Bernhard Cx Group

Bernhard

Commissioning Review of Submittal Data for Construction

This submittal has been reviewed by the Commissioning Provider for general conformance related to the commissioning requirements in the contract documents and Owner's Project Requirements document. This review is not intended to verify overall equipment compliance of the design intent and no design direction shall be inferred or implied.
The Designer of Record shall verify overall compliance of the design intent according to the contract documents.

[X] Reviewed with Comments

12/10/24

[ ] Reviewed with No Comments

Commissioning Review Comments are enclosed.

CLARK & ENERSEN: SEE ALL COMMENTS WITHIN.

1. UPDATE PERFORMANCE OF ALL COMPONENTS TO 300' ELEVATION

PROVIDE FACTORY MOUNTED ISOLATION DAMPERS ON DISCHARGE OF AH-2, AND BOTH INLET AND DISCHARGE OF AH-5A/5B

2. PROVIDE 0.035" TUBES ON ALL HEAT RECOVERY COILS

3. INLCUDE DIRTY APD LISTED ON FILTER SECTION IN TOTAL STATIC PRESSURE OF UNITS AND SIZE FANS ACCORDINGLY.

4. CONFIRM UV LIGHTS INCLUDED HAVE FUNCTIONALITY OF DETAIL 3/M6.01.

5. PROVIDE MINIMUM 9.12" TSP ON AH-2 PER SCHEDULE.

6. PROVIDE MINIMUM 8.55" TSP ON AH-5A/5B PER SCHEDULE.

7. PROVIDE PIPING AND COIL CONNECTIONS ON OPPOSITE SIDES FOR AH-5A VS AH-5B PER PLANS.

8. PROVIDE RECOMMENED DOOR SWINGS AS NOTED WITHIN,

9. CONFIRMING WITH OWNER IF 93% REDUNDANCY IS ACCEPTABLE FOR AH-2 SUPPLY FANS. WHAT OPTIONS ARE THERE TO ACHIEVE FULL N+1 WITH THE MOTORS?

[ ] REVIEWED [ ] REVIEWED AND NOTED

[X] REVISE AND RESUBMIT [ ] REJECTED

Corrections or comments made on the shop drawings during this review do not relieve contractor from compliance with requirements of the drawings and specifications. This check is only for review of general conformance with design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for confirming and correlating all quantities and dimensions; selecting fabrication process and techniques of construction; coordinating their work with that of all other trades; and performing their work in a safe and satisfactory manner.

CLARK & ENERSEN

By csharp Date 01/08/2025

CDI CONTRACTORS

CDI Contractors, LLC
3000 Cantrell Road
Little Rock, Arkansas 72202
501 / 666-4300

Transmittal

No 2024.11.25-4

PROJECT: UAMS- CAMID

DATE: Nov 25, 2024

To: UAMS
4301 W MARKHAM ST. SLOT 545
LITTLE ROCK AR 72205
US

RE: 23 73 13 - Air Handling Units

ATTN: TAMARA BARRON

JOB: 240147

WE ARE SENDING:		SUBMITTED FOR:		ACTION TAKEN:	
☐	Shop Drawings	☑	Approval	☐	Approved as Submitted
☐	Letter	☐	Your Use	☐	Approved as Noted
☐	Prints	☐	As Requested	☐	Returned After Loan
☐	Change Order	☐	Review and Comment	☐	Resubmit
☐	Plans			☐	Submit
☐	Samples	SENT VIA:		☐	Returned
☐	Specifications	☐	Attached ☐ Separate Cover	☐	Returned for Corrections
☐	Other:			☑	Due Dec 09, 2024
☑	Submittal:			☐	Other:

Line	Item	Package	Code	Rev.	QTY	Date	Description	Status
1	Submittal		237313-02	1		Nov 25, 2024	PD:AHU - 5A	Submitted
2	Submittal		237313-01	1		Nov 25, 2024	PD:AH - 2	Submitted
3	Submittal		237313-03	1		Nov 25, 2024	PD:AHU - 5B	Submitted

REMARKS:

CC:

CLARK & ENERSEN, Mark Huettner

Signed: _____
MATTHEW HUGHES

CDI CONTRACTORS, LLC

☑ **APPROVED AS NOTED** ☐ **REJECTED**
☐ **APPROVED** ☐ **REVISE**

BY hughem **DATE** 11/25/2024

SUBMITTAL# 237313-02 **SPEC** 237313

This submittal has been reviewed for compliance with the contract documents. Approval does not relieve the subcontractor/supplier of the responsibility for conformance to the quality standards as set forth in the contract document, nor does it relieve the responsibility for field verification of all conditions relating to this contract.

Quality People. Building Solutions.

Comfort Systems USA (Arkansas), Inc.
P.O. Box 16620
Little Rock, AR 72231
Phone 501-834-3320
Fax 501-834-5416

Date: 11/20/2024
Return Request: 11/30/2024
Project: UAMS (CAMID)
Supplier: Harrison Energy
Manufacturer: Daikin
Submittal: Air Handling Units
Submittal Number: 23 73 13-01
Drawing # and Installation: Mechanical Drawings

ARCHITECT
Clark Kenersen
2020 Baltimore Avenue, Suite 300
Kansas City, MO 64108
816-474-8237

ENGINEER
Clark Kenersen
2020 Baltimore Avenue, Suite 300
Kansas City, MO 64108
816-474-8237

GENERAL CONTRACTOR
CDI Contractirs
3000 Cantrell Rd.
Little Rock, AR 72202
501-666-4300

MECHANICAL SUBCONTRACTOR
Comfort Systems USA (Arkansas), Inc.
9924 Landers Rd.
N. Little Rock, AR 72117
501-834-3320

Notes:

CSUSA PROJECT NO.
22-6069
sean@comfortar.com

Submittal

Harrison
Energy Partners

Prepared For:
Clark & Enerson

Date:
November 1, 2024

Sold To:
Comfort Systems USA

Job Name:
UAMS CAMID

Harrison Energy Partners is pleased to provide the enclosed submittal for your review and approval.

Qty.	Product Summary
2	Daikin Air Handling Units

Josh Robinson | Sales Engineer
Harrison Energy Partners
1501 Westpark Drive, Suite 9
Little Rock, AR 72204-2457
Ph. 501-539-0633

The attached information describes the equipment we propose to furnish for this project, and is submitted for your approval.

Indoor Air Handling Units

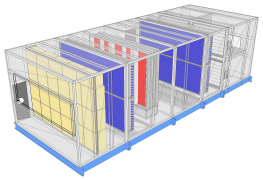
Tag	Qty.	Description	Model Number
AHU-2	1	Indoor Air Handling Unit	Daikin CAH064
AHU-5	1	Indoor Air Handling Unit	Daikin CAH011

- Double wall construction with 2” R13 insulation
- ASHRAE leakage class 6
- Access sections with view ports and lights as required
- Stainless steel drain pans in humidifier and cooling coil sections
- 8” base rail
- Galvanized steel interior liners
- Combination filter section
- Heat recovery coil section
- Steam IFB coil section
- Humidifier section
- Chilled water coil section with UV lights
- Supply fan section
    - NOTE: AHU-5 is selected as a stacked unit. Software limitations only allow us to select one section with a supply fan, therefore one of the supply fan sections is labeled “return/exhaust.” Both fan sections in this unit will be utilized as supply fans.

SUBMITTAL DATA

Job Name	UAMS CAMID
For	
Sold To	
Prepared For	
Customer PO#	
Prepared By	Jake Skinner
Date	11/1/2024

Job Information	Technical Data Sheet
Job Name	UAMS CAMID
Date	November 01 2024
Submitted By	JS
Software Version	13.43
Unit Tag	AHU-2



LENGTH IS TOO LONG FOR END DUCT CONNECTION. CAN LARGE DISCHARGE PLENUM BE ADDED AND FIELD CUT TO EITHER TOP OR END DUCT CONNECTION?

Unit Overview

Model Number	Supply					
	Air Volume cfm	Static Pressure		External Dimensions		
		External inWc	Total inWc	Height in	Width in	Length in
CAH064GDHM	26000	4.25	8.35	92*	124*	334

**Not including base rails, coil connectors, drain connectors and control boxes.*

Unit

Model Number:	CAH064GDHM		
Approval:	ETL Listed / ETL Listed to Canadian Safety Standards (ETL Label / ETLc Label)		
Construction:	High pressure low leakage construction		
Outer Panel:	24 gauge G90 Galvanized Steel (unpainted)		
Liner:	24 gauge Galvanized Steel (unless noted per section)		
Insulation:	R-13 Injected Foam		
Unit Configuration:	Inline horizontal	**Drive (Handling) Location:**	Left
Base:	8" formed channel	**Wall Thickness:**	2 in
Altitude:	0 ft	**Parts Warranty:**	Standard One Year

SELECT AT 300'

Plenum Section	Component: 1	Length: 22 in	Shipping Section: 1

Air Pressure Drop

0.06 inWc

Custom Openings

Custom Opening	Location	Width	Height	Rainhood w/Screen
1	End	108 in	34 in	None

Door

Location	Width	Opening	Window Type	Light
Drive side	18 in	Outward	Round	LED marine light kit and switch only

Clarify if inlet isolation damper is provide/installed with unit or by others.

Combination Filter

Component: 2 | Length: 22 in | Shipping Section: 1

Access	Face Velocity	Face Area	Air Volume
Side	393 ft/min	66.2 ft²	26000 cfm

Portion	Type	Efficiency	Air Pressure Drop				Number of Filters	Height	Width	Depth
			Clean Air	Mean Air	Dirty Air	User Spec				
Pre-Filter	Pleated	MERV 8	0.17 inWc	**0.58** inWc	1.00 inWc	N/A	18	24 in	20 in	2 in
							5	12 in	24 in	2 in
Filter	Varicel VXL cartridge	MERV 15	0.27 inWc	**1.13** inWc	2.00 inWc	N/A	18	24 in	20 in	12 in
							5	12 in	24 in	12 in

Door

Location	Width	Opening
Drive side	18 in	Outward

Special Options

Sound Baffle	Filter Gauge
(As casing details)	Magnehelic 0-5"

Access Section

Component: 3 | Length: 22 in | Shipping Section: 1

Air Pressure Drop

0.00 inWc

Door

Location	Width	Opening	Window Type	Light
Drive side	18 in	Outward	Round	LED marine light kit and switch only

Chilled Water Coil

Component: 4 | Length: 42 in | Shipping Section: 2

Coil Model	Total Capacity	Sensible Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)
5WL1208B	356299 Btu/hr	356299 Btu/hr	2	8	12	0.625 in	1.50 in x 1.299 in

Air Volume	Air Temperature				Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering		Leaving						
	Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb					
26000 cfm	99.6 °F	77.2 °F	87.1 °F	73.8 °F	0.69 inWc	39 in	111 in	60.12 ft²	432 ft/min

Fluid		Flow Rate	Pressure Drop	Velocity	Volume	Weight
Entering	Leaving					
82.9 °F	95.4 °F	60.00 gpm	8.60 ftHd	1.70 ft/s	61.0 gal	514.00 lb

Connection [Data Per Coil]				Glycol Type	Min. Fin Surface Temp.	Min. Tube Wall Surface Temp.	Fouling Factor
Type	Size	Location	Material				
Threaded	2.50 in	Drive side	Carbon steel	Propylene (30%)	82.9 °F	82.9 °F	0.000

Material				Drain Pan	Drain Side	Turbospiral
Fin	Tube	Header	Case			
Aluminum .0075 in	Copper .020 in	Copper	Galv. steel	Stainless steel	Drive side	Yes

Schedules specify 0.035"

AHRI 410 Certification

Coil is NOT certified by AHRI

Door

Location	Width	Opening	Window Type	Light
Drive side	20 in	Outward	Round	LED marine light kit and switch only

IFB Steam Coil	Component: 5	Length: 36 in	Shipping Section: 2

Coil Model	Total Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)
AMX12CE103.469.01	1546300 Btu/hr	1	1	12	0.625 in	1.50 in x 1.299 in

Air Volume	Air Temperature		Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering Dry Bulb	Leaving Dry Bulb					
26000 cfm	17.6 °F	72.7 °F	0.15 inWc	69 in	99 in	47.63 ft²	548 ft/min

Fluid		Max. Superheat Temp. in Steam Coil Inlet
Steam Pressure	Condensate Load	
15.00 psig	1620.58 lb/hr	30.0 °F

Connection [Data Per Coil]				
Type	Steam Size	Condensate Size	Location	Material
Threaded	3.00 in	2.50 in	Drive side	Carbon steel

Material			
Fin	Tube	Header	Case
Copper .012 in	Copper .035 in	Carbon Steel	Galv. steel

Access Section	Component: 6	Length: 24 in	Shipping Section: 3

Air Pressure Drop
0.00 inWc

Door			
Location	Width	Opening	Light
Drive side	20 in	Outward	LED marine light kit with GFI outlet

Future Chilled Water Coil	Component: 7	Length: 38 in	Shipping Section: 3

Number of Coils	Number of Rows
2	2

Coil Air Pressure Drop	Finned Height	Finned Width	Face Area	Face Velocity
0.20 inWc	39 in	111 in	60.12 ft²	432 ft/min

Connection Location	Connection Material
Drive side	Carbon steel

Coil Model	Drain Pan	Drain Pan Side
Future Coil (Not Supplied)	Stainless steel	Drive side

AHRI 410 Certification
Coil is NOT certified by AHRI

Door			
Location	Width	Opening	Light
Drive side	22 in	Outward	LED marine light kit with GFI outlet

Humidifier Section. Humidifier manifold to be factory installed. Performance data is located at the end of this submittal

Confirm UVC light control panel furnished with unit meets the requirements in drawing detail.

Chilled Water Coil

Component: 8 | Length: 48 in | Shipping Section: 4

Coil Model	Total Capacity	Sensible Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)
5WD0812B	2244626 Btu/hr	1352153 Btu/hr	2	12	8	0.625 in	1.50 in x 1.299 in

Air Volume	Air Temperature				Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering		Leaving						
	Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb					
26000 cfm	99.6 °F	77.2 °F	52.0 °F	51.8 °F	1.03 inWc	39 in	111 in	60.12 ft²	432 ft/min

Water		Flow Rate	Pressure Drop	Velocity	Volume	Weight
Entering	Leaving					
45.0 °F	59.2 °F	315.70 gpm	14.30 ftHd	3.30 ft/s	92.0 gal	768.00 lb

Connection [Data Per Coil]				Min. Fin Surface Temp.	Min. Tube Wall Surface Temp.	Fouling Factor
Type	Size	Location	Material			
Threaded	2.50 in	Drive side	Carbon steel	45.0 °F	45.0 °F	0.000

Material				Drain Pan	Drain Side
Fin	Tube	Header	Case		
Aluminum .0075 in	Copper .020 in	Copper	Galv. steel	Stainless steel	Drive side

AHRI 410 Certification

Certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at www.ahridirectory.org

OPR requires N+1 which is usually 100% redundancy. Confirm with owner if 93.4% redundancy is acceptable.

Door

Location	Width	Opening	Window Type	Light
Drive side	20 in	Outward	Round	UVC Lights

Supply Fan Array

Component: 10 | Length: 42 in | Shipping Section: 5

Fan Performance

Air Volume*	Static Pressure			Fan Energy Index(FEI)	Total Input Power	Fan Shaft Power*	Speed		Redundancy(N-1)	Fan Circuit	
	External	Total	Cabinet				Operating	Maximum		MOP	MCA
6500 cfm	4.25 inWc	8.35 inWc	0.01 inWc	1.25	41.7 kW	12.68 BHP	3065 rpm	3650 rpm	93.4 %	90.00 A	74.38 A

TSP is more than 0.75" less than design. Clarify is this is acceptable.

Fan Data

Fan Type	Blade Type	Quantity of Fans	Wheel Diameter	Number of Blades	Discharge	Motor Location
SWSI / 2x2	Airfoil / 2	4	18.25 in	12	Axial	Behind Fan

Motor Data

Power	Electrical Supply	Speed	Efficiency	Enclosure	Frame Size	Supplier	Number of Poles	Lock Rotor Current*	Full Load Current*
15.0 HP	460/60/3 V/Hz/Phase	3500 rpm	Premium	ODP	215 T frame	Generic	2	111.01 A	17.50 A

Fan Options

Isolation Backdraft Dampers:	Provided	Block Off Plate:	None
Piezometer Ring:	1 ring per fan	Piezometer Delta P:	16.26
Shaft Grounding Kit:	Provided	Isolator Type:	Spring

VFD/Starter/Disconnect Data

Selection Type:	MMP J-Box	Vendor:	Factory Standard
VFD Power:	15 HP	Voltage:	460 V
Height x Width x Depth:	15.75 in x 11.81 in x 7.90 in	Mounting:	Door Side
Enclosure:	NEMA 1		

Panel

Location	Width	Opening
Removable panels	- in	Outward

Notes

Please clarify VFDs are provided/installed by others.

** after a unit label denotes the data for an individual fan.*

Plenum Section	Component: 11	Length: 24 in	Shipping Section: 5

Recommend inward opening access door on positive pressure sections.

Air Pressure Drop
0.24 inWc

Custom Openings

Custom Opening	Location	Width	Height	Rainhood w/Screen
1	End	80 in	24 in	None

Door

Location	Width	Opening	Window Type	Light
Drive side	20 in	Outward	Round	LED marine light kit and switch only

Special Options

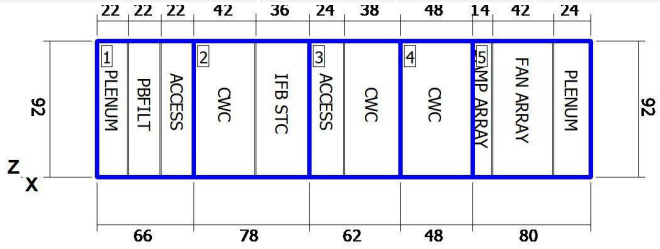
Tread Plate Floor Liner	Sound Baffle
Tread plate installed	(As casing details)

Unit Sound Power (dB)

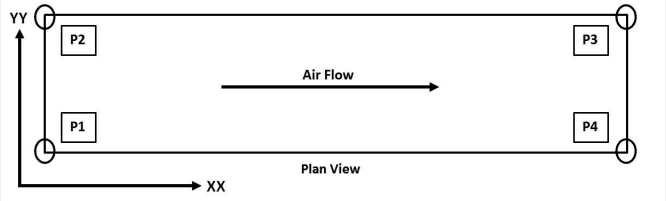
Type	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Radiated:	86	76	73	77	74	66	49	51
Unit Discharge:	91	81	83	92	90	88	81	74
Unit Return:	86	76	73	77	74	66	49	51

Shipping Section Details

Section	Length in	Weight lb	Corner Weights (lb)				Center of Gravity (in)		
			P1	P2	P3	P4	XX	YY	ZZ
1	66	1738	423	423	446	446	34	62	46
2	78	5432	1632	1683	1085	1033	30	63	49
3	62	1395	317	317	381	381	34	62	39
4	48	3885	1296	1360	678	614	16	64	48
5	80	4236	1210	1235	908	883	34	63	45
Entire Unit	**334**	**16686**	**3926**	**4066**	**4450**	**4309**	**175**	**63**	**46**



Elevation View



Plan View

NOTE: Special components aren't included in the corner weights and center of gravity data.

NOTE: Shipping weights listed do not include weight of water (listed in coil section(s) above.

Shipping Protection	Shipping Bag

NOTE: Shipping protection is not meant for long term storage.

NOTE: In some instances a shipping bag cannot be applied. In these circumstances stretch wrap would be supplied.

UPDATE TO DIRTY STATUS. FOR BOTH PRE AND FINAL FILTERS.

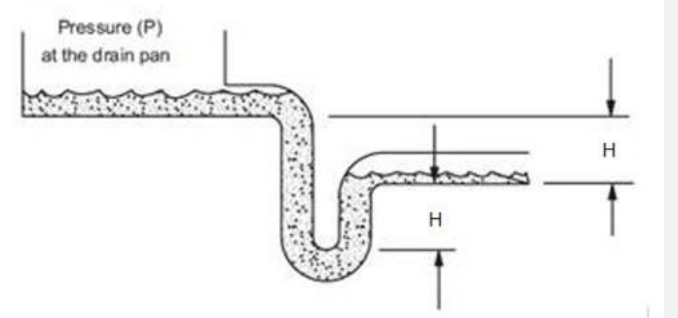
Supply Static Pressure Drop

Component	Option	Static Pressure Drop
Plenum Section	Plenum Section	0.06 insWg
Panel and Cartridge Filter	Panel and Cartridge Filter	1.72 insWg
Access Section	Access Section	
Chilled Water coil	Chilled Water coil	0.69 insWg
Steam Face and Bypass Coil	Steam Face and Bypass Coil	0.15 insWg
Access Section	Access Section	
Chilled Water coil	Chilled Water coil	0.20 insWg
Chilled Water coil	Chilled Water coil	1.03 insWg
Damper	Damper	
Supply Fan	Cabinet	0.01 insWg
Plenum Section	Plenum Section	0.24 insWg
External Static	External Static	4.25 insWg
Total Supply Fan Static		8.35 insWg

PROVIDE MINIMUM 9.12" TSP PER SCHEDULE.

Minimum Recommended Drain Pan Trap Dimensions

Shipping Section	Component	H
2	Chilled Water coil	5.44
3	Chilled Water coil	6.14
4	Chilled Water coil	8.20



Dimensions provided as a courtesy and are recommended minimums only. Daikin is not responsible for supplying or designing drain pan traps and is not responsible for any damage caused by incorrect trap heights. The dimensions listed above should be reviewed and approved by a licensed plumbing professional.

This calculation is based on an assumption that 0.25 inches of the external static pressure is in the return duct and the remainder is in the supply duct. If actual conditions vary from this assumption then contact Applications for new trap height recommendations.

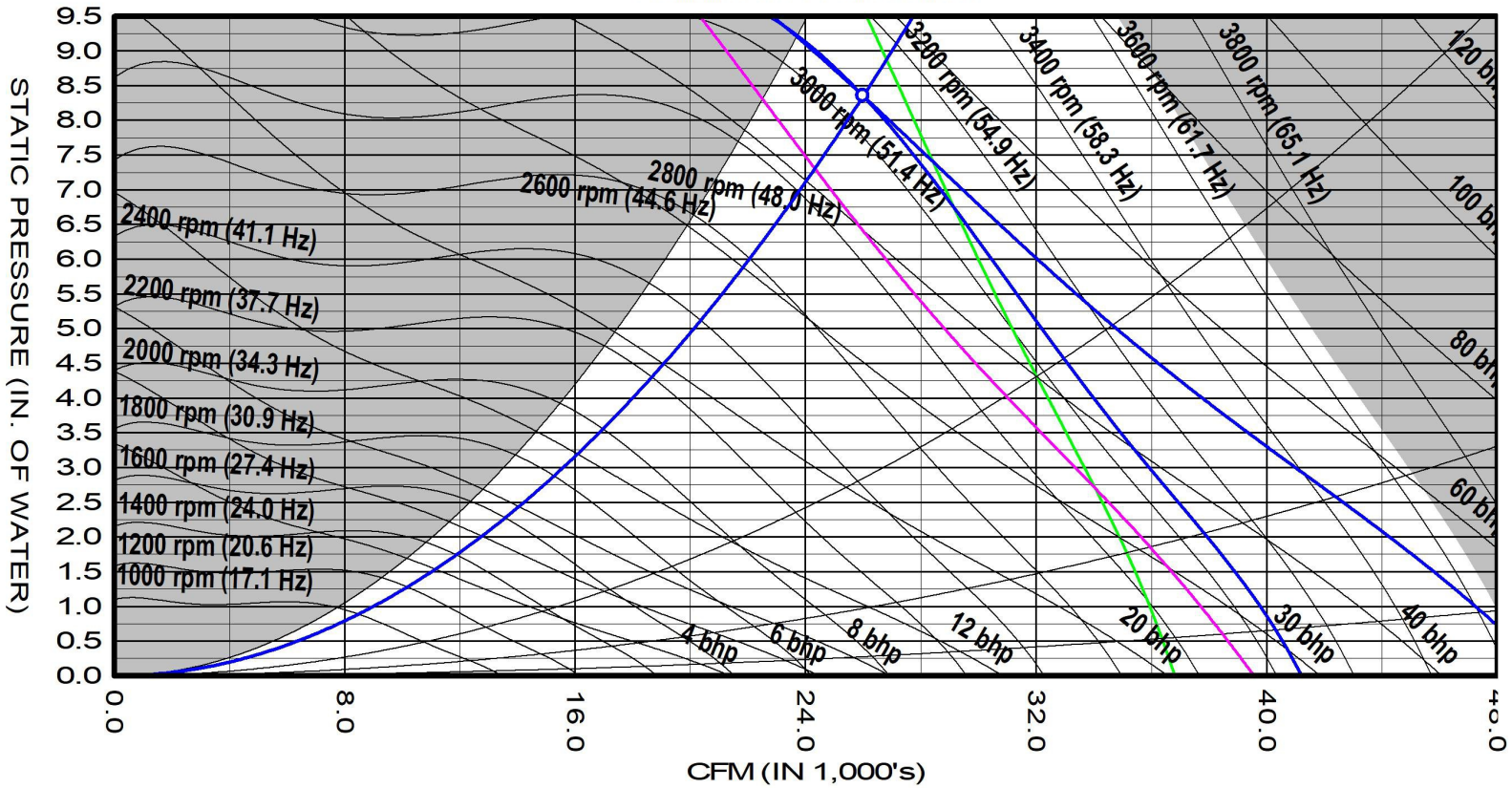
AHRI Certification

Certified by the AHRI Central Station Air-Handling Unit (AHU) Certification Program, which is based on AHRI Standard 430/431. AHRI certified units are subject to rigorous and continuous testing, have performance ratings independently measured and are third-party verified. Certified units may be found in the AHRI Directory at www.ahridirectory.org.

Notes

Important
1. This unit may not meet ASHRAE Standard 90.1 - 2007 fan motor power limitations for the year and system selected. If that code applies, alternate fan selections may be required.
2. The designer and installer must ensure compliance with applicable codes. A component supplier cannot determine the brake horsepower ("BHP") for other motors in the air handling system.
3. Before approving this unit, determine whether ASHRAE Standard 90.1 - 2007 has been adopted in the specific jurisdiction or contract specifications in which the unit will be installed.

Daikin AHU Fan Curve



Green line = fan curve for 3 fan(s) at max speed

Red line = BHP curve for 3 fan(s) at max power of selected motor

AF 18 DD PLENUM 12BL (100% Width) 2x2 Supply Fan at Standard Conditions					
Air volume	26000	cfm	Fan speed	3065	rpm
Total static	8.35	insWg	Max speed	3650	rpm
Fan Shaft Power	50.7	bhp	Efficiency	67.4	%
Approx VFD Setting	52.5	Hz	Motor Speed	3500	rpm
Fan Energy Index(FEI)	1.25		Redundancy	93.4	%
Unit tagging	AHU-2		Date	November-01-2024	
Job name	UAMS CAMID		Time	07:13	

Supply fan performance is certified in accordance with the Central Station Air-Handling Unit Certification Program, which is based on AHRI Standard 430.

B0BKVU

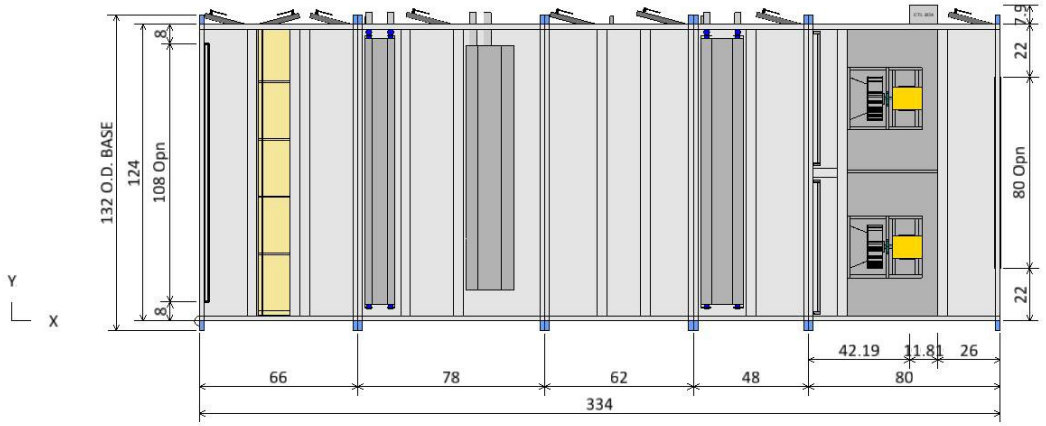
UAMS CAMID

11

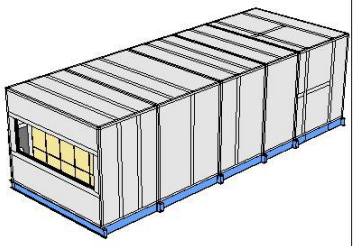
11/1/2024

AHU-2

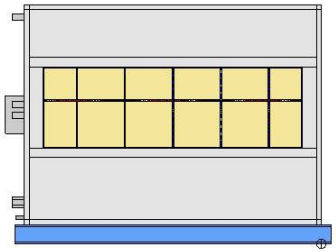
Drawing



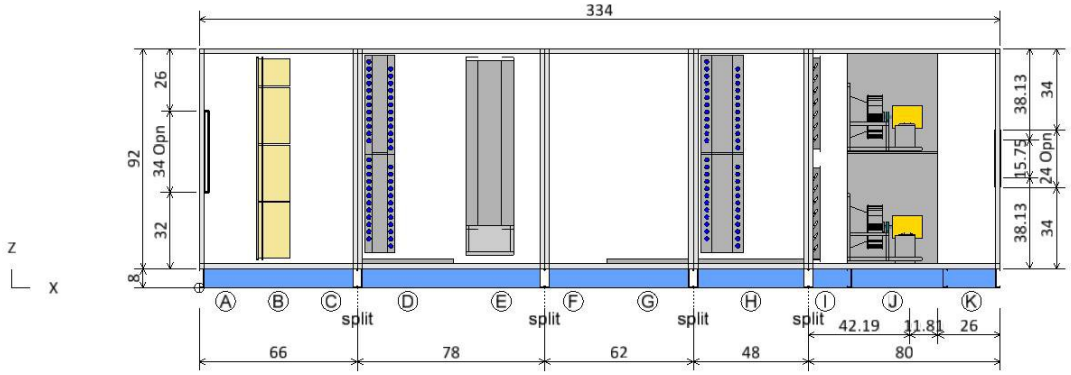
PLAN VIEW



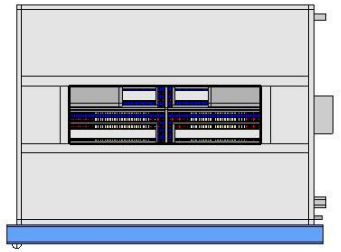
ISOMETRIC VIEW



FRONT END VIEW



ELEVATION VIEW



REAR END VIEW

Plan/Elevation	Unit Tag: AHU-2			Sales Office: Harrison Energy Partners		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH064GDHM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

DAIKIN

13600 Industrial Park Blvd, Minneapolis, MN 55441

www.DaikinApplied.com Software Version: 13.43

All opening dimensions have a 1" mounting flange along the inner edge. The actual airflow area of the opening is 2" smaller in each dimension.

B0BKVU

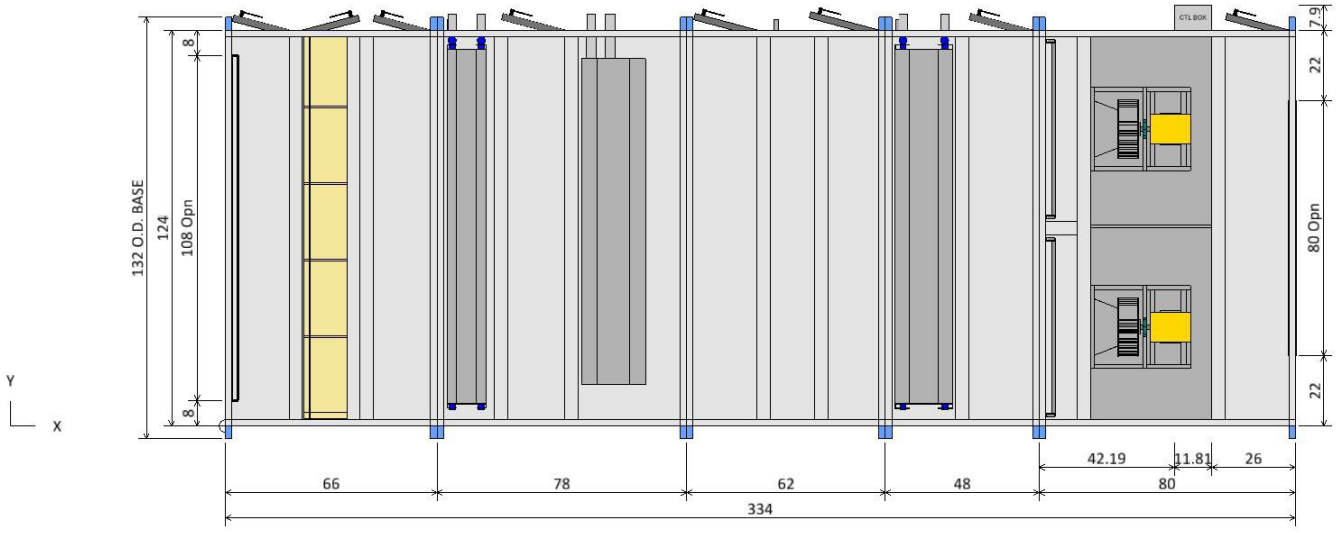
UAMS CAMID

12

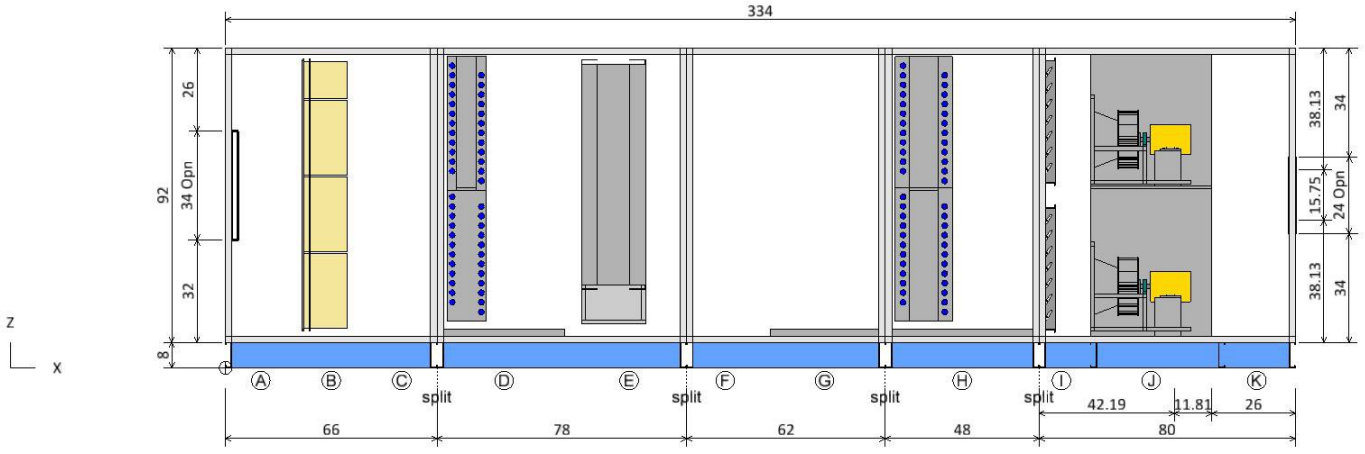
11/1/2024

AHU-2

Drawing



PLAN VIEW



ELEVATION VIEW

Component Key		
Ⓐ	Plenum Section Left Door (WxH):	 18 ins x 48 ins
Ⓑ	Panel and Cartridge Filter Pre Filter Type: Cartridge Filter Type: Left Door (WxH):	 Pleated (MERV 8) Varicel VXL 18 ins x 88 ins
Ⓒ	Access Section Left Door (WxH):	 18 ins x 68 ins
Ⓓ	Chilled Water coil Coil Model: Total Capacity: Left Door (WxH):	 5WL1208B 356299.0 Btu/hr 20 ins x 68 ins
Ⓔ	Steam Face and Bypass Coil Total Capacity:	 1546300.0 Btu/hr
Ⓕ	Access Section Left Door (WxH):	 20 ins x 68 ins
Ⓖ	Chilled Water coil Coil Model: Total Capacity: Left Door (WxH):	 5WH0002C 0.0 Btu/hr 22 ins x 68 ins
Ⓗ	Chilled Water coil Coil Model: Total Capacity: Left Door (WxH):	 5WD0812B 2244626.0 Btu/hr 20 ins x 68 ins
Ⓘ	Damper	
Ⓙ	Supply Fan Fan Type: Fan Size (Class): Air Flowrate: T.S.P: Motor Power:	 Centrifugal - Plenum 18 (2) 6500.0 cfm 8.3 insWg 15.0 HP
Ⓚ	Plenum Section Left Door (WxH):	 20 ins x 48 ins

Plan/Elevation - No Ends	Unit Tag: AHU-2			Sales Office: Harrison Energy Partners		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH064GDHM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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www.DaikinApplied.com Software Version: 13.43

All opening dimensions have a 1" mounting flange along the inner edge. The actual airflow area of the opening is 2" smaller in each dimension.

B0BKVU

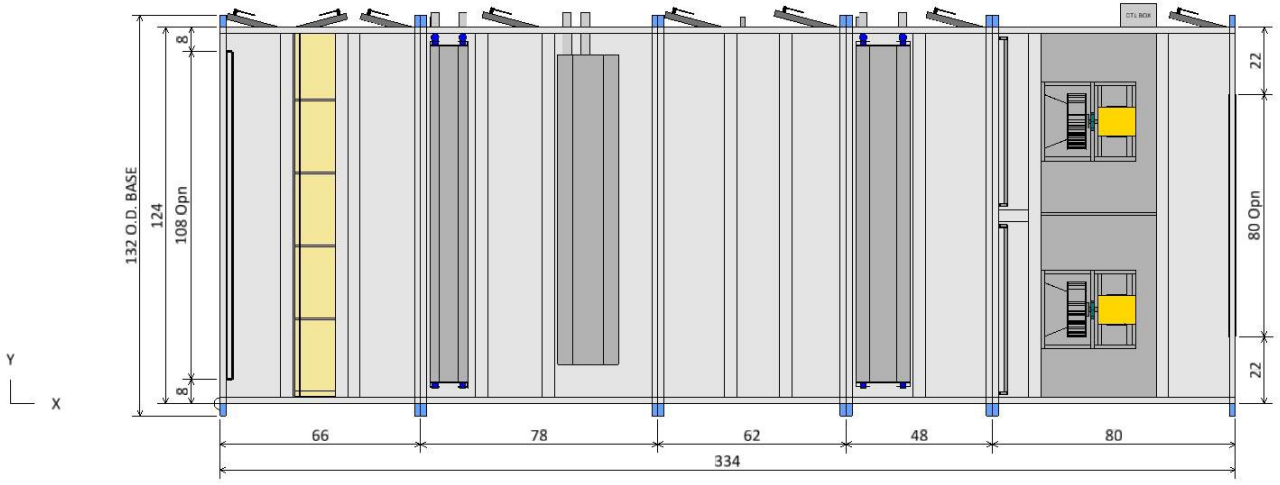
UAMS CAMID

13

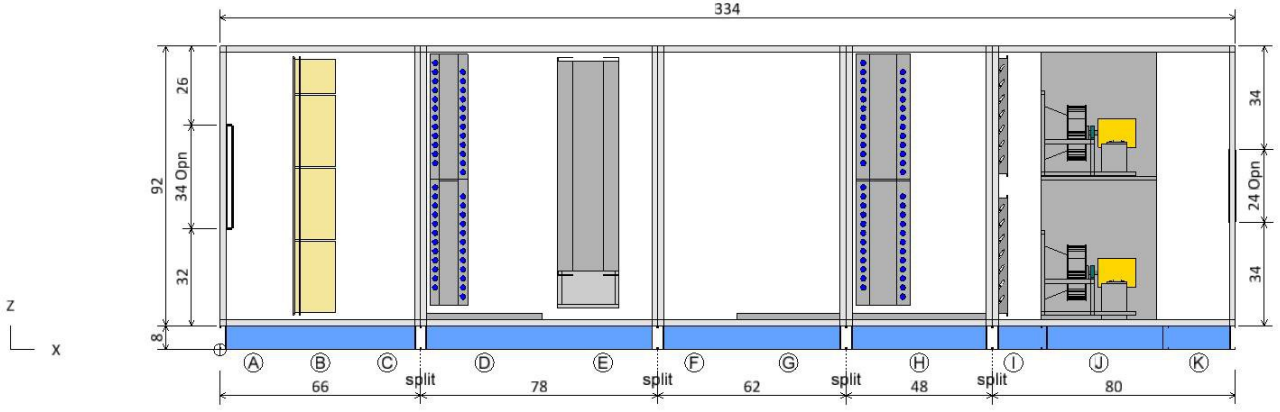
11/1/2024

AHU-2

Drawing



PLAN VIEW



ELEVATION VIEW

Component Key

	Type	X	Y	Z	Wid	Hgt
Ⓐ	Plenum Section Opening	0.00	8.00	40.00	108.00	34.00
Ⓚ	Plenum Section Opening	334.00	22.00	42.00	80.00	24.00

Note: Dimensions are measured from the origin point.
Note: Openings with or without dampers are recessed into the unit by approximately 1.75 in.

Opening/Damper Connections	Unit Tag: AHU-2			Sales Office: Harrison Energy Partners		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH064GDHM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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B0BKVU

UAMS CAMID

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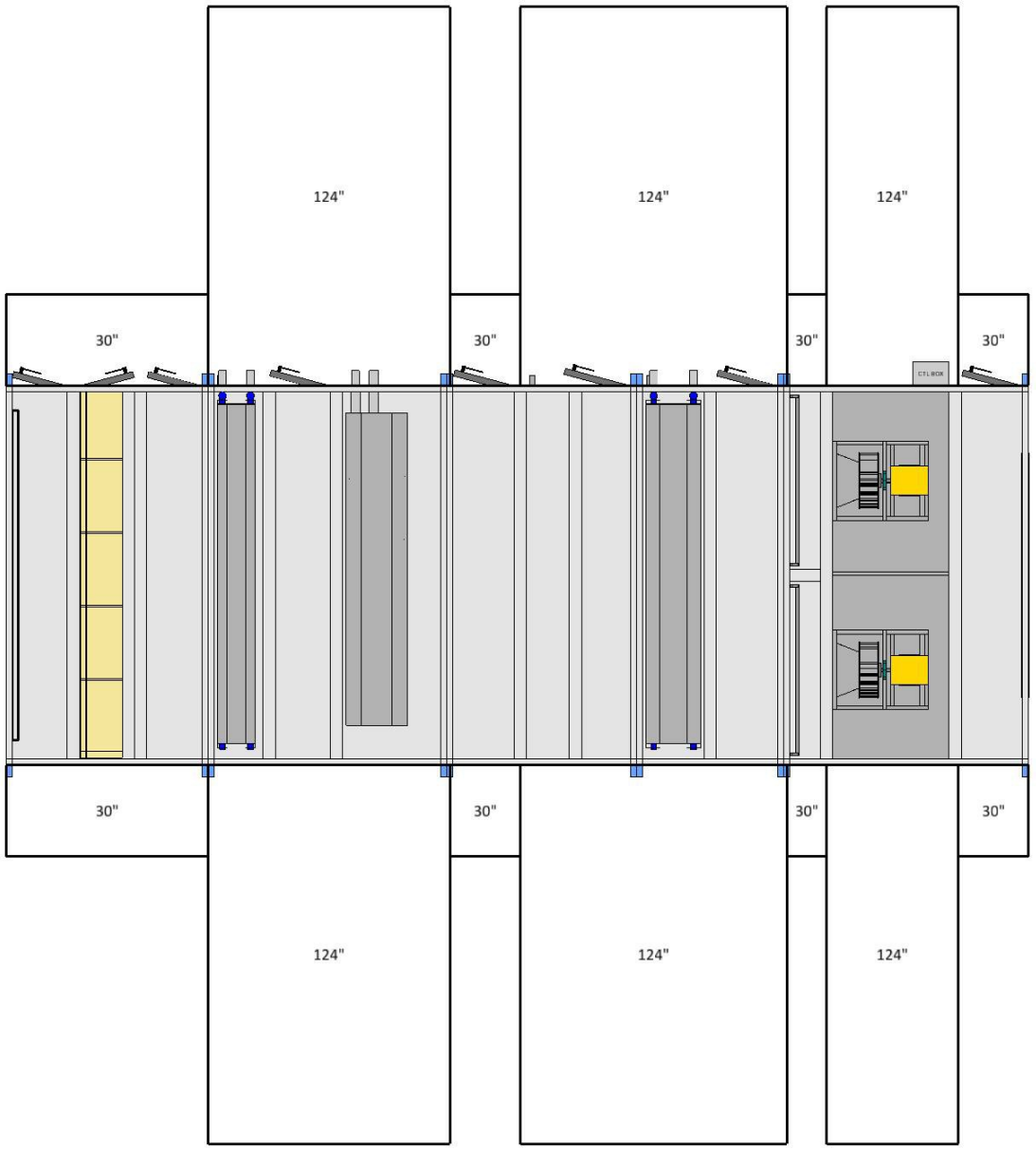

PLAN VIEW

Notes

Check local electrical component service clearance codes for specific distances.

Access is only required on one side of the unit.

Service Clearance View	Unit Tag: AHU-2			Sales Office: Harrison Energy Partners		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH064GDHM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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All opening dimensions have a 1" mounting flange along the inner edge. The actual airflow area of the opening is 2" smaller in each dimension.

AHU-2

Drawing

B0BKVU

UAMS CAMID

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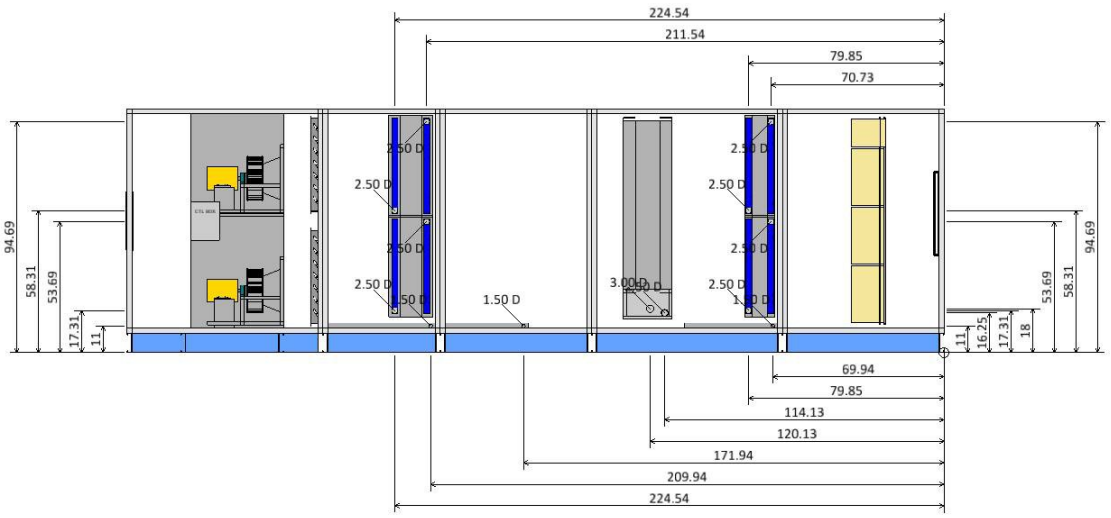
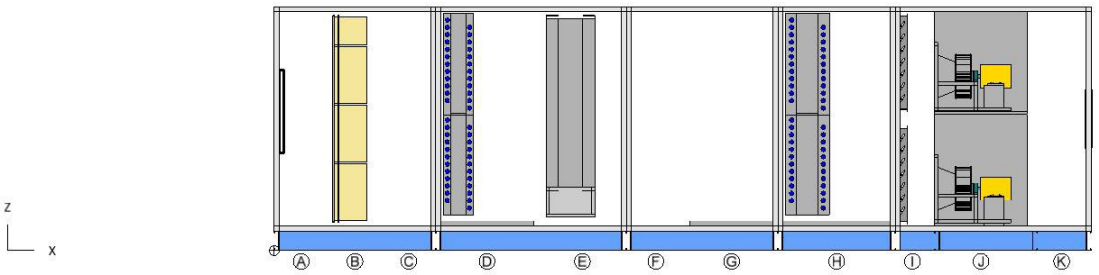
11/1/2024

AHU-2

Drawing



LEFT ELEVATION VIEW



RIGHT ELEVATION VIEW

Coil and Drain Connections

	Type	X	Y	Z	Diam
Ⓓ	Chilled Water coil				
	Condensate drain conn:	69.94	127.40	11.00	1.50
	Cold water inlet:	79.85	129.00	17.31	2.50
	Cold water outlet:	70.73	129.00	53.69	2.50
	Cold water inlet:	79.85	129.00	58.31	2.50
	Cold water outlet:	70.73	129.00	94.69	2.50
Ⓔ	Steam Face and Bypass Coil				
	Steam inlet:	120.13	129.00	18.00	3.00
	Steam outlet:	114.13	129.00	16.25	2.50
Ⓖ	Chilled Water coil				
	Condensate drain conn:	171.94	127.40	11.00	1.50
Ⓗ	Chilled Water coil				
	Condensate drain conn:	209.94	127.40	11.00	1.50
	Cold water inlet:	224.54	129.00	17.31	2.50
	Cold water outlet:	211.54	129.00	53.69	2.50
	Cold water inlet:	224.54	129.00	58.31	2.50
	Cold water outlet:	211.54	129.00	94.69	2.50

Note: Dimensions are measured from the origin point.

Coil and Drain Connections	Unit Tag: AHU-2			Sales Office: Harrison Energy Partners		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH064GDHM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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B0BKVU

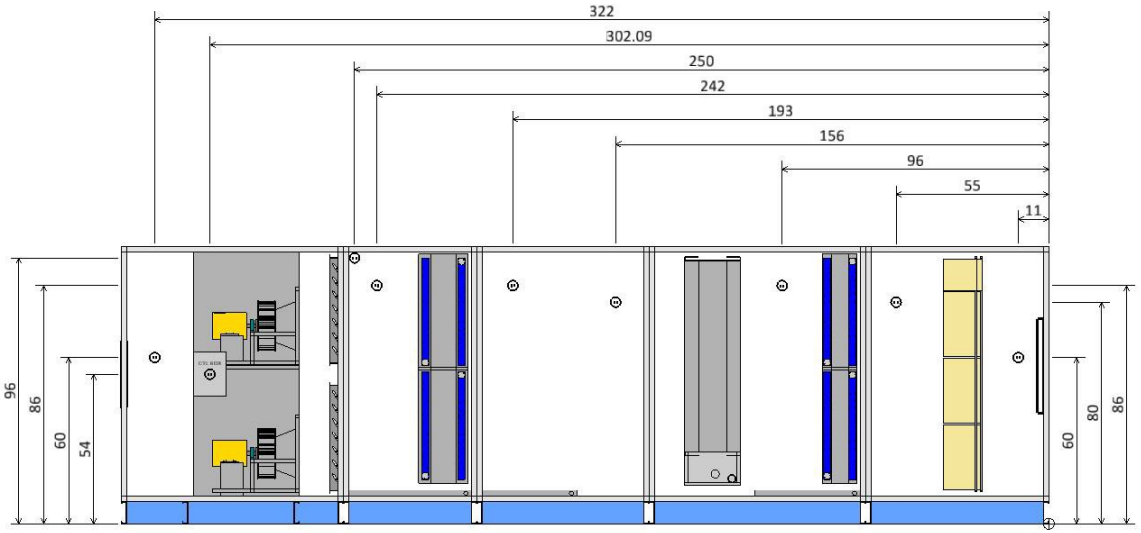
UAMS CAMID

16

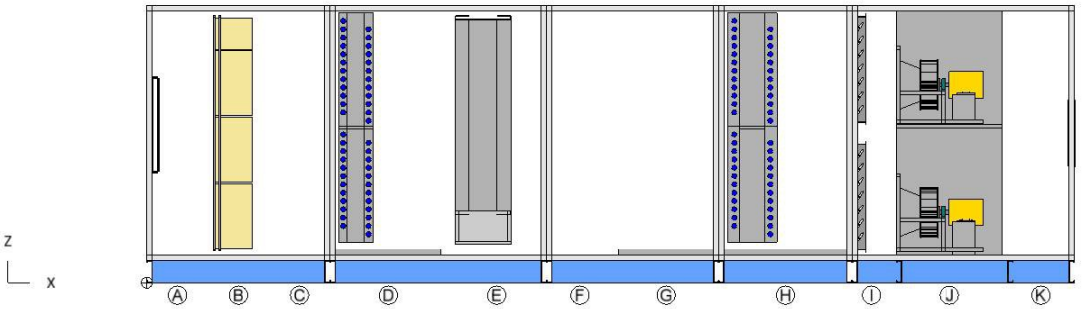
11/1/2024

AHU-2

Drawing



LEFT ELEVATION VIEW



RIGHT ELEVATION VIEW

Component Key

	Type	X	Y	Z	Volts	Phase
Ⓐ	Plenum Section LED Marine Light	11.00	124.00	60.00	110	1
Ⓒ	Access Section LED Marine Light	55.00	124.00	80.00	110	1
Ⓓ	Chilled Water coil LED Marine Light	96.00	124.00	86.00	110	1
Ⓕ	Access Section LED Marine Light GFI	156.00	124.00	80.00	110	1
Ⓖ	Chilled Water coil LED Marine Light GFI	193.00	124.00	86.00	110	1
Ⓗ	Chilled Water coil LED Marine Light UVC Light	242.00 250.00	124.00 122.00	86.00 96.00	110 115	1 1
Ⓙ	Supply Fan Fan	302.09	124.00	54.00	460	3
Ⓚ	Plenum Section LED Marine Light	322.00	124.00	60.00	110	1

Note: Dimensions are measured from the origin point.

Electrical Connections	Unit Tag: AHU-2			Sales Office: Harrison Energy Partners		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH064GDHM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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All opening dimensions have a 1" mounting flange along the inner edge. The actual airflow area of the opening is 2" smaller in each dimension.

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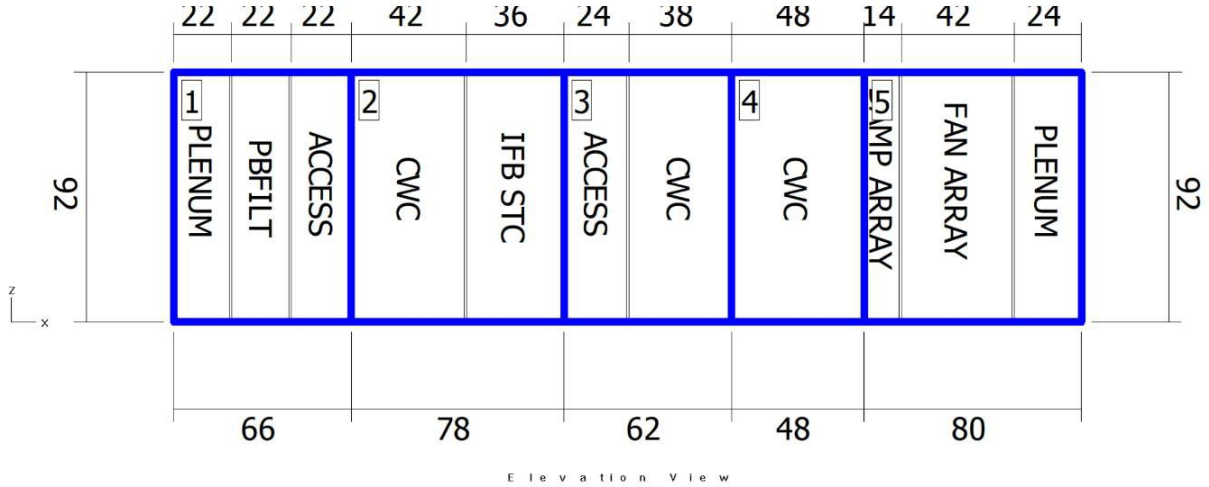
UAMS CAMID

17

11/1/2024

AHU-2

Drawing



Shipping Sections

Section	Weight (lb)	X	Y	Z
Section 1	1737.72	66	124	92
Section 2	5431.78	78	124	92
Section 3	1395.43	62	124	92
Section 4	3885.11	48	124	92
Section 5	4235.50	80	124	92
Total Unit	16685.55	334	124	92

Note: Base rails, curb ready base, coil connectors, drain connectors, and control boxes not included in height X, Y, Z dimensions. Shipping section may be 2" longer in air flow direction due to internal splice joint.

