VAX 4000

BA42B Enclosure Maintenance

Order Number: EK–472AB–MG. B01

August 1994

This manual provides reference, installation, and maintenance information for the BA42B Enclosure used with the VAX 4000 Model 100/100A/105A systems.

Digital Equipment Corporation
Maynard, Massachusetts

August, 1994

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

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Preface

This manual provides the information that you will need to maintain the BA42B Enclosure when used with the VAX 4000 Model 100/100A/105A systems. It contains information about the enclosure, installation information, and procedures for servicing field replaceable units (FRUs).

Audience

This manual is for Digital™ Services personnel who provide support and maintenance for systems that use this enclosure. It is also for customers who have a self-maintenance agreement with Digital Equipment Corporation. Users of this manual must have experience in replacing hardware components.

Structure of This Manual

This manual is divided into three chapters, three appendixes, a glossary, and an index:

- Chapter 1 provides an overview of the system enclosure and describes the controls, mass storage areas and capacity, signal distribution, power distribution, input and output connections, and configuration guidelines.
- Chapter 2 provides site preparation information and describes how to install the systems that use the enclosure.
- Chapter 3 provides instructions on removing and replacing FRUs.

- Appendix A gives the pin specifications for the ports on the back of the system unit.
- Appendix B gives a list of the related documents.
- Appendix C gives a list of recommended spare parts.

Conventions

The following conventions are used in this manual:

Convention	Description
Ctrl/*x*	Ctrl/*x* indicates that you hold down the Ctrl key while you press another key or mouse button (indicated here by *x*).
x	A lowercase italic *x* indicates the generic use of a letter. For example, *xxx* indicates any combination of three alphabetic characters.
italic type	Italic type emphasizes important information, indicates variables, and indicates the complete titles of manuals.
nn nnn.nnn nn	A space character separates groups of 3 digits in numerals with 5 or more digits. For example, *10 000* equals *ten thousand*.
n.nn	A period in numerals signals the decimal point indicator. For example, *1.75* equals *one and three-fourths*.
Note	A note contains information of special importance to the reader.
Caution	A caution contains information to prevent damage to the equipment.

1
Enclosure Description

This chapter describes the BA42B Enclosure. It gives information on the following:

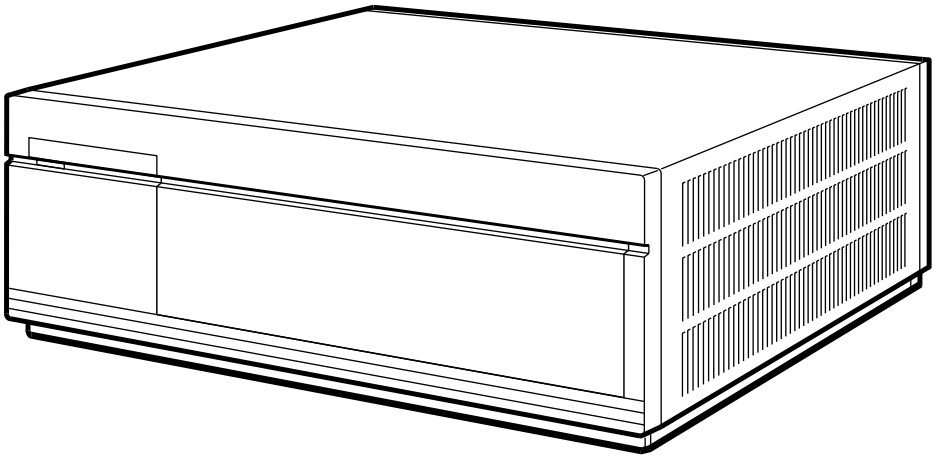
- Mass storage device areas
- Controls, indicators, ports, and connectors
- Power and signal distribution
- Air circulation
- Configuration guidelines

The BA42B Enclosure houses the system unit of the VAX 4000 Model 100/100A/105A systems. It is a desktop-style enclosure (see Figure 1–1).

Note

The VAX 4000 Models 100A/105A can be distinguished from the Model 100 by the protruding connector panel (see Section 1.2). The illustrations in this manual will show different models as examples. Where the functionality differs, it is called to the reader's attention and addressed in the text.

Figure 1–1 BA42B Enclosure



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1.1 Mass Storage Device Areas

The BA42B Enclosure contains 3.5-inch (13.5 cm) and 5.25-inch (20.25cm) half-height mass storage devices. These mass storage devices are mounted on two drive-mounting shelves. The upper drive-mounting shelf can contain one, two, or three DSSI drives. The lower drive-mounting shelf can contain one or two SCSI devices, that is, CD–ROM drives or removable media devices. See Section 1.5.3 for information about mass storage device combinations and orientation.

1.2 Controls, Indicators, Ports, and Connectors

The power OK indicator (POK) is on the front of the BA42B Enclosure. Figure 1–2 shows the common ports and connectors in VAX 4000 BA42B-based systems. Figure 1–3 and Figure 1–4 show differences between the VAX 4000 Model 100, and the VAX 4000 Models 100A and 105A, respectively. Table 1–1 describes the functions of the controls, indicators, ports, and connectors in all VAX 4000 BA42B-based systems.

Enclosure Description
1.2 Controls, Indicators, Ports, and Connectors

Figure 1–2 Common VAX 4000 BA42B-Based Systems Controls, Indicators, Ports, and Connectors for all Models

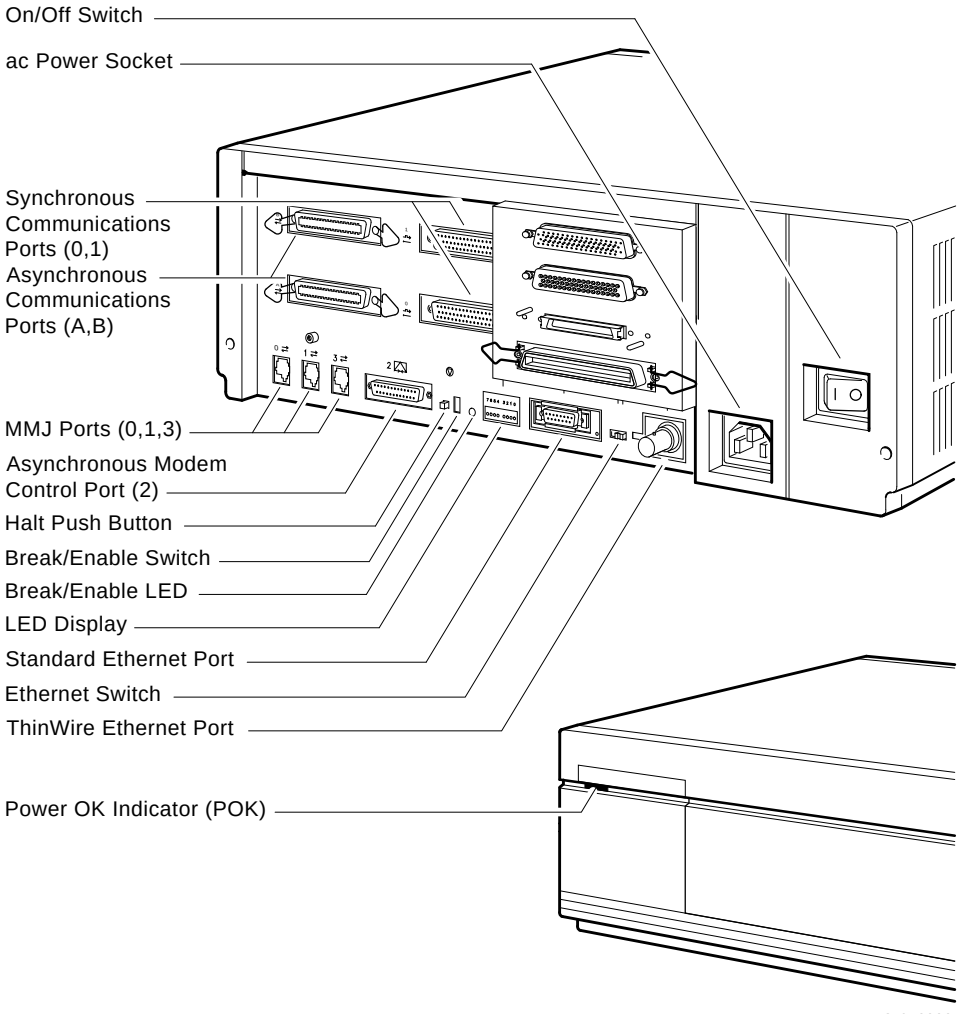


Figure 1–3 Ports and Connectors Unique to the VAX 4000 Model 100

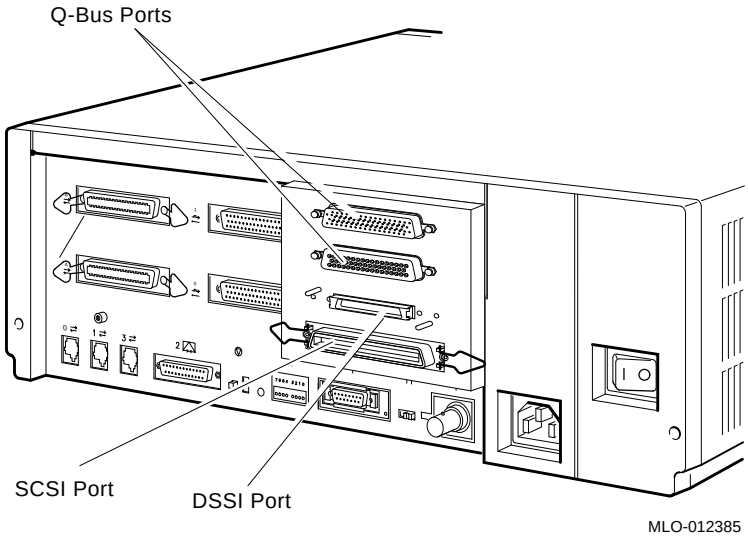
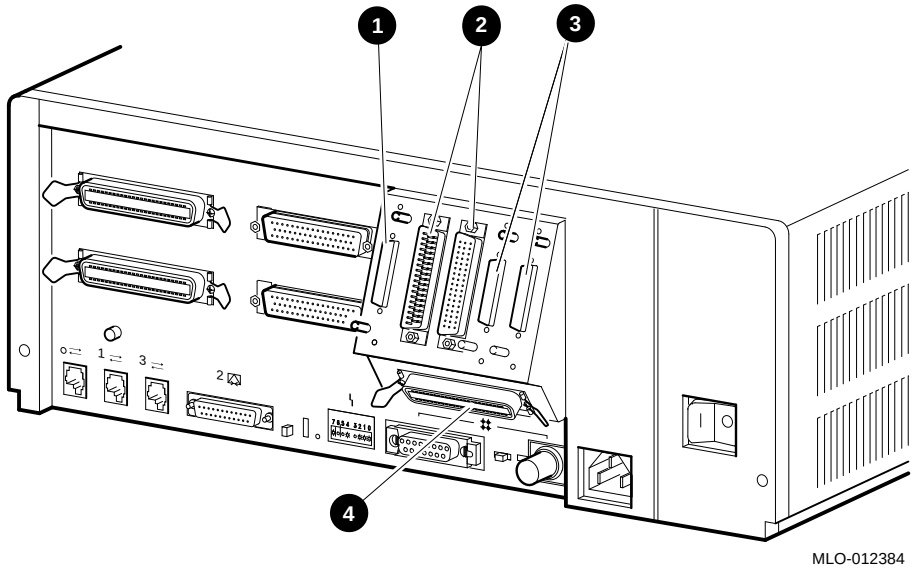


Figure 1–4 Ports and Connectors Unique to the VAX 4000 Model 100A/105A



❶ DSSI port

❷ Q–bus ports

❸ Optional DSSI ports

❹ SCSI port

Table 1–1 Functions of the Controls, Indicators, Ports, and Connectors

Component	Description
On/Off switch	Applies and stops the power to the system unit as follows: • On (|)—Applies the ac power to the system unit • Off (O)—Stops the ac power to the system unit
System ac power socket	A socket for the ac power input.
SCSI[1] port	A port that allows you to connect external SCSI devices.
Synchronous communications ports (0,1)[2]	Two ports that allow you to connect devices that have synchronous communications support.
Asynchronous communications ports (A,B)[2]	One or two ports that provide one of the following asynchronous communications expansion options: • Eight DEC423 compatible asynchronous ports • Sixteen DEC423 compatible asynchronous ports • Eight EIA-232 compatible modem ports
MMJ[3] port 0	DEC423 compatible asynchronous port. This port is the primary console port.
MMJ port 1	DEC423 compatible asynchronous port.
MMJ port 3	DEC423 compatible asynchronous port. This port functions as an alternate console port when the break/enable switch is set in the up position when you turn on the system unit.
Asynchronous modem control port (2)	EIA-232 compatible asynchronous port with modem control.
DSSI Connector[4]	Ports for the management of integrated storage products.
Q–bus Connectors	Q–bus expansion port which connects the expansion enclosure.
Halt push button	A momentary-contact push button that puts the system in console mode.

[1]Small computer system interface (SCSI).

[2]Optional ports that depend on the system configuration.

[3]Modified modular jack (MMJ).

[4]Digital Storage Systems Interconnect (DSSI); up to three in some optional configurations.

(continued on next page)

Table 1–1 (Cont.) Functions of the Controls, Indicators, Ports, and Connectors

Component	Description
Break/enable switch[5]	A two-position switch that determines the function of MMJ port 3 as follows: • Up position—MMJ port 3 functions as a console port. In this state, you can press the Break key on the keyboard of a terminal connected to MMJ port 3 to put the system in console mode. • Down position—MMJ port 3 functions as a normal communications port. MMJ port 0 functions as a console port.
Break/enable LED[6]	A LED indicator that shows the function of MMJ port 3 as follows: • On—MMJ port 3 functions as a console port. • Off—MMJ port 3 functions as a normal communications port.
LED display	A set of eight LEDs that provide power-up and self-test diagnostic code information. This is useful for fault diagnosis when the console terminal is not functioning.
Standard Ethernet port	A port that allows you to connect the system to a standard Ethernet network.
Ethernet switch	A two-position switch that determines the type of Ethernet that the system uses as follows: • Left position—selects the standard Ethernet type • Right position—selects the ThinWire™ Ethernet type
ThinWire Ethernet port	A port that allows you to connect the system to a ThinWire Ethernet network.

[5]The system recognizes the position of this switch only when you turn on the power.

[6]Light emitting diode (LED).

1.3 Power and Signal Distribution

The power supply (30-35042-01) provides power to all the units in the enclosure. It accepts alternating current (ac) input voltage in the ranges 110 V ac to 120 V ac (88 V rms[1] to 132 V rms) and 220 V ac to 240 V ac (176 V rms to 264 V rms).

The regulators in the power supply maintain the correct direct current (dc) output voltages, which are independent of the fluctuations in the ac input power. The power supply can provide a continuous power output of 166 watts (W). The power supply has two internal fans that cool the unit while it operates. Table 1–2 gives the current specifications of the dc circuits.

Table 1–2 Power Supply dc Outputs

Voltage (dc)	Output Current Range in Amperes (dc)	
	Minimum	Maximum
+5.1	3.8	15.0
+12.1	0.18	7.1
-12.0	0.3	1.0
-9.0	0.0	0.2
+3.3	0.0	3.5

The power supply (30-35042-01) has the following output connectors:

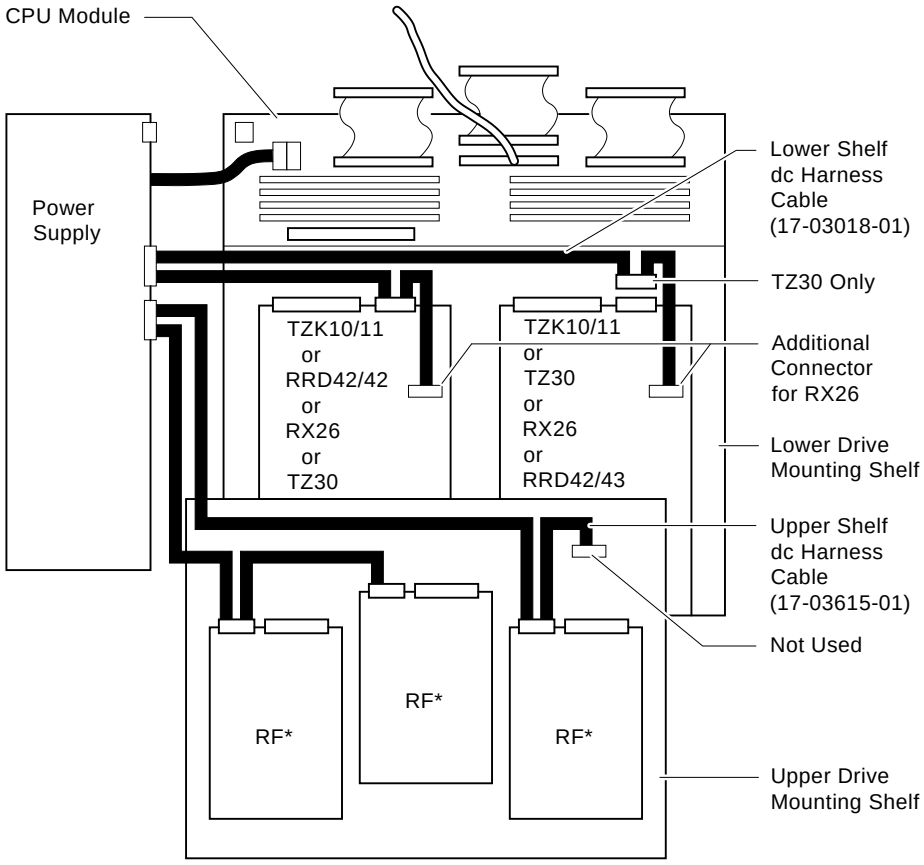
- A flying lead connector that provides the dc power to the central processing unit (CPU) module
- One connector on the side of the power supply that provides the dc power to the devices on the upper drive-mounting shelf
- One connector on the side of the power supply that provides the dc power to the devices on the lower drive-mounting shelf

Figure 1–5 shows the distribution of power in the BA42B Enclosure.

[1] Root mean square.

Enclosure Description
1.3 Power and Signal Distribution

Figure 1–5 Power Distribution



Note: **RF*** denotes RF31T/RF35/RF36 Disk Drives

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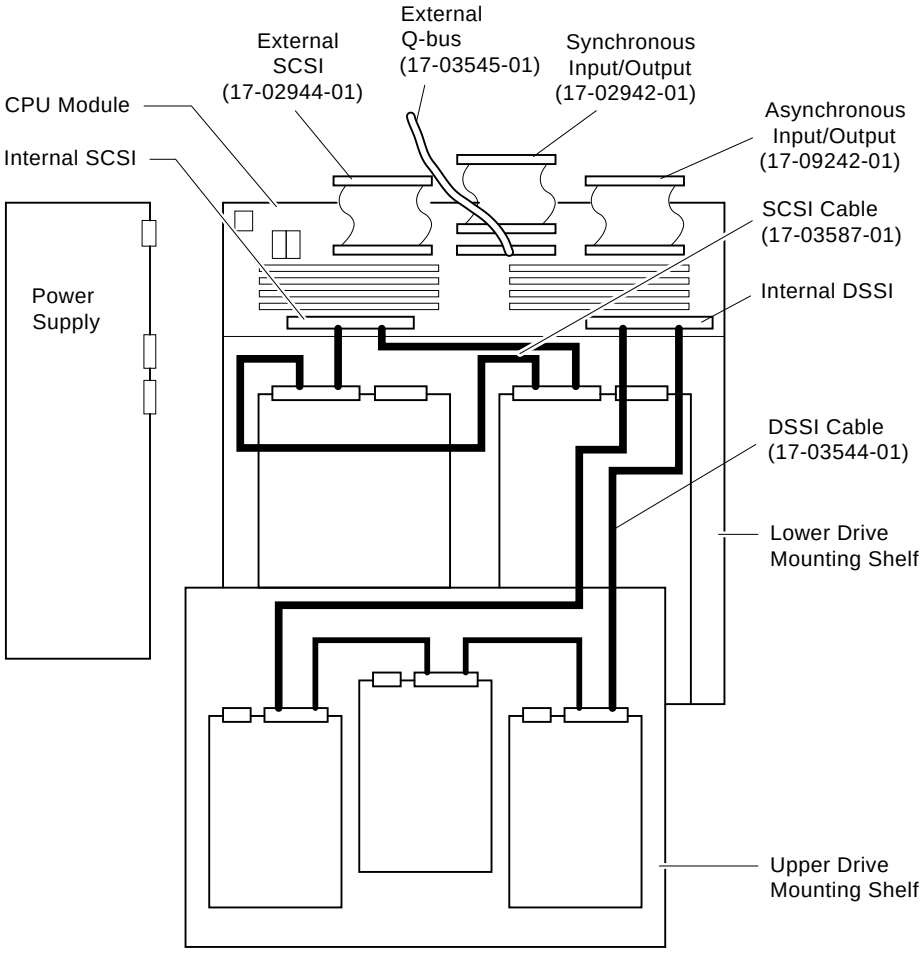
Appendix A provides information on the pin specifications for the connectors. The CPU module is the main source for signal distribution in a BA42B Enclosure system. The SCSI and DSSI cables are connected to the CPU module. Each of the other connectors on the cables has a pull-tab. Use the pull-tab to disconnect the cable from a device. Each pull-tab has a number that identifies the drive to which the SCSI or DSSI cable connector is connected (see Figure 1–6).

Figure 1–6 Signal Distribution



1.4 Air Circulation

The power supply (30-35042-01) contains two fans. These fans provide the air circulation for the enclosure. The air intake is on the right side of the BA42B Enclosure (when viewed from the front), and the air exhaust is on the left side. A typical value of airflow is 0.0104 cubic meters per second (m^3/sec) (22 cubic feet per minute [ft^3/min]).

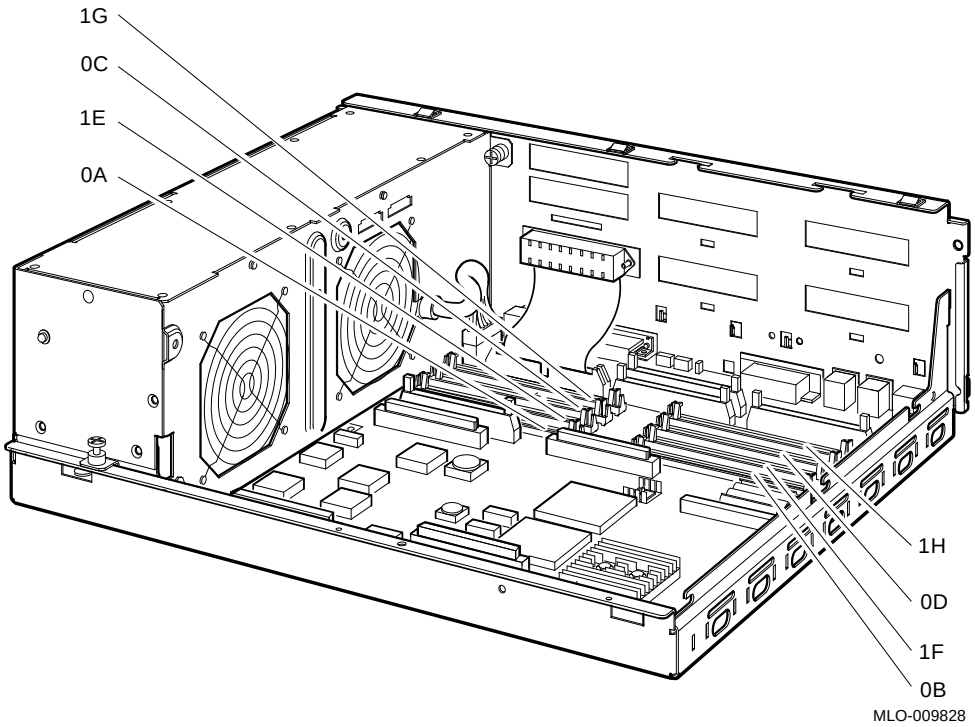
1.5 Configuration Guidelines

The combination of memory, communications options, and internal mass storage devices determines the configuration of a system. Refer to the *VAX 4000 Model 100, 100A, 105A KA52/53 CPU System Maintenance* manual for a list of the external mass storage devices that VAX 4000 Models 100/100A/105A systems support.

1.5.1 Memory Configurations

In the VAX 4000 100/100A/105A, the basic system memory is 16-MB or 64-MB. This memory is contained on two sets of MS44L-BC or MS44-DC modules installed on the KA52/KA53 CPU module. You can expand the system memory in 16-MB or 32-MB increments by adding MS44L-BC or MS44-DC memory options. An MS44L-BC memory option consists of four MS44L-AA (4-MB) memory modules. An MS44-DC memory option consists of four MS44-CA (16-MB) memory modules. Figure 1–7 shows the locations of the memory expansion connectors on the VAX 4000 Models 100/100A/105A KA52/53 CPU module.

Figure 1–7 Memory Expansion Connectors on the KA52/KA53 CPU Module

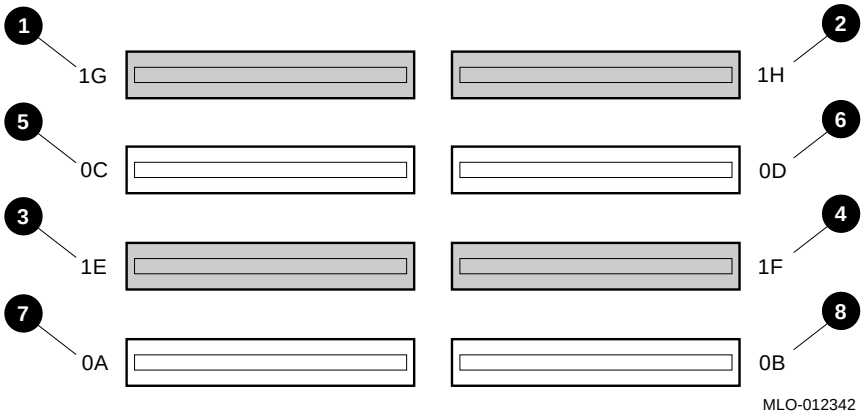


Note

Both MS44–DC (four MS44–CA SIMMs) and MS44L–BC (four MS44L–AA SIMMs) must be installed entirely in either the "1" bank or the "0" bank of connectors; do not mix them in banks.

Figure 1–8 shows the banks of slots as they are viewed from the front of the system. The "1" set of banks is shaded for identification.

Figure 1–8 Identifying Appropriate Banks of SIMM Connectors



❶ Bank 1G
❷ Bank 1H
❸ Bank 1E
❹ Bank 1F
❺ Bank 0C
❻ Bank 0D
❼ Bank 0A
❽ Bank 0B

1.5.2 Communications Options

Table 1–3 lists the communications options that a BA42B Enclosure can contain.

Table 1–3 BA42B Communications Options

Option Name	Description
Asynchronous Options	
DHW42-AA	Provides 8 DEC423 asynchronous lines
DHW42-BA	Provides 16 DEC423 asynchronous lines
DHW42-CA	Provides 8 EIA-232 asynchronous modem lines
DHW42-UP	8 to 16 DEC423 asynchronous line upgrade
Synchronous Options	
DSW42-AA[1]	Provides two EIA-232/V.24 synchronous lines

[1]This option is supplied with two external cables that support the EIA-232/V.24 interface.

The DSW42-AA option also supports the communications interfaces listed in Table 1–4, but you must order the external cable separately.

Table 1–4 DSW42-AA Communications Interface Support

Communications Interface	External Cable
EIA-423/V.10	BC19E-02
EIA-422/V.11	BC19B-02

Each communications option contains three field replaceable units (FRUs) that are installed in the enclosure as follows:

- A logic board

  The logic board connects directly to the CPU module.

- An input/output cable

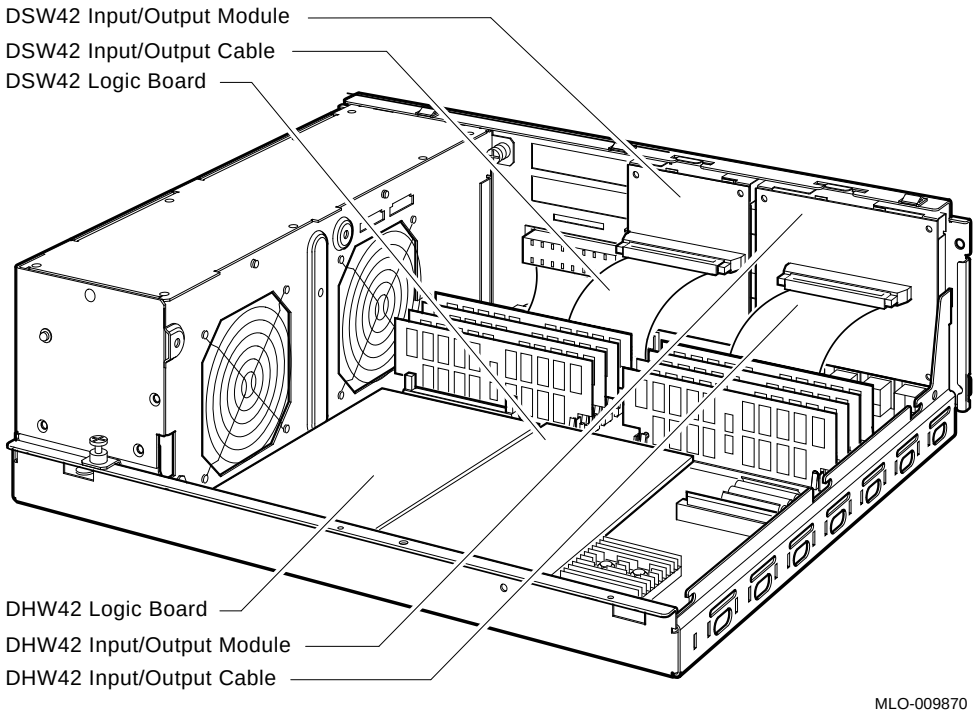
  The input/output cable connects the CPU module to the input/output module.

- An input/output module

The input/output module is a snap-fit assembly that is attached to the inside of the back panel of the BA42B Enclosure.

The communications options logic boards have different locations in the BA42B Enclosure, depending on the model number of the system. The DHW42 logic board is located to the left of the CPU module, with the DSW42 logic board located to its right (see Figure 1–9; Model 100 is shown as an example).

Figure 1–9 Communications Options in Model 100/100A/105A Systems



1.5.3 Mass Storage Devices

Table 1–5 lists the mass storage devices that the BA42B Enclosure can contain.

Table 1–5 BA42B Mass Storage Devices

Option Name	Description	Size[1] (in)	Capacity
RF31T/RF35 /RF36	Disk drive	3.5	381-MB/852-MB /1.6-GB
TZ30[2]	Tape drive	5.25	95-MB cartridge
TZK10/TZK11[2]	Tape drive	5.25	Range of cartridges[3]
TLZ06/TLZ07[2]	Tape drive	5.25	Range of cassettes[4]
RX26[2]	Diskette drive	3.5	Range of diskettes[5]
RRD42[2]	CD–ROM[5] drive	5.25	600-MB CD–ROM
RRD43[2]	CD–ROM[5] drive	5.25	600-MB CD–ROM

[1]Size of half-height device.

[2]Removable media device.

[3]Supports 320-MB and 525-MB cartridges.

