

TECHNICAL

S Y S T E M S

Midgley-Huber, Inc.
 Project: Stuart Elementary School Chiller
 Upgrade
 PR: 92224
 6/5/2008

- ☐ FURNISH AS SUBMITTED ☐ REVIEW AND RESUBMIT
☐ REJECTED ☐ SUBMIT SPECIFIED ITEM
☐ FURNISH AS CORRECTED

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

BRENNAN CONSTRUCTION CO., INC.

Date 06/18/08 ch

Midgley-Huber, Inc.
 Kent Bailey

ENGINEERED SYSTEMS ASSOCIATES			
SHOP DRAWING REVIEW			
NO EXCEPTIONS TAKEN	NOTE MARKINGS		
REJECTED	RESUBMIT		
Engineer's review is for general conformance with the design concept and contract documents. Markings or comments shall not be construed as relieving the Contractor from compliance with the project plans and specifications, nor departures therefrom. The Contractor remains responsible for details and accuracy, for confirming and correlating all quantities and dimensions, for selecting fabrication process, for techniques of assembly, and for performing his work in a safe manner.			
By <u>DES</u>		Date <u>6/20/08</u>	

Technical Systems

P.O. Box 1206 | Pryor, OK 74362 | phone (918) 825-7222 | fax (918) 825-0723

Water Chiller Accessories
Midgley- Huber
Project: Stuart Elementary School Chiller Upgrade
PR: 92224

Model 30A1SD160H2-SPT
Quantity 1
Design Ambient 95°F
Entering Solution Temp 55°F
Leaving Solution Temp 45°F
RLA 111 amps
MCA ~~100~~ amps *321 As per Wiring Diagram*
GPM 340 GPM
Solution 40% Propylene
Unit Voltage 460/3/60
Control Voltage 115/1/60
Dimensions 348"Lx96"Wx125.6875"H
Est. Shipping Weight 19,474 lbs.
Est. Operating Weight 20,154 lbs.

UNIT ACCESSORIES

Fan Cycle +20°
Unloading per Compressor Variable 40%-100%
Independent Refrigerant Circuits
Compressor Fusing
Control Circuit Transformer
Alarm Circuit w/ Dry contacts - MCS Controller
NEMA 3R Panel w/ UL 508 Label
Automatic Lead-Lag Switch – MCS Controller
Off/ Run/ Pumpdown Switch
Adjustable Guaranteed off Timer (GOT) - MCS
Time Delay Between Compressors - MCS
Unit Phase Failure Monitor

Fused 115 Volt Convenience Outlet
Amperage Meter – MCS Controller
Load Limiting Pressure Switch – MCS Controller
Liquid Line Solenoid, Drier, & Sight Glass - Mounted
Liquid Line Drier (rep core) & Sight glass
High Altitude Fan Assemblies
Painted Cabinet – Epoxy – Beige Color
Standard Hot Gas Bypass – 25 Tons
Standard Pump Package – Armstrong Pump
Dedicated Pump Enclosure w/ rem. Service Panels
Close Coupled Pump Series 4380 Model 4 x 4 x 10
Thermometers
Butterfly Valve/ Ball Suct and Disch of Pump
½" Closed Cell Pipe Insulation
Common Pressure Gauge w/ shut off valves
Triple Duty Chilled Water Storage Tank – Closed 375 Gal with Sight
Glass
Glycol Feed Tank w/High Pressure Pump
Manual Vent and Drain Valves on Storage Tank
MCS DDC Controller - *Bacnet Compatable to Building DDC?*
Mount Glycol Tank Across system Pump w/ Shut off valves inlet &
Outlet
Triple Duty Tank will serve following functions:
(A) Storage
(B) Expansion
(C) Air Separation

Air Cooled Chiller Rating Report

Model Number: 30A1SD160H2-SPT **Base Model:** 30A1SD160
Condenser: (1)12C46.25X282-14-4-1C-S/C --- (1)12C46.25X282-14-4-1C-S/C
Evaporator: RAETXC200-2 **Fouling =** .0001 **System:** FULL
Compressor: (1) SCH28000.H2 --- (1) SCH28000.H2
Fans: (18) 1 hp, 28" dia, 1140 rpm, 60 hz, high alt **Altitude =** 0
Fluid: Glycol 40% Propylene
Refrigerant: R22H
Hertz: 60

Leaving Fluid [°F]	Ambient [°F]	Evaporator [°F]	Condenser [°F]	Capacity [Tons]	Unit [KW]	GPM	Evaporator PD [psi]	Compressor EER	Unit EER
32.0	85.0	22.3	107.8	109.8	140.4	285.6	999.0	10.9	9.4
34.0	85.0	24.0	108.4	113.8	142.0	296.0	999.0	11.2	9.6
35.0	85.0	24.9	108.8	115.8	143.0	301.0	999.0	11.3	9.7
36.0	85.0	25.7	109.2	117.6	143.8	306.2	999.0	11.4	9.8
38.0	85.0	27.4	109.8	121.8	145.4	316.8	999.0	11.6	10.1
40.0	85.0	29.1	110.6	125.8	147.4	327.6	999.0	11.8	10.2
----	----	----	----	----	----	----	----	----	----
32.0	95.0	22.9	117.2	101.8	153.0	265.0	999.0	9.2	8.0
34.0	95.0	24.6	117.8	105.6	154.6	274.8	999.0	9.4	8.2
35.0	95.0	25.5	118.2	107.6	155.6	279.6	999.0	9.5	8.3
36.0	95.0	26.3	118.6	109.4	156.6	284.6	999.0	9.6	8.4
38.0	95.0	28.0	119.2	113.4	158.4	294.8	999.0	9.8	8.6
40.0	95.0	29.8	119.8	117.4	160.0	305.4	999.0	10.0	8.8
----	----	----	----	----	----	----	----	----	----
32.0	105.0	23.5	126.6	93.4	166.2	242.8	999.0	7.6	6.7
34.0	105.0	25.3	127.2	97.0	168.0	252.2	999.0	7.9	6.9
35.0	105.0	26.1	127.6	98.6	169.0	256.8	999.0	7.9	7.0
36.0	105.0	27.0	127.8	100.6	169.8	261.8	999.0	8.1	7.1
38.0	105.0	28.7	128.4	104.4	171.6	271.6	999.0	8.3	7.3
40.0	105.0	30.4	129.2	108.0	173.6	281.2	999.0	8.4	7.5

Calculations based on 10°F Range

Catalog Rating

Capacity [BTUH]

8°F Evaporator: 1080000

10°F Evaporator: 1368000

Condenser @ 25°F Temperature Difference: 1820866

Discharge Line Loss: 1 [°F]

Suction Line Loss: 1 [°F]

We reserve the right to change or revise specifications and product design in connection with any feature of our products. Such changes do not entitle the buyer to corresponding changes, improvements, additions, or replacements for equipment previously sold or shipped.

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P.O. Box 1206 | Pryor, OK 74362 | Phone: (918) 825-7222 | Fax: (918) 825-0723

Report Created On: Thursday, June 5, 2008
Report Created By: MIKEM

Report Created Using
RAE Solutions

Page 1 of 1
Version: 2008.5.27.0

Air Cooled Chiller Rating Report

Model Number: 30A1SD160H2-SPT **Base Model:** 30A1SD160
Condenser: (1)12C46.25X282-14-4-1C-S/C --- (1)12C46.25X282-14-4-1C-S/C
Evaporator: RAETXC200-2 **Fouling =** .0001 **System:** FULL
Compressor: (1) SCH28000.H2 --- (1) SCH28000.H2
Fans: (18) 1 hp, 28" dia, 1140 rpm, 60 hz, high alt **Altitude =** 4500
Fluid: Glycol 40% Propylene
Refrigerant: R22H
Hertz: 60

Leaving Fluid [°F]	Ambient [°F]	Evaporator [°F]	Condenser [°F]	Capacity [Tons]	Unit [KW]	GPM	Evaporator PD [psi]	Compressor EER	Unit EER
41.0	85.0	30.5	111.0	129.4	148.6	336.2	999.0	12.1	10.5
43.0	85.0	32.2	111.8	133.6	150.6	347.0	999.0	12.3	10.6
44.0	85.0	33.0	112.2	135.8	151.6	352.6	999.0	12.4	10.7
45.0	85.0	33.9	112.4	138.0	152.4	358.6	999.0	12.5	10.9
47.0	85.0	35.5	113.2	142.4	154.4	369.8	999.0	12.7	11.1
49.0	85.0	37.2	114.0	146.8	156.6	381.4	999.0	12.9	11.3
---	---	---	---	---	---	---	---	---	---
41.0	95.0	31.1	120.4	120.6	161.6	313.2	999.0	10.2	9.0
43.0	95.0	32.8	121.0	124.6	163.4	324.0	999.0	10.4	9.1
44.0	95.0	33.7	121.4	126.8	164.6	329.2	999.0	10.5	9.2
45.0	95.0	34.5	121.8	128.8	165.6	334.6	999.0	10.6	9.3
47.0	95.0	36.2	122.4	133.0	167.6	345.8	999.0	10.8	9.5
49.0	95.0	37.9	123.2	137.2	169.8	356.6	999.0	11.0	9.7
---	---	---	---	---	---	---	---	---	---
41.0	105.0	31.8	129.6	111.2	175.2	289.0	999.0	8.6	7.6
43.0	105.0	33.5	130.4	115.0	177.4	298.6	999.0	8.8	7.8
44.0	105.0	34.4	130.6	117.0	178.2	304.2	999.0	8.9	7.9
45.0	105.0	35.2	131.0	119.0	179.4	309.2	999.0	8.9	8.0
47.0	105.0	36.9	131.6	123.0	181.4	319.8	999.0	9.1	8.1
49.0	105.0	38.6	132.4	127.0	183.8	330.0	999.0	9.3	8.3

Calculations based on 10°F Range

Catalog Rating

Capacity [BTUH]

8°F Evaporator: 1080000

Discharge Line Loss: 1 [°F]

10°F Evaporator: 1368000

Suction Line Loss: 0.5 [°F]

