CUSTOM AIR PRODUCTS & SERVICES, INC.
35 Southbelt Industrial Drive • Houston, Texas 77047
(713) 460-9009 • Fax (713) 460-9499
www.customairproducts.com

HERC RENTALS

2018 FLEET

17F-0871

120 TON SKID MOUNT & CAGE AHU

COATED HOUSING, GALV. SKID & CAGE, 4" DIXON CONN.

VFD - NO HEATER

PAHH-120TC-0NN0NN-5E5-P2-VG2CEUP

GENERAL PURPOSE

460V/3PH/60HZ

8/7/2018

INSTALLATION & OPERATION MANUAL

BOOK ASSEMBLED BY: JONATHAN O'MALLEY
DATE: 8/7/2018

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SECTION

01

JOB SCOPE

Quote No:	DW17-11-08-22
Quote Date:	11-08-2017
Project Type:	(12) 120 Ton Industrial Air Handling Unit
Drawing Delivery:	2 weeks after receipt of order
Equipment Delivery:	12-14 weeks After Receipt of Approved Drawings (ARAD)
Freight Terms:	FOB HERC
Payment Terms:	*Net 45* **100% upon completion*

Item	Qty	Description		
1.	12	CAPS Model # **PAHH-120TC-0NN0NN-5E5-P2-VG2CEUP** Unit shall consist of the following components: • The skid shall be fabricated from 3/16" thick, 6" X 4" rectangular steel tube. The skid size is length and width plus piping headers so that no part of the unit is outside of the rack. The fork truck lifting slots are 4" X 10" X 3/16" and made of the same material and are incorporated into the design on 48" centers apart. The skid components are continuously welded at all joints. All tubing ends are capped and continuously welded. The skid incorporates 4" X 4" tie-down holes in each corner of the tubing and is welded solid. All unit serial numbers and weight tags shall be cutout on a steel plate and attached to the skid at diagonal corner locations. Center of gravity will be clearly marked on the upper and lower portion of the skid / frame assembly. • The lifting frame material shall be 4" X 4" square steel tubing. This frame is designed for overhead lifting and stacking of the units. All tubing ends are capped and continuously welded. The tubing is cut and fit to the height, width, and length of the unit. All corners have a 45 degree, 3/8" steel plate gusset. The top of the frame has a 3/8" steel plate superman gusset welded to the horizontal tubing and incorporates a 1½ inch hole that aligns with the drag eye to secure stacking of units. • The entire skid and lifting / stacking frame shall be provided with a hot dipped galvanized coating for increased corrosion protection. • The exterior skin of the unit shall be formed from 16 gauge galvanealed steel. The double wall interior liner shall be formed from 20 gauge galvanized steel. • The units shall be insulated with 1" Thermax foam board insulation.		

Item	Qty	Description		
		• Unit doors to be double-wall construction using 16 gauge, galvanealed steel on the outer wall and 20 gauge, galvanized steel on the inner wall. All corners shall be continuously welded. • The hardware shall be non-corrosive material to include: Tek-screws, door hinges, and positive acting door latches • The drain pan shall be formed and continuously welded using T-304 stainless steel. The coil hat sections shall be formed and welded using T-304 stainless steel and designed to allow for easy coil removal. All coil drain lines and pee traps shall be fitted from 1 ½" stainless steel fittings. Dual drain connections are provided. • Filters shall be mounted in a 2" track installed on the inlet airside of the unit. The filters shall be slip in, 2" - 30% pleats. Blank-offs shall be sealed and caulked. • Each unit shall have (4) discharge collars, sized 19.75" round and are welded to the exterior wall. Each collar shall have a damper fabricated from ½" stainless steel rod welded to a 14 stainless steel damper. A seven (7)-position steel quadrant is welded in place for CFM adjustment. Each duct collar will be provided with friction type duct clamps. • Each unit shall have (6) return collars, sized 19.75" round and are welded to the exterior wall. Each collar shall have a damper fabricated from ½" stainless steel rod welded to a 14 gauge stainless steel damper. A seven (7)-position steel quadrant is welded in place for CFM adjustment. Each duct collar will be provided with friction type duct clamps. • The fan shall be an ACF Class II, Arrangement 3, belt-drive, plenum fan. The fan wheel shall be aluminum and the shaft shall be all steel. The fan bearings are warranted under original manufacturer's warranty. The drive shall be a belt system rated for a 1.3 service factor. • The fan motor shall be T.E.F.C. 460/3/60 and rated for VFD operation. • All coils shall be provided to meet the scheduled performance. All coil performance shall be certified in accordance with ARI Standard 410. All coils shall be tested at 315 psig air pressure. • All coils shall have 5/8" OD seamless copper tubes mechanically expanded into fins to ensure high thermal performance with lower total flow and pumping requirements. Minimum tube wall thickness shall be 0.020 inches. • Aluminum plate fins with belled collars are standard. • Aluminum-finned coils shall be supplied with die formed casing and tube sheets of mill galvanized steel. • The evaporator coil shall have corrosion resistant coating "EnergyGuard" applied the exterior surfaces. The evaporator coil shall have a low water level drain vale installed with exterior access for winterization purposes.		

Item	Qty	Description

- The coil connections shall have flanged butterfly isolation valves and 4" Dixon brass quick connects.
- Provided chilled water temperature and pressure taps at coil connections
- The evaporator coil piping header shall have a tubing connected to the vent and drain for draining and venting air.
- The electrical controls shall include a NEMA 4 disconnect box equipped with a circuit breaker, magnetic starter, pilot lights for phase incorrect and power, and a unit OFF/AUTO two position switch.
- Provide and install VFD for variable airflow operation using a potentiometer.
- 4/0 cam-lock terminals will be provided for power hookup.
- The unit shall be manufactured in accordance with NEC codes, ETL requirements and labeled with the appropriate 3rd party NRTL as requested.
- All painting of these components to be Herc specified color.
- CAPS will provide and install the Herc decal package as per provided layout drawing by Herc.
- Unit to be tested and verified for proper operation at Custom Air Products & Services prior to shipment.
- Herc Representatives will also have full access to schedules and production progress as units are being manufactured.

AHU	CFM	TSP	MOTOR HP
AHU-1	15,000	5.00	20

COOLING COIL				
AHU	**FPM**	**EAT: DB / WB**	**LAT: DB / WB**	**MBH TOTAL**
AHU-1	481	95.0 / 80.0	52.9 / 52.8	1,462.0
MBH SENSIBLE	**ROW(S) / FPI**	**EWT**	**LWT**	**GPM**
690.6	8 / 11	45	55.2	287.0

- Unit Dimensions: 102" L x 147 ½" W x 63 ¼" H
- Unit Weight: 5,200 LBS

Item	Qty	Description		
		EXCLUSIONS • Installation, Equipment and Start-up Commissioning by others • Sales tax not included • Freight not included • Overtime not included • Proposal valid for 30 days • Any items not listed in the above scope of work to be performed		

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SECTION

02

FAN & MOTOR SUBMITTAL

Performance	
Quantity	1
Volume (CFM)	15,000
External SP (in. wg)	5.75
Total SP (in. wg)	5.75
Operating Power (hp)	19.22
Start-Up Power (hp)	19.22
Fan RPM	1511
Max Fan RPM	1,702
Oper. Frequency (Hz)	60
Elevation (ft)	105
Start-up Temp.(F)	70
Operating Temp.(F)	70

Fan Configuration	
Size	30
Class	II
Arrangement	3
Rotation	CW
Orientation	Horizontal

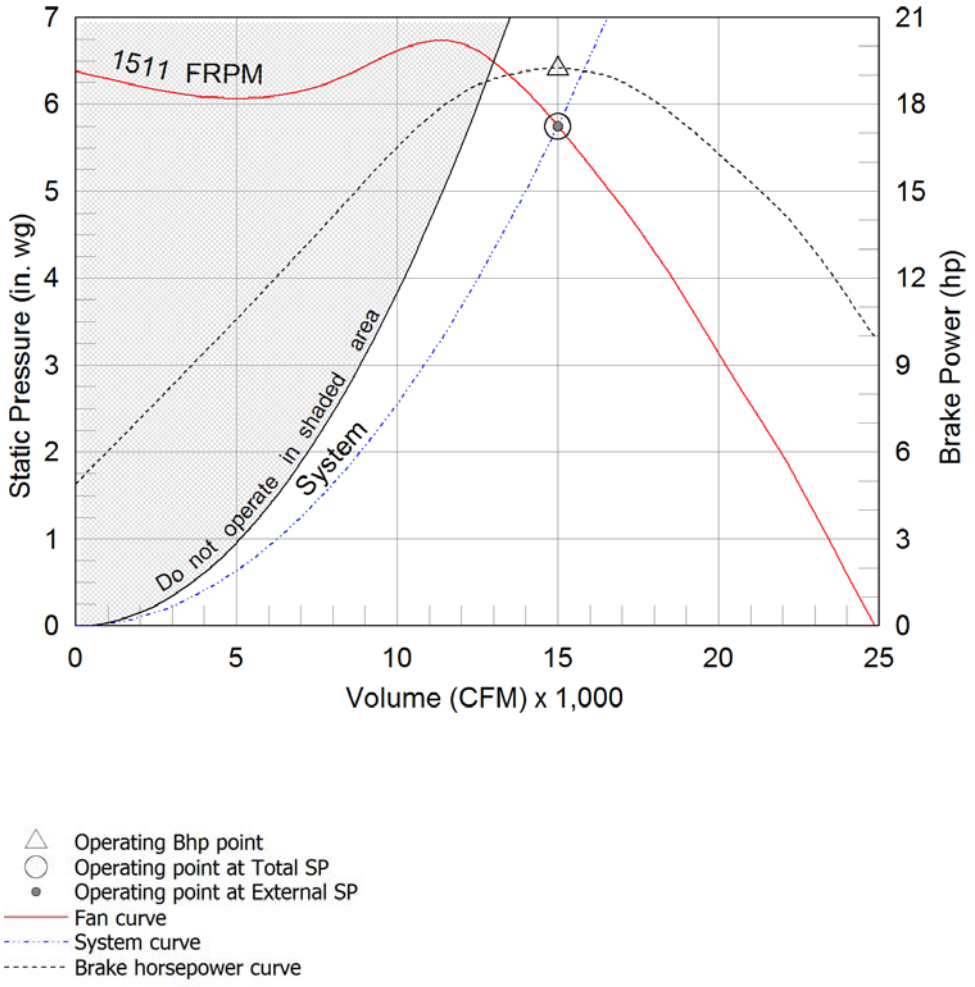
Equipment Weights	
Fan (LMD)(lb)	490
Motor/Drive (lb)	319
Accessories (lb)	45

Misc Fan Data	
Outlet Velocity (ft/min)	2,190
Static Efficiency (%)	73
Tip Speed (ft/min)	11,869
Corner Weight A (lb)	141
Corner Weight B (lb)	248
Corner Weight C (lb)	169
Corner Weight D (lb)	297

