Park Hill School District

Building Successful Futures • Each Student • Every Day

PARK HILL SCHOOL DISTRICT

REQUEST FOR PROPOSAL

9501 N. Seymour Ave.
Kansas City, MO 64153

2027 SUMMER HVAC

Park Hill High School
Renner Elementary

Detailed Proposal Information is Available on District Website
http://www.parkhill.k12.mo.us

Bid Closing Date: December 4, 2026

Bid Closing Time: 9:00 am CST

Park Hill School District reserves the right to reject any or all proposals and to waive informalities or irregularities in any proposal.

Park Hill School District

Building Successful Futures • Each Student • Every Day

November 16, 2026

CONTRACTOR:

You are invited to bid on providing labor and materials for the removal and installation of District provided HVAC units at Park Hill High School and Renner Elementary in the Park Hill School District.

C & C Controls must be used to coincide with District Energy Management System. If you have not done work for Park Hill School District in the past 5 years, you may be required to provide references.

A mandatory "pre-bid" meeting will begin at the Park Hill School District Support Services Center at 9501 N. Seymour Ave., Kansas City, MO 64153 on November 24, 2026 at 9:00 A.M.
Park Hill High School – 7701 NW Barry Rd, Kansas City, MO 64153
Renner Elementary - 7401 NW Barry Rd, Kansas City, MO 64153

The Park Hill School District, **will accept sealed bids until 9:00 a.m., December 4, 2026 at the office of Park Hill School District Support Services, 9501 N. Seymour Ave, Kansas City, MO 64153.**

Sincerely,

Jeremie Kahler

Jeremie Kahler
Director of Facilities

REQUEST FOR PROPOSAL - HVAC

The Park Hill School District (DISTRICT) is seeking proposals from qualified providers (CONTRACTOR) to furnish labor and materials for removal and installation of HVAC units.

Sealed proposals will be received at the Support Services office located at 9501 N. Seymour Ave, Kansas City, Missouri 64153 until December 4, 2026 at 9:00 AM. Proposals will be opened at that time.

Said proposals must conform to the specifications and instructions.

The DISTRICT reserves the right to reject any and all proposals and to waive informalities.

Proposals must be returned on the form(s) provided, with "Bid Proposal – 2027 Summer HVAC" clearly on the label. A proposal must consist of all pages of the proposal request including the signature page of the proposal, signed by an authorized representative of the firm. Non-conformance with these instructions may be grounds for rejection of proposal.

Faxed or e-mailed proposals will not be accepted. Late proposals will be rejected, unopened and returned.

_____

Jeremie Kahler
Director of Facilities
Park Hill School District
9501 N. Seymour Ave
Kansas City, Mo 64153

General Notes

- Bids will be awarded by package.
- Project is tax exempt.
- Certified payroll to meet requirements of Missouri Prevailing Wage law is required.
- All RTU's must include factory installed disconnects
- CONTRACTOR is responsible for any damage to sidewalks and grounds.
- Verify all RTU's output and notify District of differences
- Winning bidder will be required to provide schedule of work and adjust schedule as needed
- Factory start-up required on all RTU replacements.
- CONTRACTOR will only be supplying labor. PHSD will be purchasing equipment and CONTRACTOR will be responsible for receiving, storing, and delivering equipment to jobsite for installation.
- Any roof work to be coordinated with Tremco. Including curbs.
- Specifications:

  (All RTU's) – CONTRACTOR must work with C&C on integrating new equipment, new factory/field installed disconnects, hinged access panels, factory required filters, replace seal tite, factory start up. CONTRACTOR must inspect unit(s) for any damage or defects upon receipt at the site(s) and before installation. CONTRACTOR is responsible for lifting units in place. (picking and setting) CONTRACTOR is responsible for removal and disposal of existing equipment.

  CONTRACTOR – All bulkheads must have bushing/grommet for wiring, verify need for curb adapters with manufacturer.

- Payment will not be made until after July 1, 2027.
- Controls will be subbed to installing contractor.

PROJECT SCHEDULE

November 16, 2026 – RFP published to Park Hill School District website

November 24, 2026 – Mandatory Pre-Bid Meeting 9:00 AM at Support Services Center 9501 N. Seymour Ave, Kansas City MO 64153

December 4, 2026 – Sealed bids due by 9:00 AM to 9501 N. Seymour Ave, Kansas City MO 64153

December 10, 2026 – Park Hill School District Board of Education: First Read - Bids, Contracts, Agreements

January 14, 2027 – Park Hill School District Board of Education: Second Read and approval

February 1, 2027 – Park Hill Maintenance and Operations Department will contact board approved CONTRACTOR(s) to proceed with project

June 1, 2027 – Approximate work start date

August 1, 2027 – Work completion date

BID FORM—HVAC

PACKAGE #1 – Park Hill High School

SUBMIT BIDS TO: **Jeremie Kahler**
Park Hill School District
9501 N. Seymour Ave
Kansas City, MO 64153

Sealed bids will be accepted until **9:00 a.m., December 4, 2026.** Please ensure the envelope you return is clearly marked "Bid Proposal—2027 Summer HVAC".
Package 1: Schedule will be coordinated with the District. Project is tax exempt.

Unit	Bid
Split system D	_____
	_____
	_____
	Total $ _____

Factory start up required

District employee and C&C must be present.

CONTRACTOR must work with C&C on integrating new equipment, new factory/field installed disconnects, hinged access panels, factory required filters, replace seal tite, factory start up.

All bulkheads must have bushing/grommet for wiring, verify need for curb adapters with manufacturer.

All RTUs must include hail guards and disconnects.

COMPANY _____

ADDRESS _____

_____

PHONE _____ FAX _____

EMAIL _____

PRINT NAME _____

SIGNATURE _____ Date: _____

BID FORM—HVAC

PACKAGE #2 – Renner Elementary

SUBMIT BIDS TO: **Jeremie Kahler**
Park Hill School District
9501 N. Seymour Ave
Kansas City, MO 64153

Sealed bids will be accepted until 9:00 a.m., December 4, 2026. Please ensure the envelope you return is clearly marked "Bid Proposal—2027 Summer HVAC".

Package 2: Schedule will be coordinated with the District. Project is tax exempt.

Unit	Bid
RTU 7 & 8	_____
	_____
	Total $ _____

Factory start up required

District employee and C&C must be present.

CONTRACTOR must work with C&C on integrating new equipment, new factory/field installed disconnects, hinged access panels, factory required filters, replace seal tite, factory start up.

All bulkheads must have bushing/grommet for wiring, verify need for curb adapters with manufacturer.

All RTUs must include hail guards and disconnects.

COMPANY _____

ADDRESS _____

_____

PHONE _____ FAX _____

EMAIL _____

PRINT NAME _____

SIGNATURE _____ Date: _____

Trane Precedent Packaged Rooftop

Unit Overview - Model Number: YHK120A3S0M**D0C0A1A0A0000000000000000000

Application	Unit Size	Refrigerant	Elevation
DX Cooling / Gas Heat	10 Ton	R-454B Refrigerant	0.00 ft

Supply Fan		External Dimension			Unit Weight
Airflow	Total static pressure	Height	Width	Length	Operating
3700 cfm	1.120 in H2O	4.24 ft	4.44 ft	7.34 ft	1234.0 lb

AHRI Data & Unit Features

Efficiency	High Efficiency
EER @ AHRI conditions	11.60
IEER @ AHRI conditions	15.80

Factory Installed Options
Medium gas heat
Economizer, DB with barometric relief
Hinged access panels with 2-in MERV 8
Through-the-base Electric
Non-Fused Disconnect Switch
Unpowered 20A Convenience Outlet
Modulating Hot Gas Reheat (HGRH)



Packaged Rooftop units cooling, heating capacities and efficiencies are rated within the scope of the Air-Conditioning, Heating & Refrigeration Institute (AHRI) Certification Program and display the AHRI Certified® mark as a visual confirmation of conformance to the certification sections of AHRI Standard 340-360 (I-P) and ANSI Z21.47 pertaining to Commercial Warm Air Furnaces. Certified units may be found in the AHRI directory at www.ahridirectory.org.

Unit Electrical

Unit voltage	208-230/60/3	**Condenser fan FLA (Total)**	6.30 A
MCA	60.00 A	**Evaporator fan FLA**	8.80 A
MOP	80.00 A	**Compressor 1 RLA**	25.20 A
		Compressor 2 RLA	13.20 A
		Compressor power	8.81 kW
		System power	10.82 kW

Controls

Unit control	Symbio 700
Supply fan	Multi-speed motor

Cooling Performance

Cooling entering dry bulb	80.00 F
Cooling entering wet bulb	67.00 F
Coil leaving dry bulb	56.98 F
Coil leaving wet bulb	55.95 F
Unit leaving dry bulb	58.24 F
Unit leaving wet bulb	56.46 F
Saturated discharge temperature	121.78 F
Saturated suction temperature	51.67 F

Capacity	
Gross total capacity	126.29 MBh
Gross sensible capacity	93.11 MBh
Gross latent capacity	33.19 MBh
Net total capacity	122.56 MBh
Net sensible capacity	89.37 MBh
Net sensible heat ratio	72.92 %
Fan motor heat	1.92 MBh
Refrigerant charge - Ckt 1	9.4 lb
Percent capacity	28/72/100

Reheat Performance

Refrigeration system option	Modulating Hot Gas Reheat (HGRH)
Entering dry bulb (in HGRH)	73.00 F
Entering wet bulb (in HGRH)	64.00 F
Evap coil LAT DB (HGRH)	53.11 F
Evap coil LAT WB (HGRH)	52.81 F
HGRH AMB	70.00 F

Capacity	
HGRH capacity	74.22 MBh
Leaving dry bulb w HGRH	72.80 F
HGRH DP	52.63 F
Temperature rise (HGRH)	18.44 F
HGRH RATE	4.47 gph
Reheat coil LAT DB (HGRH)	71.55 F
Reheat coil LAT WB (HGRH)	60.03 F

Gas Heat Performance

Heating stages	2	**Heating entering air temperature**	70.00 F
Heating capacity	Medium gas heat	**Heating leaving air temperature**	110.06 F
Input heating capacity	200.00 MBh	**Heating temperature rise**	40.06 F
Output heating capacity	162.00 MBh		

Airflow Performance

Indoor Fan Performance	
Design airflow	3700 cfm
Design ESP	0.500 in H2O
Supply motor horsepower	3.000 hp
Supply operating horsepower	1.70 bhp
Supply RPM	1359 rpm
Indoor Fan Type	BC Plenum
Indoor fan drive type	Variable Direct
Component SP Add	0.376 in H2O
Total static pressure	1.120 in H2O

Outdoor Fan Performance	
Outdoor fan quantity	1
Outdoor fan type	Propeller
Outdoor fan drive type	Direct

Outside Air and Filtration

Outside Air
Economizer, DB with barometric relief

Filter Type	
Filter type	2-inch MERV 8 throwaway filters
1st Filter Size and Qty.	2 - 18 x 24 x 2
2nd Filter Size and Qty	3 - 24 x 16 x 2

Field Installed Accessories

Hinged access panels with 2-in MERV 8
Non-Fused Disconnect Switch
Through-the-base Electric
Humidity wall mounted sensor

Acoustics

Sound Path	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Ducted discharge	86 dB	88 dB	77 dB	74 dB	68 dB	65 dB	65 dB	66 dB
Ducted inlet	82 dB	76 dB	72 dB	60 dB	58 dB	56 dB	56 dB	56 dB
Outdoor noise	86 dB	87 dB	87 dB	83 dB	81 dB	77 dB	73 dB	67 dB

Physical Data

Evaporator rows	2
Evaporator fin spacing	18.000 Per Inch
Evaporator face area	11.84 sq ft
Evaporator face velocity	313 ft/min

Corner Weights and Center of Gravity

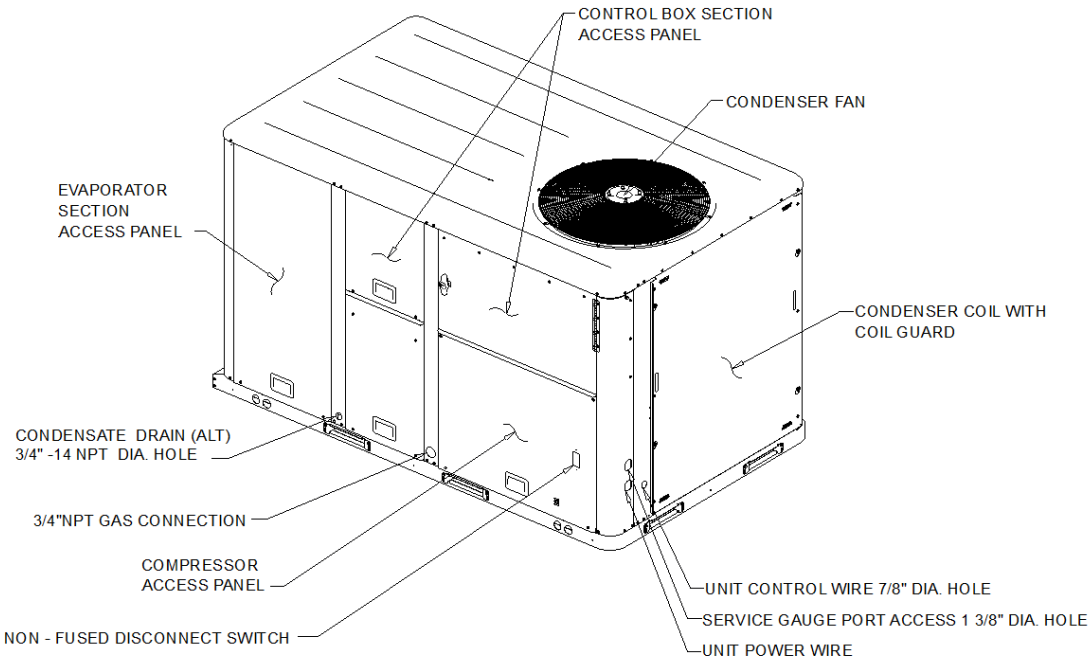
Corner Weights				Center of Gravity	
Corner weight A	354.0 lb	**Corner weight C**	168.0 lb	**Length**	3.42 ft
Corner weight B	302.0 lb	**Corner weight D**	193.0 lb	**Width**	1.50 ft

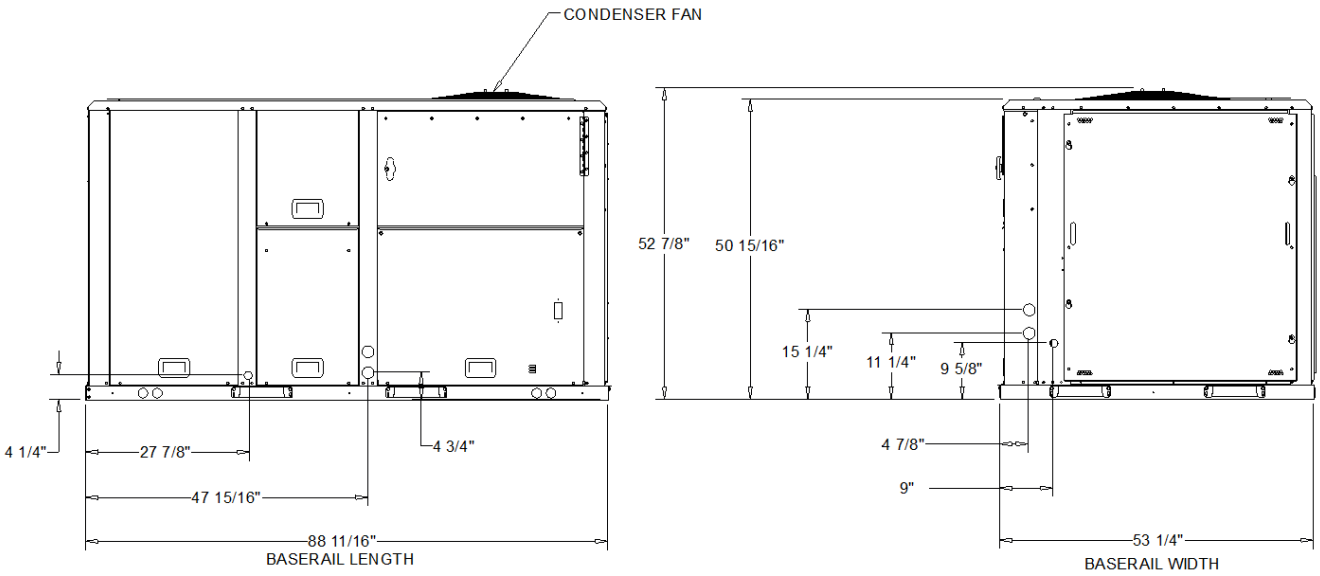
Warranties

1st Yr Labor Whole Unit
2nd-5th Yr Labor Whole Unit
4th-5th yr parts less compr warranty

Trane select assist version number	2609
Data Generation Date	11/09/2026

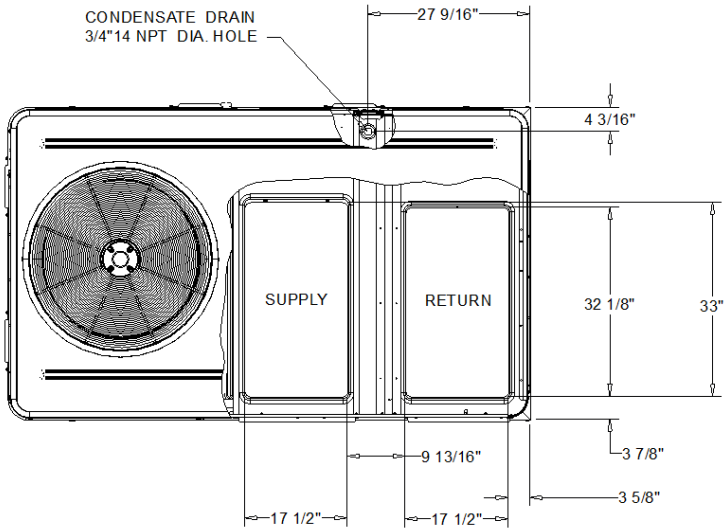
NOTES:
1. VERIFY WEIGHTS, CONNECTIONS, AND ALL DIMENSIONS WITH INSTALLER DOCUMENTS BEFORE INSTALLATION



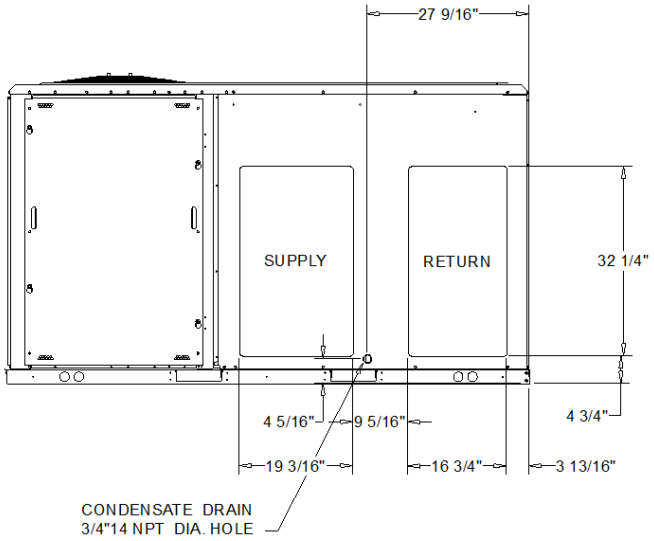


DX COOLING / GAS HEAT HIGH EFFICIENCY

DIMENSION DRAWING



PLAN VIEW OF DOWNFLOW OPENINGS



HORIZONTAL AIR FLOW OPENING

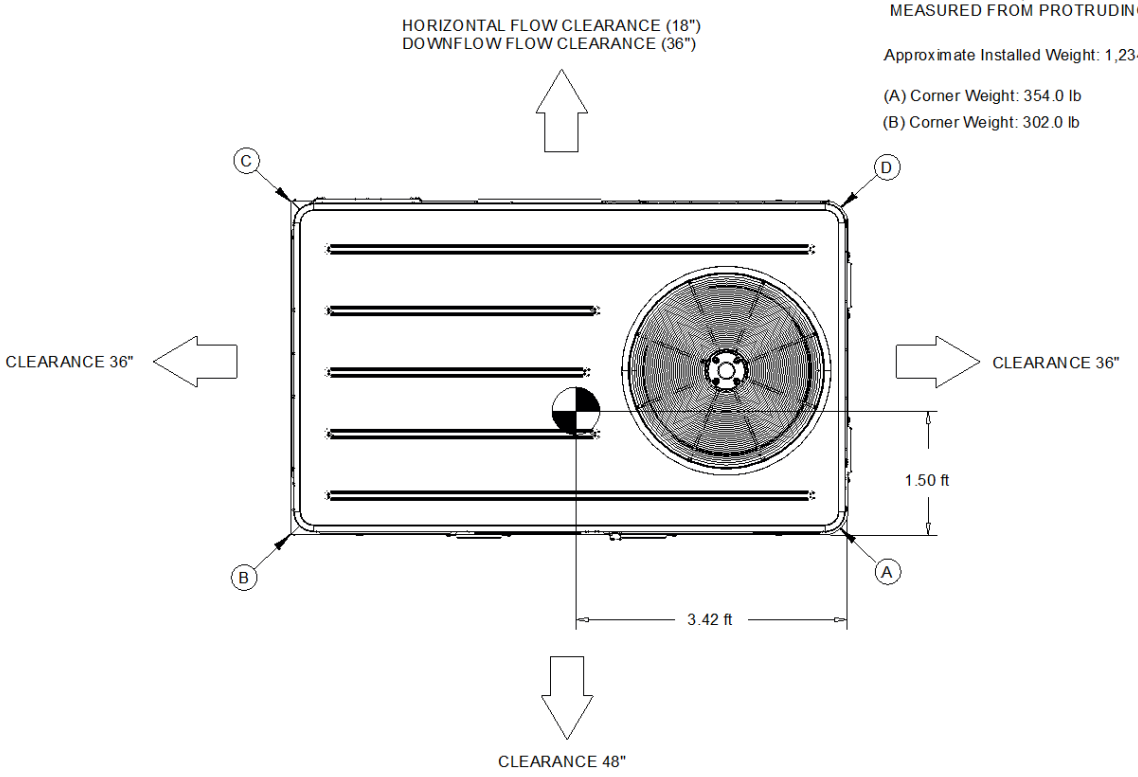
DX COOLING / GAS HEAT HIGH EFFICIENCY

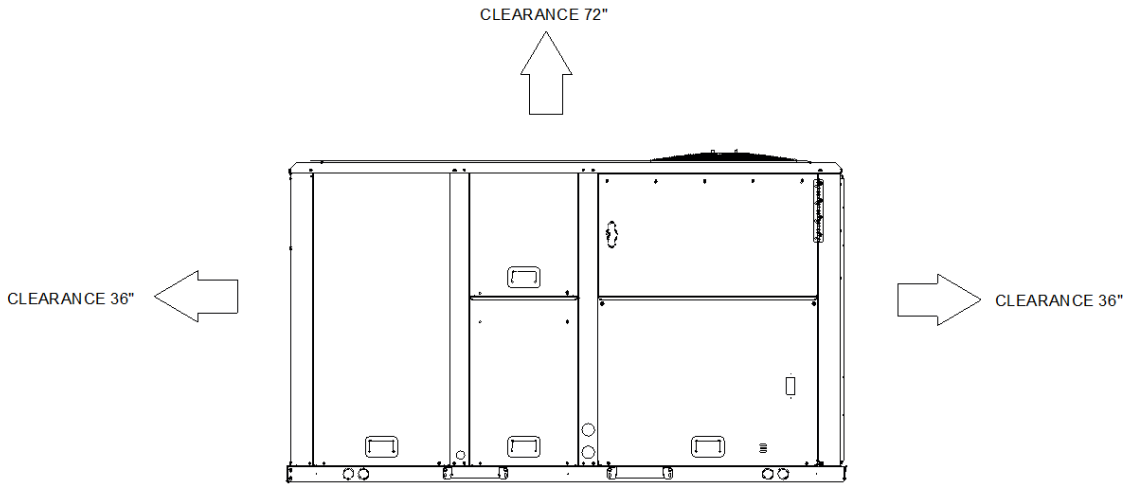
DIMENSION DRAWING

NOTES:
1. APPROX. INSTALLED WEIGHT INCLUDES ALL SELECTED OPTIONS AND ACCESSORIES.
2. CORNER WEIGHTS ARE FOR BASE UNIT ONLY AND DO NOT INCLUDE OPTIONS OR ACCESSORIES.
3. WEIGHT INCLUDES BOTH FACTORY AND FIELD INSTALLED ACCESSORY.
4. WHEN EQUIPPED WITH ECONOMIZER OR BAROMETRIC RELIEF DAMPER, CLEARANCE DISTANCE IS TO BE MEASURED FROM PROTRUDING HOOD INSTEAD OF BASE.

Approximate Installed Weight: 1,234.0 lb

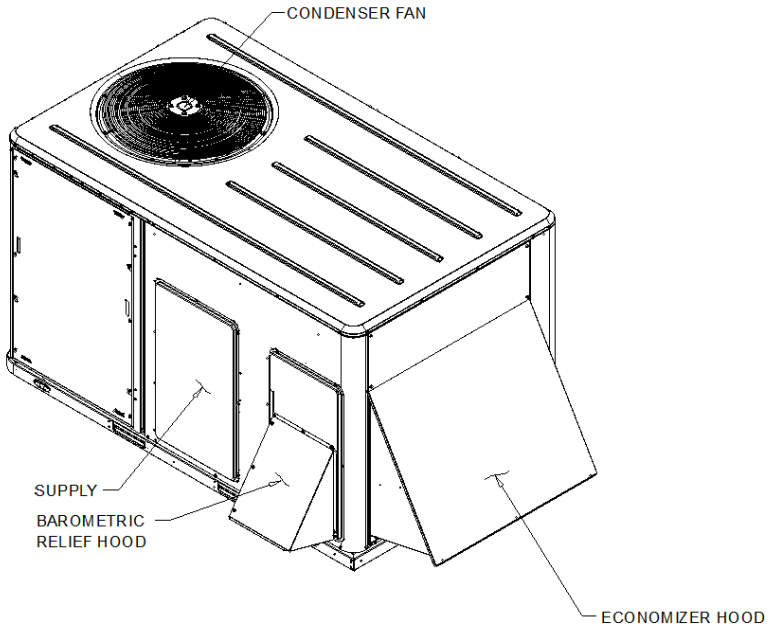
(A) Corner Weight: 354.0 lb
(B) Corner Weight: 302.0 lb
(C) Corner Weight: 168.0 lb
(D) Corner Weight: 193.0 lb

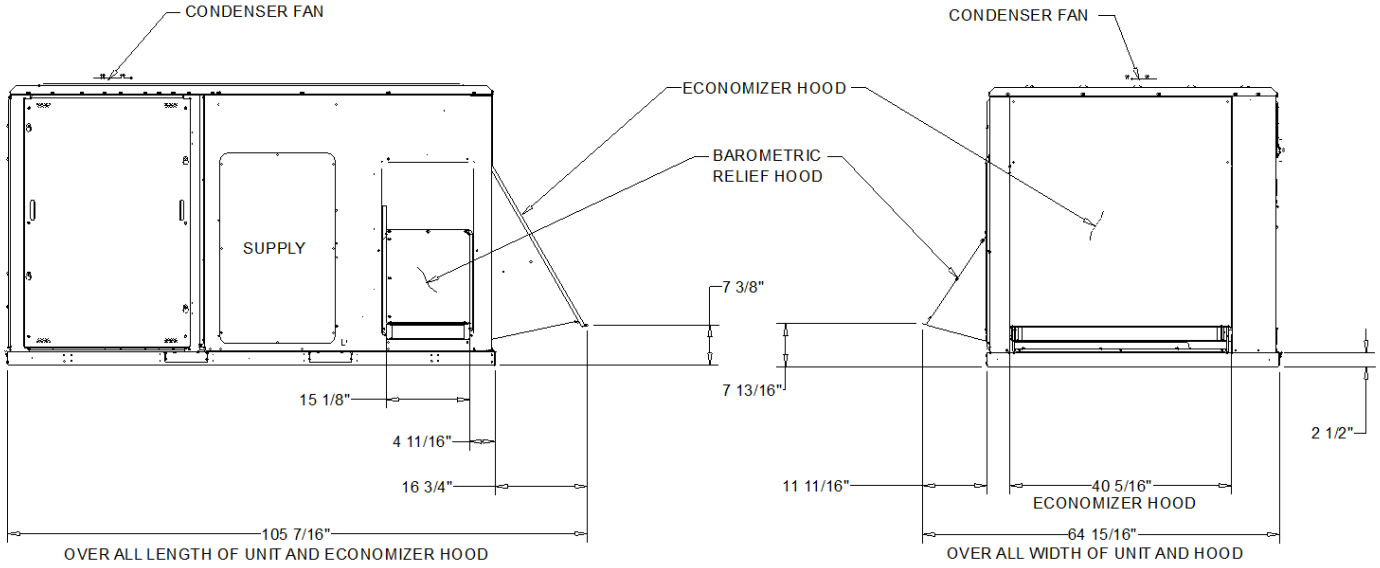




DX COOLING / GAS HEAT HIGH EFFICIENCY

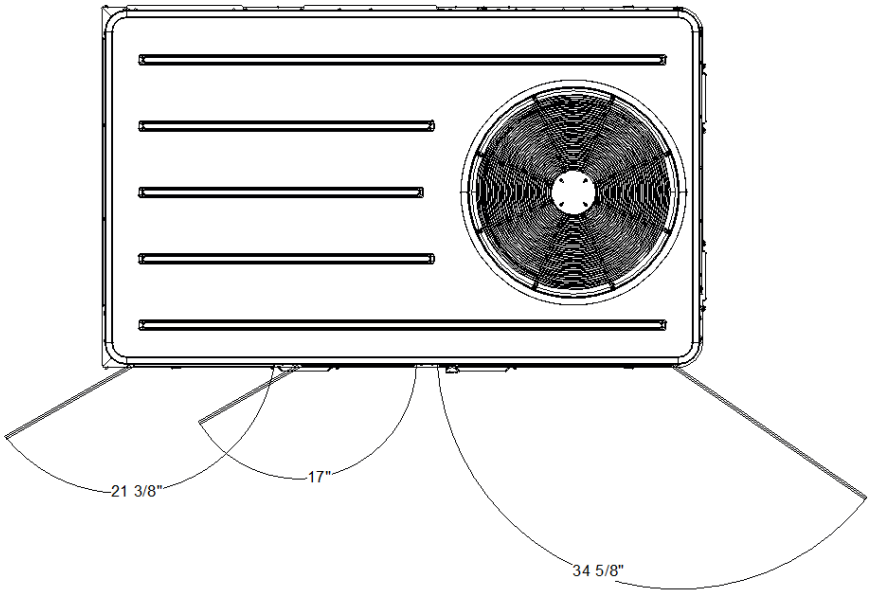
WEIGHTS AND CLEARANCES

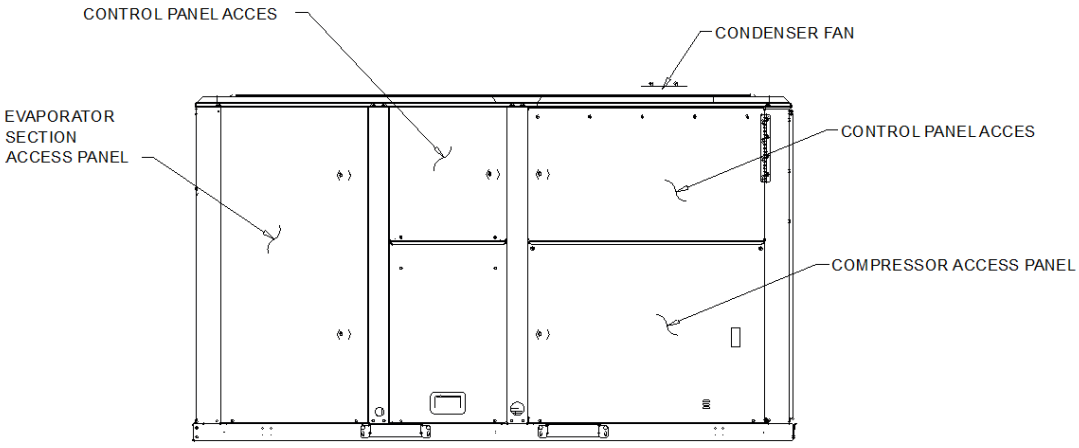




ECONOMIZER AND BAROMETIC AIR DAMPER(S) (OPTION)

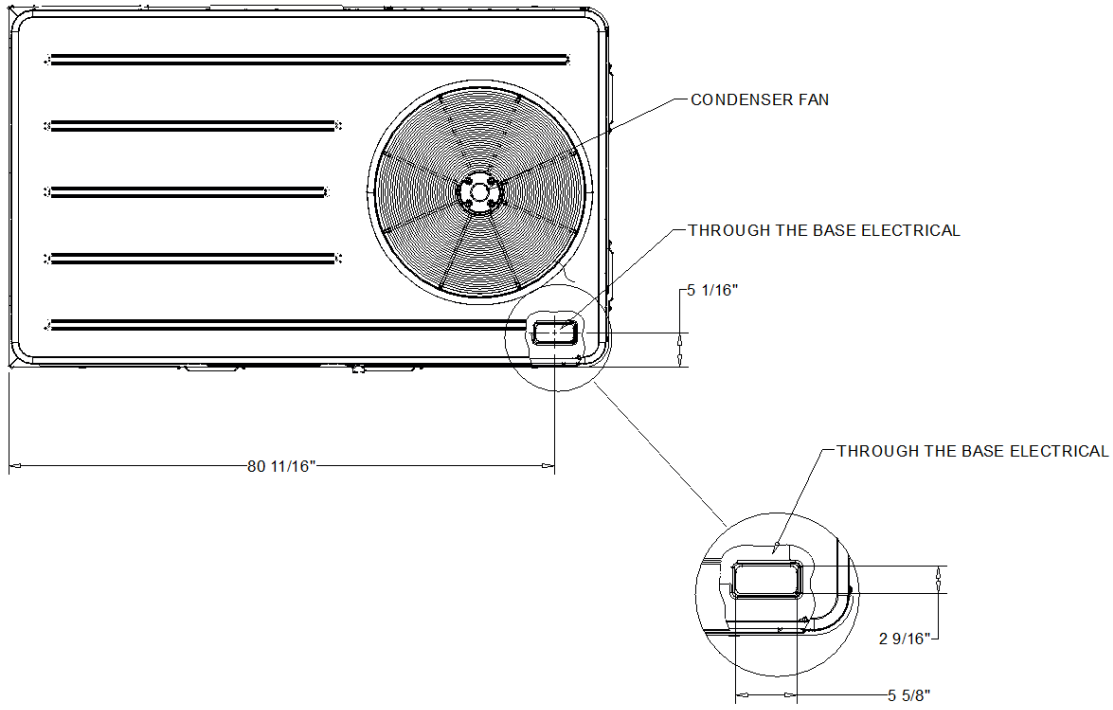
DX COOLING / GAS HEAT HIGH EFFICIENCY

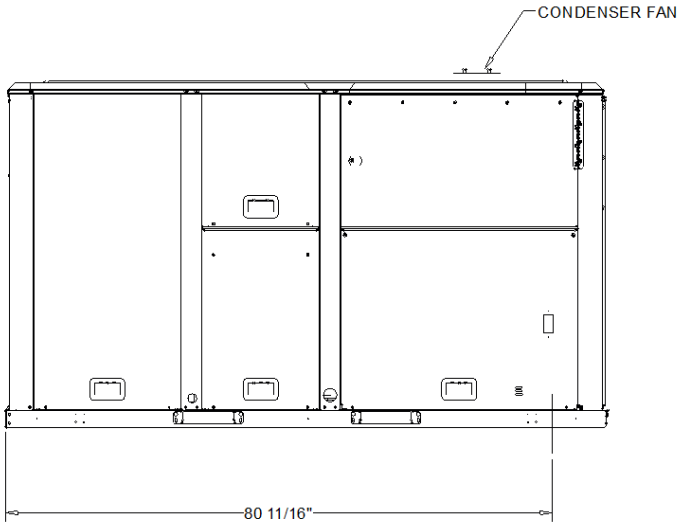




SWING DIAMETER FOR HINGED DOOR(S) (OPTION)

