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# **CDI-4000**

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## **DSSI to SCSI Adapter User's Manual**

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## Return and Repair Policy

### WARRANTY PERIOD

The following warranty period is from the date of shipment:

CMD Host Adapter	one year
Cable	90 days
Drive	manufacturer's warranty

### RETURN FOR CREDIT

The allowable period of return for credit from the date of shipment is as follows

CMD Host Adapter	less than 30 days
Cable	less than 30 days
Drive	not applicable

### RETURN FOR REPAIR

#### CMD Host Adapter

##### In-Warranty (Less than 1 year)

- CMD offers a *15 working day turnaround repair service* at the cost of parts only. Defective boards will be repaired and returned to the customer within 15 working days from the date of return to CMD.
- CMD also offers two *in-warranty 24 hour expediting services*:
  - 24 Hour Turnaround Loaner Service:*  
Under this policy, CMD will ship a loaner in 24 hours during regular working days to the customer for a charge of \$100.00 per loaner. Upon receiving the loaner, customer must return the defective board to CMD within seven (7) days for repair. CMD will repair the defective board and return the board to the customer. Customer must then return the loaner in seven (7) days after the receipt of the repaired board. Approval for loaner service is based on credit verification.
  - 24 Hour Turnaround Swap Service:*  
In the case that the defective board is within the first six (6) months of the warranty, CMD, at its own option, offers a 24 hour turnaround swap service. CMD will ship the same model of the board to customer within 24 hours during working days in exchange for the defective board. CMD will swap with a new board if board is not functional upon arrival. For all other cases, swap will occur with either a new or refurbished board for a charge of \$200.00. CMD does not offer swap services for boards that are purchased more than six months from the date of shipment. Customer is responsible for returning the defective board to CMD within seven (7) days after receipt of the swapped board.
- The remaining warranty period shall apply to the repaired or swapped board.

##### Out-of-Warranty (more than 1 year)

- CMD offers a *15 working day turnaround repair service* at a rate of \$300.00 plus parts and freight for all out-of-warranty host adapter boards. Defective boards will be repaired and returned to customer within 15 working days starting with date of return to CMD.
- CMD also offers an *Out-of-Warranty 24 Hour Turnaround Loaner Service*:  
Under this policy, CMD will ship the same model loaner in the 24 hour time frame of working days to customer for an additional charge of \$100.00 plus freight per loaner. The loaner is for use by the customer during the period that the defective board is being repaired. Customer is responsible for returning the defective board to CMD within seven days after the receipt of loaner and returning the loaner in seven (7) days once the defective board is repaired and received. The approval of the loaner service is at CMD's option and based upon customer credit verification.
- CMD will extend warranty for a period of six (6) months on any out-of-warranty repaired board.

#### Cable

- In-Warranty (90 days) - free swap.
- Out-of-Warranty (90 days) - not applicable.

#### Drive

In-Warranty (per manufacturer) - manufacturer charge only.

Out-of-Warranty (per manufacturer) - manufacturer charge plus \$100 CMD handling.

#### RETURN FOR UPGRADE/ UPDATE

##### CMD Host Adapter

###### In-Warranty (less than 1 year)

- CMD offers a *15 working day turnaround different function upgrade service* for boards that can be upgraded to a higher function; and a *free 15 working day turnaround ECO Field Upgrade* for all its boards. CMD will *upgrade* the hardware of its board to a higher function for a charge of the difference of list prices of the original and upgraded functions. CMD will also update its board to its latest firmware release at no charge to the customer. Boards will be upgraded/updated and returned to the customer within 15 working days from the date of return to CMD.
- CMD also offers *24 hour turnaround loaner service* as stated in "RETURN FOR REPAIR."
- The remaining warranty period shall apply to the updated board. For upgraded boards, CMD will extend warranty for a period of six months.

###### Out-of-Warranty (More than 1 year)

- CMD offers a *15 working day turnaround different function upgrade service* for boards that can be upgraded to a higher function at a charge of the difference of list prices of two functions. CMD also offers a *free 15 working day turnaround ECO Field Upgrade* for all its boards. Boards will be upgraded/updated and returned to customer within 15 working days from the date of return to CMD.
- CMD also offers *24 hours turnaround Loaner Service* as stated in "RETURN FOR REPAIR."
- There will be no warranty extension for same function firmware update. For different function Hardware upgrade, CMD will extend warranty for a period of six (6) months.

Drive—same as in RETURN FOR REPAIR.

#### SHIPPING CHARGES

The following shipping charges apply to all REPAIR, SWAP, LOANER, and UPGRADE UNITS.

##### In-Warranty

- Domestic - freight from CMD to customer is to be paid by CMD; freight from customer to CMD is to be paid by customer.
- International - all fees are to be paid by customer (including custom duty and broker fees).

##### Out-of Warranty

- Domestic - all fees are to be paid by customer.
- International - all fees are to be paid by customer (including custom duty and broker fees).

#### GENERAL CONDITIONS

All goods returned to CMD including returns for credit, swap returns, loaner returns, and evaluation returns shall remain in good condition. Any damage or alteration done by the customer will result in a rejection or additional charge to the customer.

Customer must consult CMD Technical Support for authorization of CMD not functional upon arrival boards and swap requests. CMD Sales personnel must be consulted for authorization of returned goods for credit and/or evaluation.



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## Preface

The CDI-4000 Rev 1.3 contains the following changes to the previous revision of the CDI-4000 DSSI™ to SCSI Adapters manual:

- ◆ Instructions for installing the CDI-4007 front panel adapter kit have been added to Chapter 5.
- ◆ Table 6-1 on page 6-13 has been updated to reflect the current LED wiring configuration.
- ◆ Chapter 8 now contains information about three new SCS related parameters (MAX\_HOSTS, TMARKSEARCH and SHORT\_TMARK), as well as the CDI-4000's on-board utilities.
- ◆ Appendix A contains an updated list of supported devices.



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## Table of Contents

<b>1</b>	<b>Introduction</b>	<b>1-1</b>
	How to Use This Manual	1-1
	Conventions	1-2
<b>2</b>	<b>Features and Components</b>	<b>2-1</b>
	Features	2-1
	CDI-4000 Models	2-2
	DSSI and SCSI Bus Cabling	2-3
	Host Computer to CDI-4000	2-3
	CDI-4000 to SCSI Devices	2-4
	Components	2-5
	Ports and Connectors	2-5
	LED Indicators	2-7
<b>3</b>	<b>Hardware Configuration and Installation</b>	<b>3-1</b>
	Determining DSSI Node ID	3-1
	Hardware Configuration	3-2
	General Installation	3-8
<b>4</b>	<b>CDI-4000-SA Installation</b>	<b>4-1</b>
	Installing CDI-4000-SAE and Elite Drives into VAX 4000	4-1
	CDI-4000-SA1 and Universal Drive Installation into VAX 4000	4-12
	Installing CDI-4000-SA2 and 3 1/2-inch Drives into VAX 4000	4-20
<b>5</b>	<b>CDI-4000-SB Installation</b>	<b>5-1</b>
	Installing CDI-4000-SB into MicroVAX 3300 and 3400	5-1
<b>6</b>	<b>CDI-4000-SC Installation</b>	<b>6-1</b>
	CDI-4000-SC Installation into TRIMM DA40 or DA60	6-1

<b>7</b>	<b>CDI-4000-SD Installation</b>	<b>7-1</b>
	Installing CDI-4000-SDA or CDI-4000-SDB into Shoebox	7-2
	Installing CDI-4000-SDC into TRIMM TWR-540-231 Tower	7-11
	Installing CDI-4000-SDC into TRIMM DA40 or DA60	7-17
	Installing CDI-4000 onto Half-Height LCD Holding Bracket	7-23
<b>8</b>	<b>DUP Utility</b>	<b>8-1</b>
	DUP Utility Using Console	8-1
	DUP Utility Using VMS	8-7
	LCD Front Panel Configuration	8-7
	Front Panel LED Indicators	8-7
	Initial Power-On Display	8-8
	LCD Keys	8-9
	Main Setup Menu	8-9
	System-Wide Parameters Menu	8-10
	Device Parameters Menu	8-13
	Overview	8-14
	Naming Conventions Example	8-14
	<b>Appendices</b>	
<b>A</b>	<b>Supported Systems and Devices</b>	<b>A-1</b>
	Systems Supported	A-1
	Operating System Supported	A-1
	SCSI Devices	A-1
	Magnetic disk drives	A-1
<b>B</b>	<b>Troubleshooting</b>	<b>B-1</b>
	Cables	B-1
	LED Indicators	B-1
	CMD Technical Support	B-1
<b>C</b>	<b>Connectors and Jumper Settings</b>	<b>C-1</b>
	Connectors	C-1
	Jumper Settings	C-6
<b>D</b>	<b>Advanced VAXclustering</b>	<b>D-1</b>
	System Information	D-1
	Figuring Your System Configuration	D-4

**Glossary**

**G-1**

**Index**

**I-1**

---

## List of Figures

### 2 Features and Components

2-1: CDI-4000 DSSI and SCSI ports	2-1
2-2: CDI-4000 components	2-6
2-3: LED Indicators	2-7

### 3 Hardware Configuration and Installation

3-1: Configuration prior to CDI-4000 installation	3-2
3-2: DSSI Node ID and SCSI ID configurations	3-3
3-3: DSSI port termination	3-5
3-4: SCSI port active termination	3-6
3-5: SCSI port passive termination	3-7
3-6: Shoebox installation example	3-9
3-7: Cable connection	3-10
3-8: Host Computer DSSI connection	3-11
3-9: DSSI port (J1) cable connection	3-12
3-10: SCSI port (J2) cable connection	3-13
3-11: Power connection	3-14

### 4 CDI-4000-SAE Installation

4-1: CDI-4000-SAE drive installation	4-2
4-2: CDI-4000-SAE fan bracket installation	4-3
4-3: CDI-4000-SAE SCSI cable connection	4-4
4-4: CDI-4000-SAE DSSI cable connection	4-5
4-5: CDI-4000-SAE power connections	4-6
4-6: CDI-4000-SAE board and mylar installation	4-7
4-7: CDI-4000-SAE ISE and drive alignment	4-8
4-8: CDI-4000-SAE ISE and drive installation	4-9
4-9: CDI-4000-SAE front panel connections	4-10

4-10: CDI-4000-SAE front panel installation	4-11
4-11: CDI-4000-SA1 drive installation	4-12
4-12: CDI-4000-SA1 SCSI cable connections	4-13
4-13: CDI-4000-SA1 DSSI and SCSI cabling	4-14
4-14: CDI-4000-SA1 power connections	4-15
4-15: Mounting mylar and standoffs, CDI-4000-SA1	4-16
4-16: CDI-4000-SA1 board mounting	4-17
4-17: CDI-4000-SA1 ISE and drive installation	4-18
4-18: CDI-4000-SA1 front panel connections	4-19
4-19: CDI-4000-SA1 ISE front panel installation	4-20
4-20: CDI-4000-SA2 drive installation	4-21
4-21: Mounting mylar for CDI-4000-SA2	4-21
4-22: CDI-4000-SA2 power connection	4-22
4-23: CDI-4000-SA2 SCSI cable connections	4-23
4-24: CDI-4000-SA2 DSSI cable connections	4-24
4-25: CDI-4000-SA2 board mounting	4-25
4-26: CDI-4000-SA2 right bracket installation	4-26
4-27: CDI-4000-SA2 ISE and drive alignment	4-27
4-28: CDI-4000-SA2 ISE connections	4-28
4-29: CDI-4000-SA2 ISE front panel installation	4-29

## **5 CDI-4000-SB Installation**

5-1: Connecting mylar to the CDI-4000	5-2
5-2: SCSI cable connection	5-3
5-3: Mounting the CDI-4000 onto the drive	5-4
5-4: Mounting the brackets to the drive	5-5
5-5: Removing the MicroVAX front panel	5-6
5-6: Removing the DSSI control panel	5-7
5-7: Installing the bracket into the MV cavity	5-8
5-8: Sliding the drive into the cavity	5-9
5-9: Power connections	5-10

## **6 CDI-4000-SC Installation**

6-1: Mounting bracket installation	6-3
6-2: SCSI port (J2) cable connection	6-4
6-3: Mounting the CDI-4000 into DA40	6-5
6-4: Installing the DSSI bracket	6-6
6-5: DSSI port (J1) cable connection	6-7
6-6: Host Computer DSSI connection	6-8

6-7: Power connection	6-9
6-8: DA40 Fan Compartment with Mate-N-Lok	6-10
6-9: DA60 Fan Compartment with Mate-N-Lok	6-11
6-10: Connecting J5 and J6	6-12
6-11: LCD module (back view)	6-14

## **7 CDI-4000-SD Installation**

7-1: Mounting the CDI-4000	7-3
7-2: Installing the DSSI bracket	7-4
7-3: DSSI ports for shoebox	7-5
7-4: Host Computer DSSI connection	7-6
7-5: SCSI port (J2) cable connection	7-7
7-6: Power connection	7-8
7-7: Connecting rainbow cable to J8	7-9
7-8: Mounting the CDI-4000	7-11
7-9: Slide the tray into the tower	7-12
7-10: Installing the DSSI bracket	7-13
7-11: DSSI port for tower	7-14
7-12: Sliding the tray into the DA40 or DA60	7-18
7-13: Installing the DSSI bracket	7-19
7-14: DSSI port for TRIMM DA40 or DA60	7-20
7-15: Power connection	7-21
7-16: Connecting the CDI-4000 and mylar	7-23
7-17: Mounting CDI-4000 to LCD holding bracket	7-25

## **8 DUP Utility**

8-1: Example of DSSI node ID configuration	8-2
8-2: Example of CDI-4000 configuration	8-3
8-3: Example of CDI-4000 configuration	8-5
8-4: Example of DSSI device configuration	8-6
8-5: LCD Display Parameters	8-14
8-6: Naming Conventions	8-14



## **Appendices**

### **C Connectors and Jumper Settings**

C-1: Non-shielded SCSI device connector C-1

C-2: J4 C-3

C-3: J6 and J5 C-4

### **D Advanced VAXclustering**

D-1: Example of VAXcluster D-3

---

## List of Tables

### 2 Features and Components

2-1: CDI-4000 Models and Options	2-2
2-2: Active/Passive Termination Selection	2-5
2-3: Ports and Connectors	2-5
2-4: LED Indicators	2-7

### 3 Hardware Configuration and Installation

3-1: DSSI Port Node ID Jumper Selections	3-3
3-2: Initiator SCSI Port ID Jumper Selections	3-4
3-3: CDI-4000 Models Kit Assembly Installation Procedures	3-8

### 6 CDI-4000-SC Installation

6-1: LCD LED's and Drive SCSI IDs	6-13
-----------------------------------	------

### 7 CDI-4000-SD Installation

7-1: LCD LEDs and Drive SCSI IDs	7-10
7-2: LCD LEDs and Drive SCSI IDs	7-16
7-3: LCD LEDs and Drive SCSI IDs	7-22

### 8 DUP Utility

8-1: LCD Keys	8-9
---------------	-----

## Appendices

### C Connectors and Jumper Settings

C-1: Connectors	C-1
C-2: SCSI Port (J2) Connector Pin Assignments	C-2
C-3: J4, RS-232 Port Connector Pin Assignments	C-3
C-4: J5, LCD Display Port Connector Pin Assignments	C-4

C-5: J6, ISE and LCD Front Panel Connector Pin Assignments	C-5
C-6: DSSI Port (J1) ID Jumper Selections	C-6
C-7: SCSI Port (J2) ID Jumper Selections	C-6
C-8: Jumper Settings	C-7
C-9: Jumper Settings on LCD Front Panel Display	C-7

## **D Advanced VAXclustering**

D-1: System 1, DSSI Bus 0	D-2
D-2: System 1, DSSI Bus 1	D-2
D-3: System 2, DSSI Bus 0	D-3
D-4: System 3, DSSI Bus 0	D-3
D-5: System _____, DSSI Bus _____	D-4
D-6: System _____, DSSI Bus _____	D-4
D-7: System _____, DSSI Bus _____	D-5
D-8: System _____, DSSI Bus _____	D-5

This User's Guide details the features, installation, and operation of your CDI-4000™. It includes information on setting up and configuring the system for use.

## How to Use This Manual

This guide has eight chapters and four appendices. Each chapter explains a different aspect of preparing your system and CDI-4000 for use. You may refer to the appendices for further configuration and troubleshooting information. The following descriptions summarize each section.

**Chapter 1: Introduction** explains the purpose of this guide and details the conventions used.

**Chapter 2: Features and Components** describes the CDI-4000 and details its distinct features.

**Chapter 3: Hardware Configuration and Installation** describes procedures for configuring the CDI-4000, installing the CDI-4000-AA, CDI-4000-AB, CDI-4000-AC into a general system or storage box. This chapter also describes how to install SCSI devices and terminate the DSSI and SCSI buses.

**Chapter 4: CDI-4000-SA Installation** describes procedures for installing the CDI-4000-SA, the ISE canister kit, both Elite and universal 5¼-inch drives, and two 3½-inch drives in one ISE canister kit into the VAX 4000.

**Chapter 5: CDI-4000-SB Installation** describes procedures for installing the CDI-4000-SB, front panel adapter kit (CDI-4007) and SCSI devices into the MicroVAX 3300 and 3400.

**Chapter 6: CDI-4000-SC Installation** describes procedures for installing the CDI-4000-SC and the LCD Display Panel into the TRIMM DA40 or DA60.

**Chapter 7: CDI-4000-SD Installation** describes procedures for installing the CDI-4000-SD half-height LCD assembly into various external chassis including a shoebox, tower, and TRIMM DA40 or DA60. Instructions are also given for mounting the CDI-4000 to the half-height LCD holding bracket.

**Chapter 8: DUP Utility** describes how to configure the operating system and the CDI-4000 using the DUP Utility from the system console, VMS, and the LCD Display Panel. Also demonstrates the CDI-4000's on-board utilities.

**Appendix A: Supported Devices and Operating systems** lists the SCSI devices and operating systems compatible with the CDI-4000.

**Appendix B: Troubleshooting** gives some troubleshooting guidelines for the CDI-4000.

**Appendix C: Connectors and Jumper Settings** lists all connectors and jumper settings for the CDI-4000.

**Appendix D: Advanced VAXclustering** describes how to configure your computing environment for advanced VAXclustering.

## Conventions

The following conventions are used in the CDI-4000 User's Guide.

**Keycaps**—Characters in square brackets represent keys on your keyboard. For example, "Press [Esc][F1][F2]" means press the [Esc][F1][F2] key. When two or more keys are joined by a plus sign (+), press those keys at the same time.

**Commands**—Text in italics represent commands that can be used on a system, such as *show dev*.

**NOTE** Sometimes italics are used for emphasis; for example, *do not* remove jumper shunt W13.

**Entering Text or Commands on Screen**—Text or commands that must be entered on screen are bolded italics as ***show dev di***; be sure to type the text or command and press [Enter].

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## Features and Components

The CDI-4000 is a DSSI to SCSI adapter which allows you to connect devices such as hard disk drives, erasable optical drives (without any software patches or special drivers), CD-ROM drives, and WORM drives to a system such as the VAX 4000 and MicroVAX 3300.

### Features

For purposes of this manual, the port connecting to the host computer, J1 on the CDI-4000, is called the DSSI Port. The port connecting to the SCSI devices, J2, is called the SCSI Port. These devices may include disk, optical drives, CD-ROM, and WORM drives. The CDI-4000 plays a role of initiator to the SCSI devices from J2, see Figure 2-1.

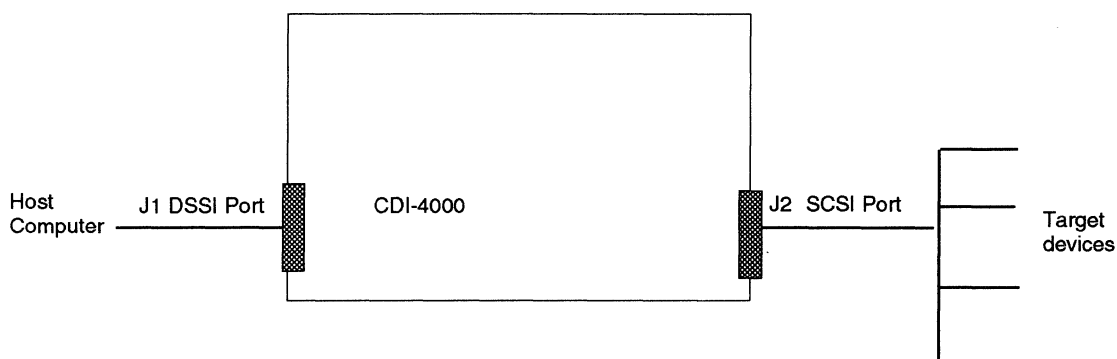


Figure 2-1: CDI-4000 DSSI and SCSI ports

## CDI-4000 Models

The following is a list of the different models and options for the CDI-4000.

**Table 2-1 CDI-4000 Models and Options**

Model	Features	Supported
CDI-4000-AA	The DSSI to SCSI adapter	1 SCSI device
CDI-4000-AB	The DSSI to SCSI adapter	2 SCSI devices
CDI-4000-AC	The DSSI to SCSI adapter	7 SCSI devices
CDI-4000-SAE	The DSSI to SCSI adapter; the ISE (integrated storage element) kit for integrating one Seagate® Elite drive into any VAX 4000 cabinet.	1 SCSI device
CDI-4000-SA1	The DSSI to SCSI adapter; the ISE (integrated storage element) kit for integrating one universal drive into any VAX 4000 cabinet.	1 SCSI device
CDI-4000-SA2	The DSSI to SCSI adapter; the ISE (integrated storage element) kit for integrating one 5¼-inch drive or two 3½-inch drives into one VAX 4000 slot.	2 SCSI device
CDI-4000-SB	The DSSI to SCSI adapter; the MicroVAX kit for complete integration into any DSSI-based MicroVAX cabinet.	1 SCSI device
CDI-4000-SC	The DSSI to SCSI adapter; the LCD Display Panel for easy integration into Rack Mount TRIMM® DA40 or DA60, Table Top, or Desktop subsystem packages.	7 SCSI devices
CDI-4000-SDA	The DSSI to SCSI adapter; the half-height LCD assembly for easy integration into shoebox.	1 SCSI devices
CDI-4000-SDB	The DSSI to SCSI adapter; the half-height LCD assembly for easy integration into shoebox.	2 SCSI devices
CDI-4000-SDC	The DSSI to SCSI adapter; the half-height LCD assembly for easy integration into shoebox, tower or TRIMM DA40 or DA60.	7 SCSI devices
CDI-4000-ISE	The ISE (integrated storage element) kit for integration into any VAX 4000 cabinet Front Panel Bezel with control panel and drive canister for mounting 5¼-inch SCSI device and necessary cables.	
CDI-4000-MV	The MicroVAX kit for complete integration into any DSSI-based MicroVAX cabinet; includes mounting assembly and necessary cables.	
CDI-4000-LCD	The LCD Display Panel for easy integration into Rack Mount TRIMM DA40 or DA60, Table Top, or Desktop subsystem packages.	

## DSSI and SCSI Bus Cabling

The CDI-4000 contains one 50-pin DSSI port, J1, and one 50-pin SCSI port, J2 connected to the SCSI devices. When the CDI-4000 and the SCSI devices are installed in the same cabinet which meets EMI/RFI shielding requirements, a 25-signal twisted-pair cable must be used for connecting the Host, the CDI-4000 (at J2) and the SCSI devices. When the CDI-4000 and the SCSI devices are installed in separate cabinets, a shielded SCSI cable should be used to meet FCC requirements.

A minimum conductor size of 28 AWG must be used to minimize noise effects and ensure proper distribution of optional terminator power. The maximum cable length is 6.0 meters or 20 feet in single-ended mode.

## Host Computer to CDI-4000

This section details the DSSI Port and proper termination for J1 through use of terminator resistors and terminator power.

### ***DSSI Port***

J1 on the CDI-4000 is a 50-pin DSSI connector which connects to the host computer. The CDI-4000, to the host computer, looks very much like an ordinary DSSI device.

Each device on the DSSI bus requires a unique identification address (specifically 0-7). ID 7 has the highest priority on the bus and ID 0 has the lowest priority. The CDI-4000 is factory configured to 0, at J1. Select a DSSI ID for the CDI-4000 that is not currently being used on the system (to check ID number perform *show device* ). See Chapter 3 for DSSI Node ID selections from on-board jumpers.

### ***Termination at J1***

Terminator resistors, RN2 and RN4, are removable 270-ohm and RN1 and RN3 are removable 120-ohm terminator resistor packs for the J1 DSSI Port. DSSI bus specifications require the cable to be terminated at both *physical* ends. Termination is usually required at J1 on the CDI-4000 if it is at the end of the DSSI cable. See Chapter 3 for proper termination instructions.

The CDI-4000 can supply power to the TERMPWR (pin 23 through 28) of the DSSI connector J1 through a diode, a fuse (F1), and a jumper (W1). If the host computer does not supply terminator power, place jumper shunt on W1 (see Chapter 3 for termination instructions).



## **CDI-4000 to SCSI Devices**

This section details the SCSI Port and proper termination for J2 through the use of terminator resistors and terminator power.

### ***SCSI Port***

J2 on the CDI-4000 is a 50-pin single-ended SCSI connector which connects to the target devices. The CDI-4000 is factory configured to SCSI ID 7 at J2. See Chapter 3 for SCSI Port ID settings from on-board jumpers.

Since the CDI-4000 is factory configured to SCSI ID 7, the SCSI ID of the target devices connected to the CDI-4000 should be set from SCSI ID 0 to 6 starting at SCSI ID 0.

### ***Termination at J2***

Terminator resistors, RN16, RN17, and RN18, are removable 220/330-ohm passive or 110-ohm active (factory set) terminator resistor packs for J2. SCSI bus specifications requires the cable to be terminated at both *physical* ends of the SCSI bus. It is recommended that these resistors remain in place if the CDI-4000 (at J2) is at one *physical* end of the cable.

The CDI-4000 supplies terminator power to the TERMPWR pin (pin 26) of SCSI connector (J2) through a fuse (F2), a diode, and jumper block W12. To install terminator power, install W12. Since the J2 SCSI port acts like an initiator to the target devices on the bus, W12 should remain installed.

Any SCSI terminator (on-drive or external) needs to be powered by at least one SCSI device, otherwise the SCSI signals will be pulled down. Typically, an initiator (SCSI host adapter) provides the power to the on-board terminator, the external SCSI terminator, or the on-drive terminator when the drive is powered OFF.

Anytime an external SCSI terminator (instead of an on-drive SCSI terminator) is used, the SCSI terminator power option of the CDI-4000 must be enabled at jumper shunt W12.

### **Active/Passive Termination**

The CDI-4000 has a new feature that allows you to select active or passive termination for J2 SCSI connector. Active termination contains resistor networks and a voltage regulator. Passive termination contains only resistor networks. Refer to “Termination at J2” in this chapter for specifications on ohms. Table 2-2 details jumper settings for active/passive termination.

**Table 2-2 Active/Passive Termination Selection**

W11	1-2 IN	Active Termination enabled for SCSI port J2 (F)
W11	2-3 IN	Passive Termination enabled for SCSI port J2

Note that (F) means factory setting.

## **Components**

This section details the CDI-4000 components.

### **Ports and Connectors**

Table 2-3 lists the ports and connectors on the CDI-4000.

**Table 2-3 Ports and Connectors**

J1	DSSI Interface
J2	SCSI Interface
J3	Power connector
J4	Serial Port for RS-232 Interface
J5	LCD Interface
J6	ISE or LCD Interface

Figure 2-2 illustrates the CDI-4000.

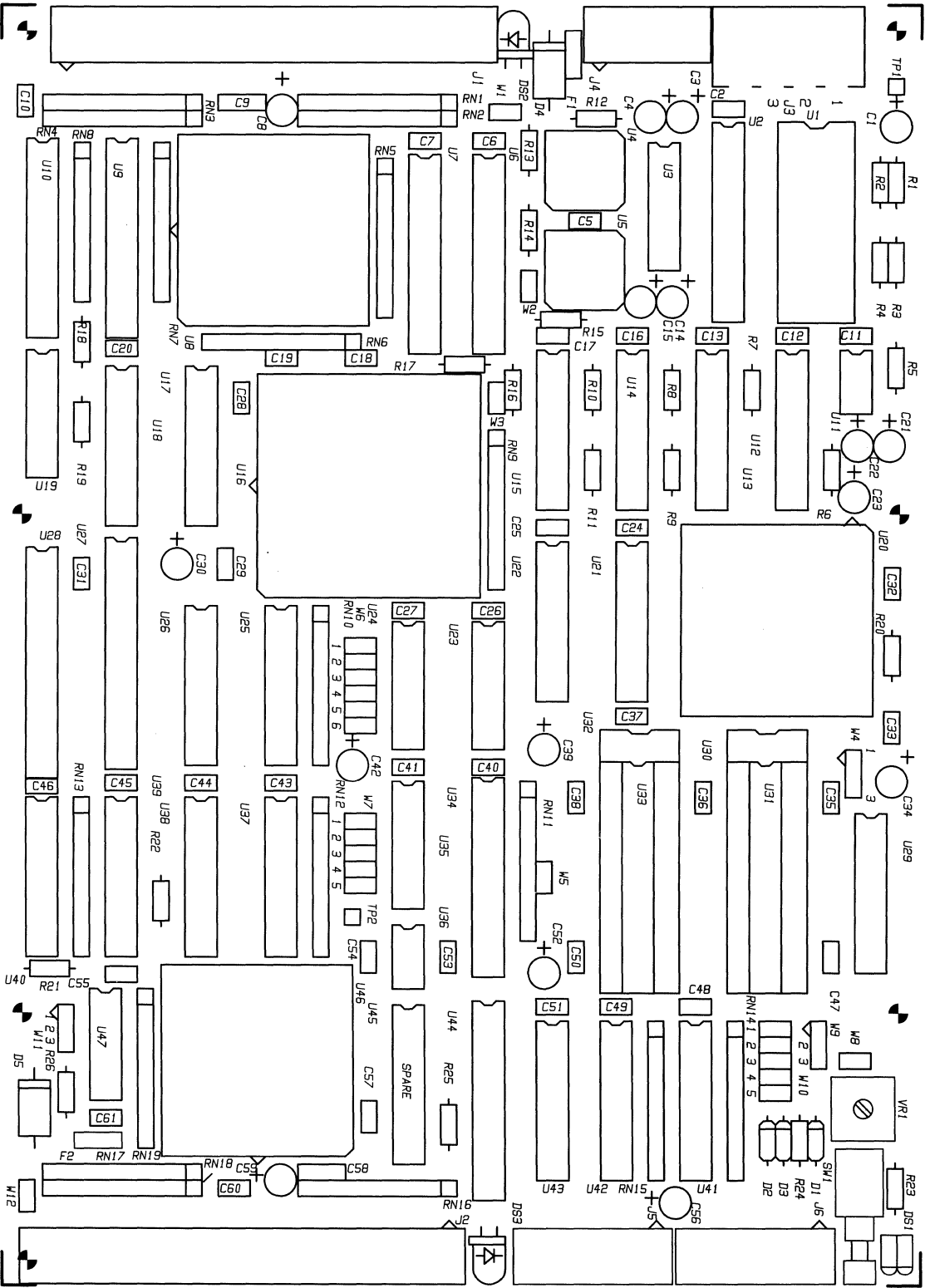


Figure 2-2: CDI-4000 components

# LED Indicators

LED indicators light up when the CDI-4000 is installed and powered “ON.” The green lights indicate normal functions of the CDI-4000; the red light indicates a possible problem. DS1 is located next to J6, DS2 is next to J1, and DS3 is next to J2.

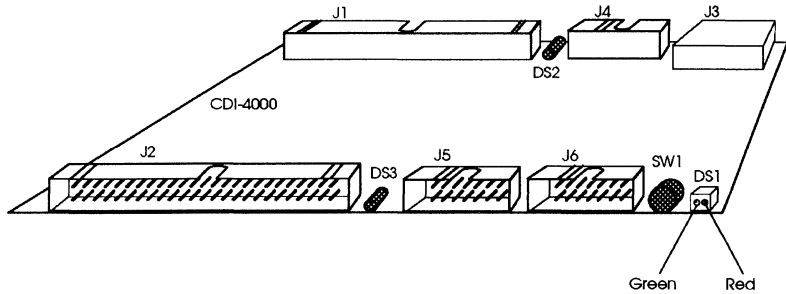


Figure 2-3: LED Indicators

Table 2-4 lists the LED indicators for the CDI-4000.

Table 2-4 LED Indicators

DS1	Green LED. This LED blinks during SCSI activity. Red LED, blinks 15 times upon bootup. This LED is “ON” if there is an error condition.
DS2	This LED will be “ON” whenever TERMPWR is active on the DSSI bus, at J1. This includes TERMPWR supplied by the CDI-4000 or other device(s) on the DSSI bus.
DS3	This LED will be “ON” whenever TERMPWR is active on the SCSI bus. This includes TERMPWR supplied by the CDI-4000 or other device(s) on the SCSI bus.
SW1	Reset Switch



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## Hardware Configuration and Installation

Hardware Configuration and Installation involves determining DSSI node ID, configuring the hardware, terminating each end of the DSSI and SCSI buses, identifying each port, and general installation procedures for the CDI-4000 and SCSI devices. This chapter is organized in sequence; refer to each section for procedures.

### Determining DSSI Node ID

The CDI-4000 must have a unique node number on the DSSI bus. Since your VAX computer will most likely be configured for DSSI node IDs 7 or 6, the CDI-4000 node ID must be set to a unique node number starting from 0 to 7. If another device on the DSSI bus has ID of 0, set the ID to 1, 2, 3, or another number up to 7.

**NOTE** J1's node ID must be set to the same ID that it is set to in the operating system software.

To determine the DSSI node ID for the CDI-4000, follow these steps.

**WARNING** DO NOT connect the CDI-4000 to the system at this time!

1 At the console prompt, >>>, enter:

>>>*sho dev*

The screen will display all devices and their respective node IDs, as shown in the example in Figure 3-1.

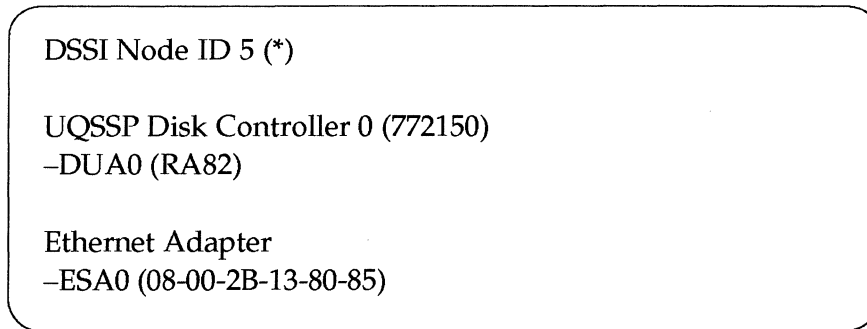


Figure 3-1: Configuration prior to CDI-4000 installation

- 2 Determine a *unique* node ID (between 0 to 7) for the CDI-4000. Remember or note this ID number for configuring jumpers as shown in Table 3-1, DSSI Port Node ID Jumper Selections.

## Hardware Configuration

Hardware configuration of the CDI-4000 may vary with each system and device. Due to the various options for configuring the CDI-4000, this section must be completed prior to installing the CDI-4000 and its respective SCSI devices. Upon completion of hardware configuration, see your respective "Installation" section or chapter (see Table 3-3).

- 1 Turn the host computer completely OFF.
- 2 Carefully unpack the CDI-4000 and place on a non-metallic surface.

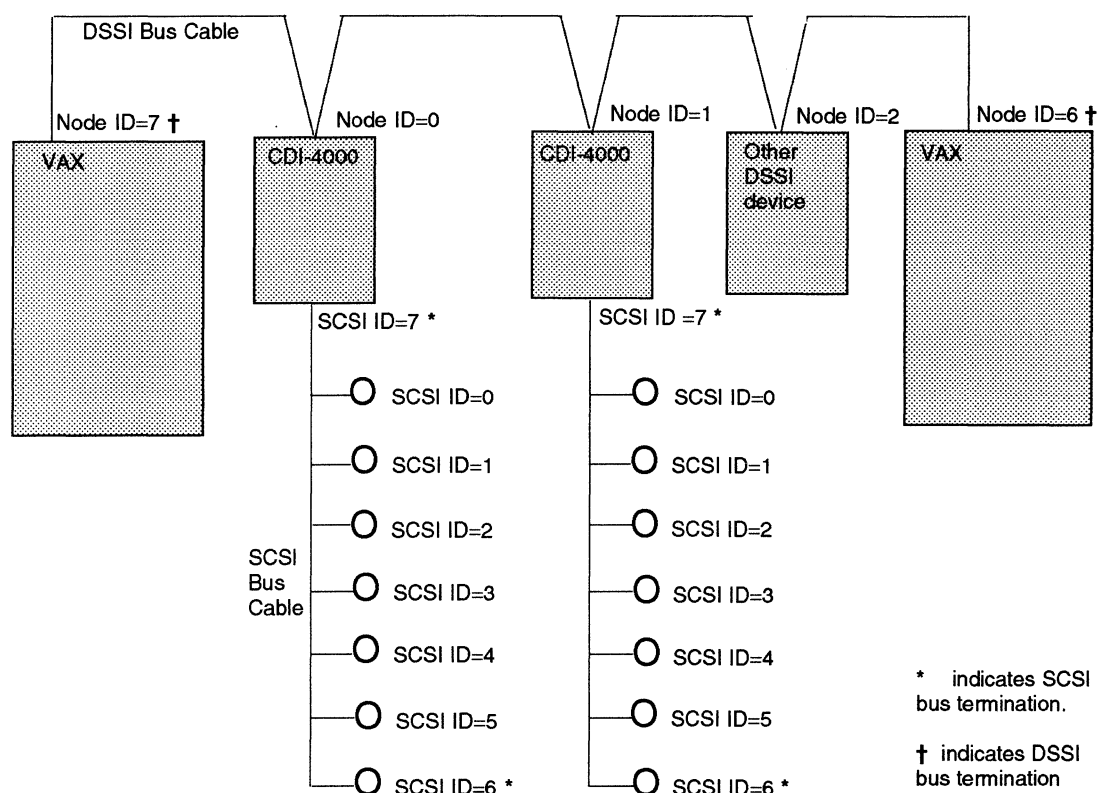
**WARNING** Be sure to wear anti-static wrist straps or equivalent to protect the CDI-4000 from electrostatic damage.

- 3 Use the jumper selections in Table 3-1 and set DSSI Port node ID (J1) to the number specified in step 2 of "Determining DSSI Node ID."

**Table 3-1 DSSI Port Node ID Jumper Selections**

CDI-4000 DSSI Node ID	W6-1	W6-2	W6-3
7	IN	IN	IN
6	IN	IN	OUT
5	IN	OUT	IN
4	IN	OUT	OUT
3	OUT	IN	IN
2	OUT	IN	OUT
1	OUT	OUT	IN
0 (factory)	OUT	OUT	OUT

Figure 3-2 illustrates an example of configuring a system.

**Figure 3-2: DSSI Node ID and SCSI ID configurations**



- 4 Make sure jumpers are on W7-1, W7-2, and W7-3 to identify the SCSI port (J2) as ID 7. If another device on the SCSI bus has SCSI ID 7, set the J2 SCSI ID to 6, 5, 4, or another number down to 0 by placing jumpers over the pins as listed in Table 3-2 (see Chapter 2, section “CDI-4000 to SCSI Devices” for complete explanation of SCSI ID).

**Table 3-2 Initiator SCSI Port ID Jumper Selections**

CDI-4000 SCSI ID	W7-1	W7-2	W7-3
7 (factory)	IN	IN	IN
6	IN	IN	OUT
5	IN	OUT	IN
4	IN	OUT	OUT
3	OUT	IN	IN
2	OUT	IN	OUT
1	OUT	OUT	IN
0	OUT	OUT	OUT

- 5 Terminate each *physical* end of the DSSI bus connected at J1. If CDI-4000 is not at one end of the DSSI bus, *remove terminators* at J1. Follow the instructions below (see Figure 3-3):

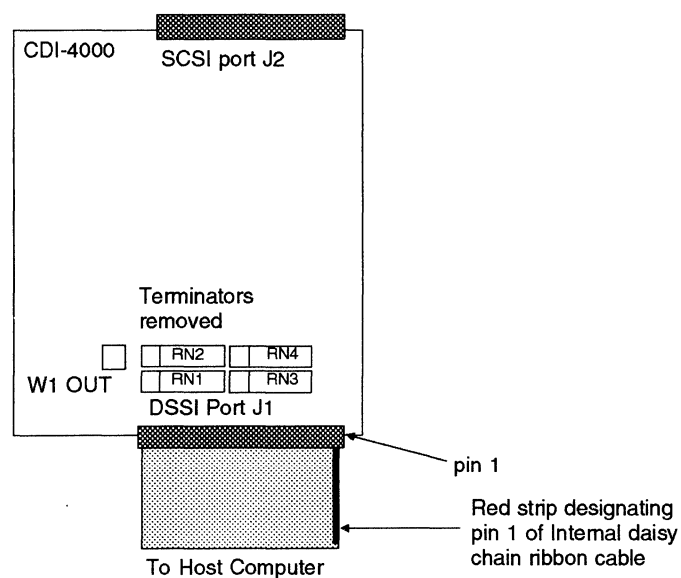
*To remove terminators at J1:*

Remove the four (4) terminators in locations RN1, RN2, RN3, and RN4 from the CDI-4000 located near J1. Remove jumper shunt in W1 to disable TERMPWR at J1.

**WARNING** RN1 and RN3 are 120 ohm; RN2 and RN4 are 270 ohm.

*To install terminators at J1:*

Put four (4) terminators in locations RN1, RN2, RN3, and RN4 near J1 (numbers must face J1). Put jumper shunt in W1 to supply TERMPWR (make sure the host computer is not supplying terminator power).



**Figure 3-3: DSSI port termination**

- 6 Terminate each *physical* end of the SCSI bus connected at J2. *DO NOT* terminate devices in the middle of the SCSI bus. If the CDI-4000 is in the middle of the SCSI bus, *remove terminators at J2*.

SCSI devices can be terminated directly on the device (see manufacturer's documentation) or by using an external terminator.

### Active Termination

*To install terminators at J2:*

Put three (3) active 110-ohm terminators in locations RN16, RN17, and RN18 (active resistor numbers end in 111). Pin 1 of resistor must align with pin 1 of the socket shown by the white mark in the Figure 3-4.