Motor and Drives	
Motor Supplier	Greenheck
Size (hp)	20
RPM	1725
Enclosure	TEFC
Voltage	460
Cycle	60
Phase	3
Frame Size	256T
Max Frame Size	286
Location	Right Side
Pulley Type	Constant
Drive Loss (%)	3.3
NEC FLA* (Amps)	27

Model: 30-APH-3-II-200
Plenum Fan

Operating Performance



Sound Power by Octave Band

Sound Data	62.5	125	250	500	1000	2000	4000	8000	LwA	dBA	Sones
Inlet	85	90	92	89	82	79	76	74	90	79	30
Outlet	92	94	94	94	90	84	80	78	95	84	41

*FLA - based on tables 150 or 148 of National Electrical Code 2002. Actual motor FLA may vary, for sizing thermal overload, consult factory.
LwA - A weighted sound power level, based on ANSI S1.4
dBA - A weighted sound pressure level, based on 11.5 dB attenuation per octave band at 5 ft- dBA levels are not licensed by AMCA International
Sones - calculated using AMCA 301 at 5 ft

Model: 30-APH-3-II-200

Plenum Fan

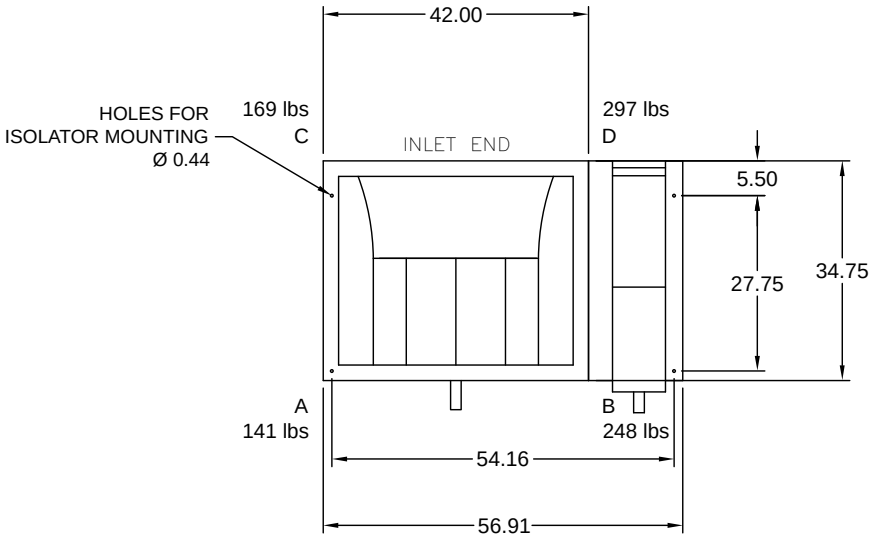
Standard Construction Features:

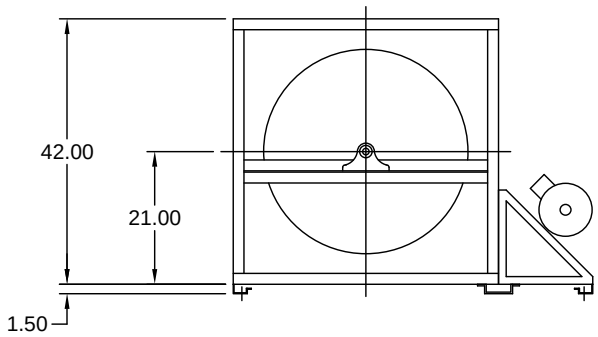
HOUSING: Heavy gauge, welded steel mounting frame with die formed flanges - Inlet panel is heavy gauge steel with die formed flanges with welded corners - Steel components are phosphatized and coated - Corrosion resistant fasteners BEARINGS, SHAFT, AND WHEEL: Heavy duty, concentric locking, self-aligning ball or roller pillow block bearings - Polished, solid steel shafts - Welded, aluminum centrifugal wheel - 12 bladed construction- Airfoil blade profile

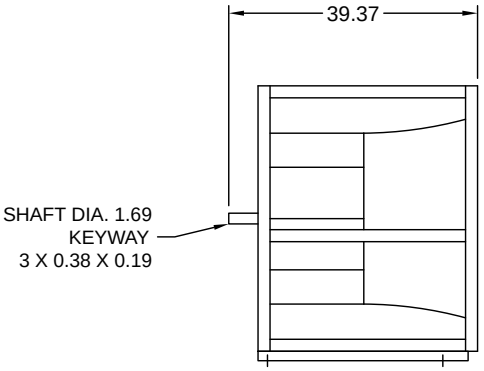
Selected Options & Accessories:

Motor PN - 304932, Baldor Motor Model Number - EM2334T
NEMA Premium Efficient Motor - meets NEMA Table 12-12
Motor VFD Rated without Shaft Grounding Protection
Motor with Minimum 40 Degree C Ambient Temperature
Motor with Class B Insulation
Fan Class - II
Motor Position - RightSide
Bearings - L(10) Life of 80,000 Hours, L(50) avg. life 400,000 Hours
Coating - Permatector, Concrete Gray-RAL 7023, Fan and Attached Accessories, Mill Finish on Aluminum Wheel
Nylon Extended Lube Lines - Factory Mounted
Fan Orientation - Horizontal
Direct Mount Isolators, Isolator-Spring, Free Standing, 1 Inch
Protective Cage - Totally Enclosed, coated w/Safety yellow finish
Factory Vibration Test, 0.15 in/sec, peak, filter-in as measured at the fan RPM
Motor Slide Base
Unit Warranty: 1 Yr (Standard)

Model: 30-APH-3-II-200 Plenum Fan







Notes: All dimensions shown are in units of in.
Drawings are not to scale. Drawings are of standard unit and do not include dimensions for accessories or design modifications.

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SECTION

03

COIL SUBMITTALS

Customer:		Date:	4/18/2013
Contact:		From:	
Telephone:		Company:	
Cell:		Return Tel:	
Fax:		Return Fax:	
Job:	120 Ton AHU		
Quote #:			

Construction

Item:	120 Ton AHU
Coils Per Bank:	1
Allow Opp. End:	No
Tube OD IN:	5/8
Coil Duty:	Cool-Standard
Fins Per Inch:	Optimize
Rows:	Optimize
Fin Surface:	Optimize ABC
Fin Height (IN):	42.00
Finned Length (IN):	107.0
Tubing Mat. (IN):	0.020 Copper
TurboSpirals:	No
Fin Mat. (IN):	0.0075 Aluminum
Conn Qty/Size (IN):	1 / 4.00
Circuiting:	Optimize

Air Side

Air Flow (Sft^3/min)	15,000
Altitude FT:	.00
Ent. Air DB/WB °F:	95.00 / 80.00
Lvg. Air DB/WB °F:	.00 / .00
Total / Sensible MBH:	1,440 / .00
Max Air PD "H2O:	.00

Fluid Side

Fluid Type:	Water
Ent. Fluid :	45.00
Lvg. Fluid :	55.00
Fluid Flow gal/min:	.00
Max FPD FT H2O:	.00

OUTPUT DATA				OPTIONS	
Model Number:		5WD1108B		Casing Material:	Galvanized
Air Velocity:	(Sft/min)	480.6		Casing Type:	Flanged
Total Capacity:	MBH	1,462		Hand:	Right
Sens. Capacity:	MBH	690.6		Connection Material:	Carbon Steel
Lvg. Air DB:	°F	52.90		Connection Type:	MPT
Lvg. Air WB:	°F	52.75		Vent/Drain:	.50 FPT on Side
Standard APD	"H2O	.95		Label Kit:	No
Lvg. Fluid:	°F	55.15		Coating: None	
Fluid Flow:	gal/min	287.0		Mounting Holes:	No
Fluid PD:	FT H2O	14.17		Drain Headers:	No
Fluid Vel.:	ft/s	5.47		Boxed Headers:	No
Conn Size:	IN	(1) 4.000			
Internal Volume:	in^3	8,358			
Weight (Dry):	lbm	764.0			
Weight (w/Fluid):	lbm	1,085			
Notes:		AIL			

Notes:

A) ARI Certified And Rated In Accordance With ARI 410.

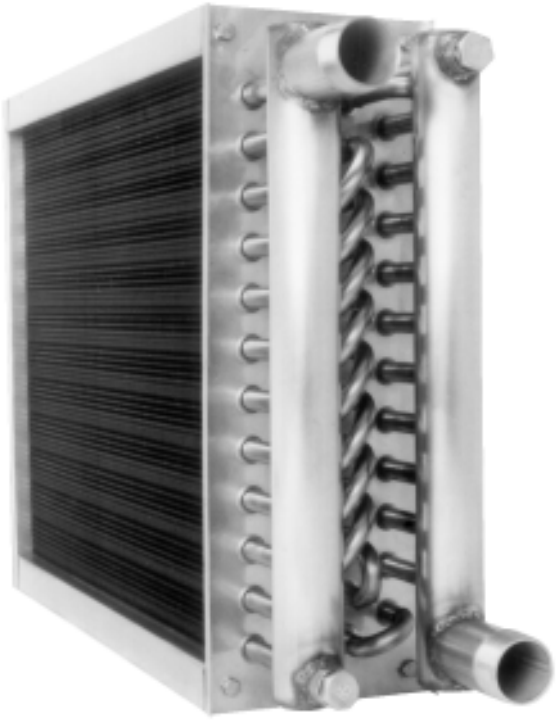
I) Header Pressure Drop Exceeds 30% of Total Fluid Pressure Drop.

L) Coil rating valid for Heatcraft coils only.

