

VME Workstation Enclosure

Installation and Owner's Guide

Order Number: EK-VMEWS-IN. A01

This manual describes the installation, removal, and replacement of components of the VME Workstation Enclosure.

November 1995

Digital Equipment Corporation makes no representation that the use of its products in the manner described in this publication will not infringe on existing or future patent rights, nor do the descriptions contained in this publication imply the granting of licenses to make, use, or sell equipment or software in accordance with the description.

FCC NOTICE: This equipment generates and uses radio frequency energy. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart G of Part 15 of FCC Rules, which are designed to provide reasonable protection against such radio and television interference in a residential installation.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, the user is encouraged to try to correct the interference.

MDC Avis De Conformation:

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de Classe B prescrites dans le Reglement sur le brouillage radioelectriques edicte par le ministere des Communications du Canada.

EMI:

This product complies with the following domestic and international standards:

- Domestic—Complies with FCC Part 15, Class B.
- International—Complies with CISPR22 (EN5502 (European Norm)) Class B.

VCCI:

この装置は、第一種情報装置（商工業地域において使用されるべき情報装置）で商工業地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（VCCI）基準に適合しております。

従って、住宅地域またはその隣接した地域で使用すると、ラジオ、テレビジョン受信機等に受信障害を与えることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

© Digital Equipment Corporation 1995. All Rights Reserved.

Printed in U.S.A.

The prepaid Reader's Comments form at the end of this document request your critical evaluation to assist in preparing future documentation.

The following are trademarks of Digital Equipment Corporation: Alpha, Digital, and the DIGITAL logo.

All other trademarks and registered trademarks are the property of their respective holders.

S3089

This document was prepared using VAX DOCUMENT Version 2.1.

Contents

Preface	v
1 Introduction	
1.1 General Description	1-1
2 Installation	
2.1 Introduction	2-1
2.2 Unpacking	2-1
2.3 Environmental Requirements	2-2
2.3.1 Mechanical Requirements	2-3
2.3.2 Electrical Specifications	2-3
2.4 Installing the VME Workstation Enclosure	2-4
2.4.1 Attaching the Handles	2-4
2.4.2 Attaching the Slide Extender Brackets to the Slide Assemblies	2-5
2.4.3 Installing the Left and Right Slide Assemblies	2-6
2.4.4 Attaching the Inner Slide Races to the Enclosure	2-8
2.4.5 Securing the VME Workstation Enclosure to the Slide Assemblies ...	2-9
3 Replacing Components	
3.1 Introduction	3-1
3.2 Removing and Replacing the Enclosure Covers	3-4
3.3 Removing and Replacing the Rear Exhaust Fan	3-5
3.4 Removing and Replacing the Side Intake Fan	3-7
3.5 Removing and Replacing the Power Supply	3-8
3.6 Removing and Replacing the CD-ROM Drive	3-11
3.7 Removing and Replacing the Rear Hard Disk Drive	3-13
3.8 Removing and Replacing the Front Hard Disk Drive	3-14
3.9 Removing and Replacing the Single-Board Computer (SBC)	3-15
3.10 Removing and Replacing the SBC Cables	3-17
3.11 Removing and Replacing the Breakout Module	3-19
3.12 Removing and Replacing the Internal SCSI Cable	3-22
3.13 Removing and Replacing the Internal to External SCSI Cable	3-24
3.14 Installing Additional Modules in the Card Cage	3-24
3.15 Installing Blank Bulkhead Panels	3-24

Figures

2-1	Contents of the Rack-Mounted VME Workstation Enclosure Shipping Cartons	2-2
2-2	Attaching the Handles and Wings to the Enclosure	2-5
2-3	Attaching the Slide Extender Brackets	2-6
2-4	VME Workstation Enclosure Slide Mounting Pattern	2-7
2-5	Attaching the Inner Slide Races to the Enclosure	2-8
2-6	Installing the VME Workstation Enclosure in the Cabinet	2-9
3-1	VME Workstation Enclosure Components (Front View)	3-2
3-2	VME Workstation Enclosure Components With Small Fan Bracket (Rear View)	3-3
3-3	VME Workstation Enclosure Components With Large Fan Bracket (Rear View)	3-4
3-4	Removing the Enclosure Covers	3-5
3-5	Removing the Rear Fan Assembly	3-6
3-6	Removing the Rear Fan	3-6
3-7	Removing the Side Intake Fan	3-8
3-8	Removing and Replacing the Power Supply	3-10
3-9	Removing and Replacing the CD-ROM Drive	3-12
3-10	Removing and Replacing the Hard Disk Drive	3-14
3-11	Removing and Replacing the SBC Module	3-16
3-12	Replacing the Ethernet Cable	3-18
3-13	Replacing the Monitor Cable	3-19
3-14	Installing the AXPvme 160 or 230 MHz Breakout Module (for 2-slot SBC)	3-20
3-15	Installing the AXPvme 64 Breakout Module (for 1-slot SBC)	3-21
3-16	Plugging the SCSI Connector Into the AXPvme 160 or 230 MHz Breakout Module (for 2-slot SBC)	3-21
3-17	Plugging the SCSI Connector Into the AXPvme 64 Breakout Module (for 1-slot SBC)	3-22
3-18	Internal SCSI Cable Routing	3-23
3-19	Installing Blank Bulkhead Panels	3-25

Tables

3-1	Field-Replaceable Components	3-1
-----	--	-----

Preface

Purpose of This Guide

This guide describes how to install, remove, and replace components of the VME Workstation Enclosure.

Who Should Use This Guide

This guide is intended for qualified personnel who install and maintain computer equipment.

Structure of This Guide

This guide is organized as follows:

- **Chapter 1, Introduction**—Provides an overview of the VME Workstation Enclosure.
- **Chapter 2, Installation**—Describes how to install the enclosure in an equipment cabinet.
- **Chapter 3, Replacing Components**—Describes how to remove and replace components contained within the enclosure.

Related Documents

Other documents related to the VME Workstation Enclosure are as follows:

- *AXPvme Single-Board Computer Installation/User Guide* (EK-EBV1X-IN. A01)
- *DSP3000 Series 3.5-Inch Disk Drives Installation Guide* (EK-RH2CA-IG. A01)
- *RRD4* CD-ROM Drive User and Installation Guide* (EK-RRD4*-IN. A02)

Conventions Used in This Guide

This guide uses the following conventions:

Convention	Meaning
Note	A Note calls the reader's attention to any item of information that may be of special importance.
Caution	A Caution contains information essential to avoid damage to the equipment.
<i>italic type</i>	<i>Italic type</i> indicates complete titles of manuals.
bold type	Bold type indicates text that is highlighted for emphasis.

The following warning symbols may appear on the enclosure for your safety.



Warning: This area contains electrical energy. Disconnect the AC power cord to the enclosure before accessing this area.



Warning: High-voltage shock hazard present inside the power supply.

1.1 General Description

The VME (Versa Module Eurocard) Workstation Enclosure is a 7-slot enclosure containing a prewired VMEbus J1/J2 backplane that accepts up to seven 6U x 160mm boards. Your VME Workstation Enclosure may contain one or two SCSI hard disk drives, a SCSI CD-ROM disk drive, and a Single-Board Computer. With these components and the addition of an external monitor, keyboard, and mouse, the VME Workstation Enclosure is a fully-functional workstation. The Single-Board Computer can be either one slot or two slots in height, leaving five or six slots available for other application modules.

2.1 Introduction

This chapter describes the installation of the VME Workstation Enclosure in an equipment cabinet. Topics covered in this chapter include:

- Unpacking
- Environmental requirements
- Mechanical requirements
- Electrical specifications
- Installation

2.2 Unpacking

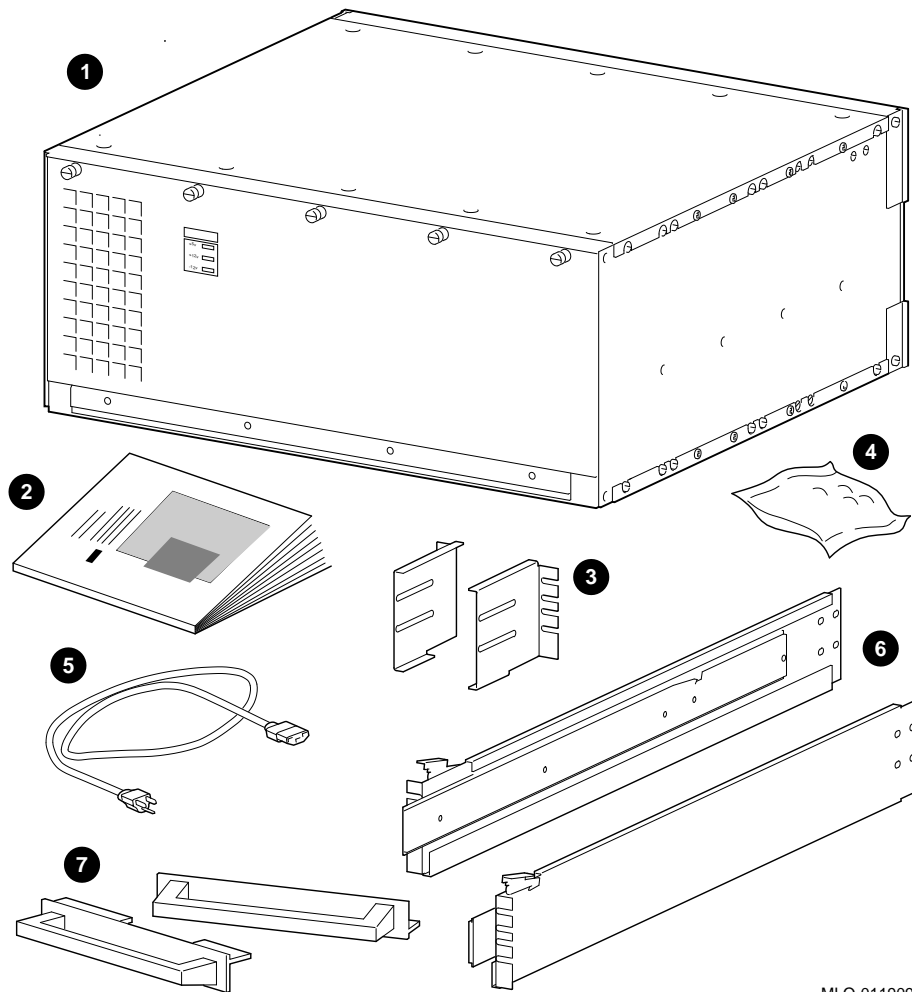
The VME Workstation Enclosure hardware shipment consists of one or two cartons. One carton contains the VME Workstation Enclosure, handles and wings, AC power cord (US type only), and documentation. If you have ordered a rack mounting kit for the enclosure, the second carton contains slide assemblies, rear slide extenders, and slide mounting hardware. If you have ordered the desk-top conversion kit for the enclosure, a carton contains wrap-around covers and feet. Check the shipment to verify that you receive all the items shown in Figure 2-1 and listed on the packing slip.

If the equipment is damaged or if any items are missing, notify the delivery agent and contact the Digital sales representative.

Save the shipping cartons in case you move the equipment to a new location or you return the equipment for repair.

Installation

Figure 2-1 Contents of the Rack-Mounted VME Workstation Enclosure Shipping Cartons



MLO-011909

- | | |
|---|--------------------------------|
| ❶ VME Workstation Enclosure | ❺ AC power cord (US type only) |
| ❷ The <i>VME Workstation Enclosure Installation and Owner's Guide</i> | ❻ Slide assemblies |
| ❸ Slide extender brackets | ❼ Handles and wings |
| ❹ Slide mounting hardware (one or more packets) | |

2.3 Environmental Requirements

The following list contains the environmental requirements for the VME Workstation Enclosure.

- Keep the ambient temperature between 10°C and 40°C (50°F and 104°F).
- Keep the environment between 10% and 90% relative humidity (noncondensing).
- Keep the air around the equipment well-circulated to prevent heat from building up and to provide an exhaust space at the rear of the cabinet.
- Provide 1.5 m (4.9 ft) front and rear clearance for service access.

- Decrease static electricity buildup by locating the equipment away from busy areas such as office corridors, and keep the environment at the recommended humidity levels. Static electricity can cause the equipment to fail, data to be lost, and other problems to occur.
- Keep the area where the equipment is located clean. Do not place food or liquids on or near the equipment.
- Keep the area where the equipment is located free from dust (dust particles can interfere with chassis cooling and can damage the hardware).

2.3.1 Mechanical Requirements

The following list contains the mechanical requirements for the VME Workstation Enclosure.

