YORK BY JOHNSON CONTROLS	Supersedes:160.75-PW8 (311) Form 160.75-PW8 (511)
WIRING DIAGRAM	**YK CHILLER (STYLE G) OPTIVIEW CONTROL CENTER W/ LTC I/O BOARD WITH UNIT MOUNTED LOW OR MEDIUM VOLTAGE SSS, UNIT MOUNTED LOW VOLTAGE VSD WITH MODBUS OR REMOTE MEDIUM VOLTAGE VSD**
CONTRACTOR _____	PURCHASER _____
ORDER NO. _____	JOB NAME _____
YORK CONTRACT NO. _____	LOCATION _____
YORK ORDER NO. _____	ENGINEER _____

☐ REFERENCE DATE _____ ☐ APPROVAL DATE _____ ☐ CONSTRUCTION DATE _____

JOB DATA:

CHILLER MODEL NO. YK _____

NO. OF UNITS _____

COMPRESSOR MOTOR _____ VOLTS, 3-PHASE, _____ Hz

OIL PUMP MOTOR _____ VOLTS, 3-PHASE, _____ Hz, _____FLA

Issue Date:
May 23, 2011

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 this individual posseses 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.

External wiring, unless specified as an optional connection in the manufacturer's product line, is not to be connected inside the OptiView 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 Johnson Controls' published specifications and must be performed only by a qualified electrician. Johnson Controls 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 Johnson Controls' policy for continuous product improvement, the information contained in this document is subject to change without notice. While Johnson Controls makes no commitment to update or provide current information automatically to the manual owner, that information, if applicable, can be obtained by contacting the nearest Johnson Controls Service office.

Operating/service personnel maintains the responsibility of the applicability of these documents to the competitive equipment the kit is installed on. If there is any question regarding the applicability of these documents, the technician should verify whether the equipment has been modified and if current literature is available with the owner of the equipment prior to performing any work on the chiller.

NOTES

1. This wiring diagram describes the standard electronic control scheme for use with an YORK Solid State Starter or Variable Speed Drive. For details of standard modifications. Refer to 160.75-PW4.
2. Field wiring to be in accordance with the National Electrical Code as well as all other applicable codes and specifications. See product form 160.73-PW2 or160.73-PW5 for field wiring connections.

   Caution: Field wiring contacts may have voltage present when power is removed.
   Field wiring contacts could be connected to external power sources.
3. Numbers along the left side of the diagram are line identification numbers. The numbers along the right side indicate the line number location of the relay contacts. An underlined contact location signifies a normally closed contact.
4. Main control panel class 1 field wiring terminal connection points are indicated by numbers within a rectangle. I.E. [15] . Main control panel factory wiring terminal connection points are indicated by numbers within a triangle. I.E. △5 . Components markings are indicated by numbers within a circle. I.E. (C1) . Numbers adjacent to circuit lines are the circuit identification numbers.
5. To cycle unit on and off automatically with contacts other than those shown, install a cycling device between terminals [1] and [13] (line 38) (see note 7). If a cycling device is installed, the jumper must be removed between terminals [1] and [13].
6. To stop the unit and not to permit it to start again, instal a stop device between terminals [1] and [8] (line 33)(see note 9). Remote stop switch may be connected between terminals [1], [7], [8] (lines 32 and 33)(see note 9). Remote Start-Stop switch (line 32) is operative only in "Remote" operating mode.
7. Device contact rating to be 5 milliamperes at 115 Volts AC.
8. Contact rating is 5 Amps resistive at 120 Volts AC or 240 Volts AC.
10. For wiring diagram of LCSSS or LVVSD, refer to product form 160.73-PW2.

    For wiring diagram of MVVSD or MVSSS, refer to product form 160.73-PW5.
11. A jumper is installed between terminals [24] and [25] for normal operation. To check motor rotation on initial start-up, the jumper may be removed as a momentary switch installed between terminals [24] and [25] . Depress the start switch on the control panel. After completion of the pre lube sequence jog the motor with the momentary switch. When proper rotation is obtained, replace the momentary switch with a jumper. The momentary switch must have a minimum contact rating of 1 FLA, 10 LRA at 115 Volts AC.

    Caution: A temporary momentary switch or jumper is the only connection permitted between terminals [24] and [25] . Connections of any other devices to either terminals may cause inadvertent compressor start-up.
12. Solid State Motor Overload Contact (CM) in LCSSS, LVVSD, MVSSS and MVVSD is set to trip at 105% FLA.
13. Contact rating is 5 Amps resistive @ 250 Volts AC and 30 Volts DC. 2 Amp Inductive (.4 PF) @ 250 Volts AC and 30 Volts DC.
14. Field connected control power supply is not required. A control transformer is supplied on the Medium Voltage Solid State Starter and the Medium Voltage Variable Speed Drive.
15. Maximum allowable current draw for the sum of all loads is 2 amps holding, and 10 amps in rush.
16. Each 115VAC field-connected inductive load: I.E. Relay Coil, Motor Starter Coil, etc. shall have a transient suppressor wired in parallel with it's coil. Physically located at the coil. Spare transient suppressors and control circuit fuses are supplied in a bag attached to the green ground screw located in the lower left corner of the control panel.

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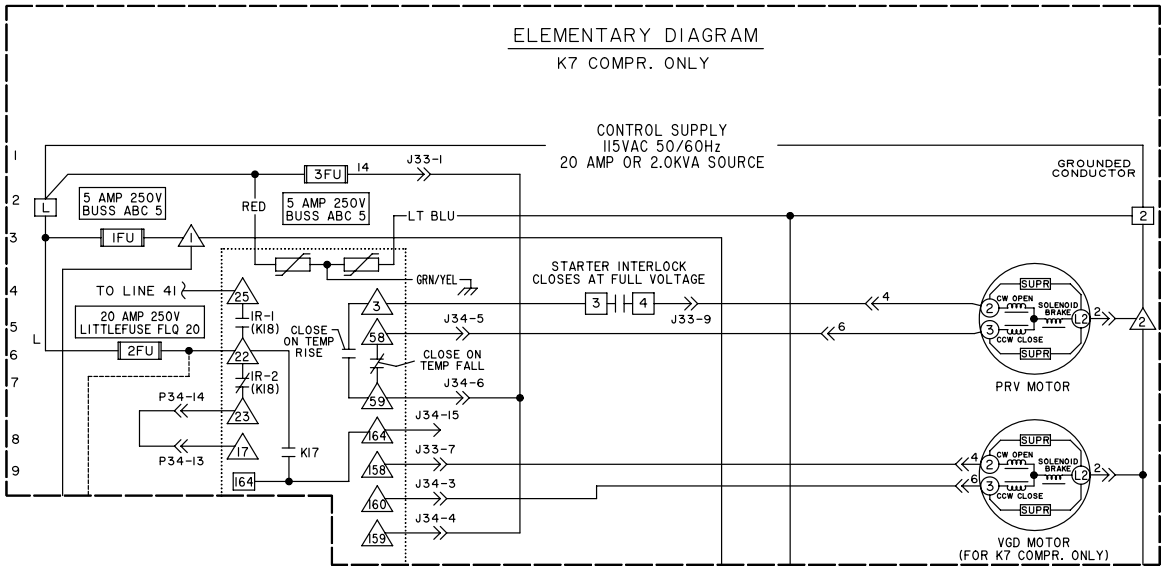
LEGEND

IHTR	3-PHASE THERMOSTATICALLY CONTROLLED 3000 WATT OIL HEATER AT LINE VOLTAGE (P6 AND LARGER)
ILEP	LOW EVAPORATOR PRESSURE (PROVIDED BY EVAP PRESSURE TRANSDUCER)
IM	3-PHASE OIL HEATER CONTACTOR
10L	2T PROTECTOR (346V AND 600V UNITS ONLY)
IT	CLASS 2 POWER SUPPLY TRANSFORMER
3M	CONDENSER PUMP MOTOR STARTER
IR	COMPRESSOR MOTOR / IHTR HEATER CONTROL RELAY (K-18 - LOCATED ON I/O BOARD)
3R	VS OIL PUMP DRIVE RUN RELAY
1SOL	OIL RETURN SOLENOID VALVE
2SOL	LIQUID LINE SOLENOID VALVE (USED ON "J" COMPRESSORS ONLY)
1SS	DPDT 3 POSITION ROCKER SWITCH
2T, 3T, 4T	BUCK/BOOST TRANSFORMERS 1KVA (346V AND 575/600 UNITS ONLY)
CM	SOLID STATE OVERLOAD/POWER FAULT CONTACTS
FDTS	FAULTY DISCHARGE TEMPERATURE SENSOR
FLA	FULL LOAD AMPS (COMPRESSOR MOTOR)
FU	FUSE
PGD	PROXIMITY GAP DISTANCE (PROBE LOCATED IN COMPRESSOR)
HDT	REFRIG. HIGH DISCHARGE TEMPERATURE (PROVIDED BY RT2)
HOP	HIGH OIL PRESSURE (PROVIDED BY 2 TRANSDUCERS)
HOT	HIGH OIL TEMPERATURE (PROVIDED BY RT3)
HPCO	HIGH PRESSURE CUTOUT
K13, K14, K17	RELAYS MOUNTED ON I/O BOARD (SEE OPERATION MANUAL)
LCWT	LEAVING CHILLED WATER TEMPERATURE
LEP	LOW EVAPORATOR PRESSURE (PROVIDED BY EVAP. PRESSURE TRANDUCER)
LLS	LIQUID LEVEL SENSOR (PROBE)
LOT	LOW OIL TEMPERATURE (PROVIDED BY RT3)
LOTD	LOW OIL TEMPERATURE DIFFERENTIAL (PROVIDED BY RT3 AND CONDENSER PRESSURE TRANDUCER)
HGBP	HOT GAS BYPASS
L1	INDUCTOR 4A, 9mH (460VAC) OR 8A. 3mH (230VAC)
LWT	LOW WATER TEMPERATURE (PROVIDED BY RT1)
MOV	METAL OXIDE VARISTOR
OL	MOTOR STARTER OVERLOADS
OP	LOW OIL PRESSURE (PROVIDED BY 2 TRANDUCERS)
OVA	ORIFICE VALVE ACTUATOR
PRV	PRE-ROTATION VANE MOTOR
RT1-RT9	RESISTANCE TEMPRERATURE SENSING ELEMENT
RES	RESISTOR
SUPR	TRANSIENT SUPPRESSOR
TB1, TB3, TB5	TERMINAL BLOCK, FACTORY WIRING - △
TB2, TB4	TERMINAL BLOCK, FIELD CONNECTION - □
TB6	TERMINAL BLOCK, FIELD (BOTTOM), FACTORY (TOP)
VGD	VARIABLE GEOMETRY DIFFFUSER
VMP	VANE MOTOR POTENTIOMETER
VMS	VANE MOTOR SWITCH
VS	VARIABLE SPEED OIL PUMP DRIVE
	FIELD WIRING
	FACTORY WIRING
	CIRCUIT BOARD OR ENCLOSURE BOUNDRY
	JACK (J1, J2, ...)
	PLUG (P1, P2, ...)
	WIRE ENTRANCE IN CONTROL PANEL
	OPTION (WHEN SUPPLIED) BY JOHNSON CONTROLS
	MECHANICAL LINKAGE
	SHIELDED CABLE
	METAL OXIDE VARISTOR
	TERMINAL LOCATED IN SSS / VSD (TB1 OR 1TB)