DX COOLING / GAS HEAT HIGH EFFICIENCY

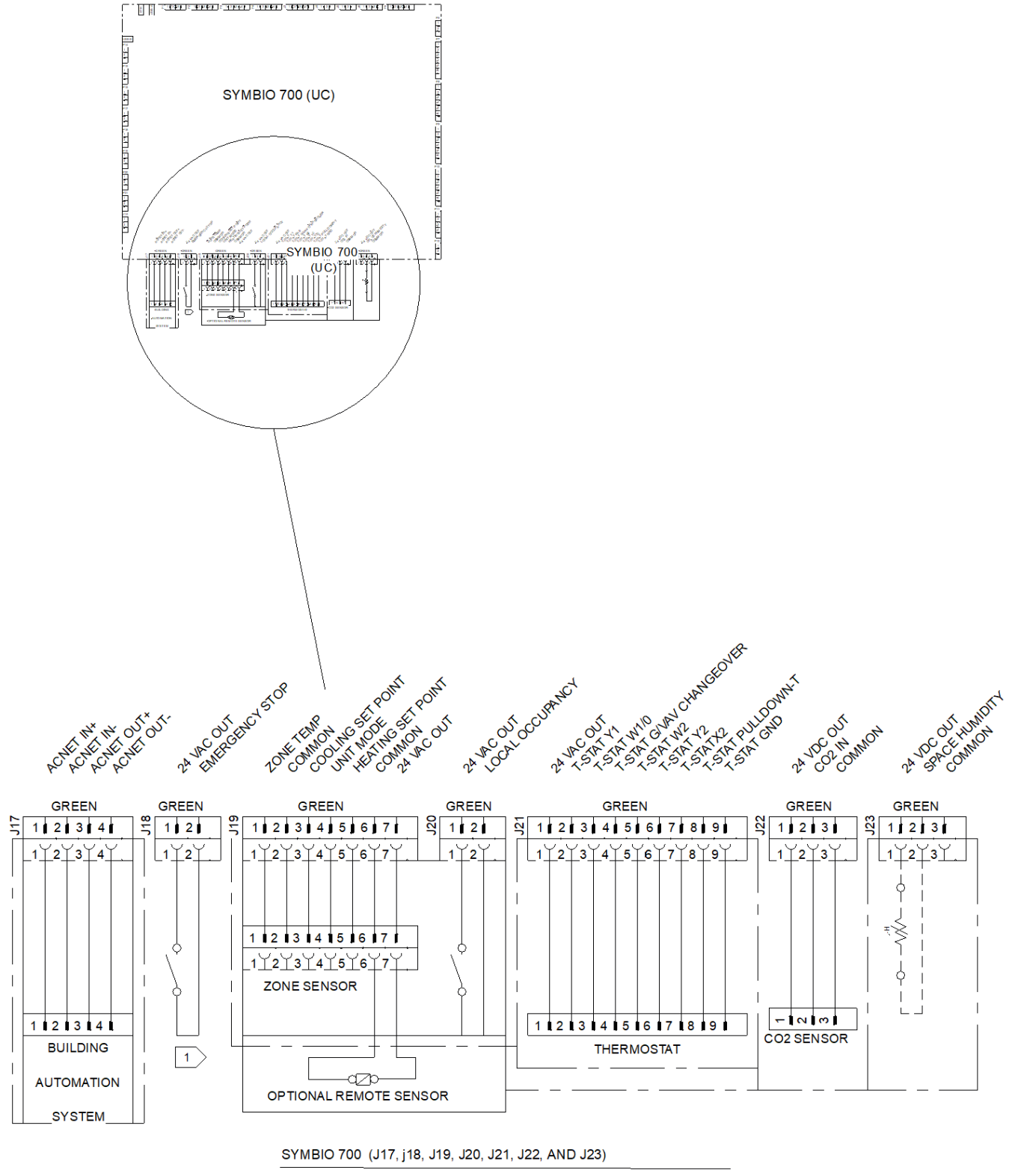




THROUGH-THE-BASE ELECTRICAL (OPTION)

DX COOLING / GAS HEAT HIGH EFFICIENCY

NOTES:
1. VERIFY WEIGHT, CONNECTION, AND ALL DIMENSION WITH INSTALLER DOCUMENTS BEFORE INSTALLATION



SYMBIO 700 (J17, j18, J19, J20, J21, J22, AND J23)

FIELD WIRING DRAWING

General (6-25 Ton)
The packaged rooftop unit's cooling capacities, heating capacities, and efficiencies are certified to AHRI Standard 210/240. It is listed to UL standard 60335-2-40. The gas heating units comply with ANSI Z21.47 and 10 CFR Part 431 for Commercial Warm Air. The unit features convertible airflow and is controlled by Symbio, which operates within a range of 40°F to 125°F in cooling mode as standard from the factory. It is factory-assembled, internally wired, fully charged, and 100 percent run-tested to verify cooling operation, fan and blower rotation, and control sequence before leaving the factory. The Fault Detection and Diagnostics (FDD) system meets the mandatory requirements of CA Title 24, offering fully configurable diagnostics that allow fault history and reading fault codes at the unit via the Symbio 700 board or app. The FDD system detects faults such as air temperature sensor failure/fault and notification of acceptable economizer mode, and it is certified by the Energy Commission as meeting these requirements. The unit features colored and numbered wiring internally for simplified identification and is cULus listed and classified in accordance with Central Cooling Air Conditioners. Additionally, the unit shall be furnished with a leak detection system from the factory, consisting of one or more refrigerant detection sensors. When the system detects a leak, the unit controller shall initiate mitigation actions.

Casing
The unit casing is constructed from zinc-coated, heavy-gauge, galvanized steel and features weather-resistant pre-painted metal with a galvanized substrate. It meets the ASTM B117 standard for a 672-hour salt spray test. The unit includes removable single-side maintenance access panels, which are equipped with lifting handles. These handles can be removed and reinstalled by removing fasteners, while still providing a water and airtight seal. The exposed vertical panels and top covers in the indoor air section are insulated with a cleanable, foil-faced, fire-retardant, permanent, odorless glass fiber material. The base pan has no penetrations within the perimeter of the curb, except for the raised 1-inch high downflow supply/return openings, which provide an added water integrity precaution in case the condensate drain backs up. The condensate connection is available through the base or through the side. The base of the unit is insulated with 1/8 inch, foil-faced, closed-cell insulation. Additionally, the unit base includes provisions for forklift and/or crane lifting on three sides of the unit.

Compressors (6-10 Ton)
All units are equipped with direct-drive, hermetic, scroll-type compressors featuring centrifugal-type oil pumps. The compressors have suction gas-cooled motors with a voltage utilization range of plus or minus 10 percent of the unit nameplate voltage. Internal overloads are standard with scroll compressors, and crankcase heaters are included on all compressors. Each unit includes a liquid line refrigerant drier. The units feature dual compressors and three stages of cooling.

Indoor Fan (6-25 Ton)
The indoor fan features a direct drive plenum fan design with a backward-curved fan wheel and an external rotor direct drive variable speed indoor motor. Supply fan speed adjustments can be made using the Symbio 700 or Mobile App. The motors are electronically protected and are high-efficiency variable speed direct drive motors.

Evaporator and Condenser Coils
The evaporator and condenser coils feature optimal heat transfer performance due to flat, streamlined tubes with small ports and a metallurgical tube-to-fin bond. This design reduces the system refrigerant charge by up to 50 percent, leading to better compressor reliability. The compact all-aluminum microchannel coils reduce the unit's weight and are fully recyclable, minimizing galvanic corrosion due to their all-aluminum construction. The strong aluminum brazed structure provides better fin protection, while the flat streamlined tubes are more dust-resistant and easy to clean. Additionally, the coils are leak-tested at the factory to verify their pressure integrity.

Phase Monitor
Phase monitor protects 3-phase equipment from phase loss, phase reversal and phase imbalance. Any fault condition shall produce a Failure Indicator LED and send the unit into an auto stop condition.

Gas Heating Section
The compact cabinet features a tubular heat exchanger available in low, medium, and high heat capacities. Corrosion-resistant aluminized steel tubes and burners are standard on all models. An induced draft combustion blower is used to pull the combustion products through the firing tubes. The heater utilizes a direct spark ignition (DSI) system and a flame sensor as a safety device to validate the flame.

Modulating Hot Gas Reheat (HGRH)
The modulating hot gas reheat (HGRH) humidity control system allows for full independent control of latent capacity via a staged or modulating refrigeration system and independent control of discharge air temperature via a modulating hot gas reheat valve. This system provides tightly controlled humidity levels without overcooling the space, delivering year-round comfort and improving indoor air quality. The modulating reheat feature maintains a stable neutral leaving air temperature, resulting in less cycling. The system includes both relative humidity and dew point control.

MERV 8 filters
2-inch deep MERV 8 filters

Standard Drain Pan (3-10 Ton)
The standard drain pan features an easy-to-clean, composite, removable, dual-sloped drain pan designed for improved indoor air quality (IAQ). The drain pan configuration is modifiable, allowing for the installation of the drain trap on either side of the unit or through the base.

Frostat
The Frostat is used as a safety mechanism, designed to open to prevent freezing temperatures on the evaporator coil. It closes when the temperature rises to 50°F. This device is particularly utilized in low airflow or high outside air applications, specifically in cooling-only scenarios.

Coil Guards
Coil Guards are factory installed to provide condenser coil protection during shipping and from hail, vandals, wind, and other damage. The toolless design lends itself to ease of maintenance in cleaning coils.

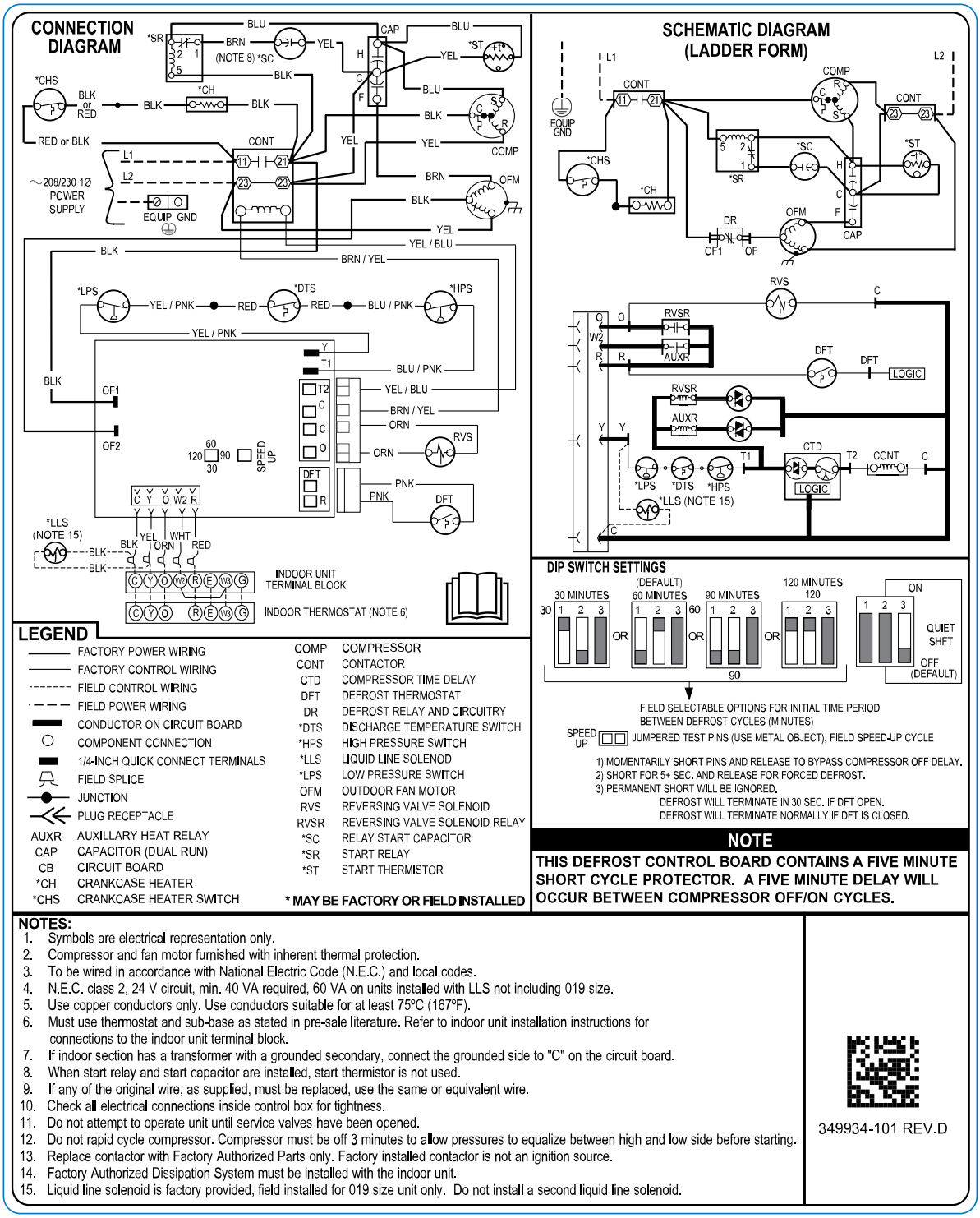
Through-the-Base Electrical with Disconnect Switch
The unit includes a 3-pole, molded case disconnect switch with provisions for through-the-base electrical connections. The disconnect switch is installed within the unit in a watertight enclosure. Wiring is provided from the switch to the unit's high voltage terminal block. The switch is cULus agency recognized. Note that the disconnect switch is sized per NEC and cULus guidelines but does not replace unit overcurrent protection.

Unpowered Convenience Outlet
Unpowered GFCI, 120V/20A, 2 plug, convenience outlet.

Standard Economizer dry bulb control (Field Installed)
The standard economizer features fully modulating 0 to 100 percent motor and dampers, with a minimum position setting, preset linkage, wiring harness with plug, spring return actuator, and fixed dry bulb control. The unit arrives in the shipping position and must be switched to the operating position by the installing contractor.

N5H5S
SPLIT-SYSTEM HEAT PUMP
WITH R-454B REFRIGERANT
1.5 To 5 Nominal Tons

Wiring Diagrams



LEGEND

	FACTORY POWER WIRING	COMP	COMPRESSOR
	FACTORY CONTROL WIRING	CONT	CONTACTOR
	FIELD CONTROL WIRING	CTD	COMPRESSOR TIME DELAY
	FIELD POWER WIRING	DFT	DEFROST THERMOSTAT
	CONDUCTOR ON CIRCUIT BOARD	DR	DEFROST RELAY AND CIRCUITRY
	COMPONENT CONNECTION	*DTS	DISCHARGE TEMPERATURE SWITCH
	1/4-INCH QUICK CONNECT TERMINALS	*HPS	HIGH PRESSURE SWITCH
	FIELD SPLICE	*LLS	LIQUID LINE SOLENOD
	JUNCTION	*LPS	LOW PRESSURE SWITCH
	PLUG RECEPTACLE	OFM	OUTDOOR FAN MOTOR
AUXR	AUXILLARY HEAT RELAY	RVS	REVERSING VALVE SOLENOID
CAP	CAPACITOR (DUAL RUN)	RVSR	REVERSING VALVE SOLENOID RELAY
CB	CIRCUIT BOARD	*SC	RELAY START CAPACITOR
*CH	CRANKCASE HEATER	*SR	START RELAY
*CHS	CRANKCASE HEATER SWITCH	*ST	START THERMISTOR

* MAY BE FACTORY OR FIELD INSTALLED

NOTE

THIS DEFROST CONTROL BOARD CONTAINS A FIVE MINUTE SHORT CYCLE PROTECTOR. A FIVE MINUTE DELAY WILL OCCUR BETWEEN COMPRESSOR OFF/ON CYCLES.

NOTES:

1. Symbols are electrical representation only.
2. Compressor and fan motor furnished with inherent thermal protection.
3. To be wired in accordance with National Electric Code (N.E.C.) and local codes.
4. N.E.C. class 2, 24 V circuit, min. 40 VA required, 60 VA on units installed with LLS not including 019 size.
5. Use copper conductors only. Use conductors suitable for at least 75°C (167°F).
6. Must use thermostat and sub-base as stated in pre-sale literature. Refer to indoor unit installation instructions for connections to the indoor unit terminal block.
7. If indoor section has a transformer with a grounded secondary, connect the grounded side to "C" on the circuit board.
8. When start relay and start capacitor are installed, start thermistor is not used.
9. If any of the original wire, as supplied, must be replaced, use the same or equivalent wire.
10. Check all electrical connections inside control box for tightness.
11. Do not attempt to operate unit until service valves have been opened.
12. Do not rapid cycle compressor. Compressor must be off 3 minutes to allow pressures to equalize between high and low side before starting.
13. Replace contactor with Factory Authorized Parts only. Factory installed contactor is not an ignition source.
14. Factory Authorized Dissipation System must be installed with the indoor unit.
15. Liquid line solenoid is factory provided, field installed for 019 size unit only. Do not install a second liquid line solenoid.

349934-101 REV.D

Fig. 1 – 208-230-1

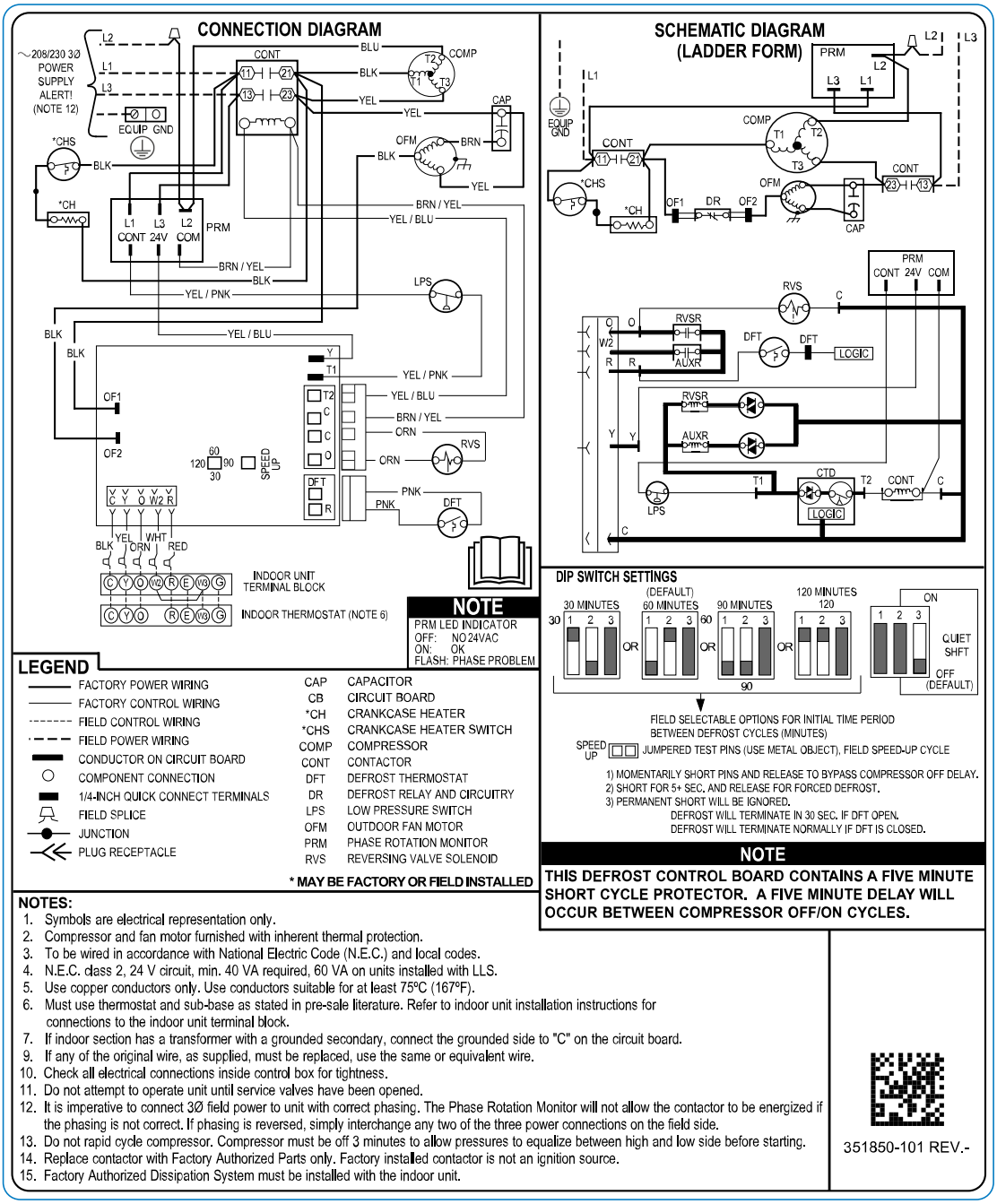


Fig. 2 – 208/230-3 Sizes (3, 4 and 5 Tons)

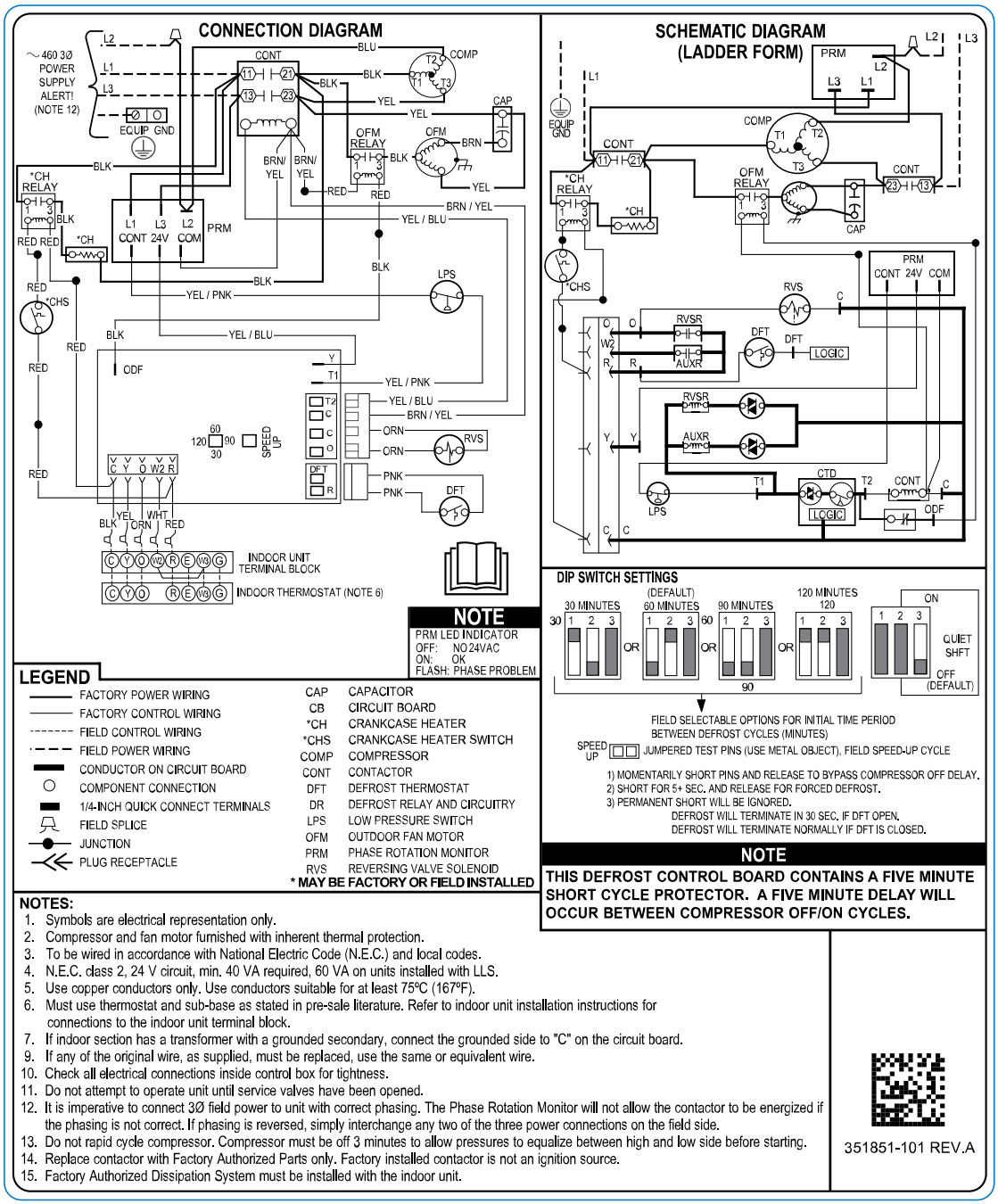


Fig. 3 – 460-3-60 Sizes (3, 4 and 5 Tons)

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FHMA5 & WCHL
Fan Coil Units for R-454B Refrigerant
Sizes 18 to 6

Installation Instructions

NOTE: Read these entire instructions before starting the installation.

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Safety Considerations

Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electrical shock, or other conditions which may cause death, personal injury or property damage. Consult a qualified installer, service agency, or your distributor or branch for information or assistance. The qualified installer or agency must use factory-authorized kits or accessories when modifying this product. Refer to the individual instructions packaged with kits or accessories when installing.

Follow all safety codes. Wear safety glasses, protective clothing and work gloves. Have a fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions included in literature and attached to the unit. Consult local building codes and the current editions of the National Electrical Code (NEC) NFPA 70.

In Canada, refer to the current editions of the Canadian Electrical Code CSA C22.1.

Recognize safety information. This is the safety-alert symbol ⚠. When you see this symbol on the unit and in instruction manuals, be alert to the potential for personal injury.

Understand the signal words **DANGER**, **WARNING**, and **CAUTION**. These words are used with the safety-alert symbol. **DANGER** identifies the most serious hazards which **will** result in severe personal injury or death. **WARNING** signifies hazards which **could** result in personal injury or death. **CAUTION** is used to identify unsafe practices which **may** result in minor personal injury or product and property damage. **NOTE** is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.

⚠ WARNING



PROPERTY OR PERSONAL INJURY HAZARD

Risk of fire. Flammable refrigerant used.

To be repaired only by trained service personnel. Do not puncture refrigerant tubing.

Auxiliary devices which may be ignition sources shall not be installed in the ductwork, other than auxiliary devices listed for use with the specific appliance. See instructions.

Dispose of refrigerant properly in accordance with federal or local regulations.

Failure to follow proper R-454B mitigation system installation instructions can result in property damage, personal injury, or death. If any fault codes are listed, please troubleshoot to prevent system malfunction.

⚠ WARNING

PERSONAL INJURY / PROPERTY DAMAGE HAZARD

Failure to follow this warning could result in property damage, personal injury, or death.

For continued performance, reliability, and safety, the only approved accessories and replacement parts are those specified by the equipment manufacturer. The use of non-manufacturer approved parts and accessories could invalidate the equipment limited warranty and result in fire risk, equipment malfunction, and failure. Please review manufacturer's instructions and replacement part catalogs available from your equipment supplier.

⚠ WARNING

ELECTRICAL OPERATION HAZARD

Failure to maintain proper clearances could result in personal injury or death.

Before installing or servicing unit, always turn off all power to unit. There may be more than 1 disconnect switch. Turn off accessory heater power if applicable.

⚠ CAUTION

CUT HAZARD

Failure to follow this caution may result in personal injury.

Sheet metal parts may have sharp edges or burrs. Use care and wear appropriate protective clothing, safety glasses and gloves when handling parts.

⚠ CAUTION

HOT TUBE WARNING

Failure to follow this caution could result in personal injury and/or property damage.

Refrigerant lines can reach or exceed 130 °F (54 °C). Avoid contact with the vapor header or vapor line, especially in Heating Mode. Do not service A2L refrigerant fan coils while these components are hot to avoid risk of ignition source.

Introduction

These Fan Coils are designed for installation flexibility. The units leave the factory compliant with low leak requirements of less than 2% cabinet leakage rate at 1.0 inches W.C. and 1.4% cabinet leakage rate at 0.5 inches W.C. when tested in accordance with ASHRAE 193 standard.

All these fan coils use a multi-tap ECM motor for efficiency. The units have been designed for upflow, downflow (kit required), and horizontal orientations, including manufactured and mobile home applications.

IMPORTANT: These units are designed specifically for R-454B refrigerant and must be used only with R-454B refrigerant air conditioners and heat pumps as shipped.

IMPORTANT: This unit MUST be installed in a location that is LOWER than 600 meters above sea level. These units are available for systems of 18,000 through 60,000 BTUh nominal cooling capacity. See Product Data literature for all available accessory kits.

Heater Packages

NOTE: Some heater sizes may require the removal of two screws which connect the blower housing to the fan deck (removal will not impact performance). See Care and Maintenance on p14 and Fig. 24.

For units not equipped with factory-installed heat, a factory-approved, field-installed, UL listed heater package is available from your equipment supplier. See unit rating plate for a list of factory-approved heaters. Heaters that are not factory approved could cause damage which would not be covered under the equipment warranty. If fan coil contains a factory-installed heater package, minimum circuit ampacity (MCA) and maximum fuse/breaker may be different than units with a same size field-installed accessory heater. The difference is not an error and is due to calculation difference per UL guidelines.

Installation

Check Equipment

Unpack unit and move to final location. Remove carton taking care not to damage unit.

NOTE: If the door gasket is damaged or missing, the unit may not meet the ASHRAE 193 standard for cabinet air leakage. See the Product Data for this model or contact your supplier to order the gasket kit.

Inspect equipment for damage prior to installation. File claim with shipping company if shipment is damaged or incomplete. Locate unit rating plate which contains proper installation information. Check rating plate to be sure unit matches job specifications.

Mount Unit

Unit can stand or lie on floor, or hang from ceiling or wall. Allow space for wiring, piping, and servicing unit.

The indoor equipment and pipes shall be securely mounted and guarded such that accidental rupture of equipment cannot occur from such events as moving furniture or reconstruction activities. When a Fresh Air Ventilator (HRV or ERV) is used, the air extraction opening from the room shall be located equal to or below the top of the unit. For floor mounted units, it shall be as low as practicable. The air extraction openings shall be located in a sufficient distance, BUT NOT LESS THAN 3ft 4in (3 m), from the air intake openings to prevent re-circulation to the space. When a Fresh Air Ventilator (HRV or ERV) is used, the lower edge of the air extraction opening where air is exhausted from the room SHALL NOT be more than 4in (100 mm) above the floor.

IMPORTANT: When unit is installed over a finished ceiling and/or living area, building codes may require a field-supplied secondary condensate pan to be installed under the entire unit. Some localities may allow as an alternative, the running of a separate, secondary condensate line. Consult local codes for additional restrictions or precautions.

Nuisance sweating may occur if the unit is installed in a high humidity environment with low airflow.

Upflow Installation

If return air is to be ducted through a floor, set unit on floor over opening and use 1/8" to ¼" (3 to 6 mm) thick fireproof resilient gasket between duct, unit, and floor.

Side return is a field option on slope coil models. Cut opening per dimensions (Fig. 2). A field-supplied bottom closure is required.

Modular Units

Modular units (3½, 4, and 5 ton) can be disassembled and components moved separately to the installation area for reassembly. This process accommodates small scuttle holes and limiting entrances to installation sites (Fig. 1).

To disassemble the unit, disconnect the 4-pin sensor wire harness at the dissipation board and undo the wire routing in the cabinet. Remove the rear corner brackets by removing 2 screws which secure the brackets. Remove either 2 screws in each front corner of the coil box, or 2 screws in the blower box. **Do not** remove all 4 screws in each corner. Sections may now be separated by lifting the top section from the lower section.

To reassemble, reverse above procedure. Be certain to reinstall all fasteners when reassembling.

Manufactured and Mobile Home Housing Applications

1. Secure the fan coil to the structure using field-supplied hardware.
2. Allow a minimum of 24" (610 mm) clearance from access panels.
3. Recommended method of securing for typical applications:
   a. If fan coil is away from wall, attach pipe strap to top of fan coil using no. 10 self-tapping screws. Angle strap down and away from back of fan coil, remove all slack, and fasten to wall stud of structure using 5/16" lag screws. Typical both sides of fan coil.
   b. If fan coil is against wall, secure fan coil to wall stud using 1/8" (3 mm) thick right-angle brackets. Attach brackets to fan coil

using no. 10 self-tapping screws and to wall stud using 5/16" lag screws (Fig. 1).

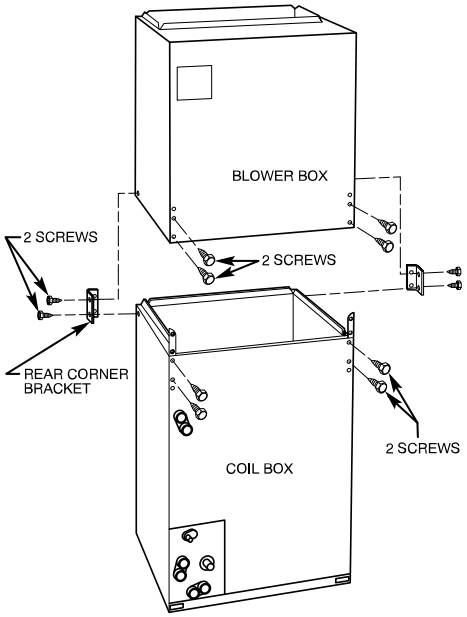


Fig. 1 – Removal of Brackets on Modular Unit

Downflow Installation

In this application, field conversion of the evaporator is required using accessory downflow kit along with an accessory base kit. Use fireproof resilient gasket, 1/8" to ¼" (3 to 6 mm) thick, between duct, unit, and floor.

NOTE: To convert units for downflow applications, refer to Installation Instructions supplied with kit for proper installation. See the Product Data or contact your supplier for the kit number. Use fireproof resilient gasket, 1/8" to ¼" (3 to 6 mm) thick, between duct, unit, and floor.

NOTE: A gasket kit is also required for all downflow applications to maintain low air leak/low sweat performance. See the Product Data or contact your supplier for the kit number.

⚠ CAUTION

PRODUCT OR PROPERTY DAMAGE HAZARD

Failure to follow this warning caution may result in product or property damage.

The conversion of the fan coil to downflow requires special procedures for the condensate drains on both A-coil and Slope-coil units. The vertical drains have an overflow hole between the primary and secondary drain holes. This hole is plugged for all applications except downflow, and must be used for downflow. During conversion process, remove plastic cap covering vertical drains only and discard. Remove plug from overflow hole and discard. At completion of downflow installation, caulk around vertical pan fitting to door joint to retain low air leak performance of the unit.

Horizontal Installation

Units must not be installed with access panels facing up or down. All other units are factory built for horizontal left installation (Fig. 3 and Fig. 4). When suspending unit from ceiling, dimples in casing indicate suitable location of screws for mounting metal support straps (Fig. 3).

For horizontal applications having high return static and humid return air, the Water Management Kit may need to be used to assist in water management. See the Product Data or contact your supplier for the kit number.

NOTE: Modular units can be disassembled and components moved separately to installation area for reassembly. This process accommodates small scuttle holes and limiting entrances to installation sites (Fig. 8).

⚠ CAUTION

PROPERTY DAMAGE HAZARD

Failure to follow this caution may result in product or property damage.

For optimum condensate drainage performance in horizontal installations, unit should be leveled along its length and width.