- The enclosure is 17.78 cm (H) x 43.18 cm (W) x 40.01 cm (D)
7.00 inches (H) x 17.00 inches (W) x 15.75 inches (D)
- The enclosure weighs approximately 10 kg (22 pounds) when equipped with a CD-ROM drive, a hard drive, and a Single-Board Computer module.
- The enclosure can be either rack mounted or converted for desktop operation.

2.3.2 Electrical Specifications

The input requirements and output electrical capabilities for the VME Workstation Enclosure power supply are as follows:

- AC input: 90–264 Vac continuous range, 47 to 63 Hz, internally fused for 7 A.

The power supply output specifications are as follows:

- Output—350 watts total, any combination of power
- Output #1: + 5V at 50A
- Output #2: +12V at 8/12A peak
- Output #3: -12V at 4.0A
- Output #4: $\pm 5.2V$ at 5.0A (floating)
- Power factor: 0.99 typical at full load.
- Line regulation: All outputs $\pm 1\%$ over input range.
- Regulation band: Outputs #1, 2, and 4 $\pm 1\%$. Output #3 $\pm 4\%$ (20% minimum load on outputs #2 and 3).
- Ripple and noise: 1% peak-to-peak or 100mv, whichever is greater (50 MHz bandwidth).
- Remote sense: (+5V) compensates for 500mv total line drop. Open sense lead protection.
- Overload protection: All outputs are protected against overload and short circuit. Automatic recovery on removal of fault.
- Overvoltage protection: Protects load against power supply induced overvoltage. Trip point is set at 136% maximum for outputs #1 and 2.
- Brownout protection: Holds regulation down to 85 Vac.

Installation

- Thermal protection: Shuts down power supply if overheated. Automatic recovery.
- Hold up time: 20 ms minimum after removal of power at nominal line and full load.
- Peak output current: Dual output ratings define continuous and peak currents. Peak current can be delivered for a maximum of 30 seconds.

2.4 Installing the VME Workstation Enclosure

The following sections describe how to install the VME Workstation Enclosure in a standard RETMA 48.26 cm (19.00 in.) wide equipment cabinet. The enclosure occupies 17.78 vertical centimeters (7.00 inches) of space in the equipment cabinet.

The following tools are required to install the VME Workstation Enclosure:

- Medium Phillips screwdriver
- Small flat-blade screwdriver
- Box wrench or nut driver, 7.938 cm (5/16 in.), 2 required
- Allen wrench, 3.175 cm (1/8 in.)

The following mounting hardware is required to install the VME Workstation Enclosure:

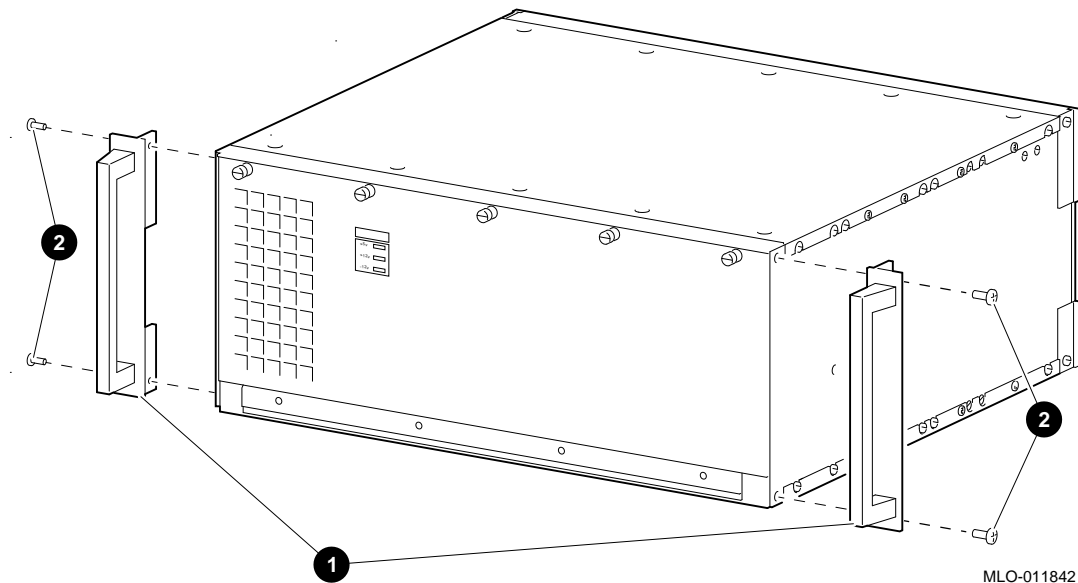
- Slide extender mounting kit—consists of 8 hex bolts, 8 hex nuts, and 8 spring washers
- Inner race mounting kit—consists of 8 Allen-head bolts (the nuts included are not required)
- Slide assembly mounting hardware—4 four-hole nut bars, 4 U-nuts, 16 screws to secure the slide assemblies, and 4 screws to secure the enclosure front panel to the cabinet

2.4.1 Attaching the Handles

The VME Workstation Enclosure is shipped with the handles and wings ❶ removed as shown in Figure 2-2, but note that the handles are attached to the wings. During shipment, the handle and wing mounting screws are installed in the mounting holes. To attach the handle and wings to the enclosure, follow these steps:

1. At the front corners of the enclosure where the handles and wings are to be attached, remove the two mounting screws ❷ on each side.
2. Using two screws ❷, mount a handle and wing ❶ at each front corner of the enclosure. The handles and wings are identical and can be interchanged.

Figure 2-2 Attaching the Handles and Wings to the Enclosure



- ❶ Handle and wings
- ❷ Screws (2) for each handle and wing

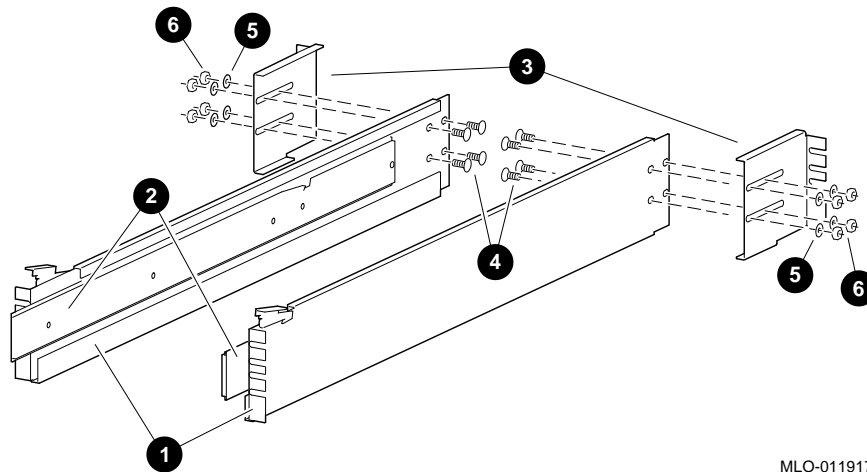
2.4.2 Attaching the Slide Extender Brackets to the Slide Assemblies

The VME Workstation Enclosure may be shipped with a pair of RETMA slide assemblies ❶ and two slide extender brackets ❷ as shown in Figure 2-3. To attach the slide extender brackets to the slide assemblies, follow these steps:

1. Attach the left slide extender bracket to the rear outside surface of the left slide assembly by using four hex bolts ❸, spring washers ❹, and four nuts ❺, but **do not** tighten.
2. Adjust the slide extender bracket so that the left slide assembly slide just fits between the inside surfaces of the front and rear vertical mounting rails. Now tighten the mounting hardware installed in step 1.
3. Repeat steps 1 and 2 to attach and adjust the right slide extender bracket to the right slide assembly.

Installation

Figure 2–3 Attaching the Slide Extender Brackets



MLO-011917

- | | | | |
|-----------------------------------|---------------------|---------------------------|---------------------------------------|
| ❶ Left and right slide assemblies | ❷ Inner slide races | ❸ Slide extender brackets | ❹ Hex bolts (4) for each bracket |
| | | | ❺ spring washers (4) for each bracket |
| | | | ❻ Nuts (4) for each bracket |

2.4.3 Installing the Left and Right Slide Assemblies

To install the left and right slide assemblies, follow these steps:

1. Check each slide assembly for any damage and for smooth operation.
2. Identify the VME Workstation Enclosure location in the cabinet and establish a datum line, which serves as a reference to identify the mounting hole positions for the slide assemblies and the U-nuts. To establish a datum line:
 - a. Determine the area of the cabinet where the enclosure will be installed. The enclosure requires 17.78 cm (7.00 in.) of height, or 12 successive holes.
 - b. Establish a datum line at the base of the area between two holes having 1.3 cm (.5 in.) spacing as shown in Figure 2–4 at the pencil. The first hole above the datum line is identified as hole 1. Hole 1 establishes the location of the bottom edge of the VME Workstation Enclosure.
3. Install the slide assemblies between the front and rear vertical mounting rails as follows:
 - a. Determine the proper mounting holes for the slide mounting brackets by using the four-hole pattern in the bar nut ❹. This pattern repeats every 4.45 cm (1.75 in.) along the rails. The proper four-hole pattern for the bar nut on the front and rear rails is the 5th, 6th, 7th, and 8th holes ❷ above the datum line.
 - b. Position a bar nut in the correct position on the inside of the rear rail and start the four screws, but **do not** tighten.
 - c. Position a bar nut in the correct position on the inside of the front rail and start the four screws, but **do not** tighten.

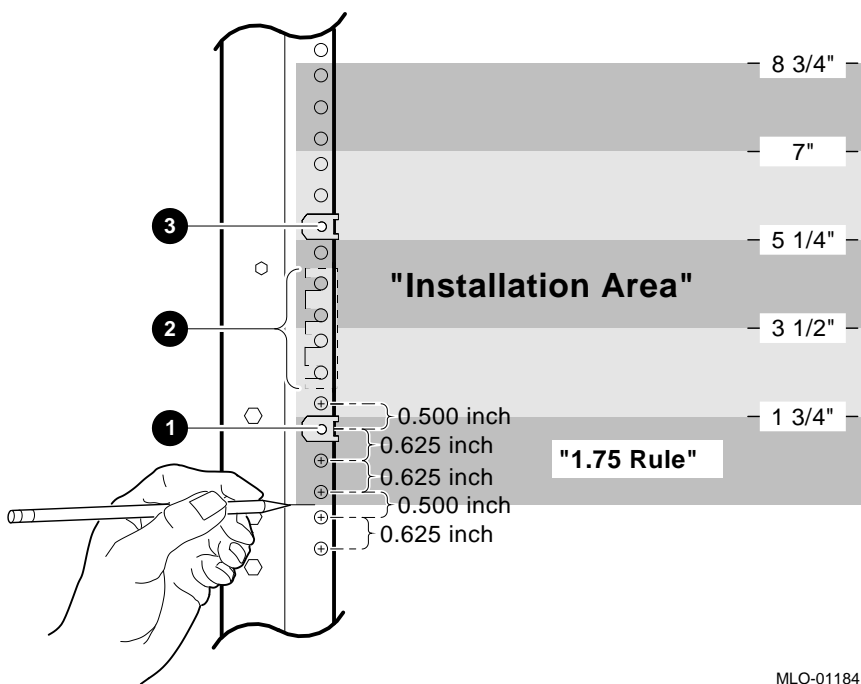
- d. Slide the front and rear slide mounting bracket fingers between the rail and the bar nut.

Note

Pull the slide assembly upward when securing it to the rails.

- e. On each slide assembly, tighten the 8 screws to secure the slide assembly to the cabinet rails.
4. Install two U-nuts **1**, **3** and **5** on the front and rear rail over the 3rd and 10th holes above the datum line by sliding the U-nuts over the edge of the rail and aligning them with the holes. The U-nuts secure the VME Workstation Enclosure, in the closed position, to the rails. Ensure that the threaded part of the U-nut is on the **inside** of the rail.