ELEMENTARY DIAGRAM



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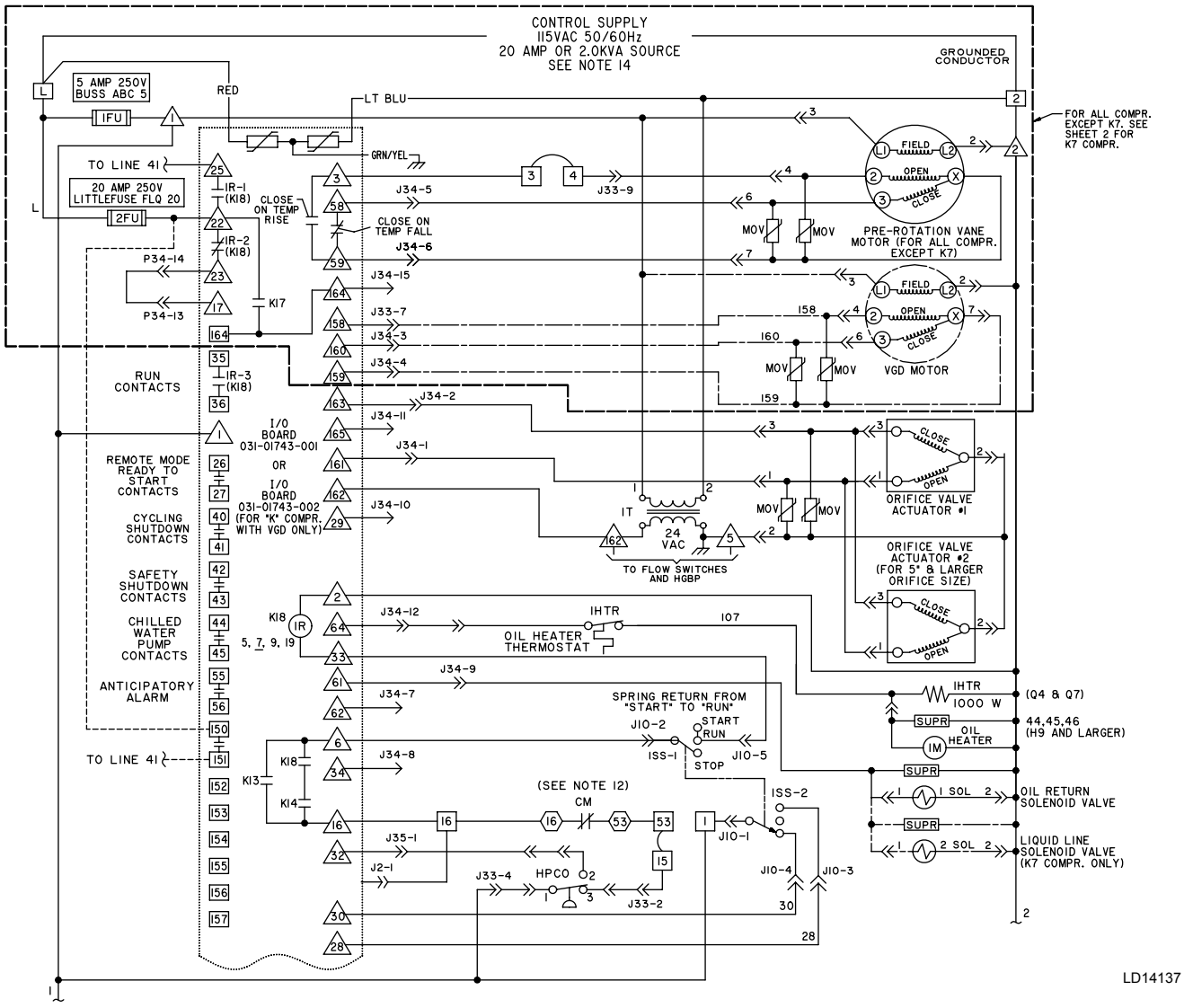

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FIGURE 1 - ELEMENTARY DIAGRAM

ELEMENTARY DIAGRAM (CONT'D)

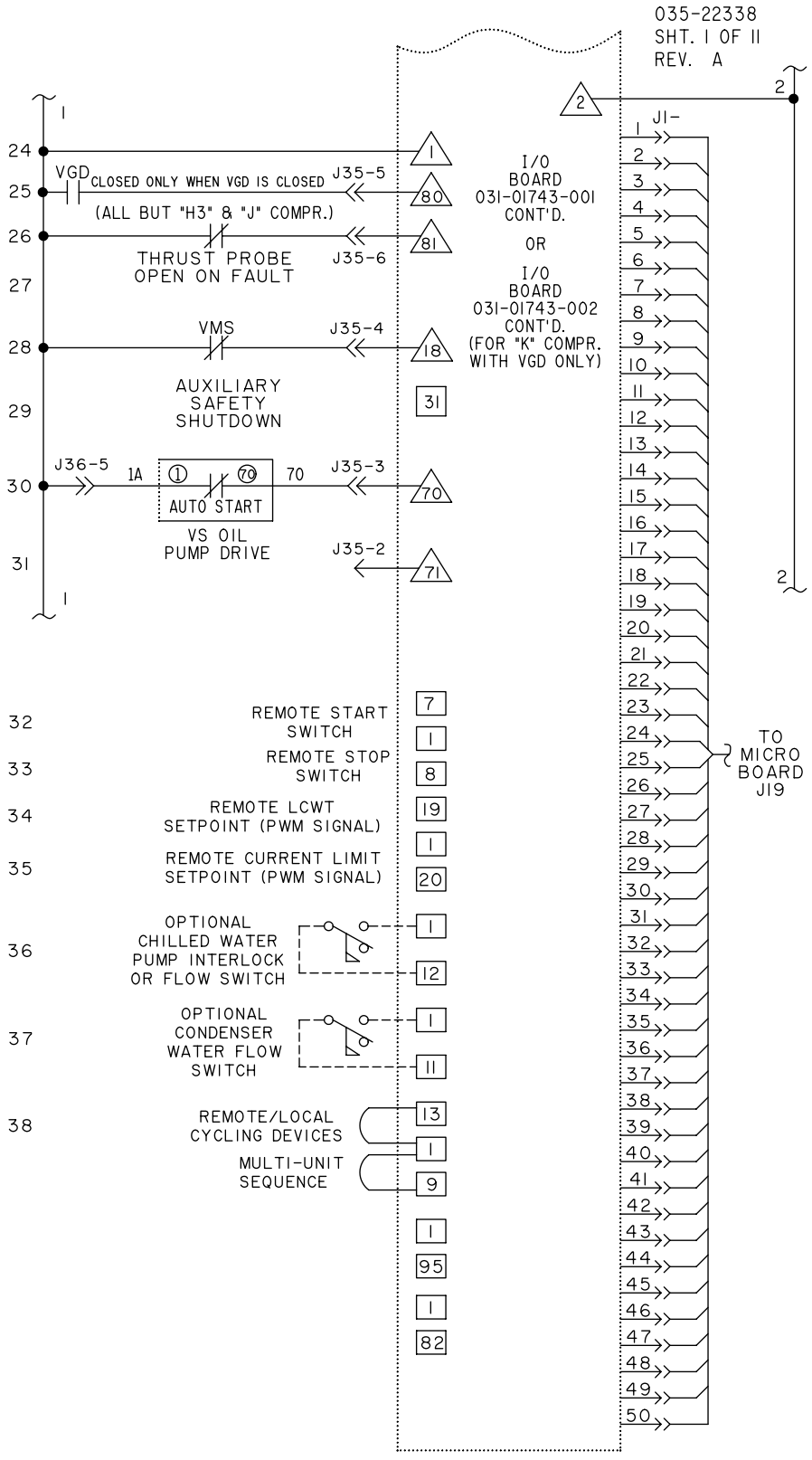

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FIGURE 1 - ELEMENTARY DIAGRAM (CONT'D)

ELEMENTARY DIAGRAM (CONT'D)

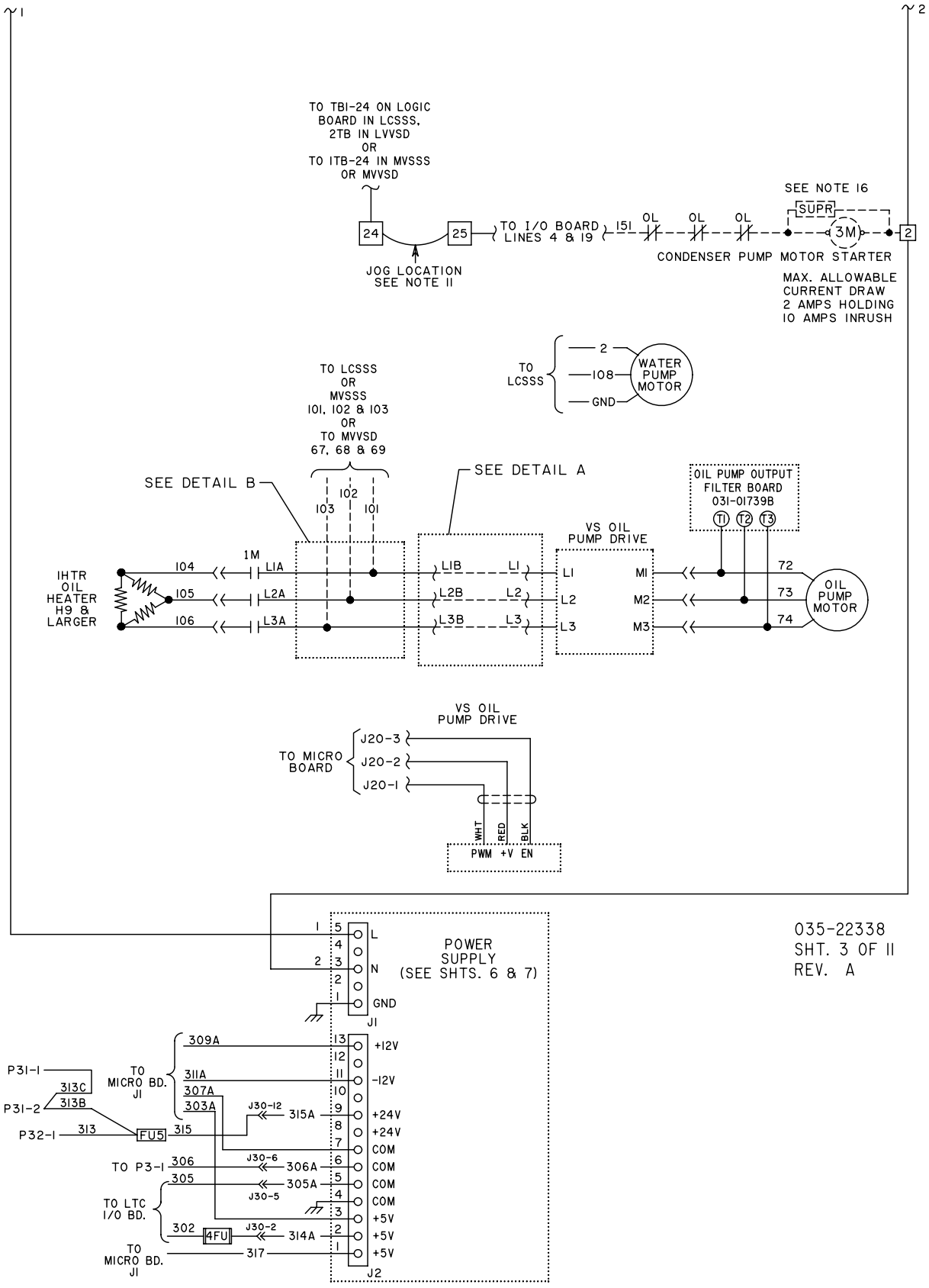

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FIGURE 2 - ELEMENTARY DIAGRAM

