BA214 Enclosure Maintenance

Order Number EK–190AA–MG–001

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Preface

This guide provides maintenance, installation, and reference information for the BA214 enclosure. This enclosure is intended for MicroPDP–11 and MicroVAX systems.

Intended Audience

This document is intended only for DIGITAL Field Service personnel and qualified self-maintenance customers.

Organization

This guide has three chapters and one appendix.

Chapter 1 provides an overview of the BA214 enclosure, describing the card cage and module handles, controls and indicators, backplane, power distribution, and configuration guidelines.

Chapter 2 provides installation guidelines and procedures for the BA214 enclosure in either the rack or wall mount configuration.

Chapter 3 describes how to remove and replace field replaceable units (FRUs). The beginning of the chapter contains a list of these FRUs.

Appendix A provides a list of related documentation.

Warnings, Cautions, and Notes

Warnings, cautions, and notes appear throughout this guide. They have the following meanings:

WARNING	Provides information to prevent personal injury.
CAUTION	Provides information to prevent damage to equipment or software.
NOTE	Provides general information about the current topic.

Chapter 1

BA214 Enclosure Description

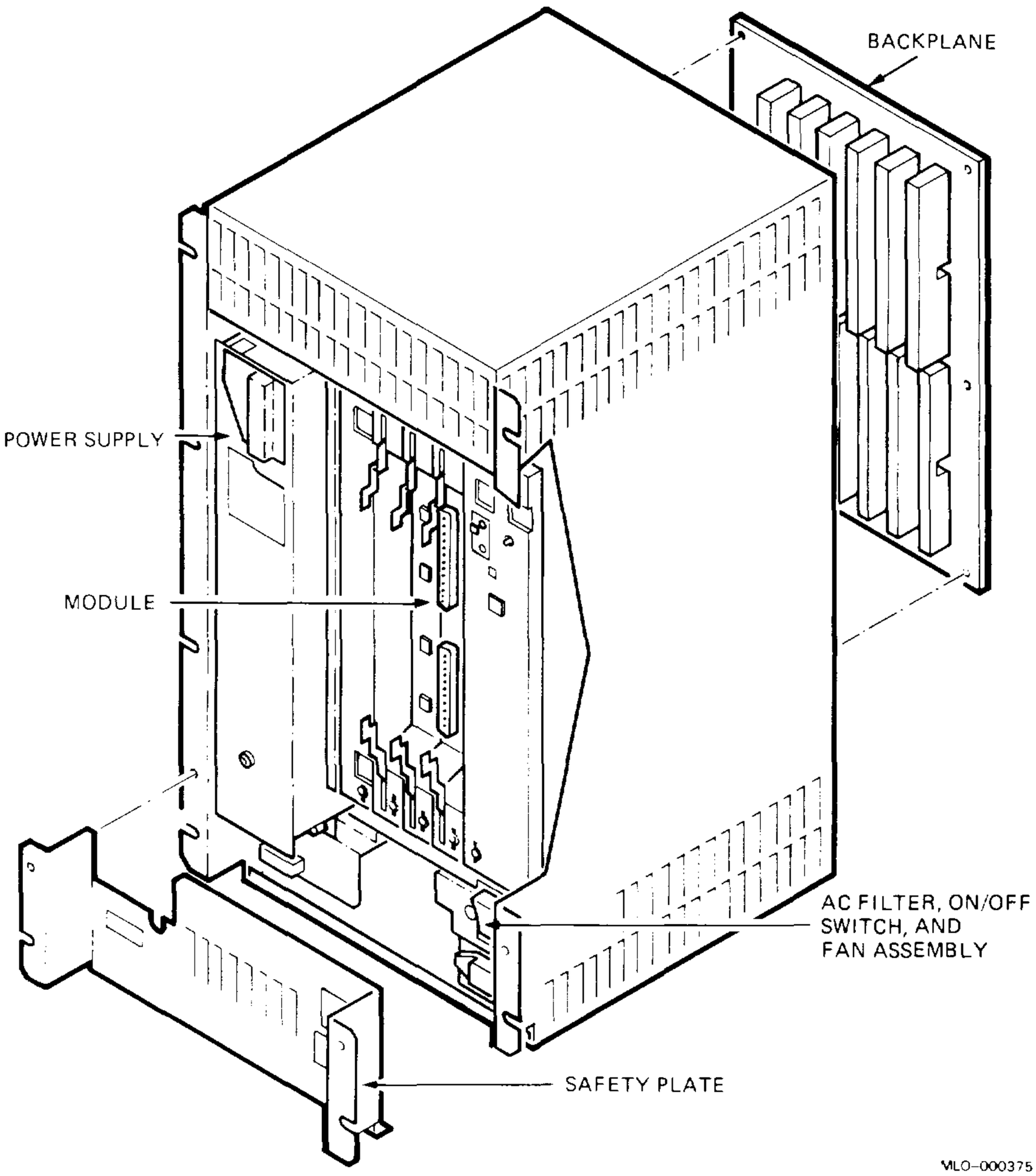
1.1 Introduction

The BA214 enclosure is a member of the BA200-series of enclosures, and is available in rack mount and wall mount configurations.

The BA214 enclosure has six backplane slots, one power supply, and one fan. The enclosure does not support mass storage devices; system diagnostics must be either loaded from the Ethernet or contained on the CPU module.

Figure 1–1 shows the BA214 enclosure with its major field replaceable units (FRUs).

Figure 1–1: BA214 Enclosure



1.2 Card Cage and Module Handles

There are two main differences between modules used in a BA200-series enclosure and those used in other system enclosures:

- Option modules with external I/O connectors have bulkhead handles. These handles replace the insert panels and internal cabling found in the BA23 and BA123 enclosures. This design is easier to maintain because it eliminates system errors caused by faulty internal cabling.
- Non-I/O modules (such as memory modules) have blank bulkhead covers.

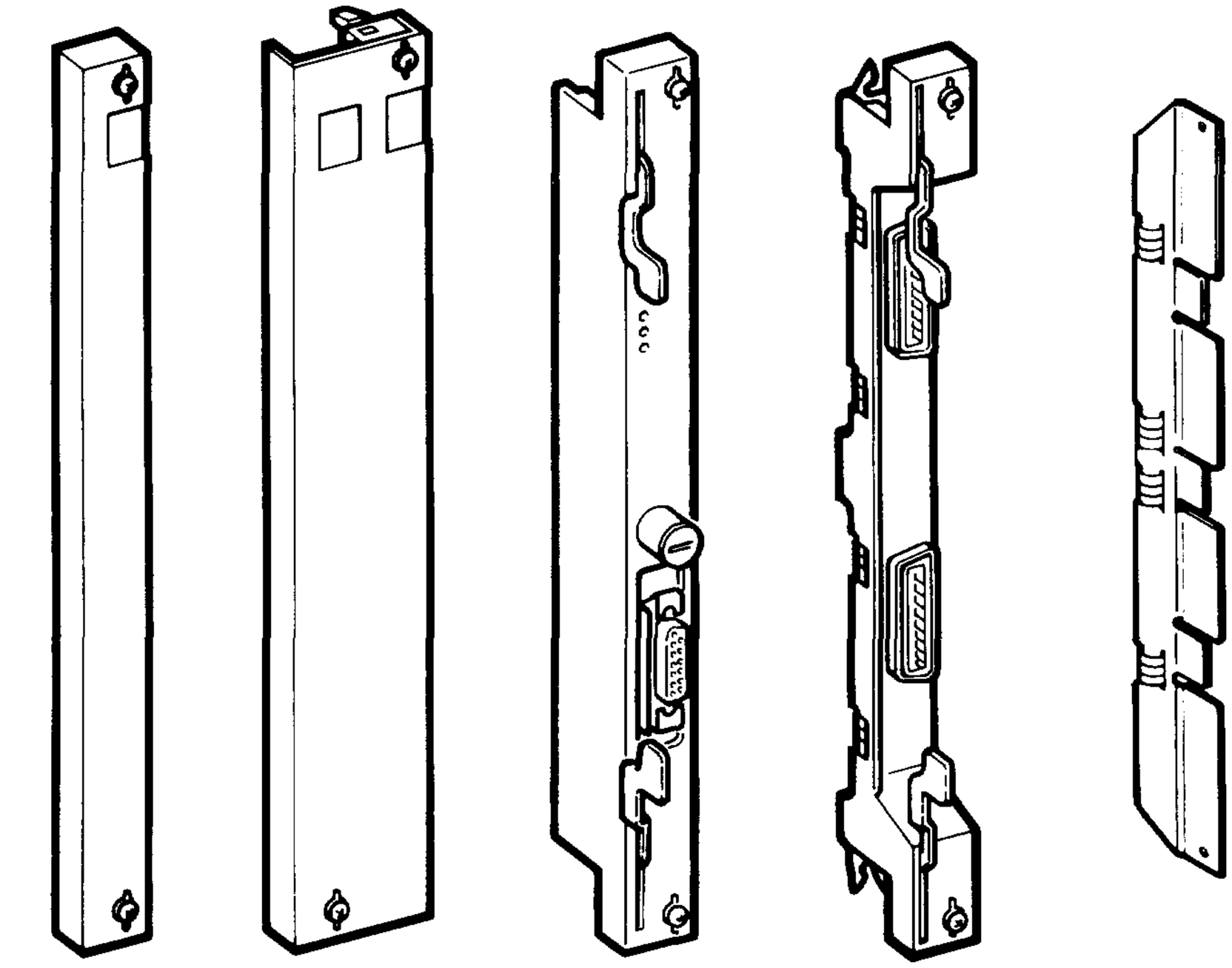
The module handles and covers form an electrical seal that complies with regulations for electromagnetic interference (EMI) for (1) keeping radio frequency interference generated by the system in the enclosure, and (2) keeping external radio frequencies from entering the enclosure. The module handles and blank covers also help guarantee proper airflow.

There are four basic types of handles and covers used for BA200-series compatible modules (Figure 1–2):

Single-width flush handle
Single-width recessed handle
Single-width blank covers
Dual-width blank covers

Each handle or cover has two captive quarter-turn Phillips screws to hold the module in the card cage (Figure 1–2). Module handles also have release levers to help install or remove the module from the card cage.

Figure 1–2: BA200-Series Handles and Covers



Some modules have special configurations, such as the dual-width cover with I/O connector for CPUs. Table 1–1 describes common module cover variations.

Table 1–1: BA214 Handles and Covers

Part	Part Number	Description
Single-width blank cover	70–23981–01	Covers one backplane slot in the following cases: Covers a standard Q22-bus module that does not have external I/O connectors (for example, a memory module). Covers an unused slot (slots 2 through 6). If you install this type of cover next to a module with a recessed handle, you must add a metal filler panel to maintain compliance for EMI. See Section 1.2.1.
Single-width recessed handle	–	Used on modules designed for a BA200-series enclosure. The handle is riveted to the module. This style is the preferred handle for all BA214 modules with external I/O connectors. The CXA16 and CXY08 communication modules use this type of handle.
Single-width flush handle	–	Used when a recessed handle would interfere with the module circuitry or I/O connector. The flush handle is also riveted to the module. The KDJ11–S (a MicroPDP–11 processor) and DEQNA–S Ethernet controller have flush handles.
Dual-width cover with I/O	H3600–SA	For the KA630 and KA650 CPU modules. The cover is not attached to the CPU.
Dual-width cover with I/O	H3601–SA	For the KDJ11–BF CPU module. The cover is not attached to the CPU.
Dual-width cover with I/O	H3602–SA	For the KA640 CPU module. The cover is not attached to the CPU.

1.2.1 Filler Panel for Covers and Flush Handles

When you install a module with a blank cover or flush handle next to a recessed-handle module, you *must* install a filler panel (Figure 1–2) between the modules to meet regulations for EMI. Without the filler panel, circuitry on the recessed-handle module is exposed. The filler panel has four sets of finger stock that provide an effective chassis ground between the handles. Flush handles, recessed handles, and covers have screw holes at the top and bottom for the installation of this filler panel.