HEATCRAFT

FLUID COIL

INSTALLATION OPERATION AND MAINTENANCE



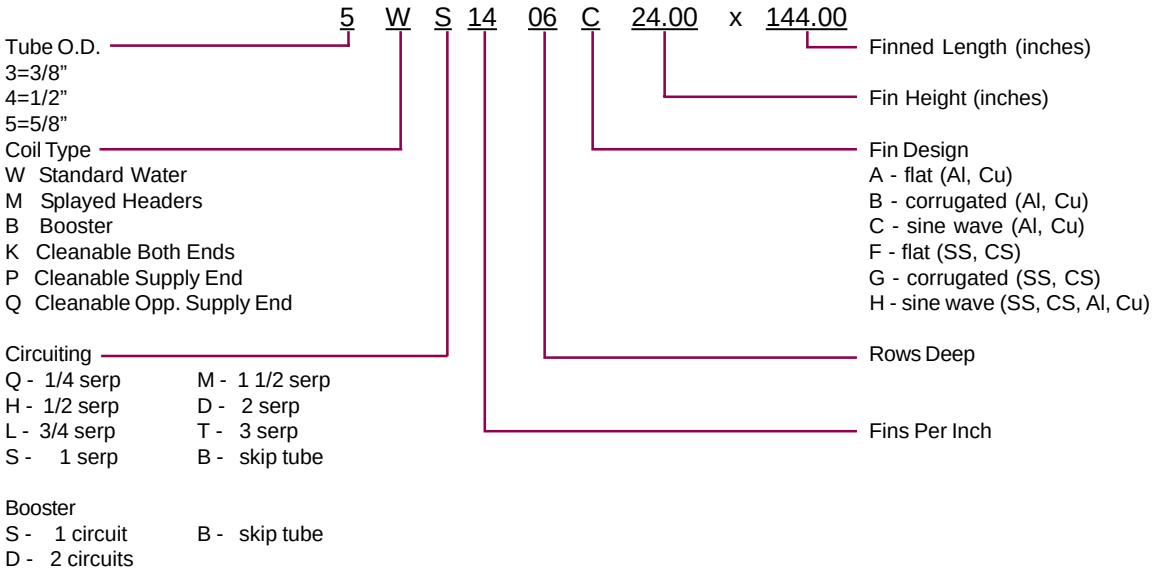
Commercial Products
PO Box 1457 / 1000 Heatcraft Drive, Grenada, MS 38902-1457
Tel: 800-225-4328 / 662-229-4000 Fax: 662-229-4212
Email: coils@heatcraft.com
Web Site: www.heatcraft.com

Guidelines for the installation, operation and maintenance of Heatcraft's cooling and heating coils have been provided to help insure the proper performance of the coils and their longevity. These are general guidelines that may have to be tailored to meet the specific requirements of any one job. As always, the installation and maintenance of any coil should be performed by a qualified party or individual. Protective equipment such as safety glasses, steel toe boots and gloves are recommended during the installation and routine maintenance of the coil.

Receiving Instructions

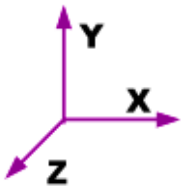
1. All Heatcraft coils are factory tested, inspected and carefully packaged.
2. Damage to the coils can occur after they have left the factory. Therefore, the coils should be inspected for shipping damage upon receipt. The freight bill should also be checked against items received for complete delivery.
3. Damaged and/or missing items should be noted on the carrier's freight bill and signed by the driver.
4. For additional assistance, contact your local Heatcraft representative.

Nomenclature



Mounting

	Horizontal Air Flow Horizontal Tubes	Level with the y-axis and x-axis.
	Vertical Air Flow[2] Horizontal Tubes	Level with the z-axis and x-axis.
	Horizontal Air Flow Vertical Tubes	Level with the y-axis and x-axis.

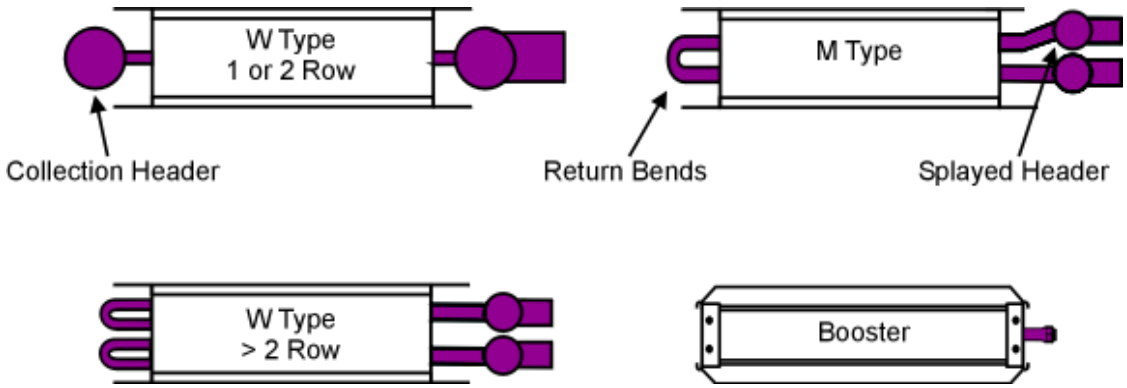


1. All Heatcraft water and glycol coils are designed to be fully drainable when properly mounted.
2. Vertical air-flow is not recommended for dehumidifying coils.

Coil Types

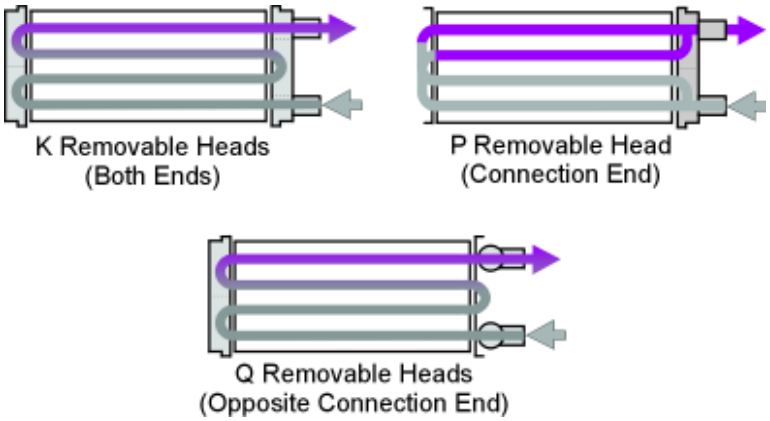
Standard Fluid Coils

HEATCRAFT's fluid coils are specifically designed for your particular application. Flexibility is built into our manufacturing processes, offering variations in fin type, fin density, circuitry arrangement, coil casing and materials of construction. Standard fluid type "W" coils utilize a collection header for one and two row applications and return bends for applications that require three or more rows. Type "M" coils are used for one and two row applications that require same end connections. For type "M" coils the supply and return headers are offset or "splayed." This orientation allows for the supply and return headers to be placed side by side. Booster coils, type "B," are also available for one and two row applications.



Cleanable Fluid Coils

Heatcraft also offers cleanable fluid coils for applications where mechanical cleaning of the internal surface of the tubes are required. Our cleanable coils utilize a box-style head in lieu of cylindrical headers. The head contains baffles for circuiting and is removable for easy access to coil tubes. Type “P” coils are cleanable from the supply end of the coil. Type “Q” coils are cleanable from the end opposite the supply. Type “K” coils are cleanable from both ends of the coil.



Installation

1. Carefully remove the coil from the shipping package to avoid damage to the finned surface area. Damaged fins can be straightened using an appropriate fin comb. If a mist eliminator was purchased, remove it before installation.
2. For coils with removable heads, check the torque on the nuts before installing. Refer to **Maintenance** on Page 6 for recommended torque values.
3. Heatcraft recommends cleaning the coil with a commercially available coil cleaner prior to installation. Refer to **Maintenance** on Page 6 for cleaning recommendations.
4. Check the coil hand designation to insure that it matches the system. Water and glycol coils are generally plumbed with the supply connection located on the bottom of the leaving air-side of the coil and the return connection at the top of the entering air-side of the coil (Figure 2 - Connection Diagram). This arrangement provides counter flow heat exchange and positive coil drainage. If a universal coil is supplied, cap off the two unused connections.
5. Standard coils must be mounted level to insure drainability. Refer to **Mounting** on page 2 for leveling requirements. Coils with intermediate headers and coils with removable box style headers can be pitched 1/8” per foot of coil finned length towards the coil’s header/connection end.
6. Proper clearance should be maintained between the coil and other structures such as the fan, filter racks, transition areas, etc..
7. Once installed, the coil should be pressurized to 100 psig with dry nitrogen or other suitable gas. The coil should be left pressurized for a minimum of 10 minutes. If the coil holds the pressure, the hook-up can be considered leak free. If the pressure drops by 5 psig or less re-pressurize the coil and wait another 10 minutes. If the pressure drops again, there is more than likely one or

more small leaks which should be located and repaired. Pressure losses greater than 5 psig would indicate a larger leak that should be isolated and repaired. If the coil itself is found to be leaking, contact your local Heatcraft representative. Unauthorized repair to the coil may void the coil's warranty (see Heatcraft's warranty policy on back cover).

8. All field brazing and welding should be performed using high quality materials and an inert gas purge (such as nitrogen) to reduce oxidation of the internal surface of the coil.
9. All field piping must be self supporting. System piping should be flexible enough to allow for thermal expansion and contraction of the coil.
10. General piping diagrams can be found in Figure 1 - Horizontal Airflow and Figure 3 - Vertical Airflow.
11. (If a mist eliminator was purchased) With the coil installed, place the mist eliminator into its brackets. Make sure the mesh is aligned with the coil face area (finned area).