Figure 2-4 VME Workstation Enclosure Slide Mounting Pattern



MLO-011841

- 1** Lower U-nut
- 2** Holes for the bar nut (positioned behind the rail)
- 3** Upper U-nut

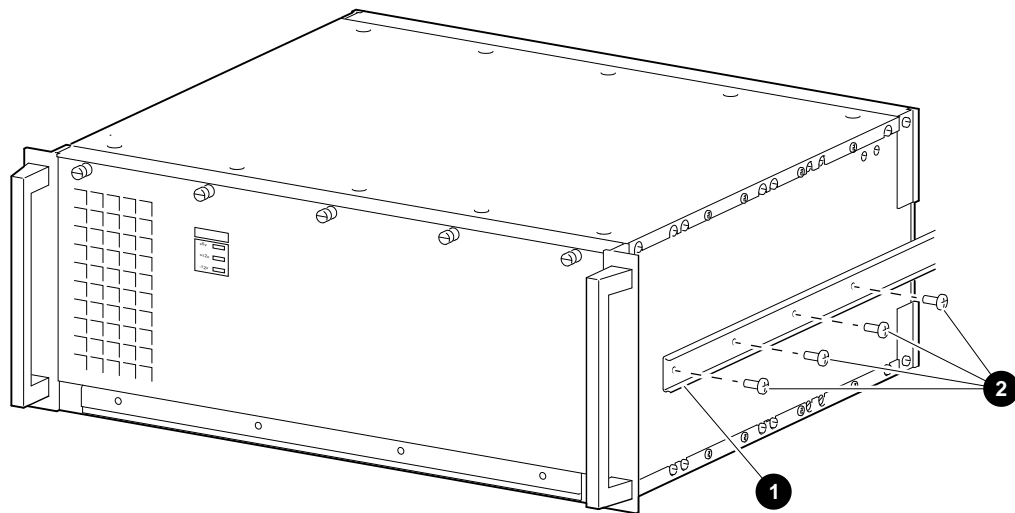
Installation

2.4.4 Attaching the Inner Slide Races to the Enclosure

To attach the inner slide races to the enclosure as shown in Figure 2–5, follow these steps:

1. Remove the right inner slide race from the right slide assembly by extending the race forward as far as it will go. Push the slide lock down and continue extending the race until it is completely free from the right slide assembly.
2. Attach the right inner slide race **1** to the right side of the chassis by using four Allen-head screws **2**.
3. Repeat steps 1 and 2 to remove the left inner slide race from the left slide assembly and attach the race to the left side of the enclosure.

Figure 2–5 Attaching the Inner Slide Races to the Enclosure



MLO-011907

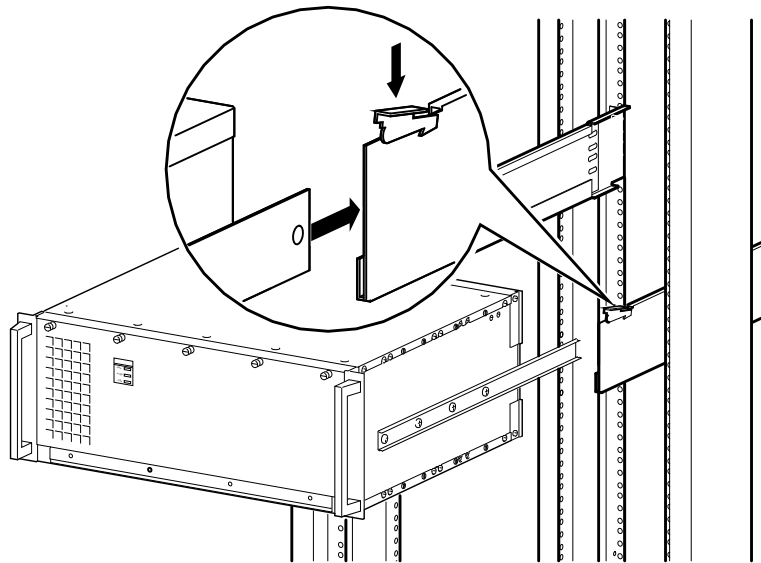
- 1** Slide race
- 2** Allen-head screws (4)

2.4.5 Securing the VME Workstation Enclosure to the Slide Assemblies

To secure the enclosure to the slide assemblies, follow these steps:

1. Lift the VME Workstation Enclosure and position it so that the left and right inner slide races align with the slide assemblies that are attached to the cabinet rails.
2. Move the enclosure into the cabinet while ensuring that the inner slide races slide into the slide assemblies.
3. Release the slide locking lever as shown in Figure 2–6 on both slides and carefully slide the enclosure into the cabinet. Ensure that the enclosure can clear all other equipment in the cabinet and that the slides operate smoothly.
4. Secure the enclosure to the equipment rails by tightening the four screws into the U-nuts.

Figure 2–6 Installing the VME Workstation Enclosure in the Cabinet



LJ-04421-T10

Replacing Components

3.1 Introduction

This chapter describes how to remove and replace the field-replaceable VME Workstation Enclosure components. The field-replaceable components listed in Table 3-1 are shown in Figures 3-1, 3-2, and 3-3.

Table 3-1 Field-Replaceable Components

Description	Part Number
AXPvme 64 or 100 MHz Single-Board Computer (SBC) ¹	2T-EBV10-**6
AXPvme 160, 166, or 230 MHz Single-Board Computer (SBC) ²	2T-EBV12-**6
AXPvme 64 or 100 MHz Breakout Module ³	54-22605-01
AXPvme 160, 166 or 230 MHz Breakout Module ⁴	54-22621-01
CD-ROM Drive	RRD4*-**6
SCSI Drive	RZ**-**6
Ethernet Cable	2T-VMCECA-CE (17-04255-01)
Internal SCSI Cable	2T-VMCECA-CS (17-04239-01)
SCSI Termination ⁵	12-37004-04
Internal to External SCSI Cable	2T-ESCSI-CA (17-04248-01)
Video, Keyboard, and Mouse Cable	2T-VMCECA-CG (17-04235-01)
350-Watt Power Supply	2T-VMIEWS-PS
Variable-speed DC Fan	2T-VMIEWS-VF

¹1-slot height

²2-slot height

³For use with 1-slot SBC

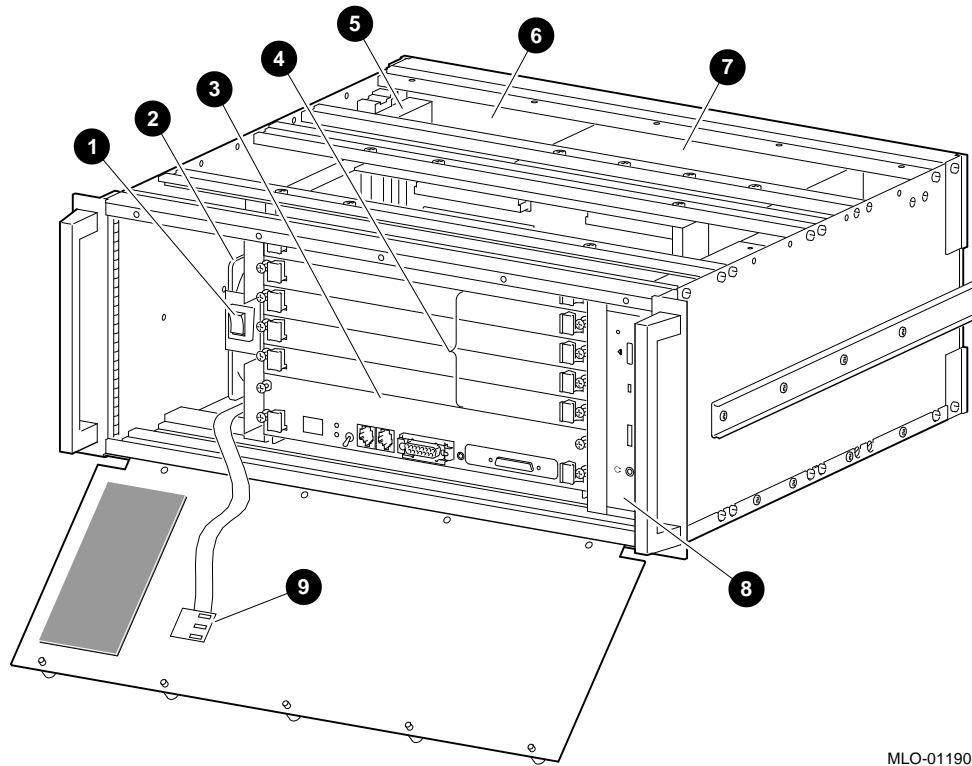
⁴For use with 2-slot SBC

⁵Termination for internal SCSI cable when no internal to external SCSI cable is used

⁶The asterisks represent part number variations.

Replacing Components

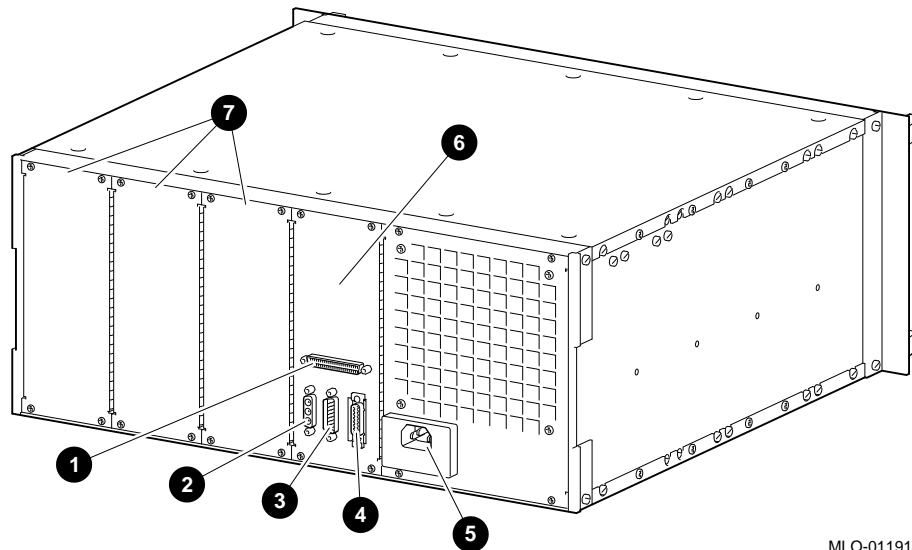
Figure 3-1 VME Workstation Enclosure Components (Front View)



MLO-011908

- | | |
|--|--|
| ❶ DC power switch | ❷ Rear exhaust fan |
| ❸ Side intake fan | ❸ Power supply |
| ❹ Single-Board Computer (160 or 230 MHz SBC) | ❹ SCSI CD-ROM drive or SCSI hard drive |
| ❺ Airblocker modules, (1) for each unused slot | ❺ +5V, +12V, and -12V LED display |
| ❻ SCSI Hard drive | |

Figure 3–2 VME Workstation Enclosure Components With Small Fan Bracket (Rear View)

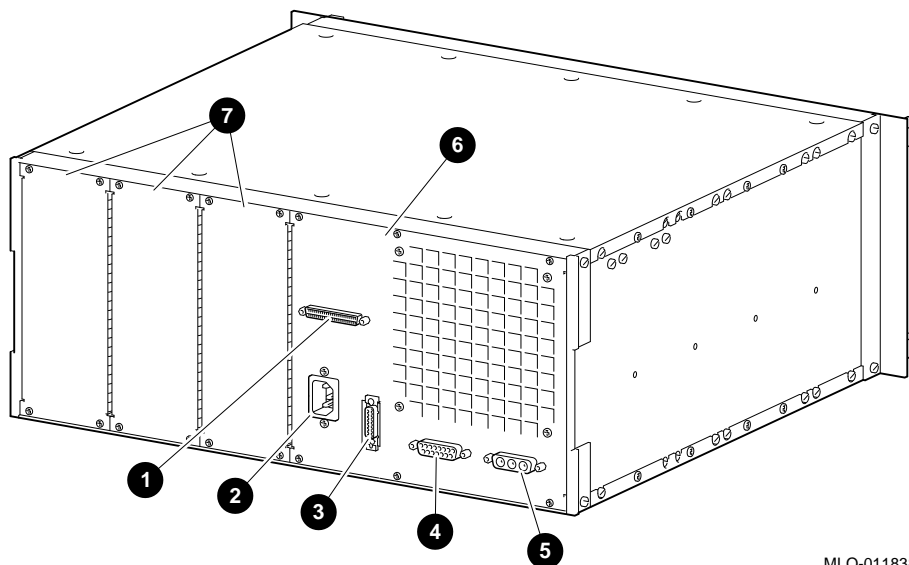


MLO-011911

- | | |
|--|----------------------------|
| ❶ Optional internal to external SCSI connector | ❺ AC input connector |
| ❷ Video connector | ❻ Connector bulkhead panel |
| ❸ Keyboard and mouse connector | ❼ Blank bulkhead panels |
| ❹ Ethernet connector | |

Replacing Components

Figure 3-3 VME Workstation Enclosure Components With Large Fan Bracket (Rear View)