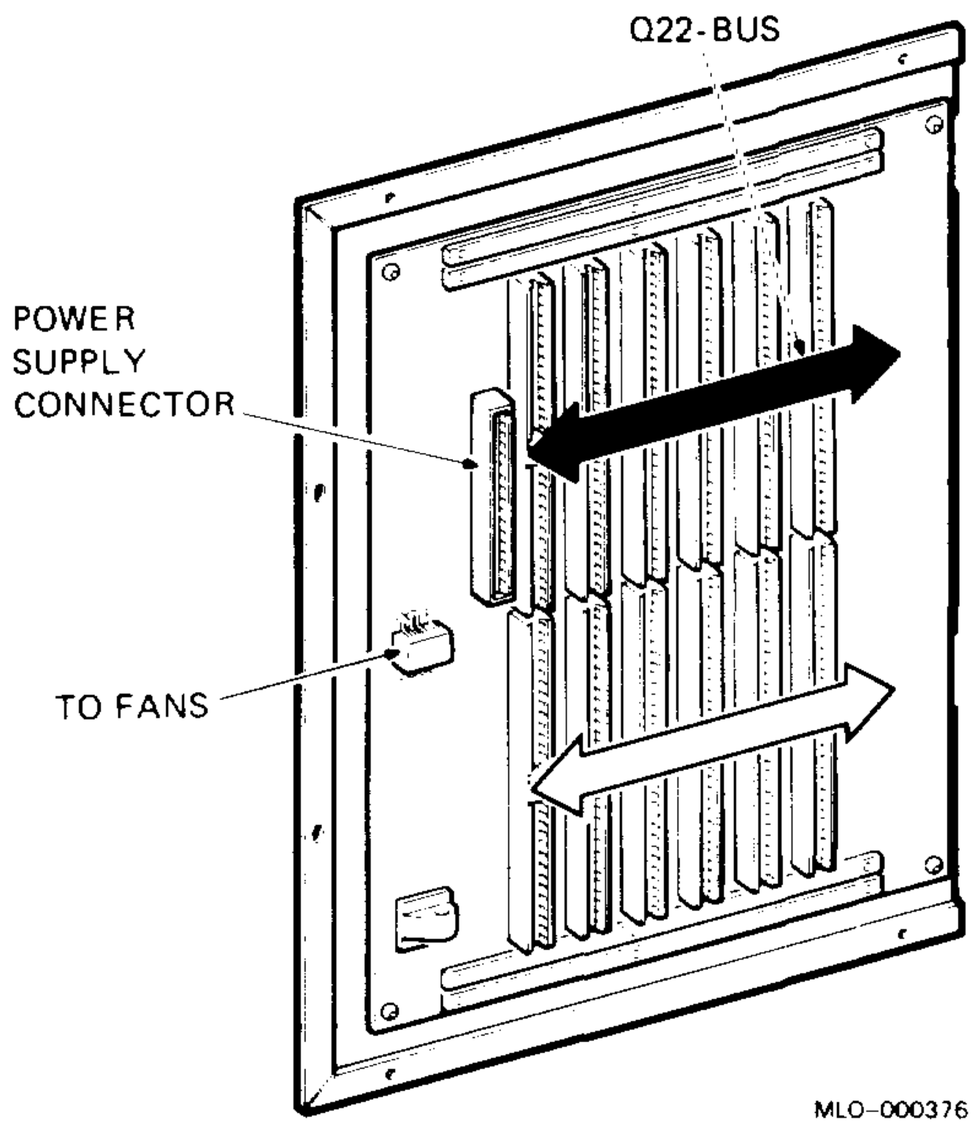
1.2.2 Support Panel for Dual-Height Modules

A plastic panel provides extra support for dual-height modules in the BA200-series card cage. Dual-height modules are always installed in the AB rows of a slot. The panel plugs into the CD rows below the module to provide additional support. The panel has a fitted groove along the top edge to support the dual-height module above it.

1.3 Backplane

The BA214 enclosure has a six-slot, quad-height backplane (Figure 1–3). 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.

Figure 1–3: BA214 Backplane



The backplane is bounded and cannot be expanded. It supports 32 equivalent ac loads and 20 dc loads from all the modules installed in the backplane. An *ac load* is the amount of capacitance a module presents to a bus signal line. One ac load equals 9.35 picofarads (pf). A *dc load* is the amount of dc leakage a module presents to a bus signal line. One dc load is approximately 105 microamperes (μA). The backplane presents 5.6 ac loads to the Q22-bus.

The backplane (Figure 1–3) has one 56-pin edge board connector mounted on the left side to connect to the power supply, and one 4-pin power connector, also on the left side, for a cable to the dc fan below the card cage.

1.4 System Controls and Indicators

The baud rate select switch and power-up mode switch are on the dual-width CPU I/O cover. These controls vary depending on the CPU. Refer to the applicable CPU maintenance documentation for a description of the controls on the CPU I/O panel.

The power supply has the following dc power indicators, which light when the dc voltages are within regulation:

- DC OK LED, located on the control panel
- Green LED, located on the front of the power supply

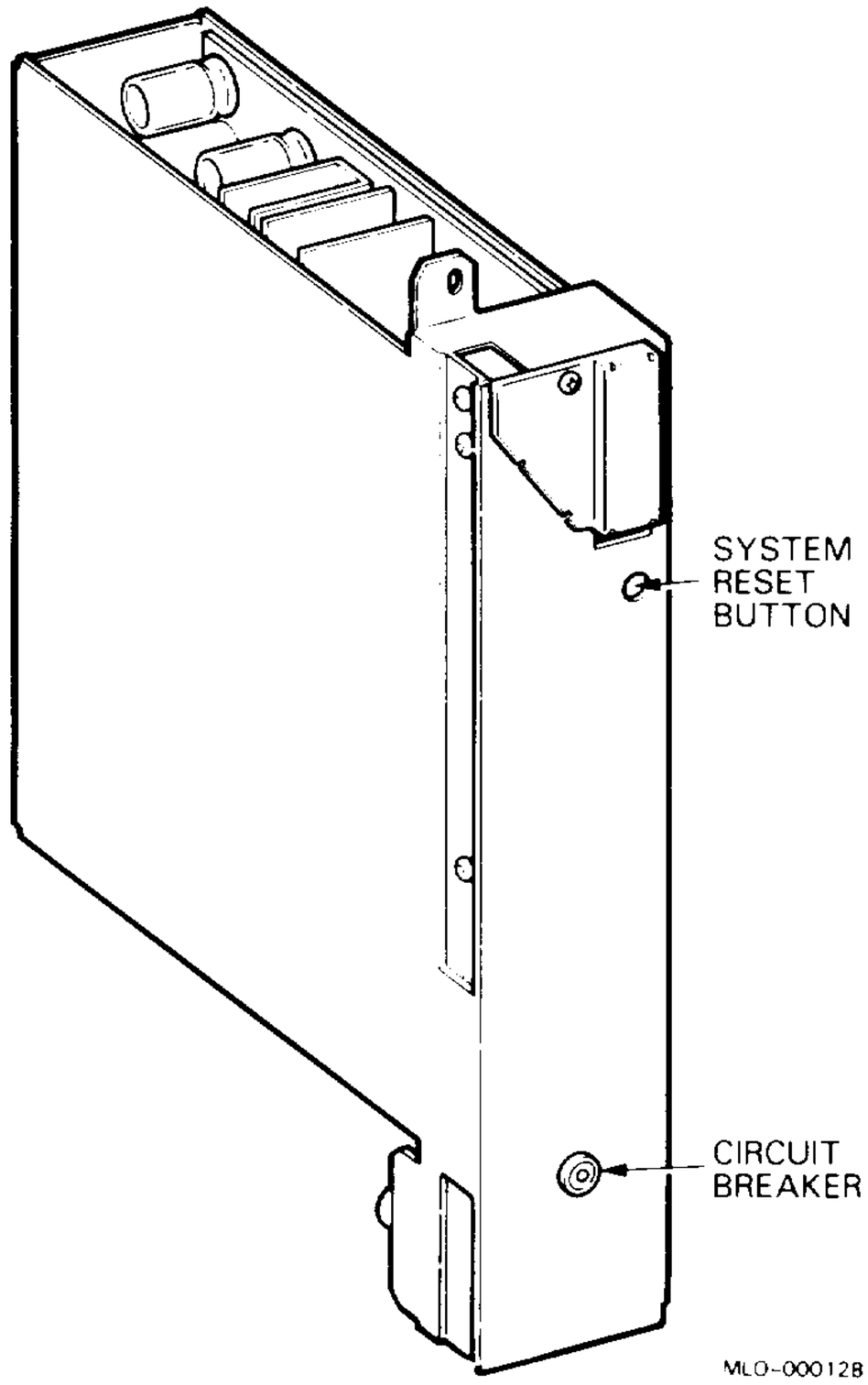
1.5 Power Supply

The BA214 enclosure contains one power supply (Figure 1–4). The power supply plugs directly into the backplane via a 56-pin connector. The power supply delivers the following maximum current:

7.0 amps at +12 Vdc
33.0 amps at +5 Vdc

The maximum current at +12 Vdc and +5 Vdc must not consume more than 230 watts of power.

Figure 1–4: BA214 Power Supply

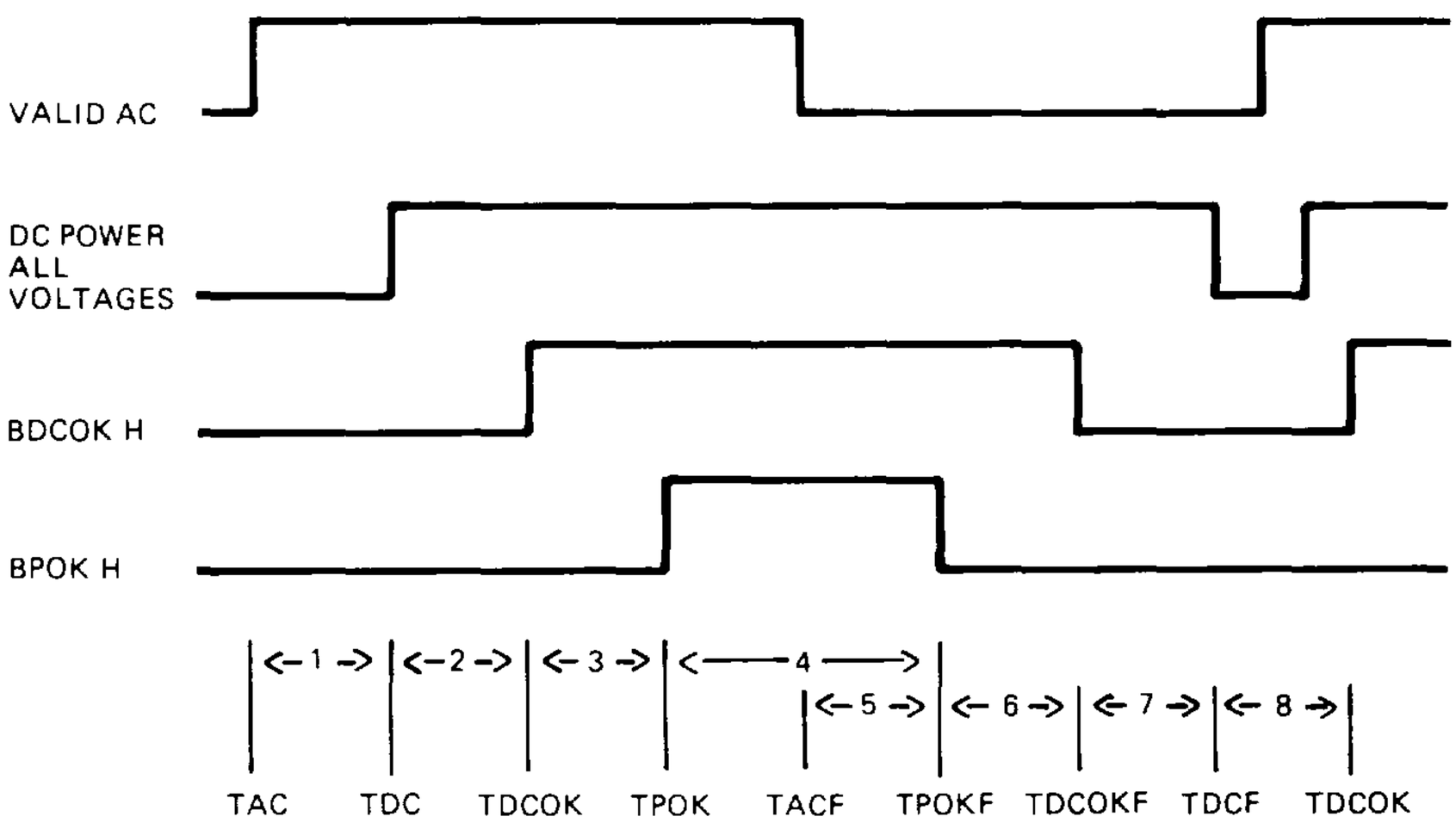


An ac line filter provides ac input power to the power supply. The filter is under the power supply and card cage (see Figure 1–1). The power supply has a 12-hole (six of which contain connectors) ac input power connector at its base.

