

Installing Model 20 and 30  
Systems

## Warning

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for Class A computing devices pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.



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# ADDENDUM

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**042-000097-00**

This addendum updates manual 014-000904-03 to:

**014-000904-04**

Update your manual by removing pages and replacing with the change pages as follows:

**Remove**

Old Notice Page  
Preface, i,ii,iii,iv  
Old Contents  
1-7 through 1-12  
2-11 through 2-14  
4-31 and 4-32  
5-1 through 5-12  
6-1 through 6-10  
9-1 through 9-12  
10-1 and 10-2  
  
13-3 through 13-6  
13-9 and 13-10  
13-13 and 13-14  
13-17 and 13-18  
Old Index

**Replace with**

New Notice Page  
Preface i,ii,iii,iv  
New Contents  
1-7 through 1-12  
2-11 through 2-14  
4-31 and 4-32  
5-1 through 5-12  
6-1 through 6-10  
9-1 through 9-12  
10-1 and 10-2  
Add new Chapter 10A after Chapter 10  
13-3 through 13-6  
13-9 and 13-10  
13-13 and 13-14  
13-17 and 13-18  
New Index



014-000904-04

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# Addendum

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## 042-000101

Please note the following changes to this manual, *Installing Model 20 and 30 Systems* (DGC No. 014-000904-02). These changes update the manual to DGC No. 014-000904-03.

The first section is titled "Important Tips for Installation". This section should be read and inserted in front of all installation procedures. The information is in a gray box to distinguish it from other pages in the manual.

The next section contains the change pages, formatted so that you can insert them in place of current pages. A gray edge runs down one side of each change page.

The new "Notice" page provided with this addendum replaces the existing one in your manual.



014-000904-03

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## Important Tips for Installation ...

This section should be read and inserted in front of your installation manual.

### Useful reference pages

Before you install your system, mark the following pages. You may need to refer to these sheets several times during the installation procedures.

Adapter cable part numbers: 3-8

Device cable part numbers: 3-6

Card numbers: 13-3

Computer unit assembly illustration: 1-2 (modules only) or  
1-14 (complete system)

Configuration sheet: 1-15 to 1-17

Telephone assistance numbers: 1-18, 1-19

### Recommended installation procedure

1. Install and test the basic units as follows:
  - Install all the modules: the power supply and CPU logic modules, the logic expansion and disk modules, if present, the diskette module, and the disk expansion, second power supply and cartridge tape modules, if present. (See Chapter 4, "Installing Modules".)
  - Install the system console. (Depending on your order, see Chapter 5 or Chapter 6.)
  - Read the information on controls, handling diskettes, powering the system up and down, and using Customer Diagnostics. (See *Operating the Model 20 and 30 Systems*, Chapter 2.)
  - Run the Power-up test. (See *Testing Model 20 and 30 Systems*, Chapter 2.)

- Run the Customer Diagnostics system test. (See *Testing Model 20 and 30 Systems*, Chapter 3, and the Release Notice for Customer Diagnostics, if present.) Be sure to include all your equipment in the inventory list. At this time, you can even include peripherals not yet installed.
- 2. Power down the system and install the remaining cables (see Chapter 4) and the peripherals. (See Chapters 5 - 12. The table of contents will guide you to the installation information you need in these chapters.)
- 3. Test the peripherals with the Power-up test, Customer Diagnostics, and the simple off-line tests. (See *Testing the Model 20 and 30 Systems* and the Release Notice for Customer Diagnostics, if present. Use the Testing Guidelines in Chapter 1 and the table of contents to help you find the testing information you need in the manual.)

## Unpacking

### Module

To unpack a module,

- Place the unopened shipping box on your work surface.
- Open the box at the top and spread the flaps.
- Making sure that the contents remain inside, invert the box and place it gently on your work surface.
- Pull the box off about half way.
- Carefully tilt the entire package until the box is lying flat on its side.
- Slide the module, with its packing material, out of the box.
- Lift off the top clamshell and remove the module.

### Cords and Cables

Your system includes several power cords and cables packed either in the small accessories box or with the equipment. To avoid confusing cords and cables when unpacking, use the figures and tables on 3-4 through 3-8 to help you identify these parts.

## Connecting modules

The metal fasteners may not be easy to move at first.

When you are connecting the modules, it is easier to push the metal fasteners into place if you hold the modules tightly together and perfectly parallel.

## Cables

This section gives additional information on the CPU/Power supply cables, device cables, the adapter cables, and the system console cable. It also corrects the text references to line numbers on the adapter cables.

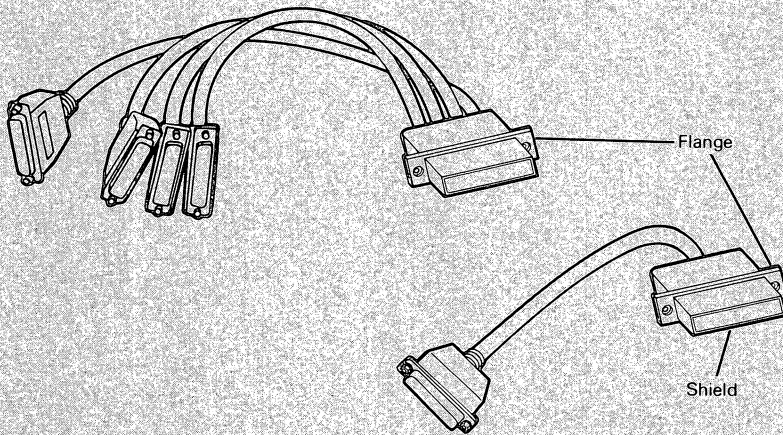
**CPU/Power supply cables** You can connect the cables going from the CPU logic module to the power supply module in only one way. These connectors are keyed: that is, one or more connector hole is covered and the corresponding connector pin is missing.

**Adapter cable line numbers** Please note that any reference to the line numbers on a 4-line adapter cable should be 0, 1, 2, and 3 instead of 1, 2, 3, and 4. The cable is stamped P2 for Line 0, P3 for Line 1, P4 for Line 2, and P5 for Line 3.

Any reference to the line number on the 1-line adapter cable should be 0 instead of 1. The cable is stamped P2 for Line 0.



**Adapter and system console cables** An adapter cable or system console cable connector may not be marked with an UP arrow or the word TOP to show you which way to insert the connector into the back of the logic module. Look closely at the connector end that plugs into the module. The distance between the screw position on each flange and the oblong metal shield is different.



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Insert the connector so that the flange with the screw position closest to the metal shield is up.

**Device cables** The device cable connectors are shaped to fit together in only one way.

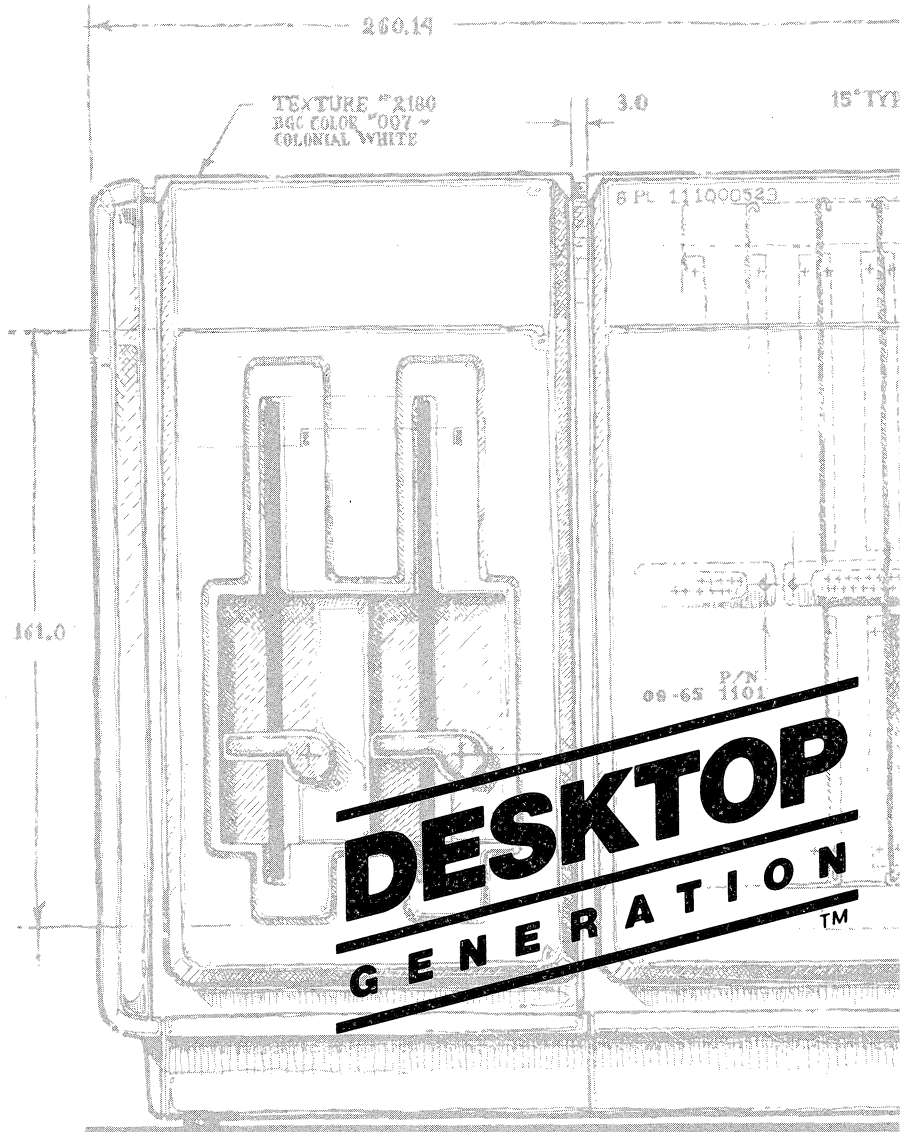
## Labels on logic modules

If there are no labels above the slots in the back of the logic modules, note that the slots should be numbered 1 to 5, beginning on the left of each module, as viewed from the rear.

## Cards

If you are installing cards, be sure that the component side faces to the right, as viewed from the front.





## Installing Model 20 and 30 Systems

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# Preface

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This book is part of a how-to series that teaches you the fundamental operation of your DESKTOP GENERATION™ computer, its peripheral components, and system software. The series is intended for both new and experienced computer users, and contains the information you need to: (1) unpack and install your DESKTOP GENERATION system; (2) operate the computer and any optional equipment; (3) test your hardware and handle any problems that may arise; and (4) put your operating system and other software to productive use.

This manual, the first in the series, is divided into two parts. Part One describes the components of the DESKTOP GENERATION system and shows you how to select a site for your computer and its optional peripherals; Part Two tells you how to unpack and inspect them for any damage incurred during shipping, and how to install them. After assembling your entire system with the help of this book, you will be ready to learn its operation. The operating guide and others in the DESKTOP GENERATION series are described under "Related Manuals" in this preface.

## Organization

This book contains thirteen chapters, and an index. It is divided into two parts and organized so that portions of it can be read selectively.

### Part One

- Chapter 1 introduces your system's components. A configuration sheet at the end of the chapter is for recording information about the equipment in your system.
- Chapter 2 helps you choose and prepare a site for your system, one that is comfortable to work in and safe for your equipment.

### Part Two

- Chapter 3 explains how your components are shipped and what you should be aware of when unpacking them.
- Chapter 4 helps you unpack and install the modules that form your computer assembly, along with any optional modules you may have ordered.
- Chapter 5 explains how to unpack, configure, and install a DASHER® D210, D211, or D220 terminal.
- Chapter 6 contains unpacking and installation guidelines for DASHER D410, D460, or D470C terminals.
- Chapter 7 helps you unpack and connect a data tablet and the cursor puck or stylus that comes with it.
- Chapter 8 shows how to unpack and install a mouse and mouse pad, and how to calibrate the mouse once you have connected it to your system.
- Chapter 9 steps you through unpacking and installing the multifunction dot matrix printer, model 4434.



- Chapter 10 provides unpacking and installation instructions for the data processing dot matrix printers, Model 4433 and Model 4531.
- Chapter 10A helps you unpack and install the Model 4531 dot matrix printer.
- Chapter 11 explains how to unpack and install the letter-quality printer, model 4518, along with any paper handling options you may have ordered.
- Chapter 12 leads you through unpacking and installing the color plotter.
- Chapter 13 explains how to add or replace printed circuit cards — SPU, FPU, memory, or input/output (I/O) — in your system.
- The index alphabetically lists the concepts and terms used in this book.

A documentation comment form follows the index. It invites you to help Data General improve its publications by commenting on this book.

## Reading Path

Start at Part Two, Chapter 3, if you would like to unpack and install your system immediately.

Start at Part One, Chapter 1, if you want a description of all the components in your system and information on selecting a site.

## Related Manuals

A comprehensive documentation set supports all the hardware and software products available for the DESKTOP GENERATION computer system. The manuals listed below are meant to be read in sequence by anyone who owns a DESKTOP GENERATION system.

### **Operating Model 20 and 30 Systems**

Follows this book in the DESKTOP GENERATION series with instructions for using your computer and peripheral equipment on a day-to-day basis — from inserting a diskette in its drive or loading paper in your printer to changing plotter pens and more. DGC ordering no. 014-000903.

### **Testing Model 20 and 30 Systems**

A follow-on to Model 20 and 30 operation, explains how to test your system's operation with diagnostic software. Contains flow diagrams, problem solving procedures, a problem report form, and phone numbers to call for Data General assistance. DGC ordering no. 014-000905.

### **Using DG/RDOS on DESKTOP GENERATION Systems**

Follows the installation, operating, and testing guides with instructions for loading and using the DG/RDOS operating system and other software. Exercises and examples get you started with DG/RDOS DGC ordering no. 069-000056.

### **Using AOS on DESKTOP GENERATION Systems**

Follows the installation, operating, and testing guides with instructions for loading and using the AOS operating system and other software. Exercises and examples lay the groundwork for working with AOS and with several programming languages. DGC ordering no. 069-000058.

Your source for other DESKTOP GENERATION and Data General publications is TIPS: the Technical Information and Publications Service. To order the TIPS catalog of publications, obtain order forms or information. write or call:

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OK  
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# Overview and Planning

## Part **One**

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Part One contains 2 chapters; Chapter 1 describes the components in your DESKTOP GENERATION computer system; Chapter 2 helps you select and prepare a site for your system. If you want to unpack and install your system immediately, skip ahead to Part Two.

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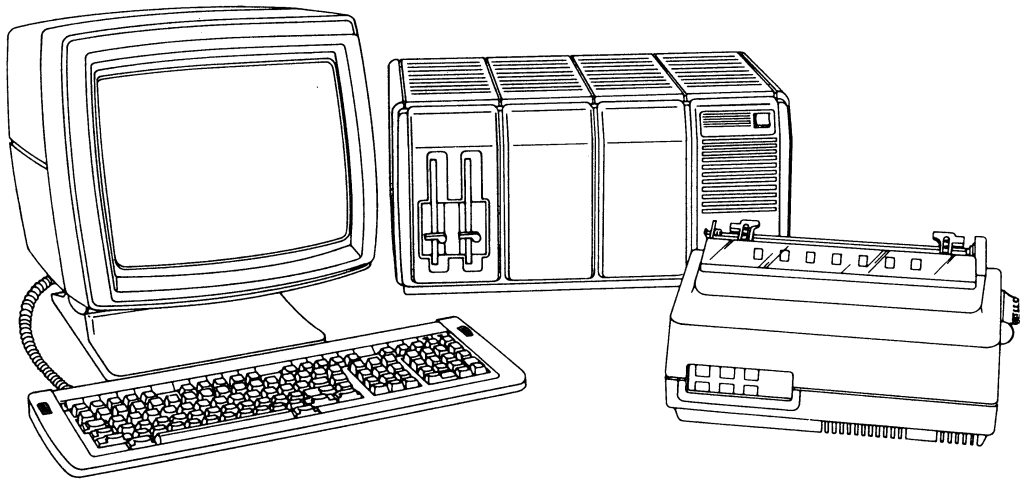
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# Your System Components

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# 1

Your DESKTOP GENERATION™ system consists of a computer unit and your choice of peripheral equipment. This chapter describes the components that you assemble to form a computer unit and the peripheral equipment that you can connect to it.



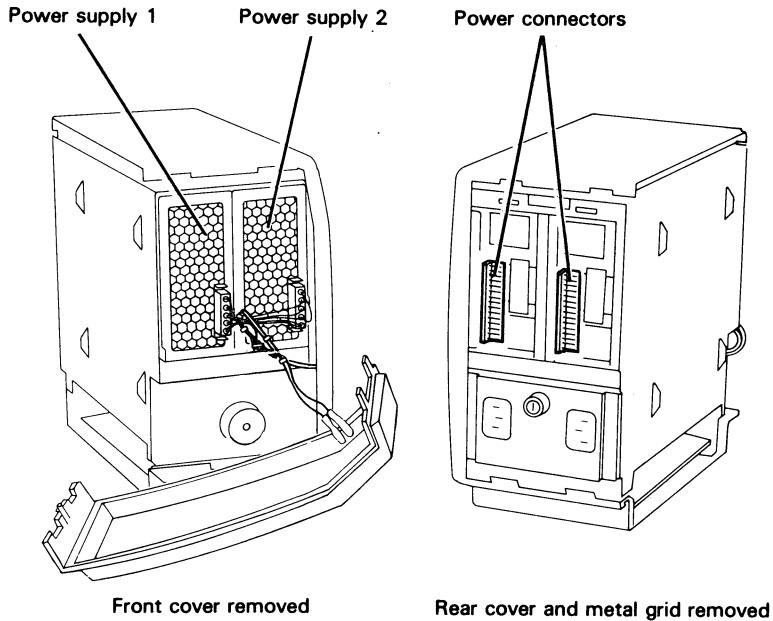
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one module to the next. Backpanel signals from the power supply and cartridge tape modules are carried to adjacent modules by cables.

## Power Supply Module

*The power supply module is always the rightmost module in the computer unit.* In preconfigured systems, it contains two power supplies (supply 1 and supply 2) and a cooling blower. Optionally, the power supply module may hold a line frequency generator — a source of line frequency for the real-time clock on the SPU card in the CPU logic module. The module has a power switch on the front panel and a power cord that you plug into an ac outlet. The power supplies feed power to their respective modules through a cable that plugs into a connector behind each power supply; the other end of this cable is soldered to the backpanel of the CPU logic module.



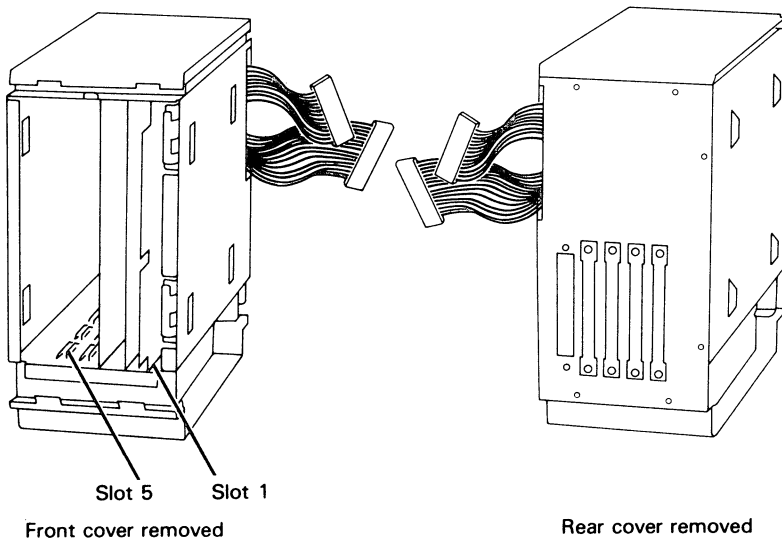
Supply 1 provides power for the blower, the CPU logic module and the diskette module. Supply 2 provides power for the disk module and logic expansion module. The cartridge tape module has its own power supply.

## CPU Logic Module

*The CPU logic module is always installed next to the power supply module. All cards plug into the module's backpanel, which carries signals from one card to the next.*

You will connect cables between the backpanel of the CPU logic module and the power supplies in the power supply module on its right (as viewed from the front). These cables enable the CPU logic module to draw power from the supplies and pass it across its backpanel to the other modules in your system. A 96-pin connector joins the backpanel with the module on its left.

The CPU logic module can hold up to five 7-inch by 9-inch printed circuit cards. When you add a new card or replace a faulty one, you slide the card into a vertical slot from the front of the module so that it plugs into the module's backpanel. The slot closest to the power supply is slot 1 and the slot farthest away is slot 5. You will also install cables between your peripheral components (your system console, for example) and the cards that control them.



When you first install your system, the CPU logic module already contains cards. Configuration labels on the rear cover of the module tell you each card's slot assignment. The CPU logic module contains a system processing card, called the SPU. The module may also contain up to four of the following cards:

Floating point unit (FPU) card

Memory cards

USAM and Microproducts (I/O) cards

The SPU card always occupies the first slot. If you install an FPU card in your system, it occupies slot 2; otherwise, this slot, like the remaining three slots, can contain a memory or I/O cards. Memory cards are always installed in the lowest-numbered slots available because they must be as close as possible to the SPU card.

When expanding a previously installed system or replacing a faulty CPU logic module, you install cards in the module yourself. The information in Chapter 13 will help you remove or install cards in your system.

**SPU Card** The SPU card contains electronic circuitry that performs several essential functions — the central processing unit processes instructions; the firmware floating point instruction set (on Model 20 systems only) and commercial instruction set (on Model 30 systems only) enhances performance and increases your selection of software; and the real-time clock and programmable interval timer are standard programming aids.

**FPU Card** Present in all Model 30 systems, the FPU card contains electronic circuitry that accelerates the processing of floating point instructions.

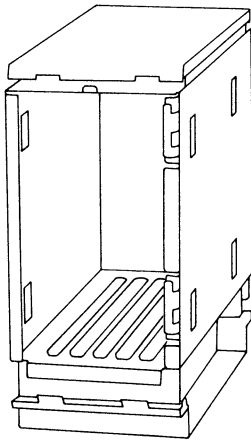
**Memory Cards** Memory cards can supply your system with user memory up to a total of 2 Mbytes (1.5 for Model 30 systems). The CPU logic module can contain up to four 512 Kbyte or 256 Kbyte memory cards. If your system has an FPU card, you can install up to three memory cards.

**I/O Cards** I/O cards are of three varieties: USAM (universal synchronous/asynchronous multiplexor) cards, which allow you to connect terminals, printers and other peripheral equipment or communicate with another computer; the 4207 interface card for a DG/RDOS

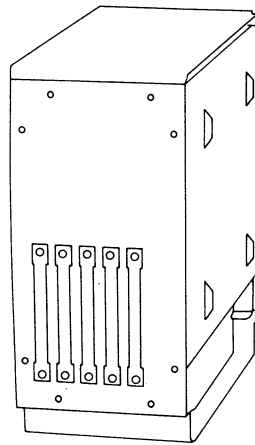
foreground terminal and other terminals and printers, and Microproducts I/O cards, which enable you to customize a system for applications such as instrumentation and process control.

The USAM card contains either one or four lines. Data General's pregenerated DG/RDOS and AOS operating systems allow you to use one line for system-to-system communications: line 1. Any line can be used to control peripheral equipment or communicate with another Data General or DESKTOP GENERATION computer.

## Logic Expansion Module



Front cover removed



Rear cover removed

DG-26131

Like the CPU logic module, the logic expansion module contains five slots which can hold up to five 7-inch by 9-inch printed circuit cards. These slots may contain I/O cards only. Each I/O card plugs into the backpanel; an edge connector on each card joins an external I/O device cable through a slot in the rear of the module. When you first install your system, the logic expansion module already contains at least one card. Configuration labels on the rear of the module tell you each card's slot assignment. If you are replacing a faulty logic expansion module or adding cards to one already installed, you install cards in the module yourself.

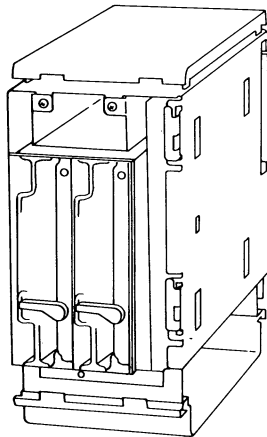


If your system includes a *logic expansion module*, you position it next to the CPU logic module. Its backpanel connects to adjacent backpanels with 96-pin connectors. The logic expansion module receives power through its backpanel from the second power supply in the power supply module. The logic expansion module may contain I/O cards only. These cards can occupy any slot in the module.

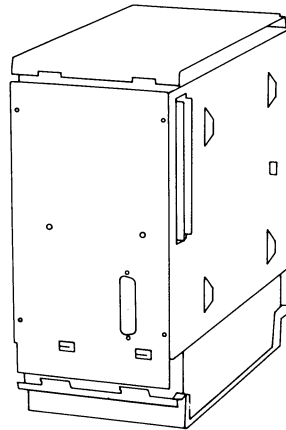
**CAUTION** *The logic expansion module must contain a card in slot 1 in order for the system to operate correctly.*

## Diskette Module

*The diskette module must be the leftmost module (as viewed from the front), except in systems where a cartridge tape module is present; in these systems, the cartridge tape module is the leftmost module and the diskette module is next to it.*



Front cover removed



Rear cover removed

DG-26135

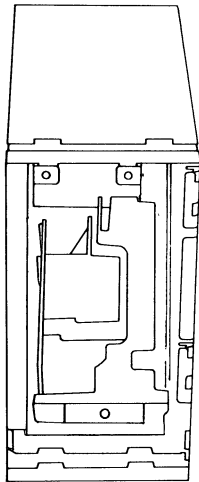
Its backpanel joins the backpanel on its right with a 96-pin connector. The diskette module receives power through its backpanel from the first power supply in the power supply module.

If the diskette module is the leftmost in your system, the 25-pin connector in back can be used for an external microI/O bus cable. For more information on this connector, see the technical reference *Model 20 and 30 Systems* (DGC No. 014-000767).

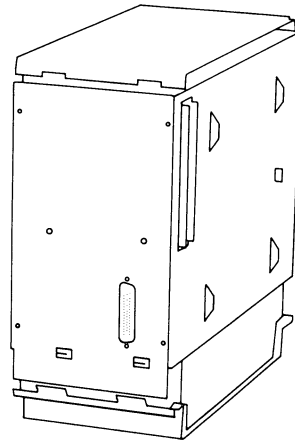
The diskette module has one or two slots in front for inserting 5.25 inch diskettes and a diskette controller card, which plugs into the module's backpanel. A latch, which you close over the slot, engages the diskette with the drive. Each 5.25-inch diskette offers 368.6 Kbytes of on-line storage for a maximum of 737.2 Kbytes.

## Disk Module

*In a preconfigured system, you position the disk module between the leftmost logic module and the diskette module (as viewed from the front). 96-pin connectors join the disk module backpanel with the backpanels on either side of it. The module receives power through its backpanel from the second power supply in the power supply module. The disk module contains one Winchester disk drive and a disk controller card which plugs into the module's backpanel; this card can control two drives, the one in the module and a second drive in an expansion (remote) disk unit.*



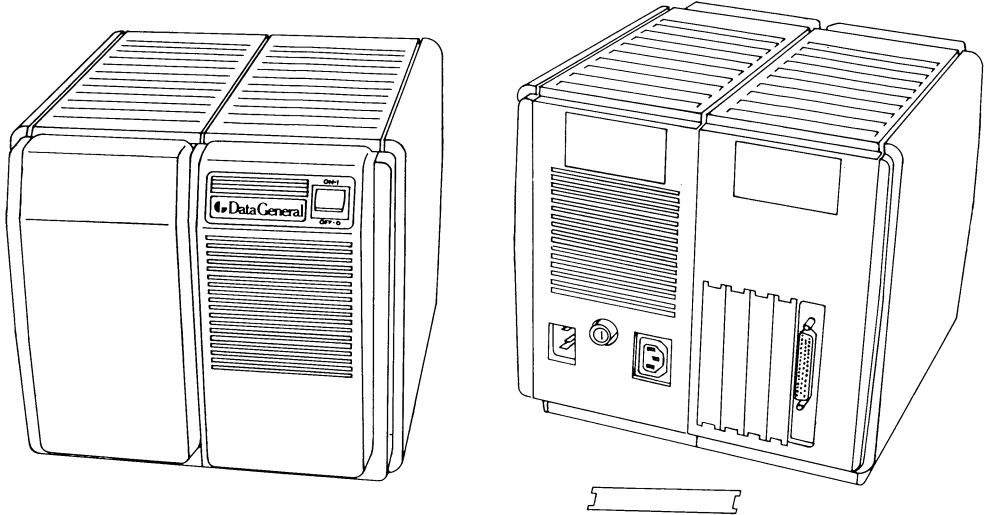
Front cover removed



Rear cover removed

## Expansion Disk Unit

The expansion disk unit is separate, or remote, from the computer unit but is controlled by the disk controller in the first disk module. It contains its own disk and power supply modules. The power supply module is identical to the one in the computer unit except that it never contains more than one supply.

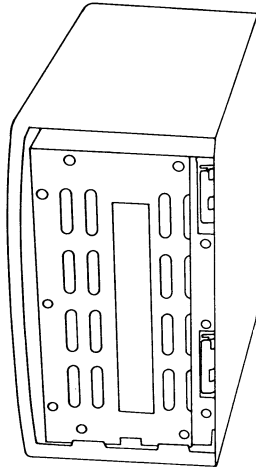


DG-26133

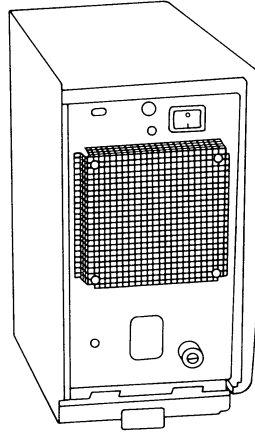
When installing an expansion disk unit, you connect its power supply to an ac outlet and connect a five foot (1.5m) external cable from the unit to a 50-pin connector on the back of the first disk module.

## Cartridge Tape Module

If your system has a cartridge tape module, it must be the leftmost module in the computer unit (as viewed from the front). It contains a 1/4-inch cartridge tape deck, a cartridge tape controller card, its own power supply, and a cooling blower and an I/O cable. When installing it, you will connect the I/O cable to the top 16 pins of a 20-pin connector on the diskette module's backpanel. MODEL #  
6270



Front cover removed



Rear cover removed

DG-26136

The front of the module has a slot where you load the cartridge tape; a door covers this slot to protect the drive from static electricity. At the back of the module is a 25-pin connector which can be used for an external microI/O bus cable. For more information on this connector, see the technical reference *Model 20 and 30 Systems* (DGC No. 014-000767). The power switch is on the back of the module, which you will cable to an ac outlet.

## Peripheral Equipment

In addition to the system console, your system may have some of the following components:

- Additional terminals
- Data tablet
- Mouse
- Printers
- Plotter

## System Console and Additional Terminals

Your system console and any additional terminals can be any of the DASHER D210, D211, D220, D410, D460 or D470C terminals. You can also use earlier model Data General terminals; however this manual covers only D210/D211/D220 and D410/D460/D470C terminals.

These terminals consist of a monitor and a detached keyboard. When installing one of them as the system console, you plug the terminal onto the SPU card so the console interface can control it. For additional terminals, you plug the terminal into a short adapter cable for a USAM line or 4207 interface.

Your system console and additional terminals receive power from an ac outlet at your site. The power switch is in back of the monitor.

## Data Tablet and Mouse

The data tablet, an active surface that translates graphic into digital data, comes with a three-button cursor puck or pen-like stylus. The hand-held mouse comes with a grided aluminum pad which the mouse uses to translate movement into X, Y coordinate pairs.

When you install a data tablet or mouse, you connect it to an adapter cable behind the CPU logic or logic expansion module so that a line on the USAM card can control it. The connection for the cursor puck or stylus is underneath the data tablet. The mouse pad requires no cabling.

Both the tablet and the mouse have their own modular power supplies that plug into an ac outlet at your site. Neither device has a power switch.

## Printers and Plotter

The printers and plotter are desktop units. Some printers — the letter-quality printer, for example — come with different paper handling options; others simply require you to install a ribbon and cover; and the plotter has no separate parts except for its pens. In all cases, this book tells you how to proceed.

When installing a printer or plotter, you will cable it to a short adapter cable behind the CPU logic or logic expansion module so that a line on the USAM card can control it.

A printer or plotter receives its power from an ac outlet at your site. The power switch is in back of the unit.

## Configuration Sheet

The pages ahead are a workspace for you to record information about your system's components and their functional characteristics. The record you create will make expanding and servicing your system a more organized and efficient process for you or your Data General service representative.

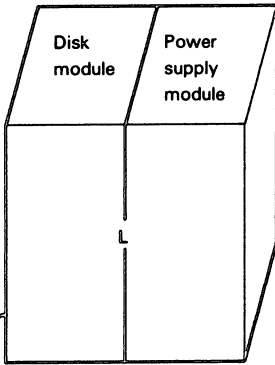
Several forms are provided for you to work with: the expanded system diagram shows at a glance where components are located in your system; the system configuration chart contains a component checklist with space for your comments; and four supplementary worktables give you a place to describe your SPU I/O facilities, USAM lines, model 4207 asynchronous controller, and other I/O cards.

## Your System At a Glance

The figure ahead shows a fully *configured*, or expanded, DESKTOP GENERATION system. Each module and peripheral component is correctly positioned in relation to the others, with important sections called out so you can see how connections are made.

As you unpack and install your own system with the help of the chapters ahead, use the configuration sheet which follows the figure to record your system components. This information will be useful to you when you expand your system or when you call a Data General Service Operations Center with any questions or problems that arise. The telephone numbers are listed at the end of this chapter. As your system grows, update the configuration sheet to include new peripheral equipment, modules, or cards.

**Expansion disk unit**



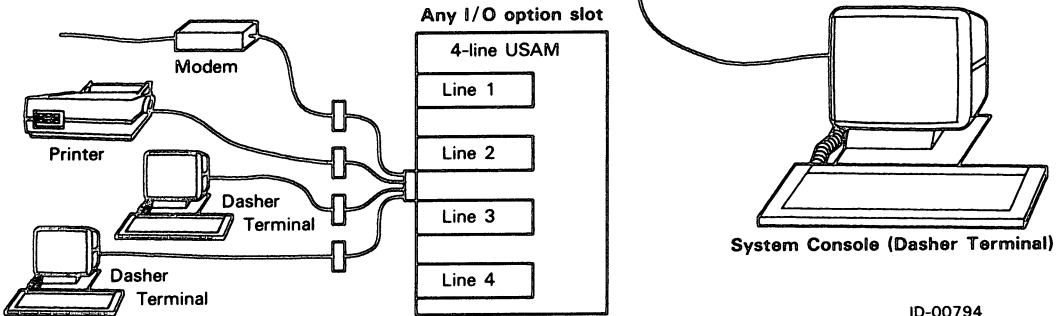
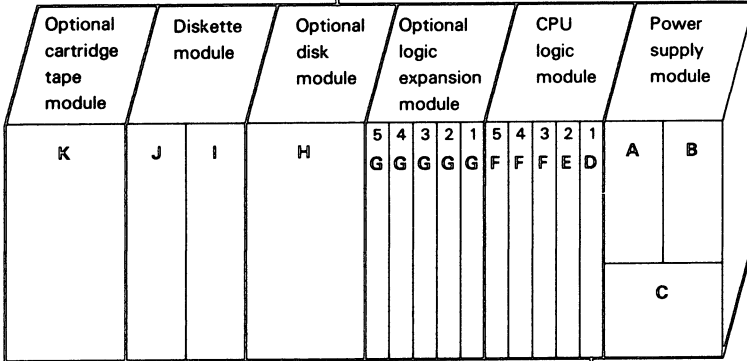
**Legend**

- A Power supply 1
- B Power supply 2 °
- C Line frequency generator
- D SPU
- E FPU or memory
- F Memory or I/O option
- G I/O option \*\*
- H Disk drive
- I Diskette drive 0
- J Diskette drive 1
- K Cartridge tape drive
- L Second disk drive

° Required when computer unit contains optional expansion disk unit and/or logic expansion module.

\*\* Card slot 1 must contain an I/O card when logic expansion module is present.

**Model 20 and 30 expanded computer unit**





# System Configuration Chart

	Location (see facing diagram)	Component	Check if present	Characteristics / Comments
Power supply module	A	Power supply 1	✓	
	B	Power supply 2		
	C	Line frequency generator		
CPU logic module	D slot 1	SPU	✓	Model 20 or 30 FIS?
	E slot 2	Floating point card <sup>1</sup>		
		Memory <sup>2</sup>		Memory size:      Address range:
	F slot 3	Memory <sup>2</sup>		Memory size:      Address range:
		I/O option <sup>3</sup>		Card name:      Devices connected:
	F slot 4	Memory		Memory size:      Address range:
I/O option <sup>3</sup>			Card name:      Device connected:	
Logic expansion module <sup>4</sup>	G slot 1	Memory		Memory size:      Address range:
		I/O option <sup>3</sup>		Card name:      Device connected:
	G slot 2	Memory		Memory size:      Address range:
		I/O option <sup>3</sup>		Card name:      Device connected:
	G slot 3	Memory		Memory size:      Address range:
I/O option <sup>3</sup>			Card name:      Device connected:	
G slot 4	Memory		Memory size:      Address range:	
	I/O option <sup>3</sup>		Card name:      Device connected:	
G slot 5	Memory		Memory size:      Address range:	
	I/O option <sup>3</sup>		Card name:      Device connected:	
Disk module	H	Winchester disk subsystem		Capacity:
Diskette module	I	Diskette drive 0	✓	
	J	Diskette drive 1		
Cartridge tape module	K	Cartridge tape subsystem		
Disk expansion unit <sup>5</sup>	L	Second disk and power supply		Capacity:
System console		DASHER terminal <sup>6</sup>	✓	Model no.

<sup>1</sup> Required with Model 30 SPU.

<sup>2</sup> At least one memory card required in system.

<sup>3</sup> Complete the appropriate I/O configuration table.

<sup>4</sup> Slot 1 must contain an I/O option card when this module is present.

<sup>5</sup> The capacity of this unit is the same as the capacity of the disk module.

A disk module is a prerequisite for this unit.

<sup>6</sup> See the configuration chart for SPU I/O facilities for asynchronous line characteristics.

# SPU I/O Facilities

<b>System console port</b> (asynchronous interface)	_____
<b>Line Interface</b> RS-232-C or 20 mA current loop:	_____
<b>Character format</b>	
no. of data bits:	8 bits
no. of stop bits:	1 bit
parity:	None
<b>Baud rate</b>	_____
<b>Device Connected</b>	_____
<b>PIT counter rate</b>	_____

# 4-Line and 1-Line USAM

	Line Interface Type			Asynchronous <sup>1</sup> or Synchronous	Device Connected
	RS-232	RS-422	Current Loop		
<b>Line 1</b>	_____	_____	_____	Asynchronous, if 1-line	_____
<b>Line 2</b>	_____	_____	_____	Asynchronous	_____
<b>Line 3</b>	_____	_____	_____	Asynchronous	_____
<b>Line 4</b>	_____	_____	_____	Asynchronous	_____

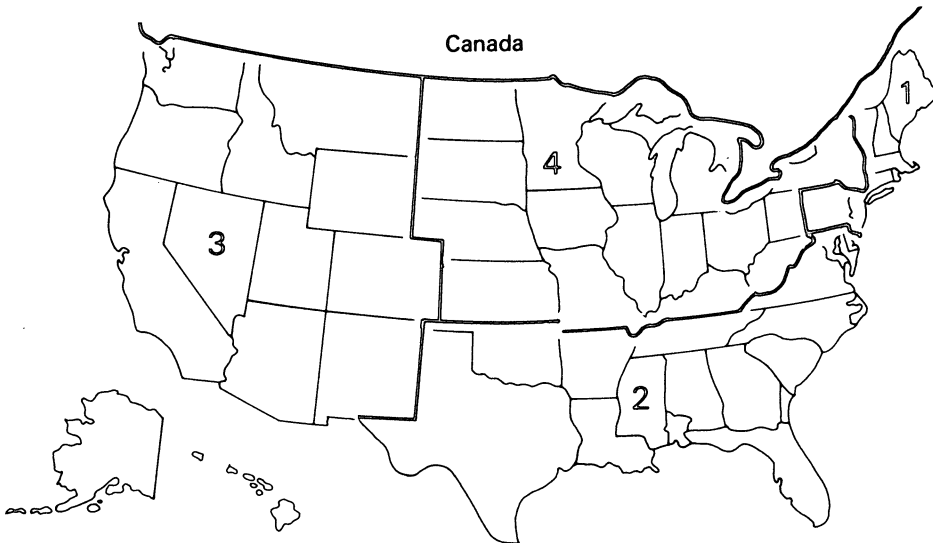
<sup>1</sup> Baud rate, parity, and all other characteristics except line interface type are defined by your software.



## Telephone Assistance

If you are unable to solve a problem with your system with the information in this manual, contact one of the Data General Service Operations Centers listed below for toll-free telephone support. The SOC will put you in touch with one of Data General's telephone assistance staff to answer such questions as, "If one of my terminals isn't working, can I try connecting it to another USAM line?"

Free telephone assistance is available with your warranty and with most Data General service options. Lines are open from 8:30 a.m. to 8:30 p.m., Eastern Standard Time, Monday through Friday. A call to Data General's general information hot-line, 1-800-DATAGEN, can also help you contact the SOC nearest you.



DG-25956

**Area 1**

50 Maple Street  
Milford, Massachusetts 01757

TWX #	K088
In state	1-800-322-1173
Outside	1-800-343-2335
Local	617-478-4000

**Area 2**

6420 Atlantic Boulevard  
Suite 200  
Norcross, Georgia 30071

TWX #	K337
In state	1-800-282-3066
Outside	1-800-241-3647
Local	404-446-0909

**Area 3**

1500 Rosencrans Avenue  
Manhattan Beach, California 90266

TWX #	K352
In state	1-800-343-2051
Outside	1-800-343-1296
Local	213-536-0440

**Area 4**

1501 Woodfield Road  
Schaumburg, Illinois 60195

TWX #	K279
In state	1-800-942-9106
Outside	1-800-323-0806
Local	312-884-6600

**Canada**

2155 Leanne Boulevard  
Mississauga, Ontario L5K 2K8

TWX #	K305
Toronto	416-823-3541
Quebec	1-800-268-5319
BC	112-800-268-5342
Canada-wide	1-800-268-5342



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# Site Planning

---

# 2

Before you install your new DESKTOP GENERATION computer system, you will want to prepare a place for it. The site you select will depend on the size of your system and optional equipment, your intended use of the system, and the physical space you have available. The information in this chapter helps you select and prepare a site for your computer system based on the following:

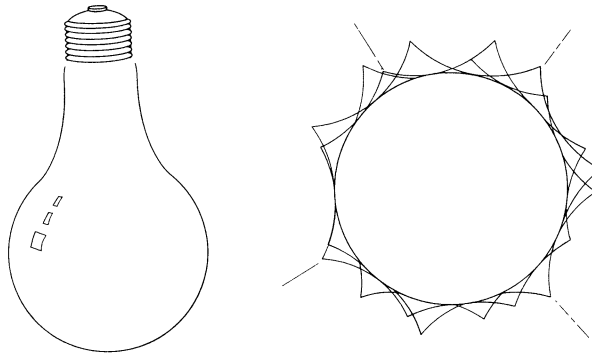
- Personal comfort and suitability,
  - Environmental conditions,
  - Mechanical and electrical specifications,
  - Radio frequency interference.
-

## Personal Comfort and Suitability

The site you choose for your computer system should be comfortable and well-lit, with plenty of work space, furniture, and electrical outlets to accommodate it.

Whether you are setting up your system in your home or office, keep in mind who will be using the system and why. If, for example, your computer is for home use and has a printer or plotter, do not locate it where the sound of a printer or plotter would be bothersome or disruptive. If you are planning an office or industrial site, you may want to refer to Data General's *Site Planning Guide* (DGC No. 015-000912) for general requirements of a computer facility.

## Lighting



DG-25984

Correct lighting at your site is important because it reduces eye strain and fatigue. Try to avoid these conditions:

- Bright indoor lights that may be reflected from your display screen into your eyes,
- Direct sunlight or bright daylight that causes reflections on the display screen.

To avoid distracting lighting situations, use *soft* light bulbs, shades to disperse the light, or panels over fluorescent bulbs to scatter the light. A dimmer control to dim the lights is also helpful. To reduce glare from nearby windows, use curtains or screens, or turn your display away from the glare.



## Workspace

You can install a minimum computer system (three modules, monitor, and keyboard) on a surface as small as 2.5 by 5.5 feet (76.2 by 167.6 centimeters). Remember to leave a little more space for connection of power cords, device cables, and free circulation of air. Do not install your system in a location that prevents the flow of air through the vents on top of the modules. Improper air circulation can cause the computer to fail. Remember, too, that if you have a printer in your system you will need plenty of room for loading and stacking paper.

The physical dimensions of your equipment will help you plan your total space requirements. You will find the dimensions of your computer unit under "Mechanical and Electrical Specifications" in this chapter. Specifications for equipment such as terminals, printers, plotter, and data tablet can be found in Chapters 5 through 12.

Choose comfortable, sturdy, and durable furniture that provides plenty of work space. An office table approximately 28.35 inches (72 cm) high is the best typing height for most people. The length and width of the office table will depend on the amount of equipment in your system and on how much space you require to work.

If you have a printer or plotter, you will need a heavy-duty table that can withstand the weight and possible vibration of the printer. Check the mechanical specifications for printers and the plotter in Chapters 9 through 12.

Furniture designed specifically for use with your computer system is available from Data General. A Data General sales representative will help you select the furniture suitable for your particular use.

## Electrical Outlets

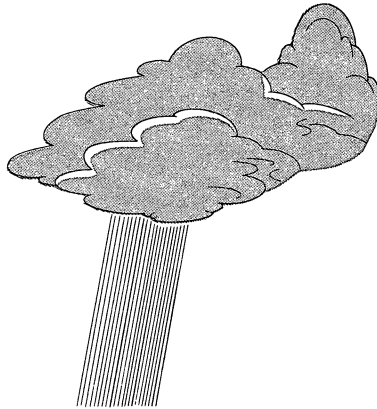
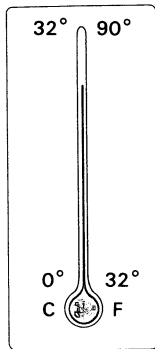
Your computer system uses power from an ac electrical outlet. It is important that you select a site with adequate outlets to provide power to the computer unit and any terminals, printers, plotters, data tablet, or mouse.

The section "Mechanical and Electrical Specifications" in this chapter lists the electrical requirements for your computer unit. Specifications for other equipment are supplied in Chapters 5 through 12.

## Environmental Conditions

You need to be concerned with several environmental conditions in order to ensure the proper operation of your equipment. Temperature and humidity, static electricity, magnetism, contamination, and vibration can cause your system to malfunction.

### Temperature and Humidity



DG-25985

Your system works best when operating within the following guidelines:

Temperature: 50 to 100 degrees F  
(10 to 38 degrees C)

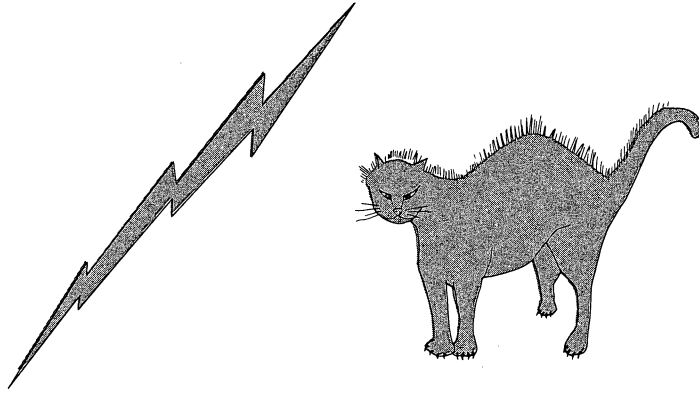
Relative humidity: 20 to 80 percent (noncondensing)

If you are storing your computer system, make sure storage conditions conform to the following guidelines:

Temperature: -29 to 122 degrees F  
(-20 to 50 degrees C)

Relative humidity: 10 to 90 percent (noncondensing)

## Static Electricity



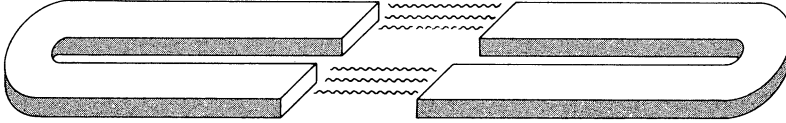
DG-25986

Static electricity can cause many problems with your computer system:

- Data in memory is lost,
- Terminals send incorrect data to the computer,
- Monitor screens lose displays,
- Printers overprint or print garbled data,
- Fuses blow and cards fail.

If you find you have a static electricity problem, place a static-proof mat or piece of carpeting at the entrance to the room you have selected as the site for your computer system; place a second static-proof mat or carpet in front of the computer system. This should permanently eliminate any static electricity problem.

## Magnetism



DG-25987

Diskettes are coated with a thin magnetic surface on which data is recorded. Objects that are in any way magnetic can disrupt the data on the diskette surface, rendering it useless. If a magnetic force is strong enough, it can wipe out data completely. For this reason, keep the following (and similar) magnetic objects away from your computer system:

- Power cords,
- Filing cabinets with magnetized locks,
- Magnetized screwdrivers,
- Magnetic pad and pencil sets,
- Magnetic paper clip holders,
- Magnetized clips and clamps.

Never place a diskette on top of the computer unit because the magnetism in the computer itself may cause loss of data. In addition, do not place consoles or terminals too near the computer's power supply or other electrical devices such as typewriters and printers. The magnetism in these devices can cause static or a distorted display screen.

## Contamination



DG-25988

The magnetic surface on your diskette is sensitive to contamination by smoke, dust, food particles, powder, eraser crumbs, and even fingerprints. It is important that you do not eat or drink while handling diskettes and that you touch only their protective jackets.

It is also important that you do not eat or drink near your computer system and that you never set food or beverages on top of the modules. An accidental spill could cause serious damage to your unit.

Vibrations and shock waves can degrade the operation of the mechanical and electrical parts of your system. Constant low-level vibrations can sometimes do as much damage as occasional extreme shocks and vibrations. Do not install your system in an area that is exposed to either condition.

## Mechanical and Electrical Specifications

The following mechanical and electrical specifications will help you plan the physical environment for your computer site. The mechanical specifications will help you determine space requirements and furniture needs. The electrical specifications give you the power requirements for your computer system.

### Mechanical Specifications

The tables ahead list mechanical specifications for the following equipment:

- Minimum three-module computer unit  
(1 power supply, 1 or 2 diskette drives)
- Four-module computer unit  
(2 power supplies, 1 or 2 diskette drives, 1 disk drive: the minimum unit for preconfigured systems)
- Logic expansion module
- Disk module
- Cartridge tape module
- Expansion (remote) disk unit.

Mechanical specifications for the system console, terminals, printers, plotter, data tablet, and mouse are listed in Chapters 5 through 13.

<b>3-Module Computer Unit (with covers)</b>	
Weight	38.5 lbs (17.3 kg) with 1 diskette drive
(maximum)	41.8 lbs (18.8 kg) with 2 diskette drives
Height	10.7 in (27.2 cm)
Depth	13.0 in (33.0 cm)
Width	15.7 in (39.9 cm)

**4-Module Computer Unit** (with covers)

Weight (maximum)	54.0 lbs (24.5 kg)
Height	10.7 in (27.2 cm)
Depth	13.0 in (33.0 cm)
Width	20.5 in (52.0 cm)

**Logic Expansion Module** (empty, without covers)

Weight	65 lbs (3.0 kg)
Height	10.7 in (27.2 cm)
Depth	12.8 in (32.5 cm)
Width	4.8 in (12.2 cm)

**Disk Module** (without covers)

Weight	14.5 lbs (6.6 kg)
Height	10.7 in (27.2 cm)
Depth	12.8 in (32.5 cm)
Width	4.8 in (12.8 cm)

**Cartridge Tape Module (without covers)**

Weight	15.5 lbs (7.0 kg)
Height	10.7 in (27.2 cm)
Depth	13.5 in (34.3 cm)
Width	4.8 in (12.2 cm)

**Expansion Disk Unit (without covers)**

Weight	28.5 lbs (12.9 kg)
Height	10.7 in (27.2 cm)
Depth	12.8 in (32.5 cm)
Width	10.9 in (27.7 cm)



## Electrical Specifications

Your computer system requires that electrical specifications such as voltage, current, and line frequency be within a certain range for correct operation and reliability. Your main concern will be to supply the proper voltage and current required by your system. You have little or no control over the line frequency unless you install special equipment.

To prevent damage to your system or injury to yourself, use only three-pronged ac outlets and be sure that your electrical system is wired in accordance with the National Electrical Code. If you find that operating your system causes blown fuses or tripped circuit breakers, try unplugging other electrical equipment on the same line that may be causing the problem. Heavy electrical loads such as air conditioners, office copying machines, or elevators should not be connected to the same fuse box, even though they may be on separate lines. Also try using different ac outlets protected by a different fuse or circuit breaker.

At power on, all electrical equipment draws a momentary surge of current called *inrush* current. In general, the sum of all inrush currents on *one line* should never exceed 10 times the amp rating on your fuse or circuit breaker. Any more will overload the circuit. For example, if all electrical equipment on one line has a total inrush current of 140 amps and your fuse or circuit breaker is rated 15 amps, your electrical system should be able to draw 150 amps of inrush current with no problem.

**WARNING** *Never replace blown fuses or circuit breakers with others that have a higher amp rating. This will cause extremely hazardous conditions.*

If you have any doubts about the wiring at your site, a licensed electrician can answer your questions.

The tables ahead list the electrical specifications of components that require an ac power source; each of these components needs access to one ac power outlet. Electrical specifications for the system console, terminals, printers, plotter, data tablet, and mouse are listed in Chapters 5 through 12.

