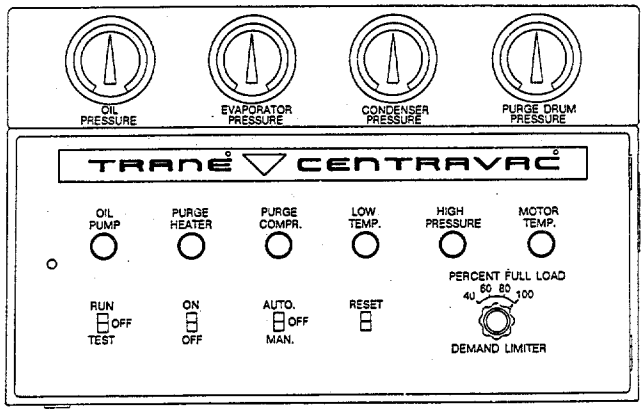
TRANE™

Wiring PNL-W-1

Library	**Service Literature**
Product Section	**Refrigeration**
Product	**Centrifugal Liq. Chiller, Water-Cooled**
Model	**PNL (Parts)**
Literature Type	**Wiring**
Sequence	**1**
Date	**September 1987**
File No.	**SV-RF-CTV-PNL-W-1-987**
Supersedes	

CenTraVac Instrument Panels



Models

Includes wiring diagrams for instrument panels used on these older model CenTraVacs:

CTV
CV
OCV
PCV
Single (50L-300L) CenTraVacs
Duplex (800-1200) CenTraVacs

Table of Contents

The Trane Company
La Crosse, Wisconsin 54601-7599
Printed in U.S.A.

General Information

Literature Change History

PNL-W-1 (August 1987)

Original issue of manual. Provides typical schematic and connection diagrams for many of the instrument panels used on older model CenTraVacs.

Overview

The typical wiring diagrams in this booklet are representative of the control wiring in each of the CenTraVac instrument panels listed. Because of the number of diagram revisions that occurred over the years---and the existence of "special" panels, it is possible that none of these diagrams exactly reflects the actual wiring in a particular instrument panel.

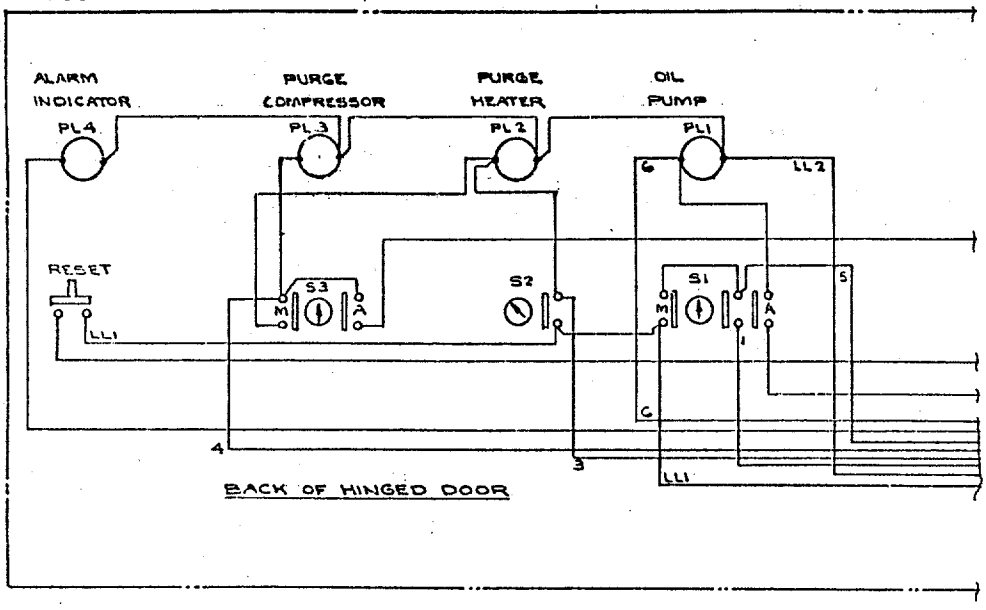
For specific electrical connection and schematic information, always refer to the wiring diagram pasted inside the instrument panel door.

Table 1 summarizes the instrument panels included in this wiring booklet by unit application; it also cross-references each "PNL-" number with the appropriate figure and page numbers.

Table 1
Early Model CenTraVac Instrument Panels

CenTraVac Model(s)	Instrument Panel No.	Panel Wiring Diagram Figure No.	Page Nos.
50L-300L Single CenTraVacs	PNL-0092	1	4, 5
	PNL-0103	2	6, 7
	PNL-0168	3	8, 9
	PNL-0171	6	14, 15
800-1200 Duplex CenTraVacs	PNL-0169	4	10, 11
	PNL-0170	5	12, 13
	PNL-0173	8	18, 19
CTV: 62.5-420 HP	PNL-0406	9	20, 21
	PNL-1476	14	28, 29
	PNL-1512, -2616	11	24, 25
	PNL-2617	24	48, 49
400 HP & Over	PNL-0172	7	16, 17
	PNL-0407	10	22, 23
	PNL-1477	15	30, 31
w/N & R Compressors	PNL-1211	11	24, 25
OCV: w/Electric Motor Drive	PNL-1211, -1512, -2616	11	24, 25
Hi Speed w/Electric Motors	PNL-2159, -2176	17	34, 35
	PNL-2498, -2500	19	38, 39
	PNL-2560, -2564, -4585, -5608	22	44, 45
	PNL-3408, -3409, -4587, -4634, -5610	26	52, 53
	PNL-6726, -6729	29	58, 59
	PNL-6728, -6731	31	62, 63
	PNL-8795, -8797	33	66, 67
w/Steam Turbine or Gas Engine Drives	PNL-2499	20	40, 41
	PNL-2561, -2565, -4586, -5609	23	46, 47
	PNL-2620	25	50, 51
	PNL-3410, -3411, -4594, -4637, -5617	27	54, 55
	PNL-6727, -6730	30	60, 61
	PNL-6732, -6733	32	64, 65
	PNL-8796, -8798	34	68, 69
PCV: 2C-5F, 0J-1J	PNL-1524	16	32, 33
	PNL-2490, -2539	18	36, 37
	PNL-2558, -4583, -5606	21	42, 43
CV : 9A-12F	PNL-1524	16	32, 33
	PNL-2490, -2539	18	36, 37
	PNL-2558, -4583, -5606	21	42, 43
6C-7G	PNL-2157	16	32, 33
	PNL-2491, -2540	18	36, 37
	PNL-2559	21	42, 43
6A-8C	PNL-4584, -5607	21	42, 43
LCV: 1C-3F	PNL-2107	16	32, 33
	PNL-2492, -2541	18	36, 37
	PNL-2562	21	42, 43
4D-7B	PNL-2158	16	32, 33
	PNL-2493, -2542	18	36, 37
	PNL-2563	21	42, 43
FCV: 0K-2A	PNL-4585, -5608	22	44, 45
LOCV	PNL-4596	28	56, 57
	PNL-5618	16	32, 33
Miscellaneous	PNL-1267	12	26
(Time Delay Panel)	*PNL-1268*	*13*	*27*

Figure 1
Wiring for PNL-0092, Pneumatic Instrument Panel for 50L-300L Single CenTraVacs



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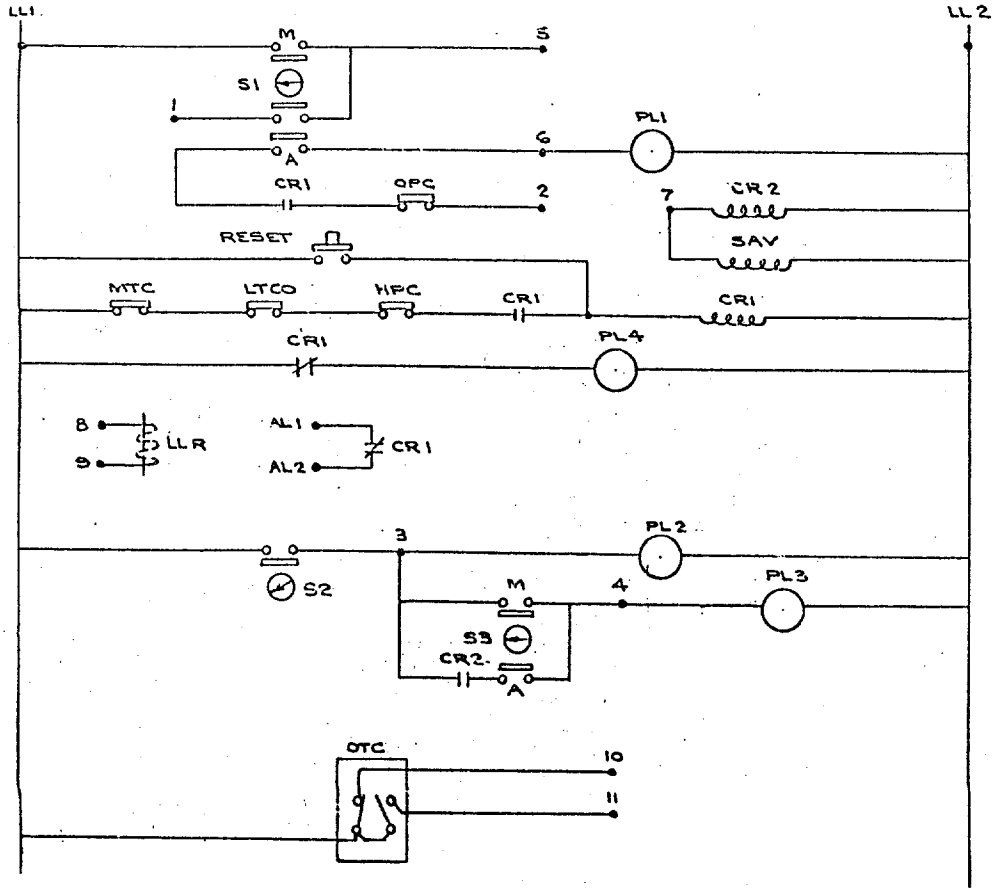
ELECTRICAL LINE DIAGRAM



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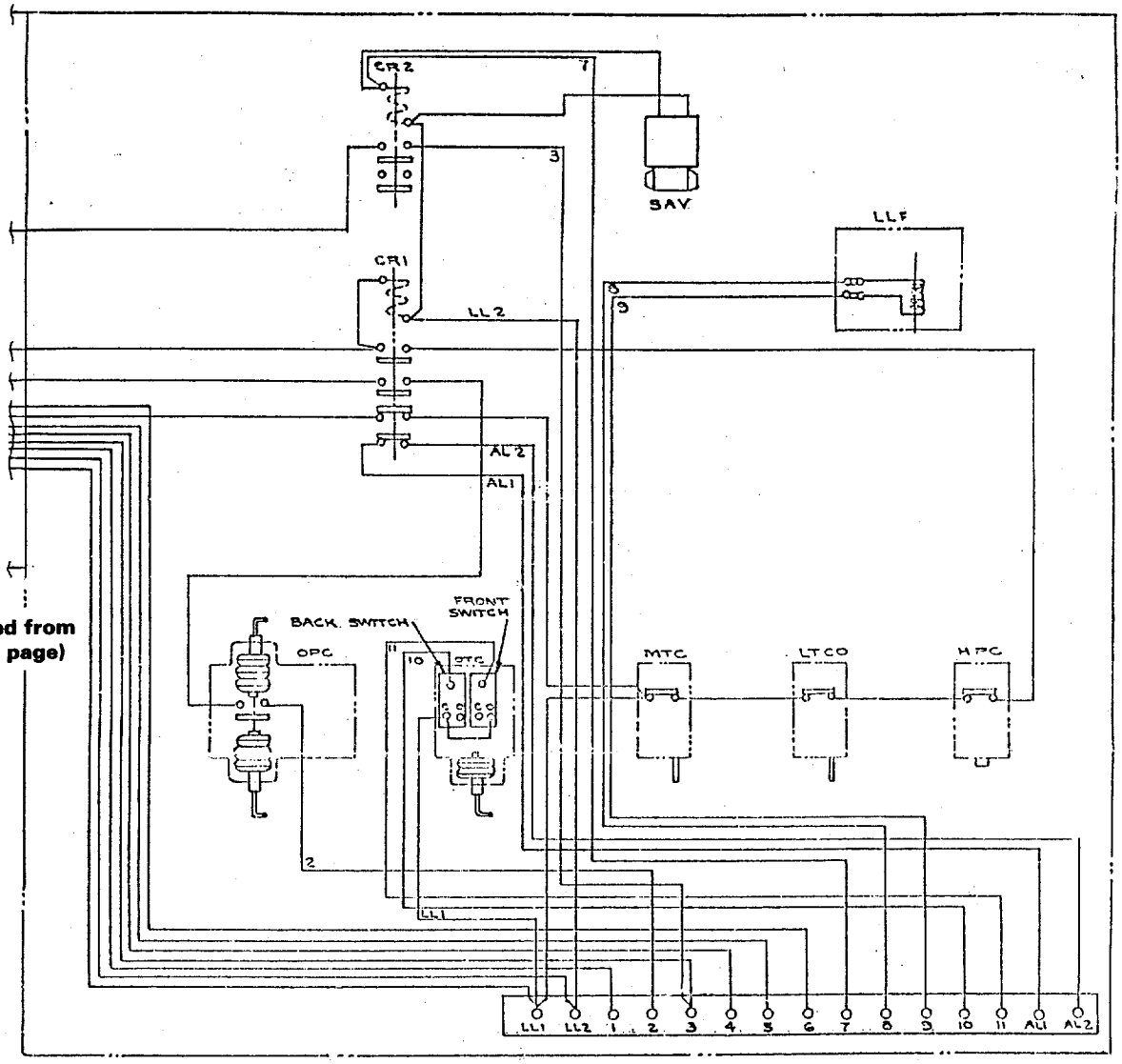


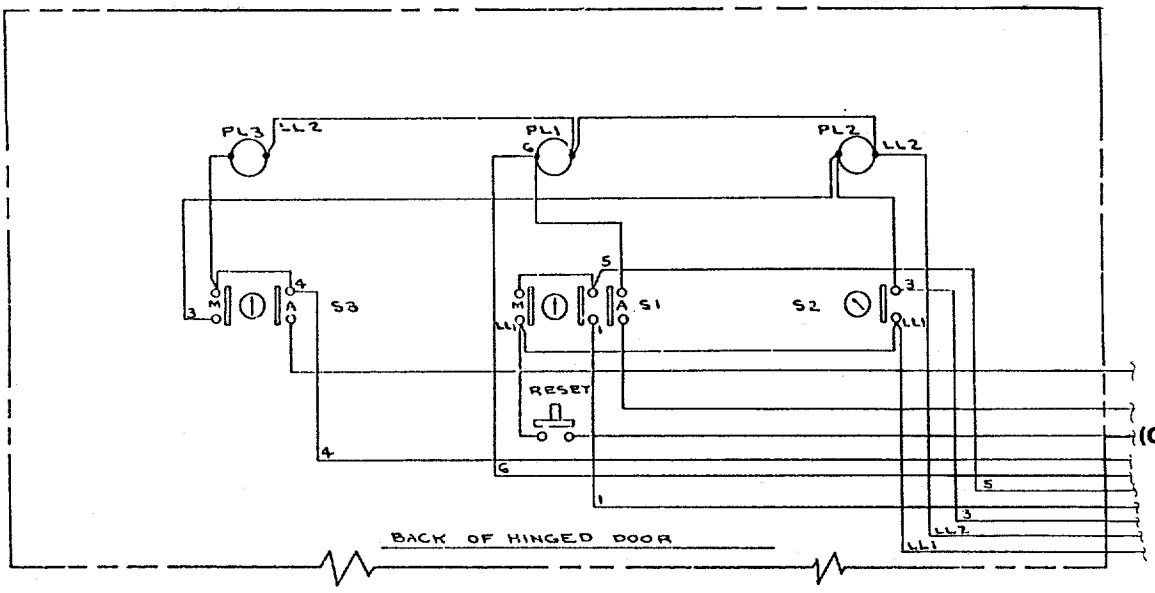
INTERIOR OF CABINET

WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

Drwg. 2301-1095A

Figure 2
Wiring for PNL-0103,
220-Volt Instrument Panel for
50L-300L Single CenTraVacs



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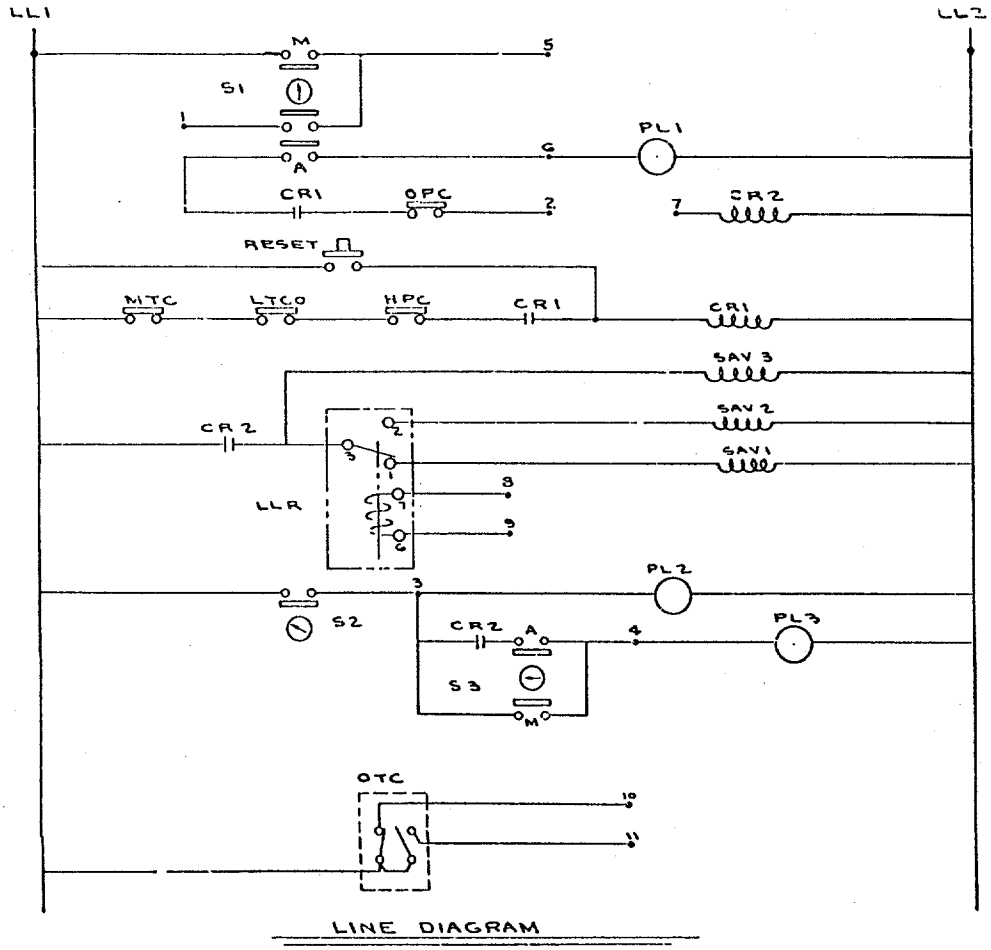

LINE DIAGRAM

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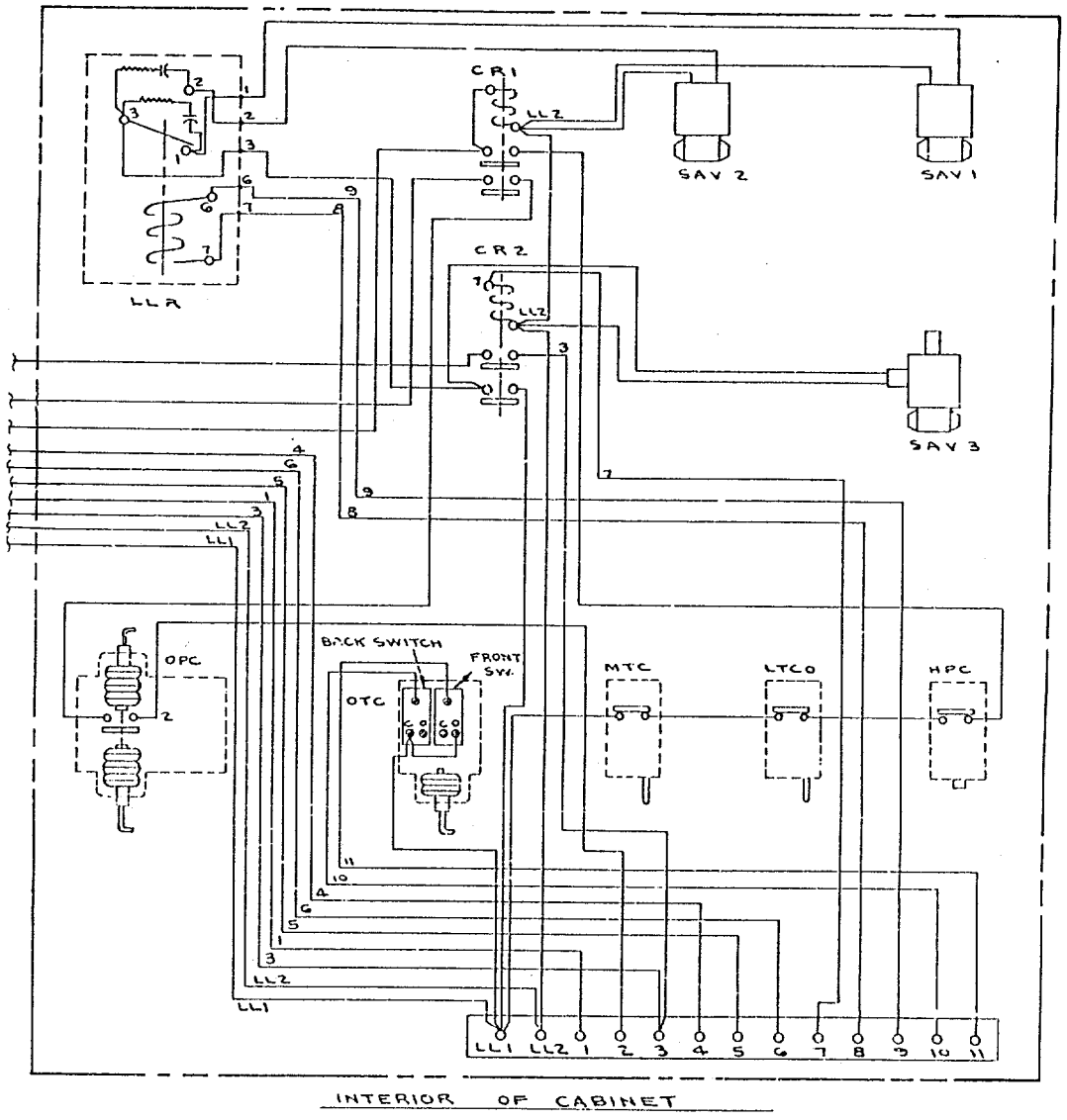
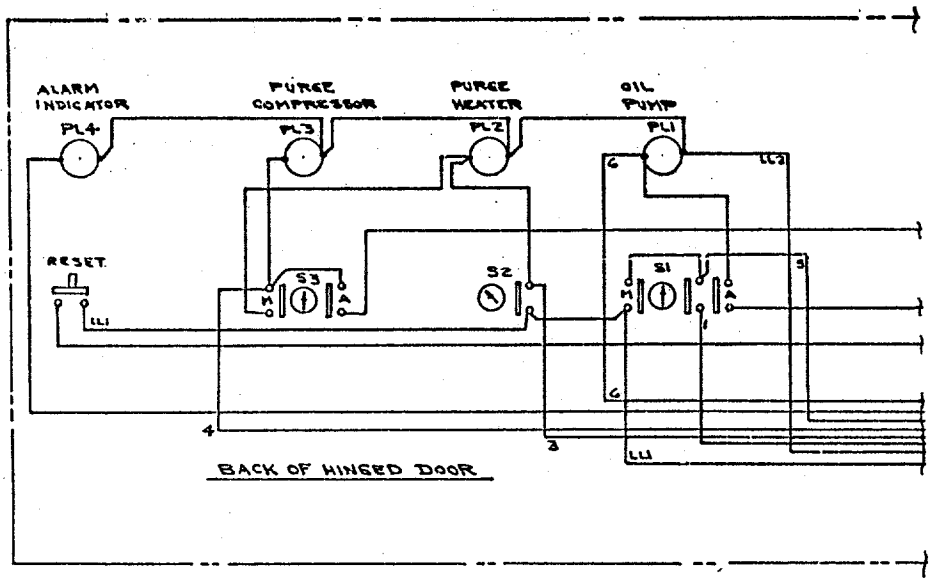


WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

Drwg. 4510-2225C

Figure 3
Wiring for PNL-0168,
Pneumatic Instrument Panel for
50L-300L Single CenTraVacs



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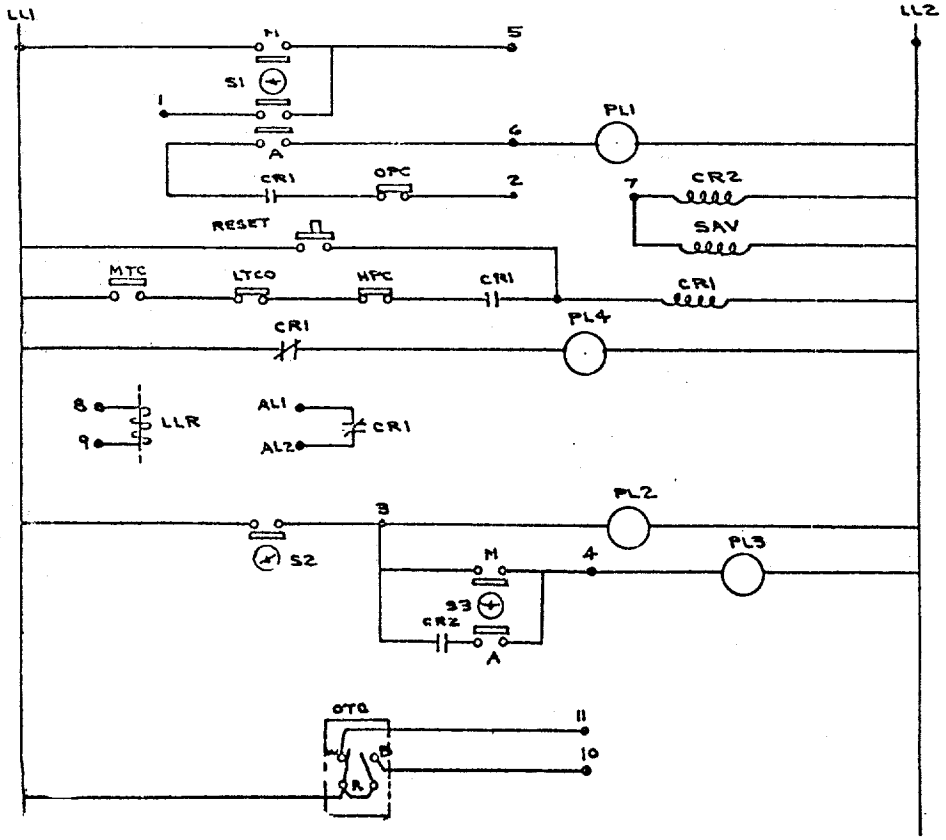
ELECTRICAL LINE DIAGRAM



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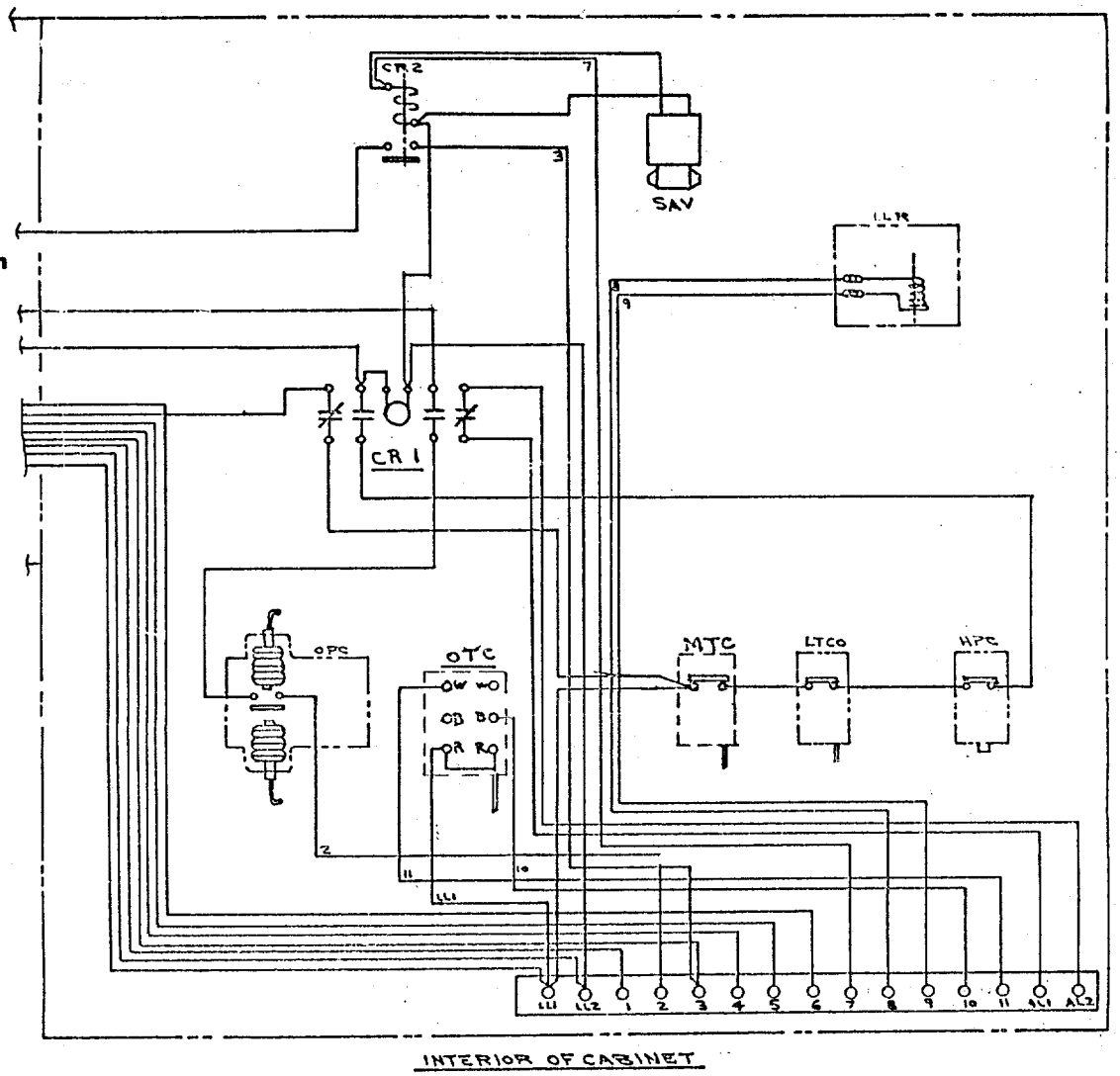
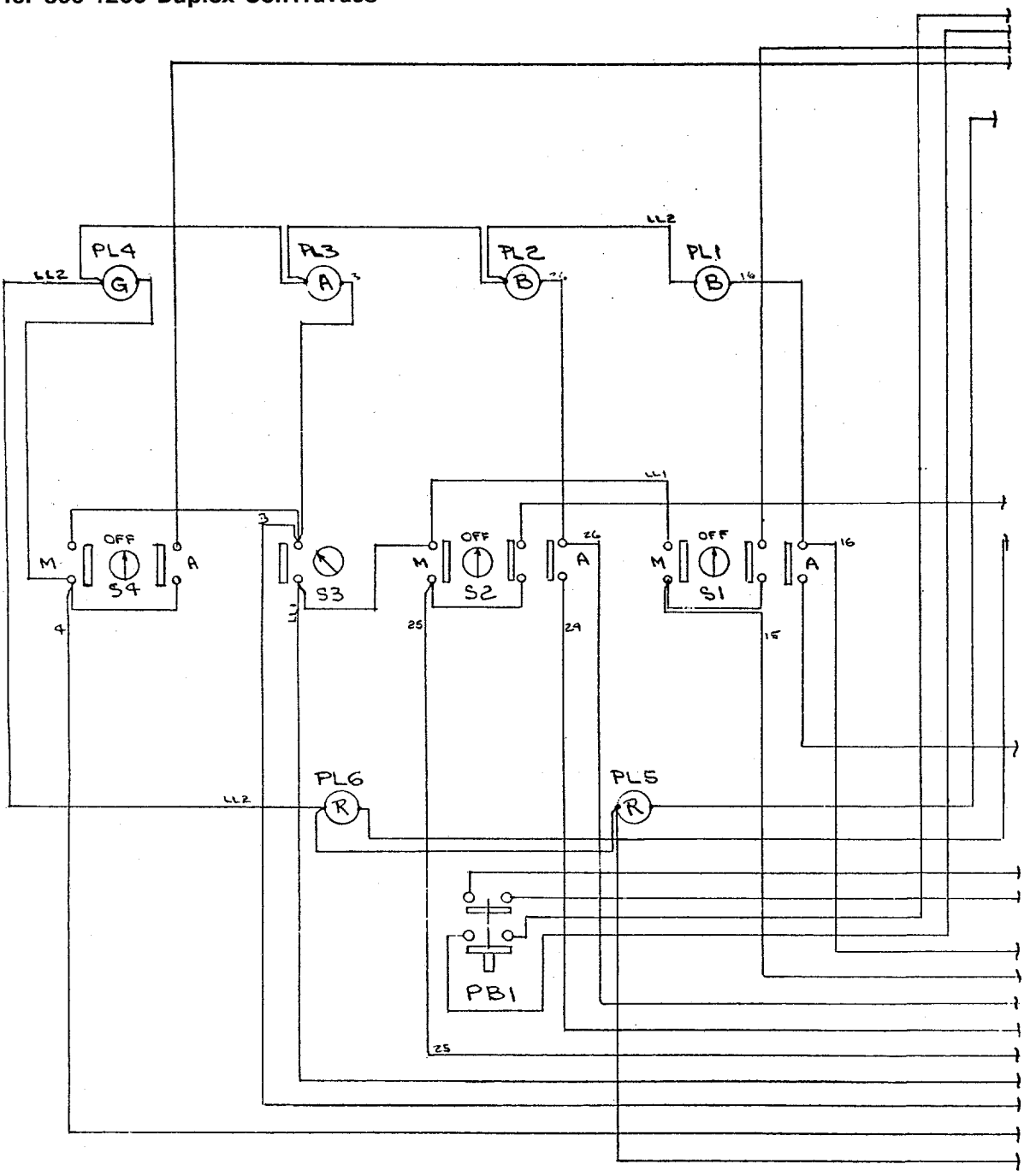


WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

Drwg. 2301-2052B

Figure 4
Wiring for PNL-0169,
115-Volt Main Instrument Panel (Pneumatic)
for 800-1200 Duplex CenTraVacs



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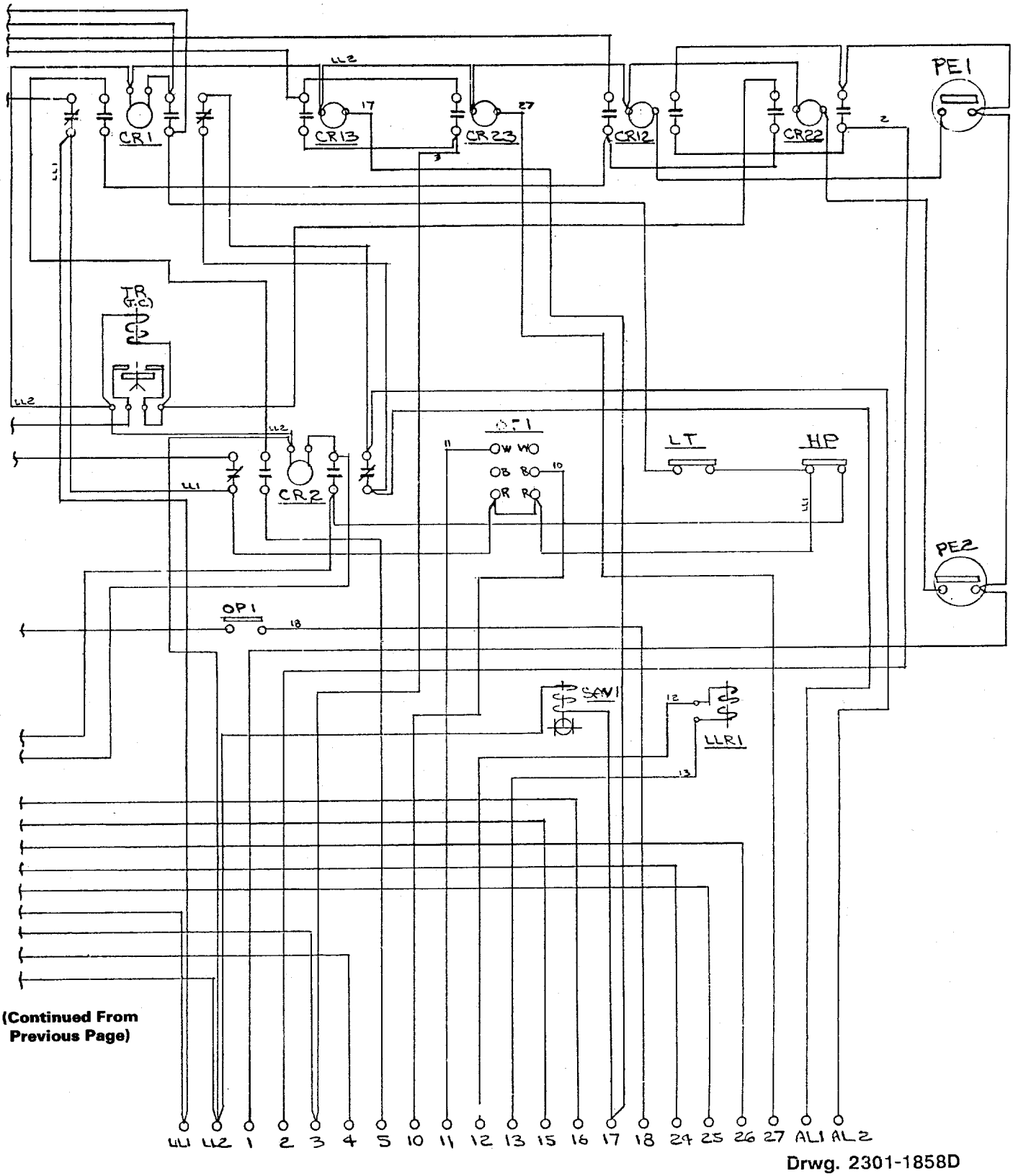
WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.



