



CYBER 180

# 810 and 830 Computer Systems

Installation and Checkout

810 Computer System  
810A Computer System  
65810 Computer System  
830 Computer System  
830A Computer System  
65830 Computer System

60469450

REVISION RECORD

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REVISION	DESCRIPTION
01 (02-84)	Preliminary manual released.
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or use the comment form  
on the last page.

MANUAL TO EQUIPMENT LEVEL CORRELATION SHEET

=====  
 This manual reflects the equipment configuration listed below.

EXPLANATION: Locate the equipment type and series number, as shown on the equipment FCO log, in the list below. Immediately to the right of the series number is an FCO number. If that number and all of the numbers underneath it match all of the numbers on the equipment FCO log, then this manual accurately reflects the equipment.

EQUIPMENT TYPE	SERIES	WITH FCOs	COMMENTS
AA161-A	87	03508	Mainframe
AA179-A	05	03492	Mainframe
AT453-A	11	03393	Second PPS Barrel
AU125-A	04	03286	Six Channel Increment
AU129-A	01	-----	4DHO ICI Channels
BS222-A	01	-----	3HBH Memory Arrays
BS228-A	01	-----	3HBH Memory Arrays

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## PREFACE

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This manual is intended for use by experienced field personnel who are familiar with CDC® CYBER Computer Systems and Control Data Corporation installation and checkout practices. It provides general and detailed installation and checkout information for the mainframe of the CDC® CYBER 180 Models 810, 810A, 65810, 830, 830A and 65830 Computer Systems which may include the following options:

AA161-A	CYBER 180 810/830 Basic Equipment
AA179-A	CYBER 180 65810/65830 Basic Equipment
AT453-A	Second Barrel Option
AU125-A	Six Channel Increment
AU127-B	Second CPU Option
AU129-A	ICI Channel Option
BS167-A	Memory Increment 2 Megabytes
BS222-A	16 MB Array Increment
BS228-A	8 MB Array Increment
GK212-A	System Power Control Panel
GK410-A	SPSS Battery Ride Through
GK419-A	400 Hz Terminator Power Supply
FA152-A	Intelligent Small Disk (ISD) Adaptor
FA165-A	Intelligent Small Magnetic Tape drive (ISMT) Adaptor

The first section briefly describes the components of the central computer system.

The second section provides an installation flowchart. Tape the chart to a convenient place at the installation site and record on it the start and stop times, and installation notes.

The third section contains installation procedures that are divided into three parts for easy separation when installers work independently.

The appendixes are compiled in alphabetical order by title.

Installation procedures for Intelligent Small Disk (ISD) cabinets shipped separately from the mainframe are in the CDC Intelligent Small Disk (ISD) Subsystem manual [60457210].

Installation and checkout of the display console are usually part of the system installation and checkout. Information about the display station is in the Display Station Hardware Reference/CE Manual listed in the system publication index. The CDC® 18002-2 Console is available with the CYBER 180 Models 810, 810A, 65810, 830, 830A and 65830 Computer Systems using NOS 2.3 or later operating systems. This product includes a CC634B Display Station also known as the 721-21 Display Terminal, V4.0 controlware and an AV117A Cable. Installation manuals are listed on the following page.

Installation and checkout of peripherals are documented in manuals shipped with the equipment.

Additional information about the equipment's physical, power, and cooling requirements is in the Site Preparation Manual, and the Power Distribution and Warning System Manual. These and other related manuals are listed in the system publication index following this preface.

Information about the installation and checkout of a system with a 400-Hz motor-generator set (MG set) is in the MG manual and the Site Preparation Section 4 manual listed in the system publication index. The Site Preparation Section 4 manual also contains diagrams that show wiring connections to associated power equipment.

Other manuals referenced in this manual but not listed in the system publication index are:

<u>Control Data Publication</u>	<u>Publication Number</u>
CDC 721 Display Terminal Unpacking/Packing Instructions	62940038
Control Data CYBER 170 Display Station	
Hardware Reference/Custom Engineering Manual	62952600
Control Data 721-21/31 Display Terminal Owner's Manual/ Installation Instructions	62950101
CYBER Initialization Package (CIP) User's Handbook	60457180
810-1 Network Processor Unit (NPU)	60461470
FA165-A Intelligent Small Tape (ISMT) Adapter	60461100
Intelligent Small Disk (ISD) Subsystem	60457210
Linewriter 400/800 Set-up and Reference Manual	44689037
Maintenance Software Library MSL15X Reference Manual	60456530
MSL15X Model Independent Tests Maintenance Software Reference Manual	60469390
MSL151 Model Dependent Tests Maintenance Software Reference Manual	60469400
Packaging Document	59120000
Remote Technical Assistance Handbook	60000078

Manual ordering information and latest publication revision levels are available from the Control Data Literature and Distribution Services catalog, publication number 90310500. The packaging document is available from:

Corporate Packaging and Material Handling Engineering  
8100 34th Avenue South  
Minneapolis, Minnesota. U.S.A. 55420



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**SECTION 1**

**INTRODUCTION**





=====

This manual supports the installation and checkout of CDC® CYBER 180 Models 810, 810A, 65810, 830, 830A and 65830 central computers. The central computer consists of modules which form parts of the mainframe. Power requirement is three phase, 50/60 Hz and optional 400 Hz supplied by a motor-generator set (MG set).

### MAINFRAME

Part of the central computer is a basic cabinet that consists of two cabinets bolted together--the power cabinet and the logic cabinet shown in figure 1-1. The power cabinet contains up to eight power supplies, a battery backup, and various power modules. The logic cabinet has two logic modules that contain:

- One or two central processor units (CPU)
- Input/output unit (IOU)
- Central memory unit (CM)

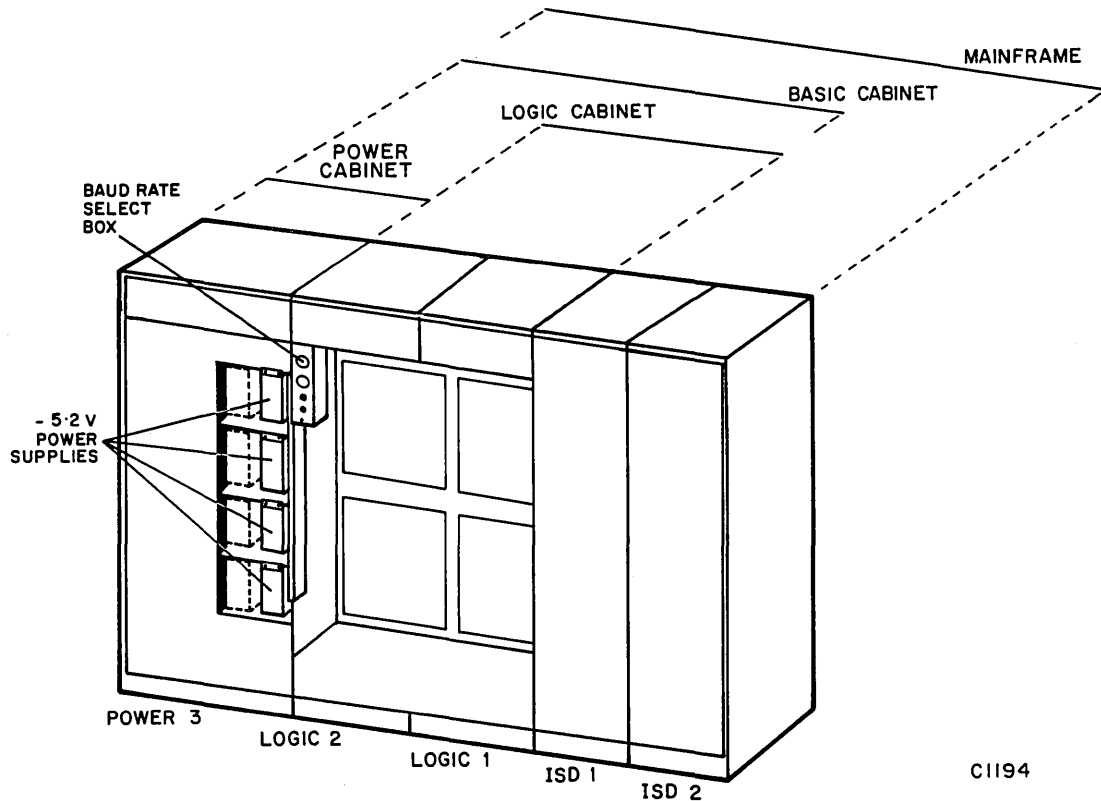
Two optional 834 Disk Cabinets can be bolted to the right side (rear view) of the basic cabinet. Each cabinet containing up to four spindles/control modules is connected by way of an ICI channel interface with the computer. The mainframe, therefore, contains up to four detachable cabinets bolted together.

### DISPLAY CONSOLE

A standard CC634B Display Console and or an optional CC545 Display Console can be connected to the mainframe by way of the two port mux and channel 10 respectively.

### TAPE UNIT

Optional 639 Tape Drives can be connected to the computer by way of ICI channel interfaces.



C1194

Figure 1-1. Mainframe Configuration

OPTIONAL POWER REQUIREMENT

**MOTOR-GENERATOR SET**

The smallest MG set is rated at 12.5 kVA. Larger MG sets require a wall-mounted system power control panel (SPCP). The MG provides three-phase, 400-Hz power to the mainframe, peripherals, and 40 V dc terminator power supply.

**SPCP**

The SPCP is a 400-Hz power control device.

FIELD TRANSFER

If the system is a field transfer, refer to the Site Preparation, Section 2 Manual for correct Hubbell connectors, power overlay, and jumper wires. Ensure that they are on site two weeks prior to the mainframe installation.

## ASSUMPTIONS

Assume that the following installations are complete and that items are available on site before start of installation of the mainframe:

- Field Planning and Construction (FP&C) preparation and verification of site complete.
- Circuit breaker panels and related wiring, including Hubbell connectors, installed.
- Emergency-off switches installed and tested.
- MG set installed, where applicable.
- SPCP and associated control cables installed, where applicable.
- 40 V dc terminator power supply installed, where applicable.
- Channel cables labelled and installed.
- External peripherals and cables installed.
- ISD formatted at factory.
- Two-port multiplexer (TPM) cables for remote terminal assistance (RTA) are on site, where applicable.
- Phone and modem for TPM test are on site.
- Installation tool kit is on site.
- Deadstart and CYBER Initialization Package (CIP) tapes are on site.
- Electromagnetic compatibility (EMC) kit is on site.
- Mainframe positioned but not uncrated.
- Scratch tape for ISMT read and write tests is on site.
- A console table for the CC634 Display Console is on site.

## EQUIPMENT PARTS LIST

The computer system is shipped in separate boxes, each one identified by a letter. Start installing the system with BOX A. Install all boxes that have the same letter, then work towards the last box in the letter sequence. Look for multiple boxes of the same letter because more than one may have been shipped.

SAMPLE PARTS LIST

BOX A - MAINFRAME

- SYSTEM MASTER LOG (inside unit)
- FCA LOG & INSTRUCTIONS (inside unit)
- FCA NUMBER, LINE NUMBER
- Copies of FCOs shown on SML
- PAK INSERTION TOOL
- LIST OF MAINFRAME OPTIONS ATTACHED

BOX B - MISCELLANEOUS KITS

- MANUAL KIT
- INSTALLATION MANUAL
- I.Q.P. MANUAL & INSTALLATION REPORT
- 810 MANUAL KIT
- 810 CIP KIT with MSL
- 830 MANUAL KIT
- 830 CIP KIT with MSL

BOX C - DISPLAY TERMINAL

- CC634B TERMINAL
- AV117A CABLE, VIKING-X
- YA275A POWER CONV. KIT

OR

- CC545G
- CC545H
- CABLES, COAXIAL 65 ft
- CHAIR, CONSOLE
- MANUAL, REFERENCE

BOX D - I.S.D. SUBSYSTEM

- CABLE, DC POWER SUPPLY
- CABLE, C/M to C/M, 50 pin (76")
- MANUAL KIT
- BOLTS (.25 x 1.25)
- LOCKWASHERS
- NUTS
- LIST OF I.S.D. OPTIONS ATTACHED

BOX E - NETWORK PROCESSOR 2550

- MANUAL KIT
- LIST OF NETWORK OPTIONS ATTACHED

BOX F - I.S.M.T. SUBSYSTEM

- MANUAL KIT
- PACKING LIST

BOX G - PRINTER #1 (CT301A)

- PRINTER BAND

BOX H - PRINTER #2 (CT302A)

- PRINTER BAND

BOX J - CABLES FOR 2550 N.P.U.

- MANUALS 2550 N.P.U.

BOX K - SPARES KIT #1

- SEE ATTACHED LIST

BOX L - SPARES KIT #2

- SEE ATTACHED LIST

BOX M - SPARES KIT #2

- SEE ATTACHED LIST



**SECTION 2**

**INSTALLATION FLOWCHART**





# INSTALLATION FLOWCHART

This section contains two identical flowcharts. One will become part of an overall Site Resource Management Chart of an installation. The second one will be used by the installers. The flowcharts illustrate work unit assignments and sequencing of installation procedures of the central computer.

During installation, installer will remove the flowchart in figure 2-2 and tape it up. Fill in the times and check off each box as installation progresses.

Except when the flowchart or a procedure calls for team effort, two installers work independently. Refer to the flowchart instruction page for team details.

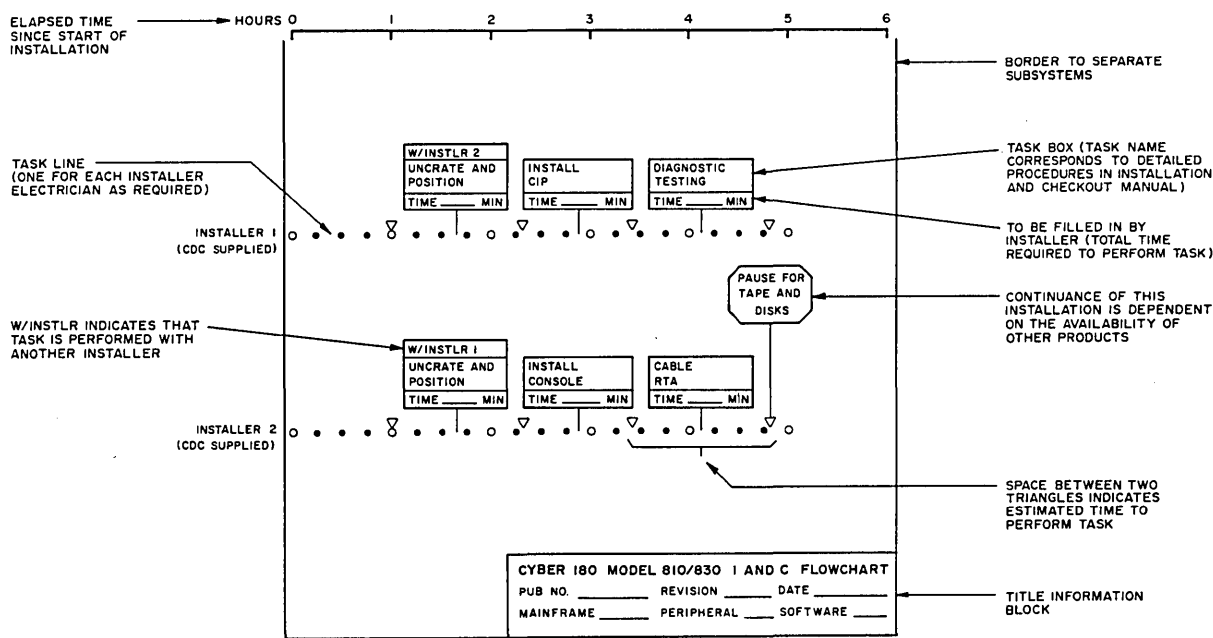
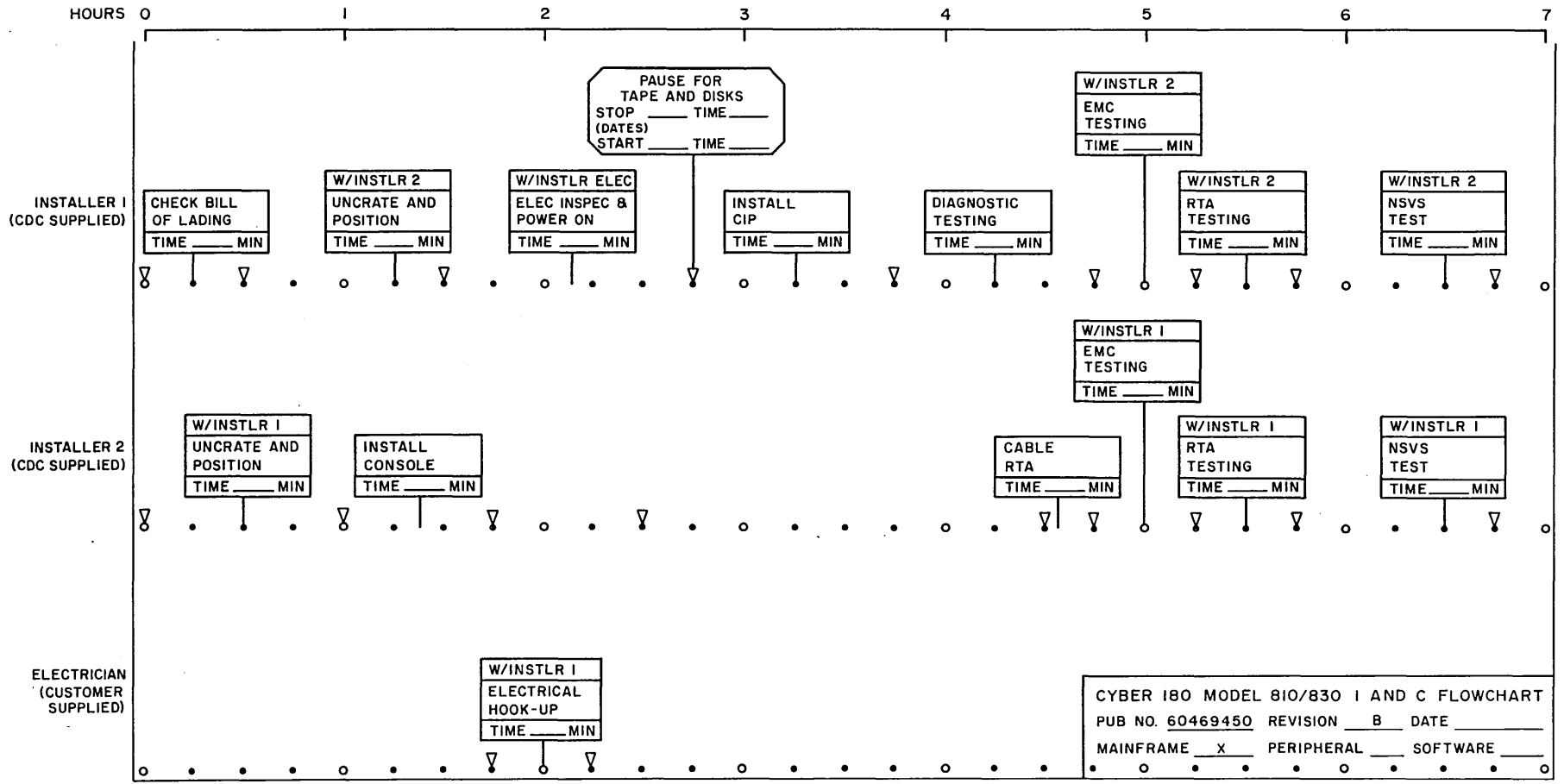
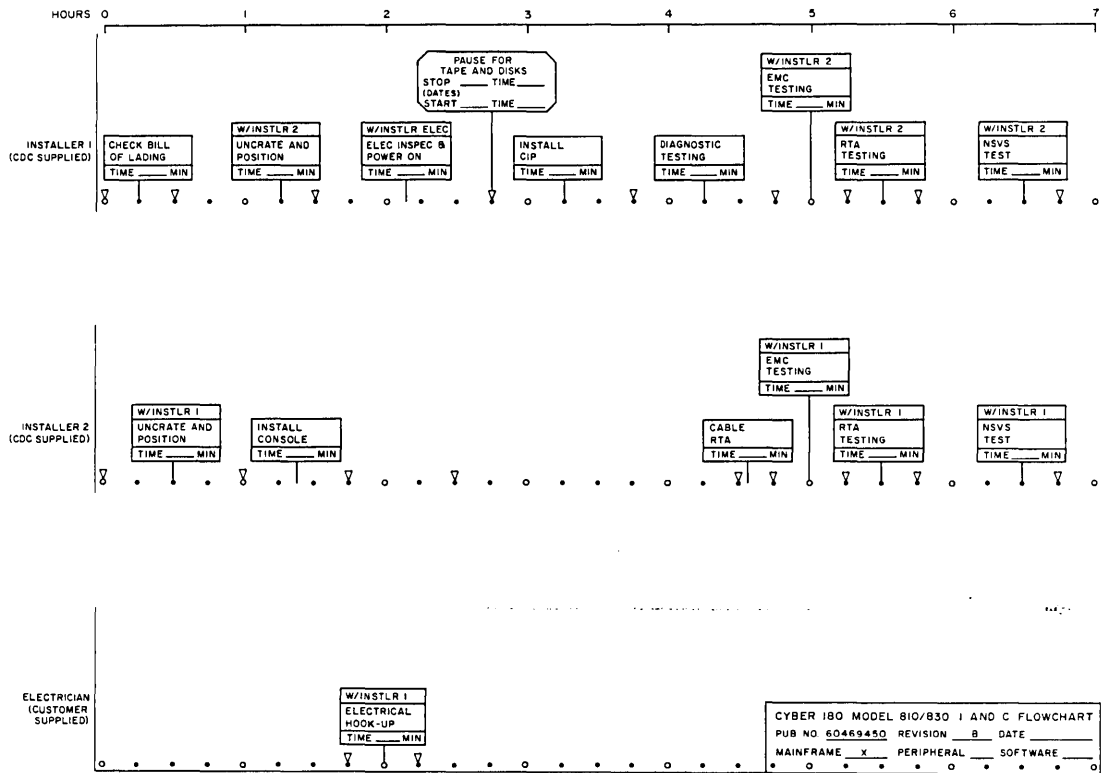


Figure 2-1. Installation and Checkout Flowchart Instruction



CI141

Figure 2-2. Installation and Checkout Flowchart, for Installer



C1201

Figure 2-3. Installation and Checkout Flowchart, for Site Resource Management

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**SECTION 3**

**PROCEDURES**



=====  
Mainframe installation procedures are organized so that two installers and an electrician can remove the procedures and work on them at the same time.

The procedures in this section are for mainframe installation and checkout. Procedures for installation of disk, tape, and display station are supplied separately with each unit. Refer to applicable installation procedure manuals listed in the preface.

Installer 1 should remove PART I of the procedures in this section and work independently except as indicated by the flowchart in Section 2.

Installer 2 should remove PART II of the procedures in this section and work independently except as indicated by the flowchart in Section 2.

PART III of this section is a guide for the electrician who will team up with installer 1 where required by the flowchart in Section 2.

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**PART I**

**INSTALLER 1 - PROCEDURES**



PART I - FOR INSTALLER 1

CHECK BILL OF LADING

- \_\_\_\_\_ 1. A Control Data Corporation Certified Installer (CI) must be present at the unpacking.
- \_\_\_\_\_ 2. Locate previously shipped miscellaneous kits (from EIC) and BOX B which contains the installation and checkout (ICO) manual, site preparation manual, controlware tape, and CYBER Initialization Package (CIP) tape.
- \_\_\_\_\_ 3. Locate envelope marked OPEN FIRST containing instructions for unpacking all the boxes.
- \_\_\_\_\_ 4. Check contents by using the lists enclosed with each box labelled with a letter such as A, B, or C.
- \_\_\_\_\_ 5. Report damaged and missing items to EIC.

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## UNCRATE AND POSTION

### UNCRATE

#### NOTE

If the computer system is shipped with the power cabinet separated from the logic cabinet, do not use the following. Use the appendix titled, Split Frame Installation and De-Installation.

- \_\_\_\_\_ 1. A Control Data Corporation CI must direct uncrating and check for damage.

#### WARNING

Carefully cut packing straps. They may snap outward and cause personal injury.

- \_\_\_\_\_ 2. Uncrate mainframe using the unpacking instructions attached to the outside of the mainframe crate.

#### NOTE

Do not continue unless the computer cabinets are at room temperature. All equipment must be at room temperature before power is applied.

- \_\_\_\_\_ 3. Remove outer plastic wrapping. Check equipment for damage. Refer to appendix titled, Mainframe Components for location of components.

### POSITION

- \_\_\_\_\_ 1. Locate site plan.
- \_\_\_\_\_ 2. Position the display station on customer-supplied table.

#### CAUTION

Do not cut floor tiles inside the computer room.

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ELECTRICAL INSPECTION AND POWER ON

Electrical inspection and power on consists of five sections that must be performed in sequence as follows:

1. Cables and Wires Inspection
2. Electrical Inspection
3. Power Application

CAUTION

When handling logic paks, wear the electrostatic discharge (ESD) wrist strap.

NOTE

Four board locks (19268398) are installed at the factory to keep the logic modules from loosening. If board locks are removed for any reason, re-install them.

NOTE

For de-installation of computer, remove jumper wire from IOU20-A009/IOU20-B009 and connect it to IOU19-C007/IOU20-D007.

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CABLES AND WIRES INSPECTION

- \_\_\_\_\_ 1. Check visually for loosened connections (Berg blocks).
- \_\_\_\_\_ 2. Remove jumper wire from panel location IOU19-C007/IOU20-D007 and attach it to IOU20-A009/IOU20-B009.

If SPCP option is not available, skip steps 3 to 9.

- \_\_\_\_\_ 3. Verify that status and control cables are connected to SPCP and run to mainframe position.
- \_\_\_\_\_ 4. Verify that cables were labelled correctly at the factory.
- \_\_\_\_\_ 5. Verify that 50/60-Hz and 400-Hz input power lines are connected properly to the SPCP.
- \_\_\_\_\_ 6. Verify that MG REMOTE ADJUST, MG REMOTE START, and MG POWER STATUS connections are complete.
- \_\_\_\_\_ 7. Install and connect the four status and control cables to the I/O Connector Panel as follows:

<u>SPCP</u>	<u>MAINFRAME I/O CONNECTOR PANEL</u>
J7	J6
J8	J7
J9	J4
TB3-3,4	J8

- \_\_\_\_\_ 8. Terminate J5 on I/O connector panel. See figure B-1.
- \_\_\_\_\_ 9. Verify operation of SPCP.

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## ELECTRICAL INSPECTION

- \_\_\_\_\_ 1. Set all circuit breakers to OFF at wall power distribution panel.
- \_\_\_\_\_ 2. Check wiring on connectors using diagrams in appendix titled, Power Distribution Diagrams.
- \_\_\_\_\_ 3. Check that Hubbell connector is seated snugly in the 50/60-Hz, 3-Phase Power Input Connector J1. Turn lock ring to secure. Refer to figure 3-1 for location.
- \_\_\_\_\_ 4. If 400-Hz, 3-phase power is required by the system, check that larger Hubbell connector is seated snugly into connector J2. Turn lock ring to secure.
- \_\_\_\_\_ 5. Verify that correct overlay for site power is installed. Refer to the appropriate diagram in figure 3-2 for the verification.
- \_\_\_\_\_ 6. Verify that tap change jumpers are connected according to the diagram on the overlay.
- \_\_\_\_\_ 7. Set BLOWER/CHARGER switch to NORM and all circuit breakers to off as shown in figure 3-3.
- \_\_\_\_\_ 8. Set mechanical zero adjustment of voltage percent meter to zero.
- \_\_\_\_\_ 9. Set two circuit breakers (AUXILIARY POWER SUPPLY, BLOWER/CHARGER POWER) to on.
- \_\_\_\_\_ 10. Verify ISD power cable connection shown in figure 3-1.
- \_\_\_\_\_ 11. Close and lock power panel door.

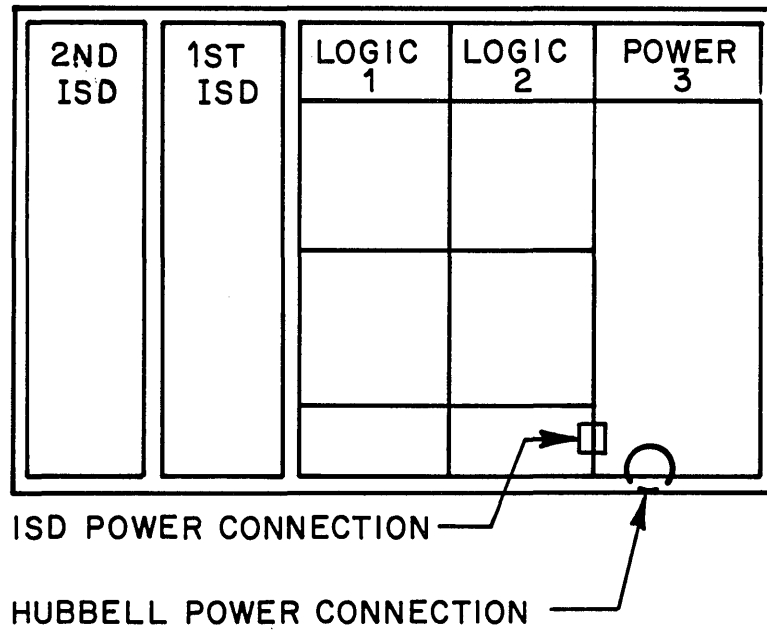
### CAUTION

Battery Back-Up option (BBU) is live with high voltage even when BATTERY DISCONNECT is switched to OFF.

### NOTE

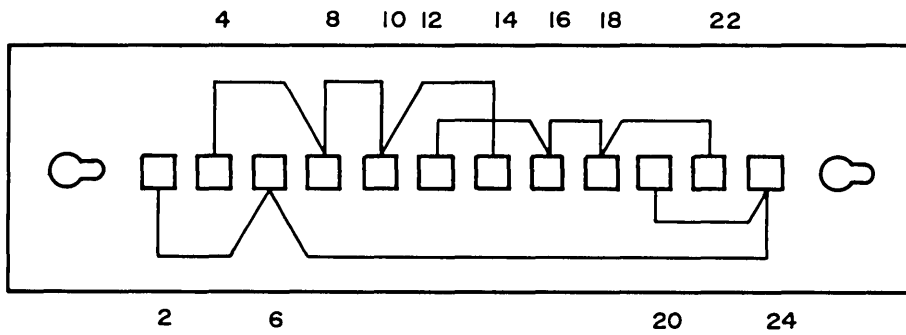
When Hubbell is installed, electrical safety ground is in place.