MLO-011838

- | | |
|--|--------------------------|
| ❶ Optional internal to external SCSI connector | ❺ Video connector |
| ❷ AC input connector | ❻ Fan/connector assembly |
| ❸ Ethernet connector | ❼ Blank bulkhead panels |
| ❹ Keyboard and mouse connector | |

3.2 Removing and Replacing the Enclosure Covers

To remove and replace the top and bottom enclosure covers as shown in Figure 3-4, follow these steps:

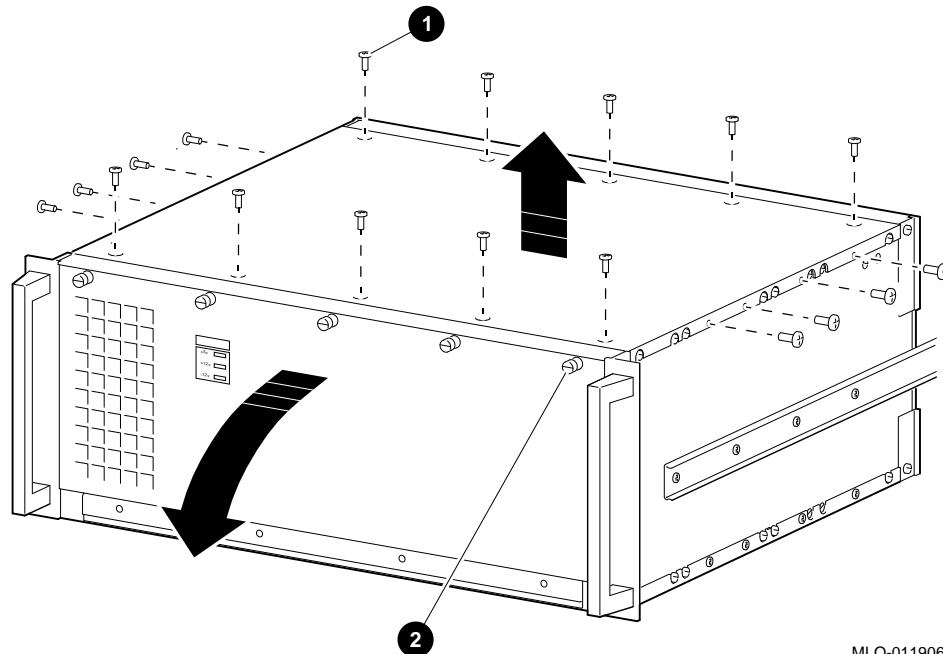
1. Remove the 18 screws ❶ that secure the top cover and remove the cover.
2. Remove the 18 screws that secure the bottom cover and remove the cover.

Note

The top and bottom covers are identical, but the cover sides are keyed and do have front and back edges.

3. Replace the covers in the reverse order of removal.

Figure 3-4 Removing the Enclosure Covers



MLO-011906

- 1** Screws (18) for each cover
- 2** Front panel captive screws (5)

3.3 Removing and Replacing the Rear Exhaust Fan

Note

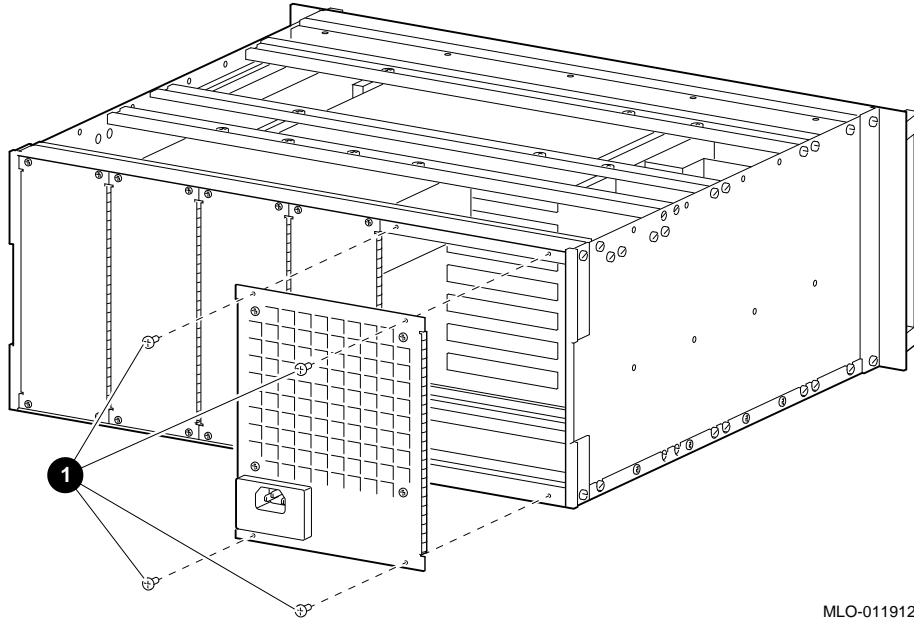
Your VME enclosure may have a small fan mounting bracket as shown in Figure 3-2 or a larger mounting bracket as shown in Figure 3-3.

To remove and replace the rear exhaust fan, refer to Figures 3-5 and 3-6 and follow these steps:

1. Unplug the AC power cord.
2. Unscrew the four or six captive screws **1** Figure 3-5 that secure the fan mounting plate.
3. Unplug the fan DC power connector **4** Figure 3-6.
4. Remove the four screws **2**, nuts and washers **3** that secure the fan to the mounting plate **1** Figure 3-6 and remove the fan.
5. Install the replacement fan in the reverse order of removal.
6. Plug the AC power cord into the power connector.

Replacing Components

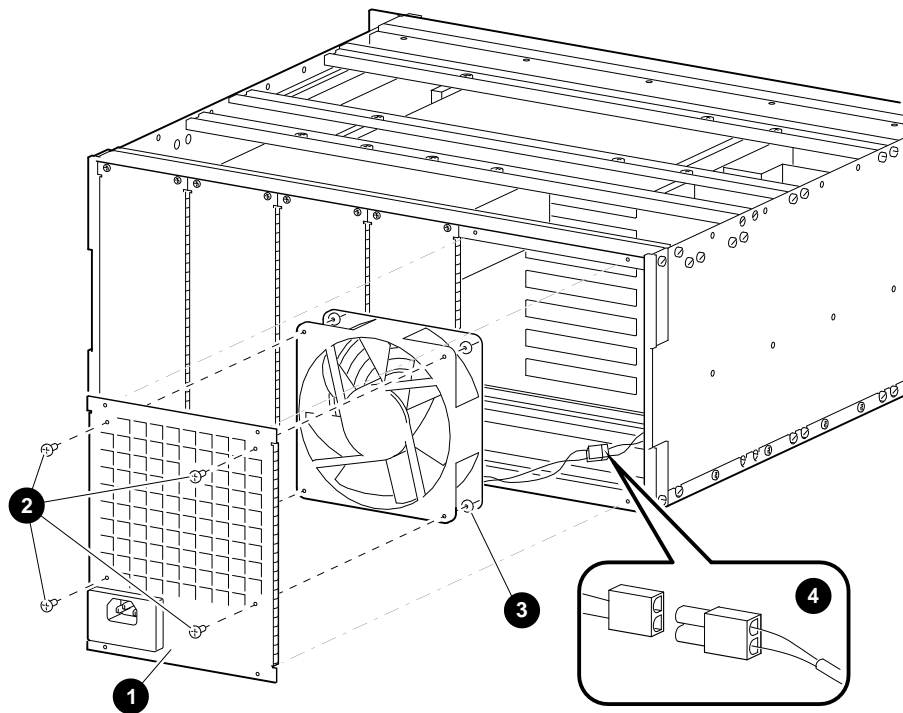
Figure 3–5 Removing the Rear Fan Assembly



MLO-011912

- ❶ Fan assembly mounting screws (4)

Figure 3–6 Removing the Rear Fan



MLO-011913

- ❶ Fan mounting plate
- ❷ Fan mounting screws (4)
- ❸ Fan mounting nuts and washers (4)
- ❹ Fan DC power connector

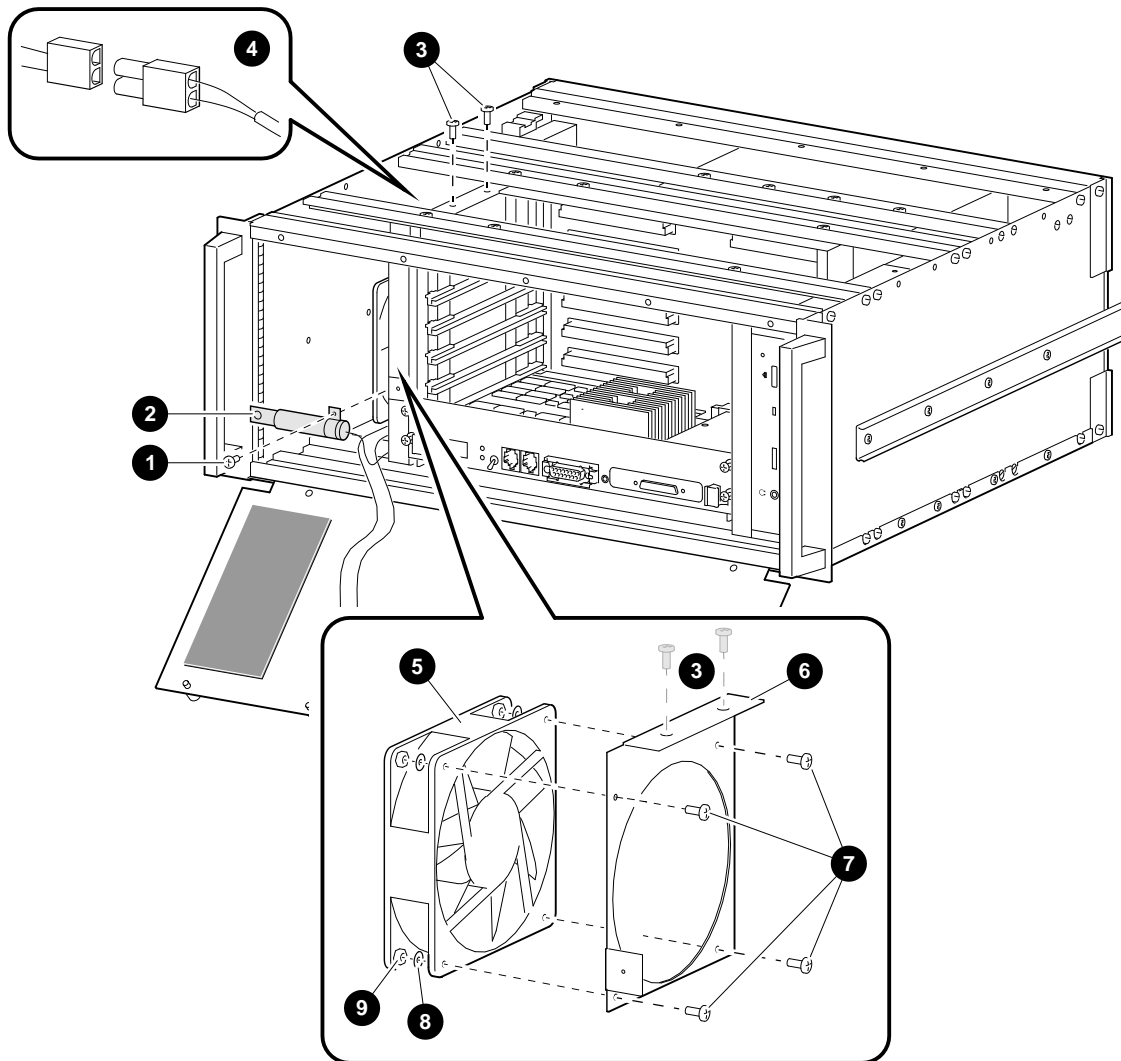
3.4 Removing and Replacing the Side Intake Fan

To remove and replace the side input fan as shown in Figure 3–7, follow these steps:

1. Unplug the AC power cord.
2. Remove the top and bottom covers as instructed in Section 3.2.
3. Locate the fan speed thermal sensor ❶ and remove the screw ❷ that secures the sensor to the metal bracket.
4. Unplug the fan DC power connector ❸.
5. Remove the two top screws ❹ and the single side screw ❺ that secure the fan assembly and slide the assembly out the front of the enclosure.
6. Remove the four screws ❻, nuts ❼, and washers ❸ that secure the fan ❽ to the mounting plate ❾ and remove the fan.
7. Install the replacement fan in the reverse order of removal.
8. Replace the fan speed thermal sensor.
9. Replace the top and bottom covers.
10. Plug the AC power cord into the power connector.

