



CUSTOM AIR PRODUCTS & SERVICES, INC.

35 Southbelt Industrial Drive • Houston, Texas 77047
(713) 460-9009 • Fax (713) 460-9499
www.customairproducts.com

HERC

-

1108163

18F-0235

(3) 500 TON WATER COOLED CHILLER
WITH REMOTE MONITORING

-

-

460V/3PH/60HZ

GENERAL PURPOSE

9/17/2018

INSTALLATION & OPERATION MANUAL

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18F-0235**

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SECTION

01

JOB SCOPE



Quote No:	DW18-03-29-01-R1
Quote Date:	03-29-2018
Project Type:	Three (3) 500 Ton Water Cooled Chillers with Remote Monitoring
Drawing Delivery:	2 weeks after receipt of order
Equipment Delivery:	18-19 weeks After Receipt of Approved Drawings (ARAD)
Freight Terms:	FOB Herc Rentals
Payment Terms:	<i>Net 30 Days 100% upon completion</i>

Item	Qty	Description
1.	3	<p>Provide one (1) 500 ton York water-cooled centrifugal liquid chiller PCHU-500TC-ONNONN-5E5-0-UP with the following rentalized construction features and options:</p> <p>1. 500-Ton Water-Cooled Centrifugal Liquid Chiller</p> <ul style="list-style-type: none"> YORK YK water-cooled centrifugal chiller with R-134a refrigerant. Chiller will be supplied for a 460-volt, 3 phase, and 60 Hz application. The chiller shall be provided with the following standard features: <p>Base Unit</p> <ul style="list-style-type: none"> One (1) open-drive centrifugal compressor Water-side of evaporator designed for 300-psig DWP with compact water boxes and grooved connections. OptiView graphic control panel mounted in NEMA 4X enclosure Liquid level sight glass on both shells to determine refrigerant level Refrigerant isolation valves to isolate refrigerant charge in the condenser ¾" thermal insulation of evaporator and suction elbow 0.025" thick evaporator and condenser tubes Dual oil filters Hot-gas bypass down to 10% load WP-II RAM motor with 115V Space Heater tied to Optiview, bearing and wining RTD's tied to Motor Monitor and NEMA 4 terminal box NEMA 4X control panel with hinged protective window over display panel. Star Delta, closed transition started manufactured by Ram with the following features: <ul style="list-style-type: none"> NEMA 4 enclosure 2 KVA control power transformer

Item	Qty	Description
		<ul style="list-style-type: none"> ○ Voltmeter- 3-leg reading ○ Ammeter- 3-leg with 3 current transformers ○ Mp 3000 Motor Protection Module ○ Ground fault protection ○ One (1) extra interlock ○ Standard molded case breaker <ul style="list-style-type: none"> ● CAPS provided start-up and testing at the CAPS facility utilizing cooling tower, AHU's, generator and pumps. ● Parts, labor, refrigerant warranty on entire unit – Twelve (12) months after startup or eighteen (18) month after date of shipment from York Factory ● ASME U-1 Report ● Job specific general arrangement drawings ● 115/1/60 oil heater ● Canadian CRN Requirement (Alberta, Quebec, Ontario and British Columbia) ● 2-5th Year Entire Unit Part, Labor and Refrigerant <p>2. The skid end sections (2) shall be fabricated from an 8" structural channel that will be seam welded to industry's standards. These skid sections shall be constructed to mate to the chiller base, therefore not increase the overall height of the chiller. One skid end section shall be extended to accommodate electro-mechanical starter panel and drain. One skid end section shall extend under the hose connection headers shall be long enough to provide tie-down locations for shipping. The skid center section (1) of the skid shall be fabricated from 10" structural channel and include 6" x 10" fork pockets located at the center of gravity. For additional support, angles shall be bolted to the electrical panel framework and welded to the skid. A removable platform panel shall be furnished with each chiller. All unit serial numbers and weight tags shall be cutout on a steel plate and attached to the skid at diagonal corner locations. A crane shall be provided for safe unloading and setting of equipment on trailer.</p> <p>3. Skid shall be hot dipped galvanized. Primary welds at chiller base shall be cold galvanized</p> <p>4. Electro-mechanical starter shall be mounted so that it allows clearance for water box removal. One 4" EMT conduits shall be run to the motor terminal box and shall be appropriately supported. Motor wiring shall be 4/0 conductors with a capability of 400 amps per a conductor. Panel mounted cam-locks connectors shall be furnished and wired (2 runs per a phase).</p> <p>5. Electro-mechanical starter control wiring shall consist of a phase monitor (RM35TF30), auxiliary 115 volt power receptacle, auxiliary 115 volt power master relay (square D 8501-XM040V02), hour meter, a red phase fail light, and a green power on light. A 3-pole 15 amp fuse block shall be furnished and mounted in the starter panel for the oil pump power feed. Ten conductors including ground shall be ran from starter to micro-control panel</p>