CABINET-FRONT VIEW



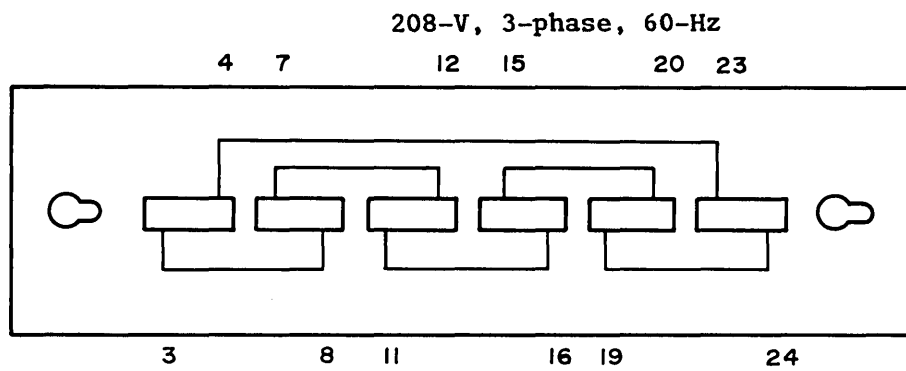
C1195

Figure 3-1. Hubbell Connector Power Input Area



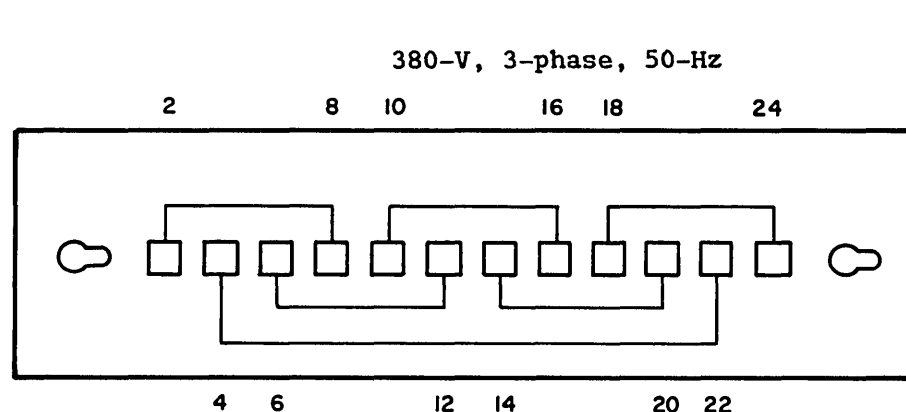
208 VAC  
3 PH  
60 HZ

C1148



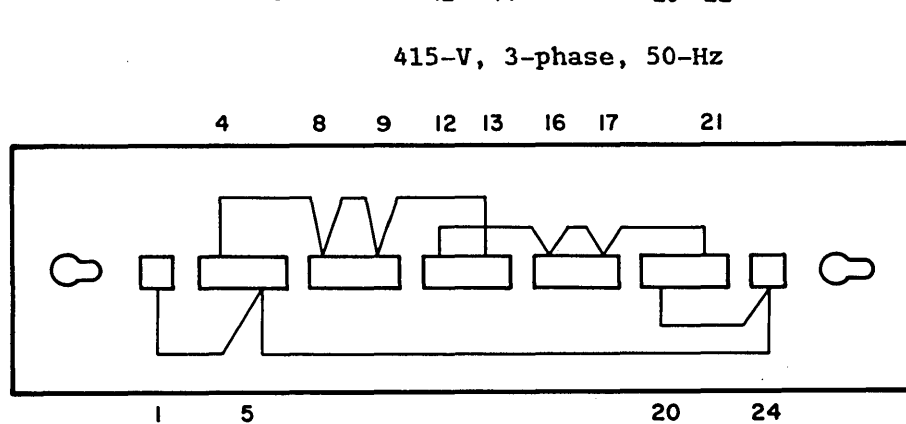
380 VAC  
3 PH  
50 HZ

C1149



415 VAC  
3 PH  
50 HZ

C1150

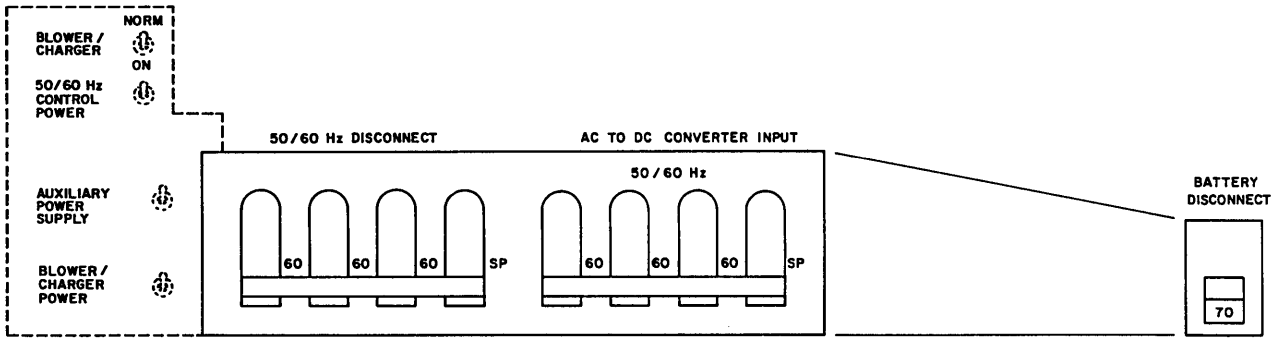
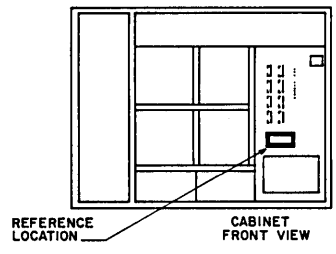


240 VAC  
3 PH DELTA  
60 HZ

C1151

240-V, 3-phase Delta, 60-Hz

Figure 3-2. Power Supply Tap Change Overlays



C1016

Note: When toggle switch is at ON, blower/charger is not sequencing.

Figure 3-3. Power, Blower Switches, and Circuit Breaker Assembly

## POWER APPLICATION

The computer system may or may not include the SPCP option. Choose one of the two sections below: Power Application (No SPCP) or Power Application (SPCP).

### Power Application (No SPCP)

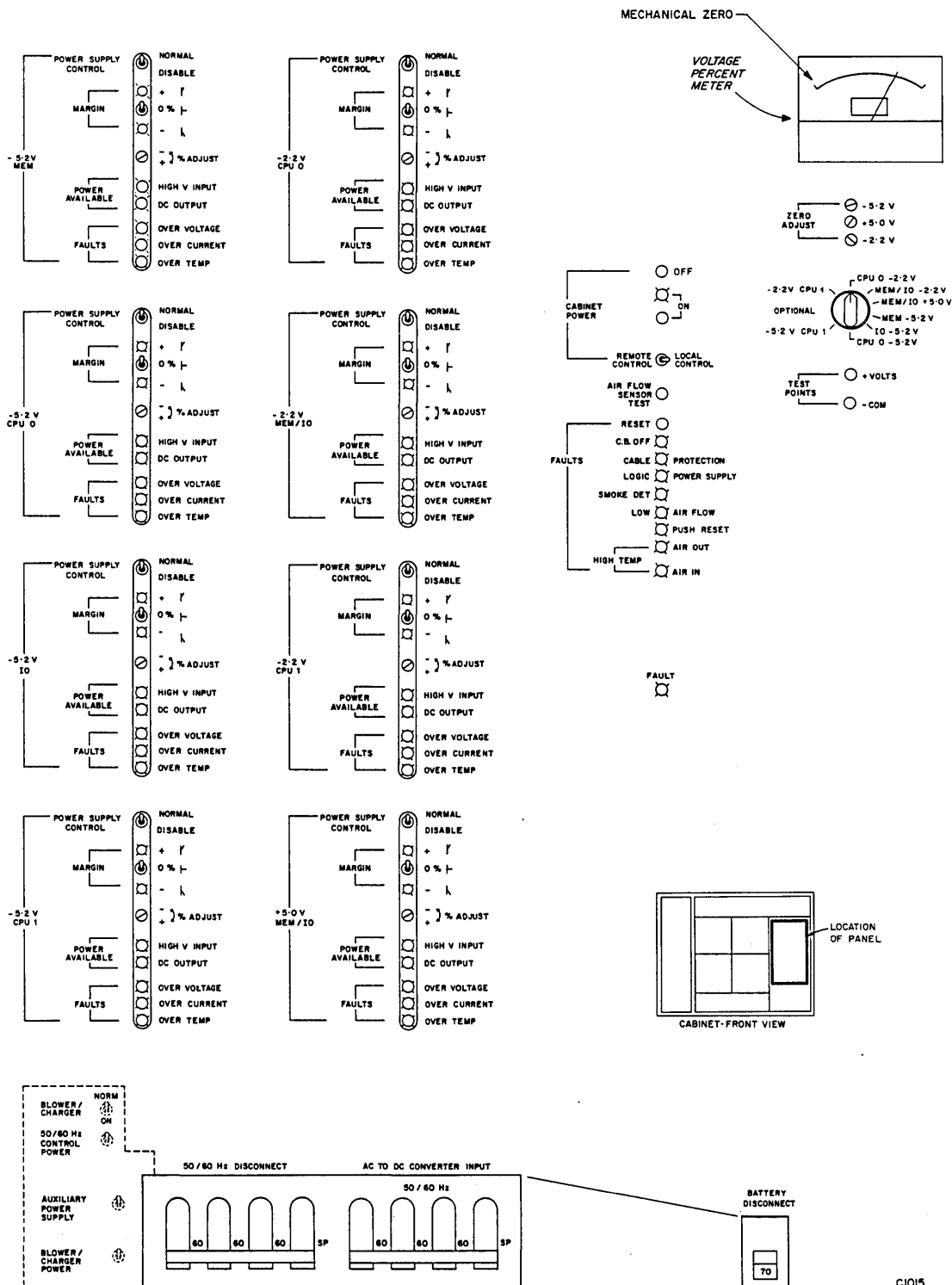
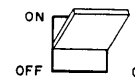
- \_\_\_\_\_ 1. Set wall power distribution panel 50/60-Hz and 400-Hz (if applicable) circuit breakers for mainframe and display console to on.
- \_\_\_\_\_ 2. Set CABINET POWER switch to LOCAL CONTROL position shown in figure 3-4.
- \_\_\_\_\_ 3. Switch on mainframe circuit breakers in the following sequence:
  - \_\_\_\_\_ a. 50/60-Hz DISCONNECT
  - \_\_\_\_\_ b. AC TO DC CONVERTER INPUT
  - \_\_\_\_\_ c. BATTERY DISCONNECT

#### NOTE

Power off mainframe in reverse sequence.

- \_\_\_\_\_ 4. Push FAULTS RESET and CABINET POWER ON buttons to power up mainframe.
- \_\_\_\_\_ 5. Connect digital voltmeter to test points.
- \_\_\_\_\_ 6. Select mainframe voltages -5.2 V, -2.2 V, and +5.0 V, one at a time. Adjust to  $\pm 0.01$  V if necessary.
- \_\_\_\_\_ 7. Adjust the mainframe voltage percent meter to 0% for each voltage.
- \_\_\_\_\_ 8. Switch display station on.

UNIT  
EMERGENCY



C1015

Figure 3-4. Mainframe Panel Switches and Controls



## Power Application (SPCP)

Use this procedure under normal installation conditions. All steps below refer to figure 3-4 except where noted. Refer to appendix titled, SPCP Settings, for power application procedures when voltage adjustments are necessary.

- \_\_\_\_\_ 1. Set wall power distribution panel 50/60-Hz and 400-Hz (if applicable) circuit breakers for the mainframe and display console to on.
- \_\_\_\_\_ 2. Set the 50/60-Hz DISCONNECT switch to on.
- \_\_\_\_\_ 3. Set CABINET POWER CONTROL switch to LOCAL position.

### NOTE

CABINET POWER CONTROL switch must be set to REMOTE during normal computer system operation.

- \_\_\_\_\_ 4. Set the POWER OFF RIDETHROUGH TIME SELECT switch to 2.5 seconds, as shown in figure 3-5.
- \_\_\_\_\_ 5. Turn key on SPCP to LOCAL.
- \_\_\_\_\_ 6. Push POWER ON button on SPCP. MG starts and power is available in approximately one minute.
- \_\_\_\_\_ 7. Verify that the SPCP voltmeter registers 0% and that POWER AVAILABLE light is ON.
- \_\_\_\_\_ 8. Switch on mainframe circuit breakers in the following sequence:
  - \_\_\_\_\_ a. 50/60-Hz DISCONNECT
  - \_\_\_\_\_ b. AC TO DC CONVERTER INPUT
  - \_\_\_\_\_ c. BATTERY DISCONNECT
- \_\_\_\_\_ 9. Push FAULTS RESET and CABINET POWER ON buttons.
- \_\_\_\_\_ 10. Set all POWER SUPPLY CONTROL (voltage) MARGINS toggle switches to 0%.
- \_\_\_\_\_ 11. Connect digital voltmeter to test points.
- \_\_\_\_\_ 12. Select mainframe voltages -5.2 V, -2.2 V, and +5.0 V, one at a time. Adjust to  $\pm 0.01$  V if necessary.
- \_\_\_\_\_ 13. Adjust the mainframe voltage percent meter to 0% for each voltage.
- \_\_\_\_\_ 14. Switch display console on.
- \_\_\_\_\_ 15. Read auxiliary power supply voltages. Reading must be as shown in table 3-1.

Table 3-1. Auxiliary Power Supply Voltages

Test Point	Description	Voltage Tolerance
1	Ground	NA
2	-12 V	-12.00 V $\pm$ 0.01 V
3	+12 V	+12.00 V $\pm$ 0.01 V
4	+ 5 V	+5.15 V $\pm$ 0.01 V

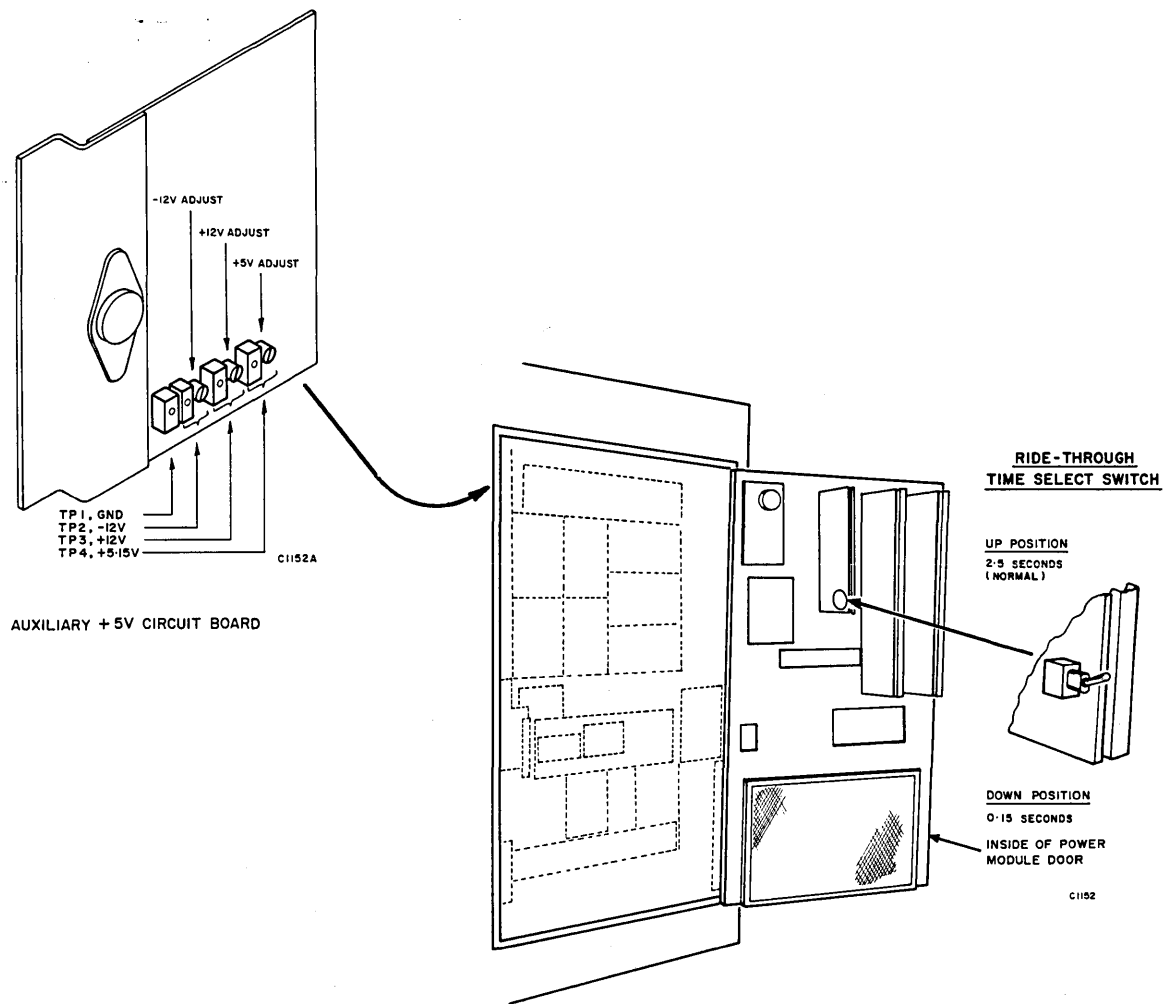


Figure 3-5. Ride-Through Time Select Switch, Auxiliary Power Test Points

## INSTALL CIP

### MSL/OPERATING SYSTEM PREPARATION

#### NOTE

On 810-1 systems where ISD and ISMT are the peripheral equipment, refer to instructions supplied with the ISD and ISMT.

- \_\_\_\_\_ 1. Enter all coldstart/warmstart programs contained in appendix titled, Deadstart and Initialization.
- \_\_\_\_\_ 2. Load and run Long Deadstart Sequence (LDS) program.
- \_\_\_\_\_ 3. Mount CYBER Initialization Package (CIP) tape and upload tape controlware.
- \_\_\_\_\_ 4. Coldstart/warmstart disk and control module.
- \_\_\_\_\_ 5. Deadstart MSL.

### BUILD DEADSTART DISK

- \_\_\_\_\_ 1. Copy CIP tape to disk 0.

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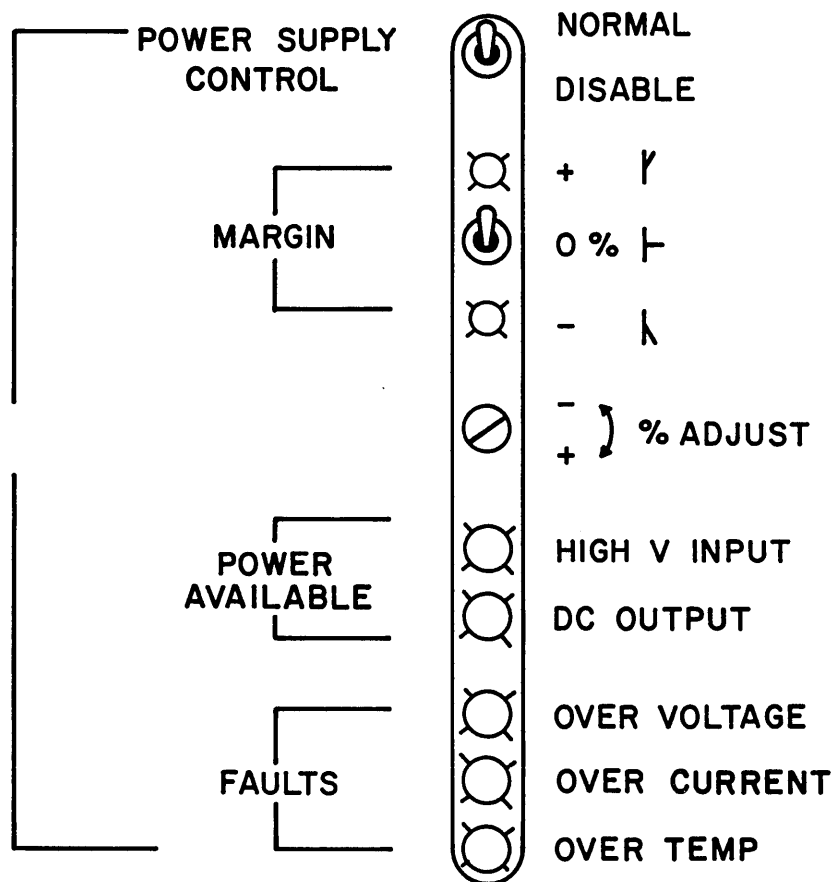
## DIAGNOSTIC TESTING

The command buffer VERIFY includes automatic margin condition testing. If the command buffer is not available, use the tests listed in appendix titled, Software Tests and Limits.

The command buffer VERIFY calls a series of diagnostics intended for confidence testing. Execution time is approximately 75 minutes.

To interpret the contents of maintenance registers, refer to appendix titled, Maintenance Registers.

- \_\_\_\_\_ 1. Deadstart from disk.
- \_\_\_\_\_ 2. Load command buffer called VERIFY.
- \_\_\_\_\_ 3. Set NORMAL/DISABLE Switch to NORMAL on all of the logic power supply controls. A typical panel is shown in figure 3-6.
- \_\_\_\_\_ 4. Set MARGIN switch to 0% on all of the logic power supply controls.
- \_\_\_\_\_ 5. Run the VERIFY command buffer by typing GO VERIFY.



C1017

Figure 3-6. Typical Logic Power Supply Controls

**PART II**

**INSTALLER 2 - PROCEDURES**





INSTALL CONSOLE

CC634B

- \_\_\_\_\_ 1. Locate unpacking instructions (62940038) in BOX C.
- \_\_\_\_\_ 2. Only one BOX C will contain a CC634B Display Station (15633349). Unpack as instructed.
- \_\_\_\_\_ 3. Display station is shipped from factory set up for 120-V ac, 60-Hz operation. For 50-Hz operation, locate YA275-A Power Conversion Kit (15633093). Follow instructions in the kit.
- \_\_\_\_\_ 4. Place the CC634B on dual-height table (optional) and connect to two-port mux terminal 0, as shown in appendix titled, I/O Connector Panel.

CAUTION

Check that the voltage select switch is set to local voltage.

- \_\_\_\_\_ 5. Locate the CC634B Display Station owner's manual (62950101) and follow instructions in the installation section.
- \_\_\_\_\_ 6. Locate and connect AV117A Data Cable (19268593) from the display station to terminal 0 of mainframe at the I/O connector panel. See appendix titled, I/O Connector Panel. The panel is hinged for easy access to the connectors.
- \_\_\_\_\_ 7. Set up the console parameters using procedures in the owner's manual. Also refer to CIP User's Handbook.

CC545 (OPTIONAL)

- \_\_\_\_\_ 1. Position the CC545 over the floor cutout for data cables from the CC545 port of the I/O connector panel.
- \_\_\_\_\_ 2. Unpack and set up as instructed in the supplied installation manual.
- \_\_\_\_\_ 3. Install the two data cables at both ends. Figure 3-7 shows the proper connections.
- \_\_\_\_\_ 4. Connect the CC545 to the 400-Hz power cables.

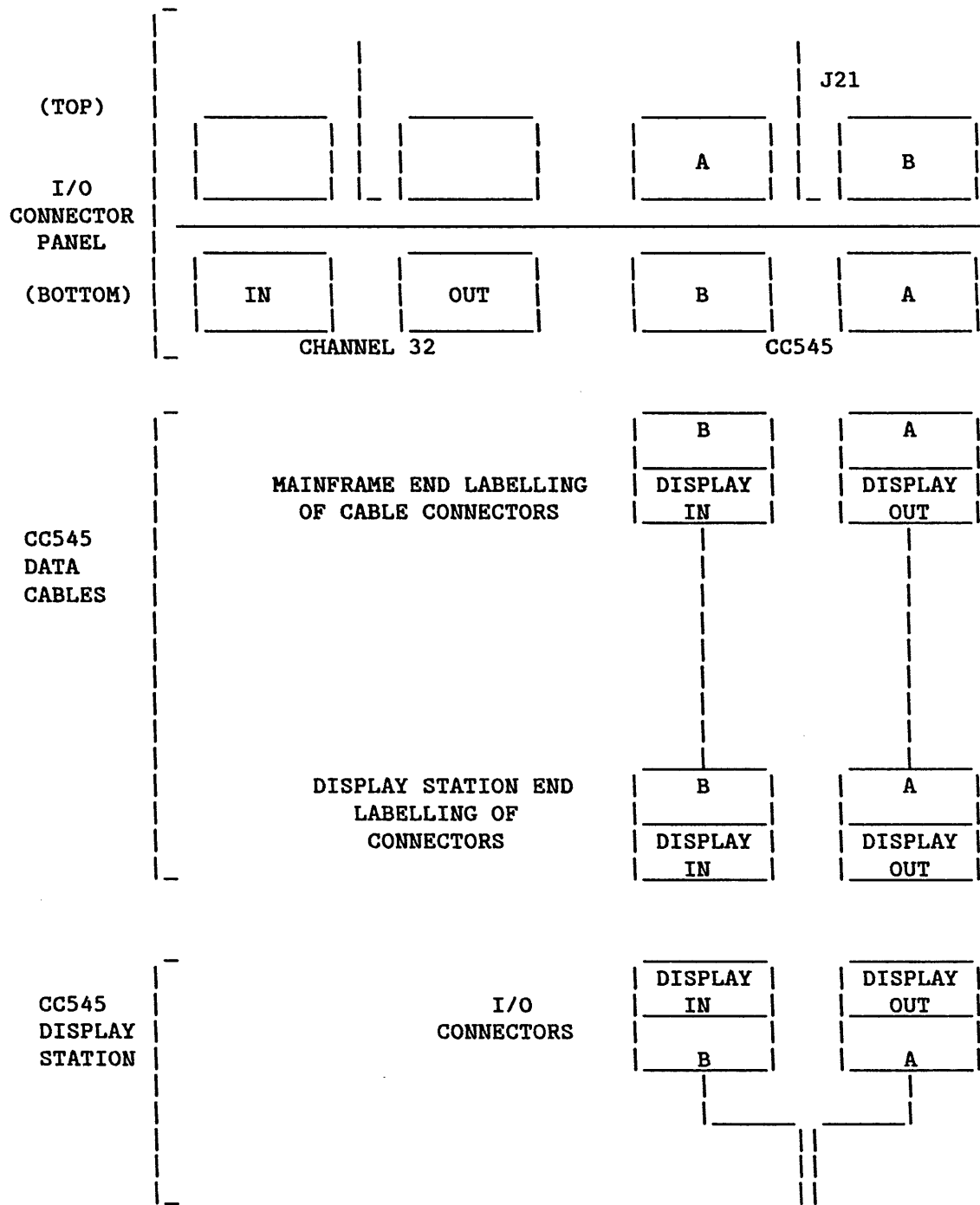


Figure 3-7. CC545 Data Cable Connections

## CABLE AND RTA

### CONNECT I/O CABLES

1. Install and connect all channel cables to I/O connector panel. Appendix titled, I/O Connector Panel has a list of channel connections originating from the logic backpanels.

### WARNING

All equipment on CYBER 170 channels must be tuned as specified in the associated equipment manuals.

### CAUTION

Channel timing on models 810 and 830 differs from that on models 815, 825, and 835.

2. If a CC545 Display Station is used, connect CC545 cables. Refer to figure 3-7.

### PRINTER OPTIONS INSTALLATION

1. Follow installation procedures contained in the manual (44689037) shipped with the printer.
2. Set printer options as shown in appendix titled, Printer Setup.

### I/O CHANNEL PARITY GENERATION

The command to set channel parity is: PS xx yyy

Where:

xx = Channel number  
yyy = ON or OFF

This command turns on ('1') or off ('0') the generation-of-parity function in the external channels.

When ON is entered for the parameter yyy, the parity switch bit is set to generate odd parity, that is, the generation of parity occurs at the external input on channel xx.

When data arriving at the external channel interface carries a valid parity bit, the generation of parity is not required. The parity switch bit may be cleared by entering OFF for the yyy parameter. This disables parity generation and allows the parity bit transmitted by the external equipment to determine the integrity of data arriving at the input.

**RTA CABLES**

The RS232 Cable used in remote technical assistance (RTA) hookup can be one of the following:

67185784,	3.0 metres	67185786,	15.2 metres
67185785,	7.6 metres	67185787,	30.5 metres

INSTALLERS 1 AND 2

EMC TESTING

Installer 1

- \_\_\_\_\_ 1. Close mainframe doors.
- \_\_\_\_\_ 2. Connect one of the 4.5 m (15 ft) test leads from an interference generator to a ground connection, at the SPCP if applicable. Connect the other lead to a frame ground close to the power input connector on the mainframe cabinet.
- \_\_\_\_\_ 3. Plug in the interference generator and switch it on.
- \_\_\_\_\_ 4. When installer 2 is running the RCT11 test, turn the OUTPUT CONTROL (amplitude) on the interference generator until there is a meter reading of 10,000 V. No error should occur.

Installer 2

- \_\_\_\_\_ 5. Run RCT11 command buffer.

NOTE

While running this test, press the space bar periodically. This assures the test will not take an indefinite amount of time.

- \_\_\_\_\_ 6. Turn off the interference generator and remove the leads.

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RTA TESTING, REMOTE MAINTENANCE ACCESS

Procedures for Remote Technical Assistance (RTA) installation and verification are found in the Remote Technical Assistance Handbook publication number [60000078].

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NOS SYSTEM VALIDATION SUITE TEST

- \_\_\_\_\_ 1. Load and run NOS System Validation Suite (NSVS) for approximately one hour. This is one pass for an 810 system.
- \_\_\_\_\_ 2. If test is successful, the computer system is ready to be handed over to Professional Services personnel.

NOTE

NSVS generates and tests errors. Do not be alarmed when error messages are displayed.

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**PART III**

**ELECTRICIAN - PROCEDURES**



PART III - FOR ELECTRICIAN AND INSTALLER 1

ELECTRICAL HOOKUP

50/60 HZ

- \_\_\_\_\_ 1. Install proper Hubbell connector and wiring according to the site planning for the computer system.

400 HZ (OPTIONAL)

NOTE

Refer to appendix titled, Power Distribution Diagrams.

- \_\_\_\_\_ 1. Connect 50/60-Hz power lines to 50/60-Hz power input area J1.
- \_\_\_\_\_ 2. Connect MG control wiring from TB1-1 through -4 to mainframe TB3-1 through -4 (smaller TB) respectively.
- \_\_\_\_\_ 3. Connect power wiring from 400-Hz wall distribution power panel to mainframe J2.

