

Preface

This manual describes how to unpack, set up, and start a new AViiON® desktop workstation to the point at which you are ready to install your system software. It also provides illustrated instructions and detailed information for replacing failing parts and for adding expansion memory after the workstation is installed.

The information in this manual applies to all AViiON workstation models with a desktop computer unit chassis; that is, models in the 100, 200, and 300 series. Since there are model-specific differences in base hardware and hardware configurations, we make it clear within text when details relate to specific models of hardware.

Although some computer hardware experience will be helpful, you do not need knowledge of AViiON or RISC-based computer technology to use this manual.

About This Revision

A vertical bar in the margin of a page indicates substantive technical change from the previous revision. The exceptions are Chapter 5, (*Using the System Control Monitor*) and Appendix C (*Understanding Boot Path Syntax*), which contain entirely new material. Technical changes in this revision relate to the following:

- Streamlined installation procedures for DG/UX Release 5.4.
- Danish and Norwegian keyboard language support.
- References to related documentation (for DG/UX customers and Remote Assistance contract holders).
- Updated or enhanced descriptions of supported peripherals and device identification.

Information about handling, protecting, and loading quarter-inch cartridge (QIC) tape media is no longer in this manual. You will find this information in the manual that came with your tape drive.

How We Organized This Manual

We organized the information in this manual as follows.

Chapter 1 Getting Started

Provides information you need *before* starting any work. Begins with a reading path for the tasks of setting up, maintaining, or expanding your workstation. Includes an overview of base workstation components and options.

Chapter 2 Setting Up Your Workstation

Describes how to connect (or disconnect) the workstation monitor, keyboard, mouse, and computer unit power cord, as well as cabling for the following optional devices:

- asynchronous devices such as a modem, serial printer, or plotter.
- local area network (LAN) transceiver.
- peripheral housing subsystems or standalone SCSI mass-storage devices.
- parallel printer (300 series only).

Begins with site preparation and unpacking instructions, an inventory worksheet for cables and cords, and an installation checklist to complete before you begin.

Chapter 3 Starting and Stopping Your Workstation

Explains how to correctly power the workstation up and down. Describes routine firmware power-up testing and the automatic boot sequence. Provides suggestions for resolving power-up problems such as a blank monitor display, unreadable text messages, or error indicators.

Chapter 4 Expanding and Maintaining Your Workstation

Describes how to remove and replace the power supply, fuse, speaker, or fan assembly, how to add or replace memory modules, how to remove and replace the PROM (Programmable Read-Only Memory) component, and how to remove and replace the system board tray assembly.

Begins by describing how to avoid electrostatic discharge (ESD) damage while working inside the computer chassis, and how to open and close the chassis cover.

Chapter 5 Using the System Control Monitor (SCM)

Describes how to use SCM commands and menus to set or change system configuration parameters. Contains a quick reference of boot device specifications and describes how to use boot path arguments to boot the system manually or automatically.

Appendix A Technical Specifications

Lists physical, environmental, and electrical specifications for base hardware and optional components.

Appendix B Customer Replaceable Units (CRUs)

Lists those parts that you can replace by ordering from Data General.

Appendix C Understanding Boot Path Syntax

Explains the syntax used in boot path arguments.

Related Documents

You received a comprehensive documentation package with your AViiON computer system. Those documents specifically mentioned within the text of this manual appear below; they are a small subset of manuals available for your workstation. Refer to the *Guide to AViiON® and DG/UX™ Documentation* (069–701085) or to the document *Read This First* (069–000519) for a complete description of related hardware and DG/UX operating system documentation. Use *Read This First* if your workstation runs Release 3.4x of the DG/UX System (any release prior to 5.40); use the *Guide to AViiON® and DG/UX™ Documentation* if your workstation runs DG/UX Release 5.4x.

Hardware Manuals

AViiON® Series Systems Automatic Reporting and Remote Assistance User's Guide (015–000356)

Available with a Remote Assistance contract only. Provides details about remote and machine-initiated calling. Explains how to set up your system and make a remote connection, and describes user menus.

Using AViiON® System Diagnostics (014–001863)

Describes how to use menu-based utilities to verify system hardware; test the graphics monitor, keyboard, and mouse; check for faults in LAN connections; and maintain cartridge tape and diskette media.

DG/UX Release 4.3x Manuals

Initially Installing and Setting Up the DG/UX™ System on AViiON® Stand-Alone Workstations (069–000520)

Presents step-by-step procedures for installing the DG/UX operating system on a stand-alone AViiON workstation with or without a hard disk preloaded with DG/UX software at the factory. Does not assume experience with UNIX® software, but does presuppose some familiarity with an operating system such as MS-DOS®.

Initially Installing and Setting Up the DG/UX™ System on AViiON® Servers with Clients (069–000549)

Presents step-by-step procedures for installing and setting up a DG/UX client/server system that supports AViiON operating system clients, workstations, X terminals, and local terminals and printers. Does not assume experience with UNIX software, but does presuppose some familiarity with an operating system such as MS-DOS®.

Installing and Managing the DG/UX™ System (093–701052)

Shows how to install and manage the DG/UX operating system on AViiON hosts that will run as stand-alone, server, or client systems. Aimed at system administrators who are familiar with a UNIX operating system.

DG/UX Release 5.4x Manuals

Installing the DG/UX™ System (093–701087)

Shows how to install the DG/UX operating system on AViiON computers. Instructions address first–time installations on new hardware, installations on existing systems, and upgrades to a newer release of the software.

Peripheral Manuals

Installing and Operating the Model 10565 Peripheral Housing Unit (014–001810)

Describes how to unpack, inspect, install, and power up the unit. Explains how to replace the power supply, line cord, and fan and provides general instructions for replacing a drive. Lists physical, electrical, and environmental specifications of the peripheral housing unit.

Installing CSS2 and CSS2/DC Storage Subsystem Components (014–002032)


Describes how to unpack, inspect, install, and power up the unit. Explains how to replace the power supply, line cord, and fan, and provides general instructions for replacing a drive. Lists physical, electrical, and environmental specifications of the subsystem.

Installing the Model 6586/6587 Magnetic Tape Streamer Unit (014–001692)

Describes how to unpack, inspect, install, and power up the unit. Explains how to install and remove reel–to–reel tapes.

Reader, Please Note

We use the following conventions in this manual:

Within text, “press New Line” means that you should press the New Line key on the Data General DASHER® keyboard, or the Enter key on the keyboard that ships with your workstation. If you are using another keyboard compatible with the industry–standard IBM PC AT® keyboard, the equivalent key is usually marked Enter, Return, or with a symbol such as .

The term *workstation* refers to any single–user AViiON model that provides graphics computing either as a stand–alone station or as a network client to a server system. *Desktop workstation* refers to AViiON 100, 200, and 300 series models with a compact, desktop computer unit chassis.

The term *server* refers to a computer system that provides user services through direct terminal lines and/or a local area network (LAN). An AViiON server could be a *stand–alone server*, which provides operating system support via direct terminal access, or a *network server*, which provides operating system support to client computers across a LAN. Some computers function as both stand–alone and network operating system servers. The term *client* refers to any computer that receives operating system or file services from a server system via the LAN.

The *system console* refers to the keyboard and display device that receives power-up diagnostic test messages and from which you bring up your operating system. In most cases, the system console communicates directly with the computer's system board. A workstation's system console usually consists of the graphics monitor and graphics keyboard. A server's system console usually consists of an asynchronous terminal with an ASCII character set, in ANSI or VT100/VT200-emulation mode, and connected to an RS-232-C system board interface.

Within text, we use the following symbols:

Symbol	Means
↵	Press the New Line, Carriage Return (CR), Return, or Enter key on your keyboard.
SCM>	The default System Control Monitor (SCM) prompt.
#	The default DG/UX superuser shell prompt.

In examples we use

This typeface to show your entry.

This typeface to show system queries and responses.

Contacting Data General

Data General wants to assist you in any way it can to help you use its products. Please feel free to contact the company as outlined below.

Manuals

If you require additional manuals, please use the enclosed TIPS order form (United States only) or contact your local Data General sales representative.

Telephone Assistance

If you are unable to solve a problem using any manual you received with your system, and you are within the United States or Canada, contact the Data General Service Center by calling 1-800-DG-HELPS for toll-free telephone support. The center will put you in touch with a member of Data General's telephone assistance staff who can answer your questions.

Free telephone assistance is available with your hardware warranty and with most Data General software service options. Lines are open from 8:30 a.m. to 8:30 p.m., Eastern Time, Monday through Friday.

For telephone assistance outside the United States or Canada, ask your Data General sales representative for the appropriate telephone number.

Joining Our Users Group

Please consider joining the largest independent organization of Data General users, the North American Data General Users Group (NADGUG). In addition to making valuable contacts, members receive FOCUS monthly magazine, a conference discount, access to the Software Library and Electronic Bulletin Board, an annual Member Directory, Regional and Special Interest Groups, and much more. For more information about membership in the North American Data General Users Group, call 1-800-877-4787 or 1-512-345-5316.

End of Preface

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Chapter 1

Getting Started

The first part of this chapter provides a reading path for the tasks you can complete using this manual:

- setting up a new workstation
- powering the workstation up or down
- responding to power-up problems
- replacing parts (Customer Replaceable Units, or CRUs) that have failed
- adding expansion memory or mass-storage

Latter sections of this chapter provide an overview of your workstation hardware and options.

Planning Your Work

Before beginning a task, refer to the appropriate subsection below. Each subsection summarizes where in this manual you will find the information you need.

Reading Path for Setting Up a New Workstation

For instructions on unpacking and setting up your workstation components, read Chapter 2 in sequence. You can skip those subsections that do not apply to your configuration. Be sure to complete the Installation Checklist, Figure 2-6, *before* starting any work. Then, read the first section in Chapter 3, “Starting the Workstation” before powering up your new workstation. From there, you will proceed to your operating system documentation for installation information, or to the manual *Using AViiON® System Diagnostics* for information about the 15-minute hardware acceptance test.

Reading Path for Power-Up Procedures or Problems

For a description of the testing and automatic boot sequence your workstation undergoes when powering up normally, refer to the first part of Chapter 3, “Starting the Workstation.” Refer to the “Solving Power-Up Problems” section of Chapter 3 for troubleshooting suggestions. For steps to properly shut down the workstation, refer to the last section of Chapter 3, “Shutting Down the Workstation.”

To change the automatic boot sequence, refer to the “Changing the Default System Boot Path” section of Chapter 5. To construct an SCM **BOOT** command line or boot path argument, refer to the last section of Chapter 5, “Specifying a Boot Path.”

Reading Path for Replacing Parts

You can replace both external workstation components and those inside the computer unit chassis. Refer to Appendix B for a complete list of Customer Replaceable Units (CRUs) with part numbers.

External CRUs

An external part is any defined CRU that is externally connected to the computer unit chassis. If you are replacing an external part, follow the steps in the appropriate section of Chapter 2 to disconnect the old and reconnect the new part. Table 1-1 lists external CRUs with the appropriate section of Chapter 2.

Table 1-1 Reading Path for Replacing External Parts

If you need to replace this	Read this Section of Chapter 2
Keyboard	Connecting the Keyboard
Mouse	Connecting the Mouse
LAN Cable	Connecting a Local Area Network Cable
Serial Printer Cable	Connecting Asynchronous Devices
Modem Cable	Connecting Asynchronous Devices
Plotter or Scanner Cable	Connecting Asynchronous Devices
Terminal Cable	Connecting Asynchronous Devices
Parallel Printer Cable	Connecting a Parallel Printer
SCSI Bus Cable	Connecting a SCSI Bus Cable and Terminator
Mass-Storage Unit	Connecting a SCSI Bus Cable and Terminator
Monochrome Graphics Monitor	Connecting the Graphics Monitor
Color Graphics Monitor	Connecting the Graphics Monitor
Computer Unit Power Cord	Connecting the Computer Unit Power Cord

NOTE: Sections of Chapter 2 appear in the order seen above (top-to-bottom).

Internal CRUs

An internal part is any defined CRU *inside* the computer unit chassis. If you are replacing an internal part, first follow the instructions in the “Avoiding ESD Damage” and “Opening the Computer Unit” sections at the beginning of Chapter 4; then, proceed to the appropriate subsection later in Chapter 4. Table 1-2 lists internal CRUs and the relevant subsections of Chapter 4.

Table 1–2 Reading Path for Replacing Internal Parts

If you need to replace this	Read this Section of Chapter 4
Fan	Replacing the Fan Assembly
Speaker	Replacing the Speaker Assembly
Power Supply	Replacing the Power Supply
SCSI Bus Fuse	Replacing the SCSI Bus Fuse
Memory Module(s)	Adding or Replacing Memory Modules
System Board or any System Board Component	Replacing the System Board Assembly

NOTE: Sections of Chapter 4 appear in the order seen above (top-to-bottom).

Reading Path for Expanding the Workstation

You can expand your workstation configuration by adding additional memory, mass-storage drives, or an external option.

Adding Memory

If you are adding memory, follow the instructions in the “Avoiding ESD Damage” and “Opening the Computer Unit” sections at the beginning of Chapter 4; then, proceed to “Adding or Replacing Memory Modules” later in Chapter 4.

If you change the configuration of memory modules in any way, the next time you power up the workstation you will need to refer to the “Changed Memory Configuration” subsection within “Solving Powerup Problems” in Chapter 3.

Adding Mass-Storage Devices

Read the “About Mass-Storage Drives” section of this chapter for an overview of mass-storage options. If you are adding a drive to a housing unit, refer both to the manual that came with the drive and to the manual that came with the housing unit for instructions.

If you are connecting a stand-alone mass-storage drive or housing unit, follow the steps in the “Connecting a SCSI Bus Cable and Terminator” section of Chapter 2 and refer to the manual that came with the unit.

Adding an External Option

If you are adding an option (such as a LAN transceiver, modem, or another externally connected peripheral), follow the steps in the appropriate section of Chapter 2 to connect the cabling. Table 1–1 lists each external option with the section of Chapter 2 that describes how to connect it. Refer to the manual that came with the option for additional information or instructions.

Overview of the AViiON Desktop Workstation

Read this section to become familiar with AViiON 100, 200, and 300 series workstation hardware.

A basic workstation consists of the desktop computer unit, a color or monochrome graphics monitor, an IBM PC AT®-style keyboard, and a mouse device. Figure 1-1 illustrates the basic desktop workstation. The AViiON series and model number determine your particular workstation configuration. Refer to the next section for information about workstation identification numbers.

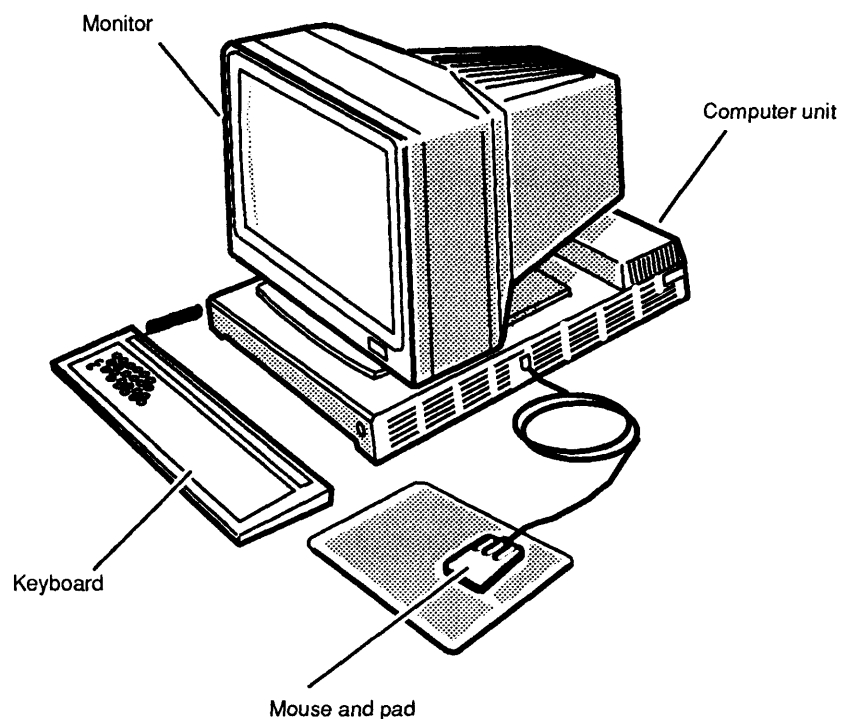
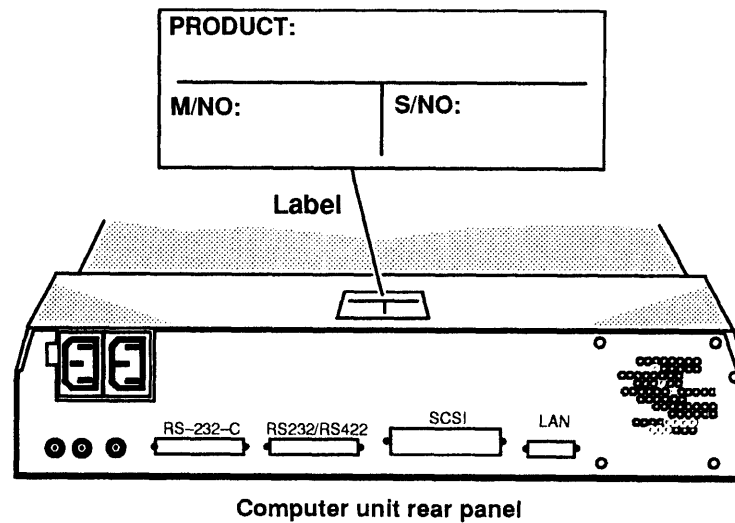


Figure 1-1 AViiON Desktop Workstation

Identifying Your Workstation Model

Examine the label located above the computer unit rear panel to identify your AViiON series name, model number, and serial number, as shown in Figure 1-2.

The serial number (S/NO) identifies your exact workstation hardware. Keep a record of your workstation series, model, and serial number in the event your Product Identification label comes off or becomes unreadable for any reason.



Computer unit rear panel

Figure 1-2 AViiON Product Identification Label

The workstation model number (M/NO) identifies which particular configuration you ordered; whether it is a base unit only, or was packaged with peripherals. Some models do not include the graphics monitor, keyboard, or mouse. Other models do not include mass-storage drives; in this case, the workstation operates as a client to an operating system server via the local area network (LAN).

The AViiON series name (PRODUCT) identifies your AViiON product type. You may see the AViiON series name referred to as CPU TYPE on Data General sales or shipping documentation. Throughout this manual we refer to the AViiON series name when differences between workstation series are important. Table 1-3 shows the features of each AViiON desktop workstation series.

Table 1-3 Features of AVIIION 100, 200, and 300 Series Workstations

Series	Second Port ¹	CPU Clock Speed ²	Color	Memory Capacity ³
AV/100	RS232	16.67	NO	16
AV/200	RS232	16.67	NO	28 ⁴
AV300	Parallel	16.67	NO	112
AV300D	RS232	16.67	NO	112
AV300DC	RS232	16.67	YES	112
AV310	Parallel	20	NO	112
AV310DC	RS232	20	YES	112

¹ Either a second serial port (RS232) or a Parallel Printer port

² Reported in Megahertz

³ Reported in Megabytes

⁴ Ordering limitation only; there is no physical memory restriction.

About the Computer Unit

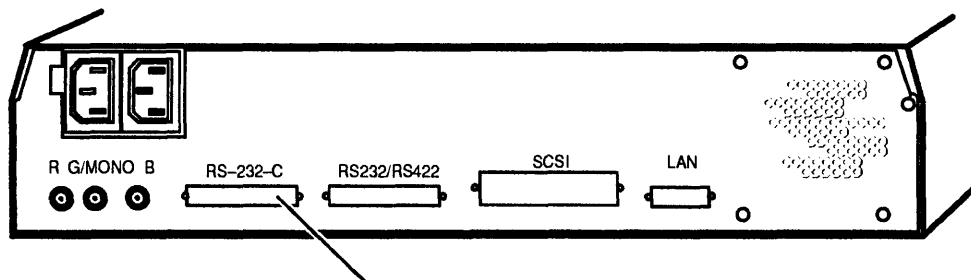
This section describes the desktop computer unit. The computer unit contains the system printed circuit board (PCB), power supply, and fan. The chassis, switches, and rear panel connectors to system board I/O ports are also part of the computer unit.

System Board

The base system PCB includes the following components:

- Motorola 88000 CPU (central processing unit) and 88200 CMMU (cache and memory management unit) processor set, running at 16.67 or 20 megahertz clock speeds.
- Seven socket connectors for 4- or 16-megabyte memory modules. The minimum configuration contains two 4-megabyte memory boards for 8 megabytes minimum DRAM (dynamic random access memory). Table 1-3 shows maximum memory configurations, by series. Refer to Chapter 4 for a complete discussion of memory configuration.
- 1-bit monochrome or 8-bit color graphics controller for monochrome or color/grayscale, 1280x1024 resolution, flicker-free graphics display.
- An integrated SCSI (Small Computer System Interface) controller for mass-storage support via an external SCSI bus.
- An Ethernet 802.3 LAN (local area network) interface to an external transceiver, allowing the workstation to function as a client or server in a LAN environment.
- Serial I/O interface, providing one or two RS-232-C asynchronous ports (for data terminal devices such as a modem, terminal, serial printer, scanner or plotter), and the mouse port.
- A parallel printer port for a Centronics-compatible printer (AViiON 300 and 310).

Refer to Appendix A for more detailed information about base and optional system board components. Figure 1-3 illustrates the rear panel connectors to system board I/O ports. Refer to Chapter 2 for information about installing devices in any of the connectors.



NOTE: On some models, this is the parallel printer port, labeled PRINTER.

Figure 1-3 Rear Panel Connectors

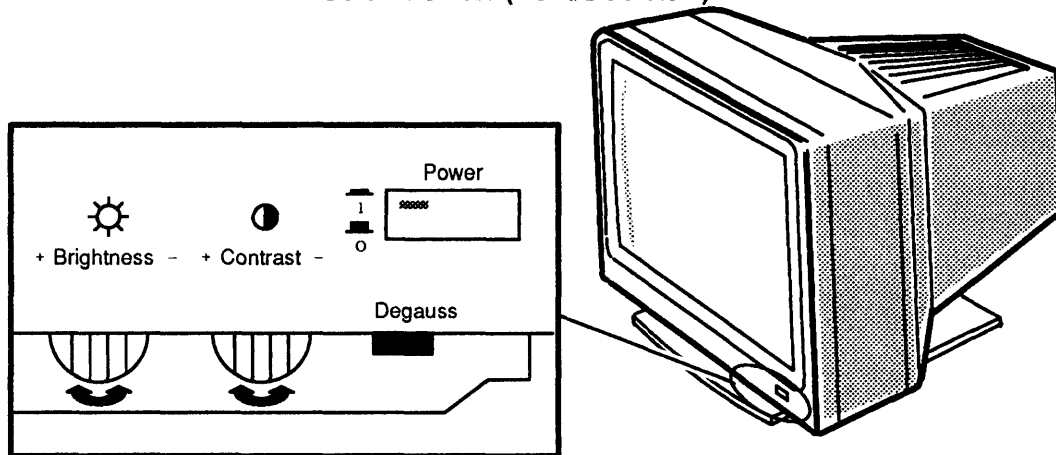
About the Graphics Monitor

A graphics workstation package includes a graphics monitor, model G6487 (color) or model G6486 (monochrome); these are the monitors you see in illustrations throughout this manual. Figures 1-4 and 1-5 illustrate their dials and switches. Refer to Chapter 2 for information about connecting your monitor to the computer unit.

If you did not order Data General's model G6487 or G6486 graphics monitor, you can use any color or monochrome graphics monitor with the correct video parameters. Refer to Appendix A for required hardware specifications for the monitor.

A "C" suffix in your series number (AViiON 300DC, for example) indicates that the workstation contains a color graphics controller and uses a color monitor (illustrated in Figure 1-4). No "C" suffix in your series number (AViiON 100, for example) indicates that the workstation contains a monochrome graphics controller. Refer to Table 1-3 for a summary of which AViiON workstation series include color graphics.

Color monitor (front/side view)



NOTE: Rotate Brightness and Contrast controls left and right to activate. Press Power and Degauss switches *in* to activate. The Power switch LED illuminates when monitor power is on.

Figure 1-4 Color Graphics Monitor and Controls

Over time, the monitor screen becomes magnetized and your screen display may appear distorted; pressing the Degauss switch demagnetizes the monitor screen and clears any associated distortion.

Monochrome monitor

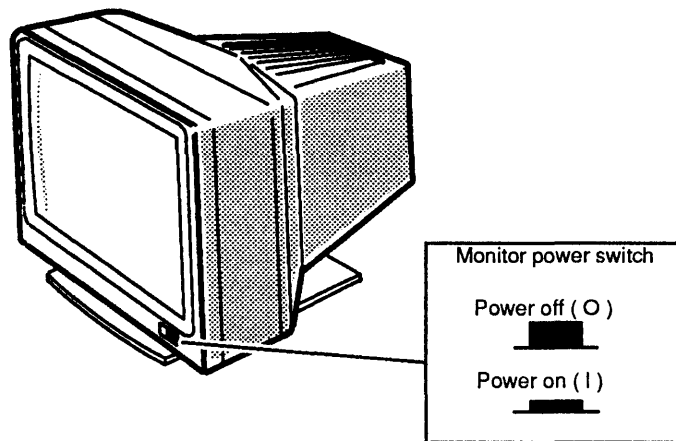


Figure 1-5 Monochrome Graphics Monitor and Controls

About the Keyboard and Mouse

Your workstation graphics packages includes (in addition to the monitor) a graphics keyboard and a three-button optical mouse with pad. Both have optional extension cables for connecting to the computer unit. The U.S. English keyboard is compatible with the IBM PC AT-101 ; some international versions contain 102 keys. The Japanese keyboard is AX-compatible. Refer to Chapter 2 for information about connecting the keyboard and mouse to the desktop computer unit, and to Appendix A for their technical specifications.

About Mass-Storage Drives

The Small Computer System Interface (SCSI) is an ANSI-defined standard for computer and peripheral interconnection. Your computer unit includes a SCSI bus controller that supports your disk(s) and cartridge tape drive(s). This controller extends to the connector labeled SCSI on your computer unit rear panel. The external SCSI bus connector allows you to connect SCSI-based mass-storage devices to your workstation. The SCSI bus can support a total of seven SCSI-based tape and/or disk devices housed within one to three mass-storage subsystems.

NOTE: Some documentation, especially for your system software, may refer to the SCSI controller boards as SCSI *adapters*.

Most workstations include at least one mass-storage housing unit such as the Peripheral Housing Unit (PHU) or the Combined Storage Subsystem in a deskside chassis (CSS2/DC). Refer to Chapter 2 for information about connecting a mass-storage device or terminating the external SCSI bus connector on the computer unit rear panel.

Each PHU or CSS2/DC can contain a combination of full-height and half-height SCSI-based drives. The following 5.25-inch, full-height drives are supported:

- 644-megabyte or 1-gigabyte Winchester disk drive
- 590-megabyte erasable optical disk drive
- 2-gigabyte 8-millimeter cartridge tape backup

The following half-height SCSI-based drives are supported:

- 179- or 332-megabyte Winchester disk drive
- 600-megabyte CD-ROM disk drive.
- 150-megabyte quarter-inch cartridge (QIC) tape drive.
- Multicapacity (320/525-megabyte) quarter-inch cartridge (QIC) tape drive.
- 3.5- or 5.25-inch diskette drive.

Refer to the manual that came with the drive and to the manual that came with the housing unit for information about adding a drive, and for specific information such as environmental specifications, operating, and maintaining procedures.

In addition to drives installed in a mass-storage housing unit, you may also have a 1600 bpi (bits per inch), 6250/1600 bpi, or 6250/1600/800 bpi reel-to-reel tape drive (desktop model) connected to the external SCSI bus.

Identifying SCSI Drives

Every SCSI device has a PCB configuration jumper that, when set, assigns an identification number called a SCSI device ID, or *SCSI ID*. System software recognizes SCSI devices using the SCSI ID; your workstation firmware and the DG/UX operating system both use the SCSI ID in device naming syntax.

When you receive devices preinstalled in a mass-storage housing unit, their SCSI ID numbers are already set to default values. Data General ships the PHU and CSS2/DC units to you with a label adhered to the rear of the chassis; the label indicates the location and the SCSI ID number of each preinstalled device. (You may receive a duplicate of this label inside a shipping package; keep this copy for your records.)

NOTE: In addition to default device identification jumpers, the factory sets jumpers in your preinstalled SCSI drives to enable parity.

You need to know the SCSI ID of a device to boot from it or to configure it as the automatic boot device (as described in Chapter 5). Table 1-4 lists the default (factory-installed) SCSI device ID numbers for hard disk, tape, and removable disk drives. Table 1-4 includes the device name (in DG/UX Common Device Specification format) necessary to boot the device. Note that the device name contains the SCSI ID. Refer to Appendix C for details about the syntax for boot device specifications. Refer to *Installing the DG/UX™ System* for complete information about DG/UX Common Device Specification format.