<b>Power Supply Module<sup>1</sup></b>			
Power type	100 V	120 V	220/240 V
Voltage range	85-110 V	102-132 V	187-264 V
Line frequency	47-63 Hz	47-63 Hz	47-63 Hz
Current <sup>2</sup> (maximum, per supply)	3 A/35 A	3 A/25A	1.5/1.75 A
Power con- sumed <sup>2</sup> (maximum, per supply)	225 W/240 W	225 W/240 W	225 W/240 W
Inrush current (maximum, per supply)	30 A 1/2 cycle	30 A 1/2 cycle	30 A 1/2 cycle
Equivalent <sup>2</sup> heat output (per supply)	770/820 BTU/hr	770/820 BTU/hr	770/820 BTU/hr
Power cord	8.2 ft (2.5 m)	8.2 ft (2.5 m)	8.2 ft (2.5 m)

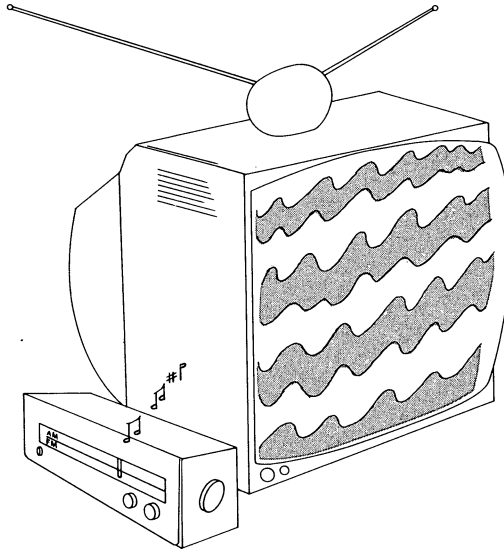
<sup>1</sup>The power supply module in a three-module computer unit contains one power supply. The power supply module in a system with either a disk or logic expansion module contains two power supplies.

<sup>2</sup>The first figure is for 135-watt supplies; the second figure is for 150-watt supplies.

<b>Cartridge</b>	<b>Tape</b>	<b>Module</b>	
Power type	100 V	120 V	220/240 V
Voltage range	90-110 V	102-132 V	187-264 V
Line frequency	47-63 Hz	47-63 Hz	47-63 Hz
Current (maximum)	1.2 A	1.2 A	1.2 A
Power consumed (maximum)	54 W	54 W	54 W
Inrush current (maximum)	1.5 A	1.5 A	1.5 A
Power cord	8.2 ft (2.5 m)	8.2 ft (2.5 m)	8.2 ft (2.5 m)

<b>Expansion</b>	<b>Disk Unit</b>		
Power type	100 V	120 V	220/240 V
Voltage range	85-115 V	102-132 V	187-264 V
Line frequency	47-63 Hz	47-63 Hz	47-63 Hz
Current (maximum)	1.5 A	1.5 A	0.75 A
Power consumed (maximum)	70 W	70 W	70 W
Inrush current (maximum)	30 A 1/2 cycle	30 A 1/2 cycle	30 A 1/2 cycle
Power cord	8.2 ft (2.5 m)	8.2 ft (2.5 m)	8.2 ft (2.5 m)

## Radio Frequency Interference



DG-25989

Because your computer system generates and uses radio frequencies, it may interfere with or be affected by other devices which generate radio frequencies — radios, microwave ovens and the like. You can avoid this problem by installing the computer properly, according to the procedures outlined in this manual.

Choose a site for the computer free of radios, televisions, and other devices generating or using radio frequencies. Make sure that this site has no ac outlets that share a line with such devices.

If you properly install your computer unit, connect its optional equipment, and find that you have an interference problem such as distortion of your display screen, radio sound, or television picture, contact your nearest Service Operations Center.

## The Next Step

After choosing a site for your new computer system with the help of this chapter, you are ready to unpack and install it. Guidelines for unpacking and installing your system are in the next chapter.

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# Unpacking and Assembly

## Part **Two**

---

The first chapter in this section give you guidelines for unpacking and installing your system.

The next chapter tells you how to unpack and connect your computer unit modules. It also gives special instructions for installing a second power supply cartridge tape module, and remote disk unit. Each succeeding chapter gives a description of unpacking and installing another component of your system.



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# Unpacking and Installation Guidelines

---

# 3

By now you have opened the shipping carton labeled OPEN FIRST and have removed your DESKTOP GENERATION documentation along with all the cables and other miscellaneous items. This chapter prepares you to unpack and install your system in an organized manner. Before you begin, open your System User's Library and remove the diskettes that hold your operating system software; open the Installation Library and remove the diskette containing your diagnostic software; and organize your DESKTOP GENERATION manuals in the following binders:

## **Installation Library**

Should contain this book and *Testing Model 20 and 30 Systems*.

## **System User's Library**

Should contain *Operating Model 20 and 30 Systems and Using DG/RDOS on DESKTOP GENERATION™ Systems* or *Using AOS on DESKTOP GENERATION™ Systems*.

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## Getting Started

Everything that you need to assemble your computer unit has been shipped to you as individual components in various cartons. One of the cartons containing the major units of your DESKTOP GENERATION computer system has a plastic envelope attached to its side. Inside of this envelope is a listing of the items your shipment includes. This list gives the Data General part number(s) for the main component(s) in your shipment and the number of cables included with them.

Each carton is visibly marked to let you know what it contains. For example, those cartons that contain a computer module show a graphic representation of a module on the outside and a label telling you which module is enclosed. Make sure you have cartons for each of the components listed, except the printed circuit cards: these cards were installed in your modules before shipment.

To ensure the safe arrival of your computer equipment, a *shockwatch* label is attached to some cartons. These labels let you know when a shipping carton has been mishandled.



DG-26078



A shockwatch label that is bright red in color means that the carton to which it is attached has suffered a shock or has been mishandled in transit. *Do not open the carton.* Instead, immediately call your nearest Service Operations Center and report the problem. If you cannot find a shockwatch label attached to the sides of any of the cartons, call the Service Operations Center and report this fact. The phone numbers and addresses of all Service Operations Centers are listed in Chapter 1 of this book.

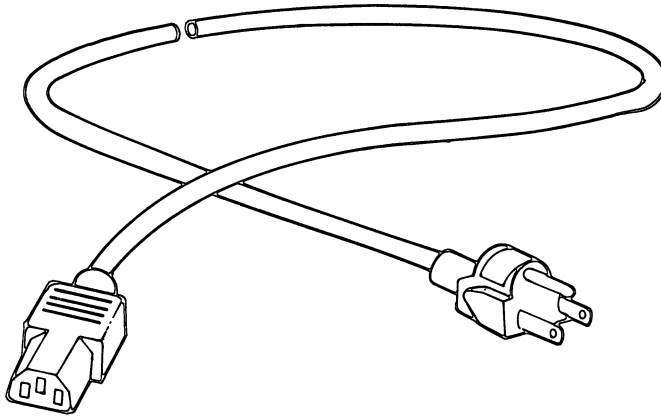
Each subsequent chapter of this book contains a detailed inventory list of what you should find as you open individual cartons. If any of the equipment appears missing or damaged, immediately contact the Service Operations Center nearest you and report the problem.

## Unpacking

To avoid confusion you should unpack each component as you are ready to connect it to your system. Each chapter tells how to unpack the component(s) it discusses. You can use this same information for repacking if you need to move or return any part of your computer system.

## Power Cords

To avoid confusing cables when unpacking, first remove any power cords from the accessories carton. The power cords for some equipment — printers and terminals, for example — may be packaged in the carton containing the equipment and not in the accessories carton. The power cords are not marked with numbers, but are easy to recognize. The following figure shows how they look.

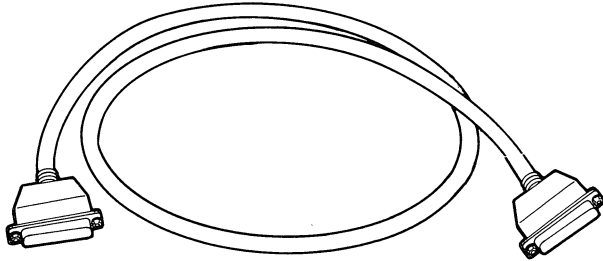


DG-26202

Keep the power cords handy for connecting your computer, and other equipment requiring an ac power source, to an ac outlet.

## Device Cables

The following figure represents the device cables—those that allow the computer to communicate with peripheral equipment.



DG-26203

These cables are stamped with a number beginning with 005. The different device cables for each type of equipment are listed in the table ahead. The standard-length cable is listed first. Keep the device cables handy for connecting your peripheral equipment to the computer.

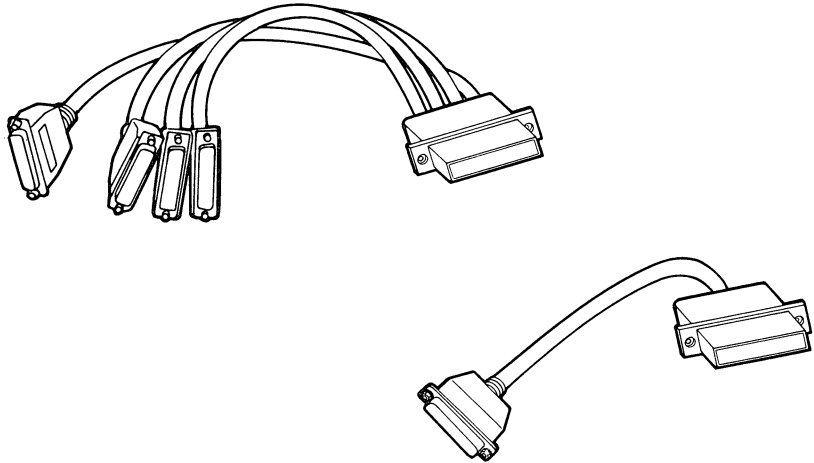
Equipment	Length	Part Number	Interface Type
System console or device on 4207 card	25 ft	005 013258	EIA RS-232-C
	5 ft	005 013325	
	15 ft	005 013315	
	50 ft	005 013321	
	25 ft	005 013260	Current loop
	50 ft	005 013282 <sup>1</sup>	
	100 ft	005 013283 <sup>1</sup>	
	300 ft	005 013285 <sup>1</sup>	
500 ft	005 013284 <sup>1</sup>		
DASHER terminal on USAM line	25 ft	005 013258	EIA RS-232-C
	5 ft	005 013325	
	15 ft	005 013315	
	50 ft	005 013321	
	25 ft	005 013260	Current loop
	50 ft	005 013282 <sup>1</sup>	
	100 ft	005 013283 <sup>1</sup>	
	300 ft	005 013285 <sup>1</sup>	
500 ft	005 013284 <sup>1</sup>		
Any printer or plotter on USAM line	25 ft	005 013384	EIA RS-422-A
	25 ft	005 013258	EIA RS-232-C
	5 ft	005 013325	
	15 ft	005 013315	
	50 ft	005 013321	
Model 4433 printer on USAM line	25 ft	005 013260	Current loop
	50 ft	005 013282 <sup>1</sup>	
	100 ft	005 013283 <sup>1</sup>	
	300 ft	005 013285 <sup>1</sup>	
	500 ft	005 013284 <sup>1</sup>	
Modem on USAM line	25 ft	005 019687	Not applicable
Expansion disk unit	5 ft	005 020683	Not applicable
System-to-system <sup>2</sup>	25 ft	005-021381	EIA RS-232-C, EIA RS-422-A
	15 ft	005 021382	
	50 ft	005 021380	
	25 ft	005 013260	Current loop
	50 ft	005 013282	
	100 ft	005 013283	
	300 ft	005 013285	
	500 ft	005 013284	

<sup>1</sup>These are extension cables. They must be used with the 25 ft cable, 005 013260.

<sup>2</sup>Used when connecting a DESKTOP GENERATION system directly to another Data General or DESKTOP GENERATION system.

## Adapter Cables

The following figure represents the adapter cables — those that make some of your device cables compatible with your computer.



DG-26204

These cables are stamped with a number beginning with 005. The different adapter cables are listed below. Keep the adapter cables handy for connecting your peripheral equipment to the computer.

A directional arrow and the word "TOP" are stamped into the cable's connector to help you install it correctly.

Adapter Cable	Length	Part Number	Interface Type
Console or 4207 interface	1 ft	005 021148	EIA RS-232-C or current loop
4-Line USAM	1 ft	005 021041	EIA RS-232-C, EIA RS-422-A, or current loop
1-Line USAM	1 ft	005 020688	EIA RS-232-C, EIA RS-422-A, or current loop
Current loop adapter unit <sup>1</sup>	3.6 in	005 021359	Current loop

<sup>1</sup>Used when connecting a DESKTOP GENERATION system directly to another DESKTOP GENERATION or other Data General system via a current loop interface.

## Printed Circuit Cards

The printed circuit cards for your particular computer system have already been configured and installed in the appropriate modules at the factory. Configuration labels on the backs of logic modules tell you which card was installed in each slot. If in the future you order additional cards to expand your system, or if you receive a new card to replace a faulty one, you will receive these cards in individual shipping cartons.

## Installation

This section explains how you use this manual to unpack, assemble, and install your system. The manual leads you through these procedures for your equipment in the following order:

- Computer unit modules
- System console
- Optional equipment
- Additional cards.

## Computer Unit Modules

You unpack and assemble the modules of your computer unit first. Chapter 4, "Computer Unit Assembly," tells you how to do this. This chapter is also helpful if you are replacing a faulty module or expanding your system with an optional one, such as the cartridge tape module.

## System Console

After you install your computer unit, you install the monitor and keyboard that comprise your system console. Information on unpacking and connecting a D210 or D211 system console is in Chapter 5; and for a D410 or D460 system console, in Chapter 6.

## Optional Equipment

After installing your system console, you assemble any optional equipment such as terminals, data tablet, mouse, printers, or plotter. Information on unpacking and connecting a D210 or D211 terminal is in Chapter 5; and for a D410 or D460 terminal, in Chapter 6. Information on unpacking and connecting the data tablet, mouse, printers, and plotter is in Chapters 7 through 12.

## Additional Cards

If you are expanding your system with new cards or replacing a faulty card, you will need to refer to Chapter 13, "Card Installation." This chapter tells you how to unpack and install any card. It also explains how to configure and connect any internal cables for the following cards:

SPU

Floating point unit (FPU)

Memory


USAM

4207 interface

Information on configuring the Microproduct I/O cards — the IEEE interface card, for example — is supplied in the installation data sheets shipped with the card.

## The Next Step

Turn to the next chapter and follow its instructions to unpack, assemble, and install your computer unit.





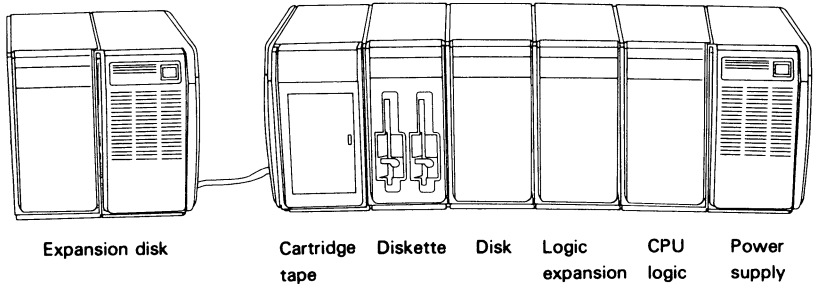
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# Computer Unit Assembly

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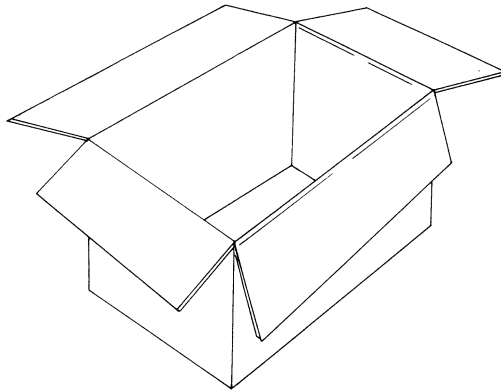
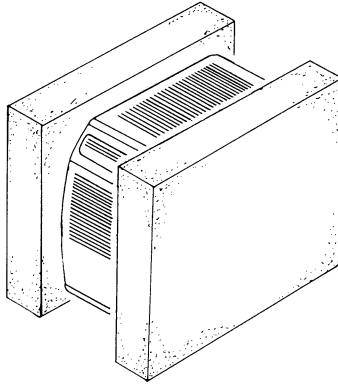
# 4

This chapter begins with a set of general guidelines to help you unpack and inspect the modules. Then a series of illustrated steps guides you through the installation procedures, starting with your basic computer unit assembly and progressing to any optional modules you may have. Keep a Phillips-head screwdriver, a regular screwdriver or similar tool, and a needle-nose pliers handy as you assemble your computer unit.



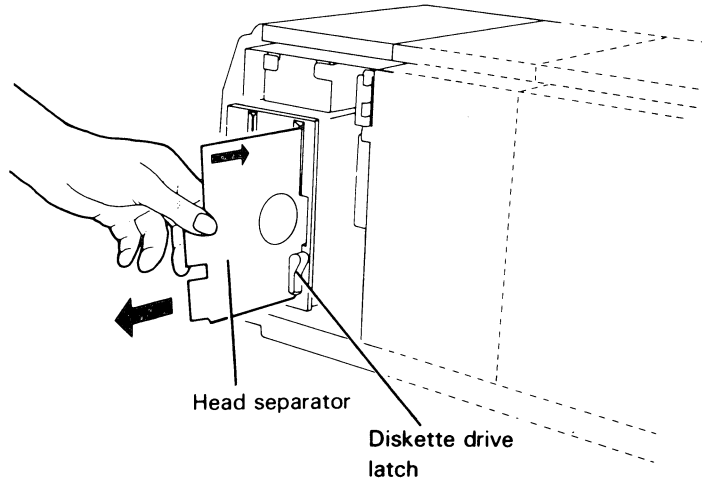
DG-25618

## Unpacking and Inspecting Modules



DG-25635

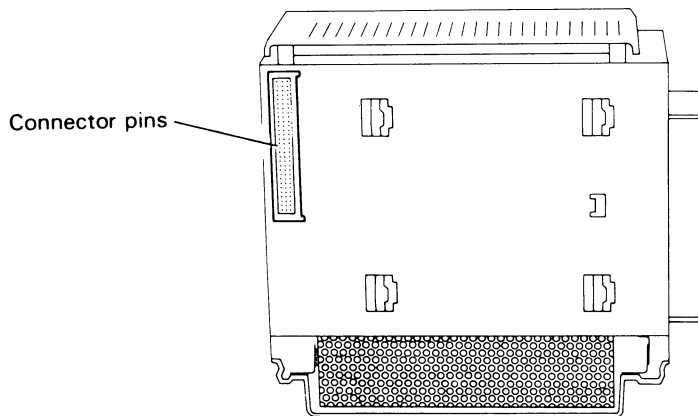
As you unpack each of the modules in your system, remember to check off each on your configuration sheet. Also remember to remove the cardboard head separator from each diskette slot by turning the diskette drive latch down and pulling the head separator out. After you remove the separator turn the latch back up.



DG-25636

Inspect each module to make sure that no damage occurred during shipping. Check the plastic covers for defects such as broken fingers and chipped or cracked plastic.

Locate the gold connector pins on the sides of the CPU, disk, diskette, and logic expansion modules. If any pins appear bent or damaged, *do not* attempt to connect or install the module, but contact your nearest Service Operations Center instead.



DG-25637

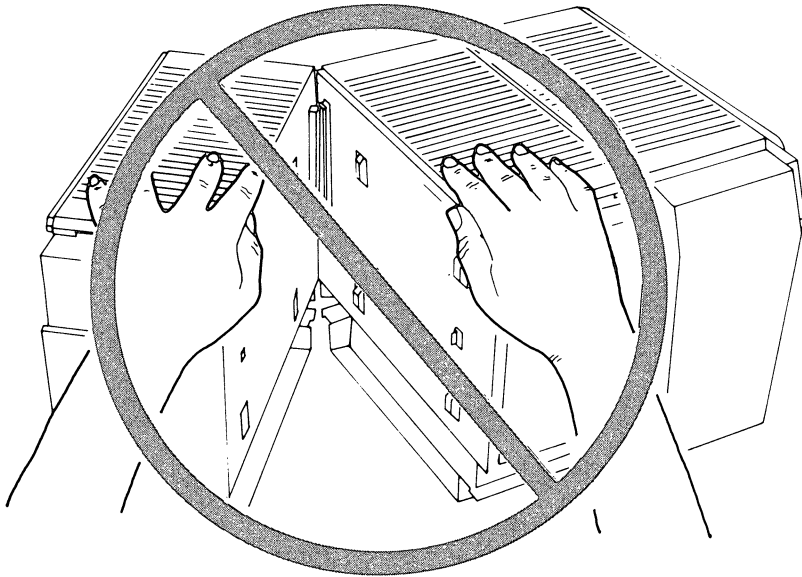
If any other equipment appears missing or damaged, report the problem to the Service Operations Center. If you need to return any module, refer to the packing diagram earlier and repack it as shown. When repacking a diskette module, remember to install the cardboard head separator in each diskette slot first.

## Adding or Replacing Modules

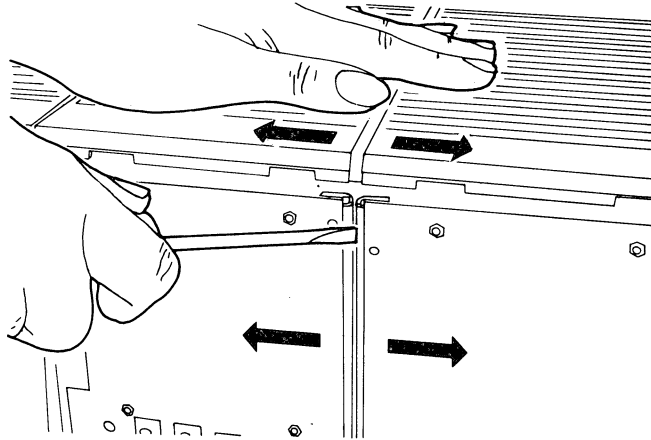
These general guidelines apply to anyone removing a module to return it for service or adding a new module to a system previously installed. If you are installing a system for the first time, skip ahead to "Installing Modules."

When removing a module, always turn off the main power switches of the computer unit and cartridge tape module, if present. Unplug the power cords from their ac outlets and disconnect any devices (printers, plotter, terminals, data tablet, or mouse) cabled to the module you are disconnecting.

When disconnecting two modules, never force them apart from the top.



Instead, insert a screwdriver or similar tool between the backs of the two modules and gently pry them apart. Always disconnect and remove the modules while keeping them parallel to avoid bending the pins.



DG-25653

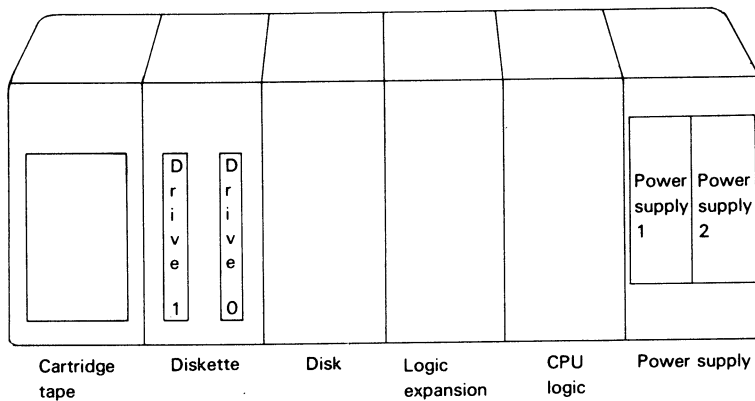
To disconnect one or more modules in your system, simply reverse the instructions in the section ahead, "Installing Modules." Chapters 5 through 12 show you how to uncable a printer, plotter, terminal, data tablet, or mouse.

## Installing Modules

In this section you will find instructions for installing the modules in your system — the CPU logic module, logic expansion module, power supply module, diskette and disk modules, and cartridge tape module. To install an expansion disk unit or second power supply, see the sections “Installing an Expansion Disk Unit” and “Installing a Second Power Supply” later in this chapter.

You will need a Phillips-head and a regular screwdriver or similar tool to install the modules in your system, so keep them handy.

The following configuration diagram shows you the order in which modules should be connected if you are installing your first DESKTOP GENERATION system, and tells you where to add a module if you are expanding a system already installed.

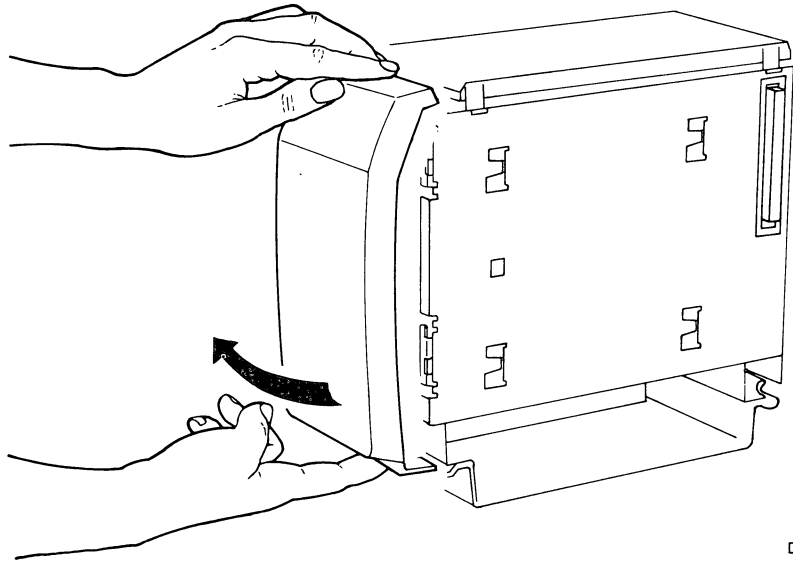


DG-25638

As the diagram shows, you start with the power supply module on the far right and end by connecting the last module in the far left position. If your system does not include one of the optional modules in the diagram, disregard that option and connect the next module you have in the sequence.

Take the following steps to connect the modules.

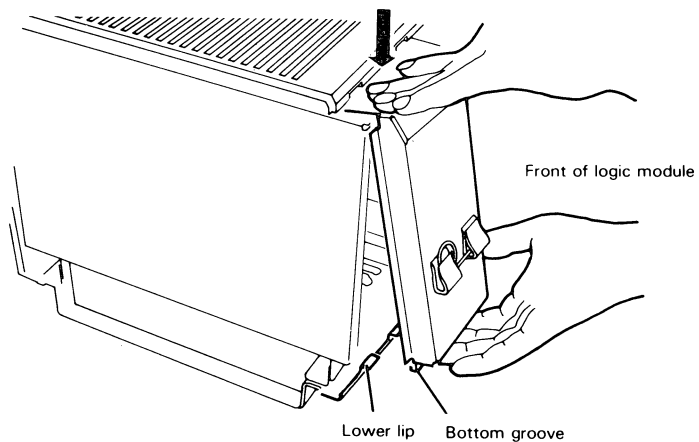
1. Remove the front covers from the CPU module (and the logic expansion module, if present).



DG-25639

To remove any front cover, press up on the bottom of the cover and pull it away from the module.

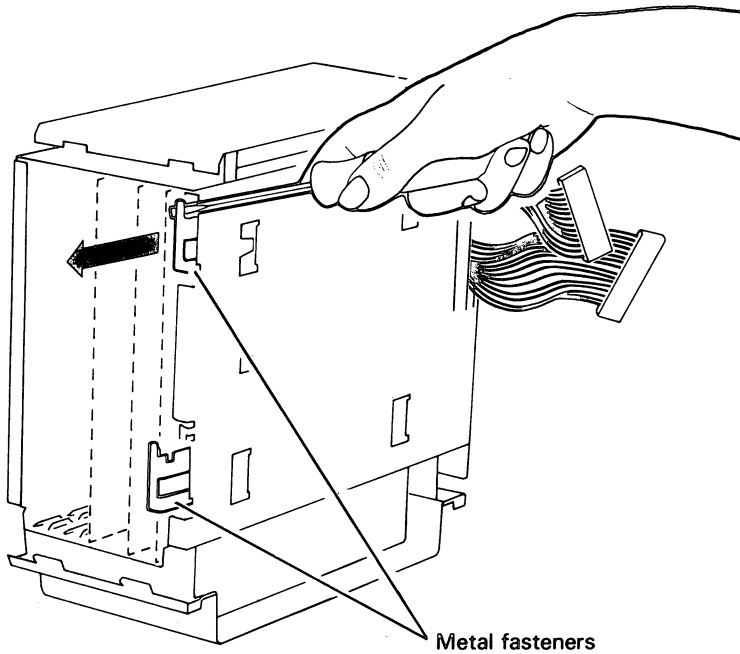
2. Remove the metal radio frequency interference (RFI) shield from the CPU logic module (and expansion module, if present).



DG-25963

To remove the shield, press down firmly on the top as shown. The bottom groove of the shield will pop free of the module's lower lip. Pull the shield away from the module.

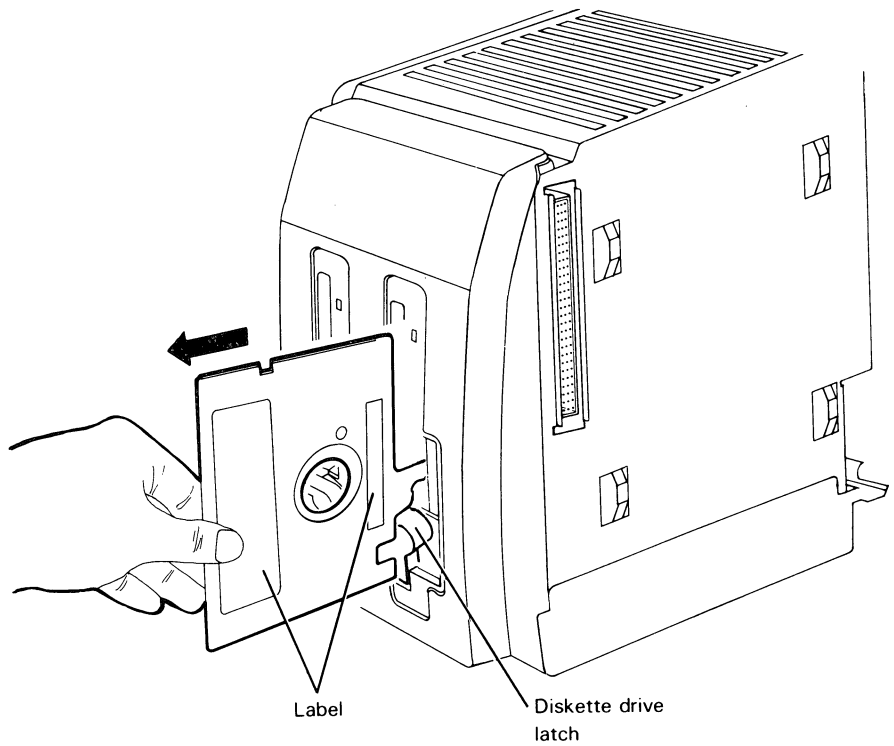
3. Pull out the two metal fasteners on the CPU logic module. The fasteners can be pulled out approximately  $3/4$  of an inch.



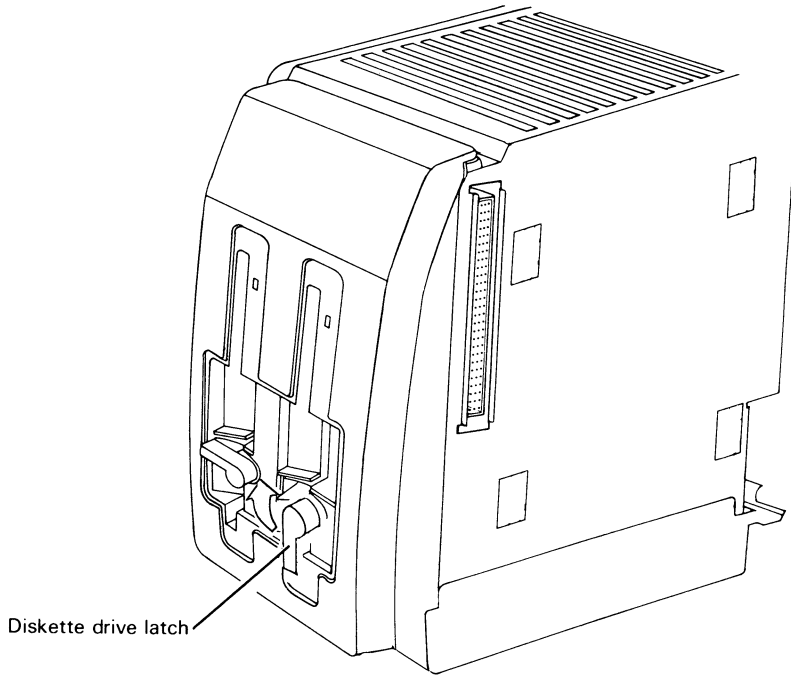
DG-25642



4. Turn the diskette drive latch(es) down. Remove the cardboard head separator from the drive.



5. Turn the diskette drive latch(es) up to the left.

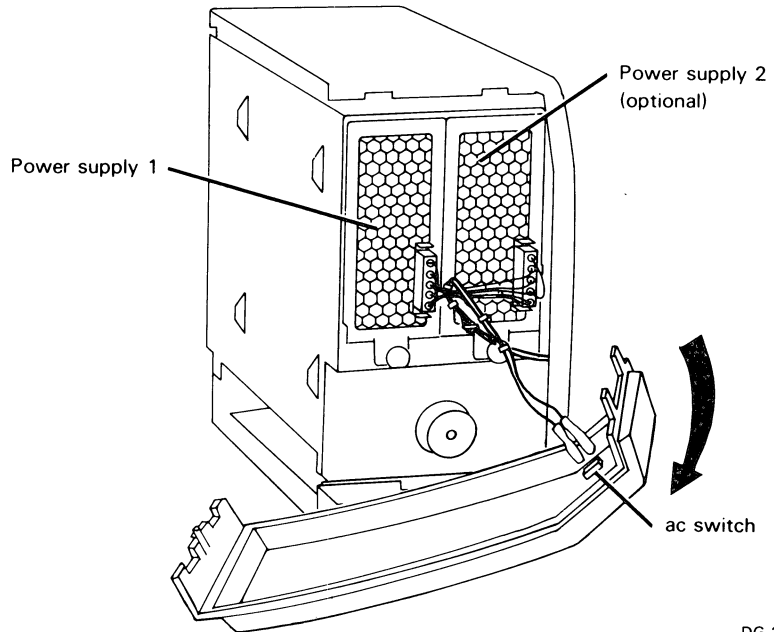


DG-26354

6. Remove the front cover from the diskette module.

7. Remove the front cover from the power supply module(s).

**CAUTION** *Be careful not to disturb the wires that connect the supply to the ac switch on the back of the front cover.*

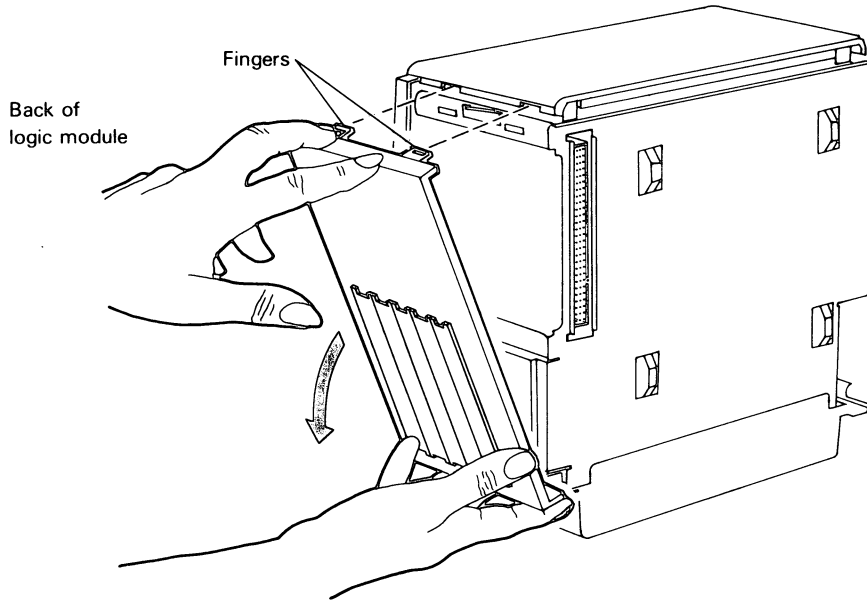


DG-26355

Rest the cover on the surface in front of the module. To avoid scratching the cover, be sure the surface is non-abrasive.

8. Remove the front cover from the disk module(s), if these modules are present in your system.

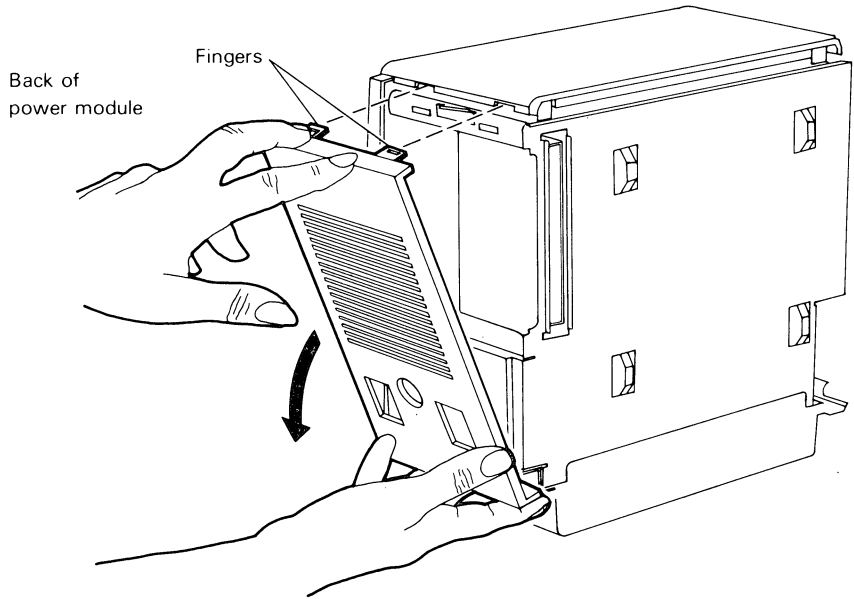
9. Remove the rear cover from the CPU logic module (and the logic expansion module, if present).



DG-26356

To remove a rear cover, press down on the top of the cover and pull it away from the module.

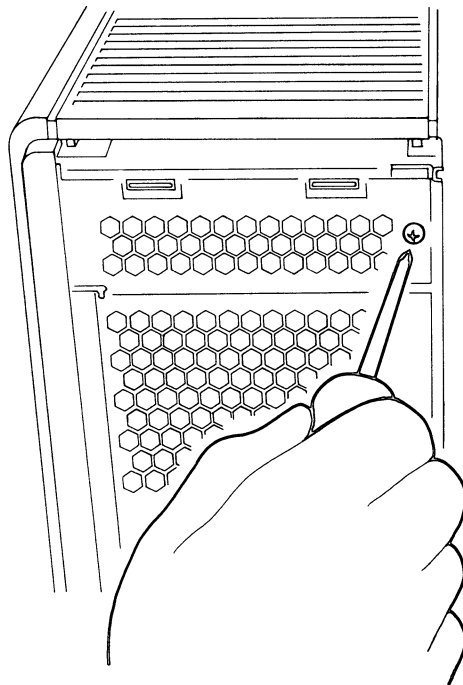
10. Remove the rear cover from the power module.



DG-26357

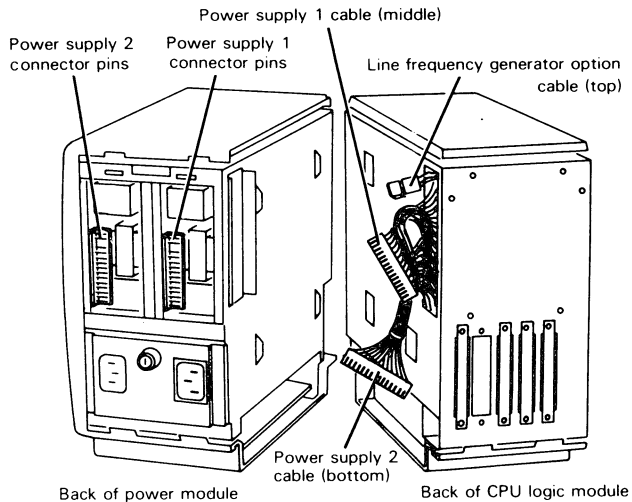
1. Remove the metal grid at the back of the power supply module by unscrewing the two screws and washers on the right side and lifting off the grid.

Back of  
power module



DG-26358

12. Place the CPU logic and power supply modules on your work surface at a slight angle to each other.



DG-26359

**NOTE** *If your system does not have the line frequency generator option, leave the wrapping tape on the connector — the small, black connector on top. The connector will be tucked into the power supply module (Step 18).*

*If your system does have the line frequency generator option, call your Data General Service Operations Center for installation information.*

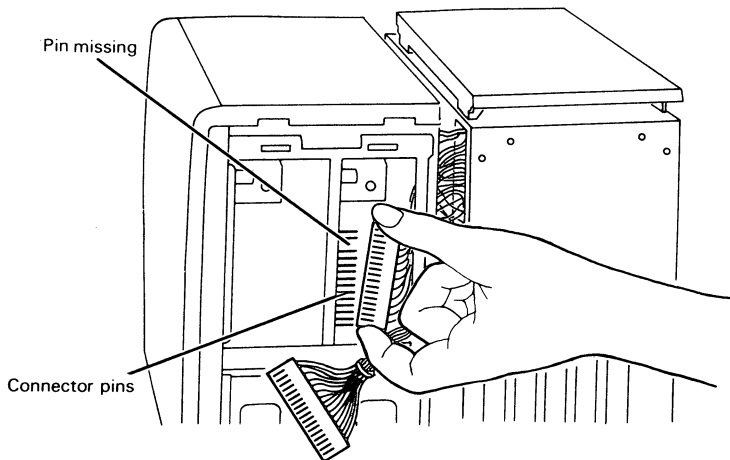
It is easier to do the next four steps with the modules slightly apart, moving them closer when you do step 14 and 16.

13. Guide the Power supply 2 cable (on the bottom) through the side "window" of the power supply module.
14. Guide the Power supply 1 cable (in the middle) through the side "window" of the power supply module. Pull the modules closer together as necessary.
15. Make sure that the line frequency generator option cable (if present, the small, black connector on top) is pushed through the window.

**NOTE** *If you do not have the line frequency generator option, leave the wrapping tape on the connector.*

16. With the modules still slightly apart, connect Power supply 1 cable to the connector pins on the back of the first power supply. (You may have to press hard.)

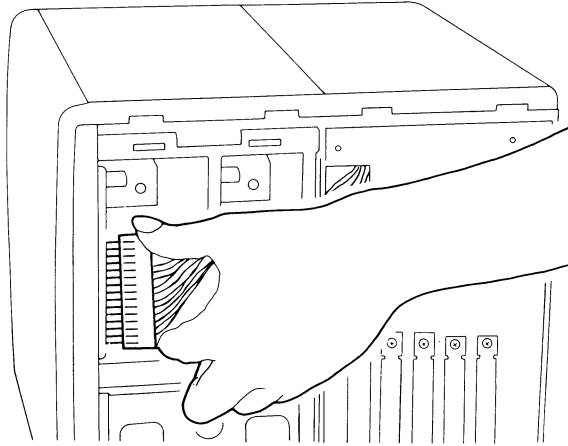
**CAUTION** *Pay close attention when you connect this cable. A cable that is twisted or misaligned can cause serious damage to your unit.*



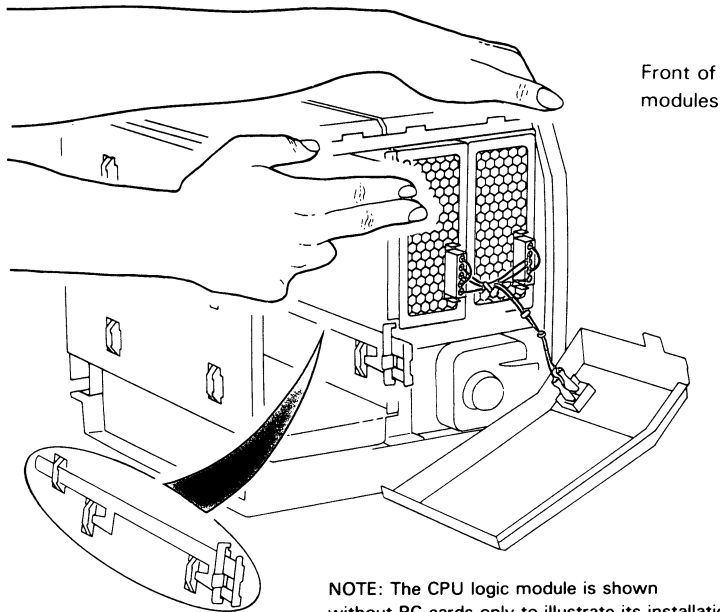


**NOTE** *You can only insert these connectors one way. The connector is keyed: a hole on the connector cable is covered to match a missing pin on the connector pin.*

**17.** If your system has a second power supply, connect Power supply 2 cable to the connector pins on the back of the second supply.



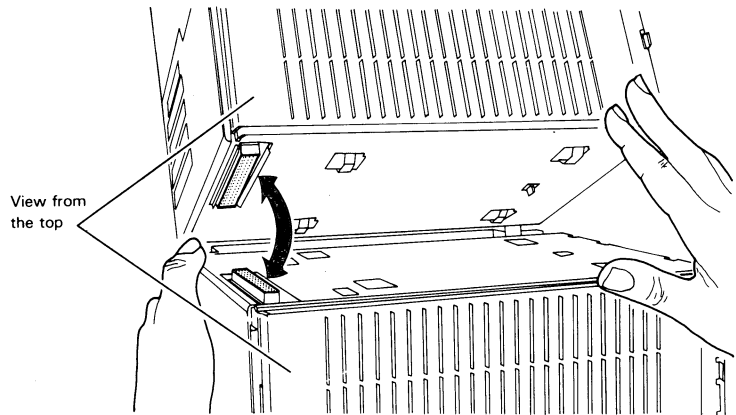
18. If your system does not have a second power supply or the line frequency generator option, tuck the unused cables, into the power supply chassis.
19. Replace the metal grid on the back of the power supply module and tighten the two screws and washers that hold it in place.
20. Place the CPU logic and power supply modules tightly together and perfectly parallel. Push in the top and bottom metal fasteners on the CPU logic module so that they engage the four metal catches on the side of the power supply module.



DG-26362

**WARNING** Before pulling the modules together, be sure that the cables and the ties around the cables are not caught between the modules.

**21.** Select the next module in your system. Connect it to the CPU logic module by joining its gold connector pins to the logic module's female connector. Press firmly on the modules, making sure the connectors are properly engaged.



DG-25648

**WARNING** *Use extreme care when connecting the modules to avoid bending the connector pins.*

**22.** Continue connecting all modules in your system — except the cartridge tape module — as described in the previous steps. If you have a cartridge tape module, install it last using the steps ahead. Skip to "Closing Procedures" if this is your first installation and your system has no tape module.

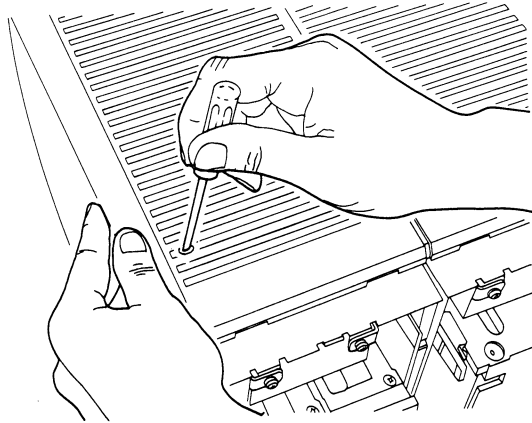
If you are adding a disk or logic expansion module, read "Installing a Second Power Supply" later in this chapter, after connecting the modules.



## Installing a Cartridge Tape Module

Take the following steps to connect a cartridge tape module to your system.

1. Remove the side panel from the diskette module, if necessary, by placing a small Phillips-head screwdriver or similar tool in the small holes on the top left side of the module. This releases the side panel from the side of the module.

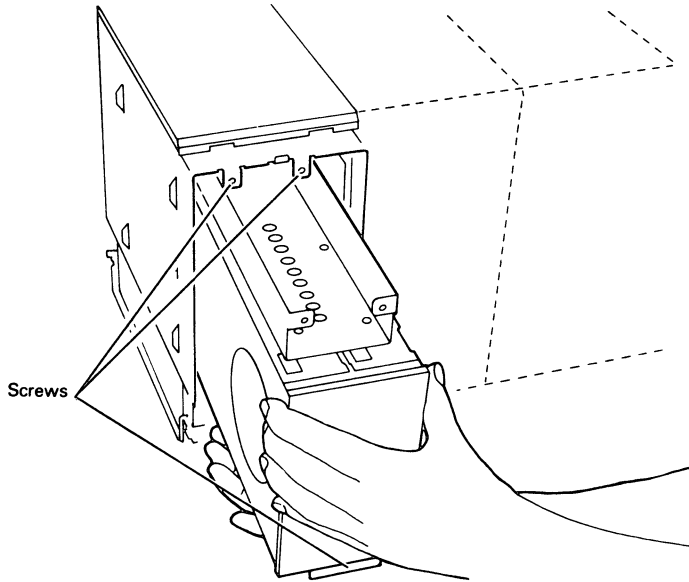


DG-25661

2. Remove the front plastic covers from the cartridge tape and diskette modules, if necessary.

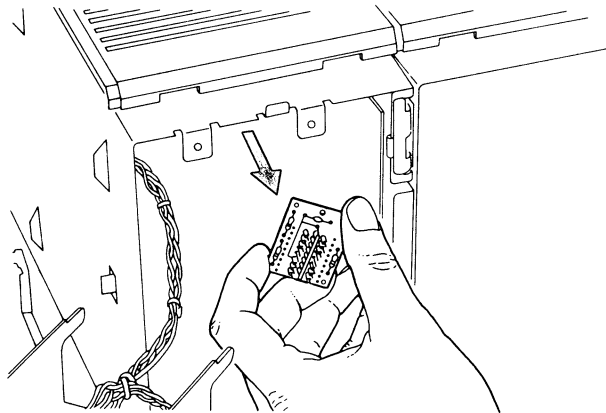
**CAUTION** *There is a small electrostatic discharge wire connected to the back of the cartridge tape module's plastic cover. Be careful not to disturb the wire when you remove the cover.*

3. Unscrew the three screws holding the diskette drive in place and slowly pull the diskette drive completely out of the module.



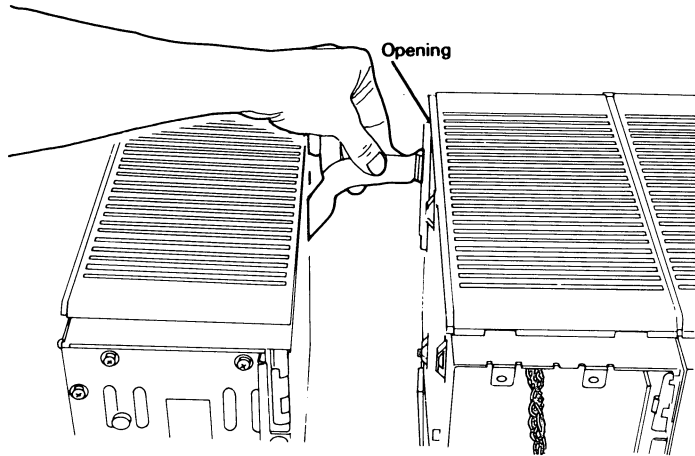
DG-26237

4. Remove the terminator plug from the back of the diskette module's backpanel.



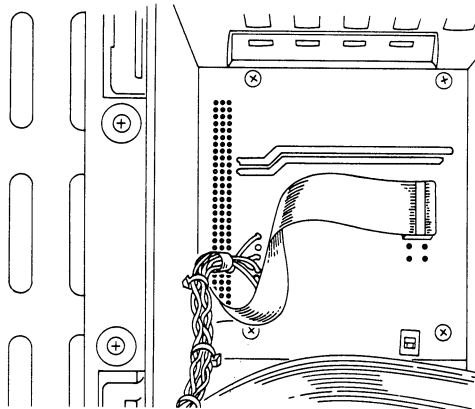
DG-25663

5. Remove the metal cover from the side of the diskette module to expose the opening underneath. Place the cartridge tape module next to the diskette module. Thread the tape module's I/O cable through the opening in the side of the diskette module.



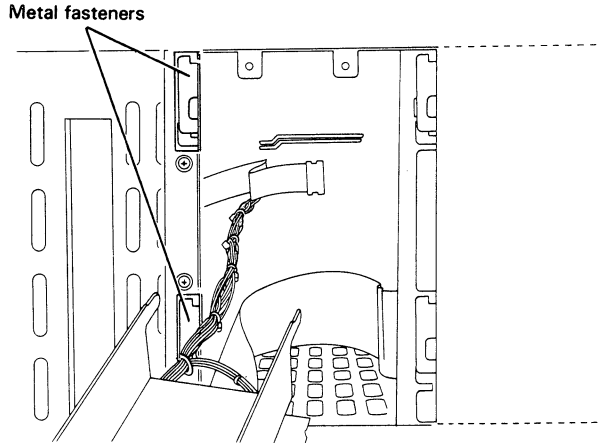
DG-25664

6. With the I/O cable's red stripe on top, connect the end of the I/O cable to the top 16 pins on the backpanel of the diskette module.