ELEMENTARY DIAGRAM (CONT'D)

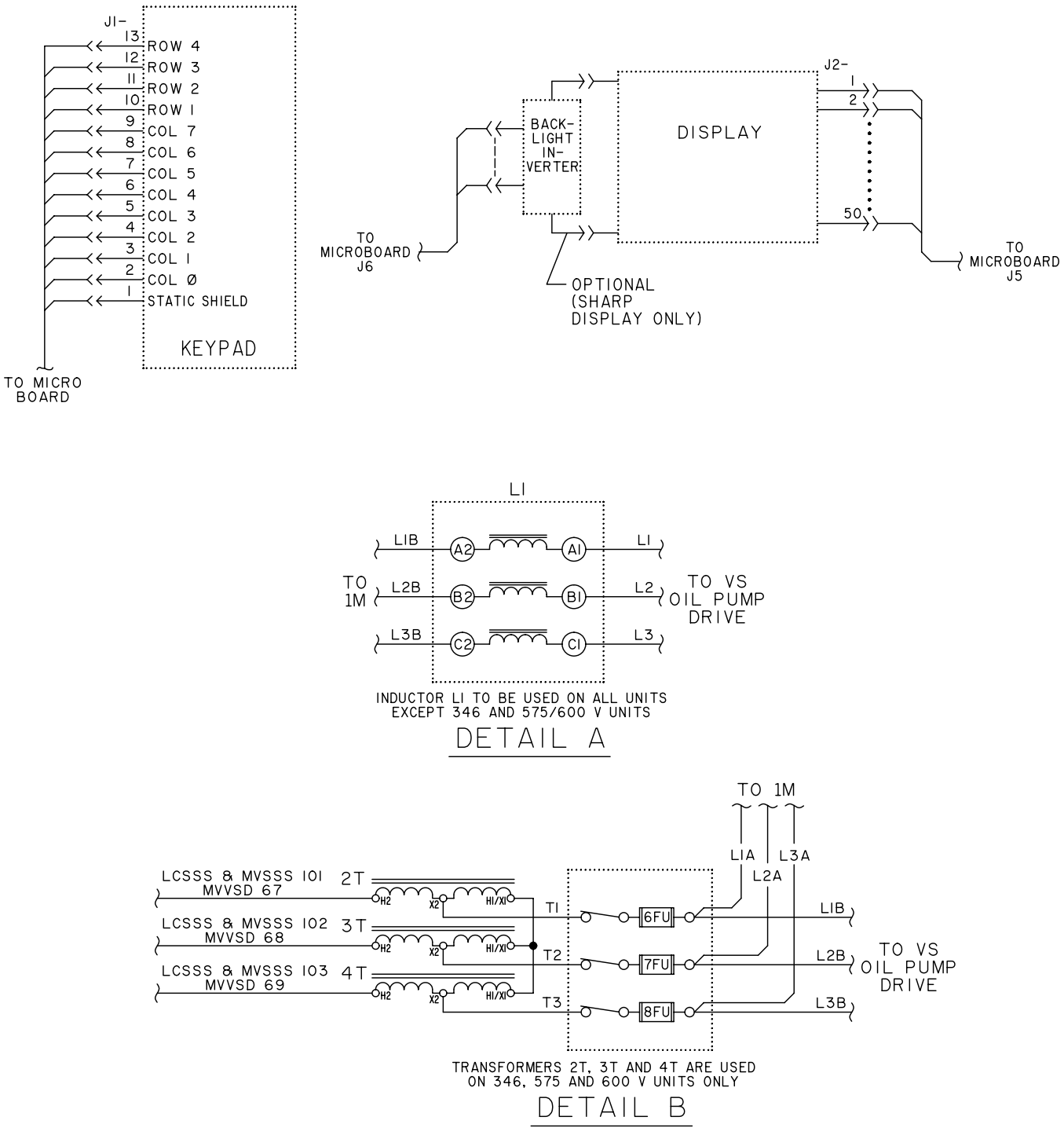

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FIGURE 2 - ELEMENTARY DIAGRAM (CONT'D)

MICROBOARD DIAGRAM (031-02430)

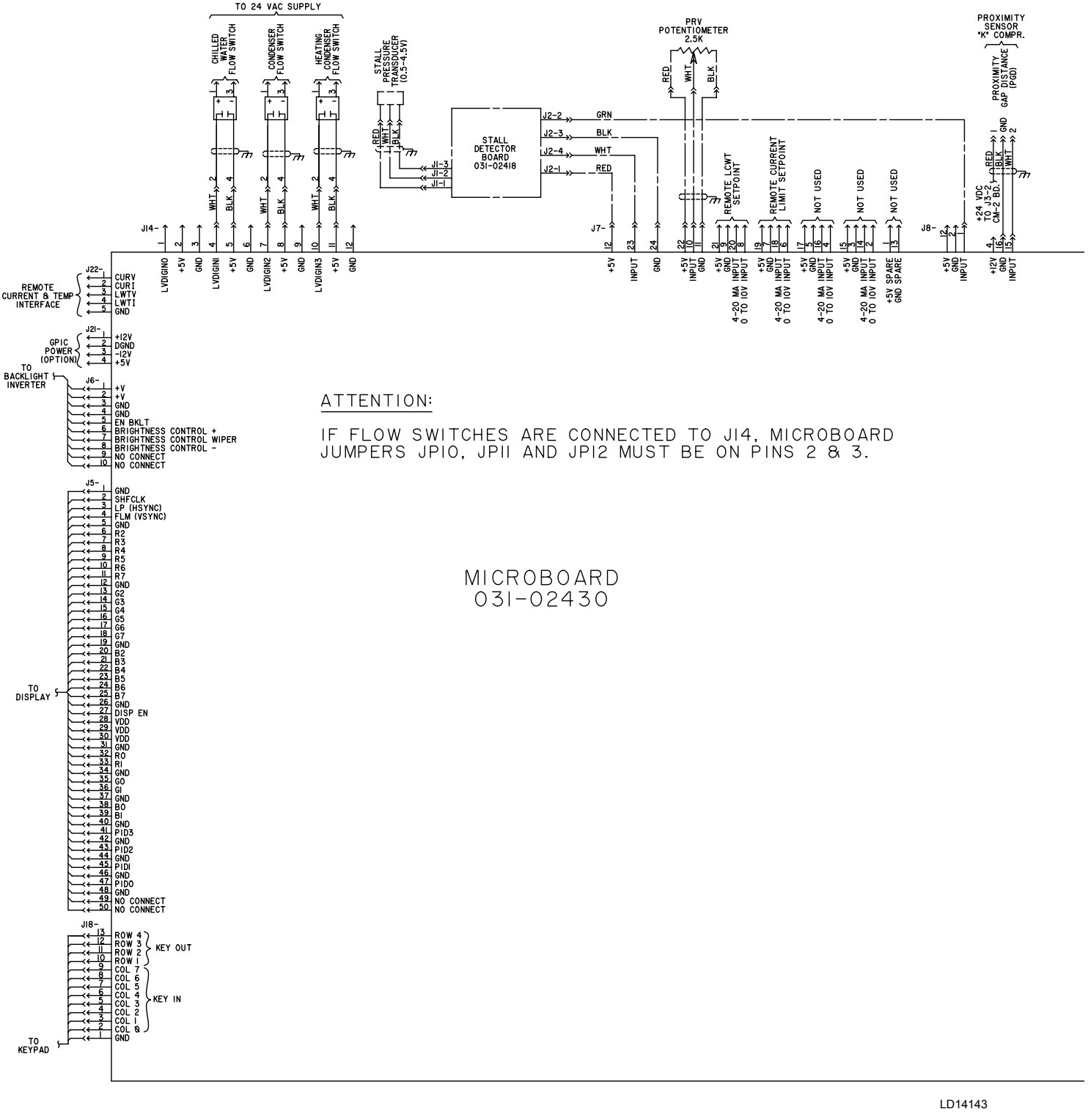

FIGURE 3 - MICROBOARD DIAGRAM

MICROBOARD DIAGRAM (031-02430) (CONT'D)

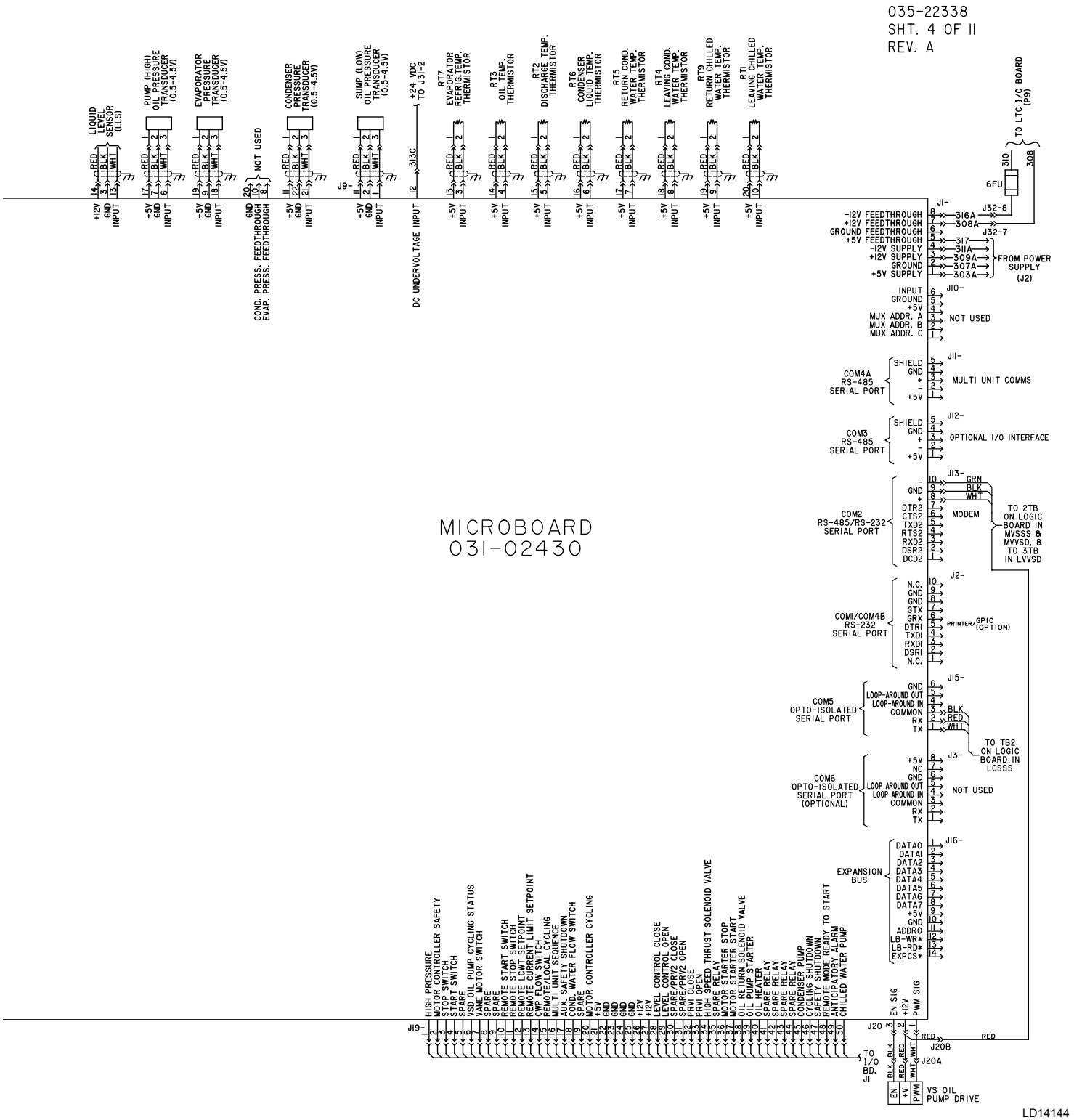

FIGURE 3 - MICROBOARD DIAGRAM (CONT'D)