Shipping Sections	Unit Tag: AHU-2			Sales Office: Harrison Energy Partners		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH064GDHM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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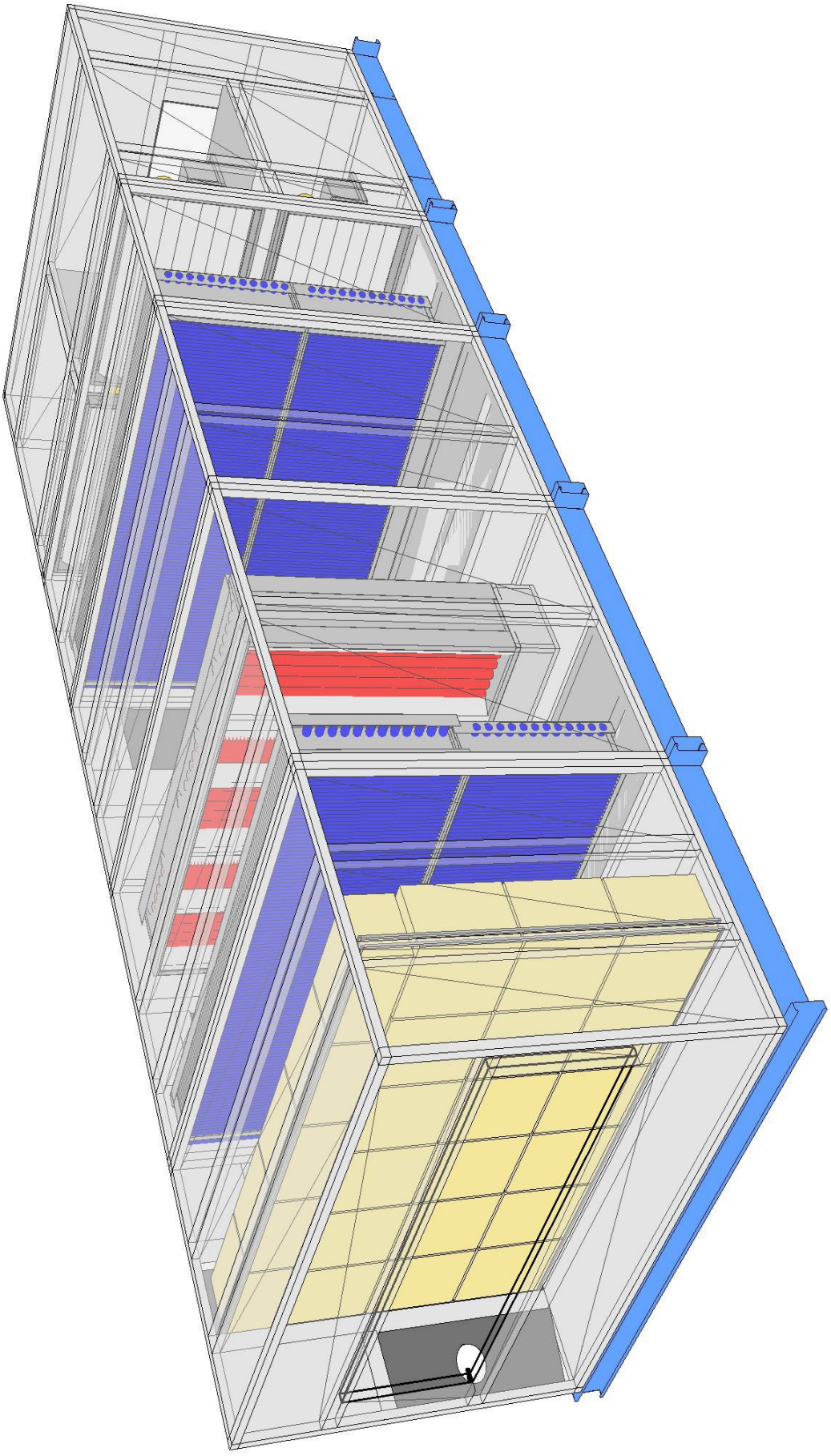
All opening dimensions have a 1" mounting flange along the inner edge. The actual airflow area of the opening is 2" smaller in each dimension.



Product Drawing

Unit Tag: AHU-2			Sales Office: Harrison Energy Partners		
Project Name: UAMS CAMID			Sales Engineer:		
Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

Product: Vision Air Handler
Model: CAH064GDHM

All opening dimensions have a 1" mounting flange along the inner edge. The actual airflow area of the opening is 2" smaller in each dimension.

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www.DaikinApplied.com Software Version: 13.43

SUBMITTAL DATA

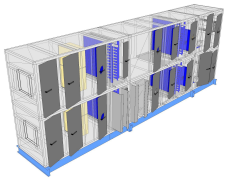
Job Name	UAMS CAMID
For	
Sold To	
Prepared For	
Customer PO#	
Prepared By	Jake Skinner
Date	11/1/2024

Table of Contents

Floor plan indicates coil connections on opposite sides on top vs. bottom unit. Submittal shows coil/piping connections on same side of unit for both units. Coordinate LH vs. RH connections for each AHU.

Please clarify if humidifier condensate drain cooler shall be submitted here or separately.

Job Information	Technical Data Sheet
Job Name	UAMS CAMID
Date	November 01 2024
Submitted By	JS
Software Version	13.43
Unit Tag	AHU-5 Stacked



Unit Overview

Model Number	Supply						Return/Exhaust					
	Air Volume cfm	Static Pressure		External Dimensions			Air Volume cfm	Static Pressure		External Dimensions		
		External inWc	Total inWc	Height in	Width in	Length in		External inWc	Total inWc	Height in	Width in	Length in
CAH011GDGM	3870	3.00	6.90	52*	48*	304	3870	3.00	7.07	52*	48*	304

**Not including base rails, coil connectors, drain connectors and control boxes.*

Unit

Model Number:	CAH011GDGM		
Approval:	ETL Listed / ETL Listed to Canadian Safety Standards (ETL Label / ETLc Label)		
Construction:	High pressure low leakage construction		
Outer Panel:	24 gauge G90 Galvanized Steel (unpainted)		
Liner:	24 gauge Galvanized Steel (unless noted per section)		
Insulation:	R-13 Injected Foam		
Unit Configuration:	Stacked with parallel air flows	**Drive (Handling) Location:**	Right
Base:	8" formed channel	**Wall Thickness:**	2 in
Altitude:	0 ft	**Parts Warranty:**	Standard One Year

Plenum Section

Component: 1 | Length: 24 in | Shipping Section: 1

Air Pressure Drop
0.12 inWc

Custom Openings

Custom Opening	Location	Width	Height	Rainhood w/Screen
1	End	20 in	20 in	None

Door

Location	Width	Opening
Drive side	20 in	Outward

Access Section

Component: 2 | Length: 24 in | Shipping Section: 1

Air Pressure Drop
0.00 inWc

Door

Location	Width	Opening
Drive side	20 in	Outward

Clarify if inlet air isolation dampers are provided with units or by others.

Combination Filter

Component: 3 | Length: 16 in | Shipping Section: 1

Access	Face Velocity	Face Area	Air Volume
Front	558 ft/min	6.9 ft²	3870 cfm

Portion	Type	Efficiency	Air Pressure Drop				Number of Filters	Height	Width	Depth
			Clean Air	Mean Air	Dirty Air	User Spec				
Pre-Filter	Pleated	MERV 8	0.27 inWc	**0.63** inWc	1.00 inWc	N/A	1	24 in	24 in	2 in
							1	20 in	24 in	2 in
Filter	Varicel VXL cartridge	MERV 15	0.45 inWc	**1.22** inWc	2.00 inWc	N/A	1	24 in	24 in	12 in
							1	20 in	24 in	12 in

Special Options

Sound Baffle	Filter Gauge
(As casing details)	Minihelic II 0-5"

Access Section

Component: 4 | Length: 22 in | Shipping Section: 1

Air Pressure Drop
0.00 inWc

Door

Location	Width	Opening	Window Type	Light
Drive side	14 in	Outward	Round	LED marine light kit and switch only

Chilled Water Coil

Component: 5 | Length: 28 in | Shipping Section: 1

Coil Model	Total Capacity	Sensible Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)
5WL1208B	54152 Btu/hr	54152 Btu/hr	1	8	12	0.625 in	1.50 in x 1.299 in

Air Volume	Air Temperature				Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering		Leaving						
	Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb					
3870 cfm	99.6 °F	77.2 °F	86.8 °F	73.7 °F	0.56 inWc	42 in	35 in	10.21 ft²	379 ft/min

Fluid		Flow Rate	Pressure Drop	Velocity	Volume	Weight
Entering	Leaving					
85.9 °F	89.1 °F	35.10 gpm	4.60 ftHd	1.80 ft/s	12.0 gal	103.00 lb

Connection [Data Per Coil]				Glycol Type	Min. Fin Surface Temp.	Min. Tube Wall Surface Temp.	Fouling Factor
Type	Size	Location	Material				
Threaded	2.50 in	Drive side	Carbon steel	Propylene (30%)	85.9 °F	85.9 °F	0.000

Material				Drain Pan	Drain Side	Turbospiral
Fin	Tube	Header	Case			
Aluminum .0075 in	Copper .020 in	Copper	Galv. steel	Stainless steel	Drive side	Yes

AHRI 410 Certification

Coil is NOT certified by AHRI

Door

Location	Width	Opening	Light
Drive side	8 in	Outward	LED marine light kit and switch only

HRC coil shall be minimum 0.035" thick per schedule. Typ.

Confirm HRC coil meets winter performance criteria also. Include performance data if applicable. Typ.

IFB Steam Coil	Component: 6	Length: 36 in	Shipping Section: 2

Coil Model	Total Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)
HMX8AS45.927.02	240300 Btu/hr	1	2	8	0.625 in	1.50 in x 1.299 in

Air Volume	Air Temperature		Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering Dry Bulb	Leaving Dry Bulb					
3870 cfm	17.6 °F	75.1 °F	0.17 inWc	43 in	27 in	8.05 ft²	488 ft/min

Fluid		Max. Superheat Temp. in Steam Coil Inlet
Steam Pressure	Condensate Load	
15.00 psig	248.68 lb/hr	30.0 °F

Connection [Data Per Coil]				
Type	Steam Size	Condensate Size	Location	Material
Threaded	2.50 in	2.50 in	Drive side	Carbon steel

Material			
Fin	Tube	Header	Case
Aluminum .0075 in	Copper .035 in	Carbon Steel	Galv. steel

Access Section	Component: 7	Length: 24 in	Shipping Section: 2

Air Pressure Drop
0.00 inWc

Door				
Location	Width	Opening	Window Type	Light
Drive side	16 in	Outward	Round	LED marine light kit with GFI outlet

Future Chilled Water Coil	Component: 8	Length: 28 in	Shipping Section: 2

Number of Coils	Number of Rows
1	2

Coil Air Pressure Drop	Finned Height	Finned Width	Face Area	Face Velocity
0.10 inWc	42 in	35 in	10.21 ft²	379 ft/min

Connection Location	Connection Material
Drive side	Carbon steel

Coil Model	Drain Pan	Drain Pan Side
Future Coil (Not Supplied)	Stainless steel	Drive side

AHRI 410 Certification
Coil is NOT certified by AHRI

Door			
Location	Width	Opening	Light
Drive side	14 in	Outward	LED marine light kit and switch only

Humidifier Section.
Humidifier manifold to be factory installed. Performance data is located at the end of this submittal.

Chilled Water Coil

Component: 9 | Length: 40 in | Shipping Section: 2

Coil Model	Total Capacity	Sensible Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)
5WH1008C	326506 Btu/hr	198084 Btu/hr	1	8	10	0.625 in	1.50 in x 1.299 in

Air Volume	Air Temperature				Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering		Leaving						
	Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb					
3870 cfm	99.6 °F	77.2 °F	52.8 °F	52.6 °F	1.21 inWc	42 in	35 in	10.21 ft²	379 ft/min

Water		Flow Rate	Pressure Drop	Velocity	Volume	Weight
Entering	Leaving					
45.0 °F	60.1 °F	43.30 gpm	8.90 ftHd	3.30 ft/s	12.0 gal	101.00 lb

Connection [Data Per Coil]				Min. Fin Surface Temp.	Min. Tube Wall Surface Temp.	Fouling Factor
Type	Size	Location	Material			
Threaded	2.00 in	Drive side	Carbon steel	45.0 °F	45.0 °F	0.000

Material				Drain Pan	Drain Side
Fin	Tube	Header	Case		
Aluminum .0075 in	Copper .020 in	Copper	Galv. steel	Stainless steel	Drive side

AHRI 410 Certification

Certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at www.ahridirectory.org

Door

Location	Width	Opening	Window Type	Light
Drive side	20 in	Outward	Round	LED marine light kit and switch only

TSP is nearly 1.5" less than scheduled TSP.

Return/Exhaust Fan

Component: 10 | Length: 38 in | Shipping Section: 3

Fan Performance

Air Volume	Static Pressure			Fan Energy Index(FEI)	Total Input Power	Fan Shaft Power	Speed		Outlet Velocity
	External	Total	Cabinet				Operating	Maximum	
3870 cfm	3.00 inWc	7.07 inWc	0.00 inWc	1.11	6.2 kW	6.95 BHP	3199 rpm	3650 rpm	0 ft/min

Fan Data

Fan Type	Blade Type / Class	Nominal Fan Size	Quantity of Fans	Wheel Diameter	Material Type	Number of Blades	Discharge	Motor Location
Centrifugal - Plenum	Airfoil / 2	DDPL16	1	15.75 in	Aluminum	12	Axial	Behind Fan

Motor Data

Power	Electrical Supply	Speed	Efficiency	Enclosure	Frame Size	Supplier	Number of Poles	Lock Rotor Current	Full Load Current
10.0 HP	460/60/3 V/Hz/Phase	3500 rpm	Premium	ODP	213 T frame	Generic	2	74.01 A	12.00 A

Fan Options

Piezometer Ring:	Provided on Drive Side Fan	Piezometer Delta P:	6.87
Shaft Grounding Kit:	Provided	Isolator Type:	Spring

VFD/Starter/Disconnect Data

Selection Type:	External J-Box	Vendor:	Factory Standard
VFD Power:	10 HP	Voltage:	460 V
Height x Width x Depth:	6.00 in x 6.00 in x 4.00 in	Mounting:	Door Side
Enclosure:	NEMA 1		

Door

Location	Width	Opening
Drive side	22 in	Outward

Please clarify VFDs are provided/installed by others. Typ.

Recommend inward opening access doors on positiver pressure sections. Typ.

Plenum Section	Component: 11	Length: 24 in	Shipping Section: 3

Air Pressure Drop

0.05 inWc

Custom Dampers

Custom Damper	Damper Type	Location	Size (Width x Height)		Material	Blade Action	Rainhood w/Screen
			Overall	Opening			
1	CBD6-OUT	End	32 in x 16 in	29 in x 13 in	Alum	Parallel	None

Door

Location	Width	Opening	Window Type	Light
Drive side	20 in	Outward	Round	LED marine light kit and switch only

Plenum Section	Component: 12	Length: 24 in	Shipping Section: 4

Air Pressure Drop

0.12 inWc

Custom Openings

Custom Opening	Location	Width	Height	Rainhood w/Screen
1	End	20 in	20 in	None

Door

Location	Width	Opening
Drive side	20 in	Outward

Access Section	Component: 13	Length: 24 in	Shipping Section: 4

Air Pressure Drop

0.00 inWc

Door

Location	Width	Opening
Drive side	20 in	Outward

Combination Filter	Component: 14	Length: 16 in	Shipping Section: 4

Access	Face Velocity	Face Area	Air Volume
Front	558 ft/min	6.9 ft²	3870 cfm

Portion	Type	Efficiency	Air Pressure Drop				Number of Filters	Height	Width	Depth
			Clean Air	Mean Air	Dirty Air	User Spec				
Pre-Filter	Pleated	MERV 8	0.27 inWc	**0.63** inWc	1.00 inWc	N/A	1	24 in	24 in	2 in
							1	20 in	24 in	2 in
Filter	Varicel VXL cartridge	MERV 15	0.45 inWc	**1.22** inWc	2.00 inWc	N/A	1	24 in	24 in	12 in
							1	20 in	24 in	12 in

Special Options

Sound Baffle	Filter Gauge
(As casing details)	Magnehelic 0-5"

Access Section	Component: 15	Length: 22 in	Shipping Section: 4

Air Pressure Drop

0.00 inWc

Door

Location	Width	Opening	Window Type	Light
Drive side	14 in	Outward	Round	LED marine light kit and switch only

Chilled Water Coil	Component: 16	Length: 28 in	Shipping Section: 4

Coil Model	Total Capacity	Sensible Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)
5WL1208B	54152 Btu/hr	54152 Btu/hr	1	8	12	0.625 in	1.50 in x 1.299 in

Air Volume	Air Temperature				Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering		Leaving						
	Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb					
3870 cfm	99.6 °F	77.2 °F	86.8 °F	73.7 °F	0.56 inWc	42 in	35 in	10.21 ft²	379 ft/min

Fluid		Flow Rate	Pressure Drop	Velocity	Volume	Weight
Entering	Leaving					
85.9 °F	89.1 °F	35.10 gpm	4.60 ftHd	1.80 ft/s	12.0 gal	103.00 lb

Connection [Data Per Coil]				Glycol Type	Min. Fin Surface Temp.	Min. Tube Wall Surface Temp.	Fouling Factor
Type	Size	Location	Material				
Threaded	2.50 in	Drive side	Carbon steel	Propylene (30%)	85.9 °F	85.9 °F	0.000

Material				Drain Pan	Drain Side	Turbospiral
Fin	Tube	Header	Case			
Aluminum .0075 in	Copper .020 in	Copper	Galv. steel	Stainless steel	Drive side	Yes

AHRI 410 Certification
Coil is NOT certified by AHRI

Door			
Location	Width	Opening	Light
Drive side	8 in	Outward	LED marine light kit and switch only

Manual Component	Component: 17	Length: 36 in	Shipping Section: 5

Pressure Drop
0.00 inWc

Panel		
Location	Width	Opening
Removable panels	- in	Outward

Access Section	Component: 18	Length: 24 in	Shipping Section: 5

Air Pressure Drop
0.00 inWc

Door				
Location	Width	Opening	Window Type	Light
Drive side	16 in	Outward	Round	LED marine light kit with GFI outlet

IFB Coil Section.
IFB coil in this section will be identical to the IFB coil in the bottom section of the air handler (component 6)

Future Chilled Water Coil	Component: 19	Length: 28 in	Shipping Section: 5

Number of Coils	Number of Rows
1	2

Coil Air Pressure Drop	Finned Height	Finned Width	Face Area	Face Velocity
0.10 inWc	42 in	35 in	10.21 ft²	379 ft/min

Connection Location	Connection Material
Drive side	Carbon steel

Coil Model	Drain Pan	Drain Pan Side
Future Coil (Not Supplied)	Stainless steel	Drive side

AHRI 410 Certification

Coil is NOT certified by AHRI

Door

Location	Width	Opening	Light
Drive side	14 in	Outward	LED marine light kit and switch only

Chilled Water Coil	Component: 20	Length: 40 in	Shipping Section: 5

Coil Model	Total Capacity	Sensible Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)
5WH1008C	326506 Btu/hr	198084 Btu/hr	1	8	10	0.625 in	1.50 in x 1.299 in

Air Volume	Air Temperature				Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering		Leaving						
	Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb					
3870 cfm	99.6 °F	77.2 °F	52.8 °F	52.6 °F	1.21 inWc	42 in	35 in	10.21 ft²	379 ft/min

Water		Flow Rate	Pressure Drop	Velocity	Volume	Weight
Entering	Leaving					
45.0 °F	60.1 °F	43.30 gpm	8.90 ftHd	3.30 ft/s	12.0 gal	101.00 lb

Connection [Data Per Coil]				Min. Fin Surface Temp.	Min. Tube Wall Surface Temp.	Fouling Factor
Type	Size	Location	Material			
Threaded	2.00 in	Drive side	Carbon steel	45.0 °F	45.0 °F	0.000

Material				Drain Pan	Drain Side
Fin	Tube	Header	Case		
Aluminum .0075 in	Copper .020 in	Copper	Galv. steel	Stainless steel	Drive side

AHRI 410 Certification

Certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at www.ahridirectory.org

Door

Location	Width	Opening	Window Type	Light
Drive side	20 in	Outward	Round	LED marine light kit and switch only

Humidifier Section.
Humidifier manifold to be factory installed. Performance data is located at the end of this submittal.

Supply Fan

Component: 21 | Length: 38 in | Shipping Section: 6

Fan Performance

Air Volume	Static Pressure			Fan Energy Index(FEI)	Total Input Power	Fan Shaft Power	Speed		Outlet Velocity
	External	Total	Cabinet				Operating	Maximum	
3870 cfm	3.00 inWc	6.90 inWc	0.00 inWc	1.11	6.1 kW	6.79 BHP	3174 rpm	3650 rpm	0 ft/min

Fan Data

Fan Type	Blade Type / Class	Nominal Fan Size	Quantity of Fans	Wheel Diameter	Material Type	Number of Blades	Discharge	Motor Location
Centrifugal - Plenum	Airfoil / 2	DDPL16	1	15.75 in	Aluminum	12	Axial	Behind Fan

Motor Data

Power	Electrical Supply	Speed	Efficiency	Enclosure	Frame Size	Supplier	Number of Poles	Lock Rotor Current	Full Load Current
10.0 HP	460/60/3 V/Hz/Phase	3500 rpm	Premium	ODP	213 T frame	Generic	2	74.01 A	12.00 A

Fan Options

Piezometer Ring:	Provided on Drive Side Fan	**Piezometer Delta P:**	6.87
Shaft Grounding Kit:	Provided	**Isolator Type:**	Spring

VFD/Starter/Disconnect Data

Selection Type:	External J-Box	**Vendor:**	Factory Standard
VFD Power:	10 HP	**Voltage:**	460 V
Height x Width x Depth:	6.00 in x 6.00 in x 4.00 in	**Mounting:**	Door Side
Enclosure:	NEMA 1		

Door

Location	Width	Opening
Drive side	22 in	Outward

Plenum Section

Component: 22 | Length: 24 in | Shipping Section: 6

Air Pressure Drop

0.05 inWc

Custom Dampers

Custom Damper	Damper Type	Location	Size (Width x Height)		Material	Blade Action	Rainhood w/Screen
			Overall	Opening			
1	CBD6-OUT	End	32 in x 16 in	29 in x 13 in	Alum	Parallel	None

Door

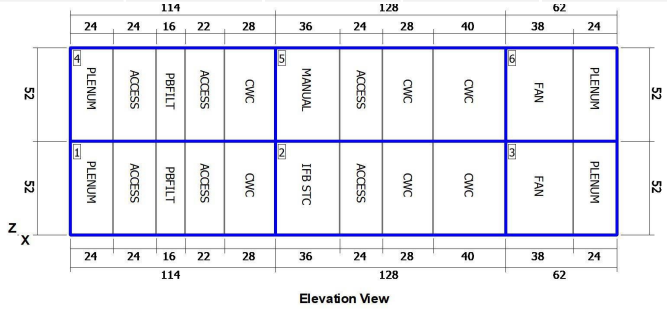
Location	Width	Opening	Window Type	Light
Drive side	20 in	Outward	Round	LED marine light kit and switch only

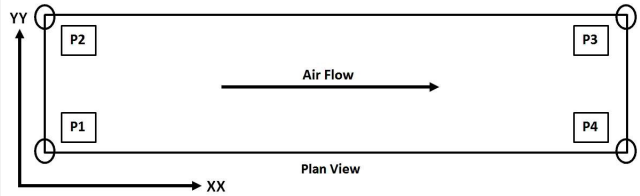
Unit Sound Power (dB)

Type	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Radiated:	84	75	66	74	68	62	51	51
Unit Discharge:	84	77	75	82	81	81	80	71
Unit Return:	84	75	66	74	68	62	51	51

Shipping Section Details

Section	Length in	Weight lb	Corner Weights (lb)				Center of Gravity (in)		
			P1	P2	P3	P4	XX	YY	ZZ
1	114	1441	282	256	439	465	71	23	30
2	128	1843	472	448	451	474	64	23	28
3	62	771	232	228	154	157	25	24	27
4	114	1249	234	208	391	417	74	23	33
5	128	1255	253	229	376	399	79	23	32
6	62	677	208	205	130	134	24	24	30
Entire Unit	**304**	**7236**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**
	Lower level only								





NOTE: Special components aren't included in the corner weights and center of gravity data.

NOTE: Shipping weights listed do not include weight of water (listed in coil section(s) above.

Shipping Protection

None

Supply Static Pressure Drop

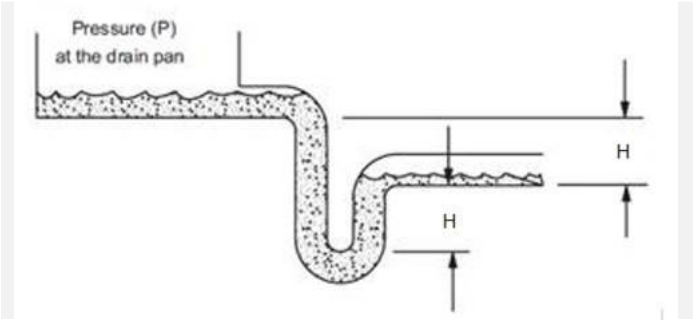
Component	Option	Static Pressure Drop
Plenum Section	Plenum Section	0.12 insWg
Access Section	Access Section	
Panel and Cartridge Filter	Panel and Cartridge Filter	1.86 insWg
Access Section	Access Section	
Chilled Water coil	Chilled Water coil	0.56 insWg
Manual Section	Manual Section	
Access Section	Access Section	
Chilled Water coil	Chilled Water coil	0.10 insWg
Chilled Water coil	Chilled Water coil	1.21 insWg
Supply Fan	Cabinet	
Plenum Section	Plenum Section	0.05 insWg
External Static	External Static	3.00 insWg
Total Supply Fan Static		6.90 insWg

Exhaust Static Pressure Drop

Component	Option	Static Pressure Drop
Plenum Section	Plenum Section	0.12 insWg
Access Section	Access Section	
Panel and Cartridge Filter	Panel and Cartridge Filter	1.86 insWg
Access Section	Access Section	
Chilled Water coil	Chilled Water coil	0.56 insWg
Steam Face and Bypass Coil	Steam Face and Bypass Coil	0.17 insWg
Access Section	Access Section	
Chilled Water coil	Chilled Water coil	0.10 insWg
Chilled Water coil	Chilled Water coil	1.21 insWg
Return Fan	Cabinet	
Plenum Section	Plenum Section	0.05 insWg
External Static	External Static	3.00 insWg
Total Return/Exhaust Fan Static		7.07 insWg

Minimum Recommended Drain Pan Trap Dimensions

Shipping Section	Component	H
1	Chilled Water coil	11.08
2	Chilled Water coil	11.62
2	Chilled Water coil	14.04
4	Chilled Water coil	5.08
5	Chilled Water coil	5.28
5	Chilled Water coil	7.70



Dimensions provided as a courtesy and are recommended minimums only. Daikin is not responsible for supplying or designing drain pan traps and is not responsible for any damage caused by incorrect trap heights. The dimensions listed above should be reviewed and approved by a licensed plumbing professional.

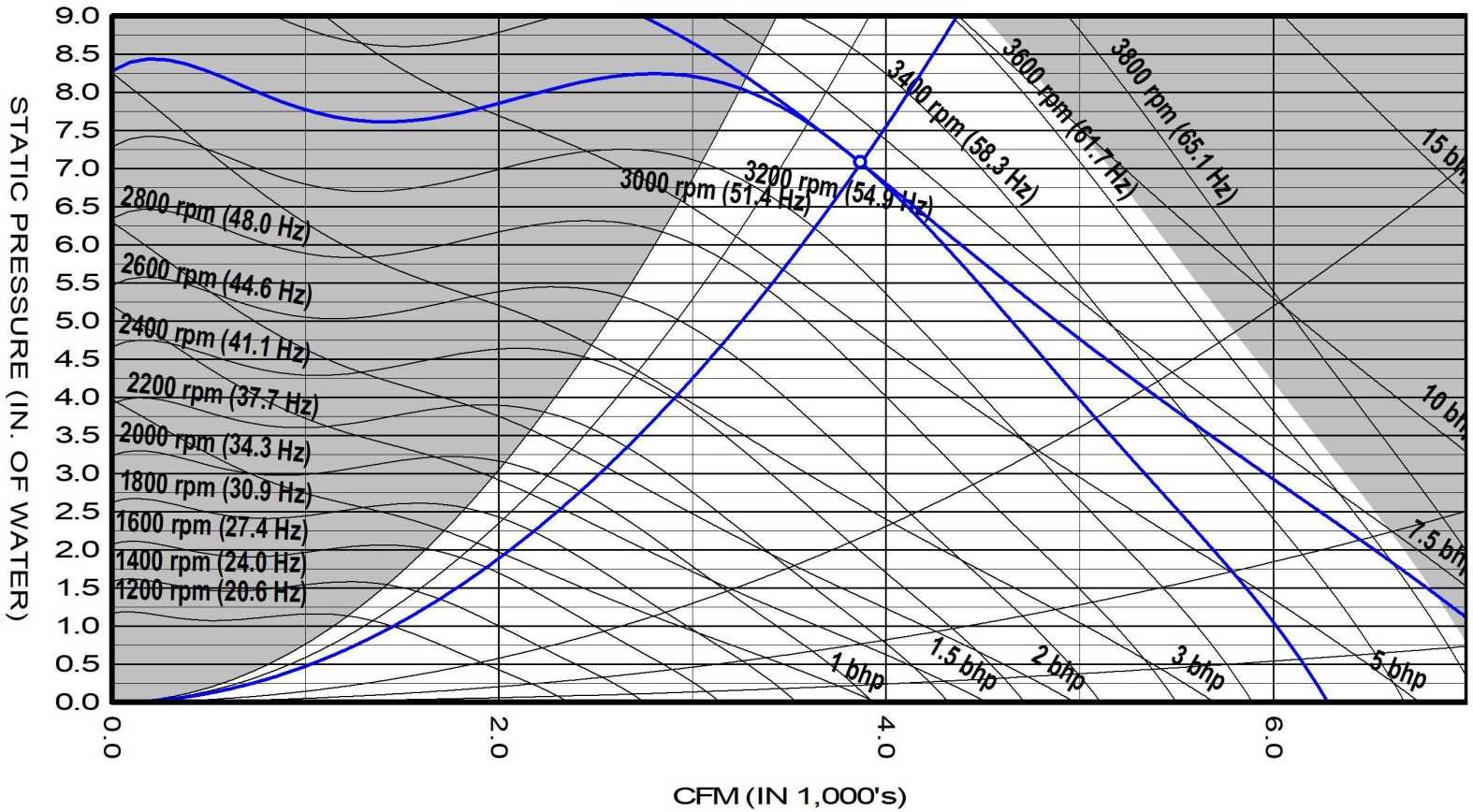
AHRI Certification

Certified by the AHRI Central Station Air-Handling Unit (AHU) Certification Program, which is based on AHRI Standard 430/431. AHRI certified units are subject to rigorous and continuous testing, have performance ratings independently measured and are third-party verified. Certified units may be found in the AHRI Directory at www.ahridirectory.org.

Notes

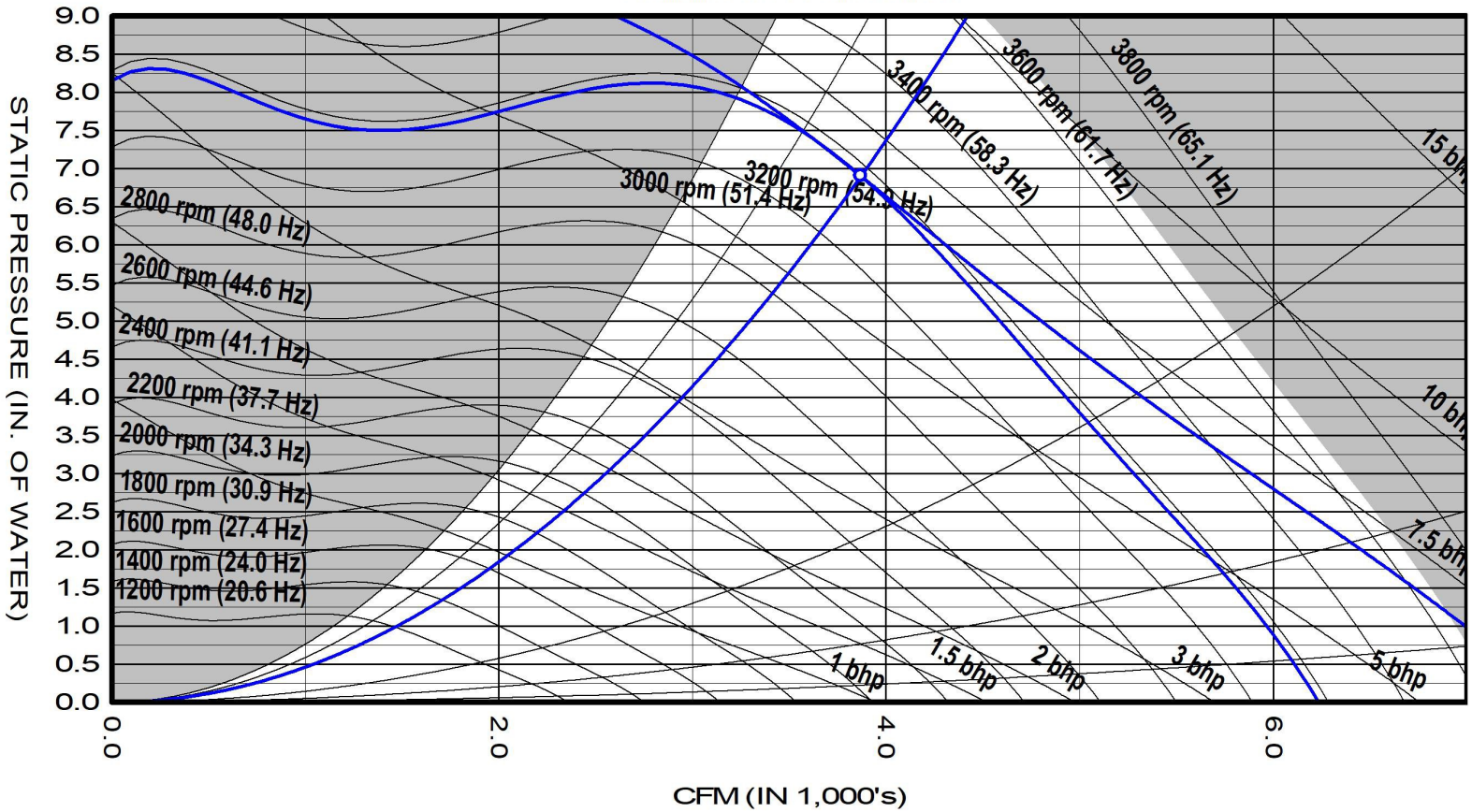
Important
1. This unit may not meet ASHRAE Standard 90.1 - 2007 fan motor power limitations for the year and system selected. If that code applies, alternate fan selections may be required.
2. The designer and installer must ensure compliance with applicable codes. A component supplier cannot determine the brake horsepower ("BHP") for other motors in the air handling system.
3. Before approving this unit, determine whether ASHRAE Standard 90.1 - 2007 has been adopted in the specific jurisdiction or contract specifications in which the unit will be installed.

Daikin AHU Fan Curve



AF 16 DD PLENUM 12BL (100% Width) 1x1 Ret/Exh Fan at Standard Conditions					
Air volume	3870	cfm	Fan speed	3199	rpm
Total static	7.07	insWg	Max speed	3650	rpm
Fan Shaft Power	7.0	bhp	Efficiency	61.9	%
Approx VFD Setting	54.8	Hz	Motor Speed	3500	rpm
Fan Energy Index(FEI)	1.11				
Unit tagging	AHU-5 Stacked		Date	November-01-2024	
Job name	UAMS CAMID		Time	07:13	

Daikin AHU Fan Curve



AF 16 DD PLENUM 12BL (100% Width) 1x1 Supply Fan at Standard Conditions					
Air volume	3870	cfm	Fan speed	3174	rpm
Total static	6.90	insWg	Max speed	3650	rpm
Fan Shaft Power	6.8	bhp	Efficiency	61.8	%
Approx VFD Setting	54.4	Hz	Motor Speed	3500	rpm
Fan Energy Index(FEI)	1.11				

Unit tagging	AHU-5 Stacked	Date	November-01-2024
Job name	UAMS CAMID	Time	07:13

Supply fan performance is certified in accordance with the Central Station Air-Handling Unit Certification Program, which is based on AHRI Standard 430.

B0BKVU

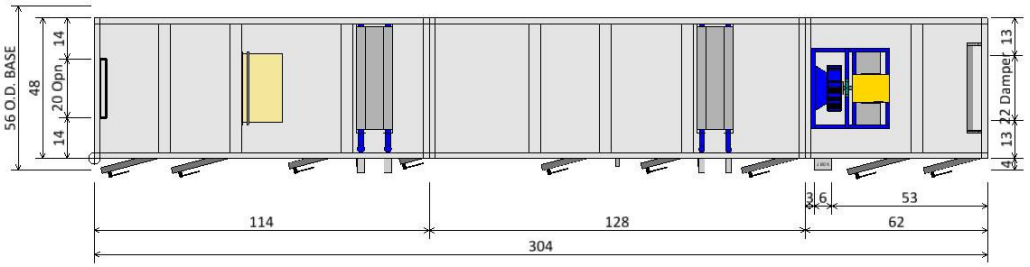
UAMS CAMID

17

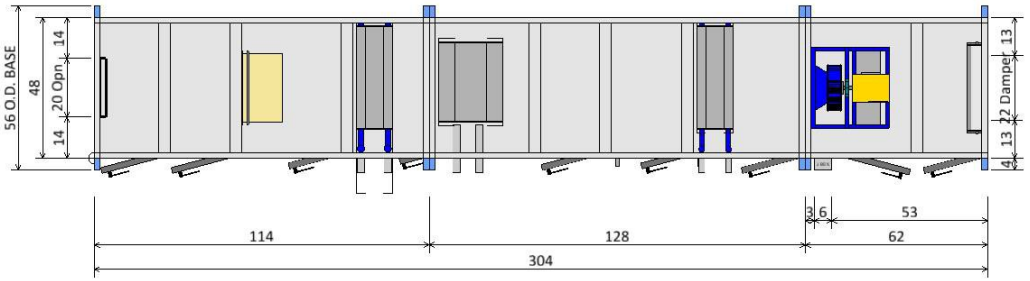
11/1/2024

AHU-5 Stacked

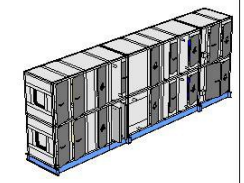
Drawing



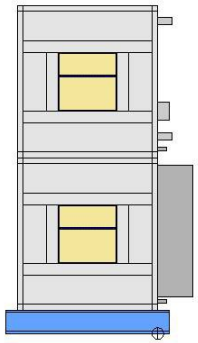
TOP DECK PLAN VIEW



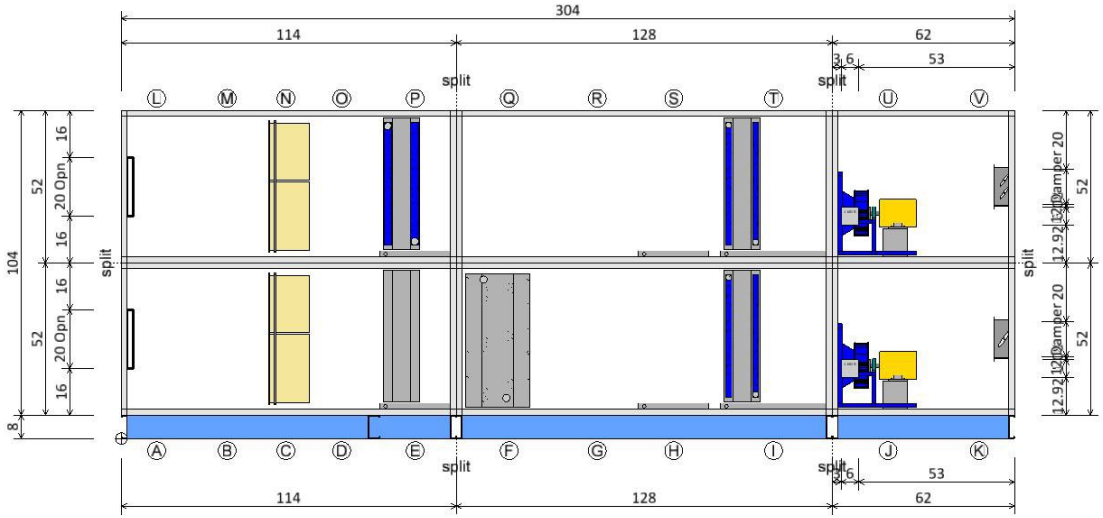
BOTTOM DECK PLAN VIEW



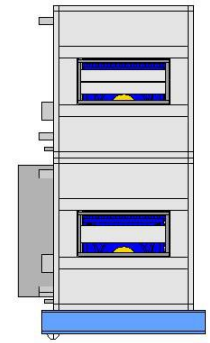
ISOMETRIC VIEW



FRONT END VIEW



ELEVATION VIEW



REAR END VIEW

Product Drawing	Unit Tag: AHU-5 Stacked			Sales Office: Harrison Energy Partners		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH011GDGM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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All opening dimensions have a 1" mounting flange along the inner edge. The actual airflow area of the opening is 2" smaller in each dimension.

B0BKVU

UAMS CAMID

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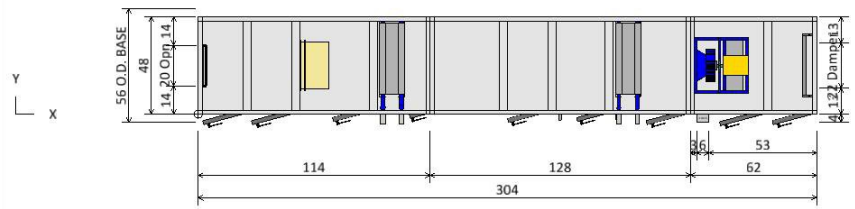
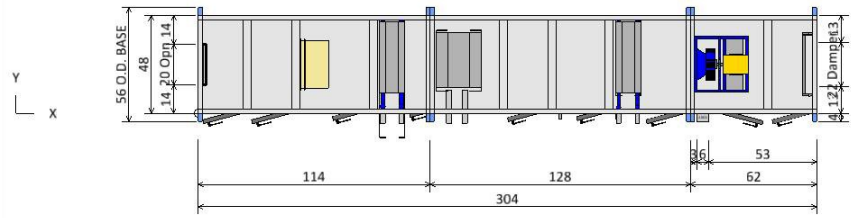
11/1/2024

AHU-5 Stacked

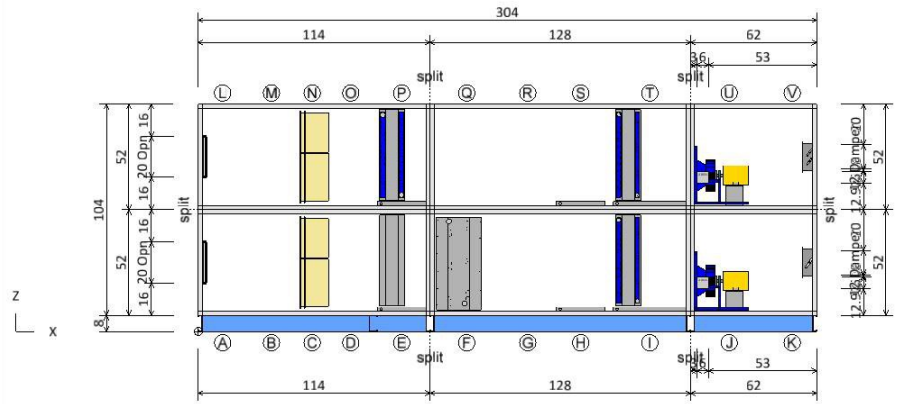
Drawing



TOP DECK PLAN VIEW



BOTTOM DECK PLAN VIEW



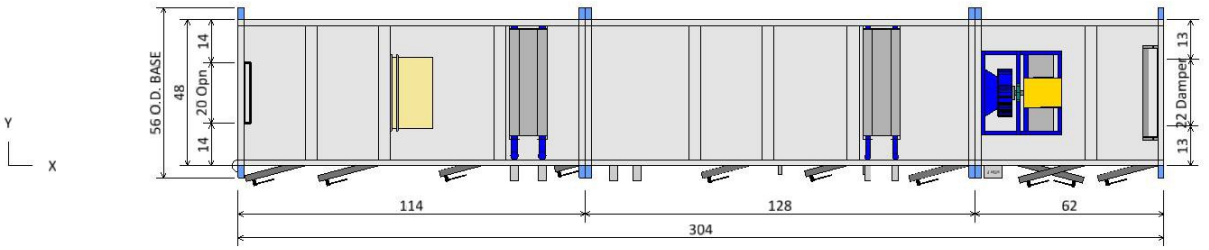
ELEVATION VIEW

Component Key

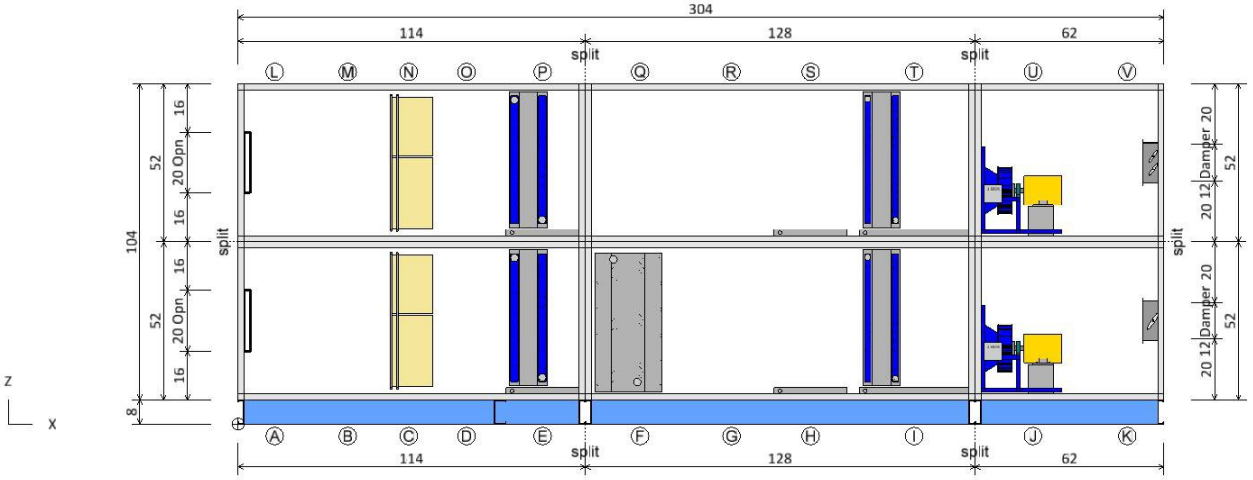
Ⓐ	Plenum Section Right Door (WxH):	 20 ins x 48 ins
Ⓑ	Access Section Right Door (WxH):	 20 ins x 48 ins
Ⓒ	Panel and Cartridge Filter Pre Filter Type: Cartridge Filter Type:	 Pleated (MERV 8) Varicel VXL
Ⓓ	Access Section Right Door (WxH):	 14 ins x 48 ins
Ⓔ	Chilled Water coil Coil Model: Total Capacity: Right Door (WxH):	 5WL1208B 54152.0 Btu/hr 8 ins x 38 ins
Ⓕ	Steam Face and Bypass Coil Total Capacity:	 240300.0 Btu/hr
Ⓖ	Access Section Right Door (WxH):	 16 ins x 48 ins
Ⓗ	Chilled Water coil Coil Model: Total Capacity: Right Door (WxH):	 5WH0002C 0.0 Btu/hr 14 ins x 38 ins
Ⓘ	Chilled Water coil Coil Model: Total Capacity: Right Door (WxH):	 5WH1008C 326506.0 Btu/hr 20 ins x 38 ins
Ⓙ	Return Fan Fan Type: Fan Size (Class): Air Flowrate: T.S.P: Motor Power: Right Door (WxH):	 Centrifugal - Plenum 16 (2) 3870.0 cfm 7.1 insWg 10.0 HP 22 ins x 48 ins
Ⓚ	Plenum Section Right Door (WxH):	 20 ins x 44 ins
Ⓛ	Plenum Section Right Door (WxH):	 20 ins x 48 ins
Ⓜ	Access Section Right Door (WxH):	 20 ins x 48 ins
Ⓝ	Panel and Cartridge Filter Pre Filter Type: Cartridge Filter Type:	 Pleated (MERV 8) Varicel VXL
Ⓞ	Access Section Right Door (WxH):	 14 ins x 48 ins
Ⓟ	Chilled Water coil Coil Model: Total Capacity: Right Door (WxH):	 5WL1208B 54152.0 Btu/hr 8 ins x 38 ins
Ⓠ	Manual Section	
Ⓡ	Access Section Right Door (WxH):	 16 ins x 48 ins
Ⓢ	Chilled Water coil Coil Model: Total Capacity: Right Door (WxH):	 5WH0002C 0.0 Btu/hr 14 ins x 38 ins
Ⓣ	Chilled Water coil Coil Model: Total Capacity: Right Door (WxH):	 5WH1008C 326506.0 Btu/hr 20 ins x 38 ins
Ⓤ	Supply Fan Fan Type: Fan Size (Class): Air Flowrate: T.S.P: Motor Power: Right Door (WxH):	 Centrifugal - Plenum 16 (2) 3870.0 cfm 6.9 insWg 10.0 HP 22 ins x 48 ins
Ⓥ	Plenum Section Right Door (WxH):	 20 ins x 44 ins

Product Drawing	Unit Tag: AHU-5 Stacked			Sales Office: Harrison Energy Partners			DAIKIN
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:			13600 Industrial Park Blvd, Minneapolis, MN 55441
Model: CAH011GDGM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in	www.DaikinApplied.com Software Version: 13.43

All opening dimensions have a 1" mounting flange along the inner edge. The actual airflow area of the opening is 2" smaller in each dimension.



PLAN VIEW



ELEVATION VIEW

Component Key

	Type	X	Y	Z	Wid	Hgt
Ⓐ	Plenum Section Opening	0.00	14.00	24.00	20.00	20.00
Ⓚ	Plenum Section Supply air damper	304.00	9.50	27.50	29.00	13.00
Ⓛ	Plenum Section Opening	0.00	14.00	76.00	20.00	20.00
Ⓥ	Plenum Section Supply air damper	304.00	9.50	79.50	29.00	13.00

Note: Dimensions are measured from the origin point.
Note: Openings with or without dampers are recessed into the unit by approximately 1.75 in.

Opening/Damper Connections	Unit Tag: AHU-5 Stacked			Sales Office: Harrison Energy Partners		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH011GDGM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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All opening dimensions have a 1" mounting flange along the inner edge. The actual airflow area of the opening is 2" smaller in each dimension.

B0BKVU

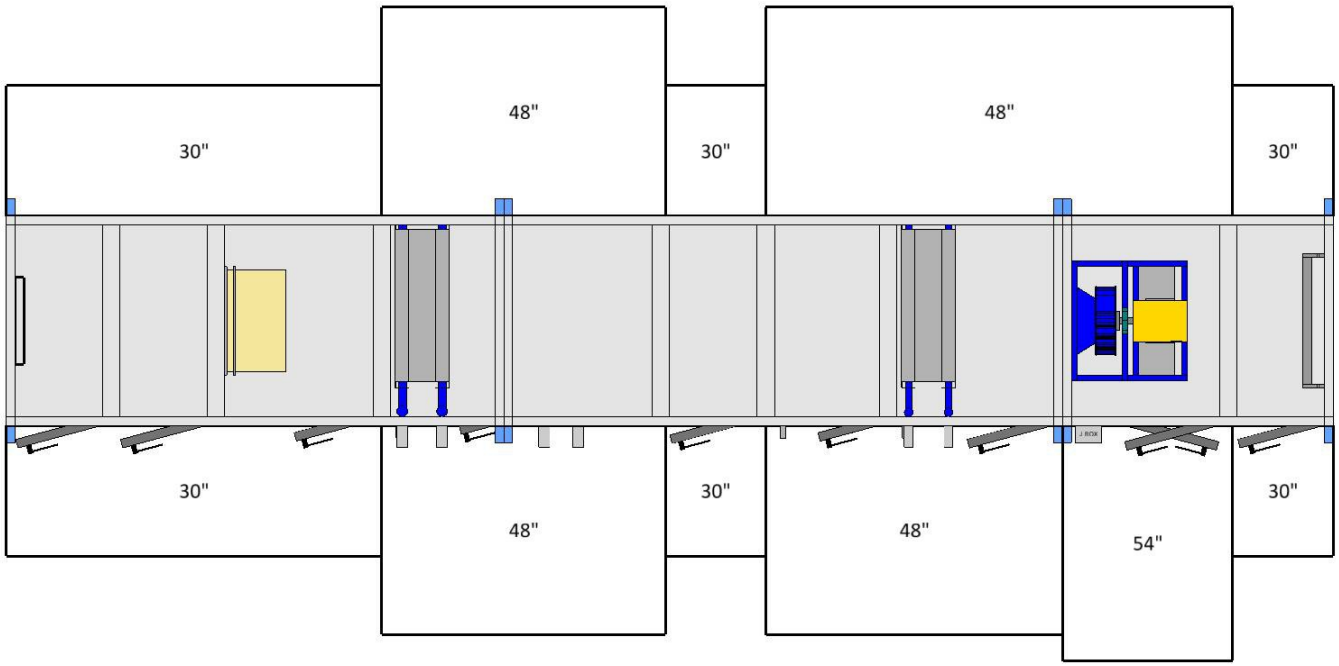
UAMS CAMID

20

11/1/2024

AHU-5 Stacked

Drawing



PLAN VIEW

Notes

Check local electrical component service clearance codes for specific distances.

Access is only required on one side of the unit.

Service Clearance View	Unit Tag: AHU-5 Stacked			Sales Office: Harrison Energy Partners		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH011GDGM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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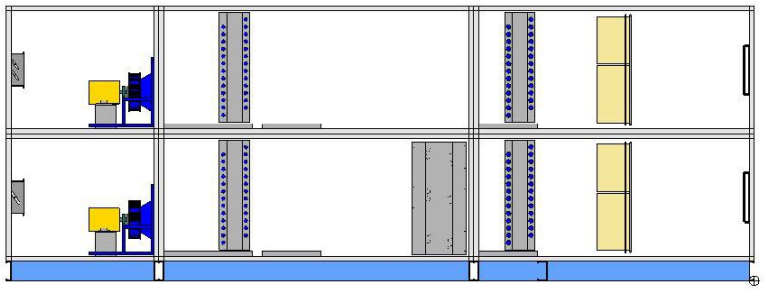
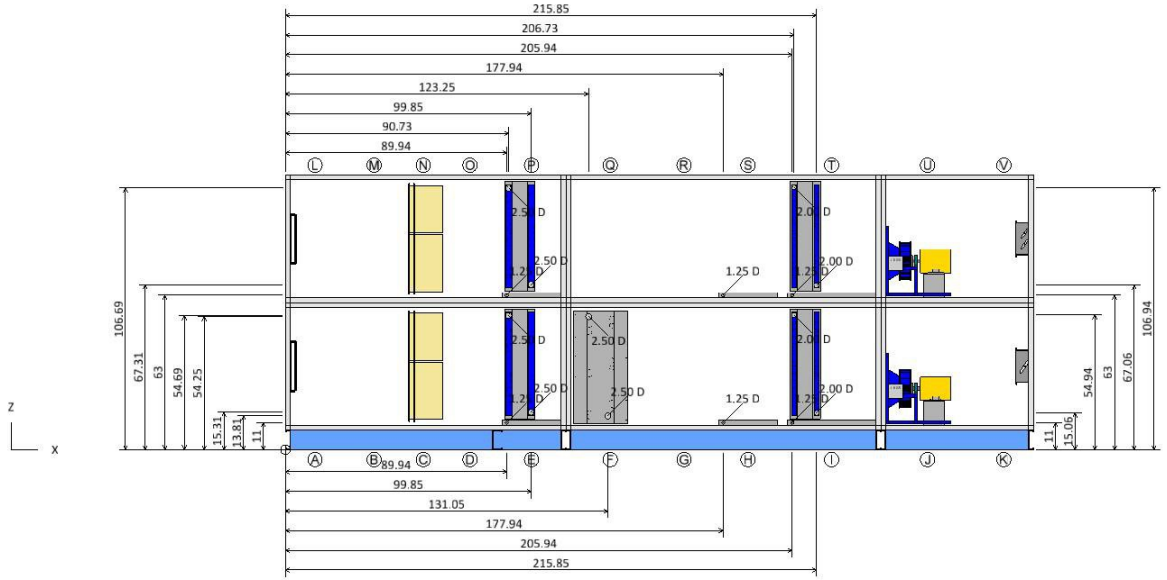
All opening dimensions have a 1" mounting flange along the inner edge. The actual airflow area of the opening is 2" smaller in each dimension.



LEFT ELEVATION VIEW



RIGHT ELEVATION VIEW

Coil and Drain Connections

	Type	X	Y	Z	Diam
Ⓔ	Chilled Water coil				
	Condensate drain conn:	89.94	-2.90	11.00	1.25
	Cold water inlet:	99.85	-5.00	15.31	2.50
	Cold water outlet:	90.73	-5.00	54.69	2.50
Ⓕ	Steam Face and Bypass Coil				
	Steam inlet:	123.25	-5.00	54.25	2.50
	Steam outlet:	131.05	-5.00	13.81	2.50
Ⓗ	Chilled Water coil				
	Condensate drain conn:	177.94	-2.90	11.00	1.25
Ⓘ	Chilled Water coil				
	Condensate drain conn:	205.94	-2.90	11.00	1.25
	Cold water inlet:	215.85	-5.00	15.06	2.00
	Cold water outlet:	206.73	-5.00	54.94	2.00
Ⓟ	Chilled Water coil				
	Condensate drain conn:	89.94	-2.90	63.00	1.25
	Cold water inlet:	99.85	-5.00	67.31	2.50
	Cold water outlet:	90.73	-5.00	106.69	2.50
Ⓢ	Chilled Water coil				
	Condensate drain conn:	177.94	-2.90	63.00	1.25
Ⓣ	Chilled Water coil				
	Condensate drain conn:	205.94	-2.90	63.00	1.25
	Cold water inlet:	215.85	-5.00	67.06	2.00
	Cold water outlet:	206.73	-5.00	106.94	2.00

Note: Dimensions are measured from the origin point.