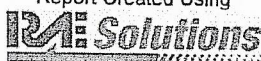
Condenser @ 25°F Temperature Difference: 1820866

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P.O. Box 1206 | Pryor, OK 74362 | Phone: (918) 825-7222 | Fax: (918) 825-0723

Report Created On: Friday, May 30, 2008
 Report Created By: MIKEM

Report Created Using


Page 1 of 1
 Version: 2008.5.27.0

Close Coupled Vertical In-Line Centrifugal Pump

Representative: RAE Corporation
4492 hunt Street, Pryor, OK
Phone: 918-825-7222, Fax:

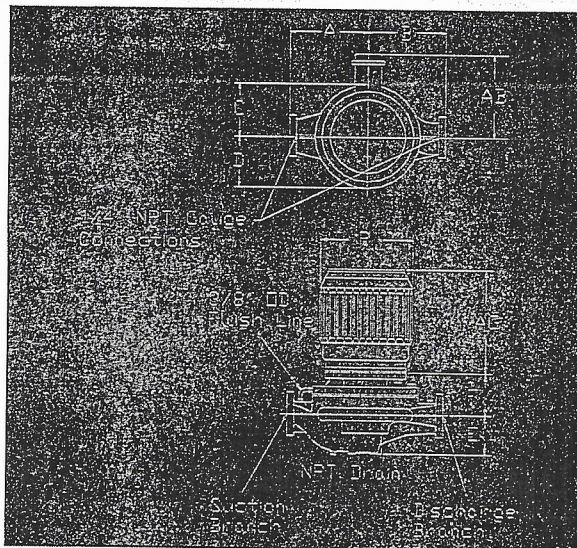
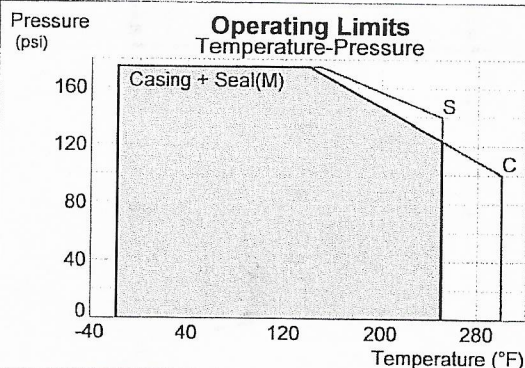
Order No: **Date:**
Submitted by: Mike McClendon **Date:** 5/29/2008
Approved by: **Date:**

Tag Num:	
Service:	
Location:	
No. of Pumps:	1
Capacity:	340 usgpm
Head:	75 ft
Piping:	Single
Suction Pressure:	0 ft
Liquid:	PropyleneGlycol:40, sg= 1.04, 45 °
Viscosity:	47.41 ssu
Branch Sizes:	Suction= 4 in, Discharge= 4 in

Motor Supplier:	Factory Choice
Motor Size:	15 hp @ 1800 rpm
Frame Size:	254JM
Enclosure:	ODP
Cycle/Phase/Voltage:	60/3/460
Motor Eff:	Std
Insulation:	Class "B" Insulation (266.0 °F)
Starter Config:	DOL
Full Load/Starting (A)	21.0 / 115.9

Construction	BF (Bronze Fitted)
ANSI Flange Rating	125 lb. (Cast Iron)
Volute	Cast Iron (A48-30)
Impeller	Bronze (B584-844)
Shaft Sleeve	Bronze (B584-844)
Flush Line	Bronze (B584-844)
Casing Gasket	Confined Non-Asbestos Fiber
Motor Shaft	Carbon Steel

Manufacturer	Armstrong
Manu. Code [21A]	21A
Seal Type	Inside Unbalanced
Rotating Face	Carbon
Stationary Seat	Silicon Carbide
Secondary Seal	EPDM
Springs	Stainless Steel
Rotating Hardware	Stainless Steel

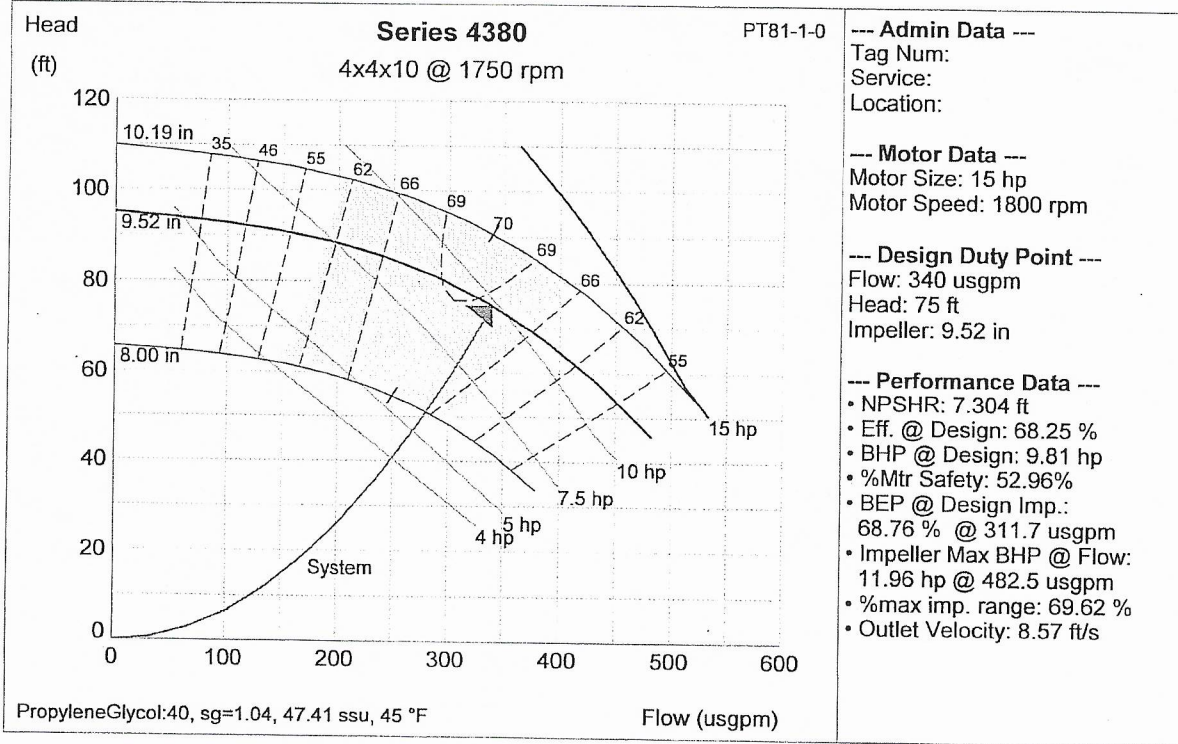


Suct.	Disch.	A	B	C	D	E	Drain	P.Wgt	F	AG	P	AB	M.Wgt
4	4	14	12	7.75	6.88	7.63	0.25	273	4.75	20.25	13	10.38	160

ARMSTRONG
SUBMITTAL

Series 4380
4x4x10

Close Coupled Vertical In-Line Centrifugal Pump



Triple Duty Tanks

Definition:

Rae Corporation manufactures a closed tank that can be rated at 75 psi or 150 psi. These tanks are used primarily for storage of water in the system. In a closed system, it is good practice to include some type of expansion and air separation. These are generally separate items that require extra space for locating and installing them in the piping system. We have created a triple duty tank that includes these three concepts. The tank is obviously a **storage** tank, however it also maintains an air cushion to allow the air to separate out of the water before entering the pump. **Air separation** occurs when the water velocity is slowed down, as within a large tank. Therefore, the addition of the cushion allows these air pockets to migrate to the top of tank. This cushion is created by the 5" pipe-stand that is located at the purge valve on the top of the tank. With the use of this piece of pipe, you can create a pocket of air used for expansion. Therefore, the last function is then **expansion** of water in the system. These three uses are combined into one tank in the unit.