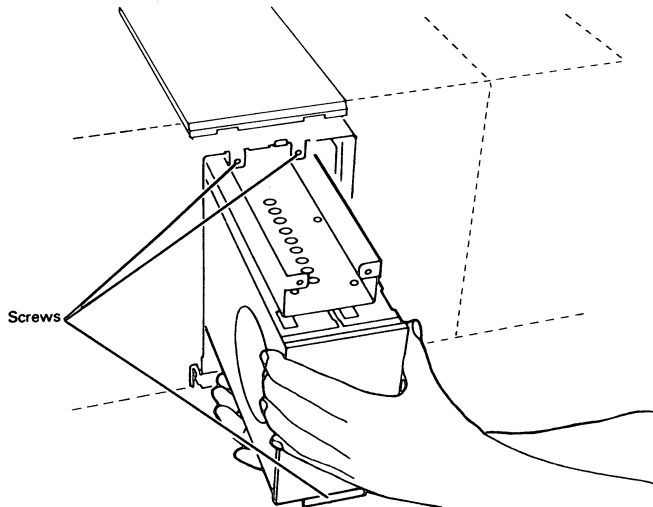
DG-25665

7. Connect the diskette and cartridge tape modules by placing them close together and pushing in the top and bottom metal fasteners on the cartridge tape module.



DG-25666

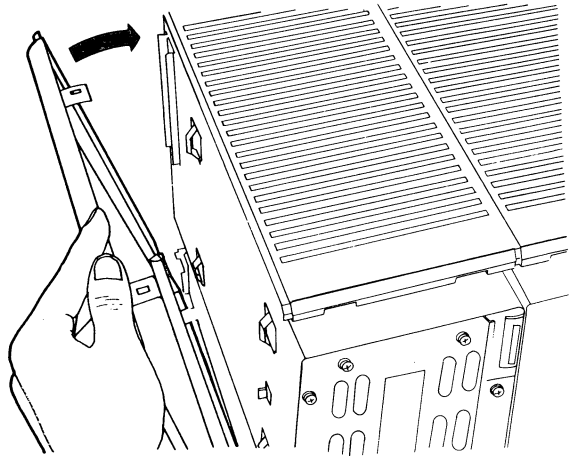
8. Replace the diskette drive in the diskette module and tighten the three screws that hold the diskette drive in place.



DG-25662

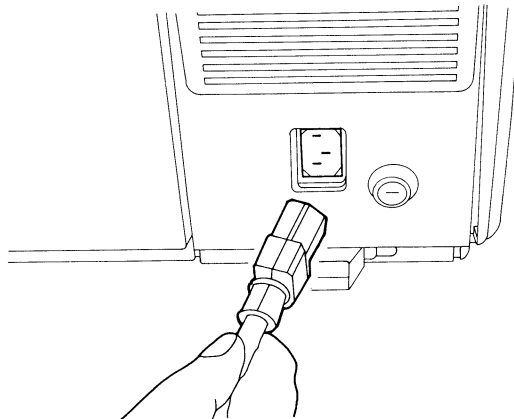


9. Install the side panel of the cartridge tape module by lining up the fingers at the bottom of the panel with the notches on the bottom of the tape module. Swing the panel towards the module while applying pressure to the top, and snap the panel in place.



DG-25668

10. Replace the plastic covers on the cartridge tape and diskette modules.
11. Make sure the cartridge tape module is turned off. Plug one end of the ac power cord into the ac connector on the back of the tape module.



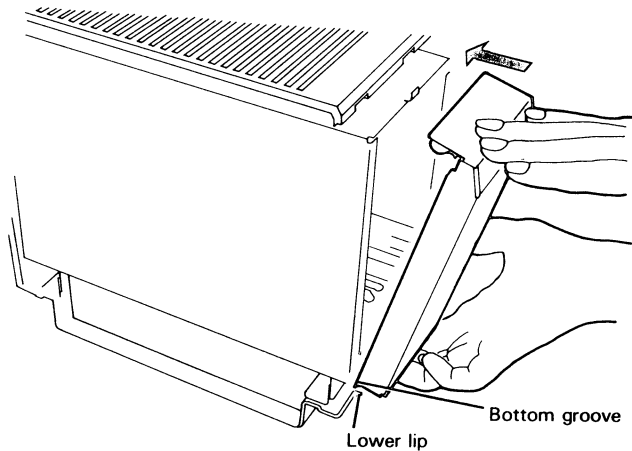
DG-25669

**NOTE** *If you ever remove the cartridge tape module from your system, remember to reinstall the terminator plug on the backpanel of the diskette module and to replace the metal cover for the opening in the side of the diskette module.*

12. If you are installing a system for the first time, continue with "Closing Procedures."

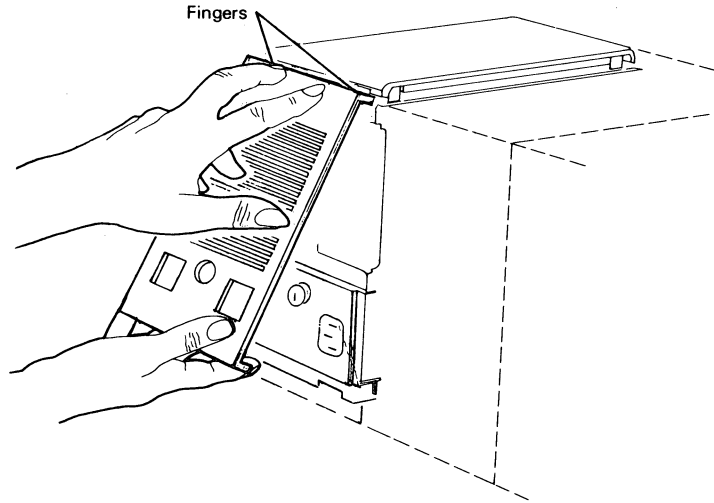
## Closing Procedures

1. Replace the RFI shield on the CPU logic module (and logic expansion module, if present) by fitting the groove at the bottom of the shield onto the lower lip of the module. Press the shield towards the module until it snaps into place.



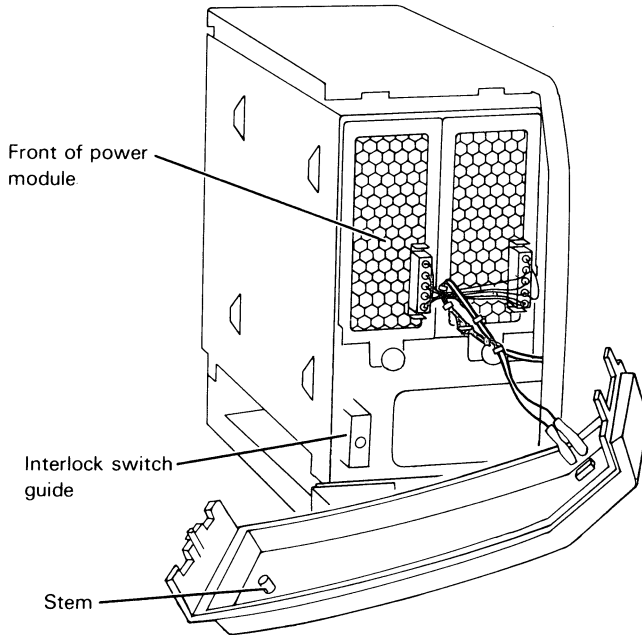
DG-25965

2. Replace all front and rear covers by inserting their two fingers under the plastic top of the module. Push up on the bottom of the cover while swinging it towards the module. The cover will snap into place.



DG-25650

**NOTE** *When replacing the front cover on a power supply module, insert the stem on the inside of the cover into the interlock switch guide. Put the bottom of the cover in place, then snap the top into place.*



DG-26366

3. Connect the computer unit's power cord to the ac connector in back of the power supply module.

cables from this equipment to the USAM line that controls it. The 4-line USAM card uses a 4-line adapter cable (DGC part no. 005-021071) and the 1-line USAM card uses a 1-line adapter cable (DGC part no. 005-020619). Either cable connects to the USAM card through an opening in the rear of the CPU logic or logic expansion module.

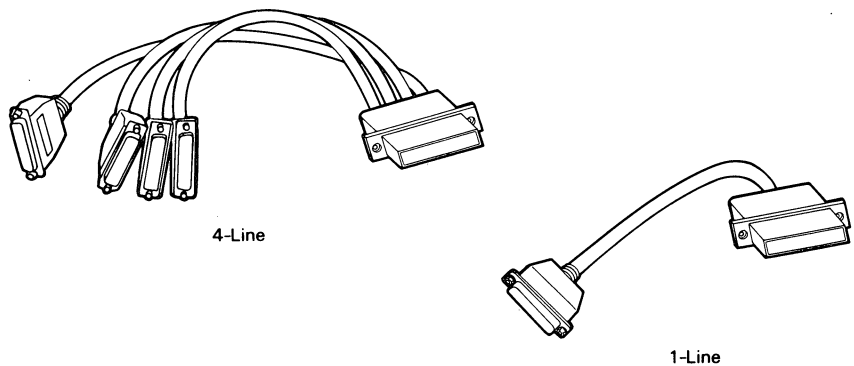
The 4-line adapter cable has four cable connectors, one for each line. The connectors are labeled P2 through P5, with P2 for line 1, P3 for line 2, and so on. The 1-line adapter cable has one cable connector, labeled P2, for line 1. These lines can be used for communicating with another computer system or for controlling peripheral devices such as a printer or plotter.

In a DG/RDOS or AOS system, only line 1 can be used for communicating with another computer; all lines can be used to control peripheral devices. The lowest-numbered line controls a printer. The next-lowest line controls a plotter. Any unused lines can control terminals, a data tablet, or a mouse.

Suppose, for example, you have an AOS system with a communications line, a printer, one user's terminal, and a mouse: line 1 is for the communications line, line 2 is for the printer, and lines 3 and 4 are for the terminal and mouse. If this system had no communications line, line 1 would be for the printer and lines 2 and 3 for the terminal and mouse.

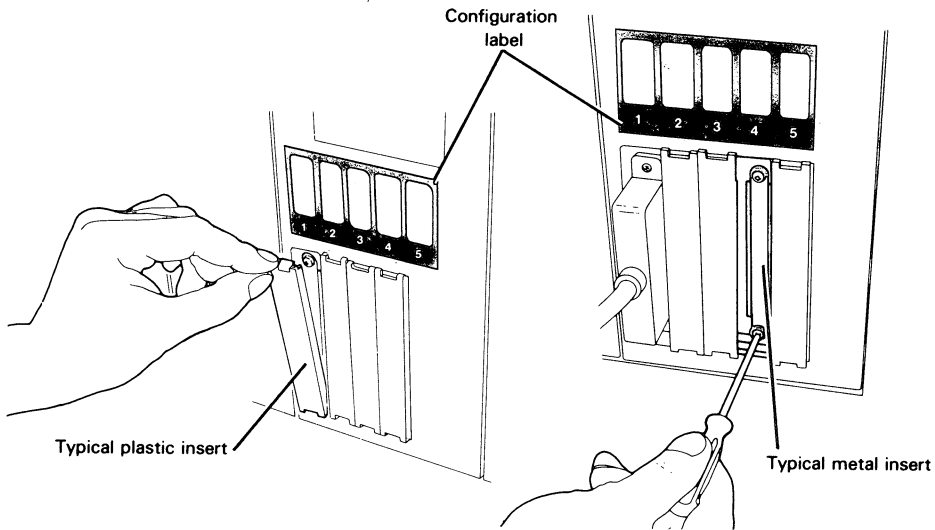
**NOTE** *Your operating system refers to line 1 of the USAM card as line 0, line 2 as line 1, and so on.*

USAM adapter cables



Take the following steps to connect the system console or USAM adapter cable.

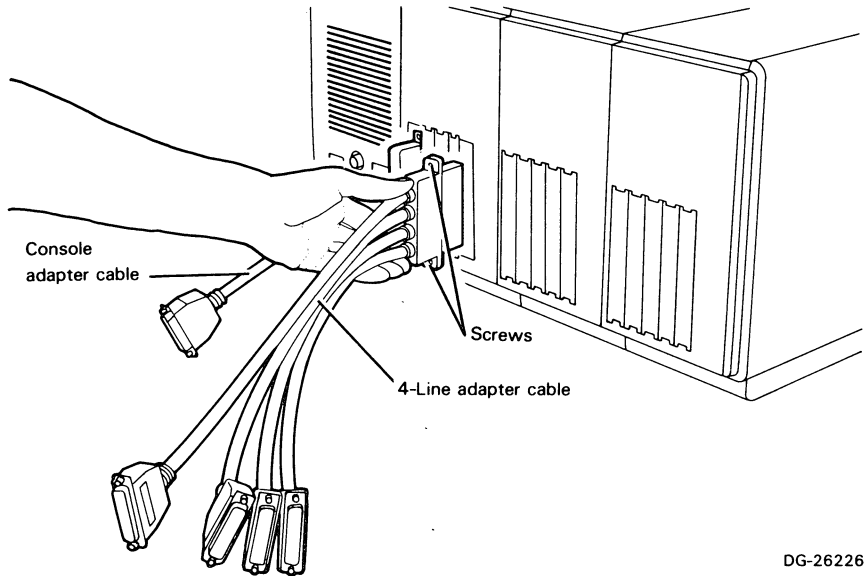
1. If you are connecting an adapter cable for your system console, remove the plastic and metal inserts (if present) that covers slot 1 behind the CPU logic module. If you are connecting a USAM or 4207 adapter cable, remove the plastic and metal inserts behind either the CPU logic or logic expansion module for the slot containing the USAM or 4207 interface card. The configuration labels on the back of the logic modules tell you which slot holds each card.



DG-26138

2. Make sure the arrow and word "TOP" on the cable's connector are in the up position before plugging the cable into the card's rear connector. (The figure below shows a 4-line adapter cable being connected to a USAM card in slot 5 of the CPU logic module.)

3. Tighten the two screws that hold the cable in place.



DG-26226

4. If your system has a modem or you want to connect it directly to another DESKTOP GENERATION or other Data General system, continue with the instructions ahead. If not, you can skip ahead to install an expansion disk unit or second power supply if you have these options. Or read "The Next Step" at the end of this chapter.

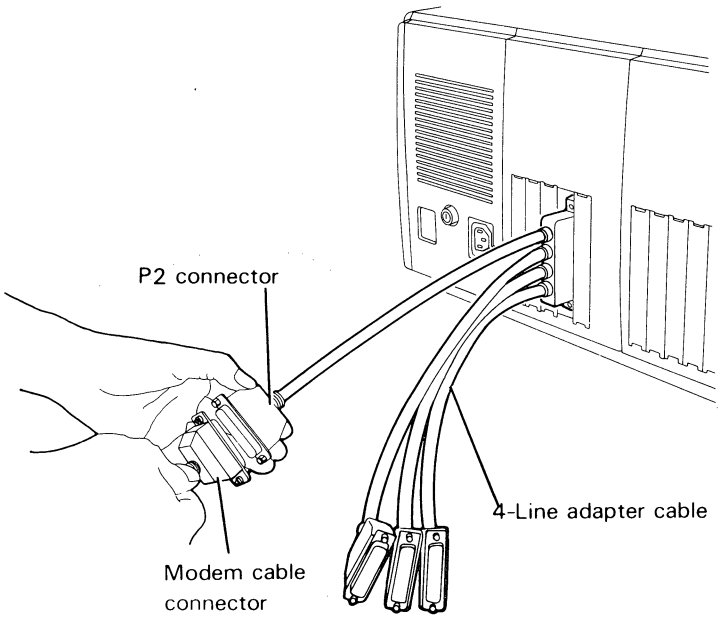
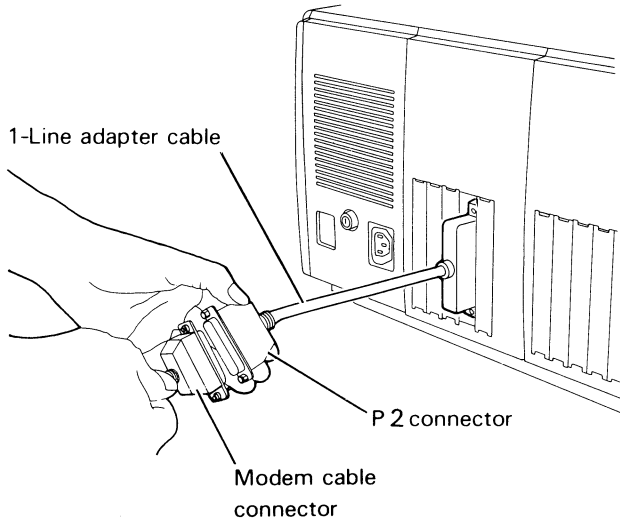
## Modem Cable

If your system includes a modem, the modem cable is required to connect it to a USAM line. A modem is typically used in DESKTOP GENERATION systems for communications with another computer. The USAM line connects to a modem which, in turn, connects to a "communications" line — a telephone line, for example. Another modem, connected to a different computer, also connects to this communications line. If you are using a Data General operating system, line 1 of the USAM card must control the communications line.

Take the following steps to connect the modem cable to a USAM line.

1. Locate the P2 connector on the USAM adapter cable and plug the modem cable into it. (P2 is the only available connector on the 1-line adapter cable. The figure on the next page shows a modem cable being connected to a 1-line and a 4-line adapter cable.)
2. Tighten the two screws that hold the cable in place.





The next sections tell you how to connect directly to another system, connect an expansion disk unit and add a second power supply to your system if you have these options. If not, you are ready to read "The Next Step" at the end of the chapter.

## Connecting Directly to Other Systems

Your DESKTOP GENERATION computer can function as a workstation when you connect it directly (without a modem) to another DESKTOP GENERATION or other Data General computer. You can connect your DESKTOP GENERATION system to another system using either a current loop, EIA RS-422-A, or EIA RS-232-C interface.

If you use an EIA interface, you connect the systems using one of the system-to-system EIA interface cables listed in the table for device cables in Chapter 3. If you use a current loop interface, you connect the systems using one of the system-to-system current loop cables listed in the same table; first, however, you install a small adapter unit (DGC Part Number 005-21359) in your system. This small unit — the current loop adapter — resides between the current loop device cable on the *host* (main) computer and the adapter cable on the interface card in the *workstation* (other) system.

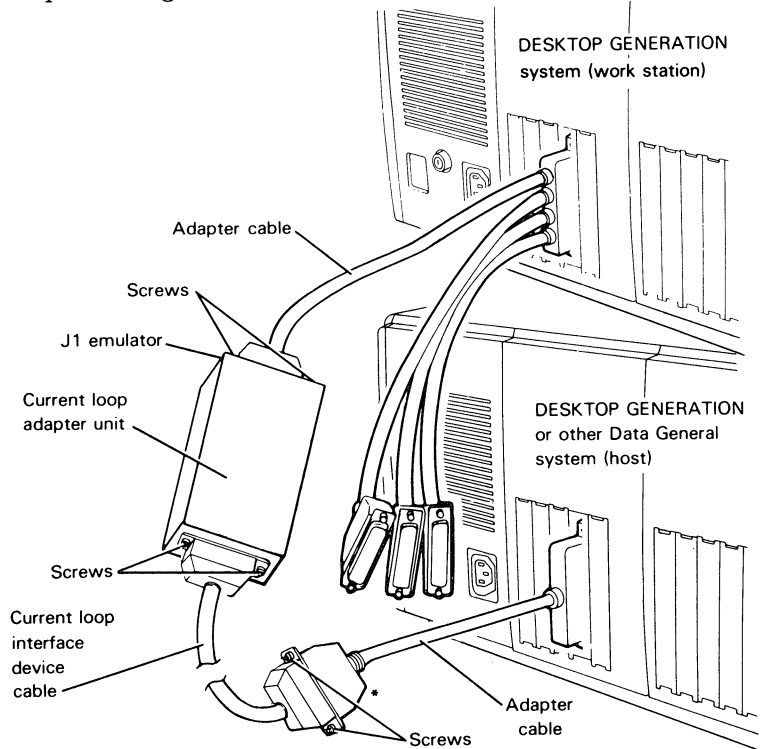
The instructions ahead tell you how to connect your DESKTOP GENERATION system to another DESKTOP GENERATION or other Data General computer using either an EIA or current loop interface. The figures show a typical system-to-system connection via 4-line and 1-line adapter cables from USAM cards in both systems. However, you may connect the systems via any line on any interface adapter cable listed in the table for adapter cables in Chapter 3.

Remember to configure the card or line on the card to reflect the proper interface. If you need to change the interface mode on the interface card in your DESKTOP GENERATION computer system, refer to Chapter 13 in this manual or to the maintenance service guide, *Model 20 and 30 Computer Systems* (DGC No. 015-000141.)

To connect your system to another system using a current loop interface, take the following steps.

1. Plug the J1, EMULATOR end of the current loop adapter unit into the connector on the adapter cable of the interface card in the workstation DESKTOP GENERATION system. Tighten the two screws on the adapter unit that hold it and the adapter cable in place.

2. Plug the J2 end of the adapter unit into the male connector on the current loop interface device cable. Then tighten the two screws that hold the adapter unit and cable in place.
3. Connect the female connector of the device cable for the current loop interface to the interface card's adapter cable (if there is one) in the host system. Tighten the two screws that hold the cables in place.



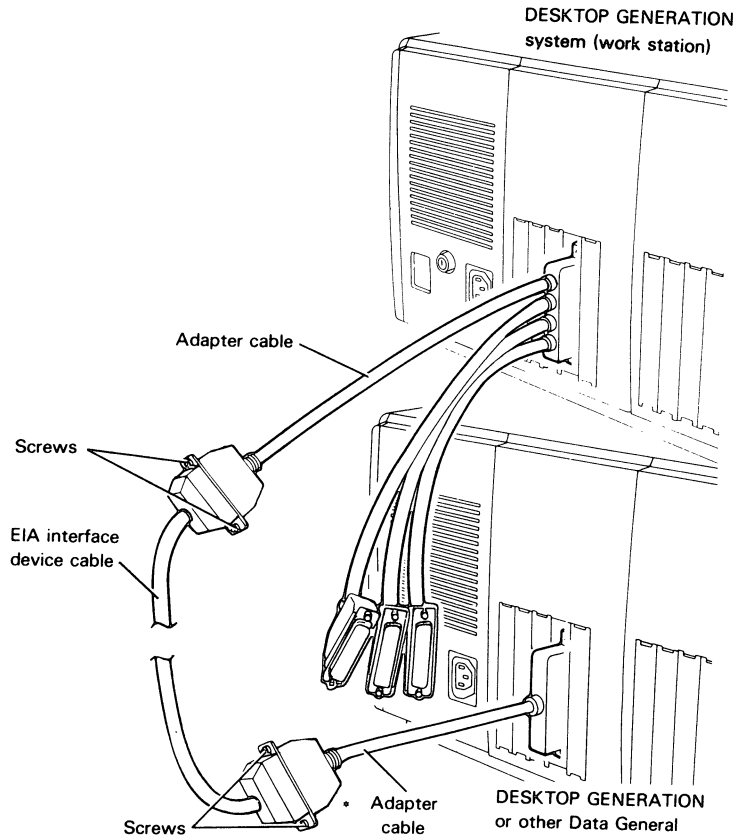
\* When connecting to systems other than DESKTOP GENERATION, connect the interface device cable directly to one of the terminal connectors located on the host system's bulkhead.

DG-26243

To connect your system to another system using an EIA RS-422-A or EIA RS-232-C interface, take the following steps.

1. Plug one end of the EIA interface device cable into the adapter cable of the interface card in the workstation DESKTOP GENERATION system. Tighten the two screws that hold the cables in place.

2. Plug the other end of the EIA interface device cable onto the interface card's adapter cable (if there is one) in the host system. Tighten the two screws that hold the cables in place.



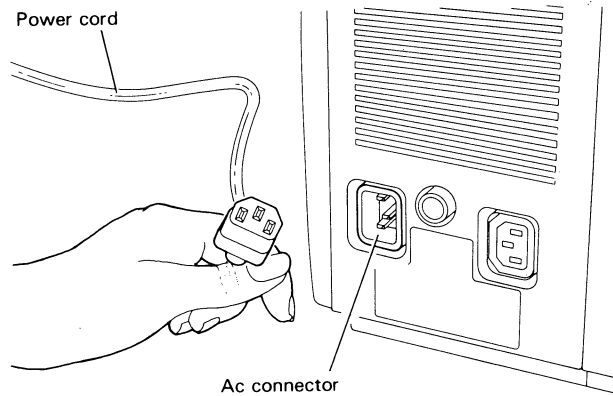
\* When connecting to systems other than DESKTOP GENERATION, connect the interface device cable directly to one of the terminal connectors located on the host system's bulkhead.

## Installing a Disk Expansion Unit

**WARNING** *When adding a disk expansion unit to a previously installed system, first make sure the heads of your first disk drive are at the loading zone — an area where data cannot be destroyed by disk movement. To position the heads at this zone, load Customer Diagnostics and select **PREPARE DISKS FOR MOVING**.*

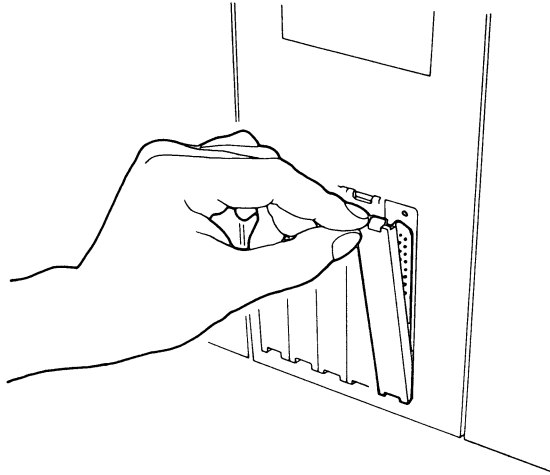
Take the following steps to connect the disk expansion unit.

1. Turn off the computer and unplug the power supply module's power cord from its ac outlet.



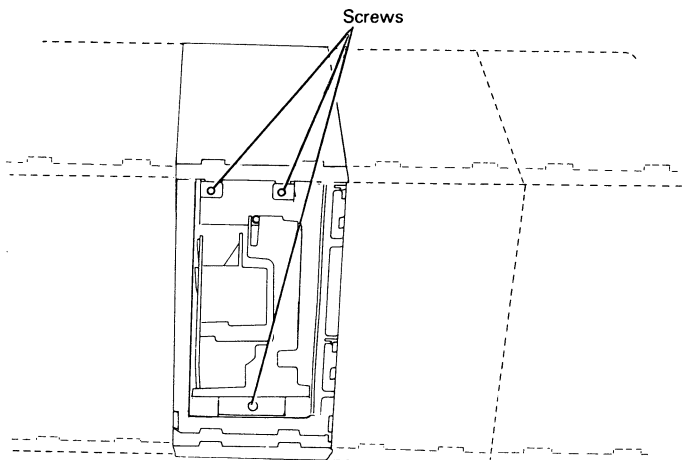
DG-25651

2. Remove the rightmost plastic insert from the rear covers of the first disk module and the expansion disk unit. Beneath each insert you will find a 50-pin connector.



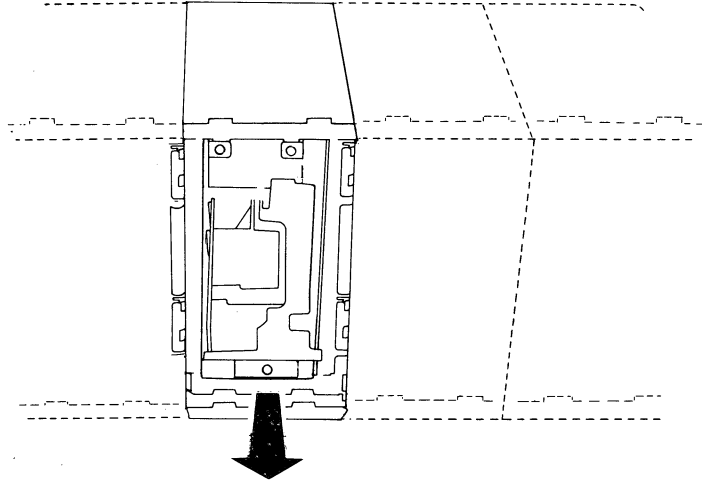
DG-25966

3. Remove the front plastic cover from the first disk module, if necessary.
4. Unscrew the three small screws and washers that secure the disk drive in the first disk module.



DG-25656

5. Slowly pull the disk drive out of the first disk module.

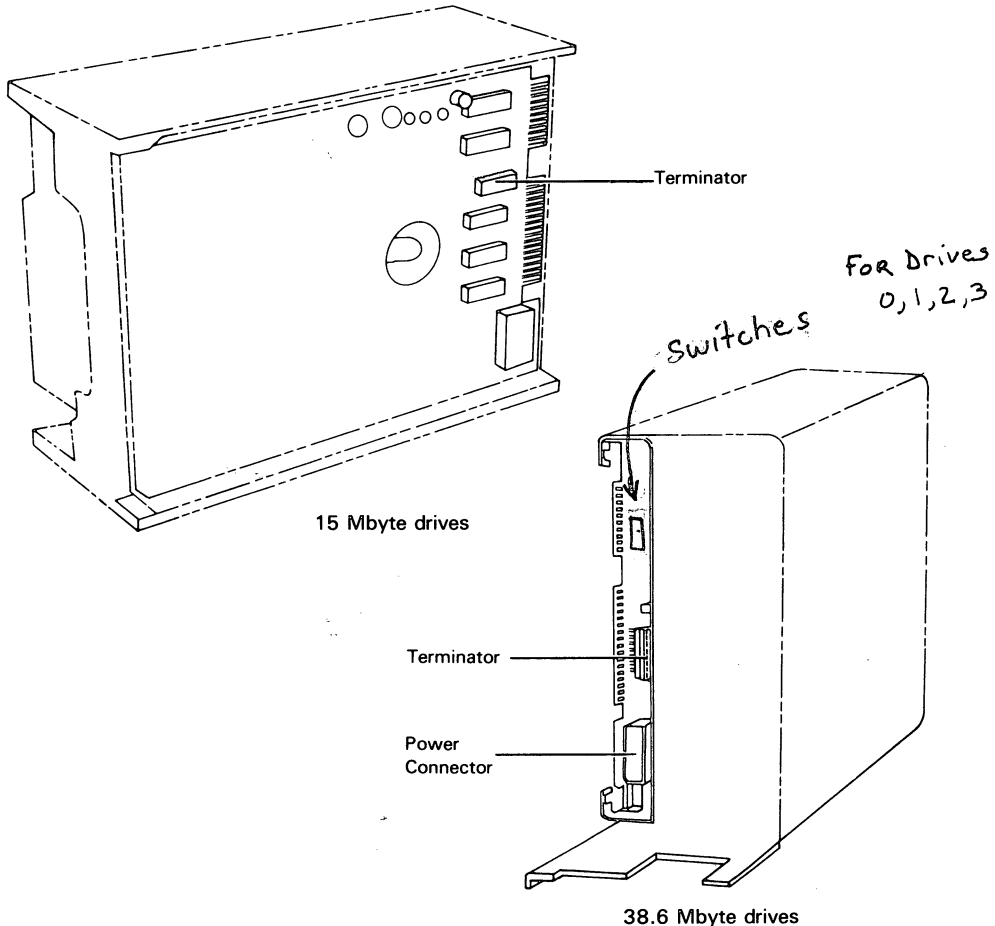


DG-25657

**CAUTION** Use extreme care when removing the disk drive from the module; the drive is sensitive to mishandling.

6. Locate the terminator chip on the printed circuit card at the right side of the drive unit and remove it from its connector. See appropriate illustration below for location of terminator. Retain terminator for possible future use. (For easy storage, tape the terminator to the front of the drive unit.) Terminator must be reinstalled if secondary drive is disconnected from system and system is to be used.

6. Locate the terminator chip on the printed circuit card at the right side of the drive unit and remove it from its connector. See appropriate illustration below for location of terminator. Retain terminator for possible future use. (For easy storage, tape the terminator to the front of the drive unit.) Terminator must be reinstalled if secondary drive is disconnected from system and system is to be used.

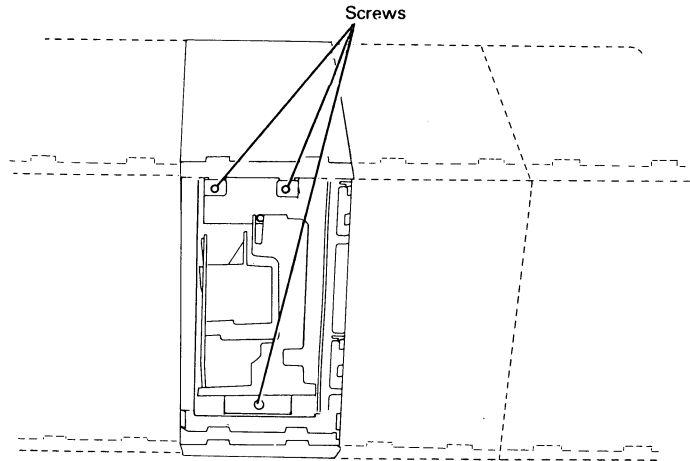


DG-26478

**CAUTION** You may need to use a small pair of needle-nose pliers to remove the terminator from the card. Be careful not to bend any of the pins on the terminator as you remove it.

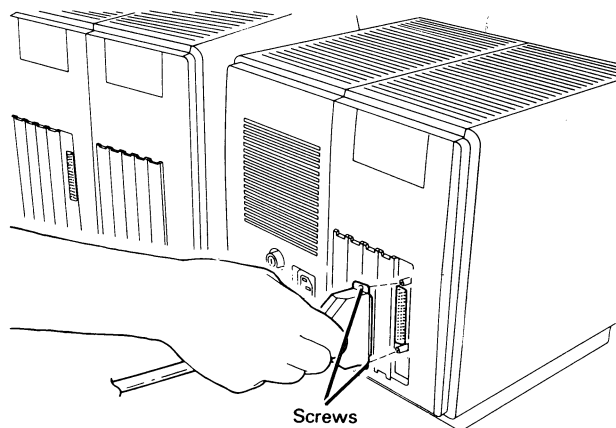


7. Gently replace the disk drive in the first disk module, being careful not to crush or twist the cables. Tighten the three screws that hold the drive in place.



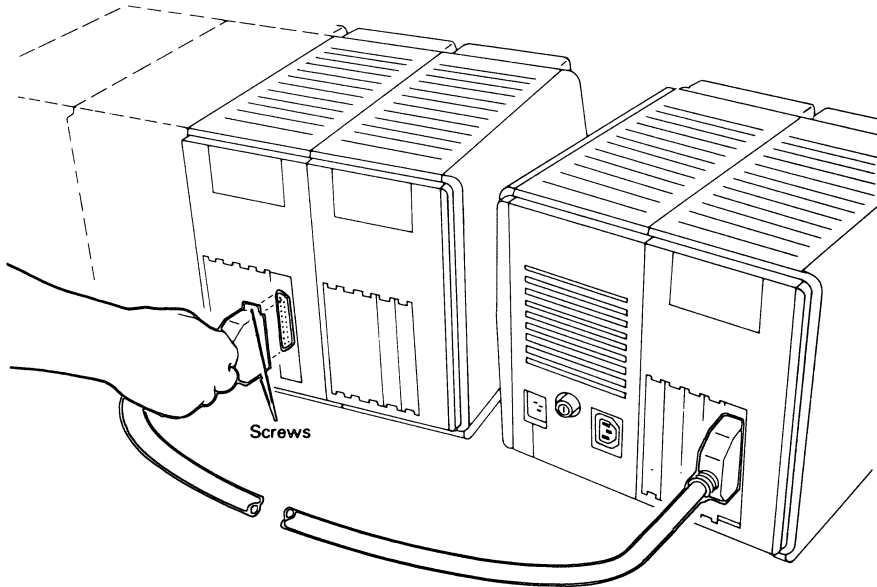
DG-25656

8. Replace the front plastic cover on the first disk module.
9. Connect one end of the disk device cable to the connector behind the disk module in the expansion disk unit. Tighten the screws that hold the cable in place.



DG-25967

10. Connect the other end of the disk device cable to the connector behind the first disk module in the computer unit. Tighten the screws that hold the cable in place.



11. Make sure the power switch on the front of the expansion disk unit is in the off position.
12. Plug one end of the power cord into the ac connector behind the power supply module in the expansion disk unit; plug the other end into an ac outlet.
13. Plug the computer unit's power cord into its ac outlet.

**NOTE** *If you ever remove the expansion disk unit from your system, remember to reinstall the gray terminator chip on the printed circuit card in the first disk module.*

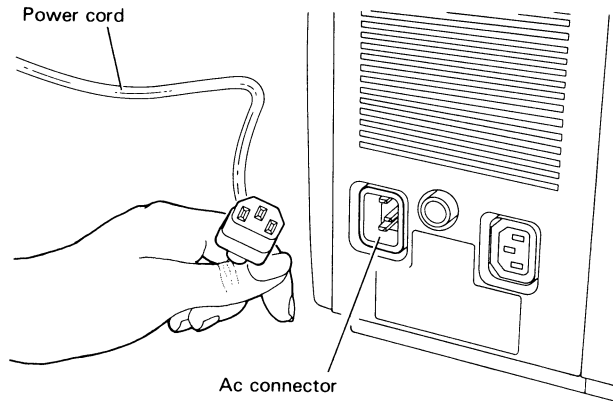
## Installing a Second Power Supply

When you add a disk or logic expansion module to a system (not preconfigured) that has neither components, you need to install a second power supply if your power supply module only contains one.

Take the following steps to install a second power supply.

1. Turn off the computer and unplug the power cord from its ac outlet and from the back of the power supply module.

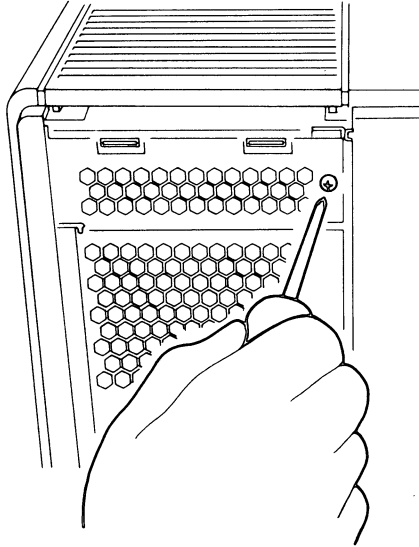
**WARNING** *Voltages within the power supply are dangerously high. Wait at least 5 minutes after turning off the power supply to allow these voltages to completely discharge.*



DG-25651

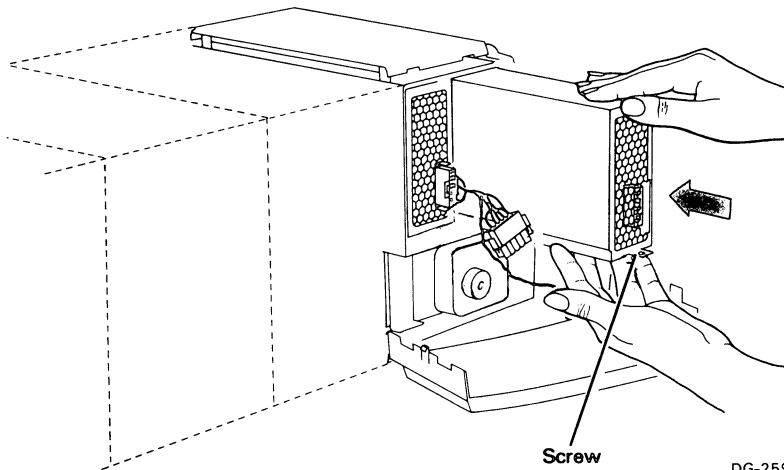
2. Remove the back and front covers from the power supply module, being careful not to disturb the wires connecting the power supply to the ac switch on the back of its front cover.

3. Remove the metal grid on the back of the power supply module by loosening the two screws and washers on the right side and lifting off the grid.



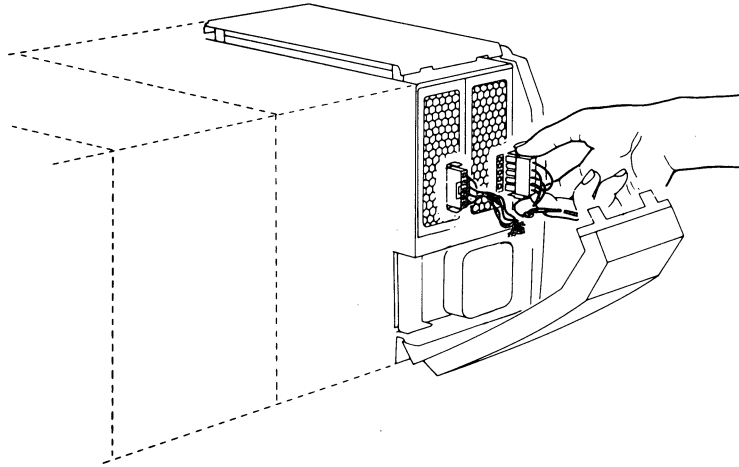
DG-25964

4. Slide the new power supply into the space to the right of the first power supply until it is securely in place. Tighten the screw and two washers that hold the power supply in place.



DG-25970

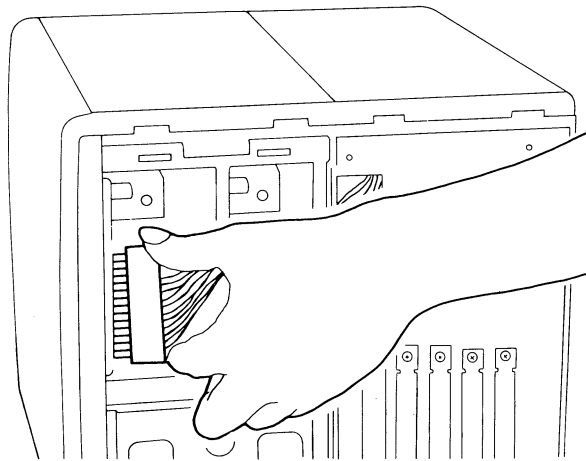
5. Connect the loose cable in front of the power supply to the connector on the second power supply.



DG-25971

6. Connect the loose cable in back of the power supply module to the second power supply's connector pins.

**CAUTION** *Pay close attention when you connect this cable. A cable twisted and connected upside down or misaligned can cause serious damage to your unit.*



DG-25647

7. Replace the metal grid on the back of the power supply module by tightening the two screws and washers that hold it in place.
8. Replace the back and front covers of the power supply module.
9. Plug the power cord into the back of the power supply module and into an ac source outlet.

**NOTE** *To remove a power supply from the power supply module, turn off the computer unit, unplug the power cord from its ac outlet, and wait five minutes to allow dangerous voltages to discharge. Remove the power supply by following the installation steps in reverse.*

## The Next Step

You are ready to connect the system console and additional terminals, if you have them. Guidelines to help you unpack and connect your system console are in the next chapter. Information on connecting a terminal is in Chapters 5 and 6: Chapter 5 helps you with D210 or D211 terminals, and Chapter 6 covers D410 and D460 terminals.

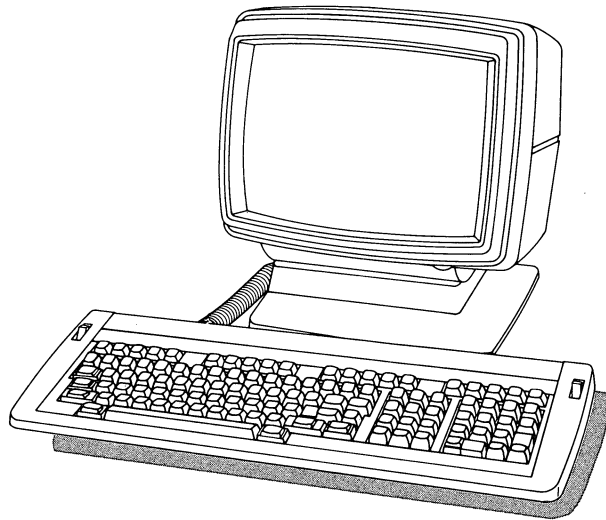
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# DASHER D210, D211, and D220 Terminals

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# 5

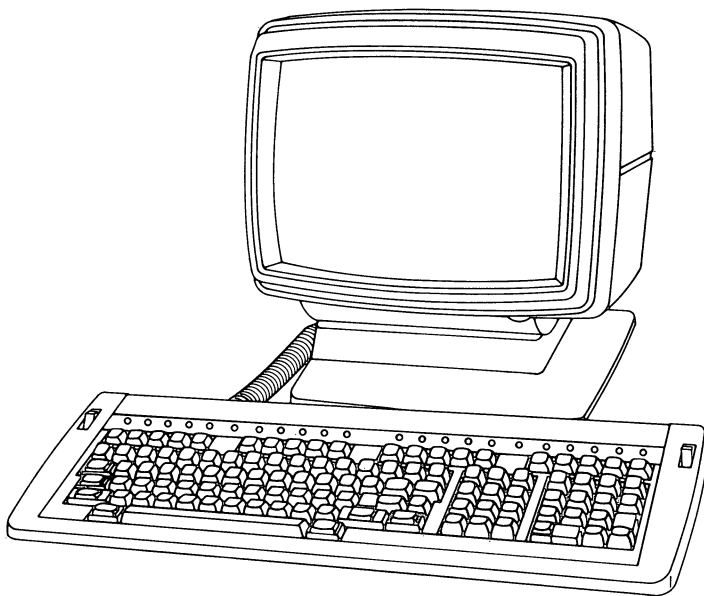
This chapter tells you how to unpack, inspect, configure, and install your DASHER D210, D211 or D220 terminal. The terminal can function as the system console or a user terminal in any system, or as a foreground terminal or user terminal in a DG/RDOS system.



## Getting Started

Before you unpack your terminal, a review of the site you have chosen for it will help ensure that it operates correctly. The temperature of this site should stay between +50 and +100 degrees F (+10 and +38 degrees C). The relative humidity should be between 20 and 80 percent (noncondensing).

You can install the display unit in an area of approximately 1.5 cubic feet (45.7 cm). While the display unit requires little space beyond its own dimensions, you should allow 6 in. (15.2 cm) around and above it for ventilation and cabling. The keyboard requires an area of approximately 2 ft by 9 in. (61 cm by 22 cm) and stands 1 inch high (2.7 cm). It is adjustable to three angles: 0, 10, and 15 degrees.





You will need to place the display unit within 25 ft (6.1 m) of the computer unit to connect it directly to the system with the standard-length device cable. You will also need to place it within 7.5 ft (2.25 m) of a grounded, three-pronged ac outlet in order to connect it to an ac power source. The keyboard connects to the display unit by a coiled cord which expands from 2 ft (0.6 m) coiled to 4 ft (1.2 m) stretched, giving you some flexibility in where you place it.

**WARNING** *To prevent injury to yourself or damage to the terminal, use only a three-pronged ac receptacle for ac power.*

The terminal requires that the ac voltage, current, and line frequency be within certain ranges for correct operation and reliability. Your main concern will be to supply the proper voltage and current. (You have little or no control over the line frequency unless you install special equipment.) General electrical requirements can be found in Chapter 2, "Site Planning." If you have any doubts about the wiring at your site, a licensed electrician can answer your questions.

The following electrical and mechanical specifications will help you install the terminal in your system.

## Electrical Specifications

	D 210/211		D220	
<b>Voltage type</b>	100 V, 120 V	220 V <sup>1</sup> , 240 V <sup>1</sup>	100 V, 120 V	220 V 240 V
<b>Voltage range</b>	90-132 V	187-264 V	90-132 V	187-264 V
<b>Maximum amps/phase</b>	0.75 A	0.40 A	1.6 A	0.8 A
<b>Power consumed (maximum) @ 0.75 A A nominal current</b>	40 W	40 W	110 W	110 W
<b>Input surge (maximum)</b>	25 A	25 A	25 A	5 A
<b>Heat Output</b>	150 BTU/hr	150 BTU/hr	377 BTU/hr	377 BTU/hr
<b>Power cord</b>	8.2 ft (2.5 m)	8.2 ft (2.5 m)	7.5 ft (2.3 m)	7.5 ft (2.3 m)

<sup>1</sup>D211 and D220 terminals only.

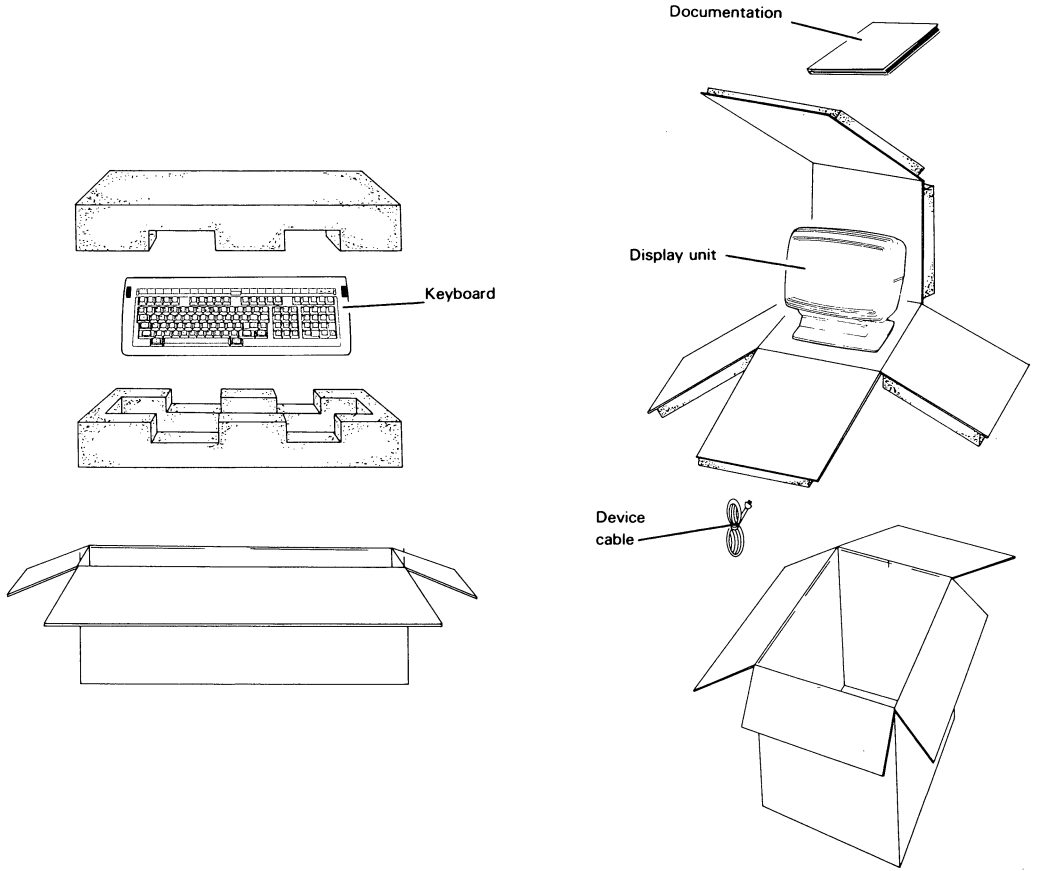
## Mechanical Specifications

<b>Display Unit</b>	<b>D210/D211</b>		<b>D200</b>	
Height:	13.1 in	(34.0 cm)	13.1 in	(34.0 cm)
Width:	12.8 in	(32.5 cm)	12.8 in	(32.5 cm)
Depth:	12.8 in	(32.7 cm)	14.2 in	(36.0 cm)
Weight:	18 lb	(8.1 kg)	27 lbs	(12.2 kg)
<b>Keyboard</b>				
Height:	2.4 in	(4.4 cm)	2.4 in	(4.4 cm)
Width:	20.4 in	(51.9 cm)	20.4 in	(51.9 cm)
Depth:	7.5 in	(19.6 cm)	7.5 in	(19.6 cm)
Weight:	5.8 lb	(2.6 kg)	5.8 lb	(2.6 kg)

## Unpacking and Inspecting the Terminal

Take the following steps to unpack and inspect your terminal.

1. Open the shipping cartons and remove the display unit, keyboard, and other items.
2. Gently remove all packing materials.



3. Check the contents of the carton against the inventory checklist below to make sure you have received all items. Some items such as device cables may be in other cartons. You can find the device cable's part number in the "Device Cable" section in Chapter 3.

Inventory Checklist	
<input type="checkbox"/>	Documentation
<input type="checkbox"/>	Monitor
<input type="checkbox"/>	Device cable
<input type="checkbox"/>	Keyboard with cable
<input type="checkbox"/>	Power cord

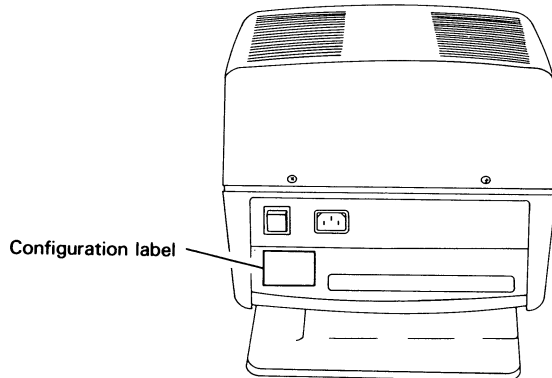
DG-26146

4. Save the cartons and all packing materials to use if you move or if you must return the terminal.

5. Carefully inspect the terminal for any visible damage. If it appears damaged or contains any loose parts, call the nearest Service Operations Center and report the problem. If you need to return the terminal, repack it as shown in the packing diagram.

6. Using the figure on the next page, locate the configuration label in back of the display unit. Using the table below, make sure the model number on the label specifies the display unit you ordered and that its power characteristics match those of your ac power source.

D210 Model	D211 Model	D220 Model	Power (voltage)
6242	6243	6283	120 Vac
6242/-1	6243/-1	6283/-1	100 Vac
6242/-2	6243/-2	6283/-2	220 Vac
6242/-4	6243/-4	6283/-4	240 Vac
6242/-5	6243/-5	6283/-5	240 Vac
6242/-6	6243/-6	6283/-6	240 Vac
6242/-7	6243/-7	6283/-7	220 Vac
6242/-8	6243/-8	6283/-8	220 Vac
6242/-9	6243/-9	6283/-9	220 Vac
6242/-0	6243/-0	6283/-0	220 Vac



DG-26147

If the display unit is not the right type or its power characteristics are incorrect, call your nearest Service Operations Center and report the problem. If you need to return the terminal, repack it as shown earlier in the packing diagram.

