

Quality People. Building Solutions.

Comfort Systems USA (Arkansas), Inc.
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Date: 8/5/2024

Return Request: 8/12/2024

Project: LRAFB – Dorm 854 Renovation

Supplier: Trane

Manufacturer: Trane

Submittal: Air Cooled Water Chiller (Re-Submittal #1)

Submittal Number: 23 64 23-01

Drawing # and Installation: Mechanical Drawings

ARCHITECT

GENERAL CONTRACTOR

HGL Construction
P.O. Box 1035
Jacksonville, AR 72099
501-983-1160

ENGINEER

EECI
10 Corporate Hill Dr. Suite 100
Little Rock, AR 72205
501-244-0511

MECHANICAL SUBCONTRACTOR

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

Notes:

This re-submittal is to address submittal comments about chiller's ability to communicate with the Base EMCS. Please refer to submittal number 230923-01 for this information. Chiller will communicate with Base EMCS.

CSUSA PROJECT NO.

24-7031

joseph@comfortar.com

9924 Landers Rd.
No. Little Rock, AR 72117



Chiller Submittal

Prepared For:
Energy Engineering Consultants, Inc.

Date: April 02, 2024

Sold To:
Comfort Systems USA (AR), Inc

Job Name:
LRAFB B854 Dorm Renovation

Trane U.S. Inc. is pleased to provide the following submittal for your review and approval.

Product Summary

Qty Product

1 30 Ton, Air-Cooled Scroll Chiller (Tag: CH-1)

Equipment Submitted Based on Plans Dated 29 FEB, 2024

Submittal Notes:

- Refrigerant Type: R-454B – Required Due to R-410A Phase-out
- Single Point Connection Main Line Unit Power
- Circuit Breaker-High Fault Rated Control Panel
- 5 Year Warranty on All Parts Including Compressor
- 115V Freeze Protection
- Factory Startup
- Short Cycle, Low Pressure, and Flow Verification Safeties Included in Unit Controls

Not Included: Installation, wiring, rigging, any kind of vibration isolation, seismic isolation, piping, pumps, buffer/expansion tanks, and any other item not specified above.

Austin Johnson

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Clayton Kinley

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Clayton.Kinley@Trane.com

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

Submittal acceptance and return is a critical step, so please ensure submittals are returned with approval to release to production within 14 days of submittal date.

Product performance and submittal data is valid for a period of 6 months from the date of submittal generation. If six months or more has elapsed between submittal generation and equipment release, the product performance and submittal data will need to be verified. It is the customer's responsibility to obtain such verification.

Tag Data - Air-Cooled Scroll (Qty: 1)

Item	Tag(s)	Qty	Description	Model Number
A1	CH-1	1	80 Ton Air-Cooled (CGAM)	CGAM080A2**2EXD2A1A3A1AX*A1D2B4XXXXXXB1A3A 1D1XXCXX

Product Data - Air-Cooled Scroll**Item: A1 Qty: 1 Tag(s): CH-1**

Air-Cooled Scroll Packaged Chiller
 Startup Included - Trane Service must start equipment for warranty to be honored
 80 nominal tons
 Factory Assigned
 60 hertz
 208 volt 3 phases
 High efficiency/performance
 Refrigerant Charge R-454B
 With factory installed freeze protection
 Refrigerant isolation valves (discharge valve)
 ETL Listed to US/Canadian Safety Standard
 ASHRAE 90.1/CSA C743 - 2019 Compliance
 AHRI certified
 Factory installed flow switch - set point 15 cm/sec
 Phase Reversal Protection
 Standard Cooling
 Grooved pipe connection
 Factory insulation 0.75"
 Performance based on propylene glycol
 Wide Ambient
 Lanced aluminum fins
 Across the line starter/direct on line
 Single point connection main line unit power-ancillary items require other power
 Circuit breaker-high fault rated control panel
 Enclosure Type UL 60335 Rated for Outdoor Applications
 BACnet MS/TP Interface
 High A short circuit rating
 Elastomeric isolators
 With water strainer factory installed
 Super quiet
 Architectural louvered panels
 5 Year parts warranty whole unit
 1st year labor warranty
 5 Year refrigerant warranty

Performance Data - Air-Cooled Scroll

Tags	CH-1
Refrigeration capacity (tons)	74.73
Total power input (kW)	86.89
Full load refrigeration efficiency (EER (Btu/W-h))	10.320
NPLV.IP (EER (Btu/W-h))	15.530
IPLV.IP (EER (Btu/W-h))	16.227
Sound power level (dBA)	92
Refrigerant Charge Circuit 1 (lb)	67.0
Refrigerant Charge Circuit 2 (lb)	67.0
Refrigerant Charge Circuit 1 (kg)	30
Refrigerant Charge Circuit 2 (kg)	30
Oil Factory Fill Charge - CKT 1 (gal)	1.40
Oil Charge Circuit 1 (gal)	3.90
Oil Charge Circuit 2 (gal)	3.90
Oil Charge Circuit 1 (Metric) (L)	14.80
Oil Charge Circuit 2 (Metric) (L)	14.80
Oil Factory Fill Charge - CKT 2 (gal)	1.40
Entering fluid evap (F)	54.00
Leaving fluid evap (F)	42.00
Flow evap (gpm)	157.73
Min flow evap (gpm)	129.57
Min flow PD evap+strainer (ft H2O)	1.61
Evap fluid concentration (%)	30.00
Evap fluid freeze point (F)	9.19
Fluid pressure drop evap (ft H2O)	12.02
Total PD evap+strainer (ft H2O)	14.36
Evap fouling factor (hr-sq ft-deg F/ Btu)	0.000100
Saturated evap temp circuit 1 (F)	36.25
Saturated evap temp circuit 2 (F)	36.24
Ambient air temperature (F)	95.00
Saturated cond temp circuit 1 (F)	122.43
Saturated cond temp circuit 2 (F)	122.44
Compressor power input (kW)	79.33
RLA - compressor 1A (A)	73.90
LRA - compressor 1A (A)	485.00
RLA - compressor 1B (A)	73.90
LRA - compressor 1B (A)	485.00
RLA - compressor 2A (A)	73.90
LRA - compressor 2A (A)	485.00
RLA - compressor 2B (A)	73.90
LRA - compressor 2B (A)	485.00
Total airflow (cfm)	57257
Total Number of Fans (Each)	6.00
Constant Speed Fan Motors	4
VFD Controlled Fan Motors	2
Fan power (kW)	7.17
Constant Speed Fan FLA (Each) (A)	6.70
Constant Speed Fan HP (Each) (hp)	1.270
VFD Controlled Input Amps (A)	7.00
VFD Controlled Motor Voltage (V)	200.0
Single point power MCA (A)	360
Single point power MOP (A)	450
Short circuit current rating (A)	65000
Number of Compressors	4
Number of Refrigerant Circuits	2

Tags	CH-1
Number of Compressors CKT1	2
Number of Compressors CKT2	2
Refrigeration capacity steps	4
Shipping weight (lb)	5607
Operating weight (lb)	5692
Length (in)	146.200
Width (in)	88.400
Height (in)	92.500
Freeze Protection Wattage Ckt 3 (W)	665.0

Product Report - Air-Cooled Scroll
Item: A1 Qty: 1 Tag(s): CH-1

Unit Overview	
Chiller Model	CGAM
Unit Nominal Tonnage	80 tons
Unit Type	High efficiency
Refrigeration Capacity	74.73 tons
Cooling Efficiency	10.32 EER (Btu/W-h)
IPLV/IP	16.23 EER (Btu/W-h)
NPLV/IP	15.53 EER (Btu/W-h)
Elevation	0.000 ft
Unit Frequency	60. hertz
Unit Voltage	208.volt 3 phases
Refrigerant Type	Refrigerant Charge R-454B
Number of compressor	4
Number of circuits	2
Number of capacity steps	4
Agency Listing	ETL Listed to US/Canadian Safety Std
Model Number	CGAM080A2**2EXD2A1A3A1AX* A1D2B4XXXXXB1A3A1D1XXCX ;X



Evaporator Information					
Evaporator Application					
Standard Cooling					
Fluid Temperatures		Flow Rate		Freeze protection	
Evaporator Leaving	42.00 F	Design Flow	157.7 gpm	Freeze protection	With freeze protection
Evaporator Entering	54.00 F	Min Flow	129.6 gpm	Fouling factor	0.000100 hr-sq ft-deg F/ Btu
Fluid Properties		Fluid Pressure Drop		Flow switch set point	Flow switch set point 15 cm/sec
Fluid Type	Propylene glycol	Total PD evap+strainer	14.4 ft H2O		
Fluid Concentration	30.00 %	Design Evap PD	12.0 ft H2O		
Freeze Point	9.19 F	Min PD	1.61 ft H2O		

Condenser Information					
Unit Application	Wide Ambient	Fin Material	Lanced aluminum		
Ambient Air Temp.	95.0 F	Total airflow	57257 cfm	Number of Fans	6