Put jumper shunt in W12 (this allows for +5-volts to be sent to the external terminator at the end of the SCSI bus). See Figure 3-4.

**NOTE** Terminator pin 1 is marked by a dot.

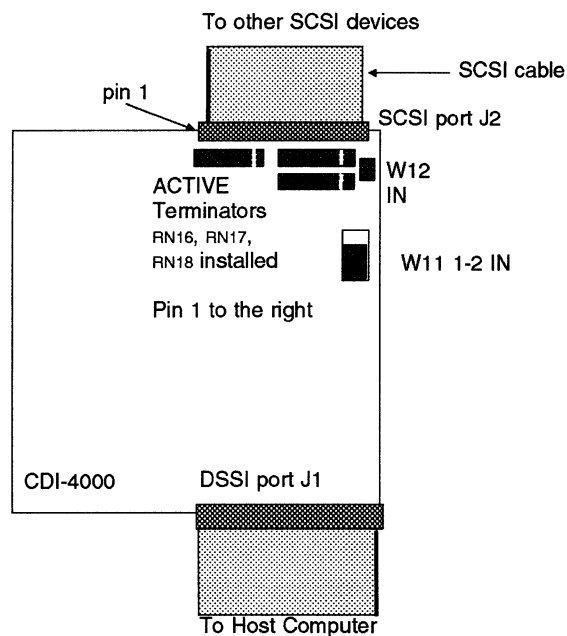


Figure 3-4: SCSI port active termination

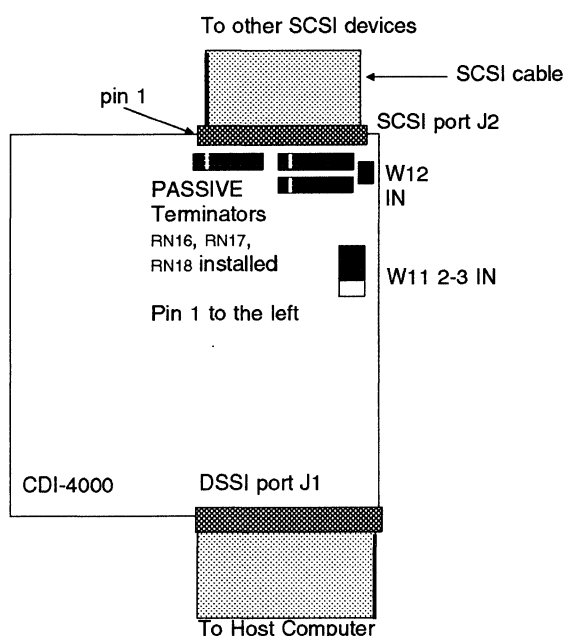
**WARNING** Install W11 1-2 IN for active termination; W11 2-3 IN for passive termination.

## Passive Termination

*To install terminators at J2:*

Put three (3) passive 220/330-ohm terminators in locations RN16, RN17, and RN18 (final numbers on the resistors must read 221331). Pin 1 of resistor must align with pin 1 of the socket shown by the white mark in the Figure 3-5).

Put jumper shunt in W12 (this allows for +5-volts to be sent to the external terminator at the end of the SCSI bus). See Figure 3-5.



**Figure 3-5: SCSI port passive termination**

*To remove terminators at J2:*

Remove the three (3) terminators in locations RN16, RN17, and RN18, next to J2 on the CDI-4000. W12 may be removed if another device is supplying terminator power.

## General Installation

The CDI-4000 may be installed inside the chassis of the SCSI device if space constraints allow, inside a storage box like the DEC BA42 Storage Expansion Box, or inside a system like the VAX system.

This section details installation procedures for the CDI-4000-AA, CDI-4000-AB, CDI-4000-AC and their respective SCSI devices without kit assemblies. For installation procedures for CDI-4000 with kit assemblies, see Table 3-3.

**Table 3-3 CDI-4000 Models Kit Assembly Installation Procedures**

Model	Kit Assembly and Enclosure	Chapter
CDI-4000-SAE, CDI-4000-SA1, CDI-4000-SA2	ISE canister kit for the VAX 4000	see Chapter 4
CDI-4000-SB	ISE canister kit for the MicroVAX	see Chapter 5
CDI-4000-SC	LCD Display Panel for TRIMM DA40 or DA60	see Chapter 6
CDI-4000-SDA, CDI-4000-SDB, CDI-4000-SDC	half-height LCD assembly for shoebox, tower, TRIMM DA40 or DA60	see Chapter 7

For general installation procedures of the CDI-4000-AA, CDI-4000-AB, and CDI-4000-AC (without kit assemblies), follow these instructions.

- 1 Carefully install the CDI-4000 into an assigned slot inside a storage box, shoebox, or system, see Figure 3-6 as an example.

- WARNING**
- ❶ **Make sure the CDI-4000 or any of its components are NOT directly touching metal surfaces. Attach plastic washers as specified in the drawing.**
  - ❷ **Make sure there is proper ventilation in the storage unit.**

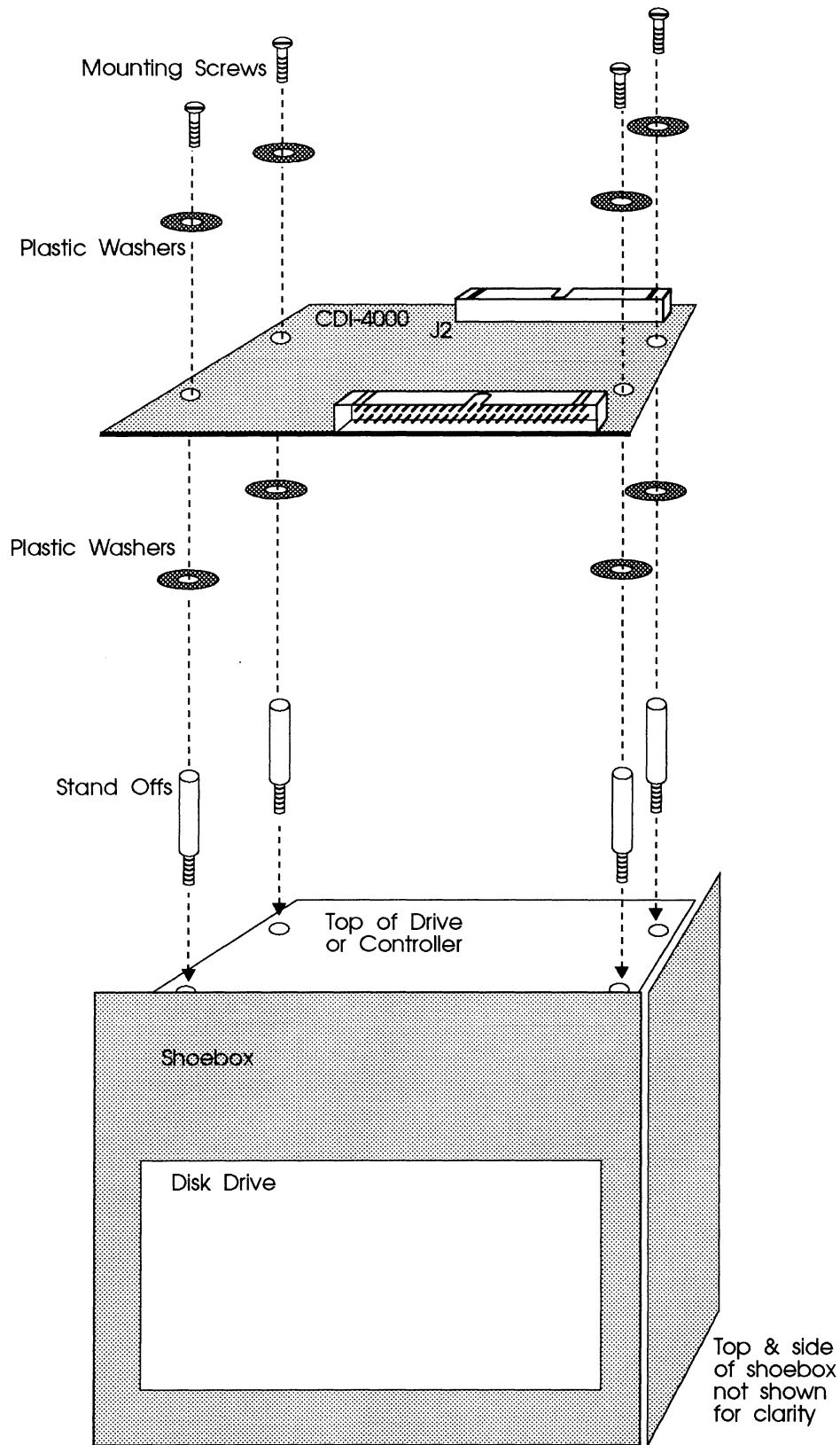


Figure 3-6: Shoebox installation example

- 2 If you are installing the CDI-4000 into a shoebox or system chassis, the connection will be similar to that shown in Figure 3-7.

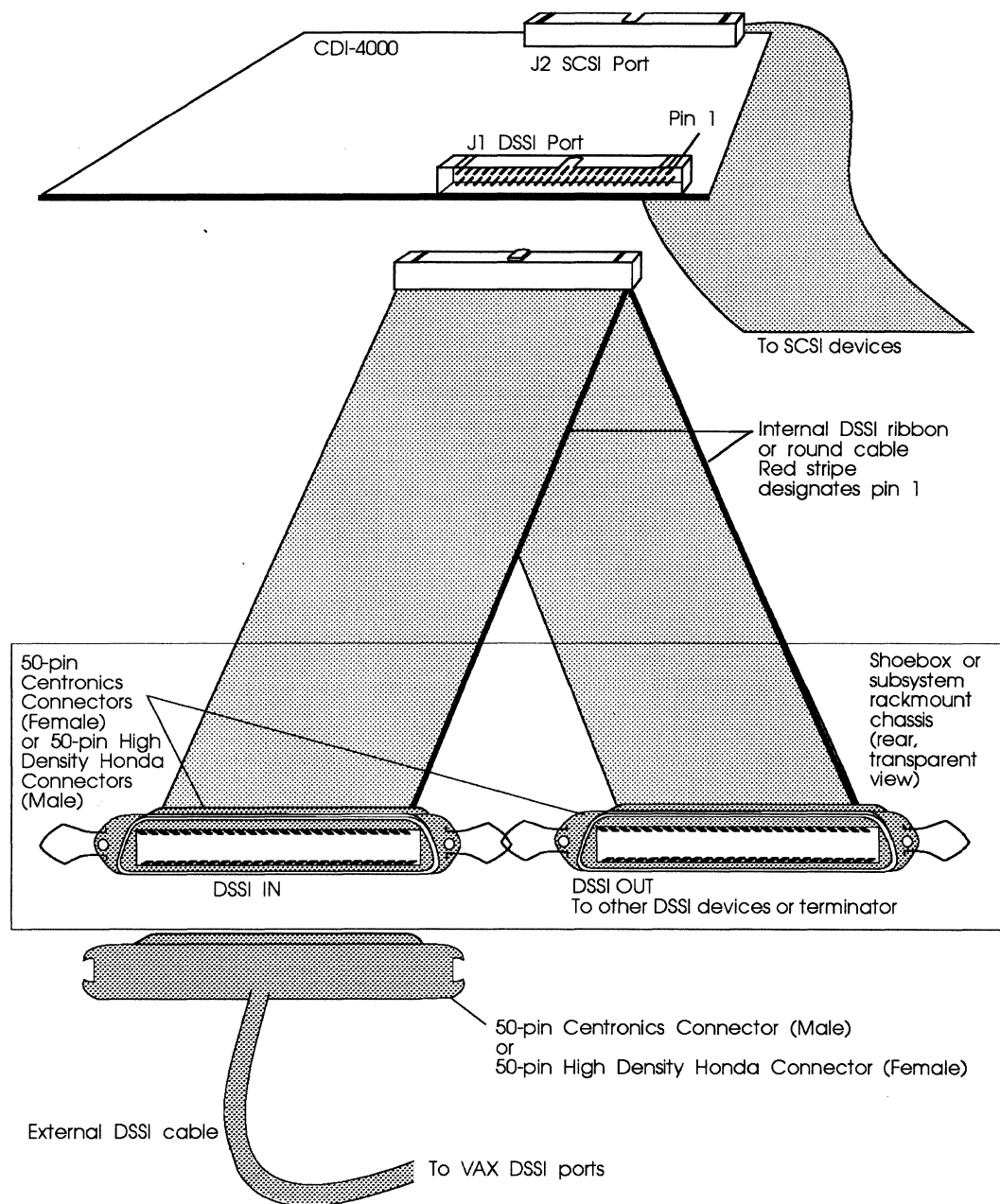


Figure 3-7: Cable connection

- 3 Connect one end of the DSSI cable to the DSSI connector of the host computer as shown in Figure 3-8.

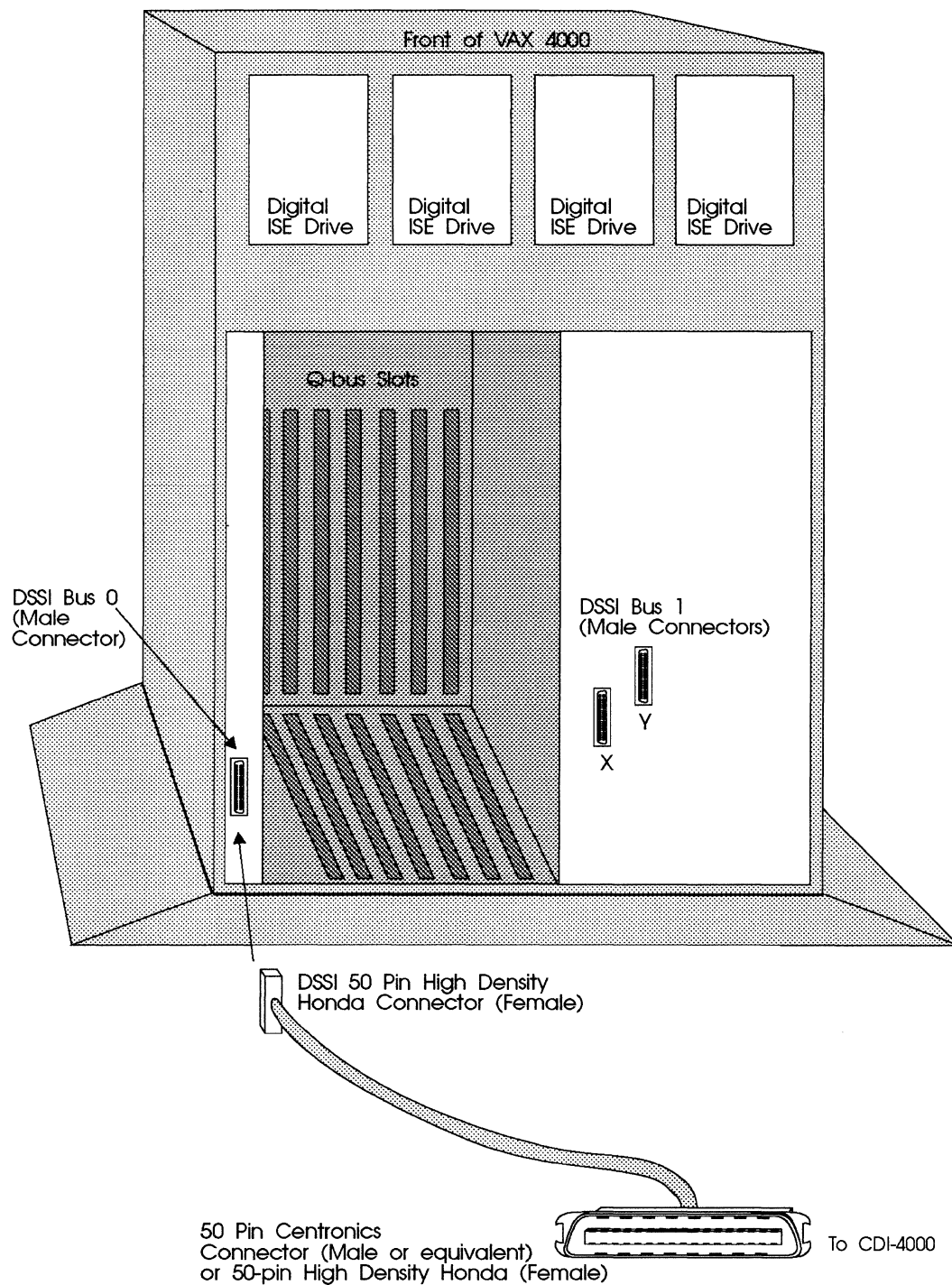


Figure 3-8: Host Computer DSSI connection



- 4 Connect the other end of the DSSI cable to the CDI-4000 at J1, DSSI port as shown in Figure 3-9.

**WARNING** To prevent damage to the CDI-4000, pin 1 of the DSSI cable and pin 1 of J1 of the CDI-4000 *must* align.

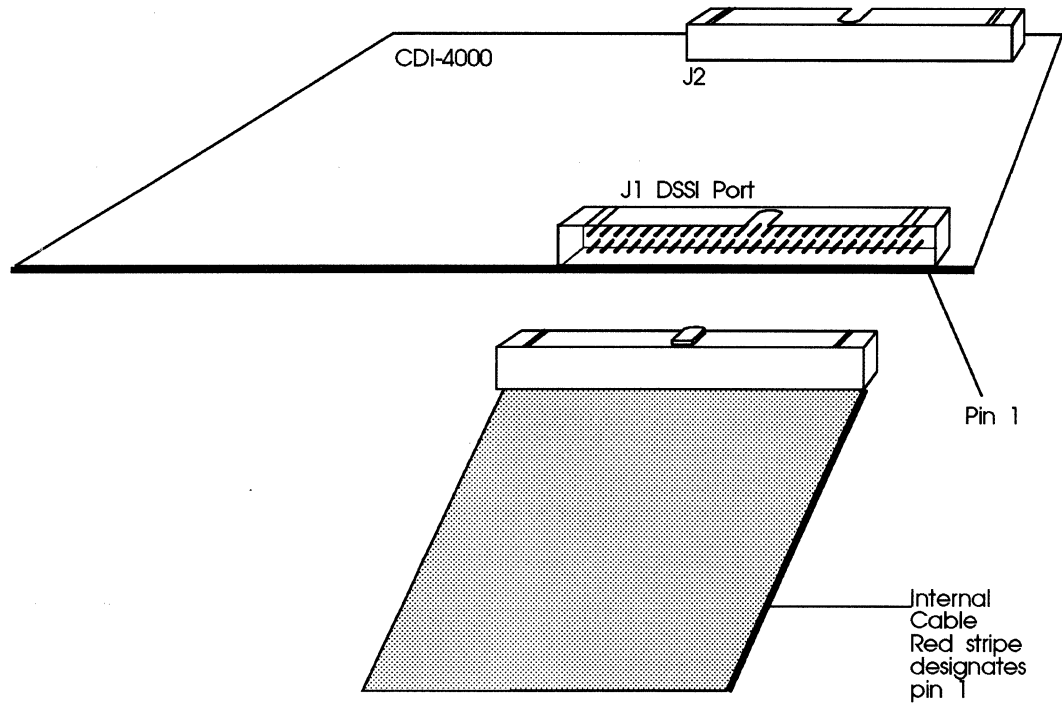


Figure 3-9: DSSI port (J1) cable connection

- 5 Connect one end of a SCSI cable to the CDI-4000 at J2, SCSI port (see Figure 3-10).

**WARNING** To prevent damage to the CDI-4000, pin 1 of the SCSI cable and pin 1 of J2 of the CDI-4000 *must* align.

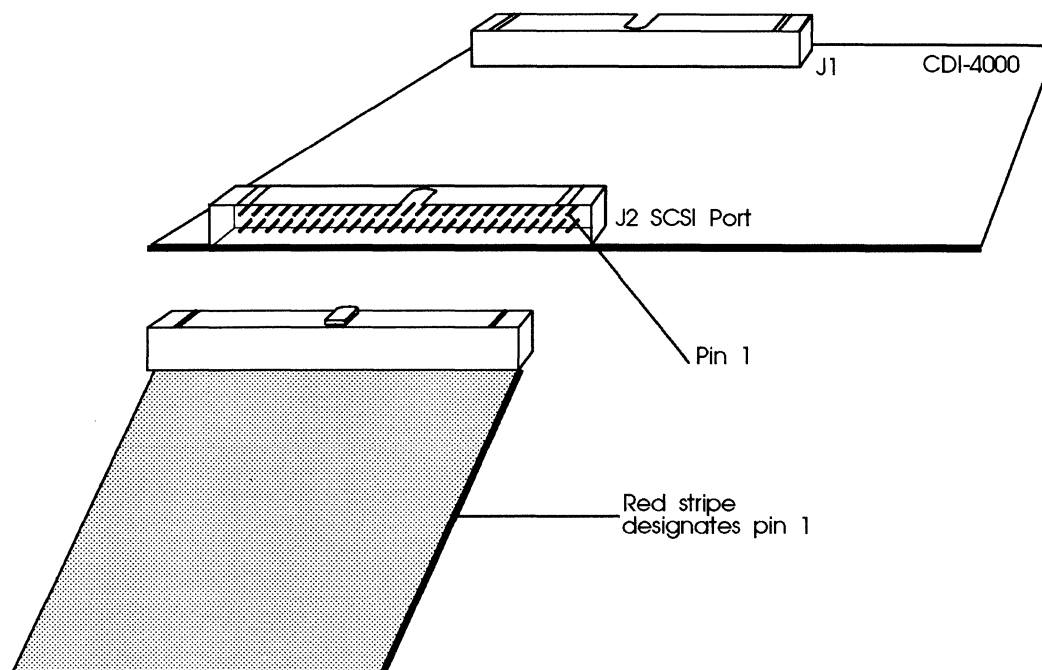
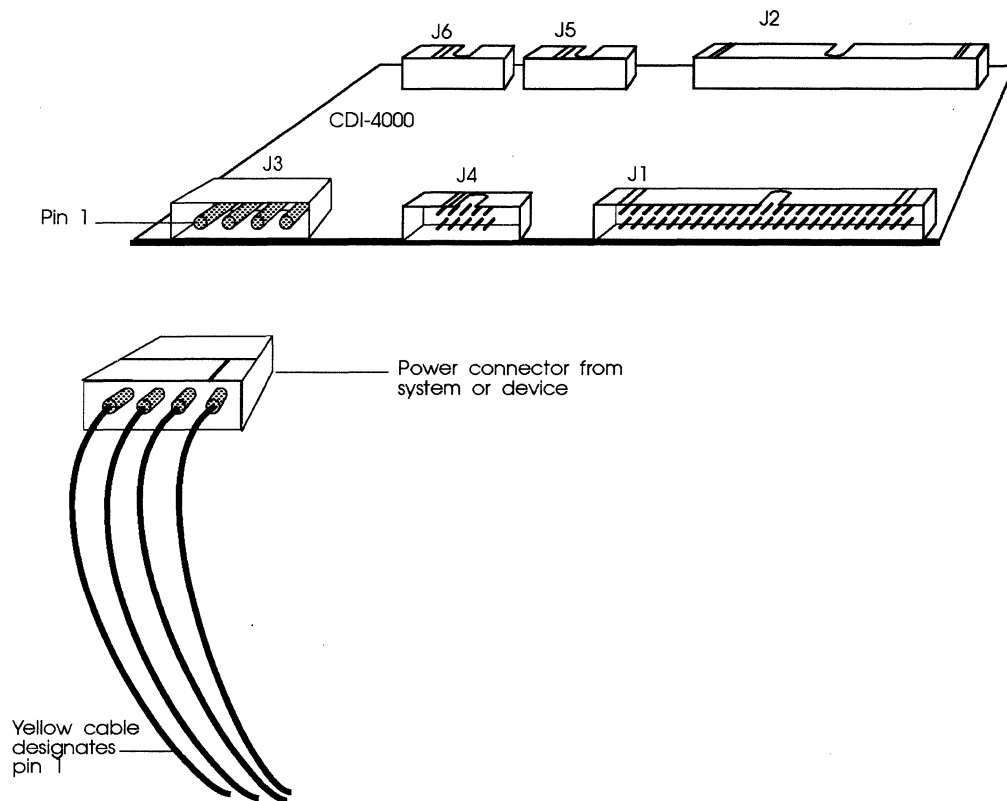


Figure 3-10: SCSI port (J2) cable connection

- 6 Connect the other end of the cable to the SCSI device (align pin 1's). Up to seven devices may be installed by correctly cabling to other SCSI devices.

- 7 Connect the 4-pin power cable to the power connector, J3. Be sure pin 1 from the cable is aligned with pin 1 on the CDI-4000 as shown in Figure 3-11.



**Figure 3-11: Power connection**

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## CDI-4000-SA Installation

CDI-4000-SA Installation involves installing the CDI-4000 into a VAX 4000, using both Elite and universal 3½-inch or 5¼-inch drives. CDI-4000-SAE, CDI-4000-SA1 and CDI-4000-SA2 along with the SCSI devices installation procedures are given in this section. For installing SCSI devices, terminating each end of the DSSI and SCSI buses, and identifying each port see Chapter 3, "Determining DSSI Node" and "Hardware Configuration."

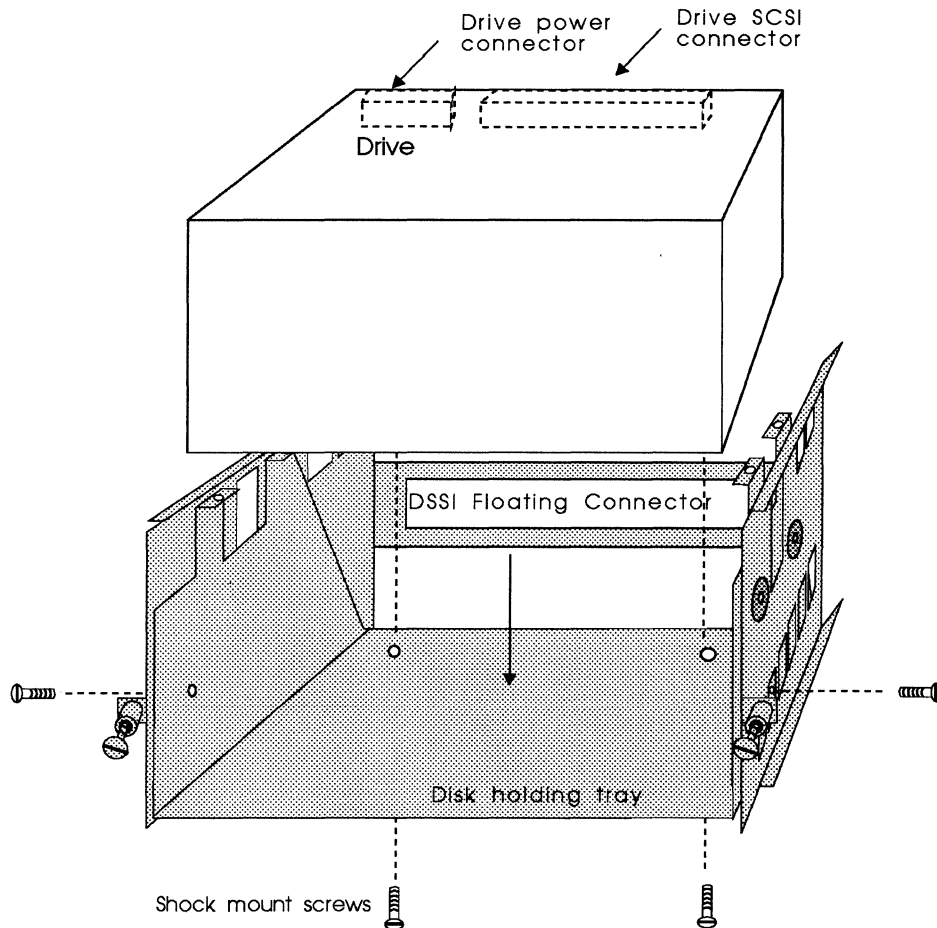
### Installing CDI-4000-SAE and Elite Drives into VAX 4000

If you have the CDI-4000-SAE, a Seagate Elite-I or Elite-II disk drive, and a VAX 4000, install the ISE, CDI-4000, and the drive by following these instructions.

- 1 Carefully unpack the drive from its frame and remove the four screws (two located on the sides and two on the bottom of the drive) if applicable.

**WARNING** Be sure to wear anti-static wrist straps or equivalent to protect the drive and the CDI-4000 from electrostatic damage.

- 2 Carefully install the drive into the disk holding tray of the ISE chassis. SCSI connector on the drive must face the floating connector on the ISE chassis. See Figure 4-1.



**Figure 4-1: CDI-4000-SAE drive installation**

- 3 Put four shock mount screws into the drive through the disk holding tray; two screws are located in the back bottom and two are located on each side of the disk holding tray. See Figure 4-1.
- 4 Install fan bracket by aligning the two notches on the left side of the fan bracket into the two slots of the left side of the ISE and the two holes into the bottom of the disk holding tray; put two screws into the fan bracket through the ISE. See Figure 4-2.

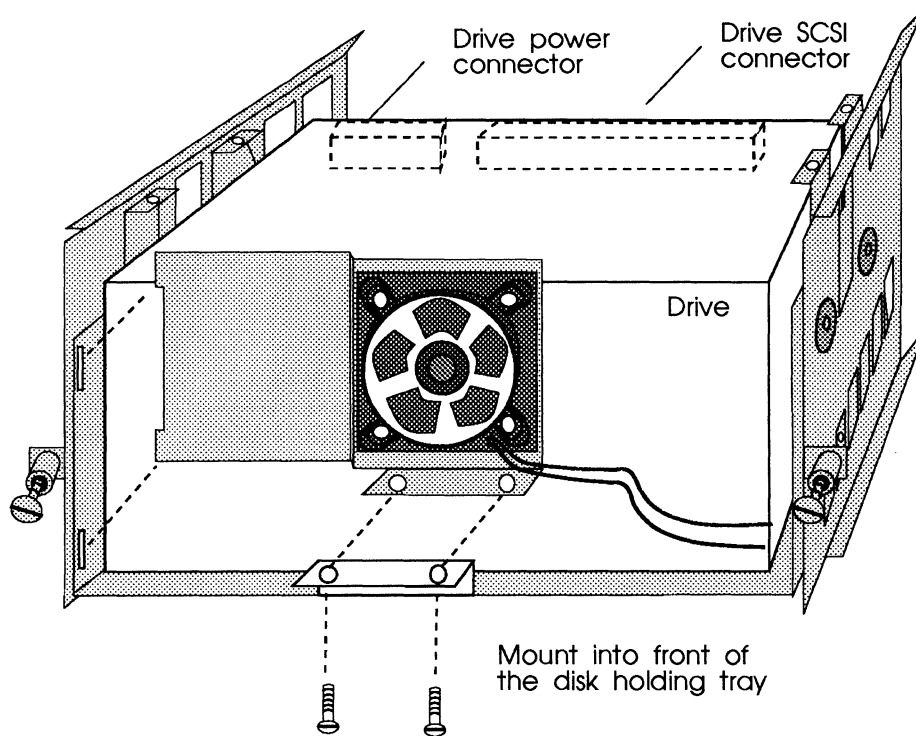


Figure 4-2: CDI-4000-SAE fan bracket installation

- 5 Connect the SCSI cable to J2 of the CDI-4000 and the SCSI connector on the back of the drive (component side of CDI-4000 must face drive). See Figure 4-3 and 4-4.

**WARNING** To prevent damage to the CDI-4000, pin 1 of the SCSI cable and pin 1 of J2 of the CDI-4000 *must* align.

**NOTE** SCSI cable will be laid between the CDI-4000 and the drive.

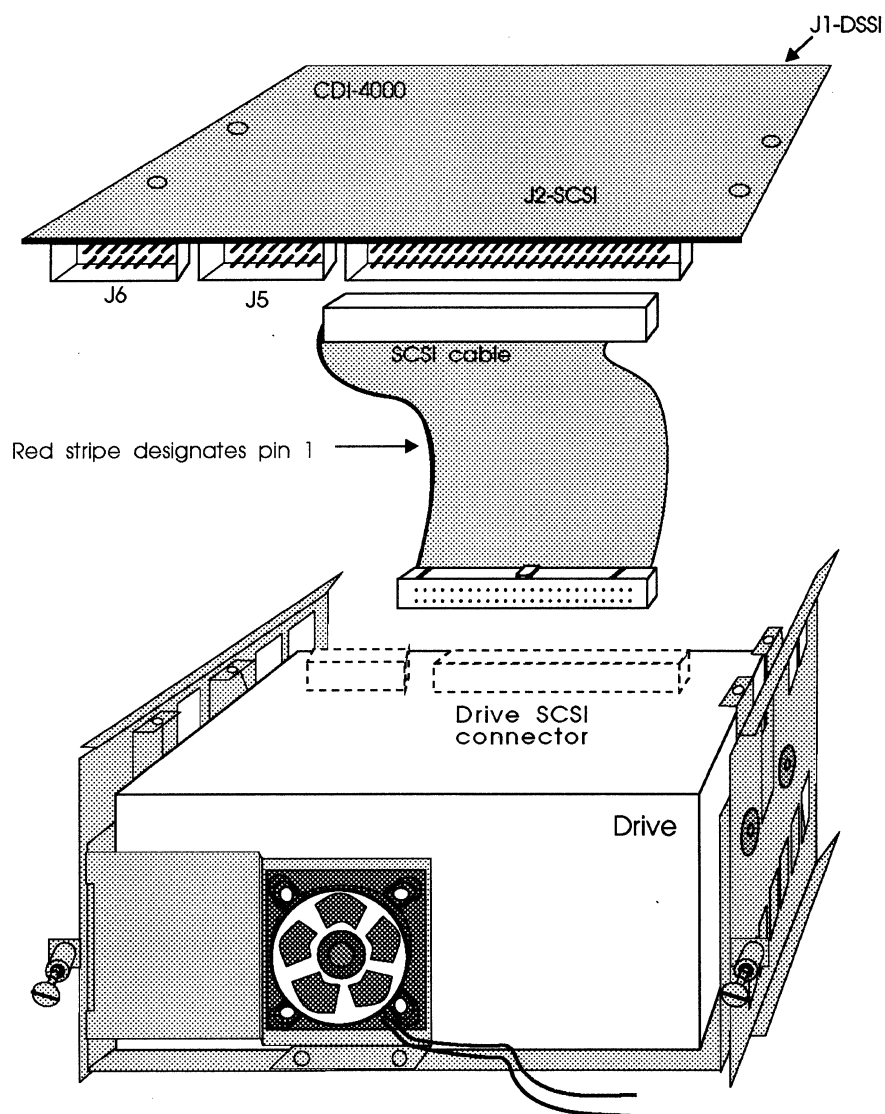


Figure 4-3: CDI-4000-SAE SCSI cable connection

- 6 Connect the DSSI cable from the floating connector to J1 of the CDI-4000. See Figure 4-4.

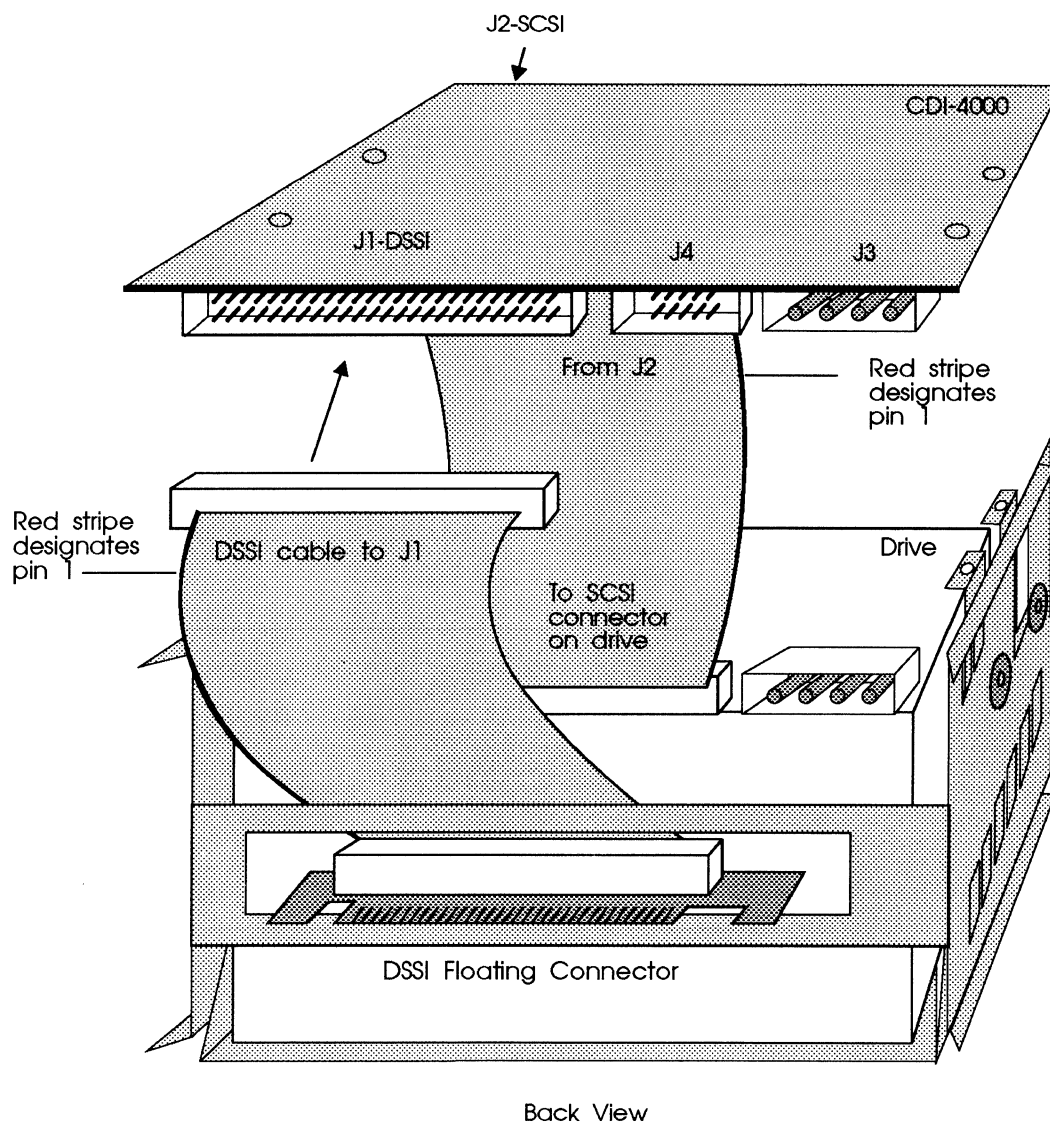


Figure 4-4: CDI-4000-SAE DSSI cable connection



- 7 Locate the power connectors from the floating connector.
- 8 Connect the end of the power connector to the CDI-4000 at J3 and the middle power connector to the drive. See Figure 4-5.

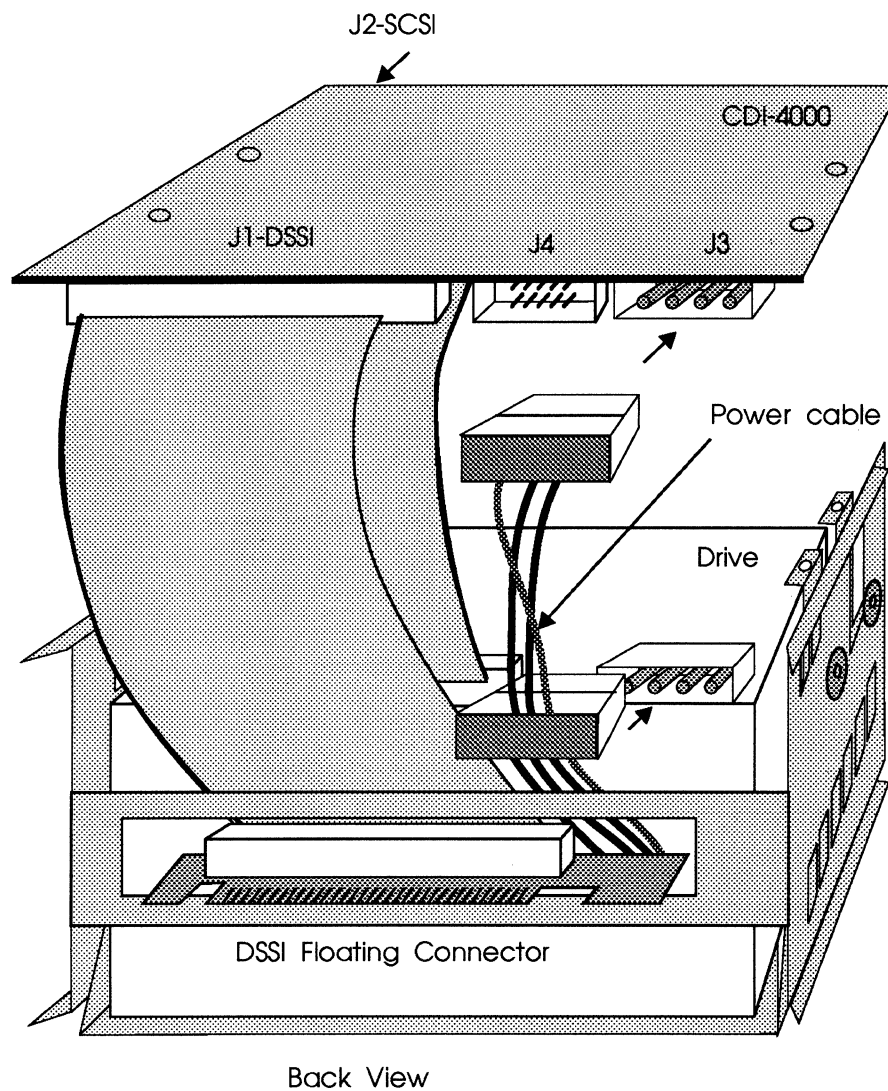


Figure 4-5: CDI-4000-SAE power connections

- 9 Place the CDI-4000 on top of the drive with J1 facing the floating connector (component side facing the drive).
- 10 Place the mylar insulator on top of the CDI-4000; see Figure 4-6.