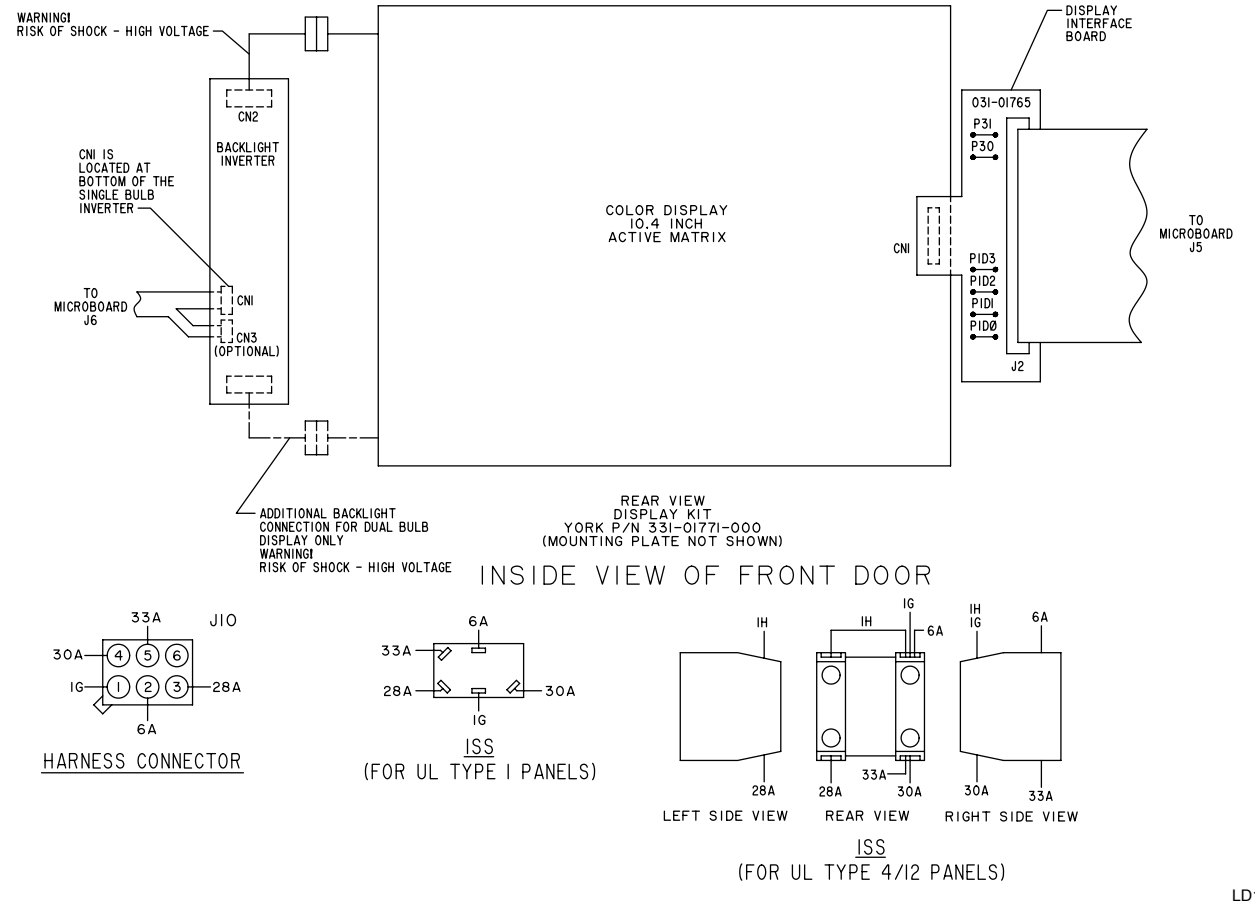

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FIGURE 4 - DISPLAY INTERFACE BOARD

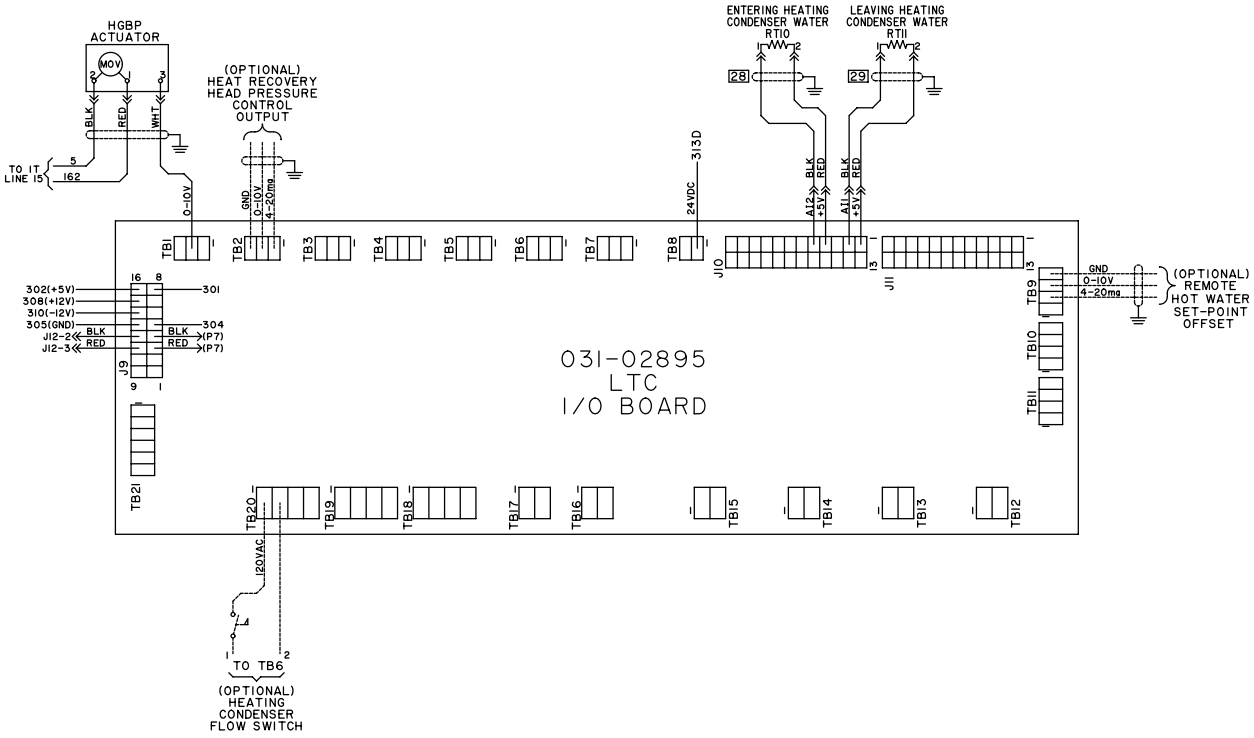

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FIGURE 5 - LTC I/O BOARD

PRESSURE-TEMPERATURE CHART							
APPLICATION		DEVICE	UNITS	OPERATING POINT			
CHILLED WATER	BRINE			ON RISE		ON FALL	
✓	✓	HDT	DEG.F/DEG.C	220/104.4		219/103.9	
✓	✓	HOT	DEG.F/DEG.C	180/82.2		179/81.7	
✓	✓	OP	PSID/kPa	25/172		15/104	
				FOR FURTHER INFORMATION, SEE OPERATOR'S MANUAL			
✓	✓	HP (R-134a)	PSIG/kPa	CUT-OUT 180/1241	INHIBIT PRV OPENING * 162.5/1120	ALLOW PRV OPENING * 160/1103	CUT-IN 120/827
✓		LEP (R-134a)	PSIG/kPa	CUT-IN 25.1/173	ALLOW PRV OPENING 28.0/193	INHIBIT PRV OPENING 27.0/186	CUT-OUT 25.0/172
	✓	ILEP	PSIG				
✓	✓	HOP	PSID/kPa	90/620.6		<90/620.6	
✓	✓	FDTS	DEG.F/DEG.C	30.0/-1.10		29.9/-1.20	
✓		LWT	DEG.F/DEG.C	PROGRAMMABLE PER OPERATIONS MANUAL FORM 160.54-O1			
	✓	LWT	DEG.F/DEG.C				
✓	✓	LOT	DEG.F/DEG.C	71.0/21.7		55.0/12.8	
✓	✓	LOTD †	DEG.F/DEG.C	30/16.7		29.9/16.6	
✓	✓	LOTD ††	DEG.F/DEG.C	40/22.2		39.9/22.1	

LOW/HIGH LINE VOLTAGE TRIP/RESET VALUES					
SSS TYPE	COMPRESSOR MOTOR SUPPLY VOLTAGE RANGE - (V)	LOW LINE VOLTAGE OPERATING POINT		HIGH LINE VOLTAGE OPERATING POINT	
		CUTOUT - (V) (ON FALL)	CUTIN - (V) (ON RISE)	CUTOUT - (V) (ON RISE)	CUTIN - (V) (ON FALL)
LCSSS	200-208	160	174	227	226
LCSSS	220-240	185	200	262	261
LCSSS	380	305	331	415	414
LCSSS	400	320	349	436	435
LCSSS	415	335	362	454	453
LCSSS	440-480	370	400	524	523
LCSSS	550-600	460	502	655	654
LCSSS	SUPPLY VOLTAGE RANGE DISABLED	NONE	0	NONE	0
MVSSS	2300	1863	1864	2606	2605
MVSSS	3300	2673	2674	3739	3738
MVSSS	4160	3369	3370	4713	4712

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FIGURE 6 - PRESSURE TEMPERATURE CHART / LINE VOLTAGE TRIP/RESET VALUES