GC545 DISPLAY STATION (OPTIONAL)

1. Connect 400-Hz power wiring to display station as follows:
- \_\_\_\_\_ a. Safety ground to lug E3
  - \_\_\_\_\_ b. Neutral to TB4-1
  - \_\_\_\_\_ c. Line 1 to TB4-2
  - \_\_\_\_\_ d. Line 2 to TB4-3
  - \_\_\_\_\_ e. Line 3 to TB4-4

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**APPENDIX A**

**DEADSTART AND INITIALIZATION**





=====  
Initial installation of the computer system consists of loading controlware to the tape and disk adaptors, building a deadstart disk, and preparing CMRDECK for NOS System Validation Suite (NSVS) testing. The system is then ready for Professional Services' personnel to install the customer Network Operating System (NOS).

A preferred system configuration has been devised for the Supermini computer system. This scheme allows standardization of deadstart programs and system initialization parameters. Fill in the checklists for this site so that parameter substitutions will be automatic in the prompts and the deadstart programs.

After every power down/power up sequence, tape and disk adaptors require re-loading of controlware. This appendix provides procedures which assist the installer at installation time as well as the operator at other times.

Four deadstart programs are stored in ROM. Programs 4 and 5 are chain test programs. Program 4 tests PP transfer in the lower PP. Program 5 tests the upper PP. Program 6 master clears the IOU, CM, and CPU. Program 7 paints characters on the display station screen.

Deadstart programs 0 through 3 given in this appendix are typical programs set up for ICI channels.

INSTALLATION CHECKLIST

Number of disk channels (1-5) \_\_\_\_\_  
 Number of tape channels (1-2) \_\_\_\_\_  
 Disk channel numbers (0, 1, 3, 20, 26) \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_  
 Tape channel numbers (6, 26) \_\_\_\_\_, \_\_\_\_\_  
 Number of disk control modules (1-8) \_\_\_\_\_  
 Number of disk units (2-8) \_\_\_\_\_  
 Number of tape units (1-2) \_\_\_\_\_  
 Size of central memory  
 (2, 4, 8, 12, 16, or 32 megabytes) \_\_\_\_\_

Disk Unit Connections

<u>EST Number</u>	<u>Unit Number</u>	<u>Control Module Number</u>
10 or _____	0	<u>0</u>
11 or _____	1	_____
12 or _____	2	_____
13 or _____	3	_____
14 or _____	0	_____
15 or _____	1	_____
16 or _____	2	_____
17 or _____	3	_____

Disk Control Module (CM) Connections

<u>EST Number</u>	<u>CM Number</u>	<u>First Channel</u>	<u>Second Channel</u>
40 or _____	0	<u>0</u>	_____
41 or _____	1	<u>0</u>	_____
42 or _____	2	_____	_____
43 or _____	3	_____	_____
44 or _____	4	_____	_____
45 or _____	5	_____	_____
46 or _____	6	_____	_____
47 or _____	7	_____	_____

Tape Unit Connections

<u>EST Number</u>	<u>Unit Number</u>	<u>Control Module Number</u>
60 or _____	0	<u>06</u>
61 or _____	0	_____

## HOW TO INSTALL DEADSTART PROGRAMS

A sample step-by-step procedure is shown as follows:

1. Press: <CTRL>-G      You will see OPERATOR ACCESS ENABLED.
2. Press: <CTRL>-R      You will see DEADSTART OPTIONS display.
3. Press:    M            You will see MAINTENANCE OPTIONS display.
4. In GP n, n is the number of the deadstart program.  
Enter: GP 1 <NEXT>      Program 1 is illustrated
5. Enter: 01+1402 <NEXT>
6. Enter:        7306 <NEXT>
7. Enter:        0017 <NEXT>
8. Enter:        7546 <NEXT>
9. Enter:        7706 <NEXT>
10. Enter:       0120 <NEXT>
11. Enter:       7406 <NEXT>
12. Enter:       7106 <NEXT>
13. Enter:       7301 <NEXT>
14. Enter:       0710 <NEXT>
15. Enter:       0000 <NEXT>
16. Enter:       0000 <NEXT>
17. Enter:       0000 <NEXT>
18. Enter:       0000 <NEXT>
19. Enter:       0000 <NEXT>
20. Enter:       7112 <NEXT>
21. Enter:       SP 1 <NEXT> Program 1 is saved.

## DEADSTART PROGRAMS

### Deadstart Program 0

This program assumes that the deadstart disk is spun up. It warmstarts NOS from disk.

01	0
02	0
03	0
04	7540
05	7700
06	05eu*
07	7406
10	7106
11	7301
12	0710
13	0
14	0
15	0
16	0
17	0
20	0

NOTE 1: To save this program, enter: SP 0 <NEXT>.

\* NOTE 2: Word 06 can be changed to 01eu for spinning up only.  
e = equipment number  
u = unit number of disk

### Deadstart Program 1

This program warmstarts from CIP tape.

01	1402
02	7306
03	0017
04	7546
05	7706
06	0120
07	7406
10	7106
11	7301
12	0710
13	0000
14	0000
15	0000
16	0000
17	0000
20	7112

NOTE: To save this program, enter: SP 1 <NEXT>.

Deadstart Program 2

This program coldstarts tape unit from CIP tape.

01	1402
02	7306
03	0017
04	7546
05	7706
06	0600
07	1500
10	3430
11	7706
12	0012
13	7406
14	7106
15	0030
16	0300
17	0000
20	7112

NOTE: To save this program, enter: SP 2 <NEXT>.

Deadstart Program 3

This program spins up the disk, and warmstarts NOS from the NOS disk.

01	0000
02	7540
03	7700
04	0100
05	7700
06	0500
07	7400
10	7100
11	7301
12	0710
13	0002*
14	0000
15	0000
16	0000
17	0000
20	7112

NOTE 1: To save this program, enter: SP 3 <NEXT>.

\* NOTE 2: Word 13 = rrr ppp xxx xxx  
rrr = Deadstart level: 0 = initial  
ppp = 1: Display CMR  
xxx xxx = CMRDECK number

## HOW TO INSTALL THE CIP

Mount Control Data CIP tape in the tape unit. CIP installation consists of the following steps:

1. Coldstarting the tape unit from CIP tape and loading microcode controlware into the tape adaptor.
2. Warmstarting from CIP tape and ISD INITIALIZATION: loading microcode controlware into the disk adaptor and control module that are connected to the deadstart disk, spinning up the disk, and then installing controlware on disk.
3. Copying the CIP tape to the deadstart disk.

For further details, refer to NOS CYBER Supermini Operations User's Guide, publication number 60459850.

COLDSTART FROM CIP TAPE

1. Press: <CTRL>-G            You will see OPERATOR ACCESS ENABLED.
2. Press: <CTRL>-R            You will see DEADSTART OPTIONS display.
3. Press: M                    You will see MAINTENANCE OPTIONS display.
4. Enter: GP 2 <NEXT>        Check to ensure the display is same as program 2 given in this appendix.
5. Enter: S        <NEXT>     You will see SYSTEM INITIALIZATION IN PROGRESS.
6. Ensure that the tape moves forward and then rewinds to BOT (beginning of tape).

WARMSTART FROM CIP TAPE

1. Press: <CTRL>-G            You will see OPERATOR ACCESS ENABLED.
2. Press: <CTRL>-R            You will see DEADSTART OPTIONS display.
3. Press: M                    You will see MAINTENANCE OPTIONS display.
4. Enter: GP 1 <NEXT>        Check to ensure the display is same as program 1 given in this appendix.
5. Enter: S        <NEXT>     You will see CIP INITIAL OPTIONS display.
6. Press: U                    You will see the UTILITIES display.
7. Press: M                    You will see the CHANNEL - 00 prompt.
8. Press:            <NEXT>     You will see the EQUIPMENT - 0 prompt.
9. Press:            <NEXT>     You will see the UNIT - 00 prompt.
10. Press:            <NEXT>     You will see the messages showing that CIP is loading. After several minutes, you will see the installed display.
11. Optional: If you wish to initialize the remainder of the disk units, fill in the table which will assist you in entering parameters.

<u>Disk Number</u>	<u>Channel</u>	<u>Equipment</u>	<u>Unit Number</u>
0	_____	_____	_____
1	_____	_____	_____
2	_____	_____	_____
3	_____	_____	_____
4	_____	_____	_____
5	_____	_____	_____
6	_____	_____	_____
7	_____	_____	_____

## COPYING CIP FROM TAPE TO DISK

1. Press: <CTRL>-G You will see OPERATOR ACCESS ENABLED.
2. Press: <CTRL>-R You will see DEADSTART OPTIONS display.
3. Enter: GP 1 <NEXT> Check to ensure the display is same as program 1 given in this appendix.
4. Enter: S <NEXT> You will see CIP INITIAL OPTIONS.
5. Press: B You will see the BUILD DEADSTART DISK display.
6. Press: F This is a FULL BUILD. You will see the CHANNEL - 00 prompt.
7. Press: <NEXT> You will see the EQUIPMENT - 0 prompt.
8. Press: <NEXT> You will see the UNIT - 00 prompt.
9. Press: <NEXT> In about 20 minutes, you will see  
INSTALLATION COMPLETE  
DEADSTART IS REQUIRED.
10. CIP is now installed to disk 10. For systems with more than four disks, repeat above steps 1 through 5 and do the following steps. Otherwise, go to step 11.
- 10.1 Press: S This is a SHORT BUILD. You will see the CHANNEL - 00 prompt.
- 10.2 Enter: nn <NEXT> nn is the channel number of disk 14 that you recorded in the checklist earlier. You will see the EQUIPMENT - 0 prompt.
- 10.3 Press: <NEXT> You will see the UNIT - 00 prompt.
- 10.4 Enter: n0 <NEXT> n is the control module number of disk 14. In about 15 minutes, you will see  
INSTALLATION COMPLETE  
DEADSTART IS REQUIRED.
11. Unload and remove the CIP tape.
12. The computer is now ready for MSL diagnostic testing.



**APPENDIX B**

**I/O CONNECTOR PANEL**



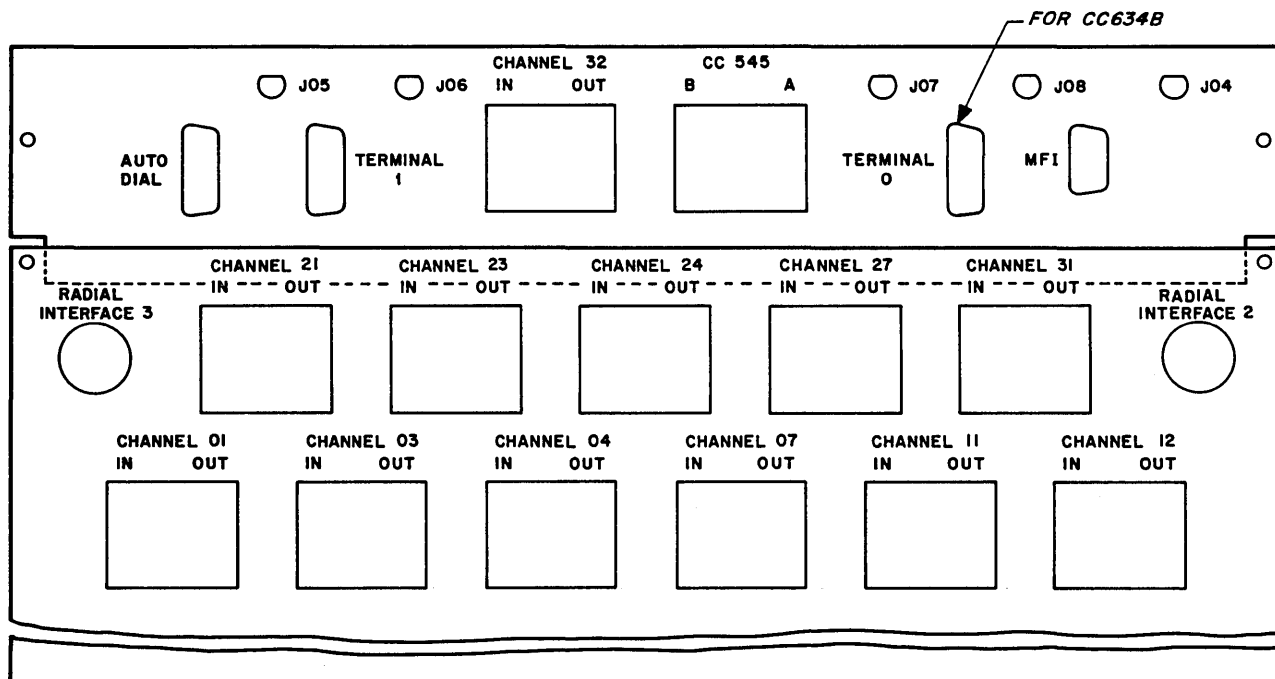
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This appendix contains a list of preferred channel configurations, a table of channel cable/panel pin locations, and a figure of the I/O Connector Panel. Preferred channel configurations are as follows:

<u>Channel</u>	<u>AA161-A</u>	<u>AA179-A</u>	<u>Device</u>	<u>Channel</u>	<u>AA161-A</u>	<u>AA179-A</u>	<u>Device</u>
0	(ICI)	(ICI)	ISD-1	20	(ICI)	(ICI)	ISD-2
1	(170)*	(170)	RMS-1	21	(170)	(170)	RMS-4
2	(INT)	(ICI)	-	22	(INT)	(ICI)	-
3	(170)*	(170)	RMS-2	23	(170)	(170)	OPEN
4	(170)	(170)	RMS-3	24	(170)	(170)	COMM-2
5	(INT)	(170)	-	25	(INT)	(170)	-
6	(ICI)	(ICI)	ISMT-1	26	(ICI)	(ICI)	OPEN
7	(170)	(170)	COMM-1	27	(170)	(170)	OPEN
10	(CONS)	(CONS)	-	30	(INT)	(170)	-
11	(170)	(170)	OPEN	31	(170)	(170)	MAG. TAPE-1
12	(170)	(170)	UR	32	(170)	(170)	MAG. TAPE-2
13	(INT)	(170)	-	33	(INT)	(170)	-

#### Abbreviations

COMM	Communications 2550
CONS	Console
ICI	Integrated Controller Interface
INT	Internal (reserved)
ISD	Intelligent Small Disk Unit
ISMT	Intelligent Small Magnetic Tape Unit
RMS	Rotating Mass Storage
UR	Unit Record (Card, Printer Equipment)
OPEN	Available for peripheral expansion
*	Optional ICI channels replacing 170 channels (4DHO pak)



C1146

Figure B-1. AA161-A I/O Connector Panel - View from Bottom,  
Cable Connection Side

Table B-1. Factory-Installed User Channel Cable Connections

Connector Panel	Cable Name	AA161-A Backpanel Location/Pin	Connector Panel	Cable Name	AA161-A Backpanel Location/Pin
Ch1	J22A	IOU10-A009	Ch21	J11A	IOU15-A009
	J22B	IOU10-B009		J11B	IOU15-B009
Ch3	J16A	IOU10-A039	Ch23	J12A	IOU15-A039
	J16B	IOU10-B039		J12B	IOU15-B039
Ch4	J17A	IOU10-A072	Ch24	J13A	IOU15-A072
	J17B	IOU10-B072		J13B	IOU15-B072
Ch7	J18A	IOU09-A009	Ch27	J14A	IOU16-A009
	J18B	IOU09-B009		J14B	IOU16-B009
Ch11	J19A	IOU09-A039	Ch31	J15A	IOU16-A039
	J19B	IOU09-B039		J15B	IOU16-B039
Ch12	J20A	IOU09-A072	Ch32	J10A	IOU16-A072
	J20B	IOU09-B072		J10B	IOU16-B072

Connector Panel	Cable Name	AA179-A Backpanel Location/Pin	Connector Panel	Cable Name	AA179-A Backpanel Location/Pin
Ch1	J22A	IOU09-A009	Ch21	J11A	IOU14-A009
	J22B	IOU09-B009		J11B	IOU14-B009
Ch3	J16A	IOU09-A039	Ch23	J12A	IOU14-A039
	J16B	IOU09-B039		J12B	IOU14-B039
Ch4	J17A	IOU09-A072	Ch24	J13A	IOU14-A072
	J17B	IOU09-B072		J13B	IOU14-B072
Ch5	J28A	IOU07-A009	Ch25	J25A	IOU16-A009
	J28B	IOU07-B009		J25B	IOU16-B009
Ch7	J18A	IOU08-A009	Ch27	J14A	IOU15-A009
	J18B	IOU08-B009		J14B	IOU15-B009
Ch11	J19A	IOU08-A039	Ch30	J26A	IOU16-A039
	J19B	IOU08-B039		J26B	IOU16-B039
Ch12	J20A	IOU08-A072	Ch31	J15A	IOU15-A039
	J20B	IOU08-B072		J15B	IOU15-B039
Ch13	J29A	IOU07-A072	Ch32	J10A	IOU15-A072
	J29B	IOU07-B072		J10B	IOU15-B072
			Ch33	J27A	IOU16-A072
				J27B	IOU16-B072

Description of Cable	Cable Pin Number	AA161-A/AA179-A Backpanel Location
DSPLY	J21A	IOU17-A072
DSPLY	J21B	IOU17-B072
ATODAL	J01-1	IOU20-C034
2PTMUX	J02-1	IOU20-D044
2PTMUX	J03-1	IOU20-D024

SPCP J9	Mainframe J04
J7	J06
J8	J07
TB3-3,4	J08

Mainframe J05	TERMINATED*
J09	MFI
J23	Radial I/F 3
J24	Radial I/F 2

\* SHORT WARNING appears if J05 is terminated before SPCP is connected to the mainframe.

Table B-2. ICI Channel Connections

Channel	Channel Pak			Adaptor Pak		
	AA161-A Panel Location	Top Pins	Cable Block	AA161-A Panel Location	Top Pins	Cable Block
00	IOU-10	AC-102	J1	IOU-27	AC-009	P1
	IOU-10	BD-102	J0	IOU-27	AC-039	P0
01	IOU-10	AC-009	J1	IOU-24	AC-009	P1
	IOU-10	BD-009	J0	IOU-24	AC-039	P0
03	IOU-10	AC-039	J1	IOU-23	AC-009	P1
	IOU-10	BD-039	J0	IOU-23	AC-039	P0
06	IOU-09	AC-102	J1	IOU-28	AC-009	P1
	IOU-09	BD-102	J0	IOU-28	AC-039	P0
20	IOU-15	AC-102	J1	IOU-26	AC-009	P1
	IOU-15	BD-102	J0	IOU-26	AC-039	P0
26	IOU-16	AC-102	J1	IOU-25	AC-009	P1
	IOU-16	BD-102	J0	IOU-25	AC-039	P0

Channel	Channel Pak		Adaptor Pak	
	AA179-A Panel Location	Top Pins	AA179-A Panel Location	Top Pins
00	IOU-09	AC-102	IOU-27	AC-009
	IOU-09	BD-102	IOU-27	AC-039
02	IOU-07	AC-009	IOU-24	AC-009
	IOU-07	BD-009	IOU-24	AC-039
06	IOU-08	AC-039	IOU-23	AC-009
	IOU-08	BD-039	IOU-23	AC-039
20	IOU-14	AC-102	IOU-28	AC-009
	IOU-14	BD-102	IOU-28	AC-039
22	IOU-16	AC-102	IOU-26	AC-009
	IOU-16	BD-102	IOU-26	AC-039
26	IOU-15	AC-102	IOU-25	AC-009
	IOU-15	BD-102	IOU-25	AC-039

Notes:

1. If a wire wrap is on pin IOU-20 A009, the backpanel is hard-wired for ICI options. Do not install ICI cable in this case.
2. Only when AU129A option is installed is this table applicable.

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**APPENDIX C**

**MAINFRAME COMPONENTS**



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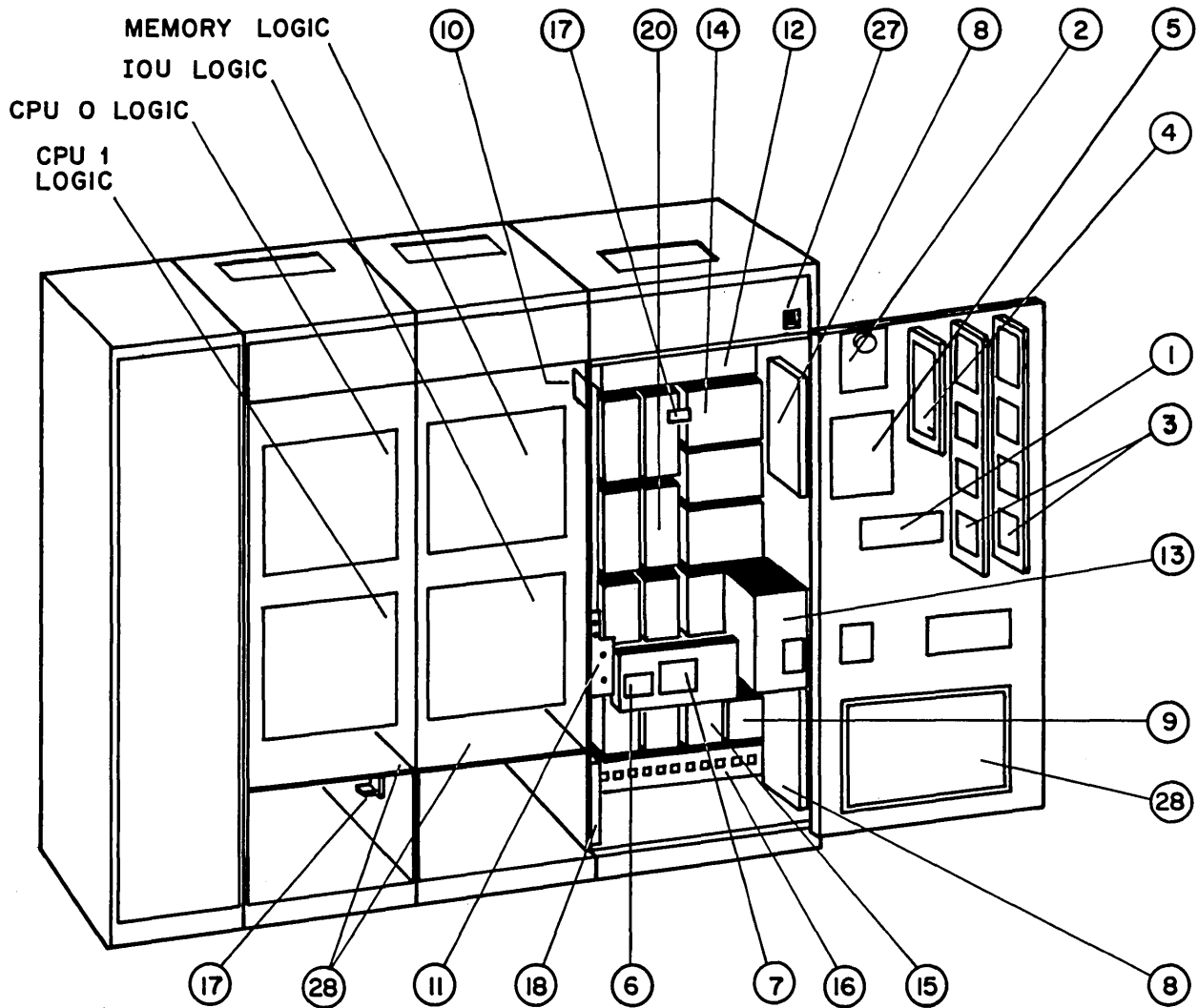
This appendix consists of tables and diagrams identifying the components found in the power supply.

Table C-1. Cabinet, Front and Rear Views (Sheet 1 of 2)

Find Number	Description
1	Protect module assembly
2	Voltage percent meter assembly
3	Power supply interface module assembly
4	Power control module assembly, ride through time sel switch
5	Power control interface
6	Circuit breaker 50/60 Hz
7	ac to dc converter input circuit breaker (50/60 Hz or 400 Hz)
8	Fuse panel
9	Capacitor box assembly
10	Auxiliary power supply regulator assembly
11	Circuit breakers: bulk auxiliary power supply (top); blower/charger (bottom)
12	ac to dc converter assembly
13	Battery control box assembly circuit breaker
14	Battery pack assembly
15	dc to dc outlet power supply

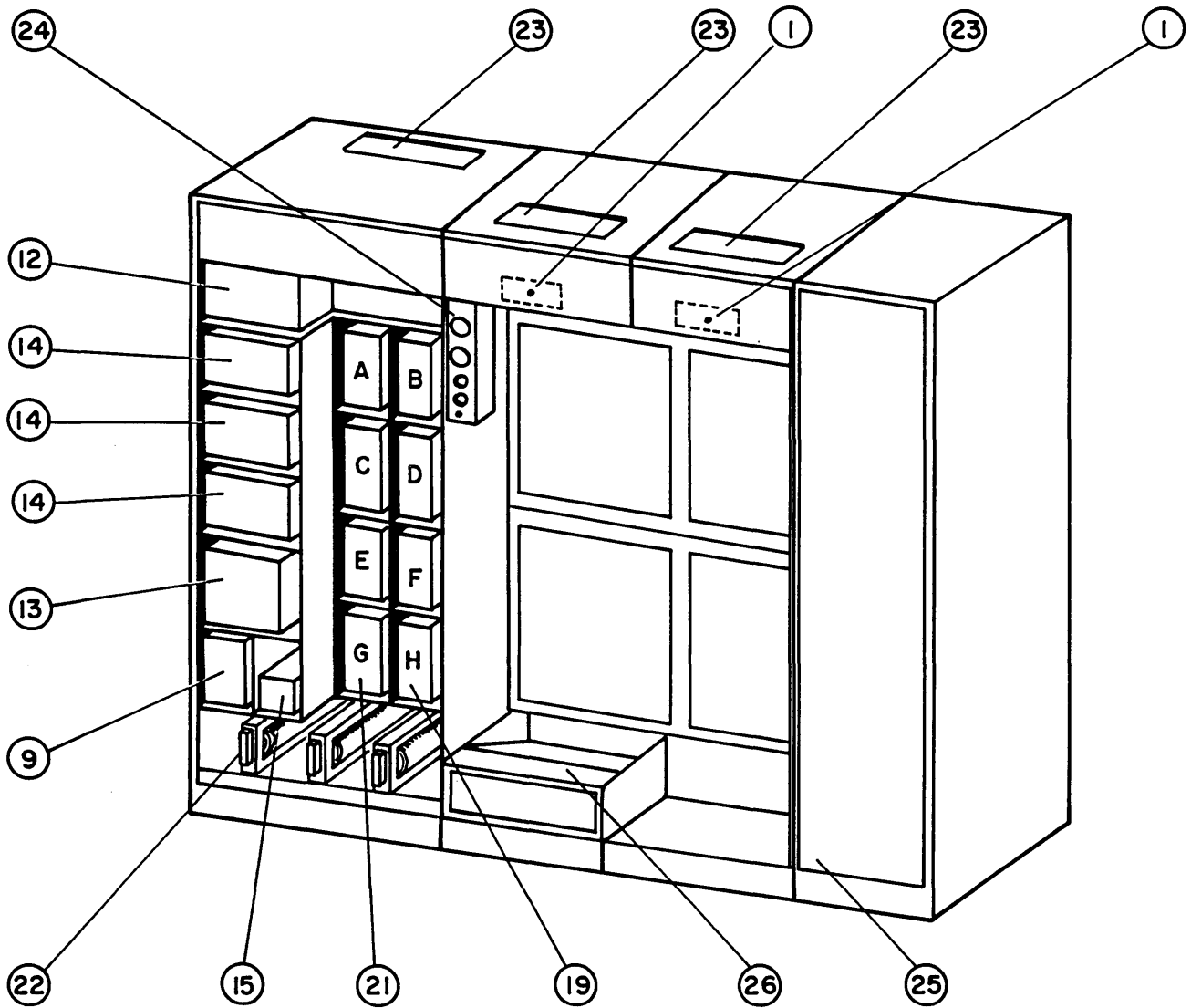
Table C-1. Cabinet, Front and Rear Views (Sheet 2 of 2)

Find Number	Description
16	Tap change panel
17	Air flow sensor assembly
18	RFI filter
19	Switching power supply +5.2 V
20	Switching power supply -2.2 V
21	Switching power supply +5.0 V
22	5 kVA transformer
23	Blower module frame assembly
24	Two port mux box
25	Intelligent small disk
26	I/O connector panel
27	Emergency off switch
28	Air filter assembly



C1020

Figure C-1. Computer Cabinet - Front View



- |                   |                  |
|-------------------|------------------|
| A — CPU 0 -2·2V   | B — MEM +5·2V    |
| C — MEM I/O -2·2V | D — CPU 0 +5·2 V |
| E — CPU 1 -2·2V   | F — I/O +5·2V    |
| G — MEM I/O +5 V  | H — CPU 1 +5·2 V |

C1021

Figure C-2. Computer Cabinet - Rear View

**APPENDIX D**

**MAINTENANCE REGISTERS**





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This appendix consists of three maintenance register charts on six pages.