Coil and Drain Connections	Unit Tag: AHU-5 Stacked			Sales Office: Harrison Energy Partners		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH011GDGM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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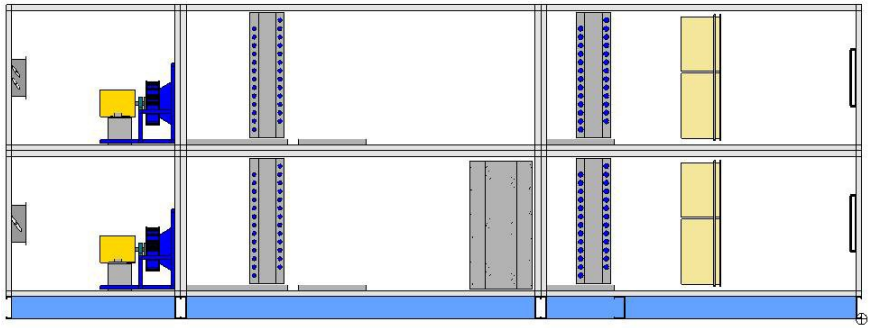
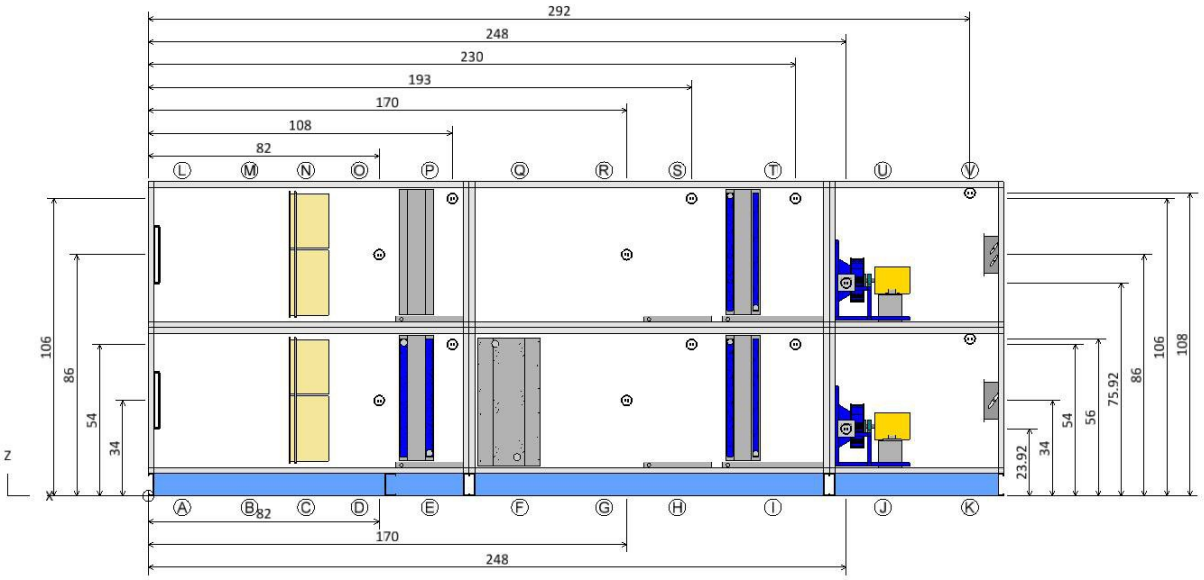
www.DaikinApplied.com Software Version: 13.43

All opening dimensions have a 1" mounting flange along the inner edge. The actual airflow area of the opening is 2" smaller in each dimension.



LEFT ELEVATION VIEW



RIGHT ELEVATION VIEW

Component Key

	Type	X	Y	Z	Volts	Phase
Ⓓ	Access Section LED Marine Light	82.00	0.00	34.00	110	1
Ⓔ	Chilled Water coil LED Marine Light	108.00	0.00	54.00	110	1
Ⓖ	Access Section LED Marine Light GFI	170.00	0.00	34.00	110	1
Ⓗ	Chilled Water coil LED Marine Light	193.00	0.00	54.00	110	1
Ⓘ	Chilled Water coil LED Marine Light	230.00	0.00	54.00	110	1
Ⓙ	Return Fan Fan	248.00	0.00	23.92	460	3
Ⓚ	Plenum Section LED Marine Light	292.00	0.00	56.00	110	1
Ⓞ	Access Section LED Marine Light	82.00	0.00	86.00	110	1
Ⓟ	Chilled Water coil LED Marine Light	108.00	0.00	106.00	110	1
Ⓡ	Access Section LED Marine Light GFI	170.00	0.00	86.00	110	1
Ⓢ	Chilled Water coil LED Marine Light	193.00	0.00	106.00	110	1
Ⓣ	Chilled Water coil LED Marine Light	230.00	0.00	106.00	110	1
Ⓤ	Supply Fan Fan	248.00	0.00	75.92	460	3
Ⓥ	Plenum Section LED Marine Light	292.00	0.00	108.00	110	1

Note: Dimensions are measured from the origin point.

Electrical Connections	Unit Tag: AHU-5 Stacked			Sales Office: Harrison Energy Partners		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH011GDGM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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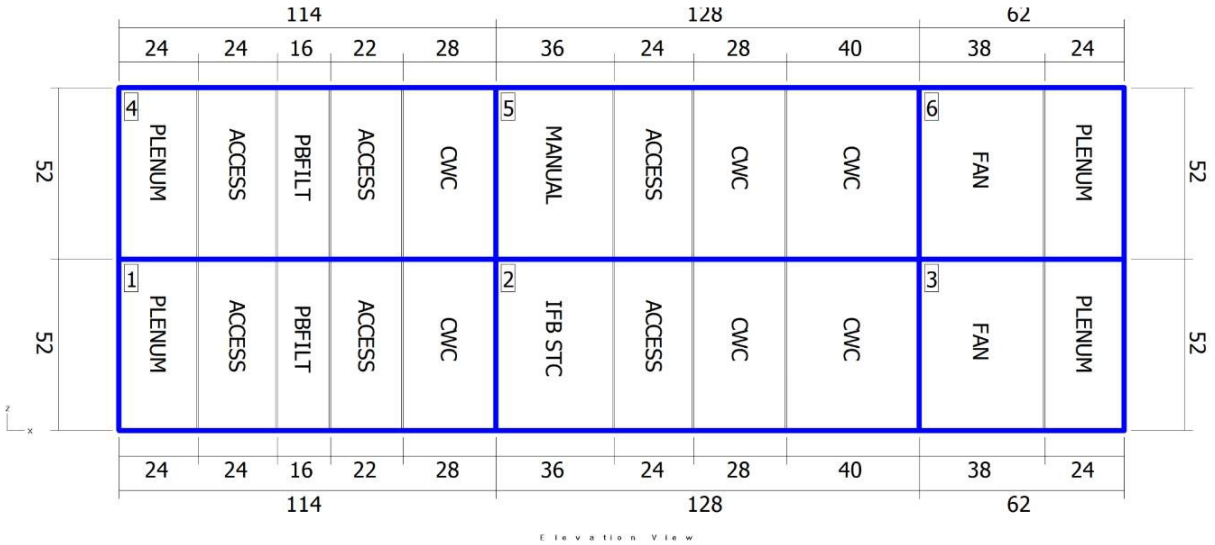
All opening dimensions have a 1" mounting flange along the inner edge. The actual airflow area of the opening is 2" smaller in each dimension.



Shipping Sections

Section	Weight (lb)	X	Y	Z
Section 1	1440.72	114	48	52
Section 2	1843.39	128	48	52
Section 3	771.04	62	48	52
Section 4	1249.06	114	48	52
Section 5	1255.39	128	48	52
Section 6	677.00	62	48	52
Total Unit	7236.60	304	48	104

Note: Base rails, curb ready base, coil connectors, drain connectors, and control boxes not included in height X, Y, Z dimensions.
Shipping section may be 2" longer in air flow direction due to internal splice joint.

Shipping Sections	Unit Tag: AHU-5 Stacked			Sales Office: Harrison Energy Partners		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH011GDGM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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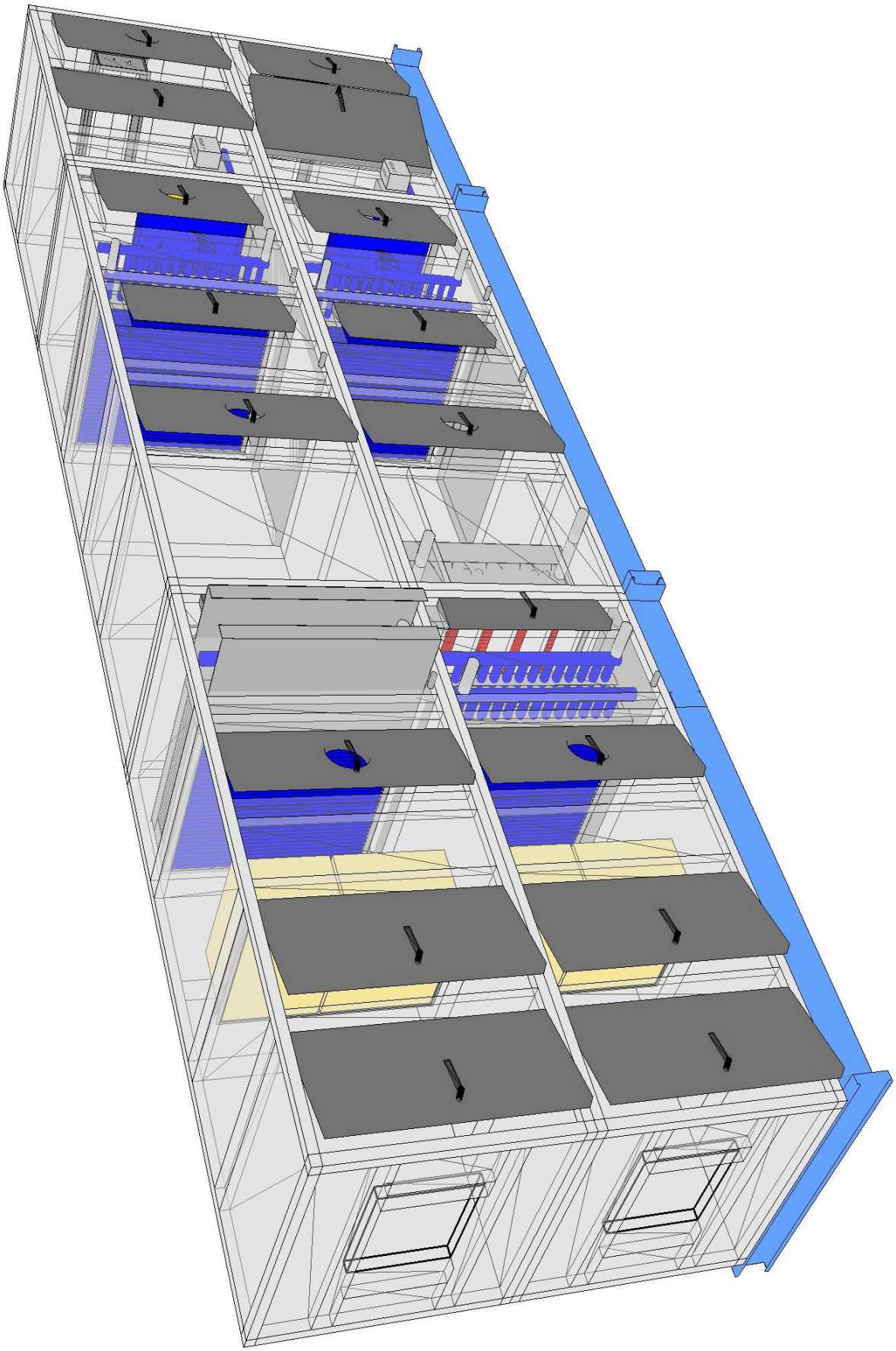

Product Drawing

Unit Tag: AHU-5 Stacked			Sales Office: Harrison Energy Partners		
Project Name: UAMS CAMID			Sales Engineer:		
Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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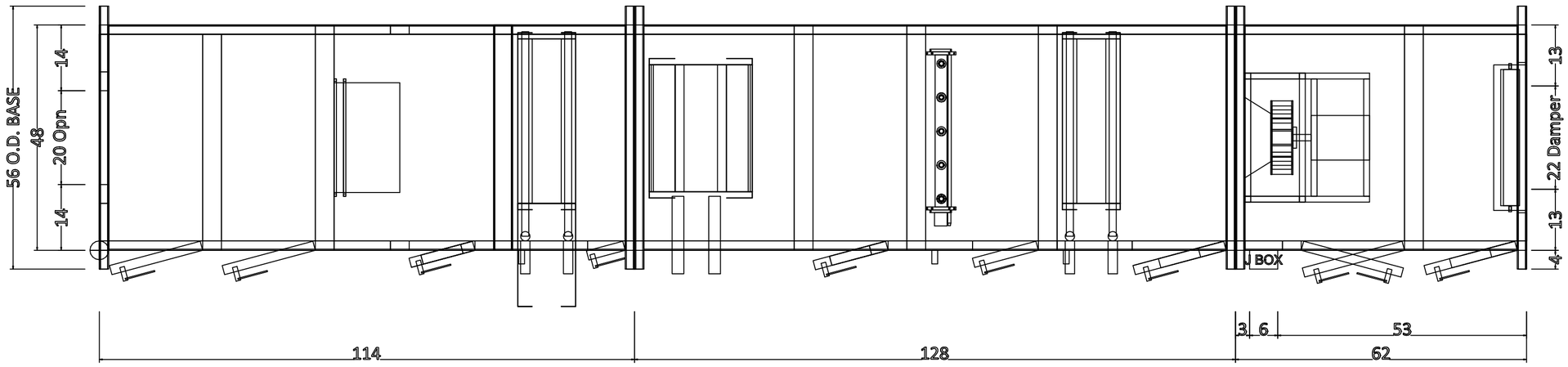
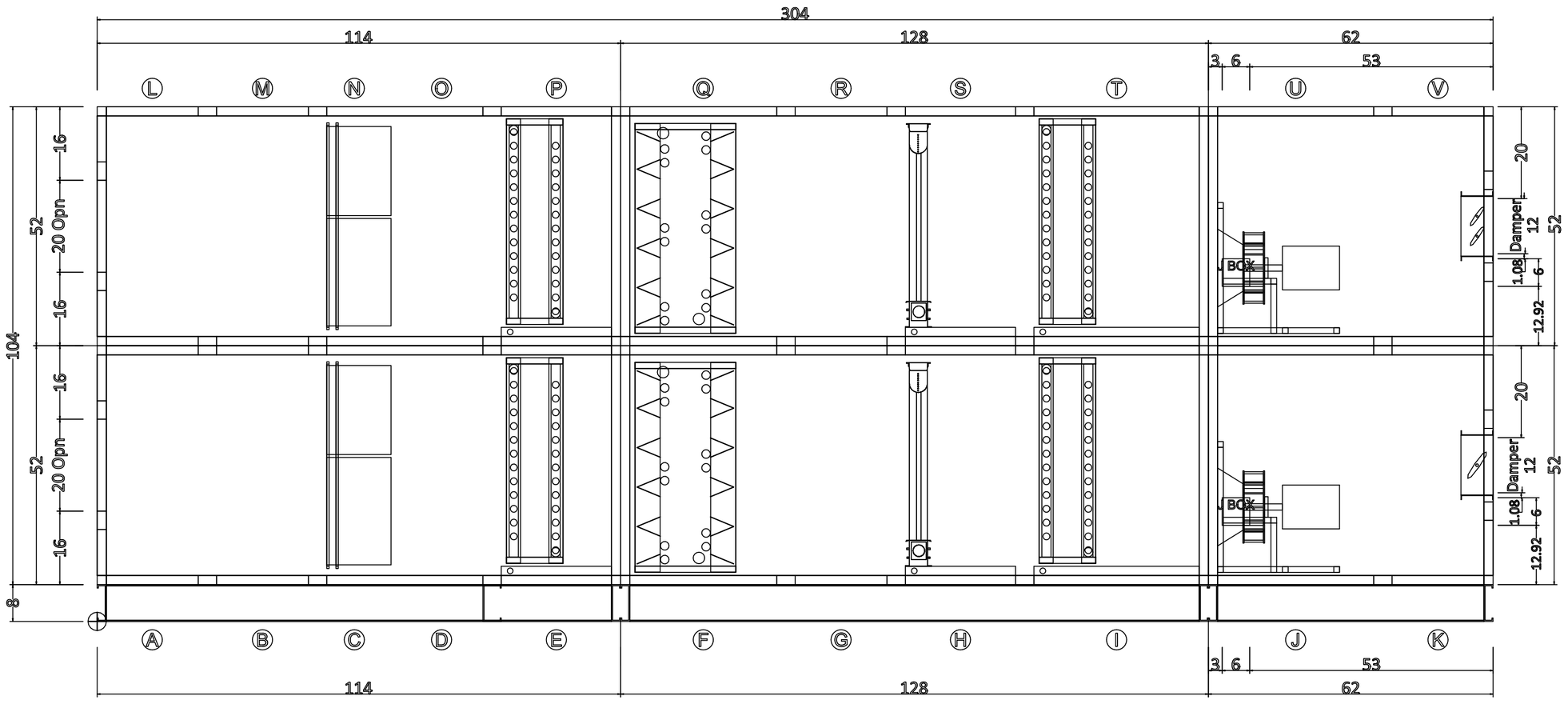
All opening dimensions have a 1" mounting flange along the inner edge. The actual airflow area of the opening is 2" smaller in each dimension.

Unit drawings showing humidifier manifolds and IFB coil in the top airstream



PLAN VIEW



ELEVATION VIEW

Component Key		
Ⓐ	Plenum Section Right Door (WxH):	 20 ins x 48 ins
Ⓑ	Access Section Right Door (WxH):	 20 ins x 48 ins
Ⓒ	Panel and Cartridge Filter Pre Filter Type: Cartridge Filter Type:	 Pleated (MERV 8) Varicel VXL
Ⓓ	Access Section Right Door (WxH):	 14 ins x 48 ins
Ⓔ	Chilled Water coil Coil Model: Total Capacity: Right Door (WxH):	 5WH1108C 54005.0 Btu/hr 8 ins x 38 ins
Ⓕ	Steam Face and Bypass Coil Total Capacity:	 240300.0 Btu/hr
Ⓖ	Access Section Right Door (WxH):	 16 ins x 48 ins
Ⓗ	Chilled Water coil Coil Model: Total Capacity: Right Door (WxH):	 5WH0002C 0.0 Btu/hr 14 ins x 38 ins
Ⓘ	Chilled Water coil Coil Model: Total Capacity: Right Door (WxH):	 5WH1008C 326506.0 Btu/hr 20 ins x 38 ins
Ⓙ	Return Fan Fan Type: Fan Size (Class): Air Flowrate: T.S.P: Motor Power: Right Door (WxH):	 Centrifugal - Plenum 16 (2) 3870.0 cfm 7.3 insWg 10.0 HP 22 ins x 48 ins
Ⓚ	Plenum Section Right Door (WxH):	 20 ins x 44 ins
Ⓛ	Plenum Section Right Door (WxH):	 20 ins x 48 ins
Ⓜ	Access Section Right Door (WxH):	 20 ins x 48 ins
Ⓝ	Panel and Cartridge Filter Pre Filter Type: Cartridge Filter Type:	 Pleated (MERV 8) Varicel VXL
Ⓞ	Access Section Right Door (WxH):	 14 ins x 48 ins
Ⓟ	Chilled Water coil Coil Model: Total Capacity: Right Door (WxH):	 5WH1108C 54005.0 Btu/hr 8 ins x 38 ins
Ⓠ	Manual Section	
Ⓡ	Access Section Right Door (WxH):	 16 ins x 48 ins
Ⓢ	Chilled Water coil Coil Model: Total Capacity: Right Door (WxH):	 5WH0002C 0.0 Btu/hr 14 ins x 38 ins
Ⓣ	Chilled Water coil Coil Model: Total Capacity: Right Door (WxH):	 5WH1008C 326506.0 Btu/hr 20 ins x 38 ins
Ⓤ	Supply Fan Fan Type: Fan Size (Class): Air Flowrate: T.S.P: Motor Power: Right Door (WxH):	 Centrifugal - Plenum 16 (2) 3870.0 cfm 7.2 insWg 10.0 HP 22 ins x 48 ins
Ⓥ	Plenum Section Right Door (WxH):	 20 ins x 44 ins

Plan/Elevation - No Ends	Unit Tag: AHU-5 Stacked			Sales Office: Daikin Applied Plymouth		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH011GDGM	Oct. 24, 2024	Ver/Rev: A	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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All opening dimensions have a 1" mounting flange along the inner edge. The actual airflow area of the opening is 2" smaller in each dimension.

Submittal Package

Opportunity Name, Quote Name
UAMS CAMID, 896314

Preparation Date
2024-07-23

Locally Represented By
Condair House Account Sales
2740 Fenton Road
Ottawa, Ontario, Canada

Salesperson
Liam Berry

Zone List

Zone Tag	Q_{MA} CFM	Q_{OA} %	DB_{OA} °F	RH_{OA} %	DB_{BH} °F	RH_{BH} %	DB_{AH} °F	RH_{AH} %	DB_{SD} °F	RH_{SD} %	W_{Duct} in.	H_{Duct} in.	H_{TOT} lbs/hr	Absorption ft	Location	Tech
H-2	26000	100	53	13	53	13	53	83	53	80	108	72	718	1.62	In Duct	LiveSteam
H-5	2500	100	52	13	55	11	55	85	55	80	30	36	77	1.97	In Duct	LiveSteam

Q_{MA} = Mixed Air Volume	Q_{OA} = Outside Air
DB_{OA} = Outside Air Design Dry Bulb Temperature	RH_{OA} = Outside Air Design Relative Humidity
DB_{BH} = Before Humidification Dry Bulb Temperature	RH_{BH} = Before Humidification Relative Humidity
DB_{AH} = After Humidification Dry Bulb Temperature	RH_{AH} = After Humidification Relative Humidity
DB_{SD} = Space Design Dry Bulb Temperature	RH_{SD} = Space Design Relative Humidity
W_{Duct} = Duct Width	H_{Duct} = Duct Height
H_{TOT} = Total Humidification	Absorption = Absorption Distance

Product List

Zone Tag	Part Number	Item	Qty
H-2	1594341	Valve, Bronze, 1 1/4" Cv=20.0	1
H-2	2597632	Act. 0-10 Vdc 1/2 - 2 in (1/2 - 3/4 SS)	1
H-2	2597652	Wye Strainer, 2.0" nominal diameter	1
H-2	2577157	Trap F&T up to 15 psig, M	1
H-2	2549922	HEADER SAM-E 108, 3" CENTERS (SST)	1
H-2	2538925	Header Insulation, SAM-e 108"	1
H-2	1503419	Steam Tube, SAM-e, 60 in Type B, 304SS	33
H-2	2538853	Tube Insulation, SAM-e 60" (Covers 1 Tube)	33
H-2	2521405	Mounting Frame, SAM-e 51 - 99 in, SS	1
H-2	1503476	Inlet adapter, SAM-e, Pressure Steam 1-1/4" npt	1
H-2	2591657	SP Top Center Mounting Assembly	3
H-2	2591658	SP SAM-e Adjustable yoke,Side Frame qty2	1
H-2	2577157	Trap F&T up to 15 psig, M	1
H-5	1594314	Valve, Bronze, 1/2" Cv=2.20	1
H-5	2597632	Act. 0-10 Vdc 1/2 - 2 in (1/2 - 3/4 SS)	1
H-5	2597648	Wye Strainer, 0.75" nominal diameter	1
H-5	2577157	Trap F&T up to 15 psig, M	1
H-5	2549909	HEADER SAM-E 30, 3" CENTERS (SST)	1
H-5	2538912	Header Insulation, SAM-e 30"	1
H-5	1503391	Steam Tube, SAM-e, 24 in Type A, 304SS	7
H-5	2538847	Tube Insulation, SAM-e 24" (Covers 1 Tube)	7
H-5	2521404	Mounting Frame, SAM-e 27 - 51 in, SS	1
H-5	1503473	Inlet adapter, SAM-e, Pressure Steam1/2" npt	1
H-5	2591657	SP Top Center Mounting Assembly	1
H-5	2591658	SP SAM-e Adjustable yoke,Side Frame qty2	1
H-5	2577157	Trap F&T up to 15 psig, M	1

Product list appears to list devices for AH-5 as 1 unit. AH-5 is 2 independent identical units. Update product list accordingly.

Data Sheet - H-2

LiveSteam

Opportunity Name:	UAMS CAMID
Quote Name:	896314
Salesperson:	Liam Berry
Date:	2024-07-23

Calculation Basis

Humidification Load (total)	718.0 lbs/h
Load Correction (gains/losses)	30.7 lbs/h
Calculated Load	687.3 lbs/h
Duct Size	108 x 72 in.
Duct Orientation	Horizontal
Total Air Volume	26000 CFM
Outside Air	100 %
Air Velocity	481.5 ft./min
Altitude	0 ft
Air Pressure	14.7 psig
Humidity Increase	40.3 gr/lb

Outside Air	Temperature	53.0°F
	Relative Humidity	13 %
	Absolute Humidity	7.4 gr/lb
Before Humidification	Temperature	53.0°F
	Relative Humidity	13 %
	Absolute Humidity	7.4 gr/lb
After Humidification	Temperature	53.0°F
	Relative Humidity	83 %
	Absolute Humidity	49.5 gr/lb
Space Design	Temperature	53.0°F
	Relative Humidity	80 %
	Absolute Humidity	47.7 gr/lb

UPDATE TO 300'

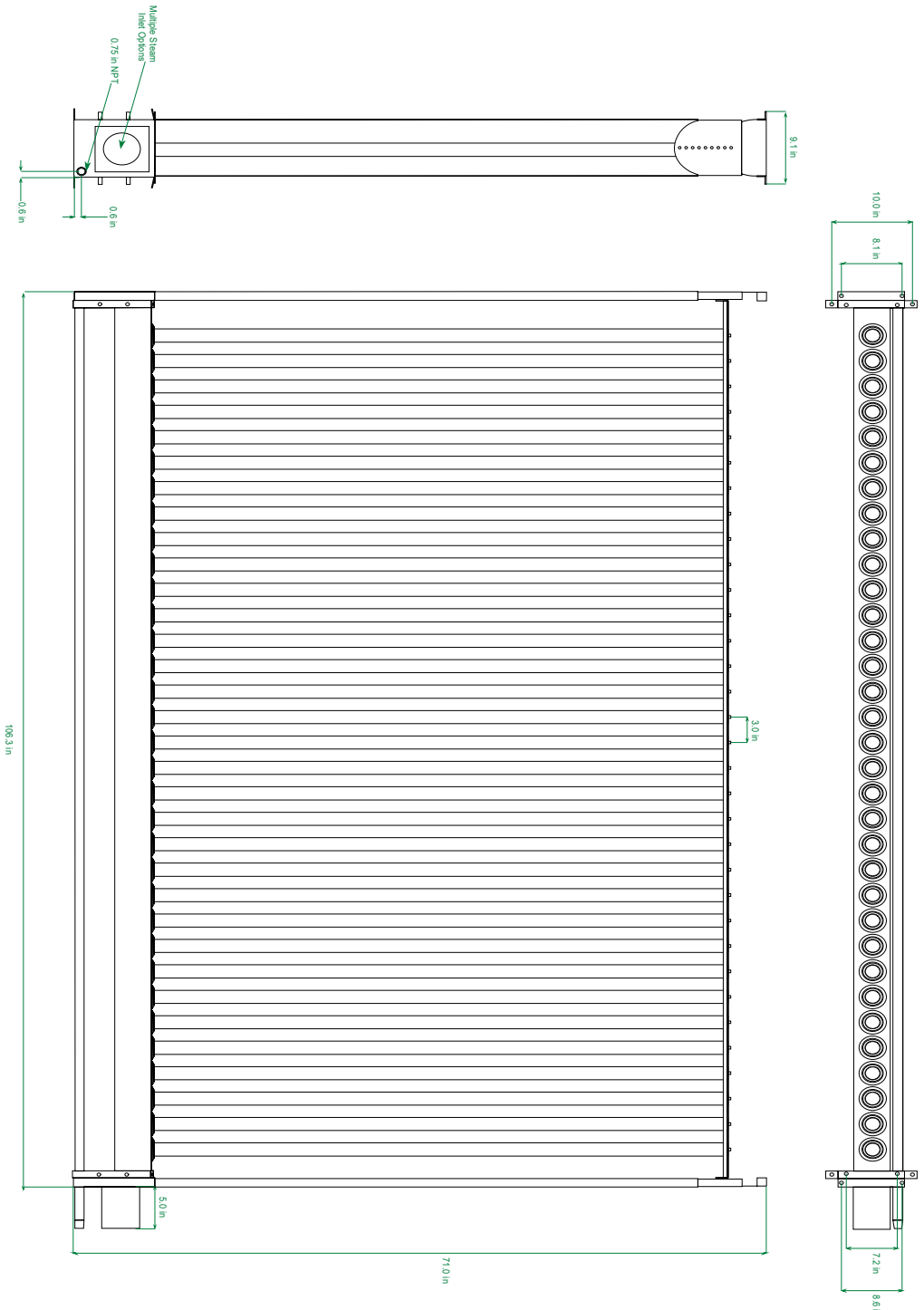
Product Data

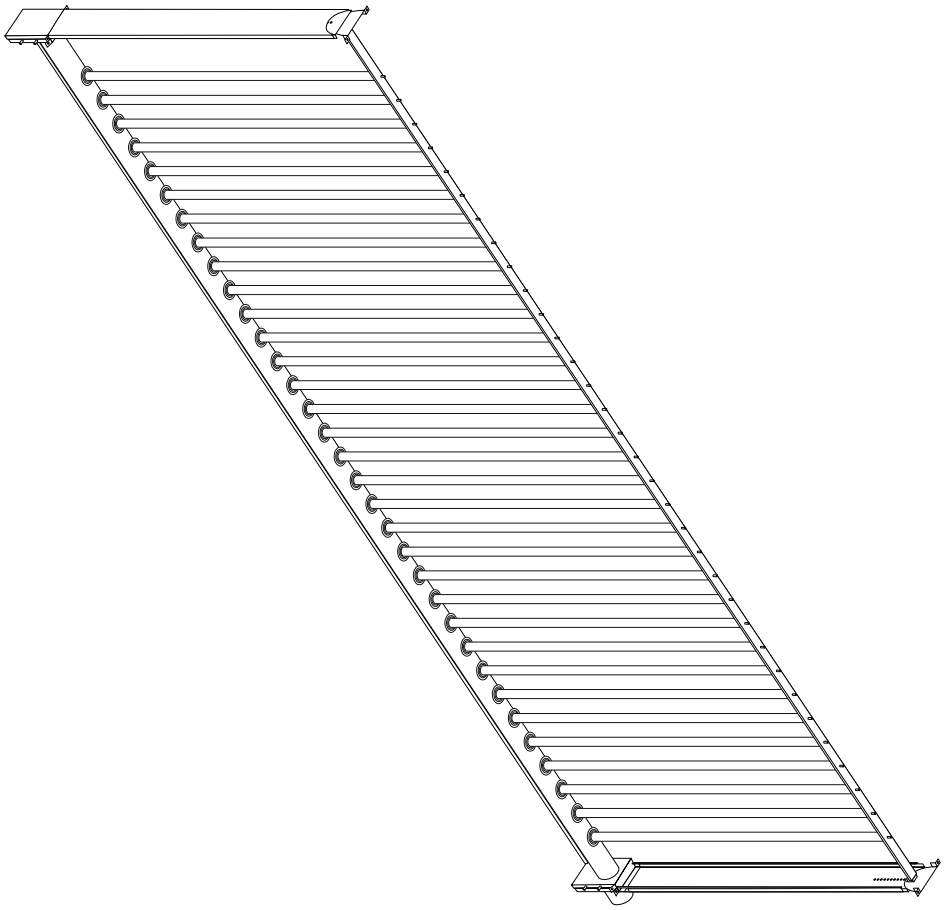
Valve, Bronze, 1 1/4" Cv=20.0

Supplied Steam Pressure:	12 psig	Maximum Steam Pressure:	50 psig
Adjusted Maximum Capacity:	719.3 lbs/h	Width:	17.3 in.
Steam Outlet OD:	1.25 in.	Height:	23.7 in.
Quantity Steam Outlets:	1	Depth:	9 in.
Minimum Steam Pressure:	2 psig	Valve CV:	20

HEADER SAM-E 108, 3" CENTERS (SST)

Width:	9 in.	Net Weight:	43.4 lbs
Height:	8.75 in.	Product Length:	108 in.
Length:	106.25 in.		


Multiple Steam Inlet Options
0.75 in NPT
9.1 in
0.6 in
0.6 in
10.0 in
8.1 in
106.3 in
3.0 in
5.0 in
71.0 in
7.2 in
8.6 in



Data Sheet - H-5

LiveSteam

Opportunity Name:	UAMS CAMID
Quote Name:	896314
Salesperson:	Liam Berry
Date:	2024-07-23

Calculation Basis

Humidification Load (total)	77.1 lbs/h
Load Correction (gains/losses)	5.0 lbs/h
Calculated Load	72.1 lbs/h
Duct Size	30 x 36 in.
Duct Orientation	Horizontal
Total Air Volume	2500 CFM
Outside Air	100 %
Air Velocity	333.3 ft./min
Altitude	0 ft
Air Pressure	14.7 psig
Humidity Increase	44.2 gr/lb

update to 300'

Outside Air	Temperature	51.5°F
	Relative Humidity	13 %
	Absolute Humidity	7.0 gr/lb
Before Humidification	Temperature	55.0°F
	Relative Humidity	11 %
	Absolute Humidity	7.0 gr/lb
After Humidification	Temperature	55.0°F
	Relative Humidity	85 %
	Absolute Humidity	54.3 gr/lb
Space Design	Temperature	55.0°F
	Relative Humidity	80 %
	Absolute Humidity	51.2 gr/lb

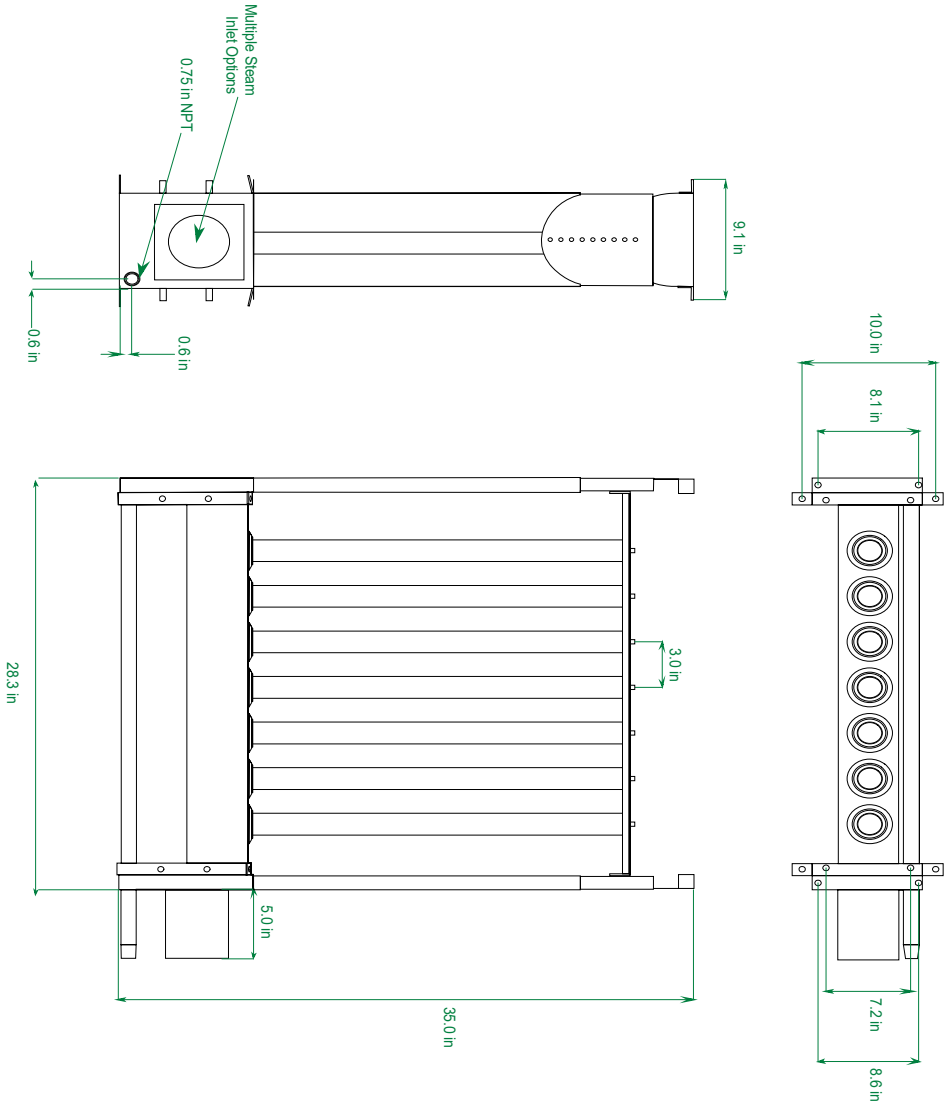
Product Data

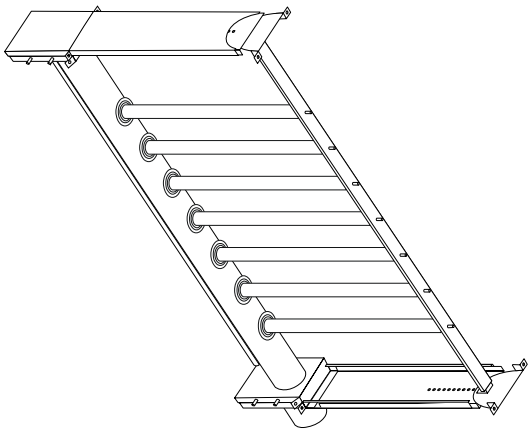
Valve, Bronze, 1/2" Cv=2.20

Supplied Steam Pressure:	12 psig	Maximum Steam Pressure:	50 psig
Adjusted Maximum Capacity:	79.1 lbs/h	Width:	9.7 in.
Steam Outlet OD:	0.5 in.	Height:	11.2 in.
Quantity Steam Outlets:	1	Depth:	6 in.
Minimum Steam Pressure:	2 psig	Valve CV:	2.2

HEADER SAM-E 30, 3" CENTERS (SST)

Width:	9 in.	Net Weight:	15.4 lbs
Height:	8.75 in.	Product Length:	30 in.
Length:	28.25 in.		


Multiple Steam Inlet Options
0.75 in NPT
9.1 in
0.6 in
0.6 in
10.0 in
8.1 in
28.3 in
3.0 in
5.0 in
35.0 in
7.2 in
8.6 in



A1 - Live Steam (1594341) Description

LIVESTEAM HUMIDIFIERS

Pressurized Boiler Steam Humidifier (Isothermal Technology)

Pre-engineered, cost effective, humidification system designed to control and distribute steam under pressure, from a facility steam boiler, for introduction into a duct or Air Handling Unit.

The system is configured to operate with regular boiler steam, up to 50 psig, using standard bronze and stainless steel components.

Steam distributors are constructed of high quality stainless steel and can be configured for single or multiple configurations. The optional stainless steel insulation jacket encompasses 1/2" fiberglass insulation to minimize heat transfer in the air stream

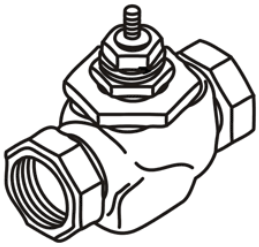
All LIVESTEAM systems consist of: a steam valve, separator, actuator/linkage and steam distributor(s). Required optional components: steam trap(s), wye strainers, humidistat(s) and temperature switch.

FEATURES

- Stainless steel separators
- Bronze steam valves with stainless steel seat, stem, and plug
- Pneumatic or electric actuator/linkage
- Stainless steel steam distributors (standard or insulated)
- Single distributor capacity: up to 1501 lbs/hr @ 50 psi
- Multiple distributor capacity: up to 3209 lbs/hr @ 50 psi
- On/Off or modulating control
- Two-year limited warranty

A2 - Live Steam (1594341) Schematic

VALVE DATA



Valve Manufacturer:	Schneider Electric
Valve Model:	VB-7263
Valve Size:	1/2" - 2"
Flow Type:	Modified Equal Percentage
Flow Coefficient (Cv) Factor:	As Specified

Valve Body Data		Material	
Maximum Static Pressure	250 Psig	**Body**	Bronze
Maximum Inlet Pressure (Steam)	100 Psig	**Stem**	Stainless Steel
Recommen ded Differential Pressure	35 Psig	**Seat**	Bronze
		Plug	Stainless Steel
Maximum Media Temperature	340°F(171°C)	**Packing**	Spring Loaded Teflon Cone
Plug Type	Parabolic	**Disc**	Teflon

Rangeability:

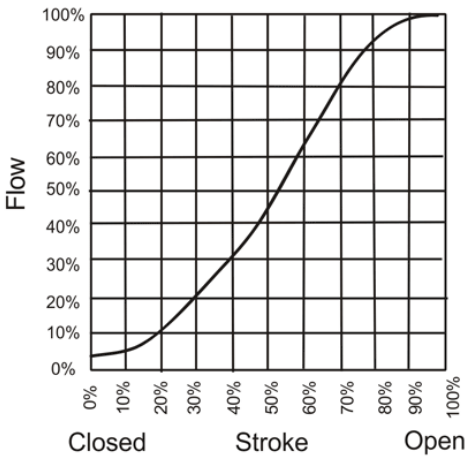
Rangeability is defined as the ratio of rated flow to the minimum controllable flow.

For two-way valves, modulation occurs when plug displacement allows flow through the area between the plug and the port. The rangeability value is achieved by accurately machining the plug and port diameters for appropriate clearance. The following are normal values, with 25% tolerances.

Nominal Size		Valve	Nominal Ratio
Standard	Metric	Cv	
1/2"	15mm	0.1	2:1
		0.22	4:1
		0.4	5:1
		0.75	10:1
		1.3	15:1
		2.2	25:1
		2.8	28:1
		4.4	40:1
3/4"	20mm	5.5	50:1
		7.5	60:1
1"	25mm	10	60:1
		12	75:1
1 1/4"	32mm	20	75:1
1 1/2"	40mm	28	75:1
2"	50mm	40	75:1

NORTEC reserves the right to ship the selected valve or an equivalent valve depending on availability

Typical Flow Curve



*For representative purposes only

CONTROL VALVE
BRONZE BODY

A3 - Live Steam (2597632) Description

LIVESTEAM / SE Series Electric Modulating Actuator, provides motive power to operate steam valves. The actuators are designed mount directly to the valves without the use of linkages. They are linear acting and feature a return spring to close the valve in case of a loss of power. A manual override simplifies commissioning and allows the user to set the correct pre-load tension on the valve stem. The actuators are designed for safe operation and feature overload protection as well as a plenum rated polymer housing. Available control voltages include on/off, 0-10VDC, or 4- 20 mA, and 2 to 10 VDC feedback signal reports position of the valve. All actuators a operate with a 24 VAC supply voltage. For applications where only 120 VAC is available, a plug-in transformer, part 1603032, can be used.

A4 - Live Steam (2597632) Installation

Actuator/Valve Close-Off Pressure

Valve Material	Valve Part Number	CV	Size	Pressure* (psig)	Actuator Part Number			Linkage Kit**
					0-10 Vdc	4-20 mAdc	On/Off	
Bronze	1594300	0.10	0.5"	2-50	1507549	1507550	1507551	2573331
	1594302	0.22	0.5"	2-50	1507549	1507550	1507551	2573331
	1594304	0.40	0.5"	2-50	1507549	1507550	1507551	2573331
	1594306	0.75	0.5"	2-50	1507549	1507550	1507551	2573331
	1594310	1.3	0.5"	2-50	1507549	1507550	1507551	2573331
	1594314	2.2	0.5"	2-50	1507549	1507550	1507551	2573331
	1594316	2.9	0.5"	2-50	1507549	1507550	1507551	2573331
	1594318	4.4	0.5"	2-50	1507549	1507550	1507551	2573331
	1594322	5.5	0.75"	2-50	1507549	1507550	1507551	2573331
	1594324	7.5	0.75"	2-50	1507549	1507550	1507551	2573331
	1594330	10	1"	2-50	1507549	1507550	1507551	2573331
	1594332	12	1"	2-50	1507549	1507550	1507551	2573331
	1594341	20	1.25"	2-50	1507549	1507550	1507551	2573331
	1594350	28	1.5"	2-35	1507549	1507550	1507551	2573331
				36-50	1507552	1507553	1507554	2573332
	1594360	40	2"	2-20	1507549	1507550	1507551	2573331
				21-50	1507552	1507553	1507554	2573332
Stainless Steel	1594201	0.10	0.5"	2-50	1507549	1507550	1507551	2573333
	1594203	0.22	0.5"	2-50	1507549	1507550	1507551	2573333
	1594205	0.40	0.5"	2-50	1507549	1507550	1507551	2573333
	1594206	0.75	0.5"	2-50	1507549	1507550	1507551	2573333
	1594207	0.95	0.5"	2-50	1507549	1507550	1507551	2573333
	1594208	1.3	0.5"	2-50	1507549	1507550	1507551	2573333
	1594209	1.75	0.5"	2-50	1507549	1507550	1507551	2573333
	1594210	2.2	0.5"	2-50	1507549	1507550	1507551	2573333
	1594211	2.8	0.5"	2-50	1507549	1507550	1507551	2573333
	1594213	3.6	0.5"	2-50	1507549	1507550	1507551	2573333
	1594221	4.3	0.75"	2-50	1507549	1507550	1507551	2573333
	1594222	5	0.75"	2-50	1507549	1507550	1507551	2573333
	1594223	6.2	0.75"	2-50	1507549	1507550	1507551	2573333
	1594432	10	1"	2-50	1507556	1507557	1507558	2573334
	1594440	24	1.5"	2-50	1507556	1507557	1507558	2573334
	1594450	40	2"	2-50	1507556	1507557	1507558	2573334

*Maximum operating steam pressure for LiveSteam humidifiers is 50 PSIG (15 PSIG on Steam Exchange Humidifiers)

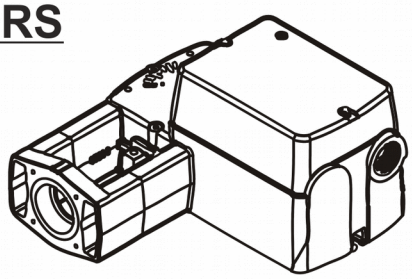
**Linkage Kit already included with Actuator

condair

Actuators Maximum Close-Off Pressure

A5 - Live Steam (2597632) Shop Drawing

ELECTRIC ACTUATORS



For bronze ½" – 2" and stainless steel ½" – ¾" valves, for incoming pressures from 2 to 50 psi for all valves, except for 1 1/2" which would be 2 to 34 psi and 2" which would be 2 to 19 psi.

Actuator Inputs

Control Signal: On/Off, 0-10 Vdc, 4-20 mAdc
Power Input: See Table-1. All 24 Vac circuits are Class 2. All circuits 30 Vac and above are class 1.
Connections: 3 ft (91cm) appliance wire or plenum cables, enclosure accepts ½" (13mm) conduit connectors. For M20 metric connector, use ½" NPT to M20 adaptor.

Actuator Outputs

Electrical:

Position Feedback Voltage (proportional or floating only): For voltage ranges, the feedback signal is the same range as the input signal. The 4-20 mAdc current range and floating actuators have a 2-10 Vdc position feedback signal. The position feedback signal can supply up to 0.5 mA to operate up to 4 additional slave actuators.

Mechanical:

Linear Stroke: ½" (13mm) nominal.
Approx. Stroke Timing: Powered, 44-60 sec.
Manual Override: Allows positioning of valve and pre-load using manual crank.
Right/Left Jumper: Permits reverse acting/direct acting linear motion (0-10 Vdc and 4-20 mAdc only).

Environment:

Shipping & Storage: -40 to 160°F (-40 to 71°C)
Operating: -22 to 140°F (-30 to 60°C)
Temperature Restrictions: For maximum ambient 140°F (60°C) the maximum allowable fluid temperature should not exceed 366°F (186°C).
Humidity: 15-95%RH, non-condensing
Location: NEMA 1. NEMA 2 (enclosure is air plenum rated), UL Type 2 (IEC IP54) with customer supplied water tight conduit connectors.
Overall Dimensions: 6.76" (172mm) x 3.5" (89mm) x 6.31" (160mm)

Agency Listings
UL 873: Underwriters Laboratories (File #E9429 Category Temperature-Indicating and Regulating Equipment).
CUL: UL Listed for use in Canada by Underwriters Laboratories. Canadian Standards C22.2 No. 24-93.

Table 1

Part Number	Control Action	Actuator Power Input							Linear Stroke Inches	Approx. Stroke Timing in Seconds @ 70ºF (21ºC)		Output Force Rating lb (Newton)	
		Voltage	Running					Holding					
			50Hz		60Hz		DC Amps	50/60Hz					
			VA	W	VA	W		W		Powered	Spring Return	Min.	Max Stall
1507549	0-10 Vdc	24 Vac±20% 20-30 Vdc	6.6	4.2	6.6	4.2	0.14	1.5	½	60	16	-	-
1507550	4-20 mAdc												
1507551	On/Off		5.3	4.1	5.3	4.1	0.15	1.2		44	19		

condair

Electric Actuator
Part # 1507549, 1507550, 1507551

A6 - Live Steam (2597632) Shop Drawing

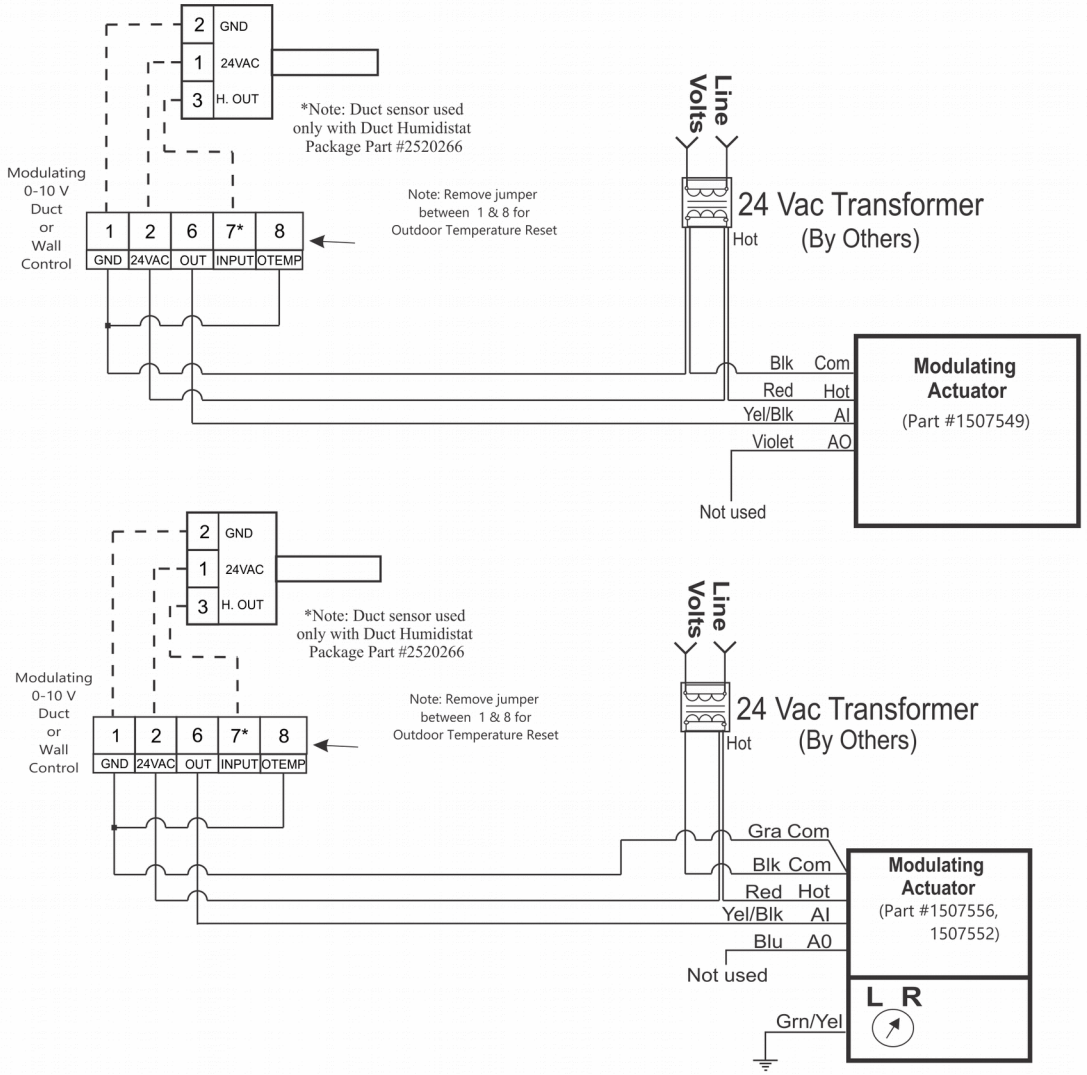
0-10V DIGITAL HUMIDISTAT

Wiring Diagram for Livesteam

Part #	Description
1510142	0-10V Digital Wall Humidistat
2520266	0-10V Digital Duct Humidistat pkg.

Warning: Failure to wire the humidistat in accordance with the wiring diagram could permanently damage the electronics. Such errors will void the warranty.
Cabling between controls and unit should be shielded 18 AWG

HUMIDISTAT TO ACTUATOR CONNECTIONS

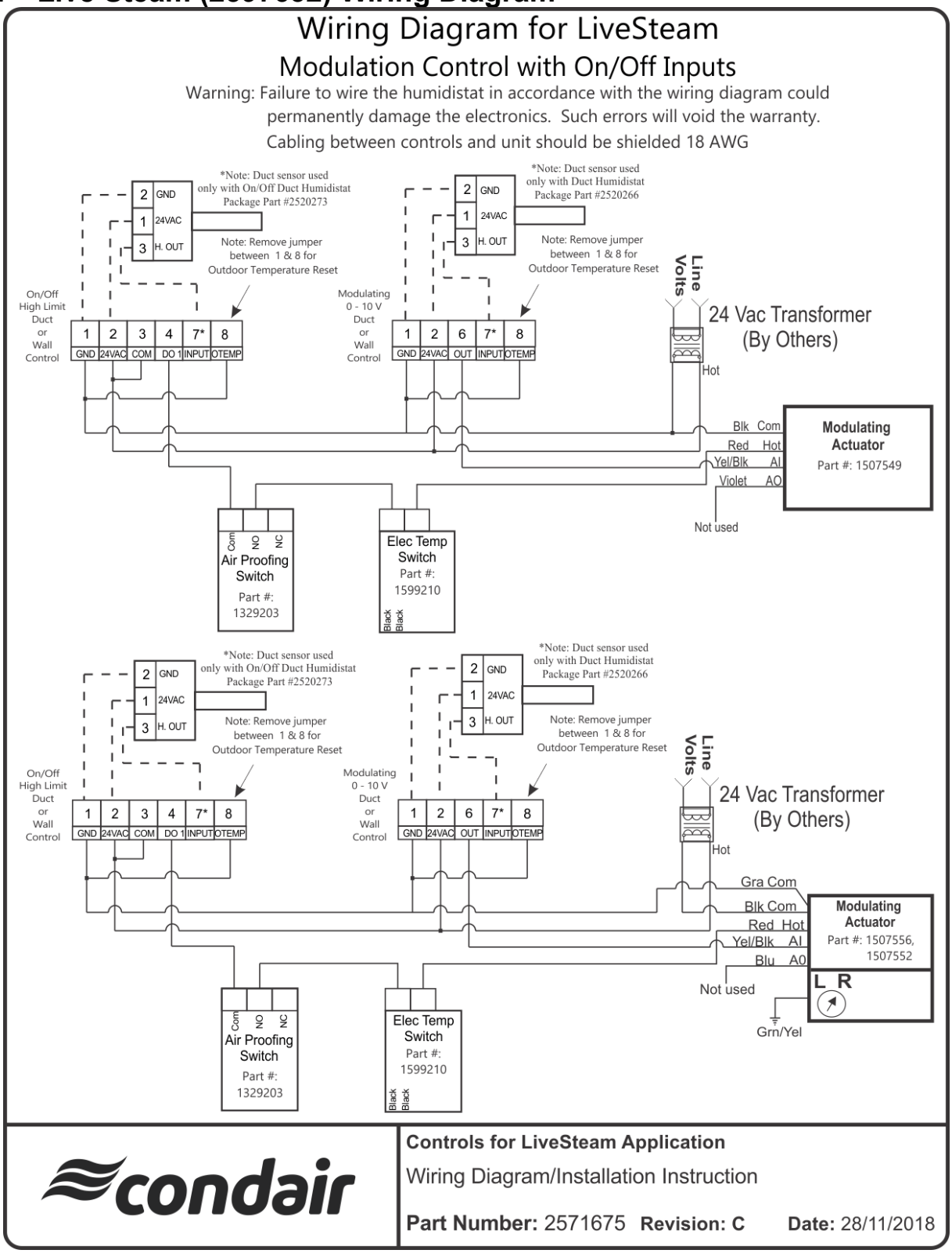


Nortec 0-10V Digital Humidistat for LiveSteam

Wiring Diagram/Installation Instruction

Part Number: 2520531 **Revision: C** **Date:** 03/10/14

A7 - Live Steam (2597632) Wiring Diagram



A8 - Live Steam (2597652) Description

LIVESTEAM Wye Strainer, used in the supply steam line to remove impurities by filtering the steam through a strainer screen.

A9 - Live Steam (2597652) Shop Drawing

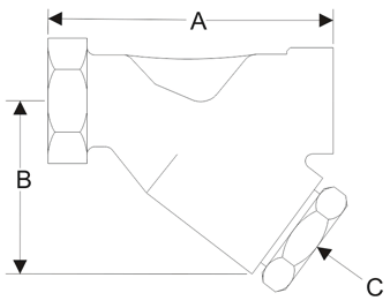
STRAINER DATA

Strainer Type:	"Y" Type
Strainer Size:	½" to 3"
Connection:	NPT
Body Material:	Cast Iron
Screen Material:	20 Mesh Stainless Steel
Pressure (non-shock):	250 psi (1725 kPa) - 406°F (208°C)
Installation:	The strainer should be installed with the flow direction as indicated on the body, in a vertical down or horizontal pipe line. The strainer must be accessible for periodic removal of accumulated debris by either blowing down or removal and cleaning of the screen.

