



New Release

Form QWC4-PW2 (321)

**FIELD CONNECTIONS AND CONTROL
WIRING FOR QWC4 CHILLER****WIRING DIAGRAM**

CONTRACTOR _____
ORDER NO. _____
QTC CONTRACT NO. _____
QTC ORDER NO. _____

PURCHASER _____
JOB NAME _____
LOCATION _____
ENGINEER _____

REFERENCE DATE _____

APPROVAL DATE _____

CONSTRUCTION DATE _____

JOB DATA:

CHILLER (PIN 1-4) QWC4

VSD FRAME SIZE (PIN 11) _____

RUNNING LOAD AMPS (RLA) _____

POWER SUPPLY VOLTAGE(PIN 20, 21) _____

AUTO TRANSFORMER _____ YES _____ NO

CIRCUIT BREAKER (PIN 22) _____ YES _____ NO

DISCONNECT SWITCH (PIN 22) _____ YES _____ NO

IMPORTANT!

READ BEFORE PROCEEDING!

GENERAL SAFETY GUIDELINES

This equipment is a relatively complicated apparatus. During installation, operation maintenance or service, individuals may be exposed to certain components or conditions including, but not limited to: refrigerants, materials under pressure, rotating components, and both high and low voltage. Each of these items has the potential, if misused or handled improperly, to cause bodily injury or death. It is the obligation and responsibility of operating/service personnel to identify and recognize these inherent hazards, protect themselves, and proceed safely in completing their tasks. Failure to comply with any of these requirements could result in serious damage to the equipment and the property in

which it is situated, as well as severe personal injury or death to themselves and people at the site.

This document is intended for use by owner-authorized operating/service personnel. It is expected that these individuals possess independent training that will enable them to perform their assigned tasks properly and safely. It is essential that, prior to performing any task on this equipment, this individual shall have read and understood this document and any referenced materials. This individual shall also be familiar with and comply with all applicable governmental standards and regulations pertaining to the task in question.

SAFETY SYMBOLS

The following symbols are used in this document to alert the reader to specific situations:



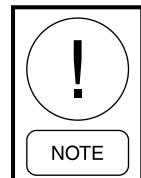
Indicates a possible hazardous situation which will result in death or serious injury if proper care is not taken.



Identifies a hazard which could lead to damage to the machine, damage to other equipment and/or environmental pollution if proper care is not taken or instructions and are not followed.



Indicates a potentially hazardous situation which will result in possible injuries or damage to equipment if proper care is not taken.



Highlights additional information useful to the technician in completing the work being performed properly.



External wiring, unless specified as an optional connection in the manufacturer's product line, is not to be connected inside the control cabinet. Devices such as relays, switches, transducers and controls and any external wiring must not be installed inside the micro panel. All wiring must be in accordance with Quantech's published specifications and must be performed only by a qualified electrician. Quantech will NOT be responsible for damage/problems resulting from improper connections to the controls or application of improper control signals. Failure to follow this warning will void the manufacturer's warranty and cause serious damage to property or personal injury.

CHANGEABILITY OF THIS DOCUMENT

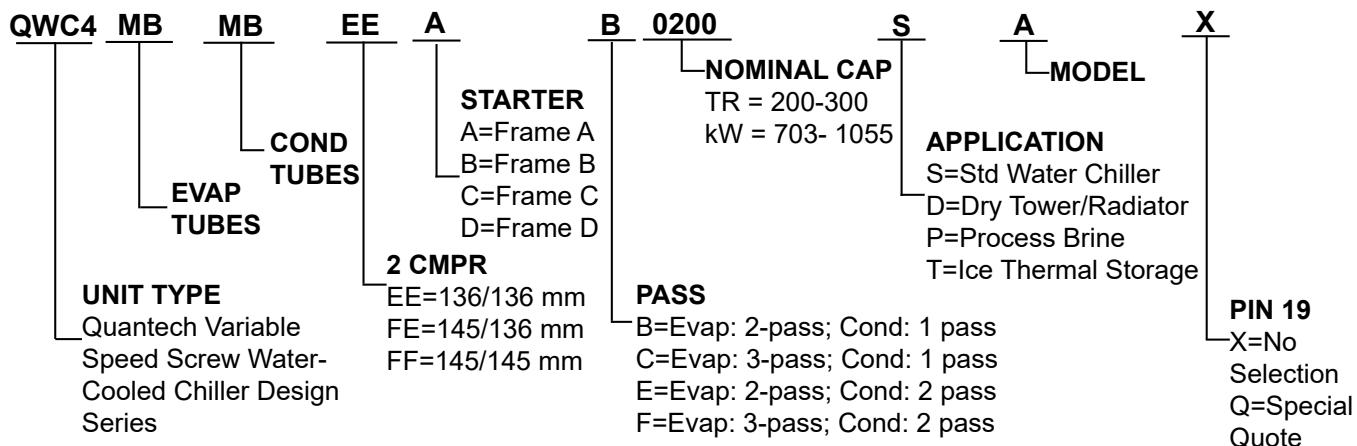
In complying with Quantech's policy for continuous product improvement, the information contained in this document is subject to change without notice. Quantech makes no commitment to update or provide current information automatically to the manual or product owner. Updated manuals, if applicable, can be obtained by contacting the nearest Quantech Service office or accessing the Johnson Controls Knowledge Exchange website at <https://docs.johnsoncontrols.com/chillers>.

It is the responsibility of rigging, lifting, and operating/service personnel to verify the applicability of these documents to the equipment. If there is any question regarding the applicability of these documents, rigging, lifting, and operating/service personnel should verify whether the equipment has been modified and if current literature is available from the owner of the equipment prior to performing any work on the chiller.

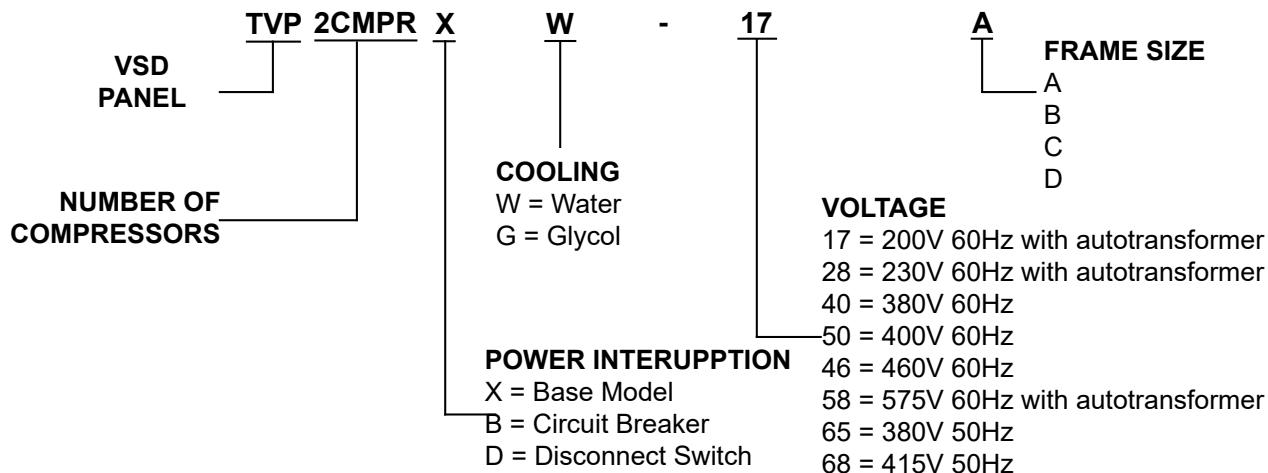
ASSOCIATED LITERATURE

MANUAL DESCRIPTION	PART NUMBER
E-Link Gateway Installation Instructions	24-104-04-9 Rev. C

NOMENCLATURE



VARIABLE SPEED DRIVE NOMENCLATURE



NOTES

NOTES FOR DRAWINGS

NO.	DESCRIPTION
1	All field wiring shall be in accordance with the relevant electrical code as well as all other applicable codes and specifications.
2	Contacts must be suitable for switching 115VAC at 5 MA.
3	Contacts are rated at 115V/230V, 100VA, resistive load only, and must be suppressed at load by user.
4	See installation, operation and maintenance manual when optional equipment is used.
5	Not applicable
6	Not applicable
7	Applied to models ending in 65B, 65C, 50B, 50C, 68B, 68C, and all models ending in D.
8	A. Fuses -F(4FU and 5FU) are 12 A for 380V, 400V and 415V models. B. Fuses -F (4FU and 5FU) are 10 A for 200V, 230V, 460V and 575V models.
9	A. Fuses -F(1FU, 2FU and 3FU) are 630 A for models ending in A & B. B. Fuses -F(1FU, 2FU and 3FU) are 800 A for models ending in C. C. Fuses -F (1FU, 2FU and 3FU) are 900 A for models ending in 46D & 58D. D. Fuses -F (1FU, 2FU and 3FU) are 1000 A for models ending in 40D, 65D, 50D & 68D.
10	See Detail B for units with auto transformer.
11	Not applicable.
12	For Detail E for CE units.
13	Options not applicable to all units, remote temp reset, remote current limit.
15	A. For models ending in A or B - AGDB P/N is 031-02061-003. B. For models ending in C OR D - AGDB P/N is 031-02061-001.
16	Accessory E-Link Gateway consisting of AMGB (cannot be used with RCC accessory)
17	Not applicable.
18	Not applicable.
19	A. Models ending in A get capacitors C1, C5, C2 and C6. B. Models ending in B and C get capacitors C1, C3, C5, C2, C4 and C6. C. Models ending in D get capacitors C1, C3, C5, C7, C2, C4, C6 and C8.
20	See Detail C for optional circuit breaker or disconnect switch.

LEGEND

- ES Transient Voltage Suppression
-  Terminal Block for Customer Connections (1TB)
-  Terminal Block for Quantech Connection
- Wiring Components by Quantech
- Optional Equipment
- — Wiring and/or Components by Others
-  NB Note Well
- EXT A Component Marked Thus is External to the Control Panel
- *=NOT REQUIRED FOR ALL MODELS

For information on the notes in the following wiring diagrams not listed here, refer to the notes legend on the language kit that ships with the unit, which is located on the inside of the panel door.

