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DOCUMENT 9131  
March 9, 2005  
Revision L



**Title:** **INSTRUCTION MANUAL**  
**L-847 RUNWAY CIRCUIT SELECTOR SWITCH**  
**Series –84700**

REV.	DESCRIPTION	LTR.	CHK.	APV
A	Added Figure 6-3, -4, -11 (Pg. 39); Pg. 37 deleted S2 switch; Pg. 24 & 25, 6.3, 6.4 & 6.11, added figure for remote connections & deleted info that was present for remote connections; Pg. 25, 6.9, added info on removing tagged wire	A92-037	PG 3/6/92	JAS 3/6/92
B	Added 'Figures & Tables' to table of contents; corrected para 3.1.1 page 6; added to para 3.1.4 page 8; added Figure 3C	A92-069		JAS 4/15/92
C	Revised Table of Contents, Figures & Table Page numbers on vi and vii to agree after inclusion of Figure 3C per Rev. B	A94-215	7/1/94	PG
D	Pages 16, 17, 28, 29, 30, 31, 34, 37 and 39, moved K1 connection from J1-2 to J1-3.	A94-431		DG 11/29/94
E	Revised origin & destination in para. 3.1.3.2.3, deleted note referencing connection as option same para., added page 7A	A96-465		JAS 9/18/96
F	1) On fig.'s 5-1 & 6-9A, label were 1.25A, Fig. 5-2 label was 2.50A, Fig.'s 6-7F, 6-5B, 6-2B & 4-1B, F1 was 2.50A, Fig.'s 4-1A, 6-2A, 6-5A, 6-9B & 6-7C, F1 was 1.25A.	A97-423	7/24/97	JAS
G	1) Pg's 9, 10, 21, 22, 32, 35 & 38, revised Cooper logo; 2) Pg. 38, revised S-1 label to current label; 3) Pg. 39, revised labeling of TB1 label to accurately represent option -9 function; 4) Pg. 40, added 3rd. view of remote control connections for option -9	A97-516	11/3/97	JAS
H	1) On page 21, 22 & 38 changed picture of K2 relay to latest design; 2) On page 23 & 24, item 9 P/N was 30845; 3) On page 23, item 12 P/N was 46-192-5X/D-5 and on page 24 item 12 P/N was 46-192-5X/D-3; 4) On page 39, added #12 terminal note	A200-221	8/7/00	JAS
J	In Para. 3.1.3.2.4 & .5, #12AWG was #8AWG	A202-043	2/25/02	GFR
K	Revised Parts Lists Item 9 was 32407, Relay Assy and added Items 19 & 20. Updated Figures 5-1, 5-2 and 6-9A to show new 32797 K2 Relay Assy and added Figure 5-1A.	A203-063	3/04/04	GFR
L	Added Options 14 & 15 to Table 1-1, Figures 5-1, 5-2, 6-2A, and 6-2B, and Section 6	A204-292	3/9/05	GFR

## **LIMITED PRODUCT WARRANTY**

**THE FOLLOWING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING, BUT NOT BY WAY OF LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.**

Crouse-Hinds Airport Lighting Products (the “Company”) warrants to each original Buyer of Products manufactured by the Company that such Products are, at the time of delivery to the Buyer, free of material and workmanship defects, provided that no warranty is made with respect to:

- (a) any Product which has been repaired or altered in such a way, in Company's judgment, as to affect the Product adversely;
- (b) any Product which has, in Company's judgment, been subject to negligence, accident or improper storage;
- (c) any Product which has not been operated and maintained in accordance with normal practice and in conformity with recommendations and published specification of Company; and,
- (d) any Products, component parts or accessories manufactured by others but supplied by Company (any claims should be submitted directly to the manufacturer thereof).

Crouse-Hinds Airport Lighting Products' obligation under this warranty is limited to use reasonable efforts to repair or, at its option, replace, during normal business hours at any authorized service facility of Company, any Products which in its judgment proved not to be as warranted within the applicable warranty period. All costs of transportation of Products claimed not to be as warranted and of repaired or replacement Products to or from such service facility shall be borne by Purchaser. Company may require the return of any Product claimed not to be as warranted to one of its facilities as designed by Company, transportation prepaid by Purchaser, to establish a claim under this warranty. The cost of labor for installing a repaired or replacement product shall be borne by Purchaser. Replacement parts provided warranty period of the Products upon which they are installed to the same extent as if such parts were original components thereof. Warranty services provided under the Agreement do not assure uninterrupted operations of Products; Company does not assume any liability for damages caused by any delays involving warranty service. The warranty period for the Products is 24 months from date of shipment or 12 months from date of first use whichever occurs first.

## **SAFETY NOTICES**

This equipment is normally used or connected to circuits that may employ voltages, which are dangerous and may be fatal if accidentally contacted by operating or maintenance personnel. Extreme caution should be exercised when working with this equipment. While practical safety precautions have been incorporated in this equipment, the following rules must be strictly observed:

### **KEEP AWAY FROM LIVE CIRCUITS**

Operating and maintenance personnel must at all times observe all safety regulations. **DO NOT PERFORM MAINTENANCE ON INTERNAL COMPONENTS OR RE-LAMP WITH POWER ON.**

### **RESUSCITATION**

Maintenance personnel should familiarize themselves with the technique for resuscitation found in widely published manuals of first aid instructions.

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## SECTION 1

### GENERAL INFORMATION

#### 1.1 INTRODUCTION

##### 1.1.1 Purpose

This instruction book provides field support data and information for the FAA Type L-847 Runway Circuit Selector Switches manufactured by Crouse-Hinds Airport Lighting Products, Windsor, CT 06095. The equipment is herein after referred to as a CSC.

##### 1.1.2 Applicability

This instruction book applies only to that hardware bearing the part number series 84700. Instructions for standard options are provided in Section 6 of this document. Refer to Table 1-1 for complete part number information.

#### 1.2 EQUIPMENT DESCRIPTION

##### 1.2.1 Function

The FAA Type L-847 CSC is a power switching cabinet specifically designed for connection to the output of an FAA Type L-828 Airport Lighting Constant Current Regulator (CCR). It is capable of switching one or more series lighting circuits either locally or from a remote location, without affecting CCR operation.

##### 1.2.2 Features

The CSC is designed to accommodate lighting loads of up to 70KW at 20 amps and 30KW at 6.6 amps. Standard models are equipped with from one to four circuit capability in one NEMA 1 enclosure. Any combination of load circuits may be energized simultaneously. Modular construction has been utilized to provide ease of maintenance. A clear dead front cover allows safe inspection of high voltage components without the need to de-energize the lighting system.

##### 1.2.3 Options

A number of factory installed options are available. These options, listed in Table 1-1, enable the customer to configure the CSC for a variety of specific applications. It is recommended that the customer contact Crouse-Hinds to verify the specific options required for an application prior to order submittal. Option -1 is installed on all units. See Section 3.1.4.

##### 1.2.4 Specifications

The following specification data applies to a standard model 84700 series CSC without options.

#### 1.2.4.1 FAA Classification

Type: L-847-1, -2, -3, -4  
Class: A (for Class B, order Option -10 or -13)  
Rating: 1 and 2 (Dual Rating)

#### 1.2.4.2 Electrical Characteristics

Primary Power: L-847-1, -2: 120 VAC, 1.2A, 50/60Hz  
L-847-3, -4: 120 VAC, 2.4A, 50/60Hz  
  
Regulator Rating: All Models: Up to 20 amps at up to 5000 volts, continuous.  
Relay contacts rated for 5000 operations.

#### 1.2.4.3 Physical Characteristics

Dimensional: L-847-1, -2: 24" H x 21" W x 9" D, 67 lbs.  
L-847-3, -4: 24" H x 30" W x 9" D, 103 lbs.  
  
Mechanical: All models supplied in a NEMA 1 enclosure painted blue. All high voltage components protected by a clear dead front cover.  
  
Environmental: Temperature: -55° to +55°C  
(-67° to +131°F)  
  
Altitude: 0 to 10,000 ft.  
  
Humidity: Up to 100 percent

### 1.3 INSTALLATION REQUIREMENTS

The CSC is shipped from the factory complete and ready for installation. The agency responsible for installation must supply all necessary connectors, wire and conduit. Markings are provided on the enclosure at recommended conduit entry points. The enclosure may be surface mounted on a wall or conduit mounted on a suitable concrete base.



**TABLE 1-1**

**84700 PART NUMBERS**

<u>BASIC NO.</u> ..... <u>NUMBER OF CIRCUITS</u> .....		<u>UP TO THREE OPTIONS</u> <u>OPT A</u> ..... <u>OPT B</u> ..... <u>OPT C</u>
84700	(1 through 4)	(Three Options from the selection chart)

- The standard equipment includes the following:
- NEMA 1 Cabinet
- 120 VAC, 50/60 Hz primary power to be supplied by customer
- Internal 120 VAC remote control power
- Handles both 6.6 or 20 amp circuits with any standard regulator
- Meets FAA 150/5345-5A requirements
- Unit provides simultaneous switching (i.e., A or B, or A + B)

**OPTION SELECTION CHART**

<u>OPTION NO.</u>	<u>DESCRIPTION</u>
-1	De-Energized Switching. Included in all units
-2	Primary Power 220 to 240 VAC, 50/60Hz
-3	Remote Control 48 VDC (External 48 VDC)
-4	Remote Control 120 VAC, 50/60Hz (External)
-5	Remote Back Indication, 6.6 Amp Circuits (ON-OFF)
-6	Remote Back Indication, 20 Amp Circuits (ON-OFF)
-7	Digital Ammeter for Each Circuit (Indoor Use Only)
-8	Exclusive Circuit Selection (A or B) Only
-9	Back-Up Regulator Switching (available on L-847-2 only)
-10	NEMA 4 Cabinet
-11	Remote Control 24 VDC (External 24 VDC)
-12	Cabinet Door Interlock Switch
-13	NEMA 4X Cabinet
-14	Without Cabinet
-15	Primary Power 480 VAC, 50/60Hz

## SECTION 2

### TECHNICAL DESCRIPTION

#### 2.1 THEORY OF OPERATION

The operational discussion presented herein pertains to standard model CSC units. Equipment supplied with options may deviate somewhat from the exact operational description presented, but the basic operating principles are identical for all equipment configurations.

##### 2.1.1 Local Control

The CSC control circuits operate from the 120 VAC primary power source and energize the relay coils in the high voltage circuit to supply power to the lighting circuit selected. When switch, remote-off-local, is selected to LOCAL, switches S1 and S2 (S1 through S4) are active. When any of these switches is set to ON, a signal is applied to the timing circuits located on the circuit card assembly. The timing circuit, in turn, supplies power immediately to the coil of the respective double pole relay in the high voltage section. After a brief delay, less than one second, the timing circuit supplies power to the coil of the associated single pole shorting relay in the high voltage section, thus energizing the lighting circuit. (Note: Due to the characteristics of Type L-828 Regulators, the other lighting loads may dim momentarily. This is normal.) To de-energize a lighting circuit, the respective control switch is selected to OFF. This action immediately de-energizes the single pole shorting relay, which places a short across the lighting circuit. After a brief delay, the timing circuit removes power from the coil of the double-pole isolating relay, which opens to isolate the lighting circuit from the regulator. The timing diagram in Figure 2-1 may be helpful in understanding the switching sequence.

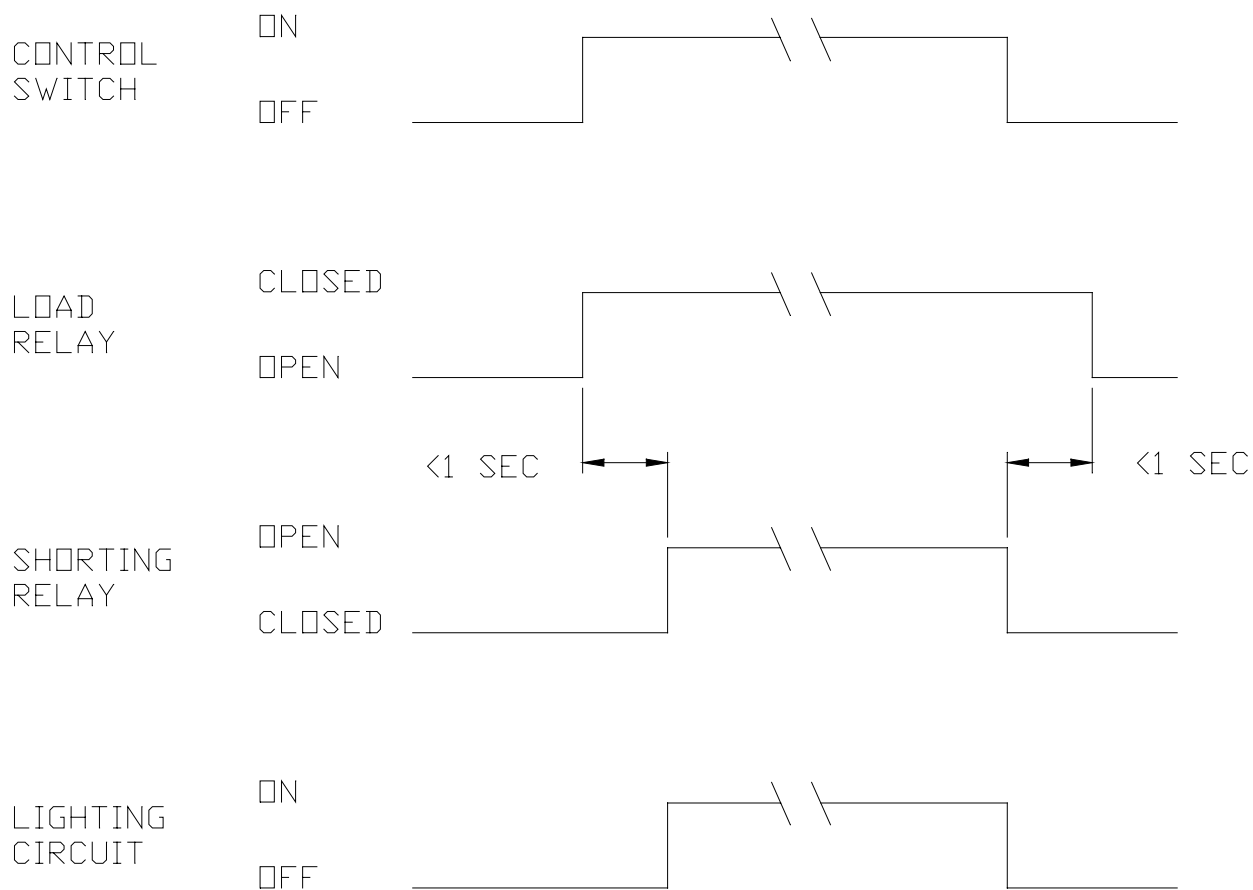
De-energized switching (Option -1) is installed on all units. This turns the regulator off prior to switching the circuits and turns the regulator back on after the circuits have been switched. See Sections 3.1.3.2 and 3.1.4 for more detail.