Item	Qty	Description
		<p>(3) 12awg and (7) 14awg. Four conductors shall be ran from starter to oil pump panel (4) 14awg.</p> <p>6. Differential pressure switches shall be furnished and mounted for the condenser water flow and evaporative water. Conduit shall be ran back to the micro-control panel consisting of (2) 14awg wire plus a ground per a switch. Stainless steel hose shall be used for each differential gauge.</p> <p>7. All piping spool pieces shall be welded per industry standards per CAPS drawings. Piping shall be 6”-150# with (2 in & 2 out) for the evaporator inlet and outlet and 6”-150# with (2 in & 3 out) for the condenser inlet and outlet. All vents, drains, and solar powered digital thermometers shall be supplied and installed.</p> <p>8. 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.</p> <p>9. Herc Rentals Representatives will also have full access to schedules and production progress as units are being manufactured.</p> <p>Remote Monitoring:</p> <ul style="list-style-type: none"> • Hardware installed <ul style="list-style-type: none"> • NEMA 4 enclosure • Cellular data unit • Processer interface modem • 1 year subscription for JCI “Connected Chiller Monitoring Service”, will provide the following: <ul style="list-style-type: none"> • Create Customer Dashboard • 24/7 remote operations center alarm/alert monitoring • Four (4) remote scheduled service visits • 12 months of hosting and cellular modem wireless charges • Access to customer facing dashboard to access machines • Data reports
		<p><u>EXCLUSIONS & NOTES</u></p> <ul style="list-style-type: none"> • Factory full load test • Final site Installation, Equipment and Start-up Commissioning by others • Trailer • 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

COMPONENTS



Hour Meter, 120 Vac

CRAMER

Mfr. Model # **635G**

Shipping Weight **0.5 lbs.**

Country of Origin **USA** | *Country of Origin is subject to change.*

Note: Product availability is real-time updated and adjusted continuously. The product will be reserved for you when you complete your order. [More](#)

Technical Specs

Item	Elapsed Time Indicator	Bezel to Back Length (In.)	2-3/4
Bezel Face (In.)	2-1/2 Round	Material of Construction	Constructed of High Impact Black Styrene
Elapsed Time To	99999.9 Hrs.	Reset Type	Nonresettable
Display Units	Hours		