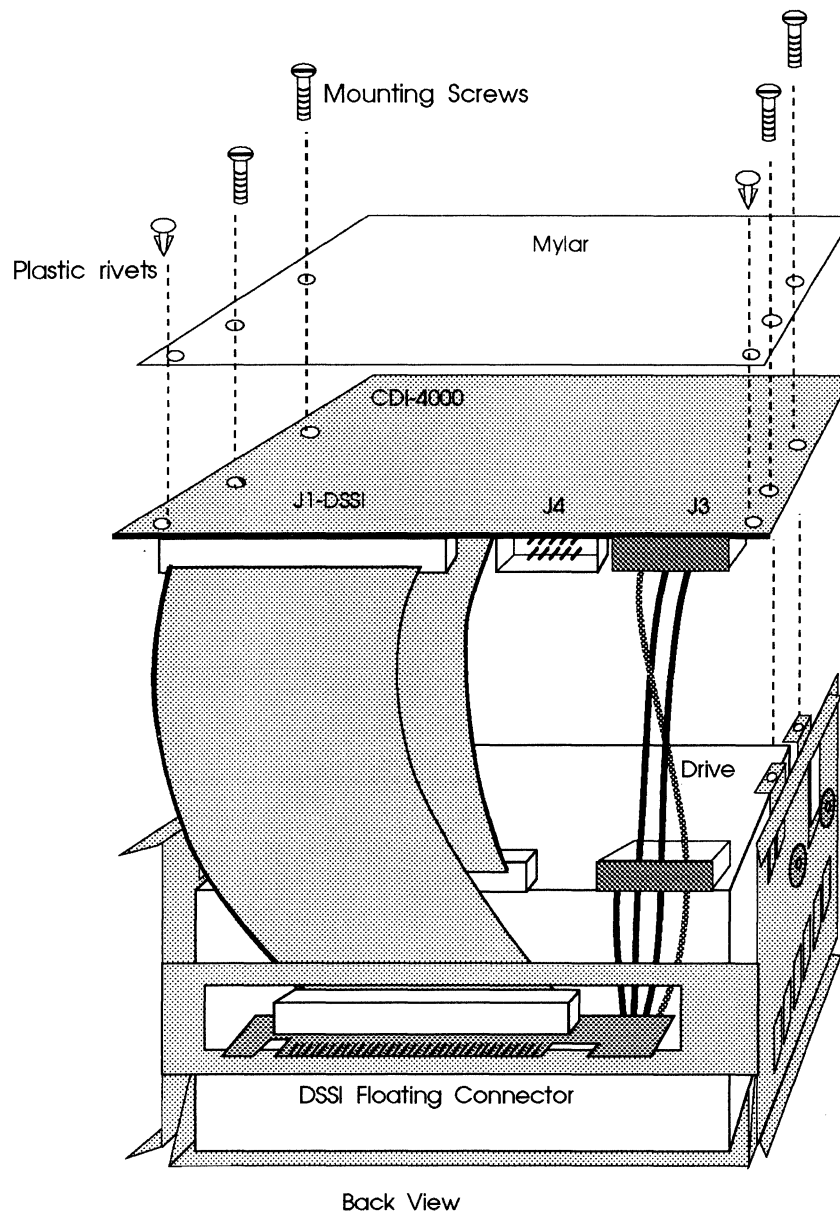


Figure 4-6: CDI-4000-SAE board and mylar installation

- 11 Put four screws into the ISE through the mylar insulator and the CDI-4000. Put two rivets into the CDI-4000 through the mylar; see Figure 4-6.

- 12 Turn the drive and the ISE chassis so that the mylar insulator faces the right and the floating connector faces the system. See Figure 4-7.

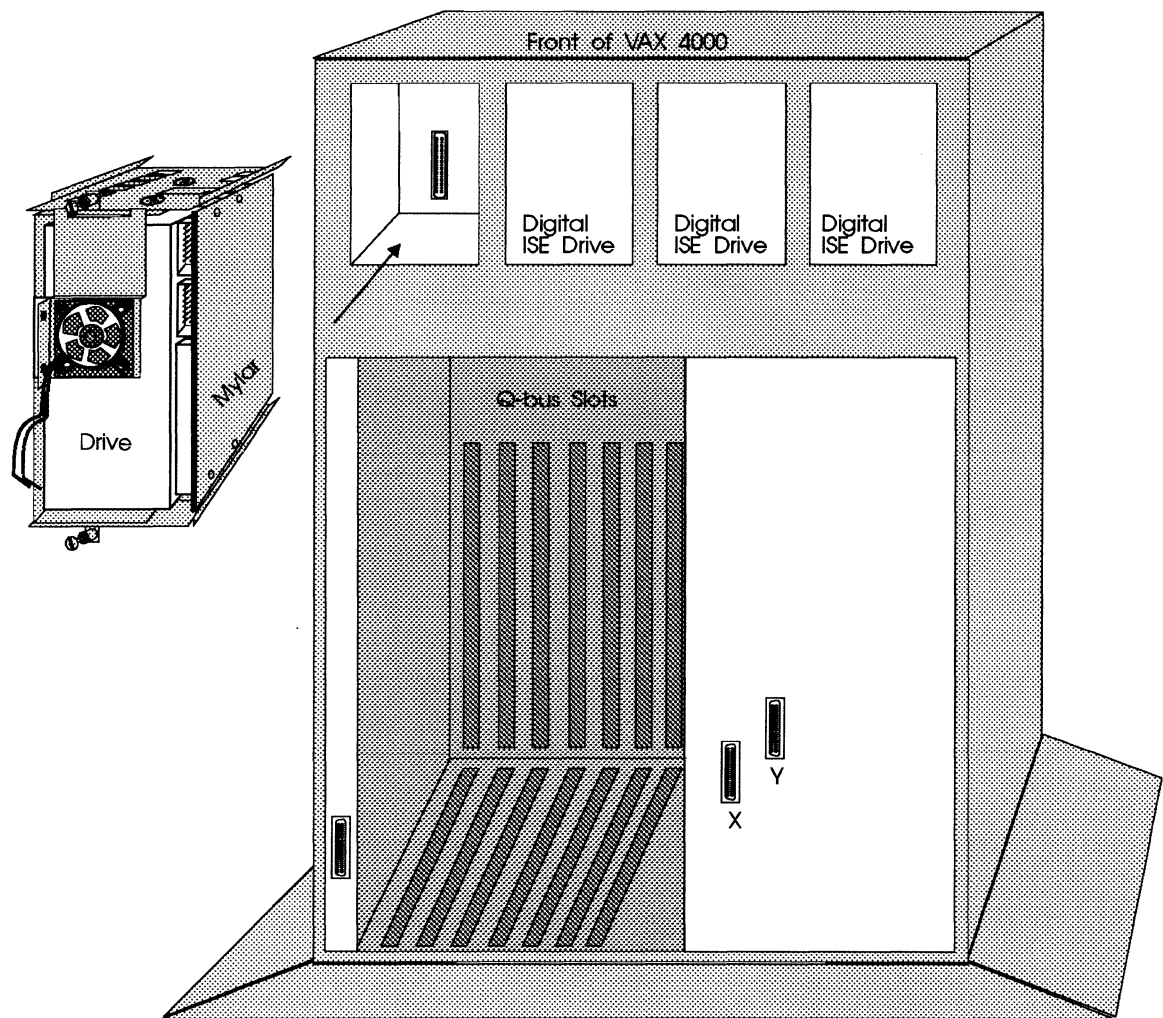


Figure 4-7: CDI-4000-SE ISE and drive alignment

- 13 Align the ISE rails with the rail slots in the system and slide the ISE with the drive into the system until the floating connector is tightly in the DSSI connector in the backplane of the system. See Figure 4-8.

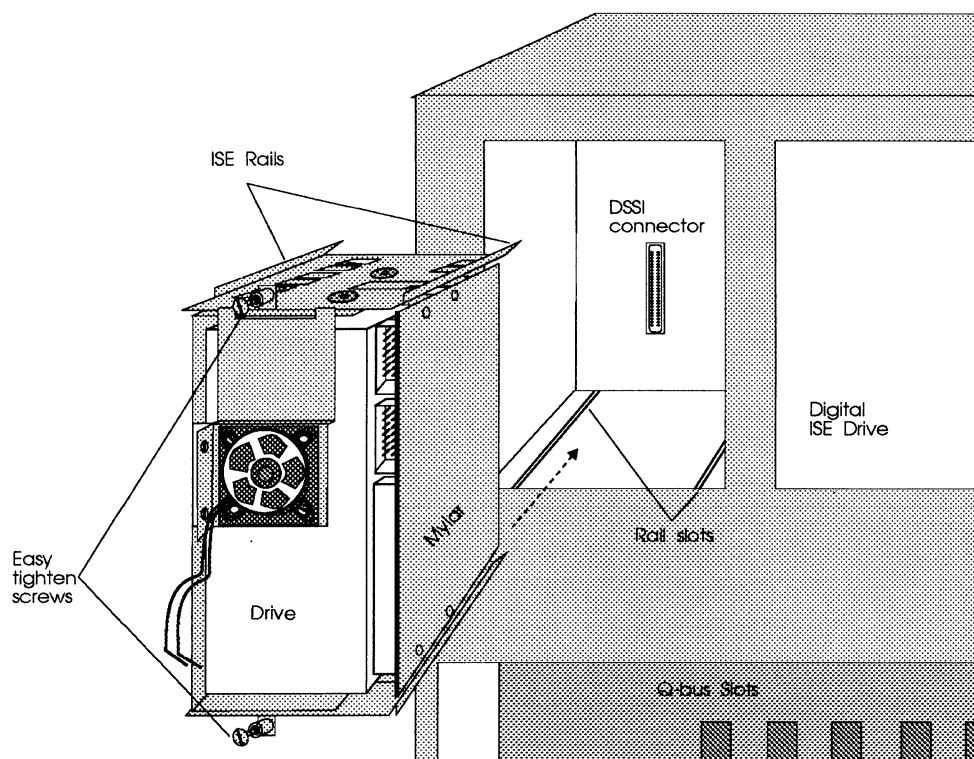


Figure 4-8: CDI-4000-SE ISE and drive installation

- 14 Tighten the easy tighten screws now located on the top and bottom of the ISE chassis.

- 15 Connect one end of the 14-pin cable to J6 of the CDI-4000 and the other end into the back of the ISE front panel display. See Figure 4-9.

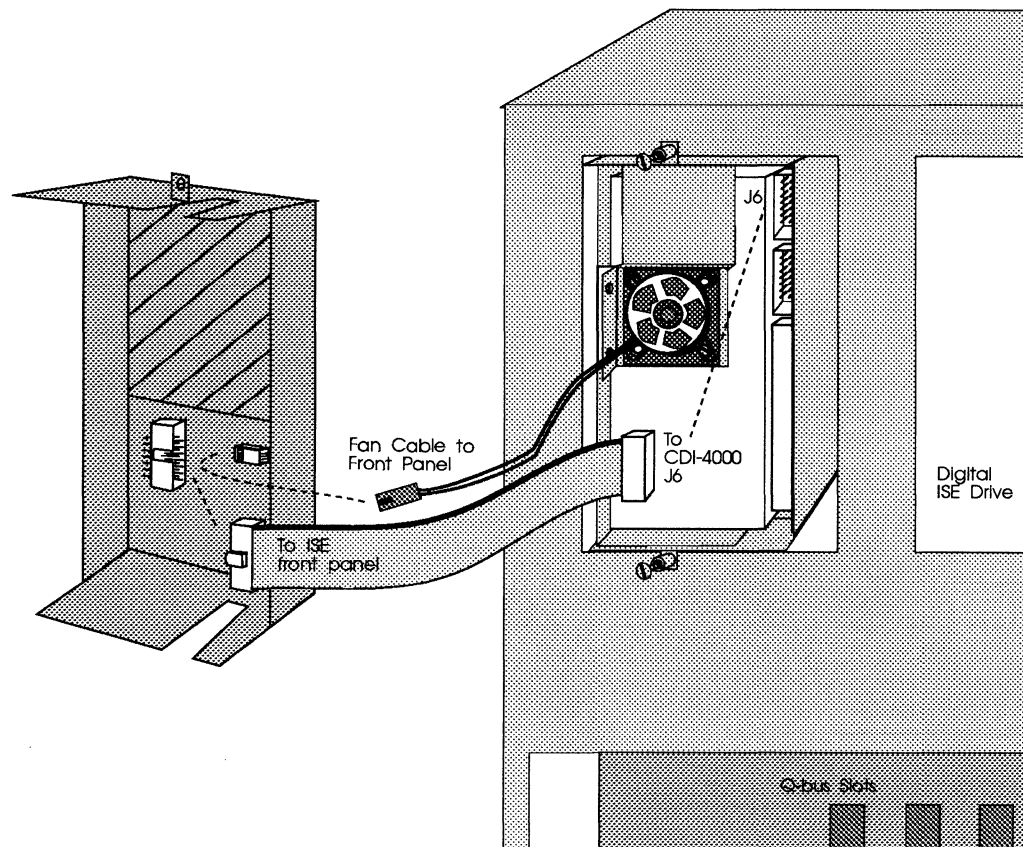


Figure 4-9: CDI-4000-SE front panel connections

- 16 Connect the fan wire to the back of the ISE front panel display. See Figure 4-9.

- 17 Slide the two tabs at the bottom of the ISE front panel display inside the system chassis and slide the top tab into the system; see Figure 4-10.

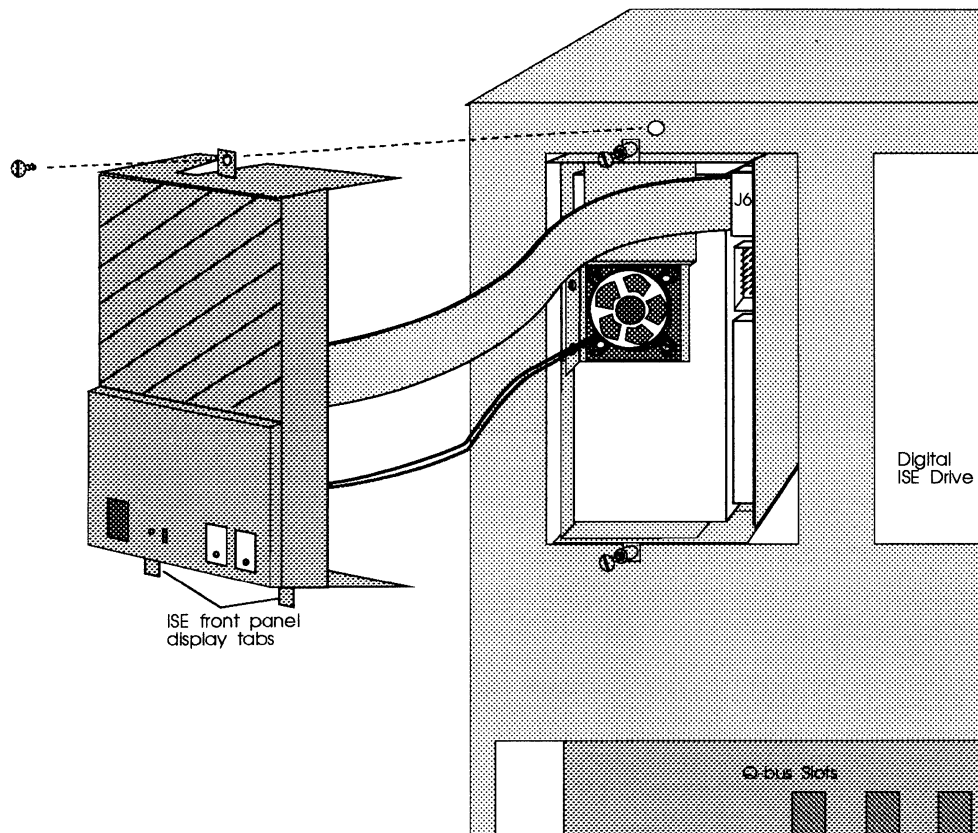


Figure 4-10: CDI-4000-SAE front panel installation

- 18 Put one screw into the system chassis through the top hole in ISE front panel display; see Figure 4-10.

## CDI-4000-SA1 and Universal Drive Installation into VAX 4000

If you have the CDI-4000-SA1, any drive *other than* Seagate Elite-I or Elite-II disk drive (see Appendix A for drive list), and a VAX 4000, follow these instructions.

- 1 Carefully unpack the drive from its frame and remove the four screws (two located on each side of the drive) if applicable.

**WARNING** Be sure to wear anti-static wrist straps or equivalent to protect the drive and the CDI-4000 from electrostatic damage.

- 2 Put four screws into the drive through the ISE chassis, two screws on the right and two on the left side of the drive. SCSI connector on the drive must face the floating connector on the ISE chassis. See Figure 4-11.

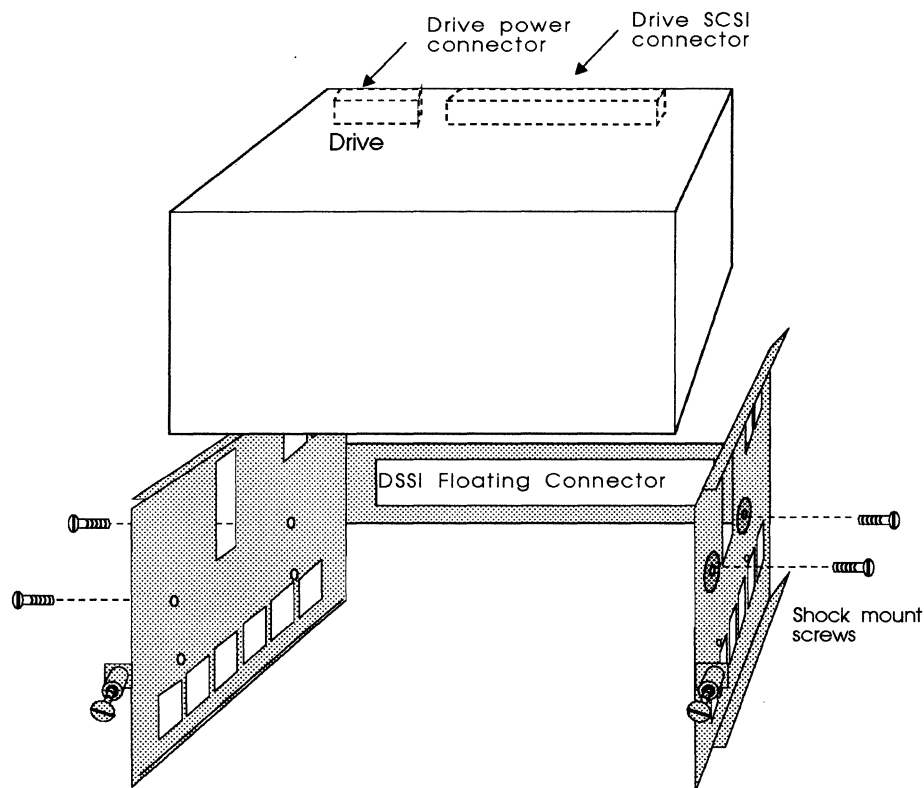


Figure 4-11: CDI-4000-SA1 drive installation

- 2 Connect tied up side of the SCSI cable to J2 of the CDI-4000 and the other end to the SCSI connector on the back of the drive (component side of CDI-4000 must face drive). See Figure 4-12 and 4-13. The flat portion of the SCSI cable will be laid between the CDI-4000 and the drive.

**WARNING** To prevent damage to the CDI-4000, pin 1 of the SCSI cable and pin 1 of J2 of the CDI-4000 *must* align.

**NOTE** Fold the extra cable toward the front of the drive.

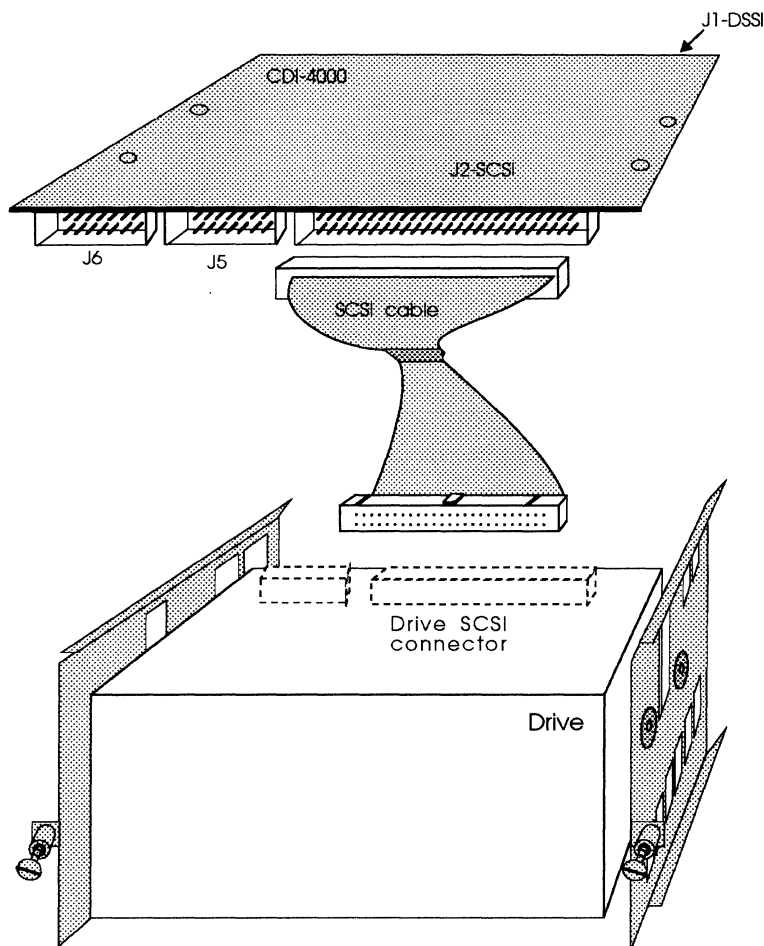


Figure 4-12: CDI-4000-SA1 SCSI cable connections



- 3 Connect the DSSI cable (50-pin cable, 2-inch long) from the floating connector to J1 of the CDI-4000. See Figure 4-13.

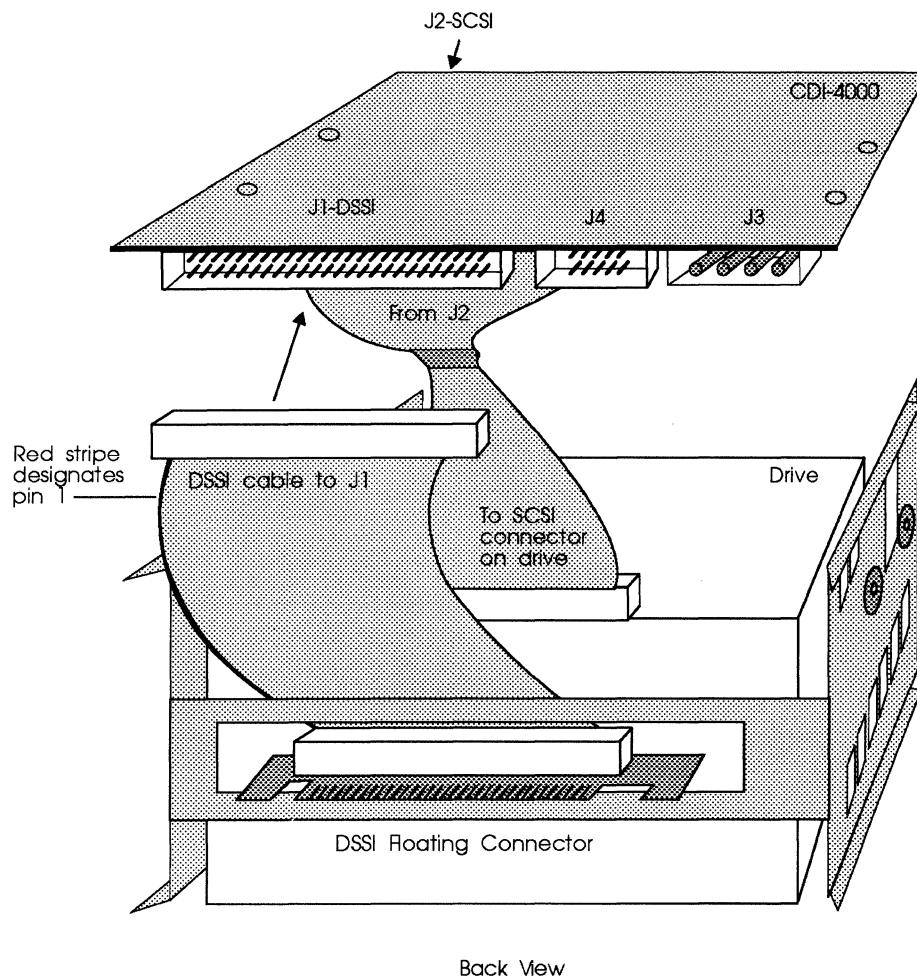
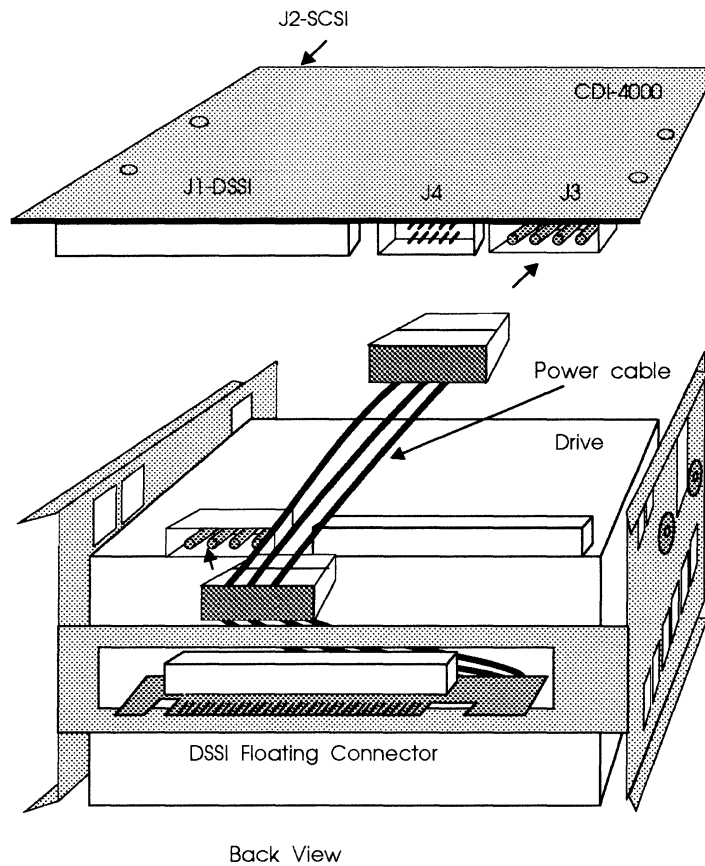


Figure 4-13: CDI-4000-SA1 DSSI and SCSI cabling

- 4 Locate the power connectors from the floating connector.
- 5 Connect the middle connector of the power cable to the power connector on the drive and the end connector to the J3 on the CDI-4000. See Figure 4-14.



**Figure 4-14: CDI-4000-SA1 power connections**

- 6 Place the mylar insulator on top of the CDI-4000; put two rivets into the CDI-4000 through the mylar; see Figure 4-15.

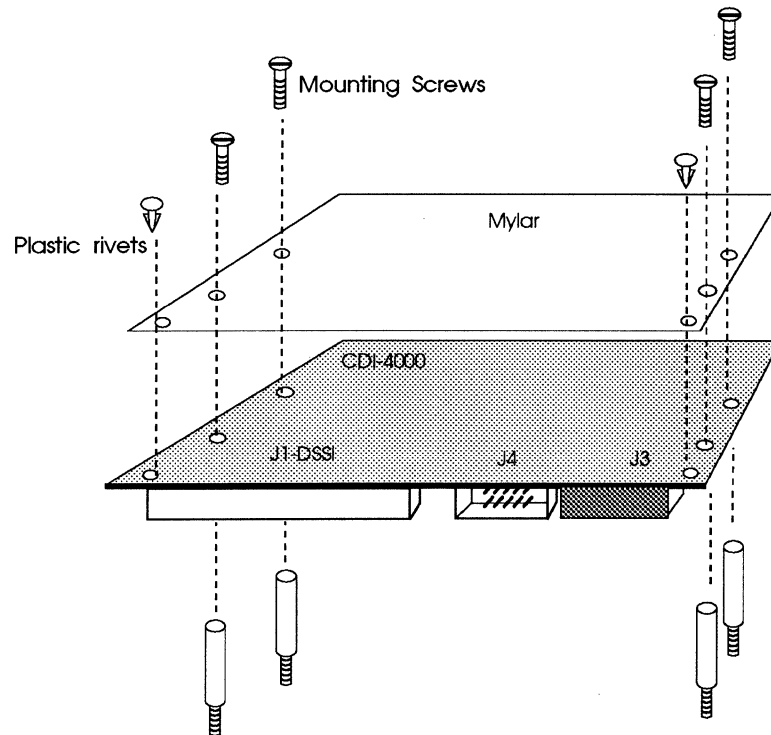


Figure 4-15: Mounting mylar and standoffs, CDI-4000-SA1

- 7 Put the four screws into the four threaded standoffs through the mylar and the CDI-4000. See Figure 4-15.
- 8 Place the CDI-4000 and mylar on top of the drive with J1 facing the floating connector, and component side facing the drive, and tighten four screws. See Figure 4-16.

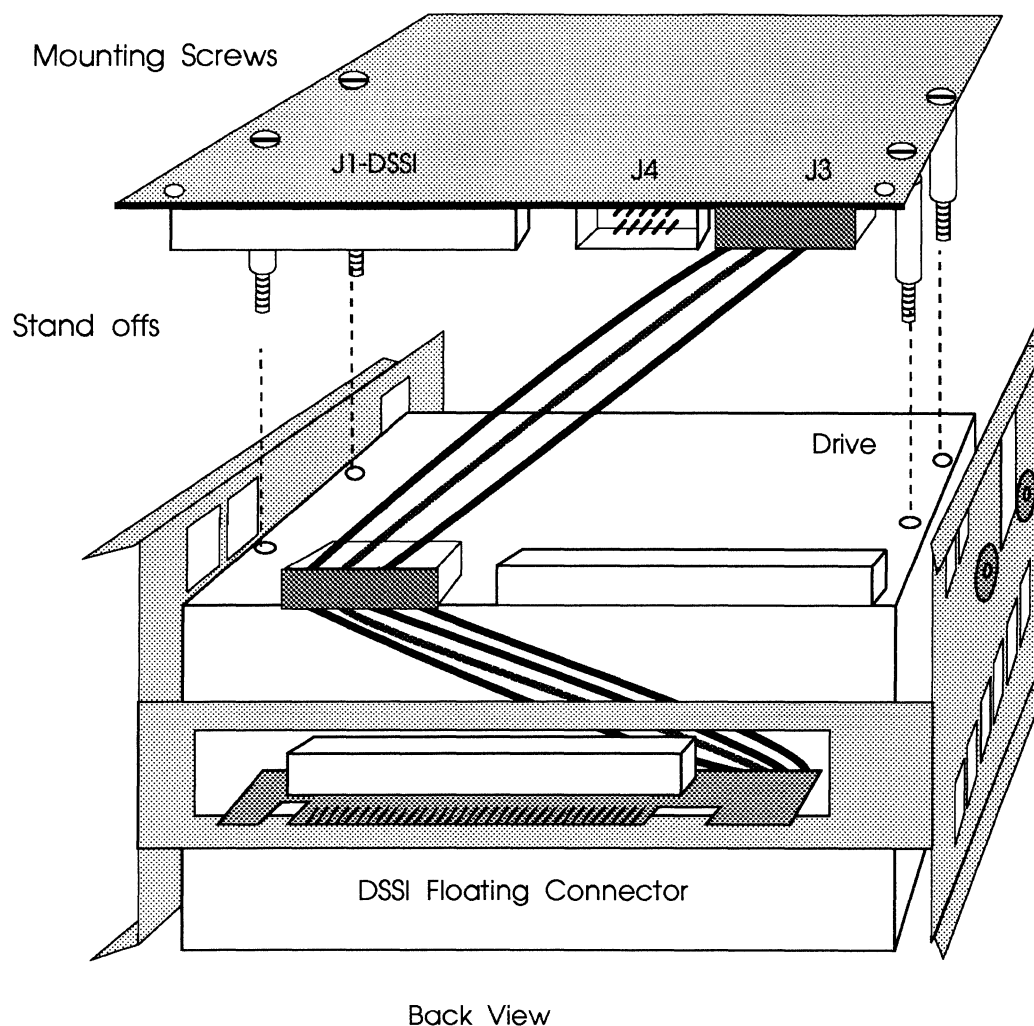
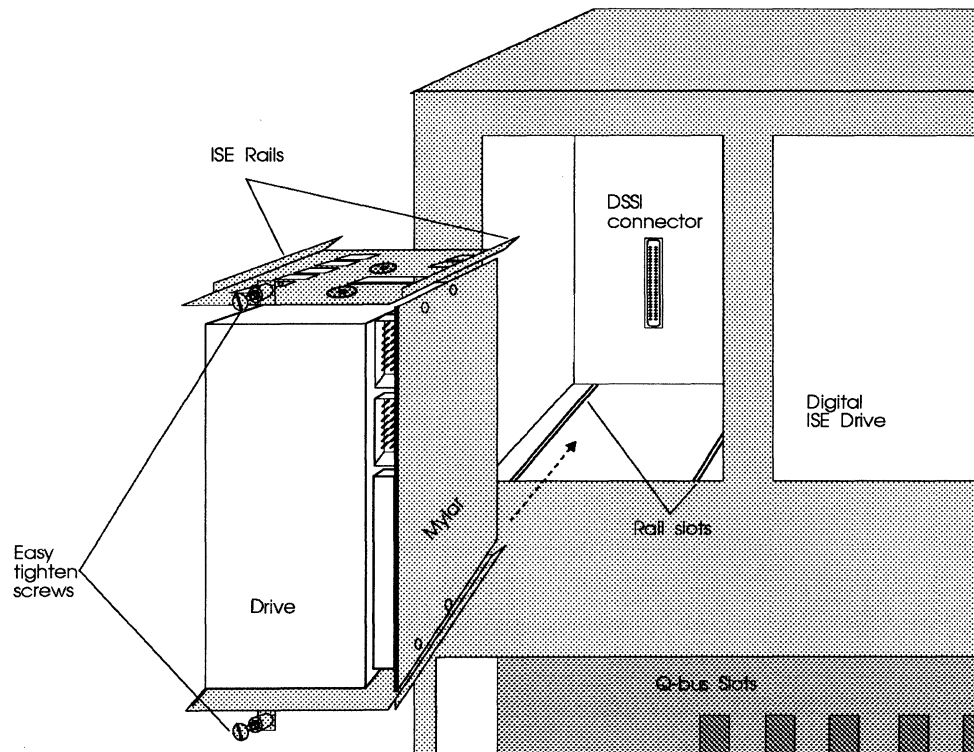


Figure 4-16: CDI-4000-SA1 board mounting

- 9 Turn the drive and the ISE chassis so that the mylar insulator faces the right and the floating connector faces the system. See Figure 4-17.



**Figure 4-17: CDI-4000-SA1 ISE and drive installation**

- 10 Align the ISE rails with the rail slots in the system and slide the ISE with the drive into the system until the floating connector is tightly in the DSSI connector in the backplane of the system. See Figure 4-17.
- 11 Tighten the easy tighten screws now located on the top and bottom of the ISE chassis.
- 12 Connect one end of the 14-pin cable to J6 of the CDI-4000 and the other end into the back of the ISE front panel display as shown in Figure 4-18.

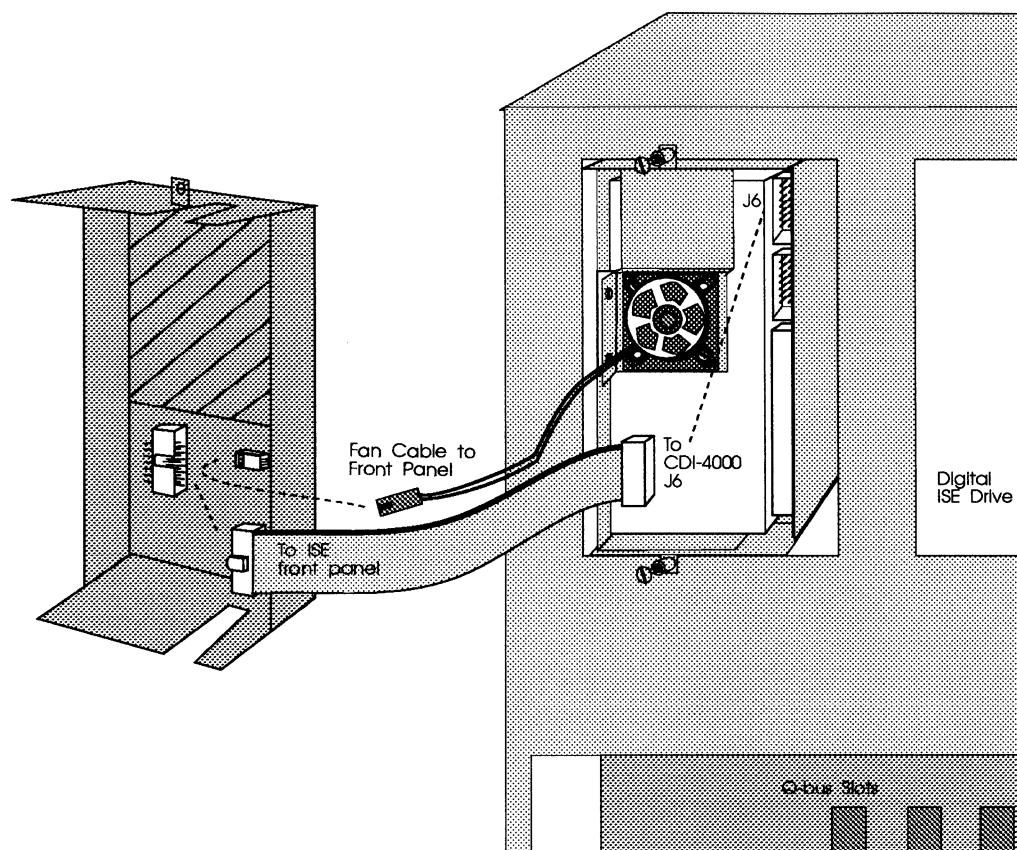


Figure 4-18: CDI-4000-SA1 front panel connections

- 13 Slide the two tabs at the bottom of the ISE front panel display inside the system chassis and slide the top into the system; see Figure 4-19.

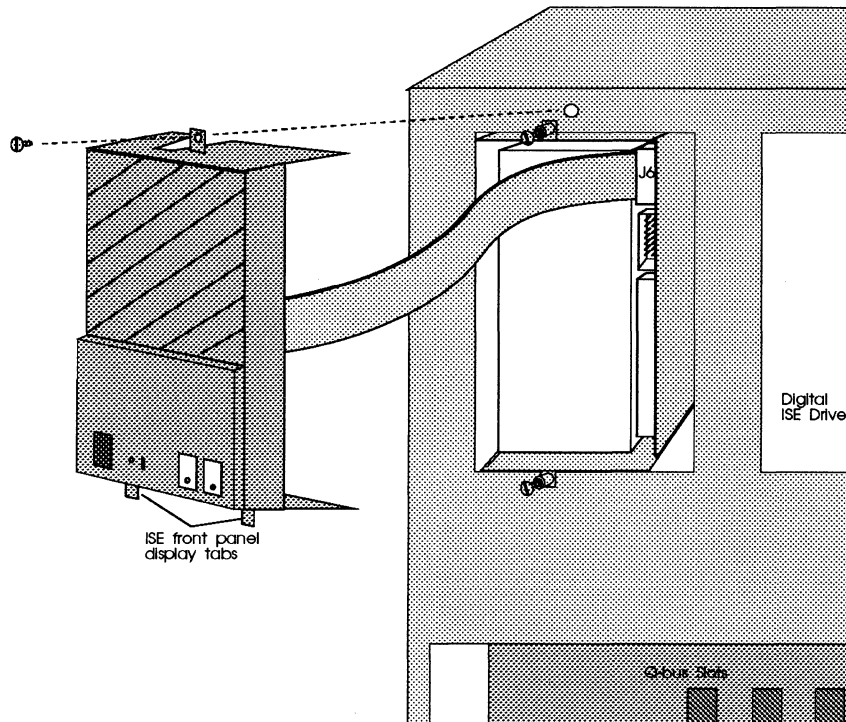


Figure 4-19: CDI-4000-SA1 ISE front panel installation

- 14 Put one screw into the system chassis through the top hole in the ISE front panel display; see Figure 4-19.

## Installing CDI-4000-SA2 and 3 1/2-inch Drives into VAX 4000

If you have the CDI-4000-SA2, two 3½-inch disk drives, and a VAX 4000, install the ISE, CDI-4000, and the drives by following these instructions.

- 1 Carefully unpack the drives from their frame and remove the mounting screws (located on the sides and/or bottom of the drive) if applicable.

**WARNING** Be sure to wear anti-static wrist straps or equivalent to protect the drive and the CDI-4000 from electrostatic damage.

- 2 Place the 3½-inch drive into the disk holding tray and secure it by putting four screws into the drive through the bottom of the disk holding tray. Repeat for the second drive. (Drives' connectors must face left when viewing from the rear.) See Figure 4-20.

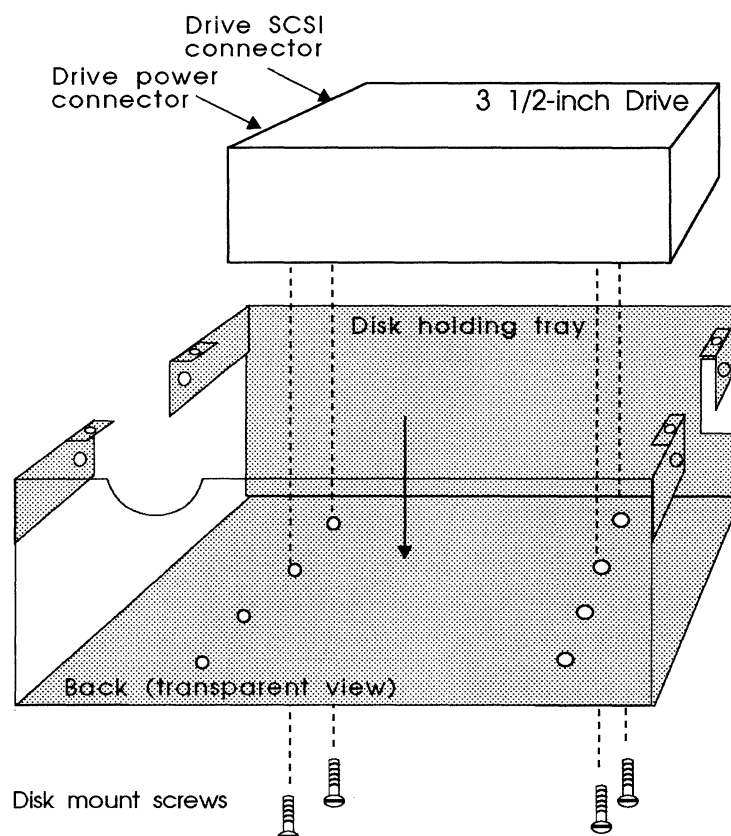


Figure 4-20: CDI-4000-SA2 drive installation

- 3 Put the mylar on the solder side of the CDI-4000 and put two plastic rivets into the CDI-4000 through the mylar. See Figure 4-21.

