

**TRANE™**

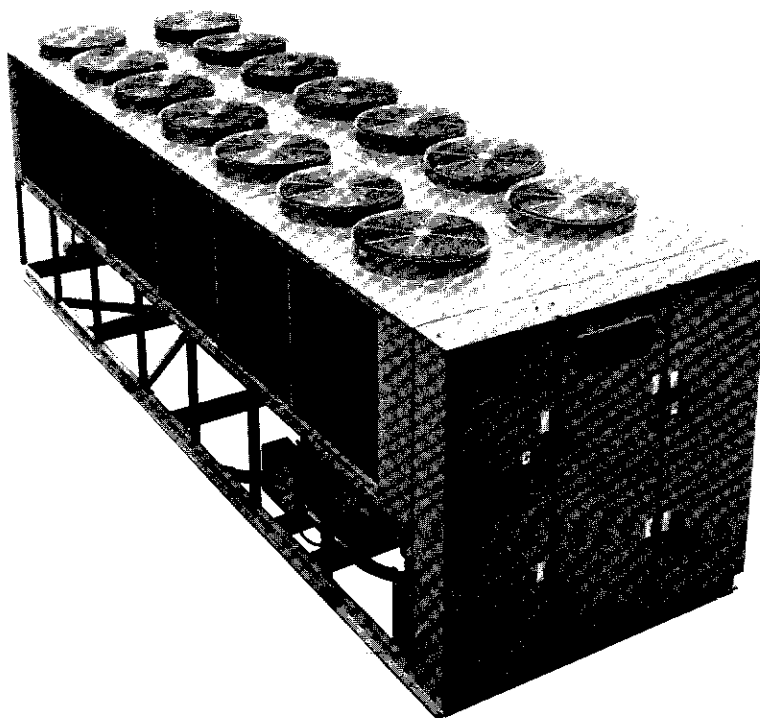
Wiring

RTAA-W-1

Library	Service Literature
Product Section	Refrigeration
Product	Rotary Liquid Chillers - Air-Cooled
Model	RTAA
Literature Type	Unit Wiring
Sequence	1
Date	October 1990
File No.	SV-RF-RLC-RTAA-W-1-1090
Supercedes	

Air-Cooled Series®™ Chiller

Rotary Liquid Chillers



Models

RTAA-130
RTAA-140
RTAA-155

RTAA-170
RTAA-185
RTAA-200

AO Design Sequence

Since The Trane Company has a policy of continuous product improvement, it reserves the right to change specifications and designs without notice. The installation and servicing of the equipment referred to in this booklet should be done by qualified, experienced technicians.

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The Trane Company
La Crosse, Wisconsin 54601-7589
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General Information

Literature Change History

RTAA-W-1 (October 1990)

Original issue of manual; provides typical field connection diagrams, electrical schematics and connection diagrams for 130-200 Ton RTAA units of "A" design sequence.

Note: The typical wiring diagrams in this manual are representative of "A" design sequence units and are provided only for general reference. **These diagrams may not reflect the actual wiring of your unit.** For specific electrical connection and schematic information, always refer to the wiring diagrams which were shipped with your unit.

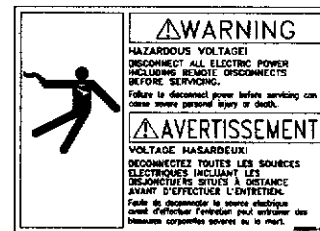
Unit Electrical Data

To determine the specific electrical characteristics of a particular chiller, always refer to the nameplates mounted on the unit.

A summary of the unit and compressor motor electrical data is published in the RTAA Installation-Operation-Maintenance manual that was shipped with this unit.

World environmental scientists have concluded, based on the best currently available evidence, that ozone in our upper atmosphere is being reduced due to release of CFC fully halogenated compounds.

Prior to installation, operation, service or maintenance on this equipment, refer to "Refrigerant Emission Control" in the RTAA Installation-Operation-Maintenance manual.

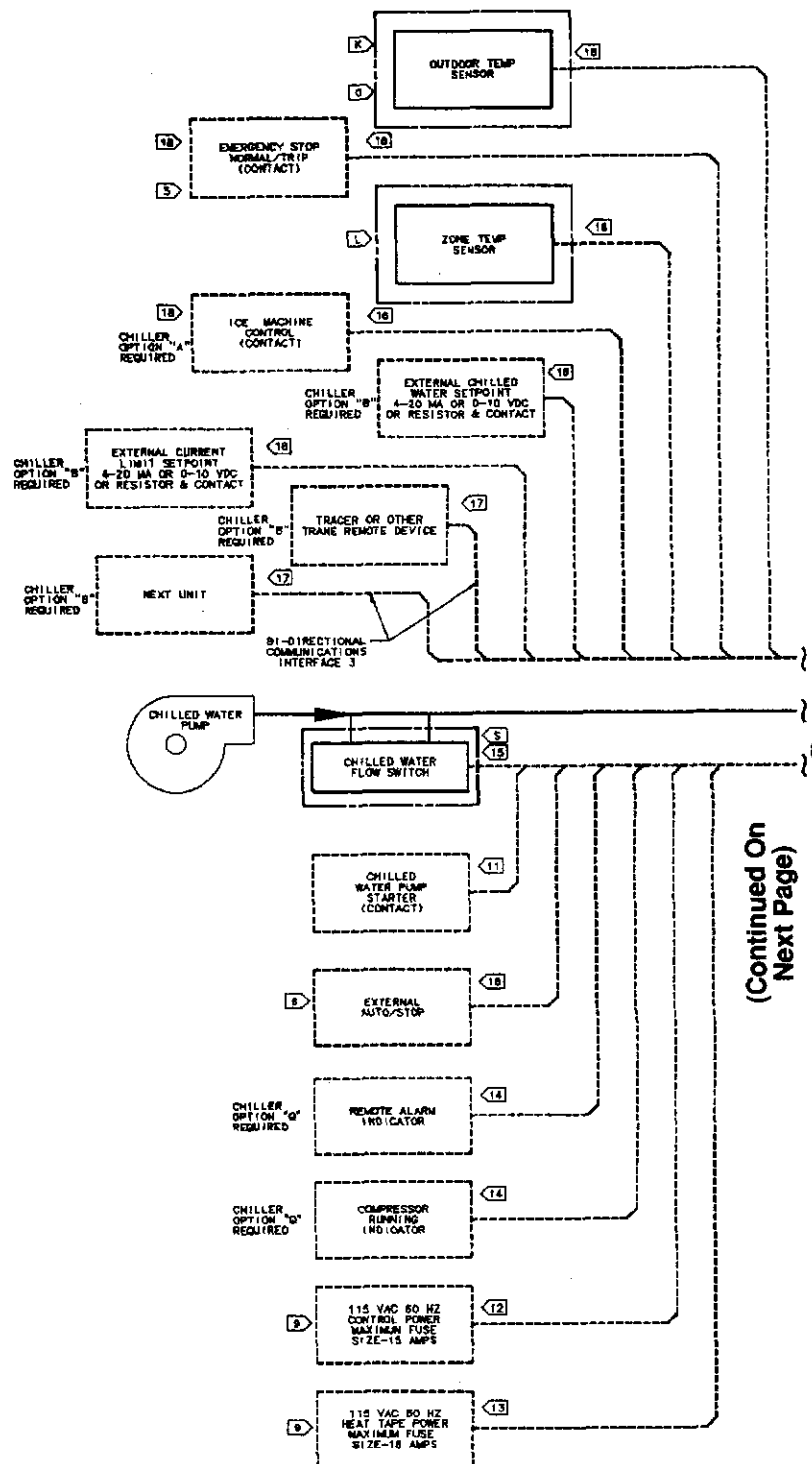


WARNING

IT IS IMPERATIVE THAT L1-L2-L3 IN THE STARTER BE CONNECTED IN THE A-B-C PHASE SEQUENCE TO PREVENT EQUIPMENT DAMAGE DUE TO REVERSE ROTATION.

**Figure 1.
RTAA Field Wiring
Layout Diagram**

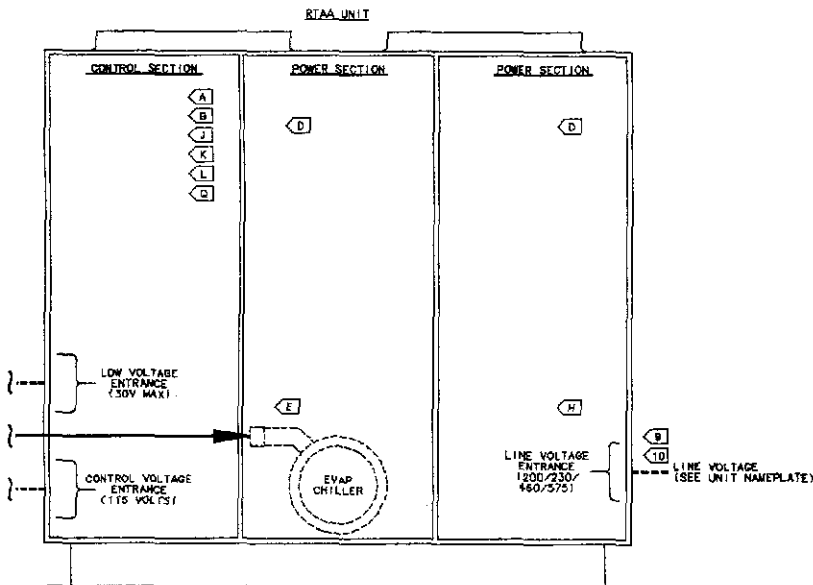
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Figure 1.
RTAA Field Wiring Layout
Diagram (Continued)

See Notes on Page 6



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CUSTOMER WIRE SELECTION			
UNIT SIZE	POWER WIRE SELECTION TO DISCONNECT SWITCH (1S1)	DISCONNECT SWITCH SIZE	CONNECTOR WIRE RANGE
130 TON, CKT 1 & 2	200/230	400	(2) - 3/0 TO 250 MCM
140 TON, CKT 1 & 2	200/230 VOLT	400	(2) - 3/0 TO 250 MCM
155, 175 TON, CKT 1	200/230 VOLT	600	(2) - 250 TO 500 MCM
155, 175 TON, CKT 2	200/230 VOLT	400	(2) - 3/0 TO 250 MCM
130, 140, 155, 175, 185 TON	480 VOLT	400	(2) - 3/0 TO 250 MCM
130, 140, 155, 175, 185 TON	575 VOLT	310	(1) - 250 TO 500 MCM
185, 200 TON, CKT 1 & 2	200/230 VOLT	600	(2) - 250 TO 500 MCM
200 TON	480 VOLT	600	(2) - 250 TO 500 MCM
200 TON	575 VOLT	400	(2) - 3/0 TO 250 MCM
UNIT SIZE	POWER WIRE SELECTION TO MAIN TERMINAL BLOCK (1TB1)	TERMINAL BLOCK SIZE	CONNECTOR WIRE RANGE
130-200 TON	200/230 CKT #1	840 AMP	(2) - #2 TO 500 MCM
130-200 TON	200/230 CKT #2	840 AMP	(2) - #2 TO 500 MCM
130-200 TON	480/575	840 AMP	(2) - #2 TO 600 MCM
CONTROL WIRE SELECTION FOR 30 VOLT OR LESS CIRCUITS - SEE NOTE 18			
WIRE GAUGE	MAXIMUM LENGTH FOR SENSOR LEADS		
14 AWG	5000 FT		
16 AWG	2000 FT		
18 AWG	1000 FT		

**Figure 1.
RTAA Field Wiring Layout
Diagram (Continued)**

NOTES:

1. DASHED LINES INDICATE RECOMMENDED FIELD WIRING BY OTHERS. PHANTOM LINES INDICATE ALTERNATE CIRCUITRY OR AVAILABLE SALES OPTION. CHECK SALES ORDER TO DETERMINE IF WIRING IS REQUIRED FOR SPECIFIC OPTIONS.
2. ALL THREE PHASE MOTORS SUPPLIED WITH THE UNIT ARE PROTECTED UNDER PRIMARY SINGLE PHASE FAILURE CONDITIONS.
3. CAUTION - DO NOT ENERGIZE UNIT UNTIL CHECK-OUT AND START-UP PROCEDURES HAVE BEEN COMPLETED.
4. THE FOLLOWING CAPABILITIES ARE OPTIONAL - THEY ARE IMPLEMENTED AND WIRED AS REQUIRED FOR A SPECIFIC SYSTEM APPLICATION.
 - (A) ICE-MACHINE CONTROL (CANNOT BE USED W/ OPTION "L")
 - (B) COMMUNICATIONS INTERFACE
 - (D) WYE-DELTA CLOSED TRANSITION STARTER
 - (E) CONTROL POWER TRANSFORMER.
 - (H) UNIT DISCONNECT, NON FUSED
 - (J) CHILLED WATER RESET - RETURN WATER
 - (K) CHILLED WATER RESET - OUTDOOR AIR
 - (L) CHILLED WATER RESET - ZONE AIR (CANNOT BE USED WITH OPTION "A")
 - (O) LOW AMBIENT LOCKOUT
 - (Q) DELUXE OPM INCLUDES:
 - REMOTE RUNNING INDICATION AND ALARM CONTACTS
 - DISPLAY OF * VOLTS
 - DISPLAY OF STARTS AND HOURS BY COMPRESSOR
 - UNDER/OVER VOLTAGE PROTECTION
 - (S) CHILLED WATER FLOW SWITCH (NOT REQUIRED FOR CHILLER PROTECTION)
5. AUXILIARY CONTROLS FOR A CUSTOMER SPECIFIED OR INSTALLED LATCHING TRIP/OUT. THE CHILLER WILL RUN NORMALLY WHEN THE CONTACT IS CLOSED AND TRIP THE CHILLER OFF ON MANUALY RESETTABLE DIANOSTIC WHEN THE CONTACT OPENS. MANUAL RESET IS ACCOMPLISHED AT THE CHILLER SWITCH ON THE FRONT OF THE UNIT CONTROL MODULE (UCM).
6. AUXILIARY CONTROLS FOR A CUSTOMER SPECIFIED OR INSTALLED REMOTE AUTO/STOP FUNCTION. THE CHILLER WILL RUN NORMALLY WHEN THE CONTACT IS CLOSED AND STOP THE CHILLER WHEN THE CONTACT IS OPEN. RE-CLOSURE OF THE CONTACT WILL PERMIT THE CHILLER TO AUTOMATICALLY RETURN TO NORMAL OPERATION. TO BE IN SERIES WITH CHILLED WATER PUMP RELAY (SK211).