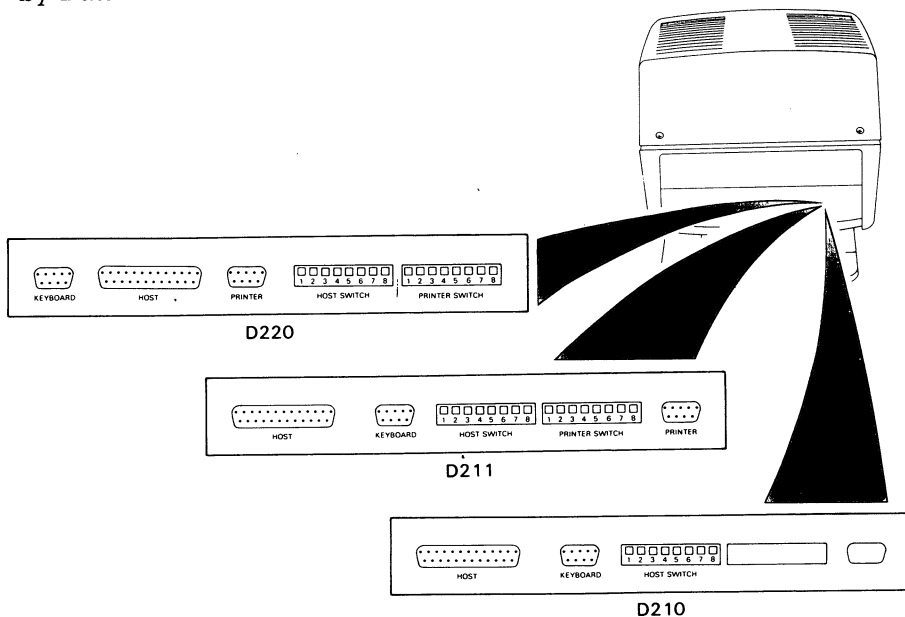
Check the bottom the display unit's keyboard. You should find a label with model number 6245- or 6246-. A letter following the dash specifies the international font of your keyboard. "A" for U.S., "B" for U.K., "C" for French, and so on.

If the keyboard's model number or international font suffix are incorrect, call the Service Operations center and report the problem. If you need to return the keyboard, repack it as shown in the packing diagram.

7. Enter information about your terminal on the system configuration sheet.

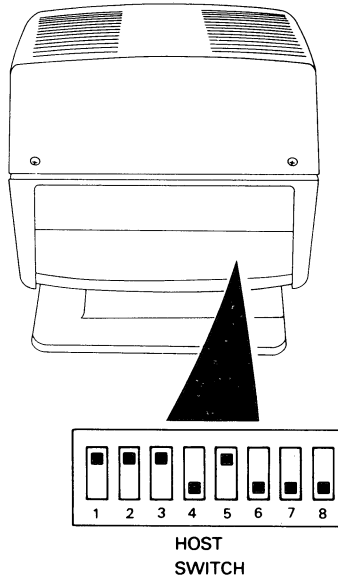
## Configuring the Terminal

Terminal characteristics, such as data transmission rates, are selected by switches behind the display unit. These switches, called *host switches*, select characteristics for communicating with the computer unit. The D211 display unit has a second set of switches, called *printer switches*, which select characteristics for communicating with an optional slave printer. Host switches must be set to the values required for a terminal in a system using operating system software supported by Data General.



## D210 Host Switches

Make sure that the host switches S1 through S6 and S8 are set as shown below. (Switch S7 selects ac line frequency; its settings are described later.)



DG-26149

These settings select the following characteristics:

Operating mode: DG  
Baud rate: 9600  
Parity: Mark

Do not change these settings unless you are using the terminal in a customized application or with an operating system not supported by Data General that requires different characteristics. If you need to change the values, refer to *DASHER D210 and D211 Display Terminal User's Manual* (DGC No. 014-000746) or *DASHER D220 Color Display Terminal User's Manual* (DGC No. 014-000950).

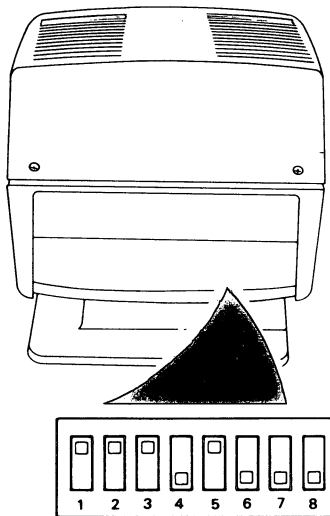
Switch S7 selects the line frequency for the D210 terminal. This switch should be set

UP (1 position) if you are using a 50Hz ac power source.

DOWN (0 position) if you are using a 60Hz ac power source.

## D211 or D220 Host Switches

Make sure that the host switches S1 through S8 are set as shown below.



HOST  
SWITCH

DG-26154



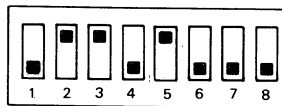
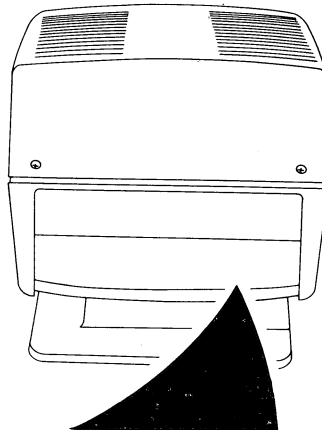
These settings select the following characteristics:

Operating mode: DG  
Baud rate: 9600  
Parity: Mark  
Data length: 7 bits

Do not change these settings unless you are using the terminal in a customized application or with a non-Data General operating system that requires different characteristics. If you need to change the values, refer to *DASHER D210 and D211 Display Terminal User's Manual* (DGC No. 014-000746) or *DASHER D220 Color Display Terminal User's Manual* (DGC No. 014-000950).

## D211 or D220 Printer Switches

If you are using a slave printer, make sure that printer switches S1 through S7 are set as shown as below.



PRINTER

DG-26159

These settings select the following characteristics:

Baud rate:                    9600  
Data length:                 8 bits

You should maintain these settings unless they fail to match the characteristics of your slave printer. If you need to change their values, refer to *DASHER D210 and D211 Display Terminal User's Manual* (DGC No. 014-000746) or *DASHER D220 Color Display Terminal User's Manual* (DGC No. 014-000950).

Printer switch S8 selects the line frequency for the D211 or D220 terminal. This switch should be set

UP (1 position)                if you are using a 50 Hz ac power source.  
DOWN (0 position)            if you are using a 60 Hz ac power source.

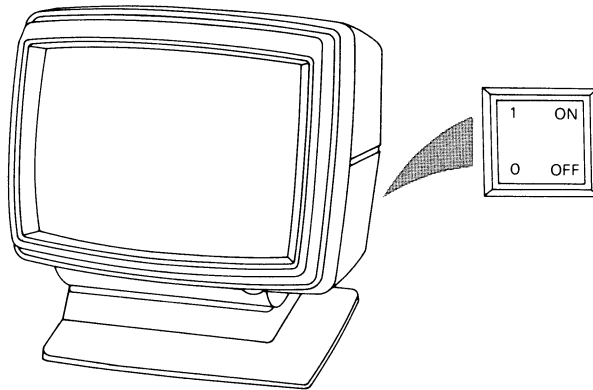
## Installing the Terminal

You install the terminal by connecting the keyboard to the monitor and then connecting the terminal to the printed circuit card that controls it. Since the terminal can function as a system console, user terminal, or DG/RDOS foreground terminal, it can be controlled by different cards. As the console, the terminal is controlled by the console interface on the SPU card; as a user terminal, it is controlled by a USAM line or 4207 card; and as a foreground terminal it is controlled by the 4207 card. The SPU card occupies slot 1 in the CPU logic module and the USAM and 4207 cards occupy I/O slots in the CPU logic or logic expansion module. The configuration labels on the back of the logic modules tell you which slot holds each card.

A short adaptor cable, which plugs into the SPU, USAM, or 4207 card through an opening behind the module provides the connection to the console interface, USAM, or 4207 line. The adapter cable for the console or 4207 interface is DGC part number 005-021148. The adapter cable for the 4-line USAM card is DGC part number 005-02104; the adapter cable for the 1-line USAM card is DGC part number 005-020688.

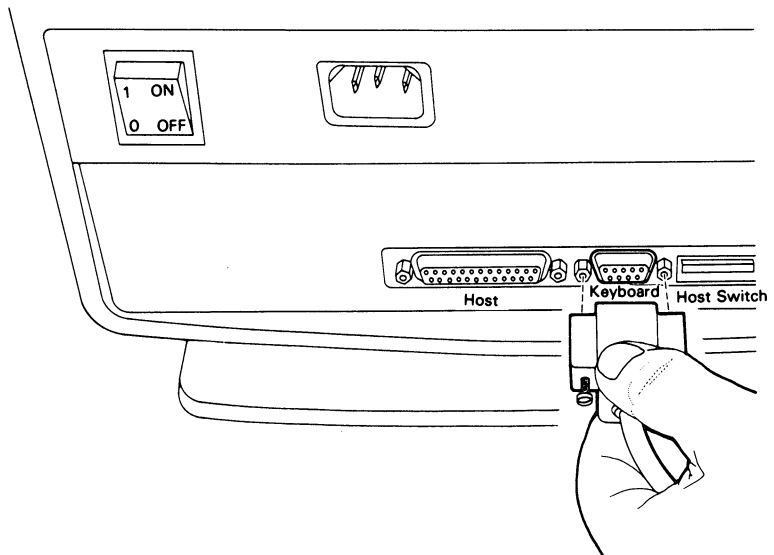
1. Make sure the computer is turned off.

2. Make sure the terminal is turned off.



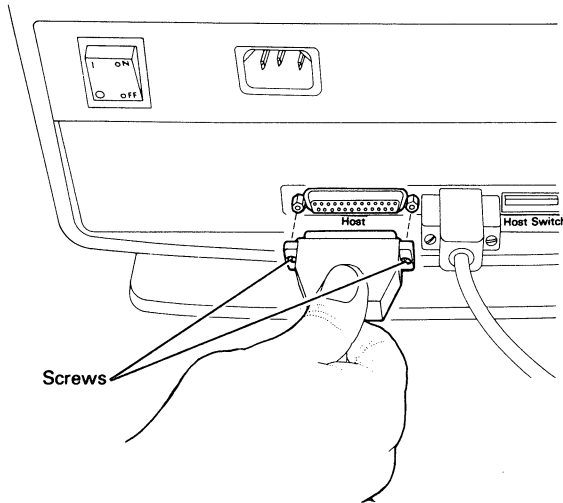
DG-26152

3. Locate the KEYBOARD connector behind the display unit and plug the keyboard cable into it. Tighten the two screws that hold the cable in place.



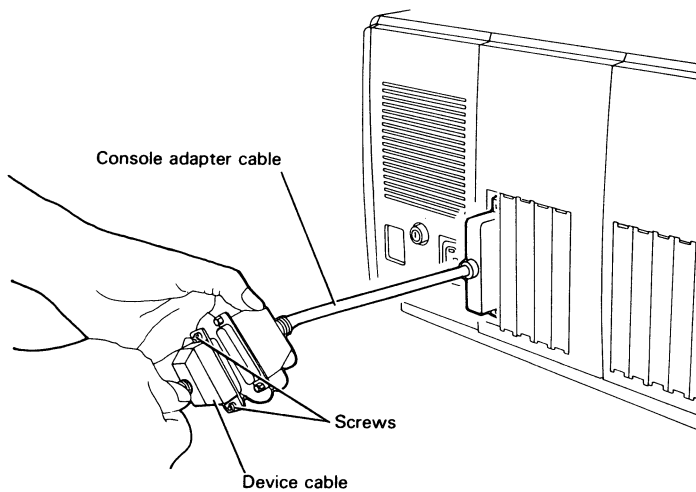
DG-26108

4. Locate the HOST computer connector behind the display unit and plug one end of the terminal's device cable into it. Tighten the two screws that hold the device cable in place.



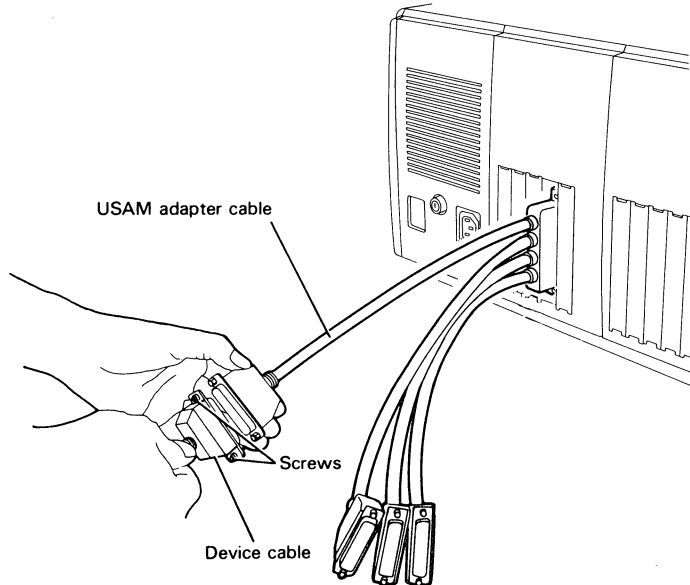
DG-26110

5. For the system console, locate the console adapter cable connected to slot 1 behind the CPU logic module and plug it into the other end of the terminal's device cable. Tighten the two screws that hold the cables in place.

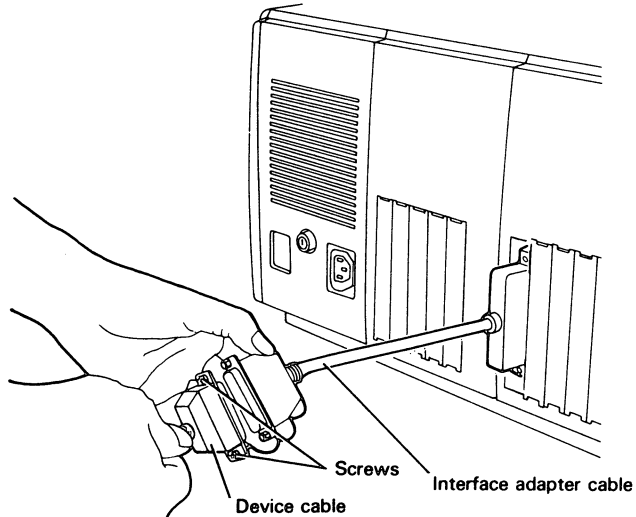


**6.** For a user terminal, locate the adapter cable for the USAM line or 4207 interface controlling the terminal and plug it into the other end of the terminal's device cable. Tighten the two screws that hold the cables in place. (The figure below shows a typical connection to a USAM card in slot 4 of the CPU logic module.)

**NOTE** *If you do not remember which line of the USAM card controls the terminal, reread "Adapter Cables" in Chapter 4.*

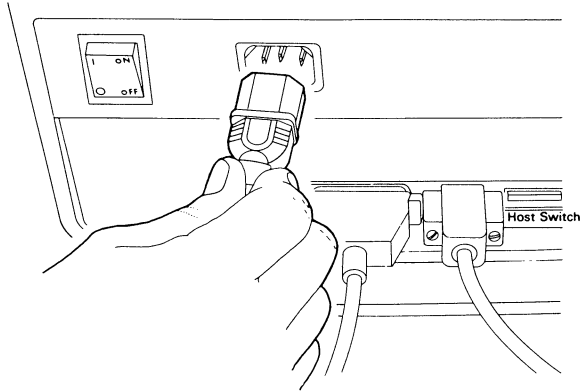


7. For a DG/RDOS foreground terminal, locate the slot containing the interface adapter cable for the 4207 card and plug it into the other end of the terminal's device cable. Tighten the two screws that hold the cables in place. (The figure below shows the connection to a 4207 card in slot 1 of the logic expansion module.)



DG-26227

8. Plug one end of the terminal's power cord into the ac connector behind the display unit and the other end into an ac outlet.



DG-26111

## The Next Step

If your system includes other equipment, connect it with the help of the chapters ahead. After installing your system, get acquainted with its operation by reading *Operating Model 20 and 30 Systems*. Then turn to *Testing Model 20 and 30 Systems* to verify your system's operation with diagnostic software.





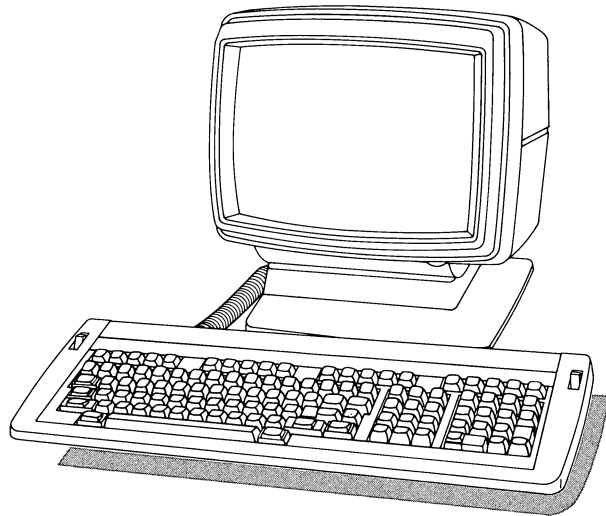
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# DASHER D410, D460, and D470C Terminals

---

# 6

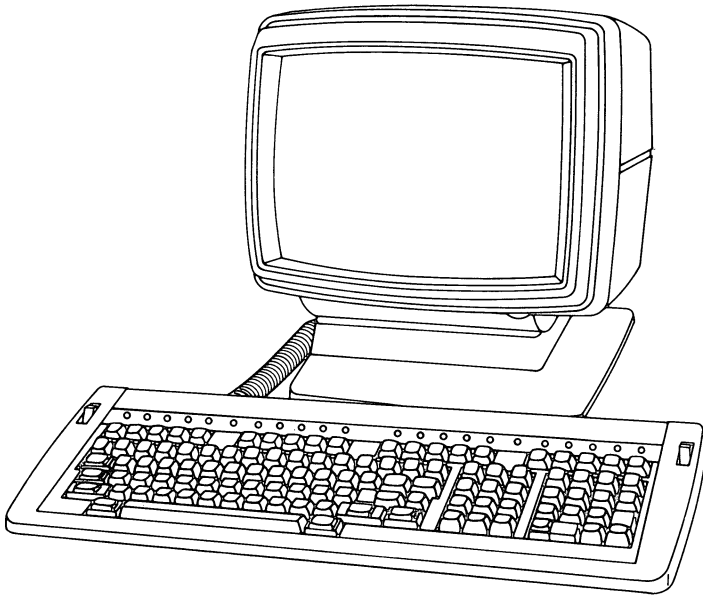
This chapter tells you how to unpack, inspect, configure, and install your DASHER D410, D460, or D470C terminal. The terminal can function as the system console or a user terminal in any system, or as a foreground terminal or user terminal in a DG/RDOS system.



## Getting Started

Before unpacking your terminal, a review of the site you have chosen for it will help ensure that it operates correctly. The temperature of your site should be between +10 and +38 degrees C (+50 and +100 degrees F). The relative humidity should stay within 20 and 80 percent (noncondensing).

You can install the display unit in an area approximately 1.5 by 1.5 ft (45.7 cm). While the display unit needs little space beyond its own dimensions, you should allow 6 in. (15.2 cm) around and above it for ventilation and cabling. The keyboard requires an area of approximately 2 ft by 9 in. (61 cm by 22 cm) and stands 1 inch (2.7 cm). It adjusts to three angles: 0, 10, and 15 degrees.



You will need to place the display unit within 25 ft (6.1 m) of the computer unit to connect it directly to the system with a standard-length device cable. You will also need to place it within 7.5 ft (2.25 m) of a grounded, three-pronged ac outlet in order to connect it to an ac power source. The keyboard connects to the display unit by a coiled cord which expands from 2 ft (0.6 m) coiled to 4 ft (1.2 m) stretched, giving you some flexibility in where you place it.

**WARNING** *To prevent injury to yourself or damage to the terminal, use only a three-pronged ac receptacle for ac power.*

The terminal requires that the ac voltage, current, and line frequency be within certain ranges for correct operation and reliability. Your main concern will be to supply the proper voltage and current. (You have little or no control over the line frequency unless you install special equipment.) General electrical requirements for your system can be found in Chapter 2, "Site Planning." If you have any doubts about the wiring at your site, a licensed electrician can answer your questions.

The following electrical and mechanical specifications will help you install the terminal in your system.

## Electrical Specifications

	D410/D460		D470C	
<b>Voltage type</b>	100 V, 120 V	220 V, 240 V	100 V, 120 V	220 V, 240V
<b>Voltage range</b>	90-132 V	187-264 V	90-132 V	187-264 V
<b>Maximum amps/phase</b>	1.0 A	0.75 A	2.0 A	1.0 A
<b>Power consumed (maximum) @ 0.75 A nominal current</b>	90 W	90 W	110 W	110 W
<b>Input surge (maximum)</b>	25 A	25 A	25 A	12.5 A
<b>Heat Output</b>	283 BTU/hr	283 BTU/hr	377 BTU/hr	377 BTU/hr
<b>Power cord</b>	7.5 ft (2.25 m)	7.5 ft (2.25 m)	7.5 ft. (2.25 m)	7.5 ft (2.25 m)

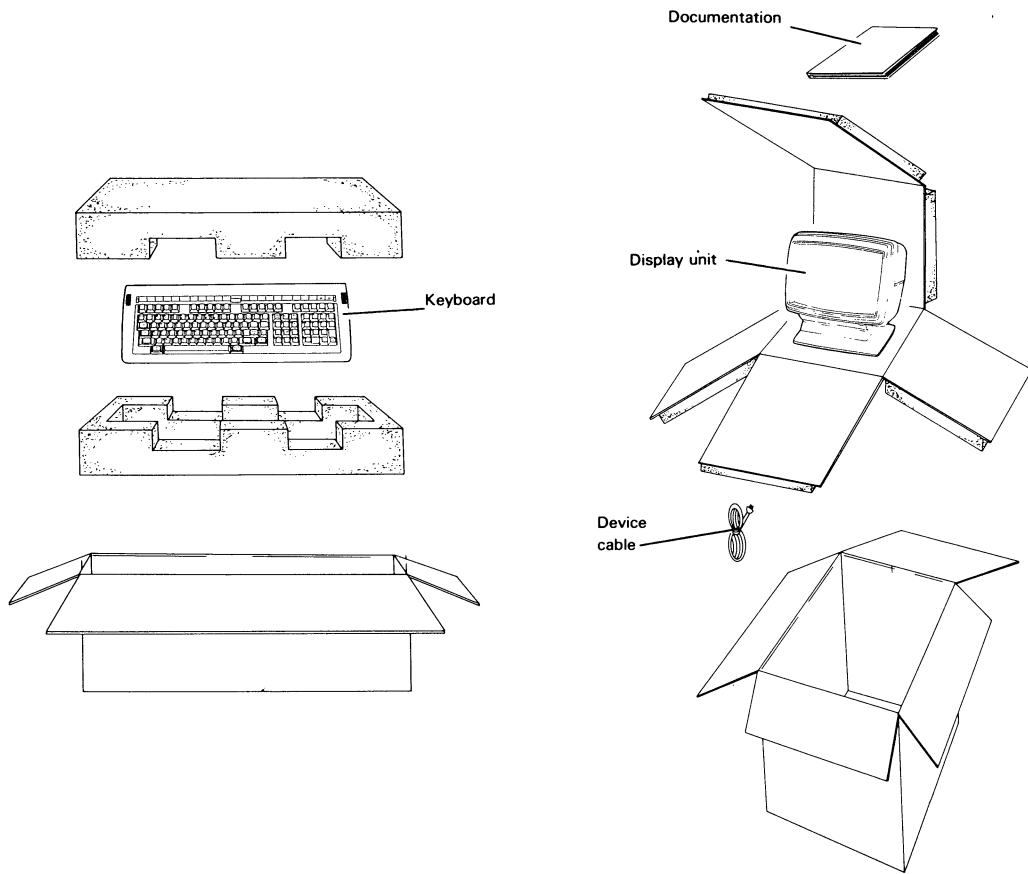
## Mechanical Specifications

<b>Display Unit</b>	<b>D410/D460</b>		<b>D470C</b>	
Height:	13.2 in	(34.0 cm)	13.1 in	(34.0 cm)
Width:	12.7 in	(32.5 cm)	12.8 in	(32.5 cm)
Depth:	12.8 in	(32.7 cm)	14.2 in	(36.0 cm)
Weight:	18.0 lbs	(8.1 kg)	27.5 lbs	(12.5 kg)
<b>Keyboard</b>				
Height:	2.4 in	(4.4 cm)	2.4 in	(4.4 cm)
Width:	20.4 in	(51.9 cm)	20.4 in	(51.9 cm)
Depth:	7.5 in	(19.6 cm)	7.5 in	(19.6 cm)
Weight:	5.8 lbs	(2.6 kg)	5.8 lbs	(2.6 kg)

## Unpacking and Inspecting the Terminal

Take the following steps to unpack and inspect your D410 or D460 terminal.

1. Open the shipping cartons and remove the display unit, keyboard, and other items.
2. Gently remove all packing materials.



3. Check the contents of the carton against the inventory checklist below to make sure you have received all items. Some items such as device cables may be in other cartons. You can find the device cable's part number in the "Device Cable" section in Chapter 3.

Inventory Checklist	
<input type="checkbox"/>	Documentation
<input type="checkbox"/>	Monitor
<input type="checkbox"/>	Device cable
<input type="checkbox"/>	Keyboard with cable
<input type="checkbox"/>	Power cord

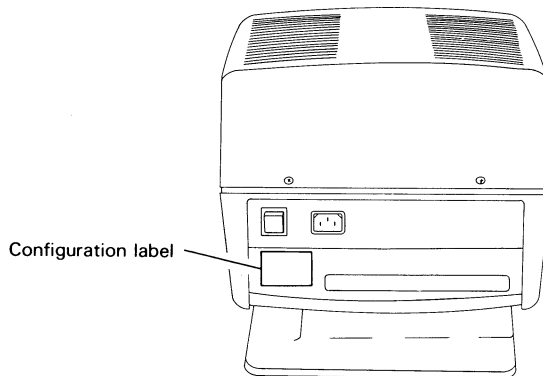
DG-26146

4. Save the cartons and all packing materials to use if you move or if you must return the terminal.

5. Carefully inspect the terminal for any visible damage. If it appears damaged or contains any loose parts, call your nearest Service Operations Center and report the problem. If you need to return the terminal, repack it as shown in the packing diagram.

6. Using the figure on the next page, locate the configuration label behind the display unit. Using the table below, make sure the model number on the label specifies the display unit you ordered and that its power characteristics match those of your ac power source.

D410 Model	D460 Model	D470C Model	Power (voltage)
6255	6256	6291	120 Vac
6255/-1	6256/-1	6291/-1	100 Vac
6255/-2	6256/-2	6291/-2	220 Vac
6255/-4	6256/-4	6291/-4	240 Vac
6255/-5	6256/-5	6291/-5	240 Vac
6255/-6	6256/-6	6291/-6	240 Vac
6255/-7	6256/-7	6291/-7	220 Vac
6255/-8	6256/-8	6291/-8	220 Vac
6255/-9	6256/-9	6291/-9	220 Vac
6255/-0	6256/-0	6291/-0	220 Vac



DG-26147

If the display unit is not the right type or its power characteristics are incorrect, call your nearest Service Operations Center and report the problem. If you need to return the terminal, repack it as shown in the packing diagram.

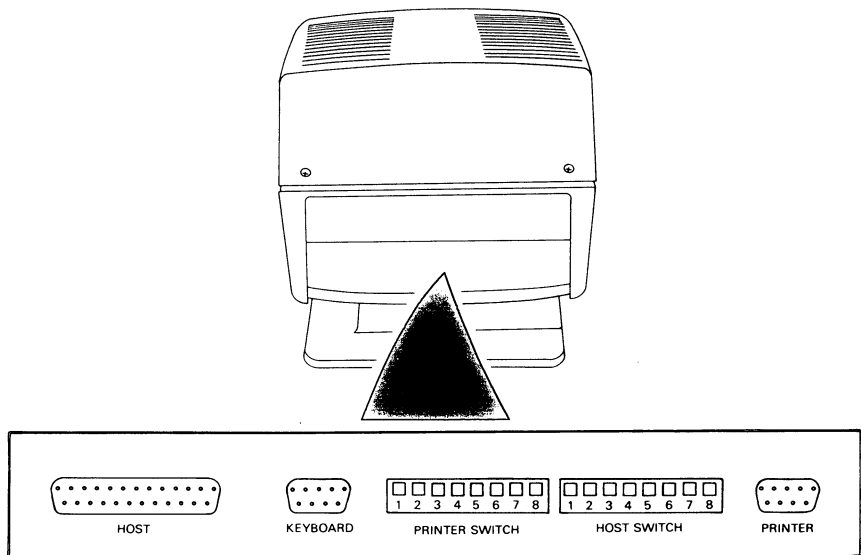
Check the bottom of the display unit's keyboard. You should find a label with model number 6245- or 6246-. A letter following the dash specifies the international font of your keyboard. "A" for U.S., "B" for U.K., "C" for French, and so on.

If the keyboard's model number or international font suffix are incorrect, call the Service Operations Center and report the problem. If you need to return the keyboard, repack it as shown in the packing diagram.

7. Enter information about your terminal on the system configuration sheet.

## Configuring the Terminal

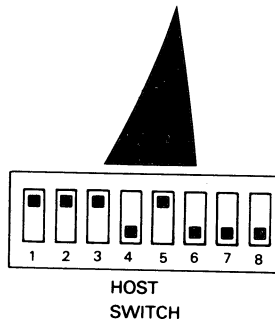
Terminal characteristics, such as data transmission rates, are selected by switches behind the display unit. These switches, called *host switches*, select characteristics for communicating with the computer unit. The display unit has a second set of switches, called *printer switches*, which select characteristics for communicating with an optional slave printer. Host switches must be set to the values required for a terminal in a system using operating system software supported by Data General.





## Host Switches

Make sure the host switches behind your display unit are set as shown below. (Switch S8 of the printer switches selects ac line frequency; its settings are described later.)



DG-26149

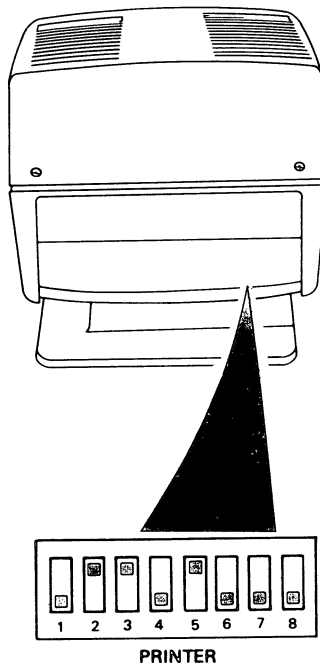
These settings select the following characteristics:

Operating mode: DG  
Baud rate: 9600  
Parity: Mark  
Data length: 7 bits

Do not change these settings unless you are using your terminal in a customized application or with an operating system not supported by Data General that requires different characteristics. If you need to change the values, refer to *DASHER D410 and D460 Display Terminal User's Manual* (DGC No. 014-000761 or *DASHER 470C Color Display Terminal User's Manual* (DGC No. 014-000788)).

## Printer Switches

If you are using a slave printer, make sure that printer switches S1 through S7 are set as shown below. (Switch S8 selects ac line frequency; its settings are described later.)



DG-26159

These settings select the following characteristics:

Baud rate:	9600
Split baud:	No
Data length:	8 bits

You should maintain these switch settings unless they fail to match the characteristics of your slave printer. If you need to change the values, refer to *DASHER D410 and D461 Display Terminal User's Manual* (DGC No. 014-000761) or *DASHER D470C Color Display Terminal User's Manual* (DGC No. 014-000788).

Printer switch S8 selects the line frequency for the terminal. This switch should be set

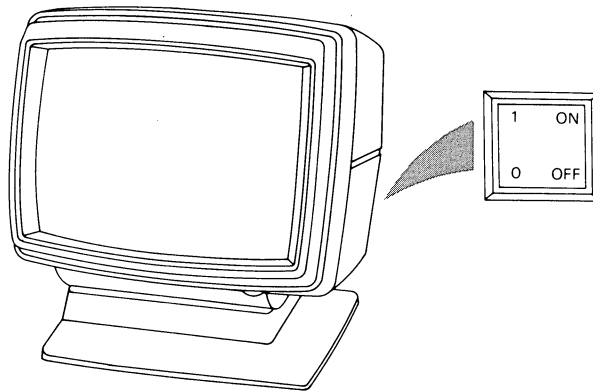
UP (1 position)	if you are using a 50 Hz ac power source.
DOWN (0 position)	if you are using a 60 Hz ac power source.

## Installing the Terminal

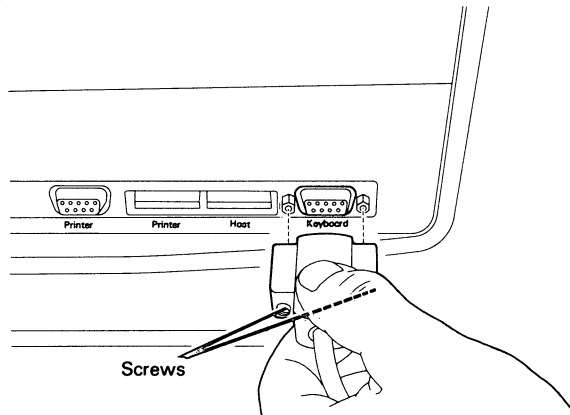
To install your terminal, you connect the keyboard to the monitor and connect the terminal to the printed circuit card that controls it. Since the terminal can function as a system console, user terminal, or DG/RDOS foreground terminal, it can be controlled by different cards. As the console, the terminal is controlled by the console interface on the SPU card; as a user terminal, it is controlled by a USAM line or 4207 card; and as a foreground terminal it is controlled by the 4207 card. The SPU card occupies slot 1 in the CPU logic module and the USAM and 4207 interface cards occupy I/O slots in the CPU logic or logic expansion module.

A short adaptor cable, which plugs into the SPU, USAM, or 4207 card through an opening behind the module provides the connection to the console interface, USAM, or 4207 line. The adapter cable for the console or 4207 interface is DGC part number 005-021148. The adapter cable for the 4-line USAM card is DGC part number 005-02104; the adapter cable for the 1-line USAM card is DGC part number 005-020688.

1. Make sure the computer is turned off.
2. Make sure the terminal is turned off.

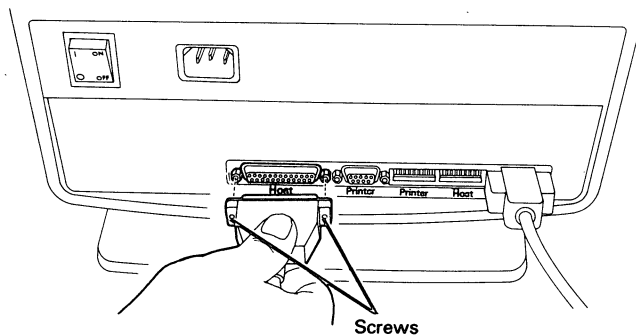


3. Locate the **KEYBOARD** connector behind the display unit and plug the keyboard cable into it. Tighten the two screws that hold the cable in place.



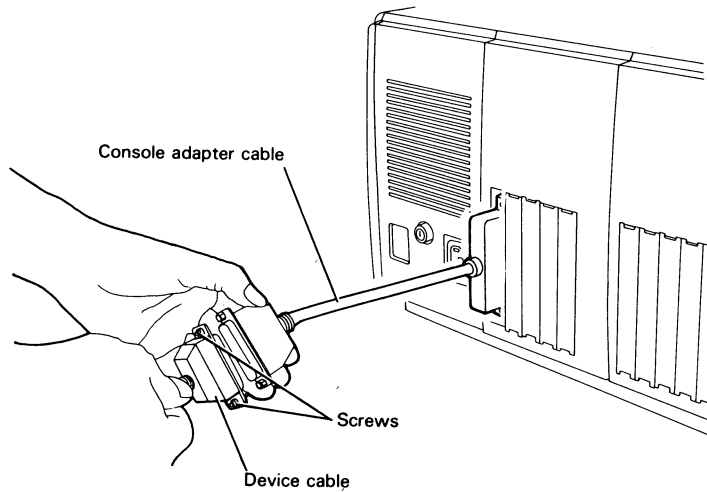
DG-26114

4. Locate the **HOST** connector behind the display unit and plug one end of the terminal's device cable into it. Tighten the two screws that hold the device cable in place.



DG-26115

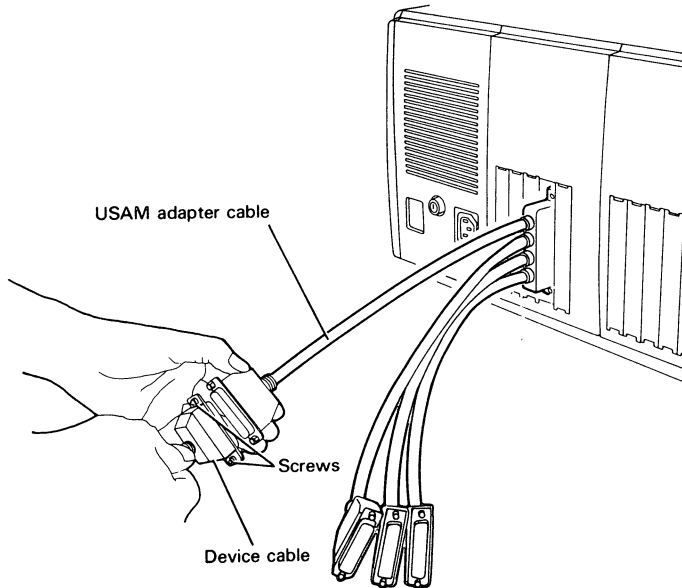
5. For the system console, locate the console adapter cable connected to slot 1 behind the CPU logic module and plug it into the other end of the terminal's device cable. Tighten the two screws that hold the cables in place.



DG-26081

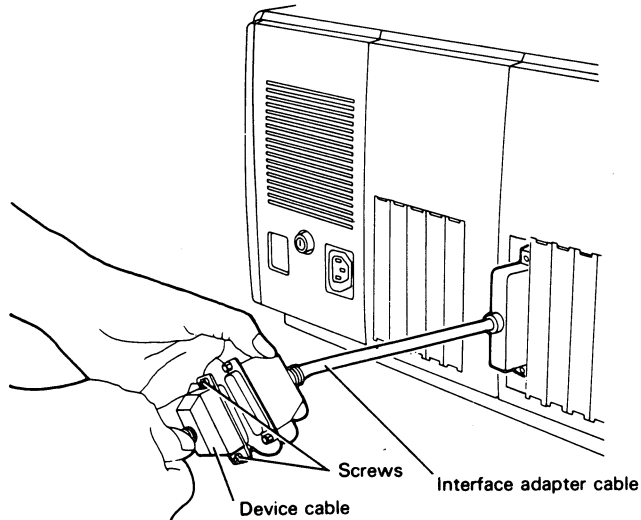
6. For a user terminal, locate the adapter cable for the USAM line or 4207 interface controlling the terminal and plug it into the other end of the terminal's device cable. Tighten the two screws that hold the cables in place. (The figure below shows a typical connection to a USAM card in slot 4 of the CPU logic module.)

*NOTE If you do not remember which line of the USAM card controls the terminal, reread the section "Adapter Cables" in Chapter 4.*



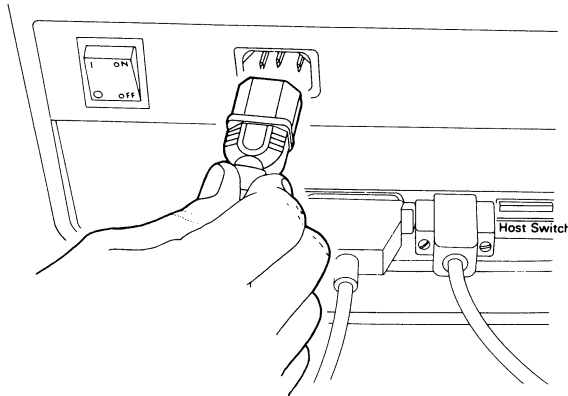
DG-26155

**7.** For a DG/RDOS foreground terminal, locate the slot containing the interface adapter cable for the 4207 card and plug it into the other end of the terminal's device cable. Tighten the two screws that hold the cables in place. (The figure below shows the connection to a 4207 card in slot 1 of the logic expansion module.)



DG-26227

8. Plug one end of the terminal's power cord into the ac connector behind the display unit and the other end into an ac outlet.



DG-26111

## The Next Step

If your system includes other equipment, connect it with the help of the chapters ahead. After installing your system, get acquainted with its operation by reading *Operating Model 20 and 30 Systems*. Then turn to *Testing Model 20 and 30 Systems* to verify your system's operation with diagnostic software.



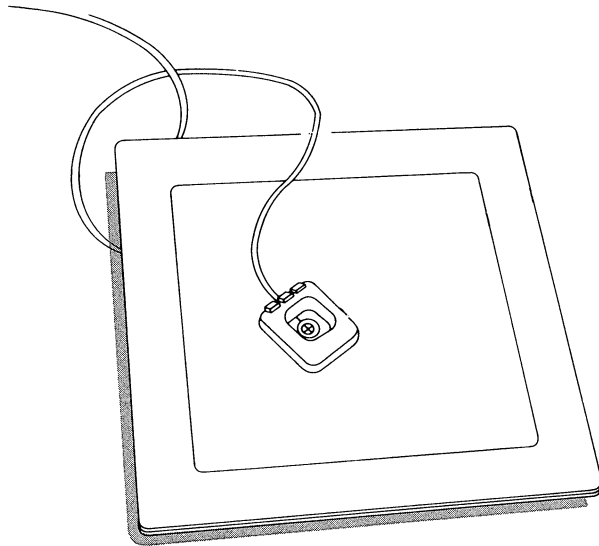
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# Data Tablet

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# 7

This chapter tells you how to unpack, inspect, and connect your data tablet and your cursor puck or stylus, called *positioning devices*.

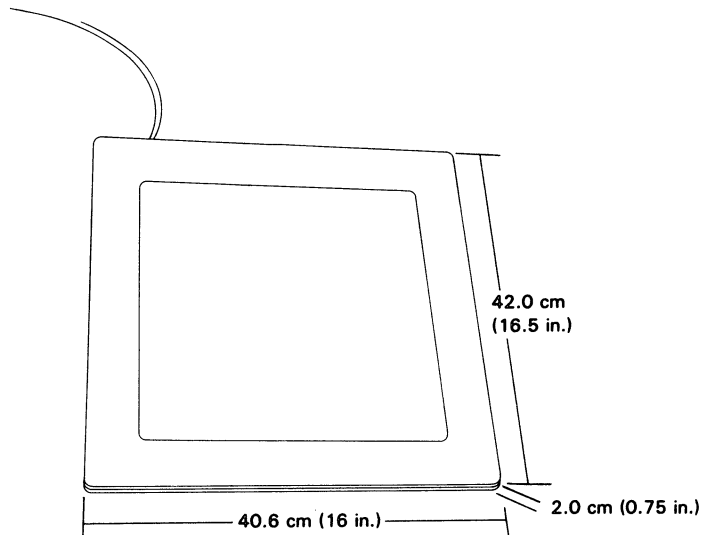


DG-26168

## Getting Started

Before you unpack your data tablet, a review of the site you have chosen for it will help to ensure that it operates correctly. The temperature of your site should stay within 45 and 110 degrees F (7 and 43 degrees C). Relative humidity should be between 8 and 80 percent.

You can install your data tablet in a space approximately 18 inches square. (45 cm square). Although the data tablet and positioning devices require little space beyond their own dimensions, you should allow extra room for cables and routine maintenance.



DG-26169

You will need to place the data tablet within 6 ft (1.8 m) of a grounded, three-pronged ac outlet in order to connect it to an ac power source.

**WARNING** *To prevent injury to yourself or damage to the tablet and positioning device, use only a three-pronged ac receptacle for ac power.*

The data tablet comes with a modular power supply that plugs into an ac outlet. The ac outlet must have a clearance of at least 6 in. on all sides in order to accommodate the power supply.

The data tablet and positioning device require the ac voltage, current, and line frequency to be within a certain range for correct operation and reliability. Your main concern will be to supply the proper voltage and current. (You have little or no control over the line frequency unless you install special equipment.)

You will find general electrical requirements for your system in Chapter 2 under "Site Planning." If you have any doubts about the wiring at your site, a licensed electrician can answer your questions.

The following electrical and mechanical specifications will help you to install the data tablet and positioning device in your system.

## Electrical Specifications

<b>Power type</b>	100 V	120 V	220/240 V
<b>Voltage range</b>	90-110 V	104-127 V	200-260 V
<b>Line frequency</b>	50/60 Hz	58-62 Hz	48-52 Hz
<b>Current (maximum)</b>	Not available	Not available	Not available
<b>Power consumed (maximum)</b>	20 W	20 W	20 W

## Mechanical Specifications

<b>Data Tablet</b>		
Height:	0.75in	( 2.0 cm)
Width:	16 in	(40.6 cm)
Depth:	16.5 in	(42.0 cm)
Weight:	4.0 lbs	( 1.8 kg)
Angle of tilt:	5 to 20 deg	
<b>Cursor Puck</b>		
Height:	0.75 in	(2.0 cm)
Width:	2.5 in	(6.4 cm)
Depth:	3.1 in	(7.9 cm)
<b>Stylus</b>		
Height:	0.44 in	(1.1 cm)
Width:	0.6 in	(1.5 cm)
Length:	5.4 in	(13.8 cm)

## Unpacking and Inspecting Your Data Tablet

Take the following steps to unpack and inspect your data tablet and positioning device.

1. Open the shipping cartons and remove all items.
2. Gently remove all packing materials from around the items.
3. Review the inventory checklist on the next page to make sure you have received all items. Some items, such as the power supply module, may be shipped in other cartons. You can find the device cable's part number in the "Device Cable" section in Chapter 3. The manual supplied with your data tablet applies to many different types of computer systems; for this reason, we recommend that you install, operate, and test the tablet using this and other DESKTOP GENERATION books written specifically for your system.

### Inventory Checklist

- |  |   |
|--|---|
| <input type="checkbox"/> Tablet with split-end cable                       | <input type="checkbox"/> Power supply module with cable |
| <input type="checkbox"/> Cursor puck with cable<br>or<br>Stylus with cable | <input type="checkbox"/> Documentation package          |

DG-26170

4. Save the cartons and all packing materials to use if you move or must return your tablet or positioning device.
5. Carefully inspect the tablet and positioning device for any visible damage. If the tablet or positioning device appears damaged or contains any loose parts, call the Service Operation Center and report the problem. If you need to return your tablet or positioning device, pack it as it was when you received it.
6. Enter information about your tablet and positioning device on the system configuration sheet.

## Installing Your Data Tablet

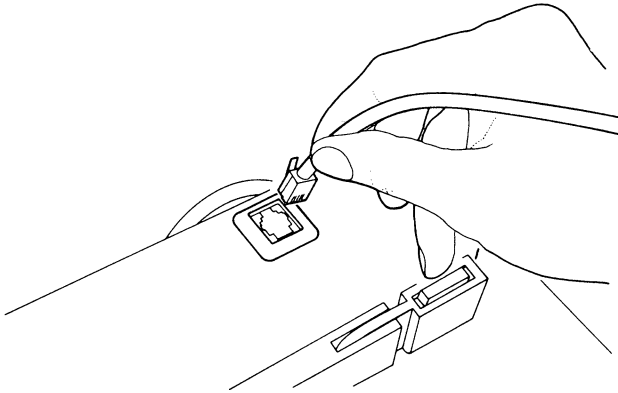
You install the tablet in your system by connecting it to the printed circuit card which controls it. The tablet is controlled by a line on a USAM card (or the 4207 card) which occupies a slot in the CPU logic or logic expansion module. A short adapter cable, which plugs into a USAM or 4207 card through an opening behind the module, provides the connection to the line.

The adapter cable for the 4-line USAM card (DGC No. 005-021041) has four cable connectors, one for each line. The connectors are labeled P2 through P5. The tablet's cable plugs into one of these connectors. The adapter cable for a 1-line USAM card (DGC No. 005-020688) has one cable connector labeled P2. The tablet's cable plugs into this connector. The adapter cable for a 4207 card (DGC No. 005-021148) has one cable connector. The tablet's cable plugs into this connector.

**NOTE** *If you are adding a tablet to a previously installed system without a USAM line available, you must add a USAM or 4207 card to your system. Install this card as described in Chapter 13 before connecting the tablet.*

Take the following steps to install your tablet and positioning device, keeping a small flat screwdriver handy. If you are removing the tablet or positioning device from your system, follow these steps in reverse.

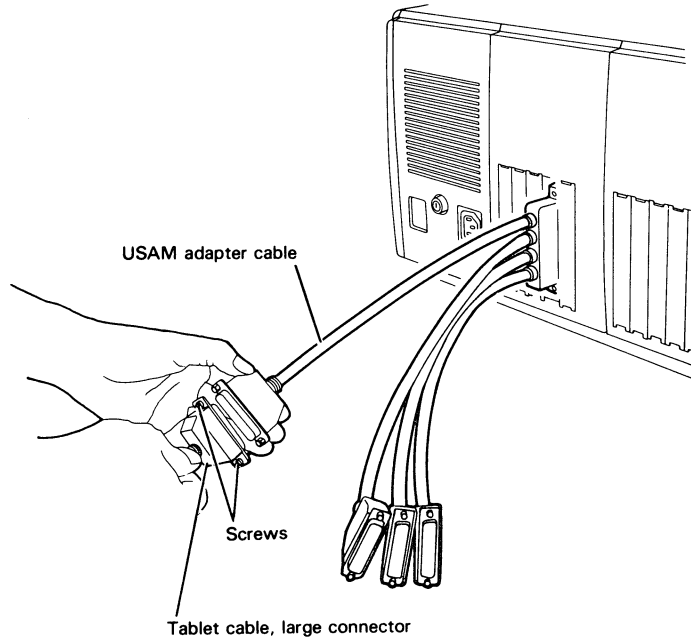
1. Make sure the computer is turned off.
2. Locate the modular jack plug on the upper right corner beneath the tablet. Plug the modular connector of your cursor puck or stylus cable into this jack plug.



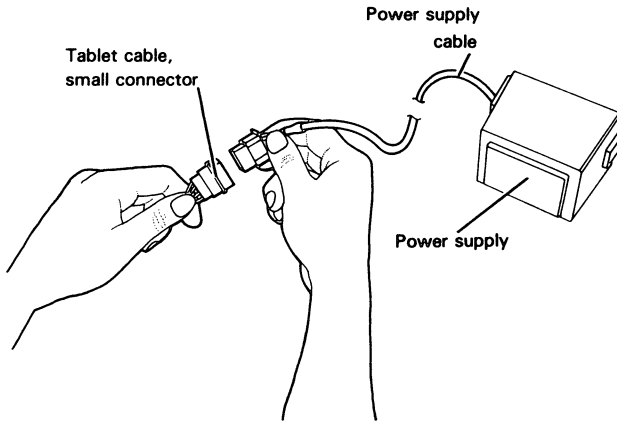
DG-26119

**3.** Locate the adapter cable connector for the USAM line or 4207 card that controls the tablet and plug it into the tablet cable's large connector. Tighten the two screws that hold the cables in place. (The figure below shows a typical connection to a USAM card in slot 4 of the CPU logic module.)

**NOTE** *If you do not remember which line of the USAM card controls the data tablet, reread the section "Adapter Cables" in Chapter 4.*

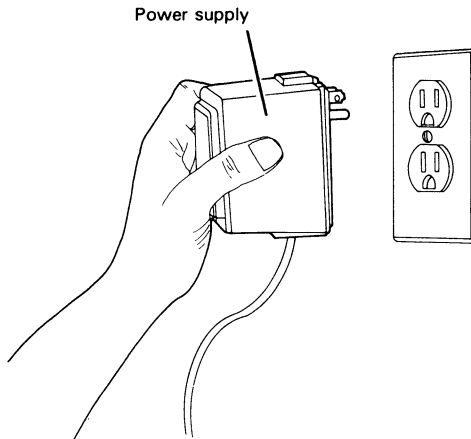


4. Plug the tablet cable's small connector into the cable connector for the tablet's power supply. (Your power supply may be larger or smaller than the one shown below.)



DG-26118

5. Plug the tablet's power supply into an ac outlet. (Your power supply may be larger or smaller than the one shown below.)



DG-25929



## The Next Step

If your system includes any other devices, such as a printer or plotter, connect them with the help of the chapters ahead. After installing your system, get acquainted with its operation by reading *Operating Model 20 and 30 Systems*. Then turn to *Testing Model 20 and 30 Systems* to verify your system's operation with diagnostic software.



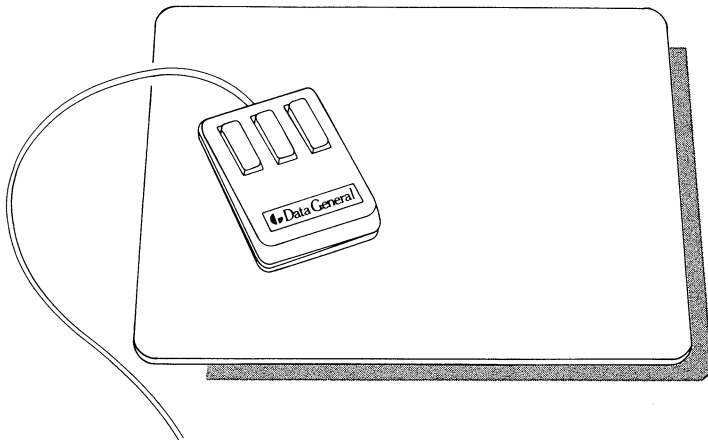
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# Mouse and Mouse Pad

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# 8

This chapter tells you how to unpack, inspect, and connect the mouse and mouse pad. The chapter also explains how to calibrate the mouse once you connect it to the system.