[4]Supports 60 M and 90 m cassettes.

[5]Supports 1.4-MB and 2.8-MB diskettes.

The BA42B Enclosure has two drive-mounting shelves for mass storage devices as follows:

- Upper drive-mounting shelf

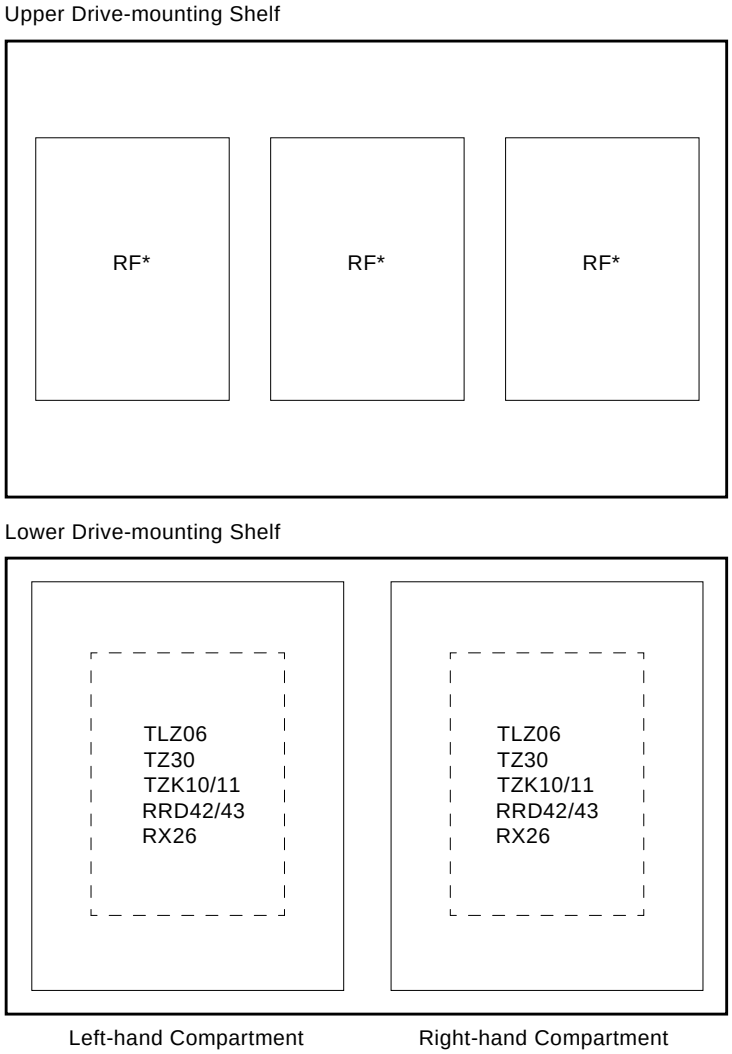
  The upper drive-mounting shelf can contain one, two, or three DSSI disk drives.

- Lower drive-mounting shelf

  The lower drive-mounting shelf can contain one or two SCSI devices. These devices are either CD–ROM drives or removable media devices.

Figure 1–10 shows the combinations of mass storage devices in a BA42B Enclosure.

Figure 1–10 Mass Storage Device Combinations in the BA42B Enclosure



Note: RF* denotes RF31T/RF35/RF36 disk drives.

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2
Installation Procedures

This chapter describes how to install a BA42B system. It gives information on the following:

- Preparing the site
- Unpacking the system
- Installing a BA42B system

Since the back of the enclosure differs from model to model, the portion of this chapter devoted to the actual installation of the system is divided into two sections; the first covers the VAX 4000 Model 100, and the second section covers the VAX 4000 Models 100A/105A.

2.1 Preparing the Site

Before you unpack the BA42B system, verify the physical, environmental, and electrical requirements described in this section.

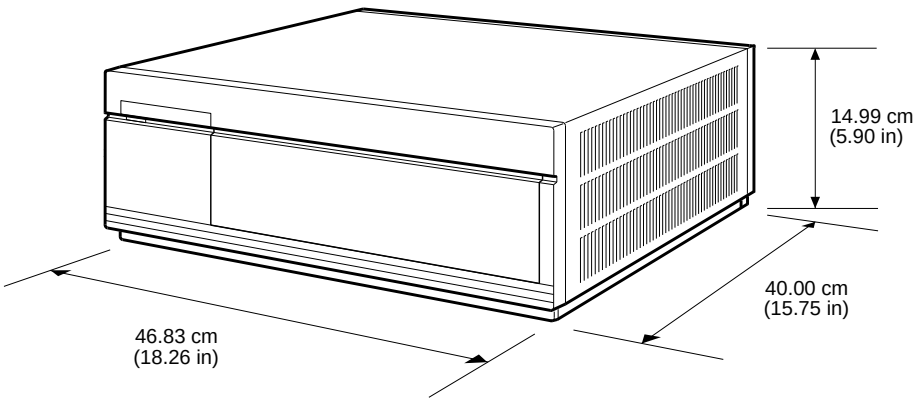
2.1.1 Enclosure Dimensions

Figure 2–1 shows the dimensions of the BA42B Enclosure.

Caution

The container and enclosure together typically weigh 20.50 kilograms (kg) (45 pounds [lb]). Two people are required to handle the container.

Figure 2–1 BA42B Dimensions



The dimensions of the container are as follows:

- Height = 35.3 cm (14.0 inches)
- Width = 61.1 cm (24.0 inches)
- Depth = 51.0 cm (20.0 inches)

2.1.2 Additional Equipment

When you are installing additional equipment, follow these guidelines:

- Make sure that there is sufficient space for the terminals and other peripheral equipment.
- Make sure that you keep the mass storage devices in an area that has the same temperature and humidity as the computer area (see Table 2–1).
- When you plan the cable routing for multiple-terminal systems, consider factors such as safety, convenience, future expansion, and cost. Label and install the cables before you install the system.

2.1.3 Operating Environment

Computer systems in office areas are subject to electrostatic discharge (ESD), temperature changes, and humidity. To install the system in the correct environment, follow these guidelines:

- Install the system in a well-ventilated area where the temperature and humidity ranges listed in Table 2–1 are maintained during the year.
- Do not place a system near heating or cooling devices, large windows, or doors that open to the outside. Rapid changes of temperature can affect the performance of the system.
- Place the system in an area where the air contains a minimum of dust and other abrasive contaminants.

2.1.4 Electrostatic Discharge

ESD can cause system failures and loss of data. To minimize the buildup of static electricity, follow these guidelines:

- Maintain a relative humidity level of at least 40%.
- Place the system away from busy corridors.
- Carpet in the computer area is not recommended. However, if you want to use carpet, antistatic carpet is recommended. When carpet is already in use, put an antistatic mat under the system.

2.1.5 Heat Dissipation

The heat dissipated by a BA42B Enclosure system depends on the model number of the system, but is typically 410 British thermal units/hour (Btu/h).

2.1.6 Temperature, Humidity, and Altitude Ranges

Table 2–1 gives the operating, nonoperating, and storage ranges for the temperature, humidity, and altitude for BA42B Enclosure systems.

Table 2–1 Temperature, Humidity, and Altitude Ranges

Parameter	Operating Range[1]	Nonoperating Range	Storage Range
Temperature	10°C to 40°C	–40°C to 66°C	5°C to 50°C
	(50°F to 104°F)	(–40°F to 151°F)	(41°F to 122°F)
Relative humidity[2]	10% to 90%	10% to 95%[2]	10% to 95%
Altitude	2400 m maximum	4900 m maximum	
	(8000 ft maximum)	(16 000 ft maximum)	
Rate of change of temperature	11°C per hour maximum		
	(20°F per hour maximum)		

[1]For operation above sea level, decrease the operating temperature by 1.8°C per 1000 m (or 1°F per 1000 ft).

[2]At a temperature of 66°C.

2.1.7 Electrical Requirements

The power source to which the system connects must be capable of providing power to the system unit and any other additional equipment, such as local terminals and expansion boxes. Digital™ recommends that each system operates in a dedicated power circuit. Additional power equipment may be required to avoid power interruptions. Table 2–2 lists the electrical requirements of systems in BA42B Enclosures. The power supply in the system is autosensing. You do not have to select the input voltage.

Table 2–2 BA42B Electrical Requirements

Parameter	Values
Nominal voltages	110 V ac or 220 V ac
Voltage ranges	100 V ac to 120 V ac (88 V rms[1] to 132 V rms) and 220 V ac to 240 V ac (176 V rms to 264 V rms)
Power source phase	Single
Nominal frequencies	50 Hz[2] or 60 Hz
Frequency range	47 Hz to 63 Hz
Maximum running current	1.2 A for 110 V ac systems and 0.6 A for 220 V ac systems
Steady state current	1.0 A for 110 V ac systems and 0.5 A for 220 V ac systems
Maximum inrush current	32 A
Maximum power consumption	120 W

[1]Root mean square (rms).

[2]Hertz (Hz).

2.2 Unpacking the System

Open the container. Remove the box and the accessory tray. The box contains the system unit. The accessory tray contains the following:

- *Customer Hardware Information Kit*
- *OpenVMS Factory Installed Software User Guide*
- Software licenses
- Power cord
- Other accessories

Expansion boxes, if ordered, are supplied in separate containers.

Depending on the system configuration, the contents of the container may differ from the items shown in Figure 2–2. When unpacking the system, do the following:

1. Check the contents of the container against the packing slip.
2. Store the unused parts for future use. Depending on how you set up the system, you may not use all the components supplied with the system.

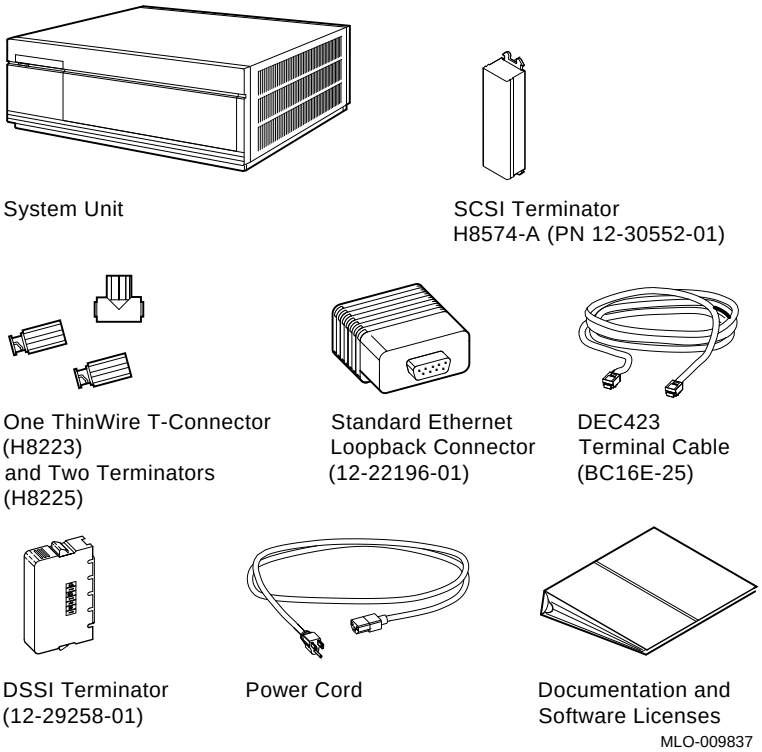
Installation Procedures
2.2 Unpacking the System

Always repack the system unit in its original packing material when moving or relocating the system. This precaution protects the system from damage.

Note

Figure 2–2 shows the contents of a VAX 4000 Model 100 kit as an example. The VAX 4000 100A/105A kits have no Ethernet Loopback connector, and may contain up to three DSSI terminators, depending on options ordered.

Figure 2–2 System Unit and Accessory Tray Contents



2.3 Installing the BA42B System

After you unpack the system, move the BA42B Enclosure to the location from which it will operate. Place the enclosure so that it satisfies the following space requirements:

- Allow 5 cm (approximately 2 inches) of clearance on each side of the enclosure for ventilation.
- Allow 10 cm (approximately 4 inches) of clearance in the back of the enclosure for the connection of cables.
- Allow 20 cm (approximately 8 inches) of clearance in the front of the enclosure so that you can reach the removable media devices, depending on the system configuration.

Note

Section 2.3.1 covers the installation of a VAX 4000 Model 100. See Section 2.3.2 to install either a VAX 4000 Model 100A or Model 105A.

2.3.1 Installing a BA42B-Based VAX 4000 Model 100

To install a VAX 4000 Model 100:

2.3.1.1 Identifying the Ports and Connectors on the System

Figure 1–2 and Figure 1–3 show the ports and connectors on a VAX 4000 Model 100. Section 1.2 describes the functions of the controls, indicators, ports, and connectors in all BA42B-based systems.

2.3.1.2 Connecting the Console Terminal

To connect a console terminal to a BA42B-based VAX 4000 Model 100 system, follow these steps:

1. Make sure that the on/off switch on the terminal is in the off position.
2. Set the communication parameters of the terminal (see Table 2–3).

Table 2–3 Terminal Settings

Feature	Setting
Terminal mode	VTnnn-7bit
Transmit speed	9600 baud
Receive speed	receive = transmit
Character format	8 bits, no parity
Stop bits	1
Comm1 port	DEC-423 (data-leads-only)

See the terminal documentation if you want more information on setting up the terminal.

Note

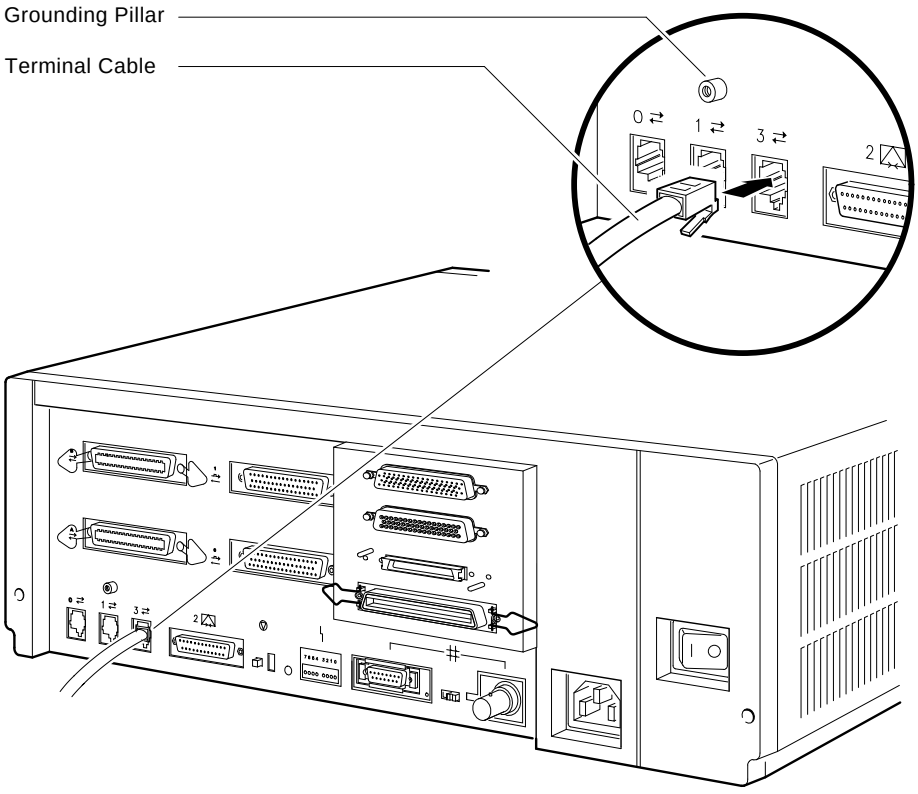
If you connect the console terminal cable to one of the MMJ ports on the back of a VT3*xx* terminal, you must set the port so that it can operate as a DEC423 port. See the terminal documentation for more information.

3. Connect the terminal cable supplied with the system (see Figure 2–2) to MMJ port 3 on the back of the system (see Figure 2–3). Connect the other end of the console cable to a DEC423 port on the terminal.
4. If the terminal has EIA-232 ports only, connect the EIA-232 to DEC423 adapter to the EIA-232 port on the terminal. Then connect the terminal cable to the EIA-232 to DEC423 adapter.

Note

Some terminal cables have grond wire. You must connect this ground wire to the grounding pillar (screw) above MMJ port 1, using the screw provided with the cable.

Figure 2–3 Connecting the Console Terminal



2.3.1.3 Connecting the ThinWire Terminator or Loopback Connector

You can connect BA42B-based VAX 4000 Model 100 systems to either a ThinWire Ethernet network or to a standard Ethernet network. To test the Ethernet circuitry in the system before you connect to a network, install either the ThinWire terminator or the standard Ethernet loopback connector.

The ThinWire terminator and the standard Ethernet loopback connector are supplied with BA42B systems (see Figure 2–2). The ThinWire terminator consists of a T-Connector and two end terminators. The standard Ethernet loopback connector is a single unit.

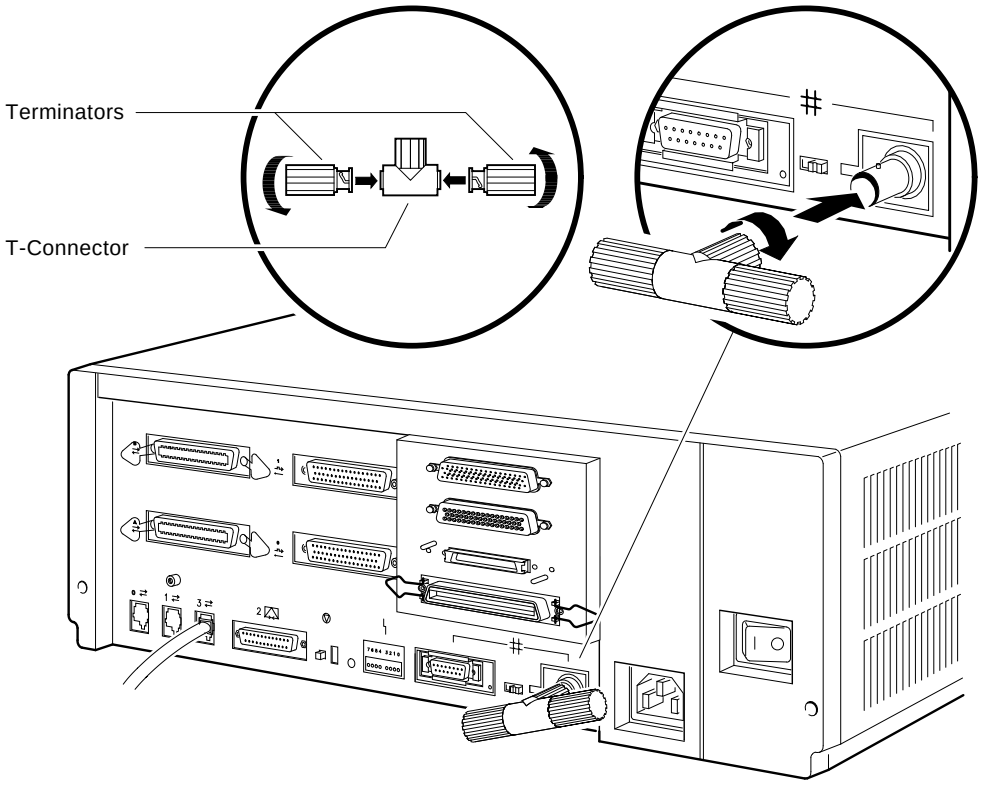
You choose the network type using the Ethernet switch on the back of the system (see Figure 1–2). The switch settings for the network types are as follows:

- Right position—ThinWire Ethernet
- Left position—standard Ethernet

When you want to use a ThinWire Ethernet network, follow these steps:

1. Set the Ethernet switch to the right position.
2. To form a ThinWire terminator, connect the two terminators (see Figure 2–4) to the T-Connector.
3. Connect the ThinWire terminator to the ThinWire Ethernet port on the back of the system unit by pushing in and turning the barrel connector clockwise until it locks (see Figure 2–4).

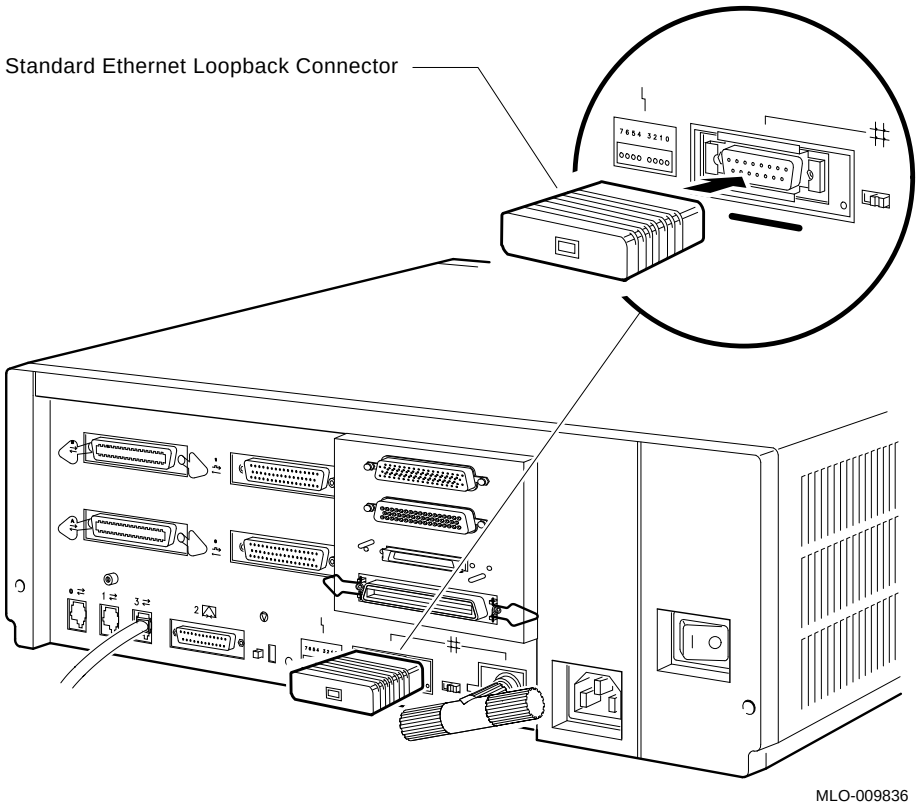
Figure 2–4 Connecting the ThinWire Terminator to the System



If you want to use a standard Ethernet network, follow these steps:

1. Set the Ethernet switch to the left position.
2. Connect the standard Ethernet loopback connector to the standard Ethernet port on the back of the system unit (see Figure 2–5).

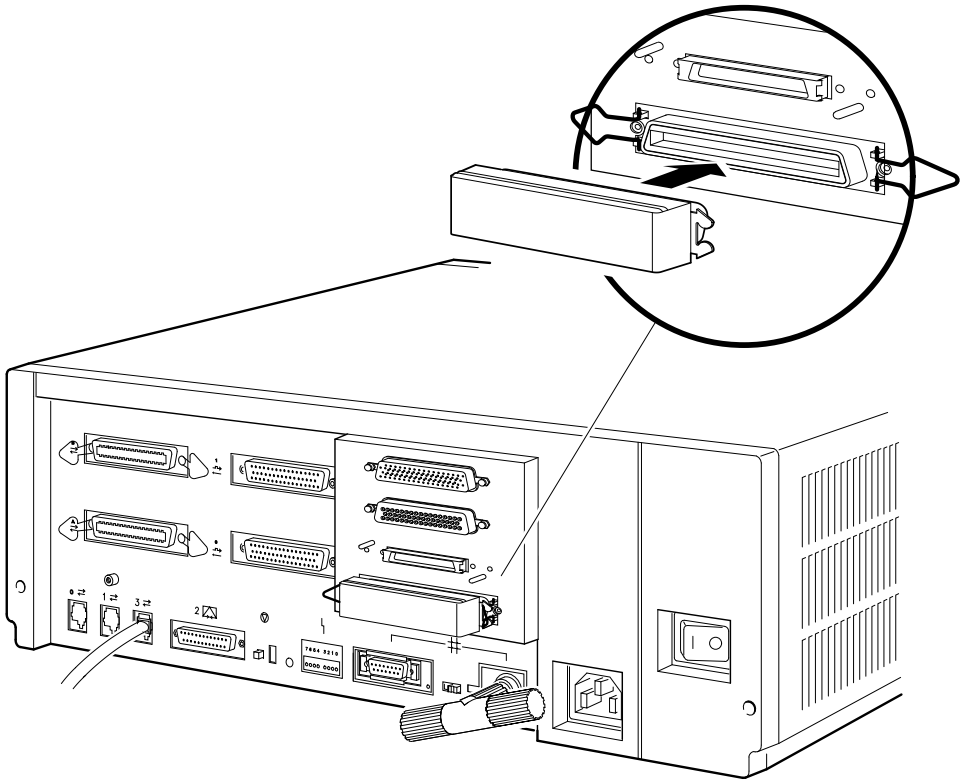
Figure 2–5 Connecting the Standard Ethernet Loopback Connector to the System



2.3.1.4 Connecting the SCSI Terminator

1. Connect the SCSI terminator to the SCSI port as shown in Figure 2–6.
2. Close the bail loops over the terminator ends.

Figure 2–6 Connecting the SCSI Terminator



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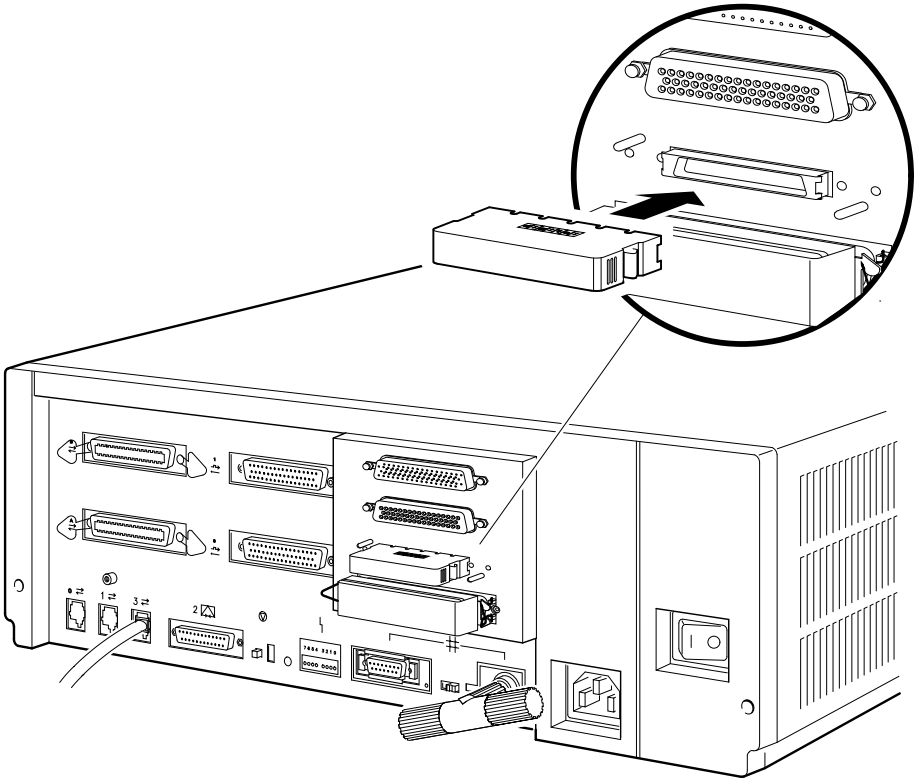
2.3.1.5 Connecting the DSSI Terminator

Connect the DSSI terminator to the DSSI port as shown in Figure 2–7.

Figure 2–7 Connecting the DSSI Terminator



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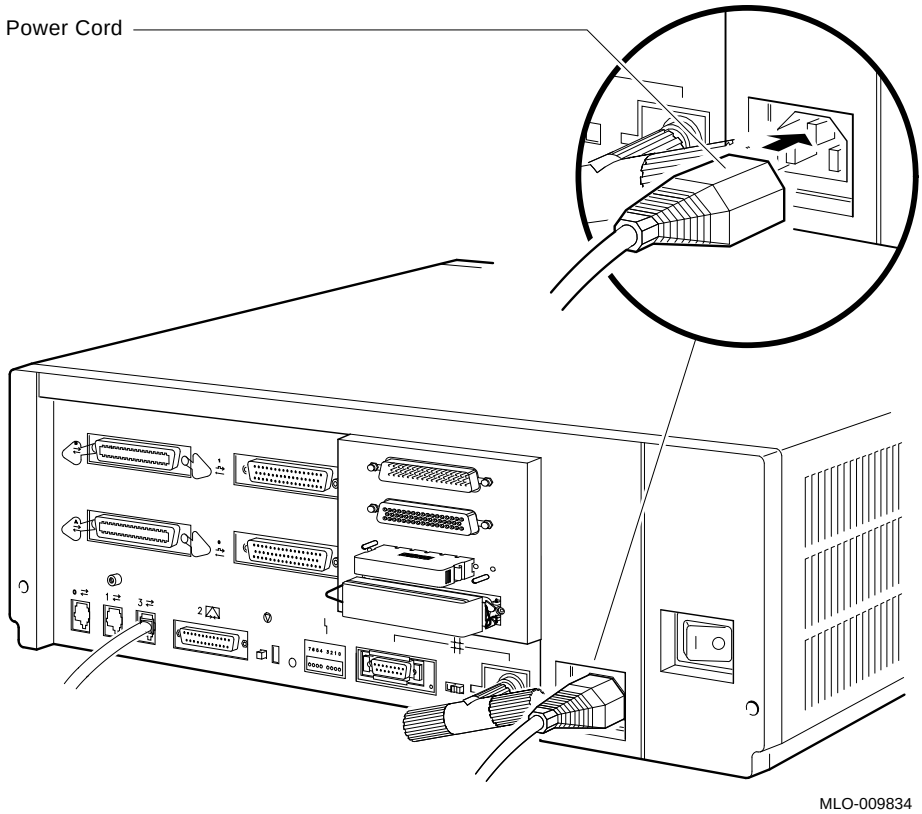
2.3.1.6 Connecting the System Unit Power Cord

A BA42B-based VAX 4000 Model 100 accepts 100 V ac to 120 V ac at 50 Hz or 60 Hz, or 220 V ac to 240 V ac at 50 Hz or 60 Hz. The power supply is self-sensing. You do not have to select the input voltage. To connect the system power cord, follow these steps:

1. Set the on/off switch on the back of the system to the off (O) position.
2. Connect the power cord, supplied with the system (see Figure 2–2), to the ac power socket on the back of the system (see Figure 2–8).
3. Connect the other end of the power cord to a grounded power outlet.