WIRING:

7. ALL CUSTOMER CONTROL CIRCUIT WIRING MUST HAVE A MINIMUM RATING OF 150 VOLTS.
8. ALL FIELD WIRING MUST BE INACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC), STATE AND LOCAL REQUIREMENTS. OUTSIDE THE UNITED STATES, OTHER COUNTRIES APPLICABLE NATIONAL AND/OR LOCAL REQUIREMENTS SHALL APPLY.
- (9) FOR CANADIAN INSTALLATION (CSA) ONLY. LOCAL INSPECTION AUTHORITIES MAY REQUIRE SINGLE POWER SOURCE DISCONNECTING MEANS.

REQUIRED WIRING:

- (10) COPPER WIRE ONLY - SIZED PER N.E.C. - BASED ON NAMEPLATE MINIMUM CIRCUIT AMPACITY (MCA). SEE CUSTOMER WIRE SELECTION TABLE. FOR 200/230 VOLT UNITS, REFRIGERANT CIRCUITS #1 AND #2 REQUIRE SEPERATE POWER SUPPLIES.
- (11) 2 WIRES, 115 VAC CIRCUIT. MINIMUM CONTACT RATING AT 115 VAC - 8.9 VA INRUSH, 1.3 VA SEALED.
- (12) FOR UNITS WITHOUT THE CONTROL POWER TRANSFORMER (111) OPTION, THE CUSTOMER MUST PROVIDE CONTROL POWER OF 115 VAC, 60 HERTZ, SINGLE PHASE, 750 VA ON 130 THRU 200 TON UNITS.
- (13) FOR ALL UNITS, THE HEAT TAPE MUST BE POWERED FROM A SEPERATE CUSTOMER PROVIDED 115 VAC, 480 WATT SOURCE.

OPTIONAL WIRING:

- (14) 3 WIRES, 115 VAC CIRCUIT. SEPERATE 115 VAC POWER SUPPLY IS REQUIRED. LOAD NOT TO EXCEED 1150 VA INRUSH, 115 VA SEALED.
- (15) 2 WIRES, 115 VAC CIRCUIT. MINIMUM CONTACT RATING AT 115 VAC - 8.9 VA INRUSH, 1.3 VA SEALED.
- (16) 2 WIRES, 30 VOLT OR LESS CIRCUIT. DO NOT RUN IN CONDUIT WITH HIGHER VOLTAGE CIRCUITS. SEE CUSTOMER WIRE SELECTION TABLE.
- (17) SHIELDED TWISTED PAIR, 30 VOLT OR LESS CIRCUIT. MAXIMUM LENGTH 5000 FEET. DO NOT RUN IN CONDUIT WITH HIGHER VOLTAGE CIRCUITS. SEE CUSTOMER WIRE SELECTION TABLE. BELDON TYPE 8760 RECOMMENDED.
- (18) CUSTOMER SUPPLIED CONTACTS MUST BE COMPATIBLE WITH DRY CIRCUIT 12 VDC, 45mA RESISTIVE LOAD. SILVER OR GOLD CONTACTS RECOMMENDED.

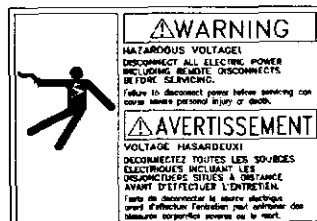


Figure 2.
RTAA Field Wiring

NOTES:

1. DASHED LINES INDICATE RECOMMENDED FIELD WIRING BY OTHERS. PHANTOM LINES INDICATE ALTERNATE CIRCUITRY OR AVAILABLE SALES OPTION. CHECK SALES ORDER TO DETERMINE IF WIRING IS REQUIRED FOR SPECIFIC OPTIONS.
2. ALL THREE PHASE MOTORS SUPPLIED WITH THE UNIT ARE PROTECTED UNDER PRIMARY SINGLE PHASE FAILURE CONDITIONS.
3. CAUTION - DO NOT ENERGIZE UNIT UNTIL CHECK OUT AND START UP PROCEDURES HAVE BEEN COMPLETED.
4. SEE INSERT "A" FOR RESISTOR CONNECTIONS TO PROGRAM AN EXTERNAL CHILLED WATER SETPOINT WHEN 4 - 20 mA OR A 0 - 10 VDC SIGNAL IS NOT USED. SEE THE OPERATORS MANUAL FOR RESISTOR VALUES.
5. SEE INSERT "B" FOR RESISTOR CONNECTIONS TO PROGRAM AN EXTERNAL CURRENT LIMIT SETPOINT WHEN 4 - 20 mA OR A 0 - 10 VDC SIGNAL IS NOT USED. SEE THE OPERATORS MANUAL FOR RESISTOR VALUES.
6. SEE INSERT "C" FOR CONTACTS (IN PLACE OF THE ZONE TEMP. SENSOR) FOR OPTIONAL ICE MACHINE CONTROL - OPTION "A".
7. THE FOLLOWING CAPABILITIES ARE OPTIONAL - THEY ARE IMPLEMENTED AND WIRED AS REQUIRED FOR A SPECIFIC SYSTEM APPLICATION.
 - A ICE-MACHINE CONTROL (CANNOT BE USED WITH OPT. LI)
 - B COMMUNICATIONS INTERFACE
 - D WYE-DELTA CLOSED TRANSITION STARTER
 - E CONTROL POWER TRANSFORMER.
 - H UNIT DISCONNECT, NON-FUSED
 - J CHILLED WATER RESET - RETURN WATER
 - K CHILLED WATER RESET - OUTDOOR AIR
 - L CHILLED WATER RESET - ZONE AIR (CANNOT BE USED WITH OPT. A)
 - O LOW AMBIENT LOCKOUT
 - Q DELUXE CPM INCLUDES:
 - REMOTE RUNNING INDICATION AND ALARM CONTACTS
 - DISPLAY OF * VOLTS
 - DISPLAY OF STARTS AND HOURS BY COMPRESSOR
 - UNDER/OVER VOLTAGE PROTECTION
 - S CHILLED WATER FLOW SWITCH (NOT REQUIRED FOR CHILLER PROTECTION)

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WIRING AND CONTACT REQUIREMENTS:

20. ALL FIELD WIRING MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC), STATE, AND LOCAL REQUIREMENTS. OUTSIDE THE UNITED STATES, OTHER COUNTRIES APPLICABLE NATIONAL AND/OR LOCAL REQUIREMENTS SHALL APPLY.
21. FOR CANADIAN INSTALLATION (CSA) ONLY, LOCAL INSPECTION AUTHORITIES MAY REQUIRE SINGLE POWER SOURCE DISCONNECTING MEANS.
22. FOR UNITS WITHOUT THE CONTROL POWER TRANSFORMER (1T1) OPTION, THE CUSTOMER MUST PROVIDE CONTROL POWER OF 115 VAC, 60 HERTZ, SINGLE PHASE, 750 VA ON 150 THRU 200 TON UNITS.
23. FOR ALL UNITS, THE HEAT TAPE MUST BE POWERED FROM A SEPERATE CUSTOMER PROVIDED 115 VAC, 420 WATT SOURCE.
24. CUSTOMER SUPPLIED CONTACTS MUST BE COMPATIBLE WITH DRY CIRCUIT 12VDC, 45mA RESISTIVE LOAD. SILVER OR GOLD PLATED CONTACTS ARE RECOMMENDED.
25. 30 VOLT OR LESS CIRCUIT. DO NOT RUN IN CONDUIT WITH HIGHER VOLTAGE CIRCUITS. USE #14-18 AWG, SEE SELECTION TABLE.
26. MINIMUM CONTACT RATING AT 115 VAC: 6.9VA INRUSH, 1.3VA SEALED.
27. FIELD WIRE ELECTRICAL LOADING IS NOT TO EXCEED THE FOLLOWING RATINGS:

TERMINALS	DEVICE	VOLTAGE	SEALED VA	INRUSH VA
1U2-TB4-2,1	1U2K1,NO	115	115	1150*
1U2-TB4-2,3	1U2K1,NC	115	115	1150*
1U2-TB4-5,4	1U2K2,NO	115	115	1150*
1U2-TB4-5,6	1U2K2,NC	115	115	1150*

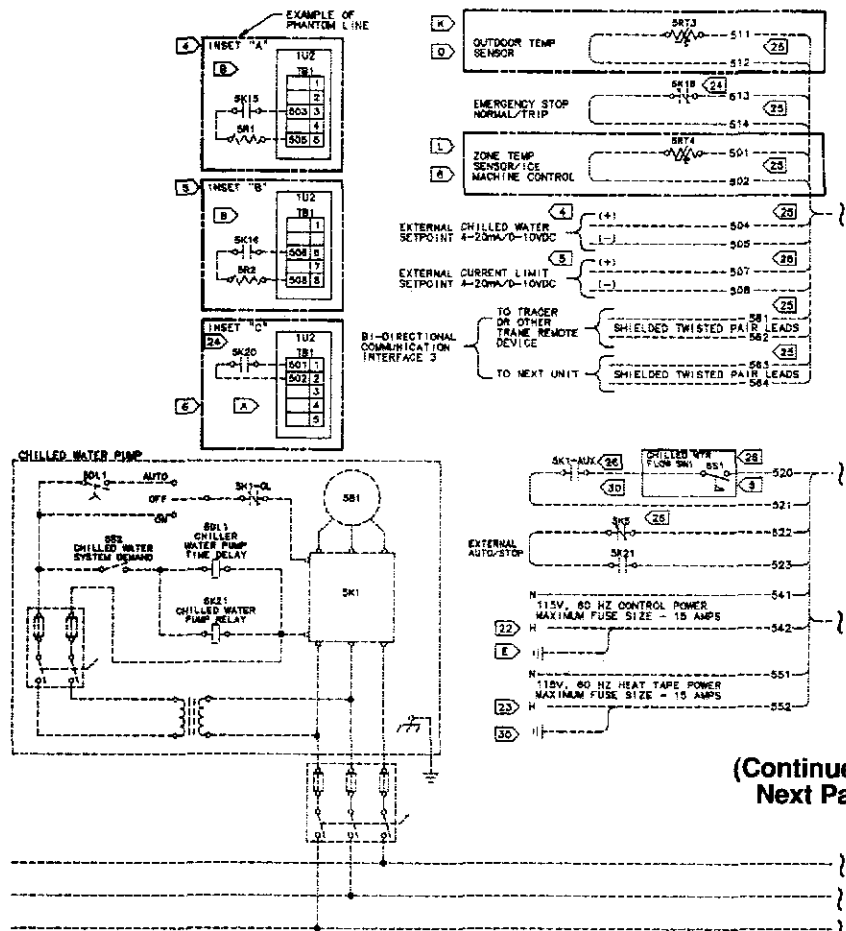
* STANDARD PILOT DUTY RATING (35% POWER FACTOR).
28. WHEN CUSTOMER INPUT IS REQUIRED, REMOVE JUMPER AND INSTALL CUSTOMER WIRING.
29. AS SHIPPED 200/230 VOLT UNIT TRANSFORMER 1T1-(OPTIONAL) IS WIRED FOR 200 VOLT OPERATION. IF UNIT IS TO BE OPERATED ON A 230 VOLT POWER SUPPLY, RE-CONNECT AS SHOWN IN INSET D'S. IF THE CPM UPGRADE (OPTION Q) IS USED, CHANGE UCM RESET DISPLAY MENU ITEM 3b FROM 200V TO 230V.
30. REQUIRED WIRING FOR BASIC UNIT OPERATION. ALL OTHER WIRING IS EITHER FOR OPTIONS OR AT THE CUSTOMERS DISCRETION.
31. 380/460/575 VOLT UNITS REQUIRE MAIN POWER CONNECTIONS ONLY TO 1T1. 200/230 VOLT UNITS REQUIRE MAIN POWER CONNECTIONS TO BOTH 1T1 (CKT #1) AND 1T2 (CKT #2). POWER WIRING ENTERS LOWER RIGHT HAND SIDE OF CONTROL PANEL.
32. ALL CUSTOMER CONTROL CIRCUIT WIRING MUST HAVE A MINIMUM RATING OF 150 VOLTS.