Replacing Components

Figure 3–7 Removing the Side Intake Fan



MLO-011840

- | | |
|------------------------------------|----------------------------|
| ❶ Sensor mounting screw | ❹ Fan mounting plate |
| ❷ Fan speed thermal sensor | ❺ Fan mounting screws (4) |
| ❸ Fan assembly mounting screws (3) | ❻ Fan mounting washers (4) |
| ❹ Fan DC power connector | ❼ Fan mounting nuts (4) |
| ❺ Fan | |

3.5 Removing and Replacing the Power Supply

The 350-watt universal-input power supply is located at the rear of the enclosure beneath the top cover as shown in Figure 3–8. To remove and replace the power supply, follow these steps:

1. Unplug the AC power cord.
2. Remove the top and bottom covers as instructed in Section 3.2.
3. Set the enclosure on its handles.

Replacing Components

4. Locate TB1 on the left side of the power supply and remove the three screws ②, ③, and ④ that secure the spade lugs connected to the AC power input wires and disconnect the spade lugs from the terminal board.
5. Locate J3 ⑨ on the right side of the power supply and unplug the connector.
6. Locate J1 ⑧ on the right side of the power supply and unplug the connector.
7. Locate J2 ⑦ on the right side of the power supply and unplug the connector.
8. Locate the main DC output wires ⑤ and ⑥ on the right side of the power supply, remove the two screws that secure the output wires, and disconnect the output wires.
9. Set the enclosure on its bottom.

Caution

Before removing the screws that secure the power supply to the top enclosure rails, grasp the power supply so that it cannot drop onto the breakout module and possibly damage it.

10. Remove the four screws ① that secure the power supply to the top enclosure rails and remove the power supply from the enclosure.
11. Correctly orient the replacement power supply and insert it into the enclosure.
12. Insert the four screws ① to secure the power supply to the top enclosure rails.
13. Set the enclosure on its handles.
14. On the right side of the power supply, use a screw to secure the spade lug connected to the red main positive output wire bundle ⑤ to the positive terminal.
15. On the right side of the power supply, use a screw to secure the two spade lugs connected to the black main negative output wire bundles ⑥ to the negative terminal.
16. Insert the large red plug into J2 ⑦.
17. Insert the large white plug into J1 ⑧.
18. Insert the small red plug into J3 ⑨.
19. Using a screw, attach the spade lug on the brown wire to TB1-L (Line) ④.
20. Using a screw, attach the spade lug on the blue wire to TB1-N (Neutral) ③.
21. Using a screw, attach the spade lug on the green and yellow ground wire to TB1-G (Ground) ②.
22. Replace the top and bottom covers.
23. Plug the AC power cord into the power connector.

3.6 Removing and Replacing the CD-ROM Drive

The CD-ROM drive is located at the right front corner of the enclosure behind the hinged front cover as shown in Figure 3-9. If your VME enclosure has a front hard disk drive, refer to Section 3.8 for instructions. To remove and replace the CD-ROM drive, follow these steps:

1. Unplug the AC power cord.
2. Remove the top cover as instructed in Section 3.2 and place the enclosure on its rear panel.
3. Loosen the five captive screws that secure the front cover and pull the hinged cover down to the open position.
4. Loosen the single captive screw ❶ that secures the drive carrier plate in place and pull the drive unit forward as far as possible.
5. Unplug the internal SCSI cable connector ❷ at the rear of the drive.
6. Unplug the DC power cable connector ❸ at the rear of the drive and remove the drive from the enclosure.
7. Remove the two screws and washers ❹ on the top and the two screws and washers on the bottom that secure the drive unit to the carrier plate and remove the drive unit.
8. Verify that the replacement drive SCSI ID matches the original drive SCSI ID. Refer to the *RRD4* CD-ROM Drive User and Installation Guide*, (EK-RRD4*-IN. A02.)
9. Install the replacement drive by using the reverse order of removal.

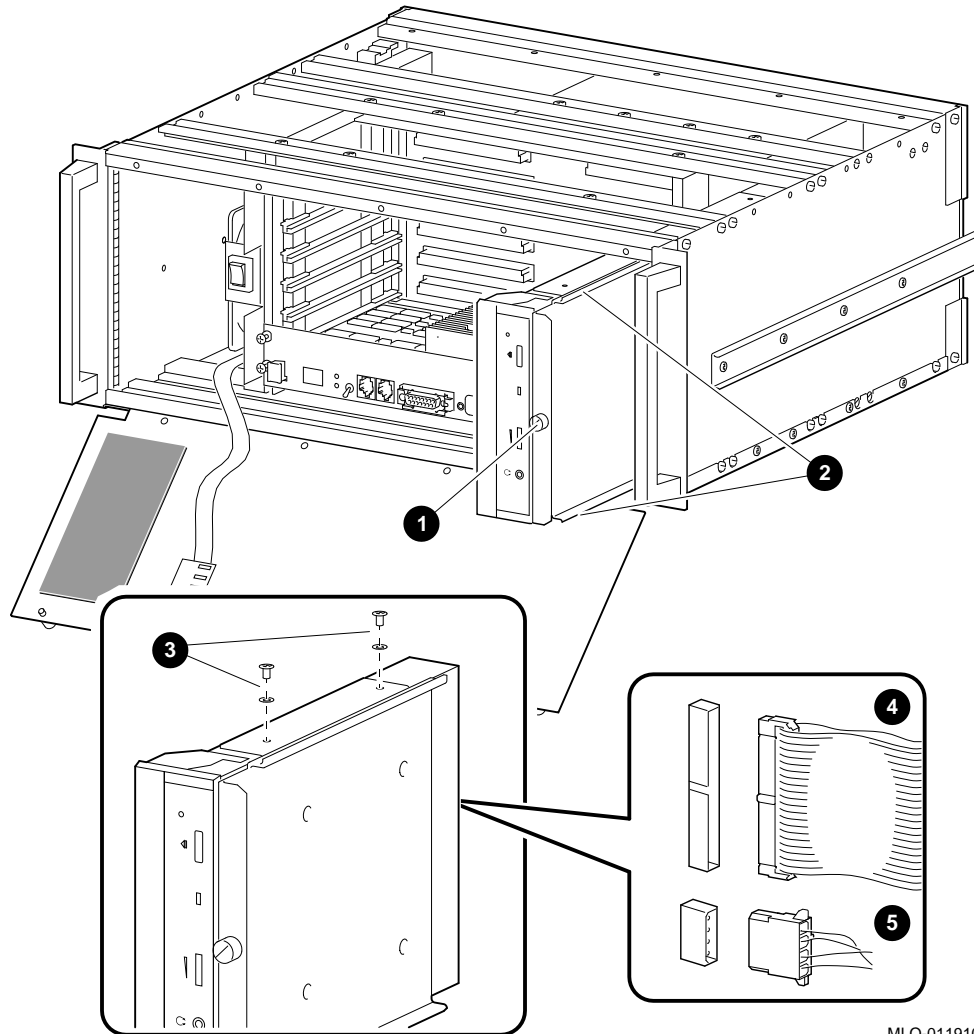
Caution

When you reinstall the CD-ROM screws and washers that secure the drive to the carrier plate, ensure that you use the washers and do not overtighten the screws. Either of these may cause the drive carrier plate to bind, preventing the carrier plate slides ❺ from moving freely.

10. Replace the top cover.
11. Plug the AC power cord into the power connector.

Replacing Components

Figure 3-9 Removing and Replacing the CD-ROM Drive



MLO-011910

- ❶ Captive screw (1) on drive carrier plate
- ❷ Carrier plate slides
- ❸ Mounting screws and washers (2) on top and (2) on bottom

- ❹ Internal SCSI cable
- ❺ DC power cable

3.7 Removing and Replacing the Rear Hard Disk Drive

The hard disk drive is located at the left rear of the enclosure behind the fan assembly, as viewed from the front.

Note

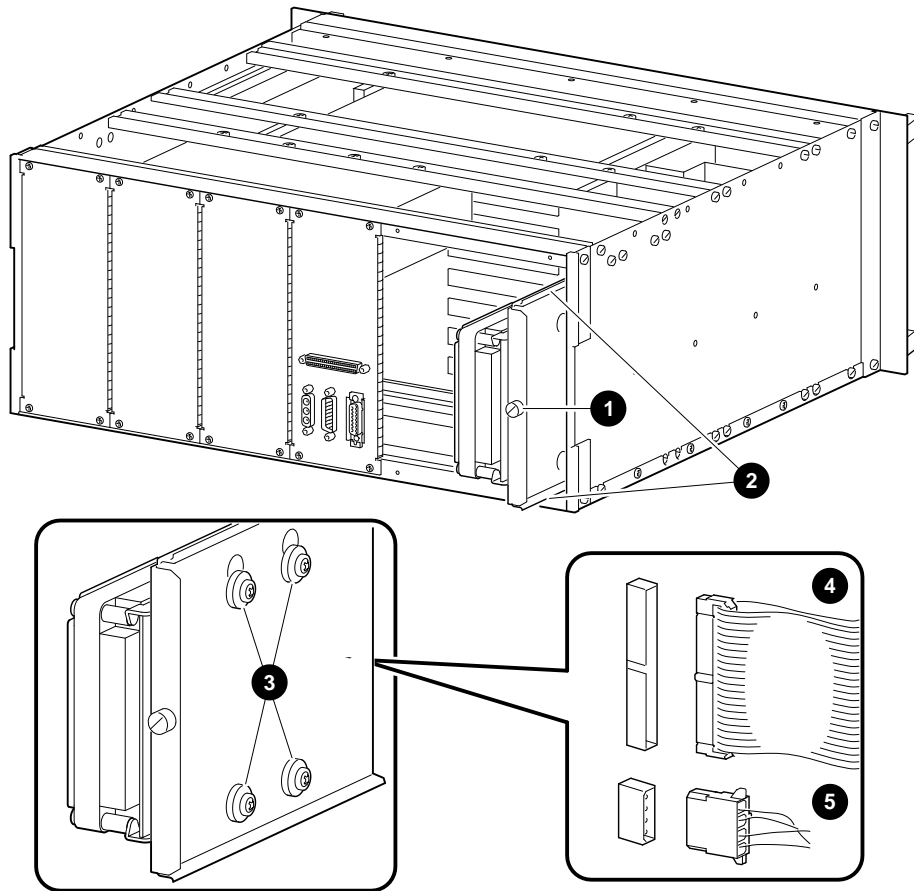
Your VME enclosure may have a small fan mounting bracket as shown in Figure 3-2 or a larger mounting bracket as shown in Figure 3-3.

To remove and replace the rear drive as shown in Figure 3-10, follow these steps:

1. Unplug the AC power cord.
2. Remove the top and bottom covers as instructed in Section 3.2.
3. Remove the four screws as shown in ❶ Figure 3-5 that secure the rear fan mounting plate to the enclosure and remove the fan assembly.
4. Loosen the captive screw as shown in ❶ Figure 3-10 that secures the drive assembly in place and pull the drive assembly forward as far as possible.
5. Unplug the internal SCSI cable ❷ attached at the rear of the drive.
6. Unplug the power cable ❸ attached at the rear of the drive.
7. Loosen the four screws ❹ that secure the drive unit to the carrier plate just enough to free the drive unit from the carrier plate and remove the drive unit.
8. Verify that the replacement drive SCSI ID matches the original drive SCSI ID. Refer to the *DSP3000 Series 3.5-inch Disk Drives Installation Guide*, (EK-RH2CA-IG.A01.)
9. Install the replacement drive by using the reverse order of removal.
10. Replace the top and bottom covers.
11. Plug the AC power cord into the power connector.

Replacing Components

Figure 3–10 Removing and Replacing the Hard Disk Drive



MLO-011916

- | | |
|----------------------------------|-----------------------|
| ❶ Captive screw | ❷ Internal SCSI cable |
| ❸ Carrier plate slides | ❹ DC power cable |
| ❹ Screws and rubber grommets (4) | |

3.8 Removing and Replacing the Front Hard Disk Drive

Optionally, you can use a hard disk drive in place of the CD-ROM drive. This drive is located at the right front corner of the enclosure behind the hinged front cover. Refer to Figure 3–9 for steps 1 through 6 and Figure 3–10 for steps 7 through 11 when replacing the front hard disk drive. To remove and replace the front hard disk drive, follow these steps:

1. Unplug the AC power cord.
2. Remove the top cover as instructed in Section 3.2 and place the enclosure on its rear panel.
3. Loosen the five captive screws that secure the front cover and pull the hinged cover down to the open position.
4. Loosen the single captive screw ❶ that secures the drive carrier plate in place and pull the drive unit forward as far as possible.
5. Unplug the internal SCSI cable connector ❷ at the rear of the drive.