Unit Electrical						
Unit					RLA	LRA
Compressor Starter	Across the line	Incoming Power Line Conn. Type	Single point	Compressor A	73.90 A	485.00 A
Total Power	86.89 kW	Power Line Conn. Type	Circuit breaker-high fault rated	Compressor B	73.90 A	485.00 A
Compressor Power	79.33 kW	Short Circuit Current Option	High	Compressor D	73.90 A	485.00 A
Fan Power	7.170 kW	Short Circuit Current Rating	65000 A	Compressor E	73.90 A	485.00 A
Fan FLA	6.70 A	Single Point Power MCA	360 A			
		Single Point Power MOP	450 A			

Physical Information					
Dimensions		Weights		Refrigerant Charge	Oil Charge
Length	146.200 in	Operating Weight	5692 lb	Circuit 1	67.0 lb
Width	88.400 in	Shipping Weight	5607 lb	Circuit 2	67.0 lb
Height	92.500 in				3.90 gal

Unit Acoustics (A-Weighted)			
A-Weighted	Sound Power	Sound Pressure*	Unit Sound Package
100%	92 dBA		Super quiet

Note: In Accordance with AHRI 370

*Note: at 30 feet in free field

Product Report - Air-Cooled Scroll
Item: A1 Qty: 1 Tag(s): CH-1

Partload Information

Partload Data.IP - IPLV 16.23 EER (Btu/W-h)								
Load %	Cap. tons	LWT Evap F	EWI Evap F	Flow Evap gpm	WPD Evap ft H2O	Amb F	Power kW	Eff. EER (Btu/W-h)
100	78.53	44.00	54.00	187.7	17.6	95.0	87.95	10.71
75	58.90	44.00	51.50	187.7	17.6	80.0	0.0000	13.97
50	39.27	44.00	49.00	187.7	17.6	65.0	0.0000	17.41
25	19.63	44.00	46.50	187.7	17.6	55.0	0.0000	18.30

Warranty

Standard Warranty

Regulatory Compliance

Certified in accordance with the AHRI Air-Cooled Water-Chilling Packages Certification Program, which is based on AHRI Standard 550/590 (I-P) and AHRI Standard 551/591 (SI). Certified units may be found in the AHRI Directory at www.ahridirectory.org. Unit contains freeze protection liquids in the evaporator and is certified when rated per the Standard with water.



Trane Select Assist 281
 Version Number:
 Data Generation Date: 4/2/2024

Mechanical Specifications - Air-Cooled Scroll**Item: A1 Qty: 1 Tag(s): CH-1****Foundation**

Provide rigid, non-warping mounting pads or a concrete foundation of sufficient strength and mass to support the applicable operating weight (i.e. including completed piping, and full operating charges of refrigerant, oil and water). The expectation of Trane equipment is that piping is fully supported by an independent structure/system, without being connected to the waterbox. Once in place, the unit must be level within 1/2" across the length and width of the unit. The Trane Company is not responsible for equipment problems resulting from an improperly designed or constructed foundation.

Center Of Gravity

Different unit configurations and options may cause a variation in the center of gravity from what is listed in the submittal.. Refer to the Installation, Operating and Maintenance manual for specific lifting instructions.

General

Units are constructed of a galvanized steel frame with galvanized steel panels and access doors. Component surfaces are finished with a powder-coated paint.

Each unit ships with full operating charges of refrigerant and oil.

Compressor and Motor

The unit is equipped with four hermetic, direct-drive, 3600 rpm 60 Hz suction gas-cooled scroll compressors. The simple design has only three major moving parts and a completely enclosed compression chamber which leads to increased efficiency. Overload protection is internal to the compressors. The compressor includes: centrifugal oil pump, oil level sight glass and oil charging valve. Each compressor will have compressor heaters installed and properly sized to minimize the amount of liquid refrigerant present in the oil sump during off cycles.

Unit-Mounted Starter

The control panel is designed per UL 60335. The starter is in an across-the-line configuration, factory-mounted and fully pre-wired to the compressor motor and control panel. Typically, Trane scroll compressors are up to full speed in one second when started across-the-line.

A factory-installed, factory-wired 820 VA control power transformer provides all unit control power (120 Vac secondary) and Trane Symbio (TM) 800 controller module power (24 Vac secondary).

A molded case high interrupting capacity circuit breaker, factory pre-wired with terminal block power connections and equipped with a lockable external operator handle, is available to disconnect the chiller from main power.

Power Connection

Power connections include main three-phase power and one separate 115V, 20 amp customer provided single phase power connection is required to power the heaters (if used for freeze protection).

Short circuit current rating of 65 kA is provided.

Evaporator

Braze plate evaporator is made of stainless steel with copper as the braze material. It is designed to withstand a refrigerant side working pressure of 430 psig (29.6 bars) and a waterside working pressure of 150 psig (10.5 bars). Evaporator is tested at 1.1 times maximum allowable refrigerant side working pressure and 1.5 times maximum allowable water side working pressure. It has one water pass. A water strainer and a flow switch are factory installed.

Immersion heaters protect the evaporator to an ambient of -20°F (-29°C).

All evaporators have grooved pipe connections.

Note: An additional 115V, 20 amp field provided single phase power connection is required to power the heaters (if used for freeze protection).

Condenser

Air-cooled condenser coils have lanced aluminum fins mechanically bonded to internally-finned copper tubing.

The condenser coil has an integral sub-cooling circuit. The maximum allowable working pressure of the condenser is 650 psig (44.8 bars). Condensers are factory proof tested at 650 psig (44.8 bars).

Direct-drive vertical discharge condenser fans are balanced and individually protected. Three-phase condenser fan motors with permanently lubricated ball bearings and external thermal overload protection are provided.

A variable speed drive on the first fan of each circuit allows the unit to start and operate with ambient temperatures between 0.0 F and 125.0 F.

Refrigerant Circuits

The unit has dual refrigerant circuits. Each refrigerant circuit has Trane scroll compressors piped in parallel with a passive oil management system. A passive oil management system maintains proper oil levels within compressors and has no moving parts. Each refrigerant circuit includes filter drier, electronic expansion valve, liquid line and discharge service valves. Capacity modulation is achieved by turning compressors on and off. The unit has four capacity stages.

Unit Controls

All unit controls are housed in an outdoor rated weather tight enclosure with removable plates to allow for customer connection of power wiring and remote interlocks. All controls, including sensors, are factory mounted and tested prior to shipment. Microcomputer controls provide all control functions including startup and shut down, leaving chilled/hot water temperature control, **evaporator flow proving**, compressor staging and speed control, electronic expansion valve modulation, condenser fan sequencing and speed control, **anti-recycle logic**, automatic lead/lag compressor starting and load limiting.

The Symbio (TM) 800 unit control module, utilizing Adaptive Control microprocessor, automatically takes action to avoid unit shut-down due to abnormal operating conditions associated with low refrigerant pressure, high condensing pressure. Should the abnormal operating condition continue until a protective limit is violated, the unit will be shut down. Unit protective functions of the Symbio (TM) 800, include loss of chilled water flow, evaporator freezing, loss of refrigerant, low refrigerant pressure, high refrigerant pressure, high compressor motor temperature, and loss of oil to the compressor..

Communications

BACNet Interface allows the user to easily interface using BACNet MS/TP via a single twisted-pair wiring to a factory-installed and tested communication board.

Architectural Louvered Panels

Louvered panels cover the complete condensing coil and service area beneath the condenser.

Isolators

Molded elastomeric isolators, sized to reduce vibration transmission to the supporting structure when the unit is installed, ship with the chiller.