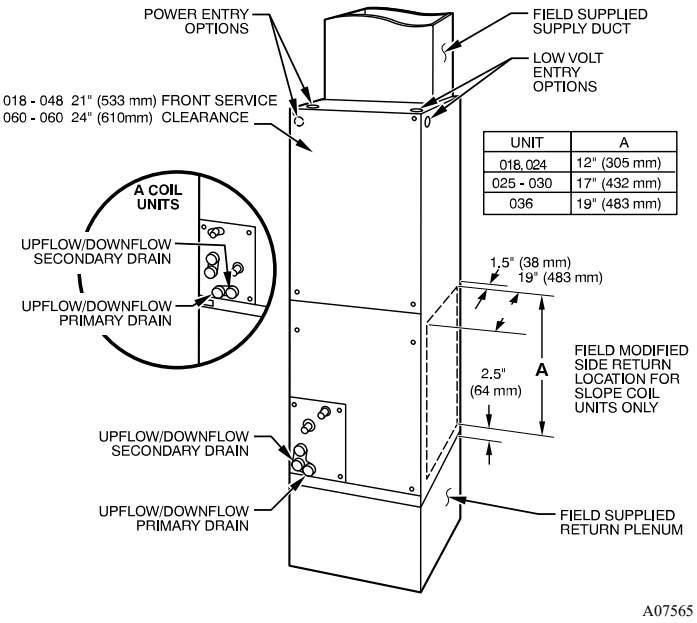


Fig. 2 – Slope Coil Unit in Upflow Application

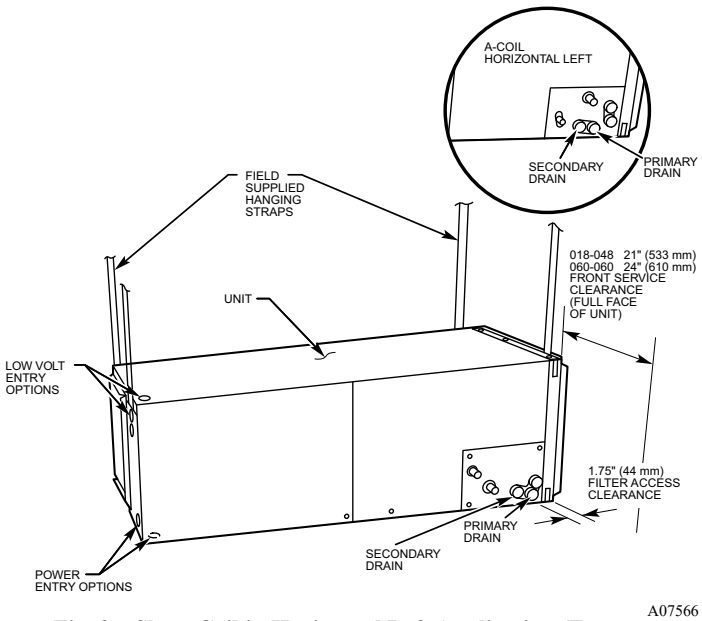


Fig. 3 – Slope Coil in Horizontal Left Application (Factory Configuration)

Horizontal Right Conversion of Units with Slope Coils

NOTE: A gasket kit is required for horizontal slope coil conversion to maintain low air leak/low sweat performance. See the Product Data or contact your supplier for the kit number.

1. Remove blower and coil access panels and fitting panel (Fig. 6).
2. Disconnect sensor on drain pan and cut wire tie securing sensor harness to the coil.
3. Undo sensor wire routing and place entire harness in the control box.
4. Remove coil mounting screw securing coil assembly to right side casing flange.
5. Remove coil assembly.
6. Lay fan coil on its right side and reinstall coil assembly with condensate pan down (Fig. 5).
7. Attach coil to casing flange using previously removed coil mounting screw.
8. Reconnect sensor wire harness by following routing shown in Fig. 5.

IMPORTANT: Sensor must be installed with the connector facing down or facing horizontally. Sensor should never be positioned with connector facing upward. Incorrect sensor position could result in premature failure.

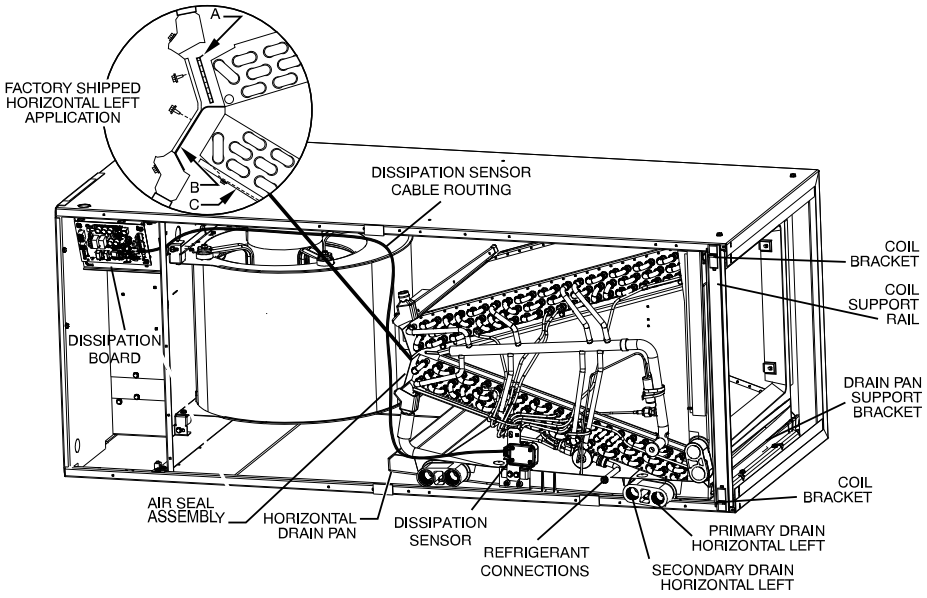
9. Make sure pan cap in fitting door is properly seated on fitting door to retain low air leak rating of the unit.
10. Add gaskets from kit.
11. Align holes with tubing connections and condensate pan connections. Reinstall access panels and fitting panel.
12. Make sure liquid and suction tube grommets are in place to prevent air leaks and cabinet sweating. Install grommets after brazing.

Horizontal Right Conversion of Units with A-Coils

1. Remove blower and coil access panels (Fig. 6).
2. Disconnect and remove sensor on delta plate and install on horizontal drain pan clip (Fig. 18).

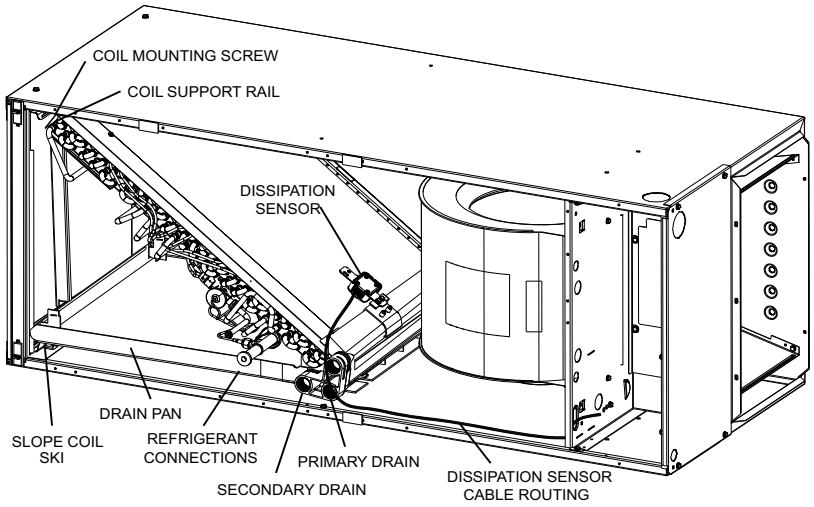
IMPORTANT: Sensor must be installed with the connector facing down or facing horizontally. Sensor should never be positioned with connector facing upward. Incorrect sensor position could result in premature failure.

3. Undo sensor wire harness routing and place entire harness in the control box.
4. Remove metal clip securing fitting panel to condensate pan. Remove fitting panel.
5. Remove 2 snap-in clips securing A-coil in unit.
6. Slide coil and pan assembly out of unit.
7. Remove horizontal drain pan support bracket from coil support rail on left side of unit and reinstall on coil support rail on right side of unit (Fig. 7).
8. Convert air seal assembly for horizontal right.
   a. Remove air seal assembly from coil by removing 4 screws (Fig. 6).
   b. Remove air splitter (B) from coil seal assembly by removing 3 screws (Fig. 6 inset).
   c. Remove filler plate (A) and install air splitter (B) in place of filler plate.
   d. Install filler plate (A) as shown in horizontal right application.
   e. Remove condensate troughs (C) and install on opposite tube sheets.
   f. Install hose onto plastic spout.
9. Install horizontal pan on right side of coil assembly.
10. Slide coil assembly into casing. Be sure coil bracket on each corner of vertical pan engages coil support rails.
11. Reinstall 2 snap-in clips to correctly position and secure coil assembly in unit. Be sure clip with large offsets is used on right side of unit to secure horizontal pan.
12. Remove two oval fitting caps from left side of the coil, access panel, and fitting panel.
13. Remove insulation knockouts on right side of coil access panel.
14. Remove 2 oval coil access panel plugs and reinstall into holes on left side of coil access panel and fitting panel.
15. Install condensate pan fitting caps (from Step 12) in right side of coil door making sure that cap snaps and seats cleanly on back side of the coil door. Make sure no insulation interferes with seating of cap.
16. Reinstall access and fitting panels, aligning holes with tubing connections and condensate pan connections. Be sure to reinstall metal clip between fitting panel and vertical condensate pan.
17. Make sure liquid and suction tube grommets are in place to prevent air leaks and cabinet sweating.



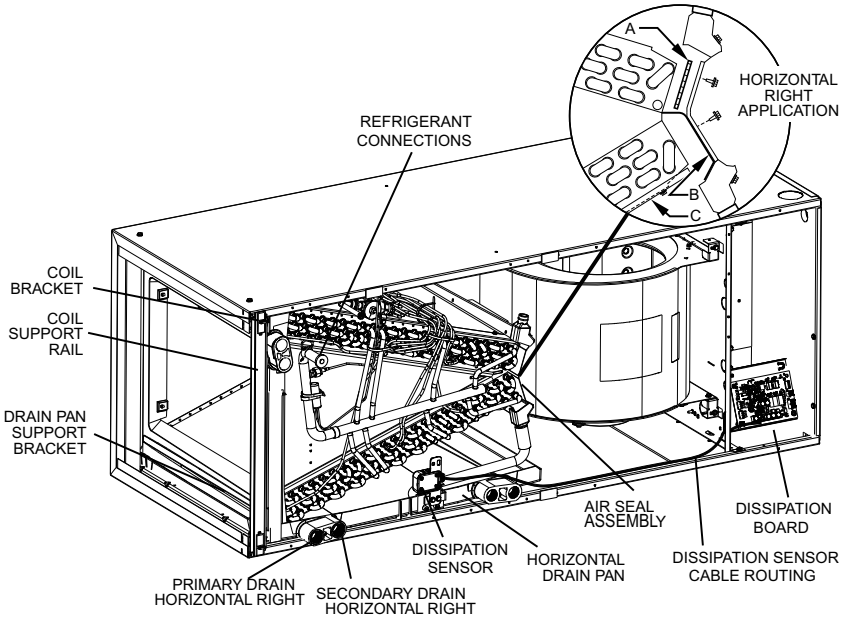
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Fig. 4 – A-Coil in Horizontal Left Application (Factory Configuration)



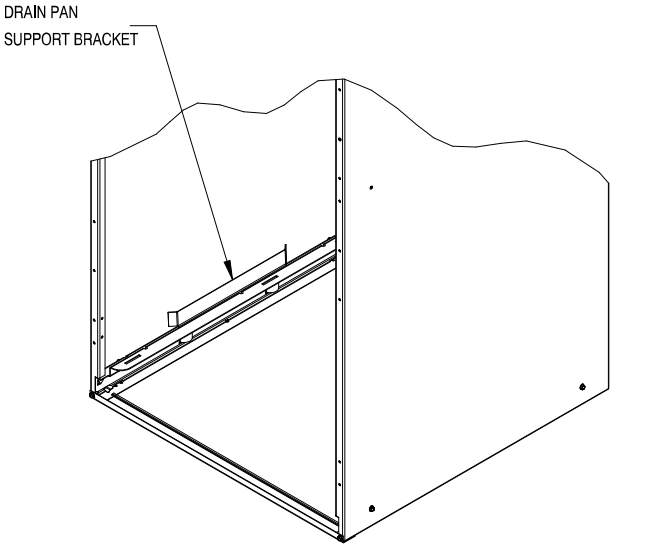
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Fig. 5 – Conversion for Horizontal Right Applications - Slope Coil



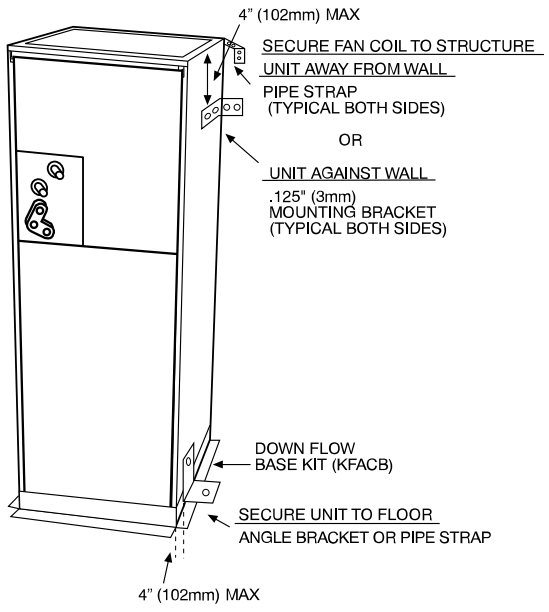
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Fig. 6 – Conversion for Horizontal Right Applications - A-Coil



A07571

Fig. 7 – Drain Pan Support Bracket



A07567

Fig. 8 – Mobile Home or Manufactured Housing Applications

Air Ducts

Connect supply-air duct over the outside of ¾" (19 mm) flanges provided on supply-air opening. Secure duct to flange, using proper fasteners for type of duct used, and seal duct-to-unit joint. If return-air flanges are required, install factory-authorized accessory kit.

Use flexible connectors between ductwork and unit to prevent transmission of vibration. When electric heater is installed, use heat-resistant material for flexible connector between ductwork and unit at discharge connection. Ductwork passing through unconditioned space must be insulated and covered with vapor barrier.

Units equipped with 20-30kW electric heaters require a 1" (25 mm) clearance to combustible materials for the first 36" (914 mm) of supply duct. All 18,000 BTU units equipped with 8 or 10 kW electric heaters require a 1" (25.4 mm) clearance to combustible materials for the first 12" of supply duct.

If the appliance is connected via an air duct system to one or more rooms, the supply and return air shall be directly ducted to the space. Open areas such as false ceilings shall not be used as a return air duct. Any auxiliary devices installed in the ductwork should be approved by the manufacturer or declared suitable with the R-454B refrigerant.

⚠ WARNING

EXPLOSION AND PERSONAL HEALTH HAZARD

Failure to follow this warning could result in personal injury, death, and/or unit damage.

Ensure to keep any required ventilation openings clear of obstruction.

Air ducts connected to the appliance shall not contain a POTENTIAL IGNITION SOURCE.

Auxiliary devices which may be a POTENTIAL IGNITION SOURCE shall not be installed in the duct work. Examples of such POTENTIAL IGNITION SOURCES are hot surfaces with a temperature exceeding 1292°F (700°C) and electric switching devices. Ensure only manufacturer approved auxiliary devices are installed.

Ductwork Acoustical Treatment

Metal duct systems that do not have a 90° elbow and 10 feet of main duct before first branch takeoff may require internal acoustical insulation lining. As an alternative, fibrous ductwork may be used if constructed and installed in accordance with the latest edition of SMACNA construction standard on fibrous glass ducts. Both acoustical lining and fibrous ductwork shall comply with National Fire Protection Association as tested by UL Standard 181 for Class 1 air ducts.

Electrical Connections

Units from the factory protect the low voltage circuit with a 3A automotive type fuse in-line on the wire harness. Motor speeds and time delay function are built into the motor. See Minimum CFM and Motor Speed Selection on p8 for clarification.

When a factory-approved accessory control package has been installed, check all factory wiring per unit wiring diagram and inspect factory wiring connections to be sure none were loosened during transit or installation. If a different control package is required, see unit rating plate.

Before proceeding with electrical connections, make certain that supply voltage, frequency, phase, and ampacity are as specified on the unit rating plate. See unit wiring label for proper field high- and low-voltage wiring. Make all electrical connections in accordance with the NEC and any local codes or ordinances that may apply. Use copper wire only.

The unit must have a separate branch electric circuit with a field-supplied disconnect switch located within sight from, and readily accessible from, the unit.

On units with a factory-installed disconnect with pull-out removed, service and maintenance can be safely performed on only the load side of the control package.

⚠ CAUTION

Units may contain plastic plugs for the high and low voltage electrical connections. These plugs should only be removed when these ports are used for install or servicing and should be discarded after removal.

⚠ WARNING

PERSONAL OR EQUIPMENT DAMAGE HAZARD.

Failure to follow this warning could result in personal injury, death, and/or unit damage.

Provide training to installation personnel to follow national and local electrical codes.

⚠ WARNING

ELECTRICAL SHOCK OR UNIT DAMAGE HAZARD

Failure to follow this warning could result in personal injury, death, and/or unit damage.

If a disconnect switch is to be mounted on unit, select a location where drill and fasteners will not contact electrical or refrigeration components.

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in personal injury or death.

Field wires on the line side of the disconnect found in the fan coil unit remain live, even when the pull-out is removed. Service and maintenance to incoming wiring cannot be performed until the main disconnect switch (remote to the unit) is turned off.

Line Voltage Connections

If unit contains an accessory electric heater, remove and discard power plug from fan coil and connect male plug from heater to female plug from unit wiring harness. (See Electric Heater Installation Instructions.)

For units without electric heat:

1. Connect 208/230V power leads from field disconnect to yellow and black stripped leads.
2. Connect ground wire to unit ground lug.

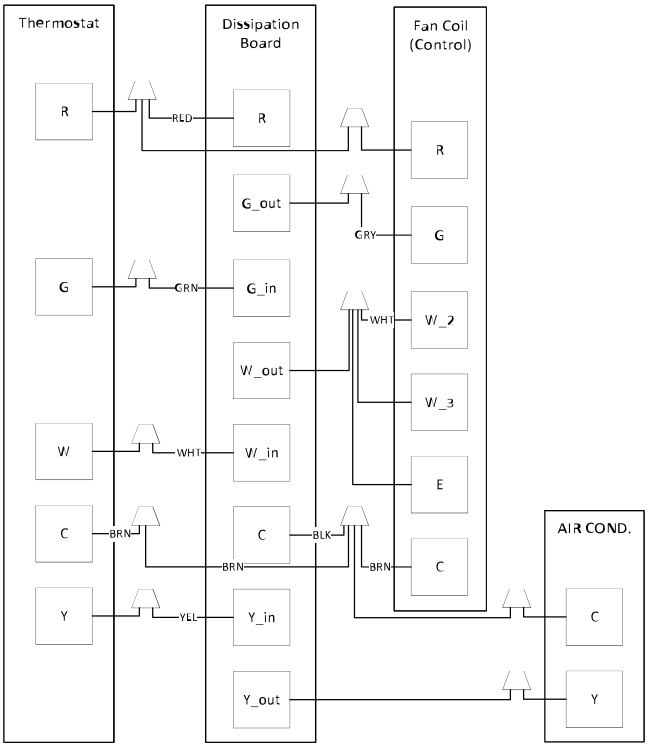
NOTE: Units installed without electric heat should have a field-supplied sheet metal block-off plate covering the heater opening. This will reduce air leakage and formation of exterior condensation.

24V Control System

Connection To Unit

Wire low voltage in accordance with wiring label on the blower (Fig. 9 thru Fig. 12). Use #18 AWG color-coded, insulated (35° C minimum) wire to make the low-voltage connections between the thermostat, the unit, and the outdoor equipment. If the thermostat is located more than 100' (30 m) from the unit (as measured along the low-voltage wire), use #16 AWG color-coded, insulated (35° C minimum) wire. All wiring must be NEC Class 1 and must be separated from incoming power leads.

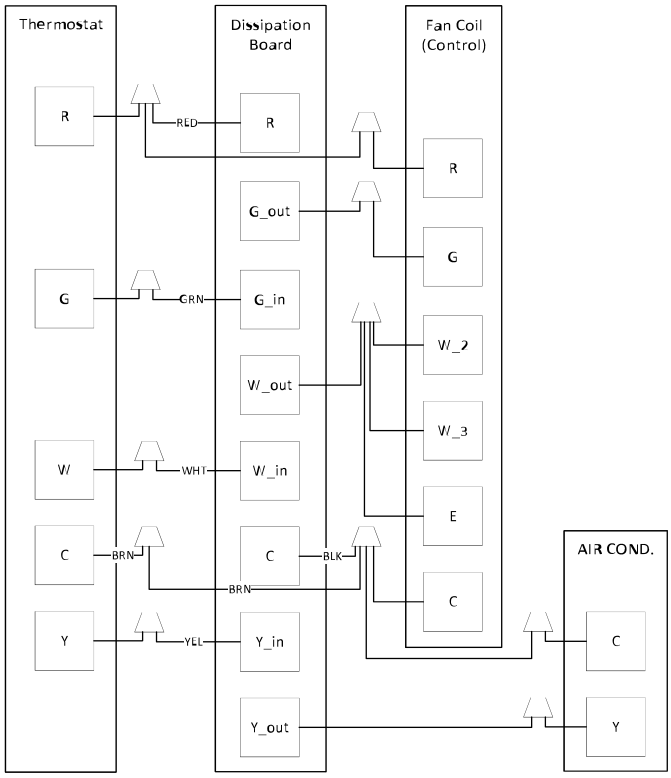
Refer to outdoor unit wiring instructions for any additional wiring procedure recommendations.



NOTE: Wire a float switch in the field "R" circuit from the "R" field connection terminal of the furnace leading to the thermostat.

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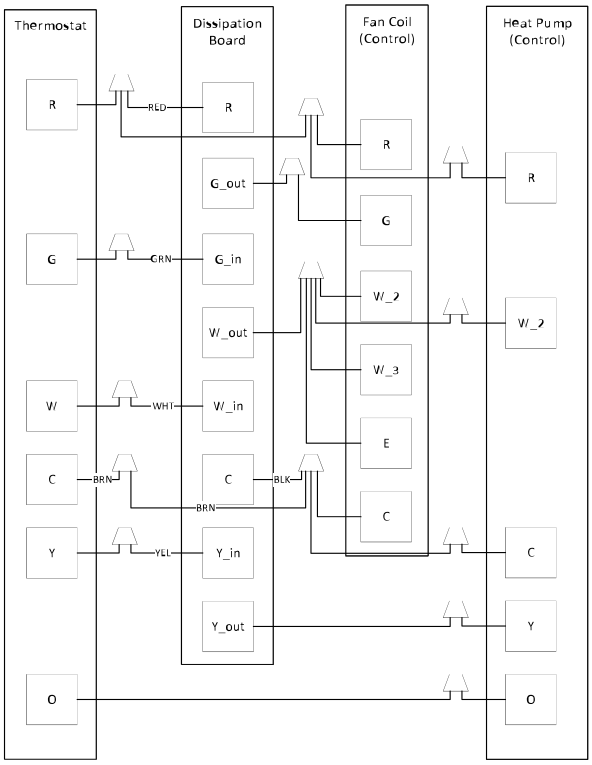
Fig. 9 – Wiring Layout Air Conditioning Unit (Cooling Only)



NOTE: Wire a float switch in the field "R" circuit from the "R" field connection terminal of the furnace leading to the thermostat.

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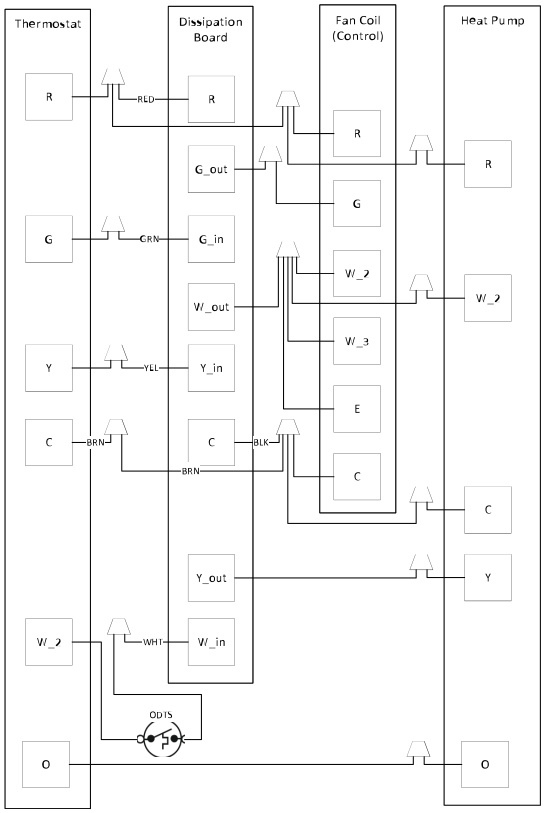
Fig. 10 – Wiring Layout Air Conditioning Unit (Cooling and 1-Stage Heat)



NOTE: Wire a float switch in the field "R" circuit from the "R" field connection terminal of the furnace leading to the thermostat.

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Fig. 11 – Wiring Layout Heat Pump Unit (Cooling and 2-Stage Heat with No Outdoor Thermostat)



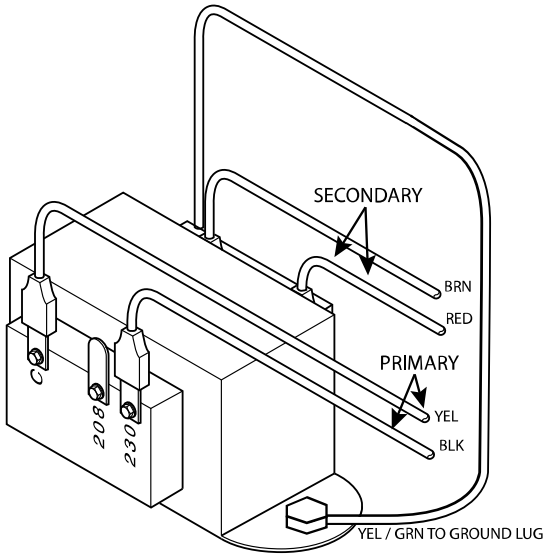
NOTE: Wire a float switch in the field "R" circuit from the "R" field connection terminal of the furnace leading to the thermostat.

A230485A

Fig. 12 – Wiring Layout Heat Pump Unit (Cooling and 2-Stage Heat for Manufactured Housing)

Transformer Information

The transformer is factory wired for 230V operation. For 208V applications, disconnect the black wire from the 230V terminal on transformer and connect it to the 208V terminal (Fig. 13).



A05182A

Fig. 13 – Transformer Connections

Heater Staging

If electric heat staging is required, a multi-stage heating room thermostat is required. Consult your equipment supplier for a suitable thermostat.

Manufactured Housing

In manufactured housing applications, the Code of Federal Regulations, Title 24, Chapter XX, Part 3280.714 requires that supplemental electric heat be locked out at outdoor temperatures above 40° F (4° C), except for a heat pump defrost cycle. See Fig. 12 for typical low voltage wiring with outdoor thermostat.

Ground Connections

NOTE: Use UL listed conduit and conduit connectors for connecting supply wire(s) to unit to obtain proper grounding. Grounding may also be accomplished by using grounding lugs provided in control box.

⚠ WARNING

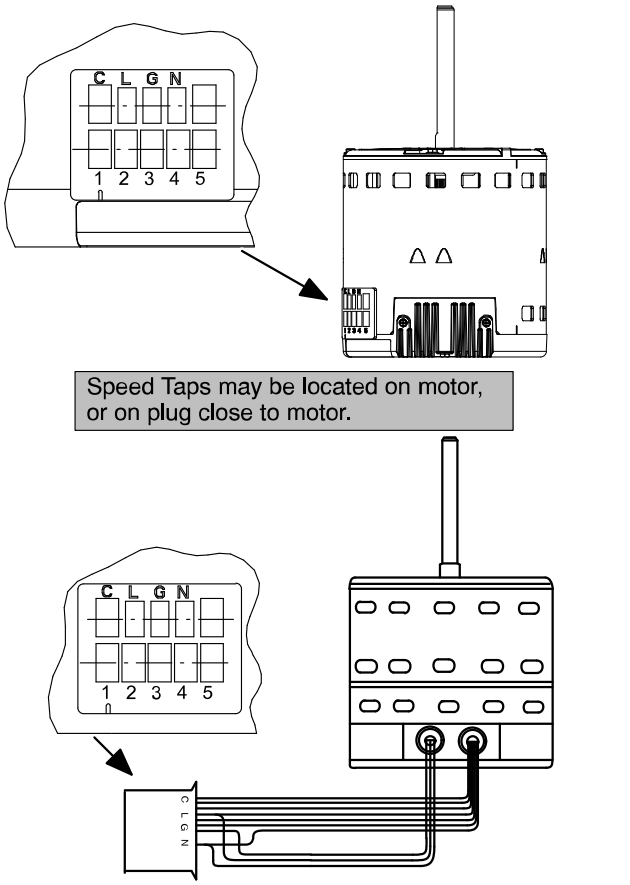
ELECTRICAL SHOCK HAZARD

Failure to establish uninterrupted or unbroken ground could result in personal injury and/or death.

According to NEC, NFPA 70, and local codes, the cabinet must have an uninterrupted or unbroken ground to minimize personal injury if an electrical fault should occur. The ground may consist of electrical wire or metal conduit when installed in accordance with existing electrical codes. If conduit connection uses reducing washers, a separate ground wire must be used.

Minimum CFM and Motor Speed Selection

The fan speed selection is done at the motor connector. Units with or without electric heaters require a minimum CFM. Refer to the unit wiring label to ensure that the fan speed selected is not lower than the minimum fan speed indicated.



A11048

Fig. 14 – Motor Speed Selection

Table 1 – Fan Speed Selection

Tap 1	Low	90 sec off delay
Tap 2	Medium	90 sec off delay
Tap 3	High	90 sec off delay
Tap 4	Electric heat †	0 sec off delay
Tap 5	Max ‡	0 sec off delay

† electric heat airflow is same CFM as Tap 3, except 0 sec off delay
‡ high static applications, see airflow tables for max airflow

To change motor speeds disconnect the BLUE fan lead from motor connector terminal #2 (factory default position) and move to desired speed-tap; 1, 2, 3, or 5.

Speed-taps 1, 2, and 3 have a 90 second blower off time delay pre-programmed into the motor. Speed-tap 4 is used for electric heat only (with 0 second blower time delay) and the WHITE wire should remain on tap 4. Speed-tap 5 is used for high static applications, but has a 0 second blower time delay pre-programmed into the motor. See Airflow Performance tables for actual CFM. Se Fig. 14 for motor speed selection location.

NOTE: In low static applications, lower motor speed tap should be used to reduce possibility of water being blown off coil.

Refrigerant Tubing Connection and Evacuation

Use accessory tubing package or field-supplied tubing of refrigerant grade. Suction tube must be insulated. Do not use damaged, dirty, or contaminated tubing because it may plug refrigerant flow-control device. ALWAYS evacuate the coil and field-supplied tubing to 500 microns before opening outdoor unit service valves.

⚠ CAUTION

PRODUCT DAMAGE HAZARD

Failure to follow this caution may result in product or property damage.

A brazing shield MUST be used when tubing sets are being brazed to the unit connections to prevent damage to the unit surface and condensate pan fitting caps.

Units have sweat suction and liquid tube connections. Make suction tube connection first.

IMPORTANT: Federal regulations require that you do not vent refrigerant to the atmosphere. Recover during system repair or final unit disposal.

- Run refrigerant tubes as directly as possible by avoiding unnecessary turns and bends.
- Make provision for expansion and contraction of long piping runs.
- Protect piping and fittings as much as possible against adverse environmental effects; for example, the danger of water collecting and freezing in relief pipes or the accumulation of dirt and debris.
- Install piping to reduce the likelihood of hydraulic shock damaging the system.
- Always use certified steel piping and components to protect against corrosion.
- Protect flexible pipe elements against mechanical damage and excessive stress by torsion or other forces. Check flexible pipes for mechanical damage annually.

1. Cut tubing to correct length.
2. Insert tube into sweat connection on unit until it bottoms.
3. All fittings need to withstand 700 PSIG (Mechanical Fittings or Brazing). When brazing, use silver bearing or non-silver bearing brazing material. Do not use solder (materials which melt below 800° F / 427° C). Consult local code requirements.
4. Perform a pressure check of the unit with a nitrogen charge of about 200psi. The Nitrogen holding charge must not decrease in pressure for 1 hour.
5. Perform leak check on the unit. Vacuum unit to 500 microns. When isolating the unit from the pump, the pressure shall not rise above 1500 microns in 10 minutes.

Mechanical Line Set Connections

If using mechanical or crimp-type line set connections, follow crimp tool manufacturer's instructions.

NOTE: Should the use of mechanical fittings cause failure of the fittings or failure of the equipment, such would not be covered under the standard warranty.

⚠ CAUTION

PRODUCT DAMAGE HAZARD

Failure to follow this caution may result in product or property damage.

Wrap a wet cloth around rear of fitting to prevent damage to TXV and factory-made joints.

Refrigerant Flow-Control Device

The 18-60 size units come equipped with an R-454B refrigerant mechanical TXV. When tightening nuts on a TXV, do not exceed 20 ft-lbs.

Always use outdoor units designed to match indoor fan coil applications.

⚠ CAUTION

PRODUCT OPERATION HAZARD

Failure to follow this caution may result in improper product operation.

If using a TXV in conjunction with a single-phase reciprocating compressor, a compressor start capacitor and relay are required. Consult outdoor unit pre-sale literature for start assist kit part number.

Disassembly

⚠ WARNING

PERSONAL INJURY HAZARD

Failure to follow this warning could result in personal injury.

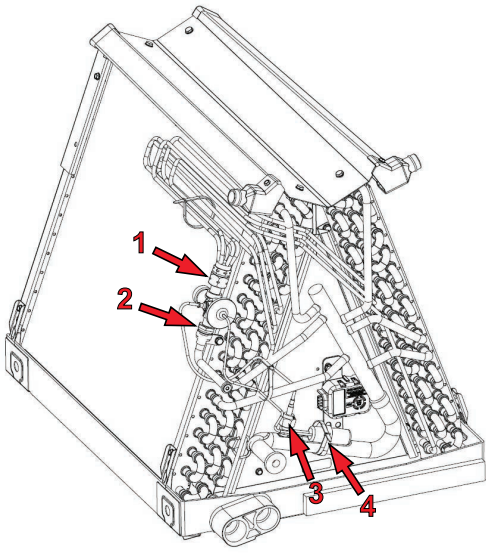
Remove refrigerant charge from system and ensure there is no pressure before servicing the TXV.

NOTE: For Item #1 (Fig. 15): Use an adjustable wrench with a backup adjustable wrench to loosen the brass nut (TXV outlet). Then use both wrenches to loosen Item # 2 (TXV inlet).

1. Use an adjustable wrench with a backup adjustable wrench to loosen Item # 3 (TXV equalizer line).
2. For Item #4 - Cut the wire tie and remove the black insulation. Remove the band from around the TXV bulb.
3. Cut the wire tie that holds the TXV equalizer line and bulb from the aluminum vapor header tube.
4. Remove 2 screws from the TXV bracket. Remove the TXV from the coil unit.

Assembly

1. Mount the TXV bracket and TXV with the 2 screws removed during disassembly.
2. Connect Items #1 and #2 (TXV outlet and inlet respectively) and use an adjustable wrench with a backup wrench to tighten each nut. Tighten to between 10 and 20 ft-lbs.
3. Connect Item #3 and use an adjustable wrench with a backup adjustable wrench to tighten the flare nut. Tighten to approximately 12 ft-lbs.
4. Item # 4 - Reconnect the TXV bulb with a clamp and reinstall insulation around the TXV bulb and vapor tube.



A230489

Fig. 15 – Mechanical TXV Removal

⚠ CAUTION

UNIT DAMAGE HAZARD

Failure to follow this Caution may result in unit damage.