Figure 2–8 Connecting the Power Cord

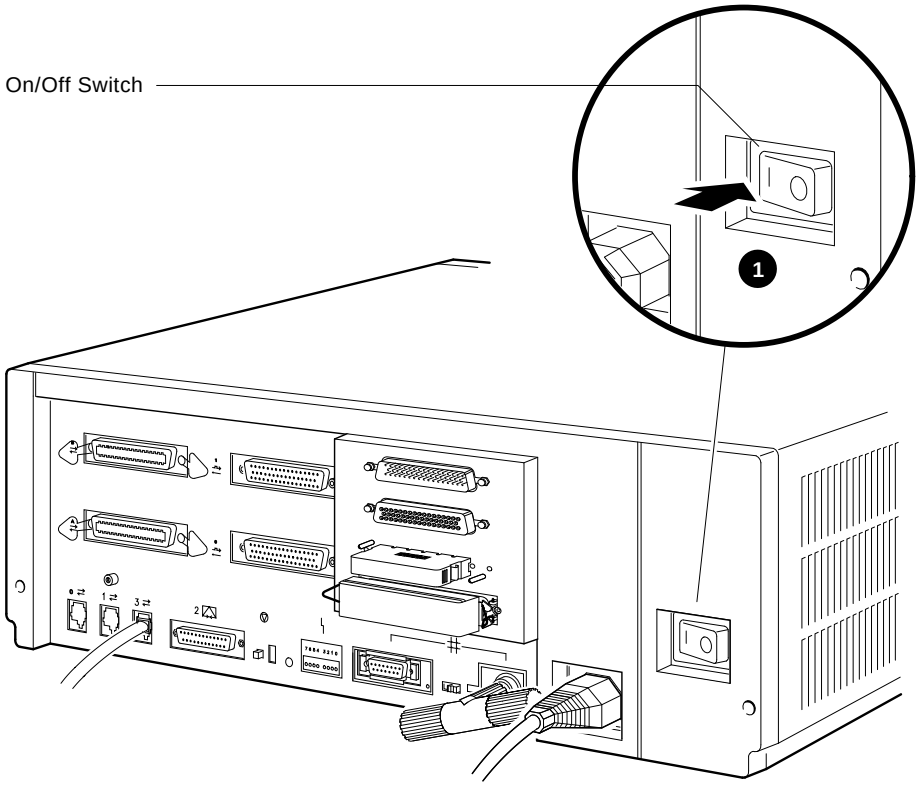


2.3.1.7 Turning On the System

To turn on the system, follow these steps:

1. Set the on/off switch on the terminal to the on position.
2. Set the on/off switch on the system to the on (|) position (see Figure 2–9).

Figure 2–9 Turning On the System



Refer to the *VAX 4000 Model 100, 100A, 105A KA52/KA53 CPU System Maintenance* manual for information about the self-tests that run when you turn on the system.

Note

Section 2.3.2 covers the installation of either a VAX 4000 Model 100A or 105A. Turn to Section 2.3.1 to install a VAX 4000 Model 100.

2.3.2 Installing a BA42B-Based VAX 4000 Model 100A/105A

To install A VAX 4000 Model 100A or 105A:

2.3.2.1 Identifying the Ports and Connectors on the System

Figure 1–2 and Figure 1–4 show the ports and connectors in VAX 4000 Models 100A and 105A. Section 1.2 describes the functions of the controls, indicators, ports, and connectors in all VAX 4000 BA42B-based systems.

2.3.2.2 Connecting the Console Terminal

To connect a console terminal to a BA42B-based VAX 4000 100A/105A, follow these steps:

1. Make sure that the on/off switch on the terminal is in the off position.
2. Set the communication parameters of the terminal (see Table 2–4).

Table 2–4 Terminal Settings

Feature	Setting
Terminal mode	VTnnn-7bit
Transmit speed	9600 baud
Receive speed	receive = transmit
Character format	8 bits, no parity
Stop bits	1
Comm1 port	DEC-423 (data-leads-only)

See the terminal documentation if you want more information on setting up the terminal.

Note

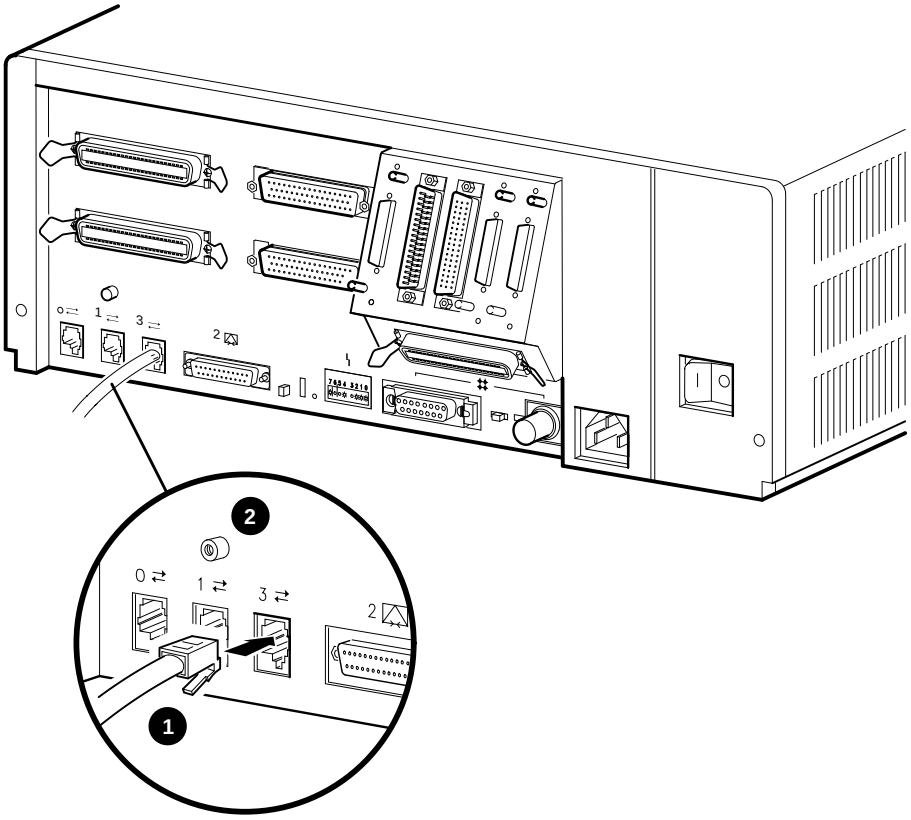
If you connect the terminal cable to one of the MMJ ports on the back of a VT3*xx* terminal, you must set the port so that it can operate as a DEC423 port. See the terminal documentation for more information.

3. Connect the terminal cable supplied with the system (see Figure 2–2) to MMJ port 3 on the back of the system unit (see Figure 2–10). Connect the other end of the console cable to a DEC423 port on the terminal.
4. If the terminal has EIA-232 ports only, connect the EIA-232 to DEC423 adapter to the EIA-232 port on the terminal. Then connect the terminal cable to the EIA-232 to DEC423 adapter.

Note

Some terminal cables have an ground wire. You must connect this ground wire to the grounding pillar (screw) above MMJ port 1, using the screw provided with the cable.

Figure 2–10 Connecting the Console Terminal



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❶ Terminal cable

❷ Grounding pillar

2.3.2.3 Connecting the ThinWire Terminator or Loopback Connector

You can connect the VAX 4000 Models 100A/105A to either a ThinWire Ethernet network or to a standard Ethernet network. To test the Ethernet circuitry in the system before you connect to a network, install either the ThinWire terminator or the standard Ethernet loopback connector.

The ThinWire terminator and the standard Ethernet loopback connector are supplied with BA42B systems (see Figure 2–2). The ThinWire terminator consists of a T-connector and two end terminators. The standard Ethernet loopback connector is a single unit.

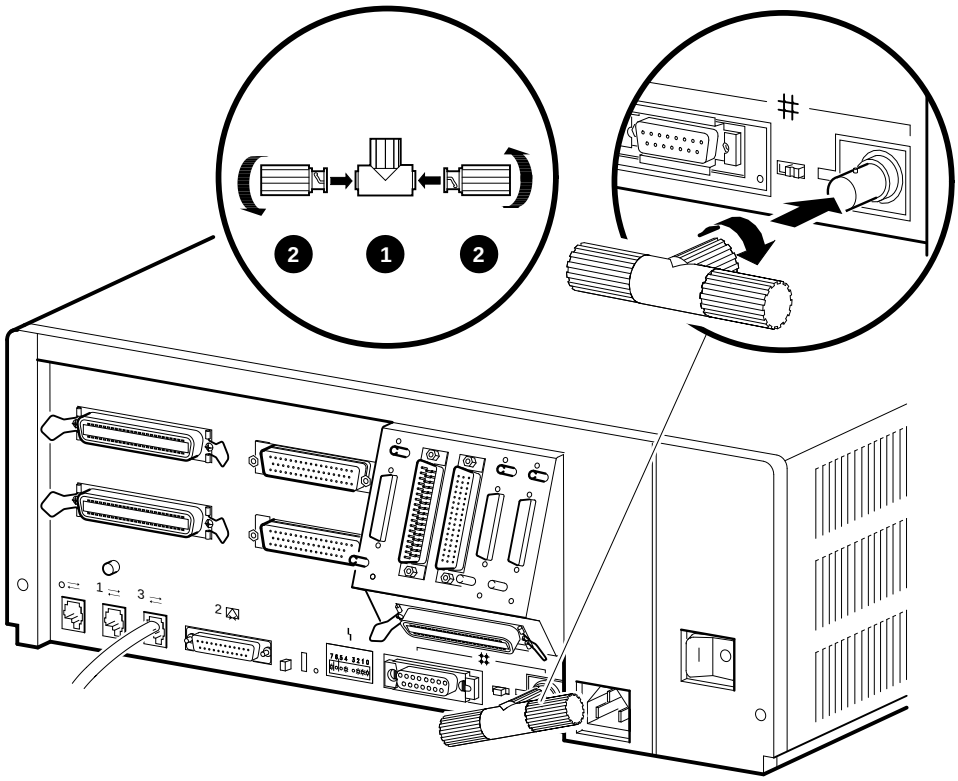
You choose the network type using the Ethernet switch on the back of the system (see Figure 1–2). The switch settings for the network types are as follows:

- Right position—ThinWire Ethernet
- Left position—standard Ethernet

When you want to use a ThinWire Ethernet network, follow these steps:

1. Set the Ethernet switch to the right position.
2. To form a ThinWire terminator, connect the two terminators (see Figure 2–11) to the T-connector.
3. Connect the ThinWire terminator to the ThinWire Ethernet port on the back of the system by pushing in and turning the barrel connector clockwise until it locks (see Figure 2–11).

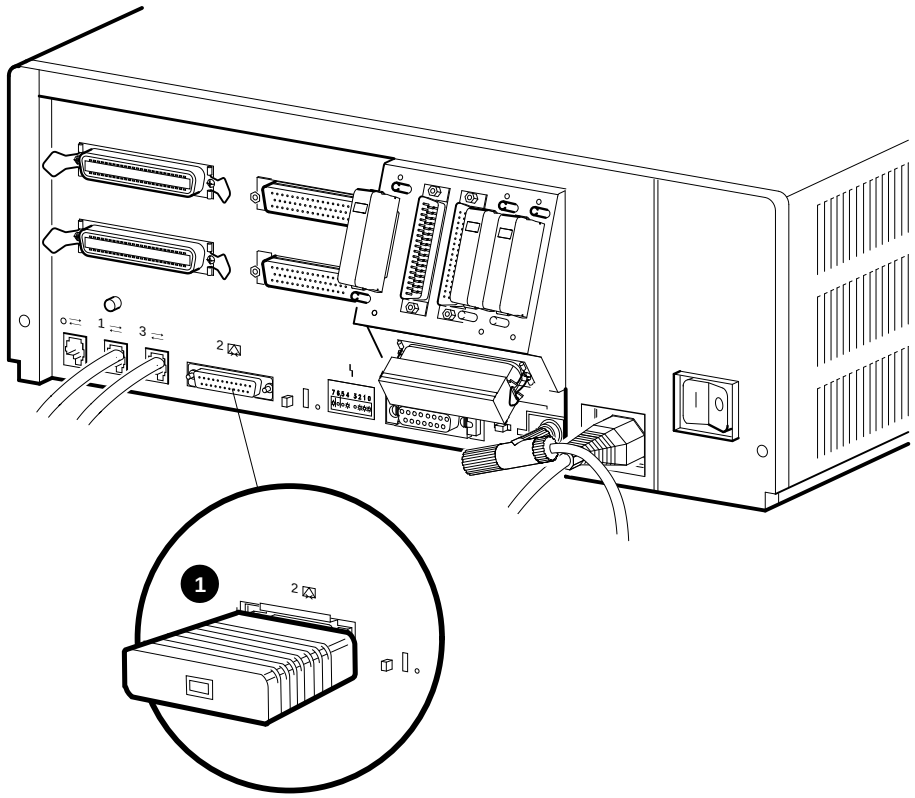
Figure 2–11 Connecting the ThinWire Terminator to the System



❶ T-connector

❷ Terminators

Figure 2–12 Connecting the Standard Ethernet Loopback Connector to the VAX 4000 Models 100A/105A



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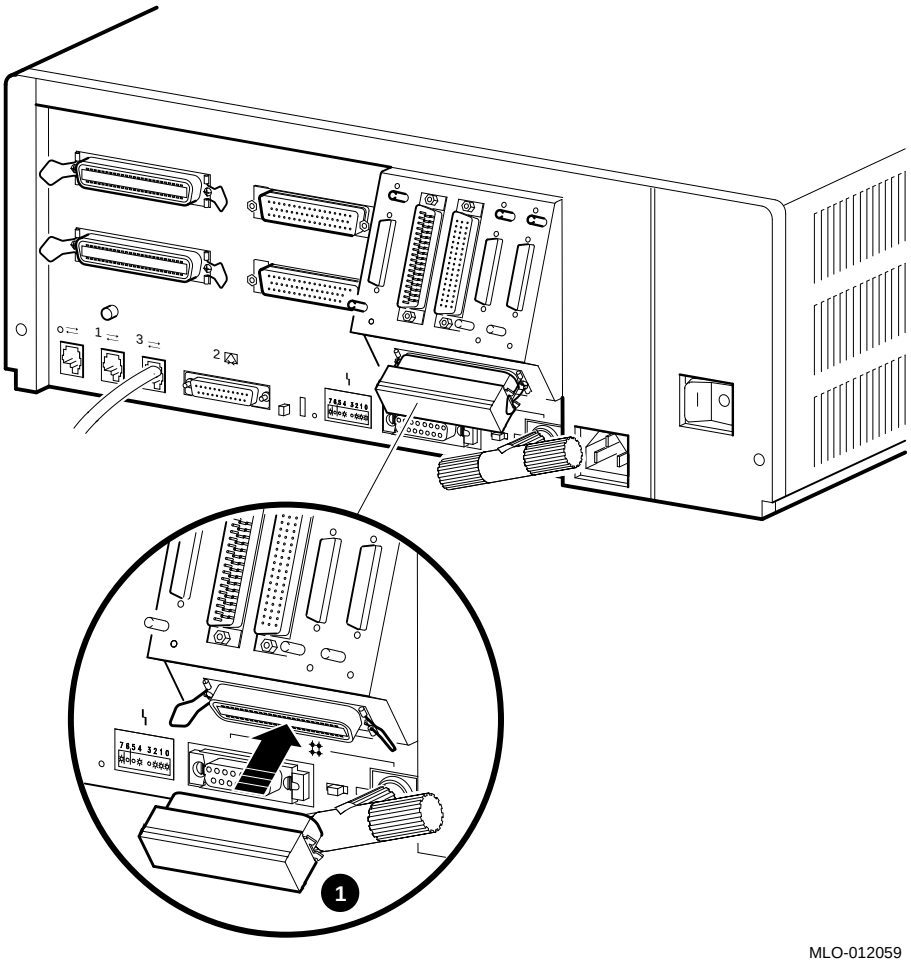
❶ Standard Ethernet loopback connector

❷ Ethernet cable

2.3.2.4 Connecting the SCSI Terminator

1. Connect the SCSI terminator to the SCSI port as shown in Figure 2–13.
2. Close the bail loops over the terminator ends.

Figure 2–13 Connecting the SCSI Terminator

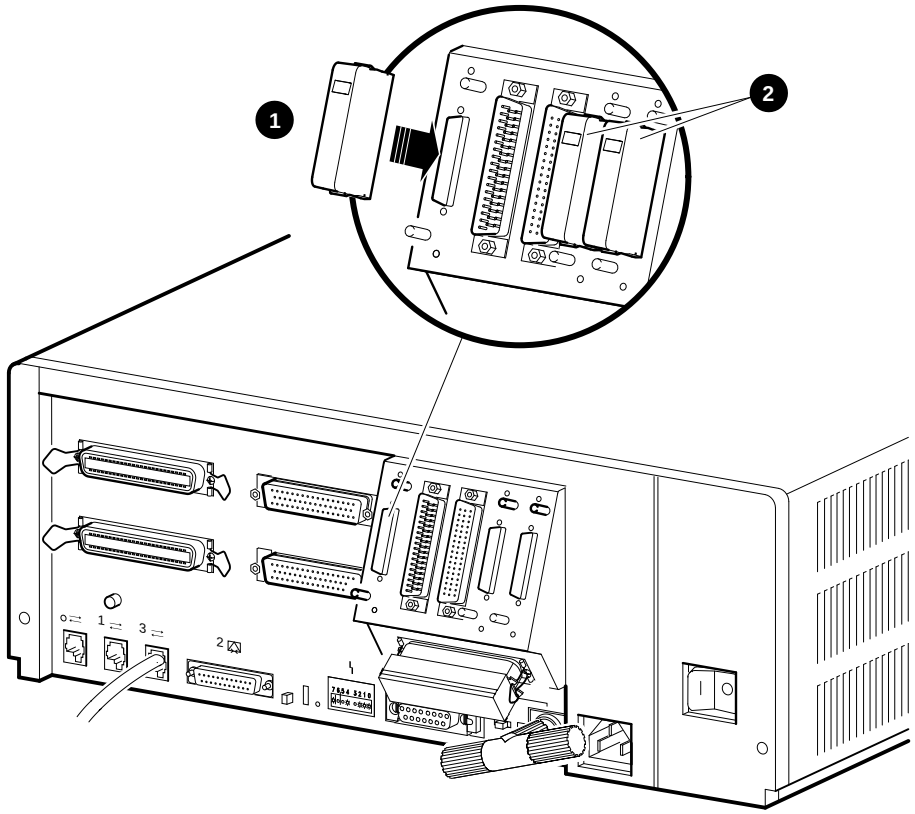


❶ SCSI terminator and port

2.3.2.5 Connecting the DSSI Terminator

Connect the DSSI terminator to the DSSI port as shown in Figure 2–14.

Figure 2–14 Connecting the DSSI Terminator



❶ DSSI terminator and port

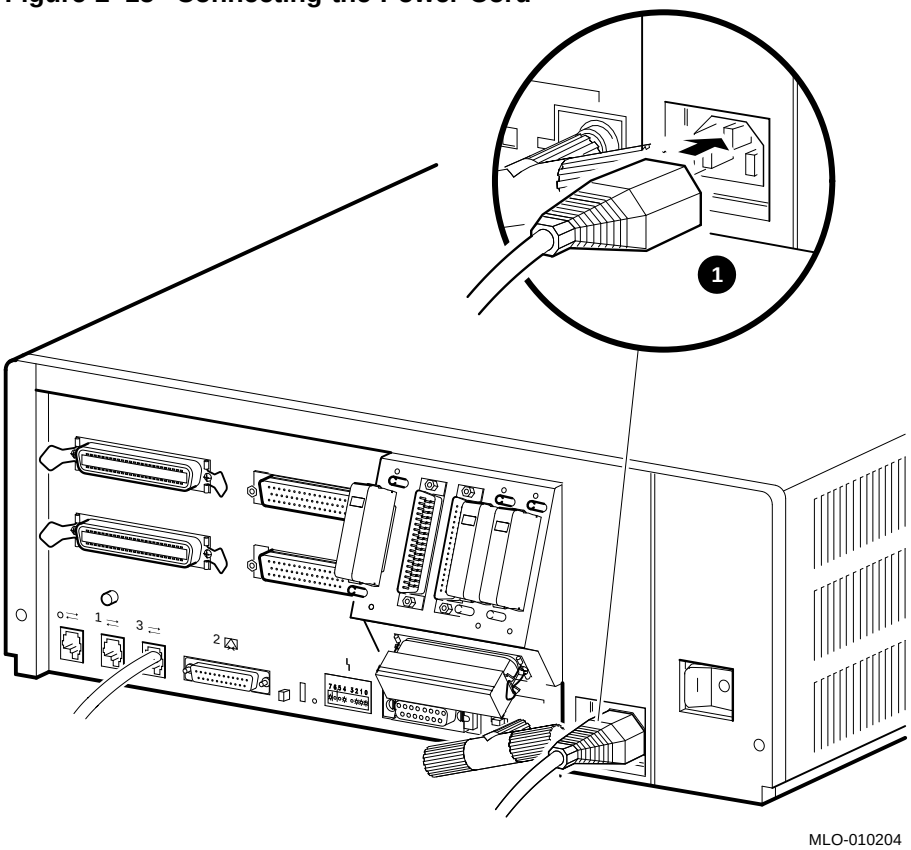
❷ DSSI Terminators connected to optional DSSI ports

2.3.2.6 Connecting the System Unit Power Cord

A VAX 4000 Model 100A/105A accepts 100 V ac to 120 V ac at 50 Hz or 60 Hz, or 220 V ac to 240 V ac at 50 Hz or 60 Hz. The power supply is self-sensing. You do not have to select the input voltage. To connect the system power cord, follow these steps:

1. Set the on/off switch on the back of the system to the off (O) position.
2. Connect the power cord, supplied with the system (see Figure 2–2), to the ac power socket on the back of the system (see Figure 2–15).
3. Connect the other end of the power cord to a grounded power outlet.

Figure 2–15 Connecting the Power Cord



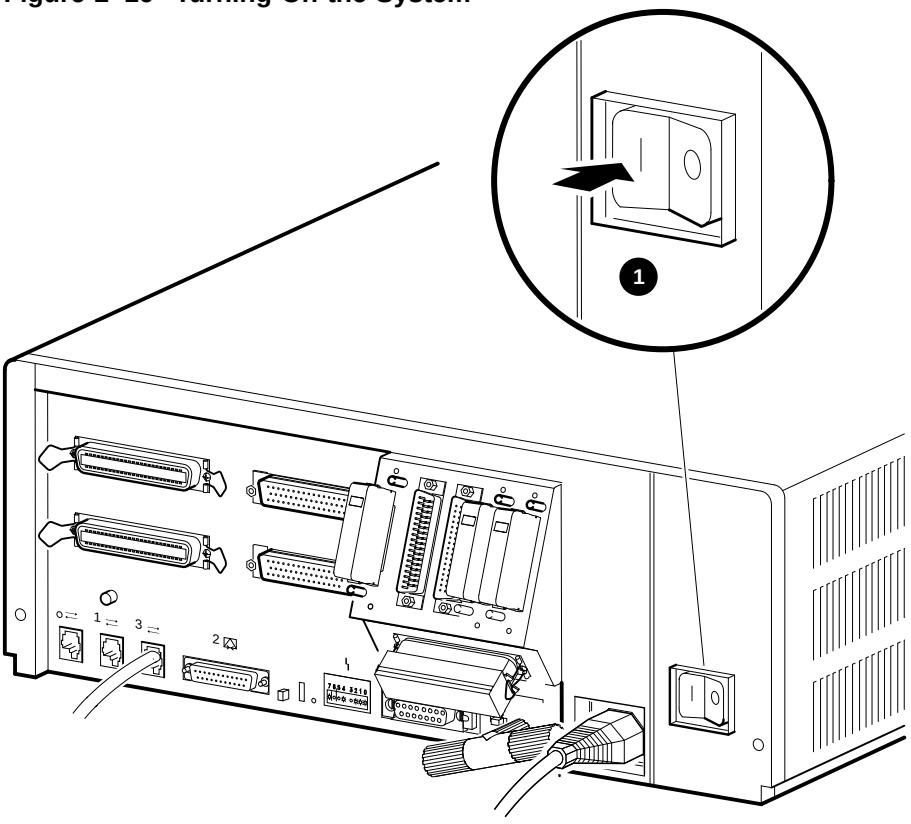
❶ Power cord

2.3.2.7 Turning On the System

To turn on the system, follow these steps:

1. Set the on/off switch on the terminal to the on position.
2. Set the on/off switch on the system to the on (|) position (see Figure 2–16).

Figure 2–16 Turning On the System



❶ On/off switch

Refer to the *VAX 4000 Model 100, 100A, 105A KA52/53 CPU System Maintenance* manual for information about the self-tests that run when you turn on the system.

3

Removing and Replacing Field Replaceable Units

Note

FRUs for the BA42B-based VAX 4000 systems are the same for Models 100, 100A, and 105A, except where noted. Illustrations in this chapter depict various models.

This chapter describes how to remove and replace the Field Replaceable Units (FRUs) in the BA42B Enclosure. Use this chapter when:

- Removing the enclosure cover
- Removing an MS44 or MS44L memory module
- Removing the upper drive-mounting shelf
- Removing an RX26 diskette drive assembly
- Removing a TZ30 tape drive
- Removing a TZK10/TZK11 tape drive
- Removing a TLZ06/TLZ07 tape drive
- Removing an RF31T/RF35/RF36 disk drive
- Removing an RRD42 CD–ROM drive
- Removing an RRD43 CD–ROM drive
- Removing the upper and lower drive-mounting shelf combination
- Removing the SCSI cable
- Removing the DSSI cable
- Removing the DSSI daughter board
- Removing a DSW42 synchronous communications option

Removing and Replacing Field Replaceable Units

- Removing a DHW42 asynchronous communications option
- Removing the CPU module
- Replacing the CPU module
- Removing the power supply

Note

Unless otherwise specified, you can replace a FRU by reversing the steps described in the removal procedure.

Table 3–1 lists the major FRUs in the BA42B Enclosure. It also gives the order numbers for the FRUs and a reference to a section in this chapter that gives information on how to replace the FRU. Refer to the *VAX 4000 BA42B Enclosure System Options* manual for more information about options. Appendix C gives a complete list of the spare parts for the BA42B Enclosure. Figure 3–1 shows the locations of the major FRUs in the BA42B Enclosure.

Caution

- Only qualified personnel should remove or install the FRUs.
- Before you remove or install the FRUs, turn off the system and disconnect the power cord.
- Static electricity can damage integrated circuits. Wear a wrist strap and place an antistatic mat under the system when working with the internal parts of the system unit.

You must have the following tools to replace the FRUs in a BA42B-based VAX system:

- A number 1, Phillips screwdriver
- A blade screwdriver

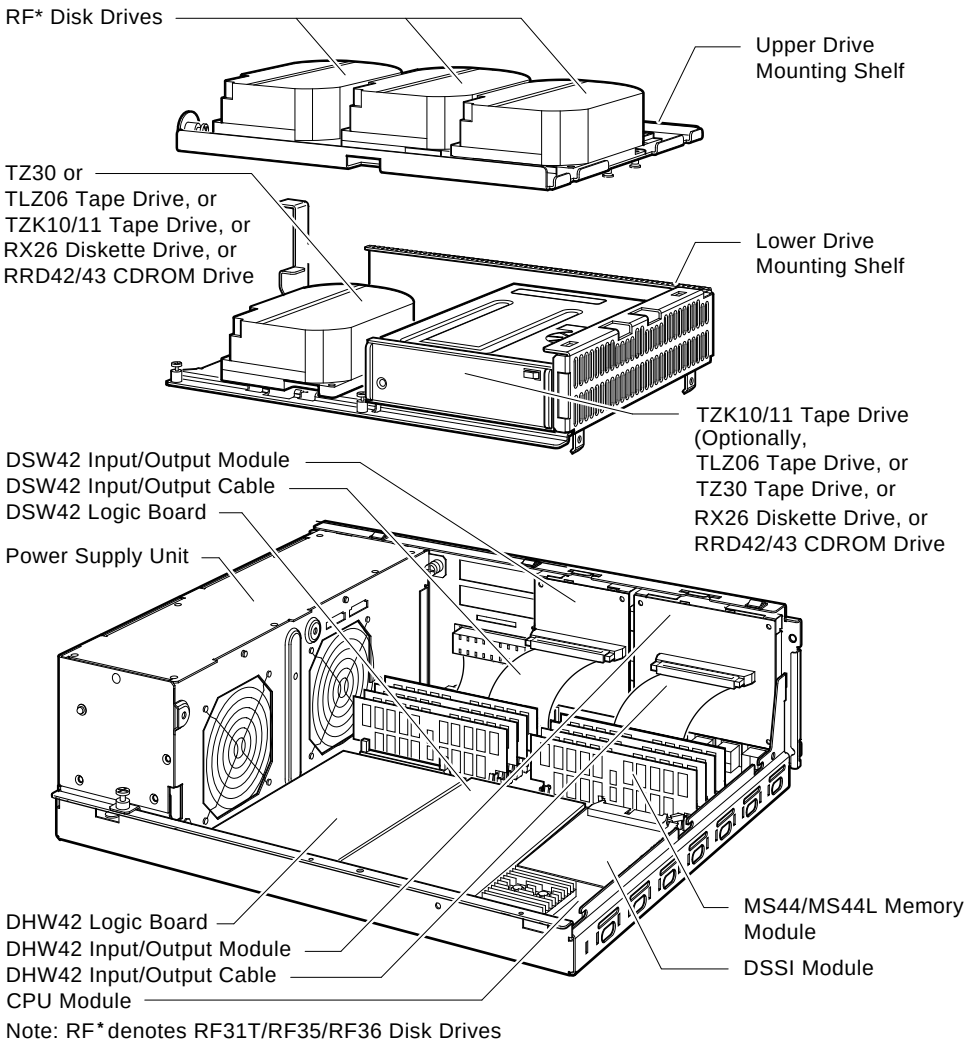
Table 3–1 Major FRUs in the BA42B Enclosure

FRU	Order Numbers	Section
Memory module	MS44-BC, MS44L-DC	3.2
Diskette drive	RX26-AA	3.4
TZ30 tape drive	TZ30-AA	3.5
TZK10/TZK11 tape drive	TZK10-AA, TZK11-AA	3.6
TLZ06/TLZ07 tape drive	TLZ06-AA, TLZ07-AA	3.7
RF31T/RF35/RF36	RF31T-EA/RF35-EA /RF36-EA	3.8
RRD42 CD–ROM drive	RRD42-AA	3.9
RRD43 CD–ROM drive	RRD43-AA	3.10
Single DSSI daughter board or Dual DSSI daughter board	54-21837-01 54-22444-01	3.14
Synchronous communications option	DSW42-AA	3.15
Asynchronous communications option	DHW42-AA, -BA, -CA	3.16
KA52 CPU module (Model 100/100A) or KA53 CPU module (Model 105A)	54-21797-01 54-21797-02	3.17
Power supply	30-35042-01	3.19

Note

Figure 3–1 shows a VAX 4000 Model 100 as an example. VAX 4000 Models 100A and 105A have the same FRUs in the same locations.