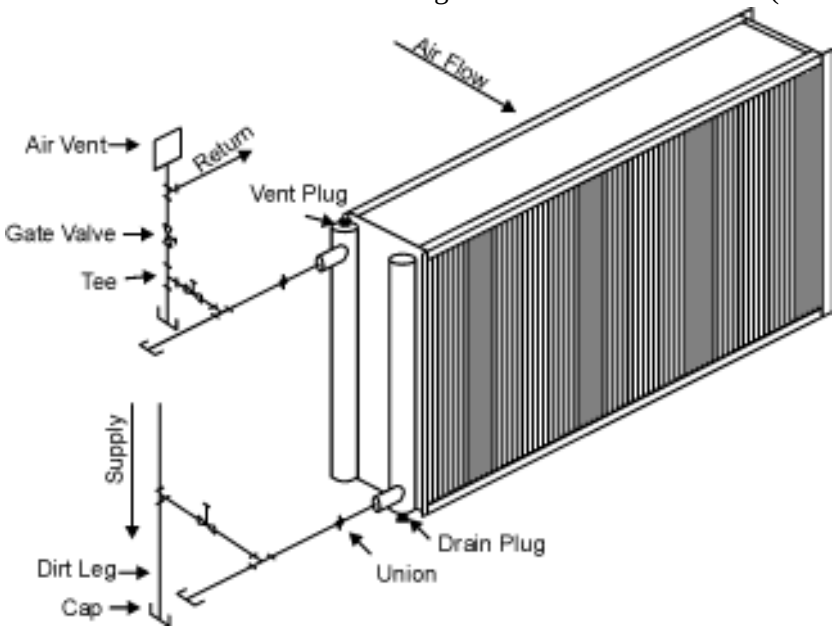


Figure 1 - Horizontal Airflow Diagram

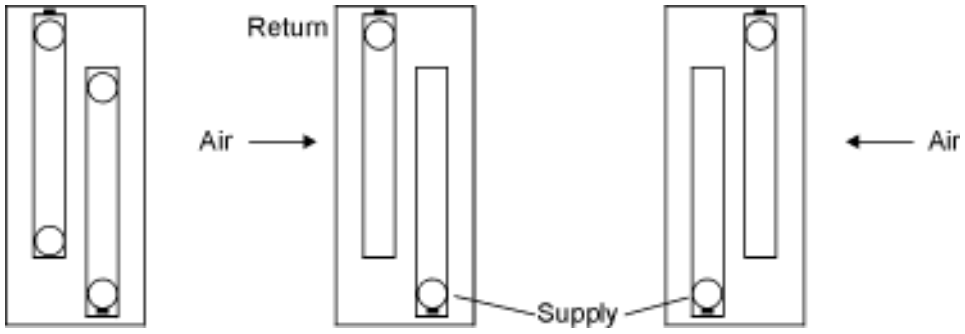


Figure 2 - Coil Diagram

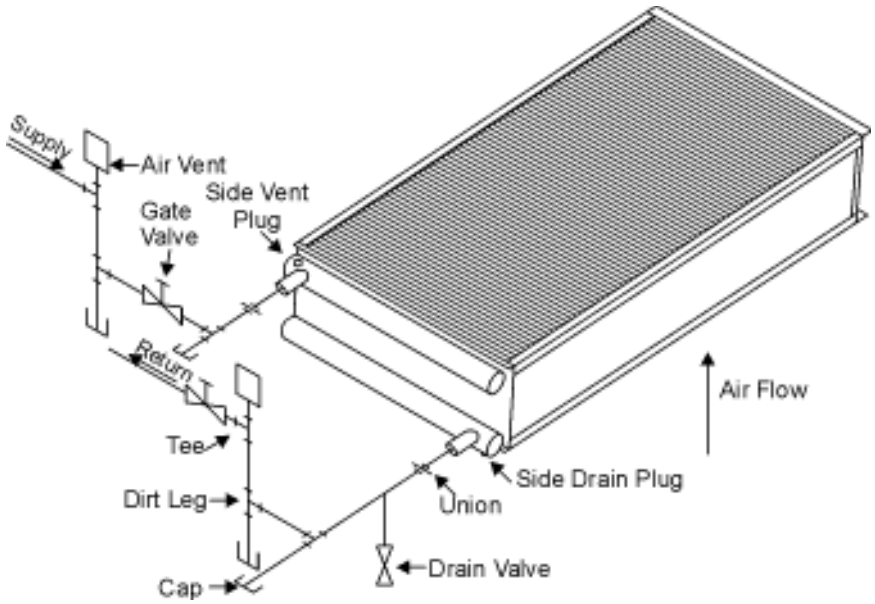


Figure 3 - Vertical Airflow Diagram

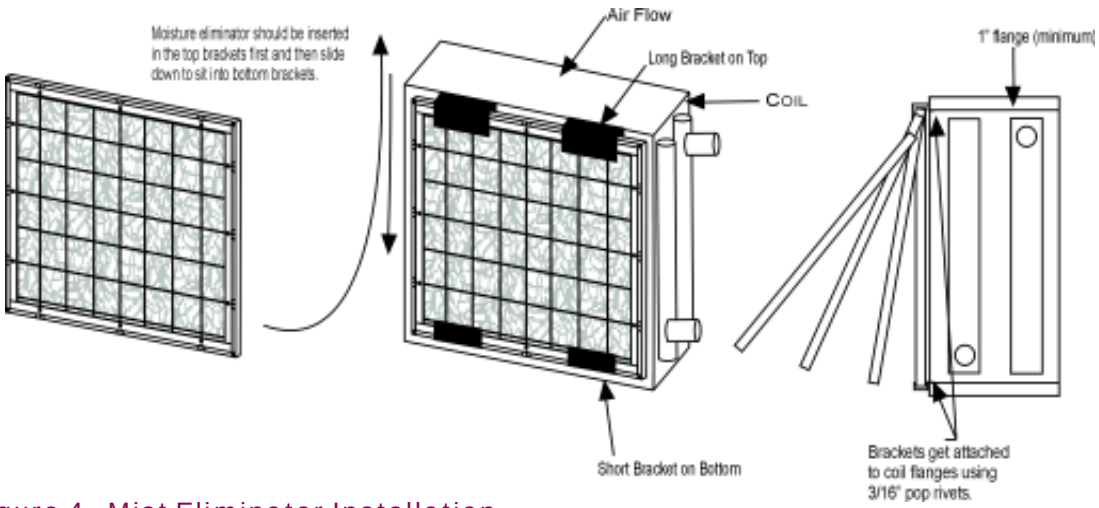


Figure 4 - Mist Eliminator Installation

Operation

Initial Start-Up

1. Open all air vents so that air is eliminated from within the coil circuitry and headers. Verify that all vents and drains are not obstructed and do discharge a stream of water.
2. Fill the coil with water then close all vents.
3. Perform an initial hydrostatic leak test of all brazed, threaded or flanged joints, valves and interconnecting piping. Recheck the coil level and correct if necessary. When the setup is found to be leak free, discharge and discard initial water charge. It is important that all grease, oil, flux and sealing compounds present from the installation be removed.

General

1. Proper air distribution is vital to coil performance. Air flow anywhere on the coil face should not vary by more than 20%.
2. The drain pan and associated piping (drain line and trap) should be installed so that there is no standing water in the drain pan and that no blow-through occurs.
3. Fluid and air velocities should be maintained within Heatcraft's recommended values.

Table 2a

Fluid Velocity	
Water	1 to 8 fps
Glycol	1 to 6 fps

Table 2b

Maintenance

General

1. Filters and mist eliminators should be inspected on a regular basis and changed as needed. Maintaining clean filters and mist eliminators is a cost effective way to help maintain maximum coil performance and service life.
2. Periodic inspection of the coil for signs of corrosion and/or leaks is recommended. Repair and replacement of the coil and the connecting piping, valves, etc., should be performed as needed by a qualified individual(s).
3. Should the coil surface need cleaning, caution should be exercised in selecting the cleaning solution as well as the cleaning equipment. Improper selection can result in damage to the coil and/or health hazards. Clean the coil from the leaving air-side so that foreign material will be washed out of the coil rather than pushed further in. Be sure to carefully read and follow the manufacturer's recommendations before using any cleaning fluid.
4. Maintain the circulated fluid free of sediment, corrosive products and biological contaminants. Periodic testing of the fluid followed by any necessary corrective measures along with maintaining adequate fluid velocities and proper filtering of the fluid will help to satisfy this goal.
5. If automatic air vents are not utilized, periodic venting of the coil is recommended to remove accumulated air. Caution should be exercised to avoid injury. High pressure and/or high temperature fluids can cause serious personal injury.
6. Heatcraft's cleanable coils with removable box headers should be cleaned using a suitable brush or its equivalent. Dislodged debris should be flushed from the coil and drain pan. Be sure that debris does not clog the drain. After the coil has been cleaned, the old gaskets should be discarded and replaced with new ones (contact your local Heatcraft representative for replacement gaskets). The box header should then be reinstalled. The recommended instal-

lation procedure is as follows.

a. Nuts and weld studs should be coated with thread lubricant.

b. Tighten all nuts per Figure 5 - Torque Pattern, to 35 ft-lb torque. After the initial torque has been applied retorque them to 50 ft-lb, again using the pattern shown in Figure 5. The permissible range of final torque values are as follows:

maximum torque:	53 ft-lb
design torque:	50 ft-lb
minimum torque:	47 ft-lb

c. Pressure test coils per the installation instructions.

d. After the coil has been leak tested and found to be free from leaks, let it sit for 24 hours. Retorque to 50 ft-lb per Figure 5 - Torque Pattern.

e. Refill the coil per the operation instructions.

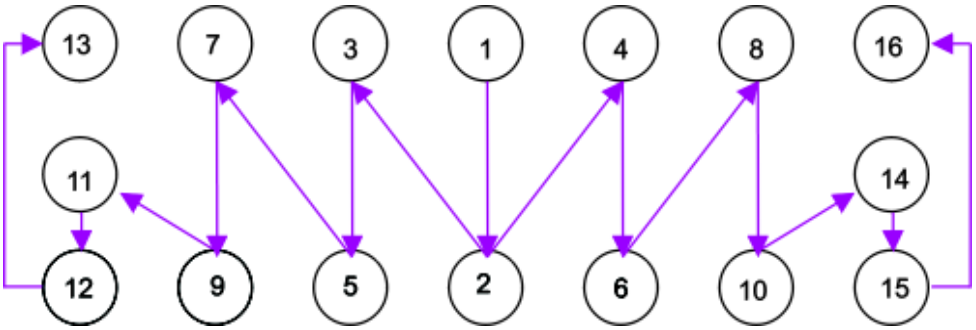


Figure 5 - Torque Pattern

Freeze Protection

During the winter, chilled water coils need to be protected against freezing. The two predominant protective measures are covered below.

Blowing-Out Coils

1. Isolate the coil from the rest of the system by closing the valves on both the supply and return lines (gate valves in Figure 1 - Horizontal Airflow and Figure 3 - Vertical Airflow).

2. Drain the coil by opening all drain valves and/or the drain plug. Remove the vent plug to aid the draining process.

3. Once the coil has been fully drained, the blower can be hooked-up. Caps installed in the piping on straight runs going to the supply and return connections are ideal points to hook-up the blower. The air vent and drain plug are not suitable locations for hooking-up the blower. *Caution should be exercised when installing the blower. The blower operator must take precautions to insure that water does not come into contact with any*

of the electrical components of the blower. Failure to do so may result in damage to the equipment and serious injury.

4. Close the vent or drain plug on the header which the blower is connected and open the drain valve or cap on the other header.
5. Operate the blower for 45 minutes and then check the coil to see if it is dry. A mirror placed in the discharge will become fogged if moisture is present. Repeat this procedure until the coil is dry.
6. Let the coil stand for several minutes then blow it out again. If water comes out, repeat the blowing operation.
7. Leave all plugs out and drains open until the threat of freezing has passed.

Flushing Coils

1. Heatcraft recommends the use of inhibited glycol designed for HVAC applications for corrosion protection. The use of uninhibited glycol has produced formicary corrosion in copper tubing. The complete filling of water coils with an inhibited glycol solution for freeze protection can be expensive. In some instances, it is more cost effective to flush the coils with an appropriate concentration of inhibited glycol solution. Residual fluid can be left in the coil without the threat of freeze damage provided the correct concentration of inhibited glycol was used. The recovered fluid can then be used to flush other coils. Select an inhibited glycol solution that will protect the coil from the lowest possible temperatures that can occur at the particular coil's locality. The following tables have been provided for your convenience.

[1]Freeze points may vary from product to product.

2. Estimate the volume of the coil in gallons.

   For 5/8" tubes (1.5" face tube spacing)
   (finned height in inches)x(finned length in inches)x(# of rows)x 0.0011 = gallons
   For ½" tubes (1.25" face tube spacing)
   (finned height in inches)x(finned length in inches)x(# of rows)x 0.00083 = gallons

3. Isolate the coil from the rest of the system by closing the valves on both the supply and return lines (gate valves in Figure 1 - Horizontal Airflow and Figure 3 - Vertical Airflow).