The power supply enters and completes a shutdown sequence (Figure 1–5) whenever the BPOK H signal is negated. When BPOK H is asserted high on the Q22-bus, the power system is in a state to allow normal system operation. The following conditions negate BPOK H:

- Temperature sensor triggered, possibly caused by fan failure
- An overcurrent condition
- Input voltage greater than 132 Vrms or less than 88 Vrms

Figure 1–5: BA214 Power Supply Timing Diagram



1. 3 seconds maximum
2. 3 milliseconds (msec) minimum
3. 70 msec minimum
4. 3 msec minimum
5. 20 msec ride-through time
6. 4 msec minimum hold up
7. 5 msec minimum
8. 3 msec minimum

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1.6 Fan

The BA214 enclosure has one 11.3-cm (4.5-in) dc fan attached to the ac line filter. The fan draws air into the top of the enclosure, through the card cage, and out the bottom of the enclosure. A temperature sensor in the power supply adjusts fan speed by varying the fan's input voltage based on the room temperature. The sensor adjusts input voltage to provide sufficient cooling, at minimum speed, for all combinations of load. The maximum output is –12 volts at 45°C (113°F). The minimum is –6 volts at 28°C (82°F).

1.7 Configuration Guidelines

Before you change a configuration in the BA214 enclosure, you must consider the following factors:

Module order in the backplane
Module configuration

When you add a device to a system, you must know the capacity of the system enclosure in these areas:

Number of backplane slots
Power limitation

1.7.1 Module Order and Configuration

Module order in the backplane is system specific, depending on the CPU. Refer to the applicable CPU maintenance documentation for the preferred module order of the specific system.

For information on how to configure modules, refer to *Microsystems Options*, which includes a complete listing of all supported options along with the following information for each module and device:

Ordering information
Operating system support
Diagnostic support
Option description
CSR addresses and interrupt vectors
LEDs
Loopback connectors
Self-tests
FRUs (if applicable)
Related documentation

1.7.2 Configuration Worksheet

Use the configuration worksheet (Figure 1–6) to be sure a configuration does not exceed system limits for expansion space, power, and bus loads. If you use standard DIGITAL modules, you will not exceed the limits for bus loads.

When you change a configuration, use the worksheet as follows:

1. On the worksheet, 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 information for each device, using the data listed in Table 1–2.
4. Add up the columns. Make sure the totals are within the limits for the power supply.

NOTE: *Check the appropriate CPU maintenance documentation to determine which options are supported for the specific system.*

Table 1–2: Power and Bus Load Data

		Current (Amps)		Power	Bus Loads	
Option	**Module**	**+5 V**	**+12 V**	**Watts**	**AC**	**DC**
AAV11–SA	A1009–PA	1.8	0.0	9.0	2.1	0.5
ADV11–SA	A1008–PA	3.2	0.0	16.0	2.3	0.5
AXV11–SA	A026–PA	2.0	0.0	10.0	1.2	0.3
KWV11–SA	M4002–PA	2.2	0.130	11.16	1.0	0.3
CXA16–M	M3118–YA	1.6	0.20	10.4	3.0	0.5
CXB16–M	M3118–YB	2.0	0.0	10.0	3.0	0.5
CXY08–M	M3119–YA	1.8	0.30	12.6	3.2	0.5
DELQA–SA	M7516–PA	2.7	0.5	19.5	2.2	0.5
DEQNA–SA	M7504	3.5	0.50	23.5	2.2	0.5
DFA01	M3121–PA	1.97	0.40	14.7	3.0	1.0
DPV11–SA	M8020–PA	1.2	0.30	9.6	1.0	1.0
DRQ3B–SA	M7658–PA	4.5	0.0	22.5	2.0	1.0
DRV1J–SA	M8049–PA	1.8	0.0	9.0	2.0	1.0
DRV1W–SA	M7651–PA	1.8	0.0	9.0	2.0	1.0
DZQ11–SA	M3106–PA	1.0	0.36	9.3	1.4	0.5
IBQ01–SA	M3125–PA	5.0	0.0	25.0	4.6	1.0

Table 1–2 (Cont.): Power and Bus Load Data

		Current (Amps)		Power	Bus Loads	
Option	**Module**	**+5 V**	**+12 V**	**Watts**	**AC**	**DC**
IEQ11–SA	M8634–PA	3.5	0.0	17.5	2.0	1.0
KA620–AA	M7478	6.2	0.14	32.7	2.7	1.0
KA630–AA	M7606	6.2	0.14	32.7	2.7	1.0
KA650–AA	M7620–A	6.0	0.14	31.7	2.7	1.0
KDJ11–BC	M8190	5.5	0.1	28.7	2.3	1.1
KDJ11–BF	M8190	5.5	0.2	29.9	2.6	1.0
KMV1A–SA	M7500–PA	2.6	0.2	15.4	3.0	1.0
KWV11–SA	M4002–PA	2.2	0.13	11.16	1.0	0.3
LPV11–SA	M8086–PA	1.6	0.0	8.0	1.8	0.5
M9060–YA	–	5.3	0.0	26.5	0.0	0.0
MS630–AA	M7607	1.0	0.0	5.0	0.0	0.0
MS630–BA	M7608	1.8	0.0	9.0	0.0	0.0
MS630–BB	M7608	1.8	0.0	9.0	–	–
MS630–CA	M7609	3.1	0.0	15.5	0.0	0.0
MS650–AA	M7621–A	2.7	0.0	13.5	0.0	0.0
MSV11–JD	M8637–D	3.74	0.0	18.7	2.7	0.5
MSV11–JE	M8637–E	4.1	0.0	20.5	2.7	0.5
MSV11–PK	M8067–K	3.45	–	17.25	2.0	1.0
MSV11–PL	M8067–L	3.6	–	17.5	2.0	1.0
MSV11–QA	M7551–AA	2.4	0.0	12.0	2.0	1.0
VCB02	M7169	5.8	0.75	38.0	3.5	1.0
VCB02	M7168	3.4	0.0	17.0	0.0	0.0

Figure 1–6: BA214 Configuration Worksheet

POWER SUPPLY						BUS LOADS	
SLOT (ABCD)	MODULE	CURRENT 5 V	AMPS 12 V	POWER (WATTS)		AC	DC
1							
2							
3							
4							
5							
6							
TOTAL: POWER SUPPLY						—	—
MUST NOT EXCEED		33.0	7.0	230.0 *		—	—
TOTAL: BUS LOADS							
MUST NOT EXCEED						35.0	20.0

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Chapter 2
Installation

This chapter provides installation guidelines and procedures for the BA214 enclosure in either the rack or wall mount configuration.

2.1 Rack Mount or Wall Mount Installation

Before you unpack the BA214 system, read *BA200-Series Chassis Rack and Wall Mount Installation*, which is included in the rack mount kit and the wall mount kit.

BA200-Series Chassis Rack and Wall Mount Installation provides the following:

- Physical, environmental, and electrical requirements for systems in the BA214 enclosure
- Shipping carton contents
- Installation procedures to mount the BA214 enclosure in a standard 47.5-cm (19-in) rack or on a wall

Unpack and install the BA214 enclosure according to the procedures in the wall and rack mount installation guide.

2.2 Connecting the Console Terminal to the System

After you have installed the BA214 enclosure in a rack or on the wall, use the instructions in the terminal installation guide to connect the various components of the console terminal.

Before you connect the console terminal to the system, turn on the terminal to make sure it works correctly and to set up the terminal options.

Connect the console terminal to the system as follows:

1. Turn off the console terminal.
2. Connect the terminal cable to the Comm Port on the rear of the terminal, according to the instructions in the terminal installation

guide. The location of the jack varies. If the terminal does not have a modified modular jack, use a 25-pin adapter (H8571–A) to connect the cable to the console terminal.

3. Feed the other end of the cable under the system base and connect it to the modified modular jack labeled A–1 on the CPU I/O panel (Figure 2–1).

4. Use the guidelines in Table 2–1 to change the terminal setup.

Figure 2–1: Connecting the Console Terminal to the System (Example)

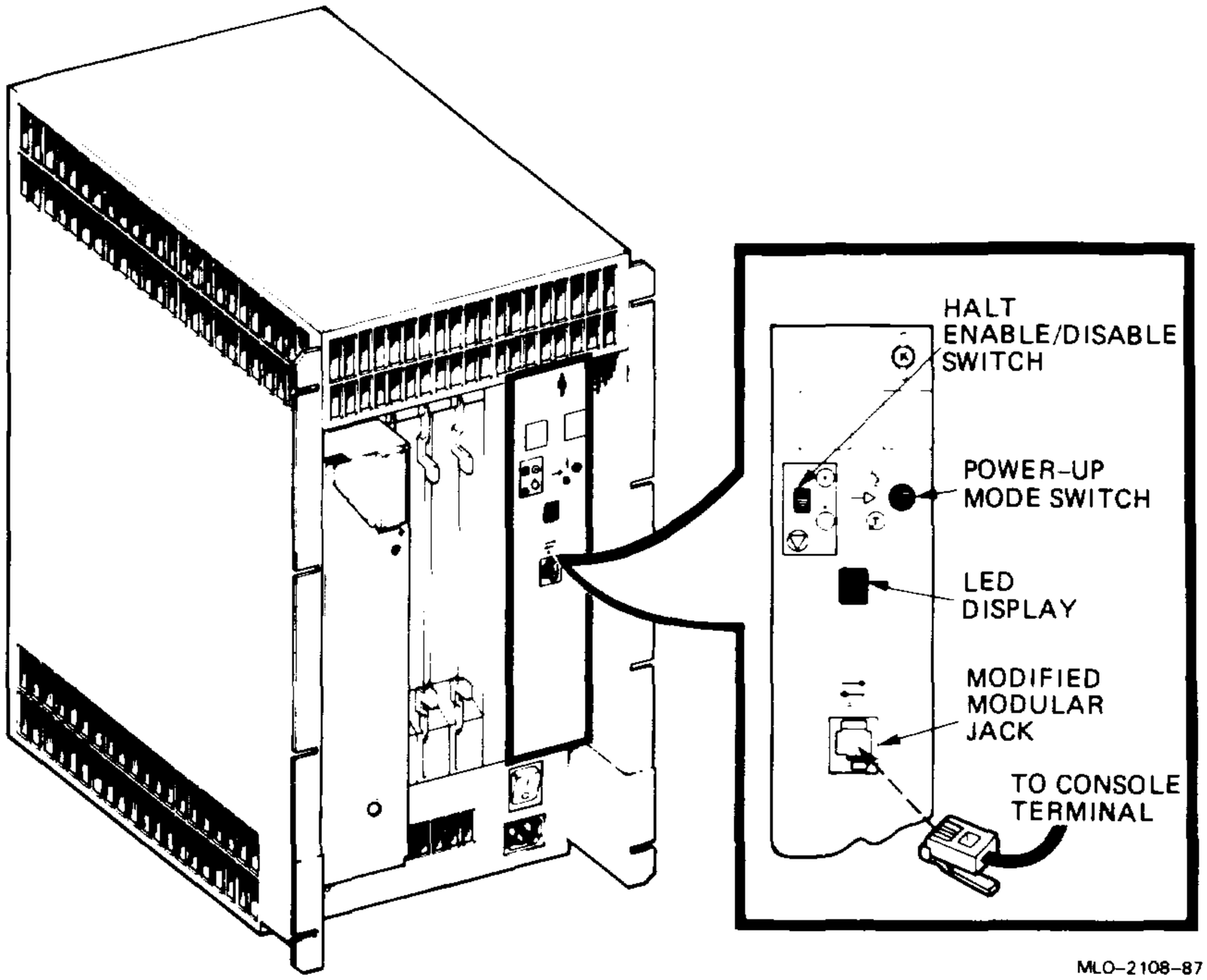


Table 2–1: Terminal Setup Parameters

Terminal Type	Data Bits	Receive Parity	Transmit Parity
Hardcopy	7	Ignore	Space parity or odd parity
Video	8	Ignore	None

2.3 Connecting Additional Devices

Each module cover or handle has an identifying label at the top. This label contains the option number and module number.

CAUTION: *Use only DIGITAL BA200-series blank covers. Do not substitute other covers; they may not meet the required specifications.*

Table 2–2 lists the part numbers for the module I/O cables.

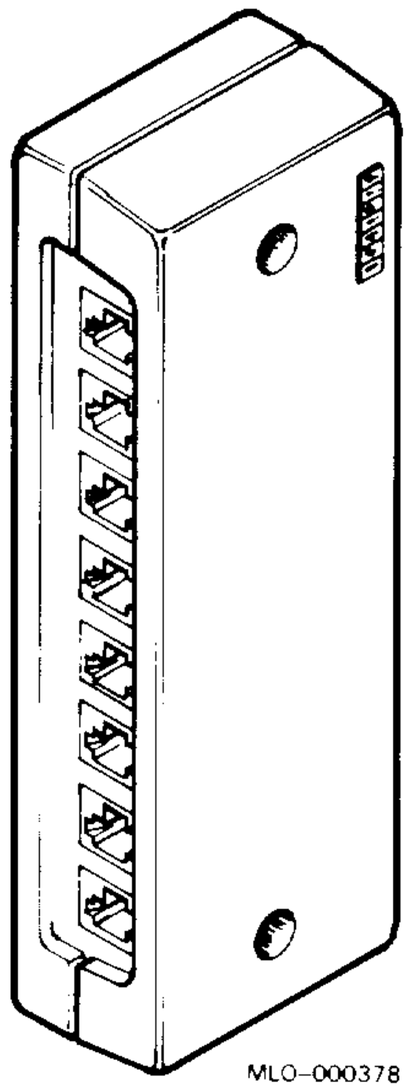
Table 2–2: BA214 I/O Cables

Module	Cable Part Number
CXA16	BC16D
CXY08	BC19N–12, BC22F
DZQ11	BC23H, BC22F

2.3.1 Connecting Terminals and Printers

Use a cable concentrator to connect terminals and printers. The H3104 cable concentrator is shown in Figure 2–2. You can connect up to 16 terminals and/or printers for each CXA16 module installed in the system. You connect the cable concentrator to the system with a BC16D cable.