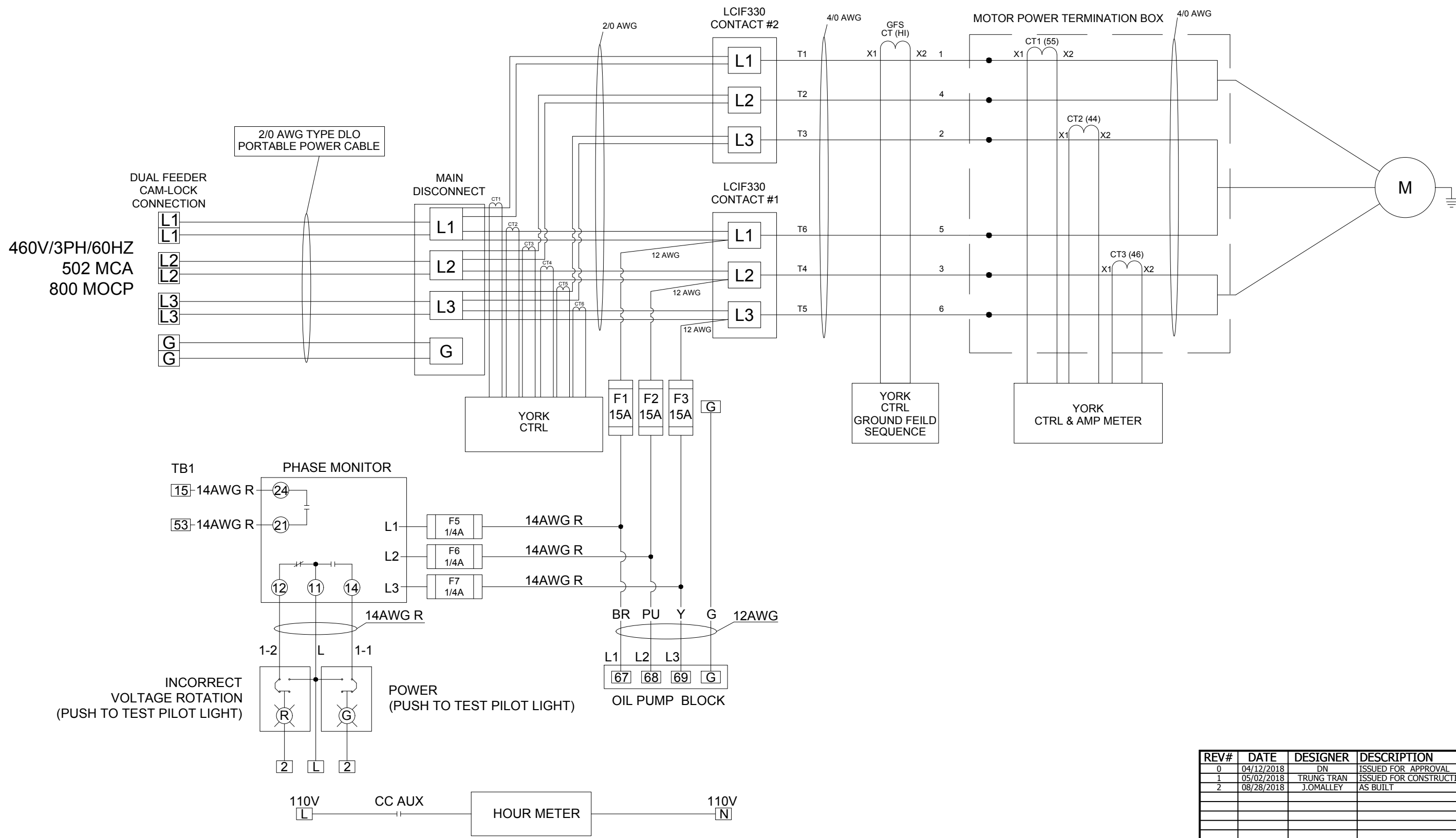


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SECTION

03

ELECTRICAL DRAWINGS



REV#	DATE	DESIGNER	DESCRIPTION
0	04/12/2018	DN	ISSUED FOR APPROVAL
1	05/02/2018	TRUNG TRAN	ISSUED FOR CONSTRUCTION
2	08/28/2018	J.OMALLEY	AS BUILT



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CHECKER: _____ DATE: _____

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CAPS NO.: 18F-0235	DRAWING: AE1	DRAWN BY: DAVID NGUYEN	DATE: 04/12/2018
CUST. PO#: 1108163	SHEET: 1 OF 2	CHECKED BY: DAVID NGUYEN	DATE: 05/02/2018
SIZE: B	REV: 2	APPROVED BY: STEVE NAEHER	DATE: 08/28/2018

CUSTOMER: **HERC RENTALS**

**(3) 500 TON WATER COOLED INDUSTRIAL CHILLERS
460V/3PH/60HZ**

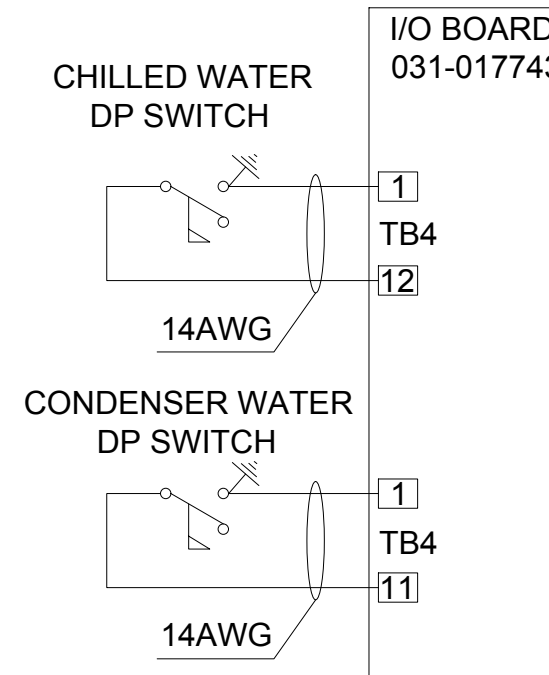
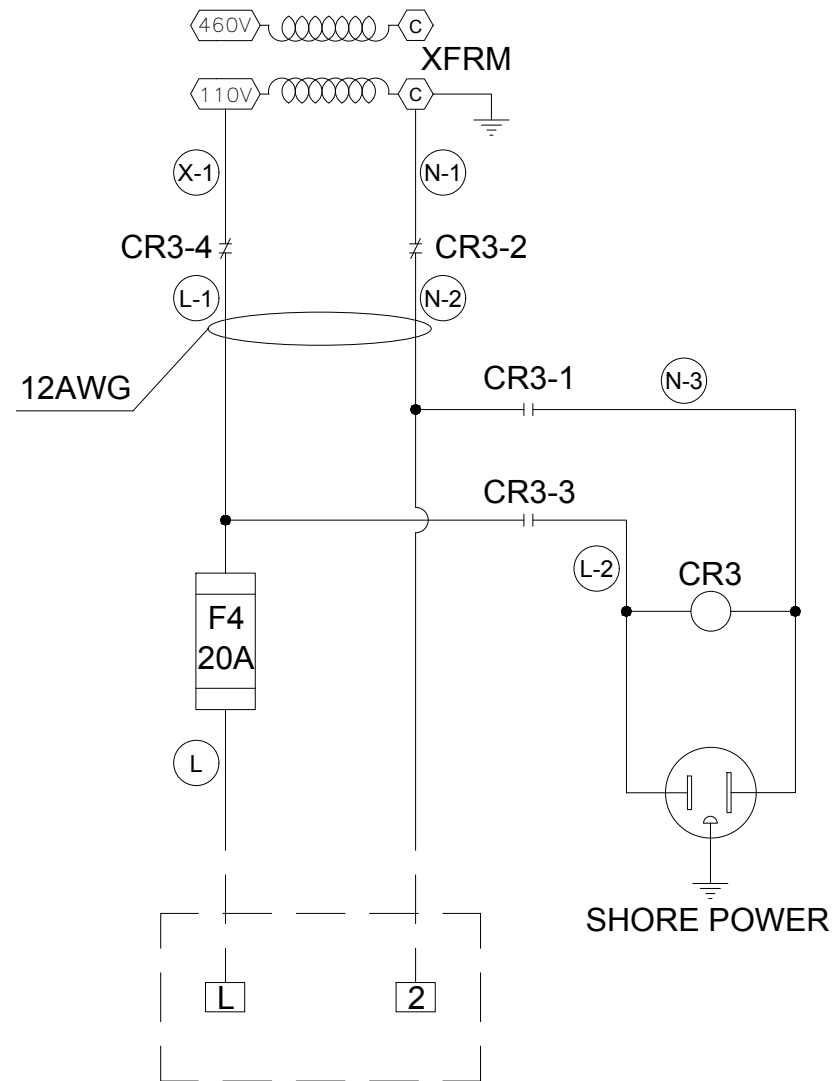
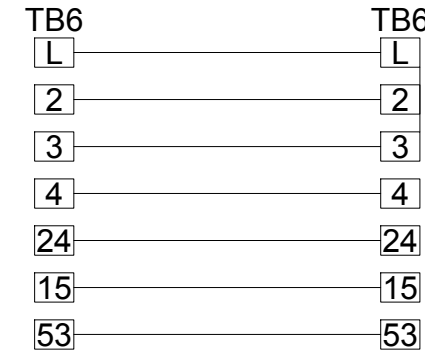
**ELECTRICAL DESIGN
POWER ON CONTROL**

