YORK® **PRODUCT DRAWING** YORK INTERNATIONAL CORPORATION P.O. Box 1592, York, PA 17405	Supersedes: 160.52-PW1 (1297) Form 160.52-PW1 (698) **WIRING DIAGRAM, MILLENNIUM MODEL YK (STYLE D) LIQUID CHILLERS MICROCOMPUTER CONTROL CENTER WITH ELECTRO-MECHANICAL STARTER**
CONTRACTOR _____ ORDER NO. _____ YORK CONTRACT NO. _____ YORK ORDER NO. _____	PURCHASER _____ JOB NAME _____ LOCATION _____ ENGINEER _____
☐ REFERENCE DATE _____	☐ APPROVAL DATE _____ ☐ CONSTRUCTION DATE _____

JOB DATA:

CHILLER MODEL NO. YK _____

NO. OF UNITS _____

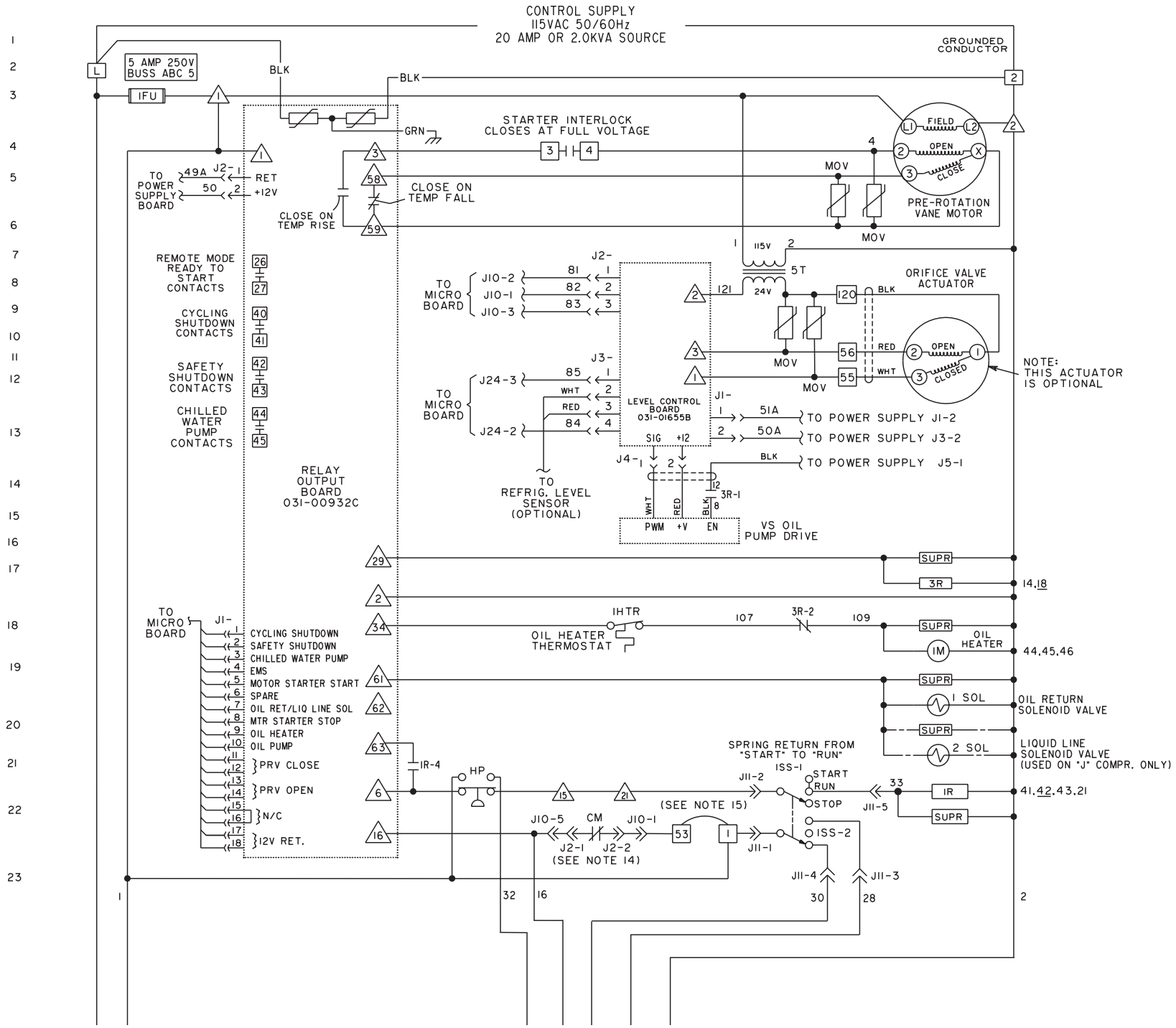
COMPRESSOR MOTOR _____ VOLTS, 3-PHASE, _____ Hz

