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Submittal:

AHU/Split System - Revision 1

Spec Section: 23 7313.13

Attention: Mr. Dave Bergan

Phone: 513-985-6070 Fax:
Cell: Email: dbergan@maderiacityschools.org

Job Name: Maderia HS Gym HVAC Replace

Job #: 227219 PM: Brent Ernsth

To: Madeira City Schools
Attention: Mr. Dave Bergan
7465 Loannes Drive

Maderia, OH 45243
Phone: 513-985-6070 Fax:

Submittal Majid submitted this one.
Notes:

Comments:

Contacts:

Supplier Habegger Commercial Group -Cincinnati
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Owner Madeira City Schools
Mr. Dave Bergan, Assistant Project Manager
7465 Loannes Drive,
Maderia, OH, 45243
Phone 513-985-6070 Fax:

REVIEWED REVIEWED/CORRECTIONS NOTED
 REJECTED REVISE AND RESUBMIT

Corrections or comments made on the submittals during this review do not relieve Contractor from compliance with requirements of the Contract Documents. This review is for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor remains responsible for determining the accuracy and completeness of other details such as dimensions and quantities; for substantiating instructions for installations; verifying materials, field measurements and related construction criteria; checking, coordinating, and performing work in compliance with the Contract Documents.

KZF DESIGN Inc. lydia.jordan Date 07-15-22

Reviewed For Submittal Approved

Review does not relieve supplier from compliance with requirements of the drawings and specifications or conformance with contract documents.

By: Brent Ernsth Date: 7-15-22
Brent Ernsth

- Provide BACnet compatible unit controller / controls
- Provide bipolar ionization



**SPLIT SYSTEM SUBMITTALS
(REV1)**

Project

Maderia High School Gym

Date

July 12, 2022

Jeff Gries
Habegger Corp,

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Prepared By: Jeff Gries

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06:42PM

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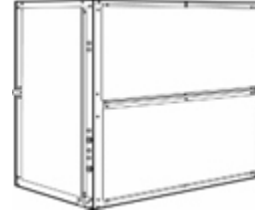
AHU-3 - CU-3

**Submittal Cover Sheet
Unit Report
Performance Summary Report
Certified Drawings
Feature Sheet**

Unit Report For AHU-3 - CU-3

Project: Maderia HS GYM
Prepared By: Jeff Gries

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Outdoor Unit Parameters

Unit Quantity: 1
 Unit Model: 38AUD
 Unit Size: 20 Tons
 Voltage: 460-3-60 V-Ph-Hz
 Condenser Coil: Al/Cu
 No. of DX Circuits: 2
 No. of Stages: Dual Stage

Indoor Unit Parameters

Unit Model: 40RUA
 Unit Size: 20 Tons
 No. of Coils: 2
 Voltage: 460-3-60 V-Ph-Hz

System Parameter

System Quantity: 1
 Refrigerant Type: PURON
 Compressor Quantity: 2
 Compressor Type: Scroll
 Std. Capacity Steps: 50, 100
 Std. Min. Outdoor Temp(Cooling): -20.0 °F
 No. of Outdoor fans: 4

Outdoor Unit Dimensions and Weight

Unit Length: 7' 2.1"
 Unit Width: 5' 7.1"
 Unit Height: 4' 2.4"
 Unit Shipping Weight: 978 lb
 Unit Operating Weight: 978 lb

Indoor Unit Dimensions and Weight

Unit Length: 7' 5.0"
 Unit Width: 2' 4.2"
 Unit Height: 4' 8.1"
 Unit Shipping Weight: 730 lb
 Unit Operating Weight: 730 lb

Accessories and Installed Options

Low ambient FIOP operation down to -20 F.

Part Number	Description	Quantity
Base Unit - Outdoor		
38AUDB25A0A6-0A0A0		1
	Base Unit	
	Al/Cu Condensing Coil	1
	Low Ambient Controls	1
	Packaging Options - Standard	1
	Standard Electrical Mechanical Controls	1
	Refrig Circ/Compressor Staging - Two Circuits/ Dual Stage	1
Base Unit - Indoor		
40RUAA25T1A6-0A0A0	Base Unit	1
	Std Static, High Efficient Motor / Std Drive	1
	Cabinet Paint - None	1
	2-Speed Fan Controller (VFD)	1
Accessories		
CAECOMZR010A01	Economizer - temperature dry bulb controlled - Ultra LOW LEAK	1

The 38AUZ/AUD are furnished with filter drier which is factory provided (field installed). Additional filter driers can be purchased separately through RCD (Replacement Components Division). See the Product Library for Replacement Filter Drier Information for more information.

Performance Summary For AHU-3 - CU-3

Project: Maderia HS GYM
Prepared By: Jeff Gries

07/12/2022
06:42PM

System: **38AUD025/40RUA025**
 No. of Circuits:..... **Dual Circuit**
 System Quantity:..... **1**
 Altitude:..... **0.0** ft
 EER @ ARI Conditions:..... **11.0**
 IEER:..... **12.0**
 Linear Pipe Length:..... **50.0** ft
 Suction Line Size:..... **1 1/8** in
 Liquid Line Size:..... **1/2** in
 Suction Line Loss:..... **1.4** °F
 Condensing unit is rated in accordance with ARI 365.

This system has a combined part load efficiency (IEER) that meets or exceeds the US DOE 2018 minimum cooling efficiency standards.

Refer to the 38AU installation instructions for installation specific line sizing guidance

Outdoor Unit Parameters

Unit Quantity:..... **1**
 PartNumber:..... **38AUDB25A0A6-0A0A0**
 Unit Model:..... **38AUD**
 Unit Size:..... **20 Tons**
 Condenser Coil:..... **Al/Cu**
 No. of DX Circuits:..... **2**
 Voltage:..... **460-3-60** V-Ph-Hz
 Clg Ent Air DB:..... **95.0** °F

Outdoor Electrical Data

Unit Voltage:..... **460-3-60** V-Ph-Hz
 Unit MCA:..... **40.8** Amps
 Unit MOCP:..... **50.0** Amps
 Total Compressor Power of Unit:..... **NA**
 Voltage Range Min:..... **414** V
 Voltage Range Max:..... **506** V
 Compressor RLA:..... **16.7**
 Compressor LRA:..... **114**
 Compressor Quantity:..... **2**
 Fan Motors Qty:..... **4**
 Fan Motor FLA:..... **0.8** Amps
 Notice: Outdoor unit elect. data is based on 460-3-60
 Control Panel SCCR: 5kA RMS at Rated Symmetrical Voltage

Indoor Unit Parameters

PartNumber:..... **40RUAA25T1A6-0A0A0**
 Unit Model:..... **40RUA**
 Unit Size:..... **20 Tons**
 Coil Rows:..... **4**
 No. of Splits:..... **2**
 Voltage:..... **460-3-60** V-Ph-Hz
 Actual Airflow:..... **8000.0** CFM
 Standard Airflow:..... **8000.0** CFM
 Total Clg Cap.(Gross):..... **250.5** MBH
 Sensible Clg Cap.(Gross):..... **192.2** MBH
 Ent Air DB:..... **80.0** °F
 Ent Air WB:..... **67.0** °F
 Ent Enthalpy:..... **31.44** BTU/lb
 Lvg Air DB:..... **57.8** °F
 Lvg Air WB:..... **57.1** °F
 Lvg Enthalpy:..... **24.48** BTU/lb
 Coil Bypass Factor:..... **NA**

Performance Summary For AHU-3 - CU-3

Project: Maderia HS GYM
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Indoor Supply Fan

***Using 2-Speed Fan Controller (VFD)

Indoor Unit External Static:	0.50	in wg
Economizer Loss:.....	0.17	in wg
Grille Loss:	0.00	in wg
Plenum Loss:	0.00	in wg
Acc. Heating Loss:.....	0.00	in wg
Total Ext Static:.....	0.67	in wg
Fan Speed:	851	RPM
Fan Power:.....	4.00	BHP
Fan Motor Max:.....	5.00	BHP
Fan Motor FLA:	9.1	Amps

Motor and Standard Drive Required.

Selected Standard Drive Range: 679 - 863 RPM

Indoor Electrical Data

Unit Voltage:	460-3-60	V-Ph-Hz
Unit MCA:.....	12.0	Amps
Unit MOCP:.....	20.0	Amps

Notice: Indoor unit elect. data is based on 460-3-60

Acoustics

Sound Power Levels, db re 10E-12 Watts

A-Weighted	Outdoor Unit (dB)	Indoor Unit (dB,Ducted)
Total Level	85.2	96.4
63Hz	64.8	76.4
125Hz	68.9	82.5
250Hz	71.4	86.0
500Hz	82.8	92.4
1000Hz	79.0	89.6
2000Hz	74.2	88.8
4000Hz	69.0	84.6
8000Hz	61.9	NA
Sound Message	Sound for AUD025	Sound for RUA025

Acoustic Notes:

- 38AUZ/D/Q units sound ratings are in accordance with AHRI 270-2008 - Sound Rating of Outdoor Unitary Equipment.
- 40RU units sound ratings are in accordance with AHSRAE 1987 HVAC Systems and Applications handbook.
- The acoustic center of the unit is located at the geometric center of the unit.

