

KZQSA Module Installation Guide

Order Number EK-KZQSA-IG-002

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Preface

This manual provides the information and procedures necessary to install a KZQSA Small Computer System Interface (SCSI) adapter and SCSI cabling in a MicroVAX 3000 series system, a MicroVAX II series system, and a VAX 4000 series system. It also provides instructions for configuring a system using the MicroVAX Diagnostic Monitor (MDM) or console commands. This manual also provides information for drive-to-drive connections.

Intended Audience

This document is intended only for Digital service personnel or for qualified self-maintenance customers who have purchased the Entry Systems Service Information Kit (part number QZ-K19AA-GZ).

Structure of This Manual

- Chapter 1 describes the KZQSA adapter module and provides an overview of related equipment.
- Chapter 2 contains the unpacking instructions.
- Chapter 3 contains information for planning your system.
- Chapter 4 provides information for KZQSA configuration.
- Chapter 5 describes the installation of the KZQSA adapter kit into the MicroVAX 3000, MicroVAX II, and VAX 4000 systems.
- Chapter 6 describes the connection from drive to drive.
- Chapter 7 contains the procedure for testing your KZQSA adapter.
- Appendix A is a table of CSR settings.

Conventions

The following conventions are used in this book.

Conventions	Meaning
UPPERCASE BOLD	Uppercase bold type indicates user input in interactive examples.
Ctrl/z	A sequence such as Ctrl/z indicates that you must hold down the key labeled Ctrl while you press the key z.
CAUTION	Cautions provide information to prevent damage to equipment or software. Read these carefully.
NOTE	Notes provide general information about the current topic.
WARNING	Provides information to prevent personal injury.

Related Documents

Document	Order Number
BA213 Enclosure Maintenance Guide	EK-189AA-MG
BA215 Enclosure Maintenance Guide	EK-191AA-MG
BA123 Enclosure Maintenance Guide	EK-188AA-MG
BA23 Enclosure Maintenance Guide	EK-186AA-MG
BA430/440 Enclosure Maintenance	EK-348AB-MG
H9642 Cabinet Maintenance Guide	EK-187AA-MG
H9644 Cabinet Maintenance Guide	EK-221AA-MG
MicroVAX Diagnostic Monitor User's Guide	AA-FM7AE-DN

For the Customer

If you are not qualified to perform the installation of the KZQSA option kit, call your Digital service representative to schedule an installation.

It is your responsibility to perform a software backup before your Digital service representative arrives at the site. This step ensures that data is not lost during installation.

To install the module and cable, carefully follow the procedures outlined in this manual. If you have any difficulty performing the installation, call your Digital service representative for assistance.

Be sure the bus grant continuity path is intact after the installation. No vacant backplane slots should exist between modules.

Customers may order additional copies of this documentation or related documentation from:

Digital Equipment Corporation
P.O. Box CS2008
Nashua, NH 03061

Instructions to Digital Service Personnel

To install the KZQSA adapter module and SCSI cable, carefully follow the installation procedures outlined in this manual. When you have completed the installation, submit a labor activity reporting system (LARS) form. For information on completing this form, contact your unit manager.

Digital personnel may order additional documents from:

Digital Equipment Corporation
444 Whitney Street
Northboro, MA 01532
Attn: P&CS Order Administration (NRO2-2)

ALL-IN-1: send to ORDER @NRO. There must be a space before the @.

VAXmail: send to NEST::ORDER

CAUTION: *Be sure to take antistatic precautions when unpacking and installing the module. Use the groundstrap and antistatic mat found in the antistatic kit (part number 29-26246-00).*

Chapter 1

Description

This chapter describes the KZQSA adapter and the enclosures into which it can be installed.

1.1 KZQSA Adapter Overview

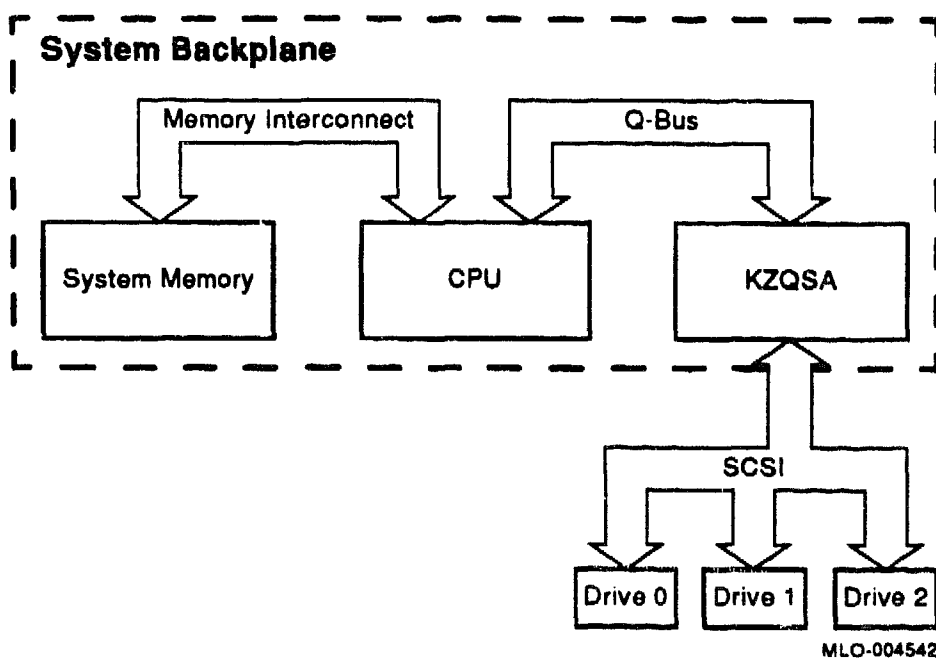
The KZQSA adapter module allows Q-bus-based systems like the MicroVAX system to communicate with SCSI devices (such as the TLZ04 and RRD40 drives). The KZQSA adapter module contains the addressing logic required to make a connection between the system and a requested drive on the SCSI bus. The KZQSA adapter can connect up to three drives in any sequence through the SCSI bus.

Figure 1-1 illustrates the relationship between the system, the KZQSA adapter module, and SCSI drives. It shows three drives connected through the SCSI bus to the KZQSA adapter and to the Q-bus.

The KZQSA adapter module is supported by the following operating systems and diagnostic utility:

- VMS operating system—Version 5.3-2 or later
- MDM diagnostic utility—Version 3.2 or later

Figure 1-1: System/SCSI Subsystem Relationship



1.2 MicroVAX 3000 Series Systems

The MicroVAX 3000 series system may be housed in a BA213 enclosure, a BA215 enclosure, or an H9644 cabinet. Both the BA213 and BA215 enclosures house standalone systems, whereas the H9644 cabinet is used to house a BA213 enclosure and disk or tape drive. This chapter will describe each component.

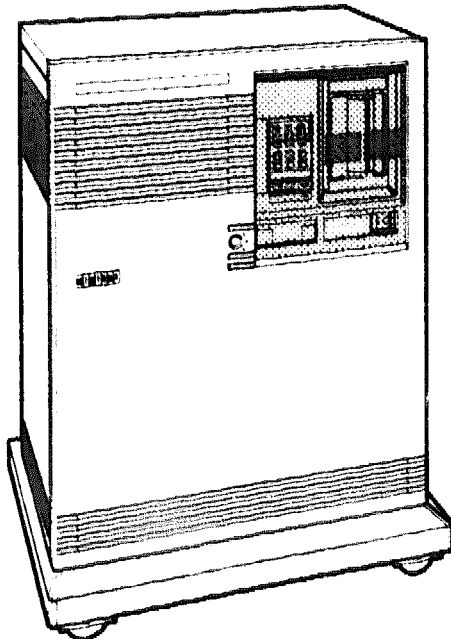
MicroVAX 3000 Series Overview

- CPU module (central processing unit)
- Memory modules
- Communication controllers
- Console module
- Drive controller
- Tape or disk drives
- Power supplies
- Fans

BA213 Enclosure Overview

The BA213 enclosure has a 12-slot, Q22-bus backplane and two modular power supplies. Figure 1-2 shows the BA213 enclosure.

Figure 1-2: BA213 Enclosure



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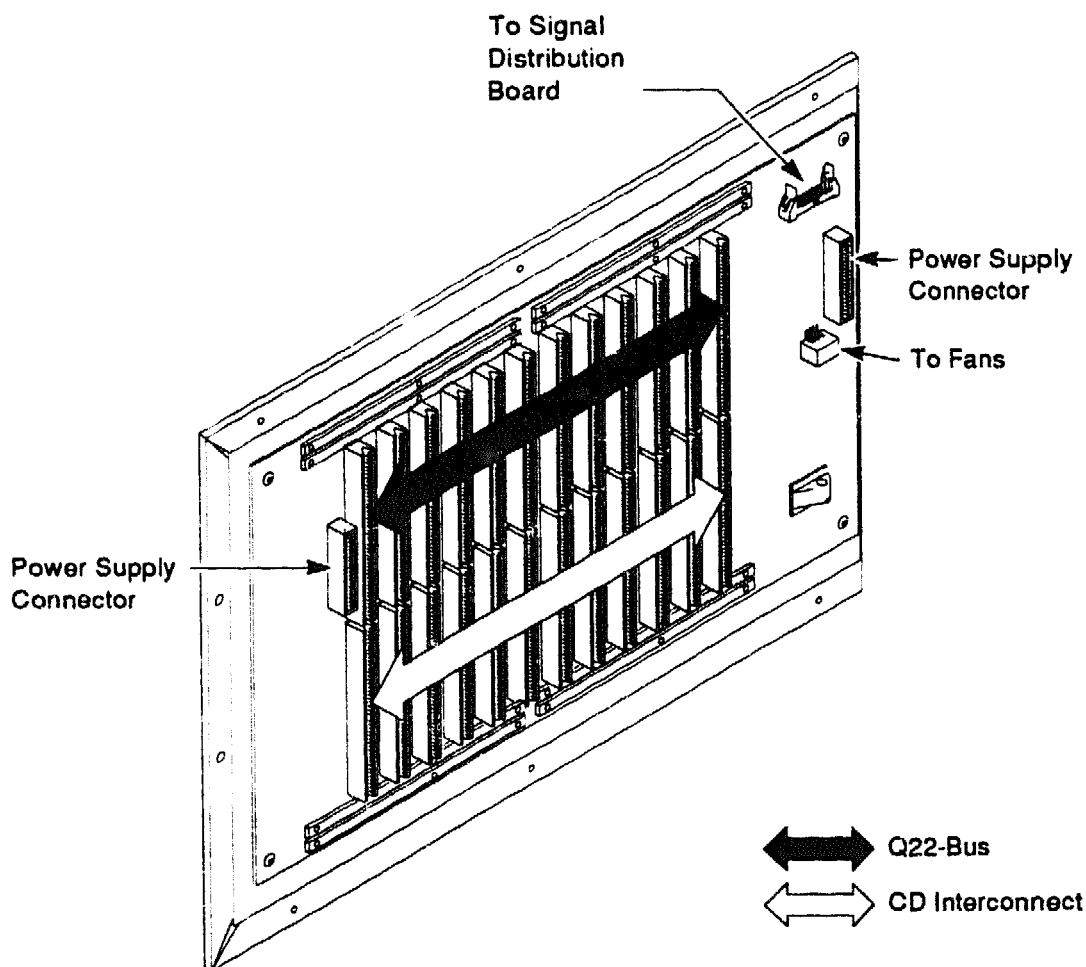
The BA213 enclosure uses bulkhead handles or covers that fit over the front of the Q-bus module. Standard modules such as the KZQSA adapter have bulkhead handles that are an integral part of the module.

All handles or covers form an electrical seal that complies with FCC regulations for keeping radio frequency interference (RFI) generated by the system inside the enclosure, and for keeping externally generated RFI out of the enclosure. They also help guarantee proper airflow through the system for module cooling.

BA213 Backplane Bus Grant

The backplane implements the Q22-bus on the AB rows of each slot. The CD interconnect is implemented in all slots. MicroVAX systems use the CD rows of slots 1 through 5 for their high-speed memory interconnects. Bus grant signals pass through each installed module through the A connectors of each slot. Figure 1-3 shows the bus grant routing for the BA213 backplane. Use bus grant continuity cards (M9047) in vacant backplane slots between other Q-bus modules to ensure bus continuity.

Figure 1-3: BA213 Backplane Bus Grant

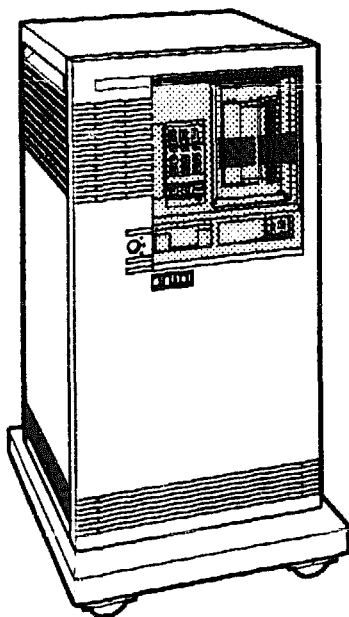


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BA215 Enclosure Overview

The BA215 enclosure is smaller than the BA213 and uses a 6-slot Q22-bus backplane in place of the 12-slot backplane. The BA215 uses only one modular power supply instead of two. The BA215 enclosure holds up to two embedded 13.3-cm (5.25-in) storage devices. Fixed-disk drives face the rear of the enclosure. This allows easy access to the drive signal and power cables. Tape drives face the front of the enclosure. Figure 1-4 shows the BA215 enclosure.

Figure 1-4: BA215 Enclosure



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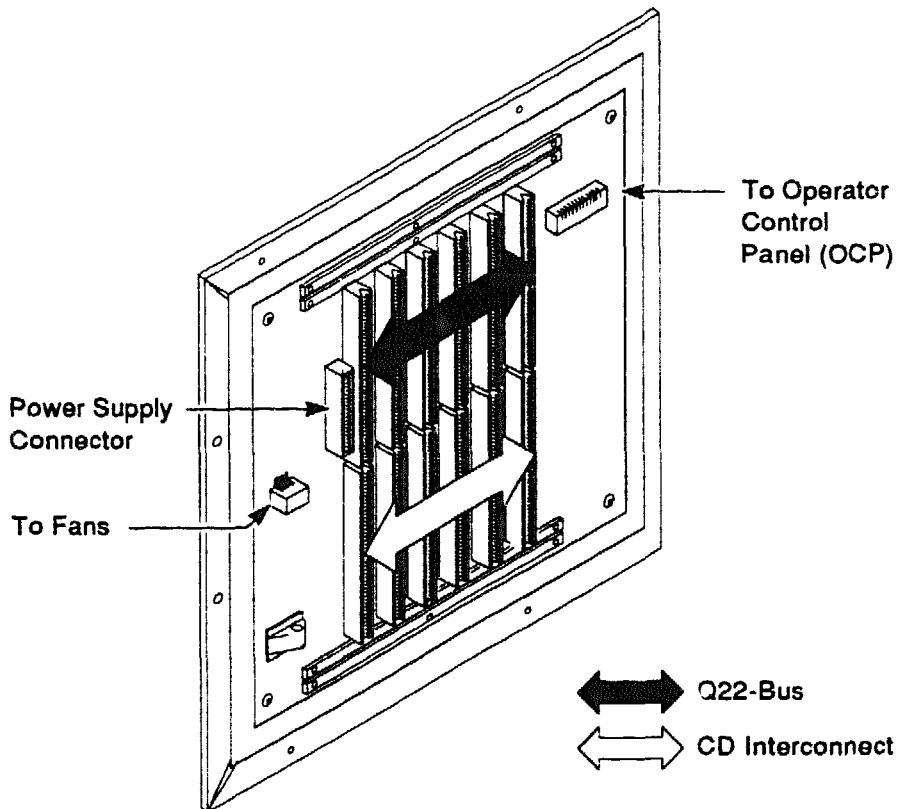
The connection of modules to external drives is the same as for the BA213. The connection is made from the handles or covers that fit over the front of the module. Standard modules, such as the KZQSA have bulkhead handles that are an integral part of the module.

All handles and covers form an electrical seal that complies with FCC regulations for keeping radio frequency interference (RFI) generated by the system inside the enclosure. They also help guarantee proper airflow through the system for module cooling.

BA215 Backplane Bus Grant

All six backplane slots are Q/CD slots. That is, the AB rows of all six slots contain the Q22-bus, and the CD rows of all slots contain the CD interconnect. Bus grant signals pass through each installed module through A connectors of each slot. Figure 1-5 shows the bus grant routing for the BA215 backplane. Use bus grant continuity cards (M9047) in vacant backplane slots to ensure bus continuity.

Figure 1-5: BA215 Backplane Bus Grant

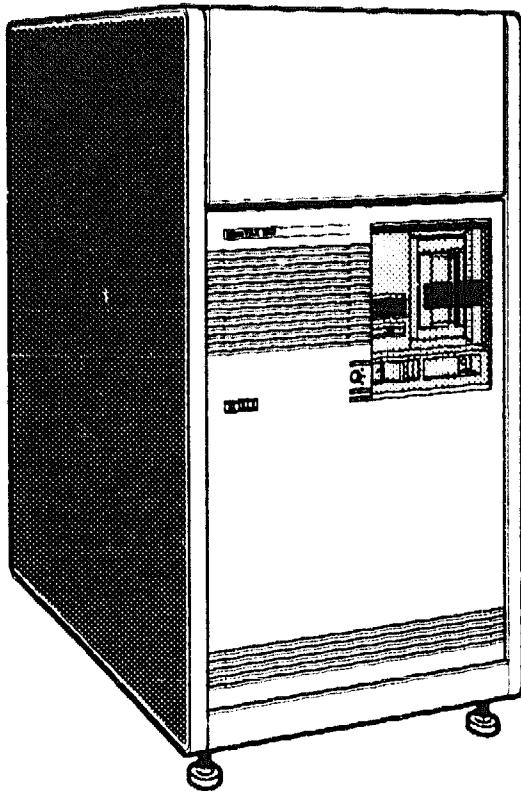


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H9644 Cabinet Overview

The H9644 cabinet contains a BA213 enclosure and a power controller. It allows space for a 26.6-cm (10.5-in) disk or tape drive above the BA213 enclosure. The H9644 cabinet is used for MicroVAX 3900 and 3600 systems. (See Figure 1-6.)

Figure 1-6: MicroVAX 3900/3600 Cabinet



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1.3 MicroVAX II Series Systems

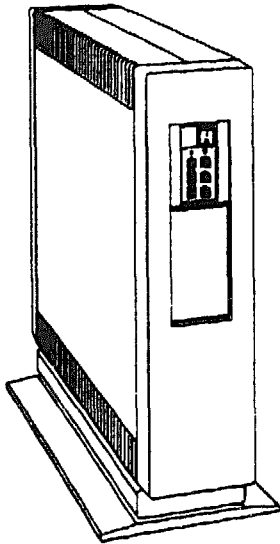
The MicroVAX II series system may be housed in a BA23 enclosure, a BA123 enclosure, or an H9642 cabinet. Both the BA23 and BA123 enclosures house standalone systems, whereas the H9642 cabinet is used to house a BA23 enclosure and disk or tape drives.

BA23 Enclosure Overview

- CPU module (central processing unit)
- Memory modules
- Communication controllers
- Console module
- Drive controller
- Tape or disk drives
- Power supplies
- Fans

The BA23 enclosure has an eight-slot Q22-bus backplane and holds up to two 13.3-cm (5.25-in) storage drives. Figure 1-7 shows the BA23 enclosure.

Figure 1-7: BA23 Enclosure

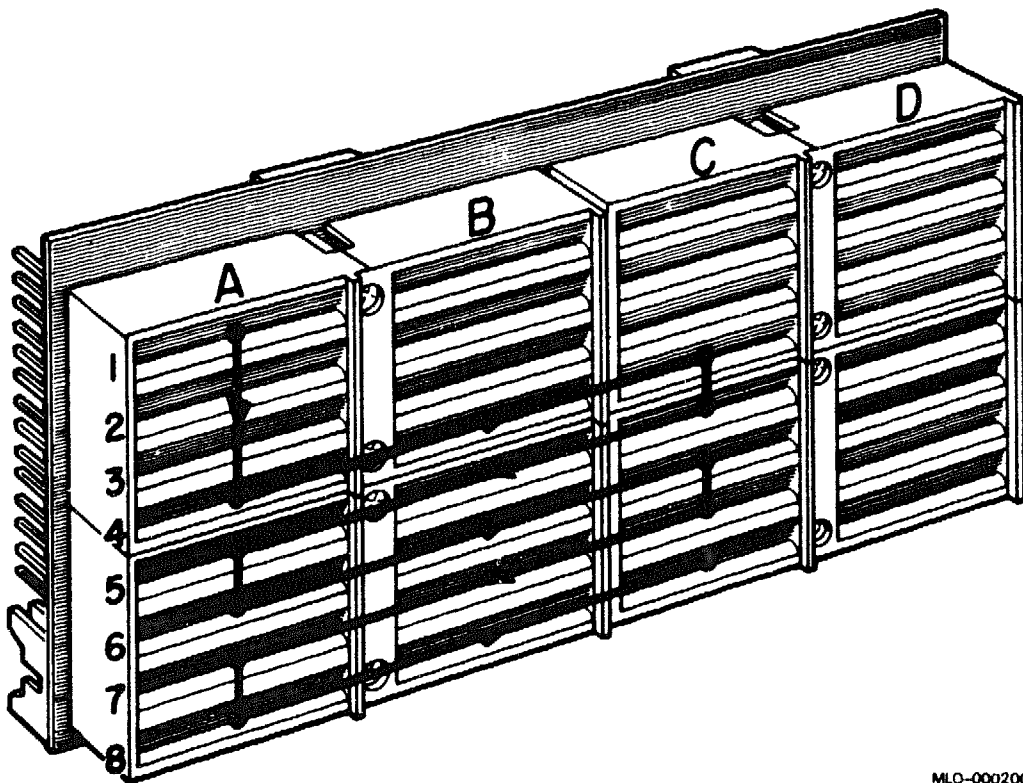


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BA23 Backplane Bus Grant

The backplane implements the Q22-bus on the AB rows of each slot. The CD rows of slots 1 through 3 form the MicroVAX memory interconnect. Install only MS630 memory modules in the CD rows of slots 2 and 3. You can install any dual height modules in the AB rows of slots 2 and 3. Slot 1 is reserved for the CPU module. Figure 1-8 shows the bus grant continuity path for the BA23 backplane.

Figure 1-8: BA23 Backplane Bus Grant

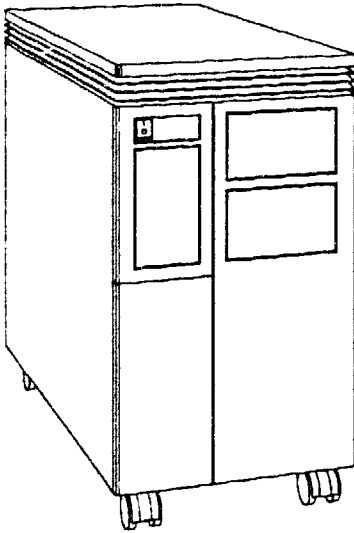


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BA123 Enclosure Overview

The BA123 enclosure has a 13-slot Q22-bus backplane and holds up to five 13.3-cm (5.25-in) storage drives. Figure 1-9 shows the BA123 enclosure.

Figure 1-9: BA123 Enclosure

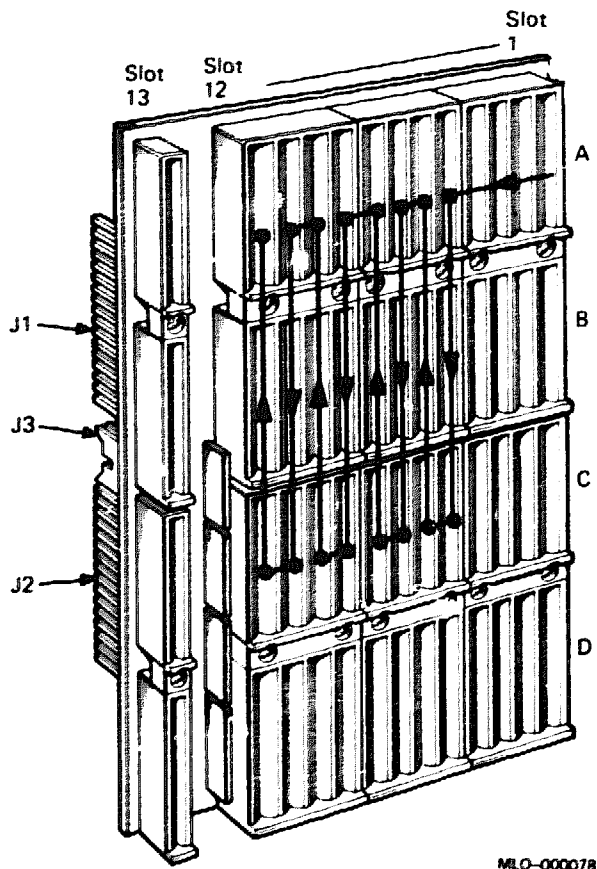


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BA123 Backplane Bus Grant

The backplane implements the Q22-bus on the AB rows of each slot. The first 12 slots are dual or quad-height modules. The CD rows of slot 13 are for the signal distribution board. If needed, a second signal distribution board can be installed in the AB rows of slot 13. MicroVAX systems use the CD rows of slots 1 through 4 for their high-speed memory interconnects. Figure 1-10 shows the bus grant continuity path for the BA123 backplane.

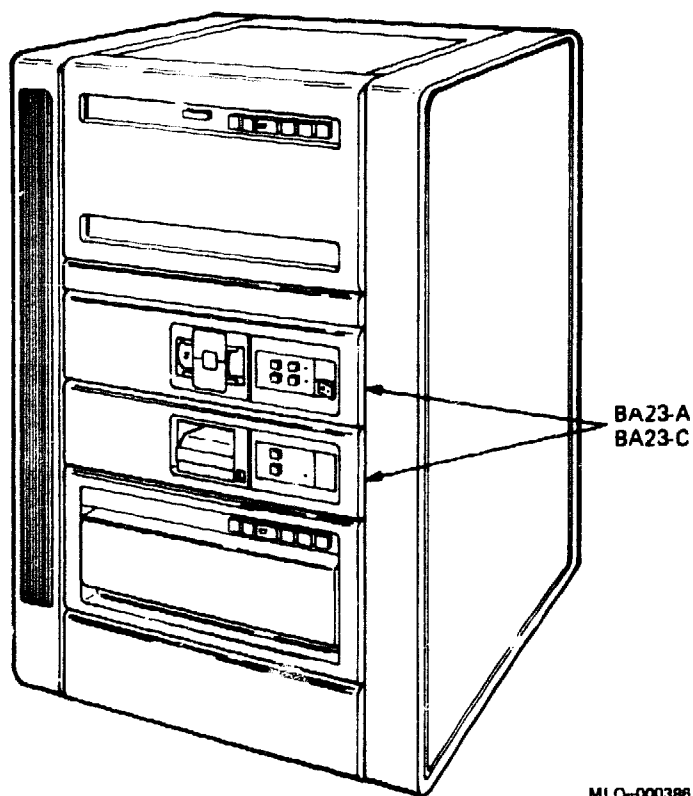
Figure 1-10: BA123 Backplane Bus Grant



H9642 Cabinet Overview

The H9642 cabinet holds two rack mounted BA23 enclosures and has space for larger mass storage devices. (See Figure 1-11.) Each BA23 enclosure can hold half-height and full-height mass storage drives. The full-height mass storage drive is 13.3 cm (5.25 in) high.