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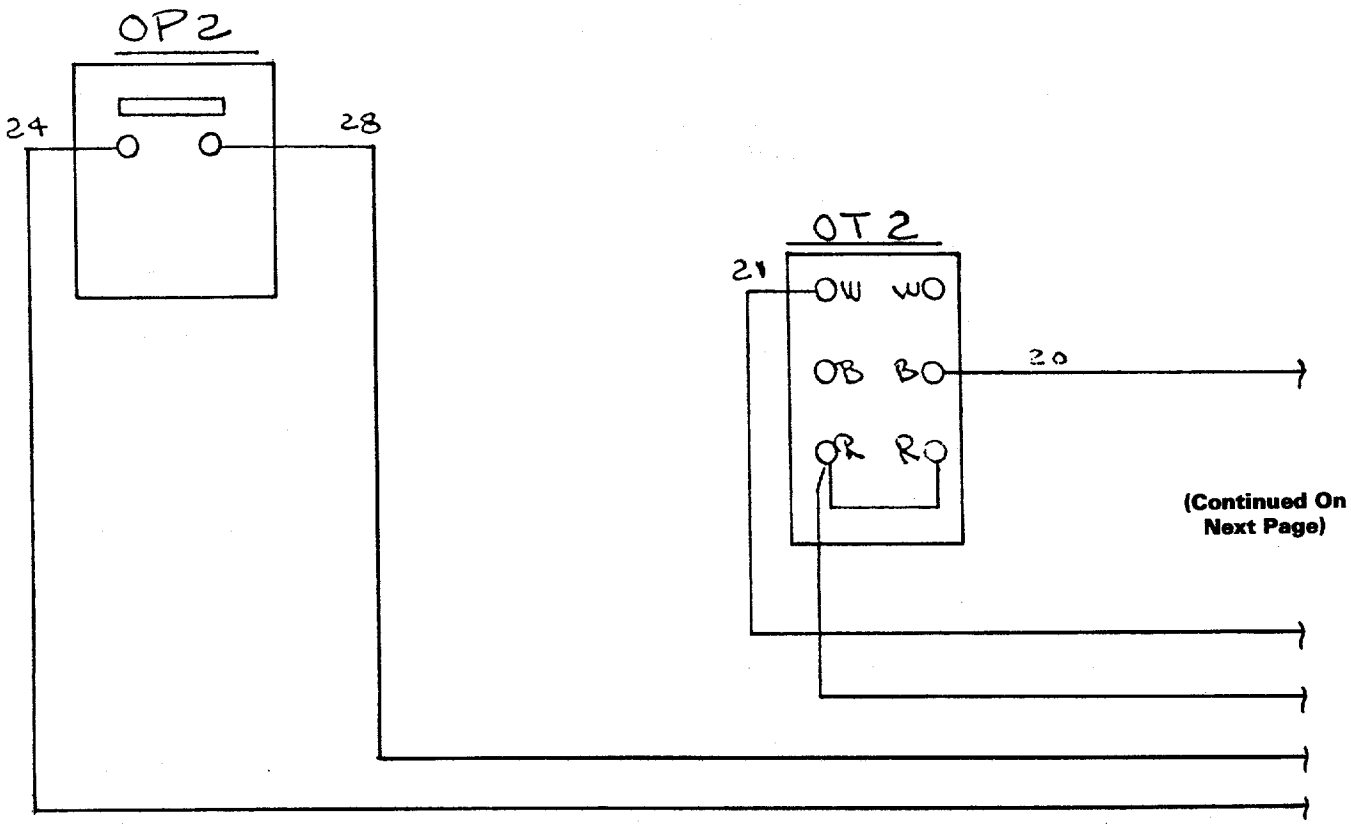
Drwg. 2301-1858D

Figure 5
Wiring for PNL-0170,
115-Volt Auxiliary Instrument Panel for
800-1200 Duplex CenTraVacs



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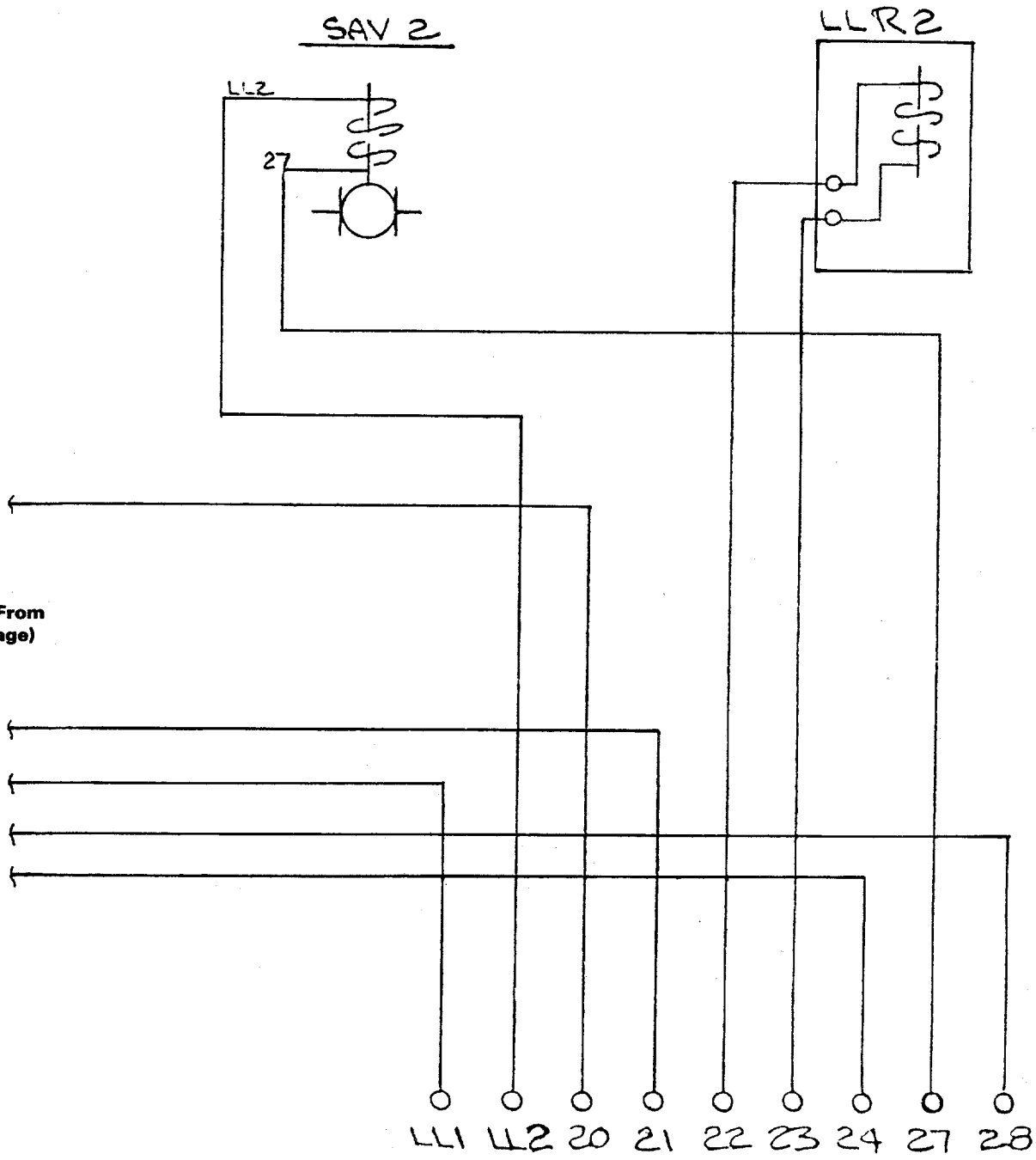
WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.



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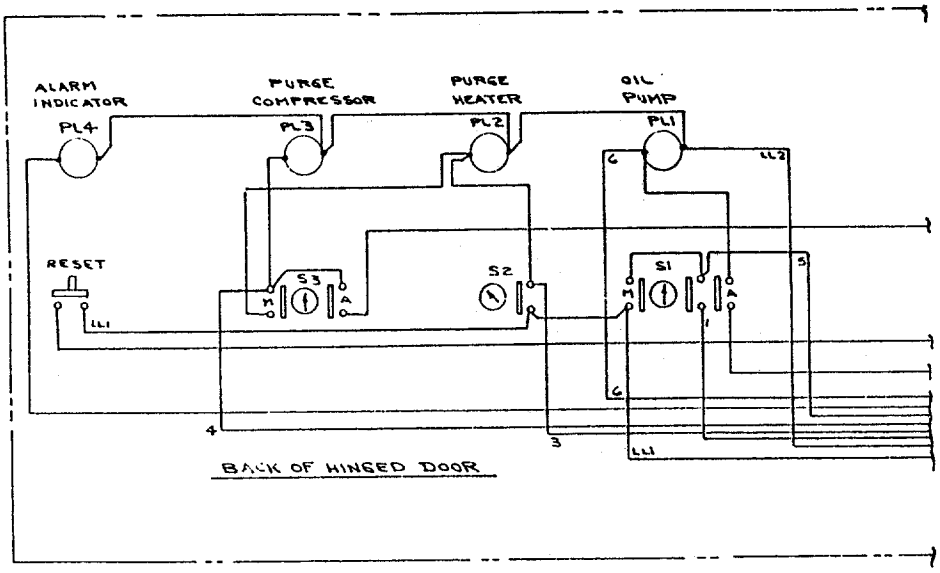
Drwg. 2301-1859

Figure 6
Wiring for PNL-0171,
Instrument Panel for 50L-300L
Single CenTraVacs



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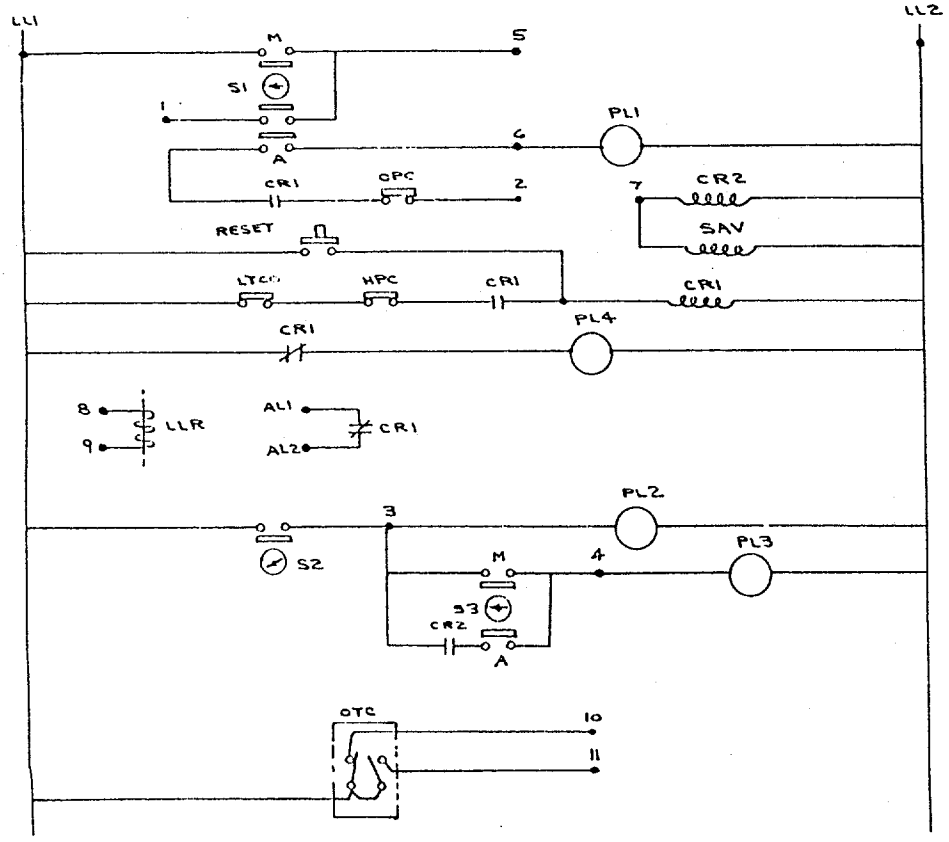
ELECTRICAL LINE DIAGRAM



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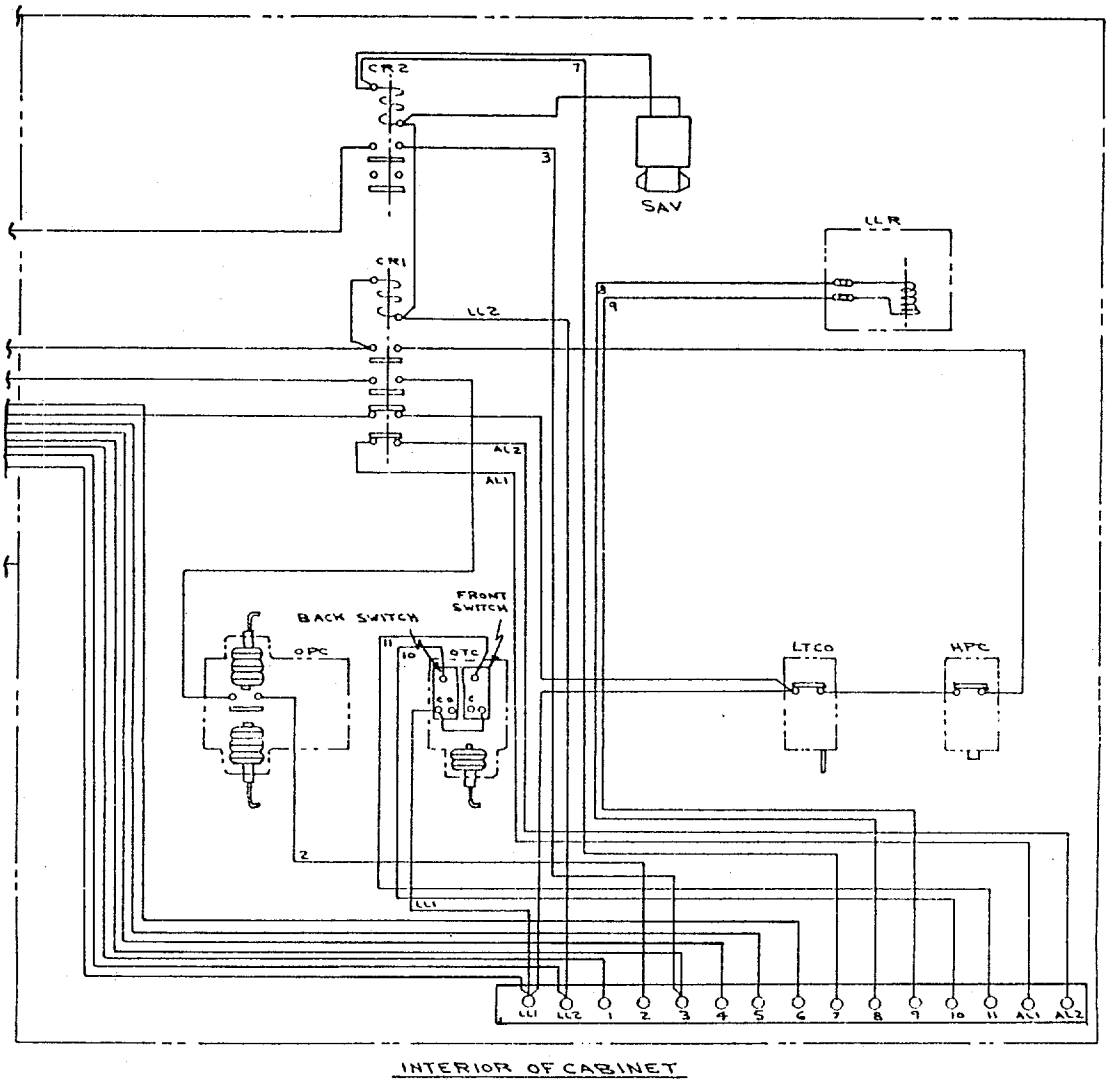
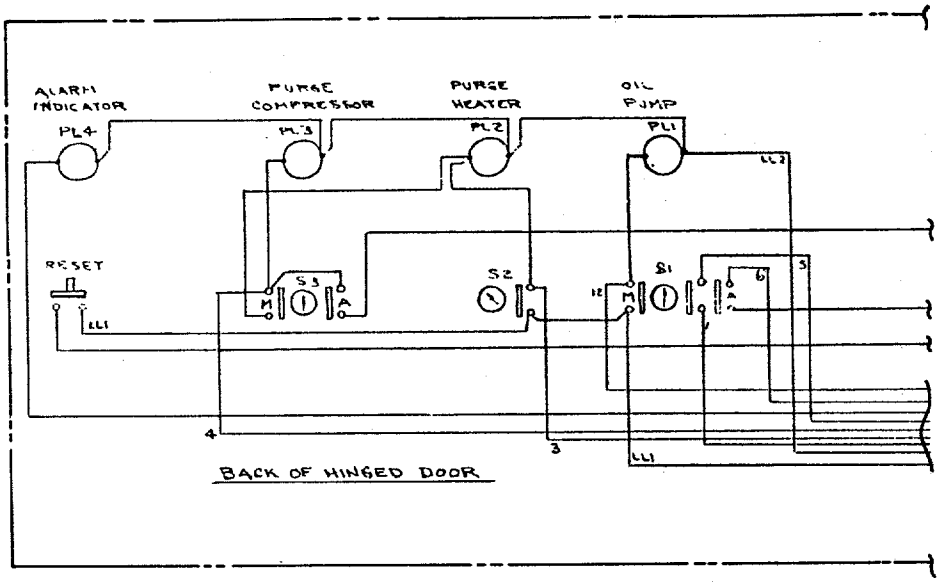


WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

Drwg. 2301-1908

Figure 7
Wiring for PNL-0172,
Main Instrument Panel (Pneumatic)
for CTVs (400 Hp and Over)



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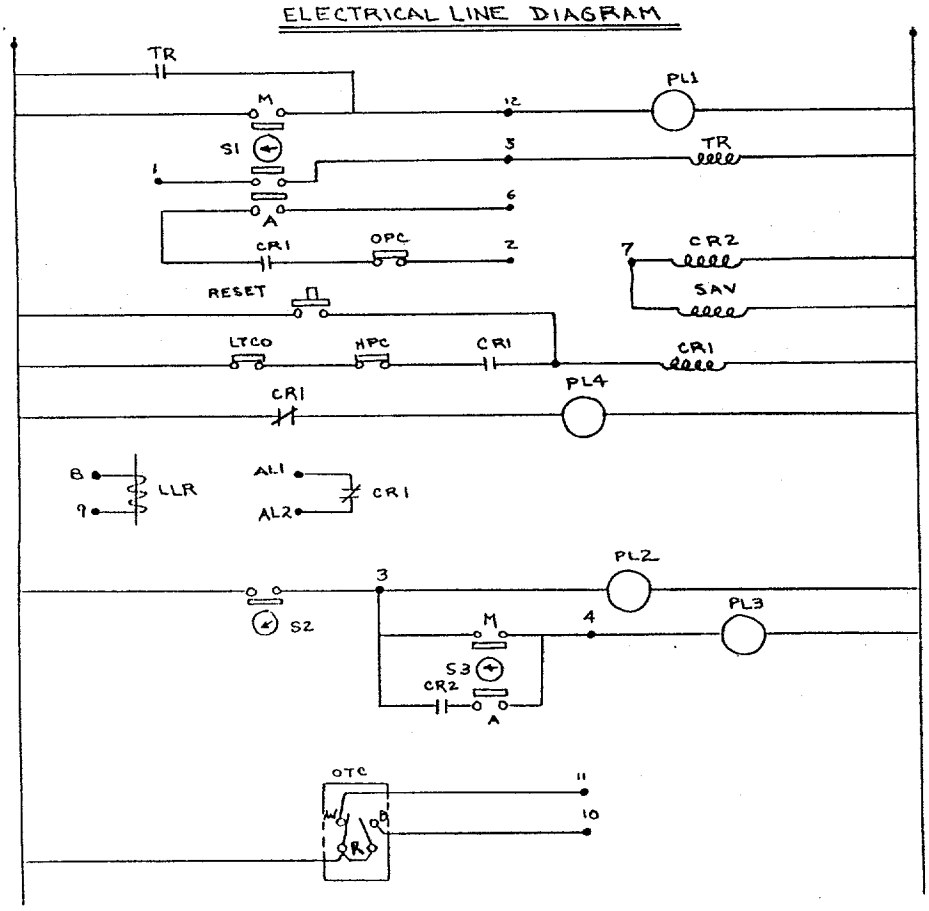

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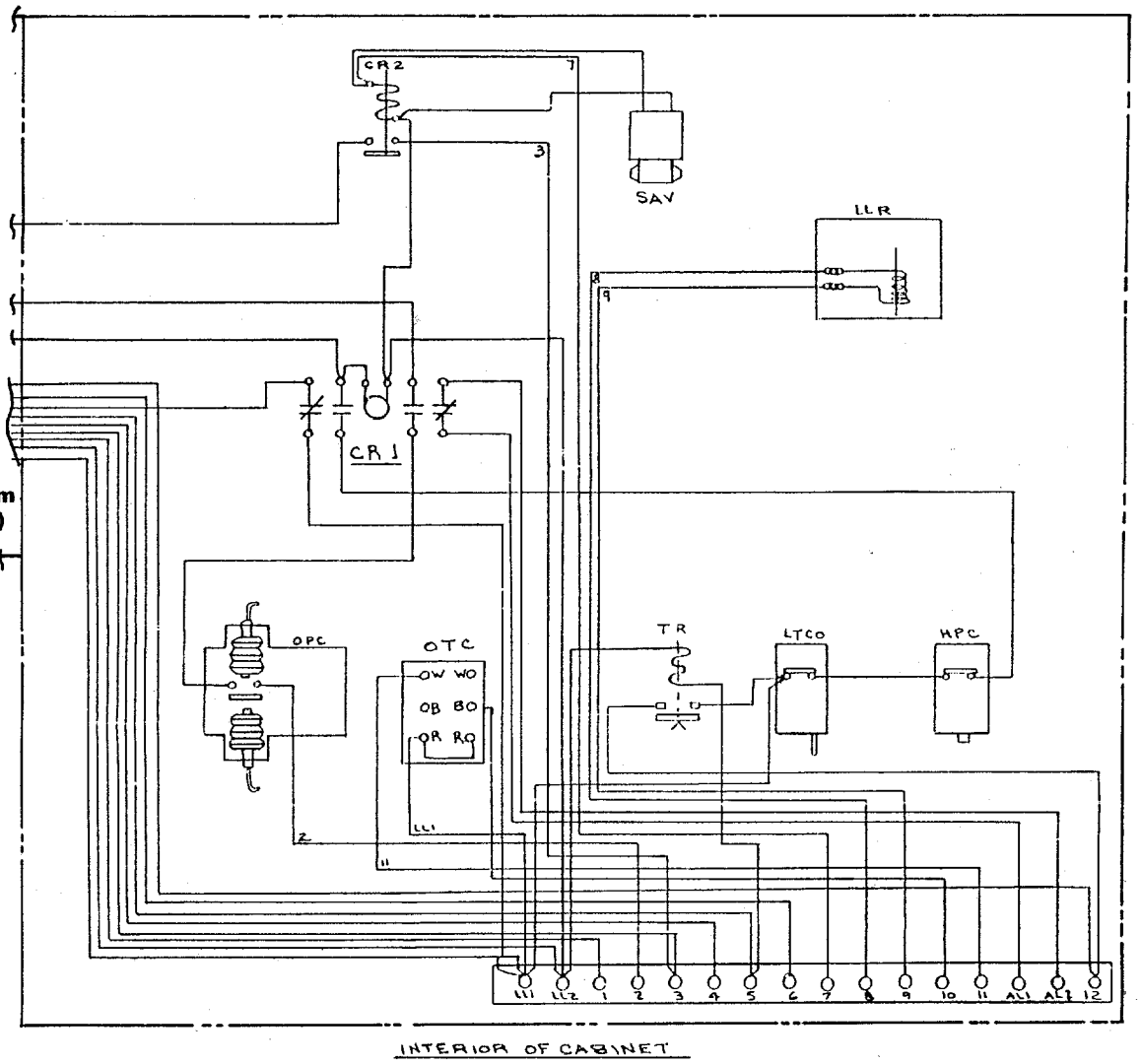
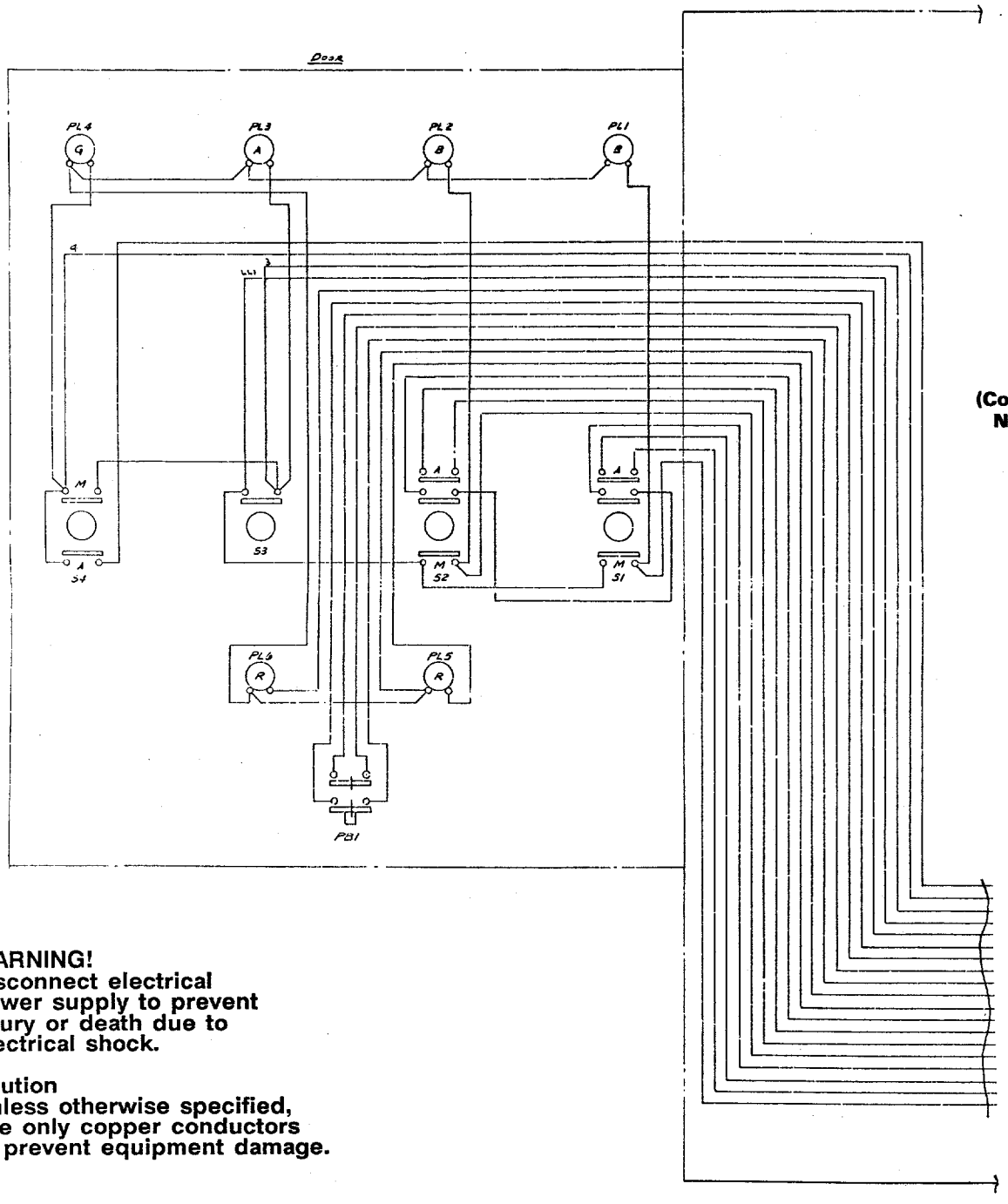


WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

Drwg. 2301-2053

Figure 8
Wiring for PNL-0173,
Main Instrument Panel (Pneumatic)
for 800-1200 Duplex CenTraVacs



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WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

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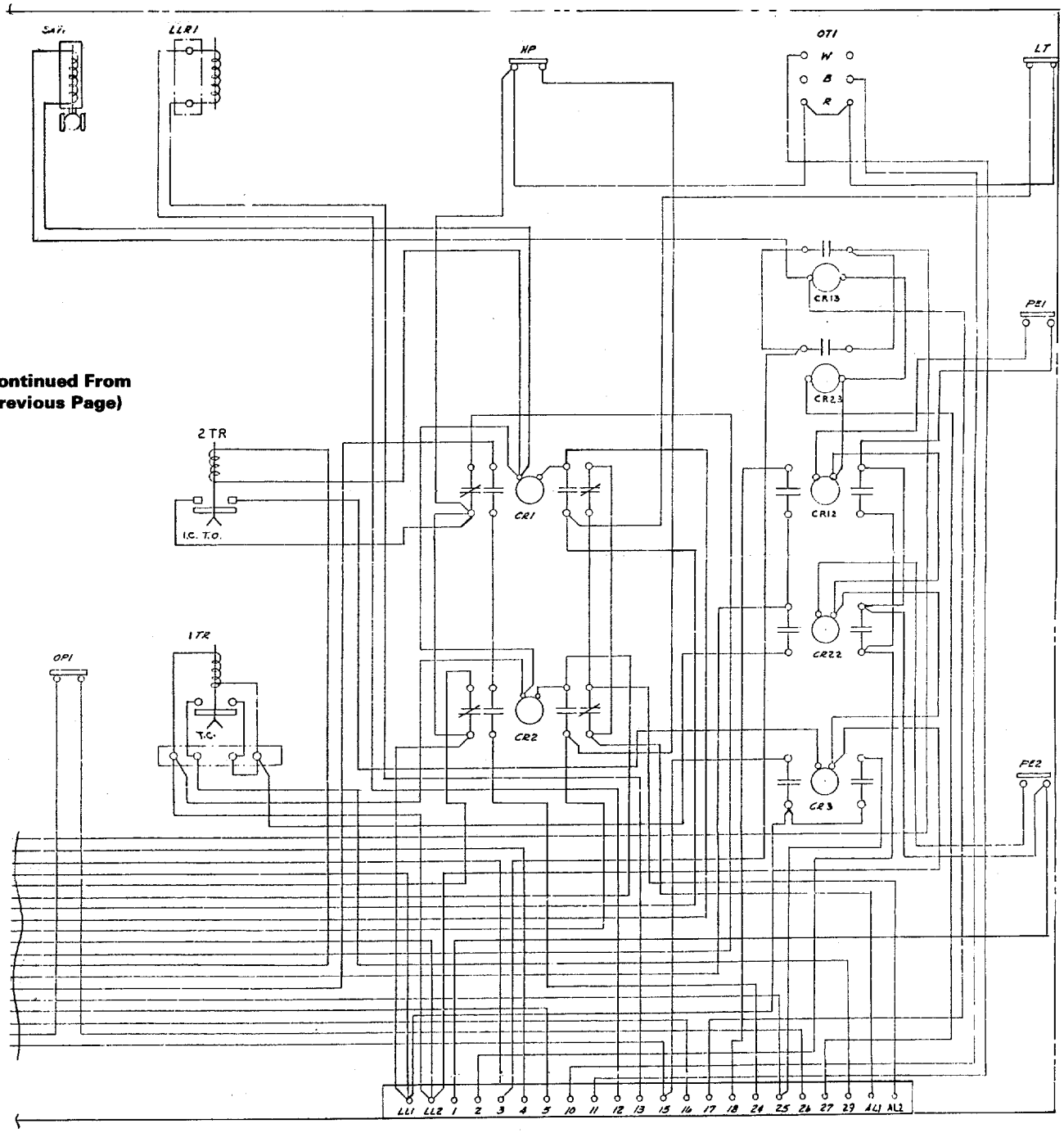
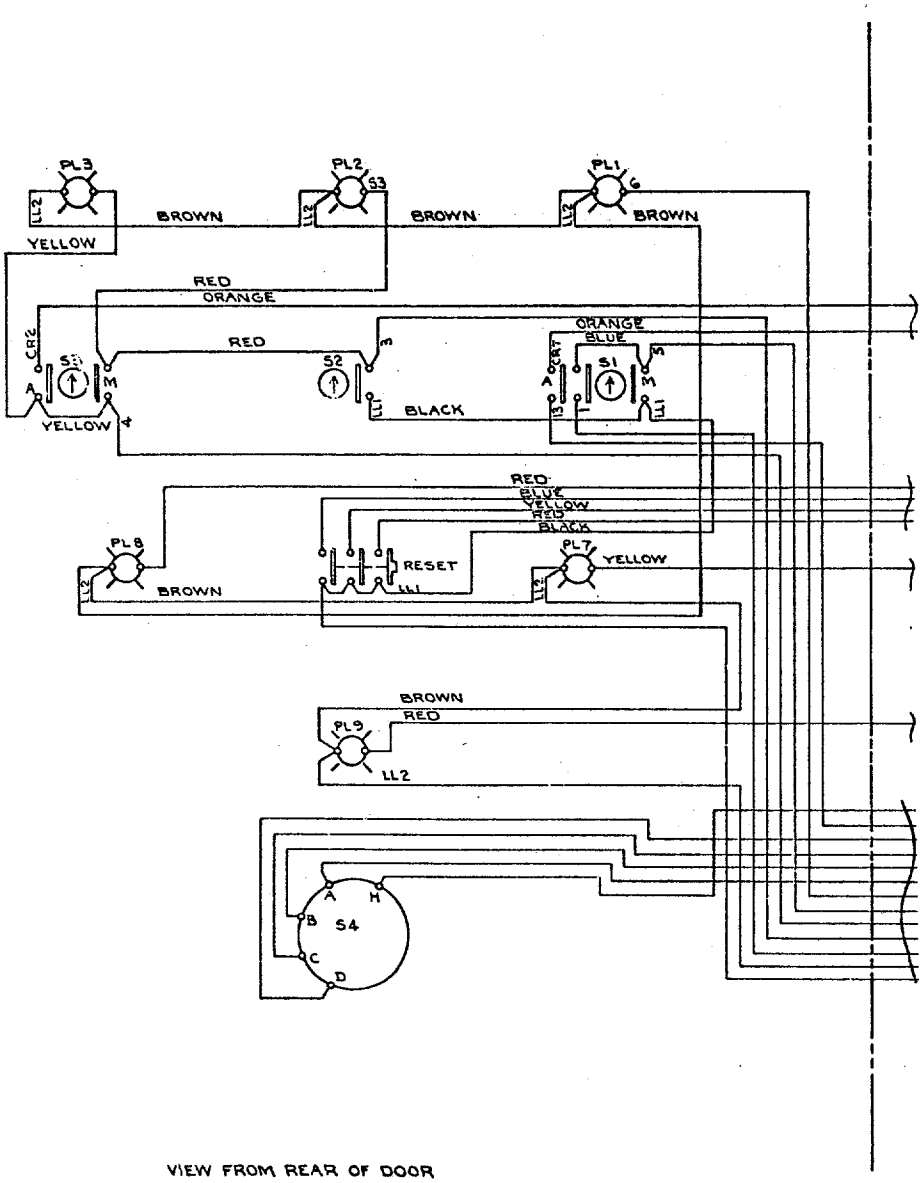