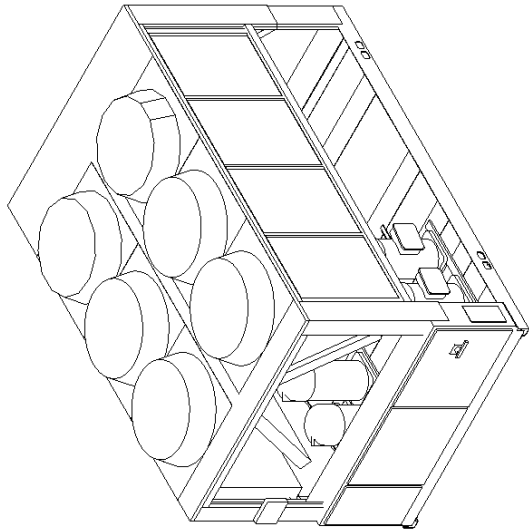
Dimensional Drawings - Air-Cooled Scroll
Item: A1 Qty: 1 Tag(s): CH-1

INLET/OUTLET WATER
CONNECTION SIZE

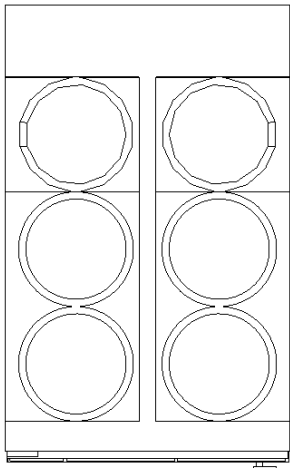
BRAZE PLATE
WATER VOLUME/STORAGE

4" (100mm)

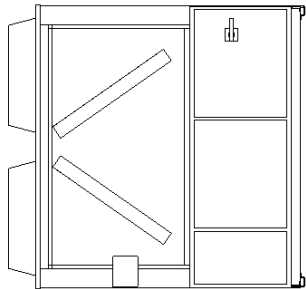
7.0 GAL (26.5 LITERS)