Figure 1-11: H9642 Cabinet

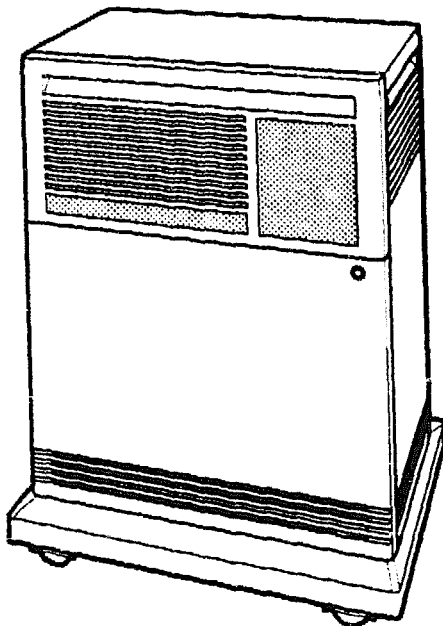


1.4 VAX 4000 Model 300 System Overview

VAX 4000 Model 300 systems house all components in a BA440 enclosure. See Figure 1-12. This enclosure is a free-standing pedestal that houses the following:

- CPU module (central processing unit)
- Memory modules
- Communications controllers
- Console module
- Tape drive controller
- RF-series integrated storage elements
- TLZ04 tape drive
- Power supply
- Fans

Figure 1-12: BA440 Enclosure

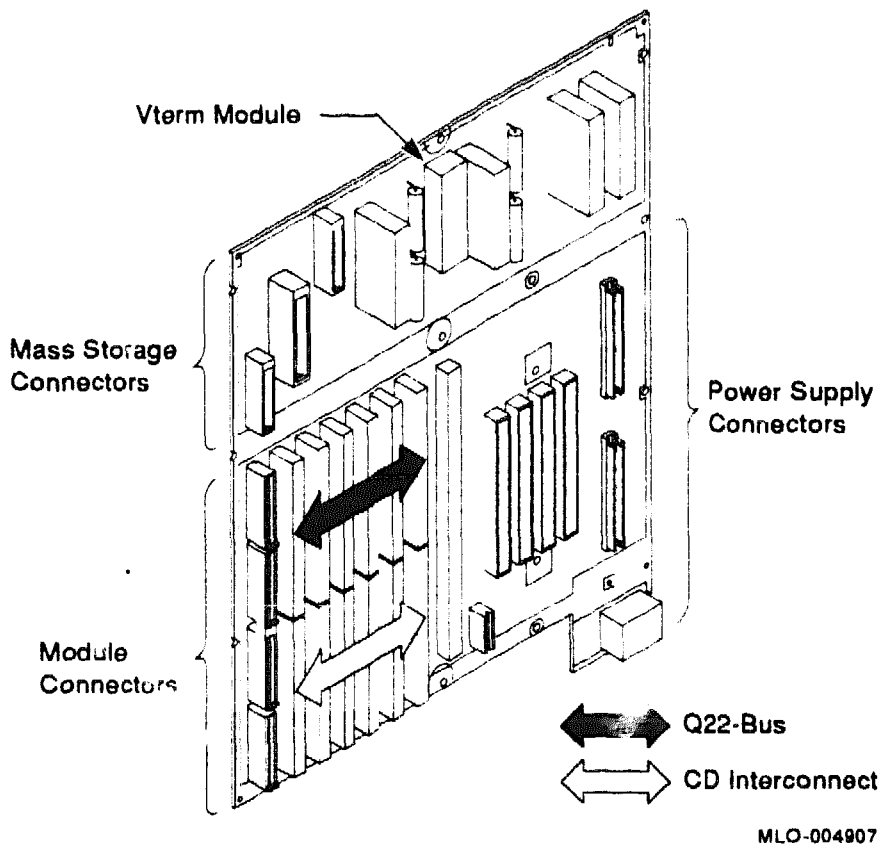


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BA440 Backplane Bus Grant

The backplane implements the Q22-bus on the AB rows of each slot and the CD interconnect on the CD rows of each slot. There are two sections to the BA440 backplane. From right to left the first five slots are reserved for memory modules and the CPU module. The first four slots are for memory and the fifth slot is for the CPU. To the left of the CPU are seven Q-bus slots. A console module with system controls and connectors covers the first five slots. Slots 6 through 12 are available for Q-bus modules. Bus grant continuity cards (M9047) must be used in vacant backplane slots between other Q-bus modules to ensure bus continuity. Figure 1-13 shows the backplane.

Figure 1-13: BA440 Backplane Bus Grant



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Chapter 2

Unpacking Instructions

Unpacking consists of removing the adapter module and one or two terminators which is dependent on option kit. Verify that there are no missing parts, and inspect for damage. Report any damage or shortages to the shipper and notify your Digital service representative.

Before opening the container, check for external damage such as dents, holes, or crushed corners. Open and unpack the shipping container. Verify the contents of your option kit using Table 2-1.

NOTE: *The KZQSA adapter module is packaged inside an antistatic wrapping with a silica gel packet to prevent moisture damage. Do not unpack the module until antistatic precautions have been taken. (See Section 2.2.) Save the wrapping and the gel packet to protect any modules that are being stored or transported.*

2.1 Option Kits

The KZQSA adapter module is shipped as part of an option kit. Each option kit includes a KZQSA adapter module, one or two terminators, and documentation. Table 2-1 lists the options that are included in each kit, and Table 2-2 lists the options that are offered for expansions and changes. Figure 2-1 shows the options that are available.

CAUTION: *If you have a TLZ04-GA, it is supplied with two cables. One cable is the BCO6P-06, which is a 1.83-m (6-ft) cable and should be used for KZQSA module connections. The other cable is shorter in length and should not be used with the KZQSA.*

Table 2-1: Standard KZQSA Adapter Kits

Option Kit	Part Description	Order Number
KZQSA-SA (factory installed) BA200/400 series	KZQSA adapter module	M5976-SA
	Two terminators	H8574-A
KZQSA-SF (field installed) BA200/400 series	KZQSA adapter module	M5976-SA
	Two terminators	H8574-A
	KZQSA Module Installation Guide	EK-KZQSA-IG
KZQSA-AA BA23/H9642 series	KZQSA adapter module	M5976-AA
	One terminator	H8574A
	BA23/H9642 cable kit contains the following:	70-22834-01
	.31-m (12-in) ribbon cable (BA23)	17-01244-02
	.92-m (36-in) ribbon cable (H9642)	17-01244-04
	Bulkhead connector	74-41593-01
	Screws and lock washers	
	KZQSA Module Installation Guide	EK-KZQSA-IG
KZQSA-BA BA123 enclosure	KZQSA adapter module	M5976-AA
	One terminator	H8574A
	BA123 cable kit contains the following:	70-22834-02
	.53-m (21-in) ribbon cable (BA123)	17-01244-03
	Bulkhead connector	74-41593-01
	Screws and lock washers	

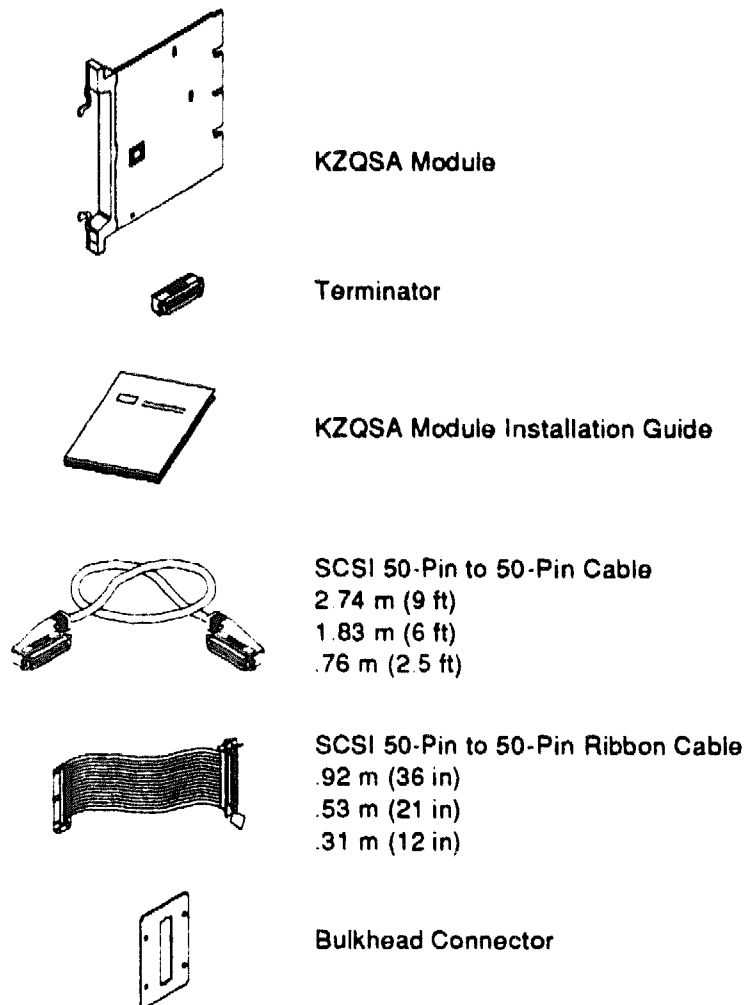
Table 2-1 (Cont.): Standard KZQSA Adapter Kits

Option Kit	Part Description	Order Number
	KZQSA Module Installation Guide	EK-KZQSA-IG

Table 2-2: Options Available

Option	Part Description	Digital Part Number	Order Number
KZQSA	Factory installed		KZQSA-SA BA200/400 series
	Field installed		KZQSA-SF BA200/400 series
	BA23/H9642		KZQSA-AA
	BA123		KZQSA-BA
	2.74-m (9-ft) SCSI 50-pin cable	17-02659-01	BC06P-09
	1.83-m (6-ft) SCSI 50-pin cable	17-02659-02	BC06P-06
	.76-m (2.5-ft) SCSI 50-pin cable	17-02659-03	BC06P-2F
	SCSI terminator	12-30552-01	H8574-A
	Bulkhead connector	74-41593-01	
	KZQSA Module Installation Guide	EK-KZQSA-IG	EK-KZQSA-IG

Figure 2-1: KZQSA Options



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2.2 Inspection

CAUTION: *Printed circuit boards can be damaged by static electricity. When handling the KZQSA adapter module, wear an antistatic wrist strap and use a grounded work surface, such as the one in the antistatic kit (part number 29-26246).*

Visually inspect the KZQSA adapter module for damage. Check the components and connectors for broken, bent, or missing pins. If there is any damage, discontinue the installation.

Chapter 3

Planning the System Installation

It is important to carefully plan the system installation before putting new modules into the system. This process involves checking the power and bus load requirements and ensuring that you have everything you need to make the configuration work.

Fill out a configuration worksheet before proceeding with the installation. A configuration worksheet lets you track the parameters that limit system configuration, such as space, power requirements, and bus loads.

Figure 3-1 through Figure 3-5 are examples of a configuration worksheet for the BA213, BA215, BA23, BA123, and BA440 enclosures, respectively. Table 3-1 lists power and bus load data for all modules and storage devices currently supported by Digital.

3.1 Steps for Planning System

1. List all the devices already installed in the system.
2. List all the devices you plan to install in the system.
3. Fill in the power and bus load data from Table 3-1 for each device you list.
4. Total the figures in the columns and make sure the totals are within the limits specified for the enclosure.

Figure 3-1: BA213 Configuration Worksheet

RIGHT POWER SUPPLY

SLOT	MODULE	Current (Amps)		Power (Watts)
		+5 Vdc	+12 Vdc	
1				
2				
3				
4				
5				
6				
MASS STORAGE:				
Tape Drive				
Fixed Disk 0				
Total these columns:				
Must not exceed:		33.0 A	7.6 A	230.0 W

LEFT POWER SUPPLY

SLOT	MODULE	Current (Amps)		Power (Watts)
		+5 Vdc	+12 Vdc	
7				
8				
9				
10				
11				
12				
MASS STORAGE:				
Fixed Disk 1				
Fixed Disk 2				
Total these columns:				
Must not exceed:		33.0 A	7.6 A	230.0 W

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Figure 3-2: BA215 Configuration Worksheet

POWER SUPPLY					BACKPLANE	
SLOT	MODULE	Current (Amps)		Power (Watts)	Bus Loads	
		+5 Vdc	+12 Vdc		AC	DC
1						
2						
3						
4						
5						
6						
MASS STORAGE:						
Tape Drive					---	---
Fixed Disk 1					---	---
Fixed Disk 2					---	---
DSSI Terminator		0.64	0.0	3.0	---	---
Total these columns:						
Must not exceed:		33.0 A	7.6 A*	230.0 W	33.5**	20.0

*NOTE: Power supplies may differ. Check your power supply specifications to confirm the maximum +12V current.

**Applicable to KA6xx-series CPUs.

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Figure 3-3: BA23 Configuration Worksheet

SLOT	MODULE	Current (Amps)		Power (Watts)	I/O Inserts	
		+5 V	+12 V		B	A
1	AB CD					
2	AB CD					
3	AB CD					
4	AB CD					
5	AB CD					
6	AB CD					
7	AB CD					
8	AB CD					
MASS STORAGE:						
1						
2						
Total these columns:						
Must not exceed:		36.0	7.0	230 W	4	2*

*If more than two type A connectors are required, an adapter template (PN 74-27740-01) may be used. This allows three additional type A connectors but reduces the available type B cutouts to two.

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Figure 3-4: BA123 Configuration Worksheet

		REGULATOR A			REGULATOR B				
SLOT	MODULE	Current (Amps)		Power (Watts)	Current (Amps)		Power (Watts)	I/O Inserts	
		+5 V	+12 V		+5 V	+12 V		B	A
1	AB CD								
2	AB CD								
3	AB CD								
4	AB CD								
5	AB CD								
6	AB CD								
7	AB CD								
8	AB CD								
9	AB CD								
10	AB CD								
11	AB CD								
12	AB CD								
13	AB CD								
	Signal Dist.	0.52		2.60					
MASS STORAGE:									
Shelf	Device								
5*									
4									
3									
2									
1									
Total these columns:									
Must not exceed:		36 A	7 A	230 W	36 A	7 A	230 W	6	4**

*Recommended four drives maximum - two in shelves 1 and 2, two in 3, 4, or 5.

**If more than four 1 x 4 I/O panels are required, an adapter template may be used.

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Figure 3–5: BA440 Configuration Worksheet

SLOT	MODULE	Current (Amps)				Power (Watts)	Bus Load	
		+5 Vdc	+12 Vdc	-3.3 Vdc	-12 Vdc		AC	DC
MEM 1								
MEM 2								
MEM 3								
MEM 4								
CPU	L-4000A/B	7.40	0.35	0.27	0.04	42.6	4.0	1.0
MEM 6								
Qbus 1								
Qbus 2								
Qbus 3								
Qbus 4								
Qbus 5								
Qbus 6								
Qbus 7								
H3604		1.7	0.5	0.0	0.25	17.5	—	—
MASS STORAGE:								
Tape							—	—
1								
2								
3								
Total these columns:								
Must not exceed:		60.0 A	22.0 A	15.0 A	3.0 A	584.0 W	31	20

Note: Total output power from +3.3 Vdc and +5 Vdc must not exceed 330 W.

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Table 3-1: Power and Bus Load Data

Option	Module	Current in Amps		Power Bus Loads		
		+5 V	+12 V	Watts	AC	DC
AAV11-D ¹	A1009	1.8	0.0	9.0	1.0	1.0
ADV11-D ¹	A1008	3.2	0.0	16.0	1.0	1.0
CXA16	M3118-YA	1.4	0.11	8.3	3.0	1.5
CXY08	M3119-YA	1.4	0.35	11.2	3.0	1.5
DEQNA	M7504	3.5	0.5	23.5	2.8	0.5
DHV11	M3104	4.5	0.55	29.1	2.9	0.5
DLVJ1	M8043	1.0	0.25	8.0	1.0	1.0
DMV11-M	M8053	3.4	0.4	21.8	2.0	1.0
DMV11-N	M8064	3.4	0.4	21.8	2.0	1.0
DPV11	M8020	1.2	0.3	9.6	1.0	1.0
DRV11	M7941	0.9	0.0	4.5	2.8	1.0
DRV11-J	M8049	1.8	0.0	9.0	2.0	1.0
DZQ11	M3106	1.0	0.36	9.32	1.5	1.0
DZV11	M7957	1.2	0.39	10.7	3.9	1.0
H3604 ²		1.7	0.5	14.50	—	—
IEQ11	M8634	3.0	0.0	15.0	2.0	1.0
KA630-AA	M7606	6.2	0.14	32.7	2.7	1.0
KA670-A/B ³	L4000-A/B	7.4	0.35	41.20	4.0	1.0
KDA50-Q	M7164	6.93	0.0	34.65	3.0	0.5
KDA50-Q	M7165	6.57	0.03	33.21	0.0	0.0
KFQSA	M7769	5.5	0.0	27.0	3.8	0.5
KLESI	M7740	3.0	0.0	15.0	2.3	1.0
KMV11	M7500	2.6	0.2	15.4	3.0	1.0
KWV11-C ¹	M4002	2.2	0.013	11.2	1.0	1.0

¹Usually connected through a universal data input panel (UDIP) using a 13.3-cm (5.25-in) mass storage slot.

²Also include -12 Vdc @ 0.25 amps, 3 watts.

³Also include 3.3 Vdc @ 0.27 amps, 0.9 watt and -12 Vdc @ 0.04 amps, 0.5 watt.

Table 3–1 (Cont.): Power and Bus Load Data

Option	Module	Current in Amps		Power Bus Loads		
		+5 V	+12 V	Watts	AC	DC
KZQSA	M5976	5.0	0.0	28	4.75	1.4
LPV11	M8027	0.8	0.0	4.0	1.4	1.0
MRV11–D	M7942	2.8	0.0	14.0	1.8	1.0
MS630–AA	M7607	1.0	0.0	5.0	–	–
MS630–BA	M7608	1.3	0.0	6.5	–	–
MS630–CA	M7609	2.1	0.0	10.5	–	–
MS670–BA	L4001–BA	2.52	0.0	12.6	–	–
RC25		1.0	2.5	35.0	–	–
RD51		1.0	1.6	24.2	–	–
RD52		1.0	2.5	35.0	–	–
RD53		0.9	2.5	34.5	–	–
RD54		1.3	1.34	23.7	–	–
RF30		1.25	2.85	18.3	–	–
RF31E–AA		1.0	2.8	38.6	–	–
RF71		1.25	4.54	26.5	–	–
RQDX2	M8639–YB	6.4	0.1	33.2	2.0	1.0
RQDX3	M7555	2.48	0.06	13.2	1.0	1.0
RQDXE	M7513	0.8	0.0	4.0	1.0	0.0
RRD50	M7552	–	–	–	–	–
RX33		0.5	0.3	5.6	–	–
RX50		0.85	1.8	25.9	–	–
TK50		1.35	2.4	33.55	–	–
TLZ04		2.2	.34	15	–	–
TQK50	M7546	2.9	0.0	14.5	2.0	1.0
TSV05	M7196	6.5	0.0	32.5	3.0	1.0
VCB01	M7602	5.0	0.0	25.0	3.0	1.0

Table 3-1 (Cont.): Power and Bus Load Data

Option	Module	Current in Amps		Power Bus Loads		
		+5 V	+12 V	Watts	AC	DC
VCB02	M7169	5.8	0.75	38.0	3.5	1.0
VCB02	M7168	3.4	0.0	17.0	0.0	0.0

Chapter 4

KZQSA Configuration

NOTE: *If your KZQSA option is factory installed, the configuration will be completed at the factory.*

4.1 Steps for KZQSA Configuration

- Selecting the memory base address
- Selecting the I/O (CSR) address
- Selecting the SCSI Node ID address

CAUTION: *First, read the following list of general configuration rules.*

1. All external cables used with the BA440 enclosure must be BC06P cables.
2. A maximum of two BC06P cables may be used in any one bus. BC06P cables are available in lengths of 0.76 m (2.5 ft), 1.83 m (6 ft), and 2.74 m (9 ft).
 - An exception: If a 2.74-m (9-ft) BC06P cable is used in the system, only one cable is allowed.
 - It is important to remember that the 0.76-m (2.5-ft) cable used to connect the adapter to the storage shelf in the Q-bus-based BA440 enclosure is an external cable that must be counted in calculating the maximum length.
3. There are no restrictions on the number or the type of devices as long as the devices are within the standard limits of the SCSI bus. For example, only three devices maximum per bus are allowed.
4. The above step should ensure that the industry standard maximum bus length of 6 meters is not exceeded. The BA440 enclosure's internal SCSI bus length is 1.2 m (47 in).
5. If there are tabletop drives connected to the BA440, the internal cable length must be taken into account.

4.1.1 Step One: Selecting the Memory Base Address

The Q22-bus base address for the onboard 128-Kb memory must be set properly before installation. If more than one KZQSA adapter module is installed in a system, or if another Q-bus module that uses a Q-bus address is installed, you must ensure that the address does not overlap. **Each module must have a unique base address.** The base address is selected by setting 5 memory address jumpers shown in Figure 4-1. Address bits A17 to A21 are represented by jumpers W9 to W13, respectively. (See Table 4-1.) An installed jumper is indicated by a 1. The default address begins at 01000000 and ends at 01377777.

CAUTION: *Jumper W8 is reserved for Digital use; do not install.*

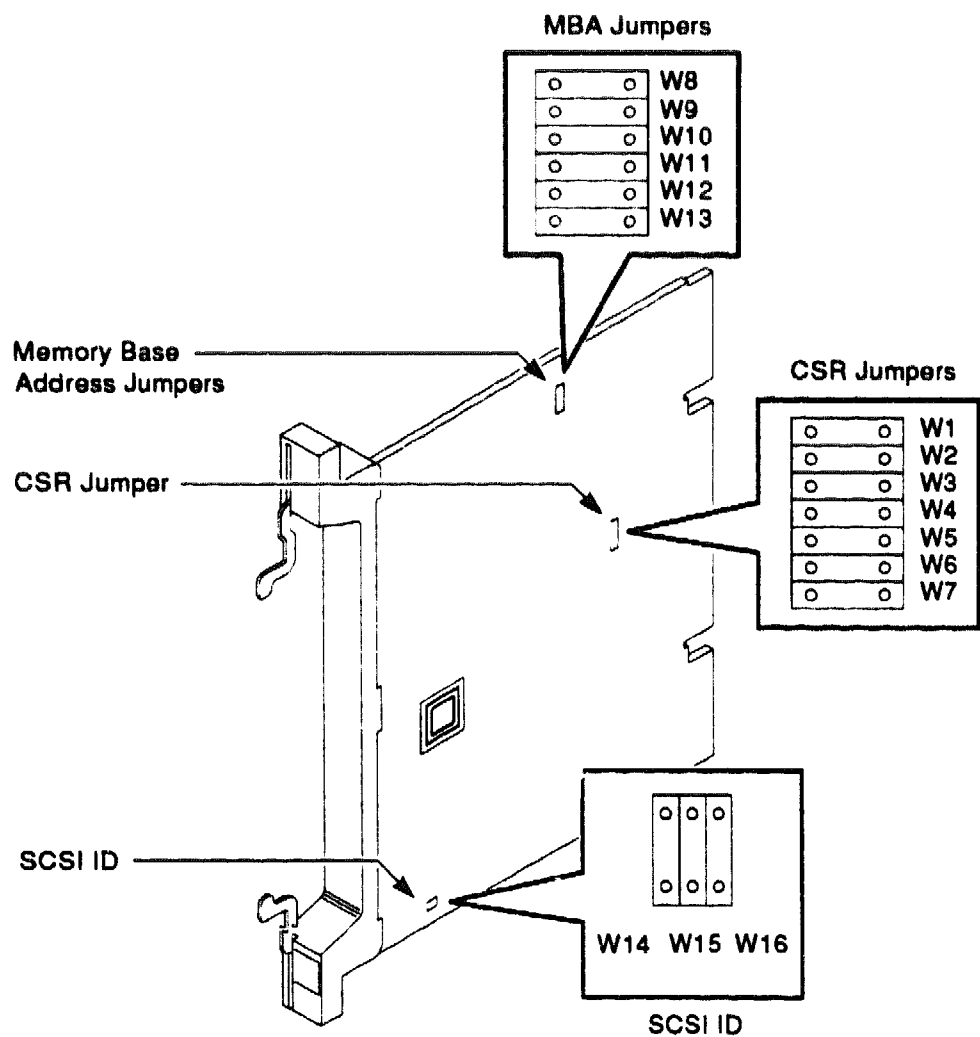
Table 4-1: Memory Base Address Jumpers

Address Range	Address Bits					Comment
	A21	A20	A19	A18	A17	
	Jumper Numbers					
	W13	W12	W11	W10	W9	
00000000-00377777	0	0	0	0	0	
04000000-00777777	0	0	0	0	1	
01000000-01377777	0	0	0	1	0	Default address
01400000-01777777	0	0	0	1	1	
02000000-02377777	0	0	1	0	0	
02400000-02777777	0	0	1	0	1	
03000000-03377777	0	0	1	1	0	
03400000-03777777	0	0	1	1	1	
04000000-04377777	0	1	0	0	0	
04400000-04777777	0	1	0	0	1	
05000000-05377777	0	1	0	1	0	
05400000-05777777	0	1	0	1	1	
06000000-06377777	0	1	1	0	0	
06400000-06777777	0	1	1	0	1	

Table 4-1 (Cont.): Memory Base Address Jumpers

Address Range	Address Bits					Comment
	A21	A20	A19	A18	A17	
	Jumper Numbers					
W13	W12	W11	W10	W9		
07000000-07377777	0	1	1	1	0	
07400000-07777777	0	1	1	1	1	
10000000-10377777	1	0	0	0	0	
10400000-10777777	1	0	0	0	1	
11000000-11377777	1	0	0	1	0	
11400000-11777777	1	0	0	1	1	
12000000-12377777	1	0	1	0	0	
12400000-12777777	1	0	1	0	1	
13000000-13377777	1	0	1	1	0	
13400000-13777777	1	0	1	1	1	
14000000-14377777	1	1	0	0	0	
14400000-14777777	1	1	0	0	1	
15000000-15377777	1	1	0	1	0	
15400000-15777777	1	1	0	1	1	
16000000-16377777	1	1	1	0	0	
16400000-16777777	1	1	1	0	1	
17000000-17377777	1	1	1	1	0	
17400000-17777777	1	1	1	1	1	Illegal, do not use

Figure 4-1: KZQSA Adapter Module - Jumper Locations



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4.1.2 Step Two: Installing I/O CSR Jumpers

The base address of the 32-word I/O block associated with the SII (SCSI to Integrated Circuit Interconnect) interface chip, DMA, and vector registers is selected by the seven address jumpers W1 through W7. The jumpers are located on the KZQSA adapter board shown in Figure 4-1. The jumpers allow the block to be located anywhere in the I/O page. An installed jumper is indicated by a 1 (see Table A-1). The default address begins at 761300 and ends at 761376.

The correct CSR base address may be obtained using VMS for both the MicroVAX 3000 series and VAX 4000 series systems. You may also obtain the CSR base address on VAX 4000 series systems using the console firmware. Examples of each are provided on the following pages.

4.1.2.1 Using VMS to Configure CSR

Enter the following instructions at the \$ prompt:

```
$RUN SYS$SYSTEM:SYSGEN
sysgen>CONFIG
device>DEVICE NAME AND QUANTITY
```

Example:

```
device>UDA, 2
device>TU81, 1
device>QZA, 1
device> CvVz
```

The following display appears:

```
device:uda    name:pua    csr:772150    vector:154    support:yes
device:tu81   name:pta    csr:774500    vector:260    support:yes
device:uda    name:pub    csr:760334    vector:300    support:yes
device:kzqsa  name:pka    csr:761400    vector:304    support:yes
sysgen>
```

The displayed CSR address for the KZQSA should now be jumpered. See Table A-1 for address settings and Figure 4-1 for location of address jumpers.

The default address is 761300.

Example of CSR setting using default address:

Base Address	Q-bus Address	C S R J u m p e r s							
		W7	W6	W5	W4	W3	W2	W1	
2000 02C0	761300	0	0	0	1	0	1	1	

4.1.2.2 Using Configure from Console Firmware (VAX 4000 Model 300)

The CONFIGURE command is similar to the VMS SYSGEN CONFIG utility. This command simplifies system configuration by providing information that is typically available only with a running operating system.

The CONFIGURE command invokes an interactive mode that permits the user to enter Q22-bus device names, then generates a table of Q22-bus I/O page device CSR addresses and device vectors. A sample configuration display appears below.

Enter the CONFIGURE command and then the word HELP:

```
>>>CONFIGURE
```

```
enter device configuration, help, or exit
device,number? HELP
```

The following display appears:

```
devices:
lpv11      kxj11      klv11j     dzq11      dzv11      dfa01
rlv12      tsv05      rxv21      drv11w     drv11      bdpv11
dmv11      delqa      deqna      desqa      rqdx3      kda50
rrd50      rqc25      kfqsa-disk tqk50      tqk70      tu81e
rv20       kfqsa-tape kmv11      ieql1      dhq11      dhv11
cxa16      cxb16      cxy08      vcb01      qvss       lnv11
lnv21      qpss       dsv11      adv11c     aav11c     axv11c
kwv11c     adv11d     aav11d     vcb02      qdss       drv11j
drq3b      vsv21      ibq01      idv11a     idv11b     idv11c
idv11d     iav11a     iav11b     mira       adq32      dtc04
desna      igql1      div32      kiv32      dtcn5      dtc05
kwv32      kzqsa

numbers:
1 to 255, default is 1
device,number?
```

Enter devices used:

device, number? **KZQSA**
device, number? **KFQSA-DISK**
device, number? **CXA16**
device, number? **KDA50**
device, number? **EXIT**

The following display appears:

address/vector assignments
-772150/154 kfqsa-disk
-760334/300 kda50
-760500/310 cxa16
-761400/320 kzqsa

Enter EXIT:

>>>EXIT

4.1.3 Step Three: Installing SCSI Node ID Jumpers

The SCSI node ID select mechanism determines the ID number by which the device is known on the bus. Each device (including the system adapter) must have a unique ID. The KZQSA may be configured as node ID numbers 0–7. The default setting is ID = 7. Selection is made by installing the binary coded jumpers W14 through W16 (ID 0 through ID 2, respectively), on the KZQSA adapter module. See Table 4–2.