**Figure 2.
RTAA Field Wiring
(Continued)**

See Notes on Page 7

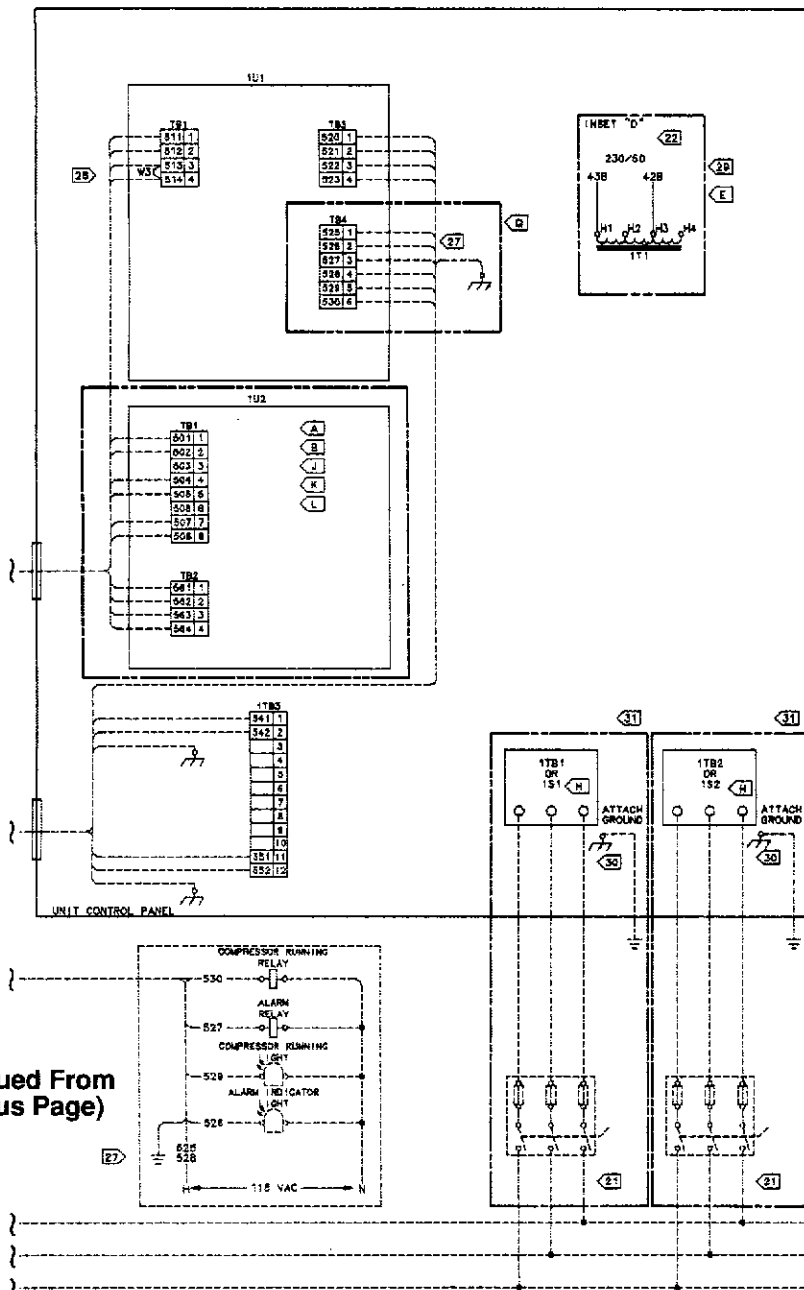
CUSTOMER WIRE SELECTION TABLE				
POWER WIRE SELECTION TO DISCONNECT SWITCH (1F11)				H
UNIT SIZE	UNIT VOLTAGE	DISCONNECT SWITCH SIZE	CONNECTOR WIRE RANGE	
130 TON, CKT 1 & 2	200/230	400	(2) - 3/8 TO 250 MCM	
130 TON	380 VOLT	TBD	(3) - 3/8 TO 250 MCM	
140 TON, CKT 1 & 2	200/230 VOLT	400	(2) - 3/8 TO 250 MCM	
140 TON	380 VOLT	TBD	(3) - 3/8 TO 250 MCM	
155, 175 TON, CKT 1	200/230 VOLT	500	(2) - 3/8 TO 250 MCM	
155, 175 TON, CKT 2	200/230 VOLT	400	(2) - 3/8 TO 250 MCM	
155, 175 TON	380 VOLT	TBD	(3) - 3/8 TO 250 MCM	
130, 140, 155, 175, 185 TON	480 VOLT	400	(2) - 3/8 TO 250 MCM	
130, 140, 155, 175, 185 TON	575 VOLT	310	(2) - 3/8 TO 250 MCM	
185, 200 TON, CKT 1 & 2	200/230 VOLT	500	(2) - 3/8 TO 250 MCM	
185 TON	380 VOLT	TBD	(3) - 3/8 TO 250 MCM	
200 TON	380 VOLT	TBD	(3) - 3/8 TO 250 MCM	
200 TON	480 VOLT	500	(2) - 3/8 TO 250 MCM	
200 TON	575 VOLT	400	(2) - 3/8 TO 250 MCM	
POWER WIRE SELECTION TO MAIN TERMINAL BLOCK (1F11)				
UNIT SIZE	UNIT VOLTAGE	TERMINAL BLOCK SIZE	CONNECTOR WIRE RANGE	
130-200 TON	200/230 CKT #1	840 AMP	(2) - #2 TO 400 MCM	
130-200 TON	200/230 CKT #2	840 AMP	(2) - #2 TO 400 MCM	
130-200 TON	380/480/575	840 AMP	(2) - #2 TO 400 MCM	
CONTROL WIRE SELECTION FOR 30 VOLT OR LESS CIRCUITS - SEE NOTE 25				
WIRE SIZE	MAXIMUM LENGTH FOR SENSOR LEADS			
14 AWG	5000 FT			
18 AWG	2000 FT			
18 AWG	1000 FT			
FUSE REPLACEMENT SELECTION				
FUSE DESCRIPTION	UNIT SIZE	UNIT VOLTAGE	FUSE TYPE	FUSE SIZE
CONDENSER FAN FUSE (1F1 - 1F12)	ALL	ALL	CLASS RMS(800V)	35 AMP
CONTROL CIRCUIT FUSE (1F13)	ALL	ALL	BUSF TYPE S	10 AMP
POWER CONTROL TRANSFORMER FUSE (1F18-1F17)	ALL	200/230V	CLASS RMS (250V)	5 AMP
		200V	CLASS RMS (250V)	5 AMP
		480V	CLASS RMS (800V)	4 AMP
		575V	CLASS RMS (800V)	4 AMP
OPN & WSP FUSE (1U1F1, 1U4F1 & 1U5F1)	ALL	ALL	BUSF GMD-1/4	0.25 AMP
EXV FUSE (1U2F1)	ALL	ALL	BUSF GMD-3/10	0.30 AMP
CSR FUSE (1U2F2)	ALL	ALL	BUSF GMD-2/10	0.20 AMP
			LITTLEFUSE 230-250	5x20mm
			LITTLEFUSE 230-300	5x20mm
			LITTLEFUSE 230-200	5x20mm



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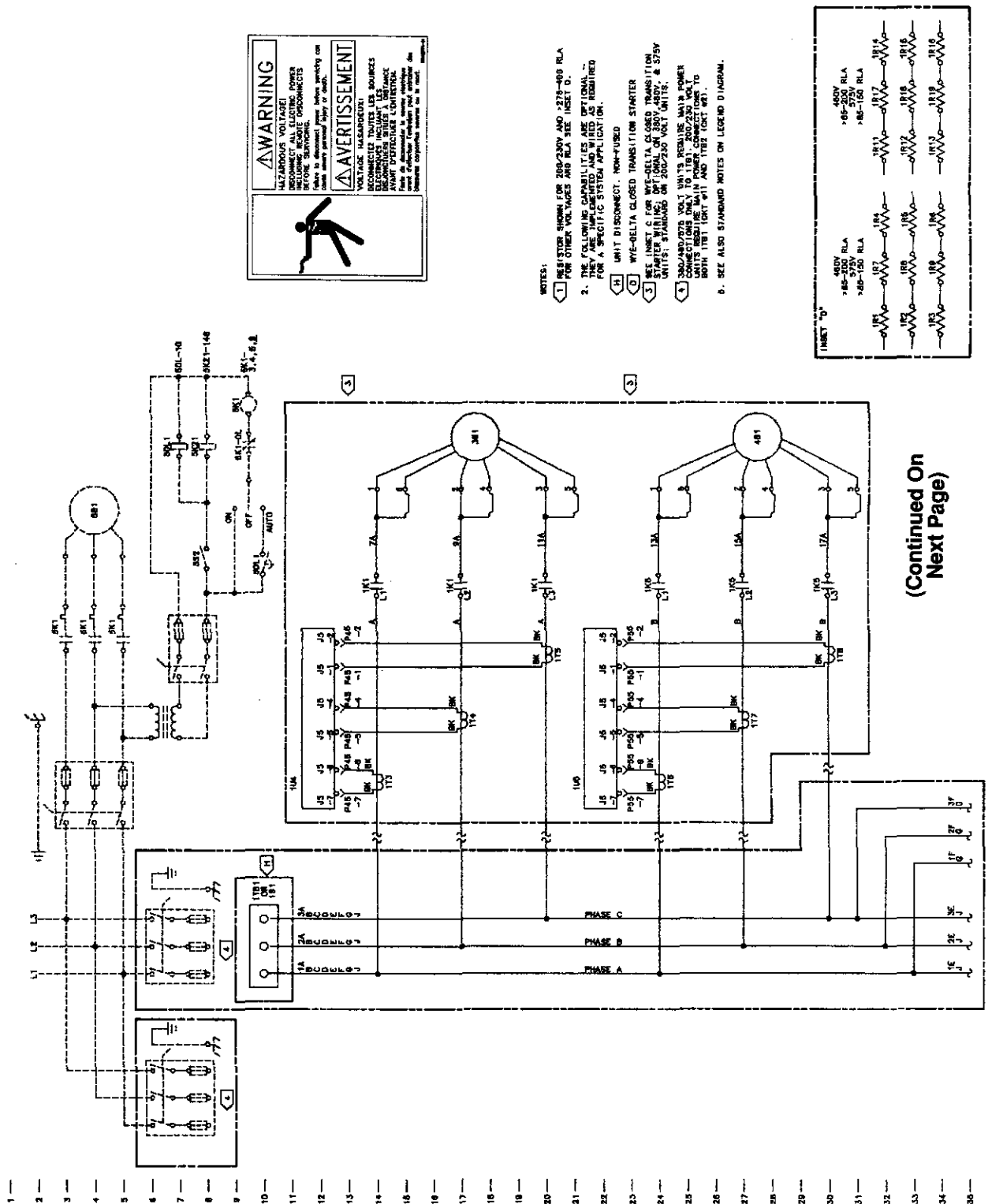
Figure 2.
RTAA Field Wiring
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Figure 3.
RTAA Schematic
Wiring - Page 1