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TEXAS BOARD OF PROFESSIONAL ENGINEERS
FIRM NUMBER F-14008

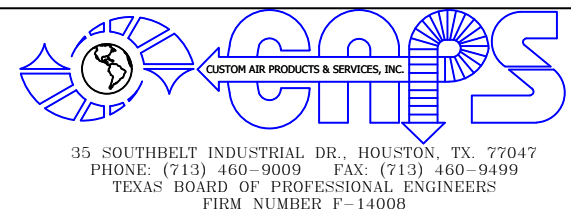
LEGEND	
CR3	MASTER RELAY
DP	DIFFERENTIAL PRESSURE
F	FUSE
TB	TERMINAL BLOCK
XFRM	TRANSFORMER

CHILLER CONTROL PANEL

STARTER PANEL



REV#	DATE	DESIGNER	DESCRIPTION
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1	05/02/2018	TRUNG TRAN	ISSUED FOR CONSTRUCTION
2	08/28/2018	J.OMALLEY	AS BUILT



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CAPS NO.:	DRAWING:	DRAWN BY:	DATE:
18F-0235	AE2	DAVID NGUYEN	04/12/2018
CUST. PO#:	SHEET:	CHECKED BY:	DATE:
1108163	2 OF 2	DAVID NGUYEN	05/02/2018
SIZE:	REV:	APPROVED BY:	DATE:
B	2	STEVE NAEHER	08/28/2018