Table 1-4 SCSI Device Identification

Drives	ID Number	Device Name
Hard Disk¹		
First	0	sd(insc())
Second	1	sd(insc(),1)
Third	2	sd(insc(),2)
Removable Disk²		
First (LUN 0)	3	Not a bootable device
Second (LUN 1)	3	Not a bootable device
Cartridge Tape		
First	4	st(insc(),4)
Second	5	st(insc(),5)
Third	6	st(insc(),6)

¹ Includes Winchester and CD-ROMdisk drives.

² Includes diskette and optical disk drives. Their SCSI ID is set on the SCSI adapter board; when the adapter manages more than one drive, the drives have the same SCSI ID number. The LUN (Logical Unit Number) differentiates drives managed by the same SCSI adapter.

Assume, for example, that you have one PHU and one CSS2/DC connected to your workstation in a daisy chain fashion, with the following drive configuration: one full-height hard disk drive and one tape drive in the PHU, plus a second disk and tape drive installed in the CSS2/DC. The SCSI device ID numbers for the example configuration are set at the factory as illustrated in Figure 1-6.

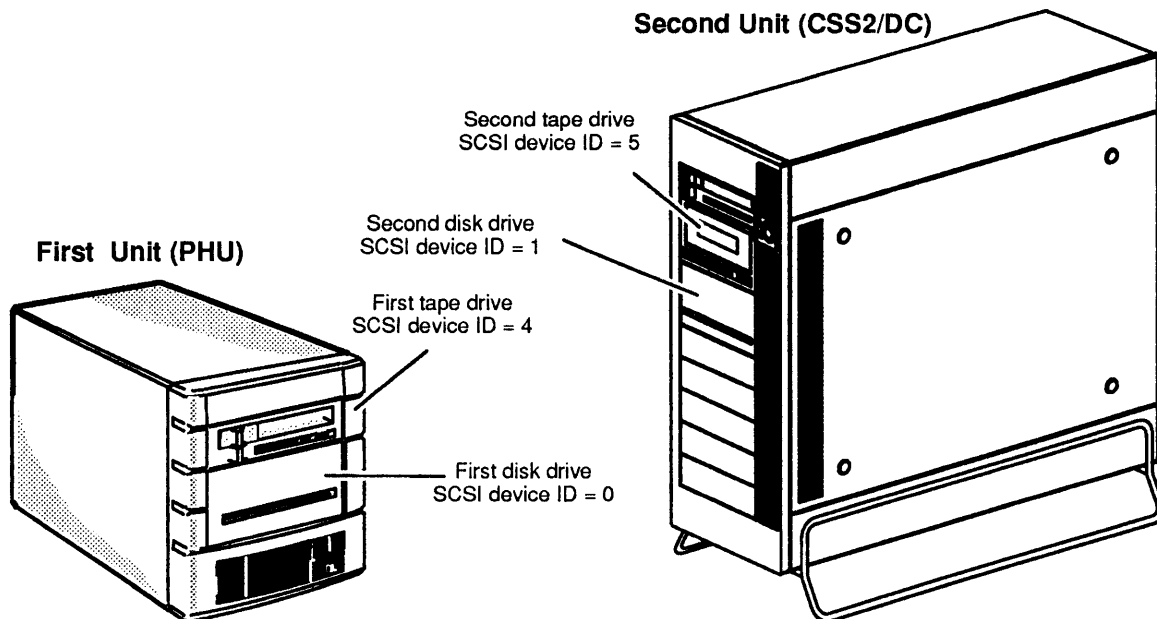


Figure 1–6 Example of Default SCSI ID Settings

When you add drives, we recommend that you follow the SCSI ID numbering scheme shown in Table 1–4. Refer to the drive manual for an explanation of how to install the SCSI ID jumper. To access drives inside the mass-storage chassis, refer to *Installing and Operating the Model 10565 Peripheral Housing Unit (PHU)* or to *Installing CSS2 and CSS2/DC Storage Subsystems*, listed in Preface. Be sure to record the SCSI ID number and installed position of any new drives on the chassis identification label; this is an important step since your system software refers to SCSI drives by identification number.

NOTE: ID assignments do not need to reflect the physical positioning of devices along the SCSI bus; a drive at the physical end of the bus can have a higher or lower device identification number than another drive closer to the computer unit.

The DG/UX operating system kernel allows the configuration of any SCSI device at any unique and valid SCSI ID. However, other software such as device drivers may limit the use of certain IDs to specific types of devices. Check the device-specific documentation for your unit, and the documentation for any customized software you plan to run on your system, for any further SCSI restrictions.

The default workstation boot sequence looks for a disk at SCSI ID 0. Therefore, if you are reassigning SCSI ID numbers, be sure that ID 0 is to the system (root) disk.

End of Chapter



Chapter 2

Setting Up Your Workstation

Use the sections of this chapter to set up your new workstation, or to add or replace the following external components:

- keyboard or mouse
- local-area network (LAN) transceiver
- asynchronous data terminal devices such as a serial printer, scanner, plotter, or a modem
- parallel printer (AViiON 300 only)
- external SCSI-based mass-storage
- graphics monitor
- computer unit power cord

Refer to the next section and Complete the Installation Checklist (Figure 2-6) *before* setting up your new workstation or proceeding with installation procedures.

Before You Start

Before getting started, you need to prepare a site, unpack and inspect your equipment, confirm that the computer unit voltage switch is set properly for your site, and gather required documentation and materials.

Selecting a Site

Your first step is to select the final location for setting up and operating your workstation. Try to complete as much of the installation as possible at this final location. Select an area with the following physical requirements:

- Access to at least one ac outlet, plus one outlet for each external peripheral (such as storage units, printers, etc.).
- A desk or cleared work surface to position the computer unit, graphics monitor, keyboard, mouse with pad, and external peripherals at a comfortable height for use.
- Appropriate natural or electrical lighting.

Ensure that your site is compatible with the physical, environmental, and electrical requirements listed in Appendix A. If you have peripheral devices, examine the documentation that you received with each device for electrical and environmental requirements.

Unpacking and Inspecting Your Equipment

Follow the steps in this section to unpack and inspect your new computer system. Although it may seem simpler to unpack items as you install them, it is important to verify before you start that your equipment arrived as ordered and undamaged.

1. Remove and set aside the packing slip from the outside of each shipping carton; open the cartons one by one and remove the equipment. As you do so, inspect the equipment carefully for visible damage.

CAUTION: Handle your computer equipment carefully; do not drop or jar it. Lift by grasping firm surfaces only.

2. Compare the items you received with the items listed on the packing slips. Make sure that the model and/or part numbers on the packing slip match those on your equipment. Open every carton. If you think you received the wrong equipment, contact Data General as described in the Preface.
3. Make sure that you received equipment with the proper voltage and frequency for your site. You will verify that the voltage for your computer unit is appropriate for your site in the next section.

You can determine the voltage rating for your monitor and power cords by examining their part number suffixes. Table 2-1 lists voltage suffixes (by country) for your graphics monitor (model G6487 or G6486) and for your computer unit power cord. Verify that the voltage for both is appropriate for your site.

Table 2-1 Voltage Suffixes

Country	Voltage	Model Number Suffix
U.S./Canada	120	None
U.S./Canada	100	-1
United Kingdom ¹	240	-5
Australia	240	-6
Europe ²	220	-7
Italy	220	-8
Denmark	220	-9
Switzerland	220	-0

¹ Used in Bangladesh, Bermuda, Hong Kong, Nigeria, Pakistan, Singapore, Sri Lanka, and the United Arab Republics.

² Excluding Switzerland, Italy, the United Kingdom, and Denmark.

4. Make sure that you have all of the cables listed on your packing slip; the cables may be together in one box or packaged separately with the device. Use Table 2-2 to record the cables you received. (You receive only those cables listed in Table 2-2 that were ordered with your workstation.)

Table 2-2 Cable/Cord Inventory Worksheet

<input checked="" type="checkbox"/>	Cable or Cord Type	Part Number	Model Number
	Mouse and Keyboard		
<input type="checkbox"/>	5 ft (1.52 m) Mouse extension cable	005-008468	15357E005
<input type="checkbox"/>	6 ft (1.83 m) Keyboard extension cable	005-008469	15358E006
	Graphics Monitor		
<input type="checkbox"/>	Color monitor triple-BNC cable	005-034408	N/A
<input type="checkbox"/>	Monochrome monitor single-BNC cable	005-034410	N/A
<input type="checkbox"/>	120V monitor power cord		109-001253
<input type="checkbox"/>	240V monitor power cord		109-001544
	Ethernet LAN¹		
<input type="checkbox"/>	16.4 ft (5 m) IEEE 802.3 plenum (Teflon®)	005-033791	1326
<input type="checkbox"/>	65.6 ft (20 m) IEEE 802.3 plenum (Teflon)	005-033787	1326A
<input type="checkbox"/>	16.4 ft (5 m) IEEE 802.3 PVC	005-033766	15274E005
<input type="checkbox"/>	65.6 ft (20 m) IEEE 802.3 PVC	005-033742	15274E020
	External SCSI Mass-Storage		
<input type="checkbox"/>	5 ft (1.52 m) cable	005-033000	15325E005
<input type="checkbox"/>	10 ft (3.05 m) cable	005-033001	15325E010
<input type="checkbox"/>	15 ft (4.57 m) cable	005-033335	15324E015
	Serial Devices		
<input type="checkbox"/>	5 ft (1.5 m) EIA RS-232 cable	005-013325	1340-S
<input type="checkbox"/>	15 ft (4.6 m) EIA RS-232 cable	005-033703	1340-T
<input type="checkbox"/>	25 ft (7.6 m) EIA RS-232 cable	005-033788	1340
<input type="checkbox"/>	50 ft (15.2 m) EIA RS-232 cable	005-033776	1340-A
<input type="checkbox"/>	25 ft (7.6 m) modem cable	005-033775	1084M
<input type="checkbox"/>	10 ft (3.05 m) modem extension cable	005-035445	1084M-A
<input type="checkbox"/>	25 ft (7.6 m) EIA RS-422 cable	005-033783	1339
<input type="checkbox"/>	50 ft (15.2 m) EIA RS-422 extension	005-033743	1339-A ²
<input type="checkbox"/>	100 ft (30.4 m) EIA RS-422 extension	005-033745	1339-B ²
<input type="checkbox"/>	300 ft (41.4 m) EIA RS-422 extension	005-020907	1339-C ²
<input type="checkbox"/>	500 ft (152.4 m) EIA RS-422 extension	005-020908	1339-D ²
	Parallel Printer		
<input type="checkbox"/>	5 ft (1.5 m) Centronics cable	005-023915	10235
<input type="checkbox"/>	30 ft (9.1 m) Centronics cable	005-033762	15293E030

¹ Connects model 4540, 4540-A, or 4619 LAN transceivers.

² These are extensions to the standard 25-ft cable. Requires cable model 1339 as prerequisite.

If you think you received incomplete or incorrect cabling, contact Data General as described in the Preface.

5. Examine the model number and suffix (the letter following the model number) on the label at the bottom of the keyboard (G6488-x, where x is the the suffix for your keyboard language) to make sure you received the appropriate keyboard. Table 2-3 lists the language suffixes for available keyboards.

Table 2-3 Language Suffixes for Keyboard Part Numbers

Suffix	Keyboard
A	U.S. English
B	U.K. English
C	French
D	German
G	Spanish
H	Danish
I	Italian
M	French/Canadian
N	Swedish/Finnish
O	Norwegian
S	Katakana (AX) ¹
Y	Swiss

¹ Japan's AT-compatible keyboard.
Supports Katakana and Kanji

If you think you received the wrong keyboard, contact Data General as described in the Preface.

NOTE: Refer to the "Changing the Console Language" section of Chapter 5 for information regarding the configuration of your keyboard, particularly if you have a Danish or Norwegian keyboard.

Verifying the Voltage Selection Switch Setting

The voltage selection switch is pre-set for your location at the factory. It is rarely necessary to change the setting, but it is important to verify that the initial setting is correct.

CAUTION: *Powering up the computer system with an incorrect voltage selection can damage the computer. If you are unsure of the proper line voltage for the installation site, consult a qualified electrician.*

Follow these steps to ensure that your workstation's voltage selection switch is properly set. You will need a medium, flat-blade screwdriver.

1. Move the computer unit, if necessary, so you have access to the back.
2. Loosen the two screws on the rear panel as shown in Figure 2-1.

NOTE: The screws are *captive*; they can be loosened but not removed from the rear panel.

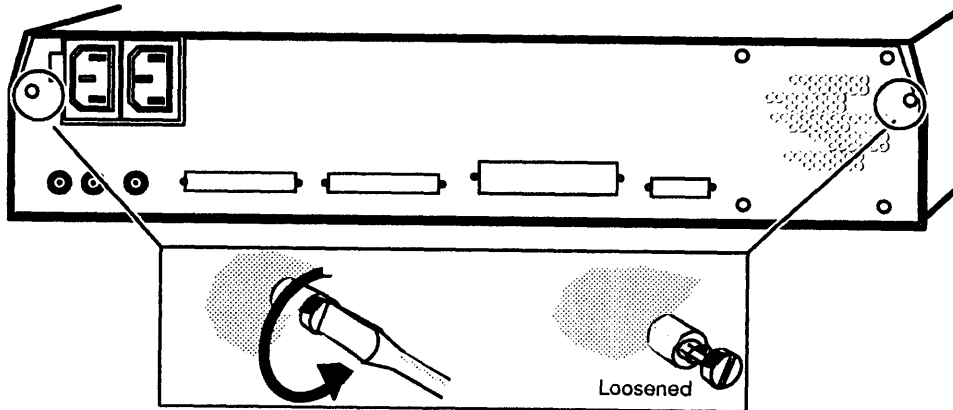


Figure 2-1 Loosening Two Screws that Attach the Tray Assembly to the Computer Unit Housing

3. Slide the tray assembly out of the housing until the voltage selection switch is visible, as shown in Figure 2-2.

CAUTION: Do not open the computer unit all the way. Unless you are properly grounded, you can discharge static electricity and damage components in the system. It is unnecessary to expose the inside of the computer unit to electrostatic discharge (ESD) damage to complete these steps. Do not touch components inside the computer unit housing once the tray assembly is exposed.

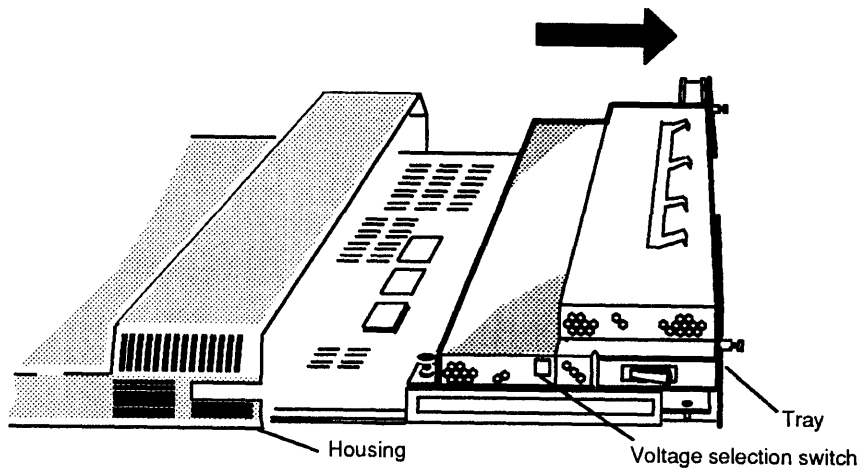


Figure 2-2 Sliding the Tray Assembly out of the Housing

4. Examine the voltage selection switch. If the installation site has 100-V or 120-V ac line voltage, make sure the switch is in the 115 V position as shown in Figure 2-3 (a). Most sites in the United States and Canada have 120 V ac power.

If the site has 220- or 240-V ac line voltage, make sure the switch is in the 230-V position as shown in Figure 2-3 (b).

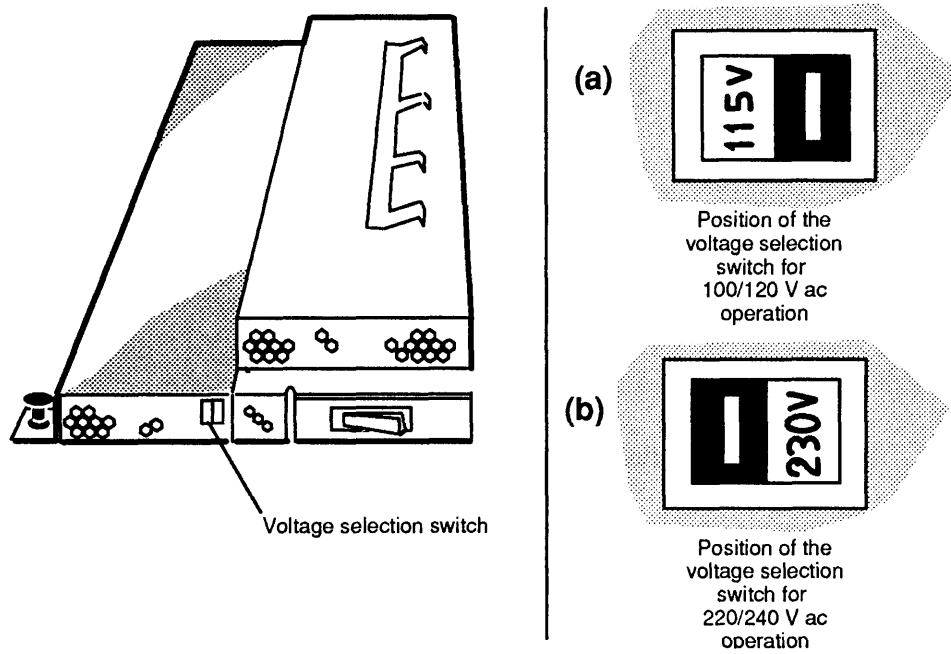


Figure 2-3 Verifying the Voltage Selection Switch Setting

5. Push the tray assembly back into the housing as shown in Figure 2-4.

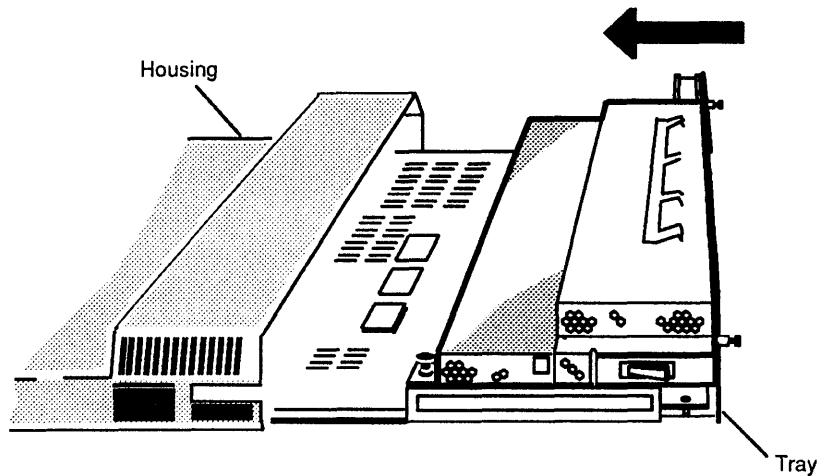


Figure 2-4 Replacing the Tray Housing

6. Tighten the two screws that attach the tray assembly to the housing as shown in Figure 2-5.

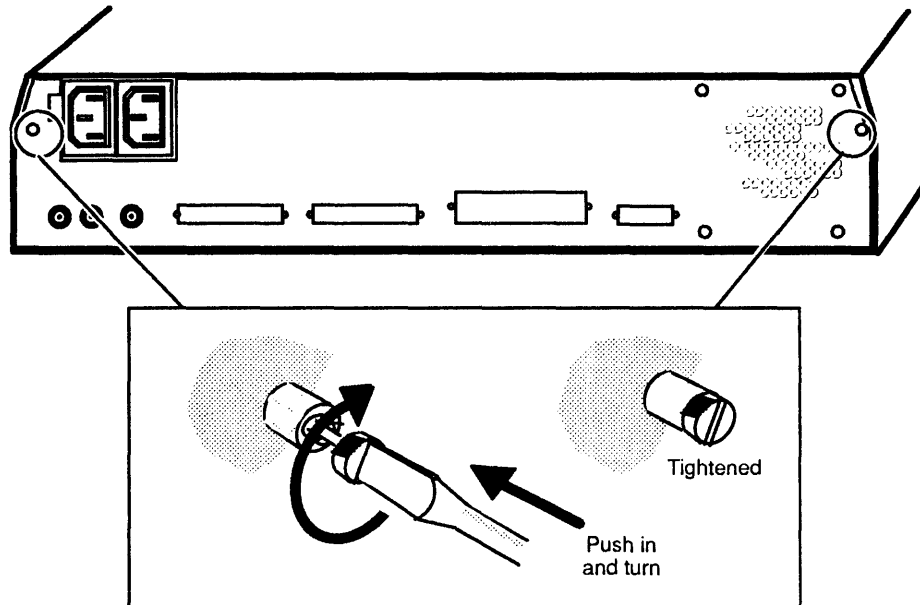


Figure 2-5 Tightening the Two Screws that Attach the Tray Assembly to the Computer Unit Housing

Gathering Documentation and Media

If you ordered Release 5.4x of the DG/UX™ operating system, refer to the *Guide to AViiON® Documentation* for a description of hardware and software documentation available for your workstation. The pamphlet *Installation Roadmap* guides you through the documentation you need for installing your workstation's hardware and software components.

If you ordered Release 4.3x of the DG/UX operating system (any DG/UX release prior to Release 5.40), refer to the document *Read This First* for instructions on using the manuals you received and (in conjunction with the *Guide to AViiON® Documentation*) a description of documentation available for your workstation.

If you ordered a preloaded DG/UX operating system package, the files you need to install your operating system are already on disk. Otherwise, you received cartridge tape media you will use to load the files you need to install your operating system.

Whether or not you ordered the DG/UX operating system, you received AViiON System Diagnostics software (either preloaded on disk or on cartridge tape). You can use these diagnostics to verify your hardware configuration as an optional part of the installation, or use them to test your hardware at a later time. Refer to *Using AViiON® System Diagnostics* for information about using the 15-minute hardware acceptance test and the other diagnostic utilities provided.

CAUTION: *If you received the diagnostics on disk, we strongly recommend that you make a backup tape before installing your operating system.*

Figure 2-6 itemizes what you need to do or to have when you set up and start your workstation for the first time.

<input checked="" type="checkbox"/>	Check When Completed:
<input type="checkbox"/>	Make sure your installation site satisfies the electrical and environmental requirements listed in Appendix A.
<input type="checkbox"/>	Inspect equipment received for damage.
<input type="checkbox"/>	Compare packing slips with equipment received and equipment ordered.
<input type="checkbox"/>	Determine the ac line current for your site
<input type="checkbox"/>	<input type="checkbox"/> 100/120 volts
<input type="checkbox"/>	<input type="checkbox"/> 220/240 volts
<input type="checkbox"/>	Ensure that all of your equipment and cable model numbers reflect the proper site voltage for your site.
<input checked="" type="checkbox"/>	Make Sure You Have These:
<input type="checkbox"/>	Medium flat-blade screwdriver (non-magnetic)
<input type="checkbox"/>	Operating system installation documentation. For the correct manual title, refer to the <i>Installation Roadmap</i> if you purchased DG/UX Release 5.4. Refer to <i>Read This First</i> if you are installing a release of the DG/UX operating system prior to 5.40.
<input type="checkbox"/>	Software Release Notices, plus cartridge tapes if you did not order preloaded software.
	You May Need These:
<input type="checkbox"/>	<i>Installing and Operating the Model 10565 Peripheral Housing Unit, Installing CSS2 and CSS2/DC Storage Subsystem Components or Installing the Model 6586/6587 Magnetic Tape Streamer Unit</i> for information about any of these peripheral options.
<input type="checkbox"/>	<i>Using AViiON® System Diagnostics</i> for information about using the Acceptance test or other diagnostic utilities to test your hardware.
<input type="checkbox"/>	<i>Automatic Reporting and Remote Assistance User's Guide</i> if you have a remote assistance contract.
<input type="checkbox"/>	Documentation that came with any peripherals you are connecting: drives, printers, modems, terminals, scanners, plotters, etc.

Figure 2-6 Installation Checklist

Proceed with this chapter to complete your installation. For an overview of the workstation hardware components and operator switches, refer to Chapter 1.

Connecting the Keyboard

Follow these steps to connect the keyboard to the computer unit. Reverse the order of these instructions to remove a faulty keyboard in order to replace it.

CAUTION: Do not try to remove or replace your keyboard while the computer power is on.

1. Place the keyboard on the desk near the computer unit.
2. Plug the keyboard cable into the keyboard connector located on the side of the computer unit as shown in Figure 2-7. There is a keyboard icon printed on the chassis to help you identify the connector.

If you have a keyboard extension cable, first connect the keyboard cable and the extension cable; then, connect the extension cable into the computer unit keyboard connector as shown in Figure 2-7.

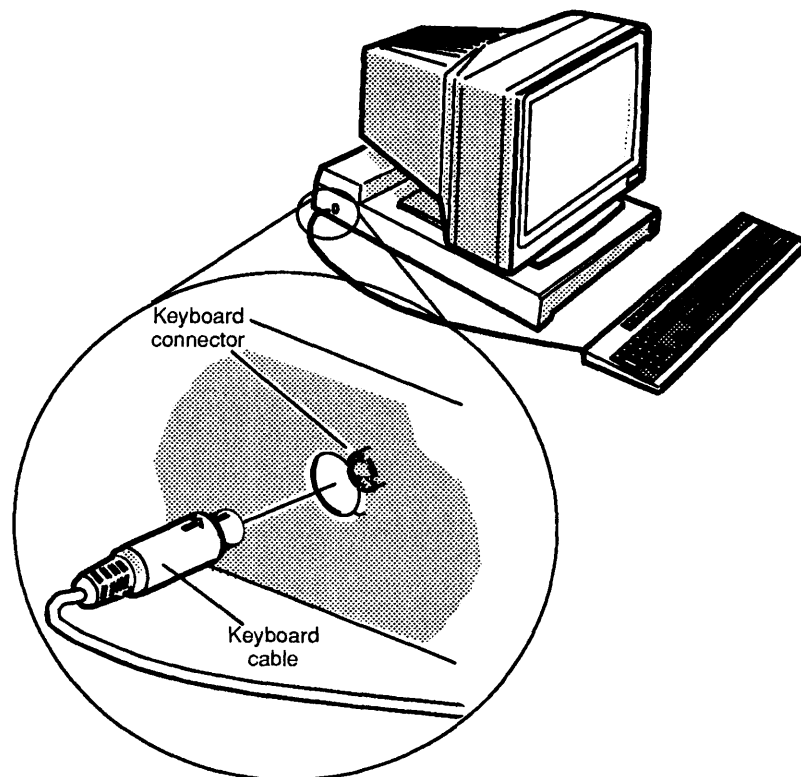


Figure 2-7 Plugging In or Unplugging the Keyboard Cable

NOTE: Refer to *Using AViiON® System Diagnostics* for information about using a diagnostic utility to test the keyboard. Refer to Chapter 5 for information about changing the keyboard language and using the Danish or Norwegian keyboard.

Connecting the Mouse

Follow these steps to connect the mouse device to the computer unit. Reverse the order of these instructions to remove a faulty mouse in order to replace it.

CAUTION: Do not try to remove or replace your mouse while computer power is on.

1. Place the mouse and mouse cable on the desk near the computer unit.
2. If you have a mouse extension cable, first connect the mouse cable and the extension cable; then, connect the extension cable into the computer unit mouse connector, as shown in Figure 2-8.
3. Plug the mouse cable into the mouse connector on the side of the computer unit. The connector is located to the right of the reset switch, as shown in Figure 2-8. There is a mouse icon printed on the chassis to help you identify the connector.
4. Place the mouse pad on the desk with its shiny side facing up.

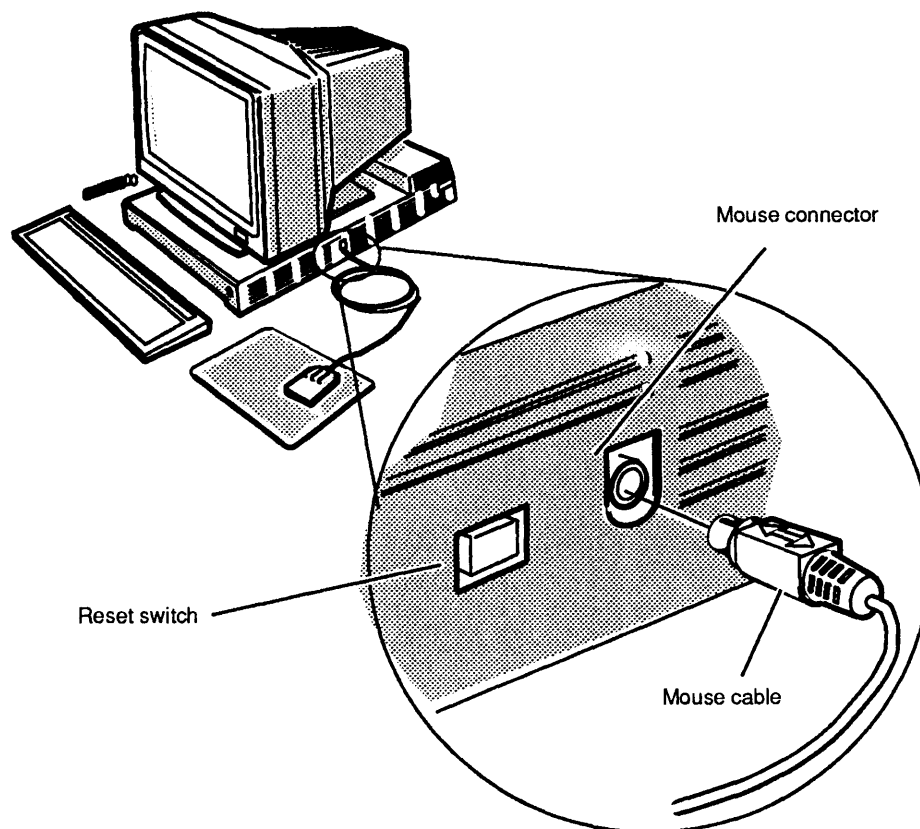


Figure 2-8 Plugging In or Unplugging the Mouse Cable

NOTE: Refer to *Using AViiON® System Diagnostics* for information about using a diagnostic utility to test the mouse device. Refer to Chapter 5 for information about changing the mouse baud rate setting.