##### 2.1.2 Remote Operation

The CSC, when operated remotely, functions exactly the same as when under local control, except that switches S1 and S2 (S1 through S4) are not active. Remote control power is normally derived internal to the CSC. However, external power sources may be used if the proper option is specified.

##### 2.1.3 CCR Interlock

An interlock switch is provided for the high voltage section of the CSC. This switch should be connected in series with the control circuit of the CCR to provide for immediate shutdown of the CCR in the event that the dead front cover of the CSC is removed. Normally, however, the CCR or CCRs should be de-energized prior to removal of the dead front cover



TYPICAL CSC TIMING DIAGRAM

FIGURE 2-1

## SECTION 3

### INSTALLATION AND OPERATION

#### **WARNING**

**INSTALLATION, SERVICE, MAINTENANCE OR OPERATION SHOULD BE PERFORMED BY QUALIFIED PERSONNEL ONLY.**

#### 3.1        INSTALLATION

All CSC units are supplied ready for operation with all ordered options installed. When properly connected, no electrical adjustments should be necessary prior to use.

##### 3.1.1        Location

The CSC may be installed in all locations meeting the environmental requirements as specified in paragraph 1.2.4.3 except where explosive or highly corrosive atmospheres may be present. The equipment should be accessible to qualified personnel only. In addition, adequate drainage should be provided to preclude the possibility of standing water hindering maintenance or normal operations.

##### 3.1.2        Power Requirements

Standard model CSC units require a source of 120 VAC at 50/60Hz. If the particular unit to be installed is equipped with option -2, a source of 220 to 240 VAC at 50/60Hz is required. Refer to Table 1-1.

##### 3.1.3        Detail Installation Checklist

- NOTICE:
- (1)        Read and become familiar with this procedure before attempting installation of this equipment. Improper installation procedures can damage this equipment and may void the warranty!
  - (2)        Further, the instructions for each equipment option included should similarly be understood before proceeding with installation.
  - (3)        Installer should initial in space provided (    ) after completing each step.

##### 3.1.3.1        Mechanical Installation

- (    )        1.        Unpack the CSC, open the enclosure and check for any shipping damage.
- (    )        2.        Remove the dead front cover from the high voltage section.

### 3.1.3.1 Mechanical Installation Cont'd

- ( ) 3. Remove the electrical assembly from the enclosure by loosening and removing the mounting hardware from the four corners of the base plate panel.
- ( ) 4. The electrical assembly can now be placed in the shipping carton for protection.
- ( ) 5. Proceed to mount the empty enclosure in the desired fashion. Recommended conduit hole locations are shown on Figure 3.
- ( ) 6. Remove all dirt and foreign material from the enclosure, then re-install the electrical assembly in the enclosure after completing the mounting and conduit connector installation.

### 3.1.3.2 Electrical Wiring

- ( ) 1. Connect the ground conductor to the ground lug located in the lower left hand corner of the base plate.
- ( ) 2. Connect the remote control leads to 31955 TB1 terminals as indicated.

L - 120 VAC hot lead (Input for Option -2 is  
LN - 120 VAC Neutral to "H" terminals on Step-  
down Transformer)  
CR - Remote Control Common  
C1 - Remote Control Circuit 1  
C2 - Remote Control Circuit 2  
C3 - Remote Control Circuit 3 for 84700-3 & -4  
C4 - Remote Control Circuit 4 for 84700-4

Note: 31955 TB1 is removable for ease of installation.

- ( ) 3. Connect the CCR control power to 31955 TB1 terminals as indicated:

CC1 - Control Power Feed from Regulator  
CC2 - Control Load to Tower

See page 7A.

- ( ) 4. Connect the output of the CCR to terminals R1 and R2, in the high voltage section, using the #12 AWG ring terminals provided.

3.1.3.2 Electrical Wiring Cont'd

- ( ) 5. Connect each lighting load to the respective LOOP terminals in the high voltage section, using the #12 AWG ring terminals provided.

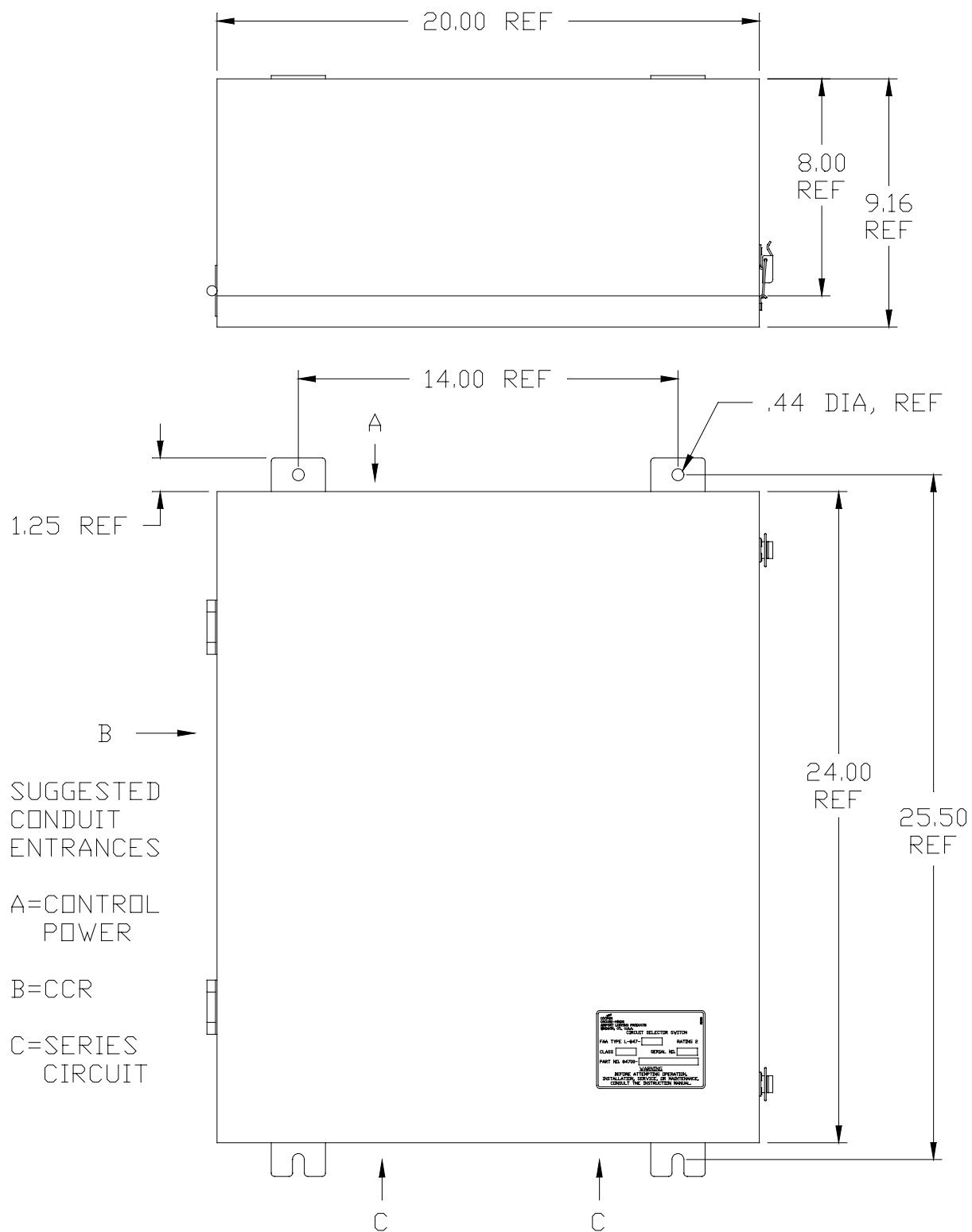
NOTE: BEFORE CONNECTING LOAD TO LOOP TERMINALS, REMOVE JUMPER FROM ONLY THOSE TERMINALS THAT LOAD IS BEING CONNECTED TO.

- ( ) 6. Make any option related connections.

- ( ) 7. Re-install the dead front cover and fasten securely.

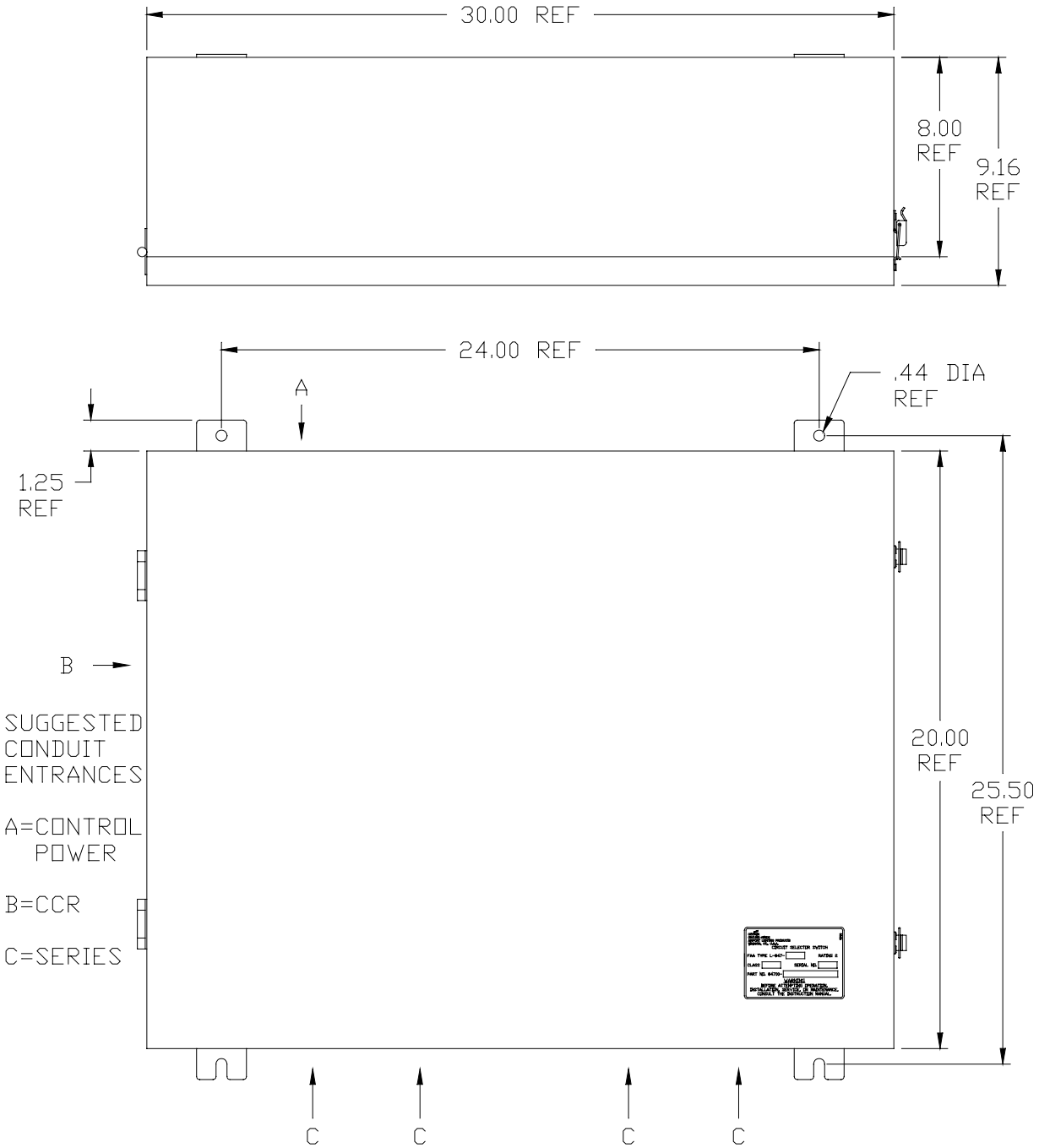
3.1.4 Option -1, De-Energized Switching, Disabling

- ( ) 1. To disable de-energized switching feature, move E2 spring shunt on 31955 circuit assembly from E2-2/E2-3 to E2-1/E2-2, refer to Figure 3C.