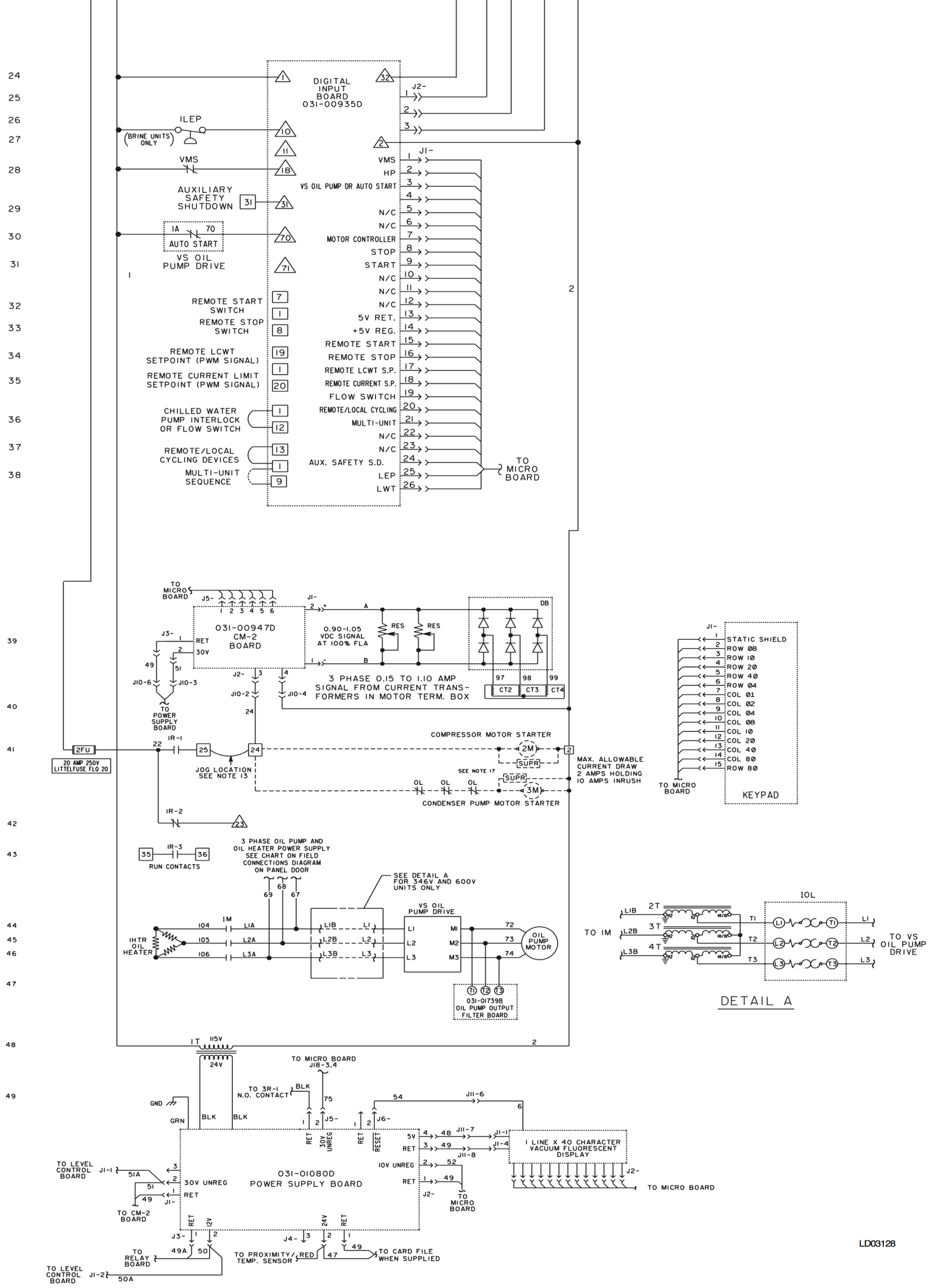
OIL PUMP MOTOR _____ VOLTS, 3-PHASE, _____ Hz, _____FLA

REMARKS:

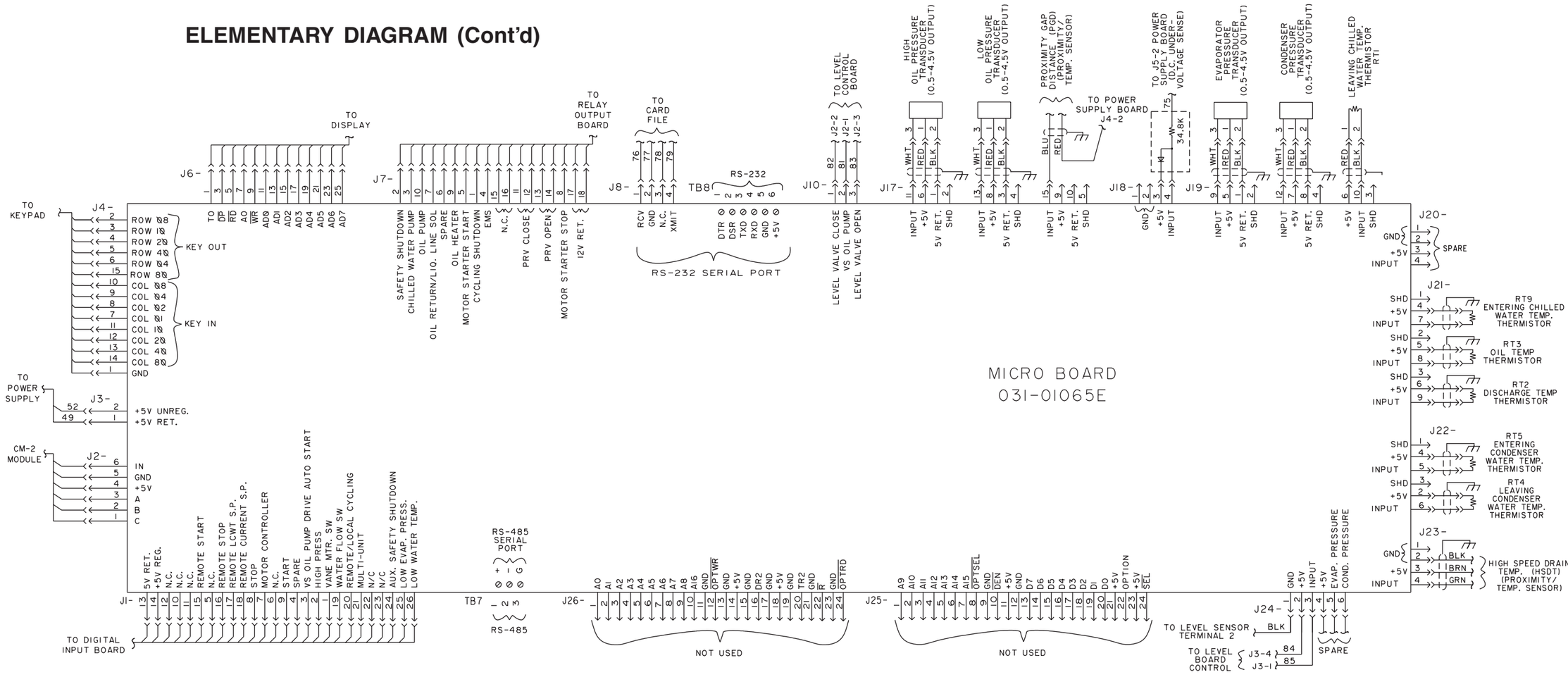
ELEMENTARY DIAGRAM

REV. 035-15977 (REV. A)