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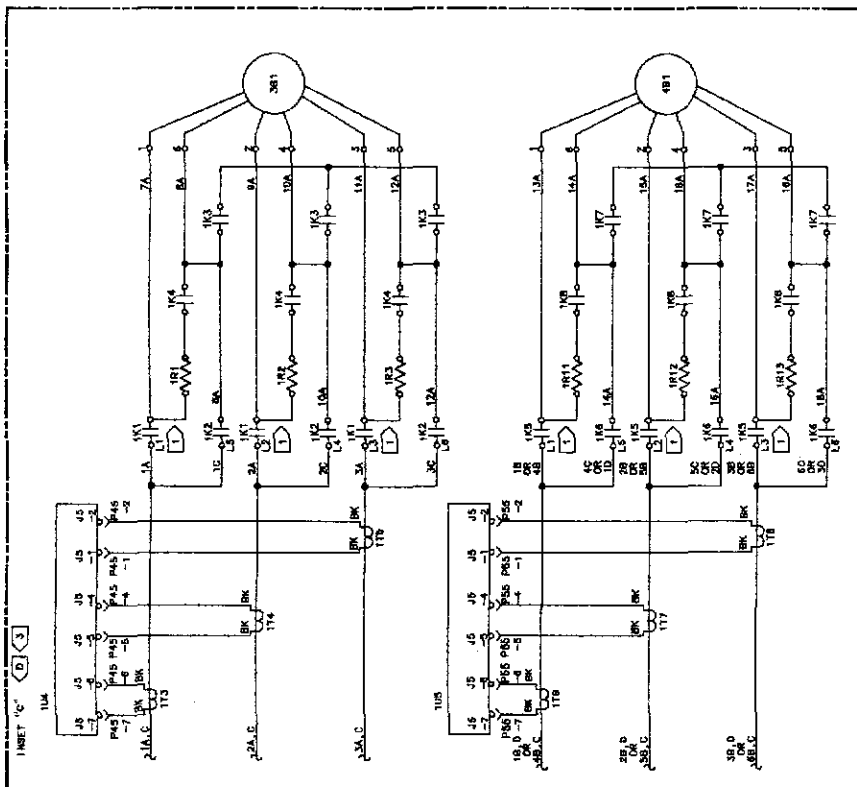
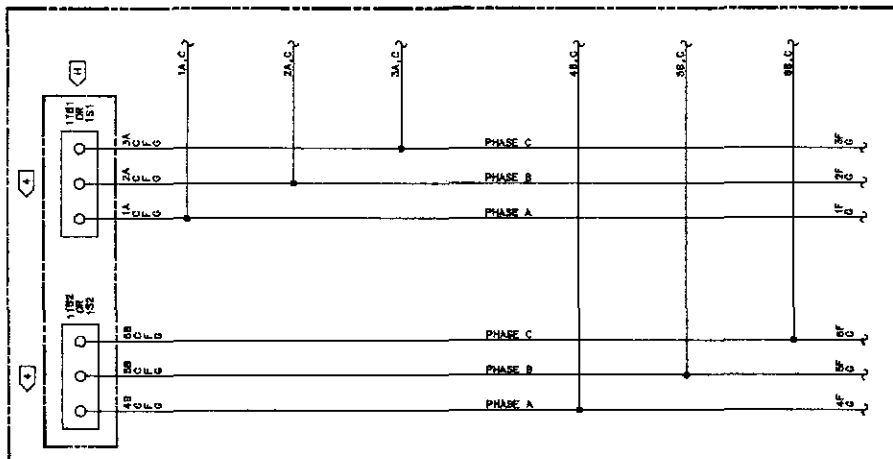
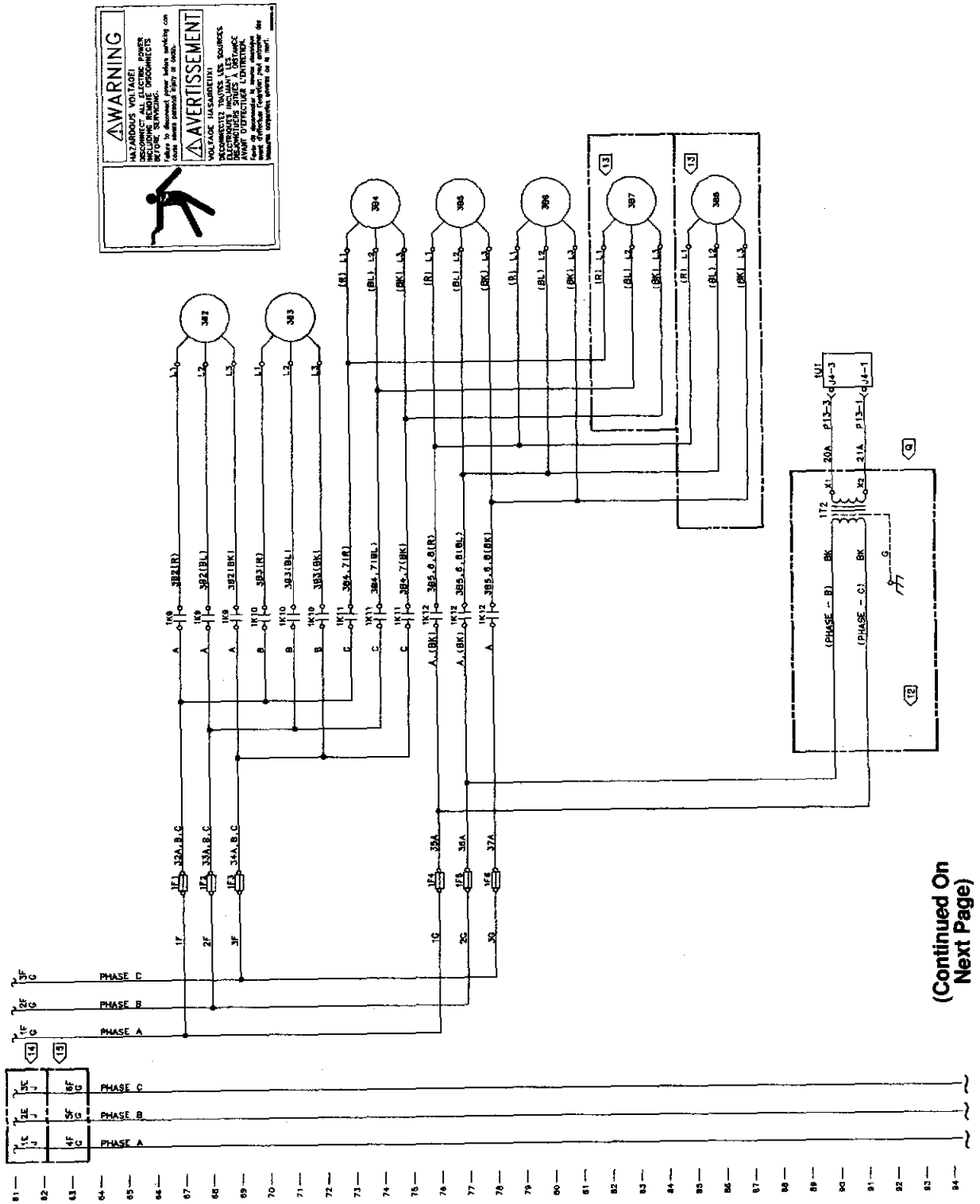
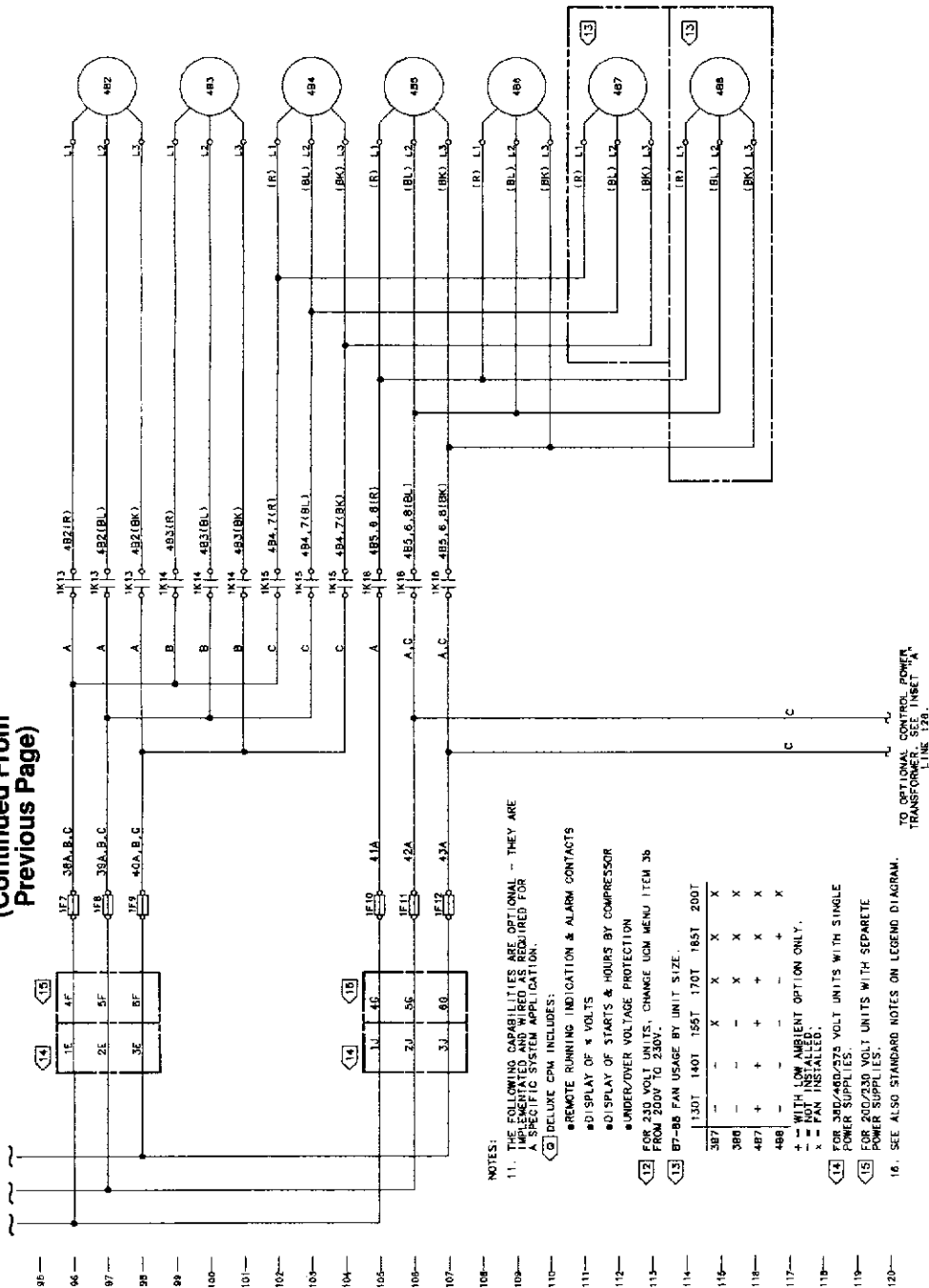


Figure 4.
RTAA Schematic
Wiring - Page 2



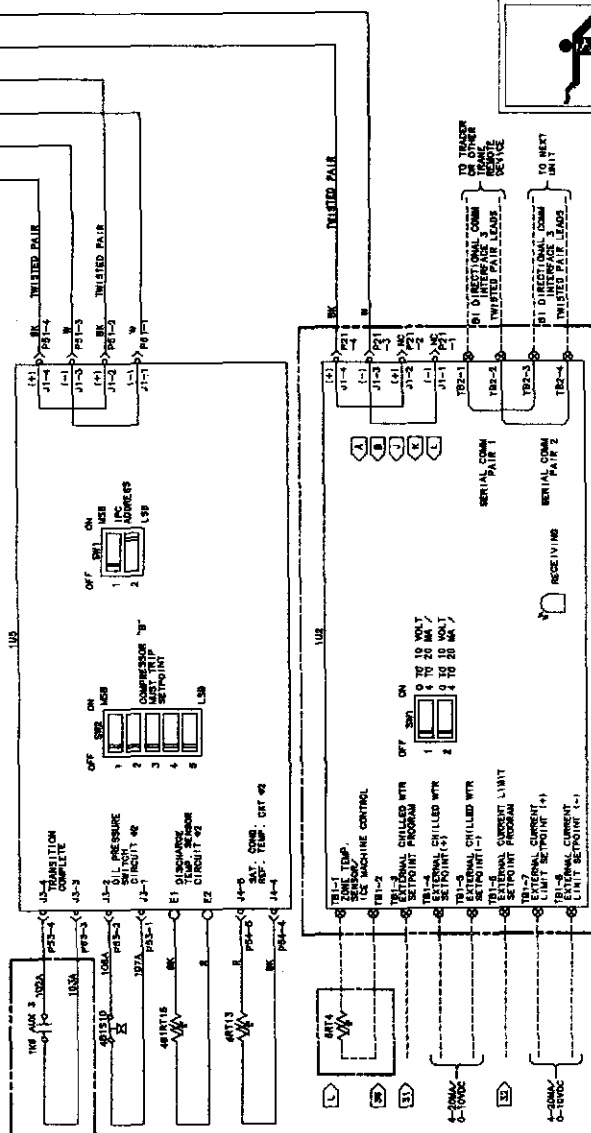
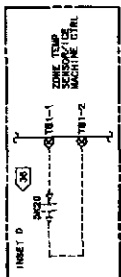
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- 31 SEE INLET B FOR RESISTOR CONNECTIONS TO PROGRAM AN EXTERNAL LOAD.
- 32 THE TEST LOG FOR THIS CONNECTION IS TO BE FOUND ON INTERNAL WIRE LIST. A LOW VOLTAGE WARNING LIGHT AND A ZONE AIR TEMP INPUT ARE USED.
33. THE FOLLOWING CAPABILITIES ARE OPTIONAL - THEY ARE IMPLEMENTED AND WIRED AS REQUIRED FOR A SPECIFIC SYSTEM APPLICATION:

 - A ICE-MACHINE CONTROL. (CANNOT BE USED WITH OPT. L)
 - B COMMUNICATIONS INTERFACE
 - C CHILLED WATER RESET - PETLUM WATER
 - D CHILLED WATER RESET - OUTDOOR AIR
 - E CHILLED WATER RESET - ZONE AIR (CANNOT BE USED WITH OPT A)

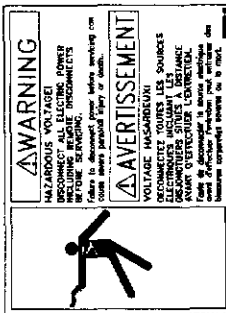


Figure 7.
RTAA Schematic
Wiring - Page 5

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⚠ WARNING

HAZARDOUS VOLTAGE!
DISCONNECT ALL POWER SOURCES
INCLUDING REAR DISCONNECTS
BEFORE WORKING ON THIS WIRING.
Failure to disconnect power before working on
wiring may result in personal injury or death.

⚠ AVERTISSEMENT

VOLTAJE PELIGROSO!
DESCONECTE TODOS LOS FUENTES
DE ENERGIA INCLUIDO EL REAR
DISCONNECT ANTES DE TRABAJAR
EN ESTE WIRING.
Falta de desconectar la energia
puede ocasionar lesiones personales o la muerte.