LIST OF FIGURES

FIGURE 1 - Control Elementary Diagram.....	6
FIGURE 2 - Control Elementary Diagram.....	8
FIGURE 3 - Power Elementary Diagram	10
FIGURE 4 - Control Wiring - Connection Diagram	12
FIGURE 5 - Power Wiring - Connection Diagram.....	14
FIGURE 6 - Panel Layout.....	16
FIGURE 7 - Field Connections	20
FIGURE 8 - Power Wiring.....	22
FIGURE 9 - Wiring Instructions For Optional Autotransformer	23
FIGURE 10 - System 1 Compressor Electrical Assembly	24
FIGURE 11 - System 2 Compressor Electrical Assembly.....	26
FIGURE 12 - Connector Wiring Of HPCO	27

LIST OF TABLES

TABLE 1 - System 1 Compressor Electrical Assembly	25
TABLE 2 - System 2 Compressor Electrical Assembly	27

CONTROL ELEMENTARY DIAGRAM

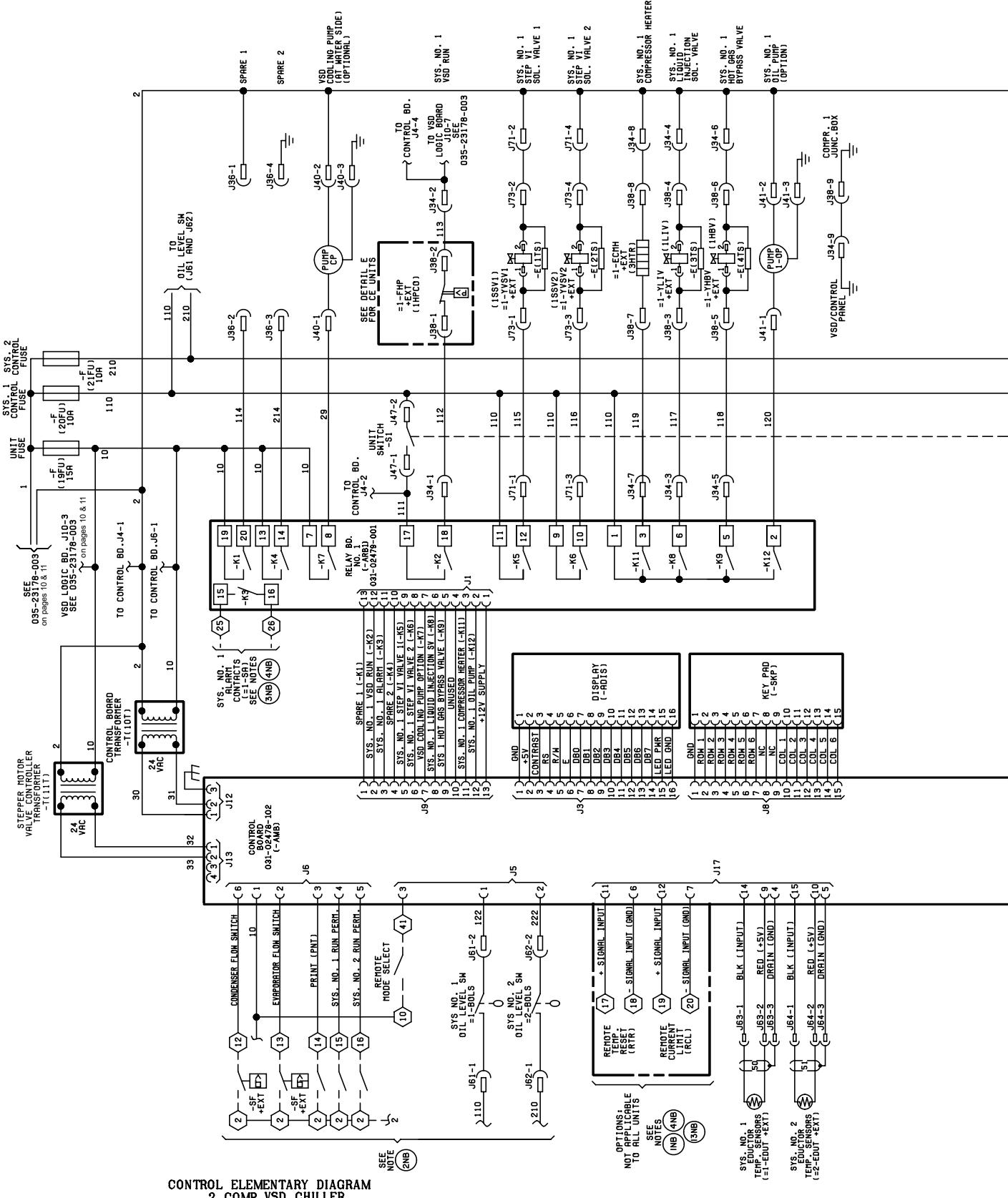


FIGURE 1 - CONTROL ELEMENTARY DIAGRAM

LD16129a

CONTROL ELEMENTARY DIAGRAM (CONT'D)

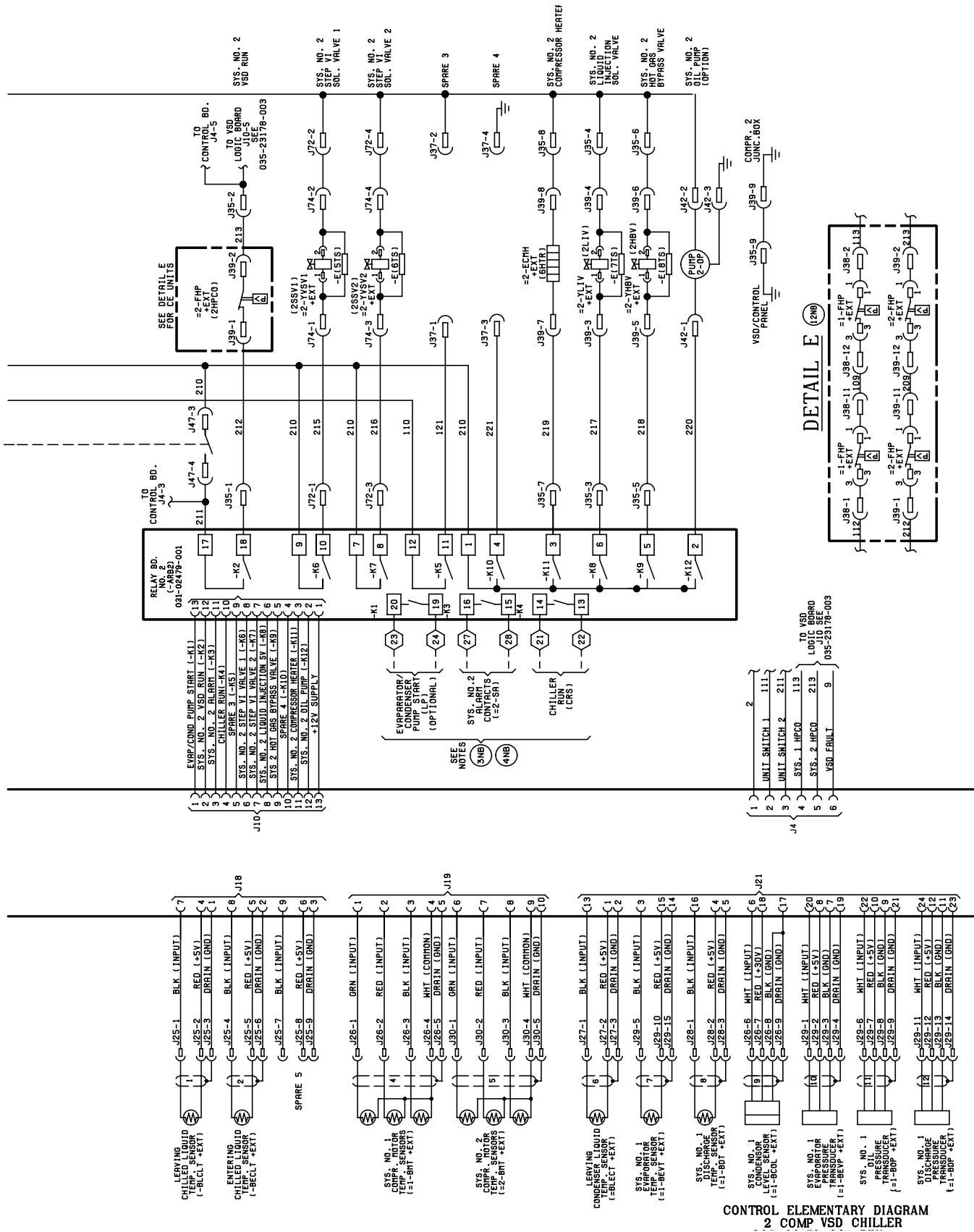


FIGURE 1 - CONTROL ELEMENTARY DIAGRAM (CONT'D)

CONTROL ELEMENTARY DIAGRAM (CONT'D)

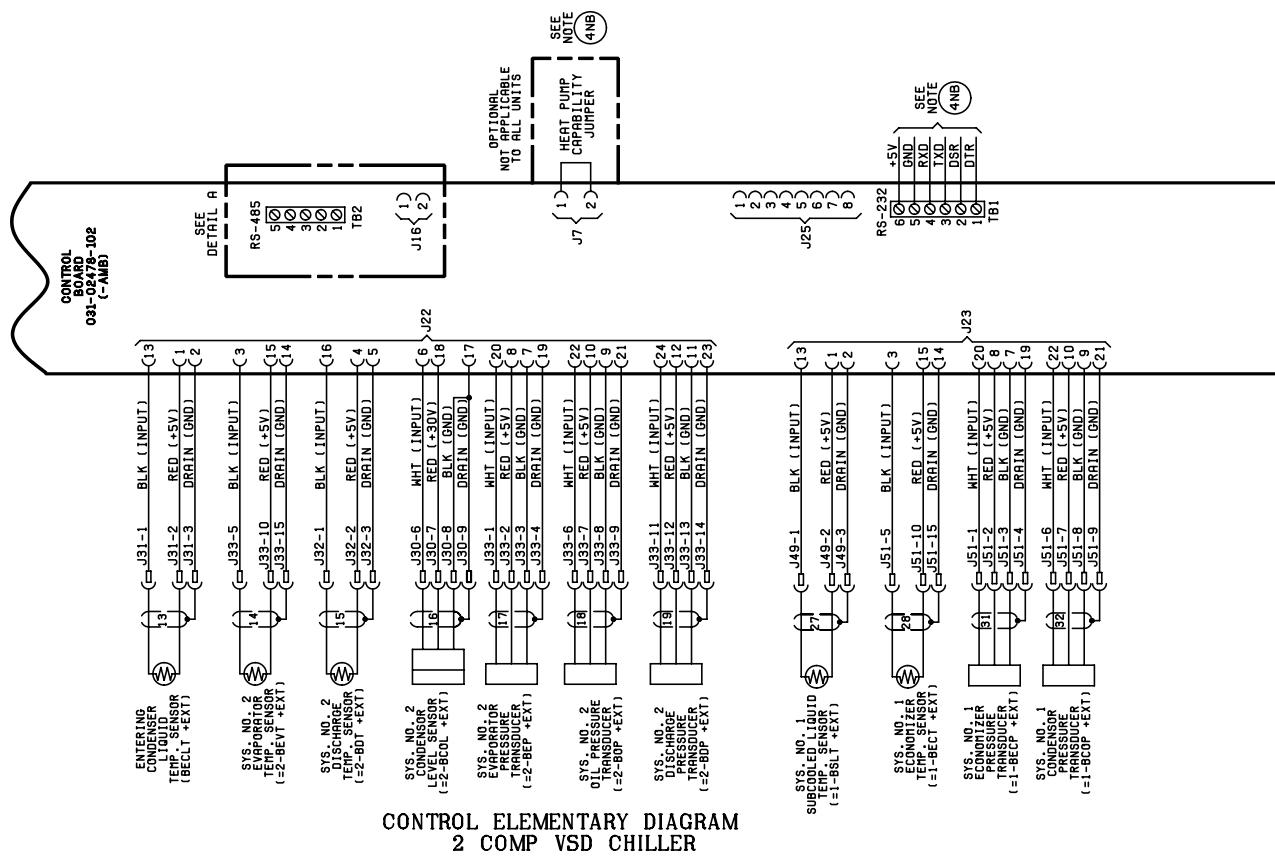


FIGURE 2 - CONTROL ELEMENTARY DIAGRAM

CONTROL ELEMENTARY DIAGRAM (CONT'D)