Type	IT
Sizes	1/2" to 3"
Connections	NPT
Construction	Cast Iron
Maximum Saturated Steam Pressure	250 psig
Standard Screen	20 Mesh Type 304 Stainless Steel

No	Part	Material
1	Body	Cast Iron
2	Bushing (1/4" - 2")	Malleable Iron
2A	Cap (2 1/2" - 3")	Cast Iron
3	Cap Gasket (2 1/2" & 3")	Graphite
4	Standard Screen	Stainless Steel Type 304

Dimension	A	B	C	Weight
Size	inch	inch	NPT	lbs
1/2	3-3/16	2-1/16	3/8"	1.2
3/4	3-3/4	2-7/16	1/2"	2.9
1	4	2-5/8	3/4"	4.3
1-1/4	5	3-3/8	1"	6.5
1-1/2	5-3/4	3-7/8	1-1/4"	9.6
2	7	4-3/4	1-1/2"	12.9
2-1/2	9-1/4	5-7/8	1-1/4"	22.0
3	10.0	6	1-1/4"	35.0



Strainer - Cast Iron
Nortec Part #159-9620 to 159-9627

A10 - Live Steam (2597652) Shop Drawing

STRAINER DATA

Steam Pressure		Strainer Nominal Diameter in Inches											
		3/4		1		1 1/4		1 1/2		2		2 1/2	
psig	kPa	lbs/hr	kg/hr	lbs/hr	kg/hr	lbs/hr	kg/hr	lbs/hr	kg/hr	lbs/hr	kg/hr	lbs/hr	kg/hr
2	14	105	48	182	83	255	116	346	157	638	290	912	414
5	34	124	56	215	98	301	137	409	186	753	342	1075	489
10	69	155	70	270	123	378	172	512	233	944	429	1348	613
15	103	186	85	324	147	454	206	616	280	1135	516	1621	737
20	138	218	99	379	172	530	241	720	327	1326	603	1894	861
25	172	249	113	433	197	607	276	824	374	1517	690	2167	985
30	207	281	128	488	222	683	311	927	421	1708	776	2440	1109
35	241	312	142	543	247	760	345	1031	469	1899	863	2713	1233
40	276	343	156	597	271	836	380	1135	516	2090	950	2986	1357
45	310	375	170	652	296	912	415	1238	563	2281	1037	3259	1481
50	345	406	185	706	321	989	450	1342	610	2472	1124	3532	1605

condair | Strainer Size Performance Data

A11 - Live Steam (2577157) Description

LIVESTEAM Steam Trap, float and thermostatic for pressures up to 15 psig. The trap allows removal of condensate from a pressurized steam system while preventing the passage of steam.

A12 - Live Steam (2577157) Shop Drawing

TRAP DATA

Trap Type: Float and Thermostatic

Trap Connection: ¾" NPT

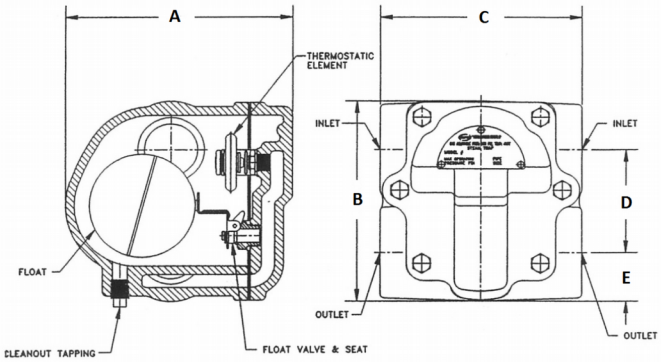
Construction: Cast Iron Body and Cover. Stainless Steel Internals.

Maximum Operating Pressure: 15 psig (103 kPa) Nortec Part #2577157
75 psig (103 kPa) Nortec Part #1599602

Installation: Full port isolating valves should be placed to permit servicing. The trap should be installed below the drainage point with a collecting leg before the trap, in a position so that the float arm is in a horizontal plane so that the float rises and falls vertically, and with the direction of flow as indicated on the body. The trap has 4 orifices and 2 plugs to facilitate installation.

Maintenance: This product can be maintained without disturbing the piping connections. Complete isolation from both supply and return line is required before any servicing is performed.

Dimensions in (cm)								
	A	B	C	D	E	Weight	Cleanout port	Ports
2577157/ 1599602	5-3/4 (14.6)	5-11/16 (14.4)	4-7/8 (12.3)	3-3/8 (8.5)	1-5/32 (2.9)	12 lbs (5.4 kg)	1/4"NPT	4 ports, 2 plugs, 3/4" NPT



Construction Materials	
Part	Material
Body	Class 30 Cast Iron
Cap	Class 30 Cast Iron
Disc	Stainles Steel & Brass
Hinge	Brass
Pin, Hinge	Stainles Steel
Gasket	non Asbestos Fiber
Seat	SST, Brass Holder
Valve	Stainless Steel
Clip	Stainless Steel
Lever & float	Stainless Steel
Plug 1/4" NPT	Steel

nortec humidity.com

Steam Trap - F&T Cast Iron
Nortec Part # 2577157, 1599602

A13 - SAM-e (2549922) Description

SAM-e HEADERS

The SAM-e distributes clean steam, precisely controlled, uniformly into the entire air stream, and void of any condensate spray. Steam distribution takes place via steam tubes with integrated nozzles. The steam is kept dry as condensate is drained through the main header.

The stainless steel headers are typically installed with vertical tubes for horizontal airflow applications, but can also be mounted horizontally (10 deg. incline from horizontal) for vertical airflow applications. The headers can be ordered 3, 6, 9, or 12 inch center to center tube spacing for maximum flexibility and optimal steam distribution..

Manufactured out of high grade 304 stainless steel, the header features welded inlet and condensate connections to ensure leak-free operation. Stainless steel inlet adapter is factory supplied for connection to steam supply line(s), allowing maximum flexibility, and simplification of installation. Specialized synthetic grommets form an air and water-tight seal around the base of the steam tubes, simplifying installation and ensuring reliable leaf-free operation.

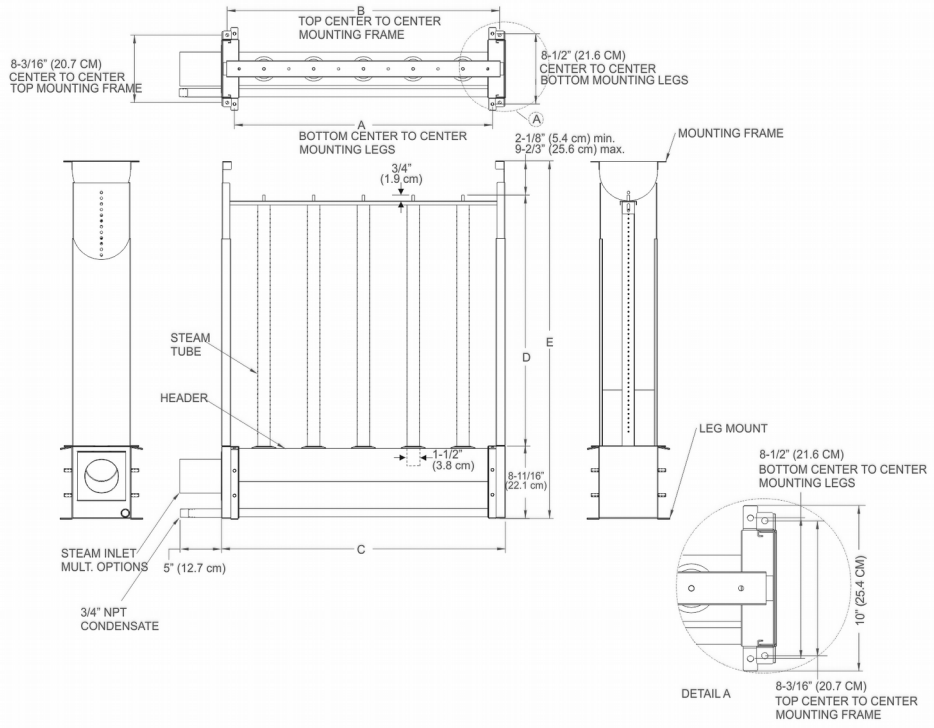
Headers are also available with optional 304 stainless steel insulation. This metal shielding creates an insulating air-gap around the header which minimizes heat transfer by conduction and convection, while the reflective surface minimzes heat transfer by radiation. Insulating the header in this manner increases energy efficiency by up to 70%, and results in significantly reduced airstream heat gain and steam condensate loss.

FEATURES

- Steam tubes with end support bracket for easy installation.
- All stainless steel distributors and nozzles ensure permanent bond.
- Stainless steel header with rubber grommet seals for easy installation of steam tubes.
- Includes hose cuffs and clamps for steam line connections.
- Adjustable mounting frame available for quick and easy installation.
- Available with 3", 6", 9" or 12" center to center steam tube spacing.
- Available insulated for increased energy efficiency and reduced airstream heat gain.
- High capacities.
- Ten year limited warranty.

A14 - SAM-e (2549922) Shop Drawing

Duct Width		A		B		C		Duct Height		D (Tube height)		E Min.		E Max.	
in	cm	in	cm	in	cm	in	cm	in	cm	in	cm	in	cm	in	cm
18	45.7	13 1/8	33.3	14 7/8	37.8	16 1/4	41.3	18	45.7	5 1/2	14.0	17	43.2	24 2/3	62.7
24	61.0	19 1/8	48.6	20 7/8	53.0	22 1/4	56.5	24	61.0	11 1/2	29.2	23	58.4	30 2/3	77·9
30	76.2	25 1/8	63.8	26 7/8	68.3	28 1/4	71.8	30	76.2	17 1/2	44·5	29	73.7	36 2/3	93·1
36	91.4	31 1/8	79.1	32 7/8	83.5	34 1/4	87.0	36	91.4	23 1/2	59.7	35	88.9	42 2/3	108.4
42	106.7	37 1/8	94.3	38 7/8	98.7	40 1/4	102.2	42	106.7	29 1/2	74.9	41	104.1	48 2/3	123.6
48	121.9	43 1/8	109.5	44 7/8	114.0	46 1/4	117.5	48	121.9	35 1/2	90.2	47	119.4	54 2/3	138.9
54	137.2	49 1/8	124.8	50 7/8	129.2	52 1/4	132.7	54	137.2	41 1/2	105.4	53	134.6	60 2/3	154.1
60	152.4	55 1/8	140.0	56 7/8	144.5	58 1/4	148.0	60	152.4	47 1/2	120.7	59	149.9	66 2/3	169.3
66	167.6	61 1/8	155.3	62 7/8	159.7	64 1/4	163.2	66	167.6	53 1/2	135.9	65	165.1	72 2/3	184.6
72	182.9	67 1/8	170.5	68 7/8	174.9	70 1/4	178.4	72	182.9	59 1/2	151.1	71	180.3	78 2/3	199.8
78	198.1	73 1/8	185.7	74 7/8	190.2	76 1/4	193.7	78	198.1	65 1/2	166.4	77	195.6	84 2/3	215.1
84	213.4	79 1/8	201.0	80 7/8	205.4	82 1/4	208.9	84	213.4	71 1/2	181.6	83	210.8	90 2/3	230.3
90	228.6	85 1/8	216.2	86 7/8	220.7	88 1/4	224.2	90	228.6	77 1/2	196.9	89	226.1	96 2/3	245.5
96	243.8	91 1/8	231.5	92 7/8	235.9	94 1/4	239.4	96	243.8	83 1/2	212.1	95	241.3	102 2/3	260.8
102	259.1	97 1/8	246.7	98 7/8	251.1	100 1/4	254.6	102	259.1	89 1/2	227.3	101	256.5	108 2/3	276.0
108	274.3	103 1/8	261.9	104 7/8	266.4	106 1/4	269.9	108	274.3	95 1/2	242.6	107	271.8	114 2/3	291.3
114	289.6	109 1/8	277.2	110 7/8	281.6	112 1/4	285.1	114	289.6	101 1/2	257.8	113	287.0	120 2/3	306.5
120	304.8	115 1/8	292.4	116 7/8	296.9	118 1/4	300.4	120	304.8	107 1/2	273.1	119	302.3	126 2/3	321.7
126	320.0	121 1/8	307.7	122 7/8	312.1	124 1/4	315.6	126	320.0	113 1/2	288.3	125	317.5	132 2/3	337.0
132	335.3	127 1/8	322.9	128 7/8	327.3	130 1/4	330.8	132	335.3	119 1/2	303.5	131	332.7	138 2/3	352.2
138	350.5	133 1/8	338.1	134 7/8	342.6	136 1/4	346.1	138	350.5	125 1/2	318.8	137	348.0	144 2/3	367.5
144	365.8	139 1/8	353.4	140 7/8	357.8	142 1/4	361.3	144	365.8	131 1/2	334.0	143	363.2	150 2/3	382.7



SAM-e General Dimensions
July 5, 2012

A15 - SAM-e (2549922) Shop Drawing

Air Velocity [fpm (m/s)]	Air Pressure Loss [in(mm) of water column]			
	SAM-e Tube Spacing			
	3" (762 mm)	6" (152 mm)	9" (229 mm)	12" (305 mm)
500 (2.5)	0.01 (0.3)	0.01 (0.3)	No measurable data	
750 (3.8)	0.03 (0.8)	0.01 (0.3)		
1000 (5.1)	0.05 (1.3)	0.02 (0.5)		
1250 (6.4)	0.07 (1.8)	0.03 (0.8)		
1500 (7.6)	0.09 (2.3)	0.04 (1.0)	0.01 (0.3)	0.01 (0.3)
1750 (8.9)	0.10 (2.5)	0.06 (1.5)	0.01 (0.3)	0.01 (0.3)
2000 (10.2)	0.12 (3.0)	0.08 (2.0)	0.01 (0.3)	0.01 (0.3)

SAM-e Static Air Pressure Table
July 15, 2016

A16 - SAM-e (1503419) Description

Steam DISTRIBUTOR, Type B for SAM-e, 304ss, suitable for capacities up to 36 lbs/hr (16 kg/hr). Constructed of 1.5" O.D. (3.8 cm) high-grade stainless steel tubing, the distributors can accommodate duct heights between 24"-144" for in-duct header mounting, and between 18"-144" for outside duct header mounting. Each distributor has 48 stainless steel nozzles to evenly disperse steam into the duct or air handling unit.

The steam tubes come equipped with evenly spaced stainless steel nozzles providing optimum steam distribution, over the entire length of tube. These nozzles extend into the center of the steam tube ensuring only condensate-free steam is released. Condensate drains out of the steam tubes, and through the header, eliminating the need for jacketed tubes. A permanent bond between the nozzle and steam tube is made when the nozzle is hydraulically pressed into the tube. They have the same thermal expansion characteristics guaranteeing a permanent union. The specifically sized orifices ensure consistent output from each nozzle.

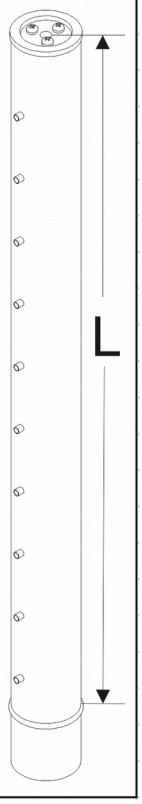
Steam distributors are available with optional 304 stainless steel insulation. Tube insulation consists of two 304 stainless steel shields, which are clamped onto the distributor tubes forming an insulating air gap around the tube while leaving a small gap for the nozzles to release steam. For tube insulation, contact and heat transfer between stainless steel shields and distributor to be limited using a ‘knife edge’ type angled contact. The air gap reduces heat transfer through conduction and convection, while the reflective surfaces minimize heat transfer through radiation.

FEATURES

- Capacities of 36 lbs/hr (16 kg/hr) per tube.
- Nozzle design ensures only condensate-free steam is dispersed and prevents spitting.
- Stainless steel nozzles are pressed into tube ensuring permanent bond.
- Available insulation improves energy efficiency by as much as 70%.
- Can be retrofit with insulation in the field.
- Maintenance free.
- Ten year limited warranty.

A17 - SAM-e (1503419) Shop Drawing

304 SS SAM-e Short Absorption Manifold Tubes

In-Duct Height Including Header in (cm)	Type A 15 lbs/hr (7 kg/hr)	Type B 35 lbs/hr (16 kg/hr)	Type B+ 55 lbs/hr (25 kg/hr)	Type C 75 lbs/hr (34 kg/hr)	"L" Dimension in (cm)	In-Duct Optional Mounting Frame	Steam Tube Profile
18 (45.7)	1503388	N/A	N/A	N/A	5.5 (14.0)	1504697	
24 (61.0)	1503389	1503411	N/A	N/A	11.5 (29.2)		
30 (76.2)	1503390	1503412	1509391	N/A	17.5 (44.5)	1503469	
36 (91.4)	1503391	1503413	1509392	1503440	23.5 (59.7)		
42 (106.7)	1503392	1503414	1509393	1503441	29.5 (74.9)	1503470	
48 (121.9)	1503393	1503415	1509394	1503442	35.5 (90.2)		
54 (137.2)	1503394	1503416	1509395	1503443	41.5 (105.4)		
60 (152.4)	1503395	1503417	1509396	1503444	47.5 (120.7)		
66 (167.6)	1503396	1503418	1509397	1503445	53.5 (136.9)	1503471	
72 (182.9)	1503397	1503419	1509398	1503446	59.5 (151.1)		
78 (198.1)	1503398	1503420	1509399	1503447	65.5 (166.4)		
84 (213.4)	1503399	1503421	1509400	1503448	71.5 (181.5)		
90 (228.6)	1503400	1503422	1509401	1503449	77.5 (196.9)		
96 (243.8)	1503401	1503423	1509402	1503450	83.5 (212.1)		
102 (259.1)	1503402	1503424	1509403	1503451	89.5 (227.3)		
108 (274.3)	1503403	1503425	1509404	1503452	95.5 (242.6)	1503472	
114 (289.6)	1503404	1503426	1509405	1503453	101.5 (257.8)		
120 (304.8)	1503405	1503427	1509406	1503454	107.5 (273.1)		
126 (320.0)	1503406	1503428	1509407	1503455	113.5 (288.3)		
132 (335.3)	1503407	1503429	1509408	1503456	119.5 (303.5)		
138 (350.5)	1503408	1503430	1509409	1503457	125.5 (318.8)		
144 (365.8)	1503409	1503431	1509410	1503458	131.5 (334.0)		

304 SS
SAM-e Short Absorption Manifold Tubes
July 5, 2012

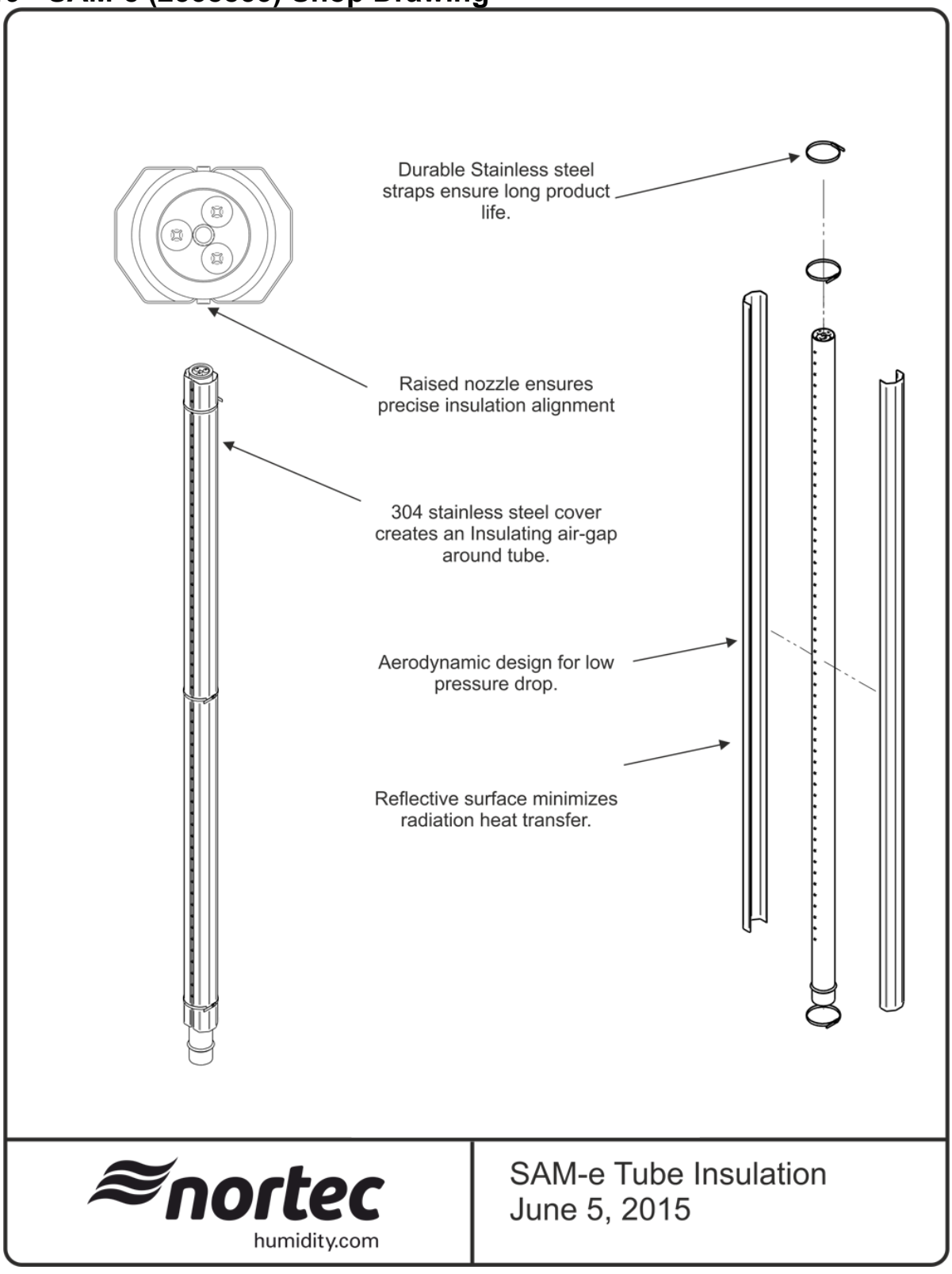
A18 - SAM-e (2538853) Description

SAM-e Tube Insulation (1 req'd for each tube), compatible with all SAM-e and mini SAM-e tubes.
Constructed high quality 304 stainless steel, this shielding provides an insulating air gap around the steam tubes. The insulating air-gap significantly reduces energy losses from hot distributor tubes. Insulation can be factory installed on new orders or easily retrofit to existing installations. When ordering, order insulation to match tube length.

FEATURES

- Improve energy efficiency by as much as 70%.
- Reduce condensate losses.
- Minimal heat gain into air-stream.
- Aerodynamic design minimizes pressure losses.
- Fiberglass free and non-hygroscopic for hygienic operation.
- Easily retrofit to existing installations.
- Maintenance free.
- Tube insulation consists of two stainless steel shields that are clamped onto the distributor tubes, leaving a small gap for the steam nozzles to release steam. Contact and heat transfer between the insulating shields and the tube is prevented by using an angled knife edge along each shield. The resulting air gap around the tube reduces heat transfer through conduction and convection, while the reflective surfaces minimize heat transfer through radiation.

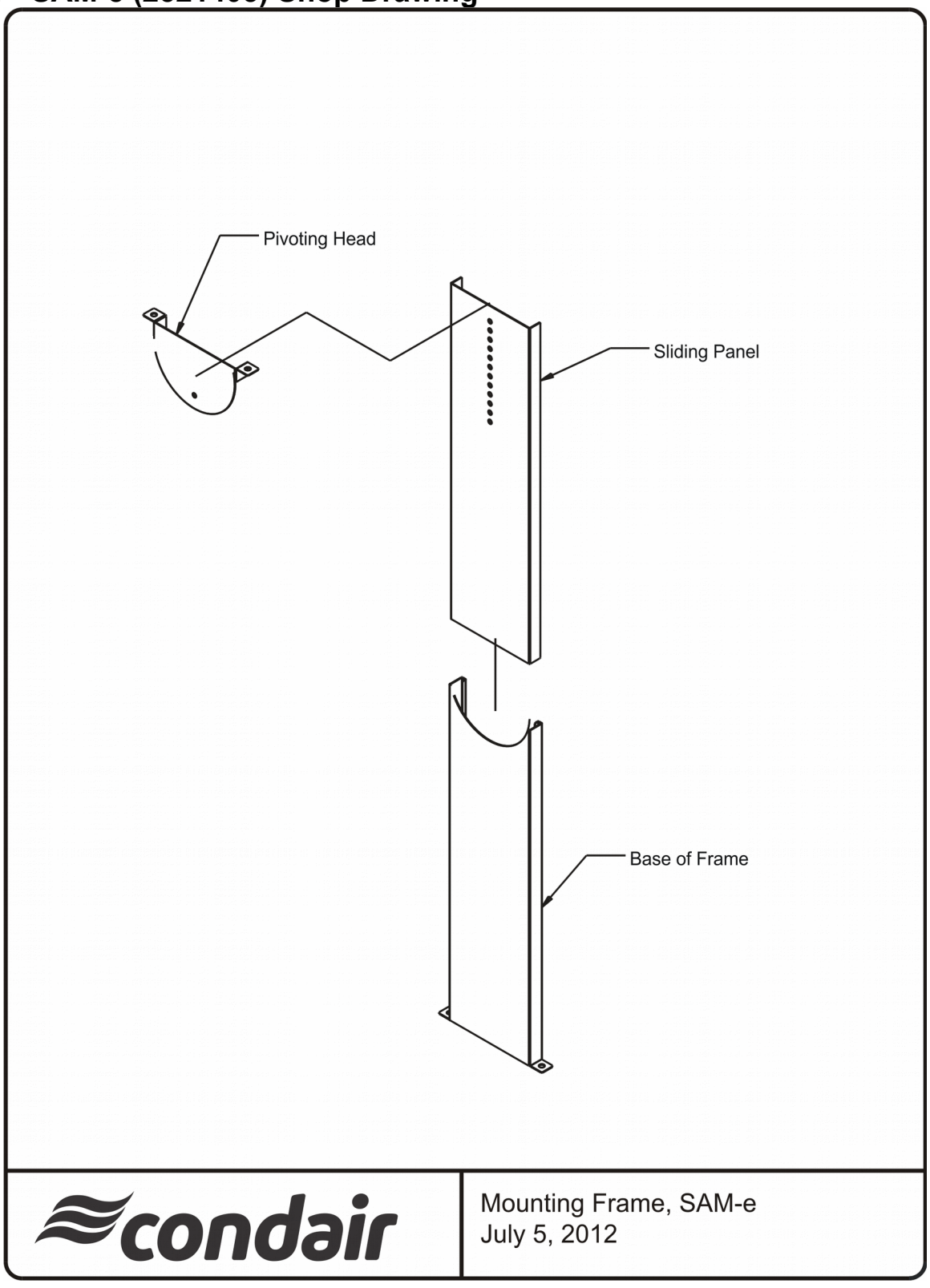
A19 - SAM-e (2538853) Shop Drawing



A20 - SAM-e (2521405) Description

Mounting FRAME, Adjustable for SAM-e, Constructed of stainless steel, the mounting frame provides support and allows for a quick and easy installation. The telescopic frame can be adjusted to suit the duct or air handling unit. The mounting frame is optional for horizontal duct applications, but required for vertical duct applications.

A21 - SAM-e (2521405) Shop Drawing



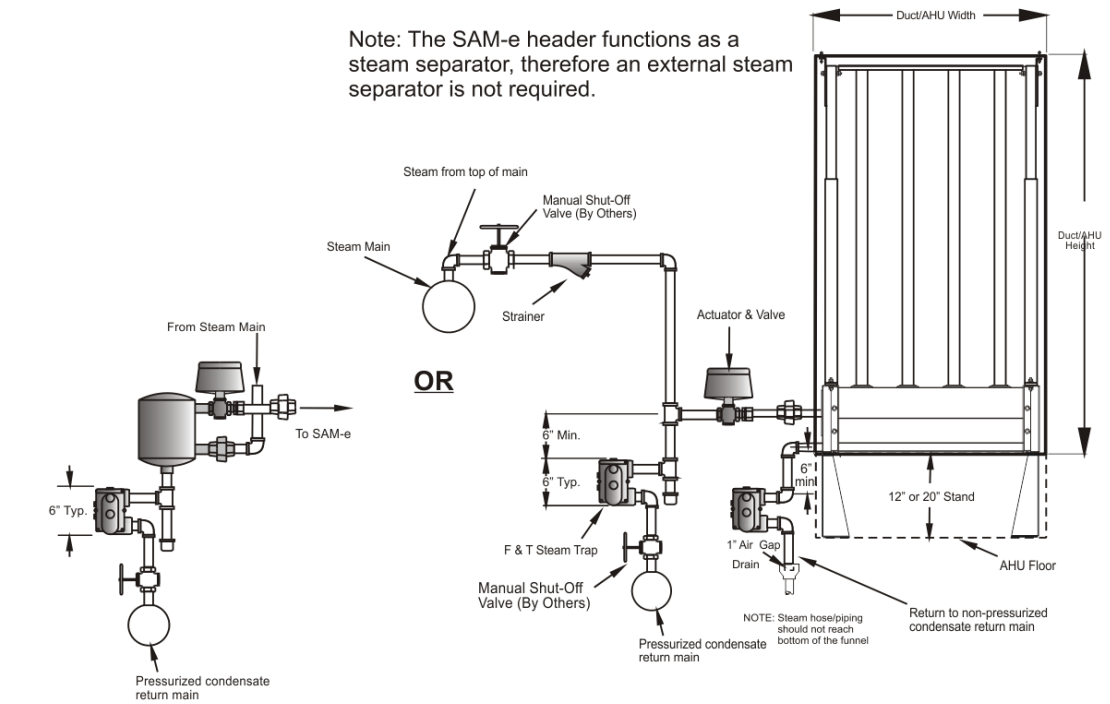
A22 - SAM-e (1503476) Description

Pressure Inlet Adapter Kit for SAM-e

Provides an NPT threaded connection for connecting a SAM-e Short Absorption Manifold to a LiveSteam or pressure steam system. Inlet adapter kits are constructed from high quality stainless steel and are factory welded to the SAM-e header. Pressure inlet kits also include an internal baffle to separate steam from condensate allowing operation without the need for an external separator.

A23 - SAM-e (1503476) Installation

Pressurized Steam

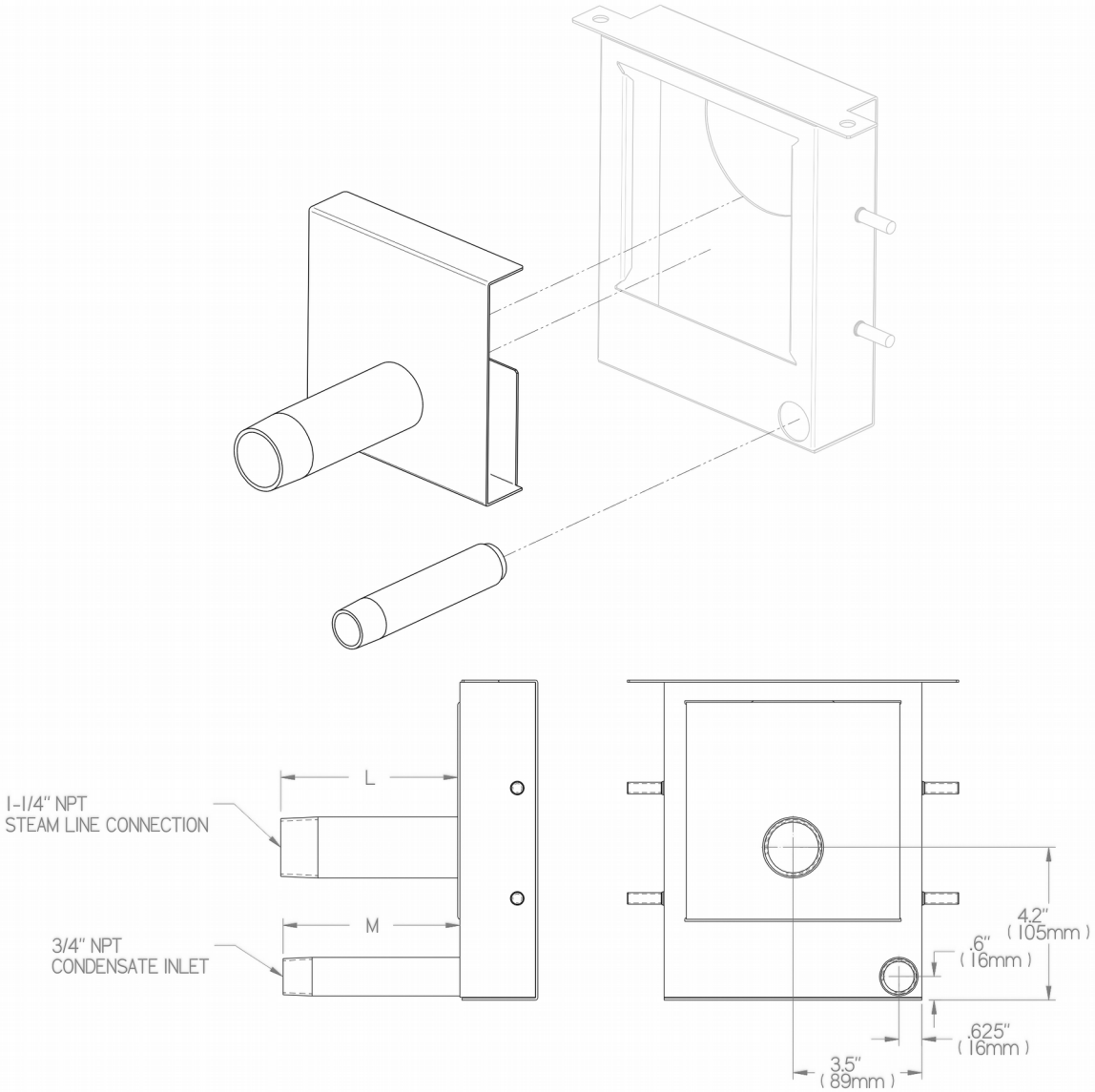


Installation with External Separator

Installation without External Separator

Typical SAM-e Installation for Pressurized Steam Applications
July 5, 2012

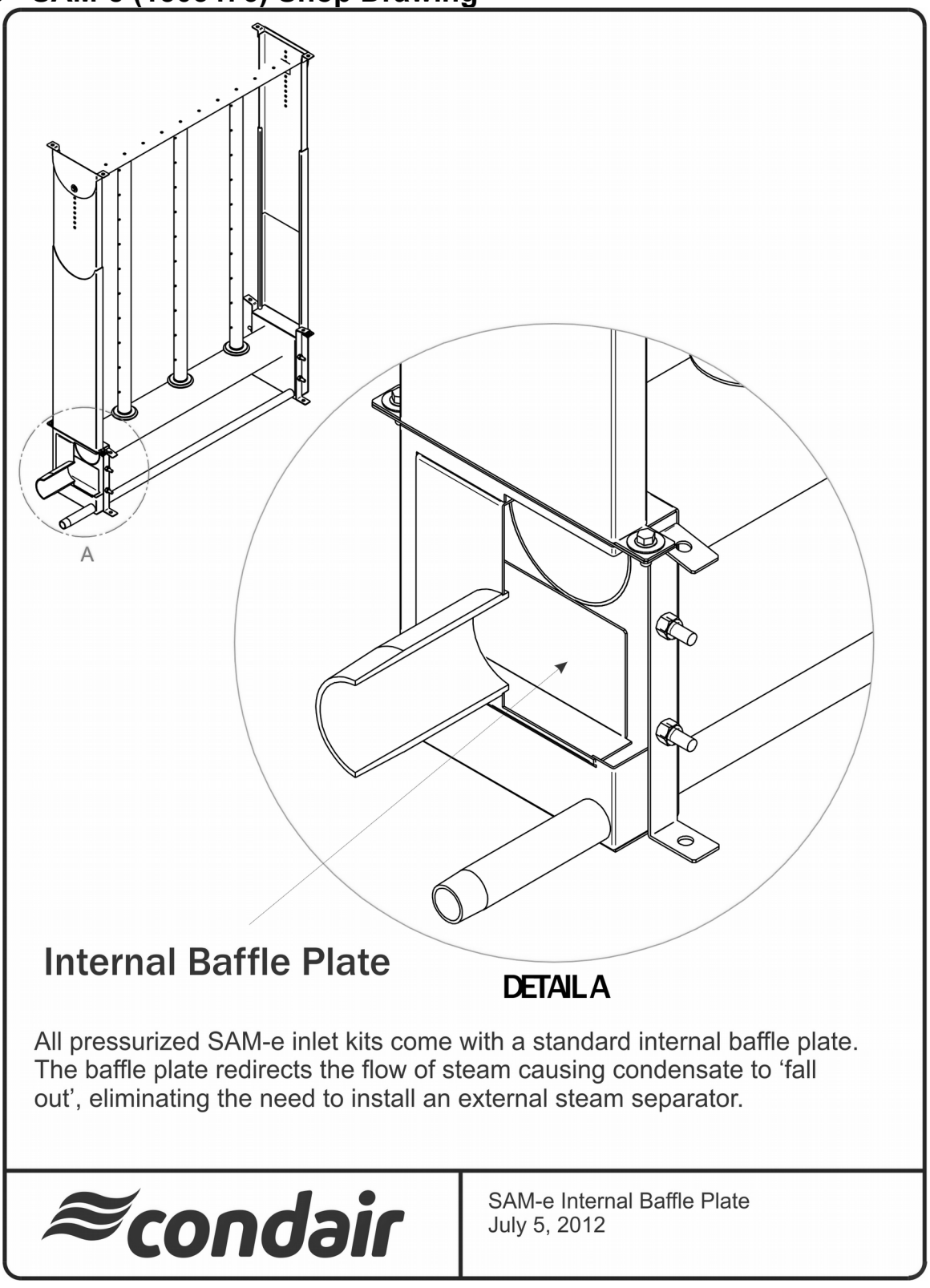
A24 - SAM-e (1503476) Schematic



Part No.	Description	L (in. (mm))	M (in. (mm))
1503476	Inlet Kit SAM-e, Pressurized 1-1/4" NPT X 5"	4.8 (122)	4.8 (122)
1509489	Inlet Kit SAM-e, Pressurized 1-1/4" NPT X 10"	9.8 (249)	9.8 (249)
1509490	Inlet Kit SAM-e, Pressurized 1-1/4" NPT X 12"	11.8 (300)	11.8 (300)

Inlet Kit SAM-e,
Pressurized 1-1/4" NPT

A25 - SAM-e (1503476) Shop Drawing



A26 - SAM-e (2591657) Description

SAM-e Top Center Mount Bracket; provides additional support and rigidity for cases where a SAM-e will be shipped fully assembled insided of an air handling unit. This option is typically used when shipping the SAM-e for installation at an Air Handling Unit manfuacturer.

A27 - SAM-e (2591658) Description

SAM-e Side Yoke (x2), provides an additional two adjustable side yokes. This can be used as either a replacement for existing yokes, or to double up the existing yokes for additional strength.

A28 - SAM-e (1503391) Description

Steam DISTRIBUTOR, Type A for SAM-e, 304ss, suitable for capacities up to 15 lbs/hr (7 kg/hr).
Constructed of 1.5" O.D. (3.8 cm) high-grade 304 stainless steel tubing, the distributors can accommodate duct heights between 18"-144" for in-duct header mounting, and between 8"-144" for outside duct header mounting. Each distributor has 20 stainless steel nozzles to evenly disperse steam into the duct or air handling unit.

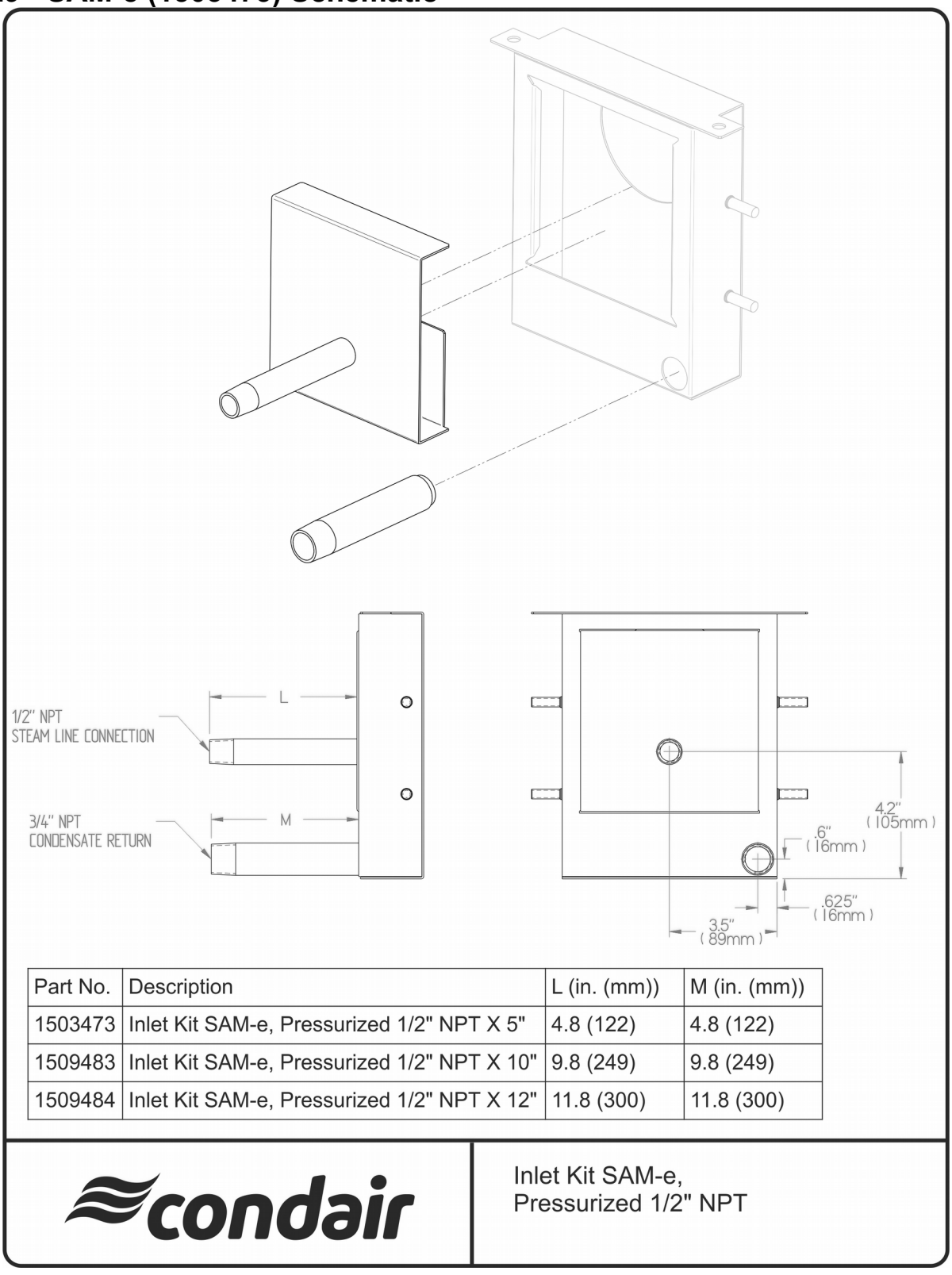
The steam tubes come equipped with evenly spaced stainless steel nozzles providing optimum steam distribution, over the entire length of tube. These nozzles extend into the center of the steam tube ensuring only condensate-free steam is released. Condensate drains out of the steam tubes, and through the header, eliminating the need for jacketed tubes. A permanent bond between the nozzle and steam tube is made when the nozzle is hydraulically pressed into the tube. They have the same thermal expansion characteristics guaranteeing a permanent union. The specifically sized orifices ensure consistent output from each nozzle.

Steam distributors are available with optional 304 stainless steel insulation. Tube insulation consists of two 304 stainless steel shields, which are clamped onto the distributor tubes forming an insulating air gap around the tube while leaving a small gap for the nozzles to release steam. For tube insulation, contact and heat transfer between stainless steel shields and distributor to be limited using a ‘knife edge’ type angled contact. The air gap reduces heat transfer through conduction and convection, while the reflective surfaces minimize heat transfer through radiation.

FEATURES

- Capacities of 15 lbs/hr (7 kg/hr) per tube.
- Nozzles design ensures only dry steam is dispersed and prevents spitting.
- Stainless steel nozzles are pressed into tube ensuring permanent bond.
- Available insulation improves energy efficiency by as much as 70%.
- Can be retrofit with insulation in the field.
- Maintenance free.
- Ten year limited warranty.

A29 - SAM-e (1503473) Schematic



Part No.	Description	L (in. (mm))	M (in. (mm))
1503473	Inlet Kit SAM-e, Pressurized 1/2" NPT X 5"	4.8 (122)	4.8 (122)
1509483	Inlet Kit SAM-e, Pressurized 1/2" NPT X 10"	9.8 (249)	9.8 (249)
1509484	Inlet Kit SAM-e, Pressurized 1/2" NPT X 12"	11.8 (300)	11.8 (300)

Inlet Kit SAM-e,
Pressurized 1/2" NPT

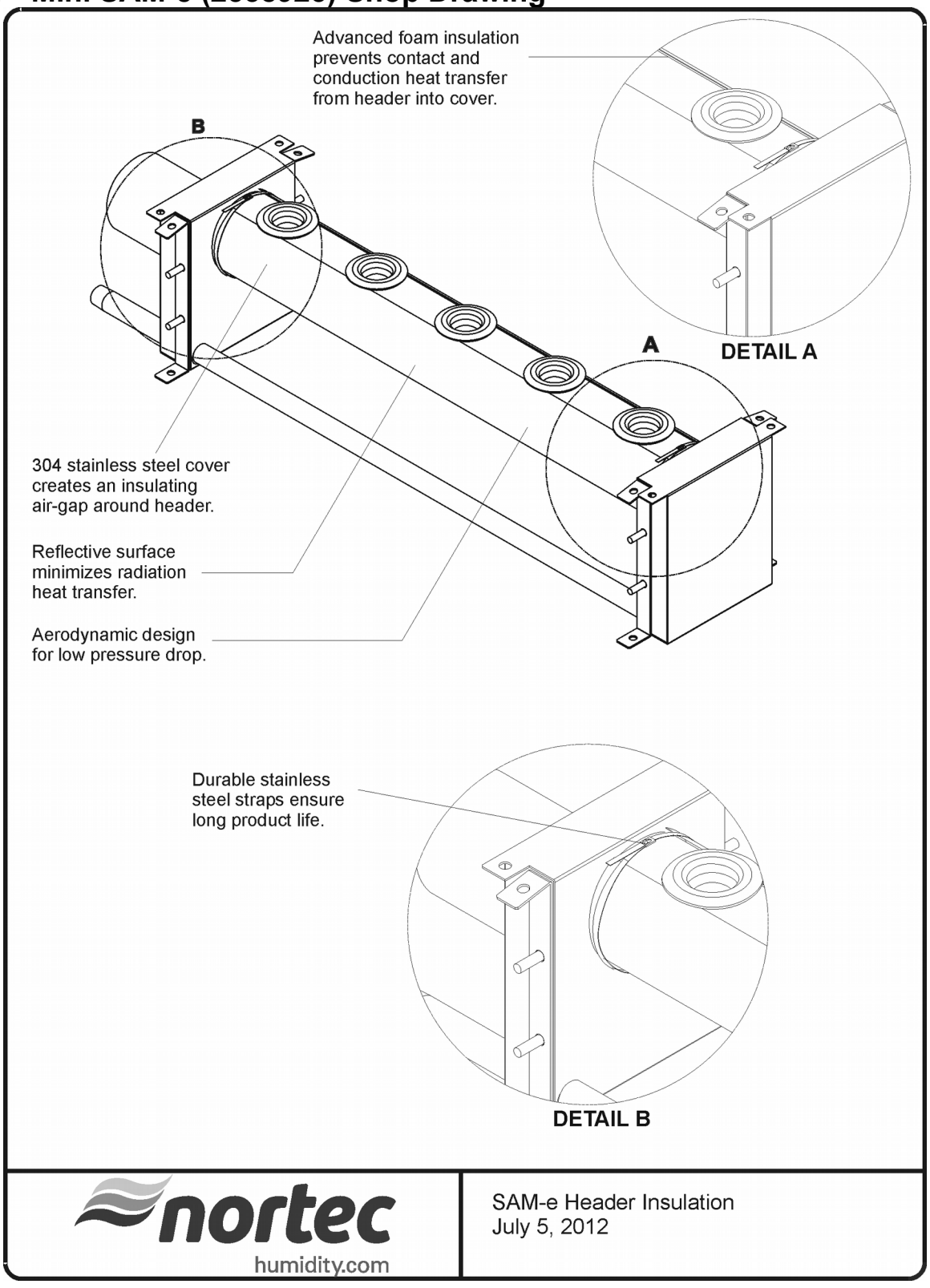
A30 - Mini SAM-e (2538925) Description

SAM-e Header Insulation, compatible with all SAM-e and mini SAM-e headers. Constructed from high quality 304 stainless steel, this shielding provides an insulating air gap around the header. The insulating air-gap significantly reduces energy losses from hot distributor headers. Insulation can be factory installed on new orders or easily retrofit to existing installations. When ordering, order insulation to match header length.

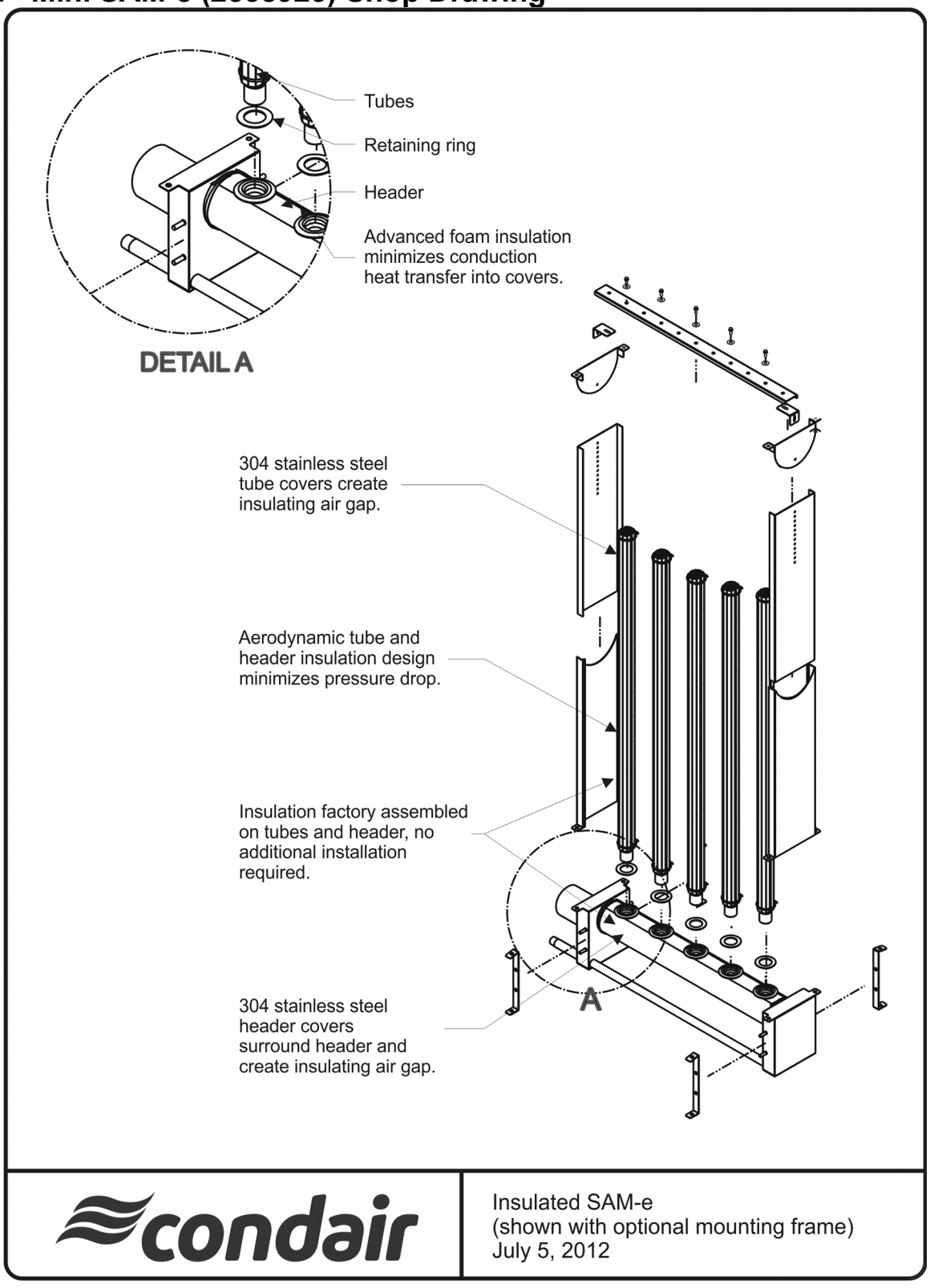
FEATURES

- Improve energy efficiency by as much as 70%.
- Reduced condensate losses.
- Minimal heat gain into air-stream.
- Aerodynamic design minimizes pressure losses.
- Fiberglass free and non-hygroscopic for hygienic operation.
- Easily retrofit to existing installations.
- Maintenance free.
- Header insulation consists of a stainless steel shield that is clamped onto the distributor header, leaving a small gap for the steam tubes to protrude. Contact and heat transfer between the insulating shield and the tube is prevented by using strips of synthetic foam insulation. The resulting air gap around the header reduces heat transfer through conduction and convection, while the reflective surfaces minimize heat transfer through radiation.

A31 - Mini SAM-e (2538925) Shop Drawing



A32 - Mini SAM-e (2538925) Shop Drawing



TERMS & CONDITIONS OF SALE

PRICES:

All prices are LIST price. All prices and discount factors are subject to change without notice.

ORDERS:

All orders must be in writing (made out to Condair Inc. or Condair Ltd. hereinafter collectively referred to as Condair) or submitted through Help software, and are subject to acceptance by Condair's Credit Manager prior to production release and are contingent upon governmental regulations, availability of labor and materials, strikes, accidents, fires, and all other causes beyond the control of Condair.

SHIPPING TERMS:

Shipping Terms: All packaged goods, (electric and gas-fired) humidifiers, SAM-e, Livesteam distribution systems, HP, ML and AirFog, are shipped FOB factory, standard ground freight included to the continental United States and Canada. Parts orders that are over $1,000 net invoice value are shipped freight included. All air freight charges are extra. Export crating and export shipping costs are extra.

RISK OF LOSS & DAMAGE:

Risk of loss or damage passes to the Buyer when the equipment described herein is delivered to the carrier. Any claim for goods lost or damaged in transit, shall be made by the Buyer against the carrier.

CHANGED OR CANCELLED ORDERS:

- All changed or cancelled orders, in production or completed, are subject to a charge of 30%.
- Orders other than " Quick Ship Orders" for packaged products (e.g. electric, gas-fired) may generally be cancelled within 48 hours of being placed. Condair will make every effort to stop production of an order upon written notice of cancellation. If production has not started, Condair will waive the cancellation charge.
- Orders for equipment specially fabricated cannot be cancelled. E.g. SAM-e, LiveSteam, HP, ML, ME, and DL.
- Parts orders that are regular stock items are not subject to a cancellation charge. However, if a parts order is changed, which includes adding new parts to an order; this may cause a delay in delivery.

RETURNED GOODS:

- Condair will accept unused equipment returned for credit only when prior approval has been given. Prior to returning goods a Return Material Authorization Number (RMA) must be obtained and it must be clearly marked on all returned goods. Goods received without an RMA will not be accepted and credit will not be issued. Any material accepted for return must be shipped back prepaid by the Buyer and must reach Condair without damage.
- An RMA will only be issued within 3-months of the equipment's shipping date.
- Any unused equipment accepted for return is subject to a 30% restocking charge.
- Equipment specially fabricated, cannot be returned. E.g. SAM-e, Livesteam, HP, ML, ME, and DL.
- Credit will only be issued to the original purchaser.
- Credit will be issued in the form of a credit note, which can be used towards a future purchase.

WARRANTY - UNITS:

Condair warrants for a period of two years after installation or 30 months from the manufacturer's ship date, whichever is earlier, that Condair's manufactured and assembled products, not otherwise expressly warranted, are free from defects in material and workmanship. No warranty is made against corrosion, deterioration, or suitability of substituted materials used as a result of compliance with government regulations. Extended warranties are available for most Condair manufactured products at the time of initial product order.

Condair's obligations and liabilities under this warranty are limited to furnishing replacement parts to the customer, F.O.B. Condair's factory, providing the defective part(s) is returned freight prepaid by the Buyer. Parts used for repairs are warranted for the balance of the term of the warranty on the original humidifier or 90 days, whichever is longer.

The warranties set forth herein are in lieu of all other warranties expressed or implied by law. No liability whatsoever shall be attached to Condair until said products have been paid for in full and then said liability shall be limited to the original purchase price for the product. Any further warranty must be in writing, signed by an officer of Condair. In no event will Condair be liable for any incidental, special, indirect or consequential damages or for loss of profits, business or goodwill whether based in contract or in tort or other liability to provide indemnification or any other remedy. This limitation applies whether or not Condair has been advised or is aware of the possibility of such damages.

Condair's limited warranty on accessories, not of Condair's manufacture, such as controls, humidistats, pumps, etc. is limited to the warranty of the original equipment manufacturer from date of original shipment of the products to the Buyer.

Condair makes no warranty and assumes no liability unless the equipment is installed in strict accordance with a copy of the catalog and installation manual in effect at the date of purchase and by a contractor approved by Condair to install such equipment. Condair makes no warranty and assumes no liability whatsoever for consequential damage or damage resulting directly from misapplication, incorrect sizing or lack of proper maintenance of the equipment. Condair retains the right to change the design, specification and performance criteria of its products without notice or obligation.

Extended warranties for 1, 2, or 3 additional years can be purchased at time of order only through Help Software.

Parts or materials that are considered consumables, including but not limited to: cylinders, filters, nozzles, membranes, media, gaskets, O-rings, etc. are NOT covered by the warranty.

Condair makes no warranty and assumes no liability whatsoever for damage resulting from freezing of the humidifier, supply lines, drain lines, or quality of the water used.

REPLACEMENT PARTS:

- All requests for replacement parts, whether they are for warranty consideration or not, require a covering purchase order, prior to Condair releasing the goods. Goods will be shipped to the Buyer with an invoice.
- To obtain credit for parts covered by Condair's warranty, defective parts must be returned for inspection. To return parts the Buyer must request a Return Material Authorization (RMA) and it must be clearly marked on all returned parts. Parts returned without an RMA will not be accepted and credit will not be issued. All parts returned for credit must be shipped back prepaid by the Buyer.
- All parts must be returned within 3-months of an RMA being issued. Parts returned more than 3-months from when the RMA was issued will not be accepted.
- Credit for parts covered under warranty will be issued, if inspection indicates the returned parts are defective.

PAYMENT:

Terms of payment are net 30 days from date of invoice, unless otherwise specified. The offer of these terms is contingent upon approval by the Credit Manager at the time of receipt of the Buyer's official order. The Buyer agrees that interest on all overdue accounts may be charged monthly at a rate of 2.0% per month (24% per annum). Maintaining good credit will assist in meeting delivery. For quick ship orders, contact factory for pricing.