4. Drain the coil by opening all drain valves and/or the drain plug. Remove the vent plug to aid the draining process.
5. Close the drain valve(s) and drain plug.
6. Connect the flushing system to the coil. A typical system is shown in Figure 6 - Flushing System Diagram.
7. With the throttling valve closed, start the pump and operate until the air is vented from the coil. Next, close the air vent.
8. Open the throttling valve about half-way and circulate the fluid through the coil for 15 minutes. Check the strength of the fluid. A hydrometer or test kit from the fluid manufacturer is suitable for this application.
9. Adjust the solution strength as needed and circulate the fluid for another 15 minutes.
10. Repeat steps 8 and 9 until the desired concentration is reached.
11. Shut the pump down and drain the inhibited glycol from the coil.
12. The recaptured fluid can be used to flush other coils.

Note: Be sure to follow the manufactures' recommendations before utilizing any glycol based anti-freeze solution. Additional fluid will be required for the pump, connected piping and fluid reservoir. Formulae are for estimation purposes only.

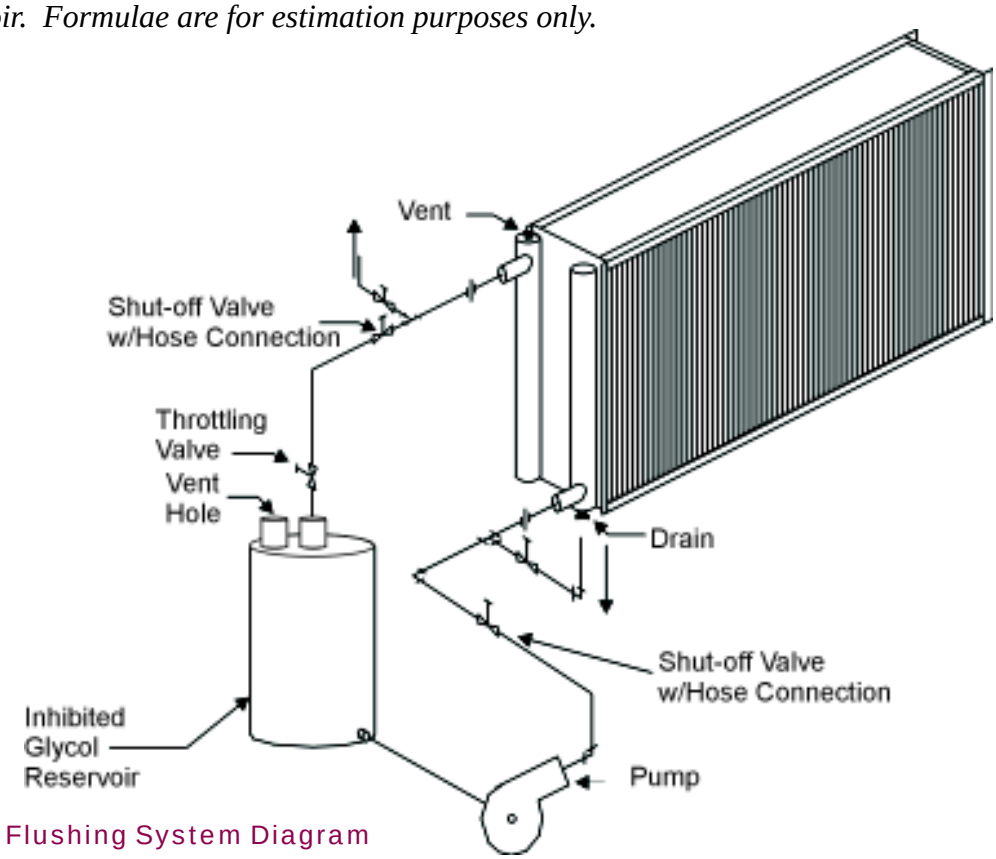


Figure 6 - Flushing System Diagram

COMMERCIAL PRODUCTS WARRANTY

Heatcraft , hereinafter referred to as the “Company”, warrants that it will provide free suitable repair or replacement of coils in the event any coil of its manufacture used in the United States proves defective in material or workmanship within twelve (12) months from the date shipped by the Company.

THIS WARRANTY CONSTITUTES THE BUYER’S SOLE REMEDY. IT IS GIVEN IN LIEU OF ALL OTHER WARRANTIES. THERE IS NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT AND UNDER NO CIRCUMSTANCE SHALL THE COMPANY BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, WHETHER THE THEORY BE BREACH OF THIS OR ANY OTHER WARRANTY, NEGLIGENCE, OR STRICT TORT.

This warranty extends only to the original purchaser. Of course, abuse, misuse, or alteration of the product in any manner voids the Company’s warranty obligation.

This warranty does not obligate the Company to pay any labor or service costs for removing or replacing parts, or any shipping charges.

No person (including any agent or salesman) has authority to expand the Company’s obligation beyond the terms of this express warranty, or to state that the performance of the coil is other than that published by the Heat Transfer Division of Heatcraft.

May 2006

HEATCRAFT
PO Box 1457 / 1000 Heatcraft Drive, Grenada, MS 38902-1457
Tel: 800-225-4328 / 662-229-4000 Fax: 662-229-4212
Email: coils@heatcraft.com
Web Site: www.heatcraft.com

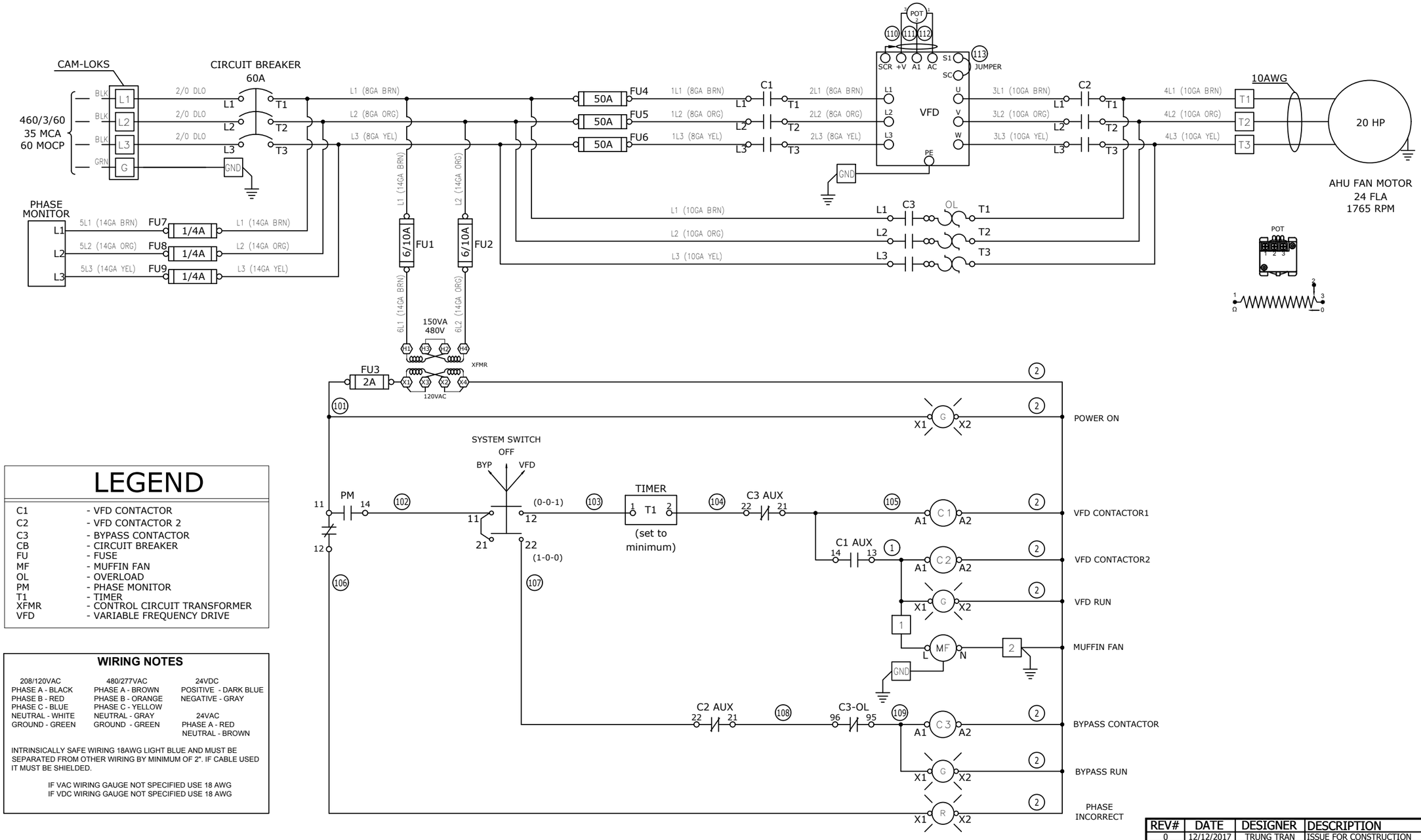
Printed in U.S.A.

CUSTOM AIR PRODUCTS & SERVICES, INC.
35 Southbelt Industrial Drive • Houston, Texas 77047
(713) 460-9009 • Fax (713) 460-9499
www.customairproducts.com

SECTION

04

ELECTRICAL DRAWINGS



LEGEND

C1	- VFD CONTACTOR
C2	- VFD CONTACTOR 2
C3	- BYPASS CONTACTOR
CB	- CIRCUIT BREAKER
FU	- FUSE
MF	- MUFFIN FAN
OL	- OVERLOAD
PM	- PHASE MONITOR
T1	- TIMER
XFMR	- CONTROL CIRCUIT TRANSFORMER
VFD	- VARIABLE FREQUENCY DRIVE

WIRING NOTES

208/120VAC	480/277VAC	24VDC
PHASE A - BLACK	PHASE A - BROWN	POSITIVE - DARK BLUE
PHASE B - RED	PHASE B - ORANGE	NEGATIVE - GRAY
PHASE C - BLUE	PHASE C - YELLOW	
NEUTRAL - WHITE	NEUTRAL - GRAY	24VAC
GROUND - GREEN	GROUND - GREEN	PHASE A - RED
		NEUTRAL - BROWN

INTRINSICALLY SAFE WIRING 18AWG LIGHT BLUE AND MUST BE SEPARATED FROM OTHER WIRING BY MINIMUM OF 2". IF CABLE USED IT MUST BE SHIELDED.