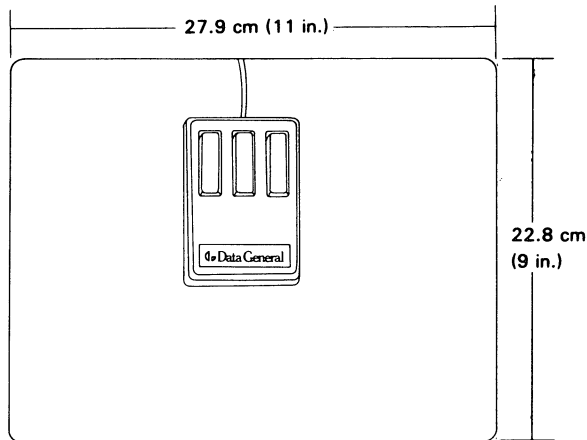


DG-26173

## Getting Started

Before you unpack your mouse and pad, a review of the site you have chosen for them will help to ensure that they operate correctly. The temperature of your site should stay within 50 and 100 degrees F (10 and 38 degrees C). Relative humidity should be between 20 and 80 percent.

You can install your mouse and pad on a level surface measuring approximately 12 by 12 in. (30.5 cm). Although the mouse and pad require little space beyond their own dimensions, you should allow extra room for cables and routine maintenance.



DG-26174

You will need to place the mouse within 6 ft (1.8 m) of a grounded, three-pronged ac outlet in order to connect it to an ac power source.

**WARNING** *To prevent injury to yourself or damage to the mouse, use only a three-pronged ac receptacle for ac power.*

The mouse comes with a modular power supply that plugs into an ac outlet. The ac outlet must have a clearance of at least 6 in. on all sides in order to accommodate the power supply.

The mouse and pad require that ac voltage, current, and line frequency be within a certain range for correct operation and reliability. Your main concern will be to supply the proper voltage and current. (You

have little or no control over the line frequency unless you install special equipment.)

You will find general electrical requirements for your system in Chapter 2 under "Site Planning." If you have any doubts about the wiring at your site, a licensed electrician can answer your questions.

The following electrical and mechanical specifications will help you to install the mouse and pad in your computer system.

## Electrical Specifications

<b>Power type</b>	100 V	120 V	220/240 V
<b>Voltage range</b>	90-110 V	100-135 V	200-260 V
<b>Line frequency</b>	48-52 Hz	58-62 Hz	48-52 Hz
<b>Current</b> (maximum)	Not available	0.1 A	Not available
<b>Power consumed</b> (maximum)	Not available	12 W	Not available

## Mechanical Specifications

<b>Mouse</b>		
Height:	1.0 in	(2.5 cm)
Width:	2.6 in	(6.6 cm)
Depth:	3.9 in	(9.9 cm)
Weight:	168 gm	(6.0 oz)
<b>Pad</b>		
Height:	1/16 in	(0.15 cm)
Width:	11 in	(27.9 cm)
Depth:	9 in	(22.8 cm)
Weight:		

## Unpacking and Inspecting Your Mouse

1. Open the shipping cartons and remove all items.
2. Gently remove all packing materials from around the items.
3. Review the inventory checklist below to make sure you have received all items. Some items, such as the power supply module, may be shipped in other cartons. You can find the device cable's part number in the "Device Cable" section in Chapter 3. The manual supplied with the mouse applies to several types of computer systems; for this reason, we recommend that you install, operate, and test the mouse using this and other DESKTOP GENERATION manuals written specifically for your system.

Inventory Checklist	
<input type="checkbox"/>	Mouse pad
<input type="checkbox"/>	Mouse with split-end cable
<input type="checkbox"/>	Power supply module with cable
<input type="checkbox"/>	Documentation package

DG-26175

4. Save the cartons and all packing materials to use if you move the mouse and pad or must return them.
5. Carefully inspect the mouse and pad for any visible damage. If the mouse or pad appears damaged or contains any loose parts, call your nearest Service Operations Center and report the problem. If you need to return your mouse or pad, pack it as it was when you received it.
6. Enter information about your mouse and pad on the system configuration sheet.

## Installing Your Mouse

You install the mouse in your system by connecting it to the printed circuit card which controls it. The mouse is controlled by a line on a USAM card (or the 4207 card), which occupies a slot in the CPU logic or logic expansion module. A short adapter cable, which plugs into a USAM or 4207 card through an opening behind the module, provides the connection to the line.

The adapter cable for the 4-line USAM card (DGC No. 005-021041) has four cable connectors, one for each line. The connectors are labeled P2 through P5. The mouse's cable plugs into one of these connectors. The adapter cable for the 1-line USAM card (DGC No. 015-020688) has one cable connector labeled P2. The mouse's cable plugs into this connector. The adapter cable for a 4207 card (DGC No. 005-021148) has one cable connector. The mouse's cable plugs into this connector.

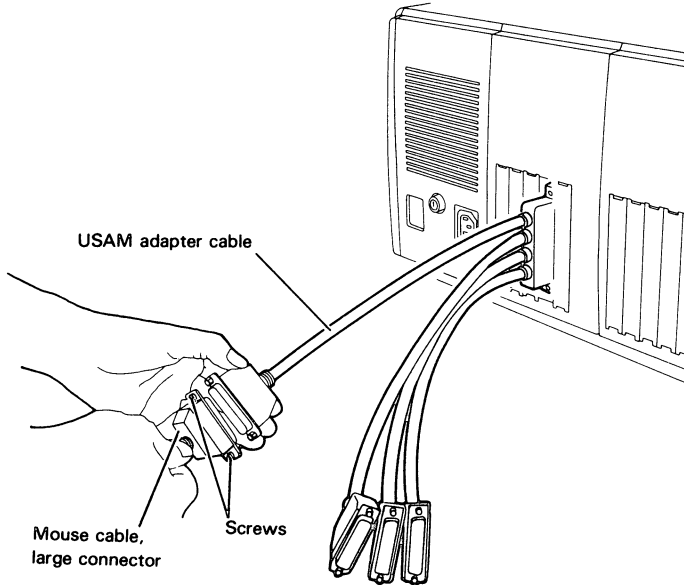
*NOTE If you are adding a mouse to a previously installed system without a USAM line available, you must add a USAM or 4207 card to your system. Install this card as described in Chapter 13 before connecting the mouse and pad.*

Take the following steps to connect the mouse, keeping a small flat screwdriver handy. If you are removing the mouse from your system, follow these steps in reverse.

1. Make sure the computer is turned off.

2. Locate the adapter cable connector for the USAM or 4207 line that controls the mouse and plug it into the mouse cable's large connector. Tighten the two screws that hold the cables in place. (The figure below shows a typical connection to a USAM card in slot 4 of the CPU logic module.)

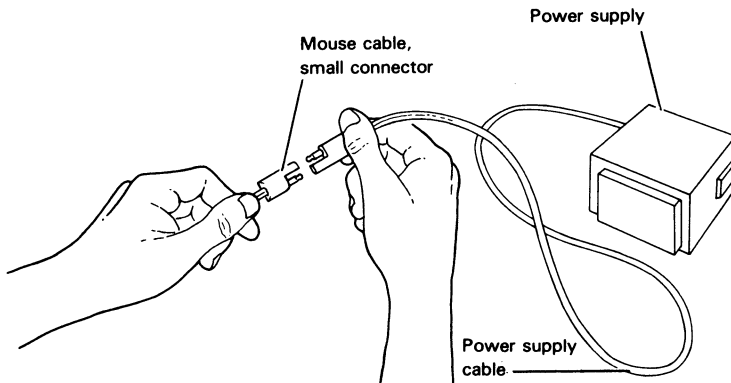
**NOTE** *If you do not remember which line of the USAM card controls the mouse, reread the section "Adapter Cables" in Chapter 4.*



DG-26177

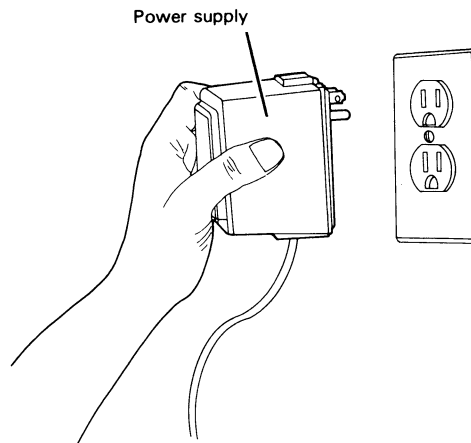


- 3.** Plug the mouse cable's small red connector into the cable connector for the mouse's power supply. (Your power supply may be larger or smaller than the one shown below.)



DG-26178

- 4.** Plug the power supply module into an ac outlet. (Your power supply may be larger or smaller than the one shown below.)



DG-25929

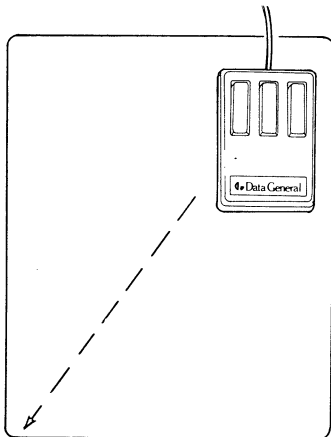
## Calibrating the Mouse

The mouse is automatically calibrated the first time you move it across the pad after power up. The orientation of the mouse in either the vertical or horizontal position relative to the pad is also established during calibration.

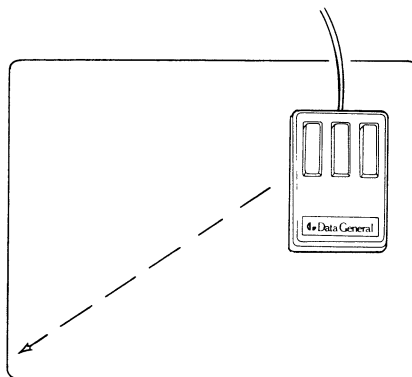
**CAUTION** *Do not unplug the mouse's power supply unless you want to recalibrate the mouse or remove it from your system.*

If you do not know the orientation of the mouse or want to change it, take the following steps to calibrate the mouse.

1. Position the mouse pad on your working surface either vertically or horizontally, whichever way you want to use it.
2. Power down the mouse and then power it up again by unplugging its power supply from the ac outlet and then plugging it in again.
3. Position the mouse on the top right corner of the pad with its keys towards the top of the pad.
4. Move the mouse across the pad in a diagonal direction, from the top right corner to the bottom left corner.



Vertical orientation



Horizontal orientation

## The Next Step

If your system includes any other devices, such as a printer or plotter, connect them with the help of the chapters ahead. After installing your system, get acquainted with its operation by reading *Operating Model 20 and 30 Systems*. Then turn to *Testing Model 20 and 30 Systems* to verify your system's operation with diagnostic software.



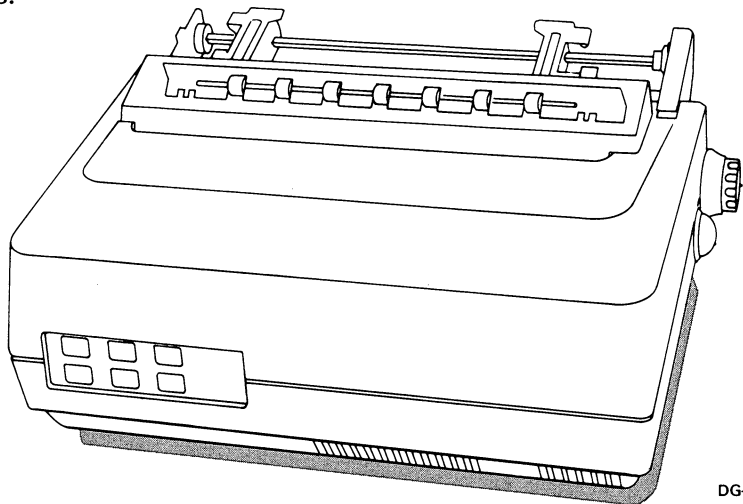
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# Multifunction Dot Matrix Printer

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# 9

This chapter tells you how to unpack, inspect, and connect your Model 4434 or Model 4531 multifunction dot matrix printer. These procedures, except as noted in the text, are basically the same for both models.



DG-25879

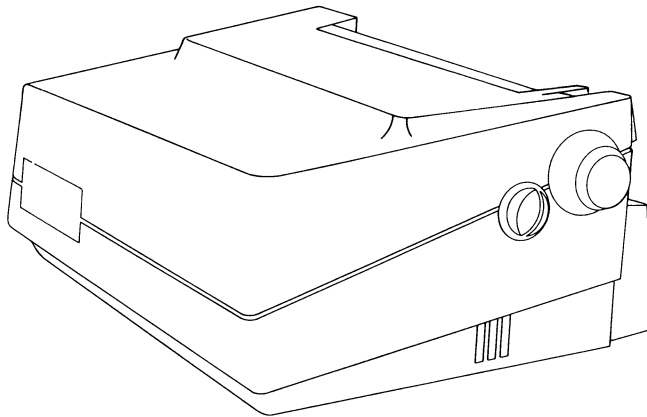
## Getting Started

Before you unpack your printer, a review of the site you have chosen for it will help to ensure that it operates correctly. The temperature of your site should stay within 50 and 100 degrees F (10 and 38 degrees C). Relative humidity should be between 20 and 80 percent.

Because the printer emits some noise during operation, avoid installing it in an area where its sound would be disturbing.

Although the printer requires little space beyond its own dimensions, you should allow 20 in. (50.8 cm) around it for ventilation, power and device cables, and routine maintenance.

Place the printer on the edge of a table or other surface so that the paper feeds properly.



DG-25581

You will need to place the printer within 25 ft (7.6 m) of your computer to connect it with the standard-length device cable. You will also need to place it within 6 ft (2 m) of a grounded, three-pronged ac outlet in order to connect it to an ac power source.

**WARNING** *To prevent injury to yourself or damage to the printer, use only a three-pronged ac receptacle for ac power.*

The printer requires that ac voltage, current, and line frequency be within a certain range for correct operation and reliability. Your main concern will be to supply the proper voltage and current. (You have little or no control over the line frequency unless you install special equipment.) You will find general electrical requirements for your system in Chapter 2 under Site Planning. If you have any doubts about the wiring at your site, a licensed electrician can answer your questions.

The following electrical and mechanical specifications will help you install the printer in your computer system.

## Model 4434 Electrical Specifications

<b>Power type</b>	100 V	120 V	220/240 V
<b>Voltage range</b>	85-110 V	105-132 V	187-242
<b>Line frequency</b>	47-63 Hz	47-63 Hz	47-63 Hz
<b>Current</b> (maximum)	0.45 A	0.45 A	0.3 A
<b>Power consumed</b> (maximum)	120 W	120 W	120 W
<b>Inrush current</b> (maximum)	10 A	10 A	10 A
<b>Power cord</b>	7.5 ft	7.5 ft	None supplied

## Model 4434 Mechanical Specifications

<b>Height:</b>	6.2 in	(15.8 cm)
<b>Width:</b>	13.7 in	(34.8 cm)
<b>Depth:</b>	9.64 in	(24.5 cm)
<b>Weight:</b>	18 lbs	(8 kg)

## Model 4531 Electrical Specifications

<b>Power type</b>	100 V	120 V	220	240 V
<b>Line frequency</b>	50 Hz	60 Hz	50 Hz	50 Hz
<b>Current</b> (maximum)	1.2 A	1.2 A	0.6 A	0.6 A
<b>Power cord</b>	6 ft	6 ft	None supplied	

## Model 4531 Mechanical Specifications

<b>Height:</b>	6.1 in	(15.5 cm)
<b>Width:</b>	19.1 in	(48.5 cm)
<b>Depth:</b>	9.57 in	(24.3 cm)
<b>Weight:</b>	23.5 lbs	(10.7 kg)



# Unpacking and Inspecting Your Printer

1. Open the shipping carton and remove the printer and accessory box.
2. Gently remove the foam pieces from the printer and the accessories from the box.
3. Review the inventory checklist below to make sure you have received all items. You will find some items, such as the device cable, in other cartons. You can find the device cable's part number in the "Device Cable" section in Chapter 3. The manuals supplied with the printer apply to several types of computer systems; for this reason, we recommend that you install, operate, and test the printer using this and other DESKTOP GENERATION manuals written specifically for your system.

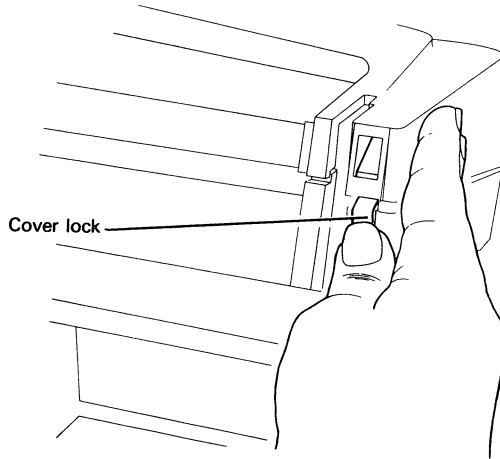
## Inventory Checklist

- Printer
- Paper separator
- Forms tractor
- Acrylic dust cover
- Ribbon
- Power cord
- Device cable
- Documentation package

DG-26186

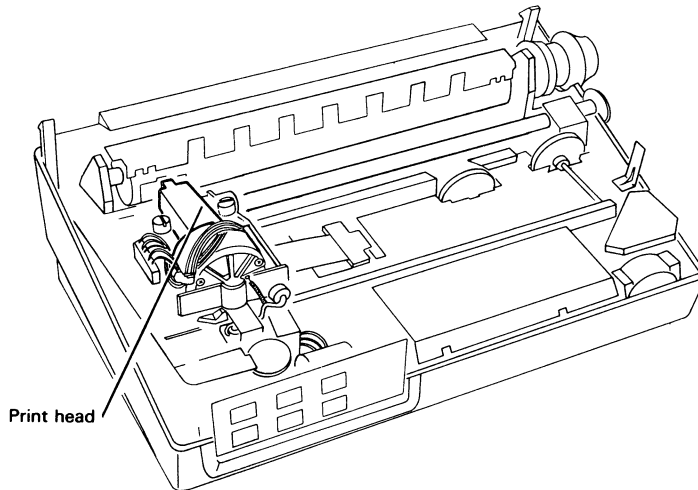
4. Save the cartons and all packing materials in case you move or must return your printer.

5. Remove the printer's cover by pressing the two cover locks on the back of the printer, and lifting the cover up.



DG-25583

6. Remove the plastic tie securing the print head.



DG-25584

7. Carefully inspect the printer for any visible damage. If the printer appears damaged or contains any loose hardware or parts, call your nearest Service Operations Center and report the problem. If you need to return your printer, repack it as it was shipped to you.
8. Enter information about your printer on the system configuration sheet.

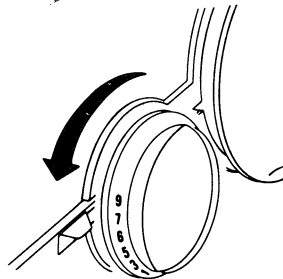
## Installing Your Printer

The sections ahead guide you through the installation of your printer. If you are removing the printer from your system, follow these procedures in reverse. Installation procedures are the same for both dot matrix printer models, except where noted.

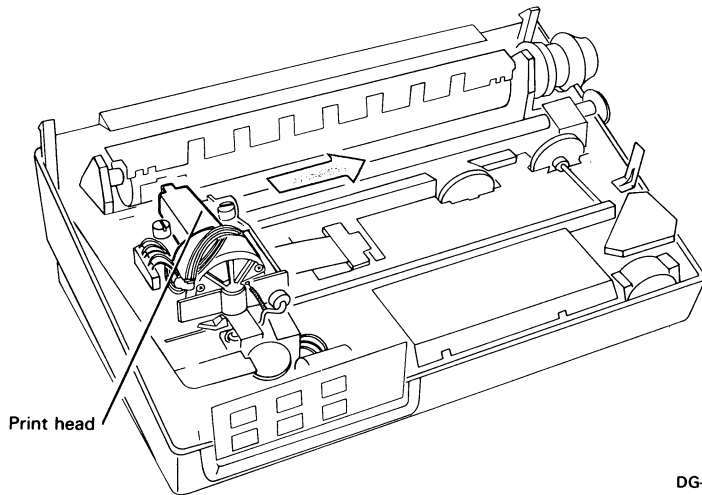
## Installing the Ribbon

Take the following steps to install a ribbon in your printer.

1. Turn the paper thickness adjustment knob counterclockwise to position 9.

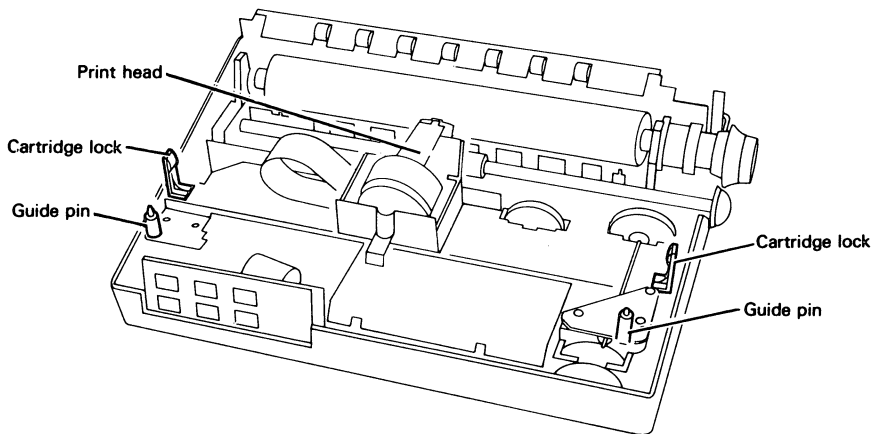


2. Slide the print head to the middle of its track.



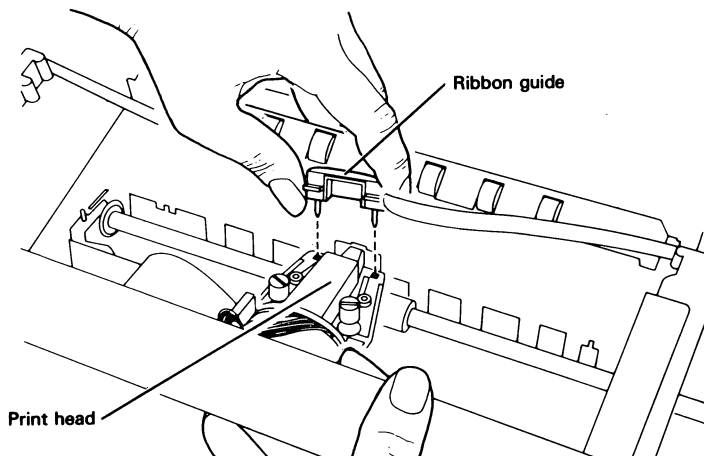
DG-26187

3. Locate the two guide pins on which the ribbon cartridge will rest.



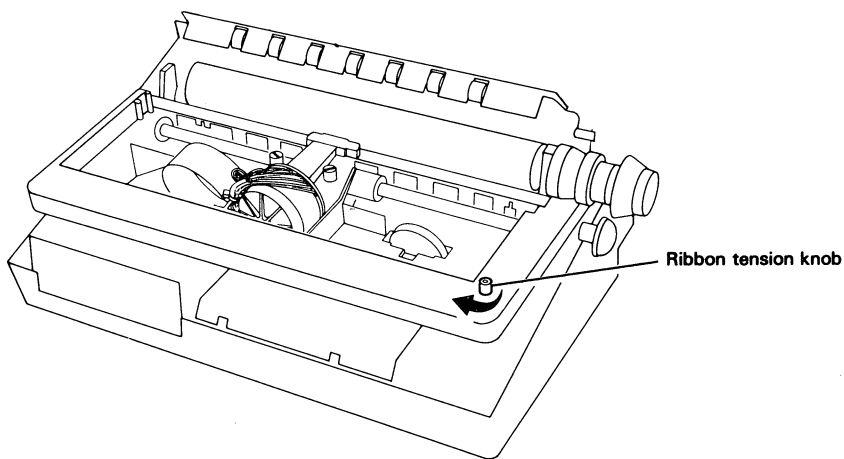
DG-25586

- 4.** Remove the ribbon cartridge from its box and insert the ribbon guide of the ribbon cartridge into the print head. Fit the cartridge onto the guide pins and press down until the ribbon cartridge snaps into place.



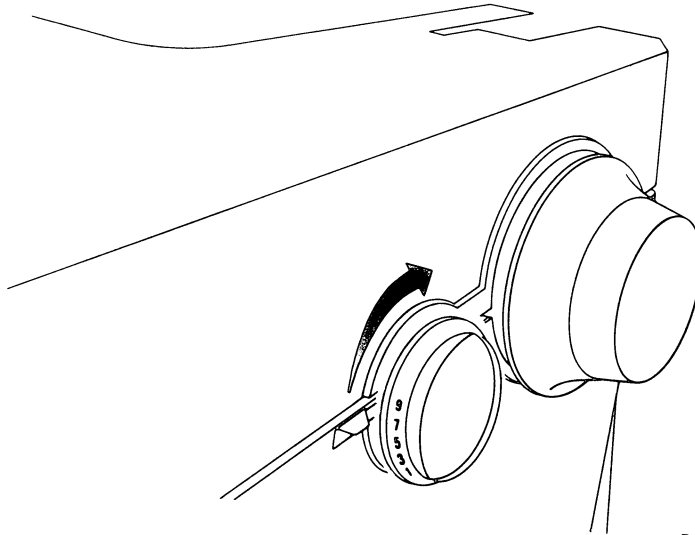
JG-25587

- 5.** Tighten the ribbon by turning the ribbon tension knob clockwise. Turn the knob a few additional times to make sure the ribbon is not twisted or its path blocked.



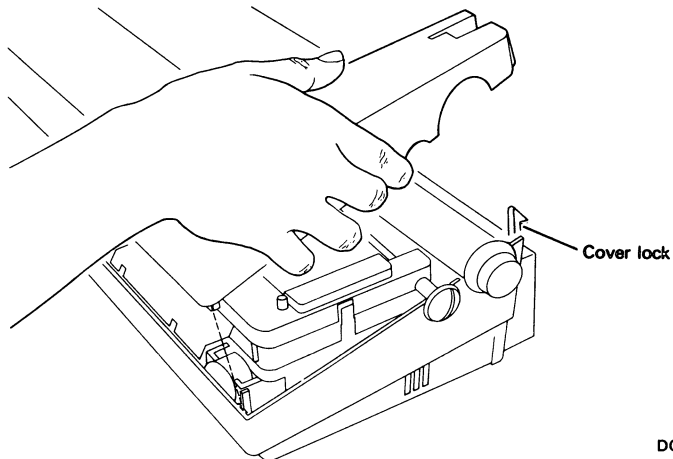
DG-25588

6. Turn the paper thickness adjustment knob to the desired position. Try position 5 for normal printing and a higher number for multiple-part forms.



DG-25427

Hook the front of the cover into place; then lower the back of the cover over the cover locks until it snaps shut.



DG-25589

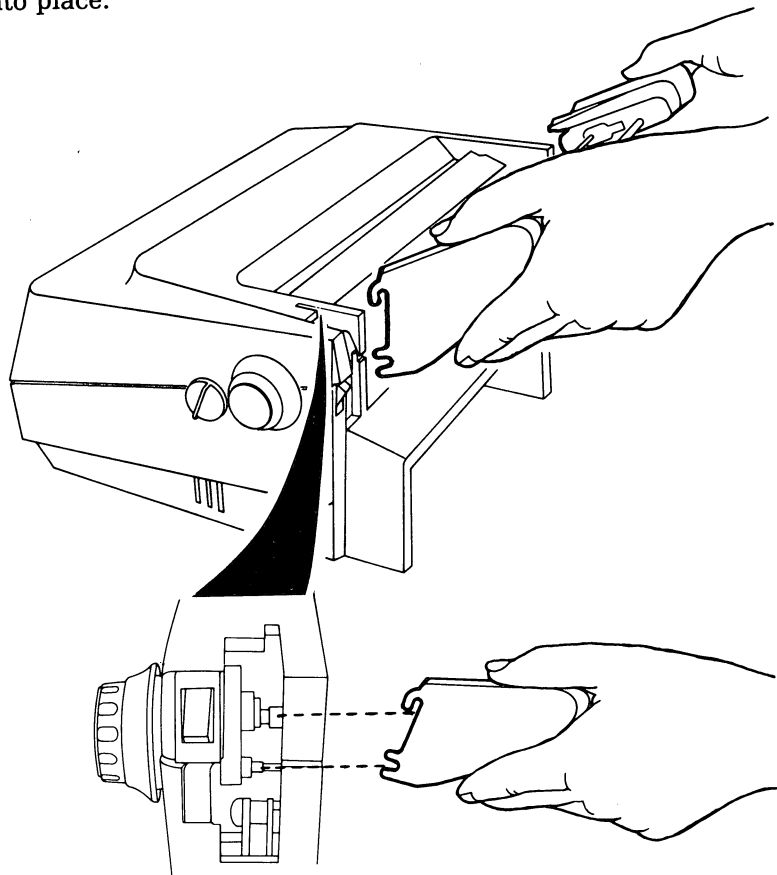
## The Next Step

If your printer is Model 4434, install the dust cover and tractor with the help of the next section. If your printer is Model 4531, skip ahead to "Installing the Model 4531 Paper Guide and Tractor".

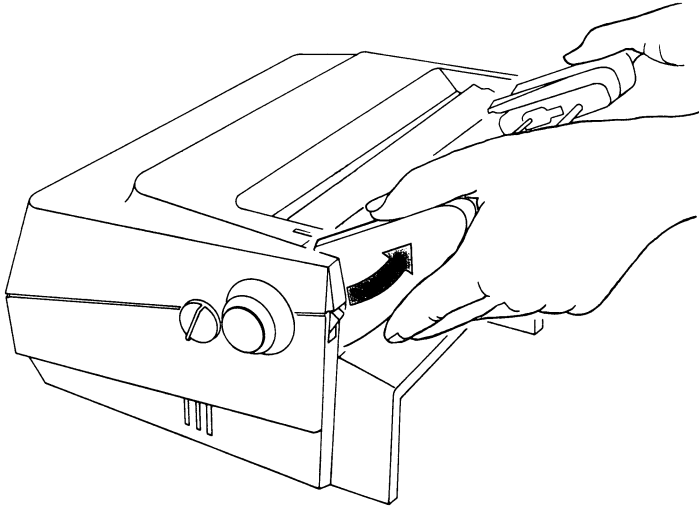
### Installing Model 4434 Dust Cover and Tractor

Take the following steps to install the forms tractor and dust cover. If you are removing these items from the printer, you may find it easier to remove the dust cover on some models if you remove the forms tractor first.

1. Install the forms tractor by hooking the tractor's left and right top notches onto the top studs on the back of the printer. Then hook the bottom notches onto the bottom studs. The tractors should click into place.

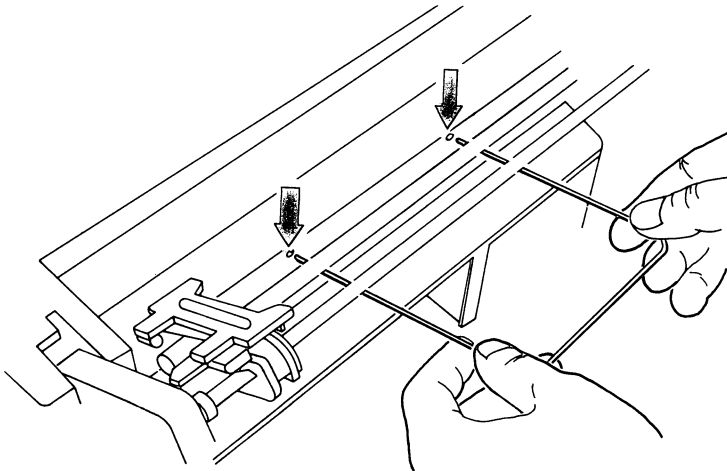


To remove the tractor, unhook the bottom notches and then lift the tractor up.



DG-25591

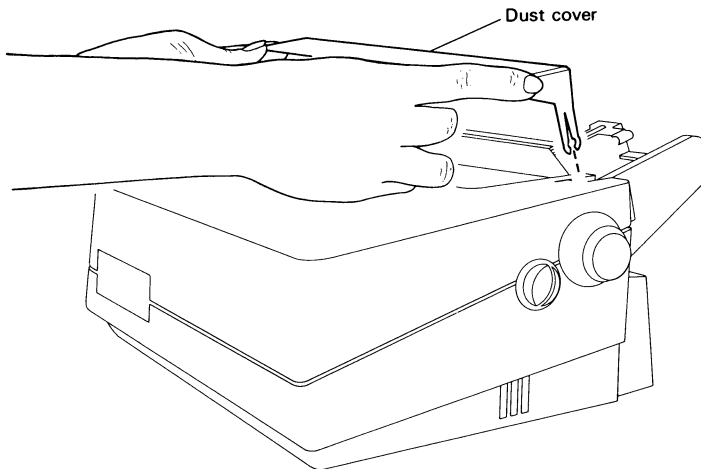
2. Install the metal paper separator by inserting it into the holes on the back of the printer.



DG-25592

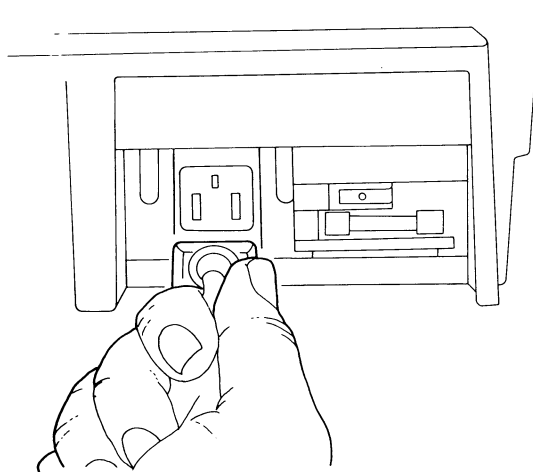


3. Install the acrylic dust cover by fitting the left and right notches onto the top studs behind the printer.



DG-25420

4. Plug the power cord into the power connector on the back of the printer. If the printer is a 220/240 V model, make sure the switch on the bottom of the printer is set correctly.



DG-25593

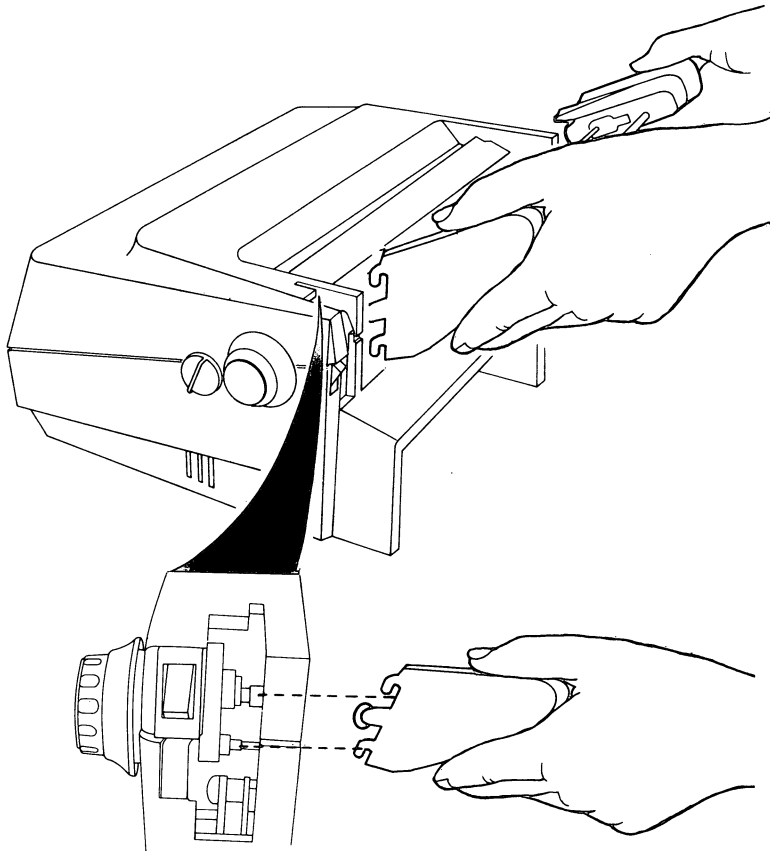
5. Plug the power cord into an ac outlet.

## The Next Step:

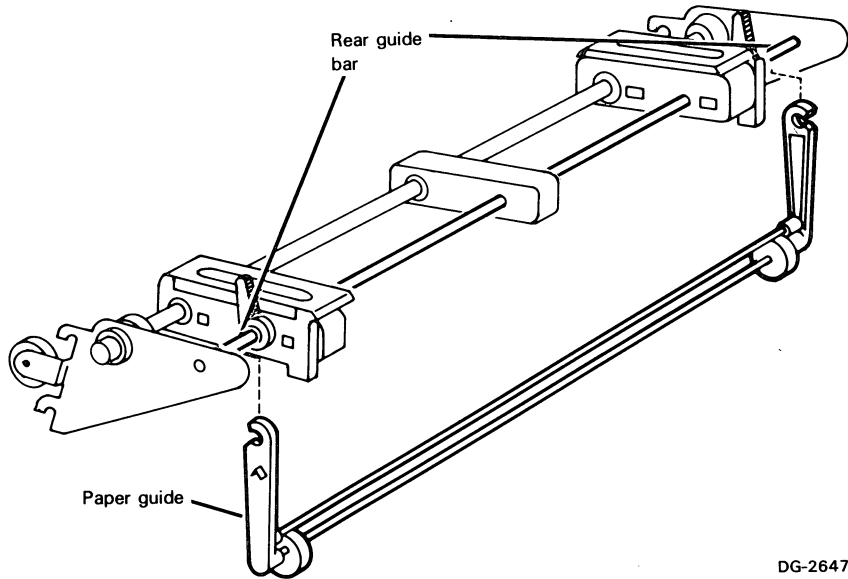
Skip ahead to "Configuring Your Printer."

### Installing Model 4531 Paper Guide and Tractor

1. Install the forms tractor by hooking the tractor's left and right lower notches onto the lower studs on the back of the printer. Then hook the top notches onto the top studs. The tractors should click into place.

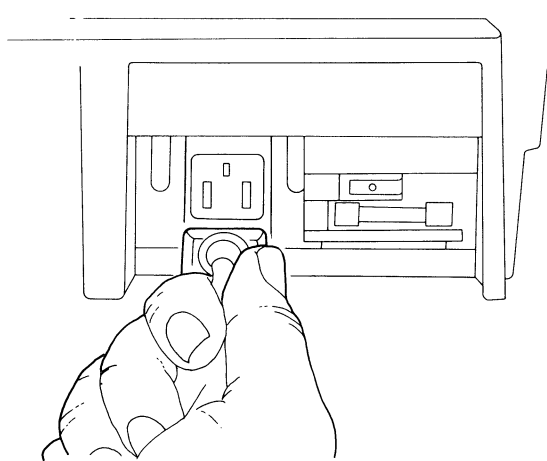


2. Install the paper guide by clipping it into the rear guide bar of the tractor feed.



DG-26474

3. Plug the cord into the power connector on the back of the printer. If the printer is a 220/240 V model, make sure the switch on the bottom of the printer is set correctly.



DG-25593

4. Plug the power cord into an ac outlet.

## Configuring Your Printer

Printer characteristics such as form length, lines per inch, and data transmission rates are set at the factory to the values required for a printer in a standard DESKTOP GENERATION system that uses a Data General operating system. We advise against changing these preset values (called *default values*) unless you are using the printer in a custom application or with a non-Data General operating system. If you need to change the printer's data transmission characteristics, refer to the documentation you received with the printer.

On occasion, you may want to override the default values; for example, when you load paper with a different form length or when you want to change the appearance of the print on the page. To change form length, print format, or use a different character set, refer to *Operating Model 20 and 30 Systems*.

### Checking Default Values

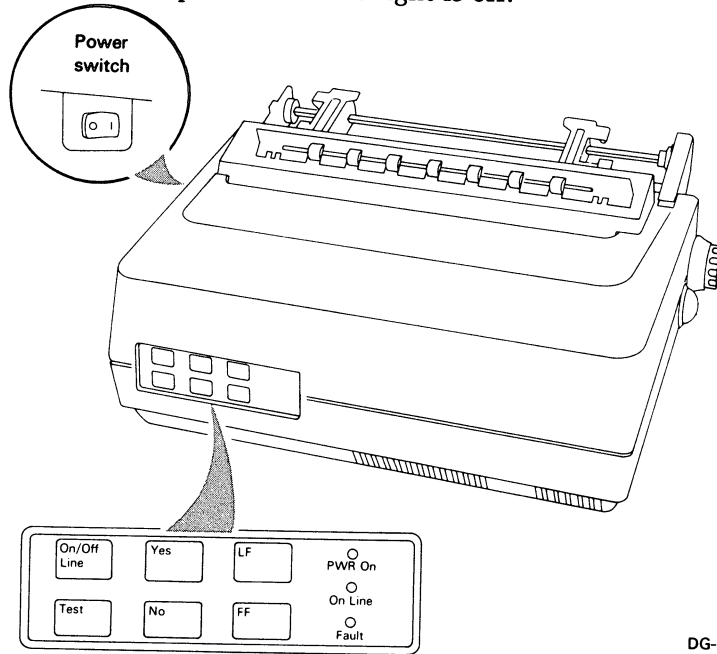
The following table lists the printer characteristics and their default values. The characteristics you might want to change during normal operation are marked with an asterisk (\*).

Form length: *	11 inches (66 lines)
Lines per inch (LPI): *	6
Characters per inch (CPI): *	10
Character set: *	USA
Interface type:	Serial
Baud rate:	9600
Number of data bits:	8
Parity:	None

Your printer helps you ensure that its default values have been set correctly by providing a printout of its current characteristics. To obtain this printout, you must first load paper into the printer according to the instructions in the printer chapter of *Operating Model 20 and 30 Systems*.

After loading the printer with paper, take the following steps to check its default values.

1. Turn the printer on by turning on the Power switch. Make sure the printer is off line by pressing the On/Off Line switch. The printer is off line when the yellow On Line light is off.



DG-25594

2. Press the No switch. The printer then prints out a list similar to the one shown in the table earlier.

## Changing Printer Characteristics

If the printer prints a list that does not agree with the factory-set default values, you must enter interactive mode and change these values to their proper default settings.

When the printer is in interactive mode, it prints out a menu of questions that permit you to change its characteristics. Take the following steps to enter interactive mode.

1. Place the printer off line by pressing the On/Off Line switch. The printer is off line when the yellow On Line light is off.
2. Press the Yes switch and, while still pressing that switch, press the No switch momentarily. The printer lists a series of questions that

you answer in order to change its characteristics. Right now your only concern is the first question:

#### RESTORE DEFAULTS?

To learn about the remaining questions, refer to the documentation shipped with the printer.

3. Press the Yes switch to set the printer characteristics to the default values listed earlier in the table. The printer then prints END OF MENU and leaves interactive mode. Press the On/Off Line switch to resume normal operation. If you answer no by mistake, press the Test switch to terminate interactive mode; reenter interactive mode according to steps 1 and 2 above; and try again.

## Connecting Your Printer

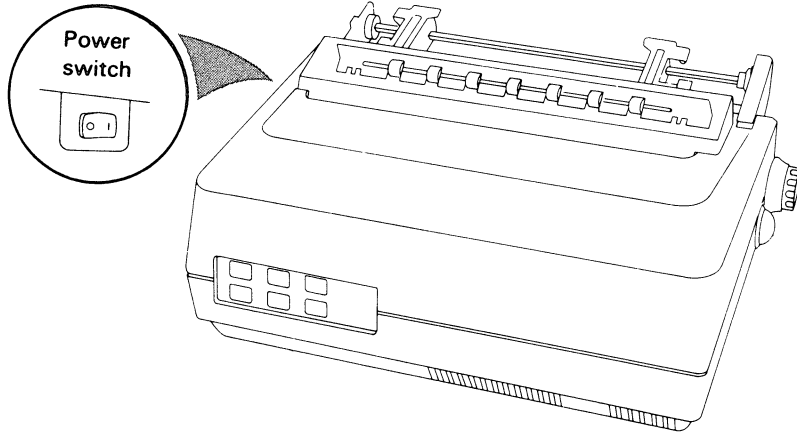
You install the printer in your system by connecting it to the printed circuit card which controls it. The printer is controlled by a line on a USAM card (or the 4207 card) which occupies an I/O slot in the CPU logic or logic expansion module. A short adapter cable, which plugs into a USAM or 4207 card through an opening behind the module, provides the connection to the line.

The adapter cable for the 4-line USAM card (DGC part no. 005-021041) has four cable connectors, one for each line. The connectors are labeled P2 through P5. P2 is for line 1, P3 is for line 2, and so on. The printer's device cable plugs into the connector for the line that controls it. The adapter cable for the 1-line USAM card (DGC part no. 005-020688) has one cable connector labeled P2. The printer's device cable plugs into this connector. The adapter cable for a 4207 card (DGC No. 005-021148) has one cable connector. The printer's cable plugs into this connector.

*NOTE If you are adding a printer to a previously installed system without a USAM line available, you must add a USAM or 4207 card to your system. Install this card as described in Chapter 13 before connecting the printer.*

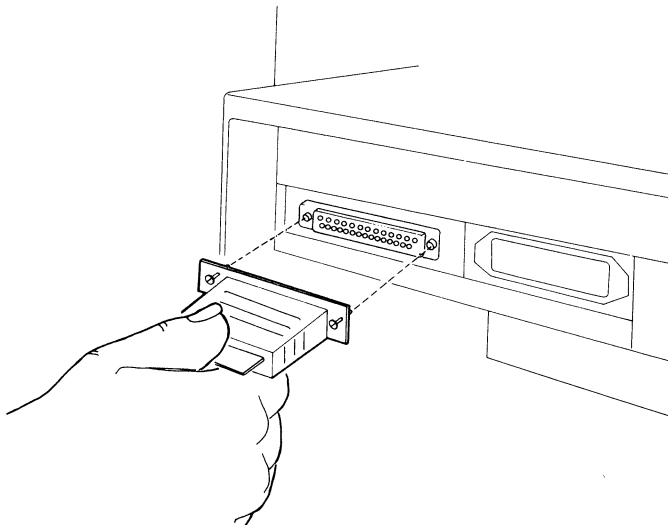
Take the following steps to connect the printer, keeping a small Phillips screwdriver and flat screwdriver handy.

1. Make sure the computer is turned off.
2. Turn the printer off. Remove the power cord from its ac outlet.



DG-26188

3. Plug one end of the printer's device cable into the connector behind the printer. Tighten the two screws that hold the cable in place.

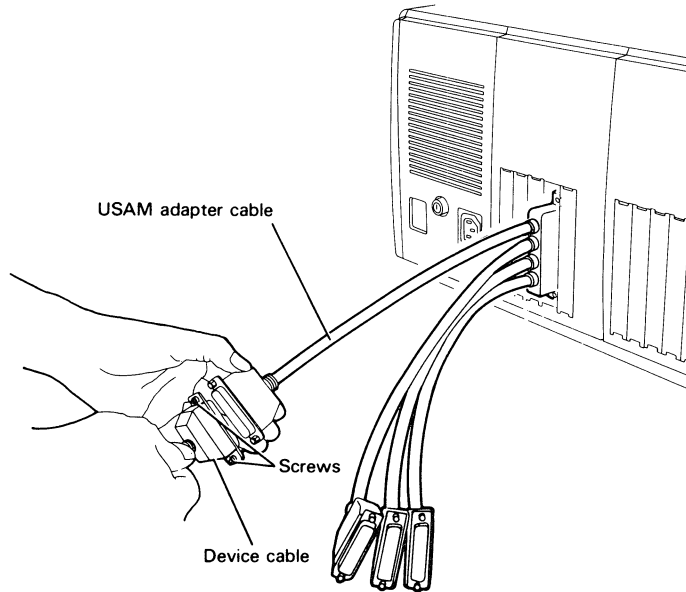


DG-25595



4. Locate the adapter cable for the USAM or 4207 line that controls the printer and plug it into the other end of the printer's device cable. Tighten the two screws that hold the cables in place. (The figure below shows a typical connection to a USAM card in slot 4 of the CPU logic module.)

**NOTE** *If you do not remember which line of the USAM card controls the printer, reread "Adapter Cables" in Chapter 4.*



DG-26155

5. Plug the power cord into ac outlet.

## The Next Step

If your system includes any other devices, such as a plotter, connect them with the help of the chapters ahead. After installing your system, get acquainted with its operation by reading *Operating Model 20 and 30 Systems*. Then turn to *Testing Model 20 and 30 Systems* to verify your system's operation with diagnostic software.

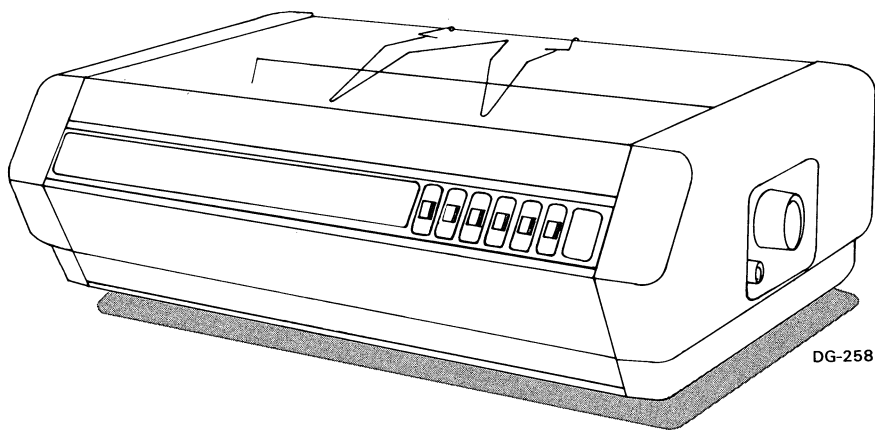


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# Model 4433 Data Processing Dot Matrix Printer **10**

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This chapter tells you how to unpack, inspect, and connect your Model 4433 data processing dot matrix printer.



DG-25871

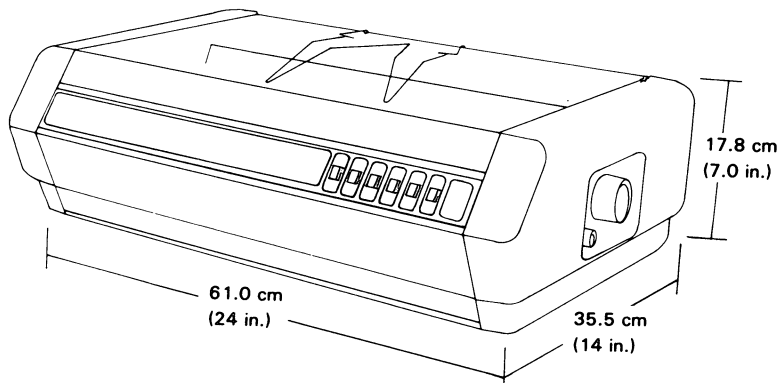
## Getting Started

Before you unpack your printer, a review of the site you have chosen for it will help to ensure that it operates correctly. The temperature of your site should stay within 50 and 100 degrees F (10 and 38 degrees C). Relative humidity should be between 20 and 80 percent.

Because the printer emits some noise during operation, avoid installing it in an area where its sound may be disturbing.

Install your printer in a space approximately 27 by 20 in. (68.6 by 50.8 cm). These dimensions permit access to all printer controls and power and device cables. Allow a 20 in. (50.8 cm) access area above the printer for ventilation.

You can install the printer on any sturdy desk or table top. However, if you plan to feed paper through the bottom, you will need a slotted-top table or print stand.



DG-25692

You should place the printer within 25 ft (7.5 m) of your computer in order to connect it with the standard-length device cable. The printer should also be within 7.5 ft (2.25 m) of a grounded, three-pronged ac outlet in order to connect it to an ac power source.

**WARNING** *To prevent injury to yourself or damage to the printer, use only a three-pronged ac receptacle for ac power.*

The printer requires that ac voltage, current, and line frequency be within a certain range for correct operation and reliability. Your main concern will be to supply the proper voltage and current. (You have little or no control over the line frequency unless you install special equipment.) You will find basic electrical requirements for your system in Chapter 2 under "Site Planning." If you have any doubts about the wiring at your site, a licensed electrician can answer your questions.

The following electrical and mechanical specifications will help you to install the printer in your system.

## Electrical Specifications

<b>Power type</b>	120 V	220 V	240 V
<b>Voltage range</b>	102-132 V	187-242 V	204-264 V
<b>Line frequency</b>	59.4-60.6 Hz	45.5-50.5 Hz	45.5-50.5 Hz
<b>Current</b> (maximum)	1.8 A	0.9 A	0.9 A
<b>Inrush surge</b> (maximum)	13 A	7 A	7 A
<b>Power cord</b>	7.5 ft (2.25 m)	None supplied	None supplied

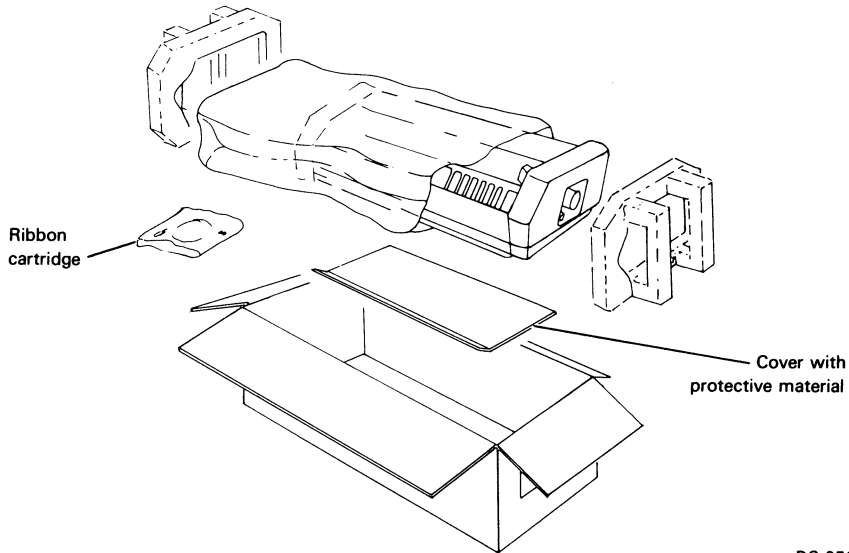
## Mechanical Specifications

<b>Height:</b>	7 in	(17.8 cm)
<b>Depth:</b>	14 in	(35.5 cm)
<b>Width:</b>	24 in	(61.0 cm)
<b>Weight:</b>	35 lbs	(15.9 kg)

## Unpacking and Inspecting Your Printer

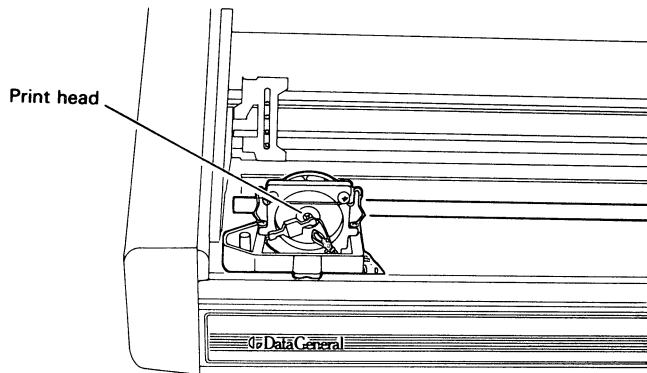
Take the following steps to unpack the printer and inspect it.