Bernhard Cx Group

Bernhard

Commissioning Review of Submittal Data for Construction

This submittal has been reviewed by the Commissioning Provider for general conformance related to the commissioning requirements in the contract documents and Owner's Project Requirements document. This review is not intended to verify overall equipment compliance of the design intent and no design direction shall be inferred or implied.
The Designer of Record shall verify overall compliance of the design intent according to the contract documents.

[X] Reviewed with Comments

12/10/24

[ ] Reviewed with No Comments

Commissioning Review Comments are enclosed.

CLARK & ENERSEN: SEE ALL COMMENTS WITHIN.

1. UPDATE PERFORMANCE OF ALL COMPONENTS TO 300' ELEVATION

PROVIDE FACTORY MOUNTED ISOLATION DAMPERS ON DISCHARGE OF AH-2, AND BOTH INLET AND DISCHARGE OF AH-5A/5B

2. PROVIDE 0.035" TUBES ON ALL HEAT RECOVERY COILS

3. INLCUDE DIRTY APD LISTED ON FILTER SECTION IN TOTAL STATIC PRESSURE OF UNITS AND SIZE FANS ACCORDINGLY.

4. CONFIRM UV LIGHTS INCLUDED HAVE FUNCTIONALITY OF DETAIL 3/M6.01.

5. PROVIDE MINIMUM 9.12" TSP ON AH-2 PER SCHEDULE.

6. PROVIDE MINIMUM 8.55" TSP ON AH-5A/5B PER SCHEDULE.

7. PROVIDE PIPING AND COIL CONNECTIONS ON OPPOSITE SIDES FOR AH-5A VS AH-5B PER PLANS.

8. PROVIDE RECOMMENED DOOR SWINGS AS NOTED WITHIN,

9. CONFIRMING WITH OWNER IF 93% REDUNDANCY IS ACCEPTABLE FOR AH-2 SUPPLY FANS. WHAT OPTIONS ARE THERE TO ACHIEVE FULL N+1 WITH THE MOTORS?

[ ] REVIEWED [ ] REVIEWED AND NOTED

[X] REVISE AND RESUBMIT [ ] REJECTED

Corrections or comments made on the shop drawings during this review do not relieve contractor from compliance with requirements of the drawings and specifications. This check is only for review of general conformance with design concept of the project and general compliance with the information given in the contract documents. The contractor is responsible for confirming and correlating all quantities and dimensions; selecting fabrication process and techniques of construction; coordinating their work with that of all other trades; and performing their work in a safe and satisfactory manner.

CLARK & ENERSEN

By csharp Date 01/08/2025

CDI CONTRACTORS

CDI Contractors, LLC
3000 Cantrell Road
Little Rock, Arkansas 72202
501 / 666-4300

Transmittal

No 2024.11.25-4

PROJECT: UAMS- CAMID

DATE: Nov 25, 2024

To: UAMS
4301 W MARKHAM ST. SLOT 545
LITTLE ROCK AR 72205
US

RE: 23 73 13 - Air Handling Units

ATTN: TAMARA BARRON

JOB: 240147

WE ARE SENDING:		SUBMITTED FOR:		ACTION TAKEN:	
☐	Shop Drawings	☑	Approval	☐	Approved as Submitted
☐	Letter	☐	Your Use	☐	Approved as Noted
☐	Prints	☐	As Requested	☐	Returned After Loan
☐	Change Order	☐	Review and Comment	☐	Resubmit
☐	Plans			☐	Submit
☐	Samples	SENT VIA:		☐	Returned
☐	Specifications	☐	Attached ☐ Separate Cover	☐	Returned for Corrections
☐	Other:			☑	Due Dec 09, 2024
☑	Submittal:			☐	Other:

Line	Item	Package	Code	Rev.	QTY	Date	Description	Status
1	Submittal		237313-02	1		Nov 25, 2024	PD:AHU - 5A	Submitted
2	Submittal		237313-01	1		Nov 25, 2024	PD:AH - 2	Submitted
3	Submittal		237313-03	1		Nov 25, 2024	PD:AHU - 5B	Submitted

REMARKS:

CC:

CLARK & ENERSEN, Mark Huettner

Signed: _____
MATTHEW HUGHES

CDI CONTRACTORS, LLC

☑ **APPROVED AS NOTED** ☐ **REJECTED**
☐ **APPROVED** ☐ **REVISE**

BY hughem **DATE** 11/25/2024

SUBMITTAL# 237313-02 **SPEC** 237313

This submittal has been reviewed for compliance with the contract documents. Approval does not relieve the subcontractor/supplier of the responsibility for conformance to the quality standards as set forth in the contract document, nor does it relieve the responsibility for field verification of all conditions relating to this contract.

Quality People. Building Solutions.

Comfort Systems USA (Arkansas), Inc.
P.O. Box 16620
Little Rock, AR 72231
Phone 501-834-3320
Fax 501-834-5416

Date: 11/20/2024
Return Request: 11/30/2024
Project: UAMS (CAMID)
Supplier: Harrison Energy
Manufacturer: Daikin
Submittal: Air Handling Units
Submittal Number: 23 73 13-01
Drawing # and Installation: Mechanical Drawings

ARCHITECT
Clark Kenersen
2020 Baltimore Avenue, Suite 300
Kansas City, MO 64108
816-474-8237

ENGINEER
Clark Kenersen
2020 Baltimore Avenue, Suite 300
Kansas City, MO 64108
816-474-8237

GENERAL CONTRACTOR
CDI Contractirs
3000 Cantrell Rd.
Little Rock, AR 72202
501-666-4300

MECHANICAL SUBCONTRACTOR
Comfort Systems USA (Arkansas), Inc.
9924 Landers Rd.
N. Little Rock, AR 72117
501-834-3320

Notes:

CSUSA PROJECT NO.
22-6069
sean@comfortar.com

Submittal

Harrison
Energy Partners

Prepared For:
Clark & Enerson

Date:
November 1, 2024

Sold To:
Comfort Systems USA

Job Name:
UAMS CAMID

Harrison Energy Partners is pleased to provide the enclosed submittal for your review and approval.

Qty.	Product Summary
2	Daikin Air Handling Units

Josh Robinson | Sales Engineer
Harrison Energy Partners
1501 Westpark Drive, Suite 9
Little Rock, AR 72204-2457
Ph. 501-539-0633

The attached information describes the equipment we propose to furnish for this project, and is submitted for your approval.

Indoor Air Handling Units

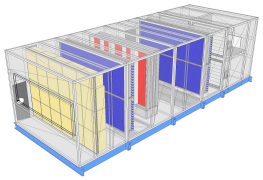
Tag	Qty.	Description	Model Number
AHU-2	1	Indoor Air Handling Unit	Daikin CAH064
AHU-5	1	Indoor Air Handling Unit	Daikin CAH011

- Double wall construction with 2” R13 insulation
- ASHRAE leakage class 6
- Access sections with view ports and lights as required
- Stainless steel drain pans in humidifier and cooling coil sections
- 8” base rail
- Galvanized steel interior liners
- Combination filter section
- Heat recovery coil section
- Steam IFB coil section
- Humidifier section
- Chilled water coil section with UV lights
- Supply fan section
    - NOTE: AHU-5 is selected as a stacked unit. Software limitations only allow us to select one section with a supply fan, therefore one of the supply fan sections is labeled “return/exhaust.” Both fan sections in this unit will be utilized as supply fans.

SUBMITTAL DATA

Job Name	UAMS CAMID
For	
Sold To	
Prepared For	
Customer PO#	
Prepared By	Jake Skinner
Date	11/1/2024

Job Information	Technical Data Sheet
Job Name	UAMS CAMID
Date	November 01 2024
Submitted By	JS
Software Version	13.43
Unit Tag	AHU-2



LENGTH IS TOO LONG FOR END DUCT CONNECTION. CAN LARGE DISCHARGE PLENUM BE ADDED AND FIELD CUT TO EITHER TOP OR END DUCT CONNECTION?

Unit Overview

Model Number	Supply					
	Air Volume cfm	Static Pressure		External Dimensions		
		External inWc	Total inWc	Height in	Width in	Length in
CAH064GDHM	26000	4.25	8.35	92*	124*	334

**Not including base rails, coil connectors, drain connectors and control boxes.*

Unit

Model Number:	CAH064GDHM		
Approval:	ETL Listed / ETL Listed to Canadian Safety Standards (ETL Label / ETLc Label)		
Construction:	High pressure low leakage construction		
Outer Panel:	24 gauge G90 Galvanized Steel (unpainted)		
Liner:	24 gauge Galvanized Steel (unless noted per section)		
Insulation:	R-13 Injected Foam		
Unit Configuration:	Inline horizontal	**Drive (Handling) Location:**	Left
Base:	8" formed channel	**Wall Thickness:**	2 in
Altitude:	0 ft	**Parts Warranty:**	Standard One Year

SELECT AT 300'

Plenum Section	Component: 1	Length: 22 in	Shipping Section: 1

Air Pressure Drop

0.06 inWc

Custom Openings

Custom Opening	Location	Width	Height	Rainhood w/Screen
1	End	108 in	34 in	None

Door

Location	Width	Opening	Window Type	Light
Drive side	18 in	Outward	Round	LED marine light kit and switch only

Clarify if inlet isolation damper is provide/installed with unit or by others.

Combination Filter

Component: 2 | Length: 22 in | Shipping Section: 1

Access	Face Velocity	Face Area	Air Volume
Side	393 ft/min	66.2 ft²	26000 cfm

Portion	Type	Efficiency	Air Pressure Drop				Number of Filters	Height	Width	Depth
			Clean Air	Mean Air	Dirty Air	User Spec				
Pre-Filter	Pleated	MERV 8	0.17 inWc	**0.58** inWc	1.00 inWc	N/A	18	24 in	20 in	2 in
							5	12 in	24 in	2 in
Filter	Varicel VXL cartridge	MERV 15	0.27 inWc	**1.13** inWc	2.00 inWc	N/A	18	24 in	20 in	12 in
							5	12 in	24 in	12 in

Door

Location	Width	Opening
Drive side	18 in	Outward

Special Options

Sound Baffle	Filter Gauge
(As casing details)	Magnehelic 0-5"

Access Section

Component: 3 | Length: 22 in | Shipping Section: 1

Air Pressure Drop

0.00 inWc

Door

Location	Width	Opening	Window Type	Light
Drive side	18 in	Outward	Round	LED marine light kit and switch only

Chilled Water Coil

Component: 4 | Length: 42 in | Shipping Section: 2

Coil Model	Total Capacity	Sensible Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)
5WL1208B	356299 Btu/hr	356299 Btu/hr	2	8	12	0.625 in	1.50 in x 1.299 in

Air Volume	Air Temperature				Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering		Leaving						
	Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb					
26000 cfm	99.6 °F	77.2 °F	87.1 °F	73.8 °F	0.69 inWc	39 in	111 in	60.12 ft²	432 ft/min

Fluid		Flow Rate	Pressure Drop	Velocity	Volume	Weight
Entering	Leaving					
82.9 °F	95.4 °F	60.00 gpm	8.60 ftHd	1.70 ft/s	61.0 gal	514.00 lb

Connection [Data Per Coil]				Glycol Type	Min. Fin Surface Temp.	Min. Tube Wall Surface Temp.	Fouling Factor
Type	Size	Location	Material				
Threaded	2.50 in	Drive side	Carbon steel	Propylene (30%)	82.9 °F	82.9 °F	0.000

Material				Drain Pan	Drain Side	Turbospiral
Fin	Tube	Header	Case			
Aluminum .0075 in	Copper .020 in	Copper	Galv. steel	Stainless steel	Drive side	Yes

Schedules specify 0.035"

AHRI 410 Certification

Coil is NOT certified by AHRI

Door

Location	Width	Opening	Window Type	Light
Drive side	20 in	Outward	Round	LED marine light kit and switch only

IFB Steam Coil	Component: 5	Length: 36 in	Shipping Section: 2

Coil Model	Total Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)
AMX12CE103.469.01	1546300 Btu/hr	1	1	12	0.625 in	1.50 in x 1.299 in

Air Volume	Air Temperature		Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering Dry Bulb	Leaving Dry Bulb					
26000 cfm	17.6 °F	72.7 °F	0.15 inWc	69 in	99 in	47.63 ft²	548 ft/min

Fluid		Max. Superheat Temp. in Steam Coil Inlet
Steam Pressure	Condensate Load	
15.00 psig	1620.58 lb/hr	30.0 °F

Connection [Data Per Coil]				
Type	Steam Size	Condensate Size	Location	Material
Threaded	3.00 in	2.50 in	Drive side	Carbon steel

Material			
Fin	Tube	Header	Case
Copper .012 in	Copper .035 in	Carbon Steel	Galv. steel

Access Section	Component: 6	Length: 24 in	Shipping Section: 3

Air Pressure Drop
0.00 inWc

Door			
Location	Width	Opening	Light
Drive side	20 in	Outward	LED marine light kit with GFI outlet

Future Chilled Water Coil	Component: 7	Length: 38 in	Shipping Section: 3

Number of Coils	Number of Rows
2	2

Coil Air Pressure Drop	Finned Height	Finned Width	Face Area	Face Velocity
0.20 inWc	39 in	111 in	60.12 ft²	432 ft/min

Connection Location	Connection Material
Drive side	Carbon steel

Coil Model	Drain Pan	Drain Pan Side
Future Coil (Not Supplied)	Stainless steel	Drive side

AHRI 410 Certification
Coil is NOT certified by AHRI

Door			
Location	Width	Opening	Light
Drive side	22 in	Outward	LED marine light kit with GFI outlet

Humidifier Section. Humidifier manifold to be factory installed. Performance data is located at the end of this submittal

Confirm UVC light control panel furnished with unit meets the requirements in drawing detail.

Chilled Water Coil

Component: 8 | Length: 48 in | Shipping Section: 4

Coil Model	Total Capacity	Sensible Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)
5WD0812B	2244626 Btu/hr	1352153 Btu/hr	2	12	8	0.625 in	1.50 in x 1.299 in

Air Volume	Air Temperature				Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering		Leaving						
	Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb					
26000 cfm	99.6 °F	77.2 °F	52.0 °F	51.8 °F	1.03 inWc	39 in	111 in	60.12 ft²	432 ft/min

Water		Flow Rate	Pressure Drop	Velocity	Volume	Weight
Entering	Leaving					
45.0 °F	59.2 °F	315.70 gpm	14.30 ftHd	3.30 ft/s	92.0 gal	768.00 lb

Connection [Data Per Coil]				Min. Fin Surface Temp.	Min. Tube Wall Surface Temp.	Fouling Factor
Type	Size	Location	Material			
Threaded	2.50 in	Drive side	Carbon steel	45.0 °F	45.0 °F	0.000

Material				Drain Pan	Drain Side
Fin	Tube	Header	Case		
Aluminum .0075 in	Copper .020 in	Copper	Galv. steel	Stainless steel	Drive side

AHRI 410 Certification

Certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at www.ahridirectory.org

OPR requires N+1 which is usually 100% redundancy. Confirm with owner if 93.4% redundancy is acceptable.

Door

Location	Width	Opening	Window Type	Light
Drive side	20 in	Outward	Round	UVC Lights

Supply Fan Array

Component: 10 | Length: 42 in | Shipping Section: 5

Fan Performance

Air Volume*	Static Pressure			Fan Energy Index(FEI)	Total Input Power	Fan Shaft Power*	Speed		Redundancy(N-1)	Fan Circuit	
	External	Total	Cabinet				Operating	Maximum		MOP	MCA
6500 cfm	4.25 inWc	8.35 inWc	0.01 inWc	1.25	41.7 kW	12.68 BHP	3065 rpm	3650 rpm	93.4 %	90.00 A	74.38 A

TSP is more than 0.75" less than design. Clarify is this is acceptable.

Fan Data

Fan Type	Blade Type	Quantity of Fans	Wheel Diameter	Number of Blades	Discharge	Motor Location
SWSI / 2x2	Airfoil / 2	4	18.25 in	12	Axial	Behind Fan

Motor Data

Power	Electrical Supply	Speed	Efficiency	Enclosure	Frame Size	Supplier	Number of Poles	Lock Rotor Current*	Full Load Current*
15.0 HP	460/60/3 V/Hz/Phase	3500 rpm	Premium	ODP	215 T frame	Generic	2	111.01 A	17.50 A

Fan Options

Isolation Backdraft Dampers:	Provided	Block Off Plate:	None
Piezometer Ring:	1 ring per fan	Piezometer Delta P:	16.26
Shaft Grounding Kit:	Provided	Isolator Type:	Spring

VFD/Starter/Disconnect Data

Selection Type:	MMP J-Box	Vendor:	Factory Standard
VFD Power:	15 HP	Voltage:	460 V
Height x Width x Depth:	15.75 in x 11.81 in x 7.90 in	Mounting:	Door Side
Enclosure:	NEMA 1		

Panel

Location	Width	Opening
Removable panels	- in	Outward

Notes

Please clarify VFDs are provided/installed by others.

** after a unit label denotes the data for an individual fan.*

Plenum Section	Component: 11	Length: 24 in	Shipping Section: 5

Recommend inward opening access door on positive pressure sections.

Air Pressure Drop
0.24 inWc

Custom Openings

Custom Opening	Location	Width	Height	Rainhood w/Screen
1	End	80 in	24 in	None

Door

Location	Width	Opening	Window Type	Light
Drive side	20 in	Outward	Round	LED marine light kit and switch only

Special Options

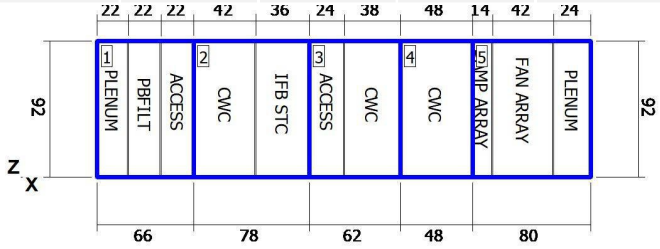
Tread Plate Floor Liner	Sound Baffle
Tread plate installed	(As casing details)

Unit Sound Power (dB)

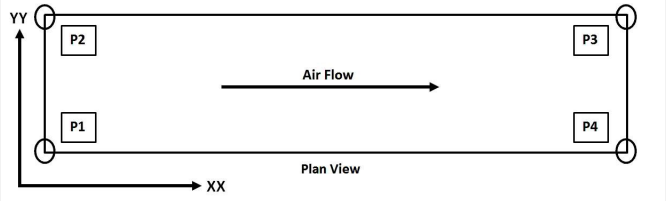
Type	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Radiated:	86	76	73	77	74	66	49	51
Unit Discharge:	91	81	83	92	90	88	81	74
Unit Return:	86	76	73	77	74	66	49	51

Shipping Section Details

Section	Length in	Weight lb	Corner Weights (lb)				Center of Gravity (in)		
			P1	P2	P3	P4	XX	YY	ZZ
1	66	1738	423	423	446	446	34	62	46
2	78	5432	1632	1683	1085	1033	30	63	49
3	62	1395	317	317	381	381	34	62	39
4	48	3885	1296	1360	678	614	16	64	48
5	80	4236	1210	1235	908	883	34	63	45
Entire Unit	**334**	**16686**	**3926**	**4066**	**4450**	**4309**	**175**	**63**	**46**



Elevation View



Plan View

NOTE: Special components aren't included in the corner weights and center of gravity data.

NOTE: Shipping weights listed do not include weight of water (listed in coil section(s) above.

Shipping Protection	Shipping Bag

NOTE: Shipping protection is not meant for long term storage.

NOTE: In some instances a shipping bag cannot be applied. In these circumstances stretch wrap would be supplied.

UPDATE TO DIRTY STATUS. FOR BOTH PRE AND FINAL FILTERS.

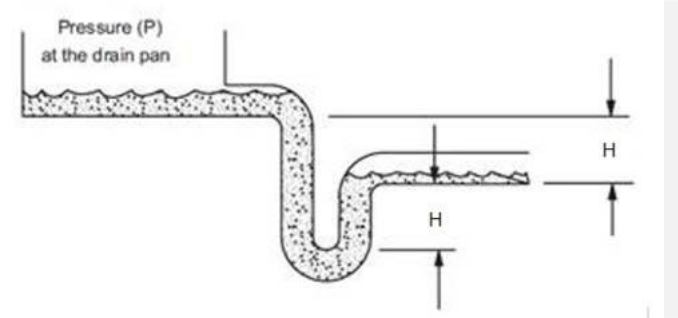
Supply Static Pressure Drop

Component	Option	Static Pressure Drop
Plenum Section	Plenum Section	0.06 insWg
Panel and Cartridge Filter	Panel and Cartridge Filter	1.72 insWg
Access Section	Access Section	
Chilled Water coil	Chilled Water coil	0.69 insWg
Steam Face and Bypass Coil	Steam Face and Bypass Coil	0.15 insWg
Access Section	Access Section	
Chilled Water coil	Chilled Water coil	0.20 insWg
Chilled Water coil	Chilled Water coil	1.03 insWg
Damper	Damper	
Supply Fan	Cabinet	0.01 insWg
Plenum Section	Plenum Section	0.24 insWg
External Static	External Static	4.25 insWg
Total Supply Fan Static		8.35 insWg

PROVIDE MINIMUM 9.12" TSP PER SCHEDULE.

Minimum Recommended Drain Pan Trap Dimensions

Shipping Section	Component	H
2	Chilled Water coil	5.44
3	Chilled Water coil	6.14
4	Chilled Water coil	8.20



Dimensions provided as a courtesy and are recommended minimums only. Daikin is not responsible for supplying or designing drain pan traps and is not responsible for any damage caused by incorrect trap heights. The dimensions listed above should be reviewed and approved by a licensed plumbing professional.

This calculation is based on an assumption that 0.25 inches of the external static pressure is in the return duct and the remainder is in the supply duct. If actual conditions vary from this assumption then contact Applications for new trap height recommendations.

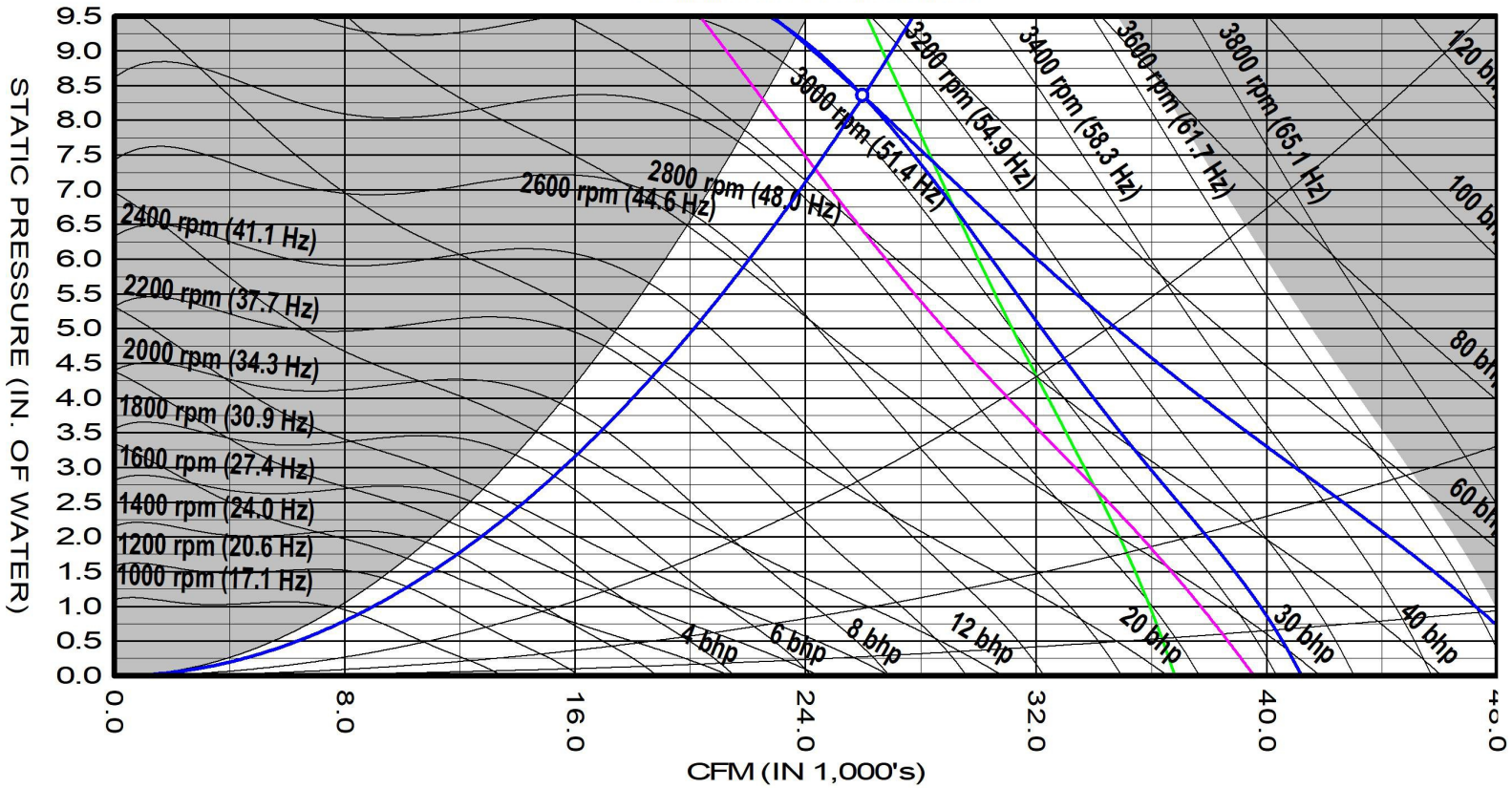
AHRI Certification

Certified by the AHRI Central Station Air-Handling Unit (AHU) Certification Program, which is based on AHRI Standard 430/431. AHRI certified units are subject to rigorous and continuous testing, have performance ratings independently measured and are third-party verified. Certified units may be found in the AHRI Directory at www.ahridirectory.org.

Notes

Important
1. This unit may not meet ASHRAE Standard 90.1 - 2007 fan motor power limitations for the year and system selected. If that code applies, alternate fan selections may be required.
2. The designer and installer must ensure compliance with applicable codes. A component supplier cannot determine the brake horsepower ("BHP") for other motors in the air handling system.
3. Before approving this unit, determine whether ASHRAE Standard 90.1 - 2007 has been adopted in the specific jurisdiction or contract specifications in which the unit will be installed.

Daikin AHU Fan Curve



Green line = fan curve for 3 fan(s) at max speed

Red line = BHP curve for 3 fan(s) at max power of selected motor

AF 18 DD PLENUM 12BL (100% Width) 2x2 Supply Fan at Standard Conditions					
Air volume	26000	cfm	Fan speed	3065	rpm
Total static	8.35	insWg	Max speed	3650	rpm
Fan Shaft Power	50.7	bhp	Efficiency	67.4	%
Approx VFD Setting	52.5	Hz	Motor Speed	3500	rpm
Fan Energy Index(FEI)	1.25		Redundancy	93.4	%
Unit tagging	AHU-2		Date	November-01-2024	
Job name	UAMS CAMID		Time	07:13	

Supply fan performance is certified in accordance with the Central Station Air-Handling Unit Certification Program, which is based on AHRI Standard 430.

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UAMS CAMID

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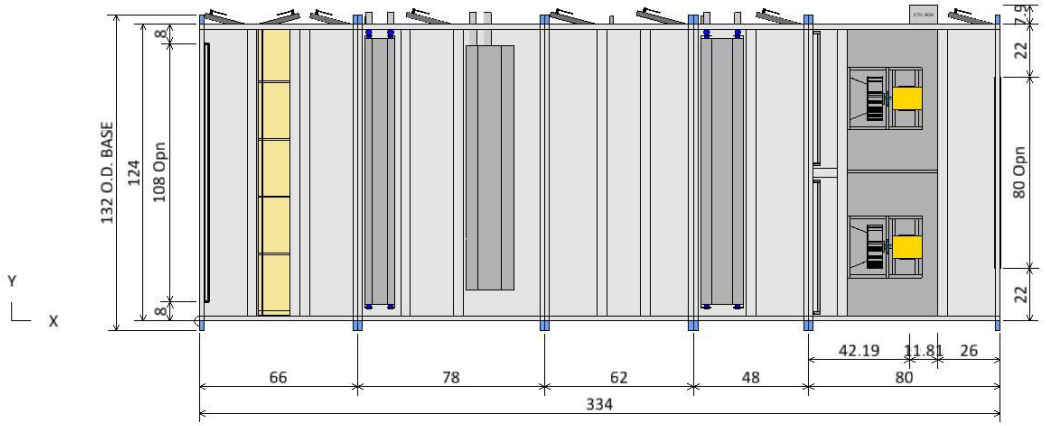
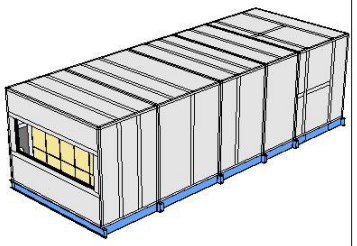
11/1/2024

AHU-2

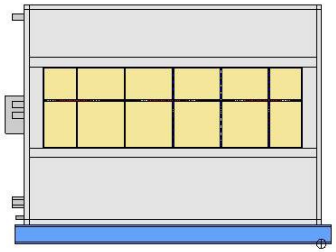
Drawing



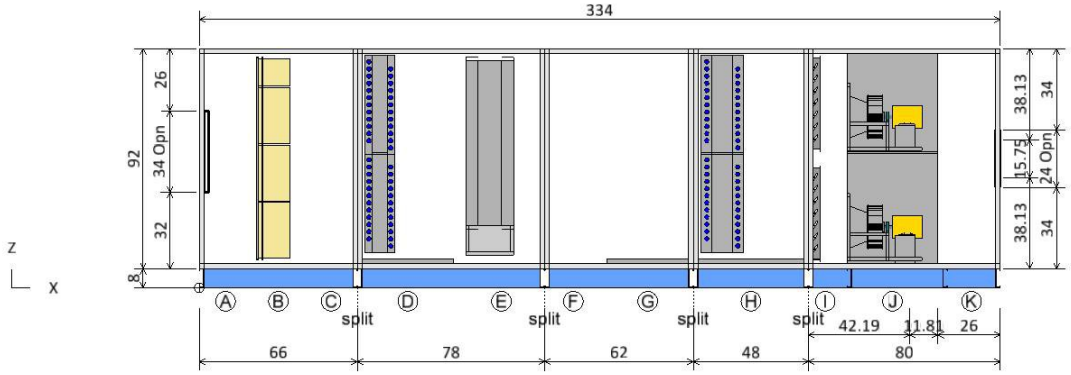
PLAN VIEW



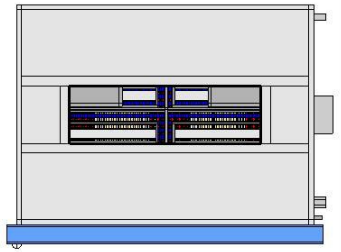
ISOMETRIC VIEW



FRONT END VIEW



ELEVATION VIEW



REAR END VIEW

Plan/Elevation	Unit Tag: AHU-2			Sales Office: Harrison Energy Partners		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH064GDHM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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All opening dimensions have a 1" mounting flange along the inner edge. The actual airflow area of the opening is 2" smaller in each dimension.

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UAMS CAMID

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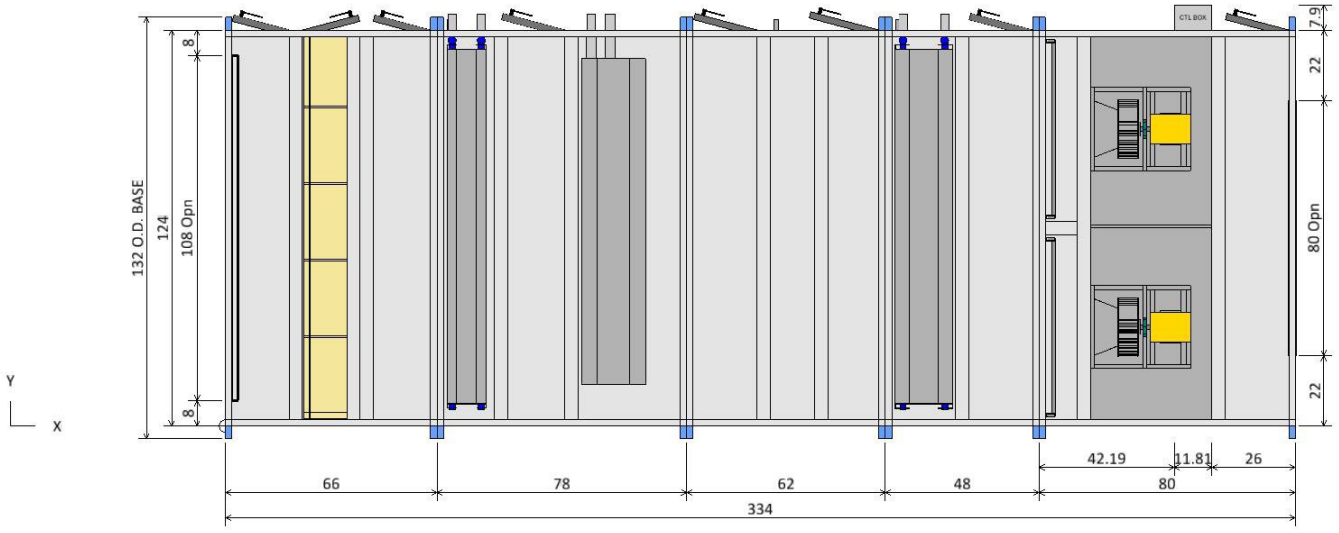
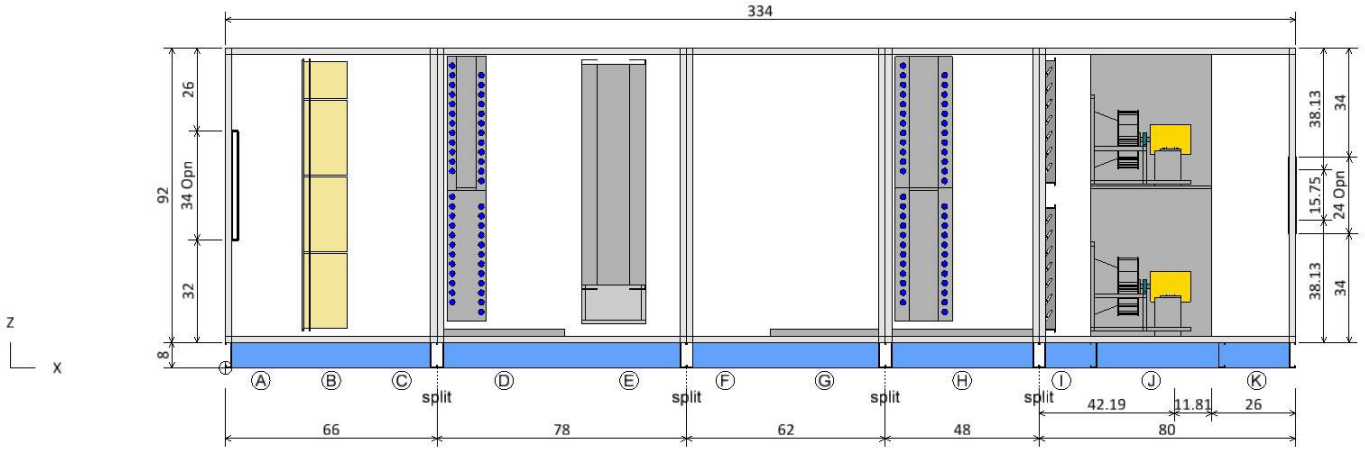
AHU-2

Drawing



PLAN VIEW



ELEVATION VIEW

Component Key		
Ⓐ	Plenum Section Left Door (WxH):	 18 ins x 48 ins
Ⓑ	Panel and Cartridge Filter Pre Filter Type: Cartridge Filter Type: Left Door (WxH):	 Pleated (MERV 8) Varicel VXL 18 ins x 88 ins
Ⓒ	Access Section Left Door (WxH):	 18 ins x 68 ins
Ⓓ	Chilled Water coil Coil Model: Total Capacity: Left Door (WxH):	 5WL1208B 356299.0 Btu/hr 20 ins x 68 ins
Ⓔ	Steam Face and Bypass Coil Total Capacity:	 1546300.0 Btu/hr
Ⓕ	Access Section Left Door (WxH):	 20 ins x 68 ins
Ⓖ	Chilled Water coil Coil Model: Total Capacity: Left Door (WxH):	 5WH0002C 0.0 Btu/hr 22 ins x 68 ins
Ⓗ	Chilled Water coil Coil Model: Total Capacity: Left Door (WxH):	 5WD0812B 2244626.0 Btu/hr 20 ins x 68 ins
Ⓘ	Damper	
Ⓙ	Supply Fan Fan Type: Fan Size (Class): Air Flowrate: T.S.P: Motor Power:	 Centrifugal - Plenum 18 (2) 6500.0 cfm 8.3 insWg 15.0 HP
Ⓚ	Plenum Section Left Door (WxH):	 20 ins x 48 ins

Plan/Elevation - No Ends	Unit Tag: AHU-2			Sales Office: Harrison Energy Partners		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH064GDHM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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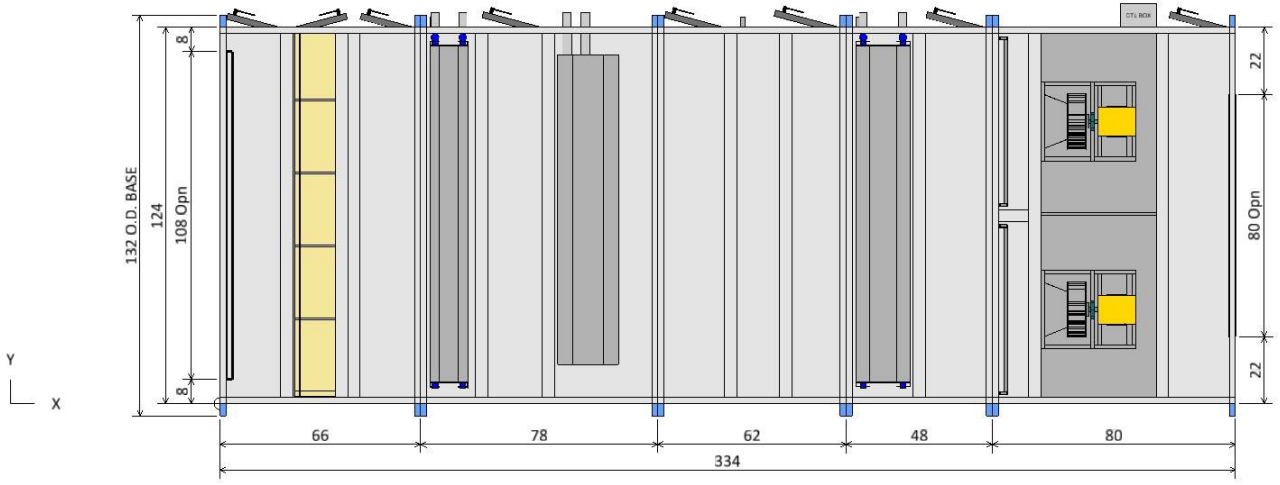
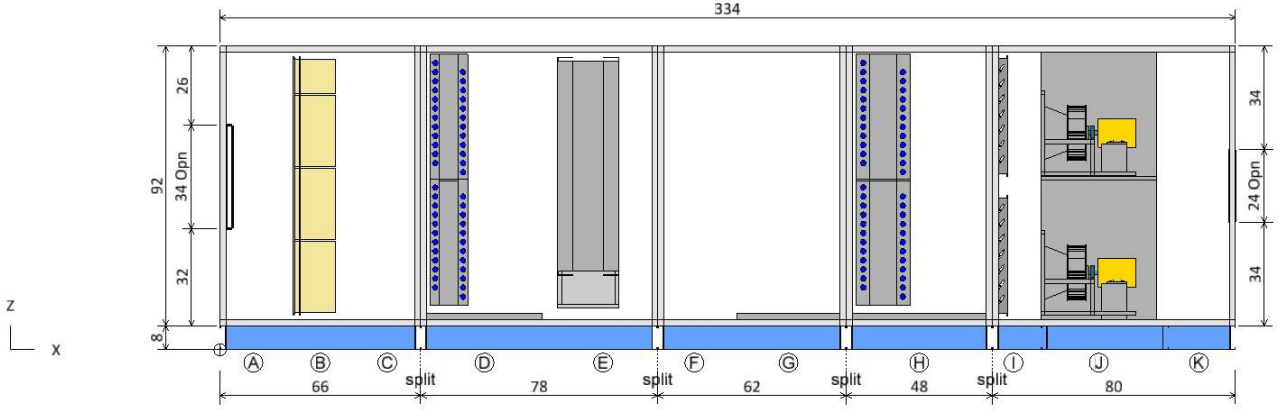
AHU-2

Drawing



PLAN VIEW



ELEVATION VIEW

Component Key

	Type	X	Y	Z	Wid	Hgt
Ⓐ	Plenum Section Opening	0.00	8.00	40.00	108.00	34.00
Ⓚ	Plenum Section Opening	334.00	22.00	42.00	80.00	24.00

Note: Dimensions are measured from the origin point.
Note: Openings with or without dampers are recessed into the unit by approximately 1.75 in.

Opening/Damper Connections	Unit Tag: AHU-2			Sales Office: Harrison Energy Partners		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH064GDHM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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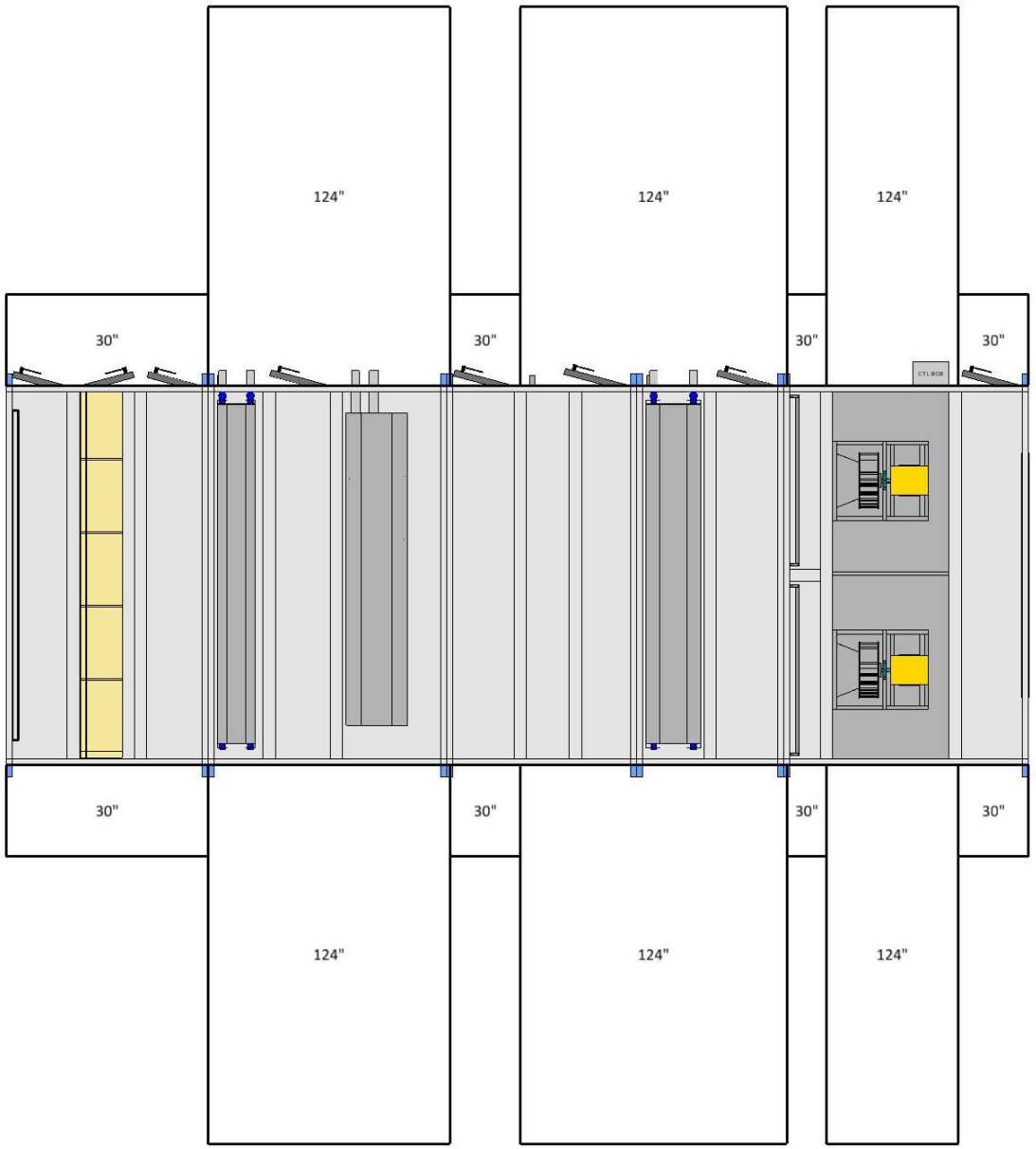

PLAN VIEW

Notes

Check local electrical component service clearance codes for specific distances.

Access is only required on one side of the unit.

Service Clearance View	Unit Tag: AHU-2			Sales Office: Harrison Energy Partners		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH064GDHM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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All opening dimensions have a 1" mounting flange along the inner edge. The actual airflow area of the opening is 2" smaller in each dimension.

AHU-2

Drawing

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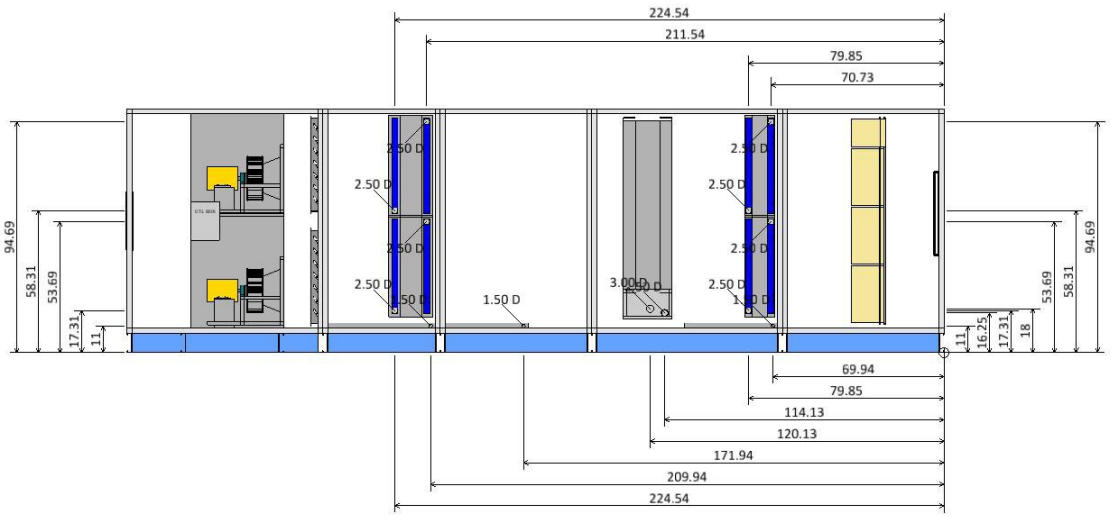
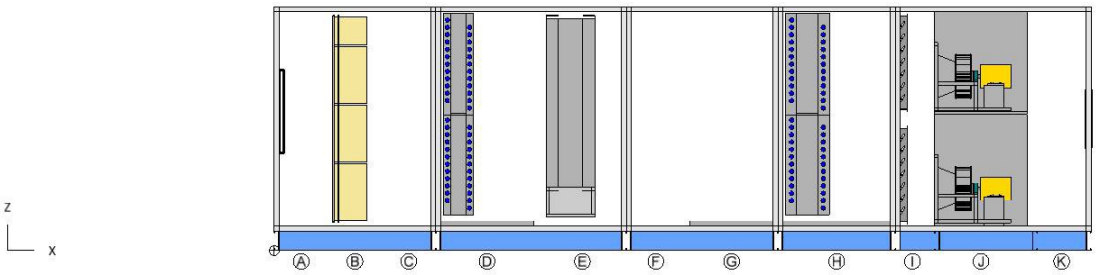
11/1/2024

AHU-2

Drawing



LEFT ELEVATION VIEW



RIGHT ELEVATION VIEW

Coil and Drain Connections

	Type	X	Y	Z	Diam
Ⓓ	Chilled Water coil				
	Condensate drain conn:	69.94	127.40	11.00	1.50
	Cold water inlet:	79.85	129.00	17.31	2.50
	Cold water outlet:	70.73	129.00	53.69	2.50
	Cold water inlet:	79.85	129.00	58.31	2.50
	Cold water outlet:	70.73	129.00	94.69	2.50
Ⓔ	Steam Face and Bypass Coil				
	Steam inlet:	120.13	129.00	18.00	3.00
	Steam outlet:	114.13	129.00	16.25	2.50
Ⓖ	Chilled Water coil				
	Condensate drain conn:	171.94	127.40	11.00	1.50
Ⓗ	Chilled Water coil				
	Condensate drain conn:	209.94	127.40	11.00	1.50
	Cold water inlet:	224.54	129.00	17.31	2.50
	Cold water outlet:	211.54	129.00	53.69	2.50
	Cold water inlet:	224.54	129.00	58.31	2.50
	Cold water outlet:	211.54	129.00	94.69	2.50

Note: Dimensions are measured from the origin point.

Coil and Drain Connections	Unit Tag: AHU-2			Sales Office: Harrison Energy Partners		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH064GDHM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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All opening dimensions have a 1" mounting flange along the inner edge. The actual airflow area of the opening is 2" smaller in each dimension.

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UAMS CAMID

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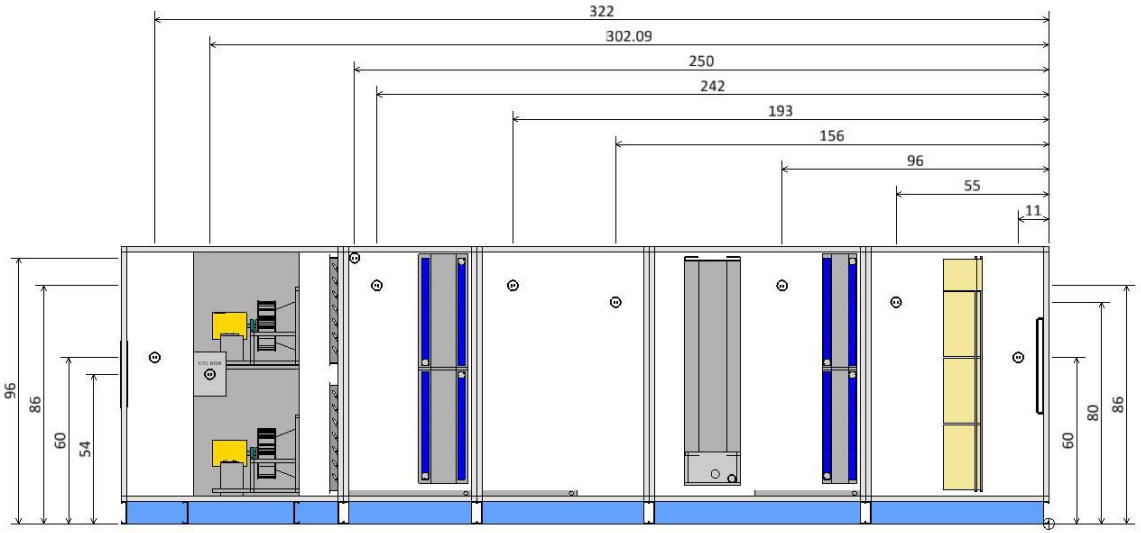
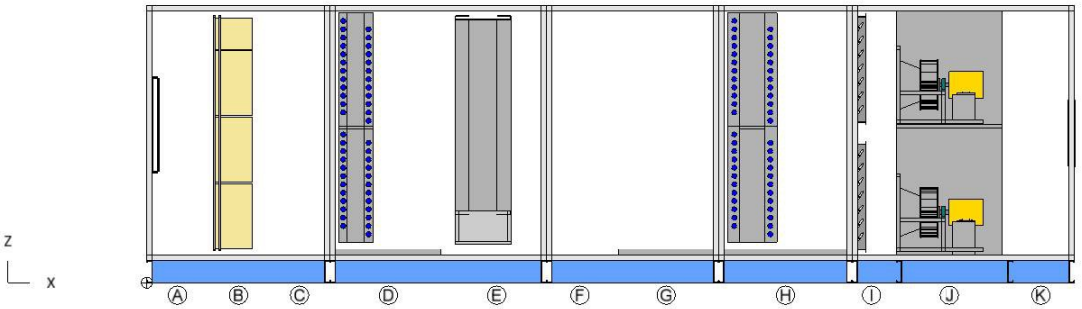
AHU-2

Drawing



LEFT ELEVATION VIEW



RIGHT ELEVATION VIEW

Component Key

	Type	X	Y	Z	Volts	Phase
Ⓐ	Plenum Section LED Marine Light	11.00	124.00	60.00	110	1
Ⓒ	Access Section LED Marine Light	55.00	124.00	80.00	110	1
Ⓓ	Chilled Water coil LED Marine Light	96.00	124.00	86.00	110	1
Ⓕ	Access Section LED Marine Light GFI	156.00	124.00	80.00	110	1
Ⓖ	Chilled Water coil LED Marine Light GFI	193.00	124.00	86.00	110	1
Ⓗ	Chilled Water coil LED Marine Light UVC Light	242.00 250.00	124.00 122.00	86.00 96.00	110 115	1 1
Ⓙ	Supply Fan Fan	302.09	124.00	54.00	460	3
Ⓚ	Plenum Section LED Marine Light	322.00	124.00	60.00	110	1

Note: Dimensions are measured from the origin point.

Electrical Connections	Unit Tag: AHU-2			Sales Office: Harrison Energy Partners		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH064GDHM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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All opening dimensions have a 1" mounting flange along the inner edge. The actual airflow area of the opening is 2" smaller in each dimension.

B0BKVU

UAMS CAMID

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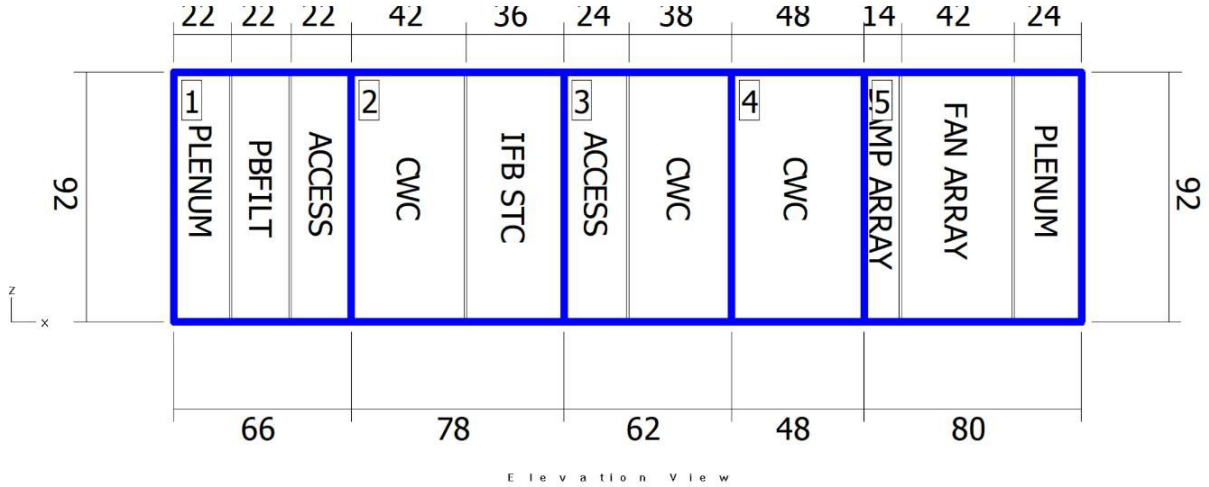
11/1/2024

AHU-2

Drawing



Shipping Sections

Section	Weight (lb)	X	Y	Z
Section 1	1737.72	66	124	92
Section 2	5431.78	78	124	92
Section 3	1395.43	62	124	92
Section 4	3885.11	48	124	92
Section 5	4235.50	80	124	92
Total Unit	16685.55	334	124	92

Note: Base rails, curb ready base, coil connectors, drain connectors, and control boxes not included in height X, Y, Z dimensions. Shipping section may be 2" longer in air flow direction due to internal splice joint.