CONNECTION DIAGRAM

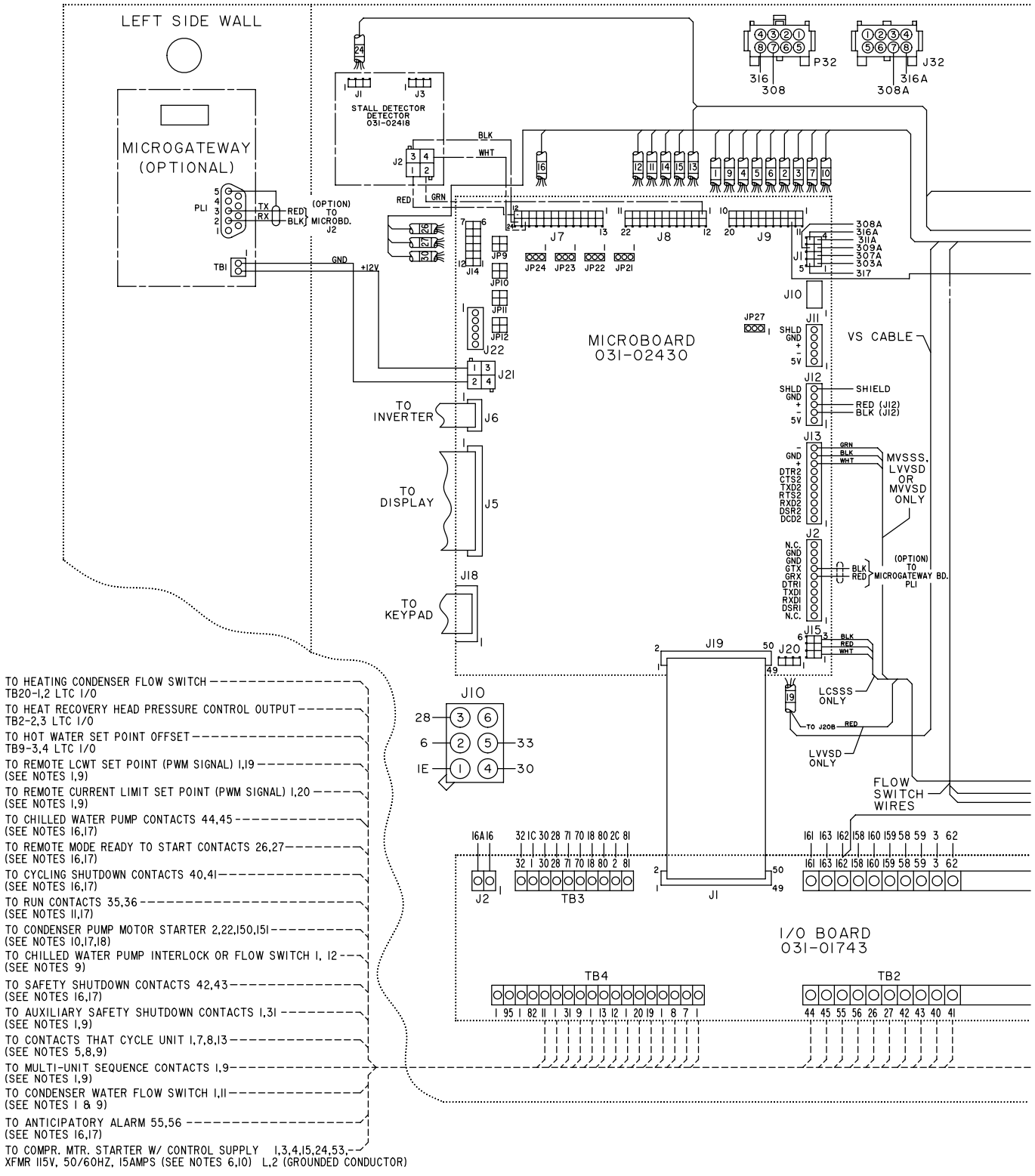

FIGURE 7 - CONNECTION DIAGRAM

CONNECTION DIAGRAM (CONT'D)

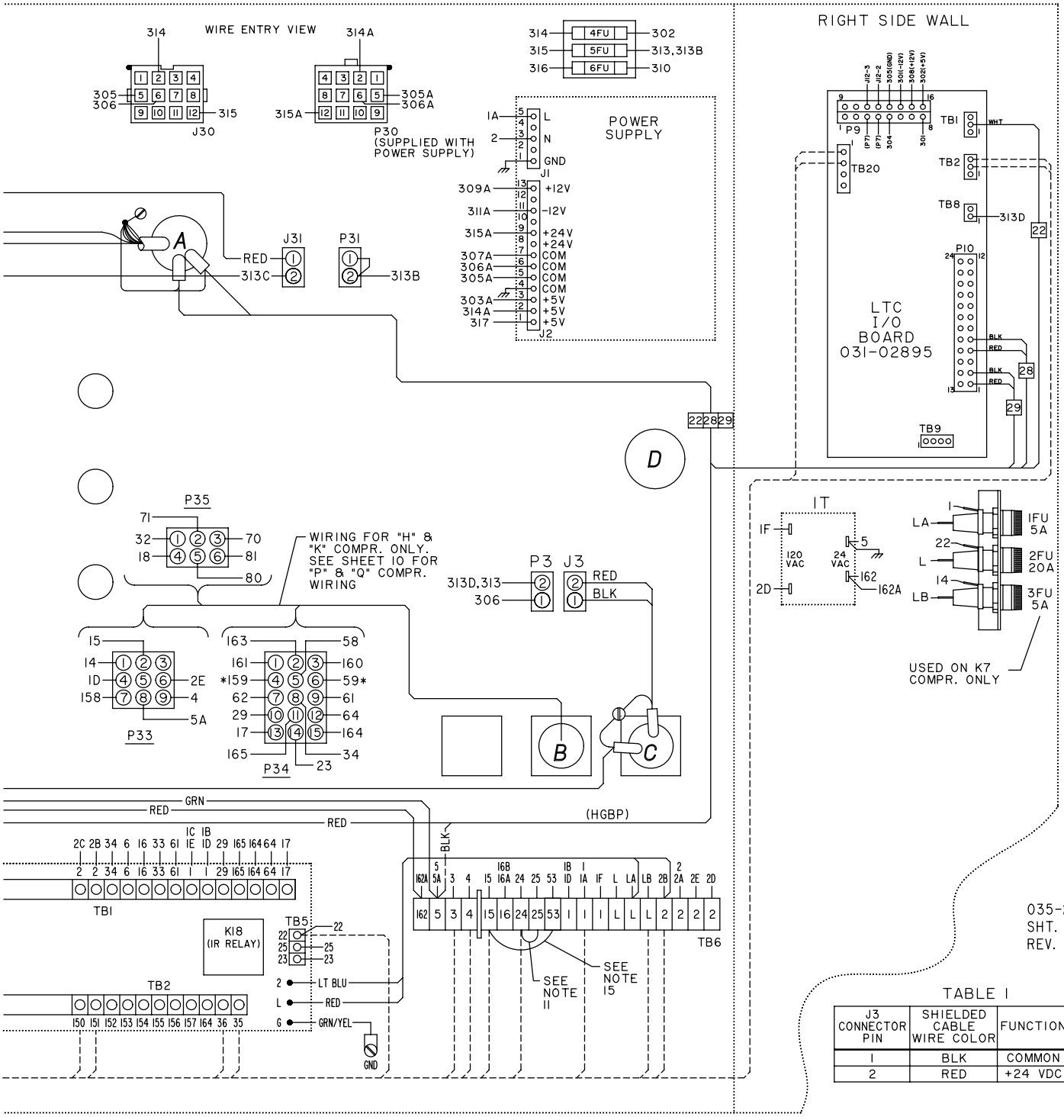

TABLE I

J3 CONNECTOR PIN	SHIELDED CABLE WIRE COLOR	FUNCTION	LCSSS TB2 PIN
1	BLK	COMMON	5
2	RED	+24 VDC	4

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FIGURE 7 - CONNECTION DIAGRAM (CONT'D)

CONNECTION DIAGRAM

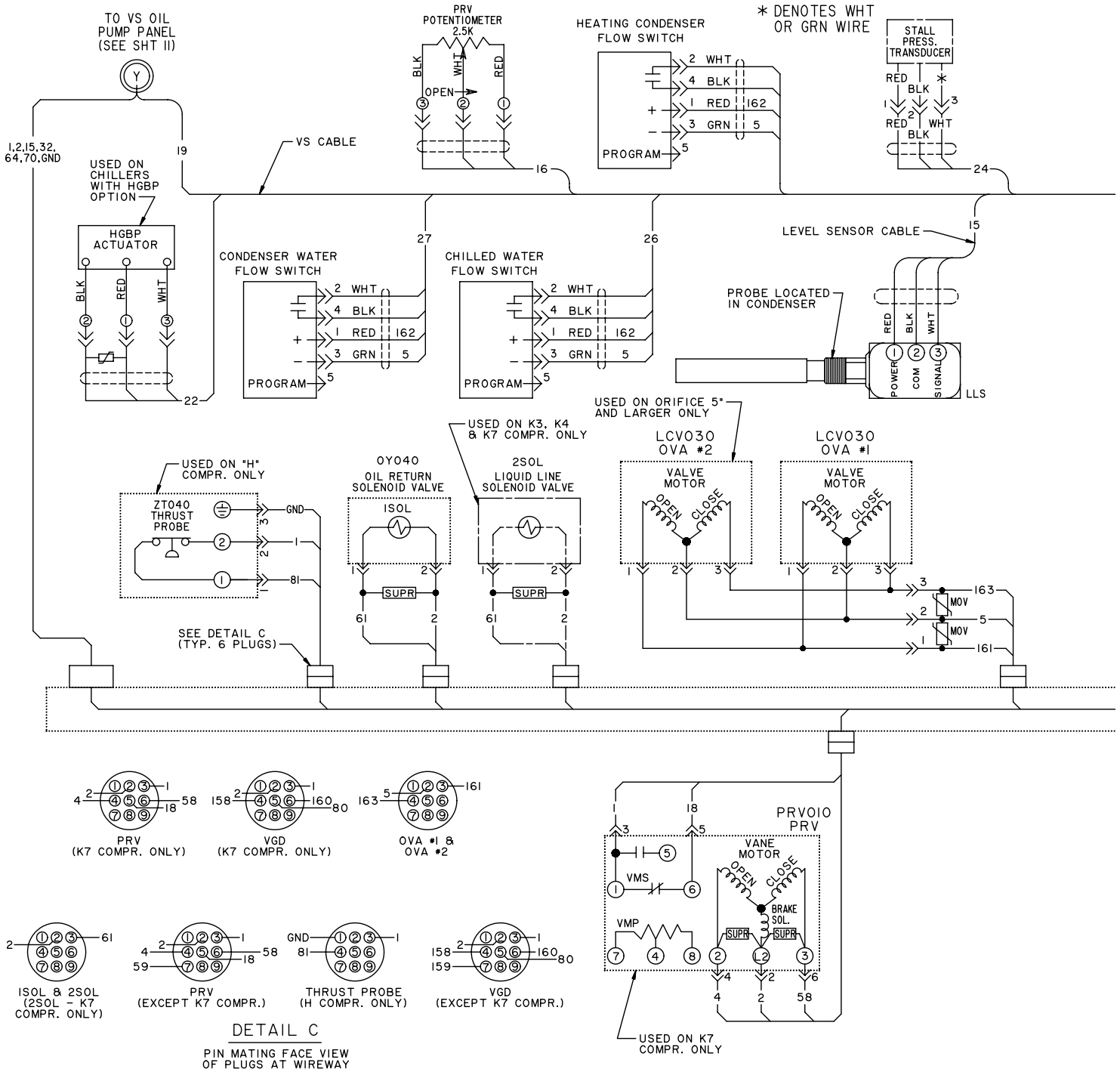

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FIGURE 8 - CONNECTION DIAGRAM