IOU MAINTENANCE REGISTER

BIT	(R/W)	(R/W)	(R/W)	(RD)	(R/W)	BIT	BYTE
	TEST MODE (A0) (240) 16 8	FAULT STATUS 2 (01) (201) 16 8	FAULT STATUS 1 (00) (200) 16 8	STATUS (40) (100) 16 8	ENVIRONMENT CONTROL (30) (060) 16 8		
00			N/A			00	0
01			N/A			01	
02			N/A			02	
03			PP 4 ERR			03	
04			PP 3 ERR			04	
05			PP 2 ERR			05	
06			PP 1 ERR			06	
07			PP 0 ERR			07	
08			N/A			08	1
09			N/A			09	
10			N/A			10	
11			PP 11 ERR			11	
12			PP 10 ERR			12	
13			PP 7 ERR			13	
14			PP 6 ERR			14	
15			PP 5 ERR			15	
16			N/A			16	2
17			N/A			17	
18			N/A			18	
19			PP 24 ERR			19	
20			PP 23 ERR			20	
21			PP 22 ERR			21	
22			PP 21 ERR			22	
23			PP 20 ERR			23	
24			N/A			24	3
25			N/A			25	
26			N/A			26	
27			PP 31 ERR			27	
28			PP 30 ERR			28	
29			PP 27 ERR			29	
30			PP 26 ERR			30	
31			PP 25 ERR			31	
32		CHAN 7 ERROR	ERROR CL	N/A		32	4
33		6	ERROR CR	N/A		33	
34		5	FIRMWARE ERROR	N/A		34	
35		4	ERROR CH		N/A	35	
36		3	ERROR CP		PP NUMBER	36	
37		2	CVRSN ERROR		↓	37	
38		1	N/U		PP NUMBER	38	
39		CHAN 0 ERROR	PPH DATA-IN ERR	BATTERY ON-LINE	↓	39	
40		CHAN 17 ERROR	N/U	PP RGTR A,P,Q,K	N/A	40	
41		N/A	↓	PP RGTR A,P,Q,K	N/A	41	
42		CHAN 15 ERROR	N/U	↓	N/A	42	
43		N/A	OSB VIOLATION		CHAN NUMBER	43	
44		CHAN 13 ERROR	↓		↓	44	
45		12	OSB ADRS PE		CHAN NUMBER	45	
46		11	N/U		↓	46	
47		CHAN 10 ERROR	CH DATA OUT ERR		↓	47	
48		CHAN 27 ERROR	UNCOR CH RD ERR		N/A	48	
49		26	UNCOR CH WR ERR		N/U	49	
50		25	CH REJECT		N/U	50	
51		24	CH TAG OUT ERR		LOAD MODE	51	
52		23	CH RESP CODE ERR		DUMP MODE	52	
53		22	N/U		IDLE MODE	53	
54		21	N/U		RGTR SEL 0=P	54	
55		CHAN 20 ERROR	N/U		1=Q 2=K 3=A	55	
56		N/A	↓	PP RGTR A,P,Q,K	BBL 1 BLK	56	
57		N/A	N/U	LDS BIT	BBL 0 BLK	57	
58		N/A	↓	N/A	EN DS/DUMP/IDLE	58	
59		RI 2/3	↓	BBL RECONFIG	ENBL TEST MODE	59	
60		CHAN 33 ERROR	↓	PP RECONFIG	ENBL OSB CHECK	60	
61		32	↓	↓	ENBL R+A TO PPH	61	
62		31	↓	PP RECONFIG	N/U	62	
63		CHAN 30 ERROR	N/U		ENBL ERR STOP	63	

NOTES: N/A - BITS NOT AVAILABLE WILL ALWAYS BE ZEROES  
 N/U - THESE BITS ARE NOT ASSIGNED BUT MAY BE READ OR WRITTEN  
 (RD) - READ ONLY REGISTER  
 (R/W) - READ/WRITE REGISTER  
 UNANNOTATED BYTES = N/A

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⚠ IOU TEST CODES  
 00 N/U  
 01 CHAN TO PP (GEN) CP  
 02 PP TO CHAN (GEN) CP  
 03 PPH TO R RGTR (GEN) CR  
 04 PPH (CHECK) CR  
 05 MCODE DATA (CHECK) CP  
 06 PPH (GEN) CH  
 07 CH FCTN (GEN) CP

08 Y RGTR (GEN) CH  
 09 A RGTR (GEN) CR  
 0A SHP ROM (CHECK) CR  
 0B Q RGTR (GEN) CR  
 0C P RGTR (GEN) CR  
 0D G MUX (GEN) CR  
 0E R TO Y (GEN) CL  
 0F N/U

10 N/U  
 11 ADRS TO CHC (=) CL  
 12 N/U  
 13 DATA TO CHC (=) CH  
 14 OSB ADRS (CHECK) CL  
 15 TAG IN (CHECK) DC  
 16 RESP CODE (CHECK) CN  
 17 CHAN 15 DATA BUS (CHECK) CK

(\*) 'HI' FORCED FOR PAR BIT AT GENERATOR  
 (GEN) PARITY INVERTED ON GENERATOR  
 (CHECK) PARITY INVERTED ON CHECKING

Figure D-1. IOU Maintenance Register (1 of 2)

IOU MAINTENANCE REGISTER

BYTE	BIT	(R/W) OS BOUNDS (21) 16 (041) 8	(R/W) FAULT STATUS MASK (18) 16 (030) 8	(RD) OPTIONS INSTALLED (12) 16 (022) 8	(RD) ELEMENT ID (10) 16 (020) 8	(RD) STATUS SUMMARY (00) 16 (000) 8	BIT	BYTE
0	00	N/A	N/A			SAME AS BYTE 7	00	0
	01	N/A	N/A				01	
	02	N/A	N/A				02	
	03	PP 4 BV	PP 4 HV				03	
	04	PP 3 BV	PP 3 HV				04	
	05	PP 2 BV	PP 2 HV				05	
	06	PP 1 BV	PP 1 HV				06	
	07	PP 0 BV	PP 0 HV				07	
1	08	N/A	N/A			SAME AS BYTE 7	08	1
	09	N/A	N/A				09	
	10	N/A	N/A				10	
	11	PP 11 BV	PP 11 HV				11	
	12	PP 10 BV	PP 10 HV				12	
	13	PP 7 BV	PP 7 HV				13	
	14	PP 6 BV	PP 6 HV				14	
	15	PP 5 BV	PP 5 HV				15	
2	16	N/A	N/A			SAME AS BYTE 7	16	2
	17	N/A	N/A				17	
	18	N/A	N/A				18	
	19	PP 24 BV	PP 24 HV				19	
	20	PP 23 BV	PP 23 HV	PP 25-31			20	
	21	PP 22 BV	PP 22 HV	PP 20-24			21	
	22	PP 21 BV	PP 21 HV	PP 5-11			22	
	23	PP 20 BV	PP 20 HV	PP 0-4			23	
3	24	N/A	N/A	CHAN 7		SAME AS BYTE 7	24	3
	25	N/A	N/A	6			25	
	26	N/A	N/A	5			26	
	27	PP 31 BV	PP 31 HV	4			27	
	28	PP 30 BV	PP 30 HV	3			28	
	29	PP 27 BV	PP 27 HV	2			29	
	30	PP 26 BV	PP 26 HV	1			30	
	31	PP 25 BV	PP 25 HV	CHAN 0			31	
4	32		CHAN 7 HV	CHAN 17		SAME AS BYTE 7	32	4
	33		6 HV	N/A			33	
	34		5 HV	CHAN 15			34	
	35		4 HV	N/A			35	
	36		3 HV	CHAN 13			36	
	37		2 HV	12			37	
	38		1 HV	11			38	
	39		CHAN 0 HV	CHAN 10			39	
5	40	N/A	CHAN 17 HV	CHAN 27		SAME AS BYTE 7	40	5
	41	N/A	N/A	26			41	
	42	N/A	CHAN 15 HV	25			42	
	43	N/A	N/A	24			43	
	44	N/A	CHAN 13 HV	23			44	
	45	N/A	12 HV	22			45	
	46	OSB ADRS	11 HV	21			46	
	47	OSB ADRS	CHAN 10 HV	CHAN 20			47	
6	48	OSB ADRS	CHAN 27 HV	N/A		SAME AS BYTE 7	48	6
	49	OSB ADRS	26 HV	N/A			49	
	50	OSB ADRS	25 HV	N/A			50	
	51	OSB ADRS	24 HV	N/A			51	
	52	OSB ADRS	23 HV	CHAN 33			52	
	53	OSB ADRS	22 HV	32			53	
	54	OSB ADRS	21 HV	31			54	
	55	OSB ADRS	CHAN 20 HV	CHAN 30			55	
7	56	OSB ADRS	N/A	BATTERY BACKUP		N/A N/A N/A SUM STATUS PP HALT UNCORR ERR N/A LONG WARNING	56	7
	57	OSB ADRS	N/A	N/A			57	
	58	OSB ADRS	N/A	N/A			58	
	59	OSB ADRS	RI 2/3 HV	N/A			59	
	60	OSB ADRS	CHAN 33 HV	RI 2/3			60	
	61	OSB ADRS	32 HV	RI 0/1			61	
	62	OSB ADRS	31 HV	2 PORT MUX			62	
	63	OSB ADRS	CHAN 30 HV	AA179-A			63	

NOTES  
 N/A - BITS NOT AVAILABLE WILL ALWAYS BE ZEROES  
 N/U - THESE BITS ARE NOT ASSIGNED BUT MAY BE READ OR WRITTEN  
 (RD) - READ ONLY REGISTER  
 (R/W) - READ/WRITE REGISTER  
 HV - MASK VECTOR  
 BV - BIT VECTOR  
 UNANNOTATED BYTES = N/A

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Figure D-2. IOU Maintenance Register (2 of 2)

MEM MAINTENANCE REGISTER

BYTE	BIT	(R/W)	(R/W)	(R/W)	(R/W)	BIT	BYTE
0	00	VALID ERROR	VALID ERROR	VALID SB ERROR	X 100=CPU 0	00	0
	01	UNLOGGED ERROR	UNLOGGED ERROR	UNLOG CORR ERROR	X 010=I/O	01	
	02	DATA OUT PE	+ILL FUNCTION	N/A	X 001=CPU 1	02	
	03	DBE	+BOUNDS FAULT	N/A	N/A	03	
	04	+TAGOUT PE	2ND PASS	N/A / 00-REF/2PS	N/A	04	
	05	PORT CODE (SEE	PORT CODE (SEE	X 01-CPU 1	N/A	05	
	06	PORT CODE A0)	PORT CODE A0)	X 10-IOU	N/A	06	
	07	0	REFRESH PORT	N/A / 11-CPU 0	N/A	07	
1	08	N/A	N/A	N/A		08	1
	09	ADDRESS 38	ADDRESS 38	ADDRESS 38		09	
	10					10	
	11					11	
	12					12	
	13					13	
	14					14	
	15					15	
2	16					16	2
	17					17	
	18					18	
	19					19	
	20					20	
	21					21	
	22					22	
	23					23	
3	24					24	3
	25					25	
	26					26	
	27					27	
	28					28	
	29					29	
	30					30	
	31	ADDRESS 60	ADDRESS 60	ADDRESS 60		31	
4	32	+DATA OUT PE 0	+PE DATA PAK 1	SYNDROME BITS 0	N/A	32	4
	33		+PE DATA PAK 2		N/A	33	
	34		+PE DATA PAK 3		N/A	34	
	35		+PE DATA PAK 4			35	
	36					36	
	37					37	
	38					38	
	39	+DATA OUT PE 7		SYNDROME BITS 7		39	
5	40				(UPPER BOUNDS ADDRESS LIMIT)	40	5
	41					41	
	42					42	
	43					43	
	44					44	
	45					45	
	46		+TAG IN PE			46	
	47		+FUNCTION PE			47	
6	48		+MARK PE			48	6
	49		+ADDRESS PE 4			49	
	50		+ADDRESS PE 5			50	
	51		+ADDRESS PE 6			51	
	52		+ADDRESS PE 7			52	
	53		FUNCTION BITS 0			53	
	54		FUNCTION BITS 1			54	
	55		FUNCTION BITS 2			55	
7	56		FUNCTION BITS 3			56	7
	57		FCTN CODE PAR			57	
	58		MARK BIT PAR			58	
	59		MARK BITS 0			59	
	60					60	
	61					61	
	62					62	
	63		MARK BITS 7			63	

NOTES:

N/A - BITS NOT AVAILABLE; WILL ALWAYS BE ZEROES  
 UNANNOTATED BYTES ARE N/A  
 (RD) - READ ONLY REGISTER  
 (R/W) - READ/WRITE REGISTER

(S) = -2% FREQUENCY MARGIN  
 (F) = +2% FREQUENCY MARGIN  
 + MEANS BIT IS A 'ONE' IF CONDITION IS FALSE; 'ZERO' IF CONDITION IS TRUE.

C1090

Figure D-3. MEM Maintenance Register (1 of 2)

MEM MAINTENANCE REGISTER

BYTE	BIT	(R/W)	(RD)	(RD)	(RD)	BIT	BYTE
0	00	ENVIRONMENT CONTROL (20) (040) 8 16	OPTIONS INSTALLED (12) (022) 8 16	ELEMENT ID (10) (020) 8 16	STATUS SUMMARY (00) (000) 8 16	00	0
	01					01	
	02					02	
	03					03	
	04					04	
	05					05	
	06					06	
	07					07	
1	08	ENVIRONMENT CONTROL (20) (040) 8 16	OPTIONS INSTALLED (12) (022) 8 16	ELEMENT ID (10) (020) 8 16	STATUS SUMMARY (00) (000) 8 16	08	1
	09					09	
	10					10	
	11					11	
	12					12	
	13					13	
	14					14	
	15					15	
2	16	ENVIRONMENT CONTROL (20) (040) 8 16	OPTIONS INSTALLED (12) (022) 8 16	ELEMENT ID (10) (020) 8 16	STATUS SUMMARY (00) (000) 8 16	16	2
	17					17	
	18					18	
	19					19	
	20					20	
	21					21	
	22					22	
	23					23	
3	24	ENVIRONMENT CONTROL (20) (040) 8 16	OPTIONS INSTALLED (12) (022) 8 16	ELEMENT ID (10) (020) 8 16	STATUS SUMMARY (00) (000) 8 16	24	3
	25					25	
	26					26	
	27					27	
	28					28	
	29					29	
	30					30	
	31					31	
4	32	ENVIRONMENT CONTROL (20) (040) 8 16	OPTIONS INSTALLED (12) (022) 8 16	ELEMENT ID (10) (020) 8 16	STATUS SUMMARY (00) (000) 8 16	32	4
	33					33	
	34					34	
	35					35	
	36					36	
	37					37	
	38					38	
	39					39	
5	40	ENVIRONMENT CONTROL (20) (040) 8 16	OPTIONS INSTALLED (12) (022) 8 16	ELEMENT ID (10) (020) 8 16	STATUS SUMMARY (00) (000) 8 16	40	5
	41					41	
	42					42	
	43					43	
	44					44	
	45					45	
	46					46	
	47					47	
6	48	ENVIRONMENT CONTROL (20) (040) 8 16	OPTIONS INSTALLED (12) (022) 8 16	ELEMENT ID (10) (020) 8 16	STATUS SUMMARY (00) (000) 8 16	48	6
	49					49	
	50					50	
	51					51	
	52					52	
	53					53	
	54					54	
	55					55	
7	56	ENVIRONMENT CONTROL (20) (040) 8 16	OPTIONS INSTALLED (12) (022) 8 16	ELEMENT ID (10) (020) 8 16	STATUS SUMMARY (00) (000) 8 16	56	7
	57					57	
	58					58	
	59					59	
	60					60	
	61					61	
	62					62	
	63					63	

NOTES:  
 N/A - BITS NOT AVAILABLE; WILL ALWAYS BE ZEROES  
 UNANNOTATED BYTES ARE N/A  
 (RD) - READ ONLY REGISTER  
 (R/W) - READ/WRITE REGISTER

(S) = -2X FREQUENCY MARGIN  
 (F) = +2X FREQUENCY MARGIN  
 + MEANS BIT IS A 'ONE' IF CONDITION IS FALSE, 'ZERO' IF CONDITION IS TRUE.

C1091

Figure D-4. MEM Maintenance Register (2 of 2)

CPU MAINTENANCE REGISTER

BYTE	BIT	(R/W) PROCESSOR TEST MODE (A0) (240) 8	(R/W) MAP CORR ERROR LOG (93) (223) 8	(RD) CNTL STORE ERROR LOG (81) (201) 8	(R/W) PROCESSOR FAULT STATUS (80) (700) 8	(R/W) CS BKPT ADDRESS (32) (062) 8	BIT	BYTE
0	00						00	0
	01						01	
	02						02	
	03						03	
	04						04	
	05						05	
	06						06	
	07						07	
1	08						08	1
	09						09	
	10						10	
	11						11	
	12						12	
	13						13	
	14						14	
	15						15	
2	16						16	2
	17						17	
	18						18	
	19						19	
	20						20	
	21						21	
	22						22	
	23						23	
3	24						24	3
	25						25	
	26						26	
	27						27	
	28						28	
	29						29	
	30						30	
	31						31	
4	32						32	4
	33						33	
	34						34	
	35						35	
	36						36	
	37						37	
	38						38	
	39						39	
5	40						40	5
	41						41	
	42						42	
	43						43	
	44						44	
	45						45	
	46						46	
	47						47	
6	48	N/A					48	6
	49	N/A					49	
	50	N/A					50	
	51	N/A					51	
	52	TEST CODE 0000 - 0F00					52	
	53						53	
	54						54	
	55						55	
7	56	N/A					56	7
	57	N/A					57	
	58	N/A					58	
	59	N/A					59	
	60	TEST CODE 0000 - 000C					60	
	61						61	
	62						62	
	63						63	

NOTES:  
 N/A - BITS NOT AVAILABLE, WILL ALWAYS BE ZEROES.  
 N/U - THESE BITS ARE NOT ASSIGNED BUT MAY BE READ OR WRITTEN.  
 (RD) - READ ONLY REGISTER  
 (R/W) - READ/WRITE REGISTER

⚠ 0000 - N/U  
 0900 - INVERT MEH FCNTN PARITY  
 0A00 - INVERT MEH TAG PARITY  
 0B00 - INVERT MARK PARITY  
 0C00 - INVERT DATA/ADRS PARITY BYTES 0,1  
 0D00 - INVERT DATA/ADRS PARITY BYTES 2,3  
 0E00 - INVERT DATA/ADRS PARITY BYTES 4,5  
 0F00 - INVERT DATA/ADRS PARITY BYTES 6,7  
 ⚠ 0008 - INVERT PARITY ON PSR MUX  
 0009 - INVERT PARITY ON FP BRANCH INDEX ROM  
 000A - INVERT PARITY ON FP TRAP INDEX ROM  
 000B - INVERT PARITY ON HAINT CHAN DATA  
 000C - INVERT PARITY ON SADDR LATCH DATA  
 RSTR (11) - PROCESSOR I.D.  
 16 BITS 0-62 = 0  
 BIT 63 = 0 FOR CPU 0,  
 1 FOR CPU 1

NOTE 3 - ARVI PE 0-7, 32-39  
 NOTE 4 - ARVI PE 8-15, 40-47  
 NOTE 5 - ARVI PE 16-23, 48-55  
 NOTE 6 - ARVI PE 24-31, 56-63  
 NOTE 7 - UNCORR MEH WR ERROR  
 NOTE 8 - SHIFT ROM PE OR SHIFTER INPUT  
 NOTE 9 - UNCORR MEH RD ERROR  
 NOTE 10 - HAC/RD PE DS  
 NOTE 11 - MEH RESPONSE TIME OUT  
 NOTE 12 - BDP ADDER/RUB, DATA ROM/RKB  
 NOTE 13 - INHED ROM PE

Figure D-5. CPU Maintenance Register (1 of 2)

BYTE	BIT	(R/W)	(R/W)	(RD)	(RD)	(RD)	BIT	BYTE
		CS ADDRESS REGISTER (31) (061) 8 16	ENVIRONMENT CONTROL (30) (060) 8 16	OPTIONS INSTALLED (12) (022) 8 16	ELEMENT ID (10) (020) 8 16	STATUS SUMMARY (00) (000) 8 16		
0	00		N/A				00	0
	01		↓				01	
	02		N/A				02	
	03		CS MICRO STEP ENBL				03	
	04		PFS TRAPS				04	
	05		N/A				05	
	06						06	
	07						07	
1	08						08	1
	09		PWM +15X				09	
	10		PWM -15X				10	
	11						11	
	12						12	
	13						13	
	14						14	
	15						15	
2	16						16	2
	17						17	
	18						18	
	19						19	
	20						20	
	21						21	
	22						22	
	23						23	
3	24		PFS ENBL	N/A			24	3
	25		MAP RMA ENBL	N/A			25	
	26		MAP FILE 0 ENBL	N/A			26	
	27		1	DUAL CPU			27	
	28		2	CONCURRENT 170			28	
	29		MAP FILE 3 ENBL	CY170 MODE OPT			29	
	30		INSTR RTY ENBL	SECDED C.S.			30	
	31		INSTR STEP ENBL	PHF INSTALLED			31	
4	32		N/U				32	4
	33		TEST MODE ENBL		0		33	
	34				0		34	
	35		SEE NOTE 2		0	ELEMENT	35	
	36		CS BKPT ENBL		0	TYPE NO.	36	
	37		CS SWEEP ENBL		0		37	
	38		N/A		0		38	
	39		N/A		0		39	
5	40				0		40	5
	41				0	MODEL NO.	41	
	42				0		42	
	43				1	13=030	43	
	44				0	14=010	44	
	45				X		45	
	46				X		46	
	47				X		47	
6	48		N/A				48	6
	49		N/A				49	
	50		N/A				50	
	51						51	
	52						52	
	53						53	
	54		S REGISTER DATA (MICRAND ADRS CS)				54	
	55						55	
7	56					SERIAL NO.	56	7
	57						57	
	58					CY180 MON MODE	58	
	59					SHORT WARNING	59	
	60					PROCESSOR HALT	60	
	61					UNCORR ERROR	61	
	62					CORRECTED ERROR	62	
	63					LONG WARNING	63	

NOTES:  
 N/A - BITS NOT AVAILABLE, WILL ALWAYS BE ZEROES.  
 UNANNOTATED BYTES ARE N/A  
 N/U - THESE BYTES ARE NOT ASSIGNED BUT MAY BE READ OR WRITTEN  
 (RD) - READ ONLY REGISTER  
 (R/W) - READ/WRITE REGISTER  
 (R/W) - PROCESSOR I.D. BITS 0-62=0  
 RSTR (11) - BIT 63=0 FOR CPU-0, 1 FOR CPU-1

NOTE 2 - DSBL CORR ERROR TO P1 SS

Figure D-6. CPU Maintenance Register (2 of 2)

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**APPENDIX E**

**PANEL MAP**



PANEL MAP

E

28	DP	HB	MEMORY (ODPH)/(3HBH) BANK 3
27	DP	HB	MEMORY (ODPH)/(3HBH) BANK 3
26	DP	DP	MEMORY (ODPH) BANK 3
25	DP	DP	MEMORY (ODPH) BANK 3
24	DP	HB	MEMORY (ODPH)/(3HBH) BANK 2
23	DP	HB	MEMORY (ODPH)/(3HBH) BANK 2
22	DP	DP	MEMORY (ODPH) BANK 2
21	DP	DP	MEMORY (ODPH) BANK 2
20	DP	DP	MEMORY (ODPH)/(3HBH) BANK 1
19	DP	DP	MEMORY (ODPH)/(3HBH) BANK 1
18	DP	DP	MEMORY (ODPH) BANK 1
17	DP	DP	MEMORY (ODPH) BANK 1
16	DP	DP	MEMORY (ODPH)/(3HBH) BANK 0
15	DP	DP	MEMORY (ODPH)/(3HBH) BANK 0
14	DP	DP	MEMORY (ODPH) BANK 0
13	DP	DP	MEMORY (ODPH) BANK 0
12	DA	DP	MEMORY ADDRESS
11	DD	DD	DATA PAK 12-15,28-31,44-47,60-63
10	DD	DD	DATA PAK 08-11,24-27,40-43,56-59
09	DD	DD	DATA PAK 04-07,20-23,36-39,52-55
08	DD	DD	DATA PAK 00-03,16-19,32-35,48-51
07	DC		MEMORY CONTROL
06			
05			
04			
03			
02			
01	DP		MASTER CLOCK (1DP0)

PANEL MEM

28			SUPERMINI PERIPHERAL ADAPTER
27			SUPERMINI PERIPHERAL ADAPTER
26			SUPERMINI PERIPHERAL ADAPTER
25			SUPERMINI PERIPHERAL ADAPTER
24			SUPERMINI PERIPHERAL ADAPTER
23			SUPERMINI PERIPHERAL ADAPTER
22			
21			
20		CK	TWO PORT MUX, DEADSTART
19		CM	PP MEMORY (TEN) BARREL 1
18		CM	PP MEMORY (TEN) BARREL 0
17		CO	CHANNEL 10B (DSC), CLOCK FNO
16		CH	CHANNELS 26B-33B
15		CH	CHANNELS 20B-25B
14		CP	PP BARREL 1
13		CP	PP BARREL 1
12		CR	PP BARREL 0
11		CP	PP BARREL 0
10		CP	PP BARREL 0
09		CH	CHANNELS 00B-05B
08		CH	CHANNELS 06B-13B
07		CJ	CHANNELS 14B, 15B, 17B
06		CL	MAINT RGTR
05		CL	CENTRAL MEMORY ADDRESS
04			
03			
02			
01	DD		MAINT ACCESS CONTROL

PANEL IOU

28			
27			
26		DW	MAP DATA 56-63, CLOCK FNO
25		DW	MAP DATA 48-55, CLOCK FNO
24		UX	MAP MISC VALIDITY CHECKING
23		DW	MAP DATA 40-47, CLOCK FNO
22		DW	MAP DATA 32-39, CLOCK FNO
21		GA	RNI, MAP CONTROL
20		DS	CONT STORE 64-83, NEXT ADRS LOGIC
19		DR	CONT STORE 24-31, 56-63, ARVI 2, P M RGTR
18		DR	CONT STORE 16-23, 48-55, ARVI 2, P M RGTR
17		DR	CONT STORE 08-15, 40-47, ARVI 2, P M RGTR
16		DR	CONT STORE 00-07, 32-39, P MAINT RGTR
15		GL	LENGTH YKW, ARVI 1
14		TJ	PROCESS RGTR TRAPS (HARD RGTRS)
13		TV	BDP DATA
12		TR	CONTROLS - BDP, B ADDER, STREAMING
11		TD	NORMALIZER, CONTROL RINGS
10		TC	FLOATING POINT, S ADDER
09		DE	CM RESP, TAG, DEBUG, FP EXC, AD/BD MUX SEL
08		TM	MAIN CONTROL
07		TS	SHIFT, L ADDER
06		DF	RGTR FILE 48-63
05		DF	RGTR FILE 32-47
04		DF	RGTR FILE 16-31
03		DF	RGTR FILE 00-15
02		TG	UPPER IMMEDIATE INSTR PIPE
01		TH	LOWER IMMEDIATE INSTR PIPE

PANEL CPO

Figure E-1. Panel Map - Models 810 and 830

28	DP	HB	MEMORY (ODPH)/(3HBH) BANK 3
27	DP	HB	MEMORY (ODPH)/(3HBH) BANK 3
26	DP	DP	MEMORY (ODPH) BANK 3
25	DP	DP	MEMORY (ODPH) BANK 3
24	DP	HB	MEMORY (ODPH)/(3HBH) BANK 2
23	DP	HB	MEMORY (ODPH)/(3HBH) BANK 2
22	DP	DP	MEMORY (ODPH) BANK 2
21	DP	DP	MEMORY (ODPH) BANK 2
20	DP	HB	MEMORY (ODPH)/(3HBH) BANK 1
19	DP	HB	MEMORY (ODPH)/(3HBH) BANK 1
18	DP	DP	MEMORY (ODPH) BANK 1
17	DP	DP	MEMORY (ODPH) BANK 1
16	DP	HB	MEMORY (ODPH)/(3HBH) BANK 0
15	DP	HB	MEMORY (ODPH)/(3HBH) BANK 0
14	DP	DP	MEMORY (ODPH) BANK 0
13	DP	DP	MEMORY (ODPH) BANK 0
12	DA	DD	MEMORY ADDRESS
11	DD	DD	DATA PAK 12-15,28-31,44-47,60-63
10	DD	DD	DATA PAK 08-11,24-27,40-43,56-59
09	DD	DD	DATA PAK 04-07,20-23,36-39,52-55
08	DD	DD	DATA PAK 00-03,16-19,32-35,48-51
07	DC		MEMORY CONTROL
06			
05			
04			
03			
02			
01	DP		MASTER CLOCK (IDPO)

PANEL MEM

28			SUPERMINI PERIPHERAL ADAPTER
27			SUPERMINI PERIPHERAL ADAPTER
26			SUPERMINI PERIPHERAL ADAPTER
25			SUPERMINI PERIPHERAL ADAPTER
24			SUPERMINI PERIPHERAL ADAPTER
23			SUPERMINI PERIPHERAL ADAPTER
22			
21			
20		CM	TWO PORT MUX, DEADSTART
19		CM	PP MEMORY (TEN) BARREL 1
18		CM	PP MEMORY (TEN) BARREL 0
17		CO	CHANNEL 10B (DSC), CLOCK FNO
16		CH	CHANNELS 26B-33B
15		CH	CHANNELS 20B-25B
14		CP	PP BARREL 1
13		CR	PP BARREL 1
12		CR	PP BARREL 0
11		CP	PP BARREL 0
10		CH	CHANNELS 00B-05B
09		CH	CHANNELS 06B-13B
08		CJ	CHANNELS 14B, 15B, 17B
07		CN	MAINT RGTR
06		CL	CENTRAL MEMORY ADDRESS
05			
04			
03			
02		DC	MAINT ACCESS CONTROL
01			

PANEL IOU

28			
27			
26		DW	MAP DATA 56-63, CLOCK FNO
25		DW	MAP DATA 48-55, CLOCK FNO
24		UX	MAP MISC VALIDITY CHECKING
23		DW	MAP DATA 40-47, CLOCK FNO
22		DW	MAP DATA 32-39, CLOCK FNO
21		GA	RNI, MAP CONTROL
20		DS	CONT STORE 64-83, NEXT ADRS LOGIC
19		DR	CONT STORE 24-31, 56-63, ARVI 2, P M RGTR
18		DR	CONT STORE 16-23, 48-55, ARVI 2, P M RGTR
17		DR	CONT STORE 08-15, 40-47, ARVI 2, P M RGTR
16		DR	CONT STORE 00-07, 32-39, P MAINT RGTR
15		GL	LENGTH YKW, ARVI 1
14		TJ	PROCESS RGTR TRAPS (HARD RGTRS)
13		TV	BDP DATA
12		TR	CONTROLS - BDP, B ADDER, STREAMING
11		TD	NORMALIZER, CONTROL RINGS
10		TC	FLOATING POINT, S ADDER
09		DE	CM RESP, TAG, DEBUG, FP EXC, AD/BD MUX SEL
08		TM	MAIN CONTROL
07		TS	SHIFT, L ADDER
06		DF	RGTR FILE 48-63
05		DF	RGTR FILE 32-47
04		DF	RGTR FILE 16-31
03		DF	RGTR FILE 00-15
02		TH	UPPER IMMEDIATE INSTR PIPE
01		TH	LOWER IMMEDIATE INSTR PIPE

PANEL CPO

28			
27			
26		DW	MAP DATA 56-63, CLOCK FNO
25		DW	MAP DATA 48-55, CLOCK FNO
24		UX	MAP MISC VALIDITY CHECKING
23		DW	MAP DATA 40-47, CLOCK FNO
22		DW	MAP DATA 32-39, CLOCK FNO
21		GA	RNI, MAP CONTROL
20		DS	CONT STORE 64-83, NEXT ADRS LOGIC
19		DR	CONT STORE 24-31, 56-63, ARVI 2, P M RGTR
18		DR	CONT STORE 16-23, 48-55, ARVI 2, P M RGTR
17		DR	CONT STORE 08-15, 40-47, ARVI 2, P M RGTR
16		DR	CONT STORE 00-07, 32-39, P MAINT RGTR
15		GL	LENGTH YKW, ARVI 1
14		TJ	PROCESS RGTR TRAPS (HARD RGTRS)
13		TV	BDP DATA
12		TR	CONTROLS - BDP, B ADDER, STREAMING
11		TD	NORMALIZER, CONTROL RINGS
10		TC	FLOATING POINT, S ADDER
09		DE	CM RESP, TAG, DEBUG, FP EXC, AD/BD MUX SEL
08		TM	MAIN CONTROL
07		TS	SHIFT, L ADDER
06		DF	RGTR FILE 48-63
05		DF	RGTR FILE 32-47
04		DF	RGTR FILE 16-31
03		DF	RGTR FILE 00-15
02		TH	UPPER IMMEDIATE INSTR PIPE
01		TH	LOWER IMMEDIATE INSTR PIPE