Shipping Sections	Unit Tag: AHU-2			Sales Office: Harrison Energy Partners		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH064GDHM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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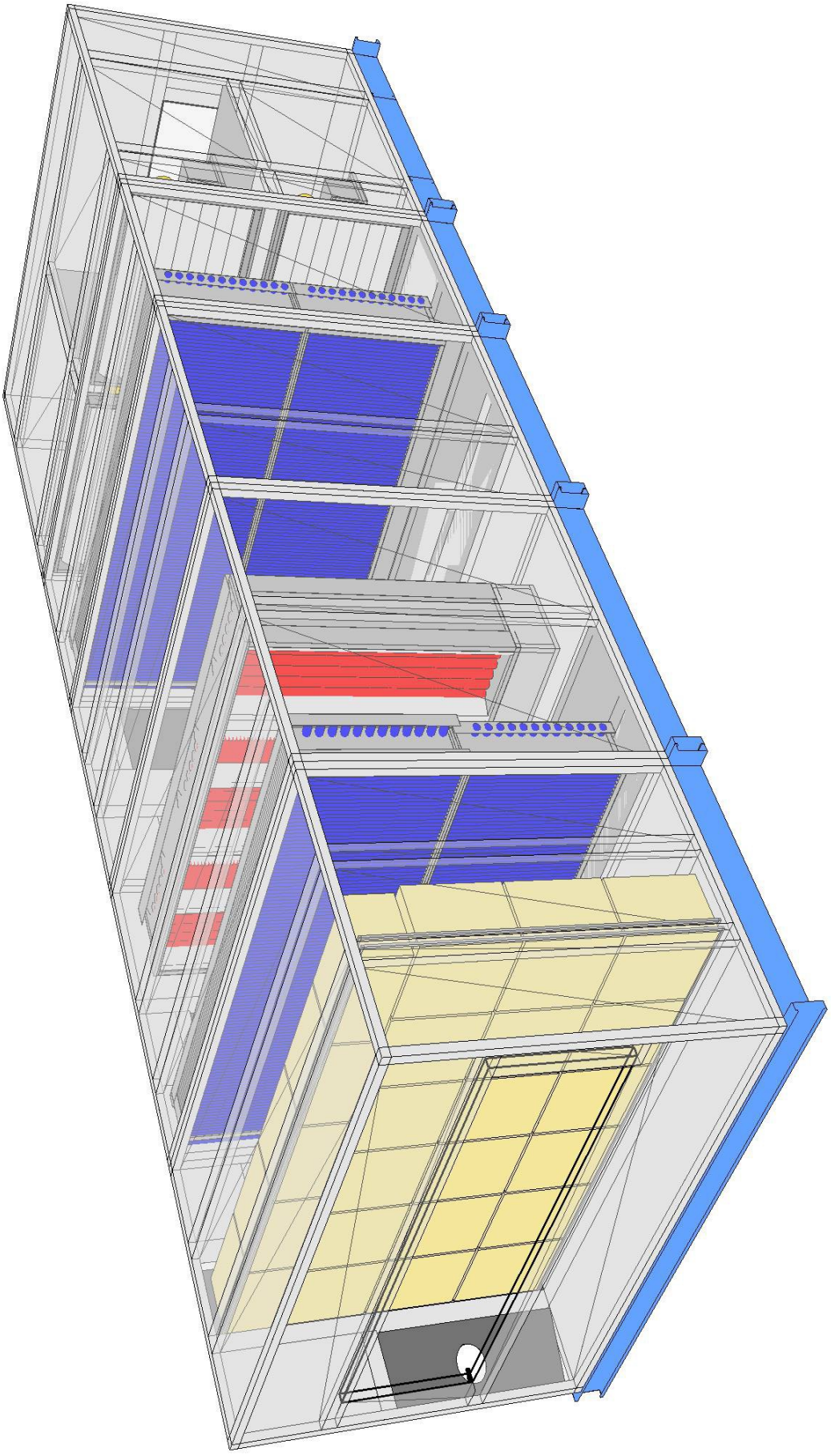
All opening dimensions have a 1" mounting flange along the inner edge. The actual airflow area of the opening is 2" smaller in each dimension.



Product Drawing

Unit Tag: AHU-2			Sales Office: Harrison Energy Partners		
Project Name: UAMS CAMID			Sales Engineer:		
Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

Product: Vision Air Handler
Model: CAH064GDHM

All opening dimensions have a 1" mounting flange along the inner edge. The actual airflow area of the opening is 2" smaller in each dimension.

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www.DaikinApplied.com Software Version: 13.43

SUBMITTAL DATA

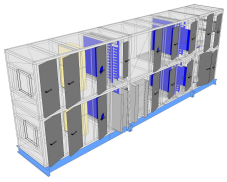
Job Name	UAMS CAMID
For	
Sold To	
Prepared For	
Customer PO#	
Prepared By	Jake Skinner
Date	11/1/2024

Table of Contents

Floor plan indicates coil connections on opposite sides on top vs. bottom unit. Submittal shows coil/piping connections on same side of unit for both units. Coordinate LH vs. RH connections for each AHU.

Please clarify if humidifier condensate drain cooler shall be submitted here or separately.

Job Information	Technical Data Sheet
Job Name	UAMS CAMID
Date	November 01 2024
Submitted By	JS
Software Version	13.43
Unit Tag	AHU-5 Stacked



Unit Overview

Model Number	Supply						Return/Exhaust					
	Air Volume cfm	Static Pressure		External Dimensions			Air Volume cfm	Static Pressure		External Dimensions		
		External inWc	Total inWc	Height in	Width in	Length in		External inWc	Total inWc	Height in	Width in	Length in
CAH011GDGM	3870	3.00	6.90	52*	48*	304	3870	3.00	7.07	52*	48*	304

**Not including base rails, coil connectors, drain connectors and control boxes.*

Unit

Model Number:	CAH011GDGM		
Approval:	ETL Listed / ETL Listed to Canadian Safety Standards (ETL Label / ETLc Label)		
Construction:	High pressure low leakage construction		
Outer Panel:	24 gauge G90 Galvanized Steel (unpainted)		
Liner:	24 gauge Galvanized Steel (unless noted per section)		
Insulation:	R-13 Injected Foam		
Unit Configuration:	Stacked with parallel air flows	**Drive (Handling) Location:**	Right
Base:	8" formed channel	**Wall Thickness:**	2 in
Altitude:	0 ft	**Parts Warranty:**	Standard One Year

Plenum Section

Component: 1 | Length: 24 in | Shipping Section: 1

Air Pressure Drop
0.12 inWc

Custom Openings

Custom Opening	Location	Width	Height	Rainhood w/Screen
1	End	20 in	20 in	None

Door

Location	Width	Opening
Drive side	20 in	Outward

Access Section

Component: 2 | Length: 24 in | Shipping Section: 1

Air Pressure Drop
0.00 inWc

Door

Location	Width	Opening
Drive side	20 in	Outward

Clarify if inlet air isolation dampers are provided with units or by others.

Combination Filter

Component: 3 | Length: 16 in | Shipping Section: 1

Access	Face Velocity	Face Area	Air Volume
Front	558 ft/min	6.9 ft²	3870 cfm

Portion	Type	Efficiency	Air Pressure Drop				Number of Filters	Height	Width	Depth
			Clean Air	Mean Air	Dirty Air	User Spec				
Pre-Filter	Pleated	MERV 8	0.27 inWc	**0.63** inWc	1.00 inWc	N/A	1	24 in	24 in	2 in
							1	20 in	24 in	2 in
Filter	Varicel VXL cartridge	MERV 15	0.45 inWc	**1.22** inWc	2.00 inWc	N/A	1	24 in	24 in	12 in
							1	20 in	24 in	12 in

Special Options

Sound Baffle	Filter Gauge
(As casing details)	Minihelic II 0-5"

Access Section

Component: 4 | Length: 22 in | Shipping Section: 1

Air Pressure Drop
0.00 inWc

Door

Location	Width	Opening	Window Type	Light
Drive side	14 in	Outward	Round	LED marine light kit and switch only

Chilled Water Coil

Component: 5 | Length: 28 in | Shipping Section: 1

Coil Model	Total Capacity	Sensible Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)
5WL1208B	54152 Btu/hr	54152 Btu/hr	1	8	12	0.625 in	1.50 in x 1.299 in

Air Volume	Air Temperature				Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering		Leaving						
	Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb					
3870 cfm	99.6 °F	77.2 °F	86.8 °F	73.7 °F	0.56 inWc	42 in	35 in	10.21 ft²	379 ft/min

Fluid		Flow Rate	Pressure Drop	Velocity	Volume	Weight
Entering	Leaving					
85.9 °F	89.1 °F	35.10 gpm	4.60 ftHd	1.80 ft/s	12.0 gal	103.00 lb

Connection [Data Per Coil]				Glycol Type	Min. Fin Surface Temp.	Min. Tube Wall Surface Temp.	Fouling Factor
Type	Size	Location	Material				
Threaded	2.50 in	Drive side	Carbon steel	Propylene (30%)	85.9 °F	85.9 °F	0.000

Material				Drain Pan	Drain Side	Turbospiral
Fin	Tube	Header	Case			
Aluminum .0075 in	Copper .020 in	Copper	Galv. steel	Stainless steel	Drive side	Yes

AHRI 410 Certification

Coil is NOT certified by AHRI

Door

Location	Width	Opening	Light
Drive side	8 in	Outward	LED marine light kit and switch only

HRC coil shall be minimum 0.035" thick per schedule. Typ.

Confirm HRC coil meets winter performance criteria also. Include performance data if applicable. Typ.

IFB Steam Coil	Component: 6	Length: 36 in	Shipping Section: 2

Coil Model	Total Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)
HMX8AS45.927.02	240300 Btu/hr	1	2	8	0.625 in	1.50 in x 1.299 in

Air Volume	Air Temperature		Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering Dry Bulb	Leaving Dry Bulb					
3870 cfm	17.6 °F	75.1 °F	0.17 inWc	43 in	27 in	8.05 ft²	488 ft/min

Fluid		Max. Superheat Temp. in Steam Coil Inlet
Steam Pressure	Condensate Load	
15.00 psig	248.68 lb/hr	30.0 °F

Connection [Data Per Coil]				
Type	Steam Size	Condensate Size	Location	Material
Threaded	2.50 in	2.50 in	Drive side	Carbon steel

Material			
Fin	Tube	Header	Case
Aluminum .0075 in	Copper .035 in	Carbon Steel	Galv. steel

Access Section	Component: 7	Length: 24 in	Shipping Section: 2

Air Pressure Drop
0.00 inWc

Door				
Location	Width	Opening	Window Type	Light
Drive side	16 in	Outward	Round	LED marine light kit with GFI outlet

Future Chilled Water Coil	Component: 8	Length: 28 in	Shipping Section: 2

Number of Coils	Number of Rows
1	2

Coil Air Pressure Drop	Finned Height	Finned Width	Face Area	Face Velocity
0.10 inWc	42 in	35 in	10.21 ft²	379 ft/min

Connection Location	Connection Material
Drive side	Carbon steel

Coil Model	Drain Pan	Drain Pan Side
Future Coil (Not Supplied)	Stainless steel	Drive side

AHRI 410 Certification
Coil is NOT certified by AHRI

Door			
Location	Width	Opening	Light
Drive side	14 in	Outward	LED marine light kit and switch only

Humidifier Section.
Humidifier manifold to be factory installed. Performance data is located at the end of this submittal.

Chilled Water Coil

Component: 9 | Length: 40 in | Shipping Section: 2

Coil Model	Total Capacity	Sensible Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)
5WH1008C	326506 Btu/hr	198084 Btu/hr	1	8	10	0.625 in	1.50 in x 1.299 in

Air Volume	Air Temperature				Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering		Leaving						
	Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb					
3870 cfm	99.6 °F	77.2 °F	52.8 °F	52.6 °F	1.21 inWc	42 in	35 in	10.21 ft²	379 ft/min

Water		Flow Rate	Pressure Drop	Velocity	Volume	Weight
Entering	Leaving					
45.0 °F	60.1 °F	43.30 gpm	8.90 ftHd	3.30 ft/s	12.0 gal	101.00 lb

Connection [Data Per Coil]				Min. Fin Surface Temp.	Min. Tube Wall Surface Temp.	Fouling Factor
Type	Size	Location	Material			
Threaded	2.00 in	Drive side	Carbon steel	45.0 °F	45.0 °F	0.000

Material				Drain Pan	Drain Side
Fin	Tube	Header	Case		
Aluminum .0075 in	Copper .020 in	Copper	Galv. steel	Stainless steel	Drive side

AHRI 410 Certification

Certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at www.ahridirectory.org

Door

Location	Width	Opening	Window Type	Light
Drive side	20 in	Outward	Round	LED marine light kit and switch only

TSP is nearly 1.5" less than scheduled TSP.

Return/Exhaust Fan

Component: 10 | Length: 38 in | Shipping Section: 3

Fan Performance

Air Volume	Static Pressure			Fan Energy Index(FEI)	Total Input Power	Fan Shaft Power	Speed		Outlet Velocity
	External	Total	Cabinet				Operating	Maximum	
3870 cfm	3.00 inWc	7.07 inWc	0.00 inWc	1.11	6.2 kW	6.95 BHP	3199 rpm	3650 rpm	0 ft/min

Fan Data

Fan Type	Blade Type / Class	Nominal Fan Size	Quantity of Fans	Wheel Diameter	Material Type	Number of Blades	Discharge	Motor Location
Centrifugal - Plenum	Airfoil / 2	DDPL16	1	15.75 in	Aluminum	12	Axial	Behind Fan

Motor Data

Power	Electrical Supply	Speed	Efficiency	Enclosure	Frame Size	Supplier	Number of Poles	Lock Rotor Current	Full Load Current
10.0 HP	460/60/3 V/Hz/Phase	3500 rpm	Premium	ODP	213 T frame	Generic	2	74.01 A	12.00 A

Fan Options

Piezometer Ring:	Provided on Drive Side Fan	Piezometer Delta P:	6.87
Shaft Grounding Kit:	Provided	Isolator Type:	Spring

VFD/Starter/Disconnect Data

Selection Type:	External J-Box	Vendor:	Factory Standard
VFD Power:	10 HP	Voltage:	460 V
Height x Width x Depth:	6.00 in x 6.00 in x 4.00 in	Mounting:	Door Side
Enclosure:	NEMA 1		

Door

Location	Width	Opening
Drive side	22 in	Outward

Please clarify VFDs are provided/installed by others. Typ.

Recommend inward opening access doors on positiver pressure sections. Typ.

Plenum Section	Component: 11	Length: 24 in	Shipping Section: 3

Air Pressure Drop

0.05 inWc

Custom Dampers

Custom Damper	Damper Type	Location	Size (Width x Height)		Material	Blade Action	Rainhood w/Screen
			Overall	Opening			
1	CBD6-OUT	End	32 in x 16 in	29 in x 13 in	Alum	Parallel	None

Door

Location	Width	Opening	Window Type	Light
Drive side	20 in	Outward	Round	LED marine light kit and switch only

Plenum Section	Component: 12	Length: 24 in	Shipping Section: 4

Air Pressure Drop

0.12 inWc

Custom Openings

Custom Opening	Location	Width	Height	Rainhood w/Screen
1	End	20 in	20 in	None

Door

Location	Width	Opening
Drive side	20 in	Outward

Access Section	Component: 13	Length: 24 in	Shipping Section: 4

Air Pressure Drop

0.00 inWc

Door

Location	Width	Opening
Drive side	20 in	Outward

Combination Filter	Component: 14	Length: 16 in	Shipping Section: 4

Access	Face Velocity	Face Area	Air Volume
Front	558 ft/min	6.9 ft²	3870 cfm

Portion	Type	Efficiency	Air Pressure Drop				Number of Filters	Height	Width	Depth
			Clean Air	Mean Air	Dirty Air	User Spec				
Pre-Filter	Pleated	MERV 8	0.27 inWc	**0.63** inWc	1.00 inWc	N/A	1	24 in	24 in	2 in
							1	20 in	24 in	2 in
Filter	Varicel VXL cartridge	MERV 15	0.45 inWc	**1.22** inWc	2.00 inWc	N/A	1	24 in	24 in	12 in
							1	20 in	24 in	12 in

Special Options

Sound Baffle	Filter Gauge
(As casing details)	Magnehelic 0-5"

Access Section	Component: 15	Length: 22 in	Shipping Section: 4

Air Pressure Drop

0.00 inWc

Door

Location	Width	Opening	Window Type	Light
Drive side	14 in	Outward	Round	LED marine light kit and switch only

Chilled Water Coil	Component: 16	Length: 28 in	Shipping Section: 4

Coil Model	Total Capacity	Sensible Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)
5WL1208B	54152 Btu/hr	54152 Btu/hr	1	8	12	0.625 in	1.50 in x 1.299 in

Air Volume	Air Temperature				Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering		Leaving						
	Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb					
3870 cfm	99.6 °F	77.2 °F	86.8 °F	73.7 °F	0.56 inWc	42 in	35 in	10.21 ft²	379 ft/min

Fluid		Flow Rate	Pressure Drop	Velocity	Volume	Weight
Entering	Leaving					
85.9 °F	89.1 °F	35.10 gpm	4.60 ftHd	1.80 ft/s	12.0 gal	103.00 lb

Connection [Data Per Coil]				Glycol Type	Min. Fin Surface Temp.	Min. Tube Wall Surface Temp.	Fouling Factor
Type	Size	Location	Material				
Threaded	2.50 in	Drive side	Carbon steel	Propylene (30%)	85.9 °F	85.9 °F	0.000

Material				Drain Pan	Drain Side	Turbospiral
Fin	Tube	Header	Case			
Aluminum .0075 in	Copper .020 in	Copper	Galv. steel	Stainless steel	Drive side	Yes

AHRI 410 Certification
Coil is NOT certified by AHRI

Door			
Location	Width	Opening	Light
Drive side	8 in	Outward	LED marine light kit and switch only

Manual Component	Component: 17	Length: 36 in	Shipping Section: 5

Pressure Drop
0.00 inWc

Panel		
Location	Width	Opening
Removable panels	- in	Outward

Access Section	Component: 18	Length: 24 in	Shipping Section: 5

Air Pressure Drop
0.00 inWc

Door				
Location	Width	Opening	Window Type	Light
Drive side	16 in	Outward	Round	LED marine light kit with GFI outlet

IFB Coil Section.
IFB coil in this section will be identical to the IFB coil in the bottom section of the air handler (component 6)

Future Chilled Water Coil	Component: 19	Length: 28 in	Shipping Section: 5

Number of Coils	Number of Rows
1	2

Coil Air Pressure Drop	Finned Height	Finned Width	Face Area	Face Velocity
0.10 inWc	42 in	35 in	10.21 ft²	379 ft/min

Connection Location	Connection Material
Drive side	Carbon steel

Coil Model	Drain Pan	Drain Pan Side
Future Coil (Not Supplied)	Stainless steel	Drive side

AHRI 410 Certification

Coil is NOT certified by AHRI

Door

Location	Width	Opening	Light
Drive side	14 in	Outward	LED marine light kit and switch only

Chilled Water Coil	Component: 20	Length: 40 in	Shipping Section: 5

Coil Model	Total Capacity	Sensible Capacity	Number of Coils	Number of Rows	Fins per Inch	Tube Diameter	Tube Spacing (Face x Row)
5WH1008C	326506 Btu/hr	198084 Btu/hr	1	8	10	0.625 in	1.50 in x 1.299 in

Air Volume	Air Temperature				Coil Air Pressure Drop	Finned Height	Finned Length	Face Area	Face Velocity
	Entering		Leaving						
	Dry Bulb	Wet Bulb	Dry Bulb	Wet Bulb					
3870 cfm	99.6 °F	77.2 °F	52.8 °F	52.6 °F	1.21 inWc	42 in	35 in	10.21 ft²	379 ft/min

Water		Flow Rate	Pressure Drop	Velocity	Volume	Weight
Entering	Leaving					
45.0 °F	60.1 °F	43.30 gpm	8.90 ftHd	3.30 ft/s	12.0 gal	101.00 lb

Connection [Data Per Coil]				Min. Fin Surface Temp.	Min. Tube Wall Surface Temp.	Fouling Factor
Type	Size	Location	Material			
Threaded	2.00 in	Drive side	Carbon steel	45.0 °F	45.0 °F	0.000

Material				Drain Pan	Drain Side
Fin	Tube	Header	Case		
Aluminum .0075 in	Copper .020 in	Copper	Galv. steel	Stainless steel	Drive side

AHRI 410 Certification

Certified in accordance with the AHRI Forced-Circulation Air-Cooling and Air-Heating Coils Certification Program which is based on AHRI Standard 410 within the Range of Standard Rating Conditions listed in Table 1 of the Standard. Certified units may be found in the AHRI Directory at www.ahridirectory.org

Door

Location	Width	Opening	Window Type	Light
Drive side	20 in	Outward	Round	LED marine light kit and switch only

Humidifier Section.
Humidifier manifold to be factory installed. Performance data is located at the end of this submittal.

Supply Fan

Component: 21 | Length: 38 in | Shipping Section: 6

Fan Performance

Air Volume	Static Pressure			Fan Energy Index(FEI)	Total Input Power	Fan Shaft Power	Speed		Outlet Velocity
	External	Total	Cabinet				Operating	Maximum	
3870 cfm	3.00 inWc	6.90 inWc	0.00 inWc	1.11	6.1 kW	6.79 BHP	3174 rpm	3650 rpm	0 ft/min

Fan Data

Fan Type	Blade Type / Class	Nominal Fan Size	Quantity of Fans	Wheel Diameter	Material Type	Number of Blades	Discharge	Motor Location
Centrifugal - Plenum	Airfoil / 2	DDPL16	1	15.75 in	Aluminum	12	Axial	Behind Fan

Motor Data

Power	Electrical Supply	Speed	Efficiency	Enclosure	Frame Size	Supplier	Number of Poles	Lock Rotor Current	Full Load Current
10.0 HP	460/60/3 V/Hz/Phase	3500 rpm	Premium	ODP	213 T frame	Generic	2	74.01 A	12.00 A

Fan Options

Piezometer Ring:	Provided on Drive Side Fan	**Piezometer Delta P:**	6.87
Shaft Grounding Kit:	Provided	**Isolator Type:**	Spring

VFD/Starter/Disconnect Data

Selection Type:	External J-Box	**Vendor:**	Factory Standard
VFD Power:	10 HP	**Voltage:**	460 V
Height x Width x Depth:	6.00 in x 6.00 in x 4.00 in	**Mounting:**	Door Side
Enclosure:	NEMA 1		

Door

Location	Width	Opening
Drive side	22 in	Outward

Plenum Section

Component: 22 | Length: 24 in | Shipping Section: 6

Air Pressure Drop

0.05 inWc

Custom Dampers

Custom Damper	Damper Type	Location	Size (Width x Height)		Material	Blade Action	Rainhood w/Screen
			Overall	Opening			
1	CBD6-OUT	End	32 in x 16 in	29 in x 13 in	Alum	Parallel	None

Door

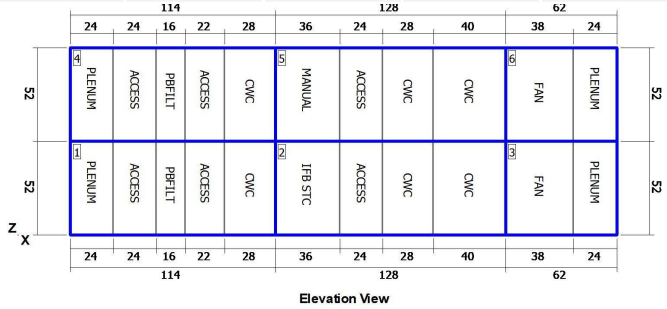
Location	Width	Opening	Window Type	Light
Drive side	20 in	Outward	Round	LED marine light kit and switch only

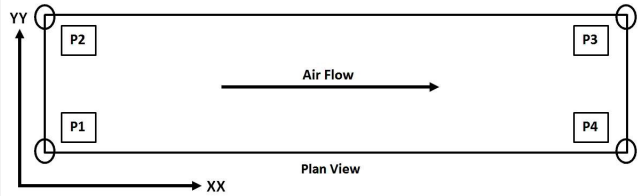
Unit Sound Power (dB)

Type	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Radiated:	84	75	66	74	68	62	51	51
Unit Discharge:	84	77	75	82	81	81	80	71
Unit Return:	84	75	66	74	68	62	51	51

Shipping Section Details

Section	Length in	Weight lb	Corner Weights (lb)				Center of Gravity (in)		
			P1	P2	P3	P4	XX	YY	ZZ
1	114	1441	282	256	439	465	71	23	30
2	128	1843	472	448	451	474	64	23	28
3	62	771	232	228	154	157	25	24	27
4	114	1249	234	208	391	417	74	23	33
5	128	1255	253	229	376	399	79	23	32
6	62	677	208	205	130	134	24	24	30
Entire Unit	**304**	**7236**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**	**n/a**
	Lower level only								





NOTE: Special components aren't included in the corner weights and center of gravity data.

NOTE: Shipping weights listed do not include weight of water (listed in coil section(s) above.

Shipping Protection

None

Supply Static Pressure Drop

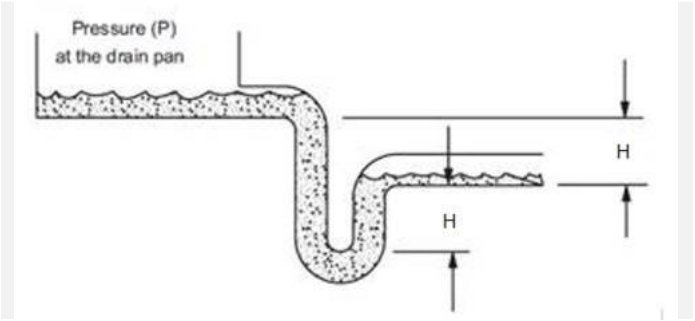
Component	Option	Static Pressure Drop
Plenum Section	Plenum Section	0.12 insWg
Access Section	Access Section	
Panel and Cartridge Filter	Panel and Cartridge Filter	1.86 insWg
Access Section	Access Section	
Chilled Water coil	Chilled Water coil	0.56 insWg
Manual Section	Manual Section	
Access Section	Access Section	
Chilled Water coil	Chilled Water coil	0.10 insWg
Chilled Water coil	Chilled Water coil	1.21 insWg
Supply Fan	Cabinet	
Plenum Section	Plenum Section	0.05 insWg
External Static	External Static	3.00 insWg
Total Supply Fan Static		6.90 insWg

Exhaust Static Pressure Drop

Component	Option	Static Pressure Drop
Plenum Section	Plenum Section	0.12 insWg
Access Section	Access Section	
Panel and Cartridge Filter	Panel and Cartridge Filter	1.86 insWg
Access Section	Access Section	
Chilled Water coil	Chilled Water coil	0.56 insWg
Steam Face and Bypass Coil	Steam Face and Bypass Coil	0.17 insWg
Access Section	Access Section	
Chilled Water coil	Chilled Water coil	0.10 insWg
Chilled Water coil	Chilled Water coil	1.21 insWg
Return Fan	Cabinet	
Plenum Section	Plenum Section	0.05 insWg
External Static	External Static	3.00 insWg
Total Return/Exhaust Fan Static		7.07 insWg

Minimum Recommended Drain Pan Trap Dimensions

Shipping Section	Component	H
1	Chilled Water coil	11.08
2	Chilled Water coil	11.62
2	Chilled Water coil	14.04
4	Chilled Water coil	5.08
5	Chilled Water coil	5.28
5	Chilled Water coil	7.70



Dimensions provided as a courtesy and are recommended minimums only. Daikin is not responsible for supplying or designing drain pan traps and is not responsible for any damage caused by incorrect trap heights. The dimensions listed above should be reviewed and approved by a licensed plumbing professional.

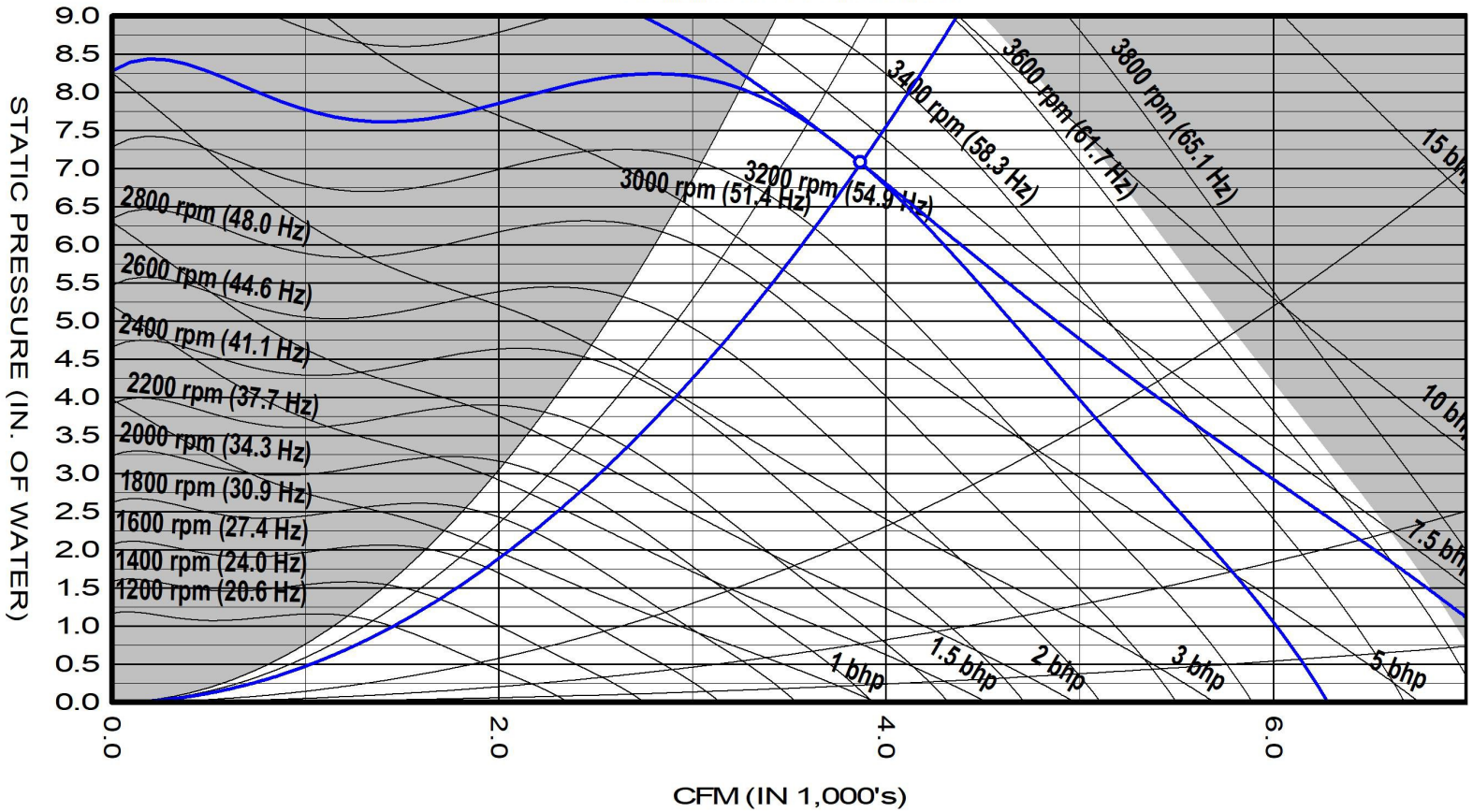
AHRI Certification

Certified by the AHRI Central Station Air-Handling Unit (AHU) Certification Program, which is based on AHRI Standard 430/431. AHRI certified units are subject to rigorous and continuous testing, have performance ratings independently measured and are third-party verified. Certified units may be found in the AHRI Directory at www.ahridirectory.org.

Notes

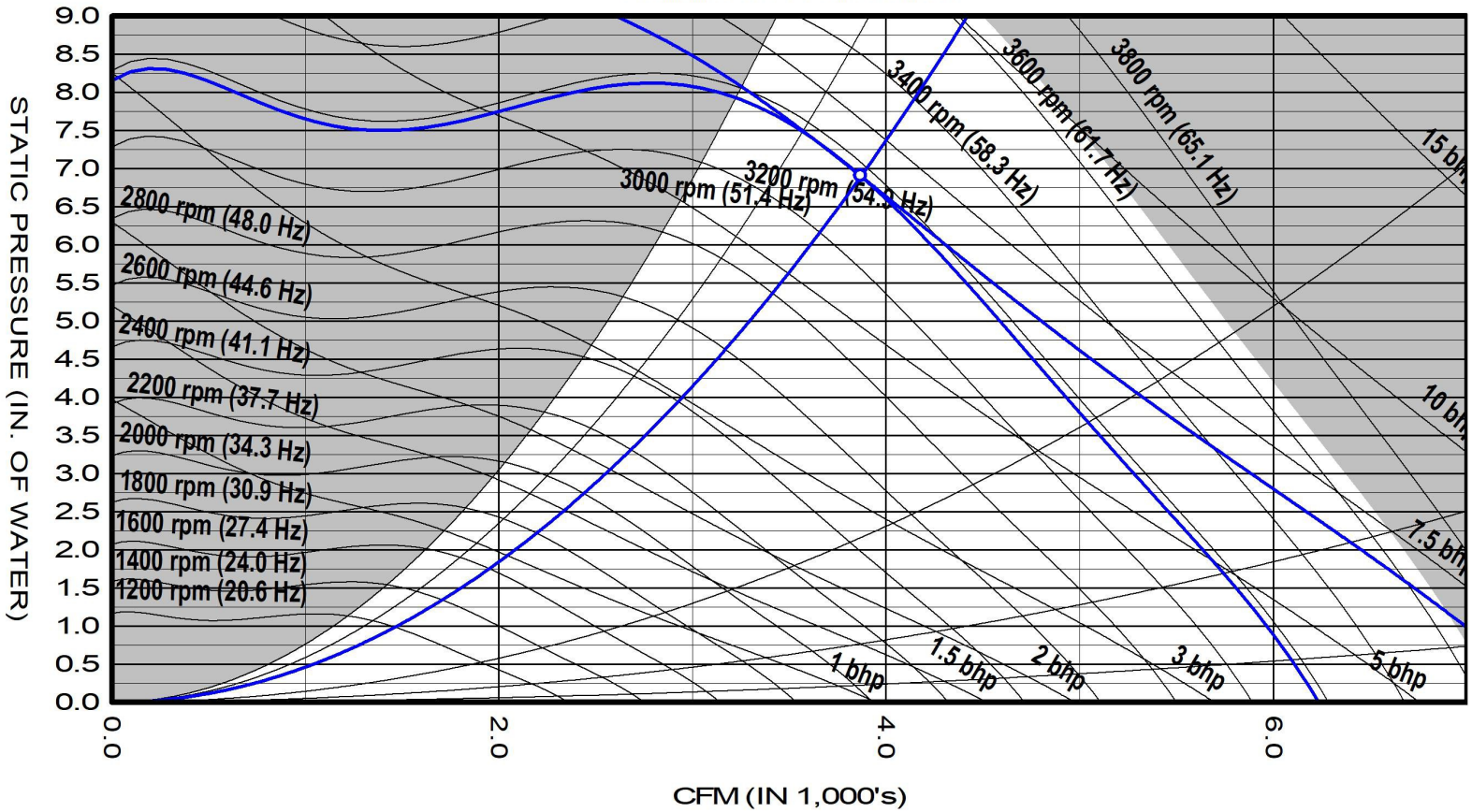
Important
1. This unit may not meet ASHRAE Standard 90.1 - 2007 fan motor power limitations for the year and system selected. If that code applies, alternate fan selections may be required.
2. The designer and installer must ensure compliance with applicable codes. A component supplier cannot determine the brake horsepower ("BHP") for other motors in the air handling system.
3. Before approving this unit, determine whether ASHRAE Standard 90.1 - 2007 has been adopted in the specific jurisdiction or contract specifications in which the unit will be installed.

Daikin AHU Fan Curve



AF 16 DD PLENUM 12BL (100% Width) 1x1 Ret/Exh Fan at Standard Conditions					
Air volume	3870	cfm	Fan speed	3199	rpm
Total static	7.07	insWg	Max speed	3650	rpm
Fan Shaft Power	7.0	bhp	Efficiency	61.9	%
Approx VFD Setting	54.8	Hz	Motor Speed	3500	rpm
Fan Energy Index(FEI)	1.11				
Unit tagging	AHU-5 Stacked		Date	November-01-2024	
Job name	UAMS CAMID		Time	07:13	

Daikin AHU Fan Curve



AF 16 DD PLENUM 12BL (100% Width) 1x1 Supply Fan at Standard Conditions					
Air volume	3870	cfm	Fan speed	3174	rpm
Total static	6.90	insWg	Max speed	3650	rpm
Fan Shaft Power	6.8	bhp	Efficiency	61.8	%
Approx VFD Setting	54.4	Hz	Motor Speed	3500	rpm
Fan Energy Index(FEI)	1.11				

Unit tagging	AHU-5 Stacked	Date	November-01-2024
Job name	UAMS CAMID	Time	07:13

Supply fan performance is certified in accordance with the Central Station Air-Handling Unit Certification Program, which is based on AHRI Standard 430.

B0BKVU

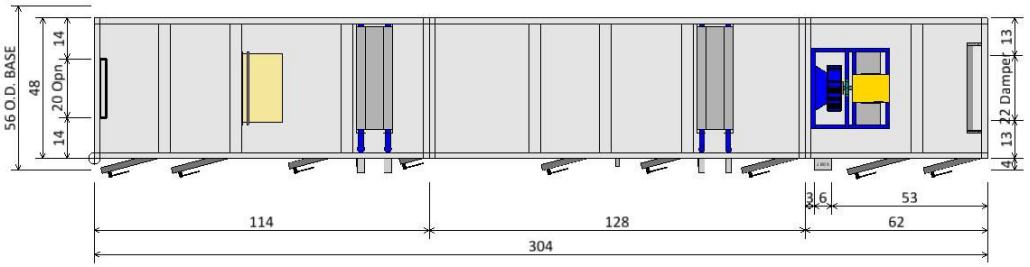
UAMS CAMID

17

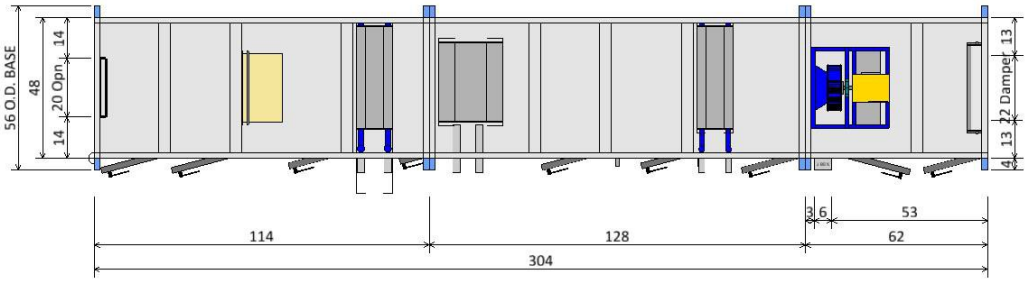
11/1/2024

AHU-5 Stacked

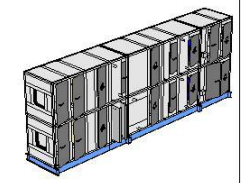
Drawing



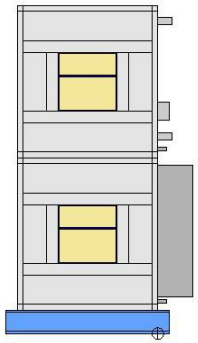
TOP DECK PLAN VIEW



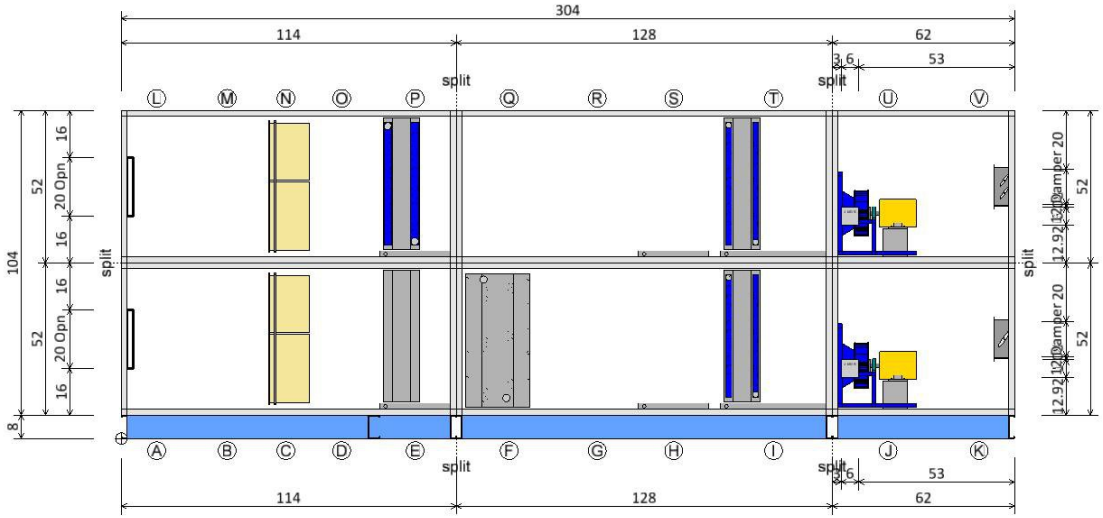
BOTTOM DECK PLAN VIEW



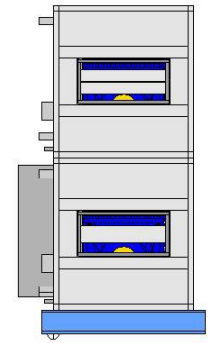
ISOMETRIC VIEW



FRONT END VIEW



ELEVATION VIEW



REAR END VIEW

Product Drawing	Unit Tag: AHU-5 Stacked			Sales Office: Harrison Energy Partners		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH011GDGM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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All opening dimensions have a 1" mounting flange along the inner edge. The actual airflow area of the opening is 2" smaller in each dimension.

B0BKVU

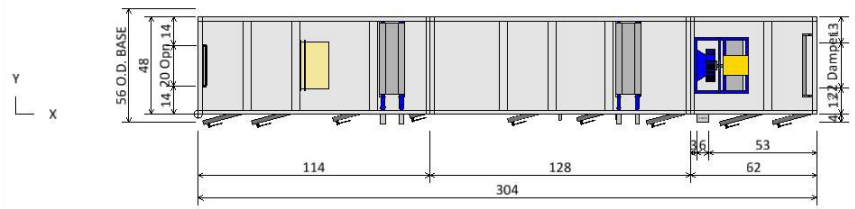
UAMS CAMID

18

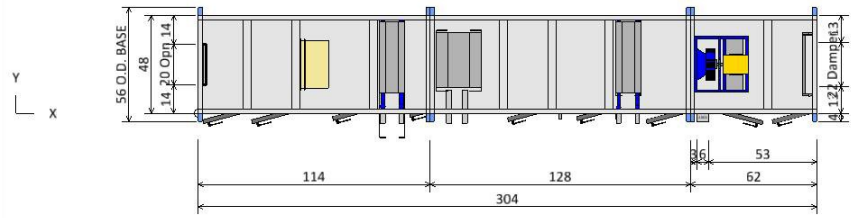
11/1/2024

AHU-5 Stacked

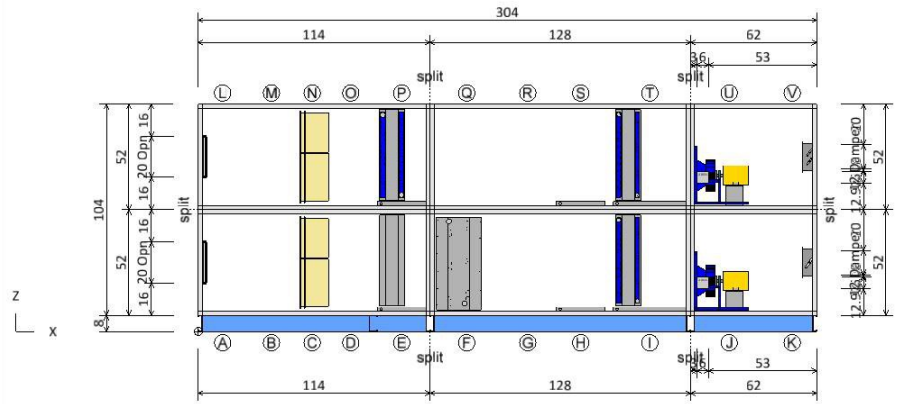
Drawing



TOP DECK PLAN VIEW



BOTTOM DECK PLAN VIEW



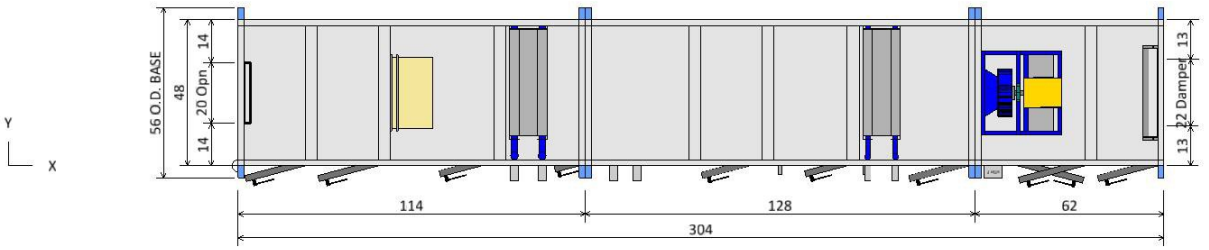
ELEVATION VIEW

Component Key

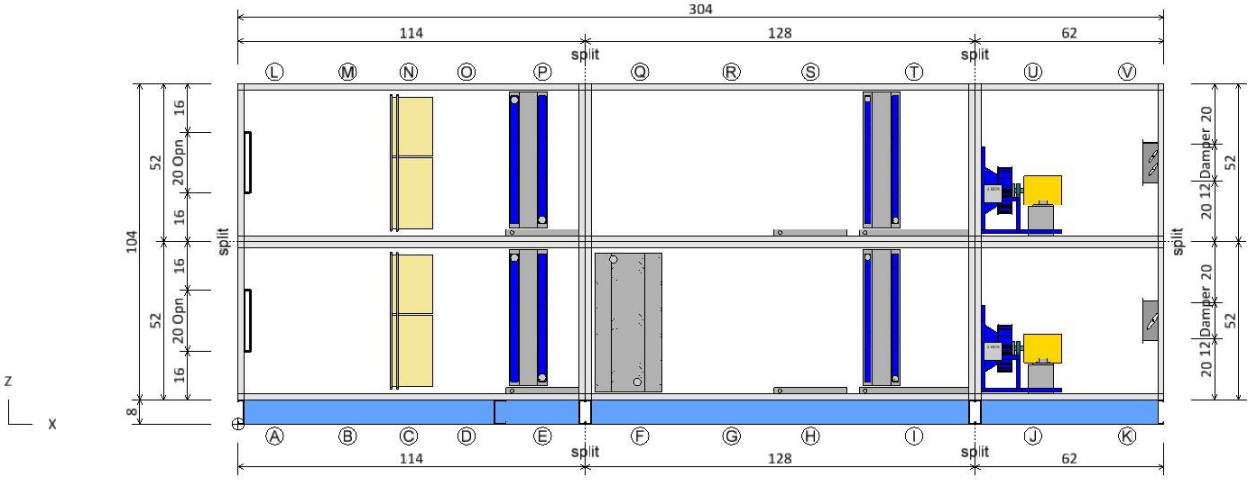
Ⓐ	Plenum Section Right Door (WxH):	 20 ins x 48 ins
Ⓑ	Access Section Right Door (WxH):	 20 ins x 48 ins
Ⓒ	Panel and Cartridge Filter Pre Filter Type: Cartridge Filter Type:	 Pleated (MERV 8) Varicel VXL
Ⓓ	Access Section Right Door (WxH):	 14 ins x 48 ins
Ⓔ	Chilled Water coil Coil Model: Total Capacity: Right Door (WxH):	 5WL1208B 54152.0 Btu/hr 8 ins x 38 ins
Ⓕ	Steam Face and Bypass Coil Total Capacity:	 240300.0 Btu/hr
Ⓖ	Access Section Right Door (WxH):	 16 ins x 48 ins
Ⓗ	Chilled Water coil Coil Model: Total Capacity: Right Door (WxH):	 5WH0002C 0.0 Btu/hr 14 ins x 38 ins
Ⓘ	Chilled Water coil Coil Model: Total Capacity: Right Door (WxH):	 5WH1008C 326506.0 Btu/hr 20 ins x 38 ins
Ⓙ	Return Fan Fan Type: Fan Size (Class): Air Flowrate: T.S.P: Motor Power: Right Door (WxH):	 Centrifugal - Plenum 16 (2) 3870.0 cfm 7.1 insWg 10.0 HP 22 ins x 48 ins
Ⓚ	Plenum Section Right Door (WxH):	 20 ins x 44 ins
Ⓛ	Plenum Section Right Door (WxH):	 20 ins x 48 ins
Ⓜ	Access Section Right Door (WxH):	 20 ins x 48 ins
Ⓝ	Panel and Cartridge Filter Pre Filter Type: Cartridge Filter Type:	 Pleated (MERV 8) Varicel VXL
Ⓞ	Access Section Right Door (WxH):	 14 ins x 48 ins
Ⓟ	Chilled Water coil Coil Model: Total Capacity: Right Door (WxH):	 5WL1208B 54152.0 Btu/hr 8 ins x 38 ins
Ⓠ	Manual Section	
Ⓡ	Access Section Right Door (WxH):	 16 ins x 48 ins
Ⓢ	Chilled Water coil Coil Model: Total Capacity: Right Door (WxH):	 5WH0002C 0.0 Btu/hr 14 ins x 38 ins
Ⓣ	Chilled Water coil Coil Model: Total Capacity: Right Door (WxH):	 5WH1008C 326506.0 Btu/hr 20 ins x 38 ins
Ⓤ	Supply Fan Fan Type: Fan Size (Class): Air Flowrate: T.S.P: Motor Power: Right Door (WxH):	 Centrifugal - Plenum 16 (2) 3870.0 cfm 6.9 insWg 10.0 HP 22 ins x 48 ins
Ⓥ	Plenum Section Right Door (WxH):	 20 ins x 44 ins

Product Drawing	Unit Tag: AHU-5 Stacked			Sales Office: Harrison Energy Partners			DAIKIN
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:			13600 Industrial Park Blvd, Minneapolis, MN 55441
Model: CAH011GDGM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in	www.DaikinApplied.com Software Version: 13.43

All opening dimensions have a 1" mounting flange along the inner edge. The actual airflow area of the opening is 2" smaller in each dimension.



PLAN VIEW



ELEVATION VIEW

Component Key

	Type	X	Y	Z	Wid	Hgt
Ⓐ	Plenum Section Opening	0.00	14.00	24.00	20.00	20.00
Ⓚ	Plenum Section Supply air damper	304.00	9.50	27.50	29.00	13.00
Ⓛ	Plenum Section Opening	0.00	14.00	76.00	20.00	20.00
Ⓥ	Plenum Section Supply air damper	304.00	9.50	79.50	29.00	13.00

Note: Dimensions are measured from the origin point.
Note: Openings with or without dampers are recessed into the unit by approximately 1.75 in.

Opening/Damper Connections	Unit Tag: AHU-5 Stacked			Sales Office: Harrison Energy Partners		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH011GDGM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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All opening dimensions have a 1" mounting flange along the inner edge. The actual airflow area of the opening is 2" smaller in each dimension.

B0BKVU

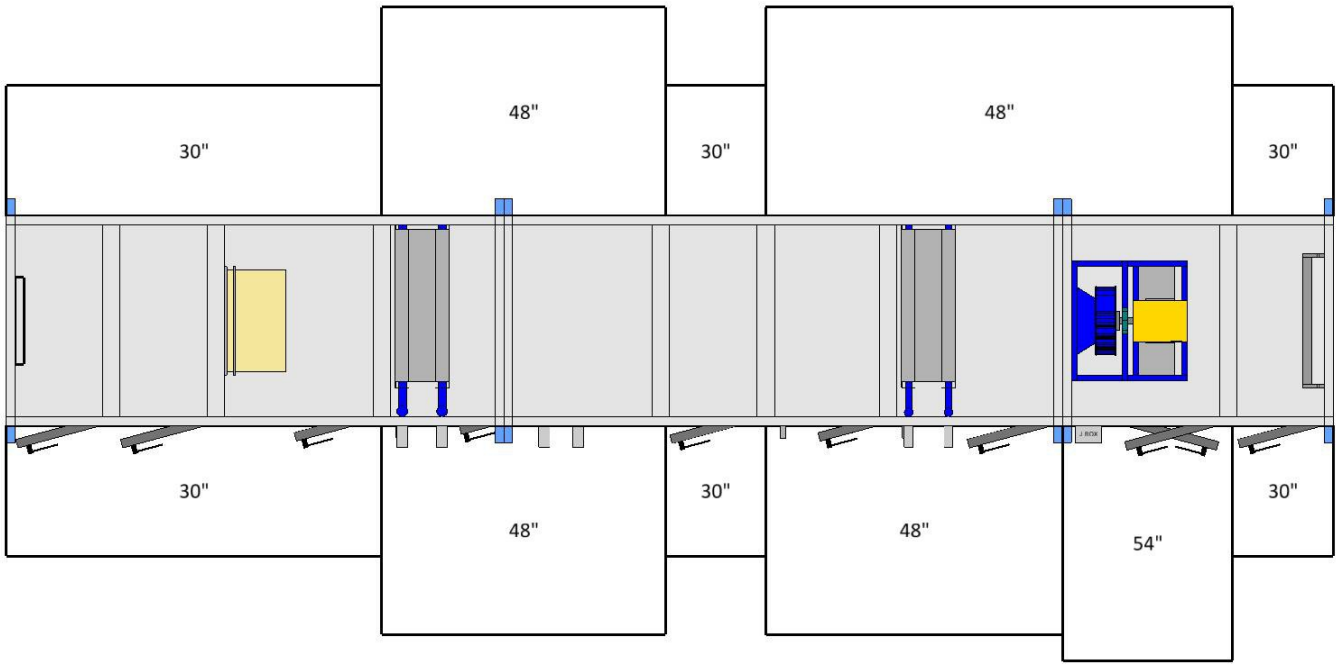
UAMS CAMID

20

11/1/2024

AHU-5 Stacked

Drawing



PLAN VIEW

Notes

Check local electrical component service clearance codes for specific distances.

Access is only required on one side of the unit.

Service Clearance View	Unit Tag: AHU-5 Stacked			Sales Office: Harrison Energy Partners		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH011GDGM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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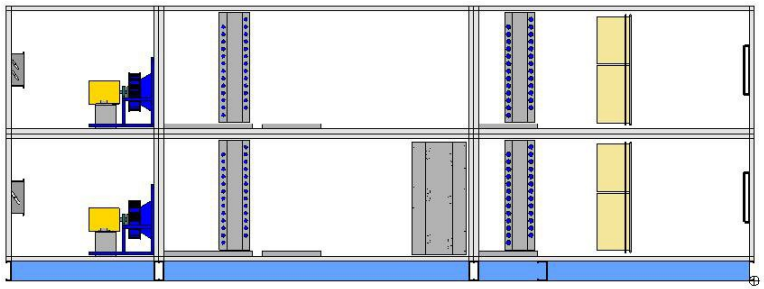
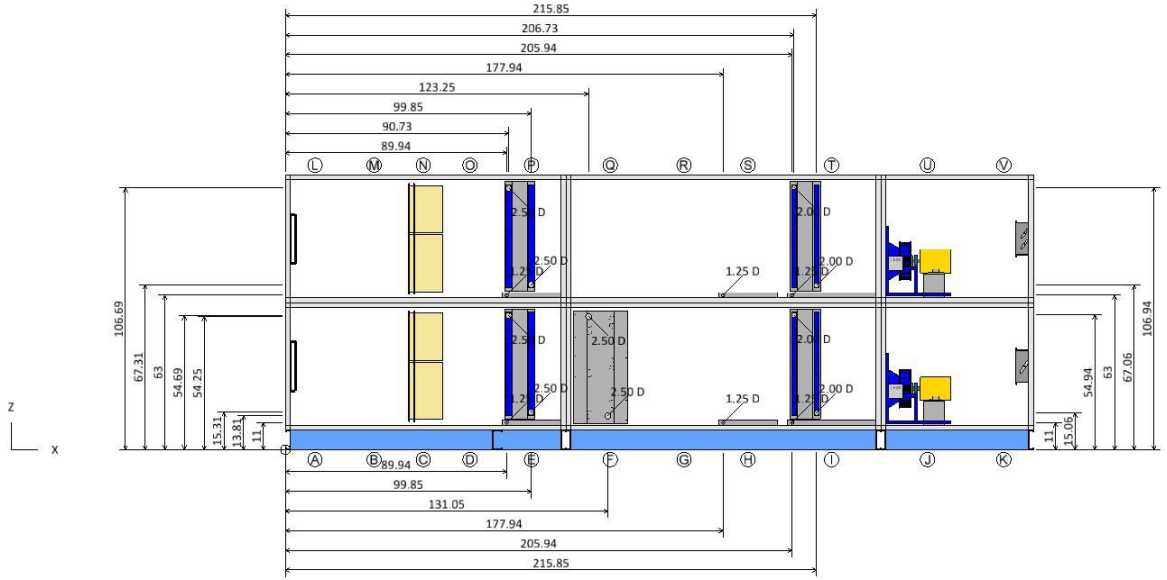
All opening dimensions have a 1" mounting flange along the inner edge. The actual airflow area of the opening is 2" smaller in each dimension.



LEFT ELEVATION VIEW



RIGHT ELEVATION VIEW

Coil and Drain Connections

	Type	X	Y	Z	Diam
Ⓔ	Chilled Water coil				
	Condensate drain conn:	89.94	-2.90	11.00	1.25
	Cold water inlet:	99.85	-5.00	15.31	2.50
	Cold water outlet:	90.73	-5.00	54.69	2.50
Ⓕ	Steam Face and Bypass Coil				
	Steam inlet:	123.25	-5.00	54.25	2.50
	Steam outlet:	131.05	-5.00	13.81	2.50
Ⓗ	Chilled Water coil				
	Condensate drain conn:	177.94	-2.90	11.00	1.25
Ⓘ	Chilled Water coil				
	Condensate drain conn:	205.94	-2.90	11.00	1.25
	Cold water inlet:	215.85	-5.00	15.06	2.00
	Cold water outlet:	206.73	-5.00	54.94	2.00
Ⓟ	Chilled Water coil				
	Condensate drain conn:	89.94	-2.90	63.00	1.25
	Cold water inlet:	99.85	-5.00	67.31	2.50
	Cold water outlet:	90.73	-5.00	106.69	2.50
Ⓢ	Chilled Water coil				
	Condensate drain conn:	177.94	-2.90	63.00	1.25
Ⓣ	Chilled Water coil				
	Condensate drain conn:	205.94	-2.90	63.00	1.25
	Cold water inlet:	215.85	-5.00	67.06	2.00
	Cold water outlet:	206.73	-5.00	106.94	2.00

Note: Dimensions are measured from the origin point.