CUSTOMER: **HERC RENTALS**

**(3) 500 TON WATER COOLED INDUSTRIAL CHILLERS
 460V/3PH/60HZ**

**ELECTRICAL DESIGN
 LOW VOLTAGE CONTROL**



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SECTION

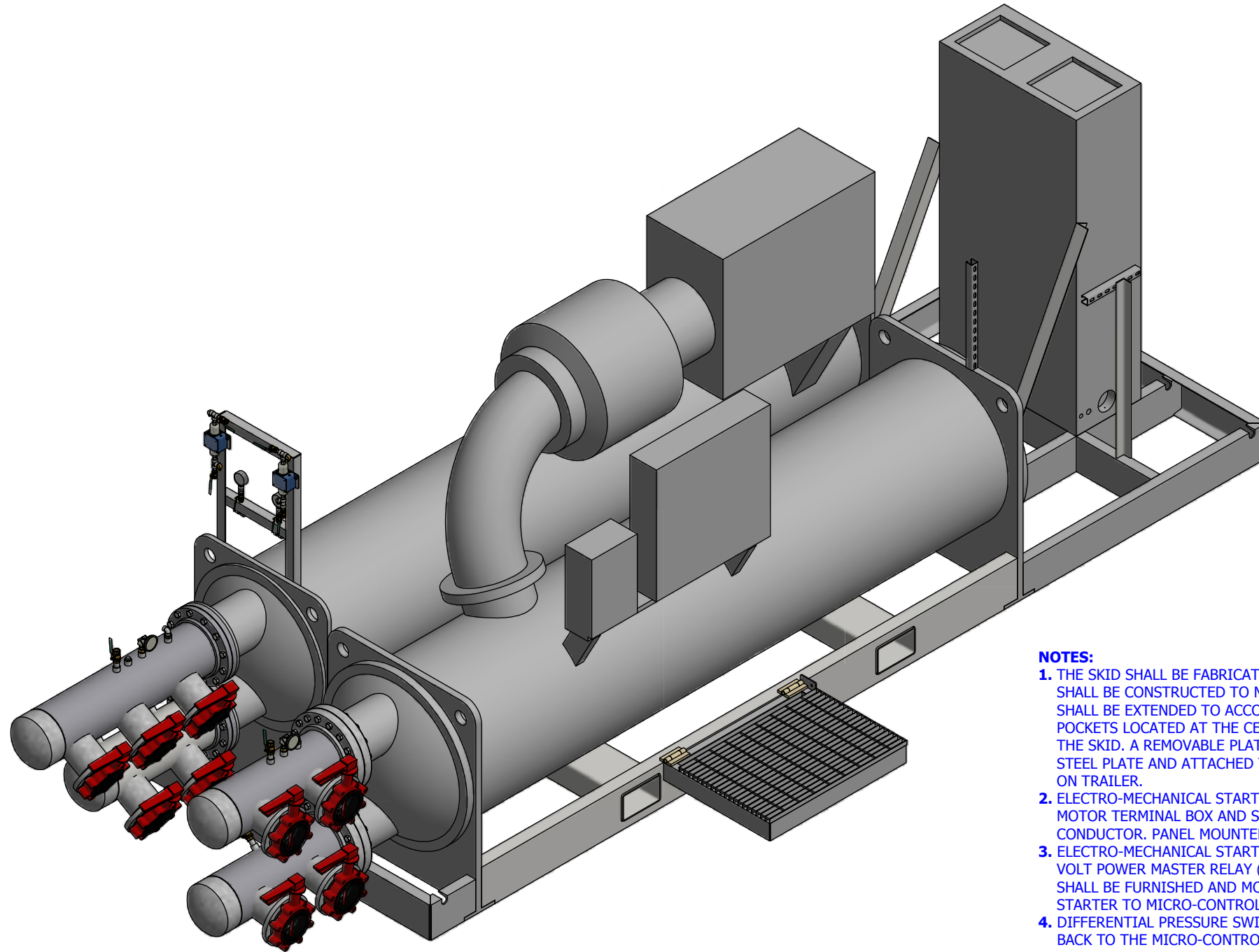
04

MECHANICAL DRAWINGS

REVISION HISTORY

REV	DESIGNER	DATE	DESCRIPTION
0	ALEX BANNISTER	4/26/2018	INITIAL RELEASE. PROJECT COPIED FROM CAPS EQUIPMENT LIBRARY FROM PROJECT 15F-0142

HERC 500 TON YORK CHILLER WATER COOLED CENTRIFUGAL LIQUID WITH SKID PACKAGE FABRICATION DRAWINGS 18F-0235



NOTES:

1. THE SKID SHALL BE FABRICATED FROM AN 8" STRUCTURAL CHANNEL THAT WILL BE SEAM WELDED TO INDUSTRY'S STANDARDS. SKID SHALL BE CONSTRUCTED TO MATE TO THE CHILLER BASE, THEREFORE NOT INCREASE THE OVERALL HEIGHT OF THE CHILLER. THE SKID SHALL BE EXTENDED TO ACCOMMODATE ELECTRO-MECHANICAL STARTER PANEL AND DRAIN. THE SKID SHALL INCLUDE 4" X 10" FORK POCKETS LOCATED AT THE CENTER OF GRAVITY. FOR ADDITIONAL SUPPORT, ANGLES SHALL BE BOLTED TO THE ELECTRICAL PANEL FRAMEWORK AND WELDED TO THE SKID. A REMOVABLE PLATFORM PANEL SHALL BE FURNISHED WITH EACH CHILLER. ALL UNIT SERIAL NUMBERS AND WEIGHT TAGS SHALL BE CUTOUT ON A STEEL PLATE AND ATTACHED TO THE SKID AT DIAGONAL CORNER LOCATIONS. A CRANE SHALL BE PROVIDED FOR SAFE UNLOADING AND SETTING OF EQUIPMENT ON TRAILER.
2. ELECTRO-MECHANICAL STARTER SHALL BE MOUNTED SO THAT IT ALLOWS CLEARANCE FOR WATER BOX REMOVAL. ONE 4" EMT CONDUITS SHALL BE RAN TO THE MOTOR TERMINAL BOX AND SHALL BE APPROPRIATELY SUPPORTED. MOTOR WIRING SHALL BE 4/0 CONDUCTORS WITH A CAPABILITY OF 400 AMPS PER A CONDUCTOR. PANEL MOUNTED CAM-LOCKS CONNECTORS SHALL BE FURNISHED AND WIRED (2 RUNS PER A PHASE).
3. ELECTRO-MECHANICAL STARTER CONTROL WIRING SHALL CONSIST OF A PHASE MONITOR (RM35TF30), AUXILIARY 115 VOLT POWER RECEPTACLE, AUXILIARY 115 VOLT POWER MASTER RELAY (SQUARE D 8501-XM040V02), HOUR METER, A RED PHASE FAIL LIGHT, AND A GREEN POWER ON LIGHT. A 3-POLE 15 AMP FUSE BLOCK SHALL BE FURNISHED AND MOUNTED IN THE STARTER PANEL FOR THE OIL PUMP POWER FEED. TEN CONDUCTOR INCLUDING GROUND SHALL BE RAN FROM STARTER TO MICRO-CONTROL PANEL (3) 12AWG AND (7) 14AWG. FOUR CONDUCTORS SHALL BE RAN FROM STARTER TO OIL PUMP PANEL (4) 14AWG.
4. DIFFERENTIAL PRESSURE SWITCHES SHALL BE FURNISHED AND MOUNTED FOR THE CONDENSER WATER FLOW AND EVAPORATIVE WATER. CONDUIT SHALL BE RAN BACK TO THE MICRO-CONTROL PANEL CONSISTING OF (2) 14AWG WIRE PLUS A GROUND PER A SWITCH. STAINLESS STEEL HOSE SHALL BE USED FOR EACH DIFFERENTIAL GAUGE.
5. ALL PIPING SPOOL PIECES SHALL BE WELDED PER INDUSTRY STANDARDS. PIPING SHALL BE 6"-150# WITH (1 IN & 1 OUT) FOR THE EVAPORATOR INLET AND OUTLET AND 6"-150# WITH (2 IN & 3 OUT) FOR THE CONDENSER INLET AND OUTLET. ALL VENTS, DRAINS, AND SOLAR POWERED DIGITAL THERMOMETERS SHALL BE SUPPLIED AND INSTALLED.
6. THE ENTIRE CHILLER AND SKID SHALL BE PROPERLY PREPARED AND COATED. CHILLER AND SKID SHALL BE PAINTED WHITE WITH THE EXCEPTION OF STAINLESS STEEL ENCLOSURES IF AVAILABLE.



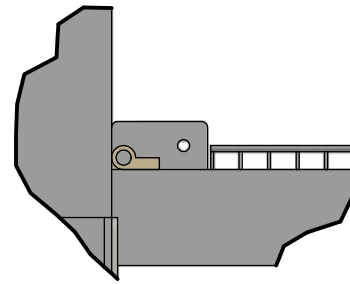
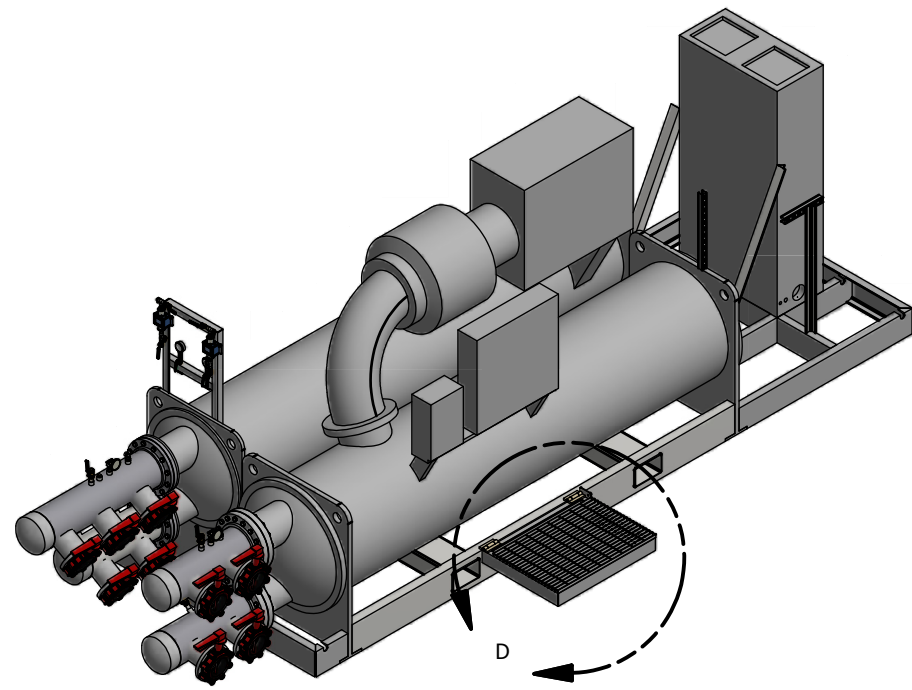
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 FIRM NUMBER E-14008