IF VAC WIRING GAUGE NOT SPECIFIED USE 18 AWG
IF VDC WIRING GAUGE NOT SPECIFIED USE 18 AWG

REV#	DATE	DESIGNER	DESCRIPTION
0	12/12/2017	TRUNG TRAN	ISSUE FOR CONSTRUCTION
1	04/27/2018	B. LANDRY	AS-BUILT

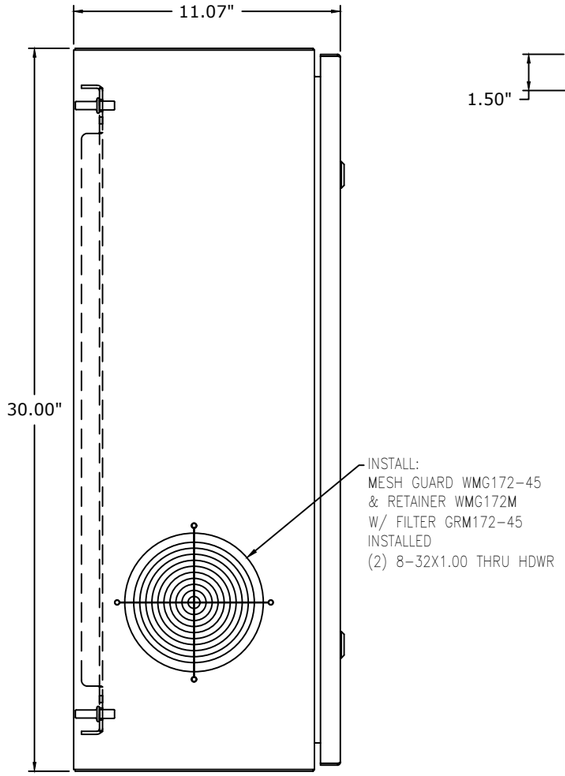
CUSTOM AIR PRODUCTS & SERVICES, INC.
35 SOUTHBELT INDUSTRIAL DR., HOUSTON, TX. 77047
PHONE: (713) 460-9009 FAX: (713) 460-9499
TEXAS BOARD OF PROFESSIONAL ENGINEERS
FIRM NUMBER F-14008

CERTIFIED AS-BUILT

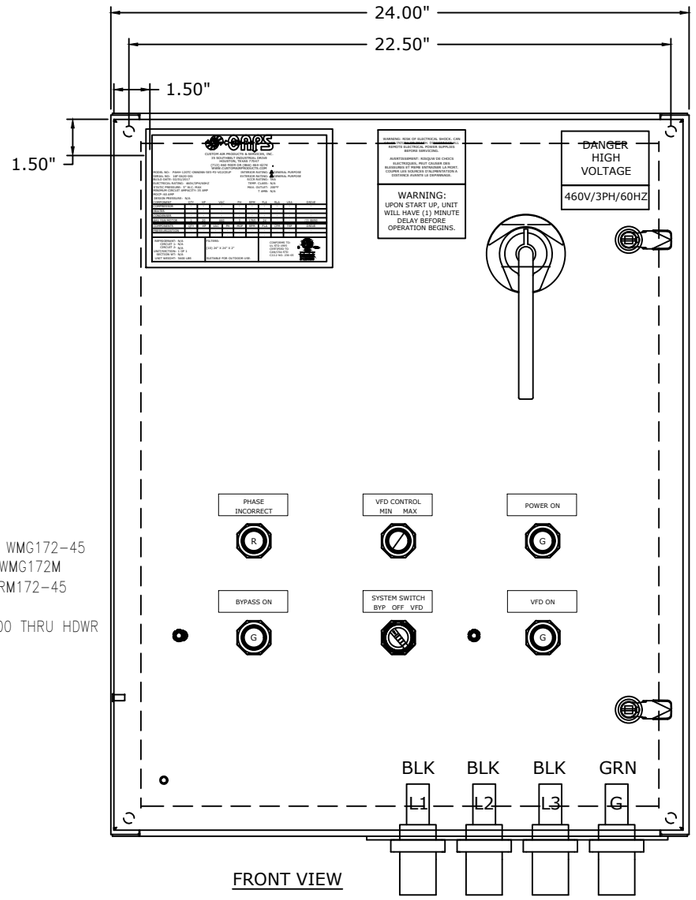
CHECKER: _____ DATE: _____

APPROVER: _____ DATE: _____

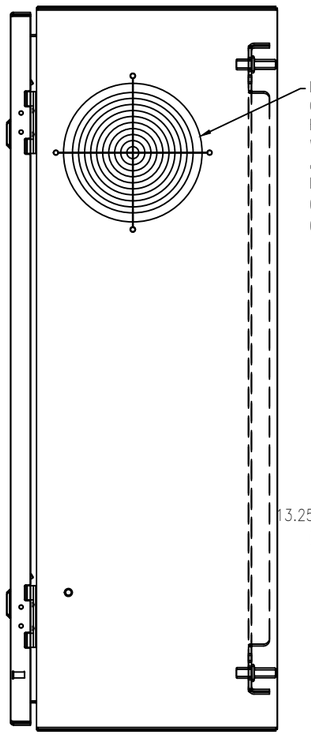
CAPS NO.: 17F-0871	DRAWING: AE1	DRAWN BY: TRUNG TRAN	DATE: 12/12/2017	CUSTOMER: HERC RENTALS	
CUST. PO#:	SHEET: 1 OF 4	CHECKED BY: DAVID NGUYEN	DATE: 04/27/2018	120 TON CHILLED WATER AIR HANDLER UNIT GALV SKID, GALV CAGE, COATED HOUSING DUCTED RETURN, 460V/3Ø/60Hz, NEMA 4 CONSTRUCTION ELECTRICAL DESIGN ELECTRICAL WIRING DIAGRAM	
SIZE: B	REV: 1	APPROVED BY: LARRY NOVAK	DATE: 04/27/2018		



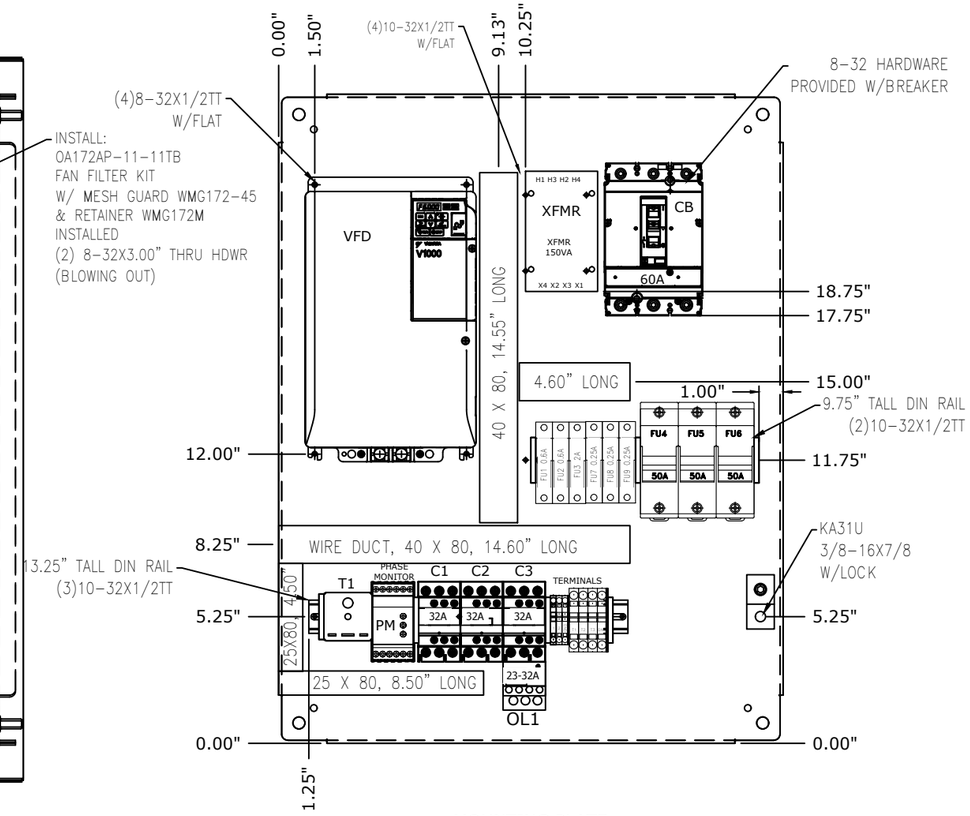
L.H. SIDE VIEW



FRONT VIEW



R.H. SIDE VIEW



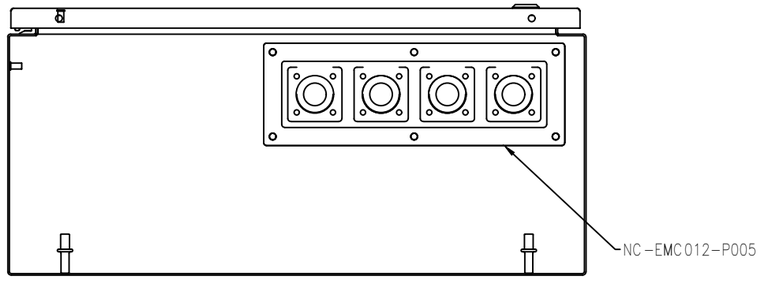
MOUNTING PLATE

LEGEND

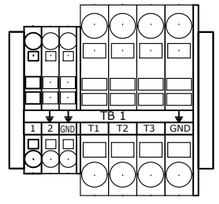
C1	- VFD CONTACTOR
C2	- VFD CONTACTOR 2
C3	- BYPASS CONTACTOR
CB	- CIRCUIT BREAKER
FU	- FUSE
MF	- MUFFIN FAN
OL	- OVERLOAD
PM	- PHASE MONITOR
T1	- TIMER
XFMR	- CONTROL CIRCUIT TRANSFORMER
VFD	- VARIABLE FREQUENCY DRIVE

NOTES:

1. TERMINAL MARKER FOR TERMINALS MARKED "SP" WILL BE BLANK.
2. EACH DEVICE TO HAVE (2) LABELS. ONE ON DEVICE, ONE ON PANEL BEHIND DEVICE.
3. ALL DIN RAIL AND WIRE DUCT MOUNTED WITH 10-32X1/2 TT



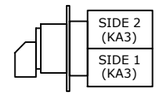
BOTTOM VIEW



TERMINAL BLOCK CHART	
TERMINAL	P/N
END STOP	3022276
1	2004-1201
2	2004-1207
GND	2004-1207
END SECTION	2004-1291
T1-T3	2010-1201
GND	2010-1207
END SECTION	2010-1291
END STOP	3022276