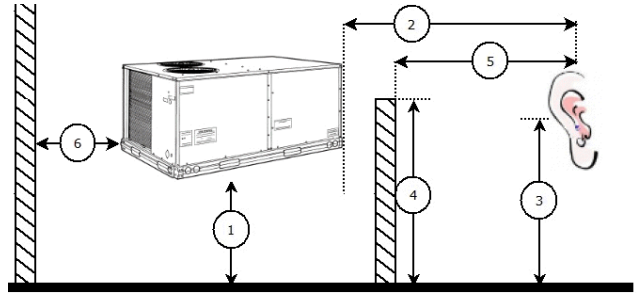
Performance Summary For AHU-3 - CU-3

Project: Maderia HS GYM
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Advanced Acoustics Parameters

- 1. Unit height above ground:**1.0** ft
- 2. Horizontal distance from unit to receiver:**20.0** ft
- 3. Receiver height above ground:**5.7** ft
- 4. Height of obstruction:**0.0** ft
- 5. Horizontal dist. from obstruction to receiver:**0.0** ft
- 6. Horizontal dist. from unit to obstruction:**0.0** ft



Detailed Acoustics Information

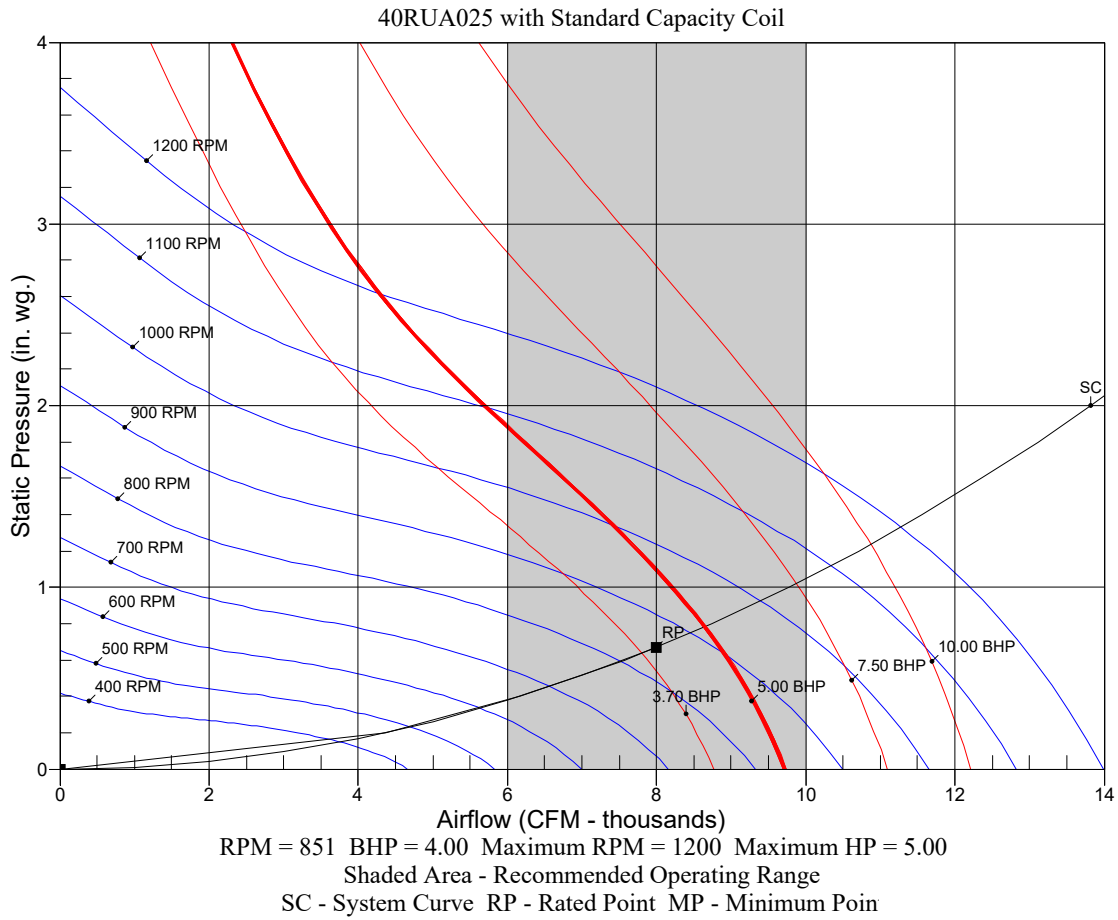
Octave Band Center Frequency, Hz	63	125	250	500	1k	2k	4k	8k	Overall
Sound Power Levels at Unit's Acoustic Center (L _w), dB	91	85	80	86	79	73	68	63	93
A-Wgtd Sound Power Levels at Unit's Acoustic Center (L _{wA}), dBA	65	69	71	83	79	74	69	62	85
Sound Press. Levels at Dist. Specified above (L _p), dB	66	60	55	61	54	48	43	38	69
A-Wgtd Sound Press. Levels at Dist. Specified above (L _{pA}), dBA	40	44	47	58	54	50	44	37	61

Calculation methods used in this program are patterned after the ASHRAE Guide; other ASHRAE Publications and the AHRI Acoustical Standards. While a very significant effort has been made to insure the technical accuracy of this program, it is assumed that the user is knowledgeable in the art of system sound estimation and is aware of the tolerances involved in real world acoustical estimation. This program makes certain assumptions as to the dominant sound sources and sound paths which may not always be appropriate to the real system being estimated. Because of this, no assurances can be offered that this software will always generate an accurate sound prediction from user supplied input data. If in doubt about the estimation of expected sound levels in a space, an Acoustical Engineer or a person with sound prediction expertise should be consulted.

Performance Summary For AHU-3 - CU-3

Project: Maderia HS GYM
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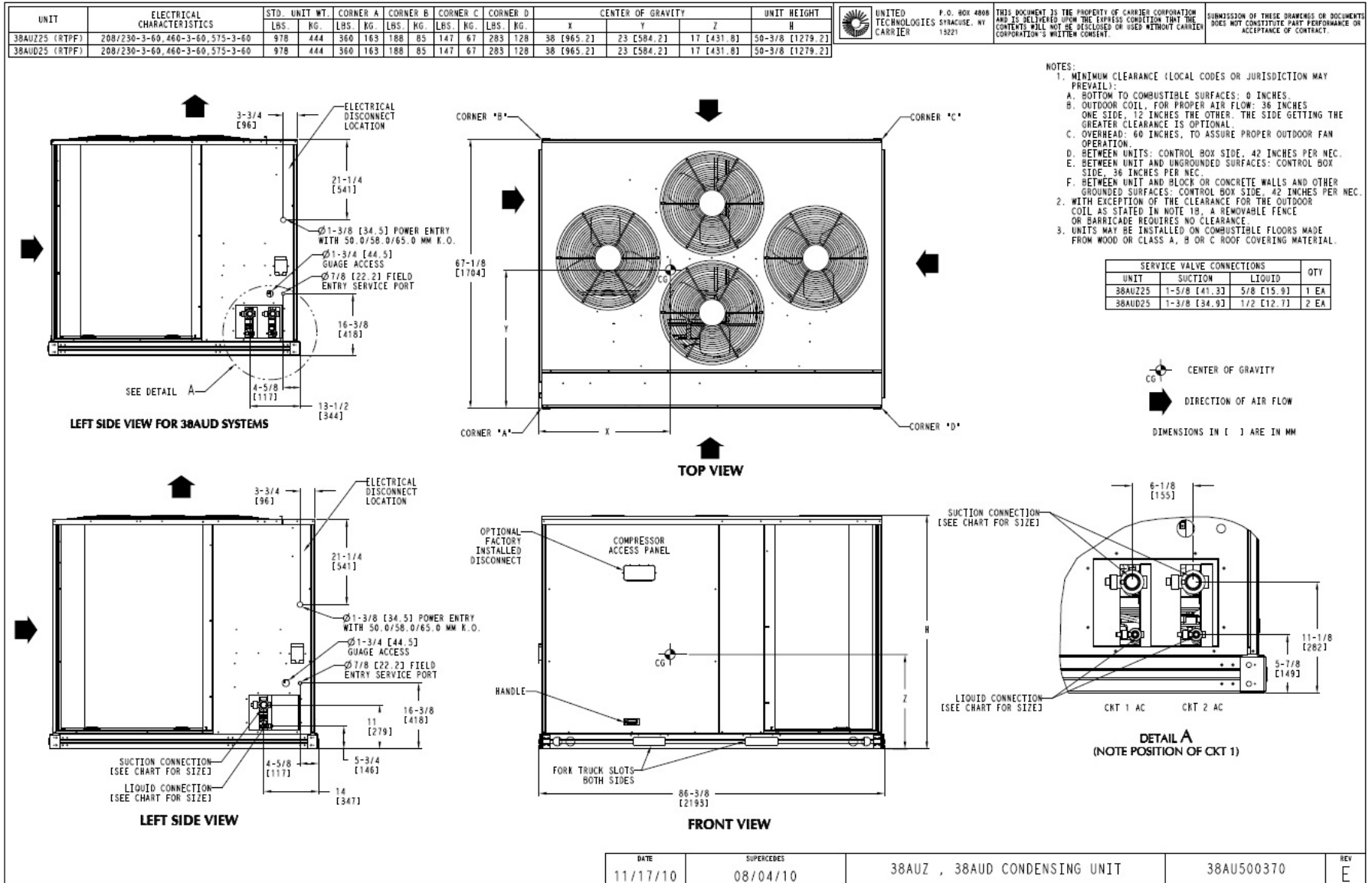
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Certified Drawing for AHU-3 - CU-3

Project: Maderia HS GYM
Prepared By: Jeff Gries

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Certified Drawing for AHU-3 - CU-3

Project: Maderia HS GYM
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UNIT	UNIT WEIGHT (W/TXV)
40RUA-14	695 lbs [315 kg]
40RUA-16	713 lbs [323 kg]
40RUA-25	730 lbs [331 kg]
40RUQ-16	713 lbs [323 kg]
40RUQ-25	720 lbs [327 kg]
40RUS-14	661 lbs [300 kg]
40RUS-16	677 lbs [307 kg]
40RUS-25	683 lbs [310 kg]