84700-1 OR -2 SUGGESTED CONDUIT ENTRANCES

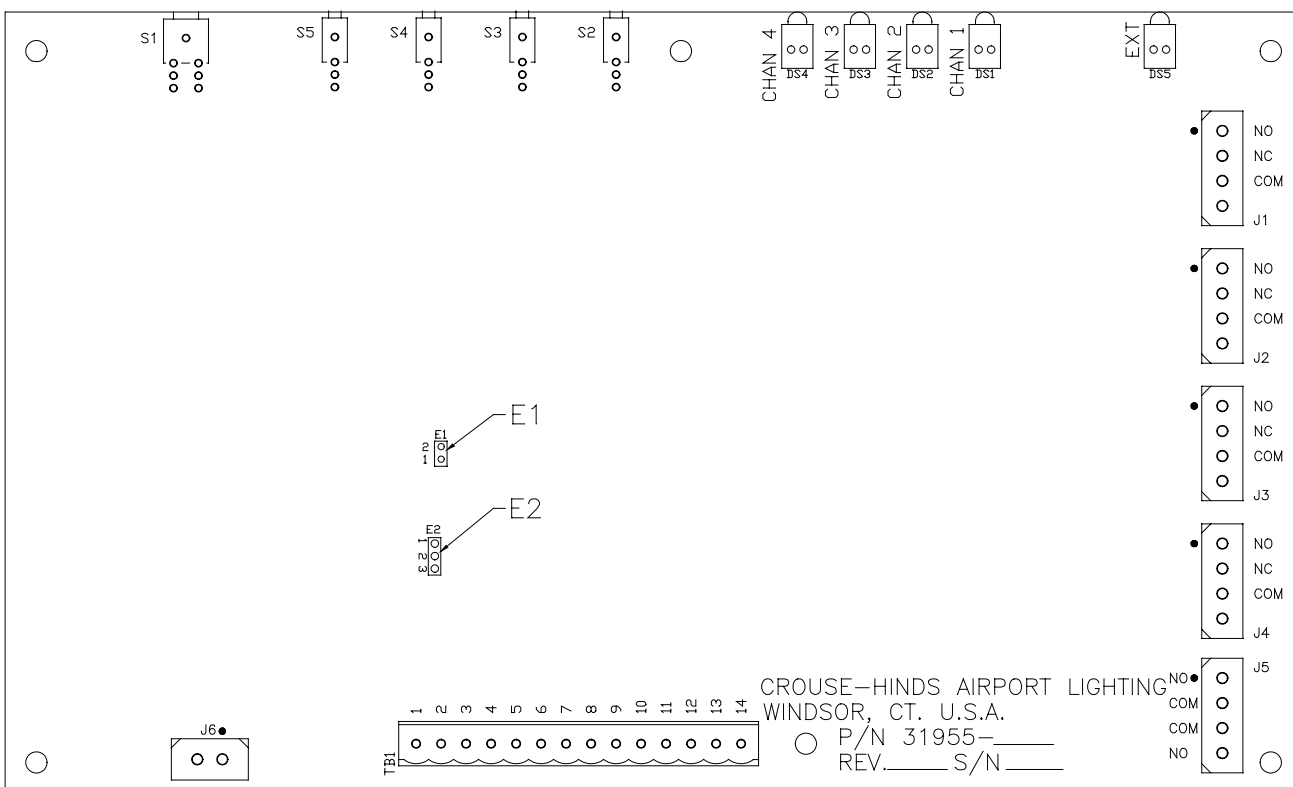
FIGURE 3A



84700-3 OR -4 SUGGESTED CONDUIT ENTRANCES

FIGURE 3B





PRINTED CIRCUIT BOARD  
31955

FIGURE 3C

## 3.2 OPERATION

### 3.2.1 Initial Checkout

This checkout is divided into two sections. In the first section, all control functions are checked. In the second, the high voltage functions are checked. If the CSC fails to perform properly at any step of this procedure, consult the troubleshooting guide in Section 4.

#### 3.2.1.1 Control Functions

- ( ) 1. Set all CSC switches to the OFF position.
- ( ) 2. Apply Primary Power to the CSC.
- ( ) 3. Set switch to the local operation position and verify visually that none of the high voltage relays pull-in.
- ( ) 4. Set switch S1 to ON and verify visually that the LOOP 1 high voltage relays energize. (Refer to Section 2.1.1 for operational details).
- ( ) 5. Set switch S1 to OFF and verify visually that the LOOP 1 high voltage relays de-energize.
- ( ) 6. Repeat steps 4 and 5 for the remaining switches and LOOPS.
- ( ) 7. Verify proper remote control operation by setting to the remote position and exercising the remote control circuit.

#### 3.2.1.2 High Voltage Functions

- ( ) 1. Turn on the CCR to the lowest intensity step. Verify it does not trip-out on open circuit.
- ( ) 2. Set each switch on the CSC to the ON position and verify that the associated lighting circuit is energized. Some contact arcing is normal during switching.
- ( ) 3. Checkout of the dead front interlock should be accomplished as follows:
  - A. Turn off, lock and tag the CCR.
  - B. Remove primary power from the CSC.
  - C. Remote the dead front cover and close the CSC cabinet door.

### 3.2.1.2 High Voltage Functions Cont'd

- D. Attempt to turn on the CCR. Verify it does not turn on.
- E. After repeating Step A above, re-install the dead front cover on the CSC.
- F. Restore power to all circuits.

### 3.2.2 Normal Operation

In most cases, the CSC will be operated from a remote location. To affect this mode, set to remote and close the cabinet door. No other adjustments are necessary. To operate the CSC locally, set for local operation and select the desired lighting circuit by setting the associated local switch to ON. It is strongly recommended that the CSC cabinet door be closed securely when the equipment is unattended to preclude unauthorized operation.

SECTION 4  
MAINTENANCE

**WARNING**

**INSTALLATION, SERVICE, MAINTENANCE OR OPERATION SHOULD  
BE PERFORMED BY QUALIFIED PERSONNEL ONLY.**

4.1 PERIODIC MAINTENANCE

The CSC should be inspected periodically as shown below:

<u>INTERVAL</u>	<u>ACTION</u>
1 month	(A) Visually inspect high voltage relays through clear dead front cover.
3 months	(A) Perform Control Functions checkout per Section 3.2.1.1 to verify proper operation.
6 months	(A) Isolate the CSC and CCR from all sources of electrical power.
	(B) Check all wiring connections for loose or missing screws. Check terminal blocks and component connections.
	(C) Check for broken or damaged wires and components.
	(D) Remove dust build up.
	(E) Inspect housing for rust or chipped paint. Clean and touch up with paint as required.
	(F) Re-install all covers and restore primary power to the CSC and CCR.

4.2 CORRECTIVE MAINTENANCE

In general, corrective maintenance is performed by the replacement of parts rather than repair when they cease to function properly. The use of easily removable sub-assemblies facilitates repair. The removal and replacement procedure should be obvious to qualified maintenance personnel.

## 4.2 CORRECTIVE MAINTENANCE CONT'D

### **WARNING**

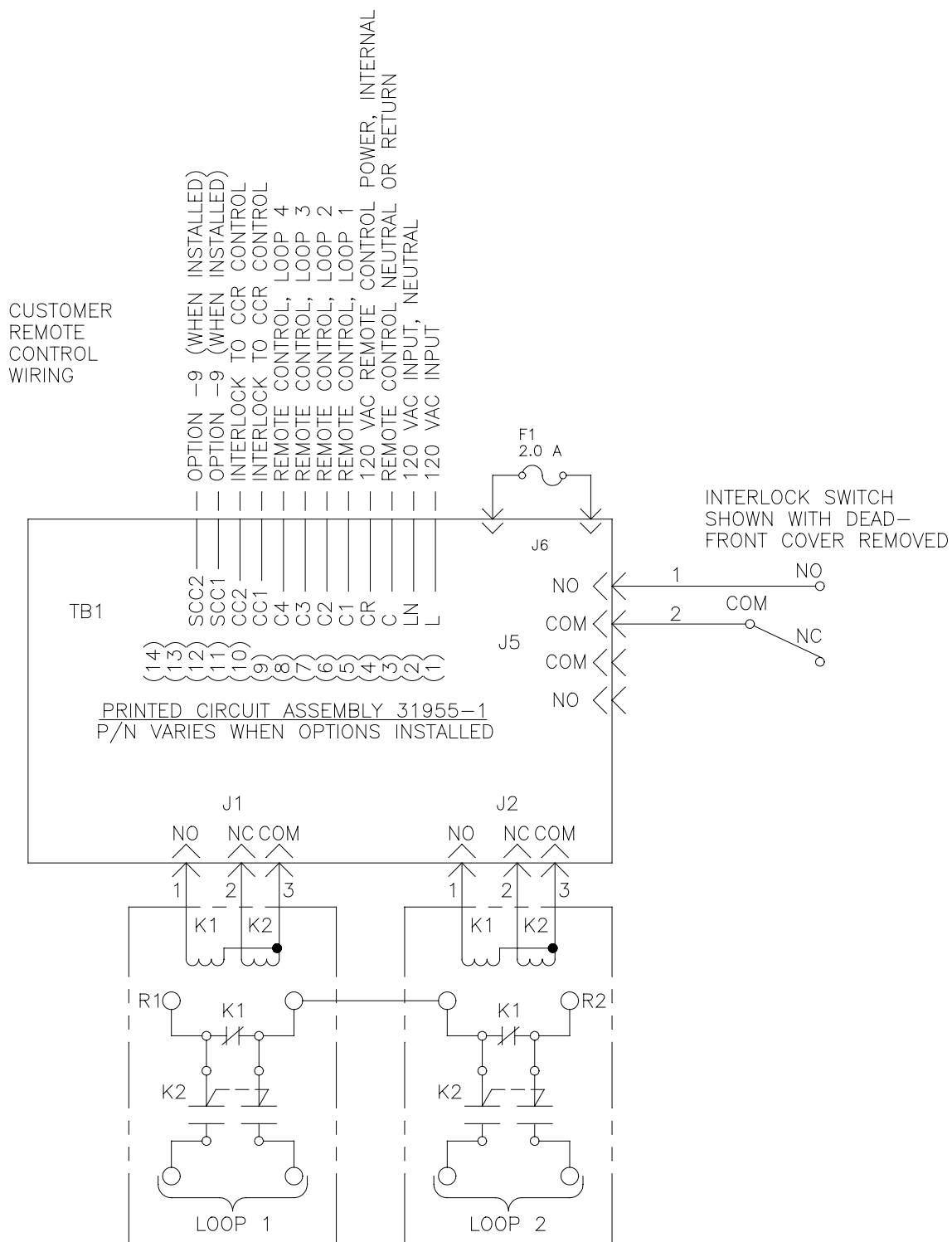
**VOLTAGES IN EXCESS OF 1000 VOLTS ARE PRESENT WHEN THE REGULATOR IS OPERATING. DO NOT ATTEMPT REPAIR OR SERVICING WITHOUT FIRST REMOVING POWER FROM THE REGULATOR. THE USE OF LOCK-OUT DEVICES IS RECOMMENDED FOR INSTALLATIONS WHERE THE POWER DISTRIBUTION PANEL IS NOT READILY VISIBLE FROM THE REGULATOR OR CSC LOCATION.**

Caution should be exercised if removal of Circuit Card Assembly becomes necessary as the board is easily damaged by improper removal and handling, either of which would void the warranty. Particular areas of concern are:

- (A) Power must be removed from the CSC before attempting to disconnect or re-connect the connector plugs from the board.
- (B) The circuit card is held in place by five screws and by washer and nuts on switch actuators. All screws, nuts and washers must be replaced after the circuit card has been re-installed and before plugs are re-connected to the board. Failure to do so will probably result in permanent or intermittent circuit board damage.

## 4.3 TROUBLESHOOTING CHART

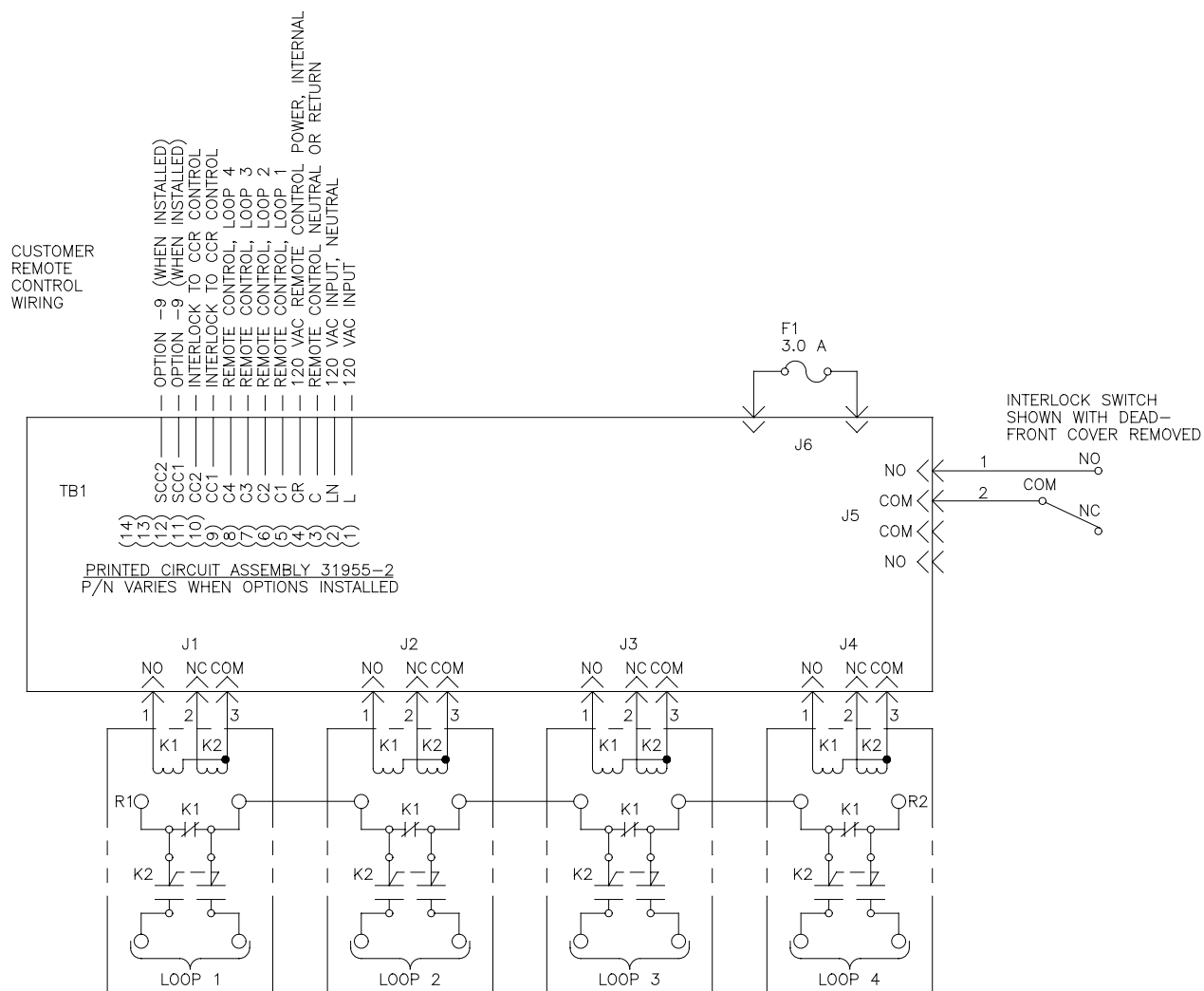
The following Troubleshooting Procedure, Table 4-2, is provided as a guideline to assist qualified airport maintenance personnel in locating and correcting any malfunctions when they occur. See Figure 4-1, CSC Schematic, for reference during troubleshooting.