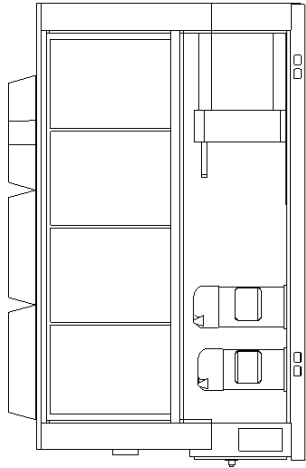
ISOMETRIC VIEW



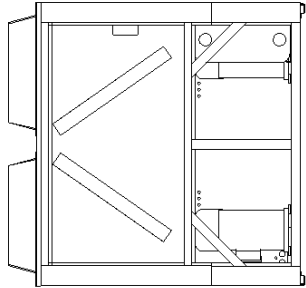
TOP VIEW



FRONT VIEW

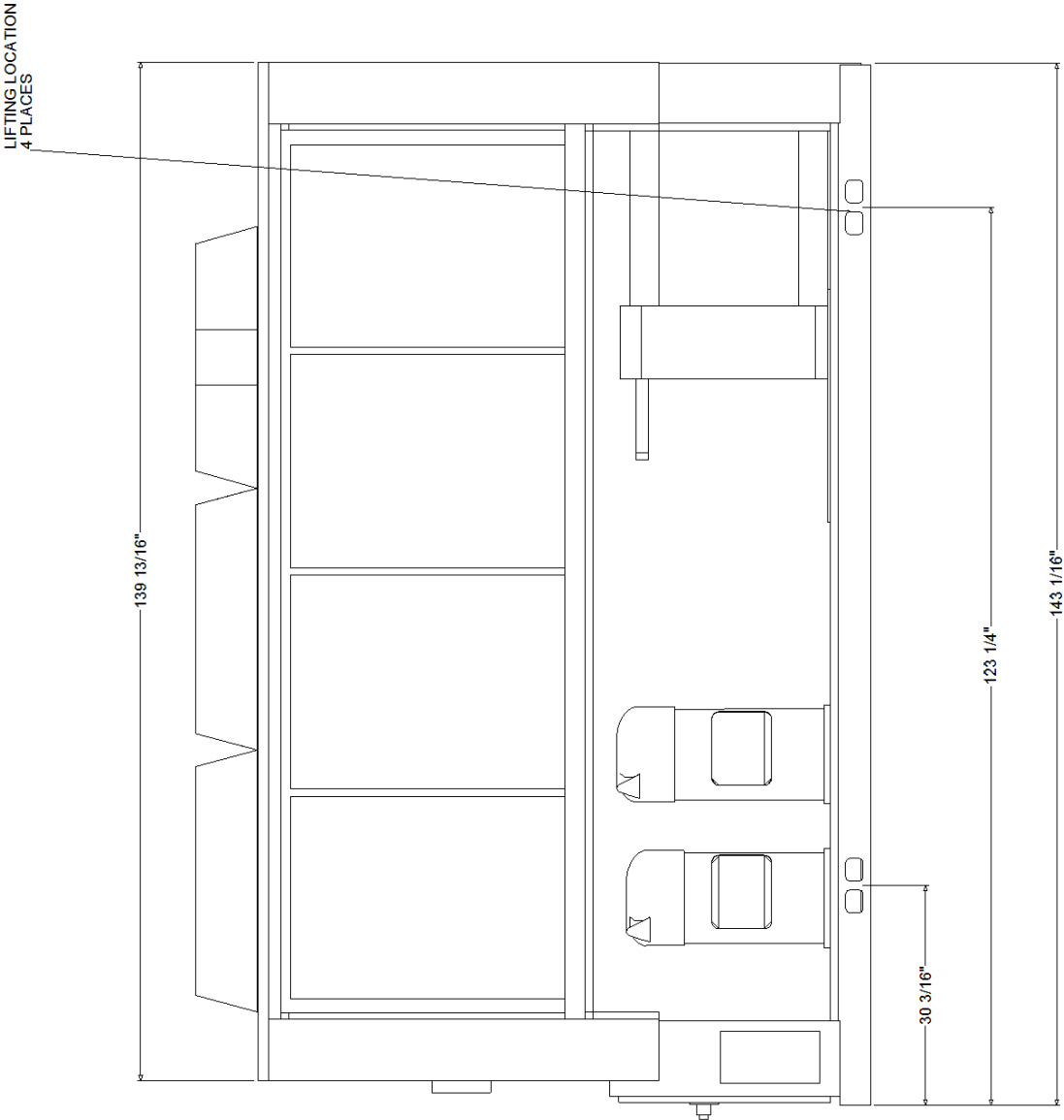


RIGHT SIDE VIEW



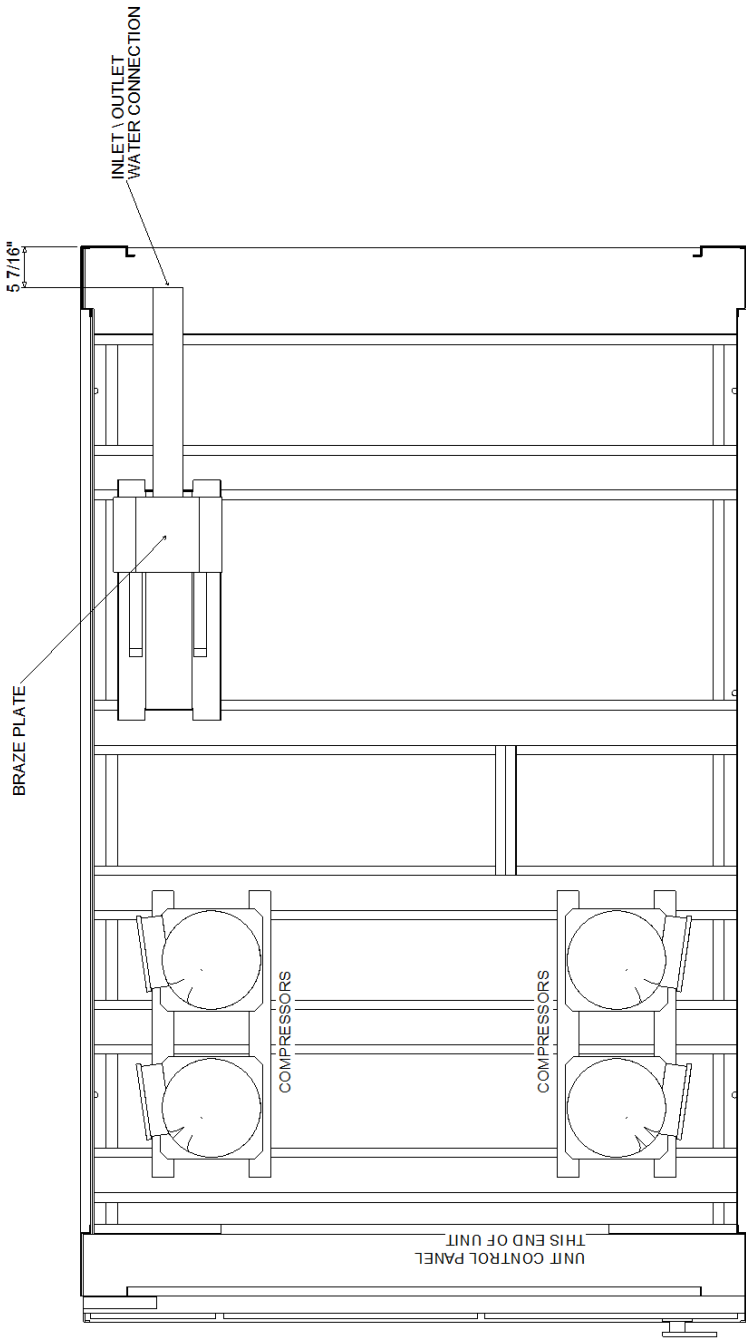
BACK VIEW

Dimensional Drawings - Air-Cooled Scroll
Item: A1 Qty: 1 Tag(s): CH-1



RIGHT SIDE VIEW

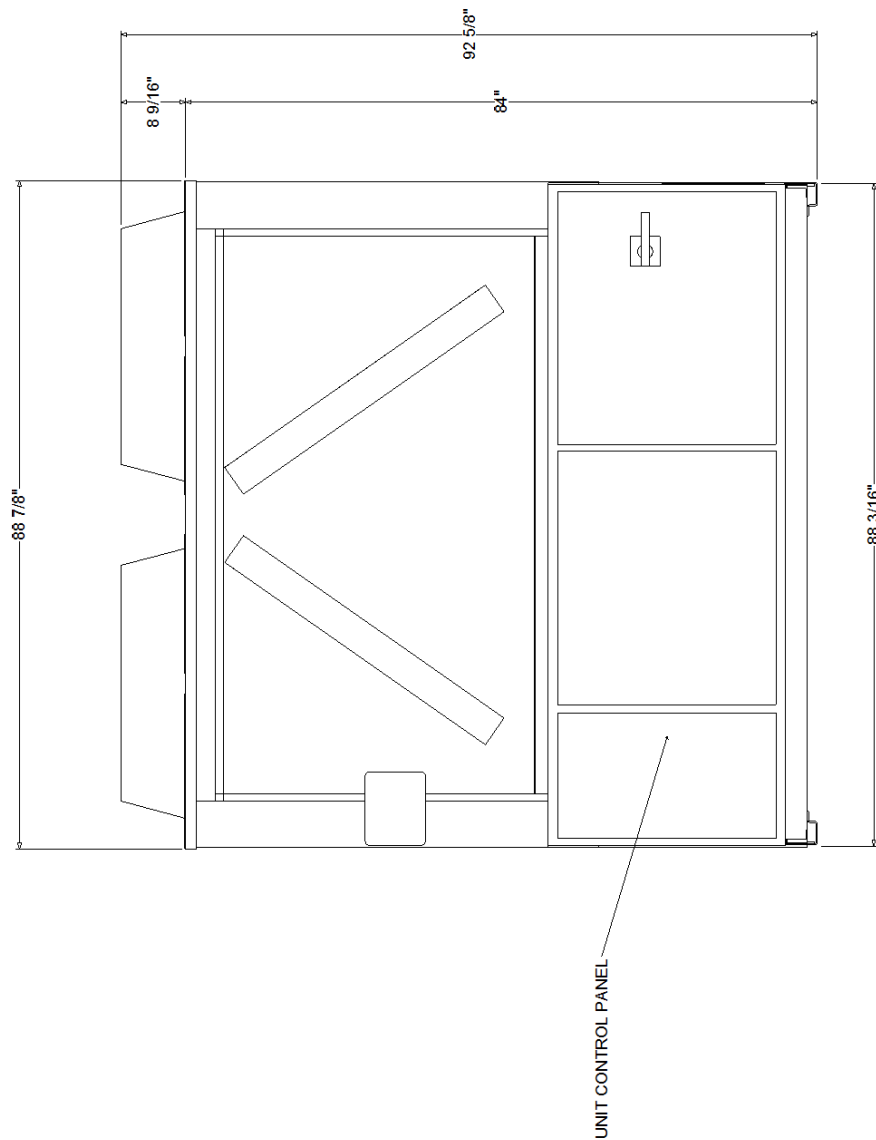
Dimensional Drawings - Air-Cooled Scroll
Item: A1 Qty: 1 Tag(s): CH-1



TOP VIEW
CONDENSER, CONTROL PANEL AND
VSD (WHEN ORDERED) REMOVED FOR CLARITY

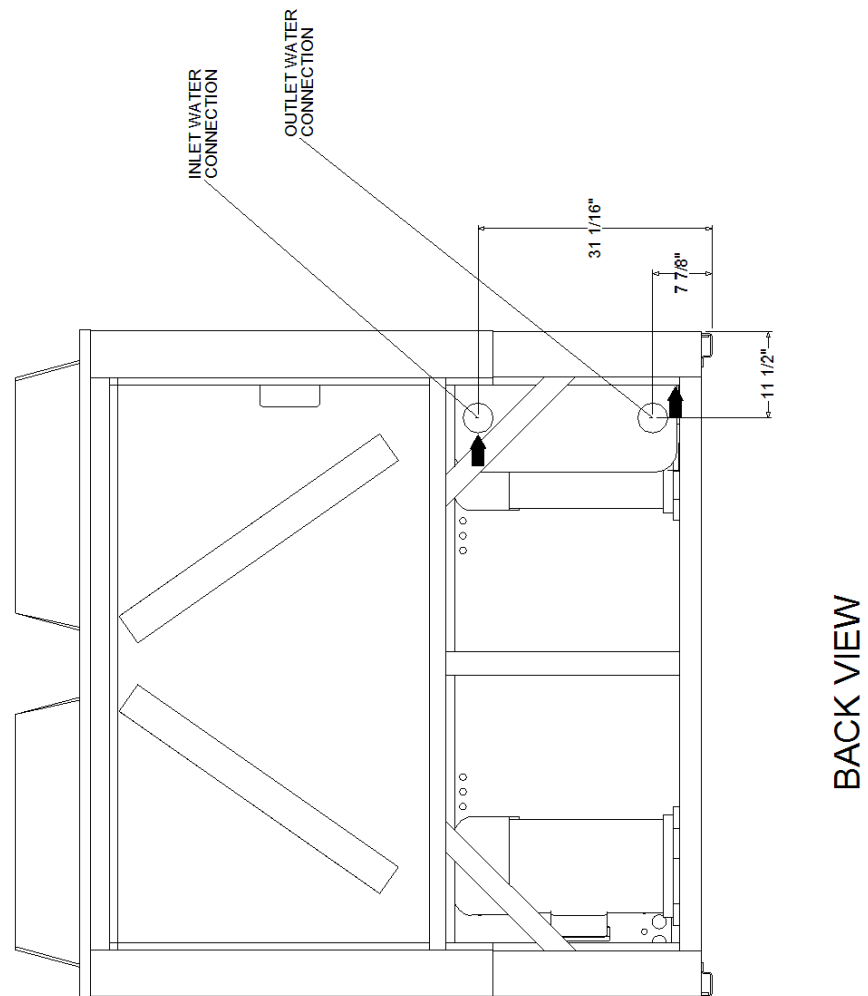
Dimensional Drawings - Air-Cooled Scroll