Figure 2–2: H3104 Cable Concentrator



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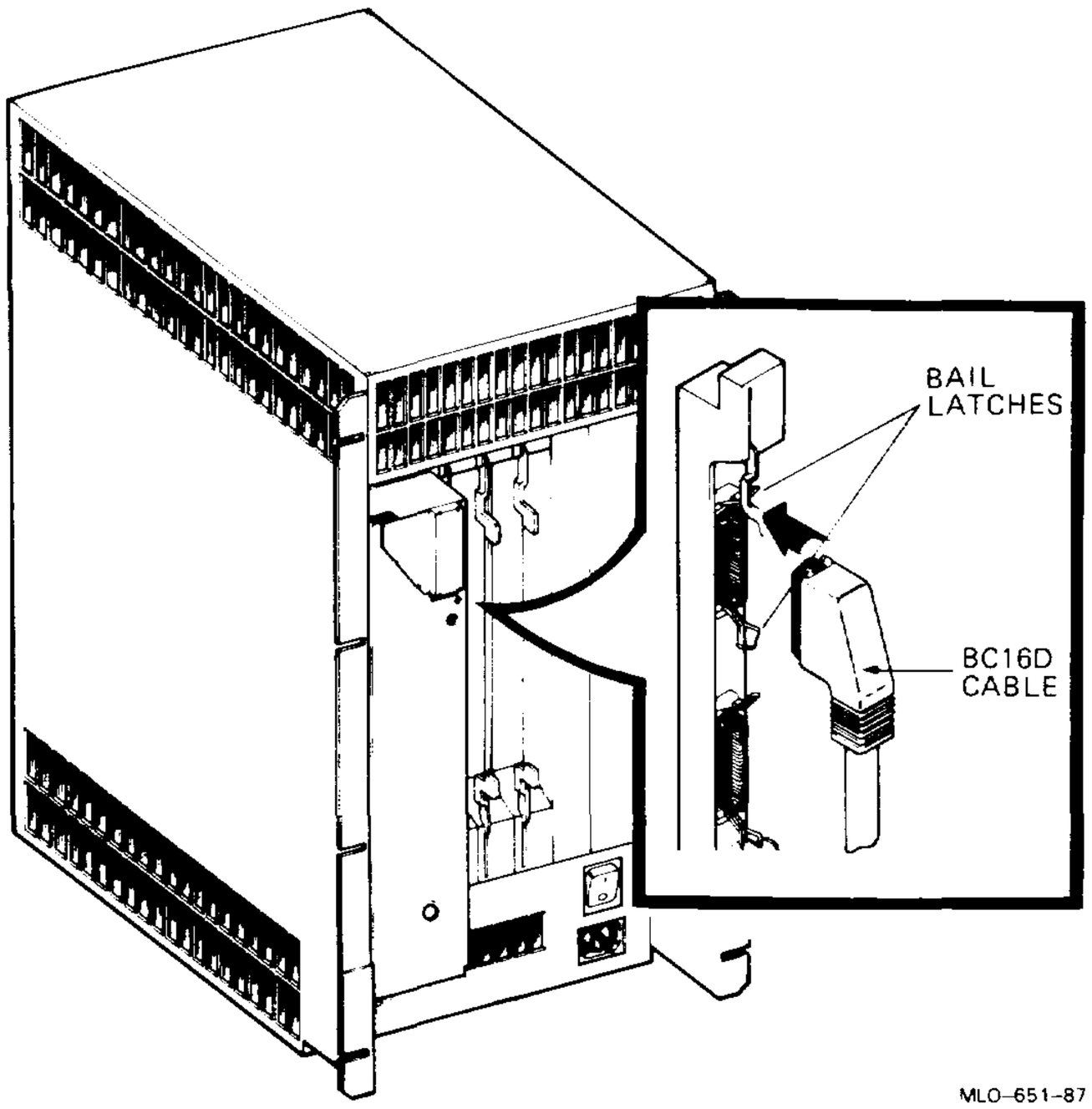
Connect additional terminals and printers as follows:

1. From the rear of the enclosure, feed one end of a BC16D cable under the BA214 frame and connect it to the 0–7 connector on the CXA16 handle (Figure 2–3). Lock the connector into place by securing the bail latches.

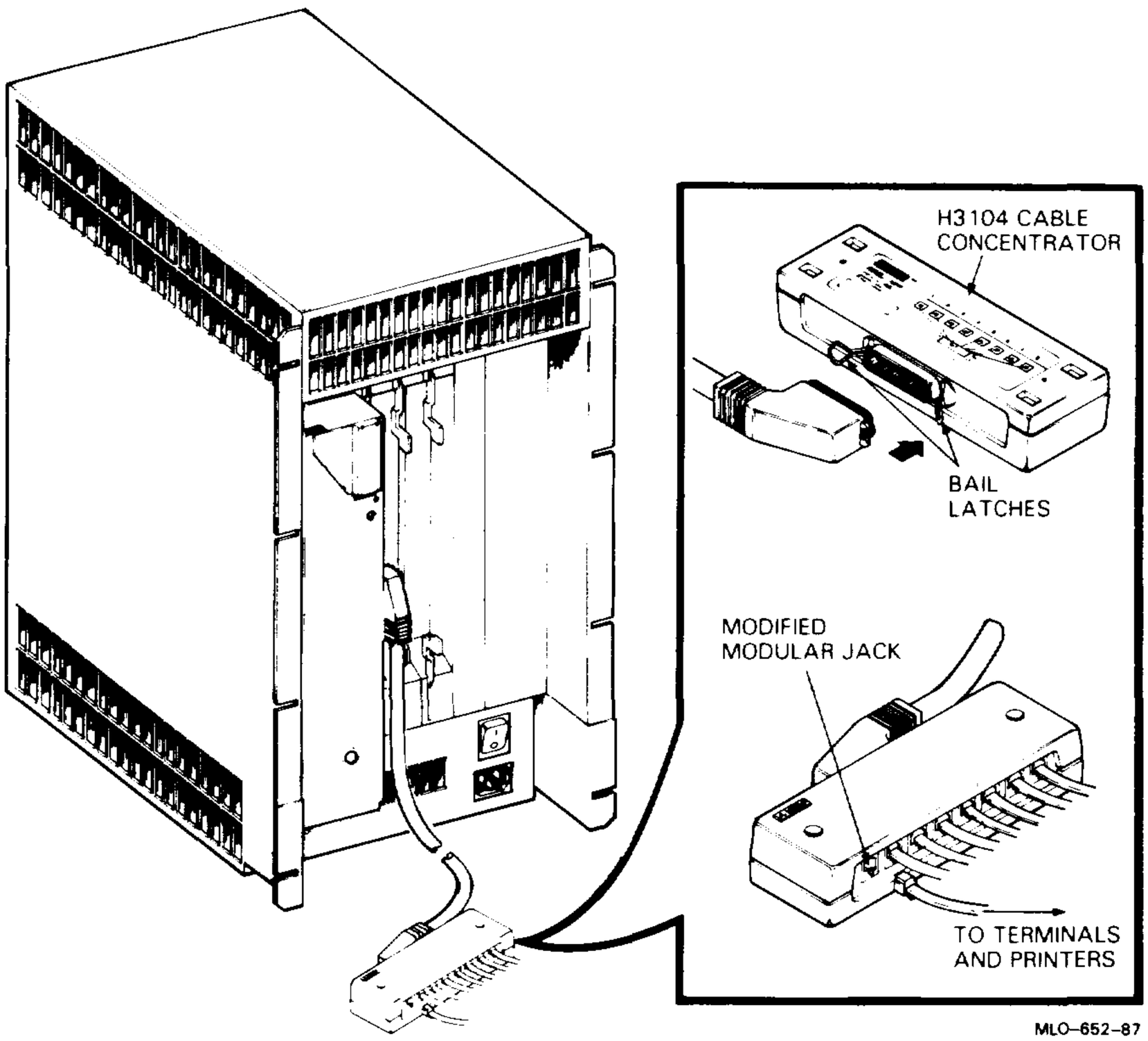
2. Connect the other end of the BC16D cable into the cable concentrator. Lock the connector into place by securing the bail latches.

Figure 2–3: Connecting Devices to a CXA16 Module



3. Connect each printer and terminal cable directly to one of the modified modular jacks on the cable concentrators (Figure 2–4). If the terminal or printer does not have a modified modular jack connection, use a 25-pin adapter or a 9-pin adapter.
4. Follow the same procedure for connecting a second cable to the CXA16, except connect the cable to the 8–15 connector on the CXA16 handle.

Figure 2–4: Connecting Devices to the Cable Concentrator



2.3.2 Connecting Modems

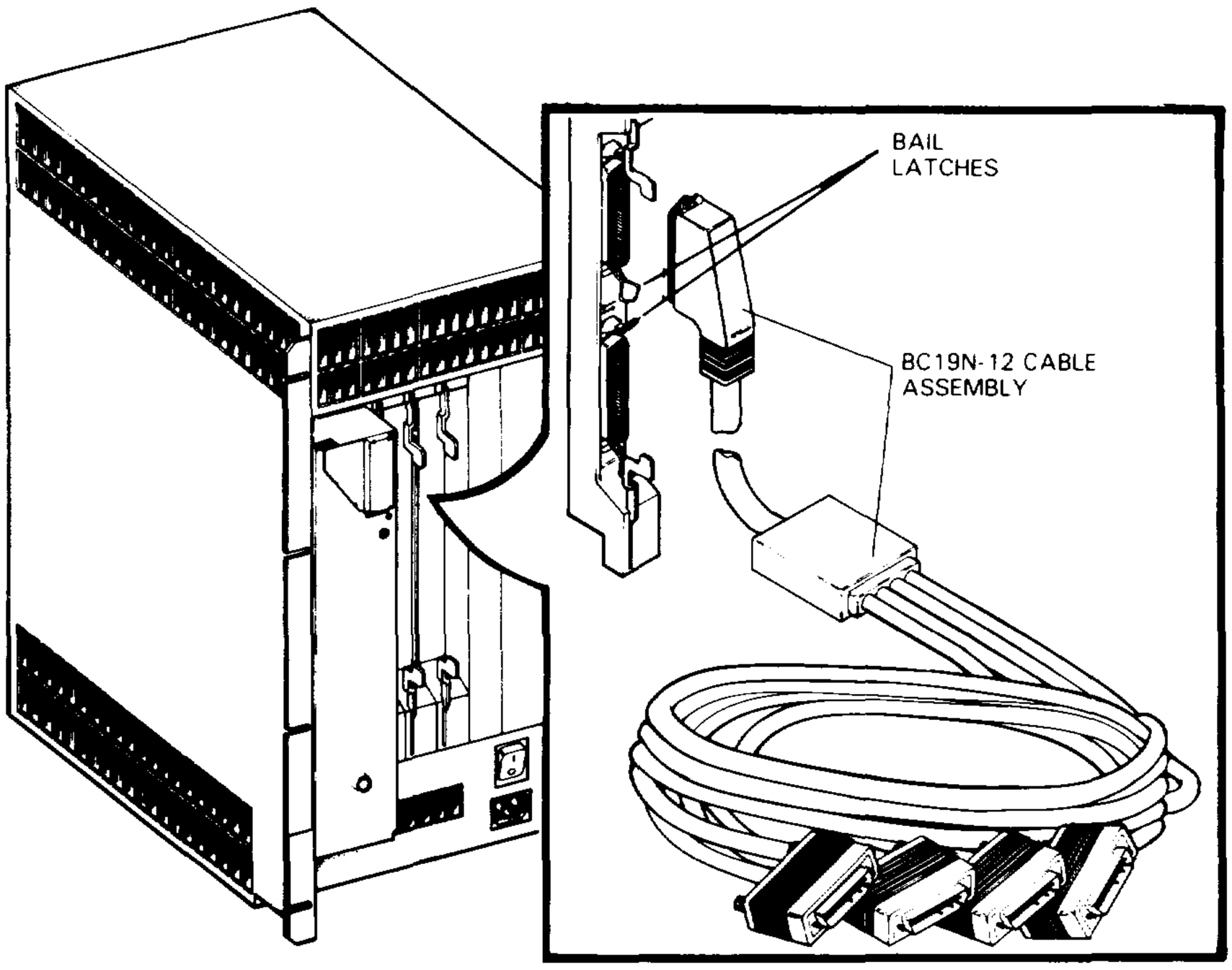
You can connect modem lines to either the DZQ11 module or the CXY08 module. The DZQ11 module supports up to four lines; the CXY08 supports up to eight lines.