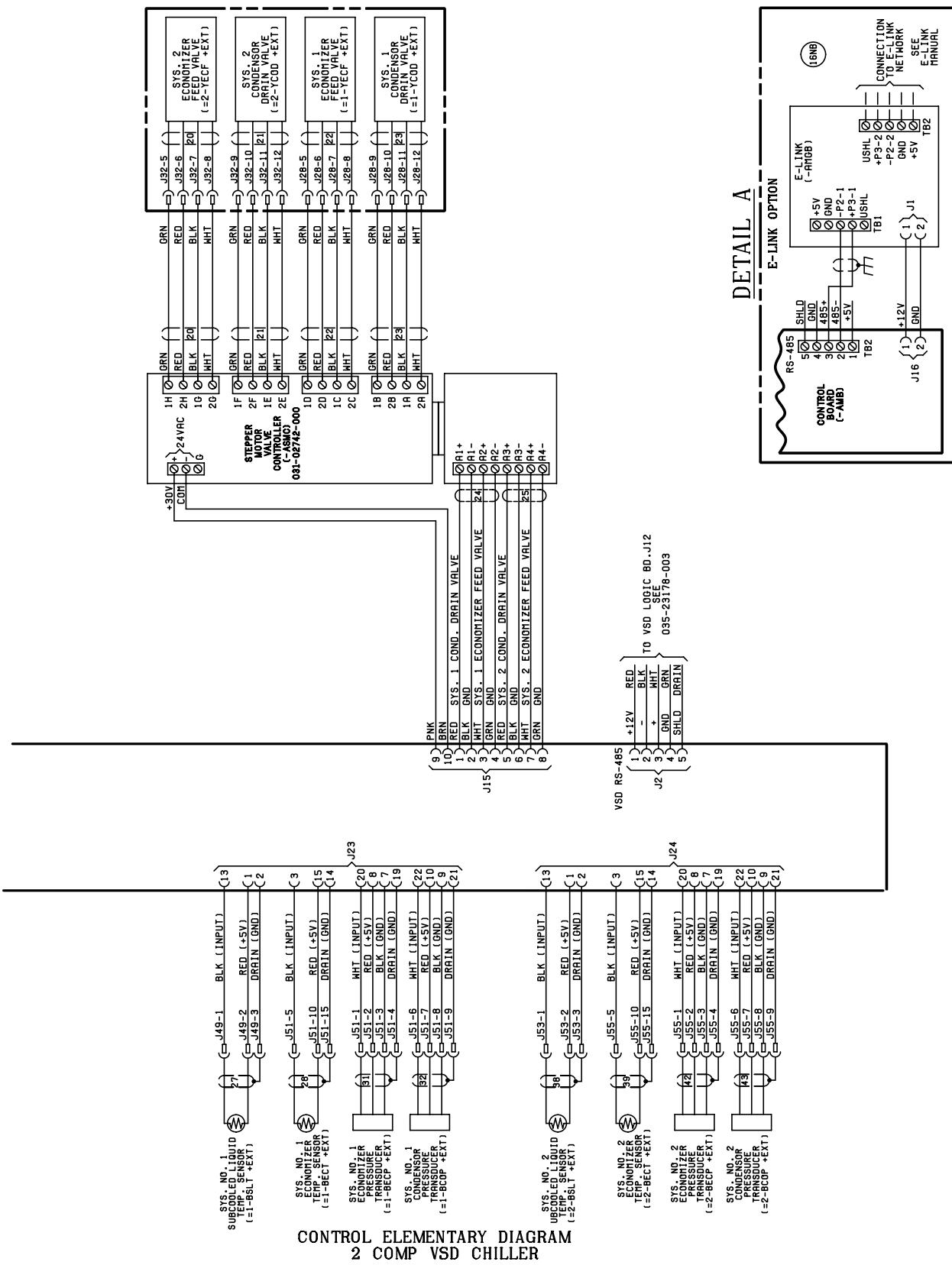
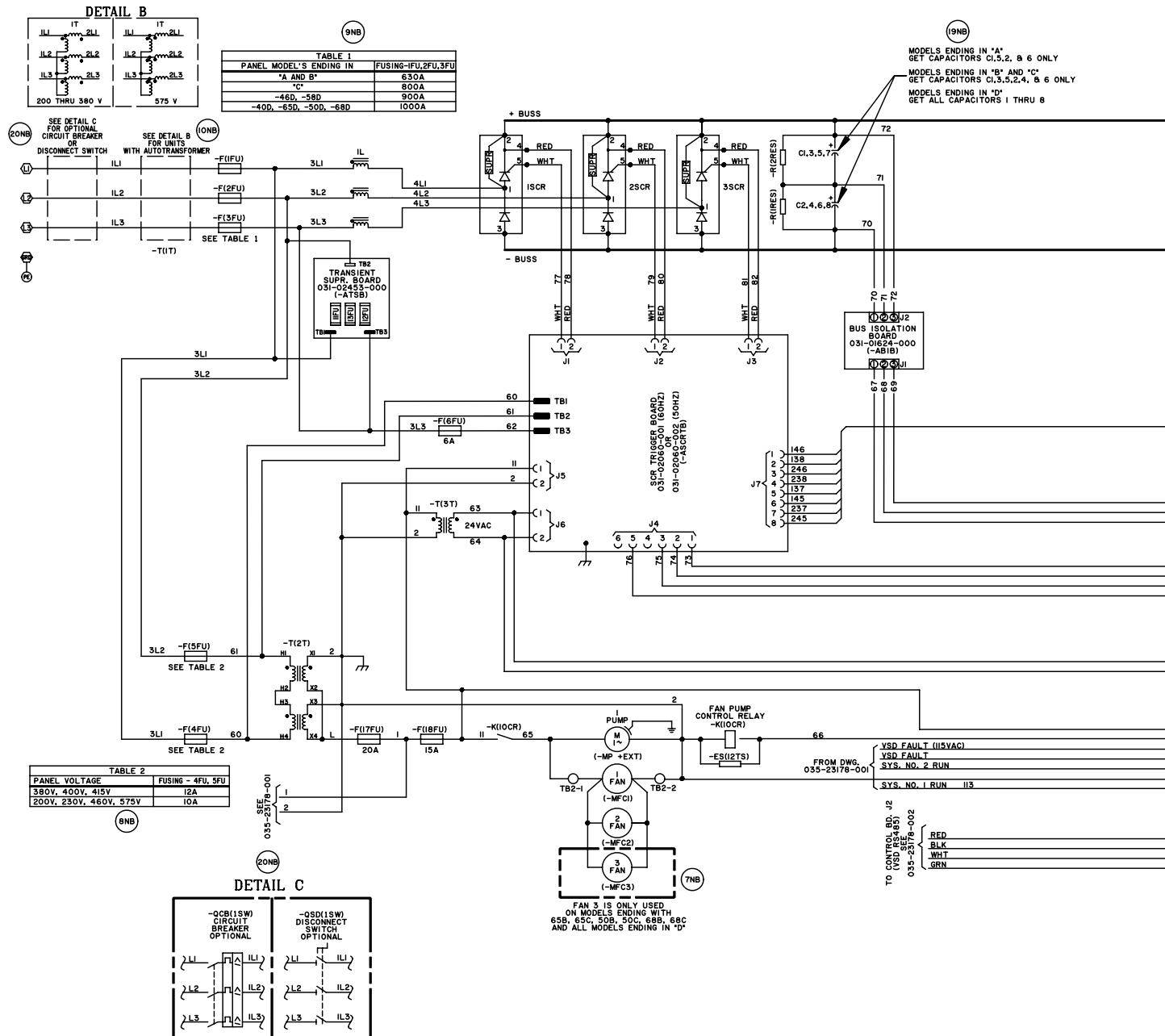
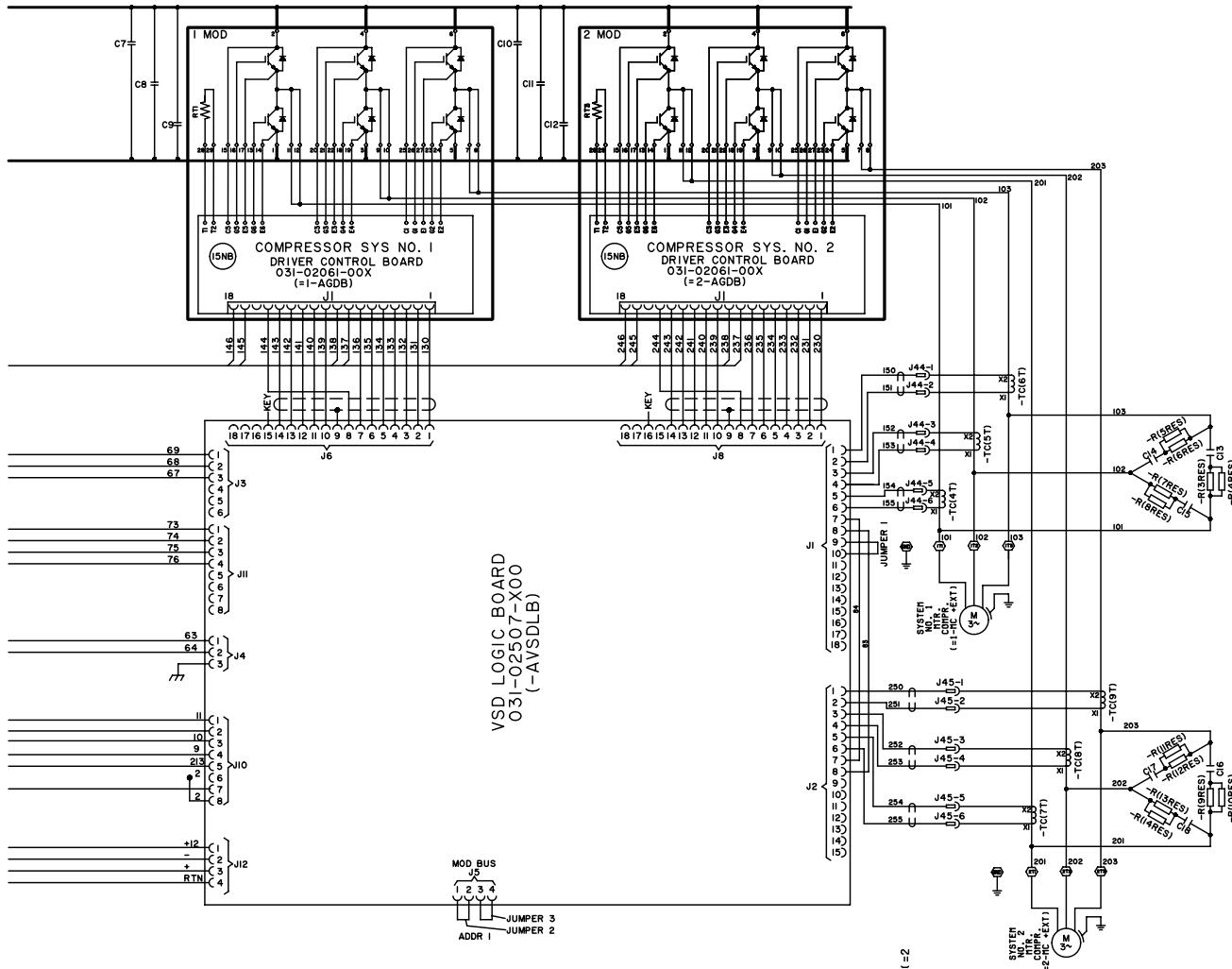