For configuring the KZQSA adapter module, refer to Table 4–2 and Figure 4–1.

Table 4–2: SCSI Node Address ID Number Settings

Node ID Number	Switch Settings			Comment
	W14	W15	W16	
0	0	0	0	
1	0	0	1	
2	0	1	0	
3	0	1	1	
4	1	0	0	
5	1	0	1	
6	1	1	0	
7	1	1	1	Default Node ID

Key to Jumper Settings

Installed jumper = 1

Uninstalled jumper = 0

x

x

Chapter 5

Installing the KZQSA Option

This chapter explains how to install the KZQSA adapter module in a MicroVAX 3000 series system, a MicroVAX II series system, and a VAX 4000 series system.

NOTE: *Only qualified service personnel should attempt to install the KZQSA adapter module. Before starting the procedure, make sure that the system manager has backed up all files. Have the system manager perform a system shutdown of the operating system before turning off the power. Make sure the customer has taken these steps before removing any panels from the enclosure.*

CAUTION: *Static electricity can damage integrated circuits. Always wear a grounded wrist strap and use a grounded work surface, such as the one found in the antistatic kit (part number 29-26246-00), when installing modules.*

Before beginning the KZQSA adapter module installation, test the system to verify that it is working properly.

CAUTION: *Have the system manager back up all necessary system software and turn off the system.*

5.1 Installing the KZQSA Option in the BA213 Enclosure

NOTE: *Step 1 is only for a BA213 enclosure that is housed in an H9644 cabinet. If your system does not utilize an H9644 cabinet, proceed to step 2. If your system does utilize an H9644 cabinet proceed to step 2 after completion of step 1.*

The front door of the H9644 cabinet and BA213 enclosure has a three-position lock that limits access to the system controls. See Figure 5-1.

1. Turn the key shown in Figure 5-1 that is in position 1 to position 3. Push the front door latch to the right, and the left side of the door will spring open. (See Figure 5-2.)

Figure 5-1: H9644 Key Positions

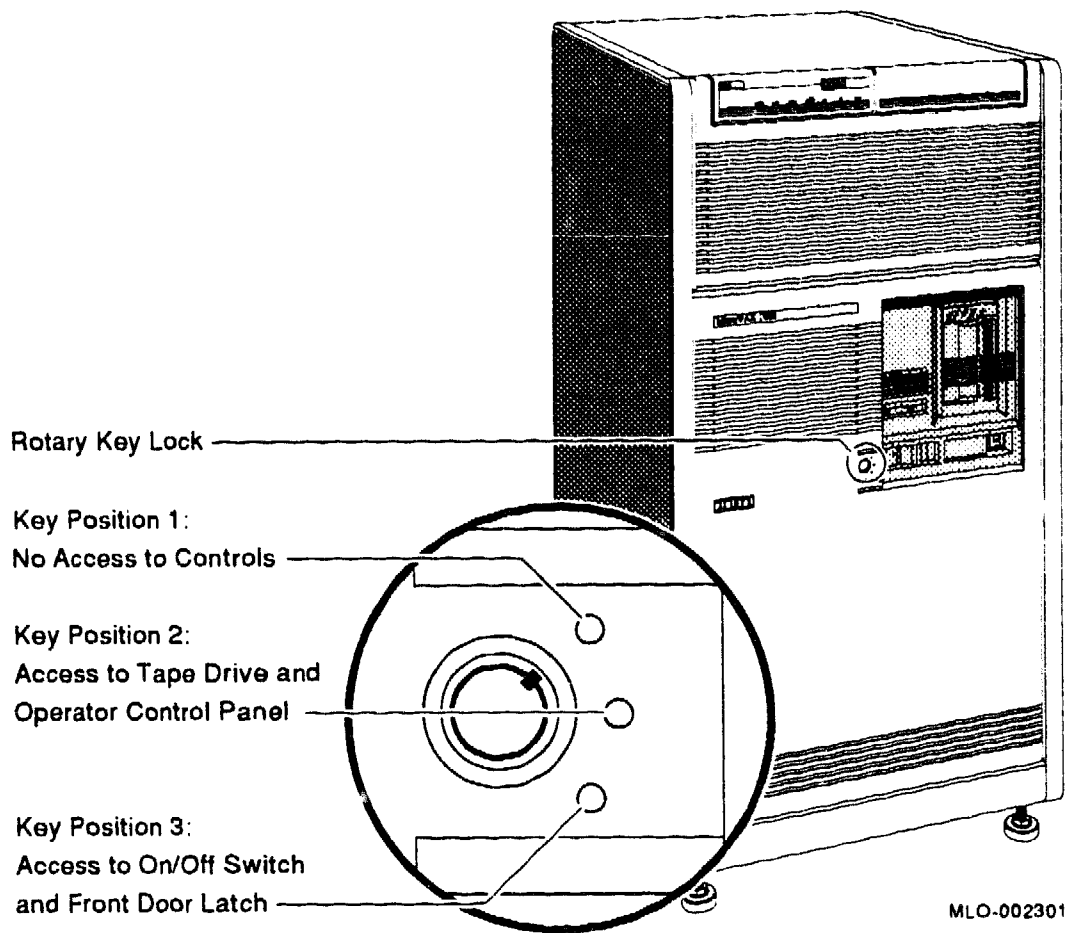
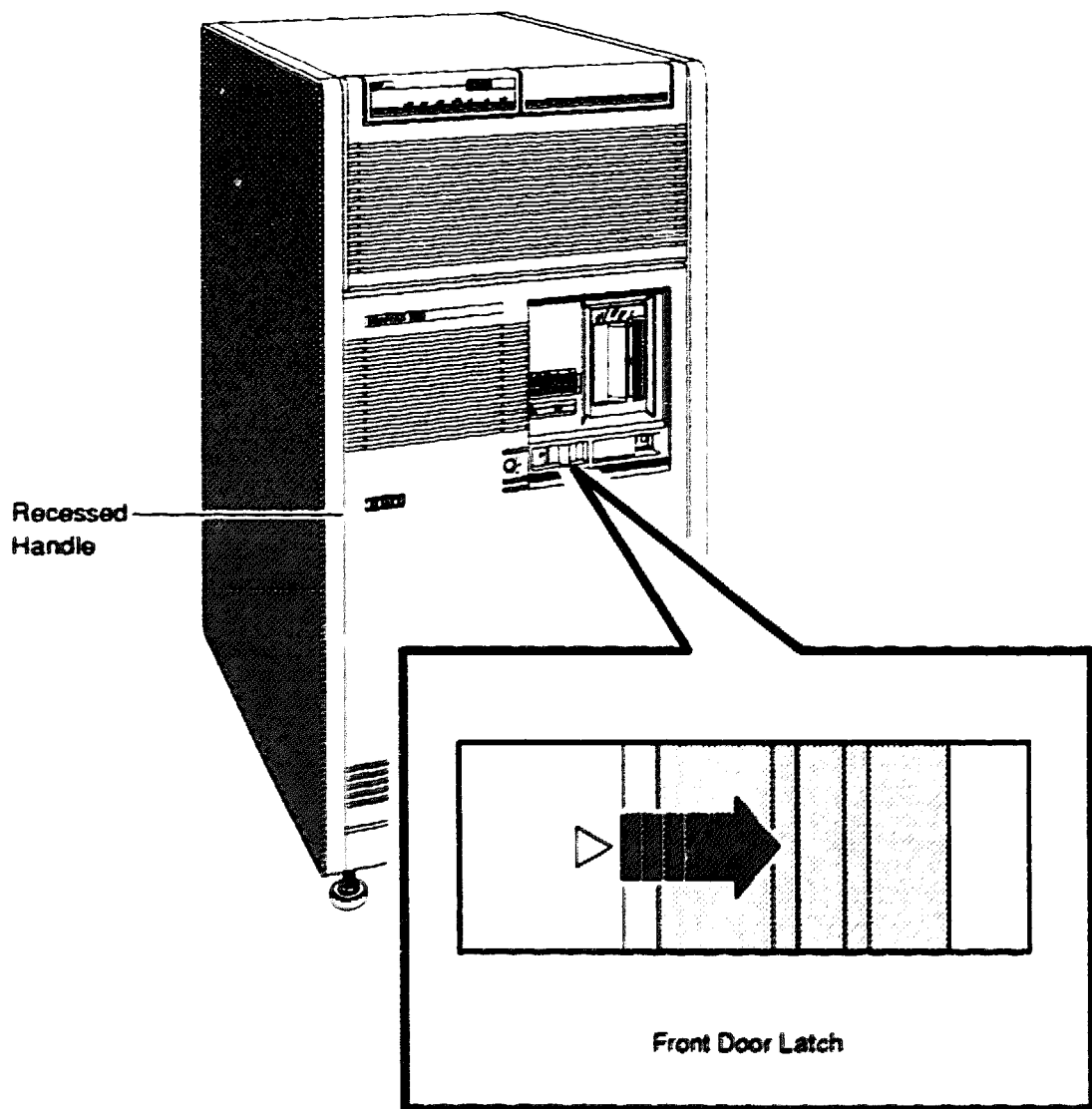


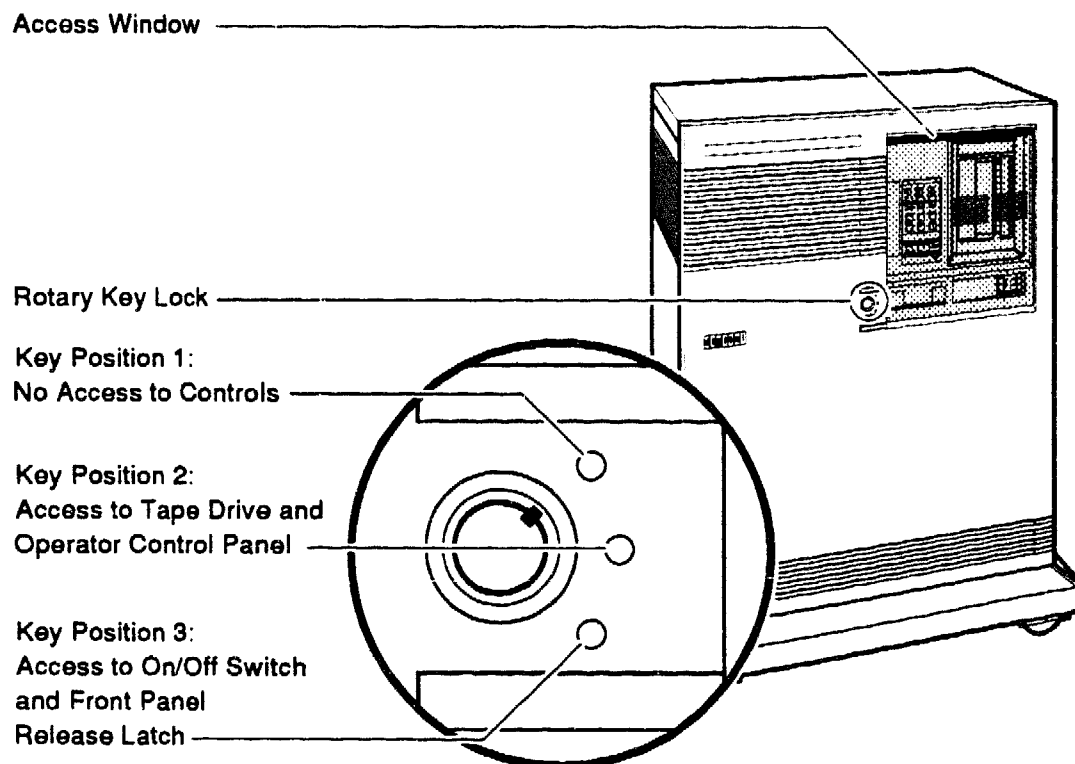
Figure 5-2: Opening the H9644 Cabinet Door



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2. In the BA213 enclosure the controls are located behind a plastic window at the upper right of the cover. See Figure 5-3. Insert the key into the rotary key lock on the front door. Turn the key from position 1 to position 3 to gain access to the power switch and front panel release latch.

Figure 5-3: BA213 Enclosure Door Release Controls

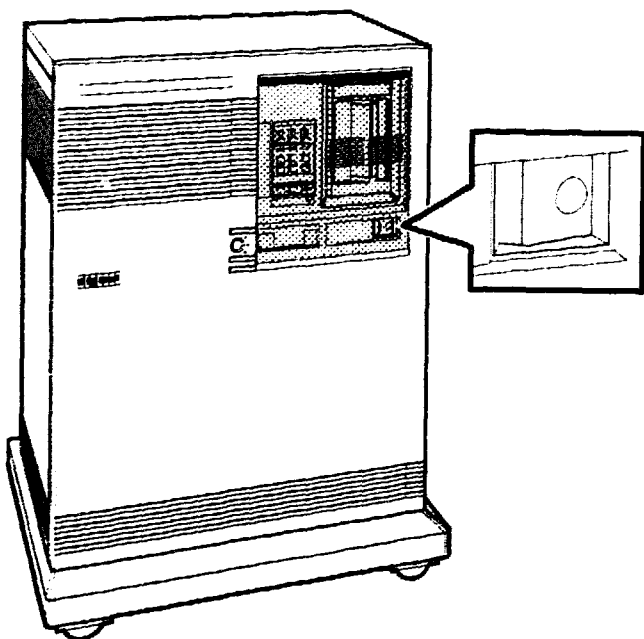


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3. Slide the window down.

4. To turn off the power, turn the power switch to the 0 position, as shown in Figure 5-4.

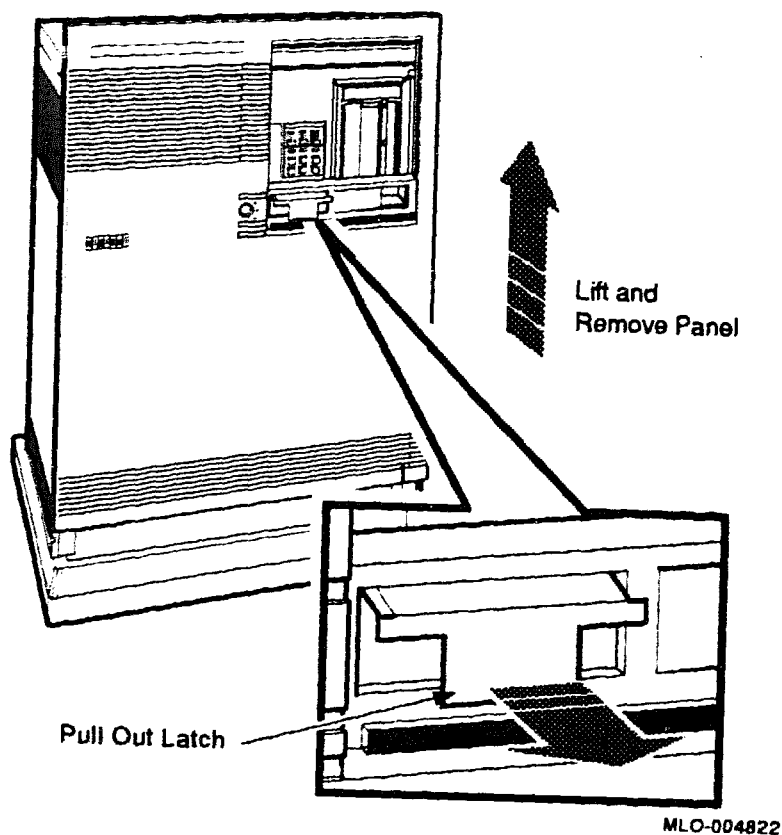
Figure 5-4: BA213 Power Switch



MLO-004549

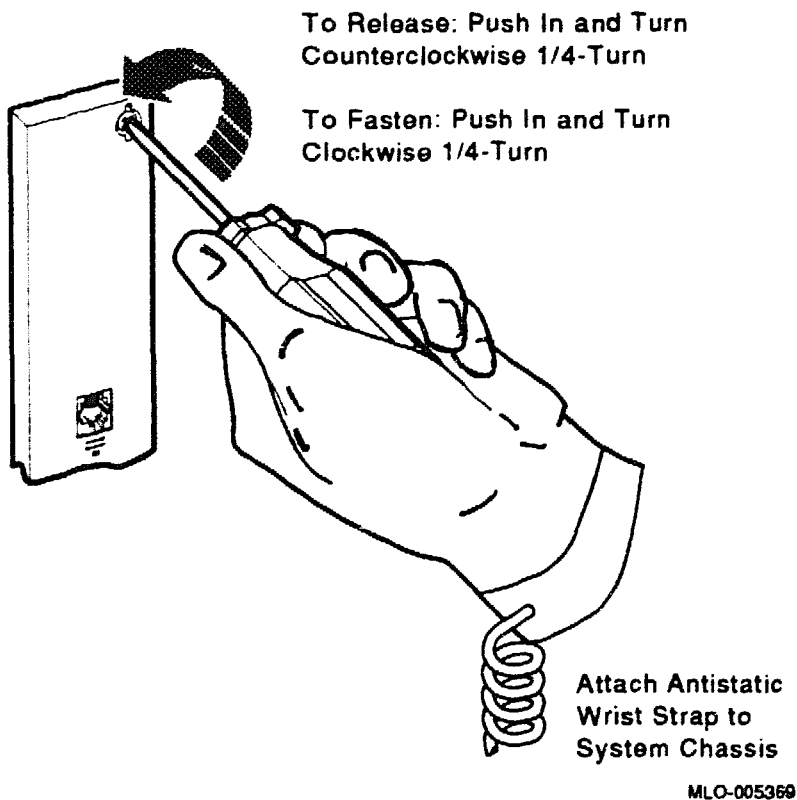
5. Pull out the latch on the front door and use the latch as a hand grip to lift up the door and remove it from the system, as shown in Figure 5-5.

Figure 5-5: Removing the BA213 Front Door



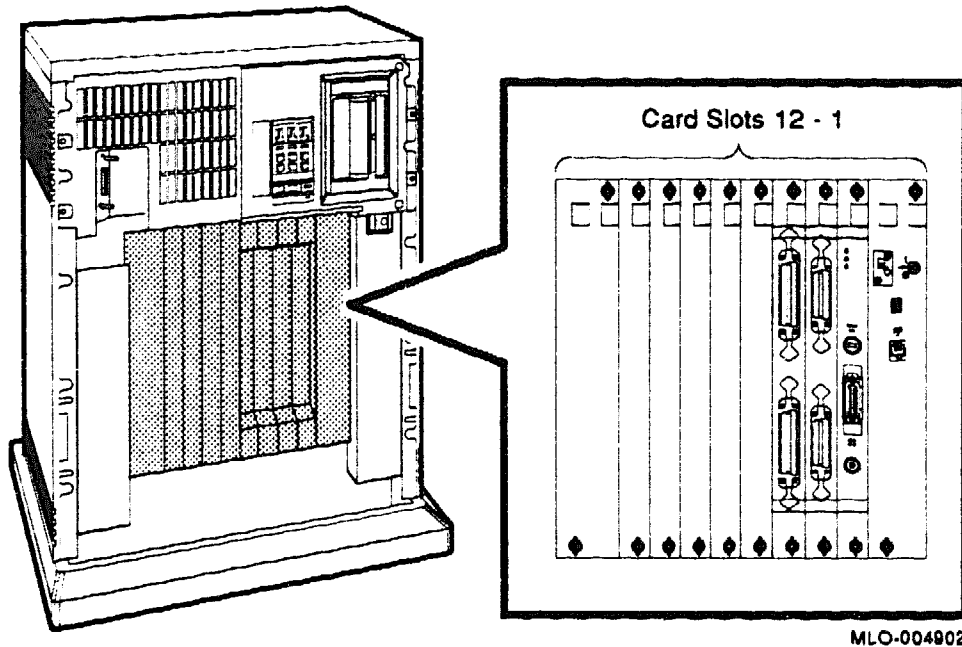
6. Remove the blank cover from the slot where the KZQSA adapter module is going to be installed by releasing the quarter-turn captive screws holding it to the card cage. See Figure 5-6. (Check your system documentation for the correct placement of modules in the card cage.) Any available slot may be used. If there are vacant slots between the last module and the KZQSA adapter module a bus grant continuity card (M9047) must be installed in those slots to ensure bus continuity.

Figure 5-6: Removing Blank Cover



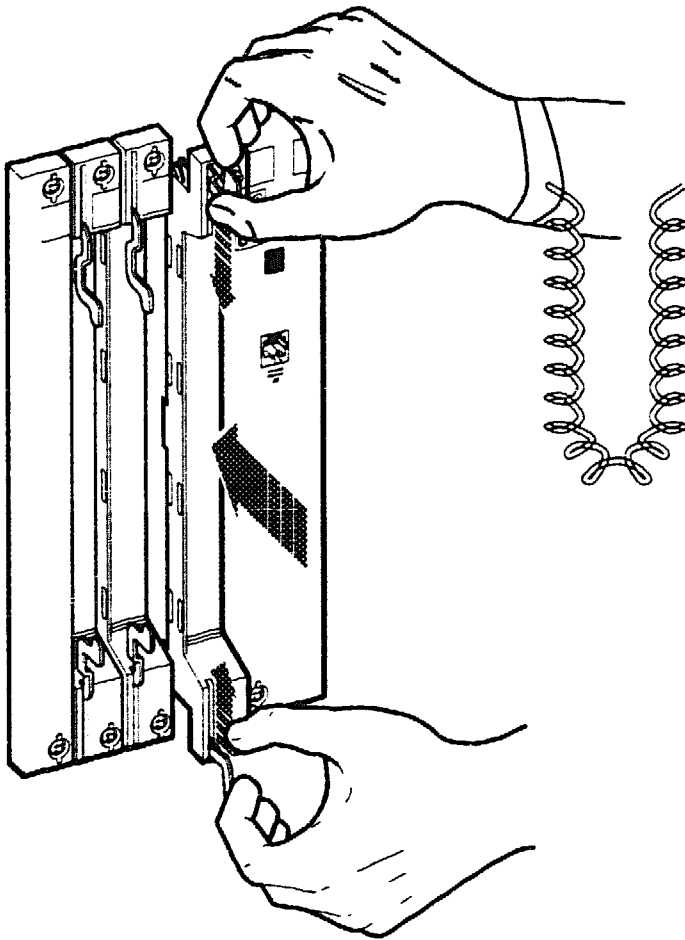
7. Check the KZQSA adapter module jumpers to ensure that you have selected the correct SCSI node ID. (See Chapter 4.) Figure 5-7 shows the BA213 card slot number identification.

Figure 5-7: BA213 Card Slot Number Identification



8. Slide the KZQSA adapter module into the card slot with the component side facing to the right and push in the levers to lock the module into place. See Figure 5-8. (The KZQSA module may be installed in any available card slot on the backplane.)

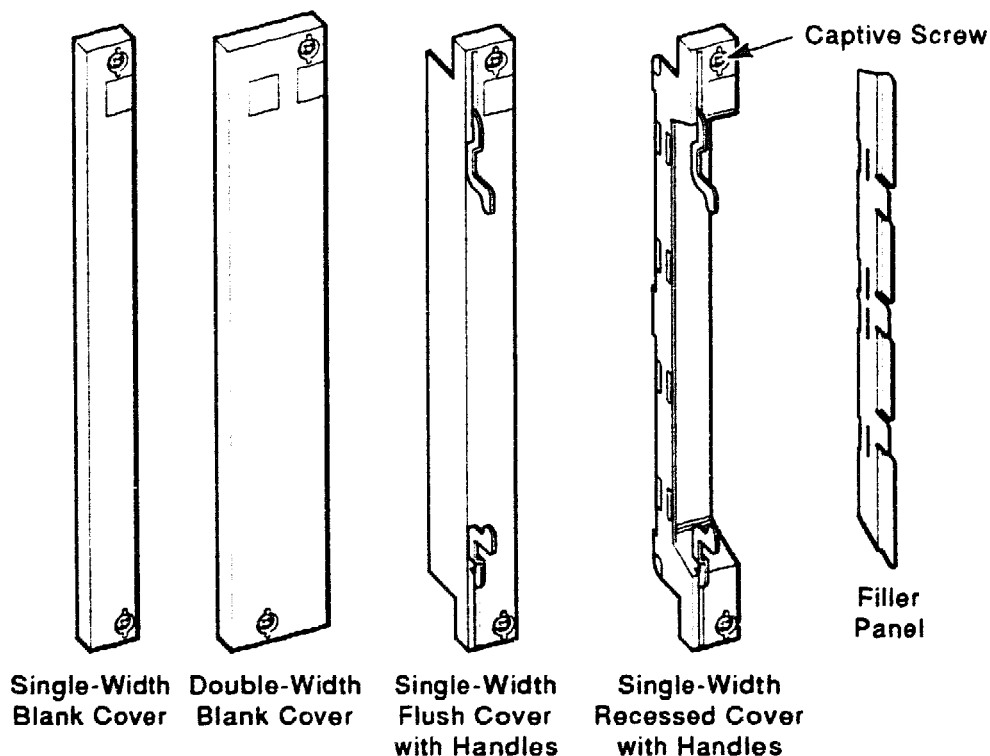
Figure 5-8: Module Insertion



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9. If you install a KZQSA module next to a module with a flush handle or blank cover, you must install a gap filler assembly between the modules to comply with EMI regulations (see Figure 5-9).

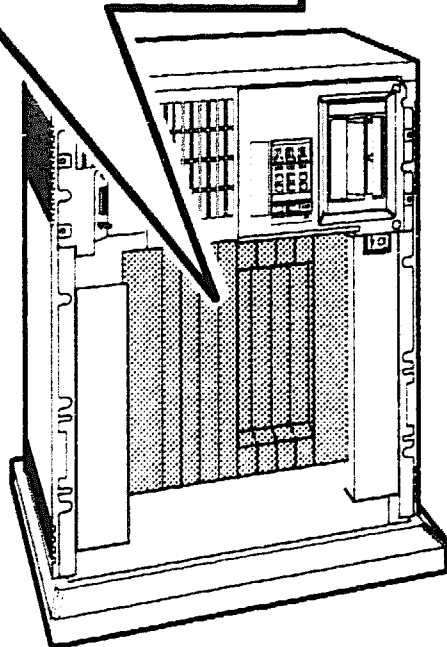
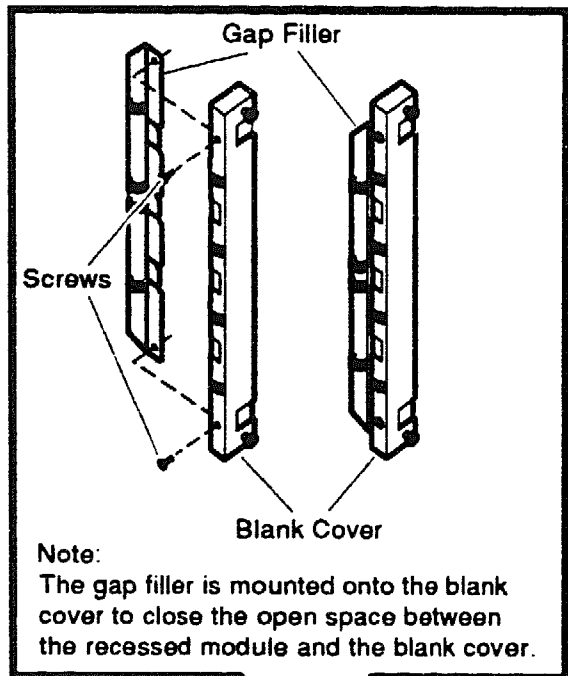
Figure 5-9: BA200-Series and BA-400 Series Handles and Covers



MLO-000769

Without the gap filler, circuitry on the flush-handle module is exposed. The gap filler is mounted onto the flush-handle module to close the open space between the flush-handle module and the KZQSA module, thus producing a ground connection. The gap filler panel on the blank cover produces a ground connection to the KZQSA module (see Figure 5-10).

Figure 5–10: Making Ground Connections with Gap Fillers



MLO-006206

Two gap filler assemblies (70-24071-01) are supplied with the KZQSA storage adapter kit. Each gap filler assembly includes one gap filler and two screws.

