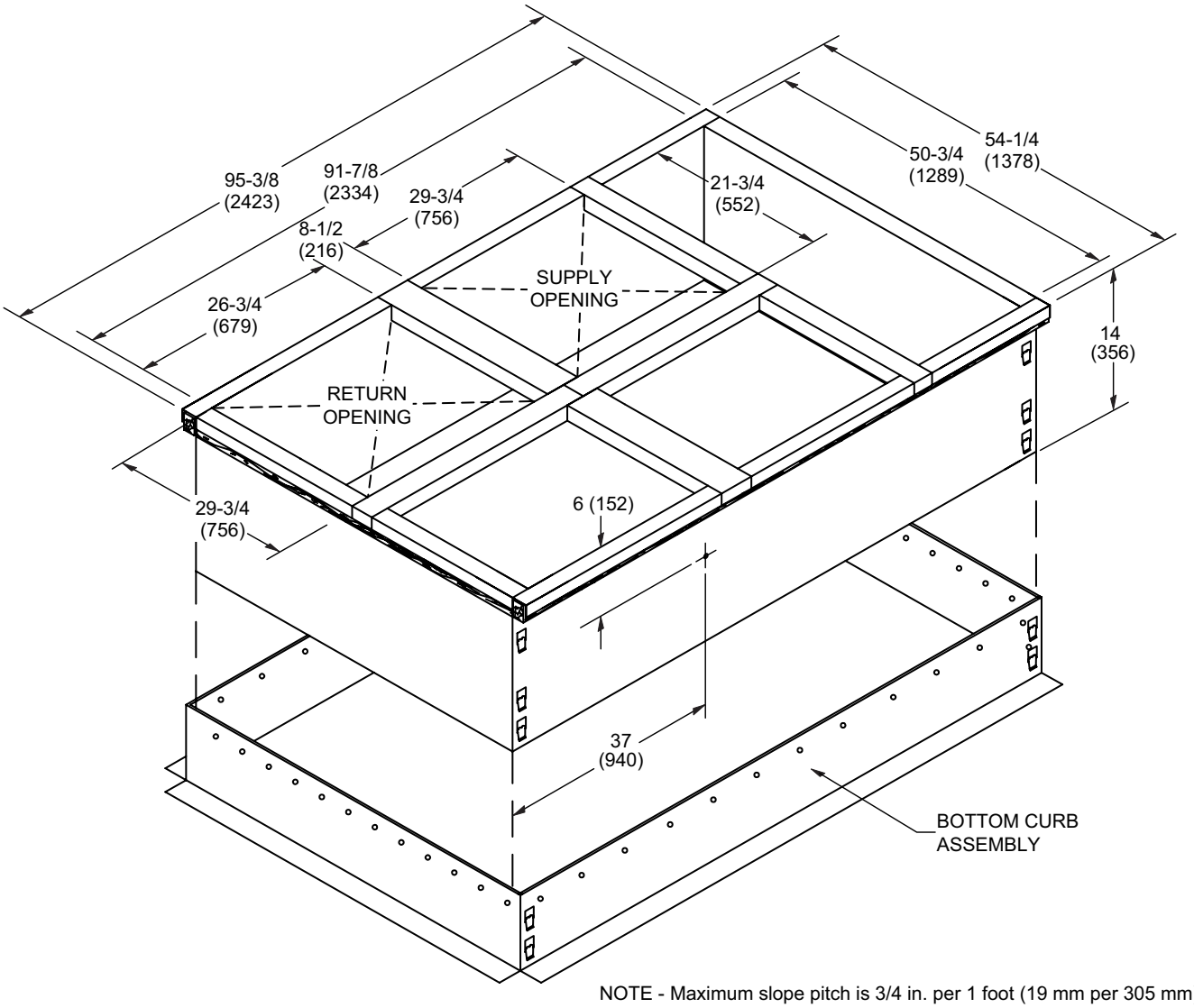
TYPICAL FLASHING DETAIL FOR ROOF CURB



DETAIL ROOF CURB

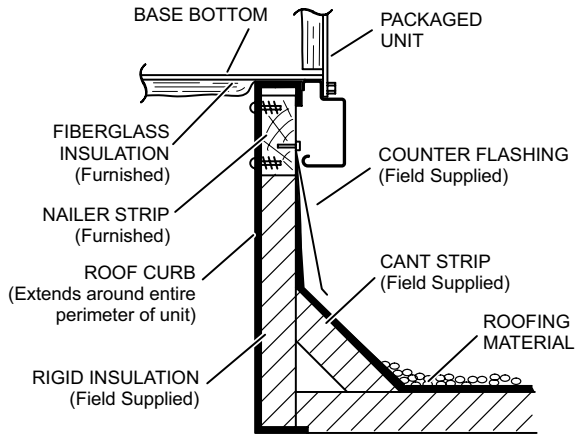


ADJUSTABLE PITCH CURBS - DOUBLE DUCT OPENING

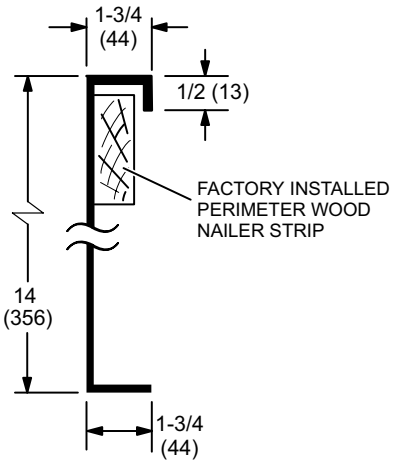


NOTE - Maximum slope pitch is 3/4 in. per 1 foot (19 mm per 305 mm) in any one direction.

TYPICAL FLASHING DETAIL FOR ROOF CURB