FIGURE 2 - CONTROL ELEMENTARY DIAGRAM (CONT'D)

POWER ELEMENTARY DIAGRAM



POWER ELEMENTARY DIAGRAM (CONT'D)

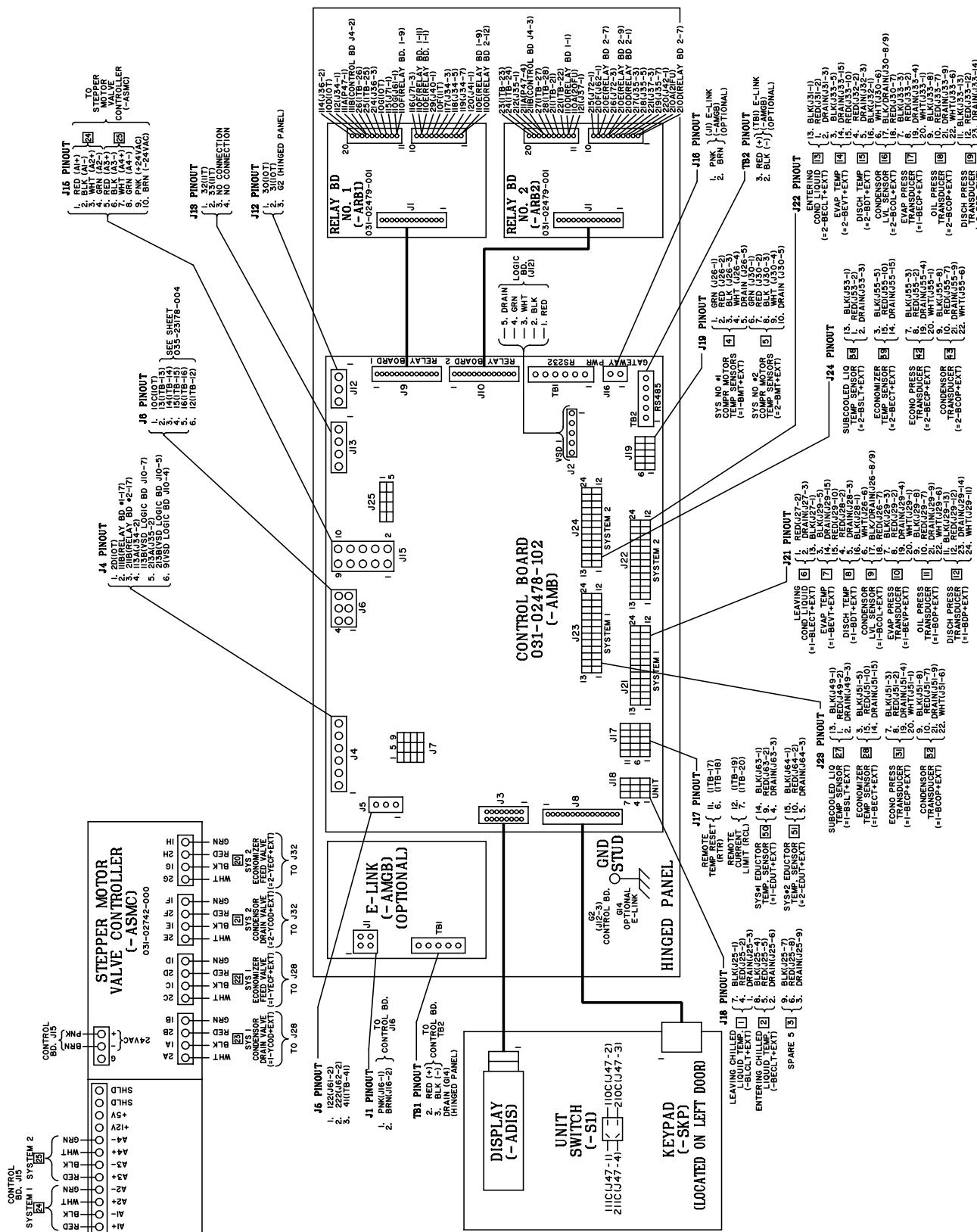


**POWER ELEMENTARY DIAGRAM
2 COMPR VSD CHILLER**

LD16131b

FIGURE 3 - POWER ELEMENTARY DIAGRAM (CONT'D)

CONTROL WIRING - CONNECTION DIAGRAM

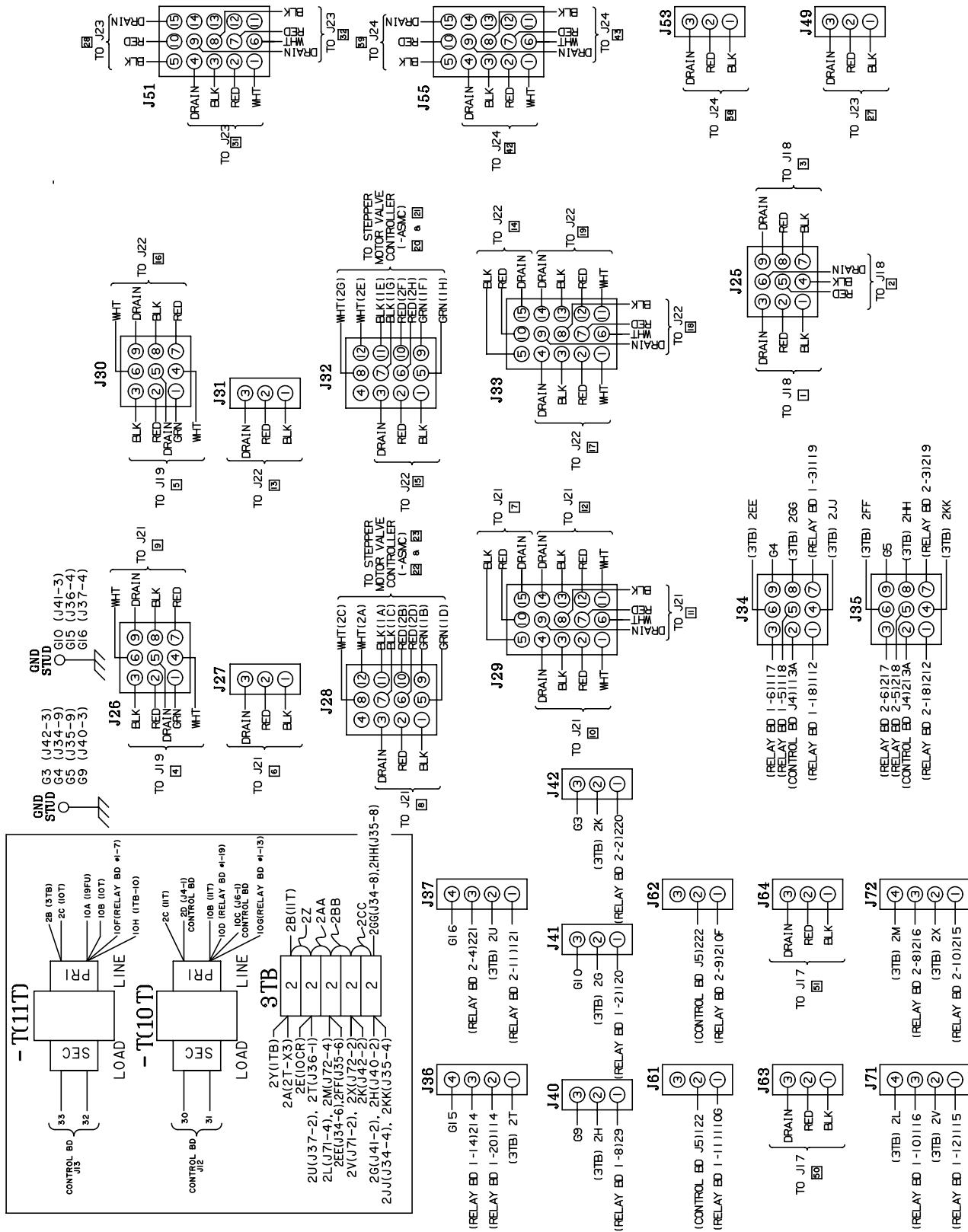


CONTROL WIRING - CONNECTION DIAGRAM 2 COMPR VSD CHILLER

LD16132a

FIGURE 4 - CONTROL WIRING - CONNECTION DIAGRAM

CONTROL WIRING - CONNECTION DIAGRAM (CONT'D)



CONTROL WIRING - CONNECTION DIAGRAM 2 COMPR VSD CHILLER

LD16132b

FIGURE 4 - CONTROL WIRING - CONNECTION DIAGRAM (CONT'D)