1. Open the shipping container and gently remove the printer and other items.



DG-25693

2. Remove all protective padding and print head tie-downs.



DG-26120

**3.** Review the inventory checklist below to make sure you have received all items. You will find some items, such as the device cable, in other cartons. The device cable's part number is in the "Device Cable" section in Chapter 3. The manual supplied with the printer applies to several types of computer systems; for this reason, we recommend that you install, operate, and test the printer using this and other DESKTOP GENERATION manuals written specifically for your system.

#### Inventory Checklist

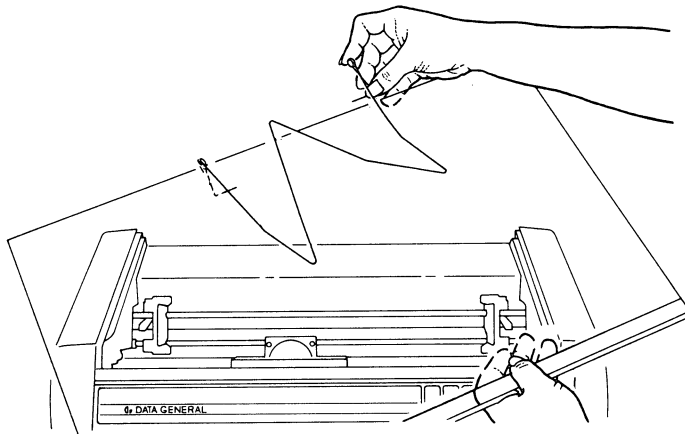
- Printer with power cord
- Cover
- Anti-static clip
- Device cable
- Documentation package

DG-26194

**4.** Save the cartons and all packing materials to use if you move or must return the printer.

**5.** Carefully inspect the printer for any visible damage and make sure the print head moves freely in both directions. If the printer appears damaged or contains any loose parts, call your nearest Service Operation Center and report the problem. If you need to return your printer, repack it as shown in the packing diagram.

6. Remove the protective material from the cover and install the anti-static clip.



DG-25699

7. Attach the model number tag (from the blister pack on the side of the shipping carton) to the center of the printer's rear panel.
8. Enter information about your printer on the system configuration sheet.

## Configuring Your Printer

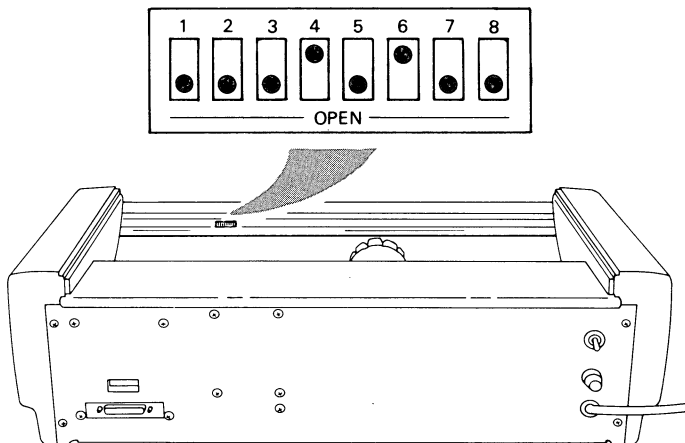
Printer characteristics are determined by two sets of switches, one inside the printer and the other on the printer's rear panel. The switches inside the printer are the *operating switches*: they set operating characteristics such as character set and print appearance. The switches on the printer's rear panel are the *serial interface switches*: they set data transmission characteristics such as baud rate and parity.

These switches are set at the factory to the values required for a printer in a standard DESKTOP GENERATION system that uses a Data General operating system.



## Operating Switches

The operating switches are set at the factory as shown below.



DG-25701

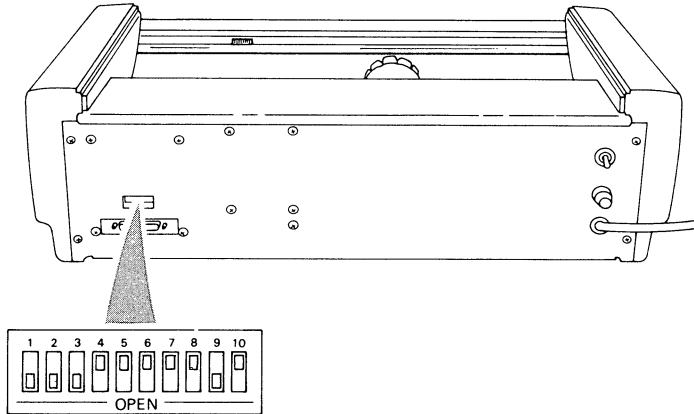
The following table shows the characteristics selected by these switch settings.

Character set:	US ASCII
Line feed after carriage return:	Enabled
Perforation skipover:	Disabled
Print format (normal or compressed):	Normal

You may want to change these switches on occasion — for example, when you want to change paper or print formats. The manual *Operating Model 20 and 30 Systems* tells you how to change your printer's switch settings.

## Serial Interface Switches

The serial interface switches are set at the factory as shown below.



DG-26195

The following table shows the characteristics selected by these switch settings.

Baud rate:	9600
Parity:	Mark
Number data bits:	7 bits
Software busy:	Enabled
Error handling procedure:	? substituted for incorrect character

We advise against changing these switch settings unless you are using the printer in a custom application or with a non-Data General operating system that requires different characteristics. If you must change the values, refer to *Enhanced 150 CPS Dot Matrix Printer User's Manual* (DGC no. 014-000728), which was shipped with your printer.

## Installing Your Printer

You install the printer in your system by connecting it to the printed circuit card which controls it. The printer is controlled by a line on a USAM card (or the 4207 card), which occupies an I/O slot in the CPU logic or logic expansion module. A short adapter cable, which plugs into a USAM or 4207 card through an opening behind the module, provides the connection to the line.

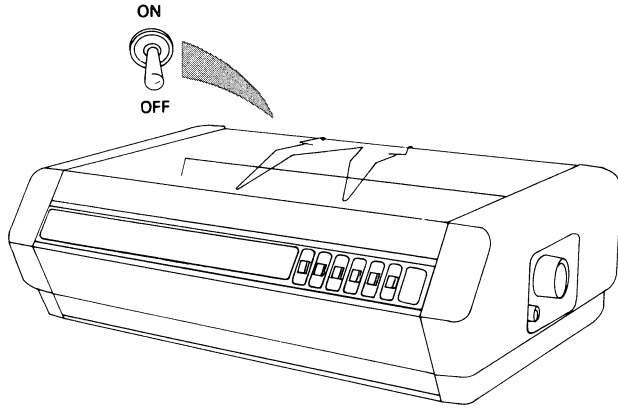
The adapter cable for the 4-line USAM card (DG part no. 005-021041) has four cable connectors, one for each line. The connectors are labeled P2 through P5. P2 is for line 1, P3 is for line 2, and so on. The printer's device cable plugs into the connector for the line that controls it. The adapter cable for the 1-line USAM card (DGC part no. 005-020688) has one cable connector labeled P2. The printer's device cable plugs into this connector. The adapter cable for a 4207 card (DGC No. 005-021148) has one cable connector. The printer's cable plugs into this connector.

*NOTE If you are adding a printer to a previously installed system without a USAM line available, you must add a USAM or 4207 card to your system. Install this card as described in Chapter 13 before connecting the printer.*

Take the following steps to install your printer, keeping a small Phillips screwdriver and a small flat screwdriver handy. If you are removing the printer from your system, follow these steps in reverse.

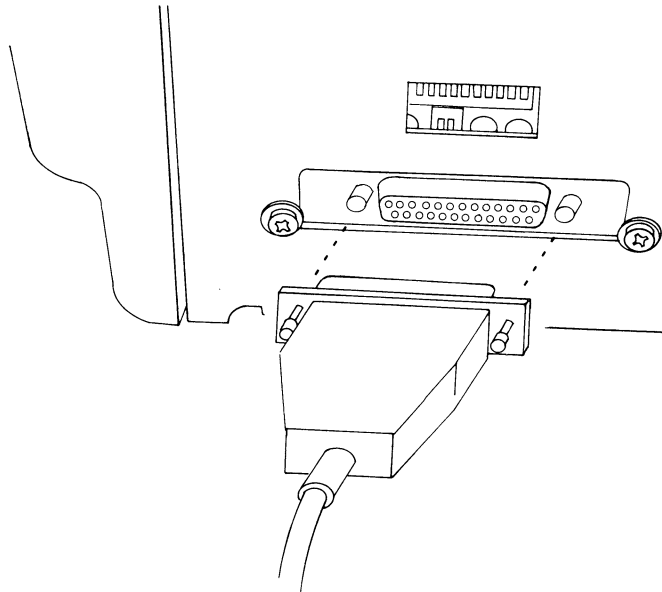
1. Turn off the computer.

2. Make sure the printer is turned off.



DG-25736

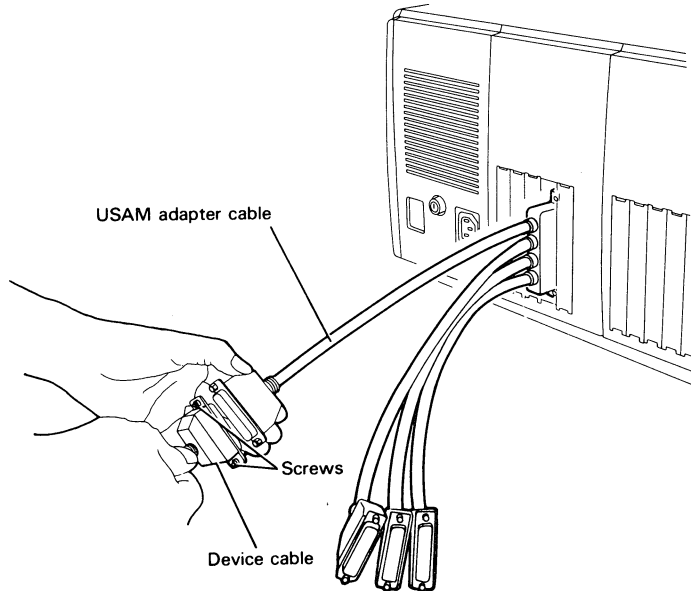
3. Plug the printer's device cable into the cable connector behind the printer. Tighten the two screws that hold the device cable in place.



DG-25706

4. Locate the adapter cable connector for the USAM or 4207 line that controls the printer and connect it to the other end of the printer's device cable. Tighten the two screws that hold the cables in place. (The figure below shows a typical connection to a USAM card in slot 4 of the CPU logic module.)

**NOTE** *If you do not remember which line of the USAM card controls the printer, reread the section "Adapter Cables" in Chapter 4.*



DG-26155

5. Plug the power cord into an ac outlet.

## The Next Step

If your system includes any other devices, such as a plotter, connect them with the help of the chapters ahead. After installing your system, get acquainted with its operation by reading *Operating Model 20 and 30 Systems*. Then turn to *Testing Model 20 and 30 Systems* to verify your system's operation with diagnostic software.

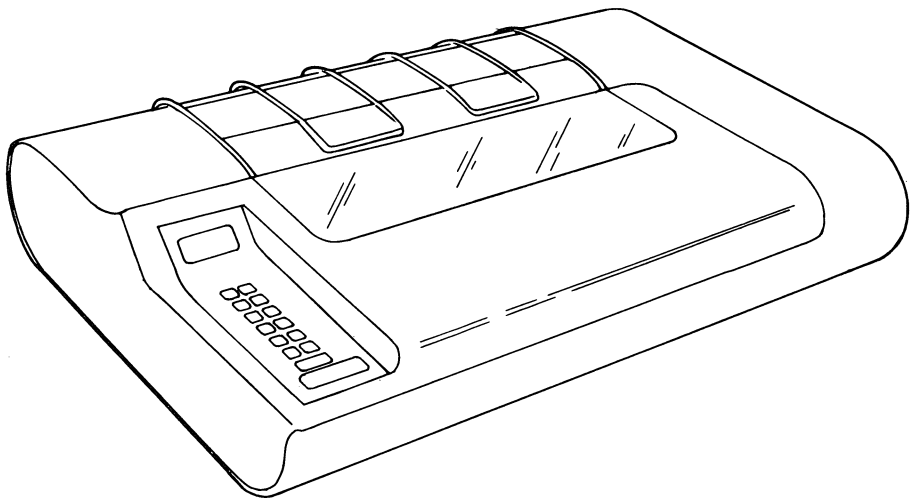


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# Model 6215 Data **10**<sub>A</sub> Processing Dot Matrix Printer

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This chapter tells you how to unpack, and connect your Model 6215 data processing dot matrix printer.



## Getting Started

Before you unpack your printer, a review of the site you have chosen for it will help to ensure that it operates correctly. The temperature of your site should stay within 50 and 100 degrees F (10 and 38 degrees C). Relative humidity should be between 20 and 80 percent.

Install your printer in a space approximately 27 by 20 in. (68.6 by 50.8 cm). These dimensions permit access to all printer controls and power and device cables. Allow a 20 in. (50.8 in. cm) access area above the printer for ventilation.

You can install the printer on a level work surface such as a sturdy desk or table top or on the (optional) pedestal assembly.

You should place the printer within 25 ft (7.5 m) of your computer in order to connect it with the standard-length device cable. The printer should also be within 7.5 ft (2.25 m) of a grounded, three-pronged ac outlet in order to connect it to an ac power source.

**WARNING** *To prevent injury to yourself or damage to the printer, use only a three-pronged ac receptacle for ac power.*



The printer requires that ac voltage, current, and line frequency be within a certain range for correct operation and reliability. Your main concern will be to supply the proper voltage and current. (You have little or no control over the line frequency unless you install special equipment.) You will find general electrical requirements for your system in Chapter 2 under "Site Planning." If you have any doubts about the wiring at your site, a licensed electrician can answer your questions.

The following electrical and mechanical specifications will help you to install the printer in your computer system.

## Electrical Specifications

<b>Power type</b>	100 V	120 V,	220/240 V
<b>Voltage range</b>	90-110 V	102-132 V	187-264 V
<b>Line frequency</b>	50/60 Hz	60 Hz	50 Hz
<b>Current</b> (maximum)	2.4 A	2 A	1.4 A @ 220 V 1 A @ 240 V
<b>Inrush surge</b> (maximum)	7.5 A	12 A	7 A
<b>Power cord</b>	7.5 ft (2.25 m)	7.5 ft (2.25 m)	None supplied

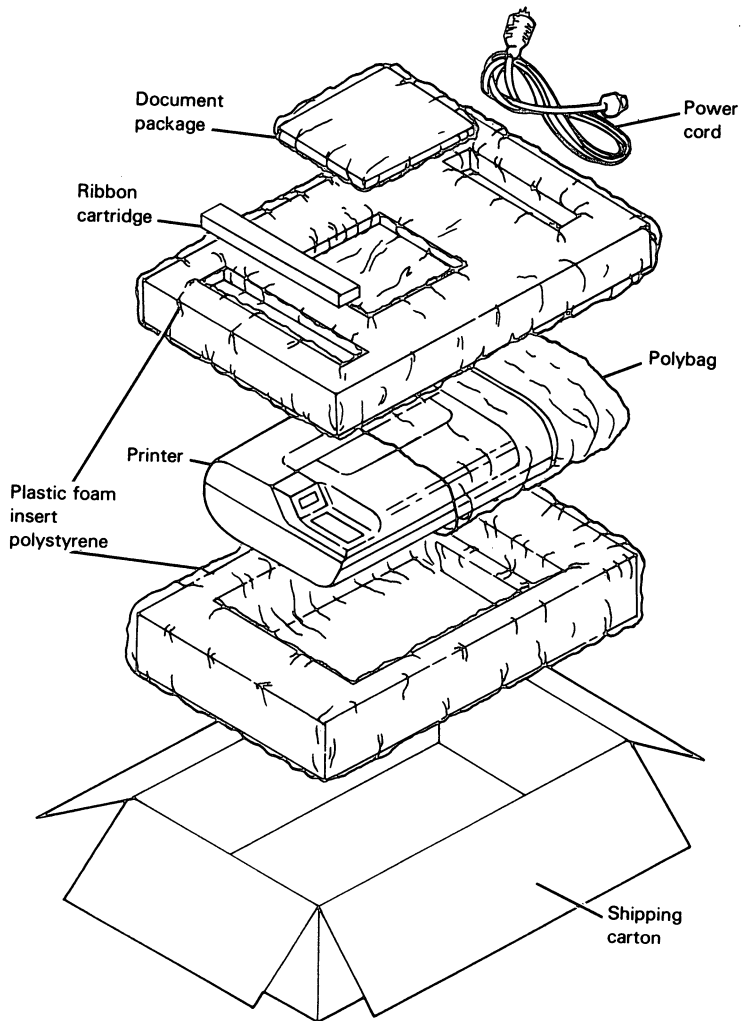
## Mechanical Specifications

<b>Height:</b>	7.7 in	(17.8 cm)
<b>Depth:</b>	18.2 in	(35.5 cm)
<b>Width:</b>	27.7 in	(61.0 cm)
<b>Weight:</b>	50 lbs	(22.7 kg)

# Unpacking and Inspecting Your Printer

Take the following steps to unpack and inspect your printer.

1. Open the shipping carton and remove the printer and other items.



2. Remove all protective padding.
3. Review the inventory checklist below to make sure you have received all items. You will find some items, such as the device cable, in other cartons. You can find the device cable's part number in the "Device Cable" section in Chapter 3. The manual supplied with the printer applies to several types of computer systems; for this reason, we recommend that you install, operate, and test the printer using this and other DESKTOP GENERATION manuals written specifically for your system.

#### Inventory Checklist

- Printer with power cord
- Cover
- Anti-static clip
- Device cable
- Documentation package

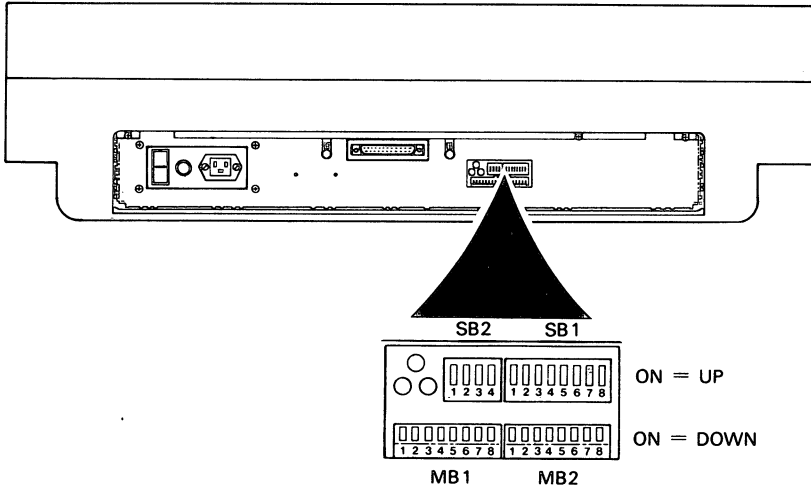
DG-26194

4. Save the cartons and all packing materials to use if you move or must return the printer.
5. Carefully inspect the printer for any visible damage and make sure the print head moves freely in both directions. If the printer appears damaged or contains any loose parts, call your nearest Service Operations Center and report the problem. If you need to return your printer, repack it as shown in the packing diagram.
6. Enter information about your printer on the system configuration sheet.

## Configuring Your Printer

Printer characteristics are determined by controls on the front of the printer and two sets of switches on the printer's rear panel. The controls on the front of the printer are the *operating controls*: they set operating conditions such as print character width and self-test mode.

The two sets of switches on the printer's rear panel are the serial interface switches — SB1 and SB2 — and the configuration switches — MB1 and MB2. The serial interface switches set data transmission characteristics such as baud rate and parity; the configuration switches set operating characteristics at power-up.

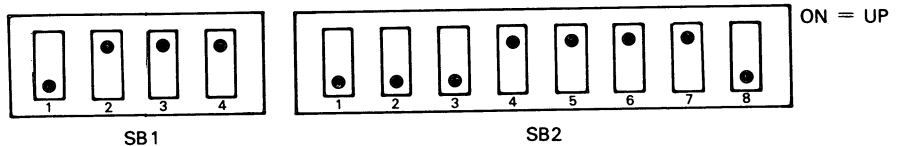


DG-26482

The serial interface and configuration switches are set at the factory to the values required for a printer in a standard DESKTOP GENERATION system that uses a Data General operating system.

## Serial Interface Switches

The serial interface switches, SB1 and SB2, are set at the factory as shown below.



DG-26477

The following table shows the characteristics selected for the serial interface.

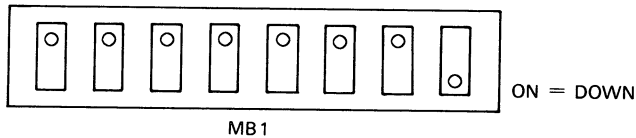
Error handling:	substitute ? for error character
Software busy:	enabled
Baud rate:	9600
Parity:	None
Data bits:	8

We advise against changing these switch settings unless you are using the printer in a custom application or with a non-Data General operating system that requires different characteristics. If you must change the values, refer to *Enhanced 150 CPS Dot Matrix Printer User's Manual* (DGC no. 014-000728), which was shipped with your printer.

## Configuration Switches

The following table shows the printer characteristics selected by the MB1 switch settings. Characteristics you might want to change during normal operation are marked with an asterisk (\*).

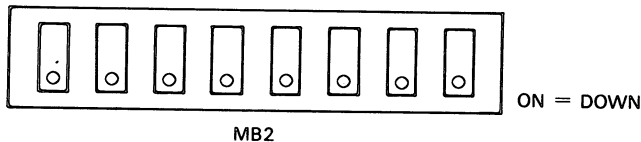
Testing mode:	Off
Power up state:	Off-line
Lines per inch (LPI)*:	6
Form length*:	12 inches
Software error trap:	Enabled
Characters per line (CPL)*:	136
Bottom margin:	Equal to form length
Data bits:	8



DG-26479

To change the switch settings check the user's manual shipped with the system, *Dot Matrix Printer Models 6215/6216*, (DGC 014-000732).

The MB2 switch selects the main and alternate character sets. The default value is the USA character set: all switches ON (down). If you would like to select another character set, check the user's manual.



DG-26480

We advise against changing these switch settings unless you are using the printer in a custom application or with a non-Data General operating system that requires different characteristics. If you must change the values, refer to *Enhanced 150 CPS Dot Matrix Printer User's Manual* (DGC no. 014-000728), which was shipped with your printer.

## Installing Your Printer

You install the printer in your system by connecting it to the printed circuit card which controls it. The printer is controlled by either the printer port on the SPU1 card or by a line on a USAM card. The SPU1 card occupies slot 1 in the CPU logic module. A USAM card occupies an I/O slot in the CPU logic or logic expansion module. A short adapter cable, which plugs into the SPU1 or USAM card through an opening behind the module, provides the connection to the printer port or USAM line.

The adapter cable for the printer port is DGC part no. 005-021148. Its single connector is designed to fit the device cable for your printer.

The adapter cable for the 4-line USAM card (DG part no. 005-021041) has four cable connectors, one for each line. The connectors are labeled P2 through P5. P2 is for line 1, P3 is for line 2, and so on. The printer's device cable plugs into the connector for the line that controls it. The adapter cable for the 1-line USAM card (DGC part no. 005-020688) has one cable connector labeled P2. The printer's device cable plugs into this connector.

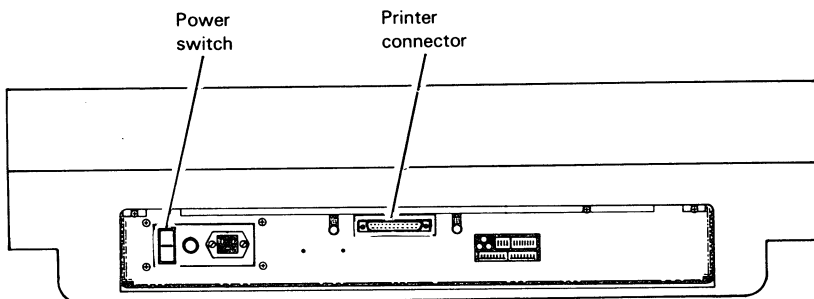
**NOTE** *If you are adding a printer to a previously installed system with a device already on the printer port and without an available USAM card, you must add a USAM card to your system. Install this card as described in Chapter 14 before connecting the printer.*

Take the following steps to install your printer, keeping a small Phillips screwdriver and a small flat screwdriver handy. If you are removing the printer from your system, follow these steps in reverse.

1. Turn off the computer.

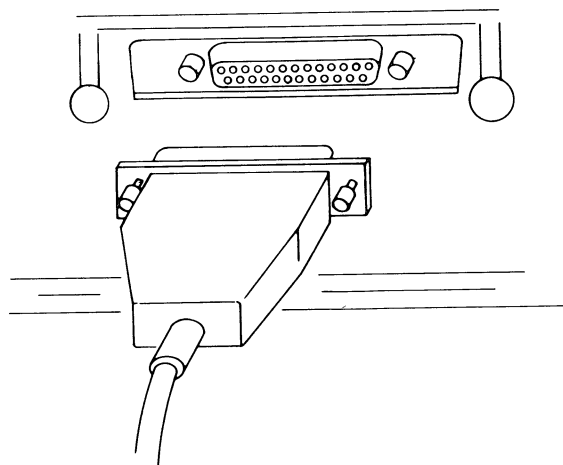


2. Make sure the printer is turned off.



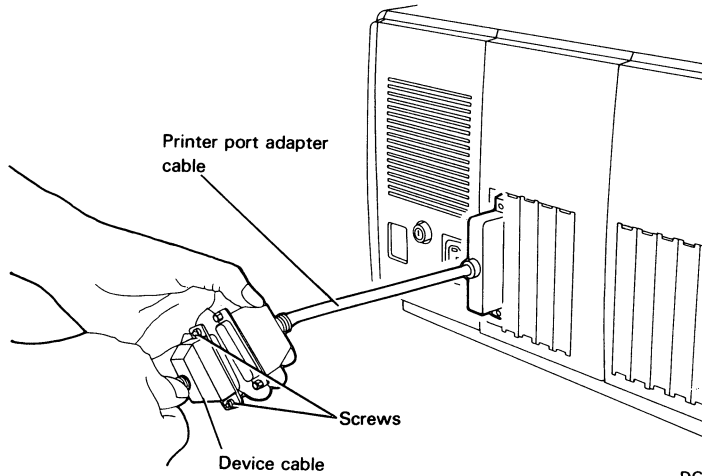
DG-26483

3. Plug the printer's device cable into the cable connector behind the printer. Tighten the two screws that hold the device cable in place.



DG-26481

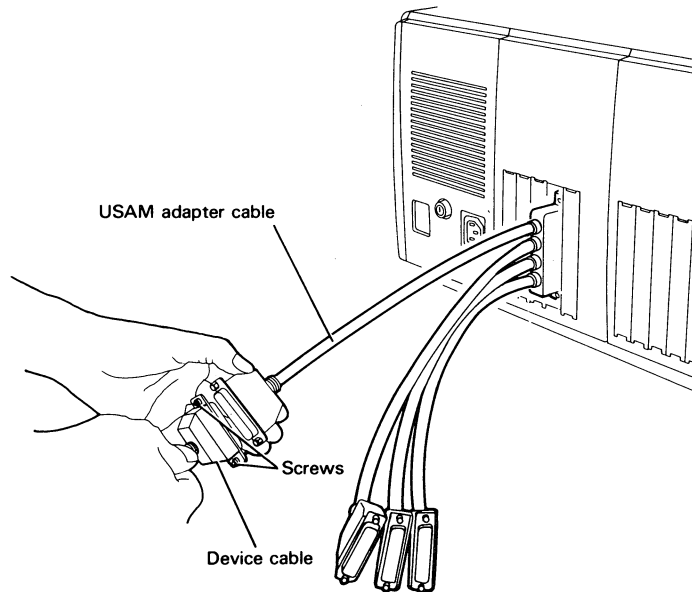
To connect the printer on the printer port, plug the other end of the printer's device cable into the connector for the printer port adapter cable. Tighten the two screws that hold the cables in place.



DG-26189

To connect the printer on a USAM line, locate the adapter cable connector for the USAM line that controls the printer and connect it to the other end of the printer's device cable. Tighten the two screws that hold the cables in place.

**NOTE** *If you do not remember which line of the USAM card controls the printer, reread the section "Adapter Cables" in Chapter 4.*



DG-26155

6. Plug the power cord into an ac outlet.

## The Next Step

If your system includes any other devices such as a plotter, connect them with the help of the chapters ahead. After installing your system, get acquainted with its operation by reading *Operating Model 10 and 10/SP Systems*. Then turn to *Testing Model 10 and 10/SP Systems* to verify your system's operation with diagnostic software.

For information on operating and testing devices not covered in these system manuals, check the user's manual shipped with the device.



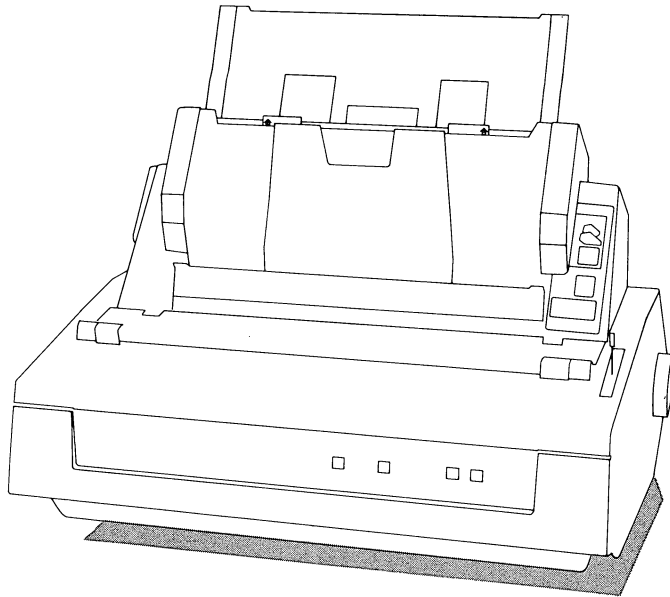
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# Model 4518 Letter-Quality Printer

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# 11

This chapter tells you how to unpack, inspect, configure, and connect your Model 4518 letter-quality printer and any of the forms handling options — cut sheet guide, single or dual-bin cut sheet feeder, bidirectional forms tractor, or envelope adapter — that make paper handling easier.



DG-25526

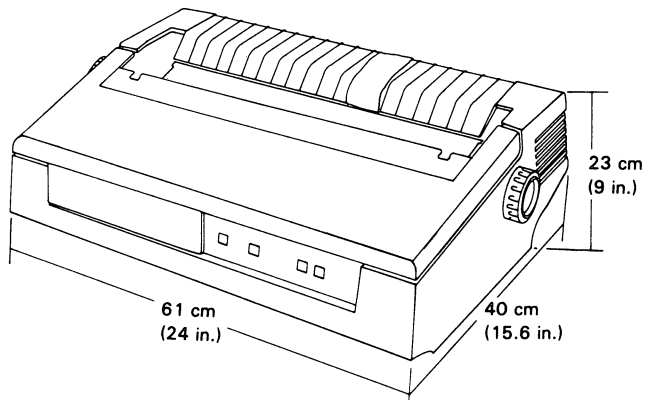
## Getting Started

Install the printer in a clean, dust-free environment on a sturdy table or surface capable of supporting at least 50 lbs. If you use the bidirectional forms tractor option, place the printer on the edge of the surface to permit proper paper handling.

Before you unpack your printer, a review of the site you have chosen for it will help to ensure that it operates correctly. The temperature of your site should stay within 50 and 100 degrees F (10 and 38 degrees C). Relative humidity should be between 20 and 80 percent.

Remember that the printer emits some noise during operation, so you should avoid installing it in an area where its sound would be disturbing.

Your letter-quality printer does not need much space beyond its own dimensions and those of any forms handling option. You should allow a 20 in. (51 cm) access area around and above the printer and forms handling option for ventilation, power and device cables, and routine maintenance.



DG-25760

You will need to place your printer within 50 ft (15.2 m) of your computer to connect it with the standard-length device cable. You will also need to place the printer within 6 ft (2 m) of a grounded, three-pronged ac outlet in order to connect it to an ac power source.

**WARNING** *To prevent injury to yourself or damage to the printer, use only a three-pronged ac receptacle for ac power.*

The printer requires that ac voltage, current, and line frequency be within a certain range for correct operation and reliability. Your main concern will be to supply the proper voltage and current. (You have little or no control over the line frequency unless you install special equipment.) You will find general electrical requirements for your system in Chapter 2 under "Site Planning." If you have any doubts about the wiring at your site, a licensed electrician can answer your questions.

The following electrical and mechanical specifications will help you to install the printer in your computer system.

## Electrical Specifications

<b>Power type</b>	100 V	120 V	220/240 V
<b>Voltage range</b>	90-110 V	105-130 V	205-250 V
<b>Line frequency</b>	47-63 Hz	47-63 Hz	47-63 Hz
<b>Current</b> (maximum)	1.3 A	1.3 A	0.7 mA
<b>Power consumed</b> (maximum)	170 W	170 W	170 W
<b>Inrush surge</b> (maximum)	24 A	24 A	24 A
<b>Power cord</b>	7.5 ft	7.5 ft	7.5 ft

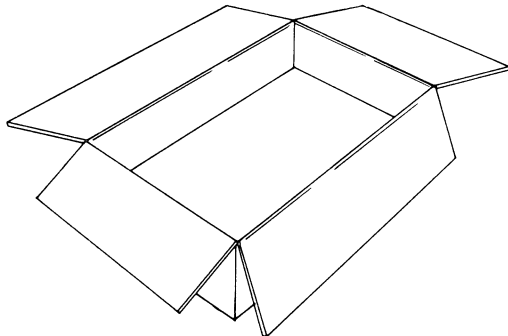
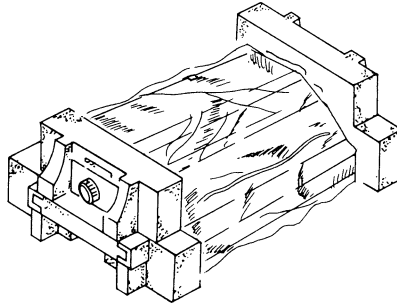
## Mechanical Specifications

Height:	9 in	(23 cm)	without forms options
	14 in	(34 cm)	with cut sheet guide
	16 in	(41 cm)	with single cut sheet feeder
	19 in	(48 cm)	with dual cut sheet feeder
	14 in	(34 cm)	with bidirectional forms tractor
Width:	24 in	(61 cm)	with or without forms option
Depth:	15.6 in	(40 cm)	with or without forms option
Weight:	37.4 lbs	(17 kg)	without forms option

## Unpacking and Inspecting Your Printer

Take the following steps to unpack and inspect your printer.

1. Open the shipping carton and remove the printer and other items.
2. Gently remove all packing materials.





**3.** Review the inventory checklist below to make sure you have received all items. You will find some items, such as the device cable, in other cartons. The device cable's part number is in the "Device Cable" section in Chapter 3. The manuals supplied with the printer apply to many different types of computer systems; for this reason, we recommend that you install, operate, and test the printer using this and other DESKTOP GENERATION books written specifically for your system.

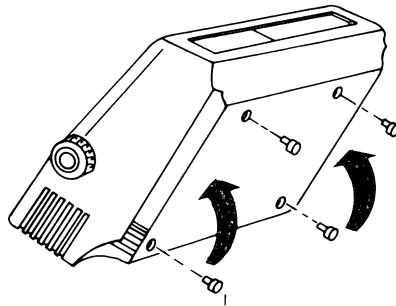
#### Inventory Checklist

- Printer
- Acrylic cover
- Ribbon cartridge
- Print thimble
- Power cord
- Device cable
- Documentation package

DG-26196

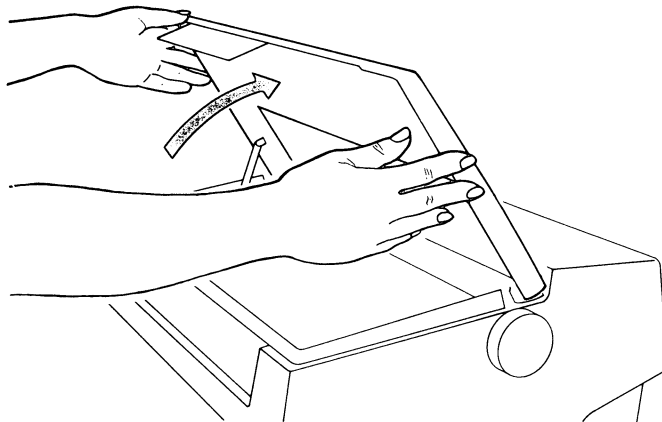
**4.** Tilt the printer up on its back to expose the base. Keep one hand on it to prevent it from falling.

**5.** Remove four shipping screws and spacers by turning them counterclockwise.



DG-25768

6. Remove the restraining tape from the top of the cover.
7. Open the hinged top of the printer's cover by lifting it up at the front.

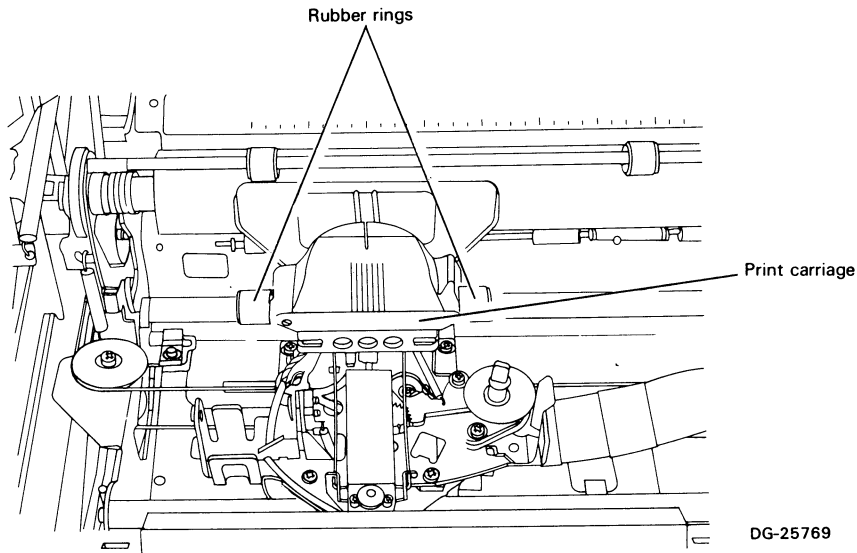


DG-25557

8. Remove any restraining tape from inside the printer. If any plastic material covers the operator switches, remove it.

**CAUTION** *You must perform the next step or the printer will not operate properly.*

9. Remove the two rubber rings holding the print carriage in place.



10. Save the cartons and all packing materials to use if you move or must return your printer.

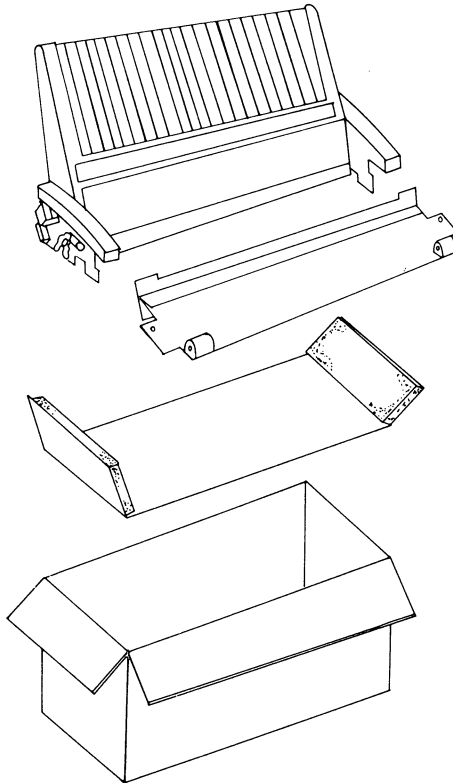
11. Carefully inspect the printer for any visible damage. If the printer appears damaged or contains any loose parts, call your nearest Service Operations Center and report the problem. If you need to return your printer, repack it as shown in the packing diagram.

12. Enter information about your printer on the system configuration sheet.

## Cut Sheet Guide

Take the following steps to unpack and inspect the cut sheet guide, if you have this forms handling option; if not, unpack and inspect any other option or skip ahead to "Configuring Your Printer."

1. Open the shipping carton and remove the cut sheet guide and any other items.
2. Gently remove any packing materials.



3. Review the inventory checklist below to make sure you have received all items.

#### Inventory Checklist

- Cut sheet guide with sensor cable
- Acrylic cover
- Limited warranty card

DG-26198

4. Save all materials to use if you move or must return the cut sheet guide.
5. Carefully inspect the cut sheet guide for any visible damage. If parts appear to be missing or damaged, call your Service Operations Center and report the problem.
6. Enter information about the cut sheet guide on your system configuration sheet.

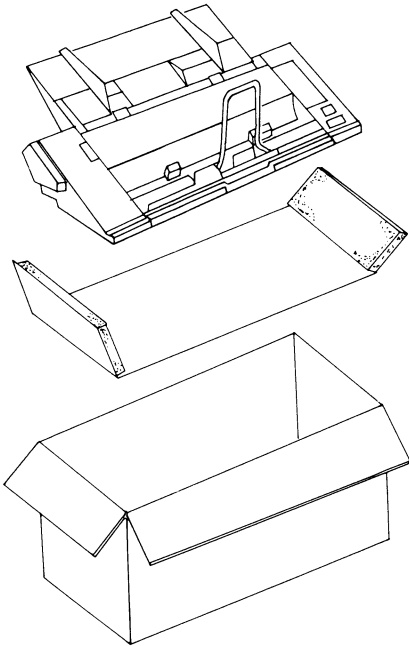
## Single or Dual Cut Sheet Feeder

Take the following steps to unpack and inspect the single or dual cut sheet feeder, if you have either of these forms handling options; if not, unpack and inspect any other option or skip ahead to "Configuring Your Printer."

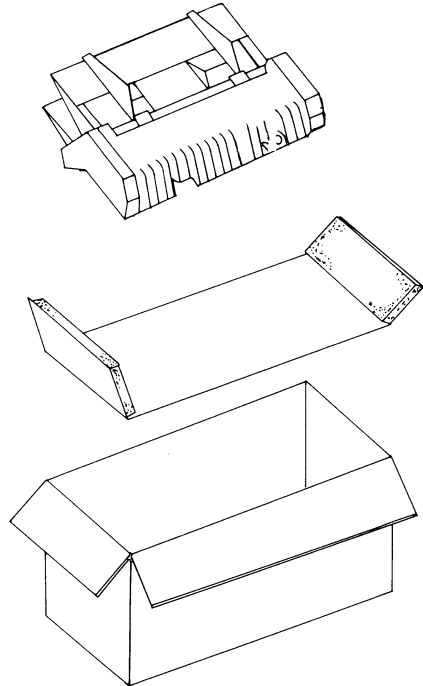
1. Open the shipping cartons and remove the cut sheet feeder and any other items.

2. Gently remove any packing materials.

Single cut sheet feeder



Dual bin adapter



*Note: The paper hopper is shown installed.*

- 3.** Review the inventory checklist below to make sure you have received all items.

<b>Inventory Checklist</b>	
<input type="checkbox"/>	Single cut sheet feeder
<input type="checkbox"/>	Dual bin adapter (optional)
<input type="checkbox"/>	Option cable
<input type="checkbox"/>	Paper stacker
<input type="checkbox"/>	Paper hopper
<input type="checkbox"/>	Main unit cover plate (installed)
<input type="checkbox"/>	Limited warranty card

DG-26199

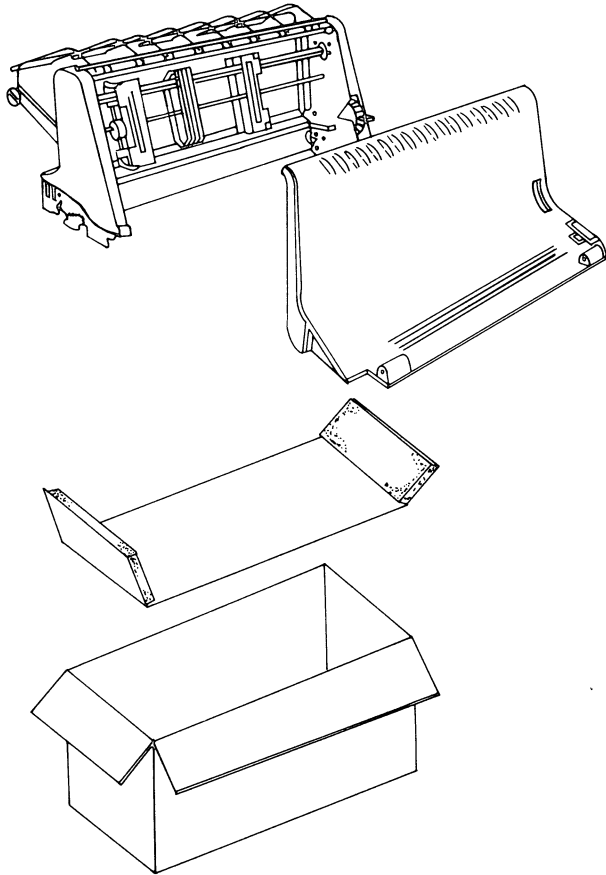
- 4.** Save all packing materials to use if you move or must return the cut sheet feeder.
- 5.** Carefully inspect the cut sheet feeder for any visible damage. If parts appear to be missing or damaged, contact your nearest Service Operations Center immediately.
- 6.** Enter information about the cut sheet feeder on your system configuration sheet.

## Bidirectional Forms Tractor

Take the following steps to unpack and inspect the bidirectional forms tractor, if you have this forms handling option; if not, skip ahead to "Configuring Your Printer."

- 1.** Open the shipping carton and remove the bidirectional forms tractor and any other items.

2. Gently remove any packing materials.



DG-25819

3. Review the inventory checklist below to make sure you have received all items.

**Inventory Checklist**

- Bidirectional forms tractor
- Silencer hood

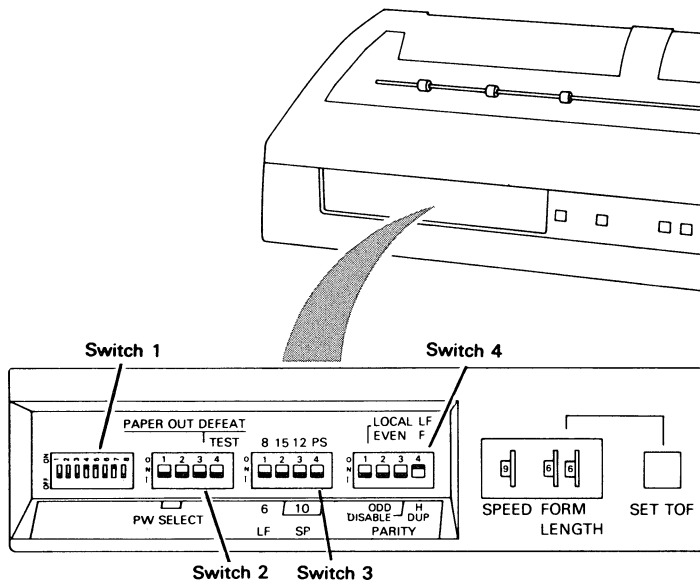
DG-26200



4. Save all packing materials to use if you move or must return the bidirectional forms tractor.
5. Carefully inspect the bidirectional forms tractor for any visible damage. If parts appear to be missing or damaged, contact your nearest Service Operations Center.
6. Enter information about the bidirectional forms tractor on your system configuration sheet.

## Configuring Your Printer

Printer characteristics such as data transmission rates and operating status are selected by switches on the printer's front panel. These switches are set at the factory to the values required for a printer in a standard DESKTOP GENERATION system using a Data General operating system. Make sure the switches are set as shown below.



The following table shows the characteristics selected by these switch settings.

**Switch 1**

Power-up state:	On-line
Form feed:	Form feed on form feed switch
Horizontal tabs:	Individual tabs cleared
Carriage return:	Auto carriage return
Protocol:	XON/XOFF protocol
Alarm:	Break on alarm
Form length switch:	Ignore form length switch
Operation mode:	Normal

**Switch 2**

Print type:	Constant pitch (10/12/15)
Paper out conditions:	Paper sensing enabled
Self-test mode:	Self-test enabled

**Switch 3**

Lines per inch:	6
Characters per inch:	10

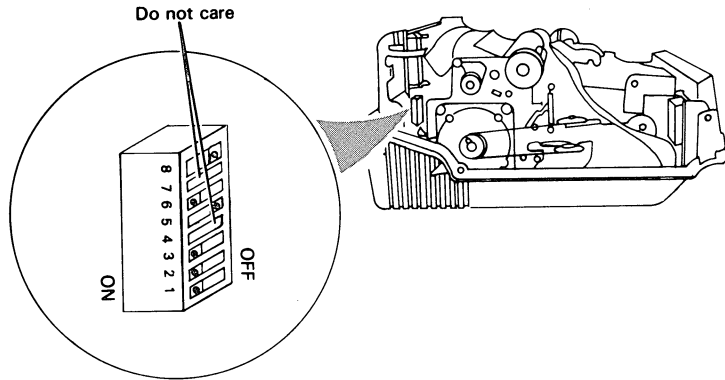
**Switch 4**

Line feed switch:	Enabled
Parity:	Parity off, mark
Transmission:	Full duplex

**Speed Switch**

Baud rate:	9600
------------	------

The printer's PC card also contains switches whose values are set at the factory.



DG-25778

The following table shows the characteristics selected by these switch settings.

Data Set Ready signal:	Enabled
Clear to Send signal:	Enabled
DCD signal (modem):	Disabled
Reverse Channel:	Do not care
Loopback test:	Disabled
2K buffer:	Enabled
Not used:	Do not care
Hammer drive:	Enabled

We advise against changing the switch settings on the operator panel and PC card — especially the data transmission characteristics — unless you are using the printer in a custom application or with a non-Data General operating system. On occasion, you may need to change some of the switches on the operator panel — for example, when you run the printer's self-test, change paper, or change print thimbles. Instructions for changing operator switch settings can be found in *Operating Model 20 and 30 Systems*.

If you must change other printer characteristics — those of data transmission and others not routinely changed while operating the printer — refer to the documentation shipped with the printer.

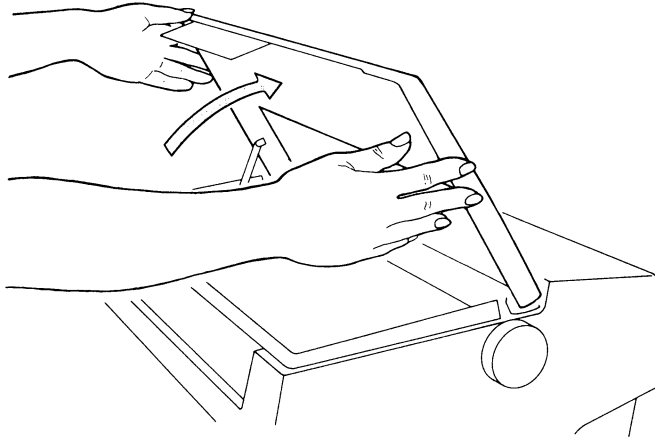
## Installing Your Printer

The procedures ahead guide you through installing a print thimble, inserting a ribbon cartridge, and connecting your printer to the rest of the system. Later sections explain how to install any forms handling option(s) you may have ordered.

### Print Thimble

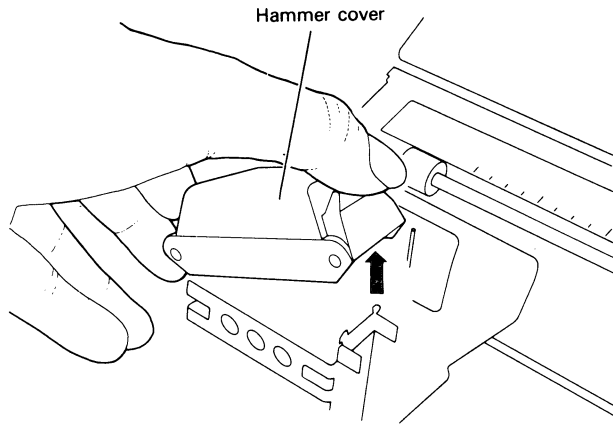
Take the following steps to install the print thimble.