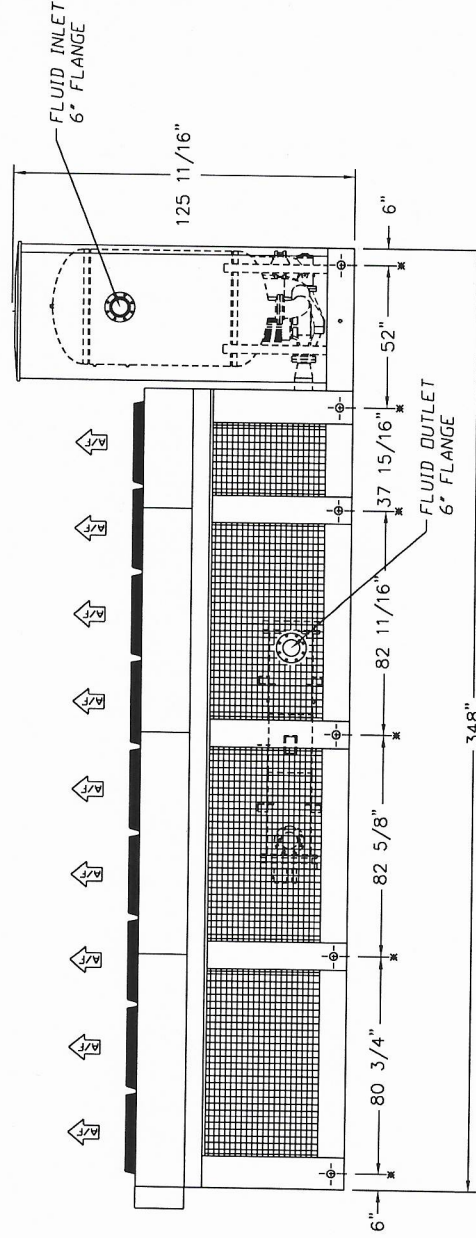
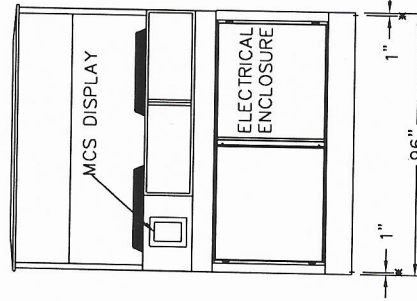
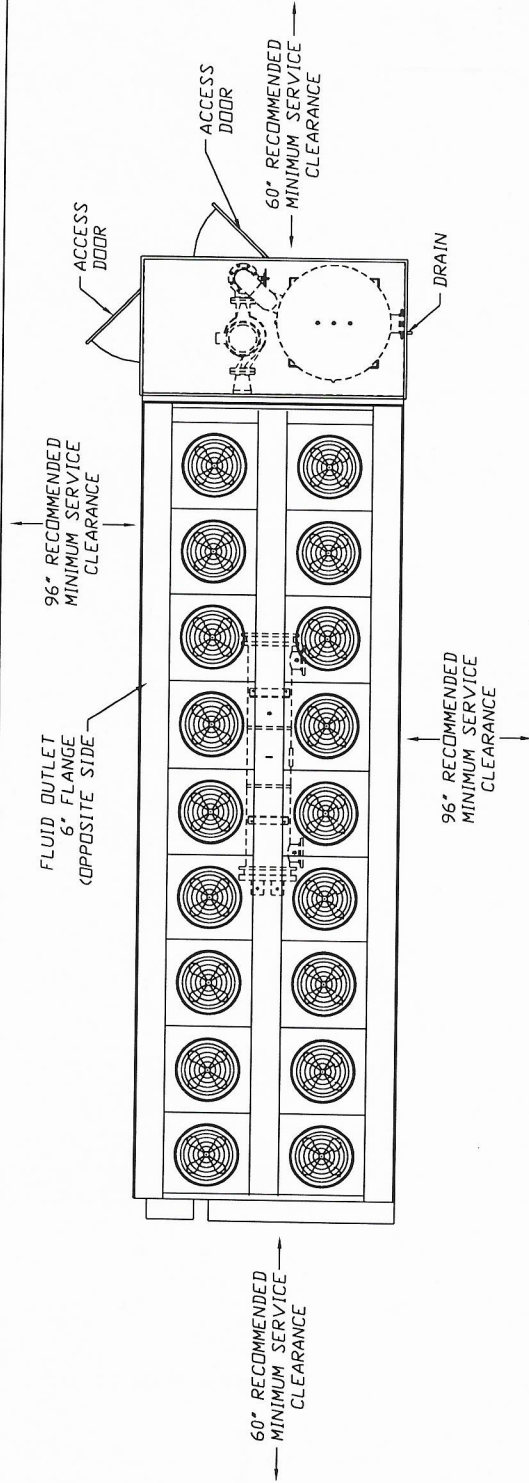
Installation:

At the time of installation, the system will be filled through the fill train provided at the tank. The valve on the top of the tank will be open to allow air out of the tank during this initial fill. You will notice that water will start flowing out of the purge valve when the system is full. The water is reaching the bottom of the pipe that extends into the tank. At this time, shut the valve off and stop filling the system.

Next, the pump should be turned on to pump water through the piping system. This will push through to the tank any pockets of air in the pipe runs or coils. After at least 10 minutes, shut the pump off, open the purge valve again, and fill the system, this time watching the purge valve a little more closely. After just a few minutes, water should start to flow out of this valve again, shut it off. Then, shut off the makeup water coming into the system. The water piping should now be purged of air, and you will have successfully pressurized the system.

As with any system, it is a good idea to check this tank during the routine maintenance schedule. The function of the triple duty tanks is based on maintaining a good air cushion in the tank. Provided that the purge valve is closed, the system should remain pressurized and available for expansion and air separation as it was designed. It is a good idea to purge the system during the maintenance schedule to allow the water to rise to the bottom of the 5" standpipe, thus releasing the air out of the system through the purge valve.

One more item to address is the auto air vent shown in the drawing attached. In a triple duty tank, these vents can also be used to automatically purge air out of the system. However, if this option is desired you must call out for an additional standpipe to be located at the air vent. This will be located at the same tank level as the pipe extending from the purge valve, to keep the air cushion in tact.



2 1/2" DIA. RIGGING HOLES
 5/8" DIA. UNIT MOUNTING HOLES
 EST. SHIPPING WT. -19,474- LBS.
 EST. OPERATING WT. -20,154- LBS.

TECHNICAL
S Y S T E M S
 DIVISION RAE CORPORATION

TITLE:
 UNIT DRAWING
 30A1SD160H2-SPT

SCALE: NONE
 DATE: 06/03/08
 SUB-TITLE:

ENGINEERING
 APPROVED BY:

QUALITY CONTROL
 APPROVED BY:

DRAWN BY: JD
 FILE NO: ACAD2008
 DRAWING NUMBER:
 92224U1

REVISED BY:

DATE:

REV. NO.

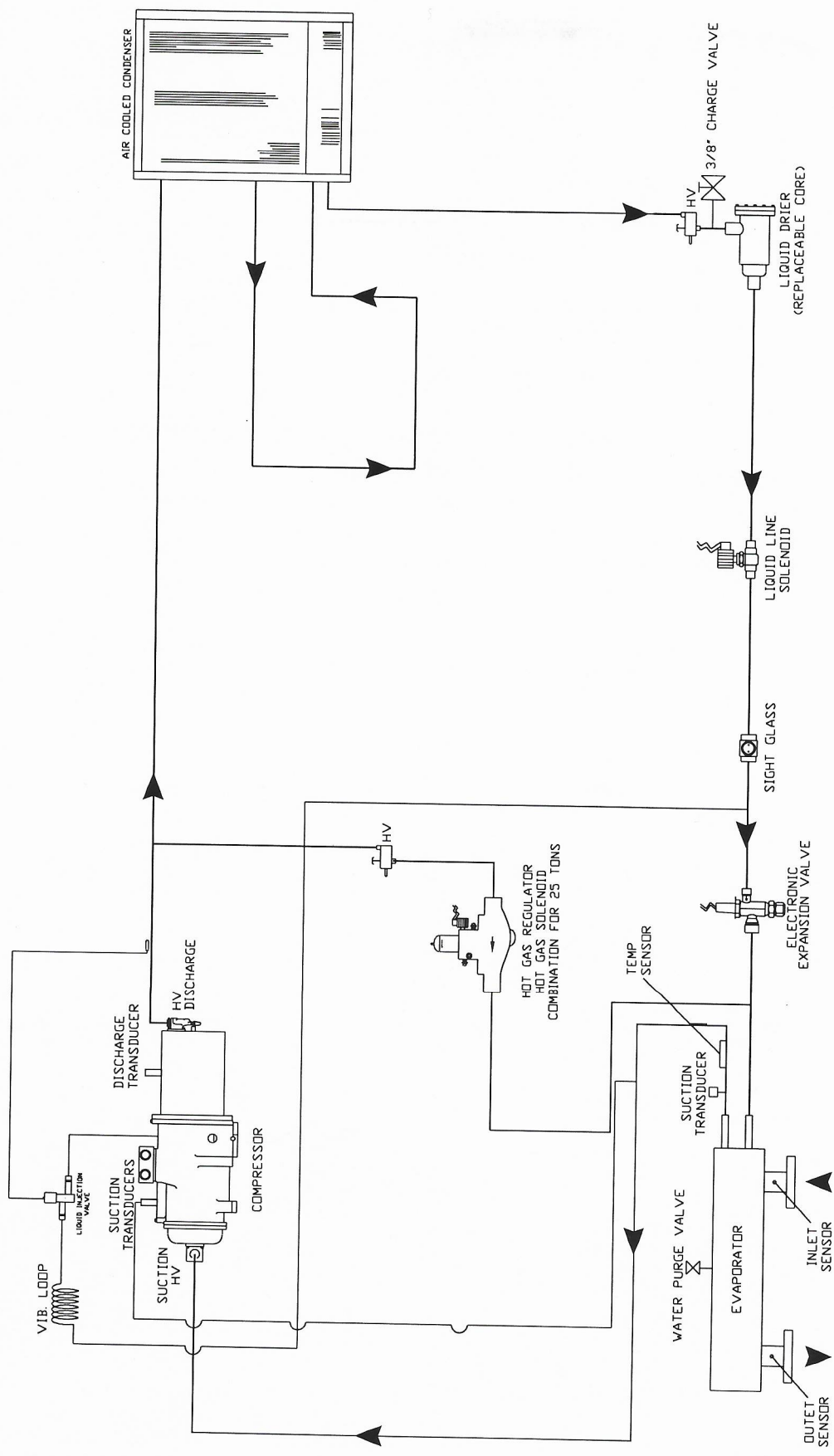
PR: 92224

92224U1

REV. NO.

DATE:

REV. NO.