POWER WIRING - CONNECTION DIAGRAM

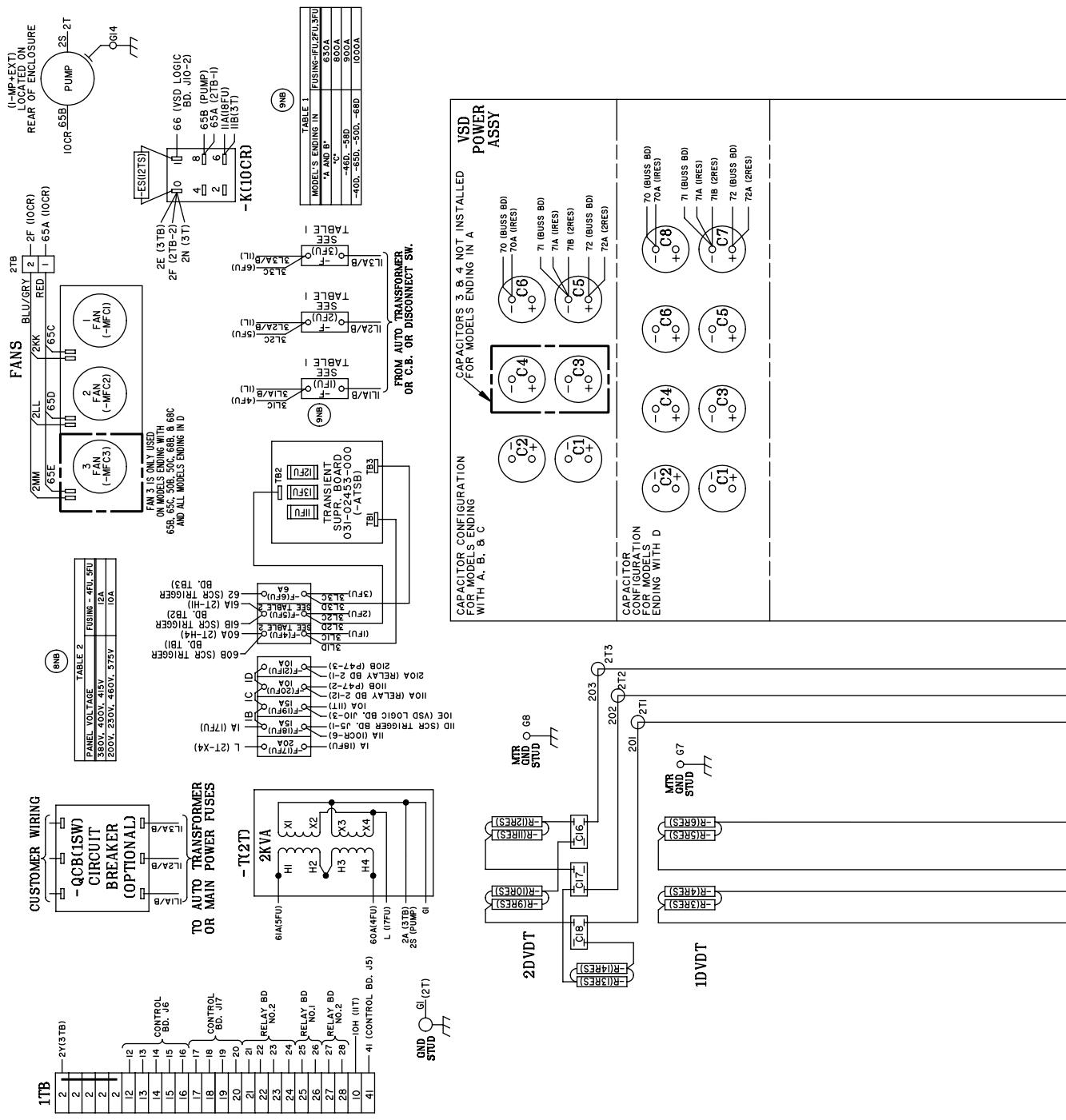


FIGURE 5 - POWER WIRING - CONNECTION DIAGRAM

POWER WIRING - CONNECTION DIAGRAM (CONT'D)

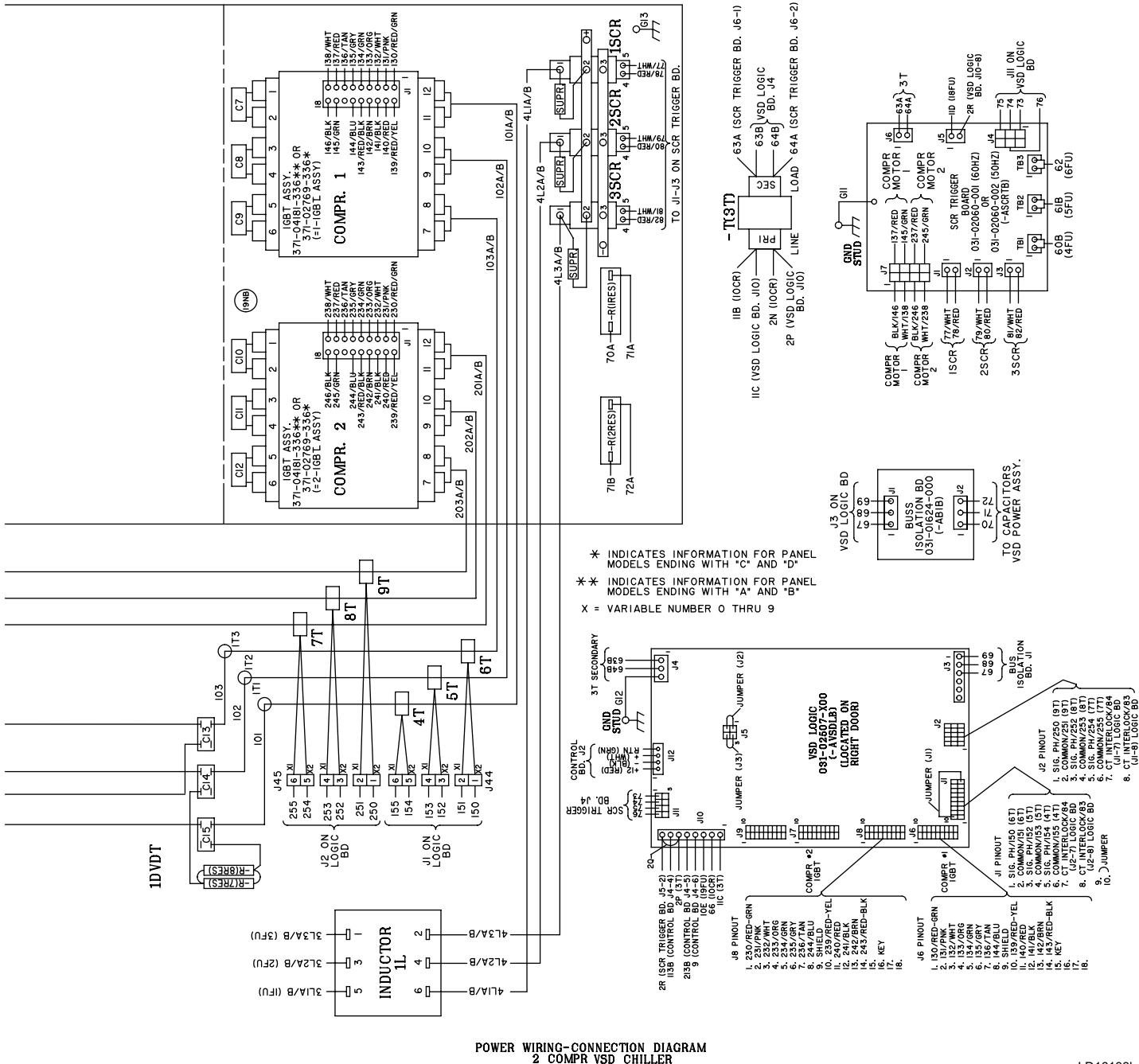
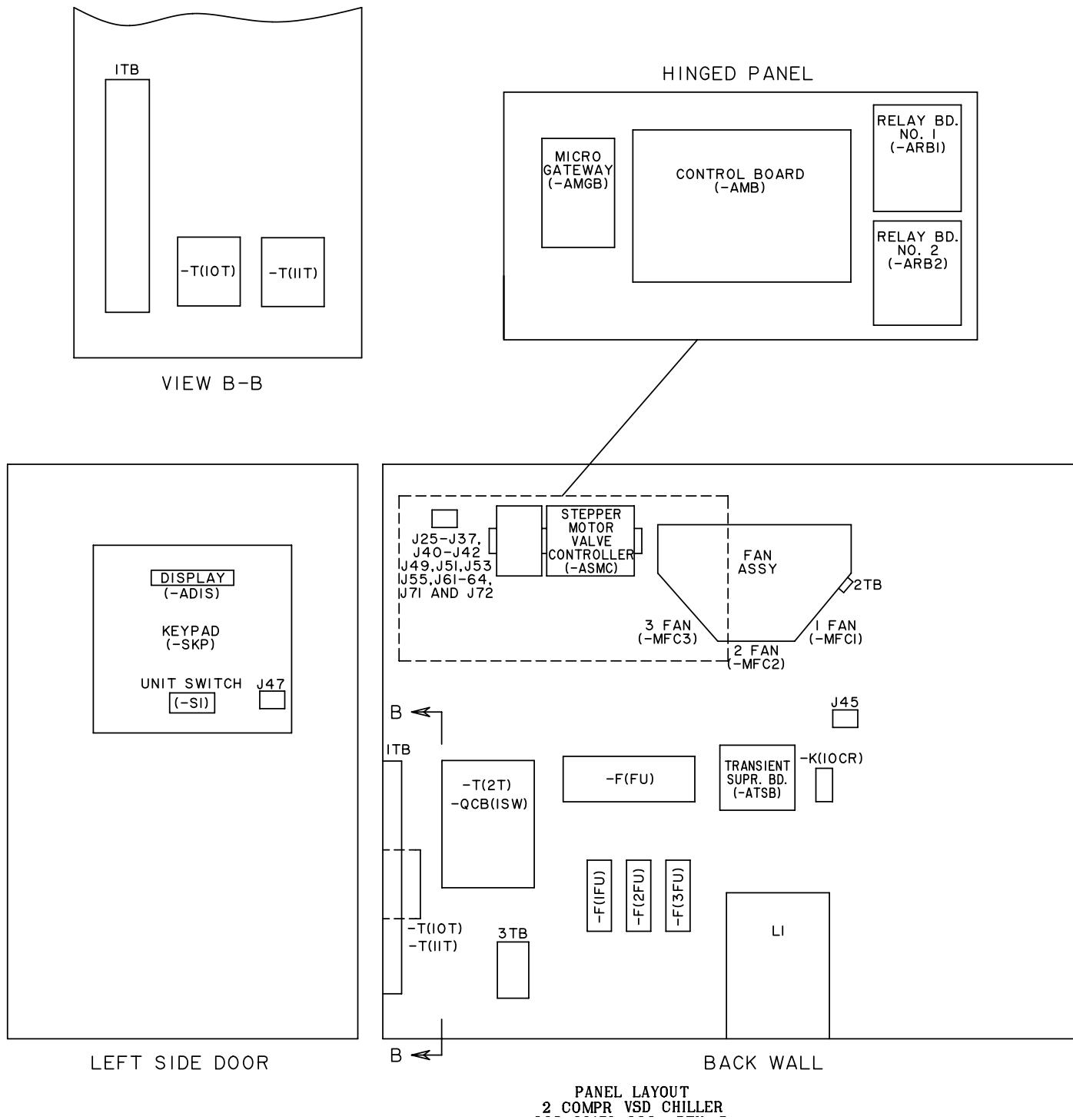


FIGURE 5 - POWER WIRING - CONNECTION DIAGRAM (CONT'D)