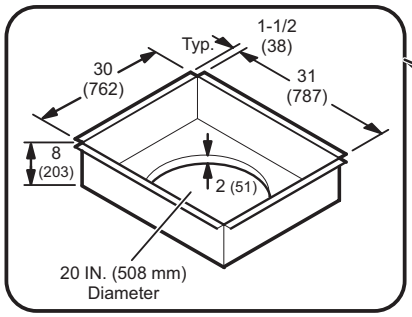


DETAIL ROOF CURB

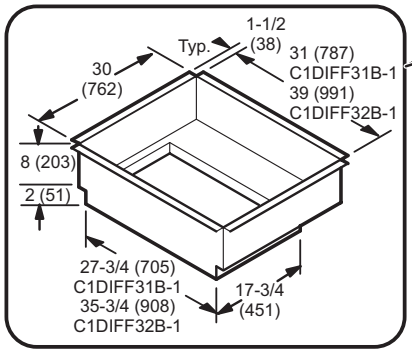


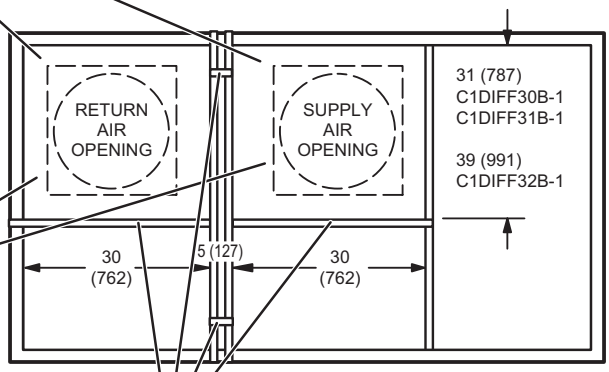
ROOF CURBS WITH SUPPLY & RETURN AIR TRANSITIONS FOR CEILING DIFFUSERS

C1DIFF30B-1 ROUND TRANSITIONS
(for 092 models)



C1DIFF31B-1 & C1DIFF32B-1 RECTANGULAR TRANSITIONS
(for 102 thru 150 models)