PANEL CPl

CI200

Figure E-2. Panel Map - Model 830 with Dual CPU Option

PANEL MEM

01	DP	MASTER CLOCK (1DP0)
02		
03		
04		
05		
06	DC	MEMORY CONTROL
07		
08	DD	DATA PAK 00-03,16-19,32-35,48-51
09	DD	DATA PAK 04-07,20-23,36-39,52-55
10	DD	DATA PAK 08-11,24-27,40-43,56-59
11	DD	DATA PAK 12-15,28-31,44-47,60-63
12		MEMORY ADDRESS
13		MEMORY (0DPH) BANK 0
14		MEMORY (0DPH) BANK 0
15	HB	MEMORY (0DPH) / (3HBH) BANK 0
16	DP	MEMORY (0DPH) BANK 1
17	DP	MEMORY (0DPH) BANK 1
18	HB	MEMORY (0DPH) / (3HBH) BANK 1
19	DP	MEMORY (0DPH) BANK 2
20	DP	MEMORY (0DPH) BANK 2
21	HB	MEMORY (0DPH) / (3HBH) BANK 2
22	DP	MEMORY (0DPH) BANK 3
23	DP	MEMORY (0DPH) BANK 3
24	HB	MEMORY (0DPH) / (3HBH) BANK 3
25	DP	MEMORY (0DPH) BANK 3
26	DP	MEMORY (0DPH) BANK 3
27	HB	MEMORY (0DPH) / (3HBH) BANK 3
28	DP	MEMORY (0DPH) / (3HBH) BANK 3

PANEL IOU

01	MO	MAINT ACCESS CONTROL
02		
03		
04	CL	CENTRAL MEMORY ADDRESS
05	CH	MAINT RGTR
06	CJ	CHANNELS 14B,15B,17B
07	SH	CHANNELS 02B,05B,13B
08	SH	CHANNELS 06B,07B,11B,12B
09	SH	CHANNELS 00B,01B,03B,04B
10	CA	PP BARREL 0
11	CA	PP BARREL 0
12	CA	PP BARREL 1
13	SH	PP BARREL 1
14	SH	CHANNELS 20B,21B,23B,24B
15	SH	CHANNELS 26B,27B,31B,32B
16	FQ	CHANNELS 22B,25B,30B,33B
17	CM	CHANNEL 10B (DSC), CLOCK FNO
18	CM	PP MEMORY (TEN) BARREL 0
19	CM	PP MEMORY (TEN) BARREL 1
20	CM	TWO PORT MUX, DEAD START
21		
22		
23		
24		
25		
26		
27		
28		

PANEL CPO

01	TH	LOWER IMMEDIATE INSTR PIPE
02	DF	UPPER IMMEDIATE INSTR PIPE
03	DF	AGTR FILE 00-15
04	DF	AGTR FILE 16-31
05	DF	AGTR FILE 32-47
06	DF	AGTR FILE 48-63
07	IT	SHIFT, L ADDER
08	IT	MAIN CONTROL
09	DE	CM RESP, TAG, DEBUG, FP EXC, AD/BD MUX SEL
10	IT	FLOATING POINT, S ADDER
11	IT	NORMALIZER, CONTROL RINGS
12	TR	CONTROLS - BDP, B ADDER, STREAMING
13	TV	BDP DATA
14	TV	PROCESS RGTR TRAPS (HARD RGTRS)
15	JGL	LENGTH YKW, ARVI 1
16	JGL	CONT STORE 00-07, 32-39, P MAINT RGTR
17	DR	CONT STORE 08-15, 40-47, ARVI 2, P M. RGTR
18	DR	CONT STORE 16-23, 48-55, ARVI 2, P M. RGTR
19	DR	CONT STORE 24-31, 56-63, ARVI 2, P M. RGTR
20	DR	CONT STORE 64-83, NEXT ADRS LOGIC
21	GA	ANI, MAP CONTROL
22	GA	MAP DATA 32-39, CLOCK FNO
23	UX	MAP DATA 40-47, CLOCK FNO
24	UX	MAP MISC VALIDITY CHECKING
25	UX	MAP DATA 48-55, CLOCK FNO
26	UX	MAP DATA 56-63, CLOCK FNO
27		
28		

PANEL CPI

01	TH	LOWER IMMEDIATE INSTR PIPE
02	DF	UPPER IMMEDIATE INSTR PIPE
03	DF	AGTR FILE 00-15
04	DF	AGTR FILE 16-31
05	DF	AGTR FILE 32-47
06	DF	AGTR FILE 48-63
07	IT	SHIFT, L ADDER
08	IT	MAIN CONTROL
09	DE	CM RESP, TAG, DEBUG, FP EXC, AD/BD MUX SEL
10	IT	FLOATING POINT, S ADDER
11	IT	NORMALIZER, CONTROL RINGS
12	TR	CONTROLS - BDP, B ADDER, STREAMING
13	TV	BDP DATA
14	TV	PROCESS RGTR TRAPS (HARD RGTRS)
15	JGL	LENGTH YKW, ARVI 1
16	JGL	CONT STORE 00-07, 32-39, P MAINT RGTR
17	DR	CONT STORE 08-15, 40-47, ARVI 2, P M. RGTR
18	DR	CONT STORE 16-23, 48-55, ARVI 2, P M. RGTR
19	DR	CONT STORE 24-31, 56-63, ARVI 2, P M. RGTR
20	DR	CONT STORE 64-83, NEXT ADRS LOGIC
21	GA	ANI, MAP CONTROL
22	GA	MAP DATA 32-39, CLOCK FNO
23	UX	MAP DATA 40-47, CLOCK FNO
24	UX	MAP MISC VALIDITY CHECKING
25	UX	MAP DATA 48-55, CLOCK FNO
26	UX	MAP DATA 56-63, CLOCK FNO
27		
28		

C1172

Figure E-3. Panel Map - Models 65810 and 65830 with Dual CPU Option

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**APPENDIX F**

**POWER DISTRIBUTION DIAGRAMS**





=====  
 This appendix contains the following three power distribution diagrams that are followed by a common set of notes.

- 50/60 Hz only
- 50/60 Hz and 12.5 kVA motor-generator set
- 50/60 Hz and 25 kVA or larger motor-generator set

Power requirements of conversion kit options are as follows:

GK411	380/415 V, 3-phase, 50 Hz	1.7 kVA
	208 V, 3-phase, 400 Hz	12.0 kVA
GK412	208 V, 3-phase, 60 Hz	13.8 kVA
GK413	380/415 V, 3-phase, 50 Hz	13.8 kVA
GK414	208 V, 3-phase, 60 Hz	1.7 kVA
	208 V, 3-phase, 400 Hz	12.0 kVA
GK420	240 V, 3-phase Delta, 60 Hz	13.8 kVA

Fluctuating voltage and current may cause the MG regulator to malfunction. The operator screen may go fuzzy or blank out. When this condition exists a modification is required.

Engineering change order (ECO) 46580 contains modification instructions for the MG regulator. The ECO is applicable only to 400 Hz power options GK411-A and GK414-A. The change involves adding a 3.83K/0.5W resistor to the gain adjust assembly contained in the MG regulator assembly and re-adjusting the gain control potentiometer to stop MG output oscillation.

The modification affects the following equipment:

- 25.0 kVA controller - GE269-A/C, B/D
- 40.0 kVA controller - GH445-A/B
- 80.0 kVA controller - GH446-A/B

Check the part numbers on the regulator assembly with the assembly part numbers in table F-1 to determine if ECO action is necessary.

TABLE F-1. MG Regulator Assembly Part Numbers

Assembly Part Number	Description	Action Necessary	New Part Number
52787011	Gain adjust assembly.	Re-number 23140150.	23140150
52653372	MG regulator with gain control.	Modify part.	23140153
52653371	MG regulator with gain control.	Modify part.	23140153
22935772	MG regulator without gain control.	Replace part.	23140153
11892312	MG regulator without gain control.	Replace part.	23140153

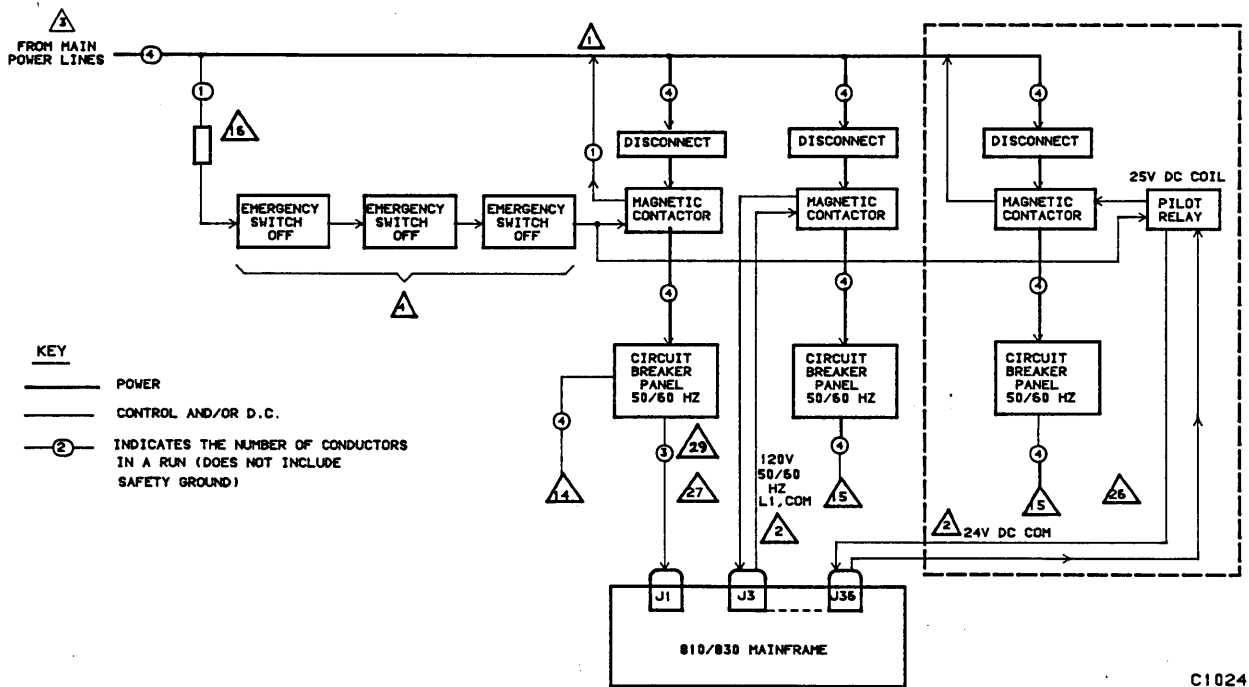
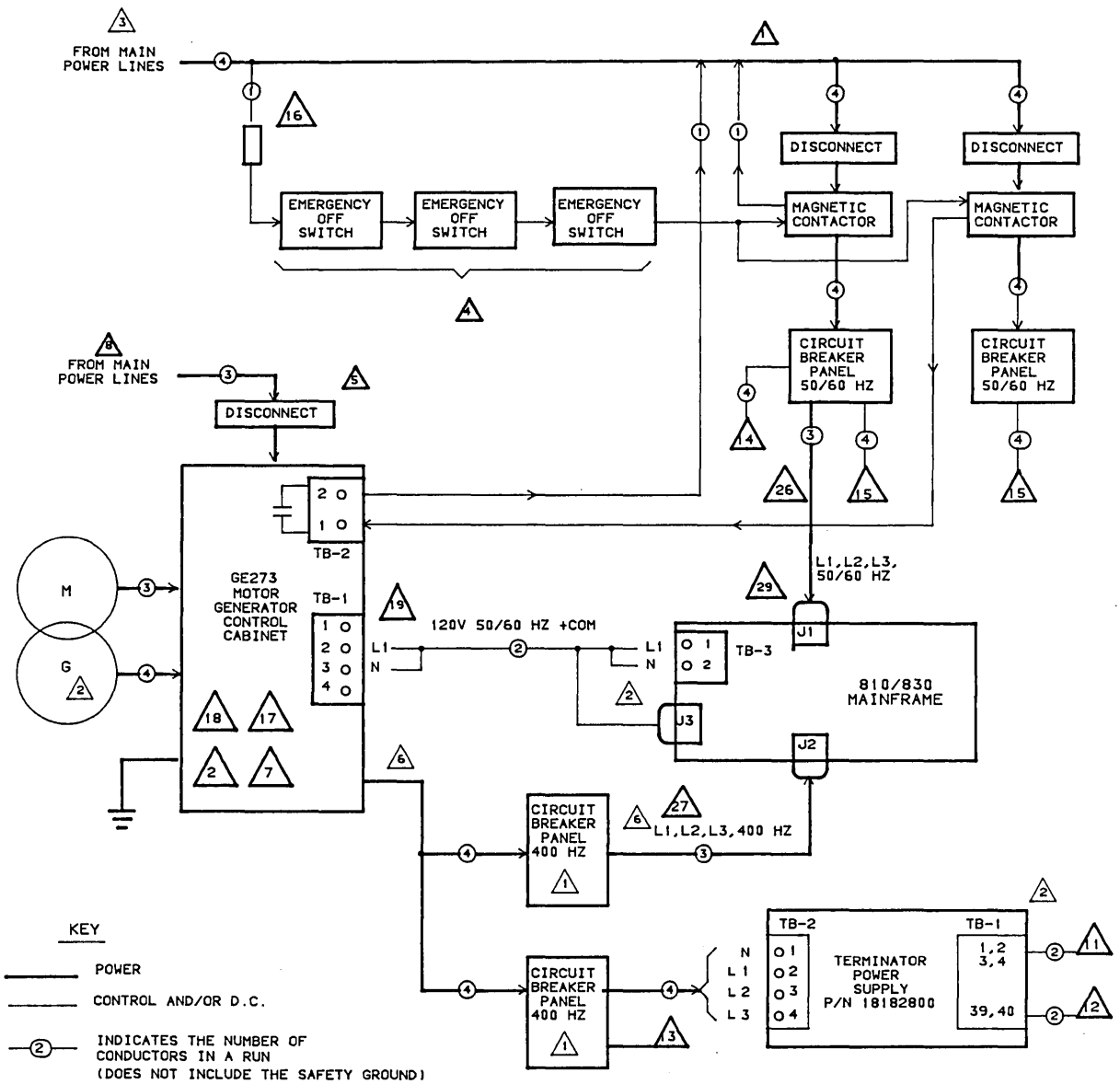


Figure F-1. Power Distribution Diagram 50/60 Hz Only



C1025

Figure F-2. Power Distribution Diagram 50/60 Hz and 12.5 kVA MG Set

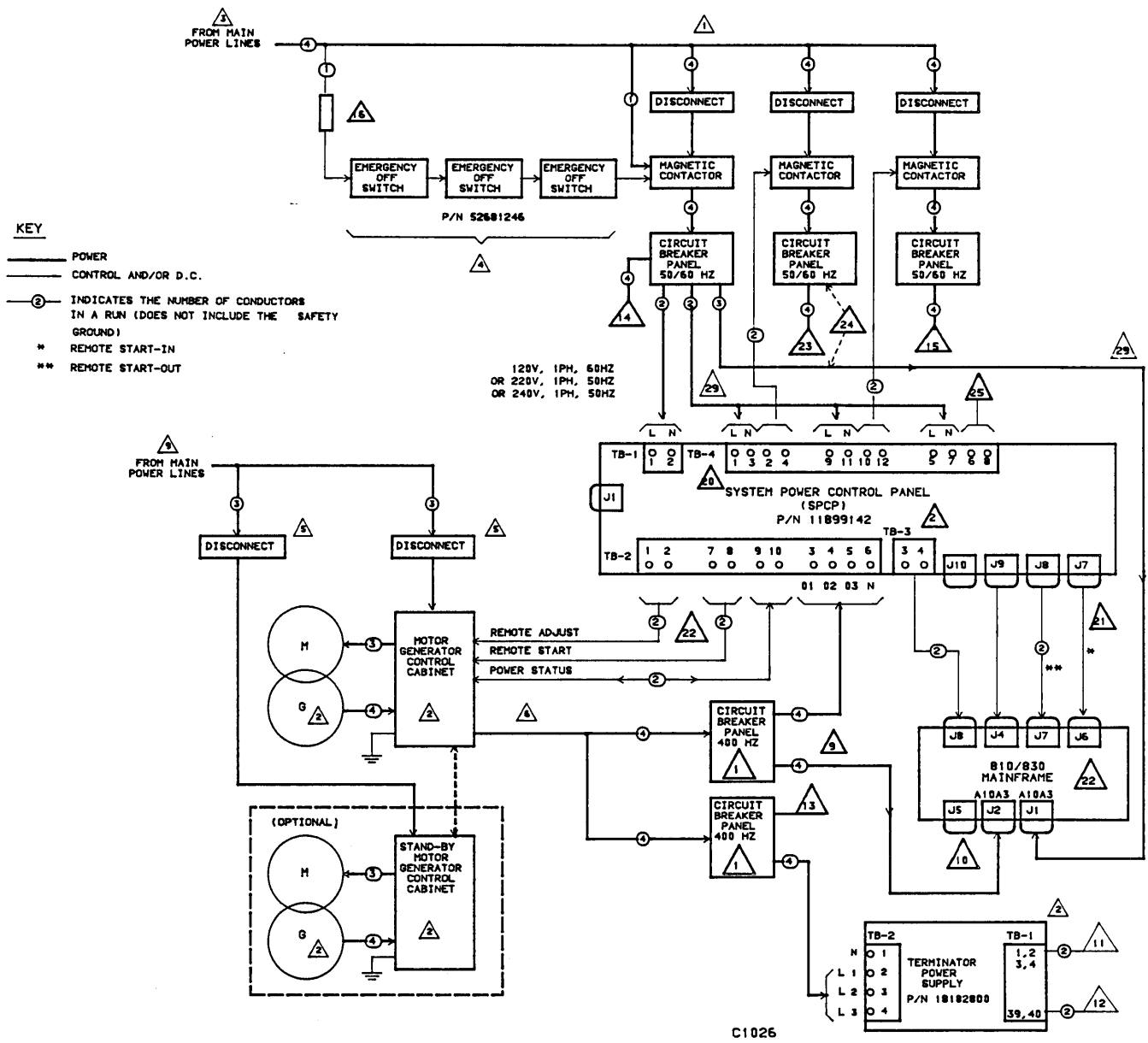


Figure F-3. Power Distribution Diagram 50/60 Hz and 25 kVA or Larger MG Set

Notes for Power Distribution Diagrams (Sheet 1 of 2)

1. Prior to computer equipment installation, circuit breakers, breaker panels, magnetic contactors, main disconnect switches, junction boxes, and associated wiring must be customer furnished and installed.
2. Part furnished by Control Data Corporation and installed by customer.
3. All wiring must be in accordance with applicable local and national codes and must be labeled for identification of source and termination.

Acceptable voltage requirements for all 50/60 and 400-Hz installations:

120/208 V, 60 Hz, 3-phase  
220/380 V, 50 Hz, 3-phase  
240/415 V, 50 Hz, 3-phase

Additional voltage requirement acceptable for 50/60 Hz installations:

240 V, 60 Hz, 3-phase Delta

4. Emergency off switches should be located approximately 1.5 m (5 ft) from the floor with one near each exit and be wired in series.
5. Size of MG input power disconnect and motor power wiring shall be based on motor power characteristics. Refer to Site Preparation Section 4 Manual, publication number 60451300.
6. Voltage loss between MG and computer equipment must not exceed two percent of the MG rated output.
7. MG output is 12.5 kVA, 208 V, 3-phase, 400 Hz.
8. Power input for 12.5 kVA MG: 208 V,  $\pm 10\%$ , 3-phase, 60 Hz.
9. Power input for 25 kVA MG: 208/220/440/460 V  $\pm 10\%$ , 3-phase, 60 Hz  
or: 398 V,  $\pm 15\%$ , 3-phase, 50 Hz
10. J5 is terminated. When terminated it monitors external power (short warning).
11.  $\pm 20$  V dc terminator power to 405 card reader (if used).
12.  $\pm 20$  V dc terminator power to 580-XXX line printer (if used).
13. To associated peripheral equipment that require 400-Hz power.
14. Provides 50/60-Hz power to items which should always remain on except when the wall-mounted emergency off switch is pulled (that is, test equipment service outlets).
15. Provides 50/60-Hz power to equipment that requires power when 400-Hz is available.
16. Fuse, customer furnished and installed.
17. MG must be placed close to the mainframe because 400-Hz voltage adjustment is done at MG cabinet front panel.

Notes for Power Distribution Diagrams (Sheet 2 of 2)

18. When 400-Hz load is increased or decreased, MG output may have to be readjusted to 208 V.

19. Connections:

<u>M-G</u>	to	<u>Mainframe</u>
TB1-1		J3
TB1-2		J3
TB1-3		J3
TB1-4		J3

20. Numbered to show wiring connections; TB-4 terminals are actually numbered sequentially.

21. SPCP should be located approximately 1.5 m (5 ft) from the floor. Unit is supplied with 15.2 m (50 ft) monitor cables P/N 53615357. Connect between SPCP and mainframe as indicated. The SPCP must be installed close enough to the mainframe so that the 15.2 m monitor cables will reach. Take into consideration the distance the cable drops from the SPCP to the room floor (below the raised floor), and rises 457 mm (18 in) into the back of the mainframe.

22. MG remote adjust, remote start, and power status wiring between SPCP and MG control cabinet must have separate raceways (three independent runs of two each) unless adequately shielded from one another by use of conduit, greenfield, or braided shield within the power cables.

23. Same as 14 except breaker panel may be shut off via the service switch within the SPCP.

24. 50/60-Hz power to the mainframe may be supplied from this panel also.

25. Circuit may be used to switch control power for an additional magnetic contactor. The circuit may be adjusted to come on 0 to 5 minutes prior to 400-Hz power and to stay on 0 to 5 minutes after 400-Hz power is removed.

26. Circuitry shown inside dashed line is an alternate remote control to that shown connected to J3. This alternate circuit is used if 120 V coil magnetic contactors are not available (that is at 50-Hz sites).

27. Main power supply (-5.2 V, -2.2 V, +5.0 V) to the logics.

28. Power to auxiliary power (+5 V, -12 V, +12 V), auxiliary battery charger, blowers, and so forth.

29. Power supply options from 50/60 Hz circuit breaker panel:

- 208 V, 3-phase, 60 Hz
- 380 V, 3-phase, 50 Hz
- 415 V, 3-phase, 50 Hz
- 240 V, 3-phase Delta, 60 Hz

**APPENDIX G**

**PRINTER SETUP**





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PRINT BAND TESTING

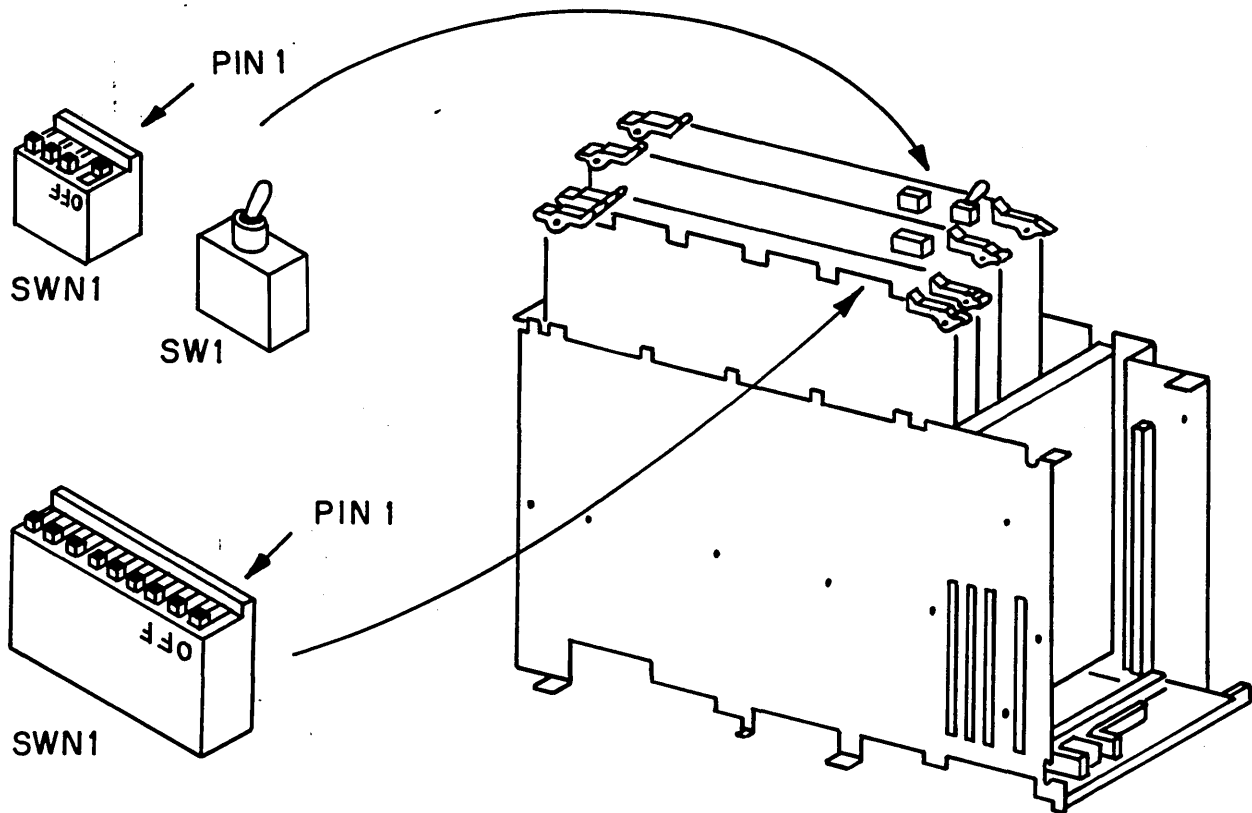
Set the configuration testing select switch (TEST SEL) to OFF. Press the TEST PRINT switch to start printing; press again to turn it off.

CDC 533/536 PRINTER OPTIONS

The 533/536 printers have a large number of configuration options. These options are selected at the operator control panel in the front right corner of the printers. Printer support utility (PSU) requires that these options be set to specific values.

## OPTIONS INSTALLATION

1. To set these options, the CE must set the switches as follows:
  - a. On Personality Module 1PC1, set toggle switch SW1 to CE or slide pin 1 of switch SWN1 pin 1 to OFF.
  - b. On CPU Module 1PC2, slide all SWN1 pins to OFF.
  - c. On the operator control panel, push option installation switches A and B on the left side to OFF and push switch C on the right side to ON. Leave the automatic perforation select (APS) and configuration test select (TEST SEL) switches to ON.



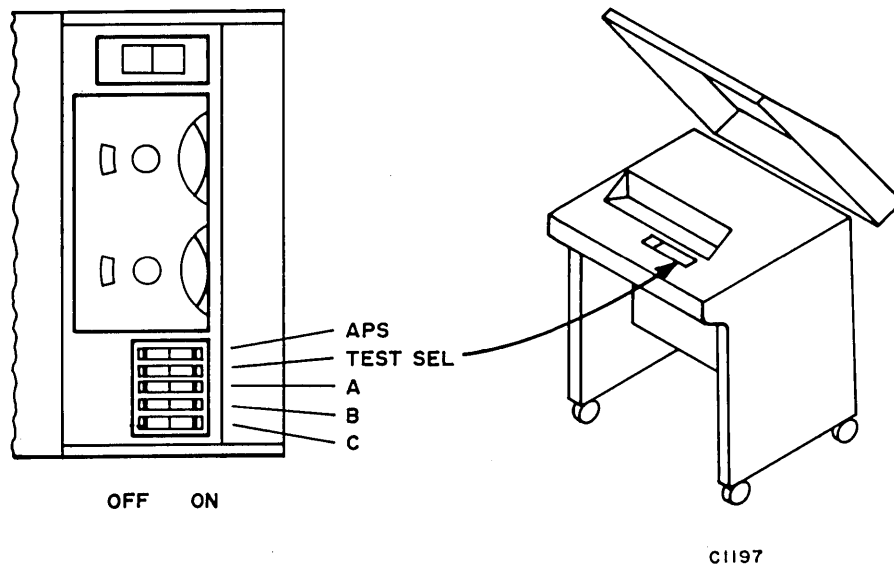
C1196

Figure G-1. Printer Switch Locations and Modules

2. Press STEP OPTION button to select which option to install. Press OPTION SELECT button to change the value of the option shown in the list below.

<u>OPTION</u>	<u>VALUE</u>	<u>OPTION</u>	<u>VALUE</u>
2	N	28	Y
3*	N	29	0
4	Y	30	N
5	N	31	N
6	Y	32	N
7	FF	33	96
8	FF	34	7
9	FF	35	1
10	Y	36	10
11	Y	37	10
12	Y	38	00
13	Y	39	00
14	Y	40	0
15	Y	41	NA
16	N	42	NA
17	N	43	NA
18	N	44	NA
19	Y	45	Y
20	N	46	1
21	N	47	16
22	3	48	NA
23	N	49	NA
24	N	50	NA
25	Y	51	
26	N	52	
27	N		

\* If a 64-character band is being used, option 3 must be set to Y.



C1197

Figure G-2. Printer Operator Control Panel

3. To resume normal printer operation, set as follows:

- a. On the operator control panel, set option installation switch C to OFF.
- b. On the 1PC1, set switch SW1 to RUN or switch SWN1 pin 1 to ON.
- c. On the 1PC2, set all SWN1 pins to ON.

#### OPERATOR ACCESS

If certain options have been assigned to Operator, they may be accessed and changed by the operator.

To change option accessibility do the following:

1. On the Personality Module IPC1, set switch SW1 to CE or switch SNN1 pin 1 to OFF.
2. On the operator control panel, set option installation switches A, B, and C to ON.
3. Step through the options by pressing OPTION SELECT button.
4. Change the assignment to CE or OPERator as needed.
5. Return switches A, B, and C of step 2 above to OFF.
6. Return switch SW1 or SWN1 to RUN or ON.

**APPENDIX H**

**SOFTWARE TESTS AND LIMITS**



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This appendix provides a table showing software tests and limits.