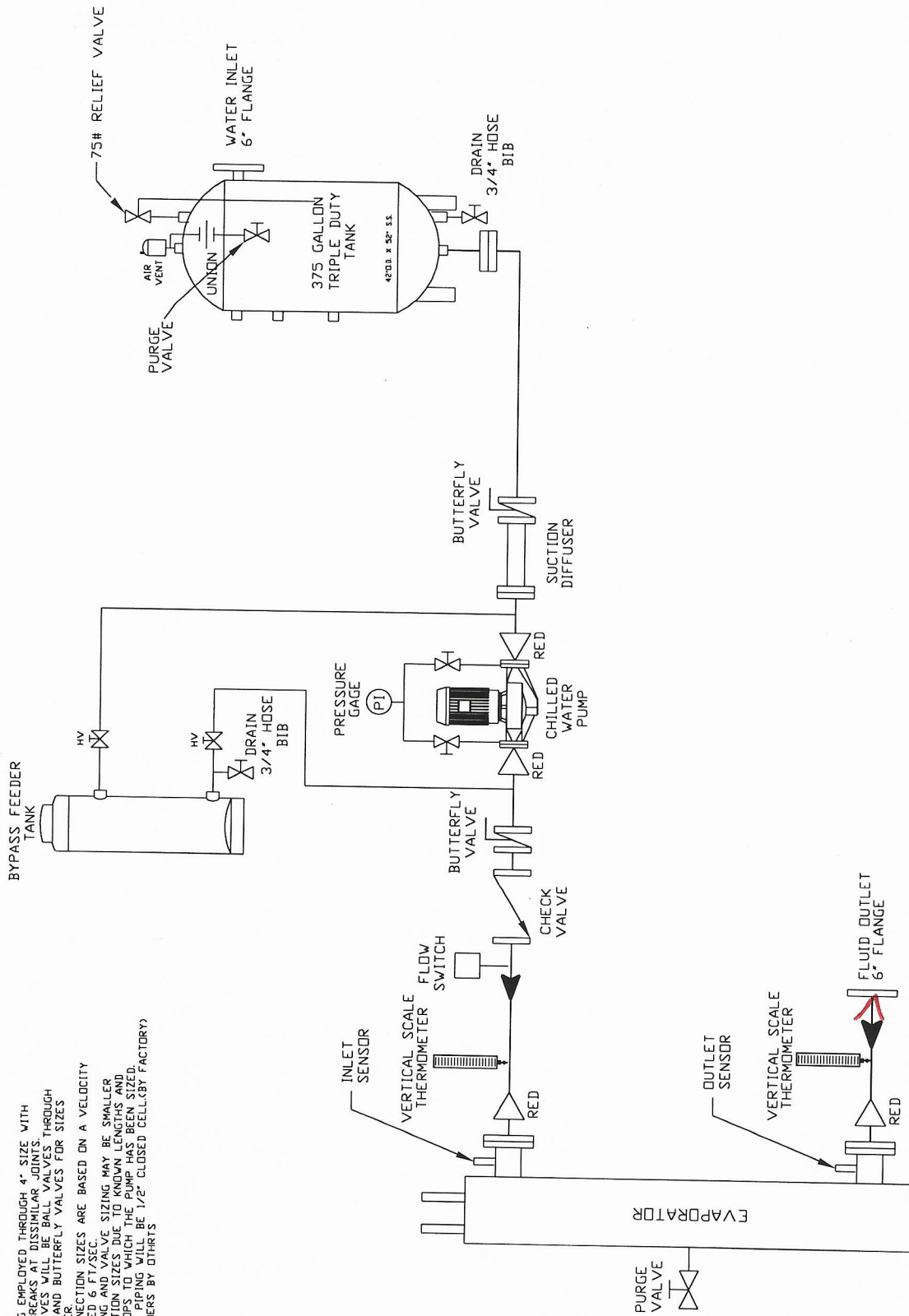


CIRCUITS 1 SHOWN, CIRCUIT 2 SAME

TECHNICAL SYSTEMS DIVISION RAE CORPORATION		TITLE: REFRIGERANT PIPING 30A1SD160H2-SPT		SCALE: NONE	ENGINEERING APPROVED BY:	QUALITY CONTROL APPROVED BY:	DRAWN BY: JD	REV'D BY:	DATE:	REV. NO.
		SUB-TITLE:		DATE: 05/30/08	PR 92224	FILE NO: ACAD2008	DRAWING NUMBER: 92224P1			

NOTES

1. COPPER TUBING EMPLOYED THROUGH 4" SIZE WITH DIELECTRIC BREAKS AT DISSIMILAR JOINTS.
2. SHUT-OFF VALVES WILL BE BALL VALVES THROUGH 2 1/2" SIZE, AND BUTTERFLY VALVES FOR SIZES 3" AND LARGER.
3. CUSTOMER CONNECTION SIZES ARE BASED ON A VELOCITY NOT TO EXCEED 6 FT/SEC.
4. INLET TUBING AND VALVE SIZING MAY BE SMALLER THAN CONNECTION SIZES DUE TO KNOWN LENGTHS AND PRESSURE DROPS. THE PUMP HAS BEEN SIZED.
5. INSULATION OF PIPING WILL BE 1/2" CLOSED CELL (BY FACTORY).
6. SYSTEM STRAINERS BY OTHERS.



**TECHNICAL
SYSTEMS**
DIVISION RAE CORPORATION

TITLE: WATER PIPING
30A1SD160H2-SPT

SCALE: NONE	ENGINEERING APPROVED BY:	QUALITY CONTROL APPROVED BY:	DRAWN BY: JD	REVISED BY:	DATE:	REV. NUMBER
DATE: 05/30/08			FILE NO: ACAD2008			
SUB-TITLE:			DRAWING NUMBER: 92224W1			

PR: 92224

NOTES: FREEZE STATS WILL BE SET AT 54 PSI FROM FACTORY. AFTER 40% PROPYLENE GLYCOL IS VERIFIED FREEZE STATS WILL NEED TO BE FIELD ADJUSTED TO 22 PSI.

DENOTES COMPONENTS LOCATED EXTERNAL OF U.L. ENCLOSURE
 () INDICATES WIRE NUMBER IDENTIFICATION
 FIELD WIRING ----- (BY OTHERS)
 FAN MOTORS ARE INHERENTLY PROTECTED.
 3 PHASE MOTORS ARE PROTECTED AGAINST PRIMARY SINGLE PHASING.

TO PROTECTED POWER SOURCE
 PER N.E.C. FOR MCA VALUE OF
 100 OR LESS, USE TYPE 60°C, IF
 GREATER THAN 100 USE TYPE 75°C
 COPPER CONDUCTORS ONLY

CONTROL CIRCUIT POWER: ☐ BY OTHERS
☐ TO SEPARATE SOURCE
☒ BY FACTORY
 TOTAL MIN. VA 2000

"HACR" BKR. MUST BE USED
 IF COMPRESSOR PROTECTION
 IS NOT PROVIDED.

DISCONNECTING MEANS BY OTHERS
☐ UNIT CIRCUIT BREAKER
☐ UNIT NON-FUSED DISCONNECT
☐ UNIT FUSED DISCONNECT

PRESSURE LINE COLOR CODE	
FREEZE	BLUE
LOW	BLUE
HIGH	RED
FAN CYCLE	RED
OIL HIGH	BLACK
OIL LOW	BLUE

LEGEND

AA-Audible Alarm
 ADC-Alarm Dry Contact
 AFI-Air Flow Interlock
 C-Contactor
 CH-Crankcase Heater
 CPR-Crankcase Press. Reg.
 CST-Cooling Stage Tstat
 CT-Current Transformers
 DDP-Disch. Press. Reg.
 DPH-Drain Pan Heaters
 DS-Door Interlock Sol.
 DSHS-Desuperheat hot gas sol.
 DTS-Discharge Line Temp. Stat
 EPR-Evap. Press. Reg.
 FCS-Fan Cycle Control
 FS-Flow Switch
 FZ-Freeze Safety
 GR/G-Ground
 HCC-Heater Cable, Chiller
 HCR-Heater Cable, Receiver
 HGBS-Hot Gas Bypass Sol.
 HGD-Hot Gas Defrost Sol.
 HP-High Pressure Safety
 LAL-Low Amb. Lock Out Tstat
 LIS-Liquid Injection Sol.
 LLS-Low Liquid Level
 LPS-Load Limit Press. Switch
 LLS-Liquid Line Sol.
 LO-Lo Press. Control
 MET-Meter Elapsed Time
 MSD-Man. Sw. Door
 MSHS-Man. Sw. Horn Silence
 MSHDA - Man. Sw. Hand-Off-Auto
 MSL-Man. Sw. Lead Lag
 MSPD-Man. Sw. Pumpdown
 MSPDR-Man. Sw. Pumpdown Off Run
 MSPHM-Man. Sw. Phase Monitor
 OK - Oil Failure Safety
 OS-Oil Separator Sol.
 OVL-Overload
 PHM-Phase Monitor
 PM-Power Module, Compressor Box
 R-Relay
 RHC-Reheat Control
 RRS-Reheat 3 Way Valve Solenoid
 TD-Time Delay
 TW/TD-Time Delay
 TPWS-Timer Part Wind Start
 ULS-Unloader Sol.
 UPS-Unloading Press. Sw.

FILE # ACAD 2008

PRESSURE SETTINGS	
CONTROL	HIGH TEMP R-22
	IN OUT
HIGH PRESSURE	MAN 400
LOW PRESSURE	50 20
FREEZE CONTROL	MAN 54
UNLOADERS	
FAN CYCLE/FAN DELAY	250 200
2-STEP FAN CYCLE, A	220 200
2-STEP FAN CYCLE, B	250 210
3-STEP FAN CYCLE, A	220 200
3-STEP FAN CYCLE, B	230 210
3-STEP FAN CYCLE, C	250 220
4-STEP FAN CYCLE, A	220 200
4-STEP FAN CYCLE, B	250 210
4-STEP FAN CYCLE, C	240 220
4-STEP FAN CYCLE, D	250 230

REVISIONS	
No.	By Date
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

TECHNICAL SYSTEMS

30A1SD160H2-SPT

CH-1 STUART ELEMENTARY SCHOOL

DIVISION R&E CORPORATION

ENGINEERING

APPROVED BY:

QUALITY CONTROL

DRAWN BY: R.N.R

PR: 92224

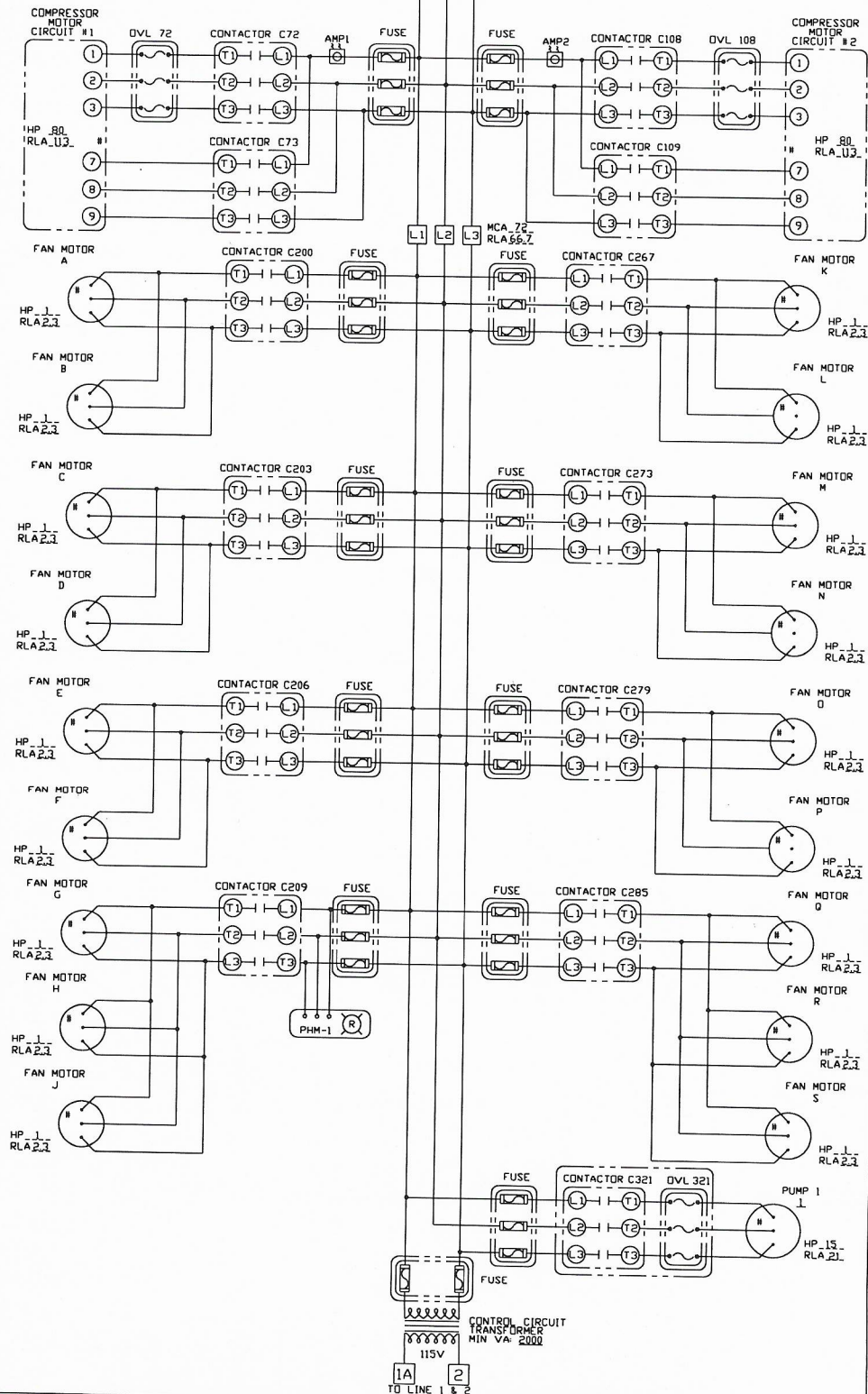
DRAWING NUMBER: 92224E1A

DATE: 06/02/08

SCALE: N/A

SUB-TITLE: ELECTRICAL SCHEMATIC

PAGE 1 of 7



NOTES:

DENOTES COMPONENTS LOCATED EXTERNAL OF U.L. ENCLOSURE
 □ INDICATES TERMINAL BLOCK
 () INDICATES WIRE NUMBER IDENTIFICATION
 FIELD WIRING ----- (BY OTHERS)

LEGEND

AA-Audible Alarm
 ADC-Alarm Dry Contact
 AFI-Air Flow Interlock
 C-Contactor
 CCH-Crankcase Heater
 CPR-Crankcase Press. Reg.
 CST-Cooling Stage T'stst
 CT-Current Transformers
 DDP-Disch. Press. Reg.
 DPH-Drain Pon Heaters
 DS-Door Interlock Sol.
 DSHS-Desuperheat hot gas sol.
 DTS-Discharge Line Temp. Slot
 EPR-Evap. Press. Reg.
 FCS-Fan Cycle Control
 FS-Flow Switch
 FZ-Freeze Safety
 GR/G-Ground
 HCC-Heater Cable, Chiller
 HCR-Heater Cable, Receiver
 HGBS-Hot Gas Bypass Sol.
 HGD-Hot Gas Defrost Sol.
 HP-High Pressure Safety
 LALT-Low Amb. Lock Out T'stst
 LIS-Liquid Injection Sol.
 LUL-Low Liquid Level
 LLPS-Load Limit Press. Switch
 LLS-Liquid Line Sol.
 LO-Lo Press. Control
 MET-Meter Elapsed Time
 MSD-Mon. Sw. Door
 MSHS-Mon. Sw. Horn Silence
 MSHOA-Mon. Sw. Hand-Off-Auto
 MSLL-Mon. Sw. Lead Log
 MSPD-Mon. Sw. Pumpdown
 MSPDR-Mon. Sw. Pumpdown Off Run
 MSPHM-Mon. Sw. Phase Monitor
 OF-Oil Failure Safety
 OS-Oil Separator Sol.
 OVL-Overload
 PHM-Phase Monitor
 PM-Power Module, Compressor Box
 R-Relay
 RHC-Reheat Control
 RRS-Reheat 3 Way Valve Solenoid
 TD-Time Delay
 TW/TD-Time Delay
 TPWS-Timer Port Wind Start
 ULS-Unloader Sol.
 UPS-Unloading Press. Sw.

FILE # ACAD 2008

PRESSURE SETTINGS
 CONTROL

HIGH TEMP	R-22
IN	OUT
HIGH PRESSURE	MAN 400
LOW PRESSURE	50 20
FREZZE CONTROL	MAN 54
UNLOADER A	
UNLOADER B	
FAN CYCLE/FAN DELAY	250 200
2-STEP FAN CYCLE A	220 200
2-STEP FAN CYCLE B	250 210
3-STEP FAN CYCLE A	220 200
3-STEP FAN CYCLE B	230 210
3-STEP FAN CYCLE C	250 220
4-STEP FAN CYCLE A	220 200
4-STEP FAN CYCLE B	230 210
4-STEP FAN CYCLE C	240 220
4-STEP FAN CYCLE D	250 230

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TECHNICAL SYSTEMS

TITLE: 30A1SD160H2-SPT

DIVISION: RAC CORPORATION

ENGINEERING: CH-1 STUART ELEMENTARY SCHOOL

APPROVED BY: [Signature]

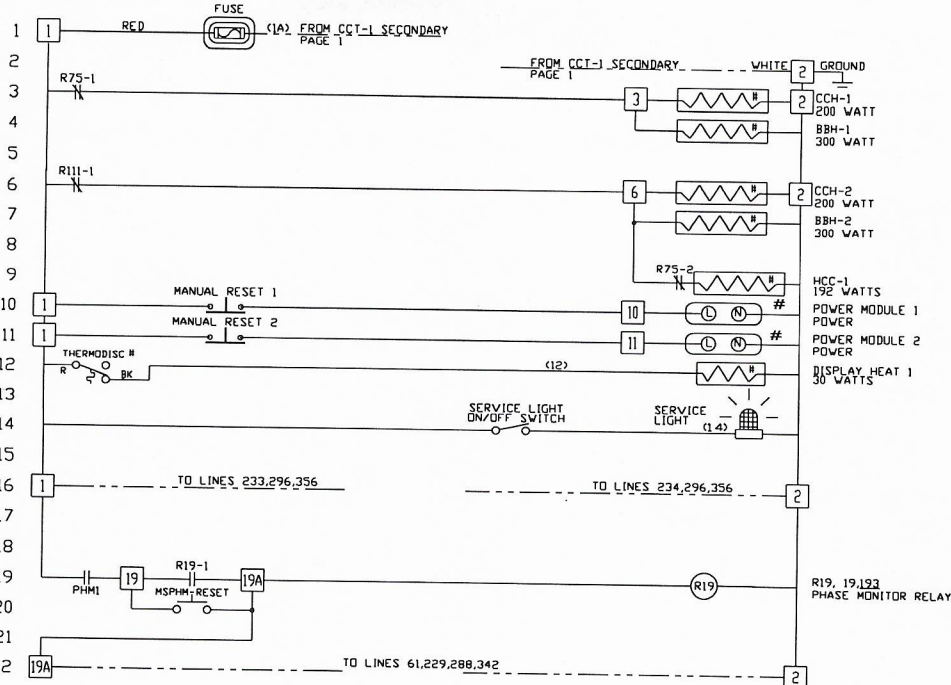
DATE: 06/02/08

SCALE: N/A

SUB-TITLE: ELECTRICAL SCHEMATIC

PAGE 2 of 7

DRAWING NUMBER: 92224E1B



NOTES:

DENOTES COMPONENTS LOCATED EXTERNAL OF U.L. ENCLOSURE
 □ INDICATES TERMINAL BLOCK
 () INDICATES WIRE NUMBER IDENTIFICATION
 FIELD WIRING -----(BY OTHERS)

LEGEND

AA-Audible Alarm
 ADC-Alarm Dry Contact
 AFI-Air Flow Interlock
 C-Contactor
 CCH-Crankcase Heater
 CPR-Crankcase Press. Reg.
 CST-Cooling Slope Tstat
 CT-Current Transformers
 DDP-Drain Pan Heaters
 DDP-Drain Pan Heaters
 DS-Door Interlock Sol.
 DSHS-Desuperheat hot gas sol.
 DTS-Discharge Line Temp. Slot
 EPR-Evap. Press. Reg.
 FCS-Fan Cycle Control
 FS-Flow Switch
 FZ-Freeze Safety
 GR/G-Ground
 HCC-Heater Cable, Chiller
 HCR-Heater Cable, Receiver
 HCBS-Hot Gas Bypass Sol.
 HGD-Hot Gas Defrost Sol.
 HP-High Pressure Safety
 LALT-Low Amb. Lock Out Tstat
 LIS-Liquid Injection Sol.
 LLL-Low Liquid Level
 LLPS-Load Limit Press. Switch
 LLS-Liquid Line Sol.
 LO-Lo Press. Control
 MET-Meter Elapsed Time
 MSD-Man. Sw. Door
 MSHS-Man. Sw. Horn Silence
 MSHOA - Man. Sw. Hand-Off-Auto
 MSL-Man. Sw. Lead Lag
 MSPD-Man. Sw. Pumpdown
 MSPDR-Man. Sw. Pumpdown Off Run
 MSPHM-Man. Sw. Phase Monitor
 OF - Oil Failure Safety
 OS-Oil Separator Sol.
 OVL-Overload
 PHM-Phase Monitor
 PM-Power Module, Compressor Box
 R-Relay
 RHC-Reheat Control
 RHS-Reheat 3 Way Valve Solenoid
 TD-Time Delay
 TM/TD-Time Delay
 TPWS-Timer Port Wind Start
 ULS-Unloader Sol.
 UPS-Unloading Press. Sw.