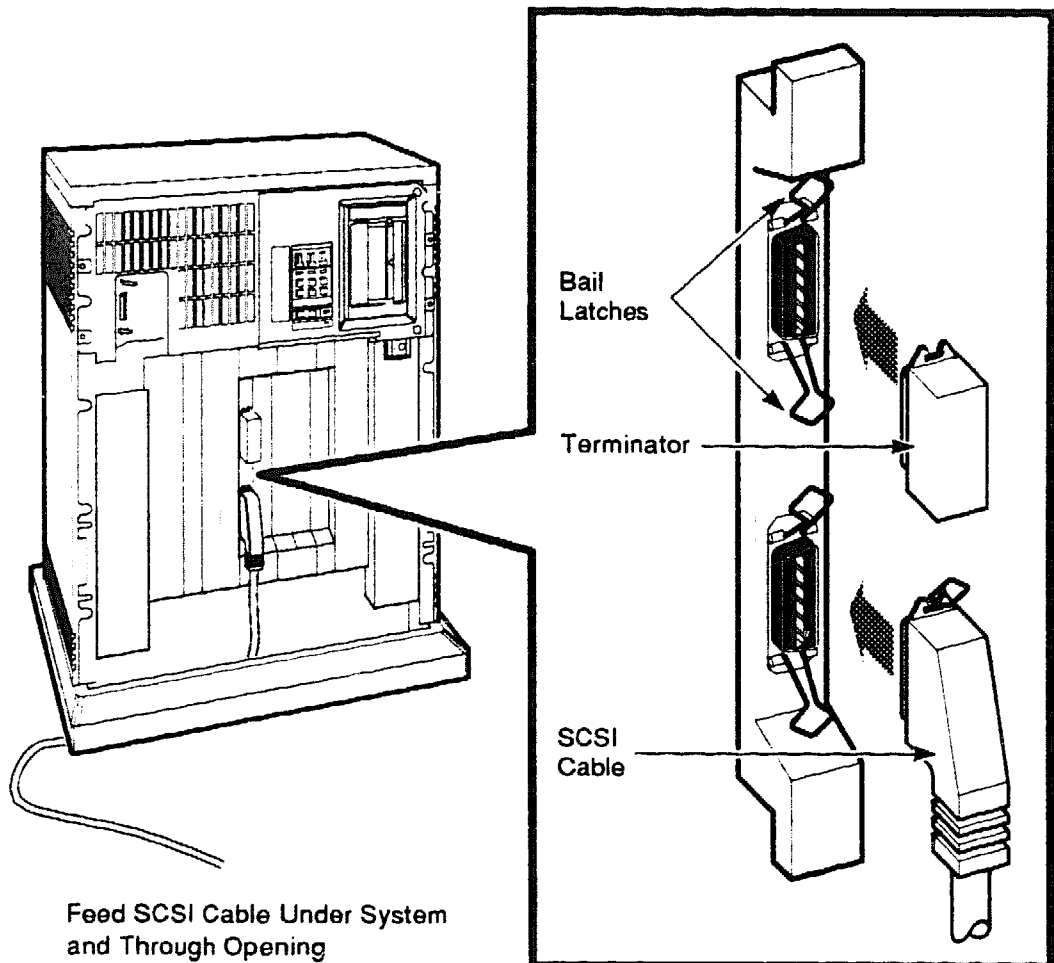
Check that the ground connections are correctly in place as follows:

- a. Identify any cases where the KZQSA module will be located next to a flush-handle module, or a module with a blank cover.
- b. Make sure a gap filler assembly is installed on the side of the flush-handle or blank cover that is located next to the KZQSA module.
- c. If needed, install a gap filler assembly as follows:
 - Fit the gap filler (70-24071-01) onto the side of the flush-handle or blank cover module that is located next to the KZQSA module. Make sure that the gap filler tabs fit into the tab indentations on the flush-handle or blank cover module (see Figure 5-10). Use the two screws that come with the assembly to attach the gap filler at the top and bottom.
 - If you have a flush-handle module, insert the module into the backplane slot.

If you have a blank cover, install the blank cover with the gap filler attached, over the card cage slot.
 - Make sure there is no open space between modules.
- d. Fasten the quarter-turn captive screws on all handles and covers in the backplane.

10. Connect the SCSI cable (part number 17-02659-02) to the lower connector of the KZQSA adapter module. Attach the terminator (part number 12-30552-01) to the top connector. Pull the bail latches toward the cable and terminator to hold them in place. See Figure 5-11.

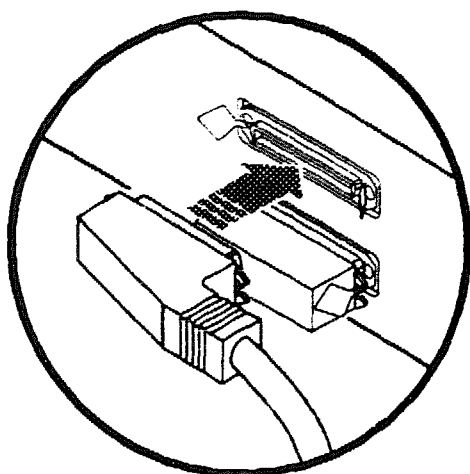
Figure 5-11: Cable and Terminator Connection



MLO-004551

11. Connect the other end of the SCSI cable to the top connector on the storage drive (TLZ04 or RRD40). Attach the terminator to the lower connector. See Figure 5-12. (If additional drives are being connected to the SCSI bus, see Chapter 6 for information on connecting multiple drives.)

Figure 5-12: Connecting KZQSA Option to Drive Unit



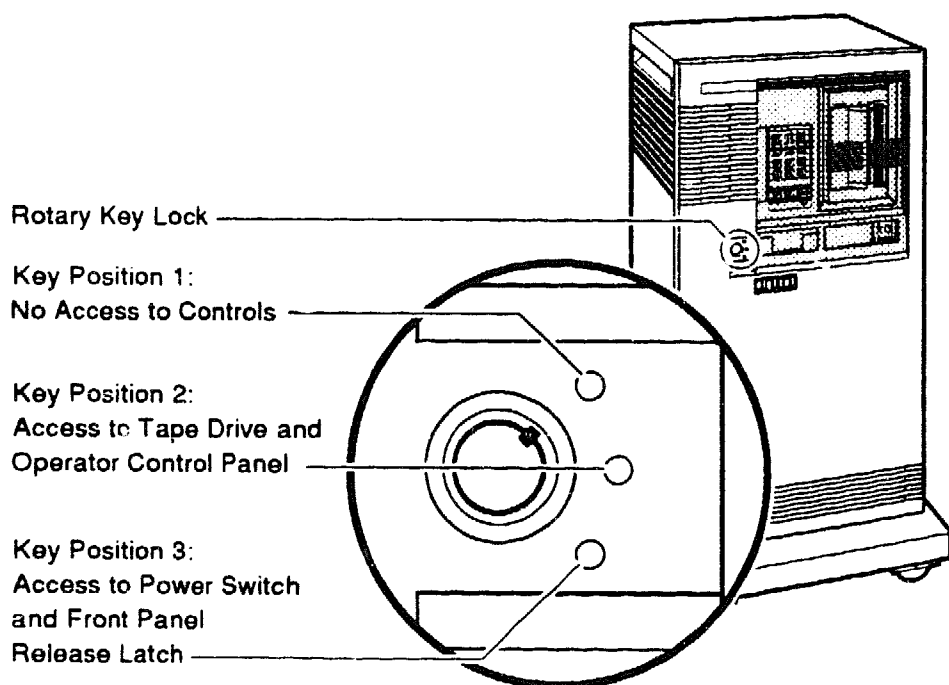
MLO-004552

5.2 Installing the KZQSA Option in the BA215 Enclosure

The front door of the BA215 enclosure has a three-position lock that limits access to the system controls. The controls are located at the upper right of the enclosure. See Figure 5-13.

1. Insert the key into the rotary key lock on the front door. Turn the key from position 1 to position 3 to gain access to the power switch and front panel release latch.

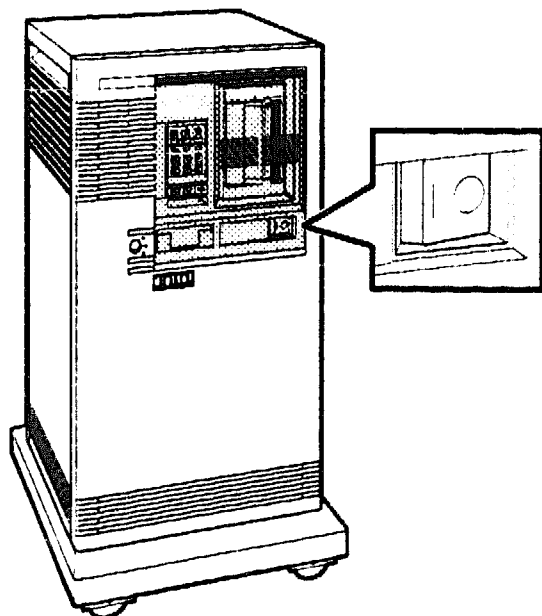
Figure 5-13: BA215 Enclosure Door Release Controls



MLO-000671

2. To turn off the power, turn the power switch to the 0 position, as shown in Figure 5-14.

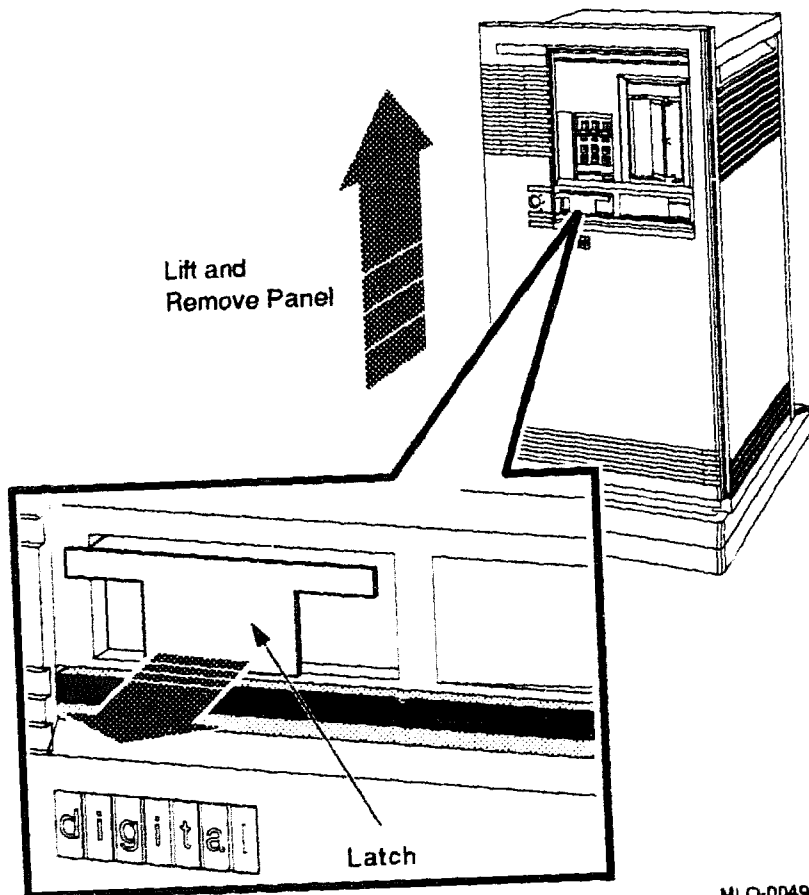
Figure 5-14: BA215 Power Switch



MLO-004553

3. Pull out the release latch on the front door, and use the latch as a hand grip to lift up the door and remove it from the system. See Figure 5-15.

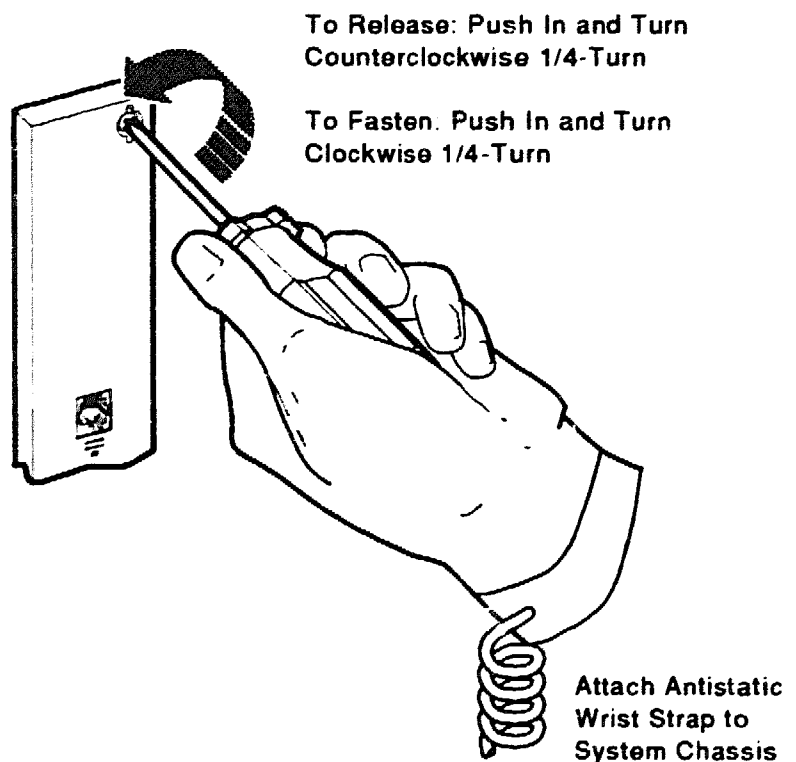
Figure 5-15: Removing the BA215 Front Panel



MLO-004905

4. Remove the blank cover from the slot where the KZQSA adapter module is going to be installed by releasing the quarter-turn captive screws holding it to the card cage. See Figure 5-16. (Check your system documentation for the correct placement of modules in the card cage.) Any available slot may be used. If there are vacant slots between the last device and the KZQSA adapter module, a bus grant continuity card (M9047) must be installed in those slots to ensure bus continuity.

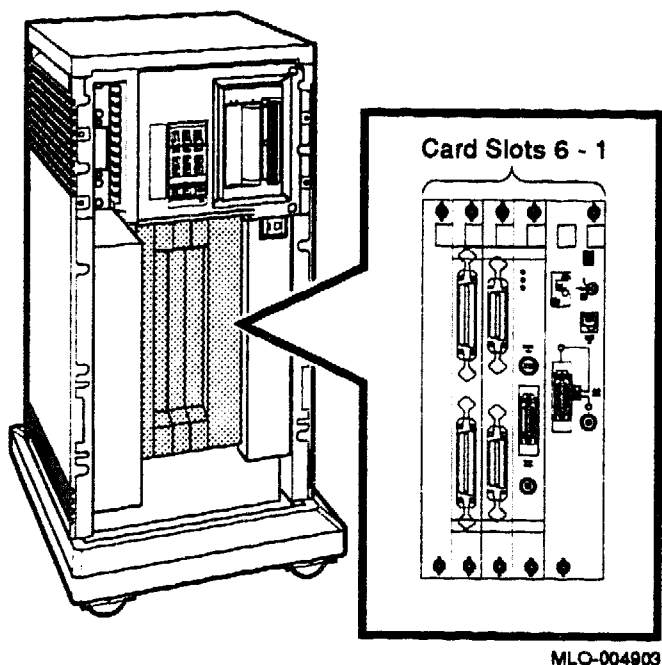
Figure 5-16: Removing Blank Cover



MLO-005369

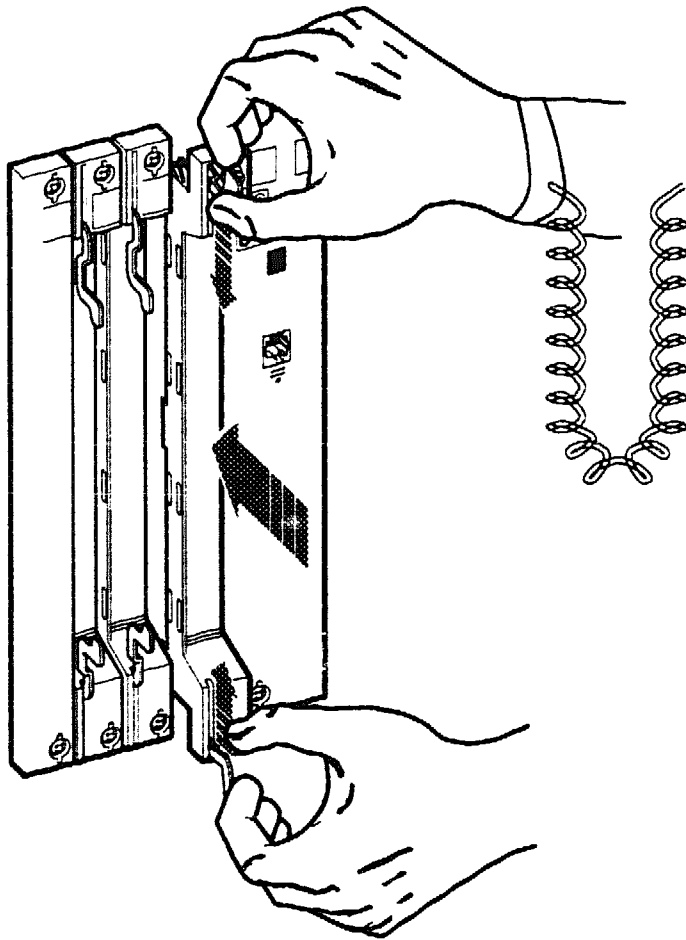
5. Check the KZQSA adapter module jumpers to ensure that you have selected the correct SCSI node ID. (See Chapter 4.) Figure 5-17 shows the BA215 card slot number identification.

Figure 5-17: BA215 Card Slot Number Identification



6. Slide the KZQSA adapter module into the card slot with the component side facing to the right and push in the levers to lock the module into place. See Figure 5-18. (The KZQSA module may be installed in any available card slot on the backplane.)

Figure 5-18: Module Insertion



MLO-004204

7. If you install a KZQSA module next to a module with a flush handle or blank cover, you must install a gap filler assembly between the modules to comply with EMI regulations (see Figure 5–9).

Without the gap filler, circuitry on the flush-handle module is exposed. The gap filler is mounted onto the flush-handle module to close the open space between the flush-handle module and the KZQSA module, thus producing a ground connection. The gap filler panel on the blank cover produces a ground connection to the KZQSA module (see Figure 5–10).

Two gap filler assemblies (70-24071-01) are supplied with the KZQSA storage adapter kit. Each gap filler assembly includes one gap filler and two screws.

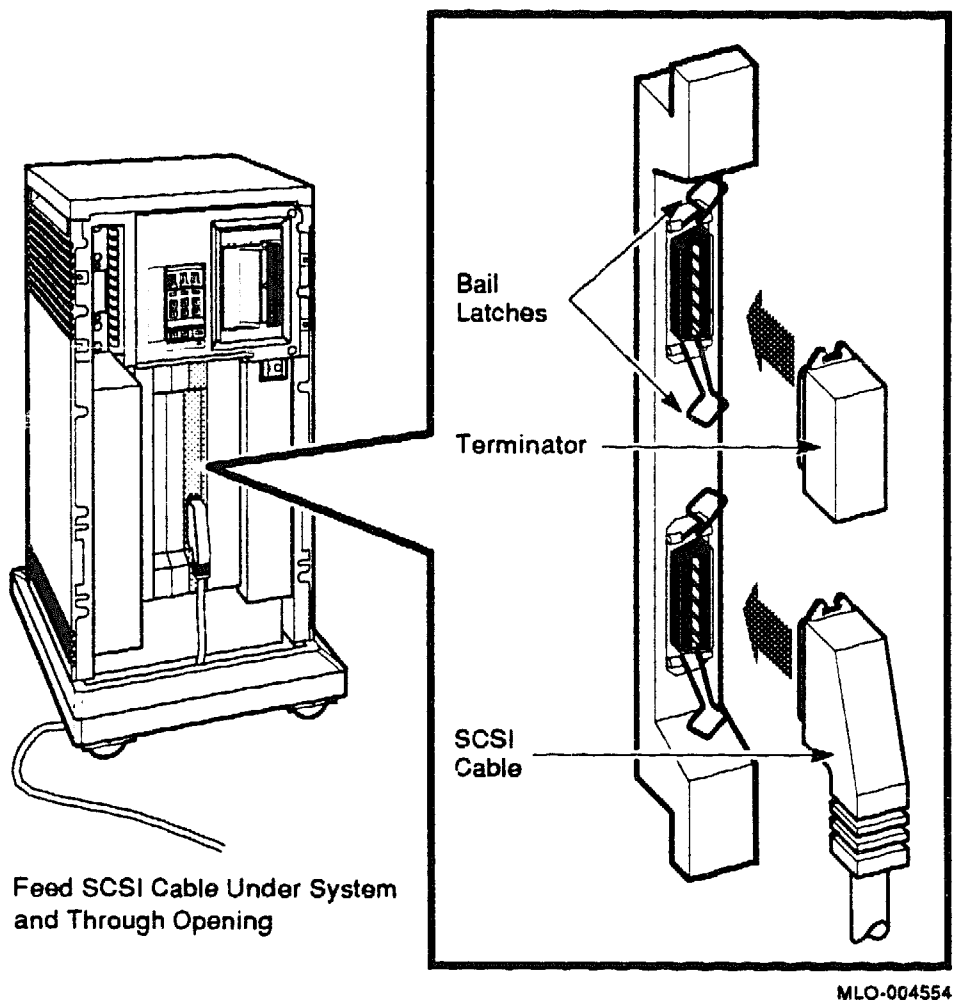
Check that the ground connections are correctly in place as follows:

- a. Identify any cases where the KZQSA module will be located next to a flush-handle module, or a module with a blank cover.
- b. Make sure a gap filler assembly is installed on the side of the flush-handle or blank cover that is located next to the KZQSA module.
- c. If needed, install a gap filler assembly as follows:
 - Fit the gap filler (70-24071-01) onto the side of the flush-handle or blank cover module that is located next to the KZQSA module. Make sure that the gap filler tabs fit into the tab indentations on the flush-handle or blank cover module (see Figure 5–10). Use the two screws that come with the assembly to attach the gap filler at the top and bottom.
 - If you have a flush-handle module, insert the module into the backplane slot.

If you have a blank cover, install the blank cover with the gap filler attached, over the card cage slot.
 - Make sure there is no open space between modules.
- d. Fasten the quarter-turn captive screws on all handles and covers in the backplane.

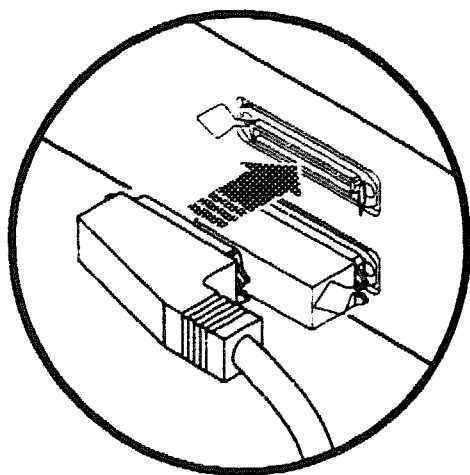
8. Connect the SCSI cable (part number 17-02659-02) to the lower connector of the KZQSA adapter module. Attach the terminator (part number 12-30552-01) to the top connector. Pull the bail latches toward the cable and terminator to hold them in place. See Figure 5-19.

Figure 5-19: Cable and Terminator Connection



9. Connect the other end of the SCSI cable to the top connector on the storage drive (TLZ04 or RRD40). Attach the terminator (part number 12-30552-01) to the lower connector (see Figure 5-20). (If additional drives are being connected to the SCSI bus, see Chapter 6 for information on connecting multiple drives.)

Figure 5-20: Connecting KZQSA Option to Drive Unit

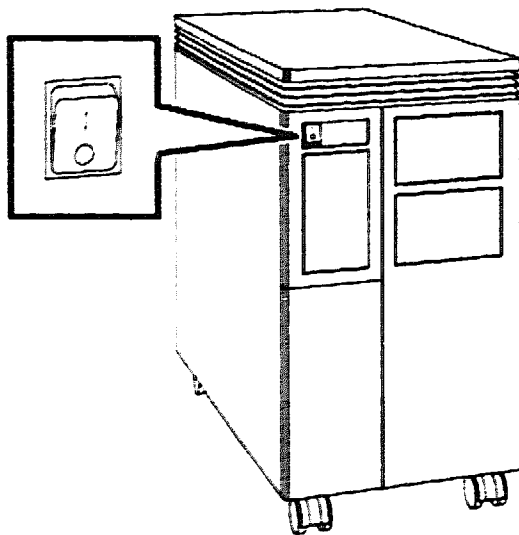


MLO-004552

5.3 Installing the KZQSA Option in the BA123 Enclosure

1. To turn off the power, turn the power switch to the 0 position, as shown in Figure 5-21.

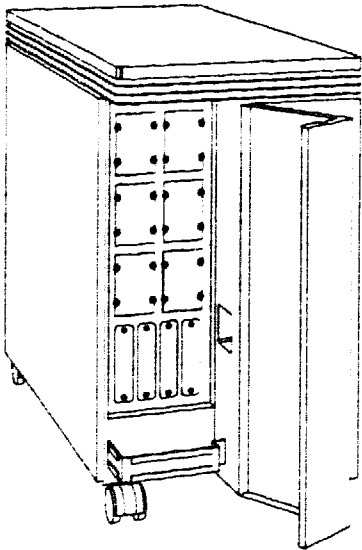
Figure 5-21: BA123 Power Switch



MLO-005264

2. Open the rear door of the enclosure as shown in Figure 5-22.

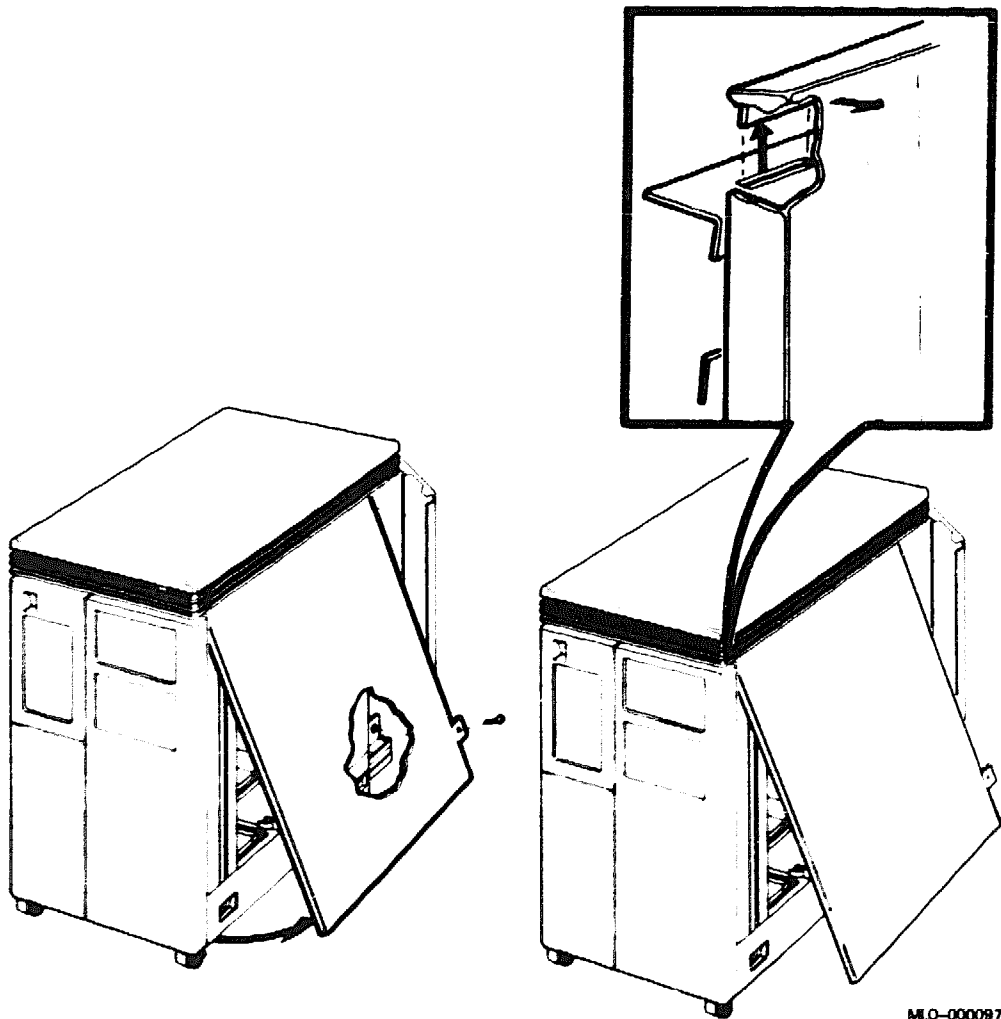
Figure 5-22: Opening the Rear Door of the Enclosure



MLO-005263

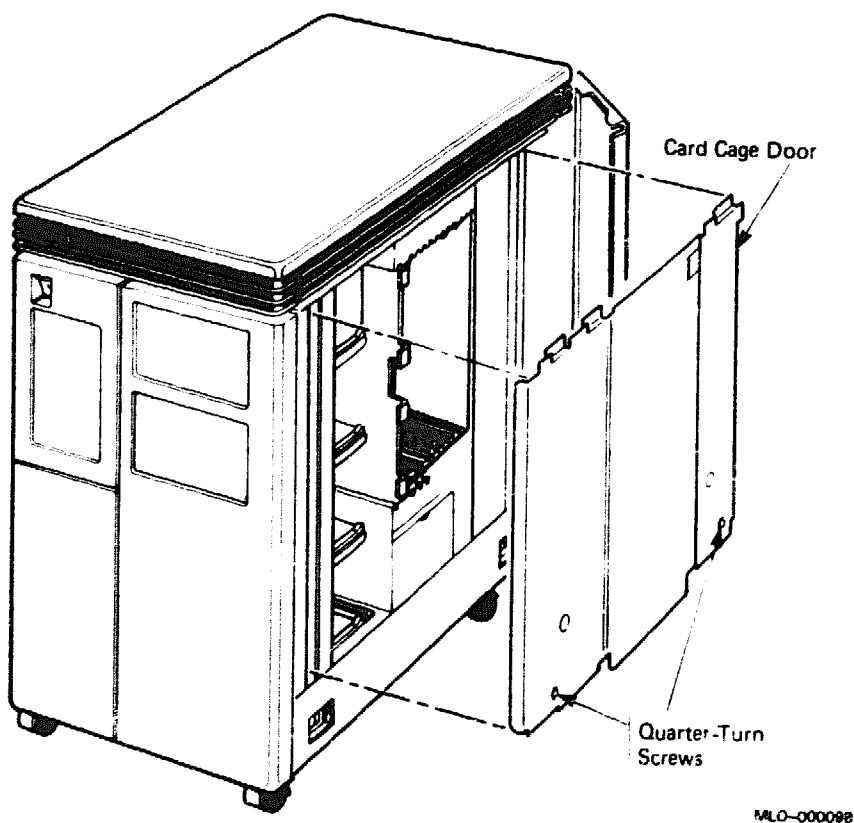
3. Loosen the captive screw that connects the right side panel to the rear of the enclosure (see Figure 5-23).
4. The panel is attached to the bottom of the enclosure frame by two snap fasteners. Pull the bottom of the panel out until the panel detaches from the bottom of the enclosure.
5. Lift the panel slightly to release it from the lip at the top of the frame and remove the panel.