1. Raise the hinged part of the printer's cover.



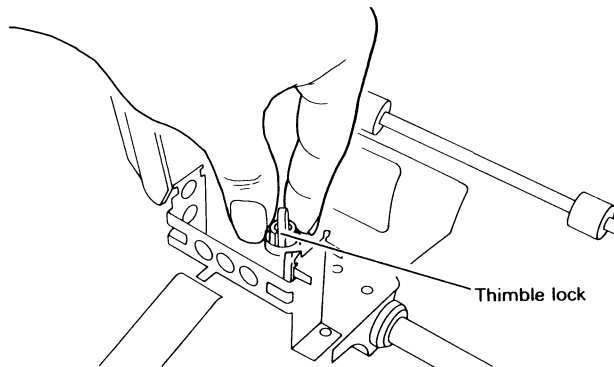
DG-25557

2. Gently lift open the hammer cover, which is hinged on the left side.



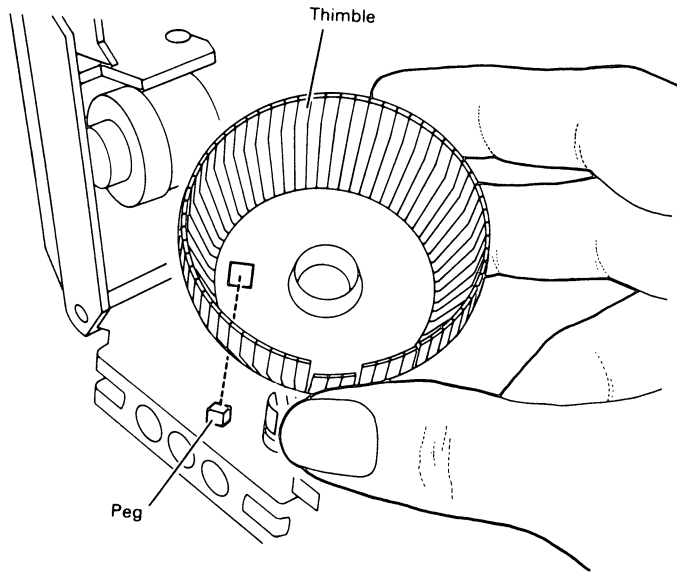
DG-25779

3. Slide the thimble lock to one side and lift it up to a vertical position.



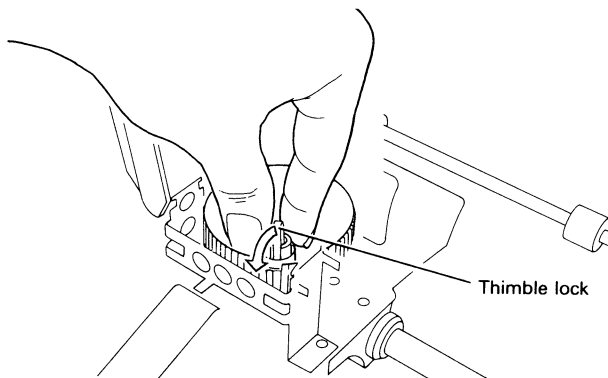
DG-25780

4. Align the square hole in the bottom of the thimble with the square peg on the thimble holder. Slip the thimble over the thimble lock.



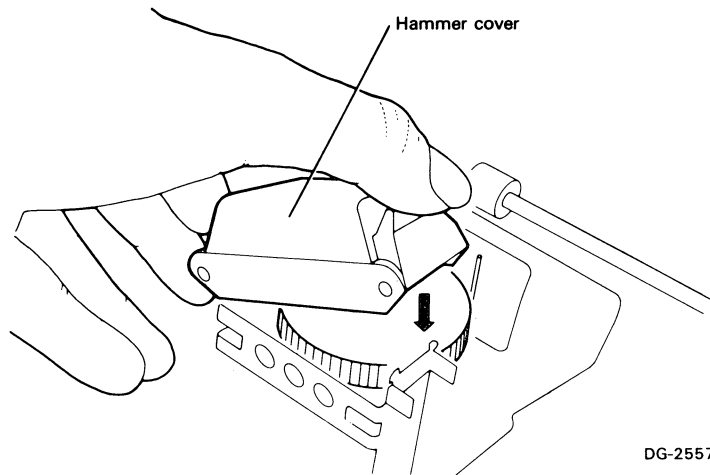
DG-25572

5. Gently press down on the thimble to make sure it is in place. Then lay the thimble lock flat and slide it back into its original position.



DG-25781

6. Lower the hammer cover and snap it closed.



DG-25574

Print thimbles produce characters in densities of 10, 12, or 15 characters per inch (CPI) or use proportional spacing (PS). *Operating Model 20 and 30 Systems* tells you how to set the switches on the printer's front panel according to the type of print thimble you install.

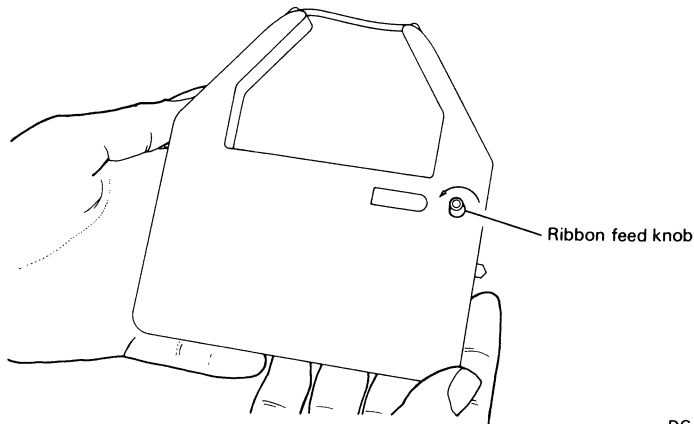
## Ribbon Cartridge

The letter-quality printer accepts either a fabric ribbon or multistrike film cartridge. You install both in the same way. For more information on both types of ribbon cartridges, along with instructions for loading paper and operating the printer, see *Operating Model 20 and 30 Systems*.

Take the following steps to load the ribbon cartridge.

1. Turn the ribbon feed knob in the direction indicated on the cartridge to put tension on the ribbon.

**CAUTION** *Do not turn the knob in the opposite direction; to do so destroys the internal winding mechanism of the ribbon.*

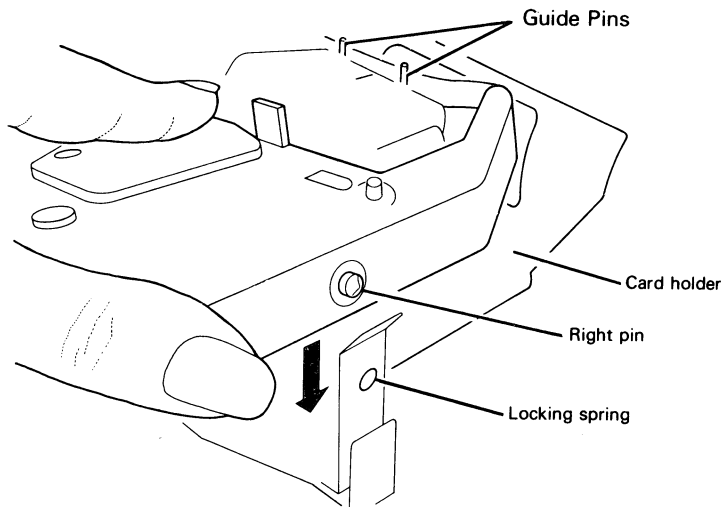


DG-25559



**2.** Insert the pin on the left side of the ribbon cartridge into the hole on the left side of the cartridge frame. Then insert the right pin into the locking spring, snapping the cartridge into place. Make sure that the ribbon rests between the two guide pins and the card holder.

**NOTE** *If you have difficulty snapping the cartridge into place, turn the ribbon feed knob a little further in the direction indicated on the ribbon cartridge. In any case, you should turn the ribbon feed knob after inserting the cartridge to put tension on the ribbon.*



DG-25566

**3.** Close the printer cover's hinged top.

## Connecting the Printer

You install the printer in your system by connecting it to the printed circuit card that controls it. The printer is controlled by a line on a USAM card (or the 4207 card), which occupies an I/O slot in the CPU logic or logic expansion module. A short adapter cable, which plugs into a USAM or 4207 card through an opening behind the module, provides the connection to the line.

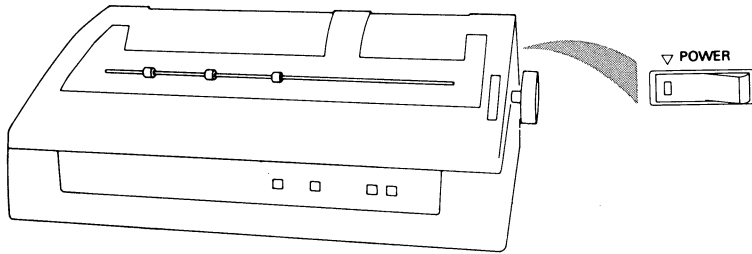
The adapter cable for the 4-line USAM card (DGC part no. 005-021041) has four cable connectors, one for each line. The connectors are labeled P2 through P5. P2 is for line 1, P3 is for line 2, and so on. The printer's device cable plugs into the connector for the line that controls it. The adapter cable for the 1-line USAM card (DGC part no. 005-020688) has one cable connector labeled P2. The printer's device cable plugs into this connector. The adapter cable for a 4207 card (DGC No. 005-021148) has one cable connector. The printer's cable plugs into this connector.

*NOTE If you are adding a printer to a previously installed system without a USAM line available, you must add a USAM or 4207 card to your system. Install this card as described in Chapter 13 before connecting the printer.*

Take the following steps to connect your printer, keeping a small Phillips screwdriver and a small flat screwdriver handy. If you are removing the printer from your system, follow these steps in reverse.

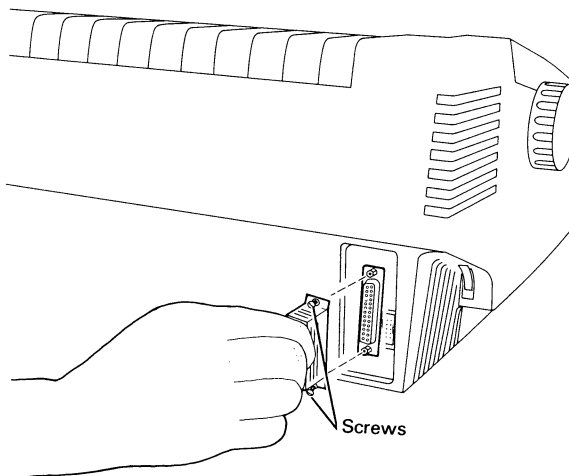
1. Turn off the computer.

2. Make sure the printer is turned off.



DG-25524

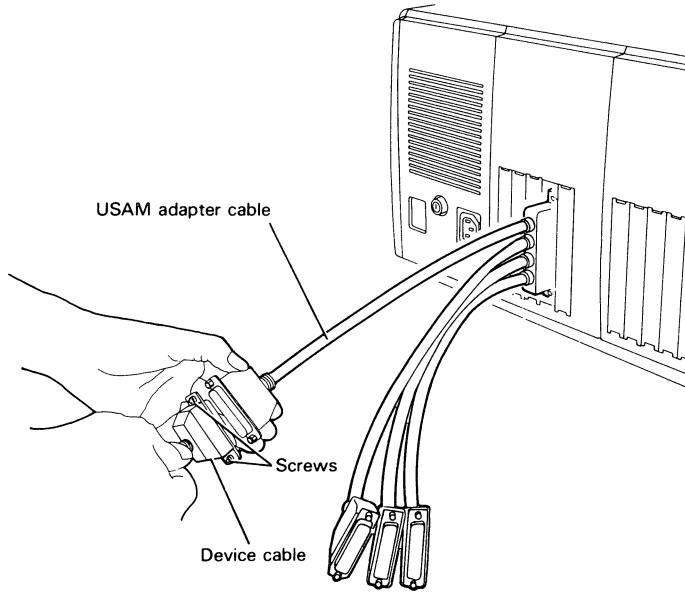
3. Plug the printer's device cable into the connector behind the printer. Tighten the two screws that hold the cable in place.



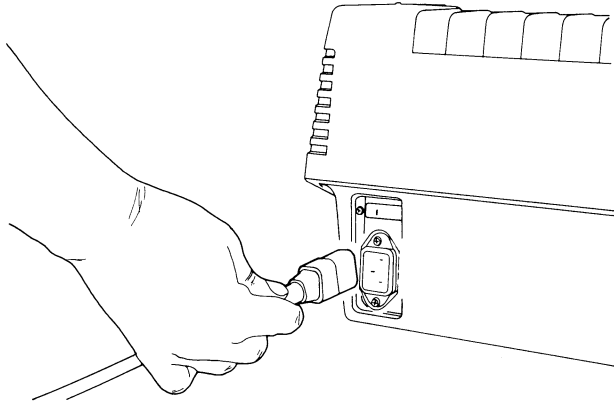
DG-25786

4. Locate the adapter cable for the USAM or 4207 line that controls the printer and plug it into the other end of the printer's device cable. Tighten the two screws that hold the cables in place. (The figure below shows a typical connection to a USAM card in slot 4 of the CPU logic module.)

**NOTE** *If you do not remember which line of the USAM card controls the printer, reread the section "Adapter Cables" in Chapter 4.*



5. Plug one end of the power cord into the ac connector on the back of the printer.



DG-25788

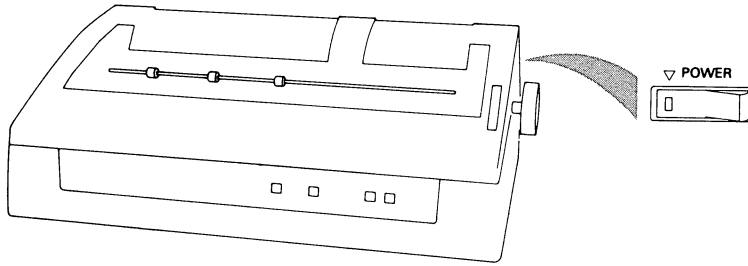
6. Plug the other end of the power cord into an ac outlet.
7. If your printer includes one or more forms handling options, install them with the help of the instructions ahead. Otherwise, skip to the end of the chapter and read "The Next Step."

## Installing the Cut Sheet Guide

The cut sheet guide allows you to load, print, and eject a single cut sheet of paper automatically. The cut sheet guide also monitors the paper supply. It indicates a paper out condition by sounding the Paper Out buzzer on the printer's front control panel.

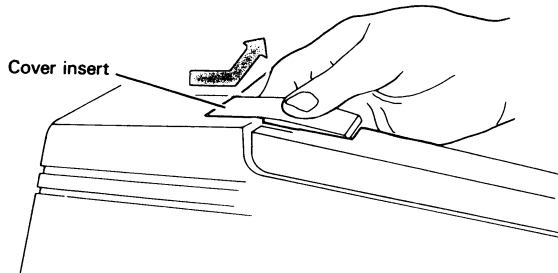
Take the following steps to install the cut sheet guide if you have this forms handling option; otherwise, continue to install other options or skip ahead to "The Next Step."

1. Turn off the printer.



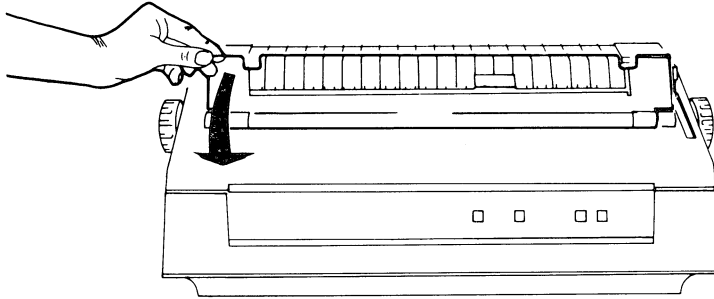
DG-25524

2. If your letter-quality printer has two cover inserts installed, remove them by grasping them on the inside bottom edge and pulling them gently sideways away from the printer cover.



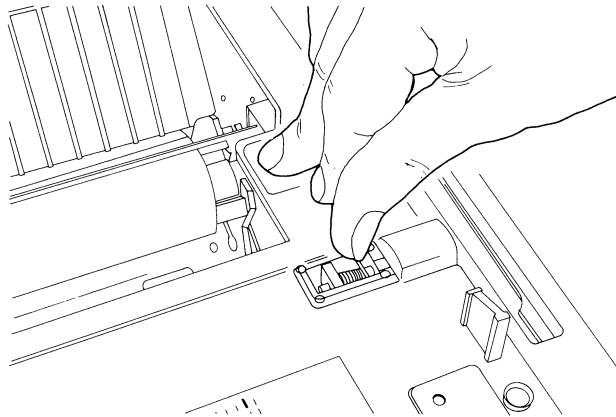
DG-25792

3. Open the printer's acrylic cover.



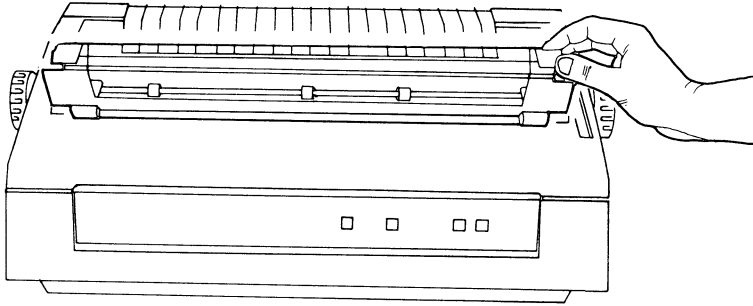
DG-25793

4. Slide the hinge pin in the right corner of the printer's acrylic cover to the left and remove the acrylic cover.



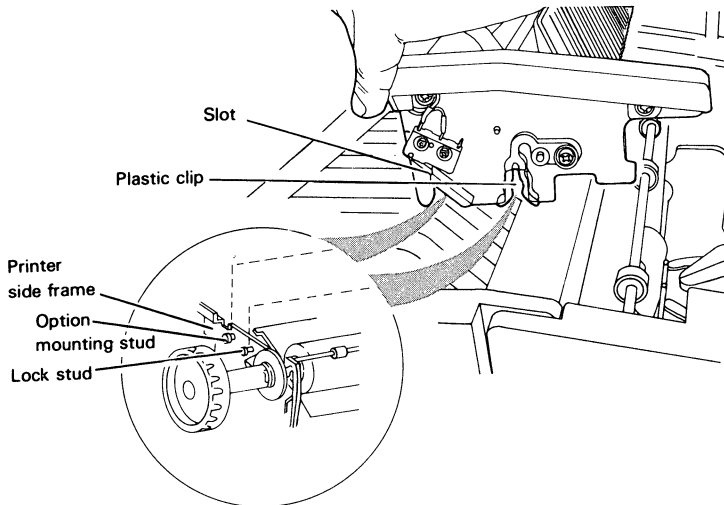
DG-25794

5. Install the cut sheet guide's acrylic cover on the printer by reversing the procedure in the step 4. Leave the cover open.



DG-25795

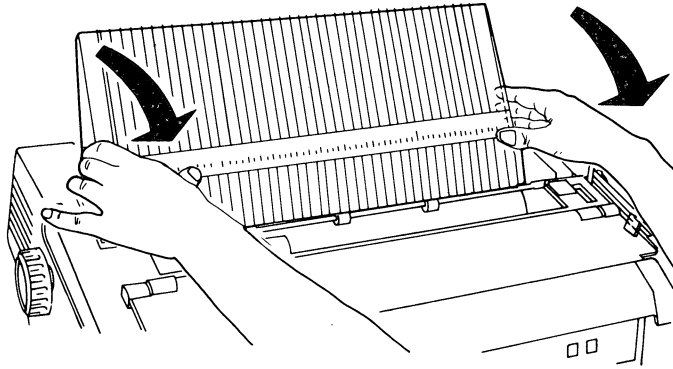
6. Hold both sides of the cut sheet guide and fit the slot in the cut sheet guide frames onto the option mounting studs on the printer side frames.



DG-25796

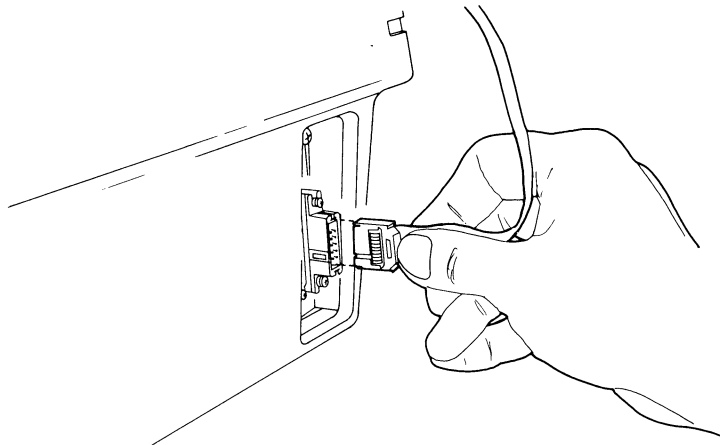


7. Push down on the guide to clamp it into place. The plastic clips fit onto the lock stud on the printer's side frame.



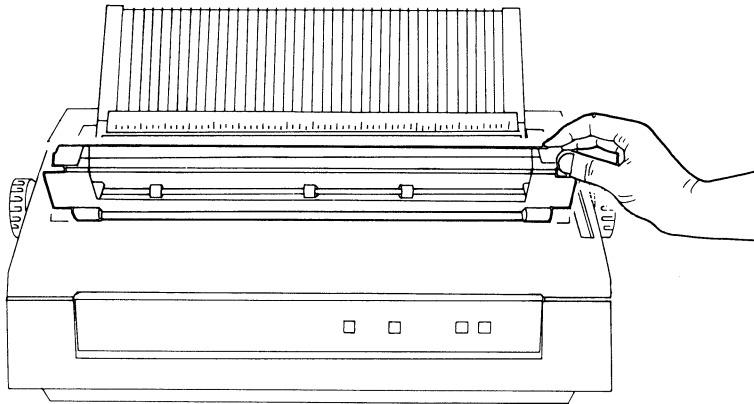
DG-25797

8. Connect the paper out sensing cable to the back of the printer.



DG-25798

9. Close the cut sheet guide's acrylic cover.

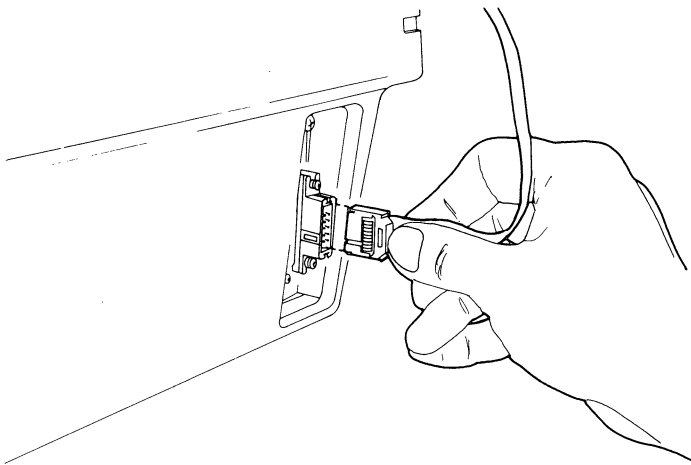


DG-25799

## Removing the Cut Sheet Guide

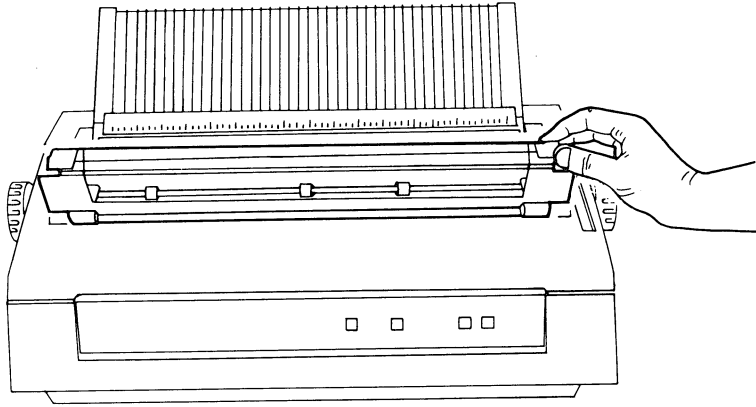
Take the following steps when removing the cut sheet guide from your printer.

1. Disconnect the paper out sensing cable from the back of the printer.



DG-25798

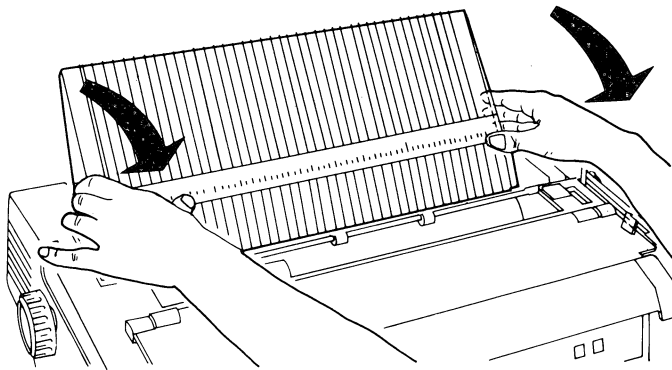
2. Open the acrylic cover.



DG-25799

**CAUTION** *Never try to remove the cut sheet guide by forcing it upwards or from side to side.*

3. Grasp both sides of the cut sheet guide's paper tray and rotate the whole unit forward to remove it.



DG-25797

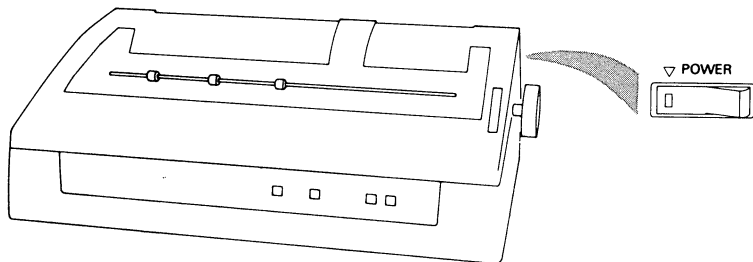
## Installing the Cut Sheet Feeder

The cut sheet feeder allows you to insert, print, and stack cut sheets automatically. You can add the dual bin adapter to double the feeder's paper handling capacity. This adapter allows you to load two different types of paper and select either type for printing. Indicator lights on the cut sheet feeder panel tell you which paper type you have selected.

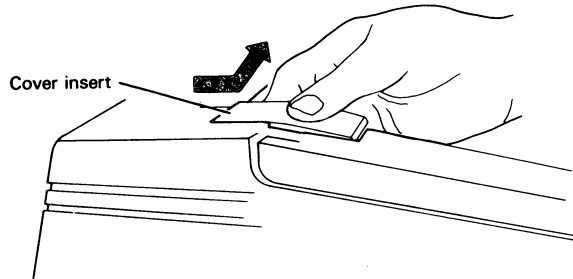
The cut sheet feeder also monitors the paper supply. It indicates a paper out condition or paper jams by lighting an alarm lamp on its control panel.

Take the following steps to install first an internal option cable and then the cut sheet feeder, if you have this forms handling option; otherwise, continue to install other options or skip ahead to "The Next Step.")

1. Make sure the printer is turned off and its power cord unplugged from its ac outlet.

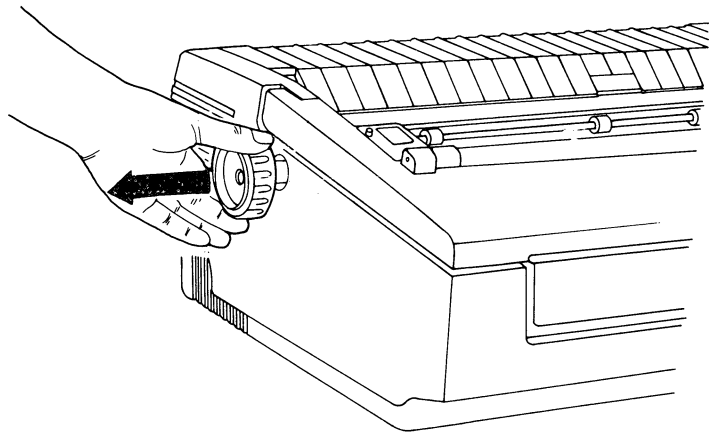


2. If your letter-quality printer has two cover inserts installed, remove them by grasping them on the inside bottom edge and pulling gently sideways away from the printer cover.



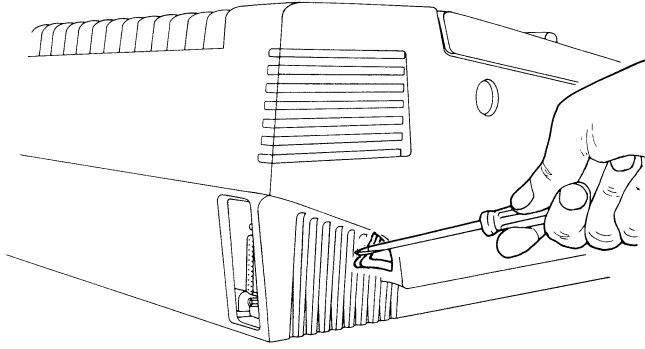
DG-25792

3. Pull off the right and left paper advance knobs.



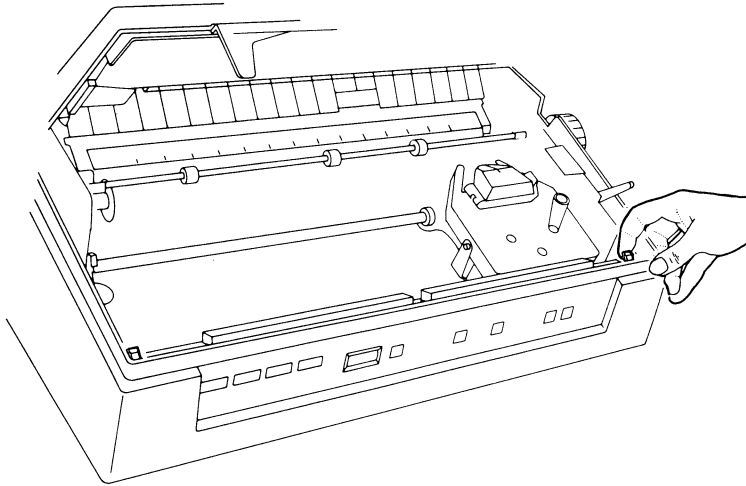
DG-25770

4. Using a screwdriver or similar tool, push down the right and left cover release levers at the rear of the printer.



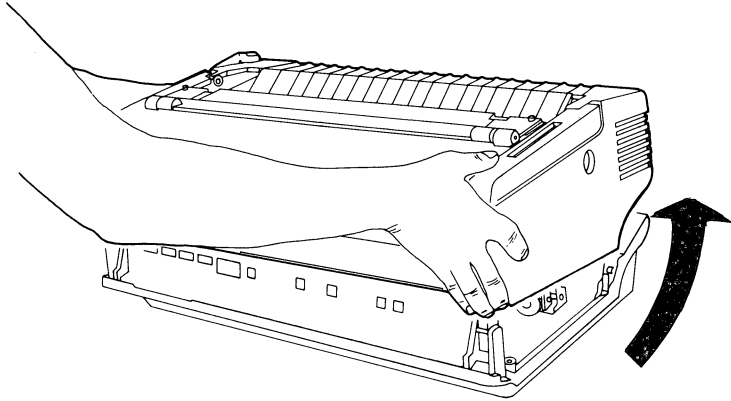
DG-25771

5. Open the hinged top of the cover and pull the right and left cover release levers inside the printer forward.



DG-26121

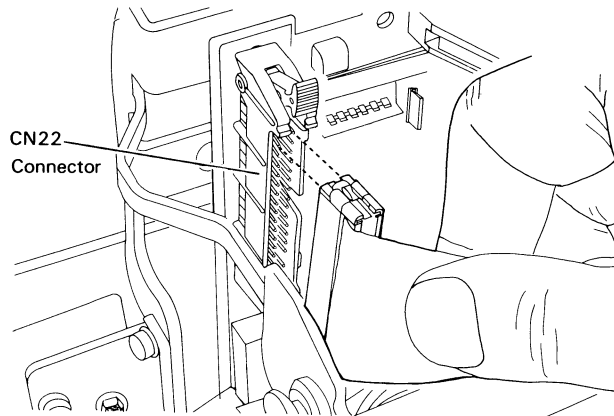
6. Close the hinged top of the cover and then lift the cover up and remove it. The hinged top of the cover will come along with it. Be careful not to hit any parts inside the printer.



DG-25772

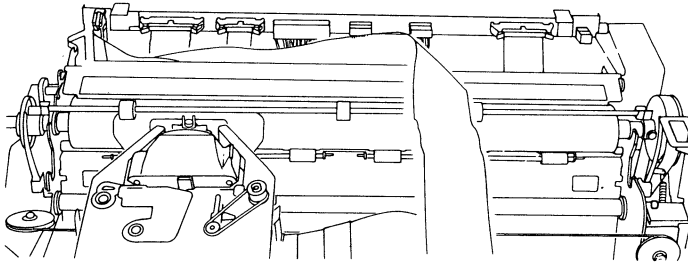
7. Plug one end of the cut sheet feeder's option cable into the CN22 connector on the printer's printed circuit card (PC card), and press it until it snaps into place.

**NOTE** Only one end of the cable fits onto the PC card. If you have trouble inserting one end of the cable's connector, try inserting the other end.



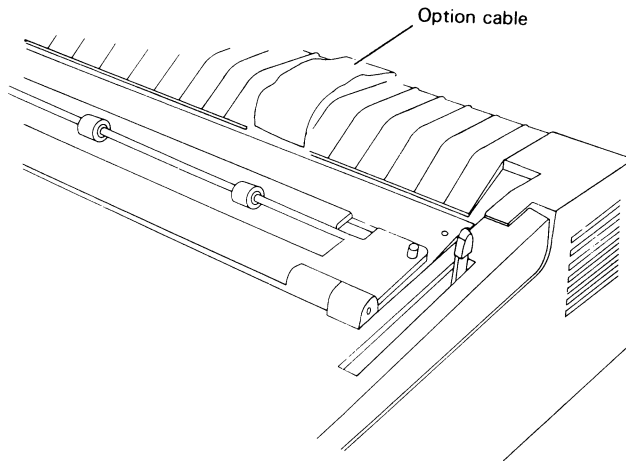
DG-25806

8. Position the option cable as shown below.



DG-25807

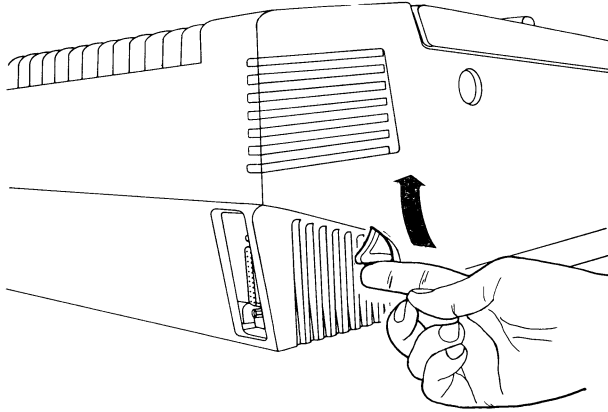
9. Replace the cover with the option cable fitting through the slot in the top of the cover.



DG-25808

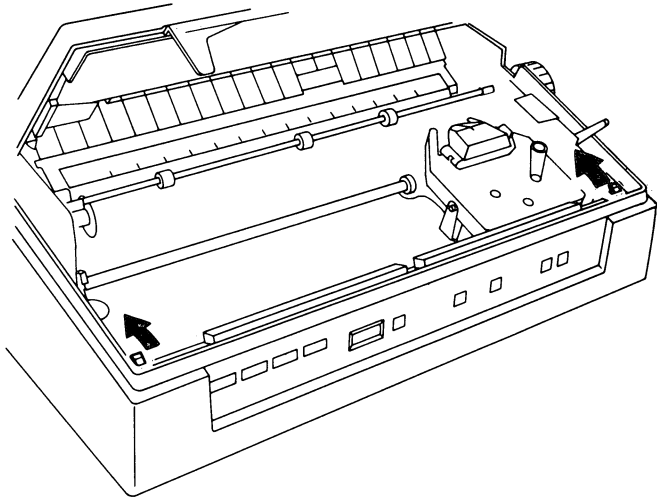


- 10.** Press the left and right cover release levers until they snap into place.



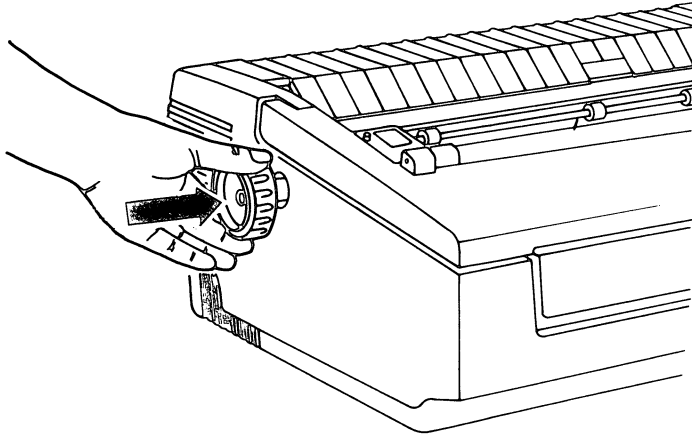
DG-25775

- 11.** Open the hinged top of the cover and push the left and right inside cover release levers back.



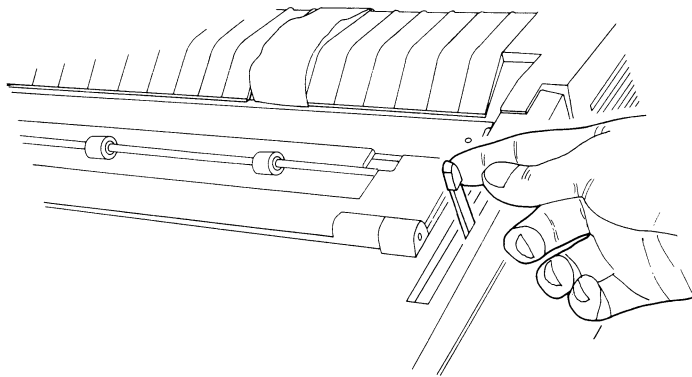
DG-26197

12. Replace the right and left paper advance knobs. Make sure the knobs are on securely; otherwise, the platen will not turn when you turn the knobs.



DG-25776

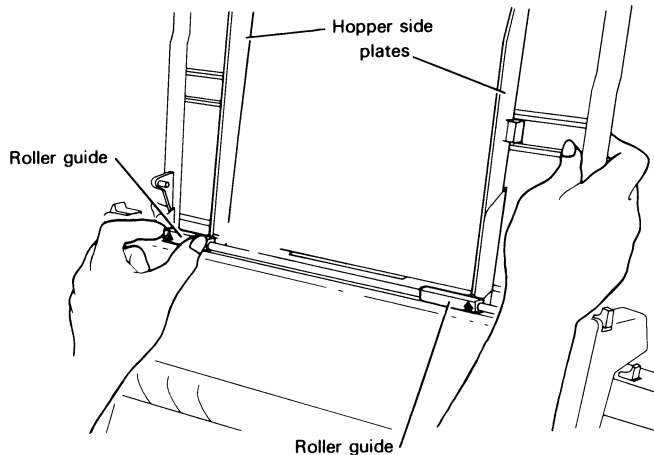
13. Now that you have installed the option cable, you are ready to install the cut sheet feeder. First place the printer paper release lever in the center position.



DG-25809

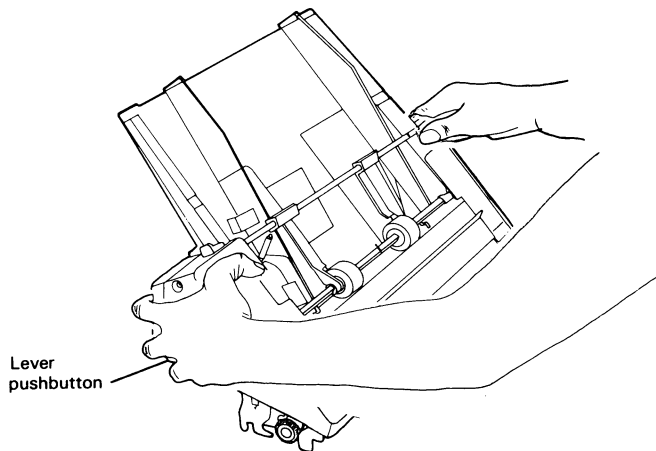
**NOTE** *Make sure the switches on the back plate of the cut sheet feeder are set for 3500 Series machines.*

**14.** Install the paper hopper by resting it on top of the feeder and supporting it with one hand. With the other hand, push the roller guides along the rail until the arrows on the guides line up with the hopper side plates. Then push down to insert the hopper into the feeder.



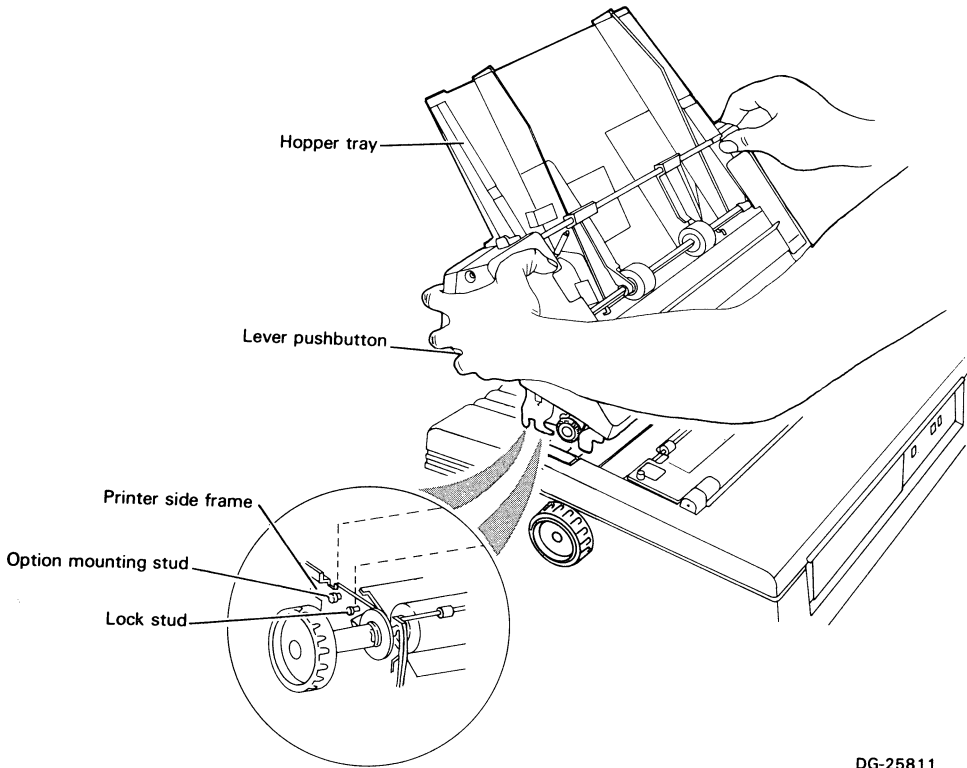
DG-25520

**15.** Hold the cut sheet feeder on both ends, pressing in on the right and left lever pushbuttons.



DG-25810

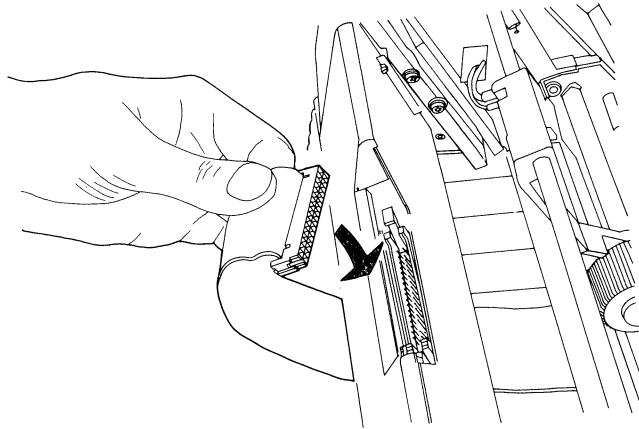
16. Fit the cut sheet feeder onto the option mounting studs on the printer side frame and press the feeder into place. When it is in place, release the right and left lever push buttons.



DG-25811

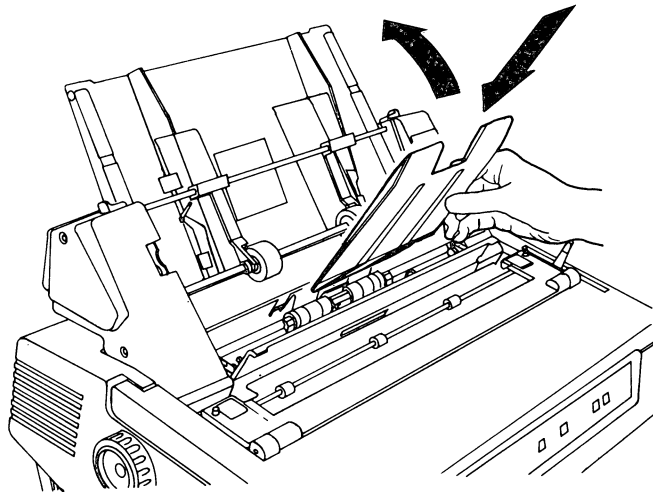
- 17.** Connect the option cable to the connector at the rear of the cut sheet feeder by pressing it until it snaps into place.

**NOTE** *Removing the hopper tray makes it easier to connect the option cable to the rear of the cut sheet feeder. To remove the hopper tray, lift it straight up and out.*



DG-25812

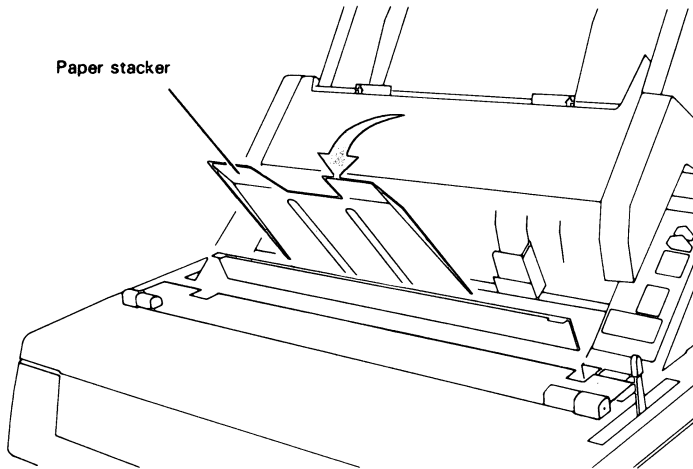
- 18.** Install the plastic paper stacker and swing it toward the cut sheet feeder.



DG-25813

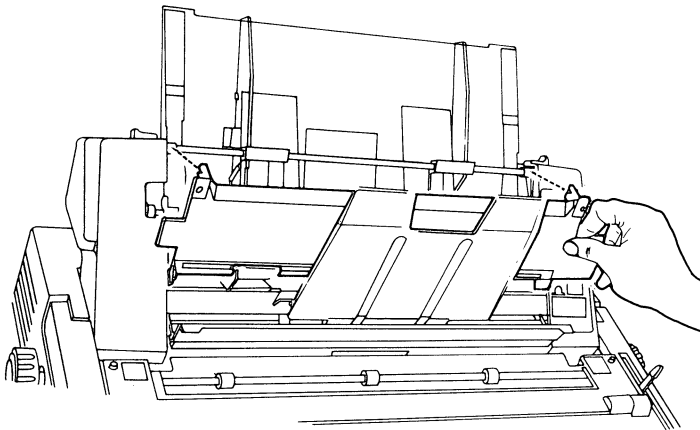
19. If you are using only a single cut sheet feeder, skip ahead to "The Next Step." If you are installing the dual bin adapter or the envelope adapter option, continue with the following steps. To install the dual bin adapter:

1. Swing the plastic paper stacker away from the cut sheet feeder unit.



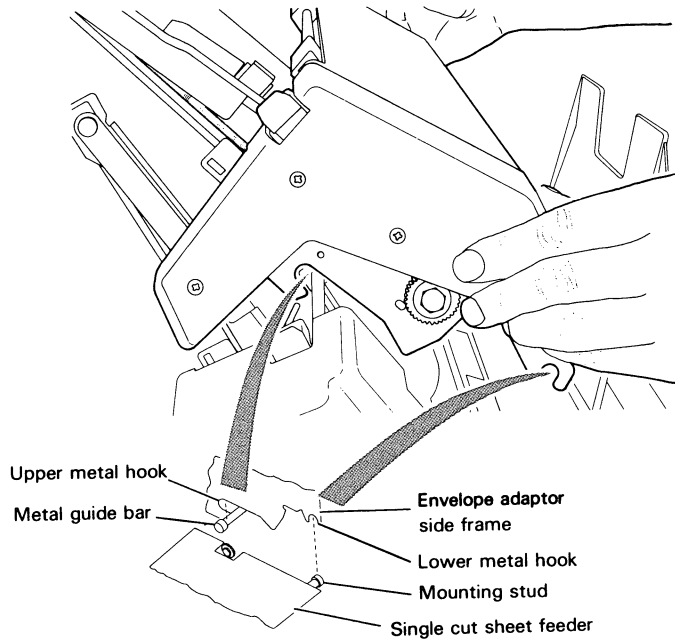
DG-25522

2. Remove the plastic cover plate from the main unit.



DG-25814

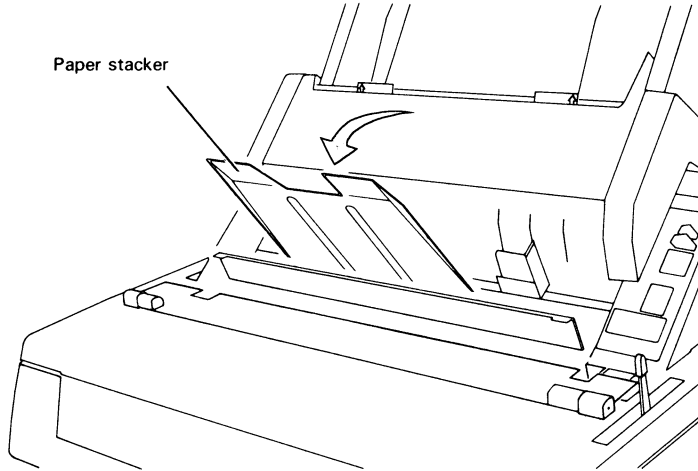
**3.** Holding the dual bin adapter by the sides, position it over the single cut sheet feeder, as shown in the figure. Fit the upper left and right metal hooks on the adapter onto the black mounting rings on the metal guidebar and press the adapter into place. The adapter's lower metal hooks will hook onto the left and right cut sheet feeder mounting studs.



DG-25816

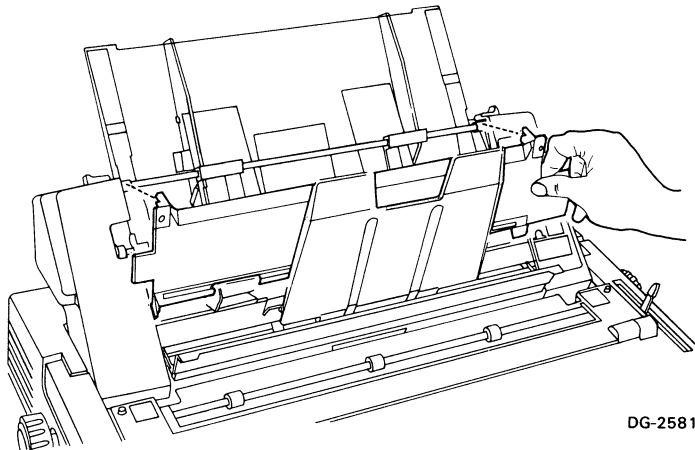
To install the envelope adapter:

1. Swing the plastic paper stacker away from the cut sheet feeder unit.



DG-25522

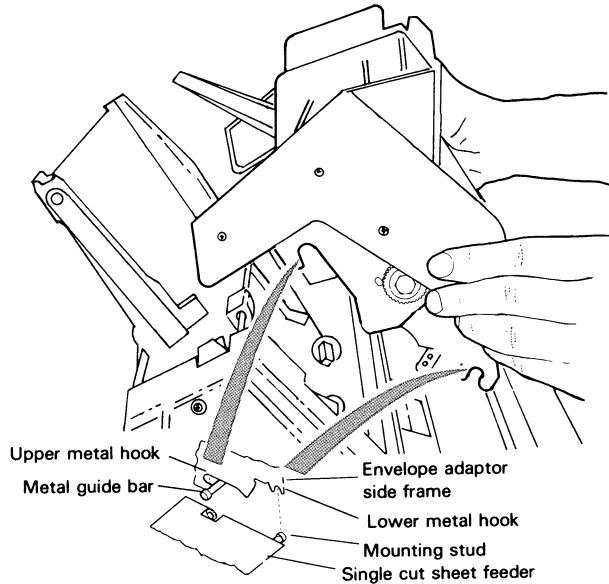
2. Remove the plastic cover plate from the main unit.



DG-25814



**3.** Holding the envelope adapter by the sides, position it over the single cut sheet feeder, as shown in the figure. Fit the upper left and right metal hooks on the adapter onto the black mounting rings on the metal guidebar and press the adapter into place. The adapter's lower metal hooks will hook onto the left and right cut sheet feeder mounting studs.

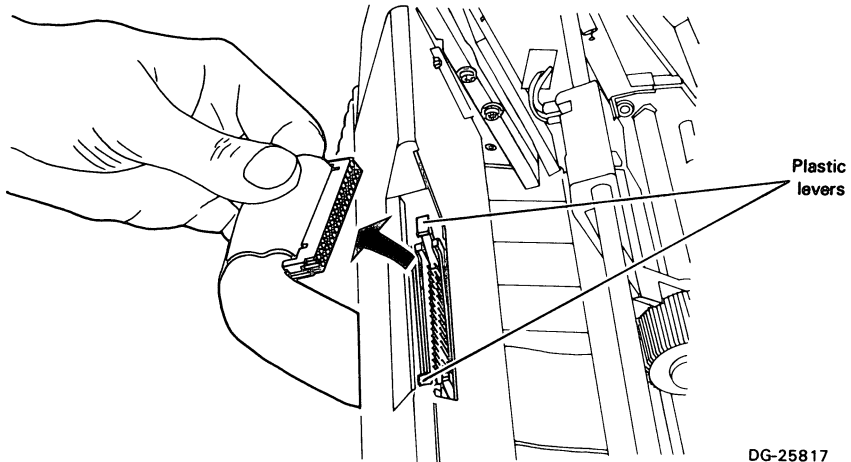


DG-26304

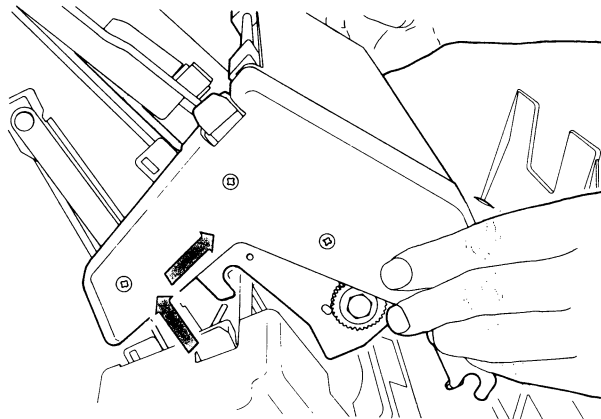
## Removing the Cut Sheet Feeder

Take the following steps when removing the cut sheet feeder from your printer.