CONNECTION DIAGRAM (CONT'D)

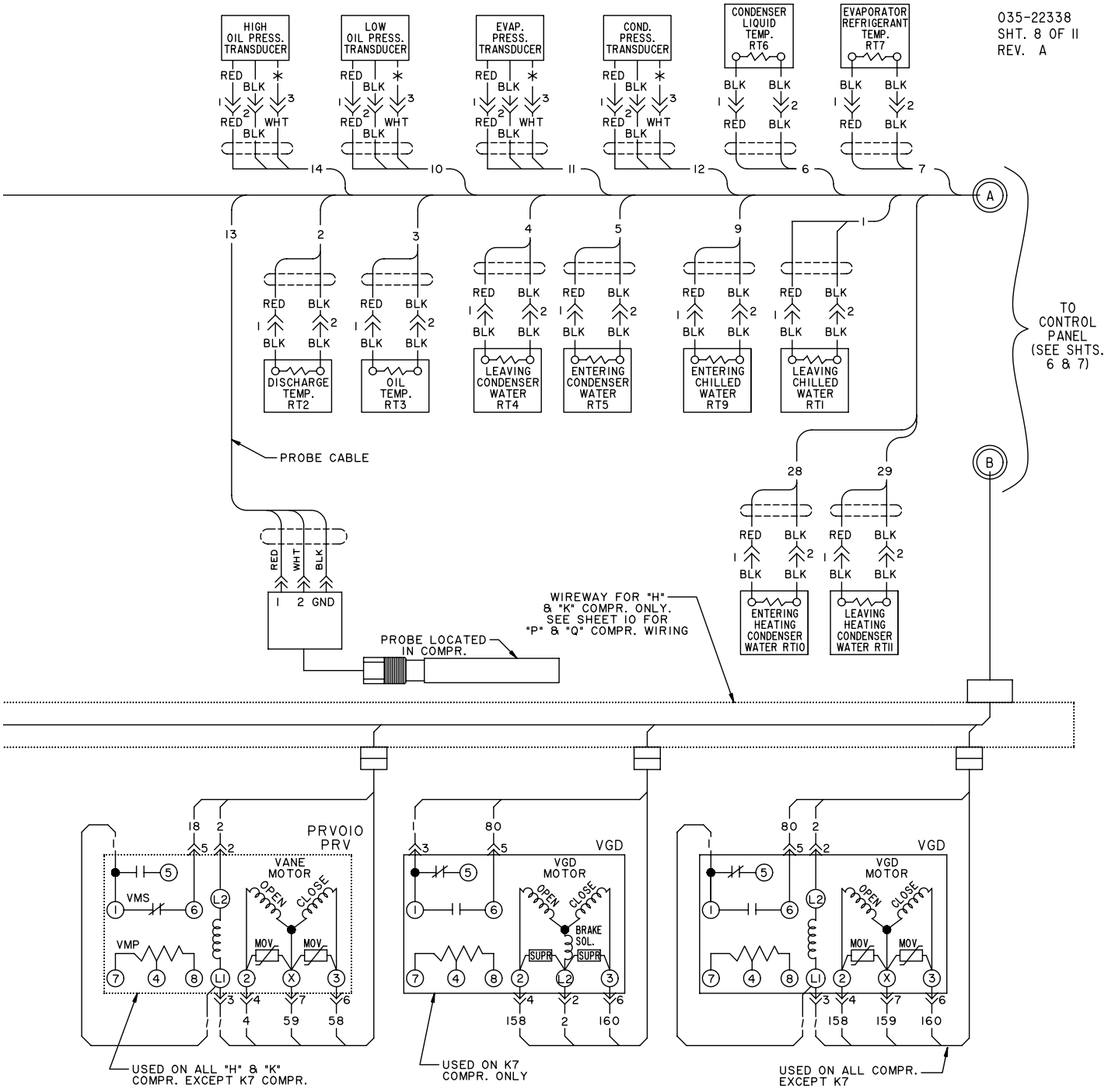

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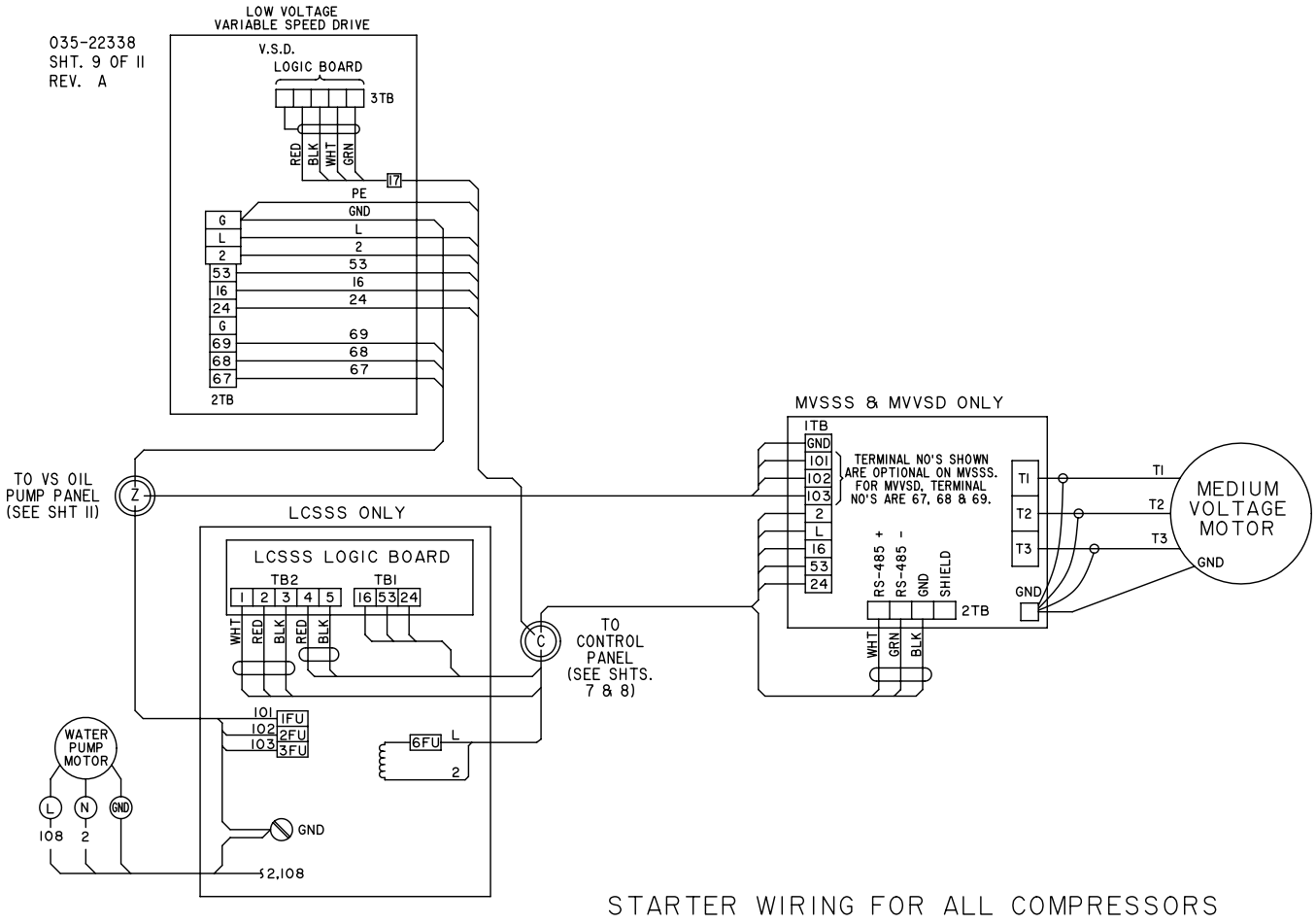
FIGURE 8 - CONNECTION DIAGRAM (CONT'D)