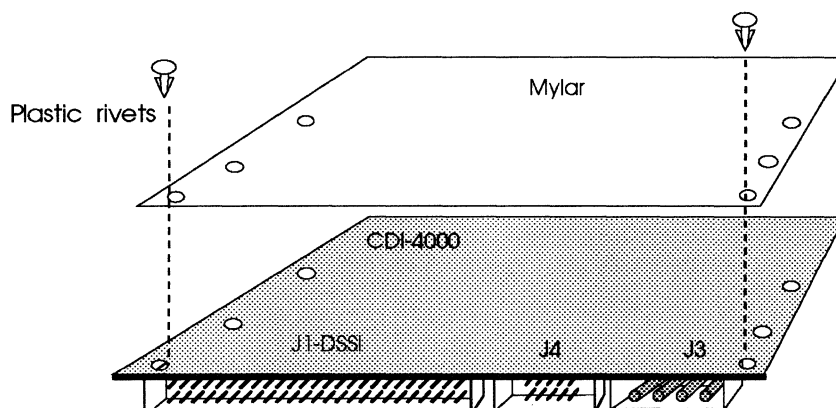


Figure 4-21: Mounting mylar for CDI-4000-SA2



- 4 Locate the power cable (with four connectors) and follow these instructions:
  - a Connect the connector labeled 1 or A to the first drive.

**NOTE** Use connectors labeled A or D for drives that have the power connectors on the sides of the drives standing up.

  - b Connect the connector labeled 2 or D to the second drive.
  - c Connect the connector labeled B to J3 on the CDI-4000
  - d Connect the connector labeled C to the power connector on the back top of the floating connector holder, see Figure 4-22.

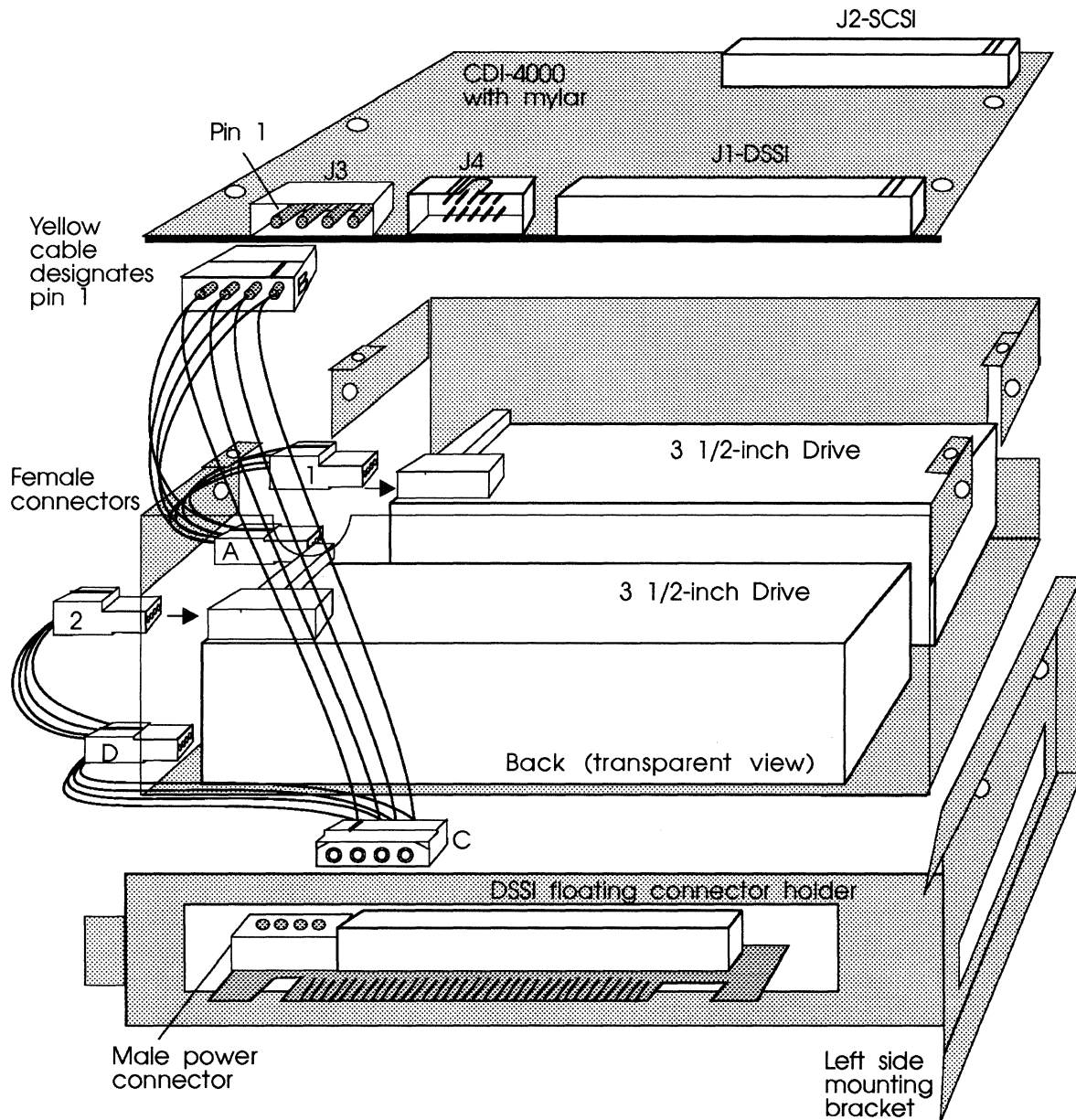


Figure 4-22: CDI-4000-SA2 power connection

- 5 Locate the SCSI cable; connect the middle connector of the SCSI cable to J2 on the CDI-4000, and connect the two ends of the SCSI cable to the drives' SCSI connectors. See Figure 4-23.

**WARNING** To prevent damage to the CDI-4000, pin 1 of the SCSI cable and pin 1 of J2 of the CDI-4000 *must* align.

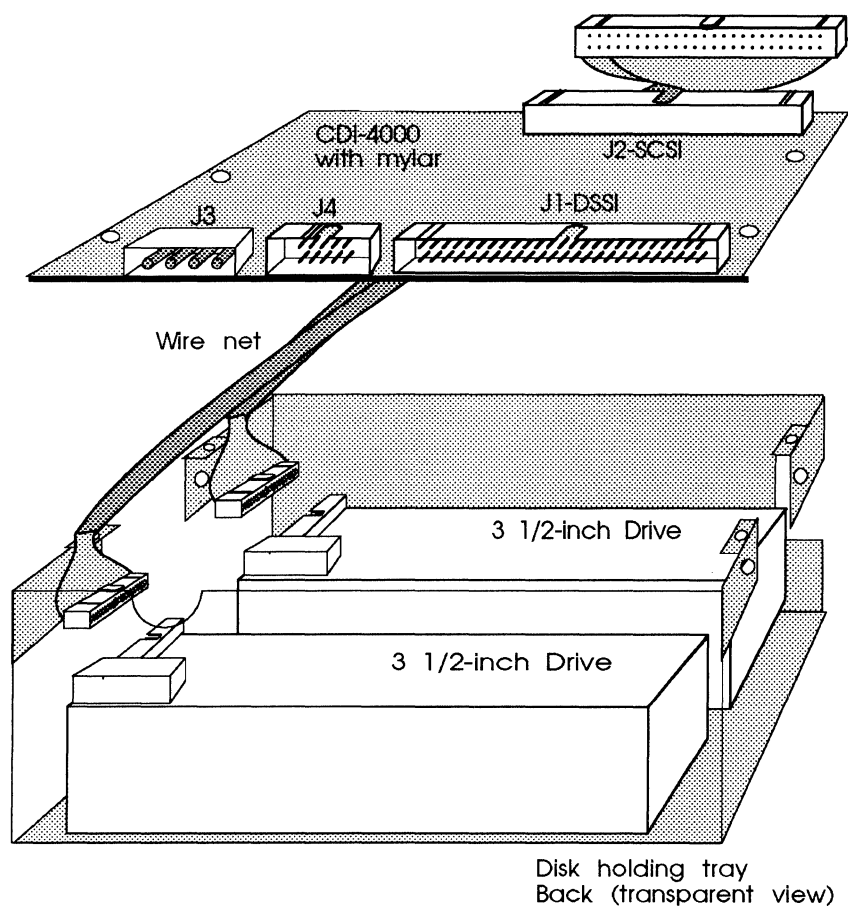


Figure 4-23: CDI-4000-SA2 SCSI cable connections

- 6 Terminate each end of the SCSI bus by removing terminators on the CDI-4000 and by making sure the terminators are in place on the drives (see Chapter 3, "Hardware Configuration").

- 7 Locate the DSSI cable; connect one end to the DSSI connector, J1, on the CDI-4000; connect the other end to the DSSI connector on the back of the floating connector holder. See Figure 4-24.

**WARNING** To prevent damage to the CDI-4000, pin 1 of the DSSI cable and pin 1 of J1 of the CDI-4000 *must* align.

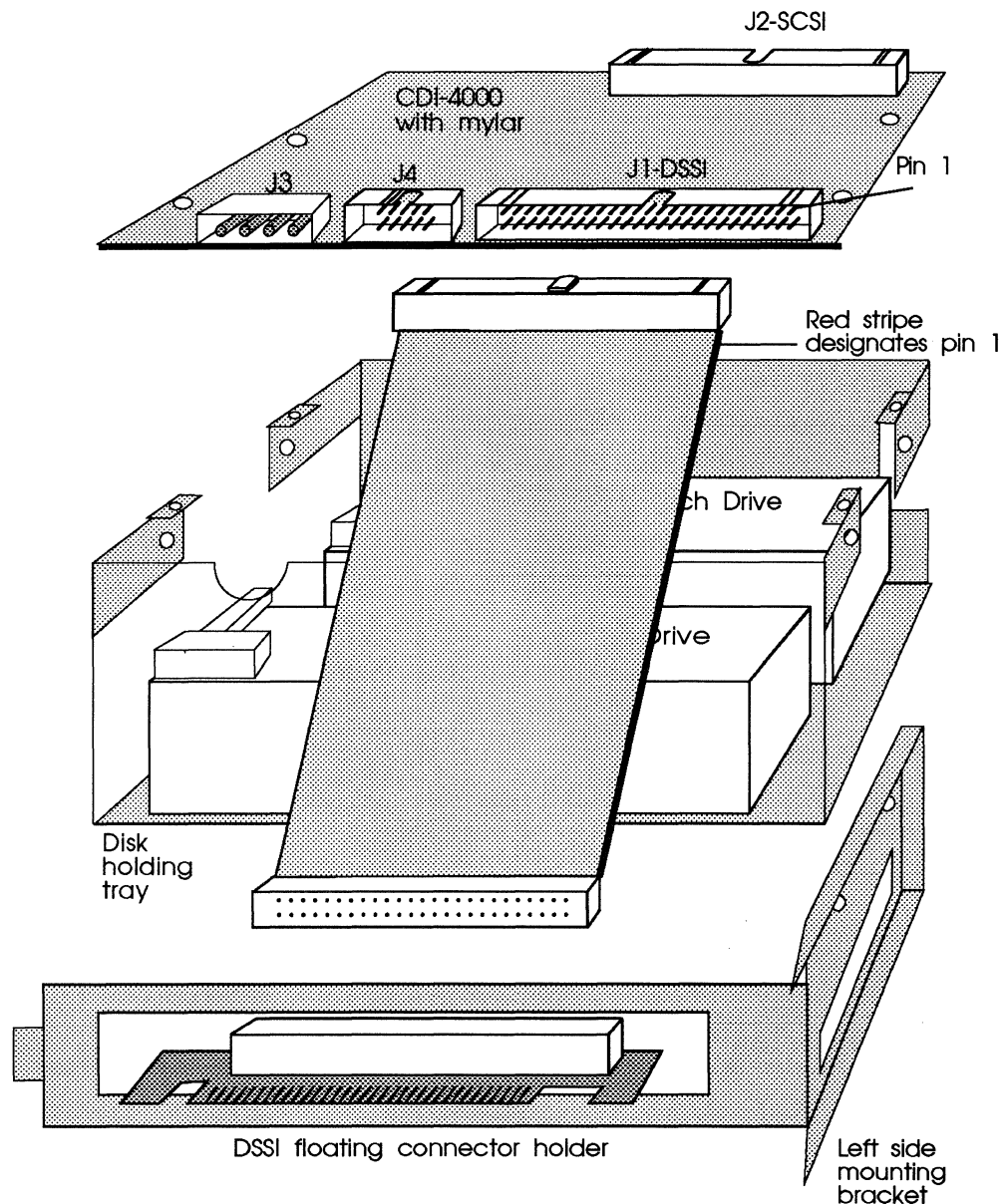


Figure 4-24: CDI-4000-SA2 DSSI cable connections

- 8 Terminate each end of the DSSI bus; see Chapter 3, "Hardware Configuration."

- 9 Mount the CDI-4000 on the top of the disk holding tray (solder side facing the drives and J1 facing the back—where the floating connector will be placed); put four screws and spacers into the disk holding tray through the CDI-4000. See Figure 4-25.

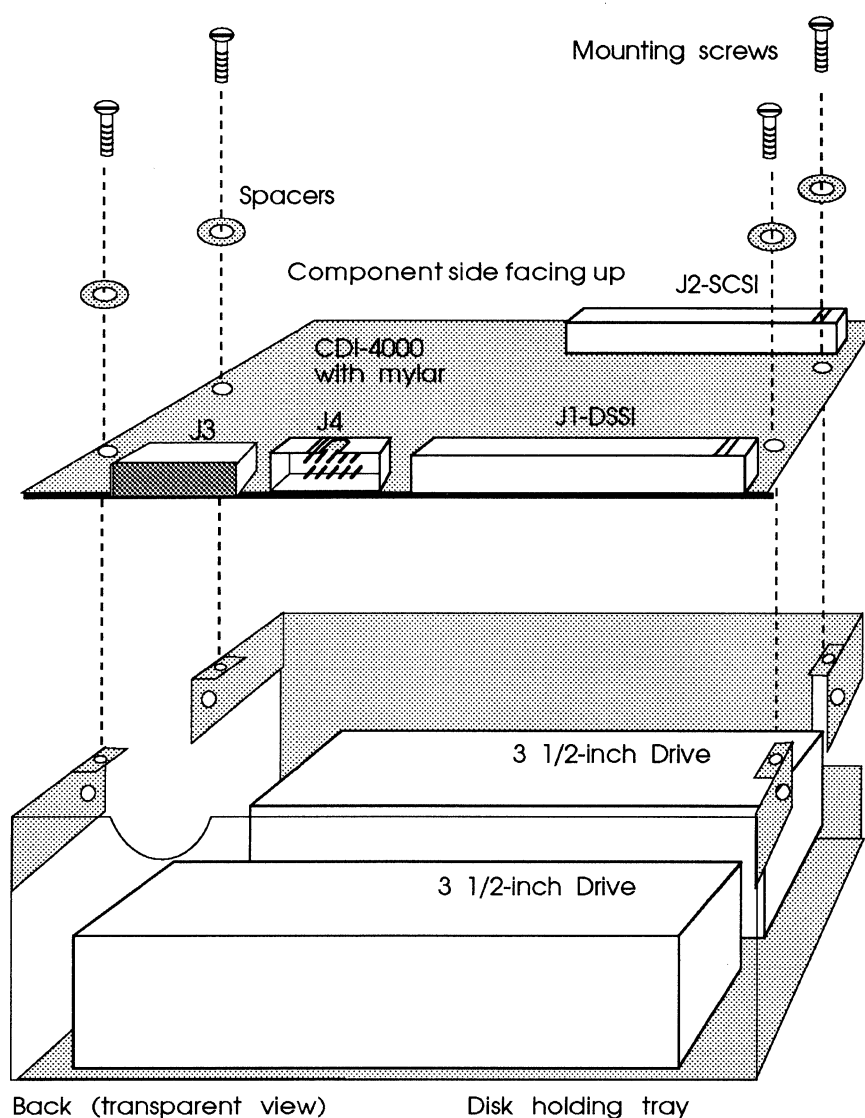


Figure 4-25: CDI-4000-SA2 board mounting

- 10 Locate the left side bracket and align it to the right side of the disk holding tray when facing the back of the tray. Put two screws into the holding tray through the left bracket. See Figure 4-26.

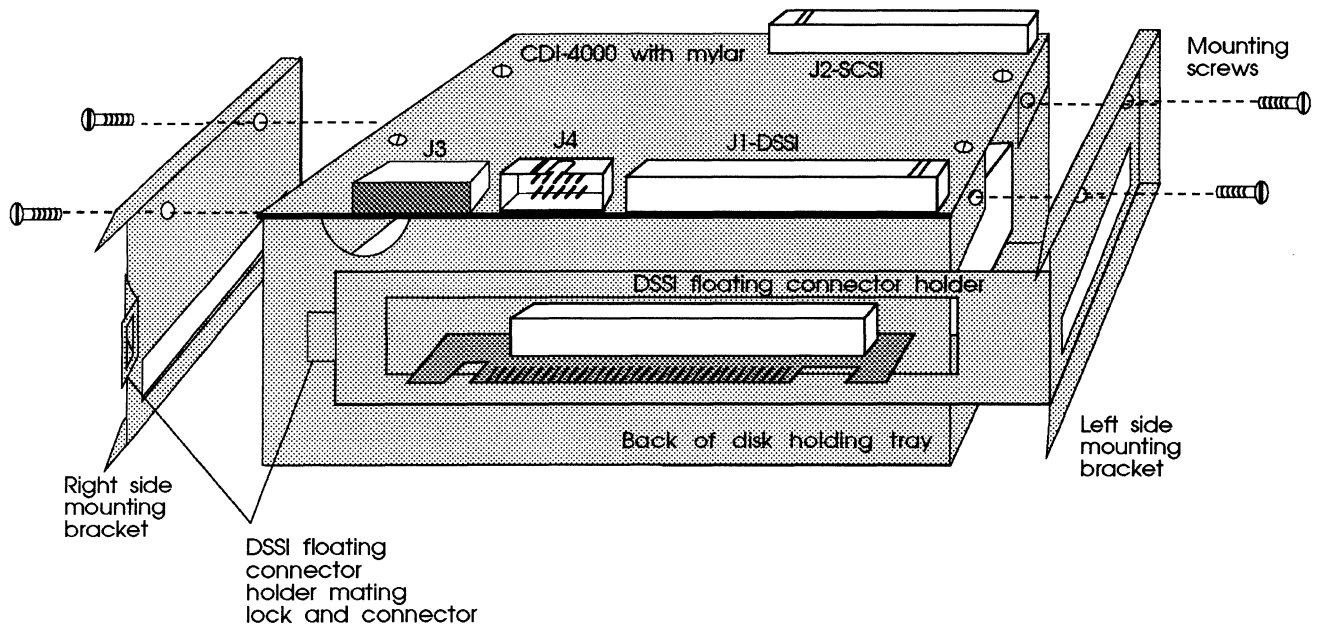


Figure 4-26: CDI-4000-SA2 right bracket installation

- 11 Insert the mating connector (tab) on the DSSI floating connector holder into the lock in the right side bracket.
- 12 Align the right side bracket to the left side of the disk holding tray when facing the back of the tray. Put two screws into the disk holding tray through the right bracket. See Figure 4-26.
- 13 Turn the drive and the ISE assembly so that the CDI-4000 faces the left and the floating connector faces the system. See Figure 4-27.

- 14 Align the ISE rails with the rail slots in the system and slide the ISE with the drive into the system until the floating connector is tightly in the DSSI connector in the backplane of the system. See Figure 4-27.

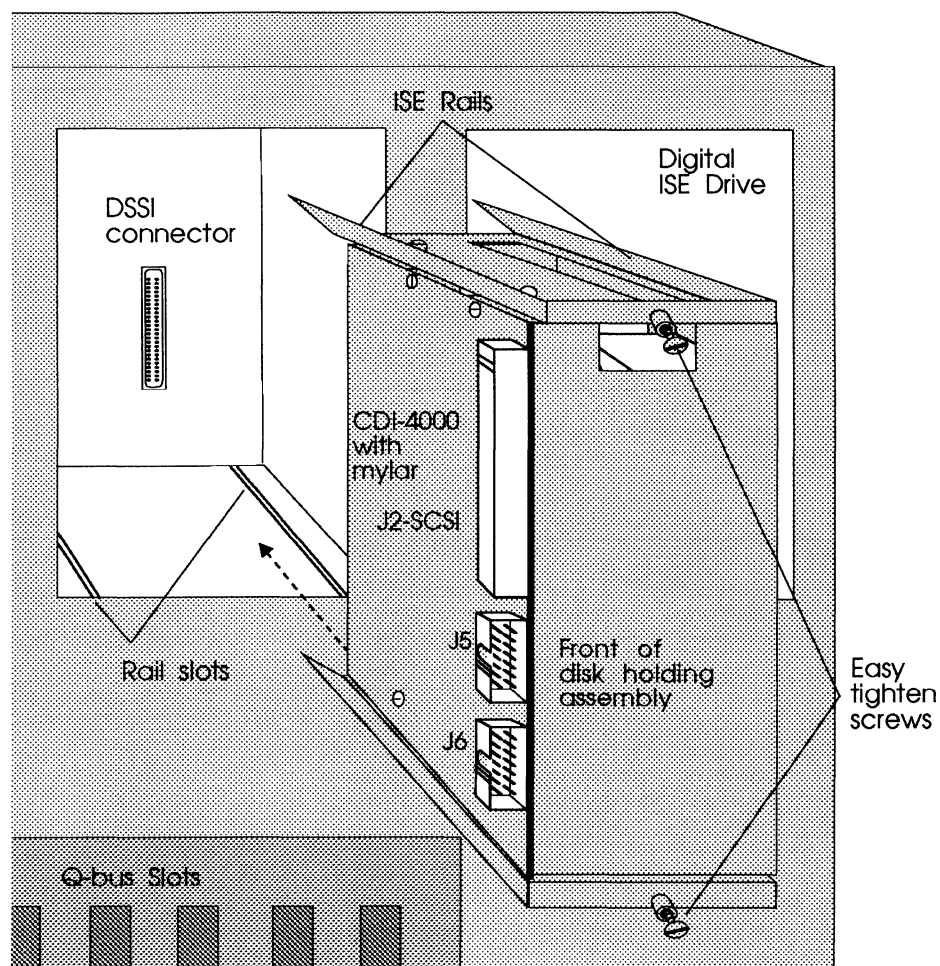


Figure 4-27: CDI-4000-SA2 ISE and drive alignment

- 15 Tighten the easy tighten screws now located on the top and bottom of the ISE assembly.

- 16 Connect one end of the 14-pin cable to J6 of the CDI-4000 and the other end into the back of the ISE front panel display as shown in Figure 4-28.

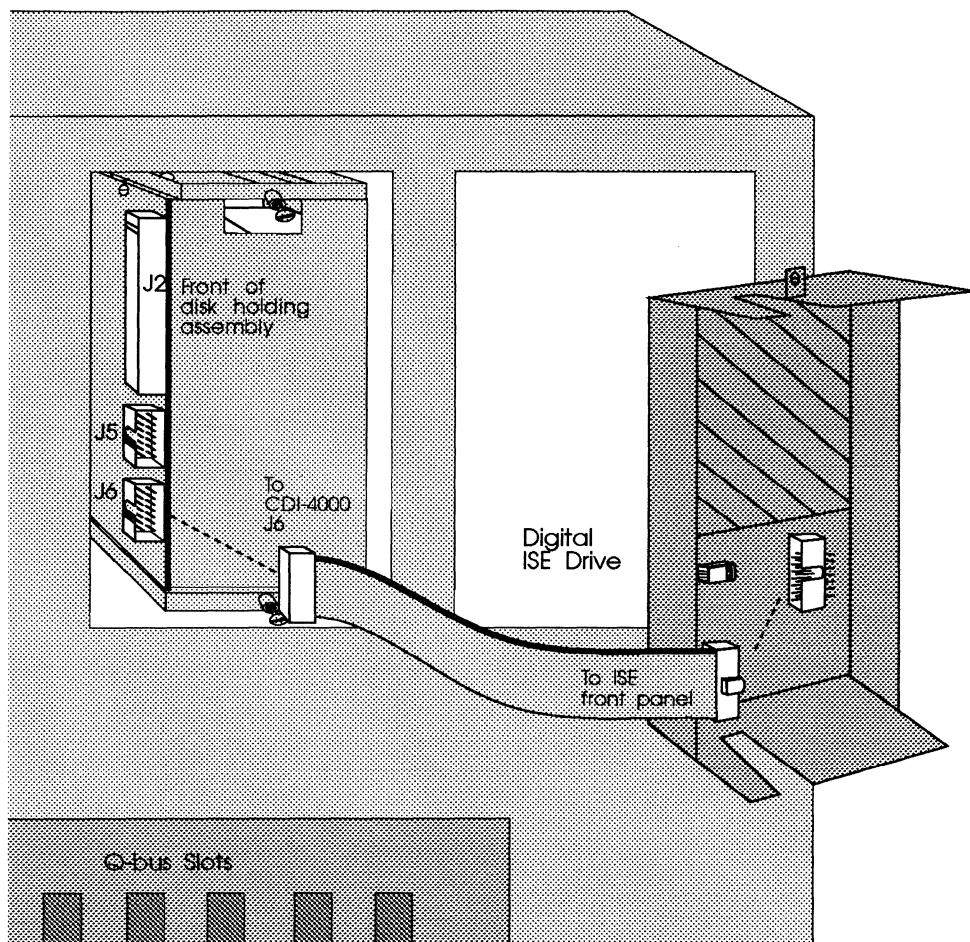


Figure 4-28: CDI-4000-SA2 ISE connections

- 17 Align the back of the front panel display with the ISE assembly and slide the two tabs at the bottom of the ISE front panel display inside the system chassis; then slide the top into the system; see Figure 4-29.

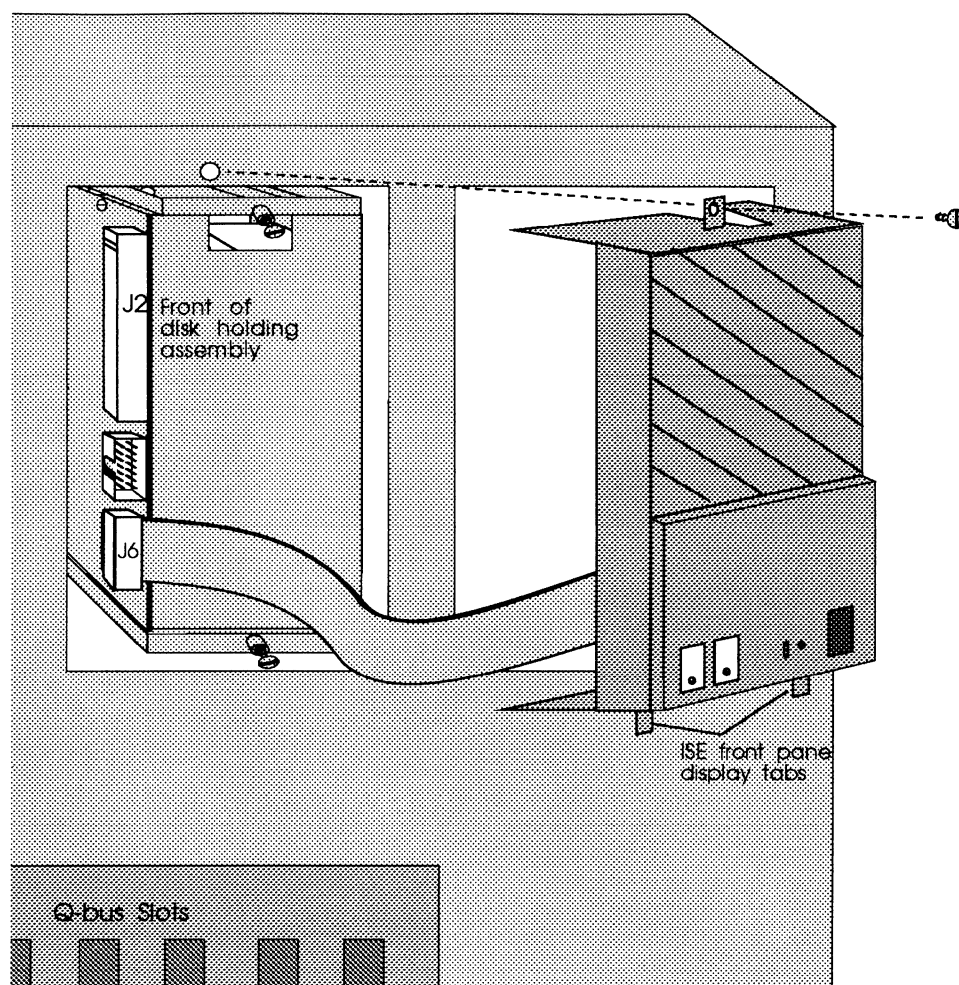


Figure 4-29: CDI-4000-SA2 ISE front panel installation

- 18 Put one screw into the system chassis through the top hole in the ISE front panel display; see Figure 4-29.





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## CDI-4000-SB Installation

CDI-4000-SB Installation involves installing the CDI-4000, front panel adapter kit (CDI-4007), and universal 5¼-inch drives into a MicroVAX 3300 or 3400. For installing SCSI devices, terminating each end of the DSSI and SCSI buses, and identifying each port see Chapter 3, "Determining DSSI Node" and "Hardware Configuration."

### Installing CDI-4000-SB into MicroVAX 3300 and 3400

If you have a MicroVAX 3300 or 3400, the CDI-4000-SB, and a disk drive, follow these procedures to install the CDI-4000 and the drive into the MicroVAX disk drive cavity. If you have a MicroVAX 3500, 3600, 3800, 3900, you must use a KFQSA controller attached to the CDI-4000.

- 1 Carefully unpack the drive from its frame and remove the four screws (two located on each side of the drive) if applicable.

**WARNING** Be sure to wear anti-static wrist straps or equivalent to protect the drive and the CDI-4000 from electrostatic damage.

- 2 Assemble the mylar insulator to the solder side of the CDI-4000 placing the two plastic rivets in the corner holes next to J1 and J3. See Figure 5-1.

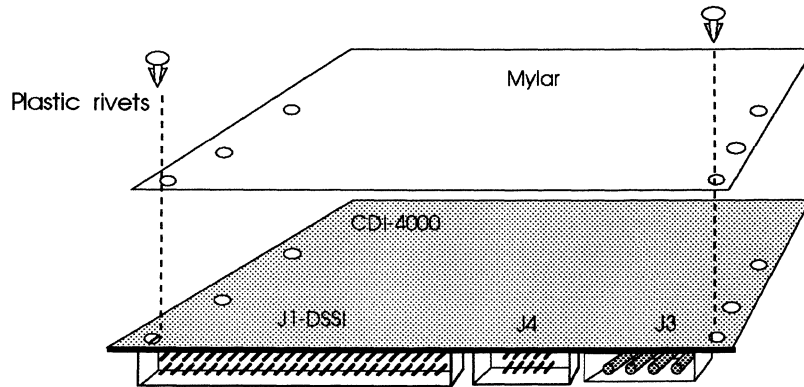
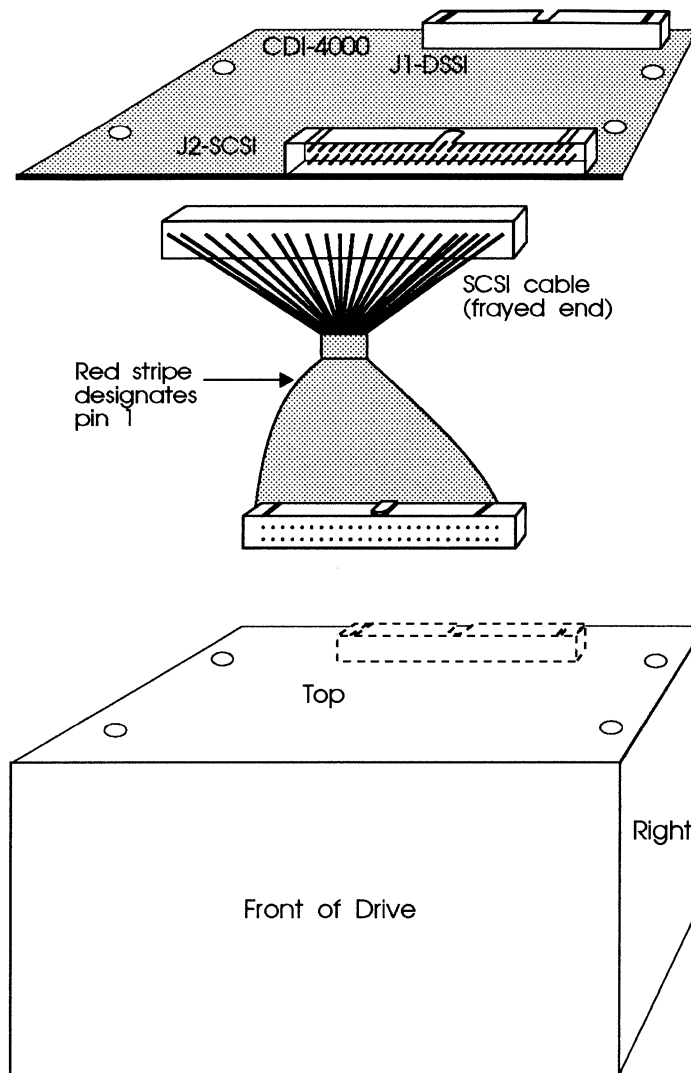


Figure 5-1: Connecting mylar to the CDI-4000

- 3 Invert the CDI-4000 with J1 next to the SCSI connector on the drive.
- 4 Connect the frayed end of the SCSI cable to J2 on the CDI-4000 and the other end to the SCSI connector on the drive. Place the flat portion of cable between the CDI-4000 and drive. See Figure 5-2.



**Figure 5-2: SCSI cable connection**

- 5 Mount the CDI-4000 on top of the drive with J1 next to the SCSI connector on the drive.
  - a Place washers between the screws and the CDI-4000.
  - b Place spacers between the CDI-4000 and the drive.
  - c Put four screws into the drive through the CDI-4000, two on each side. See Figure 5-3.

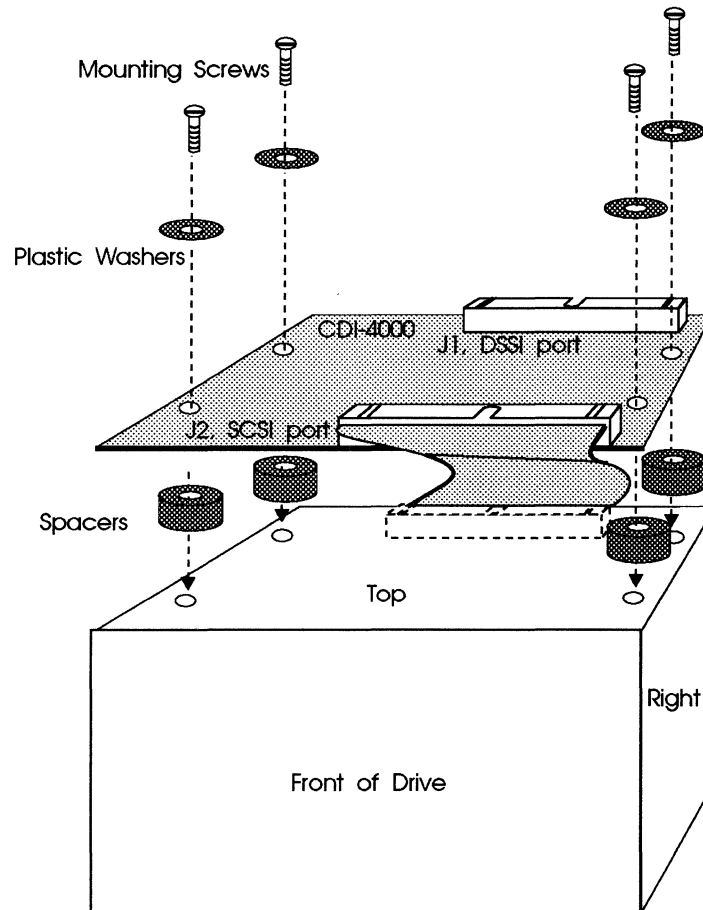


Figure 5-3: Mounting the CDI-4000 onto the drive

- 6 Locate the disk drive mounting rails with the MicroVAX mounting kit. Separate the disk drive mounting rails from the disk drive mounting brackets by loosening the easy tighten screws on the front of the mounting brackets.
- 7 Locate the mounting bracket for the left side of the disk drive. Put two screws into left side of the disk drive through the two holes in the mounting bracket (as indicated in Figure 5-4) to secure the mounting bracket to the drive.

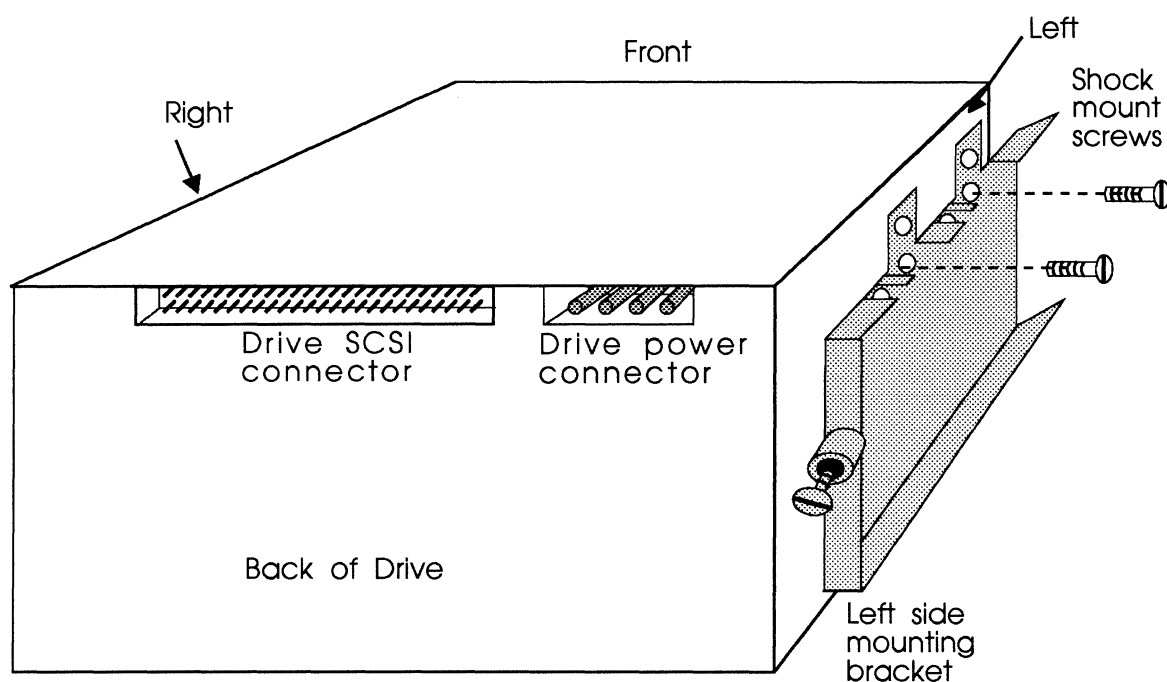


Figure 5-4: Mounting the brackets to the drive

- 8 Locate the mounting bracket for the right side of the disk drive. Put two screws into the right side of the disk drive through the two holes in the mounting bracket (as indicated in Figure 5-4) to secure the mounting bracket to the drive.

- 9 Remove the four screws in the four corners of the MicroVAX front panel. Remove the front panel of the MicroVAX. See Figure 5-5.

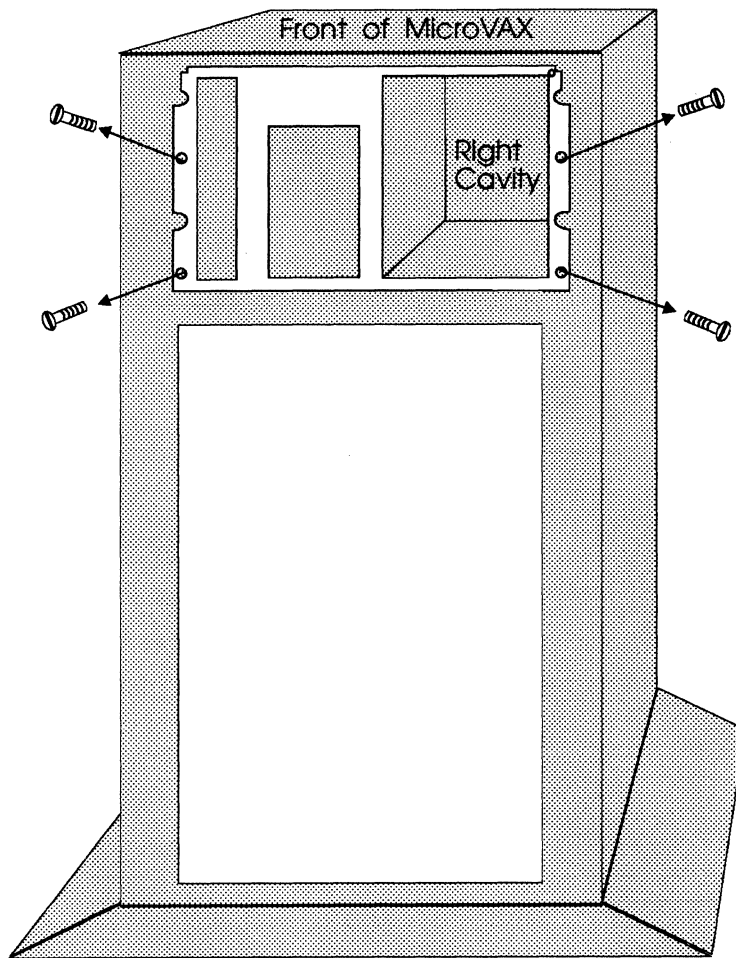


Figure 5-5: Removing the MicroVAX front panel

- 10 Loosen the screw on the top right of the DSSI control panel and take out the DSSI control panel.