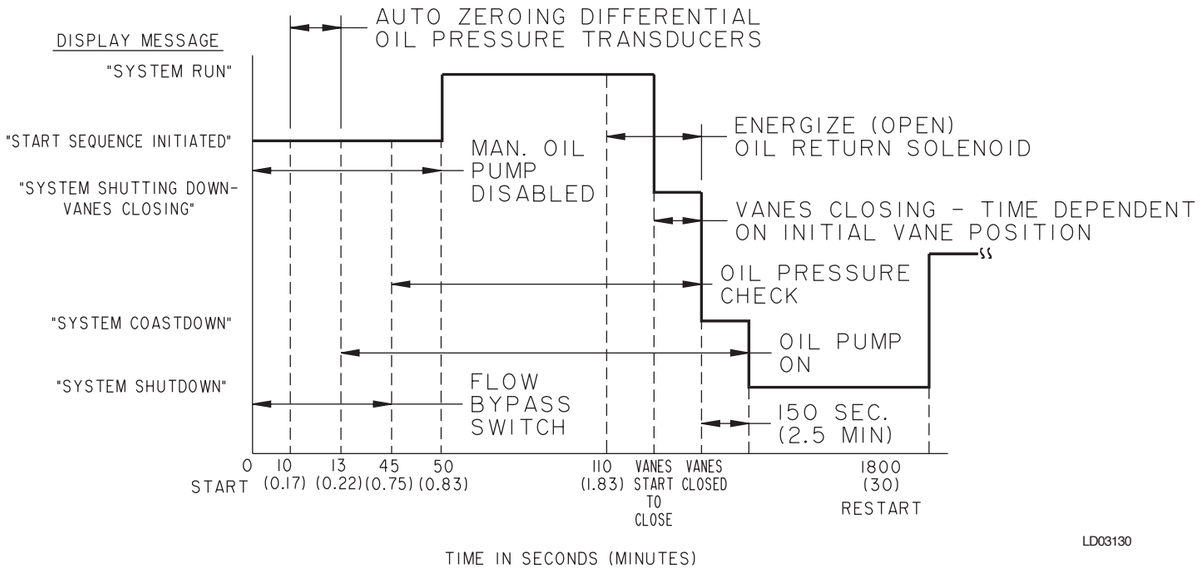

DIGITAL INPUT BOARD 031-00935D
ILEP
(BRINE UNITS ONLY)
VMS
AUXILIARY SAFETY SHUTDOWN
AUTO START
VS OIL PUMP DRIVE
REMOTE START SWITCH
REMOTE STOP SWITCH
REMOTE LCWT SETPOINT (PWM SIGNAL)
REMOTE CURRENT LIMIT SETPOINT (PWM SIGNAL)
CHILLED WATER PUMP INTERLOCK OR FLOW SWITCH
REMOTE/LOCAL CYCLING DEVICES
MULTI-UNIT SEQUENCE
VMS
HP
VS OIL PUMP DR AUTO START
N/C
MOTOR CONTROLLER
STOP
START
5V RET.
+5V REG.
REMOTE START
REMOTE STOP
REMOTE LCWT S.P.
REMOTE CURRENT S.P.
FLOW SWITCH
REMOTE/LOCAL CYCLING
MULTI-UNIT
AUX. SAFETY S.D.
LEP
LWT
TO MICRO BOARD
031-00947D CM-2 BOARD
0.90-1.05 VDC SIGNAL AT 100% FLA
RES
DB
3 PHASE 0.15 TO 1.10 AMP SIGNAL FROM CURRENT TRANS-FORMERS IN MOTOR TERM. BOX
CT2
CT3
CT4
TO POWER SUPPLY BOARD
2FU
20 AMP 250V LITTELFUSE FLO 20
IR-1
IR-2
JOG LOCATION SEE NOTE 13
COMPRESSOR MOTOR STARTER
2M
SUPR
SEE NOTE 17
OL
3M
CONDENSER PUMP MOTOR STARTER
MAX. ALLOWABLE CURRENT DRAW 2 AMPS HOLDING 10 AMPS INRUSH
STATIC SHIELD
ROW 08
ROW 10
ROW 20
ROW 40
ROW 04
COL 01
COL 02
COL 04
COL 08
COL 10
COL 20
COL 40
COL 80
ROW 80
KEYPAD
IR-3
RUN CONTACTS
3 PHASE OIL PUMP AND OIL HEATER POWER SUPPLY SEE CHART ON FIELD CONNECTIONS DIAGRAM ON PANEL DOOR
SEE DETAIL A FOR 346V AND 600V UNITS ONLY
VS OIL PUMP DRIVE
IHTR OIL HEATER
OIL PUMP MOTOR
031-01739B OIL PUMP OUTPUT FILTER BOARD
10L
2T
3T
4T
TO IM
TO VS OIL PUMP DRIVE
DETAIL A
1T
115V
24V
GND
GRN
BLK
TO MICRO BOARD J18-3,4
TO 3R-1 N.O. CONTACT
RET
30V UNREG
RESET
5V
10V UNREG
1 LINE X 40 CHARACTER VACUUM FLUORESCENT DISPLAY
TO MICRO BOARD
TO LEVEL CONTROL BOARD
TO CM-2 BOARD
031-01080D POWER SUPPLY BOARD
12V
24V
TO RELAY BOARD
TO PROXIMITY/ TEMP. SENSOR
RED
TO CARD FILE WHEN SUPPLIED
TO LEVEL CONTROL BOARD
LD03128

ELEMENTARY DIAGRAM (Cont'd)