Failure to place insulation between copper tubes and aluminum parts will lead to galvanic corrosion, which will result in a refrigerant leak in the future.

5. Use a wire tie to mount the 1/8" TXV equalizer and bulb tubes to the vapor header tube. **Make sure that there is insulation between the aluminum vapor tube and copper tube.**
6. Leak test the TXV fittings, then evacuate and charge the system to the required subcooling per the outdoor unit rating plate.

Condensate Drains

To connect drains, the cap openings must be removed. Use a knife to start the opening near the tab and using pliers, pull the tab to remove the disk. Clean the edge of the opening if necessary and install the condensate line. Finally caulk around the lines where they exit the fitting to retain the low leak rating of the unit.

Units are equipped with primary and secondary ¾" FPT drain connections. For proper condensate line installations, see Fig. 2 thru Fig. 6. To prevent property damage and achieve optimum drainage performance, BOTH primary and secondary drain lines should be installed and include properly-sized condensate traps (Fig. 16 and Fig. 21). Factory-approved condensate traps are available. It is recommended that PVC fittings be used on the plastic condensate pan. Finger-tighten plus 1-1/2 turns. Do not over-tighten. Use pipe dope.

NOTE: Do not use CPVC in field drain lines due to potential reaction with POE oil.

⚠ CAUTION

PRODUCT DAMAGE HAZARD

Failure to follow this caution may result in product or property damage.

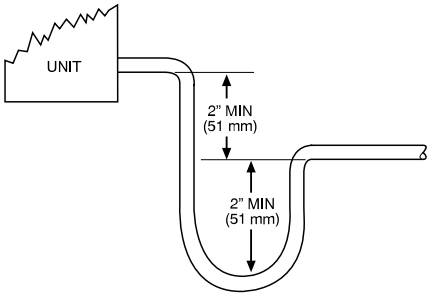
Use only full size P-traps in the condensate line (Fig. 16). Shallow running traps are inadequate and DO NOT allow proper condensate drainage (Fig. 17).

⚠ CAUTION

UNIT OR PROPERTY DAMAGE HAZARD

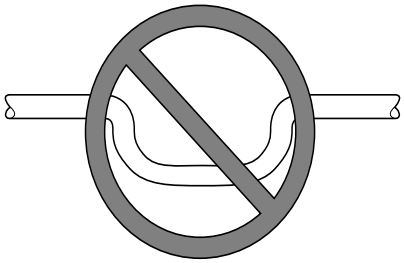
Failure to follow this warning caution may result in product or property damage.

The conversion of the fan coil to downflow requires special procedures for the condensate drains on both A-coil and Slope-coil units. The vertical drains have an overflow hole between the primary and secondary drain holes. This hole is plugged for all applications except downflow, and must be used for downflow. During conversion process, remove plastic cap covering vertical drains only and discard. Remove plug from overflow hole and discard. At completion of downflow installation, caulk around vertical pan fitting to door joint to retain low air leak performance of the unit.



A03002

Fig. 16 – Recommended Condensate Trap



DO NOT USE SHALLOW RUNNING TRAPS!

A03013

Fig. 17 – Insufficient Condensate Trap

NOTE: When connecting condensate drain lines, avoid blocking filter access panel, thus preventing filter removal. After connection, prime both primary and secondary condensate traps.

NOTE: If unit is located in or above a living space, where damage may result from condensate overflow, a field-supplied, external condensate pan should be installed underneath the entire unit, and a secondary condensate line (with appropriate trap) should be run from the unit into the pan. Any condensate in this external condensate pan should be drained to a noticeable place. As an alternative to using an external condensate pan, some localities may allow the running of a separate 3/4 inch (19 mm) condensate line (with appropriate trap) per local code to a place where the condensate will be noticeable. The property owner must be informed that when condensate flows from the secondary drain or external condensate pan, the unit requires servicing or property damage may occur.

To further protect against water damage, the International Mechanical Code (IMC) and local code may require a float switch to be installed to shut the equipment OFF if the drainage system is blocked. In 24V wired systems, a float switch listed to UL508 should be wired in the field “R” circuit from the “R” field connection terminal of the furnace leading to the thermostat. When communicating equipment is installed and wired with a communicating wall control, follow unit instructions for wiring the float switch and configuring the wall control.

⚠ WARNING

FIRE HAZARD

Failure to follow this warning could result in property damage, personal injury, or death.

When using a float switch in a secondary condensate pan or drain line, DO NOT wire the switch to break the 24V power directly from the transformer “R” circuit, as this will defeat the refrigerant leak dissipation and mitigation functions.

Install traps in the condensate lines as close to the coil as possible (Fig. 21). Make sure that the outlet of each trap is below its connection to the condensate pan to prevent condensate from overflowing the drain pan. Prime all traps, test for leaks, and insulate traps if located above a living area. Condensate drain lines should be pitched downward at a minimum slope of 1" (25 mm) for every 10 ft (3 m) of length. Consult local codes for additional restrictions or precautions.

Leak Dissipation System

⚠ WARNING

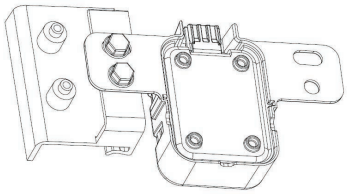
PERSONAL INJURY OR PROPERTY DAMAGE HAZARD

Failure to follow proper R-454B mitigation system installation instructions can result in property damage, personal injury, or death.

If any fault codes are listed, please troubleshoot to prevent system malfunction.

The 18-60 size units come equipped with a factory wired R-454B leak detection and dissipation system to ensure safe operation during a leak. The system consists of a bracket, a PCB, a A2L Detection Sensor, and a drain pan clip. Failure to install this system will result in potentially hazardous conditions and improper equipment operation, and void all system warranties and liabilities.

All units are shipped with the A2L Detection Sensor located in the upflow position. For sizes 18-24, the sensor will always be installed on the drain pan clip.



A230490

Fig. 18 – Dissipation Sensor Mounted on Drain Clip

For sizes 30-60, the sensor comes factory installed on the delta plate (Fig. 19, Fig. 20). For horizontal right and left, the sensor will need to be moved to the drain pan clip (Fig. 18, Fig. 4, Fig. 5, Fig. 6).

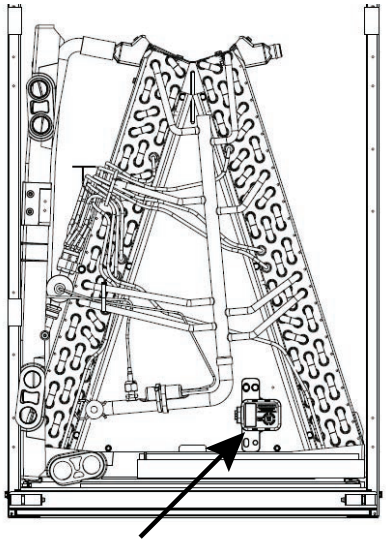
⚠ WARNING

PRODUCT OPERATION / INJURY HAZARD

Failure to follow this warning could cause product damage or personal injury.

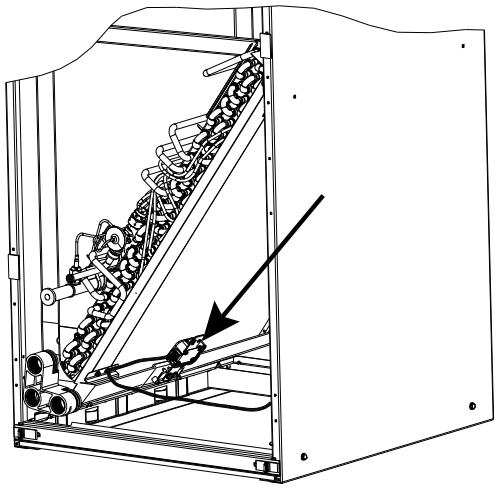
Make sure the sensor is not exposed to significant amounts of dust/dirt contamination. This could clog the sensor and prevent proper functioning. For sensor cleaning instructions, refer to service manual.

IMPORTANT: Sensor must be installed with the connector facing down or facing horizontally. Sensor should never be positioned with connector facing upward. Incorrect sensor position could result in premature failure.



A230501

Fig. 19 – A-Coil Vertical Dissipation Sensor Factory Location



A230502

Fig. 20 – Slope Coil Vertical Dissipation Sensor Factory Location

The A2L Detection Sensor is attached to a wiring harness that connects the sensor to the dissipation board. In upflow, the routing of the wire harness is up the right side of the unit behind the wire retainers for the cabinet insulation. At each wire retainers, the harness is attached using two wire ties. When converting unit to horizontal or downflow, follow routing shown in Fig. 4, Fig. 5, or Fig. 6. When converting the unit to any orientation, ensure the sensor wiring harness is disconnected and the wire harness has been placed in the control box before any components are moved.

Refer to Fig. 9 through Fig. 12 for low voltage field connections between the dissipation board and the thermostat. All control wires are labeled with the wire function and landing point.

Leak Dissipation System Self-Test

Power on the unit and verify proper functioning of equipment. The yellow LED on the dissipation board should be steady. If flash codes are present, see Troubleshooting on p12.

NOTE: Operation of the Test Mode is only possible if no faults exist on the dissipation board.

IMPORTANT: Press the Test button for roughly ONE SECOND to enter Test Mode. Pressing the Test button for a longer periods enables different functions (Table 2).

Press the Test button on the dissipation system control board to ensure proper dissipation system operation under each test condition listed below. After pressing the Test button, system will enter Dissipation Mode for 60 seconds to help verify correct operation.

Table 2 – Dissipation Board Test Button Functions

Hold Button Time (sec)	Function
1 - 4	Dissipation Mode for 60 seconds
5 - 29	Display flash code history
30+	Flash code 6
3 rapid presses	Clear flash code history

Ensure that the fan coil is able to meet the minimum required dissipation mode airflows. These required minimum airflow rates during Dissipation Mode are listed in Table 4. They are based on the total system refrigerant charge quantity.

Table 3 – Required Operational Checks to Ensure Proper Dissipation System Function

Normal Operation				
Test #	**T-Stat Call**	**Compressor**	**Indoor Fan**	**Electric/Gas Heat**
1	None	Off	Off	Off
2	Cool	On	On	Off
3	Heat	Off	On	On
Dissipation Activated				
4	None	Off	On	Off
5	Cool	Off	On	Off
6	Heat	Off	On	Off

Table 4 – Required Minimum Dissipation Mode Airflows, based on Total System Refrigerant Charge Quantity

Total System Charge (lb)	Minimum Required Dissipation Airflow (CFM)	Total System Charge (lb)	Minimum Required Dissipation Airflow (CFM)
5	133	16	426
6	160	17	452
7	186	18	479
8	213	19	505
9	239	20	532
10	266	21	559
11	293	22	585
12	319	23	612
13	346	24	639
14	372	25	665
15	399		

Troubleshooting

For all flash codes, first try power cycling the system to remove the code. Refer to Table 5.

No power

Verify the wiring to/from pins 1 and 8 on the power harness plug. Check the 24V system wiring from the transformer.

Flashing 1

Check for refrigerant leaks using an independent R-454B detector. If no leaks are present, replace the sensor.

Flashing 2

Check both ends of the sensor wire harness to ensure proper attachment. Power cycle the system to check whether the flash code has been removed. If the flash code is still present, replace the sensor.

Flashing 3

Check for refrigerant leaks using an independent R-454B detector.

Flashing 4

If the code does not clear after power cycling the system, replace the dissipation board.

Flashing 5

If the code does not clear after power cycling the system, replace the sensor.

Flashing 6

Press the test button repeatedly. Power cycle the system. If the button cannot be reset, replace the dissipation board.

Flashing 7

Verify wiring of all "Y" and "W" wires in the applicable wiring diagram.

Flashing 8

Verify wiring of all "Y" and "W" wires in the applicable wiring diagram.

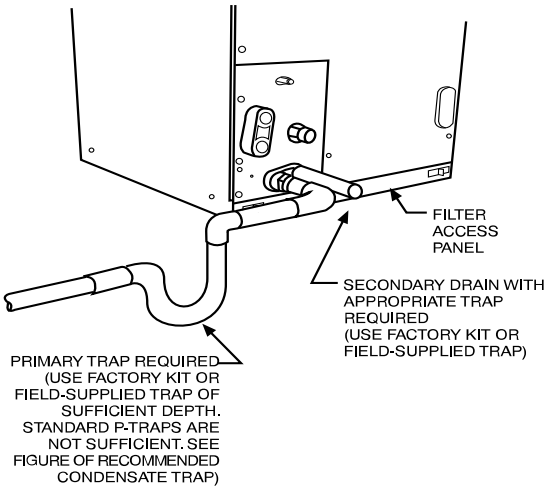
Table 5 – Flash Code Chart

Yellow LED	Reason	Mode
Solid	Normal Operation	Normal Operation
Flashing 1	Sensor >= 20% LFL	Dissipation
Flashing 2	Sensor Open	Dissipation
Flashing 3	Normal Mitigation after Leak	Dissipation
Flashing 4	No Power to G Output	Dissipation with no Blower
Flashing 5	Fault with A2L Digital Sensor	Dissipation
Flashing 6	Test Button Stuck (>30 s)	Dissipation
Flashing 7	Y or W Wiring Inverted	Normal Operation
Flashing 8	Y or W Shorted	Normal Operation

Accessories

Humidifier

Connect the humidifier and humidistat to the fan coil unit as shown in Fig. 22 and Fig. 23. The cooling lockout relay is optional.



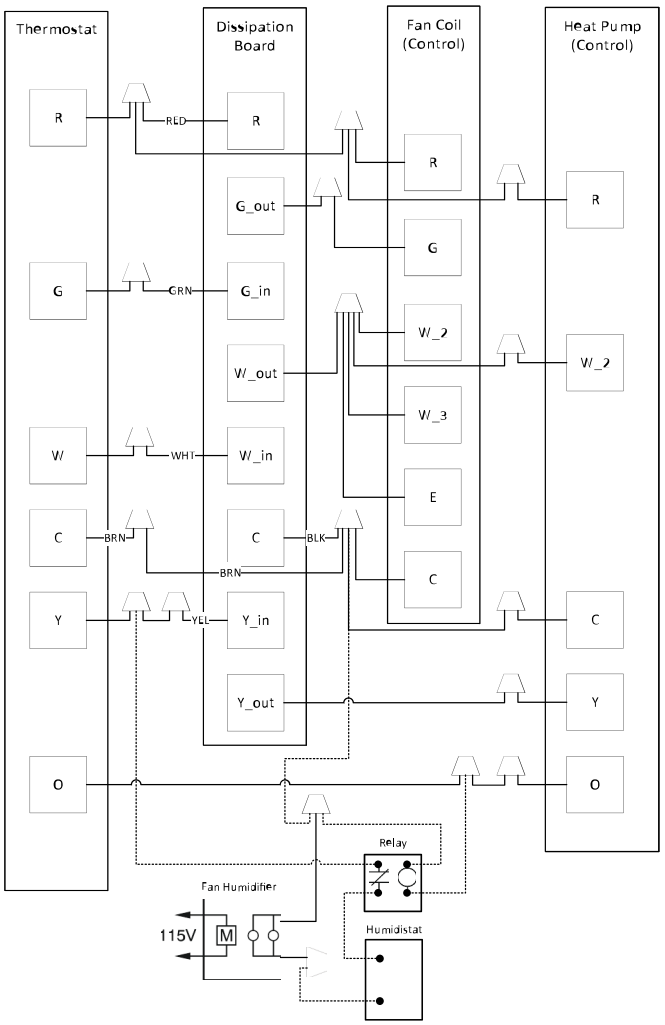
A03003

Fig. 21 – Condensate Drain

Sequence of Operation

Continuous Fan

Thermostat closes the R to G connection. G passes through the dissipation board and energizes the fan relay on the PCB which completes the circuit to the indoor blower motor. When G is de-energized, there is a 90-second delay before the relay opens.



NOTE: Wire a float switch in the field "R" circuit from the "R" field connection terminal of the furnace leading to the thermostat.

A230486A

Fig. 22 – Wiring Layout of Humidifier to Heat Pump

Cooling Mode

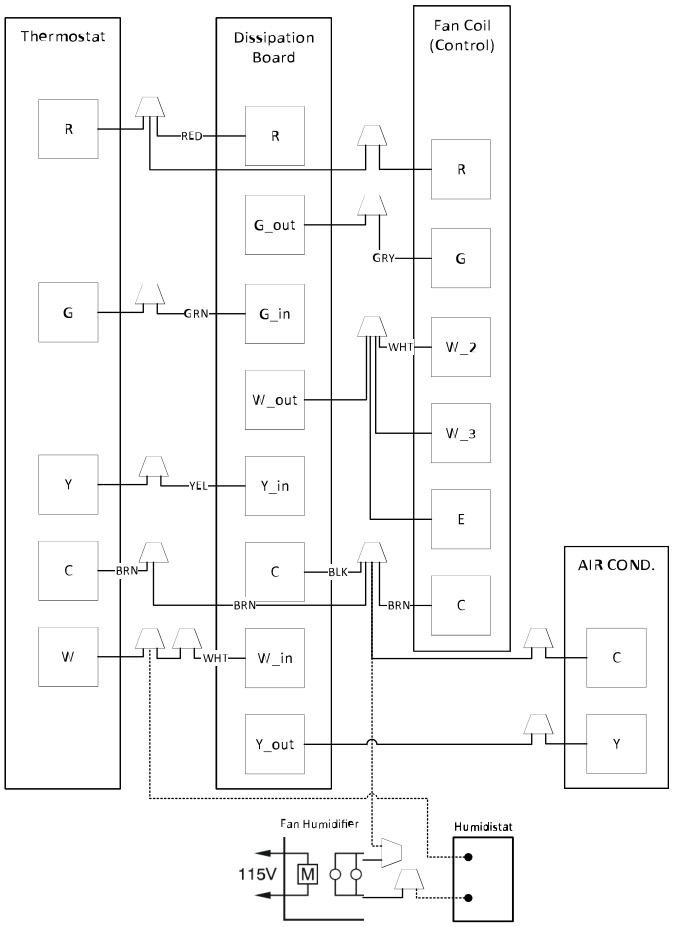
Thermostat energizes R to G, R to Y, and R to O (heat pump only). G and Y pass through the dissipation board to their respective outputs. G energizes the fan relay on the PCB which completes the circuit to the indoor blower motor. When G is de-energized, there is a 90-second delay before the fan relay opens.

Heat Pump Heating with Auxiliary Electric Heat

Thermostat energizes R to G, R to Y, and R to W connections. G and Y pass through the dissipation board to their respective outputs. G energizes the fan relay on the PCB which completes the circuit to the indoor blower motor. W energizes the electric heat relay(s) which completes the circuit to the heater element(s). When W is de-energized, the electric heat relay(s) open, turning off the heater elements. When G is de-energized there is a 90-second delay before the fan relay opens.

Electric Heat or Emergency Heat Mode

Thermostat closes R to W connection. W passes through the dissipation board and energizes the electric heat relay(s) which completes the circuit to the heater element(s). Blower motor is energized through the normally-closed contacts on the fan relay. When W is de-energized, the electric heat relay(s) opens.



NOTE: Wire a float switch in the field "R" circuit from the "R" field connection terminal of the furnace leading to the thermostat.

A230487A

Fig. 23 – Wiring Layout of Humidifier to Fan Coil with Electric Heat

Leak Dissipation Mode

Thermostat energizes appropriate signals to the dissipation board based on operation mode. The dissipation board energizes G output, which energizes the fan relay on the PCB to complete the circuit to the indoor blower motor. The dissipation board opens switches for W and Y. This de-energizes signals going to electric heat and outdoor compressor which opens the electric heat relay(s).

Start-up Procedures

Refer to outdoor unit Installation Instructions for system start-up instructions and refrigerant charging method details.

When charging unit, ensure your conditioned space is larger than the minimum floor area shown in Table 6. For charging quantities outside of the range of the table, use the following equation to determine your minimum area: A_min = 15 x Total Charge (lbs) - ft^2.

Table 6 – Charge Table

Charge (lb.)	Minimum Floor Area (sq. ft.)	Charge (lb.)	Minimum Floor Area (sq. ft.)
4	61	15	228
5	76	16	243
6	91	17	258
7	106	18	274
8	122	19	289
9	137	20	304
10	152	21	319
11	167	22	335
12	182	23	350
13	198	24	365
14	213	25	380

⚠ CAUTION

PRODUCT DAMAGE HAZARD

Failure to follow this caution may result in poor unit performance and/or product damage.

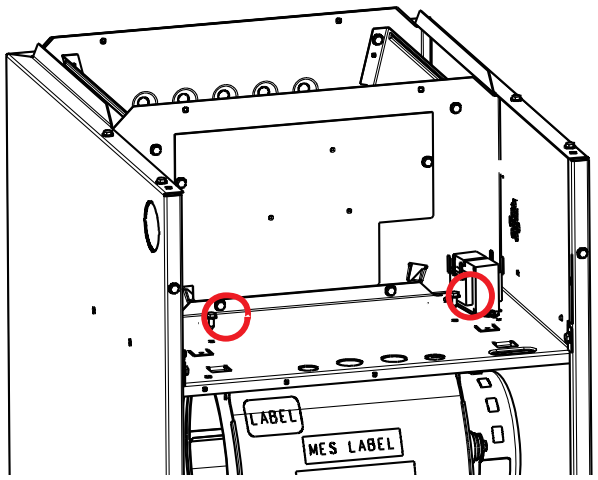
Never operate unit without a filter. Factory authorized filter kits may be used when locating the filter inside the unit. For those applications where access to an internal filter is impractical, a field-supplied filter must be installed in the return air duct system.

Care and Maintenance

To continue high performance and minimize possible equipment failure, it is essential that periodic maintenance be performed on this equipment. Consult your local dealer as to the proper frequency of maintenance contract.

The ability to properly perform maintenance on this equipment requires certain mechanical skills and tools. If you do not possess these, contact your dealer for maintenance. The only consumer service recommended or required is filter replacement or cleaning on a monthly basis.

NOTE: Servicing the blower assembly requires the removal of two screws that attach the blower housing to the fan deck. It is not necessary to reinstall of these screws after service.



A221041A

Fig. 24 – Shipping Screws

Table 7 – Electric Heater Static Pressure Drop (in. wc)

Sizes 18 - 36			Sizes 42 - 60		
Heater Elements	**kW**	**External Static Pressure Correction**	**Heater Elements**	**kW**	**External Static Pressure Correction**
0	0	+.02	0	0	+.04
1	3, 5	+.01	1	3, 5	+.03
2	8, 10	0	2	8, 10	+.02
3	9, 15	-.02	3	9, 15	0
4	20	-.04	4	20	-.02
			6	18, 24, 30	-.10

Table 8 – Airflow Performance (CFM) Wet

Ton (Size)	Blower Speed	External Static (in. wc)									
		0.1	**0.2**	**0.3**	**0.4**	**0.5**	**0.6**	**0.7**	**0.8**	**0.9**	**1.0**
1-1/2 (18)	Tap 5	754	737	717	694	668	641	605	572	528	481
	Tap 4	695	678	655	628	600	573	551	520	479	421
	Tap 3	695	678	655	628	600	573	551	520	479	421
	Tap 2	643	620	591	557	534	506	477	439	408	378
	Tap 1	487	448	428	394	358	325	281	NA	NA	NA
2 (24)	Tap 5	1021	1003	964	925	876	838	797	761	726	689
	Tap 4	936	907	873	805	779	732	696	661	626	591
	Tap 3	936	907	873	805	779	732	696	661	626	591
	Tap 2	846	831	792	739	702	651	609	548	536	491
	Tap 1	746	697	629	567	521	477	446	389	364	326
2-1/2 (30)	Tap 5	1247	1215	1188	1154	1122	1083	1053	1017	971	915
	Tap 4	1133	1114	1082	1044	1009	968	924	873	835	785
	Tap 3	1133	1114	1082	1044	1009	968	924	873	835	785
	Tap 2	1040	997	961	929	883	828	782	725	708	667
	Tap 1	896	862	805	740	689	648	597	NA	NA	NA
3 (36)	Tap 5	1433	1404	1363	1328	1282	1251	1201	1145	1095	1021
	Tap 4	1304	1277	1256	1230	1207	1168	1122	1080	1073	983
	Tap 3	1304	1277	1256	1230	1207	1168	1122	1080	1073	983
	Tap 2	1183	1148	1124	1094	1051	1005	955	901	846	783
	Tap 1	1020	995	958	921	881	840	791	735	693	649
3-1/2 (42)	Tap 5	1571	1551	1508	1473	1439	1407	1372	1317	1253	1189
	Tap 4	1517	1493	1458	1425	1392	1358	1328	1295	1253	1193
	Tap 3	1517	1493	1458	1425	1392	1358	1328	1295	1253	1193
	Tap 2	1369	1339	1299	1263	1226	1188	1155	1112	1068	1012
	Tap 1	1135	1099	1048	966	908	852	802	755	698	587
4 (48)	Tap 5	1896	1853	1821	1795	1760	1737	1702	1670	1665	1619
	Tap 4	1711	1673	1643	1607	1570	1549	1509	1490	1446	1411
	Tap 3	1711	1673	1643	1607	1570	1549	1509	1490	1446	1411
	Tap 2	1547	1504	1466	1416	1388	1369	1324	1290	1239	1200
	Tap 1	1397	1347	1312	1269	1232	1172	1135	1086	1038	989
5 (60)	Tap 5	2109	2067	2043	1996	1967	1928	1899	1848	1812	1766
	Tap 4	2109	2067	2043	1996	1967	1928	1899	1848	1812	1766
	Tap 3	2109	2067	2043	1996	1967	1928	1899	1848	1812	1766
	Tap 2	1901	1868	1825	1785	1737	1710	1662	1620	1584	1521
	Tap 1	1583	1557	1499	1451	1392	1358	1313	1259	1194	1138

Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.

Table 9 – Airflow Performance (CFM) Dry

Ton (Size)	Blower Speed	External Static (in. wc)									
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
1-1/2 (18)	Tap 5	762	741	721	698	672	656	635	577	547	509
	Tap 4	695	679	655	628	600	580	559	534	505	452
	Tap 3	695	679	655	628	600	580	559	534	505	452
	Tap 2	634	615	585	547	522	506	475	444	407	371
	Tap 1	498	470	434	390	356	300	272	NA	NA	NA
2 (24)	Tap 5	1046	1013	978	958	925	877	830	752	722	687
	Tap 4	992	950	916	869	812	763	705	660	611	585
	Tap 3	992	950	916	869	812	763	705	660	611	585
	Tap 2	900	862	814	769	709	644	594	548	507	451
	Tap 1	762	723	651	599	531	471	428	385	345	319
2-1/2 (30)	Tap 5	1277	1244	1226	1193	1169	1122	1094	1058	1014	969
	Tap 4	1179	1142	1114	1070	1039	998	937	915	867	825
	Tap 3	1179	1142	1114	1070	1039	998	937	915	867	825
	Tap 2	1066	1030	997	960	916	863	795	746	703	674
	Tap 1	923	878	832	784	723	658	616	563	NA	NA
3 (36)	Tap 5	1489	1463	1428	1388	1345	1305	1262	1213	1160	1093
	Tap 4	1357	1337	1310	1283	1249	1212	1165	1114	1064	1014
	Tap 3	1357	1337	1310	1283	1249	1212	1165	1114	1064	1014
	Tap 2	1211	1190	1162	1132	1100	1066	1016	959	905	838
	Tap 1	1059	1038	1004	967	925	887	843	791	747	681
3-1/2 (42)	Tap 5	1647	1620	1583	1548	1505	1464	1424	1379	1319	1250
	Tap 4	1569	1539	1506	1476	1442	1404	1370	1336	1299	1219
	Tap 3	1569	1539	1506	1476	1442	1404	1370	1336	1299	1219
	Tap 2	1393	1355	1329	1288	1248	1223	1180	1138	1091	1037
	Tap 1	1190	1138	1083	1020	936	869	814	762	728	631
4 (48)	Tap 5	1956	1917	1887	1855	1831	1798	1763	1743	1707	1683
	Tap 4	1773	1743	1704	1667	1634	1612	1571	1536	1500	1464
	Tap 3	1773	1743	1704	1667	1634	1612	1571	1536	1500	1464
	Tap 2	1566	1524	1483	1451	1414	1376	1340	1303	1266	1217
	Tap 1	1413	1373	1328	1283	1246	1204	1168	1120	1075	1012
5 (60)	Tap 5	2148	2123	2084	2048	2002	1974	1939	1891	1893	1812
	Tap 4	2148	2123	2084	2048	2002	1974	1939	1891	1893	1812
	Tap 3	2148	2123	2084	2048	2002	1974	1939	1891	1893	1812
	Tap 2	1955	1913	1868	1833	1796	1757	1711	1654	1632	1570
	Tap 1	1646	1590	1527	1496	1442	1373	1315	1294	1221	1164

NOTES:

1.Airflow based upon dry coil at 230V with factory-approved filter and electric heater (2 element heater sizes 18 through 36, 3 element heater sizes 42 through 60).

2.To avoid potential for condensate blowing out of drain pan prior to making drain trap:

Return static pressure must be less than 0.40 in. wc. Horizontal applications of 42 - 60 sizes must have supply static greater than 0.20 in. wc.

Airflow above 400 cfm/ton on 48-60 size could result in condensate blowing off coil or splashing out of drain pan.

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Edition Date: 10/25

Catalog No: IM-FHM5-WCHL-04

A Carrier Company

Replaces: IM-FHM5-WCHL-03

Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.

FHMA5
Performance™ Series Fan Coil Multipoise, ECM Motor for R-454B Refrigerant Sizes 18 - 60

Arcoaire® Air Conditioning & Heating

Product Data



A200369

AIR HANDLER TECHNOLOGY AT ITS FINEST

The FHMA5 fan coil has the proven technology of ICP fan coil units with R-454B refrigerant as well as vertical and horizontal applications. The design features contoured condensate pans with rugged drain connections, ensuring that little water is left in the unit at the end of the cooling duty cycle. The lack of standing condensate and corrosion free pans improves IAQ and product life, features homeowners appreciate.

Standard features include grooved tubing and louvered fins. Coil circuiting has also been updated to make the most of all ICP heat pumps and air conditioners. Units come with solid state fan controls, 1-inch (25mm) thick insulation with R-value of 4.2, multi-speed motors, and fully-wettable coils.

Assembled at the factory compliant with low leak requirements of less than 2% cabinet leakage rate at 0.5 inches W.C. and 1.4% cabinet leakage rate at 0.5 inches W.C. when tested in accordance with ASHRAE 193 standard.

The FHMA5 fan coil design is loaded with popular features. These fan coils utilize the latest in electronic commutation motor (ECM) technology through the use of high efficiency, multi-tap ECM motors allowing reliable air delivery with increased static pressure. It comes in a pre-painted (dark grey) galvanized steel casing. The unit is shipped with a R-454B refrigerant TXV (sizes 18–60).

STANDARD FEATURES

- Refrigerant leak detection dissipation system for added safety
- Multi-tap ECM (electronic commutating motor) motors – all sizes.
- Integrated motor controls, with 90-sec off TDR function, have replaced integrated circuit board.
- Five available speed tags to meet a wide range of applications.
- Large, grooved tube, louvered fin coils.
- Efficient, quiet, time-tested blower housings and diffusers.
- Sturdy, drainable condensate pans.
- Construction innovations designed to prevent cabinet sweating.
- Tested for condensate disposal in much tougher conditions than Air Conditioning and Refrigeration Institute requirements.
- Super-thick R-4.2 insulation with vapor barrier.
- Pre-painted galvanized steel cabinet (dark grey).
- Design meets stringent regulations for cabinet air leakage of less than 2% when tested at 0.5 inches W.C., and less than 1.4% at 0.5 inches W.C. when tested in accordance with ASHRAE 193 standard.
- Installation-flexible, multipoise units. 2-piece modular design available for 42 thru 60 sizes. Facilitates attic and crawlspace installations..
- Horizontal hanging provisions on cabinet.
- Newly improved filter rack area filter door insulation added for improved air seal. No tools required to access filter.
- 3 through 30 kW accessory heaters - field installed.
- Easy plug-in provisions for heater installation.
- Entry options for high and low voltage wiring hook-up.
- Leak-preventing sweat connections.
- Factory installed thermostatic expansion valve, TXV, on all coils.
- Designed for manufactured housing applications.

WARRANTY

- 5-year No Hassle Replacement limited warranty:
  - 10-year parts limited warranty with timely registration*. Equipment must be registered within 90 days of original installation, except in jurisdictions where warranty benefits cannot be conditioned on registration.

  * Applies to original purchaser/homeowner and not available to subsequent owners, except in jurisdictions where laws dictate otherwise.

See Warranty certificate for complete details and restrictions.

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MODEL NUMBER NOMENCLATURE

1	2	3	4	5	6	7	8	9	10	11	12
F	H	M	A	5	X	1	8	L	0	B	B

Product
F = Fan Coil

Type
H = ECM 5-speed

Position
M = Multipoise

Series
A

Refrigerant
5 = R454B

Metering Device
B = Modular, TXV
X = Singular, TXV

Capacity
18 = 18,000
24 = 24,000
30 = 30,000
36 = 36,000
42 = 42,000
48 = 48,000
60 = 60,000

Coil Type
L = Aluminum

Cabinet Width
A = 14"
B = 17"
C= 21"
D= 24"

Series Code

Use of the AHRI Certified TM Mark indicates a manufacturer's participation in the program For verification of certification for individual products, go to www.ahridirectory.org.

ISO 9001

A200437

Table 1 – Models Available

1-1/2 Ton	2 Ton	2-1/2 Ton	3 Ton	3-1/2 Ton	4 Ton	5 Ton
FHMA5X18L0AA	FHMA5X24L0BA	FHMA5X30L0BA	FHMA5X36L0BA	FHMA5X42L0CA FHMA5B42L0CA	FHMA5X48L0CA FHMA5B48L0CA	FHMA5B60L0DA

DIMENSIONS

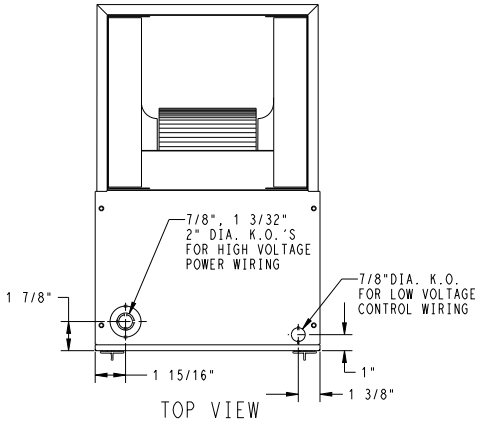
UNIT	SERIES	ELECTRICAL CHARACTERSTICS				A	B	C	D	E	F	G	H	J	COIL CONFIGURATION		SHIPPING WT (LBS)
		208/230-1-60	208/230-3-60												SLOPE	"A"	
FHMA5X18	01,02	X	O			42 11/16"	14 5/16"	12 7/16"	12 5/16"	10 7/16"	18 1/8"	18 5/8"	-	12"	X	-	120
FHMA5X24	01,02	X	O			49 5/8"	17 5/8"	15 3/4"	15 5/8"	15 3/8"	23 1/8"	23 5/8"	-	17"	X	-	131
FHMA5X30	01,02	X	O			49 5/8"	17 5/8"	15 3/4"	15 5/8"	15 7/8"	23 1/8"	23 1/2"	-	-	-	X	148
FHMA5X36	01,02	X	O			49 5/8"	17 5/8"	15 3/4"	15 5/8"	15 7/8"	23 1/8"	23 1/2"	-	-	-	X	148
FHMA5B42	01,02	X	*			53 7/16"	21 1/8"	19 1/4"	19 1/8"	19 1/2"	27 1/4"	26 15/16"	28 5/16"	-	-	X	166.5
FHMA5X42	01,02	X	*			49 5/8"	21 1/8"	19 1/4"	19 1/8"	15 11/16"	23 7/16"	23 1/8"	-	-	-	X	166
FHMA5B48	01	X	*			53 7/16"	21 1/8"	19 1/4"	19 1/8"	19 1/2"	27 1/4"	26 15/16"	28 5/16"	-	-	X	182.5
FHMA5X48	01	X	*			53 7/16"	21 1/8"	19 1/4"	19 1/8"	19 1/2"	27 1/4"	26 15/16"	-	-	-	X	182
FHMA5B60	01	X	*			59 3/16"	24 11/16"	22 3/4"	22 11/16"	25 1/4"	32 15/16"	32 5/8"	34 1/16"	-	-	X	210.5

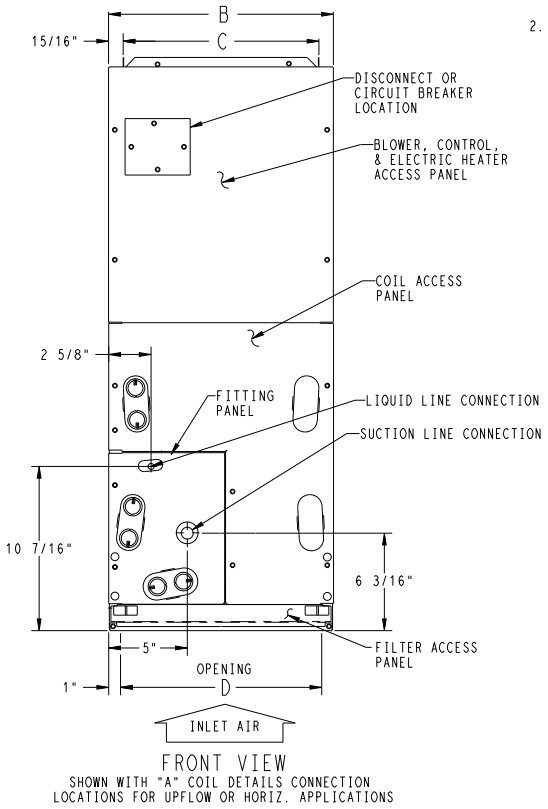
X=YES
O=NO
*=YES, DUE TO AVAILABLE FIELD INSTALLED HEATERS.