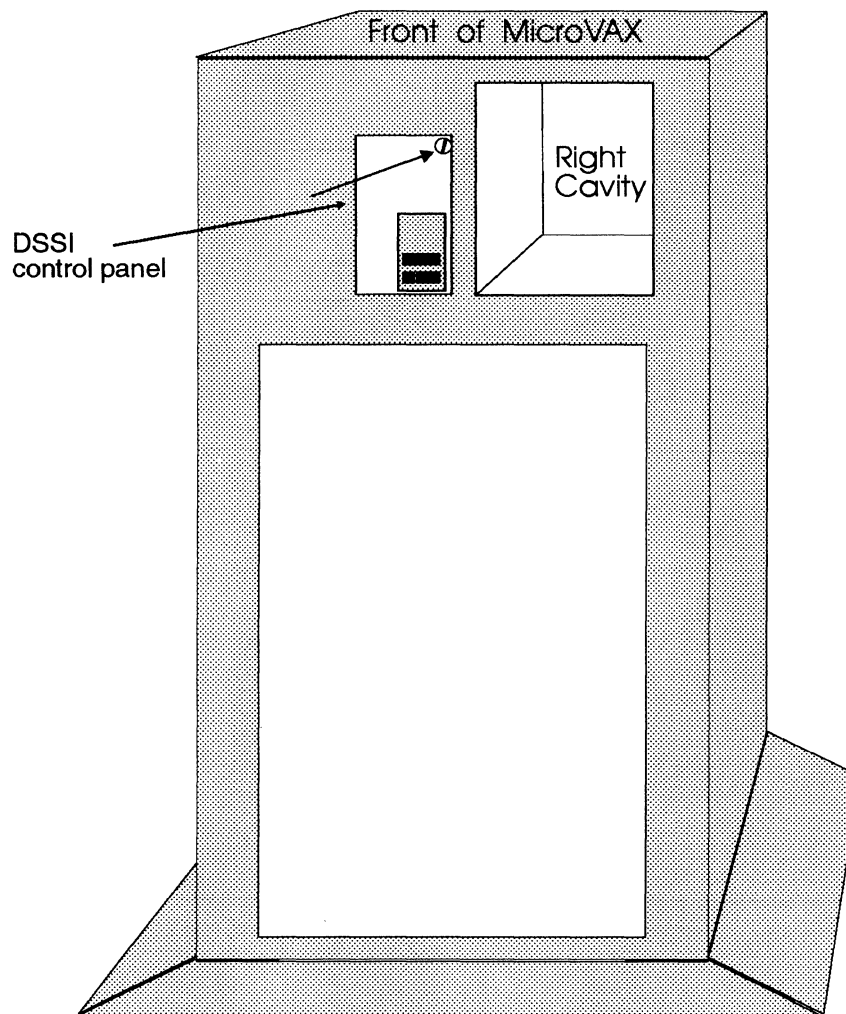


Figure 5-6: Removing the DSSI control panel



- 11 If you are installing the drive into the left disk drive cavity, follow these instructions (right cavity does not need rail installed):
  - a Place one disk drive mounting rail into the bottom center of the left MicroVAX disk drive cavity—aligning with the holes in the center of the cavity.
  - b Put two screws into the bottom of the MicroVAX cavity through the disk drive mounting rail. There are three sets of holes in the front and the back of the cavity; be sure you are putting the screws into the center holes. See Figure 5-7.

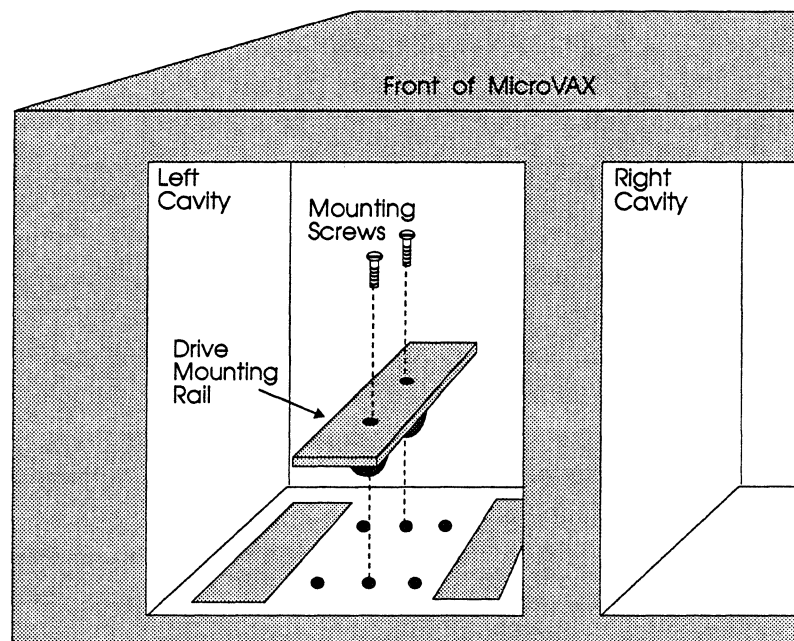
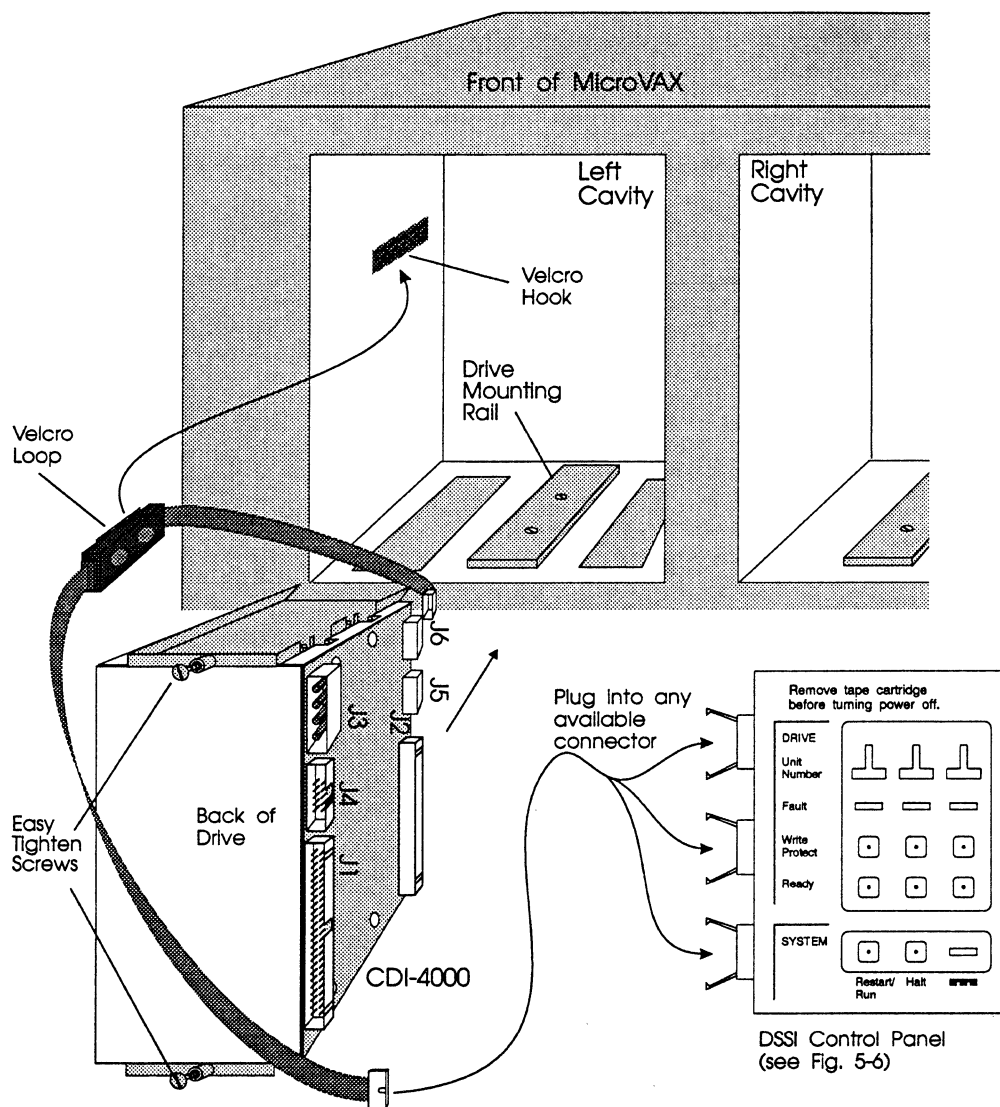


Figure 5-7: Installing the bracket into the MV cavity

- c Place the other disk drive mounting rail into the top center of the left MicroVAX disk drive cavity—aligning with the holes in the center of the cavity.
- 12 Install the front panel adapter kit (CDI-4007) by the following procedure. See figure 5-8.
  - a Remove shunt from jumper W6.
  - b Plug the 14 pin connector from the CDI-4007 to J6 on the CDI-4000.
  - c Attach the Velcro hook patch provided by CMD to a suitable place on the side wall of the left cavity. Affix the CDI-4007 to the hook patch and secure with the cable tie supplied with the kit.

- d Plug the 10 pin connector on the CDI-4007 to any available input on the DSSI control panel.
- 13 Slide the drive into the cavity with the CDI-4000 facing the right, aligning the drive mounting bracket with the drive mounting rails. See Figure 5-8.



**Figure 5-8: Sliding the drive into the cavity**

- 14** Tighten the two easy tighten screws on the mounting bracket now located at the top and bottom of the cavity. See Figure 5-8.

- 15 Locate the CMD power cable adapter.
  - a Connect the female end to the CDI-4000 at J3.
  - b Connect the other female end to the disk drive power connector.
  - c Connect the male end into the power connector cable supplied by the MicroVAX. See Figure 5-9.

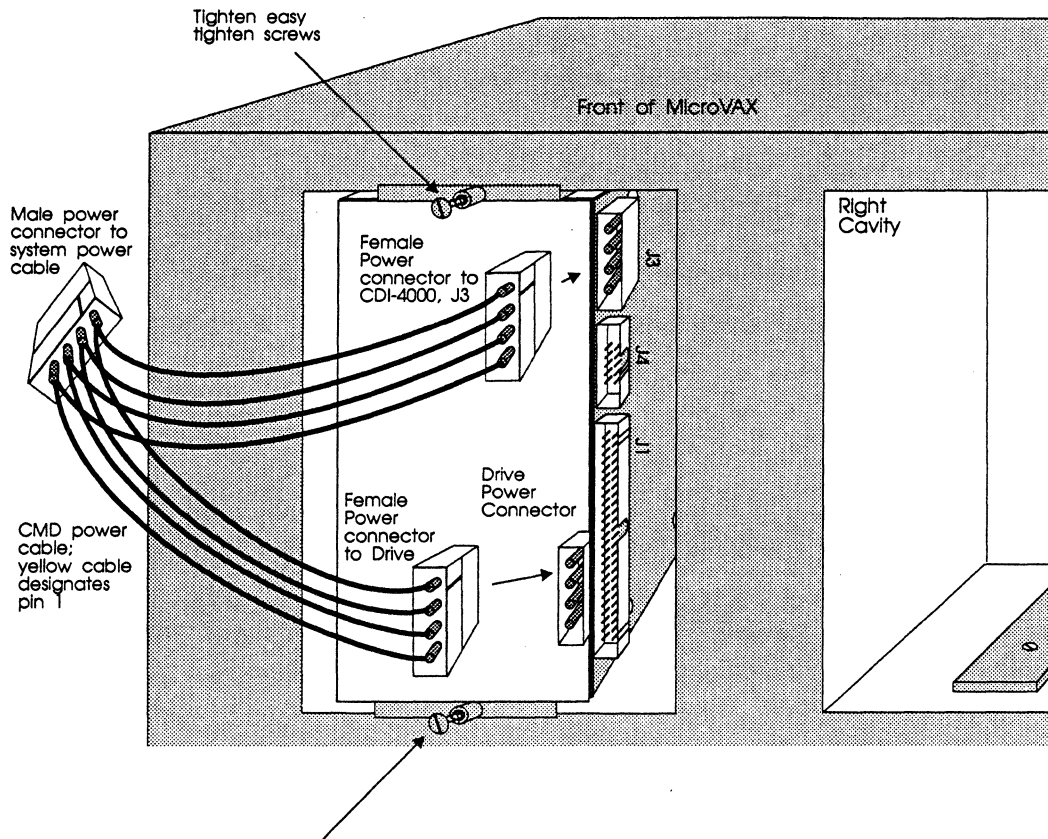


Figure 5-9: Power connections

- 16 If the drive is in the *left cavity*, connect J1 on CDI-4000 (into the daisy chain) to the internal DSSI connector by using the DEC flat DSSI cable inside the MicroVAX.

If the drive is in the *right cavity*, use the CMD flat DSSI adapter cable and follow these instructions:

- a Connect the middle female connector to J1 on the CDI-4000.
- b Connect the female connector at one end of the adapter cable to the internal DSSI connector.
- c Connect the male connector at the other end (of the CMD flat adapter cable) to an internal DSSI cable that routes to the outside of the MicroVAX chassis.

- 17** Replace the DSSI control panel of the MicroVAX and tighten the screw on the top right.
- 18** Replace the MicroVAX front panel and the four screws in the four corners of the MicroVAX front panel.



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## CDI-4000-SC Installation

CDI-4000-SC Installation involves installing the CDI-4000, the LCD Display Panel, and disk drives into a TRIMM DA40 or DA60. For installing SCSI devices, terminating each end of the DSSI and SCSI buses, and identifying each port see Chapter 3, "Determining DSSI Node" and "Hardware Configuration."

### CDI-4000-SC Installation into TRIMM DA40 or DA60

If you have the CDI-4000-SC, install the LCD Display Panel and connect the CDI-4000 into TRIMM<sup>®</sup> DA40 or DA60 by following these instructions.

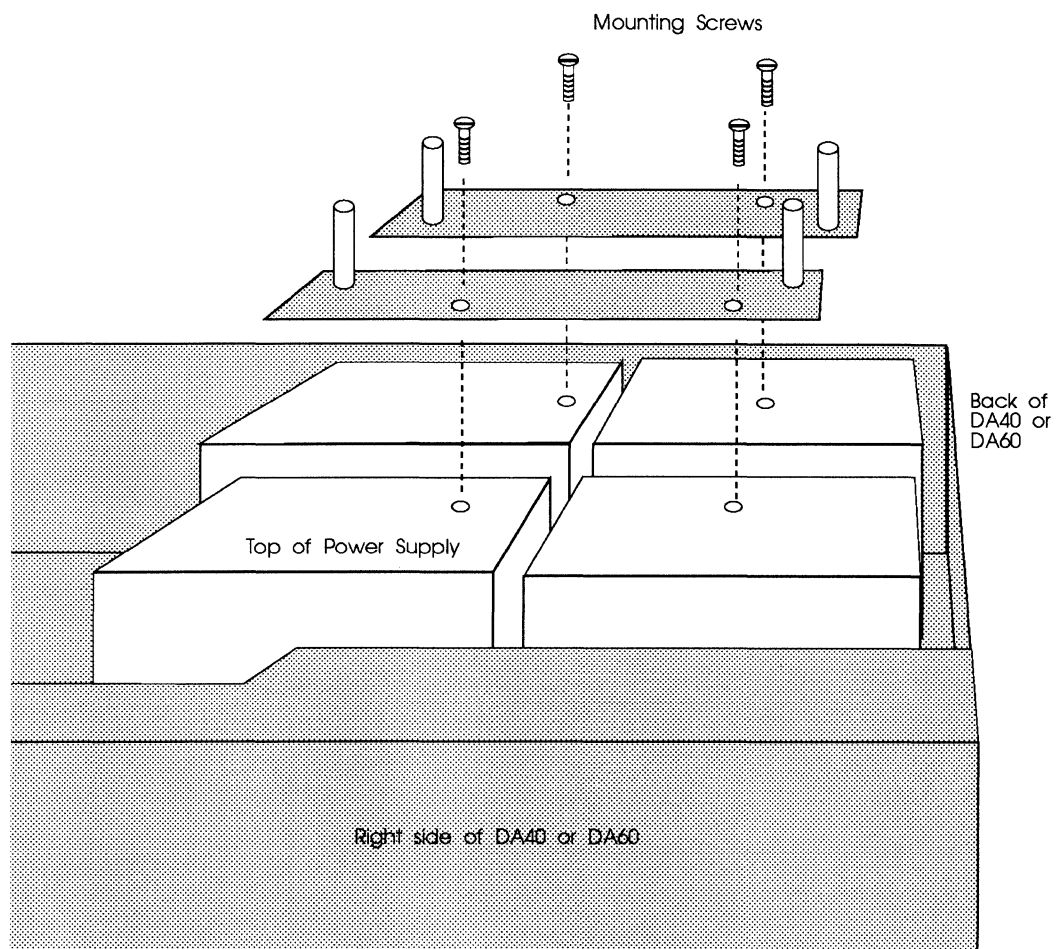
- 1 Make sure the DA40 or DA60 is powered **OFF**. Unplug the power cord from the DA40 or DA60 chassis.
- 2 Open the DA40 or DA60 as shown in DA40 or DA60 documentation. Remove the front cover of the DA40 or DA60 by pulling firmly from the left side first out towards you.

**WARNING** If the LCD is already installed, be very careful when pulling out the front cover not to damage the LCD module which is located on the right side. Use a large screw driver to pry slowly apart from the chassis starting from the left side and then the right side while watching the LCD module from the back side of the front cover.

- 3 Carefully unpack the drive from its frame and remove the four screws (located on the sides of the drive) if applicable.

**WARNING** Be sure to wear anti-static wrist straps or equivalent to protect the drive and the CDI-4000 from electrostatic damage.

- 4 Install all drives into the DA40 or DA60 as explained by DA40 or DA60 documentation.
- 5 Remove the four screws in the mounting rails located on top of the power supplies. Remove the mounting rails.
- 6 Place two CDI-4000 mounting brackets on top of the power supply and put two screws into the power supply through each bracket. See Figure 6-1.



**Figure 6-1: Mounting bracket installation**



- 7 Connect the end SCSI connector on the SCSI cable with five connectors to the CDI-4000 at J2, SCSI port; (see Figure 6-2).

**WARNING** To prevent damage to the CDI-4000, pin 1 of the SCSI cable connector and pin 1 of the J2 of CDI-4000 *must* align.

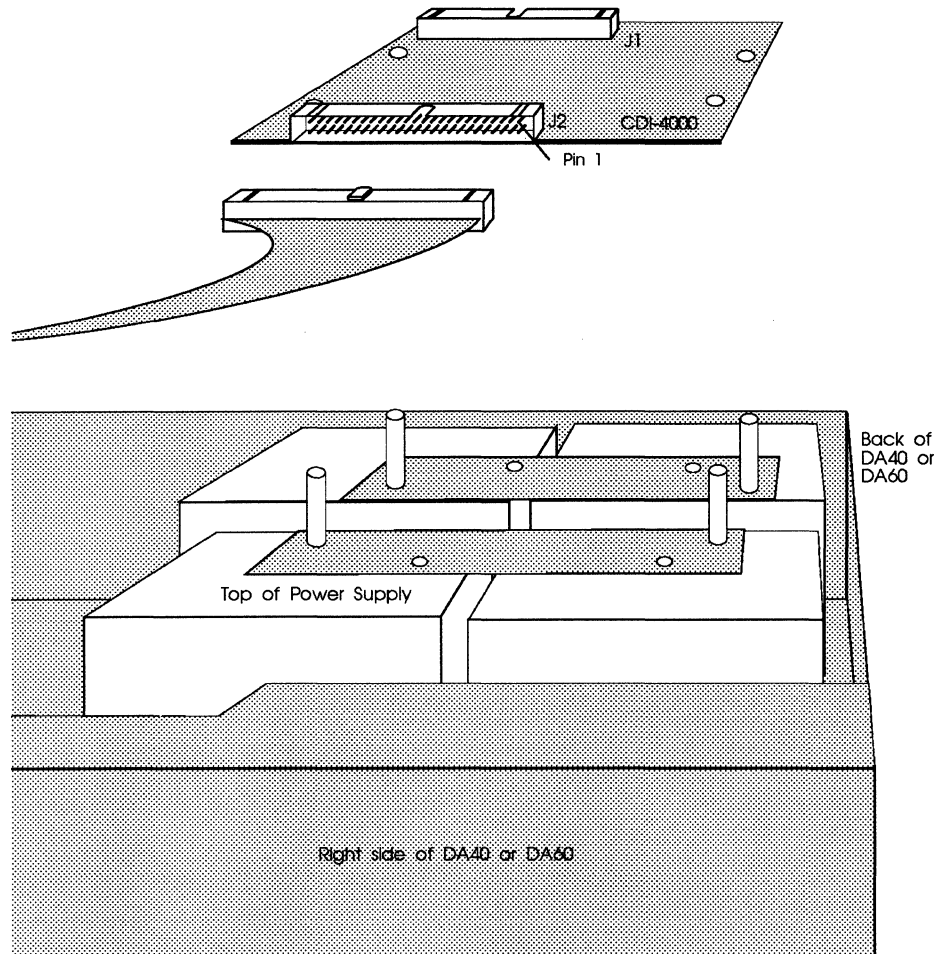


Figure 6-2: SCSI port (J2) cable connection

- 8 Connect other SCSI connectors to all SCSI devices in the DA40 or DA60. Align pin 1 of cable SCSI connector to pin 1 of SCSI connector on device correctly.
- 9 Terminate each end of the SCSI bus as explained in "Hardware Configuration" Chapter 3.
- 10 Put two plastic rivets into the CDI-4000 through the mylar. See Figure 6-3.

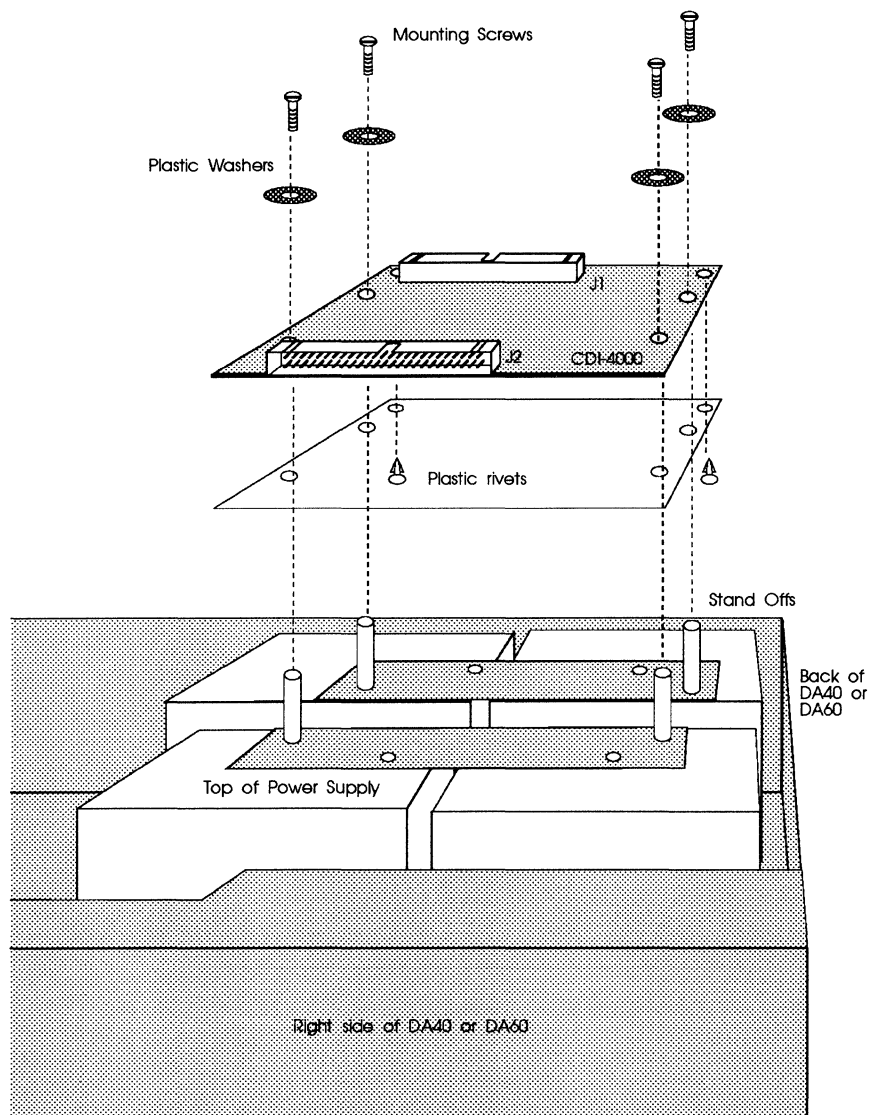


Figure 6-3: Mounting the CDI-4000 into DA40

- 11 Place the CDI-4000 on the mounting brackets and put four screws through the holes in the CDI-4000 and into the standoffs on the mounting brackets. See Figure 6-3.

- 12 Remove the four screws from the bracket located on the back right of the DA40 or DA60. Remove the bracket.
- 13 Assemble the DSSI cable to DSSI bracket.
- 14 Mount the DSSI bracket into the back of the DA40 or DA60. DSSI cable must be inside the DA40 or DA60.
- 15 Put four screws into the DA40 or DA60 through the DSSI bracket as shown in Figure 6-4.

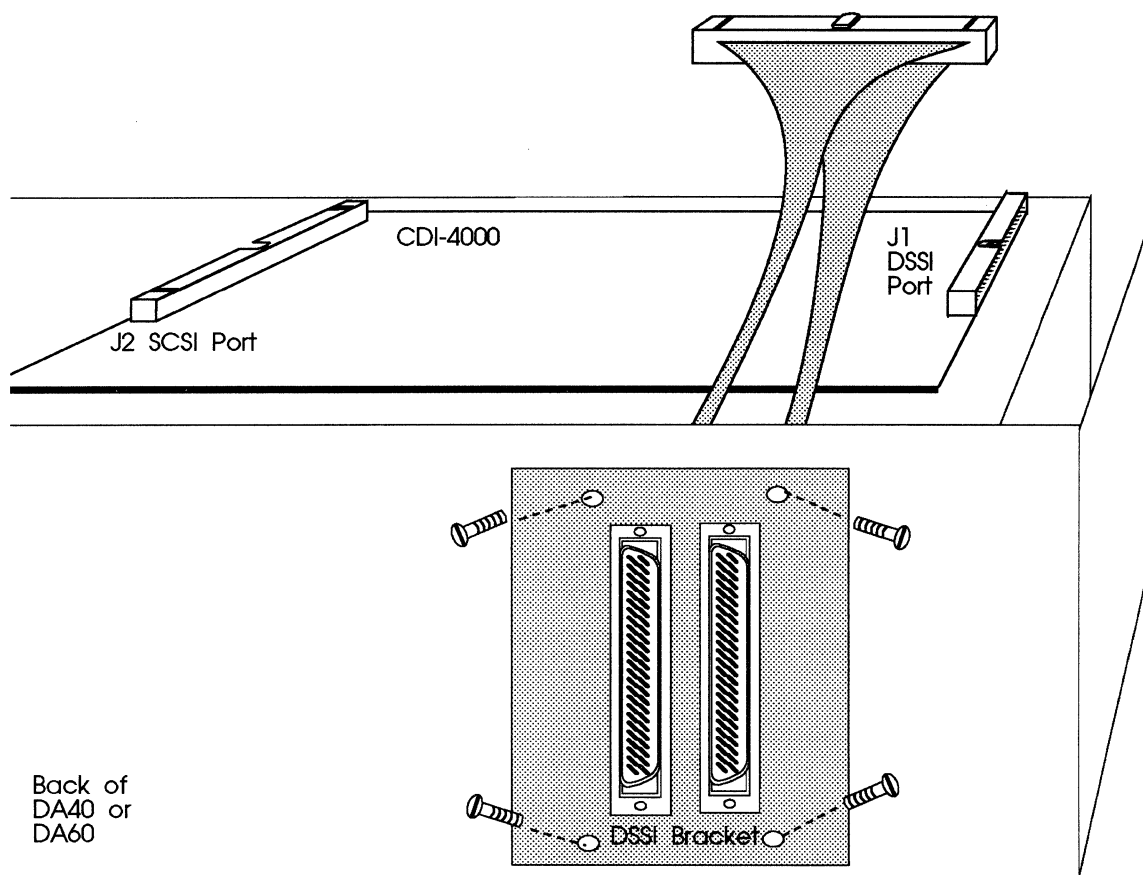
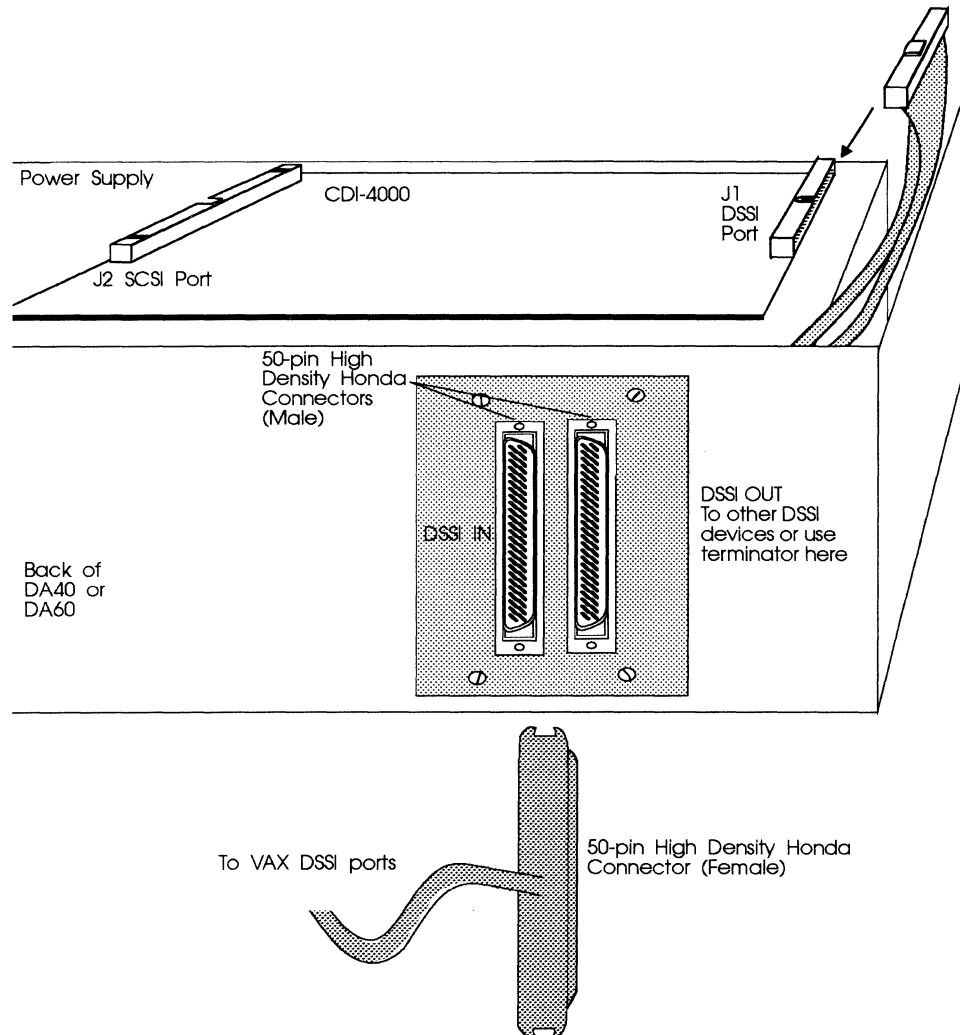


Figure 6-4: Installing the DSSI bracket

- 16 For termination on the CDI-4000 at the DSSI port—RN1, RN2, RN3, RN4. See “Hardware Configuration” Chapter 3.

- 17 Connect the DSSI cable from the DSSI bracket to the CDI-4000 at J1, DSSI port; see Figure 6-5. Route the DSSI cable on the side of the power supply.

**WARNING** To prevent damage to the CDI-4000, pin 1 of the DSSI cable connector and pin 1 of J1 of CDI-4000 *must* align.



**Figure 6-5: DSSI port (J1) cable connection**

- 18 Connect an external DSSI cable to one of the DSSI connectors on the DSSI bracket as shown in Figure 6-5.
- 19 Connect an external DSSI terminator to the other DSSI connector on the DSSI bracket if this connector is not used.

- 20 Connect the other end of the external DSSI cable to the VAX DSSI port; see Figure 6-6.

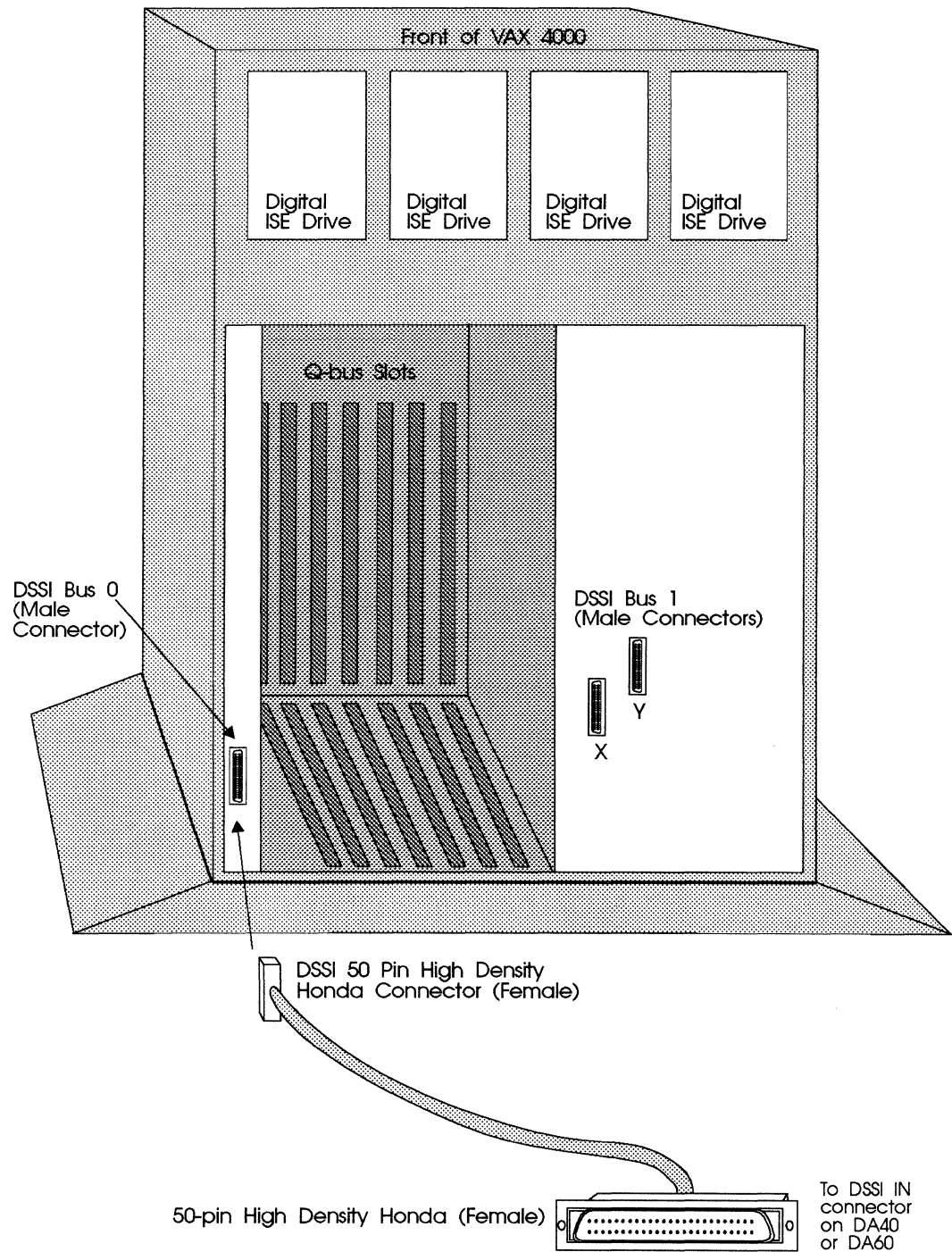
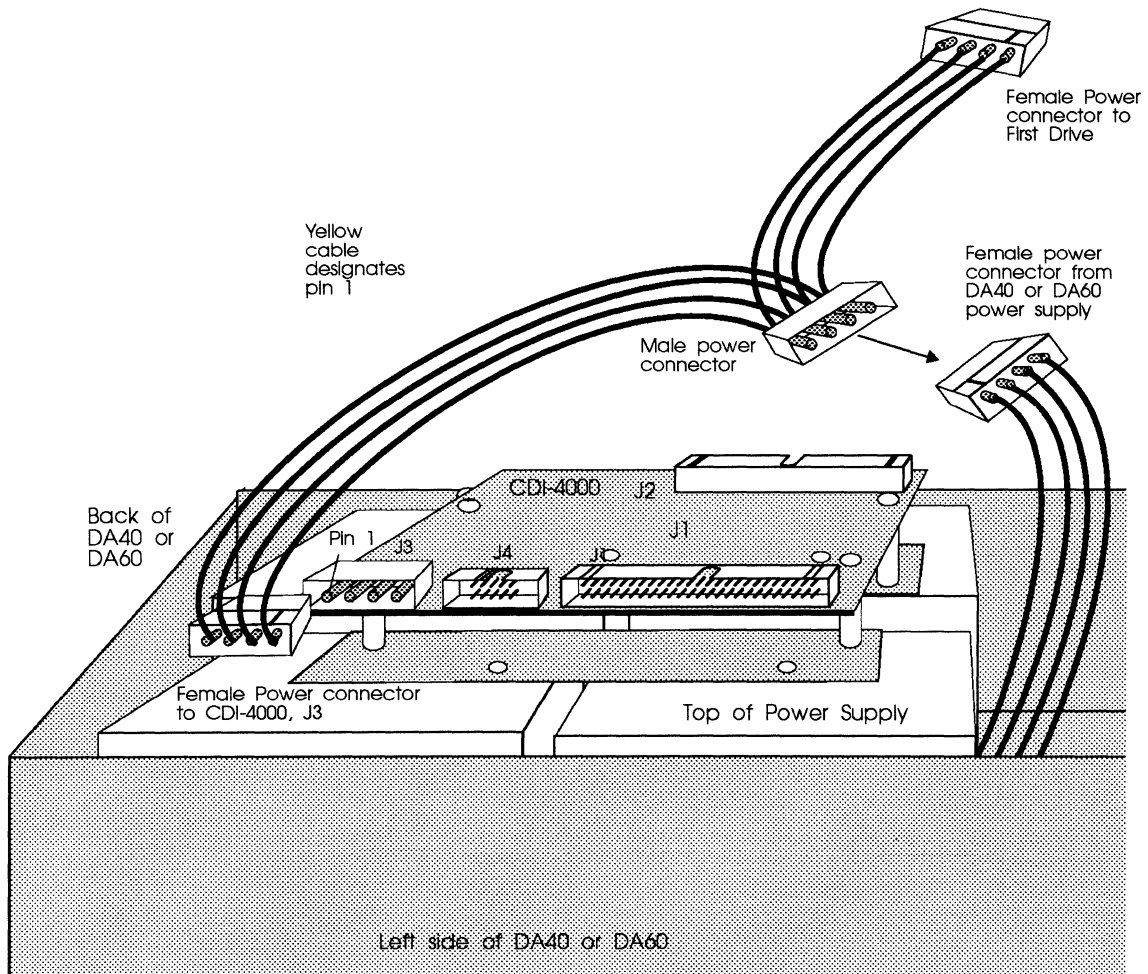


Figure 6-6: Host Computer DSSI connection

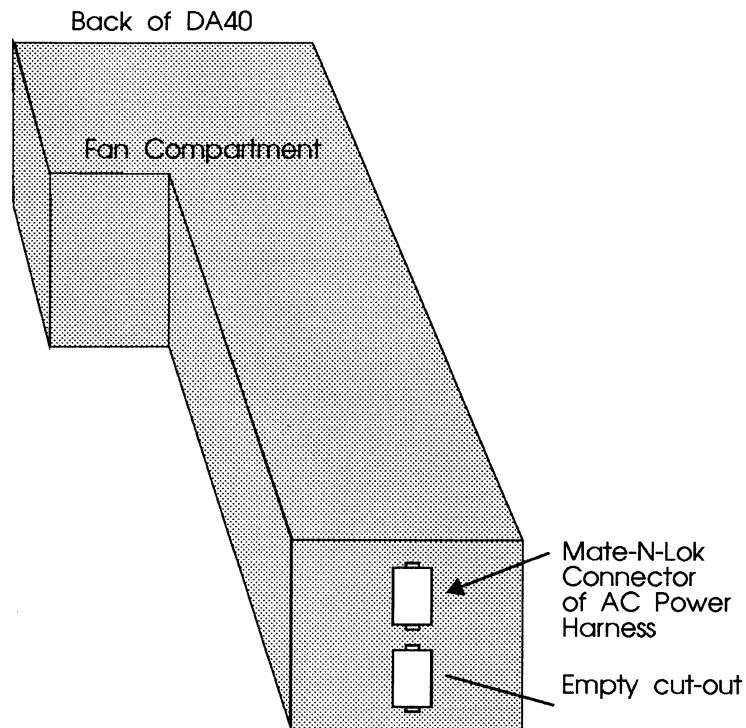
- 21 Locate the three connector power cable.
  - a Connect the female power connector to the shortest male power cable connector from the DA40 or DA60 power supply.
  - b Connect one male power connector to the CDI-4000 at J3.
  - c Connect the other male power connector to the first disk drive; see Figure 6-7.



**Figure 6-7: Power connection**

- 22 Connect other power cables from the power supply to each SCSI device in the DA40 and DA60 as explained in DA40 or DA60 documentation.
- 23 Loosen the four screws in the corners of the DA40 or DA60 front panel. Detach the front panel from the DA40 or DA60.

- 24** *Replace the power harness of the DA40 by following these instructions:*
- a** Disconnect the Mate-N-Lok connector of the AC power harness from the DA40 fan compartment. See Figure 6-8.