TERMINAL DETAIL

SYSTEM SWITCH



REV#	DATE	DESIGNER	DESCRIPTION
0	12/12/2017	TRUNG TRAN	ISSUE FOR CONSTRUCTION
1	04/27/2018	B. LANDRY	AS-BUILT

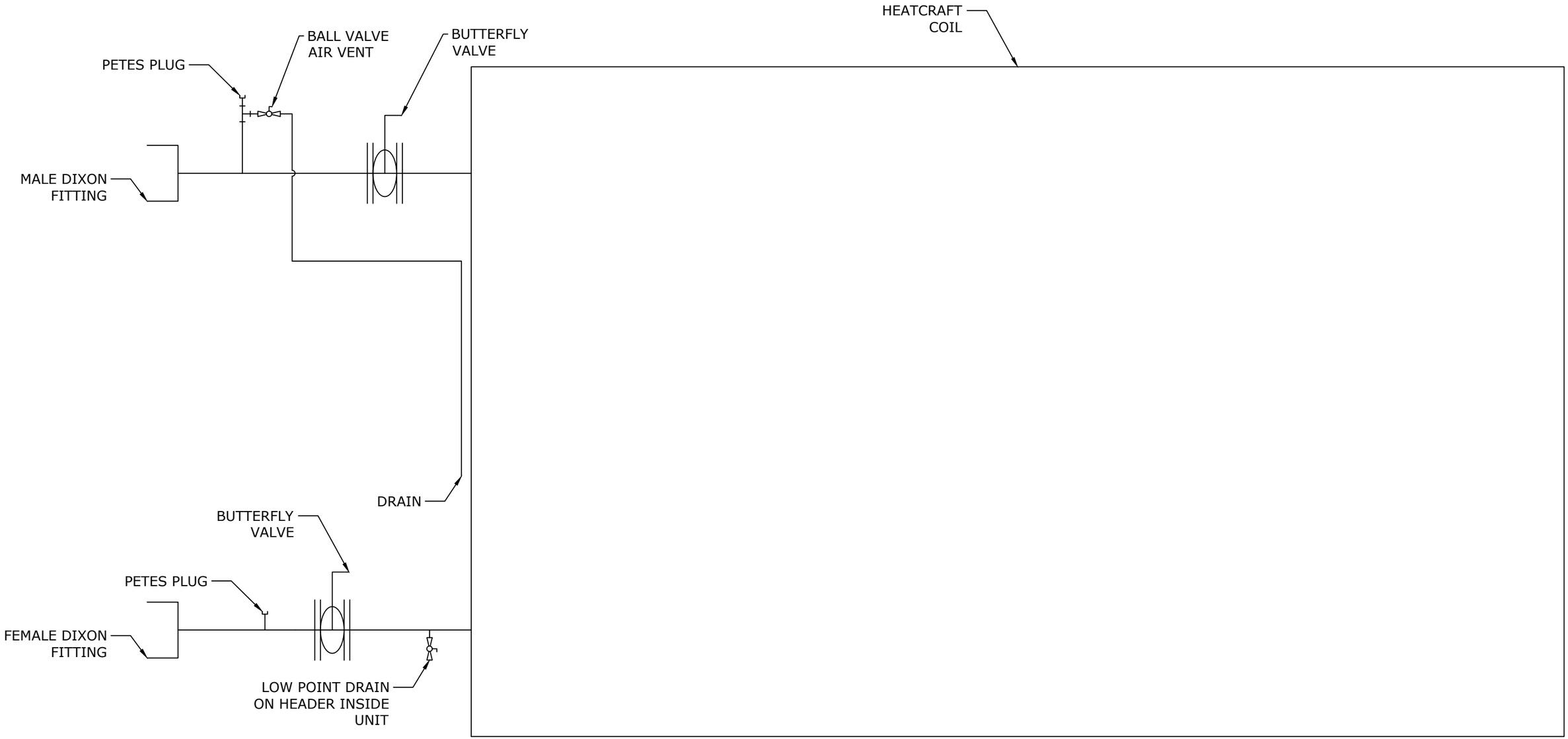
CUSTOM AIR PRODUCTS & SERVICES, INC.
35 SOUTHBELT INDUSTRIAL DR., HOUSTON, TX. 77047
PHONE: (713) 460-9009 FAX: (713) 460-9499
TEXAS BOARD OF PROFESSIONAL ENGINEERS
FIRM NUMBER F-14008

CERTIFIED AS-BUILT

CHECKER: _____ DATE: _____

APPROVER: _____ DATE: _____

CAPS NO.: 17F-0871	DRAWING: AE2	DRAWN BY: TRUNG TRAN	DATE: 12/12/2017	CUSTOMER: HERC RENTALS	
CUST. PO#:	SHEET: 2 OF 4	CHECKED BY: DAVID NGUYEN	DATE: 04/27/2018	120 TON CHILLED WATER AIR HANDLER UNIT GALV SKID, GALV CAGE, COATED HOUSING DUCTED RETURN, 460V/3Ø/60Hz, NEMA 4 CONSTRUCTION ELECTRICAL DESIGN PANEL LAYOUT	
SIZE: B	REV: 1	APPROVED BY: LARRY NOVAK	DATE: 04/27/2018		



REV#	DATE	DESIGNER	DESCRIPTION
0	12/12/2017	TRUNG TRAN	ISSUE FOR CONSTRUCTION
1	04/27/2018	B. LANDRY	AS-BUILT

CUSTOM AIR PRODUCTS & SERVICES, INC.
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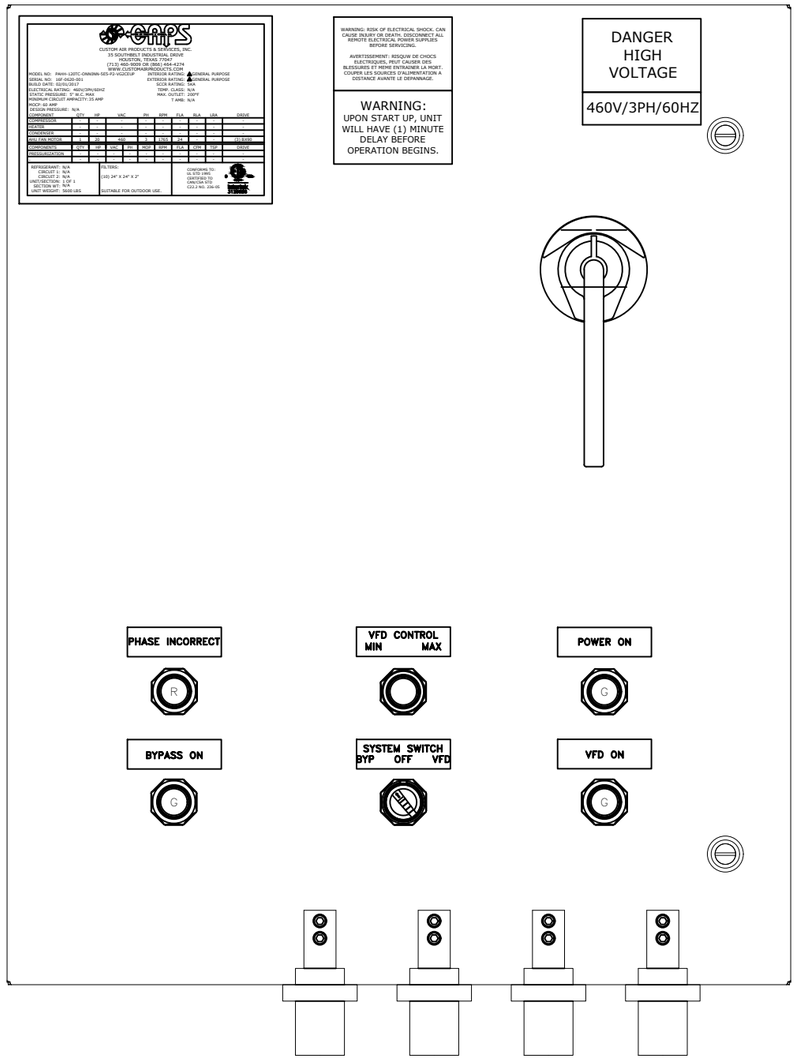
PHONE: (713) 460-9009 FAX: (713) 460-9499
TEXAS BOARD OF PROFESSIONAL ENGINEERS
FIRM NUMBER F-14008

CERTIFIED AS-BUILT

CHECKER: _____ DATE: _____

APPROVER: _____ DATE: _____

CAPS NO.: 17F-0871	DRAWING: AE3	DRAWN BY: TRUNG TRAN	DATE: 12/12/2017	CUSTOMER: HERC RENTALS	
CUST. PO#:	SHEET: 3 OF 4	CHECKED BY: DAVID NGUYEN	DATE: 04/27/2018	120 TON CHILLED WATER AIR HANDLER UNIT GALV SKID, GALV CAGE, COATED HOUSING DUCTED RETURN, 460V/3Ø/60Hz, NEMA 4 CONSTRUCTION ELECTRICAL DESIGN P&ID	
SIZE: B	REV: 1	APPROVED BY: LARRY NOVAK	DATE: 04/27/2018		



SEQUENCE OF OPERATION

The system is placed into initial operation as follows:

- Turn System Switch to “OFF”
- Turn Circuit Breaker "ON"
  - If the "Phase Incorrect" light is on, turn off the circuit breaker; reverse two (2) phases of incoming power for proper phase sequencing then check the incoming power source to be sure the unit has a good power source - 460V/3P/60HZ
  - If the "Power On" light is on and the "Phase Incorrect" light is off, the unit is ready for operation
- Turn System Switch to position that you desire

1– Bypass: The evaporator fan will bypass the VFD and runs at full speed. The "Bypass On" light will turn on

2- VFD: "VFD On" light will turn on. The evaporator fan will controlled by the VFD. Use the POT switch to adjust evaporator fan speed.

- Only use System Switch to turn of the unit

NOTE: UNIT DOES NOT HAVE A THERMOSTAT

REV#	DATE	DESIGNER	DESCRIPTION
0	12/12/2017	TRUNG TRAN	ISSUE FOR CONSTRUCTION
1	04/27/2018	B. LANDRY	AS-BUILT

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FIRM NUMBER F-14008

CERTIFIED AS-BUILT

CHECKER: _____ DATE: _____

APPROVER: _____ DATE: _____

CAPS NO.: 17F-0871	DRAWING: AE4	DRAWN BY: TRUNG TRAN	DATE: 12/12/2017	CUSTOMER: HERC RENTALS
CUST. PO#:	SHEET: 4 OF 4	CHECKED BY: DAVID NGUYEN	DATE: 04/27/2018	120 TON CHILLED WATER AIR HANDLER UNIT GALV SKID, GALV CAGE, COATED HOUSING DUCTED RETURN, 460V/3Ø/60Hz, NEMA 4 CONSTRUCTION ELECTRICAL DESIGN SEQUENCE OF OPERATION
SIZE: B	REV: 1	APPROVED BY: LARRY NOVAK	DATE: 04/27/2018	

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SECTION

05

MECHANICAL DRAWINGS

HERC
120 TON SKID MOUNTED AND CAGED AHU
COATED HOUSING, GALV. SKID, 4" DIXON CONNECTIONS
460V/3PH/60HZ GENERAL PURPOSE CONSTRUCTION
17F-0871