CONNECTION DIAGRAM



STARTER WIRING FOR ALL COMPRESSORS

LD14151

FIGURE 9 - CONNECTION DIAGRAM

CONNECTION DIAGRAM

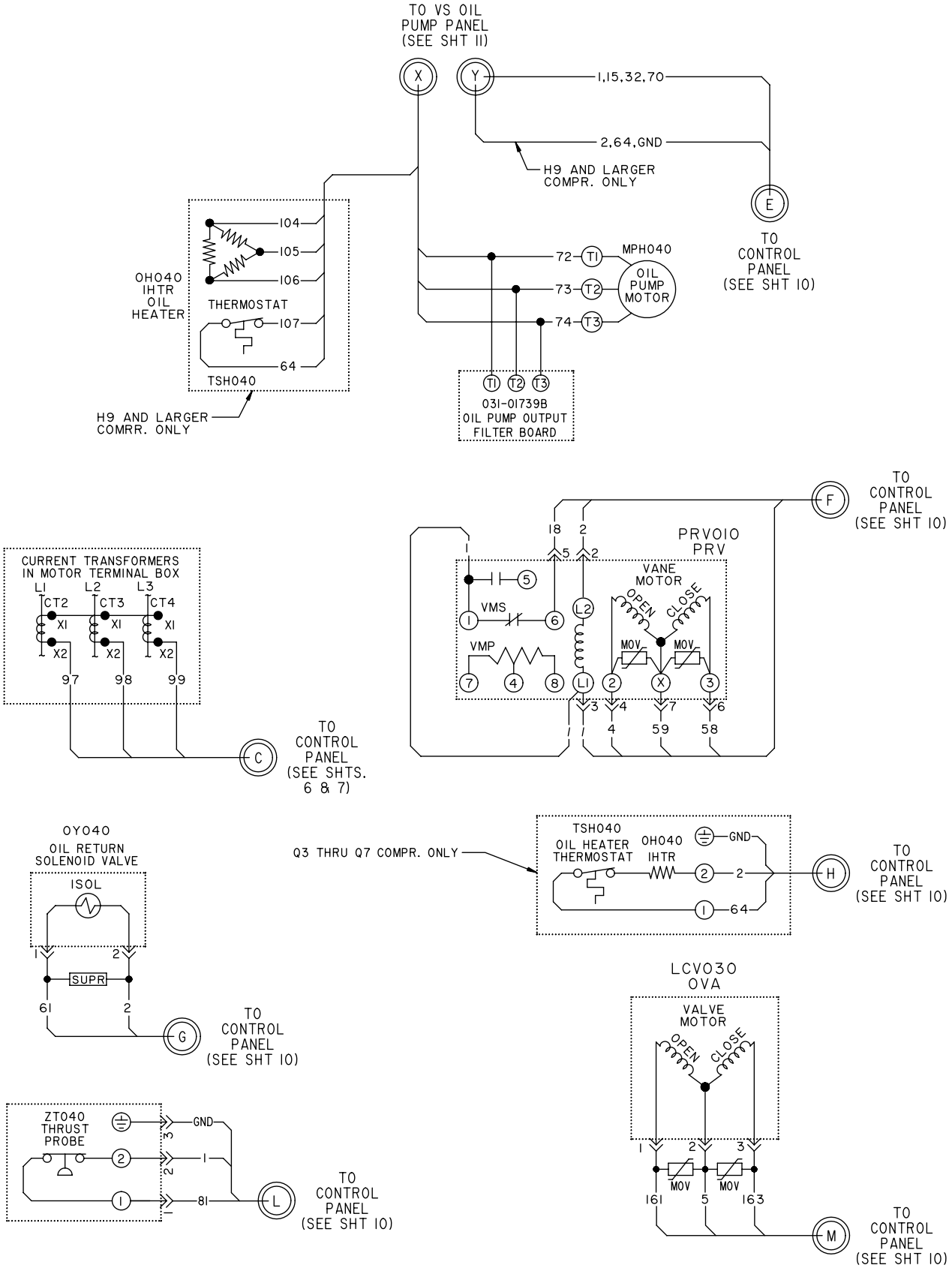


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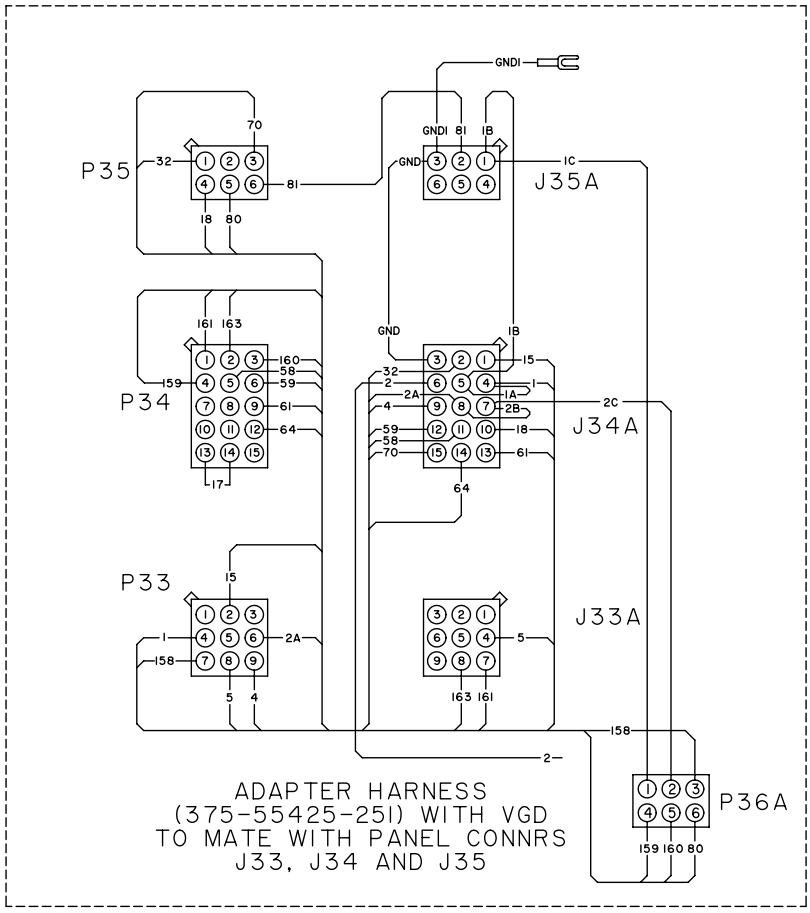
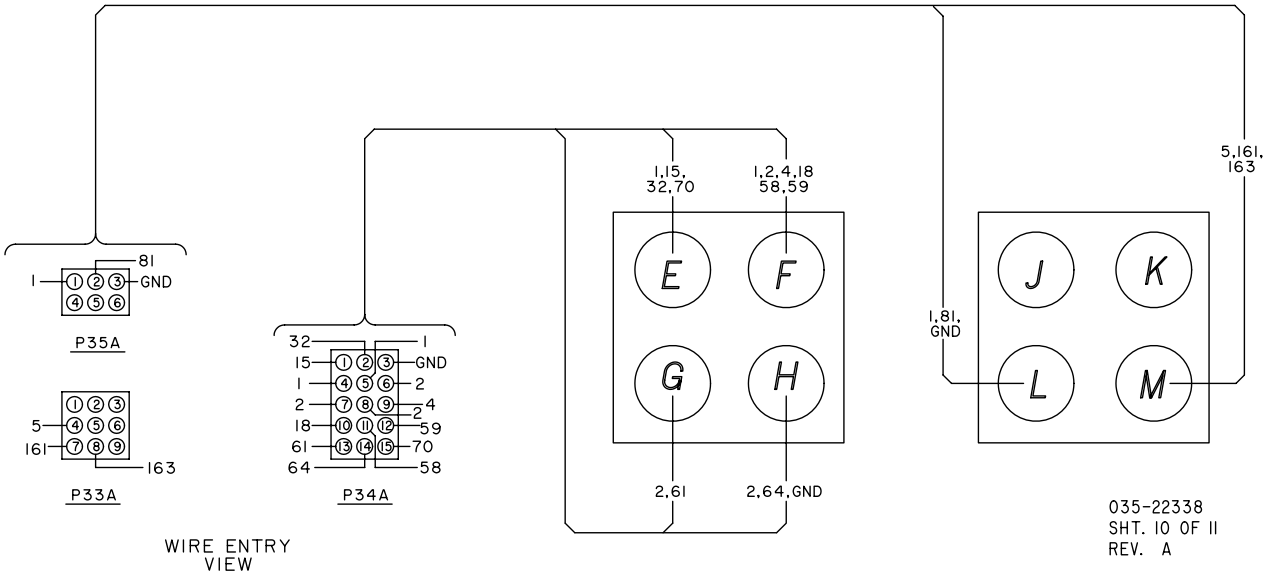
FIGURE 10 - CONNECTION DIAGRAM

CONNECTION DIAGRAM





Q4 & Q7 COMP.