FILE # ACAD 2008

PRESSURE SETTINGS			
CONTROL		HIGH TEMP	
		IN	OUT
HIGH PRESSURE	MAN	400	
LOW PRESSURE	MAN	50	20
FREZZE CONTROL	MAN	54	
UNLOADER A			
UNLOADER B			
FAN CYCLE/FAN DELAY	250	200	
2-STEP FAN CYCLE A	220	200	
2-STEP FAN CYCLE B	250	210	
3-STEP FAN CYCLE A	220	200	
3-STEP FAN CYCLE B	230	210	
3-STEP FAN CYCLE C	250	220	
4-STEP FAN CYCLE A	220	200	
4-STEP FAN CYCLE B	230	210	
4-STEP FAN CYCLE C	240	220	
4-STEP FAN CYCLE D	250	230	

REV	BY	DATE	DESCRIPTION
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TECHNICAL SYSTEMS

3041SD160H2-SPT

CH-1 SMART ELEMENTARY SCHOOL

DATE: 06/02/08

SCALE: N/A

DIVISION RAE CORPORATION

APPROVED BY:

QUALITY CONTROL:

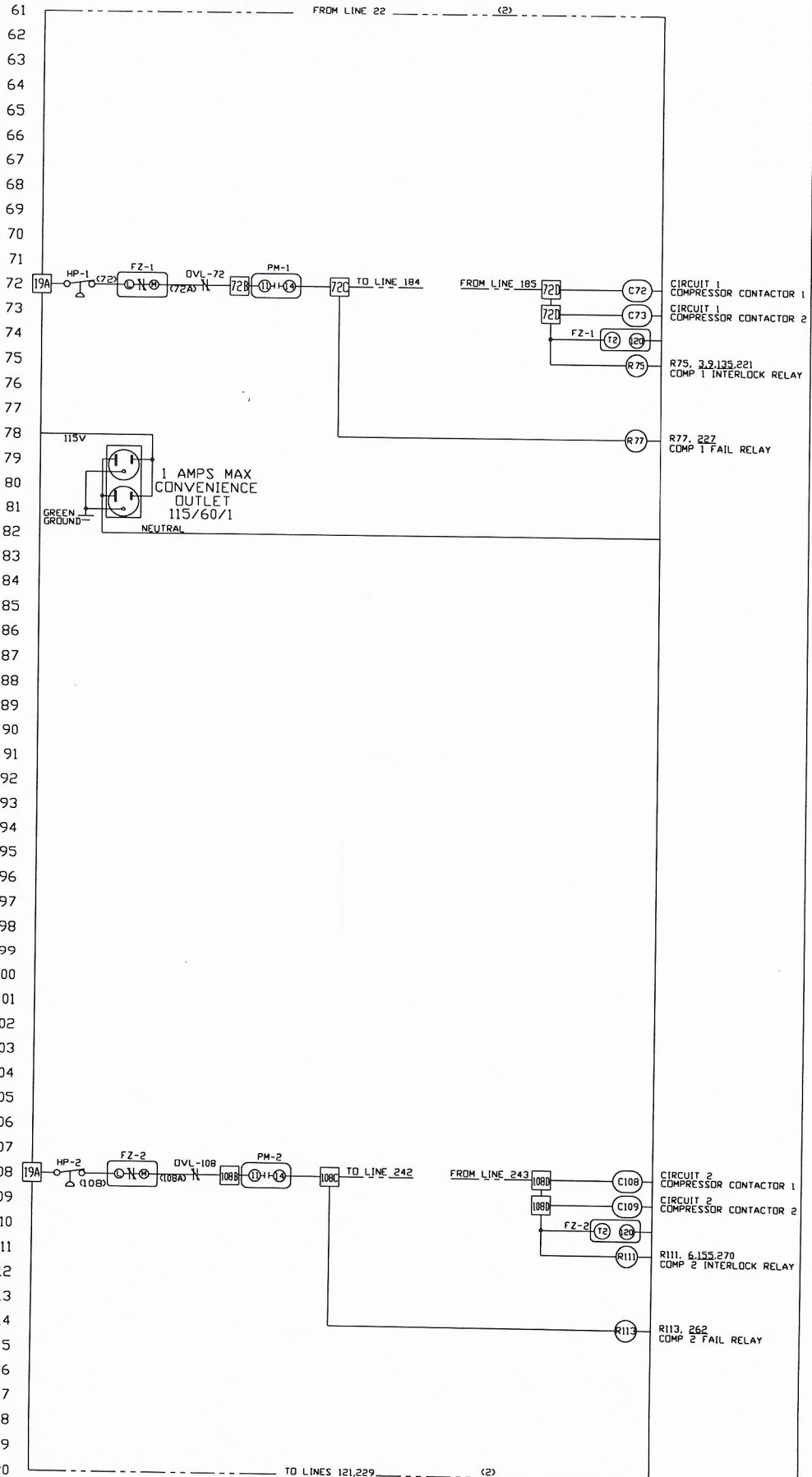
DATE: 9/22/24

FR: 92224

DRAWING NUMBER: 92224-1C

PAGE 3 of 7

ELECTRICAL SCHEMATIC



NOTES:

DENOTES COMPONENTS LOCATED EXTERNAL OF U.L. ENCLOSURE
 □ INDICATES TERMINAL BLOCK
 () INDICATES WIRE NUMBER IDENTIFICATION
 FIELD WIRING ----- (BY OTHERS)

LEGEND

AA-Audible Alarm
 ADC-Alarm Dry Contact
 AFI-Air Flow Interlock
 C-Contactor
 CCH-Crankcase Heater
 CPH-Crankcase Press. Reg.
 CST-Cooling Stage Tstat
 CT-Current Transformers
 DDPH-Drift Disch. Press. Reg.
 DPH-Drain Pan Heaters
 DS-Door Interlock Sol.
 DSHS-Desuperheat hot gas sol.
 DTS-Discharge Line Temp. Stat
 EPR-Evap. Press. Reg.
 FCS-Fan Cycle Control
 FS-Flow Switch
 FZ-Freeze Safety
 GR/G-Ground
 HCC-Heater Cable, Chiller
 HCR-Heater Cable, Receiver
 HGBS-Hot Gas Bypass Sol.
 HGD-Hot Gas Defrost Sol.
 HP-High Pressure Safety
 LALT-Low Amb. Lock Out Tstat
 LLS-Liquid Injection Sol.
 LL-Low Liquid Level
 LLPS-Load Limit Press. Switch
 LLS-Liquid Line Sol.
 LG-Lo Press. Control
 MET-Meter Elapsed Time
 MSD-Mon. Sw. Door
 MSHA-Mon. Sw. Hand-Off-Auto
 MSL-Mon. Sw. Load Log
 MSPD-Mon. Sw. Pumpdown
 MSPDR-Mon. Sw. Pumpdown Off Run
 MSPHM-Mon. Sw. Phase Monitor
 OF-Oil Failure Safety
 OS-Oil Separator Sol.
 OVL-Overload
 PHM-Phase Monitor
 PM-Power Module, Compressor Box
 R-Relay
 RHC-Reheat Control
 RHS-Reheat 3 Way Valve Solenoid
 TD-Time Delay
 TM/TD-Time Delay
 TPWS-Timer Part Wind Start
 ULS-Unloader Sol.
 UPS-Unloading Press. Sw.

FILE # ACAD 2008

PRESSURE SETTINGS

CONTROL		HIGH TEMP R-22	
		IN	OUT
HIGH PRESSURE	MAN	400	
LOW PRESSURE	50	20	
FREEZE CONTROL	MAN	54	
UNLOADER A			
UNLOADER B			
FAN CYCLE/FAN DELAY	250	200	
2-STEP FAN CYCLE A	220	200	
2-STEP FAN CYCLE B	250	210	
3-STEP FAN CYCLE A	220	200	
3-STEP FAN CYCLE B	230	210	
3-STEP FAN CYCLE C	250	220	
4-STEP FAN CYCLE A	220	200	
4-STEP FAN CYCLE B	230	210	
4-STEP FAN CYCLE C	240	220	
4-STEP FAN CYCLE D	250	230	