Figure 5-23: Removing the Right Side Panel



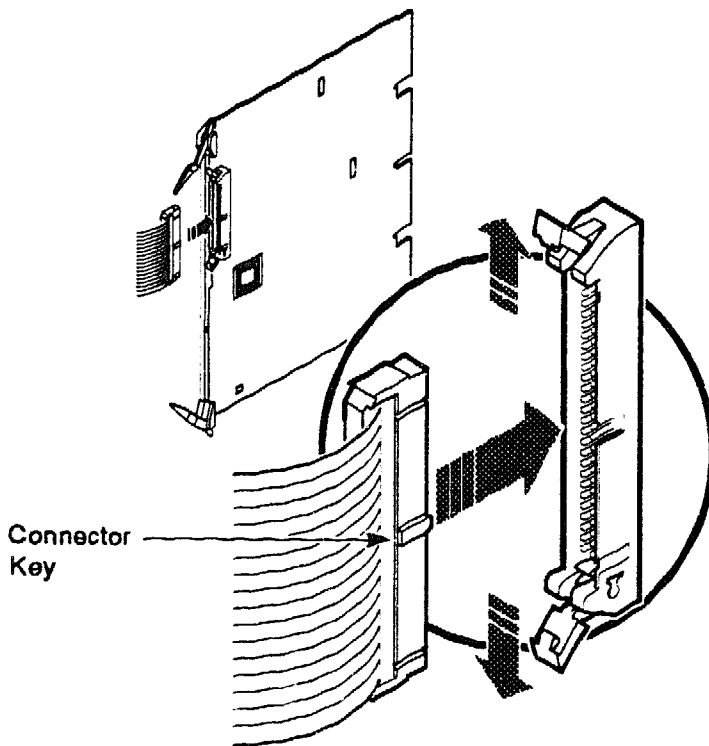
6. Remove the card cage door by releasing the two clasps at the front end of the door and swing the door open (see Figure 5-24).

Figure 5-24: Removing the Card Cage Door



7. Check the KZQSA adapter module jumpers to ensure that they are in the correct position to select the SCSI node ID. (See Chapter 4.)
8. To begin installation of cable kit part number 70-22834-02, connect the plastic 50-pin connector of the ribbon cable (part number 17-01244-03) to the KZQSA adapter module with the connector key facing toward the top of the connector, as shown in Figure 5-25. (The ribbon cable is 0.53 m (21 in) in length.)

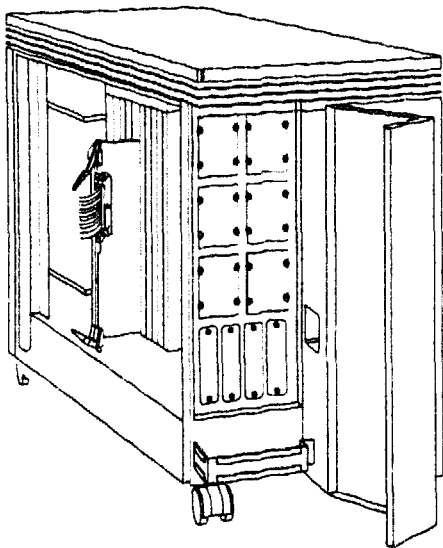
Figure 5-25: Ribbon Cable Insertion to KZQSA Adapter Module



MLO-005267

9. Slide the KZQSA adapter module into the card slot with the component side facing to the right and push in the levers to lock the module into place. See Figure 5-26. (Check your system documentation for the correct placement of modules in the card cage.) Slots 5 through 12 may be used. If there are vacant slots between the last device and the KZQSA adapter module, a bus grant continuity card (M9047) must be installed in those slots to ensure bus continuity.

Figure 5-26: Module Insertion



MLO-005268

10. If you install a KZQSA module next to a module with a flush handle or blank cover, you must install a gap filler assembly between the modules to comply with EMI regulations (see Figure 5-9).

Without the gap filler, circuitry on the flush-handle module is exposed. The gap filler is mounted onto the flush-handle module to close the open space between the flush-handle module and the KZQSA module, thus producing a ground connection. The gap filler panel on the blank cover produces a ground connection to the KZQSA module (see Figure 5-10).

Two gap filler assemblies (70-24071-01) are supplied with the KZQSA storage adapter kit. Each gap filler assembly includes one gap filler and two screws.

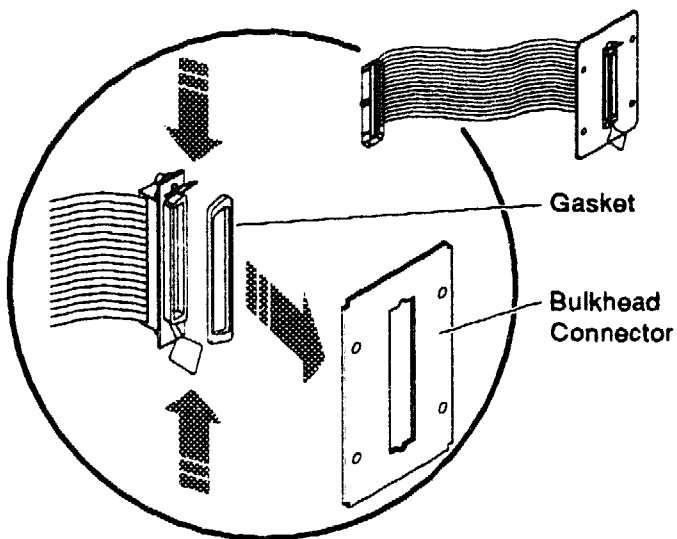
Check that the ground connections are correctly in place as follows:

- a. Identify any cases where the KZQSA module will be located next to a flush-handle module, or a module with a blank cover.
- b. Make sure a gap filler assembly is installed on the side of the flush-handle or blank cover that is located next to the KZQSA module.
- c. If needed, install a gap filler assembly as follows:
 - Fit the gap filler (70-24071-01) onto the side of the flush-handle or blank cover module that is located next to the KZQSA module. Make sure that the gap filler tabs fit into the tab indentations on the flush-handle or blank cover module (see Figure 5-10). Use the two screws that come with the assembly to attach the gap filler at the top and bottom.
 - If you have a flush-handle module, insert the module into the backplane slot.

If you have a blank cover, install the blank cover with the gap filler attached, over the card cage slot.
 - Make sure there is no open space between modules.
- d. Fasten the quarter-turn captive screws on all handles and covers in the backplane.

11. Place the FCC shield gasket (part number 74-42332-01) over the unplugged end of the ribbon cable. See Figure 5-27.

Figure 5-27: Ribbon Cable to Bulkhead Connection

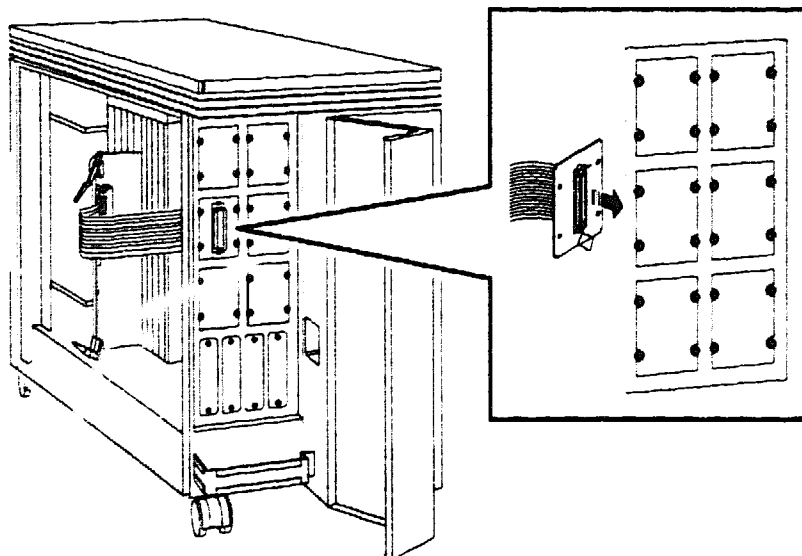


MLO-006041

12. Attach the unplugged end of the ribbon cable into the bulkhead connector (part number 74-41593-01). See Figure 5-27.

13. Remove the 64 x 84-mm (2.5 x 3.3-in) plate from any I/O panel cutout that is unused.
14. Connect the bulkhead connector on the ribbon cable to the unused cutout, as shown in Figure 5-28. Use the screws that you removed from the I/O cutout to attach the bulkhead connector.

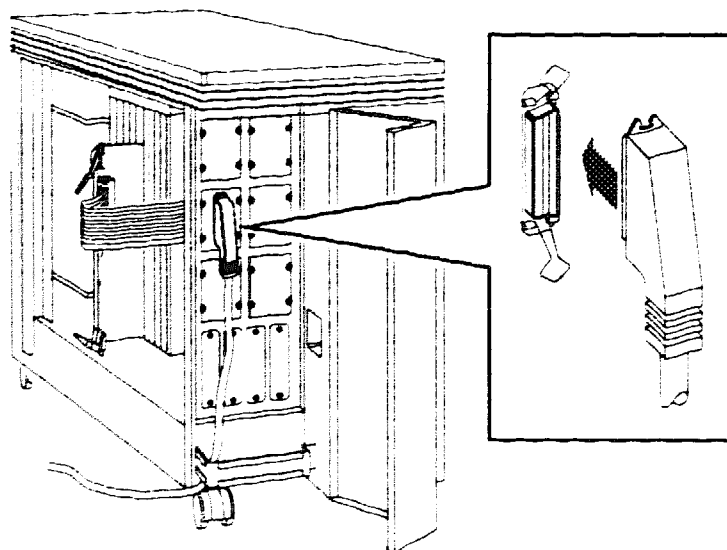
Figure 5-28: Ribbon Cable Attachment to BA123 I/O Panel



MLO-005292

15. Connect the SCSI cable (part number 17-02659-02) to the connector on the I/O panel, as shown in Figure 5-29.

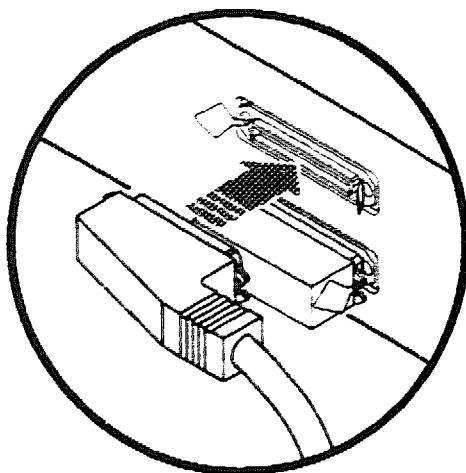
Figure 5-29: SCSI Cable Connection



MLO-005293

16. Connect the other end of the SCSI cable to the top connector on the storage drive (TLZ04 or RRD40). Attach the terminator to the lower connector. See Figure 5–30. (If additional drives are being connected to the SCSI bus, see Chapter 6 for information on connecting multiple drives.)

Figure 5–30: Connecting KZQSA Option to Drive Unit

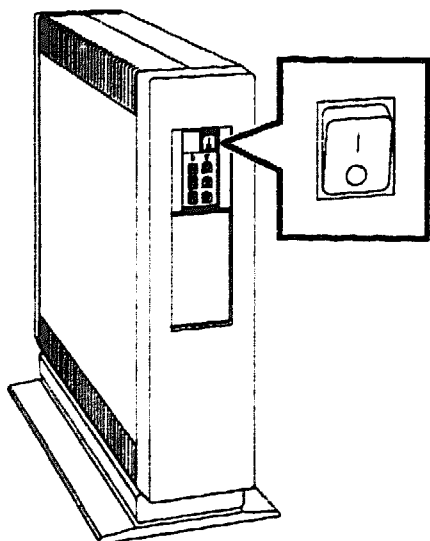


MLO-004552

5.4 Installing the KZQSA Option in the BA23 Enclosure

1. To turn off the power, turn the power switch to the 0 position, as shown in Figure 5-31.

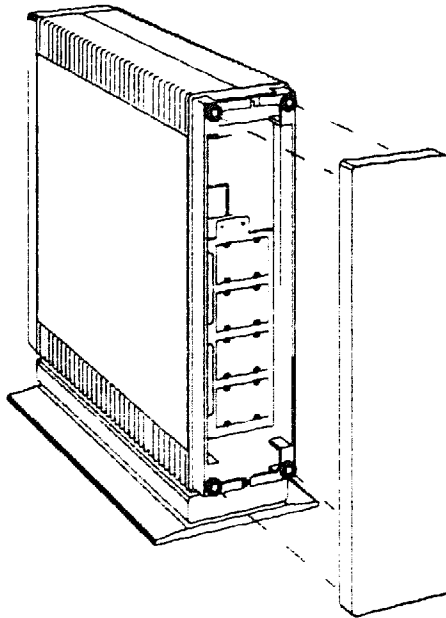
Figure 5-31: BA23 Power Switch



MLO-005285

2. Remove the rear cover by pulling it off, as shown in Figure 5-32. (Label and disconnect all cables.)

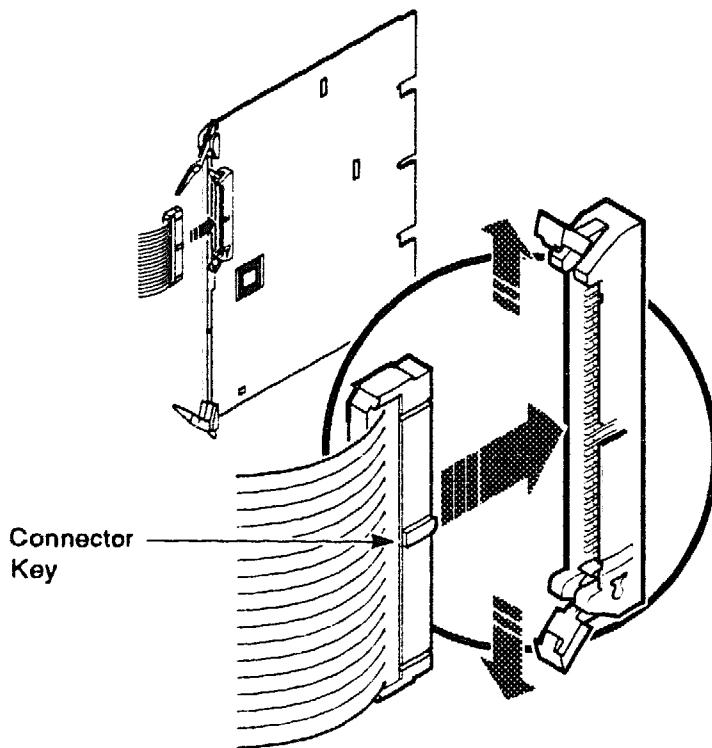
Figure 5-32: Removing the Rear Cover



MLO-005266

3. Check the KZQSA adapter module jumpers to ensure that they are in the correct position to select the SCSI node ID. (See Chapter 4.)
4. To begin installation of cable kit part number 70-22834-01, connect the plastic 50-pin connector of the ribbon cable (part number 17-01244-02) to the KZQSA adapter module with the connector key facing toward the top of the connector, as shown in Figure 5-33. (The ribbon cable is 0.31 m (12 in) in length.)

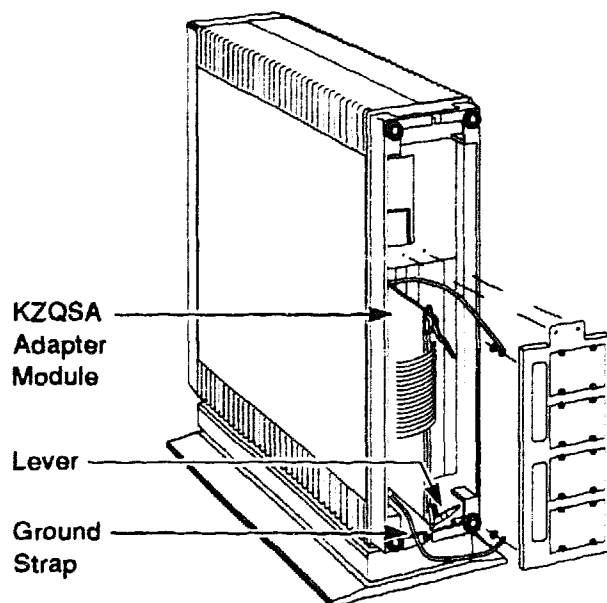
Figure 5-33: Ribbon Cable Insertion to KZQSA Adapter Module



MLO-005267

5. Loosen the two screws that hold the I/O panel in place, as shown in Figure 5-34. Then swing the assembly open and remove the ground strap screws.

Figure 5-34: Module Insertion and Removal of Ground Strap



MLO-005269

6. Slide the KZQSA adapter module into the card slot with the component side facing to the right and push in the levers to lock the module into place. See Figure 5-34. (Check your system documentation for the correct placement of modules in the card cage.) Slots 4 through 8 may be used. If there are vacant slots between the last device and the KZQSA adapter module, a bus grant continuity card (M9047) must be installed in those slots to ensure bus continuity.

7. If you install a KZQSA module next to a module with a flush handle or blank cover, you must install a gap filler assembly between the modules to comply with EMI regulations (see Figure 5-9).

Without the gap filler, circuitry on the flush-handle module is exposed. The gap filler is mounted onto the flush-handle module to close the open space between the flush-handle module and the KZQSA module, thus producing a ground connection. The gap filler panel on the blank cover produces a ground connection to the KZQSA module (see Figure 5-10).

Two gap filler assemblies (70-24071-01) are supplied with the KZQSA storage adapter kit. Each gap filler assembly includes one gap filler and two screws.

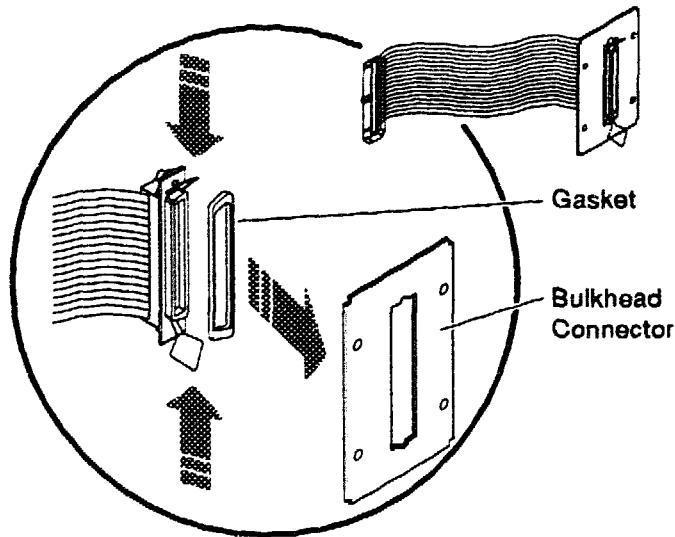
Check that the ground connections are correctly in place as follows:

- a. Identify any cases where the KZQSA module will be located next to a flush-handle module, or a module with a blank cover.
- b. Make sure a gap filler assembly is installed on the side of the flush-handle or blank cover that is located next to the KZQSA module.
- c. If needed, install a gap filler assembly as follows:
 - Fit the gap filler (70-24071-01) onto the side of the flush-handle or blank cover module that is located next to the KZQSA module. Make sure that the gap filler tabs fit into the tab indentations on the flush-handle or blank cover module (see Figure 5-10). Use the two screws that come with the assembly to attach the gap filler at the top and bottom.
 - If you have a flush-handle module, insert the module into the backplane slot.

If you have a blank cover, install the blank cover with the gap filler attached, over the card cage slot.
 - Make sure there is no open space between modules.
- d. Fasten the quarter-turn captive screws on all handles and covers in the backplane.

8. Place the FCC shield gasket (part number 74-42332-01) over the unplugged end of the ribbon cable. See Figure 5-35.

Figure 5-35: Ribbon Cable to Bulkhead Connection

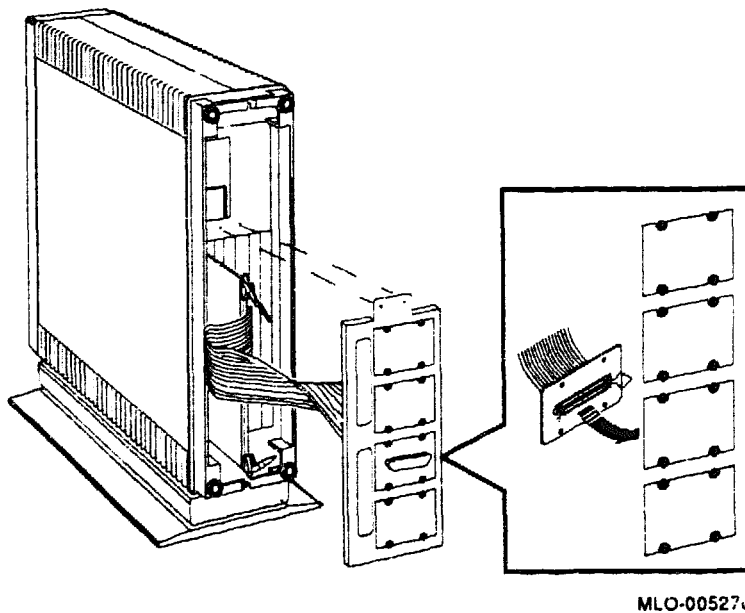


MLO-006041

9. Attach the unplugged end of the ribbon cable into the bulkhead connector (part number 74-41593-01). See Figure 5-35.

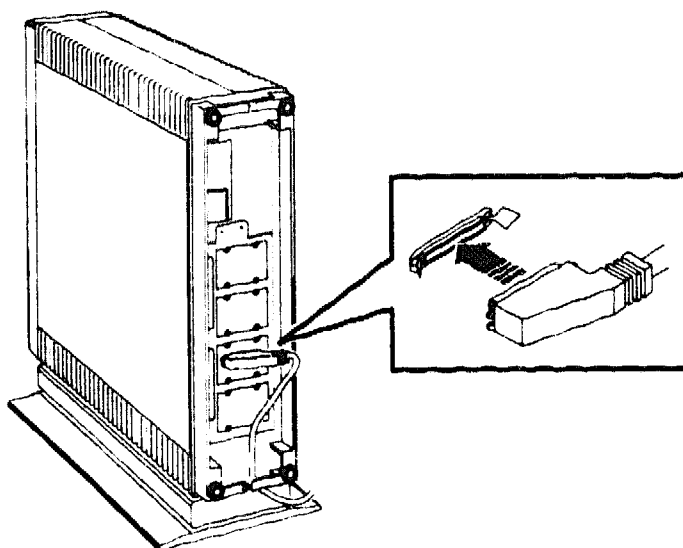
10. Remove the 64 x 84-mm (2.5 x 3.3-in) plate from any I/O panel cutout that is unused.
11. Connect the bulkhead connector on the ribbon cable to the unused cutout, as shown in Figure 5-36. Use the screws that you removed from the I/O cutout to connect the bulkhead connector.

Figure 5-36: Ribbon Cable Attachment to BA23 I/O Panel



12. Connect the SCSI cable (part number 17-02659-02) to the connector on the I/O panel, as shown in Figure 5-37.

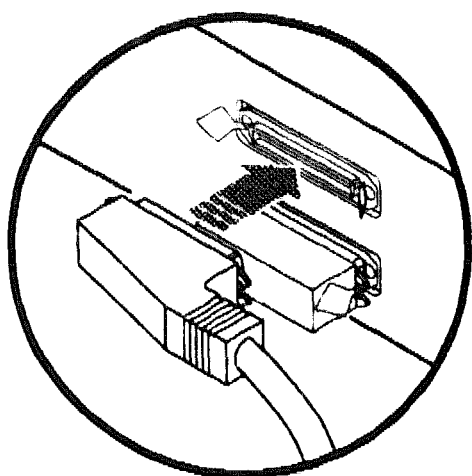
Figure 5-37: SCSI Cable Connection



MLO-005291

13. Connect the other end of the SCSI cable to the top connector on the storage drive (TLZ04 or RRD40). Attach the terminator to the lower connector. See Figure 5-38. (If additional drives are being connected to the SCSI bus, see Chapter 6 for information on connecting multiple drives.)

Figure 5-38: Connecting KZQSA Option to Drive Unit

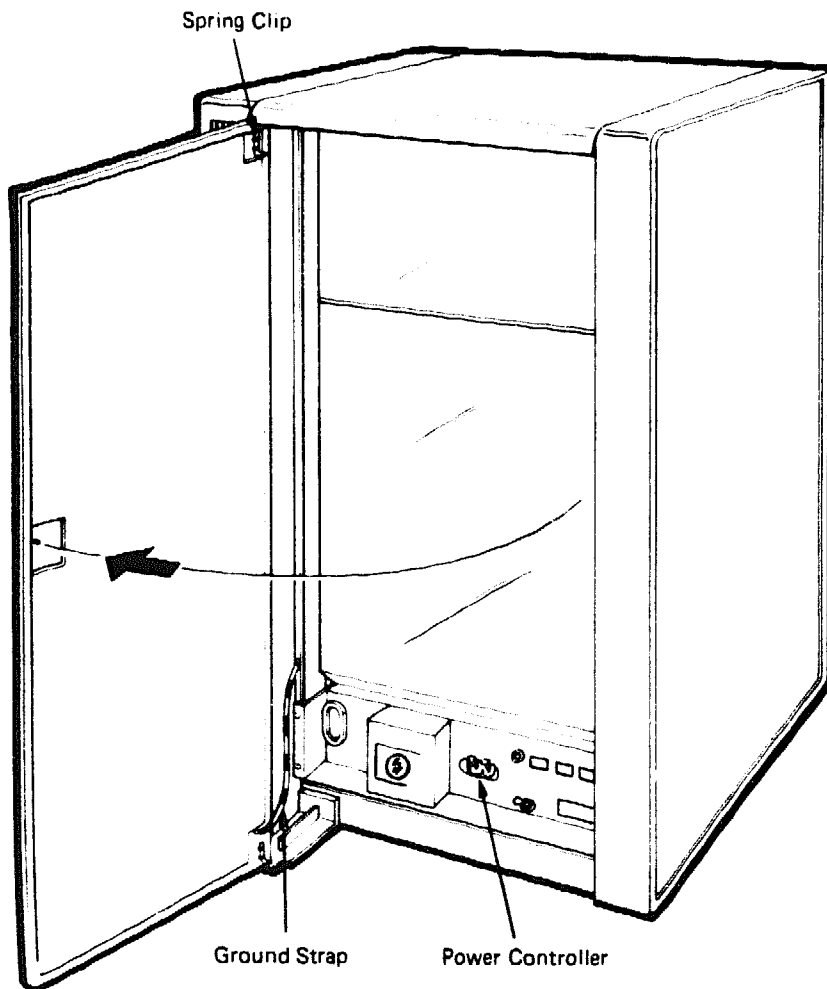


MLO-004552

5.5 Installing the KZQSA Option in the H9642 Cabinet

1. Open the rear door by swinging it from right to left as shown in Figure 5-39.

Figure 5-39: Rear Door Removal

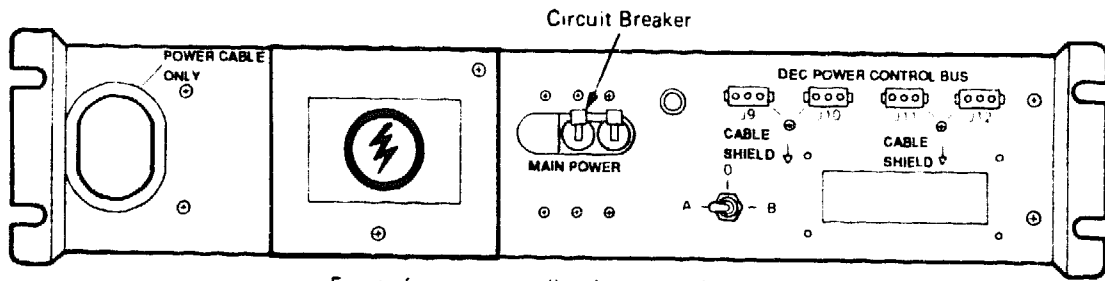


MLO-005338

2. Remove the screw that holds the ground strap to the door.
3. Press down on the spring clip in the upper left corner of the door. Lift the door straight up and off.