Connecting a Local Area Network Cable

If your workstation will be part of a local area network (LAN), you must connect the LAN transceiver cable to the computer unit LAN connector. The steps in this section assume that the LAN drop cable is already installed and the male end of the cable is within reach of your computer unit.

To connect a LAN transceiver cable to the computer unit LAN connector, complete the following steps. You will need a flat-blade screwdriver or comparable tool to complete these steps. Table 2-2 at the beginning of this chapter lists available cables. Reverse the order of these steps to remove a faulty LAN cable in order to replace it.

Refer to *Using AViiON® System Diagnostics* for information about using a diagnostic utility to test LAN cables and connections.

NOTE: You may have an optional screw converter kit (part number 005-37438); if so, you may choose to remove the sliding lock assembly described in these steps and use the screw kit to secure your LAN cable. Refer to the instructions that came with the screw converter kit.

1. Align the holes in the transceiver cable with the pins in the computer unit LAN connector, shown in Figure 2-9.

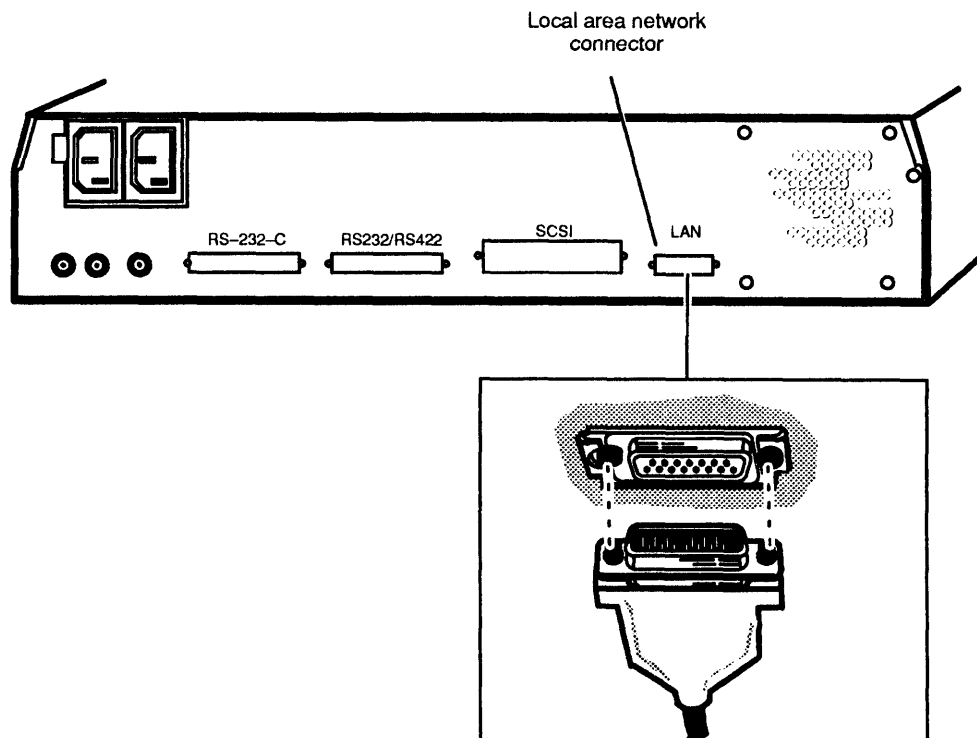


Figure 2-9 Local Area Network Connector Location

2. As shown in Figure 2–10 (a), line up the slide clip on the computer unit connector so that the slide clip mounts on the cable can pass through; then push the cable firmly into the connector.
3. Once the cable and clip mounts are secured to the connector, slide the clip using your screwdriver or a comparable tool to lock the cable in place, as shown in Figure 2–10 (b). Figure 2–10(c) illustrates the cable and connector in place.

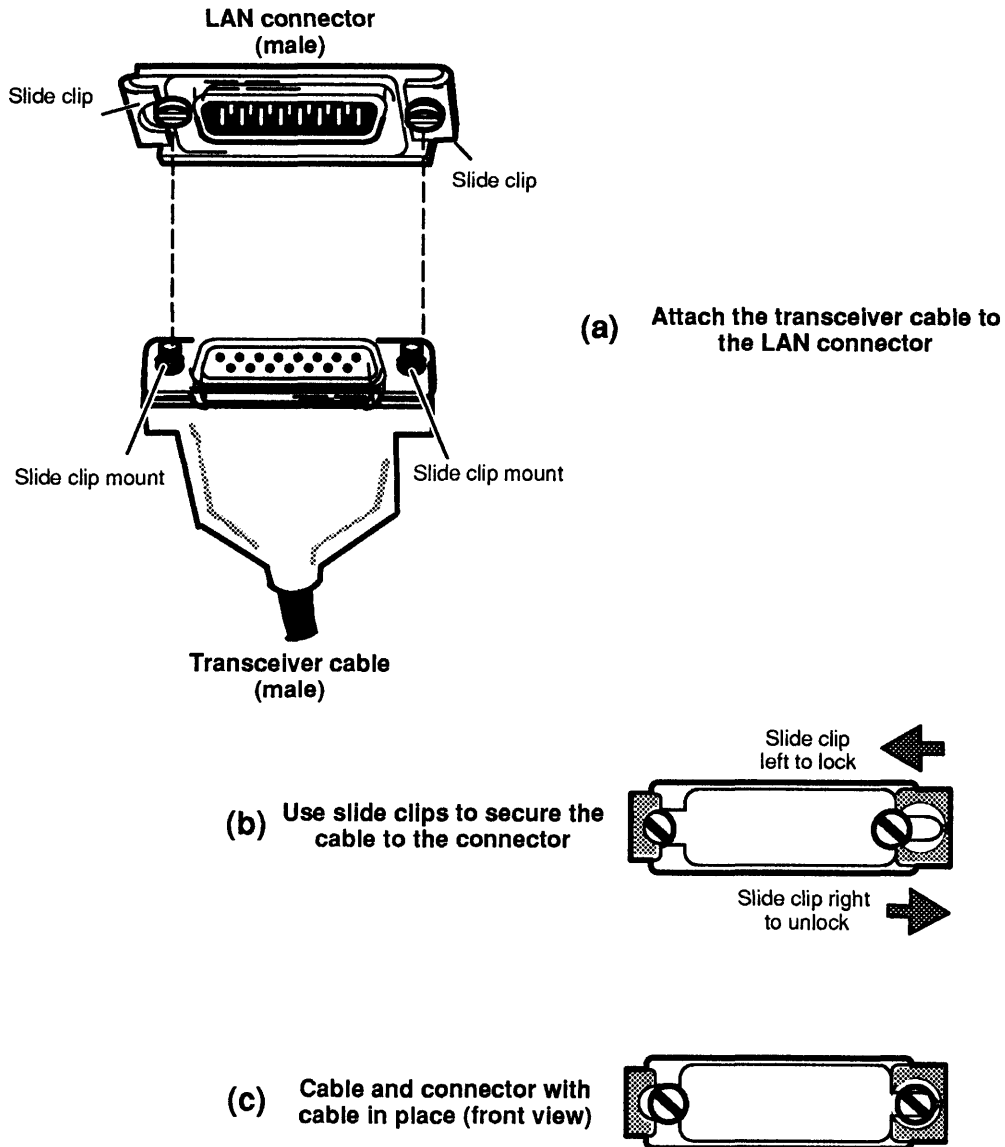


Figure 2–10 Attaching and Securing the LAN Transceiver Cable

Connecting Asynchronous Devices

This section describes how to connect an asynchronous device such as a display terminal, modem, scanner, plotter, or printer to a serial port connector on the computer unit rear panel. Table 2-2 at the beginning of this chapter lists available cables for connecting RS-232-C and RS-422-compatible devices.

NOTE: You can connect a device with an RS-232 interface to *either* serial port A or B. However, if you have a device with an RS-422 interface, connect that device to Port A. When connecting a device other than a system console terminal to Port A, you must enable modem control by using a special cable or cable adapter, as described in Appendix A.

Complete the following steps to connect an asynchronous device with an RS-232-C or RS-422 serial interface to your workstation. Reverse these steps to remove or replace an asynchronous device cable. You will need a nonmagnetic, medium flat-blade screwdriver or similar tool to complete these steps.

1. Align the holes in the female end of the cable to the pins in the connector on the computer unit. Figure 2-11 shows the location of Ports A and B. Serial Port A is labeled RS232/RS422; serial Port B is labeled RS-232-C.

NOTE: Some workstations have a parallel printer port instead of the Port B.

2. Push the cable gently but firmly into the computer unit connector.

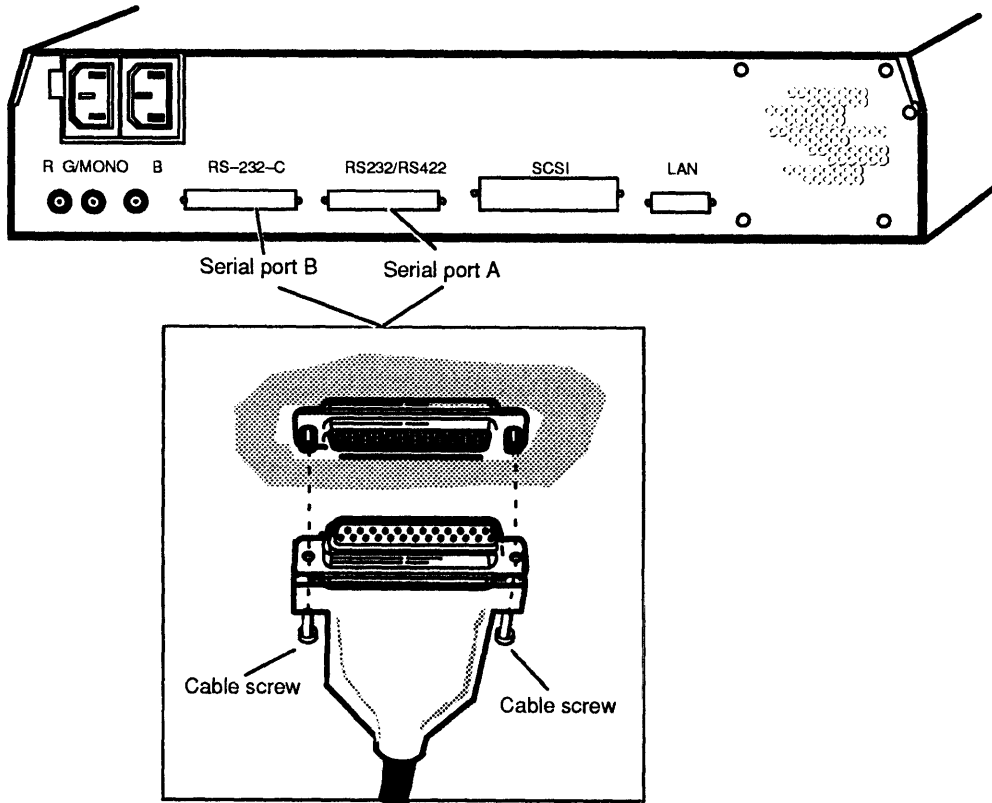


Figure 2-11 Connecting Devices to the Computer Unit Serial Connectors

3. Secure the cable to the connector by tightening the two cable screws with a medium flat-blade screwdriver.
4. Secure the other end of the cable to the connector on the back of the device.
5. Initially, both your firmware and the DG/UX operating system require that the device connected to Port A have the following characteristics:

9600 baud
8 data bits
No parity
ANSI character set
Enabled flow control

Set the switches on the device to select these characteristics. For information on device switches, see the manual that came with the device.

If you need to change these default characteristics, refer to Chapter 5 for information about changing the console port parameters after your first powerup. The SCM refers to serial Port A as the “console port.”

Connecting a Parallel Printer

This section describes how to connect a parallel printer with a Centronics interface. Skip this section if you do not have a workstation in the AViiON 300 series with connectors labeled as shown in Figure 2-12. Reverse the order of these steps to remove or replace your parallel printer cable.

1. Plug the male end of the printer cable into the parallel printer connector on the back of the computer unit as shown in Figure 2-12.

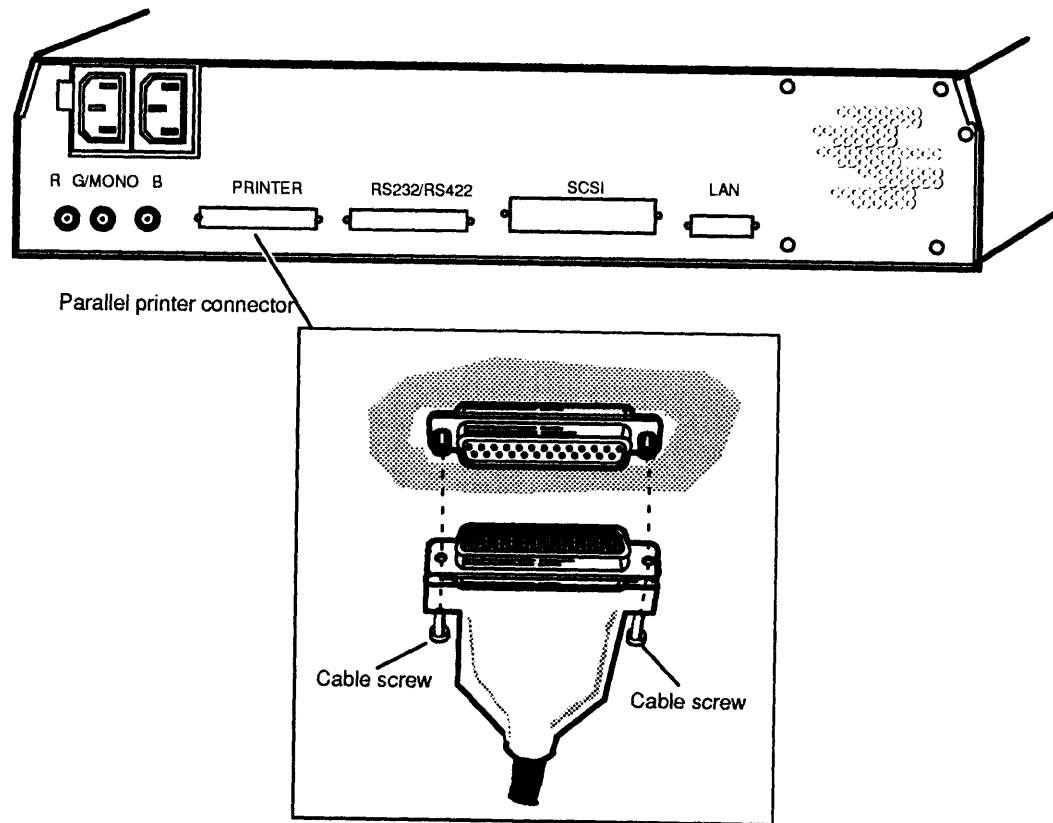


Figure 2-12 Parallel Printer Connector on the Back of the Computer Unit

2. Attach the printer cable to the connector by tightening the two screws on the printer cable.
3. Plug the other end of the printer cable into the connector on the parallel printer, as described in the manual you received with the printer.

Connecting SCSI Devices and Terminating the SCSI Bus

SCSI bus cabling begins inside the computer unit at the SCSI controller; it links the devices on the SCSI bus in a daisy-chain. You can extend the SCSI bus outside the computer unit chassis with cabling connected at the rear panel SCSI connector. The maximum length of combined internal and external SCSI bus cable cannot exceed 19.6 feet (6.07 meters).

To connect the external cabling for a SCSI-based peripheral, complete the steps in this section. Reverse the order of these steps to remove or replace an external subsystem and its SCSI bus cable.

Before you begin connecting your SCSI devices together, locate all of your SCSI bus external cables. Table 2-2 (at the beginning of this chapter) lists the cables available for connecting external, SCSI-based peripherals; refer to this Cable/Cord Inventory, or to your device-specific documentation, for the part and model numbers of the cables you need.

Refer to the “About Mass Storage Drives” section in Chapter 1 for SCSI configuration guidelines and for more information about mass storage options.

NOTE: If your system does not include any external SCSI devices or if you are removing external mass-storage, you must make sure that the bus that links the internal SCSI controller and the SCSI rear panel connector is properly terminated. Skip to the “Terminating the SCSI Bus” section (step 6) in the instructions below.

Connecting the SCSI Bus Cable

To install the cabling to connect a mass-storage subsystem or stand-alone tape drive, follow these steps; you will need a flat-blade screwdriver and the manual that came with your drive or subsystem.

1. Plug the male end of the SCSI bus cable into the computer unit SCSI bus connector; Figure 2-13 shows the location and cable end.
2. Attach the cable to the connector by tightening the two screws on the SCSI bus cable (shown in Figure 2-13).

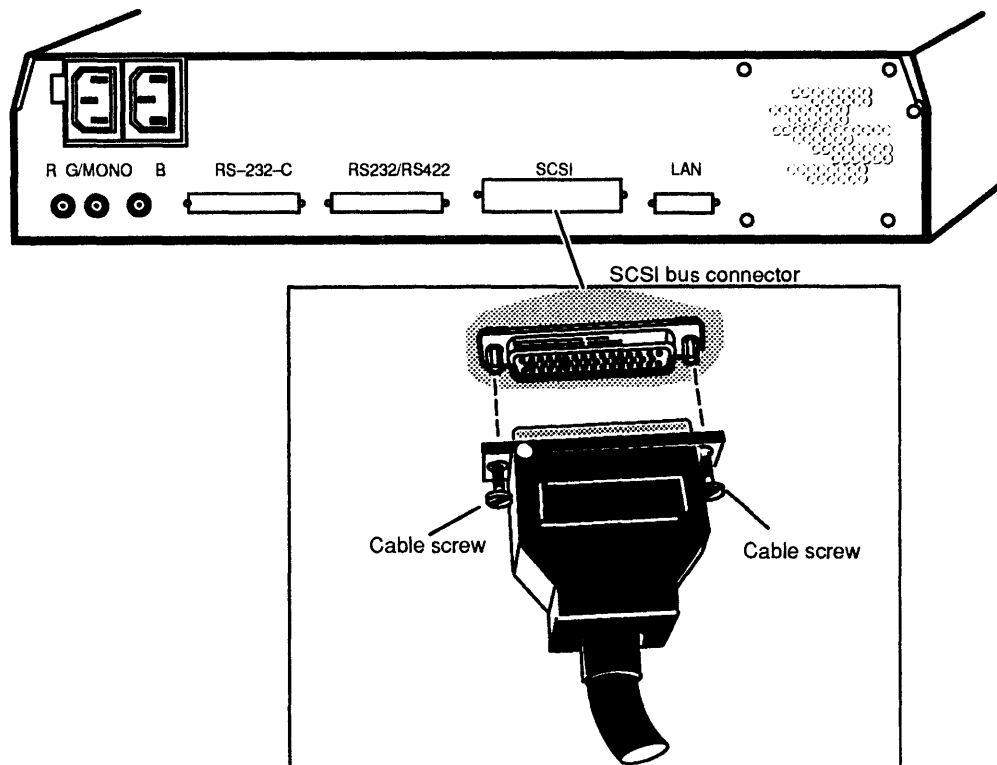


Figure 2-13 Connecting the SCSI Bus Cable to the Connector on the Back of the Computer Unit

3. Verify the voltage selection for your drive or subsystem, as described in its operating manual.
4. Examine the drive or subsystem to locate the connectors for the computer unit SCSI bus cable and the SCSI bus terminator plug. Refer to the drive or subsystem manual if you are not certain about the connector locations.

Position the unit so that the SCSI bus cable can reach its SCSI connector. If there is a cartridge-tape or other removable-media drive installed in a subsystem, position the unit so that you can easily insert or remove media.

CAUTION: *Never attempt to exceed the reach of a cable: doing so will only strain the cable and connectors, causing equipment damage or failure.*

5. Plug the other end of the SCSI bus cable into the connector on the drive or housing unit and secure the cable's connector by closing over the two spring clips, as shown in Figure 2-14. Push the spring clips straight down or straight up into the brackets of the connector; your vertical pressure will push the clips into place and secure the connection. Do not squeeze or pull the clips out of shape.

NOTE: If you are setting up two or more devices, you will connect them together in daisy-chain fashion, as described in the manual that came with your drive or subsystem.

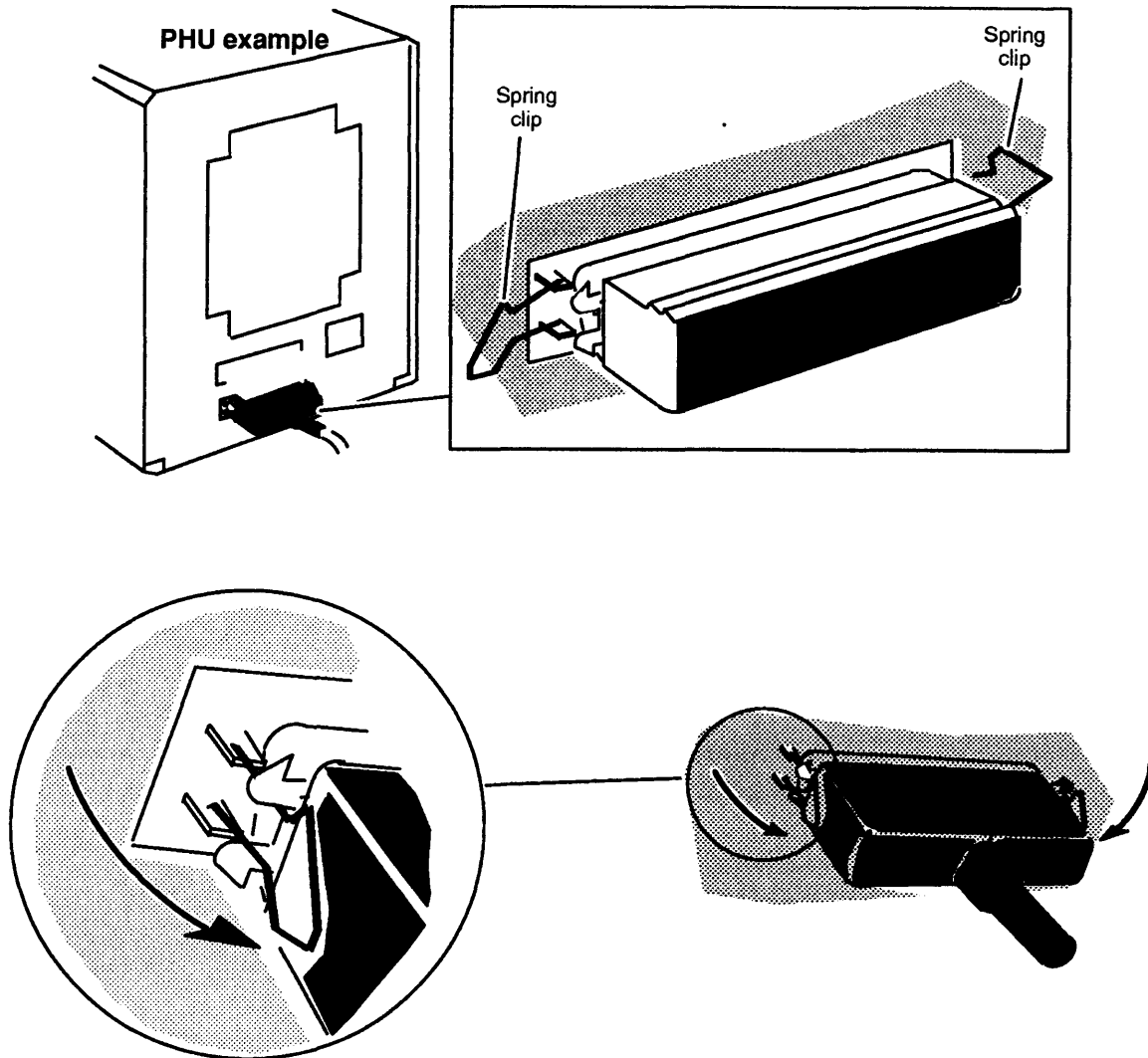


Figure 2-14 Connecting and Securing a SCSI Cable Connection

Terminating the SCSI Bus

6. Locate the CHAMP terminator plug, Data General number 005033334 (shown in Figure 2-15).
7. Insert the terminator plug into the appropriate connector on the drive or housing unit. Figure 2-15 shows the terminator inserted in a single PHU configuration. If you set up more than one mass-storage device, you will insert the terminator plug into the connector on the *last* device attached to the SCSI cable.

If you have no external mass-storage, install the plug in the computer unit rear panel connector (if one is not already installed).

8. Push the spring clips attached to the SCSI connector straight up into the brackets on the terminator plug, as shown in Figure 2–15. Your vertical pressure will push the clips into place and secure the plug; do not squeeze or pull the clips out of shape.

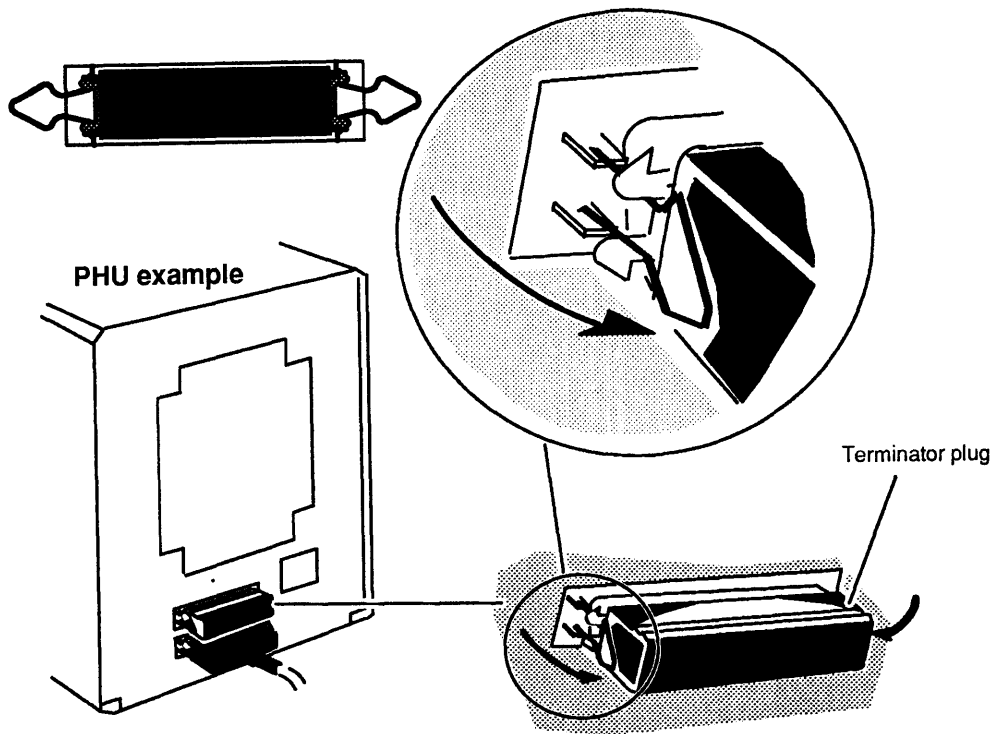


Figure 2–15 Connecting and Securing the SCSI Bus Terminator Plug

NOTE: To remove a terminator, simply reverse the process illustrated above; push the clips straight down and gently pull the terminator out of the rear panel connector.

Connecting the Graphics Monitor

This section describes how to connect a monochrome or a color graphics monitor to your computer unit.

Refer to *Using AViiON® System Diagnostics* for information about using a diagnostic utility to test your monitor after it is installed.

You will need the monitor BNC cable and power cord to complete these steps. Refer to Table 2-2 for available cable and power cords.

1. Make sure the computer unit is in its final location; then, place the monitor on top of the computer unit. Make sure that the power switches for both the computer unit and the monitor are off, as shown in Figure 2-16.