LD03129

TIMING DIAGRAM



LD03130

LEGEND

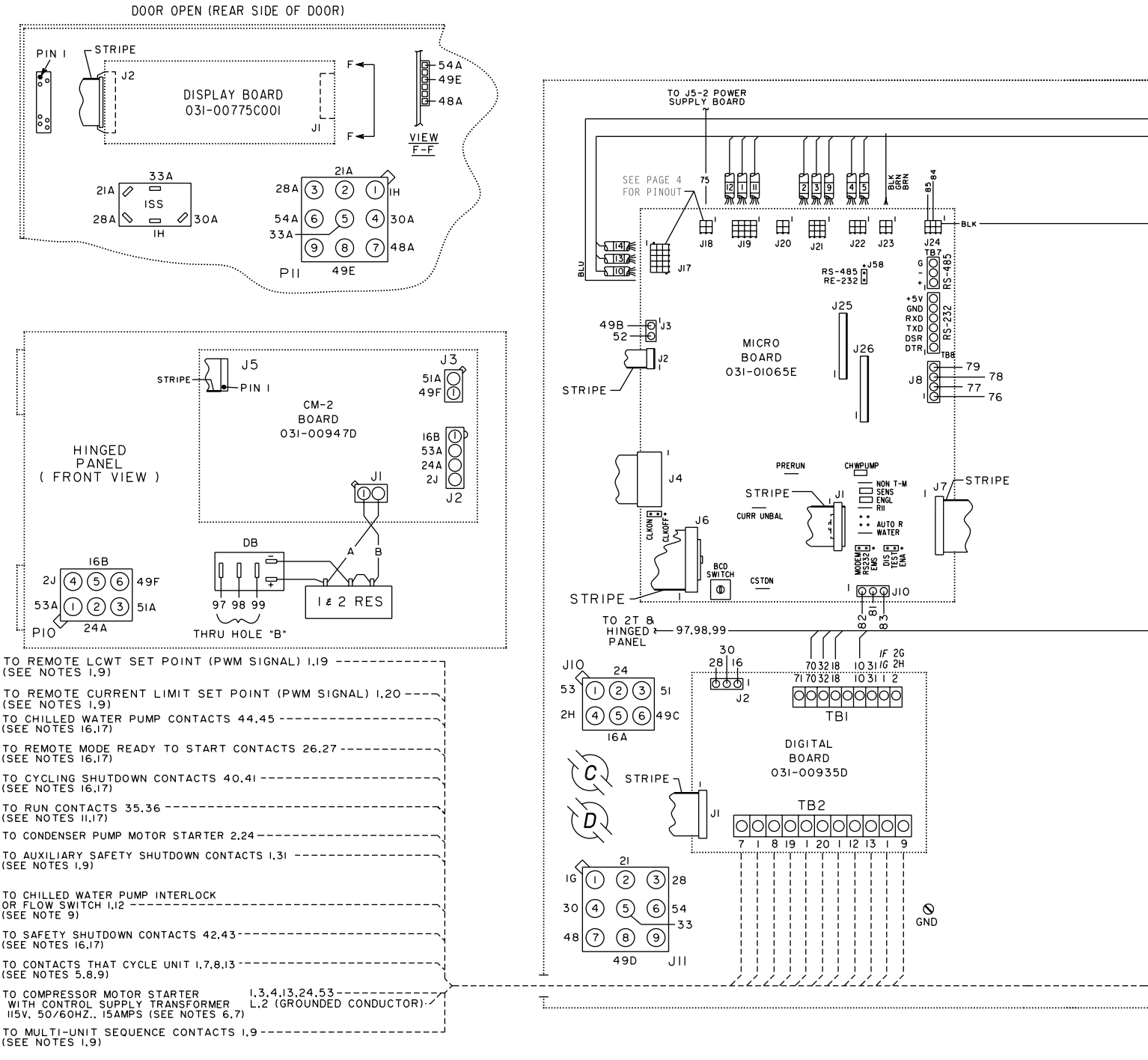
IHTR	3 PHASE THERMOSTATICALLY CONTROLLED 3000 WATT OIL HEATER AT LINE VOLTAGE.
IM	3 PHASE OIL PUMP CONTACTOR.
3M	CONDENSER PUMP MOTOR STARTER
IR	COMPRESSOR MOTOR/ IHTR HEATER CONTROL RELAY
3R	VS OIL PUMP DRIVE RUN RELAY
ISOL	OIL RETURN SOLENOID VALVE
2SOL	LIQUID LINE SOLENOID VALVE (USED ON "J" COMPR. ONLY)
ISS	DPDT 3 POSITION ROCKER SWITCH
2SS	4PST 4 POSITION MANUAL OVERRIDE SWITCH
1T,5T	CLASS 2 POWER SUPPLY TRANSFORMER
2T,3T,4T	BUCK/BOOST TRANSFORMERS (346V AND 600V UNITS ONLY)
CM	SOLID STATE OVERLOAD/POWER FAULT CONTACTS (PART OF CM-2 BOARD)
DOC	DIGITAL ORIFICE CONTROLLER
CT	CURRENT TRANSFORMER
FDTS	FAULTY DISCHARGE TEMP. SENSOR
FLA	FULL LOAD AMPS (COMPRESSOR MOTOR)
FU	FUSE
HSDT	HIGH SPEED DRAIN TEMP.
PGD	PROXIMITY GAP DISTANCE
HDT	REFRIG. HIGH DISCHARGE TEMP. (PROVIDED BY RT2)
HOP	HIGH OIL PRESSURE (PROVIDED BY TWO TRANSDUCERS)
HOT	HIGH OIL TEMPERATURE (PROVIDED BY RT3)
HP	HIGH PRESSURE CUTOUT
LEP	LOW EVAPORATOR PRESSURE (PROVIDED BY EVAP. PRESS TRANSDUCE
LLS	LIQUID LEVEL SENSOR (PROBE)
ILEP	LOW EVAPORATOR PRESSURE CUTOUT (BRINE UNITS ONLY)
LOT	LOW OIL TEMPERATURE (PROVIDED BY RT3)
LOTD	LOW OIL TEMP. DIFFERENTIAL (PROVIDED BY RT3 AND CONDENSER PRESS. TRANSDUCER)
LWT	LOW WATER TEMPERATURE (PROVIDED BY RTI)
MOV	METAL OXIDE VARISTOR
OL	MOTOR STARTER OVERLOADS
1OL	2T,3T,4T PROTECTOR (346V AND 600V UNITS ONLY)
OP	LOW OIL PRESSURE (PROVIDED BY TWO TRANSDUCERS)
OVA	ORIFICE VALVE ACTUATOR
PRV	PRE-ROTATION VANE MOTOR
RTI-RT9	RESISTANCE TEMPERATURE SENSING ELEMENT
RES	RESISTOR
SUPR	TRANSIENT SUPPRESSOR
TB1,TB3,TB6, TB7	TERMINAL BLOCK, FACTORY WIRING — △
TB2,TB4, TB5	TERMINAL BLOCK, FIELD CONNECTION — □
VMP	VANE MOTOR POTENTIOMETER
VMS	VANE MOTOR SWITCH
VS	VARIABLE SPEED OIL PUMP DRIVE
------	FIELD WIRING
———	FACTORY WIRING
.....	CIRCUIT BOARD OR ENCLOSURE BOUNDARY
→	JACK (J1,J2,...)
⟩—	PLUG (P1,P2,...)
◎	WIRE ENTRANCE HOLE IN CONTROL PANEL
—— - ——	OPTION (WHEN SUPPLIED) BY YORK.
—— -- ——	MECHANICAL LINKAGE
(- - - -)—	SHIELDED CABLE
	METAL OXIDE VARISTOR