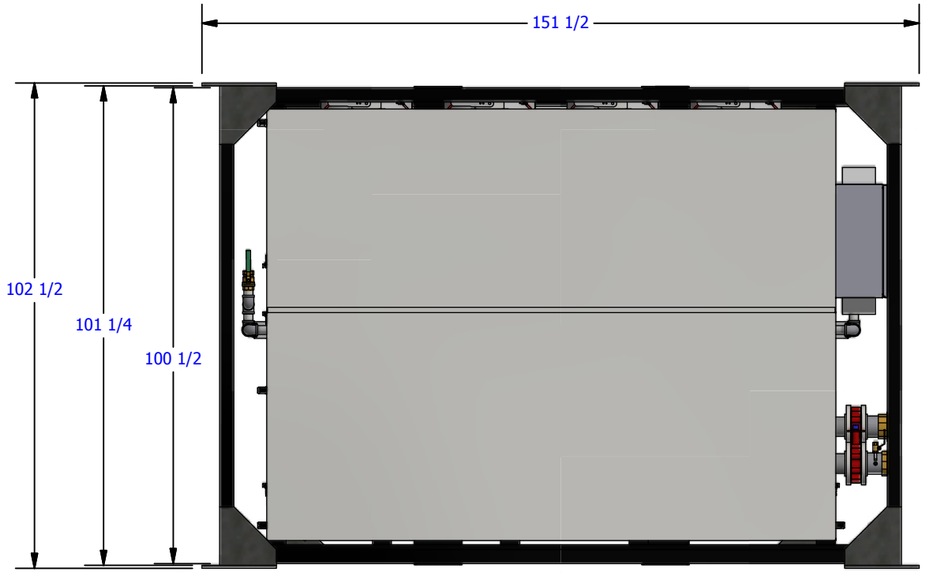
CUSTOM AIR PRODUCTS & SERVICES, INC.
35 SOUTHBELT INDUSTRIAL DR., HOUSTON, TX. 77047
PHONE: (713) 460-9009 FAX: (713) 460-9499
TEXAS BOARD OF PROFESSIONAL ENGINEERS
FIRM NUMBER F-14008

CERTIFIED AS BUILT

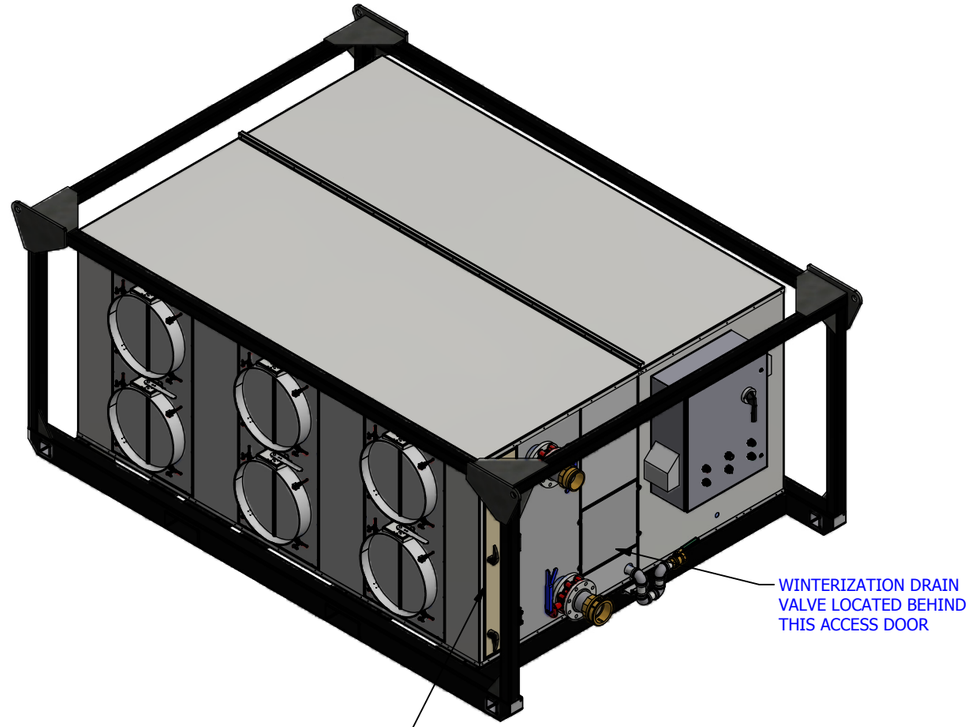
CHECKER: _____ DATE: _____

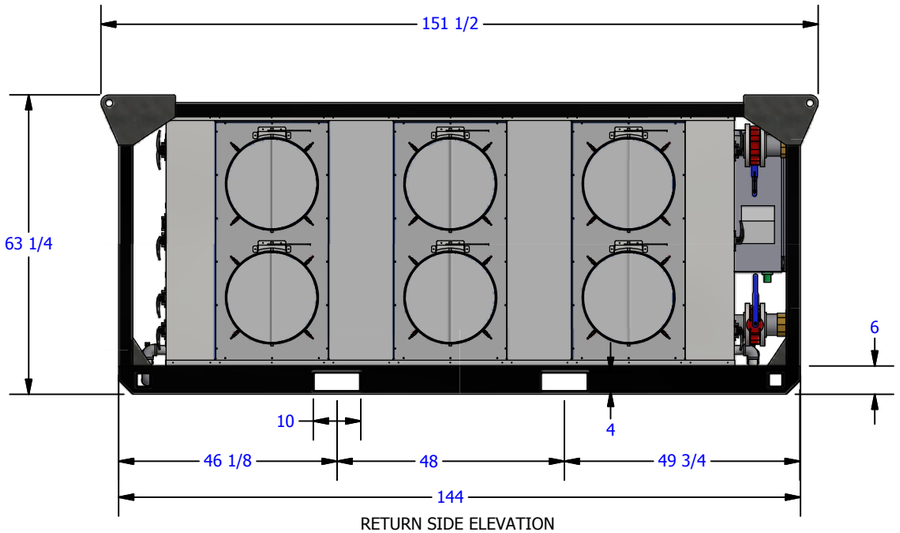
APPROVER: _____ DATE: _____

CAPS NO.:	DRAWING:	DESIGNER:	DATE:	CUSTOMER:
17F-0871	120T-AHU-000	J.REYNOLDS	9/15/2016	HERC
CUST. PO#:	SHEET: 1 OF 2	CHECKER: DAVID POTTS	DATE: 11/22/2016	120 TON SKID MOUNTED AND CAGED AHU COATED HOUSING, GALV. SKID, 4" DIXON CONNECTIONS 460V/3PH/60HZ GENERAL PURPOSE CONSTRUCTION
SIZE: B	REV: 0	APPROVER: JOHN PHAN	DATE: 11/22/2016	PROJECT INFORMATION COVER SHEET

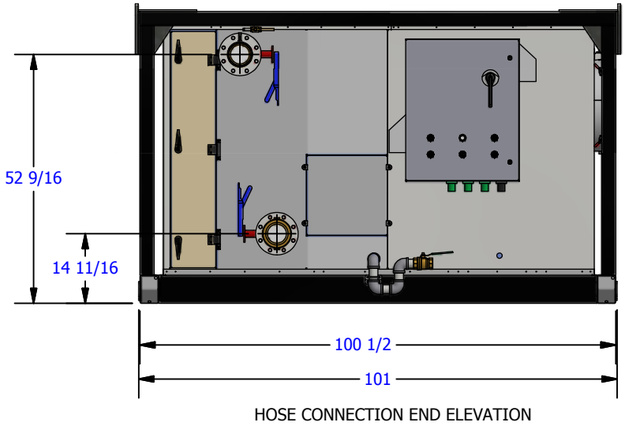


PLAN VIEW
SCALE 1 / 32





RETURN SIDE ELEVATION
SCALE 1 / 32



HOSE CONNECTION END ELEVATION
SCALE 1 / 32

UNIT WEIGHT: 5,200 LBS.

CUSTOM AIR PRODUCTS & SERVICES, INC.
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PHONE: (713) 460-9009 FAX: (713) 460-9499
TEXAS BOARD OF PROFESSIONAL ENGINEERS
FIRM NUMBER F-14008

CERTIFIED AS BUILT

CHECKER: _____ DATE: _____

APPROVER: _____ DATE: _____

CAPS NO.:	DRAWING:	DESIGNER:	DATE:	CUSTOMER:
17F-0871	120T-AHU-000	J.REYNOLDS	9/15/2016	HERC
CUST. PO#:	SHEET: 2 OF 2	CHECKER: DAVID POTTS	DATE: 11/22/2016	120 TON SKID MOUNTED AND CAGED AHU COATED HOUSING, GALV. SKID, 4" DIXON CONNECTIONS 460V/3PH/60HZ GENERAL PURPOSE CONSTRUCTION GENERAL DESIGN UNIT LAYOUT
SIZE: B	REV: 0	APPROVER: JOHN PHAN	DATE: 11/22/2016	

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SECTION

06

SPARE PARTS LIST

SUGGESTED SPARE PARTS

JOB #:	**17F-0871**	**REVISION #:**	**0**
CUSTOMER	**HERC RENTALS**		
PROJECT	**2018 FLEET**		

ITEM #	DESIGNATION	BRAND	MODEL/PART #	DESCRIPTION	QTY	CAPS#
1	EVAPORATOR FAN	GREENHECK	30-APH-3-II-200	FAN-15000CFM-5" SP, 460VAC-3Ø-60HZ-20HP	1	
2	VFD	YASKAWA	CIMR-VU4A0031FAA	20 HP FREQUENCY INVERTER 460-3-60	1	
3	POTENTIOMETER	C3 CONTROLS	POTO5k-TBW	5,000 OHM POTENTIOMETER, NEMA 4X	1	
4	FU1,2	MERSEN	ATQR6/10	6/10A TIME DELAY CLASS CC FUSE	1	
5	FU3	MERSEN	ATQR2	2A TIME DELAY CLASS CC FUSE	1	
6	FU4,5,6	MERSEN	AJT50	50A TIME DELAY CLASS J FUSES	1	
7	FU7,8,9	MERSEN	ATQR1/4	1/4A TIME DELAY CLASS CC FUSE	1	
8	TIMER	ICM	ICM102	DELAY ON MAKE TIMER	1	
9	FAN	ORION	OA172AP-11-1TB	ENCLOSURE MUFFIN FAN	1	
10	FILTER	ORION	GRM172-45	ENCLOSURE FILTER	1	
11	C1,2,3	SQUARE D	LC1D32G7	20HP CONTACTOR 120VAC COIL	1	
12	CIRCUIT BREAKER	SQUARE D	BDL36060	CIRCUIT BREAKER, 600V, 60A	1	
13	CONTACT	SQUARE D	9001KA3	NC STANDARD CONTACT BLOCK	1	
14	LIGHT	SQUARE D	9001KP1G31	PILOT LIGHT, 120VAC, TRANS, GRN, 6V, 30MM	1	
15	LIGHT	SQUARE D	9001KP1R31	PILOT LIGHT, 120VAC, TRANS, RED 6V, 30MM	1	
16	OVERLOAD	SQUARE D	LRD32	OVERLOAD RELAY 23-32A	1	
17	SYSTEM SWITCH	SQUARE D	9001KS42B	3 POSITION SELECTOR SWITCH	1	
18	TRANSFORMER	SQUARE D	SP150MQMJ	CCT, 150VA, 240/480 X 120/240V	1	
19	PHASE MONITOR	SQUARE D	RM17TU00	PHASE MONITOR	1	