4. To turn off the power, pull the main circuit breaker down. See Figure 5-40.

Figure 5-40: H9642 Power Controller Switch

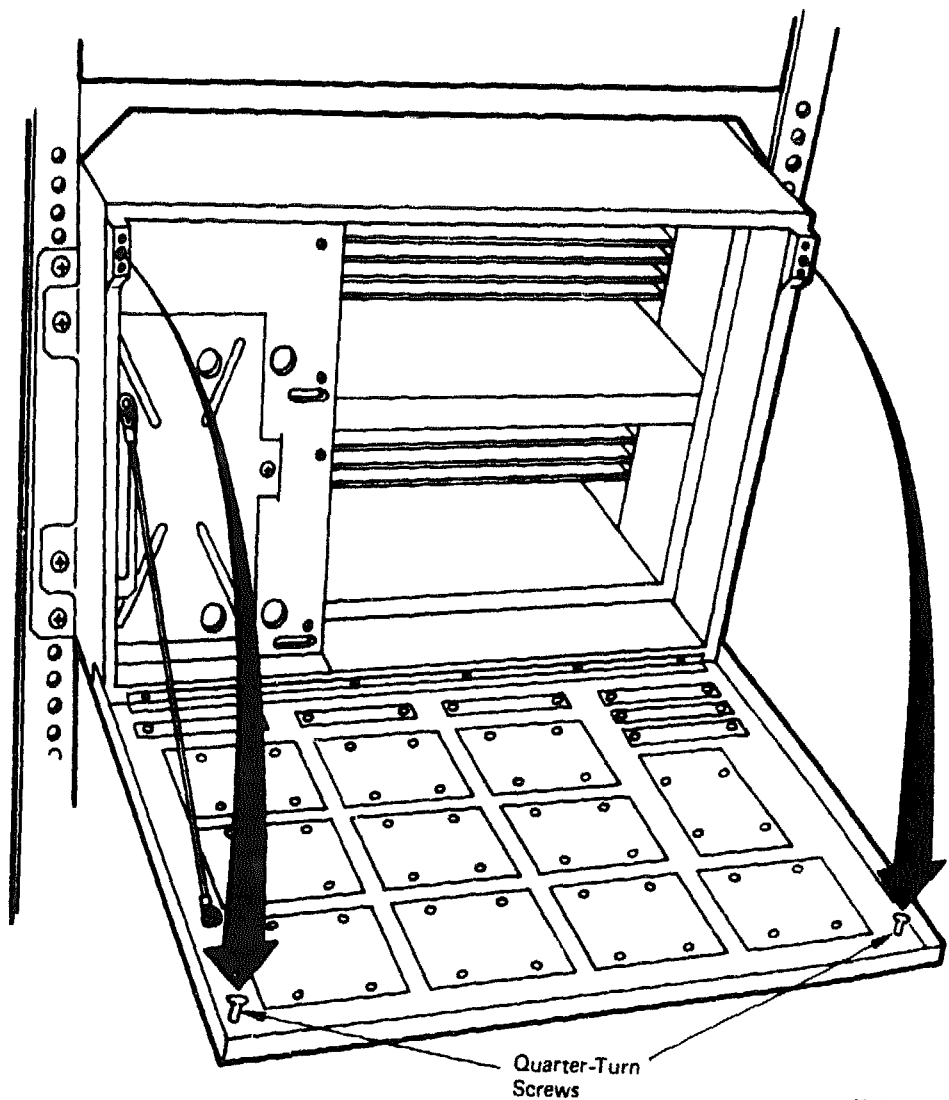


Front of power controller, from rear of cabinet

MLO-005337

5. Loosen the two quarter-turn screws on the I/O panel and lower the panel. See Figure 5-41.

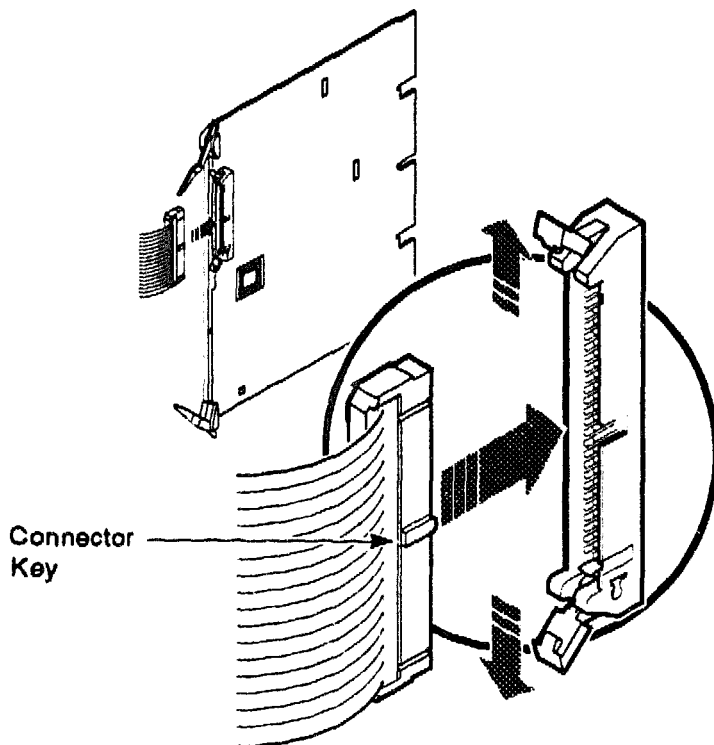
Figure 5-41: Lowering the I/O Panel



MLO-000400

6. Check the KZQSA adapter module jumpers to ensure that they are in the correct position to select the SCSI node ID. (See Chapter 4.)
7. To begin installation of cable kit part number 70-22834-01, connect the plastic 50-pin connector of the ribbon cable (part number 17-01244-04) to the KZQSA adapter module with the connector key toward the connector top, as shown in Figure 5-42. (The ribbon cable is 0.92 m (36 in) in length.)

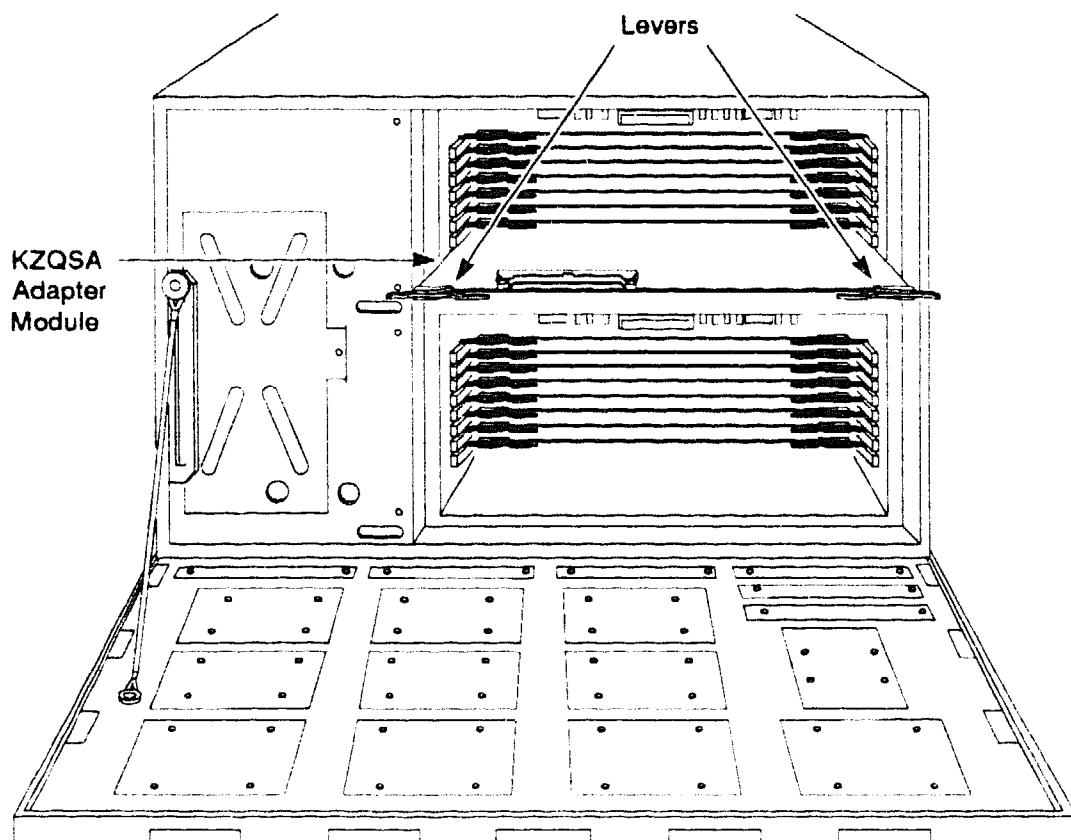
Figure 5-42: Ribbon Cable Insertion to KZQSA Adapter Module



MLO-005267

8. Slide the KZQSA adapter module into the card slot with the component side facing toward the top and push in the levers to lock the module into place. See Figure 5-43. (Check your system documentation for the correct placement of modules in the card cage.) Any available slot may be used. If there are vacant slots between the last module and the KZQSA adapter module, a bus grant continuity card (M9047) must be installed in those slots to ensure bus continuity.

Figure 5-43: Module Insertion



MLO-005294

9. If you install a KZQSA module next to a module with a flush handle or blank cover, you must install a gap filler assembly between the modules to comply with EMI regulations (see Figure 5-9).

Without the gap filler, circuitry on the flush-handle module is exposed. The gap filler is mounted onto the flush-handle module to close the open space between the flush-handle module and the KZQSA module, thus producing a ground connection. The gap filler panel on the blank cover produces a ground connection to the KZQSA module (see Figure 5-10).

Two gap filler assemblies (70-24071-01) are supplied with the KZQSA storage adapter kit. Each gap filler assembly includes one gap filler and two screws.

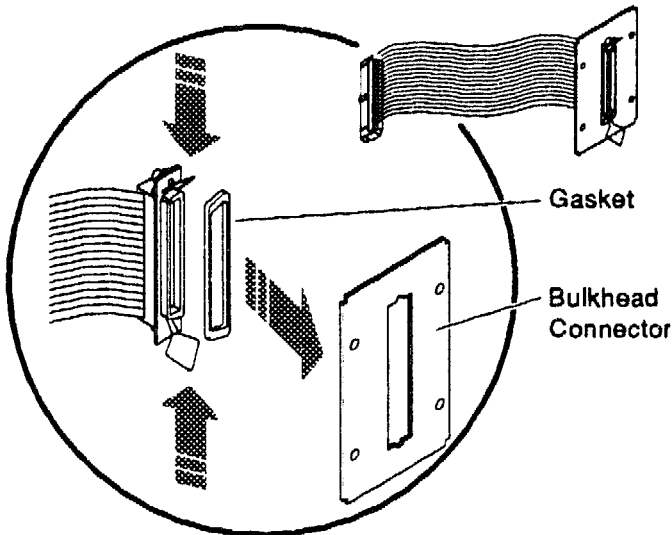
Check that the ground connections are correctly in place as follows:

- a. Identify any cases where the KZQSA module will be located next to a flush-handle module, or a module with a blank cover.
- b. Make sure a gap filler assembly is installed on the side of the flush-handle or blank cover that is located next to the KZQSA module.
- c. If needed, install a gap filler assembly as follows:
 - Fit the gap filler (70-24071-01) onto the side of the flush-handle or blank cover module that is located next to the KZQSA module. Make sure that the gap filler tabs fit into the tab indentations on the flush-handle or blank cover module (see Figure 5-10). Use the two screws that come with the assembly to attach the gap filler at the top and bottom.
 - If you have a flush-handle module, insert the module into the backplane slot.

If you have a blank cover, install the blank cover with the gap filler attached, over the card cage slot.
 - Make sure there is no open space between modules.
- d. Fasten the quarter-turn captive screws on all handles and covers in the backplane.

10. Place the FCC shield gasket (part number 74-42332-01) over the unplugged end of the ribbon cable. See Figure 5-44.

Figure 5-44: Ribbon Cable to Bulkhead Connection

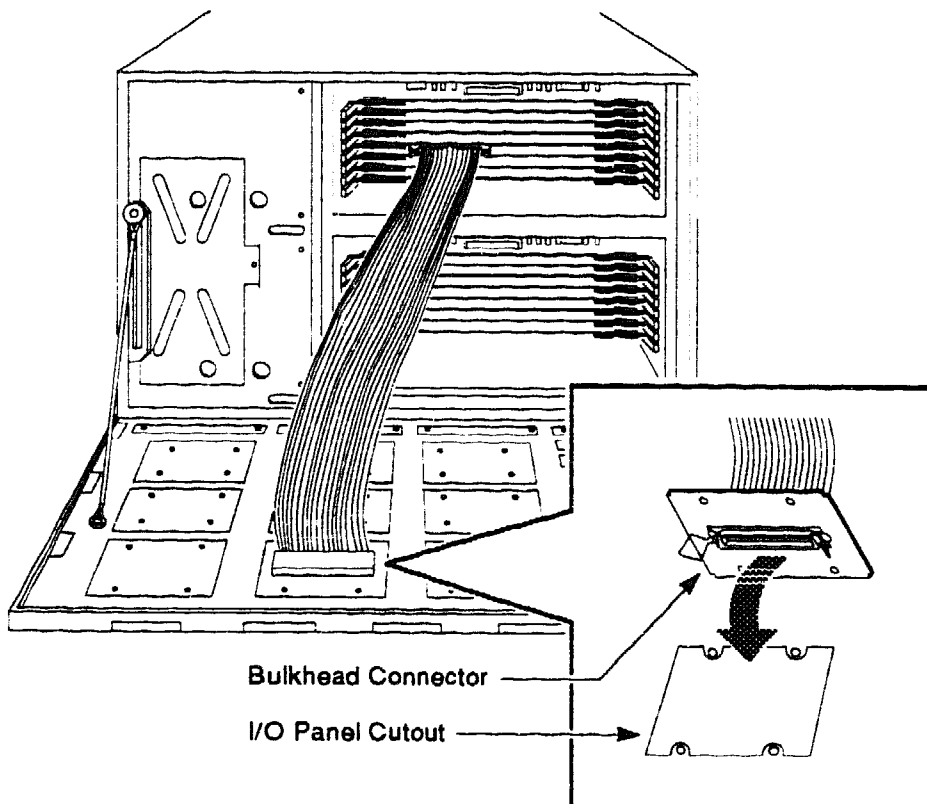


MLO-006041

11. Attach the unplugged end of the ribbon cable into the bulkhead connector (part number 74-41593-01). See Figure 5-44.

12. Remove the 64 x 84-mm (2.5 x 3.3-in) plate from any I/O panel cutout that is unused.
13. Connect the bulkhead connector on the ribbon cable to the unused cutout, as shown in Figure 5-45. Use the screws that you removed from the I/O cutout to connect the bulkhead connector.

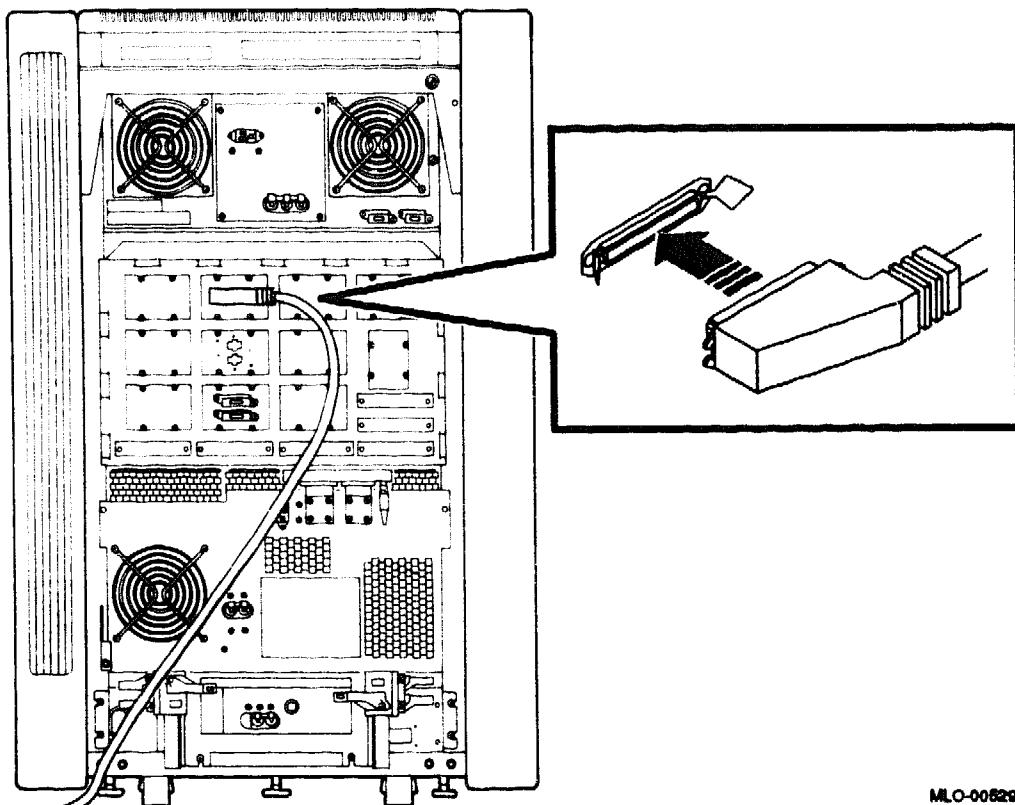
Figure 5-45: Ribbon Cable Attachment to H9642 I/O Panel



MLO-005295

14. Connect the SCSI cable (part number 17-02659-02) to the connector on the I/O panel, as shown in Figure 5-46.

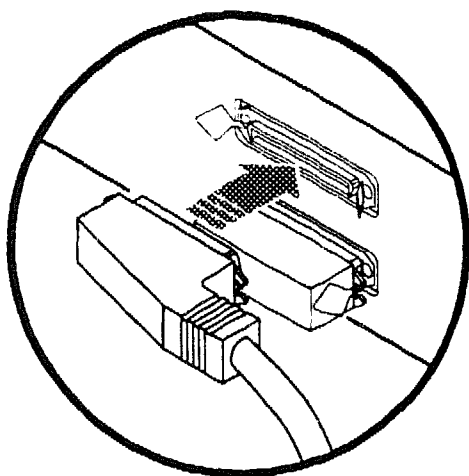
Figure 5-46: SCSI Cable Connection



MLO-006296

15. Connect the other end of the SCSI cable to the top connector on the storage drive (TLZ04 or RRD40). Attach the terminator (part number 12-30552-01) to the lower connector. See Figure 5-47. (If additional drives are being connected to the SCSI bus, see Chapter 6 for information on connecting multiple drives.)

Figure 5-47: Connecting KZQSA Option to Drive Unit



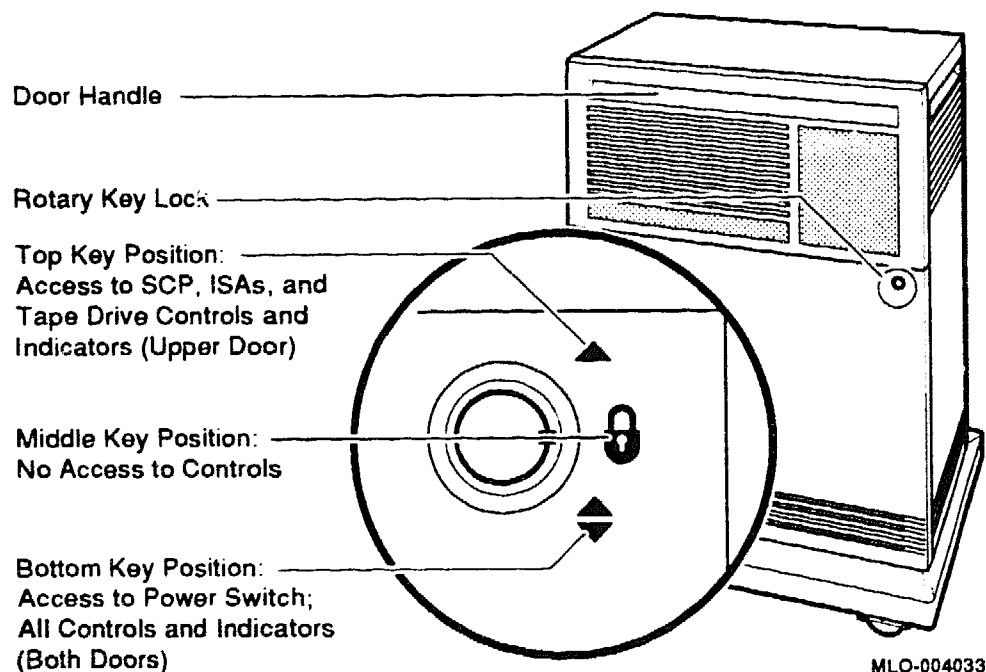
MLO-004552

5.6 Installing the KZQSA Option in the BA440 Enclosure

The front door of the BA440 enclosure has a three-position lock that limits access to the system controls. The controls are located at the upper right of the enclosure (see Figure 5-48).

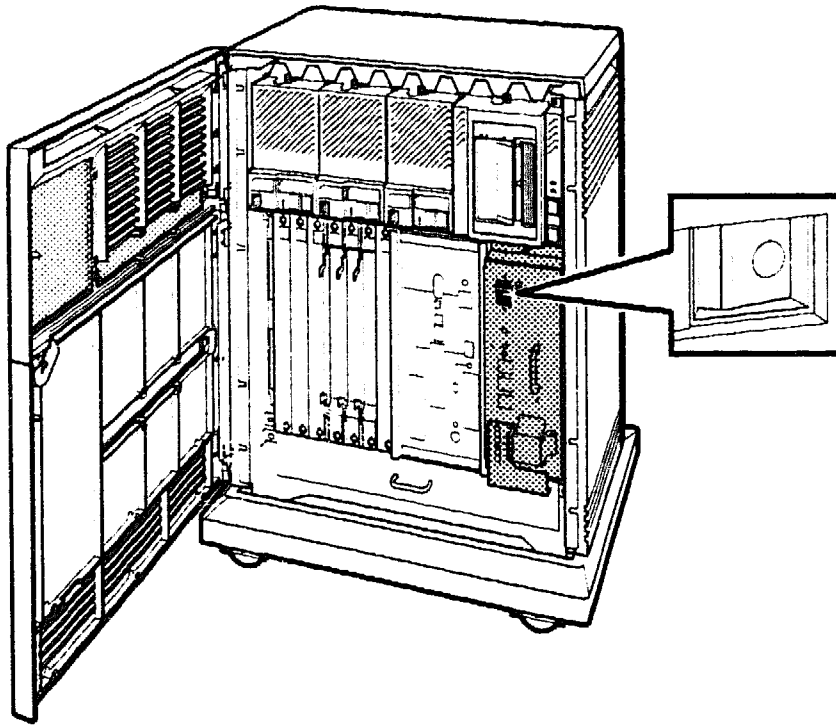
1. Insert the key into the rotary key lock on the front door. Turn the key to the bottom position to open both the upper and lower sections of the door as a single unit.
2. Open the door by pulling on the handle on the upper door.

Figure 5-48: BA440 Lock and Key Positions



3. Swing the door open. (Figure 5-49 shows the system with the upper and lower portions of the door open.)

Figure 5-49: BA440 Power Switch

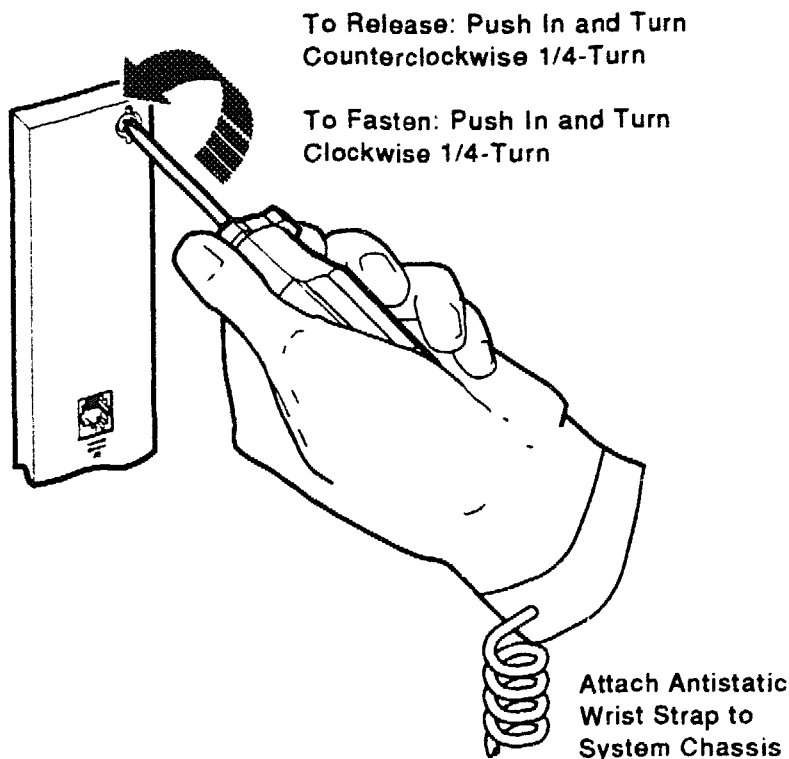


MLO-004824

4. To turn off the power, turn the power switch to the 0 position, as shown in Figure 5-49.

5. Remove the blank cover from the slot where the KZQSA adapter module is going to be installed by releasing the quarter-turn captive screws holding it to the card cage. See Figure 5-50. (Check your system documentation for the correct placement of modules in the card cage.) Any available slot may be used. If there are vacant slots between the last device and the KZQSA adapter module, a bus grant continuity card (M9047) must be installed in those slots to ensure bus continuity.

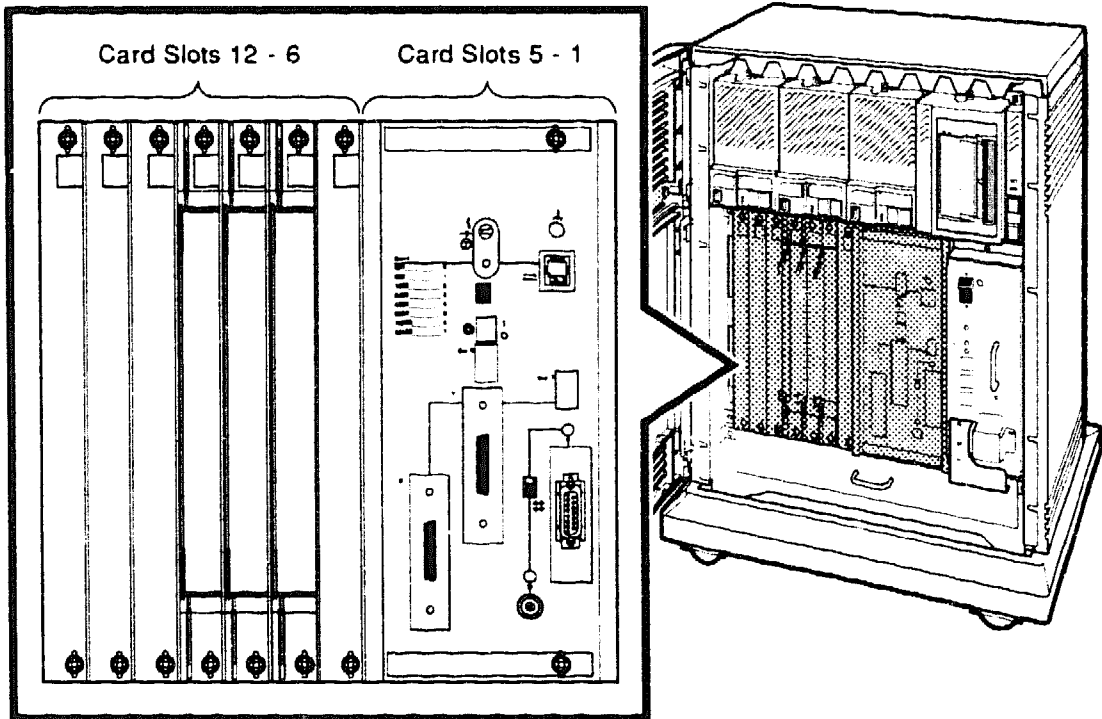
Figure 5-50: Removing Blank Cover



MLO-005369

6. Check the KZQSA adapter module jumpers to ensure that they are in the correct position to select the SCSI node ID. (See Chapter 4.) Figure 5-51 shows the BA440 card slot number identification.