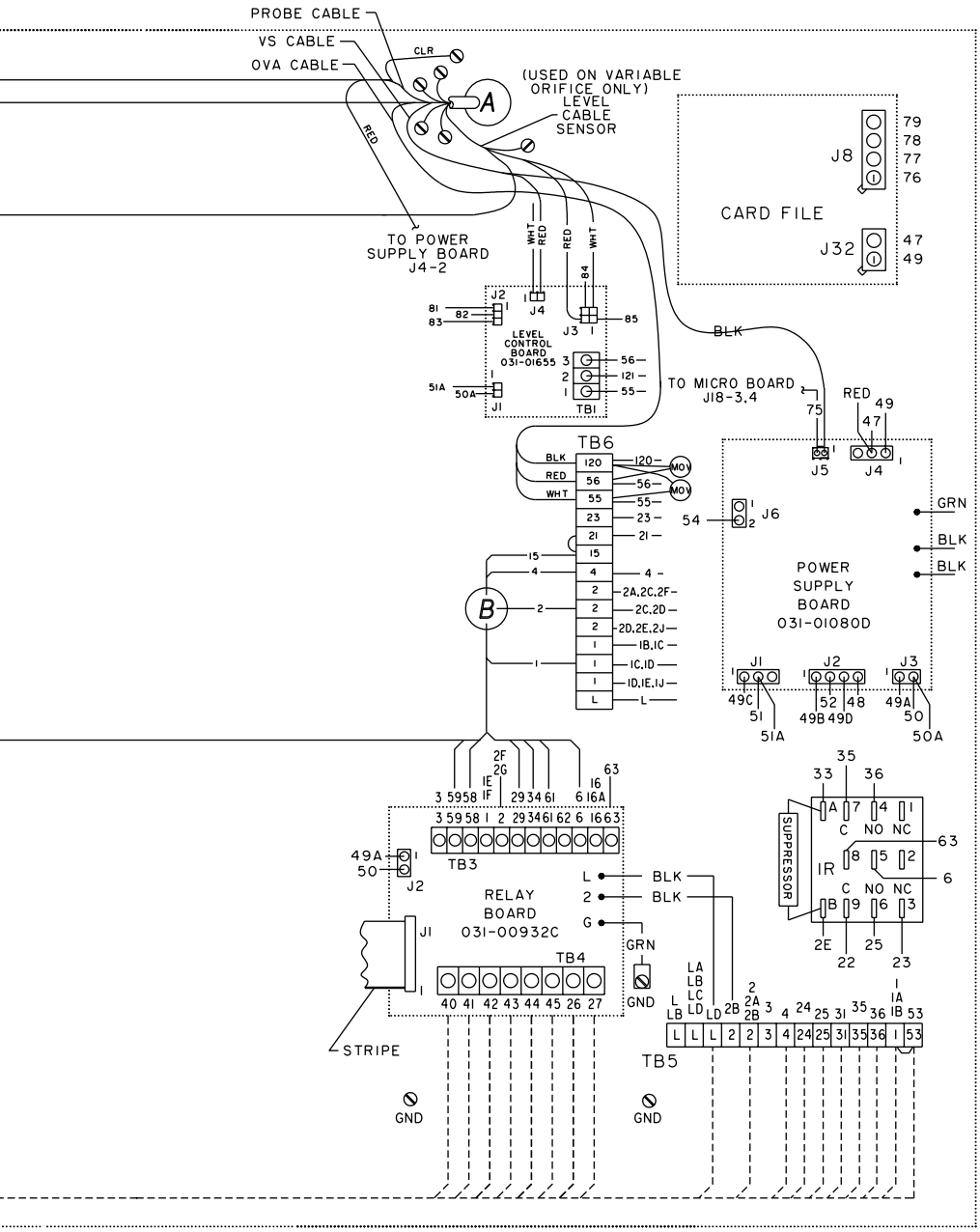
LD03131

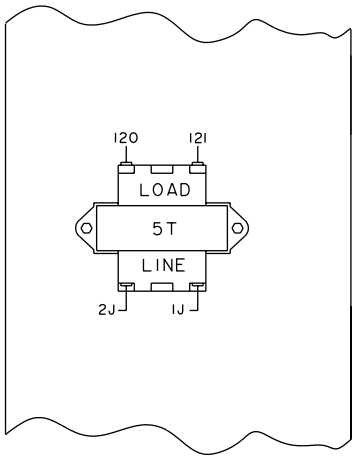
NOTES:

1. This wiring diagram describes the standard electronic control scheme for use with an electromechanical starter. For details of standard modifications, refer to Product Form 160.49-PW13.
2. Field wiring to be in accordance with the National Electrical Code as well as all other applicable codes and specifications. See Product Form 160.49-PW10 for field wiring connections.
3. Numbers along the left side of diagram are line identification numbers. The numbers along the right side indicate the line number location of 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 . Component terminal 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] &[13](line 37) (see note 9). If a cycling device is installed, jumper must be removed between terminals [1] & [13] .
6. Compressor motor starter with starter interlock contacts (rated 0.5 to 1.0 amp @ 24 volts A.C.) must be per Form 160.45-PA5.1. Control panel shall be grounded.
7. Units installed in Canada must have a field supplied CSA approved 30 Amp disconnect switch and a 20 Amp dual element fuse mounted external to control panel for 115 volt control supply.
8. To stop unit and not permit it to start again, install a stop device between terminals [1] & [8] (Line 33) (see note 9). A remote start-stop switch may be connected to terminals [1] , [7] & [8] (Lines 32 & 33) (see note 9). Remote start-stop switch (Line 32) is operative only in the "remote" operating mode.
9. Device contact rating to be 5 milliamperes @ 115 volts A.C.
10. _____
11. Contact rating is 5 Amp resistive @ 120 volts A.C. or 240 volts A.C.
12. Three phase oil pump must be properly phased L1, L2 & L3 corresponding to phase sequence A, B & C.
13. To check motor rotation on initial start-up, install momentary switch between terminals [24] & [25] (line 41). Depress start switch. After approx. 30 seconds, jog motor with momentary switch. When proper rotation is obtained, replace momentary switch with jumper. Switch must have a minimum contact rating of 2 FLA., 10 LRA at 115 Volts A.C.
14. Motor overload (CM) is set to trip at 105% FLA. During momentary power interruption (power fault), contact opens for 1 second.
15. For high and low voltage units, the factory supplied jumper between [1] & [53] must be removed when electromechanical starter overloads and/or safety devices are used. For high voltage (2300-4160) UL and CUL approved units only, electromechanical compressor motor starter overloads (normally closed) must be connected between [1] & [53] .
16. Contact rating is 5 Amps resistive @ 250 Volts A.C. & 30 Volts D.C., 2 Amp inductive (.4 PF) @ 250 Volts A.C. & 30 Volts D.C.
17. Each 115VAC field-connected inductive load: i.e. relay coil, motor starter coil, etc., shall have a transient suppressor wired in parallel with its coil, physically located at the coil. Spare transient suppressors and control circuit fuses are supplied in a bag attached to the top of the hinged panel.