CAUTION: *The monitor is heavy (approximately 60 pounds); be careful when moving it.*

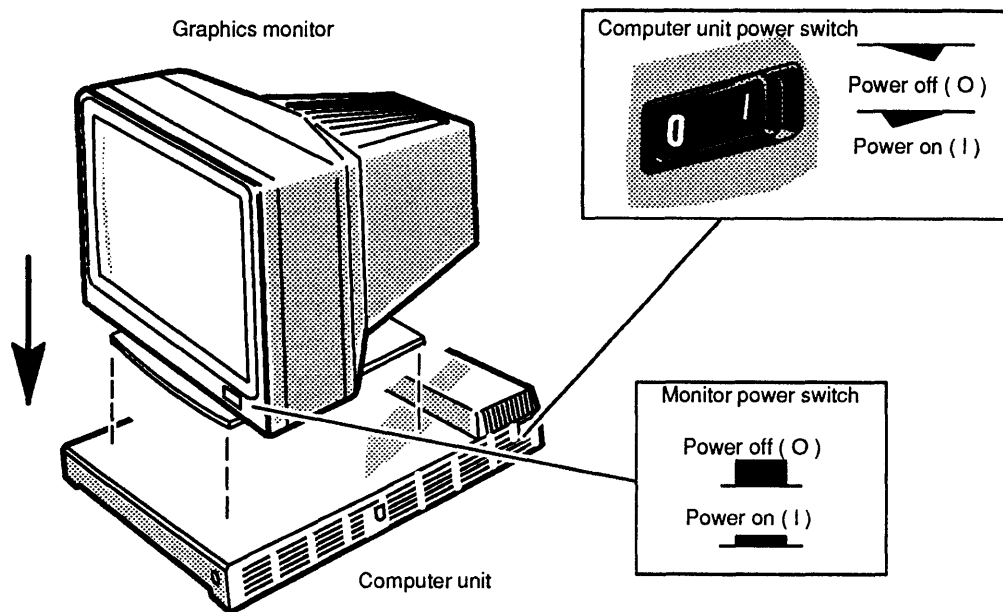


Figure 2-16 Placing the Graphics Monitor

2. Plug the female end of the monitor power cord into the ac connector at the back of the monitor, as shown in Figure 2-17.
3. Plug the male end of the monitor power cord into the rightmost ac connector on the back of the computer unit. Figure 2-17 shows the monitor power cord in place.

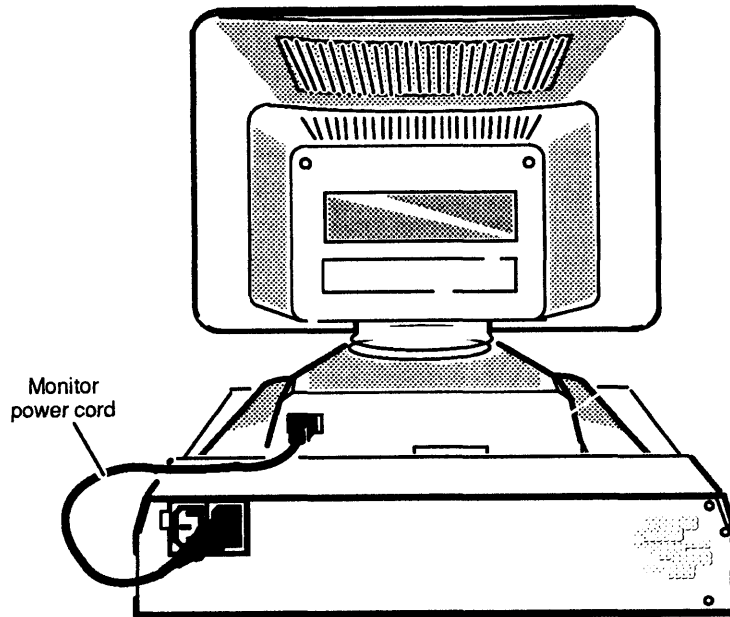


Figure 2-17 Connecting the Monitor Power Cord

If you have a color monitor, skip to step 6.

4. To cable your monochrome monitor, plug one end of the monitor BNC cable into the BNC connector on the back of the monitor, as seen in Figure 2-18. Turn the end of the cable clockwise to lock it in place.

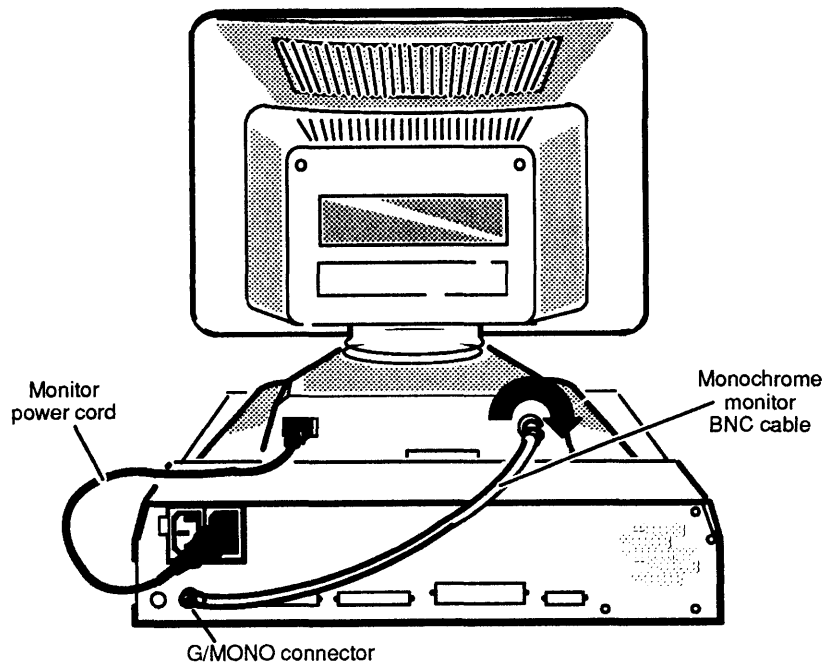
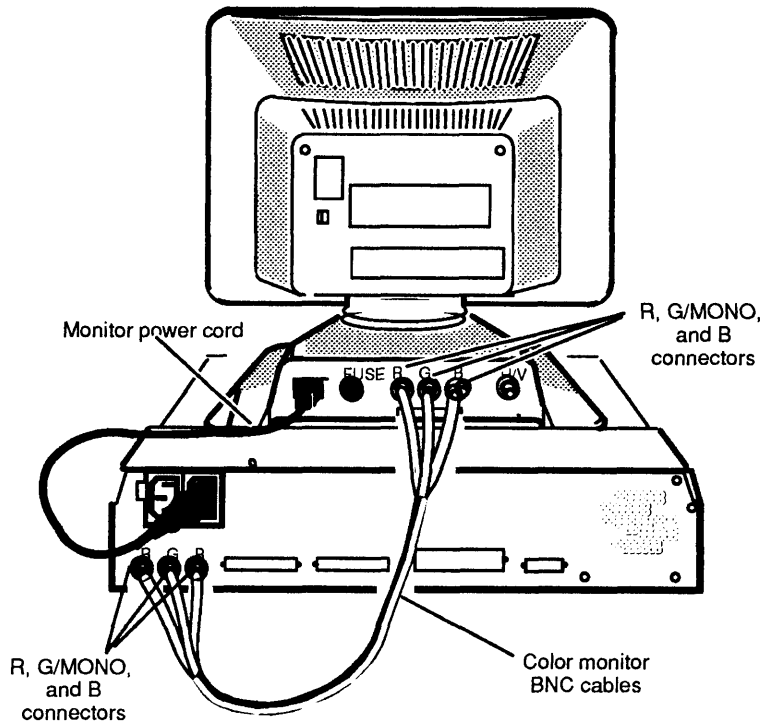


Figure 2-18 Connecting the Monochrome Monitor Cable

5. Plug the other end of the monitor cable into the G/MONO connector on the back of the computer unit, as seen in Figure 2-18. Turn the end of the cable clockwise to lock it in place.
6. To cable your color monitor, plug one end of the monitor BNC cable into the connectors on the back of the monitor. The cable is coded with red, green, and blue strips near the connector ends. Connect the red cable to the R monitor connector, the green cable to the G/MONO connector, and the blue cable to the B connector, as shown in Figure 2-19. Turn the ends of the cables clockwise to lock them in place.

NOTE: If you are cabling color monitor cables (triple-BNC) for grayscale operation, plug only the *green* BNC cable into the G/MONO connector.



NOTE: R = red, G = green, B = blue

Figure 2-19 Connecting the Color Monitor Cable

7. Plug the other end of the monitor cable into the connectors on the back of the computer unit. The color monitor cable has color-coded ends which plug into the appropriate R, G/MONO, and B connectors on the back of the computer unit, as shown in Figure 2-19. Turn the end of the cables clockwise to lock them in place.

NOTE: If you are cabling color monitor cables (triple-BNC) for grayscale operation, plug only the *green* BNC cable into the G/MONO connector.

Connecting the Computer Unit Power Cord

After you have assembled your workstation, use these steps to connect the computer unit power cord to an ac outlet and complete your set-up procedures. Reverse the order of these steps to disconnect the computer unit power cord.

CAUTION: *Make sure that the computer unit power switch is off before connecting the power cord.*

1. Locate the computer unit power cord. The correct power cord part number ensures that you are using a proper cord for your site's voltage. Refer to Table 2-1 at the beginning of this chapter if you have not already checked the voltage suffix of your power cord part number.
2. Plug the female end of the power cord into the leftmost ac connector on the computer unit, as shown in Figure 2-20.

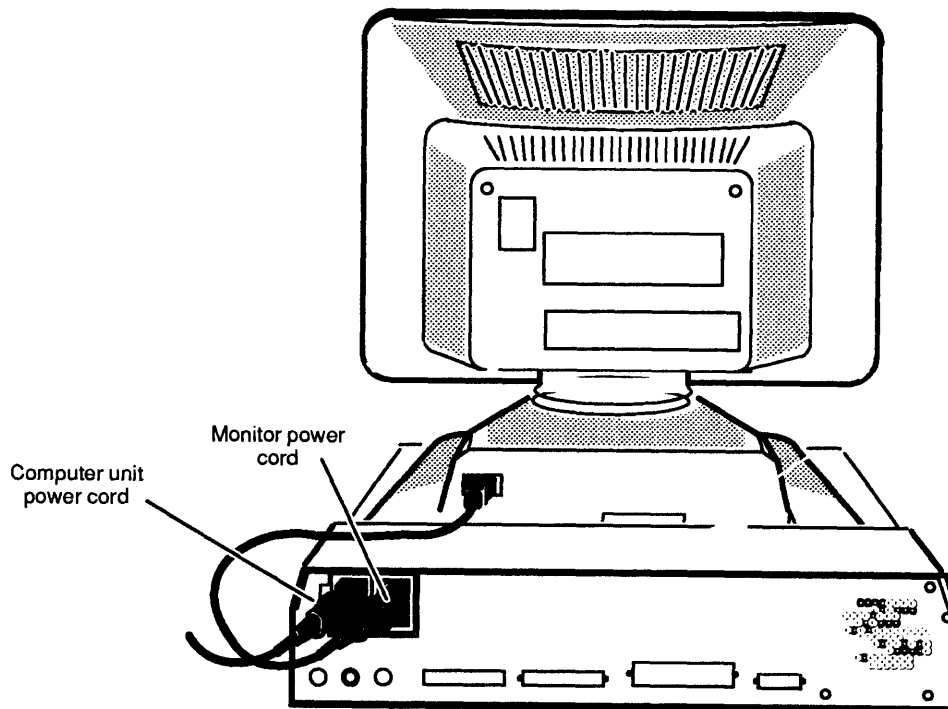


Figure 2-20 Connecting the Computer Unit Power Cord

3. Plug the male end of the power cord into an ac outlet, as shown in Figure 2-21.

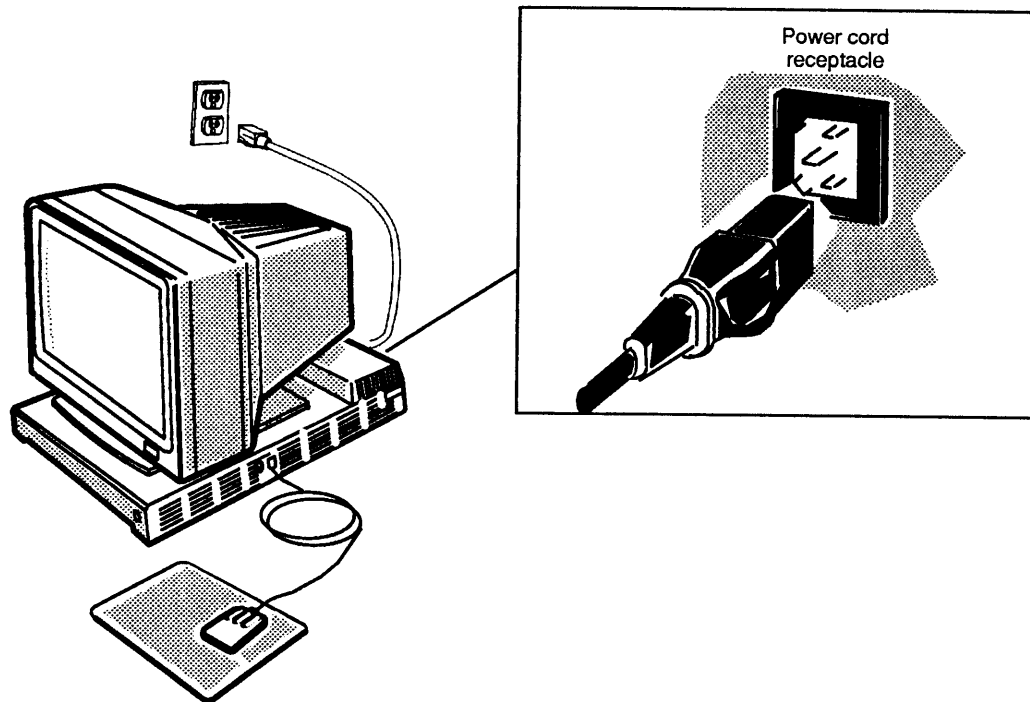


Figure 2-21 Connecting the Computer Unit Power Cord to the Outlet and the Receptacle

End of Chapter

Chapter 3

Starting and Stopping Your Workstation

The first section of this chapter describes a normal power-up sequence. After you install your workstation hardware (for the first time, as described in Chapter 2, or after hardware maintenance, as described in Chapter 4), follow the steps in the “Powering Up” section of this chapter to start the workstation and boot your operating system. The “Solving Power-Up Problems” section of this chapter describes what you can do if your workstation fails to successfully complete power-up diagnostic tests. The last section of this chapter explains how to properly power down, reset, or restart the workstation.

Starting the Workstation

Each time you apply ac power to your workstation, a series of diagnostic tests in the firmware verify that the hardware is functioning well enough to run your operating system and its applications. It is important that you turn power on to the computer unit and peripherals in the proper sequence, and that your workstation completes the power-up testing properly.

Powering Up

This section describes what to do the first time you power up your workstation. Once you become familiar with the power-up sequence and configure your operating system software, you won't need to follow these steps to start your workstation.

CAUTION: *Verify that the computer unit, monitor, peripherals, and all power cords have appropriate ac power voltage for your site before turning on power, as described in Chapter 2.*

1. Turn on power to the monitor, as shown in Figure 3-1.

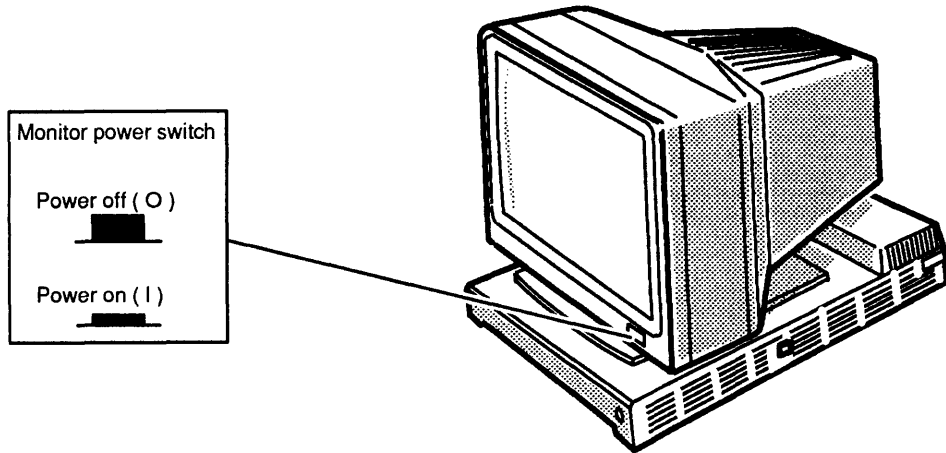


Figure 3-1 Monitor Power Switch

2. If you have a Peripheral Housing Unit (PHU), a combined storage subsystem (CSS2/DC), or another external peripheral unit connected to your workstation, turn on power to that device.

Figure 3-2 shows the location of the PHU power switch and LED power-on indicator.

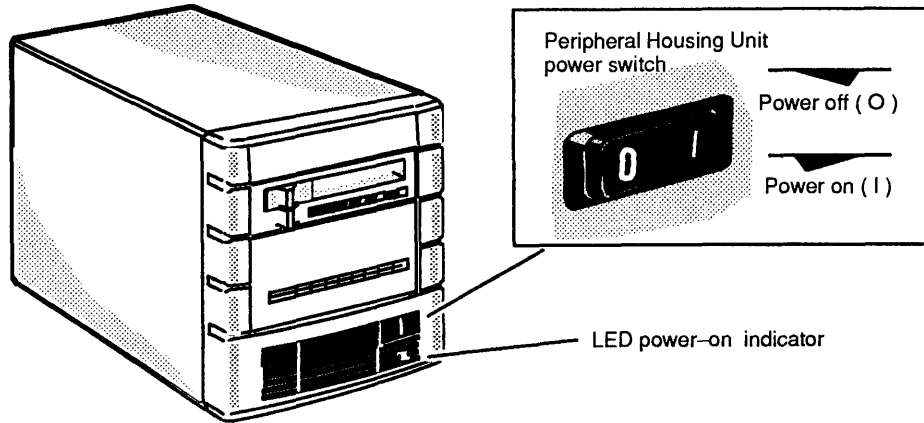


Figure 3-2 Peripheral Housing Unit (PHU) Power Switch

Figure 3-3 shows the location and operation of the CSS2/DC power switch.

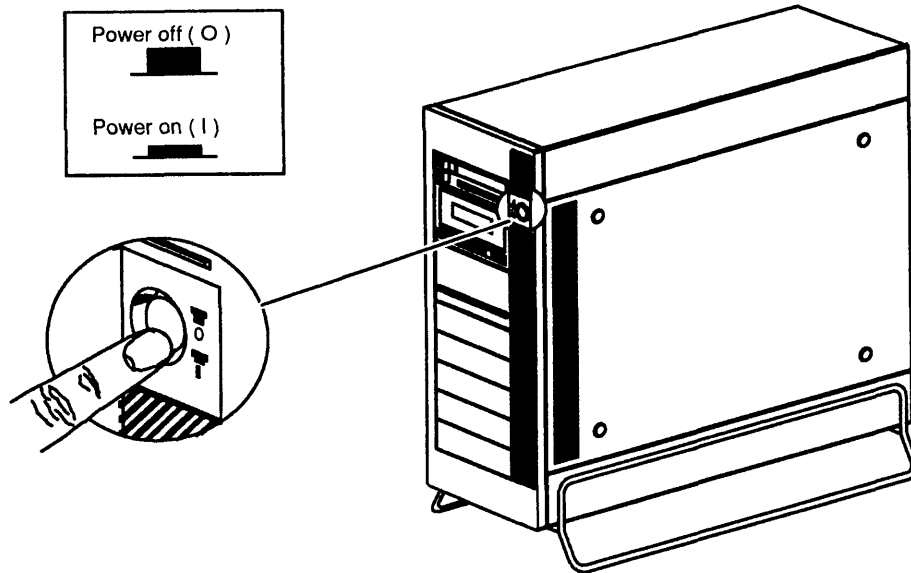


Figure 3-3 Combined Storage Subsystem Desk-side Chassis (CSS2/DC) Power Switch

3. If you have a printer or any other external device connected to your workstation, turn on power and make sure that each is *on line*. For specific information, see the documentation that came with the device.
4. Turn on power to the computer unit by pressing the computer unit's power switch as shown in Figure 3-4.

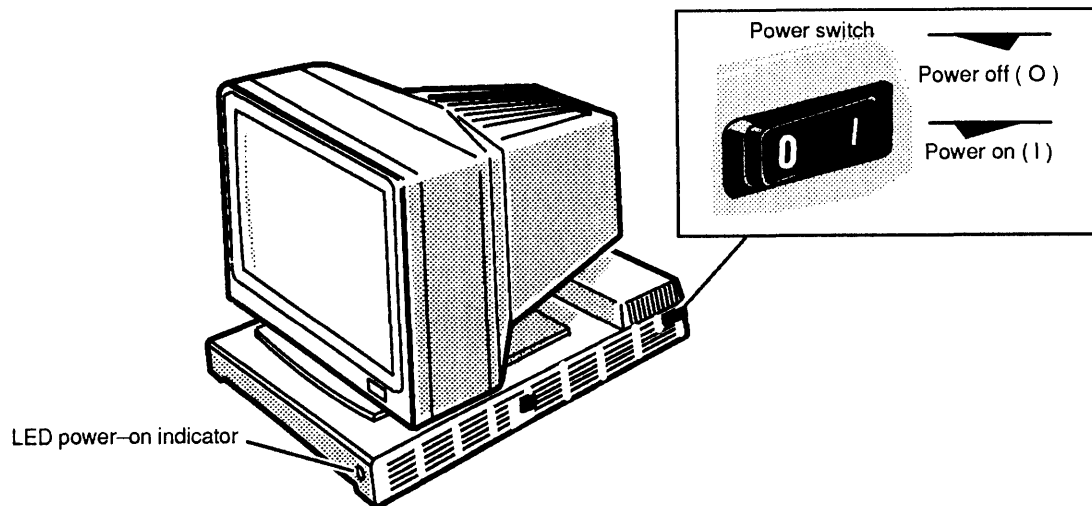


Figure 3-4 Computer Unit Power Switch and LED Power-On Indicator

5. Watch the monitor screen carefully. You will hear beep tones from the computer unit speaker and see LED activity. After approximately 10 seconds, the screen displays a power-up window in the center of the screen with a black cursor in its top left corner. After another several seconds you begin to see initialization messages. Continue with the next step when you see text messages in the power-up window. If the monitor does not behave in this manner, refer to Chapter 4, "Solving Power-Up Problems."

The following is an example of the initialization message text:

```
(c) Data General Corporation 1991
xx MHz AV Series Computer
Firmware Revision yy.yy
Keyboard Language is [U.S. English]
Local Ethernet address is [08:00:1B:zz:zz:zz]
Initializing [n Megabytes]
```

Where

xx MHz
n Megabytes

Indicates

The workstation clock speed, in megahertz
The amount of memory installed

The clock speed, firmware revision, keyboard language, Ethernet address, and amount of memory report your workstation configuration. If your display does not appear contain this information, turn power off to the computer unit, to the monitor, and to all connected peripherals; wait approximately one minute, and then repeat steps 1 through 4. If the trouble persists, refer to the next section, "Solving Power-Up Problems."

6. Examine the initialization information in your power-up display carefully. After you verify that the information is correct, continue with the next step.

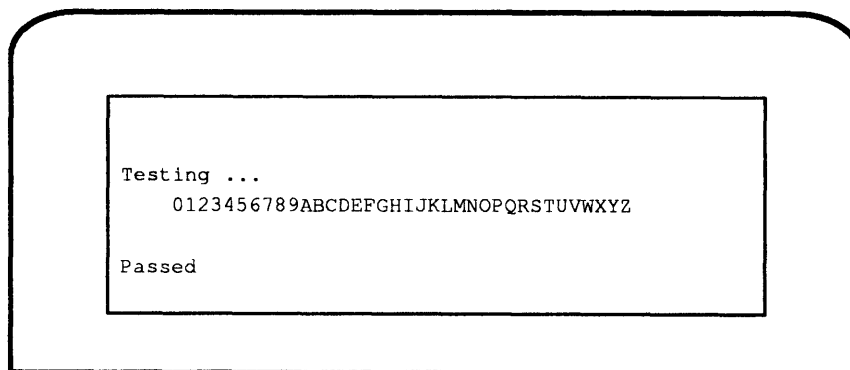
NOTE: You may want to record the workstation Ethernet address for use when installing or configuring network software.

Table 1-3 in Chapter 1 lists the CPU clock speed and graphics type (along with other features) of each AViiON series. Make sure the clock speed and graphics (monochrome or color) match what you ordered.

If any initialization messages report inaccurate information, or if your system does not find components that you ordered, contact Data General immediately.

7. After the workstation hardware is initialized, power-up tests begin automatically. As testing progresses, each character in the alphanumeric sequence 0123...ABC...Z appears on the screen as subtests complete. In addition to this visual display, the diagnostic LED and speaker beep tones signal progress as each diagnostic test passes.

Make sure that power-up tests complete successfully. Once the system displays the message `Passed`, continue to the next step. Your monitor screen appears as follows:



If the test messages are incomplete or include an error message, refer to the next section, "Solving Power-Up Problems."

8. After power-up testing completes, your workstation automatically tries to boot the DG/UX operating system. Your screen display indicates the boot device and file image, as follows:

```
Booting sd(insc(),0) root:/dgux.starter [or, dgux.installer -i]
```

What happens next depends on whether or not you ordered a DG/UX operating system package, which release you ordered, and whether it came to you preloaded on disk.

- If you ordered release 5.4 of the DG/UX operating system preloaded on disk, the SCM automatically boots the DG/UX installer system; continue with step 9(a).
- If you ordered release 4.3 of the DG/UX operating system (or any release prior to 5.40) preloaded on disk, the SCM automatically boots the DG/UX Starter system; proceed to step 9(b).
- If your DG/UX operating system software shipped to you on cartridge tape rather than preloaded on disk, or if you did *not* order the DG/UX operating system, the automatic boot process will fail; skip to step 9(c).
- If you have a diskless workstation, the automatic boot process will fail; skip to step 9(d).

NOTE: To run a 15-minute hardware acceptance test before installing your operating system, refer first to the manual *Using AViiON® System Diagnostics*.

DG/UX Release 5.4x Preloaded on Disk

9(a). Once your firmware has successfully booted the DG/UX Bootstrap, the hardware powerup is complete and the booted installer system takes over.

NOTE: If you ordered a DG/UX Release 5.4 operating system package, but the installer system fails to boot automatically, try to boot the system manually by typing the following command line at the SCM prompt:

```
SCM> b sd(insc(),0)root:/dgux.installer -i ↵
```

If the DG/UX installer system fails to boot again, contact Data General as described in the Preface.

The DG/UX Bootstrap program loads the installer image, displaying initialization and sizing messages. The installer system begins by searching for known (standard) devices. It automatically configures each device it finds. You'll see dots written across your monitor display until the screen display stops for your input at the following prompt:

```
Do you want to configure any nonstandard devices? [no]
```

You will reach this point each time you power up, until you build a customized DG/UX kernel, as described in the manual *Installing the DG/UX™ System*. Refer to that manual now.

CAUTION: Do not respond or press New Line before referring to your DG/UX installation documentation.

DG/UX Release 4.3x (any release prior to 5.4) Preloaded on Disk

9(b). Once your firmware has successfully booted the starter operating system, the hardware powerup is complete and the booted operating system takes over.

NOTE: If you ordered a DG/UX operating system package, but the starter system fails to boot automatically, try to boot the DG/UX starter system manually by typing the following command line at the SCM prompt:

```
SCM> b sd(insc(),0)root:/dgux.starter ↵
```

If the DG/UX starter system fails to boot again, contact Data General as described in the Preface.

The DG/UX bootstrap program displays initialization and sizing messages. It then starts the DG/UX starter system. Your screen display stops for your input at the Device Name? prompt.

CAUTION: Your response to the Starter System Device Name? prompt is very important. Do not respond or press New Line before referring to your DG/UX installation documentation.

You will reach this point each time you power up, until you build a DG/UX kernel and reset your automatic boot path. Refer now to your DG/UX installation documentation to proceed, as described below.

If you are familiar with the DG/UX operating system or with another UNIX-based system and want detailed installation information, refer to *Installing and Managing the DG/UX™ System* for installation instructions.

Refer to one of the following manuals if you are unfamiliar with installing and managing the DG/UX operating system, or if you prefer a step-by-step installation approach using a standard configuration:

- If you have an AViiON workstation that will run stand-alone (i.e., not as a client to a DG/UX server), use *Initially Installing and Setting Up the DG/UX™ System on AViiON® Stand-Alone Workstations*.
- If your workstation will be a DG/UX server, or a client to an AViiON DG/UX server, use *Initially Installing and Setting Up the DG/UX™ System on AViiON® Servers with Clients*.

Non-DG/UX Operating System or Non-Preloaded Disk

9(c). Whenever the automatic boot sequence fails, you see a message from the System Control Monitor (SCM). Your screen displays the following message after your workstation fails to boot the DG/UX operating system:

```
Unable to load bootfile sd(insc(),0)root:/dgux...
```

You have *not* failed the firmware powerup; your system has simply failed to boot the DG/UX operating system from disk. Proceed now to your operating system documentation for installation instructions from cartridge tape. Refer to *Installing the DG/UX™ System* if you are installing Release 5.40 or greater of the DG/UX System. Step 9(b) describes the appropriate installation documentation if you are installing a DG/UX release prior to 5.40.