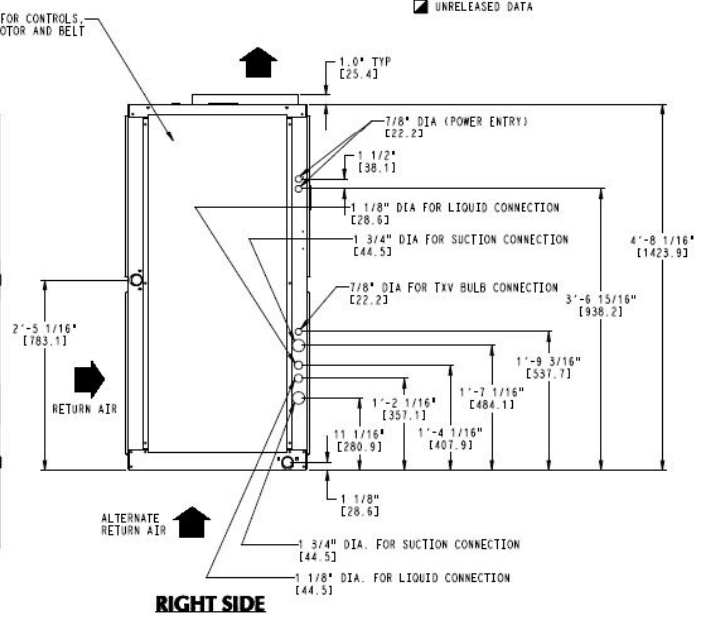
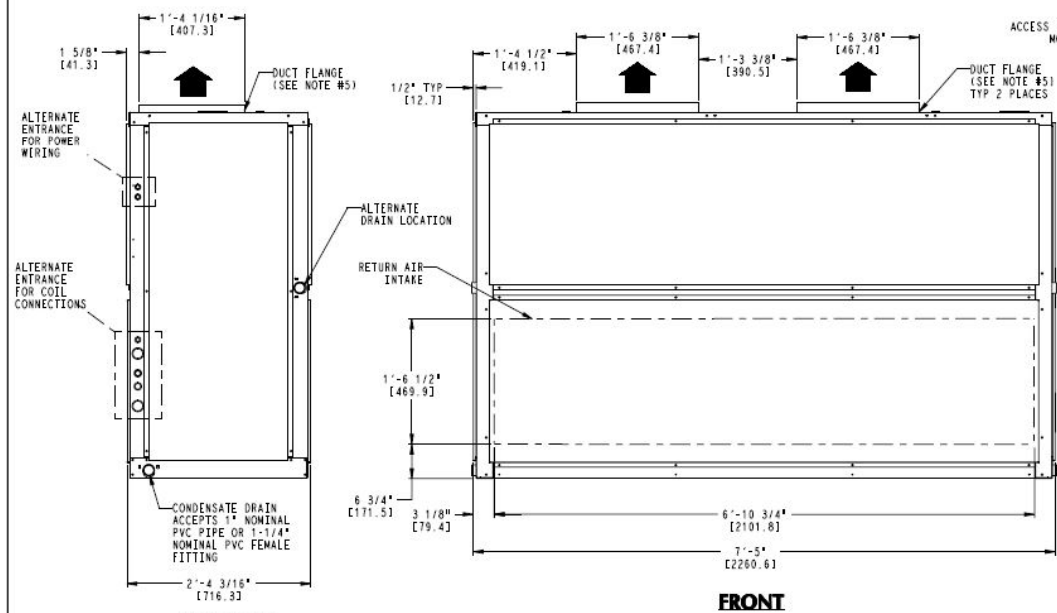
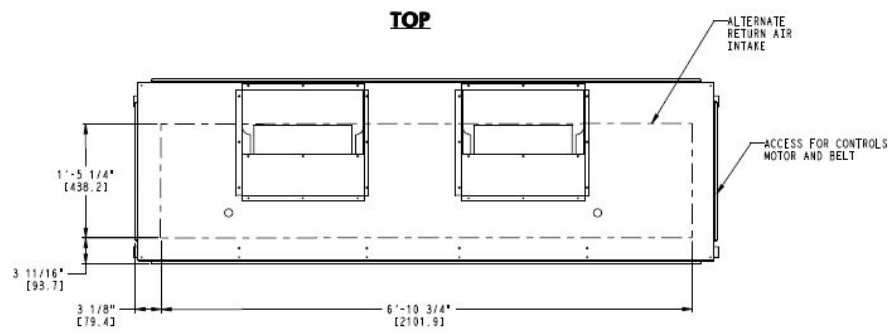
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SUBMISSION OF THESE DRAWINGS OR DOCUMENTS DOES NOT CONSTITUTE PART PERFORMANCE OR ACCEPTANCE OF CONTRACT.

- NOTES:
1. DIMENSIONS IN [] ARE IN MILLIMETERS.
 2. DIRECTIONS OF AIRFLOW.
 3. RECOMMENDED CLEARANCE:
REAR: 2 ft 6 in. [762 mm]
FRONT: 2 ft 6 in. [762 mm]
RIGHT SIDE: 2 ft 6 in. [762 mm]
LEFT SIDE: 2 ft 6 in. [762 mm]
LOCAL CODES OR JURISDICTION MAY PREVAIL.
 4. LIQUID PIPING NOT SUPPLIED BY CARRIER.
 5. DUCT FLANGE IS FACTORY SUPPLIED AND FIELD INSTALLED.

ACCESSORY	SEE DRAWING
DISCHARGE PLENUM	40RMS0097
ECONOMIZER	40RMS0100
STEAM COIL	40RMS0100
HOT WATER COIL	40RMS0100
RETURN AIR GRILLE	40RMS0097
OVERHEAD SUSPENSION	40RMS0097
SUBBASE	40RMS0097
ELECTRIC HEAT <input checked="" type="checkbox"/>	40RMS0102

UNRELEASED DATA




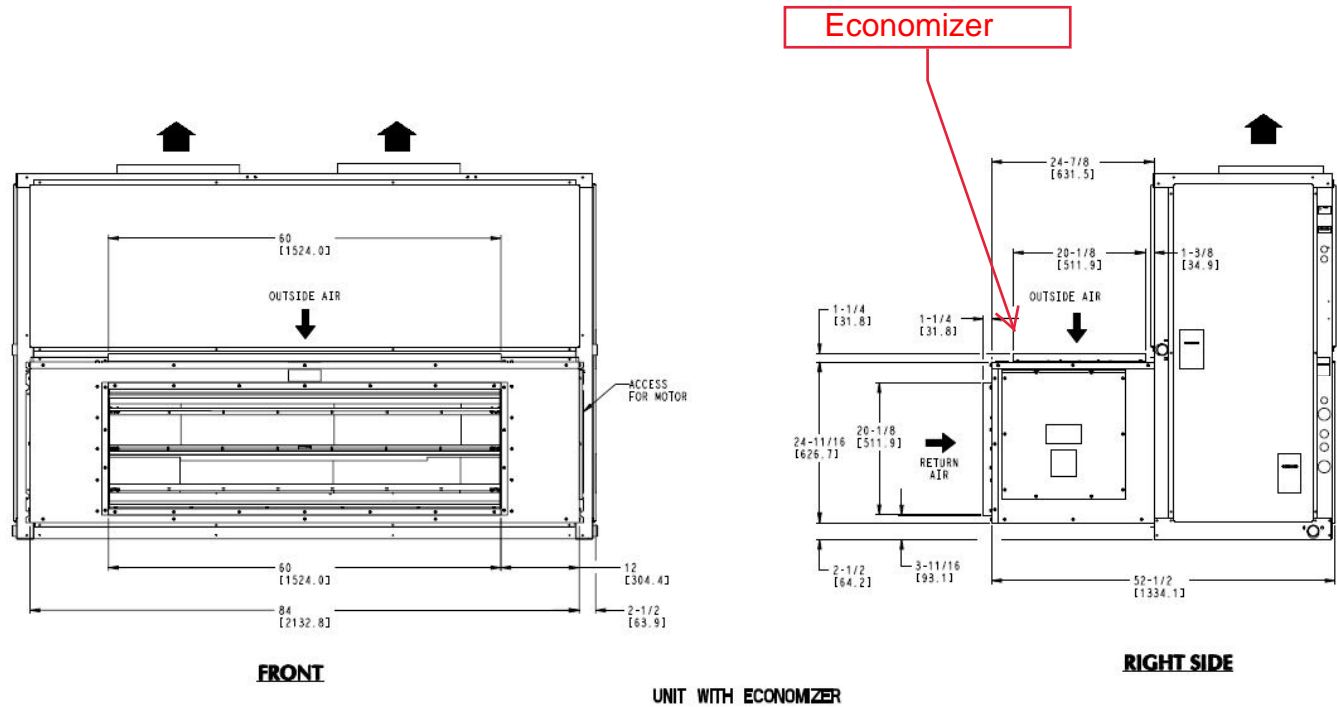
ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES	FAN COIL UNITS	REV
U.S. ECCN:NSR	1 OF 2	05/27/21	01/23/12	40RU A / Q / S - 14 / 16 / 25	G

Certified Drawing for AHU-3 - CU-3

Project: Maderia HS GYM
Prepared By: Jeff Gries

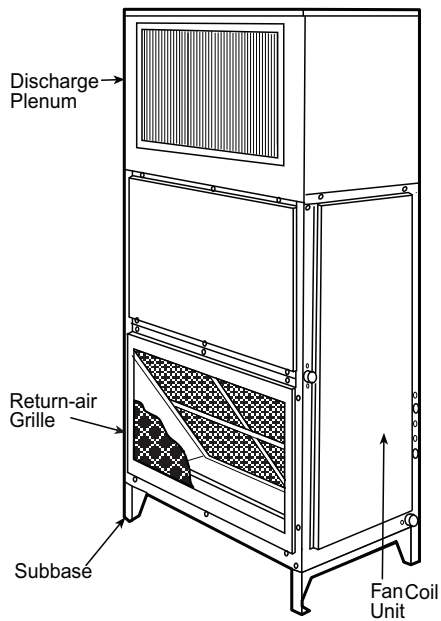
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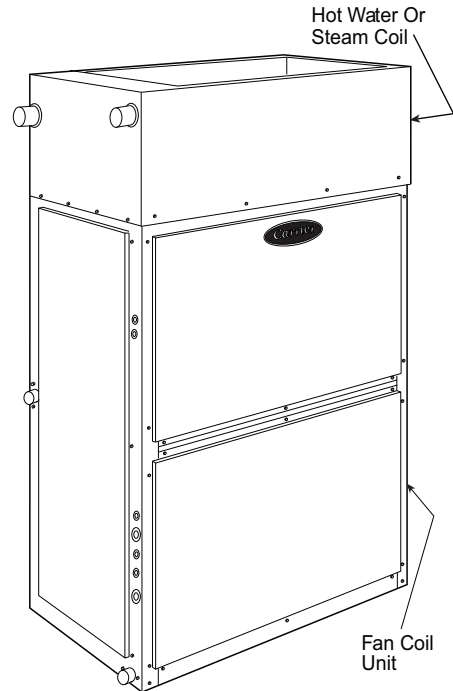


ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES	FAN COIL UNITS	40RU500028	REV
U.S. ECCN: NSR	2 OF 2	05/27/21	01/23/12	40RU A / O / S - 14 / 16 / 25		G

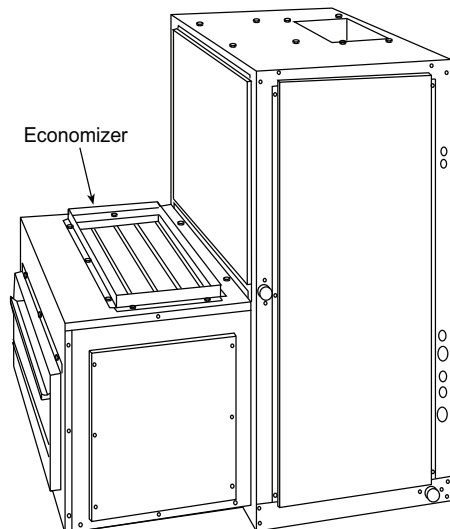
40RU WITH DISCHARGE PLENUM RETURN-AIR GRILLE AND SUBBASE



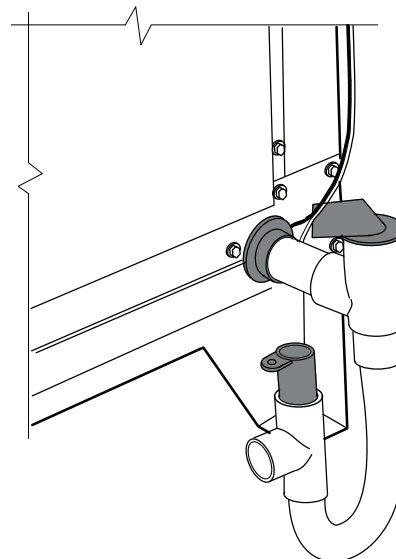
40RU WITH HOT WATER OR STEAM COIL



40RU WITH ECONOMIZER



40RU WITH CONDENSATE TRAP



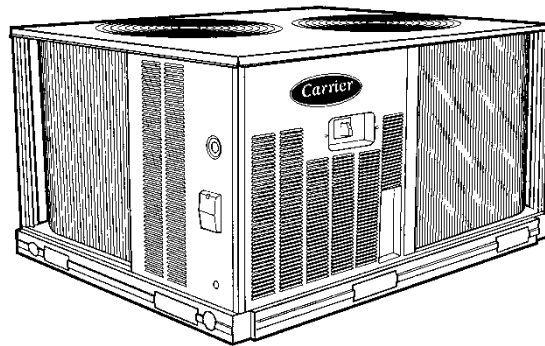
COMMERCIAL SPLIT SYSTEMS

38AUZ 6 to 20 Ton

38AUD 10 to 20 Ton

AIR-COOLED COOLING ONLY CONDENSING UNITS with PURON® REFRIGERANT

These light commercial air-cooled cooling only condensing units are easily connected by refrigerant lines and low voltage control wiring to matching Carrier packaged air-handling units or other suitable evaporator units. They are ideal for new construction or renovation applications where quality and performance are required.