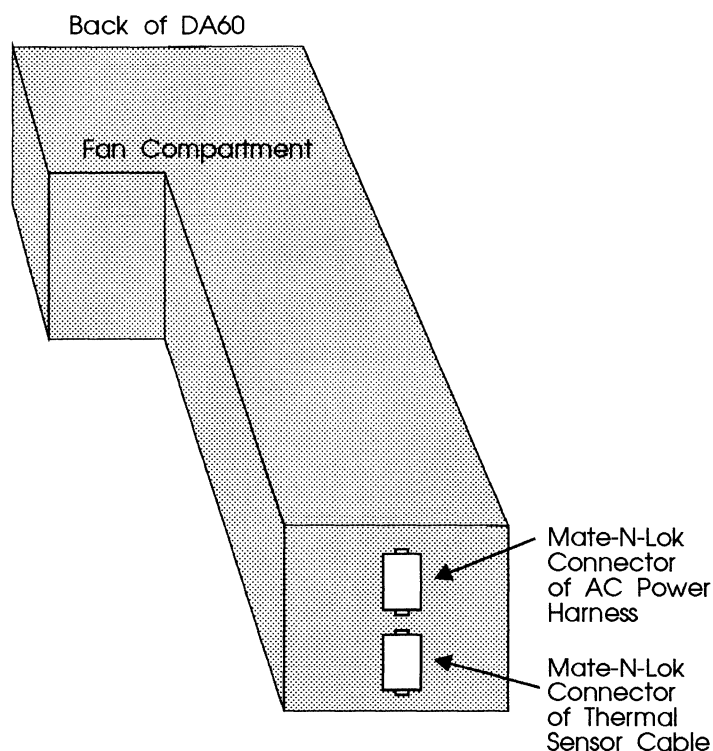
**Figure 6-8: DA40 Fan Compartment with Mate-N-Lok**

- b** Remove AC power harness from DA40 by pushing the power switch out of the front panel from the back side.
- c** Re-use and re-install the AC power harness into the LCD display panel by pushing the AC power switch into the switch cut-out from the front side of the LCD display panel.
- d** Reconnect the Mate-N-Lok connector of the AC power harness to the top Mate-N-Lok connector located on the DA40 fan compartment.

**NOTE** The power switch provided by CMD must be used as a spare part only.

*Replace the power harness of the DA60 by following these instructions:*

- a** Disconnect the Mate-N-Lok connectors of the AC power harness from the DA60 fan compartment; and disconnect the thermal sensor cable. See Figure 6-9.



**Figure 6-9: DA60 Fan Compartment with Mate-N-Lok**

- b** Remove AC power and thermal sensor harness from DA60 by pushing the power switch out of the front panel from the back side.
- c** Re-use and re-install the AC power and thermal sensor harness into the LCD display panel by pushing the AC power switch into the switch cut-out from the front side of the LCD display panel.
- d** Reconnect the Mate-N-Lok connector of the AC power harness to the top Mate-N-Lok connector located on the DA60 fan compartment.
- e** Connect the Mate-N-Lok connector for the thermal sensor cable supplied by CMD to the bottom Mate-N-Lok connector on the fan compartment. Connect any one of the 2-pin socket connector to J12 and the other one to J13 of LCD Display panel
- f** The existing thermal sensor cable from DA60 is left unused. Use tie wrap to secure unused wires and connectors.

**NOTE** The power switch provided by CMD must be used as a spare part only.



- 25 Place the LCD into the DA40 or DA60 with wiring facing the drives.
- 26 Tighten the four screws in the four corners of the LCD module to connect it to the DA40 or DA60.
- 27 Locate the two 14-pin cables connected by tape.
  - a Connect one cable from J5 of LCD to J5 on the CDI-4000.
  - b Connect one cable from J6 of LCD to J6 on the CDI-4000.
  - c Route the cables J5 and J6 on the side of the drives clearing the fan by using cable clamp. See Figure 6-10.

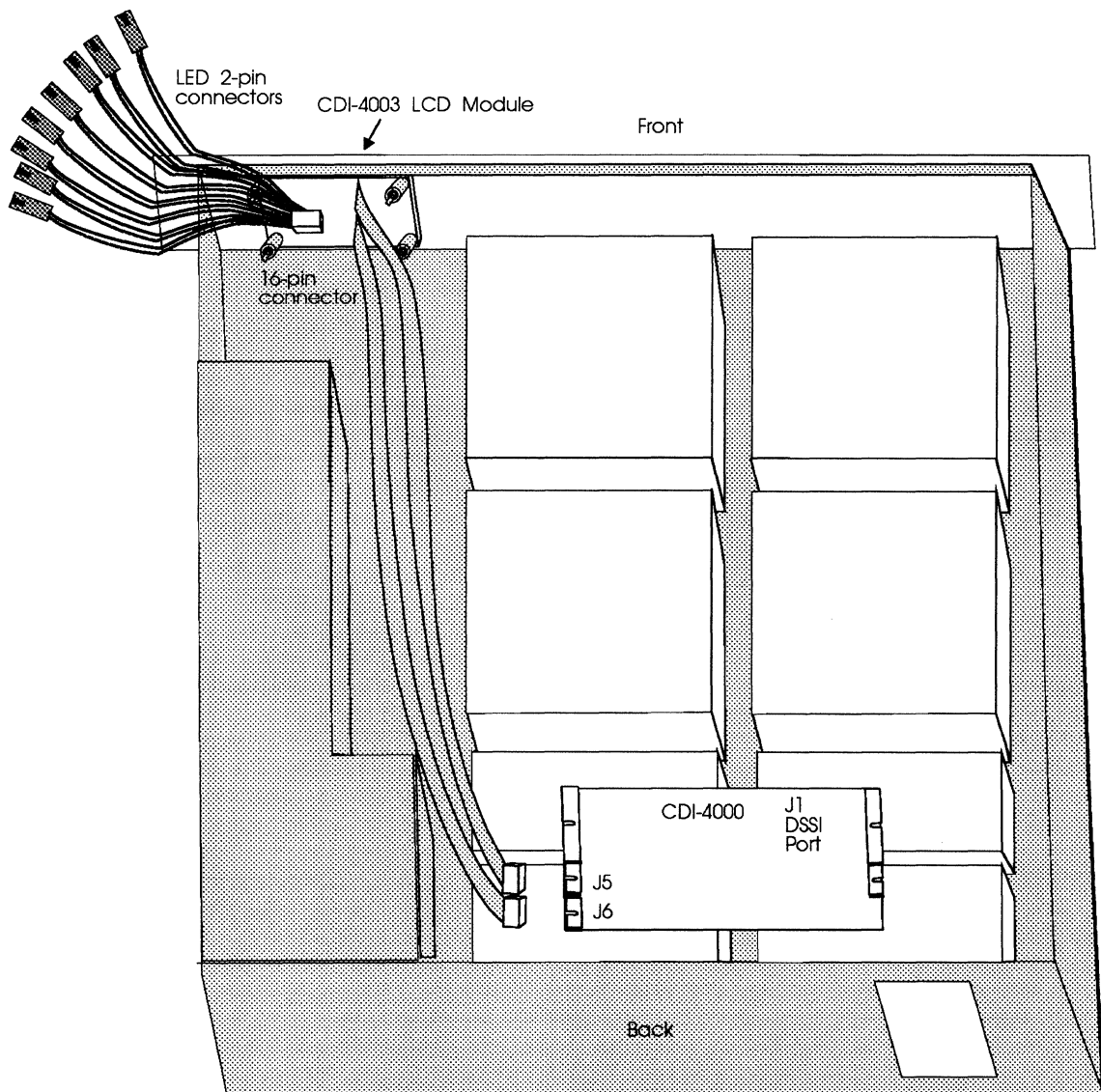


Figure 6-10: Connecting J5 and J6

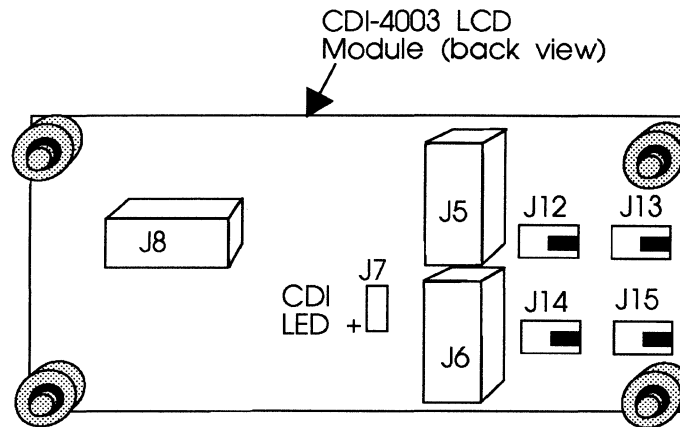
- 28 Locate the eight 2-pin socket connector cable. Connect the 16-pin socket connector to the header on the CDI-4003 (back of LCD) J8. Align brown wire of cable to position “0” of J8.
- 29 Connect each 2-pin socket connector to each LED on the drive as listed in Table 6-1. See documentation for disk drive for LED connections. For example, connect the first Brown and Red wire for LED 0 to the SCSI drive with SCSI ID 0.

**Table 6-1 LCD LED's and Drive SCSI IDs**

LCD LED	LCD LED Color Combo.	Drive SCSI ID
LED 0	Brown & Red	SCSI ID 0
LED 1	Orange & Yellow	SCSI ID 1
LED 2	Green & Blue	SCSI ID 2
LED 3	Purple & Grey	SCSI ID 3
LED 4	White & Black	SCSI ID 4
LED 5	Brown & Red	SCSI ID 5
LED 6	Orange & Yellow	SCSI ID 6
LED 7	Green & Blue	SCSI ID 7—Reserved for CDI-4000

**WARNING** Observe the polarity of the socket connector; align the “+” side of the 2-pin socket connector to the “+” side of LED.

- a If the LED on the drive is a pin header, simply connect the 2-pin socket connector into the pin header.
- b If the LED connector on the drive is a socket connector, insert the pin header (included the LCD kit) into the 2-pin socket connector; then connect it to the LED socket connector on the drive. (There are two types of pin headers, one is straight the other is bent at a 90° angle; use the one that works best with the drive.)
- c If the LED is soldered on the drive, desolder and remove the LED off and solder the pin header sent with the LCD kit (there are two types of pin headers, one is straight the other is bent at a 90° angle; use the one that works best with the drive); or consult drive documentation.
- d Connect the #7 LED wire to J7 labeled “CDI LED” of the LCD module.



**Figure 6-11: LCD module (back view)**

- 30** Close the DA40 or DA60, re-install front cover, and mount it into the rackmount chassis as explained in the DA40 or DA60 documentation.
- 31** Re-connect the AC power cord to the DA40 or DA60.

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## CDI-4000-SD Installation

CDI-4000-SD Installation involves installing the CDI-4000-SDA, CDI-4000-SDB or CDI-4000-SDC half-height LCD assemblies and disk drives into an external chassis like a shoebox, TRIMM TWR-540-231 tower, or the TRIMM DA40 or DA60.

The CDI-4000-SDA interfaces with one drive and the CDI-4000-SDB interfaces with two drives; these usually work within the shoebox. CDI-4000-SDC interfaces with seven drives and works within the subsystem tower or TRIMM DA40 or DA60.

For installing SCSI devices, terminating each end of the DSSI and SCSI buses, and identifying each port see Chapter 3, sections, "Determining DSSI Node" and "Hardware Configuration."

**NOTE** For some subassemblies, the CDI-4000-SD half-height LCD assembly will leave a gap in the front panel, if your OEM does not provide a filler panel for this gap contact CMD for a filler panel.

## Installing CDI-4000-SDA or CDI-4000-SDB into Shoebox

If you have the CDI-4000-SDA or CDI-4000-SDB half-height LCD assembly, install the half-height LCD assembly into the shoebox by following these instructions.

- 1 Make sure the shoebox is powered **OFF**. Unplug the power cord from the shoebox chassis.
- 2 Open the shoebox as shown in shoebox documentation.

**WARNING** Be sure to wear anti-static wrist straps or equivalent to protect the drive and the CDI-4000 from electrostatic damage.

- 3 Install the drives into the shoebox as explained by shoebox documentation.
- 4 Mount the half-height LCD assembly into the shoebox and put four screws into the half-height LCD assembly through the shoebox; see Figure 7-1.

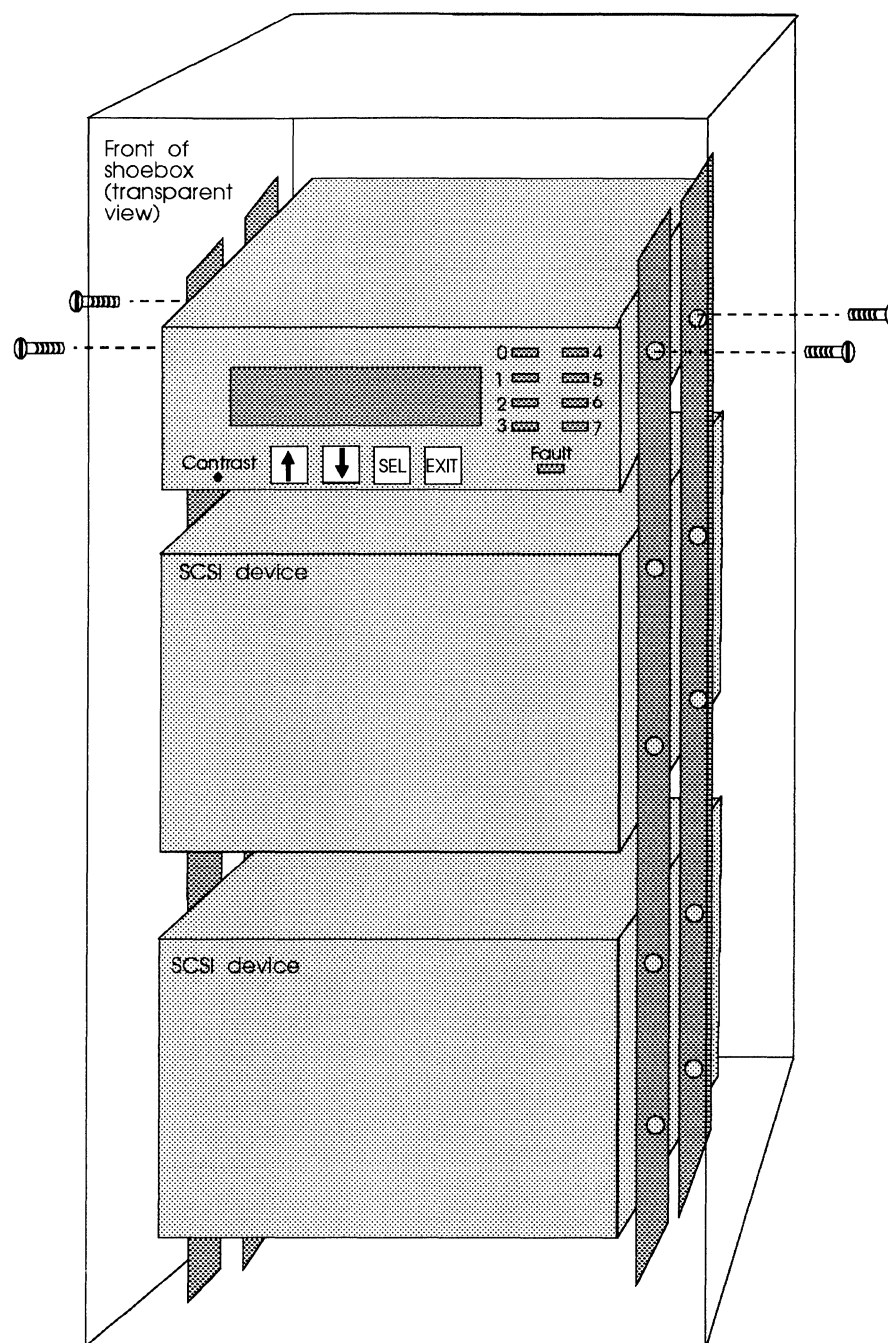


Figure 7-1: Mounting the CDI-4000

- 6 Remove the screws from the back panel cover plate(s) located on the back of the shoebox. Remove the back panel cover plate(s).
- 7 Mount the DSSI bracket or high-density Honda cut-outs to the back of the shoebox. Internal DSSI cable must be inside the shoebox.
- 8 Put mounting screws into the shoebox through the DSSI bracket(s) and secure them with the nuts with lock washers. For high-density Honda cut-outs, see Figure 7-2. For a DSSI bracket example, see Figure 7-10.

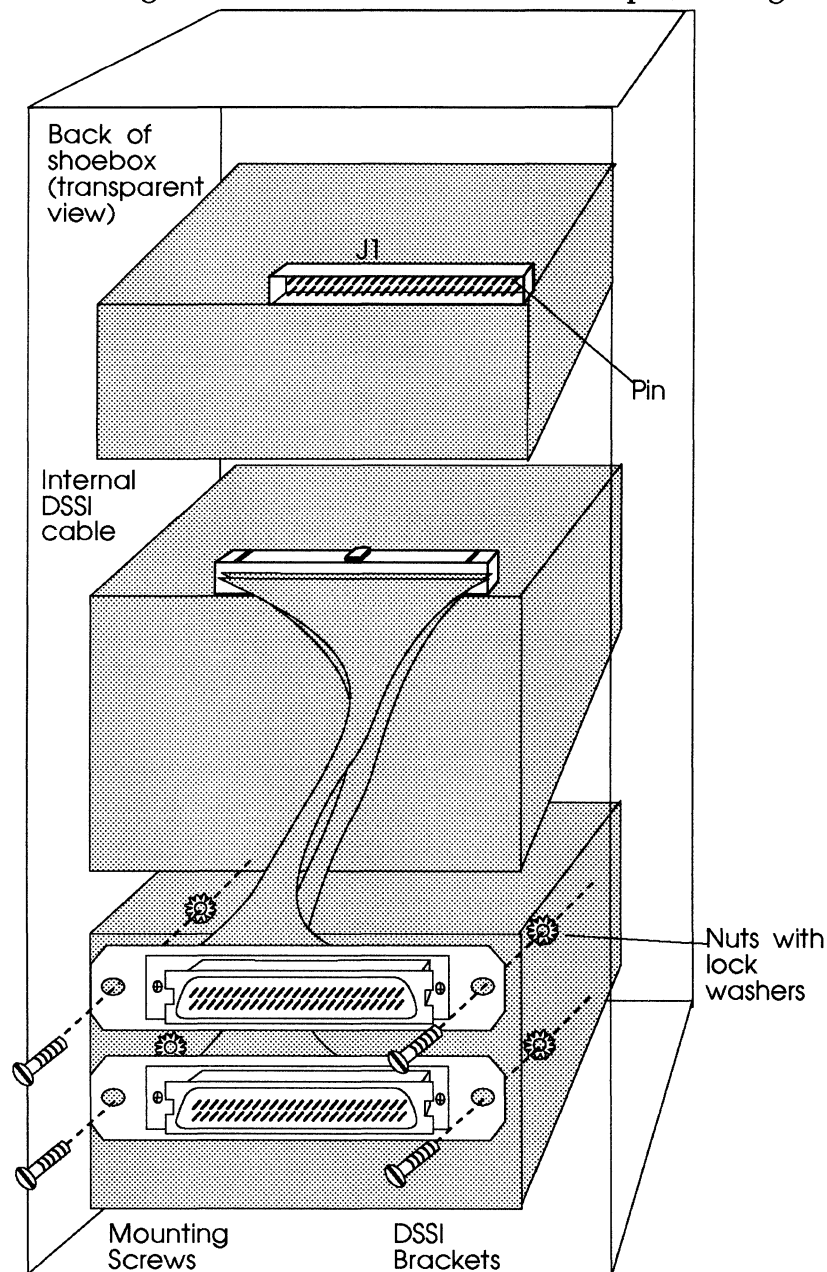


Figure 7-2: Installing the DSSI bracket

- 9 Connect the internal DSSI cable from the DSSI bracket to the CDI-4000 at J1, DSSI port; see Figure 7-2.

**WARNING** To prevent damage to the CDI-4000, pin 1 of the DSSI cable connector and pin 1 of J1 of CDI-4000 *must* align.

- 10 Connect an external DSSI cable to one of the DSSI connectors on the DSSI bracket as shown in Figure 7-3.

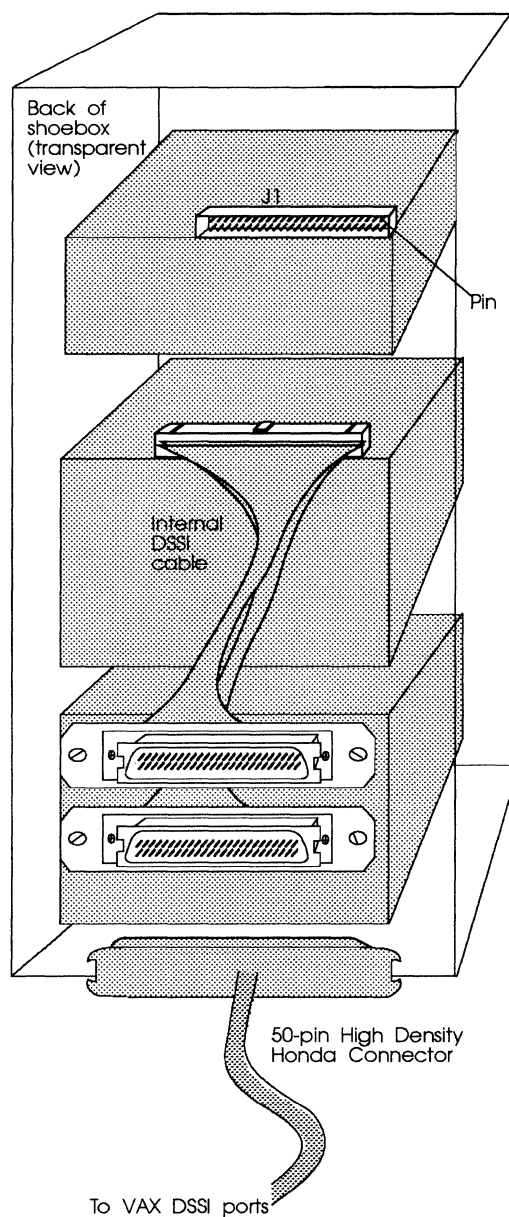


Figure 7-3: DSSI ports for shoebox



- 11 Connect the other end of the external DSSI cable to the VAX DSSI port; see Figure 7-4.

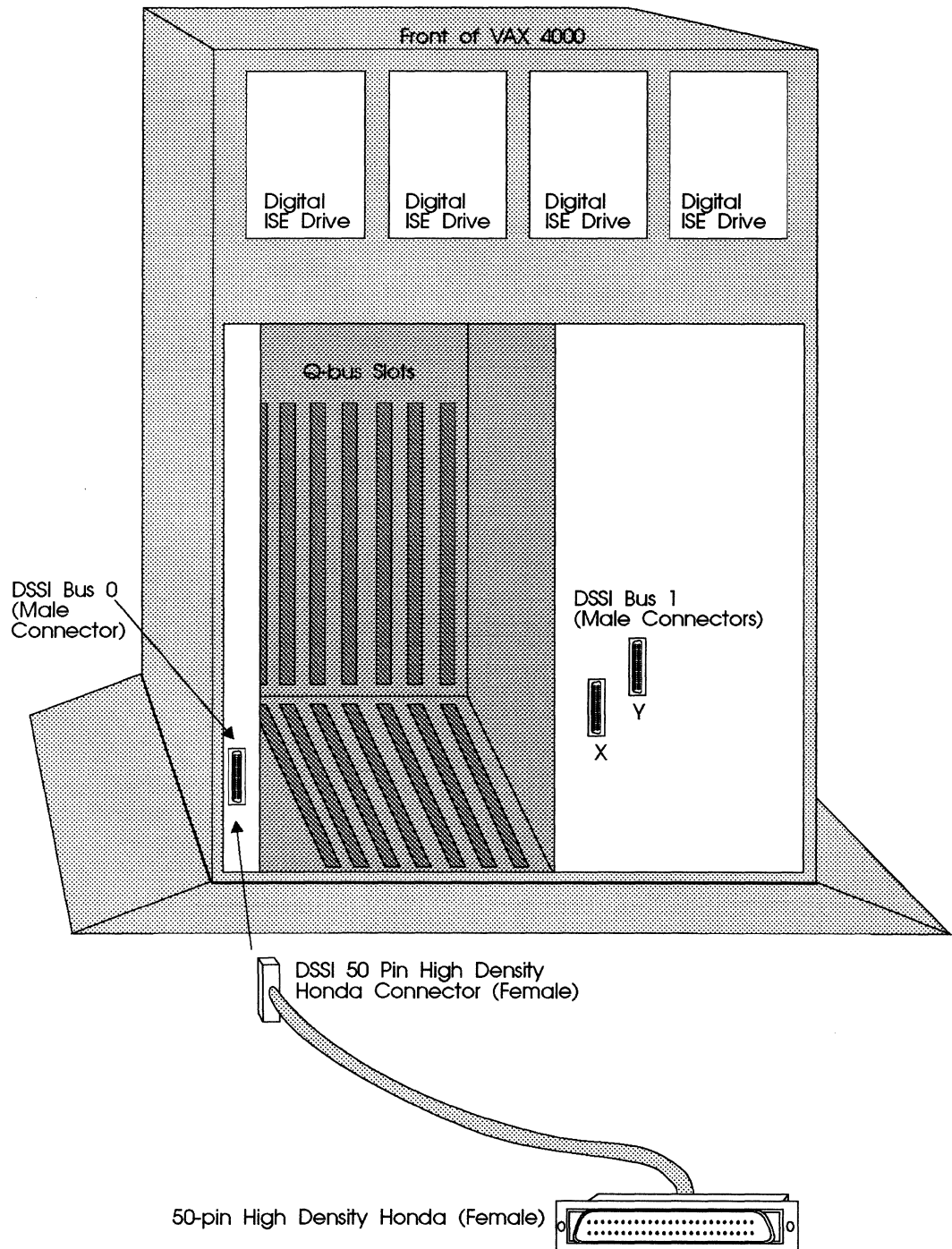


Figure 7-4: Host Computer DSSI connection

- 12 Terminate each end of the DSSI bus by using external DSSI terminators or on-board terminators; see "Hardware Configuration," Chapter 3.
- 13 Connect the male connector (with the ejector latch of the internal SCSI cable, coming from J2 on the CDI-4000) to the SCSI cable going to the SCSI drives. (If OEM does not supply SCSI cable contact CMD.) See Figure 7-5.

**WARNING** To prevent damage to the CDI-4000, pin 1 of the SCSI cable connector and pin 1 of the J2 of CDI-4000 *must* align.

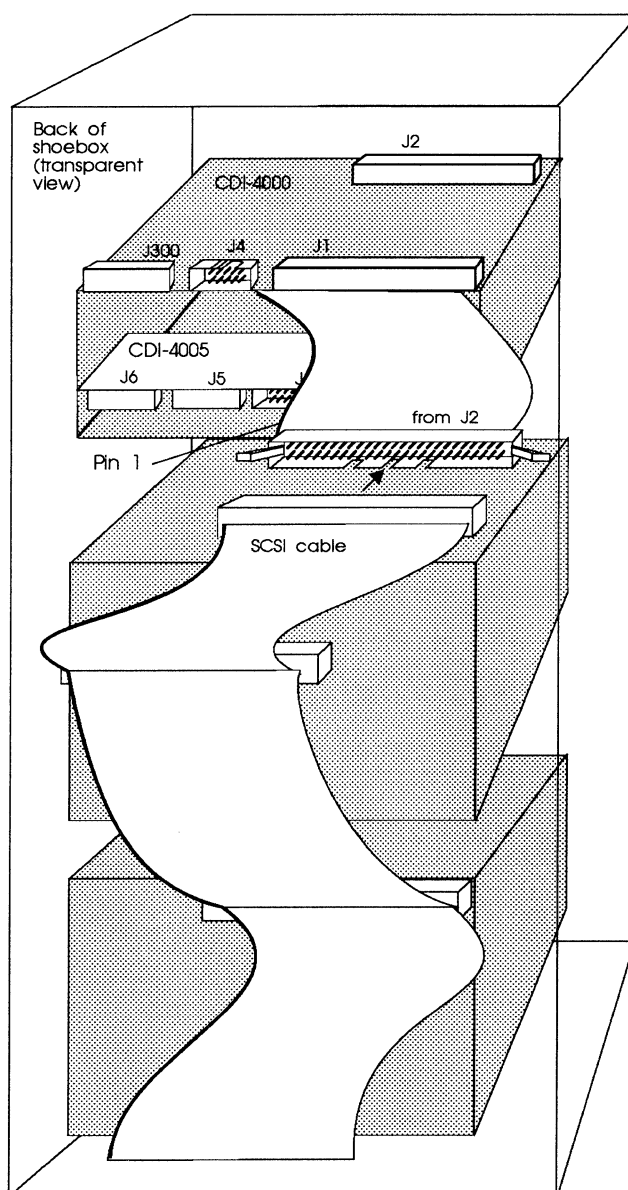


Figure 7-5: SCSI port (J2) cable connection

Or remove the CDI-4000 from the half-height LCD assembly and then directly connect the SCSI cable to J2 (see section “Installing CDI-4000 onto Half-Height LCD Holding Bracket”).

- 14 Terminate each end of the SCSI bus as explained in “Hardware Configuration” Chapter 3.
- 15 Locate the disk drives’ power cable from the shoebox.
  - a Connect one power connector to the CDI-4000 at J3; see Figure 7-6.

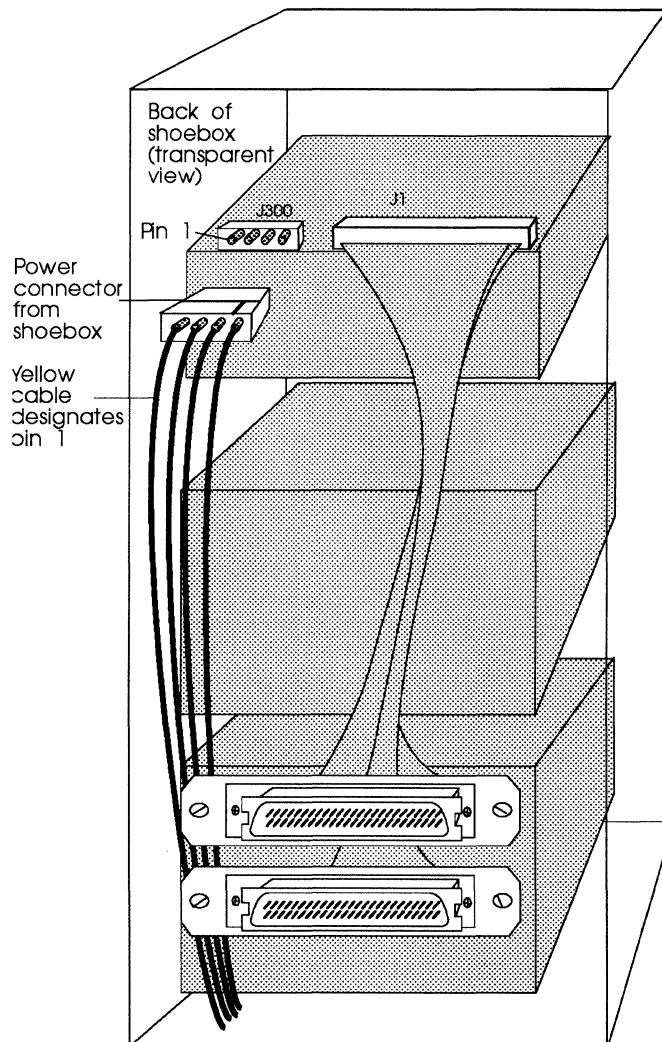


Figure 7-6: Power connection

- b Connect other power cables from the power supply to each SCSI device in the shoebox as explained in shoebox documentation.

- 16 Locate the rainbow cable with eight 2-pin socket connectors. Connect the 16-pin socket connector to J8 on the back of the CDI-4005. Align brown wire of cable to position "0" of J8, labeled "Device LED." See Figure 7-7.

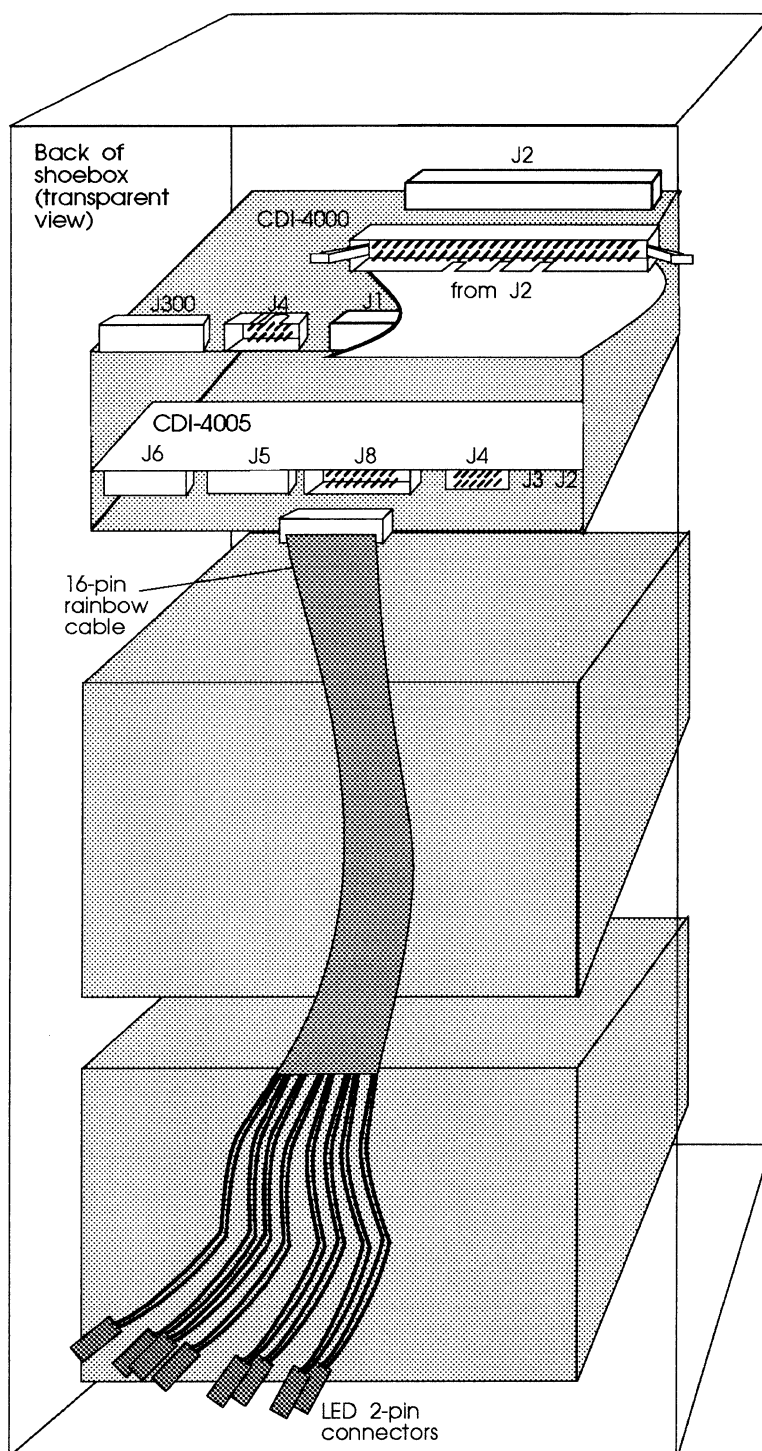


Figure 7-7: Connecting rainbow cable to J8

- 17** Connect each 2-pin socket connector to each LED on the drive as listed in Table 7-1; separate the 2-pin cables if necessary. See documentation for disk drive for LED connections. For example, connect the first Brown and Red wire for LED 0 to the SCSI drive with SCSI ID 0.

**Table 7-1 LCD LEDs and Drive SCSI IDs**

LCD LED	LCD LED Color Combo.	Drive SCSI ID
LED 0	Brown & Red	SCSI ID 0
LED 1	Orange & Yellow	SCSI ID 1
LED 2	Green & Blue	SCSI ID 2
LED 3	Purple & Grey	SCSI ID 3
LED 4	Brown & Red	SCSI ID 4
LED 5	Orange & Yellow	SCSI ID 5
LED 6	Green & Blue	SCSI ID 6
LED 7	Purple & Grey	SCSI ID 7—Reserved for CDI-4000

**WARNING** Observe the polarity of the socket connector; align the “+” side of the 2-pin socket connector to the “+” side of LED.

- a** If the LED on the drive is a pin header, simply connect the 2-pin socket connector into the pin header.
  - b** If the LED connector on the drive is a socket connector, insert the pin header (included the LCD kit) into the 2-pin socket connector; then connect it to the LED socket connector on the drive. (There are two types of pin headers, one is straight the other is bent at a 90° angle; use the one that works best with the drive.)
  - c** If the LED is soldered on the drive, desolder and remove the LED off and solder the pin header sent with the LCD kit (there are two types of pin headers, one is straight the other is bent at a 90° angle; use the one that works best with the drive); or consult drive documentation.
  - d** Connect the #7 LED wire to J7 of the CDI-4005.
- 18** Close the shoebox as explained in the shoebox documentation.
- 19** Re-connect the AC power cord to the shoebox.

# Installing CDI-4000-SDC into TRIMM TWR-540-231 Tower

If you have the CDI-4000-SDC and a TRIMM TWR-540-231 tower, install the half-height LCD assembly into the tower, by following these instructions. Other tower subsystems installation instructions will vary.

- 1 Make sure the tower is powered **OFF**. Unplug the power cord from the tower chassis.
- 2 Open the tower as shown in tower documentation.

**WARNING** Be sure to wear anti-static wrist straps or equivalent to protect the drive and the CDI-4000 from electrostatic damage.

- 3 Install all drives into the tower as explained by tower documentation.
- 4 Mount the half-height LCD assembly onto the tower tray. The mounting holes closer to the front make the half-height LCD assembly flush to the front of the chassis; see Figure 7-8.

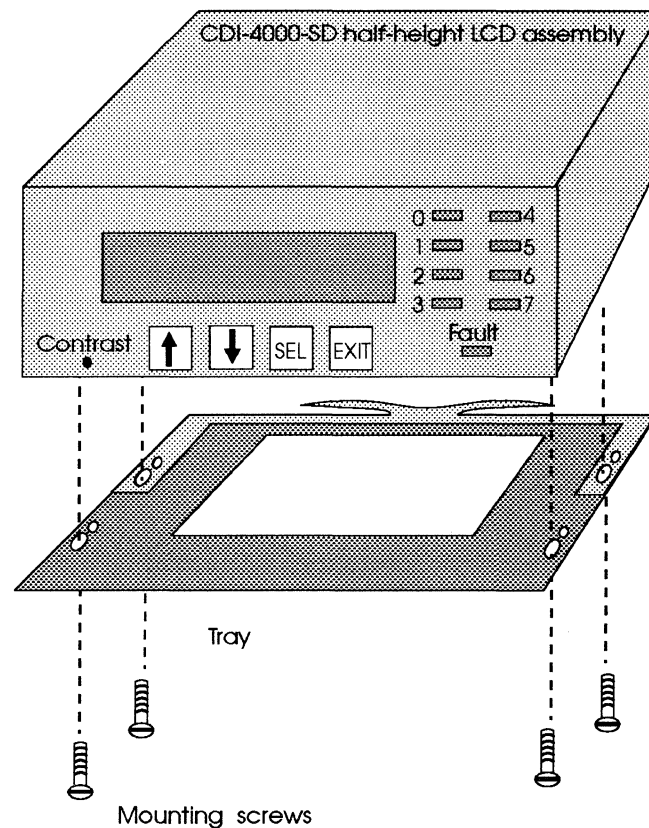


Figure 7-8: Mounting the CDI-4000

- 5 Slide the tray into the top front slot of the tower. See Figure 7-9.

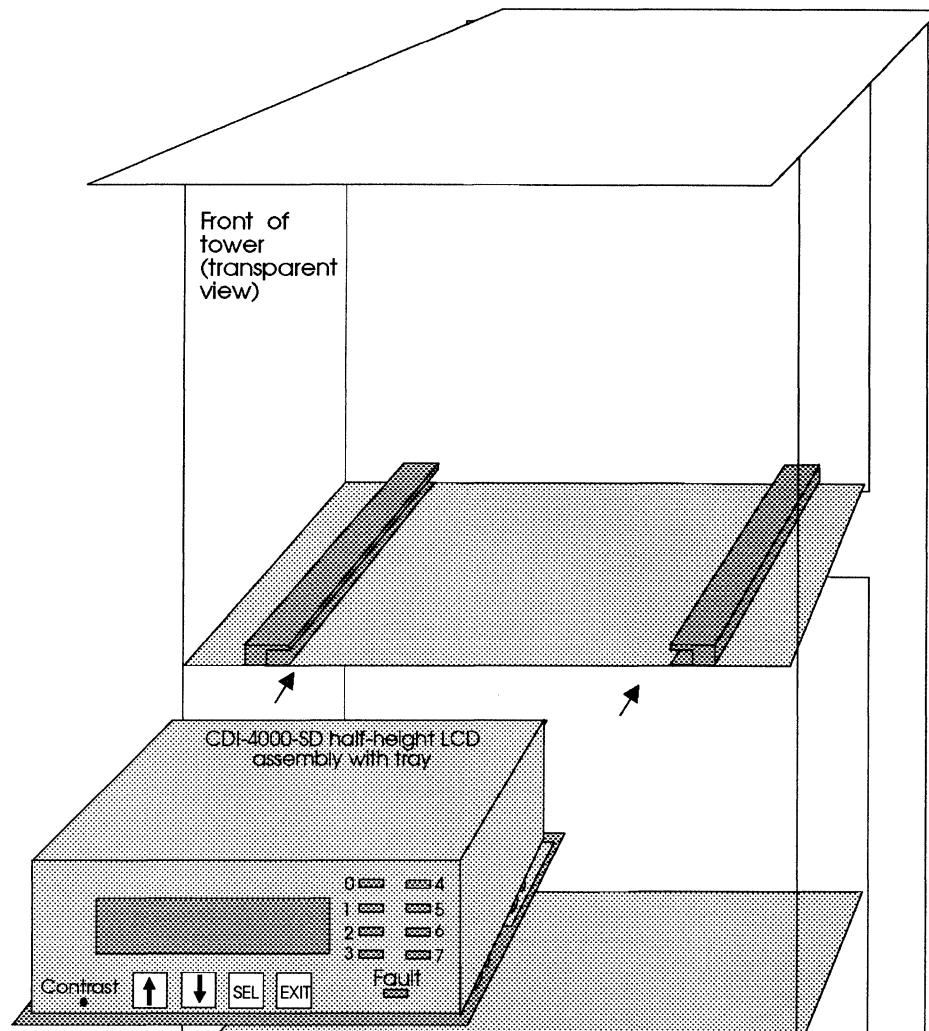


Figure 7-9: Slide the tray into the tower

- 6 Remove the four screws from the bracket located on the back of the tower. Remove the bracket.
- 7 Mount the DSSI bracket into the back of the tower. Internal DSSI cable must be inside the tower.