LD14153

FIGURE 11 - CONNECTION DIAGRAM

VARIABLE SPEED OIL PUMP DRIVE PANEL

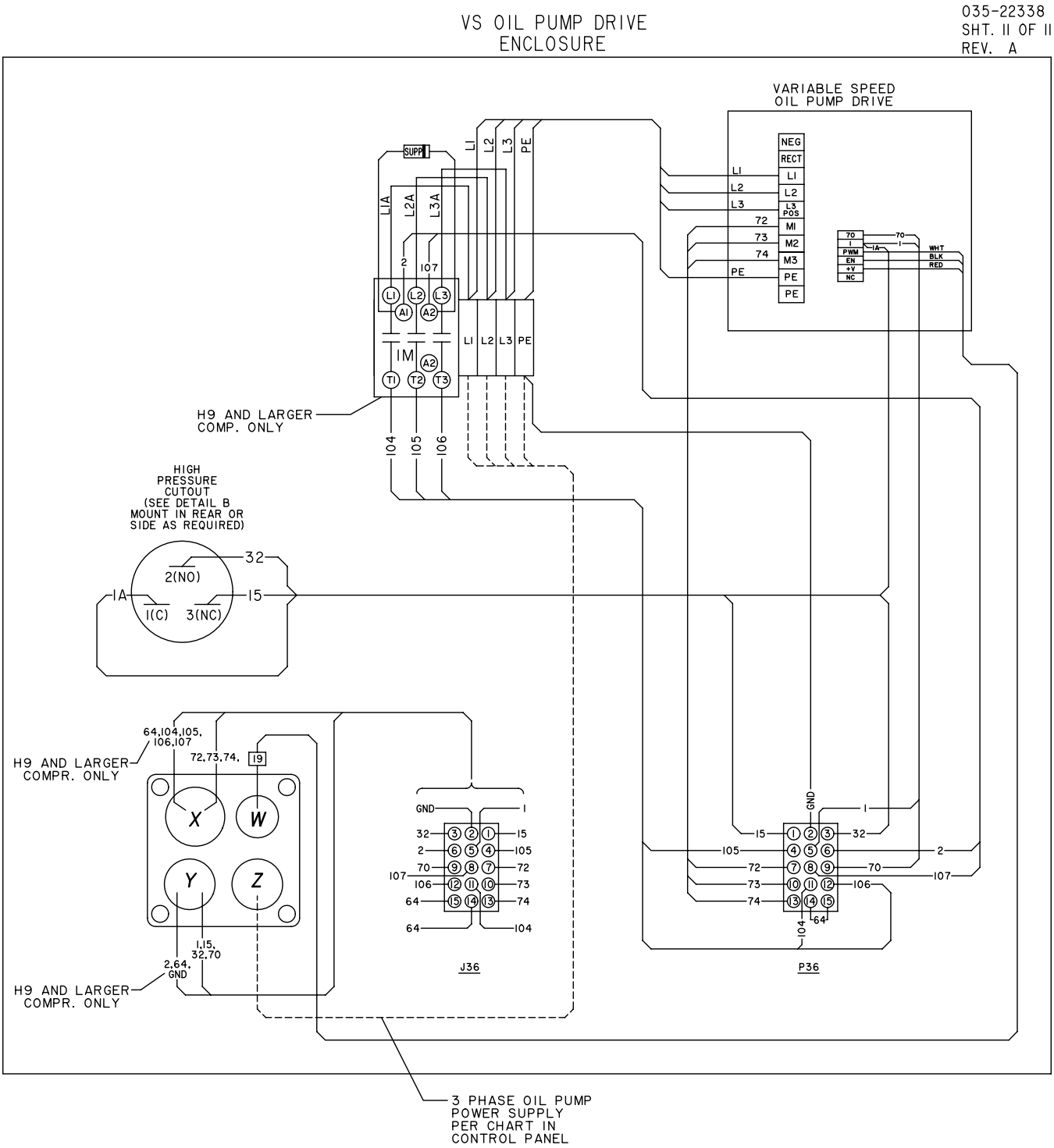


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FIGURE 12 - VARIABLE SPEED OIL PUMP DRIVE PANEL

MOTOR MONITOR WIRING

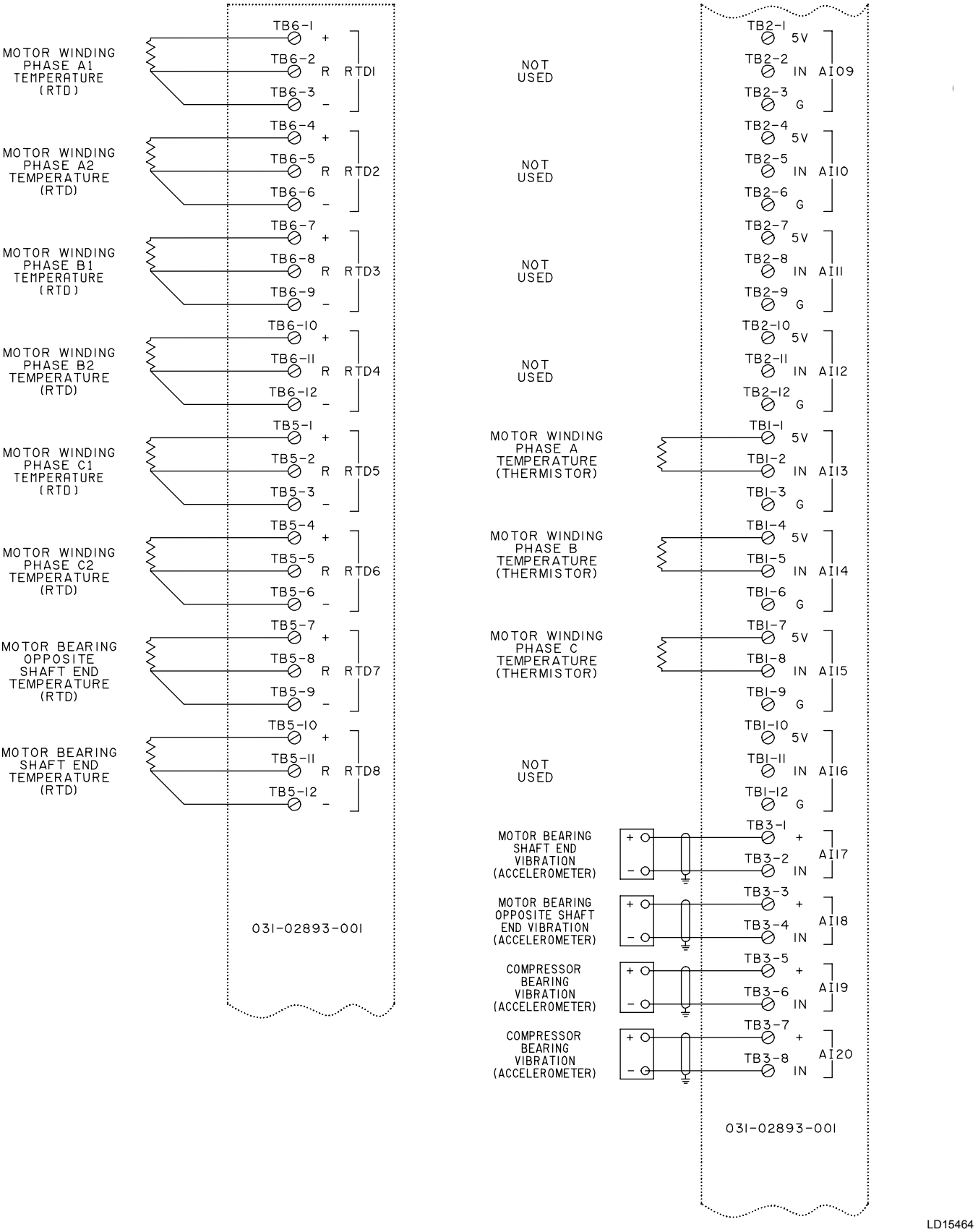


FIGURE 13 - MOTOR MONITOR WIRING

MOTOR MONITOR WIRING (CONT'D)

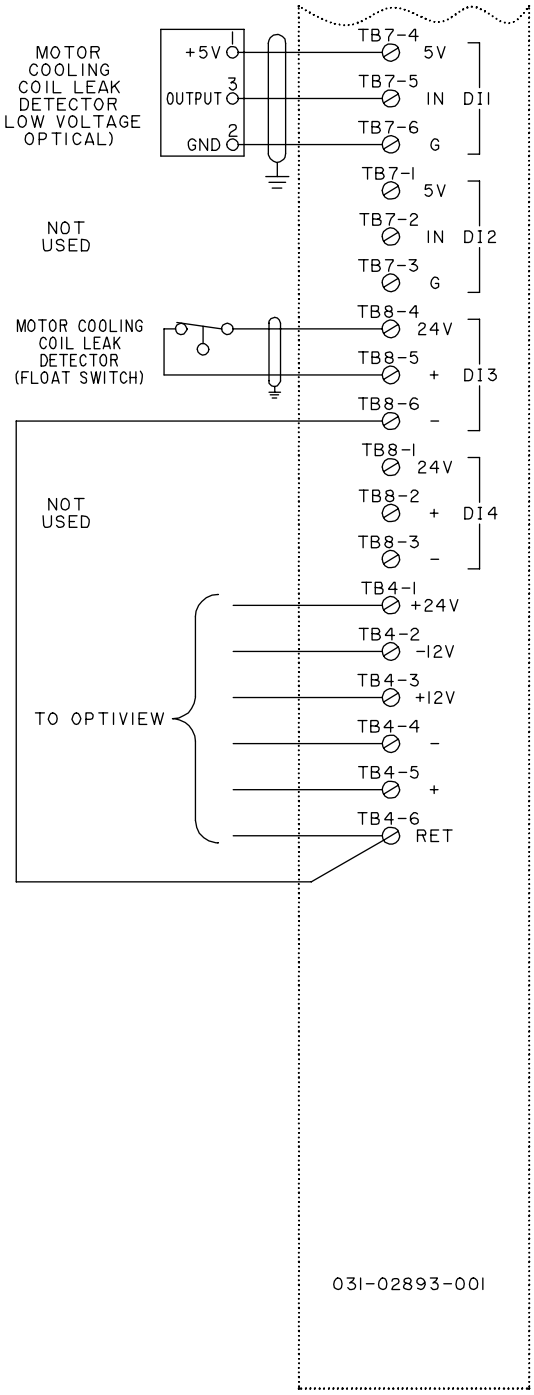
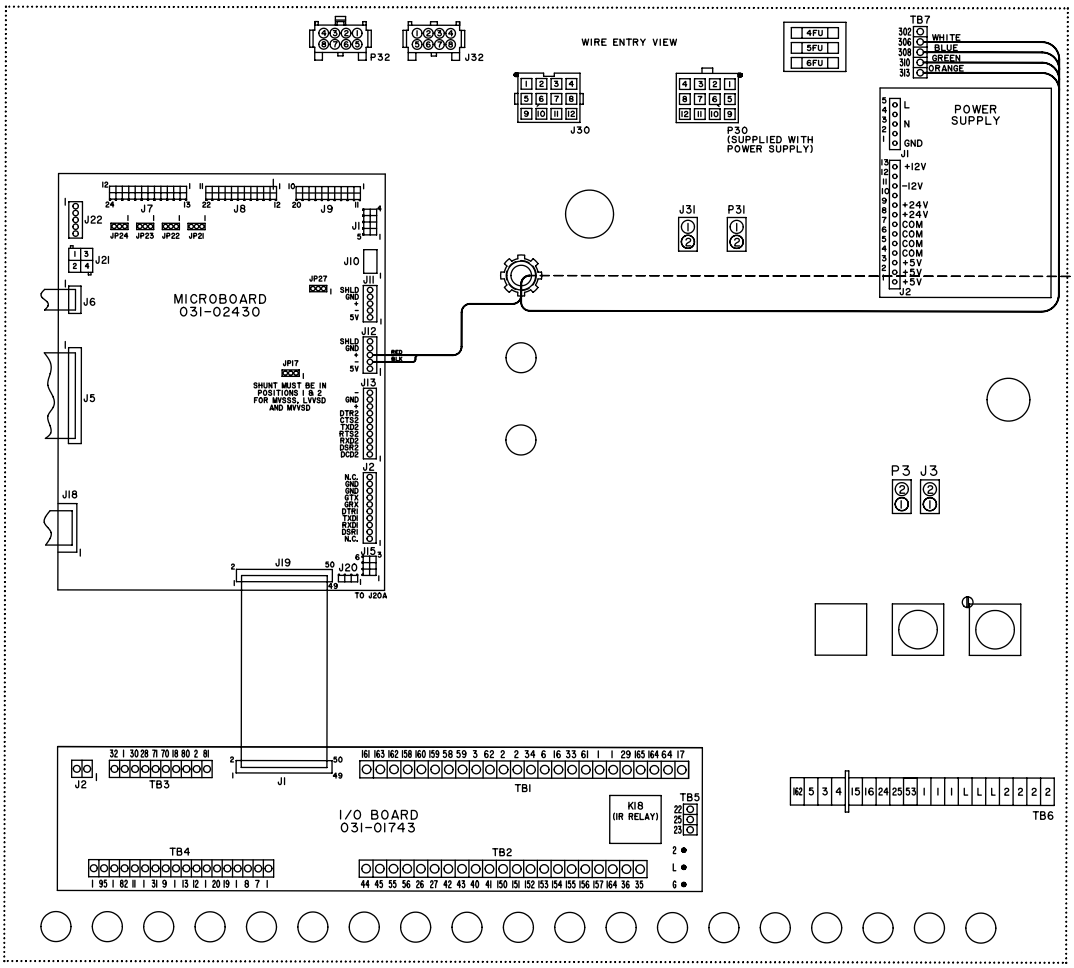


FIGURE 13 - MOTOR MONITOR WIRING (CONT'D)

MOTOR MONITOR SYSTEM WIRING



CONTROL PANEL

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FIGURE 14 - MOTOR MONITOR SYSTEM WIRING

MOTOR MONITOR SYSTEM WIRING (CONT'D)

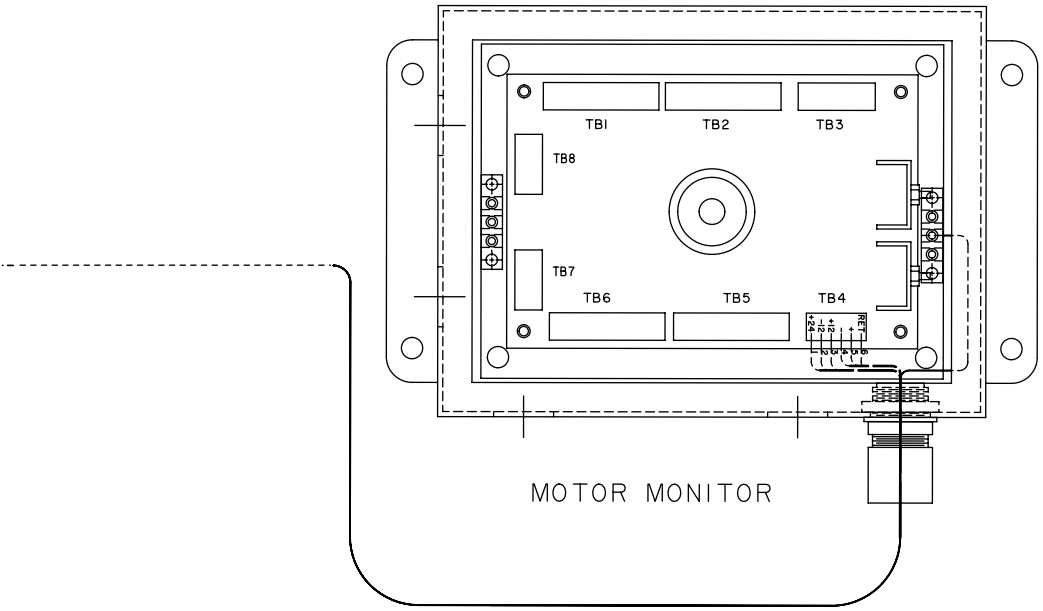

FIGURE 14 - MOTOR MONITOR SYSTEM WIRING (CONT'D)

NOTES

NOTES

BY JOHNSON CONTROLS

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