NOTE: CONNECT CCR OUTPUT TO R1 & R2

WIRING DIAGRAM  
84700-2

FIGURE 4-1A



NOTE: CONNECT CCR OUTPUT TO R1 & R2

# WIRING DIAGRAM 84700-4

FIGURE 4-1B

TABLE 4-2  
TROUBLESHOOTING PROCEDURE

PROBLEM	POSSIBLE CAUSE	TEST	CORRECTIVE ACTION
CSC does not operate in remote (all circuits)	Power source not energized	Verify voltage is present at TB1-L, LN	Restore power
	Blown fuse	Check F1	Replace fuse
	Broken wire	Check wiring harness	Repair or replace harness assy
One or two circuits of CSC do not operate in local or remote	Broken wire	Check wiring harness	Repair or replace harness assy
	Loose or defective H.V. relay module	Check connector	Re-seat connector on Timing Circuit Card
		Check relay control harness	Repair or replace relay harness
Regulator trips off when one or more circuits are activated	Miswired lighting	-----	Check all wiring
	Defective relay or open lighting circuit	Disconnect wires to R1 & R2 using an ohmmeter, determine fault location	Repair lighting circuit or replace relay module or faulty relay
Regulator current falls when light circuit is activated	regulator capacity is insufficient	Calculate total load requirements	Use a larger regulator
CSC does not operate in remote	Remote control wires connected incorrectly or broken	Check remote connections	Repair remote control equipment
	Defective timing circuit	-----	If remote control signals are correct, the problem is probably due to a defective timing circuit card. Observe all precautions of para. 4.2 when replacing the timing circuit card



<b>PROBLEM</b>	<b>POSSIBLE CAUSE</b>	<b>TEST</b>	<b>CORRECTIVE ACTION</b>
No distinct delay between high voltage relay actions	Defective timing circuit card	-----	Replace the timing circuit card. Observe all precautions of para. 4.2 when replacing the timing card
High voltage	Relay module at end of rated life	-----	Replace the high voltage relay module or relay

## SECTION 5

### PARTS LIST

#### 5.1 SCOPE

The following Parts List provides ordering data for all repairable or replaceable components and assemblies.

##### 5.1.1 List of Figures

Figure 5-1 Component Identification, 84700-1 or -2

Figure 5-2 Component Identification, 84700-3 or -4

##### 5.1.2 List of Tables

Table 5-1 Circuit Selector Parts List, 84700-1 or -2

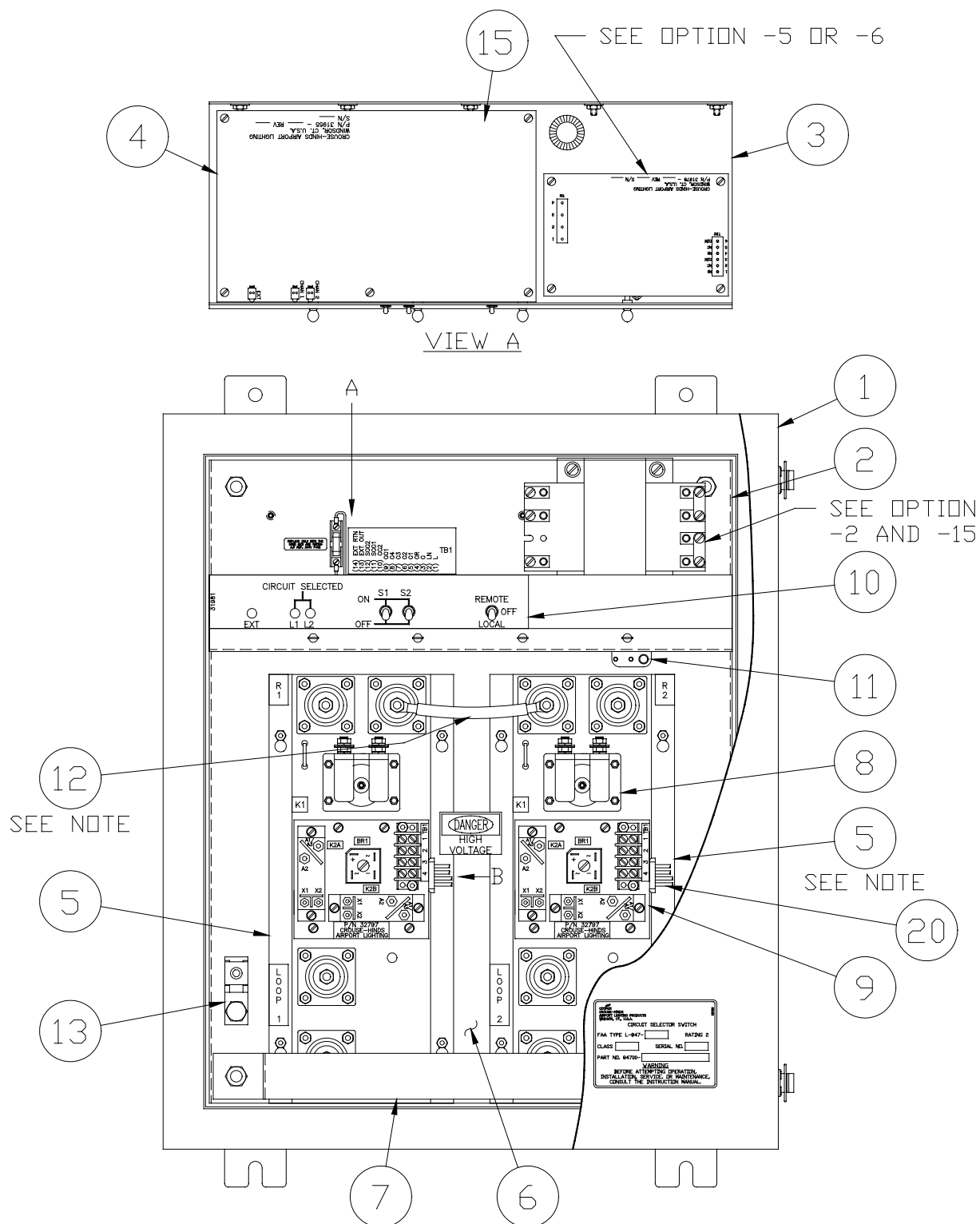
Table 5-2 Circuit Selector Parts List, 84700-3 or -4

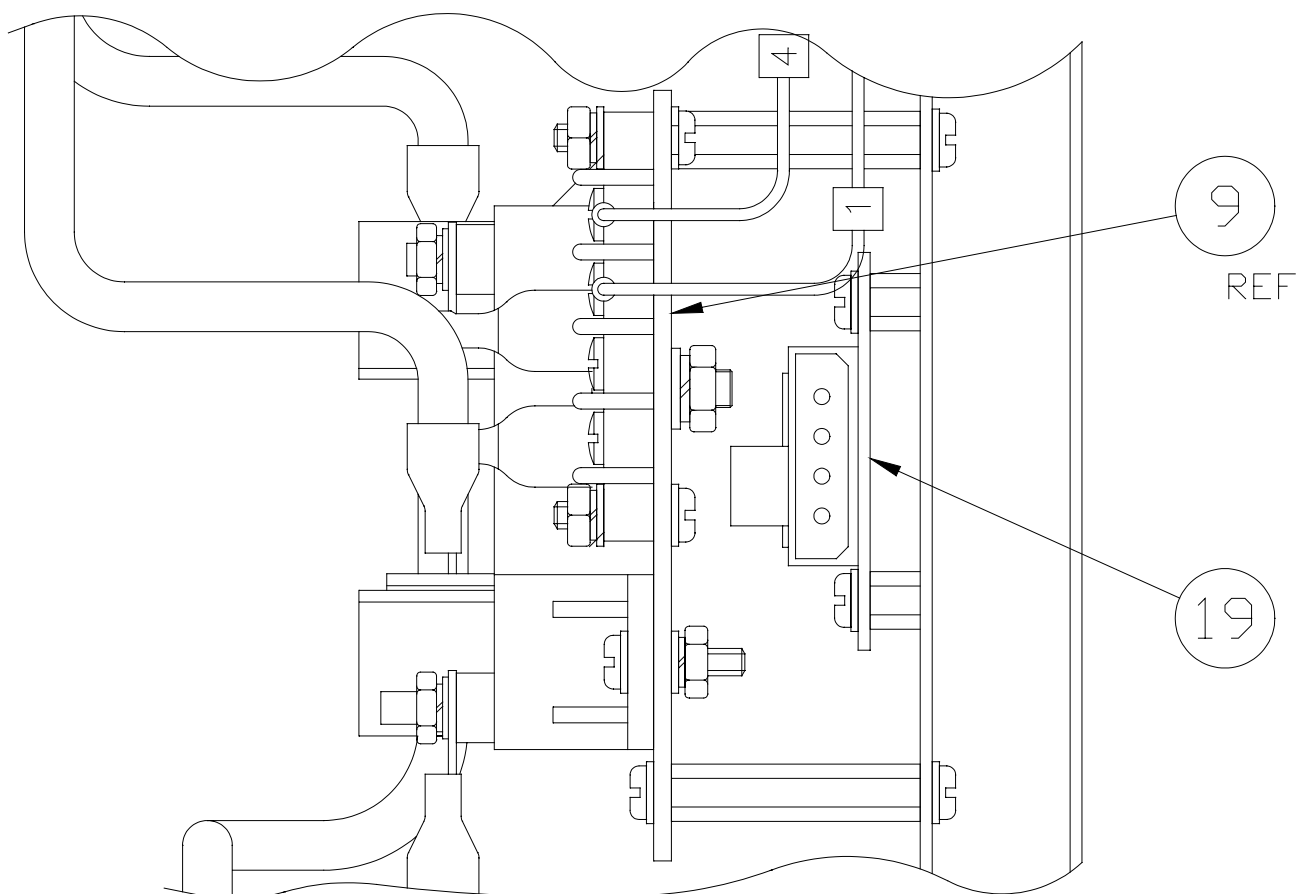
#### 5.2 ARRANGEMENT

The Figures and Tables in this section are arranged to show each replaceable part or assembly. The parts are identified in each Figure by Index Number. The Index Number also appears in the corresponding Parts List, which also provides the part number and description.

#### 5.3 REFERENCE DESIGNATION

A reference designation number is assigned to each electrical part contained in the circuit selector. These reference designations are shown on the wiring diagrams, Figure 4-1 and in the Circuit Selector Parts List, Table 5-1 and 5-2.





VIEW B

FIGURE 5-1A

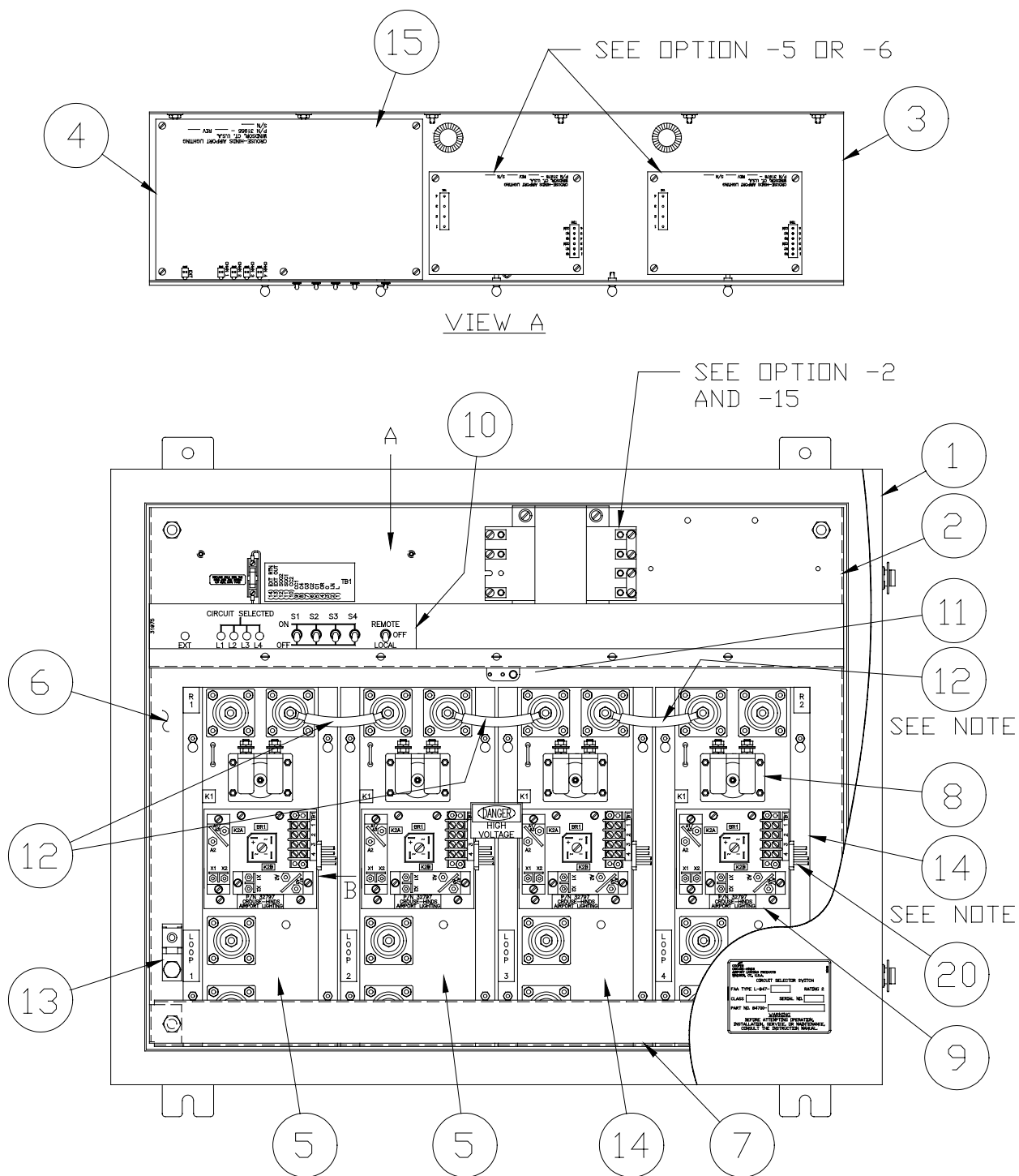


TABLE 5-1  
PARTS LIST, 84700-1 OR -2

ITEM NO	REFERENCE DESIGNATION	QUANTITY -1	-2	DESCRIPTION	CROUSE HINDS PART NUMBER
1		1	1	Cabinet	31525
2		1	1	Base Plate	30858
3		1	1	Low Voltage Panel	31973
4		1	1	Circuit Card assembly	31955-1
5		1	2	Relay Module Assembly	30848-1
6		1	1	Dead Front Plate	30832
7		1	1	Dead Front Bracket	30828
*8	K1	1	2	Relay, High Voltage, SPNC	30846
*9	K2	1	2	Assembly, Vacuum Relay, L-847	32797
10		1	1	Switch Label	31981
11		1	1	Interlock Switch	10047-1616
12		-	1	Jumper Wire	46-245-5X/D-5
13		1	1	Ground Stud	10053-184
14				Not Used	
**15		1	1	Fuse, 2.0A	10047-1590
16		1	1	Interlock Harness	31985
*17		1	2	Relay Harness	30853
18	NOT USED				
*19		1	2	Assembly,L-847 Relay Interface	32847
*20		1	2	Harness, L-847 Relay Interface	32849