Manufactured in facility registered to
ISO 9001:2008 quality standard

BASE UNIT STANDARD FEATURES:

- Puron® (R-410A) HFC refrigerant partial charge
- Single circuit units (38AUZ) are available in 1 or 2 stage cooling
- Two circuit units (38AUD) are available in 2 stage cooling
- All models utilize round tube plate fin coils.
- Standard one year parts warranty and five year compressor parts warranty. Extended 2-5 year parts and 1-5 labor coverage are available.
- Cooling operating range up to 125°F (52°C) and down to 35°F (2°C) as standard.
- Available Motormaster® I control for cooling operation down to -20°F (-29°C)
- Fully hermetic scroll compressor with crankcase heater
- New terminal board facilitating simple safety circuit troubleshooting and simplified control box arrangement. 24-volt 75va control system

- High and low pressure switches.
- Comfort Alert™ Diagnostic Board:
 - LED Go-No-Go and fault code
 - Built in time guard anti-short cycle
 - Phase protection
 - Fault code retention logic
 - Low voltage compressor contactor protector
- UL and UL, Canada apply to standard units; 575-volt units UL, Canada only.
- Full perimeter base rails with built-in rigging adapters and fork truck slots
- Pre-painted exterior panels and primer-coated interior panels tested to 500 hours salt spray protection
- Direct drive permanently lubricated condenser fan motors
- All units factory run tested
- Compressors mounted on independent vibration isolators

COMMERCIAL SPLIT SYSTEMS
40RUA 6 to 30 ton
PACKAGED AIR HANDLING UNITS with PURON® REFRIGERANT

These light commercial direct expansion (DX) cooling air handling units are easily connected by refrigerant lines and low voltage control wiring to matching Carrier condensing units or other suitable condensing units. They are ideal for new construction or renovation applications where quality and performance are required.



40RU07 – 12





**Manufactured in facility registered to
ISO 9001:2008 quality standard**

BASE UNIT STANDARD FEATURES:

- Puron® (R-410A) HFC refrigerant compatible
- 6 and 7.5 ton units feature a single evaporator coil, 10 thru 30 ton units feature two evaporator coils.
- Designed for vertical or horizontal installation
- Standard sloped drain pans and cleanable insulation
- All models utilize round tube plate fin coils for enhanced cooling performance
- Standard one year parts warranty. Extended 2-5 year parts and 1-5 labor coverage are available.
- High-static design meets a wide range of applications
- Standard factory installed thermostatic expansion valves (TXV) with removable power help to reduce installation time
- Die-formed galvanized steel casings provide durability and structural integrity. Optional paint is available.
- Optional Staged Air volume (SAV™) system provides two-speed fan control for energy savings
- Ultra LOW LEAK Economizer accessory provides ventilation air and “free” cooling with built in Fault Detection and Diagnostic (FDD) capabilities.
- Hot water coil, steam coil, and electric heat accessories are available.

AHU-1 - HP-1

**Submittal Cover Sheet
Unit Report
Performance Summary Report
Certified Drawings
Feature Sheet**

Unit Report For AHU-1 - HP-1

Project: Maderia HS GYM
Prepared By: Jeff Gries

07/12/2022



Outdoor Unit Parameters

Unit Model: **25HPB**
Unit Size: **4 Tons**
Voltage: **208/230-1-60** V-Ph-Hz

Indoor Coil Parameters

Unit Model: **FV4C**
Unit Size: **Size 006 (30 - 60,000 Btuh)**
Cabinet Insulation: **Modular with 1-in. super thick insulation**
.....
Voltage: **208-1-60** V-Ph-Hz
Refrigerant Type: **Puron**
Heating Size: **No Heat**

Outdoor Unit Dimensions and Weight

Unit Length: **35** in
Unit Width: **35** in
Unit Height: **32.0625** in
Unit Shipping Weight: **296.** lb

Indoor Coil Dimensions and Weight

Unit Length: **22.0625** in
Unit Width: **24.6875** in
Unit Height: **59.1875** in
Unit Shipping Weight: **207.** lb

COMMERCIAL APPLICATIONS

The warranty period is five (5) years on the compressor, and one (1) year on all other parts. The warranty is the original owner only and is not available for subsequent owners.

Ordering Information

Part Number	Description	Quantity
Outdoor Unit		
25HPB648A003	25HPB Carrier Comfort Heat Pump with Puron 4 Tons Cooling 16 SEER @ ARI Conditions	1
Accessories		
KSALA0301410	Low-Ambient Pressure Switch for Outdoor Unit	1
KAACH1601AAA	Crankcase Heater for Outdoor Unit	1
KSAFT0101AAA	Evaporator Freeze Thermostat for Outdoor Unit	1
KSAHS2401AAA	Hard Start Kit for Outdoor Unit	1
Indoor Coil		
FV4CNB006L00	FV4C Performance Series Fan Coil with Puron 6 Tons Cooling 208/230-1-60 Modular with 1-in. super thick insulation Aluminum	1
Accessories		
KFCEH3101C15	15 kW Electric Heater with Circuit Breaker and Relays for Indoor Unit	

The Product and Ratings Data in this program is subject to change at any time and without notice. Please refer to the latest product literature and the AHRI directory at www.ahridirectory.org for the most up-to-date information.

Performance Summary For AHU-1 - HP-1

Project: Maderia HS GYM
Prepared By: Jeff Gries

07/12/2022

System Performance

System:	25HPB/FV4C	Actual Clg Airflow:	1600.0	CFM
System Quantity:.....	1	Standard Clg Airflow:.....	1600.0	CFM
Altitude:.....	0.0 ft	Total Net Clg Capacity:.....	48.73	MBH
Linear Pipe Length:.....	50.0 ft	Net Sensible Clg Capacity:.....	40.13	MBH
COP @ 47 F:.....	3.82	Htg HP Capacity:.....	45.90	MBH
COP @ 17 F:.....	2.72	Htg HP Integrated Capacity:.....	45.90	MBH
SEER @ ARI Conditions:.....	16.0	Heating HP Compressor Power:.....	3.46	kW
EER @ ARI Conditions:.....	13.0	Total System Power:.....	3.73	kW
HSPF @ ARI Conditions:.....	9.0			

System Parameters

Outdoor Unit Parameters

Unit Model:.....	25HPB648A003
Unit Size (Nominal):.....	4 Tons
Voltage:.....	208/230-1-60 V-Ph-Hz
Clg Ent Air DB Ambient:.....	95.0 °F
Htg Ent Air DB Ambient:.....	47.0 °F

Indoor Coil Parameters

Unit Model:.....	FV4CNB006L00
Unit Size (Nominal):.....	Size 006 (30 - 60,000 Btuh)
Voltage:.....	208-1-60 V-Ph-Hz
Ent Air DB:.....	80.00 °F
Ent Air WB:.....	67.00 °F
Ent Enthalpy:.....	31.44 BTU/lb
Lvg Air DB:.....	56.78 °F
Lvg Air WB:.....	56.78 °F
Lvg Enthalpy:.....	24.67 BTU/lb
Htg Ent Air DB:.....	70.0 °F
Htg Lvg Air DB:.....	96.6 °F
Heating Size (Nominal):.....	No Heat
Total External Static Pressure:.....	0.50 in wg
Clg Coil Note:***	Airflow adjusted to high (400 cfm/ton).

Electrical Data

Outdoor Electrical Data

Unit Voltage:.....	208/230-1-60 V-Ph-Hz
Fan Motor FLA:.....	1.30 Amps
MCA:.....	31.8 Amps
Max Fuse:.....	45 Amps
Operating Range Min:.....	197 V
Operating Range Max:.....	253 V
Compressor RLA:.....	24.4 Amps
Compressor LRA:.....	130.0 Amps

Indoor Electrical Data

Unit Voltage:.....	208-1-60 V-Ph-Hz
Motor HP:.....	3/4 HP
Motor FLA:.....	6.8 Amps

Accessory Electric Heater Data

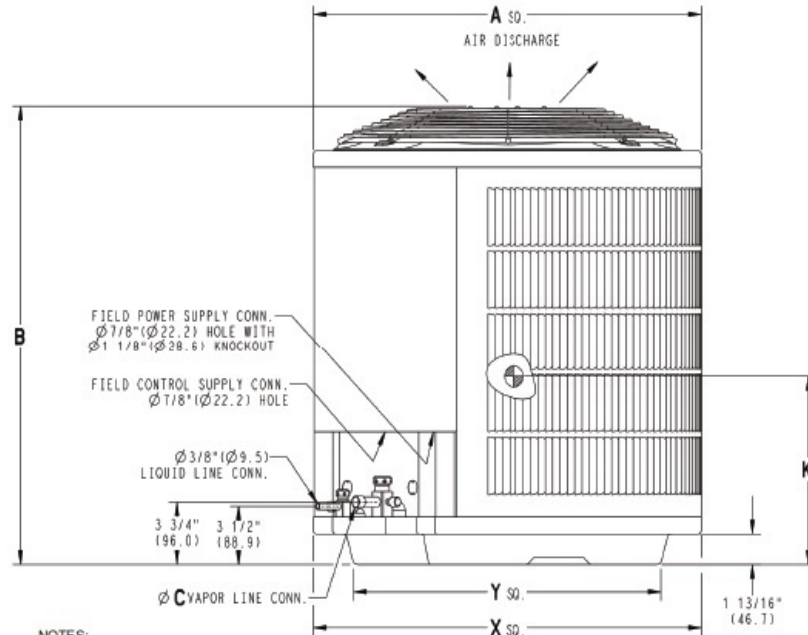
EH Part Number:.....	KFCEH3101C15
Electric Heater kW:.....	15.0 kW
For 4 wire operation (dual circuit):	
Heater Amps L1/L2:.....	36.2 Amps
Heater + Motor MCA L1/L2:.....	53.8 Amps
Heater + Motor MOCP L1/L2:.....	60 Amps
Heater Amps L3/L4:.....	18.1 Amps
Heater + Motor MCA L3/L4:.....	22.7 Amps
Heater + Motor MOCP L3/L4:.....	25 Amps
Accessory Voltage:.....	208-1-60 V-Ph-Hz

The Product and Ratings Data in this program is subject to change at any time and without notice. Please refer to the latest product literature and the AHRI directory at www.ahridirectory.org for the most up-to-date information.