Drwg. 2301-1838C

Figure 9
Wiring for PNL-0406,
Instrument Panel w/Demand Limiter and
Failure Indication for 62.5-420 HP CTVs



VIEW FROM REAR OF DOOR

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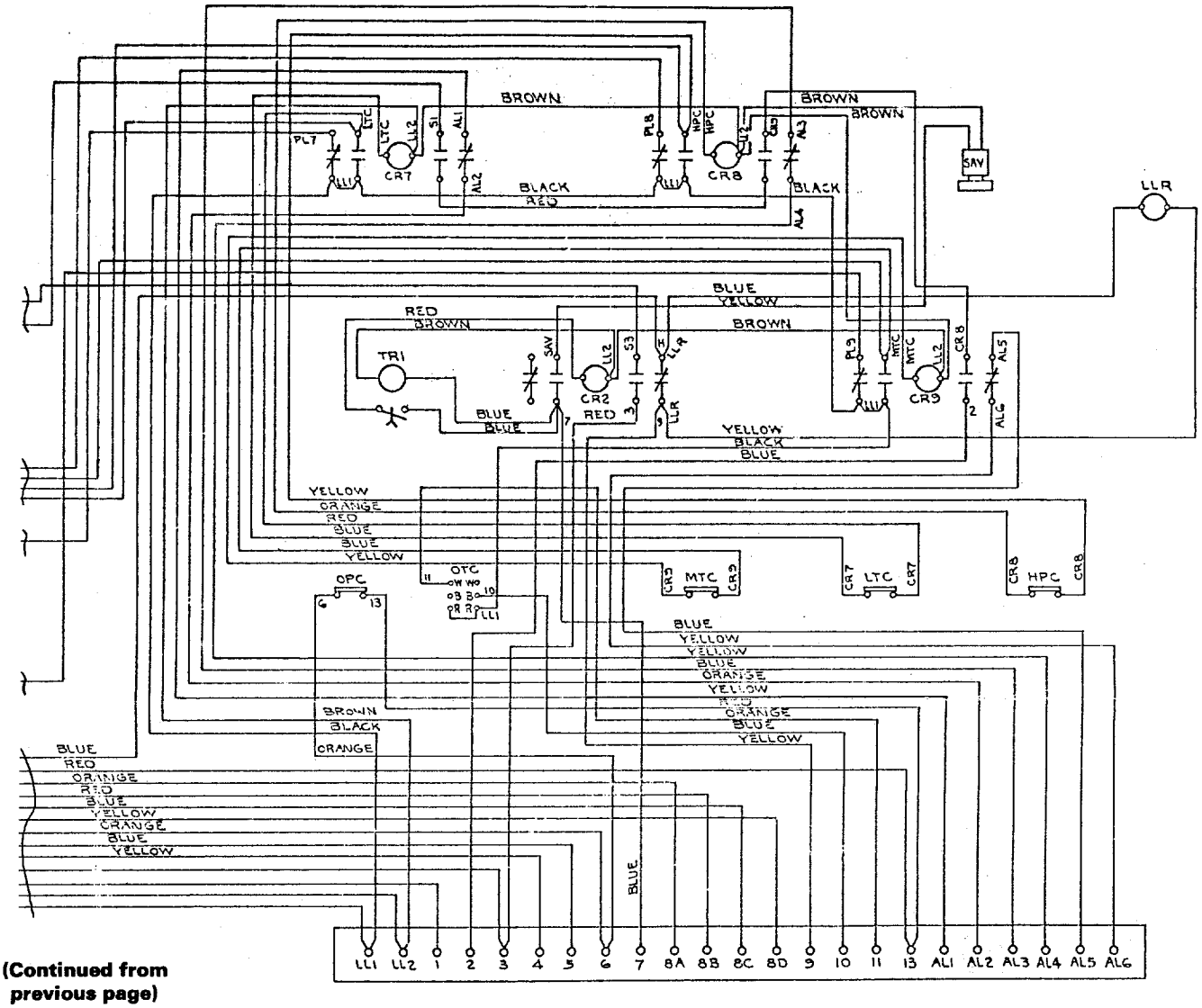

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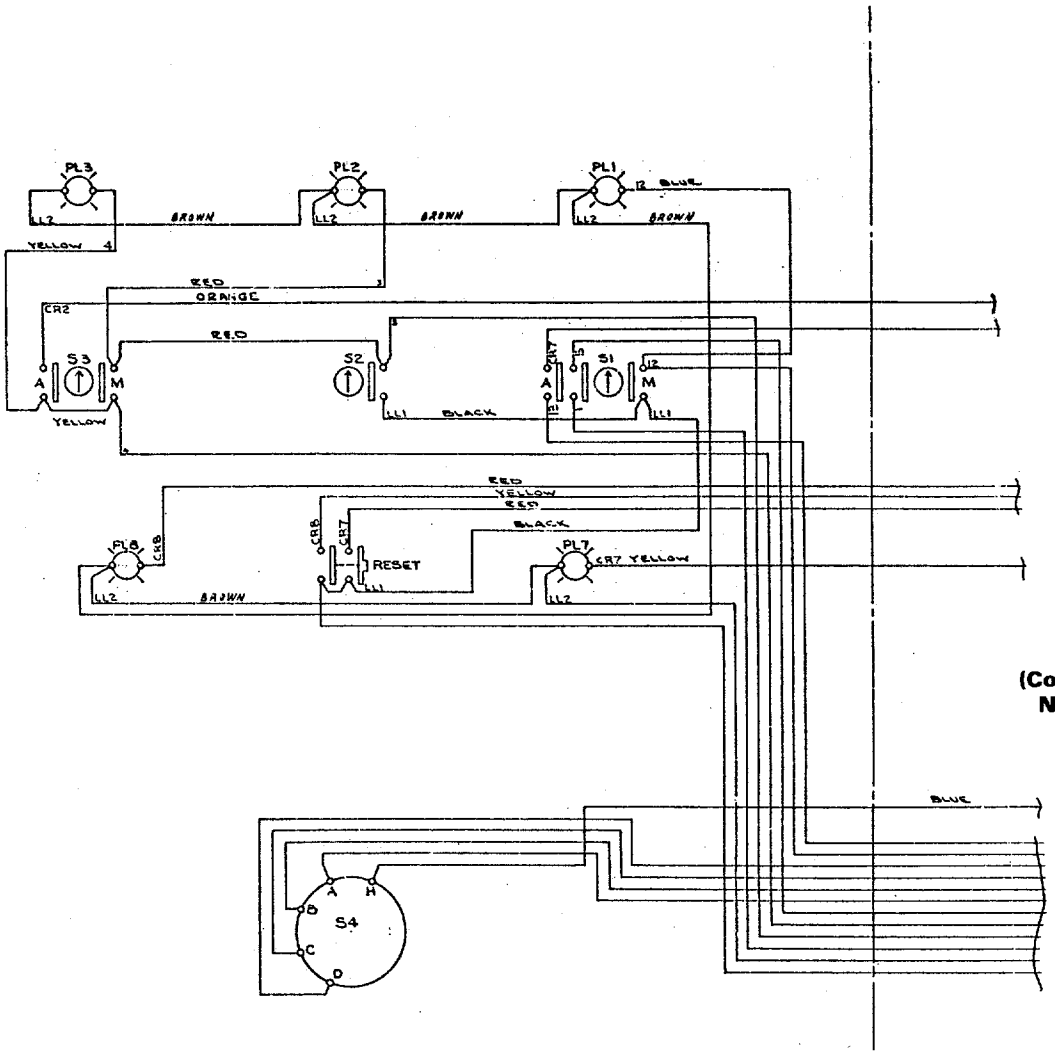
VIEW INTO CABINET

WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

Drwg. 2301-2850H

Figure 10
Wiring for PNL-0407,
Instrument Panel w/Demand Limiter and
Failure Indication for Gas-Cooled CTVs
(Over 400 Hp)



VIEW OF REAR OF DOOR

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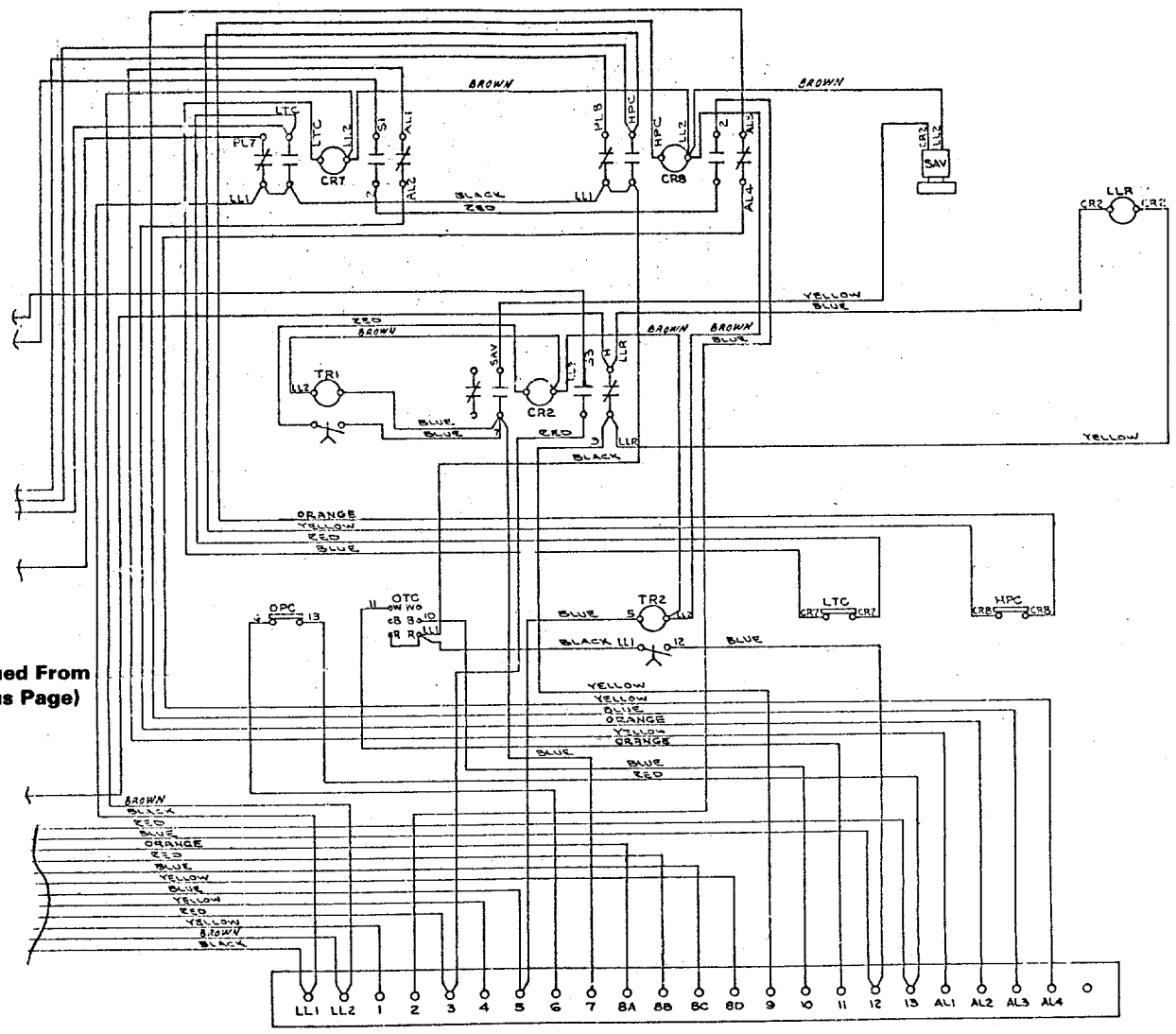
WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.



VIEW INTO CABINET

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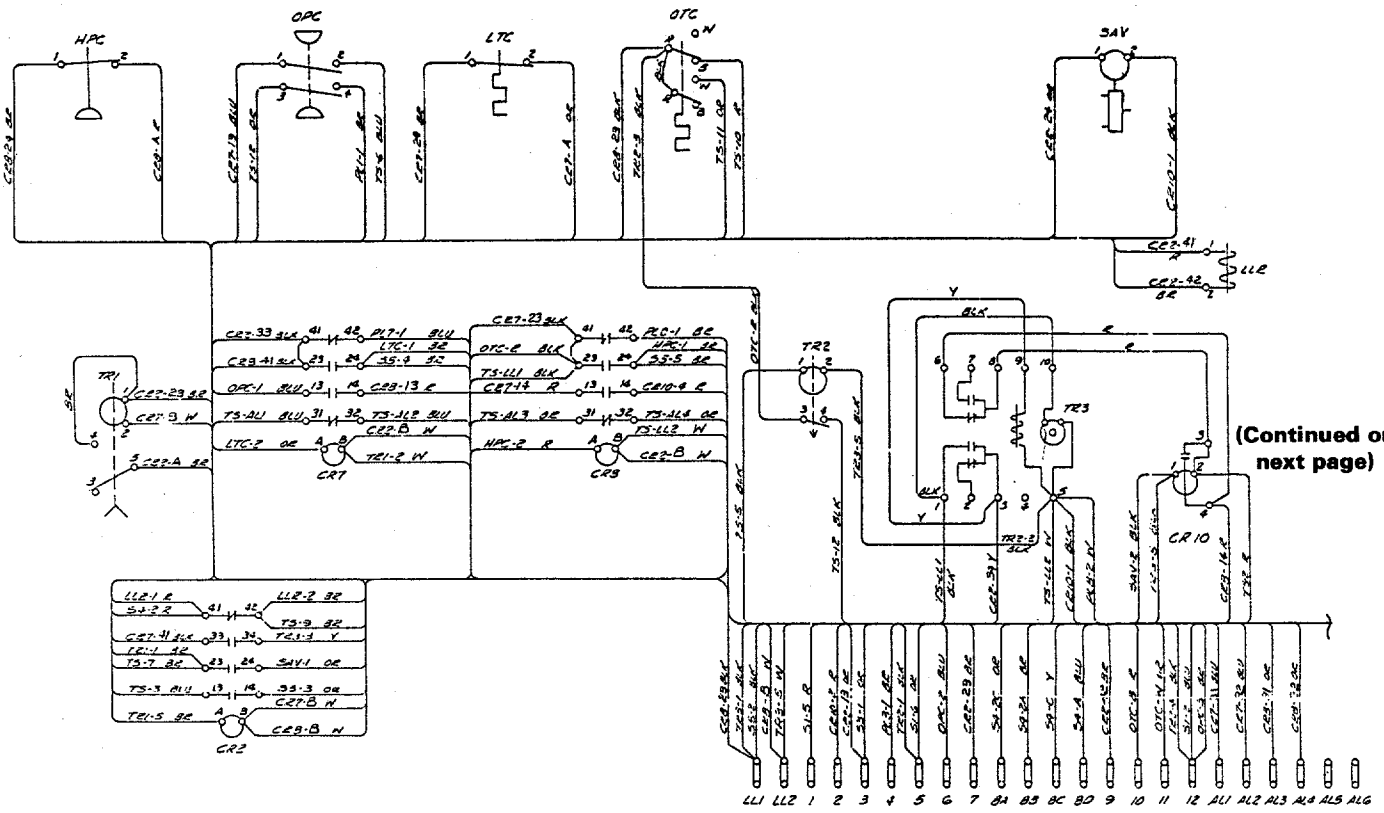
Drwg. 2301-2721E

Figure 11
Wiring for Instrument Panels PNL-1211, PNL-1512 and PNL-2616 (See Note)



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NOTES: - TR3 IS AN INTERVAL TIMER WHICH OPERATES AS FOLLOWS:

1. WHEN THE OPERATING SOLENOID IS ENERGIZED, THE NO CONTACTS CLOSE, THE NC CONTACTS OPEN IMMEDIATELY, AND A TIMING CYCLE IS INITIATED.
2. AT THE TERMINATION OF THE TIMING PERIOD, THE CLOCK MOTOR RESETS THE CONTACTS TO THEIR NORMAL POSITION INDEPENDENT OF THE OPERATING SOLENOID. THE CLOCK MOTOR RUNS CONTINUOUSLY REGARDLESS OF SOLENOID OR TIME CYCLE.
3. THE OPERATING SOLENOID MUST BE DE-ENERGIZED BEFORE A TIMING CYCLE CAN BE INITIATED.

WIRE COLOR CODE

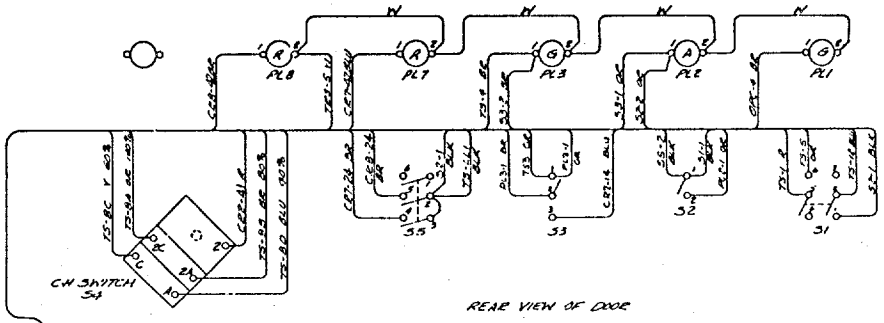
BLACK	BLK
RED	R
ORANGE	OR
YELLOW	Y
BLUE	BLU
BROWN	BR
WHITE	W

Note:

PNL-1211 = Used on 2-Stage OCVs w/Electric Motor Drives, and on Gas-Cooled CTVs w/ N and R Compressors (60 Hz)

PNL-1512 = Used on OCVs w/Electric Motor Drives, and on Gas-Cooled CTVs

PNL-2616 = Used on 2-Stage OCVs w/Electric Motors, and on Gas-Cooled CTVs (60 Hz)



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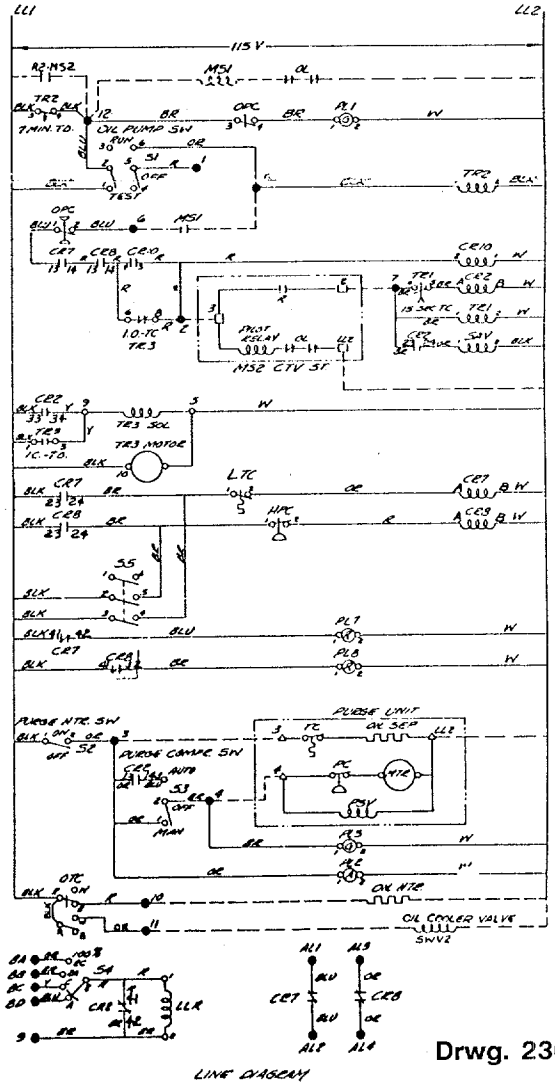
WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

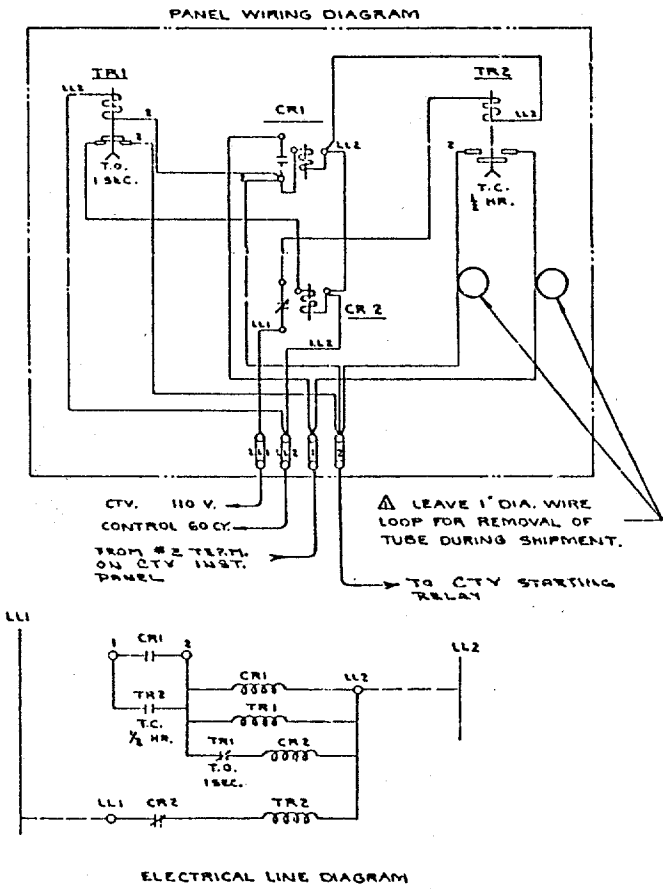
Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

● INDICATES TERMINAL ON INSTRUMENT PANEL
□ INDICATES TERMINAL ON CTV STARTER.
△ INDICATES TERMINAL ON PURGE UNIT.
---- INDICATES EXTERNAL WIRING.



Drwg. 2303-1439B

Figure 12
Wiring for PNL-1267,
115-Volt Time Delay Panel
(See Note)



Note: PNL-1267 is a time delay panel designed to prevent the centrifugal compressor from restarting for 30 minutes after each start. To cancel this "restart inhibit" timing function, momentarily jumper Terminals 1 and 2.

Following is the panel's operating sequence:

Condition 1

Assume that the machine started within the past 30 minutes. PE closes. The machine will not start at this time (because the TR2 contacts are not closed), but will have to wait for the timer to complete its 30-minute cycle from the previous PE closing.

WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

Condition 2

Assume that the machine has not started within the past 30 minutes. PE now closes. The following sequence takes place:

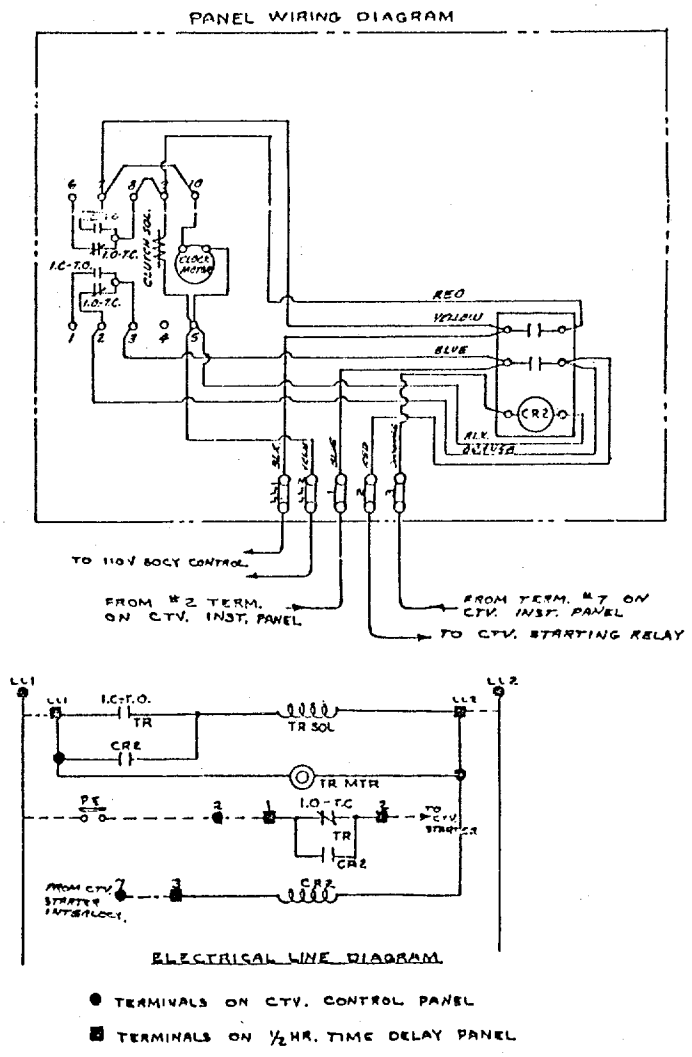
TR2 is timed out; therefore, its contacts are closed. CR1 picks up and locks in. CR2 is energized, opening its contacts, thus resetting TR2 by de-energizing its coil and opening the TR2 contacts.

Simultaneously, TR1 starts timing. One second later, its contacts open, de-energizing CR2 which closes its contacts. This, in turn, energizes TR2 and starts another 30-minute timing cycle.

Note that timer TR2 is reset and starts its 30-minute timing when the PE closes—not when it opens; therefore, when the machine starts and then stops in less than 30 minutes, it cannot start again until TR2 completes its 30-minute timing period.

Drwgs. 2850-0671M, 4510-6630B

Figure 13
Wiring for PNL-1268,
115-Volt Time Delay Panel



LEGEND

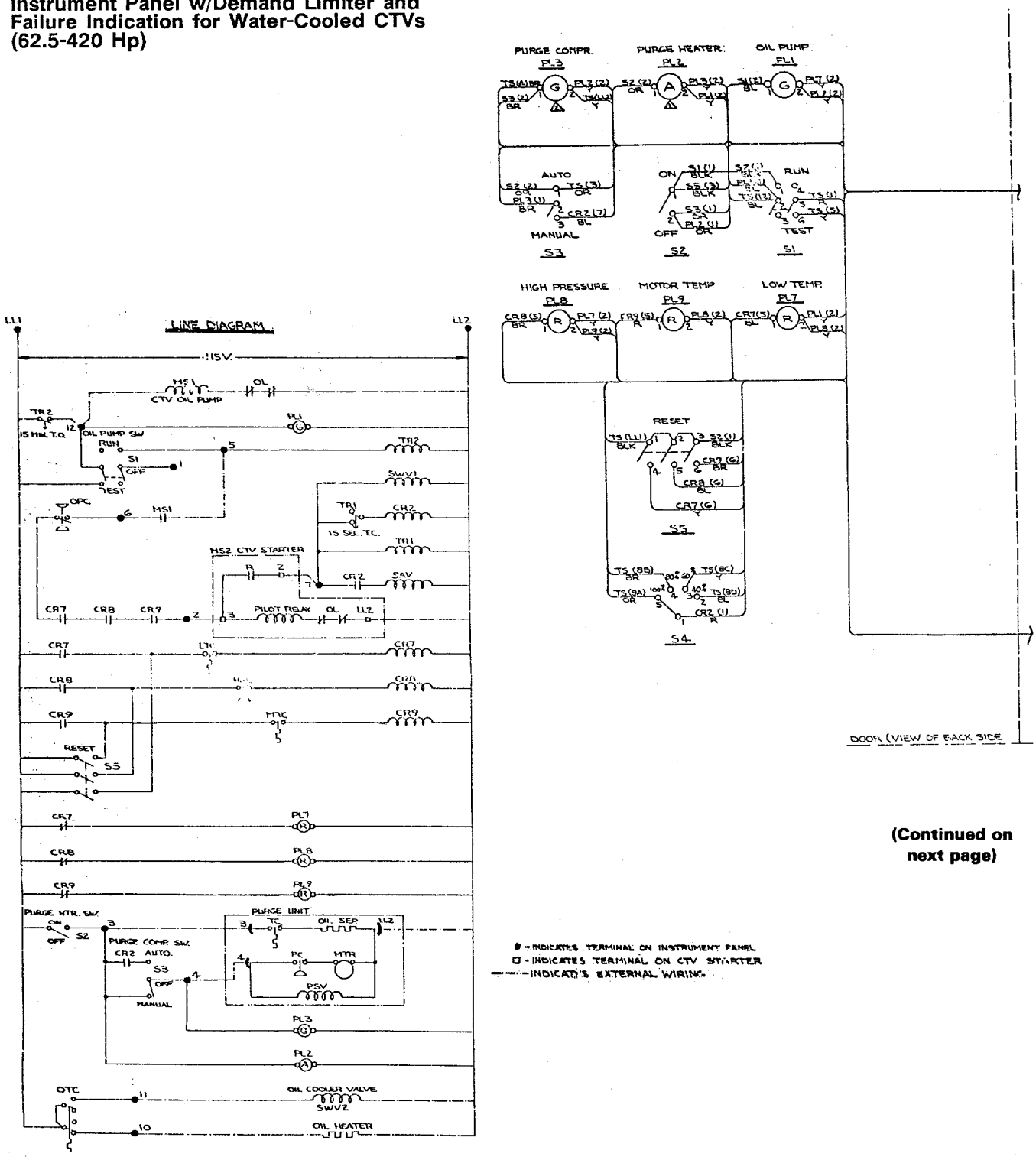
CTV.	*CENTRAVAC*
I.C.-T.O.	*INSTANT CLOSE, TIME TO OPEN*
I.O.-T.C.	*INSTANT OPEN, TIME TO CLOSE*
MTR.	*MOTOR*
SOL	*SOLENOID*
TR	*TIME DELAY RELAY*

WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

Drwg. 2850-1527AA

Figure 14
Wiring for PNL-1476,
Instrument Panel w/Demand Limiter and
Failure Indication for Water-Cooled CTVs
(62.5-420 Hp)



● = INDICATES TERMINAL ON INSTRUMENT PANEL
□ = INDICATES TERMINAL ON CTV STARTER
——— = INDICATES EXTERNAL WIRING

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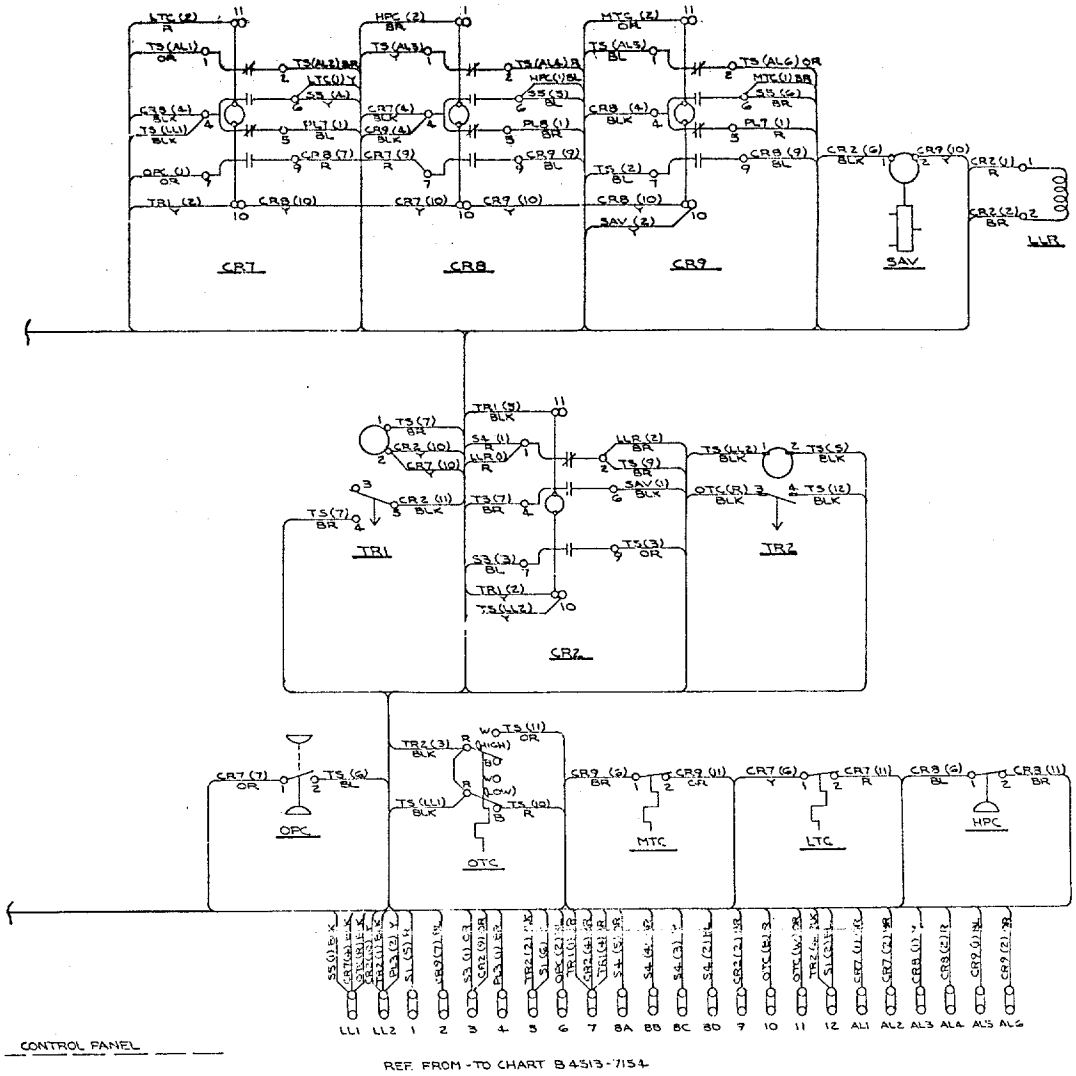

COLOR CODE
BLACK —— BLK
RED —— R
ORANGE —— OR.
YELLOW —— Y.
BLUE —— BL
BROWN —— BR.