\* = Part of Item 5 Assembly

\*\* = Part of Item 4

TABLE 5-2  
PARTS LIST, 84700-3 OR -4

ITEM NO	REFERENCE DESIGNATION	QUANTITY -3	-4	DESCRIPTION	CROUSE HINDS PART NUMBER
1		1	1	Cabinet	31530
2		1	1	Base Plate	30859
3		1	1	Low Voltage Panel	31974
4		1	1	Circuit Card assembly	31955-2
5		2	2	Relay Module Assembly	30848-1
6		1	1	Dead Front Plate	30833
7		1	1	Dead Front Bracket	30829
*8	K1	3	4	Relay, High Voltage, SPNC	30846
*9	K2	3	4	Assembly, Vacuum Relay, L-847	32797
10		1	1	Switch Label	31975
11		1	1	Interlock Switch	10047-1616
12		2	3	Jumper Wire	46-245-5X/D-4
13		1	1	Ground Stud	10053-184
14		1	2	Relay Module Assembly	30848-4
**15		1	1	Fuse, 3.0A	10047-1591
16		1	1	Interlock Harness	31985
*17		2	2	Relay Harness (Item 5 only)	30853
*18		1	2	Relay Harness (Item 14 only)	30853-1
*19		3	4	Assembly,L-847 Relay Interface	32847
*20		3	4	Harness, L-847 Relay Interface	32849

\* = Part of Item 5 or 14 Assembly

\*\* = Part of Item 4

## SECTION 6

### OPTIONS

#### 6.1 SCOPE

The following listing provides parts ordering data and customer installation data.

#### 6.2 OPTION -2

The part number for the 220VAC transformer is 10047-1444. Customer primary input connections are at points H1 and H4 on the transformer; see Figures 6-2A and 6-2B. See Figure 5-1 or 5-2 for transformer location.

#### 6.3 Option -3

Item 4 circuit card, see Figure 5-1 or 5-2 for location, changes with Option -3. See Table 6-1 for circuit card part number variations. See Figure 6-3,-4,-11 for external remote control connections.

#### 6.4 Option -4

Item 4 circuit card, see Figure 5-1 or 5-2 for location, changes with Option -4. See Table 6-1 for circuit card part number variations. See Figure 6-3,-4,-11 for external remote control connections.

#### 6.5 Option -5

The part number for the current sensing circuit card is 31978-1 for 1 loop sensing (84700-1 or -3, 1 required) and 31978-2 for 2 loop sensing (84700-2 or -4; -4 requires 2 cards). Item 5 relay module P/N is 30848-3. Item 14 relay module P/N is 30848-6. See Figure 5-1 or 5-2 for parts locations. See Figure 6-5A or 6-5-B for wiring diagram.

#### 6.6 Option -6

Same as Option -5, except Item 5 P/N is 30848-2 and Item 14 P/N is 30848-5.

#### 6.7 Option -7

See Figure 6-7A or 6-7D for meter location and part number. See Figure 6-7B or 6-7E for cabinet modifications if option field installed. See Figure 6-7C or 6-7F for wiring diagram.

#### 6.8 Option -8

Item 4 circuit card, see Figure 5-1 or 5-2 for location, changes with option -8. See Table 6-1 for circuit card part number variations.



6.9 Option -9

Item 11 P/N is 10047-1878. Item 12 P/N is 46-192-5X/D-8. The part number for the interlock switch harness is 31985-1. Item 5 P/N is the same as for standard 84700-2 module, except option -9 labeling required and, if present, remove lead with tag "THIS JUMPER TO BE REMOVED ONLY WHEN CONNECTING LOAD TO THESE TERMINALS". See Figure 6-9A for parts location. See Figure 6-9B for wiring diagram.

6.10 Option -10

Cabinet P/N is 30834 for 84700-1 or -2 and 30835 for 84700-3 or -4.

6.11 Option -11

Item 4 circuit card, see Figure 5-1 or 5-2 for location, changes with Option -11. See Table 6-1 for circuit card part number variations. See Figure 6-3,-4,-11 for external remote control connections.

6.12 Option -12

Item 14 P/N is 10047-2276 (except when used with Option -9; use Option -9 Item 14). The actuator extender P/N is 10037-573. Item 10 P/N for 84700-1 or -2 is 31986 and 31987 for 84700-3 or -4. See Figure 5-1 or 5-2 for parts location.

6.13 Option -13

Cabinet P/N is 30834-1 for 84700-1 or -2 and 30835-1 for 84700-3 or -4.

6.14 OPTION -14

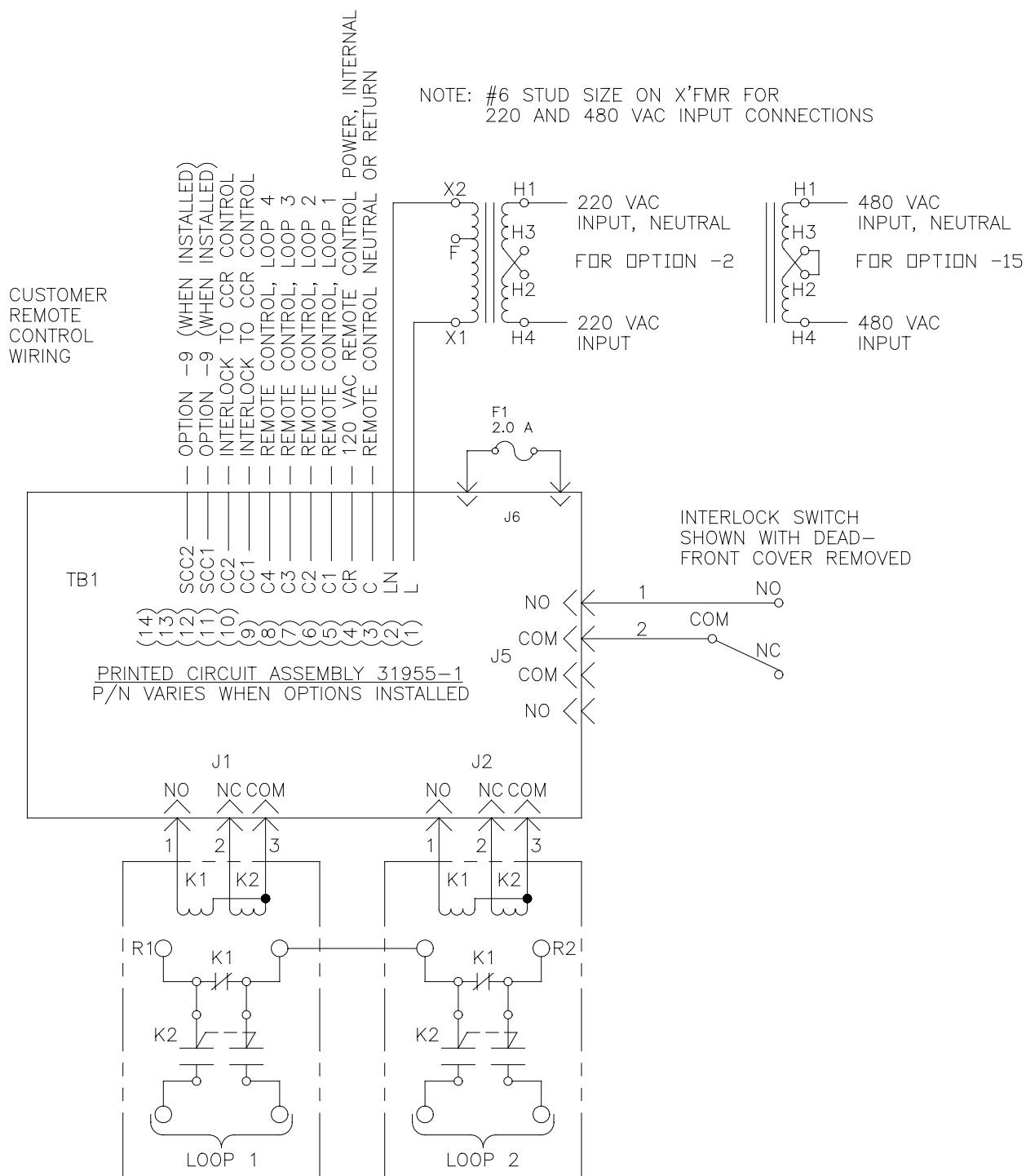
Circuit Selector Switch without the Cabinet.

6.15 OPTION -15

The part number for the 480VAC transformer is 10047-1444. Customer primary input connections are at points H1 and H4 on the transformer; see Figures 6-2A and 6-2B. See Figure 5-1 or 5-2 for transformer location.

TABLE 6-1

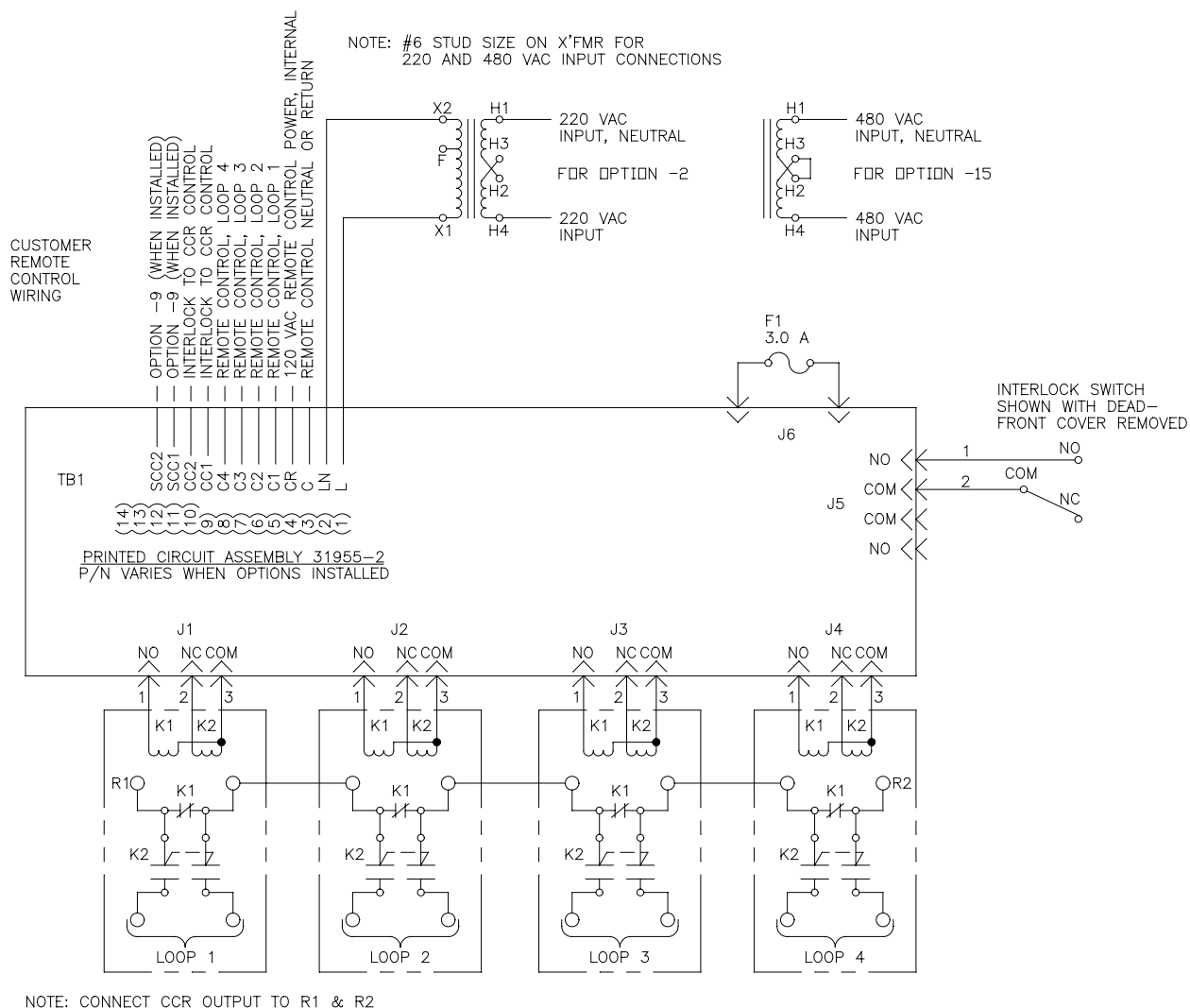
<b>PART NUMBER</b>	<b>USED ON</b>
31955-1	84700-1 or -2
31955-2	84700-3 or -4
31955-3	84700-2-9
31955-4	84700-1 or -2 w/Opt. -8
31955-5	84700-3 or -4 w/Opt. -8
31955-6	84700-1 or -2 w/Opt. -3
31955-7	84700-3 or -4 w/Opt. -3
31955-8	84700-2-3, -9
31955-9	84700-1 or -2 w/Opts. -3 & -8
31955-10	84700-3 or -3 w/Opts. -3 & -8
31955-11	84700-1 or -2 w/Opt. -11
31955-12	84700-3 or -4 w/Opt. -11
31955-13	84700-2-9, -11
31955-14	84700-1 or -2 w/Opts. -8 & -11
31955-15	84700-3 or -4 w/Opts. -8 & -11
31955-1-4	84700-1 or -2 w/Opt. -4
31955-2-4	84700-3 or -4 w/Opt. -4
31955-3-4	84700-2 w/Opts. -4 & -9
31955-4-4	84700-1 or -2 w/Opts. -4 & -8
31955-5-4	84700-3 or -4 w/Opts. -4 & -8