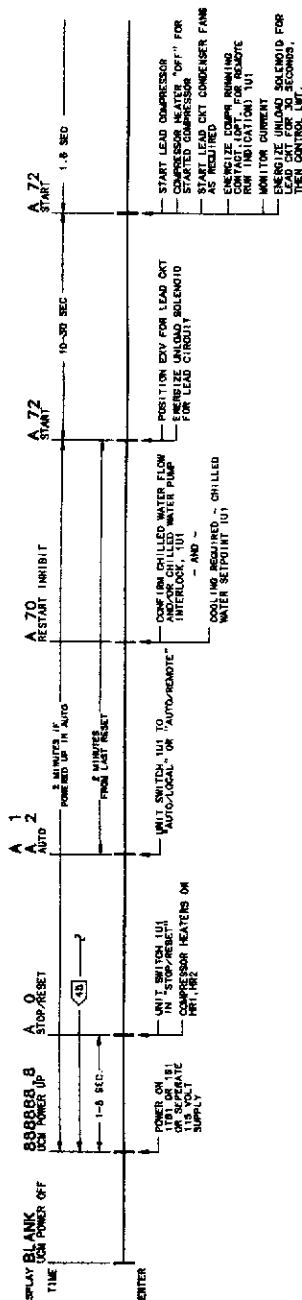


AREA	DEVICE PREFIX	LOCATION CODE
1	CONTROL PANEL	
2	FIRST CIRCUIT COMP. & FANS	
3	SECOND CIRCUIT COMP. & FANS	
4	CUSTOMER PROVIDED	
5	UNIT MOUNTED	

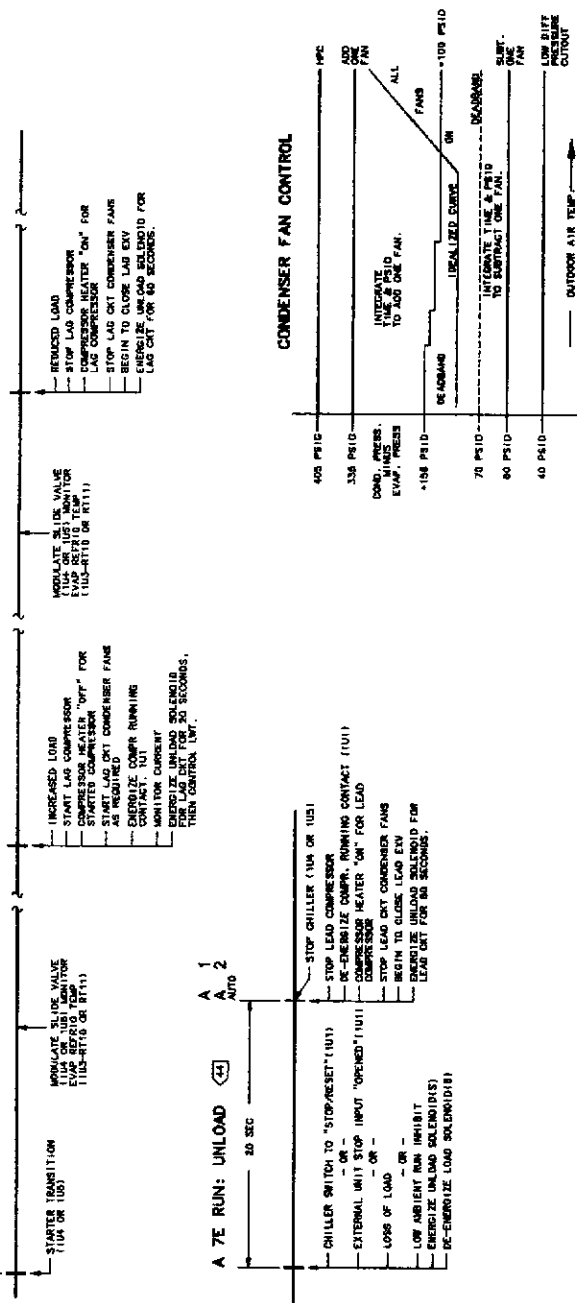
- NOTES:
41. UNLESS OTHERWISE NOTED, ALL SWITCHES ARE 125°C 177°F W/AT AMBIENT. WITH PRESSURE, AT 50% RELATIVE HUMIDITY, WITH 100% LOAD. ALL SWITCHES MUST BE OPENED AFTER A NORMAL SHUTDOWN HAS OCCURRED.
 42. DASHED LINES INDICATE DISCONNECTED FIELD WIRING BY OTHERS. DASHED LINE ENCLOSED AND/OR DASHED W/OUT OF THE FIELD INDICATES A LINE ENCLOSED (SEE EXAMPLE LINE 1). UNENCLOSED LINES ARE FIELD WIRING. UNENCLOSED LINES WITH A DASHED LINE INDICATES A LINE ENCLOSED BY FRANK CO.
 43. HANGERS ALONG THE RIGHT SIDE OF THE SCHEMATIC DESIGNATE THE LOCATION OF THE WIRING. THE HANGERS ARE NUMBERED AND INDICATES A NORMALLY CLOSED CONTACT. AN OPEN HANGER INDICATES A NORMALLY OPEN CONTACT. A HANGER WITH A TIE LINE CONTACT WITH BEGINS TYPING WHEN ENERGIZED.
 44. MFR & MFR DIAGNOSTICS WILL EFFECT AN IMMEDIATE SHUTDOWN. 72 RUN UNLOAD WILL BE TOLDED.
 45. UNLOAD 50% FOLD ENERGIZED FOR 2 MINUTES WHEN PRESSED UP IN 10 SECONDS STOPPED ON AUTO.

DEVICE DESTINATION	DESCRIPTION	LINE NUMBER
117-8	FAN FUSES CRT #1	97-98, 99-100
117-12	FAN FUSES CRT #2	99-100, 100-101
117-15	CONTROL CRT FUSE	124-125
117-16	CONTROL CRT FUSE	125-126
117-17	START CONTACTORS	126-127
117-18	START CONTACTORS	127-128
117-19	START CONTACTORS	128-129
117-20	START CONTACTORS	129-130
117-21	START CONTACTORS	130-131
117-22	START CONTACTORS	131-132
117-23	START CONTACTORS	132-133
117-24	START CONTACTORS	133-134
117-25	START CONTACTORS	134-135
117-26	START CONTACTORS	135-136
117-27	START CONTACTORS	136-137
117-28	START CONTACTORS	137-138
117-29	START CONTACTORS	138-139
117-30	START CONTACTORS	139-140
117-31	START CONTACTORS	140-141
117-32	START CONTACTORS	141-142
117-33	START CONTACTORS	142-143
117-34	START CONTACTORS	143-144
117-35	START CONTACTORS	144-145
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UNIT SEQUENCE OF OPERATION

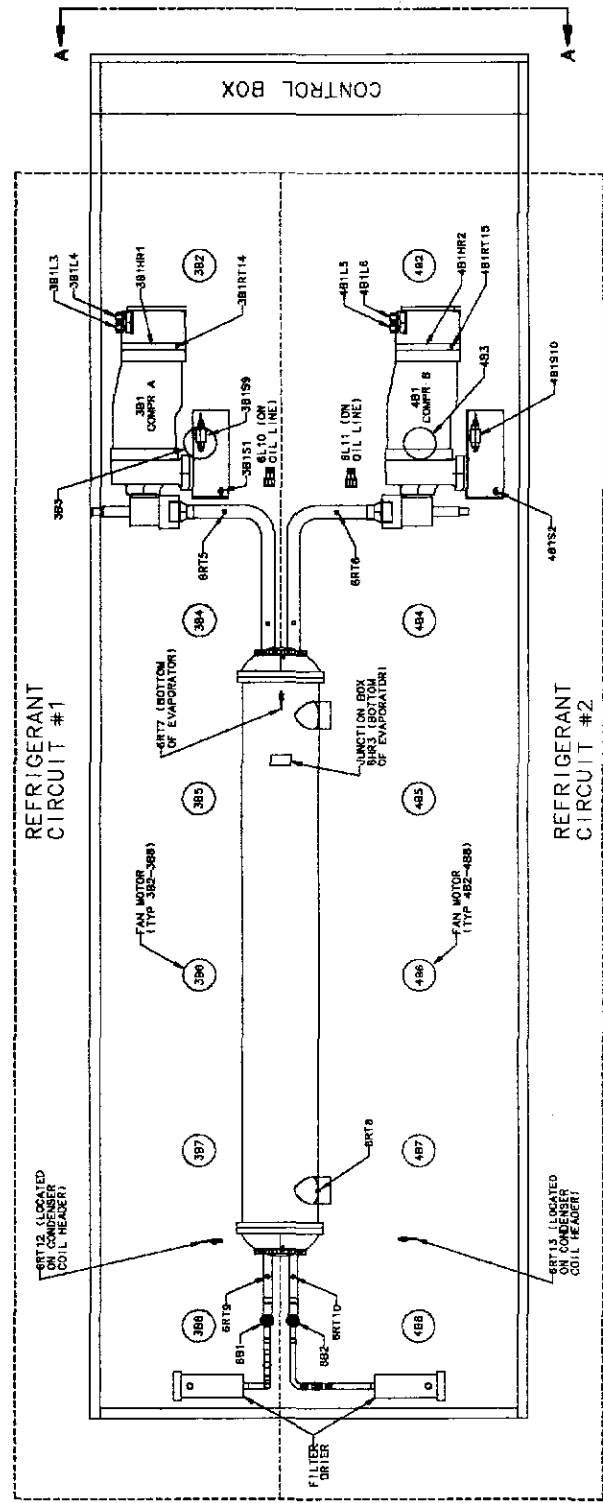


A 74 RUN: NORMAL
A 75 RUN: CURRENT LIMIT - WITHIN 10 PERCENT OF CURRENT SETPOINT (101)
A 76 RUN: CONDENSER LIMIT - WITHIN 10 PERCENT OF CONDENSER LIMIT SETPOINT (101)
A 77 RUN: EVAPORATOR LIMIT - WITHIN 0°F OF EVAP TRIP SETPOINT (101)
A 78 RUN: EVAPORATOR LIMIT - WITHIN 0°F OF EVAP TRIP SETPOINT (101)



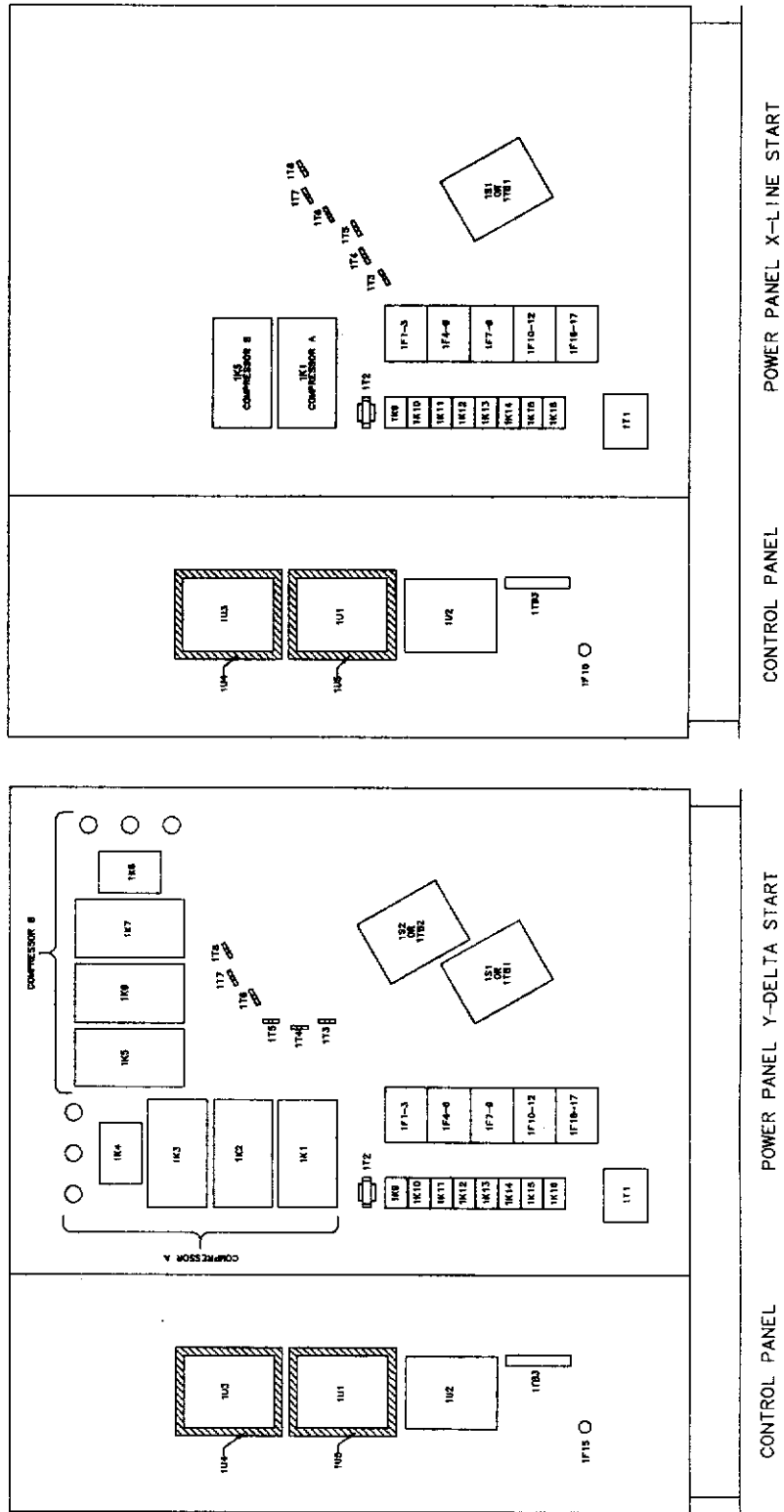
→ APPROXIMATE; VALUE VARIES BY UNIT CONFIGURATION.