NOTE:

1. SERIES DESIGNATION IS THE 13TH & 14TH POSITION OF UNIT PRODUCT NUMBER
2. ALL DIMENSIONS ARE IN "INCHES" UNLESS NOTED.

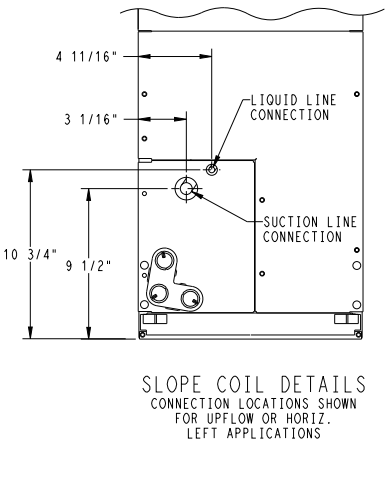
NOTE: ALLOW 21" FROM FRONT FOR SERVICE

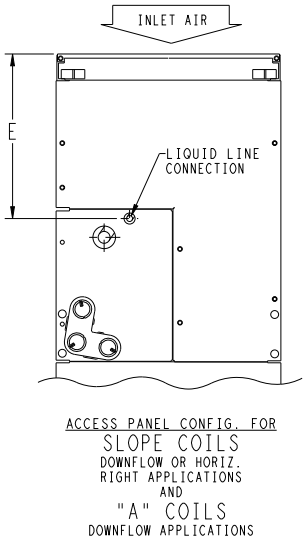


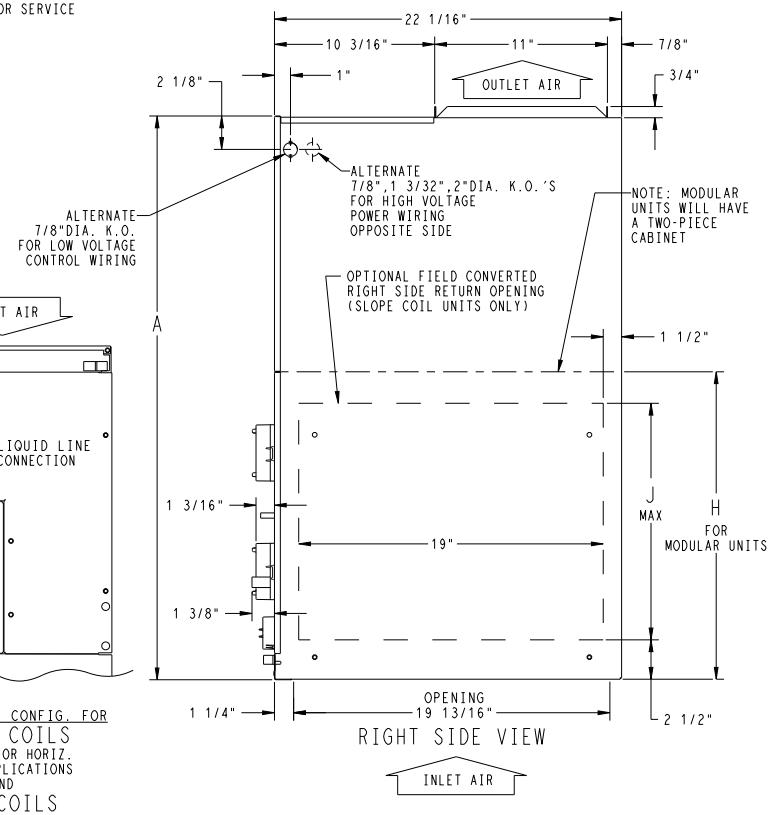


UNIT CONNECTION SIZES

SUCTION: 18 - 5/8" I.D. SWEAT
24 THRU 36 - 3/4" I.D. SWEAT
42 THRU 60 - 7/8" I.D. SWEAT
LIQUID: 3/8" I.D. SWEAT
CONDENSATE: 3/4" FPT





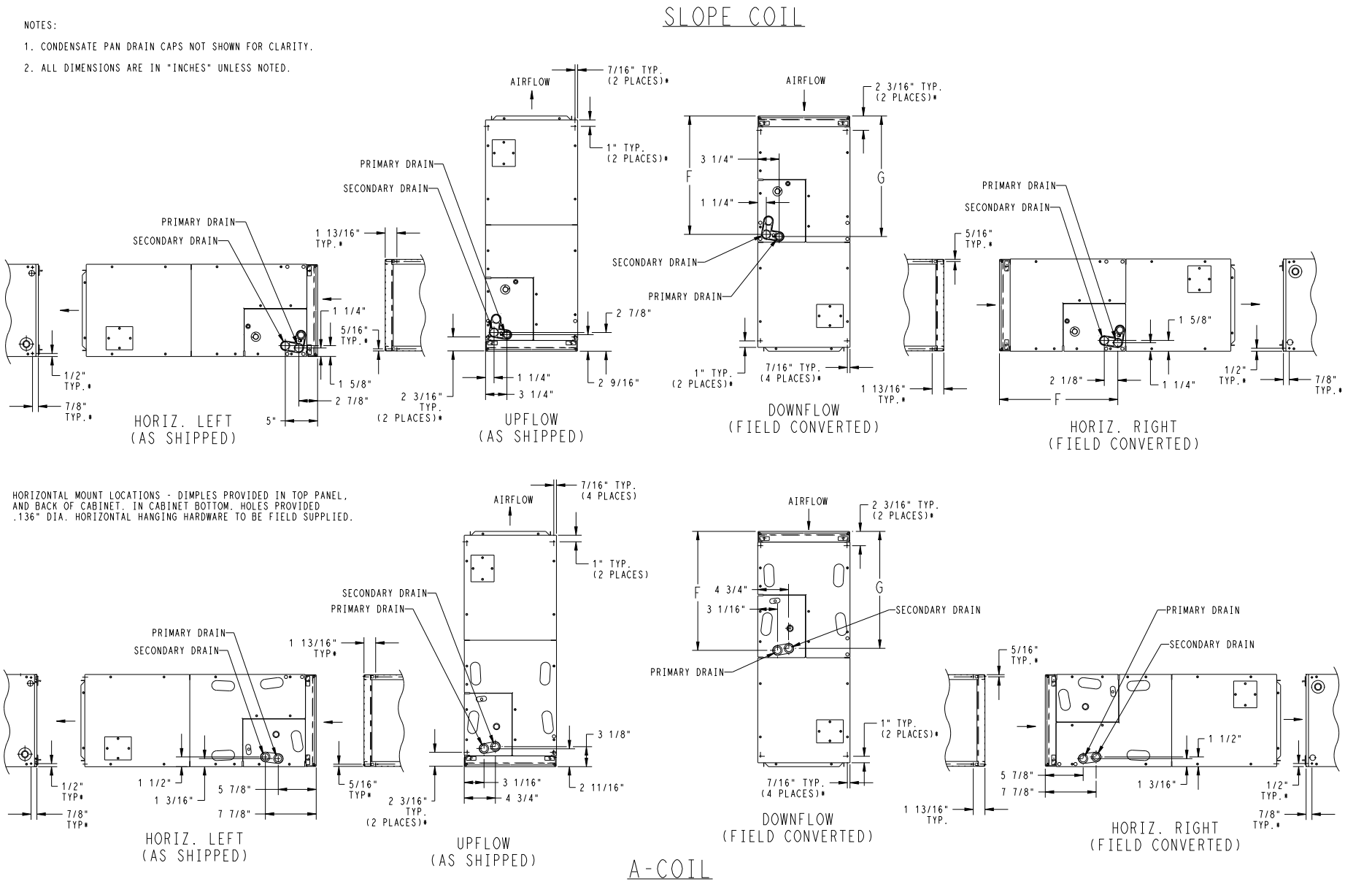


A230523AA

Fig. 1 – FHMA5 - English (sheet 1)

Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.

DIMENSIONS (cont.)



A230524

Fig. 2 – FHMA5- English (sheet 2)

Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.

DIMENSIONS (cont.)

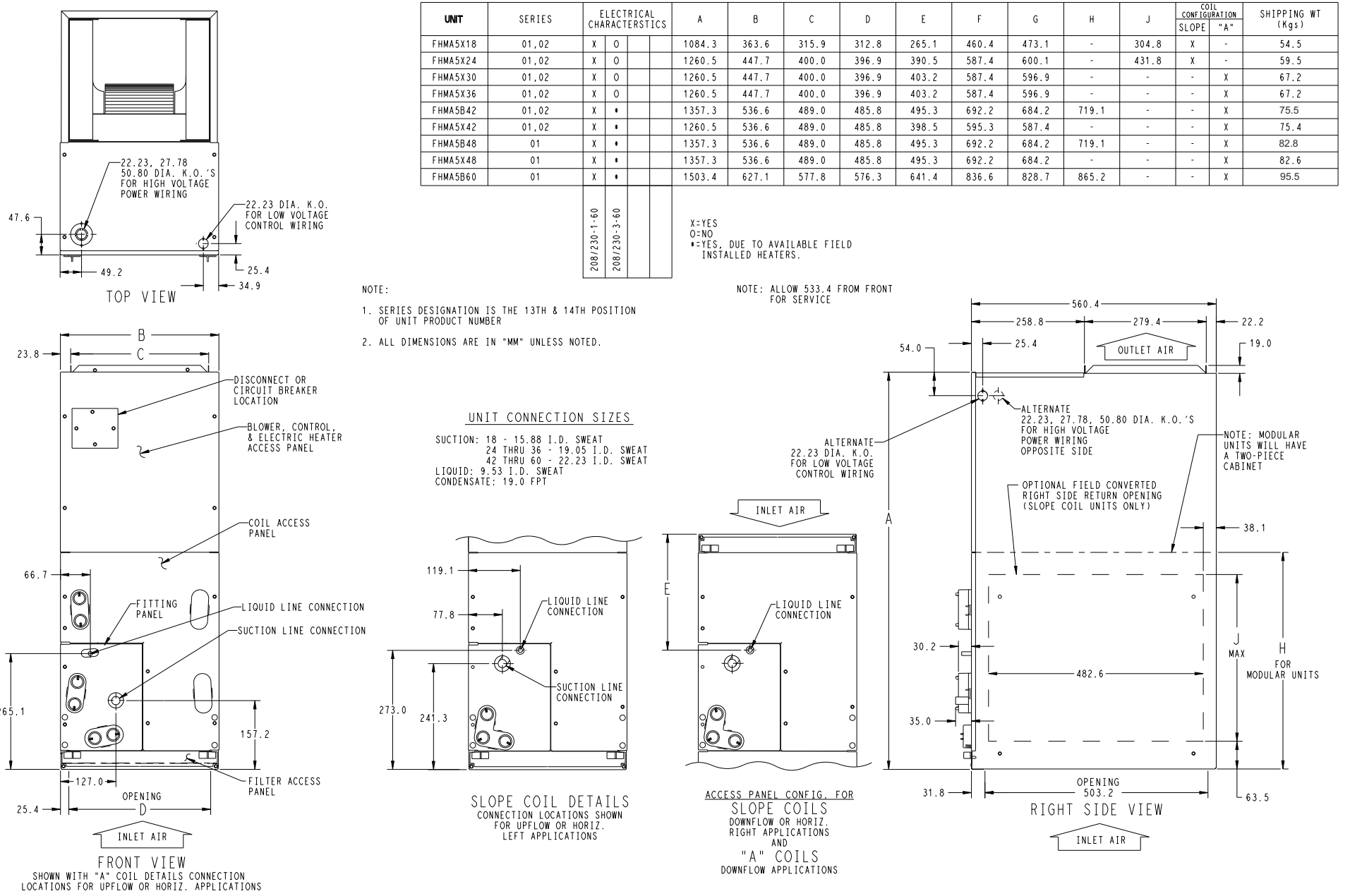
UNIT	SERIES	ELECTRICAL CHARACTERSTICS				A	B	C	D	E	F	G	H	J	COIL CONFIGURATION		SHIPPING WT (Kgs)
		208/230-1-60	208/230-3-60												SLOPE	"A"	
FHMA5X18	01,02	X	O			1084.3	363.6	315.9	312.8	265.1	460.4	473.1	-	304.8	X	-	54.5
FHMA5X24	01,02	X	O			1260.5	447.7	400.0	396.9	390.5	587.4	600.1	-	431.8	X	-	59.5
FHMA5X30	01,02	X	O			1260.5	447.7	400.0	396.9	403.2	587.4	596.9	-	-	-	X	67.2
FHMA5X36	01,02	X	O			1260.5	447.7	400.0	396.9	403.2	587.4	596.9	-	-	-	X	67.2
FHMA5B42	01,02	X	*			1357.3	536.6	489.0	485.8	495.3	692.2	684.2	719.1	-	-	X	75.5
FHMA5X42	01,02	X	*			1260.5	536.6	489.0	485.8	398.5	595.3	587.4	-	-	-	X	75.4
FHMA5B48	01	X	*			1357.3	536.6	489.0	485.8	495.3	692.2	684.2	719.1	-	-	X	82.8
FHMA5X48	01	X	*			1357.3	536.6	489.0	485.8	495.3	692.2	684.2	-	-	-	X	82.6
FHMA5B60	01	X	*			1503.4	627.1	577.8	576.3	641.4	836.6	828.7	865.2	-	-	X	95.5

X=YES
O=NO
*=YES, DUE TO AVAILABLE FIELD INSTALLED HEATERS.

NOTE:

1. SERIES DESIGNATION IS THE 13TH & 14TH POSITION OF UNIT PRODUCT NUMBER
2. ALL DIMENSIONS ARE IN "MM" UNLESS NOTED.

NOTE: ALLOW 533.4 FROM FRONT FOR SERVICE

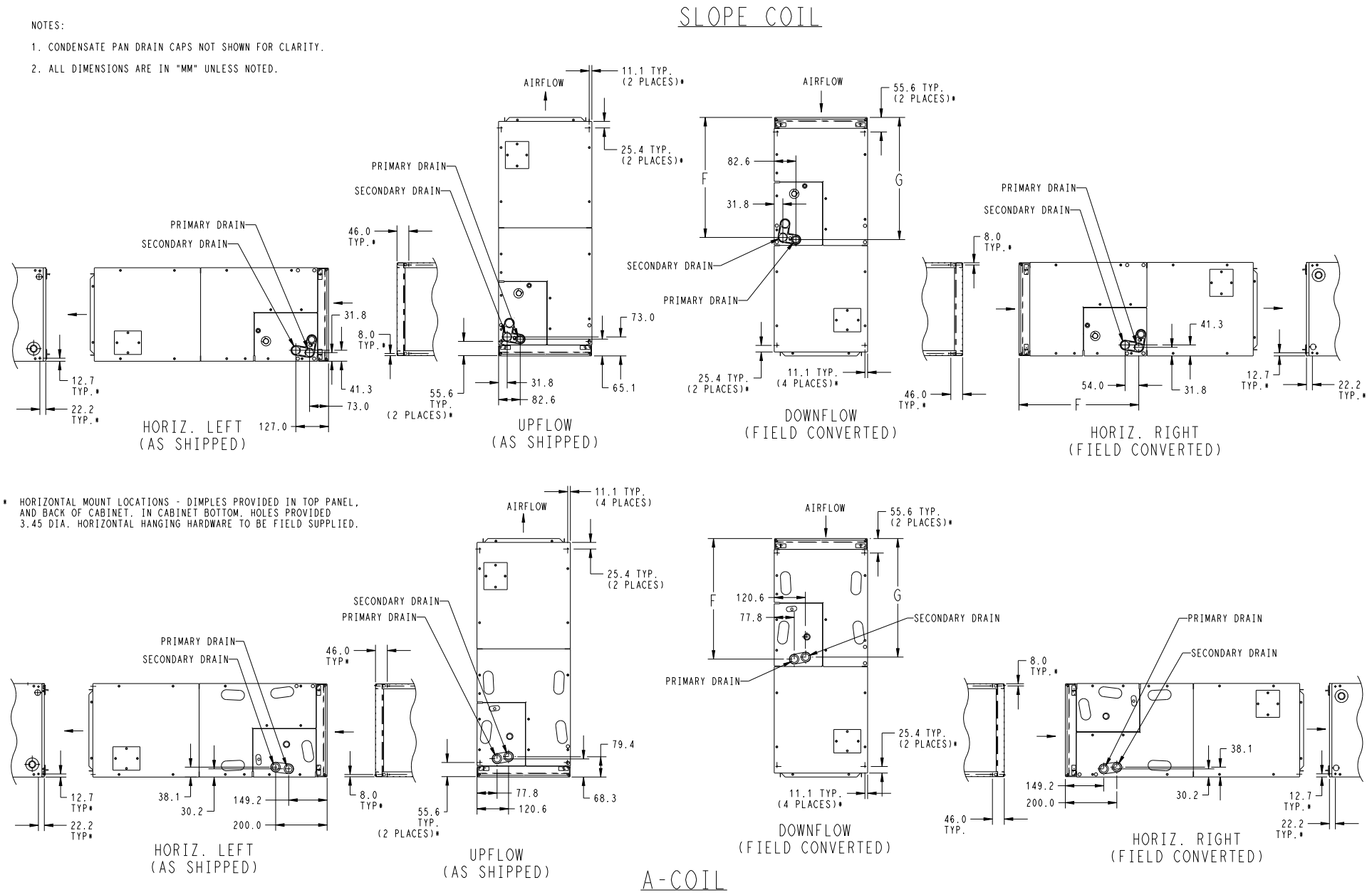


A230525A

Fig. 3 – FHMA5 - Metric (sheet 1)

Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.

DIMENSIONS (cont.)



A230526

Fig. 4 – FHMA5 - Metric (sheet 2)

Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.

Table 2 – PHYSICAL DATA

UNIT SIZE	NOMINAL COOLING CAPACITY (Btuh)	DIMENSIONS – IN (mm)			SHIPPING WEIGHT LB (KG)
		Height	Width	Depth	
18 Singular	18,000	42-11/16 in. (1084mm)	14-5/16 in. (364mm)	22-1/16 in. (560mm)	120 (54.4)
24 Singular	24,000	49-5/8 in. (1260mm)	17-5/8 in. (448mm)	22-1/16 in. (560mm)	131 (59.4)
30 Singular	30,000	49-5/8 in. (1260mm)	17-5/8 in. (448mm)	22-1/16 in. (560mm)	148 (67.1)
36 Singular	36,000	49-5/8 in. (1260mm)	17-5/8 in. (448mm)	22-1/16 in. (560mm)	148 (67.1)
42 Singular	42,000	49-5/8 in. (1260mm)	21-1/8 in. (537mm)	22-1/16 in. (560mm)	166 (75.3)
42 Modular	42,000	53-7/16 in. (1357mm)	21-1/8 in. (537mm)	22-1/16 in. (560mm)	166.5 (75.5)
48 Singular	48,000	53-7/16 in. (1357mm)	21-1/8 in. (537mm)	22-1/16 in. (560mm)	182 (82.5)
48 Modular	48,000	53-7/16 in. (1357mm)	21-1/8 in. (537mm)	22-1/16 in. (560mm)	182.5 (82.8)
60 Modular	60,000	59-3/16 in. (1503mm)	24-11/16 in. (627mm)	22-1/16 in. (560mm)	210.5 (95.5)

Table 3 – SPECIFICATIONS

SIZE	18	24	30	36	42	48	60
EVAPORATOR COIL							
Face Area, ft^2 (m^2)	2.23 (0.21)	2.97 (0.28)	3.96 (0.37)		4.45 (0.41)	5.93 (0.55)	7.42 (0.69)
Configuration	Slope		A				
Refrigerant Sweat Liquid Line Connection, in (mm)	3/8 (9.5) ID						
Refrigerant Sweat Suction Line Connection, in (mm)	5/8 (15.9) ID	3/4 (19.1) ID					7/8 (22.2) ID
Metering Device R-454B	TXV						
TXV Replacement P/N	EA66YU001	EA66YP001	EA66YP002		EA66YU002	EA66YU003	EA66YP003
FILTERS The fan coil filter rack can accommodate most common size filters as well as some smaller filters with minimal modification.							
Market Specified Filter Dimensions (W x L), in (mm)	13 x 20 (330 x 508)	16 x 20 (406 x 508)			20 x 20 (508 x 508)		24 x 20 (610 x 508)
Actual Filter Dimensions (W x L), in (mm) to Fit Fan Coil	up to 13.375 x 19.75 (340 x 502)	up to 16.5 x 19.75 (419 x 502)			up to 19.75 x 19.75 (502 x 502)		up to 23.75 x 19.75 (603 x 502)
BLOWER ASSEMBLY							
Motor Type (ECM)	Multi-tap ECM						
Motor HP	1/3	1/3	1/2	1/2	1/2	3/4	3/4
CFM	525	700	875	1050	1225	1400	1750
CABINET CONFIGURATIONS							
	Singular (1-piece)				Singular (1-piece) or Modular (2-piece)		

PERFORMANCE DATA

Table 4 – Airflow Performance (CFM) Wet

Ton (Size)	Blower Speed	External Static (in. wc)									
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
1-1/2 (18)	Tap 5	754	737	717	694	668	641	605	572	528	481
	Tap 4	695	678	655	628	600	573	551	520	479	421
	Tap 3	695	678	655	628	600	573	551	520	479	421
	Tap 2	643	620	591	557	534	506	477	439	408	378
	Tap 1	487	448	428	394	358	325	281	NA	NA	NA
2 (24)	Tap 5	1021	1003	964	925	876	838	797	761	726	689
	Tap 4	936	907	873	805	779	732	696	661	626	591
	Tap 3	936	907	873	805	779	732	696	661	626	591
	Tap 2	846	831	792	739	702	651	609	548	536	491
	Tap 1	746	697	629	567	521	477	446	389	364	326
2-1/2 (30)	Tap 5	1247	1215	1188	1154	1122	1083	1053	1017	971	915
	Tap 4	1133	1114	1082	1044	1009	968	924	873	835	785
	Tap 3	1133	1114	1082	1044	1009	968	924	873	835	785
	Tap 2	1040	997	961	929	883	828	782	725	708	667
	Tap 1	896	862	805	740	689	648	597	NA	NA	NA
3 (36)	Tap 5	1433	1404	1363	1328	1282	1251	1201	1145	1095	1021
	Tap 4	1304	1277	1256	1230	1207	1168	1122	1080	1073	983
	Tap 3	1304	1277	1256	1230	1207	1168	1122	1080	1073	983
	Tap 2	1183	1148	1124	1094	1051	1005	955	901	846	783
	Tap 1	1020	995	958	921	881	840	791	735	693	649
3-1/2 (42)	Tap 5	1571	1551	1508	1473	1439	1407	1372	1317	1253	1189
	Tap 4	1517	1493	1458	1425	1392	1358	1328	1295	1253	1193
	Tap 3	1517	1493	1458	1425	1392	1358	1328	1295	1253	1193
	Tap 2	1369	1339	1299	1263	1226	1188	1155	1112	1068	1012
	Tap 1	1135	1099	1048	966	908	852	802	755	698	587
4 (48)	Tap 5	1896	1853	1821	1795	1760	1737	1702	1670	1665	1619
	Tap 4	1711	1673	1643	1607	1570	1549	1509	1490	1446	1411
	Tap 3	1711	1673	1643	1607	1570	1549	1509	1490	1446	1411
	Tap 2	1547	1504	1466	1416	1388	1369	1324	1290	1239	1200
	Tap 1	1397	1347	1312	1269	1232	1172	1135	1086	1038	989
5 (60)	Tap 5	2109	2067	2043	1996	1967	1928	1899	1848	1812	1766
	Tap 4	2109	2067	2043	1996	1967	1928	1899	1848	1812	1766
	Tap 3	2109	2067	2043	1996	1967	1928	1899	1848	1812	1766
	Tap 2	1901	1868	1825	1785	1737	1710	1662	1620	1584	1521
	Tap 1	1583	1557	1499	1451	1392	1358	1313	1259	1194	1138

NOTES:

1.Airflow based upon dry coil at 230V with factory-approved filter and electric heater (2 element heater sizes 018 through 036, 3 element heater sizes 042 through 060).

2.To avoid potential for condensate blowing out of drain pan prior to making drain trap: Return static pressure must be less than 0.40 in. wc. Horizontal applications of 042 - 060 sizes must have supply static greater than 0.20 in. wc. Airflow above 400 cfm/ton on 048-060 size could result in condensate blowing off coil or splashing out of drain pan.

3.At higher pextstats (above 0.6 in/wc), water blowoff is more likely to occur depending on the user's setup.

PERFORMANCE DATA (cont.)

Table 5 – Airflow Performance (CFM) Dry

Ton (Size)	Blower Speed	External Static (in. wc)									
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
1-1/2 (18)	Tap 5	762	741	721	698	672	656	635	577	547	509
	Tap 4	695	679	655	628	600	580	559	534	505	452
	Tap 3	695	679	655	628	600	580	559	534	505	452
	Tap 2	634	615	585	547	522	506	475	444	407	371
	Tap 1	498	470	434	390	356	300	272	NA	NA	NA
2 (24)	Tap 5	1046	1013	978	958	925	877	830	752	722	687
	Tap 4	992	950	916	869	812	763	705	660	611	585
	Tap 3	992	950	916	869	812	763	705	660	611	585
	Tap 2	900	862	814	769	709	644	594	548	507	451
	Tap 1	762	723	651	599	531	471	428	385	345	319
2-1/2 (30)	Tap 5	1277	1244	1226	1193	1169	1122	1094	1058	1014	969
	Tap 4	1179	1142	1114	1070	1039	998	937	915	867	825
	Tap 3	1179	1142	1114	1070	1039	998	937	915	867	825
	Tap 2	1066	1030	997	960	916	863	795	746	703	674
	Tap 1	923	878	832	784	723	658	616	563	NA	NA
3 (36)	Tap 5	1489	1463	1428	1388	1345	1305	1262	1213	1160	1093
	Tap 4	1357	1337	1310	1283	1249	1212	1165	1114	1064	1014
	Tap 3	1357	1337	1310	1283	1249	1212	1165	1114	1064	1014
	Tap 2	1211	1190	1162	1132	1100	1066	1016	959	905	838
	Tap 1	1059	1038	1004	967	925	887	843	791	747	681
3-1/2 (42)	Tap 5	1647	1620	1583	1548	1505	1464	1424	1379	1319	1250
	Tap 4	1569	1539	1506	1476	1442	1404	1370	1336	1299	1219
	Tap 3	1569	1539	1506	1476	1442	1404	1370	1336	1299	1219
	Tap 2	1393	1355	1329	1288	1248	1223	1180	1138	1091	1037
	Tap 1	1190	1138	1083	1020	936	869	814	762	728	631
4 (48)	Tap 5	1956	1917	1887	1855	1831	1798	1763	1743	1707	1683
	Tap 4	1773	1743	1704	1667	1634	1612	1571	1536	1500	1464
	Tap 3	1773	1743	1704	1667	1634	1612	1571	1536	1500	1464
	Tap 2	1566	1524	1483	1451	1414	1376	1340	1303	1266	1217
	Tap 1	1413	1373	1328	1283	1246	1204	1168	1120	1075	1012
5 (60)	Tap 5	2148	2123	2084	2048	2002	1974	1939	1891	1893	1812
	Tap 4	2148	2123	2084	2048	2002	1974	1939	1891	1893	1812
	Tap 3	2148	2123	2084	2048	2002	1974	1939	1891	1893	1812
	Tap 2	1955	1913	1868	1833	1796	1757	1711	1654	1632	1570
	Tap 1	1646	1590	1527	1496	1442	1373	1315	1294	1221	1164

NOTES:

1.Airflow based upon dry coil at 230V with factory-approved filter and electric heater (2 element heater sizes 018 through 036, 3 element heater sizes 042 through 060).

2.To avoid potential for condensate blowing out of drain pan prior to making drain trap: Return static pressure must be less than 0.40 in. wc. Horizontal applications of 042 - 060 sizes must have supply static greater than 0.20 in. wc. Airflow above 400 cfm/ton on 048-060 size could result in condensate blowing off coil or splashing out of drain pan.

3.At higher pextstats (above 0.6 in/wc), water blowoff is more likely to occur depending on the user's setup.

Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.

Table 6 – Gross Cooling Capacities

Unit Size	INDOOR COIL AIR		SATURATED TEMPERATURE LEAVING EVAPORATOR (°F / °C)														
			35/2			40/4			45/7			50/10			55/13		
	CFM	EWB	TC	SHC	BF	TC	SHC	BF	TC	SHC	BF	TC	SHC	BF	TC	SHC	BF
18	525	72/22	42.80	20.80	0.00	38.40	18.70	0.00	33.50	16.50	0.01	27.90	14.10	0.02	21.70	11.70	0.02
		67/19	34.90	21.40	0.03	30.40	19.20	0.03	25.30	16.80	0.03	19.80	14.50	0.03	13.90	12.10	0.04
		62/17	27.70	21.90	0.03	23.20	19.60	0.03	18.50	17.30	0.04	14.90	14.90	0.13	12.20	12.20	0.28
	600	72/22	46.90	22.80	0.00	42.10	20.50	0.00	36.70	18.10	0.02	30.60	15.60	0.03	23.80	13.00	0.03
		67/19	38.30	23.70	0.04	33.40	21.20	0.04	27.80	18.70	0.04	21.60	16.10	0.04	15.20	13.40	0.05
		62/17	30.40	24.30	0.04	25.40	21.80	0.04	20.30	19.30	0.06	16.50	16.50	0.15	13.60	13.60	0.30
	675	72/22	50.60	24.60	0.00	45.40	22.20	0.02	39.60	19.70	0.03	33.00	17.00	0.04	25.60	14.10	0.04
		67/19	41.40	25.70	0.05	36.10	23.10	0.05	30.10	20.40	0.05	23.40	17.60	0.05	16.50	14.80	0.06
		62/17	32.90	26.60	0.05	27.50	23.90	0.05	22.10	21.10	0.07	18.10	18.10	0.17	14.90	14.90	0.32
24	700	72/22	54.40	26.40	0.00	49.20	24.00	0.00	43.30	21.40	0.01	36.40	18.50	0.02	28.60	15.50	0.03
		67/19	44.80	27.70	0.03	39.30	25.00	0.03	33.00	22.10	0.03	26.00	19.10	0.03	18.50	16.10	0.04
		62/17	35.80	28.60	0.03	30.20	25.80	0.03	24.30	22.90	0.04	19.70	19.70	0.13	16.30	16.30	0.28
	800	72/22	59.10	28.70	0.00	53.50	26.20	0.01	47.00	23.40	0.02	39.70	20.30	0.03	31.20	31.20	0.04
		67/19	48.70	30.40	0.04	42.90	27.60	0.04	36.10	24.50	0.04	28.30	21.20	0.04	20.20	17.90	0.05
		62/17	39.10	31.60	0.04	33.00	28.60	0.05	26.60	25.40	0.06	21.90	21.90	0.16	18.10	18.10	0.30
	900	72/22	63.20	30.80	0.00	57.20	28.20	0.02	50.40	25.20	0.04	42.60	22.00	0.04	33.50	18.60	0.05
		67/19	52.30	32.80	0.05	46.10	29.90	0.05	38.90	26.70	0.05	30.50	23.20	0.05	21.80	19.60	0.06
		62/17	42.10	34.50	0.05	35.60	31.30	0.06	28.80	27.90	0.07	24.00	24.00	0.18	19.80	19.80	0.32
30	875	72/22	71.60	34.70	0.00	64.40	31.30	0.00	56.30	27.70	0.00	47.20	23.80	0.02	36.80	19.70	0.02
		67/19	58.70	36.00	0.02	51.30	32.30	0.03	42.90	28.40	0.03	33.60	24.40	0.03	23.70	20.30	0.04
		62/17	46.70	36.80	0.03	39.20	33.00	0.03	31.20	29.10	0.04	25.00	25.00	0.12	20.60	20.60	0.27
	1000	72/22	78.30	38.00	0.00	70.50	34.40	0.00	61.60	30.50	0.02	51.70	26.30	0.03	40.30	21.90	0.03
		67/19	64.30	39.70	0.03	56.30	35.80	0.03	47.10	31.50	0.04	36.80	27.10	0.04	26.00	22.70	0.05
		62/17	51.40	40.90	0.04	43.10	36.70	0.04	34.40	32.40	0.05	27.90	27.90	0.14	23.00	23.00	0.29
	1125	72/22	84.30	41.00	0.00	75.90	37.20	0.00	66.80	33.20	0.02	55.80	28.60	0.04	43.60	23.80	0.04
		67/19	69.40	43.10	0.04	60.80	38.90	0.04	51.00	34.50	0.05	39.80	29.70	0.05	28.10	24.90	0.06
		62/17	55.60	44.80	0.05	46.70	40.30	0.05	37.30	35.60	0.06	30.60	30.60	0.16	25.20	25.20	0.31
36	1050	72/22	64.89	33.39	0.00	58.38	30.18	0.00	51.08	26.68	0.02	42.84	22.99	0.03	33.40	19.04	0.03
		67/19	53.14	34.96	0.04	46.48	31.47	0.04	38.88	27.72	0.04	30.22	23.74	0.04	21.13	19.74	0.05
		62/17	42.35	36.18	0.04	35.45	32.44	0.04	28.12	28.54	0.05	22.73	22.73	0.15	18.64	18.64	0.29
	1200	72/22	70.55	36.42	0.00	63.54	32.99	0.02	55.62	29.26	0.03	46.67	25.30	0.04	36.48	21.08	0.05
		67/19	57.90	38.43	0.05	50.70	34.71	0.05	42.55	30.74	0.05	33.13	26.44	0.05	23.14	22.04	0.06
		62/17	46.31	40.09	0.05	38.86	36.09	0.05	31.02	31.87	0.07	25.31	25.31	0.17	20.78	20.78	0.31
	1350	72/22	75.52	39.17	0.00	68.14	35.55	0.03	59.70	31.64	0.04	50.12	27.45	0.05	39.26	23.00	0.06
		67/19	62.18	41.63	0.06	54.49	37.72	0.06	45.77	33.52	0.06	35.75	28.98	0.06	25.00	24.22	0.08
		62/17	49.84	43.73	0.06	42.00	39.53	0.07	33.71	35.01	0.09	27.74	27.74	0.20	22.79	22.79	0.33