6. Unplug the DC power cable connector ⑤ at the rear of the drive and remove the drive from the enclosure.
7. Loosen the four screws ③ that secure the drive unit to the carrier plate just enough to free the drive unit from the carrier plate and remove the drive unit.
8. Verify that the replacement drive SCSI ID matches the original drive SCSI ID. Refer to the *DSP3000 Series 3.5-inch Disk Drives Installation Guide*, (EK-RH2CA-IG.A01.)
9. Install the replacement drive by using the reverse order of removal.
10. Replace the top and bottom covers.
11. Plug the AC power cord into the power connector.

3.9 Removing and Replacing the Single-Board Computer (SBC)

The SBC can be either a 1-slot or a 2-slot module. Figure 3–11 illustrates a 1-slot SBC. To remove and replace the SBC, follow these steps:

1. Unplug the AC power cord.
2. Loosen the five front panel captive screws and pull the panel down to its fully open position.

Caution

Static electricity can destroy the circuits on the SBC. When handling the module, wear an antistatic wriststrap with the wire clipped to the frame of the enclosure. Also, place the module on top of a conductive surface.

3. On the front of the SBC module, loosen the two slotted captive screws that secure the monitor cable and unplug the connector.
4. On the front of the SBC module, slide the Ethernet cable locking bar to the right and unplug the connector.
5. On the front of the SBC module, loosen the two captive screws (four for a 2-slot SBC) as shown in ② Figure 3–11 that secure the SBC module.
6. Remove the SBC module from the card cage by pulling the module handles.
7. After ensuring that all SBC switch settings are correct, insert the replacement SBC module into the guide tracks ③ and push the module in until the module connectors fully seat into the backplane connectors ①.

Note

If you are adding an SBC module, you also need to add the appropriate breakout module as instructed in Section 3.11.

Caution

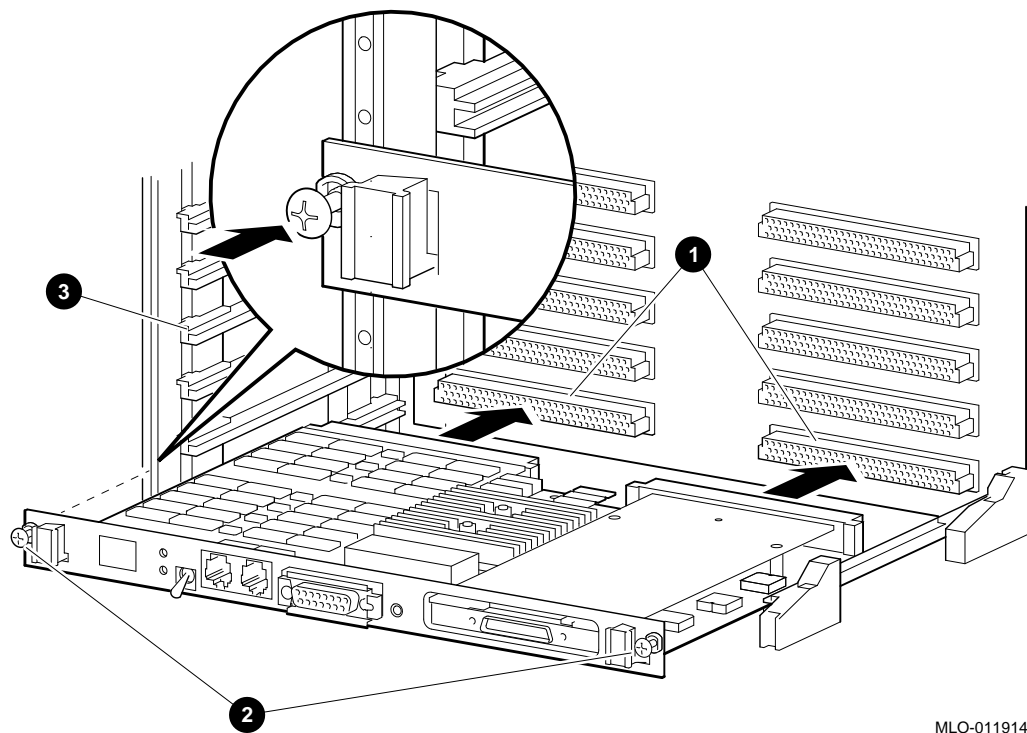
You must install an airblocker module in each unused slot. Failure to do so may damage the SBC module.

Replacing Components

8. Tighten the module captive screws.
9. Plug the Ethernet cable into the Ethernet connector on the front panel and secure it by sliding the locking bar to the left.
10. Plug the monitor cable into the Monitor connector on the front panel and secure it by tightening the two slotted captive screws.
11. Close the front panel and secure it by tightening the five captive screws.
12. Plug the AC power cord into the power connector.

For more information about the SBC, refer to the *AXPvme Single-Board Computer Installation/User Guide* (EK-EBV1X-IN. A01)

Figure 3–11 Removing and Replacing the SBC Module



MLO-011914

- ❶ Backplane SBC connectors
- ❷ Captive screws (2)
- ❸ Card cage guides

3.10 Removing and Replacing the SBC Cables

The SBC module includes an Ethernet connector as shown in ❸ Figure 3–12 and a Monitor connector as shown in ❶ Figure 3–13 mounted on the front panel. The cables interconnect the SBC to a rear SBC connector bulkhead.

Note

Your VME enclosure may have a small fan mounting bracket as shown in Figure 3–2 or a larger mounting bracket as shown in Figure 3–3. The cable connectors are included as part of the larger fan mounting bracket.

To remove and replace the cables, follow these steps:

1. Unplug the AC power cord.
2. Remove the bottom cover as instructed in Section 3.2.
3. If you are replacing the Ethernet cable, remove the two flat-head screws that secure the Ethernet connector as shown in ❹ Figure 3–12 to the rear SBC bulkhead. If your VME enclosure has the large fan mounting plate, refer to Figure 3–3 for the connector locations.
4. If you are replacing the Ethernet cable, slide the locking bar ❸ to the right and unplug the Ethernet connector from the front panel.
5. If you are replacing the monitor cable, remove the two flat-head screws that secure the video connector as shown in ❹ Figure 3–13 and the keyboard and mouse connector ❷ to the rear SBC bulkhead. If your VME enclosure has the large fan mounting plate, refer to Figure 3–3 for the connector locations.
6. If you are replacing the monitor cable, loosen the two slotted captive screws and unplug the monitor connector as shown in Figure 3–13 ❷ from the front panel.
7. Remove the applicable cable(s).
8. Install the replacement cable following the original cable routing path.
9. Plug the replacement cable(s) into the appropriate front panel connector(s) and secure, and route the cable(s) to the left and under the side fan and then to the rear SBC connector bulkhead. The Ethernet cable routing is shown in Figure 3–12 ❹ and the monitor cable routing is shown in Figure 3–13 ❸. If your VME enclosure has the large fan mounting plate, refer to Figure 3–3 for the connector locations.
10. Insert the connector(s) through the appropriate hole(s) in the SBC connector bulkhead and secure them to the bulkhead.
11. Replace the bottom cover.
12. Plug the AC power cord into the power connector.

Replacing Components

Figure 3–12 Replacing the Ethernet Cable

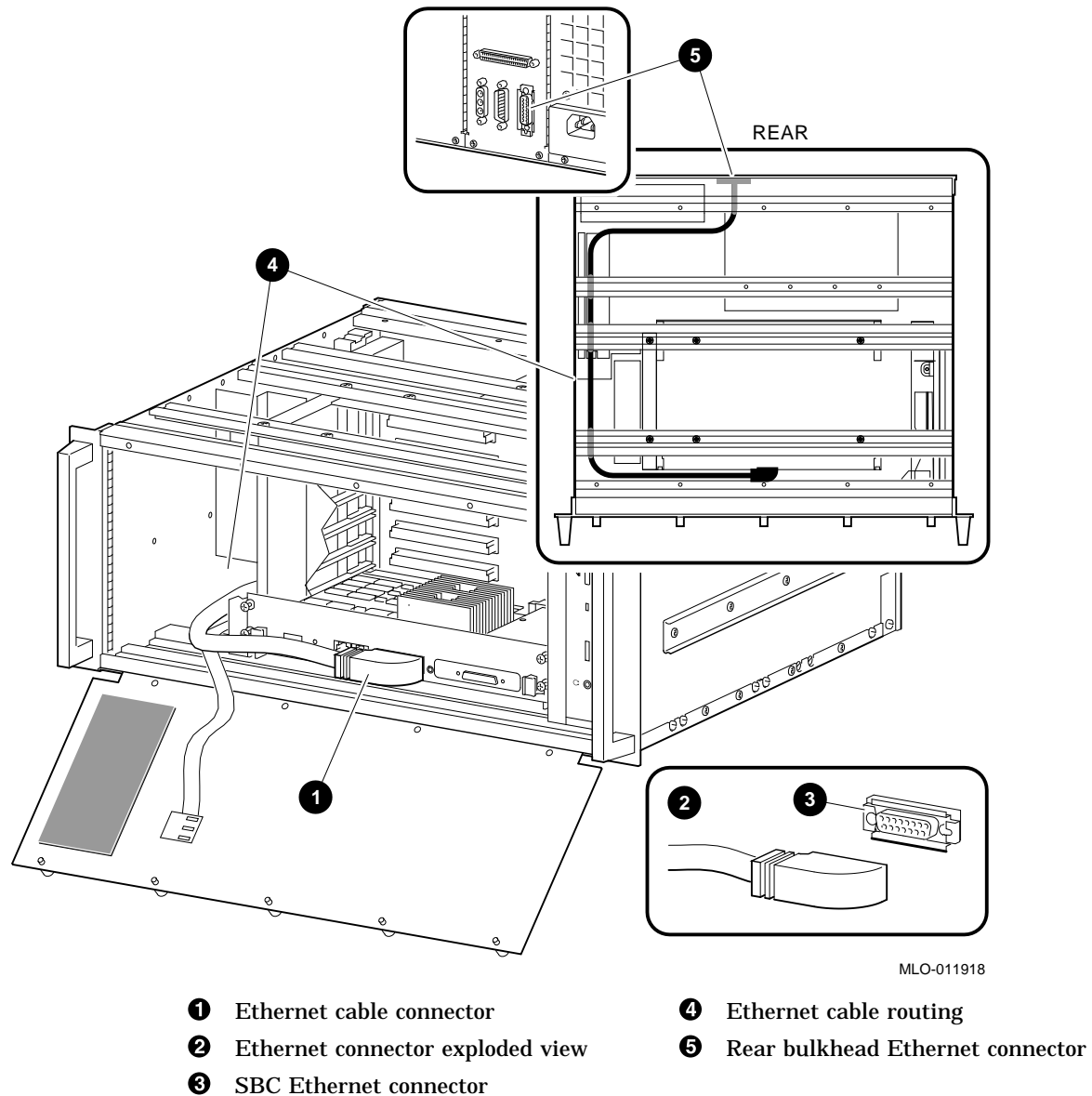
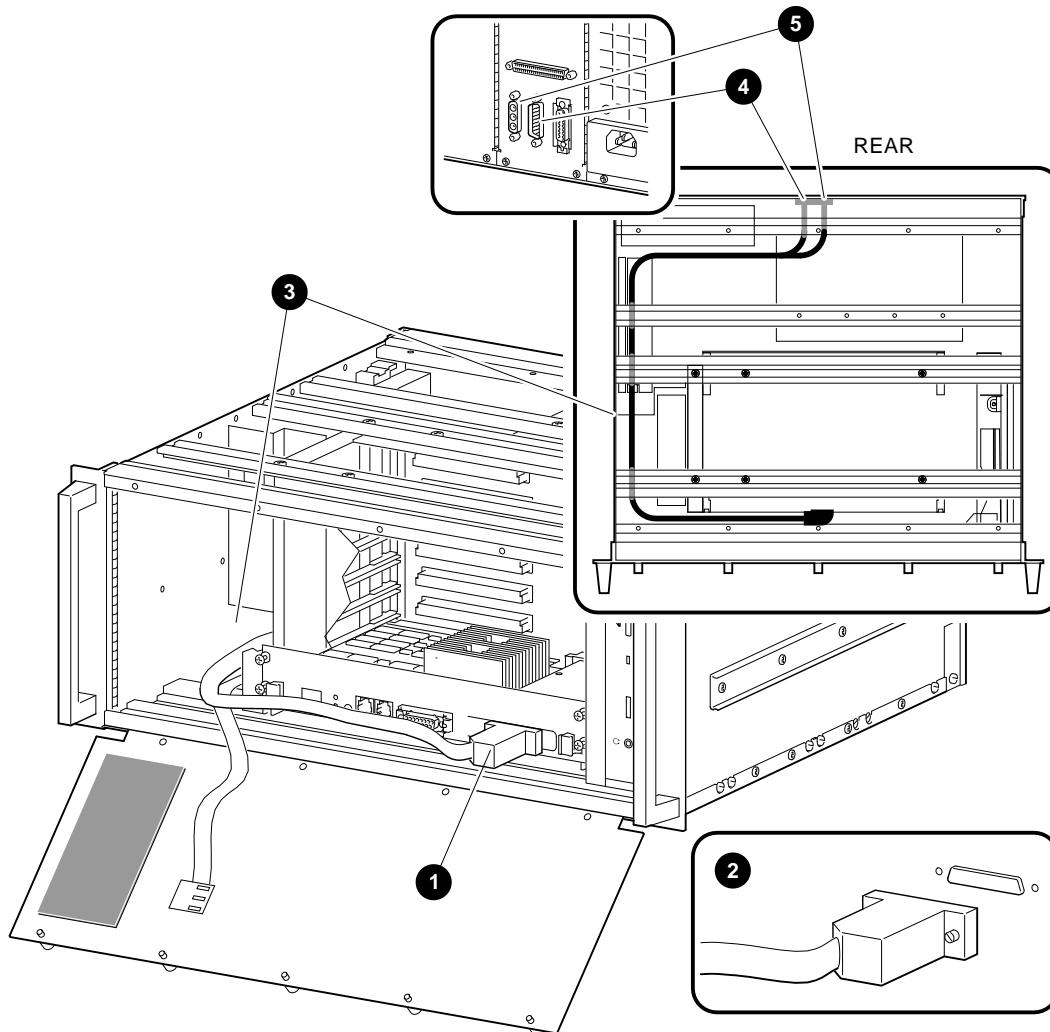