You can also connect data lines directly to the DFA01 module, which has two integral modems.

Connecting to a CXY08 Module

1. Feed the end of a BC19N–12 cable under the BA214 frame and connect it to the 0–3 connector on the CXY08 handle. Lock the connector in place by securing the bail latches (Figure 2–5).
2. Attach a modem to one of the four connectors at the opposite end of the cable assembly. To place the modem farther away, attach a BC22F cable between the cable assembly and the modem.
3. Repeat this procedure to connect a second cable assembly, except connect the cable to the 4–7 connector on the CXY08 handle.

Figure 2–5: Connecting a Modem to a CXY08 Module



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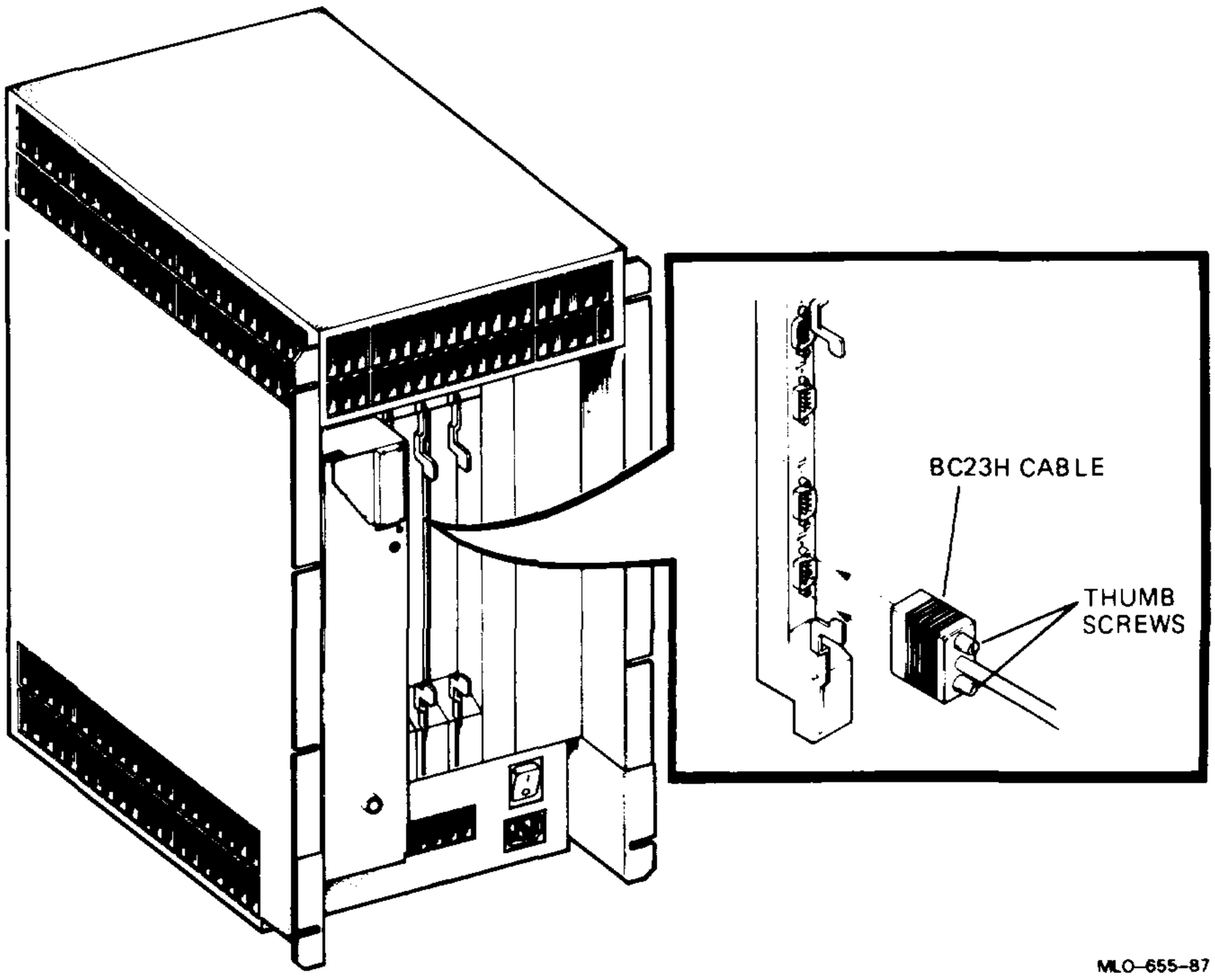
Connecting to a DZQ11 Module

1. Feed the end of the BC23H cable with the 9-pin connector under the BA214 frame and connect it to the 0 connector on the module handle. Tighten the thumb screws on the connector (Figure 2–6).
2. Attach a modem to the 25-pin connector at the other end of the cable. To place the modem farther away, attach a BC22F cable between the BC23H cable and the modem.
3. Repeat the same procedure for connecting a second, third, or fourth cable to the 1, 2, and 3 connectors on the DZQ11 handle.

Figure 2–6: Connecting a Modem to a DZQ11 Module



Connecting to a DFA01 Module

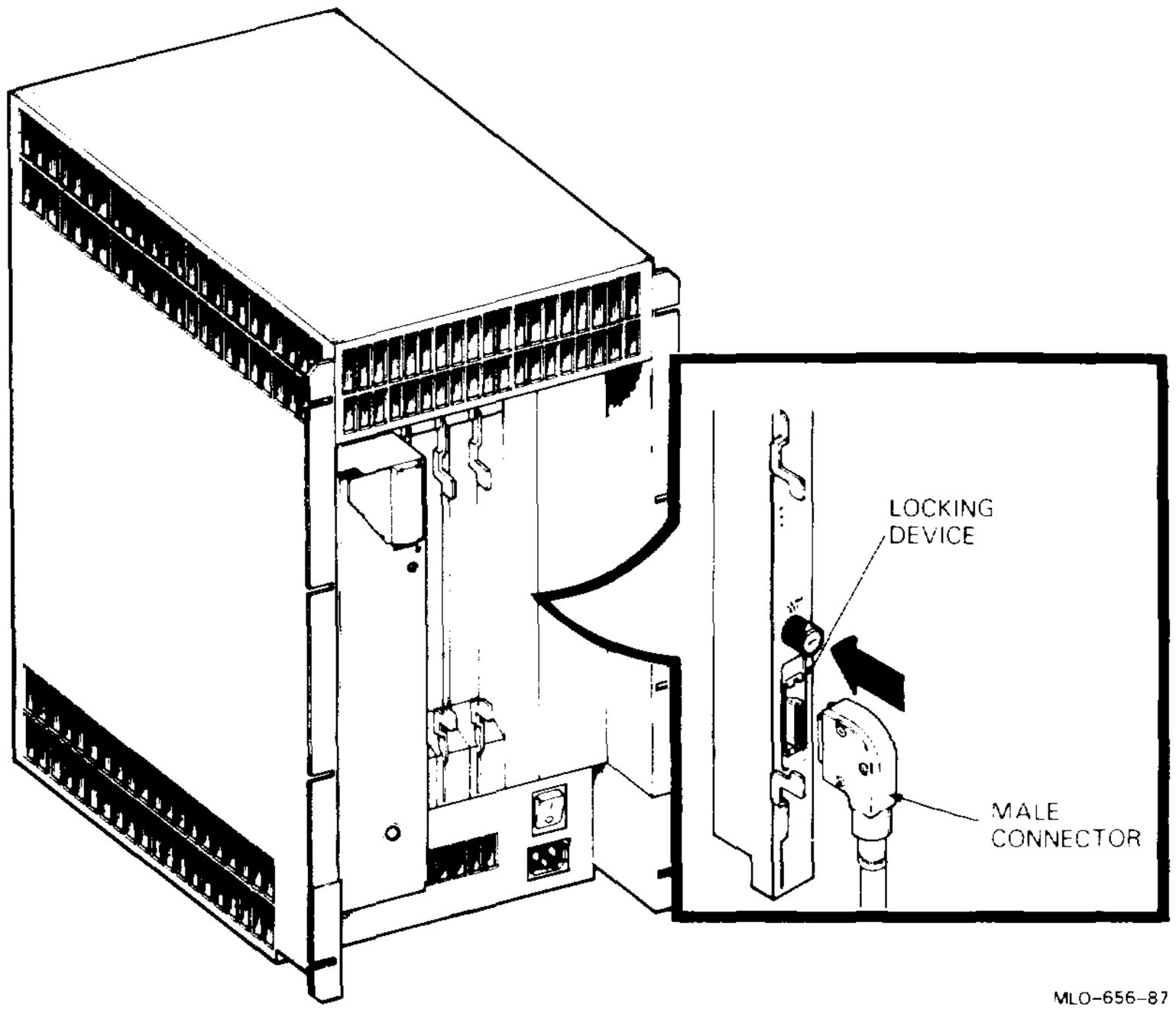
1. Connect a phone line to one of the data line jacks on the DFA01 handle.
2. Verify that the other end of the phone line is connected to a telephone outlet.
3. Optionally, you can connect a telephone to the voice line jack on the DFA01 handle.

Connecting to a Network

1. Feed the male connector on the Ethernet transceiver cable under the BA214 frame. Connect the cable to the female connector on the DEQNA or DELQA handle. Slide up the locking device on the female connector to secure the connection (Figure 2–7).

2. Connect the other end of the cable to an H4000 transceiver, a DELNI, or a DESTA.

Figure 2–7: Making a Network Connection



2.4 Setting System Controls

The system controls are on the dual-width CPU I/O panel. These controls vary depending on the CPU. Generally, you must set the baud rate of the console serial line to the same baud rate as the console terminal. Some systems also require you to set the enable/disable and power-up mode switches. Check the appropriate CPU maintenance documentation for the correct settings.

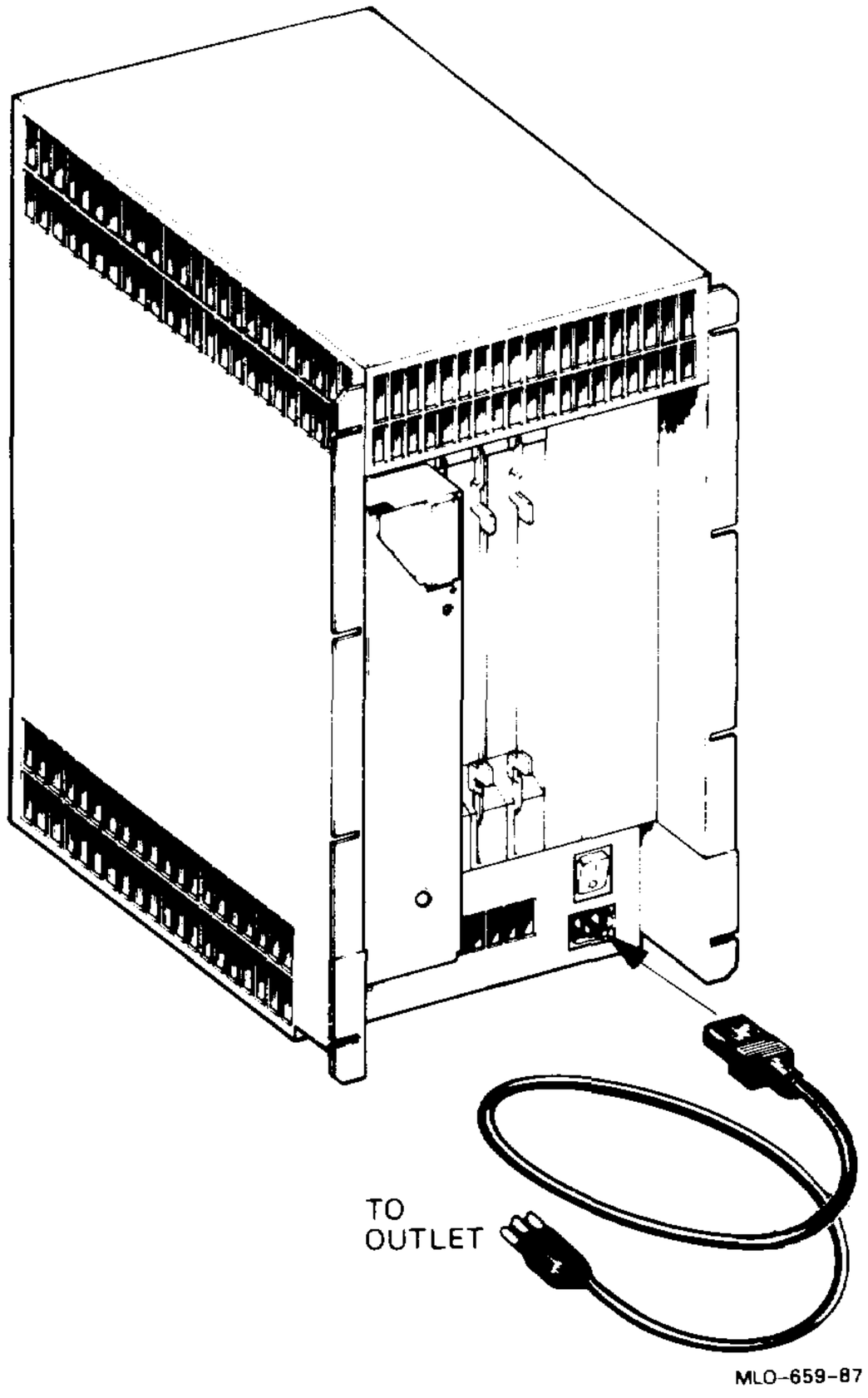
Use the removal procedure in Section 3.3 to remove the CPU I/O panel, then set the system controls.