REVISONS		By		Date	

TECHNICAL SYSTEMS

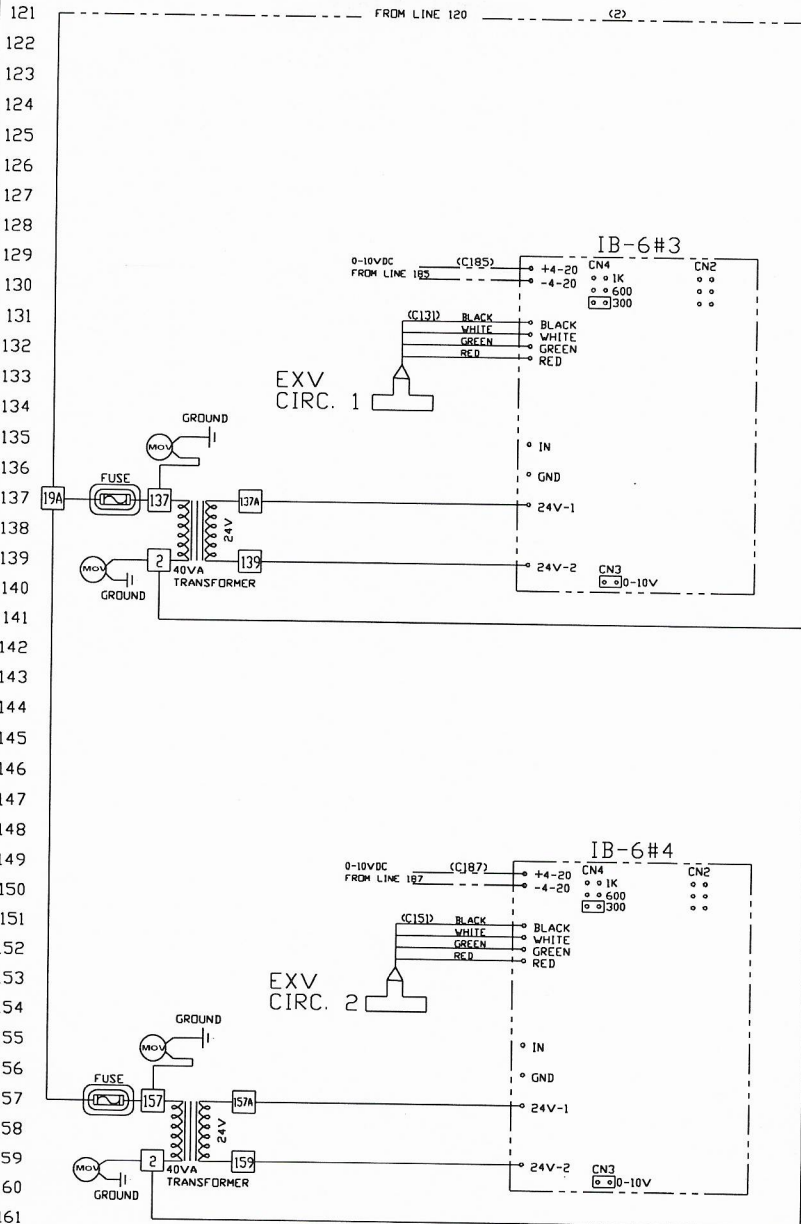
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 CH-1 START ELEMENTARY SCHOOL

DATE: 06/02/08
 SCALE: N/A
 DIVISION: RAE CORPORATION

ENGINEERING: APPROVED BY: _____
 QUANTITY CONTROL: APPROVED BY: _____

DRAWING NUMBER: 92224E1D
 DRAWN BY: RZ NR
 PREPARED BY: RZ NR

ELECTRICAL SCHEMATIC
 PAGE 4 of 7



NOTES:

* DENOTES COMPONENTS LOCATED EXTERNAL OF U.L. ENCLOSURE
 □ INDICATES TERMINAL BLOCK
 () INDICATES WIRE NUMBER IDENTIFICATION
 FIELD WIRING ----- (BY OTHERS)

MCS MAGNUM 1

LEGEND

AA-Audible Alarm
 ADC-Alarm Dry Contact
 AFI-Air Flow Interlock
 C-Contactor
 CH-Compressor Heater
 CPH-Compressor Press. Reg.
 CST-Cooling Stage Tstat
 CT-Current Transformers
 DDPH-Drift Disch. Press. Reg.
 DPH-Drain Pan Heaters
 DS-Door Interlock Sol.
 DSHS-Desuperheat hot gas sol.
 DIS-Discharge Line Temp. Stat
 EPR-Exp. Press. Reg.
 FCS-Fan Cycle Control
 FS-Flow Switch
 FZ-Freeze Safety
 GR/G-Ground
 HCC-Heater Cable, Chiller
 HCR-Heater Cable, Receiver
 HGBS-Hot Gas Bypass Sol.
 HGD-Hot Gas Defrost Sol.
 HP-High Pressure Safety
 LALT-Low Amb. Lock Out Tstat
 LUS-Liquid Injection Sol.
 LLL-Low Liquid Level
 LUPS-Load Limit Press. Switch
 LUS-Liquid Line Sol.
 LO-Lo Press. Control
 MET-Meter Elapsed Time
 MSD-Mon. Sw. Door
 MSHS-Mon. Sw. Horn Silence
 MSHOA-Mon. Sw. Hand-Off-Auto
 MSL-Mon. Sw. Lead Log
 MSPD-Mon. Sw. Pumpdown
 MSPDOR-Mon. Sw. Pumpdown Off Run
 MSPHM-Mon. Sw. Phase Monitor
 OF-Off Failure Safety
 OS-Oil Separator Sol.
 OVL-Overload
 PHM-Phase Monitor
 PM-Power Module, Compressor Box
 R-Relay
 RHC-Reheat Control
 RRS-Reheat 3 Way Valve Solenoid
 TD-Time Delay
 TM/TD-Time Delay
 TPWS-Timer Port Wind Start
 ULS-Unloader Sol.
 UPS-Unloading Press. Sw.

FILE # ACAD 2008

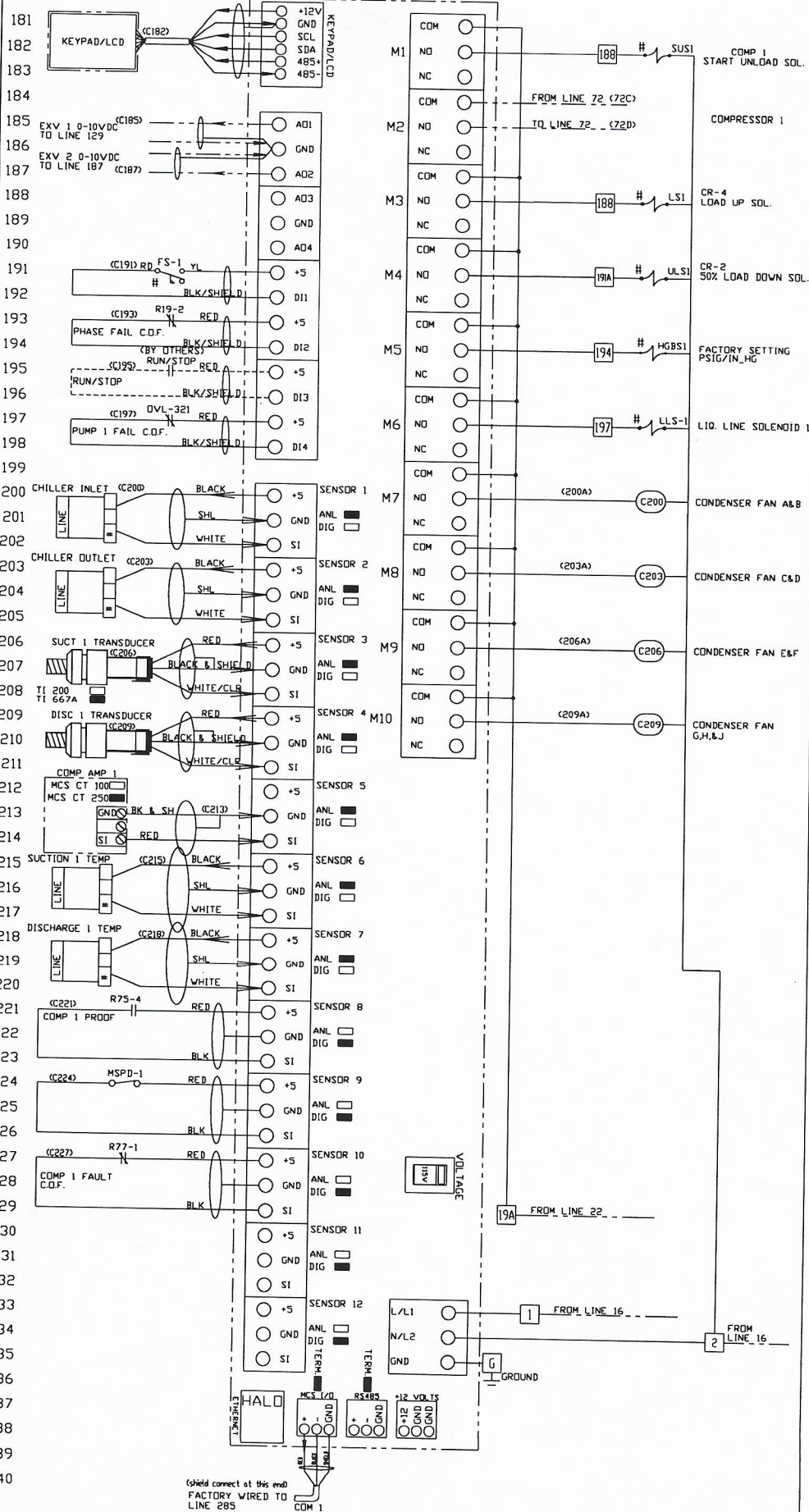
PRESSURE SETTINGS
 CONTROL

HIGH TEMP	MAN	400
LOW PRESSURE	MAN	50
FREEZE CONTROL	MAN	54
UNLOADER A		
UNLOADER B		
FAN CYCLE/FAN DELAY	250	200
2-STEP FAN CYCLE A	220	200
2-STEP FAN CYCLE B	250	210
3-STEP FAN CYCLE A	220	200
3-STEP FAN CYCLE B	230	210
3-STEP FAN CYCLE C	250	220
4-STEP FAN CYCLE A	220	200
4-STEP FAN CYCLE B	230	210
4-STEP FAN CYCLE C	240	220
4-STEP FAN CYCLE D	250	230

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TECHNICAL
 SYSTEMS
 DIVISION R&E CORPORATION
 ENGINEERING
 APPROVED BY
 DATE: 06/02/08
 SCALE: N/A
 SUB-TITLE: ELECTRICAL SCHEMATIC
 PAGE 5 of 7

30A1SD160H2-SPT
 CH-1 STUART ELEMENTARY SCHOOL
 DRAWING NUMBER
 92224E1C



NOTES:

* DENOTES COMPONENTS LOCATED EXTERNAL OF U.L. ENCLOSURE
 □ INDICATES TERMINAL BLOCK
 () INDICATES WIRE NUMBER IDENTIFICATION

LEGEND

AA-Audible Alarm
 ADC-Alarm Dry Contact
 AF-Air Flow Interlock
 C-Contactor
 CH-Compressor Heater
 CPR-Compressor Press. Reg.
 CST-Cooling Stage Tstat
 CT-Current Transformers
 DDP-Disch. Press. Reg.
 DPH-Drain Pan Heaters
 DS-Door Interlock Sol.
 DSHS-Desuperheat hot gas sol.
 DTS-Discharge Line Temp. Stat
 EPR-Evap. Press. Reg.
 FCS-Fan Cycle Control
 FS-Flow Switch
 FZ-Freeze Safety
 GR/G-Ground
 HCC-Heater Cable, Chiller
 HCR-Heater Cable, Receiver
 HGBS-Hot Gas Bypass Sol.
 HGO-Hot Gas Defrost Sol.
 HP-High Pressure Safety
 LAL-Low Amb. Lock Out Tstat
 LI-Liquid Injection Sol.
 LLL-Low Liquid Level
 LLPS-Load Limit Press. Switch
 LLS-Liquid Line Sol.
 LO-Lo Press. Control
 MET-Meter Elapsed Time
 MSD-Mon. Sw. Door
 MSHS-Mon. Sw. Horn Silence
 MSHOA-Mon. Sw. Hand-Off-Auto
 MSL-Mon. Sw. Lead Log
 MSPD-Mon. Sw. Pumpdown
 MSPDR-Mon. Sw. Pumpdown Off Run
 MSPHM-Mon. Sw. Phase Monitor
 OF-Oil Failure Safety
 OS-Oil Separator Sol.
 OM-Overload
 PHM-Phase Monitor
 PM-Power Module, Compressor Box
 R-Relay
 RHC-Reheat Control
 RNS-Reheat 3 Way Valve Solenoid
 TD-Time Delay
 TM/TD-Time Delay
 TRWS-Timer Part Wind Start
 ULS-Unloader Sol.
 UPS-Unloading Press. Sw.