Table 6 – Gross Cooling Capacities

Unit Size	INDOOR COIL AIR		SATURATED TEMPERATURE LEAVING EVAPORATOR (°F / °C)														
			35/2			40/4			45/7			50/10			55/13		
	CFM	EWB	TC	SHC	BF	TC	SHC	BF	TC	SHC	BF	TC	SHC	BF	TC	SHC	BF
42	1225	72/22	79.15	40.41	0.00	70.85	36.31	0.00	61.59	31.90	0.02	51.15	27.24	0.03	39.41	22.38	0.04
		67/19	64.55	42.04	0.04	56.05	37.58	0.04	46.51	32.90	0.04	35.85	28.04	0.04	24.90	23.25	0.05
		62/17	51.09	43.18	0.04	42.46	38.53	0.05	33.59	33.84	0.06	27.05	27.05	0.15	22.11	22.11	0.30
	1400	72/22	86.34	44.20	0.00	77.30	39.79	0.01	67.22	35.05	0.03	55.91	30.07	0.04	43.10	24.80	0.05
		67/19	70.55	46.30	0.05	61.37	41.55	0.05	50.95	36.50	0.05	39.20	31.18	0.06	27.27	25.94	0.07
		62/17	56.04	47.92	0.06	46.63	42.89	0.06	36.98	37.71	0.08	30.12	30.12	0.18	24.63	24.62	0.32
	1575	72/22	92.81	47.68	0.00	83.15	42.98	0.03	72.31	37.96	0.05	60.17	32.67	0.06	46.45	27.07	0.06
		67/19	76.00	50.25	0.06	66.13	45.22	0.06	55.01	39.88	0.07	42.37	34.20	0.07	29.47	28.50	0.08
		62/17	60.57	52.40	0.07	50.47	47.01	0.07	40.22	41.43	0.09	33.01	33.01	0.20	26.99	26.99	0.34
48	1400	72/22	83.95	44.30	0.00	75.71	40.05	0.00	66.36	35.45	0.01	55.84	30.58	0.02	43.82	25.38	0.03
		67/19	68.80	46.22	0.03	60.32	41.61	0.03	50.67	36.70	0.03	39.64	31.45	0.03	27.80	26.12	0.04
		62/17	54.96	47.71	0.03	46.12	42.77	0.03	36.69	37.67	0.04	29.32	29.32	0.13	24.10	24.10	0.28
	1600	72/22	91.53	48.40	0.00	82.59	43.90	0.00	72.47	38.97	0.02	61.02	33.73	0.03	48.01	28.16	0.04
		67/19	75.19	50.91	0.04	65.98	45.99	0.04	55.57	40.75	0.04	43.57	35.09	0.04	30.49	29.21	0.05
		62/17	60.21	52.94	0.04	50.73	47.68	0.04	40.48	42.10	0.06	32.72	32.72	0.15	26.92	26.92	0.30
	1800	72/22	98.31	52.15	0.00	88.79	47.39	0.02	77.99	42.21	0.03	65.70	36.65	0.04	51.81	30.76	0.05
		67/19	80.94	55.25	0.05	71.10	50.06	0.05	59.93	44.50	0.05	47.14	38.52	0.05	32.96	32.14	0.06
		62/17	64.96	57.83	0.05	54.92	52.30	0.05	44.06	46.35	0.07	35.97	35.97	0.17	29.59	29.59	0.31
60	1600	72/22	118.17	60.42	0.00	106.56	54.57	0.00	93.41	48.24	0.02	78.64	41.59	0.02	62.13	34.63	0.03
		67/19	96.74	62.87	0.03	84.83	56.56	0.03	71.43	49.91	0.03	56.41	42.93	0.03	39.37	35.48	0.04
		62/17	77.24	64.78	0.03	65.10	58.16	0.03	51.83	51.23	0.04	41.00	41.00	0.12	33.67	33.67	0.27
	1750	72/22	129.14	66.15	0.00	116.46	59.92	0.00	102.18	53.13	0.02	86.08	45.94	0.03	68.00	38.39	0.03
		67/19	105.94	69.36	0.04	92.95	62.59	0.04	78.33	55.41	0.04	61.93	47.86	0.04	43.49	39.82	0.05
		62/17	84.76	71.94	0.04	71.53	64.80	0.04	57.37	57.38	0.05	45.94	45.94	0.14	37.65	37.65	0.29
	2000	72/22	139.03	71.41	0.00	125.46	64.82	0.01	110.15	57.64	0.03	92.83	49.99	0.04	73.33	41.92	0.04
		67/19	114.27	75.38	0.05	100.34	68.21	0.05	84.61	60.58	0.05	66.92	52.51	0.05	47.25	43.94	0.06
		62/17	91.59	78.67	0.05	77.41	71.08	0.05	62.32	63.11	0.07	50.60	50.60	0.16	41.54	41.54	0.31

CFM - Cubic Ft per Minute **EWB** - Entering Wet Bulb °F (°C) **LWB** - Leaving Wet Bulb °F (°C) **TC** - Gross Cooling Capacity 1000 Btuh

SHC - Gross Sensible Capacity 1000 Btuh **BF** - Bypass Factor **MBH** - 1000 Btuh

NOTES:

1. Contact manufacturer for cooling capacities at conditions other than shown in table.
2. Formulas:
   Leaving db = entering db - $\frac{\text{sensible heat cap.}}{1.09 \times \text{CFM}}$
   Leaving wb = wb corresponding to enthalpy of air leaving coil (h_{lwb})
   $h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{CFM}}$
   where h_{ewb} = enthalpy of air entering coil. Direct interpolation is permissible. Do not extrapolate.
3. SHC is based on 80_F (27_C) db temperature of air entering coil. Below 80_F (27_C) db, subtract (Correction Factor x CFM) from SHC. Above 80_F (27_C) db, add (Correction Factor x CFM) to SHC.
4. Bypass Factor = 0 indicates no psychometric solution. Use bypass factor of next lower EWB for approximation.

SHC CORRECTION FACTOR

BYPASS FACTOR	ENTERING AIR DRY-BULB TEMPERATURE (°F)					
	79	78	77	76	75	Under 75
	81	82	83	84	85	Over 85
	ENTERING AIR DRY-BULB TEMPERATURE (°C)					
	26	25	25	24	24	Under 75
	27	28	28	29	29	Over 85
	Correction Factor					
0.10	.098	1.96	2.94	3.92	4.91	Use formula shown below
0.20	0.87	1.74	2.62	3.49	4.36	
0.30	0.76	1.53	2.29	3.05	3.82	

Interpolation is permissible.
Correction Factor = 1.09 x (1 - BF) x (db - 80)

Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.

PERFORMANCE DATA (cont.)

Table 7 – Electric Heater Static Pressure Drop (in wc)

SIZES 18 - 36			SIZES 42 - 60		
HEATER ELEMENTS	kW	EXTERNAL STATIC PRESSURE CORRECTION	HEATER ELEMENTS	kW	EXTERNAL STATIC PRESSURE CORRECTION
0	0	+.02	0	0	+.04
1	3, 5	+.01	1	3, 5	+.03
2	8, 10	0	2	8, 10	+.02
3	9, 15	–.02	3	9, 15	0
4	20	–.04	4	20	–.02
			6	18, 24, 30	–.10

The airflow performance data was developed using fan coils with 10-kW electric heaters (2 elements) in the 018 through 036 size units and 15-kW heaters (3 elements) in the 042 through 061 size units. For fan coils with heaters of a different number of elements, the external available static at a given CFM from the curve may be corrected by adding or subtracting available external static pressure as indicated above.

Table 8 – Minimum CFM and Motor Speed Selection

SIZE	HEATER kW									
	3	5	8	9	10	15	18	20	24	30
18	525	525	525	—	600	—	—	—	—	—
24	700	700	700	—	700	775	—	—	—	—
30	—	875	875	—	875	875	—	1060	—	—
36	—	1050	970	970	970	920	—	1040	—	—
42	—	—	1225	1225	1225	1225	1225	1225	—	—
48	—	—	1400	1400	1400	1400	1400	1400	1400	1400
60	—	—	1750	1750	1750	1750	1750	1750	1750	1750

Speed Tap 4 (white wire) is used for electric heat only. White wire must remain on tap 4.

Table 9 – Estimated Sound Power Level (dB)*

SIZE	CONDITIONS		OCTAVE BAND CENTER FREQUENCY						
	CFM	Ext Static Pressure	63	125	250	500	1000	2000	4000
18	525	0.50	70.8	66.8	62.8	59.8	57.8	55.8	51.8
24	700	0.50	72.0	68.0	64.0	61.0	59.0	57.0	53.0
30	875	0.50	73.0	69.0	65.0	62.0	60.0	58.0	54.0
36	1050	0.50	73.8	69.8	65.8	62.8	60.8	58.8	54.8
42	1225	0.50	74.4	70.4	66.4	63.4	61.4	59.4	55.4
48	1400	0.50	75.0	71.0	67.0	64.0	62.0	60.0	56.0
60	1750	0.50	76.0	72.0	68.0	65.0	63.0	61.0	57.0

* Estimated sound power levels have been derived using the method described in the 1987 ASHRAE HVAC Systems & Applications Handbook, Chapter 52, p. 52.7.

PERFORMANCE DATA (cont.)

Table 10 – EH Heater Table

HEATER PART NO.	kW @ 240V	VOLTS/PH	STAGES (kW OPERATING)	INTERNAL CIRCUIT PROTECTION	FAN COIL SIZE USED WITH	HEATING CAP.* @ 230V
EHC05CKN	5	230/1	5	None	18†	15,700
EHC07CKN	8	230/1	8	None	18†	25,100
EHC10CKN	10	230/1	10	None	18†	31,400
EHC05BKN	5	230/1	5	None	24–60	15,700
EHC07BKN	8	230/1	8	None	24–60	25,100
EHC10BKN	10	230/1	10	None	24–60	31,400
EHC20BKF	20	230/1	5, 20	Fuse†	30–60	62,800
EHC05CKB	5	230/1	5	Circuit Breaker	18†	15,700
EHC07CKB	8	230/1	8	Circuit Breaker	18†	25,100
EHC10CKB	10	230/1	10	Circuit Breaker	18†	31,400
EHC05BKB	5	230/1	5	Circuit Breaker	24–60	15,700
EHC07BKB	8	230/1	8	Circuit Breaker	24–60	25,100
EHC10BKB	10	230/1	10	Circuit Breaker	24–60	31,400
EHC20BKB	20	230/1	5, 20	Circuit Breaker	30–60	62,800
EHC09BKCN	9	230/1‡	3, 9	None	36–60	28,200
EHC15BKF	15	230/1	5, 15	Fuse†	24–60	47,100
EHC15BKB	15	230/1	5, 15	Circuit Breaker	24–60	47,100
3 Phase Only						
EHC15BHN	15	230/3	5, 15	None	36–60	47,100
EHC18BHN	18	230/3	6, 12, 18	None	42–60	56,500
3 Phase, Factory Shipped (field convertible to single phase)						
EHC25BHCF	24	230/3	8, 16, 24	Fuse	48, 60	78,300
EHC30BHCF	30	230/3	10, 20, 30	Fuse	48, 60	94,100

*. Does not include heat from blower motor.
†. Single point wiring kit required for these heaters.
‡. Field convertible to 3 phase.

Table 11 – Electrical Data for Units without Electric Heat

MODEL SIZE	MTR HP	MTR FLA	VOLTS/PH/HZ	SINGLE CIRCUIT		BRANCH CIRCUIT MIN WIRE SIZE* AWG
				MCA	MAXMUM OVERCURRENT PROTECION	
18	1/3	2.9	208/230/1/60	3.6	15	14
24	1/3	2.9	208/230/1/60	3.6	15	14
30	1/2	4.2	208/230/1/60	5.3	15	14
36	1/2	4.2	208/230/1/60	5.3	15	14
42	1/2	4.2	208/230/1/60	5.3	15	14
48	3/4	6.1	208/230/1/60	7.6	15	14
60	3/4	6.1	208/230/1/60	7.6	15	14

* Use copper wire only. Use 75_C only in this application. When using non-metallic (NM) sheathed cable, wire size required should be based on that of 60_C conductors, instead of wire sizes shown in table above per NEC Article 336-26.
NOTE: If branch circuit wire length exceeds 100 ft (30 m), consult NEC 215-2 to determine maximum wire length. Use 2% voltage drop.
FLA - Full Load Amps

SCCR (Short Circuit Current Rating) = 5kA rms, symmetrical, 230V

PERFORMANCE DATA (cont.)

HEATER ELECTRICAL DATA

Table 12 – Electric Heater Internal Protection

HEATER kW	PHASE	FUSE QTY/SIZE	CKT BKR* QTY/SIZE
5	1	—	1/60
8	1	—	1/60
9	1/3	—	—
10	1	—	1/60
15	1	2/30–2/60	2/60
15	3	—	—
18	3	—	—
20	1	4/60	2/60
24	1/3	6/60	—
30	1/3	6/60	—

* All circuit breakers are 2 pole.

When using units with 20-, 24-, and 30-kW electric heaters, maintain a 1-in. (25mm) clearance from combustible materials to discharge plenum and ductwork and maintain a distance of 36-in (914mm) from the unit. Use an accessory downflow base to maintain proper clearance on downflow installations. Use flexible connectors between ductwork and unit to prevent transmission of vibration. When electric heater is installed, use heat resistant material for flexible connector between ductwork and unit at discharge connection. Ductwork passing through unconditioned space must be insulated and covered with vapor barrier.

Table 13 – Electric Heater Electrical Data

FC Size	HEATER PART NO.	kW		PHASE	Internal Circuit Protection	HEATER AMPS* 208/230V†			MIN AMPACITY* 208/230V†			BRANCH CIRCUIT								
												Min Wire Size (AWG) 208/230V‡			Min Gnd Wire Size 208/230V‡			Max Fuse/Ckt Bkr Amps 208/230V		
						Single Circuit	Dual Circuit		Single Circuit	Dual Circuit		Single Circuit	Dual Circuit		Single Circuit	Dual Circuit		Single Circuit	Dual Circuit	
		240V	208V				L1,L2	L3,L4		L1,L2	L3,L4		L1,L2	L3,L4		L1,L2	L3,L4		L1,L2	L3,L4
24-42	EHC05BKN	5	3.8	1	None	17.8/19.7	—	—	27.5/29.9	—	—	10/10	—	—	10/10	—	—	30/30	—	—
24-42	EHC05BKB	5	3.8	1	Ckt Bkr	17.8/19.7	—	—	27.5/29.9	—	—	10/10	—	—	10/10	—	—	30/30	—	—
48-60	EHC05BKN	5	3.8	1	None	17.8/19.7	—	—	29.9/32.3	—	—	10/8	—	—	10/10	—	—	30/35	—	—
48-60	EHC05BKB	5	3.8	1	Ckt Bkr	17.8/19.7	—	—	29.9/32.3	—	—	10/8	—	—	10/10	—	—	30/35	—	—
18	EHC05CKN	5	3.8	1	None	17.8/19.7	—	—	25.9/28.3	—	—	10/10	—	—	10/10	—	—	30/30	—	—
18	EHC05CKB	5	3.8	1	Ckt Bkr	17.8/19.7	—	—	25.9/28.3	—	—	10/10	—	—	10/10	—	—	30/30	—	—
24-60	EHC07BKN	8	6.0	1	None	28.5/31.5	—	—	43.3/47.0	—	—	8/8	—	—	10/10	—	—	45/50	—	—
24-60	EHC07BKB	8	6.0	1	Ckt Bkr	28.5/31.5	—	—	43.3/47.0	—	—	8/8	—	—	10/10	—	—	45/50	—	—
18	EHC07CKN	8	6.0	1	None	28.5/31.5	—	—	39.3/43.0	—	—	8/8	—	—	10/10	—	—	40/45	—	—
18	EHC07CKB	8	6.0	1	Ckt Bkr	28.5/31.5	—	—	39.3/43.0	—	—	8/8	—	—	10/10	—	—	40/45	—	—
24-60	EHC10BKN	10	7.5	1	None	35.6/39.4	—	—	52.1/56.9	—	—	6/6	—	—	10/10	—	—	60/60	—	—
24-60	EHC10BKB	10	7.5	1	Ckt Bkr	35.6/39.4	—	—	52.1/56.9	—	—	6/6	—	—	10/10	—	—	60/60	—	—
18	EHC10CKN	10	7.5	1	None	35.6/39.4	—	—	48.1/52.9	—	—	8/6	—	—	10/10	—	—	50/60	—	—
18	EHC10CKB	10	7.5	1	Ckt Bkr	35.6/39.4	—	—	48.1/52.9	—	—	8/6	—	—	10/10	—	—	50/60	—	—
36-60	EHC09BKCN**	9	6.8	1	None	32.2/35.6	—	—	47.9/52.1	—	—	8/6	—	—	10/10	—	—	50/60	—	—
36-60	EHC09BKCN	9	6.8	3	None	18.6/20.6	—	—	30.9/33.4	—	—	8/8	—	—	10/10	—	—	40/40	—	—
24-60	EHC15BKF††	15	11.3	1	Fuse	53.4/59.1	35.6/39.4	17.8/19.7	74.4/81.5	52.1/56.9	22.3/24.6	4/4	6/6	10/10	8/8	10/10	10/10	80/90	60/60	25/25
24-60	EHC15BKB	15	11.3	1	Ckt Bkr	53.4/59.1	35.6/39.4	17.8/19.7	74.4/81.5	52.1/56.9	22.3/24.6	4/4	6/6	10/10	8/8	10/10	10/10	80/90	60/60	25/25
36-60	EHC15BHN	15	11.3	3	Fuse	30.8/34.1	—	—	46.1/50.3	—	—	8/6	—	—	10/10	—	—	50/60	—	—
42-60	EHC18BHN	18	13.5	3	None	37.2/41.2	—	—	54.1/59.1	—	—	6/6	—	—	10/10	—	—	60/70	—	—
30-60	EHC20BKF††	20	15.0	1	Fuse	71.2/78.8	35.6/39.4	35.6/39.4	96.6/106.1	52.1/56.9	44.5/49.3	3/2	6/6	8/8	8/6	10/10	10/10	100/110	60/60	45/50
30-60	EHC20BKB	20	15.0	1	Ckt Bkr	71.2/78.8	35.6/39.4	35.6/39.4	96.6/106.1	52.1/56.9	44.5/49.3	3/2	6/6	8/8	8/6	10/10	10/10	100/110	60/60	45/50
48-60	EHC25BHCF‡‡	24	18.0	3	Fuse	49.3/54.6	—	—	69.3/75.9	—	—	4/4	—	—	8/8	—	—	80/80	—	—
48-60		24	18.0	1	Fuse	85.5/94.5	—	—	114.5/125.8	—	—	2/1	—	—	6/6	—	—	125/150	—	—
48-60	EHC30BHCF‡‡	30	22.5	3	Fuse	61.7/68.2	—	—	84.8/92.9	—	—	4/3	—	—	8/8	—	—	90/100	—	—
48-60		30	22.5	1	Fuse	106.8/118.1	—	—	141.1/155.3	—	—	0/00	—	—	6/6	—	—	150/175	—	—

*. Includes blower motor amps of largest fan coil used with heater. Consult Product Data for specific motor amps.
†. For 240V, multiply 230V heater amps by 1.04. Wire sizing and over-current protection may need adjustment per local code requirements.
‡. Copper wire must be used. If other than uncoated (non-plated), 75°C ambient, copper wire (solid wire for smaller, and stranded wire for larger than 10 AWG) is used, consult applicable tables of the National Electric Code (ANSI/NFPA 70).
**. Field convertible to 3 phase.
††. Single circuit application of F15 and F20 heaters requires single-point wiring kit accessory.
‡‡. Field convertible to 1 phase, single or multiple supply circuit.

Table 14 – Field Multipoint Wiring or 24- and 30-kW Single Phase

FC Size	HEATER PART NO.	kW		PHASE	HEATER AMPS 208/230V			MIN AMPACITY 208/230V*			MIN WIRE SIZE (AWG) 208/230V†			MIN GND WIRE SIZE	MAX FUSE/CKT BKR AMPS 208/230V		
		240V	208V		L1,L2	L3,L4	L5,L6	L1,L2	L3,L4	L5,L6	L1,L2	L3,L4	L5,L6	208/230V	L1,L2	L3,L4	L5,L6
48-60	EHC25BHCF‡	24	18.0	1	28.5/31.5	28.5/31.5	28.5/31.5	43.3/47.0	35.6/39.4	35.6/39.4	8/8	8/8	8/8	10/10	50/50	40/40	40/40
48-60	EHC30BHCF‡	30	22.5	1	35.6/39.4	35.6/39.4	35.6/39.4	52.1/56.9	44.5/49.3	44.5/49.3	6/6	8/8	8/8	10/10	60/60	45/50	45/50

*. Includes blower motor amps of largest fan coil used with heater.
†. Copper wire must be used. If other than uncoated (non-plated), 75°C ambient, copper wire (solid wire for 10 AWG and smaller, stranded wire for larger than 10 AWG) is used, consult applicable tables of the NEC (ANSI/NFPA 70).
‡. Field convertible to 1 phase, single or multiple supply circuit.

Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.

Table 15 – Accessories

ITEM		ACCESSORY PART NO.*	FAN COIL SIZE USED WITH
1.	Disconnect Kit	KFADK0301DSC	All single phase 3kW - 10kW heaters
2.	Downflow Base Kit	EBAC01NCB	18
		EBAC02NCB	24, 30, 36
		EBAC03NCB	42, 48
		EBAC04NCB	60
3.	Downflow Conversion Kit †	EBAC01DFS	Slope Coil Units—18, 24
		EBAC02DFA	A-Coil Units—30, 36, 42, 48, 60
4.	Downflow/Horizontal Conversion Gasket Kit	EBAC01GSK	All
5.	Horizontal Water Management Kit (25 pack) ‡	NAMA00125HC	A-Coil Units—30, 36, 42, 48, 60
6.	Single-Point Wiring Kit	EBAC01SPK	Only with 15- and 20-kW Fused Heaters
7.	Filter	See Table 3 for filter dimension details.	
8.	Fan Coil Filter Cabinet (Fan Coil Filter Media)	AHIC0014A (FAIC0014A02)	18
		AHIC0017A (FAIC0017A2)	24, 30, 36
		AHIC0021A (FAIC0021A2)	42, 48
		AHIC0024A (FAIC0024A2)	60
9.	PVC Condensate Trap Kit (50 pack)	KFAET0150ETK	All
10.	Door Gasket Kit **	1191140	All
11.	Accessory Quick Connect Kit	NAMA00110QC	All

* Factory authorized and listed, field-installed.
** This kit is for replacement of factory installed gaskets if they are damaged or removed from the fan coil.
† EBAC01GSK must also be purchased for down flow applications.
‡ EBAC01GSK must also be purchased for down flow or horizontal applications.

Accessory Kits Description – Suggested and Required Use

1. **Disconnect Kit**
   The kit is used to disconnect electrical power to the fan coil so service or maintenance may be performed safely.

   SUGGESTED USE: Units for 3- through 10-kW electric resistance heaters and cooling controls.

2. **Downflow Base Kit**
   This kit is designed to provide a 1-in. (25mm) minimum clearance between unit discharge plenum, ductwork, and combustible materials. It also provides a gap-free seal with the floor.

   REQUIRED USE: This kit must be used whenever fan coils are used in downflow applications.

3. **Downflow Conversion Kit**
   Fan coils are shipped from the factory for upflow or horizontal-left applications. Downflow conversion kits provide proper condensate water drainage and support for the coil when used in downflow applications. Separate kits are available for slope coils and A-coils.

   REQUIRED USE: This kit must be used whenever fan coils are used in downflow applications.

4. **Downflow/Horizontal Conversion Gasket Kit**
   This kit provides the proper gasketing of units when applied in either a downflow or horizontal application.

   REQUIRED USE: Fan coils in either downflow or horizontal applications.

5. **Horizontal Applications - Water Management Kit**
   This kit provides proper installation of fan coils under conditions of high static pressure and high relative humidity.

   SUGGESTED USE: All fan coils.

6. **Single Point Wiring Kit**
   The single point wiring kit acts as a jumper between L1 and L3 lugs, and between the L2 and L4 lugs. This allows the installer to run two heavy-gauge, high-voltage wires into the fan coil rather than 4 light-gauge, high-voltage wires.

   SUGGESTED USE: Fan coils with 15- and 20-kW fused heaters only.

7. **Filter Kit (12 pack)**
   The kit consists of 12 fan coil framed filters. These filters collect large dust particles from the return air entering the fan coil and prevents them from collecting on the coil. This process helps to keep the coil clean, which increases heat transfer and, in turn, the efficiency of the system.

   SUGGESTED USE: To replace filters in fan coils.

   REQUIRED USE: All units unless a filter grille is used.

8. **Fan Coil Filter Cabinet**
   This cabinet is mounted to the fan coil on the return air end and designed to slip over the outer fan coil casing. The cabinets are insulated using the same insulation as production fan coils. They are designed for the removal of particulates from indoor air using FILXXFNC00 (17, 21, 24) media filter cartridges. These fan coil media filter cartridge kits are designed for the removal of particles from indoor air. The cartridge is installed in the return air duct next to the air handler or further upstream.

   SUGGESTED USE: All fan coils.

9. **PVC Condensate Drain Trap Kit**
   This kit consists of 50 PVC condensate traps. Each trap is pre-formed and ready for field installation. This deep trap helps the system make and hold proper condensate flow even during blower initiation.

   SUGGESTED USE: All fan coils.

10. **Door Gasket Kit**
    This kit consists of specific adhesive-backed foam strips which are applied to the unit door and frame, limiting air leakage.

11. **Accessory Quick Connect Kit**
    This kit enables the installer to easily connect a 230V IAQ accessory (air purifier, electronic air cleaner, UV light, etc.) kit to a fan coil unit, eliminating the need to run a separate power supply to the accessory. Use of this kit may eliminate the requirement for a licensed electrician to complete the job (check local codes).

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N5H5S
Single-Stage Heat Pump with R-454B Refrigerant 1.5 To 5 Tons

Arcoaire®
Air Conditioning & Heating

Product Data



This unit has been designed utilizing non-ozone depleting and low global warming potential R-454B refrigerant.
Heat pumps with R-454B refrigerant provide a collection of features unmatched by any other family of equipment.

Industry leading Features / Benefits

Efficiency

- 14.3 - 16.0 SEER2 / 10.0 - 12.5 EER2 / 7.5 - 7.8 HSPF2 (depending on unit size and indoor combination installed)
- Indoor air quality accessories available

Comfort

- System supports programmable or standard thermostat controls

Sound

- Sound levels as low as 70 dBA

Reliability

- Non-ozone depleting and low global warming potential R-454B refrigerant
- Scroll compressor
- Internal pressure relief valve
- Internal thermal overload
- Loss of charge switch
- Filter drier
- Balanced refrigeration system for maximum reliability

Durability

Protection Package:

- Solid, durable sheet metal construction
- Dense wire coil guard

Applications

- Long line - up to 250 feet (76.20 m) total equivalent length, up to 200 feet (60.96 m) condenser above evaporator, or up to 80 ft. (24.38 m) evaporator above condenser (See Long Line Guide for more information.)
- Low ambient cooling (down to 0°F/-17.8°C) with approved low ambient accessory kits

Limited Warranty

- 5-year parts limited warranty (including compressor and coil)
  10-year parts limited warranty (including compressor and coil) with timely registration*
  – Equipment must be registered within 90 days of original installation, except in jurisdictions where warranty benefits cannot be conditioned on registration.
  * Applies to original purchaser/homeowner and not available to subsequent owners except in jurisdictions where applicable laws dictate otherwise.

See warranty certificate for complete details and restrictions.

MODEL NUMBER NOMENCLATURE

N	5	H	5	S	18	A	K	A	A	A
Brand **N =Arcoaire**	**Refrigerant** **5** = R-454B	**Type** **H** = HP	**SEER2** **5**= 14.3 SEER2	**OD Design Type** **S**= Single Stage	**Nominal Capacity** **18** = 1-1/2 Tons **24** = 2 Tons **30** = 2-1/2 Tons **36** = 3 Tons **42** = 3-1//2 Tons **48** = 4 Tons **60** = 5 Tons	**Feature** **A** = Standard	**Voltage** **K** = 208-230-1 **H** = 208/230-3 **L** = 460-3	**Special Feature** **A** = Standard	**Region** **A** = Standard HP	**Major Series** **A** = Initial

Use of the AHRI Certified TM Mark indicates a manufacturer's participation in the program For verification of certification for individual products, go to www.ahridirectory.org.

C US

ENERGY STAR

This product has been designed and manufactured to meet Energy Star® criteria for energy efficiency when matched with appropriate coil/furnace components. However, proper refrigerant charge and proper air flow are critical to achieve rated capacity and efficiency. Installation of this product should follow all manufacturing refrigerant charging and air flow instructions. **Failure to confirm proper charge and air flow may reduce energy efficiency and shorten equipment life.**

Tested AHRI Combination Ratings

NOTE: Ratings contained in this document are subject to change at any time.

For AHRI ratings certificates, please refer to the AHRI directory www.ahridirectory.org
Additional ratings and system combinations can be accessed via the Ratings Database here: Arcoaire Ratings

CATALOG ORDERING NUMBERS

Size	Model Number
18	N5H5S18AKAAA
24	N5H5S24AKAAA
30	N5H5S30AKAAA
36	N5H5S36AKAAA N5H5S36AHAAA N5H5S36ALAAA
42	N5H5S42AKAAA
48	N5H5S48AKAAA N5H5S48AHAAA N5H5S48ALAAA
60	N5H5S60AKAAA N5H5S60AHAAA N5H5S60ALAAA

Standard Features

Feature	18	24	30	36	42	48	60
R-454B Refrigerant	X	X	X	X	X	X	X
Scroll Compressor	X	X	X	X	X	X	X
Field Installed Filter Drier	X	X	X	X	X	X	X
Front Seating Service Valves	X	X	X	X	X	X	X
Internal Pressure Relief Valve	X	X	X	X	X	X	X
Internal Thermal Overload	X	X	X	X	X	X	X
Long Line capability	X	X	X	X	X	X	X
Low Ambient capability with Kit	X	X	X	X	X	X	X
Suction Line Accumulator	X	X	X	X	X	X	X
Loss of Charge Switch	X	X	X	X	X	X	X

Physical Data

UNIT SIZE SERIES	18	24	30	36	42	48	60
Compressor Type	Scroll						
REFRIGERANT	R-454B						
Factory Charge lb (kg)*	6.5(2.95)	5.4(2.45)	6.1(2.77)	7.6(3.45)	7.3(3.31)	10.5(4.76)	8.7(3.95)
Outdoor Heating Piston #	42	46	52	52	61	65	70
COND FAN	Forward Swept or Propeller Type, Direct Drive						
Air Discharge	Vertical						
Air Qty (CFM)	1900	3500	3000	3500	3000	3800	4300
Motor HP	1/12	1/10	1/10	1/4	1/5	1/4	1/4
Motor RPM	800	825	825	825	1100	1110	800
COND COIL							
Face Area (Sq ft)	17.2	19.3	21.4	17.2	17.2	21.4	22.6
Fins per In.	20	20	20	20	20	20	20
Rows	1	1	1	2	2	2	2
Circuits	7	6	7	8	10	12	12
VALVE CONNECT. (In. ID)							
Vapor	5/8	5/8	3/4	3/4	7/8	7/8	7/8
Liquid	3/8"						
REFRIGERANT TUBES* (In. OD)							
Rated Vapor†	5/8	5/8	3/4	3/4	7/8	7/8	1 1/8
Rated Liquid Line‡	3/8"						

*. For 15 ft. lineset
†. Units are rated with 25 ft (7.6 m) of lineset length. See Vapor Line Sizing and Cooling Capacity Loss table when using other sizes and lengths of lineset.
‡. See Liquid Line Sizing For Cooling Only Systems with R-454B Refrigerant tables.
Note: See unit Installation Instructions for proper installation

Manufacturer reserves the right to change, at any time, specifications and designs without notice and without obligations.

Vapor Line Sizing and Cooling Capacity Loss

Acceptable vapor line diameters provide adequate oil return to the compressor while avoiding excessive capacity loss. The suction line diameters shown in the chart below are acceptable for HP systems with R-454B refrigerant:

Vapor Line Sizing and Cooling Capacity Losses - R-454B Refrigerant 1- Stage Heat Pump Applications

Unit Nominal Size (Btuh)	Maximum Liquid Line Diameters (In. OD)	Acceptable Vapor Line Diameters (In. OD)	Cooling Capacity Loss (%) Total Equivalent Line Length ft. (m) 1-Stage HP with R-454B Refrigerant								
			Total Equivalent Line Length (ft)								
			Standard Application		Long Line Application Requries Accessories						
			26-50	51-80	81-100	101-125	126-150	151-175	176-200	201-225	226-250
18	3/8	1/2	1	2	3	5	6	7	8	9	11
		5/8	0	1	1	1	2	2	2	3	3
24	3/8	5/8	0	1	2	2	3	3	4	5	5
		3/4	0	0	1	1	1	1	1	2	2
30	3/8	5/8	1	2	3	3	4	5	6	7	8
		3/4	0	0	1	1	1	2	2	2	3
		7/8	0	0	0	0	1	1	1	1	1
36	3/8	5/8	1	2	4	5	6	8	9	10	12
		3/4	0	1	1	2	2	3	3	4	4
		7/8	0	0	0	1	1	1	1	2	2
42	3/8	3/4	0	1	2	2	3	4	4	5	6
		7/8	0	0	1	1	1	2	2	2	3
48	3/8	3/4	0	1	2	3	4	5	5	6	7
		7/8	0	0	1	1	2	2	2	3	3
60	3/8	3/4	1	2	4	5	6	7	9	10	11
		7/8	0	1	2	2	3	4	4	5	5
		1 1/8	0	0	0	1	1	1	1	1	1
Applications in this area are long line. Accessories are required as shown in Table 1.											

Refrigerant Piping Length Limitations

Maximum Line Lengths:

The maximum allowable total equivalent length for heat pumps varies depending on the vertical separation. See the tables below for allowable lengths depending on whether the outdoor unit is on the same level, above or below the outdoor unit.

Maximum Line Lengths for Heat Pump Applications

	MAXIMUM ACTUAL LENGTH* ft (m)	MAXIMUM EQUIVALENT LENGTH{ ft (m)	MAXIMUM VERTICAL SEPARATION ft (m)
Units on equal level	200 (61)	250 (76.2)	N/A
Outdoor unit ABOVE indoor unit	200 (61)	250 (76.2)	200 (61)
Outdoor unit BELOW indoor unit	See Table 'Maximum Total Equivalent Length: Outdoor Unit BELOW Indoor Unit'		

. Maximum actual length not to exceed 200 ft (61 m)

Maximum Total Equivalent Length* - Outdoor Unit BELOW Indoor Unit

Size	Liquid Line Diameter w/ TXV	HP with R-454B Refrigerant - Maximum Total Equivalent Length Vertical Separation ft (m) Outdoor unit BELOW indoor unit;						
		0-20 (0 - 6.1)	21-30 (6.4 - 9.1)	31-40 (9.4 - 12.2)	41-50 (12.5 - 15.2)	51-60 (15.5 - 18.3)	61-70 (18.6 - 21.3)	71-80 (21.6 - 24.4)
18,000	3/8	250*	250*	250*	250*	250*	250*	250*
24,000	3/8	250*	250*	250*	250*	250*	250*	250*
30,000	3/8	250*	250*	250*	250*	250*	250*	250*
36,000	3/8	250*	250*	250*	250*	250*	250*	250*
42,000	3/8	250*	250*	250*	250*	250*	250*	150
48,000	3/8	250*	250*	250*	250*	230	160	—
60,000	3/8	250*	225*	190	150	110	—	—

*.Total equivalent length accounts for losses due to elbows or fitting. See the Long Line Guideline for details.
— = outside acceptable range

Long Line Applications

An application is considered Long Line when the refrigerant level in the system requires the use of accessories to maintain acceptable refrigerant management for systems reliability. Defining a system as long line depends on the liquid line diameter, actual length of the tubing, and vertical separation between the indoor and outdoor units.