2.5 Connecting the Power Cord

Connect the power cord to the enclosure as follows:

1. Make sure the system on/off switch is off (0), and that all devices connected to the system are turned off.
2. Connect the power cable to the system (Figure 2–8).
3. See the appropriate CPU maintenance documentation for information on the power-up self-tests and how to select a language.

Figure 2–8: Connecting the Power Cord



Chapter 3
FRU Removal and Replacement

This chapter describes how to remove and replace the field replaceable units (FRUs) in the BA214 enclosure.

3.1 Introduction

Table 3–1 lists the BA214 FRUs and their part numbers.

Table 3–1: BA214 FRUs

FRU	Part Number
AC filter and on/off switch assembly	70–24279–01
Backplane	54–17213–01
Cable, backplane to fan	17–01360–01
Fan, dc	12–23609–04
Power supply, 120 V	H7868–A
Power supply, 240 V	H7868–B
Sidewall filler panel (for blank cover)	74–34042–01
Single-width blank cover	70–23981–01

The CPU I/O panel is also an FRU, but is system-dependent. That is, its presence depends on which CPU is installed. Refer to the applicable CPU maintenance documentation for information on the CPU I/O panel, along with a complete list of supported options. All options are also FRUs.

Sections 3.2 through 3.6 describe the removal procedure for that FRU. Unless otherwise specified, you can install an FRU by reversing the steps in the removal procedure.

CAUTION:

- *Only qualified service personnel should remove or install FRUs.*
- *Before you remove or install FRUs, power down the system and remove the ac power cord from the wall outlet.*

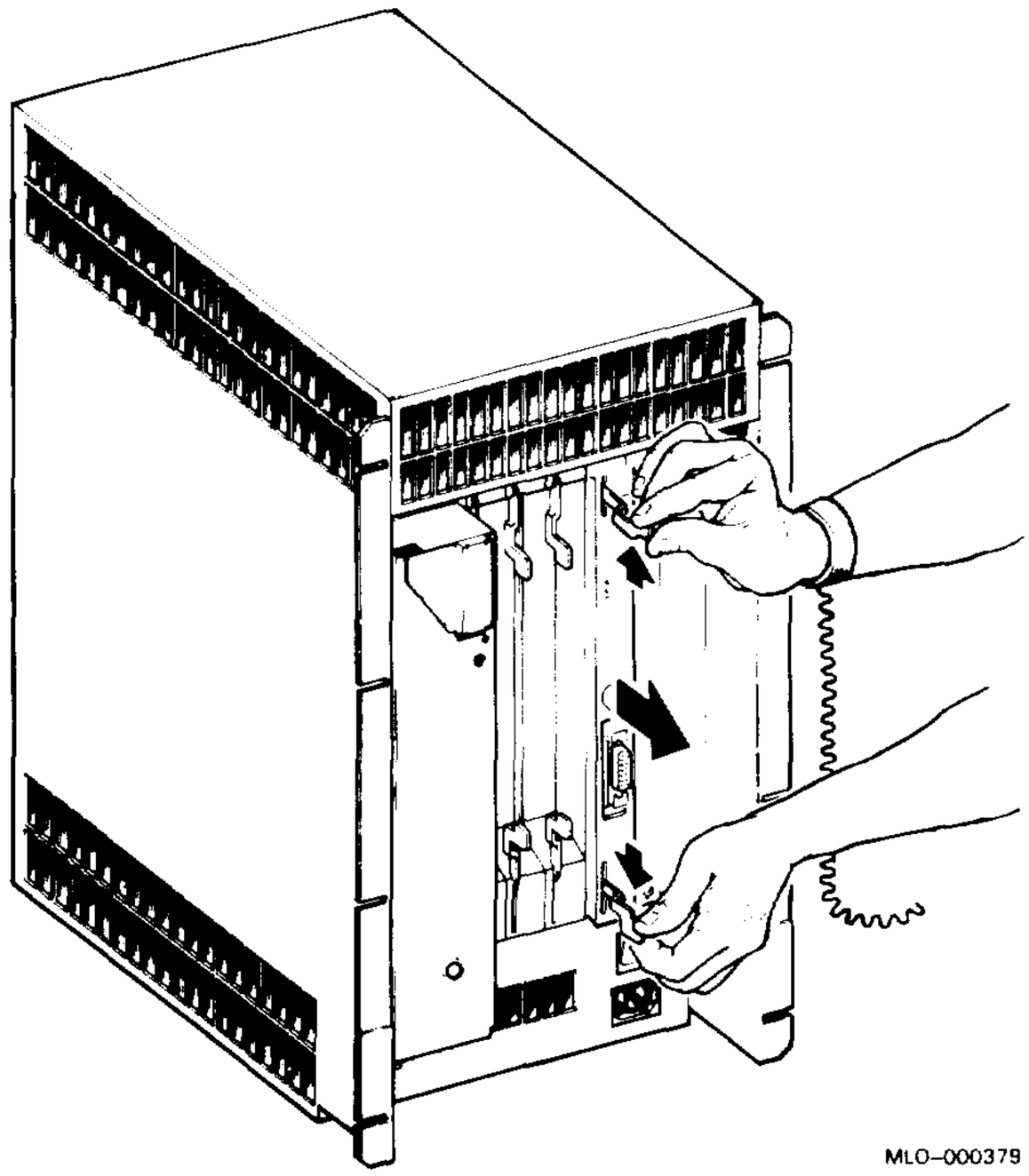
- *Static electricity can damage integrated circuits. Always use the grounded wrist strap and antistatic mat found in the Antistatic Kit when you work with the internal parts of a computer system.*

3.2 Modules with BA200-Series Bulkhead Handles

Remove modules with bulkhead handles as follows:

1. Turn off the system and unplug the ac power cord from the wall outlet.
2. Put on the grounded wrist strap and attach the alligator clip to the BA214 frame.
3. Note the orientation of external cables connected to the module. Label and disconnect the cables.
4. Release the quarter-turn captive screws that hold the module handle to the card cage.
5. Unlock the release levers by simultaneously pulling up on the top lever and pulling down on the bottom lever (Figure 3–1).
6. Pull out on the module's handle and remove the module from the card cage.

Figure 3–1: Unlocking the Release Levers



Installation Note

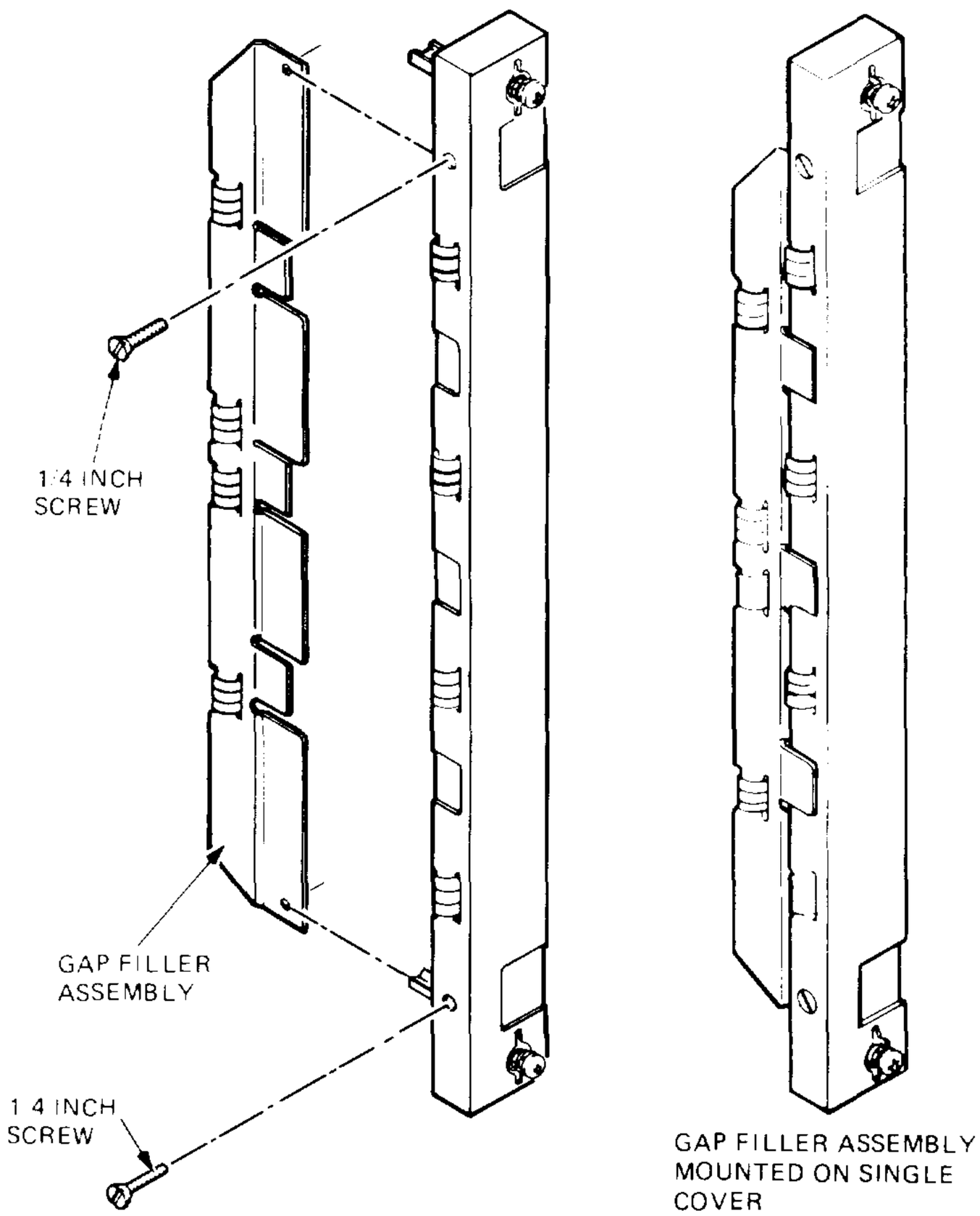
When you install a module with a blank cover or flush handle next to a recessed-handle module, you *must* install a filler panel between the modules to meet regulations for electromagnetic interference (EMI). Without the filler panel, circuitry on the recessed-handle module is exposed.

Check the modules in the card cage to see if any recessed-handle module is next to a module with a blank cover or a flush handle. Install the filler panel, if needed, as follows:

1. Fit the filler panel onto the side of the blank cover or flush-handle module that is next to the recessed-handle module. Make sure the tabs on the filler panel fit into the tab indentations on the blank cover or flush handle (Figure 3–2).

2. Using the two screws that come with the filler panel, attach the filler panel to the top and bottom of the blank cover or flush handle (Figure 3–2).

Figure 3–2: Attaching the Filler Panel (Example)



MLO-000380

3.3 Modules with Blank Covers

Remove modules with blank covers as follows:

1. Turn off the system and unplug the ac power cord from the wall outlet.
2. Put on the grounded wrist strap, and attach the alligator clip to the BA214 frame.
3. Release the two quarter-turn captive screws that hold the blank cover to the card cage. Figure 1–2 shows the position of the captive screws.
4. Pull the blank cover away from the card cage.
5. Note the orientation of internal cables connected to the module. Some connectors are not keyed. Label and disconnect the cables.
6. Unlock the module's release levers by simultaneously pulling up on the top lever and pulling down on the bottom lever. For a module with a plastic handle, pull out on the plastic handle.
7. Carefully pull the module out of the card cage.

Installation Note

Check to see if you need a filler panel(s) according to the procedure under Installation Note in Section 3.2.