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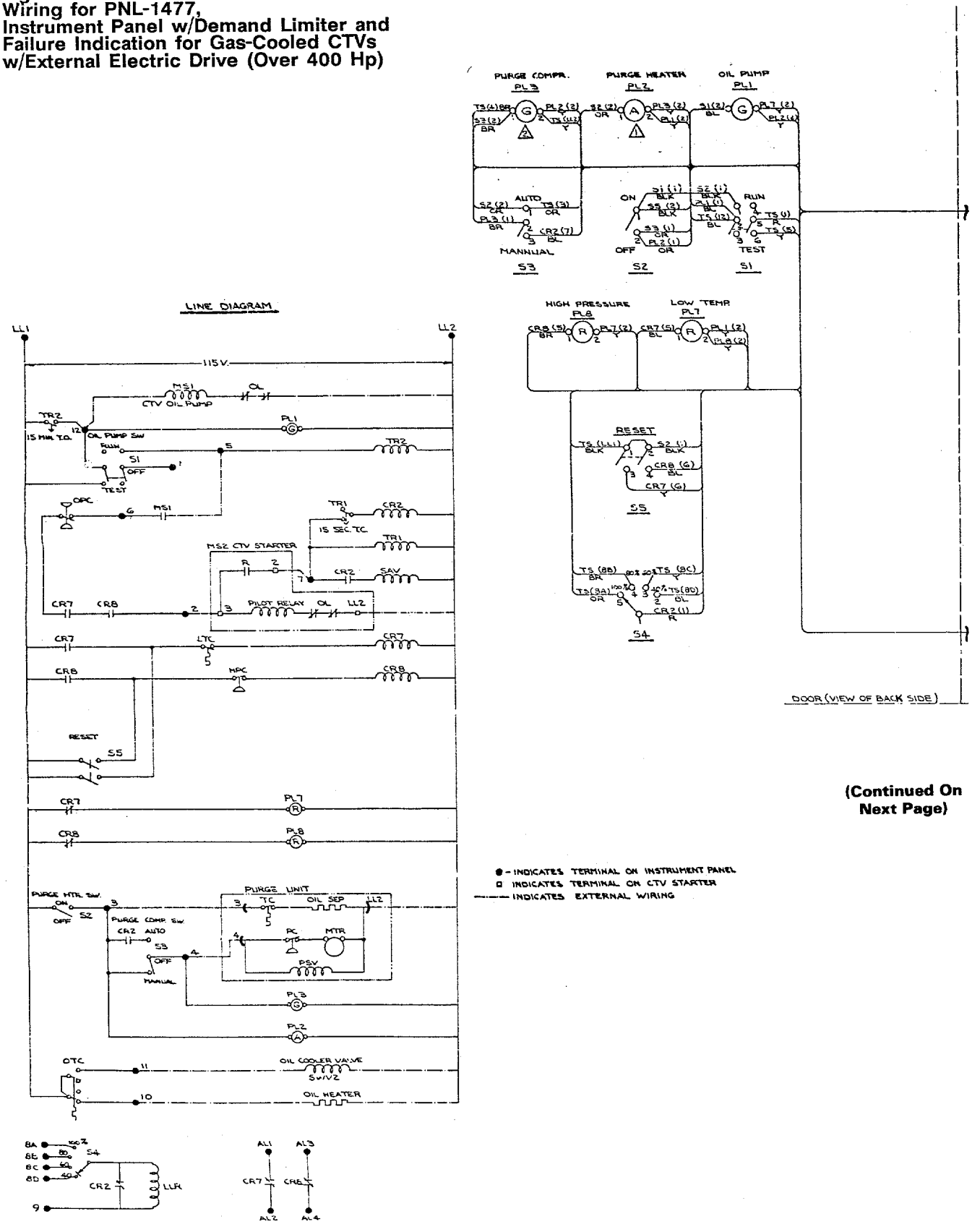
WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

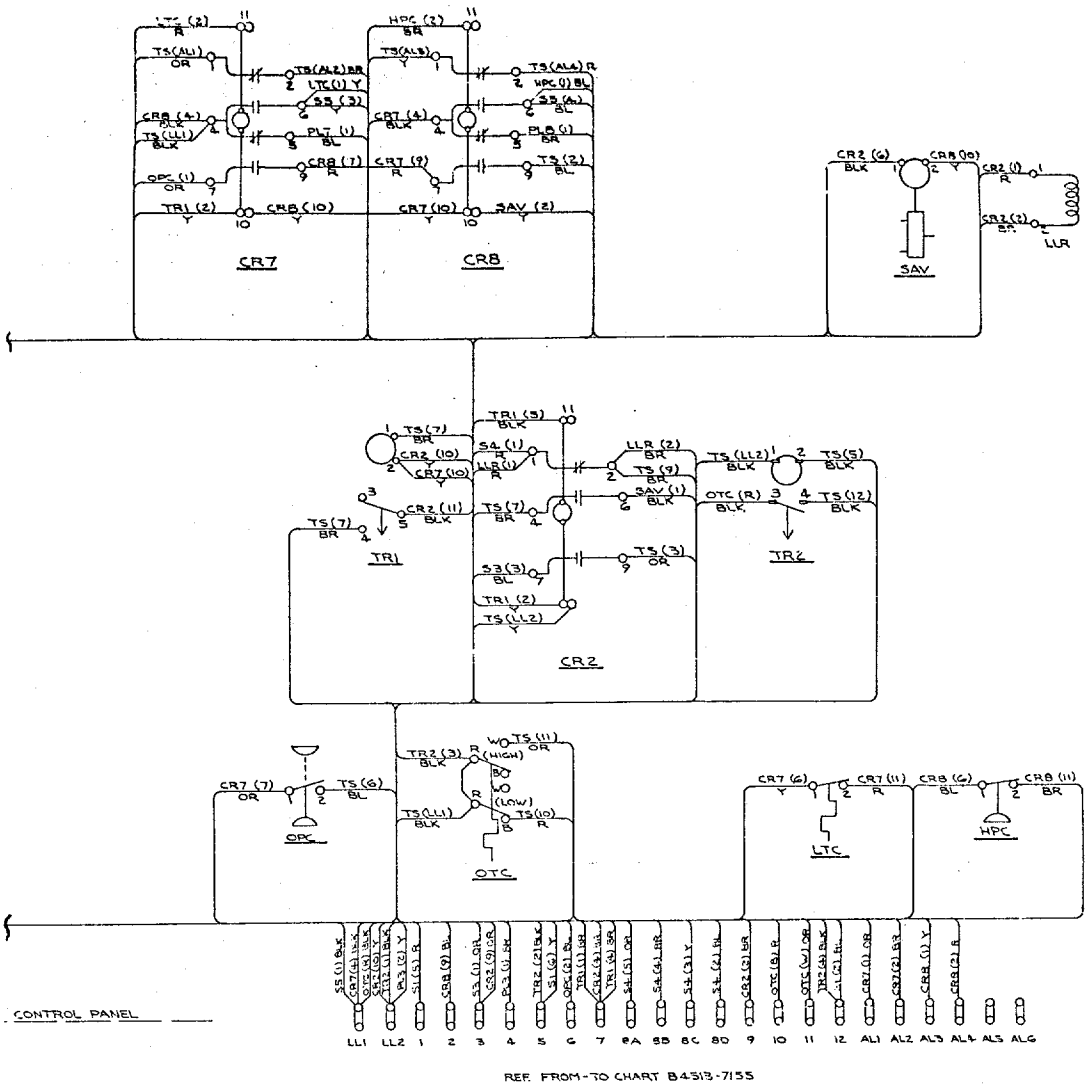
Drwg. 2301-6205J

Figure 15
Wiring for PNL-1477,
Instrument Panel w/Demand Limiter and
Failure Indication for Gas-Cooled CTVs
w/External Electric Drive (Over 400 Hp)



● - INDICATES TERMINAL ON INSTRUMENT PANEL
□ INDICATES TERMINAL ON CTV STARTER
——— INDICATES EXTERNAL WIRING

(Continued On Next Page)



REF. FROM-TO CHART B4513-7155

(Continued From Previous Page)

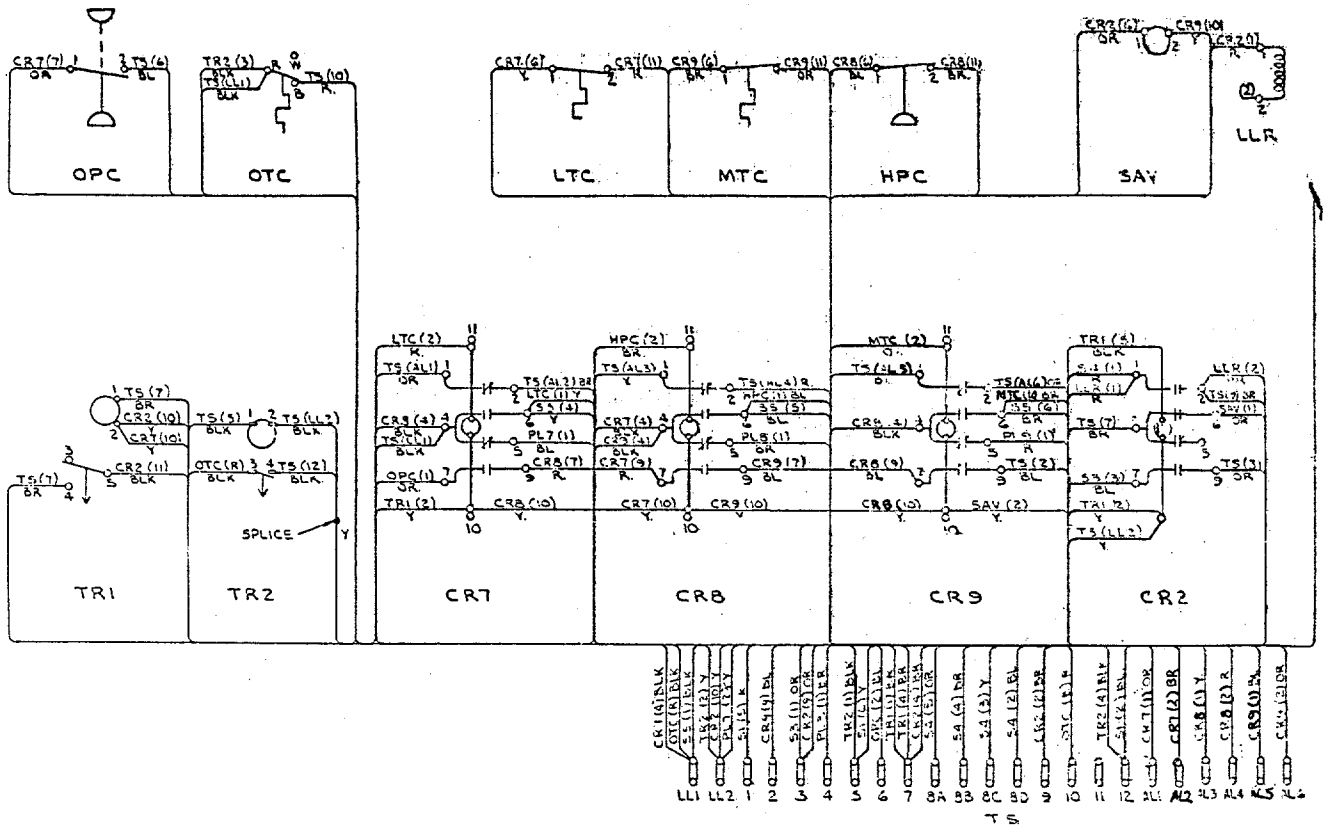
COLOR CODE
BLACK — BLK
RED — R.
ORANGE — OR.
YELLOW — Y.
BLUE — BL.
BROWN — BR.

WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

Drwg. 2301-6206H

Figure 16
Wiring for Instrument Panels
PNL-1524, PNL-2107, PNL-2157, PNL-2158
and PNL-5618 (See Note)



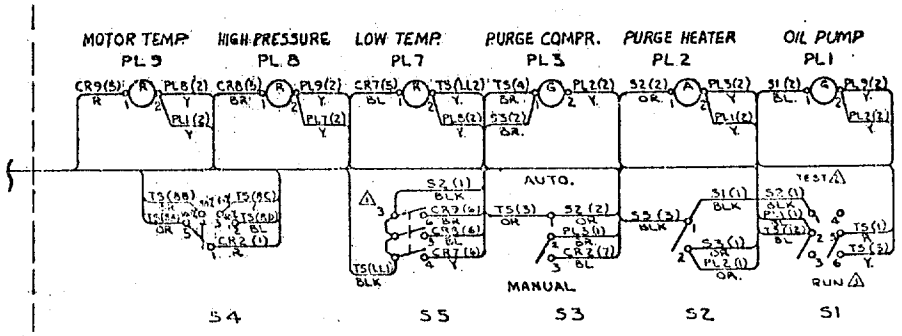
COLOR CODE
BLACK ——— BLK
RED ——— R
ORANGE — OR.
YELLOW —— Y
BLUE ——— BL
BROWN —— BR.

WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

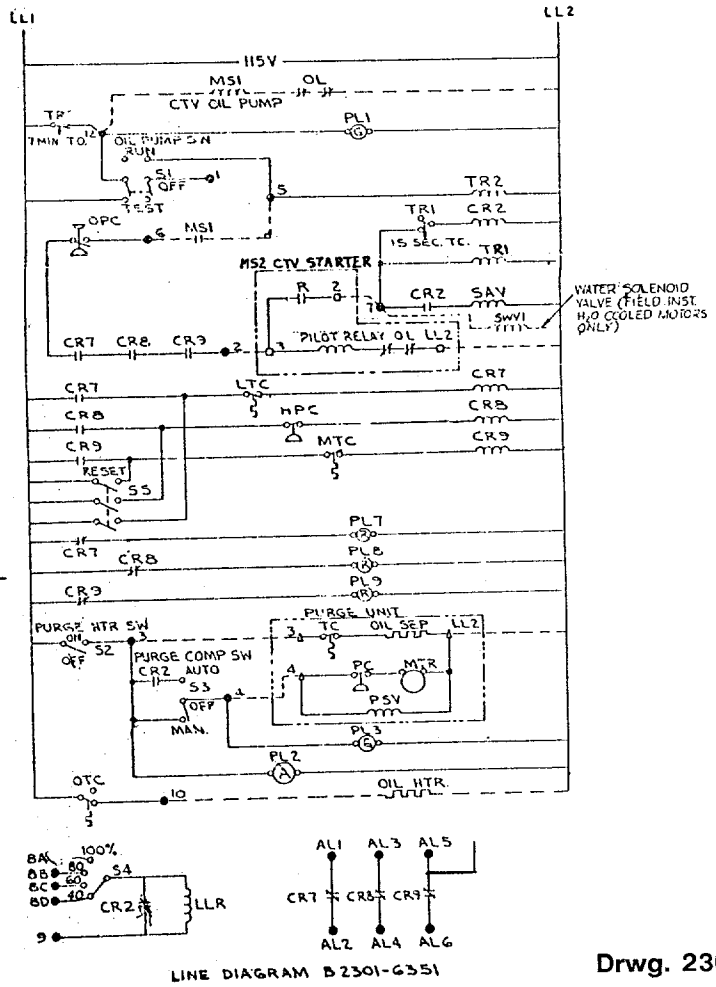
(Continued on next page)

Note:
PNL-1524 = Used on PCV 0J-5F, and on CV 9A-12F (60 Hz)
PNL-2107 = Used on LCV 1C-3F (50 Hz)
PNL-2157 = Used on CV 6C-7F (60 Hz)
PNL-2158 = Used on LCV 4D-7B (50 Hz)
PNL-5618 = Used on LOCV



DOOR (VIEW OF BACK SIDE)

(Continued from previous page)

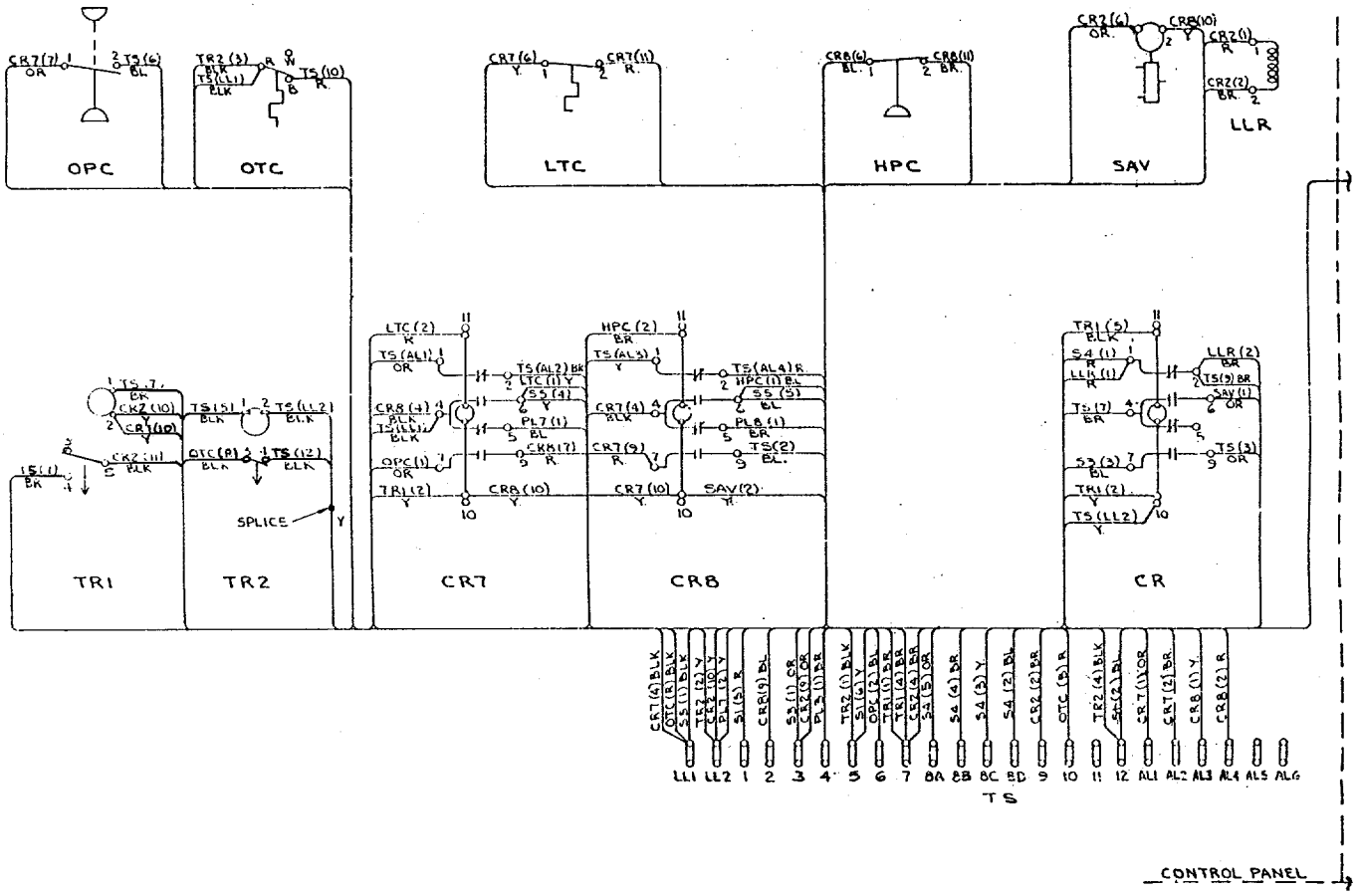


- O INDICATES TERMINAL ON INSTRUMENT PANEL
- □ INDICATES TERMINAL ON CTV STARTER
- △ INDICATES TERMINAL ON PURGE UNIT
- ---INDICATES EXTERNAL WIRING

LINE DIAGRAM B2301-G351

Drwg. 2301-6203L

Figure 17
Wiring for Instrument Panels
PNL-2159 and PNL-2176 (See Note)

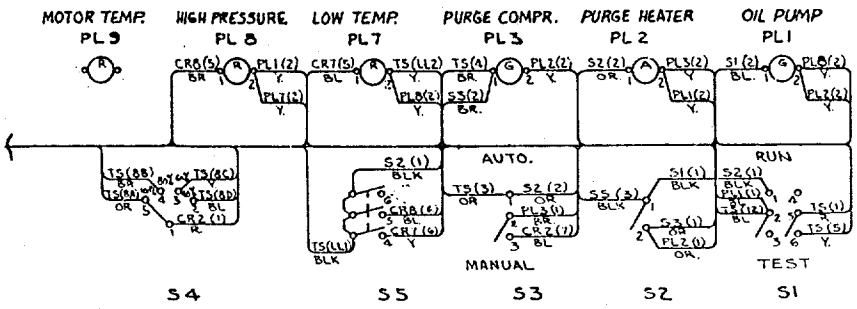


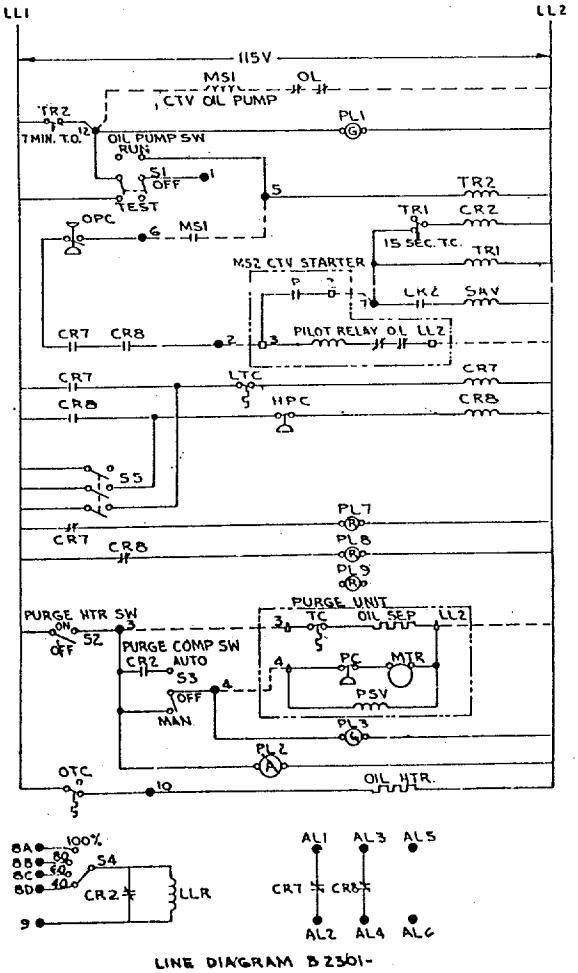
WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

(Continued On Next Page)

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

Note:
PNL-2159 = Used on High-Speed OCVs w/Electric Motors (60 Hz)
PNL-2176 = Used on High-Speed OCVs w/Electric Motors (50 Hz)





LINE DIAGRAM B2301-

(DOOR (VIEW OF BACK SIDE.)

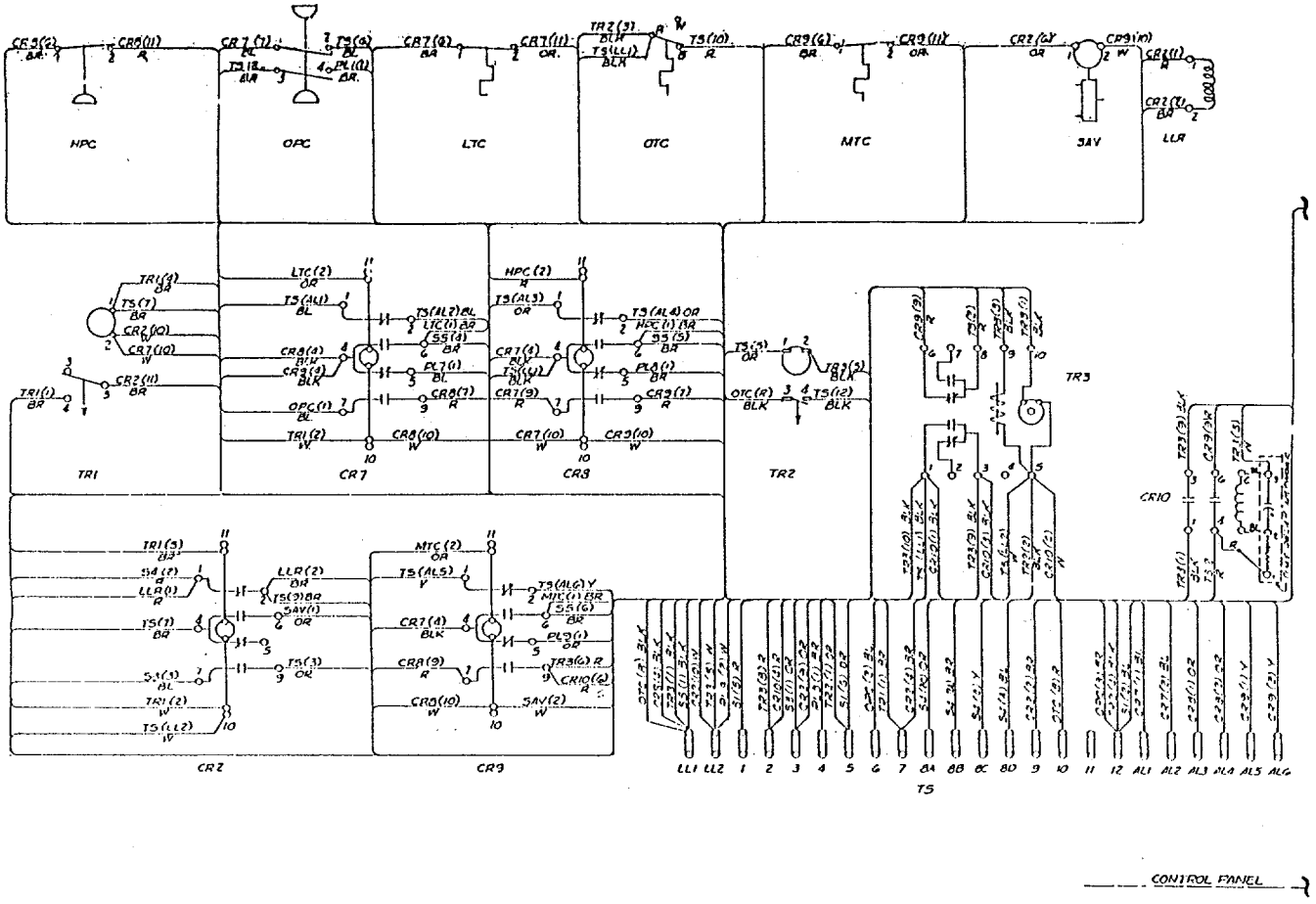
COLOR CODE
BLACK ——— BLK
RED ——— R
ORANGE ——— OR.
YELLOW ——— Y.
BLUE ——— BL
BROWN ——— BR.

(Continued From Previous Page)

- o INDICATES TERMINAL ON INSTRUMENT PANEL
- □ INDICATES TERMINAL ON CTV STARTER
- △ INDICATES TERMINAL ON PURGE UNIT
- ---INDICATES EXTERNAL WIRING

Drwg. 2301-9403A

Figure 18
Wiring for 115-Volt Instrument Panels
PNL-2490, PNL-2491, PNL-2492, PNL-2493,
PNL-2539, PNL-2540, PNL-2541 and PNL-2542
(See Note)

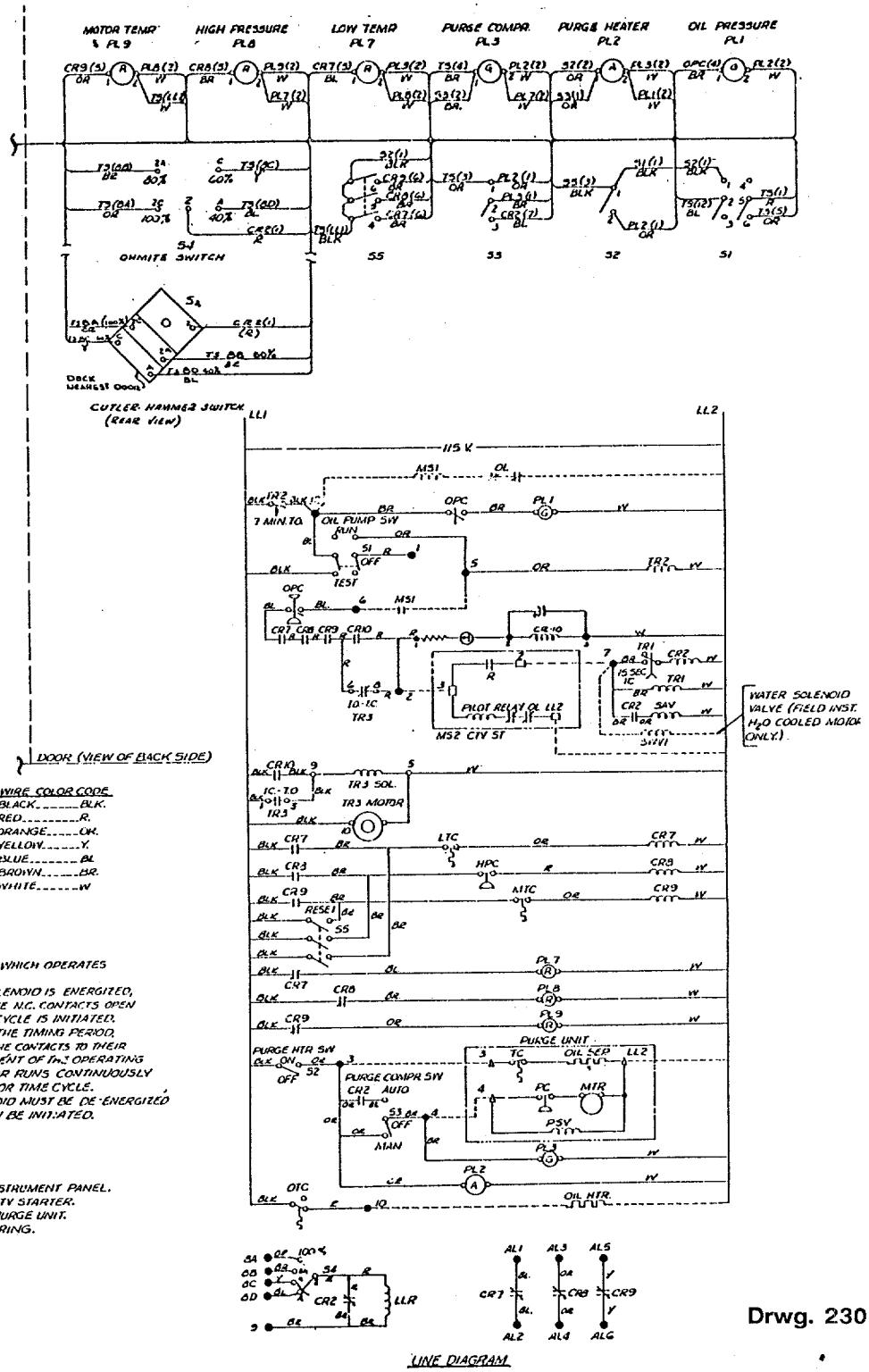


WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

(Continued on next page)

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

Note:
PNL-2490 = Used on PCV 2C-5F, PCV 0J-1J, and CV 9A-12F (60 Hz)
PNL-2491 = Used on CV 6C-7G (60 Hz)
PNL-2492 = Used on LCV 1C-3F (50 Hz)
PNL-2493 = Used on LCV 4D-7B (50 Hz)
PNL-2539 = Used on PCV-2C-5F, PCV 0J-1J, and CV 9A-12F (60 Hz)
PNL-2540 = Used on CV 6C-7G (60 Hz)
PNL-2541 = Used on LCV 1C-3F (50 Hz)
PNL-2542 = Used on LCV 4D-7B (50 Hz)



(Continued from previous page)

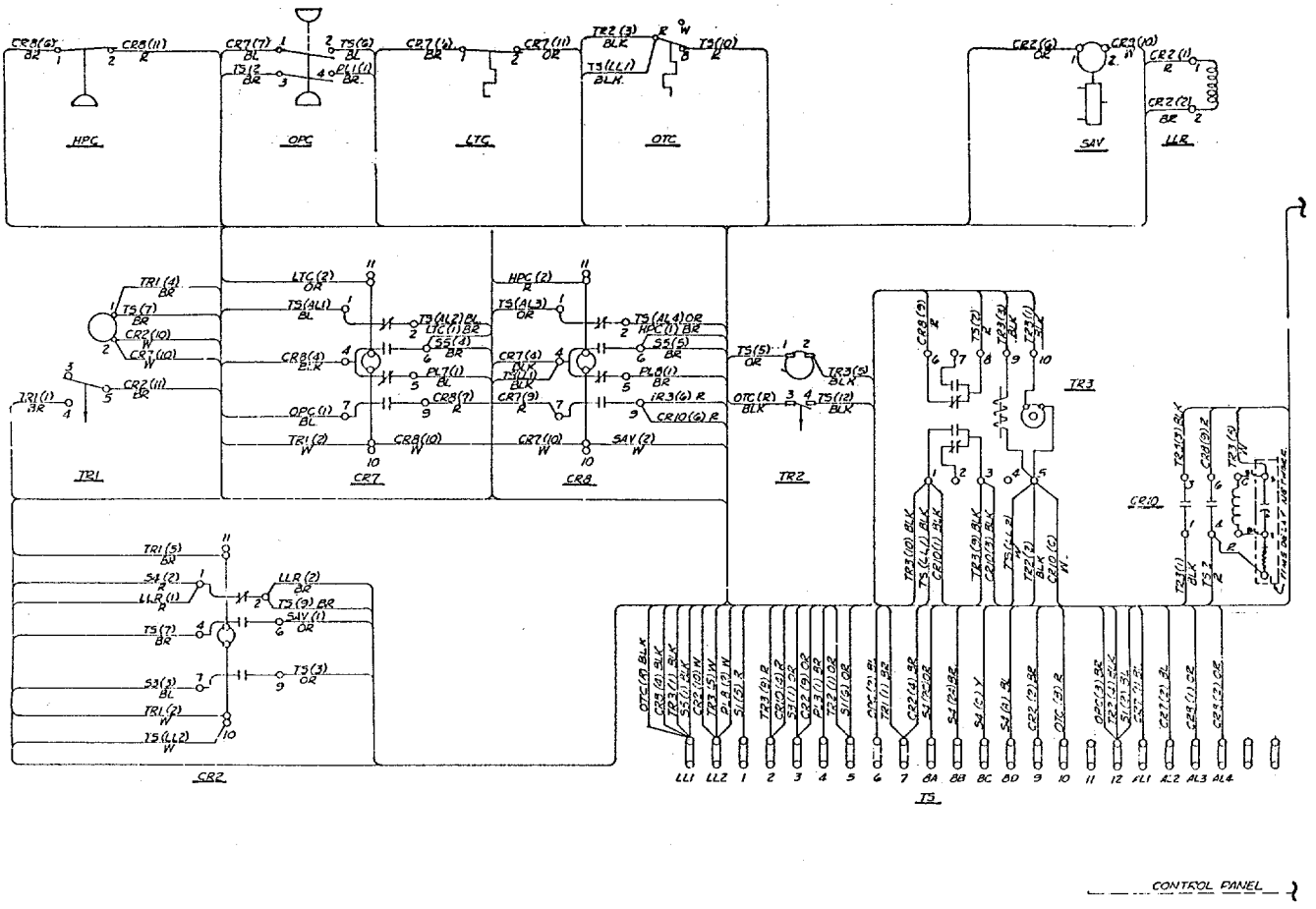
NOTE:- TR3 IS AN INTERNAL TIMER WHICH OPERATES AS FOLLOWS:

1. WHEN THE OPERATING SOLENOID IS ENERGIZED, THE N.O. CONTACTS CLOSE, THE N.C. CONTACTS OPEN IMMEDIATELY, AND A TIMING CYCLE IS INITIATED.
2. AT THE TERMINATION OF THE TIMING PERIOD, THE CLOCK MOTOR RESETS THE CONTACTS TO THEIR NORMAL POSITION INDEPENDENT OF THE OPERATING SOLENOID. THE CLOCK MOTOR RUNS CONTINUOUSLY REGARDLESS OF SOLENOID OR TIME CYCLE.
3. THE OPERATING SOLENOID MUST BE DE-ENERGIZED BEFORE A TIMING CYCLE CAN BE INITIATED.

● INDICATES TERMINAL ON INSTRUMENT PANEL.
□ INDICATES TERMINAL ON CTV STARTER.
Δ INDICATES TERMINAL ON PURGE UNIT.
--- INDICATES EXTERNAL WIRING.

Drwg. 2301-9333H

Figure 19
Wiring for Instrument Panels
PNL-2498 and PNL-2500 (See Note)



● INDICATES TERMINAL ON INSTRUMENT PANEL.
□ INDICATES TERMINAL ON CTV STARTER.
§ INDICATES TERMINAL ON PURGE UNIT.
---- INDICATES EXTERNAL WIRING.

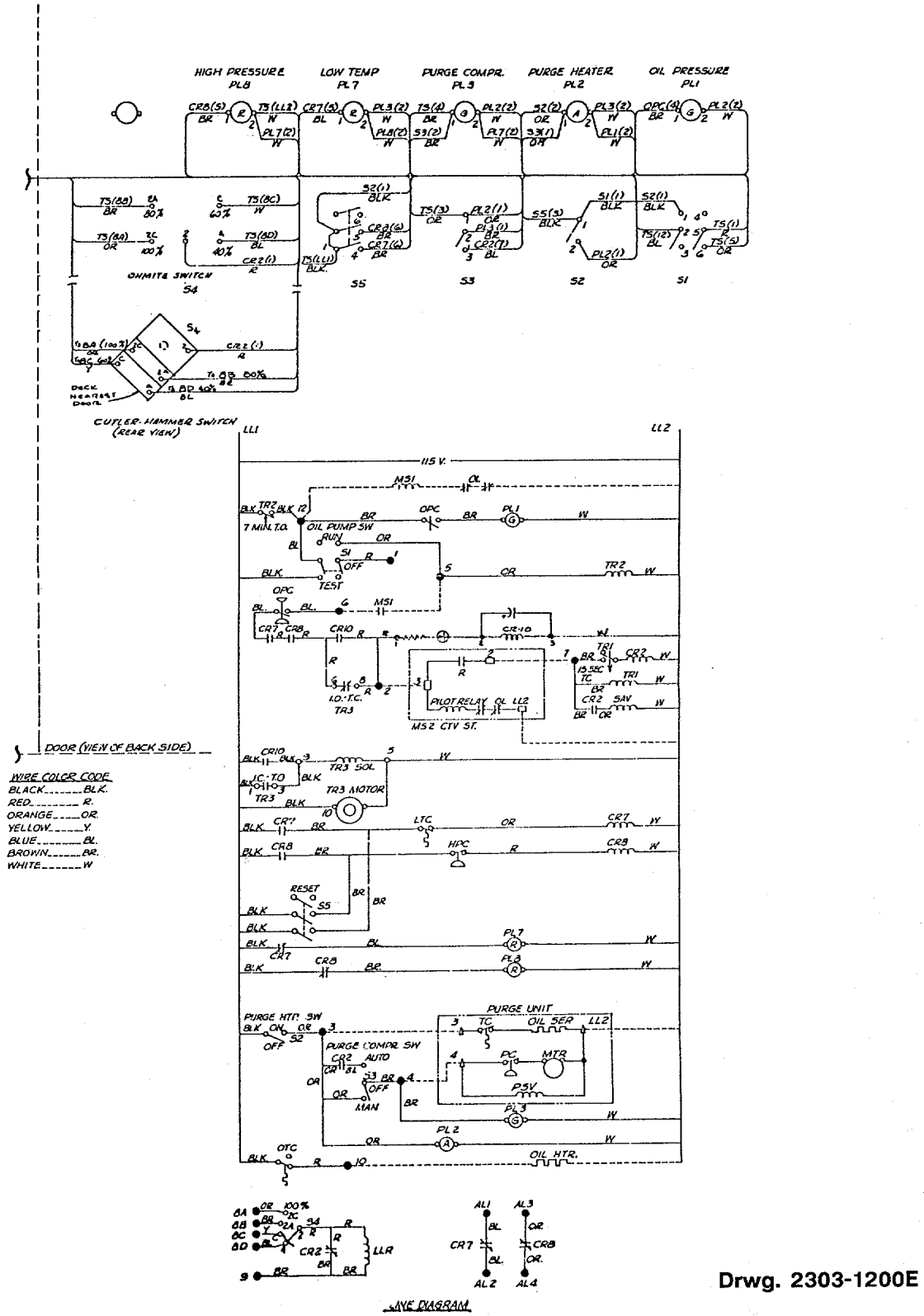
(Continued on next page)

NOTE:-
TR3 IS AN INTERNAL TIMER WHICH OPERATES AS FOLLOWS:-
1. WHEN THE OPERATING SOLENOID IS ENERGIZED, THE N.O. CONTACTS CLOSE, THE N.C. CONTACTS OPEN IMMEDIATELY, AND A TIMING CYCLE IS INITIATED.
2. AT THE TERMINATION OF THE TIMING PERIOD, THE CLOCK MOTOR RESETS THE CONTACTS TO THEIR NORMAL POSITION INDEPENDENT OF THE OPERATING SOLENOID. THE CLOCK MOTOR RUNS CONTINUOUSLY REGARDLESS OF SOLENOID OR TIME CYCLE.
3. THE OPERATING SOLENOID MUST BE DE-ENERGIZED BEFORE A TIMING CYCLE CAN BE INITIATED.

WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

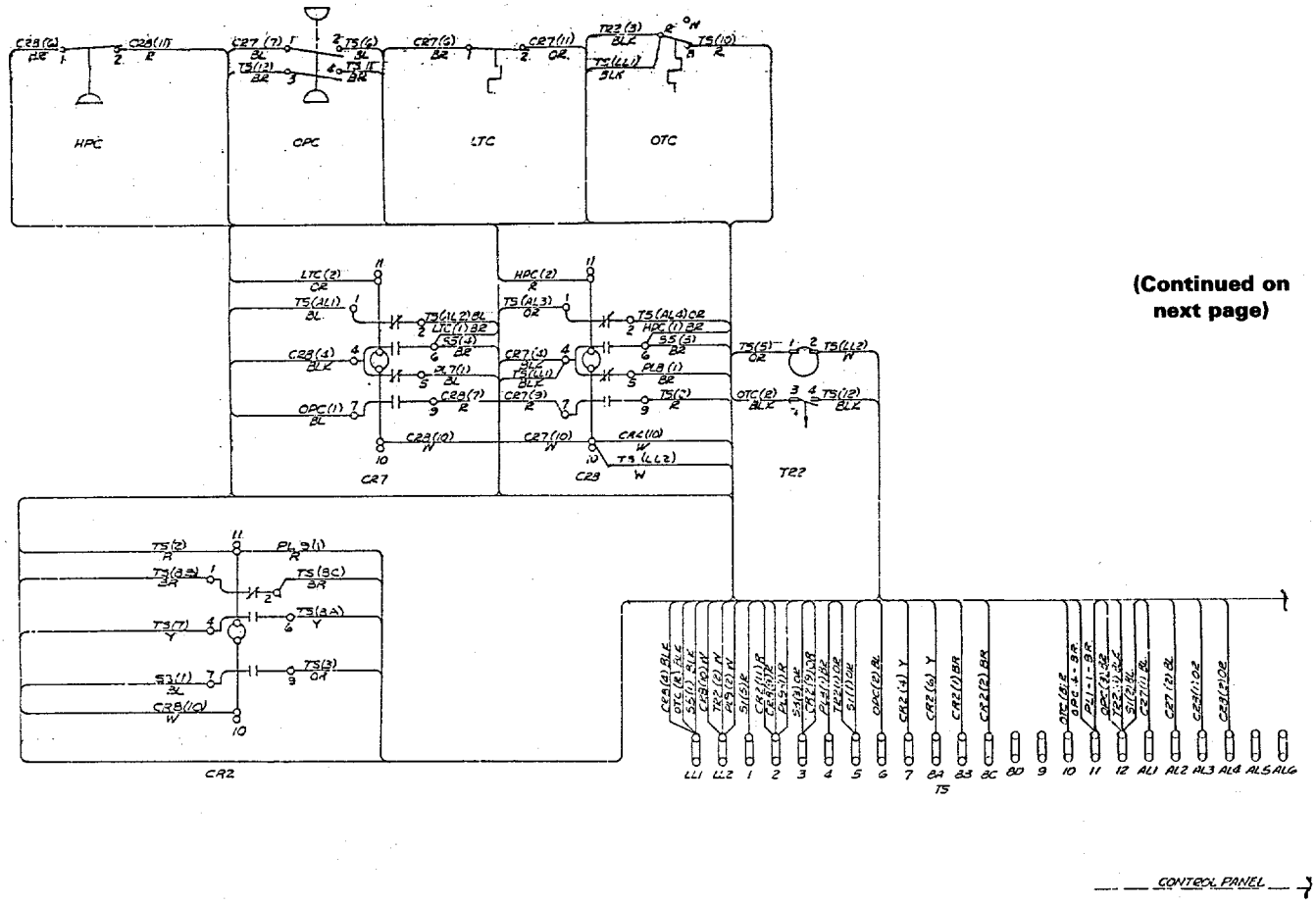
Note:
PNL-2498 = Used on High-Speed OCVs w/Electric Motor Drive (60 Hz)
PNL-2500 = Used on High-Speed OCVs w/Electric Motor Drive (60 Hz)



(Continued from previous page)

Drwg. 2303-1200E

Figure 20
Wiring for PNL-2499, Instrument Panel for OCVs w/Steam Turbine *or* Gas Engine Drives

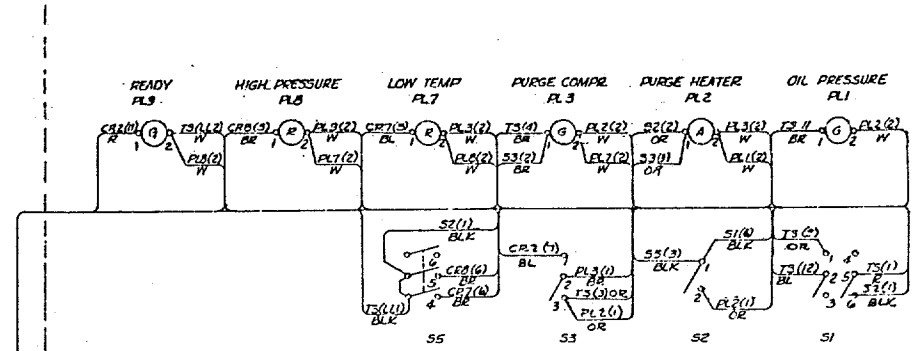


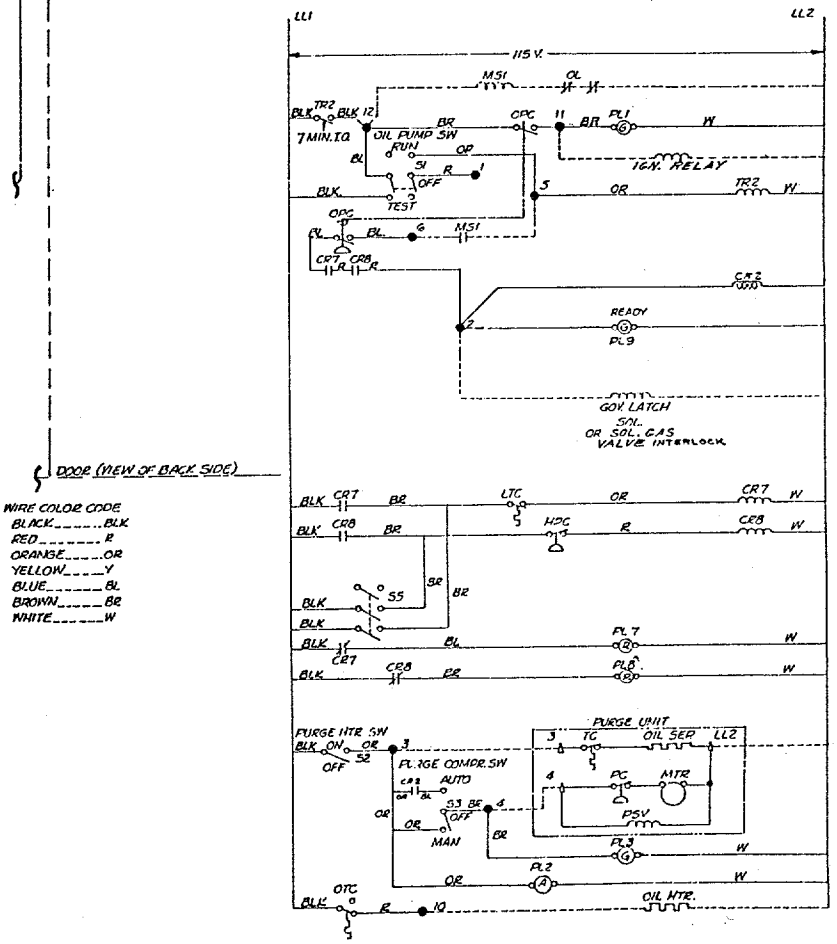
(Continued on next page)

WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

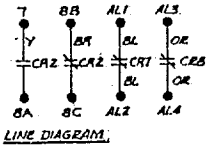
(Continued from previous page)





WIRE COLOR CODE
BLACK.....BLK
RED.....R
ORANGE.....OR
YELLOW.....Y
BLUE.....BL
BROWN.....BR
WHITE.....W

● INDICATES TERMINAL ON INSTRUMENT PANEL.
□ INDICATES TERMINAL ON CTV STARTER.
△ INDICATES TERMINAL ON PURGE UNIT.
----- INDICATES EXTERNAL WIRING.
IGN. RELAY, GOV. LATCH, OR SOL. GAS VALVE INTERLOCK AS REQUIRED. FURNISHED BY OTHERS.

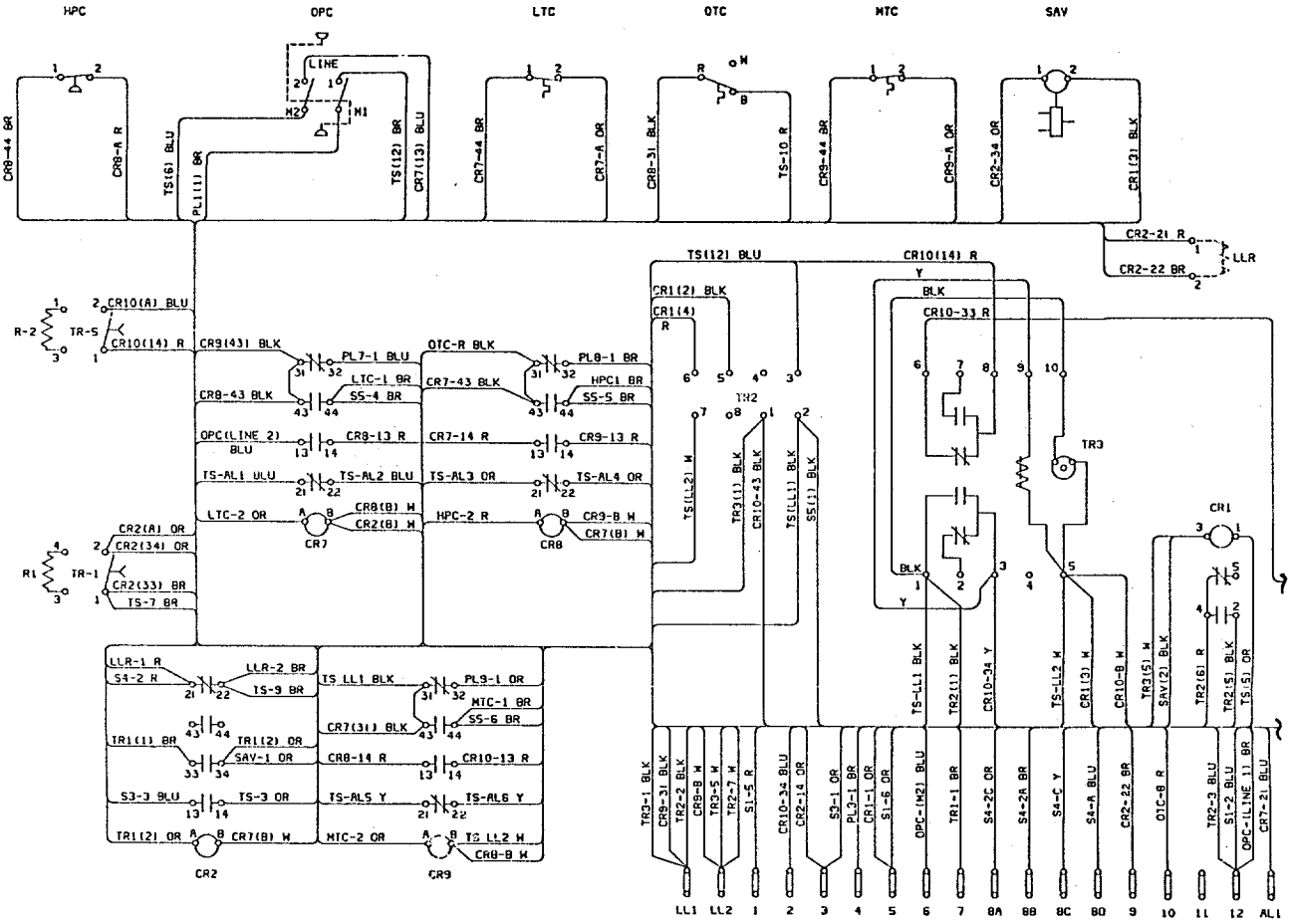


LINE DIAGRAM.

Drwg. 2303-1199F

PNL-W-1

Figure 21
Wiring for Instrument Panels PNL-2558, PNL-2559, PNL-2562, PNL-2563, PNL-4583, PNL-4584, PNL-5606 and PNL-5607 (See Note)



(Continued On Next Page)

NOTES: - TR3 IS AN INTERVAL TIMER WHICH OPERATES AS FOLLOWS:

1. WHEN THE OPERATING SOLENOID IS ENERGIZED, THE NO CONTACTS CLOSE, THE NC CONTACTS OPEN IMMEDIATELY, AND A TIMING CYCLE IS INITIATED.
2. AT THE TERMINATION OF THE TIMING PERIOD, THE CLOCK MOTOR RESETS THE CONTACTS TO THEIR NORMAL POSITION INDEPENDENT OF THE OPERATING SOLENOID. THE CLOCK MOTOR RUNS CONTINOUSLY REGARDLESS OF SOLENOID OR TIME CYCLE.
3. THE OPERATING SOLENOID MUST BE DE-ENERGIZED BEFORE A TIMING CYCLE CAN BE INITIATED.
4. TR1 & TR3 ARE SOLID STATE TIME DELAY RELAYS WITH AN AC SOLID STATE SWITCH OUTPUT. WHEN POWER IS APPLIED THROUGH A LOAD TO TERMINALS 1 AND 2, THE TIME DELAY BEGINS ITS TIMING CYCLE. THE AC SOLID STATE SWITCH REMAINS "OPEN" DURING THE TIMING PERIOD. WHEN THE TIME DELAY PERIOD IS COMPLETE, THE AC SOLID STATE SWITCH "CLOSES" AND THE CONNECTED LOAD IS ENERGIZED. THE AC SOLID STATE SWITCH REMAINS "CLOSED" UNTIL POWER IS REMOVED FROM THE TIME DELAY AND ITS CONNECTED LOAD.
   THERE WILL BE A 2.5 VAC MAX VOLTAGE DROP BETWEEN TERMINALS 1 AND 2, WHEN THE AC SOLID STATE SWITCH IS "CLOSED".
5. TR2 IS A SOLID STATE TIME DELAY RELAY WITH A RELAY OUTPUT. A SWITCH OR CONTACT CLOSURE BETWEEN TERMINAL 5 AND 6 CAUSES THE RELAY CONTACTS TO CLOSE (1 & 3) WHEN THE CONTACTS BETWEEN TERMINALS 5 AND 6 OPEN. THE TIMING CYCLE IS INITIATED. THE OUTPUT RELAY CONTACTS (1 & 3) WILL OPEN UPON COMPLETION OF THE TIME DELAY PERIOD.

Note:

PNL-2558 = Used on PCV 2C-5F, PCV 0J-1J, and CV 9A-12F (60 Hz)

PNL-2559 = Used on CV 6C-7G (60 Hz)

PNL-2562 = Used on LCV 1C-3F (50 Hz)

PNL-2563 = Used on LCV 4D-7B (50 Hz)

PNL-4583 = Used on PCV 2C-5F, PCV 0J-1J, and CV 9A-12F (60 Hz)

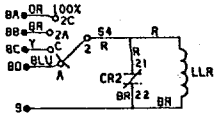
PNL-4584 = Used on CV 6A-8C (60 Hz)

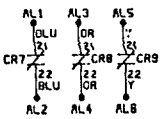
PNL-5606 = Used on PCV 2C-5F, PCV 0J-1J, and CV 9A-12F (60 Hz)

PNL-5607 = Used on CV 6A-8C (60 Hz)

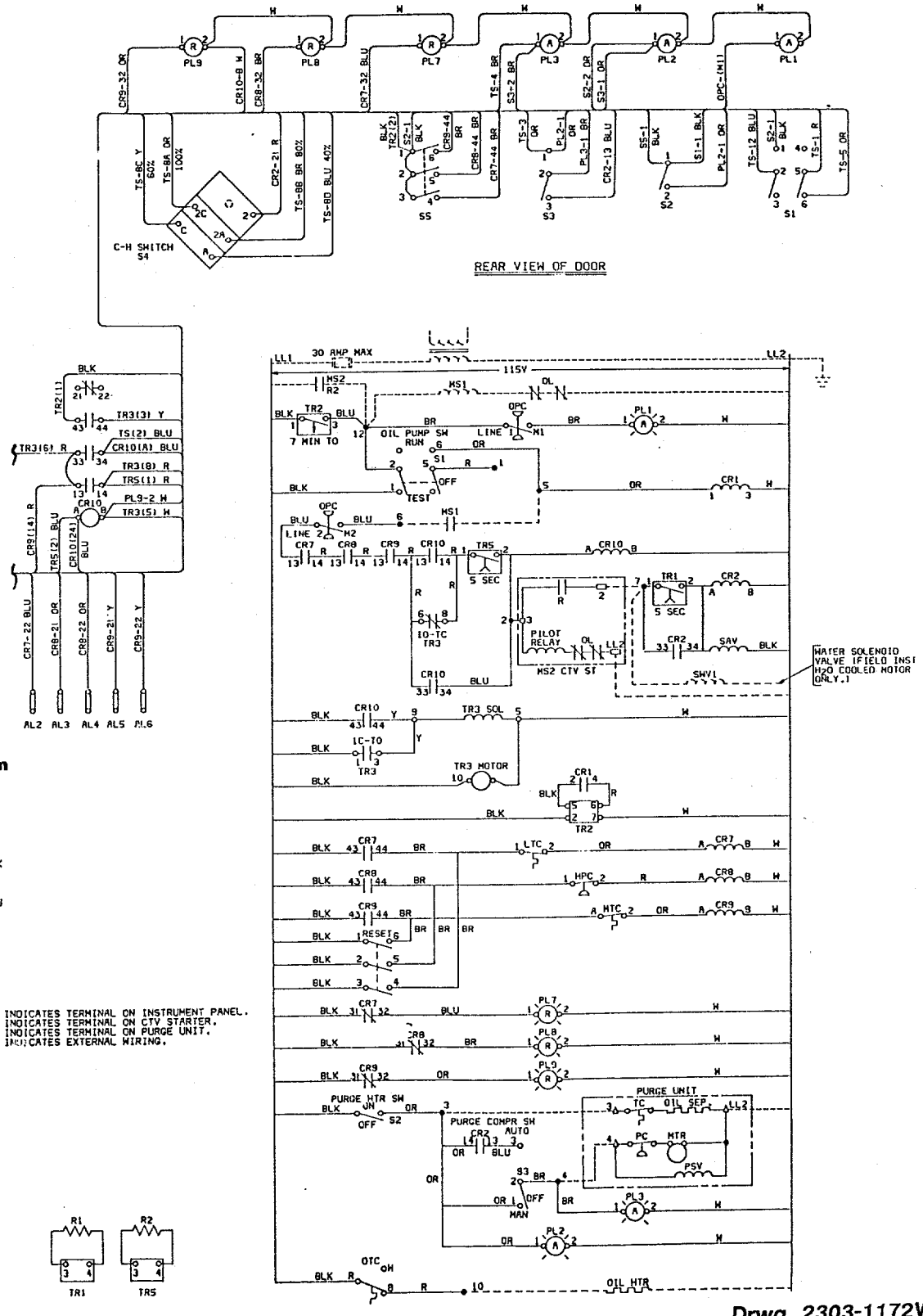
WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.





LINE DIAGRAM



(Continued From Previous Page)

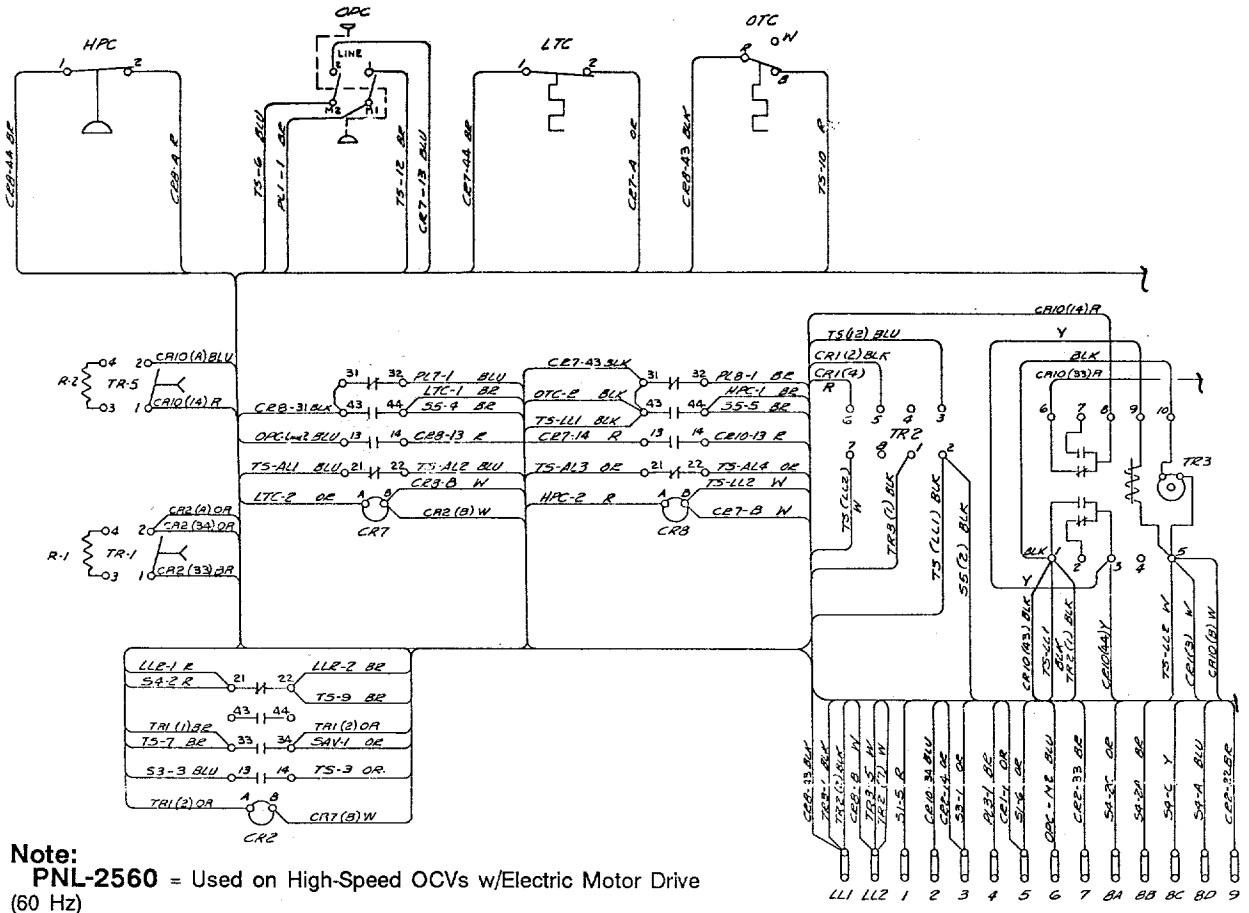
WIRE COLOR CODE
BLACK------- BLK
RED--------- R
ORANGE------ OR
YELLOW------ Y
BLUE-------- BLU
BROWN------- BR
WHITE------- W

● INDICATES TERMINAL ON INSTRUMENT PANEL.
□ INDICATES TERMINAL ON CTV STARTER.
△ INDICATES TERMINAL ON PURGE UNIT.
---- INDICATES EXTERNAL WIRING.

Drwg. 2303-1172W

PNL-W-1

Figure 22
Wiring for Instrument Panels PNL-2560, PNL-2564, PNL-4585 and PNL-5608 (See Note)



Note:

PNL-2560 = Used on High-Speed OCVs w/Electric Motor Drive (60 Hz)

PNL-2564 = Used on High-Speed OCVs w/Electric Motor Drive (50 Hz)

PNL-4585 = Used on OCVs w/Electric Motor Drives, and on FCV 0K-2A (60 Hz)

PNL-5608 = Used on OCVs w/Electric Motor Drives, and on FCV 0K-2A (60 Hz)

(Continued on next page)

WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

NOTES: - TR3 IS AN INTERVAL TIMER WHICH OPERATES AS FOLLOWS:

1. WHEN THE OPERATING SOLENOID IS ENERGIZED, THE NO CONTACTS CLOSE, THE NC CONTACTS OPEN IMMEDIATELY, AND A TIMING CYCLE IS INITIATED.
2. AT THE TERMINATION OF THE TIMING PERIOD, THE CLOCK MOTOR RESETS THE CONTACTS TO THEIR NORMAL POSITION INDEPENDENT OF THE OPERATING SOLENOID. THE CLOCK MOTOR RUNS CONTINUOUSLY REGARDLESS OF SOLENOID OR TIME CYCLE.
3. THE OPERATING SOLENOID MUST BE DE-ENERGIZED BEFORE A TIMING CYCLE CAN BE INITIATED.
4. TR1 & TR3 ARE SOLID STATE TIME DELAY RELAYS WITH AN AC SOLID STATE SWITCH OUTPUT. WHEN POWER IS APPLIED THROUGH A LOAD TO TERMINALS 1 AND 2, THE TIME DELAY BEGINS ITS TIMING CYCLE. THE AC SOLID STATE SWITCH REMAINS "OPEN" DURING THE TIMING PERIOD. WHEN THE TIME DELAY PERIOD IS COMPLETE, THE AC SOLID STATE SWITCH "CLOSES" AND THE CONNECTED LOAD IS ENERGIZED. THE AC SOLID STATE SWITCH REMAINS "CLOSED" UNTIL POWER IS REMOVED FROM THE TIME DELAY AND ITS CONNECTED LOAD.

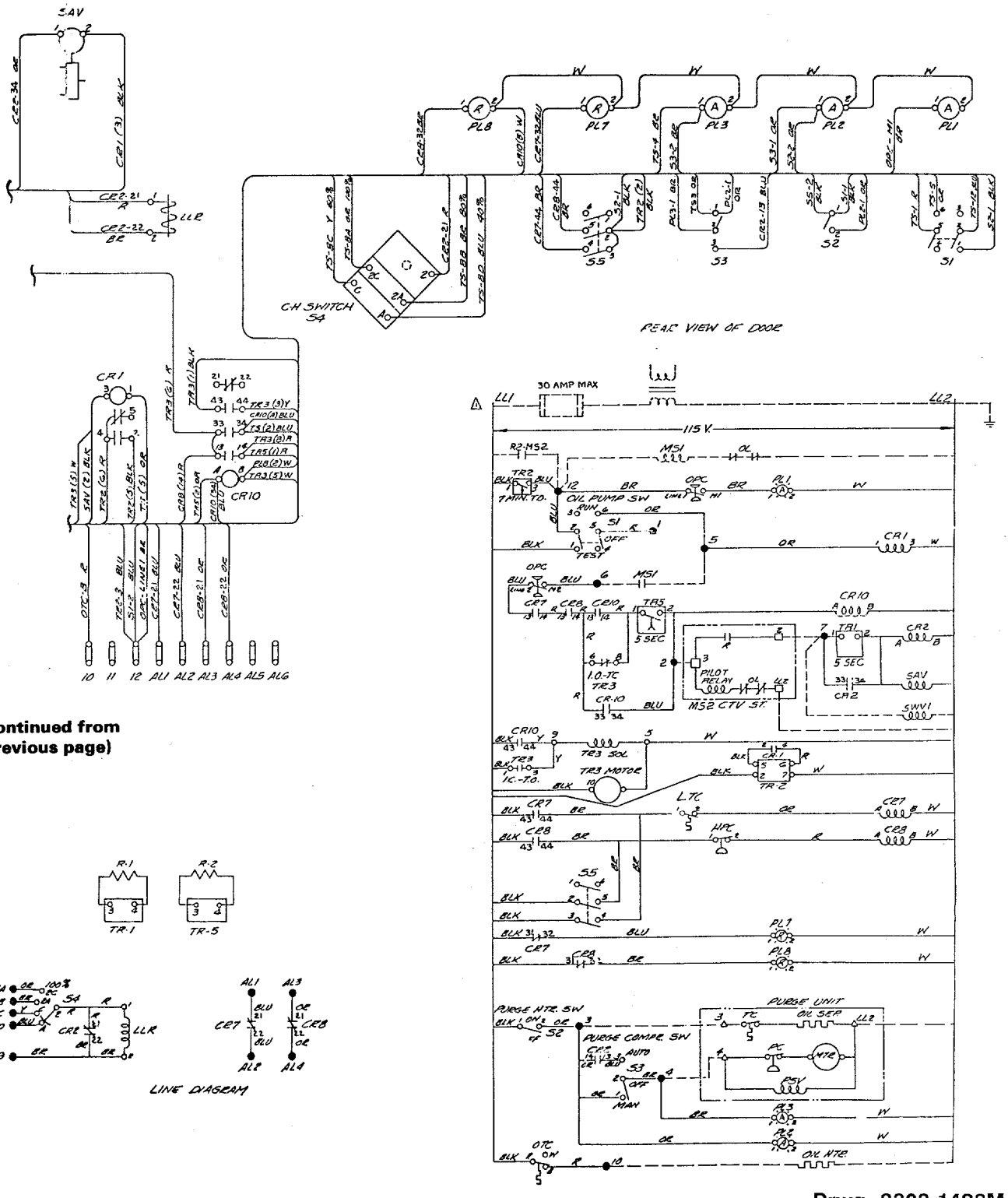
   THERE WILL BE A 2.5 VAC MAX VOLTAGE DROP BETWEEN TERMINALS 1 AND 2, WHEN THE AC SOLID STATE SWITCH IS "CLOSED".
5. TR2 IS A SOLID STATE TIME DELAY RELAY WITH A RELAY OUTPUT. A SWITCH OR CONTACT CLOSURE BETWEEN TERMINAL 5 AND 6 CAUSES THE RELAY CONTACTS TO CLOSE (1 & 3) WHEN THE CONTACTS BETWEEN TERMINALS 5 AND 6 OPEN, THE TIMING CYCLE IS INITIATED.

   THE OUTPUT RELAY CONTACTS (1 & 3) WILL OPEN UPON COMPLETION OF THE TIME DELAY PERIOD.

WIRE COLOR CODE

BLACK	BLK
RED	R
ORANGE	OR
YELLOW	Y
BLUE	BLU
BROWN	BR
WHITE	W

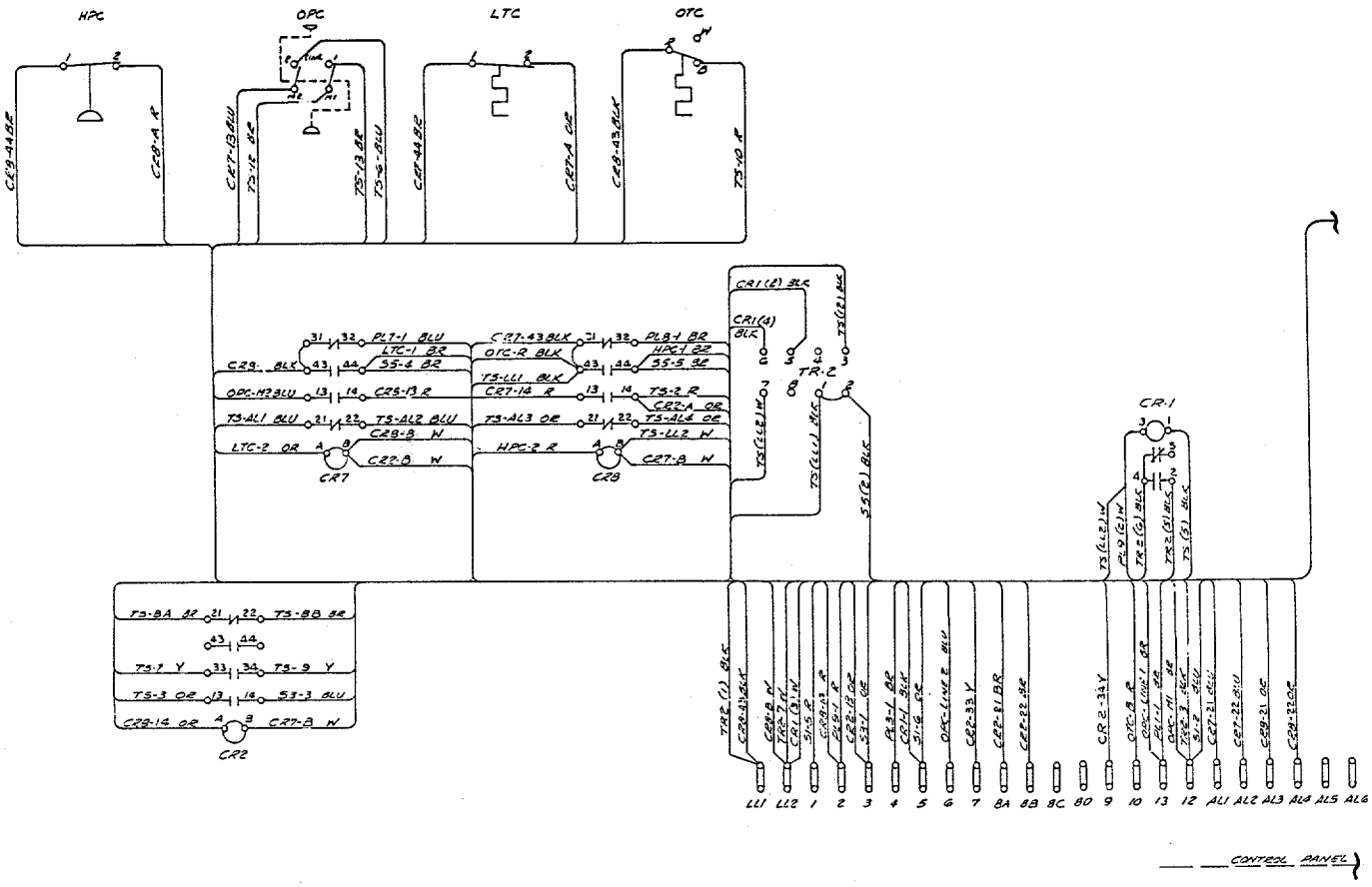
● INDICATES TERMINAL ON INSTRUMENT PANEL
□ INDICATES TERMINAL ON CTV STARTER.
△ INDICATES TERMINAL ON PURGE UNIT.
—— INDICATES EXTERNAL WIRING.