NOTE: CONNECT CCR OUTPUT TO R1 & R2

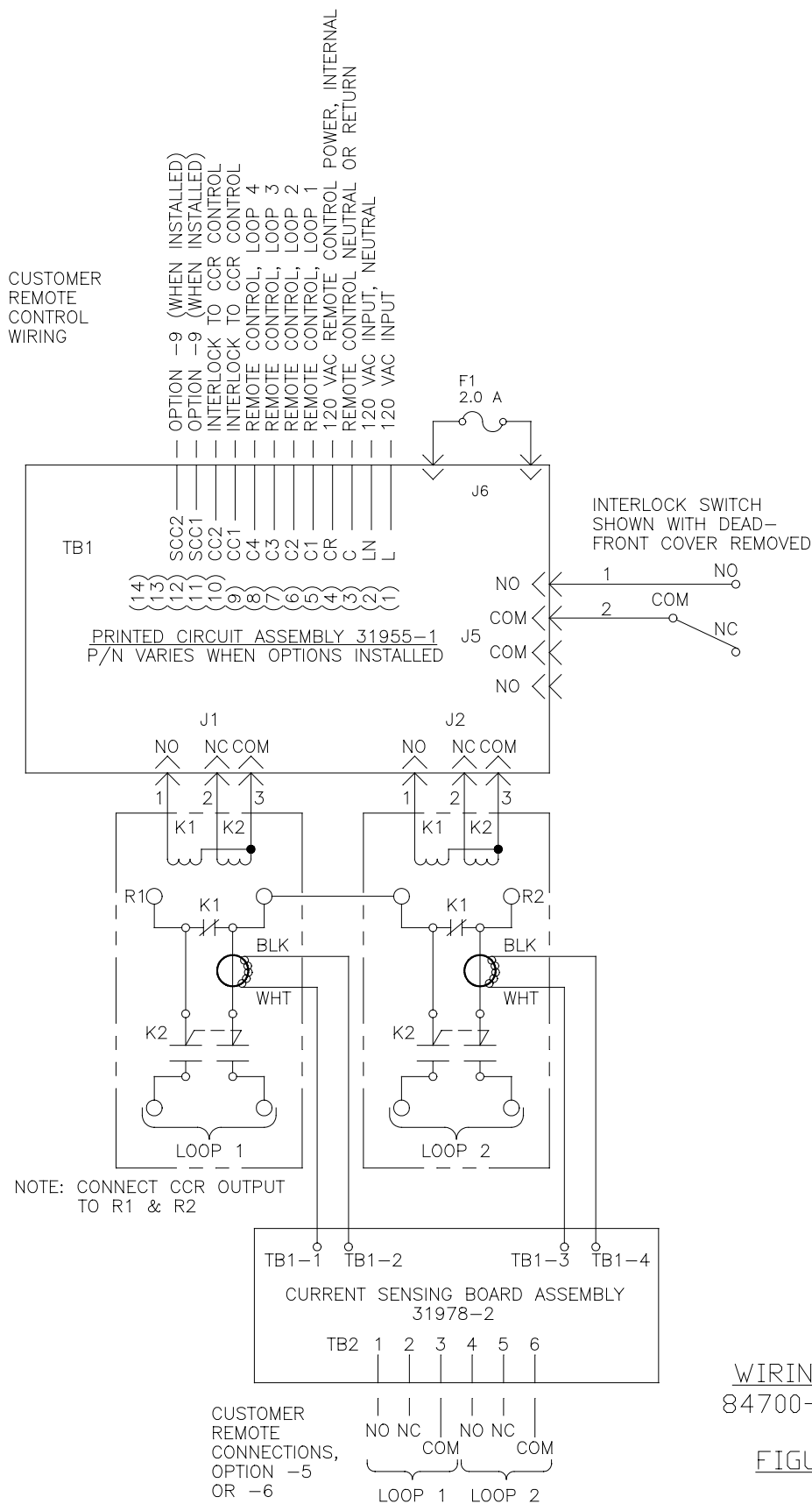
WIRING DIAGRAM  
84700-2-2 AND 84700-4-15

FIGURE 6-2A



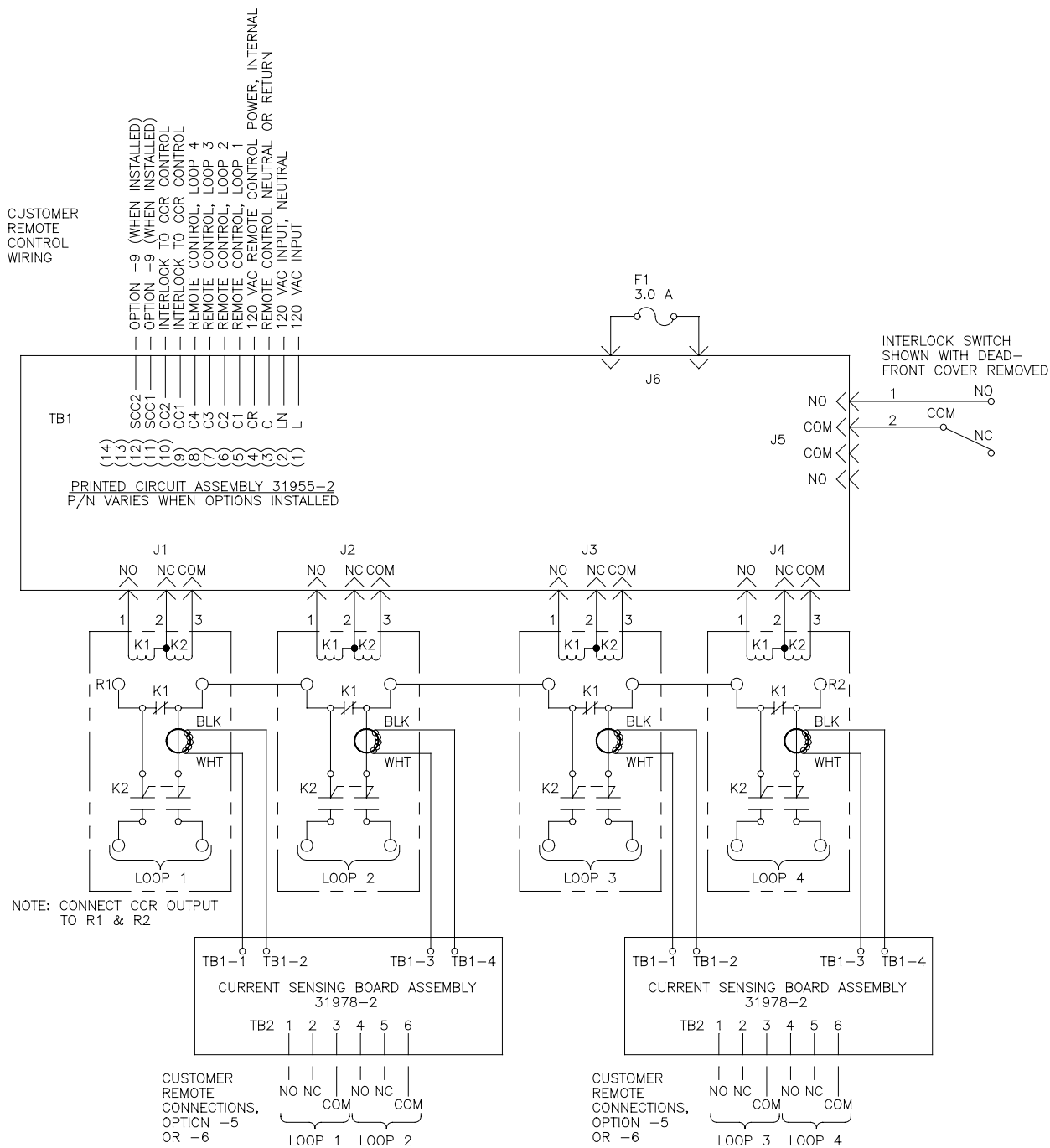
WIRING DIAGRAM  
84700-4-2 AND 84700-4-15