Certified Drawing For AHU-1 - HP-1

Project: Maderia HS GYM
Prepared By: Jeff Gries

07/12/2022

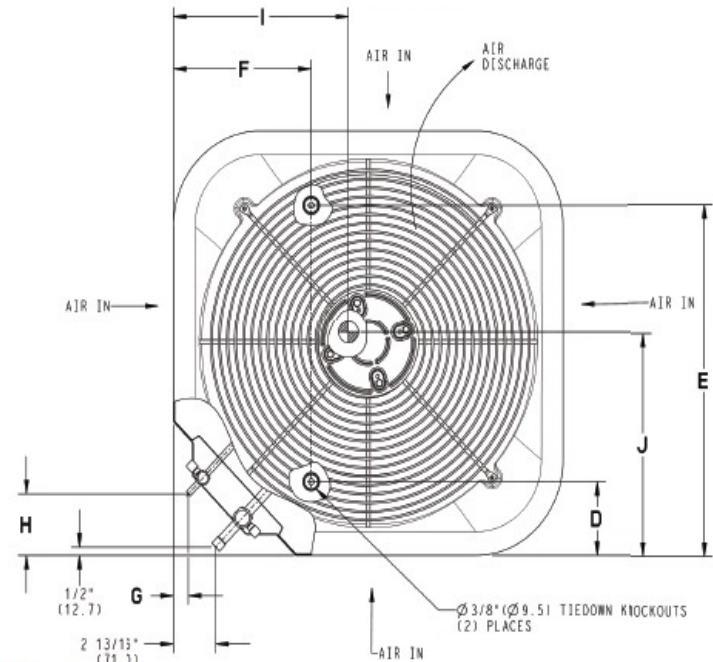


NOTES:

1. ALLOW 24" (609.6) CLEARANCE TO SERVICE SIDE OF UNIT, 48" (1219.2) ABOVE UNIT, 6" (152.4) ON ONE SIDE, 12" (304.8) ON REMAINING SIDE, AND 24" (609.6) BETWEEN UNITS FOR PROPER AIRFLOW.

2. CENTER OF GRAVITY

3. SERIES DESIGNATION IS THE 13TH POSITION OF THE UNIT MODEL NUMBER.



Outdoor Model

Unit Model:.....**25HPB**
 Unit Size:.....**4 Tons**
 Voltage:.....**208/230-1-60** V-Ph-Hz
 SEER:.....**16**
 PartNumber:.....**25HPB648A003**

Shipping Dimensions and Weights	Outdoor Unit
Height	36.63 in
Width	37.13 in
Length	37.13 in
Operating Weight	258. lb
Shipping Weight	296. lb

Dimensions										
A	B	C	D	E	F	G	H	I	J	K
35.00 in	32.06 in	0.88 in	6.56 in	28.44 in	9.13 in	1.13 in	3.81 in	16.13 in	18.00 in	14.88 in

The Product and Ratings Data in this program is subject to change at any time and without notice. Please refer to the latest product literature and the AHRI directory at www.ahrirectory.org for the most up-to-date information.

Certified Drawing For AHU-1 - HP-1

Project: Maderia HS GYM
Prepared By: Jeff Gries

07/12/2022

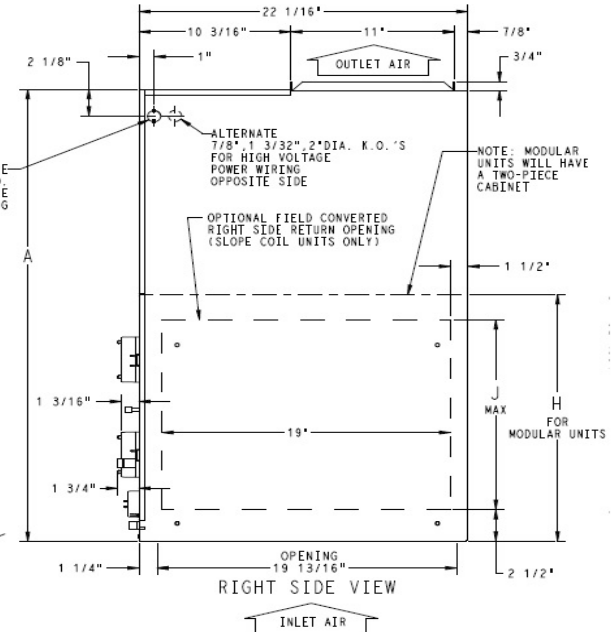
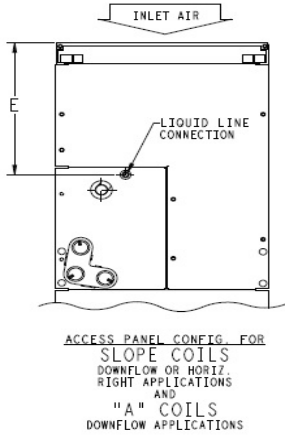
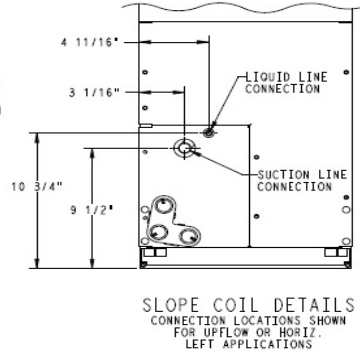
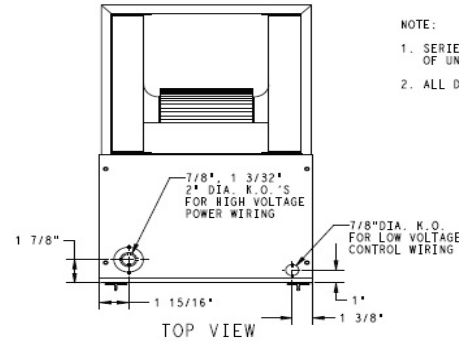
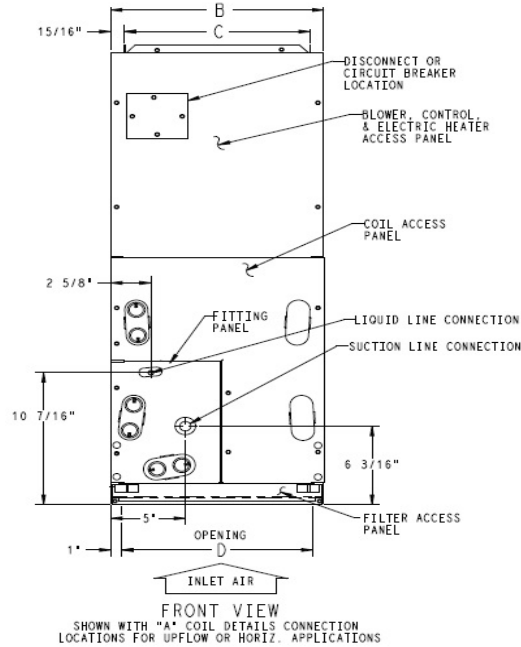
UNIT CONNECTION SIZES

SUCTION: 018 & 024 - 5/8" I.D. SWEAT
030 & 036 - 3/4" I.D. SWEAT
042 THRU 060 - 7/8" I.D. SWEAT
LIQUID: 3/8" I.D. SWEAT
CONDENSATE: 3/4" FPT

NOTE:

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

NOTE: ALLOW 21" FROM FRONT FOR SERVICE



Indoor Coil

Unit Model: **FV4C**
Unit Size: **Size 006 (30 - 60,000 Btuh)**
Voltage: **208-1-60** V-Ph-Hz
Cabinet Insulation: **Modular with 1-in. super thick insulation**
PartNumber: **FV4CNB006L00**

Dimensions and Weights	Indoor Coil
Height	59.19 in
Width	24.69 in
Length	22.06 in
Shipping Weight	207. lb

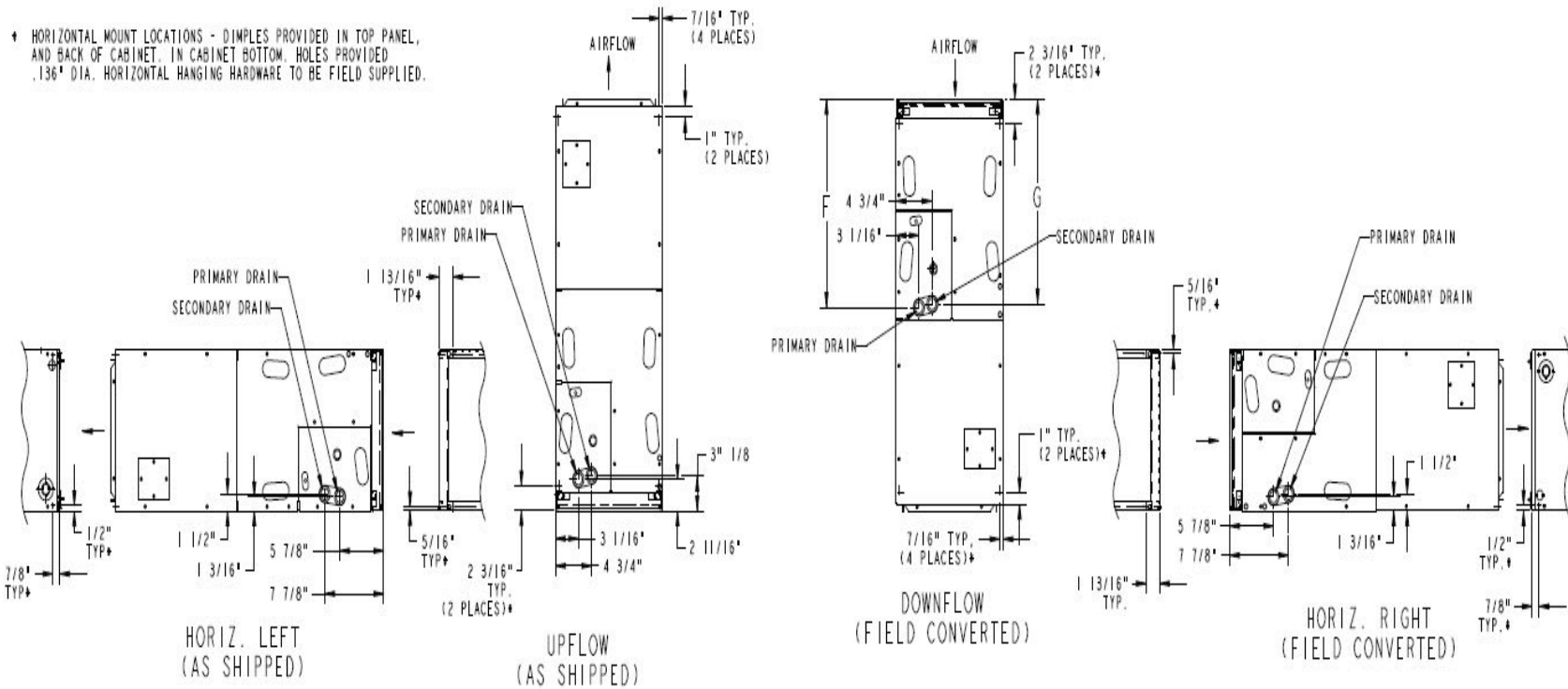
Dimensions									
A	B	C	D	E	F	G	H	J	
59.19 in	24.69 in	22.75 in	22.69 in	25.25 in	--	--	34.06 in	--	--