Test	Time Limits	Command Buffer	Parameters Selected at Stop	Comments
IOU MARGINS				
FII1	1 pass	FII10	Wide: CM,0,S or SWM (set wide margin)	Load microcode after completion of test.
TPM1	1 pass	TPM10	Narrow: CM,0,F or SNM (set narrow margin)	Two port mux test.
CM MARGINS				
CMT1	1 pass	CMT10	Wide: EP,X,123,1 Narrow: EP,X,123,2	X=PP number on which test is loaded. Display command buffer CMT10 by typing AE,CMT10.
CMEM	5 min	CMEM1	Narrow: CM,1,F Wide: CM,1,S	
CPU MARGINS				
FIS1 *	1 pass (15 min)	FIS10	Wide: CM,2,S or SWM Narrow: CM,2,F or SNM	
RCT1	5 min	RCT11		
RCT2	5 min	RCT21		
170 MODE	5 min	EXC1	(CU8, CT8, MY1, FS8)	C.B. EXC1 will load CU8, CT8, MY1, and FS8 tests.
170 MODE	5 min		L,IMC,BGK,FDT,LAT	Other tests can be loaded by typing L,XXX,XXX,XXX,XXX
170 MODE	5 min		L,POP,RTJ,FM2,CM6	(up to 4 tests)
FCT1	1 pass	FCT11		
FCT2	2 min	FCT21		
FCT3	1 pass (20 min)	FT3G01 FT3G11 FT3G21 FT3G31 FT3S11 FT3S21 FT3BD1 FT3FP1	EB, A04E, 20 (cr) EB, A04E, 20 (cr) EB, A04E, 20 (cr) EB, A04E, 28 (cr)	To speed up the tests, turn the display screen off.
FCT5	1 pass	FCT51		
FCT9	1 pass	FCT91		Run clear 1 first
EXCH	1 pass	EXCH1		

\* Available only to customers with a Control Data Maintenance Services agreement.

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**APPENDIX I**

**SPLIT FRAME  
INSTALLATION and DE-INSTALLATION**



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Split frame de-installation follows the split frame installation procedure in this section.

### SPLIT FRAME INSTALLATION

The basic cabinet is shipped in two separate pieces when accesses, such as elevators, for example, are too small. It is shipped on two skids, one contains the power cabinet and the other contains the logic cabinet. Follow this installation procedure for all split frame shipments.

Split frame installation requires special tools that must be available on site. The CI is encouraged to prepare for the installation by reading the entire procedure first. During castor platform assembly or disassembly, follow the sequence of steps exactly to meet safety requirements.

The special tools needed are:

- Scaffold
- Torque wrench
- Metric socket sets
- 7/16-inch ratchet box end wrench

## UNCRATE CABINETS

1. Insert a Rol-A-Lift on each side of the logic cabinet and under the castor platform. Strap three belts on the Rol-A-Lifts as shown in figure I-1.

### NOTE

When lifting the computer cabinet, secure both Rol-A-Lifts together so that the tongues can not slip out.

2. Cut straps that hold the logic cabinet on the skid.

### CAUTION

Be careful when cutting packing straps. They may snap outward and cause personal injury.

3. Lift cabinet just high enough off the skid, keeping the cabinet level at all times.
4. Position the castors as shown in figure I-1. Slide out the skid.
5. Repeat above steps for power cabinet skid removal.
6. Transport both cabinets on castor platforms to the computer room.

### NOTE

Do not continue unless the computer cabinets are at room temperature.

7. Cut the remaining straps and remove the corrugated panels, plywood side panels, and plastic covers from the two cabinets.

### CAUTION

Plywood panels tend to fall off the top when straps are being cut.

8. Position the cabinets for assembly preparations.

## CABINET PREPARATION

Installers should be working independently on separate cabinets.

### Logic Cabinet

This cabinet contains a CPU module and an IO/MEM module (or columns). See figure I-2 for the following steps:

- \_\_\_\_\_ 1. Remove the two blower covers from the top of the IO/MEM column.

#### CAUTION

Stand on proper scaffold to reach the blower covers.

- \_\_\_\_\_ 2. Remove the two pieces of plywood from the two Bracket Bussing Protects (23105179).
- \_\_\_\_\_ 3. Remove the 12 bolt-sets (bolts, lock washers, and flat washers) from the Bar Bussing Protect (23105184). (16 bolt-sets for computers with the dual CPU option) This step frees the blue (-2.2v) and black (ground) bus bars.
- \_\_\_\_\_ 4. Next, unbolt this Bar Bussing Protect (four bolt-sets) from the two Bracket Bussing Protects.
- \_\_\_\_\_ 5. Remove the two Bracket Bussing Protects (four bolt-sets) from the top and bottom of the cabinet.
- \_\_\_\_\_ 6. Unstrap the Baud Rate Select box and place it beside the CP1 panel.
- \_\_\_\_\_ 7. Unstrap the J4-J7 harness and swing it aside. Watch for the single wire connected to backpanel location MEM28 A70, if applicable.
- \_\_\_\_\_ 8. Unstrap the two flat black cables from the bus bars.
- \_\_\_\_\_ 9. If electrical joint compound (EJC) has dried on the bus bars, clean it off with "Scotch Brite". Re-apply a thin layer of EJC to all joints.

#### CAUTION

Electrical joint compound may irritate skin, and is harmful if swallowed. Apply with Q-tip. Avoid skin contact. Wash off with soap and water.

#### NOTE

Wiping off excess EJC with Kimwipe will leave a desirable thin layer of EJC on bus bars.

## Power Supply Cabinet

Up to eight power supplies and controls, and circuit breakers making up the power module, are contained in this cabinet.

- \_\_\_\_\_ 1. Loosen two screws beside the auxiliary power supply switch and remove the other two screws that are holding the circuit breaker assembly to the bracket. Lower the assembly. Be careful of air flow sensor wire. See figure I-3.
- \_\_\_\_\_ 2. Remove the power supply support. See figure I-3.
- \_\_\_\_\_ 3. Remove the short black bus bar from the output bar of the +5.0 V MEM/IO power supply. See figure I-7.
- \_\_\_\_\_ 4. If not already unplugged from the front, unplug the 15-position molex connectors (for control and logic) from the four -5.2 V power supplies. See figure I-3.
- \_\_\_\_\_ 5. Disconnect the red and blue (red and black) wires from the INPUT VDC terminal blocks, if necessary. See figure 3.
- \_\_\_\_\_ 6. From the rear, remove the power supply air plenum. See figure I-4.
- \_\_\_\_\_ 7. Remove the top two screws from the mounting plates of each -5.2 V power supply. See figure I-4.
- \_\_\_\_\_ 8. Loosen the four nuts on the J4-J7 connector panel (24633281) and lower it onto the top of the transformers. See figure I-4.
- \_\_\_\_\_ 9. From the front, push back the -5.2 V power supplies so that the output bars are flush with the shelves to allow the bus bars of the logic module to slide by later.
- \_\_\_\_\_ 10. If electrical joint compound (EJC) has dried on the short bus bar and all output bars of power supplies, clean them off with "Scotch Brite". Re-apply a thin layer of EJC to all joints.
- \_\_\_\_\_ 11. Remove the two blower covers from the top of the cabinet.

### CAUTION

Stand on proper scaffold to reach the blower covers.

## CABINET ASSEMBLY

With one installer on each side, slide the lighter power cabinet toward the logic cabinet. Install, but do not tighten, ten bolts (10126503), ten lock washers (10126404), and ten plain washers (10125608) from the logic side. For bolts 7 through 10 use four nuts (10125301), four lock washers (10126404), and four plain washers (10125608). Follow the steps below and use the tightening sequence shown in figure I-5:

1. \_\_\_\_\_ a. Start from the bottom. Make the two cabinets flush.

### NOTE

Do not pinch the two flat cables or wire harnesses.  
Ensure that the grey bus bar clears the power cabinet.

- \_\_\_\_\_ b. Insert bolt sets 1 through 6 in order. Start threading but do not tighten.
- \_\_\_\_\_ c. Insert bolt sets 7 through 10. Push aside the foam slightly and thread in the nut sets. Do not tighten.

### CAUTION

Stand on proper scaffold to reach the bolts and nuts.

- \_\_\_\_\_ d. Use trim bracket (53367397) to align the self-tapping screw holes in a straight line.
- \_\_\_\_\_ e. Tighten all ten bolts and nuts to 65 in lb.

### NOTE

Use a torque wrench. Do not exceed 65 in lb.

Installer 1: perform steps 2 through 7.  
Installer 2: perform steps 8 through 10.

**NOTE**

For slot holes where lockwashers are used, use flat washers to evenly distribute force on lockwasher.

- \_\_\_\_\_ 2. From the rear, re-install J4-J7 panel. Tighten nuts to 11 in lb.
- \_\_\_\_\_ 3. Locate the molex connector harness, plug the four unique molex connectors into the J4-J7 panel.
- \_\_\_\_\_ 4. Near the top, between the two cabinets, route and plug in the single 15-position molex connector to the protect board behind the FAULT light. See figure I-6.
- \_\_\_\_\_ 5. Route the harness with two red connectors to the rear of the logic cabinet just underneath the logic blowers. See figure I-6.
- \_\_\_\_\_ 6. Plug in both red connectors to their mates. Push the connectors up and place the harness behind the blue bus bar.
- \_\_\_\_\_ 7. Mount the baud rate select box by installing two screws through the J4-J7 panel. Tighten to 11 in lb.
- \_\_\_\_\_ 8. From the front, install the auxiliary panel. Apply 11 in lb to three screws (17901516) and three dish washers (09040203). See figure I-7.
- \_\_\_\_\_ 9. Install two flat +5 V positive output cables to the upper output bar on the +5.0 V MEM/IO power supply. See figure I-7.
- 10. Install bus bars to the three -2.2 V power supplies as follows. See figure I-7.
  - \_\_\_\_\_ a. Align all the bus bars next to the -2.2 V output bars.
  - \_\_\_\_\_ b. Mount the bus bar pairs using bolts (00860336) and nuts (00860104). Nuts are on the side closest to the logic module.

**CAUTION**

All bus bar bolts are not to exceed 65 in lb. Use EJC (22704200) on all bus bars.



Proceed only if all previous steps are finished.

- \_\_\_\_\_ 11. From the rear, slide the -5.2 V power supplies back to the front. Re-install mounting screws removed earlier from the rear of the power supplies.

Installer 1: Perform steps 18 through 20.

Installer 2: Perform steps 12 through 17.

- \_\_\_\_\_ 12. From the front, repeat step 10 on the four -5.2 V power supply output bars.
- \_\_\_\_\_ 13. Install red and black (or blue) wires to all eight INPUT VDC terminal blocks as follows: red to +, black or blue to -.
- \_\_\_\_\_ 14. Install the short black bus bar to the bottom output bar of the +5.0 V power supply. Nuts are on the side closest to the logic cabinet.
- \_\_\_\_\_ 15. Check torque applied to all bolts on the output bars.
- \_\_\_\_\_ 16. Ensure that all the molex connectors are plugged firmly into all eight power supplies.
- \_\_\_\_\_ 17. Mount the circuit breaker assembly.
- \_\_\_\_\_ 18. From the rear, re-install the power supply air plenum.
- \_\_\_\_\_ 19. Replace all blower covers.

CAUTION

Stand on proper scaffold to reach the blower covers.

- \_\_\_\_\_ 20. Reinstall airflow sensor plug, if necessary, as shown in figure I-3.

## CASTOR PLATFORM REMOVAL

At this time the two cabinet sections have been bolted together. Ensure that the computer is on level floor. Remove the two castor platforms as follows:

### WARNING

Do not jack up the mainframe unless the four bolts have been removed from the castor platforms. Slowly and cautiously follow the exact sequence of this procedure.

- \_\_\_\_\_ 1. Swing the two castors at the logic end to positions shown in figure I-8.
- \_\_\_\_\_ 2. Remove both castor platform bolts from inside the Rol-A-Lift cutouts at the power end. See figure I-8.  
Second installer: perform next step simultaneously.
- \_\_\_\_\_ 3. Remove both castor platform bolts from the front of the logic cabinet. See figure I-8.
- \_\_\_\_\_ 4. Insert the Power End Lifting Device (23143093 & 23102201) and a jack (53586685). See figure I-7.

### CAUTION

Ensure tongues on the bracket get well inside lips in the cut out so the brackets cannot slip out.

- \_\_\_\_\_ 5. Lift the power module end just high enough to allow the base (23102201) to swing down. Lower the base and remove the jack.

### CAUTION

Do not stand at the logic end of the computer. The computer may shift slightly.

- \_\_\_\_\_ 6. Locate Logic End Lifting Device (23140139). Lift the logic module end with the same jack just enough for both castor platforms to slide out.
- \_\_\_\_\_ 7. Once the computer frame is steady and level, slide out both castor platforms.
- \_\_\_\_\_ 8. Lower the logic end and remove the lifting device.
- \_\_\_\_\_ 9. Jack up the power end. Unbolt two bolts/washers and remove the two bases. Lower the computer to the floor. Remove all lifting devices.

## DOOR AND TRIM INSTALLATION

Install trim bracket (53367397) using self tapping screws and lockwashers.

- \_\_\_\_\_ 1. Start first screw in centre of bracket. Install both top trim brackets and trim shown in figure I-9. Use Tap-Tite screws (17901523), lock washers (10125607), and washers (10126403).
- \_\_\_\_\_ 2. Ensure latches on all doors are in open position.
- \_\_\_\_\_ 3. Install and align all removed doors for which hinges should have been previously installed. Because of uneven floor surfaces, it may be necessary to realign doors and trim. See figure I-10.

### CAUTION

Do not remove screws completely from hinge brackets to avoid dropping the tapping plate.

- \_\_\_\_\_ 3. Install two end skins using same Tap-Tite screws and washers as above.

### NOTE

The customer should save the plywood panels, castor platforms and all other hardware that were taken off during installation for future de-installation.

## SPLIT FRAME DE-INSTALLATION

When de-installing a computer from a site where exit doorways are too narrow, a castor platform packaging kit (23102967) must be available on site.

This kit consists of castors, platforms, bar bussing protect, bracket bussing protects, plywood panels, lifting devices, jacks, special skids and miscellaneous hardware.

Split frame installation requires special tools which must be available on site. The CI is encouraged to prepare for the installation by reading the entire procedure first. During castor platform assembly or disassembly, the sequence of steps must be followed exactly to meet safety requirements.

The special tools needed are:

- Scaffold
- Torque wrench
- Metric socket sets
- 7/16-inch ratchet box end wrench

## POWER HOOKUP

- \_\_\_\_\_ 1. Ensure that power is off and that cables to the mainframe are removed and disconnected.
- \_\_\_\_\_ 2. Ensure that all data cables to the I/O connector panel are disconnected.

## DOOR AND TRIM REMOVAL

Before installation of castor platforms, the following steps must be performed:

- \_\_\_\_\_ 1. Remove the two end skins. Do not detach the brackets. Label all removed hardware in customer-supplied bags.
- \_\_\_\_\_ 2. Remove the two doors at the power module end of the computer. Leave the hinges on.
- \_\_\_\_\_ 3. Remove the two top trims and brackets. Remove centre screw last. See figure I-9.

## CASTOR PLATFORM INSTALLATION

### CAUTION

Slowly and cautiously follow the exact sequence of this procedure.

- \_\_\_\_\_ 1. Insert Power End Lifting Device (23143093) into cutout, using jack to keep bracket off floor. See figure I-11.

### CAUTION

Ensure tongues on the bracket get well inside lips in the cutout so the brackets can not slip out.

- \_\_\_\_\_ 2. Using two bolts (10126526) and washers (10125612), assemble two bases (23102201) to the Power End Lifting Device (23143093). See figure I-7.

- \_\_\_\_\_ 3. Swing down the support bases using a jack, raise the lifting device mentioned in step 1 at the power end of the computer. Let the bases support the computer and then remove the jack. See figure I-7.
- \_\_\_\_\_ 4. Lift the other end with the Logic End Lifting Device (23140139) until mainframe is level with floor and both castor platforms can slide under the computer. See figure I-8.
- \_\_\_\_\_ 5. Position the smaller castor platform under the power module and the larger platform under the logic modules. Refer to figure I-8 for screw hole positions.
- \_\_\_\_\_ 6. Lower the logic end to within 0.12 inches of the castor platforms.
- \_\_\_\_\_ 7. Bolt the logic castor platform (23141083) with two bolts (00860336) and washers (10126404 and 10125608) from the front. Tighten to 65 in lb.
- \_\_\_\_\_ 8. Position the two end castors as shown in figure I-8. Lower the Logic End Lifting Device. Remove it and the jack.

CAUTION

Position the two logic end castors as shown on figure I-8 to avoid lateral shifting of cabinet when lowering the power end.

- \_\_\_\_\_ 9. Jack the power end to within 0.12 inch of the power castor platform. Unbolt and remove the bases.
- \_\_\_\_\_ 10. Bolt the power castor platform (23141075) with two bolts (00860336) and washers (10126404 and 10125608) through the Rol-A-Lift cutouts.
- \_\_\_\_\_ 11. Position castors as shown in figure I-8.
- \_\_\_\_\_ 12. Lower the computer and remove the lifting devices. Tighten all four platform bolts.

## CABINET DISASSEMBLY

Installer 1: Perform steps 1 and 2.

Installer 2: Perform steps 3 and 4.

- \_\_\_\_\_ 1. Remove the four covers from the top of the power module and the IO/MEM column of the logic module. See figure I-2.

### CAUTION

Stand on proper scaffold to reach the blower covers.

- \_\_\_\_\_ 2. Remove the power supply air plenum. See figure I-4.
- \_\_\_\_\_ 3. Unplug air flow sensor. Loosen two screws beside the auxiliary power supply switch and remove the other two screws that hold the circuit breaker assembly to the bracket. Lower the assembly. See figure I-3.
- \_\_\_\_\_ 4. Remove the red and blue (or black) wires from INPUT VDC terminal blocks of all -5.2 V power supplies.

Proceed only if above steps are finished.

Installer 1: Perform steps 5 through 10.

Installer 2: Perform steps 11 through 16.

- \_\_\_\_\_ 5. From the rear, remove the top two screws from the mounting plates of each -5.2 V power supply. See figure I-4.
- \_\_\_\_\_ 6. Disconnect both four-position blower power red connectors from behind the logic FAULT lights. Cut tywrap if present. See figure I-6.
- \_\_\_\_\_ 7. Unplug the 15-position molex connector indicated by figure I-6.
- \_\_\_\_\_ 8. Remove the baud rate select box by removing its two screws. Set it aside by the CP1 panel. See figure I-2.
- \_\_\_\_\_ 9. Unplug the four molex connectors from the J4-J7 panel. Tywrap it through a hole near the FAULT light. See figure I-6.
- \_\_\_\_\_ 10. Loosen four nuts and swing out the J4-J7 panel. See figure I-4. Rest it on the transformer.
- \_\_\_\_\_ 11. If not already unplugged from the front, unplug the 15-position molex connectors (for control and logic) from the four -5.2 V power supplies. See figure I-3.
- \_\_\_\_\_ 12. Remove four bolts from the short black bus bar from the +5.0 V power supply. Put it aside. See figure I-7.

- \_\_\_\_\_ 13. Disconnect the two flat black cables from the front of the +5.0 V MEM/IO power supply. See figure I-7.
- \_\_\_\_\_ 14. Carefully disconnect bus bars from all eight power supply locations. See figure I-7.
- \_\_\_\_\_ 15. Slide all -5.2 V PS to the back just enough (1 inch) to clear the bus bars.
- \_\_\_\_\_ 16. Remove the three auxiliary panel screws from chassis ground plate. See figure I-7 for location.

Proceed only if above steps are finished.

Installer 1: Perform steps 17 through 19.

Installer 2: Perform steps 17 through 19.

- \_\_\_\_\_ 17. Refer to figure I-5. Remove all bolts and nuts, starting from the top four. Some foam panels have to be moved aside for easier access to the bolts.
- \_\_\_\_\_ 18. Ensure all wiring is out of the way. Carefully slide the two cabinets apart.
- \_\_\_\_\_ 19. Re-install the circuit breaker assembly.



## CABINET PACKING

### Logic Cabinet

This cabinet contains a CPU module and an IO/MEM module (or columns). A second installer may go on to the power supply cabinet section.

- \_\_\_\_\_ 1. Tywrap baud rate select box with padding and tywrap it on the bus bar as shown in figure I-2.
- \_\_\_\_\_ 2. Tywrap the two flat cables around the bus bars. See figure I-2.
- \_\_\_\_\_ 3. Install the two Bracket Bussing Protects (23105179) onto the top and bottom of the cabinet. Use four bolts (10126503), four lock washers (10126404), and four plain washers (10125608). See figure I-2 for hole position. Use nuts to secure (00860104).
- \_\_\_\_\_ 4. Bolt the Bar Bussing Protect (23105184) onto the Bracket Bussing Protects. Use four bolt and nut sets as above. Note the "TOP" end of bar.
- \_\_\_\_\_ 5. Install 12 bolt-sets, as above, to mount the -2.2 V and ground power supply bus bars to this Bar Bussing Protect. (16 bolt-sets are required for computers with the dual CPU option.) Use nuts to secure (10125301).
- \_\_\_\_\_ 6. Install the two pieces of plywood (8 bolt-sets as above) onto the Bracket Bussing Protect.
- \_\_\_\_\_ 7. Install the two blower covers (8 screw-sets as above) onto the top of the IO/MEM column.
- \_\_\_\_\_ 8. Close the two doors.

### Power Supply Cabinet

Up to eight power supplies and controls, circuit breakers make up the power supply cabinet.

- \_\_\_\_\_ 1. Re-install the two blower covers (8 screws) at top of the cabinet.
- \_\_\_\_\_ 2. From the rear, replace the two screws that go on top of each of the four mounting plates for the -5.2 V power supplies.
- \_\_\_\_\_ 3. Re-install J4-J7 connector panel (24633281).
- \_\_\_\_\_ 4. Re-install the power supply air plenum at the rear of the cabinet.
- \_\_\_\_\_ 5. Secure the harness with the two red connectors to the frame.
- \_\_\_\_\_ 6. Bolt the short black bus bar upside down in shipping position. See figure I-7.
- \_\_\_\_\_ 7. Install power supply support bracket shown in figure I-3.

## CRATING AND SHIPPING

It is necessary to roll the computer cabinets on castor platforms out of the computer room, into an area that is wide enough to allow crating and loading (onto a truck). See figure I-12 for crated dimensions.

### Mainframe Cabinets

Check off left column for the logic cabinet, and right for the power cabinet.

- \_\_\_\_\_ 1. Put plastic covers on the cabinet. Tug cover under cabinet to prevent interference with castor movements.
- \_\_\_\_\_ 2. Put on plywood panels to protect the front and rear.
- \_\_\_\_\_ 3. Put on corrugated box panels and straps.
- \_\_\_\_\_ 4. Fully insert two type CD6 (3000 lb) Rol-A-Lifts under the castor platform.
- \_\_\_\_\_ 5. Use three straps on the Rol-A-Lifts so they can not slip out as shown in figure I-1.
- \_\_\_\_\_ 6. Slowly raise the cabinet just high enough for the skid to slide under. Keep the cabinet level at all times.
- \_\_\_\_\_ 7. Swing the castors of the platform as shown in figure I-1.

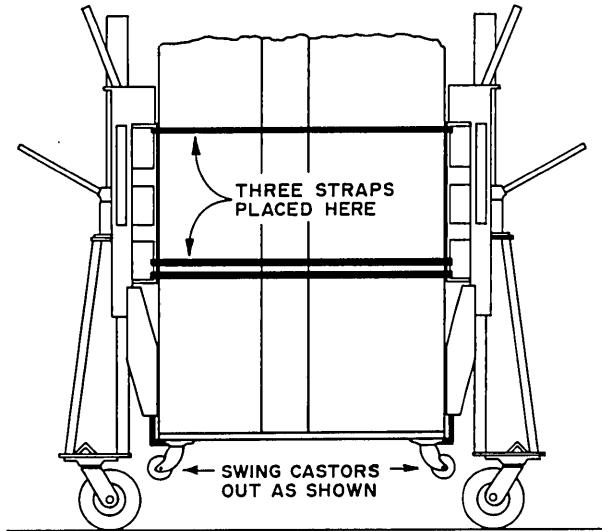
### CAUTION

Unsecured Rol-A-Lifts can and may slip out from under the cabinet.

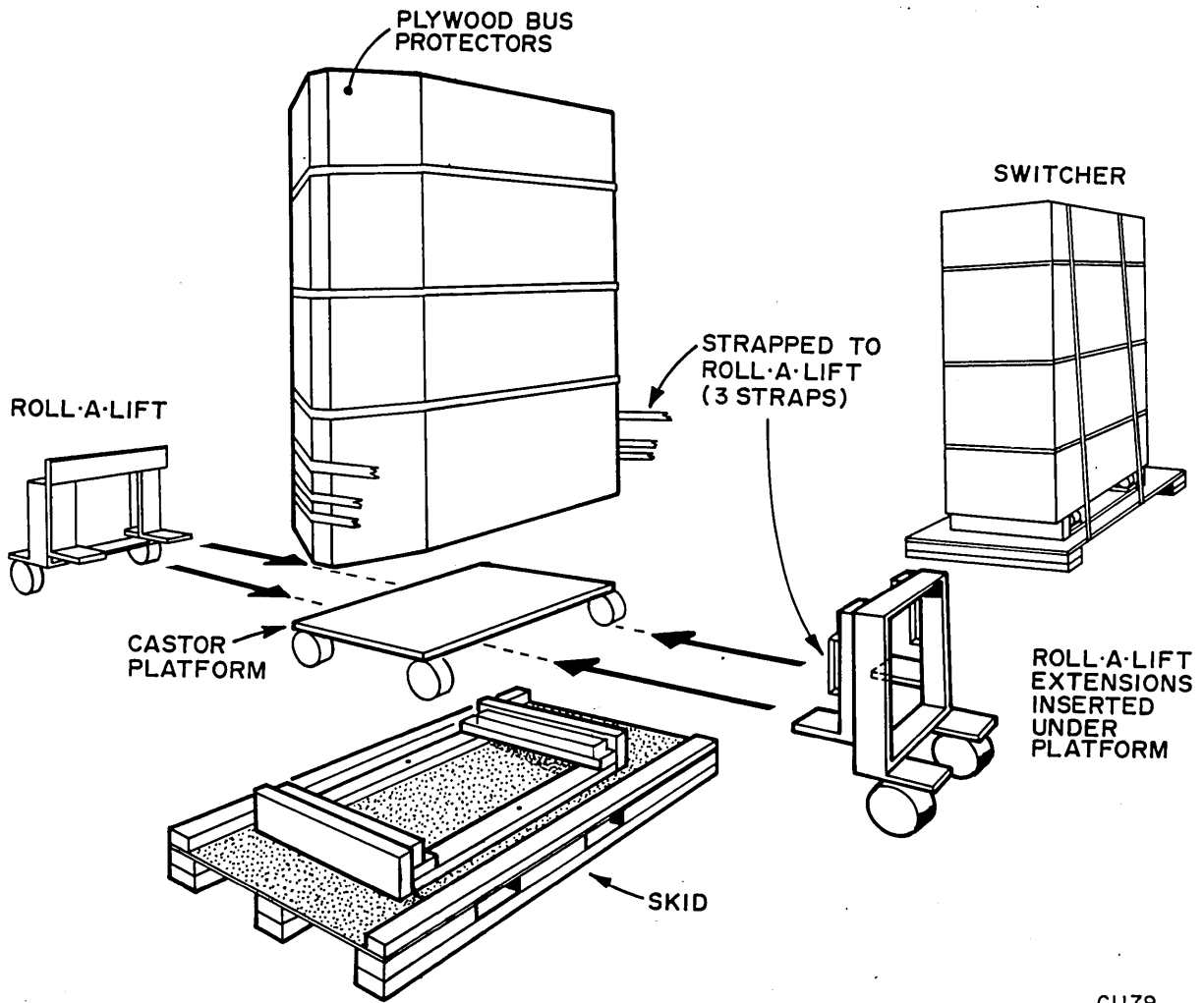
- \_\_\_\_\_ 8. Slide the special skid under the cabinet.
- \_\_\_\_\_ 9. Slowly lower the cabinet, in unison, onto the skid until the cabinet rests on the skid and the castors are free.
- \_\_\_\_\_ 10. Repeat above steps for the power cabinet.

### Door and Trim

- \_\_\_\_\_ 1. Package all removed doors and trims.
- \_\_\_\_\_ 2. Bag and label all removed screws and washers in customer-supplied bags.
- \_\_\_\_\_ 3. Strap doors and trims onto skids.