Once your operating system is installed, you use an SCM configuration menu to change the default boot path to that of your configured operating system; your operating system will come up automatically in subsequent powerups. For information about the SCM, its commands and configuration menus, refer to Chapter 5.

Diskless Workstation

9(d). Whenever the automatic boot sequence fails, you see a message from the System Control Monitor (SCM). Your screen displays the following message after your workstation fails to boot the DG/UX operating system from disk:

```
Unable to load bootfile sd(insc(),0)root:/dgux...
```

You have *not* failed the firmware powerup; your workstation has simply failed to boot the DG/UX operating system because you don't have the expected boot image on disk. Your operating system server must support your diskless workstation as a client before you can boot via the network. Proceed now to your operating system documentation for installation instructions. Refer to *Customizing the DG/UX™ System* if your diskless workstation will be a client to an operating system server running Release 5.40 or greater of the DG/UX System. Refer to *Initially Installing and Setting Up the DG/UX™ System on AViiON® Servers with Clients* if your server runs a DG/UX release prior to 5.4.

Once your diskless workstation is configured, you use an SCM configuration menu to change its default boot path so that you will automatically boot over the LAN in subsequent powerups. For information about the SCM, refer to Chapter 5.

Solving Power-Up Problems

This section provides step-by-step procedures for resolving simple power-up problems and describes error codes and messages; it begins with a quick summary of problems and suggested strategies for fixing them (Table 3-1).

NOTE: This chapter describes only the hardware-specific portion of your workstation's power-up sequence. If your workstation successfully completes power-up testing but does not boot your operating system automatically, refer to the documentation that came with your operating system. If you cannot resolve the problem using your documentation, contact Data General as described in the Preface.

During a normal powerup, your system displays the message `Passed` before it boots the DG/UX operating system or displays the SCM prompt; this signifies that the workstation has successfully completed the power-up diagnostic tests. Steps 1 through 7 in the previous section describe the sequence of a normal hardware powerup.

If your workstation fails a power-up diagnostic test, your screen either remains blank, *hangs* (does not continue testing), or displays an error message on the screen to indicate the failure. If power-up testing stops at the number 2 or if your screen displays an error message related to your memory configuration, refer to the "Memory Configuration Change" subsection later in this section. If your system hangs at any point in the power-up testing besides the number 2, or if the screen display is unreadable, refer to the "Blank or Unclear Power-Up Display" subsection. Refer to "Error Codes and Messages" if you receive other indications of error.

If you cannot resolve your problem using the information in this chapter, contact Data General as described in the Preface.

NOTE: If you do not have a specific problem with your workstation, but want to run a thorough system check, refer to the manual *Using AViiON® System Diagnostics* for a description of how to use the AViiON System Diagnostics hardware acceptance test and other utilities.

Table 3-1 summarizes the steps you can take when your screen remains blank at powerup, when your power-up display is unreadable, or when an error message appears. These steps are described in more detail in the following sections.

Table 3-1 Quick Reference for Power-Up Problems

For This Condition	Try This
Blank or Distorted Display	
Has the graphics monitor screen been blank for 2 minutes?	Rotate the Brightness dial clockwise. Power down; then <ol style="list-style-type: none"> 1. Test the ac power supply with a desk lamp or other electrical device. 2. Tighten power cord connections to the monitor and computer unit. 3. Tighten the keyboard connection and all other cabling. 4. Make sure all connected peripherals are powered on and online. 5. Turn power back on and try again.
Is text garbled on the screen?	Restore default video timing parameters. (Type Ctrl-V . For a 70-Hz monitor, type 1 after you hear a beep. For a 60-Hz monitor, type 2.)
Do you have a color monitor?	Press the degauss switch.
Is the screen still blank or unclear?	Use another monitor or a terminal to test the computer (if terminal, disconnect graphics keyboard). Contact Data General.
System Displays Text but Fails Powerup	
Is the last display in the powerup message the number 2?	If you have <i>not</i> added memory since the last powerup, contact Data General. If you have added memory since the last powerup, press the space bar to continue.
Do you see a numerical code other than 2, and/or a text message?	Write down the number or text; then <ul style="list-style-type: none"> • Turn power off to the computer unit, monitor, and any peripherals. • Tighten all cabling. Power on peripherals, monitor, and computer unit again.
Does the problem repeat?	Contact Data General.

Blank Screen at Power-Up

Complete the steps in this section if you cannot see diagnostic messages on your monitor screen after turning power on to the workstation. Follow these steps only if your monitor screen remains blank for more than 2 minutes after powerup. Refer to the next section if you can see messages, but they are unreadable or distorted.

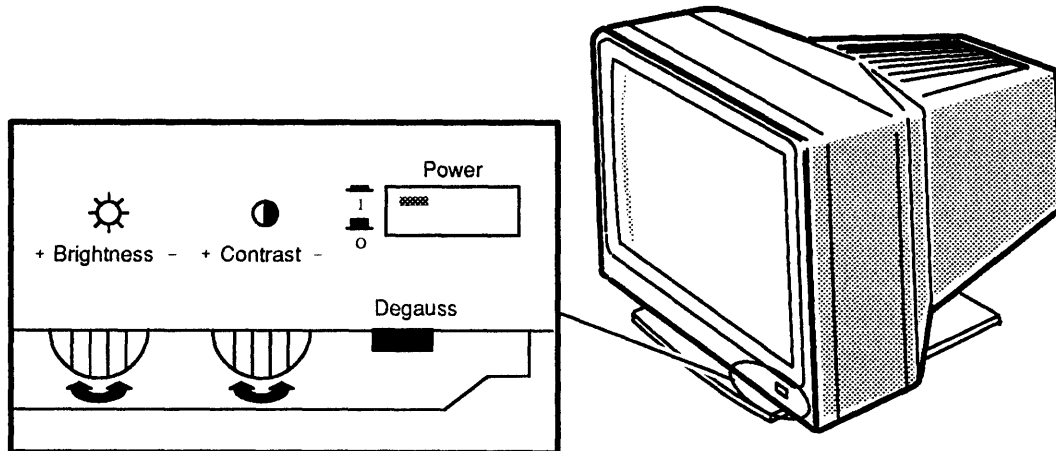
1. Turn the computer unit power off.
2. Make sure the computer unit's power cord is plugged tightly into an ac power outlet that is supplying power. Test the outlet with a desk lamp or other ac device if you are uncertain whether it is supplying power.
3. Make sure the monitor's power cord is plugged tightly into the ac power outlet.
4. Make sure the keyboard is plugged tightly into the computer unit connector, and that the connection between the keyboard and extension cable is tight.
5. Turn the monitor on. (The green LED on the monitor's power switch is illuminated when power is on).
6. Rotate the monitor brightness dial clockwise to the maximum setting, as shown in Figure 3-5.
7. Make sure the cables that connect your station components together are undamaged and their connectors are secured tightly so that they make a good connection.
8. Turn power on to all connected peripherals.
9. Turn power on to the computer unit again.
10. If the display remains blank but the computer unit LED and speaker signaled at least four times, there may be a problem with your monitor or monitor cables. Try to power up using a different display device. You can use another graphics monitor that meets the specifications listed in Appendix A; or, if you have an asynchronous terminal to connect for use as a system console, try the steps later in this section, "Testing With an Asynchronous Terminal."

Unclear Monitor Display

Try the following if your graphics monitor screen displays messages, but they are distorted or unreadable.

1. Make sure the default video timing parameters are properly set for your monitor. To set video timing for the 70-hertz, 20-inch color or monochrome monitor you received from Data General, press **Ctrl-V**, and then type **1** after you hear one beep tone. To set parameters for a 60-hertz monitor, press **Ctrl-V**, and then type **2** after you hear one beep tone. Try both frequencies if you are not certain of the correct timing for your monitor.
2. If you have a color monitor, make sure the screen is properly demagnetized. Press the Degauss switch (located next to and just beneath the monitor's power button), shown in Figure 3-5.

Color monitor (front/side view)



NOTE: Press the Degauss switch *in* to activate.
Rotate the Brightness and Contrast controls left and right for clearer screen display.

Figure 3-5 Monitor Brightness and Degauss Switch

3. If your screen display remains unreadable or unclear, contact Data General as described in the Preface.

NOTE: You may want to use AViiON System Diagnostics graphics tests to verify your monitor display, as described in the manual *Using AViiON® System Diagnostics*.

Testing the Powerup With an Asynchronous Terminal

Often, using a different display device as system console helps to determine whether a power-up problem is an indication of trouble with your computer or simply a faulty monitor. Although computer should complete powerup even with a monitor that is not working, it is difficult to know whether or not it passes diagnostic testing. Even without powerup display, flashes from the diagnostic LED on the computer unit and beeps from the computer unit speaker indicate that the tests are proceeding. You can also hear the computer unit fan spinning inside the chassis. If the LED and speaker do *not* signal at least four times, or if the fan seems to be slow or not spinning at all, contact Data General as described in the Preface; the problem is not your monitor.

If your display remains blank but the computer unit LED and speaker signaled at least four times, the monitor could be the problem. If you have another monitor, try that first; disconnect your monitor and connect the alternate as described in Chapter 2. If you don't have another graphics monitor, you can use an asynchronous terminal as system console. Refer to Chapter 2 for information about disconnecting the graphics monitor and connecting an asynchronous device to serial Port A; then, complete the steps below to test your workstation.

1. Turn the computer unit power switch to off. Make sure the computer unit power cord is plugged tightly into an ac power outlet that is supplying power.
2. Make sure the terminal power cord is plugged tightly into the ac power outlet.
3. Make sure the graphics keyboard is disconnected from the computer unit keyboard connector.
4. If you have a workstation with two serial ports, make sure the terminal cable is connected to the *first* RS-232-C connector (labeled A).
5. Make sure that all cables are secured tightly so that they make a good connection.
6. Move the brightness control on the terminal to its maximum setting and set the terminal's characteristics as follows:
 - 9600 baud
 - 8 data bits, no parity
 - ANSI character set
 - Enabled flow controlFor information on changing terminal settings, see the manual that shipped with the terminal.
7. Turn the terminal's power switch on.
8. Turn on the computer unit power again and follow the power-up procedure described at the beginning of this chapter. If your screen display is still unreadable, contact Data General as described in the Preface.

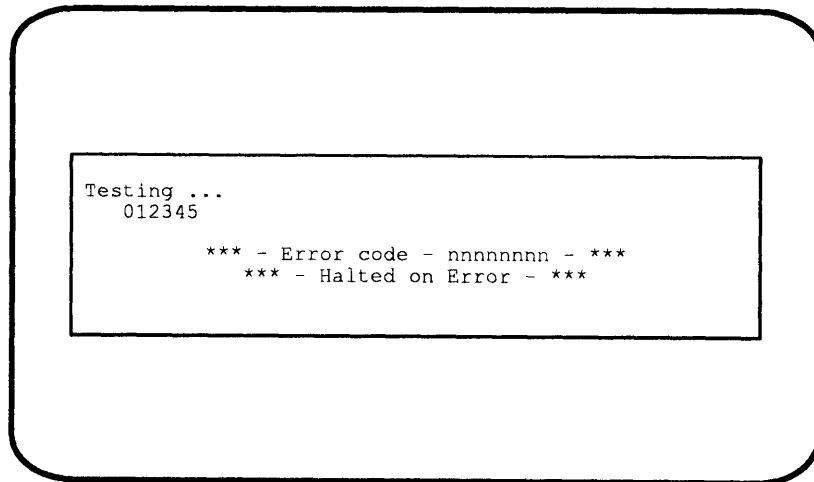
Error Codes and Messages

This section describes how your workstation signals an error during powerup. Refer to this section if power-up diagnostic tests halt and display an error message, if the system console “hangs” during power-up testing, or to determine whether the front panel diagnostic LED or speaker sounds indicate an error.

If your screen has been blank for more than two minutes, refer to the section, “Blank Graphics Monitor Screen” earlier in this chapter. If you see meaningless display instead of an error code or message on your system console screen, refer to the section “Unclear Graphics Monitor Display.”

Screen Display

If your workstation encounters a serious error during powerup, your screen display usually includes a Data General error code and a brief text message. Your screen display appears as follows after you receive an error:



Where
nnnnnnnn

Indicates
Data General fault code

NOTE: If the system console hangs at number 2 during power-up testing, refer to the “Memory Configuration Change” section later in this chapter.

If your workstation displays an error message or hangs during power-up testing at any point besides the number 2, complete the following steps.

1. Write down any text and the error code number that appears on the screen. If no error message appears, write down the last letter or number of the testing message displayed.
2. Turn off the computer unit’s power.
3. Wait at least 30 seconds.
4. Turn on power to the computer unit again. If the problem repeats, contact Data General as described in the Preface.

LED Signals

The green LED indicator normally pulses on and off during power-up diagnostic tests to signal the completion of individual tests. The LED then remains on while the system is booting, until your operating system successfully starts. If the LED remains on *before* power-up testing is complete, or if the system seems to be hung up after one or two pulses, an abnormal condition exists. Ordinarily, there are screen indications of an error; be sure to carefully record all error indicators including LED activity before contacting Data General about an error condition.

Speaker Signals

The beeps that sound during the power-up tests also provide some indication of the condition of the computer hardware. If your power-up tests complete normally, your computer unit speaker will beep several times in a unique sequence. If no beeps sound during power-up testing, if the system seems to be hung up after one or two beeps, or if the sequence of beeps is unlike that of previous powerups, an error condition exists. Sometimes you can determine the problem even if there is no discernible screen display. Table 3-2 lists beep codes and suggests how to respond to any of these abnormal conditions.

Table 3-2 Beep Codes

Beep Code	Error Condition	Solution
No sound		Probable system or speaker problem. Contact Data General.
One beep	FATAL BBSRAM ERROR	Contact Data General.
Two beeps	FATAL MEMORY ERROR	Problem with first memory module. Refer to Chapter 4 to verify that the first memory module is properly seated in its connector. If the problem repeats, contact Data General.
Three or four beeps	FATAL CACHE ERROR	Contact Data General.
Seven beeps	KEYBOARD NOT FOUND	Verify that the keyboard cable is securely connected to the computer unit. If the problem repeats, contact Data General.

Contact Data General as described in the Preface if you cannot determine the error condition or if you discover a problem you cannot solve. Ordinarily, there are screen indications of error; be sure to carefully record all error indicators before contacting Data General about an error condition.

NOTE: Often, the first two beeps are so close in sequence they sound like a single beep. You may want to try the solution for two beeps before contacting Data General.

Memory Configuration Change

After the first powerup, the power-up diagnostic tests compare the previous memory configuration with the current memory configuration. The system indicates a discrepancy between these configurations for any of the following reasons:

- You added or removed one or more memory module(s).
- One or more memory module(s) is not properly seated in its connector.
- One or more memory module(s) is failing.
- You installed memory module(s) in an illegal configuration.

If the system finds a discrepancy between the previous and current memory configuration, the power-up test stops at number 2 and displays the following screen:

```
e Data General Corporation 1991
Firmware Revision xxx.xx
xx Mhz AV Series Computer
Keyboard Language is U.S. English
Local Ethernet address is 08:00:1B:xx:xx:xx
Initializing [n Megabytes]

Testing ...
  012

Memory configuration has changed from m to n Megabytes
Press the space bar to restart with new configuration
or, if not correct, press any other key to halt.
```

Where

m Megabytes

n Megabytes

Indicates

The amount of memory sized in the previous powerup.

The amount of memory sized in the current powerup.

If you added or removed one or more memory module(s) and are certain each module is properly seated in its system board connector, press the space bar (not New Line!) to power up with the new memory configuration.

CAUTION: *Be careful not to press the space bar if you have not changed your memory configuration since the previous powerup. Powerup will continue by pressing the space bar; you could be proceeding with a failed memory module.*

If you have *not* added or removed a memory module, this error could indicate a memory module failure. Press any key other than the space bar to halt the system, write down the error code or message, and contact Data General as described in the Preface. Refer to Chapter 4 for information about properly installing or reinstalling memory modules.

Shutting Down the Workstation

Each time you turn off the workstation, you must complete a sequence of shutdown procedures to ensure that data is not lost and that you leave the hardware in the proper state. It is important to bring down your software and turn power off to your computer and peripherals in the correct order.

This section describes the various ways you can shut down your workstation. If your AViiON workstation provides resources for other computers, you probably won't shut it down very often. If you use your workstation as a stand-alone station or as a network client to a server system, however, you are likely to start it at the beginning of each work day and shut it down at the close of the day. Once you become familiar with power-down, reset, and restart procedures, you won't need to follow the steps in this section to shut down or reset your workstation.

Powering Down

Follow these steps when shutting down the workstation entirely; for instance, at the close of the day, when the workstation won't be used for a long period, or when you plan any kind of hardware maintenance tasks. You may also want to power down if your workstation is experiencing intermittent errors; often the process of restoring hardware components to the power-up state resolves temporary problems, or identifies problems that are not temporary.

CAUTION: *Never turn off power to your workstation before properly shutting down your operating system software. Resetting or cycling power to your computer while the operating system is running may result in lost data.*

1. Shut down system software according to the procedures in your operating system documentation. For a DG/UX system, the sequence to shut down the operating system *immediately* is as follows:

```
# cd / ↵  
# shutdown -g0 -y ↵  
# halt -q ↵
```
2. Once you see the SCM prompt, you can safely turn off power to the computer unit by pressing the computer unit's power switch.
3. If you have a Peripheral Housing Unit (PHU), Combined Storage Subsystem Deskside Chassis (CSS/DC) or another external storage device connected to your workstation, turn off power to the external unit.
4. If you have a printer or other device connected to your workstation, turn off power. Make sure you turn off power to each device.
5. Turn off power to the monitor.
6. Wait at least a minute before attempting to restart your workstation. Listen for the computer unit fan; do not turn power back on until you hear that the fan has stopped spinning.

Resetting the Hardware

As long as your workstation has completed power-up testing, you can reset the hardware at any time by pressing the reset switch on the computer unit side panel. Figure 3-6 shows the location of the computer unit power and reset switches.

CAUTION: *Never press the reset switch during power-up testing. If you want to interrupt a powerup sequence, wait until you see the message Passed. Also, remember that resetting or cycling power to your computer while your operating system is running may result in lost data. Always try to shut down your operating system before resetting your workstation.*

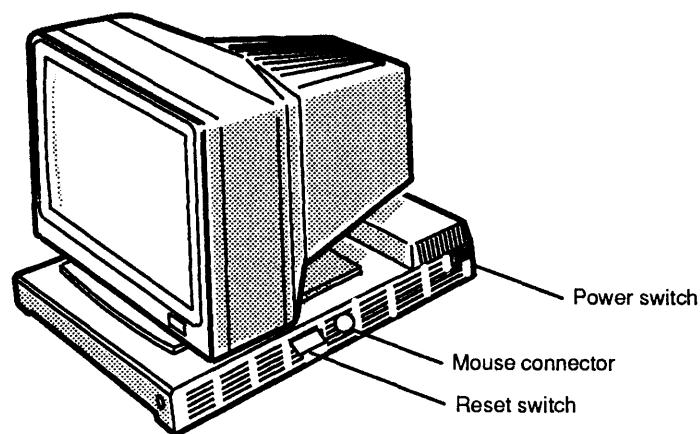


Figure 3-6 Computer Unit Reset and Power Switches

NOTE: The reset switch is set *inside* the opening shown in Figure 3-6 to prevent accidental use. You may find it easier to insert a pencil end (not the lead point!) or some other nonmagnetic, nonconductive tool into the opening to activate the reset switch.

You may want to reset the workstation if it seems to be experiencing intermittent errors; often the process of restoring hardware components to the powerup state resolves temporary problems.

Resetting the hardware without cycling power is called a *warm reset*; turning power off, and then on again is a *cold reset*. With a cold reset, your system goes through power-up testing and its automatic boot sequence, as described in the “Powering Up” section at the beginning of this chapter. With a warm reset, your workstation restores system board components to their powerup state and displays the System Control Monitor (SCM) command interpreter prompt, but does not proceed through power-up tests or automatically boot your operating system.

You can perform a warm reset while at the SCM prompt without pressing the reset switch by using the SCM RESET command, as follows:

```
SCM> r ↵ (or, SCM> reset ↵)
```

Restarting Your Operating System

Each time you turn power on, your system goes through power-up testing and its automatic boot sequence, as described in the “Powering Up” section at the beginning of this chapter. It is not necessary to power down completely in order to restart your operating system, however.

If you shut down your operating system to the SCM prompt or press the reset switch (as described in the previous sections), you can restart your operating system by entering the `BOOT` command at the SCM prompt, as follows:

```
SCM> b ↵ (or, SCM> boot ↵)
```

When you use the `BOOT` command without an argument, the workstation uses its default boot path and boots the same file it uses at every powerup. If you have not set a default boot path, it looks for a bootable file on the first SCSI disk and then tries to boot over the LAN if it cannot boot from your root disk. Refer to Chapter 5 for additional information about the SCM `BOOT` command, the default boot path, and the automatic boot sequence.

End of Chapter

Chapter 4

Expanding and Maintaining Your Workstation

This chapter explains how to expand and maintain your AViiON workstation. You can expand your workstation by adding memory modules. You can maintain your workstation's operation by installing customer replaceable units (CRUs). CRUs are subassemblies that the person responsible for operating, expanding, or maintaining the workstation can easily remove and install.

The monitor, keyboard, mouse, and cables are *external* CRUs. You replace an external CRU by simply disconnecting and reconnecting one or more cables. Refer to the procedures in Chapter 2, "Setting Up Your Workstation," if you need to replace an external CRU. The SCSI bus fuse, fan, speaker assembly, memory modules, and tray assembly are *internal* CRUs. To replace an internal CRU, you must remove the cover of the computer unit. Sections in this chapter tell you how to replace the internal CRUs.

If a Workstation Problem Occurs

If you have a problem with your workstation during powerup, first read the "Solving Power-Up Problems" section in Chapter 3. It lists problems that could occur when you start the workstation, describes error codes and messages, and provides suggestions that you can use to solve these problems.

If you cannot resolve the problem yourself, contact Data General as described in the Preface. If, after calling the Data General Service Center, you determine that a CRU needs replacement, refer to Chapter 2 for removal and replacement procedures if the CRU is external. Follow the procedures in this chapter for removing and installing an internal CRU. If you have determined that the problem is in the peripheral housing unit (PHU), refer to the manual *Installing and Operating the Model 10565 Peripheral Housing Unit*. If you have determined that the problem is in the combined storage subsystem deskside chassis (CSS2/DC), refer to the manual *Installing CSS2 and CSS2/DC Storage Subsystem Components*.

Before attempting to replace or add a CRU, read the next section so that you do not damage the replacement or add-on CRU.

Avoiding ESD Damage

Your computer unit consists of a tray assembly installed in a housing, as shown in Figure 4-1. The housing protects the electronic circuits in the tray assembly from electrostatic discharge (ESD) damage. However, when you remove the tray assembly from the housing to install a CRU, you can inadvertently damage the sensitive electronic circuits by simply touching them. Electrostatic charge that has accumulated on your body discharges through the circuits. Follow the procedures below to prevent damage to the computer unit.

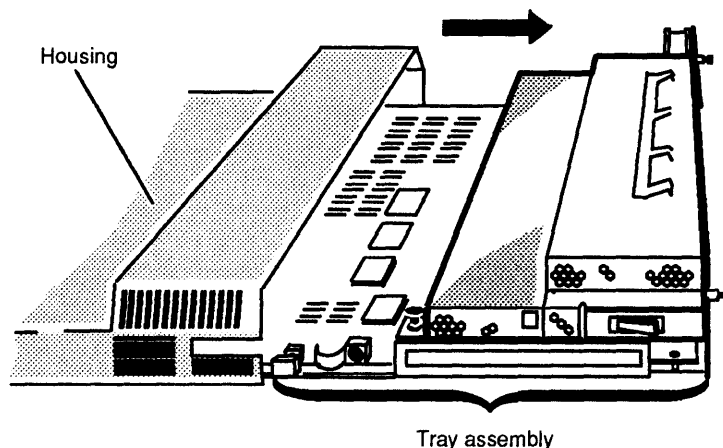


Figure 4-1 Inside the Computer Unit Chassis

CAUTION: Read and understand the following instructions before you remove the tray assembly from the housing.

- If the air in the work area is very dry, use a humidifier to help decrease the risk of ESD damage.
- Provide enough room to work on the equipment. Clear the work site of any unnecessary materials or materials that naturally build up electrostatic charge, such as foam packaging, foam cups, cellophane wrappers, and similar materials.
- Do not remove replacement or upgrade subassemblies from their antistatic packaging until the exact moment that you are ready to install them.
- Gather the tools, manuals, an ESD kit, and all other materials you will need before you slide the tray assembly from the housing. Procedures for removing subassemblies usually list required materials at the beginning. After you remove the tray assembly, you should avoid moving away from the work site; otherwise, you may build up an electrostatic charge.

- Use an ESD kit when handling circuit boards or when touching the electronic circuits inside the computer unit. If you don't have an ESD kit, you can order one from Data General. If an emergency arises and an ESD kit is not available, follow the procedures in the "Emergency Procedures (Without an ESD Kit)" section.
- Install the tray assembly in the housing as soon as possible so that the electronic circuits are protected from damage.
- If the equipment has an opening for an optional device (such as a mass-storage drive), and the device is not installed, make sure a filler panel is installed in the opening before connecting the equipment to the ac power outlet.

Emergency Procedures (without an ESD kit)

In an *emergency* when an ESD kit is not available, use the following procedures to reduce the possibility of an electrostatic discharge by ensuring that your body and the subassembly are at the same electrostatic potential.

CAUTION: These procedures are not a substitute for the use of an ESD kit.

- Before touching any electronic circuits or boards inside the equipment, firmly touch a bare (unpainted) surface of the equipment.
- Before removing any replacement or upgrade subassembly from its antistatic bag, place one hand firmly on an unpainted surface of the chassis, and at the same time, pick up the replacement or upgrade subassembly while it is still sealed in the antistatic bag. Once you have done this, *do not* move around the room or contact other furnishings, personnel, or surfaces until you have installed and *secured* the subassembly in the equipment.
- Remove the subassembly from the antistatic bag, handling printed circuit boards by the edges. Avoid touching components, edge connectors, and circuits on a printed circuit board.
- If you must move around the room or touch other surfaces before securing the subassembly in the equipment, first place the subassembly back in the antistatic bag. When you are ready again to install the subassembly repeat these procedures.
- Order an ESD kit from Data General for the next time you need to add or remove an access cover or panel.

Opening the Computer Unit

Your computer unit consists of a tray assembly installed in a housing. To install a customer replaceable unit (CRU) inside the computer, you must open the computer unit and slide the tray assembly from the housing. It is important that you read and understand the “Avoiding ESD Damage” section of this chapter before you open the computer unit. You will need a flat-blade screwdriver to open the computer unit.

The following steps tell you how to remove the tray assembly from the computer unit’s housing.

1. Power down the workstation. Refer to the “Shutting Down the Workstation” section of Chapter 3 for the proper procedure to power down the workstation.
2. Reposition the workstation, if necessary, so you can gain access to the back of the computer unit. You will need enough room to slide the tray assembly out of the computer unit’s housing. As you reposition the workstation, be careful not to strain the cables or jar the workstation.

NOTE: You do not need to move the monitor from the top of the computer unit.

3. Disconnect the computer unit’s power cord from the ac power outlet and then from the back of the computer unit. The location of the computer unit’s power cord is shown in Figure 4–2.

WARNING: To avoid electrical shock or equipment damage, always unplug the power cord from the ac power outlet and from the receptacle on the back of the computer unit before removing the tray assembly from the housing.

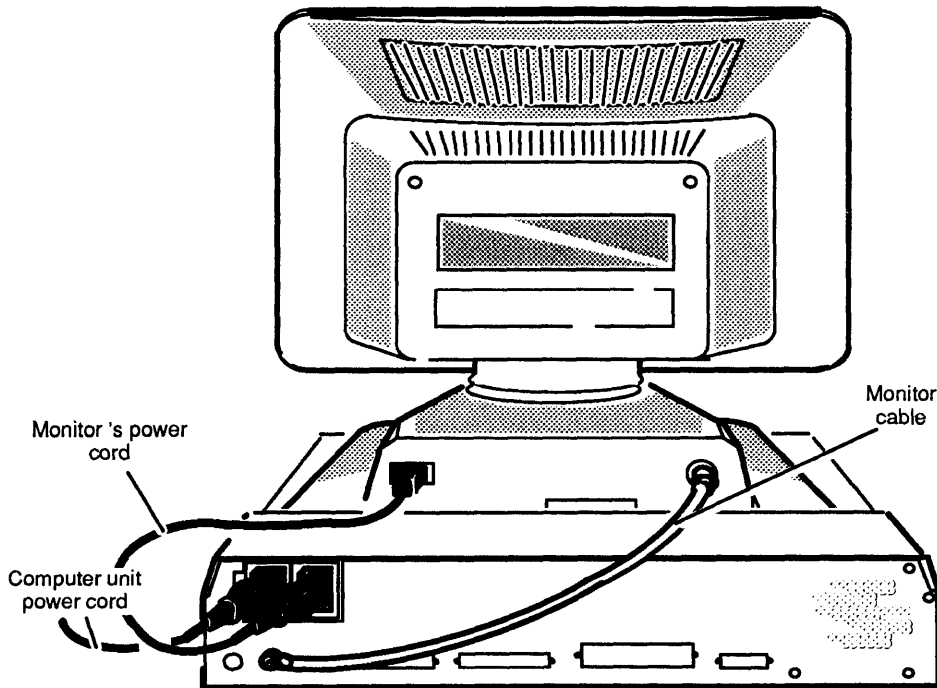


Figure 4–2 Location of the Monitor and Computer Unit Power Cords and the Monitor Cable

4. Disconnect the monitor's power cord from the ac power outlet on the back of the computer unit and from the back of the monitor as shown in Figure 4-2.
5. Turn the monitor cable counterclockwise to unlock it. Unplug the monitor cable from the connector on the back of the computer unit as shown in Figure 4-2.
6. Disconnect the keyboard cable from the left side of the computer unit as shown in Figure 4-3 .