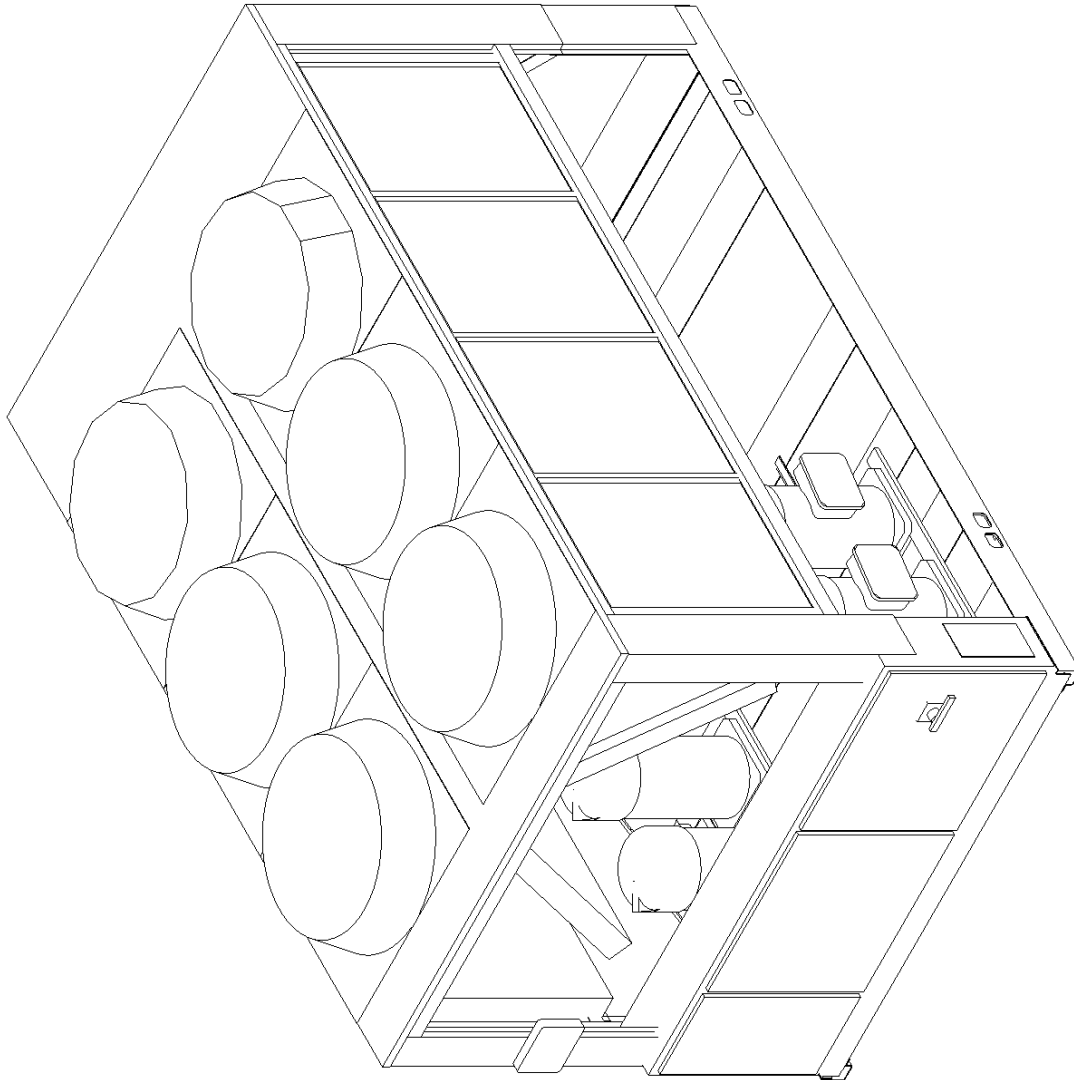
Item: A1 Qty: 1 Tag(s): CH-1



Dimensional Drawings - Air-Cooled Scroll

Item: A1 Qty: 1 Tag(s): CH-1

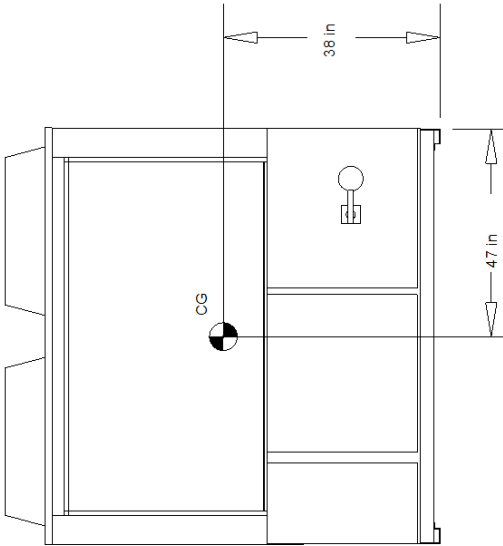


Dimensional Drawings - Air-Cooled Scroll**Item: A1 Qty: 1 Tag(s): CH-1****ISOMETRIC VIEW**LOUVERED PANELS NOT SHOWN
OVER CONTROL PANEL FOR CLARITY

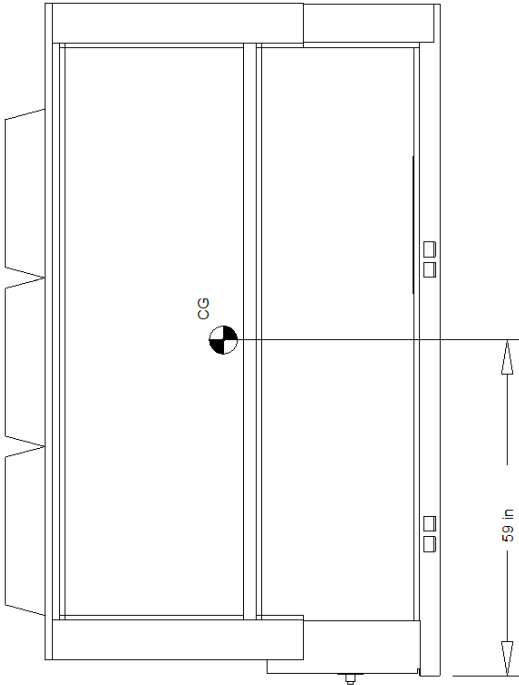
Weight, Clearance & Rigging - Air-Cooled Scroll
Item: A1 Qty: 1 Tag(s): CH-1

UNIT CENTER OF GRAVITY

SHIPPING
WEIGHT 5,607 lb



FRONT VIEW
CONTROL PANEL END



SIDE VIEW

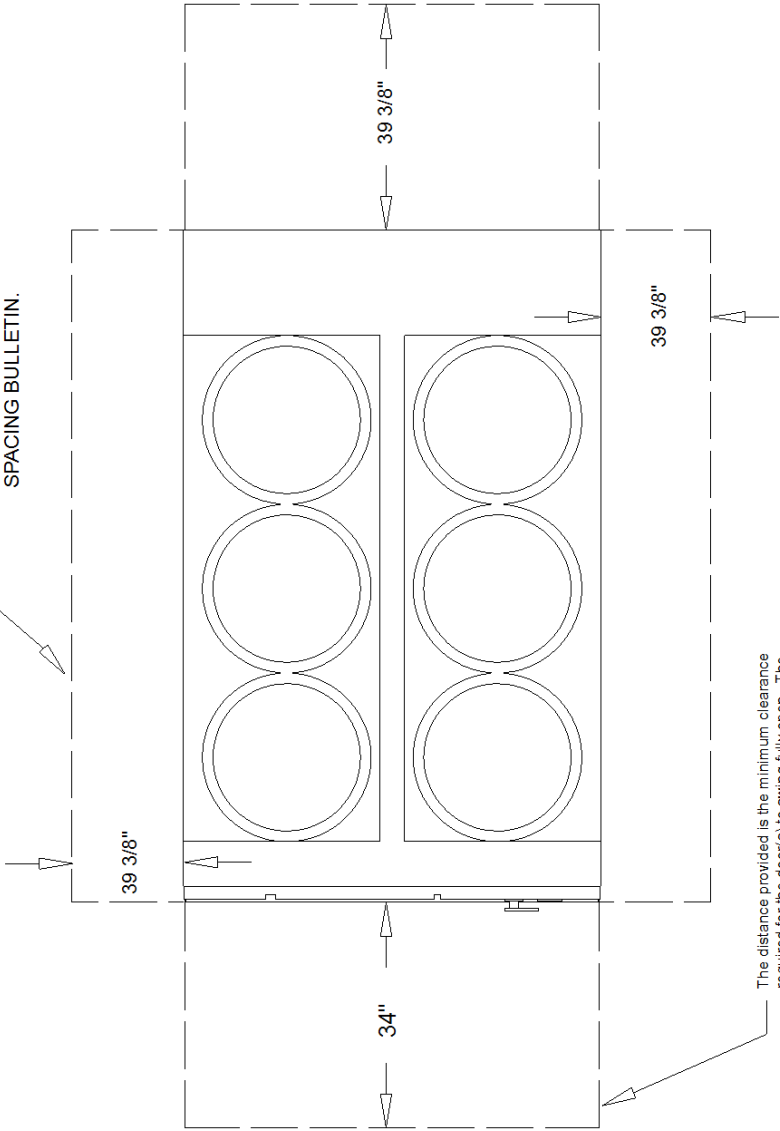
Different unit configurations and options may cause a variation in the center of gravity from what is listed. Refer to the Installation, Operating and Maintenance manual for specific lifting instructions.

Weight, Clearance & Rigging - Air-Cooled Scroll
Item: A1 Qty: 1 Tag(s): CH-1

UNIT CLEARANCE

NO OBSTRUCTIONS ABOVE THE CONDENSER

- NO OBSTRUCTIONS RECOMMENDED.
Area Required for unit operation, maintenance, and access panel.
- MORE CLEARANCE MAY BE NEEDED FOR AIRFLOW DEPENDING UPON THE INSTALLATION. REFER TO THE CLOSE SPACING BULLETIN.



TOP VIEW

Weight, Clearance & Rigging - Air-Cooled Scroll
Item: A1 Qty: 1 Tag(s): CH-1

UNIT RIGGING

LIFTING A UNIT WITH EQUAL LENGTH STRAPS WILL NOT PRODUCE A LEVEL UNIT DURING THE LIFT BECAUSE THE CG WILL NOT BE AT THE MIDPOINT BETWEEN THE BASE LIFTING HOLES. THE FOLLOWING ADJUSTMENTS MUST BE MADE TO PRODUCE A LEVEL LIFT:

- SINGLE SPREADER BAR LIFTING METHOD
IF THE UNIT CG IS CLOSER TO THE CONTROL PANEL, THE STRAPS ON THE CONTROL PANEL SIDE OF THE SPREADER BAR MUST BE ADJUSTED TO BE SHORTER THAN THOSE ON THE OPPOSITE SIDE OF THE SPREADER BAR, ALLOWING THE SPREADER BAR TO MOVE TOWARD THE CONTROL PANEL AND OVER THE UNIT CG. SEVERAL ADJUSTMENTS OF THE STRAP LENGTH MAY BE REQUIRED TO PRODUCE A LEVEL UNIT DURING LIFT.
- H-TYPE SPREADER BAR LIFTING METHOD
IF THE STRAPS FROM THE H BAR TO THE UNIT BASE ARE THE SAME LENGTH, THE CRANE LIFTING POINT ON THE CENTER WEB OF THE H BAR MUST BE ADJUSTED TO PRODUCE A LEVEL UNIT LIFT.