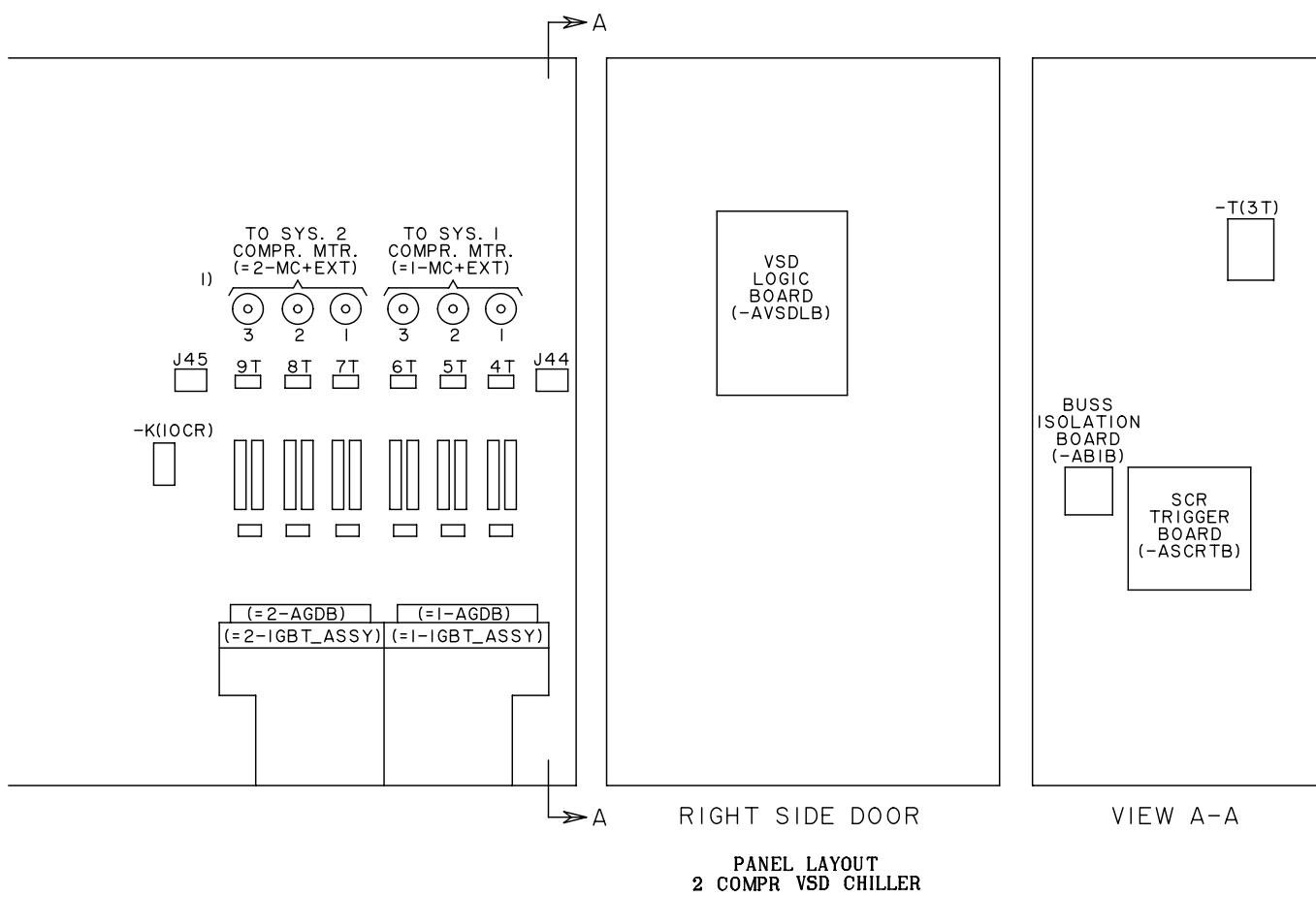
PANEL LAYOUT



LD16134a

FIGURE 6 - PANEL LAYOUT

PANEL LAYOUT (CONT'D)



LD16134b

FIGURE 6 - PANEL LAYOUT (CONT'D)

THIS PAGE IS INTENTIONALLY LEFT BLANK.

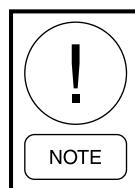
FIELD CONNECTIONS

NOTES

1. All field wiring shall be in accordance with the current edition of the relevant electric code as well as other applicable codes and specifications.
2. The Variable Speed Drive (VSD) shall be grounded in accordance with the related standards.
3. The branch circuit over current protection device for the Quantech VSD must be a time delay type with a rating, which is the standard fuse/circuit breaker size required to protect the field supply wiring conductors per the relevant electric code as well as other applicable codes and specifications.
4. The main power transformer should be adequately sized such that the transformer voltage does not exceed 10% during unit start-up.
5. The Quantech VSD power supply wiring ampacity shall be calculated as follows: Model QWC4 Minimum Circuit Ampacity: 1.25 (JOB FLA) where $125 \times (\text{System 1 (RLA0)} + (\text{System 2 RLA0}) + \text{control transformer amps})$.
6. A removable cover plate with pilot knockouts is supplied for connection of power supply conduits.
7. Each field-conducted inductive load, i.e. relay coil, motor starter coil, etc. shall have a transient suppressor wired (by others) in parallel with its coil, physically located at the coil.
8. Control wiring and input power wiring out the VSD/Control Panel by the customer.
9. Water pump and cooling fan are the customer's equipment, referenced only as wiring here.
10. The autotransformer is available as an option, which is used only for a 200V/3P/60 Hz, 230/3P/60 Hz or 575V/3P/60 Hz power system.

The Enclosure Protection Class is IP23.

Fasten the wires with 1/2 in. (M12) hardware. Torque the screws 19-22 ft-lb (25.7-29.8 N-m), and wrap all of the wiring connections with high temperature tape (P/N 025-40165-000). The tape must cover the entire terminal surface.



Quantech does not provide installation and harnesses between the autotransformer and the VSD as well as the primary side of the autotransformer.

FIELD CONNECTIONS

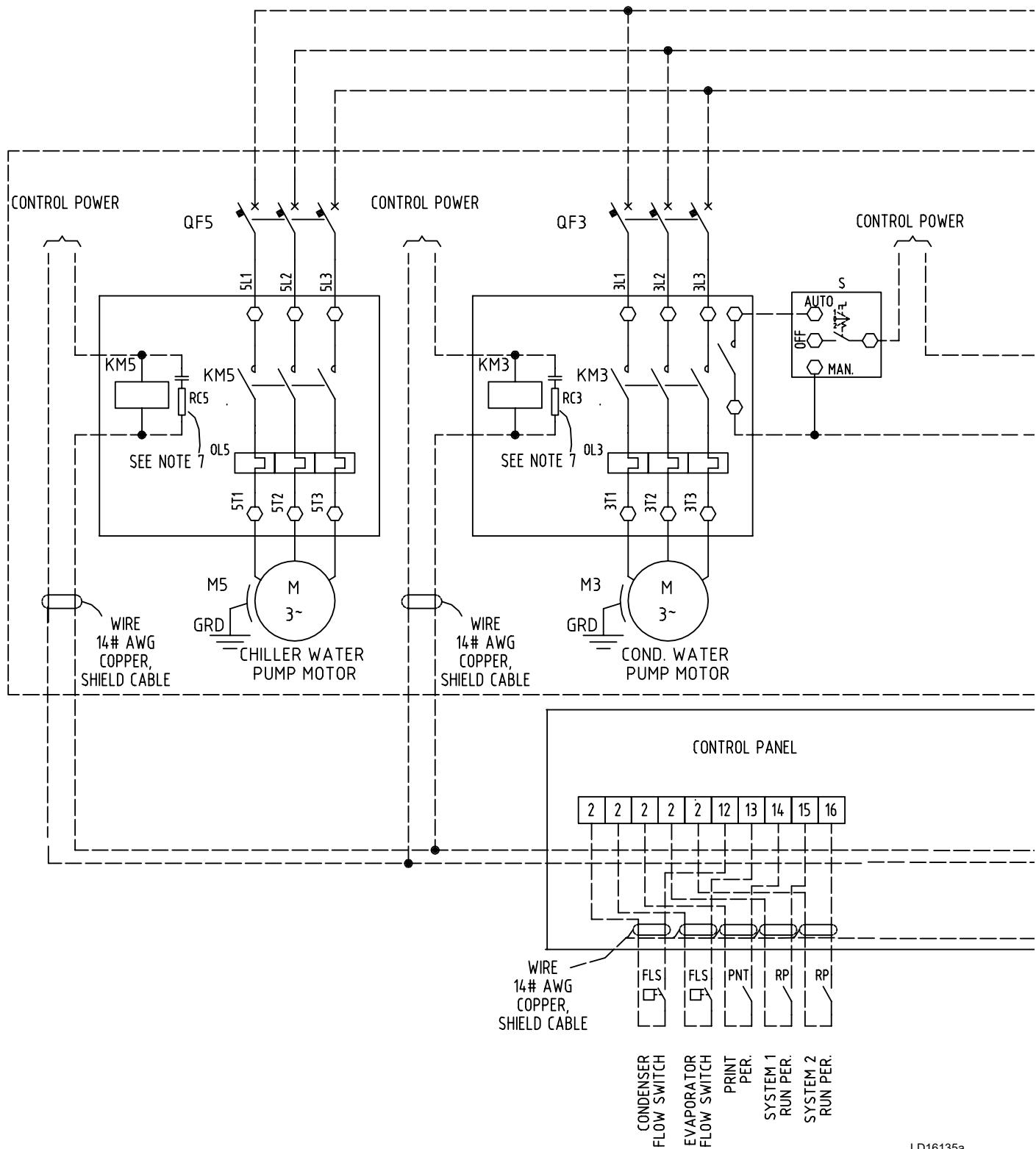


FIGURE 7 - FIELD CONNECTIONS

FIELD CONNECTIONS (CONT'D)