3.4 Power Supply

Remove the power supply as follows:

1. Turn off the system and unplug the ac power cord from the wall outlet.
2. Remove the two screws that hold the safety plate to the frame (Figure 3–3). Remove the safety plate.
3. Release the two captive screws that hold the power supply in place.
4. The power supply connects directly to the backplane. Remove the power supply slowly, to avoid damage to the backplane connector (Figure 3–4).

Figure 3–3: Removing the Safety Plate

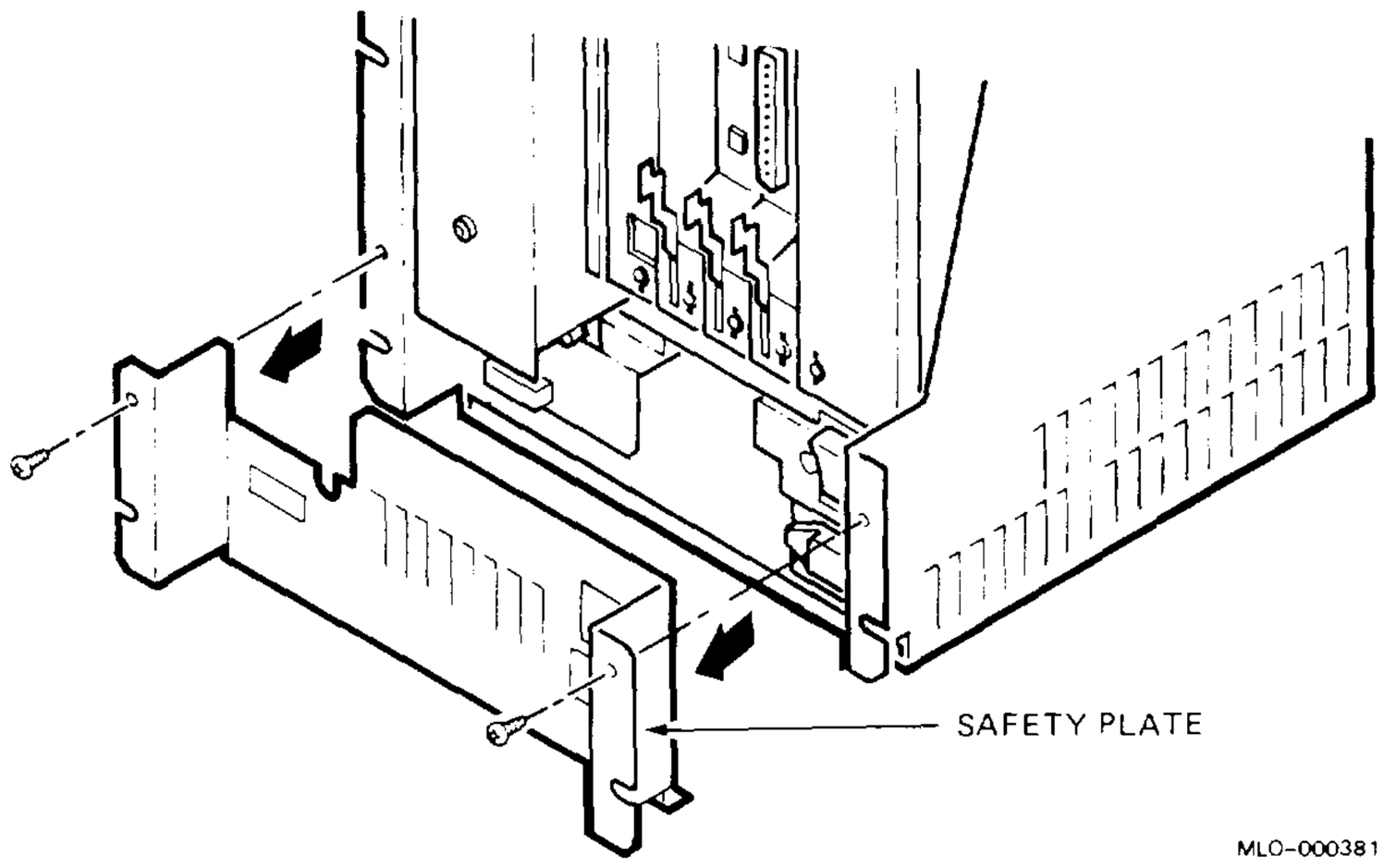
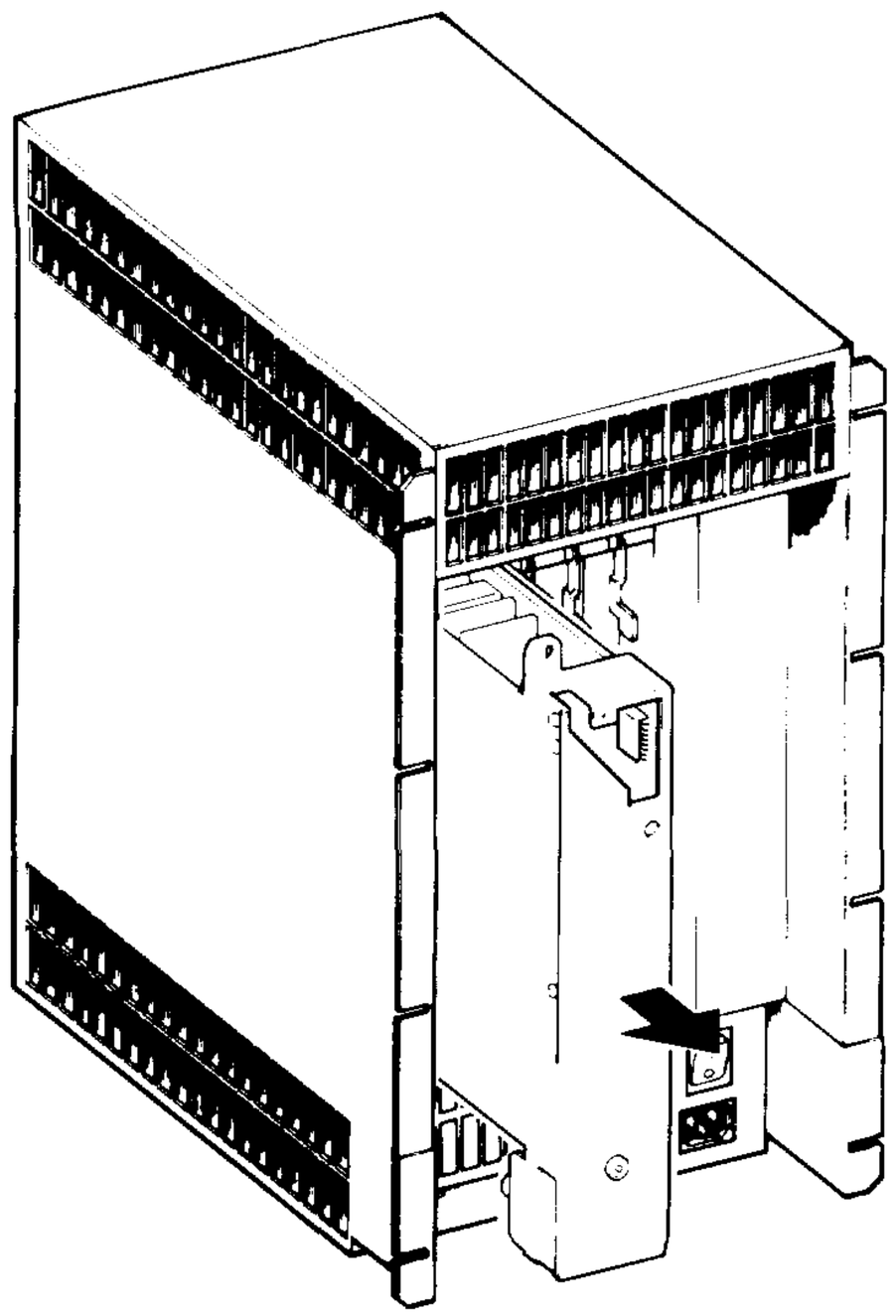


Figure 3–4: Removing the Power Supply



Installation Notes

Make sure you insert the top and bottom edges of the power supply into the plastic guides in the card cage.

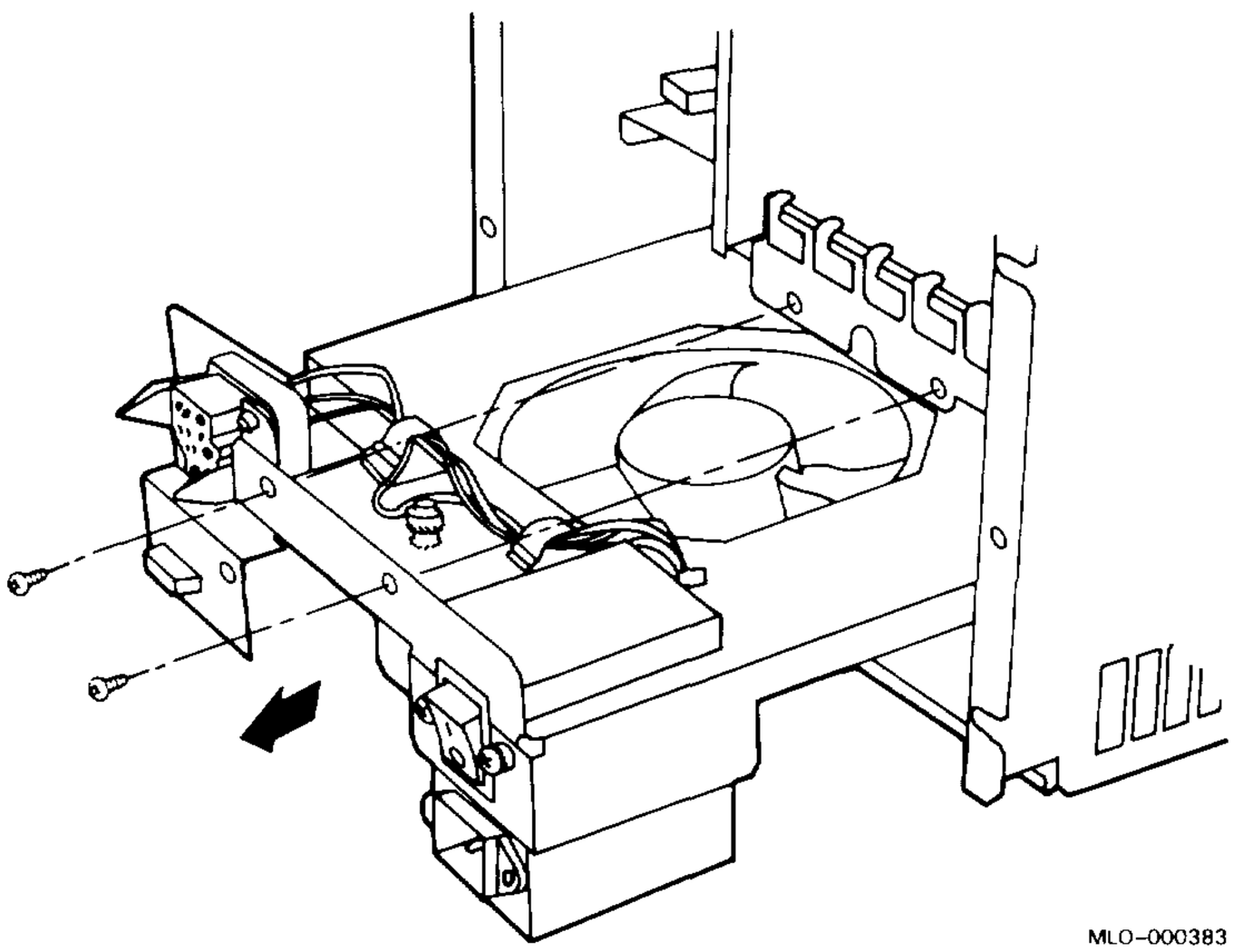
Make sure not to pinch any of the cabling between the rear of the supply and the BA214 frame. If you feel resistance, remove the supply and make sure the cabling is not in the way.

3.5 AC Filter, On/Off Switch, and Fan

Remove the ac filter and on/off switch assembly as follows:

1. Turn off the system and unplug the ac power cord from the wall outlet.
2. Remove the safety plate and the power supply according to the procedure in Section 3.4.
3. Remove the two screws that hold the ac filter and on/off switch assembly to the bottom of the card cage (Figure 3–5). You do not need to remove the two screws above the ac input connector.
4. Slide the complete assembly forward and out of the frame (Figure 3–5).

Figure 3–5: Removing the AC Filter and On/Off Switch Assembly



The dc fan is surrounded by sheet metal. The sheet metal is part of the ac filter and on/off switch assembly. To replace the fan, remove the Y-cable from the fan, then remove the fan from the sheet metal.

3.6 Backplane

The backplane is the only part of the enclosure that you remove from the rear of the enclosure. You must first remove the enclosure from the rack or the wall.