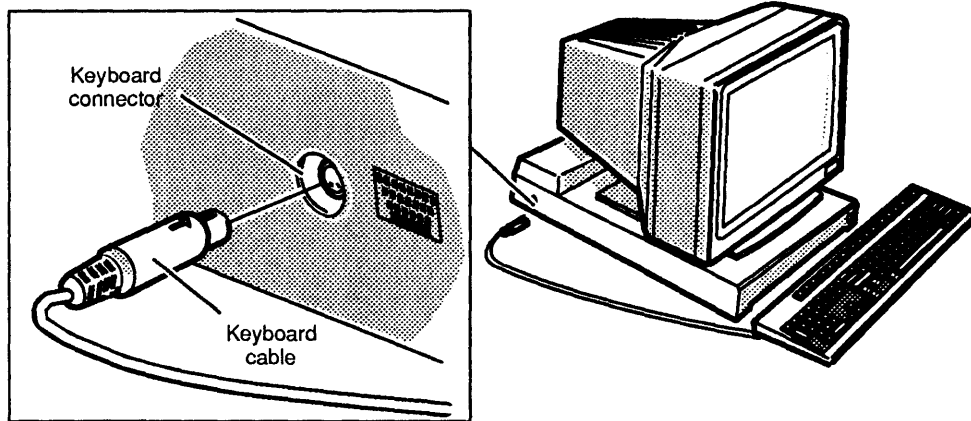


Figure 4-3 Disconnecting the Keyboard Cable from the Keyboard Connector

7. Disconnect the mouse cable from the right side of the computer unit as shown in Figure 4-4 .

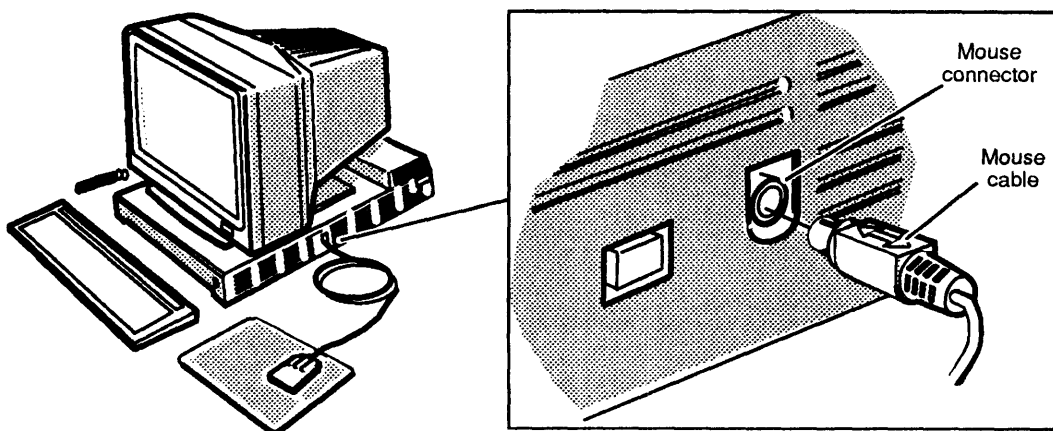


Figure 4-4 Disconnecting the Mouse Cable from the Mouse Connector

8. Disconnect any remaining cables from the back of the computer unit. Make note of where the cables attach. If necessary, temporarily label each cable you disconnect.

- Using the flat-blade screwdriver, loosen the two screws on the back panel, as shown in Figure 4-5.

NOTE: These are *captive* screws. You can loosen them, but you should not remove them.

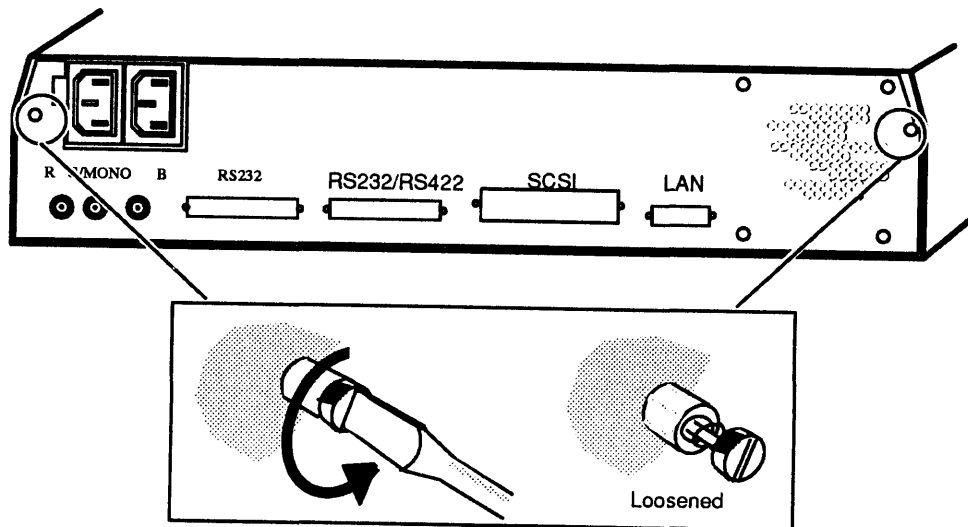


Figure 4-5 Loosening the Two Screws that Attach the Tray Assembly to the Housing

- Grasp the two captive screws on the back panel. Using them as handles, pull the tray assembly from the housing, as shown in Figure 4-6.

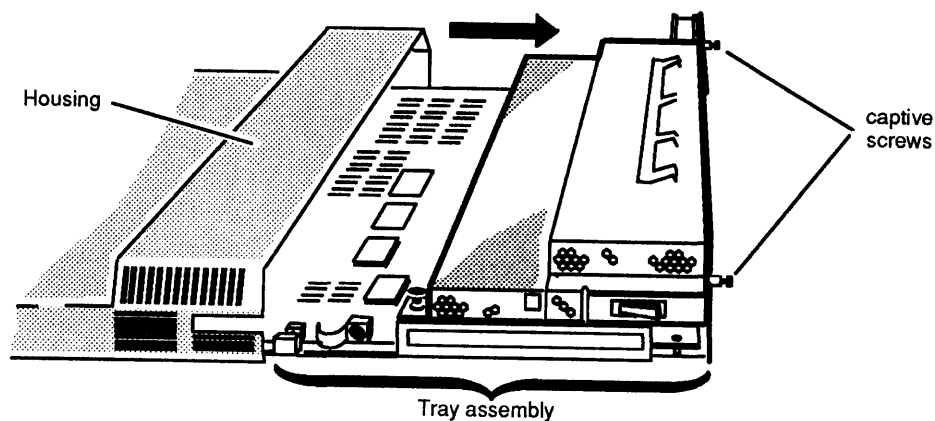


Figure 4-6 Sliding the Tray Assembly from the Housing

CAUTION: Do not touch any electronic components or circuits on the tray assembly or on the CRUs until you put on the ESD wrist strap and connect it to the tray assembly.

- Attach the clip of the ESD strap to the electromagnetic interference (EMI) clip on the mouse connector, as shown in Figure 4-7.

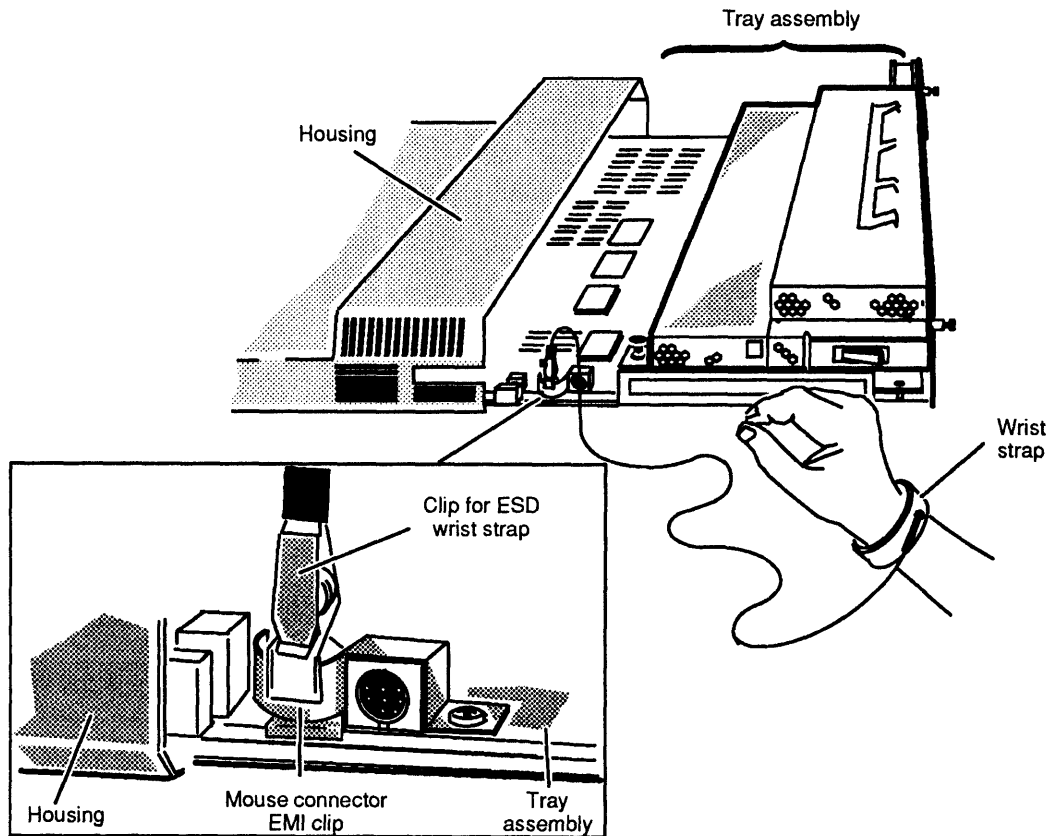


Figure 4-7 Attaching the ESD Wrist Strap and Clip

With the ESD wrist strap properly worn and attached to the tray assembly, you can now safely handle the electronic components in your workstation. Follow the instructions in the next sections of this chapter for removing and installing the customer replaceable units (CRUs).

Replacing the Fan Assembly

This section explains how to remove and install the fan assembly.

Removing the Fan Assembly

Follow the steps in this section to remove the fan assembly. You will need a medium size Phillips screwdriver.

- Open the computer unit and attach the ESD clip and wrist strap as described in the section "Opening the Computer Unit."

CAUTION: Do not touch any electronic components or circuits on the tray assembly or on the CRUs until you put on the ESD wrist strap and connect it to the tray assembly.

2. Lift up the tab on the fan connector and pull out the fan cable, as shown in Figure 4-8.

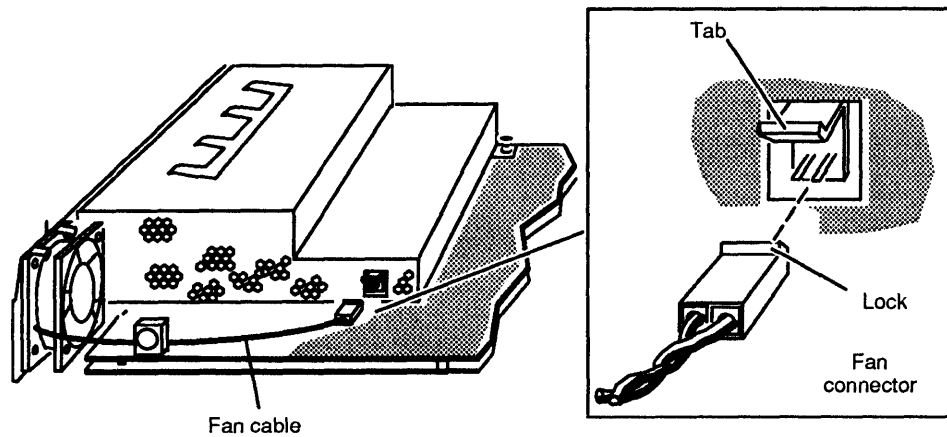


Figure 4-8 Disconnecting the Fan Cable

3. Using a Philips screwdriver, remove the three screws that attach the fan and the electromagnetic interference (EMI) fingers to the back panel of the tray assembly, as shown in Figure 4-9.

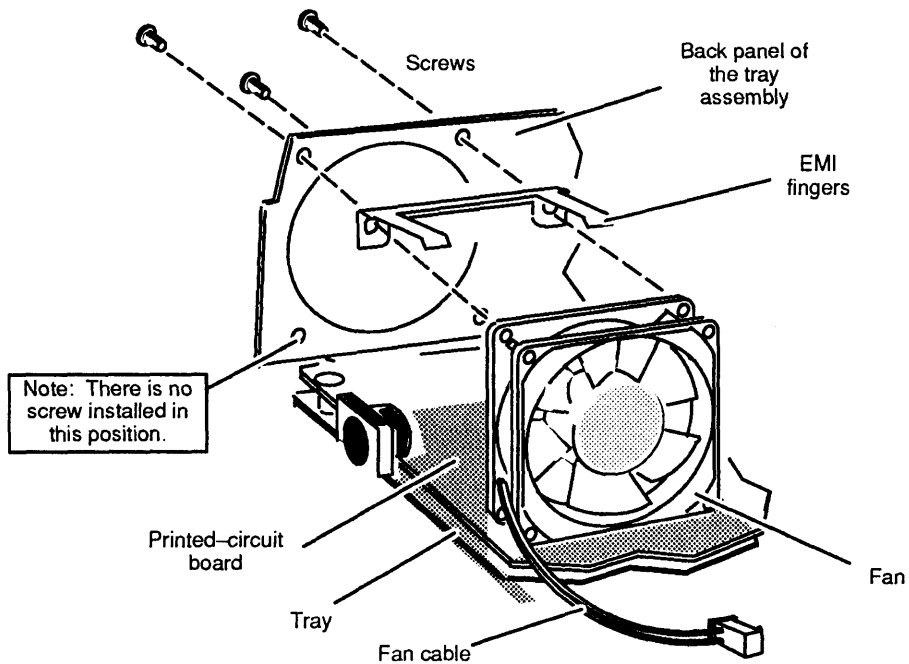


Figure 4-9 Removing the Fan

4. Lift the fan and EMI fingers from the tray assembly. Save the EMI fingers to install on the replacement fan.
5. Insert the failed fan assembly in an antistatic bag, and return it to Data General. Contact the Customer Support Center, as described in the Preface, for information on returning the faulty part.

Install the replacement fan assembly following the procedures in the next section, “Installing the Fan Assembly.”

Installing the Fan Assembly

Follow the steps in this section to install the replacement fan in the tray assembly. You will need a Phillips screwdriver.

1. Unpack the replacement fan assembly as described in the section “Unpacking and Inspecting Your Equipment” in Chapter 2.
2. Open the computer unit and attach the ESD clip and wrist strap as described in the “Opening the Computer Unit” section of this chapter.

CAUTION: *Do not touch any electronic components or circuits on the tray assembly or on the CRUs until you put on the ESD wrist strap and connect it to the tray assembly.*

3. Find the air-flow direction arrow on the replacement fan. Figure 4–10 shows the location of the arrow depending on the style of fan you receive. The air-flow direction arrow indicates the direction in which the air will move through the fan.

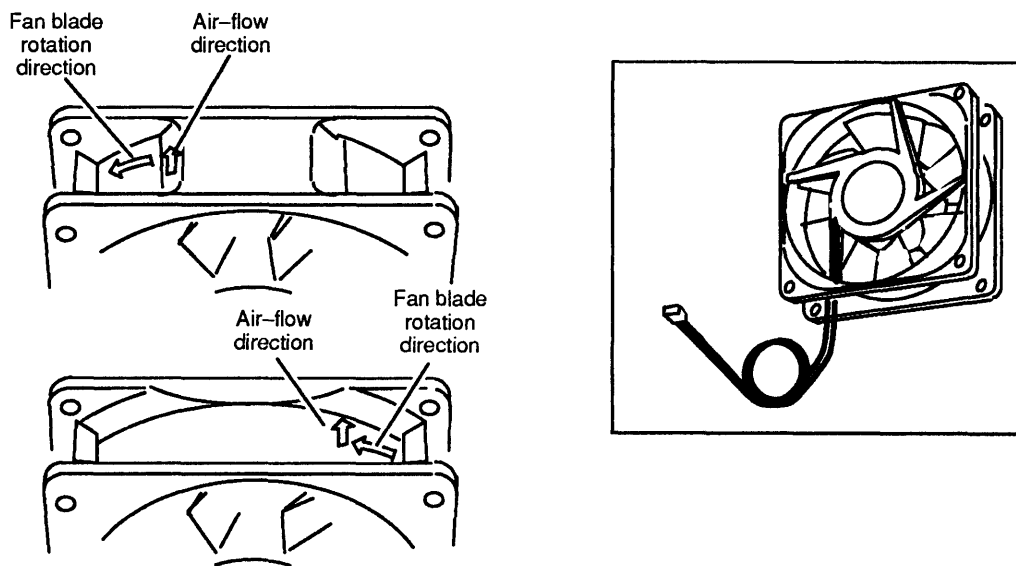


Figure 4–10 Locating the Fan's Air-Flow Direction

4. Position the replacement fan in the tray assembly so that the fan cable is located in the lower left corner and the air-flow direction arrow points toward the back of the tray assembly. Refer to Figure 4–11.

CAUTION: *If the fan's air flow direction is incorrect, your system could overheat, causing damage to the system's components.*

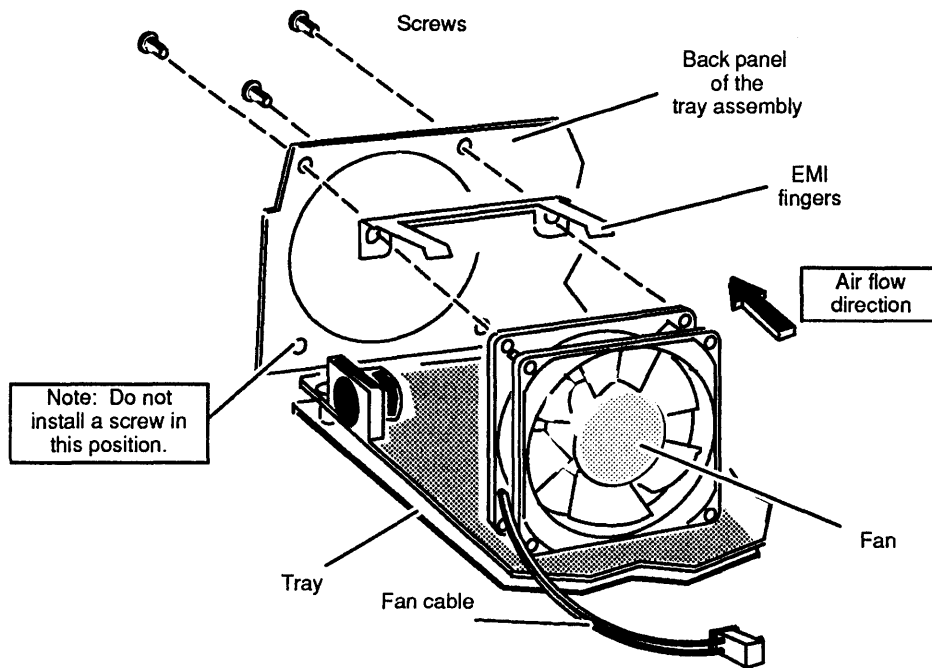


Figure 4-11 Installing the Fan

5. Position the EMI fingers between the fan and tray assembly's back panel, as shown in Figure 4-11.
6. Insert and tighten the three screws (shown in Figure 4-11) that attach the fan and EMI fingers to the back panel of the tray assembly.
7. Connect the fan cable to the power supply, as shown in Figure 4-12.

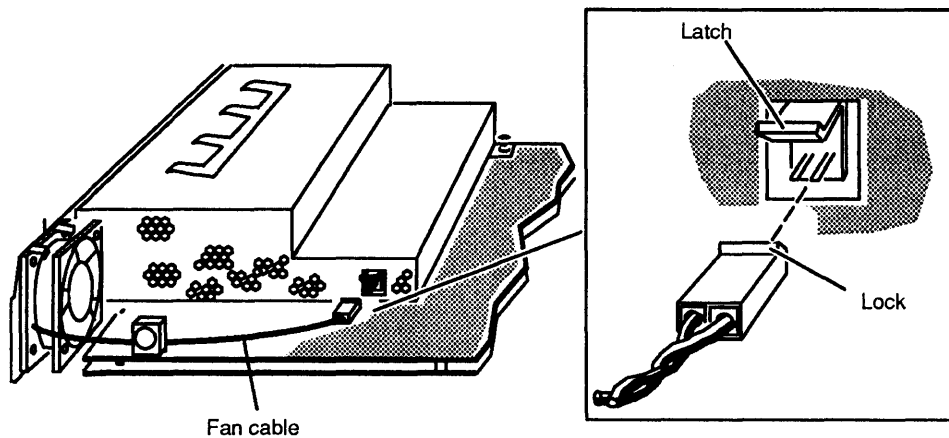


Figure 4-12 Connecting the Fan Cable

8. If you are not replacing any other CRUs, reinstall the tray assembly in the housing as described in the section "Closing the Computer Unit" at the end of this chapter.

Replacing the Speaker Assembly

This section explains how to remove and install a speaker assembly. Figure 4–13 shows the location of the speaker assembly on the tray assembly.

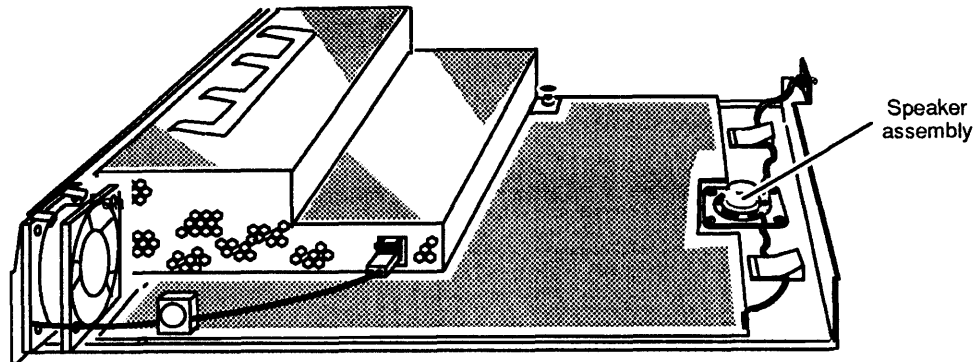


Figure 4–13 Location of the Speaker Assembly

Removing the Speaker Assembly

Follow the steps in this section to remove the speaker assembly. You will need a small flat-blade screwdriver, and either a 5 mm nut driver or a 5 mm open-end hex wrench.

1. Open the computer unit and attach the ESD clip and wrist strap as described in the section “Opening the Computer Unit.”

CAUTION: Do not touch any electronic components or circuits on the tray assembly or on the CRUs until you put on the ESD wrist strap and connect it to the tray assembly.

2. Disconnect the cable assembly from the printed-circuit board, as shown in Figure 4–14.

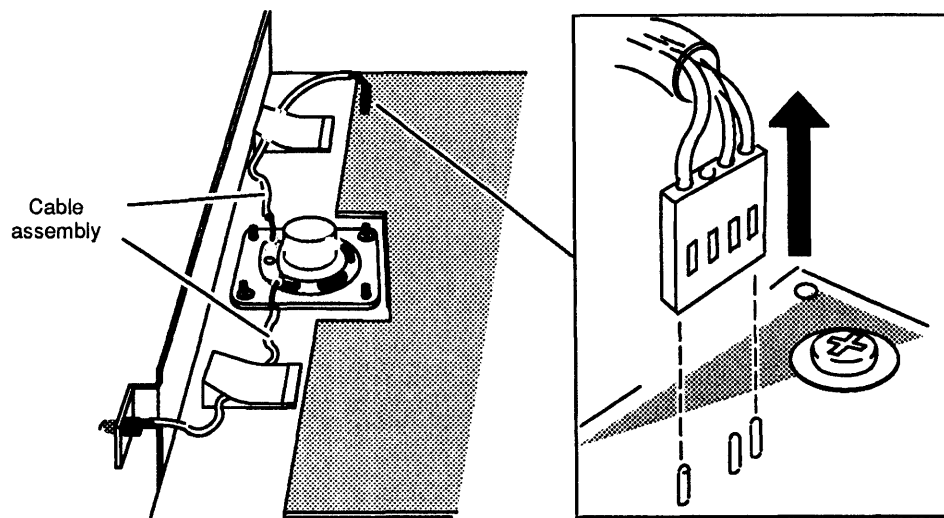


Figure 4–14 Disconnecting the Cable Assembly from the Printed-Circuit Board

3. Release the cable assembly from the two cable clips shown in Figure 4–15.

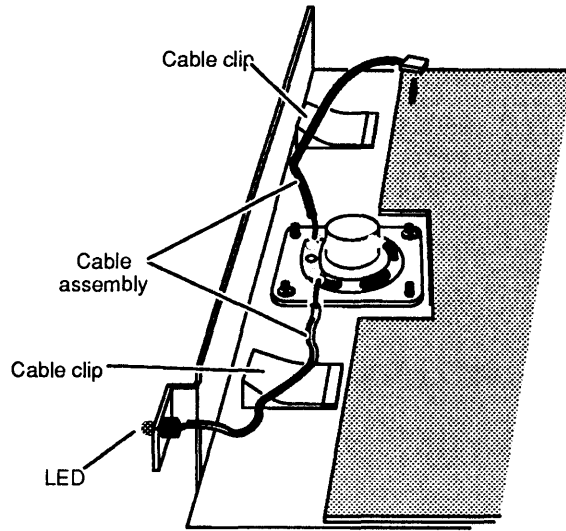


Figure 4–15 Disconnecting the Cable Assembly from the Two Cable Clips

4. Release the light emitting diode (LED) from the tray assembly. To release the light emitting diode (LED), use a small flat-blade screwdriver to pry the LED ring from the LED clip. Then slide the LED ring onto the cable, as shown in Figure 4–16. The LED clip should remain attached to the tray assembly.

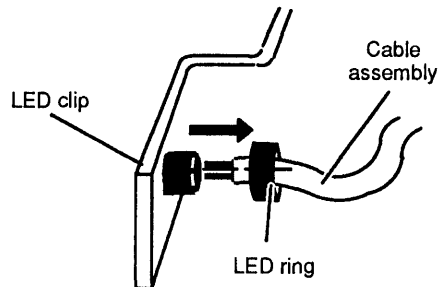


Figure 4–16 Prying Off the LED Ring

5. With your thumb, push the LED through the hole in the tray assembly and through the LED clip, as shown in Figure 4–17.

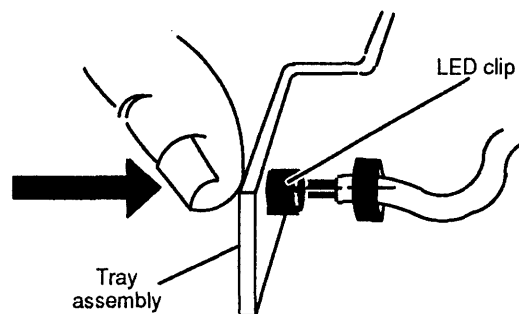


Figure 4–17 Removing the LED End of the Cable Assembly

- Remove the LED ring from the cable assembly, as shown in Figure 4–18. Save the ring to install on the cable assembly of the replacement speaker assembly.

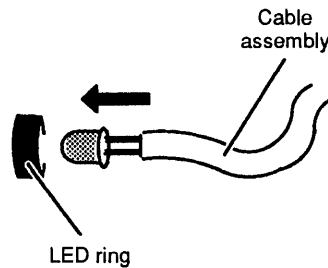


Figure 4–18 Removing the LED Ring

- Using a 5 mm nut driver or open-end wrench, remove the two hex nuts that secure the speaker to the tray assembly and lift up the speaker assembly. Save the washers and hex nuts to install on the replacement speaker assembly. Refer to Figure 4–19.