Figure 3–1 Major FRUs in the BA42B Enclosure



Note: RF* denotes RF31T/RF35/RF36 Disk Drives

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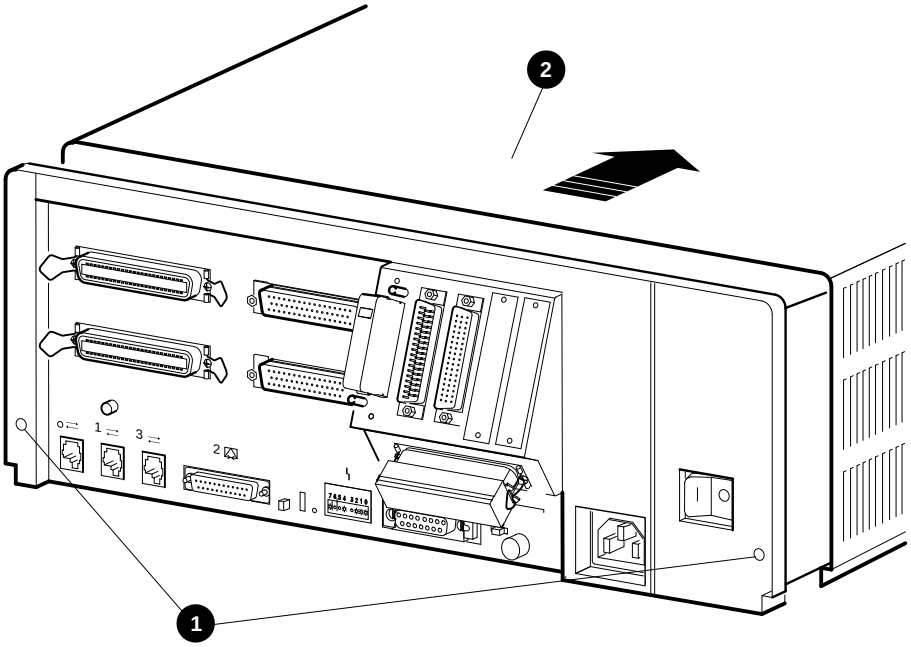
3.1 Removing the Enclosure Cover

To remove the enclosure cover, follow these steps:

1. Set the on/off switch on the system to the off (O) position.
2. Disconnect the cables, loopback connectors, and terminators that are connected to the system.
3. Loosen the two captive screws (12-30338-05) on the back of the system unit (refer to Figure 3–2).
4. Slide the cover forward and lift it up from the system unit.

Figure 3–2 Removing the Enclosure Cover



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❶ Captive screws (2)

❷ Enclosure cover

3.2 Removing an MS44 or MS44L Memory Module

To remove a memory module:

1. Remove the ac power from the BA42B Enclosure.
2. Remove the enclosure cover (refer to Section 3.1).

Caution

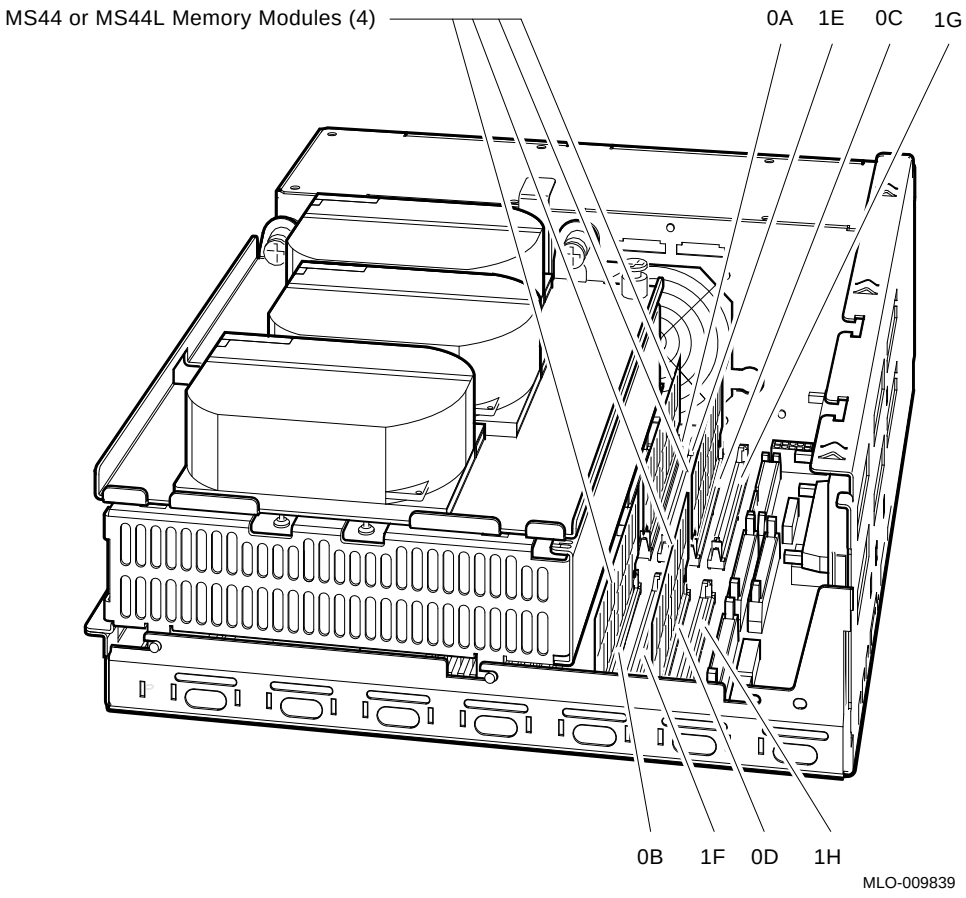
Static electricity can damage integrated circuits. Wear a wrist strap and place an antistatic mat under the system unit when working with the internal parts of the system unit.

3. Locate the faulty memory module. Figure 3–3 shows the location of the memory module connectors on the KA52/KA53 CPU module.

Note

- Note the position of the faulty memory module on the CPU module. You must install the replacement in the same position. See Section 1.5.1 for memory configurations.
- You may have to remove one or two memory modules to reach the faulty memory module. Note carefully the position of each memory module you remove.

Figure 3–3 Memory Module Connectors on the KA52/53 CPU Module



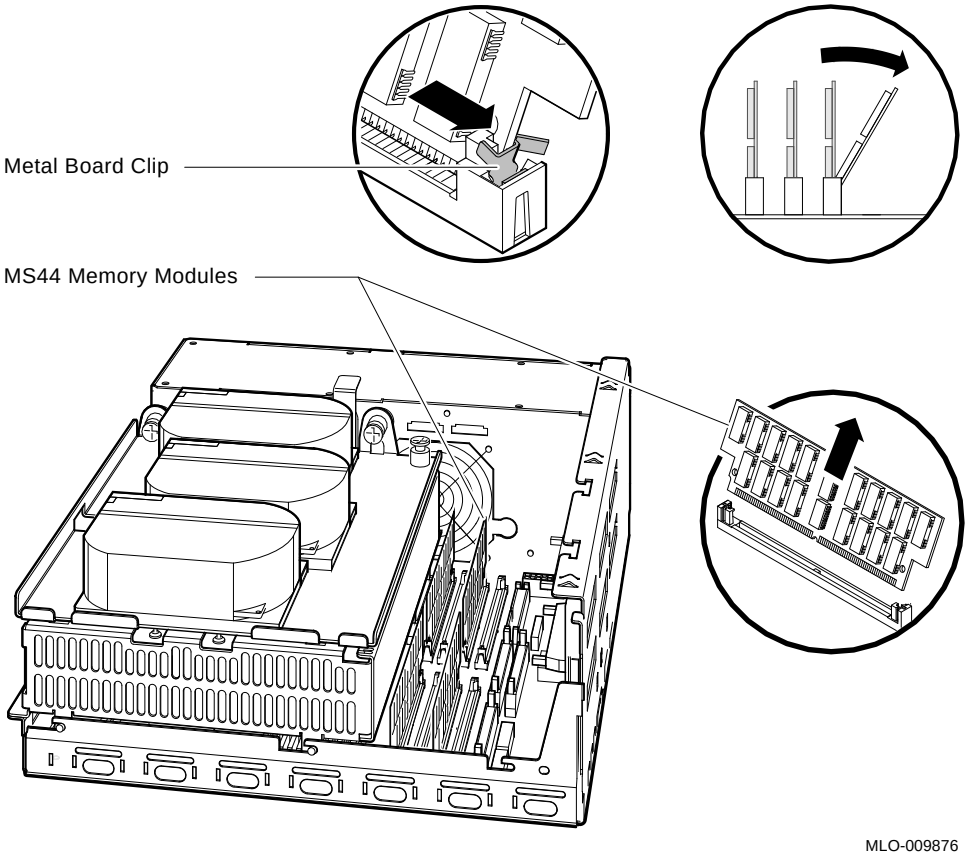
4. Push the metal board clips on the memory module connector away from the center. Tilt the memory module toward the back of the enclosure, and lift the memory module out of its connector (refer to Figure 3–4).

Caution

When installing a memory module, note that the connectors on the CPU module are keyed so that you cannot install the memory module with an incorrect orientation. Do not try to force a module into a connector.

Removing and Replacing Field Replaceable Units
3.2 Removing an MS44 or MS44L Memory Module

Figure 3–4 Removing a Memory Module



3.3 Removing the Upper Drive-Mounting Shelf

To reach some of the FRUs in the BA42B Enclosure, you must remove the upper drive-mounting shelf. Depending on the system configuration, the upper drive-mounting shelf can contain one, two, or three disk drives. You can remove the upper drive-mounting shelf with the disk drives attached. To remove the upper drive-mounting shelf, follow these steps:

1. Remove the enclosure cover (see Section 3.1).

Note

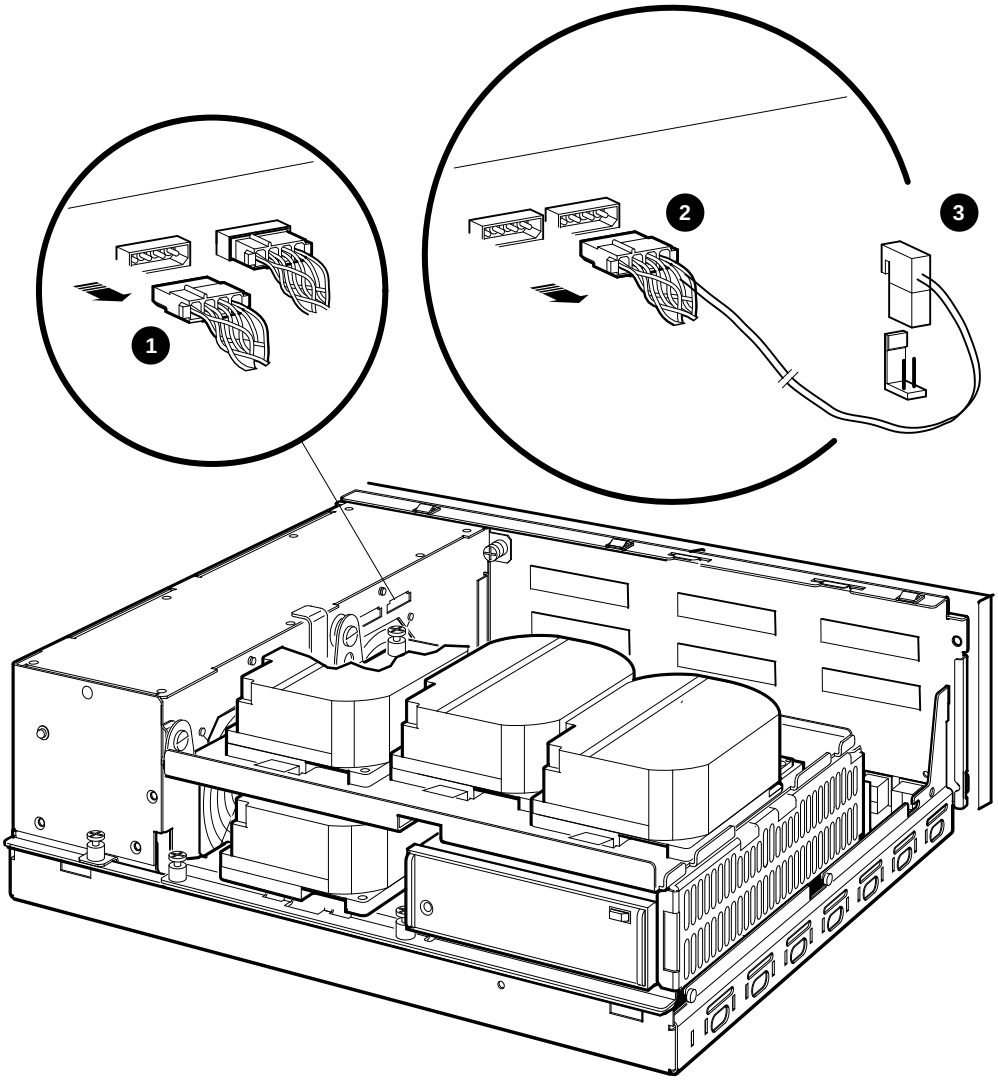
When disconnecting the cables, you must note which cables connect to which drives. On the DSSI cable, note the number on the connector pull-tab.

2. Disconnect the power cables from the power supply unit. Figure 3–5 shows where to disconnect the power cables in the BA42B Enclosure.

Note

Some systems have an additional two-pin pigtail DSSI power cable which must be disconnected from the CPU module before removing the shelf.

Figure 3–5 Removing the Upper Drive-Mounting Shelf



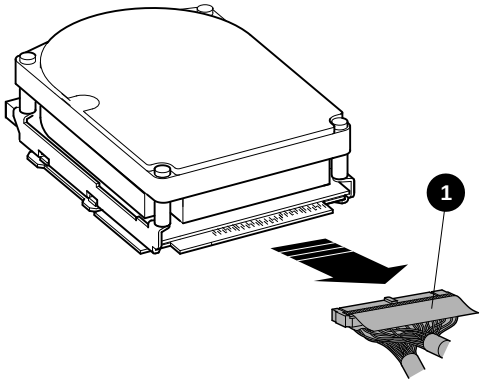
❶ Internal power cable

❷ Internal power cable with pigtailed DSSI power cable

❸ CPU module DSSI power cable connector

3. Disconnect the DSSI cable from the disk drives by pulling the pull-tabs. Figure 3–6 shows a typical signal cable being disconnected the BA42B Enclosure.

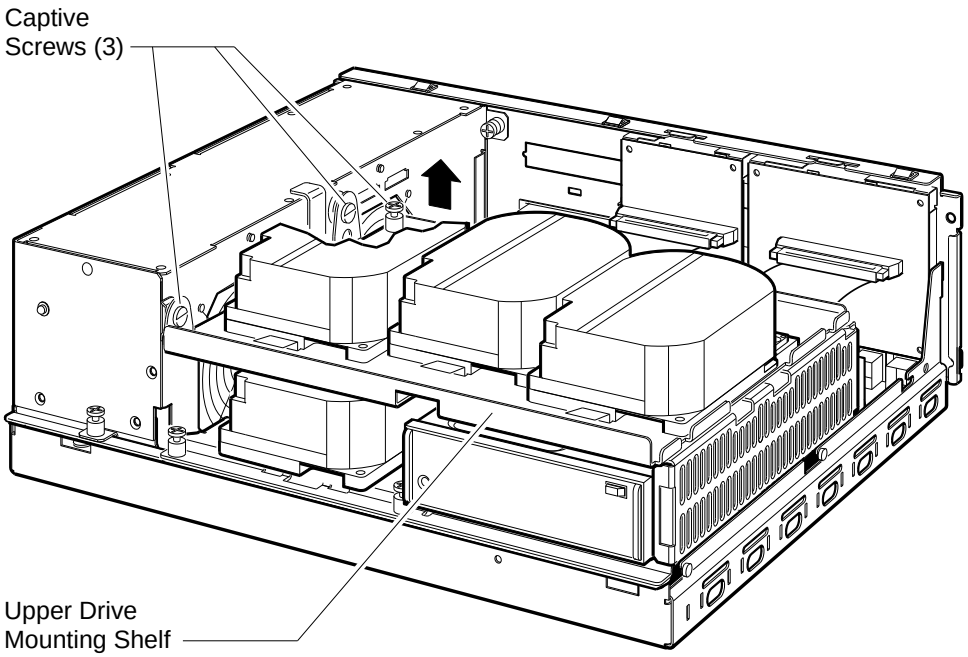
Figure 3–6 Disconnecting the DSSI Cables from the Drives



❶ Internal DSSI connector

4. Loosen the three captive screws (see Figure 3–7).

Figure 3–7 Removing the Upper Drive-Mounting Shelf



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5. Lift the left side of the upper drive-mounting shelf, and pull the drive-mounting shelf to the left until the tabs on the right side of the mounting shelf are clear of the cutouts in the lower drive-mounting shelf.
6. Remove the upper drive-mounting shelf from the enclosure.

3.4 Removing the RX26 Diskette Drive Assembly

The RX26 diskette drive assembly (when installed) is positioned on the left side or the right side of the lower drive-mounting shelf when viewed from the front. The RX26 diskette drive assembly contains three FRUs as follows:

- RX26-AA diskette drive
- RX26 FDI/SCSI board (54-20764-02)
- RX26 ribbon cable (17-00285-00)

The following procedure describes how to remove an RX26 diskette drive assembly from the right side of the lower drive-mounting shelf. The procedure for removing the RX26 diskette drive assembly from the left side of the lower drive-mounting shelf is the same. To remove the RX26 diskette drive assembly from the BA42B Enclosure, follow these steps:

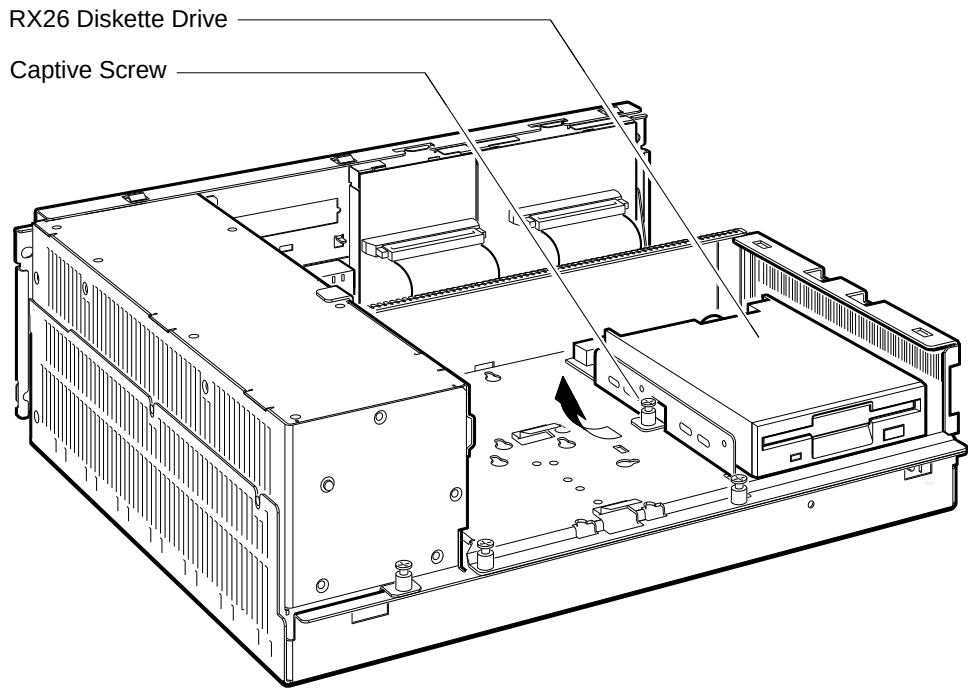
1. Remove the enclosure cover (refer to Section 3.1).
2. Remove the upper drive-mounting shelf (refer to Section 3.3).

Note

When disconnecting the cables, you must note which cables connect to which drives. On the SCSI cable, note the number on the connector pull-tab.

3. Disconnect the power cable from the back of the RX26 diskette drive. Figure 1–5 shows the power cables in the BA42B Enclosure.
4. Disconnect the power cable from the floppy diskette interface/small computer system interface (FDI/SCSI) board.
5. Disconnect the SCSI cable from the back of the FDI/SCSI board by pulling the pull-tab. Figure 1–6 shows the signal cables in the BA42B Enclosure.
6. Loosen the captive screw securing the mounting bracket to the lower drive-mounting shelf (refer to Figure 3–8).

Figure 3–8 Removing the RX26 Diskette Drive Assembly



7. Lift the left side of the RX26 diskette drive assembly and pull the diskette drive assembly to the left until the tabs on the right side of the mounting bracket are clear of the cutouts in the lower drive-mounting shelf.
8. Lift the RX26 diskette drive assembly out of the BA42B Enclosure.

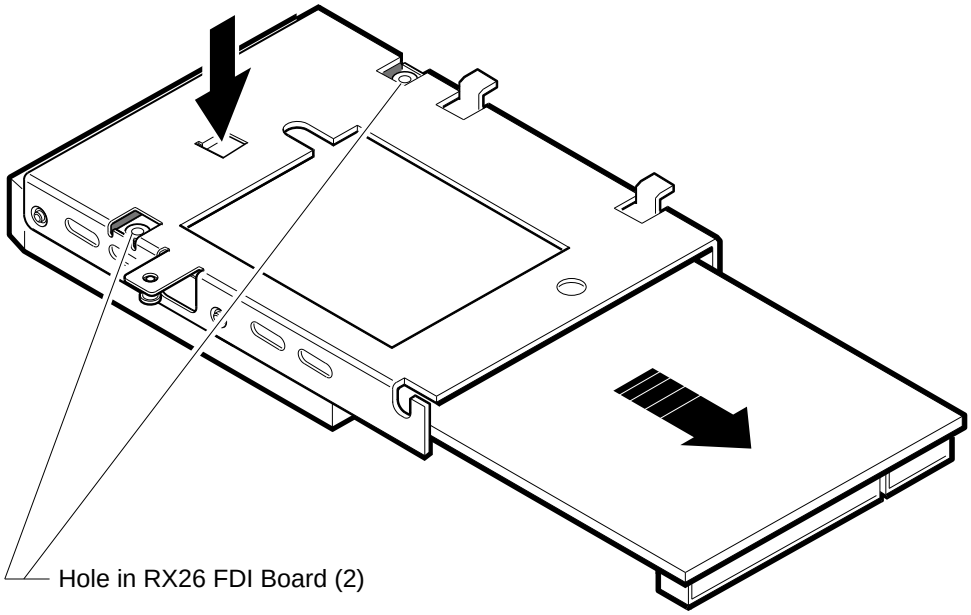
3.4.1 Removing the RX26 FDI/SCSI Board

To remove the FDI/SCSI board from the RX26 mounting bracket, follow these steps:

1. Disconnect the ribbon cable that connects the RX26 diskette drive to the RX26 FDI/SCSI board.
2. Turn the RX26 diskette drive assembly over so that the base of the mounting bracket faces up.

3. Press firmly on the front edge of the FDI/SCSI board with your finger. When the two holes on the front edge of the FDI/SCSI board are clear of the tabs in the RX26 mounting bracket, slide the RX26 FDI/SCSI board out of the RX26 mounting bracket (refer to Figure 3–9).

Figure 3–9 Removing the RX26 FDI/SCSI Board

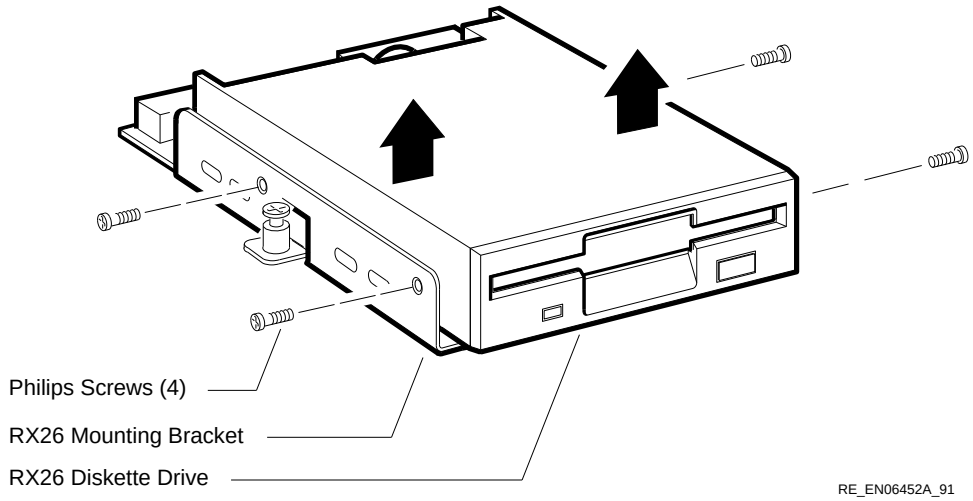


3.4.2 Separating the RX26 Diskette Drive from the Mounting Bracket

When you are installing a replacement RX26 diskette drive, you must use the mounting bracket (70-29669-01) that is attached to the faulty RX26 diskette drive (RX26-AA). To separate the RX26 diskette drive from its mounting bracket, follow these steps:

1. Remove the four screws (90-10961-03) securing the RX26 mounting bracket to the RX26 diskette drive.
2. Separate the mounting bracket from the RX26 diskette drive (refer to Figure 3–10).

Figure 3–10 Separating the Mounting Bracket from the RX26 Diskette Drive

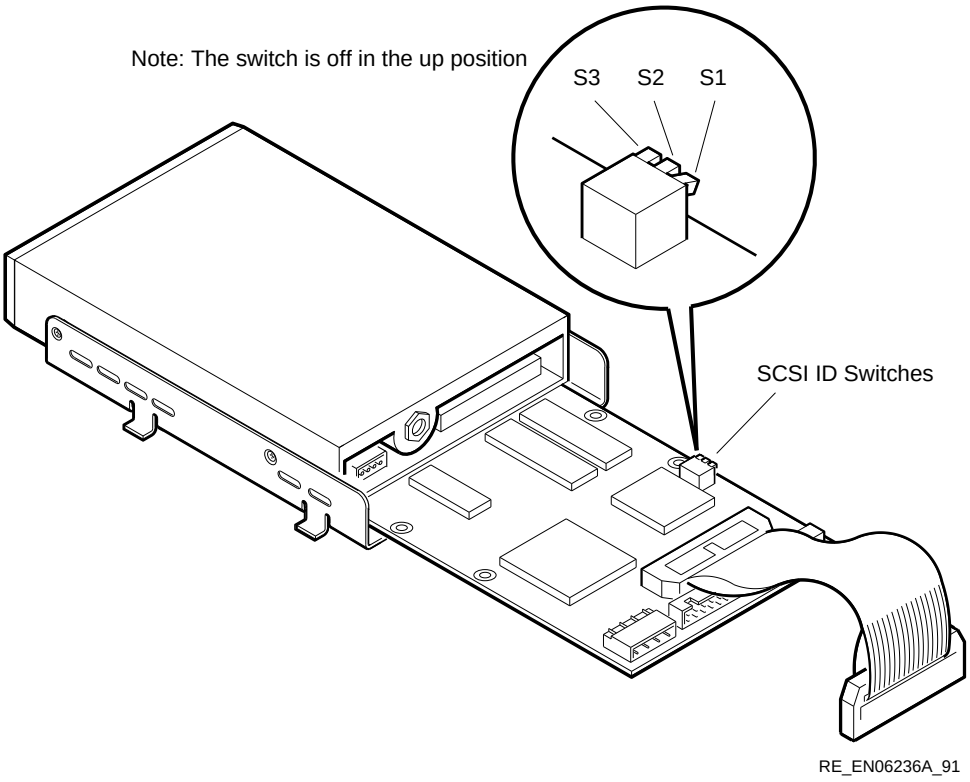


3.4.3 Setting the SCSI ID on the Replacement RX26 FDI/SCSI Board

When replacing the FDI/SCSI board, you must set the SCSI ID of the replacement board to the SCSI ID of the board you remove. To set the SCSI ID on a replacement RX26 FDI/SCSI board, follow these steps:

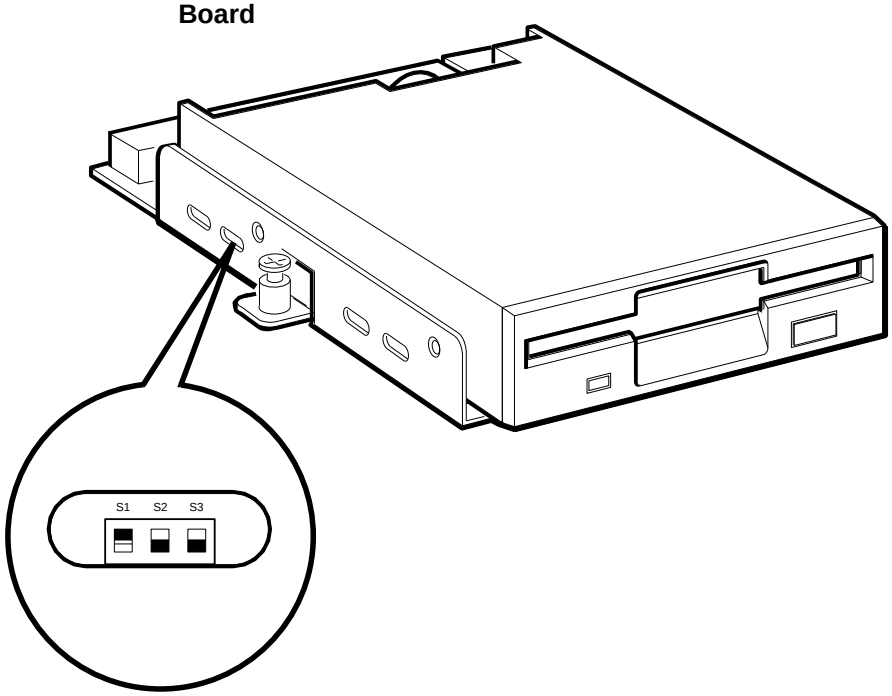
1. Note the SCSI ID switch settings on the RX26 FDI/SCSI board you removed. Figure 3–11 shows the location of the SCSI ID switches on the FDI/SCSI board.
2. Set the SCSI ID switches on the replacement RX26 FDI/SCSI board to the same settings as the SCSI ID switches of the RX26 FDI/SCSI board you removed.

Figure 3–11 Location of the SCSI ID Switches on the RX26 FDI/SCSI Board



After you install the FDI/SCSI board and connect the RX26 ribbon cable, you can reach the SCSI ID switches through a ventilation slot in the mounting bracket (refer to Figure 3–12).

Figure 3–12 How to Reach the SCSI ID Switches on the RX26 FDI/SCSI Board



Note: The SCSI ID shown is 4 (S1 is on, S2 is off, and S3 is off).

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3.5 Removing a TZ30 Tape Drive

In the VAX 4000 Models 100, 100A, 105A, the TZ30 tape drive is always mounted in the right-hand position of the lower drive-mounting shelf, when viewed from the front. To remove a TZ30 tape drive from the BA42B Enclosure, follow these steps:

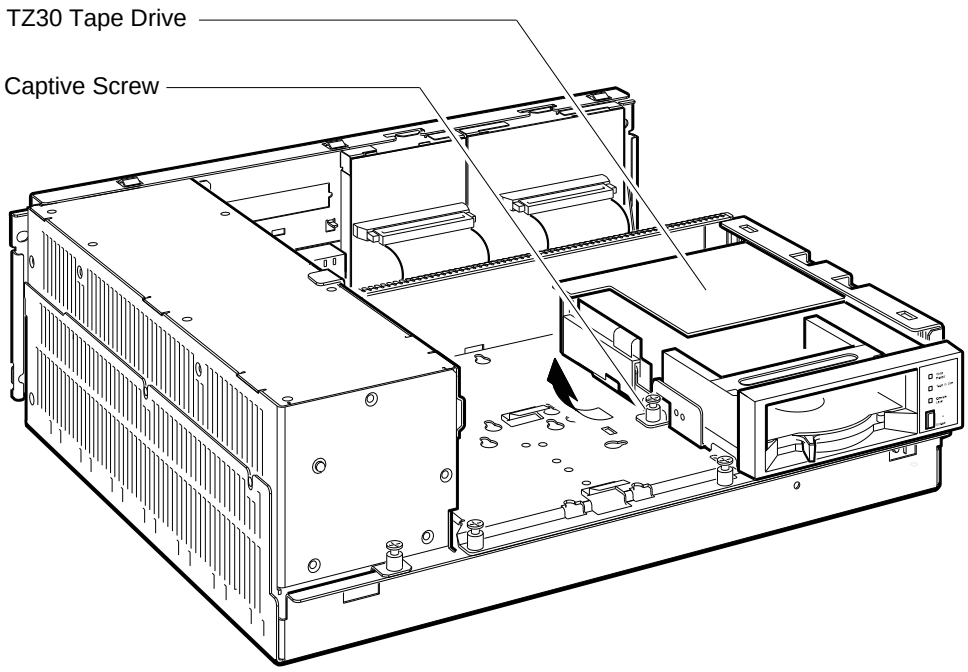
1. Remove the enclosure cover (refer to Section 3.1).
2. Remove the upper drive-mounting shelf (refer to Section 3.3).