The Product and Ratings Data in this program is subject to change at any time and without notice. Please refer to the latest product literature and the AHRI directory at www.ahrirectory.org for the most up-to-date information.

Certified Drawing For AHU-1 - HP-1

Project: Maderia HS GYM
 Prepared By: Jeff Gries

07/12/2022



A-COIL

Indoor Coil

Unit Model:..... **FV4C**
 Unit Size:..... **Size 006 (30 - 60,000 Btuh)**
 Voltage:..... **208-1-60** V-Ph-Hz
 PartNumber:..... **FV4CNB006L00**

The Product and Ratings Data in this program is subject to change at any time and without notice. Please refer to the latest product literature and the AHRI directory at www.ahrirectory.org for the most up-to-date information.

**25HPB6
Performance™ Series Heat Pump
with Puron® Refrigerant
1 – 1/2 to 5 Tons**



Product Data



**Performance
SERIES**

Carrier heat pumps with Puron® refrigerant provide a collection of features unmatched by any other family of equipment. The 25HPB6 has been designed utilizing Carrier's non-ozone depleting Puron refrigerant.

This product has been designed and manufactured to meet Energy Star® criteria for energy efficiency when matched with appropriate coil components. Refer to the combination ratings in the AHRI Directory for system combinations that meet Energy Star® guidelines.

NOTE: Ratings contained in this document are subject to change at any time. Always refer to the AHRI directory (www.ahridirectory.org) for the most up-to-date ratings information.

INDUSTRY LEADING FEATURES / BENEFITS

Energy Efficiency

- 14.0 - 16.0 SEER/11.5 - 13.0 EER/8.2 - 9.0 HSPF
- Microtube Technology™ refrigeration system
- Indoor air quality accessories available

Sound

- Sound level as low as 67 dBA

Comfort

- System supports Thermidistat™ or standard thermostat controls

Reliability

- Non-ozone depleting Puron® refrigerant
- Front-seating service valves
- Scroll compressor
- Internal pressure relief valve
- Internal thermal overload
- High pressure switch
- Loss of charge switch
- Filter drier
- Balanced refrigeration system for maximum reliability

Durability

WeatherArmor Ultra™ protection package:

- Solid, Durable sheet metal construction
- Steel louver coil guard
- Baked-on, complete outer coverage, powder paint

Applications

- Long-line - up to 250 feet (76.2 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 Longline Guide for more information.)
- Low ambient cooling (down to -10°F / -23°C) with approved low ambient accessory kits.

Product Data

PREMIUM ENVIRONMENTALLY RESPONSIBLE FAN COIL

The FV4C is the premium air handler combining the proven technology of Carrier fan coils with environmentally balanced Puron® refrigerant. The FV4C achieves an operational advantage when the ECM (Electronically Commutated Motor) is combined with a Carrier Performance™ heat pump with Puron® refrigerant.

With attention to quiet, efficient, and comfortable operation, Carrier has developed a new benchmark for superior indoor comfort and control.

Carrier's heat pump and air conditioning systems now feature Puron® refrigerant (R-410A), the chlorine-free refrigerant that is the future for the residential heating and cooling industry. The FV4C using Puron® refrigerant maximizes performance for environmentally balanced systems. In addition to environmental safety, these systems are 30 to 40% more efficient than standard heating and cooling systems, thereby combining excellence in efficiency and environmental responsibility.

The FV4C provides these benefits due to Carrier's command of ECM technology. These motors are extremely efficient at all speeds, and enable the FV4C to operate at the correct speed to deliver airflow precisely, ensuring proper performance across a wide range of duct static pressures. This adaptive efficiency also makes installation quality easier to achieve for today's demanding homeowner.

Carrier's command of ECM technology may be most evident in the comfort advantages that ECM can deliver. Operation set up steps on the Easy Select™ Board provide the installing technician with alternatives to maximize comfort and efficiency. For true indoor comfort, the homeowner can achieve command of both temperature and humidity in cooling and heating modes.

Another feature which sets the FV4C apart is the factory-installed TXV, which enhances efficiency and provides compressor protecting operation at all recommended conditions. Grooved tubing, louvered aluminum fins, and the large face areas of the FV4C refrigerant coils also provide superior efficiency, for high SEER and HSPF performance. Carrier leads the way in condensate control, a hallmark of these multipoise fan coils. All of these featured components are protected within a rugged, prepainted metal cabinet lined with super thick, high density insulation. For neat, high quality installations the unit exterior features sweat refrigerant connections for simple leak free performance, and multiple electrical entry for both high and low voltage service.

The design of these fan coils meet cabinet air leakage of less than 2% at 0.5 inches W.C., and cabinet air leakage less than 1.4% at 0.5 inches W.C. when tested in accordance with ASHRAE 193 standard.



AHU-2 - CU-2

**Submittal Cover Sheet
Unit Report
Performance Summary Report
Certified Drawings
Feature Sheet**

Unit Report For AHU-2 - CU-2

Project: Maderia HS GYM
Prepared By: Jeff Gries

07/12/2022



Outdoor Unit Parameters

Unit Model: **24ACC**
 Unit Size: **5 Tons (Size 60)**
 Voltage: **208/230-1-60** V-Ph-Hz

Indoor Coil Parameters

Unit Model: **FV4C**
 Unit Size: **Size 006 (30 - 60,000 Btuh)**
 Cabinet Insulation: **Modular with 1-in. super thick insulation**
 Voltage: **208-1-60** V-Ph-Hz
 Refrigerant Type: **Puron**
 Heating Size: **No Heat**

Outdoor Unit Dimensions and Weight

Unit Length: **35** in
 Unit Width: **35** in
 Unit Height: **45.6875** in
 Unit Shipping Weight: **372.** lb

Indoor Coil Dimensions and Weight

Unit Length: **22.0625** in
 Unit Width: **24.6875** in
 Unit Height: **59.1875** in
 Unit Shipping Weight: **207.** lb

COMMERCIAL APPLICATIONS

The warranty period is five (5) years on the compressor, and one (1) year on all other parts. The warranty is the original owner only and is not available for subsequent owners.

Ordering Information

Part Number	Description	Quantity
Outdoor Unit		
24ACC660B003	Performance Series Air Conditioner with Puron Refrigerant 5 Tons Cooling 16 SEER @ ARI Conditions	1
Accessories		
KSALA0301410	Low-Ambient Pressure Switch for Outdoor Unit	1
KAAWS0101AAA	Winter Start Control for Outdoor Unit	1
KSAHS1701AAA	Start Assist - Capacitor and Relay for Outdoor Unit	1
Indoor Coil		
FV4CNB006L00	FV4C Performance Series Fan Coil 208/230-1-60 Modular with 1-in. super thick insulation Aluminum	1
MB-GP20CB-D2EH	Micro-Metl Enthalpy Economizer w/Honeywell Controller	1

The Product and Ratings Data in this program is subject to change at any time and without notice. Please refer to the latest product literature and the AHRI directory at www.ahridirectory.org for the most up-to-date information.

Performance Summary For AHU-2 - CU-2

Project: Maderia HS GYM
Prepared By: Jeff Gries

07/12/2022

System Performance

System: **24ACC/FV4C**
System Quantity: **1**
Altitude: **0.0** ft
Linear Pipe Length: **50.0** ft
SEER @ ARI Conditions: **16.0**
EER @ ARI Conditions: **13.0**

Actual Clg Airflow: **2000.0** CFM
Standard Clg Airflow: **2000.0** CFM
Total Net Clg Capacity: **58.06** MBH
Net Sensible Clg Capacity: **44.75** MBH
Total System Power: **4.47** kW

System Parameters

Outdoor Unit Parameters

Unit Model: **24ACC660B003**
Unit Size (Nominal): **5 Tons (Size 60)**
Voltage: **208/230-1-60** V-Ph-Hz
Clg Ent Air DB Ambient: **95.0** °F

Indoor Coil Parameters

Unit Model: **FV4CNB006L00**
Unit Size (Nominal): **Size 006 (30 - 60,000 Btuh)**
Voltage: **208-1-60** V-Ph-Hz
Ent Air DB: **80.00** °F
Ent Air WB: **67.00** °F
Ent Enthalpy: **31.44** BTU/lb
Lvg Air DB: **59.28** °F
Lvg Air WB: **57.93** °F
Lvg Enthalpy: **24.99** BTU/lb
Heating Size (Nominal): **No Heat**
Total External Static Pressure: **0.50** in wg
Clg Coil Note: *****Airflow adjusted to high (400 cfm/ton).**

Electrical Data

Outdoor Electrical Data

Unit Voltage: **208/230-1-60** V-Ph-Hz
Fan Motor FLA: **1.20** Amps
MCA: **32.4** Amps
Max Fuse: **50** Amps
Operating Range Min: **197** V
Operating Range Max: **253** V
Compressor RLA: **23.7** Amps
Compressor LRA: **152.5** Amps

Indoor Electrical Data:

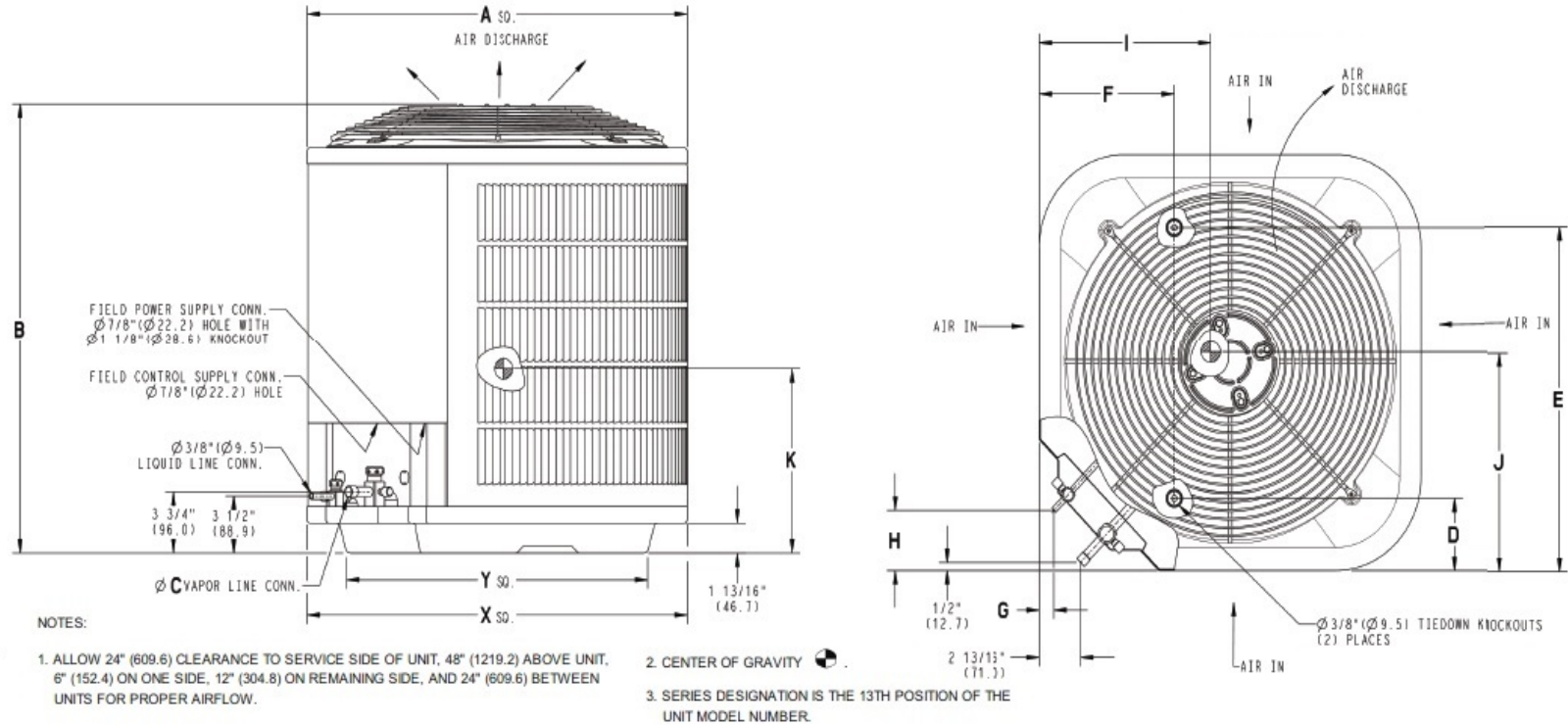
(For units with no factory installed electric heaters)
Unit Voltage: **208-1-60** V-Ph-Hz
Unit FLA: **6.8** Amps
Unit MCA: **8.5** Amps
Unit MOCP: **15.0** Amps
Unit Min Wire Size: **14.0**
Unit Fuse/Ckt Bkr Amps: **15.0** Amps
Motor HP: **3/4** HP
Notice: Indoor Elect. data is for 208-1-60 voltage

The Product and Ratings Data in this program is subject to change at any time and without notice. Please refer to the latest product literature and the AHRI directory at www.ahridirectory.org for the most up-to-date information.

Certified Drawing For AHU-2 - CU-2

Project: Maderia HS GYM
Prepared By: Jeff Gries

07/12/2022



Outdoor Model

Unit Model: **24ACC**
 Unit Size: **5 Tons (Size 60)**
 Voltage: **208/230-1-60** V-Ph-Hz
 SEER: **16**
 PartNumber: **24ACC660B003**

Shipping Dimensions and Weights	Outdoor Unit
Height	50.19 in
Width	37.13 in
Length	37.13 in
Operating Weight	337. lb
Shipping Weight	372. lb

Dimensions										
A	B	C	D	E	F	G	H	I	J	K
35.00 in	45.69 in	0.88 in	6.56 in	28.44 in	9.13 in	0.31 in	3.00 in	17.88 in	18.63 in	20.25 in

The Product and Ratings Data in this program is subject to change at any time and without notice. Please refer to the latest product literature and the AHRI directory at www.ahrirectory.org for the most up-to-date information.

Certified Drawing For AHU-2 - CU-2

Project: Maderia HS GYM
Prepared By: Jeff Gries

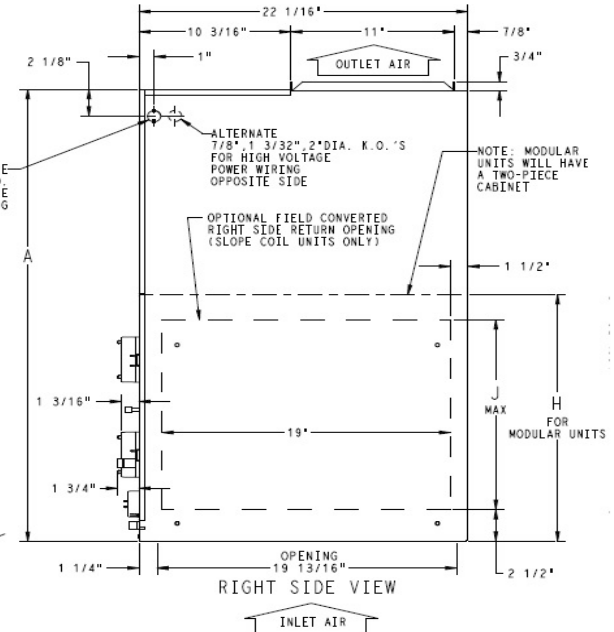
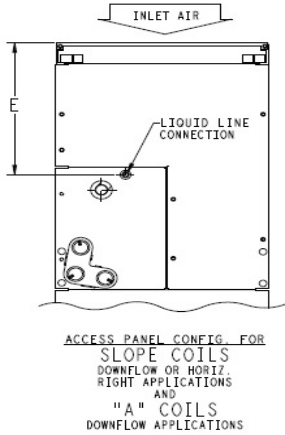
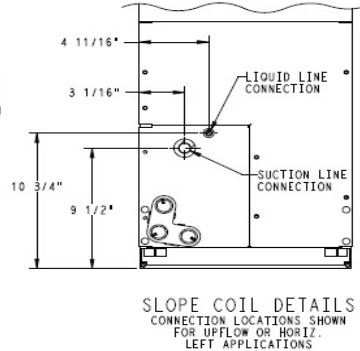
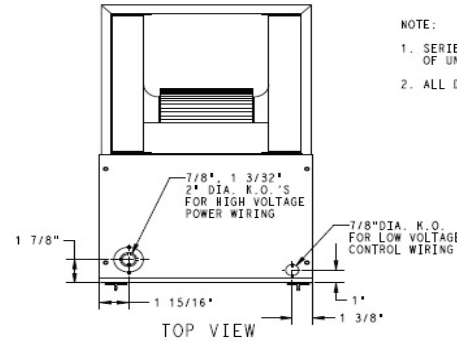
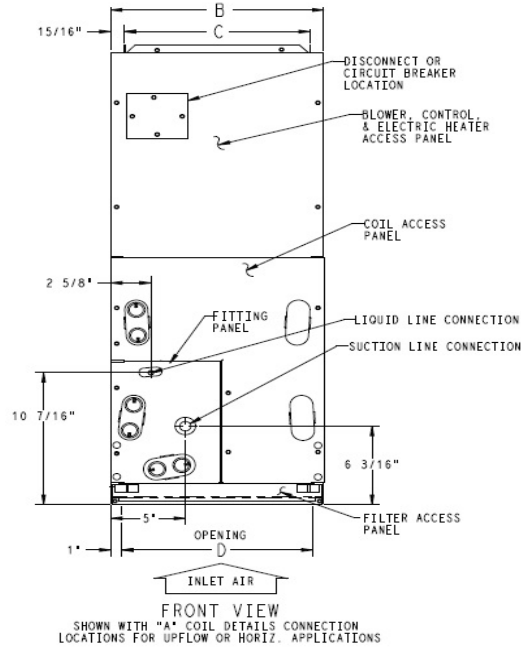
07/12/2022

UNIT CONNECTION SIZES

SUCTION: 018 & 024 - 5/8" I.D. SWEAT
030 & 036 - 3/4" I.D. SWEAT
042 THRU 060 - 7/8" I.D. SWEAT
LIQUID: 3/8" I.D. SWEAT
CONDENSATE: 3/4" FPT

- NOTE:
- SERIES DESIGNATION IS THE 14TH POSITION OF UNIT PRODUCT NUMBER
 - ALL DIMENSIONS ARE IN "INCHES" UNLESS NOTED.