(Continued from previous page)

Drwg. 2303-1428M

Figure 23
Wiring for Instrument Panels
PNL-2561, PNL-2565, PNL-4586 and PNL-5609
(See Note)

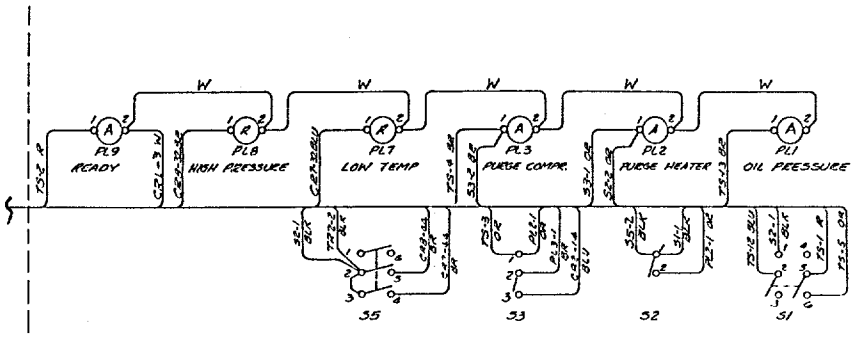


(Continued On Next Page)

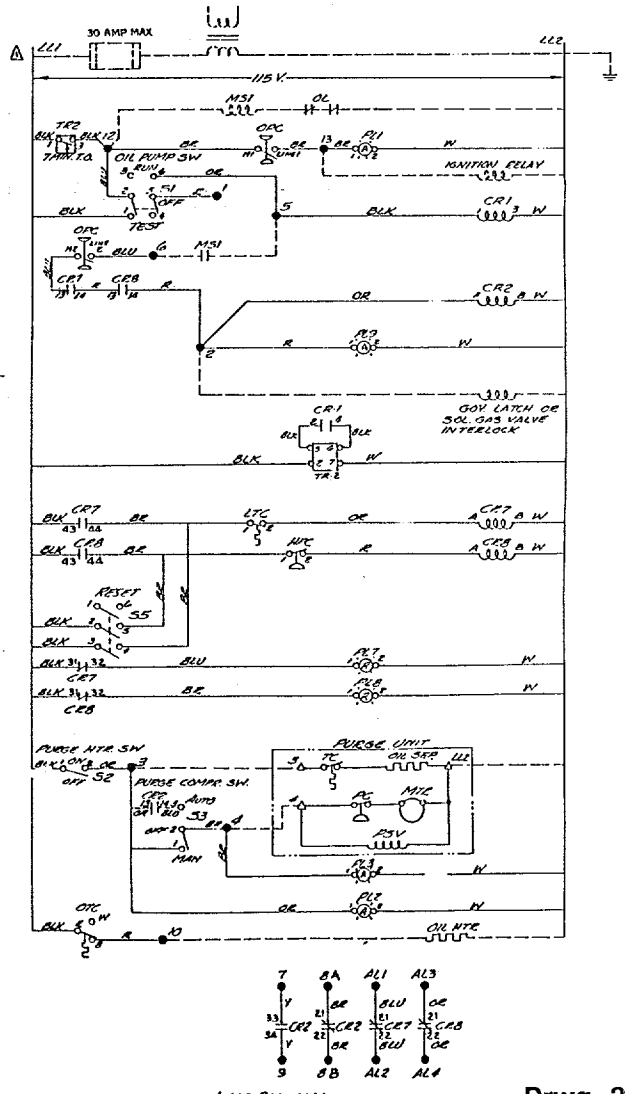
WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

Note:
PNL-2561 = Used on OCVs w/Steam Turbine or Gas Engine Drives (60 Hz)
PNL-2565 = Used on OCVs w/Steam Turbine or Gas Engine Drives (50 Hz)
PNL-4586 = Used on OCVs w/Steam Turbine or Gas Engine Drives (60 Hz)
PNL-5609 = Used on OCVs w/Steam Turbine or Gas Engine Drives (60 Hz)



REAR VIEW OF DOOR



LINE DIAGRAM

(Continued From Previous Page)

WIRE COLOR CODE

BLACK	BLK
RED	R
ORANGE	OR
YELLOW	Y
BLUE	BLU
BROWN	BR
WHITE	W

●INDICATES TERMINAL ON INSTRUMENT PANEL

△INDICATES TERMINAL ON PURGE UNIT.

-----INDICATES EXTERNAL WIRING.

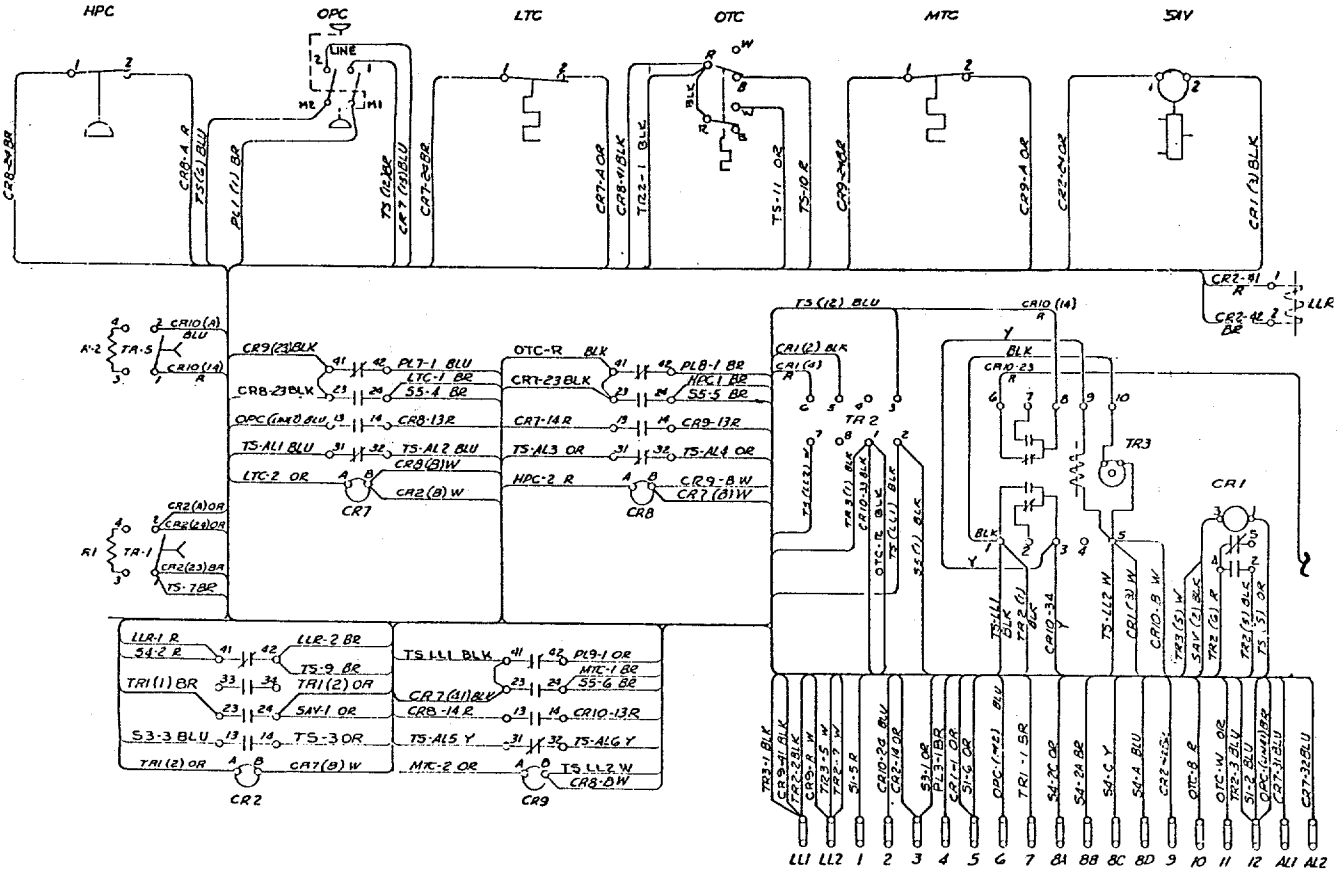
NOTE:

1. TR2 IS A SOLID STATE TIME DELAY RELAY WITH A RELAY OUTPUT. A SWITCH OR CONTACT CLOSURE BETWEEN TERMINAL 5 AND 6 CAUSES THE RELAY CONTACTS TO CLOSE (1 & 3) WHEN THE CONTACTS BETWEEN TERMINALS 5 AND 6 OPEN, THE TIMING CYCLE IS INITIATED.

   THE OUTPUT RELAY CONTACTS (1 & 3) WILL OPEN UPON COMPLETION OF THE TIME DELAY PERIOD.

Drwg. 2303-1427N

Figure 24
Wiring for PNL-2617, 115-Volt Instrument Panel for Water-Cooled CTVs (60 Hz)



WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

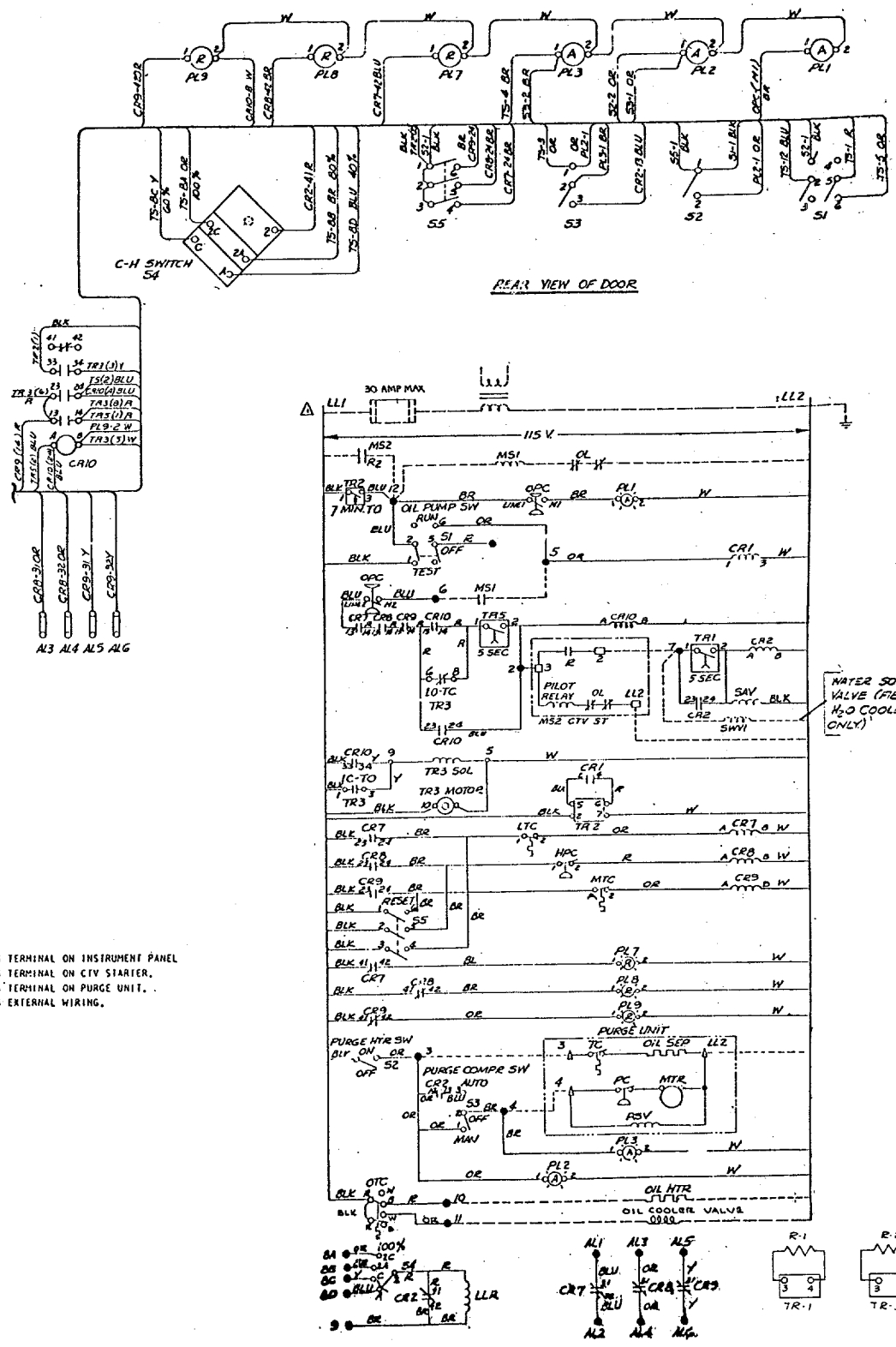
NOTES: - TR3 IS AN INTERVAL TIMER WHICH OPERATES AS FOLLOWS:

1. WHEN THE OPERATING SOLENOID IS ENERGIZED, THE NO CONTACTS CLOSE, THE NC CONTACTS OPEN IMMEDIATELY, AND A TIMING CYCLE IS INITIATED.
2. AT THE TERMINATION OF THE TIMING PERIOD, THE CLOCK MOTOR RESETS THE CONTACTS TO THEIR NORMAL POSITION INDEPENDENT OF THE OPERATING SOLENOID. THE CLOCK MOTOR RUNS CONTINUOUSLY REGARDLESS OF SOLENOID OR TIME CYCLE.
3. THE OPERATING SOLENOID MUST BE DE-ENERGIZED BEFORE A TIMING CYCLE CAN BE INITIATED.
4. TR1 & TR3 ARE SOLID STATE TIME DELAY RELAYS WITH AN AC SOLID STATE SWITCH OUTPUT. WHEN POWER IS APPLIED THROUGH A LOAD TO TERMINALS 1 AND 2, THE TIME DELAY BEGINS ITS TIMING CYCLE. THE AC SOLID STATE SWITCH REMAINS "OPEN" DURING THE TIMING PERIOD. WHEN THE TIME DELAY PERIOD IS COMPLETE, THE AC SOLID STATE SWITCH "CLOSES" AND THE CONNECTED LOAD IS ENERGIZED. THE AC SOLID STATE SWITCH REMAINS "CLOSED" UNTIL POWER IS REMOVED FROM THE TIME DELAY AND ITS CONNECTED LOAD.

   THERE WILL BE A 2.5 VAC MAX VOLTAGE DROP BETWEEN TERMINALS 1 AND 2, WHEN THE AC SOLID STATE SWITCH IS "CLOSED".
5. TR2 IS A SOLID STATE TIME DELAY RELAY WITH A RELAY OUTPUT. A SWITCH OR CONTACT CLOSURE BETWEEN TERMINAL 5 AND 6 CAUSES THE RELAY CONTACTS TO CLOSE (1 & 3) WHEN THE CONTACTS BETWEEN TERMINALS 5 AND 6 OPEN, THE TIMING CYCLE IS INITIATED.

   THE OUTPUT RELAY CONTACTS (1 & 3) WILL OPEN UPON COMPLETION OF THE TIME DELAY PERIOD.

(Continued on next page)



WIRE COLOR CODE

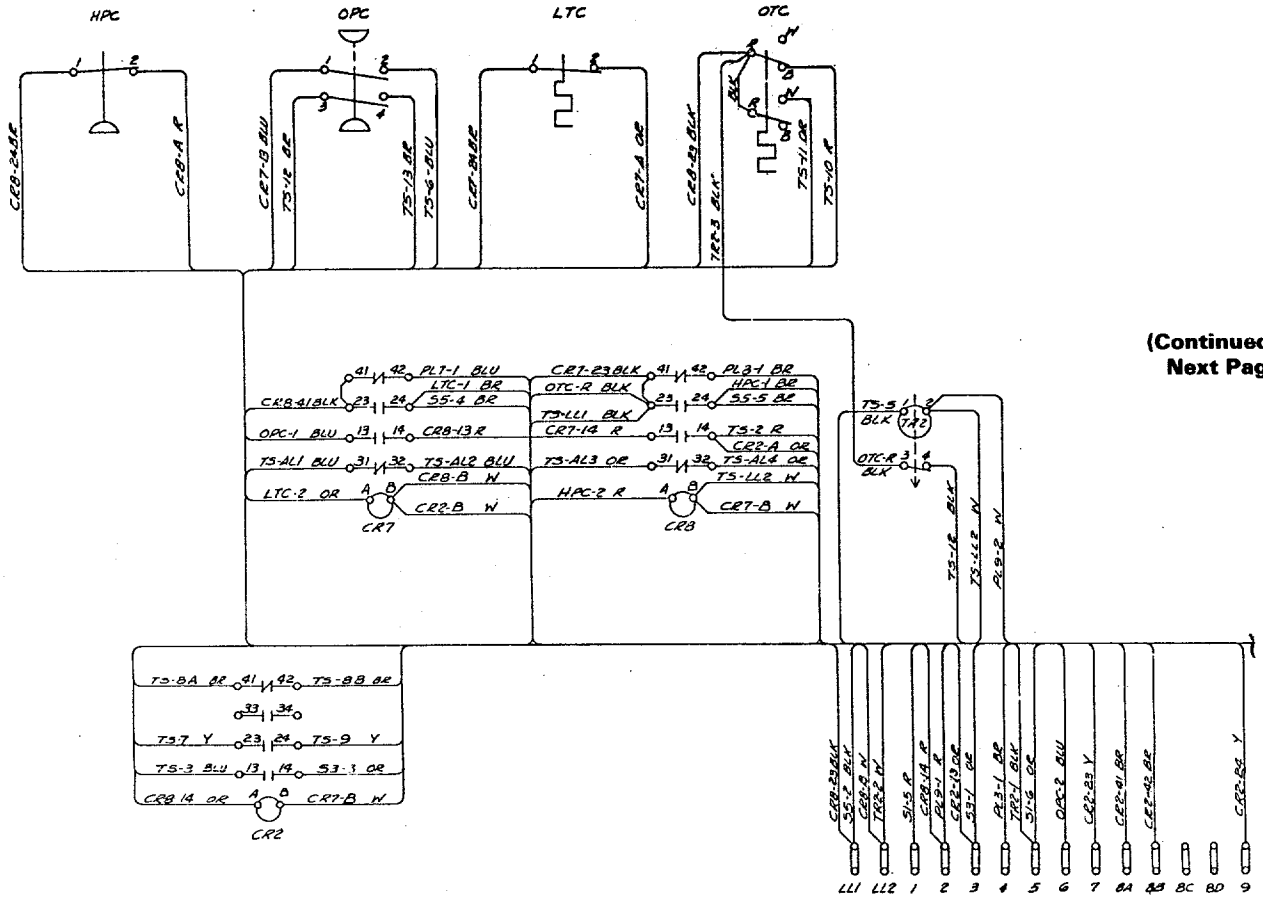
BLACK	BLK
RED	R
ORANGE	OR
YELLOW	Y
BLUE	BLU
BROWN	BR
WHITE	W

(Continued from previous page)

● INDICATES TERMINAL ON INSTRUMENT PANEL
□ INDICATES TERMINAL ON CTV STARTER.
△ INDICATES TERMINAL ON PURGE UNIT.
---- INDICATES EXTERNAL WIRING.

Drwg. 2304-0182

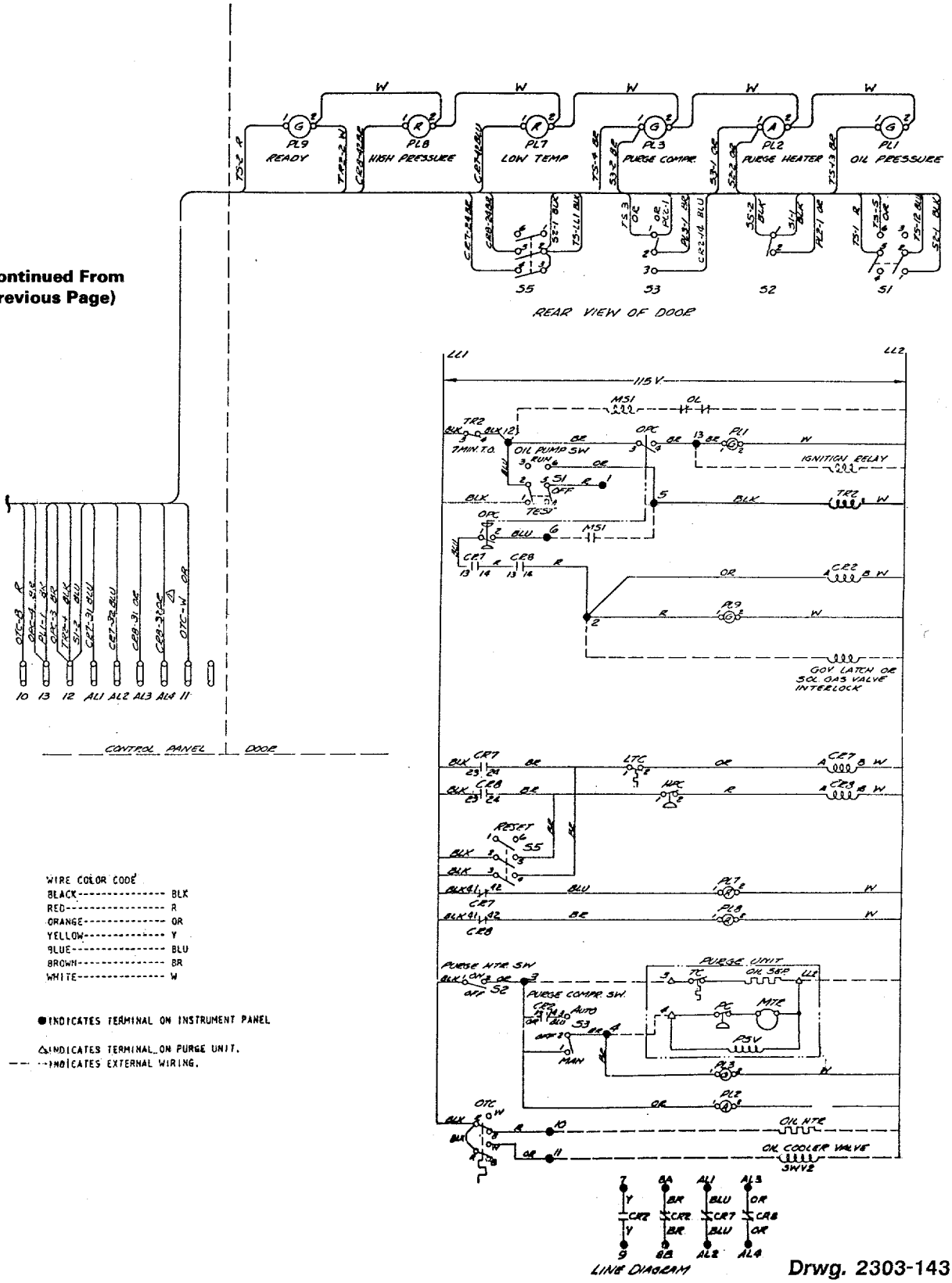
Figure 25
Wiring for PNL-2620,
Instrument Panel for 2-Stage OCVs w/Steam Turbine or Gas Engine Drives (60 Hz)



WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

(Continued From Previous Page)



WIRE COLOR CODE

BLACK	BLK
RED	R
ORANGE	OR
YELLOW	Y
BLUE	BLU
BROWN	BR
WHITE	W

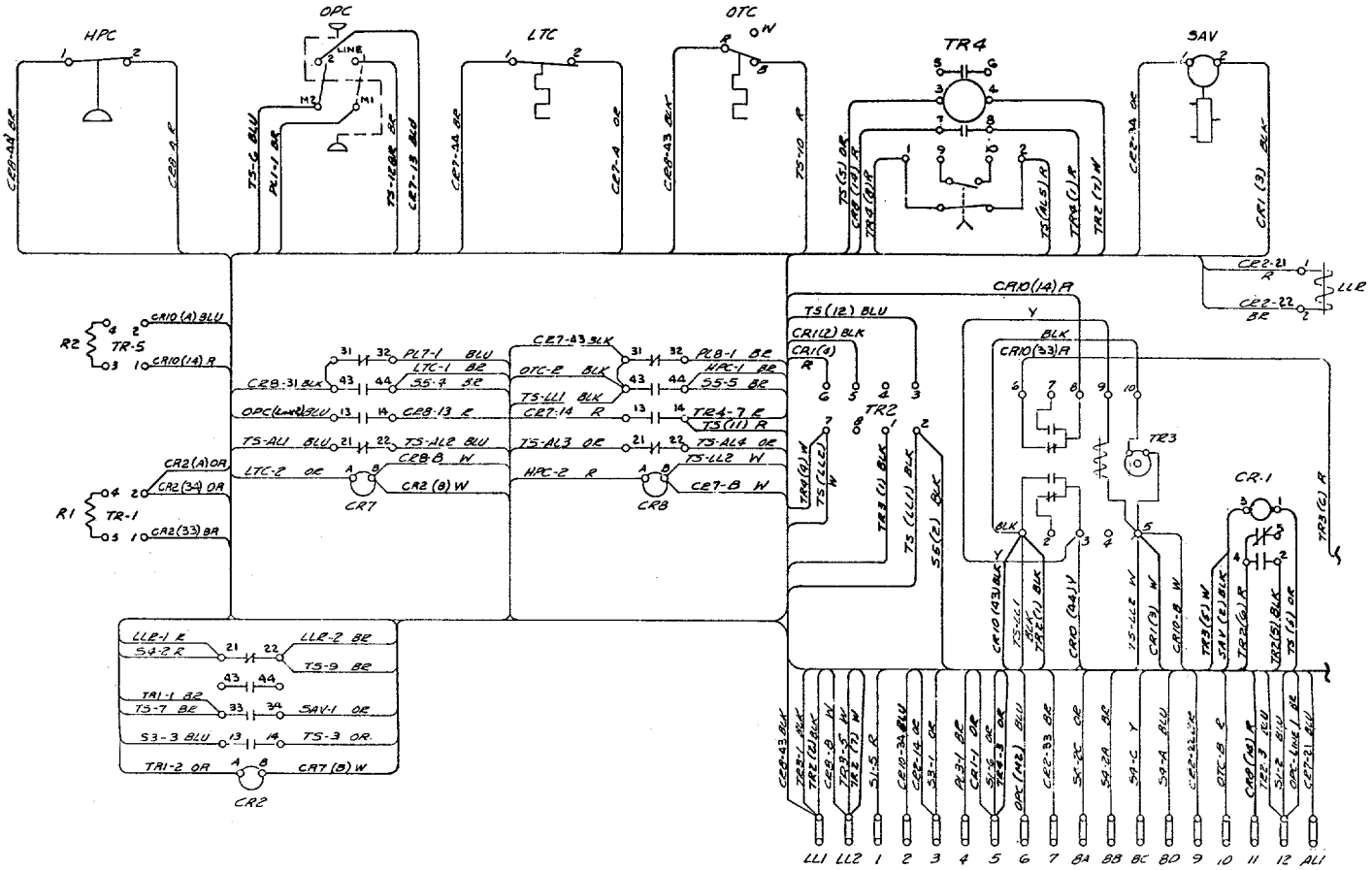
●INDICATES TERMINAL ON INSTRUMENT PANEL

△INDICATES TERMINAL ON PURGE UNIT.

- - - INDICATES EXTERNAL WIRING.

Drwg. 2303-1437C

Figure 26
Wiring for Instrument Panels PNL-3408, PNL-3409, PNL-4587, PNL-4634, and PNL-5610 (See Note)



NOTES: - TR3 IS AN INTERVAL TIMER WHICH OPERATES AS FOLLOWS:

1. WHEN THE OPERATING SOLENOID IS ENERGIZED, THE NO CONTACTS CLOSE, THE NC CONTACTS OPEN IMMEDIATELY, AND A TIMING CYCLE IS INITIATED.
2. AT THE TERMINATION OF THE TIMING PERIOD, THE CLOCK MOTOR RESETS THE CONTACTS TO THEIR NORMAL POSITION INDEPENDENT OF THE OPERATING SOLENOID. THE CLOCK MOTOR RUNS CONTINUOUSLY REGARDLESS OF SOLENOID OR TIME CYCLE.
3. THE OPERATING SOLENOID MUST BE DE-ENERGIZED BEFORE A TIMING CYCLE CAN BE INITIATED.
4. TR1 & TR5 ARE SOLID STATE TIME DELAY RELAYS WITH AN AC SOLID STATE SWITCH OUTPUT. WHEN POWER IS APPLIED THROUGH A LOAD TO TERMINALS 1 AND 2, THE TIME DELAY BEGINS ITS TIMING CYCLE. THE AC SOLID STATE SWITCH REMAINS "OPEN" DURING THE TIMING PERIOD. WHEN THE TIME DELAY PERIOD IS COMPLETE, THE AC SOLID STATE SWITCH "CLOSES" AND THE CONNECTED LOAD IS ENERGIZED. THE AC SOLID STATE SWITCH REMAINS "CLOSED" UNTIL POWER IS REMOVED FROM THE TIME DELAY AND ITS CONNECTED LOAD.

   THERE WILL BE A 2.5 VAC MAX VOLTAGE DROP BETWEEN TERMINALS 1 AND 2, WHEN THE AC SOLID STATE SWITCH IS "CLOSED".
5. TR2 IS A SOLID STATE TIME DELAY RELAY WITH A RELAY OUTPUT. A SWITCH OR CONTACT CLOSURE BETWEEN TERMINAL 5 AND 6 CAUSES THE RELAY CONTACTS TO CLOSE (1 & 3) WHEN THE CONTACTS BETWEEN TERMINALS 5 AND 6 OPEN, THE TIMING CYCLE IS INITIATED.

   THE OUTPUT RELAY CONTACTS (1 & 3) WILL OPEN UPON COMPLETION OF THE TIME DELAY PERIOD.

WIRE COLOR CODE

BLACK	BLK
RED	R
ORANGE	OR
YELLOW	Y
BLUE	BLU
BROWN	BR
WHITE	W

(Continued on next page)

Note:

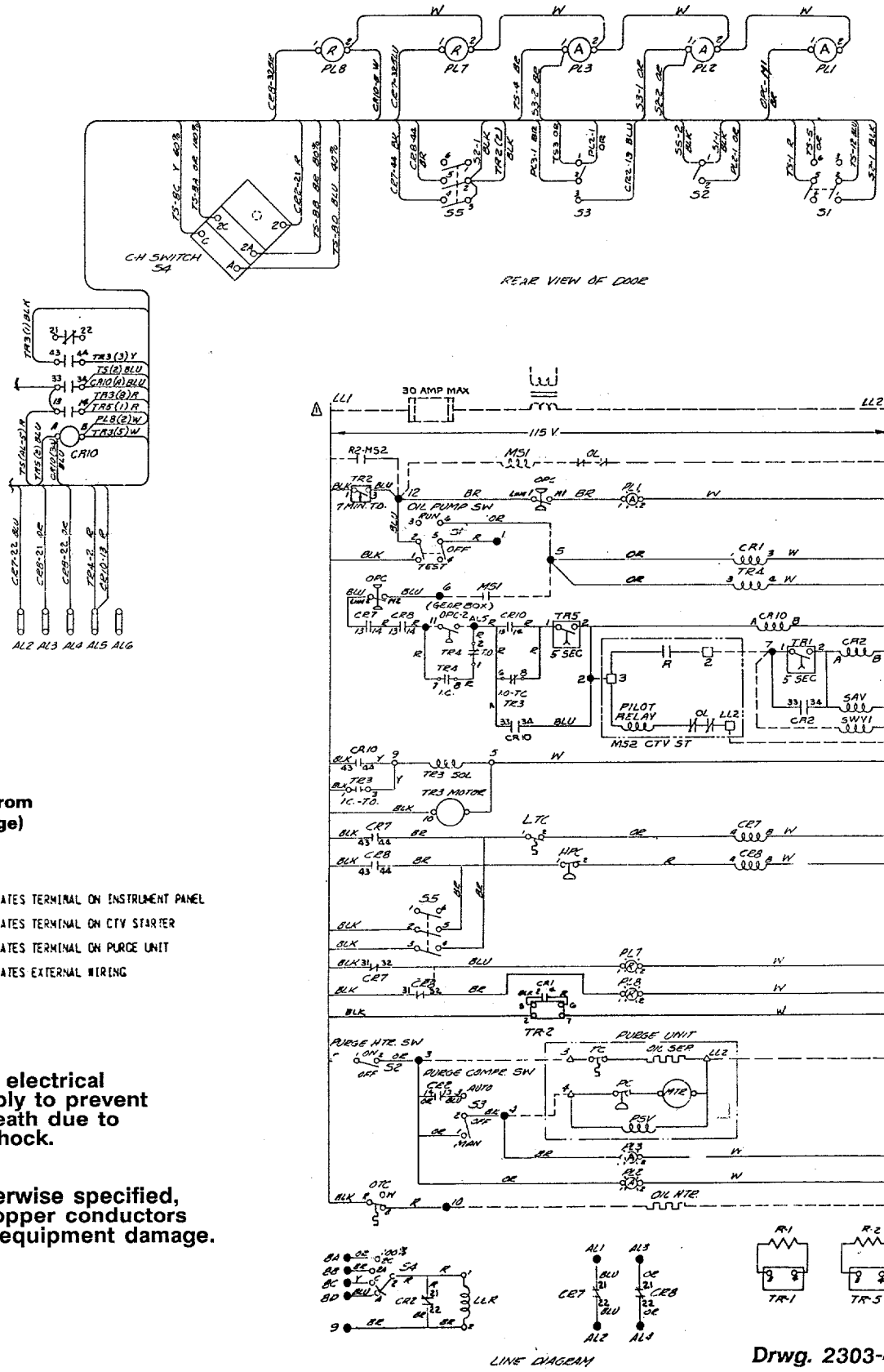
PNL-3408 = Used on High-Speed OCVs w/Electric Motors and Gear Drives (60 Hz)

PNL-3409 = Used on High-Speed OCVs w/Electric Motors and Gear Drives (50 Hz)

PNL-4587 = Used on OCVs w/Electric Motors and Gear Drives (60 Hz)

PNL-4634 = Used on OCVs w/Electric Motors and Gear Drives (60 Hz)

PNL-5610 = Used on OCVs w/Electric Motors and Gear Drives (60 Hz)



(Continued from previous page)

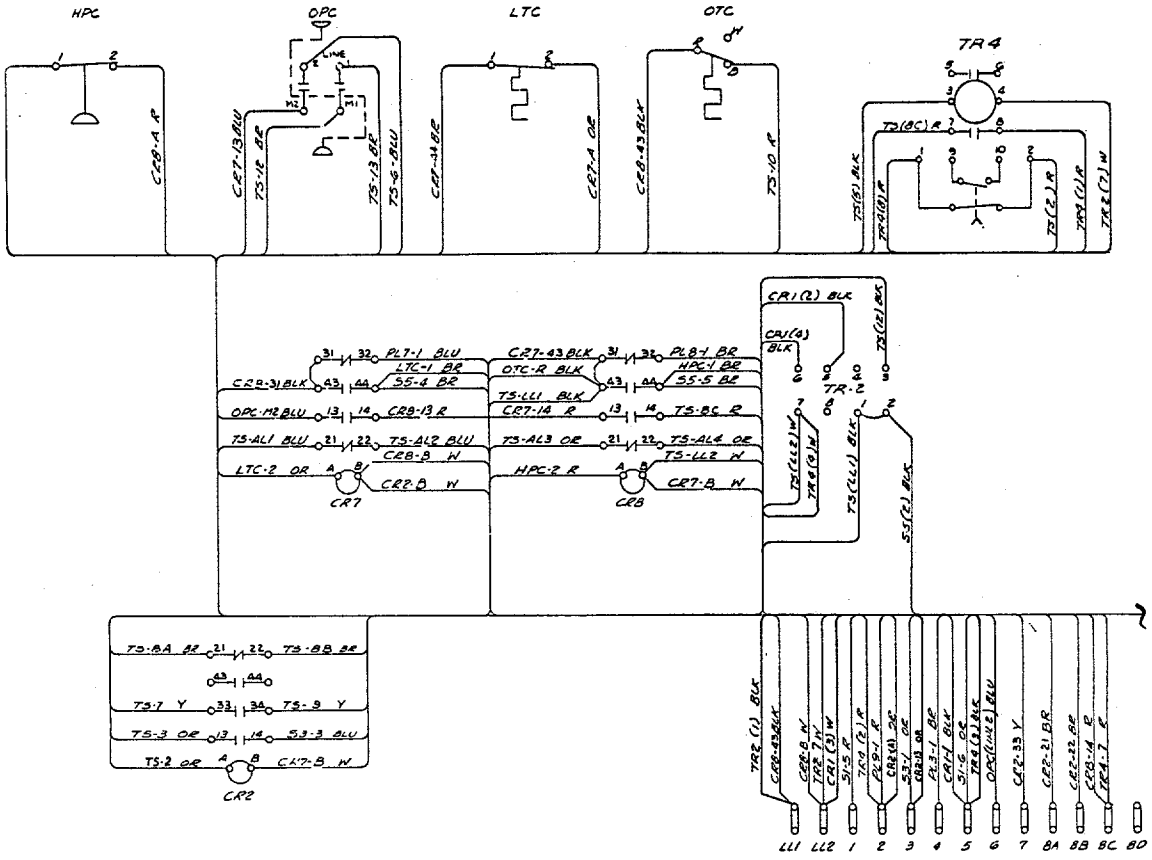
- ● INDICATES TERMINAL ON INSTRUMENT PANEL
- □ INDICATES TERMINAL ON CTV STARTER
- △ INDICATES TERMINAL ON PURGE UNIT
- - - - INDICATES EXTERNAL WIRING

WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

Drwg. 2303-4606H

Figure 27
Wiring for Instrument Panels
PNL-3410, PNL-3411, PNL-4594, PNL-4637, and PNL-5617

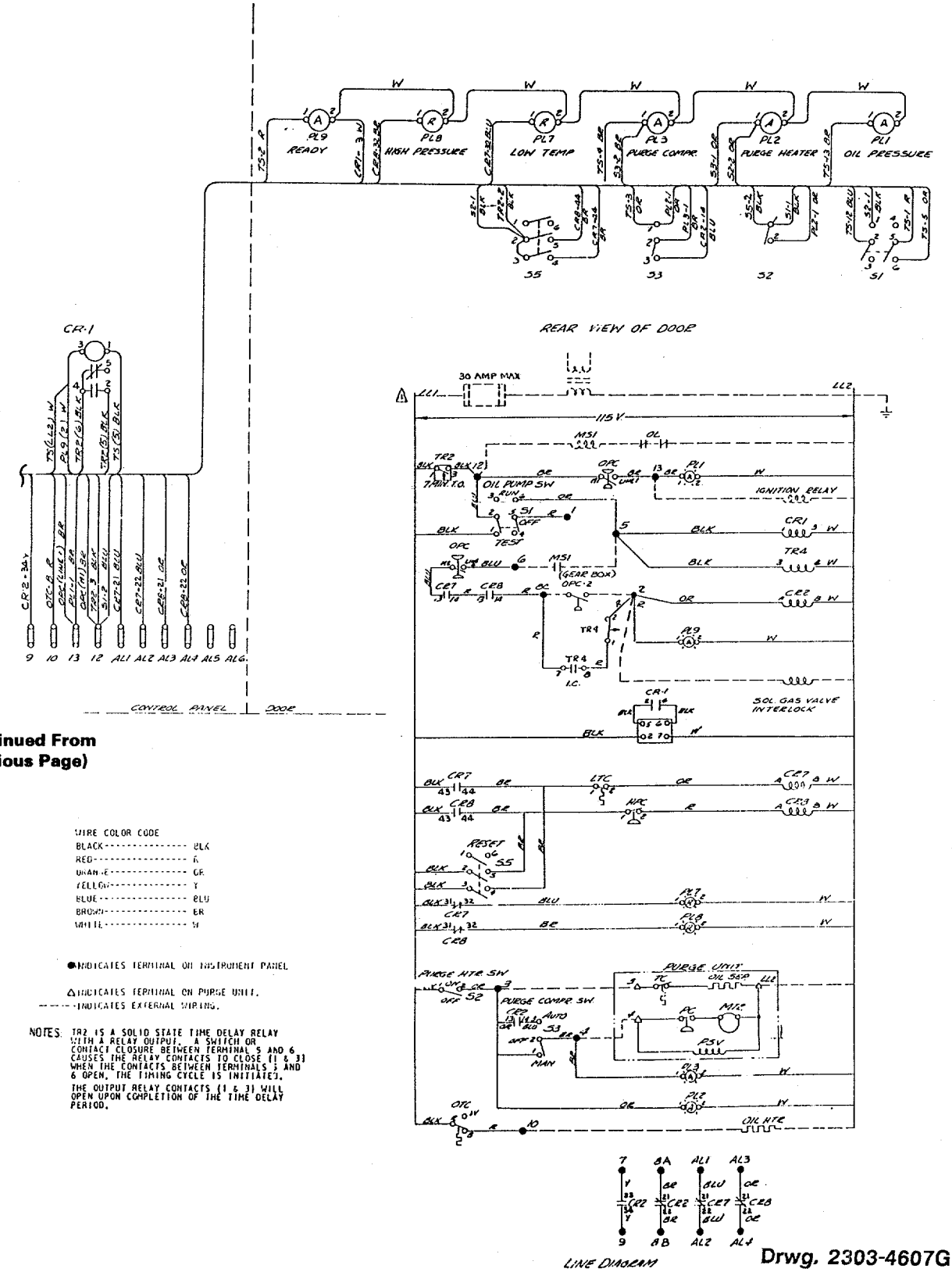


(Continued On Next Page)

WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

Note:
PNL-3410 = Used on OCVs w/Steam Turbine or Gas Engines w/Gear Boxes (50 Hz)
PNL-3411 = Used on OCVs w/Steam Turbine or Gas Engines w/Gear Boxes (60 Hz)
PNL-4594 = Used on OCVs w/Gas Engines and Gear Boxes (60 Hz)
PNL-4637 = Used on OCVs w/Gas Engines and Gear Boxes (60 Hz)
PNL-5617 = Used on OCVs w/Gas Engines and Gear Boxes (60 Hz)



(Continued From Previous Page)

WIRE COLOR CODE

BLACK	BLK
RED	R
ORANGE	OR
YELLOW	Y
BLUE	BLU
BROWN	BR
WHITE	W

●INDICATES TERMINAL ON INSTRUMENT PANEL

△INDICATES TERMINAL ON PURGE UNIT.