Note

- You can disconnect the cables from the drive more easily after you remove the drive from the drive-mounting shelf.
- When disconnecting the cables, you must note which cables connect to which drives. On the SCSI cable, note the number on the connector pull-tab.

3. Loosen the captive screw that secures the mounting bracket to the drive-mounting shelf (refer to Figure 3–13).

Figure 3–13 Removing a TZ30 Tape Drive



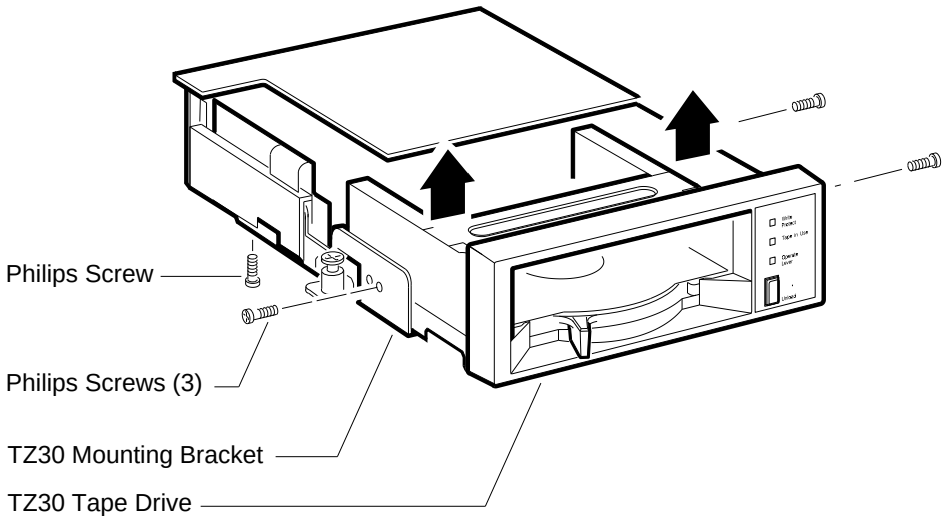
4. Lift the left side of the TZ30 tape drive. Slide the TZ30 tape drive to the left until the tabs on the right side of the mounting bracket are clear of the cutouts in the drive-mounting shelf.
5. Disconnect the power cable from the flying lead connector of the TZ30 tape drive. Figure 1–5 shows the power cables in the BA42B Enclosure.
6. Disconnect the SCSI cable from the TZ30 tape drive by pulling the pull-tab. Figure 1–6 shows the signal cables in the BA42B Enclosure.
7. Lift the TZ30 tape drive, which has its mounting bracket attached, out of the system unit.

3.5.1 Separating the TZ30 Tape Drive from the Mounting Bracket

When you are installing a replacement TZ30 tape drive, you must use the mounting bracket (74-42115-01) that is attached to the faulty TZ30 tape drive (TZ30-AA). To separate the mounting bracket from the faulty TZ30 tape drive, follow these steps:

1. Remove the two screws (90-09984-07) from the right side of the mounting bracket with a Phillps screwdriver (refer to Figure 3–14).
2. Remove one screw (90-09984-07) from the left side of the mounting bracket (refer to Figure 3–14).
3. Remove one screw (90-10961-03) from the bottom of the drive mounting bracket (refer to Figure 3–14).
4. Separate the mounting bracket from the TZ30 tape drive.

Figure 3–14 Separating the Mounting Bracket from the TZ30 Tape Drive



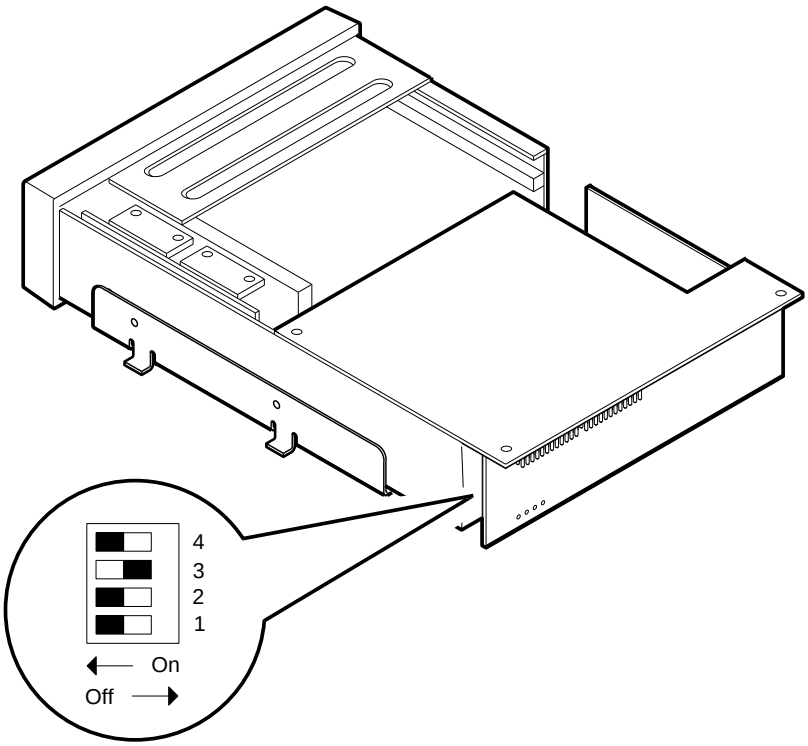
5. Keep the mounting bracket and the four screws in a safe place because you must use them to install the replacement TZ30 tape drive.

3.5.2 Setting the SCSI ID on the Replacement TZ30 Tape Drive

To set the SCSI ID on the replacement TZ30 tape drive, follow these steps:

1. Note the SCSI ID switch settings on the TZ30 tape drive you removed. Figure 3–15 shows the location of the SCSI ID switches and the recommended SCSI ID for tape drives.
2. Set the SCSI ID switches on the replacement TZ30 tape drive to the same settings as the SCSI ID switches on the TZ30 tape drive you removed.

Figure 3–15 TZ30 SCSI ID Switch Locations



Notes: 1. S1 is not used (always on).
2. The SCSI ID shown is 5 (S2 is on, S3 is off, and S4 is on).

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Refer to the *VAX 4000 BA42B Enclosure System Options* manual for more information about setting the SCSI ID of the TZ30 tape drive.

3.6 Removing a TZK10/TZK11 Tape Drive

The TZK10/TZK11 tape drive (when installed) can be on the right side or the left side of the lower drive-mounting shelf, when viewed from the front. The following procedure describes how to remove a TZK10/TZK11 tape drive from the right side of the lower drive-mounting shelf. The procedure for removing the TZK10/TZK11 tape drive from the left side of the lower drive-mounting shelf is the same. To remove a TZK10/TZK11 tape drive from the BA42B Enclosure, follow these steps:

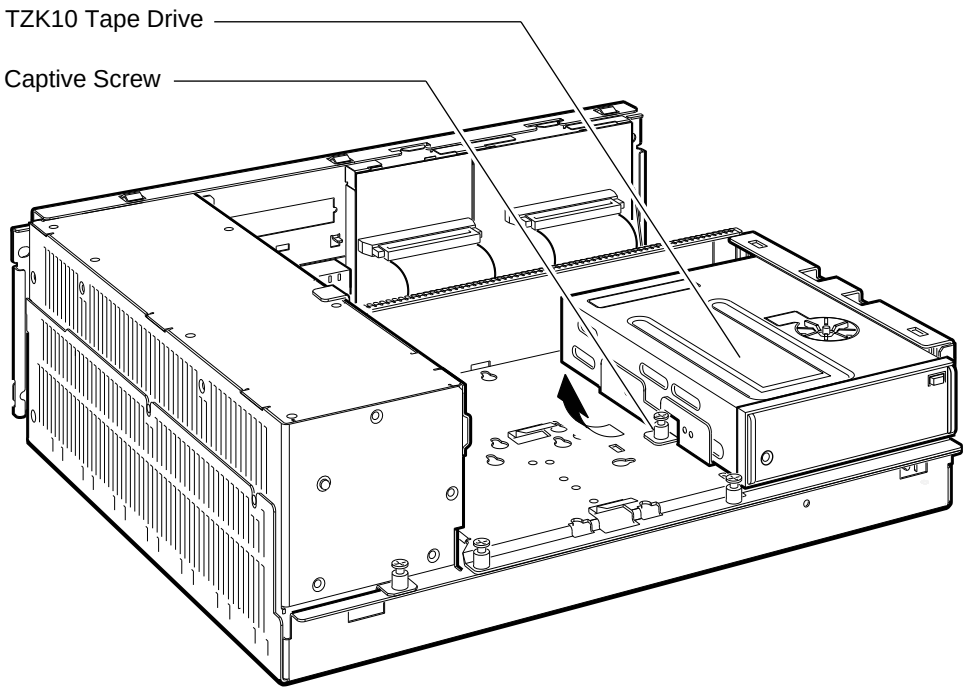
1. Remove the enclosure cover (refer to Section 3.1).
2. Remove the upper drive-mounting shelf (refer to Section 3.3).

Note

- You can disconnect the cables from the drive more easily after you remove the drive from the drive-mounting shelf.
- When you disconnect the cables, note which cables connect to which drives. On the SCSI cable, note the number on the connector pull-tab.

3. Loosen the captive screw that secures the mounting bracket to the drive-mounting shelf (refer to Figure 3–16).

Figure 3–16 Removing the TZK10/TZK11 Tape Drive



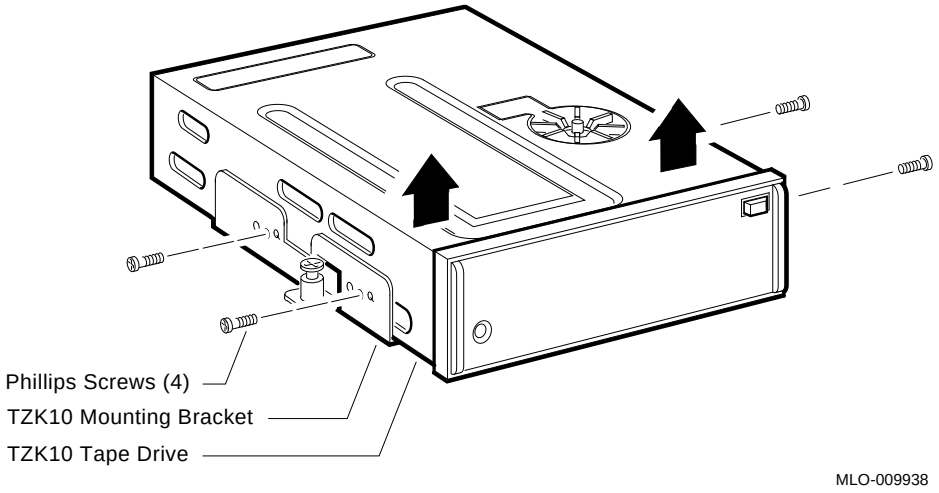
4. Lift the left side of the TZK10/TZK11 tape drive. Slide the TZK10/TZK11 tape drive to the left until the tabs on the right side of the mounting bracket are clear of the cutouts in the lower drive-mounting shelf.
5. Disconnect the power cable from the back of the TZK10/TZK11 tape drive. Figure 1–5 shows the power cables in the BA42B Enclosure.
6. Disconnect the SCSI cable from the back of the TZK10/TZK11 tape drive by pulling the pull-tab. Figure 1–6 shows the signal cables in the BA42B Enclosure.
7. Lift the TZK10/TZK11 tape drive out of the system unit.

3.6.1 Separating the TZK10/TZK11 Tape Drive from the Mounting Bracket

When you install a replacement TZK10/TZK11 tape drive, you must use the mounting bracket (74-42449-01) that is attached to the faulty TZK10/TZK11 tape drive (TZK10-AA, TZK11-AA). To separate the mounting bracket from the faulty TZK10/TZK11 tape drive, follow these steps:

1. Note which holes are used for attaching the mounting bracket to the drive before you remove it. You must use the same holes for the replacement.
2. Remove the four screws (90-10961-03) that secure the mounting bracket to the TZK10/TZK11 tape drive (refer to Figure 3–17).
3. Separate the mounting bracket from the TZK10/TZK11 tape drive.

Figure 3–17 Separating the Mounting Bracket from the TZK10/TZK11 Tape Drive



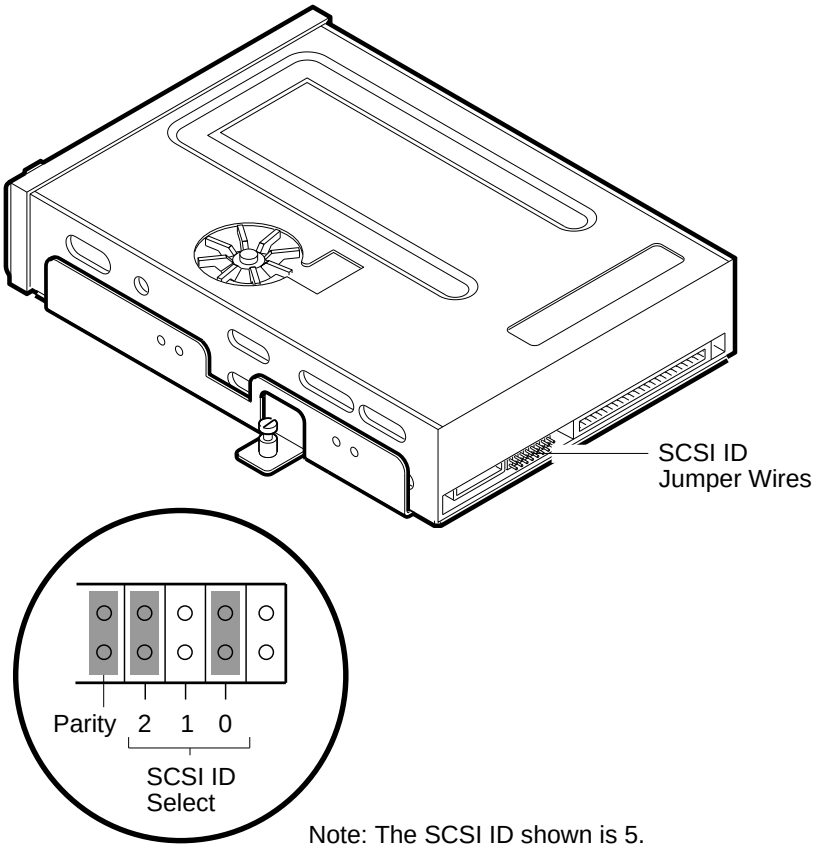
4. Keep the mounting bracket and the four screws in a safe place because you must use them to install the replacement TZK10/TZK11 tape drive.

3.6.2 Setting the SCSI ID of the Replacement TZK10/TZK11 Tape Drive

To set the SCSI ID of the replacement TZK10/TZK11 tape drive, follow these steps:

1. Note the positions of the SCSI ID jumper wires on the TZK10/TZK11 tape drive you removed. Figure 3–18 shows the location of the SCSI ID jumper wires and the recommended SCSI ID for tape drives.
2. Set the SCSI ID jumper wires on the replacement TZK10/TZK11 tape drive to the same positions as the SCSI ID switches of the TZK10/TZK11 tape drive you removed.

Figure 3–18 Locations of the SCSI ID Jumper Wires on the TZK10/TZK11 Tape Drive



Refer to the *VAX 4000 BA42B Enclosure System Options* manual for more information about setting the SCSI ID of the TZK10/TZK11 tape drives.

3.7 Removing a TLZ06/TLZ07 Tape Drive

The TLZ06/TLZ07 tape drive (when installed) can be on the right side or the left side of the lower drive-mounting shelf, when viewed from the front. The following procedure describes how to remove a TLZ06/TLZ07 tape drive from the right side of the lower drive-mounting shelf. The procedure for removing the TLZ06/TLZ07 tape drive from the left side of the lower drive-mounting shelf is the same. To remove a TLZ06/TLZ07 tape drive from the BA42B Enclosure, follow these steps:

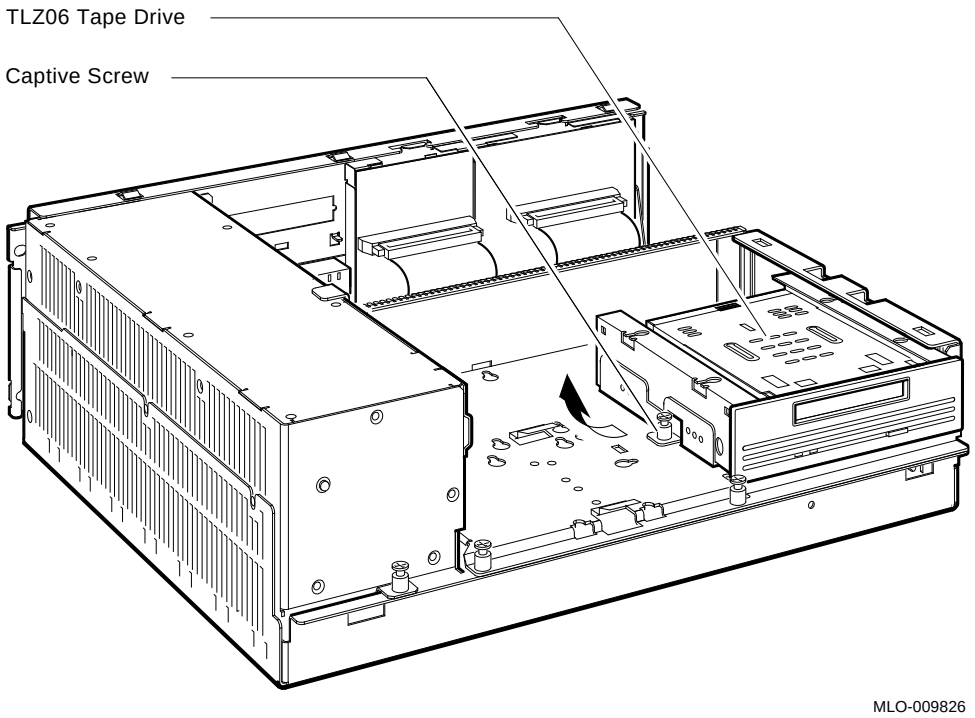
1. Remove the enclosure cover (refer to Section 3.1).
2. Remove the upper drive-mounting shelf (refer to Section 3.3).

Note

- You can disconnect the cables from the drive more easily after you remove the drive from the drive-mounting shelf.
- When you disconnect the cables, note which cables connect to which drives. On the SCSI cable, note the number on the connector pull-tab.

3. Loosen the captive screw that secures the mounting bracket to the drive-mounting shelf (refer to Figure 3–19).

Figure 3–19 Removing the TLZ06/TLZ07 Tape Drive



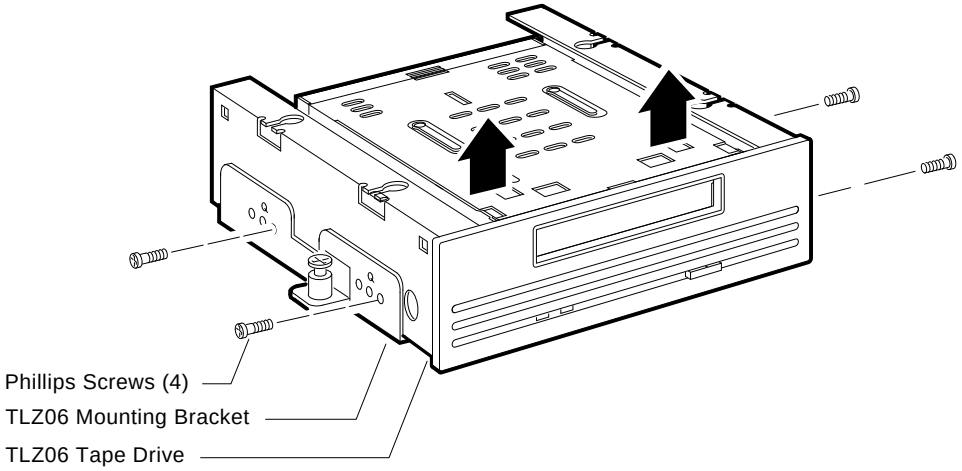
4. Lift the left side of the TLZ06/TLZ07 tape drive. Slide the TLZ06/TLZ07 tape drive to the left until the tabs on the right side of the mounting bracket are clear of the cutouts in the lower drive-mounting shelf.
5. Disconnect the power cable from the back of the TLZ06/TLZ07 tape drive. Figure 1–5 shows the power cables in the BA42B Enclosure.
6. Disconnect the SCSI cable from the back of the TLZ06/TLZ07 tape drive by pulling the pull-tab. Figure 1–6 shows the signal cables in the BA42B Enclosure.
7. Lift the TLZ06/TLZ07 tape drive out of the system unit.

3.7.1 Separating the TLZ06/TLZ07 Tape Drive from the Mounting Bracket

When you install a replacement TLZ06/TLZ07 tape drive, you must use the mounting bracket (74-42449-01) that is attached to the faulty TLZ06/TLZ07 tape drive (TLZ06-AA, TLZ07-AA). To separate the mounting bracket from the faulty TLZ06/TLZ07 tape drive, follow these steps:

1. Note which holes are used for attaching the mounting bracket to the drive before you remove it. You must use the same holes for the replacement.
2. Remove the four screws (90-10961-03) that secure the mounting bracket to the TLZ06/TLZ07 tape drive with a Phillips screwdriver (refer to Figure 3–20).
3. Separate the mounting bracket from the TLZ06/TLZ07 tape drive.

Figure 3–20 Separating the Mounting Bracket from the TLZ06/TLZ07 Tape Drive



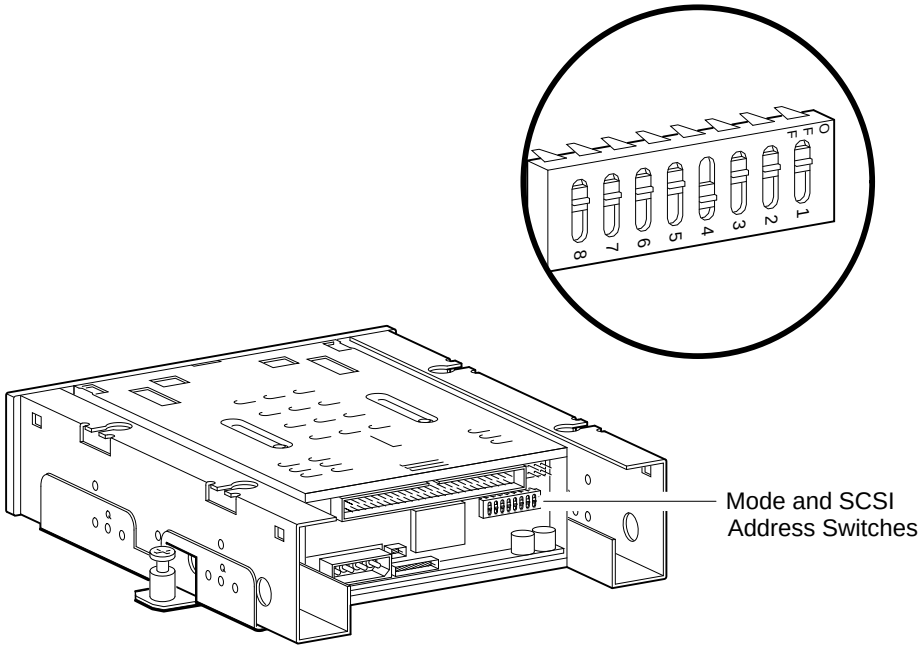
4. Keep the mounting bracket and the four screws in a safe place because you must use them to install the replacement TLZ06/TLZ07 tape drive.

3.7.2 Setting the SCSI ID and Option Switches of the Replacement TLZ06/TLZ07 Tape Drive

To set the SCSI ID and option switches of the replacement TLZ06/TLZ07 tape drive, follow these steps:

1. Note the positions of the SCSI ID and option switches on the TLZ06/TLZ07 tape drive you removed. Figure 3–21 shows the location of the SCSI ID and option switches and the recommended SCSI ID for tape drives.
2. Set the SCSI ID and option switches on the replacement TLZ06/TLZ07 tape drive to the same positions as the SCSI ID switches of the TLZ06/TLZ07 tape drive you removed.

Figure 3–21 Locations of the SCSI ID and Option Switches on the TLZ06 /TLZ07 Tape Drive



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Refer to the *VAX 4000 BA42B Enclosure System Options* manual for more information about setting the SCSI ID and option switches on TLZ06/TLZ07 tape drives.

3.8 Removing an RF31T/RF35/RF36 Disk Drive

Note

RF-series disk drives are only installed on the upper drive mounting shelf in a BA42B enclosure. The illustrations in this section show how to remove and install the RF-series drive in the left-hand position of the upper drive-mounting shelf, when viewed from the front.

To remove an RF-series drive from the BA42B Enclosure, follow these steps:

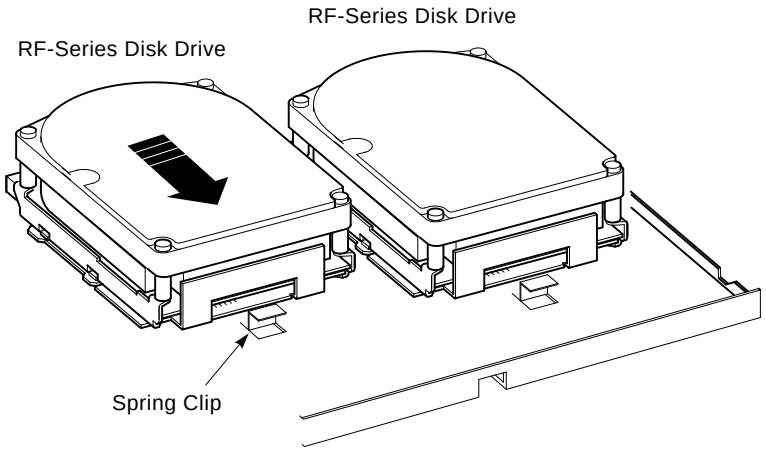
1. Remove the enclosure cover (refer to Section 3.1).

Note

- You can disconnect the cables from the drive more easily after you remove the drive from the drive-mounting shelf.
- When you disconnect the cables, you must note which cables connect to which drives. On the DSSI cable, note the number on the connector pull-tab.

2. Depress the spring clip that secures the mounting bracket to the drive-mounting shelf (refer to Figure 3–22).

Figure 3–22 Removing a Sample RF31T/RF35/RF36 Disk Drive Option



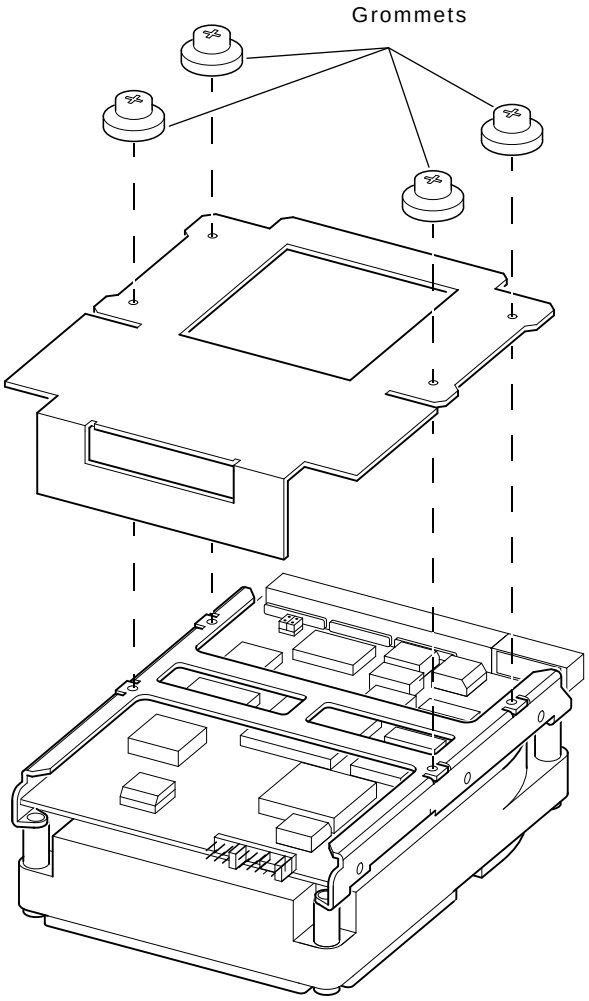
3. Slide the drive forward until the rubber grommets attached to the mounting bracket are clear of the cutouts in the lower drive-mounting shelf.
4. Disconnect the power cable from the back of the RF-series drive. Figure 1–5 shows the power cables in the BA42B Enclosure.
5. Disconnect the DSSI cable from the back of the RF-series drive by pulling the pull-tab. Figure 1–6 shows the signal cables in the BA42B Enclosure.
6. Lift the RF-series drive, which has its bracket attached, out of the system unit.

3.8.1 Separating the RF-series Drive from the Mounting Bracket

When you install a replacement RF-series drive, you must use the mounting bracket (74-744226-01) that is attached to the faulty RF-series drive. To separate the mounting bracket from the faulty drive, follow these steps:

1. Note how the bracket is attached in relationship to the RF-series drive.
2. Remove the four screws (12-31734-01) that secure the grommets and the mounting bracket to the RF-series drive.
3. Separate the mounting bracket from the RF-series drive (refer to Figure 3–23).

Figure 3–23 Separating the Mounting Bracket from the RF-Series Drive



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4. Keep the mounting bracket and the four screws in a safe place because you must use the same bracket and screws to install the replacement RF-series drive.

3.8.2 Setting the DSSI ID

In a BA42B-based VAX 4000 system, each DSSI device must have a unique DSSI ID number. When installing RF31T/RF35/RF36 disk drive options, the DSSI ID must be set to an ID that is not used by any other DSSI device in the system. (Refer to the *VAX 4000 Models 100, 100A, 105A KA52/53 CPU System Maintenance* manual for further information.)

To set the DSSI ID on RF31T/RF35/RF36 disk drive options, follow these steps:

1. Locate the DSSI ID jumper on the disk drive (see Figure 3–24).

   Table 3–2 shows the DSSI ID jumper combinations.