NOTE: ALLOW 21" FROM FRONT FOR SERVICE



Indoor Coil

Unit Model: **FV4C**
Unit Size: **Size 006 (30 - 60,000 Btuh)**
Voltage: **208-1-60** V-Ph-Hz
Cabinet Insulation: **Modular with 1-in. super thick insulation**
PartNumber: **FV4CNB006L00**

Dimensions and Weights	Indoor Coil
Height	59.19 in
Width	24.69 in
Length	22.06 in
Shipping Weight	207. lb

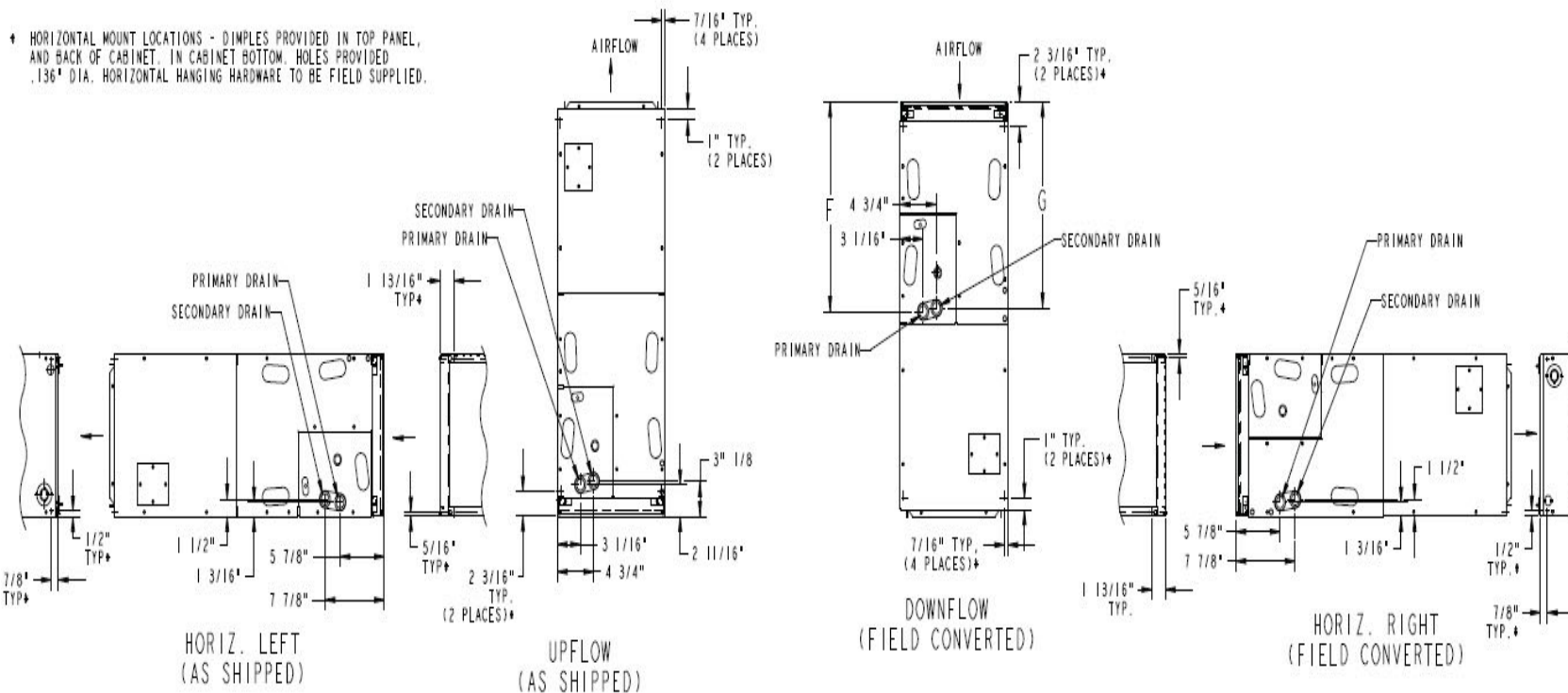
Dimensions									
A	B	C	D	E	F	G	H	J	
59.19 in	24.69 in	22.75 in	22.69 in	25.25 in	--	--	34.06 in	--	--

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Certified Drawing For AHU-2 - CU-2

Project: Maderia HS GYM
Prepared By: Jeff Gries

07/12/2022



A-COIL

Indoor Coil

Unit Model:..... **FV4C**
 Unit Size:..... **Size 006 (30 - 60,000 Btuh)**
 Voltage:..... **208-1-60** V-Ph-Hz
 PartNumber:..... **FV4CNB006L00**

The Product and Ratings Data in this program is subject to change at any time and without notice. Please refer to the latest product literature and the AHRI directory at www.ahrirectory.org for the most up-to-date information.



Date:
RTU:

Weight: 72lbs (US) 32.66kg (Metric)

Part Number: MB-GP20CB-D2EH

Submitted to:

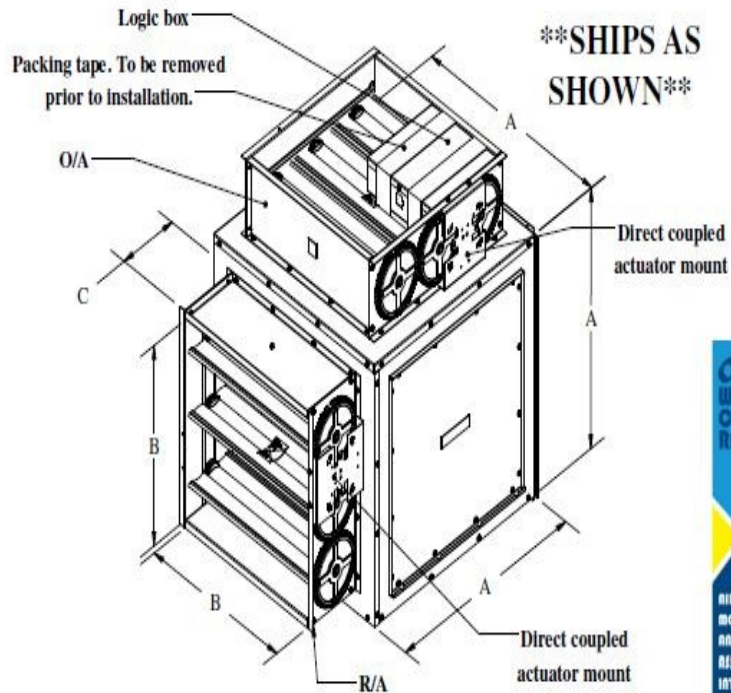
Approved by:

Notes:

Mixing Box - CUBE - 1500-2000 CFM , Ultra Low Leak Genesis Fault Detection & Diagnostic Controls - Honeywell Jade W7220 Controller, Enthalpy Sensor, Honeywell Actuator, Galvanized Metal With Gears Comprised of Polybutylene Terephthalate (PBT) Flame Retardant 30% Glass Filled , Barometric Relief NOT Included. Field Fabrication of a Transition May Be Required. Dampers are convertible and can be relocated to the desired

FEATURES:

- External gear driven dampers with roll formed blades.
- Mixing boxes are galvanized and not painted.
- Fully configurable dampers, any location can be outside air or return air.
- Fully internal 1/2" foil faced insulation.
- Barometric relief not supplied standard but required for CA, Title 24. Ordered separately.
 - MB-GP10CB uses (1) RH-GPRSMCA
 - MB-GP20CB uses (2) RH-GPRMDCA
- Motorized relief not supplied standard but may be required. Ordered separately.
 - MB-GP10CB uses (1) RH-GPRSMCA-Mx
 - MB-GP20CB uses (1) RH-GPRMDCA-Mx
- All harnesses and plugs needed are supplied.
- Economizer is class IA & AMCA certified.
- Relief blades are AMCA certified.
- Logic box not supplied with Actuator only control types.



A	B-I.D.
23.50	18.00

CFM	500	1000	1500	2000
	0.028	0.070	0.125	0.240

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Master Revision: 0002A

Page Revision: 0002A

**24ACC6
Performance™ 16 Air Conditioner
with Puron® Refrigerant
1-1/2 to 5 Tons**



Product Data



Carrier's Air Conditioners with Puron® refrigerant provide a collection of features unmatched by any other family of equipment. The 24ACC has been designed utilizing Carrier's Puron refrigerant. The environmentally sound refrigerant allows you to make a responsible decision in the protection of the earth's ozone layer.

This product has been designed and manufactured to meet Energy Star® criteria for energy efficiency when matched with appropriate coil components. Refer to the combination ratings in the Product Data for system combinations that meet Energy Star® guidelines.

NOTE: Ratings contained in this document are subject to change at any time. Always refer to the AHRI directory (www.ahridirectory.org) for the most up-to-date ratings information.

INDUSTRY LEADING FEATURES / BENEFITS

Efficiency

- 14 - 16.5 SEER / 11.5 - 13.5 EER
- Microtube Technology™ refrigeration system
- Indoor air quality accessories available

Sound

- Sound level as low as 72 dBA
- Compressor sound blanket standard

Comfort

- System supports Edge® Thermidistat™ or standard thermostat controls

Reliability

- Puron® refrigerant - environmentally sound, won't deplete the ozone layer and low lifetime service cost.
- Scroll compressor
- Internal pressure relief valve
- Internal thermal overload
- Filter drier
- High and low pressure switches
- Balanced refrigeration system for maximum reliability

Durability

WeatherArmor™ protection package:

- Solid, durable sheet metal construction
- Louvered coil guard
- Baked-on, complete outer coverage, powder paint

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 Longline Guide for more information.)
- Low ambient (down to -20°F/-28.9°C) with accessory kit

Product Data

PREMIUM ENVIRONMENTALLY RESPONSIBLE FAN COIL

The FV4C is the premium air handler combining the proven technology of Carrier fan coils with environmentally balanced Puron® refrigerant. The FV4C achieves an operational advantage when the ECM (Electronically Commutated Motor) is combined with a Carrier Performance™ heat pump with Puron® refrigerant.

With attention to quiet, efficient, and comfortable operation, Carrier has developed a new benchmark for superior indoor comfort and control.

Carrier's heat pump and air conditioning systems now feature Puron® refrigerant (R-410A), the chlorine-free refrigerant that is the future for the residential heating and cooling industry. The FV4C using Puron® refrigerant maximizes performance for environmentally balanced systems. In addition to environmental safety, these systems are 30 to 40% more efficient than standard heating and cooling systems, thereby combining excellence in efficiency and environmental responsibility.

The FV4C provides these benefits due to Carrier's command of ECM technology. These motors are extremely efficient at all speeds, and enable the FV4C to operate at the correct speed to deliver airflow precisely, ensuring proper performance across a wide range of duct static pressures. This adaptive efficiency also makes installation quality easier to achieve for today's demanding homeowner.

Carrier's command of ECM technology may be most evident in the comfort advantages that ECM can deliver. Operation set up steps on the Easy Select™ Board provide the installing technician with alternatives to maximize comfort and efficiency. For true indoor comfort, the homeowner can achieve command of both temperature and humidity in cooling and heating modes.

Another feature which sets the FV4C apart is the factory-installed TXV, which enhances efficiency and provides compressor protecting operation at all recommended conditions. Grooved tubing, louvered aluminum fins, and the large face areas of the FV4C refrigerant coils also provide superior efficiency, for high SEER and HSPF performance. Carrier leads the way in condensate control, a hallmark of these multipoise fan coils. All of these featured components are protected within a rugged, prepainted metal cabinet lined with super thick, high density insulation. For neat, high quality installations the unit exterior features sweat refrigerant connections for simple leak free performance, and multiple electrical entry for both high and low voltage service.

The design of these fan coils meet cabinet air leakage of less than 2% at 0.5 inches W.C., and cabinet air leakage less than 1.4% at 0.5 inches W.C. when tested in accordance with ASHRAE 193 standard.