For Heat Pump systems, the chart below shows when an application is considered Long Line. Beyond these lengths, long line accessories are required:

HP with R-454B Refrigerant Long Line Description ft (m)
Beyond these lengths, long line accessories are required

Liquid Line Size	Units On Same Level	Outdoor Below Indoor	Outdoor Above Indoor
3/8	80 (24.4)	20 (6.1) vertical or 80 (24.4) total	80 (24.4)

Note: See Long Line Guideline for details

Accessories

KIT NUMBER	KIT NAME	18	24	30	36	42	48	60
NASA00601CH	Crankcase Heater	X	X	X	X			
NASA00501CH	Crankcase Heater					X	X	X
NASA0130ACH	Crankcase Heater (460-3)				X			
NASA01401CH	Crankcase Heater (460-3)						X	X
NASA001TD	Time Delay Relay	X	X	X	X	X	X	X
NASA00101IK	Isolation Relay	X	X	X	X	X	X	X
NASA001LS	Solenoid Valve Kit	X	X	X	X	X	X	X
NASA404PS	High Pressure Switch	X	X	X	X	X	X	X
NASA00106SS	Snow Stand	X	X	X	X	X	X	X
NASA001AC	Cycle Protector	X	X	X	X	X	X	X
NASA00201FS	Evaporator Freeze Stat	X	X	X	X	X	X	X
NASA012SC	Hard Start (not used on 3-phase models)	X	X	X	X	X	X	X
NASA401LA	Low Ambient Cooling Pressure Switch	X	X	X	X	X	X	X
NASA00201SF	Support Foot Assembly	X	X	X	X	X	X	X
NASA00201SJ	Sound Blanket	X	X	X	X			
NASA00101SJ	Sound Blanket					X	X	X

X= Accessory

Accessory Usage Guideline

Accessory	REQUIRED FOR LOW-AMBIENT COOLING APPLICATIONS (Below 55°F / 12.8°C)	REQUIRED FOR LONG LINE APPLICATIONS*	REQUIRED FOR SEA COAST APPLICATIONS (Within 2 miles / 3.22 km)
Accumulator	Standard	Standard	Standard
Ball Bearing Fan Motor	Standard	Standard	Standard
Compressor Start Assist Capacitor and Relay†	Yes	Yes	No
Crankcase Heater	Yes	Yes	No
Evaporator Freeze Thermostat	Yes	No	No
Hard Shutoff TXV	Yes	Yes	No
Isolation Relay	Yes	No	No
Liquid Line Solenoid Valve	No	See Long-Line Application Guideline	No
Low Ambient Switch	Yes	No	No
Support Feet	Recommended	No	Recommended

*. For tubing line sets between 80 and 200 ft. (24.38 and 60.96 m) and/or 20 ft. (6.09 m) vertical differential, refer to Residential Split-System Longline Application Guideline.
†. Not used on 3-phase units

Accessory Description and Usage

1. Ball-Bearing Fan Motor

A fan motor with ball bearings which permits speed reduction while maintaining bearing lubrication.

2. Compressor Start Assist - Capacitor and Relay

Start capacitor and relay gives a ”hard” boost to compressor motor at each start up.

Usage Guideline:

Required for single-phase scroll compressors in the following applications:

Long line

Low ambient cooling

Suggested for all compressors in areas with a history of low voltage problems.

3. Crankcase Heater

An electric resistance heater which mounts to the base of the compressor to keep the lubricant warm during off cycles. Improves compressor lubrication on restart and minimizes the chance of liquid slugging.

Usage Guideline:

Required in low ambient cooling applications.

Required in long line applications.

Suggested in all commercial applications.

4. Cycle Protector

The cycle protector is designed to prevent compressor short cycling. This control provides an approximate 5-minute delay after power to the compressor has been interrupted for any reason, including power outage, protector control trip, thermostat jiggling, or normal cycling.

5. Evaporator Freeze Thermostat

An SPST temperature-actuated switch that stops unit operation when evaporator reaches freeze-up conditions.

Usage Guideline:

Required when low ambient kit has been added.

6. Low-Ambient Pressure Switch Kit

A long life pressure switch which is mounted to outdoor unit service valve. It is designed to cycle the outdoor fan motor in order to maintain head pressure within normal operating limits (approximately 100 psig to 225 psig). The control will maintain working head pressure at low-ambient temperatures down to 0°F (-18°C) when properly installed and also using wind baffles. Instructions provided in accessory kit.

Usage Guideline:

A Low-Ambient Pressure Switch must be used when cooling operation is used at outdoor temperatures below 55°F (12.8°C).

7. Outdoor Air Temperature Sensor

This device enables the thermostat to display the outdoor temperature. This device is also required to enable special thermostat features such as auxiliary heat lock out.

Usage Guideline:

Suggested for use with compatible thermostats.

8. Sound Blanket

Wraparound sound reducing cover for the compressor. Reduces the sound level of the compressor.

Usage Guideline:

Suggested when unit is installed closer than 15 ft (4.57 m) to quiet areas, bedrooms, etc.

Suggested when unit is installed between two houses less than 10 ft (3 m) apart.

Accessory Description and Usage Continued...

9. Support Feet

Four or five stick-on plastic feet that raise the unit 4 in. (101.6 mm) above the mounting pad. This allows sand, dirt, and other debris to be flushed from the unit base, minimizing corrosion.

Usage Guideline:

Suggested in the following applications:

Coastal installations.

Windy areas or where debris is normally circulating.

Rooftop installations.

For improved sound ratings.

10. Time-Delay Relay

An SPST delay relay which briefly continues operation of indoor blower motor to provide additional cooling after the compressor cycles off.

NOTE: Most indoor unit controls include this feature. For those that do not, use the guideline below.

Usage Guideline:

For improved efficiency ratings for certain combinations of indoor and outdoor units. Refer to AHRI Directory of Certified Product Performance (AHRI Directory).

When a Time-Delay Relay (TDR) is called for in the AHRI Directory, use a 30 second TDR for Micro Channel Indoor units and use a 90 second TDR for Round Tube Plate Fin Indoor units.

11. Winter Start Control

This control is designed to alleviate nuisance opening of the low-pressure switch by bypassing it for the first 3 minutes of operation.

Electrical Data

UNIT SIZE	V/PH	OPER VOLTS*		COMPR		FAN	MCA	MAX FUSE† or CKT BRK AMPS
		MAX	MIN	LRA	RLA	FLA		
18	208-230-1	253	197	45.1	8.3	0.50	10.9	15
24				64.4	10.3	0.60	13.5	20
30				67.0	12.5	0.70	16.3	25
36				86.0	14.4	1.20	19.2	30
42				123.0	19.0	1.05	24.9	40
48				126.0	22.4	1.40	29.4	50
60				157.0	23.7	1.50	31.1	50
36	208/230-3	253	187	70.0	9.0	1.20	12.5	20
48				120.4	12.8	1.4	17.4	30
60				156.4	16.0	1.50	21.5	35
36	460-3	506	414	39.0	4.1	0.64	5.7	15
48				49.4	6.0	0.73	8.2	15
60				69.0	7.1	0.94	9.8	15

*.Permissible limits of the voltage range at which the unit will operate satisfactorily
†.Time-Delay fuse.

FLA—Full Load Amps
LRA—Locked Rotor Amps
MCA—Minimum Circuit Amps
RLA—Rated Load Amps
NOTE: Control circuit is 24-V on all units and requires external power source. Copper wire must be used from service disconnect to unit.
All motors/compressors contain internal overload protection.
Short Circuit Current Rating (SCCR): 5kA rms

NOTE: Tested in compliance with AHRI 270 but not listed with AHRI.

Sound Power Level without Sound Shield

UNIT SIZE	STANDARD RATING (dBA)	TYPICAL OCTAVE BAND SPECTRUM (dB, without tone adjustment)						
		125	250	500	1000	2000	4000	8000
18	72	63.9	65.8	66.6	68.3	63.3	59.7	54.6
24	71	66.3	64.7	64.2	64.4	59.2	55.6	54.7
30	70	64.6	64.4	65.7	63.9	60.5	55.6	53.7
36	76	70.6	69.9	68.5	66.0	63.1	59.0	53.2
42	76	70.2	71.3	71.2	72.1	64.9	62.7	59.5
48	76	70.1	72.2	69.7	68.0	62.7	61.7	60.9
60	74	66.6	68.6	69.2	70.8	62.9	60.8	62.7

Sound Power Level with Accessory Sound Shield

UNIT SIZE	STANDARD RATING (dBA)	TYPICAL OCTAVE BAND SPECTRUM (dB, without tone adjustment)						
		125	250	500	1000	2000	4000	8000
18	70	64.3	65.9	66.4	67.4	62.1	59.0	53.2
24	68	66.8	64.7	64.1	64.6	60.3	53.9	50.2
30	67	65.3	65.1	65.1	62.4	58.7	53.6	50.8
36	75	70.0	68.9	68.3	65.4	62.0	57.6	50.7
42	74	70.5	72.0	71.2	70.4	63.9	62.1	58.1
48	75	70.7	72.2	69.5	67.3	62.1	60.1	56.1
60	72	68.9	68.1	69.6	69.4	61.0	58.4	58.9

NOTE: Tested in compliance with AHRI 270 but not listed with AHRI.

Charging Subcooling (TXV-Type Expansion Device)

UNIT SIZE-VOLTAGE	REQUIRED SUBCOOLING °F (°C)
18	6 (3.3)
24	6 (3.3)
30	12 (6.7)
36	10 (5.6)
42	12 (6.7)
48	13 (7.2)
60	7 (3.9)

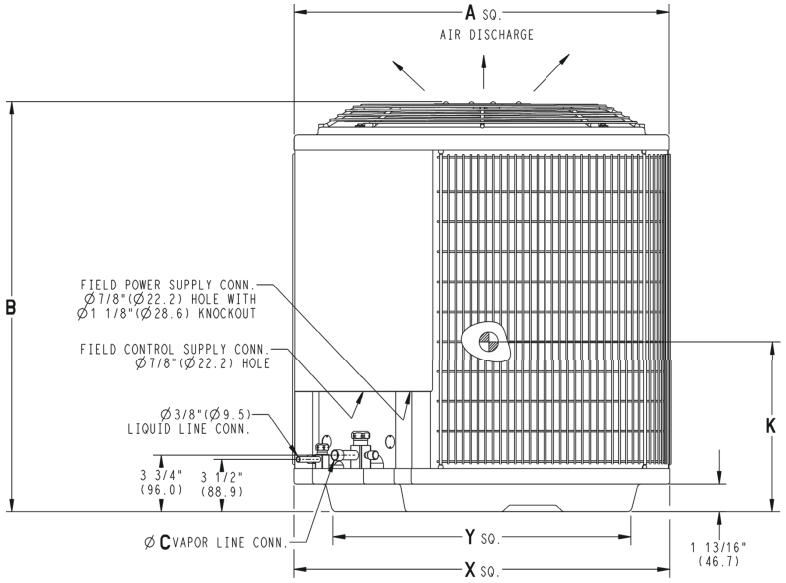
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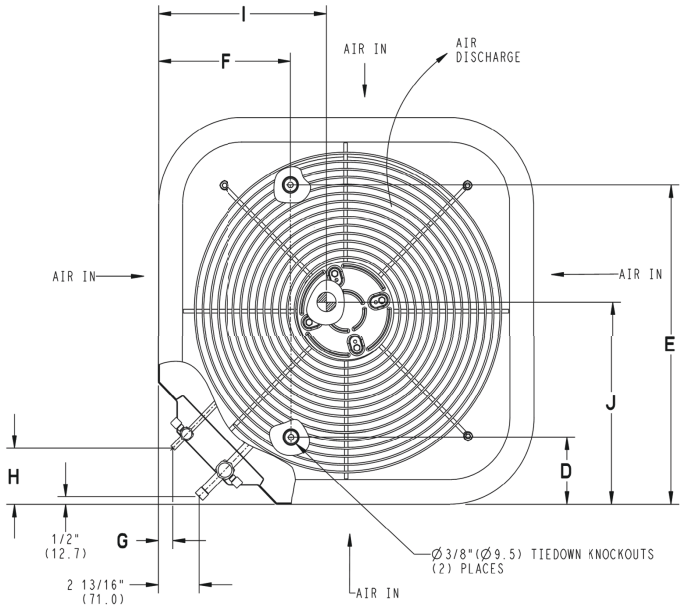
Dimensions

UNIT	SERIES	ELECTRICAL CHARACTERISTICS				A		B		C		D		E		F		G		H		I		J		K		OPERATING WEIGHT		SHIPPING WEIGHT		SHIPPING LENGTH / WIDTH (Sq.)		SHIPPING HEIGHT	
						INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	INCH	MM	Lbs	Kgs	Lbs	Kgs	INCH	MM	INCH	MM
N5H5S18**AAA	A	Y	N	N	N	31 3/16	792.5	32 1/16	815.1	5/8	15.9	6 9/16	166.1	24 11/16	626.3	9 1/8	231.3	1 1/8	28.2	3 13/16	97.4	12 1/2	317.5	11	279.4	11 3/4	298.5	149	67.6	169	76.7	32 3/16	817.9	34 7/16	875.2
N5H5S24**AAA	A	Y	N	N	N	31 3/16	792.5	35 1/2	901.4	5/8	15.9	6 9/16	166.1	24 11/16	626.3	9 1/8	231.3	1 1/8	28.2	3 13/16	97.4	13	330.2	15 1/8	384.2	16 1/2	419.1	176	79.8	196	88.9	32 3/16	817.9	37 7/8	961.6
N5H5S30**AAA	A	Y	N	N	N	31 3/16	792.5	38 7/8	987.3	3/4	19.1	6 9/16	166.1	24 11/16	626.3	9 1/8	231.3	1 1/8	28.2	3 13/16	97.4	14	355.6	14 3/4	374.7	15 1/2	393.7	168	76.2	189	85.7	32 3/16	817.9	41 1/4	1048.0
N5H5S36**AAA	A	Y	Y	Y	N	31 3/16	792.5	32 1/16	815.1	3/4	19.1	6 9/16	166.1	24 11/16	626.3	9 1/8	231.3	1 1/8	28.2	3 13/16	97.4	12	304.8	14 1/8	358.8	16 1/4	412.8	173	78.5	193	87.5	32 3/16	817.9	34 7/16	875.2
N5H5S42**AAA	A	Y	N	N	N	31 3/16	792.5	32 1/16	815.1	7/8	22.2	6 9/16	166.1	24 11/16	626.3	9 1/8	231.3	1 1/8	28.2	3 13/16	97.4	13 1/2	342.9	14 1/4	362.0	15	381.0	204	92.5	224	101.6	32 3/16	817.9	34 7/16	875.2
N5H5S48**AAA	A	Y	Y	Y	N	31 3/16	792.5	38 7/8	987.3	7/8	22.2	6 9/16	166.1	24 11/16	626.3	9 1/8	231.3	1 1/8	28.2	3 13/16	97.4	15	381.0	17 1/4	438.2	19 1/2	495.3	232	105.2	253	114.8	32 3/16	817.9	41 1/4	1048.0
N5H5S60**AAA	A	Y	Y	Y	N	35	889.0	35 1/2	901.4	7/8	22.2	6 9/16	166.1	28 7/16	722.8	9 1/8	231.3	1 1/8	28.2	3 13/16	97.4	13	330.2	15 1/2	393.7	16 3/4	425.5	234	106.1	255	115.7	36	914.9	37 7/8	961.6
		208-230-1-60	208/230-3-60	460-3-60	575-3-60	Y=YES N=NO																													

NOTES:

1. CENTER OF GRAVITY .





UNIT SIZE	"X" MINIMUM GROUND MOUNTING PAD APPLICATION DIMENSIONS		"Y" MINIMUM ROOF-TOP MOUNTING PAD APPLICATION DIMENSIONS	
-	23 1/8	587.3	17 7/8	454.6
-	25 3/4	654.0	20 7/16	518.5
18,24,30,36,42,48	31 3/16	792.5	22 15/16	583.2
60	35	889.0	26 3/4	679.7

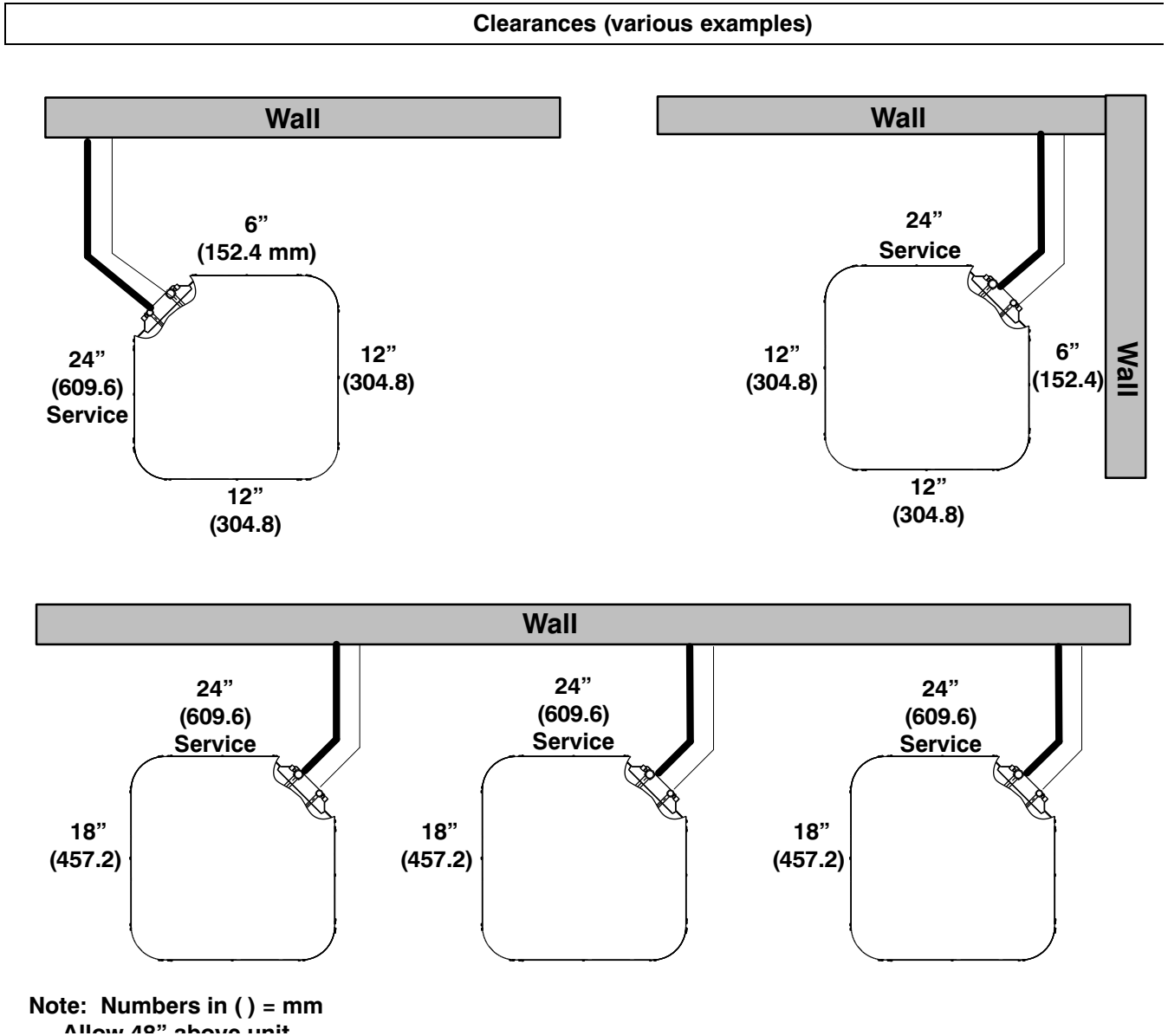
NOTE: ALL DIMENSIONS IN INCH (MM)

U.S. ECCN: Not Subject to Regulation (N.S.R.)

SD5965-4 REV. B

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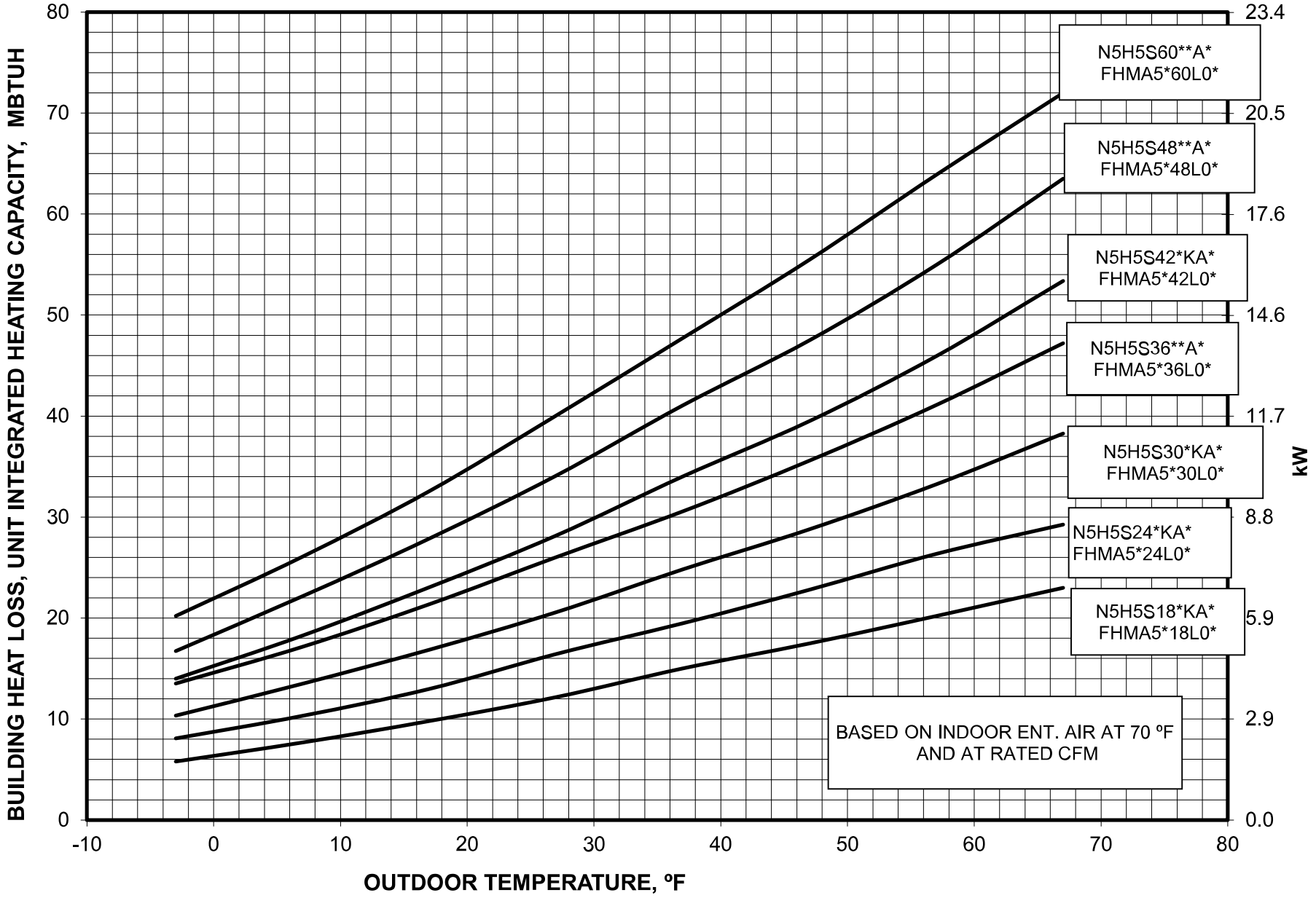
Clearances



IMPORTANT: When installing multiple units in an alcove, roof well, or partially enclosed area, ensure there is adequate ventilation to prevent re-circulation of discharge air.

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Balance Point Worksheet



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DETAILED COOLING CAPACITIES

EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																	
		75.0 (23.9)			85.0 (29.4)			95.0 (35.0)			105.0 (40.6)			115.0 (46.1)			125.0 (51.7)		
CFM	EWB	Capacity MBtuh		Total Sys.	Capacity MBtuh		Total Sys.	Capacity MBtuh		Total Sys.	Capacity MBtuh		Total Sys.	Capacity MBtuh		Total Sys.	Capacity MBtuh		Total Sys.
		Total	Sens‡	KW**	Total	Sens‡	KW**	Total	Sens‡	KW**	Total	Sens‡	KW**	Total	Sens‡	KW**	Total	Sens‡	KW**
N5H5S18AKA* Outdoor Section With FHMA5*18L0* Indoor Section																			
540	72.0 (22.2)	20.56	10.51	1.16	19.66	10.18	1.31	18.67	9.82	1.47	17.45	9.38	1.64	16.46	9.04	1.84	15.26	8.62	2.06
	67.0 (19.4)	18.72	13.04	1.17	17.91	12.71	1.32	17	12.35	1.48	16.02	11.95	1.65	15.01	11.56	1.85	13.93	11.13	2.07
	63 (17.2)††	17.38	12.54	1.18	16.62	12.21	1.33	15.78	11.85	1.48	14.81	11.41	1.66	13.94	11.07	1.86	12.94	10.64	2.08
	62.0 (16.7)	17.16	15.51	1.18	16.43	15.16	1.33	15.64	14.77	1.48	14.82	14.82	1.66	14.02	14.02	1.85	13.18	13.18	2.07
	57.0 (13.9)	16.76	16.76	1.18	16.16	16.16	1.33	15.49	15.49	1.49	14.78	14.78	1.66	14	14	1.85	13.16	13.16	2.07
600	72.0 (22.2)	20.83	10.93	1.17	19.9	10.59	1.32	18.88	10.23	1.48	17.78	9.85	1.66	16.61	9.45	1.85	15.36	9.01	2.08
	67.0 (19.4)	18.99	13.73	1.19	18.15	13.39	1.33	17.22	13.02	1.49	16.22	12.63	1.67	15.18	12.21	1.86	14.07	11.78	2.09
	63 (17.2)††	17.65	13.18	1.19	16.86	12.84	1.34	16	12.47	1.5	14.96	12.03	1.67	14.1	11.67	1.87	13.08	11.24	2.09
	62.0 (16.7)	17.5	16.41	1.19	16.76	16.03	1.34	15.99	15.99	1.5	15.13	15.13	1.67	14.41	14.41	1.87	13.53	13.53	2.09
	57.0 (13.9)	17.3	17.3	1.2	16.67	16.67	1.34	15.97	15.97	1.5	15.21	15.21	1.67	14.39	14.39	1.87	13.51	13.51	2.09
675	72.0 (22.2)	21.1	11.43	1.19	20.14	11.09	1.34	19.08	10.73	1.5	17.95	10.33	1.68	16.75	9.93	1.87	15.49	9.5	2.1
	67.0 (19.4)	19.26	14.55	1.2	18.39	14.21	1.35	17.43	13.83	1.51	16.41	13.44	1.69	15.33	13.01	1.88	14.21	12.55	2.1
	63 (17.2)††	17.91	13.95	1.21	17.1	13.6	1.36	16.21	13.22	1.52	15.13	12.77	1.69	14.22	12.38	1.89	13.22	11.94	2.11
	62.0 (16.7)	17.91	17.91	1.21	17.24	17.24	1.36	16.49	16.49	1.52	15.68	15.68	1.69	14.77	14.77	1.88	13.88	13.88	2.11
	57.0 (13.9)	17.88	17.88	1.21	17.21	17.21	1.36	16.47	16.47	1.52	15.66	15.66	1.69	14.78	14.78	1.88	13.87	13.87	2.11
N5H5S24AKA* Outdoor Section With FHMA5*24L0*Indoor Section																			
665	72.0 (22.2)	26.92	13.97	1.47	25.78	13.53	1.65	24.57	13.07	1.85	23.28	12.59	2.09	21.88	12.06	2.35	20.37	11.5	2.64
	67.0 (19.4)	24.56	17.17	1.48	23.51	16.72	1.66	22.4	16.25	1.87	21.2	15.74	2.1	19.95	15.23	2.36	18.57	14.66	2.66
	63 (17.2)††	22.82	16.55	1.49	21.83	16.09	1.67	20.8	15.62	1.87	19.7	15.13	2.11	18.52	14.6	2.37	17.26	14.04	2.67
	62.0 (16.7)	22.46	20.29	1.49	21.5	19.83	1.67	20.51	19.34	1.88	19.46	18.82	2.11	18.35	18.23	2.37	17.24	17.24	2.67
	57.0 (13.9)	21.6	21.6	1.5	20.84	20.84	1.67	20.03	20.03	1.88	19.17	19.17	2.11	18.24	18.24	2.37	17.21	17.21	2.67
800	72.0 (22.2)	27.58	14.93	1.5	26.37	14.48	1.68	25.1	14.01	1.89	23.74	13.51	2.12	22.27	12.98	2.38	20.68	12.41	2.67
	67.0 (19.4)	25.21	18.75	1.51	24.1	18.29	1.69	22.94	17.81	1.9	21.69	17.31	2.13	20.37	16.74	2.39	18.95	16.16	2.69
	63 (17.2)††	23.46	18.03	1.52	22.42	17.56	1.7	21.33	17.07	1.91	20.17	16.56	2.14	18.93	16.02	2.4	17.6	15.42	2.7
	62.0 (16.7)	23.23	22.42	1.52	22.25	21.9	1.7	21.3	21.17	1.91	20.27	20.27	2.14	19.23	19.23	2.4	18.1	18.1	2.69
	57.0 (13.9)	22.91	22.91	1.52	22.07	22.07	1.7	21.19	21.19	1.91	20.24	20.24	2.14	19.21	19.21	2.4	18.06	18.06	2.69
900	72.0 (22.2)	27.91	15.6	1.52	26.68	15.15	1.7	25.36	14.67	1.91	23.97	14.17	2.14	22.46	13.63	2.4	20.82	13.06	2.7
	67.0 (19.4)	25.56	19.86	1.54	24.42	19.39	1.72	23.22	18.9	1.92	21.94	18.39	2.15	20.58	17.82	2.42	19.11	17.22	2.71
	63 (17.2)††	23.81	19.06	1.55	22.74	18.59	1.73	21.61	18.09	1.93	20.41	17.56	2.16	19.16	17	2.43	17.79	16.39	2.72
	62.0 (16.7)	23.75	23.75	1.55	22.82	22.82	1.72	21.88	21.88	1.93	20.87	20.87	2.16	19.78	19.78	2.42	18.58	18.58	2.72
	57.0 (13.9)	23.67	23.67	1.55	22.79	22.79	1.72	21.85	21.85	1.93	20.85	20.85	2.16	19.76	19.76	2.42	18.56	18.56	2.72

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DETAILED COOLING CAPACITIES (Continued)

EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																	
CFM	EWB	75.0 (23.9)			85.0 (29.4)			95.0 (35.0)			105.0 (40.6)			115.0 (46.1)			125.0 (51.7)		
		Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**
		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡	
N5H5S30AKA* Outdoor Section With FHMA5*30L0*Indoor Section																			
915	72.0 (22.2)	34.58	18.36	1.89	33	17.76	2.13	31.31	17.13	2.39	29.54	16.47	2.68	27.68	15.79	3.01	25.76	15.1	3.4
	67.0 (19.4)	31.39	22.78	1.88	29.94	22.17	2.11	28.4	21.53	2.37	26.78	20.87	2.65	25.09	20.18	2.98	23.34	19.47	3.36
	63 (17.2)††	29.09	21.88	1.87	27.74	21.27	2.1	26.29	20.62	2.35	24.78	19.95	2.63	23.2	19.24	2.96	21.56	18.54	3.33
	62.0 (16.7)	28.7	27.11	1.87	27.4	26.47	2.1	26.05	25.76	2.35	24.68	24.68	2.63	23.4	23.4	2.96	21.89	21.89	3.34
	57.0 (13.9)	28.06	28.06	1.87	26.99	26.99	2.1	25.85	25.85	2.35	24.64	24.64	2.63	23.36	23.36	2.96	22.01	22.01	3.34
1000	72.0 (22.2)	34.98	18.98	1.92	33.35	18.37	2.16	31.62	17.73	2.42	29.83	17.08	2.7	27.93	16.4	3.04	25.94	15.69	3.43
	67.0 (19.4)	31.78	23.8	1.91	30.3	23.19	2.14	28.72	22.54	2.39	27.06	21.85	2.68	25.35	21.13	3	23.55	20.44	3.39
	63 (17.2)††	29.47	22.83	1.9	28.08	22.21	2.13	26.6	21.55	2.38	25.05	20.87	2.66	23.44	20.16	2.98	21.78	19.43	3.36
	62.0 (16.7)	29.19	28.46	1.9	27.89	27.75	2.13	26.7	26.54	2.38	25.32	25.32	2.66	23.98	23.98	2.99	22.57	22.57	3.38
	57.0 (13.9)	28.86	28.86	1.9	27.74	27.74	2.13	26.55	26.55	2.38	25.28	25.28	2.66	23.95	23.95	2.99	22.54	22.54	3.38
1125	72.0 (22.2)	35.44	19.85	1.96	33.76	19.24	2.2	31.98	18.6	2.46	30.14	17.94	2.75	28.19	17.25	3.08	26.15	16.56	3.47
	67.0 (19.4)	32.24	25.25	1.95	30.71	24.62	2.18	29.09	23.96	2.43	27.39	23.27	2.72	25.63	22.55	3.05	23.81	21.79	3.43
	63 (17.2)††	29.92	24.17	1.94	28.48	23.53	2.17	26.96	22.86	2.42	25.37	22.17	2.7	23.73	21.44	3.03	22.03	20.67	3.41
	62.0 (16.7)	29.99	29.87	1.94	28.7	28.7	2.17	27.44	27.44	2.42	26.1	26.1	2.71	24.7	24.7	3.04	23.21	23.21	3.43
	57.0 (13.9)	29.84	29.84	1.94	28.66	28.66	2.17	27.4	27.4	2.42	26.07	26.07	2.71	24.66	24.66	3.04	23.16	23.16	3.42
N5H5S36AKA* Outdoor Section With FHMA5*36L0*Indoor Section																			
1050	72.0 (22.2)	42.54	21.74	2.43	40.63	21.02	2.66	38.54	20.24	2.91	36.29	19.42	3.21	33.89	18.55	3.55	31.34	17.65	3.95
	67.0 (19.4)	38.6	26.83	2.41	36.9	26.13	2.65	35	25.34	2.92	32.95	24.51	3.22	30.77	23.63	3.57	28.49	22.72	3.98
	63 (17.2)††	35.78	25.8	2.4	34.19	25.09	2.64	32.42	24.3	2.91	30.52	23.47	3.22	28.48	22.61	3.58	26.38	21.68	4
	62.0 (16.7)	35.27	31.84	2.4	33.74	31.1	2.64	32.06	30.28	2.91	30.27	29.35	3.22	28.48	28.48	3.58	26.75	26.75	3.98
	57.0 (13.9)	34.19	34.19	2.39	32.96	32.96	2.64	31.58	31.58	2.91	30.07	30.07	3.22	28.44	28.44	3.58	26.71	26.71	3.99
1200	72.0 (22.2)	43.29	22.8	2.48	41.3	22.07	2.71	39.11	21.28	2.96	36.78	20.44	3.25	34.24	19.52	3.59	31.66	18.65	3.99
	67.0 (19.4)	39.32	28.59	2.47	37.55	27.87	2.71	35.57	27.07	2.97	33.44	26.21	3.27	31.19	25.31	3.62	28.84	24.37	4.03
	63 (17.2)††	36.47	27.43	2.45	34.81	26.7	2.7	32.97	25.9	2.97	30.99	25.04	3.27	28.91	24.14	3.63	26.72	23.2	4.05
	62.0 (16.7)	36.12	34.17	2.45	34.56	33.35	2.7	32.98	32.1	2.97	31.23	31.23	3.27	29.49	29.49	3.63	27.63	27.63	4.04
	57.0 (13.9)	35.61	35.61	2.45	34.29	34.29	2.7	32.8	32.8	2.97	31.18	31.18	3.27	29.44	29.44	3.62	27.59	27.59	4.04
1350	72.0 (22.2)	43.84	23.81	2.54	41.78	23.07	2.76	39.53	22.27	3.02	37.12	21.42	3.3	34.56	20.53	3.64	31.85	19.6	4.04
	67.0 (19.4)	39.87	30.27	2.52	38.02	29.52	2.76	36	28.71	3.02	33.81	27.83	3.32	31.49	26.9	3.66	29.11	25.93	4.07
	63 (17.2)††	37	28.98	2.51	35.27	28.23	2.75	33.38	27.41	3.02	31.35	26.54	3.32	29.21	25.49	3.67	27	24.62	4.09
	62.0 (16.7)	36.91	36.91	2.51	35.43	35.43	2.75	33.86	33.86	3.02	32.15	32.15	3.32	30.3	30.3	3.67	28.32	28.32	4.08
	57.0 (13.9)	36.79	36.79	2.51	35.38	35.38	2.75	33.82	33.82	3.02	32.11	32.11	3.32	30.27	30.27	3.67	28.31	28.31	4.08