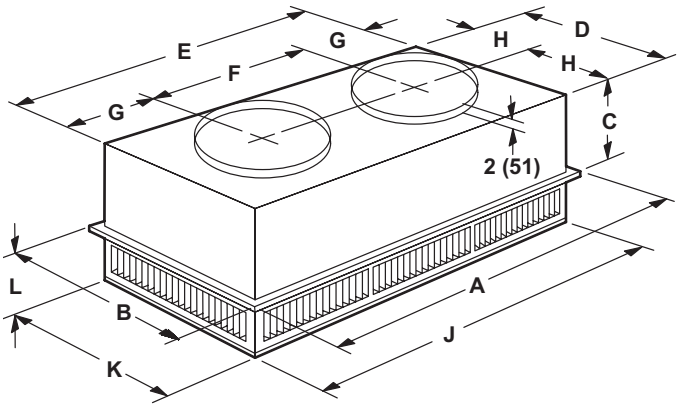


TOP VIEW

NOTE - These four supports are furnished with the transitions to replace supports furnished with curb for proper transition spacing.

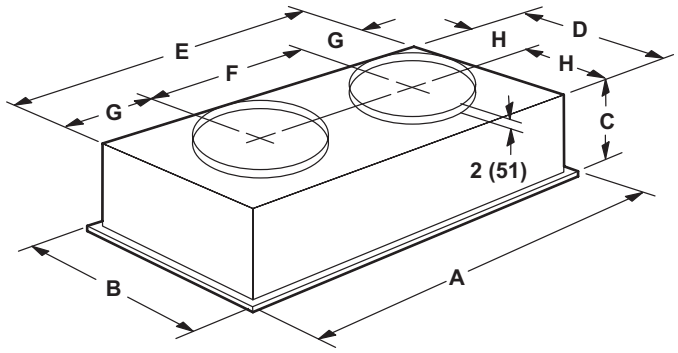
COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

STEP-DOWN CEILING DIFFUSER



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

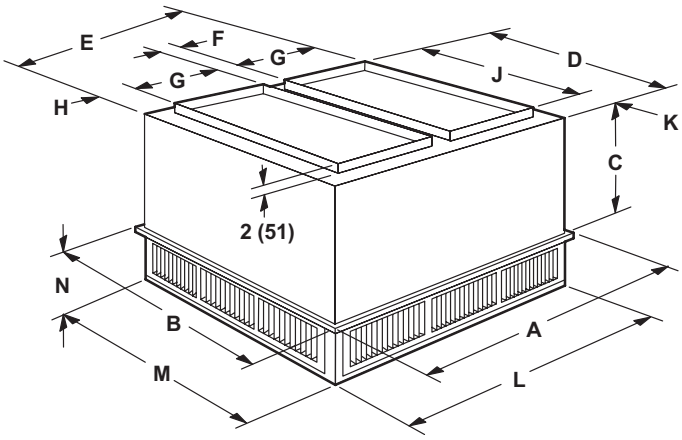
FLUSH CEILING DIFFUSER



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

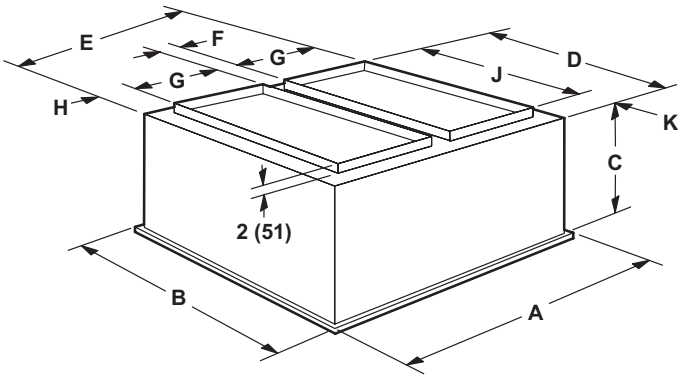
COMBINATION CEILING SUPPLY AND RETURN DIFFUSERS

STEP-DOWN CEILING DIFFUSER



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

FLUSH CEILING DIFFUSER



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

REVISIONS

Section	Description
Optional Conventional Temperature Control Systems	Added Cooling Stage-Up Timer Relay Optional Accessory for CS3000 Thermostat

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