- - - - INDICATES EXTERNAL WIRING.

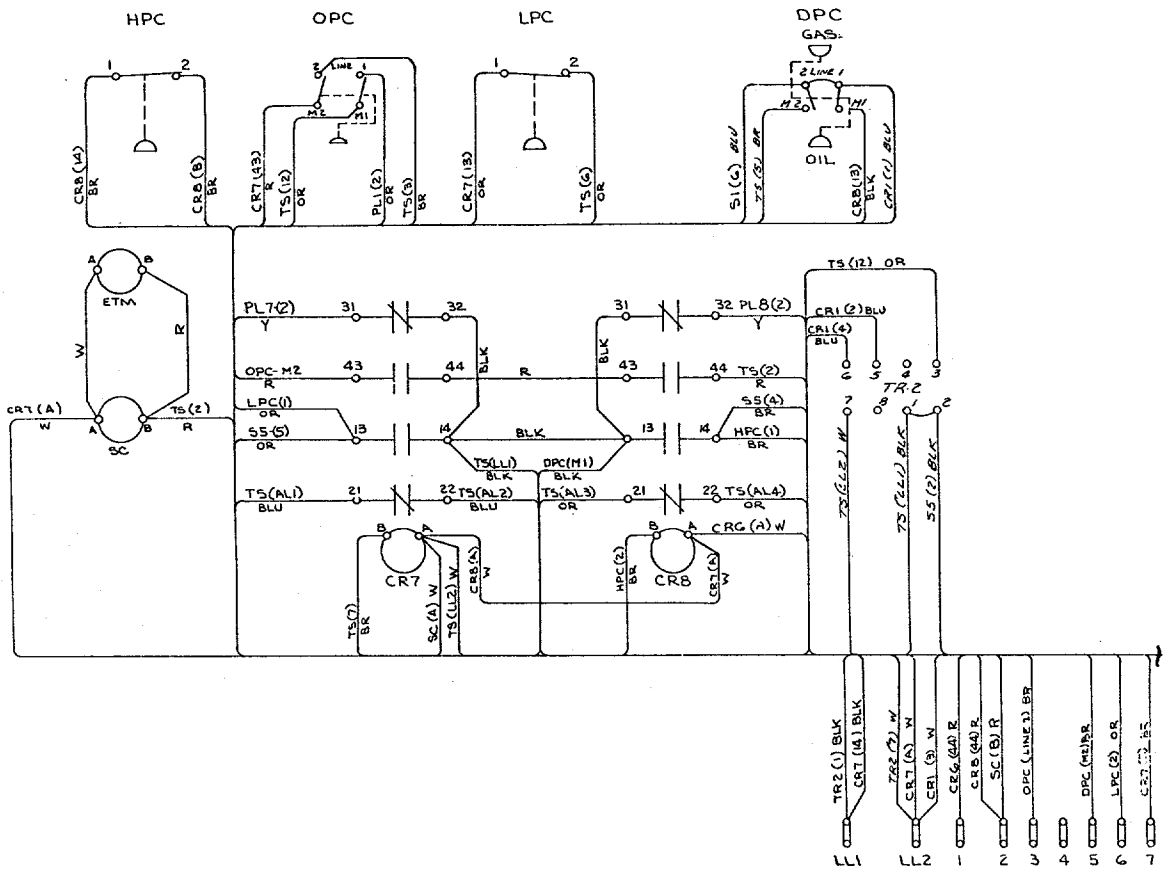
NOTES: TR2 IS A SOLID STATE TIME DELAY RELAY WITH A RELAY OUTPUT. A SWITCH OR CONTACT CLOSURE BETWEEN TERMINAL 5 AND 6 CAUSES THE RELAY CONTACTS TO CLOSE (1 & 3) WHEN THE CONTACTS BETWEEN TERMINALS 5 AND 6 OPEN, THE TIMING CYCLE IS INITIATED.

THE OUTPUT RELAY CONTACTS (1 & 3) WILL OPEN UPON COMPLETION OF THE TIME DELAY PERIOD.

LINE DIAGRAM

Drwg. 2303-4607G

Figure 28
Wiring for PNL-4596, Instrument Panel for LOCVs



(Continued on next page)

NOTE

TR2 IS A SOLID STATE TIME DELAY RELAY WITH A RELAY OUTPUT. A SWITCH OR CONTACT CLOSURE BETWEEN TERMINAL 5 AND 6 CAUSES THE RELAY CONTACTS TO CLOSE (1 & 3) WHEN THE CONTACTS BETWEEN TERMINALS 5 AND 6 OPEN, THE TIMING CYCLE IS INITIATED.

THE OUTPUT RELAY CONTACTS (1 & 3) WILL OPEN UPON COMPLETION OF THE TIME DELAY PERIOD.

SYMBOL	DESCRIPTION
TR-2	OIL PUMP TIMER
CR	CONTROL RELAY
PL	PILOT LIGHT
MS	STARTER OR CONTACTOR
HPC	HIGH PRESSURE CUTOUT
LPC	LOW PRESSURE CUTOUT
LTW	LOW WATER TEMP CUTOUT
OPC	OIL PRESSURE CUTOUT
DPC	DUAL PRESSURE CUTOUT
FS	FLOW SWITCH
S1	OIL PUMP SWITCH DPDT
S5	SAFETY RESET SWITCH
S9-S10	START-STOP-RESET SWITCH
AL	ALARM CONTACT
ETM	ELAPSED TIME METER
SC	STARTS COUNTER
OTC	OIL TEMP CUTOUT (ON OIL TANK)

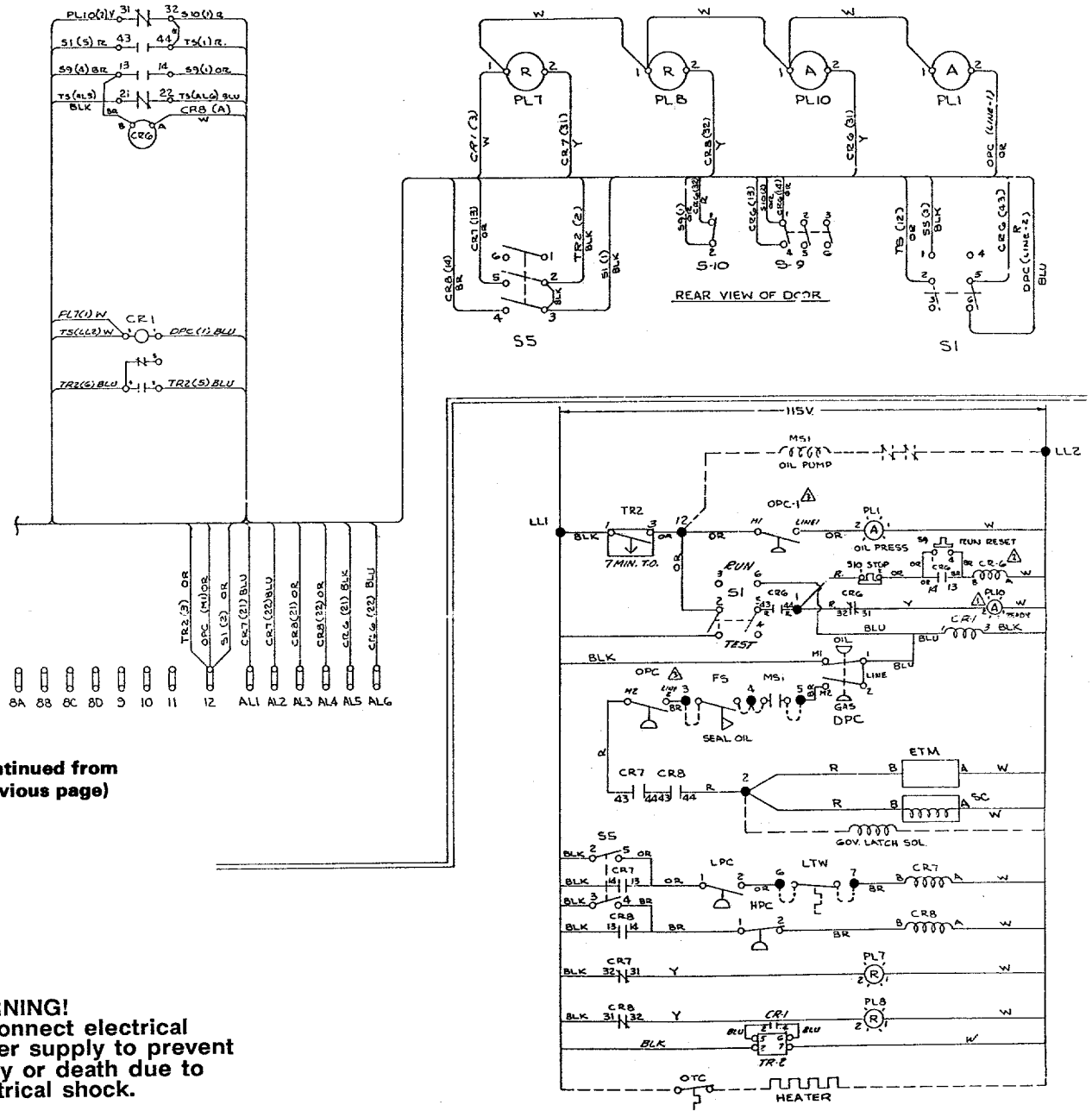
COLOR CODE

BLACK ___ BLK
RED ___ R
ORANGE ___ OR
YELLOW ___ Y
BLUE ___ BLU
BROWN ___ BR
WHITE ___ W

LINE DIAGRAM NOTES

● INDICATES TERMINAL ON INSTRUMENT PANEL

– – – – INDICATES EXTERNAL WIRING



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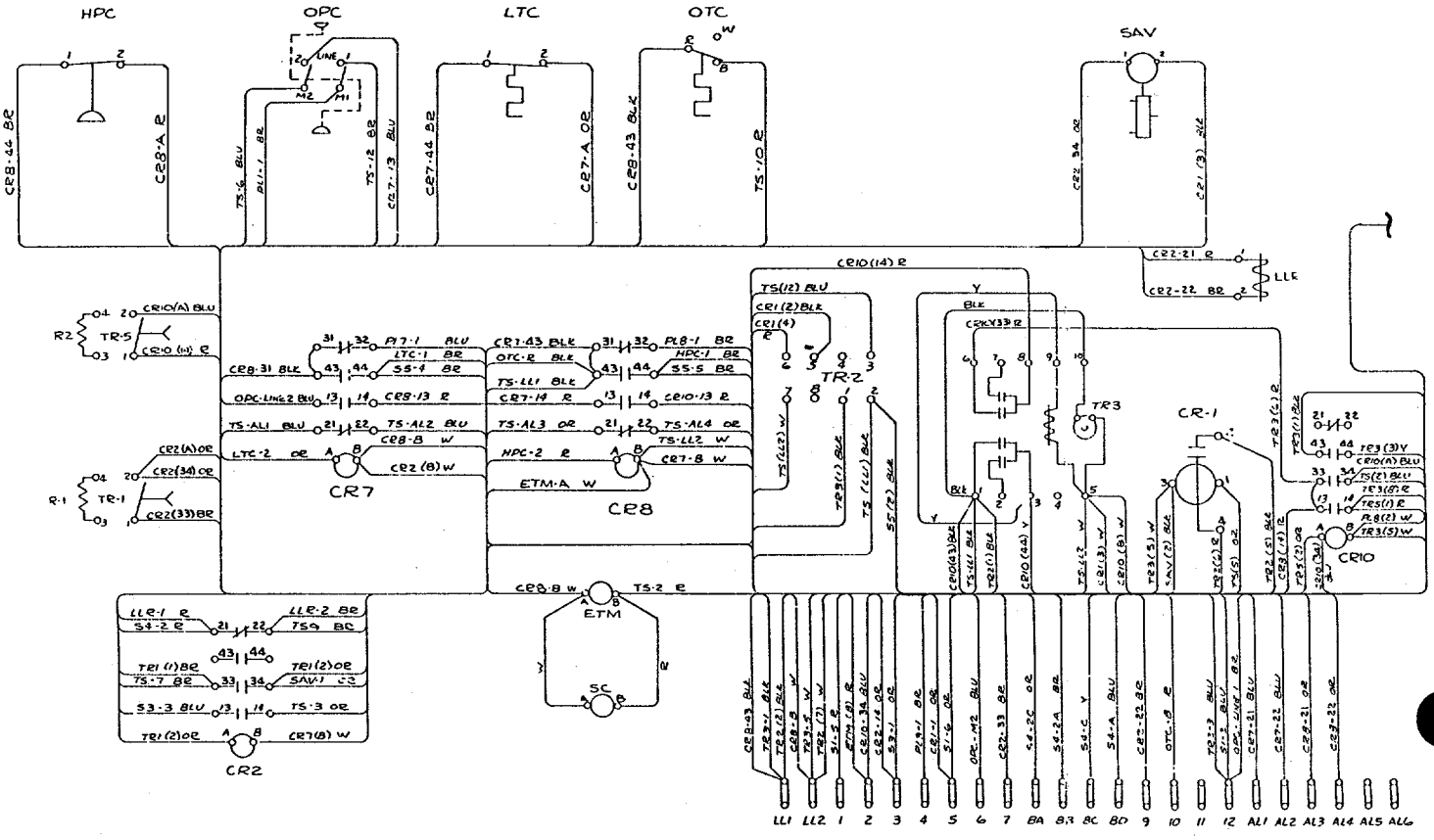
WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

Drwg. 2303-1173L

PNL-W-1

Figure 29
Wiring for Instrument Panels
PNL-6726 and PNL-6729 (See Note)



NOTES: - TR3 IS AN INTERVAL TIMER WHICH OPERATES AS FOLLOWS:

1. WHEN THE OPERATING SOLENOID IS ENERGIZED, THE NO CONTACTS CLOSE, THE NC CONTACTS OPEN IMMEDIATELY, AND A TIMING CYCLE IS INITIATED
2. AT THE TERMINATION OF THE TIMING PERIOD, THE CLOCK MOTOR RESETS THE CONTACTS TO THEIR NORMAL POSITION INDEPENDENT OF THE OPERATING SOLENOID, THE CLOCK MOTOR RUNS CONTINUOUSLY REGARDLESS OF SOLENOID OR TIME CYCLE.
3. THE OPERATING SOLENOID MUST BE DE-ENERGIZED BEFORE A TIMING CYCLE CAN BE INITIATED
4. TR1 & TR5 ARE SOLID STATE TIME DELAY RELAYS WITH AN AC SOLID STATE SWITCH OUTPUT. WHEN POWER IS APPLIED THROUGH A LOAD TO TERMINALS 1 AND 2, THE TIME DELAY BEGINS ITS TIMING CYCLE. THE AC SOLID STATE SWITCH REMAINS "OPEN" DURING THE TIMING PERIOD. WHEN THE TIME DELAY PERIOD IS COMPLETE, THE AC SOLID STATE SWITCH "CLOSES" AND THE CONNECTED LOAD IS ENERGIZED. THE AC SOLID STATE SWITCH REMAINS "CLOSED" UNTIL POWER IS REMOVED FROM THE TIME DELAY AND ITS CONNECTED LOAD
   THERE WILL BE A 2.5 VAC MAX VOLTAGE DROP BETWEEN TERMINALS 1 AND 2, WHEN THE AC SOLID STATE SWITCH IS "CLOSED"
5. TR2 IS A SOLID STATE TIME DELAY RELAY WITH A RELAY OUTPUT. A SWITCH OR CONTACT CLOSURE BETWEEN TERMINAL 5 AND 6 CAUSES THE RELAY CONTACTS TO CLOSE (1 & 3) WHEN THE CONTACTS BETWEEN TERMINALS 5 AND 6 OPEN, THE TIMING CYCLE IS INITIATED
   THE OUTPUT RELAY CONTACTS (1 & 3) WILL OPEN UPON COMPLETION OF THE TIME DELAY PERIOD

WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

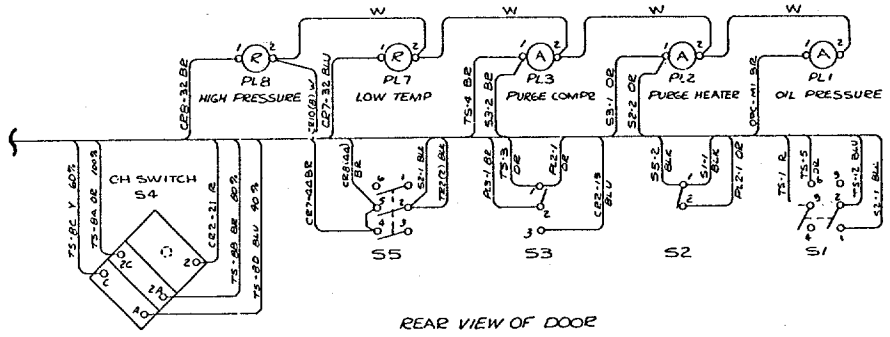
(Continued On Next Page)

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

WIRE COLOR CODE
BLACK - - - - - - - - BLK
RED - - - - - - - - - R
ORANGE - - - - - - OR
YELLOW - - - - - - Y
BLUE - - - - - - - - BLU
BROWN - - - - - - - BR
WHITE - - - - - - - W

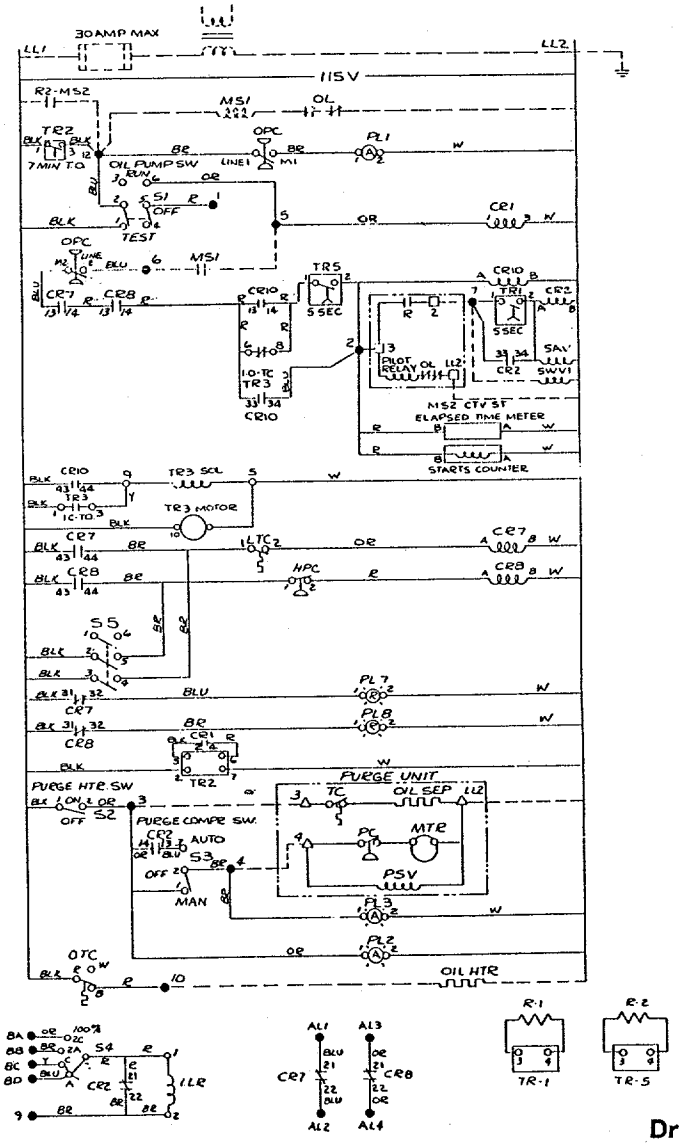
● INDICATES TERMINAL ON INSTRUMENT PANEL
□ INDICATES TERMINAL ON CTV STARTER
△ INDICATES TERMINAL ON PURGE UNIT
- - - - INDICATES EXTERNAL WIRING

Note:
PNL-6726 = Used on OCVs w/Electric Motor Drives (60 Hz)
PNL-6729 = Used on OCVs w/Electric Motor Drives (50 Hz)



REAR VIEW OF DOOR

(Continued From Previous Page)

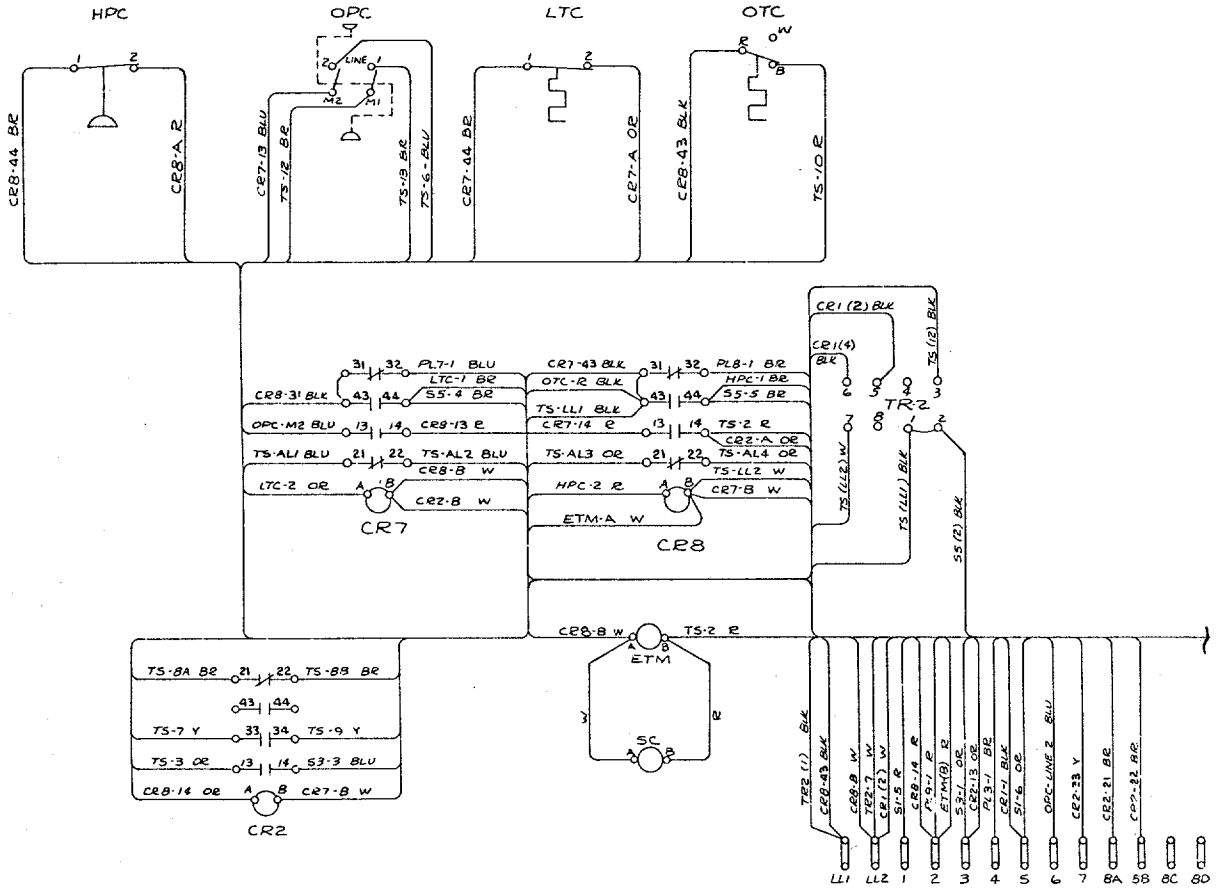


LINE DIAGRAM

Drwg. 2304-0175A

PNL-W-1

Figure 30
Wiring for Instrument Panels
PNL-6727 and PNL-6730 (See Note)



TR2 IS A SOLID STATE TIME DELAY RELAY WITH A RELAY OUTPUT. A SWITCH OR CONTACT CLOSURE BETWEEN TERMINAL 5 AND 6 CAUSES THE RELAY CONTACTS TO CLOSE (1 & 31 WHEN THE CONTACTS BETWEEN TERMINALS 5 AND 6 OPEN. THE TIMING CYCLE IS INITIATED

THE OUTPUT RELAY CONTACTS (1 & 31 WILL OPEN UPON COMPLETION OF THE TIME DELAY PERIOD

(Continued On Next Page)

WIRE COLOR CODE
BLACK - - - - - - - BLK
RED - - - - - - - - R
ORANGE - - - - - - OR
YELLOW - - - - - - Y
BLUE - - - - - - - BLU
BROWN - - - - - - - BR
WHITE - - - - - - - W

● INDICATES TERMINAL ON INSTRUMENT PANEL

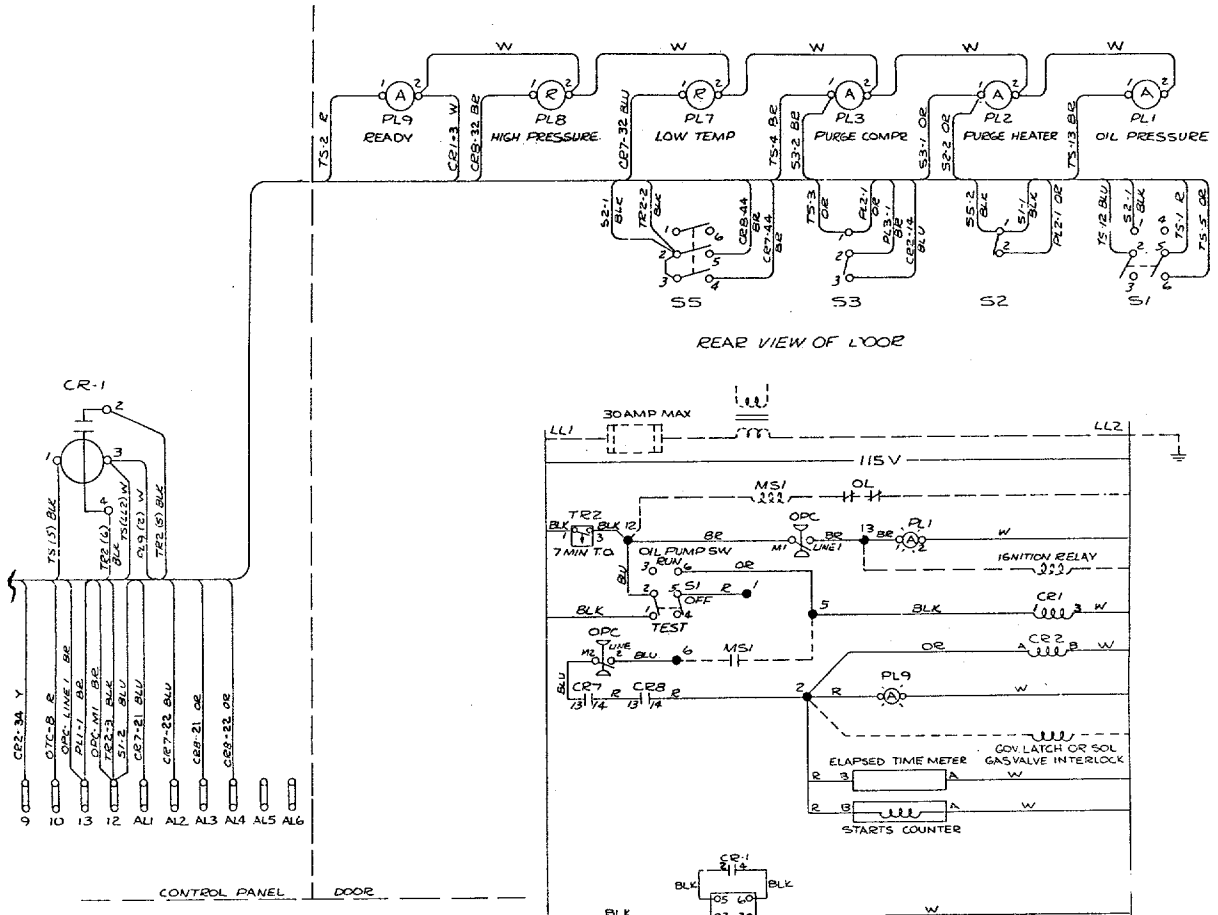
△ INDICATES TERMINAL ON PURGE UNIT

- - - - INDICATES EXTERNAL WIRING

WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

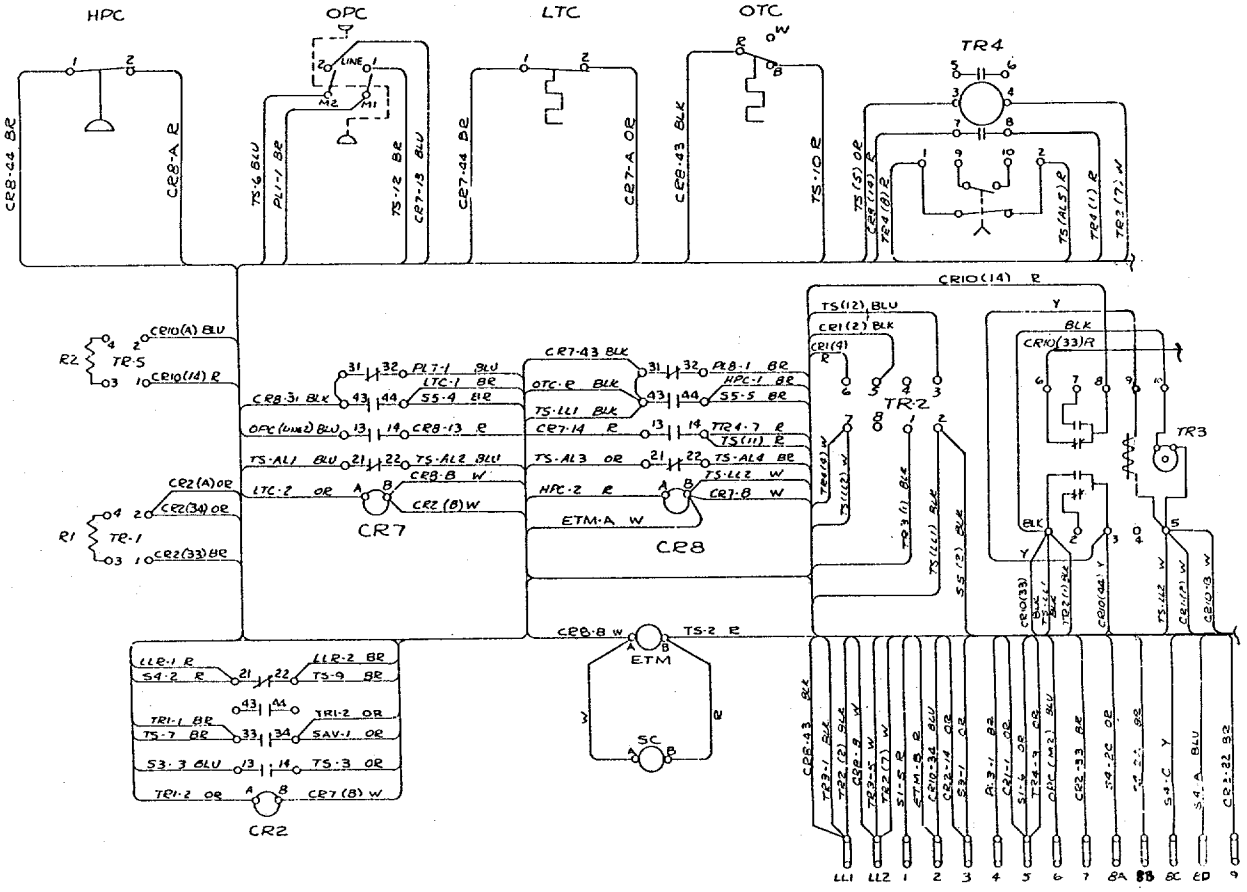
Note:
PNL-6727 = Used on OCVs w/Steam Turbine or Gas Engine Drives (60 Hz)
PNL-6730 = Used on OCVs w/Steam Turbine or Gas Engine Drives (50 Hz)



(Continued From Previous Page)

Drwg. 2304-0176A

Figure 31
Wiring for Instrument Panels
PNL-6728 and PNL-6731 (See Note)