Coil and Drain Connections	Unit Tag: AHU-5 Stacked			Sales Office: Harrison Energy Partners		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH011GDGM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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www.DaikinApplied.com Software Version: 13.43

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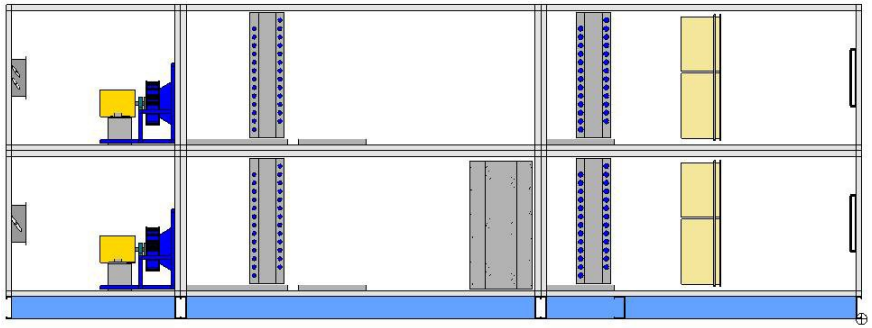
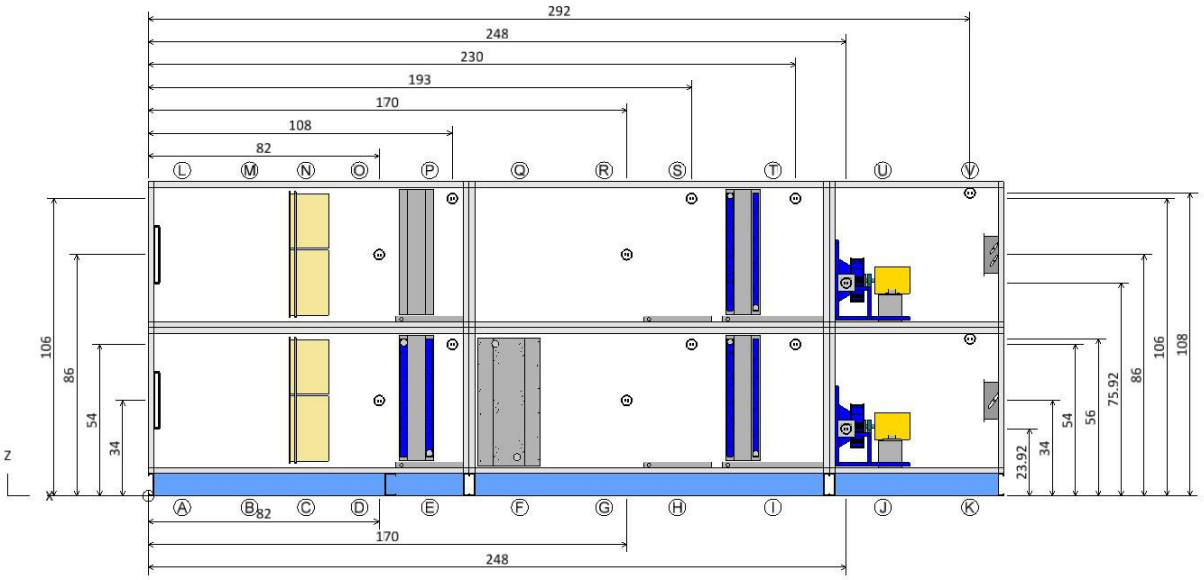


LEFT ELEVATION VIEW



RIGHT ELEVATION VIEW

Component Key

	Type	X	Y	Z	Volts	Phase
Ⓓ	Access Section LED Marine Light	82.00	0.00	34.00	110	1
Ⓔ	Chilled Water coil LED Marine Light	108.00	0.00	54.00	110	1
Ⓖ	Access Section LED Marine Light GFI	170.00	0.00	34.00	110	1
Ⓗ	Chilled Water coil LED Marine Light	193.00	0.00	54.00	110	1
Ⓘ	Chilled Water coil LED Marine Light	230.00	0.00	54.00	110	1
Ⓙ	Return Fan Fan	248.00	0.00	23.92	460	3
Ⓚ	Plenum Section LED Marine Light	292.00	0.00	56.00	110	1
Ⓞ	Access Section LED Marine Light	82.00	0.00	86.00	110	1
Ⓟ	Chilled Water coil LED Marine Light	108.00	0.00	106.00	110	1
Ⓡ	Access Section LED Marine Light GFI	170.00	0.00	86.00	110	1
Ⓢ	Chilled Water coil LED Marine Light	193.00	0.00	106.00	110	1
Ⓣ	Chilled Water coil LED Marine Light	230.00	0.00	106.00	110	1
Ⓤ	Supply Fan Fan	248.00	0.00	75.92	460	3
Ⓥ	Plenum Section LED Marine Light	292.00	0.00	108.00	110	1

Note: Dimensions are measured from the origin point.

Electrical Connections	Unit Tag: AHU-5 Stacked			Sales Office: Harrison Energy Partners		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH011GDGM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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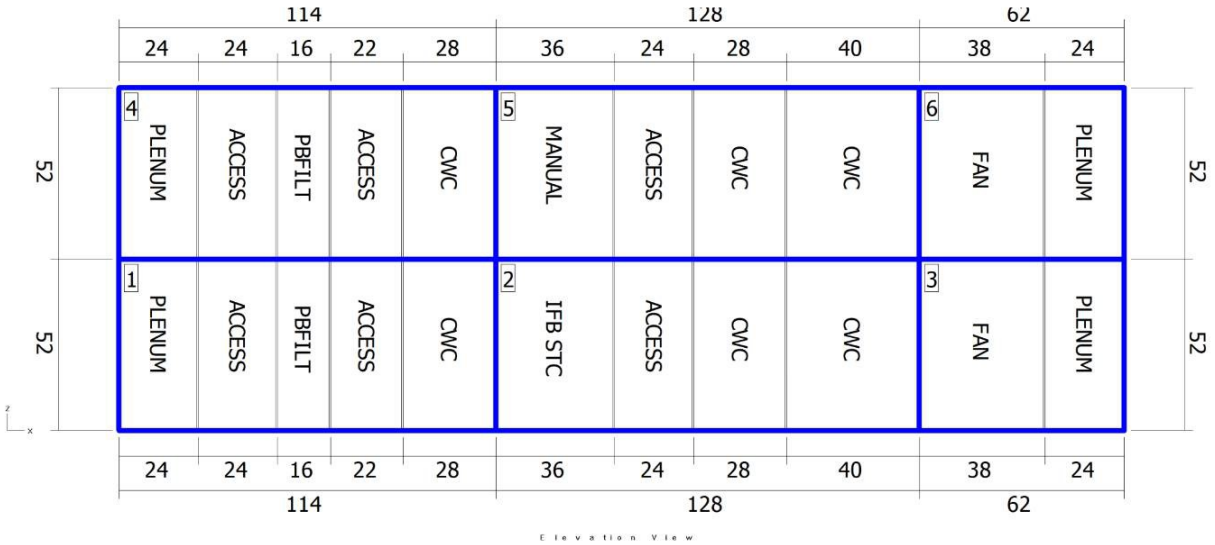

Shipping Sections

Section	Weight (lb)	X	Y	Z
Section 1	1440.72	114	48	52
Section 2	1843.39	128	48	52
Section 3	771.04	62	48	52
Section 4	1249.06	114	48	52
Section 5	1255.39	128	48	52
Section 6	677.00	62	48	52
Total Unit	7236.60	304	48	104

Note: Base rails, curb ready base, coil connectors, drain connectors, and control boxes not included in height X, Y, Z dimensions.
Shipping section may be 2" longer in air flow direction due to internal splice joint.

Shipping Sections	Unit Tag: AHU-5 Stacked			Sales Office: Harrison Energy Partners		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH011GDGM	Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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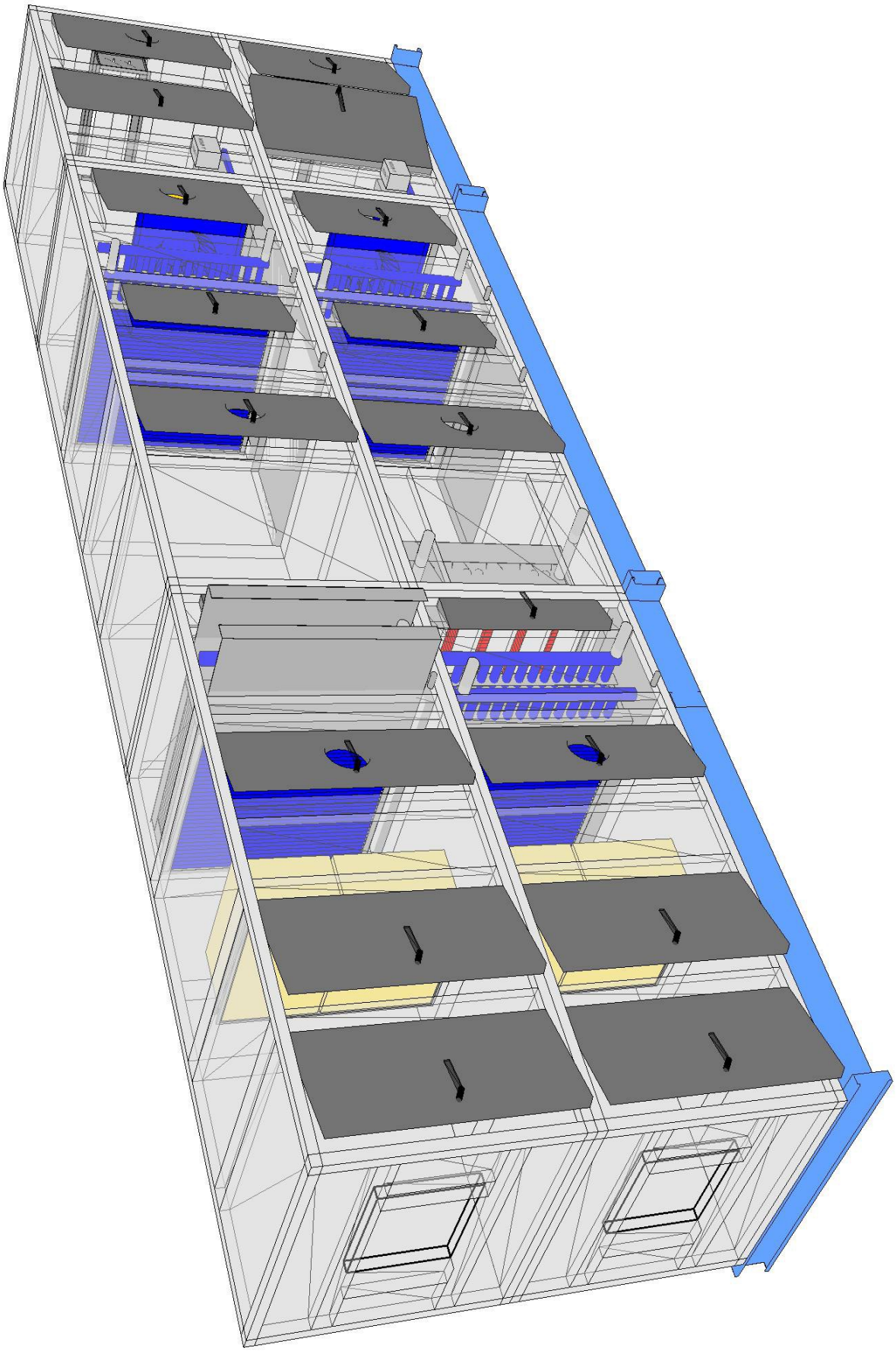

Product Drawing

Unit Tag: AHU-5 Stacked			Sales Office: Harrison Energy Partners		
Project Name: UAMS CAMID			Sales Engineer:		
Nov. 1, 2024	Ver/Rev:	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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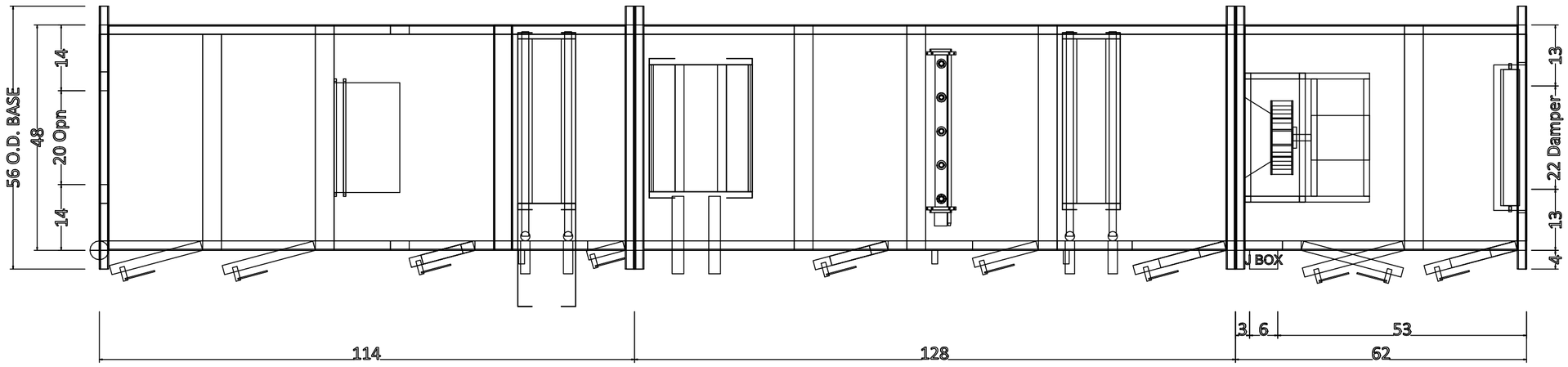
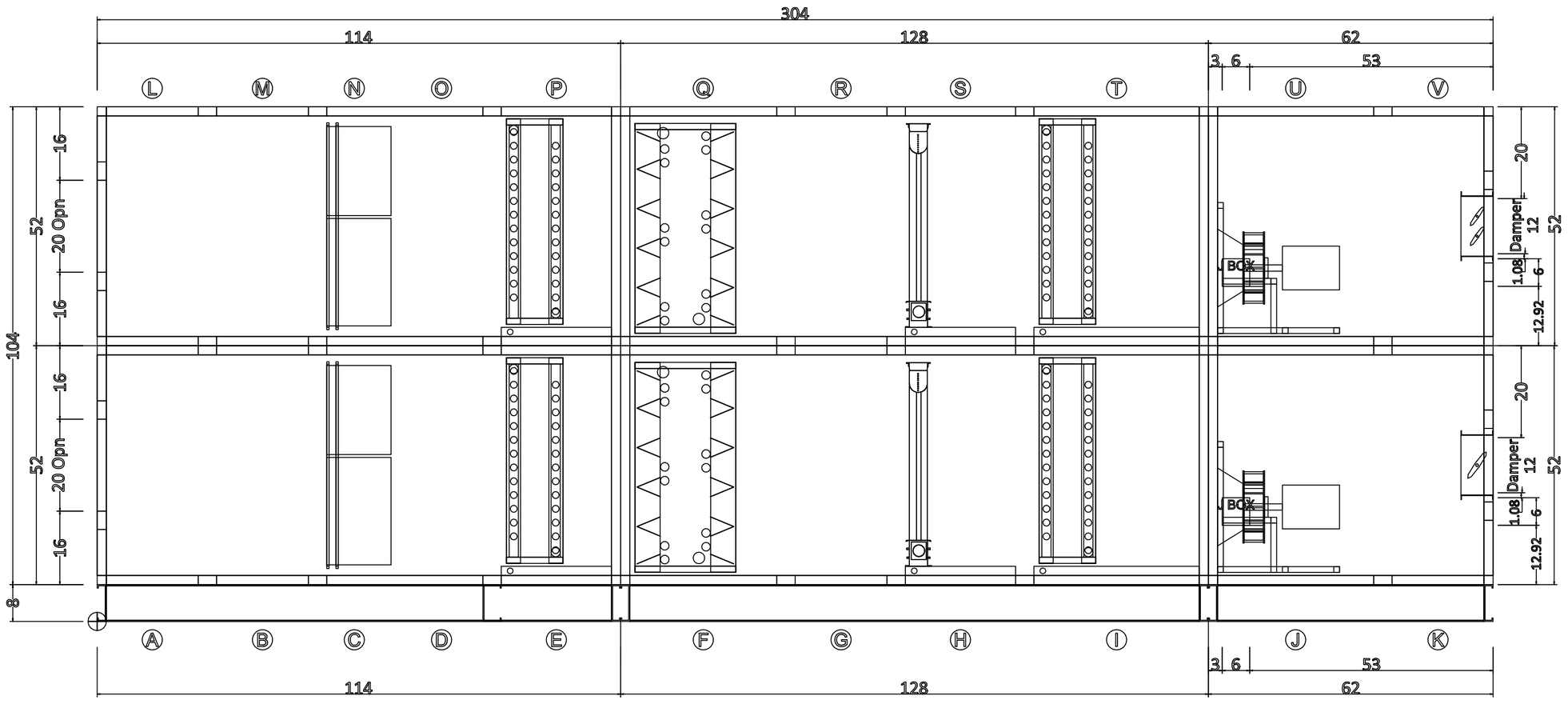
Unit drawings showing humidifier manifolds and IFB coil in the top airstream



PLAN VIEW



ELEVATION VIEW

Component Key		
Ⓐ	Plenum Section Right Door (WxH):	 20 ins x 48 ins
Ⓑ	Access Section Right Door (WxH):	 20 ins x 48 ins
Ⓒ	Panel and Cartridge Filter Pre Filter Type: Cartridge Filter Type:	 Pleated (MERV 8) Varicel VXL
Ⓓ	Access Section Right Door (WxH):	 14 ins x 48 ins
Ⓔ	Chilled Water coil Coil Model: Total Capacity: Right Door (WxH):	 5WH1108C 54005.0 Btu/hr 8 ins x 38 ins
Ⓕ	Steam Face and Bypass Coil Total Capacity:	 240300.0 Btu/hr
Ⓖ	Access Section Right Door (WxH):	 16 ins x 48 ins
Ⓗ	Chilled Water coil Coil Model: Total Capacity: Right Door (WxH):	 5WH0002C 0.0 Btu/hr 14 ins x 38 ins
Ⓘ	Chilled Water coil Coil Model: Total Capacity: Right Door (WxH):	 5WH1008C 326506.0 Btu/hr 20 ins x 38 ins
Ⓙ	Return Fan Fan Type: Fan Size (Class): Air Flowrate: T.S.P: Motor Power: Right Door (WxH):	 Centrifugal - Plenum 16 (2) 3870.0 cfm 7.3 insWg 10.0 HP 22 ins x 48 ins
Ⓚ	Plenum Section Right Door (WxH):	 20 ins x 44 ins
Ⓛ	Plenum Section Right Door (WxH):	 20 ins x 48 ins
Ⓜ	Access Section Right Door (WxH):	 20 ins x 48 ins
Ⓝ	Panel and Cartridge Filter Pre Filter Type: Cartridge Filter Type:	 Pleated (MERV 8) Varicel VXL
Ⓞ	Access Section Right Door (WxH):	 14 ins x 48 ins
Ⓟ	Chilled Water coil Coil Model: Total Capacity: Right Door (WxH):	 5WH1108C 54005.0 Btu/hr 8 ins x 38 ins
Ⓠ	Manual Section	
Ⓡ	Access Section Right Door (WxH):	 16 ins x 48 ins
Ⓢ	Chilled Water coil Coil Model: Total Capacity: Right Door (WxH):	 5WH0002C 0.0 Btu/hr 14 ins x 38 ins
Ⓣ	Chilled Water coil Coil Model: Total Capacity: Right Door (WxH):	 5WH1008C 326506.0 Btu/hr 20 ins x 38 ins
Ⓤ	Supply Fan Fan Type: Fan Size (Class): Air Flowrate: T.S.P: Motor Power: Right Door (WxH):	 Centrifugal - Plenum 16 (2) 3870.0 cfm 7.2 insWg 10.0 HP 22 ins x 48 ins
Ⓥ	Plenum Section Right Door (WxH):	 20 ins x 44 ins

Plan/Elevation - No Ends	Unit Tag: AHU-5 Stacked			Sales Office: Daikin Applied Plymouth		
Product: Vision Air Handler	Project Name: UAMS CAMID			Sales Engineer:		
Model: CAH011GDGM	Oct. 24, 2024	Ver/Rev: A	Sheet: 1 of 1	Scale: NTS	Tolerance: +/-0.25"	Dwg Units: in

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All opening dimensions have a 1" mounting flange along the inner edge. The actual airflow area of the opening is 2" smaller in each dimension.

Submittal Package

Opportunity Name, Quote Name
UAMS CAMID, 896314

Preparation Date
2024-07-23

Locally Represented By
Condair House Account Sales
2740 Fenton Road
Ottawa, Ontario, Canada

Salesperson
Liam Berry

Zone List

Zone Tag	Q_{MA} CFM	Q_{OA} %	DB_{OA} °F	RH_{OA} %	DB_{BH} °F	RH_{BH} %	DB_{AH} °F	RH_{AH} %	DB_{SD} °F	RH_{SD} %	W_{Duct} in.	H_{Duct} in.	H_{TOT} lbs/hr	Absorption ft	Location	Tech
H-2	26000	100	53	13	53	13	53	83	53	80	108	72	718	1.62	In Duct	LiveSteam
H-5	2500	100	52	13	55	11	55	85	55	80	30	36	77	1.97	In Duct	LiveSteam

Q_{MA} = Mixed Air Volume	Q_{OA} = Outside Air
DB_{OA} = Outside Air Design Dry Bulb Temperature	RH_{OA} = Outside Air Design Relative Humidity
DB_{BH} = Before Humidification Dry Bulb Temperature	RH_{BH} = Before Humidification Relative Humidity
DB_{AH} = After Humidification Dry Bulb Temperature	RH_{AH} = After Humidification Relative Humidity
DB_{SD} = Space Design Dry Bulb Temperature	RH_{SD} = Space Design Relative Humidity
W_{Duct} = Duct Width	H_{Duct} = Duct Height
H_{TOT} = Total Humidification	Absorption = Absorption Distance

Product List

Zone Tag	Part Number	Item	Qty
H-2	1594341	Valve, Bronze, 1 1/4" Cv=20.0	1
H-2	2597632	Act. 0-10 Vdc 1/2 - 2 in (1/2 - 3/4 SS)	1
H-2	2597652	Wye Strainer, 2.0" nominal diameter	1
H-2	2577157	Trap F&T up to 15 psig, M	1
H-2	2549922	HEADER SAM-E 108, 3" CENTERS (SST)	1
H-2	2538925	Header Insulation, SAM-e 108"	1
H-2	1503419	Steam Tube, SAM-e, 60 in Type B, 304SS	33
H-2	2538853	Tube Insulation, SAM-e 60" (Covers 1 Tube)	33
H-2	2521405	Mounting Frame, SAM-e 51 - 99 in, SS	1
H-2	1503476	Inlet adapter, SAM-e, Pressure Steam 1-1/4" npt	1
H-2	2591657	SP Top Center Mounting Assembly	3
H-2	2591658	SP SAM-e Adjustable yoke,Side Frame qty2	1
H-2	2577157	Trap F&T up to 15 psig, M	1
H-5	1594314	Valve, Bronze, 1/2" Cv=2.20	1
H-5	2597632	Act. 0-10 Vdc 1/2 - 2 in (1/2 - 3/4 SS)	1
H-5	2597648	Wye Strainer, 0.75" nominal diameter	1
H-5	2577157	Trap F&T up to 15 psig, M	1
H-5	2549909	HEADER SAM-E 30, 3" CENTERS (SST)	1
H-5	2538912	Header Insulation, SAM-e 30"	1
H-5	1503391	Steam Tube, SAM-e, 24 in Type A, 304SS	7
H-5	2538847	Tube Insulation, SAM-e 24" (Covers 1 Tube)	7
H-5	2521404	Mounting Frame, SAM-e 27 - 51 in, SS	1
H-5	1503473	Inlet adapter, SAM-e, Pressure Steam1/2" npt	1
H-5	2591657	SP Top Center Mounting Assembly	1
H-5	2591658	SP SAM-e Adjustable yoke,Side Frame qty2	1
H-5	2577157	Trap F&T up to 15 psig, M	1

Product list appears to list devices for AH-5 as 1 unit. AH-5 is 2 independent identical units. Update product list accordingly.

Data Sheet - H-2

LiveSteam

Opportunity Name:	UAMS CAMID
Quote Name:	896314
Salesperson:	Liam Berry
Date:	2024-07-23

Calculation Basis

Humidification Load (total)	718.0 lbs/h
Load Correction (gains/losses)	30.7 lbs/h
Calculated Load	687.3 lbs/h
Duct Size	108 x 72 in.
Duct Orientation	Horizontal
Total Air Volume	26000 CFM
Outside Air	100 %
Air Velocity	481.5 ft./min
Altitude	0 ft
Air Pressure	14.7 psig
Humidity Increase	40.3 gr/lb

Outside Air	Temperature	53.0°F
	Relative Humidity	13 %
	Absolute Humidity	7.4 gr/lb
Before Humidification	Temperature	53.0°F
	Relative Humidity	13 %
	Absolute Humidity	7.4 gr/lb
After Humidification	Temperature	53.0°F
	Relative Humidity	83 %
	Absolute Humidity	49.5 gr/lb
Space Design	Temperature	53.0°F
	Relative Humidity	80 %
	Absolute Humidity	47.7 gr/lb

UPDATE TO 300'

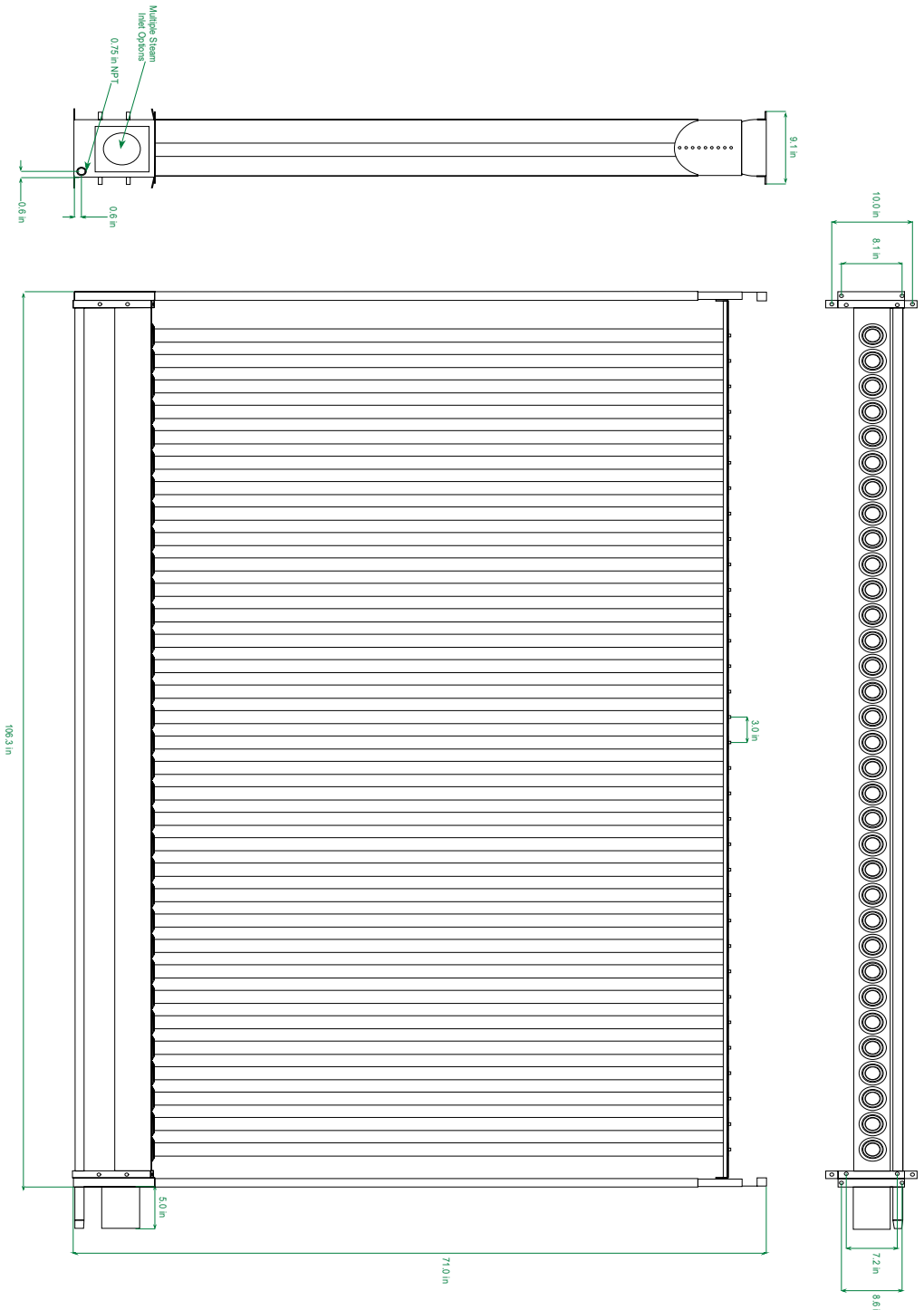
Product Data

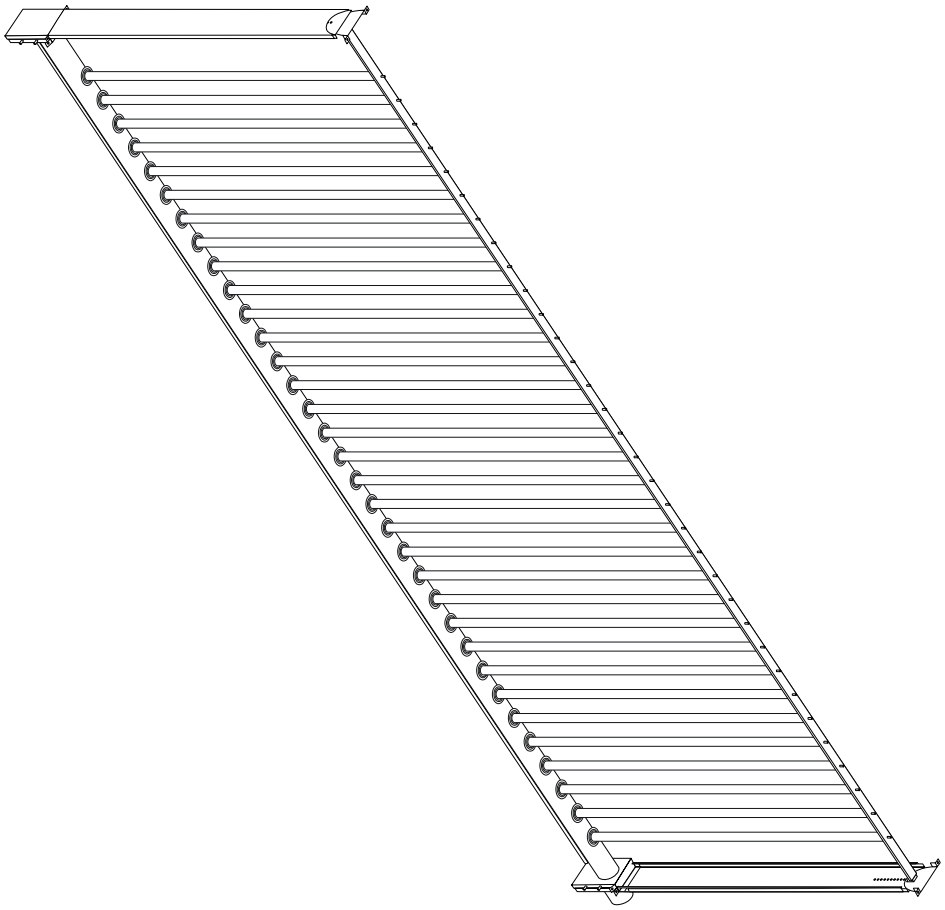
Valve, Bronze, 1 1/4" Cv=20.0

Supplied Steam Pressure:	12 psig	Maximum Steam Pressure:	50 psig
Adjusted Maximum Capacity:	719.3 lbs/h	Width:	17.3 in.
Steam Outlet OD:	1.25 in.	Height:	23.7 in.
Quantity Steam Outlets:	1	Depth:	9 in.
Minimum Steam Pressure:	2 psig	Valve CV:	20

HEADER SAM-E 108, 3" CENTERS (SST)

Width:	9 in.	Net Weight:	43.4 lbs
Height:	8.75 in.	Product Length:	108 in.
Length:	106.25 in.		


Multiple Steam Inlet Options
0.75 in NPT
9.1 in
0.6 in
0.6 in
10.0 in
8.1 in
106.3 in
3.0 in
5.0 in
71.0 in
7.2 in
8.6 in



Data Sheet - H-5

LiveSteam

Opportunity Name:	UAMS CAMID
Quote Name:	896314
Salesperson:	Liam Berry
Date:	2024-07-23

Calculation Basis

Humidification Load (total)	77.1 lbs/h
Load Correction (gains/losses)	5.0 lbs/h
Calculated Load	72.1 lbs/h
Duct Size	30 x 36 in.
Duct Orientation	Horizontal
Total Air Volume	2500 CFM
Outside Air	100 %
Air Velocity	333.3 ft./min
Altitude	0 ft
Air Pressure	14.7 psig
Humidity Increase	44.2 gr/lb

update to 300'

Outside Air	Temperature	51.5°F
	Relative Humidity	13 %
	Absolute Humidity	7.0 gr/lb
Before Humidification	Temperature	55.0°F
	Relative Humidity	11 %
	Absolute Humidity	7.0 gr/lb
After Humidification	Temperature	55.0°F
	Relative Humidity	85 %
	Absolute Humidity	54.3 gr/lb
Space Design	Temperature	55.0°F
	Relative Humidity	80 %
	Absolute Humidity	51.2 gr/lb

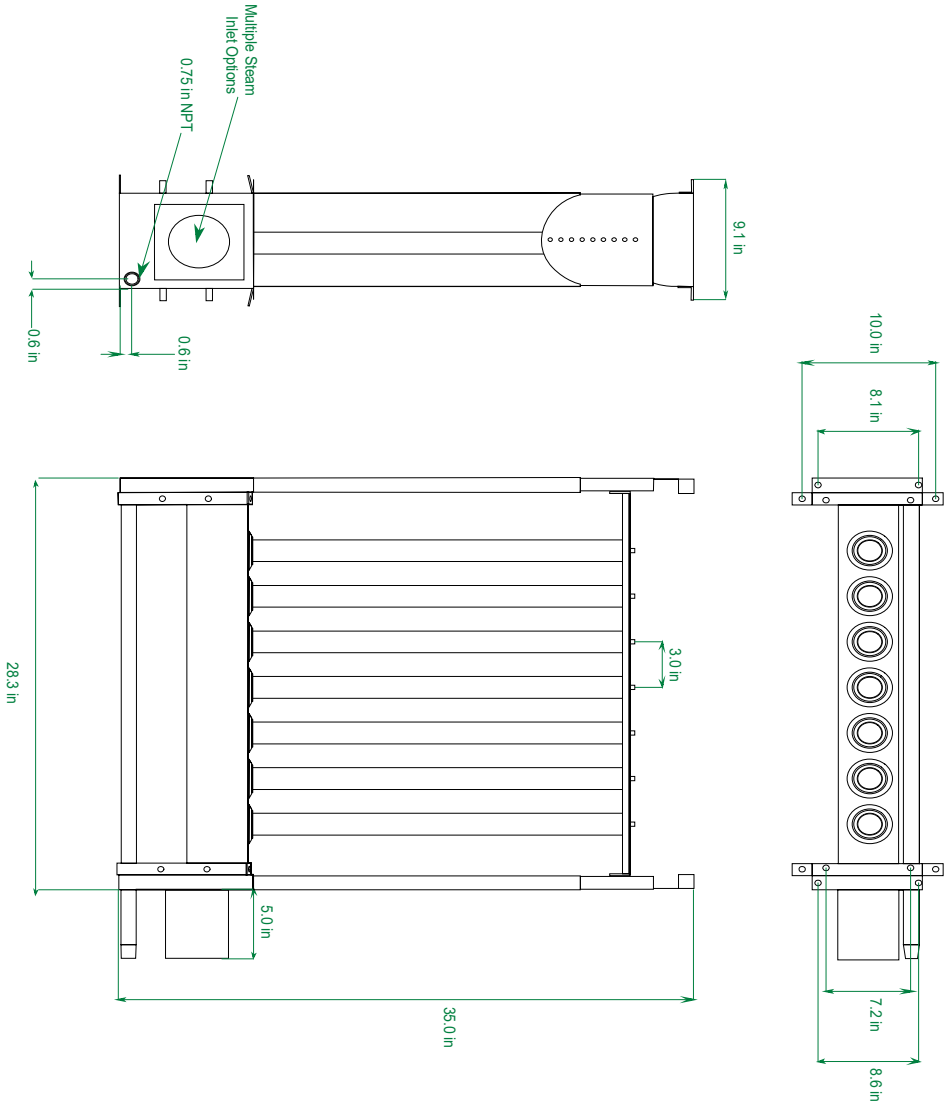
Product Data

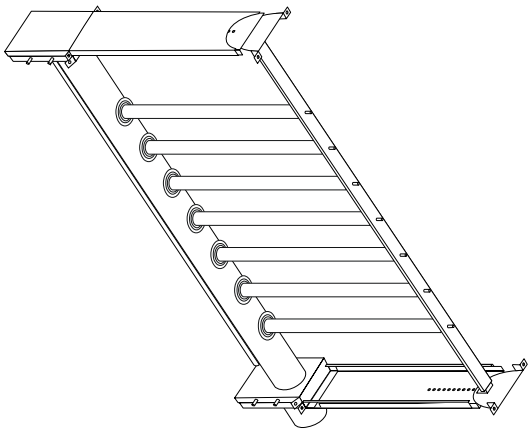
Valve, Bronze, 1/2" Cv=2.20

Supplied Steam Pressure:	12 psig	Maximum Steam Pressure:	50 psig
Adjusted Maximum Capacity:	79.1 lbs/h	Width:	9.7 in.
Steam Outlet OD:	0.5 in.	Height:	11.2 in.
Quantity Steam Outlets:	1	Depth:	6 in.
Minimum Steam Pressure:	2 psig	Valve CV:	2.2

HEADER SAM-E 30, 3" CENTERS (SST)

Width:	9 in.	Net Weight:	15.4 lbs
Height:	8.75 in.	Product Length:	30 in.
Length:	28.25 in.		


Multiple Steam Inlet Options
0.75 in NPT
9.1 in
0.6 in
0.6 in
10.0 in
8.1 in
28.3 in
3.0 in
5.0 in
35.0 in
7.2 in
8.6 in



A1 - Live Steam (1594341) Description

LIVESTEAM HUMIDIFIERS

Pressurized Boiler Steam Humidifier (Isothermal Technology)

Pre-engineered, cost effective, humidification system designed to control and distribute steam under pressure, from a facility steam boiler, for introduction into a duct or Air Handling Unit.

The system is configured to operate with regular boiler steam, up to 50 psig, using standard bronze and stainless steel components.

Steam distributors are constructed of high quality stainless steel and can be configured for single or multiple configurations. The optional stainless steel insulation jacket encompasses 1/2" fiberglass insulation to minimize heat transfer in the air stream

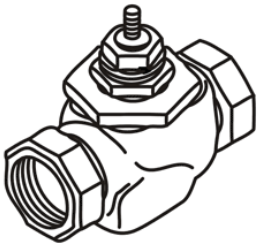
All LIVESTEAM systems consist of: a steam valve, separator, actuator/linkage and steam distributor(s). Required optional components: steam trap(s), wye strainers, humidistat(s) and temperature switch.

FEATURES

- Stainless steel separators
- Bronze steam valves with stainless steel seat, stem, and plug
- Pneumatic or electric actuator/linkage
- Stainless steel steam distributors (standard or insulated)
- Single distributor capacity: up to 1501 lbs/hr @ 50 psi
- Multiple distributor capacity: up to 3209 lbs/hr @ 50 psi
- On/Off or modulating control
- Two-year limited warranty

A2 - Live Steam (1594341) Schematic

VALVE DATA



Valve Manufacturer:	Schneider Electric
Valve Model:	VB-7263
Valve Size:	1/2" - 2"
Flow Type:	Modified Equal Percentage
Flow Coefficient (Cv) Factor:	As Specified

Valve Body Data		Material	
Maximum Static Pressure	250 Psig	**Body**	Bronze
Maximum Inlet Pressure (Steam)	100 Psig	**Stem**	Stainless Steel
Recommen ded Differential Pressure	35 Psig	**Seat**	Bronze
		Plug	Stainless Steel
Maximum Media Temperature	340°F(171°C)	**Packing**	Spring Loaded Teflon Cone
Plug Type	Parabolic	**Disc**	Teflon

Rangeability:

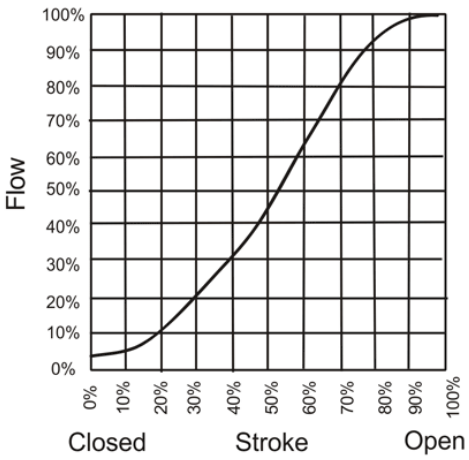
Rangeability is defined as the ratio of rated flow to the minimum controllable flow.

For two-way valves, modulation occurs when plug displacement allows flow through the area between the plug and the port. The rangeability value is achieved by accurately machining the plug and port diameters for appropriate clearance. The following are normal values, with 25% tolerances.

Nominal Size		Valve	Nominal Ratio
Standard	Metric	Cv	
1/2"	15mm	0.1	2:1
		0.22	4:1
		0.4	5:1
		0.75	10:1
		1.3	15:1
		2.2	25:1
		2.8	28:1
		4.4	40:1
3/4"	20mm	5.5	50:1
		7.5	60:1
1"	25mm	10	60:1
		12	75:1
1 1/4"	32mm	20	75:1
1 1/2"	40mm	28	75:1
2"	50mm	40	75:1

NORTEC reserves the right to ship the selected valve or an equivalent valve depending on availability

Typical Flow Curve



*For representative purposes only

CONTROL VALVE
BRONZE BODY

A3 - Live Steam (2597632) Description

LIVESTEAM / SE Series Electric Modulating Actuator, provides motive power to operate steam valves. The actuators are designed mount directly to the valves without the use of linkages. They are linear acting and feature a return spring to close the valve in case of a loss of power. A manual override simplifies commissioning and allows the user to set the correct pre-load tension on the valve stem. The actuators are designed for safe operation and feature overload protection as well as a plenum rated polymer housing. Available control voltages include on/off, 0-10VDC, or 4- 20 mA, and 2 to 10 VDC feedback signal reports position of the valve. All actuators a operate with a 24 VAC supply voltage. For applications where only 120 VAC is available, a plug-in transformer, part 1603032, can be used.

A4 - Live Steam (2597632) Installation

Actuator/Valve Close-Off Pressure

Valve Material	Valve Part Number	CV	Size	Pressure* (psig)	Actuator Part Number			Linkage Kit**
					0-10 Vdc	4-20 mAdc	On/Off	
Bronze	1594300	0.10	0.5"	2-50	1507549	1507550	1507551	2573331
	1594302	0.22	0.5"	2-50	1507549	1507550	1507551	2573331
	1594304	0.40	0.5"	2-50	1507549	1507550	1507551	2573331
	1594306	0.75	0.5"	2-50	1507549	1507550	1507551	2573331
	1594310	1.3	0.5"	2-50	1507549	1507550	1507551	2573331
	1594314	2.2	0.5"	2-50	1507549	1507550	1507551	2573331
	1594316	2.9	0.5"	2-50	1507549	1507550	1507551	2573331
	1594318	4.4	0.5"	2-50	1507549	1507550	1507551	2573331
	1594322	5.5	0.75"	2-50	1507549	1507550	1507551	2573331
	1594324	7.5	0.75"	2-50	1507549	1507550	1507551	2573331
	1594330	10	1"	2-50	1507549	1507550	1507551	2573331
	1594332	12	1"	2-50	1507549	1507550	1507551	2573331
	1594341	20	1.25"	2-50	1507549	1507550	1507551	2573331
	1594350	28	1.5"	2-35	1507549	1507550	1507551	2573331
				36-50	1507552	1507553	1507554	2573332
	1594360	40	2"	2-20	1507549	1507550	1507551	2573331
				21-50	1507552	1507553	1507554	2573332
Stainless Steel	1594201	0.10	0.5"	2-50	1507549	1507550	1507551	2573333
	1594203	0.22	0.5"	2-50	1507549	1507550	1507551	2573333
	1594205	0.40	0.5"	2-50	1507549	1507550	1507551	2573333
	1594206	0.75	0.5"	2-50	1507549	1507550	1507551	2573333
	1594207	0.95	0.5"	2-50	1507549	1507550	1507551	2573333
	1594208	1.3	0.5"	2-50	1507549	1507550	1507551	2573333
	1594209	1.75	0.5"	2-50	1507549	1507550	1507551	2573333
	1594210	2.2	0.5"	2-50	1507549	1507550	1507551	2573333
	1594211	2.8	0.5"	2-50	1507549	1507550	1507551	2573333
	1594213	3.6	0.5"	2-50	1507549	1507550	1507551	2573333
	1594221	4.3	0.75"	2-50	1507549	1507550	1507551	2573333
	1594222	5	0.75"	2-50	1507549	1507550	1507551	2573333
	1594223	6.2	0.75"	2-50	1507549	1507550	1507551	2573333
	1594432	10	1"	2-50	1507556	1507557	1507558	2573334
	1594440	24	1.5"	2-50	1507556	1507557	1507558	2573334
	1594450	40	2"	2-50	1507556	1507557	1507558	2573334

*Maximum operating steam pressure for LiveSteam humidifiers is 50 PSIG (15 PSIG on Steam Exchange Humidifiers)

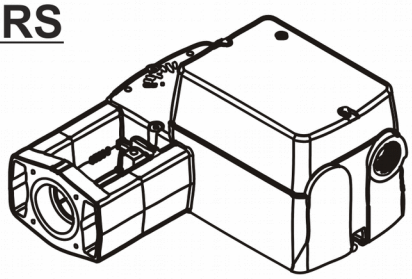
**Linkage Kit already included with Actuator

condair

Actuators Maximum Close-Off Pressure

A5 - Live Steam (2597632) Shop Drawing

ELECTRIC ACTUATORS



For bronze ½" – 2" and stainless steel ½" – ¾" valves, for incoming pressures from 2 to 50 psi for all valves, except for 1 1/2" which would be 2 to 34 psi and 2" which would be 2 to 19 psi.

Actuator Inputs

Control Signal: On/Off, 0-10 Vdc, 4-20 mAdc
Power Input: See Table-1. All 24 Vac circuits are Class 2. All circuits 30 Vac and above are class 1.
Connections: 3 ft (91cm) appliance wire or plenum cables, enclosure accepts ½" (13mm) conduit connectors. For M20 metric connector, use ½" NPT to M20 adaptor.

Actuator Outputs

Electrical:

Position Feedback Voltage (proportional or floating only): For voltage ranges, the feedback signal is the same range as the input signal. The 4-20 mAdc current range and floating actuators have a 2-10 Vdc position feedback signal. The position feedback signal can supply up to 0.5 mA to operate up to 4 additional slave actuators.

Mechanical:

Linear Stroke: ½" (13mm) nominal.
Approx. Stroke Timing: Powered, 44-60 sec.
Manual Override: Allows positioning of valve and pre-load using manual crank.
Right/Left Jumper: Permits reverse acting/direct acting linear motion (0-10 Vdc and 4-20 mAdc only).

Environment:

Shipping & Storage: -40 to 160°F (-40 to 71°C)
Operating: -22 to 140°F (-30 to 60°C)
Temperature Restrictions: For maximum ambient 140°F (60°C) the maximum allowable fluid temperature should not exceed 366°F (186°C).
Humidity: 15-95%RH, non-condensing
Location: NEMA 1. NEMA 2 (enclosure is air plenum rated), UL Type 2 (IEC IP54) with customer supplied water tight conduit connectors.
Overall Dimensions: 6.76" (172mm) x 3.5" (89mm) x 6.31" (160mm)

Agency Listings
UL 873: Underwriters Laboratories (File #E9429 Category Temperature-Indicating and Regulating Equipment).
CUL: UL Listed for use in Canada by Underwriters Laboratories. Canadian Standards C22.2 No. 24-93.

Table 1

Part Number	Control Action	Actuator Power Input							Linear Stroke Inches	Approx. Stroke Timing in Seconds @ 70ºF (21ºC)		Output Force Rating lb (Newton)	
		Voltage	Running					Holding					
			50Hz		60Hz		DC Amps	50/60Hz					
			VA	W	VA	W		W		Powered	Spring Return	Min.	Max Stall
1507549	0-10 Vdc	24 Vac±20% 20-30 Vdc	6.6	4.2	6.6	4.2	0.14	1.5	½	60	16	-	-
1507550	4-20 mAdc												
1507551	On/Off		5.3	4.1	5.3	4.1	0.15	1.2		44	19		

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Electric Actuator
Part # 1507549, 1507550, 1507551

A6 - Live Steam (2597632) Shop Drawing

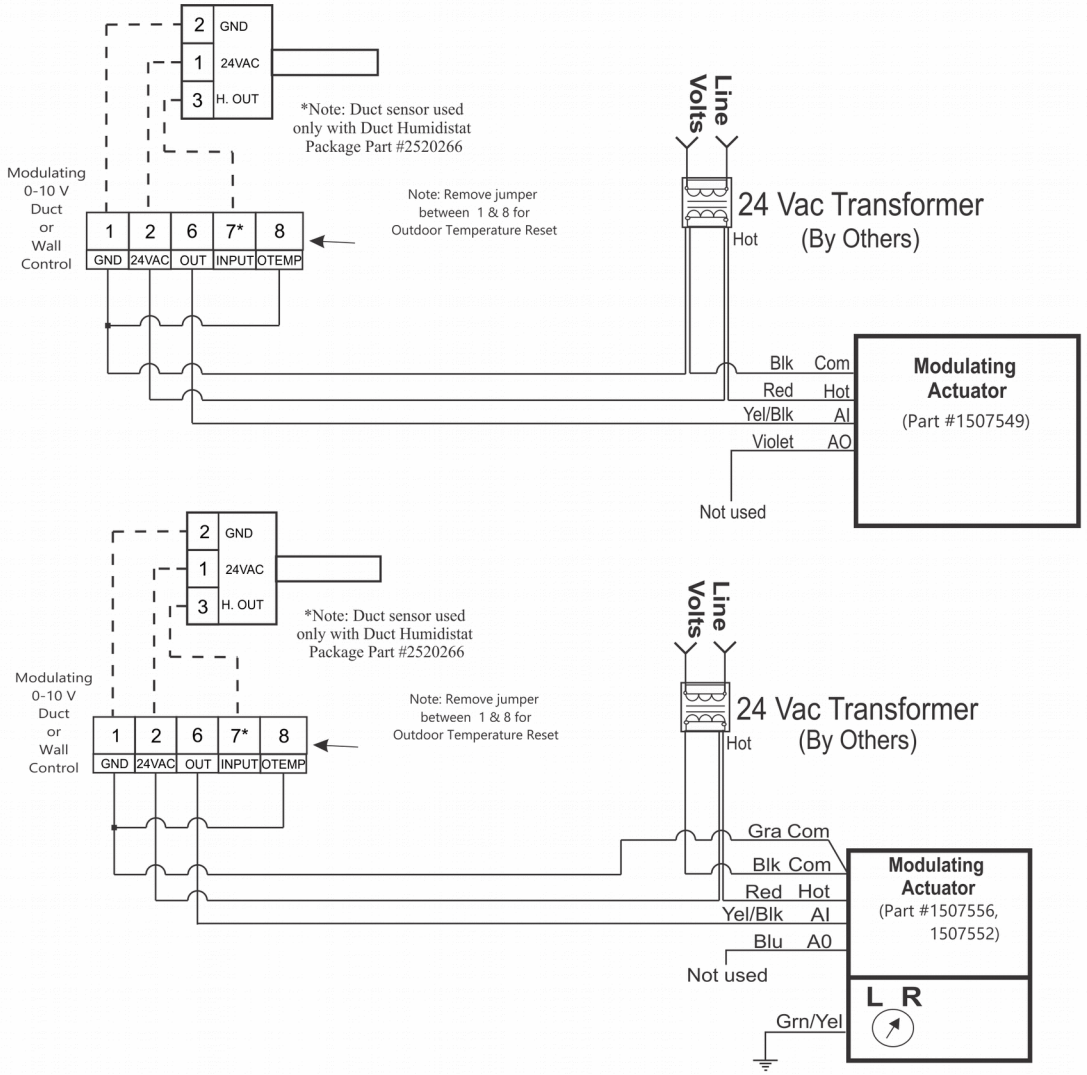
0-10V DIGITAL HUMIDISTAT

Wiring Diagram for Livesteam

Part #	Description
1510142	0-10V Digital Wall Humidistat
2520266	0-10V Digital Duct Humidistat pkg.

Warning: Failure to wire the humidistat in accordance with the wiring diagram could permanently damage the electronics. Such errors will void the warranty.
Cabling between controls and unit should be shielded 18 AWG

HUMIDISTAT TO ACTUATOR CONNECTIONS

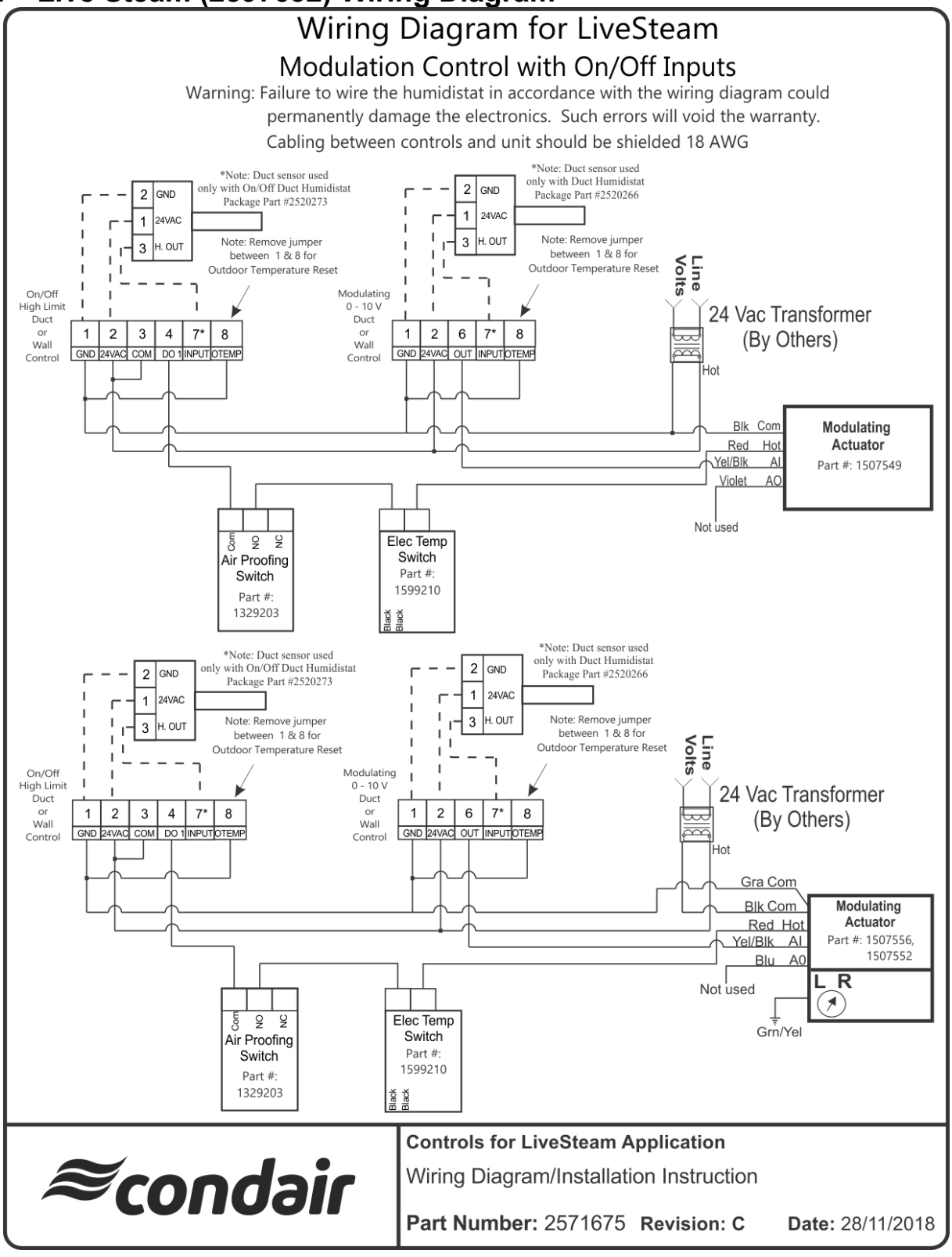


Nortec 0-10V Digital Humidistat for LiveSteam

Wiring Diagram/Installation Instruction

Part Number: 2520531 **Revision: C** **Date:** 03/10/14

A7 - Live Steam (2597632) Wiring Diagram



A8 - Live Steam (2597652) Description

LIVESTEAM Wye Strainer, used in the supply steam line to remove impurities by filtering the steam through a strainer screen.

A9 - Live Steam (2597652) Shop Drawing

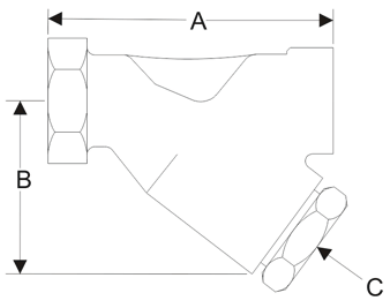
STRAINER DATA

Strainer Type:	"Y" Type
Strainer Size:	½" to 3"
Connection:	NPT
Body Material:	Cast Iron
Screen Material:	20 Mesh Stainless Steel
Pressure (non-shock):	250 psi (1725 kPa) - 406°F (208°C)
Installation:	The strainer should be installed with the flow direction as indicated on the body, in a vertical down or horizontal pipe line. The strainer must be accessible for periodic removal of accumulated debris by either blowing down or removal and cleaning of the screen.