Figure 8.
RTAA Component Locations



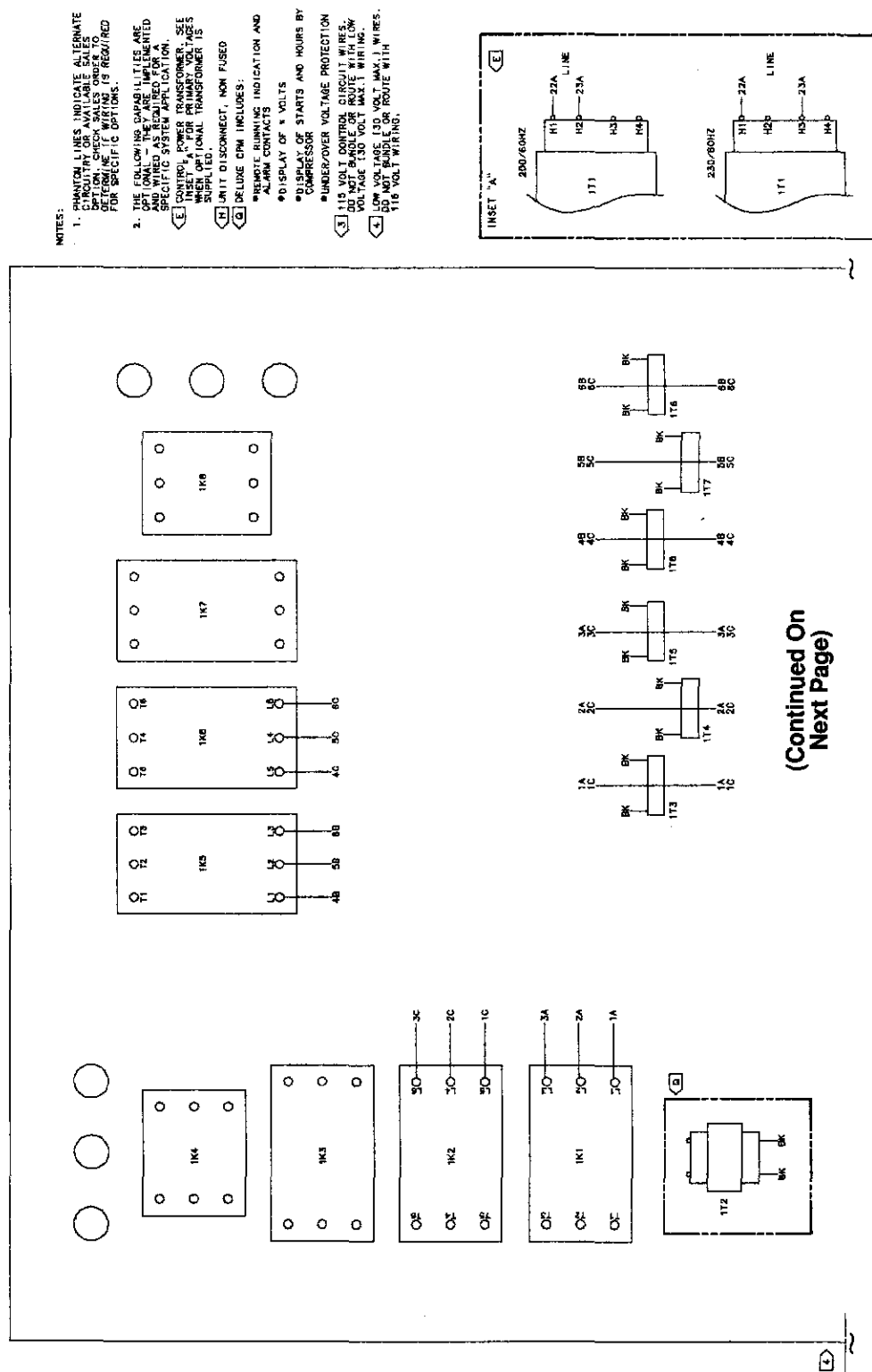
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VIEW A-A

Figure 9.
RTAA Connection Wiring
Power Panel
200/230 Volt Units



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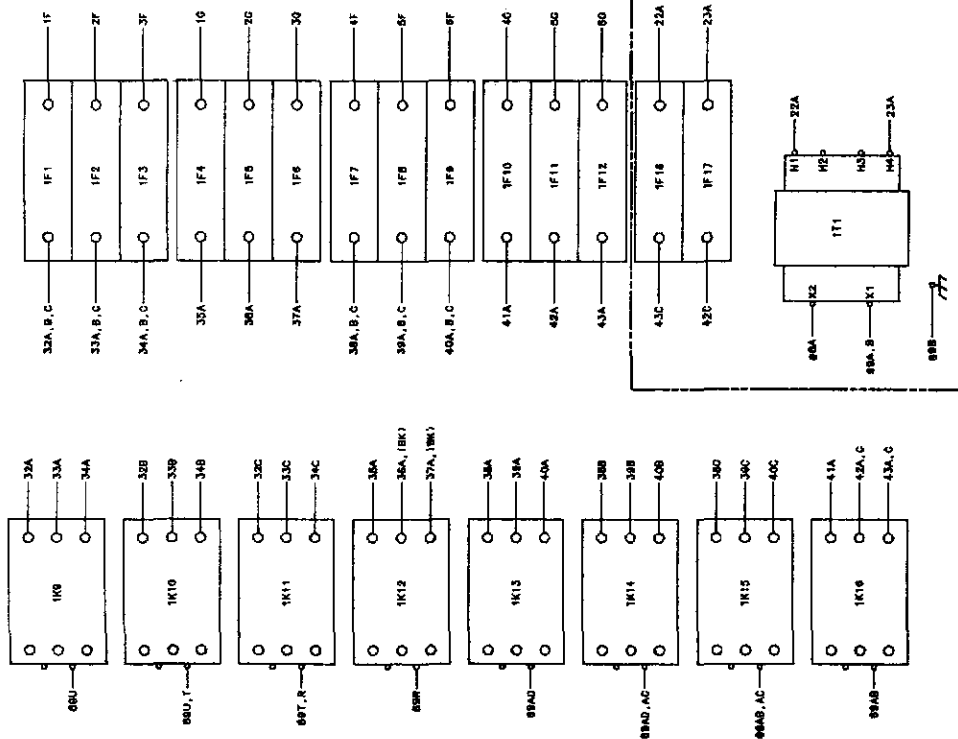
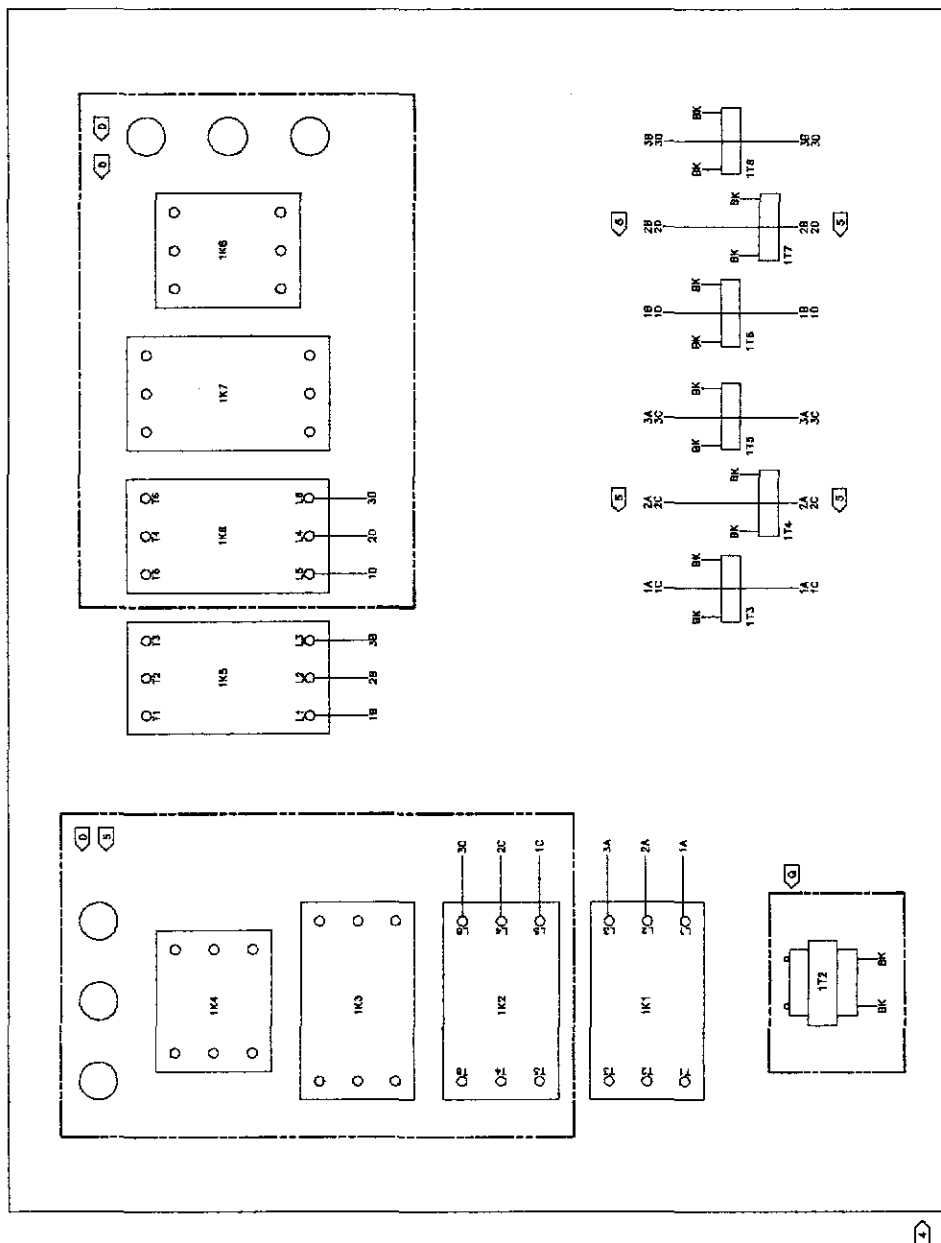


Figure 10.
RTAA Connection Wiring
Power Panel
380/460/575 Volt Units

- NOTES:
1. PHANTOM LINES INDICATE ALTERNATE CIRCUITRY OR AVAILABLE SALES OPTIONS. WIRING IS REQUIRED FOR SPECIFIC OPTIONS.
 2. THE FOLLOWING CAPABILITIES ARE OPTIONAL - THEY ARE IMPLEMENTED AS WIRING IS REQUIRED FOR A SPECIFIC SYSTEM APPLICATION.
 - (D) STAGE-A CLOSED TRANSITION
 - (E) CONTROL POWER TRANSFORMER. SEE INSET "A" FOR PRIMARY VOLTAGES WHEN OPTIONED. TRANSFORMER IS SUPPLIED.
 - (H) UNIT DISCONNECT, NON FUSED
 - (G) DELUXE CPM INCLUDES:
 - REMOTE RUNNING INDICATION
 - DISPLAY OF * VOLTS
 - DISPLAY OF STARTS AND HOURS BY COMPRESSOR
 - (3) UNDER-OVER VOLTAGE PROTECTION
 - (1) 115 VOLT CONTROL CIRCUIT WIRE. 10 MIN. BUNDLE OR ROUTE WITH 110 VOLT WIRING.
 - (4) LOW VOLTAGE 130 VOLT MAX. 1 WIRES. 10 MIN. BUNDLE OR ROUTE WITH 110 VOLT WIRING.
 - (5) NOT USED ON 1-1 START