Figure 3–13 Replacing the Monitor Cable



MLO-011919

- | | | | | |
|---------------------------|-----------------------------------|-------------------------|--|---------------------------------|
| ❶ Monitor cable connector | ❷ Monitor connector exploded view | ❸ Monitor cable routing | ❹ Rear bulkhead keyboard and mouse connector | ❺ Rear bulkhead video connector |
|---------------------------|-----------------------------------|-------------------------|--|---------------------------------|

3.11 Removing and Replacing the Breakout Module

If you use a 2-slot SBC, you must use the AXPvme 160 or 230 MHz breakout module shown in Figure 3–14. If you use a 1-slot SBC, you must use the AXPvme 64 breakout module shown in Figure 3–15. To remove and replace the breakout module, follow these steps:

1. Unplug the AC power cord.
2. Remove the bottom cover as described in Section 3.2.
3. Unplug the SCSI cable from the breakout module.

Replacing Components

4. Remove the breakout module.

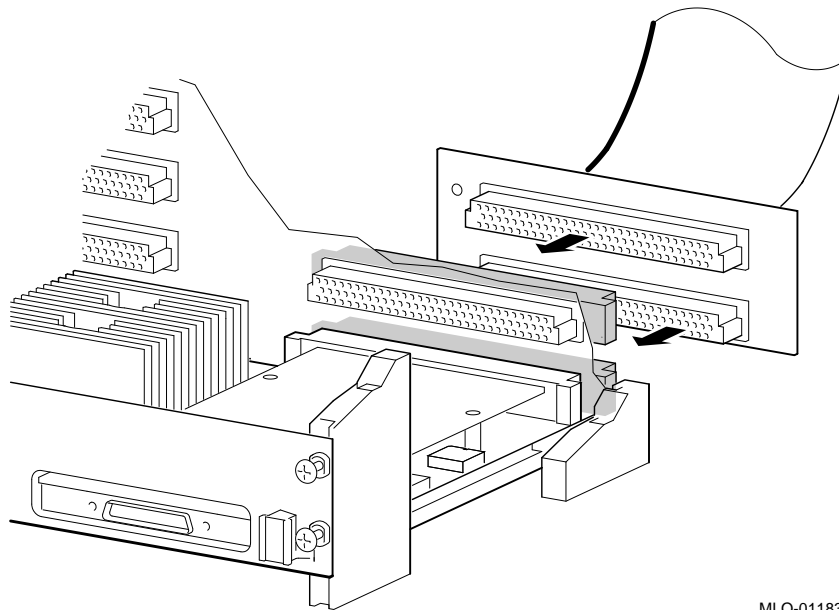
Note

Before installing the replacement breakout module, refer to the *AXPvme Single-Board Computer Installation/User Guide* (EK-EBV1X-IN. A01) for information about setting the SCSI termination jumper.

5. Install the replacement module as show in either Figure 3-14 or Figure 3-15 as applicable.
6. Plug the SCSI cable into the breakout module as shown in either Figure 3-16 or Figure 3-17.
7. Replace the bottom cover.
8. Plug the AC power cord into the power connector.

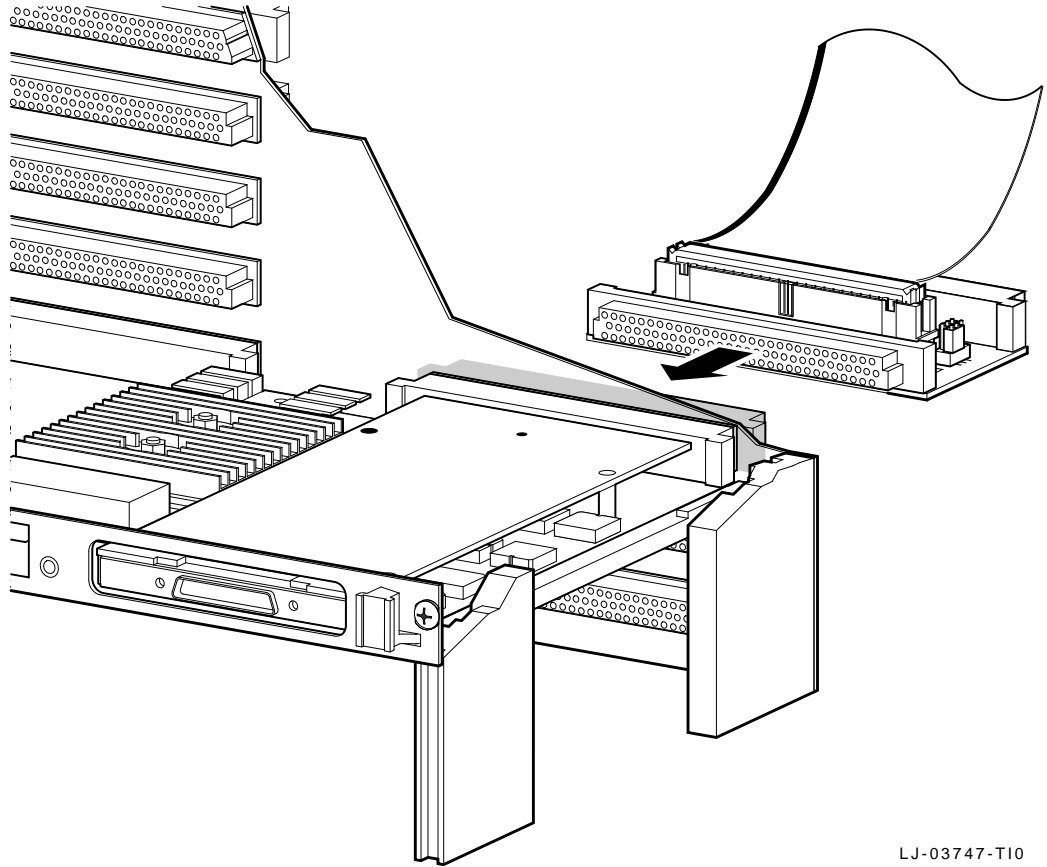
For more information about the breakout modules, refer to the *AXPvme Single-Board Computer Installation/User Guide* (EK-EBV1X-IN. A01).

Figure 3-14 Installing the AXPvme 160 or 230 MHz Breakout Module (for 2-slot SBC)



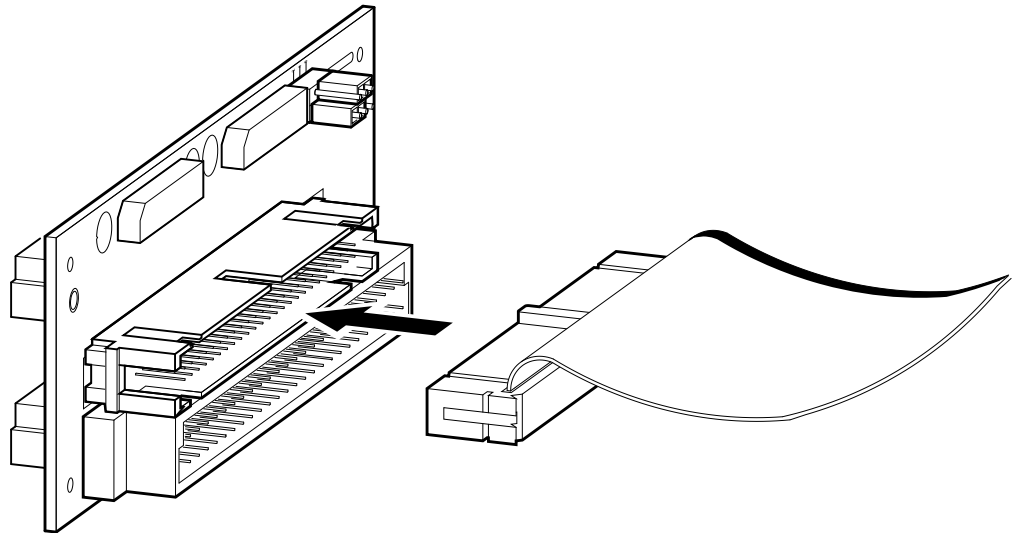
MLO-011839

Figure 3–15 Installing the AXPvme 64 Breakout Module (for 1-slot SBC)



LJ-03747-T10

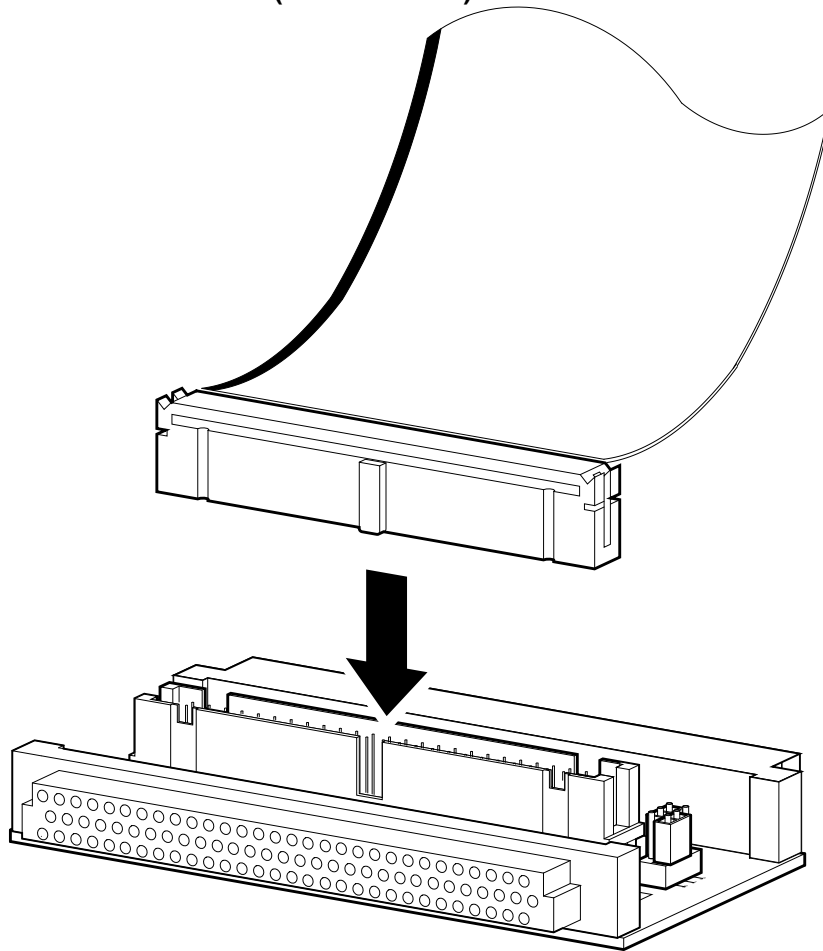
Figure 3–16 Plugging the SCSI Connector Into the AXPvme 160 or 230 MHz Breakout Module (for 2-slot SBC)