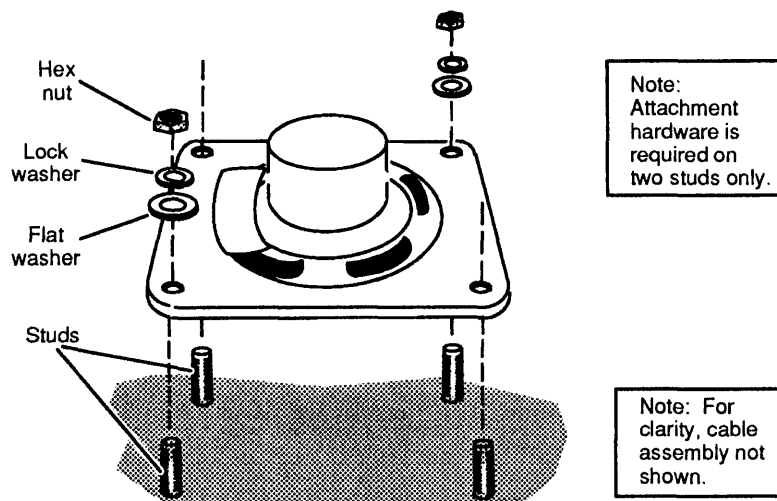


Figure 4–19 Removing the Speaker from the Tray Assembly

Install the speaker assembly following the procedures in the next section, “Installing the Speaker Assembly.”

Installing the Speaker Assembly

Follow the steps in this section to install the speaker assembly in the tray assembly. You will need a small flat-blade screwdriver, and either a 5 mm nut driver or a 5 mm open-end wrench.

- Open the computer unit and attach the ESD clip and wrist strap as described in the section “Opening the Computer Unit.”

CAUTION: Do not touch any electronic components or circuits on the tray assembly or on the CRUs until you put on the ESD wrist strap and connect it to the tray assembly.

2. Place the speaker on the four studs, as shown in Figure 4-20.

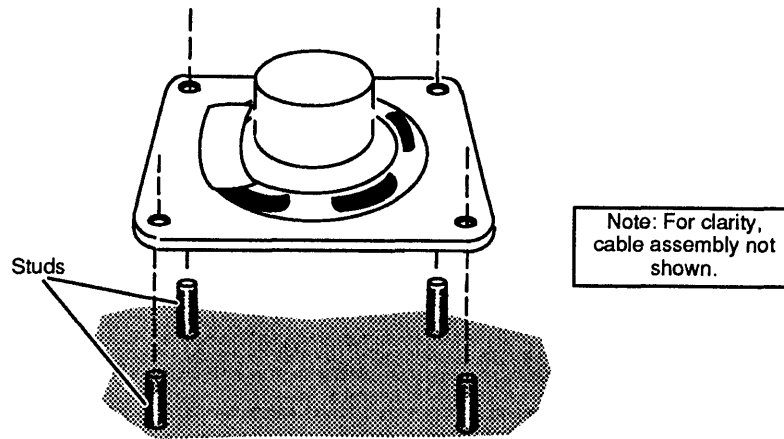


Figure 4-20 Placing the Speaker on the Tray Assembly

3. Place two washers and a hex nut on two of the studs that are diagonally opposite each other. Using a 5 mm nut driver or open-end hex wrench, tighten the hex nuts on each stud to secure the speaker to the tray assembly. Refer to Figure 4-21.

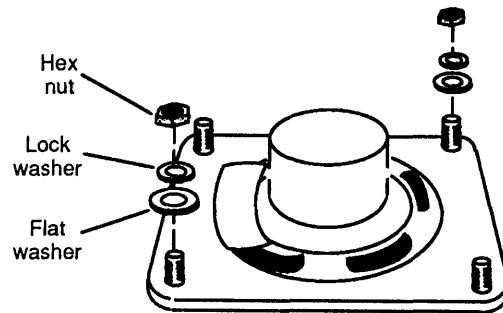


Figure 4-21 Securing the Speaker to the Tray Assembly

4. Connect the cable assembly to the printed-circuit board, as shown in Figure 4-22.

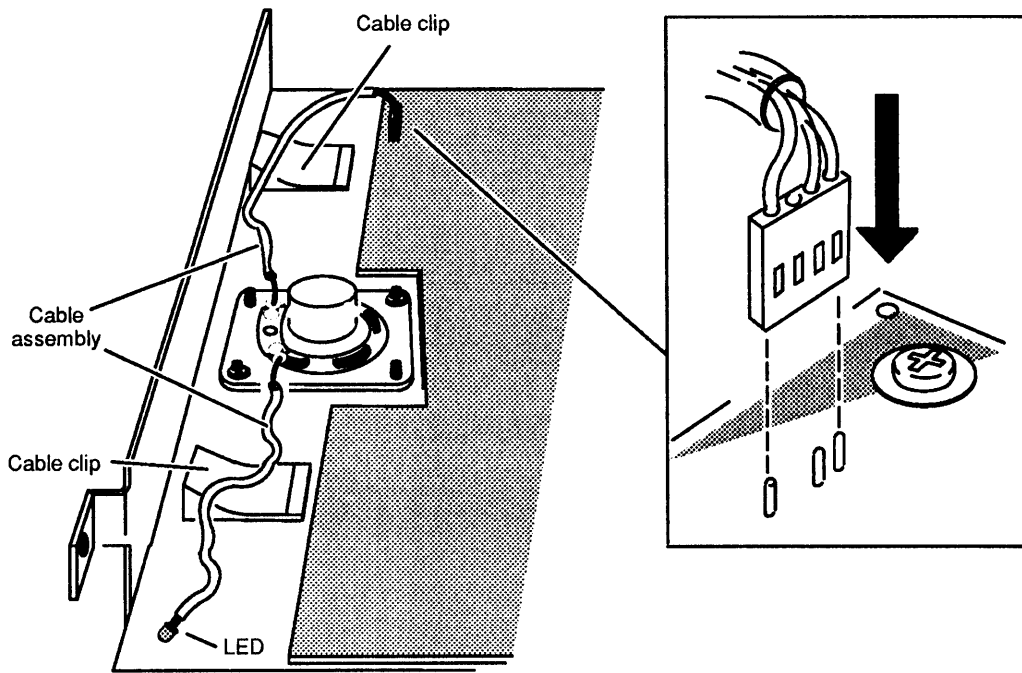


Figure 4-22 Connecting the Cable Assembly to the Printed-Circuit Board

5. Connect the cable assembly to the tray assembly with the two cable clips, as shown in Figure 4-23.

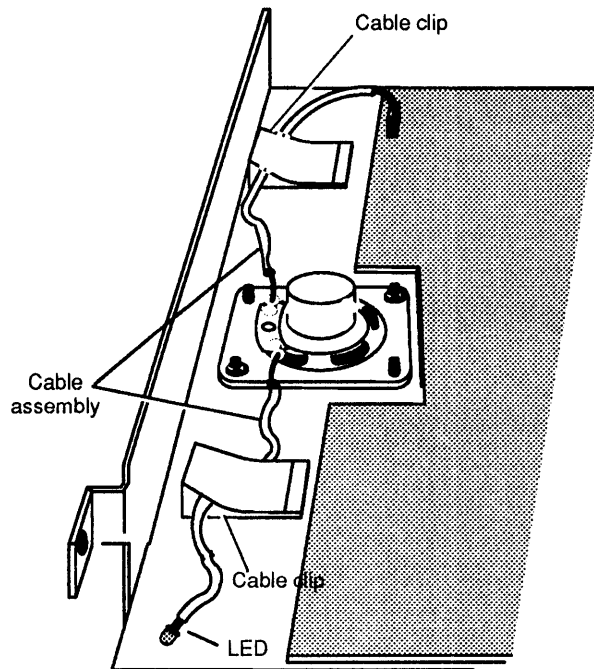


Figure 4-23 Connecting the Cable Assembly with the Two Cable Clips

6. Slide the LED ring over the LED end of the cable assembly, as shown in Figure 4-24.

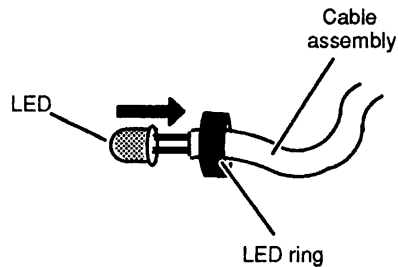


Figure 4-24 Sliding the LED Ring over the Cable Assembly

7. Insert the LED end of the cable assembly through the LED clip and the hole in the tray assembly, as shown in Figure 4-25.

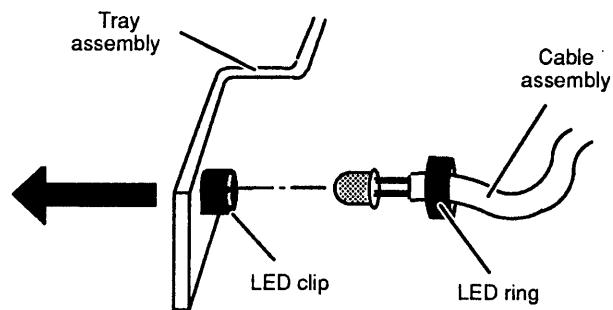


Figure 4-25 Inserting the LED End of the Cable Assembly

8. While holding the LED end of the cable assembly and the LED clip in position, slide the LED ring over the LED clip to secure it to the tray assembly, as shown in Figure 4-26.

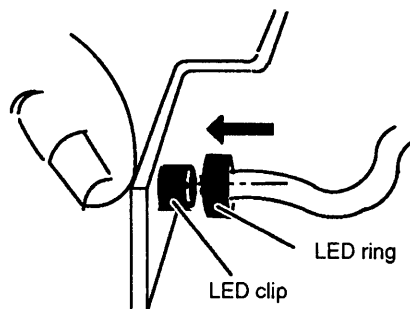


Figure 4-26 Sliding the LED Ring Over the LED Clip

9. If you are not replacing any other CRUs, reinstall the tray assembly in the housing as described in the section “Closing the Computer Unit” at the end of this chapter.

Replacing the Power Supply

This section explains how to remove and install the computer unit's power supply.

WARNING: The inside of the power supply contains high voltage that is often present even after the supply is disconnected from the ac power source. Never remove the cover of the power supply or attempt to service the power supply.

Removing the Power Supply

Follow the steps in this section to remove the power supply.

1. Open the computer unit and attach the ESD clip and wrist strap as described in the section "Opening the Computer Unit."

CAUTION: Do not touch any electronic components or circuits on the tray assembly or on the CRUs until you put on the ESD wrist strap and connect it to the tray assembly.

2. Lift up the tab on the fan connector and pull out the fan cable, as shown in Figure 4-27.

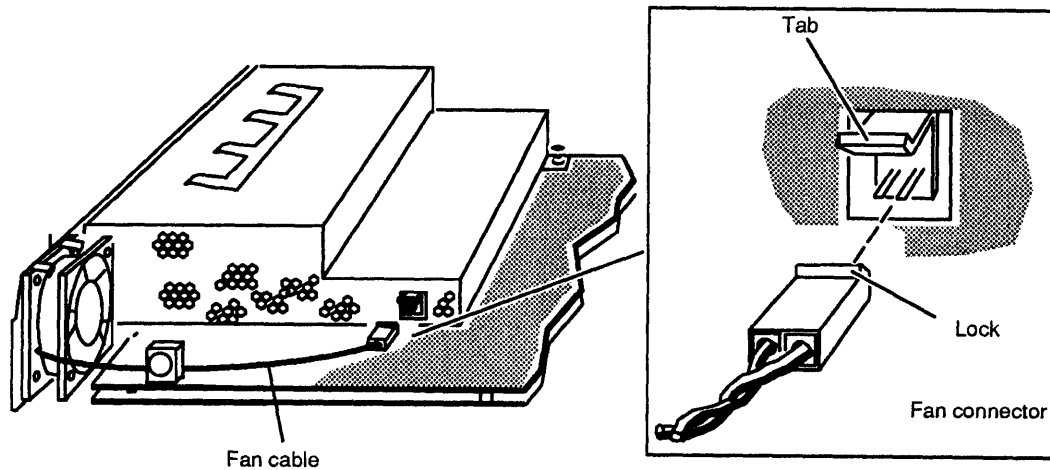


Figure 4-27 Disconnecting the Fan Cable

3. Release the power supply lock by gently pulling it up, as shown in Figure 4-28.

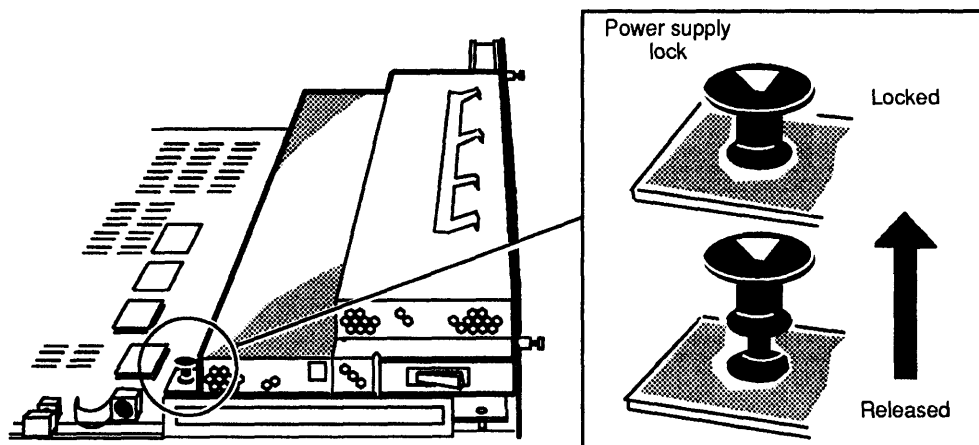


Figure 4-28 Releasing the Power Supply Lock

4. Lift the power supply up and out of the tray assembly, as shown in Figure 4-29.

The power supply hangs on two hooks on the back of the tray assembly. Its underside also attaches securely into a connector on the printed-circuit board. When you lift the power supply up, you disengage it from both the hooks and the connector at the same time.

Follow the steps in the next section to install the power supply.

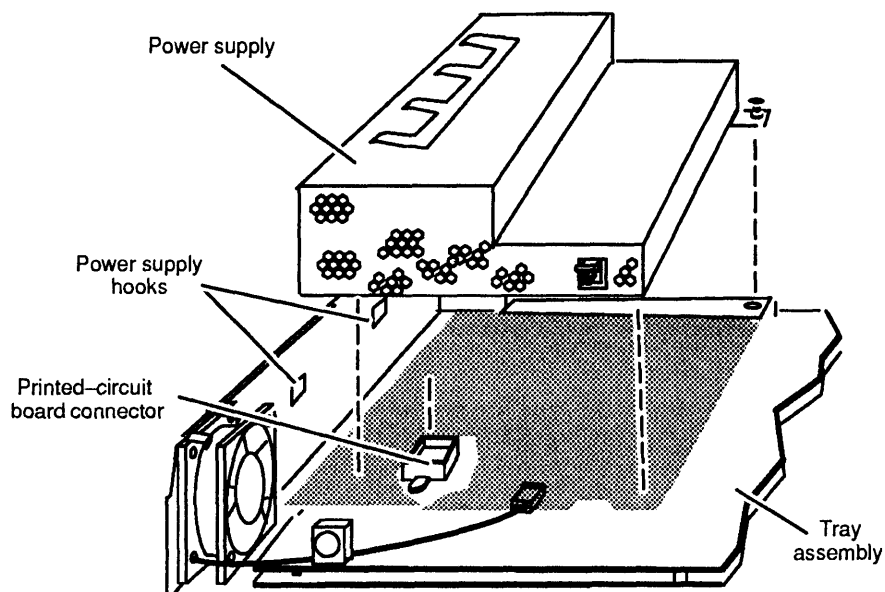


Figure 4-29 Removing the Power Supply

Installing the Power Supply

Follow the steps in this section to install the power supply in the tray assembly.

1. Open the computer unit and attach the ESD clip and wrist strap as described in the section “Opening the Computer Unit.”

CAUTION: *Do not touch any electronic components or circuits on the tray assembly or on the CRUs until you put on the ESD wrist strap and connect it to the tray assembly.*

2. Make sure the power supply is set to the proper ac line voltage for your site. If the installation site has 100 or 120 V ac power, the voltage-selection switch must be in the “115V” position, as shown in Figure 4-30 (A). If the site has 220 or 240 V ac line voltage, the voltage-selection switch must be in the “230V” position, as shown in Figure 4-30 (B).

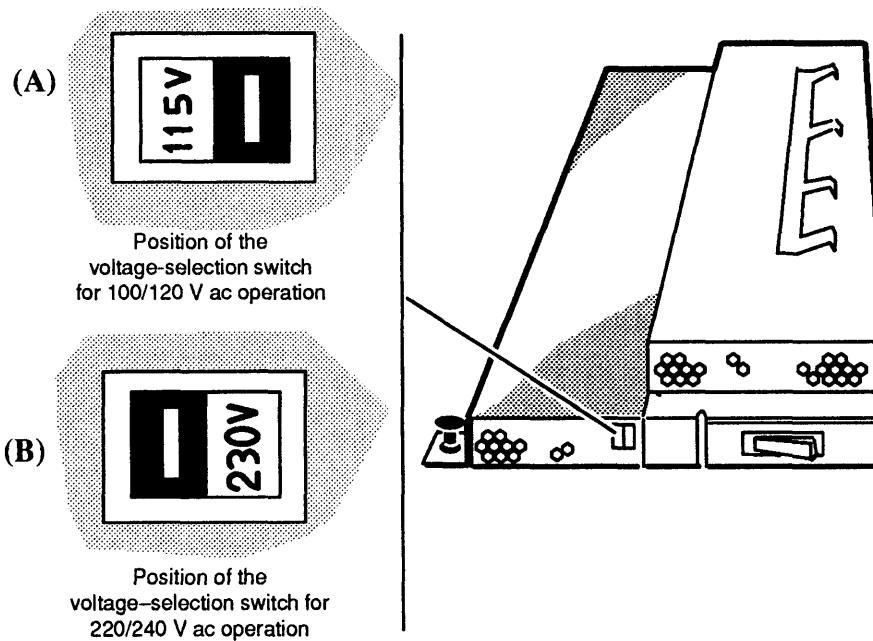


Figure 4-30 Verifying the Correct Voltage Selection Switch Position

CAUTION: *An improper setting of the voltage-selection switch can cause equipment damage. If you are unsure of your installation site’s line voltage, consult a qualified electrician.*

3. Hang the power supply on the two hooks on the inside of the tray assembly's back panel, as shown in Figure 4-31.

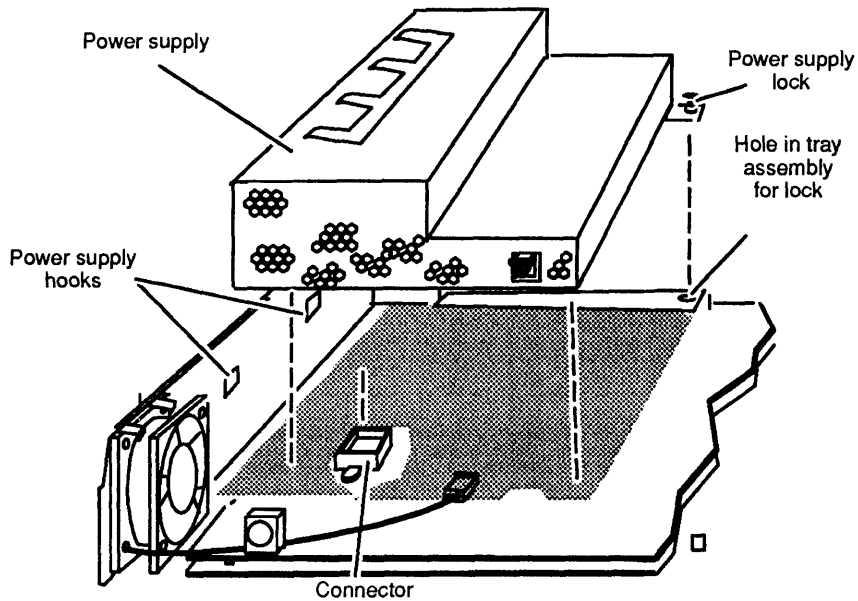


Figure 4-31 Installing the Power Supply

4. Loosely align the power supply lock with the hole beneath it in the tray assembly, as shown in Figure 4-31.
5. Gently lower the power supply onto the printed-circuit board, making sure that the connector on the underside of the power supply fits securely into the connector located on the printed-circuit board. Press down on the power supply to firmly seat it.
6. Press down on the power supply lock to secure the power supply to the tray assembly, as shown in Figure 4-32.

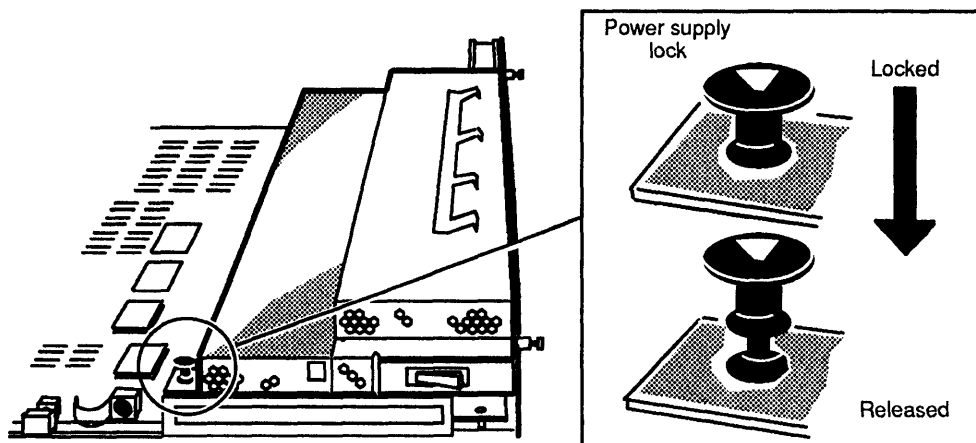


Figure 4-32 Securing the Power Supply to the Tray Assembly

7. Connect the fan cable to the power supply, as shown in Figure 4-33.

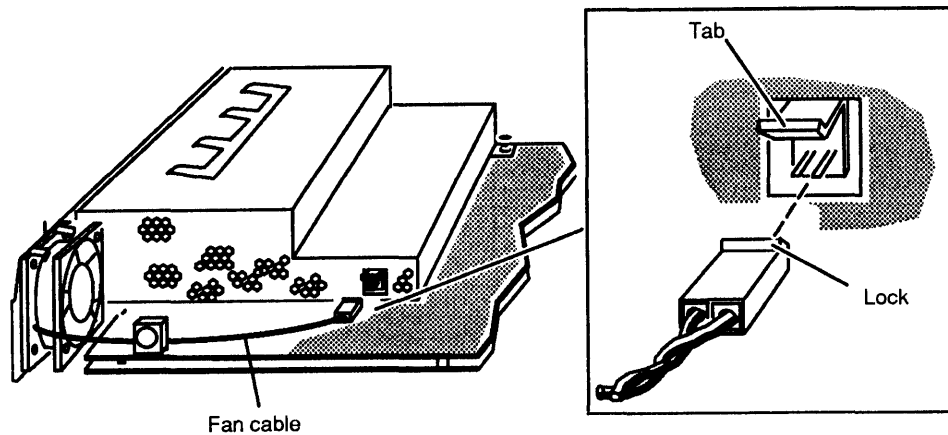


Figure 4-33 Connecting the Fan Cable

8. If you are not replacing any other CRUs, reinstall the tray assembly in the housing as described in the section “Closing the Computer Unit” at the end of this chapter.

Replacing the SCSI Bus Fuse

This section explains how to remove and install the SCSI bus fuse. You will need a small flat-blade screwdriver and a replacement 2 A, 125 V Pico (SCSI bus) fuse.

1. Open the computer unit and attach the ESD clip and wrist strap as described in the section “Opening the Computer Unit.”

CAUTION: Do not touch any electronic components or circuits on the tray assembly or on the CRUs until you put on the ESD wrist strap and connect it to the tray assembly.

2. Remove the power supply from the tray assembly as described in the section “Removing the Power Supply.”
3. With the power supply removed, gently pry the SCSI bus from its socket on the printed-circuit board with the small flat-blade screwdriver until you can remove the fuse with your fingers. The location of the fuse is shown in Figure 4-34 .

4. Align the leads of the replacement 2 A, 125 V Pico (SCSI bus) fuse with the holes in the socket, as shown in Figure 4-34. Press the fuse into the socket until it is firmly seated.

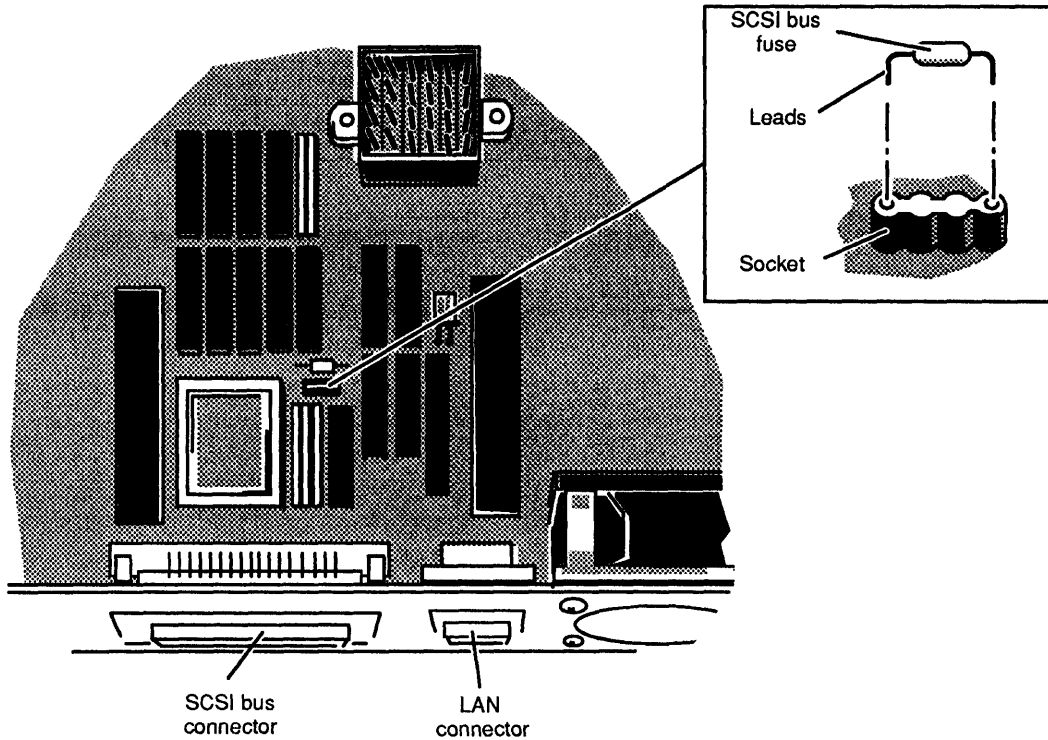


Figure 4-34 Removing or Installing the SCSI Bus Fuse

5. Replace the power supply as described in the section “Installing the Power Supply.”
6. If you are not replacing any other CRUs, reinstall the tray assembly in the housing as described in the section “Closing the Computer Unit” at the end of this chapter.

Adding or Replacing Memory Modules

Your workstation's system board has seven memory module connectors, as shown in Figure 4-35a. You can install 4-Mbyte memory modules and 16-Mbyte memory modules in these connectors, either separately or in combinations. Figure 4-35b shows the 4-Mbyte and the 16-Mbyte memory modules. You install both types of modules in these connectors in the same way.

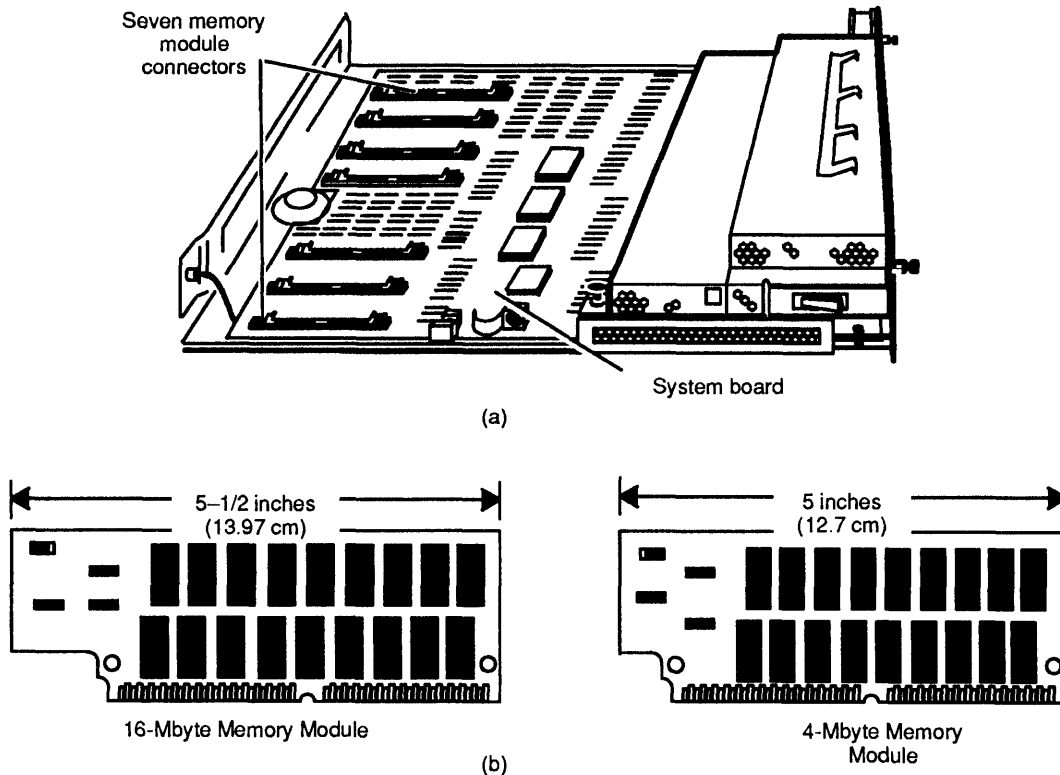


Figure 4-35 (a) Memory Module Connectors on the System Board
(b) 16-Mbyte and 4-Mbyte Memory Modules

The next sections lists general rules for installing and removing memory modules and several configuration exceptions to these rules. Read these sections before you add memory modules to your workstation. The "Memory Configuration Change" section of Chapter 3 describes how your system power-up sequence will look the first time you start the workstation after adding or changing your memory configuration. The "Viewing the Memory Configuration" section of Chapter 5 describes how to view your memory configuration (how many Mbytes are installed in each module connector and the top of memory address) from the System Control Monitor (SCM).