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DETAILED COOLING CAPACITIES (Continued)

EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																	
CFM	EWB	75.0 (23.9)			85.0 (29.4)			95.0 (35.0)			105.0 (40.6)			115.0 (46.1)			125.0 (51.7)		
		Capacity MBtuh		Total Sys.	Capacity MBtuh		Total Sys.	Capacity MBtuh		Total Sys.	Capacity MBtuh		Total Sys.	Capacity MBtuh		Total Sys.	Capacity MBtuh		Total Sys.
		Total	Sens‡	KW**	Total	Sens‡	KW**	Total	Sens‡	KW**	Total	Sens‡	KW**	Total	Sens‡	KW**	Total	Sens‡	KW**
N5H5S42AKA* Outdoor Section With FHMA5*42L0* Indoor Section																			
1240	72.0 (22.2)	49.41	25.83	2.78	47.34	25.04	3.09	45.14	24.21	3.44	42.71	23.31	3.84	40.15	22.37	4.3	37.39	21.37	4.83
	67.0 (19.4)	44.91	31.96	2.76	43.04	31.17	3.07	41	30.32	3.42	38.8	29.41	3.82	36.47	28.46	4.28	33.98	27.45	4.81
	63 (17.2)††	41.63	30.71	2.74	39.89	29.93	3.05	38	29.08	3.4	35.95	28.17	3.8	33.77	27.21	4.26	31.45	26.19	4.79
	62.0 (16.7)	41.08	37.94	2.74	39.42	37.12	3.05	37.62	36.21	3.4	35.72	35.01	3.8	33.78	33.78	4.26	31.87	31.87	4.79
	57.0 (13.9)	39.95	39.95	2.74	38.6	38.6	3.05	37.11	37.11	3.4	35.49	35.49	3.8	33.72	33.72	4.26	31.82	31.82	4.79
1400	72.0 (22.2)	50.19	26.99	2.83	48.05	26.19	3.14	45.75	25.34	3.49	43.26	24.44	3.89	40.6	23.48	4.35	37.75	22.47	4.88
	67.0 (19.4)	45.66	33.86	2.81	43.72	33.05	3.12	41.61	32.19	3.47	39.35	31.26	3.87	36.94	30.28	4.33	34.38	29.24	4.86
	63 (17.2)††	42.36	32.48	2.79	40.56	31.68	3.1	38.59	30.81	3.45	36.48	29.88	3.85	34.24	28.9	4.31	31.86	27.85	4.84
	62.0 (16.7)	42	40.44	2.79	40.31	39.53	3.1	38.59	38.26	3.45	36.8	36.63	3.85	34.87	34.87	4.32	32.86	32.86	4.85
	57.0 (13.9)	41.45	41.45	2.79	40.01	40.01	3.1	38.42	38.42	3.45	36.69	36.69	3.85	34.83	34.83	4.32	32.81	32.81	4.85
1575	72.0 (22.2)	50.83	28.19	2.88	48.62	27.38	3.19	46.25	26.53	3.54	43.66	25.6	3.94	40.94	24.64	4.4	38.03	23.62	4.93
	67.0 (19.4)	46.3	35.84	2.86	44.29	35.02	3.17	42.12	34.14	3.52	39.8	33.19	3.92	37.33	32.18	4.38	34.72	31.09	4.91
	63 (17.2)††	42.98	34.32	2.85	41.12	33.5	3.16	39.1	32.61	3.51	36.93	31.66	3.91	34.63	30.64	4.37	32.21	29.55	4.9
	62.0 (16.7)	43.03	42.54	2.85	41.35	41.35	3.16	39.66	39.66	3.51	37.83	37.83	3.91	35.84	35.84	4.37	33.7	33.7	4.9
	57.0 (13.9)	42.82	42.82	2.85	41.29	41.29	3.16	39.61	39.61	3.51	37.78	37.78	3.91	35.82	35.82	4.37	33.69	33.69	4.9
N5H5S48AKA* Outdoor Section With FHMA5*48L0*Indoor Section																			
1250	72.0 (22.2)	56.66	28.52	3.15	54.39	27.64	3.52	51.91	26.69	3.95	49.15	25.65	4.43	46.05	24.49	4.98	42.62	23.24	5.61
	67.0 (19.4)	51.3	34.6	3.14	49.27	33.73	3.5	47	32.78	3.92	44.48	31.73	4.4	41.69	30.58	4.94	38.53	29.3	5.57
	63 (17.2)††	47.5	33.32	3.13	45.58	32.44	3.48	43.48	31.48	3.9	41.14	30.44	4.37	38.53	29.28	4.92	35.61	28	5.54
	62.0 (16.7)	46.66	40.62	3.13	44.79	39.73	3.48	42.76	38.76	3.89	40.51	37.68	4.37	38.02	36.46	4.92	35.31	35.31	5.54
	57.0 (13.9)	44.41	44.41	3.12	42.96	42.96	3.47	41.36	41.36	3.88	39.57	39.57	4.36	37.55	37.55	4.91	35.24	35.24	5.54
1600	72.0 (22.2)	58.89	31.23	3.24	56.4	30.32	3.62	53.69	29.33	4.05	50.71	28.26	4.54	47.38	27.07	5.1	43.69	25.78	5.72
	67.0 (19.4)	53.41	38.98	3.23	51.15	38.06	3.6	48.72	37.07	4.02	46	35.96	4.51	43	34.78	5.05	39.66	33.45	5.68
	63 (17.2)††	49.49	37.39	3.23	47.39	36.46	3.58	45.11	35.47	4	42.59	34.38	4.48	39.8	33.17	5.02	36.69	31.84	5.65
	62.0 (16.7)	48.96	46.5	3.23	46.99	45.48	3.58	45.02	43.97	4	42.79	42.79	4.48	40.49	40.49	5.03	37.87	37.87	5.66
	57.0 (13.9)	48.27	48.27	3.22	46.6	46.6	3.58	44.77	44.77	4	42.73	42.73	4.48	40.42	40.42	5.03	37.82	37.82	5.66
1800	72.0 (22.2)	59.74	32.68	3.3	57.16	31.75	3.68	54.36	30.75	4.11	51.26	29.65	4.6	47.81	28.43	5.15	44.06	27.15	5.78
	67.0 (19.4)	54.23	41.34	3.29	51.9	40.4	3.66	49.39	39.39	4.08	46.6	38.27	4.56	43.52	37.04	5.11	40.11	35.66	5.74
	63 (17.2)††	50.27	39.57	3.28	48.12	38.64	3.64	45.77	37.61	4.06	43.18	36.49	4.54	40.3	35.24	5.08	37.13	33.85	5.71
	62.0 (16.7)	50.1	50.1	3.28	48.27	48.27	3.64	46.33	46.33	4.06	44.16	44.16	4.54	41.72	41.72	5.09	38.97	38.97	5.73
	57.0 (13.9)	49.95	49.95	3.28	48.2	48.2	3.64	46.26	46.26	4.06	44.1	44.1	4.54	41.66	41.66	5.1	38.91	38.91	5.73

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DETAILED COOLING CAPACITIES (Continued)

EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																	
CFM	EWB	75.0 (23.9)			85.0 (29.4)			95.0 (35.0)			105.0 (40.6)			115.0 (46.1)			125.0 (51.7)		
		Capacity MBtuh		Total Sys.	Capacity MBtuh		Total Sys.	Capacity MBtuh		Total Sys.	Capacity MBtuh		Total Sys.	Capacity MBtuh		Total Sys.	Capacity MBtuh		Total Sys.
		Total	Sens‡	KW**	Total	Sens‡	KW**	Total	Sens‡	KW**	Total	Sens‡	KW**	Total	Sens‡	KW**	Total	Sens‡	KW**
N5H5S60AKAAA Outdoor Section With FHMA5*60L0*Indoor Section																			
1775	72.0 (22.2)	69.13	35.84	4.07	66.01	34.69	4.53	62.68	33.48	5.05	58.98	32.15	5.64	55.14	30.78	6.31	50.84	29.3	7.06
	67.0 (19.4)	63.31	44.81	4.03	60.51	43.67	4.49	57.5	42.45	5	54.24	41.14	5.59	50.69	39.73	6.25	46.83	38.21	7.01
	63 (17.2)††	58.99	43.17	4.01	56.42	42.04	4.46	53.64	40.83	4.97	50.62	39.52	5.55	47.35	38.12	6.22	43.77	36.6	6.98
	62.0 (16.7)	58.15	53.51	4.01	55.69	52.32	4.45	53.05	51.01	4.96	50.43	49.01	5.55	47.56	47.56	6.22	44.54	44.54	6.98
	57.0 (13.9)	56.88	56.88	4	54.86	54.86	4.45	52.64	52.64	4.96	50.19	50.19	5.55	47.49	47.49	6.22	44.48	44.48	6.98
2000	72.0 (22.2)	70.03	37.44	4.15	66.79	36.27	4.61	63.34	35.04	5.13	59.6	33.72	5.72	55.57	32.31	6.39	51.18	30.8	7.14
	67.0 (19.4)	64.23	47.48	4.11	61.33	46.31	4.56	58.21	45.07	5.08	54.83	43.73	5.67	51.19	42.3	6.33	47.24	40.74	7.09
	63 (17.2)††	59.92	45.66	4.09	57.25	44.5	4.54	54.37	43.27	5.05	51.26	41.94	5.63	47.89	40.5	6.3	44.22	38.93	7.05
	62.0 (16.7)	59.36	57.03	4.09	56.89	56.89	4.53	54.43	54.43	5.05	51.79	51.79	5.64	48.93	48.93	6.31	45.73	45.73	7.07
	57.0 (13.9)	58.9	58.9	4.08	56.73	56.73	4.53	54.36	54.36	5.05	51.75	51.75	5.64	48.87	48.87	6.31	45.68	45.68	7.07
2250	72.0 (22.2)	70.76	39.14	4.23	67.42	37.96	4.7	63.84	36.71	5.22	60	35.37	5.81	55.87	33.96	6.48	51.32	32.43	7.23
	67.0 (19.4)	64.99	50.33	4.2	62	49.14	4.65	58.79	47.87	5.17	55.33	46.5	5.76	51.6	45.01	6.42	47.57	43.38	7.18
	63 (17.2)††	60.7	48.31	4.17	57.95	47.13	4.62	54.98	45.86	5.13	51.79	44.49	5.72	48.34	43.01	6.38	44.62	41.36	7.14
	62.0 (16.7)	61.03	59.18	4.18	58.5	58.5	4.63	55.97	55.97	5.14	53.2	53.2	5.73	50.14	50.14	6.4	46.76	46.76	7.17
	57.0 (13.9)	60.74	60.74	4.17	58.42	58.42	4.62	55.9	55.9	5.14	53.14	53.14	5.73	50.13	50.13	6.41	46.71	46.71	7.17

Detailed cooling capacities are based on indoor and outdoor unit at the same elevation per AHRI standard 210/240-2020. If additional tubing length and/or indoor unit is located above outdoor unit, a slight variation in capacity may occur.

‡Sensible capacities shown are based on 80°F (27°C) entering air at the indoor coil. For sensible capacities at other than 80°F (27°C), deduct 835 Btuh (245 kW) per 1000 CFM (480 L/S) of indoor coil air for each degree below 80°F (27°C), or add 835 Btuh (245 kW) per 1000 CFM (480 L/S) of indoor coil air per degree above 80°F (27°C).

**Total System. kw is total of indoor and outdoor unit kilowatts.

††At TVA rating indoor condition (75°F edb/63°F ewb). All other indoor air temperatures are at 80°F edb.

NOTE: When the required data falls between the published data, interpolation may be performed. Extrapolation is not an acceptable practice.

EWB — Entering Wet Bulb1

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HEAT PUMP HEATING PERFORMANCE

INDOOR AIR		OUTDOOR COIL ENTERING AIR TEMPERATURES °F (°C)																							
		-3.0 (-19.4)			7.0 (-13.9)			17.0 (-8.3)			27.0 (-2.8)			37.0 (2.8)			47.0 (8.3)			57.0 (13.9)			67.0 (19.4)		
EDB	CFM	Capacity MBtuh		Total Sys. KW†	Capacity MBtuh		Total Sys. kW†	Capacity MBtuh		Total Sys. kW†	Capacity MBtuh		Total Sys. kW†	Capacity MBtuh		Total Sys. kW†	Capacity MBtuh		Total Sys. kW†	Capacity MBtuh		Total Sys. kW†	Capacity MBtuh		Total Sys. kW†
		Total	Integ*		Total	Integ*		Total	Integ*		Total	Integ*		Total	Integ*		Total	Integ*		Total	Integ*		Total	Integ*	
N5H5S18AKA* Outdoor Section With FHMA5*18L0*Indoor Section																									
65.0 (18.3)	540	6.11	5.62	3.72	7.97	7.33	3.85	10.10	9.21	4.01	11.85	10.52	4.15	15.23	13.86	4.37	17.74	17.74	4.54	20.52	20.52	4.73	23.29	23.29	4.86
	600	6.18	5.69	3.73	8.07	7.42	3.86	10.22	9.32	4.00	12.63	11.22	4.16	15.36	13.97	4.33	17.92	17.92	4.48	20.75	20.75	4.63	23.46	23.46	4.75
	675	6.28	5.78	3.77	8.18	7.52	3.89	10.34	9.43	4.02	12.78	11.35	4.16	15.50	14.10	4.30	18.09	18.09	4.43	20.87	20.87	4.55	23.61	23.61	4.66
70.0 (21.1)	540	5.80	5.34	3.85	7.69	7.06	4.01	9.81	8.95	4.18	12.17	10.81	4.37	15.02	13.66	4.58	17.50	17.50	4.76	20.21	20.21	4.95	23.00	23.00	5.10
	600	5.89	5.42	3.88	7.79	7.16	4.02	9.93	9.06	4.18	12.33	10.95	4.35	15.15	13.79	4.54	17.67	17.67	4.69	20.44	20.44	4.87	23.18	23.18	4.98
	675	5.98	5.50	3.92	7.90	7.26	4.05	10.06	9.18	4.19	12.47	11.07	4.34	15.29	13.92	4.51	17.84	17.84	4.64	20.64	20.64	4.78	23.33	23.33	4.89
75.0 (23.9)	540	5.49	5.05	4.00	7.42	6.82	4.18	9.51	8.67	4.36	11.90	10.57	4.56	14.77	13.44	4.79	17.25	17.25	4.98	19.92	19.92	5.18	22.69	22.69	5.34
	600	5.57	5.13	4.03	7.48	6.88	4.19	9.63	8.78	4.36	12.01	10.67	4.54	14.92	13.58	4.75	17.42	17.42	4.91	20.13	20.13	5.10	22.88	22.88	5.22
	675	5.67	5.21	4.07	7.59	6.98	4.21	9.76	8.90	4.37	12.17	10.81	4.54	15.07	13.72	4.72	17.59	17.59	4.86	20.35	20.35	5.02	23.04	23.04	5.12
N5H5S24AKA* Outdoor Section With FHMA5*24L0*Indoor Section																									
65.0 (18.3)	665	8.52	7.84	4.88	10.71	9.84	5.00	13.36	12.18	5.18	16.70	14.83	5.46	19.74	17.96	5.69	23.10	23.10	5.97	26.61	26.61	6.23	29.51	29.51	6.45
	800	8.76	8.06	4.94	10.98	10.09	5.03	13.67	12.46	5.17	16.99	15.09	5.40	20.06	18.25	5.57	23.51	23.51	5.80	26.78	26.78	5.98	29.62	29.62	6.16
	900	8.92	8.20	4.99	11.15	10.25	5.07	13.86	12.64	5.19	17.14	15.23	5.39	20.26	18.43	5.54	23.75	23.75	5.74	26.81	26.81	5.88	29.62	29.62	6.04
70.0 (21.1)	665	8.08	7.44	5.05	10.31	9.47	5.20	12.98	11.84	5.40	16.43	14.59	5.72	19.48	17.73	5.97	22.80	22.80	6.26	26.34	26.34	6.56	29.24	29.24	6.78
	800	8.31	7.64	5.11	10.57	9.71	5.23	13.28	12.11	5.39	16.72	14.85	5.65	19.79	18.01	5.85	23.19	23.19	6.09	26.55	26.55	6.29	29.37	29.37	6.47
	900	8.46	7.78	5.16	10.73	9.86	5.27	13.47	12.28	5.41	16.89	15.00	5.64	19.98	18.18	5.81	23.43	23.43	6.03	26.61	26.61	6.18	29.39	29.39	6.35
75.0 (23.9)	665	7.60	6.99	5.23	9.90	9.10	5.40	12.61	11.49	5.63	15.71	13.96	5.92	19.24	17.50	6.27	22.50	22.50	6.57	26.06	26.06	6.89	28.96	28.96	7.11
	800	7.85	7.23	5.29	10.15	9.33	5.44	12.90	11.76	5.63	16.12	14.32	5.87	19.54	17.78	6.14	22.89	22.89	6.39	26.31	26.31	6.61	29.10	29.10	6.80
	900	8.00	7.36	5.35	10.31	9.47	5.48	13.07	11.92	5.65	16.44	14.60	5.88	19.71	17.94	6.10	23.12	23.12	6.32	26.39	26.39	6.50	29.13	29.13	6.67
N5H5S30AKA* Outdoor Section With FHMA5*30L0*Indoor Section																									
65.0 (18.3)	915	10.87	10.00	5.77	13.99	12.85	5.93	17.36	15.83	6.12	21.52	19.12	6.40	25.19	22.92	6.62	29.23	29.23	6.90	33.77	33.77	7.26	38.80	38.80	7.64
	1000	10.98	10.10	5.82	14.14	13.00	5.96	17.54	15.99	6.13	21.71	19.28	6.38	25.39	23.10	6.58	29.49	29.49	6.84	34.10	34.10	7.17	38.98	38.98	7.48
	1125	11.18	10.28	5.89	14.34	13.18	6.02	17.77	16.21	6.16	21.93	19.48	6.39	25.64	23.33	6.56	29.79	29.79	6.79	34.50	34.50	7.10	39.10	39.10	7.35
70.0 (21.1)	915	10.35	9.52	6.01	13.50	12.41	6.18	16.87	15.38	6.38	20.58	18.28	6.62	24.82	22.58	6.94	28.80	28.80	7.24	33.26	33.26	7.61	38.28	38.28	8.02
	1000	10.52	9.68	6.05	13.66	12.55	6.21	17.05	15.55	6.39	20.82	18.50	6.62	25.02	22.76	6.90	29.05	29.05	7.17	33.58	33.58	7.51	38.50	38.50	7.86
	1125	10.69	9.84	6.12	13.86	12.74	6.27	17.29	15.76	6.43	21.16	18.79	6.64	25.27	22.99	6.88	29.36	29.36	7.12	33.96	33.96	7.44	38.66	38.66	7.71
75.0 (23.9)	915	9.84	9.05	6.24	13.00	11.95	6.43	16.36	14.91	6.65	20.04	17.80	6.91	24.45	22.25	7.28	28.37	28.37	7.58	32.79	32.79	7.98	37.75	37.75	8.42
	1000	9.96	9.17	6.29	13.16	12.09	6.47	16.54	15.08	6.67	20.26	18.00	6.90	24.65	22.43	7.23	28.61	28.61	7.51	33.08	33.08	7.88	38.00	38.00	8.25
	1125	10.17	9.36	6.36	13.35	12.27	6.52	16.78	15.30	6.70	20.54	18.24	6.92	24.89	22.65	7.21	28.92	28.92	7.46	33.44	33.44	7.79	38.19	38.19	8.09
N5H5S36AKA* Outdoor Section With FHMA5*36L0*Indoor Section																									
65.0 (18.3)	1050	14.05	12.93	7.41	17.66	16.22	7.60	22.24	20.28	7.94	26.39	23.44	8.26	31.03	28.24	8.63	36.16	36.16	9.07	41.82	41.82	9.56	47.97	47.97	9.97
	1200	14.30	13.15	7.51	17.93	16.48	7.66	22.51	20.53	7.96	26.69	23.71	8.24	31.41	28.58	8.58	36.64	36.64	8.98	42.46	42.46	9.45	48.35	48.35	9.79
	1350	14.52	13.36	7.61	18.18	16.70	7.74	22.75	20.74	8.01	26.96	23.94	8.26	31.73	28.88	8.57	37.05	37.05	8.95	42.96	42.96	9.40	48.53	48.53	9.70
70.0 (21.1)	1050	13.52	12.43	7.67	17.15	15.76	7.89	21.36	19.48	8.22	26.02	23.11	8.63	30.57	27.82	9.02	35.60	35.60	9.47	41.11	41.11	9.96	47.23	47.23	10.41
	1200	13.77	12.67	7.76	17.43	16.02	7.96	21.80	19.88	8.26	26.32	23.38	8.61	30.95	28.16	8.97	36.08	36.08	9.37	41.73	41.73	9.83	47.70	47.70	10.19
	1350	13.99	12.87	7.87	17.68	16.25	8.04	22.39	20.41	8.36	26.59	23.61	8.63	31.27	28.46	8.96	36.48	36.48	9.34	42.24	42.24	9.79	47.92	47.92	10.09
75.0 (23.9)	1050	12.93	11.90	7.93	16.60	15.25	8.20	20.77	18.94	8.56	25.64	22.77	9.03	30.11	27.40	9.44	35.04	35.04	9.89	40.45	40.45	10.38	46.44	46.44	10.88
	1200	13.18	12.13	8.02	16.88	15.51	8.27	21.11	19.24	8.58	25.94	23.04	9.00	30.48	27.74	9.37	35.51	35.51	9.78	41.03	41.03	10.24	47.01	47.01	10.62
	1350	13.41	12.34	8.13	17.13	15.75	8.35	21.40	19.51	8.64	26.20	23.27	9.02	30.80	28.03	9.36	35.90	35.90	9.74	41.51	41.51	10.19	47.29	47.29	10.50

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HEAT PUMP HEATING PERFORMANCE (Continued)

INDOOR AIR		OUTDOOR COIL ENTERING AIR TEMPERATURES °F (°C)																							
		-3.0 (-19.4)			7.0 (-13.9)			17.0 (-8.3)			27.0 (-2.8)			37.0 (2.8)			47.0 (8.3)			57.0 (13.9)			67.0 (19.4)		
EDB	CFM	Capacity MBtuh		Total Sys. KW†	Capacity MBtuh		Total Sys. kW†	Capacity MBtuh		Total Sys. kW†	Capacity MBtuh		Total Sys. kW†	Capacity MBtuh		Total Sys. kW†	Capacity MBtuh		Total Sys. kW†	Capacity MBtuh		Total Sys. kW†	Capacity MBtuh		Total Sys. kW†
		Total	Integ*		Total	Integ*		Total	Integ*		Total	Integ*		Total	Integ*		Total	Integ*		Total	Integ*		Total	Integ*	
N5H5S42AKA* Outdoor Section With FHMA5*42L0*Indoor Section																									
65.0 (18.3)	1240	14.60	13.44	8.15	18.83	17.31	8.49	23.59	21.50	8.87	28.72	25.51	9.26	34.41	31.32	9.71	40.01	40.01	10.12	46.57	46.57	10.64	54.10	54.10	11.30
	1400	14.83	13.64	8.21	19.08	17.53	8.53	23.85	21.75	8.87	29.10	25.85	9.22	34.74	31.61	9.62	40.44	40.44	9.98	47.13	47.13	10.46	54.64	54.64	10.97
	1575	15.05	13.85	8.30	19.32	17.76	8.59	24.11	21.98	8.90	29.42	26.13	9.23	35.06	31.90	9.58	40.84	40.84	9.91	47.64	47.64	10.35	55.05	55.05	10.77
70.0 (21.1)	1240	14.00	12.88	8.54	18.26	16.78	8.92	23.04	21.01	9.31	28.15	25.00	9.71	34.01	30.95	10.21	39.50	39.50	10.62	45.93	45.93	11.15	53.38	53.38	11.86
	1400	14.23	13.09	8.61	18.51	17.01	8.95	23.32	21.27	9.31	28.48	25.30	9.67	34.33	31.24	10.11	39.92	39.92	10.48	46.47	46.47	10.96	53.95	53.95	11.53
	1575	14.46	13.30	8.70	18.77	17.24	9.01	23.59	21.51	9.34	28.80	25.58	9.66	34.64	31.52	10.07	40.31	40.31	10.40	46.98	46.98	10.84	54.41	54.41	11.30
75.0 (23.9)	1240	13.37	12.30	8.97	17.68	16.24	9.36	22.39	20.41	9.76	27.57	24.49	10.18	33.60	30.58	10.73	38.99	38.99	11.15	45.29	45.29	11.69	52.62	52.62	12.43
	1400	13.60	12.51	9.04	17.94	16.49	9.40	22.67	20.67	9.76	27.90	24.78	10.14	33.93	30.87	10.63	39.39	39.39	11.00	45.82	45.82	11.49	53.25	53.25	12.12
	1575	13.83	12.72	9.14	18.19	16.71	9.46	22.97	20.94	9.79	28.20	25.04	10.13	34.22	31.14	10.58	39.78	39.78	10.91	46.32	46.32	11.36	53.74	53.74	11.86
N5H5S48AKA* Outdoor Section With FHMA5*48L0*Indoor Section																									
65.0 (18.3)	1250	17.68	16.27	9.65	22.95	21.09	10.11	28.59	26.07	10.57	34.91	31.00	11.08	41.53	37.79	11.64	48.12	48.12	12.17	55.75	55.75	12.87	64.50	64.50	13.78
	1600	18.33	16.86	9.76	23.68	21.76	10.15	29.41	26.82	10.52	36.30	32.24	11.00	42.36	38.55	11.34	49.20	49.20	11.74	57.22	57.22	12.27	66.50	66.50	12.99
	1800	18.63	17.14	9.86	24.01	22.06	10.22	29.78	27.16	10.56	36.61	32.52	10.99	42.73	38.88	11.29	49.67	49.67	11.64	57.82	57.82	12.11	67.24	67.24	12.74
70.0 (21.1)	1250	16.72	15.38	10.06	22.16	20.36	10.56	27.86	25.40	11.04	34.08	30.27	11.57	41.05	37.36	12.21	47.50	47.50	12.77	54.97	54.97	13.49	63.50	63.50	14.43
	1600	17.42	16.02	10.18	22.81	20.96	10.58	28.65	26.12	10.98	34.98	31.06	11.39	41.85	38.08	11.88	48.56	48.56	12.30	56.41	56.41	12.86	65.49	65.49	13.61
	1800	17.61	16.20	10.27	23.19	21.31	10.65	29.01	26.45	11.01	35.48	31.51	11.39	42.22	38.42	11.81	49.02	49.02	12.19	57.01	57.01	12.69	66.28	66.28	13.38
75.0 (23.9)	1250	15.90	14.63	10.52	21.27	19.55	11.04	27.07	24.68	11.54	33.36	29.63	12.12	40.57	36.92	12.83	46.89	46.89	13.40	54.17	54.17	14.15	62.50	62.50	15.11
	1600	16.50	15.18	10.63	22.04	20.25	11.06	27.89	25.43	11.47	34.21	30.38	11.91	41.36	37.63	12.46	47.93	47.93	12.90	55.60	55.60	13.48	64.47	64.47	14.26
	1800	16.78	15.43	10.73	22.36	20.54	11.12	28.23	25.74	11.50	34.58	30.71	11.89	41.70	37.95	12.38	48.38	48.38	12.78	56.20	56.20	13.30	65.25	65.25	14.01
N5H5S60AKA* Outdoor Section With FHMA5*60L0*Indoor Section																									
65.0 (18.3)	1775	20.98	19.30	11.86	26.81	24.64	12.29	33.31	30.37	12.72	41.27	36.66	13.27	48.26	43.92	13.66	56.18	56.18	14.16	64.59	64.59	14.60	72.80	72.80	15.22
	2000	21.30	19.60	12.00	27.17	24.97	12.39	33.72	30.74	12.78	41.61	36.96	13.26	48.71	44.32	13.59	56.76	56.76	14.03	64.90	64.90	14.38	72.96	72.96	14.91
	2250	21.63	19.90	12.17	27.52	25.29	12.53	34.11	31.10	12.88	41.97	37.28	13.31	49.14	44.71	13.60	57.21	57.21	13.94	65.10	65.10	14.27	72.93	72.93	14.72
70.0 (21.1)	1775	20.21	18.59	12.38	26.08	23.97	12.83	32.57	29.70	13.27	40.05	35.57	13.80	47.74	43.44	14.32	55.50	55.50	14.84	63.90	63.90	15.31	72.01	72.01	15.96
	2000	20.54	18.90	12.51	26.45	24.31	12.92	33.00	30.08	13.32	41.18	36.57	13.88	48.17	43.84	14.23	56.07	56.07	14.69	64.24	64.24	15.07	72.23	72.23	15.63
	2250	20.87	19.20	12.68	26.81	24.64	13.06	33.40	30.46	13.43	41.55	36.90	13.92	48.60	44.22	14.23	56.57	56.57	14.62	64.47	64.47	14.94	72.26	72.26	15.42
75.0 (23.9)	1775	19.35	17.80	12.93	25.28	23.23	13.40	31.80	29.00	13.87	39.05	34.68	14.40	47.24	42.99	15.03	54.82	54.82	15.57	63.20	63.20	16.06	71.22	71.22	16.74
	2000	19.69	18.11	13.06	25.66	23.58	13.50	32.23	29.39	13.91	39.56	35.13	14.39	47.65	43.36	14.92	55.38	55.38	15.40	63.56	63.56	15.80	71.47	71.47	16.39
	2250	20.02	18.42	13.23	26.03	23.92	13.63	32.64	29.76	14.01	40.09	35.61	14.45	48.06	43.74	14.90	55.91	55.91	15.33	63.81	63.81	15.66	71.54	71.54	16.17

NOTE: When the required data falls between the published data, interpolation may be performed. Extrapolation is not an acceptable practice.

* The Btuh heating capacity values shown are net integrated values from which the defrost effect has been subtracted. The Btuh heating from supplement heaters should be added to those values to obtain total Sys. capacity.

† The kW values include the compressor, outdoor fan motor, and indoor blower motor. The kW from supplement heaters should be added to these values to obtain total Sys. kilowatts.

EDB — Entering Dry Bulb2

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Guide Specifications
General

Air-Cooled, Split-System Heat Pump
N5H5S
1-1/2 to 5 nominal tons

System Description

Outdoor-mounted, air-cooled, split-system heat pump unit suitable for ground or rooftop installation. Unit consists of a hermetic compressor, an air-cooled coil, propeller-type condenser fan, and a control box. Unit will discharge supply air upward as shown on contract drawings. Unit will be used in a refrigeration circuit to match up to a packaged fan coil or coil unit.

Quality Assurance

- Unit will be rated in accordance with the latest edition of AHRI Standard 210/240.
- Unit will be certified for capacity and efficiency, and listed in the latest AHRI directory.
- Unit construction will comply with latest edition of ANSI/ ASHRAE and with NEC.
- Unit will be constructed in accordance with UL standards and will carry the UL label of approval. Unit will have C-UL approval.
- Unit cabinet will be capable of withstanding Federal Test Method Standard No. 141 (Method 6061) 500-hr salt spray test.
- Air-cooled condenser coils are pressure tested and the outdoor unit is leak tested.
- Unit constructed in ISO9001 approved facility.

Delivery, Storage, and Handling

Unit will be shipped as single package only and is stored and handled per unit manufacturer's recommendations.

Warranty (for inclusion by specifying engineer)

U.S. and Canada only.

PRODUCTS

Equipment

Factory assembled, single piece, air-cooled heat pump unit. Contained within the unit enclosure is all factory wiring, piping, controls, compressor, refrigerant charge R-454B, and special features required prior to field start-up.

Unit Cabinet

Unit cabinet will be constructed of galvanized steel and coated with pre-paint.

Available with dense grill only.

Fans

Condenser fan will be direct-drive propeller type, discharging air upward.

Condenser fan motors will be totally enclosed, 1-phase type with class B or class F insulation and permanently lubricated bearings.

Shafts will be corrosion resistant.

Fan blades will be statically and dynamically balanced.

Condenser fan openings will be equipped with steel wire safety guards.

Compressor

Compressor will be hermetically sealed.

Compressor will be mounted on rubber vibration isolators.

Condenser Coil

Condenser coil will be air cooled.

Coil will be constructed of aluminum fins mechanically bonded to copper or aluminum tubes which are then cleaned, dehydrated, and sealed.

Refrigeration Components

Refrigeration circuit components will include liquid-line shutoff valve with sweat connections, vapor-line shutoff valve with sweat connections, system charge of R-454B refrigerant, POE compressor oil, accumulator, and reversing valve.

Operating Characteristics

The capacity of the unit will meet or exceed _____ Btuh at a suction temperature of _____ °F/°C. The power consumption at full load will not exceed _____ kW.

Combination of the unit and the evaporator or fan coil unit will have a total net cooling capacity of _____ Btuh or greater at conditions of _____ CFM entering air temperature at the evaporator at _____ °F wet bulb and _____ °F/°C dry bulb, and air entering the unit at _____ °F/°C.

The system will have a SEER of _____ Btuh/watt or greater at DOE conditions.

Electrical Requirements

Nominal unit electrical characteristics will be _____ v, _____ phase, 60 Hz. The unit will be capable of satisfactory operation within voltage limits of _____ v to _____ v.

Unit electrical power will be single point connection.

Control circuit will be 24v.

Special Features

Refer to section of this literature identifying accessories and descriptions for specific features and available enhancements.

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System Design Summary

1. Intended for outdoor installation with free air inlet and outlet. Outdoor fan external static pressure available is less than 0.01-in. wc.
2. Minimum outdoor operating air temperature without low-ambient operation accessory is 55°F (12.8°C).
3. Maximum outdoor operating air temperature for cooling mode is 125°F (51.7°C).
4. Minimum outdoor operating air temperature for heating mode is –10°F (–23.3°C).
5. Maximum outdoor operating air temperature for heating mode is 66°F (18.9°C).
6. For reliable operation, unit should be level in all horizontal planes.
7. For interconnecting refrigerant tube lengths greater than 80 ft (23.4 m) and/or elevation differences between indoor and outdoor units greater than 20 ft (6.1 m), consult Residential Piping and Longline Guideline and Service Manual available from equipment distributor.
8. If any refrigerant tubing is buried, provide a 6 in. (152.4 mm) vertical rise to the valve connections at the unit. Refrigerant tubing lengths up to 36 in. (914.4 mm) may be buried without further consideration. Do not bury refrigerant lines longer than 36 in. (914.4 mm).
9. Use only copper wire for electric connection at unit. Aluminum and clad aluminum are not acceptable for the type of connector provided.
10. Do not apply capillary tube indoor coils to these units.
11. Factory-supplied filter drier must be installed

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