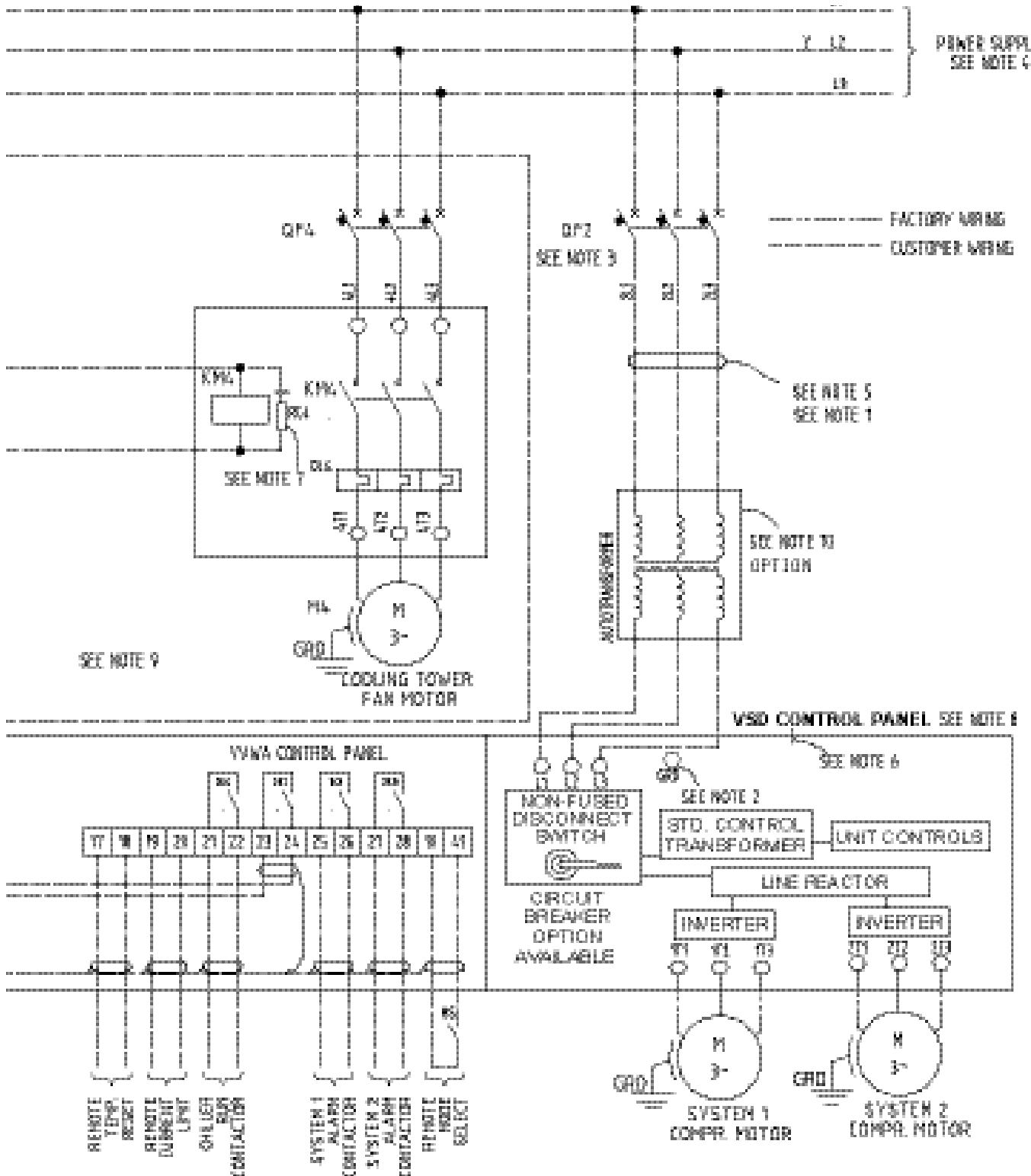
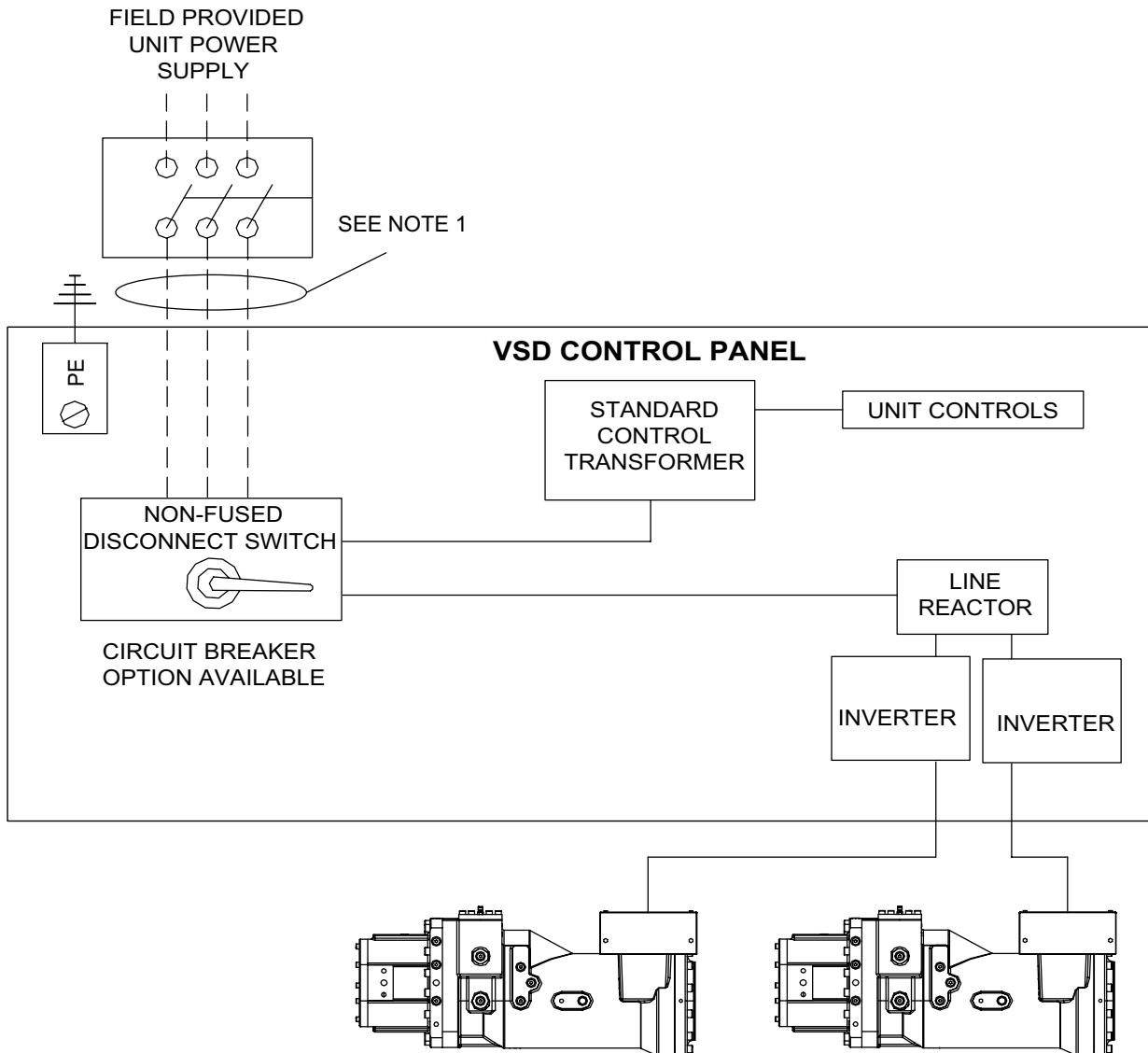


FIGURE 7 - FIELD CONNECTIONS (CONT'D)

POWER WIRING



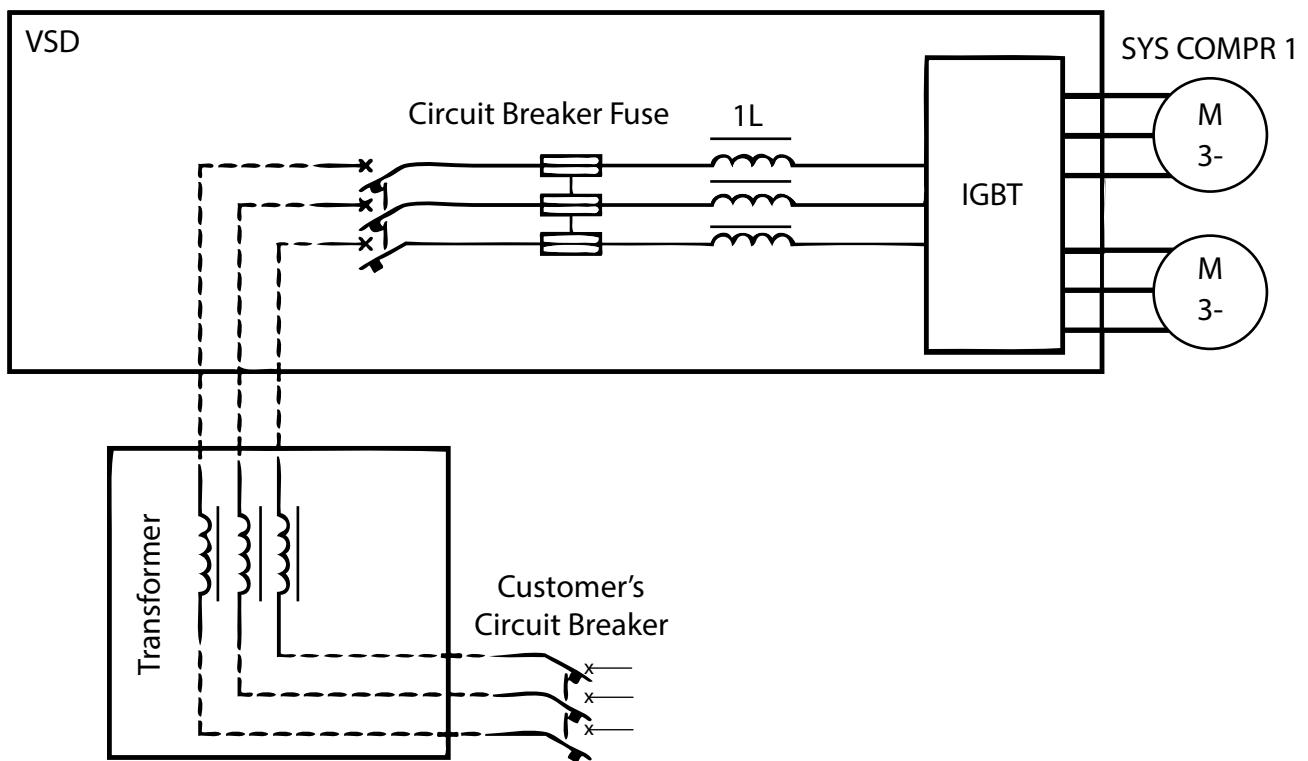
NOTES:

1. ----- Dashed Line = Field Provided Wiring
2. The transformer is located outside of the control panel.