Rules and Configuration Exceptions for Removing and Installing Memory Modules

When you remove or install memory modules follow these general rules.

- Install memory modules beginning with connector number 0. Figure 4–36 shows the connector numbering for the memory modules.
- Install memory modules contiguously: never leave an empty connector between memory modules.
- To make it possible to remove or install a memory module from a connector, temporarily remove any memory modules installed to the right of the connector as you face the front of the tray assembly, as shown in Figure 4–36.
- If your workstation does not operate properly after you install a 16-Mbyte memory module, contact Data General as described in the Preface.

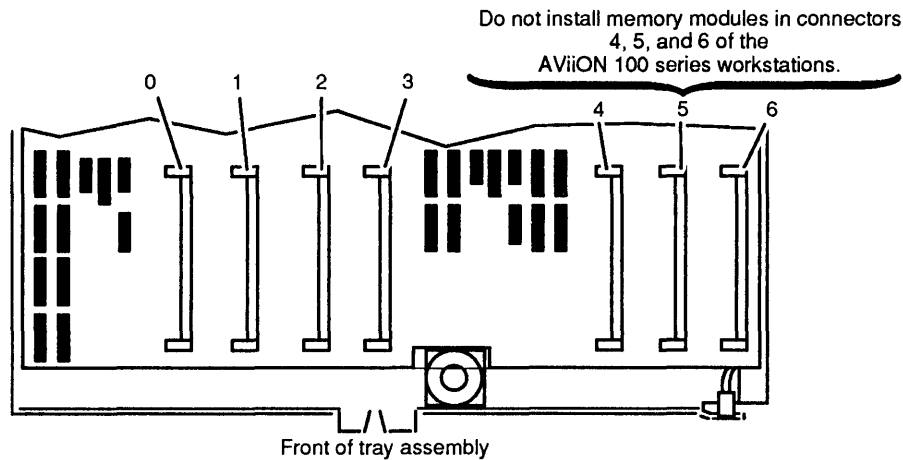


Figure 4–36 Memory Module Connector Numbering Scheme

You can install the 16-Mbyte and 4-Mbyte memory modules in any combination, with the following exceptions:

For all AViiON desktop workstations *except AViiON 100 series*—

- You must install all 16-Mbyte modules *first* (in the lower-numbered slots) when installing a mix of 4-Mbyte and 16-Mbyte modules.
- Do not install the following memory module combinations in the same workstation: *four* 16-Mbyte memory modules with *two* or *three* 4-Mbyte memory modules.
- If you install 68 Mbytes or 100 Mbytes, you need revision 9.02 or greater of PROMfirmware.

Refer to Table 4–1 for valid configurations.

For AViiON 100 series workstations— Do not install more than 16-Mbytes of memory in an AViiON 100 series workstation. Refer to Table 4–2 for valid combinations.

Table 4–1 shows valid configurations for *all except AViiON 100 series*. Figure 4–36 shows the corresponding connector numbers.

Table 4–1 Valid Memory Configurations (except AVIIION 100)

Connector Number							Total Mbytes Memory
0	1	2	3	4	5	6	
4 Mb	4 Mb						8
4 Mb	4 Mb	4 Mb					12
4 Mb	4 Mb	4 Mb	4 Mb				16
16 Mb							16
16 Mb	4 Mb						20
4 Mb	4 Mb	4 Mb	4 Mb	4 Mb			20
4 Mb	4 Mb	4 Mb	4 Mb	4 Mb	4 Mb		24
16 Mb	4 Mb	4 Mb					24
16 Mb	4 Mb	4 Mb	4 Mb				28
4 Mb	4 Mb	4 Mb	4 Mb	4 Mb	4 Mb	4 Mb	28
16 Mb	4 Mb	4 Mb	4 Mb	4 Mb			32
16 Mb	16 Mb						32
16 Mb	4 Mb	4 Mb	4 Mb	4 Mb	4 Mb		36
16 Mb	16 Mb	4 Mb					36
16 Mb	4 Mb	4 Mb	4 Mb	4 Mb	4 Mb	4 Mb	40
16 Mb	16 Mb	4 Mb	4 Mb				40
16 Mb	16 Mb	4 Mb	4 Mb	4 Mb			44
16 Mb	16 Mb	4 Mb	4 Mb	4 Mb	4 Mb		48
16 Mb	16 Mb	16 Mb					48
16 Mb	16 Mb	4 Mb	4 Mb	4 Mb	4 Mb	4 Mb	52
16 Mb	16 Mb	16 Mb	4 Mb				52
16 Mb	16 Mb	16 Mb	4 Mb	4 Mb			56
16 Mb	16 Mb	16 Mb	4 Mb	4 Mb	4 Mb		60
16 Mb	16 Mb	16 Mb	4 Mb	4 Mb	4 Mb	4 Mb	64
16 Mb	16 Mb	16 Mb	16 Mb				64
16 Mb	16 Mb	16 Mb	16 Mb	4 Mb			68 *
16 Mb	16 Mb	16 Mb	16 Mb	16 Mb			80
16 Mb	16 Mb	16 Mb	16 Mb	16 Mb	4 Mb		84
16 Mb	16 Mb	16 Mb	16 Mb	16 Mb	4 Mb	4 Mb	88
16 Mb	16 Mb	16 Mb	16 Mb	16 Mb	16 Mb		96
16 Mb	16 Mb	16 Mb	16 Mb	16 Mb	16 Mb	4 Mb	100 *
16 Mb	16 Mb	16 Mb	16 Mb	16 Mb	16 Mb	16 Mb	112

* Requires PROM firmware revision 9.02 or greater

Table 4–2 shows valid memory configurations for the AViiON 100 workstation. Figure 4–36 shows the four connectors that you must use.

Table 4–2 Valid AViiON 100 Memory Configurations

Connector Number							Total Mbytes Memory
0	1	2	3	4	5	6	
4 Mb	4 Mb						8
4 Mb	4 Mb	4 Mb					12
4 Mb	4 Mb	4 Mb	4 Mb				16

NOTE: The AViiON 100 series workstation was designed to use 4–Mbyte memory modules. You may use 16–Mbyte modules, but the system will recognize and use only 4–Mbytes of memory for each module installed.

The next sections explain how to remove a memory module and how to install a memory module. To remove a memory module, follow the steps in the “Removing Memory Modules” section. To install a memory module, follow the steps in the “Installing Memory Modules” section.

Removing Memory Modules

Follow these steps to remove a memory module from the system board. You will need a nonmagnetic, medium flat-blade screwdriver or similar nonconductive tool.

1. Open the computer unit and attach the ESD clip and wrist strap as described in the “Opening the Computer Unit” section of Chapter 1.
2. Locate the connector in which you will install the memory module(s). Refer to Figure 4–36 for the connector numbering scheme.
3. Temporarily remove any memory modules installed to the right of the connector as you face the front of the tray assembly. To do this, gently push each locking tab on the memory module connector sideways with your finger; push away from the memory module, as shown in Figure 4–37. The memory module will spring up slightly, indicating that the module is released.

CAUTION: When you push sideways on the locking tabs, push gently, and use only enough force to release the memory module. If you push too hard, you may break a locking tab. With the locking tab broken, it will be impossible to reinstall the memory module tightly enough so that the memory module will work reliably.

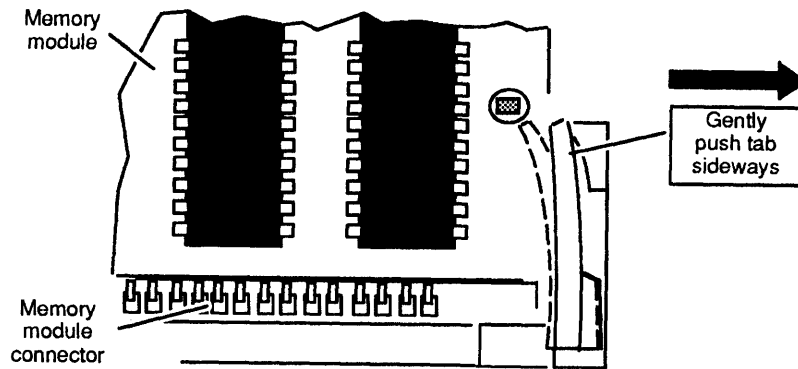


Figure 4-37 Releasing the Memory Module Locking Tabs

4. With the locking tabs released, raise the memory module to about a 20° angle from the perpendicular, as shown in Figure 4-38. Then *gently* wiggle the module from its connector.

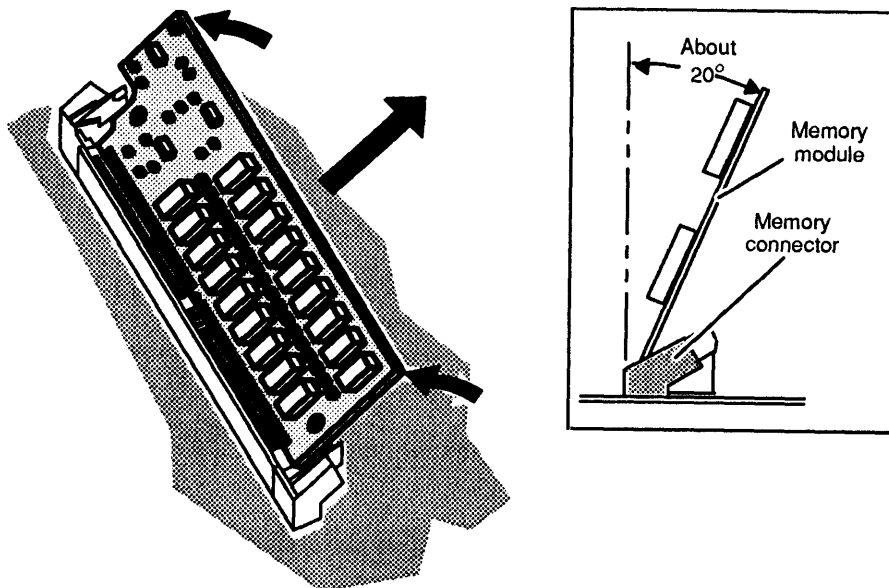


Figure 4-38 Removing a Memory Module

Install the replacement or add-on memory modules following the procedures in the next section, "Installing Memory Modules."

Installing Memory Modules

When you install or add memory modules, begin by installing the leftmost memory modules first. Make sure you have read the section “Adding or Replacing Memory Modules” for important configuration information. Refer to Figure 4–36; it shows the numbering scheme for the memory module connectors. If there are any modules to the right of the one you want to install, remove these modules first. After you remove the necessary memory module(s), install the memory module in its connector following the procedures in this section.

1. Open the computer unit and attach the ESD clip and wrist strap as described in the section “Opening the Computer Unit.”

CAUTION: Do not touch any electronic components or circuits on the tray assembly or on the CRUs until you put on the ESD wrist strap and connect it to the tray assembly.

2. Carefully remove the memory module from its packaging. Save the antistatic shipping bag and packing materials to use if you have to return the memory module.

CAUTION: If you need to set the memory module down, put it back inside the antistatic shipping bag.

3. Position the memory module vertically on top of the memory module connector, as shown in Figure 4–39.

CAUTION: Never force the memory module into the connector.

4. While applying pressure to its top edge, start tilting the module, as shown in Figure 4–39. You will feel the memory module go into the connector, and the module will stand up by itself.

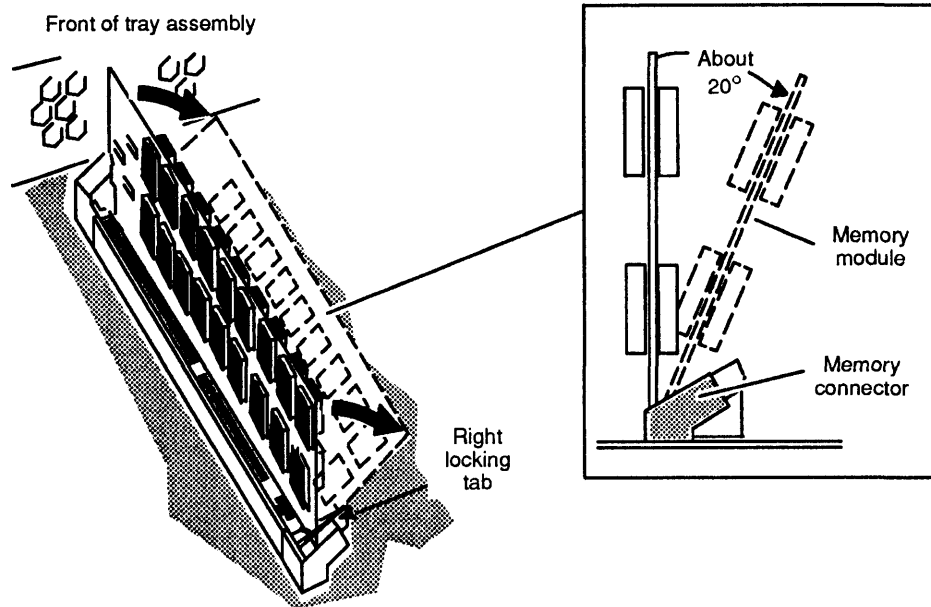


Figure 4-39 Installing the Memory Module in the Connector

5. With the memory module plugged into the connector, *gently* push on the right top edge of the module while maintaining pressure on the left top edge.

CAUTION: *Never force the memory module into the connector or against the locking tabs.*

As you push on the memory module, the right locking tab will bend away from the edge of the memory module, then ride up on the front edge of the module, locking the right side of the memory module tightly in place, as shown in Figure 4-40. You will hear a click indicating that the locking tab is latched.

6. Once the right side of the memory module is latched, push on the left side of the memory module. You will hear a click indicating that the left locking tab is latched.

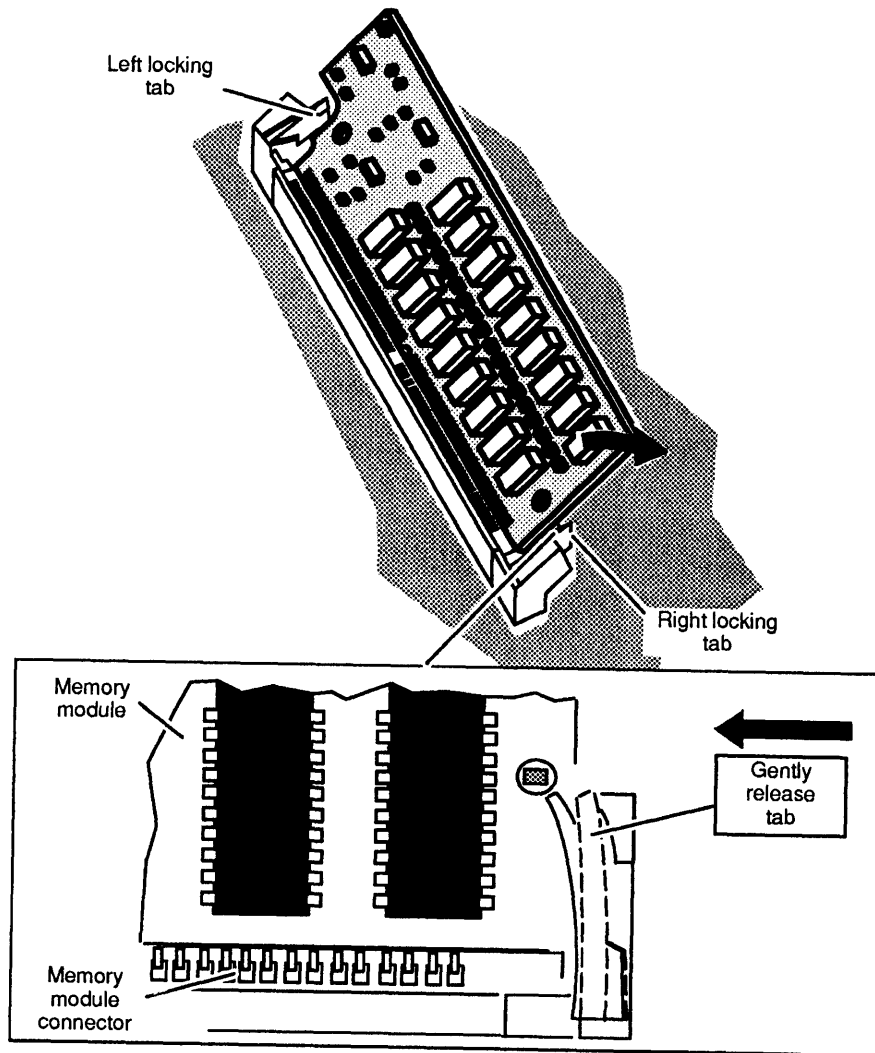


Figure 4-40 Latching the Memory Module Locking Tabs

7. Repeat steps 2. through 6. to install or reinstall any remaining memory module(s).
8. If you are not replacing any other CRUs, reinstall the tray assembly in the housing as described in the section "Closing the Computer Unit" at the end of this Chapter.

Replacing the System Board Assembly

This section explains how to remove and install a system board assembly. Figure 4-41 shows the system board assembly. It consists of the metal tray, the printed-circuit board, and the fan assembly. The system board assembly does not include the power supply, PROM, or memory modules.

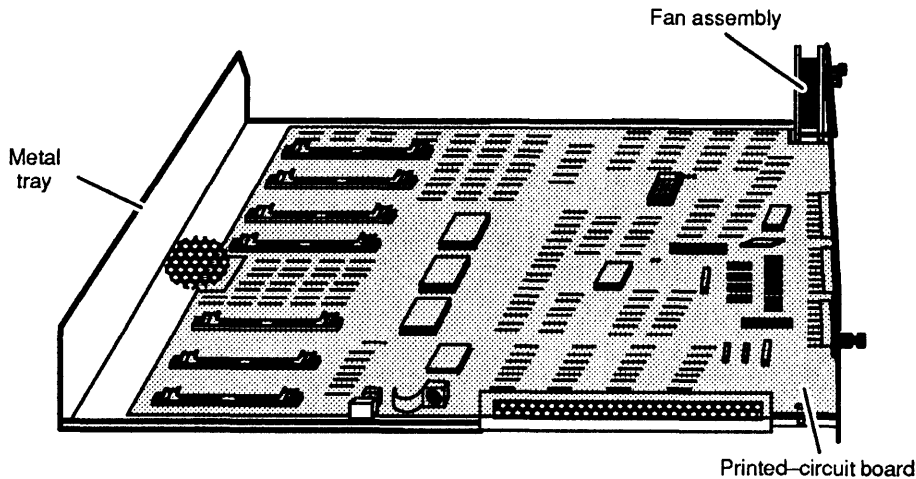


Figure 4-41 System Board Assembly

NOTE: Do not remove the printed-circuit board from the system board assembly. Replace the entire system board assembly.

Removing the System Board Assembly

To remove the system board assembly, follow the steps in this section. You will need a nonmagnetic, medium flat-blade screwdriver or similar nonconductive tool.

1. Open the computer unit and attach the ESD clip and wrist strap as described in the section "Opening the Computer Unit."

CAUTION: Do not touch any electronic components or circuits on the tray assembly or on the CRUs until you put on the ESD wrist strap and connect it to the tray assembly.

2. Disconnect the fan cable from the power supply by lifting the tab on the power supply and pulling out the fan cable, as shown in Figure 4-42.

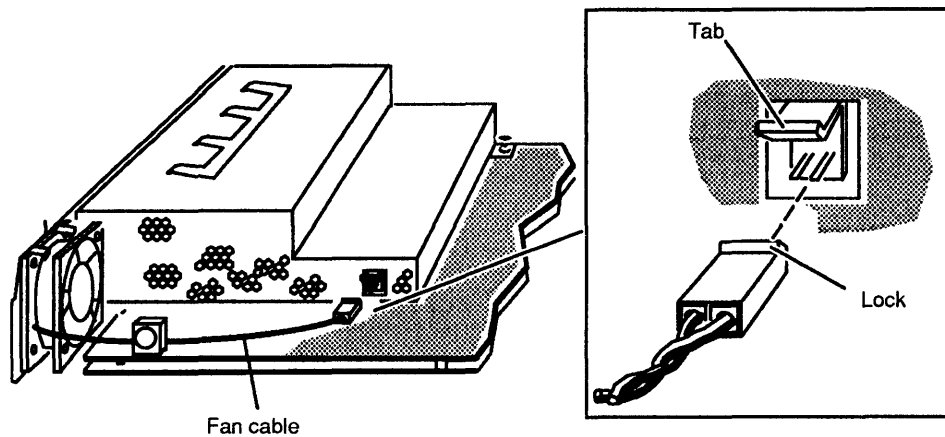


Figure 4-42 Disconnecting the Fan Cable

3. Release the power supply lock by gently pulling it up, as shown in Figure 4-43.

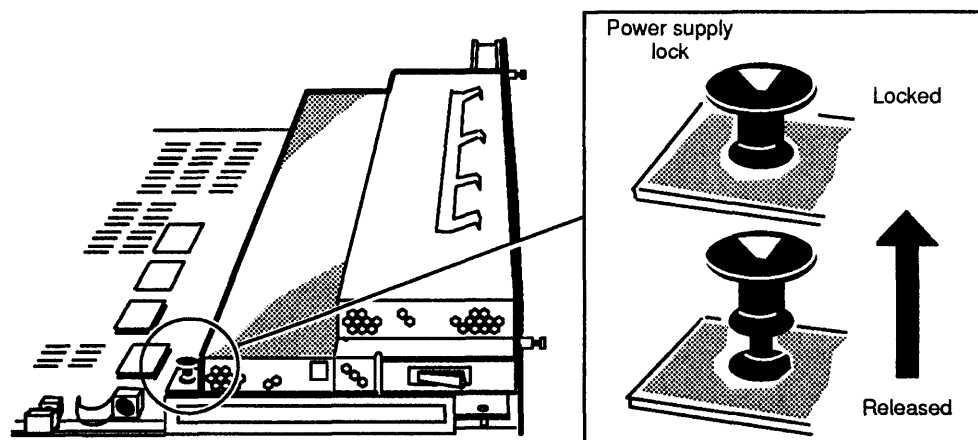


Figure 4-43 Releasing the Power Supply Lock

4. Lift the power supply up and out of the tray assembly, as shown in Figure 4-44.

The power supply hangs on two hooks on the back of the tray assembly. Its underside also attaches securely into a connector on the printed-circuit board. When you lift the power supply up, you disengage it from both hooks and the connector at the same time.

7. Insert a flat-blade screwdriver between the PROM component and its socket. *Gently* twist the screwdriver to pry the PROM component away from its socket, as shown in Figure 4-46. Repeat this procedure on each end of the component until you can remove the PROM component with your fingers.

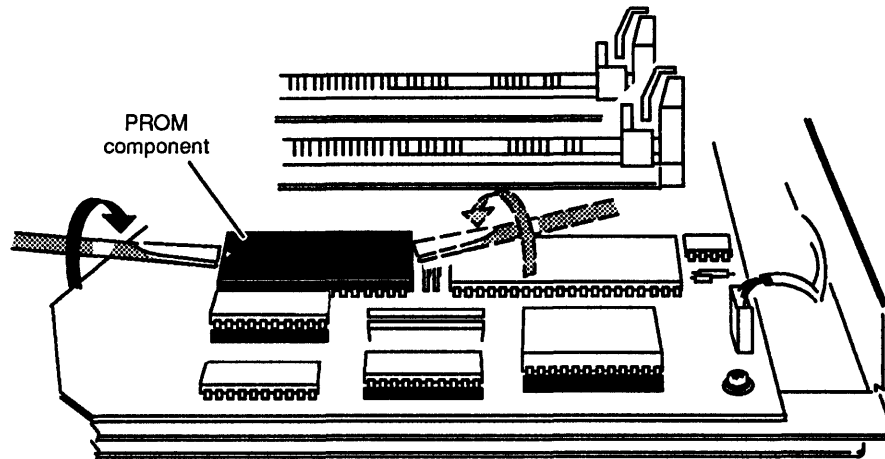


Figure 4-46 Removing the PROM Component

8. Lift the PROM component out of its socket, put it in an antistatic bag, and set it aside for later installation on the replacement system board assembly.

CAUTION: *To run applications software, you must install this original PROM on the replacement system board assembly.*

If you install a new PROM, you change the system ID number. To run some applications software, you must contact the licensing software vendor to register the new system ID number.

9. Remove the ESD clip from the system board assembly, and take off the ESD wrist strap. Store the wrist strap in a safe place for future use.

Install the replacement system board assembly following the procedures in the next section, "Installing the System Board Assembly."

Installing the System Board Assembly

To install the replacement system board assembly, follow the steps in this section. You will need a medium flat-blade screwdriver.

1. Open the computer unit and attach the ESD clip and wrist strap as described in the section "Opening the Computer Unit."

CAUTION: *Do not touch any electronic components or circuits on the tray assembly or on the CRUs until you put on the ESD wrist strap and connect it to the tray assembly.*

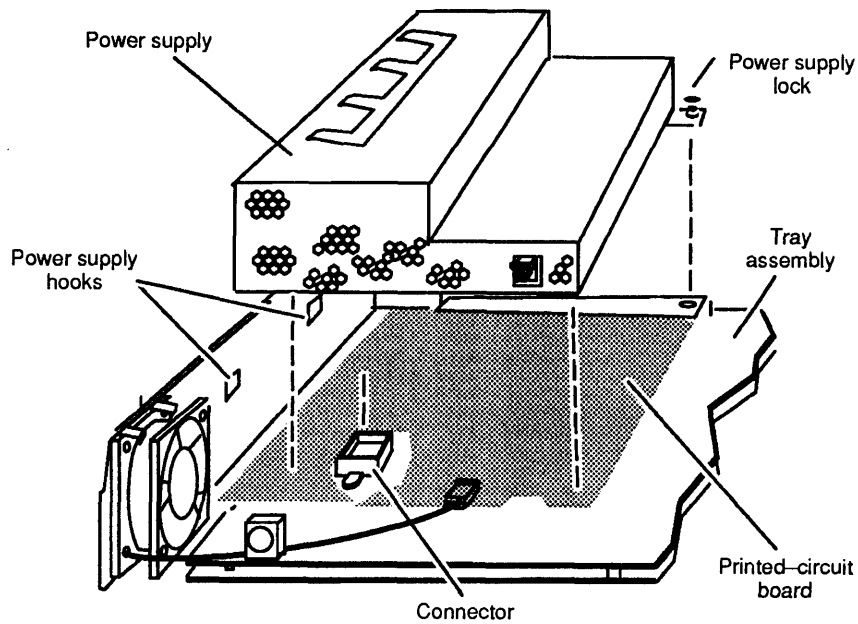


Figure 4-44 Removing the Power Supply

5. Remove all of the memory modules by following the procedures described in the section, "Removing Memory Modules".
6. Locate the PROM component on the system board assembly. Figure 4-45 shows its location.

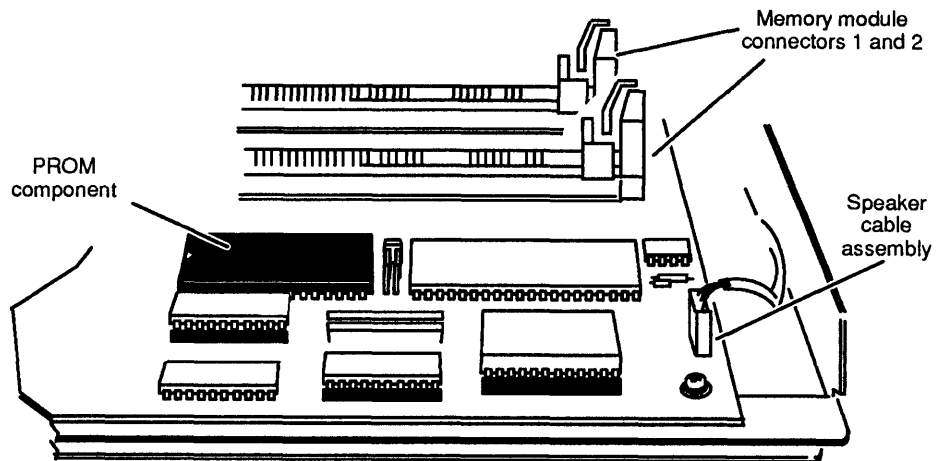


Figure 4-45 Location of the PROM Component on the System Board