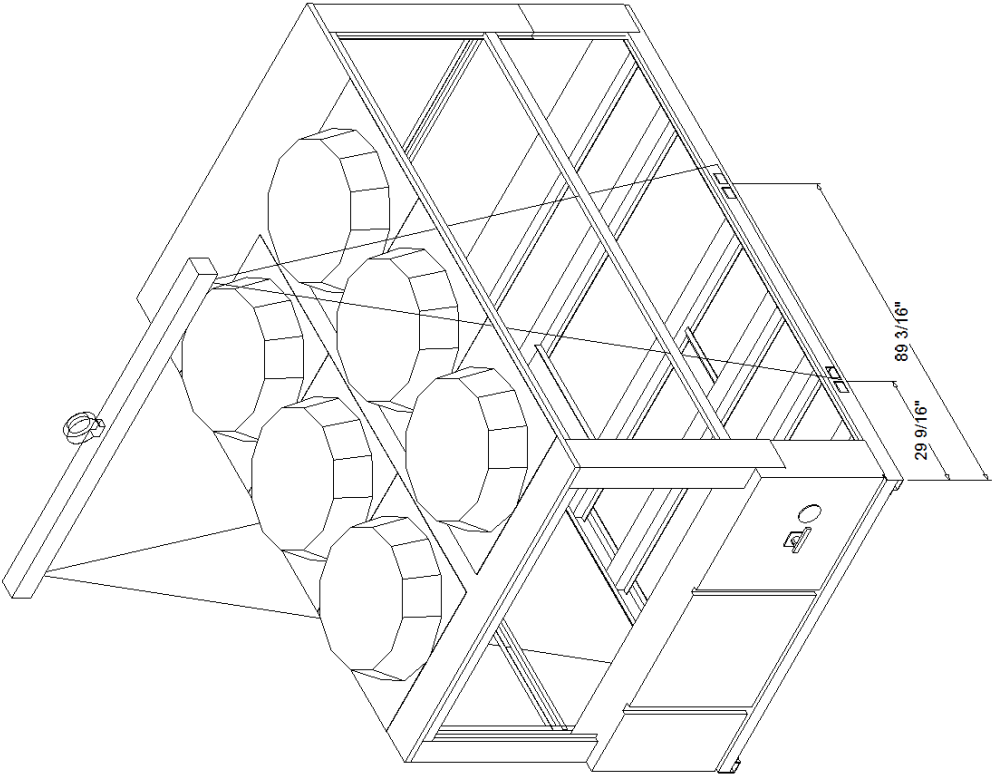
**WARNING**

IMPROPER LIFTING AND MOVING!

USE SPREADER BAR AS SHOWN IN DIAGRAM. REFER TO INSTALLATION MANUAL OR NAMEPLATE FOR UNIT WEIGHT. REFER TO INSTALLATION INSTRUCTIONS LOCATED INSIDE CONTROL PANEL FOR FURTHER RIGGING INFORMATION.

OTHER LIFTING ARRANGEMENTS COULD RESULT IN DEATH, SERIOUS INJURY OR EQUIPMENT DAMAGE.

DO NOT ALLOW LIFTING STRAPS TO CONTACT UNIT DURING LIFT!

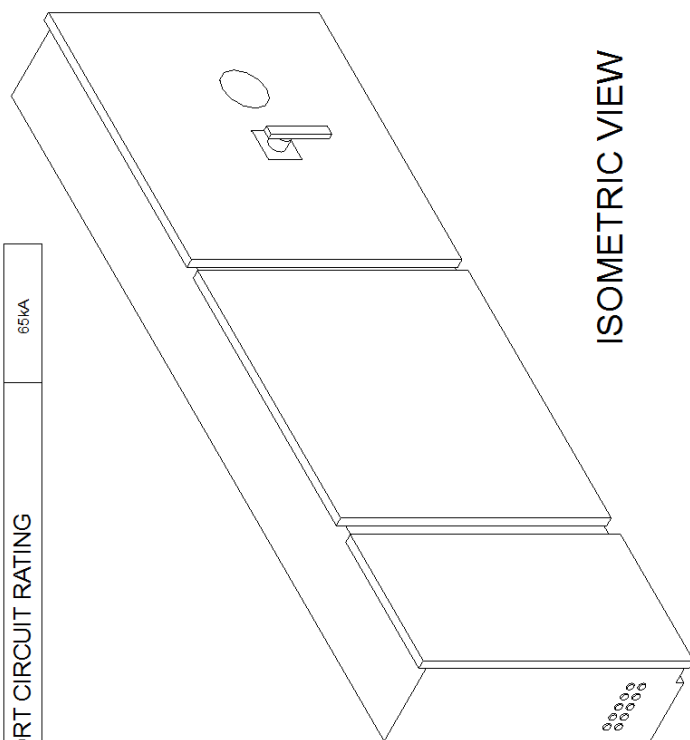


ISOMETRIC VIEW

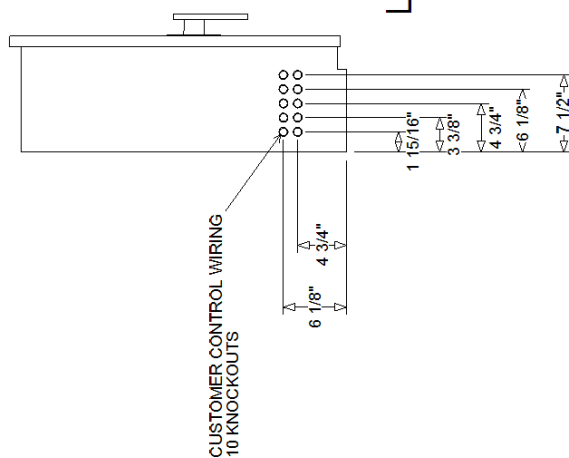
Accessory - Air-Cooled Scroll
Item: A1 Qty: 1 Tag(s): CH-1

CUSTOMER WIRE SELECTION TABLE			
POWER WIRE CONNECTION TO CIRCUIT BREAKER (1Q1)			
UNIT SIZE	UNIT EFF	VOLTAGE	CIR 1 & 2 (SINGLE POINT POWER) LUG WIRE SIZE RANGE (PER PHASE)
060	HIGH	200	(2 MAX Conductors per phase) 2/0-500MCM

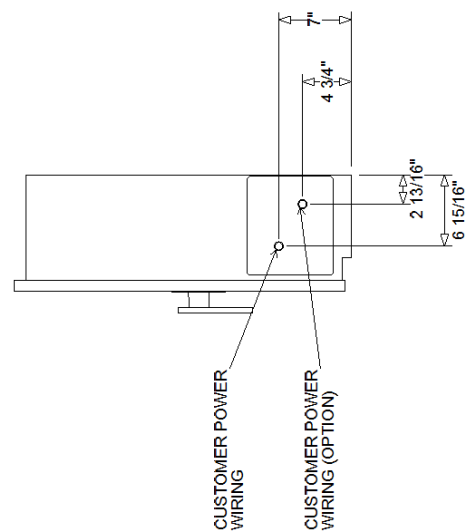
SHORT CIRCUIT RATING	65kA
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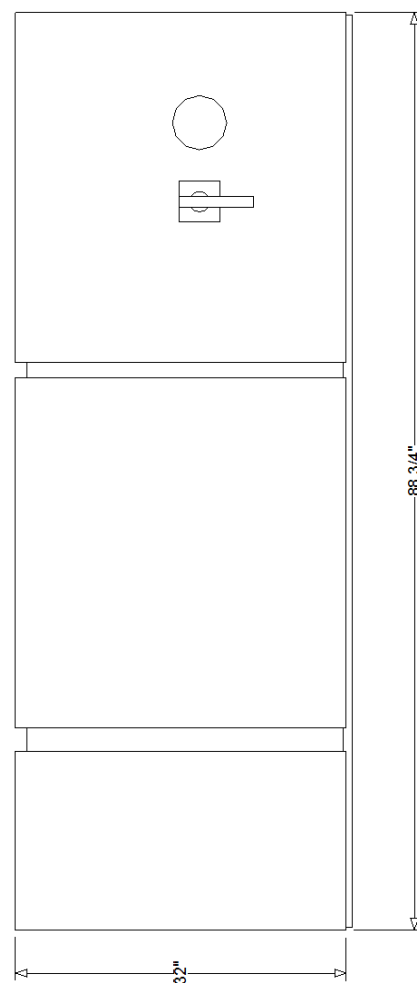
ISOMETRIC VIEW