FIGURE 6-2B



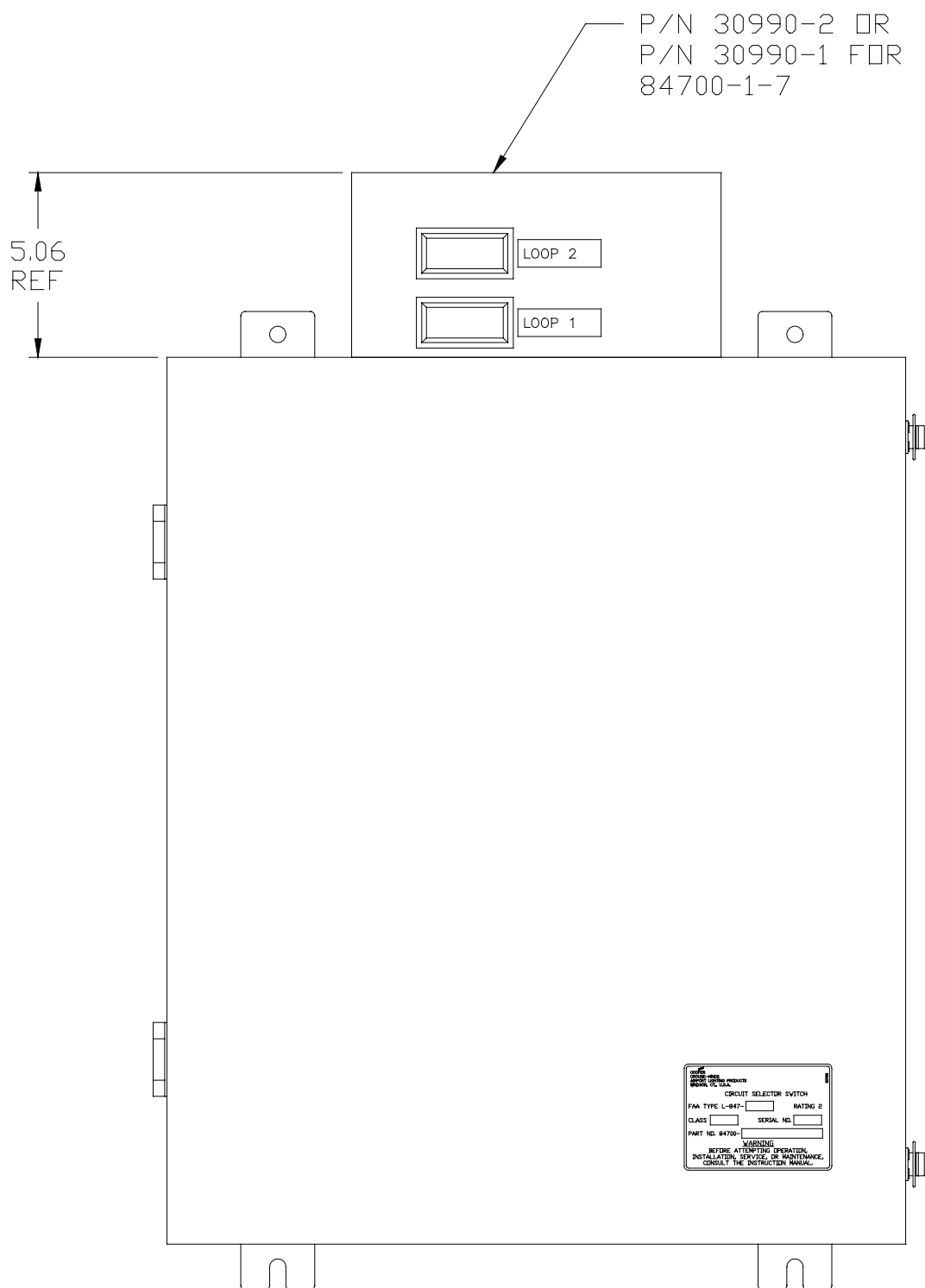
WIRING DIAGRAM  
84700-2-5 OR -6

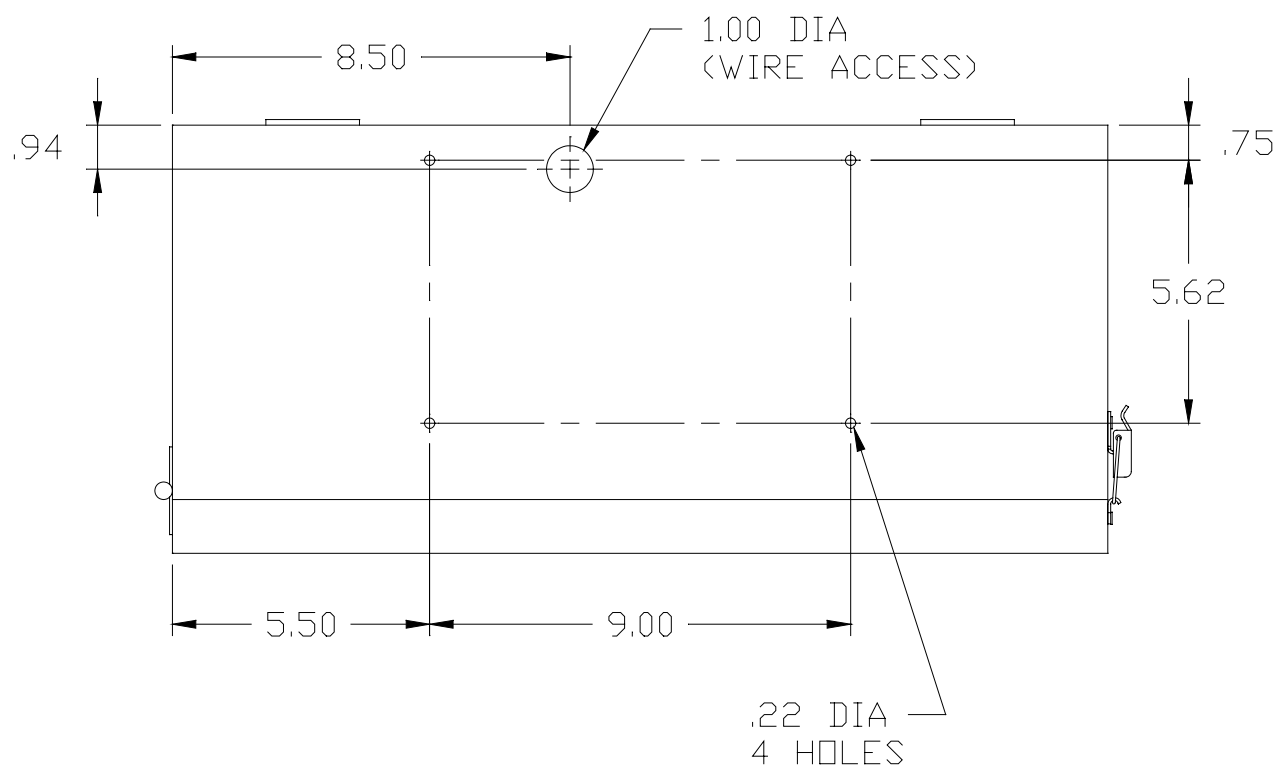
FIGURE 6-5A



WIRING DIAGRAM  
84700-4-5 OR -6

FIGURE 6-5B

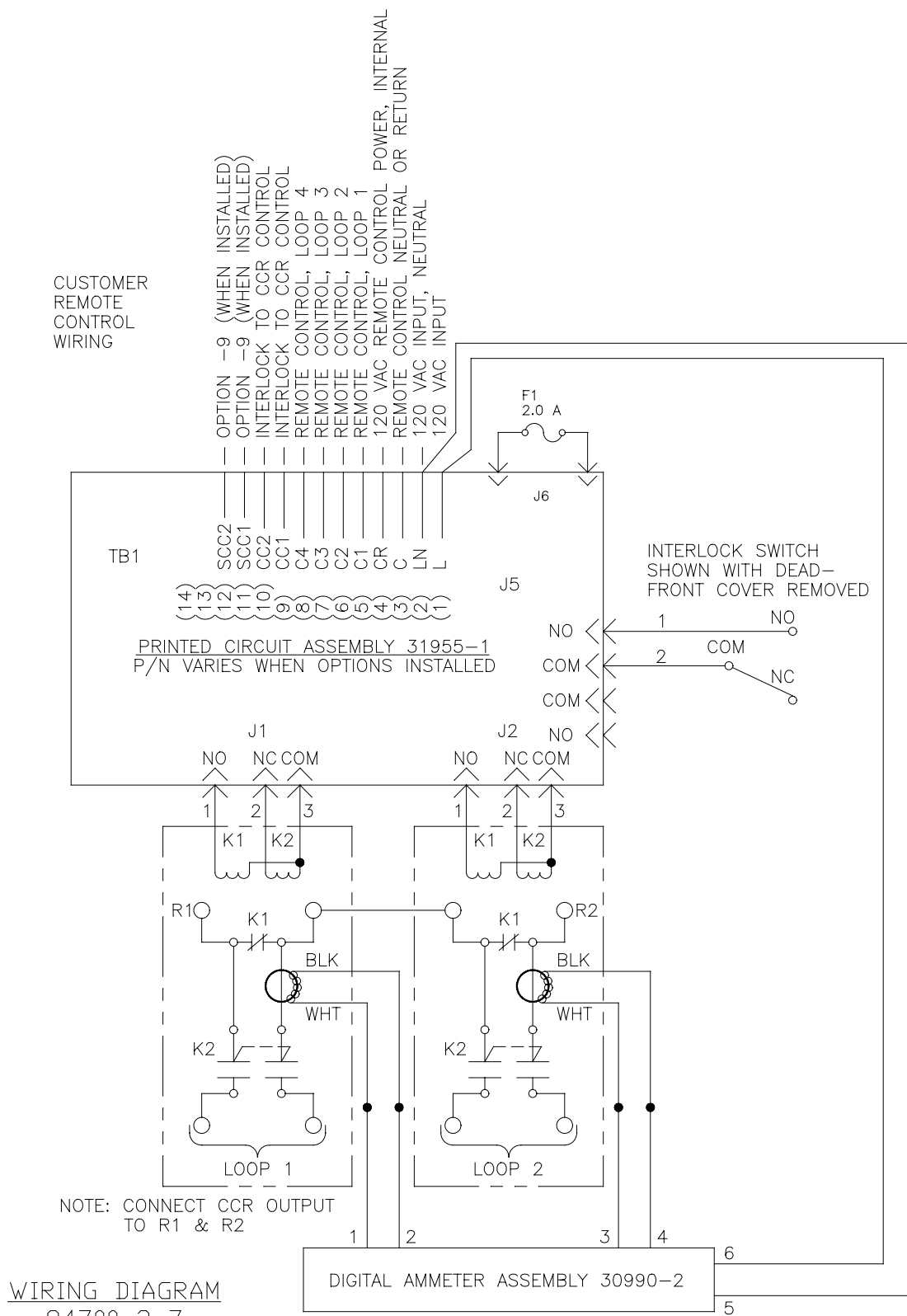




CABINET TOP, 84700-1 OR -2  
MOUNTING HOLES, DIGITAL AMMETER

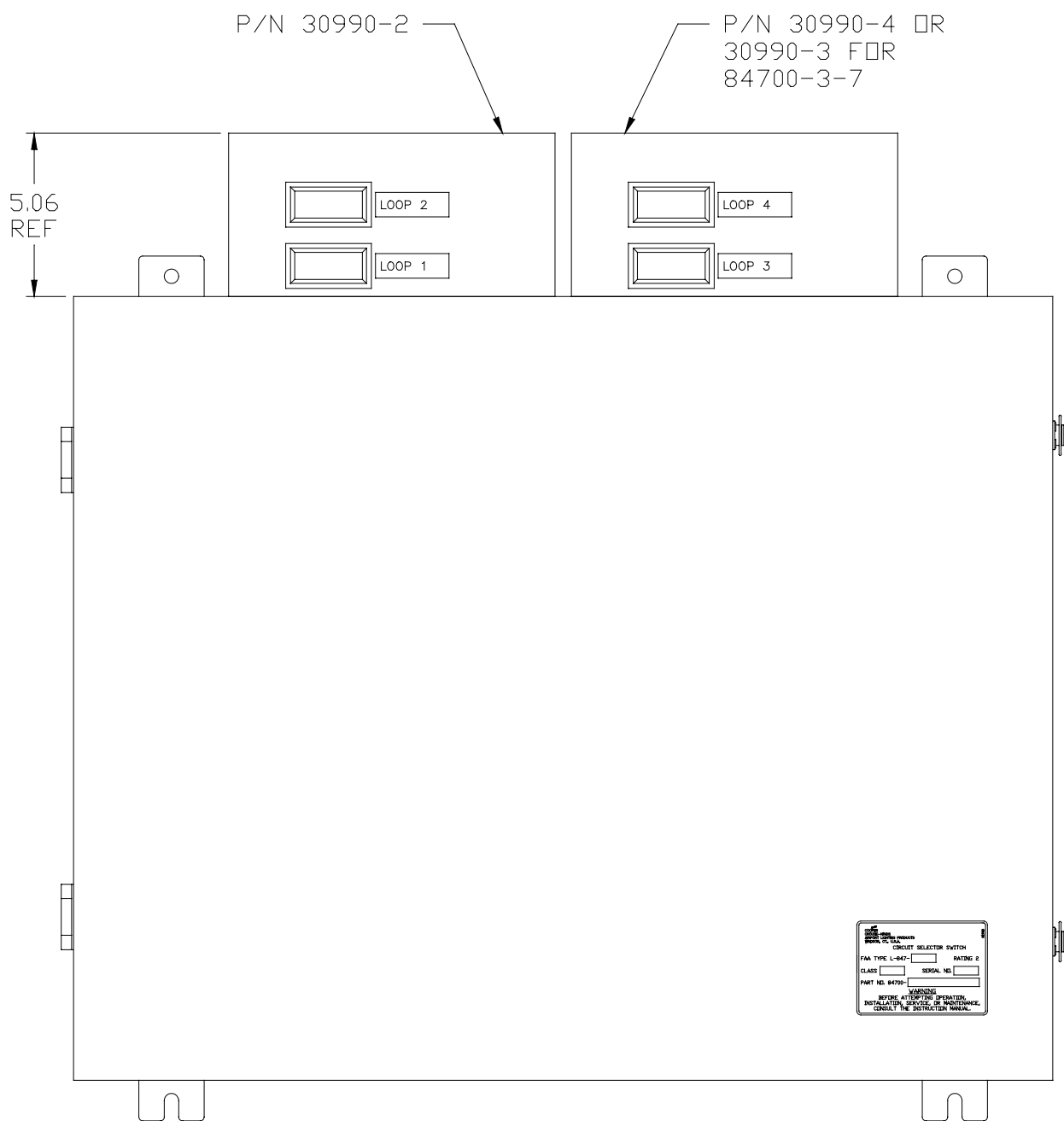
FIGURE 6-7B

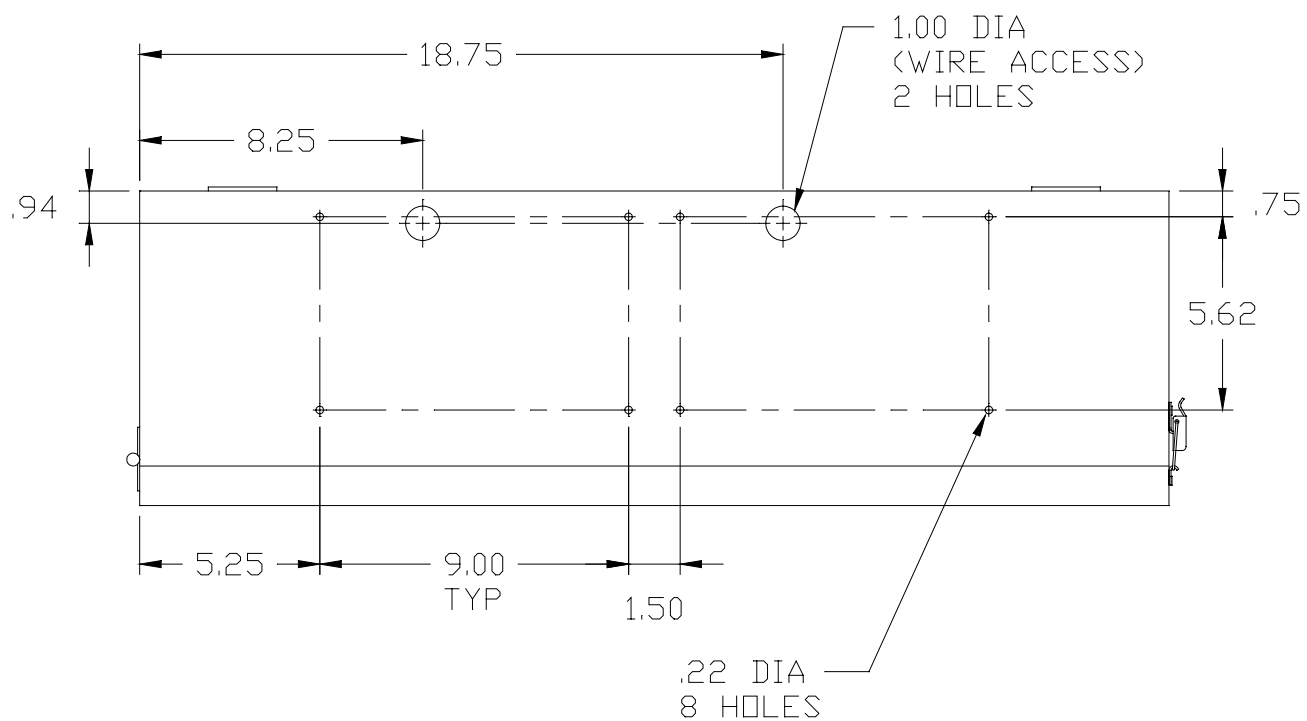




WIRING DIAGRAM  
84700-2-7

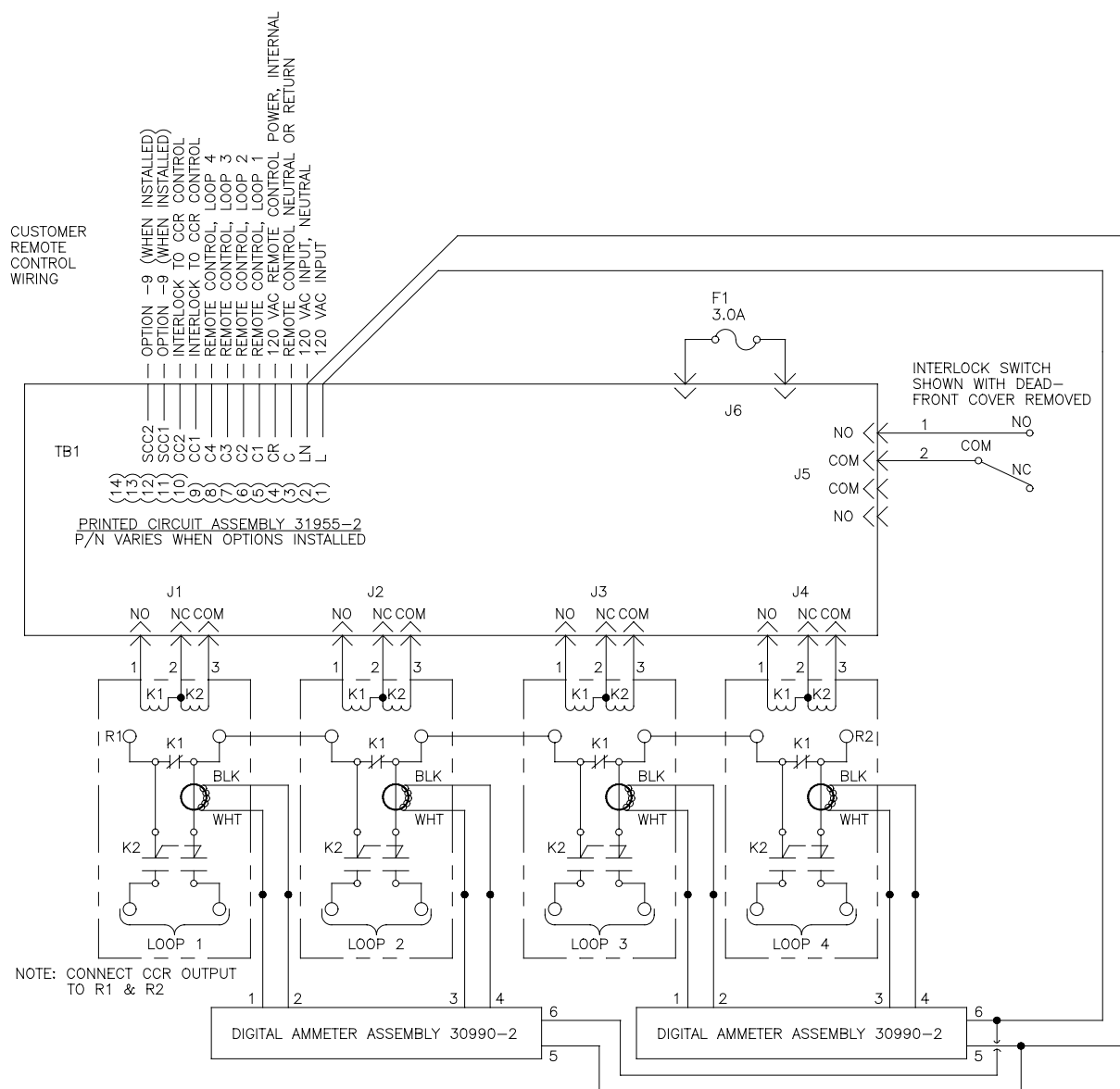
FIGURE 6-7C





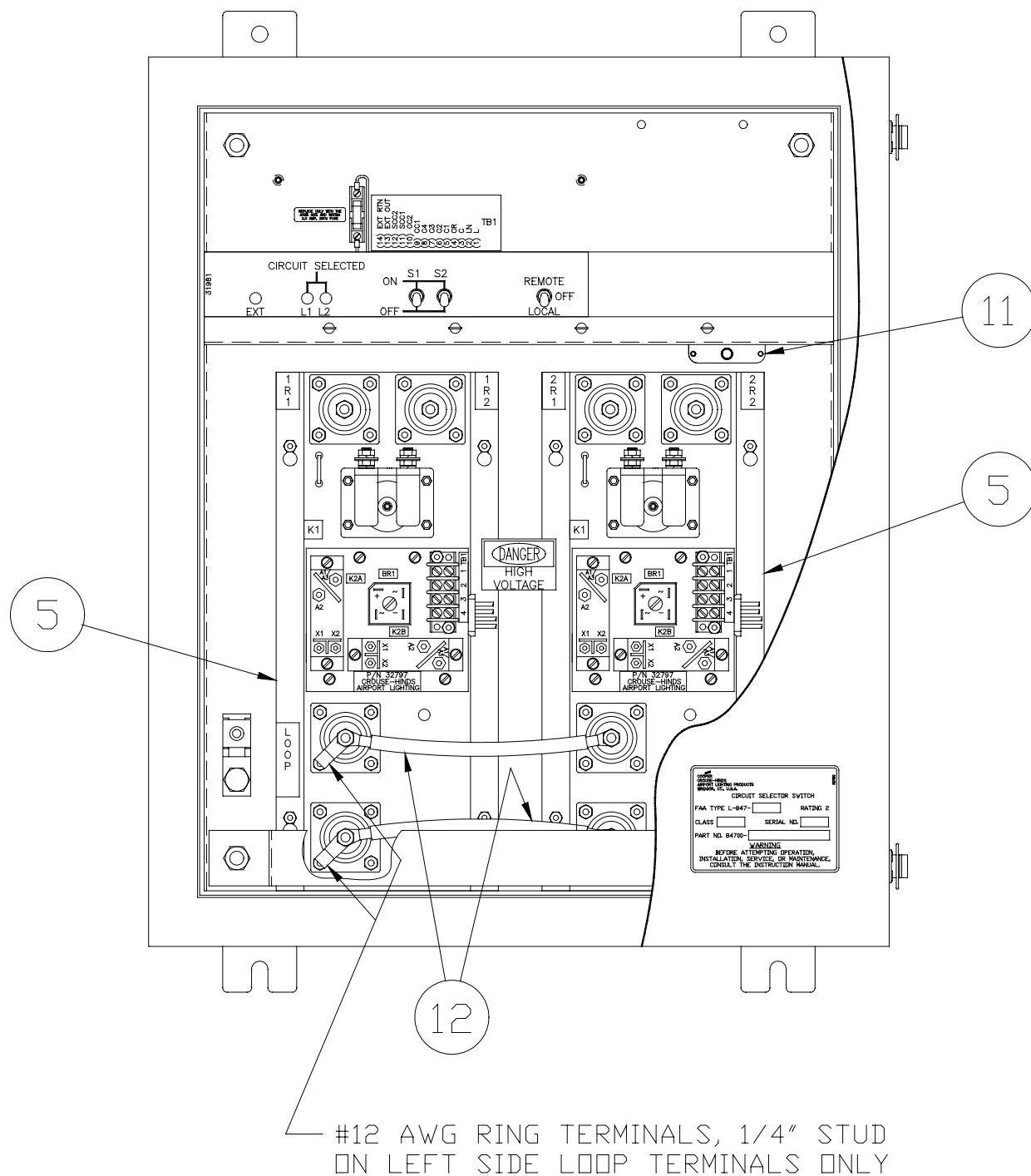
CABINET TOP, 84700-3 OR -4  