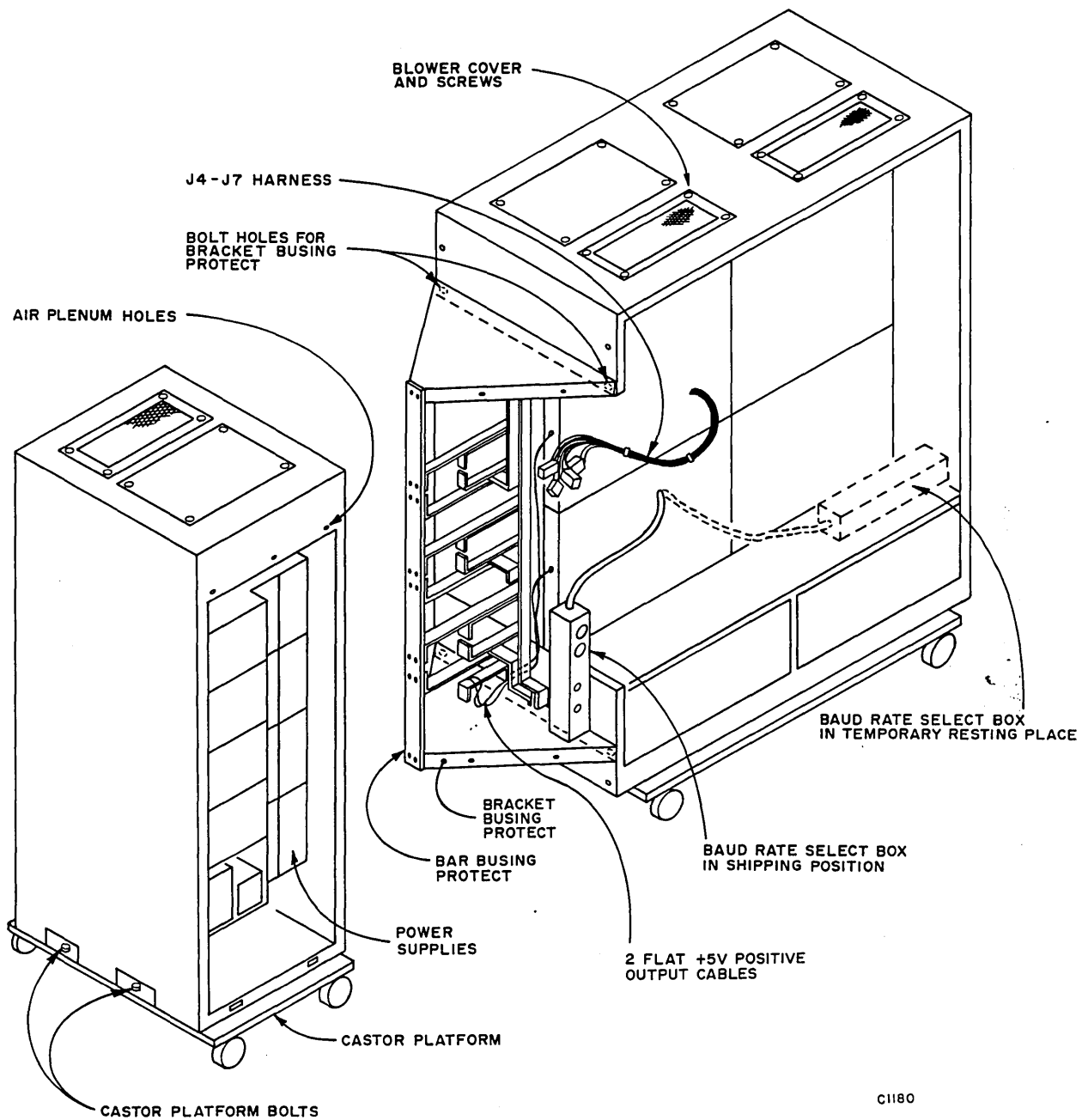


C1179A



C1179

Figure I-1. Cabinet Packing and Skids



C1180

Figure I-2. Shipping Locations of Parts and Protectors

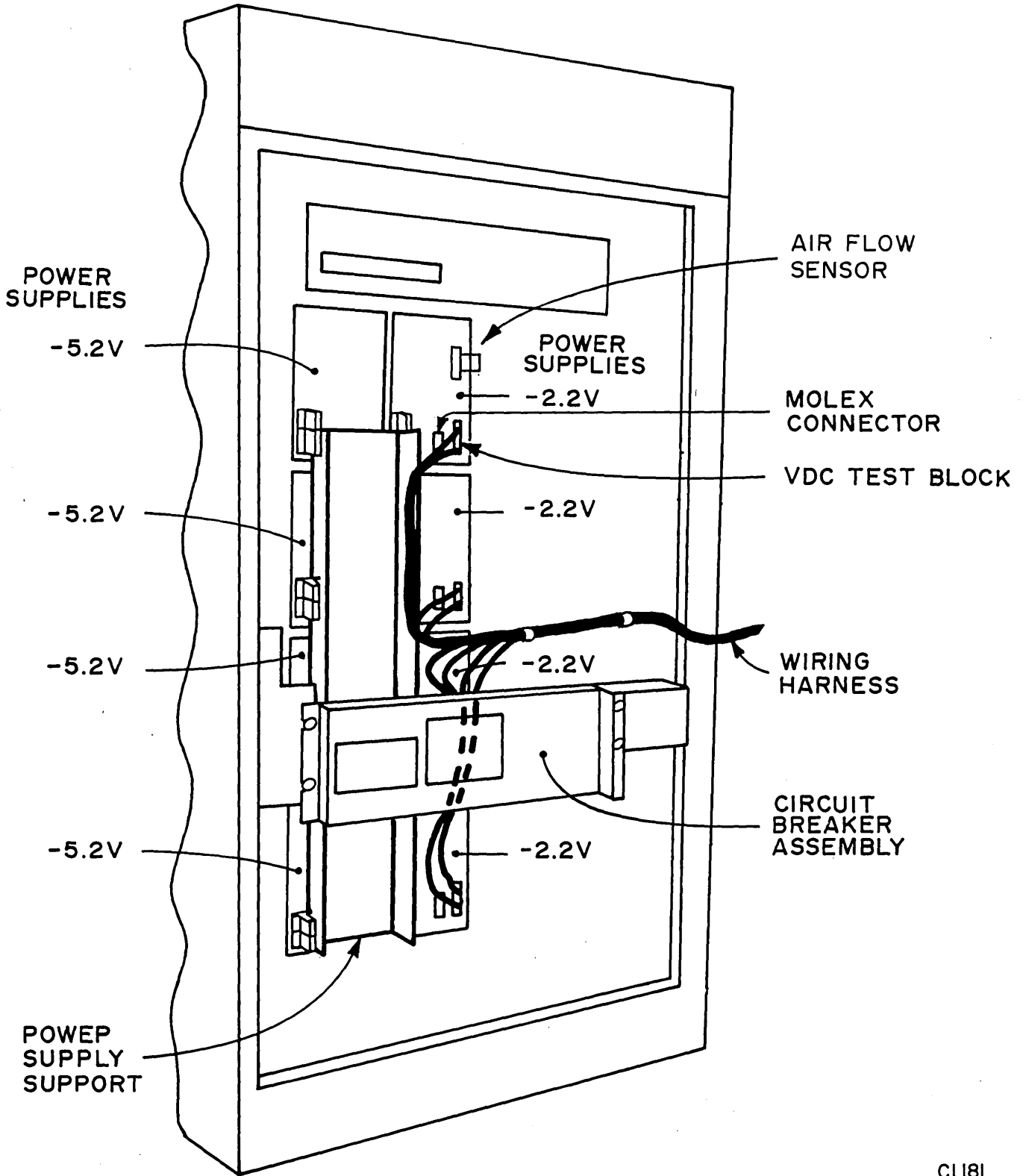


Figure I-3. Power Cabinet - Front View

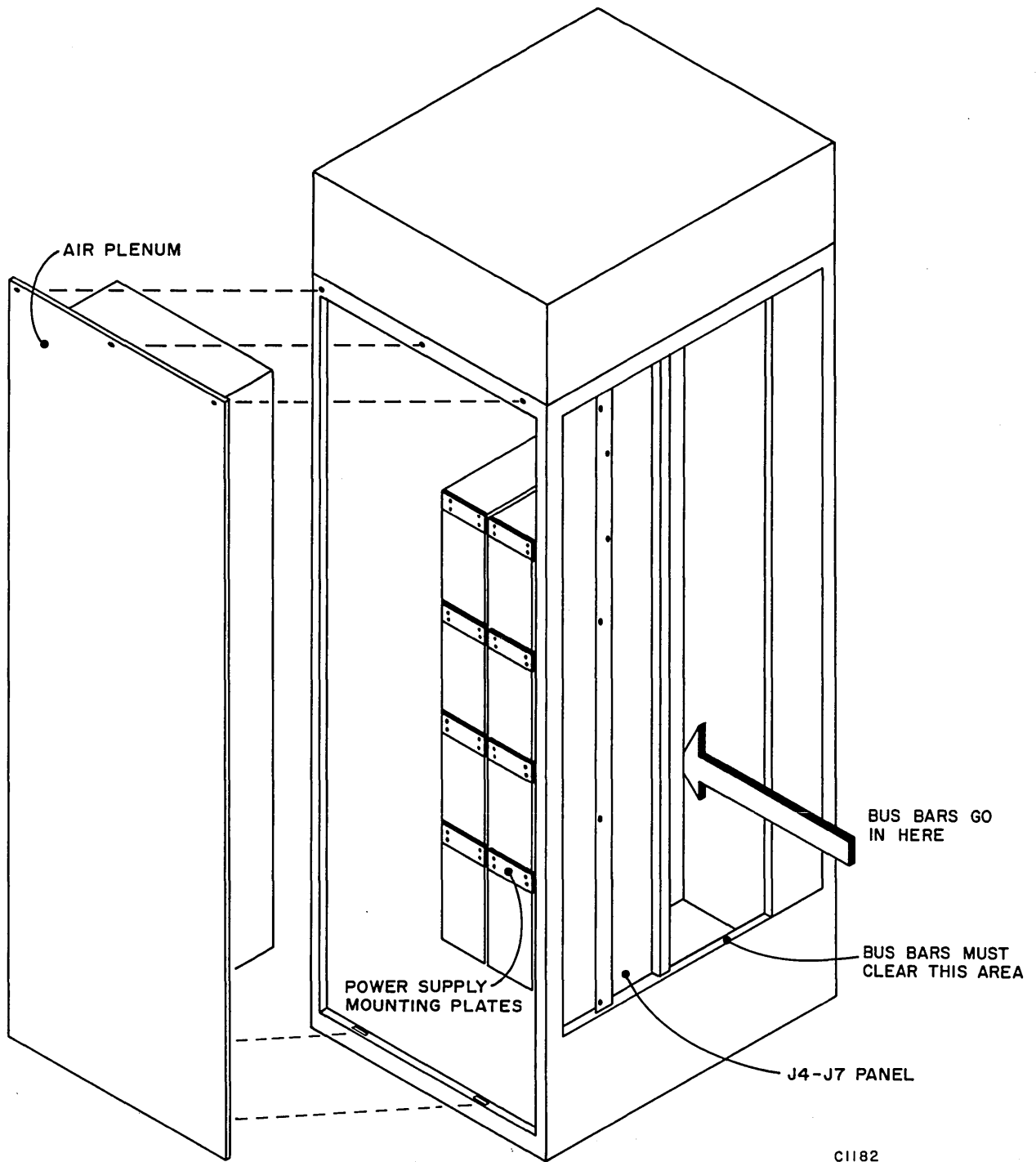


Figure I-4. Power Cabinet - Rear and Side Views

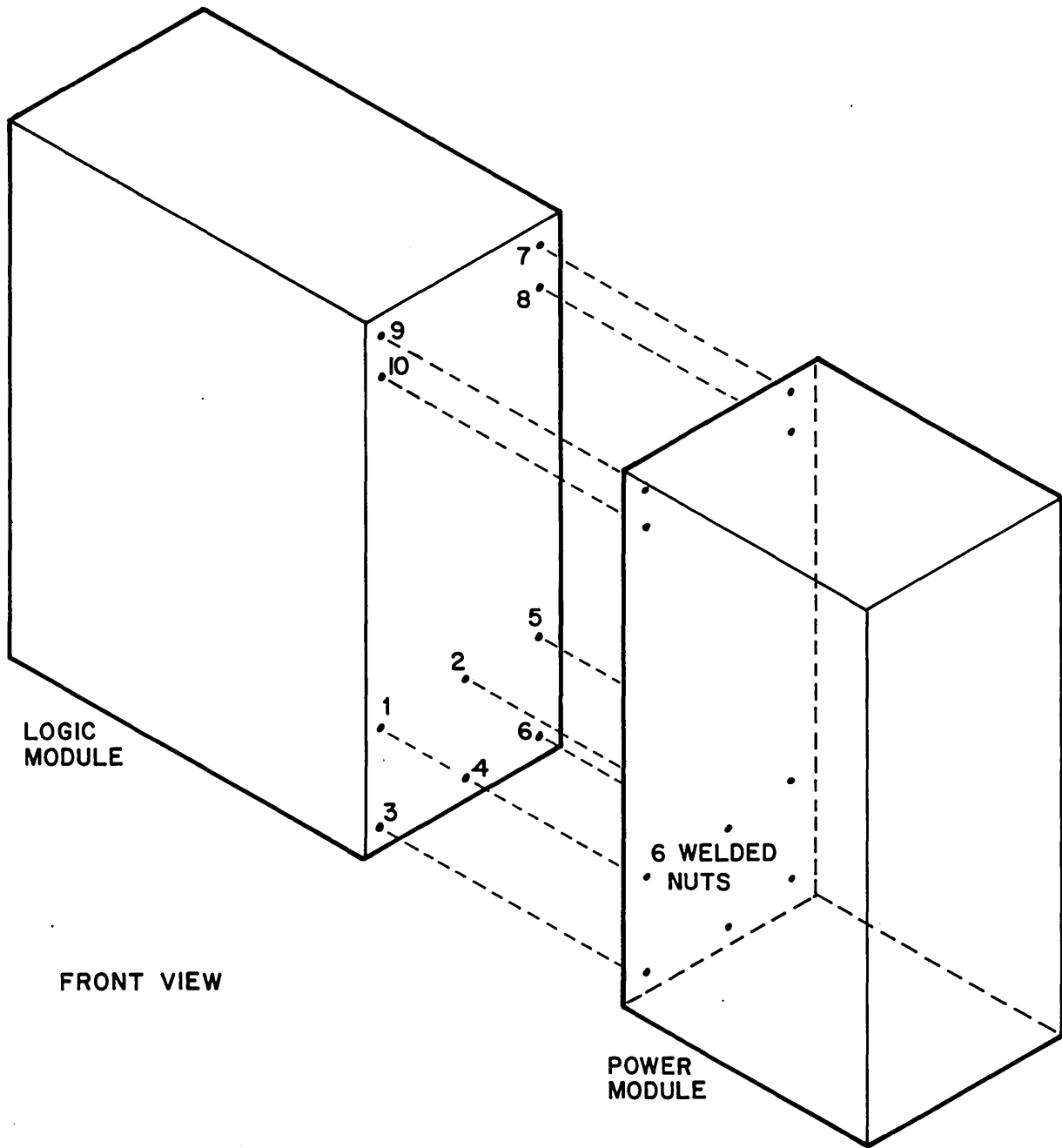


Figure I-5. Cabinet Tightening Sequence

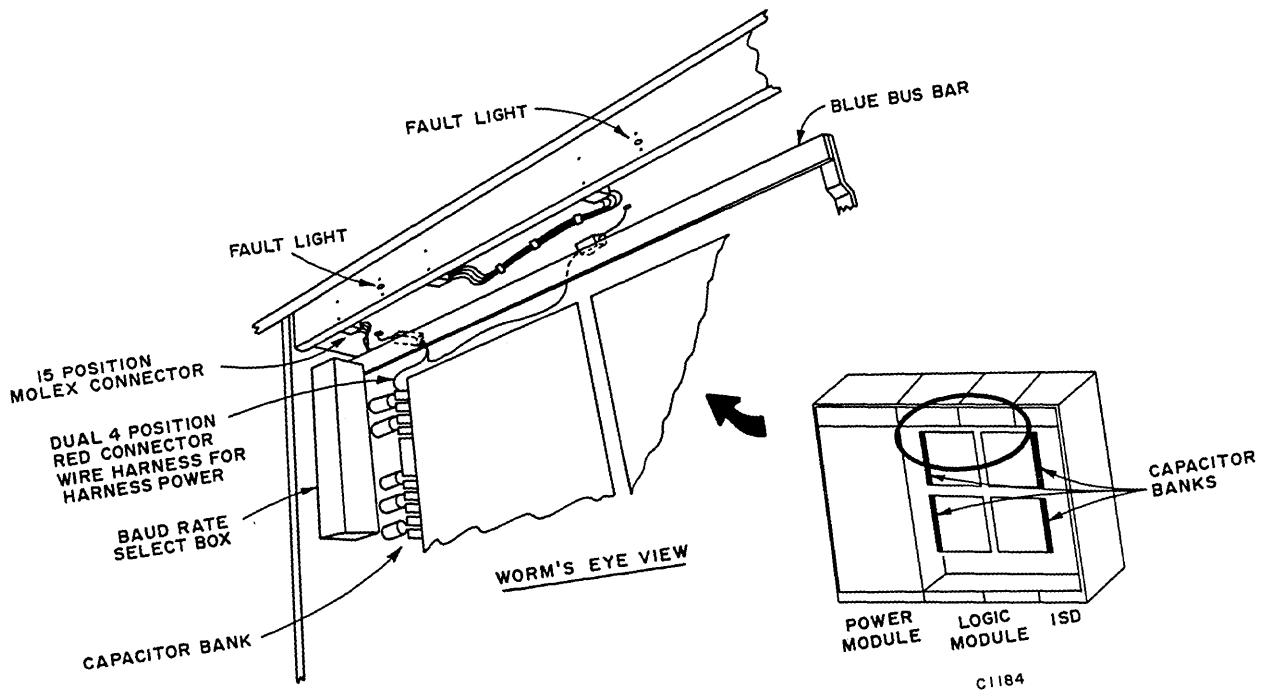
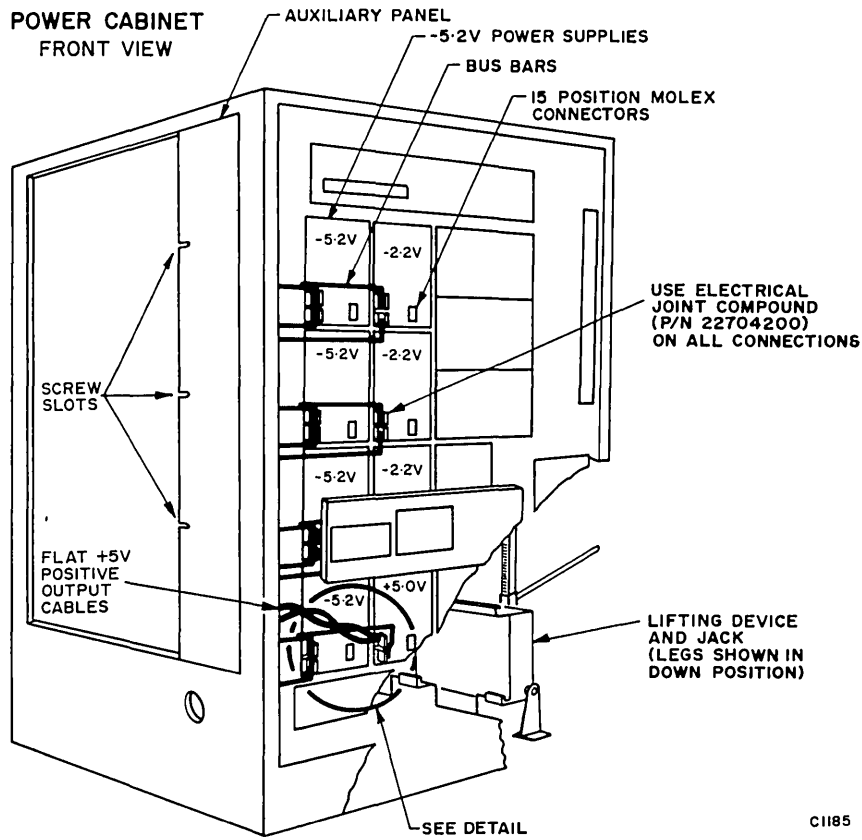


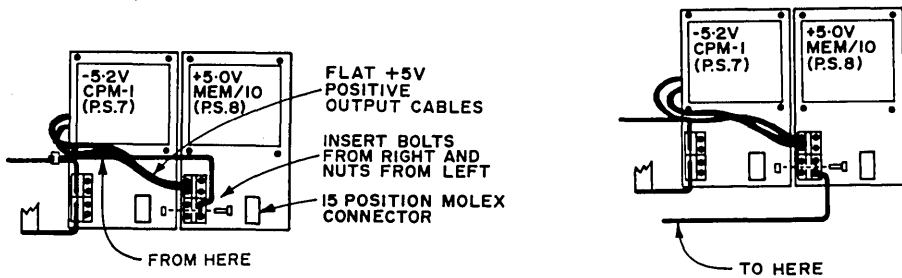
Figure I-6. Logic Cabinet - Rear View

60469450 B



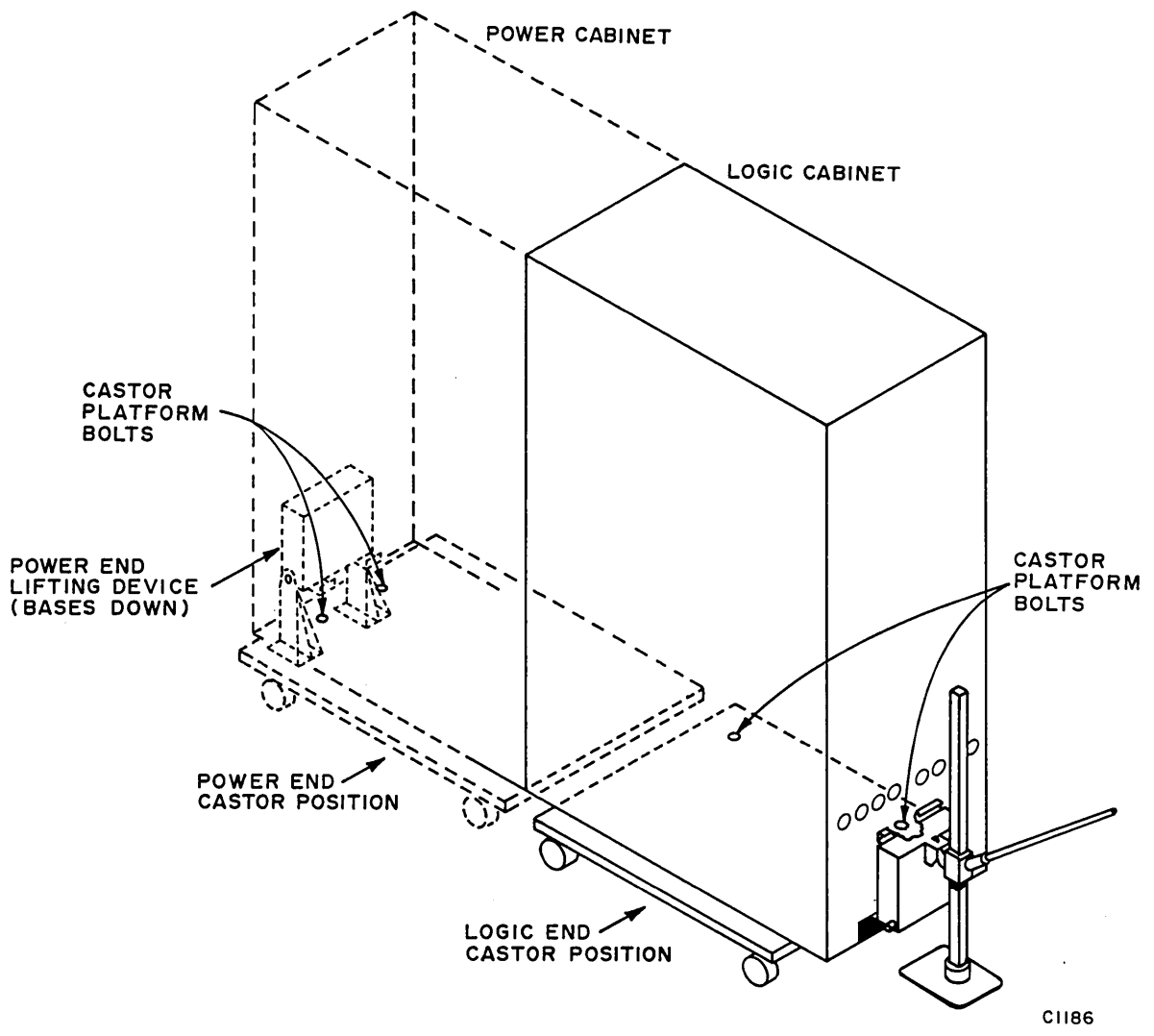


CHANGE POSITION OF THE BUS BAR FOR SHIPPING PURPOSES



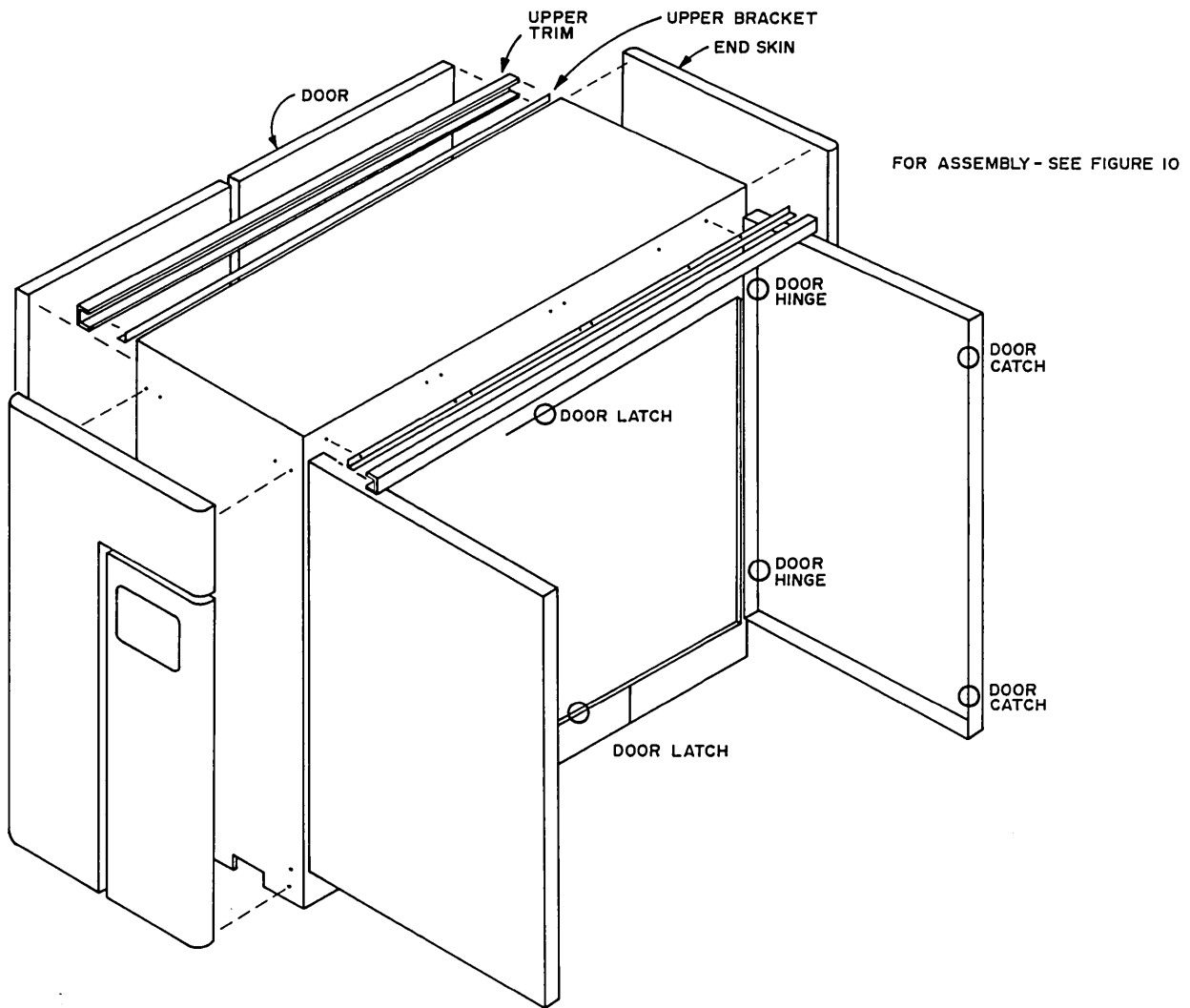
DETAIL

Figure I-7. Power End Lifting Device and Power Supply Output Bars



CI186

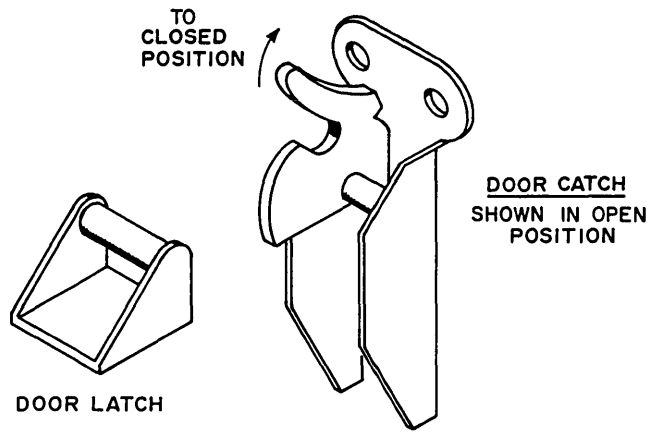
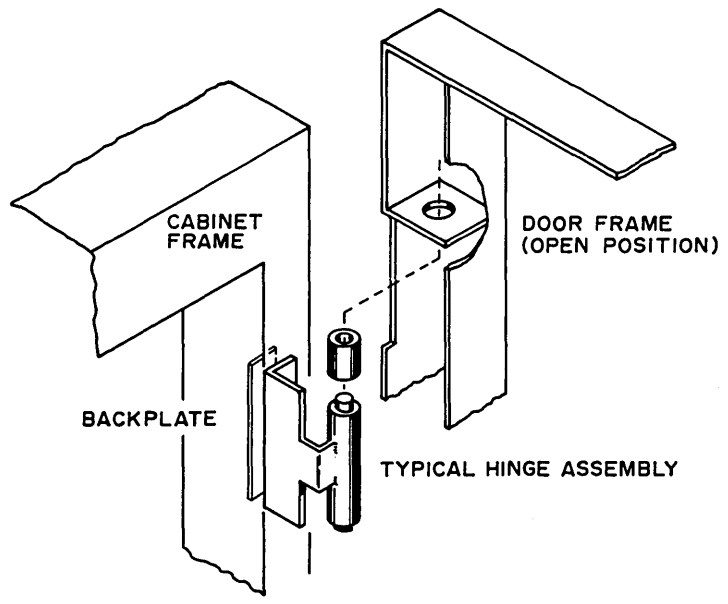
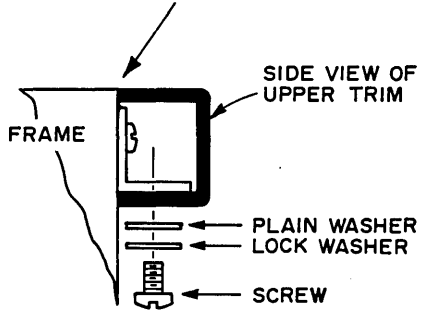
Figure I-8. Logic End Lifting Device and Castor Platform Bolts