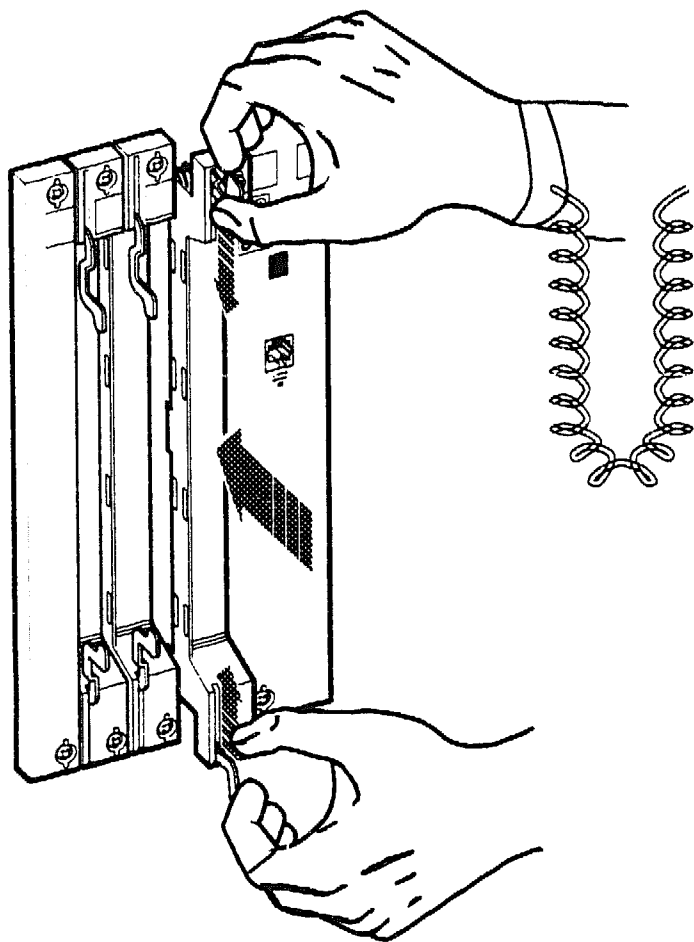
Figure 5-51: BA440 Card Slot Number Identification



MLO-004906

7. Slide the KZQSA adapter module into the card slot with the component side facing to the right and push in the levers to lock the module into place. See Figure 5-52. (The KZQSA module may be installed in any available card slot on the backplane.)

Figure 5-52: Module Insertion



MLO-004904

8. If you install a KZQSA module next to a module with a flush handle or blank cover, you must install a gap filler assembly between the modules to comply with EMI regulations (see Figure 5-9).

Without the gap filler, circuitry on the flush-handle module is exposed. The gap filler is mounted onto the flush-handle module to close the open space between the flush-handle module and the KZQSA module, thus producing a ground connection. The gap filler panel on the blank cover produces a ground connection to the KZQSA module (see Figure 5-10).

Two gap filler assemblies (70-24071-01) are supplied with the KZQSA storage adapter kit. Each gap filler assembly includes one gap filler and two screws.

Check that the ground connections are correctly in place as follows:

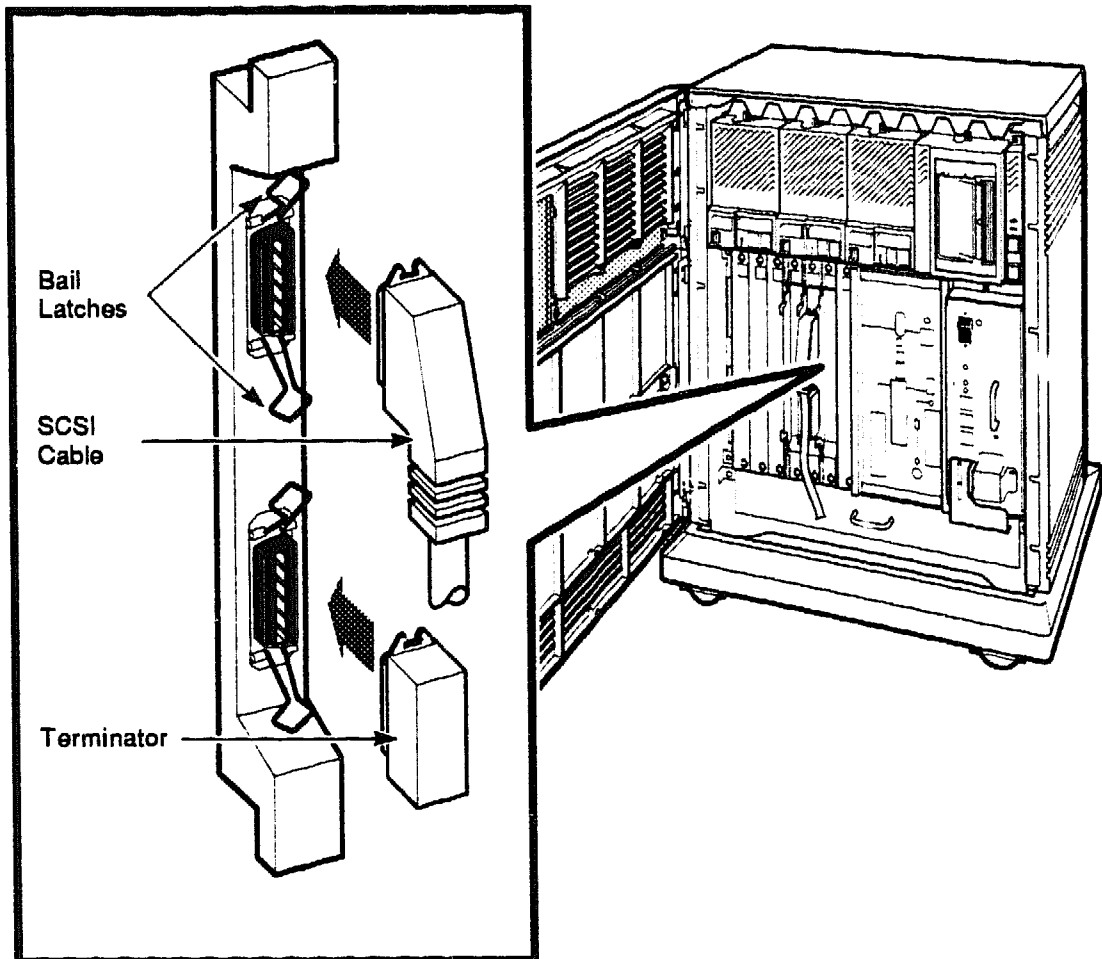
- a. Identify any cases where the KZQSA module will be located next to a flush-handle module, or a module with a blank cover.
- b. Make sure a gap filler assembly is installed on the side of the flush-handle or blank cover that is located next to the KZQSA module.
- c. If needed, install a gap filler assembly as follows:
 - Fit the gap filler (70-24071-01) onto the side of the flush-handle or blank cover module that is located next to the KZQSA module. Make sure that the gap filler tabs fit into the tab indentations on the flush-handle or blank cover module (see Figure 5-10). Use the two screws that come with the assembly to attach the gap filler at the top and bottom.
 - If you have a flush-handle module, insert the module into the backplane slot.

If you have a blank cover, install the blank cover with the gap filler attached, over the card cage slot.
 - Make sure there is no open space between modules.
- d. Fasten the quarter-turn captive screws on all handles and covers in the backplane.

NOTE: Steps 9 and 10 are for internal drives only.

9. To connect the BA440 internal drive to the SCSI bus, attach the 0.76-m (2.5-ft) SCSI cable (part number 17-02659-03) to the top connector of the KZQSA adapter module. Connect the terminator (part number 12-30552-01) to the lower connector. Pull the bail latches toward the cable and terminator to hold them in place. See Figure 5-53.

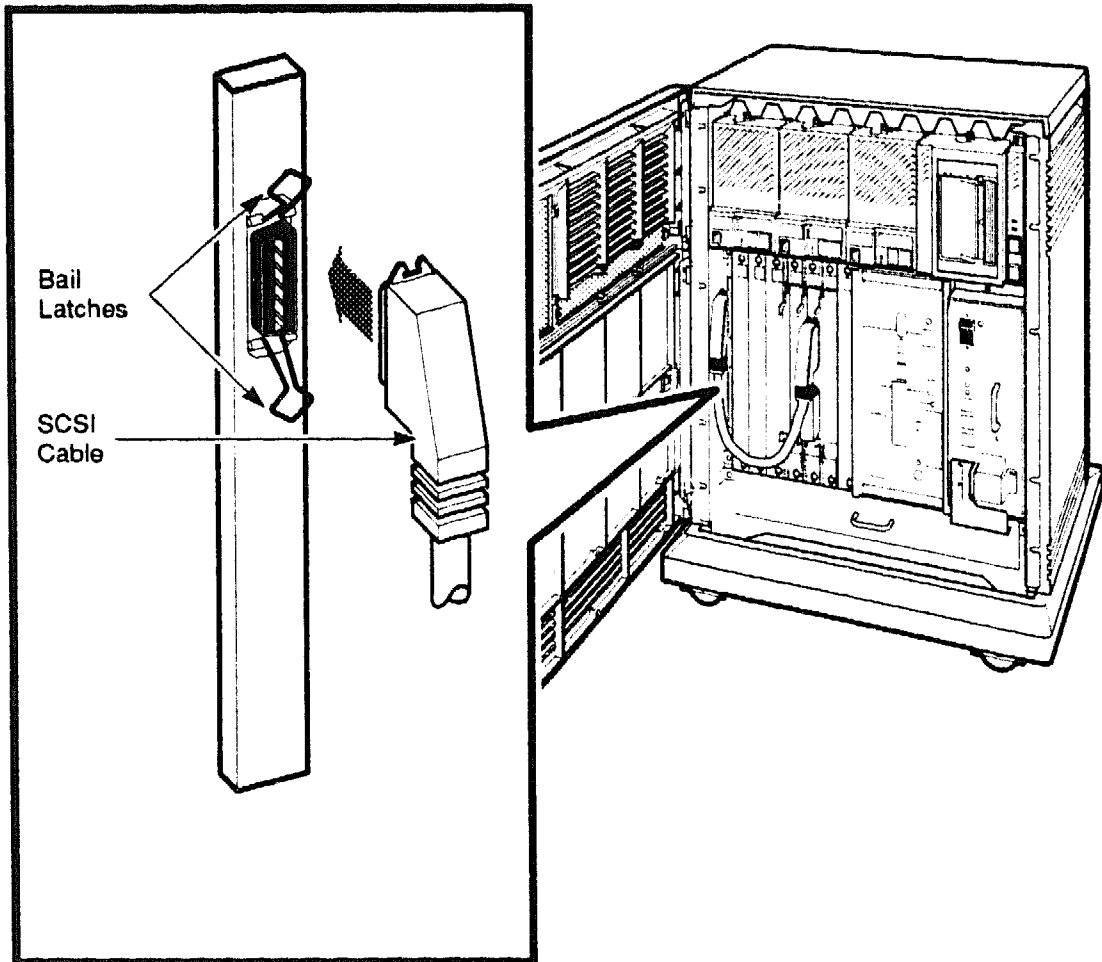
Figure 5-53: Cable and Terminator Connection



MLO-004555

10. Connect the other end of the 0.76-m (2.5-ft) SCSI cable to the connector, as shown in Figure 5-54. (When connecting more than one drive, refer to Chapter 6 for information on connecting multiple drives.)

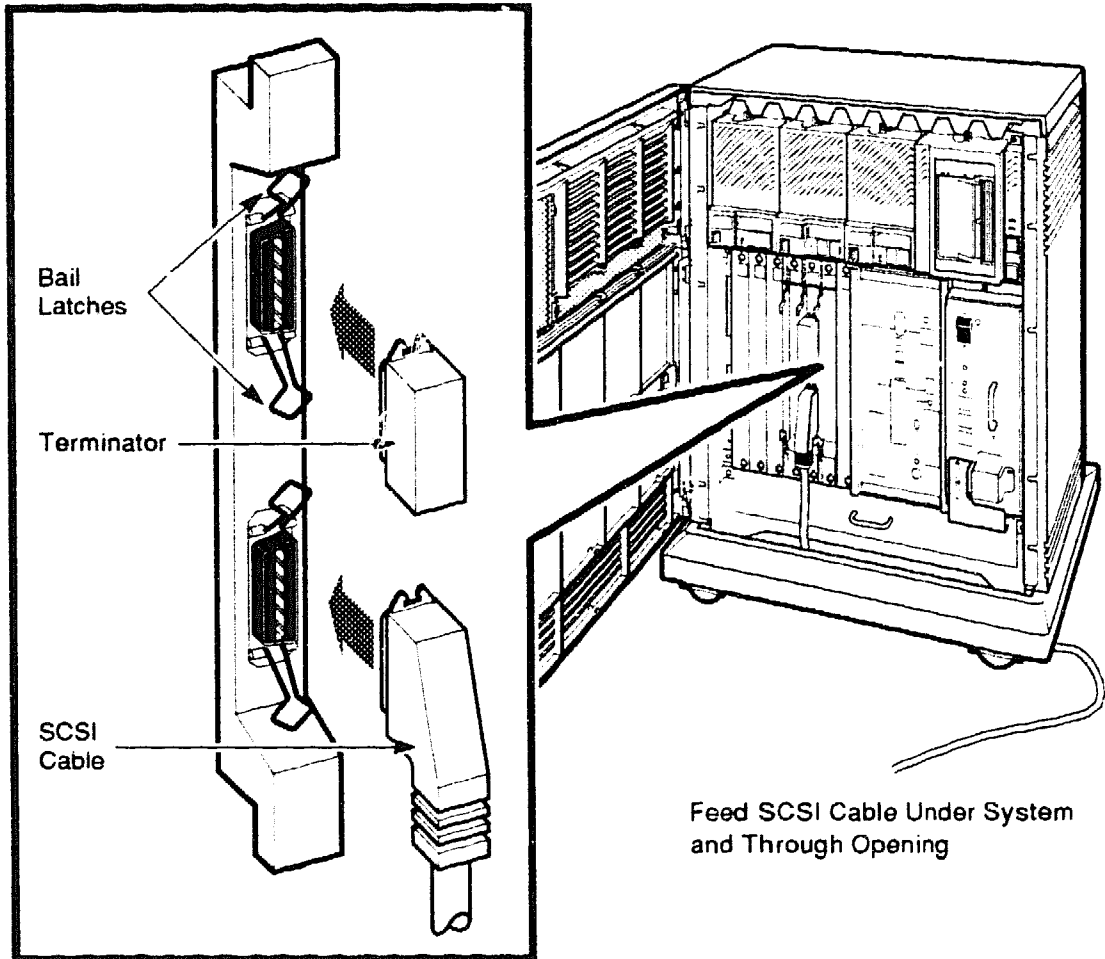
Figure 5-54: Connecting Terminator and Cable to Internal Drive



NOTE: Steps 11 and 12 are for external drives only.

11. To connect the BA440 external drive to the SCSI bus, attach the 1.83-m (6-ft) SCSI cable (part number 17-02659-02) to the bottom connector of the KZQSA adapter module. Connect the terminator (part number 12-30552-01) to the top connector. Pull the bail latches toward the cable and terminator to hold them in place. (See Figure 5-55.)

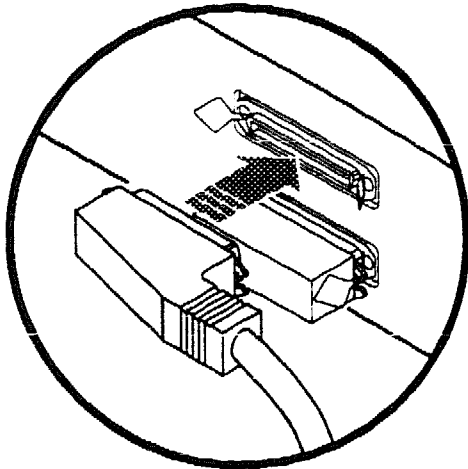
Figure 5-55: Connecting Terminator and Cable to BA440 External Drive



MLO-004557

12. Connect the other end of the 1.83-m (6-ft) SCSI cable to the top connector of the tabletop drive, as shown in Figure 5-56.
13. Connect the terminator to the lower connector of the drive as shown in Figure 5-56. (When connecting more than one drive, refer to Chapter 6 for information on connecting multiple drives.)

Figure 5-56: External Drive Connection



MLO-004552

[illegible][illegible]

Chapter 6

Connecting Multiple Drives

Multiple drives are connected to the KZQSA by a daisy-chain cabling configuration. TLZ04 or RRD40 drives may be daisy chained in any order. Each drive then must be assigned a unique node ID number. (See Section 6.3.)

The VAX 4000 series system can have an embedded drive or tabletop drives. The MicroVAX 3000 and MicroVAX II series systems can utilize only tabletop drives.

Because the embedded drive has no power supply, it is physically smaller than the tabletop model, which does have a power supply. The internal drive is embedded inside the VAX 4000 series system, whereas the tabletop drive stands alone.

6.1 Connecting Tabletop Drives

1. Remove the terminator from the lower connector of the first drive and replace it with the 1.83-m (6-ft) SCSI cable. Figure 6-1 and Figure 6-2 show conventions for the two types of drives.

Figure 6-1: TLZ04 Tabletop Drive-to-Drive Connection

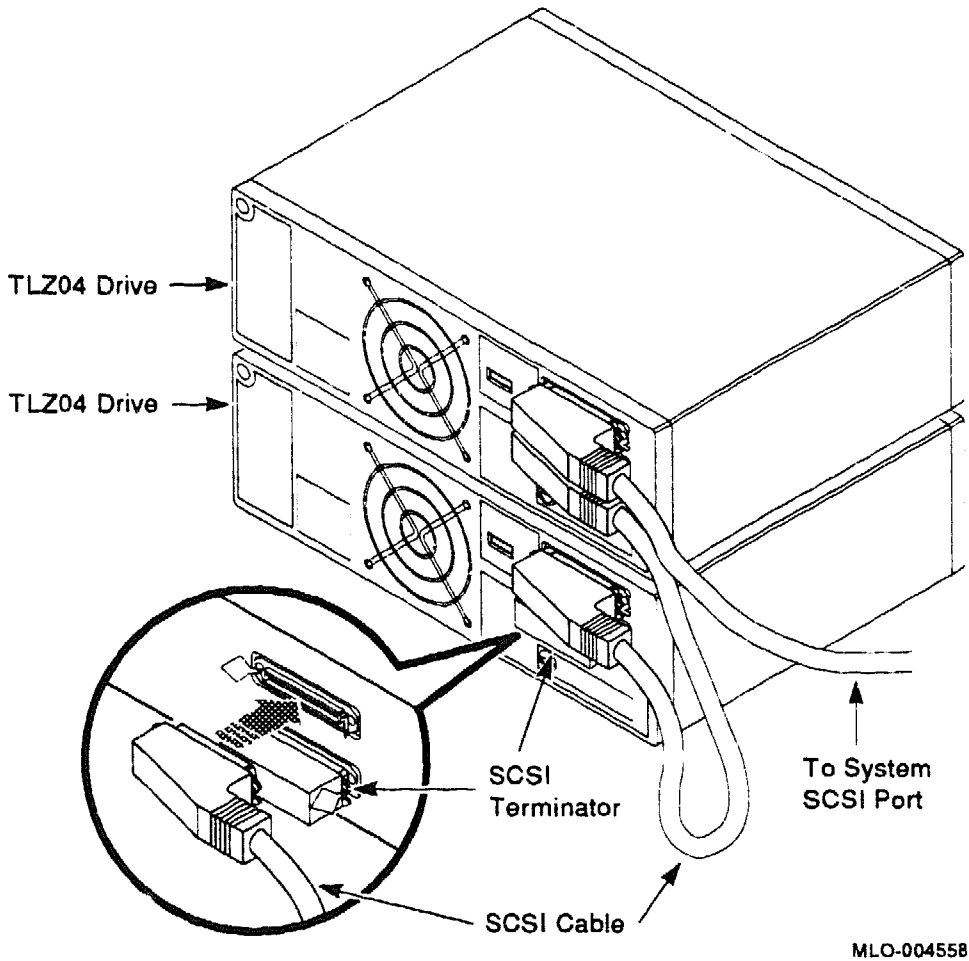
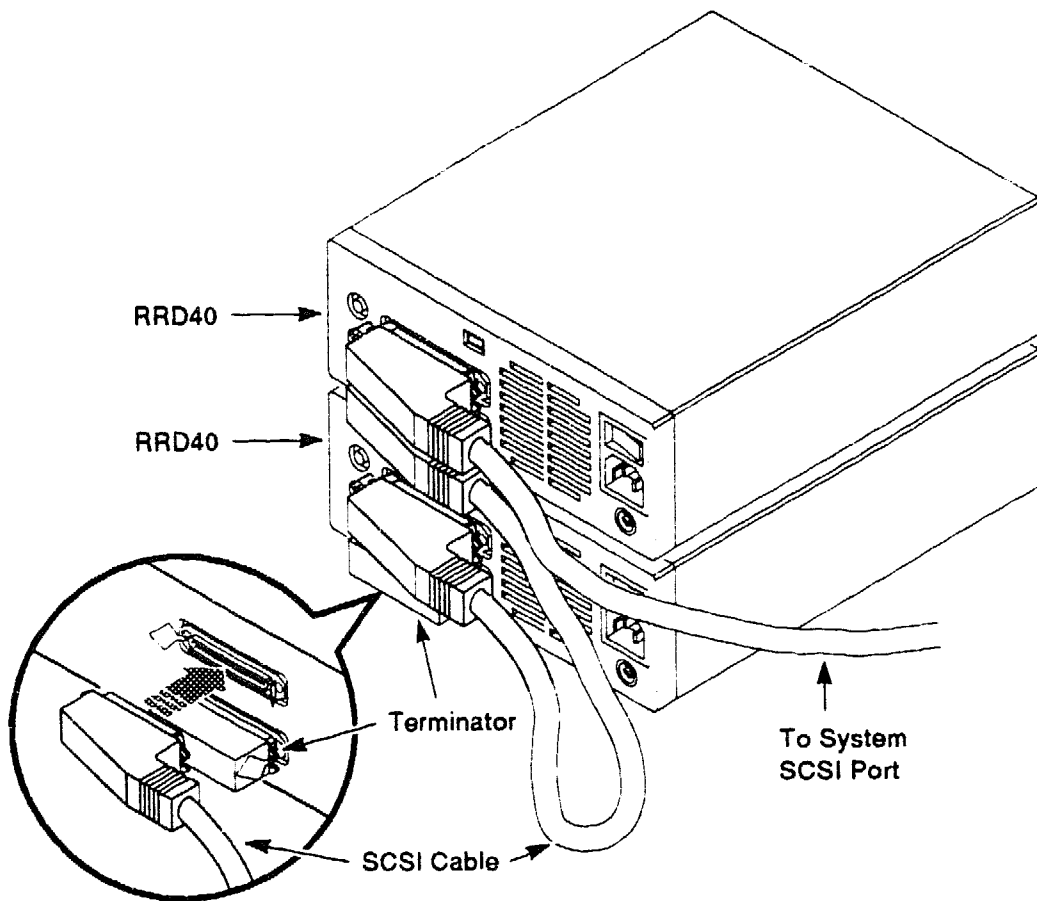


Figure 6-2: RRD40 Tabletop Drive-to-Drive Connection



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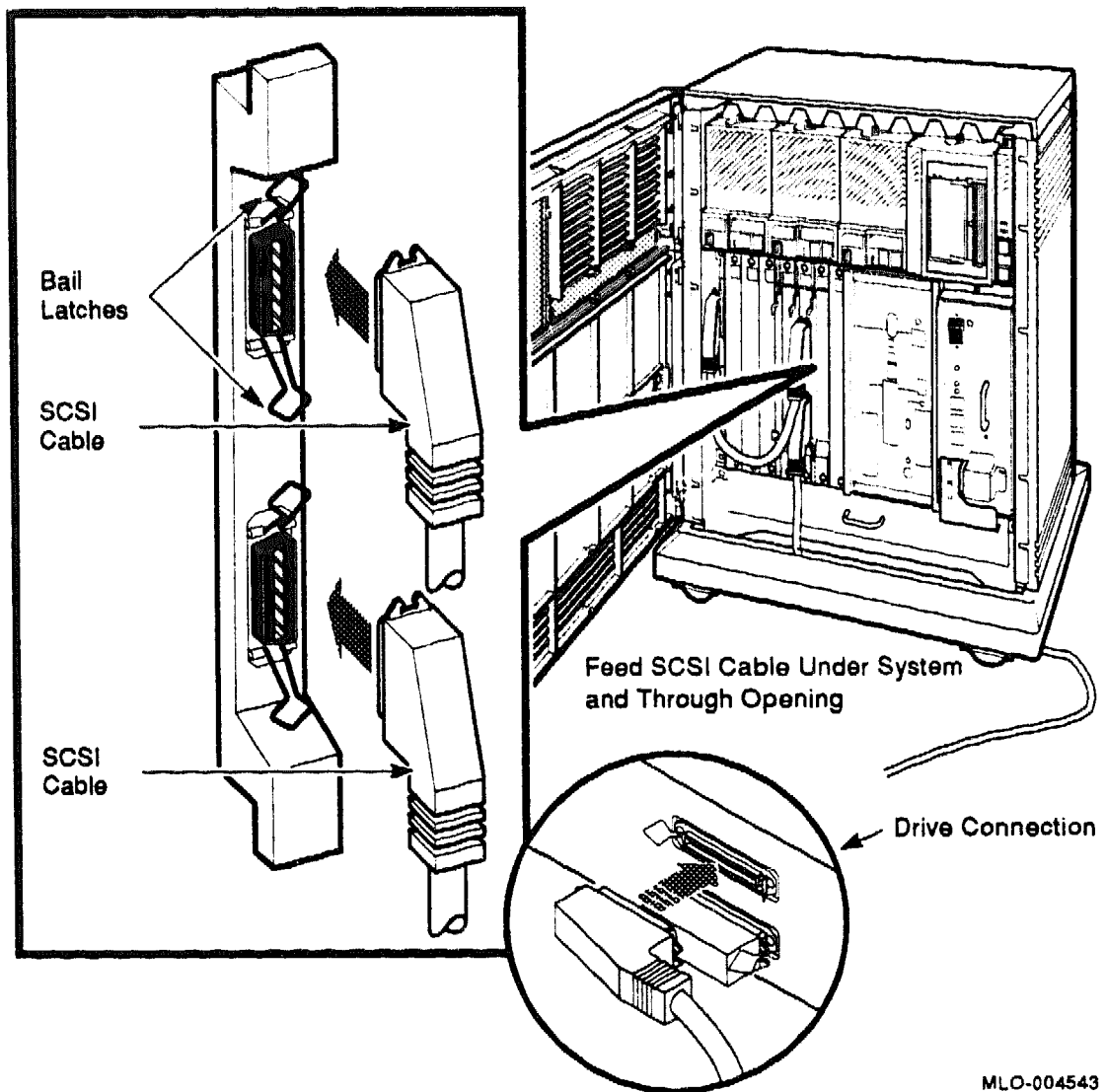
2. Connect the other end of the cable to the top connector of the next drive.
3. Connect the SCSI terminator to the bottom connector as shown in Figure 6-1 or Figure 6-2. (The SCSI bus can accommodate up to three drives, with the last drive being terminated on the bottom connector.)

6.2 Connecting to Tabletop Drive

Because the internal drive is embedded in the system, the cable connections for additional drives begin at the KZQSA adapter module. All additional drives must be tabletop models.

1. Remove the terminator from the bottom connector of the KZQSA adapter module and replace it with a 1.83-m (6-ft) SCSI cable. See Figure 6-3.

Figure 6-3: Connecting to Tabletop Drive



MLO-004543

2. Connect the other end of the cable into the top connector of the next drive.
3. Connect the terminator to the bottom connector, as shown in Figure 6-3. (The KZQSA adapter can accommodate up to three drives, with the last terminated on the bottom connector.)

6.3 Assigning the Node ID

You must assign to each drive and to the KZQSA adapter module a unique SCSI node ID. (The KZQSA adapter module SCSI node ID is discussed in Chapter 4.)