Figure 3–24 Sample RF31T/RF35/RF36 Disk Drive Option with Mounting Brackets

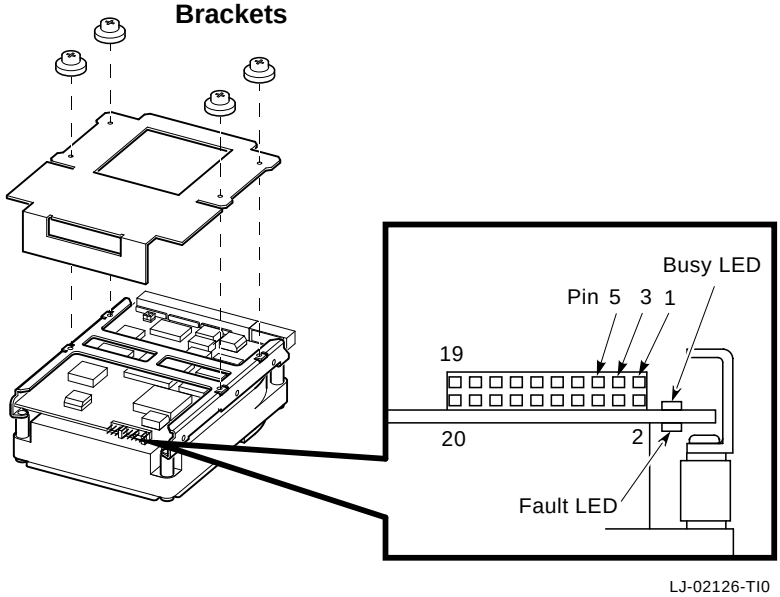

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Table 3–2 RF31T/RF35/RF36 DSSI ID Jumper Wire Combinations

DSSI ID	Pin 5	Pin 3	Pin 1
0	Out	Out	Out
1	Out	Out	In
2	Out	In	Out
3	Out	In	In
4	In	Out	Out
5	In	Out	In
6	In	In	Out
7	In	In	In

2. Determine the DSSI ID number assigned to the RF31T/RF35/RF36 disk drive option.

Note

When the system is in console mode, enter the **SHOW DSSI** command to view the DSSI ID numbers for the existing devices in the system.

3. Position the jumper for the DSSI ID number selected. Table 3–2 lists the DSSI ID numbers and the jumper wire combinations that correspond to them.

3.9 Removing an RRD42 CD–ROM Drive

Note

The illustrations in this section show how to remove and install the RRD42 CD–ROM drive in the left-hand position of the lower drive-mounting shelf, when viewed from the front. Installation in the right-hand position requires the mounting bracket to be reversed on the RRD42 CD–ROM drive. Note how the bracket is attached before removing it from the drive.

To remove an RRD42 CD–ROM drive from the BA42B Enclosure, follow these steps:

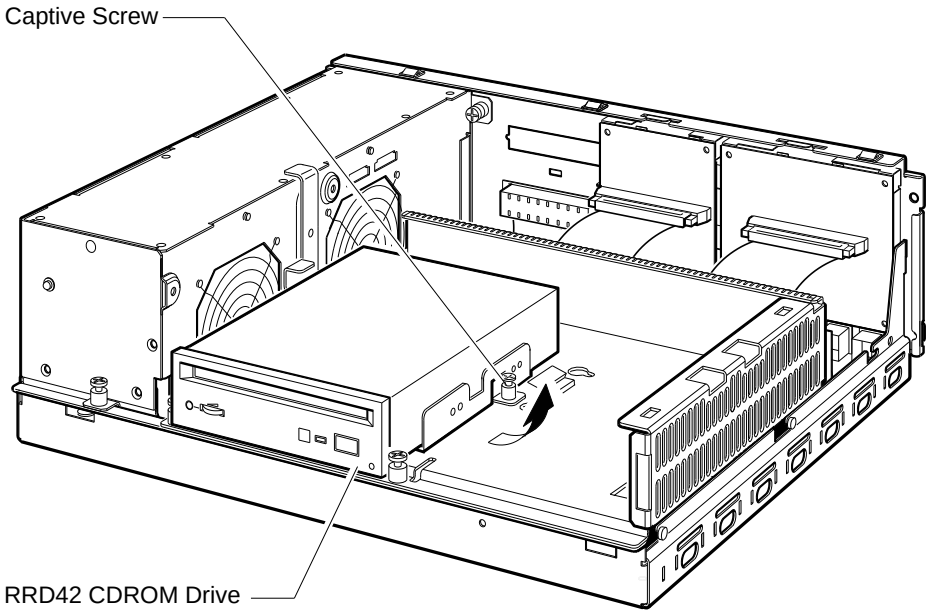
1. Remove the enclosure cover (refer to Section 3.1).
2. Remove the upper drive-mounting shelf (refer to Section 3.3).

Note

- You can disconnect the cables from the drive more easily after you remove the drive from the drive-mounting shelf.
- When you disconnect the cables, you must note which cables connect to which drives. On the SCSI cable, note the number on the connector pull-tab.

3. Loosen the captive screw that secures the mounting bracket to the drive-mounting shelf (refer to Figure 3–25).

Figure 3–25 Removing the RRD42 CD–ROM Drive



4. Lift the right side of the RRD42 CD–ROM drive. Slide the RRD42 CD–ROM drive to the right until the tabs on the left side of the mounting bracket are clear of the cutouts in the lower drive-mounting shelf.
5. Disconnect the power cable from the back of the RRD42 CD–ROM drive. Figure 1–5 shows the power cables in the BA42B Enclosure.
6. Disconnect the SCSI cable from the back of the RRD42 CD–ROM drive by pulling the pull-tab. Figure 1–6 shows the signal cables in the BA42B Enclosure.
7. Lift the RRD42 CD–ROM drive, which has its bracket attached, out of the system unit.

Caution

The RRD42 CD–ROM drive has a plastic cover that protects the drive from dust. Do not remove this cover when replacing the RRD42 CD–ROM drive or setting the SCSI ID.

3.9.1 Separating the RRD42 CD–ROM Drive from the Mounting Bracket

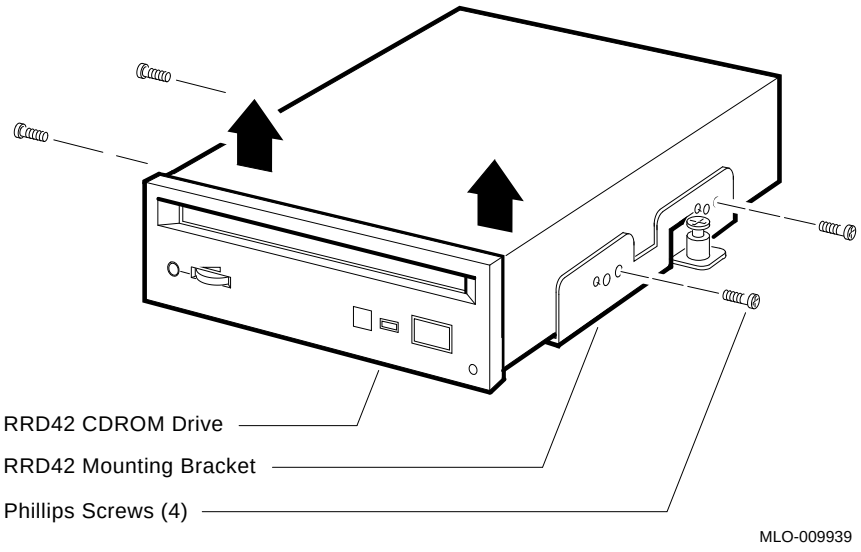
When you install a replacement RRD42 CD–ROM drive, you must use the mounting bracket (74-42449-01) that is attached to the faulty RRD42 CD–ROM drive (RRD42-AA). To separate the mounting bracket from the faulty RRD42 CD–ROM drive, follow these steps:

1. Note how the bracket is attached in relationship to the RRD42 CD–ROM drive.
2. Remove the four screws (90-10961-03) that secure the mounting bracket to the RRD42 CD–ROM drive (refer to Figure 3–26).
3. Separate the mounting bracket from the RRD42 CD–ROM drive.

Note

The following illustration shows how the mounting bracket is attached when the RRD42 CD–ROM drive is mounted in the left-hand position. If yours is mounted in the right-hand position, the bracket will be reversed.

Figure 3–26 Separating the Mounting Bracket from the RRD42 CD–ROM Drive



4. Keep the mounting bracket and the four screws in a safe place because you must use the same bracket and screws to install the replacement RRD42 CD–ROM drive.

Note

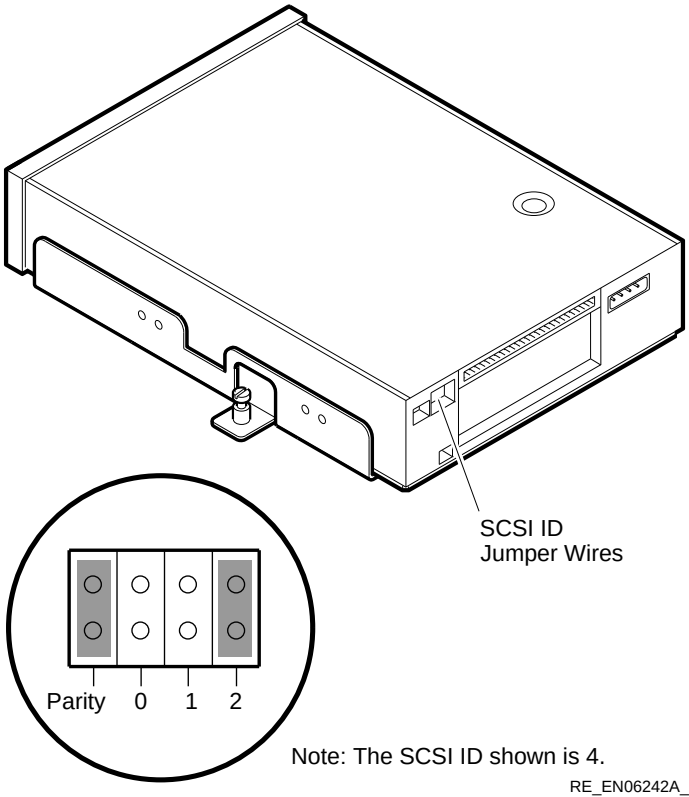
When you attach the mounting bracket to the replacement RRD42 CD–ROM drive, align the holes on the mounting bracket that are not marked by a *Q* with the screw holes on the sides of the RRD42 CD–ROM drive.

3.9.2 Setting the SCSI ID on the Replacement RRD42 CD–ROM Drive

To set the SCSI ID on the replacement RRD42 CD–ROM drive, follow these steps:

1. Note the SCSI ID jumper wires on the RRD42 CD–ROM drive you removed. Figure 3–27 shows the location of the SCSI ID jumper wires.
2. Set the SCSI ID jumper wires on the replacement RRD42 CD–ROM drive to the same positions as the SCSI ID jumper wires on the RRD42 CD–ROM drive you removed.

Figure 3–27 RRD42 SCSI ID Jumper Wire Locations



Refer to the *VAX 4000 BA42B Enclosure System Options* manual for more information about setting the SCSI ID of the RRD42 CD–ROM drive.

3.10 Removing an RRD43 CD–ROM Drive

Note

The illustrations in this section show how to remove and install the RRD43 CD–ROM drive in the left-hand position of the lower drive-mounting shelf, when viewed from the front. Installation in the right-hand position requires the mounting bracket to be reversed on the RRD43 CD–ROM drive. Note how the bracket is attached before removing it from the drive.

To remove an RRD43 CD–ROM drive from the BA42B Enclosure, follow these steps:

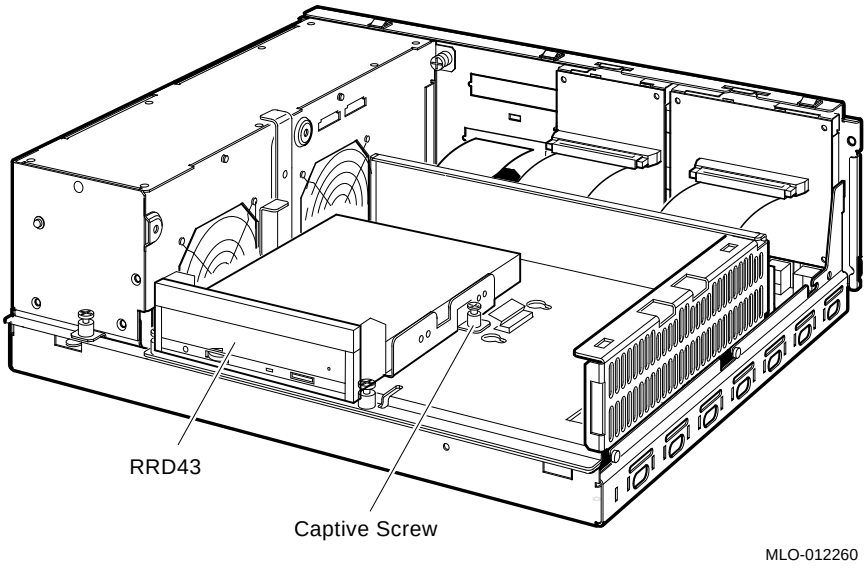
1. Remove the enclosure cover (refer to Section 3.1).
2. Remove the upper drive-mounting shelf (refer to Section 3.3).

Note

- You can disconnect the cables from the drive more easily after you remove the drive from the drive-mounting shelf.
- When you disconnect the cables, you must note which cables connect to which drives. On the SCSI cable, note the number on the connector pull-tab.

3. Loosen the captive screw that secures the mounting bracket to the drive-mounting shelf (refer to Figure 3–28).

Figure 3–28 Removing the RRD43 CD–ROM Drive



4. Lift the right side of the RRD43 CD–ROM drive. Slide the RRD43 CD–ROM drive to the right until the tabs on the left side of the mounting bracket are clear of the cutouts in the lower drive-mounting shelf.
5. Disconnect the power cable from the back of the RRD43 CD–ROM drive. Figure 1–5 shows the power cables in the BA42B Enclosure.
6. Disconnect the SCSI cable from the back of the RRD43 CD–ROM drive by pulling the pull-tab. Figure 1–6 shows the signal cables in the BA42B Enclosure.
7. Lift the RRD43 CD–ROM drive, which has its bracket attached, out of the system unit.

Caution

The RRD43 CD–ROM drive has a plastic cover that protects the drive from dust. Do not remove this cover when replacing the RRD43 CD–ROM drive or setting the SCSI ID.

3.10.1 Separating the RRD43 CD–ROM Drive from the Mounting Bracket

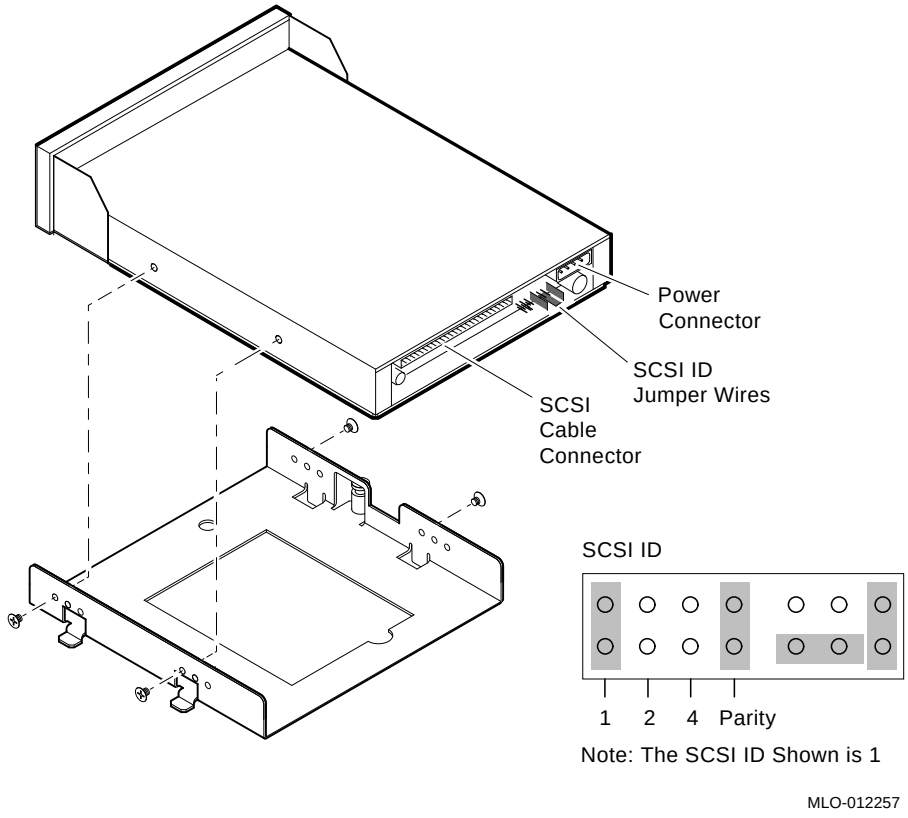
When you install a replacement RRD43 CD–ROM drive, you must use the mounting bracket (74-42449-01) that is attached to the faulty RRD43 CD–ROM drive (RRD43-AA). To separate the mounting bracket from the faulty RRD43 CD–ROM drive, follow these steps:

1. Note how the bracket is attached in relationship to the RRD42 CD–ROM drive.
2. Remove the four screws (90-10556-12) that secure the mounting bracket to the RRD43 CD–ROM drive (refer to Figure 3–29).
3. Separate the mounting bracket from the RRD43 CD–ROM drive.

Note

The Figure 3–29 shows how the mounting bracket is attached when the RRD43 CD–ROM drive is mounted in the left-hand position. If yours is mounted in the right-hand position, the bracket will be reversed.

Figure 3–29 Separating the Mounting Bracket from the RRD43 CD–ROM Drive



4. Keep the mounting bracket and the four screws in a safe place because you must use the same bracket and screws to install the replacement RRD43 CD–ROM drive.

Note

When you attach the mounting bracket to the replacement RRD43 CD–ROM drive, align the holes on the mounting bracket that are not marked by a *Q* with the screw holes on the sides of the RRD43 CD–ROM drive.

3.10.2 Setting the SCSI ID on the Replacement RRD43 CD–ROM Drive

To set the SCSI ID on the replacement RRD43 CD–ROM drive, follow these steps:

1. Note the SCSI ID jumper wires on the RRD43 CD–ROM drive you removed. Figure 3–29 shows the location of the SCSI ID jumper wires.
2. Set the SCSI ID jumper wires on the replacement RRD43 CD–ROM drive to the same positions as the SCSI ID jumper wires on the RRD43 CD–ROM drive you removed.

Refer to the *VAX 4000 BA42B Enclosure System Options* manual for more information about setting the SCSI ID of the RRD43 CD–ROM drive.

3.11 Removing the Upper and Lower Drive-Mounting Shelf Combination

Caution

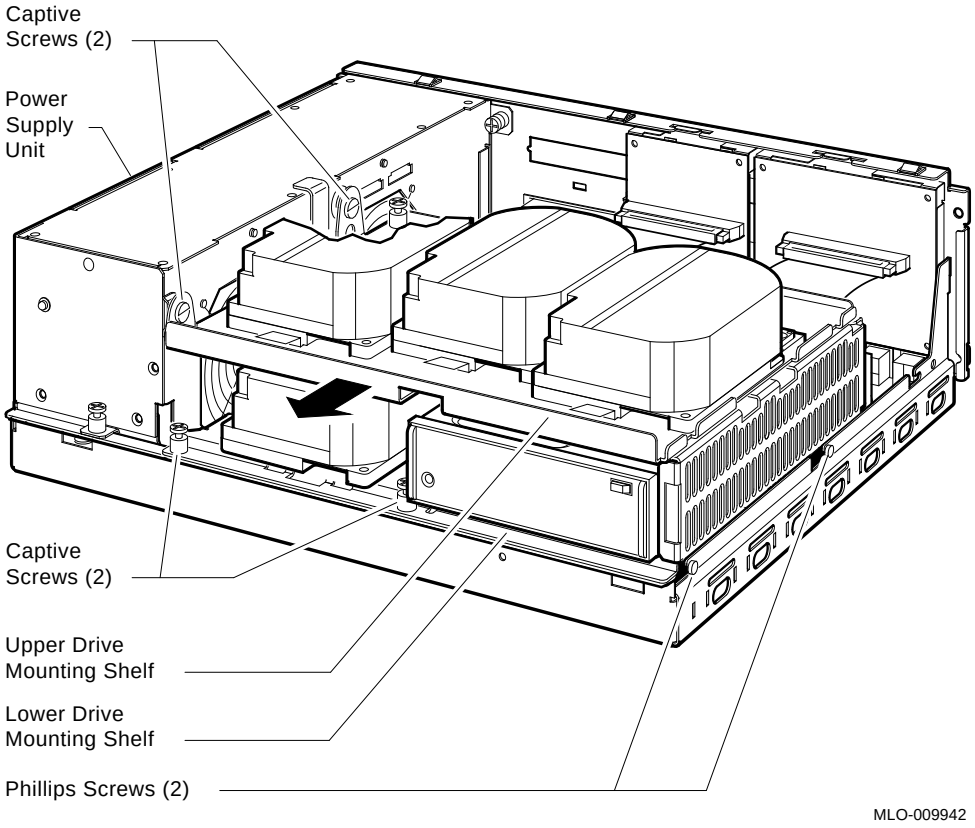
Static electricity can damage integrated circuits. Wear a wrist strap and place an antistatic mat under the system when working with the internal parts of the system.

To reach the CPU module and some of the components that connect to it, you must remove the upper drive-mounting shelf and the lower drive-mounting shelf. To save time, you can remove both of the drive-mounting shelves as one unit with the devices and cables in place. To remove the upper and lower drive-mounting shelf combination, follow these steps:

1. On the power supply, disconnect the power cables that supply power to the upper and lower drive-mounting shelves.
2. Loosen the two captive screws that secure the upper drive-mounting shelf to the power supply (refer to Figure 3–30).
3. Loosen the two captive screws that secure the lower drive-mounting shelf to the enclosure (refer to Figure 3–30).
4. Loosen the two Phillips screws (90-09984-07) that secure the lower drive-mounting shelf to the enclosure (refer to Figure 3–30).

3.11 Removing the Upper and Lower Drive-Mounting Shelf Combination

Figure 3–30 Removing the Upper and Lower Drive-Mounting Shelf Combination



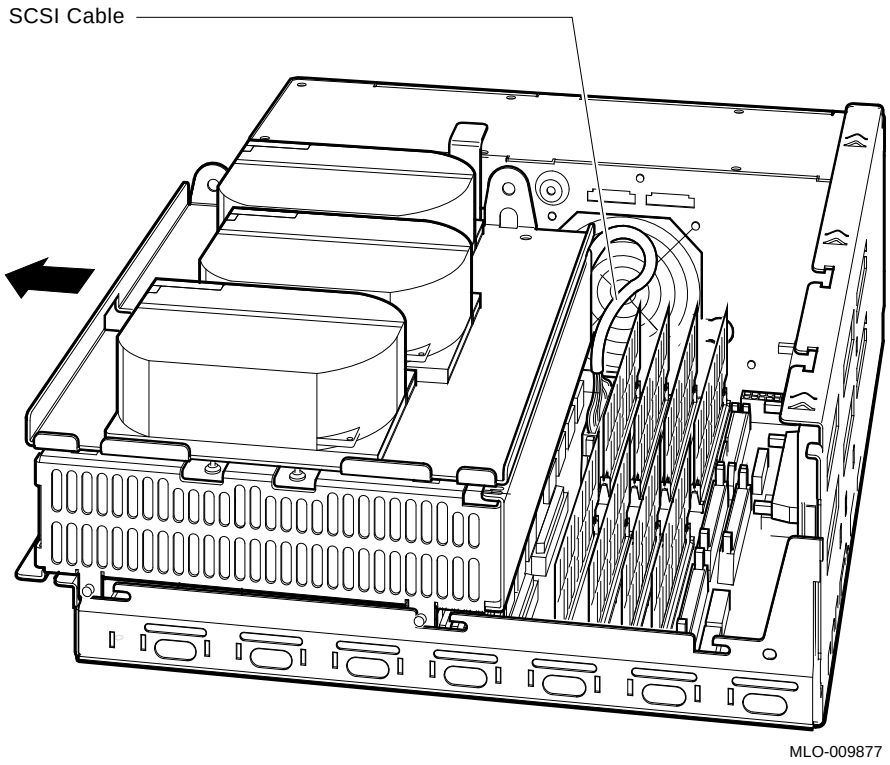
5. Slide the upper and lower drive-mounting shelf combination toward the front of the enclosure as far as it will go.

Caution

When you disconnect the SCSI cable from the CPU module, ensure that you do not damage any of the MS44 or MS44L memory modules.

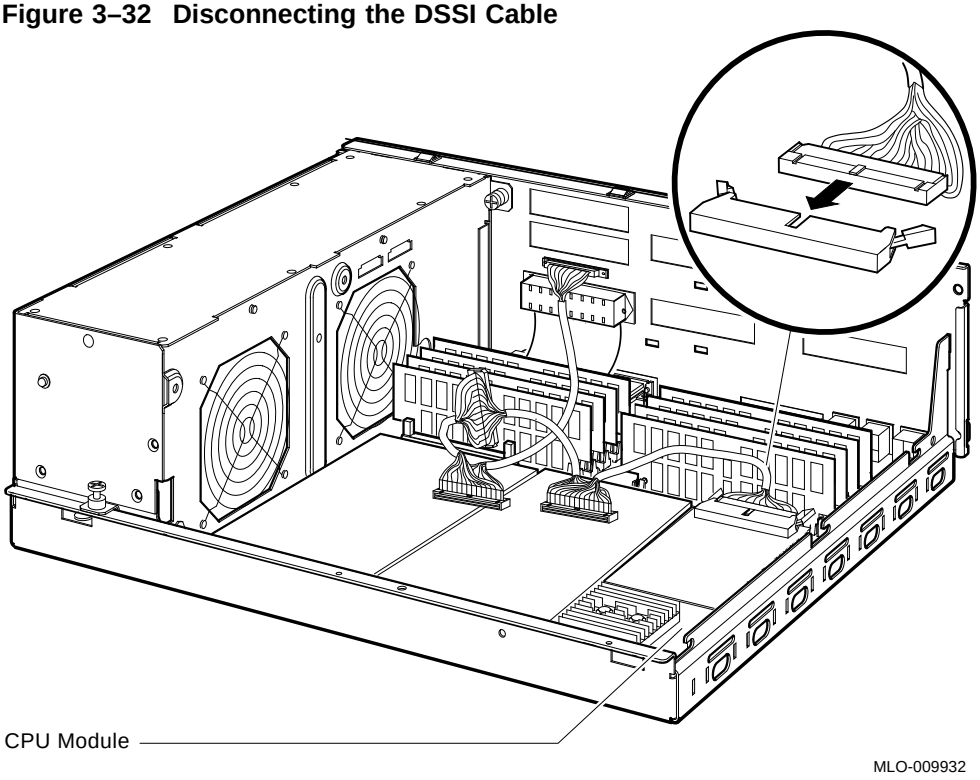
6. Disconnect the SCSI cable from the CPU module (refer to Figure 3–31).

Figure 3–31 Disconnecting the SCSI Cable



7. Disconnect the DSSI cable from the CPU module (refer to Figure 3–32).

Figure 3–32 Disconnecting the DSSI Cable



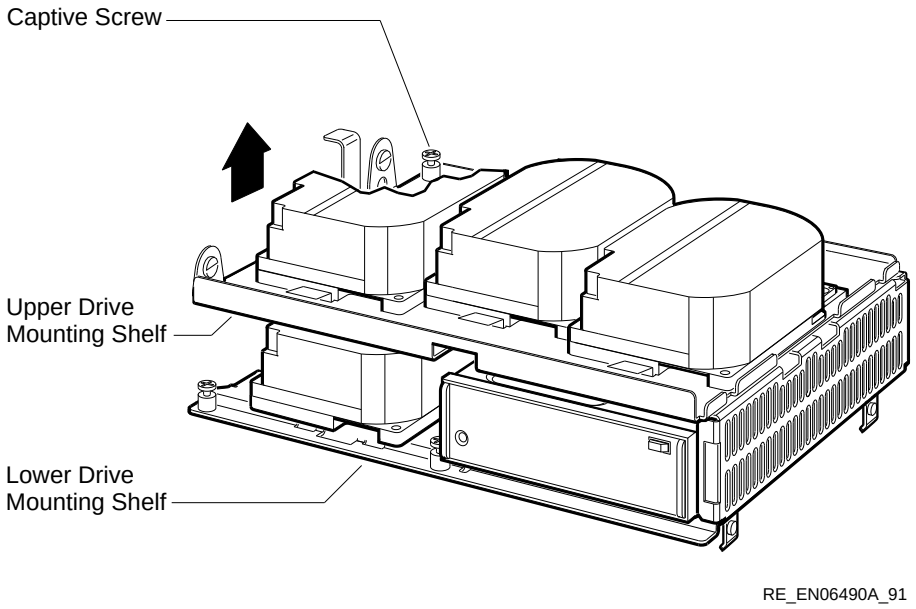
8. Lift the upper and lower drive-mounting shelf combination out of the system enclosure with the devices and cables in place.

3.12 Removing the SCSI Cable from the Enclosure

To remove the SCSI cable from the BA42B Enclosure, follow these steps:

1. Remove the upper and lower drive-mounting shelf combination (refer to Section 3.11).
2. Disconnect the DSSI cable from the disk drives on the upper drive-mounting shelf.
3. Loosen the captive screw that secures the upper drive-mounting shelf to the lower drive-mounting shelf (refer to Figure 3–33).
4. Lift the left side of the upper drive-mounting shelf and slide it to the left until the tabs on the right side of the upper drive-mounting shelf are released from the cutouts in the lower drive-mounting shelf.
5. Disconnect the SCSI cable from the mass storage devices on the lower drive-mounting shelf.

Figure 3–33 Separating the Upper Drive-Mounting Shelf from the Lower Drive-Mounting Shelf



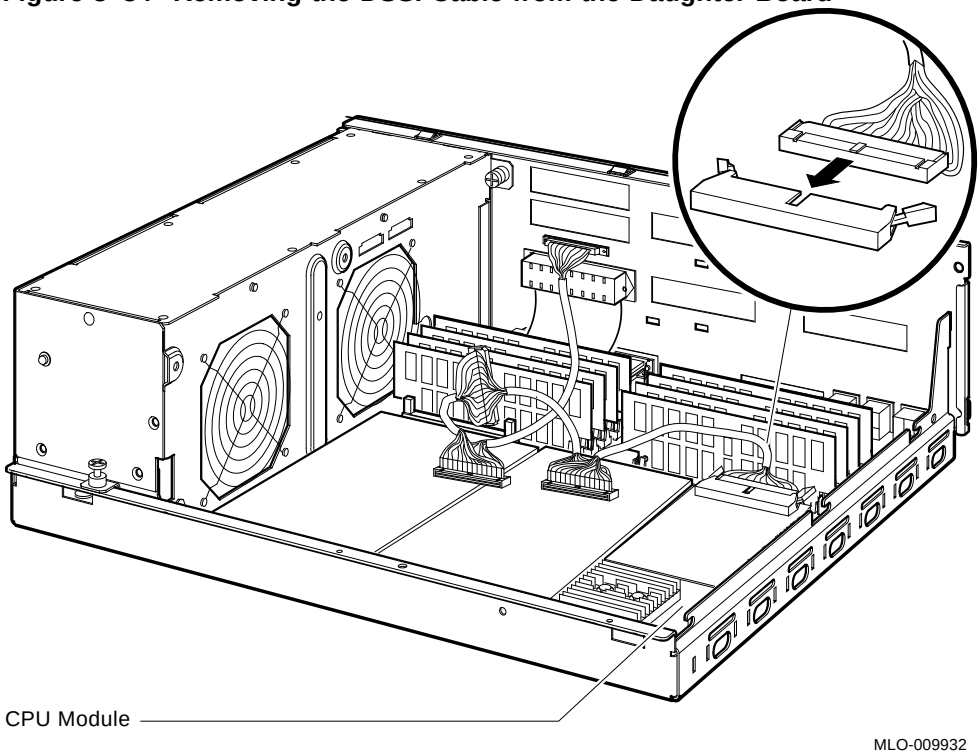
3.13 Removing the DSSI Cable from the Enclosure

To remove the DSSI cable from the BA42B Enclosure, follow these steps:

1. Remove the upper and lower drive-mounting shelf combination (refer to Section 3.11).
2. Disconnect the DSSI cable from the drives on the upper drive-mounting shelf.
3. Loosen the captive screw that secures the upper drive-mounting shelf to the lower drive-mounting shelf (refer to Figure 3–33).
4. Lift the left side of the upper drive-mounting shelf and slide it to the left until the tabs on the right side of the upper drive-mounting shelf are released from the cutouts in the lower drive-mounting shelf.
5. Disconnect the DSSI cable from the mass storage devices on the upper drive-mounting shelf.