LEFT END VIEW



RIGHT END VIEW

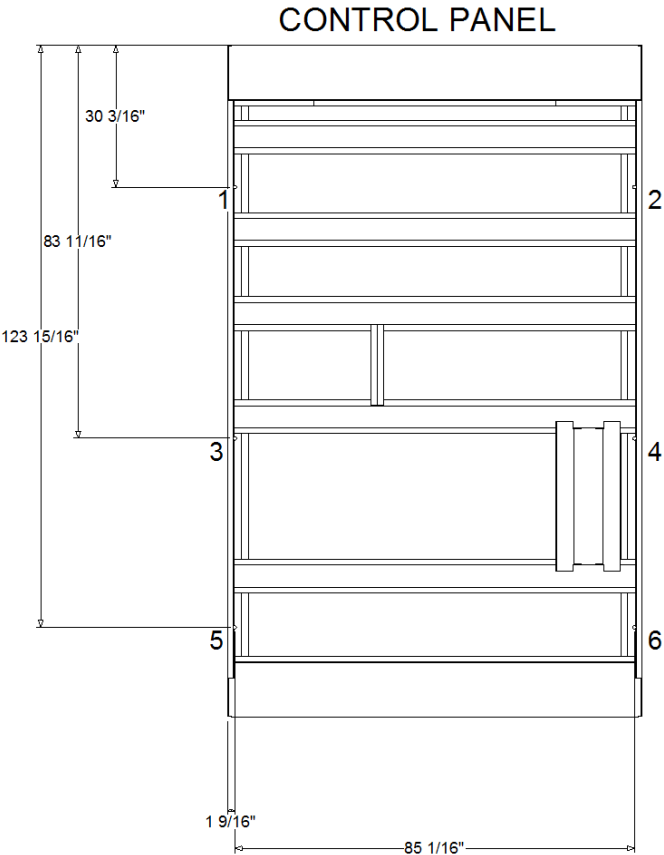


FRONT VIEW

Accessory - Air-Cooled Scroll
Item: A1 Qty: 1 Tag(s): CH-1

UNIT SIZE	MOUNTING LOCATIONS & POINT LOAD WEIGHTS								TOTAL OPERATING WEIGHT
	1	2	3	4	5	6	7	8	
080	1,450 lb	1,678 lb	789 lb	900 lb	411 lb	464 lb	N/A	N/A	5,692 lb

MOUNTING HOLE DIAMETER 3/4"

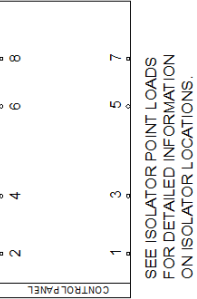


TOP VIEW

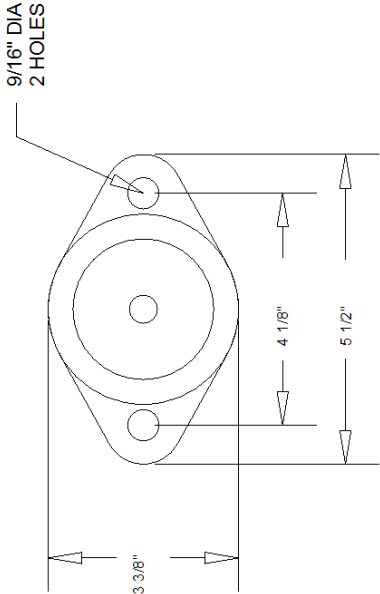
DIMENSIONS ARE REFERENCED FROM
THE END AND SIDE OF THE UNIT BASE

Accessory - Air-Cooled Scroll
Item: A1 Qty: 1 Tag(s): CH-1

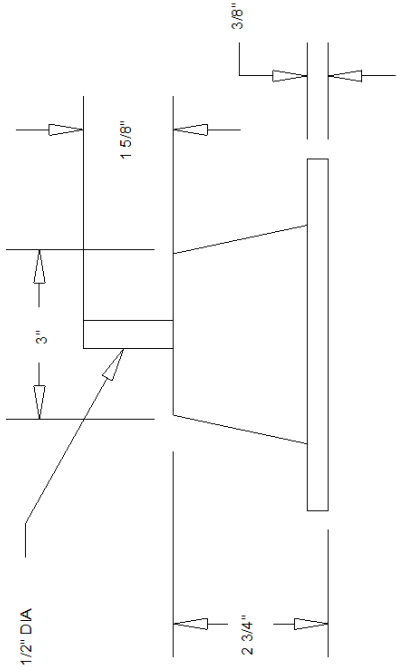
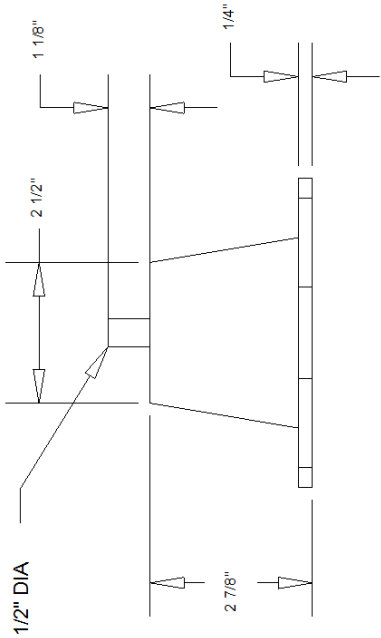
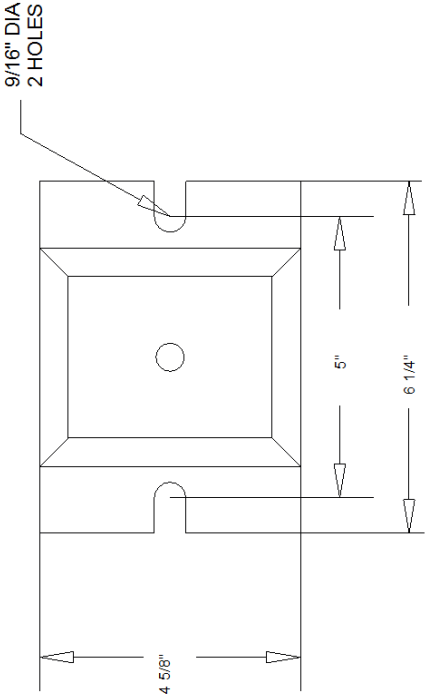
UNIT SIZE	MOUNTING LOCATIONS AND ISOLATOR NUMBER							
	1	2	3	4	5	6	7	8
080	RDP-4 BRICK RED	RDP-4 LIME	RDP-4 BRICK RED	RDP-4 BRICK RED	RDP-3 CHARCOAL	RDP-3 CHARCOAL	N/A	N/A