NOTE: *The higher the node ID address number selected, the higher the bus priority.*

6.3.1 SCSI Interface ID Switches

Before proceeding, locate the SCSI switches on the back of your drive. Figure 6-4 shows the switches for the TLZ04 drive, and Figure 6-5 shows the switches for the RRD40 drive. The four numbered DIP switches set the SCSI address ID number that the drive will respond to in the system. The drive must be given a SCSI address ID number by setting the switch. (Embedded TLZ04 drives use a SCSI ID plug on the front panel of the drive. The default number is 5.)

1. Power down all drives before assigning a SCSI ID number.
2. Determine the SCSI address ID number that your drive will be assigned. The address ID number can be any number from 0 to 7. The default ID for the KZQSA is 7.
3. Set the switches to the correct address ID number. (The TLZ04 and RRD40 drive switches are marked differently.) See Table 6-1 and Figure 6-4 for the TLZ04 drive, and Table 6-2 and Figure 6-5 for the RRD40 drive.) Figure 6-6 provides an example of a TLZ04 and an RRD40 SCSI connection.
4. After you complete the drive switch settings, see Chapter 7 for instructions on use of MDM for testing your SCSI bus interconnects.

CAUTION: *Use a ballpoint pen or pointed object to set the switches. Never use a pencil to set the switches. The graphite used in pencils can damage the switches.*

Table 6-1: TLZ04 SCSI Address Node ID Number Settings

Node ID Number	Switch Settings		
	SW4	SW2	SW1
0	0	0	0
1	0	0	1
2	0	1	0
3	0	1	1
4	1	0	0
5	1	0	1
6	1	1	0
7	1	1	1

Key to switch settings

1 = down

0 = up

Switch P is not used

Figure 6-4: TLZ04 SCSI ID Switches

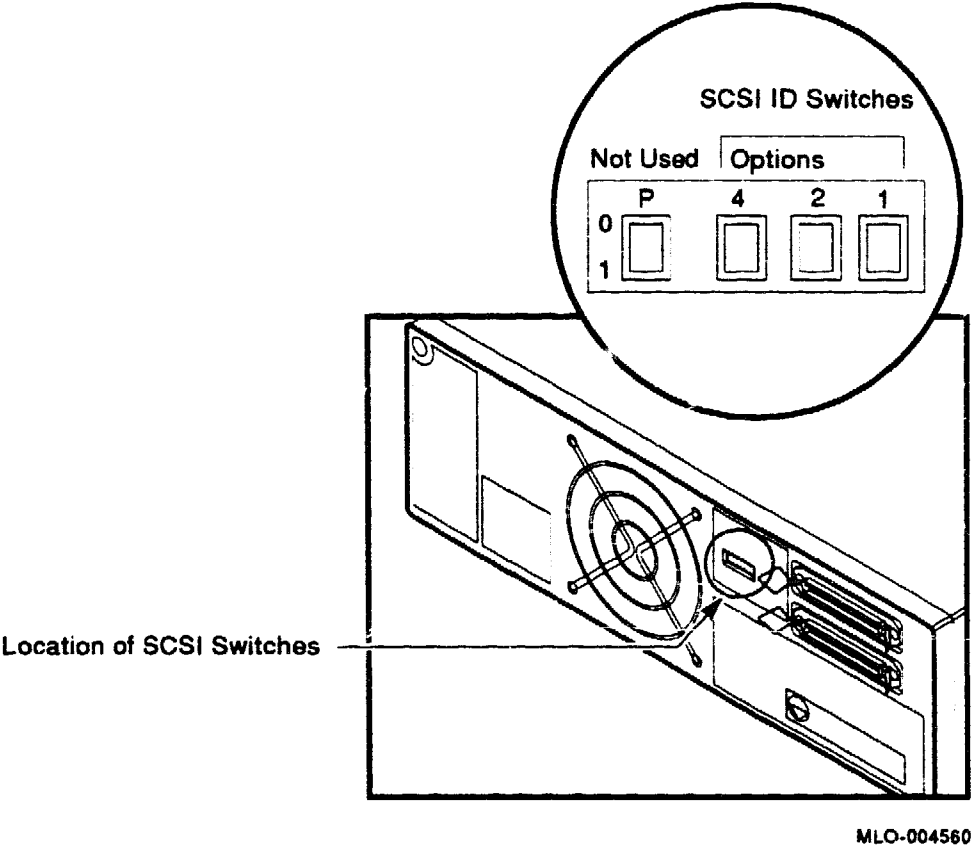


Table 6-2: RRD40 SCSI Address Node ID Number Settings

Node ID Number	Switch Settings			
	1	2	3	4
0	0	0	0	0
1	0	0	1	0
2	0	1	0	0
3	0	1	1	0
4	1	0	0	0
5	1	0	1	0
6	1	1	0	0
7	1	1	1	0

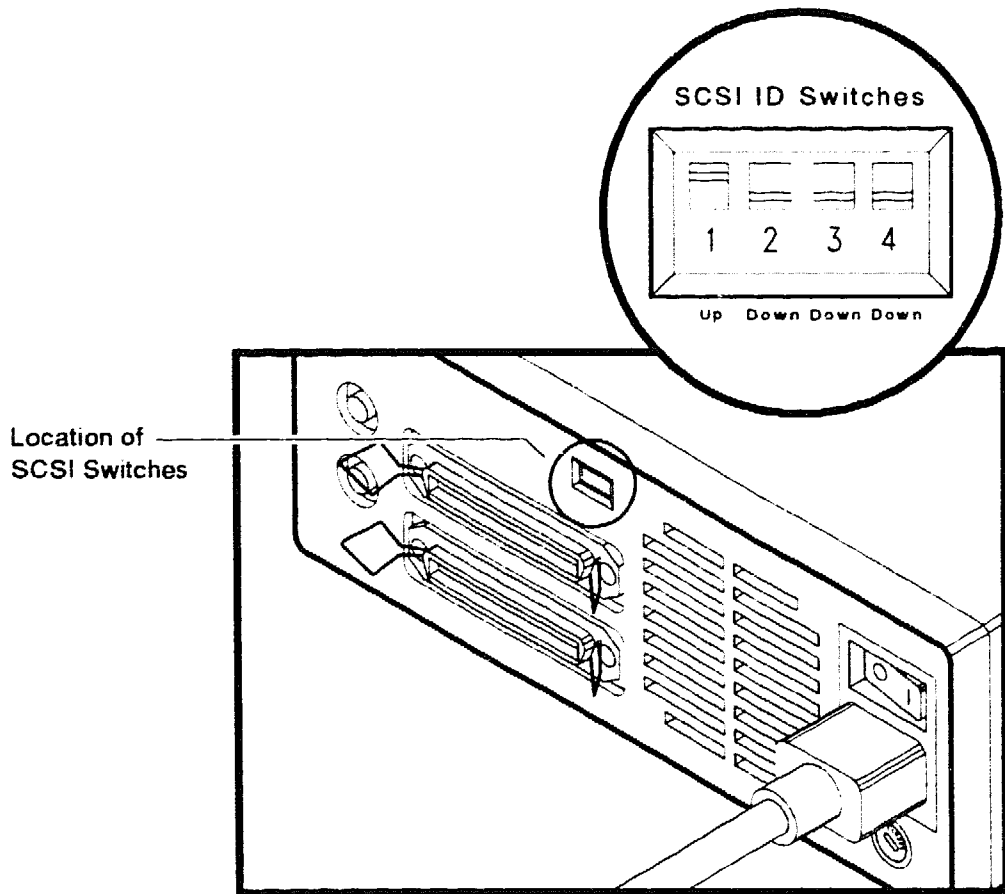
Key to switch settings

1 = on = up

0 = off = down

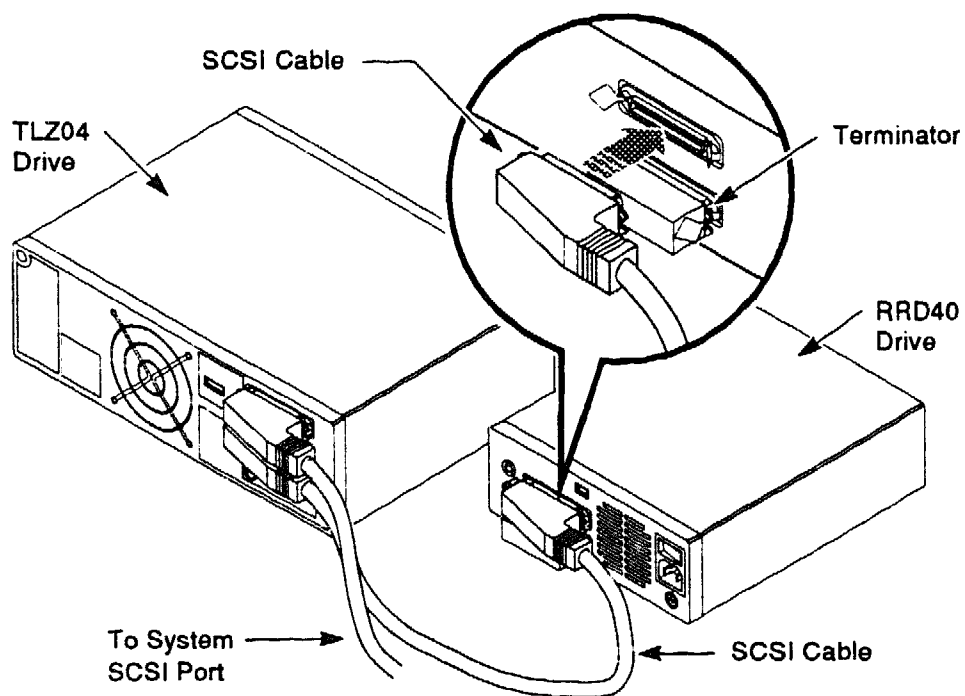
Switch 4 must be set to 0

Figure 6-5: RRD40 SCSI ID Switches



MLO-004561

Figure 6-6: Example of RRD40/TLZ04 SCSI Connection



Chapter 7

Diagnostics

This chapter describes the diagnostics for testing the KZQSA adapter module and the connected SCSI drives.

7.1 LED Error Codes

There is one LED on the KZQSA module's bulkhead handle.

1. If the power is on and the LED is on, then the terminator fuse is good.
2. If the power is on and the LED is off, then the terminator fuse is blown.

7.2 Using MDM to Run NAKZA

NAKZA is a KZQSA functional diagnostic that is executed using the MicroVAX Diagnostic Monitor (MDM) utility. The MDM utility scans for individual devices on the bus and loads one image of NAKZA for each KZQSA device it sees on the SCSI bus. Like all MDM diagnostics, NAKZA is menu-driven.

NOTE: *This section is written for users with a working knowledge of the MDM utility.*

Loading the NAKZA Diagnostic

There are several ways to load and execute MDM diagnostics. This section shows the typical way to boot with the device being tested (MUA0).

1. Load MDM by entering the following command:

```
>>>B MUA0
```

The system displays the following:

```
MicroVAX Diagnostic Monitor initializing.....please wait
```

```
MicroVAX Diagnostic Monitor - Version 4.3
```

```
        confidential diagnostic software
              property of
    Digital Equipment Corporation
```

```
Use Authorized Only Pursuant to a Valid Right-to-use License
```

```
Copyright (c) 1986, 1990
Digital Equipment Corporation
```

```
The current date and time is: 09-MAY-1990 9:37
```

```
Press the RETURN key to continue,
or enter the new date and time; then press the RETURN key.
```

```
[DD-MMM-YYYY HH:MM]:
```

```
The current date and time is: 09-MAY-1990 9:37
```

2. Enter the correct date and time, then press Return. The system displays the following:

```
Do you want to use menu mode or command line mode?
```

- 1 - menu mode
- 2 - command line mode

```
Type the Number; then press the Return key.
```

3. Select command line mode.

4. At the prompt, enter the following:

```
mdm>>SHOW BUS
```

This command displays information about devices that can be tested.
For example:

```
Autoconfigure set on
```

filename	csr	vector	br_level	status
nakaa	160000	000	0	connected
namsa	160002	000	0	connected
.				
.				
.				
nakza	161400	304	4	connected

The bus display defaults are "Autoconfigure set on" and "connected". These defaults mean that the diagnostics are loaded automatically when the system is configured.

5. At the prompt, enter the following:

```
mdm>>SET AUTOCONFIGURATION OFF
```

This command reverses the status of diagnostics to ignored. This means that the diagnostics are not loaded when the system is configured.

6. At the prompt, enter the following:

```
mdm>>CONNECT 161400 FILE_NAME NAKZA VECTOR 304 BR_LEVEL 4
```

7. At the prompt, enter the following:

```
mdm>>SHOW BUS
```

The system displays new configuration and status. For example:

Autoconfigure set off

filename	csr	vector	br_level	status
nakaa	160000	000	0	ignored
namsa	160002	000	0	ignored
.				
.				
.				
nakza	161400	304	4	connected

8. At the prompt, enter the following:

```
mdm>>CONFIGURE
```

9. At the prompt, enter the following:

```
mdm>>SHOW CONFIGURATION BRIEF
```

The following list of enabled diagnostics is displayed:

```
1 no ld kaa disabled
2 no ld msa disabled
.
.
.
5 kzqsaa - Q-bus to SCSI controller
```

```
mdm>>
```

7.3 Testing the KZQSA Subsystem

This section explains how to use the MDM test kit to access the MDM device menu, NAKZA KZQSA subsystem menu, and the NAKZA KZQSA utility tests and program menu.

Use the following procedure to access the KZQSA device menu:

1. Boot MDM. Select menu mode in response to a menu mode or command line mode query.

The following display appears:

```
MAIN MENU                                Release nnn    Version Vn.n

  1 - Test the system
  2 - Display System Configuration and Devices
  3 - Display the System Utilities Menu
  4 - Display the Service Menu
  5 - Display the Connect/Ignore Menu
  6 - Select Single Device Tests
```

Type the number; then press the RETURN key,
or type 0 and press the RETURN key to return to the Main Menu. >

2. Select the Service Menu.

Enter the number 4 and press Return.

The system displays the following:

```
MAIN MENU                                Release nnn    Version Vn.n
SERVICE MENU

  CAUTION: This menu is intended for use by qualified service
            personnel only. Misuse of the commands could destroy data.

  1 - Set test and message parameters
  2 - Exercise system continuously
  3 - Display the Device Menu
  4 - Enter Command Line Mode
```

Type the number; then press the RETURN key,
or type 0 and press the RETURN key to return to the Main Menu. >

3. Select the Device Menu.

Enter the number 3 and press Return. MDM loads and configures the diagnostics for the devices in the system. Press Return to continue.

MDM displays a list of devices in the system that have device-specific tests and, in some cases, device-specific utilities.

The devices that can be tested in the system are displayed as shown in the following example.

```
MAIN MENU                               Release nnn    Version Vn.n
SERVICE MENU
DEVICE MENU
```

This menu lets you select a device for testing.

- 1 CPUA - MicroVAX/rtVAX CPU
- 2 MEMA - MicroVAX memory system
- 3 RQDXA - Winchester diskette controller
- 4 TKXXA - TK50/TK70 controller
- 5 KZQSA - Q-bus to SCSI controller

Type the number; then press the RETURN key,
or type 0 and press the RETURN key to return to the previous menu. >

4. Select the KZQSA Subsystem Menu.

Type the number that corresponds to the KZQSA test in your system menu and press Return. For this example you would type the number 5 and press Return.

The system displays the following:

```
MAIN MENU                               Release nnn    Version Vn.n
SERVICE MENU
DEVICE MENU
KZQSAX - Q-bus to SCSI Controller MENU
```

Testing is ENABLED

- 1 - Enable/Disable testing for device
- 2 - Perform all functional tests
- 3 - Perform the exerciser test
- 4 - Display the Device Utilities Menu

Type the number; then press the RETURN key,
or type 0 and press the RETURN key to return to the previous menu. >

NOTE: The letter "X" in the menu (at the end of KZQSA) denotes the board designation; A, B, C, etc.

If "Testing is DISABLED", type the number 1 and press Return to enable testing.

5. Select the Functional Tests Menu.

Type the number 2 and press Return.

MDM reconfigures the diagnostic for the device and displays the following setup message. At this point follow the instructions in the setup message.

To halt the test at any time and return to the previous menu, press CTRL/C by holding down the CTRL key and pressing the C key.

RUNNING THE FUNCTIONAL SERVICE TESTS

KZQSA Q-bus to SCSI Controller Setup.

*** WARNING ***

These Service Tests for the KZQSA may be DESTRUCTIVE, and require the appropriate TEST/SCRATCH media to be present in ALL the enabled SCSI drives. If you do not wish to run these tests, press CTRL/C and then type "HALT" to exit. Otherwise, please load ALL your enabled SCSI drives with their appropriate TEST/SCRATCH media, and press <RETURN> when done.

(optional message only appears if a TLZ04 is present in the system)

NOTE: Due to the nature of the TLZ04 in this system, please make sure that it is loaded with a WRITE ENABLED SCRATCH TAPE, and DO NOT press CTRL/C and type "HALT" to stop the tests, but rather let them run to completion.

6. Select the Exerciser Test Menu.

Type the number 3 and press Return.

MDM reconfigures the diagnostic for the device and displays the following setup message. At this point follow the instructions in the setup message.

To halt the test at any time and return to the previous menu, press CTRL/C by holding down the CTRL key and pressing the C key.

RUNNING THE EXERCISER SERVICE TESTS

KZQSA Q-bus to SCSI Controller Setup.

*** WARNING ***

These Service Tests for the KZQSA may be DESTRUCTIVE, and require the appropriate TEST/SCRATCH media to be present in ALL the enabled SCSI drives. If you do not wish to run these tests, press CTRL/C and then type "HALT" to exit. Otherwise, please load ALL your enabled SCSI drives with their appropriate TEST/SCRATCH media, and press <RETURN> when done.

(optional message only appears if a TLZ04 is present in the system)
NOTE: Due to the nature of the TLZ04 in this system, please make sure that it is loaded with a WRITE ENABLED SCRATCH TAPE, and DO NOT press CTRL/C and type "HALT" to stop the tests, but rather let them run to completion.

7. Select the Device Utilities Menu.

Type the number 4 and press Return.

MDM reconfigures the diagnostic for the device and displays the following utility programs and tests menu.

```
MAIN MENU                               Release nnn    Version Vn.n
SERVICE MENU
DEVICE MENU
KZQSAX - Q-bus to SCSI Controller MENU
UTILITY PROGRAMS AND TESTS MENU
```

Utility selections are:

1 - KZQSA External Loopback Test

Type the number; then press the RETURN key,
or type 0 and press the RETURN key to return to the previous menu. >

To run the External Loopback Test, type the number 1 and press the RETURN key.

RUNNING A UTILITY SERVICE TEST

To halt the test at any time and return to the previous menu,
press CTRL/C by holding down the CTRL key and pressing the C key.

KZQSAX started.

KZQSAX pass 1 test number 1 started.

The KZQSA utility is used to test the SII's transceivers.
This is done with the use of a loopback module or connector
e.g. 12-30552-02.

Please insure that the loopback module or connector is
installed, and that no SCSI devices are attached to the
KZQSA. If there is a second SCSI port on the KZQSA, install a
terminator on it.

If it is installed, press <RETURN>. If not, press CTRL/C
then type "halt" to exit.

NOTE: The letter "X" in the menu (at the end of KZQSA) denotes the board
designation; A, B, C, etc.

7.3 Halting Test Execution

To halt the NAKZA diagnostic, press Ctrl/C. NAKZA stops running and the
MDM utility reports any errors that were detected during testing.

Appendix A

CSR Settings

Table A-1: CSR Jumper Settings

Base Address	Q-bus Address	CSR Jumpers						
		W7	W6	W5	W4	W3	W2	W1
2000 0000	760000	0	0	0	0	0	0	0
2000 0040	760100	0	0	0	0	0	0	1
2000 0800	760200	0	0	0	0	0	1	0
2000 00C0	760300	0	0	0	0	0	1	1
2000 0100	760400	0	0	0	0	1	0	0
2000 0140	760500	0	0	0	0	1	0	1
2000 0180	760600	0	0	0	0	1	1	0
2000 01C0	760700	0	0	0	0	1	1	1
2000 0200	761000	0	0	0	1	0	0	0
2000 0240	761100	0	0	0	1	0	0	1
2000 0280	761200	0	0	0	1	0	1	0
2000 02C0	761300	0	0	0	1	0	1	1 ¹
2000 3000	761400	0	0	0	1	1	0	0
2000 0340	761500	0	0	0	1	1	0	1

¹Default address

Key to jumper settings

Installed jumper = 1

Uninstalled jumper = 0

Jumpers W1 to W3 and W4 to W6 can be set from 0 to 7, and W7 can only be set at 6 or 7.

Table A-1 (Cont.): CSR Jumper Settings

Base Address	Q-bus Address	CSR Jumpers						
		W7	W6	W5	W4	W3	W2	W1
2000 0380	761600	0	0	0	1	1	1	0
2000 03C0	761700	0	0	0	1	1	1	1
2000 0400	762000	0	0	1	0	0	0	0
2000 0440	762100	0	0	1	0	0	0	1
2000 0480	762200	0	0	1	0	0	1	0
2000 04C0	762300	0	0	1	0	0	1	1
2000 0500	762400	0	0	1	0	1	0	0
2000 0540	762500	0	0	1	0	1	0	1
2000 0580	762600	0	0	1	0	1	1	0
2000 05C0	762700	0	0	1	0	1	1	1
2000 0600	763000	0	0	1	1	0	0	0
2000 0640	763100	0	0	1	1	0	0	1
2000 0680	763200	0	0	1	1	0	1	0
2000 06C0	763300	0	0	1	1	0	1	1
2000 0700	763400	0	0	1	1	1	0	0
2000 0740	763500	0	0	1	1	1	0	1
2000 0780	763600	0	0	1	1	1	1	0
2000 07C0	763700	0	0	1	1	1	1	1
2000 0800	764000	0	1	0	0	0	0	0
2000 0840	764100	0	1	0	0	0	0	1
2000 0880	764200	0	1	0	0	0	1	0
2000 08C0	764300	0	1	0	0	0	1	1
2000 0900	764400	0	1	0	0	1	0	0

Key to jumper settings

Installed jumper = 1

Uninstalled jumper = 0

Jumpers W1 to W3 and W4 to W6 can be set from 0 to 7, and W7 can only be set at 6 or 7.

Table A-1 (Cont.): CSR Jumper Settings

Base Address	Q-bus Address	CSR Jumpers						
		W7	W6	W5	W4	W3	W2	W1
2000 0940	764500	0	1	0	0	1	0	1
2000 0980	764600	0	1	0	0	1	1	0
2000 09C0	764700	0	1	0	0	1	1	1
2000 0A00	765000	0	1	0	1	0	0	0
2000 0A40	765100	0	1	0	1	0	0	1
2000 0A80	765200	0	1	0	1	0	1	0
2000 0AC0	765300	0	1	0	1	0	1	1
2000 0B00	765400	0	1	0	1	1	0	0
2000 0B40	765500	0	1	0	1	1	0	1
2000 0B80	765600	0	1	0	1	1	1	0
2000 0BC0	765700	0	1	0	1	1	1	1
2000 0C00	766000	0	1	1	0	0	0	0
2000 0C40	766100	0	1	1	0	0	0	1
2000 0C80	766200	0	1	1	0	0	1	0
2000 0CC0	766300	0	1	1	0	0	1	1
2000 0D00	766400	0	1	1	0	1	0	0
2000 0D40	766500	0	1	1	0	1	0	1
2000 0D80	766600	0	1	1	0	1	1	0
2000 0DC0	766700	0	1	1	0	1	1	1
2000 0E00	767000	0	1	1	1	0	0	0
2000 0E40	767100	0	1	1	1	0	0	1
2000 0E80	767200	0	1	1	1	0	1	0
2000 0EC0	767300	0	1	1	1	0	1	1

Key to jumper settings

Installed jumper = 1

Uninstalled jumper = 0

Jumpers W1 to W3 and W4 to W6 can be set from 0 to 7, and W7 can only be set at 6 or 7.

Table A-1 (Cont.): CSR Jumper Settings

Base Address	Q-bus Address	CSR Jumpers						
		W7	W6	W5	W4	W3	W2	W1
2000 0E00	767400	0	1	1	1	1	0	0
2000 0F40	767500	0	1	1	1	1	0	1
2000 0F80	767600	0	1	1	1	1	1	0
2000 0FC0	767700	0	1	1	1	1	1	1
2000 1000	770000	1	0	0	0	0	0	0
2000 1040	770100	1	0	0	0	0	0	1
2000 1080	770200	1	0	0	0	0	1	0
2000 10C0	770300	1	0	0	0	0	1	1
2000 1100	770400	1	0	0	0	1	0	0
2000 1140	770500	1	0	0	0	1	0	1
2000 1180	770600	1	0	0	0	1	1	0
2000 11C0	770700	1	0	0	0	1	1	1
2000 1200	771000	1	0	0	1	0	0	0
2000 1240	771100	1	0	0	1	0	0	1
2000 1280	771200	1	0	0	1	0	1	0
2000 12C0	771300	1	0	0	1	0	1	1
2000 1300	771400	1	0	0	1	1	0	0
2000 1340	771500	1	0	0	1	1	0	1
2000 1380	771600	1	0	0	1	1	1	0
2000 13C0	771700	1	0	0	1	1	1	1
2000 1400	772000	1	0	1	0	0	0	0
2000 1440	772100	1	0	1	0	0	0	1
2000 1480	772200	1	0	1	0	0	1	0

Key to jumper settings

Installed jumper = 1

Uninstalled jumper = 0

Jumpers W1 to W3 and W4 to W6 can be set from 0 to 7, and W7 can only be set at 6 or 7.

Table A-1 (Cont.): CSR Jumper Settings

Base Address	Q-bus Address	CSR Jumpers						
		W7	W6	W5	W4	W3	W2	W1
2000 14C0	772300	1	0	1	0	0	1	1
2000 1500	772400	1	0	1	0	1	0	0
2000 1540	772500	1	0	1	0	1	0	1
2000 1580	772600	1	0	1	0	1	1	0
2000 15C0	772700	1	0	1	0	1	1	1
2000 1600	773000	1	0	1	1	0	0	0
2000 1640	773100	1	0	1	1	0	0	1
2000 1680	773200	1	0	1	1	0	1	0
2000 16C0	773300	1	0	1	1	0	1	1
2000 1700	773400	1	0	1	1	1	0	0
2000 1740	773500	1	0	1	1	1	0	1
2000 1780	773600	1	0	1	1	1	1	0
2000 17C0	773700	1	0	1	1	1	1	1
2000 1800	774000	1	1	0	0	0	0	0
2000 1840	774100	1	1	0	0	0	0	1
2000 1880	774200	1	1	0	0	0	1	0
2000 18C0	774300	1	1	0	0	0	1	1
2000 1900	774400	1	1	0	0	1	0	0
2000 1940	774500	1	1	0	0	1	0	1
2000 1980	774600	1	1	0	0	1	1	0
2000 19C0	774700	1	1	0	0	1	1	1
2000 1A00	775000	1	1	0	1	0	0	0
2000 1A40	775100	1	1	0	1	0	0	1

Key to jumper settings

Installed jumper = 1

Uninstalled jumper = 0

Jumpers W1 to W3 and W4 to W6 can be set from 0 to 7, and W7 can only be set at 6 or 7.

Table A-1 (Cont.): CSR Jumper Settings

Base Address	Q-bus Address	CSR Jumpers						
		W7	W6	W5	W4	W3	W2	W1
2000 1A80	775200	1	1	0	1	0	1	0
2000 1AC0	775300	1	1	0	1	0	1	1
2000 1B00	775400	1	1	0	1	1	0	0
2000 1B40	775500	1	1	0	1	1	0	1
2000 1B80	775600	1	1	0	1	1	1	0
2000 1BC0	775700	1	1	0	1	1	1	1
2000 1C00	776000	1	1	1	0	0	0	0
2000 1C40	776100	1	1	1	0	0	0	1
2000 1C80	776200	1	1	1	0	0	1	0
2000 1CC0	776300	1	1	1	0	0	1	1
2000 1D00	776400	1	1	1	0	1	0	0
2000 1D40	776500	1	1	1	0	1	0	1
2000 1D80	776600	1	1	1	0	1	1	0
2000 1DC0	776700	1	1	1	0	1	1	1
2000 1E00	777000	1	1	1	1	0	0	0
2000 1E40	777100	1	1	1	1	0	0	1
2000 1E80	777200	1	1	1	1	0	1	0
2000 1EC0	777300	1	1	1	1	0	1	1
2000 1E00	777400	1	1	1	1	1	0	0
2000 1F40	777500	1	1	1	1	1	0	1
2000 1F80	777600	1	1	1	1	1	1	0
2000 1FC0	777700	1	1	1	1	1	1	1

Key to jumper settings

Installed jumper = 1

Uninstalled jumper = 0

Jumpers W1 to W3 and W4 to W6 can be set from 0 to 7, and W7 can only be set at 6 or 7.

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