Type	IT
Sizes	1/2" to 3"
Connections	NPT
Construction	Cast Iron
Maximum Saturated Steam Pressure	250 psig
Standard Screen	20 Mesh Type 304 Stainless Steel

No	Part	Material
1	Body	Cast Iron
2	Bushing (1/4" - 2")	Malleable Iron
2A	Cap (2 1/2" - 3")	Cast Iron
3	Cap Gasket (2 1/2" & 3")	Graphite
4	Standard Screen	Stainless Steel Type 304

Dimension	A	B	C	Weight
Size	inch	inch	NPT	lbs
1/2	3-3/16	2-1/16	3/8"	1.2
3/4	3-3/4	2-7/16	1/2"	2.9
1	4	2-5/8	3/4"	4.3
1-1/4	5	3-3/8	1"	6.5
1-1/2	5-3/4	3-7/8	1-1/4"	9.6
2	7	4-3/4	1-1/2"	12.9
2-1/2	9-1/4	5-7/8	1-1/4"	22.0
3	10.0	6	1-1/4"	35.0



Strainer - Cast Iron
Nortec Part #159-9620 to 159-9627

A10 - Live Steam (2597652) Shop Drawing

STRAINER DATA

Steam Pressure		Strainer Nominal Diameter in Inches											
		3/4		1		1 1/4		1 1/2		2		2 1/2	
psig	kPa	lbs/hr	kg/hr	lbs/hr	kg/hr	lbs/hr	kg/hr	lbs/hr	kg/hr	lbs/hr	kg/hr	lbs/hr	kg/hr
2	14	105	48	182	83	255	116	346	157	638	290	912	414
5	34	124	56	215	98	301	137	409	186	753	342	1075	489
10	69	155	70	270	123	378	172	512	233	944	429	1348	613
15	103	186	85	324	147	454	206	616	280	1135	516	1621	737
20	138	218	99	379	172	530	241	720	327	1326	603	1894	861
25	172	249	113	433	197	607	276	824	374	1517	690	2167	985
30	207	281	128	488	222	683	311	927	421	1708	776	2440	1109
35	241	312	142	543	247	760	345	1031	469	1899	863	2713	1233
40	276	343	156	597	271	836	380	1135	516	2090	950	2986	1357
45	310	375	170	652	296	912	415	1238	563	2281	1037	3259	1481
50	345	406	185	706	321	989	450	1342	610	2472	1124	3532	1605

condair | Strainer Size Performance Data

A11 - Live Steam (2577157) Description

LIVESTEAM Steam Trap, float and thermostatic for pressures up to 15 psig. The trap allows removal of condensate from a pressurized steam system while preventing the passage of steam.

A12 - Live Steam (2577157) Shop Drawing

TRAP DATA

Trap Type: Float and Thermostatic

Trap Connection: ¾" NPT

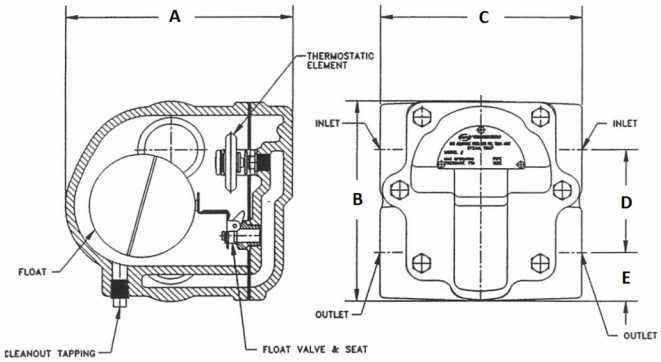
Construction: Cast Iron Body and Cover. Stainless Steel Internals.

Maximum Operating Pressure: 15 psig (103 kPa) Nortec Part #2577157
75 psig (103 kPa) Nortec Part #1599602

Installation: Full port isolating valves should be placed to permit servicing. The trap should be installed below the drainage point with a collecting leg before the trap, in a position so that the float arm is in a horizontal plane so that the float rises and falls vertically, and with the direction of flow as indicated on the body. The trap has 4 orifices and 2 plugs to facilitate installation.

Maintenance: This product can be maintained without disturbing the piping connections. Complete isolation from both supply and return line is required before any servicing is performed.

Dimensions in (cm)								
	A	B	C	D	E	Weight	Cleanout port	Ports
2577157/ 1599602	5-3/4 (14.6)	5-11/16 (14.4)	4-7/8 (12.3)	3-3/8 (8.5)	1-5/32 (2.9)	12 lbs (5.4 kg)	1/4"NPT	4 ports, 2 plugs, 3/4" NPT



Construction Materials	
Part	Material
Body	Class 30 Cast Iron
Cap	Class 30 Cast Iron
Disc	Stainles Steel & Brass
Hinge	Brass
Pin, Hinge	Stainles Steel
Gasket	non Asbestos Fiber
Seat	SST, Brass Holder
Valve	Stainless Steel
Clip	Stainless Steel
Lever & float	Stainless Steel
Plug 1/4" NPT	Steel

nortec humidity.com

Steam Trap - F&T Cast Iron
Nortec Part # 2577157, 1599602

A13 - SAM-e (2549922) Description

SAM-e HEADERS

The SAM-e distributes clean steam, precisely controlled, uniformly into the entire air stream, and void of any condensate spray. Steam distribution takes place via steam tubes with integrated nozzles. The steam is kept dry as condensate is drained through the main header.

The stainless steel headers are typically installed with vertical tubes for horizontal airflow applications, but can also be mounted horizontally (10 deg. incline from horizontal) for vertical airflow applications. The headers can be ordered 3, 6, 9, or 12 inch center to center tube spacing for maximum flexibility and optimal steam distribution..

Manufactured out of high grade 304 stainless steel, the header features welded inlet and condensate connections to ensure leak-free operation. Stainless steel inlet adapter is factory supplied for connection to steam supply line(s), allowing maximum flexibility, and simplification of installation. Specialized synthetic grommets form an air and water-tight seal around the base of the steam tubes, simplifying installation and ensuring reliable leaf-free operation.

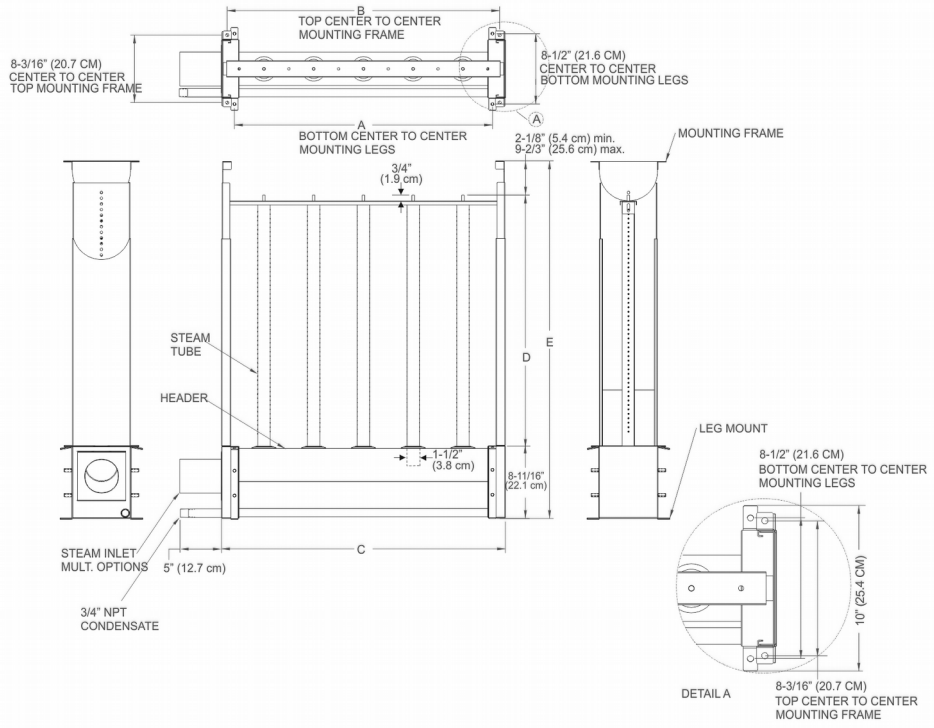
Headers are also available with optional 304 stainless steel insulation. This metal shielding creates an insulating air-gap around the header which minimizes heat transfer by conduction and convection, while the reflective surface minimzes heat transfer by radiation. Insulating the header in this manner increases energy efficiency by up to 70%, and results in significantly reduced airstream heat gain and steam condensate loss.

FEATURES

- Steam tubes with end support bracket for easy installation.
- All stainless steel distributors and nozzles ensure permanent bond.
- Stainless steel header with rubber grommet seals for easy installation of steam tubes.
- Includes hose cuffs and clamps for steam line connections.
- Adjustable mounting frame available for quick and easy installation.
- Available with 3", 6", 9" or 12" center to center steam tube spacing.
- Available insulated for increased energy efficiency and reduced airstream heat gain.
- High capacities.
- Ten year limited warranty.

A14 - SAM-e (2549922) Shop Drawing

Duct Width		A		B		C		Duct Height		D (Tube height)		E Min.		E Max.	
in	cm	in	cm	in	cm	in	cm	in	cm	in	cm	in	cm	in	cm
18	45.7	13 1/8	33.3	14 7/8	37.8	16 1/4	41.3	18	45.7	5 1/2	14.0	17	43.2	24 2/3	62.7
24	61.0	19 1/8	48.6	20 7/8	53.0	22 1/4	56.5	24	61.0	11 1/2	29.2	23	58.4	30 2/3	77·9
30	76.2	25 1/8	63.8	26 7/8	68.3	28 1/4	71.8	30	76.2	17 1/2	44·5	29	73.7	36 2/3	93·1
36	91.4	31 1/8	79.1	32 7/8	83.5	34 1/4	87.0	36	91.4	23 1/2	59.7	35	88.9	42 2/3	108.4
42	106.7	37 1/8	94.3	38 7/8	98.7	40 1/4	102.2	42	106.7	29 1/2	74.9	41	104.1	48 2/3	123.6
48	121.9	43 1/8	109.5	44 7/8	114.0	46 1/4	117.5	48	121.9	35 1/2	90.2	47	119.4	54 2/3	138.9
54	137.2	49 1/8	124.8	50 7/8	129.2	52 1/4	132.7	54	137.2	41 1/2	105.4	53	134.6	60 2/3	154.1
60	152.4	55 1/8	140.0	56 7/8	144.5	58 1/4	148.0	60	152.4	47 1/2	120.7	59	149.9	66 2/3	169.3
66	167.6	61 1/8	155.3	62 7/8	159.7	64 1/4	163.2	66	167.6	53 1/2	135.9	65	165.1	72 2/3	184.6
72	182.9	67 1/8	170.5	68 7/8	174.9	70 1/4	178.4	72	182.9	59 1/2	151.1	71	180.3	78 2/3	199.8
78	198.1	73 1/8	185.7	74 7/8	190.2	76 1/4	193.7	78	198.1	65 1/2	166.4	77	195.6	84 2/3	215.1
84	213.4	79 1/8	201.0	80 7/8	205.4	82 1/4	208.9	84	213.4	71 1/2	181.6	83	210.8	90 2/3	230.3
90	228.6	85 1/8	216.2	86 7/8	220.7	88 1/4	224.2	90	228.6	77 1/2	196.9	89	226.1	96 2/3	245.5
96	243.8	91 1/8	231.5	92 7/8	235.9	94 1/4	239.4	96	243.8	83 1/2	212.1	95	241.3	102 2/3	260.8
102	259.1	97 1/8	246.7	98 7/8	251.1	100 1/4	254.6	102	259.1	89 1/2	227.3	101	256.5	108 2/3	276.0
108	274.3	103 1/8	261.9	104 7/8	266.4	106 1/4	269.9	108	274.3	95 1/2	242.6	107	271.8	114 2/3	291.3
114	289.6	109 1/8	277.2	110 7/8	281.6	112 1/4	285.1	114	289.6	101 1/2	257.8	113	287.0	120 2/3	306.5
120	304.8	115 1/8	292.4	116 7/8	296.9	118 1/4	300.4	120	304.8	107 1/2	273.1	119	302.3	126 2/3	321.7
126	320.0	121 1/8	307.7	122 7/8	312.1	124 1/4	315.6	126	320.0	113 1/2	288.3	125	317.5	132 2/3	337.0
132	335.3	127 1/8	322.9	128 7/8	327.3	130 1/4	330.8	132	335.3	119 1/2	303.5	131	332.7	138 2/3	352.2
138	350.5	133 1/8	338.1	134 7/8	342.6	136 1/4	346.1	138	350.5	125 1/2	318.8	137	348.0	144 2/3	367.5
144	365.8	139 1/8	353.4	140 7/8	357.8	142 1/4	361.3	144	365.8	131 1/2	334.0	143	363.2	150 2/3	382.7



SAM-e General Dimensions
July 5, 2012

A15 - SAM-e (2549922) Shop Drawing

Air Velocity [fpm (m/s)]	Air Pressure Loss [in(mm) of water column]			
	SAM-e Tube Spacing			
	3" (762 mm)	6" (152 mm)	9" (229 mm)	12" (305 mm)
500 (2.5)	0.01 (0.3)	0.01 (0.3)	No measurable data	
750 (3.8)	0.03 (0.8)	0.01 (0.3)		
1000 (5.1)	0.05 (1.3)	0.02 (0.5)		
1250 (6.4)	0.07 (1.8)	0.03 (0.8)		
1500 (7.6)	0.09 (2.3)	0.04 (1.0)	0.01 (0.3)	0.01 (0.3)
1750 (8.9)	0.10 (2.5)	0.06 (1.5)	0.01 (0.3)	0.01 (0.3)
2000 (10.2)	0.12 (3.0)	0.08 (2.0)	0.01 (0.3)	0.01 (0.3)

SAM-e Static Air Pressure Table
July 15, 2016

A16 - SAM-e (1503419) Description

Steam DISTRIBUTOR, Type B for SAM-e, 304ss, suitable for capacities up to 36 lbs/hr (16 kg/hr). Constructed of 1.5" O.D. (3.8 cm) high-grade stainless steel tubing, the distributors can accommodate duct heights between 24"-144" for in-duct header mounting, and between 18"-144" for outside duct header mounting. Each distributor has 48 stainless steel nozzles to evenly disperse steam into the duct or air handling unit.

The steam tubes come equipped with evenly spaced stainless steel nozzles providing optimum steam distribution, over the entire length of tube. These nozzles extend into the center of the steam tube ensuring only condensate-free steam is released. Condensate drains out of the steam tubes, and through the header, eliminating the need for jacketed tubes. A permanent bond between the nozzle and steam tube is made when the nozzle is hydraulically pressed into the tube. They have the same thermal expansion characteristics guaranteeing a permanent union. The specifically sized orifices ensure consistent output from each nozzle.

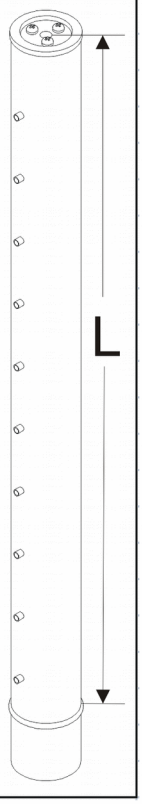
Steam distributors are available with optional 304 stainless steel insulation. Tube insulation consists of two 304 stainless steel shields, which are clamped onto the distributor tubes forming an insulating air gap around the tube while leaving a small gap for the nozzles to release steam. For tube insulation, contact and heat transfer between stainless steel shields and distributor to be limited using a ‘knife edge’ type angled contact. The air gap reduces heat transfer through conduction and convection, while the reflective surfaces minimize heat transfer through radiation.

FEATURES

- Capacities of 36 lbs/hr (16 kg/hr) per tube.
- Nozzle design ensures only condensate-free steam is dispersed and prevents spitting.
- Stainless steel nozzles are pressed into tube ensuring permanent bond.
- Available insulation improves energy efficiency by as much as 70%.
- Can be retrofit with insulation in the field.
- Maintenance free.
- Ten year limited warranty.

A17 - SAM-e (1503419) Shop Drawing

304 SS SAM-e Short Absorption Manifold Tubes

In-Duct Height Including Header in (cm)	Type A 15 lbs/hr (7 kg/hr)	Type B 35 lbs/hr (16 kg/hr)	Type B+ 55 lbs/hr (25 kg/hr)	Type C 75 lbs/hr (34 kg/hr)	"L" Dimension in (cm)	In-Duct Optional Mounting Frame	Steam Tube Profile
18 (45.7)	1503388	N/A	N/A	N/A	5.5 (14.0)	1504697	
24 (61.0)	1503389	1503411	N/A	N/A	11.5 (29.2)		
30 (76.2)	1503390	1503412	1509391	N/A	17.5 (44.5)	1503469	
36 (91.4)	1503391	1503413	1509392	1503440	23.5 (59.7)		
42 (106.7)	1503392	1503414	1509393	1503441	29.5 (74.9)	1503470	
48 (121.9)	1503393	1503415	1509394	1503442	35.5 (90.2)		
54 (137.2)	1503394	1503416	1509395	1503443	41.5 (105.4)		
60 (152.4)	1503395	1503417	1509396	1503444	47.5 (120.7)		
66 (167.6)	1503396	1503418	1509397	1503445	53.5 (136.9)	1503471	
72 (182.9)	1503397	1503419	1509398	1503446	59.5 (151.1)		
78 (198.1)	1503398	1503420	1509399	1503447	65.5 (166.4)		
84 (213.4)	1503399	1503421	1509400	1503448	71.5 (181.5)		
90 (228.6)	1503400	1503422	1509401	1503449	77.5 (196.9)		
96 (243.8)	1503401	1503423	1509402	1503450	83.5 (212.1)		
102 (259.1)	1503402	1503424	1509403	1503451	89.5 (227.3)		
108 (274.3)	1503403	1503425	1509404	1503452	95.5 (242.6)	1503472	
114 (289.6)	1503404	1503426	1509405	1503453	101.5 (257.8)		
120 (304.8)	1503405	1503427	1509406	1503454	107.5 (273.1)		
126 (320.0)	1503406	1503428	1509407	1503455	113.5 (288.3)		
132 (335.3)	1503407	1503429	1509408	1503456	119.5 (303.5)		
138 (350.5)	1503408	1503430	1509409	1503457	125.5 (318.8)		
144 (365.8)	1503409	1503431	1509410	1503458	131.5 (334.0)		

304 SS
SAM-e Short Absorption Manifold Tubes
July 5, 2012

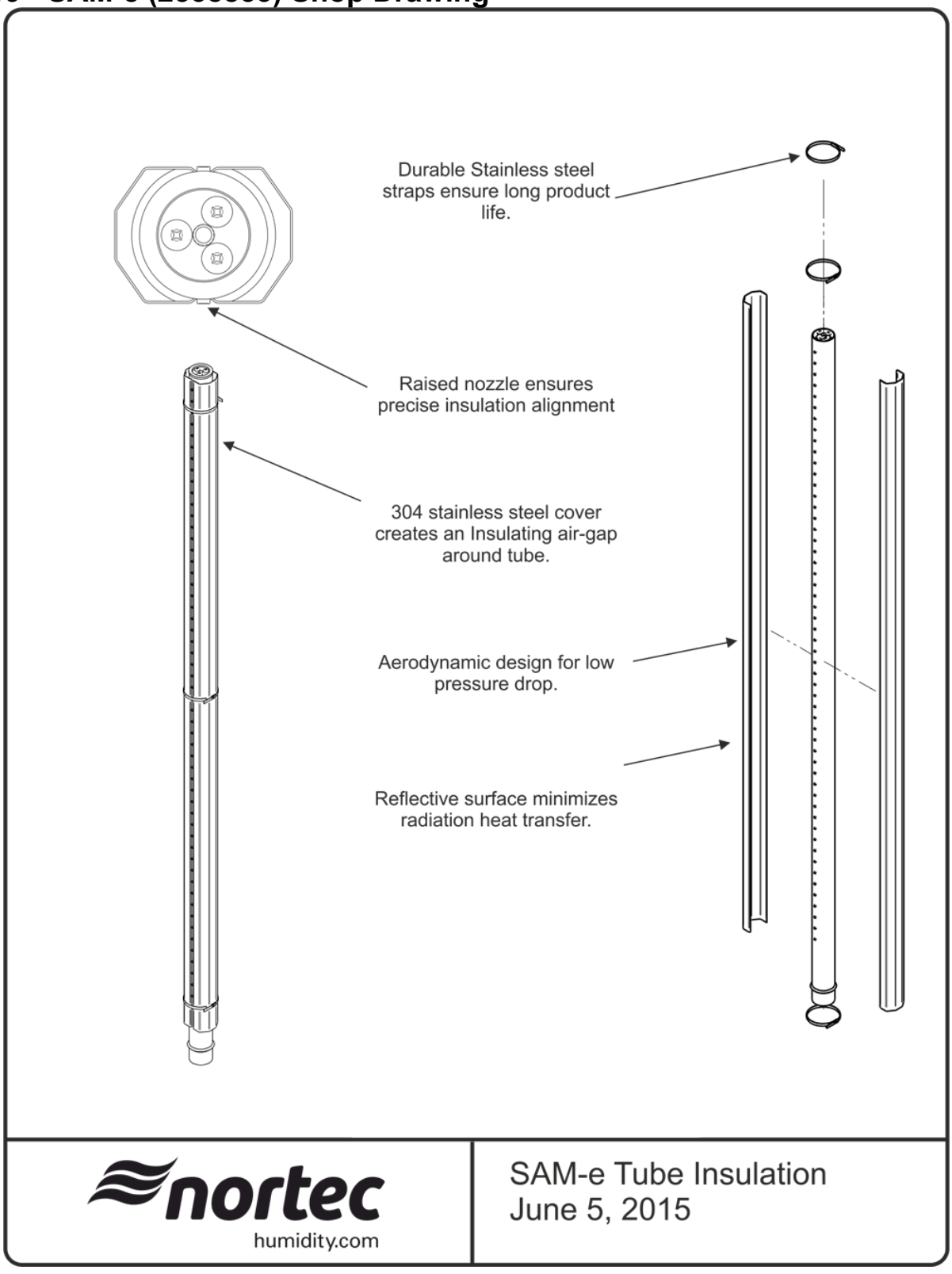
A18 - SAM-e (2538853) Description

SAM-e Tube Insulation (1 req'd for each tube), compatible with all SAM-e and mini SAM-e tubes.
Constructed high quality 304 stainless steel, this shielding provides an insulating air gap around the steam tubes. The insulating air-gap significantly reduces energy losses from hot distributor tubes. Insulation can be factory installed on new orders or easily retrofit to existing installations. When ordering, order insulation to match tube length.

FEATURES

- Improve energy efficiency by as much as 70%.
- Reduce condensate losses.
- Minimal heat gain into air-stream.
- Aerodynamic design minimizes pressure losses.
- Fiberglass free and non-hygroscopic for hygienic operation.
- Easily retrofit to existing installations.
- Maintenance free.
- Tube insulation consists of two stainless steel shields that are clamped onto the distributor tubes, leaving a small gap for the steam nozzles to release steam. Contact and heat transfer between the insulating shields and the tube is prevented by using an angled knife edge along each shield. The resulting air gap around the tube reduces heat transfer through conduction and convection, while the reflective surfaces minimize heat transfer through radiation.

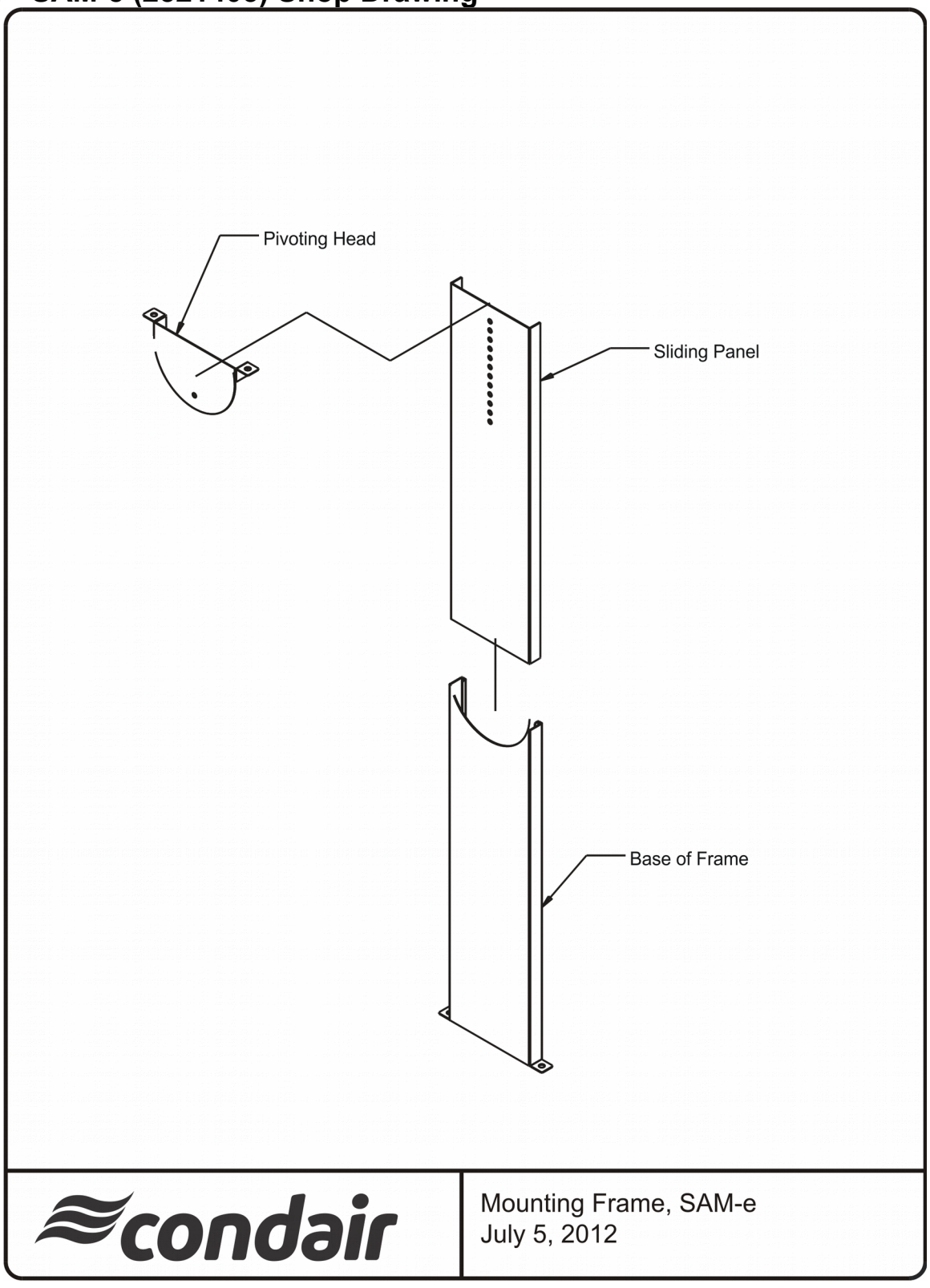
A19 - SAM-e (2538853) Shop Drawing



A20 - SAM-e (2521405) Description

Mounting FRAME, Adjustable for SAM-e, Constructed of stainless steel, the mounting frame provides support and allows for a quick and easy installation. The telescopic frame can be adjusted to suit the duct or air handling unit. The mounting frame is optional for horizontal duct applications, but required for vertical duct applications.

A21 - SAM-e (2521405) Shop Drawing



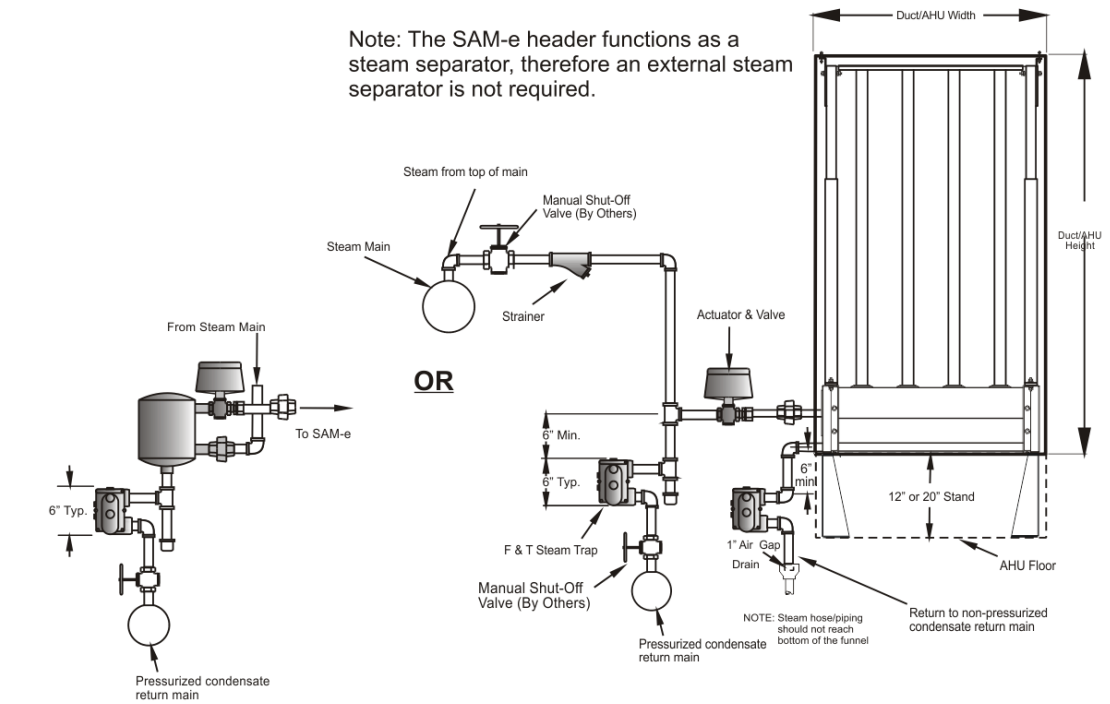
A22 - SAM-e (1503476) Description

Pressure Inlet Adapter Kit for SAM-e

Provides an NPT threaded connection for connecting a SAM-e Short Absorption Manifold to a LiveSteam or pressure steam system. Inlet adapter kits are constructed from high quality stainless steel and are factory welded to the SAM-e header. Pressure inlet kits also include an internal baffle to separate steam from condensate allowing operation without the need for an external separator.

A23 - SAM-e (1503476) Installation

Pressurized Steam

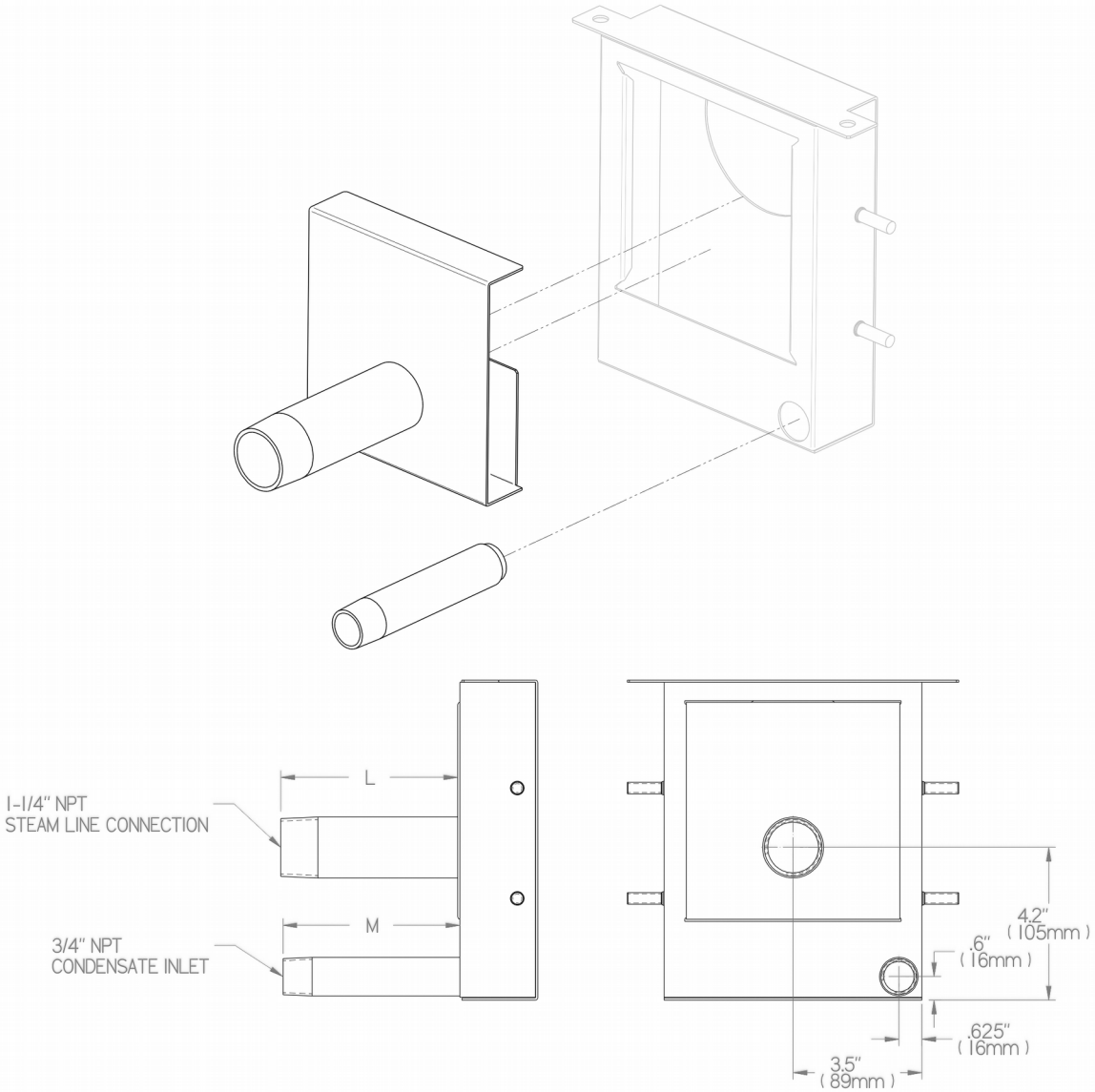


Installation with External Separator

Installation without External Separator

Typical SAM-e Installation for Pressurized Steam Applications
July 5, 2012

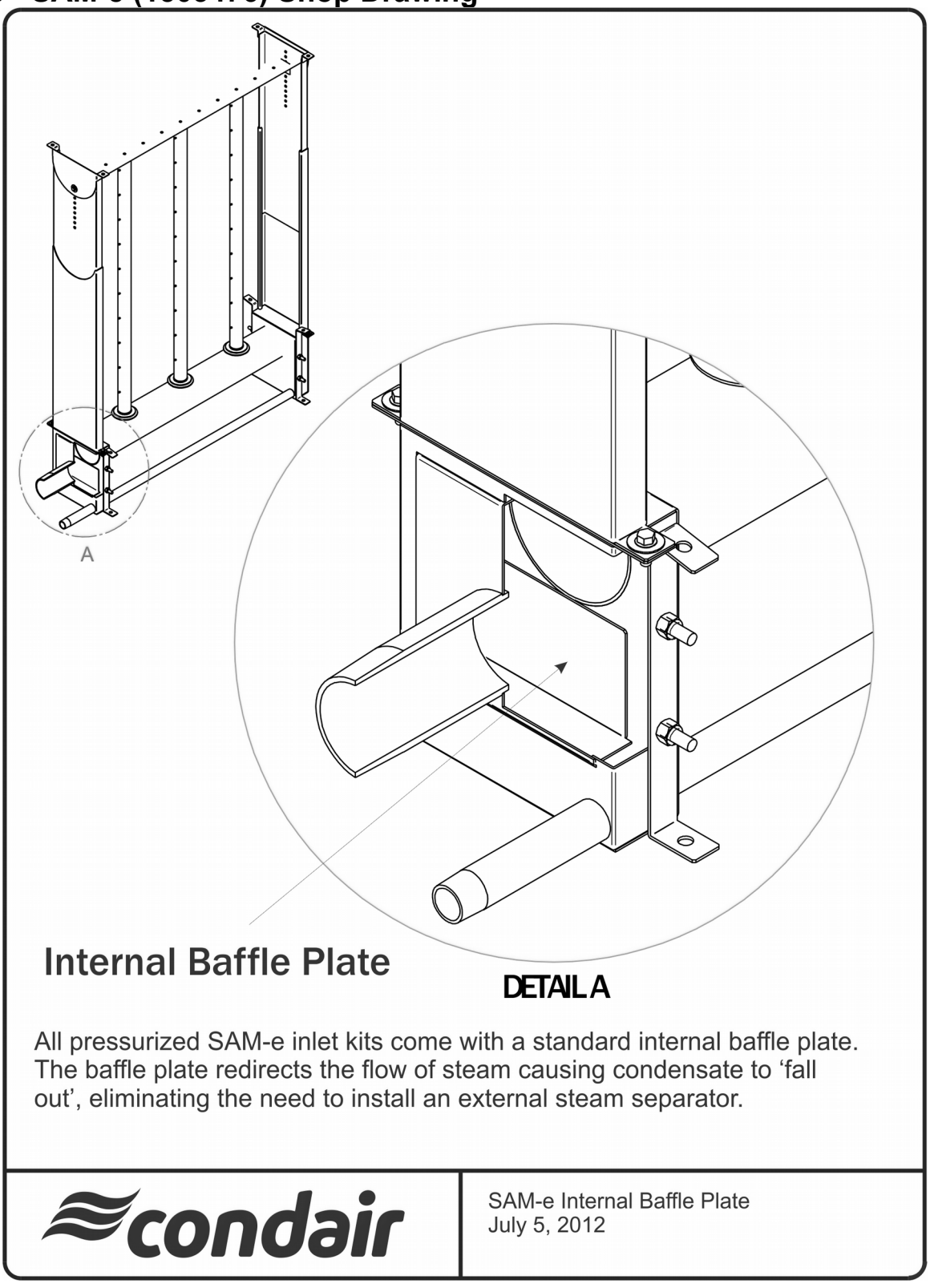
A24 - SAM-e (1503476) Schematic



Part No.	Description	L (in. (mm))	M (in. (mm))
1503476	Inlet Kit SAM-e, Pressurized 1-1/4" NPT X 5"	4.8 (122)	4.8 (122)
1509489	Inlet Kit SAM-e, Pressurized 1-1/4" NPT X 10"	9.8 (249)	9.8 (249)
1509490	Inlet Kit SAM-e, Pressurized 1-1/4" NPT X 12"	11.8 (300)	11.8 (300)

Inlet Kit SAM-e,
Pressurized 1-1/4" NPT

A25 - SAM-e (1503476) Shop Drawing



A26 - SAM-e (2591657) Description

SAM-e Top Center Mount Bracket; provides additional support and rigidity for cases where a SAM-e will be shipped fully assembled insided of an air handling unit. This option is typically used when shipping the SAM-e for installation at an Air Handling Unit manfuacturer.

A27 - SAM-e (2591658) Description

SAM-e Side Yoke (x2), provides an additional two adjustable side yokes. This can be used as either a replacement for existing yokes, or to double up the existing yokes for additional strength.

A28 - SAM-e (1503391) Description

Steam DISTRIBUTOR, Type A for SAM-e, 304ss, suitable for capacities up to 15 lbs/hr (7 kg/hr).
Constructed of 1.5" O.D. (3.8 cm) high-grade 304 stainless steel tubing, the distributors can accommodate duct heights between 18"-144" for in-duct header mounting, and between 8"-144" for outside duct header mounting. Each distributor has 20 stainless steel nozzles to evenly disperse steam into the duct or air handling unit.

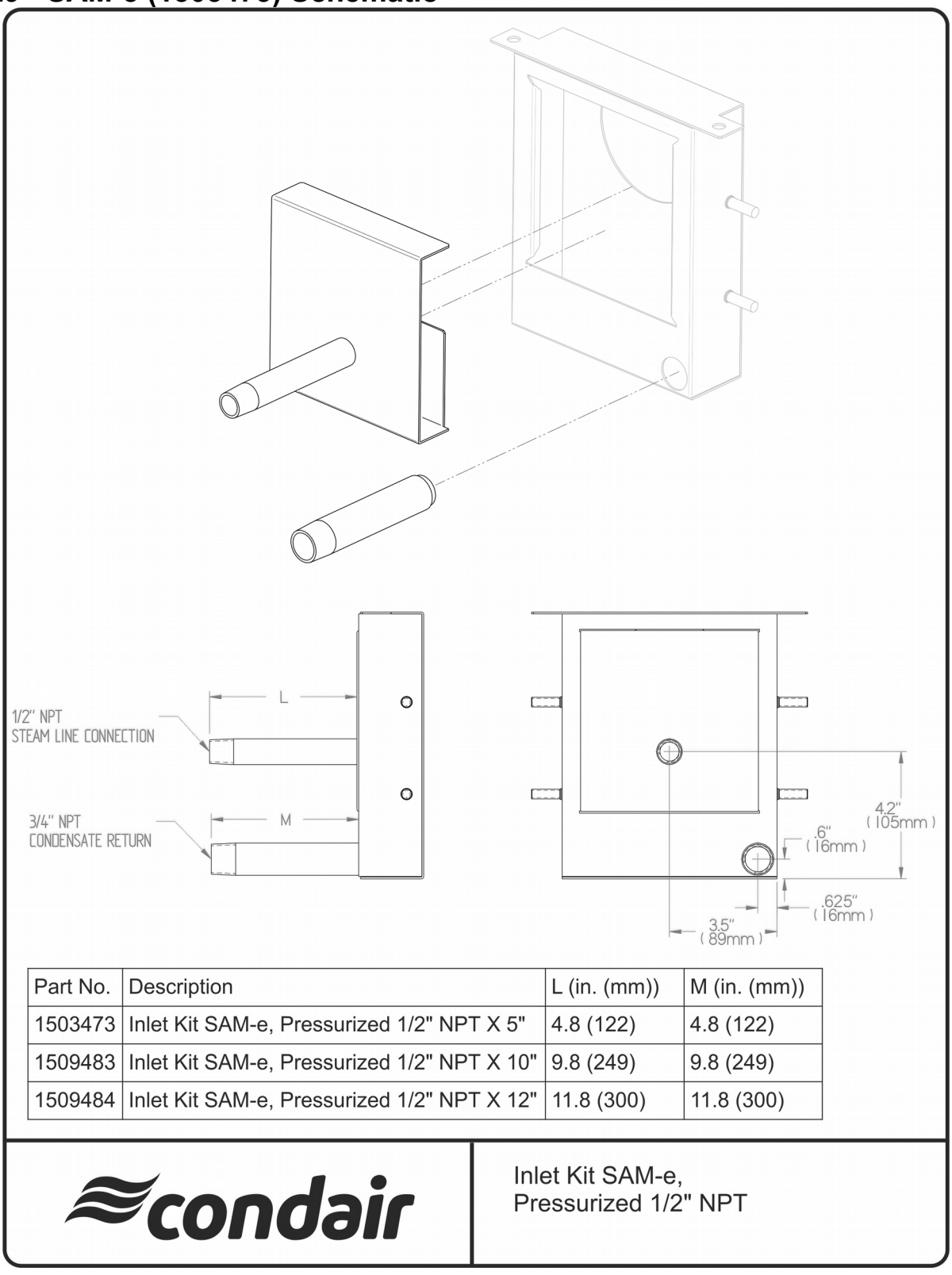
The steam tubes come equipped with evenly spaced stainless steel nozzles providing optimum steam distribution, over the entire length of tube. These nozzles extend into the center of the steam tube ensuring only condensate-free steam is released. Condensate drains out of the steam tubes, and through the header, eliminating the need for jacketed tubes. A permanent bond between the nozzle and steam tube is made when the nozzle is hydraulically pressed into the tube. They have the same thermal expansion characteristics guaranteeing a permanent union. The specifically sized orifices ensure consistent output from each nozzle.

Steam distributors are available with optional 304 stainless steel insulation. Tube insulation consists of two 304 stainless steel shields, which are clamped onto the distributor tubes forming an insulating air gap around the tube while leaving a small gap for the nozzles to release steam. For tube insulation, contact and heat transfer between stainless steel shields and distributor to be limited using a ‘knife edge’ type angled contact. The air gap reduces heat transfer through conduction and convection, while the reflective surfaces minimize heat transfer through radiation.

FEATURES

- Capacities of 15 lbs/hr (7 kg/hr) per tube.
- Nozzles design ensures only dry steam is dispersed and prevents spitting.
- Stainless steel nozzles are pressed into tube ensuring permanent bond.
- Available insulation improves energy efficiency by as much as 70%.
- Can be retrofit with insulation in the field.
- Maintenance free.
- Ten year limited warranty.

A29 - SAM-e (1503473) Schematic



Part No.	Description	L (in. (mm))	M (in. (mm))
1503473	Inlet Kit SAM-e, Pressurized 1/2" NPT X 5"	4.8 (122)	4.8 (122)
1509483	Inlet Kit SAM-e, Pressurized 1/2" NPT X 10"	9.8 (249)	9.8 (249)
1509484	Inlet Kit SAM-e, Pressurized 1/2" NPT X 12"	11.8 (300)	11.8 (300)

Inlet Kit SAM-e,
Pressurized 1/2" NPT

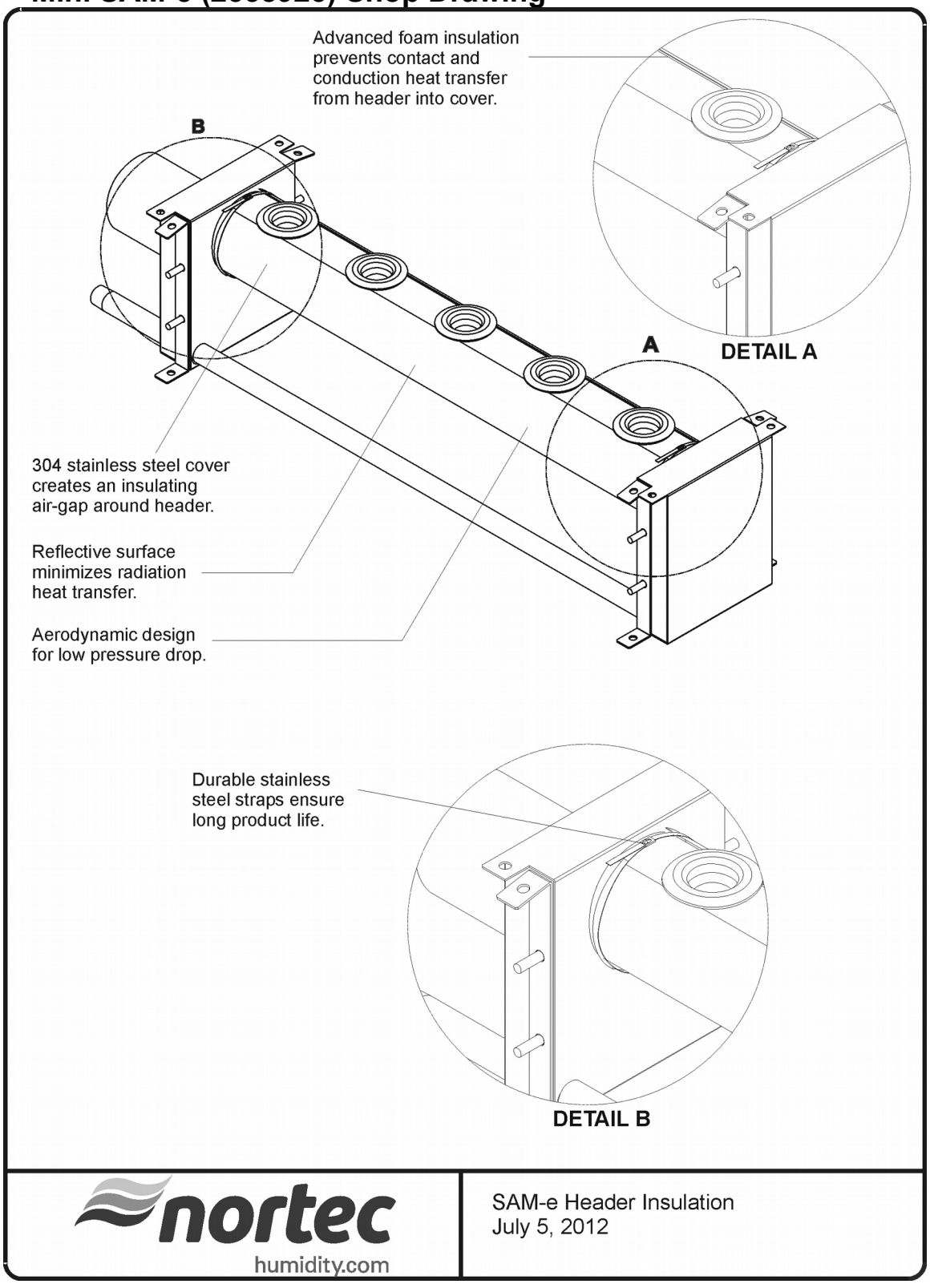
A30 - Mini SAM-e (2538925) Description

SAM-e Header Insulation, compatible with all SAM-e and mini SAM-e headers. Constructed from high quality 304 stainless steel, this shielding provides an insulating air gap around the header. The insulating air-gap significantly reduces energy losses from hot distributor headers. Insulation can be factory installed on new orders or easily retrofit to existing installations. When ordering, order insulation to match header length.

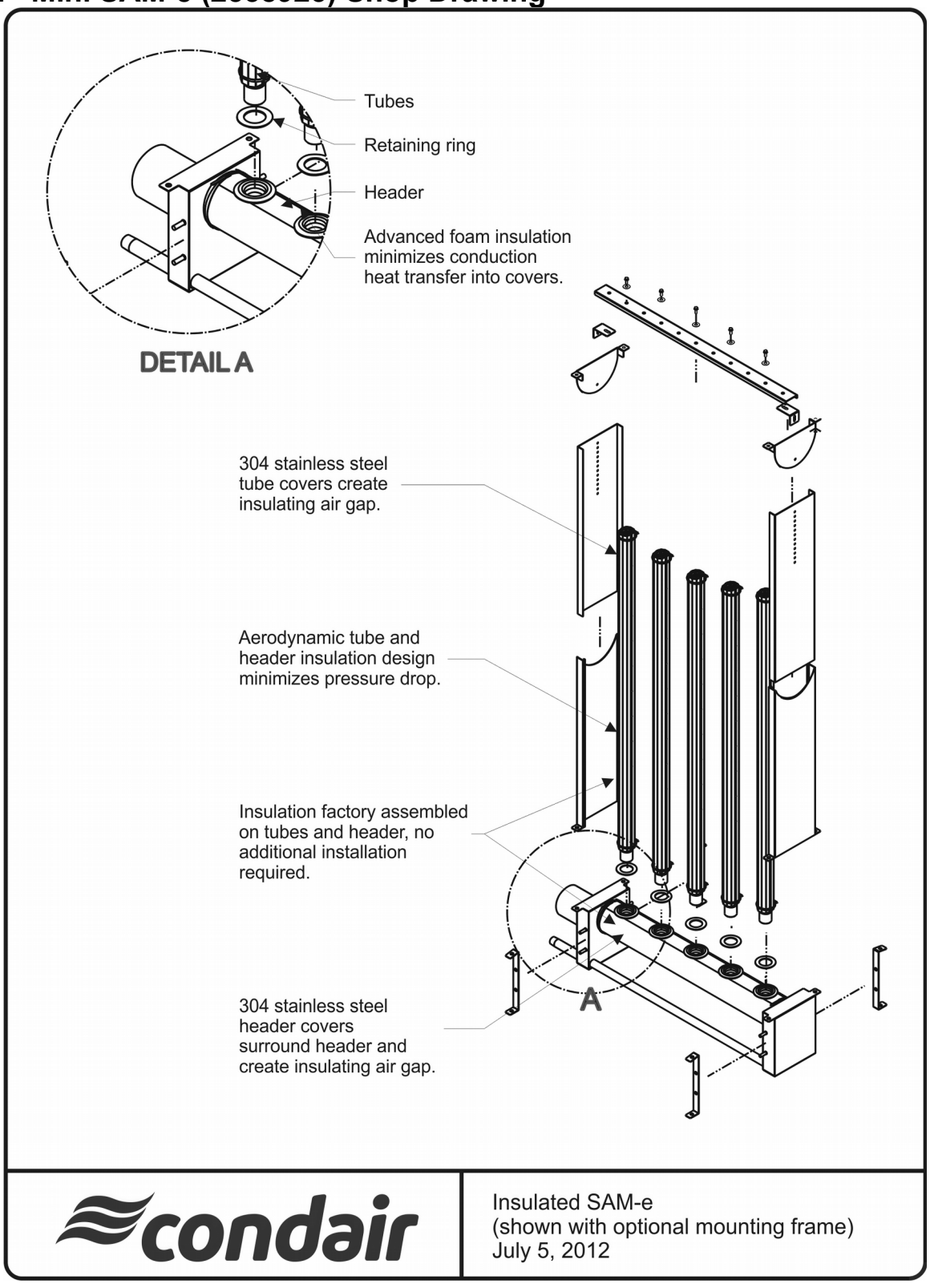
FEATURES

- Improve energy efficiency by as much as 70%.
- Reduced condensate losses.
- Minimal heat gain into air-stream.
- Aerodynamic design minimizes pressure losses.
- Fiberglass free and non-hygroscopic for hygienic operation.
- Easily retrofit to existing installations.
- Maintenance free.
- Header insulation consists of a stainless steel shield that is clamped onto the distributor header, leaving a small gap for the steam tubes to protrude. Contact and heat transfer between the insulating shield and the tube is prevented by using strips of synthetic foam insulation. The resulting air gap around the header reduces heat transfer through conduction and convection, while the reflective surfaces minimize heat transfer through radiation.

A31 - Mini SAM-e (2538925) Shop Drawing



A32 - Mini SAM-e (2538925) Shop Drawing



TERMS & CONDITIONS OF SALE

PRICES:

All prices are LIST price. All prices and discount factors are subject to change without notice.

ORDERS:

All orders must be in writing (made out to Condair Inc. or Condair Ltd. hereinafter collectively referred to as Condair) or submitted through Help software, and are subject to acceptance by Condair's Credit Manager prior to production release and are contingent upon governmental regulations, availability of labor and materials, strikes, accidents, fires, and all other causes beyond the control of Condair.

SHIPPING TERMS:

Shipping Terms: All packaged goods, (electric and gas-fired) humidifiers, SAM-e, Livesteam distribution systems, HP, ML and AirFog, are shipped FOB factory, standard ground freight included to the continental United States and Canada. Parts orders that are over $1,000 net invoice value are shipped freight included. All air freight charges are extra. Export crating and export shipping costs are extra.

RISK OF LOSS & DAMAGE:

Risk of loss or damage passes to the Buyer when the equipment described herein is delivered to the carrier. Any claim for goods lost or damaged in transit, shall be made by the Buyer against the carrier.

CHANGED OR CANCELLED ORDERS:

- All changed or cancelled orders, in production or completed, are subject to a charge of 30%.
- Orders other than " Quick Ship Orders" for packaged products (e.g. electric, gas-fired) may generally be cancelled within 48 hours of being placed. Condair will make every effort to stop production of an order upon written notice of cancellation. If production has not started, Condair will waive the cancellation charge.
- Orders for equipment specially fabricated cannot be cancelled. E.g. SAM-e, LiveSteam, HP, ML, ME, and DL.
- Parts orders that are regular stock items are not subject to a cancellation charge. However, if a parts order is changed, which includes adding new parts to an order; this may cause a delay in delivery.

RETURNED GOODS:

- Condair will accept unused equipment returned for credit only when prior approval has been given. Prior to returning goods a Return Material Authorization Number (RMA) must be obtained and it must be clearly marked on all returned goods. Goods received without an RMA will not be accepted and credit will not be issued. Any material accepted for return must be shipped back prepaid by the Buyer and must reach Condair without damage.
- An RMA will only be issued within 3-months of the equipment's shipping date.
- Any unused equipment accepted for return is subject to a 30% restocking charge.
- Equipment specially fabricated, cannot be returned. E.g. SAM-e, Livesteam, HP, ML, ME, and DL.
- Credit will only be issued to the original purchaser.
- Credit will be issued in the form of a credit note, which can be used towards a future purchase.

WARRANTY - UNITS:

Condair warrants for a period of two years after installation or 30 months from the manufacturer's ship date, whichever is earlier, that Condair's manufactured and assembled products, not otherwise expressly warranted, are free from defects in material and workmanship. No warranty is made against corrosion, deterioration, or suitability of substituted materials used as a result of compliance with government regulations. Extended warranties are available for most Condair manufactured products at the time of initial product order.

Condair's obligations and liabilities under this warranty are limited to furnishing replacement parts to the customer, F.O.B. Condair's factory, providing the defective part(s) is returned freight prepaid by the Buyer. Parts used for repairs are warranted for the balance of the term of the warranty on the original humidifier or 90 days, whichever is longer.

The warranties set forth herein are in lieu of all other warranties expressed or implied by law. No liability whatsoever shall be attached to Condair until said products have been paid for in full and then said liability shall be limited to the original purchase price for the product. Any further warranty must be in writing, signed by an officer of Condair. In no event will Condair be liable for any incidental, special, indirect or consequential damages or for loss of profits, business or goodwill whether based in contract or in tort or other liability to provide indemnification or any other remedy. This limitation applies whether or not Condair has been advised or is aware of the possibility of such damages.

Condair's limited warranty on accessories, not of Condair's manufacture, such as controls, humidistats, pumps, etc. is limited to the warranty of the original equipment manufacturer from date of original shipment of the products to the Buyer.

Condair makes no warranty and assumes no liability unless the equipment is installed in strict accordance with a copy of the catalog and installation manual in effect at the date of purchase and by a contractor approved by Condair to install such equipment. Condair makes no warranty and assumes no liability whatsoever for consequential damage or damage resulting directly from misapplication, incorrect sizing or lack of proper maintenance of the equipment. Condair retains the right to change the design, specification and performance criteria of its products without notice or obligation.

Extended warranties for 1, 2, or 3 additional years can be purchased at time of order only through Help Software.

Parts or materials that are considered consumables, including but not limited to: cylinders, filters, nozzles, membranes, media, gaskets, O-rings, etc. are NOT covered by the warranty.

Condair makes no warranty and assumes no liability whatsoever for damage resulting from freezing of the humidifier, supply lines, drain lines, or quality of the water used.

REPLACEMENT PARTS:

- All requests for replacement parts, whether they are for warranty consideration or not, require a covering purchase order, prior to Condair releasing the goods. Goods will be shipped to the Buyer with an invoice.
- To obtain credit for parts covered by Condair's warranty, defective parts must be returned for inspection. To return parts the Buyer must request a Return Material Authorization (RMA) and it must be clearly marked on all returned parts. Parts returned without an RMA will not be accepted and credit will not be issued. All parts returned for credit must be shipped back prepaid by the Buyer.
- All parts must be returned within 3-months of an RMA being issued. Parts returned more than 3-months from when the RMA was issued will not be accepted.
- Credit for parts covered under warranty will be issued, if inspection indicates the returned parts are defective.

PAYMENT:

Terms of payment are net 30 days from date of invoice, unless otherwise specified. The offer of these terms is contingent upon approval by the Credit Manager at the time of receipt of the Buyer's official order. The Buyer agrees that interest on all overdue accounts may be charged monthly at a rate of 2.0% per month (24% per annum). Maintaining good credit will assist in meeting delivery. For quick ship orders, contact factory for pricing.