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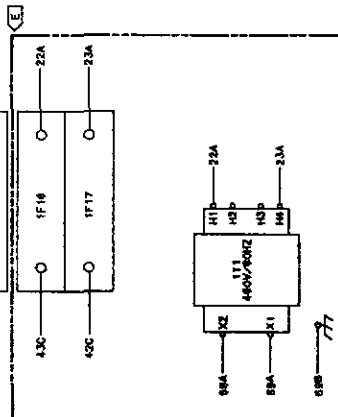
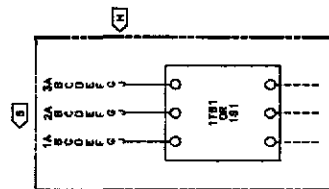
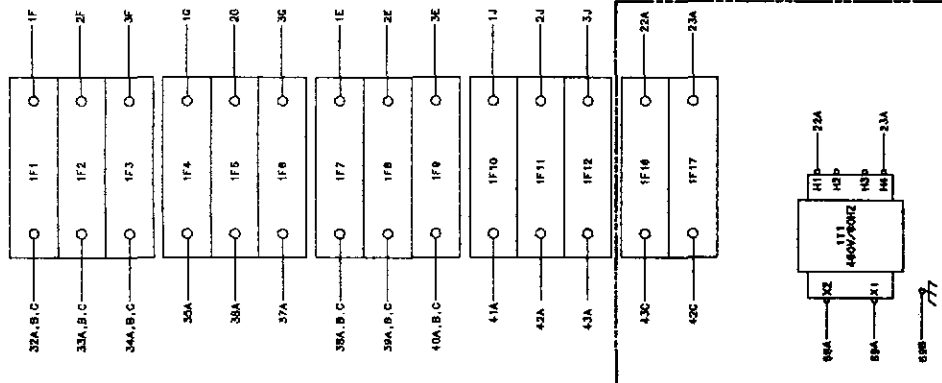
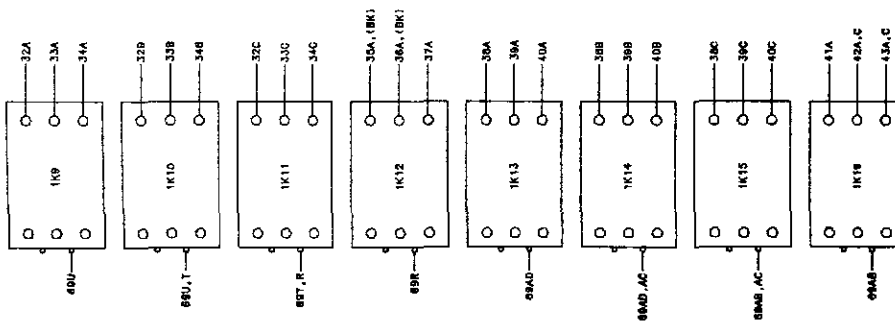
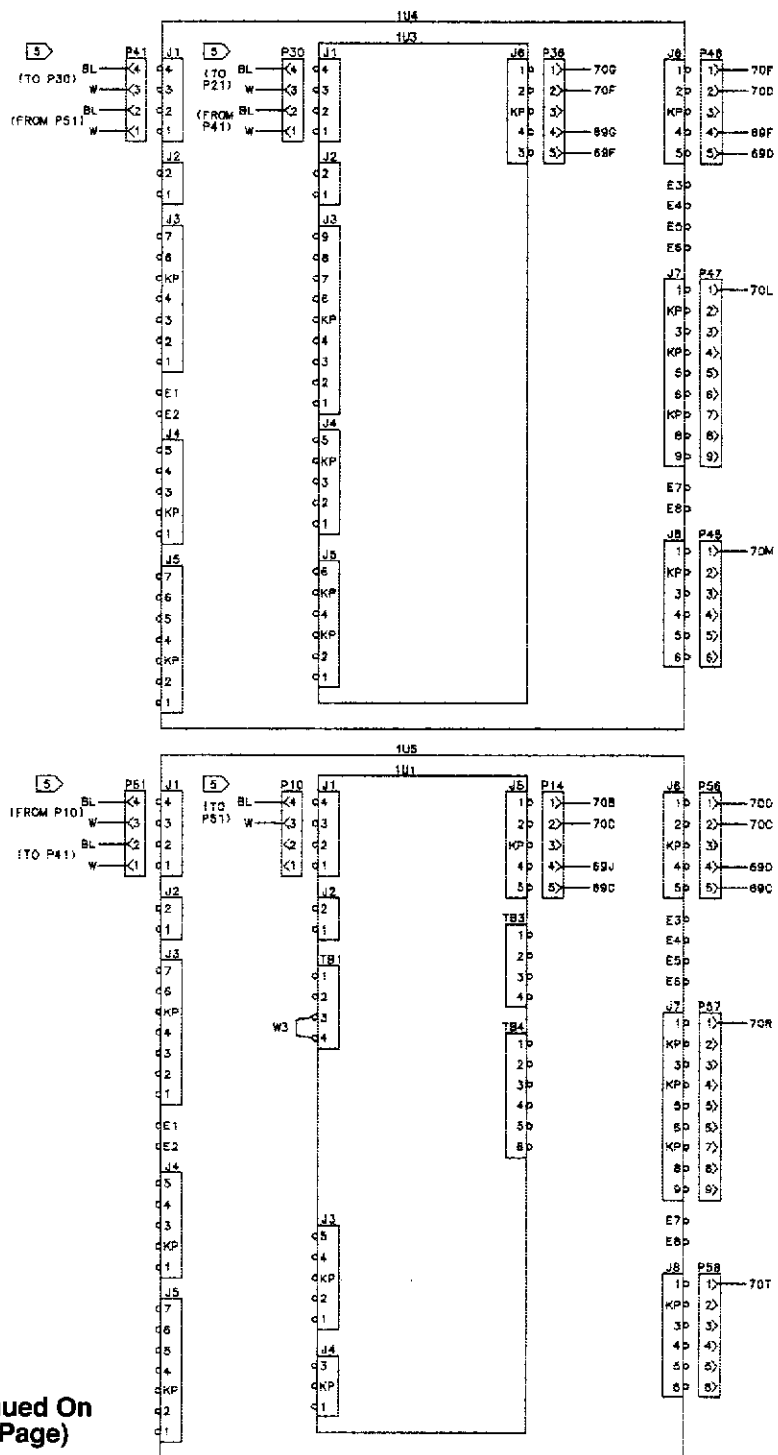
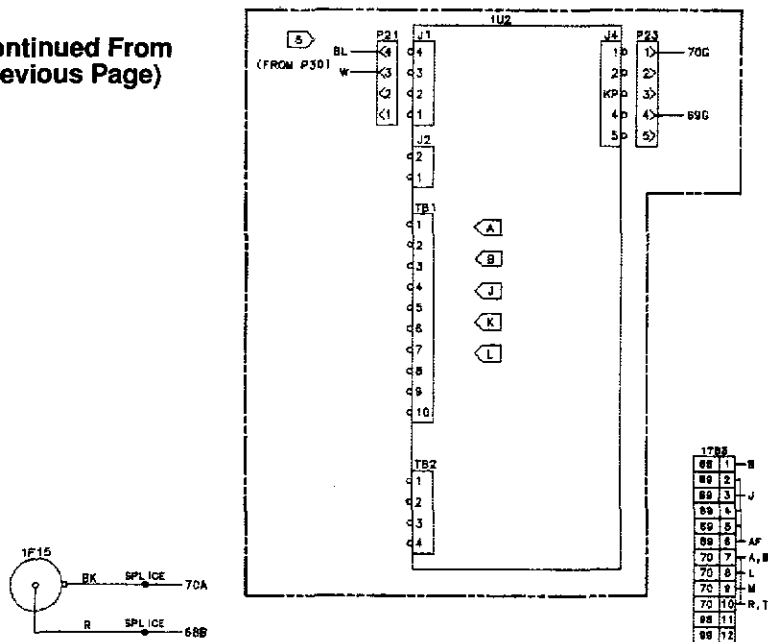


Figure 11.
RTAA Connection Wiring -
Control Panel



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NOTES:

1. PHANTOM LINES INDICATE ALTERNATE CIRCUITRY OR AVAILABLE SALES OPTION. CHECK SALES ORDER TO DETERMINE IF WIRING IS REQUIRED FOR SPECIFIC OPTIONS.
2. THE FOLLOWING CAPABILITIES ARE OPTIONAL - THEY ARE IMPLEMENTED AND WIRED AS REQUIRED FOR A SPECIFIC SYSTEM APPLICATION.
 - A ICE-MACHINE CONTROL (CANNOT BE USED W/OPTION "L")
 - B COMMUNICATIONS INTERFACE
 - J CHILLED WATER RESET - RETURN WATER
 - K CHILLED WATER RESET - OUTDOOR AIR
 - L CHILLED WATER RESET - ZONE AIR (CANNOT BE USED WITH OPTION "A")
 - D LOW AMBIENT LOCKOUT
- 3 115 VOLT CONTROL CIRCUIT WIRES. DO NOT BUNDLE OR ROUTE WITH LOW VOLTAGE (30 VOLT MAX.) WIRING.
- 4 LOW VOLTAGE (30 VOLT MAX.) WIRES. DO NOT BUNDLE OR ROUTE WITH 115 VOLT WIRING.
- 5 WIRING BETWEEN P10, P51, P41, P30 AND P21 TO BE A TWISTED PAIR. IF SHIELDED WIRE IS SUPPLIED DO NOT CONNECT THE SHIELD.

Figure 12.
RTAA Control Panel
to Power Panel Wiring

NOTES:

1. PHANTOM LINES INDICATE ALTERNATE CIRCUITRY OR AVAILABLE SALES OPTION. CHECK SALES ORDERS TO DETERMINE IF WIRING IS REQUIRED FOR SPECIFIC OPTIONS.
2. THE FOLLOWING CAPABILITIES ARE OPTIONAL - THEY ARE IMPLEMENTED AND WIRED AS REQUIRED FOR A SPECIFIC SYSTEM APPLICATION.

D WYE-DELTA CLOSED TRANSITION STARTER

E CONTROL POWER TRANSFORMER.

Q DELUXE CPM INCLUDES:

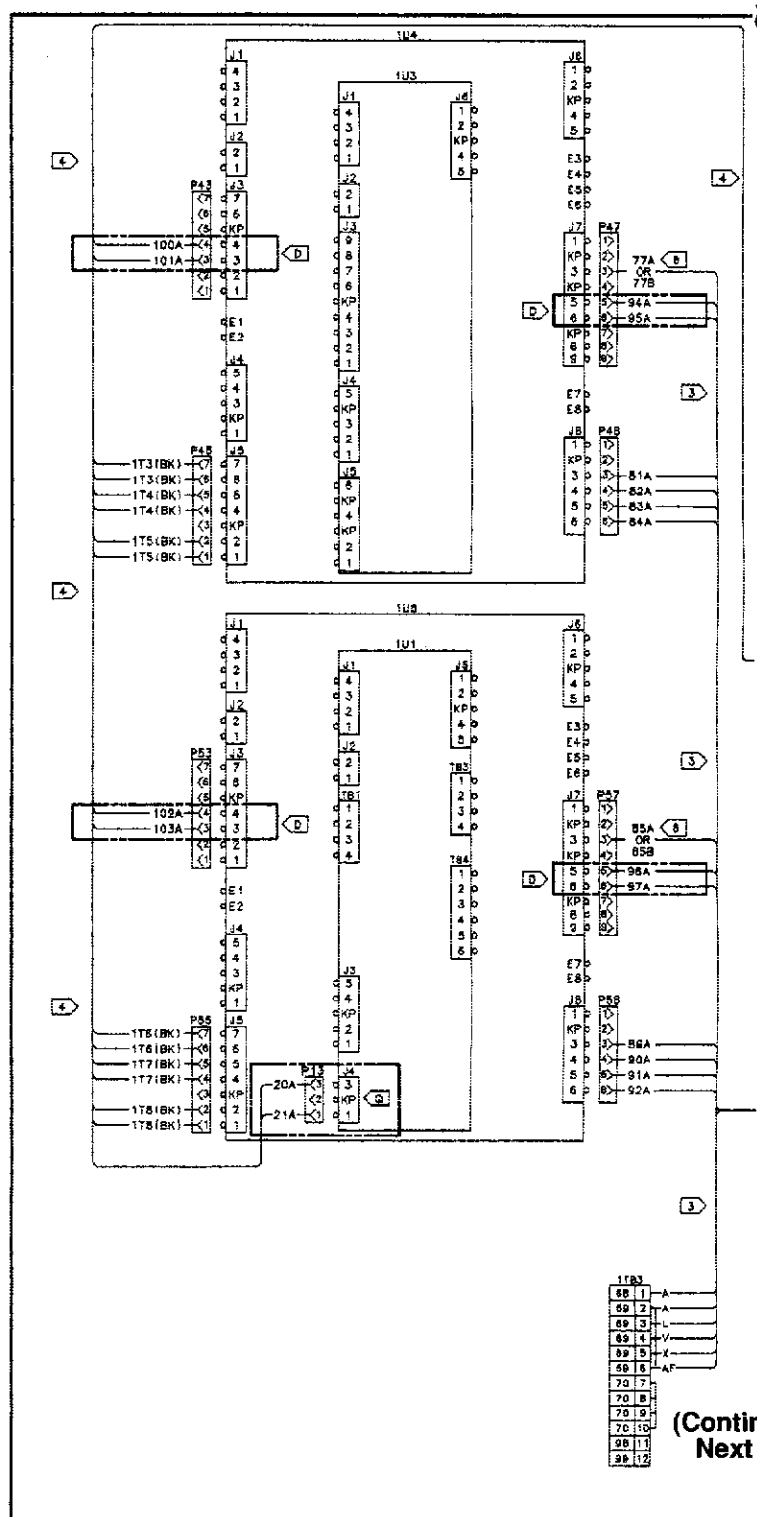
- REMOTE RUNNING INDICATION AND ALARM CONTACTS
- DISPLAY OF * VOLTS
- DISPLAY OF STARTS AND HOURS BY COMPRESSOR
- UNDER/OVER VOLTAGE PROTECTION

3 115 VOLT CONTROL CIRCUIT WIRES. DO NOT BUNDLE OR ROUTE WITH LOW VOLTAGE (30 VOLT MAX.) WIRING.