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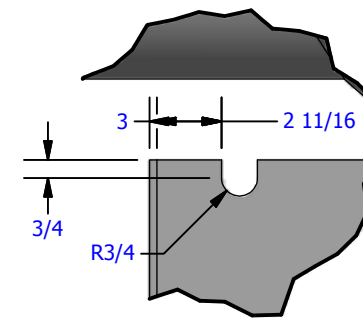
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CAPS NO.:	DRAWING:	DESIGNER:	DATE:	CUSTOMER:
18F-0235	18F-0235-000	ALEX BANNISTER	4/26/2018	HERC
CUST. PO#:	SHEET:	CHECKER:	DATE:	500 TON YORK CHILLER WATER COOLED CENTRIFUGAL LIQUID WITH SKID PACKAGE WITH CONTROL PANEL AND REMOTE MONITORING MECHANICAL DESIGN FABRICATION DRAWINGS
1108163	1 OF 2	DAVID POTTS	4/26/2018	
SIZE:	REV:	APPROVER:	DATE:	
B	0	LARRY NOVAK	4/26/2018	

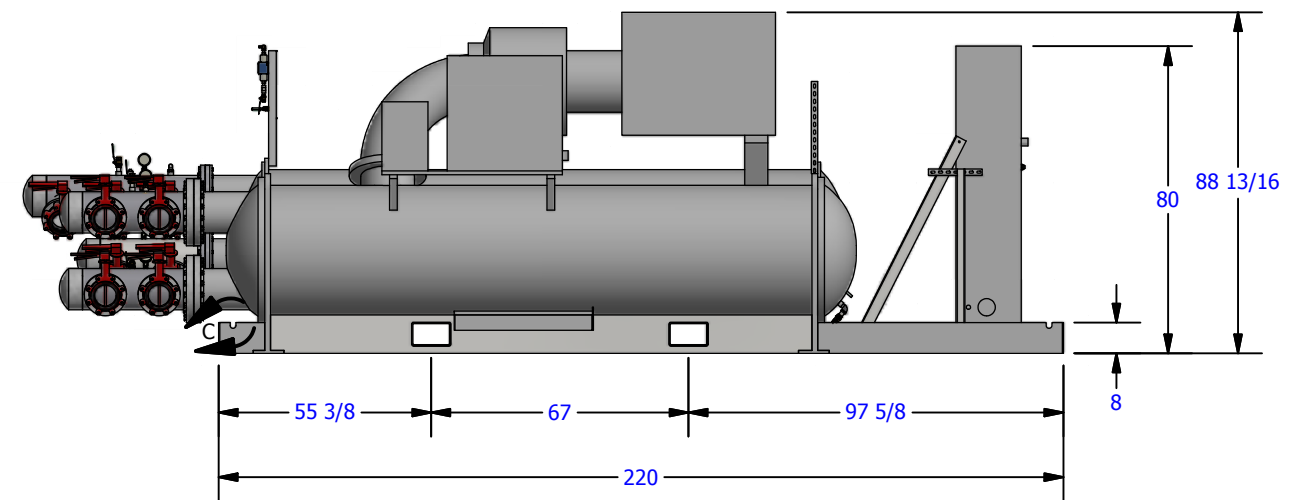
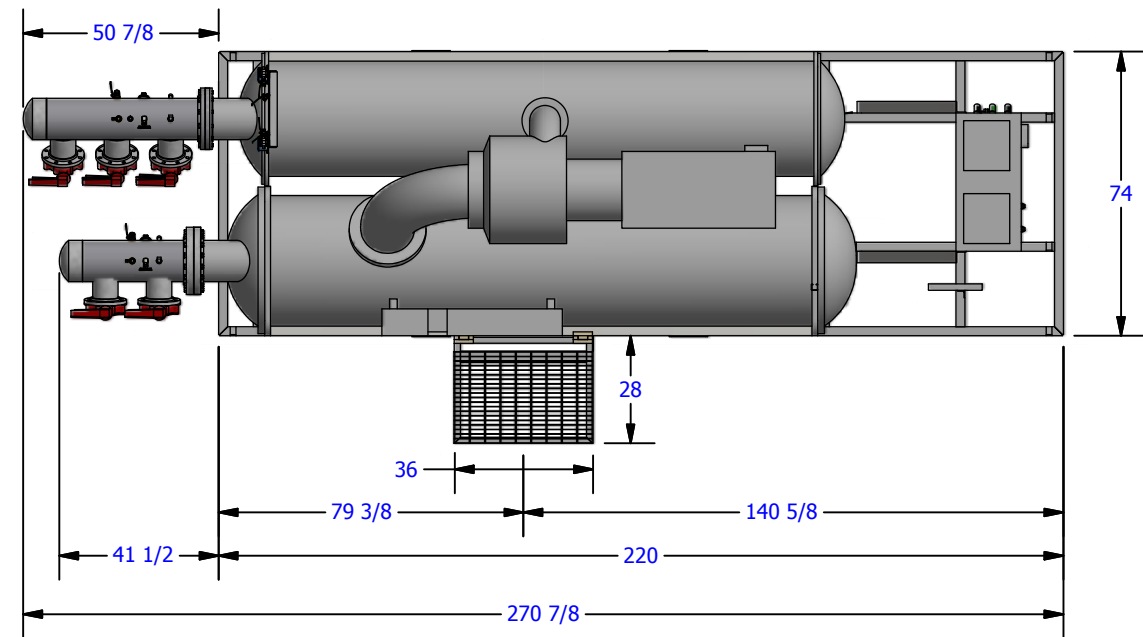
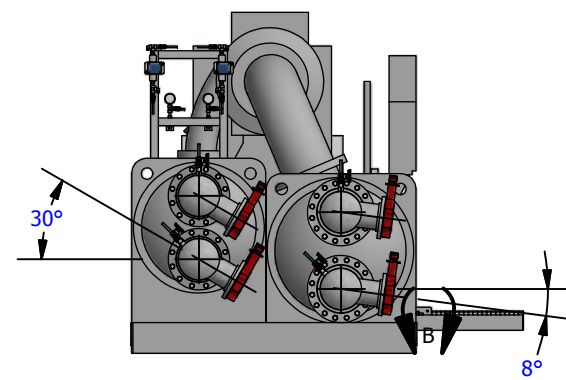
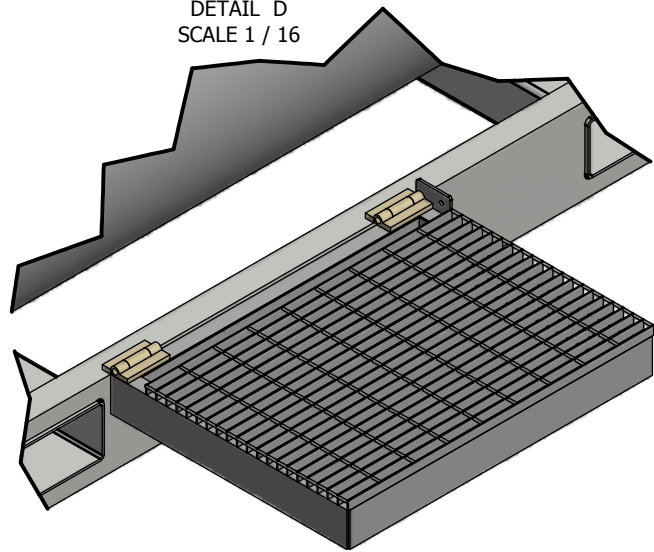