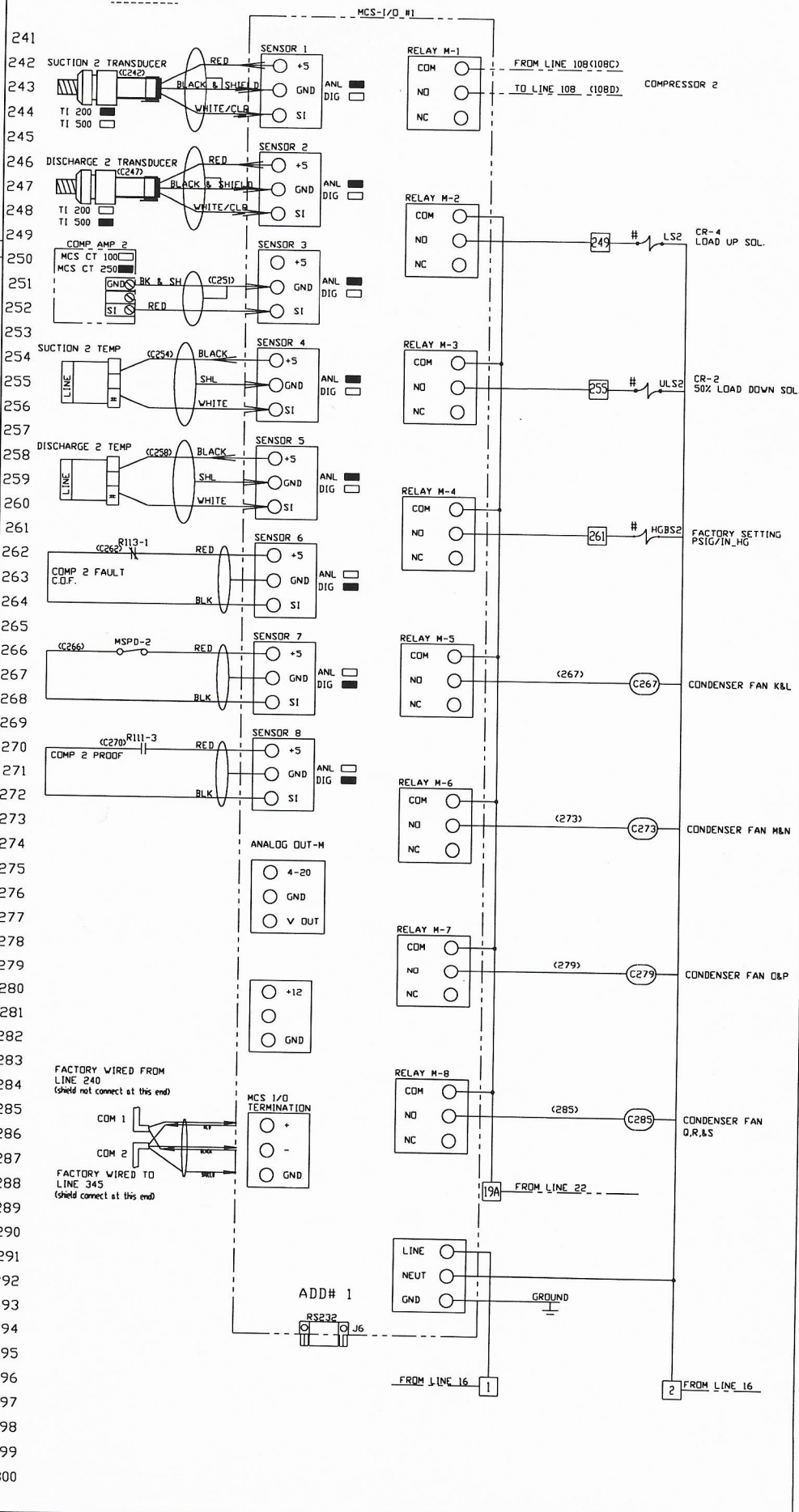
FILE # ACAD 2008

PRESSURE SETTINGS	
CONTROL	HIGH TEMP R-22
	IN 1 OUT
HIGH PRESSURE	MAN 400
LOW PRESSURE	50 20
FREEZE CONTROL	MAN 54
UNLOADER A	
FAN CYCLE/FAN DELAY	250 200
2-STEP FAN CYCLE A	220 200
2-STEP FAN CYCLE B	250 210
3-STEP FAN CYCLE A	220 200
3-STEP FAN CYCLE B	230 210
3-STEP FAN CYCLE C	250 220
4-STEP FAN CYCLE A	220 200
4-STEP FAN CYCLE B	230 210
4-STEP FAN CYCLE C	240 220
4-STEP FAN CYCLE D	250 230

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DATE: 06/02/08	SCALE: N/A	DIVISION: RAE CORPORATION
SUB-TITLE: ELECTRICAL SCHEMATIC	DATE: 06/02/08	SCALE: N/A
PAGE: 6 of 7	DATE: 06/02/08	SCALE: N/A

DATE: 06/02/08	SCALE: N/A	DIVISION: RAE CORPORATION
SUB-TITLE: ELECTRICAL SCHEMATIC	DATE: 06/02/08	SCALE: N/A
PAGE: 6 of 7	DATE: 06/02/08	SCALE: N/A



NOTES:

* DENOTES COMPONENTS LOCATED EXTERNAL OF U.L. ENCLOSURE
 □ INDICATES TERMINAL BLOCK
 () INDICATES WIRE NUMBER IDENTIFICATION

LEGEND

AA-Audible Alarm
 ADC-Alarm Dry Contact
 AFI-Air Flow Interlock
 C-Contactor
 CH-Compressor Heater
 CPR-Compressor Press. Reg.
 CST-Cooling Stage Tstat
 CT-Current Transformers
 DDP-Disch. Press. Reg.
 DPH-Drain Pan Heaters
 DS-Door Interlock Sol.
 DSHS-Desuperheat hot gas sol.
 DTS-Discharge Line Temp. Stat
 EPR-Evap. Press. Reg.
 FCS-Fan Cycle Control
 FS-Flow Switch
 FZ-Freeze Safety
 GR/G-Ground
 HCC-Heater Cable, Chiller
 HCR-Heater Cable, Receiver
 HGBS-Hot Gas Bypass Sol.
 HGO-Hot Gas Defrost Sol.
 HP-High Pressure Safety
 LALT-Low Amb. Lock Out Tstat
 LIS-Liquid Injection Sol.
 LLL-Low Liquid Level
 LLS-Load Limit Press. Switch
 LLS-Liquid Line Sol.
 LD-Lo Press. Control
 MET-Meter Elapsed Time
 MSD-Mon. Sw. Door
 MSHS-Mon. Sw. Horn Silence
 MSHOA-Mon. Sw. Hand-Off-Auto
 MSL-Mon. Sw. Lead Log
 MSPD-Mon. Sw. Pumpdown
 MSPDR-Mon. Sw. Pumpdown Off Run
 MSPHM-Mon. Sw. Phase Monitor
 OF-Oil Failure Safety
 OS-Oil Separator Sol.
 OVL-Overload
 PHM-Phase Monitor
 PM-Power Module, Compressor Box
 R-Relay
 RHC-Reheat Control
 RHS-Reheat 3 Way Valve Solenoid
 TD-Time Delay
 TM/TD-Time Delay
 TPWS-Timer Part Wind Start
 ULS-Unloader Sol.
 UPS-Unloading Press. Sw.

FILE # ACAD 2008

CONTROL

PRESSURE SETTINGS	
HIGH TEMP	R-22
IN	OUT
HIGH PRESSURE	MAN 400
LOW PRESSURE	50 20
FREZE CONTROL	MAN 54
UNLOADER	
FAN CYCLE/FAN DELAY	250 200
2-STEP FAN CYCLE A	220 200
2-STEP FAN CYCLE B	250 210
3-STEP FAN CYCLE A	220 200
3-STEP FAN CYCLE B	230 210
3-STEP FAN CYCLE C	250 220
4-STEP FAN CYCLE A	220 200
4-STEP FAN CYCLE B	230 210
4-STEP FAN CYCLE C	240 220
4-STEP FAN CYCLE D	250 230

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TECHNICAL SYSTEMS

30A1SD160H2-SP1
 CHART ELEMENTARY SCHOOL
 DIVISION RAE CORPORATION
 APPROVED BY: [Signature]
 DATE: 06/02/08
 SCALE: N/A
 SUB-TITLE: ELECTRICAL SCHEMATIC
 PAGE 7 of 7
 DRAWING NUMBER: 92224E1G

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FACTORY WIRED FROM
 LINE 284
 (shield not connect at this end)