Remove the backplane as follows:

WARNING: *Use two people to perform this procedure.*

1. Turn off the system and unplug the ac power cord from the wall outlet.
2. Remove the enclosure from the rack or the wall.
3. From the front of the enclosure:
   a. Remove the safety plate and power supply according to the procedure in Section 3.4.
   b. Release all modules from the backplane. You do not have to remove the modules from the card cage, as long as you release them from the backplane.
   c. Disconnect the power supply cable and the fan cable from the backplane. You can reach these connectors only after removing the power supply. Figure 1–3 shows the position of the power supply and fan connectors.
4. From the rear of the enclosure:
   a. Read the Caution below, then remove the four screws that hold the metal plate on the rear of the enclosure (Figure 3–6).

      CAUTION: *Remove the lower screws first, then the upper-left screw; remove the upper-right screw last. Support the metal plate as you remove the last screw. Otherwise, the weight of the backplane will cause the assembly to drop when you remove the last screw, which could damage the backplane.*

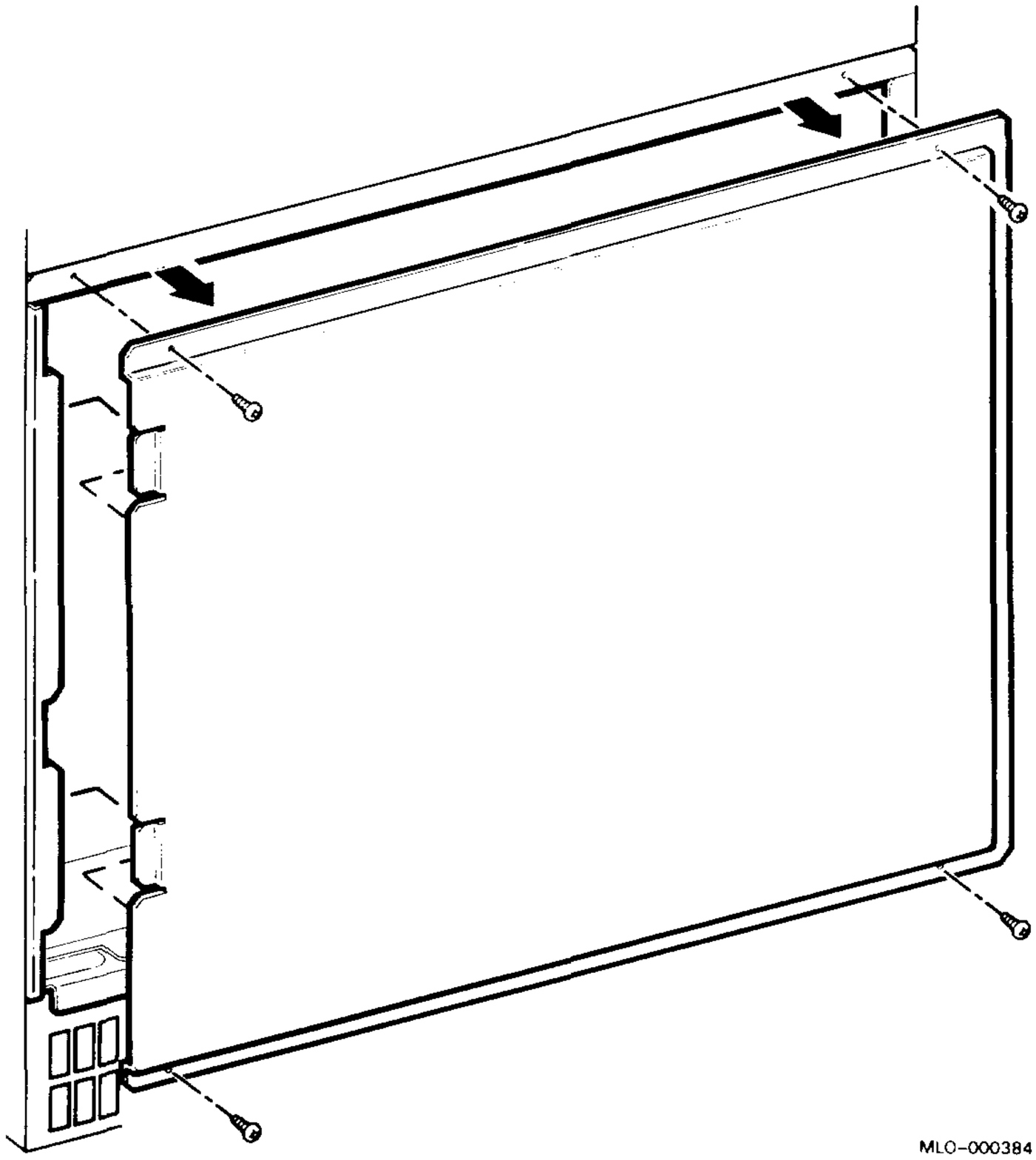
   b. Slide the metal plate to the right, to release it from the two tabs on the left side of the frame (Figure 3–6).

      The backplane and metal plate are one FRU. You do not have to remove the plate from the backplane.

Installation

1. Align the new backplane assembly with the rear of the enclosure. Insert the four screws, but do not tighten.
2. Insert one module in backplane slot 3, and one in backplane slot 6. This aligns the backplane with the card cage guides.
3. Tighten the screws.
4. Reverse steps 1 through 4 of the removal procedure.

Figure 3–6: Removing the Backplane



Appendix A
Related Documentation

The following documents contain information relating to MicroVAX or MicroPDP–11 systems.

Document Title	Order Number
Modules	
CXA16 Technical Manual	EK–CAB16–TM
CXY08 Technical Manual	EK–CXY08–TM
DEQNA Ethernet User's Guide	EK–DEQNA–UG
DHV11 Technical Manual	EK–DHV11–TM
DLV11–J User's Guide	EK–DLV1J–UG
DMV11 Synchronous Controller Technical Manual	EK–DMV11–TM
DMV11 Synchronous Controller User's Guide	EK–DMV11–UG
DPV11 Synchronous Controller Technical Manual	EK–DPV11–TM
DPV11 Synchronous Controller User's Guide	EK–DPV11–UG
DRV11–J Interface User's Manual	EK–DRV1J–UG
DRV11–WA General Purpose DMA User's Guide	EK–DRVWA–UG
DZQ11 Asynchronous Multiplexer Technical Manual	EK–DZQ11–TM
DZQ11 Asynchronous Multiplexer User's Guide	EK–DZQ11–UG
DZV11 Asynchronous Multiplexer Technical Manual	EK–DZV11–TM
DZV11 Asynchronous Multiplexer User's Guide	EK–DZV11–UG
IEU11–A/IEQ11–A User's Guide	EK–IEUQ1–UG
KA630–AA CPU Module User's Guide	EK–KA630–UG
KA640–AA CPU Module User's Guide	EK–KA640–UG
KA650–AA CPU Module User's Guide	EK–KA650–UG
KDA50–Q CPU Module User's Guide	EK–KDA5Q–UG
KDJ11–B CPU Module User's Guide	EK–KDJ1B–UG
KDJ11–D/S CPU Module User's Guide	EK–KDJ1D–UG
KDF11–BA CPU Module User's Guide	EK–KDFEB–UG
KMV11 Programmable Communications Controller User's Guide	EK–KMV11–UG
KMV11 Programmable Communications Controller Technical Manual	EK–KMV11–TM

Document Title	Order Number
Modules	
LSI–11 Analog System User's Guide	EK–AXV11–UG
Q-Bus DMA Analog System User's Guide	EK–AV11D–UG
RQDX2 Controller Module User's Guide	EK–RQDX2–UG
RQDX3 Controller Module User's Guide	EK–RQDX3–UG
Disk and Tape Drives	
RA60 Disk Drive Service Manual	EK–ORA60–SV
RA60 Disk Drive User's Guide	EK–ORA60–UG
RA81 Disk Drive Service Manual	EK–ORA81–SV
RA81 Disk Drive User's Guide	EK–ORA81–UG
SA482 Storage Array User's Guide (for RA82)	EK–SA482–UG
SA482 Storage Array Service Manual (for RA82)	EK–SA482–SV
RC25 Disk Subsystem User's Guide	EK–ORC25–UG
RC25 Disk Subsystem Pocket Service Guide	EK–ORC25–PS
RRD50 Subsystem Pocket Service Guide	EK–RRD50–PS
RRD50 Digital Disk Drive User's Guide	EK–RRD50–UG
RX33 Technical Description Manual	EK–RX33T–TM
RX50–D, –R Dual Flexible Disk Drive Subsystem Owner's Manual	EK–LEP01–OM
TK50 Tape Drive Subsystem User's Guide	EK–LEP05–UG
TS05 Tape Transport Pocket Service Guide	EK–TSV05–PS
TS05 Tape Transport Subsystem Technical Manual	EK–TSV05–TM
TS05 Tape Transport System User's Guide	EK–TSV05–UG

Document Title	Order Number
Systems	
MicroVAX Special Systems Maintenance	EK–181AA–MG
630QB Maintenance Print Set	MP–02071–01
630QE Maintenance Print Set	MP–02219–01
630QY Maintenance Print Set	MP–02065–01
630QZ Maintenance Print Set	MP–02068–01
BA23 Enclosure Maintenance	EK–186AA–MG
BA123 Enclosure Maintenance	EK–188AA–MG
BA213 Enclosure Maintenance	EK–189AA–MG
BA214 Enclosure Maintenance	EK–190AA–MG
BA215 Enclosure Maintenance	EK–191AA–MG
H9642–J Cabinet Maintenance	EK–187AA–MG
H9644 Cabinet Maintenance	EK–221AA–MG
KA630 CPU System Maintenance	EK–178AA–MG
KA640 CPU System Maintenance	EK–179AA–MG
KA650 CPU System Maintenance	EK–180AA–MG
KDF11–B CPU System Maintenance	EK–245AA–MG
KDJ11–D/S CPU System Maintenance	EK–246AA–MG
KDJ11–B CPU System Maintenance	EK–247AA–MG
MicroPDP–11 Hardware Information Kit (for BA23)	00–ZYAAA–GZ
MicroPDP–11 Hardware Information Kit (for BA123)	00–ZYAAB–GZ
MicroPDP–11 Hardware Information Kit (for H9642–J)	00–ZYAAE–GZ
MicroPDP–11 Hardware Information Kit (for BA213)	00–ZYAAS–GZ
Microsystems Options	EK–192AA–MG
Microsystems Site Preparation Guide	EK–O67AB–PG
MicroVAX II Hardware Information Kit (for BA23)	00–ZNAAA–GZ
MicroVAX II Hardware Information Kit (for BA123)	00–ZNAAB–GZ
MicroVAX II Hardware Information Kit (for H9642–J)	00–ZNAAE–GZ
MicroVAX 3500 Customer Hardware Information Kit	00–ZNAES–GZ
MicroVAX 3600 Customer Hardware Information Kit (for H9644)	00–ZNAEF–GZ
VAXstation 3200 Owner's Manual (BA23)	EK–154AA–OW
VAXstation 3500 Owner's Manual (BA213)	EK–171AA–OW
VAXstation II/GPX Owner's Manual (BA23)	EK–106AA–OW
VAXstation II/GPX Owner's Manual (BA123)	EK–105AA–OW

Document Title	Order Number
Diagnostics	
DEC/X11 Reference Card	AV–F145A–MC
DEC/X11 User's Manual	AC–FO53D–MC
XXDP User's Manual	AZ–GNJAA–MC
XXDP DEC/X11 Programming Card	EK–OXXDP–MC
MicroVAX Diagnostic Monitor Ethernet Server User's Guide	AA–FNTAC–DN
MicroVAX Diagnostic Monitor Reference Card	AV–FMXAA–DN
MicroVAX Diagnostic Monitor User's Guide	AA–FM7AB–DN
Networks	
Ethernet Transceiver Tester User's Manual	EK–ETHTT–UG
VAX/VMS Networking Manual	AA–Y512C–TE
VAX NI Exerciser User's Guide	AA–HI06A–TE

Index

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Alaska, Hawaii, or New Hampshire	603–884–6660	Digital Equipment Corporation P.O. Box CS2008
Rest of U.S.A. and Puerto Rico*	1–800–DIGITAL	Nashua, NH 03061
* Prepaid orders from Puerto Rico must be placed with DIGITAL's local subsidiary (809–754–7575)		
Canada	800–267–6219 (for software documentation) 613–592–5111 (for hardware documentation)	Digital Equipment of Canada Ltd. 100 Herzberg Road Kanata, Ontario, Canada K2K 2A6 Attn: Direct Order desk
Internal orders (for software documentation)	—	Software Distribution Center (SDC) Digital Equipment Corporation Westminster, MA 01473
Internal orders (for hardware documentation)	DTN: 234–4323 (508) 351–4323	Publishing & Circulation Serv. (P&CS) NR03–1/W3 Digital Equipment Corporation Northboro, MA 01532

NOTES

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BA214 Enclosure Maintenance
EK–190AA–MG–001

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