4 LOW VOLTAGE (30 VOLT MAX.) WIRES. DO NOT BUNDLE OR ROUTE WITH 115 VOLT WIRING.

5 NOT USED ON X-LINE START.

6 WIRES 77A AND 85A USED ON X-LINE START. WIRES 77B AND 85B USED ON WYE-DELTA START.



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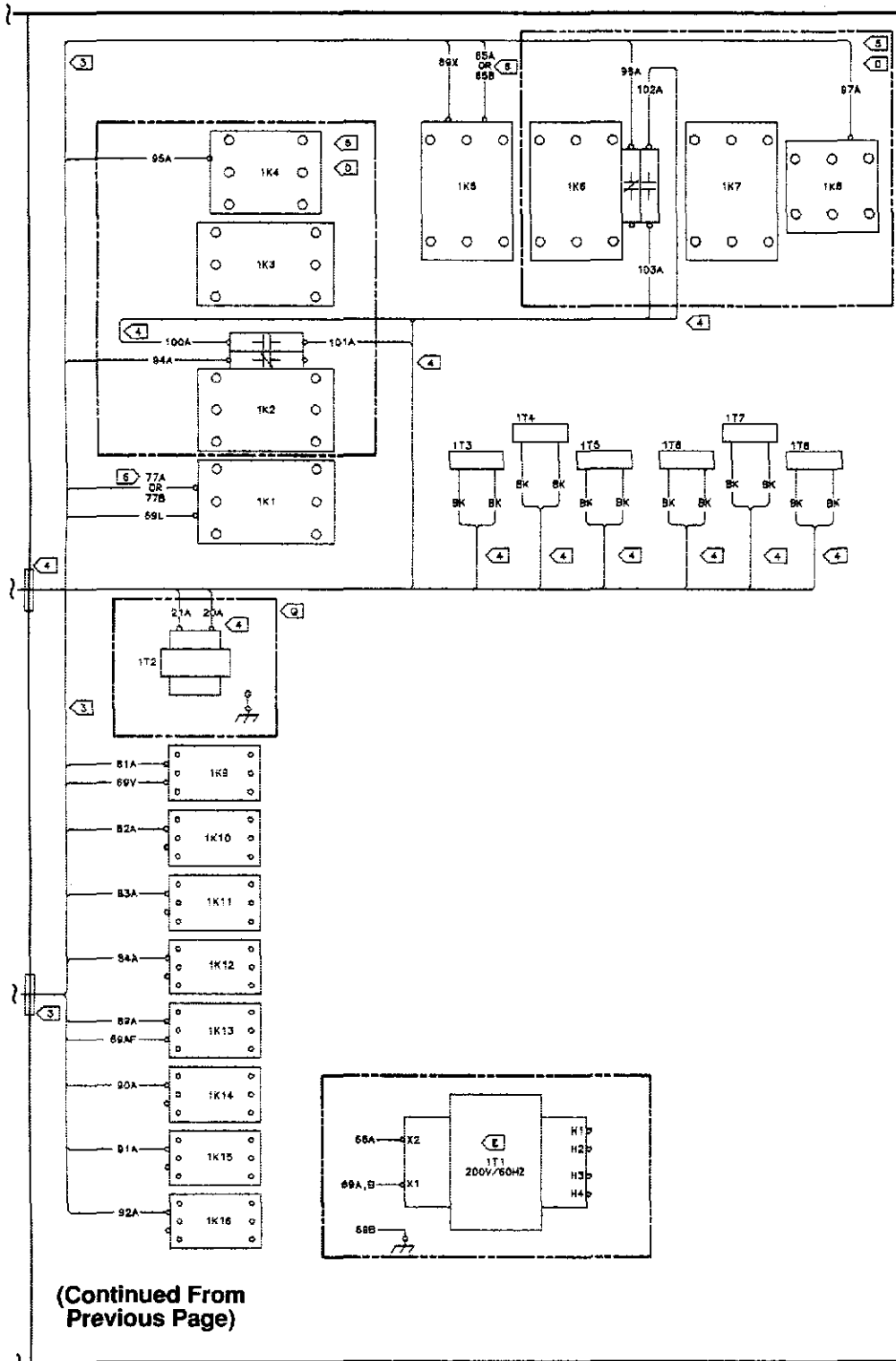


Figure 13.
RTAA Control/Power Panels
to Unit Components Wiring

NOTES:

1. PHANTOM LINES INDICATE ALTERNATE CIRCUITRY OR AVAILABLE SALES OPTION. CHECK SALES ORDER TO DETERMIN IF WIRING IS REQUIRED FOR SPECIFIC OPTIONS.
2. THE FOLLOWING CAPABILITIES ARE OPTIONAL-THEY ARE IMPLEMENTED AND WIRED AS REQUIRED FOR A SPECIFIC SYSTEM APPLICATION.

(K) CHILLED WATER RESET - OUTDOOR AIR
(O) LOW AMBIENT LOCKOUT

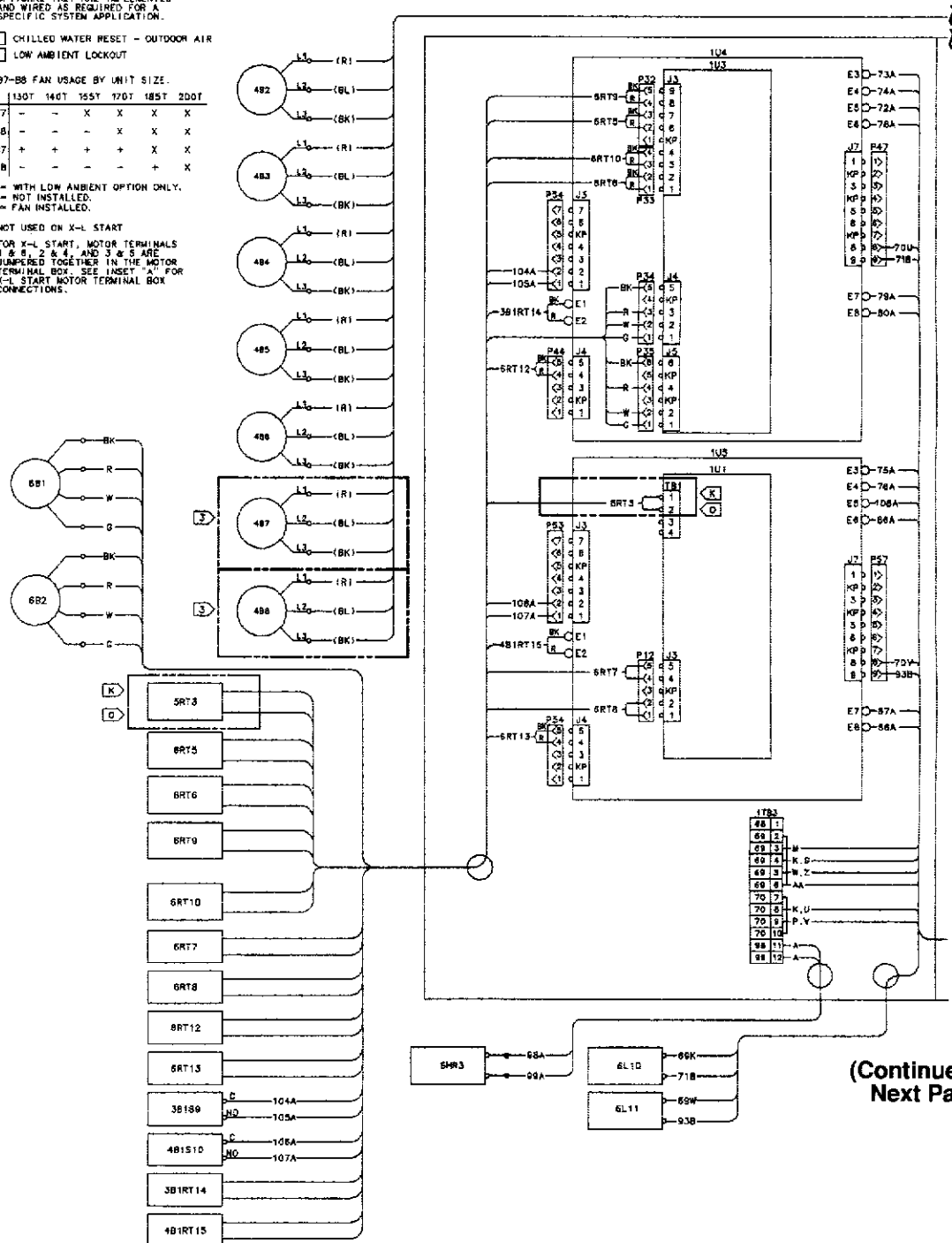
(3) B7-B8 FAN USAGE BY UNIT SIZE.

	130T	140T	155T	170T	185T	200T
3B7	-	-	X	X	X	X
3B8	-	-	-	X	X	X
4B7	+	+	+	+	X	X
4B8	-	-	-	-	+	X

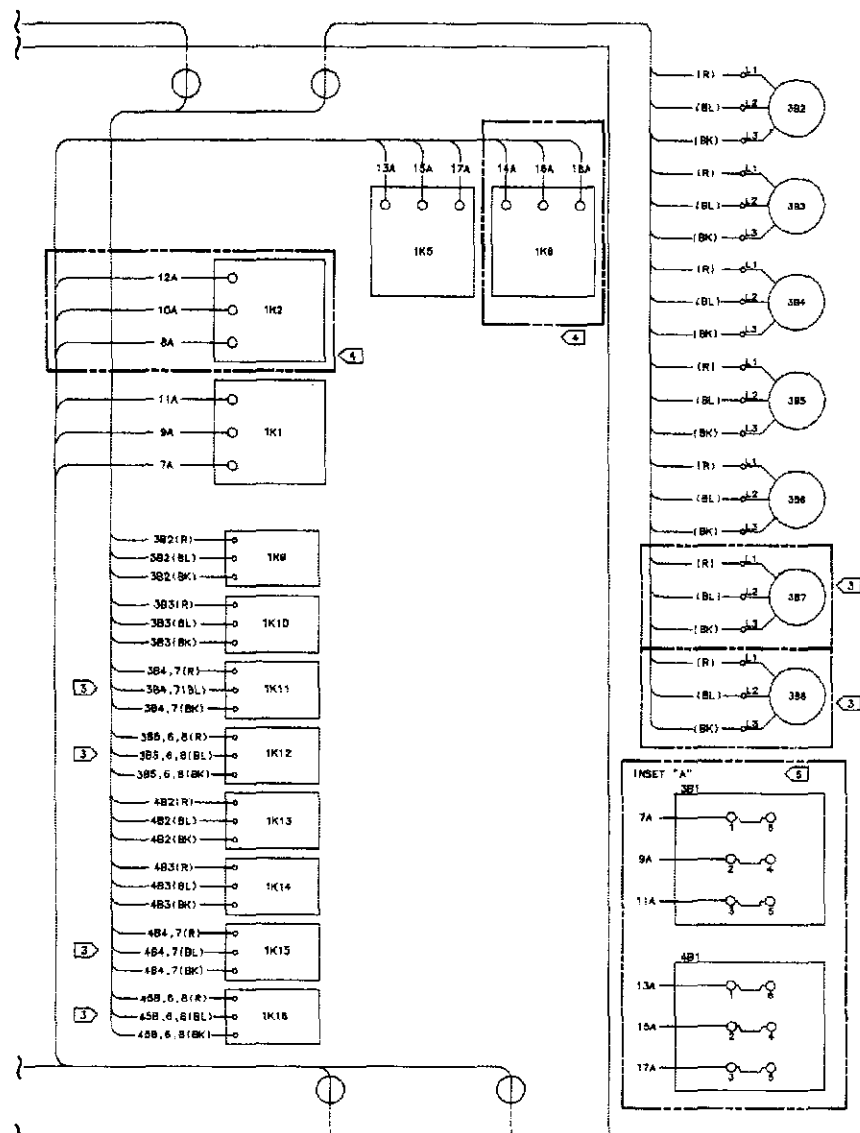
+ = WITH LOW AMBIENT OPTION ONLY.
- = NOT INSTALLED.
X = FAN INSTALLED.

(4) NOT USED ON X-L START

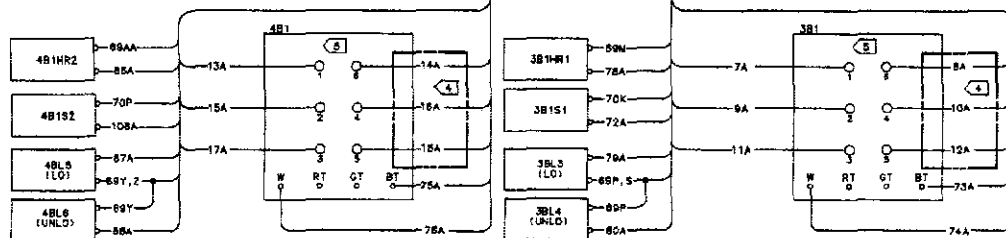
(5) FOR X-L START, MOTOR TERMINALS 1 & 2, 3 & 4, AND 5 & 6 ARE JUMPED TOGETHER IN THE MOTOR TERMINAL BOX. SEE INSET "A" FOR X-L START MOTOR TERMINAL BOX CONNECTIONS.



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