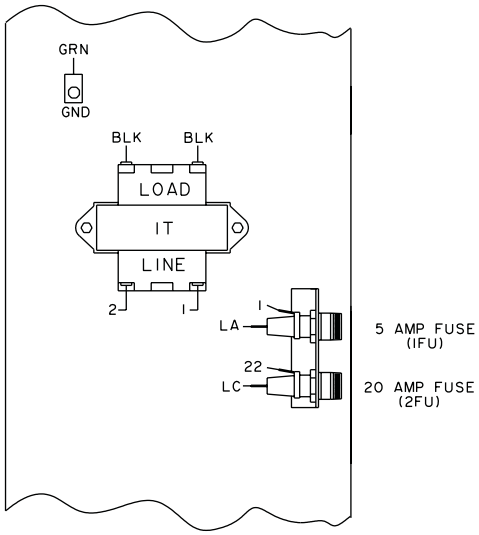
CONNECTION DIAGRAM







INSIDE VIEW OF LEFT SIDE

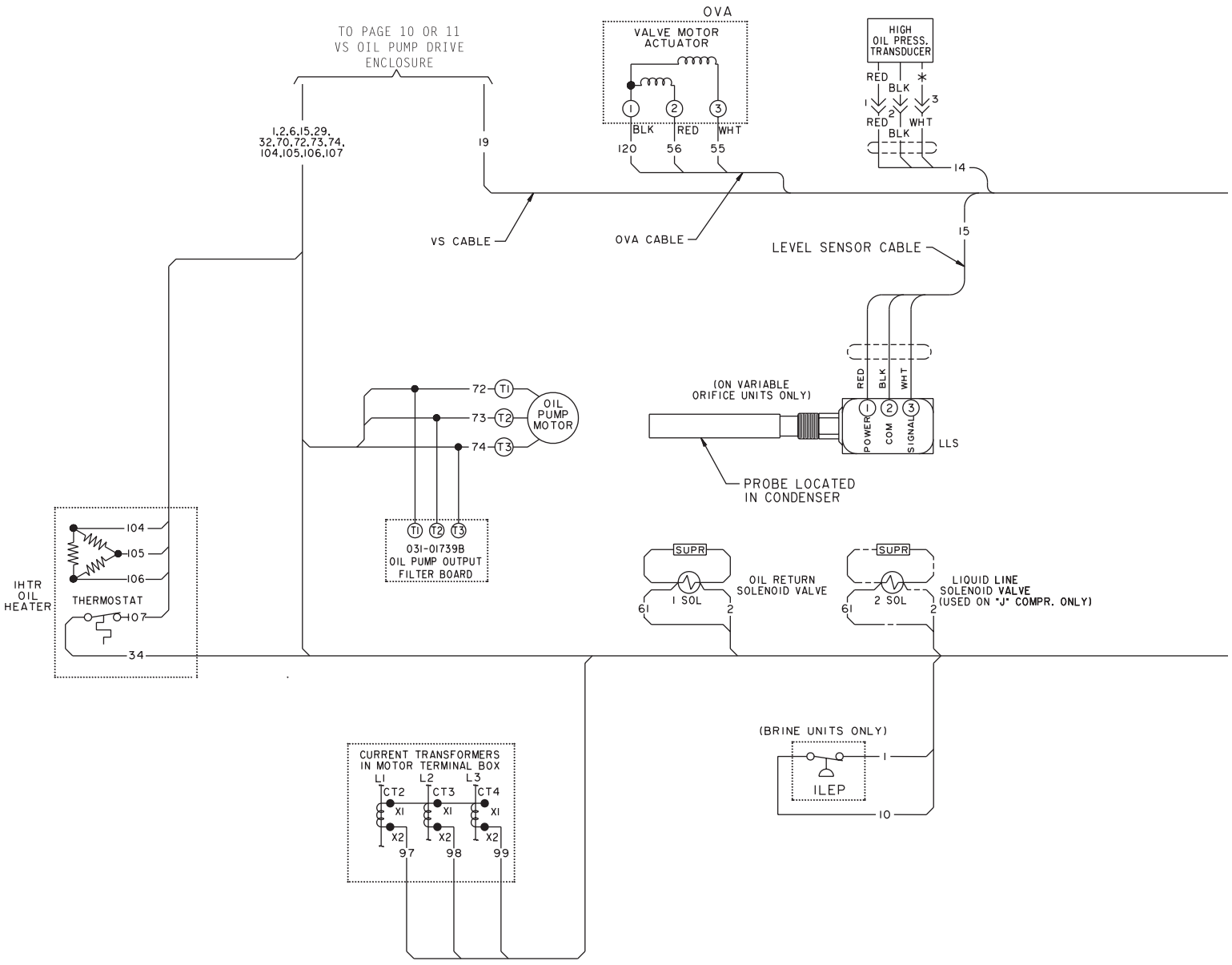


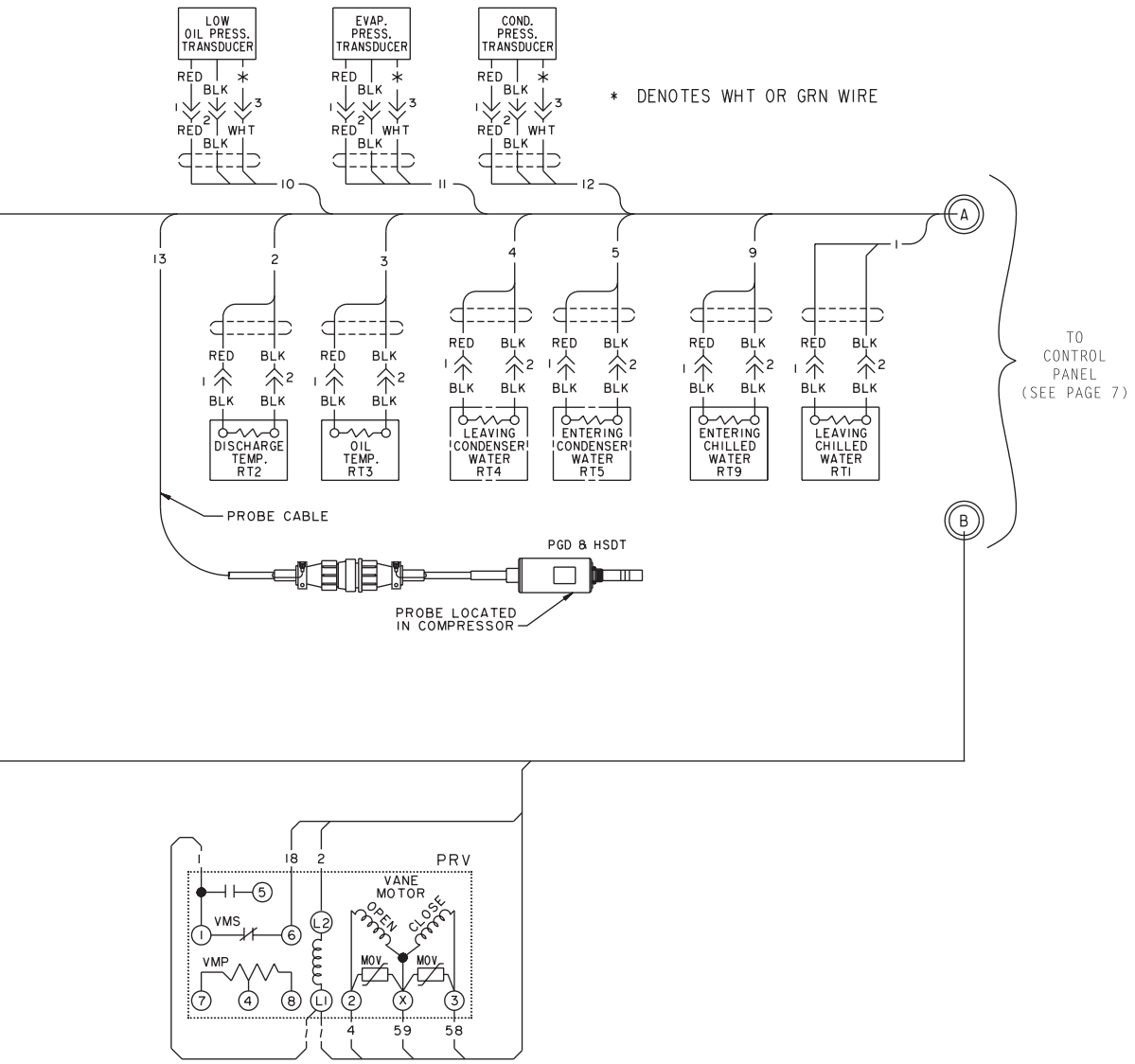
INSIDE VIEW OF RIGHT SIDE

LD03132

(CONTINUED ON PAGES 8 & 9)

CONNECTION DIAGRAM (Cont'd)

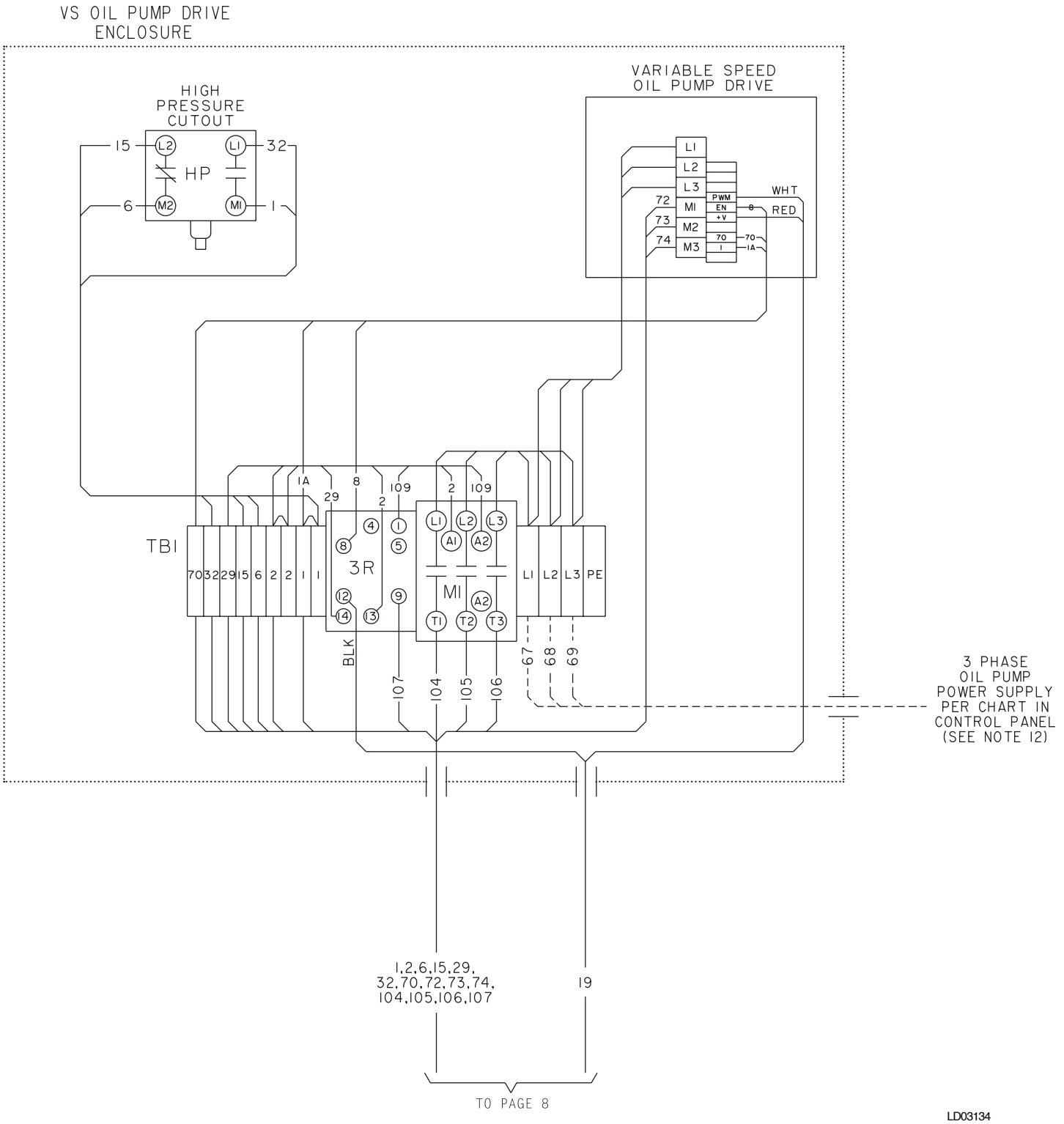



LOW OIL PRESS. TRANSDUCER
EVAP. PRESS. TRANSDUCER
COND. PRESS. TRANSDUCER
RED
BLK
WHT
* DENOTES WHT OR GRN WIRE
10
11
12
13
2
3
4
5
9
1
A
B
DISCHARGE TEMP. RT2
OIL TEMP. RT3
LEAVING CONDENSER WATER RT4
ENTERING CONDENSER WATER RT5
ENTERING CHILLED WATER RT9
LEAVING CHILLED WATER RTI
TO CONTROL PANEL (SEE PAGE 7)
PROBE CABLE
PGD & HSDT
PROBE LOCATED IN COMPRESSOR