- 8 Put four mounting screws into the tower chassis through the DSSI bracket and secure them with the nuts with lock washers as shown in Figure 7-10.

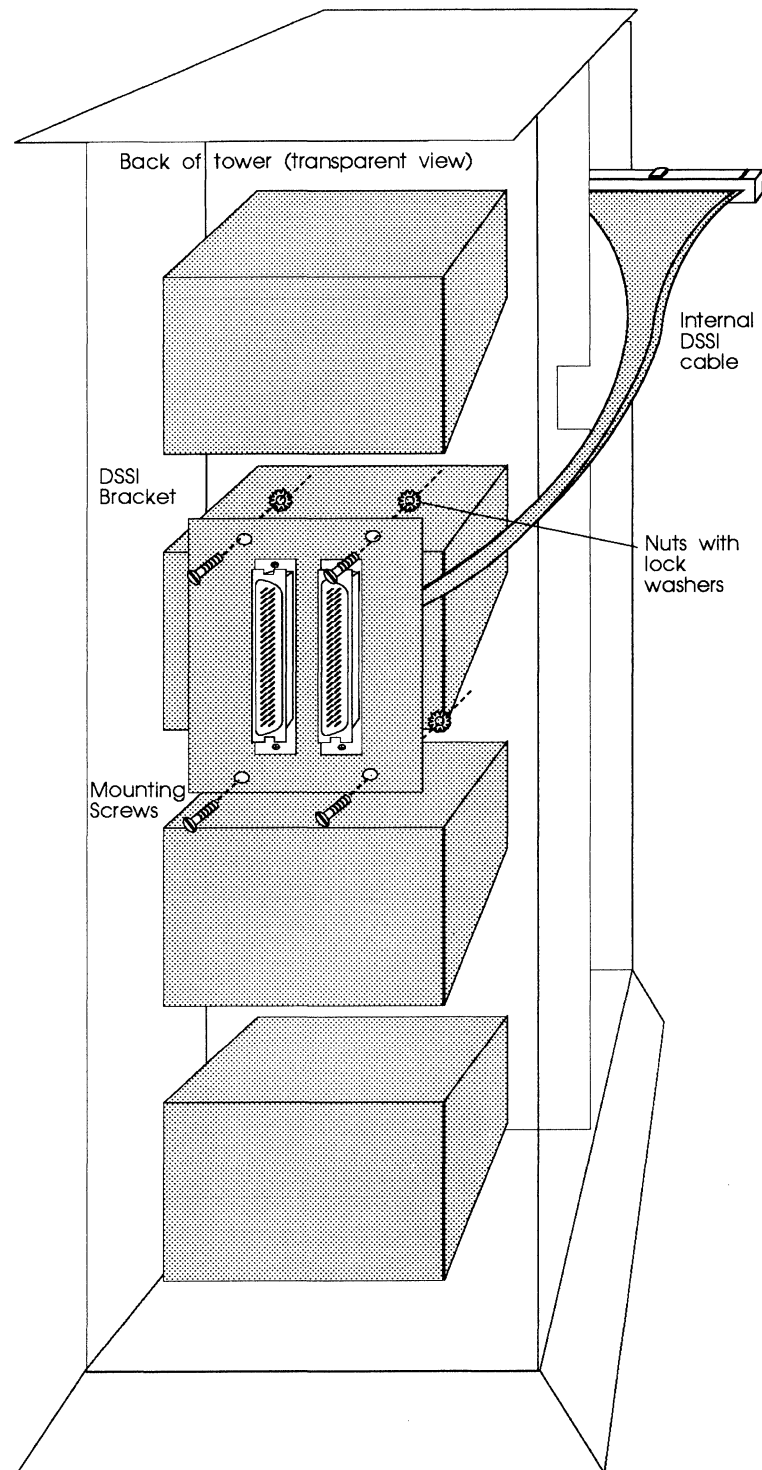


Figure 7-10: Installing the DSSI bracket



- 9 Connect the internal DSSI cable from the DSSI bracket to the CDI-4000 at J1, DSSI port; see Figure 7-10. Route the internal DSSI cable on the side of the SCSI drives and through the notch in the tower chassis.

**WARNING** To prevent damage to the CDI-4000, pin 1 of the DSSI cable connector and pin 1 of J1 of CDI-4000 *must* align.

- 10 Connect an external DSSI cable to one of the DSSI connectors on the DSSI bracket as shown in Figure 7-11.

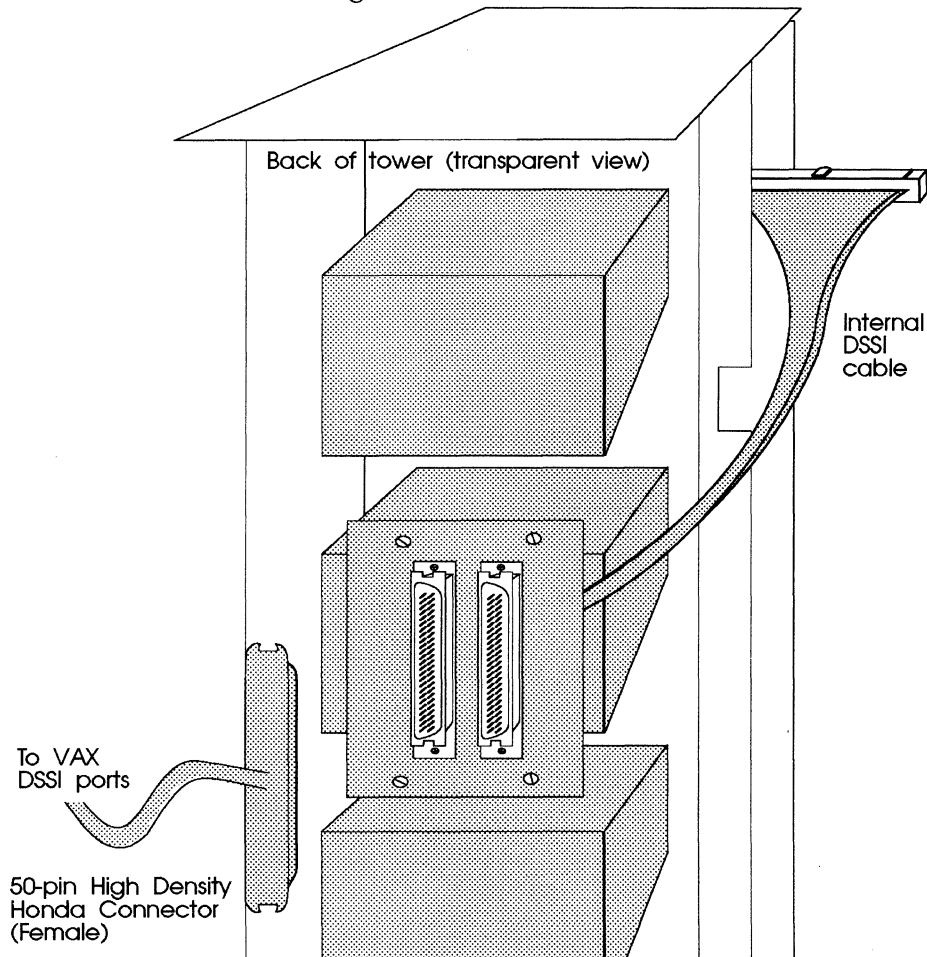


Figure 7-11: DSSI port for tower

- 11 Connect the other end of the external DSSI cable to the VAX DSSI port; see Figure 7-4.
- 12 Terminate each end of the DSSI bus by using external DSSI terminators or on-board terminators; see "Hardware Configuration," Chapter 3.

- 13 Connect the male connector (with the ejector latch of the internal SCSI cable, coming from J2 on the CDI-4000) to the SCSI cable going SCSI drives. If OEM does not supply SCSI cable contact CMD. See Figure 7-5 for reference.

**WARNING** To prevent damage to the CDI-4000, pin 1 of the SCSI cable connector and pin 1 of the J2 of CDI-4000 *must* align.

Or remove the CDI-4000 from the half-height LCD assembly and then directly connect the SCSI cable to J2 (see section "Installing CDI-4000 onto Half-Height LCD Holding Bracket").

- 14 Terminate each end of the SCSI bus as explained in "Hardware Configuration" Chapter 3.
- 15 Locate the disk drives' power cable from the tower.
  - a Connect one power connector to the CDI-4000 at J3; see Figure 7-6 for reference.
  - b Connect other power cables from the power supply to each SCSI device in the tower as explained in tower documentation.
- 16 Locate the rainbow cable with eight 2-pin socket connectors. Connect the 16-pin socket connector to J8 on the back of the CDI-4005. Align brown wire of cable to position "0" of J8, labeled "Device LED." See Figure 7-7 for reference.
- 17 Connect each 2-pin socket connector to each LED on the drive as listed in Table 7-2. See documentation for disk drive for LED connections. For example, connect the first Brown and Red wire for LED 0 to the SCSI drive with SCSI ID 0.

**NOTE** If the rainbow cable is not long enough, contact CMD for an extension cable. Connect the female end of the extension cable to J8 and the male latch/ejector end to the 16-pin connector on the rainbow cable.

**Table 7-2 LCD LEDs and Drive SCSI IDs**

LCD LED	LCD LED Color Combo.	Drive SCSI ID
LED 0	Brown & Red	SCSI ID 0
LED 1	Orange & Yellow	SCSI ID 1
LED 2	Green & Blue	SCSI ID 2
LED 3	Purple & Grey	SCSI ID 3
LED 4	Brown & Red	SCSI ID 4
LED 5	Orange & Yellow	SCSI ID 5
LED 6	Green & Blue	SCSI ID 6
LED 7	Purple & Grey	SCSI ID 7—Reserved for CDI-4000

**WARNING** Observe the polarity of the socket connector; align the “+” side of the 2-pin socket connector to the “+” side of LED.

- a If the LED on the drive is a pin header, simply connect the 2-pin socket connector into the pin header.
  - b If the LED connector on the drive is a socket connector, insert the pin header (included the LCD kit) into the 2-pin socket connector; then connect it to the LED socket connector on the drive. (There are two types of pin headers, one is straight the other is bent at a 90° angle; use the one that works best with the drive.)
  - c If the LED is soldered on the drive, desolder and remove the LED off and solder the pin header sent with the LCD kit (there are two types of pin headers, one is straight the other is bent at a 90° angle; use the one that works best with the drive); or consult drive documentation.
  - d Connect the #7 LED wire to J7 of the CDI-4005.
- 18 Close the tower as explained in the tower documentation.
- 19 Re-connect the AC power cord to the tower.

## Installing CDI-4000-SDC into TRIMM DA40 or DA60

If you have the CDI-4000-SDC, install the half-height LCD assembly into the TRIMM<sup>®</sup> DA40 or DA60 by following these instructions.

- 1 Make sure the DA40 or DA60 is powered **OFF**. Unplug the power cord from the DA40 or DA60 chassis.
- 2 Open the DA40 or DA60 as shown in DA40 or DA60 documentation.

**WARNING** Be sure to wear anti-static wrist straps or equivalent to protect the drive and the CDI-4000 from electrostatic damage.

- 3 Install all drives into the DA40 or DA60 as explained by DA40 or DA60 documentation.
- 4 Mount the half-height LCD assembly on the DA40 or DA60 tray. The mounting holes closer to the front make the half-height LCD assembly flush to the front of the chassis; see Figure 7-8.

- 5 Slide the tray into the DA40 or DA60. It is best to slide the tray into the left slot when facing the front; see Figure 7-12.

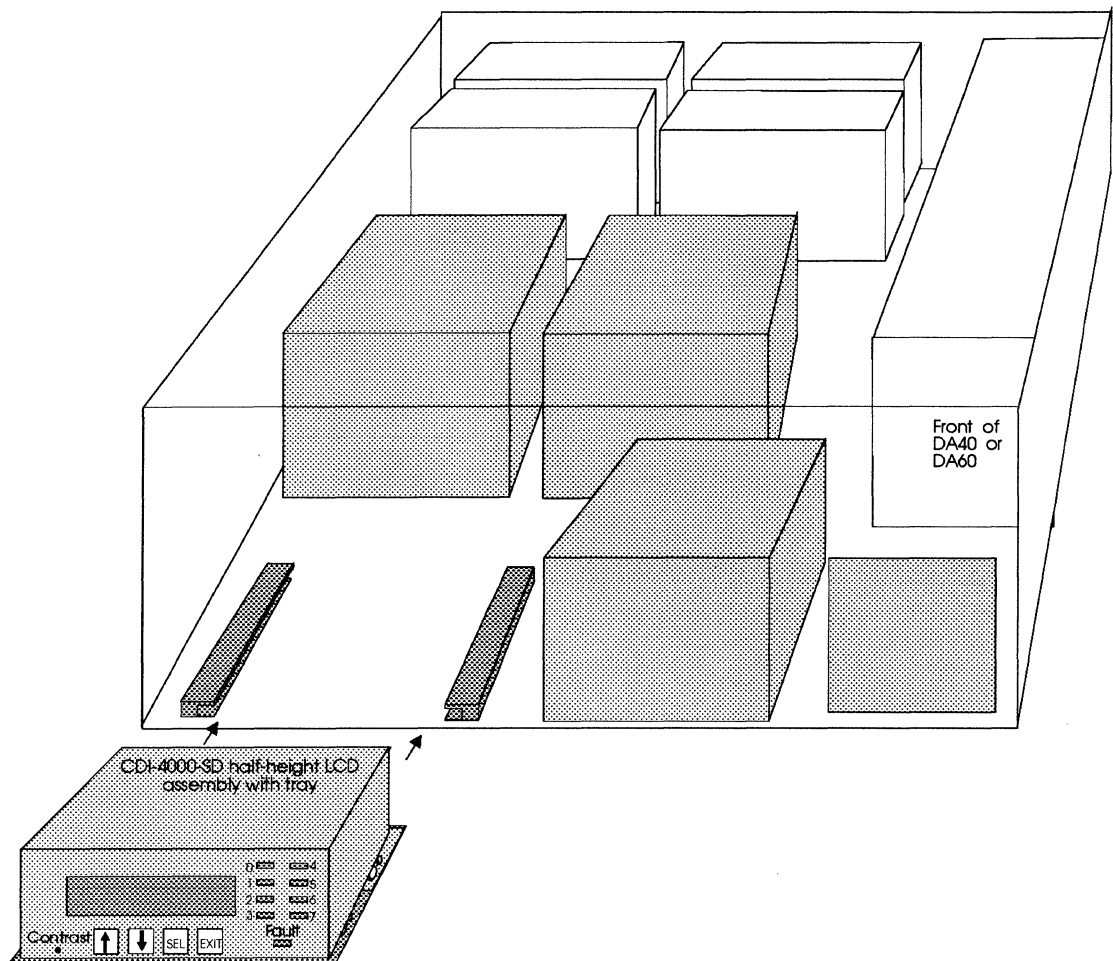
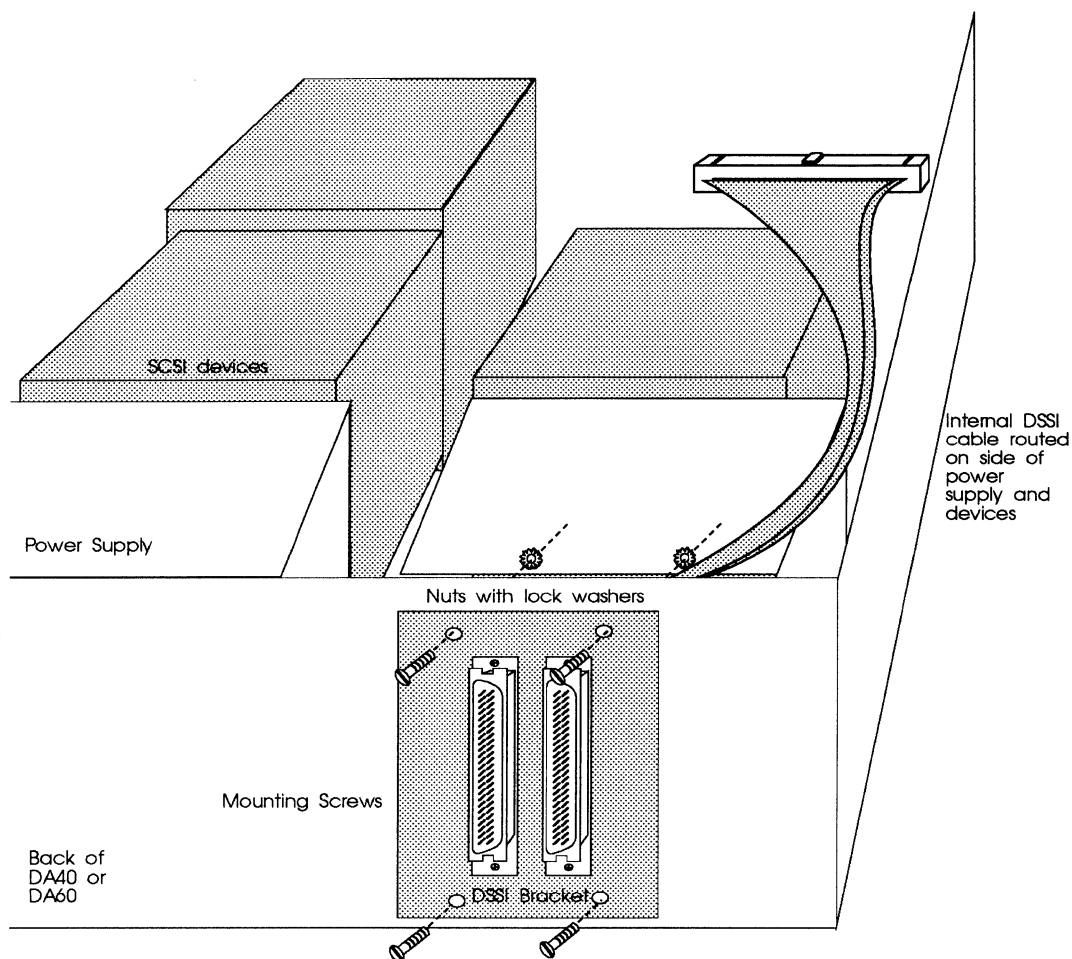


Figure 7-12: Sliding the tray into the DA40 or DA60

- 6 Remove the four screws from the bracket located on the back right of the DA40 or DA60. Remove the bracket.
- 7 Mount the DSSI bracket into the back of the DA40 or DA60. Internal DSSI cable must be inside the DA40 or DA60.

- 8 Put four mounting screws into the DA40 or DA60 through the DSSI bracket and secure them with the nuts with lock washers, as shown in Figure 7-13.



**Figure 7-13: Installing the DSSI bracket**

- 9 Connect the internal DSSI cable from the DSSI bracket to the CDI-4000 at J1, DSSI port; see Figure 7-13. Route the internal DSSI cable on the side of the SCSI drives.

**WARNING** To prevent damage to the CDI-4000, pin 1 of the DSSI cable connector and pin 1 of J1 of CDI-4000 *must* align.

- 10 Connect an external DSSI cable to one of the DSSI connectors on the DSSI bracket as shown in Figure 7-14.

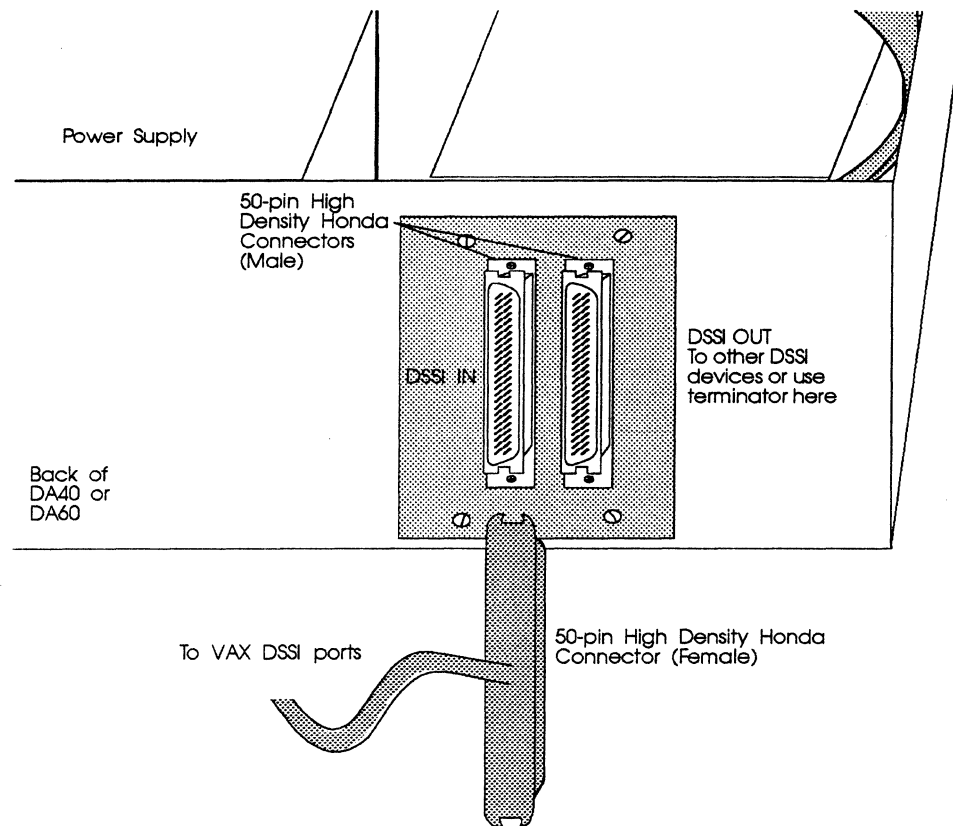


Figure 7-14: DSSI port for TRIMM DA40 or DA60

- 11 Connect the other end of the external DSSI cable to the VAX DSSI port; see Figure 7-4.
- 12 Terminate each end of the DSSI bus by using external DSSI terminators or on-board terminators; see "Hardware Configuration," Chapter 3.
- 13 Connect the male connector (with the ejector latch of the internal SCSI cable, coming from J2 on the CDI-4000) to the SCSI cable going to SCSI drives. If OEM does not supply SCSI cable contact CMD. See Figure 7-5 for reference.

**WARNING** To prevent damage to the CDI-4000, pin 1 of the SCSI cable connector and pin 1 of the J2 of CDI-4000 *must* align.

Or remove the CDI-4000 from the half-height LCD assembly and then directly connect the SCSI cable to J2 (see section “Installing CDI-4000 onto Half-Height LCD Holding Bracket”).

- 14 Terminate each end of the SCSI bus as explained in “Hardware Configuration” Chapter 3.
- 15 Locate the disk drives’ power cable from the DA40 or DA60.
  - a Connect one power connector to the CDI-4000 at J3; see Figure 7-15.

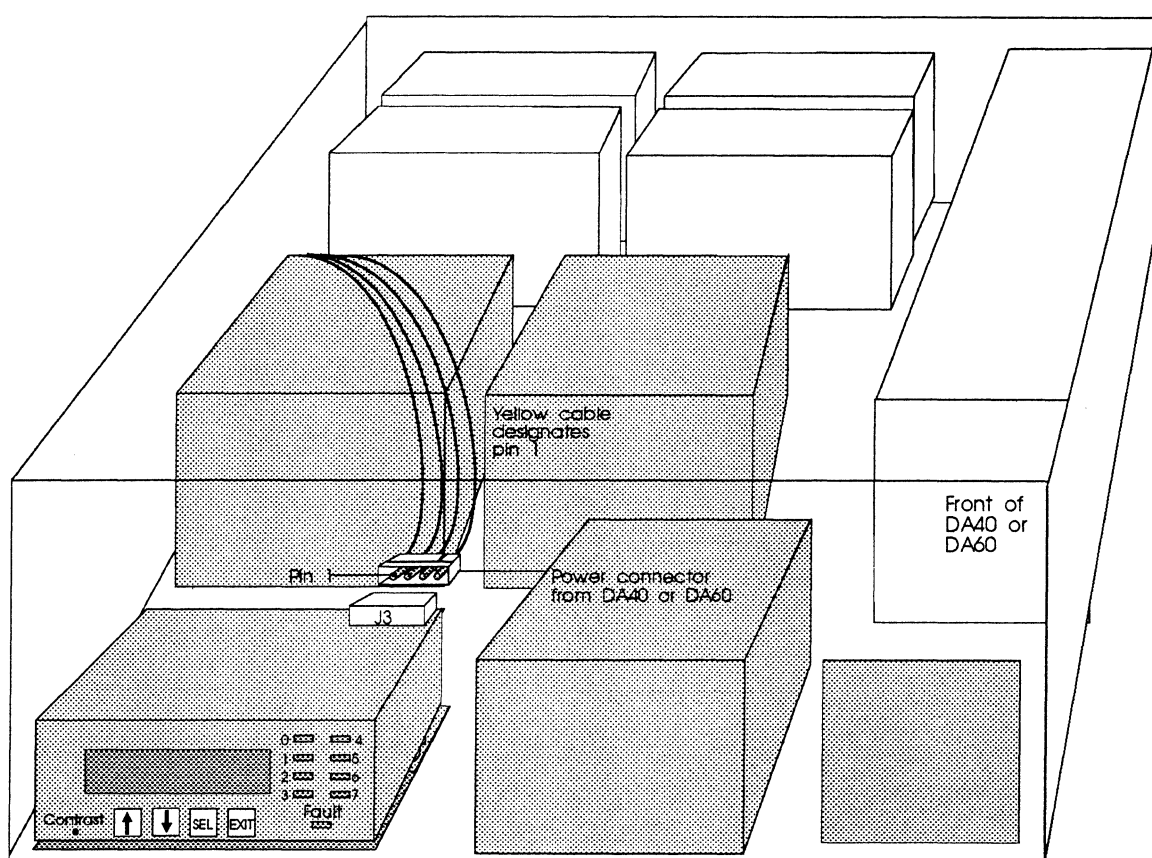


Figure 7-15: Power connection

- b Connect other power cables from the power supply to each SCSI device in the DA40 and DA60 as explained in DA40 or DA60 documentation.



- 16 Locate the rainbow cable with eight 2-pin socket connectors. Connect the 16-pin socket connector to J8 on the back of the CDI-4005. Align brown wire of cable to position "0" of J8, labeled "Device LED." See Figure 7-7 for reference.
- 17 Connect each 2-pin socket connector to each LED on the drive as listed in Table 7-3. See documentation for disk drive for LED connections. For example, connect the first Brown and Red wire for LED 0 to the SCSI drive with SCSI ID 0.

**NOTE** If the rainbow cable is not long enough, contact CMD for an extension cable. Connect the female end of the extension cable to J8 and the male latch/ejector end to the 16-pin connector on the rainbow cable.

**Table 7-3 LCD LEDs and Drive SCSI IDs**

LCD LED	LCD LED Color Combo.	Drive SCSI ID
LED 0	Brown & Red	SCSI ID 0
LED 1	Orange & Yellow	SCSI ID 1
LED 2	Green & Blue	SCSI ID 2
LED 3	Purple & Grey	SCSI ID 3
LED 4	Brown & Red	SCSI ID 4
LED 5	Orange & Yellow	SCSI ID 5
LED 6	Green & Blue	SCSI ID 6
LED 7	Purple & Grey	SCSI ID 7—Reserved for CDI-4000

**WARNING** Observe the polarity of the socket connector; align the "+" side of the 2-pin socket connector to the "+" side of LED.

- a If the LED on the drive is a pin header, simply connect the 2-pin socket connector into the pin header.
- b If the LED connector on the drive is a socket connector, insert the pin header (included the LCD kit) into the 2-pin socket connector; then connect it to the LED socket connector on the drive. (There are two types of pin headers, one is straight the other is bent at a 90° angle; use the one that works best with the drive.)
- c If the LED is soldered on the drive, desolder and remove the LED off and solder the pin header sent with the LCD kit (there are two

types of pin headers, one is straight the other is bent at a 90° angle; use the one that works best with the drive); or consult drive documentation.

- d Connect the #7 LED wire to J7 of the CDI-4005.
- 18 Close the DA40 or DA60, re-install front cover, and mount it into the rackmount chassis as explained in the tower documentation.
- 19 Re-connect the AC power cord to the tower.

## Installing CDI-4000 onto Half-Height LCD Holding Bracket

If you have a CDI-4000 and a half-height LCD holding bracket, mount the CDI-4000 to the LCD holding bracket by following these instructions.

- 1 Attach the mylar insulator on the solder side CDI-4000 using plastic rivets in the front corners of the CDI-4000 as shown in Figure 7-16.

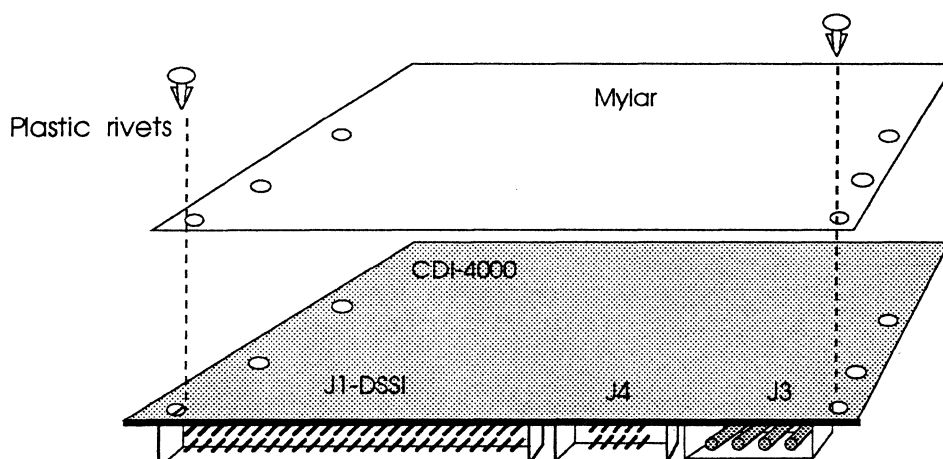


Figure 7-16: Connecting the CDI-4000 and mylar

- 2 Connect the female connector of the SCSI cable to J2 of the CDI-4000; route the SCSI cable between the LCD holding bracket and the CDI-4000.

**WARNING** To prevent damage to the CDI-4000, pin 1 of the SCSI cable connector and pin 1 of the J2 of CDI-4000 *must* align.

- 3 Connect one end of a 14-pin cable to J5 on the CDI-4000 and the other end to J5 on the CDI-4005.
- 4 Connect one end of another 14-pin cable to J6 on the CDI-4000 and the other end to J6 on the CDI-4005.
- 5 Align the CDI-4000 with J2 facing the LCD, component side up, as shown in Figure 7-17, and put four screws into the LCD holding bracket through the CDI-4000.

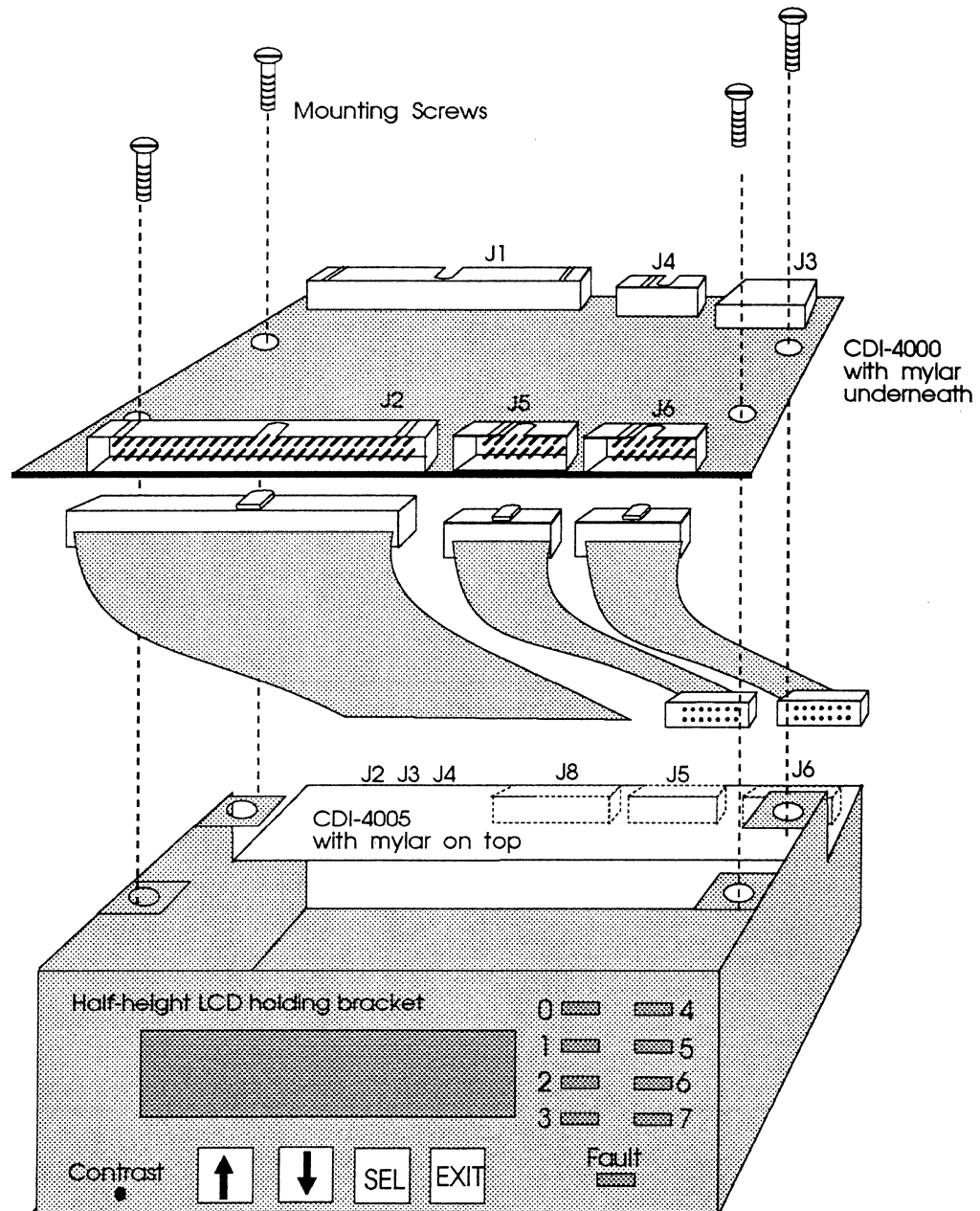


Figure 7-17: Mounting CDI-4000 to LCD holding bracket



After hardware configuration and installation is complete, the operating system software needs to recognize devices located on the DSSI bus. This chapter will assist you in configuring the CDI-4000 to operate correctly with VAX/VMS using DUP Utility through the console, operating system, and using the LCD Front Panel Display as well as the CDI-4000's on-board utilities.

## DUP Utility Using Console

This section will walk you through the DUP Utility from the console. Follow these instructions to configure DUP and the CDI-4000 in your system:

**NOTE** Every DSSI node ID must have a unique system ID and node name. The unit number also needs to be unique for every drive; see "Unit Offset," page 8-4.

- 1 Be sure all cables are securely connected and termination is correct. See section "Installation." Make sure VMS does not start to boot.
- 2 With automatic boot disabled, power "ON" the system.

- 3 At the console prompt, enter the following command:

```
>>>sho dev
```

The screen should display factory default settings for the node name of the CDI-4000 except for the node ID which was set up in "Hardware Configuration."

```
DSSI Node ID 2 (131072)
-DIA200 (RF72)
-DIA210 (RF72)
-DIA250 (RF72)

DSSI Node ID 5 (*)

UQSSP Disk Controller 0 (772150)
-DUA0 (RA82)

Ethernet Adapter
-ESA0 (08-00-2B-13-80-85)
```

Figure 8-1: Example of DSSI node ID configuration

- 4 Enter at the console prompt:

```
>>>set host/dup/dssi λ (for VAX 3300 and VAX 4000-100)
```

```
>>>set host/dup/dssi/bus:α λ (for VAX 4000)
```

where

$\lambda$  = the DSSI node number of the CDI-4000.

$\alpha$  = the DSSI bus ID number.

**NOTE** On VAX 4000 systems, you must to specify the correct DSSI bus either 0 or 1 as shown above.

- 5 At the question *Task Name?* enter:

*Task Name? params*

- 6 At the PARAMS> prompt, enter:

```
PARAMS>sh /all
```

The following will display as factory settings for the CDI-4000:

Parameter Name	Active	Min.	Max.	Units
NODENAME	"131072 "	1	8	Ascii
SYSTEMID	131072	1	268435456	DecimalNum
DISK_ALCS	0	0	255	DecimalNum
TAPE_ALCS	0	0	255	DecimalNum
INTERVAL	60	0	32768	Seconds
NUMPOLL	7	0	7	DecimalNum
UNIT_OFFSET	0	0	9	DecimalNum
SYNC_RATE	10	1	10	DecimalNum
MAX_HOSTS	3	1	7	DecimalNum
FASTSCAN	0	0	1	Boolean
SCANNING	1	0	1	Boolean
DISCONNECT	1	0	1	Boolean
POWERONRST	1	0	1	Boolean
TRYSYNC	1	0	1	Boolean
TMARKSEARCH	0	0	1	Boolean
SHORT_TMARK	1	0	1	Boolean

Figure 8-2: Example of CDI-4000 configuration

The following is a list of the SCS Related Parameters as shown in Figure 8-2.

**NODENAME**—SCS system node name. This value must be unique among all systems in the VAXcluster. The string may not include dollar sign (\$) or underscore (\_) characters and is limited to six characters. Factory Default: 131072 + Serial Number

**SYSTEMID**—specifies the lower-order 32-bits of the 48-bit system identification number. It is the unique identifier of each system. Factory Default: 131072 + Serial Number

**DISK\_ALCS**—determines the device allocation class for all disk devices connected to this DSSI bridge. If disks are to be served to other nodes within the VAXcluster this parameter must be non-zero and match the



**ALLOCLASS** SYSGEN parameter on connected systems. Factory Default: 0.

**TAPE\_ALCS**—determines the device allocation class for all tape devices connected to this DSSI bridge. If tapes are to be served to other nodes within the VAXcluster this parameter must be non-zero and match the **TAPE\_ALLOCLS** system parameter on connected systems. Factory Default: 0.

**INTERVAL**—controls the rate at which SCSI Device Scanning is done. This value is only used if **SCANNING** is enabled. Factory Default: 60 seconds.

**NUMPOLL**—controls the number of SCSI Devices to look for during each **INTERVAL**. This parameter is currently not implemented but will be activated in a future revision of firmware. Factory Default: 7 (all available units each **INTERVAL**).

**UNIT\_OFFSET**—helps differentiate devices when a system has two DSSI buses. Unit Offset is specified as the value to be used in the thousand's position of the MSCP unit ID (shown as Q in DIAQ210 in Figure 8-1) which is automatically created by the system. These unit offset values must be unique for each DSSI bus on the system. Factory Default: 0.

**SYNC\_RATE**—the rate that data is transferred during data phase between target and host.

**MAX\_HOSTS**—determines the maximum number of hosts with which the CDI-4000 will communicate. This is primarily used for disk and tape credit allotment. For maximum performance set to the maximum number of hosts to be used.

**FASTSCAN**—reduces the SCSI Select time-out to a much smaller value. The default Select time-out is 250-msec. This parameter is currently not implemented but will be activated in a future revision of firmware. Factory Default: 0 (disabled).

**SCANNING**—enables/disables the bridge's ability to scan for newly connected devices. If **SCANNING** is disabled the CDI-4000 will only do

ONE scan for devices at power-up and will not look for new devices every *INTERVAL* seconds. Factory Default: 1 (enabled).

**DISCONNECT**—enables/disables allowing disconnection to all SCSI devices connect to the CDI-4000 bridge. When only one device is connected to the CDI-4000 bridge this should be disabled for performance reasons. Factory Default: 1 (enabled).

**POWERONRST**—enables/disables the issuance of a SCSI BUS RESET on power-up. Factory Default: 1 (enabled).

**TRYSYNC**—enables/disables the synchronous negotiation upon initialization of a SCSI device. For very short cables synchronous negotiation can be disabled providing better performance in ASYNC mode than in SYNC mode. Factory Default: 1 (enabled).

**TMARKSEARCH**—enables fast tape mark searching. Since some tape drives perform slowly on large space records operations (while looking for tape marks) a skip tapemark will be done instead. The position (object) count will not be correct when enabled due to the device's not reporting the number of records skipped between tapemarks.

**SHORT\_TMARK**—enables the writing of short filemarks on Exabyte devices. When disabled all filemarks will be written as large filemarks. For Ultrix **SHORT\_TMARK** should be turned off.

- 7 At the **PARAMS>** prompt, enter:

```
PARAMS>set nodename ALPHA for example
PARAMS>set systemid 10 for example
```

- 8 Then enter:

```
PARAMS>show /all
```

The following will display:

Parameter Name	Active	Min.	Max.	Units
NODENAME	"ALPHA "	1	8	Ascii
SYSTEMID	10	1	268435456	DecimalNum
DISK_ALCS	0	0	255	DecimalNum
TAPE_ALCS	0	0	255	DecimalNum
INTERVAL	60	0	255	Seconds
NUMPOLL	7	0	7	DecimalNum
UNIT_OFFSET	0	0	9	DecimalNum
SYNC_RATE	10	1	10	DecimalNum
MAX_HOSTS	3	1	7	DecimalNum
FASTSCAN	0	0	1	Boolean
SCANNING	1	0	1	Boolean
DISCONNECT	1	0	1	Boolean
POWERONRST	1	0	1	Boolean
TRYSYNC	1	0	1	Boolean
TMARKSEARCH	0	0	1	Boolean
SHORT_TMARK	1	0	1	Boolean

Figure 8-3: Example of CDI-4000 configuration

- 9 At the prompt, to save the present changes to NOVRAM on the CDI-4000, enter:

PARAMS>*write*

- 10 At the prompt, to read the new NOVRAM values on the CDI-4000, enter:

PARAMS>*restart*

- 11 To return to the console prompt, enter:

^C  
>>>

**NOTE** You can also press [BREAK] to return to the prompt >>>.

- 12 At the console prompt, >>>, enter:

```
>>>h
>>>u
```

```
DSSI Node ID 2 (ALPHA)
-DIA200 (RF72)
-DIA210 (RF72)
-DIA250 (RF72)

DSSI Node ID 5 (*)

UQSSP Disk Controller 0 (772150)
-DUA0 (RA82)

Ethernet Adapter
-ESA0 (08-00-2B-13-80-85)
```

Figure 8-4: Example of DSSI device configuration

```
>>>i
>>>sho dev
```

DSSI devices will display with their corresponding node ID numbers.