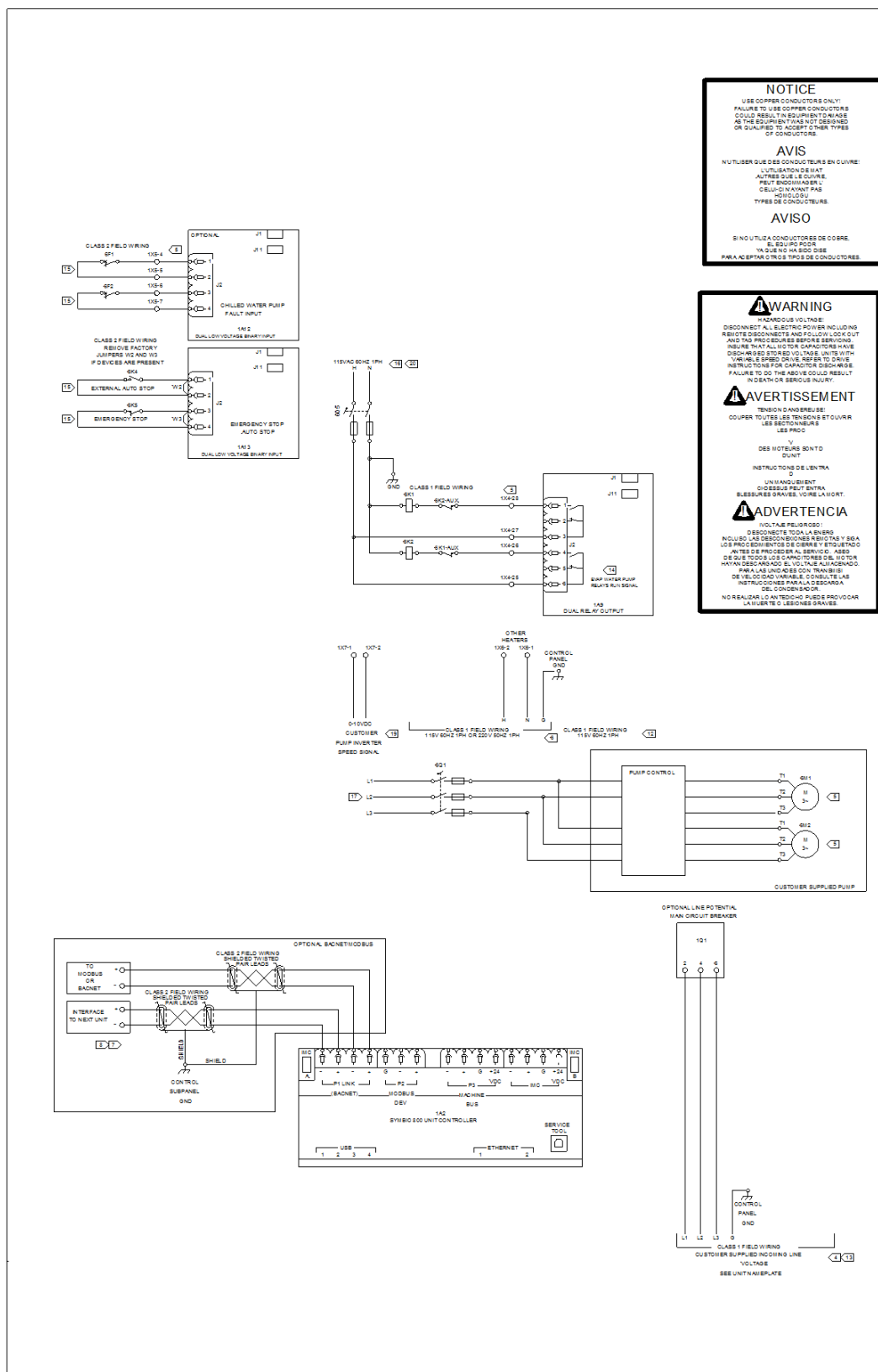
RDP-3 ISOLATORS



RDP-4 ISOLATORS



Field Wiring - Air-Cooled Scroll
Item: A1 Qty: 1 Tag(s): CH-1



Field Wiring - Air-Cooled Scroll

Item: A1 Qty: 1 Tag(s): CH-1

GENERAL NOTES:

1. REFER TO CGAM REFRESH ELECTRICAL SCHEMATIC FOR SPECIFIC ELECTRICAL CONNECTION INFORMATION AND NOTES PERTAINING TO WIRING INSTALLATION.
2. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH NATIONAL ELECTRIC CODE AND LOCAL REQUIREMENTS. WIRE REPRESENTED BY DASHED LINES INDICATE RECOMMENDED FIELD WIRING BY OTHERS.
3. ALL CUSTOMER CONTROL CIRCUIT WIRING MUST BE COPPER CONDUCTORS ONLY AND HAVE A MINIMUM INSULATION RATING OF 300 VOLTS. EXCEPT AS NOTED,

4. ALL CUSTOMER WIRING CONNECTIONS ARE MADE TO CIRCUIT BOARD MOUNTED BOX LUGS WITH A WIRE RANGE OF 14 TO 18 AWG OR DIN RAIL MOUNTED SPRING FORCE TERMINALS. SINGLE SOURCE POWER IS PROVIDED AS STANDARD ON THESE PRODUCTS, FIELD CONNECTIONS ARE MADE TO 1X1, OR 1Q2.
5. FIELD CONNECTIONS ARE ONLY MADE IN A CUSTOMER PROVIDED PUMP (PTYP=NONE). THESE CONNECTIONS WILL BE MADE BY THE FACTORY WHEN THE PUMP IS PROVIDED BY THE FACTORY (PTYP=DHHP).
6. CUSTOMER SUPPLIED POWER 115/60/1 OR 220/50/1 TO POWER RELAYS. MAX. FUSE SIZE IS 20 AMPS. GROUND ALL CUSTOMER SUPPLIED POWER SUPPLIES AS REQUIRED BY APPLICABLE CODES. GREEN GROUND SCREWS ARE PROVIDED IN UNIT CONTROL PANEL.
7. WIRED TO NEXT UNIT. 22 AWG SHIELDED COMMUNICATION WIRE EQUIVALENT TO HELIX LF22P0014216 RECOMMENDED. THE SUM TOTAL OF ALL INTERCONNECTED CABLE SEGMENTS NOT TO EXCEED 4500 FT. CONNECTION TOPOLOGY SHOULD BE DAISY CHAIN. REFER TO BUILDING AUTOMATION SYSTEM (BAS) COMMUNICATION INSTALLATION LITERATURE FOR END OF LINE TERMINATION RESISTOR REQUIREMENTS.
8. WIRED TO TRACER OR OTHER TRANE REMOTE DEVICE. 22 AWG SHIELDED COMMUNICATION WIRE EQUIVALENT TO HELIX LF22P0014216 RECOMMENDED. THE SUM TOTAL OF ALL INTERCONNECTED CABLE SEGMENTS NOT TO EXCEED 4500 FEET. CONNECTION TOPOLOGY SHOULD BE DAISY CHAIN. REFER TO BUILDING AUTOMATION SYSTEM (BAS) COMMUNICATION INSTALLATION LITERATURE FOR END OF LINE TERMINATION

RESISTOR REQUIREMENTS.

9. WIRED TO CUSTOMER CHILLED WATER SET POINT 2-10V OR 4-20mA.
10. WIRED TO CUSTOMER EXTERNAL DEMAND LIMIT 2-10V OR 4-20mA.
11. WIRED TO CUSTOMER 2-10V OR 4-20mA %%% CAPACITY ANNUNCIATOR.
12. CUSTOMER SUPPLIED POWER 115/60/1 TO CONVENIENCE OUTLET. MAX FUSE SIZE IS 25A. GROUND ALL CUSTOMER SUPPLIED POWER SUPPLIES AS REQUIRED BY APPLICABLE CODES. GREEN GROUND SCREWS ARE PROVIDED IN UNIT CONTROL PANEL.
13. ALL UNIT POWER WIRING MUST BE 600 VOLT COPPER CONDUCTORS ONLY AND HAVE A MINIMUM TEMPERATURE INSULATION RATING OF 90 DEGREE C. REFER TO UNIT NAMEPLATE FOR MAXIMUM CURRENT AMPACITY AND MAXIMUM OVERCURRENT PROTECTION DEVICE. PROVIDE AN EQUIPMENT GROUND IN ACCORDANCE WITH APPLICABLE ELECTRIC CODES. REFER TO WIRE RANGE TABLE FOR LUG SIZES.
14. UNIT PROVIDED DRY CONTACTS FOR THE CONDENSER/CHILLED WATER PUMP CONTROL. RELAYS ARE RATED FOR 7.2 AMPS RESISTIVE, 2.88 AMPS PILOT DUTY, OR 1/3 HP, 7.2 FLA AT 120 VOLTS 60 HZ, CONTACTS ARE RATED FOR 5 AMPS GENERAL PURPOSE DUTY 240 VOLTS.
15. CUSTOMER SUPPLIED CONTACTS FOR ALL LOW VOLTAGE CONNECTIONS MUST BE COMPATABLE WITH DRY CIRCUIT 24 VOLTS DC FOR A 12 mA RESISTIVE LOAD. SILVER OR GOLD PLATED CONTACTS RECOMMENDED.
16. FIELD CONNECTIONS ARE ONLY MADE IN A CUSTOMER PROVIDED PUMP. THESE CONNECTIONS WILL BE MADE BY THE FACTORY WHEN THE PUMP IS PROVIDED BY THE FACTORY. CUSTOMER SUPPLIED POWER 115V, 60Hz, 1PH.
17. CUSTOMER SUPPLIED 3 PHASE POWER.
18. OPTIONAL FIELD ASSIGNED PROGRAMMABLE RELAYS (STAT=PRLY). CLASS 1 FIELD WIRED MODULE, RELAY AT 120V: 7.2A RESISTIVE 2.88A PILOT DUTY, 1/2HP 7.2FLA; AT 240VAC: 5 AMPS GENERAL PURPOSE.
19. WIRED TO CUSTOMER 0-10 VDC PUMP SPEED SIGNAL.
20. WHEN FACTORY PROVIDED PUMP IS NOT SELECTED. CUSTOMER MUST SUPPLY SUITABLE PUMP SYSTEM. REFER TO PUMP MANUFACTURER FOR WIRING REQUIREMENTS.
21. THE CONTACTS FOR AUTO STOP AND EMERGENCY STOP SWITCHES ARE JUMPERED AT THE FACTORY BY JUMPERS W2 & W3 TO ENABLE UNIT OPERATION. IF REMOTE CONTROL IS DESIRED, REMOVED THE JUMPERS AND CONNECT TO THE DESIRED CONTROL CIRCUIT.
22. 1A44, LONTALK MODULE USED WHEN (COMM = LCI).
23. 1T5, 1T6, AND 1T7 ARE WIRED TO 1A45 AND ARE LOOSE FOR FIELD INSTALLATION. INSTALLING CONTRACTOR TO LOOP EACH CURRENT TRANSFORMER AROUND INCOMING WIRING IN ACCORDANCE WITH VERIS MODEL #E23C6-12 INSTALLATION INSTRUCTIONS. BE MINDFUL OF PHASING AND THE DIRECTION THE ARROWS ARE POINTING ON THE CURRENT TRANSFORMERS.