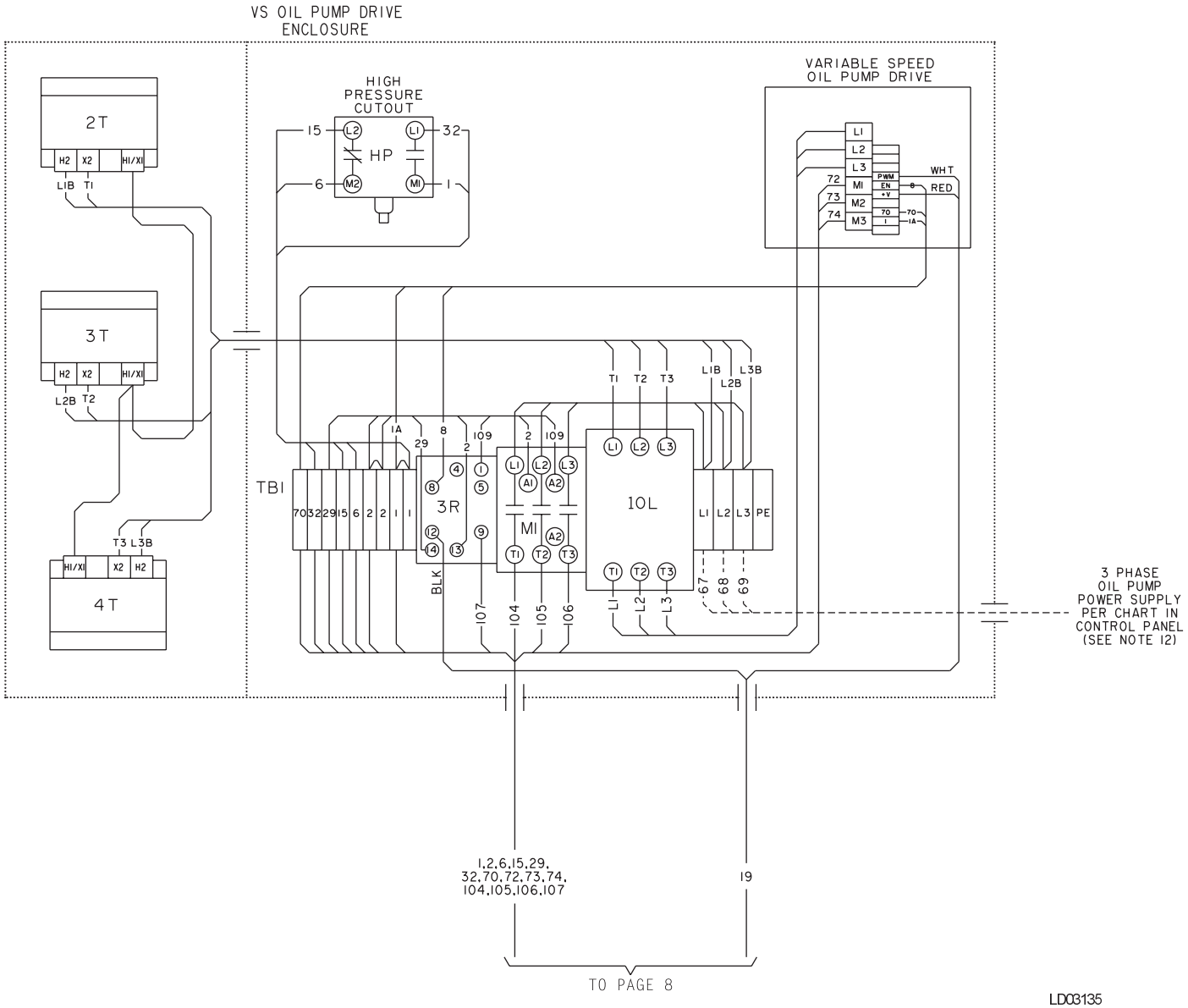
PRV
VANE MOTOR
OPEN
CLOSE
VMS
VMP
MOV
MOV
18
L2
LI
X
4
59
58

LD03133

WIRING FOR 230V AND 460V UNITS



WIRING FOR 346V AND 600V UNITS



OIL PUMP MOTOR		OIL PUMP FUSING
VOLTS-PH-HZ	FULL LOAD AMPS	MAXIMUM DUAL ELEMENT FUSE SIZE
230-3-60	6.7	15
460-3-60	3.35	7.5
575-3-60	2.6	5

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**	
✓	✓	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	CHILLED LIQUID TEMP. SETPOINT		AT OR ABOVE LCWT= 40/4.4, LWT=4/2.2 BELOW THE CHILLED LIQ. TEMP. SETPOINT: WHEN THE SETPOINT IS RAISED, LWT= 36/2.2 FOR 10 MINUTES. BELOW LWCT=40/4.4, LWT=36/2.2	
	✓	LWT	DEG.F/DEG.C	CHILLED LIQUID TEMP. SETPOINT		LWT = 4/2.2 BELOW THE CHILLED LIQ. TEMP. SETPOINT	
✓	✓	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	
✓	✓	HSDT	DEG.F/DEG.C	CUT-OUT 250/121.1		CUT-IN 180/82.2 & MANUAL RESET	

LD02609

* Function provided by condenser transducer.
** See operator's manual for a detailed description of low oil pressure and high oil flow shutdowns.
† Applicable if unit was shut down for 30 mins. or less.
†† Applicable if unit was shut down for greater than 30 mins.

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P.O. Box 1592, York, Pennsylvania USA 17405-1592

Form 160.52-PW1 (698)
Supersedes: 160.52-PW1 (1297)