LJ-03744-T10

Replacing Components

Figure 3–17 Plugging the SCSI Connector Into the AXPvme 64 Breakout Module (for 1-slot SBC)



LJ-03745-T10

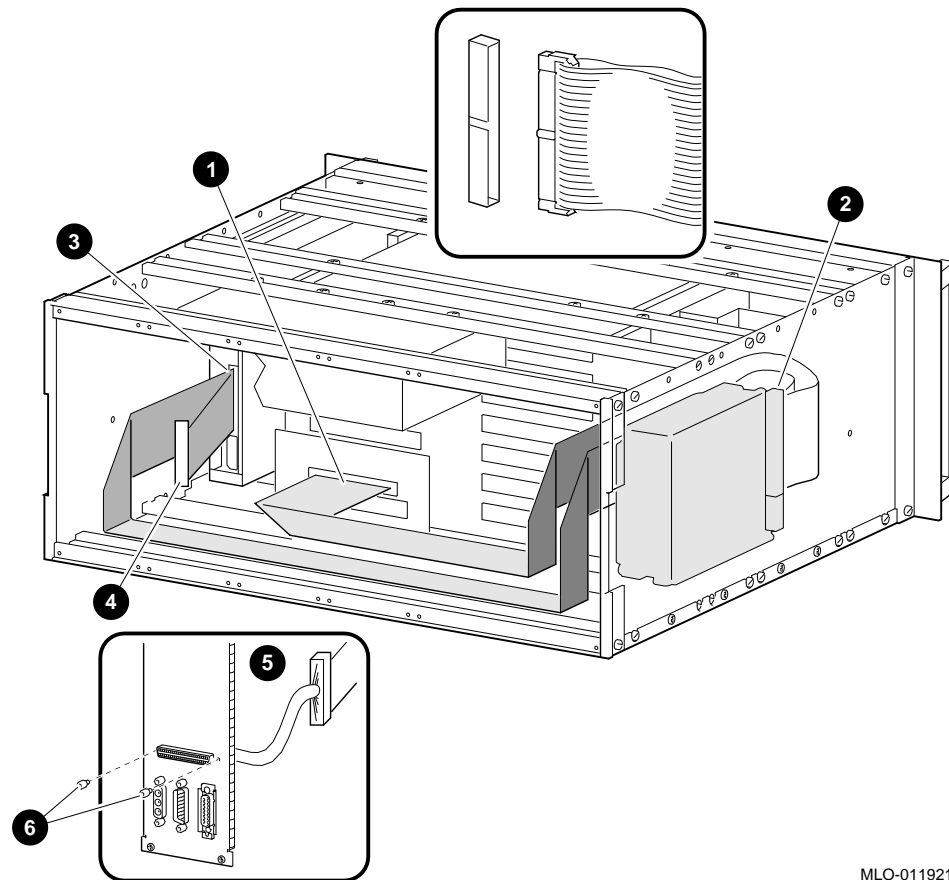
3.12 Removing and Replacing the Internal SCSI Cable

If your workstation application uses any SCSI devices, you must use the internal SCSI cable. The internal SCSI cable as shown in Figure 3–18 connects the SBC, the rear hard drive, and the CD-ROM drive (or a second hard drive). If the internal SCSI cable is not connected to an internal to external SCSI cable ⑤, a termination plug ④ is connected at the free end of the internal SCSI cable. To remove and replace the internal SCSI cable, follow these steps:

1. Unplug the AC power cord.
2. Remove the bottom cover as described in Section 3.2.
3. Remove the rear fan assembly as described in Section 3.3, but you do not have to remove the fan from the mounting plate.
4. If an internal to external SCSI cable is connected to the internal SCSI cable, disconnect the cables.
5. Disconnect the SCSI cable at the CD-ROM drive (or second hard drive), the rear hard drive, and the breakout module and remove the cable.
6. Spread out the 2 meter-long replacement SCSI cable from left to right so that the termination is located on the right-hand end of the cable.

7. Connect the left-hand end of the cable to the breakout module **1**.
8. Dress the remainder of the cable as shown in Figure 3-18 and connect the cable to the hard drive **2** and to the CD-ROM drive (or second hard drive) **3**. It is important to leave service loops in the cable next to the drives to permit the drives to be removed from the enclosure.
9. If your internal SCSI cable is connected to an internal to external SCSI cable, remove the termination from the replacement cable and connect the two cables together.
10. Replace the rear fan assembly.
11. Replace the bottom cover.
12. Plug the AC power cord into the power connector.

Figure 3-18 Internal SCSI Cable Routing



MLO-011921

- | | |
|--|---|
| <ul style="list-style-type: none"> 1 SCSI cable to breakout module connection 2 SCSI cable to hard drive connection 3 SCSI cable to CD-ROM (or second hard drive) connection | <ul style="list-style-type: none"> 4 SCSI cable termination—only if 5 is not used 5 Optional internal to external SCSI cable |
|--|---|

Replacing Components

3.13 Removing and Replacing the Internal to External SCSI Cable

The internal to external SCSI cable makes the SCSI bus available at a rear SBC bulkhead connector as shown in ⑤ Figure 3–18. To remove and replace the internal to external SCSI cable, follow these steps:

1. Unplug the AC power cord.
2. Remove the bottom cover as described in Section 3.2.
3. Remove the two screws that secure the external SCSI cable to the rear bulkhead connector and remove the internal to external SCSI cable.
4. Disconnect the internal to external SCSI from the internal SCSI cable ④.
5. Install the replacement cable in the reverse order of removal.
6. Replace the bottom cover.
7. Plug the AC power cord into the power connector.

3.14 Installing Additional Modules in the Card Cage

Your particular workstation application may require that you install additional modules in the unused card cage slots. As shipped, each VME Workstation Enclosure, has every unused card cage slot occupied by an airblocker module as shown in ④ Figure 3–1. These airblockers ensure that adequate ventilation airflow is maintained throughout the enclosure. Their mechanical design simulates the airflow resistance of a typical module. To install additional application modules in the card cage, remove the required number of airblockers and insert the application module.

Caution

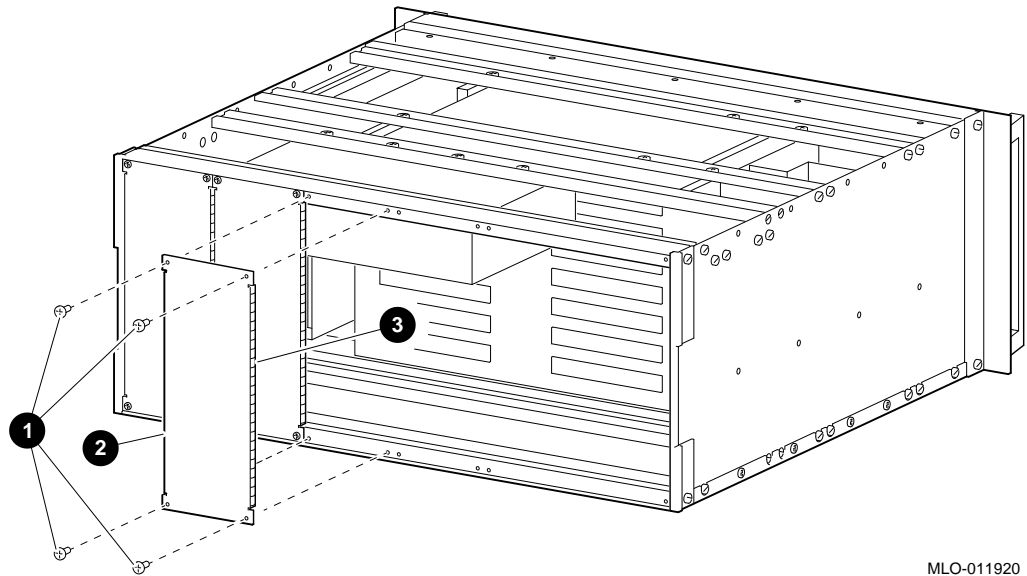
You must install an airblocker module in each unused slot. Failure to do so may damage the SBC module.

There is adequate space between the right side of the card cage and the CD-ROM drive (or a second hard drive) to accommodate application cabling routed to rear bulkhead connectors or to other locations within the enclosure.

3.15 Installing Blank Bulkhead Panels

If you need to remove any of the blank rear bulkhead panels as shown in ② Figure 3–19, be aware that there is a left-hand side and a right-hand side when you reinstall them. The copper contacts that provide the RFI/EMI seal are on the right-hand side of the bulkhead panel. The left-hand side is bent at an angle to provide space for the adjoining RFI/EMI contacts. Secure the blank bulkhead by using four screws ①.

Figure 3–19 Installing Blank Bulkhead Panels



MLO-011920

- ❶ Captive screws (4)
- ❷ Bulkhead panel, 2.8-inch wide, Digital part number 2T-VMEBB-AA
- ❸ RFI/EMI seal contacts (copper fingerstock)

How to Order Additional Documentation

Technical Support

If you need help deciding which documentation best meets your needs, call 800-DIGITAL (800-344-4825) and press 2 for technical assistance.

Electronic Orders

If you wish to place an order through your account at the Electronic Store, dial 800-234-1998, using a modem set to 2400- or 9600-baud. You must be using a VT terminal or terminal emulator set at 8 bits, no parity. If you need assistance using the Electronic Store, call 800-DIGITAL (800-344-4825) and ask for an Electronic Store specialist.

Telephone and Direct Mail Orders

From	Call	Write
U.S.A.	DECdirect Phone: 800-DIGITAL (800-344-4825) Fax: (603) 884-5597	Digital Equipment Corporation P.O. Box CS2008 Nashua, NH 03061
Puerto Rico	Phone: (809) 781-0505 Fax: (809) 749-8377	Digital Equipment Caribbean, Inc. 3 Digital Plaza, 1st Street Suite 200 Metro Office Park San Juan, Puerto Rico 00920
Canada	Phone: 800-267-6215 Fax: (613) 592-1946	Digital Equipment of Canada Ltd. 100 Herzberg Road Kanata, Ontario, Canada K2K 2A6 Attn: DECdirect Sales
International	—————	Local Digital subsidiary or approved distributor
Internal Orders ¹ (for software documentation)	DTN: 264-3030 (603) 884-3030 Fax: (603) 884-3960	U.S. Software Supply Business Digital Equipment Corporation 10 Cotton Road Nashua, NH 03063-1260
Internal Orders (for hardware documentation)	DTN: 264-3030 (603) 884-3030 Fax: (603) 884-3960	U.S. Software Supply Business Digital Equipment Corporation 10 Cotton Road Nashua, NH 03063-1260

¹Call to request an Internal Software Order Form (EN-01740-07).

Reader's Comments

VME Workstation Enclosure
Installation and Owner's Guide

EK-VMEWS-IN. A01

Your comments and suggestions help us improve the quality of our publications.

Thank you for your assistance.

I rate this manual's:

	Excellent	Good	Fair	Poor
Accuracy (product works as manual says)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Completeness (enough information)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Clarity (easy to understand)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Organization (structure of subject matter)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Figures (useful)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Examples (useful)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Index (ability to find topic)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Page layout (easy to find information)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

I would like to see more/less _____

What I like best about this manual is _____

What I like least about this manual is _____

I found the following errors in this manual:

Page	Description
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Additional comments or suggestions to improve this manual:

For software manuals, please indicate which version of the software you are using: _____

Name/Title _____ Dept. _____
Company _____ Date _____
Mailing Address _____
_____ Phone _____

----- Do Not Tear - Fold Here and Tape -----

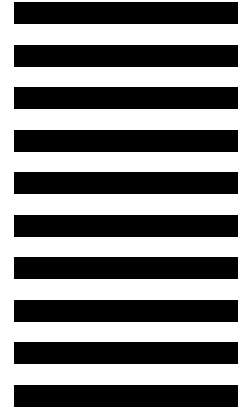


No Postage
Necessary
if Mailed
in the
United States

BUSINESS REPLY MAIL
FIRST CLASS PERMIT NO. 33 MAYNARD MASS.

POSTAGE WILL BE PAID BY ADDRESSEE

DIGITAL EQUIPMENT CORPORATION
Shared Engineering Services
DIGITAL DRIVE MKO1-2/E12
PO BOX 9501
MERRIMACK, NH 03054-9982



----- Do Not Tear - Fold Here -----