6. Disconnect the DSSI cable from the DSSI daughter board (refer to Figure 3–34).

Figure 3–34 Removing the DSSI Cable from the Daughter Board



Note

If your system has a dual DSSI daughter board installed, it will be necessary to remove the second DSSI cable as well.

3.14 Removing the DSSI Daughter Board

Caution

Static electricity can damage integrated circuits. Wear a wrist strap and place an antistatic mat under the system unit when working with the internal parts of the system unit.

To remove the DSSI daughter board from the CPU module:

1. Remove the enclosure cover (refer to Section 3.1).
2. Remove the upper and lower drive-mounting shelf combination (refer to Section 3.11).
3. Disconnect the DSSI cable from the DSSI daughter board as shown in Figure 3–35 (if not already disconnected).

Note

If your system has a dual DSSI daughter board installed, it will be necessary to remove the second DSSI cable as well. Both connectors are shown in Figure 3–36.

4. Use a standoff tool as shown in Figure 3–36, or press the latch on one of the standoff pillars and push up the corner of the DSSI daughter board until it is released.

Note

The standoff pillars contain two components: a push-button rivet (12-35477-02) and a standoff (12-35477-03).

Removing and Replacing Field Replaceable Units
3.14 Removing the DSSI Daughter Board

Figure 3–35 Removing the DSSI Daughter Board

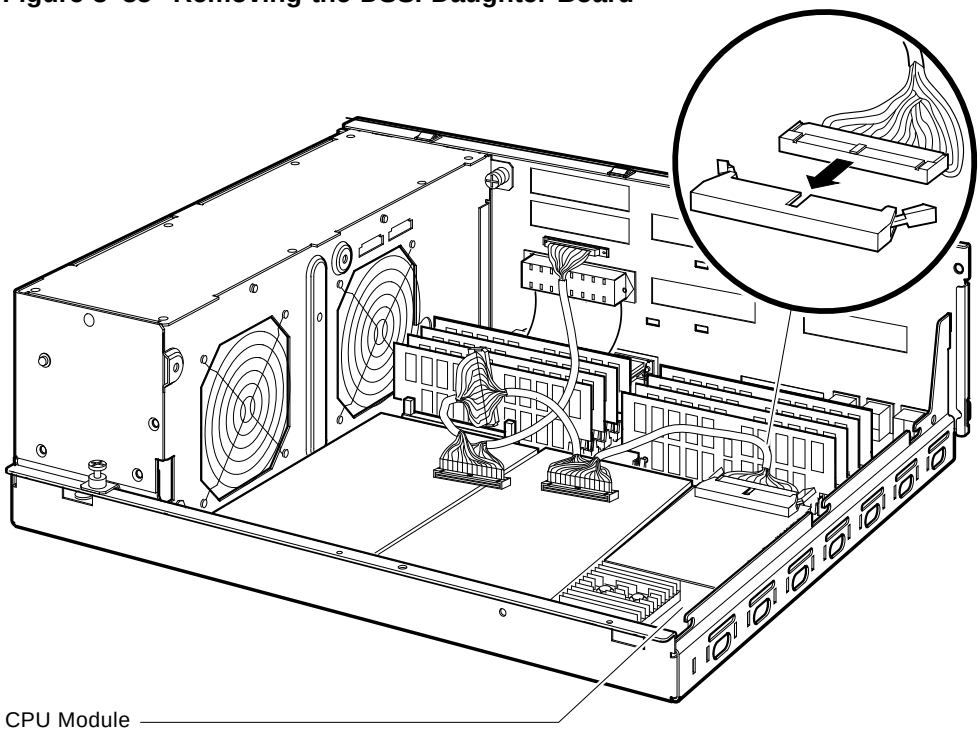
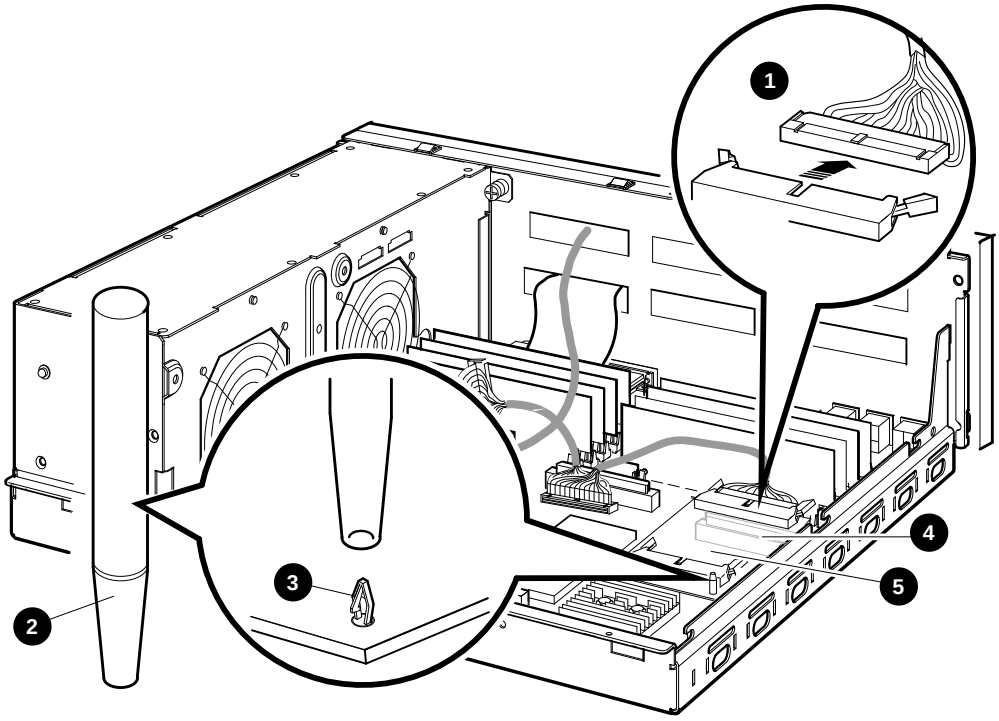


Figure 3–36 Removing the DSSI Cable and Daughter Board



❶ DSSI cable and connector

❷ Standoff tool

❸ Standoff pillar

❹ CPU module DSSI connector

❺ DSSI daughter board

5. Use the standoff tool, or press the latch on the other standoff pillar and push up that corner of the DSSI daughter board until it is released.
6. Push up the DSSI daughter board until the connectors on it are disengaged from the connectors on the CPU module.
7. Lift up and remove the DSSI daughter board from the enclosure.

3.14.1 Changing the DSSI ID

The DSSI ID can be changed by removing or replacing jumpers on the DSSI daughter board. Figure 3–37 shows the three jumper locations (labeled 4 2 1 octal) on the board and contains a table illustrating the eight possible DSSI IDs (0 to 7).

Note

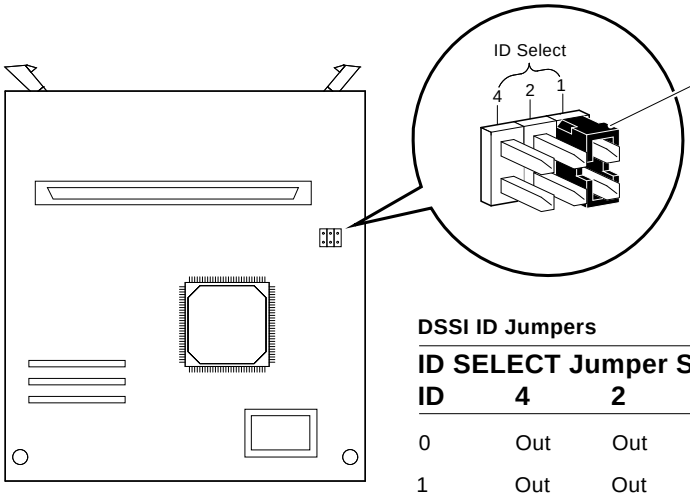
If you are replacing the DSSI daughter board you should select the same DSSI ID for the new replacement board.

1. Select an ID from 0 to 7.
2. See the table in Figure 3–37 to determine which jumpers are necessary to make your selection.
3. Remove or insert the appropriate jumpers.

   For example:

   If the ID is to be 0, remove all three jumpers. If the ID is to be 7, leave all three jumpers in.

Figure 3–37 DSSI ID Jumper Locations



DSSI ID Jumpers

ID SELECT Jumper Settings			
ID	**4**	**2**	**1**
0	Out	Out	Out
1	Out	Out	In
2	Out	In	Out
3	Out	In	In
4	In	Out	Out
5	In	Out	In
6	In	In	Out
7	In	In	In

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3.15 Removing the DSW42 Synchronous Communications Option

The DSW42 synchronous communications option contains three components that you must remove from the CPU module:

- A logic board (54-20640-01)
- An input/output cable (17-02942-01)
- An input/output module (70-28542-01)

To remove the DSW42 synchronous communications option from the BA42B Enclosure, follow these steps:

1. Remove the enclosure cover (refer to Section 3.1).
2. Remove the upper and lower drive-mounting shelf combination (refer to Section 3.11).
3. Remove the logic board, the input/output cable, and the input/output module according to the procedures in the following subsections.

3.15.1 Removing the DSW42 Logic Board

Caution

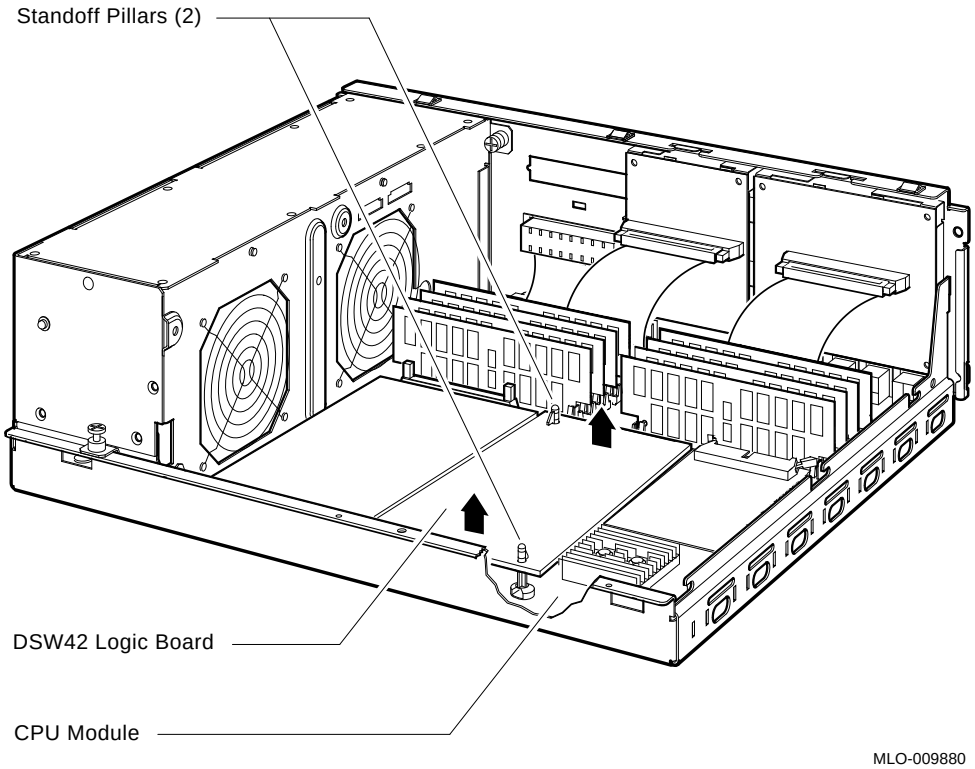
Static electricity can damage integrated circuits. Wear a wrist strap and place an antistatic mat under the system unit when working with the internal parts of the system unit.

1. Press the latch on one of the standoff pillars (refer to Figure 3–38) and push up the corner of the DSW42 logic board until the DSW42 logic board is released.

Note

The standoff pillars contain two components: a push-button rivet (12-35477-02) and a standoff (12-35477-03).

Figure 3–38 Removing the DSW42 Logic Board



2. Press the latch on the other standoff pillar and push up that corner of the DSW42 logic board until the DSW42 logic board is released.
3. Push up the DSW42 logic board until the connectors on the DSW42 logic board disengage from the connectors on the CPU module (refer to Figure 3–38).
4. Remove the DSW42 logic board from the enclosure.

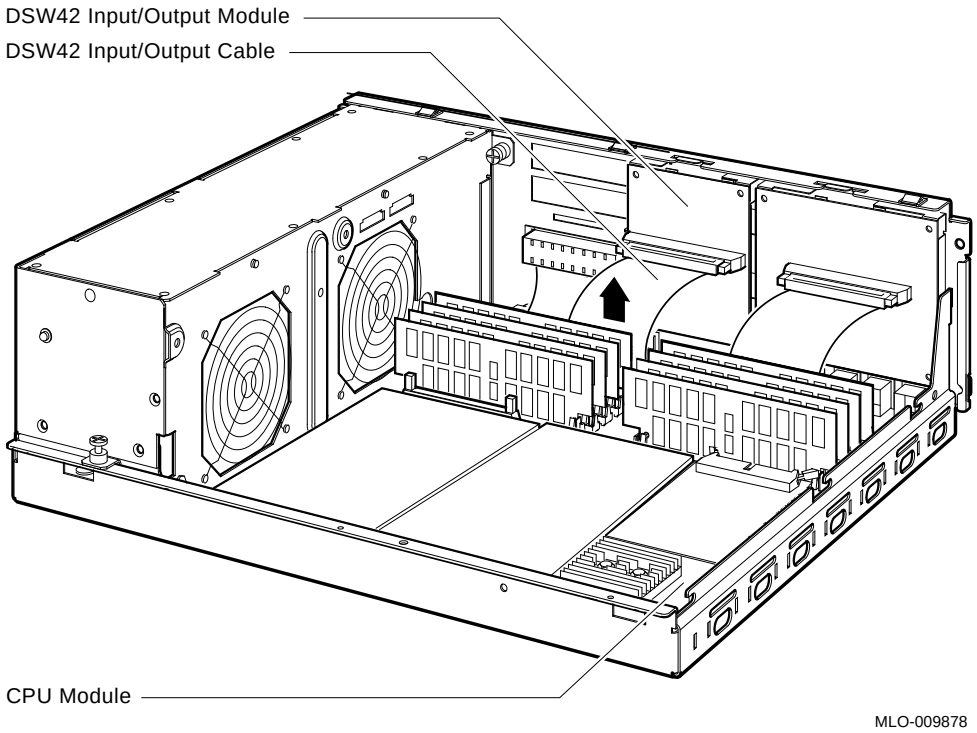
3.15.2 Removing the DSW42 Input/Output Cable

To remove the DSW42 input/output cable, follow these steps:

1. Disconnect the DSW42 input/output cable from the CPU module (refer to Figure 3–39).
2. Disconnect the DSW42 input/output cable from the DSW42 input/output module on the back of the enclosure (refer to Figure 3–39).

3. Remove the DSW42 input/output cable from the enclosure.

Figure 3–39 Removing the DSW42 Input/Output Cable



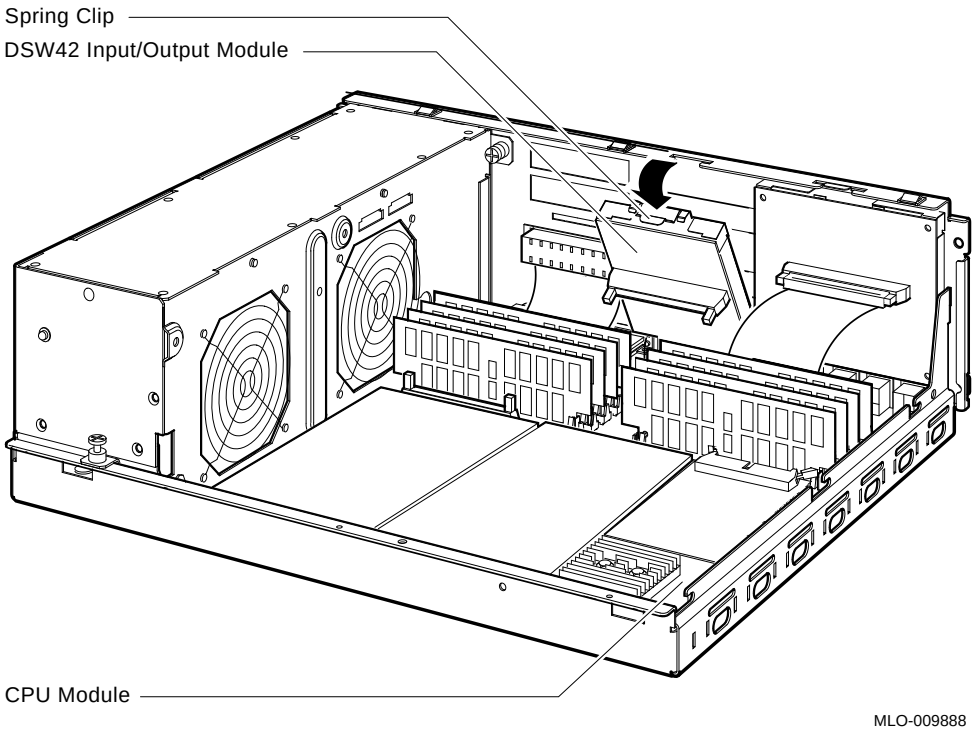
3.15.3 Removing the DSW42 Input/Output Module

To remove the DSW42 input/output module, follow these steps:

1. Disconnect the external cables that connect to synchronous ports 0 and 1 on the back of the system unit (if not already disconnected).
2. Disconnect the DSW42 input/output cable from the DSW42 input/output module (if not already disconnected).
3. Press the spring clip on the DSW42 input/output module. Pull the DSW42 input/output module towards the front of the enclosure until it is released from the back of the enclosure (refer to Figure 3–40).

4. Lift up and remove the DSW42 input/output module from the enclosure.

Figure 3–40 Removing the DSW42 Input/Output Module



3.16 Removing the DHW42 Asynchronous Communications Option

The DHW42 asynchronous communications option contains three components that you must remove from the system enclosure as follows:

- A logic board (54-20662-01)
- An input/output cable (17-02942-01)
- One of the following input/output modules:
  - 8 data-only line input/output module (70-28542-02)
  - 16 data-only line input/output module (70-28542-03)
  - 8 modem control line input/output module (70-28543-01)

To remove the DHW42 asynchronous communications option from the BA42B Enclosure, follow these steps:

1. Remove the enclosure cover (refer to Section 3.1).
2. Remove the upper and lower drive-mounting shelf combination (refer to Section 3.11).
3. Remove the logic board, the input/output cable, and the input/output module according to the procedures in the following subsections.

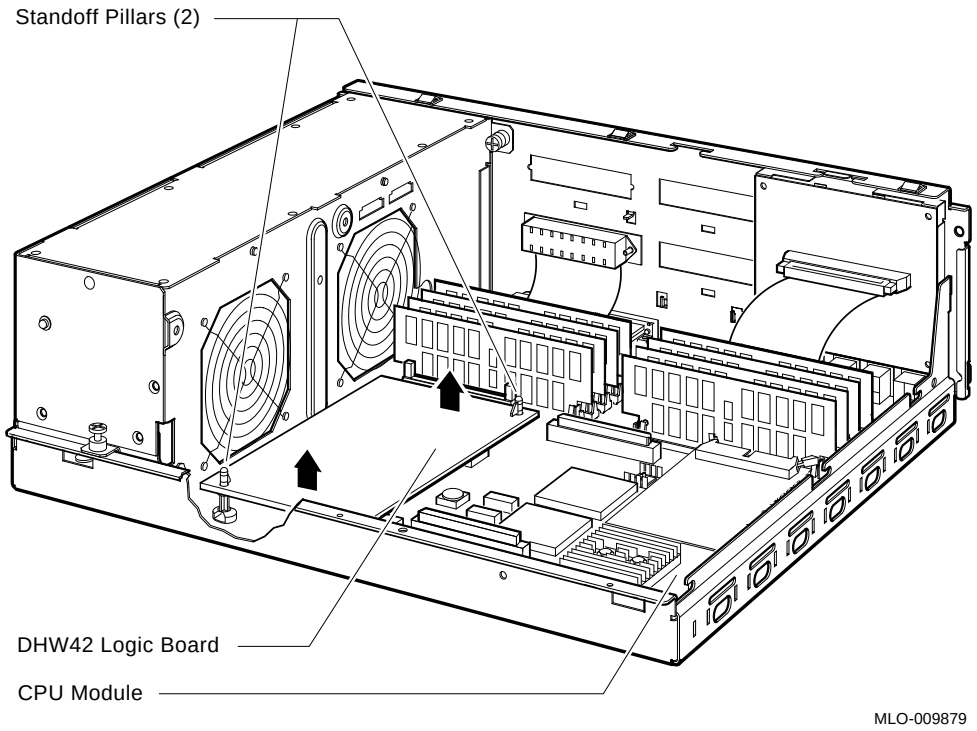
3.16.1 Removing the DHW42 Logic Board

Caution

Static electricity can damage integrated circuits. Wear a wrist strap and place an antistatic mat under the system unit when working with the internal parts of the system unit.

1. Press the latch on one of the standoff pillars (refer to Figure 3–41) and push up the corner of the DHW42 logic board until the DHW42 logic board is released.

Figure 3–41 Removing the DHW42 Logic Board



2. Press the latch on the other standoff pillar and push up the corner of the DHW42 logic board until the latch releases the DHW42 logic board.
3. Push up the DHW42 logic board until the connectors on the DHW42 logic board disengage from the connectors on the CPU module (refer to Figure 3–41).
4. Remove the DHW42 logic board from the enclosure.

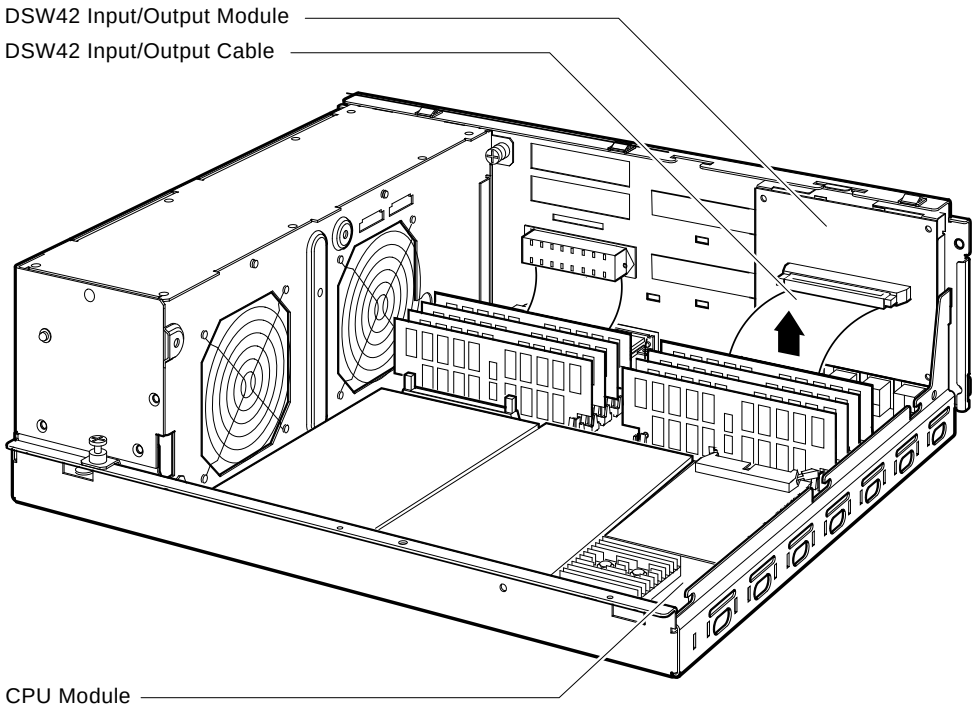
3.16.2 Removing the DHW42 Input/Output Cable

To remove the DHW42 input/output cable, follow these steps:

1. Disconnect the DHW42 input/output cable from the CPU module (refer to Figure 3–42).
2. Disconnect the DHW42 input/output cable from the DHW42 input/output module on the back of the enclosure (refer to Figure 3–42).

3. Remove the DHW42 input/output cable from the enclosure.

Figure 3–42 Removing the DHW42 Input/Output Cable



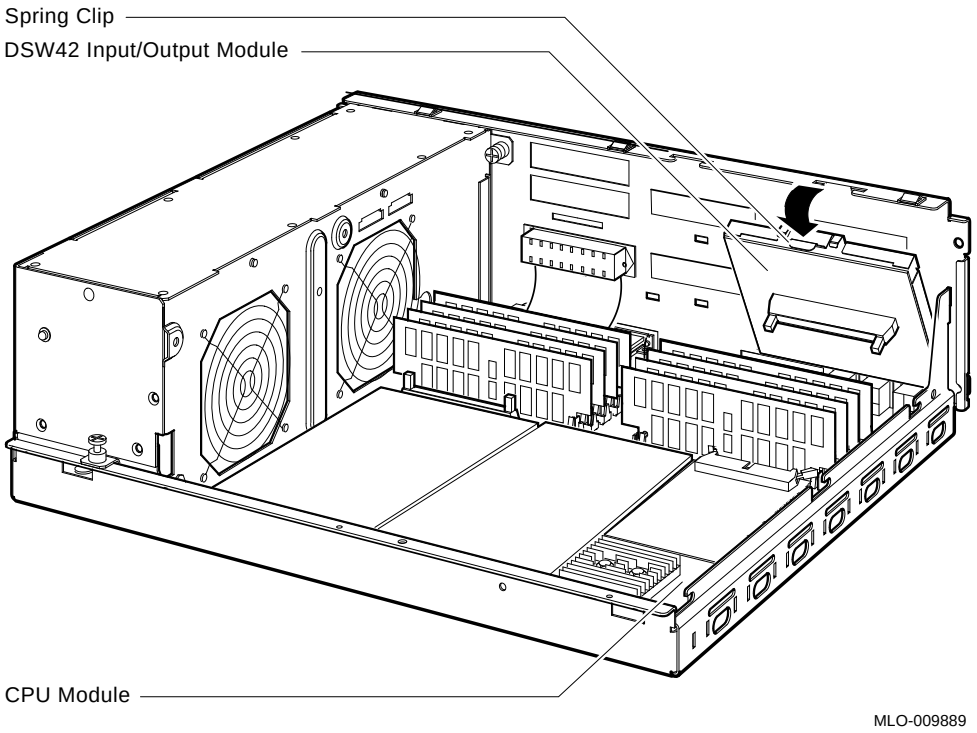
3.16.3 Removing the DHW42 Input/Output Module

To remove the DHW42 input/output module, follow these steps:

1. Disconnect the external cables that are connected to asynchronous ports A and B on the back of the system unit (if not already disconnected).
2. Disconnect the DHW42 input/output cable from the DHW42 input/output module (if not already disconnected).
3. Press the spring clip on the DHW42 input/output module. Pull the DHW42 input/output module towards the front of the enclosure until it is released from the back of the enclosure (refer to Figure 3–43).

4. Lift up and remove the DHW42 input/output module from the enclosure.

Figure 3–43 Removing the DHW42 Input/Output Module

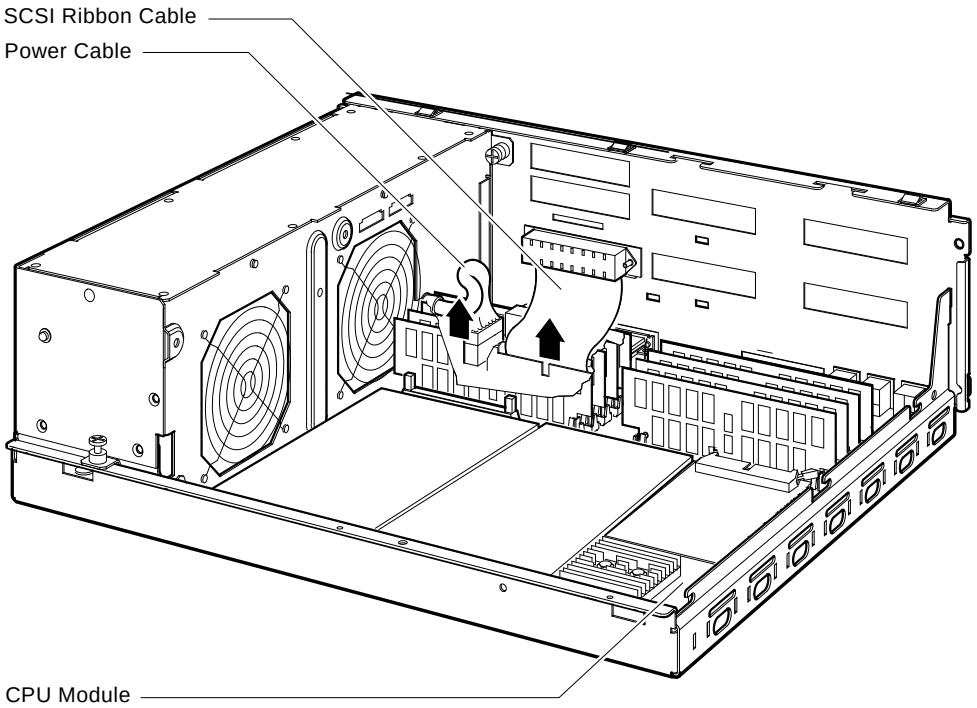


3.17 Removing the CPU Module

To remove the CPU module from the BA42B Enclosure, follow these steps:

1. Remove the ac power from the BA42B Enclosure.
2. Disconnect the external cables, loopback connectors, and terminators from the back of the system unit.
3. Remove the enclosure cover (refer to Section 3.1).
4. Remove the upper and lower drive-mounting shelf combination (refer to Section 3.11).
5. If installed, remove the DSW42 logic board (refer to Section 3.15.1) and disconnect the DSW42 input/output cable from the CPU module (refer to Section 3.15.2).
6. If installed, remove the DHW42 logic board (refer to Section 3.16.1) and disconnect the DHW42 input/output cable from the CPU module (refer to Section 3.16.2).
7. Disconnect the MS44 or MS44L memory modules from the CPU module (refer to Section 3.2).
8. Disconnect the power cable from the CPU module (refer to Figure 3–44).