LD16136

FIGURE 8 - POWER WIRING

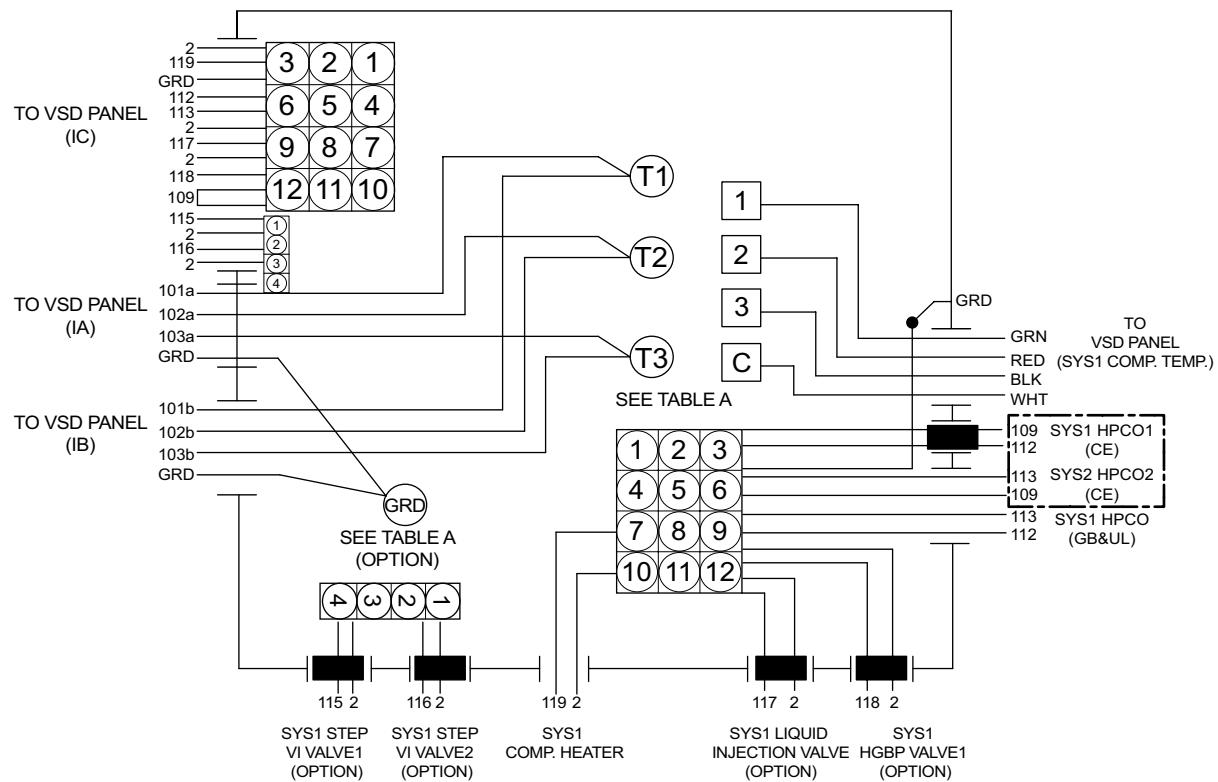
WIRING FOR OPTIONAL AUTOTRANSFORMER



LD16709

FIGURE 9 - WIRING INSTRUCTIONS FOR OPTIONAL AUTOTRANSFORMER

COMPRESSOR ELECTRICAL ASSEMBLY

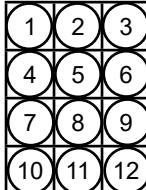


LD16464a

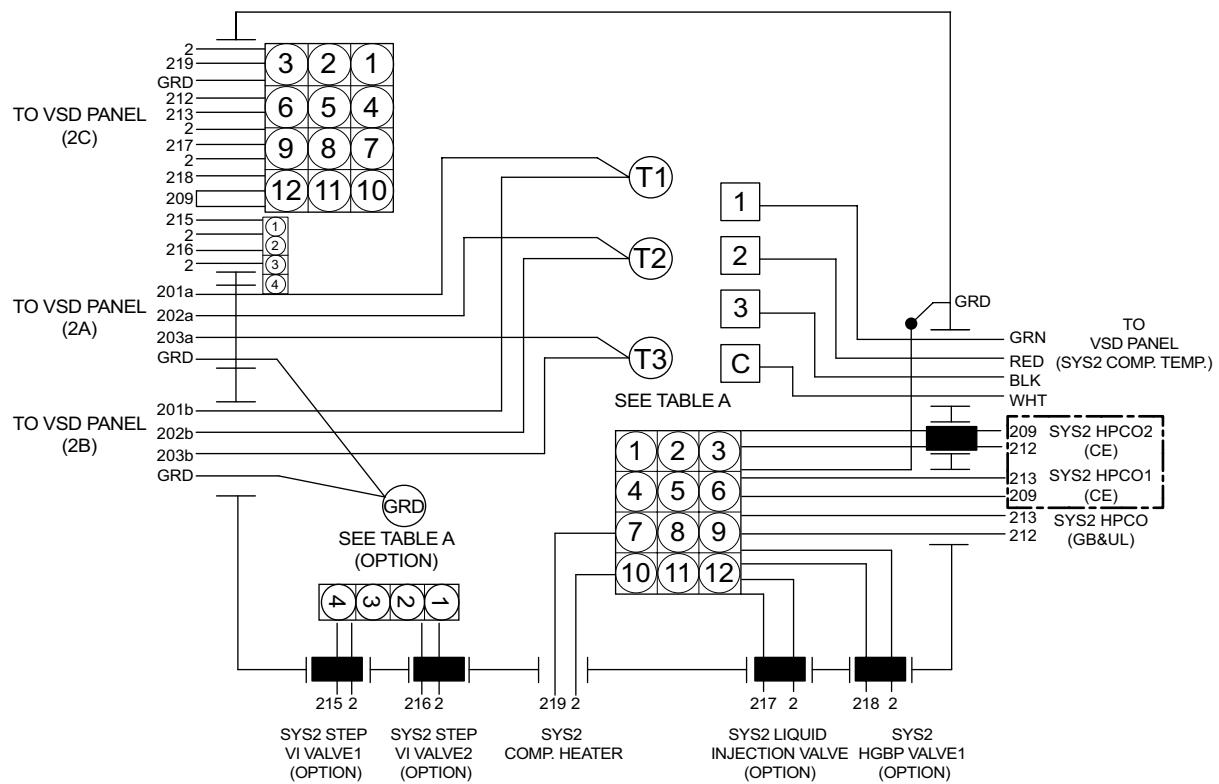
FIGURE 10 - SYSTEM 1 COMPRESSOR ELECTRICAL ASSEMBLY

COMPRESSOR ELECTRICAL ASSEMBLY (CONT'D)

TABLE 1 - SYSTEM 1 COMPRESSOR ELECTRICAL ASSEMBLY

SYS 1 COMPRESSOR SUB WIRING (CONNECTS TO CONTROL DEVICES)								
CAP DETAIL	CAP P/N	CAP "J" NUMBER	GB AND UL			CE (DUAL HPCO)		
			CAP PIN NUMBER	WIRING NUMBER	FUNCTION	CAP PIN NUMBER	WIRING NUMBER	FUNCTION
	025-20787-000 (White)	J38	1	112	SYS1 HPCO	1	112	SYS1 HPCOI
			2	113		2	109	
			3	117	SYS1 Liquid Injection Valve	3	117	SYS1 Liquid Injection Valve
			4	2		4	2	
			5	118	SYS1 HGBP Valve	5	118	SYS1 HGBP Valve
			6	2		6	2	
			7	119	SYS1 Compressor Heater	7	119	SYS1 Compressor Heater
			8	2		8	2	
			9	GND	N/A	9	GND	SYS1 HPCO2
			10			10		
			11			11	113	
			12			12	109	
	025-21756-000 (White)	J73 (Option)	1	115	SYS1 Step VI Valve 1	1	115	SYS1 Step VI Valve 1
			2	2		2	2	
			3	116	SYS1 Step VI Valve 2	3	116	SYS1 Step VI Valve 2
			4	2		4	2	

COMPRESSOR ELECTRICAL ASSEMBLY

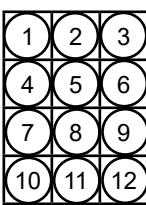


LD16465a

FIGURE 11 - SYSTEM 2 COMPRESSOR ELECTRICAL ASSEMBLY

COMPRESSOR ELECTRICAL ASSEMBLY (CONT'D)

TABLE 2 - SYSTEM 2 COMPRESSOR ELECTRICAL ASSEMBLY

SYS 2 COMPRESSOR SUB WIRING (CONNECTS TO CONTROL DEVICES)								
CAP DETAIL	CAP P/N	CAP "J" NUMBER	GB AND UL			CE (DUAL HPCO)		
			CAP PIN NUMBER	WIRING NUMBER	FUNCTION	CAP PIN NUMBER	WIRING NUMBER	FUNCTION
	025-20787-000 (White)	J39	1	212	SYS1 HPCO	1	212	SYS2 HPCOI
			2	213		2	209	
			3	217	SYS2 Liquid Injection Valve	3	217	SYS2 Liquid Injection Valve
			4	2		4	2	
			5	218	SYS2 HGBP Valve	5	218	SYS2 HGBP Valve
			6	2	SYS2 Compressor Heater	6	2	SYS2 Compressor Heater
			7	219		7	219	SYS2 Compressor Heater
			8	2		8	2	
			9	GND	N/A	9	GND	
			10			10		N/A
			11			11	213	SYS2 HPCO2
			12			12	209	
	025-21756-000 (White)	J74 (Option)	1	215	SYS2 Step VI Valve 1	1	215	SYS2 Step VI Valve 1
			2	2		2	2	
			3	216	SYS2 Step VI Valve 2	3	216	SYS2 Step VI Valve 2
			4	2		4	2	

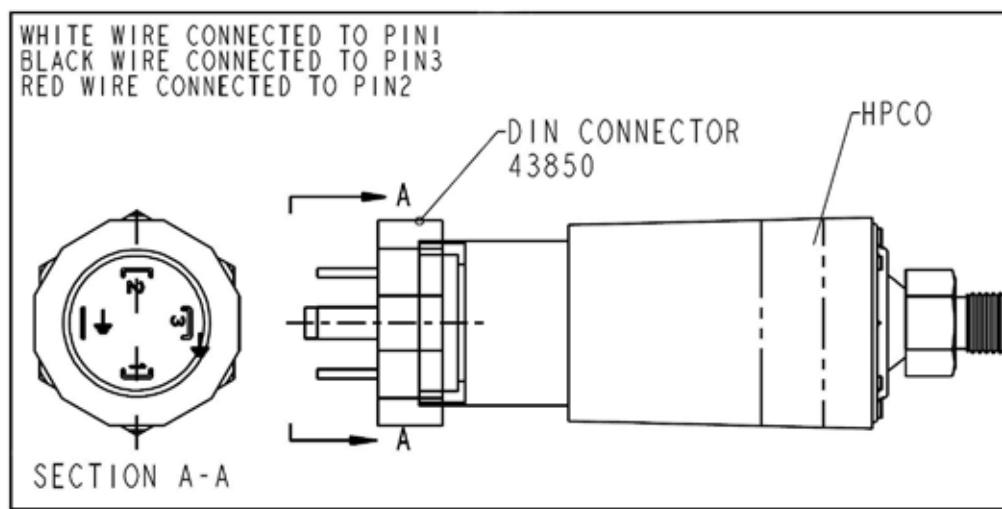


FIGURE 12 - CONNECTOR WIRING OF HPCO



Quantech Incorporated
Copyright © 2021
Form QWC4-PW2 (321)
Issue Date: March 1, 2021
New Release

www.Quantech-HVAC.com

Subject to change without notice. Printed in USA.
ALL RIGHTS RESERVED