MOUNTING HOLES, DIGITAL AMMETER

FIGURE 6-7E



WIRING DIAGRAM  
84700-4-7

FIGURE 6-7F



84700-2-9  
NOTE: LABELING ON RELAY MODULES ALSO CHANGE  
FIGURE 6-9A

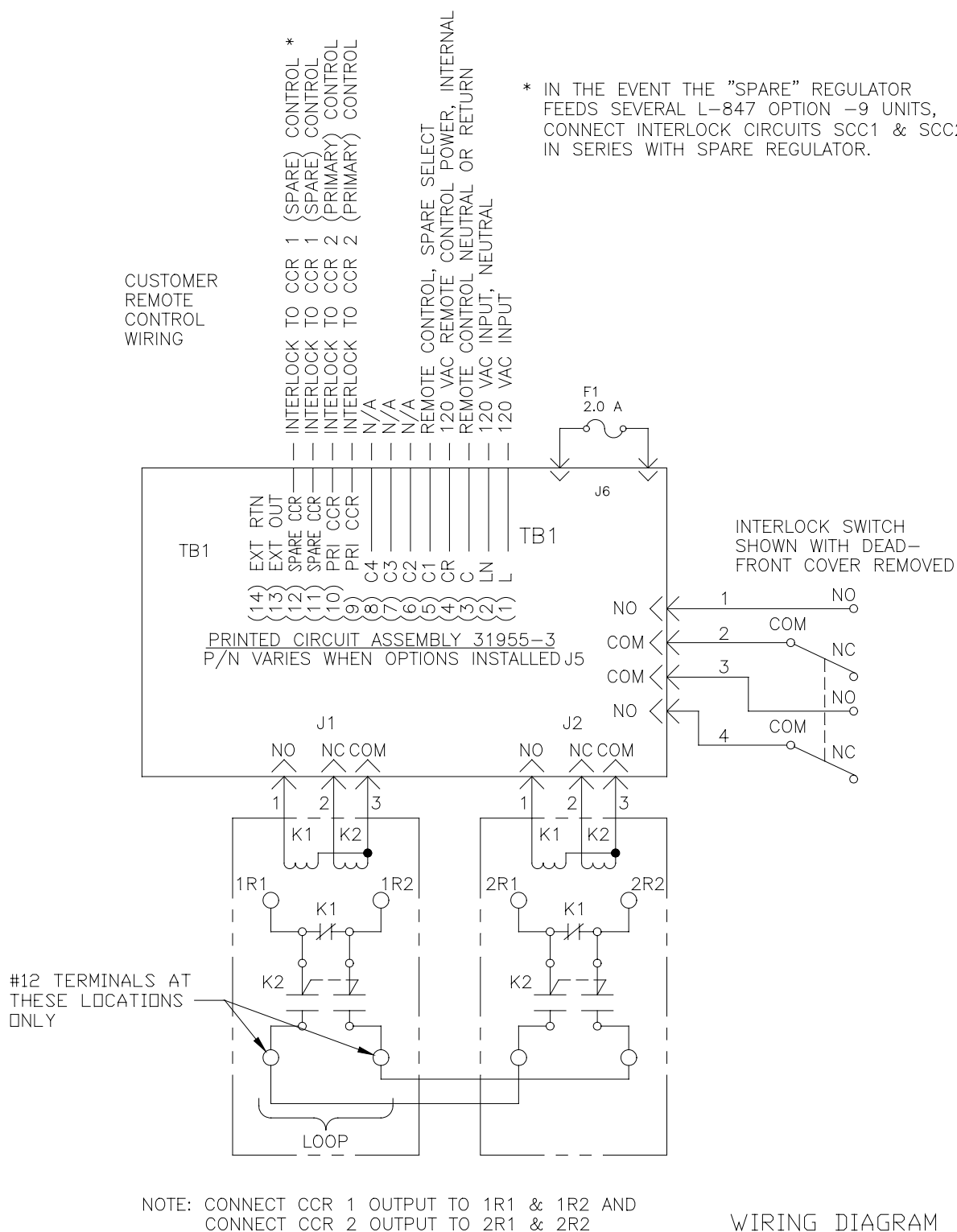
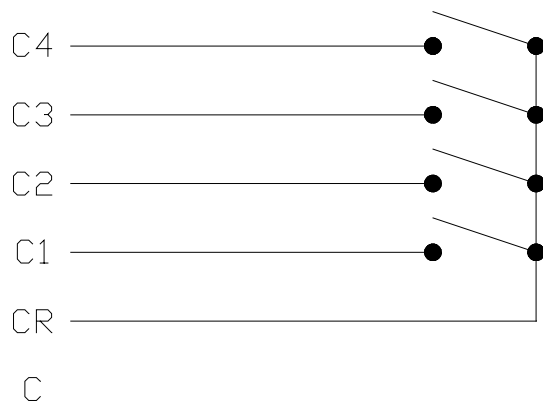
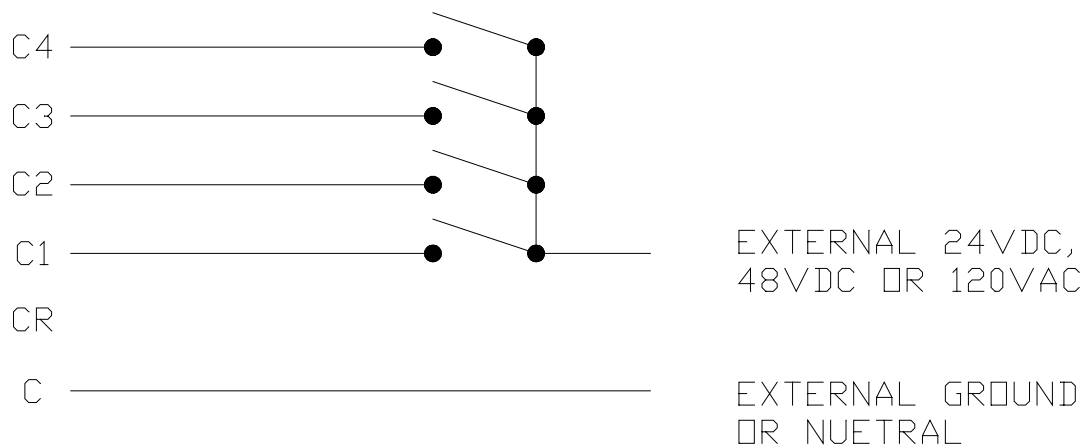


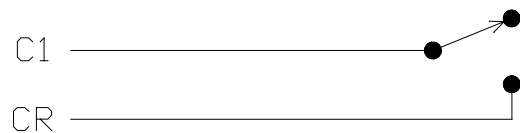
FIGURE 6-9B



INTERNAL 120V REMOTE CONTROL CONNECTIONS  
(84700-4 SHOWN)



EXTERNAL REMOTE CONTROL CONNECTIONS  
(84700-4 SHOWN)



REMOTE CONTROL CONNECTIONS  
(84700-2-9 SHOWN)

FIGURE 6-3,-4,-11