Figure 3–44 Disconnecting the Cables from the CPU Module



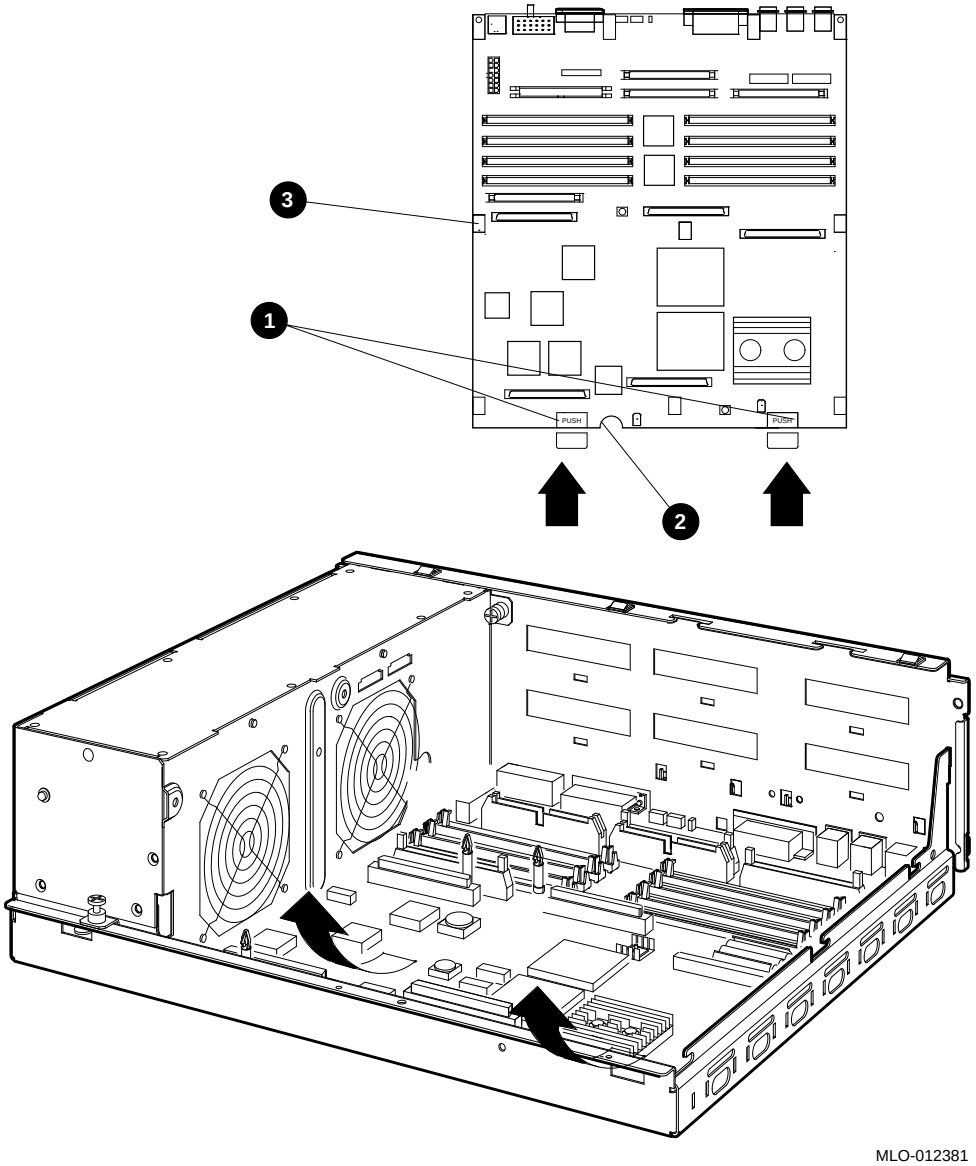
9. Disconnect the SCSI ribbon cable (17-02944-01) from the CPU module (refer to Figure 3–44).

Caution

Ensure that you do not damage any of the CPU module components by exerting too much force on the components.

10. Press the two spring clips (marked by arrows in Figure 3–45) that secure the CPU module in position. The CPU module moves forward under the tension of the connector gaskets. If necessary, slide the CPU module back until it disengages from the ten keyhole cutouts (refer to Figure 3–45).
11. Use your finger, in the semicircular cutout on the front edge of the CPU module, to lift up the front edge of the CPU module (refer to Figure 3–45).
12. While supporting the front of the CPU module with one hand, guide the connectors on the back of the CPU module out of the corresponding cutouts on the back of the enclosure.
13. Remove the CPU module from the enclosure.

Figure 3–45 Removing the CPU Module



❶ Spring clips
❷ Semicircular cutout
❸ Keyhole cutouts (10)

3.18 Replacing the CPU Module

To install a replacement CPU module in a BA42B Enclosure, follow these steps:

Caution

Static electricity can damage integrated circuits. Wear a wrist strap and place an antistatic mat under the system when working with the internal parts of the system.

1. Place the CPU module in the enclosure so that the connectors on the CPU module align with the corresponding cutouts in the back panel of the enclosure. Use the ThinWire Ethernet port as an anchor point to adjust the position of the CPU module correctly.
2. Align the keyhole cutouts in the CPU module with the corresponding standoff pillars in the base of the enclosure.

Caution

Ensure that you do not damage any of the CPU module components by exerting pressure on the components.

3. Press the CPU module at the two positions marked *push*. The spring clips push the standoff pillars into the keyhole cutouts that secure the CPU module in position.
4. Connect the DSSI cable to the CPU module.
5. Connect the SCSI cable (17-02944-01) to the CPU module (refer to Figure 3–44 for the location of the SCSI cable).
6. Connect the power cable to the CPU module (refer to Figure 3–44 for the location of the power cable).
7. Install the MS44 and MS44L memory modules that you removed from the original CPU module. Follow the steps in Section 3.2 in reverse order to install the memory modules.
8. Install the DSW42 logic board, and connect the DSW42 input/output cable if fitted. Follow the steps in Section 3.15.1 and Section 3.15.2 in reverse order to install the logic board and cable.

9. Install the DHW42 logic board, and connect the DHW42 input/output cable if fitted. Follow the steps in Section 3.16.1 and Section 3.16.2 in reverse order to install the logic board and cable.
10. Install the upper and lower drive-mounting shelf combination. Follow the steps in Section 3.11 in reverse order to install the drive-mounting shelf combination.
11. Install the enclosure cover. Follow the steps in Section 3.1 in reverse order to install the cover.

3.19 Removing the Power Supply

Note

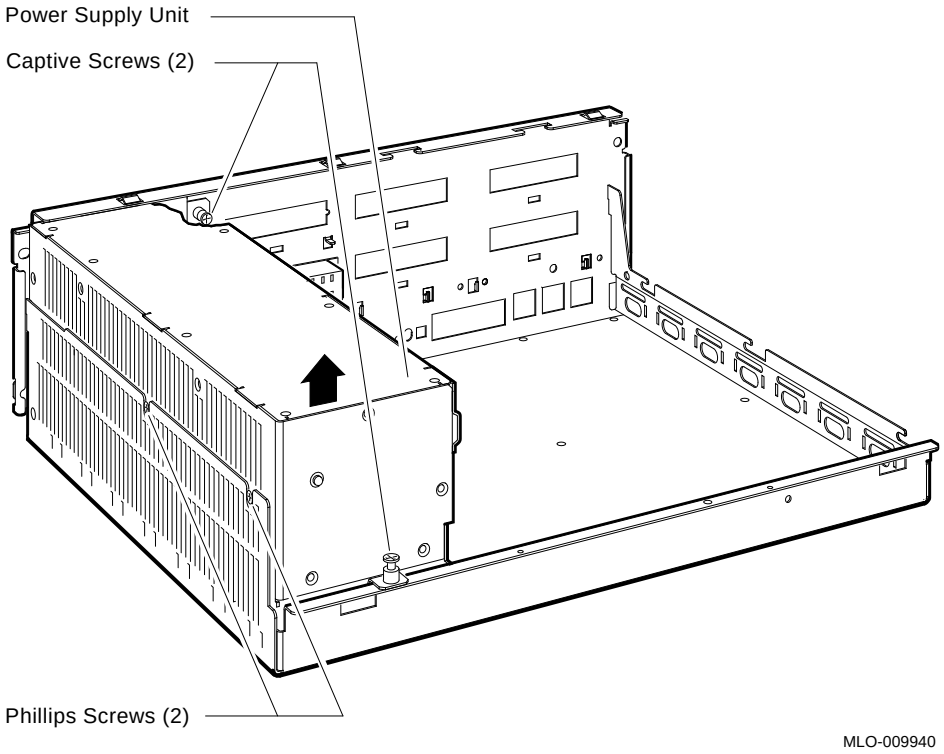
In VAX 4000 systems, the power supply (30-35042-01) is a single FRU. It does not have any replaceable components.

To remove the power supply from the BA42B Enclosure, follow these steps:

1. Remove the ac power.
2. Remove the enclosure cover (refer to Section 3.1).
3. Remove the upper and lower drive-mounting shelf combination (refer to Section 3.11).
4. Disconnect the power cable from the CPU module (refer to Figure 3–44).
5. Loosen the two captive screws (refer to Figure 3–46).

3.19 Removing the Power Supply

Figure 3–46 Removing the Power Supply



6. Loosen the two Phillips screws (90-09984-07) that secure the power supply to the left side of the enclosure (refer to Figure 3–46).

Caution

Ensure that you do not damage any of the MS44 or MS44L memory modules when you lift the power supply out of the enclosure.

7. Lift the front of the power supply (refer to Figure 3–46).
8. Remove the power supply from the enclosure.

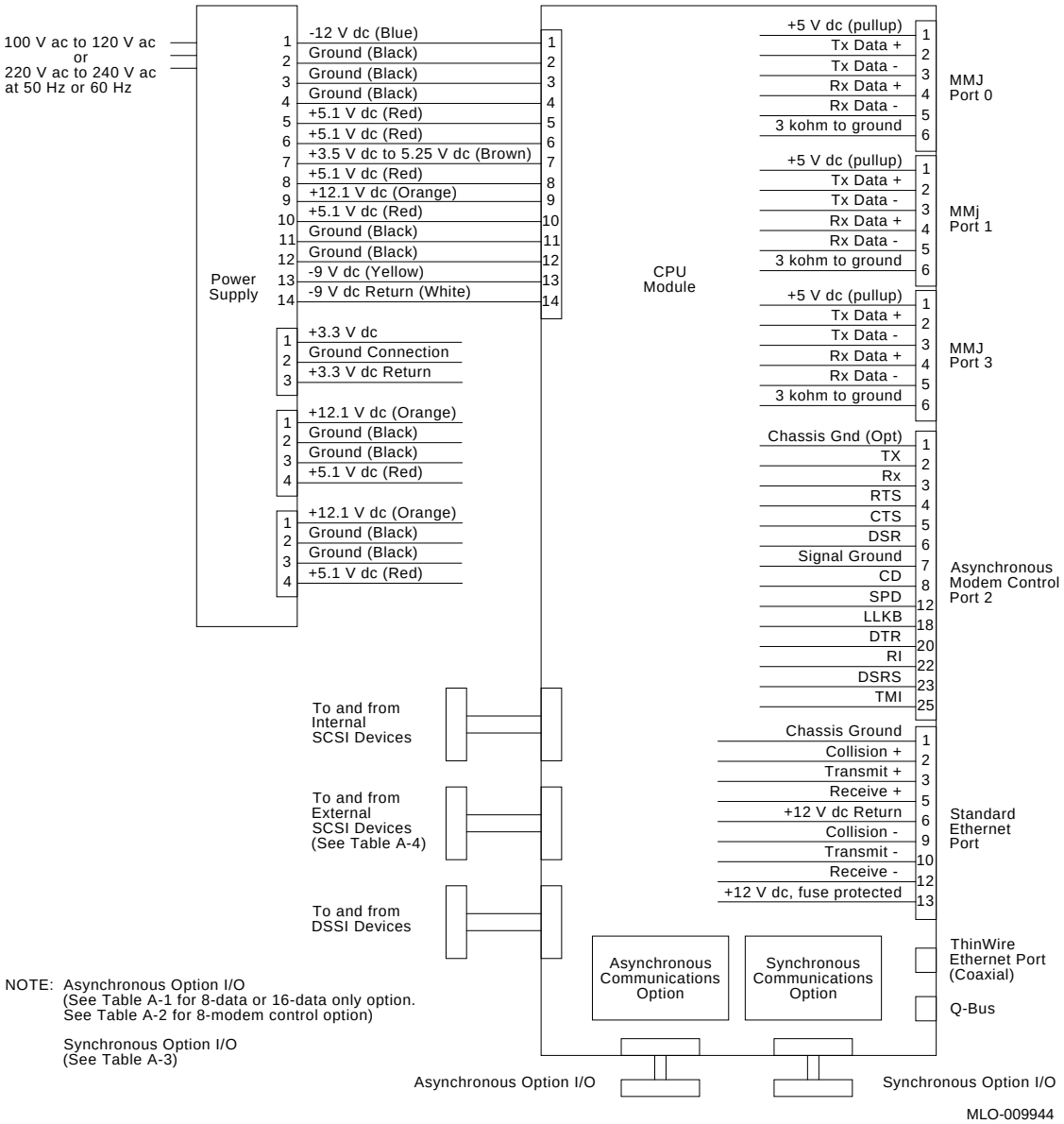
A

Pin Specifications for the Ports on the BA42B System

Figure A–1 shows the pin specifications for the ports on the BA42B system.

Pin Specifications for the Ports on the BA42B System

Figure A–1 Pin Specifications for the Ports on the BA42B System



Pin Specifications for the Ports on the BA42B System

Table A–1 Asynchronous Port A and Port B Pin Specifications for the Eight-Data and 16-Data Line Options

Contact	Port A Signal Name [2]	Port B [1] Signal Name [2]
1	LINE 0 TRANSMIT H	LINE 8 TRANSMIT H
2	LINE 0 RECEIVE H	LINE 8 RECEIVE H
3	LINE 1 TRANSMIT H	LINE 9 TRANSMIT H
4	LINE 1 RECEIVE H	LINE 9 RECEIVE H
5	LINE 2 TRANSMIT H	LINE 10 TRANSMIT H
6	LINE 2 RECEIVE H	LINE 10 RECEIVE H
7	LINE 3 TRANSMIT H	LINE 11 TRANSMIT H
8	LINE 3 RECEIVE H	LINE 11 RECEIVE H
9	LINE 4 TRANSMIT H	LINE 12 TRANSMIT H
10	LINE 4 RECEIVE H	LINE 12 RECEIVE H
11	LINE 5 TRANSMIT H	LINE 13 TRANSMIT H
12	LINE 5 RECEIVE H	LINE 13 RECEIVE H
13	LINE 6 TRANSMIT H	LINE 14 TRANSMIT H
14	LINE 6 RECEIVE H	LINE 14 RECEIVE H
15	LINE 7 TRANSMIT H	LINE 15 TRANSMIT H
16	LINE 7 RECEIVE H	LINE 15 RECEIVE H
17	150 OHMS TO GROUND	150 OHMS TO GROUND
18	150 OHMS TO GROUND	150 OHMS TO GROUND
19	LINE 0 TRANSMIT L	LINE 8 TRANSMIT L
20	LINE 0 RECEIVE L	LINE 8 RECEIVE L
21	LINE 1 TRANSMIT L	LINE 9 TRANSMIT L
22	LINE 1 RECEIVE L	LINE 9 RECEIVE L
23	LINE 2 TRANSMIT L	LINE 10 TRANSMIT L
24	LINE 2 RECEIVE L	LINE 10 RECEIVE L
25	LINE 3 TRANSMIT L	LINE 11 TRANSMIT L
26	LINE 3 RECEIVE L	LINE 11 RECEIVE L

[1]Not applicable to eight-data line option.

[2]The signal names ending with L are active low; the signal names ending with H are active high.

(continued on next page)

Table A–1 (Cont.) Asynchronous Port A and Port B Pin Specifications for the Eight-Data and 16-Data Line Options

Contact	Port A Signal Name [2]	Port B [1] Signal Name [2]
27	LINE 4 TRANSMIT L	LINE 12 TRANSMIT L
28	LINE 4 RECEIVE L	LINE 12 RECEIVE L
29	LINE 5 TRANSMIT L	LINE 13 TRANSMIT L
30	LINE 5 RECEIVE L	LINE 13 RECEIVE L
31	LINE 6 TRANSMIT L	LINE 14 TRANSMIT L
32	LINE 6 RECEIVE L	LINE 14 RECEIVE L
33	LINE 7 TRANSMIT L	LINE 15 TRANSMIT L
34	LINE 7 RECEIVE L	LINE 15 RECEIVE L
35	150 OHMS TO GROUND	150 OHMS TO GROUND
36	150 OHMS TO GROUND	150 OHMS TO GROUND

[1]Not applicable to eight-data line option.

[2]The signal names ending with L are active low; the signal names ending with H are active high.

Table A–2 Asynchronous Port A and Port B Pin Specifications for the Eight-Modem Control Line Option

Contact	Port A Signal Name [1]	Port B Signal Name [1]
1	LINE 0 TX CONN L	LINE 4 TX CONN L
2	LINE 0 RX CONN L	LINE 4 RX CONN L
3	LINE RTS CONN<0> H	LINE RTS CONN<4> H
4	LINE 0 CTS CONN H	LINE 4 CTS CONN H
5	LINE 0 DSR CONN H	LINE 4 DSR CONN H
6	LINE 0 SGND CONN L	LINE 4 SGND CONN L
7	LINE 0 CD CONN H	LINE 4 CD CONN H
8	LINE 0 SPDMI CONN H	LINE 4 SPDMI CONN H
9	LINE DTR CONN<0> H	LINE DTR CONN<4> H

[1]The signal names ending with L are active low; the signal names ending with H are active high.

(continued on next page)

Table A–2 (Cont.) Asynchronous Port A and Port B Pin Specifications for the Eight-Modem Control Line Option

Contact	Port A Signal Name [1]	Port B Signal Name [1]
10	LINE 0 RI CONN H	LINE 4 RI CONN H
11	—	—
12	LINE DSRS CONN<0> H	LINE DSRS CONN<4> H
13	LINE 1 TX CONN L	LINE 5 TX CONN L
14	LINE 1 RX CONN L	LINE 5 RX CONN L
15	LINE RTS CONN<1> H	LINE RTS CONN<5> H
16	LINE 1 CTS CONN H	LINE 5 CTS CONN H
17	LINE 1 DSR CONN H	LINE 5 DSR CONN H
18	LINE 1 SGND CONN L	LINE 5 SGND CONN L
19	LINE 1 CD CONN H	LINE 5 CD CONN H
20	LINE 1 SPDMI CONN H	LINE 5 SPDMI CONN H
21	LINE DTR CONN<1> H	LINE DTR CONN<5> H
22	LINE 1 RI CONN H	LINE 5 RI CONN H
23	—	—
24	LINE DSRS CONN<1> H	LINE DSRS CONN<5> H
25	LINE 2 TX CONN L	LINE 6 TX CONN L
26	LINE 2 RX CONN L	LINE 6 RX CONN L
27	LINE RTS CONN<2> H	LINE RTS CONN<6> H
28	LINE 2 CTS CONN H	LINE 6 CTS CONN H
29	LINE 2 DSR CONN H	LINE 6 DSR CONN H
30	LINE 2 SGND CONN L	LINE 6 SGND CONN L
31	LINE 2 CD CONN H	LINE 6 CD CONN H
32	LINE 2 SPDMI CONN H	LINE 6 SPDMI CONN H
33	LINE DTR CONN<2> H	LINE DTR CONN<6> H
34	LINE 2 RI CONN H	LINE 6 RI CONN H
35	—	—
36	LINE DSRS CONN<2> H	LINE DSRS CONN<6> H

[1]The signal names ending with L are active low; the signal names ending with H are active high.

(continued on next page)

Table A–2 (Cont.) Asynchronous Port A and Port B Pin Specifications for the Eight-Modem Control Line Option

Contact	Port A Signal Name [1]	Port B Signal Name [1]
37	LINE 3 TX CONN L	LINE 7 TX CONN L
38	LINE 3 RX CONN L	LINE 7 RX CONN L
39	LINE RTS CONN<3> H	LINE RTS CONN <7> H
40	LINE 3 CTS CONN H	LINE 7 CTS CONN H
41	LINE 3 DSR CONN H	LINE 7 DSR CONN H
42	LINE 3 SGND CONN L	LINE 7 SGND CONN L
43	LINE 3 CD CONN H	LINE 7 CD CONN H
44	LINE 3 SPDMI CONN H	LINE 7 SPDMI CONN H
45	LINE DTR CONN<3> H	LINE DTR CONN<7> H
46	LINE 3 RI CONN H	LINE 7 RI CONN H
47	—	—
48	LINE DSRS CONN<3> H	LINE DSRS CONN<7> H
49	—	—
50	—	—

[1]The signal names ending with L are active low; the signal names ending with H are active high.

Table A–3 Pin Specifications for Synchronous Port 0 and Port 1

Contact	Port 0 Signal Name [1]	Port 1 Signal Name [1]
1	CODE GND 1 L	CODE GND 2 L
2	CODE0 1 L	CODE0 2 L
3	CODE1 1 L	CODE1 2 L
4	CODE2 1 L	CODE2 2 L
5	CODE3 1 L	CODE3 2 L
6	TXDATA(B) 1 P L	TXDATA(B) 2 P L

[1]The signal names ending with L are active low; the signal names ending with H are active high.

(continued on next page)

Table A–3 (Cont.) Pin Specifications for Synchronous Port 0 and Port 1

Contact	Port 0 Signal Name [1]	Port 1 Signal Name [1]
7	TXDATA(A) 1 P H	TXDATA(A) 2 P H
8	TXDATA 1 P L	TXDATA 2 P L
9	RTS/C A 1 P L	RTS/C A 2 P L
10	RTS/C B 1 P L	RTS/C B 2 P L
11	RX DATA A 1 P L	RX DATA A 2 P L
12	RX DATA B 1 P L	RX DATA B 2 P L
13	LOCAL LOOP 1 P H	LOCAL LOOP 2 P H
14	TEST 4 1 P L	TEST 4 2 P L
15	TEST 11 1 P H	TEST 11 2 P H
16	REM LOOP 1 P H	REM LOOP 2 P H
17	R1 1 P H	R1 2 P H
18	RXCLOCK A 1 P L	RXCLOCK A 2 P L
19	RXCLOCK B 1 P H	RXCLOCK B 2 P H
20	TXCLOCK A 1 P L	TXCLOCK A 2 P L
21	TXCLOCK B 1 P H	TXCLOCK B 2 P H
22	CLOCK 1 P L	CLOCK 2 P L
23	V35 TXCLK A 1 P L	V35 TXCLK A 2 P L
24	V35 TXCLK B 1 P H	V35 TXCLK B 2 P H
25	V35 CLK A 1 P L	V35 CLK A 2 P L
26	V35 CLK B 1 P H	V35 CLK B 2 P H
27	V35 RX A 1 P L	V35 RX A 2 P L
28	V35 RX B 1 P H	V35 RX B 2 P H
29	V35 TX A 1 P L	V35 TX A 2 P L
30	V35 TX B 1 P H	V35 TX B 2 P H
31	V35 RXCLK A 1 P L	V35 RXCLK A 2 P L
32	V35 RXCLK B 1 P H	V35 RXCLK B 2 P H
33	DTR 1 P H	DTR 2 P H

[1]The signal names ending with L are active low; the signal names ending with H are active high.

(continued on next page)

Pin Specifications for the Ports on the BA42B System

Table A–3 (Cont.) Pin Specifications for Synchronous Port 0 and Port 1

Contact	Port 0 Signal Name [1]	Port 1 Signal Name [1]
34	DSR A 1 P H	DSR A 2 P H
35	DSR B 1 P L	DSR B 2 P L
36	RTS 1 P L	RTS 2 P L
37	DCD/I A 1 P H	DCD/I A 2 P H
38	DCD/I B 1 P L	DCD/I B 2 P L
39	CTS A 1 P H	CTS A 2 P H
40	CTS B 1 P L	CTS B 2 P L
42	TEST 1 1 P H	TEST 1 2 P H
43	TEST 2 1 P H	TEST 2 2 P H
44	DTE GND 1 PROT L	DTE GND 2 PROT L
45	DTR A 1 P H	DTR A 2 P H
46	DTR B 1 P L	DTR B 2 P L
47	CLOCK A 1 P L	CLOCK A 2 P L
48	CLOCK B 1 P H	CLOCK B 2 P H
49	TEST 3 1 P H	TEST 3 2 P H
50	SPEED SEL 1 P H	SPEED SEL 2 P H

[1]The signal names ending with L are active low; the signal names ending with H are active high.

Pin Specifications for the Ports on the BA42B System

Table A–4 Pin Specifications for the External SCSI Connector

Contact	Signal Name [1]	Contact	Signal Name [1]
1	GROUND	26	TERMPWR
2	DB (0) L	27	RESERVED
3	GROUND	28	RESERVED
4	DB (1) L	29	GROUND
5	GROUND	30	GROUND
6	DB (2) L	31	GROUND
7	GROUND	32	ATN L
8	DB (3) L	33	GROUND
9	GROUND	34	GROUND
10	DB (4) L	35	GROUND
11	GROUND	36	BSY L
12	DB (5) L	37	GROUND
13	GROUND	38	ACK L
14	DB (6) L	39	GROUND
15	GROUND	40	RST L
16	DB (7) L	41	GROUND
17	GROUND	42	MSG L
18	DB (P) L	43	GROUND
19	GROUND	44	SEL L
20	GROUND	45	GROUND
21	GROUND	46	C/D L
22	GROUND	47	GROUND
23	RESERVED	48	REQ L
24	RESERVED	49	GROUND
25	OPEN	50	I/O L

[1]The signal names ending with L are active low; the signal names ending with H are active high.

B

Related Documentation

The following documents contain information relating to the VAX 4000 Model 100 system.

Document Title	Order Number
VAX 4000 Model 100 Customer Letter	EK–463AA–CL
VAX 4000 Model 100 Customer Technical Information	EK–476AA–TI
VAX 4000 Model 100 Installation Information	EK–465AA–IN
VAX 4000 Model 100 Operator Information	EK–466AA–OP
VAX 4000 Model 100 Troubleshooting and Diagnostics Information	EK–4688AA–TS
VAX 4000 BA42B-Based Systems DSSI Upgrade Manual	EK–500AA–UP

The following documents contain information relating to the VAX 4000 Model 100A system.

Document Title	Order Number
VAX 4000 Model 100A Customer Letter	EK–501AA-CL
VAX 4000 Model 100A Customer Technical Information	EK–504AA–TI
VAX 4000 Model 100A Installation Information	EK-502AA-IN
VAX 4000 Model 100A Operator Information	EK–503AA-OP
VAX 4000 Model 100A Troubleshooting and Diagnostics Information	EK–505AA–TS
VAX 4000 BA42B-Based Systems DSSI Upgrade Manual	EK–500AA–UP

The following documents contain information relating to the VAX 4000 Model 105A system.

Related Documentation

Document Title	Order Number
VAX 4000 Model 105A Customer Letter	EK–511AB–CL
VAX 4000 Model 105A Customer Technical Information	EK–514AB–TI
VAX 4000 Model 105A Installation Information	EK–512AA–IN
VAX 4000 Model 105A Operator Information	EK–513AB–OP
VAX 4000 Model 100 Troubleshooting and Diagnostics Information	EK–515AB–TS

The following documents contain information relating to the VAX 4000 Models 100/100A and 105A.

Document Title	Order Number
VAX 4000 Model 100/100A/105A KA52/53 CPU System Maintenance	EK–473AB–MG
VAX 4000 BA42B Enclosure System Options	EK–474AB–OP
OpenVMS Factory Installed Software User Guide	EK-A0377-UG

C

Recommended Spare Parts List

Table C–1 gives a list of the recommended spare parts for the VAX 4000 Model 100/100A/105A systems that use the BA42B Enclosure.

Table C–1 Recommended Spare Parts

Description[1]	Part Number	Quantity
CPU module, KA52-AA/KA53-AA	54-21797-01/02	1
SCSI cable clamp	90-11237-01	1
Cable assembly, SCSI A/B, CPU to I/O	17-02944-01	1
DSSI module, single	54-21837-01	1
DSSI cable	17-03544-01	1
DSSI module, dual	54-22444-01	1
DSSI in/out cable	17-03778-01	1
DSSI terminator	12-29258-01	1
Q–bus cable	17-03545-01	1
Terminator, 50-way SCSI (H8574-A)	12-30552-01	1
Loopback connector, standard Ethernet	12-22196-01	1
T-connector, ThinWire Ethernet (H8223)	12-25869-01	1
Terminator, ThinWire Ethernet, 50-ohm (H8225)	12-26318-01	2
Loopback connector, modem port, 25-way	29-24795-00	1
Adapter, 25-way EIA-232 to 6-way MMJ	H8575-A	1
Memory module, MS44L-DC (4M bytes)	MS44L-AA	1
Memory module, MS44 (16M bytes)	MS44-CA	1

[1]The major FRUs are the entries in this column that are not indented. This manual gives instructions on how to replace these FRUs.

(continued on next page)

Recommended Spare Parts List

Table C–1 (Cont.) Recommended Spare Parts

Description[1]	Part Number	Quantity
Power supply unit (H7829-AA)	30-35042-01	1
Cable assembly, dc harness, lower shelf	17-03018-01	1
System power cord (USA)	17-00606-02	1
Terminal cable (BC16E-25)	17-00811-03	1
Antistatic kit	29-26246-00	1
DSSI power cable	17-03615-01	1
SCSI cable, bottom shelf	17-03587-01	1

[1]The major FRUs are the entries in this column that are not indented. This manual gives instructions on how to replace these FRUs.

Glossary

ac

Alternating current.

CD–ROM

Compact disc read-only memory.

CPU

Central processing unit. The main unit of a computer containing the circuits that control the interpretation and execution of instructions. The CPU holds the main storage, arithmetic unit, and special registers.

dc

Direct current.

ESD

Electrostatic discharge.

Ethernet

A type of local area network (LAN) based on carrier sense multiple access with collision detection (CSMA/DC).

FDI

Floppy diskette interface.

FRU

Field replaceable unit.

ground

A voltage reference in a system that has a zero voltage potential.

jumper wire

A short length of wire used to complete a circuit temporarily or to bypass a circuit.

LED

Light emitting diode.

MMJ

Modified modular jack.

module

A unit that contains electrical components and electrically conductive pathways between components.

port

A physical connector.

rms

Root mean square. The root mean square value of an alternating voltage is the square root of the mean value of the square of the voltage values during a complete cycle.

ROM

Read-only memory.

SCSI

Small computer system interface. An interface designed for connecting disks and other peripheral devices to computer systems. SCSI is defined by an American National Standards Institute (ANSI) standard.

standard Ethernet

An IEEE 802.3 compliant Ethernet network composed of standard Ethernet cable as opposed to thin Ethernet cable.

system

A combination of system hardware, software, and peripheral devices that performs specific processing operations.

ThinWire

A trademark used to describe Digital's IEEE 802.3 compliant products used for local distribution of data communication.

Index

R

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T

U

Reader's Comments

VAX 4000
BA42B Enclosure Maintenance
EK–472AB–MG. B01

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Thank you for your assistance.

I rate this manual's:	Excellent	Good	Fair	Poor
Accuracy (product works as manual says)	☐	☐	☐	☐
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