C1187

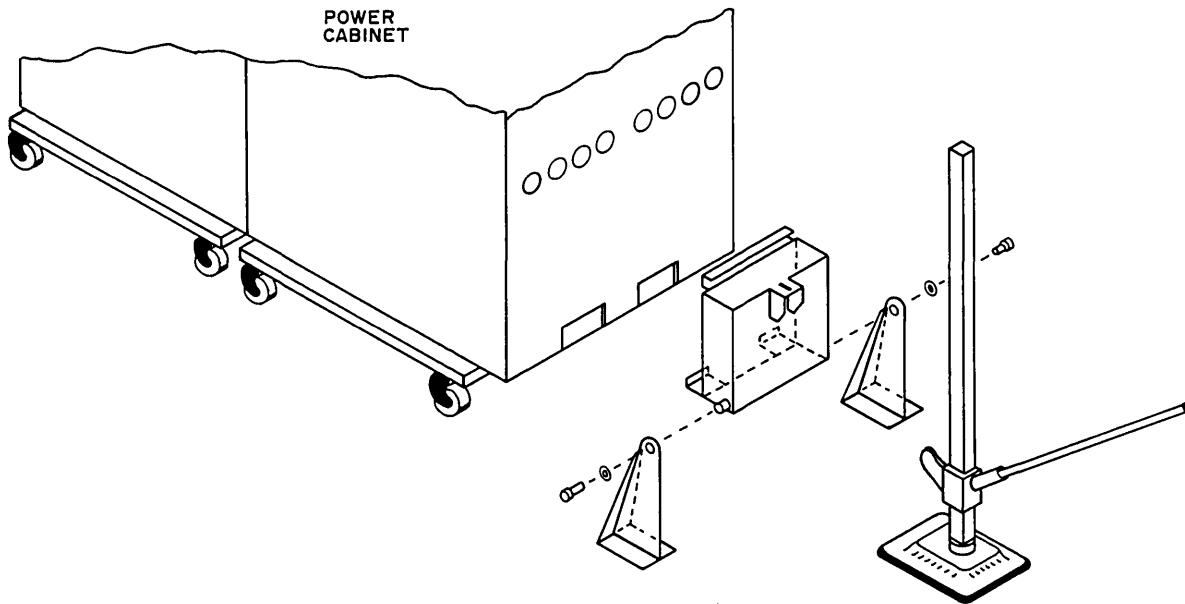
Figure I-9. Doors, Trim and End Panels

NOTE: TRIM MUST BE FLUSH WITH TOP OF CABINET



C1198

Figure I-10. Door Hinges and Latches

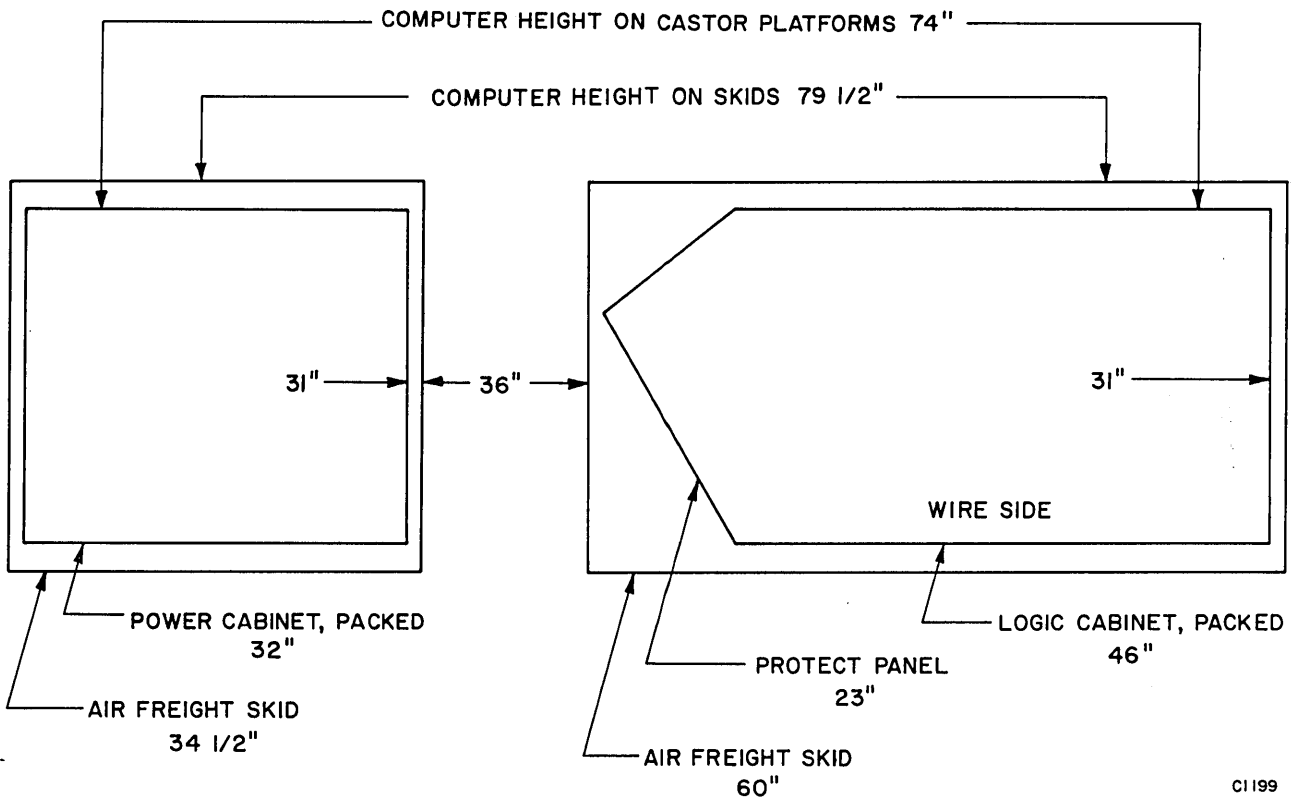


C1189

Figure I-11. Power End Lifting Device Assembly

Split frames can be shipped by truck without the use of skids. If shipment is by air, skids are mandatory. The dimensions of the two cabinets are as follows:

	<u>On Castor Platforms Only</u>	<u>On Castors and Skid</u>
Power Cabinet Weight	450 kg (990 lb)	472 (1038 lb)
Logic Cabinet Weight (Model 810)	427 kg (940 lb)	465 (1023 lb)



CI 199

Figure I-12. Crating Dimensions of Split Frames

**APPENDIX J**

**SWITCHES AND INDICATORS**





# SWITCHES AND INDICATORS

J

This appendix contains illustrations of the power supply switches and indicators.

MARK ANY LIT RED LIGHTS AND TRAPPED CIRCUIT BREAKERS.

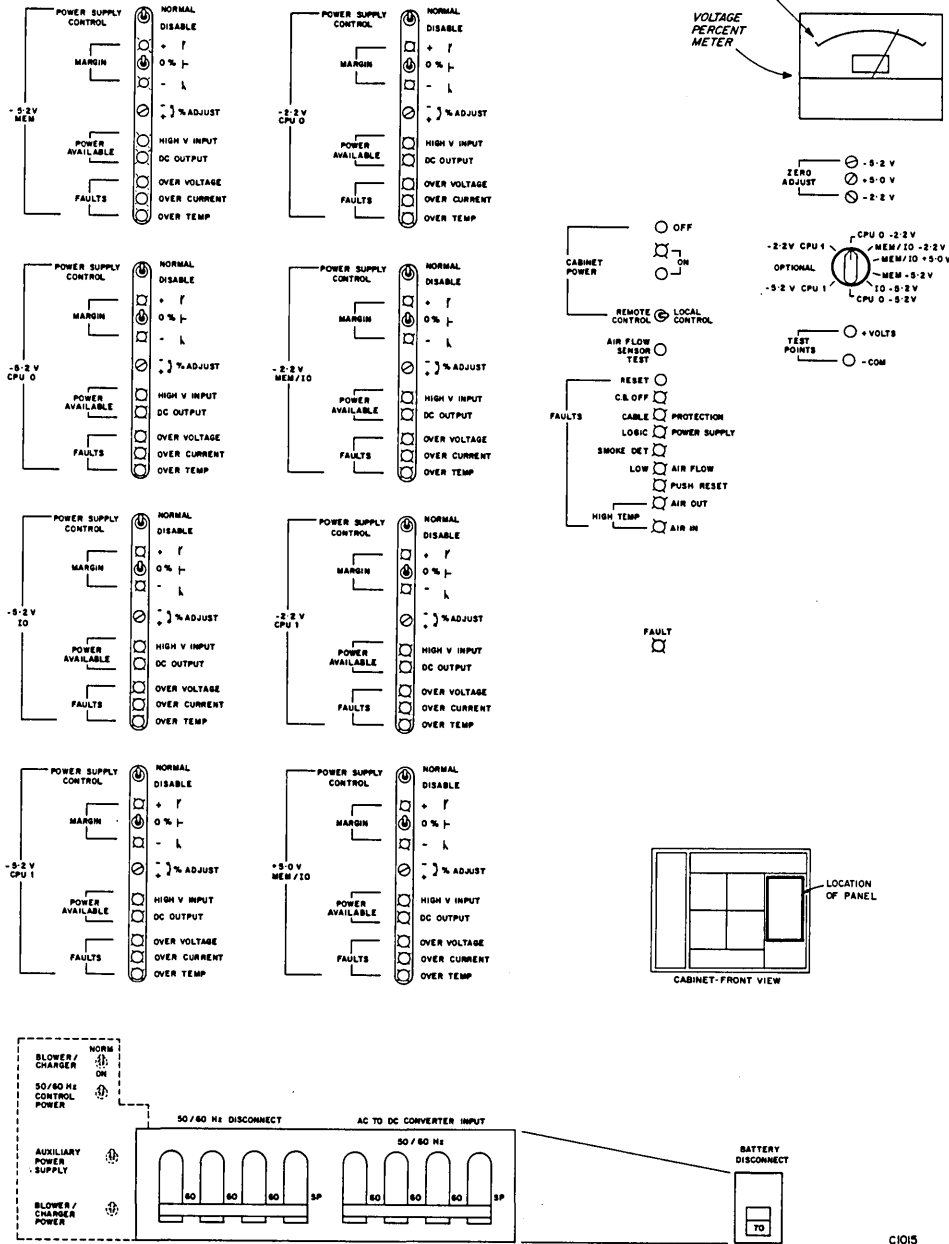
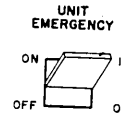
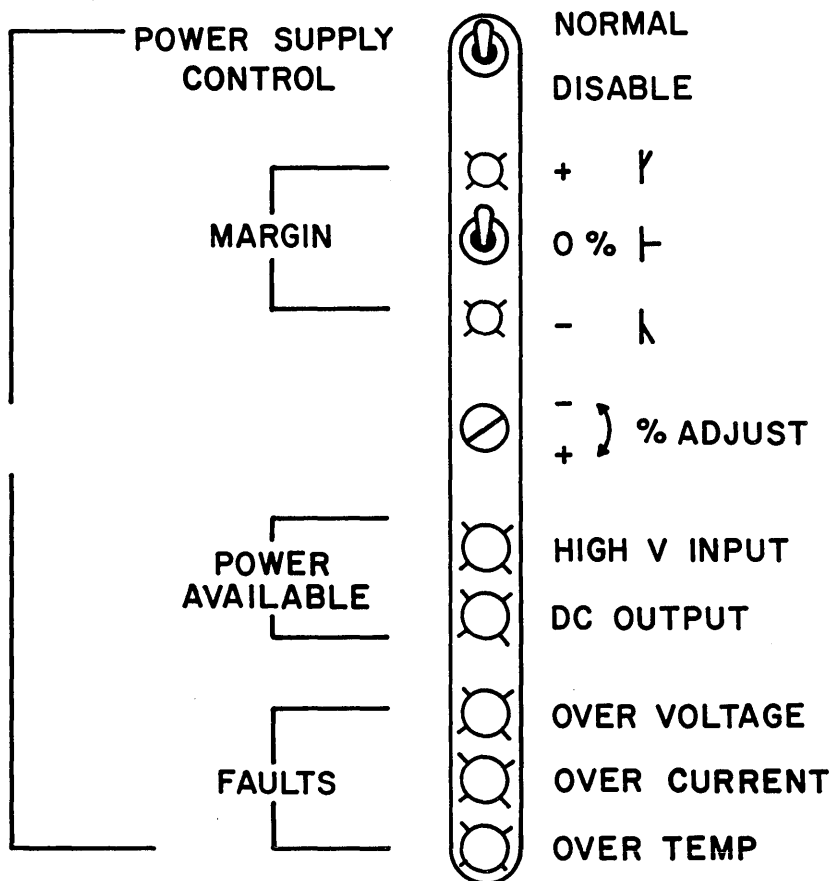
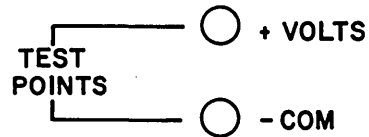
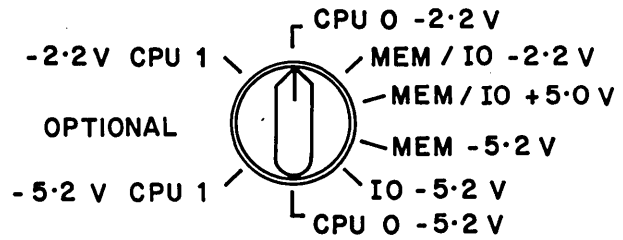
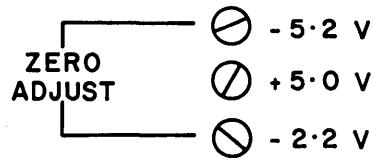
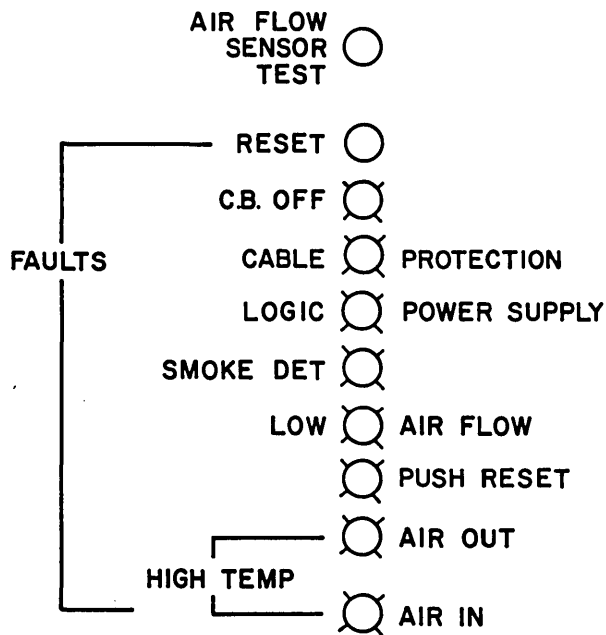
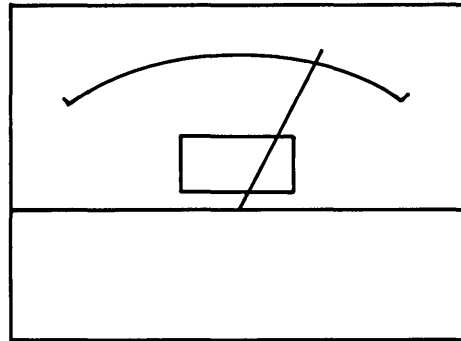
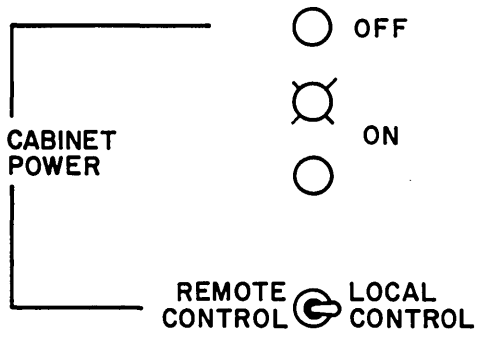


Figure J-1. Power Supply Switches and Indicators



C1017

Figure J-2. Typical Logic Power Supply Control

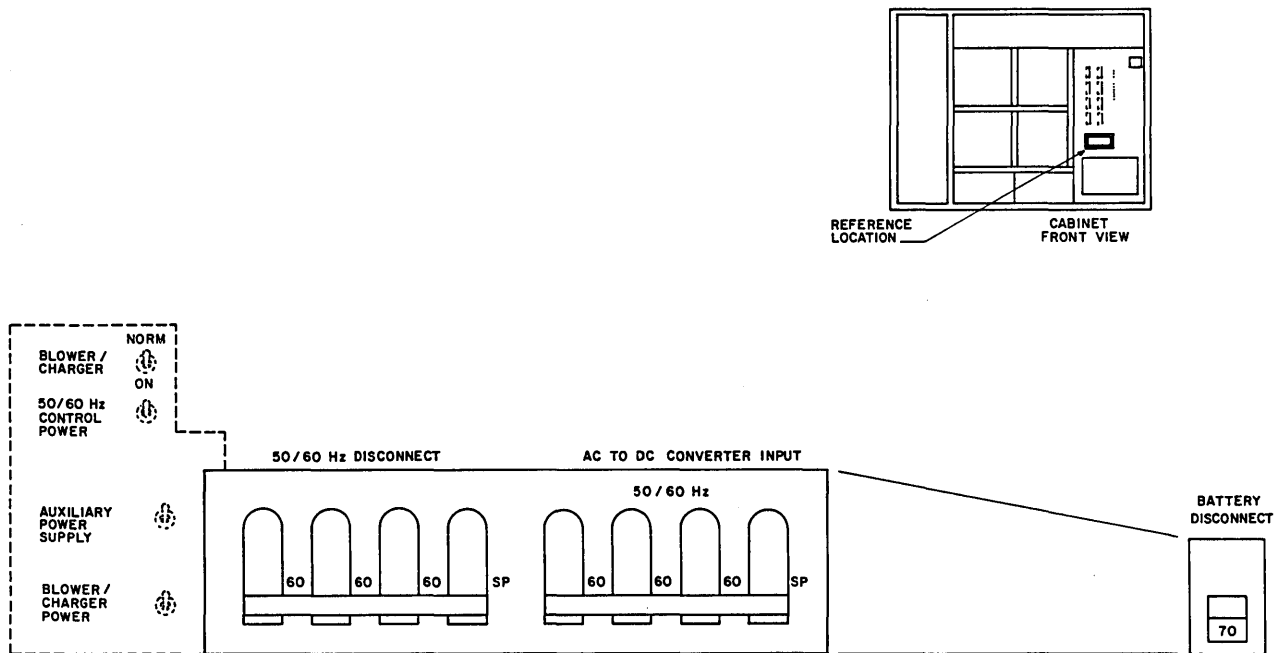


C1019



C1018

Figure J-3. Fault Indicators and Voltage Percent Meter



C1016

Figure J-4. Power, Blower Switches and Circuit Breaker Assembly

**APPENDIX K**

**SYSTEM POWER CONTROL PANEL SETTINGS**



=====

If voltage adjustments are necessary use the following procedures to apply power to the MG set from the SPCP.

NOTE

To power up the MG set without the mainframe, jump J7 to J8 with a jumper wire, and then apply power.

MG SET POWER APPLICATION

This procedure requires a digital voltmeter, FLUKE Model 8020A or equivalent.

- \_\_\_\_\_ 1. Set 50/60-Hz and 400 Hz wall-mounted circuit breaker for SPCP to ON.
- \_\_\_\_\_ 2. Press and release REMOTE ENABLE/LOCAL START button on SPCP.
- \_\_\_\_\_ 3. Wait at least one minute for the MG set to stabilize.
- \_\_\_\_\_ 4. Adjust MG set output voltage as follows:
  - \_\_\_\_\_ a. Locate TB2 inside the SPCP. See figure K-2.
  - \_\_\_\_\_ b. Connect the voltmeter between TB2-6 (neutral) and successively to TB2-3, TB2-4, and TB2-5 (three phases). Record voltage readings:
 

TB2-3	_____
TB2-4	_____
TB2-5	_____
  - \_\_\_\_\_ c. Circle the phase voltage reading which is between the highest phase and lowest phase found in step 4b. Connect the voltmeter between the middle phase and TB2-6.
  - \_\_\_\_\_ d. Adjust VOLTAGE ADJUST setscrew on front of SPCP until the voltmeter indicates 120 V ac.
- \_\_\_\_\_ 5. Read 400-Hz VOLTAGE meter in front of SPCP. Adjust potentiometer R95 in SPCP until meter indicates zero percent. See figure K-2 for location of R95.

## SPCP POWER APPLICATION

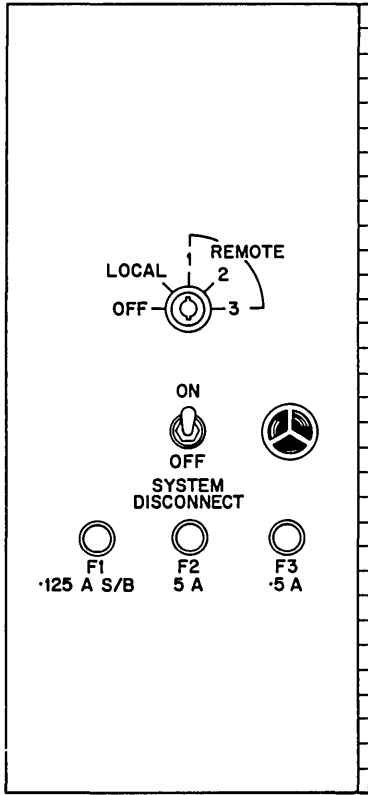
Use the following procedures to apply 50/60-Hz power to the SPCP.

1. Apply 50/60-Hz power as follows:
  - \_\_\_\_\_ a. Set LOCAL/REMOTE switch on left side of SPCP to LOCAL.
  - \_\_\_\_\_ b. Set SYSTEM DISCONNECT switch on left side of SPCP to ON.
  - \_\_\_\_\_ c. Set wall-mounted 50/60 Hz circuit breaker for SPCP to ON.
  
2. Verify that the following conditions are present:
  - \_\_\_\_\_ a. The SPCP fan is running.
  - \_\_\_\_\_ b. POWER AVAILABLE indicator is lit.
  - \_\_\_\_\_ c. Fuse indicators F1, F2, and F3 are not lit.

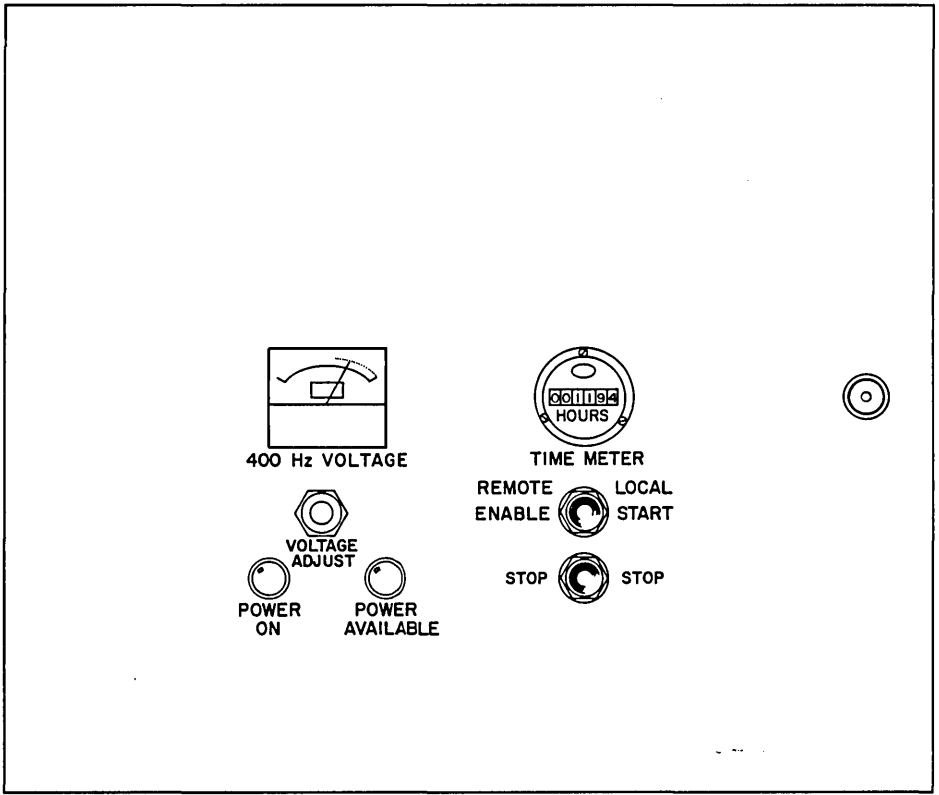
### NOTE

If conditions are not as listed, check all electrical connections to ensure that they are correct.



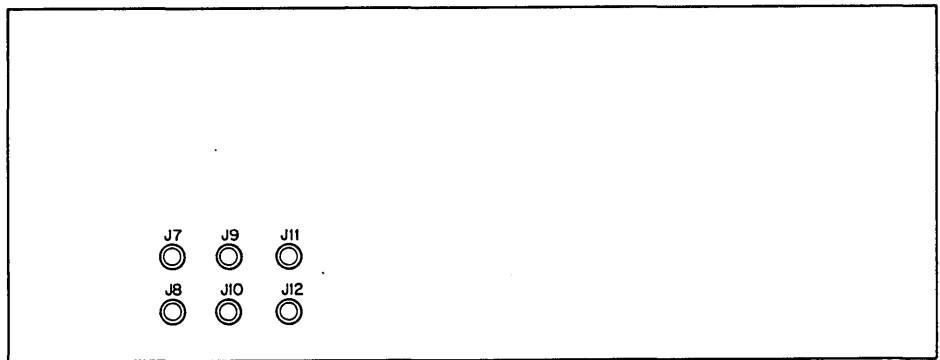
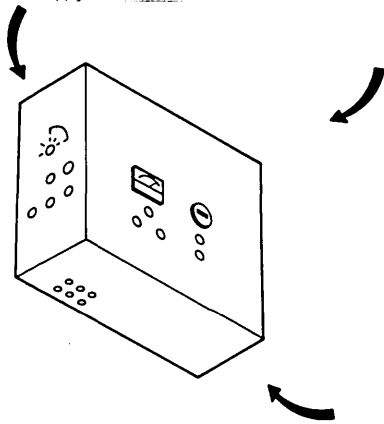


SIDE VIEW



FRONT VIEW

CO107



BOTTOM VIEW

CO107A

Figure K-1. SPCP - Front, Side, and Bottom Views

Notes for Figure K-1. System Power Control Panel - Internal View

- F1 - 0.125 A fuse
- F2 - 5 A fuse
- F3 - 0.5 A fuse
- K - Relay
- L1 - Power on indicator light
- L2 - Power available indicator light
- M1 - 400-Hz voltage meter
- M2 - Running hours meter
- R1 - 120 V, Voltage adjust variable resistor
- R95 - 0 percent adjust variable resistor
- R96 - 2.5 second adjust variable resistor
- R97 - 2 minutes adjust variable resistor
- R98 - 0 minute adjust variable resistor
- S1 - Remote enable local start switch
- S2 - Stop switch
- T - Transformer
- TB - Terminal Block

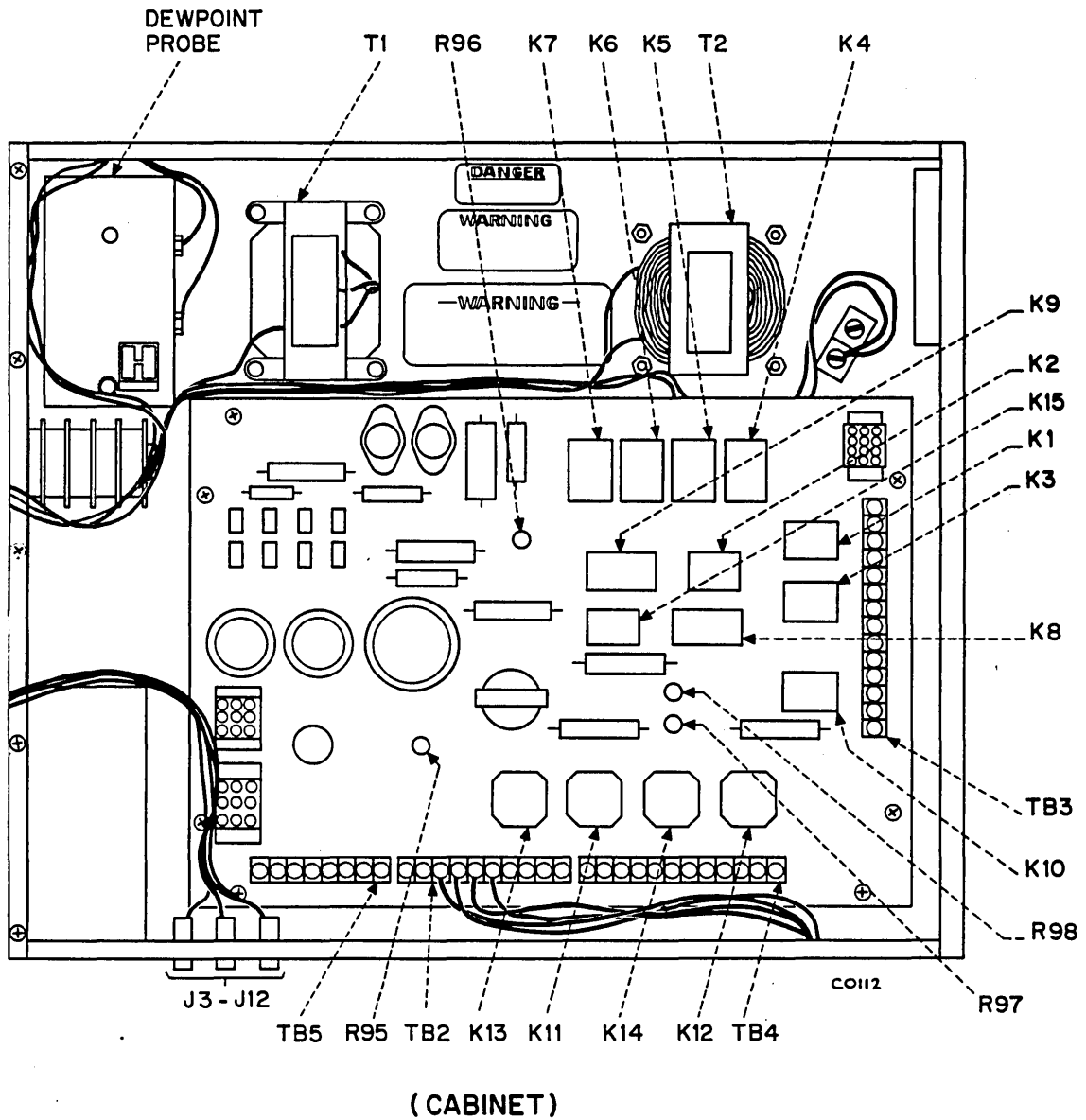


Figure K-2. System Power Control Panel - Internal View

Table K-1. Local/Remote Settings on SPCP and Cabinet for Power On

System	SPCP Local/ Remote Setting	Cabinet Local/ Remote Setting
12.5-kVA MG system, or systems sharing an MG controlled by another SPCP or TMCP without SPCP	Not applicable	LOCAL  MG and mainframe are powered on by pressing CABINET POWER ON switch on 50/60-Hz Power Control Box.
25-kVA MG system with SPCP	LOCAL  Set SYSTEM DISCONNECT switch to ON. Power on MG by depressing REMOTE ENABLE/LOCAL START switch on SPCP and hold for two seconds.	LOCAL  After MG is powered on for 1 minute, and then power on mainframe by pressing CABINET POWER ON switch on 50/60-Hz Power Control Box.
25-kVA MG system with SPCP	LOCAL  Set SYSTEM DISCONNECT switch to ON. Power on MG by depressing REMOTE ENABLE/LOCAL START switch and hold for two seconds.	REMOTE  Mainframe and MG are powered on by pressing REMOTE ENABLE/LOCAL START switch on SPCP.
25-kVA MG system with SPCP	REMOTE 1/2/3  See Hardware Operator's Guide for description.	REMOTE

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NO POSTAGE  
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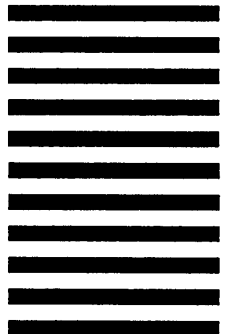
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Installation and Checkout

PUBLICATION NO : 60469450

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