DETAIL B
SCALE 1 / 8



DETAIL C
TYP. 6 PLACES
SCALE 1 / 8

DETAIL D
SCALE 1 / 16



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18F-0235	18F-0235-000	ALEX BANNISTER	4/26/2018	HERC
CUST. PO#:	SHEET:	CHECKER:	DATE:	
1108163	2 OF 2	DAVID POTTS	4/26/2018	
SIZE:	REV:	APPROVER:	DATE:	
B	0	LARRY NOVAK	4/26/2018	

**500 TON YORK CHILLER
WATER COOLED CENTRIFUGAL LIQUID WITH SKID PACKAGE
WITH CONTROL PANEL AND REMOTE MONITORING
MECHANICAL DESIGN
FABRICATION DRAWINGS**



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SECTION

05

SPARE PARTS LIST

SUGGESTED SPARE PARTS						
JOB #:	18F-0235	REVISION #:	0	REV. DATE:	9/17/2018	
CUSTOMER	HERC					
PROJECT	-					
ITEM #	DESIGNATION	BRAND	MODEL/PART #	DESCRIPTION	QTY	CAPS#
	HOUR METER	GDI	N430-0200-8111	AC/DC HOUR METER 2-HOLE, 2 TAB IN-LINE, 5-277 AC/DC		
	FUSE 1-3	MERSEN	ATMR15	AMP-TRAP 15A FUSES		
	FUSE BLOCK	MERSEN	30313R	3 POLE CLASS CC FUSE BLOCK		
	FUSE F4	MERSEN	AJT20	AMP-TRAP 20A FUSES CLASS J		
	FUSE BLOCK	MERSEN	US3J11I	1 POLE CLASS J FUSE BLOCK		
	FU5-FU7	MERSEN	ATQR-1/4	AMP-TRAP 1/4 FUSES (FOR PHASE MONITOR)		
	RECETACLE	HUBBEL	HBL5278C	RECEPTACLE		
	PL	SQUARE D	9001KT1R31	RED PILOT LIGHT 120VAC PUSH TO TEST		
	PL	SQUARE D	9001KT1G31	GREEN PILOT LIGH 120VAC PUSH-TO-TEST		
	CR3 RELAY	SQUARE D	8501XM040V02	AC MASTER RELAY 4NO CONTACTS 120V COIL		
	DP	RAWSON	J21K-150-9538	DIFF. PRESSURE SWITCH (FOR CONDENSER SIDE)		
	DP	RAWSON	J21K-357	DIFF. PRESSURE SWITCH (FOR EVAPORATOR SIDE)		
	POWER WIRE	SOUTHWIRE		4/0 TYPE W PORTABLE CABLE 1 CONDUCTOR		
	PM	SQUARE D	RM35TF30	PHASE MONITOR DPDT		