NOTES: - TR3 IS AN INTERVAL TIMER WHICH OPERATES AS FOLLOWS:

1. WHEN THE OPERATING SOLENOID IS ENERGIZED. THE NO CONTACTS CLOSE. THE NC CONTACTS OPEN IMMEDIATELY. AND A TIMING CYCLE IS INITIATED
2. AT THE TERMINATION OF THE TIMING PERIOD. THE CLOCK MOTOR RESETS THE CONTACTS TO THEIR NORMAL POSITION INDEPENDENT OF THE OPERATING SOLENOID. THE CLOCK MOTOR RUNS CONTINUOUSLY REGARDLESS OF SOLENOID OR TIME CYCLE.
3. THE OPERATING SOLENOID MUST BE DE-ENERGIZED BEFORE A TIMING CYCLE CAN BE INITIATED
4. TR1 & TR5 ARE SOLID STATE TIME DELAY RELAYS WITH AN AC SOLID STATE SWITCH OUTPUT. WHEN POWER IS APPLIED THROUGH A LOAD TO TERMINALS 1 AND 2. THE TIME DELAY BEGINS ITS TIMING CYCLE. THE AC SOLID STATE SWITCH REMAINS "OPEN" DURING THE TIMING PERIOD. WHEN THE TIME DELAY PERIOD IS COMPLETE. THE AC SOLID STATE SWITCH "CLOSES" AND THE CONNECTED LOAD IS ENERGIZED. THE AC SOLID STATE SWITCH REMAINS "CLOSED" UNTIL POWER IS REMOVED FROM THE TIME DELAY AND ITS CONNECTED LOAD

   THERE WILL BE A 2.5 VAC MAX VOLTAGE DROP BETWEEN TERMINALS 1 AND 2. WHEN THE AC SOLID STATE SWITCH IS "CLOSED"
5. TR2 IS A SOLID STATE TIME DELAY RELAY WITH A RELAY OUTPUT. A SWITCH OR CONTACT CLOSURE BETWEEN TERMINAL 5 AND 6 CAUSES THE RELAY CONTACTS TO CLOSE (1 & 3) WHEN THE CONTACTS BETWEEN TERMINALS 5 AND 6 OPEN. THE TIMING CYCLE IS INITIATED

   THE OUTPUT RELAY CONTACTS (1 & 3) WILL OPEN UPON COMPLETION OF THE TIME DELAY PERIOD

WIRE COLOR CODE

BLACK	BLK
RED	R
ORANGE	OR
YELLOW	Y
BLUE	BLU
BROWN	BR
WHITE	W

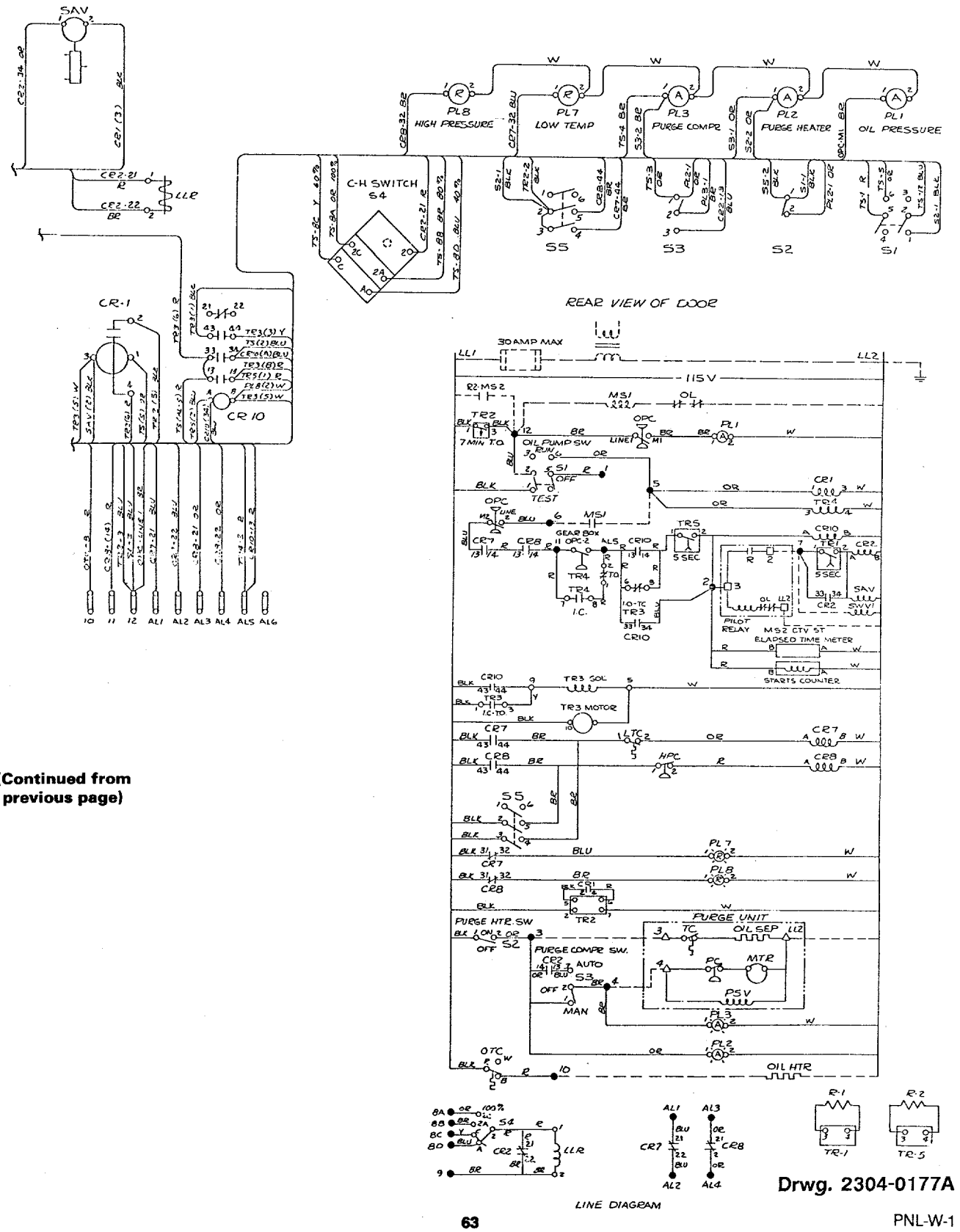
● INDICATES TERMINAL ON INSTRUMENT PANEL
□ INDICATES TERMINAL ON CTV STARTER
△ INDICATES TERMINAL ON PURGE UNIT
---- INDICATES EXTERNAL WIRING

(Continued on next page)

WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

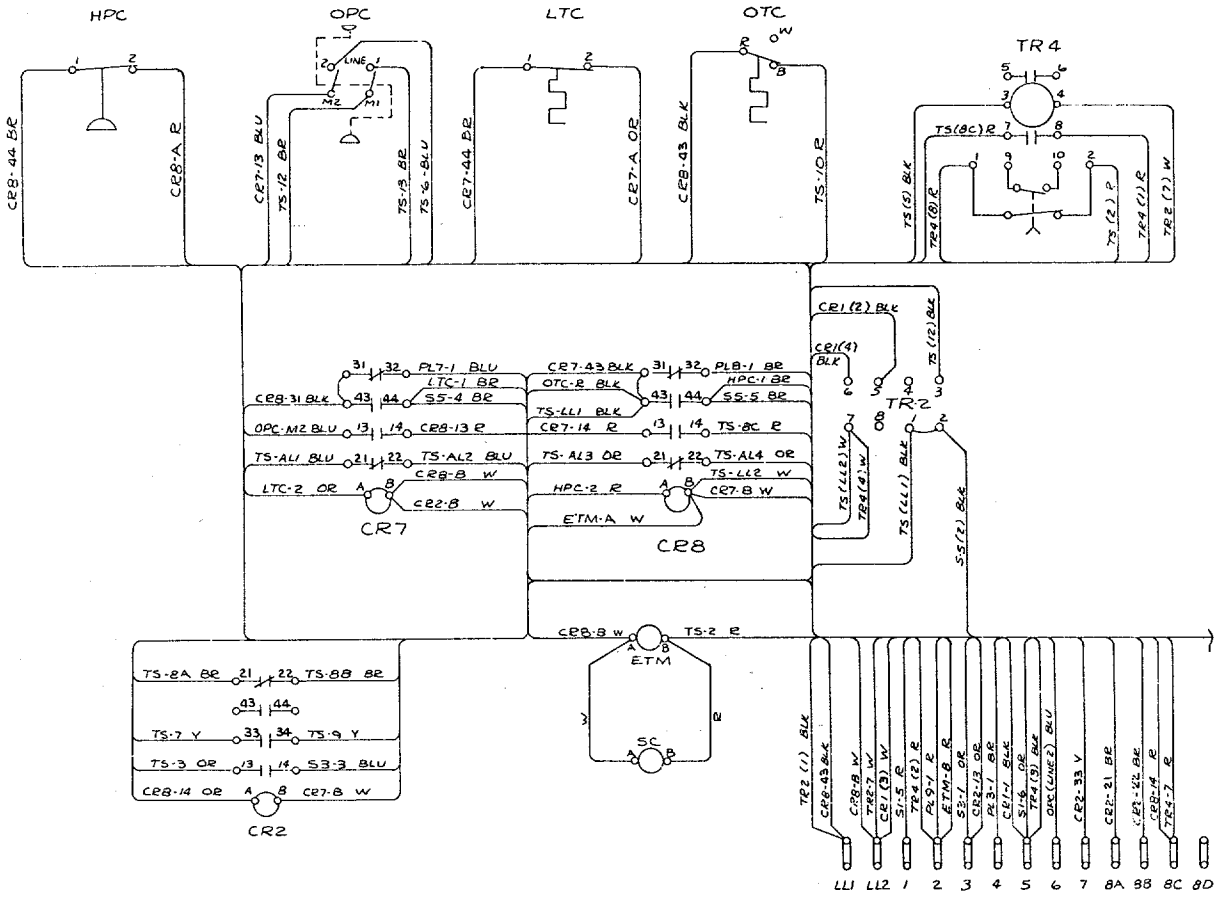
Note:
PNL-6728 = Used on OCVs w/Electric Motors and Gear Drives (60 Hz)
PNL-6731 = Used on OCVs w/Electric Motors and Gear Drives (50 Hz)



(Continued from previous page)

Drwg. 2304-0177A

Figure 32
Wiring for Instrument Panels PNL-6732 and PNL-6733 (See Note)



WIRE COLOR CODE
BLACK - - - - - - - BLK
RED - - - - - - - - R
ORANGE - - - - - - OR
YELLOW - - - - - - Y
BLUE - - - - - - - BLU
BROWN - - - - - - - BR
WHITE - - - - - - - W

● INDICATES TERMINAL ON INSTRUMENT PANEL

△ INDICATES TERMINAL ON PURGE UNIT

- - - - INDICATES EXTERNAL WIRING

NOTE:

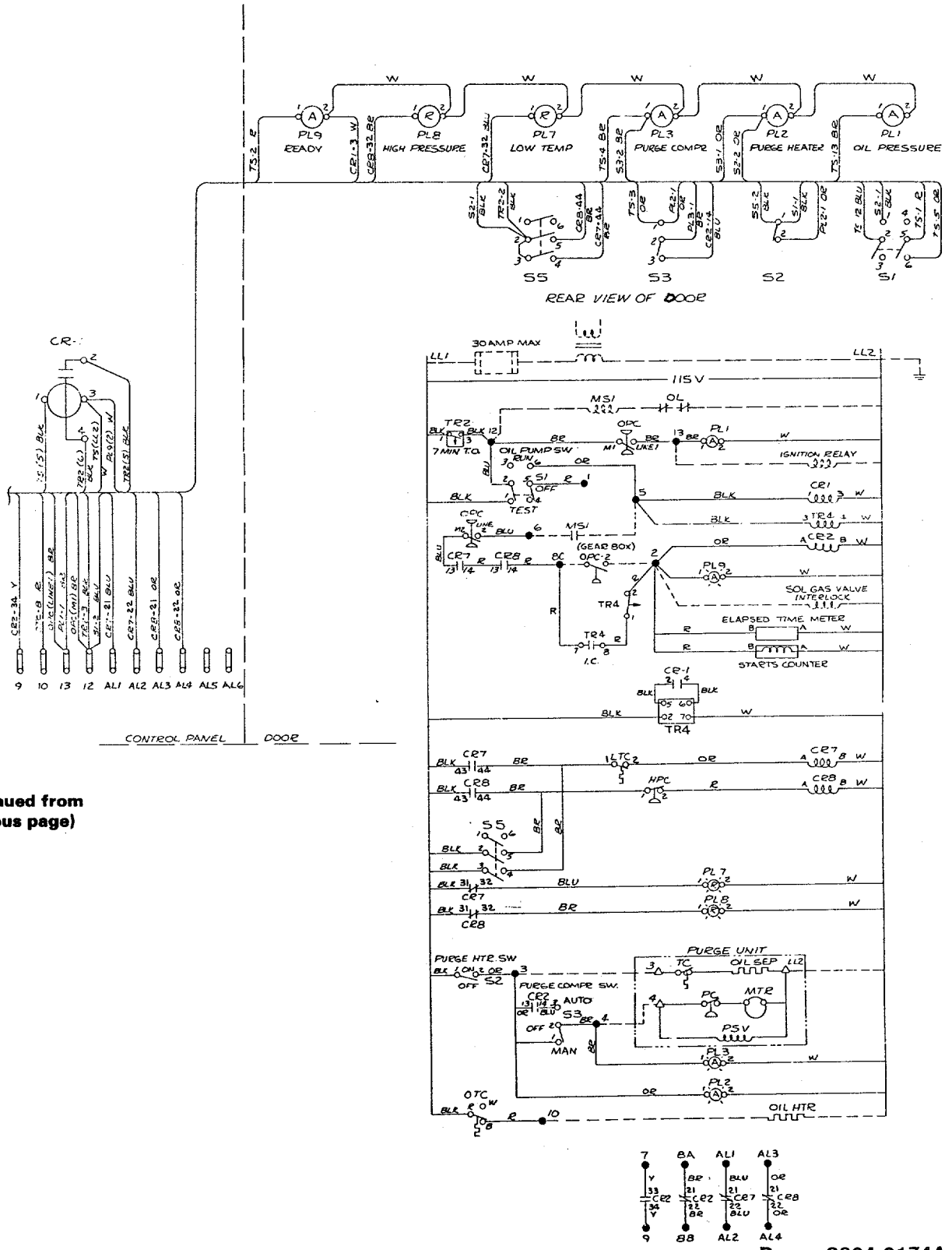
1. TR2 TS A SOLID STATE TIME DELAY RELAY WITH A RELAY OUTPUT. A SWITCH OR CONTACT CLOSURE BETWEEN TERMINAL 5 AND 6 CAUSES THE RELAY CONTACTS TO CLOSE (1 & 3) WHEN THE CONTACTS BETWEEN TERMINALS 5 AND 6 OPEN. THE TIMING CYCLE IS INITIATED
THE OUTPUT RELAY CONTACTS (1 & 3) WILL OPEN UPON COMPLETION OF THE TIME DELAY PERIOD

(Continued on next page)

WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

Note:
PNL-6732 = Used on OCVs w/Gas Engines and Gear Boxes (50 Hz)
PNL-6733 = Used on OCVs w/Gas Engines and Gear Boxes (60 Hz)



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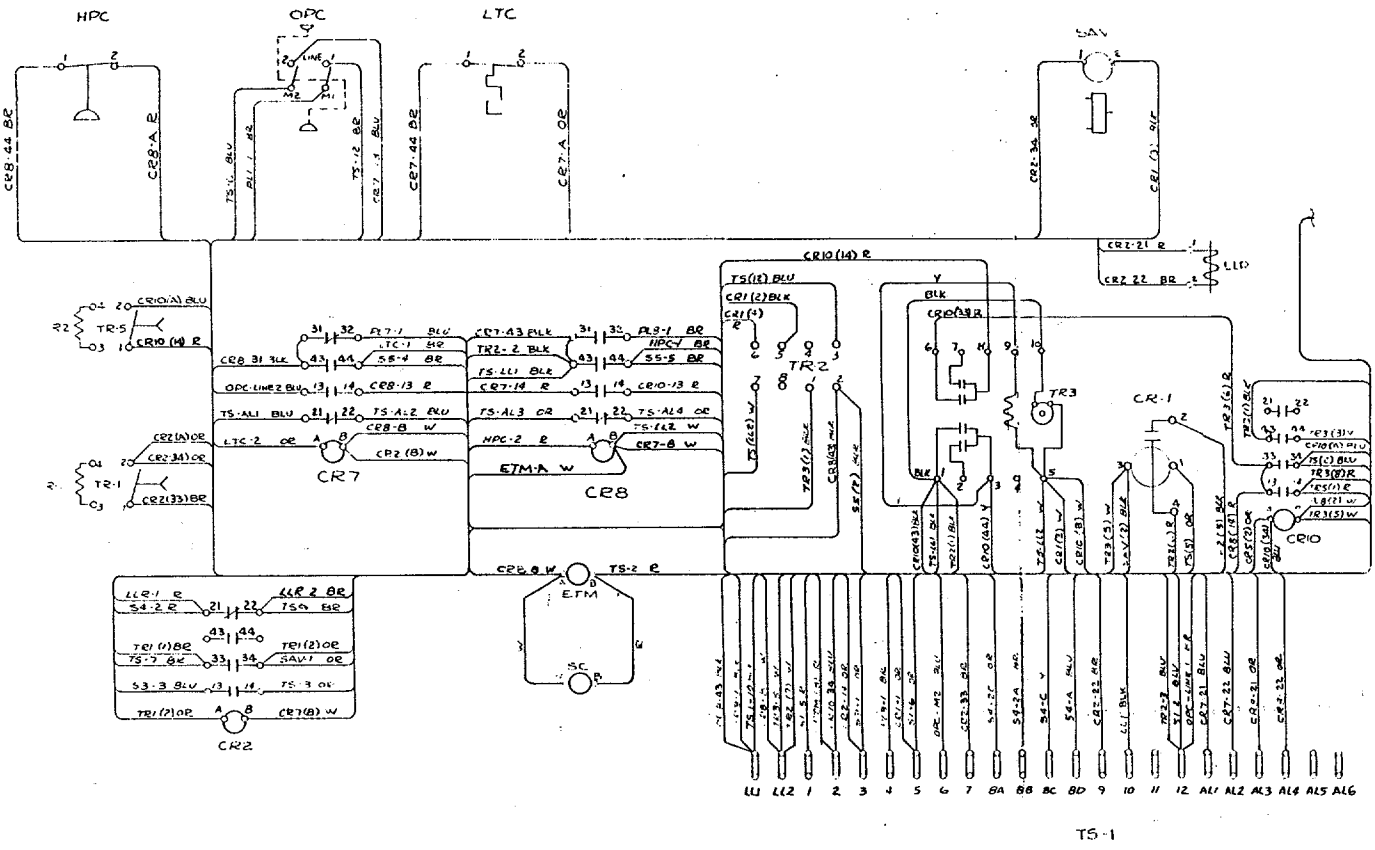
Drwg. 2304-0174A

Figure 33
Wiring for Instrument Panels
PNL-8795 and PNL-8797 (See Note)



NOTES - TR3 IS AN INTERVAL TIMER WHICH OPERATES AS FOLLOWS

1. WHEN THE OPERATING SOLENOID IS ENERGIZED, THE NO CONTACTS CLOSE, THE NC CONTACTS OPEN IMMEDIATELY, AND A TIMING CYCLE IS INITIATED
2. AT THE TERMINATION OF THE TIMING PERIOD, THE CLOCK MOTOR RESETS THE CONTACTS TO THEIR NORMAL POSITION INDEPENDENT OF THE OPERATING SOLENOID. THE CLOCK MOTOR RUNS CONTINUOUSLY, REGARDLESS OF SOLENOID OR TIME CYCLE.
3. THE OPERATING SOLENOID MUST BE DE-ENERGIZED BEFORE A TIMING CYCLE CAN BE INITIATED
4. TR1 & TR5 ARE SOLID STATE TIME DELAY RELAYS WITH AN AC SOLID STATE SWITCH OUTPUT. WHEN POWER IS APPLIED THROUGH A LOAD TO TERMINALS 1 AND 2, THE TIME DELAY BEGINS ITS TIMING CYCLE. THE AC SOLID STATE SWITCH REMAINS "OPEN" DURING THE TIMING PERIOD. WHEN THE TIME DELAY PERIOD IS COMPLETE, THE AC SOLID STATE SWITCH "CLOSES" AND THE CONNECTED LOAD IS ENERGIZED. THE AC SOLID STATE SWITCH REMAINS "CLOSED" UNTIL POWER IS REMOVED FROM THE TIME DELAY AND ITS CONNECTED LOAD

   THERE WILL BE A 2.5 VAC MAX VOLTAGE DROP BETWEEN TERMINALS 1 AND 2, WHEN THE AC SOLID STATE SWITCH IS "CLOSED"
5. TR2 IS A SOLID STATE TIME DELAY RELAY WITH A RELAY OUTPUT. A SWITCH OR CONTACT CLOSURE BETWEEN TERMINAL 5 AND 6 CAUSES THE RELAY CONTACTS TO CLOSE (1 & 3) WHEN THE CONTACTS BETWEEN TERMINALS 5 AND 6 OPEN. THE TIMING CYCLE IS INITIATED

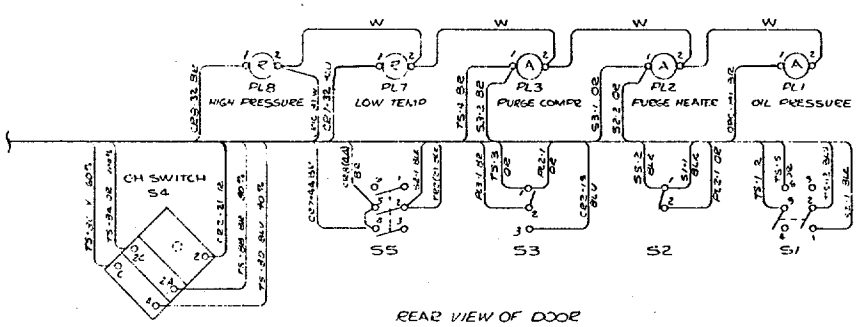
   THE OUTPUT RELAY CONTACTS (1 & 3) WILL OPEN UPON COMPLETION OF THE TIME DELAY PERIOD

(Continued On Next Page)

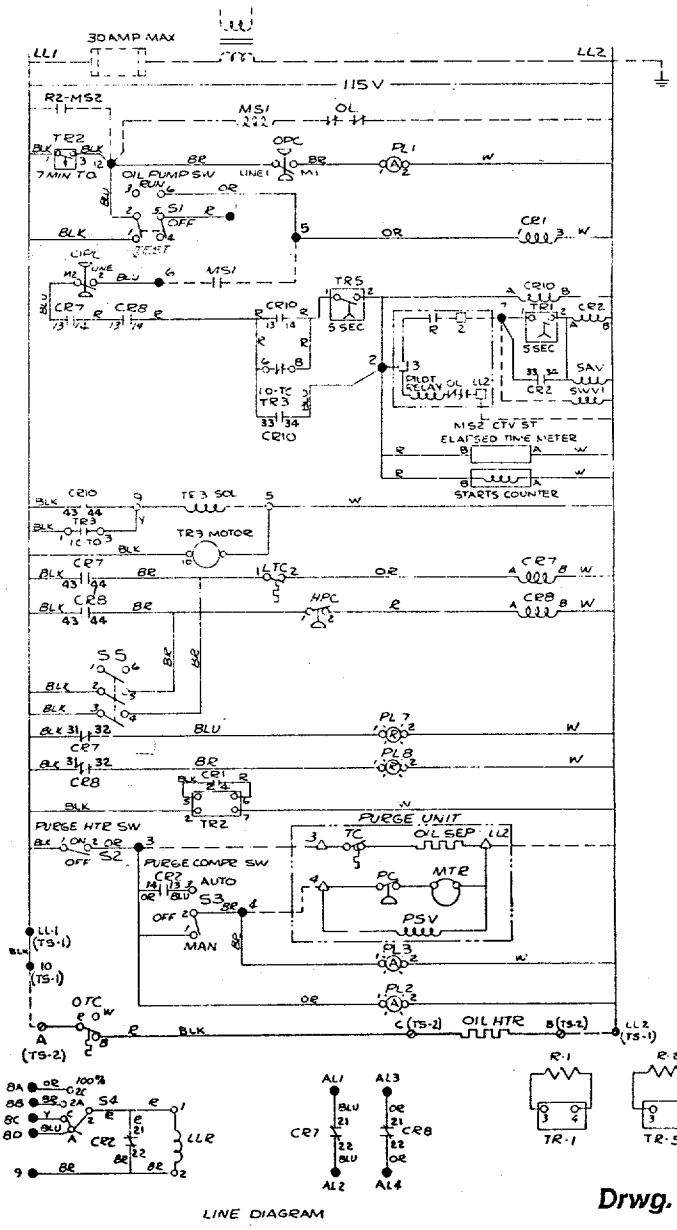
WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

Note:
PNL-8795 = Used on OCVs w/Electric Motor Drives (60 Hz)
PNL-8797 = Used on OCVs w/Electric Motor Drives (60 Hz)



REAR VIEW OF DOOR



LINE DIAGRAM

(Continued From Previous Page)

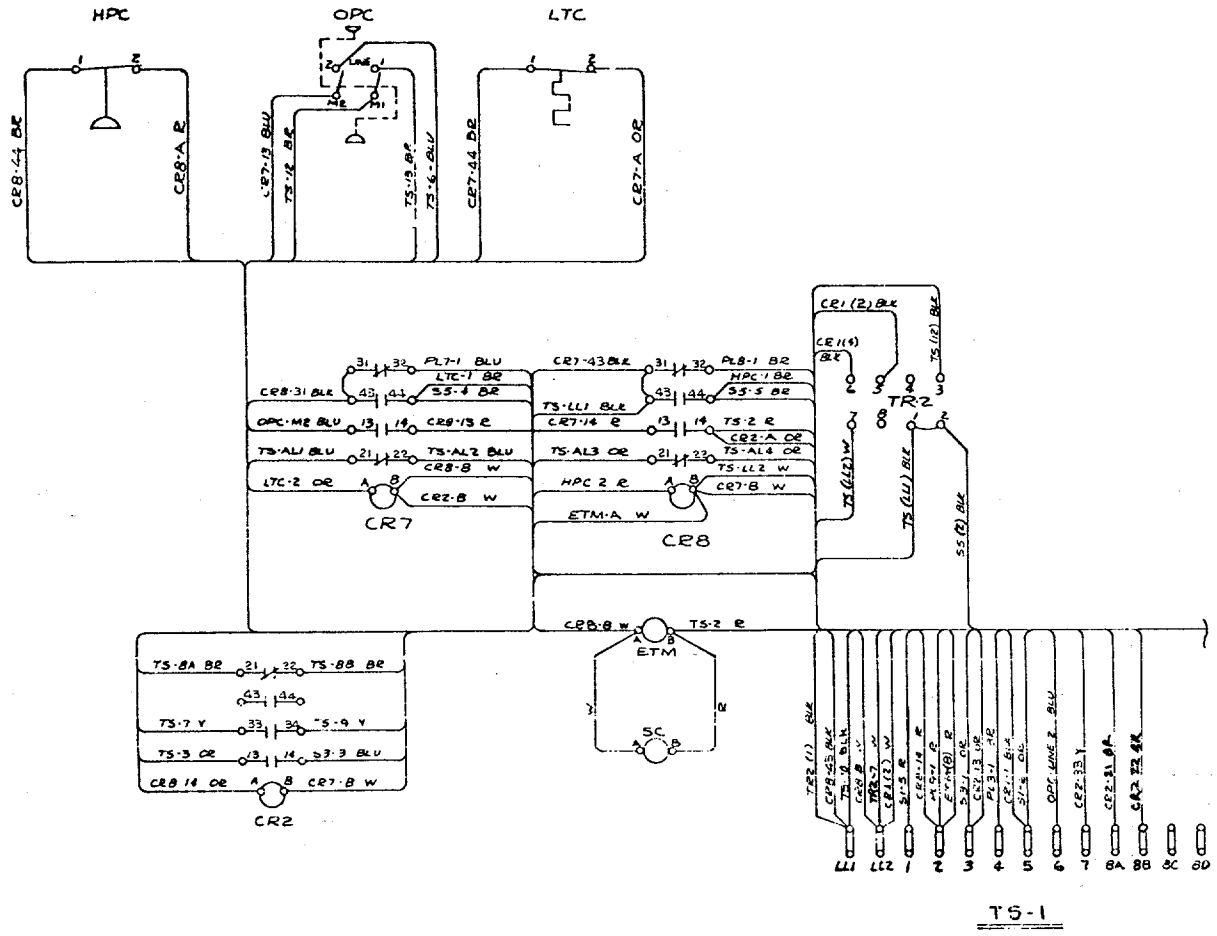
Ø INDICATES TERM. ON REMOTE OTC PNL
● INDICATES TERMINAL ON INSTRUMENT PANEL
□ INDICATES TERMINAL ON CTV STARTER
△ INDICATES TERMINAL ON PURGE UNIT
- - - - INDICATES EXTERNAL WIRING

WIRE COLOR CODE

BLACK	BLK
RED	R
ORANGE	OR
YELLOW	Y
BLUE	BLU
BROWN	BR
WHITE	W

Drwg. 2304-0422A

Figure 34
Wiring for Instrument Panels PNL-8796 and PNL-8798 (See Note)



(Continued on next page)

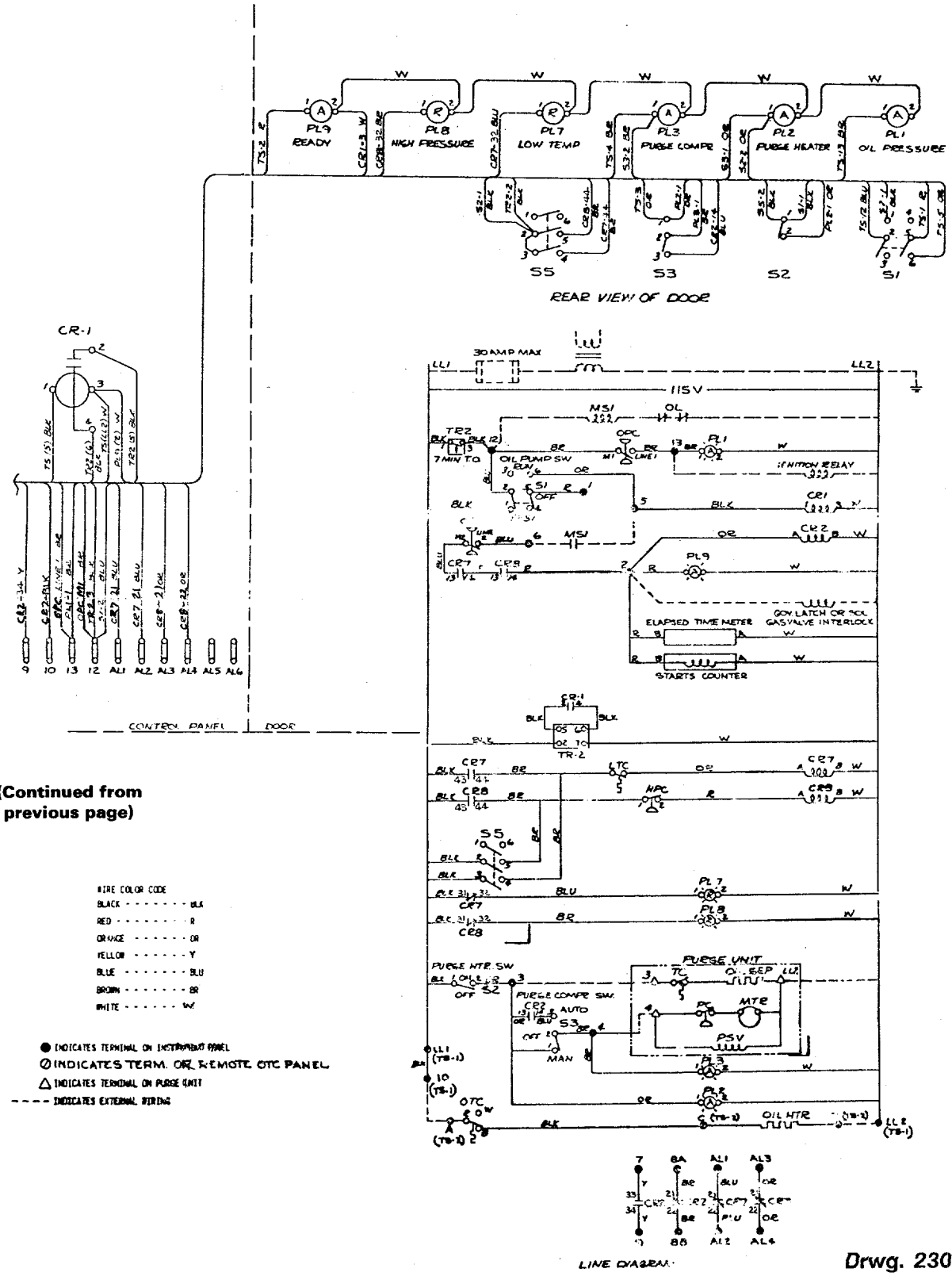
TR2 IS A SOLID STATE TIME DELAY RELAY WITH A RELAY OUTPUT. A SWITCH OR CONTACT CLOSURE BETWEEN TERMINAL 5 AND 6 CAUSES THE RELAY CONTACTS TO CLOSE (1 & 3) WHEN THE CONTACTS BETWEEN TERMINALS 5 AND 6 OPEN. THE TIMING CYCLE IS INITIATED

THE OUTPUT RELAY CONTACTS (1 & 3) WILL OPEN UPON COMPLETION OF THE TIME DELAY PERIOD

WARNING!
Disconnect electrical power supply to prevent injury or death due to electrical shock.

Caution
Unless otherwise specified, use only copper conductors to prevent equipment damage.

Note:
PNL-8796 = Used on OCVs w/Steam Turbine or Gas Engine Drives (60 Hz)
PNL-8798 = Used on OCVs w/Steam Turbine or Gas Engine Drives (60 Hz)



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WIRE COLOR CODE

BLACK	BLK
RED	R
ORANGE	OR
YELLOW	Y
BLUE	BLU
BROWN	BR
WHITE	W

● INDICATES TERMINAL ON INSTRUMENT PANEL
⊘ INDICATES TERM. ON REMOTE OTC PANEL
△ INDICATES TERMINAL ON PURGE UNIT
---- INDICATES EXTERNAL WIRING

Drwg. 2304-0423A

Wiring Diagram Legend

A generic wiring diagram legend is provided below for your reference. You may find it helpful to use this legend as you interpret the CenTraVac control panel wiring diagrams published in this booklet.

* * * * *

CR control relay (e.g., CR1, CR22)

ETM hour meter

HPC high pressure cutout (also "HP")

LLR load-limit relay (e.g., LLR, LLR1)

LTC low temperature control (also "LT" and "LTCO")

MTC motor temperature control

OPC differential oil pressure control (also "OP")

OTC 2-stage oil temperature control (also "OT")

PB push button switch (usually for system reset)

PE pneumatic-electric switch (e.g., PE1, PE)

PL1 "oil pump (pressure)" pilot light; also "oil pump #1" pilot light on PNL-169 & -173

PL2 "purge heater" pilot light; also "oil pump #2" pilot light on PNL-169 & -173

PL3 "purge compressor" pilot light; also "purge heater" pilot light on PNL-169 & -173

PL4 "alarm" indicator pilot light; also "purge compressor" pilot light on PNL-169 & -173

PL5 "low temperature alarm" pilot light on PNL-169 & -173

PL6 "high pressure alarm" pilot light on PNL-169 & -173

PL7 "low temperature alarm" pilot light

PL8 "high pressure alarm" pilot light

PL9 "motor temperature alarm" pilot light, or "ready" pilot light

RESET system reset switch

S1 oil pump selector switch; also oil pump #1 selector switch on PNL-169 & -173

S2 purge heater selector switch; also oil pump #2 selector switch on PNL-169 & -173

S3 purge compressor selector switch; also purge heater selector switch on PNL-169 & -173

S4 demand limit switch; also purge compressor selector switch on PNL-169 & -173

S5 system reset switch (e.g., S5, RESET)

SAV solenoid air valve (e.g., SAV, SAV1)

SC start counter

TR time delay relay (e.g., TR, 1TR, TR1)

TS terminal strip (e.g., TS, TS-1, TS1)

For further information on this product or other Trane products, refer to the "Trane Service Literature Catalog", ordering number IDX-IOM-1. This catalog contains listings and prices for all service literature sold by Trane. The catalog may be ordered by sending a $20.00 check to: The Trane Company, Service Literature Sales, 3600 Pammel Creek Road, La Crosse, WI 54601.

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