## DUP Utility Using VMS

To use DUP commands from VMS, follow these instructions:

- 1 Connect the device FYA0 by entering:

```
mc sysgen connect FYA0/noadapter
```

- 2 Set the host by entering at the prompt:

```
set host/dup/task=params/server=mscp$dup λ
```

Where

λ = name of DSSI node.

This will bring you to the PARAMS prompt; follow instructions given in "Console DUP Configuration."

To configure DSSI when already booted enter:

```
@sys$startup:vms$initial-050_configure all
```

## LCD Front Panel Configuration

This section describes the operation and use of the CDI-4000's LCD front panel user interface. The LCD Front Panel Display can be used to configure devices attached to the CDI-4000 and update setup information in the CDI-4000's non-volatile memory (NOVRAM).

### Front Panel LED Indicators

At power-up or board reset, the red fault LED will blink for about 15 seconds indicating that a self-test operation is in progress. After completion of self-test, the red LED ceases to blink.

During normal operation, the green LED labeled 7, normally OFF, will flicker when there is communication with the host VAX on the DSSI bus. This will not always coincide with I/O activity on the SCSI bus.

### Initial Power-On Display

When power is first applied to the CDI-4000, the LCD display shows the following message:

CMD Technology, Inc.  
CDI-4000, Rev. XXX

After five seconds, the CDI-4000 posts the following message on the LCD display that a self-test procedure is being performed.

Performing Self-Test  
Please Wait . . .

After another ten seconds, the CDI-4000 establishes the default status screen on the LCD display. The Status display provides the operator with some basic information about the current DSSI node as well as what kind of devices are detected on the SCSI bus.

Information about each device is displayed in eight second status intervals. For any given status interval, the first line will contain the MSCP designation

for the device currently being displayed along with the DSSI node name in parenthesis. During the first half of a status interval, the device's SCSI ID and LUN are displayed on the lower LCD line along with Drive On-line & Write Protect.

\$4\$DIA100	(DAISY)
ID= 1	LUN= ONLINE R/W

During the second half of the status interval, the device's manufacturer, model number and revision appear on the second line of the LCD display. The information that appears here is extracted from SCSI inquiry data that is requested from the device upon first detection. Only the first seven characters of both the manufacturer's name and model will appear on the display.

\$4\$DIA100	(DAISY)
SEAGATE ST1408N 1234	

## LCD Keys

The Table 8-1 lists the keys to change any parameters.

**Table 8-1 LCD Keys**

[SEL]	Selects the option to edit.
[↑]	Pages up through the options or field.
[↓]	Pages down through the options or field.
[EXIT]	Exits the option, field or parameters.

## Main Setup Menu

To access the various Setup Menus while the Status display is active, press [SEL] on the LCD Front Panel. The Setup Menu will appear as shown below with current selection located between square brackets. Use the [↑] or [↓] buttons to "roll" through the available menu options:

Setup Menu
[SYS PARAMS]

The System-wide sub-menu allows you to view and modify the operational parameters relating to the CDI-4000. To enter this sub-menu, press [SEL]:

Setup Menu  
[DEVICE PARAMS]

The Device sub-menu allows you to view and modify the operational parameters relating to the specific device. To enter this sub-menu, press [SEL]:

Setup Menu  
[RESTART]

The Restart option allows you to execute a warm restart of the CDI-4000's firmware. This is usually necessary after any non-volatile parameters are updated. Press [SEL] to restart the CDI-4000.

Setup Menu  
[WRITE]

The Write option is used to update the CDI-4000's non-volatile memory. When any system wide or device parameter is modified, this option must be executed for permanent change in parameters. Press [SEL] to save all parameter changes in NOVRAM.

Setup Menu  
[FACTORY]

The Factory option allows you to re-establish default factory settings for all system wide and device parameters. After this option is selected, you must execute the write option to save all parameters changes in NOVRAM. Press [SEL] to change all parameters back to default.

### **System-Wide Parameters Menu**

When selected from the main setup menu, the system-wide parameters provide you with the means to view and edit various CDI-4000 operational parameters. This section describes each of the parameters.

To review and/or edit, press [↑] or [↓] to "roll" through the parameter field to the desired parameter name. Once the desired parameter is displayed, press [SEL] to enter that field from which to edit.

During parameter editing, press [↑] or [↓] to change the character above the cursor. Press [SEL] to select the character and move to the next character in the

field and then out of the field. If the CDI-4000 detects an invalid field value, the original parameter value is re-displayed. Press [EXIT] at any time to abort a parameter change.

Node name [THUMPER ]
-------------------------

Node name refers to the SCSI system node name. This value must be unique among all systems in the VAXcluster. The value may not include embedded blanks. The factory default value is 131072+ the board serial number.

System ID [XXXX]
---------------------

System ID refers to the low order 32 bits of the 48-bit system ID number. It is the unique identifier of each system. Factory default is 131072+ board serial number.

Disk Alloc Class [4 ]
--------------------------

The Disk Allocation Class parameter determines the device allocation class for all direct access storage devices connected to the SCSI bus. If these devices are to serve other nodes within a VAXcluster, this parameter must be non-zero and match the *ALLOCLASS SYSGEN* parameters on connected systems. Factory default is 0.

Tape Alloc Class [4 ]
--------------------------

The Tape Allocation Class parameter determines the device allocation class for all sequential access storage devices connected to the SCSI bus. If these devices are to serve other nodes within a VAXcluster, this parameter must be non-zero and match the *ALLOCLASS SYSGEN* parameters on connected systems. Factory default is 0.

Poll Interval [60 ]
------------------------



This parameter determines at what rate the SCSI bus will be scanned for new devices coming on-line. This value is only used if *BUS SCAN* is turned ON. Factory default is 60 seconds.

Number to Poll [7 ]
------------------------

This parameter determines the number of SCSI devices to look for during each poll interval. This parameter is currently not implemented, but will be activated in a future revision of firmware. Factory default is seven devices (all available units each interval).

Bus Scan [ON]
------------------

This parameter enables/disables the bridge's ability to scan for newly connected devices. If *BUS SCAN* is disabled, the CDI-4000 will only do ONE scan for devices at power-up and not look for new devices every polling interval. Factory Default: ON.

Fast Scan [OFF]
--------------------

This parameter reduces the SCSI Select time-out to a much smaller value. The default Select time-out is 250-msec. This parameter is currently not implemented but will be activated in a future revision of firmware. Factory Default: OFF.

Disconnect [ON ]
---------------------

This parameter allows you to disconnect all SCSI devices connected to the CDI-4000 bridge. When only one device is connected to the CDI-4000 bridge this should be disabled for performance reasons. Factory Default: ON.

Reset on Powerup [ON ]
---------------------------

This parameter allows you to enable or disable the issuance of a SCSI Bus reset on power-up. Factory Default: ON.

Try Sync Neg [ON ]
-----------------------

This parameter allows you to specify the synchronous negotiation upon initialization of a SCSI device. For very short cables synchronous negotiation can be disabled providing better performance in ASYNC mode than in SYNC mode. Factory Default: ON.

Unit Offset [2 ]
---------------------

This parameter helps differentiate devices when a system has two DSSI buses. Unit Offset is specified as the value to be used in the thousand's position of the MSCP unit ID (shown as 0 in DIA0210 in Figure 4-1) which is automatically created by the system. These unit offset values must be unique for each DSSI bus on the system. Factory Default: 0.

Sync Rate [7 ]
-------------------

This parameter specifies the maximum rate for which the CDI-4000 will negotiate during synchronous transfers. Factory is 8-MB/sec.

### Device Parameters Menu

Device Parameters Menu provides you with the options for setting on-line and write protect features for all target IDs on the SCSI bus. Press [↑] or [↓] to "roll" through the list of target devices on the SCSI bus. Write protect for the target ID appears first, then on-line status. Press [SEL] to modify these fields using the same techniques described in the previous sub-section.

ID Write Protect [OFF]
---------------------------

Write Protect is used to prevent the host from writing on the specified target ID. When a target ID is write protected, all logical units (LUNs) for that target will also be protected.

ID On-line Status [ON ]
----------------------------

The On-line Status parameter is used to indicate to the host whether the target device is on-line. The online/offline status is applicable to all logical units for the specified target ID.

When using the [↑] or [↓] to “roll” through the list of devices, the ID representing the CDI-4000 SCSI initiator will be skipped. Changed to any device status will not take effect until control is returned to the main setup menu. On-line and write protect status is preserved in NOVRAM.

## Overview

The Figure 8-5 displays settings that can be made from LCD.

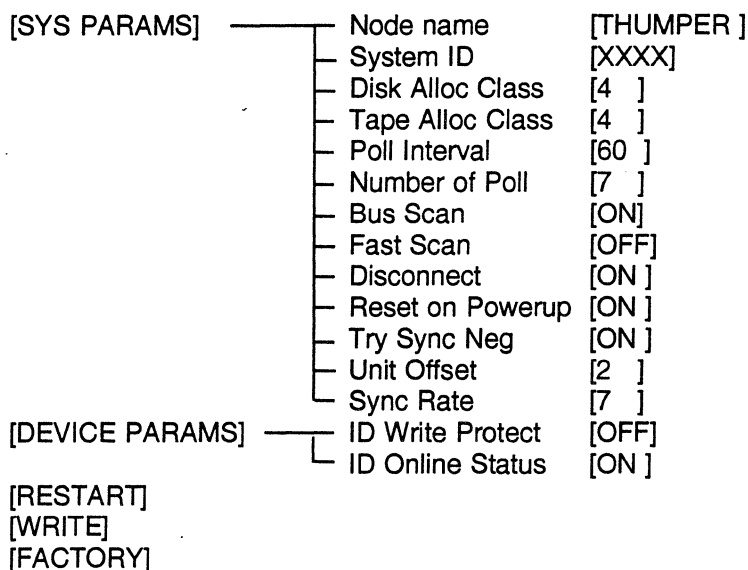


Figure 8-5: LCD Display Parameters

## Naming Conventions Example

Figure 4-6 is an example of the naming conventions of a device attached to the CDI-4000. The CDI-4000 will be set to a node ID of 1 in Figure 8-6; the unit offset, 2; the SCSI ID of the device, 3; and the SCSI LUN of the device, 4.

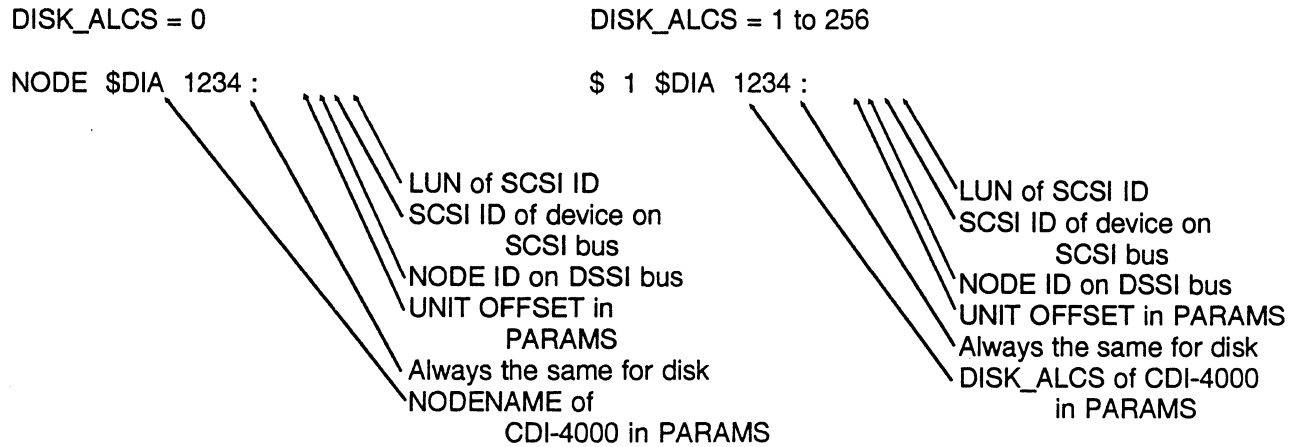


Figure 8-6: Naming Conventions

## Accessing On-Board Utilities

This section describes the CDI-4000's disk and tape utilities accessible via the DUP interface from a VAX console. These utilities allow the system installer/administrator to format and qualify disk drives as well as exercise disk and tape drives. These utilities may be used while VMS is online to other devices.

To access the on-board utilities, invoke the DUP server as described in chapter 8. When the "Task Name?" prompt appears, enter the program name "utilit" and press [ENTER]. When the controller-local program executes, the manufacturer name and model number appear along with firmware revision information. The "UTILIT" prompt then appears waiting for user input.

To access the HELP screen, type *HELP* and press [ENTER]. The following text should appear on your console:

```

HELP
SHOW                [device_name] | [/ALL]
SELECT              device_name
DESELECT            device_name
ABORT                device_name

—Disk Commands—
FORMAT              device_name
QUALIFY              device_name [/WRITE]
DISKTEST             device_name [/WRITE]

—Tape Commands—
TAPETEST             device_name

```

Figure 8-7: On-Board Utility Help Screen

The symbol “device\_name” refers to a valid MSCP/TMSCP device label such as DIA100 or MUA120. Direct Access devices, or disk drives, are specified using the “DIA” prefix while Sequential Access devices, or tape drives, are specified with the MUA prefix.

The rest of this chapter describes each of the utility commands in terms of what they do and how they are used.

## SHOW

The SHOW command displays various operational information about devices on the CDI-4000’s SCSI bus in tabular fashion. The following is an example of what the SHOW command will display:

```
UTILIT> SHOW /ALL [ENTER]
```

Device	SID	Vendor	Model	Rev	Dev Stat	Maint Oper	Maint Status
DIA100	0-0	PDQ	PDQ-103	AA01	AVAILABLE		
MUA110	1-0	ZoomDAT	ZD-750	0020	ONLINE		
DIA120	2-0	B-Tech	BDRV-10	0300	MAINT	FORMAT	IN PROGRESS
MUA130	3-0	FastARC	FA-2200	A17B	MAINT	TAPETEST	PASS #1

Figure 8-8: Example of SHOW Screen

Where:

Device = MSCP or TMSCP device name  
 SID = SCSI ID (target/lun)  
 Vendor = Manufacturer's name (first 7 chars only)  
 Model = Manufacturer's model name (first 7 chars only)  
 Rev = Manufacturer's firmware revision code  
 Dev Stat = Manufacturer's firmware revision code  
 Maint Oper = Maintenance Operation  
 (IDLE/FORMAT/QUALIFY/DISKTEST/TAPETEST)  
 Maint Status = Maintenance Operation  
 (IDLE/FORMAT/QUALIFY/DISKTEST/TAPETEST)

Information about a particular device may be display by specifying the device directly on the command line after the SHOW keyword. Information about all devices may be displayed by using the /ALL option.

## SELECT

Before a device is formatted, qualified, or put into exercise mode, it must first be allocated or SELECTed. In order to SELECT a device, the device must be AVAILABLE. Use the SHOW command to determine if a device is AVAILABLE. Devices that are listed as being OFFLINE or ONLINE will not be accessible to the SELECT command. When a device is selected, its operational status becomes "MAINT."

Note that while a device is in "MAINT" mode, it will not be accessible by VMS. The following is an example of how to use the SELECT command to allocate a device:

```
UTILIT> SELECT DIA100 [ENTER]
```

Device	SID	Vendor	Model	Rev	Dev Stat	Maint Oper	Maint Status
DIA100	0-0	PDQ	PDQ-103	AA01	MAINT	IDLE	READY

Figure 8-9: Example of SELECT Screen

If a valid device is selected, the corresponding device status is displayed to indicate the selection was made and that the device is actually in maintenance mode.

## FORMAT

To issue a SCSI Format command to the device SELECTed above, the user would type in:

```
UTILIT> FORMAT DIA100 [ENTER]
```

Device	SID	Vendor	Model	Rev	Dev Stat	Maint Oper	Maint Status
DIA100	0-0	PDQ	PDQ-103	AA01	MAINT	IDLE	READY

FORMAT will destroy all data on this device. Are you sure (Y/N)?

Figure 8-10: Example of FORMAT Screen

The user is then prompted to confirm the FORMAT operation. If the reply is "N" or "NO," the FORMAT operation is aborted with no harm to data on the drive. If the response is "Y" or "YES," a SCSI format command is issued to the drive.

The FORMAT command does not display a completion message when the drive completes formatting. To determine command completion, the user should periodically issue the SHOW command or monitor the drive's activity indicator.

## QUALIFY

After formatting, the drive should undergo one or more qualification passes. This is done with the QUALIFY command. There are two types of drive qualifications: read-only and write-read. For newly formatted drives, a full write-read qualification should be done as follows:

```
UTILIT> QUALIFY DIA100 [ENTER]
```

Device	SID	Vendor	Model	Rev	Dev Stat	Maint Oper	Maint Status
DIA100	0-0	PDQ	PDQ-103	AA01	MAINT	IDLE	READY

QUALIFY will destroy all data on this device. Are you sure (Y/N)?

Figure 8-11: Example of QUALIFY Screen

The user is then prompted to confirm the QUALIFY operation. If the reply is "N" or "NO," the QUALIFY operation is aborted with no harm to data on the drive. If the response is "Y" or "YES," the drive qualification begins.

The QUALIFY operation consists of sequentially writing a 32K chunk of data to the drive and then reading it back. This sequence repeats until all logical blocks on the drive have been written and read. When the last 32K chunk has been processed, the qualification procedure is repeated. When the "/WRITE" option is used, and a bad block is encountered, it is replaced and retested.

QUALIFY will run indefinitely until the controller is powered off or the user issues an ABORT command (described on page 8-20). The number of passes done is displayed in the pass counter.

## DISKTEST

After formatting and qualification, the drive should be exercised. This is done with the DISKTEST command. DISKTEST also has two options: read-only and write-read. For newly formatted drives, a full write-read drive exercise should be performed as follows:

UTILIT> DISKTEST DIA100 [ENTER]							
Device	SID	Vendor	Model	Rev	Dev Stat	Maint Oper	Maint Status
DIA100	0-0	PDQ	PDQ-103	AA01	MAINT	IDLE	READY
DISKTEST will overwrite some or all data on this device. Are you sure (Y/N)?							

Figure 8-12: Example of DISKTEST Screen

The user is then prompted to confirm the DISKTEST operation. If the reply is "N" or "NO," DISKTEST is aborted with no harm to data on the drive. If the response is "Y" or "YES," DISKTEST begins.

DISKTEST consists of randomly selecting logical blocks from the specified device, writing to them, and verifying the written data. DISKTEST runs until the controller is powered off or the user issues an ABORT command (described on page 8-20).

Note that this test uses the SCSI Verify command and makes use of the BytChk flag to verify the pattern written to each logical block. Drives that do



not support this flag will reject the command if issued with it, thus halting DISKTEST with an error status.

## TAPETEST

For exercising tape drives, the TAPETEST command is provided. To initiate TAPETEST for a specific drive, first select the drive and then enter the following:

```
UTILIT> TAPETEST MUA130 [ENTER]
```

Device	SID	Vendor	Model	Rev	Dev Stat	Maint Oper	Maint Status
MUA130	3-0	FastARC	FA-2200	A17B	MAINT	IDLE	READY

TAPETEST will overwrite some or all data on this device. Are you sure (Y/N)?

Figure 8-13: Example of TAPETEST Screen

The user is then prompted to confirm the TAPETEST operation. If the reply is "N" or "NO," TAPETEST is aborted with no harm to data on the drive. If the response is "Y" or "YES," TAPETEST begins.

TAPETEST consists of writing, rewinding, and then reading up to but not including a filemark. Block sizes start out at 32K and are cut in half on each successive write/rewind/read pass. When the block size reaches 1K, the entire test is restarted. TAPETEST also runs until the controller is powered off or the user issues an ABORT command (described on page 8-20).

Note that this test assumes there will be enough tape to accommodate 10 megabytes worth of 1K blocks.

## ABORT

QUALIFY, DISKTEST, and TAPETEST will run indefinitely. To terminate any of these operations, use the ABORT command as follows:

```
UTILIT> ABORT DIA100 [ENTER]
```

All outstanding SCSI commands for the specified device will complete and the device will be returned to an idle state.

Note that FORMAT operations may not be aborted.

## DESELECT

After all desired maintenance operations have been performed, the user may make a SELECTed device available to VMS by Deselecting the device as follows:

```
UTILIT> Deselect DIA100 [ENTER]
```

The deselected device is returned to a state of being AVAILABLE.

## ERROR REPORTING

The Tests will replace media errors when allowed. If other errors are encountered the test will stop and the error condition displayed on the Maint Status field. When SCSI device errors occur, the SCSI Sense Key is displayed together with the additional sense codes. If the SCSI bus is hung, error code 800E will be displayed.



# **Appendix A**

---

## **Supported Systems and Devices**

This appendix lists all SCSI devices and operating systems supported by the CDI-4000.

### **Systems Supported**

VAX 4000-100  
VAX 4000-200  
VAX 4000-300  
VAX 4000-500  
VAX 4000-600  
VAX 3300  
VAX3400  
KFQSA (newer revision)  
KFMSA

### **Operating System Supported**

VMS version 5.3 through 5.5.  
ULTRIX 4.0 through 4.2

## SCSI Devices

The following is a list of all SCSI devices that are supported by the CDI-4000.

### Magnetic disk drives

Conner Peripheral	CP3100, CP3200
Digital Equipment	DSP 3085, 3105, 3160, 5200, 5350
Fujitsu	M2694, M2263, M2266, M2652, M2654
Hewlett Packard	C2247, 97548, 97549, 97560, C3010
Hitachi	DK 515C, DK516C , DK517C
Maxtor	XT8760, P-12 Panther, P-17 Panther
Micropolis	2112, 1588, 1598, 1528, 1908, 1548, 1924
Quantum	LPS 105, LPS 210
Seagate	ST12550, ST31200, ST4766 Wren 6, ST41200 Wren 7, ST41650 Wren 8, ST41600 Elite 1, ST41601 Elite 1, ST42400 Elite 2

### Magneto-Optical Drives

Hewlett Packard	1716, 1719
MaxOptics	Tahiti 1, Tahiti 2
Panasonic	LS7010
Ricoh	5030E, 5030E2, 5031E
Sony	SMO-D501, SMO-E501

### CD-ROM Drives

Digital Equipment	RRD40, RRD42
LMS	CM212
NEC	CRD83J
Sony	XM3200
Toshiba	XM3200

**Tape Drives**

Cipher	T826S
Digital Equipment	TZ85
Exabyte	8200, 8500, 8500C
Archive Python 4mm DAT	4520NT, 4330NT, 4324NP
WangDat 4mm DAT	1300, 2000, 2600, 3100, 3200
Hewlett Packard 4mm DAT	35470A, 35480A

**9 Track Drives**

STC 2925	(1600 and 6250 BPI)
STC 9914	(1600 and 6250 BPI)
HP 88780B	(800, 1600 and 6250 BPI)
Cipher M995	(1600 and 6250 BPI)
Qualstar 3412	(800, 1600 and 6250 BPI)
Telex 9274	(1600 and 6250 BPI)

**3480 Type Drives**

Cipher T480	
STC 4380	
Fujitsu	2480, 2481, 2680

**Optical Disk Jukeboxes**

HP 1710A	32 slots, 2 drives
HP 1718C	16 slots, 1 drive
NKK	56 slots, 2 drives
IDE-6500	9 slots, 1 drive
IDE-7000	9 slots, 1 drive

**Tape Jukeboxes**

EXB-10i	10 tapes, 1 drive
EXB-120	120 tapes, 4 drives

## **Sequential Tape Stackers**

ADIC

EXB-10i

WangTEK

STC

## **Ram Disks**

Anamartic

Atto

Imperial

DES

# Appendix B

---

## Troubleshooting

This appendix assists you in troubleshooting minor problems that may occur.

### Cables

If the system does not recognize the CDI-4000 or devices connected, check the following:

- ◆ Make sure pin 1 on the cable is aligned with pin 1 on the SCSI device or CDI-4000. Make sure pins are *NOT* bent.
- ◆ Make sure the cable is not longer than 20 feet total for internal and external cables.

### LED Indicators

When the system boots DS1, the Red LED, will blink 15 times then turn off.. If the Red LED is still lit after 15 counts after boot, call CMD technical support at (800) 426-3832 or (714) 454-0800.

### CMD Technical Support

Having a CMD board entitles you to responsive technical support. Before you call CMD Technical Support, please gather the information listed below that pertains to your configuration. Make a note of any on-screen messages when a problem occurs and have this manual close by.



- CMD**      CMD product model number and serial number.  
Firmware Rev. of CMD board as shown on Eprom on the  
CDI-4000 with a blue CMD logo and copyright label.  
Listing of jumper settings on the board.  
Distributor company and contact.
- SCSI**      SCSI devices model numbers and firmware Rev. as displayed  
using the On-Board Utility.  
Settings of SCSI ID numbers of all devices.
- Computer**      Computer model.  
Operating System version.  
Complete listing of other controllers in computer backplane.  
Specify multi-hosting or clustering.
- Problem**      Describe exact nature of problem.  
Specify detailed error messages.  
Specify any recent modification to the system.  
Is this a new installation?  
Does the problem occur consistently?  
Does the problem occur when you do not use the board?  
Does the problem occur with another system (if available)?

You may contact CMD Technical Support from 8:30 AM to 5:30 PM, Pacific Standard Time, Monday through Friday, excluding major holidays, at:

(714) 454-0800 or  
(800) 426-3832 or  
(714) 455-1656 FAX

# Appendix C

## Connectors and Jumper Settings

This appendix lists connectors and jumper settings for the CDI-4000.

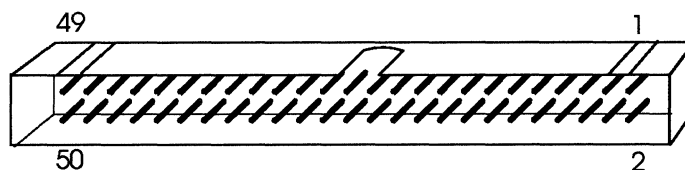
### Connectors

Table C-1 list connectors for the CDI-4000.

**Table C-1 Connectors**

J1	DSSI Interconnect to the host computer
J2	SCSI Interconnect to SCSI devices
J3	Power connector: Pin 1 no connection Pin 2 ground Pin 3 ground Pin 4 +5 volts (1.5 Amps)
J4	Serial Port to be used for RS-232 Port
J5	LCD Display Port
J6	ISE and LCD Front Panel

Figure C-1 illustrates the pin locations of the CDI-4000 non-shielded SCSI device connector (J2).



**Figure C-1: Non-shielded SCSI device connector**

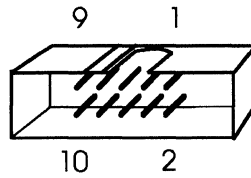
Table C-2 shows the CDI-4000 SCSI Port, J2, connector pin assignments.

**NOTE** All odd pins except pin 25 are connected to ground. Pin 25 is left open. The minus sign next to the signal indicates active low.

**Table C-2 SCSI Port (J2) Connector Pin Assignments**

Signal	Pin Number
-DB(0)	2
-DB(1)	4
-DB(2)	6
-DB(3)	8
-DB(4)	10
-DB(5)	12
-DB(6)	14
-DB(7)	16
-DB(P)	18
GROUND	20
GROUND	22
GROUND	24
TERMPWR	26
GROUND	28
GROUND	30
-ATN	32
GROUND	34
-BSY	36
-ACK	38
-RST	40
-MSG	42
-SEL	44
-C/D	46
-REQ	48
-I/O	50

Figure C-2 illustrates the RS-232 Port connector, J4, pin assignments.



**Figure C-2: J4**

Table C-3 lists the pin assignments for the J4, RS-232 Port.

**Table C-3 J4, RS-232 Port Connector Pin Assignments**

Pin 1	No Connection
Pin 2	Ground
Pin 3	Transmit Data
Pin 4	Ground
Pin 5	No Connection
Pin 6	No Connection
Pin 7	No Connection
Pin 8	Receive Data
Pin 9	Ground
Pin 10	No Connection

Figure C-3 illustrates the J5 and J6 connector pin assignments.

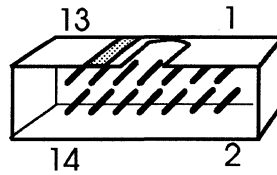


Figure C-3: J6 and J5

Table C-4 lists the pin assignments for the J5, LCD Display Port Connector.

**Table C-4 J5, LCD Display Port Connector Pin Assignments**

Pin 1	Ground
Pin 2	+5 volts power
Pin 3	Voltage Contrast Control
Pin 4	Register Select
Pin 5	Write (tied to Ground)
Pin 6	Display Clock enable/disable
Pin 7	Data Bit 0
Pin 8	Data Bit 1
Pin 9	Data Bit 2
Pin 10	Data Bit 3
Pin 11	Data Bit 4
Pin 12	Data Bit 5
Pin 13	Data Bit 6
Pin 14	Data Bit 7

Table C-5 lists the pin assignments for the J6, ISE and LCD Front Panel Connector.

**Table C-5 J6, ISE and LCD Front Panel Connector Pin Assignments**

Pin	ISE Front Panel	LCD Front Panel
1	High Temperature Sensor	Up Arrow Key Input
2	Ground	Ground
3	No Connection	No Connection
4	Ground	Ground
5	Activity Indicator for Green LED	Activity Indicator for Green LED
6	Fault Indicator shown by the Square Red LED	Fault Indicator shown by the Square Red LED
7	No Connection	Select Key Input
8	Write Protect Switch	Down Arrow Key Input
9	Ground	Ground
10	On-Line Switch for Front Panel	Exit Key Input
11	+5 volts power	+5 volts power
12	PCB Rotary Switch designating DSSI Node Selector and drives the digital display	Pin 5 Feedback Input
13	PCB Rotary Switch designating DSSI Node Selector and drives the digital display	Reserved
14	PCB Rotary Switch designating DSSI Node Selector and drives the digital display	Reserved

## Jumper Settings

Table C-6 lists the DSSI Port (J1) ID jumper selections.

**Table C-6 DSSI Port (J1) ID Jumper Selections**

CDI-4000 DSSI ID	W6-1	W6-2	W6-3
7	IN	IN	IN
6	IN	IN	OUT
5	IN	OUT	IN
4	IN	OUT	OUT
3	OUT	IN	IN
2	OUT	IN	OUT
1	OUT	OUT	IN
0 (F)	OUT	OUT	OUT

Note that (F) means factory setting.

Table C-7 lists the SCSI Port (J2) ID jumper selections.

**Table C-7 SCSI Port (J2) ID Jumper Selections**

CDI-4000 SCSI ID	W7-1	W7-2	W7-3
7 (F)	IN	IN	IN
6	IN	IN	OUT
5	IN	OUT	IN
4	IN	OUT	OUT
3	OUT	IN	IN
2	OUT	IN	OUT
1	OUT	OUT	IN
0	OUT	OUT	OUT

Note that (F) means factory setting.

Table C-8 lists the jumper settings for the CDI-4000.

**Table C-8 Jumper Settings**

W1	IN	DSSI Port J1 Term power supplied (F)
W1	OUT	DSSI Port J1 Term power not supplied
W2	IN (wire)	Reserved (F)
W3	OUT	Reserved (F)
W4	1-2 IN	EPROM Size 27H010
W4	2-3 IN	EPROM Size 27H256, 27H512 (F)
W5	OUT	Reserved (F)
W6-4, W6-5, W6-6	OUT	Reserved (F)
W7-4, W7-5	OUT	Reserved (F)
W8	OUT	Reserved (F)
W9	1-2 IN	SW1 is Reset Switch (F)
W9	2-3 IN	SW1 is NMI Switch
W10	ALL OUT	Reserved (F)
W11	1-2 IN	SCSI Port J2 Termination— Active (F)
W11	2-3 IN	SCSI Port J2 Termination—Passive
W12	IN	SCSI Port J2 Term power supplied (F)
W12	OUT	SCSI Port J2 Term power not supplied

Note that (F) means factory setting.

Table C-9 lists the jumper settings on LCD Front Panel Display.

**Table C-9 Jumper Settings on LCD Front Panel Display**

W1	1-2 IN	LCD Contrast Control from Front Pan.(F)
W1	2-3 IN	LCD Contrast Control from CDI-4000
J12, J13	1-2 IN	Normal Closed Thermal Port(F)
J14, J15	1-2 IN	Normal Open Thermal Port





# Appendix D

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## Advanced VAXclustering

This Appendix briefly explains setting up your CDI-4000 into a VAXcluster environment. There are System Information Tables in which you may enter your system information to determine specific *SCSNODE*, *ALLOCLASS*, *SCSSYSTEMID* and *SYSTEM TYPE* for each system in your configuration.

### System Information

Before attempting to install the CDI-4000 into a VAXcluster, see the examples in Tables D-1 to D-4 for VAXcluster configuration.

Refer to Digital documentation for complete VAXclustering information.

Tables D-1 to D-4 illustrate an example of a VAXcluster.

**NOTE** Information located in these Tables shows the existing configuration; open slots are locations for which the CDI-4000 can be connected.

**Table D-1 System 1, DSSI Bus 0**

DSSI Node #	SCSNODE	ALLOCLASS	SCSSYSTEMID	SYSTEM TYPE
0	RF72A	2	20	DEC RF72 DSK
1				
2				
3				
4				
5				
6	V4200A	2	1028	VAX4000-200
7 *	V4300	2	1026	VAX4000-300

\* Indicates System DSSI ID

**Table D-2 System 1, DSSI Bus 1**

DSSI Node #	SCSNODE	ALLOCLASS	SCSSYSTEMID	SYSTEM TYPE
0	RF72B	2	21	DEC RF72 DSK
1				
2				
3				
4				
5				
6	V4200B	2	1029	VAX4000-200
7 *	V4300	2	1026	VAX4000-300

\* Indicates System DSSI ID

**Table D-3      System 2, DSSI Bus 0**

DSSI Node #	SCSNODE	ALLOCLASS	SCSSYSTEMID	SYSTEM TYPE
0	RF72B	2	21	DEC RF72 DSK
1				
2				
3				
4				
5				
6 *	V4200A	2	1029	VAX4000-200
7	V4300	2	1026	VAX4000-300

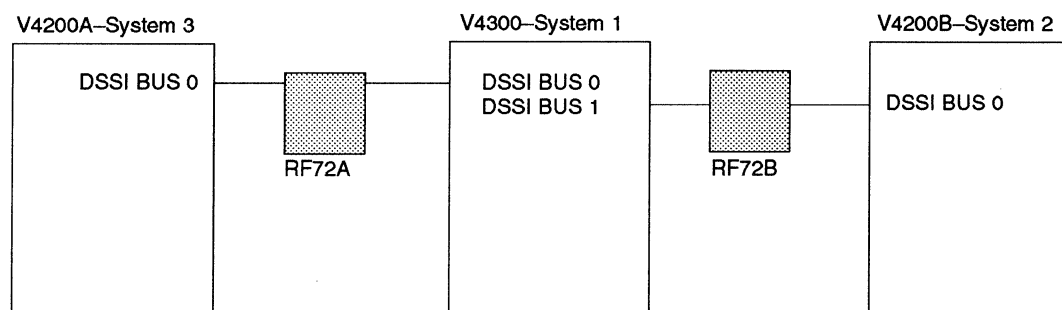
\* Indicates System DSSI ID

**Table D-4      System 3, DSSI Bus 0**

DSSI Node #	SCSNODE	ALLOCLASS	SCSSYSTEMID	SYSTEM TYPE
0	RF72A	2	20	DEC RF72 DSK
1				
2				
3				
4				
5				
6 *	V4200A	2	1028	VAX4000-200
7	V4300	2	1026	VAX4000-300

\* Indicates System DSSI ID

Figure D-1 shows the VAXcluster setup using different DSSI buses.

**Figure D-1: Example of VAXcluster**

## Figuring Your System Configuration

Use the charts below to assist you in determining the system information. Record the information in the spaces provided.

**Table D-5**      System \_\_\_\_\_, DSSI Bus \_\_\_\_\_

DSSI Node #	SCSNODE	ALLOCLASS	SCSSYSTEMID	SYSTEM TYPE
0				
1				
2				
3				
4				
5				
6				
7 *				

\* Indicates System DSSI ID

**Table D-6**      System \_\_\_\_\_, DSSI Bus \_\_\_\_\_

DSSI Node #	SCSNODE	ALLOCLASS	SCSSYSTEMID	SYSTEM TYPE
0				
1				
2				
3				
4				
5				
6				
7 *				

\* Indicates System DSSI ID

**Table D-7**      **System \_\_\_\_\_, DSSI Bus \_\_\_\_\_**

DSSI Node #	SCSNODE	ALLOCLASS	SCSSYSTEMID	SYSTEM TYPE
0				
1				
2				
3				
4				
5				
6				
7 *				

\* Indicates System DSSI ID

**Table D-8**      **System \_\_\_\_\_, DSSI Bus \_\_\_\_\_**

DSSI Node #	SCSNODE	ALLOCLASS	SCSSYSTEMID	SYSTEM TYPE
0				
1				
2				
3				
4				
5				
6				
7 *				

\* Indicates System DSSI ID



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## Glossary

The following is a glossary of frequently used SCSI terms.

**Connect**—The function that occurs when an initiator selects a target to start an operation.

**Device**—A host computer adapter or a peripheral controller or an intelligent peripheral that can be attached to the SCSI bus.

**Disconnect**—The function that occurs when a target release control of the SCSI bus, allowing it to go to the BUS FREE phase.

**DSSI**—Digital systems storage interface.

**Initiator**—A SCSI device (usually a host system) that requests an operation to be performed by another SCSI device.

**LUN**—Logic Unit Number.

**Peripheral device**—A peripheral that can be attached to an SCSI device (e.g., magnetic disk, magnetic tape, or optical disk).

**Reconnect** —The function that occurs when a target selects an initiator to continue an operation after a disconnect.

**SCSI** — Small computer systems interface.

**SCSI address**—The octal representation of the unique address (0-7) assigned to an SCSI device. This address would normally be assigned and set in the SCSI device during system installation.



**SCSI ID**—The bit-significant representation of the SCSI address referring to one of the signal lines DB (7-0).

**SCSI device**—A host computer adapter or a peripheral controller or an intelligent peripheral that can be attached to the SCSI bus.

**Target**—A SCSI device that performs an operation requested by an initiator.

## A

Active/Passive Termination 2-5, 3-6 to 3-7

## C

Cable specifications 2-3 to 2-4, 3-4, 3-13, 6-4, B-1

CDI-4003 6-13

CDI-4005 7-24

Components 2-5 to 2-7

Conventions 1-2

## D

Device SCSI port (J2) 2-1, 2-3 to 2-4, 3-4, C-1, C-6

## Devices

3 1/2-inch drives 4-1, 4-20 to 4-29

5 1/4-inch drives 4-1 to 4-18, 4-20, 5-1 to 5-11

Elite I and II 4-1 to 4-11, A-1

Erasable disk drives 2-1

Installation 3-6, 3-13

Magnetic disk drives A-1

Universal 4-1, 4-12 to 4-18, 4-20, 5-1 to 5-11, 6-1 to 6-14, 7-1 to 7-23

DSSI floating connector 4-5 to 4-9, 4-14 to 4-16, 4-18, 4-22, 4-24 to 4-27

DSSI Node ID 3-1, 3-3, 8-2 to 8-3, 8-5 to 8-8

DUP Utility 8-1 to 8-7

## F

Features 2-1, 2-3 to 2-5

## H

Hardware Configuration 3-2 to 3-7

Host computer 2-1, 2-3, G-2

Host SCSI port (J1) 2-1, 2-3, 3-4, 3-13, 6-4, 7-7, C-1, C-6

## I

Initiator 2-1, G-1 to G-2

## Installation

CDI-4000 into half-height LCD 7-23 to 7-25

CDI-4000-SA1 4-12 to 4-18, 4-20

CDI-4000-SA2 4-20 to 4-29

CDI-4000-SAE 4-1 to 4-11

CDI-4000-SB 5-1 to 5-11

CDI-4000-SDA 7-1 to 7-10

CDI-4000-SDB 7-1 to 7-10

CDI-4000-SDC 7-1, 7-11 to 7-23

General 3-8, 3-10 to 3-14

Half-height LCD 7-1 to 7-25

LCD 6-1 to 6-14, 7-2

MicroVAX 5-1, 5-4, 5-6 to 5-11

TRIMM DA40 or DA60 6-1 to 6-14, 7-1, 7-7 to 7-10, 7-17 to 7-23

TRIMM TWR-540-231 Tower 7-1, 7-11 to 7-14, 7-16

VAX 4000 4-1 to 4-18, 4-20 to 4-29

## L

## LCD

Front Panel Configuration 8-7 to 8-13

Keys 8-9

LED 6-13, 7-10, 7-16, 7-22, 8-7  
Menus 8-9 to 8-14  
LED indicators 2-7, B-1  
LUN G-1

## **M**

Models 2-2, 3-8

## **N**

Naming Conventions 8-14

## **P**

Ports and connectors 2-5  
Power cable 3-14, 4-6, 4-15, 4-22, 5-10, 6-9,  
7-8, 7-15, 7-21

## **S**

SCSI bus (see also Termination) 2-4, 3-1, 3-6,  
G-1 to G-2  
SCSI ID 2-3 to 2-4, 3-1, 3-4, 6-13, 7-10, 7-16,  
7-22, C-6, G-2

## **T**

Target 2-1, G-2  
Technical Support B-1  
Termination  
    Active 3-6  
    Passive 3-7  
    SCSI bus 3-4  
    Terminators at J1 2-3, 3-4  
    Terminators at J2 2-4 to 2-5, 3-4, 3-6 to 3-7  
    TERMPWR 2-3, 2-7, 3-5, C-7  
Troubleshooting B-1

## **U**

ULTRIX A-1

## **V**

VAXstation 2-1, A-1  
VMS 8-7, A-1