1. Disconnect the option cable from the cut sheet feeder by pressing the two plastic levers on both sides of the cable's connector.



2. Remove the dual bin adapter option, if present, by gently lifting and pulling the sides of the adapter up and away from the unit.



**NOTE** You may want to leave the option cable installed if you periodically use different options.

3. Remove the option cable from the printer by following the cable installation steps (1 through 9 under "Installing the Cut Sheet Feeder") in reverse.
4. Remove the cut sheet feeder by following the feeder installation steps (11 through 19 under "Installing the Cut Sheet Feeder") in reverse.

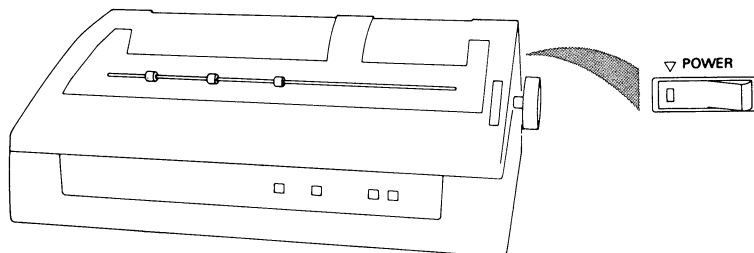
## Installing the Bidirectional Forms Tractor

The bidirectional forms tractor allows you to use continuous fanfold paper with your letter-quality printer. In addition, the bidirectional forms tractor option enables the printer to perform precise forward and reverse paper motion.

The bidirectional forms tractor has a monitor that can tell you when the paper is out. It does this by lighting the Paper light on the printer's front panel and sounding a buzzer.

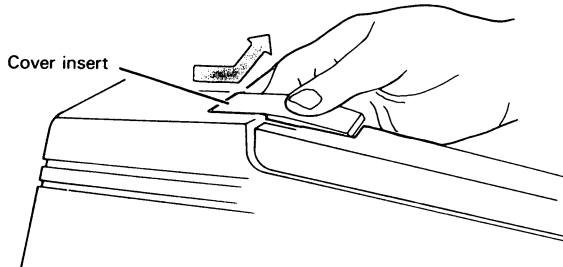
Take the following steps to install the bidirectional forms tractor, if you have this forms handling option; otherwise, skip ahead to "The Next Step."

1. Turn off the printer.



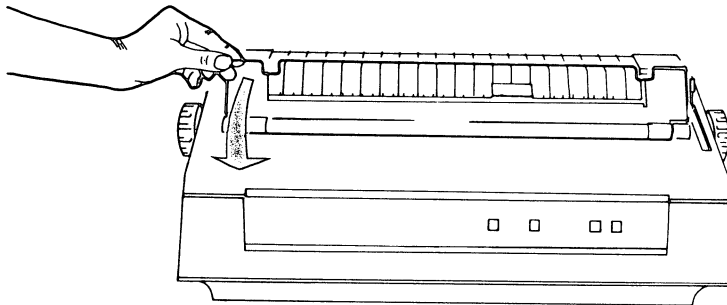
DG-25524

2. If your letter-quality printer has two cover inserts installed, remove them by grasping them on the inside bottom edge and pulling them gently sideways away from the printer cover.



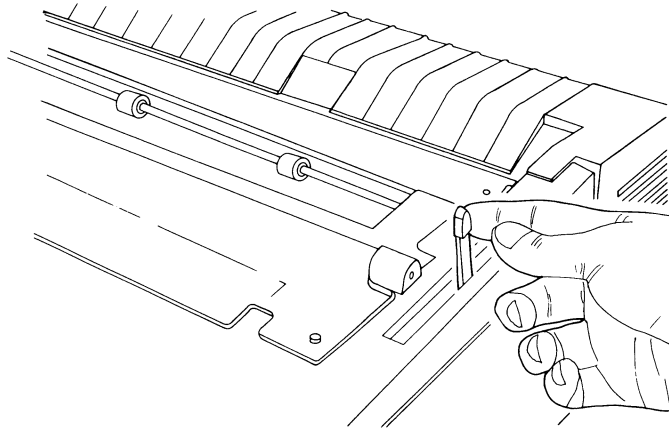
DG-25792

3. Open the printer's acrylic cover.



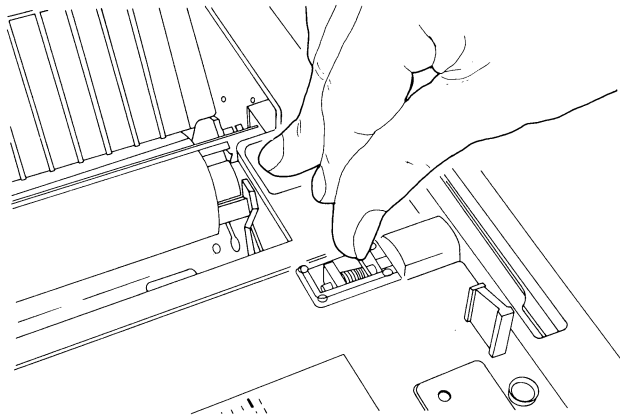
DG-25793

4. Move the paper release lever to the center position.



DG-25822

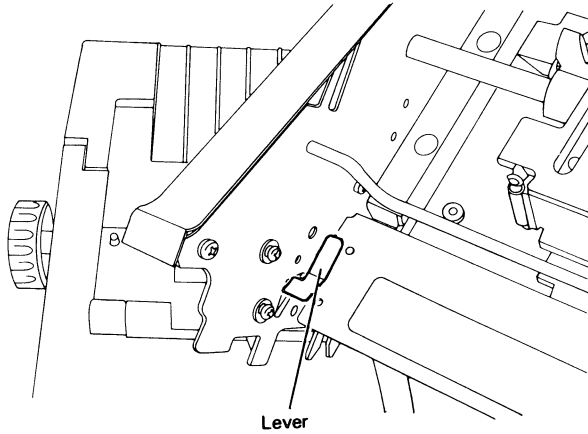
5. Slide the hinge pin in the right corner of the acrylic cover to the left. Remove the acrylic cover.



DG-25794

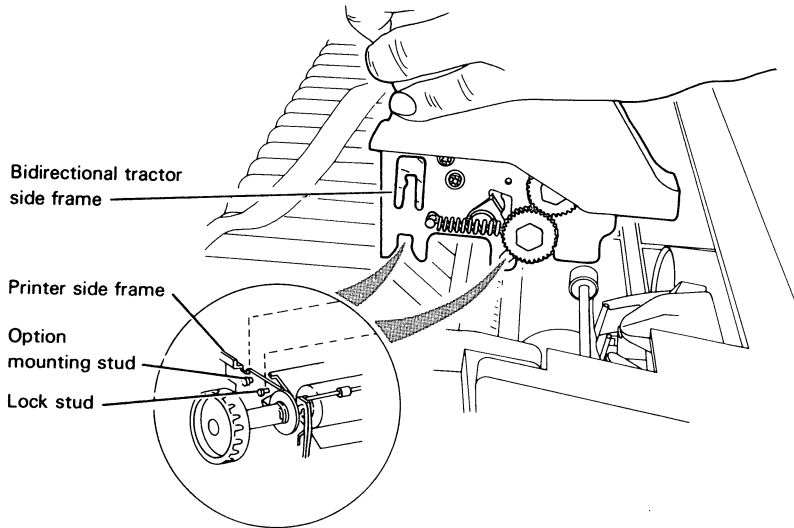
6. Install the bidirectional tractor silencer hood in place of the acrylic cover by reversing the procedure in step 5. Leave the new cover open.

7. Make sure the left and right levers on the bidirectional forms tractor are pushed toward the rear of the tractor.



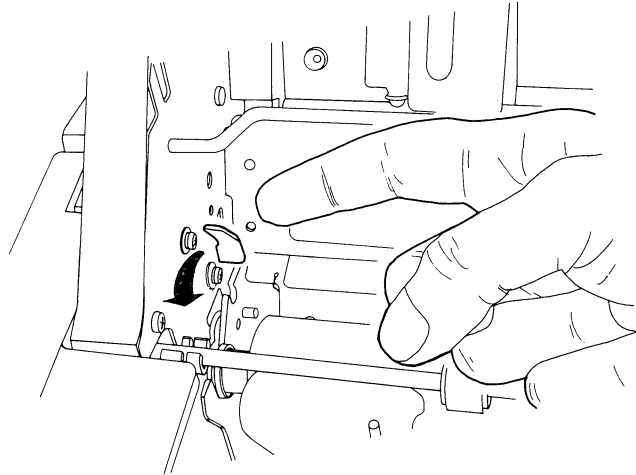
DG-25823

8. Fit the left and right slots in the bidirectional tractor frame onto the option mounting studs on the printer's side frames.



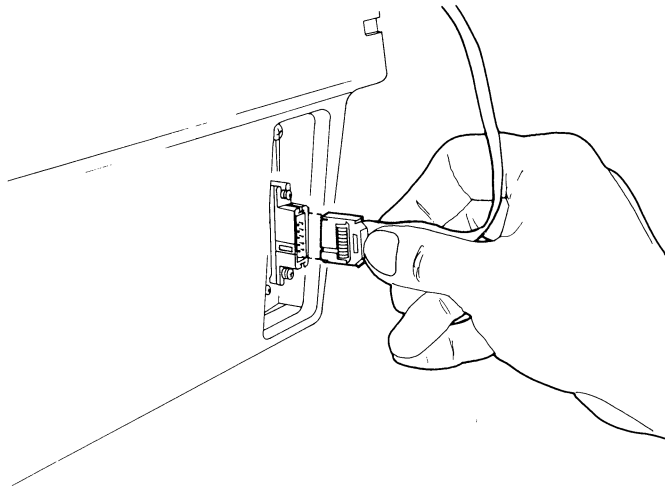
DG-25824

9. Pull the mounting lock levers forward to clamp the bidirectional forms tractor into place on the printer. Close the acrylic cover.



DG-25825

10. Connect the sensor cable to the rear of the printer.

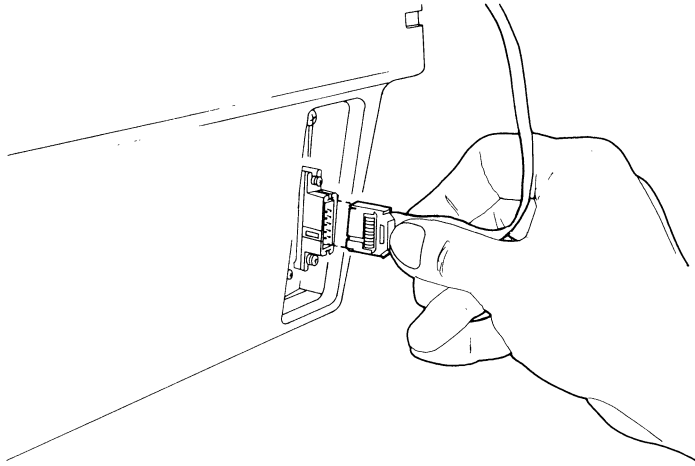


DG-25798

## Removing the Bidirectional Forms Tractor

Take the following steps when you remove the bidirectional forms tractor from the printer.

1. Disconnect the sensor cable from the rear of the printer.



DG-25798

2. Remove the bidirectional forms tractor by following its installation steps in reverse.

## The Next Step

If your system includes a plotter, connect it with the help of the next chapter. After your system is completely installed, get acquainted with its operation by reading *Operating Model 20 and 30 Systems*. Then turn to *Testing Model 20 and 30 Systems* to test your system's operation with diagnostic software.



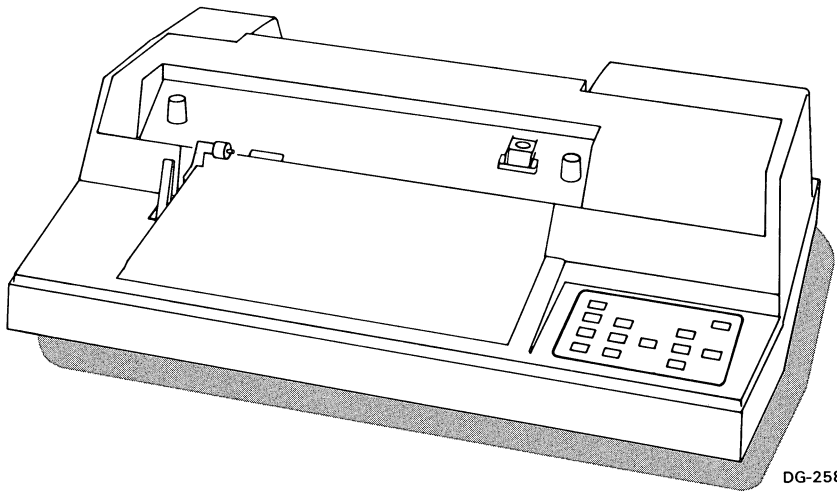
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# Color Graphics Plotter

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# 12

This chapter tells you how to unpack, inspect, configure, and connect your Model 4435 color graphics plotter.



DG-25875

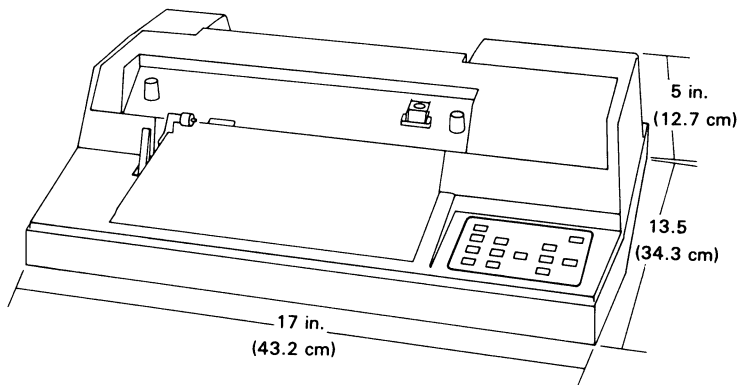
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## Getting Started

Before you unpack your plotter, a review of the site you have chosen for it will help to ensure that it operates correctly. The temperature of your site should stay within 32 and 131 degrees F (0 and 55 degrees C). Relative humidity should be between 20 and 80 percent.

Because the plotter emits some noise during operation, install it in an area where its sound would not be disturbing.

Although you can install your color graphics plotter in a space approximately 1.5 by 1.5 ft (45.7 cm) with an overhead clearance of 10 in. (25 cm), you should allow 20 in. (50.8 cm) around and above the plotter for ventilation, power and device cables, and routine maintenance.



DG-25498

You will need to place the plotter within 25 ft (7.6 m) of your computer to connect it with the standard-length device cable. You must also place the plotter within 7 ft (2.1 m) of a grounded, three-pronged ac outlet in order to connect it to an ac power source.

**WARNING** *To prevent injury to yourself or damage to the plotter, use only a three-pronged ac receptacle for ac power.*

The plotter requires that ac voltage, current, and line frequency be within a certain range for correct operation and reliability. Your main concern will be to supply the proper voltage and current. (You have little or no control over the line frequency unless you install special

equipment.) You will find general electrical requirements for your system in Chapter 2 under Site Planning. If you have any doubts about the wiring at your site, a licensed electrician can answer your questions.

The following electrical and mechanical specifications will help you install the plotter in your computer system.

## Electrical Specifications

<b>Power type</b>	100 V	120 V	220 V	240 V
<b>Voltage range</b>	90-105 V	108-126 V	198-231 V	216-252 V
<b>Line frequency</b>	47-63 Hz	47-63 Hz	47-63 Hz	47-63 Hz
<b>Current</b> (maximum)	.36 A	.30 A	.15 A	.14 A
<b>Power consumed</b> (maximum)	25 W	25 W	25 W	25 W
<b>Inrush surge</b> (maximum, 1/2 cycle)	4 A	4 A	4 A	4 A
<b>Power cord</b>	7.5 ft (2.1 m)	7.5 ft (2.1 m)	None supplied	None supplied

## Mechanical Specifications

<b>Height:</b>	5 in	(12.7 cm)
<b>Width:</b>	17 in	(43.2 cm)
<b>Depth:</b>	13.5 in	(34.3 cm)
<b>Weight:</b>	13.5 lbs	(6.1 Kg)

## Unpacking and Inspecting Your Plotter

Take the following steps to unpack the color plotter and inspect it for damage.

1. Open the shipping carton and remove the plotter and other items.
2. Gently remove all packing materials.
3. Review the inventory checklist below to make sure you have received all items. You will find some items, such as the device cable, in other cartons. The device cable's part number is in the "Device Cable" section in Chapter 3. The manuals supplied with your plotter apply to many different types of computer systems; for this reason, we recommend that you install, operate, and test the plotter using this and other DESKTOP GENERATION books written specifically for your system.

### Inventory Checklist

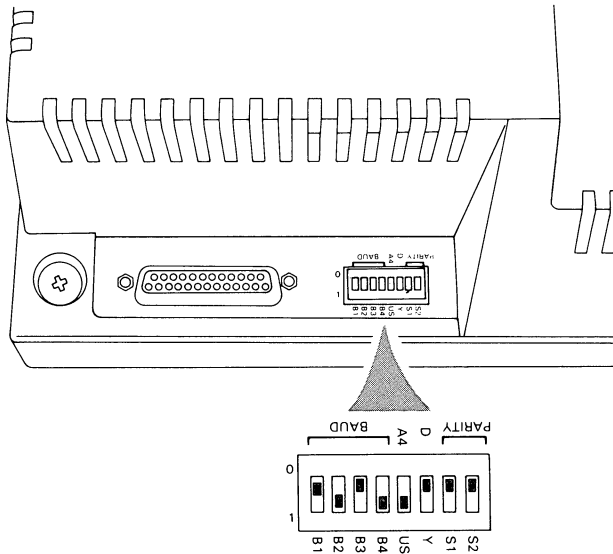
- Plotter
- Set of four fiber-tip pens, assorted colors
- Power cord
- Device cable
- Documentation package

DG-26190

4. Save the cartons and all packing materials to use if you move your system or must return your plotter.
5. Carefully inspect the plotter for any visible damage. If the plotter appears damaged or contains any loose parts, call your nearest Service Operations Center and report the problem. If you need to return your plotter, repack it as it was shipped to you.
6. Enter information about your plotter on the system configuration sheet.

## Configuring Your Plotter

Plotter characteristics such as data transmission rates, operating status, and plotting limits are selected by switches on the plotter's rear panel. These switches are set at the factory to the values required for a plotter in a standard DESKTOP GENERATION system using a Data General operating system. Make sure the switches are set as shown below.



DG-25499

The following table shows the characteristics selected by these switch settings.

Paper/film size: <sup>1</sup>	8.5 by 11 inches
Baud rate:	9600
Parity:	Enabled, even
Power-up state:	On-line

<sup>1</sup>To use paper sized 210 by 297 mm, set switch US/A4 to the A4 position.

We advise against changing these switch settings unless you are using the plotter in a custom application or with a non-Data General operating system that requires different characteristics. If you must change the values, refer to the manual shipped with your plotter.

## Installing Your Plotter

You install the plotter in your system by connecting it to the printed circuit card that controls it. The plotter is controlled by a line on a USAM card (or the 4207 card), which occupies an I/O slot in the CPU logic or logic expansion module. A short adapter cable, which plugs into a USAM or 4207 card through an opening behind the module, provides the connection to the line.

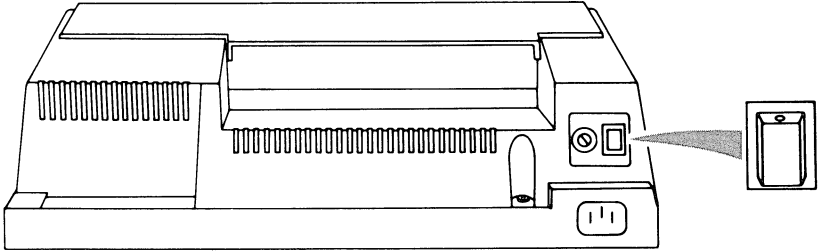
The adapter cable for the 4-line USAM card (DGC part no. 005-011041) has four cable connectors labeled P2 through P5. P2 is for line 1, P3 is for line 2, and so on. The plotter's device cable plugs into the connector for the line that controls it. The adapter cable for the 1-line USAM card (DGC part no. 005-020688) has one connector labeled P2. The plotter's device cable plugs into this connector. The adapter cable for a 4207 card (DGC No. 005-021148) has one cable connector. The plotter's device cable plugs into this connector.

*NOTE If you are adding a plotter to a previously installed system without a USAM line available, you must add a USAM or 4207 card to your system. Install this card as described in Chapter 13 before connecting the plotter.*

Take the following steps to connect your plotter, keeping a small Phillips screwdriver and a small flat screwdriver handy. If you are removing the plotter from your system, follow these steps in reverse.

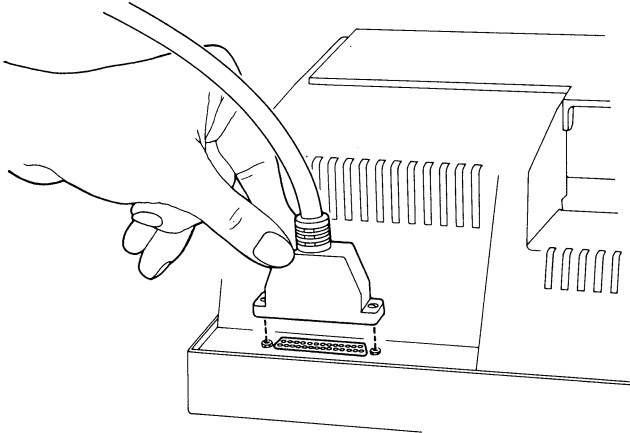
1. Turn off the computer.

2. Make sure the plotter is turned off.



DG-25501

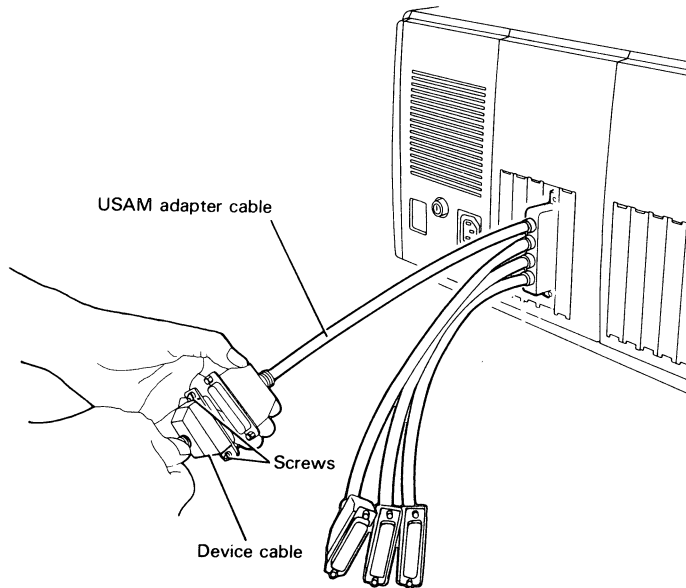
3. Plug one end of the plotter's device cable into the cable connector behind the plotter. Tighten the two screws that hold the cable in place.



DG-25502

4. Locate the cable connector for the USAM or 4207 line that controls the plotter and plug it into the other end of the plotter's device cable. Tighten the two screws that hold the cables in place. (The figure below shows a typical connection to a USAM card in slot 4 of the CPU logic module.)

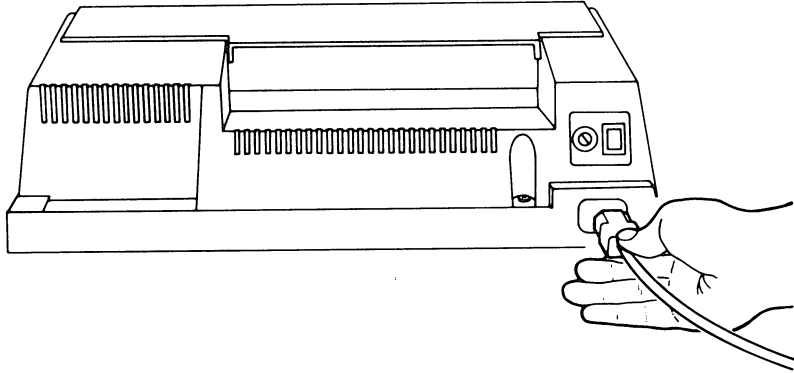
**NOTE** *If you do not remember which line of the USAM card controls the plotter, reread the section "Adapter Cables" in Chapter 4.*



DG-26155



5. Plug one end of the power cord into the ac connector on the back of the plotter.



DG-25503

6. Plug the other end of the power cord into an ac outlet.

## The Next Step

After connecting all the equipment in your system, get acquainted with its operation by reading *Operating Model 20 and 30 Systems*. Then turn to *Testing Model 20 and 30 Systems* to verify your system's operation with diagnostic software.



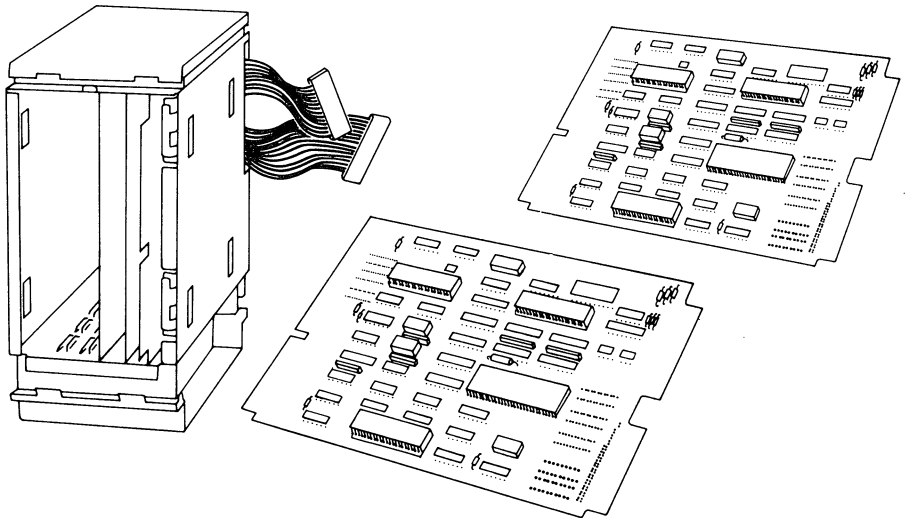
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# Card Installation

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# 13

This chapter explains how to unpack, configure, install, and remove the printed circuit cards in your DESKTOP GENERATION computer system. It also explains how to calculate the dc power requirements for your particular system. Because your system comes with cards already installed, you need only refer to this chapter when you want to replace a failing card or add a new one.



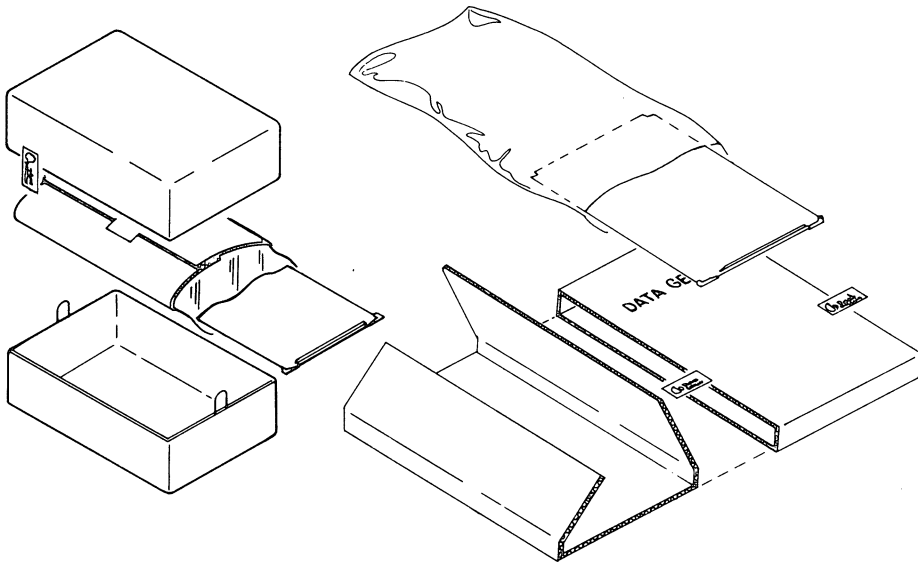
## Unpacking Cards

Printed circuit cards are extremely sensitive to environmental conditions such as static electricity and humidity. Take the following precautions before unpacking and handling any card:

- Touch a grounded object such as a doorknob to eliminate static electricity.
- Unpack your card only at the site of your computer.
- Avoid carpeted floors when handling cards out of their packing bags, especially when the humidity is low.

Take the following steps to unpack a card.

1. Open the shipping carton and remove the card and any other items.
2. Gently remove all packing materials.



**NOTE** *Your card comes with a small label (about 1 1/4 by 1/2 inch) which identifies the card. Save this label to attach to the configuration label on the back cover of the logic module when you install the card.*

**3.** Check the 005 number on the card and its cable (if there is one) against the 005 number listed below. If the numbers do not match or you believe you have been sent the wrong card, call your nearest Service Operations Center immediately.

Card	Part Number	Cable
SPU with FIS	005-017609	N/A
SPU with CIS	005-020324	N/A
Memory with 256 Kbytes	005-019538	N/A
Memory with 512 Kbytes	005-019537	N/A
4-line USAM	005-021071	005-021041
1-line USAM	005-020619	005-020688
4207	005-013951	005-021148

**4.** Save the cartons and packing materials to use if you must return the card.

**5.** Carefully inspect the card and cable (if there is one) for any visible damage. If a card or cable appears damaged, call the Service Operations Center and report the problem. If you need to return a card, repack it as shown in the packing diagram.

## DC Power Requirements

Each printed circuit card and some other components of your system — the diskette module, for instance — draw dc current from the power supplies in the power supply module.

Power supply 1 provides dc power to the CPU logic module and the diskette module. Power supply 2 provides dc power to the logic expansion and disk modules. The current draw on the power supplies depends on the particular components in your system.

The following table lists the running current requirements for all components that receive power from the supplies in the power supply module, except for optional Microproducts I/O cards. Current requirements for Microproducts I/O cards are listed on the installation data sheets for each card.

Component	DC current draw			
	+5V	-5V	+12V	-12V
SPU card set	5.0 A	0.022 A	0.11 A	0.026 A
FPU card	3.8 A	none	none	none
Each memory card	2.4 A	none	none	none
1-line USAM card	2.3 A	0.04 A	0.11 A	0.06 A
4-line USAM card	2.3 A	0.10 A	0.23 A	0.06 A
4207 card	1.1 A	0.017 A	0.025 A	0.022 A
First diskette drive	2.5 A	0.025 A	1.025 A	none
Second diskette drive	1 A	none	1 A	none
Disk module (in computer unit) <sup>1</sup>				
15 MB	5.0 A	.05 A	1.6 A	none
38.6 MB	4.0 A	.05 A	3.1 A	none

<sup>1</sup>The expansion (remote) disk unit and the cartridge tape unit have their own power supplies.

## Calculating DC Requirements

Make sure the power supply module provides enough dc current by taking the following steps.

1. Using the previous table and, if necessary, the installation data sheets, fill in the forms ahead with the current drawn by each component in your system. Be sure to include any new card(s) you are

installing. If you are using custom components, you will need to supply the dc current requirements.

**CAUTION** *The total current drawn on each dc voltage must never exceed the maximum current available for that voltage from the power supply. It is therefore essential that you figure the dc power draw of your system when adding a printed circuit card to it.*

**2.** On each form, add up the current draw for each dc voltage and enter the sum under "Total current draw."

**3.** On each form, compare "Total current draw" for each voltage with "Maximum current available." If the current draw is less than the current available, your system has enough dc power for the additional card(s). If the current draw exceeds the current available, *do not install the card(s)*: your system does not have enough power for them. Instead, contact your nearest Service Operations Center.

**Current draw on power supply 1**

Component	DC Current Draw			
	+5V	-5V	+12V	-12V
CPU logic module	5.0 A	0.022 A	0.11 A	0.026 A
SPU card	_____	_____	_____	_____
FPU card	_____	_____	_____	_____
memory card(s)	_____	_____	_____	_____
1-line USAM card	_____	_____	_____	_____
4-line USAM card	_____	_____	_____	_____
4207 card	_____	_____	_____	_____
other I/O cards:	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
Diskette module				
first diskette drive	_____	_____	_____	_____
second diskette drive	_____	_____	_____	_____
Total current draw	_____	_____	_____	_____
Maximum current available				
135-watt supply	18.5A	0.5A	2.6A	0.8A
150-watt supply	20.0A	0.5A	3.1A	0.8A

**Current draw on power supply 2**

Component	DC Current Draw			
	+5V	-5V	+12V	-12V
Logic expansion module				
1-line USAM card	_____	_____	_____	_____
4-line USAM card	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
4207 card	_____	_____	_____	_____
other I/O cards:	_____	_____	_____	_____
_____	_____	_____	_____	_____
Disk module (in computer unit)	_____	_____	_____	_____
Total current draw	_____	_____	_____	_____
Maximum current available				
135 watt-supply	16.5A		3.1/5.0A	0.8A
150 watt-supply	15.3A	0.5A	5.1/6.1A	0.8A

<sup>a</sup> First value is running current; second value is start-up current.

## Configuring Cards

Most cards can be configured with certain operating characteristics such as data transmission rates, operating status, and memory address ranges. These characteristics are selected directly on the card by means of small switches or jumpers. The switch or jumper electrically connects or disconnects two points to cause either an *on* or *off* condition that the computer uses to translate into an operating characteristic.

The characteristics of the cards already installed in your system were set at the factory; ordinarily, you will not be concerned with them. However, if you replace a failing card with a new one, you should make sure that any switches or jumpers on the new card are set to match those on the old one. Also, when you add a new card to a previously installed system, you may need to change the characteristics to those used in a standard DESKTOP GENERATION system.



This section provides switch and jumper information and tells how to configure the following cards for use in your system:

SPU

FPU

Memory

USAM

4207 interface

Information for configuring Microproducts I/O cards can be found in the installation data sheets shipped with the card.

If you are removing a card, skip ahead to "Removing and Installing Cards." If you are installing a card, read the section on that card for information on switch and jumper settings and any special installation rules; then install the card as described under "Removing and Installing Cards." When installing a card in a computer whose operating system is not supported by Data General, or to change the characteristics of a card, refer to the maintenance service guide *Model 20 and 30 Computer Systems* (DGC part no. 015-000141) for more information.

## Switches

Some cards include one or more sets of switches. Each switch set is a block of small rocker or slide switches that can be placed in one of two positions— on or off (or open or closed, depending on the particular switch).

## Jumpers

Some cards include a set of jumpers. Jumpers are wires, either plain or push-pin, that can be inserted into or removed from jumper locations on a card.

A jumper location contains a pair of jumper sockets about a half inch apart. Jumper locations are usually labeled W1, W2, and so on, or P1, P2, and so on. A jumper that is inserted in a location is said to be "in"; a jumper that is removed, or not inserted, is said to be "out".

Plain jumpers are thin gold wires about 1 inch long. Before you can insert a plain jumper, you must bend it into a U shape the width of the distance between the jumper sockets, using either your fingers or needle-nose pliers.

Push-pin jumpers are already bent and have a plastic handle-type part to help you insert them.

You insert a jumper by pushing the ends into the jumper sockets until you hear a click indicating that the jumper has snapped into place. If the jumper extends much beyond the level of the other components on the card, remove it, trim it using a wire cutter, and reinsert it.

## SPU Card

The SPU card is available in two different versions, one with circuitry for the firmware floating point instruction set (FIS) and one with circuitry for the commercial instruction set (CIS). The SPU card with CIS must be used with the hardware floating point card.

Each card is labeled with a part number. The table below lists the part numbers for the different cards.

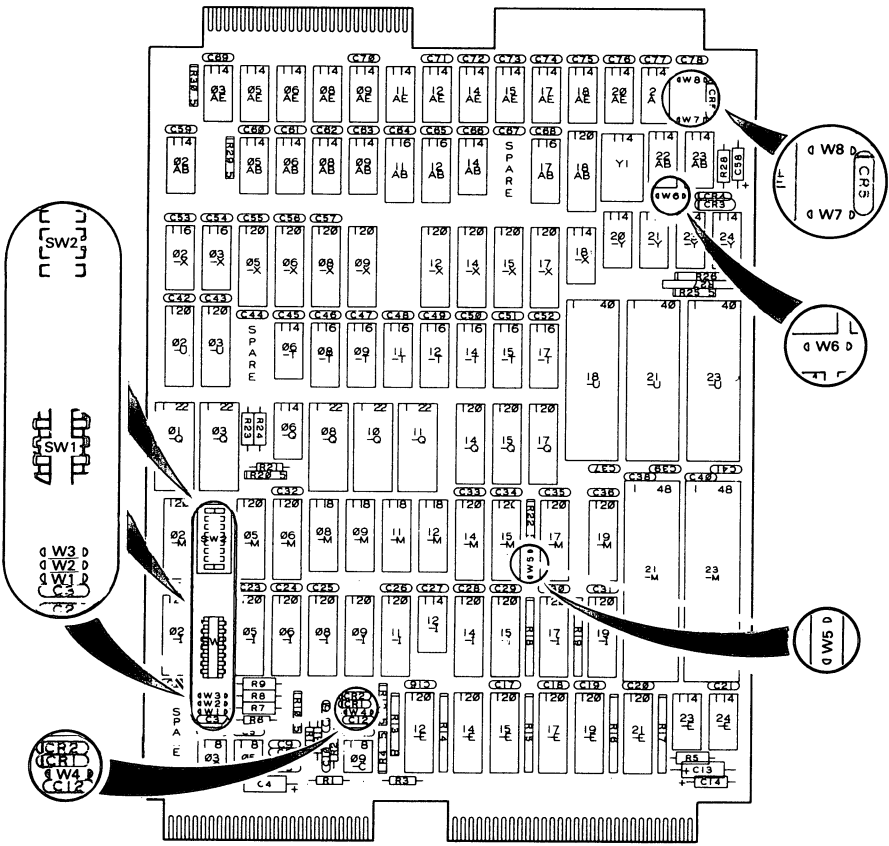
Card	Part Number
SPU with FIS	005-017609
SPU with CIS	005-020324

The SPU card has eight plain jumpers, labeled W1 through W9, and two switch sets, SW1 and SW2. Position these jumpers and switches on either SPU card as shown in the following table.

Jumpers	Position	SW1 Switches	Position	SW2 Switches	Position
W1	Out	1	Off	1	On
W2	Out	2	Off	2	On
W3	In	3	Off	3	On
W4	In	4	Off	4	Off
W5	In	5	Off	5	Off
W6	In	6	Off	6	On
W7	In	7	Off	7	On
W8	In	8	Off	8	Off
W9	Out				

The following table shows the characteristics selected by these jumpers and switches.

Interface type	EIA
Clear to Send	Enabled
Baud rate	9600
PIT rate	10 KHz



## Hardware Floating Point Card

The hardware floating point card is labeled with DGC part no. 005-020323. It must be used with the SPU card with CIS (DGC part no. 005-02324), and only with this card. It comes with an internal cable (DGC part No. 005-009663), which connects it to the SPU card. The hardware floating point card has no jumpers or switches.

## Memory Cards

Memory cards are available in two different versions, one with 256 Kbytes of memory, the other with 512 Kbytes. Each card is labeled with a part number. The table below lists the part numbers for each type of cards.

Card	Part Number
256-Kbyte memory card	005-019538
512-Kbyte memory card	005-019537

Your system can hold a maximum of three memory cards if it includes a hardware floating point card, and four memory cards if it does not.

You can use 256-Kbyte cards, 512-Kbyte cards, or a combination of both. The 512-Kbyte cards should reside in the slots closest to the SPU card. Memory card 1 resides in slot 2 if there is no hardware floating point card, and in slot 3 if there is. Memory card 2 resides in slot 3 or 4, and so on.

The memory cards have six jumpers, labeled W1 through W4, and W5 and W7. There is no W6. Insert all the jumpers listed below for the memory card(s) you are installing. Make sure jumper W7 is inserted on the memory card farthest away from the SPU card. Remove all other jumpers from the memory card(s) you are installing. The figure on the next page shows the jumper locations.

Card Number	512-Kbyte Cards Only	256-Kbyte Cards Only
1	W1, W2	W1, W2, W3
2	W1	W1, W2
3	W2	W1, W3
4	None	W1

Card Number	512-Kbyte and 256-Kbyte Cards Combined		
1	512 Kb W1, W2	512 Kb W1, W2	512 Kb W1, W2
2	512 Kb W1	512 Kb W1	256 Kb W1, W3
3	512 Kb W2	256 Kb W2, W3	256 Kb W1
4	256 Kb W3	256 Kb W2	256 Kb W2, W3



## USAM Card

The USAM card is available in two different versions, one with 4 lines and one with only 1 line. Your system may contain up to four USAM cards. A short adapter comes with each card.

The cards and cables are labeled with a part number. The table below lists the part numbers for the two cards and their cables.

Card	Card Number	Cable Number
4-line USAM	005-021071	005-021041
1-line USAM	005-020619	005-020688

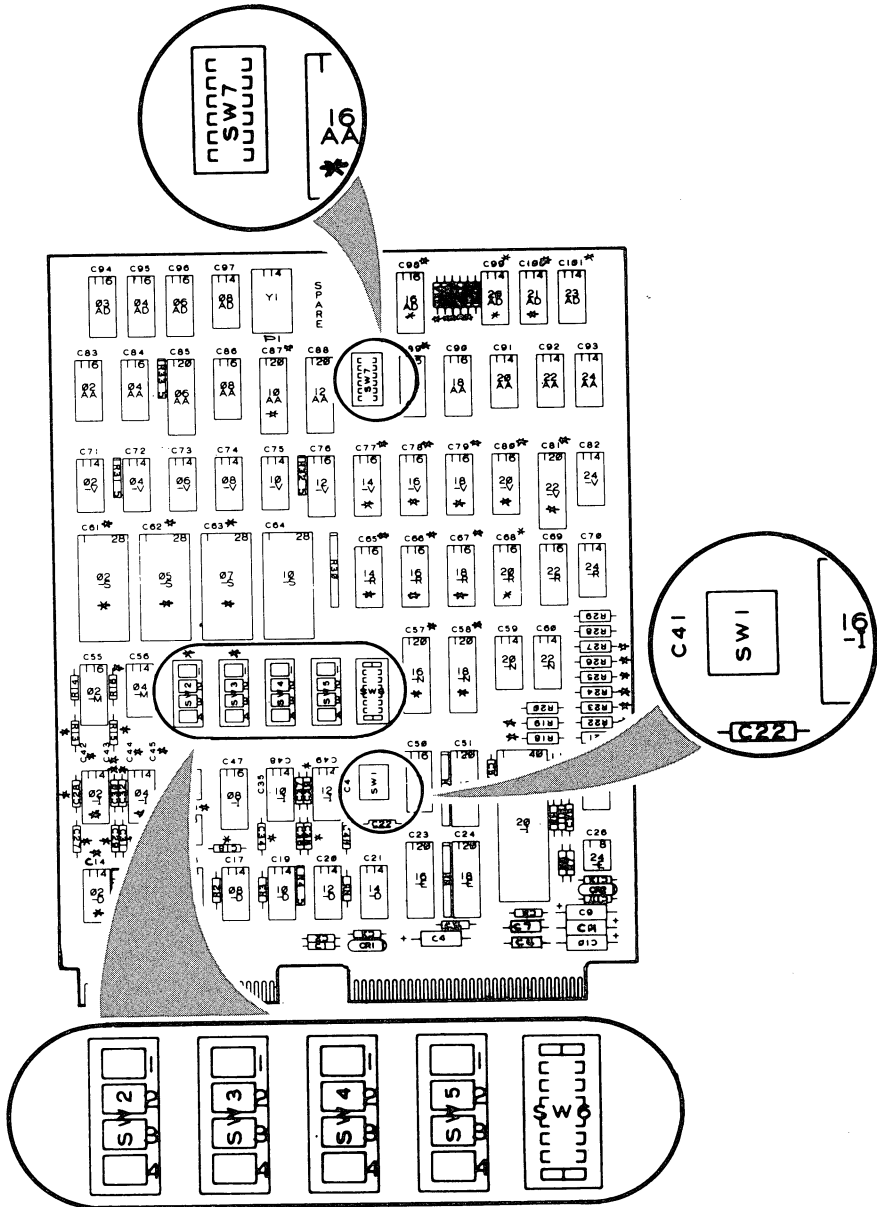
The 4-line card has seven switch sets, labeled SW1 through SW7. The 1-line card has the same switch sets except for sets SW2 and SW3, which it does not have. The figure on the next page shows the switch locations.

### SW1 Switches

Set SW1 has four switches, one for each line; switch 1 is for line 1, switch 2 for line 2, and so on. These switches are never used unless the line is connected to a modem. A switch determines how the line responds to a modem signal called *Ring Indicator*, which the modem sends when a telephone rings on a line connected to it.

If you will be connecting a modem to the line, set the line's switch to the on position so the USAM card will notify the computer when it receives the Ring Indicator signal; set the switch to the off position to inhibit the card from notifying the computer. Set the switch for any unused line to the off position.





## SW2 Through SW6 Switches

These switch sets select a line's interface type. A line can have either an EIA RS-232-C, EIA RS-422-A, or 20 mA current loop interface; however, its interface must be the same type as that of the peripheral equipment connected to the line.

A DASHER D210, D211, D410, or D460 terminal can have either type of interface. Its interface is selected by its device cable. Thus, if you use an EIA RS-422-A device cable, the terminal has an EIA RS-422-A interface.

The plotter, data tablet, mouse, and all printers except the model 4433 have only an EIA RS-232-C interface. The model 4433 printer may have a current loop, although it is preset at the factory for an EIA RS-232-C interface.

Using the following table, set the switches in each set to the interface type for your USAM lines.

Line	Set	Switches	Interface Type		
			RS-232-C	RS-422-A	Current Loop
1	SW4	1, 2	Off	Off	On
	SW5	1, 2	Off	On	Off
	SW6	1	On	Off	Off
		2	On	Off	On
2	SW4	3,4	Off	Off	On
	SW5	3,4	Off	On	Off
	SW6	3	On	Off	Off
		4	On	Off	On
3	SW2	1, 2	Off	On	Off
	SW3	1, 2	Off	Off	On
	SW6	5	On	Off	Off
		6	On	Off	On
4	SW2	3,4	Off	On	Off
	SW3	3,4	Off	Off	On
	SW6	7	On	Off	Off
		8	On	Off	On

This switch set selects a number, called the device code, which the USAM sends to the computer to identify itself. Each USAM card must have a different number. The standard device codes for the USAM cards are (octal) 34, 74, 55, and 56. Select a unique number for each USAM card and set the SW7 switches as listed below.

**Position for Device Code**

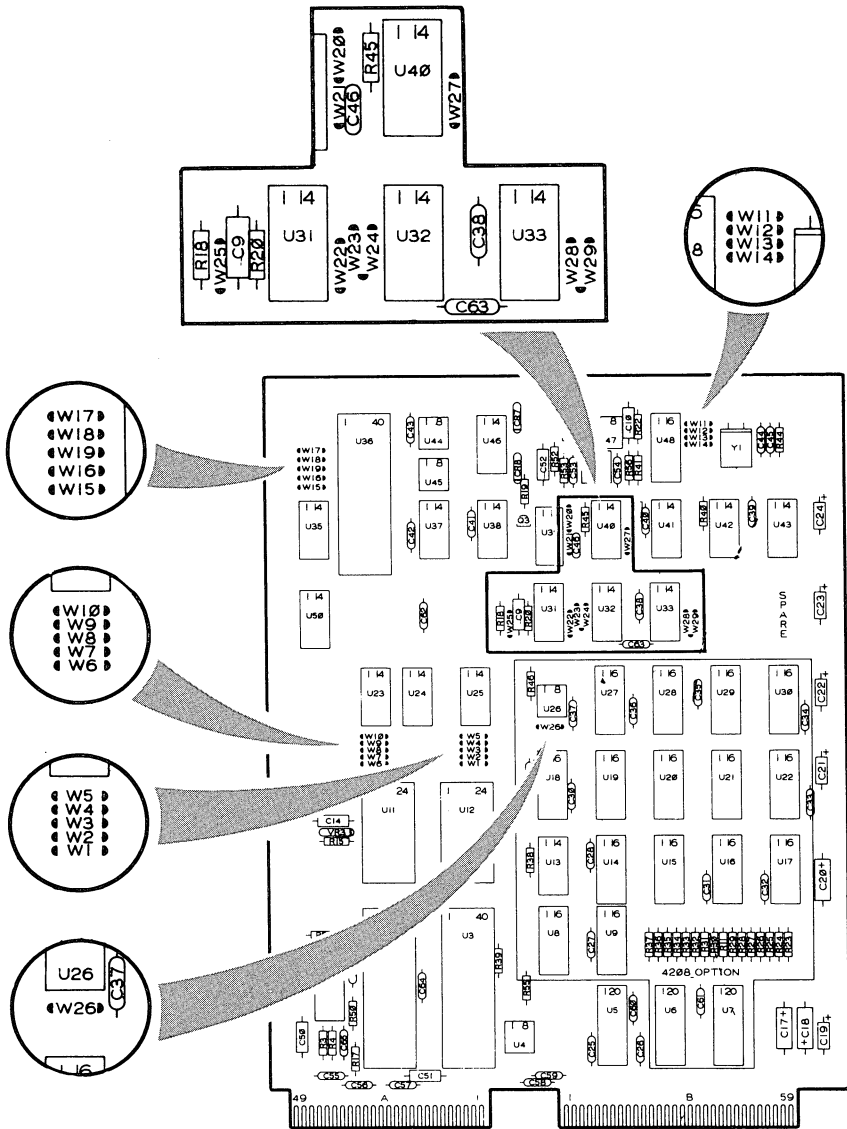
Switch	34	74	55	56
1	Off	On	On	On
2	On	On	Off	Off
3	On	On	On	On
4	On	On	On	On
5	Off	Off	Off	On
6	Off	Off	Off	On

Select the device codes in order: your first USAM is 34; the second is 74; the third is 55; the fourth is 56.

## 4207 Asynchronous Interface Card

The 4207 asynchronous interface card is labeled with DGC part number 005-13951, and its adapter cable is labeled with DGC part number 005-021148. It has 29 jumpers labeled W1 through W29. Position all the jumpers according to the following table. The figure on the next page shows the jumper locations.

Jumper	Position	Jumper	Position
W1	In	W16	In
W2	Out	W17	Out
W3	In	W18	Out
W4	Out	W19	Out
W5	Out	W20	Out
W6	In	W21	In
W7	Out	W22	Out
W8	In	W23	Out
W9	Out	W24	In
W10	Out	W25	Out
W11	In	W26	Out
W12	In	W27	In
W13	In	W28	Out
W14	Out	W29	Out
W15	Out		



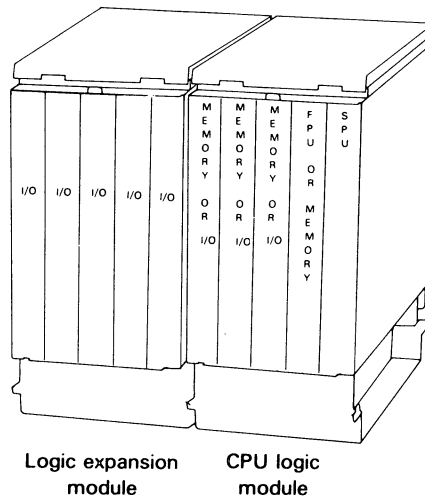
## Removing and Installing Cards

This section contains important information about removing and installing cards from your system. Before you remove or install a card, you must determine which slot it does or will occupy. Next you must check the position of certain switches, called *priority switches*, inside the module that will contain the card. And last, you remove or install the card.

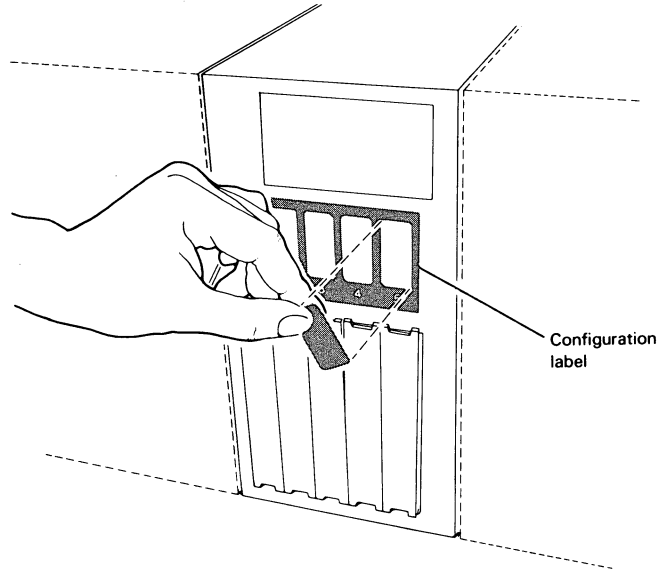
## Slot Assignments

The cards in your system must occupy certain slots in the CPU logic module and logic expansion module. The figure ahead shows which type of cards can occupy which slots in the CPU logic and logic expansion modules.

**WARNING** *Slot 1 of the logic expansion module must always contain a card, even if this means leaving a slot empty in the CPU logic module.*



When you add a card to an already installed system, attach the small label which identifies the card to the configuration label on the back cover of the logic module.



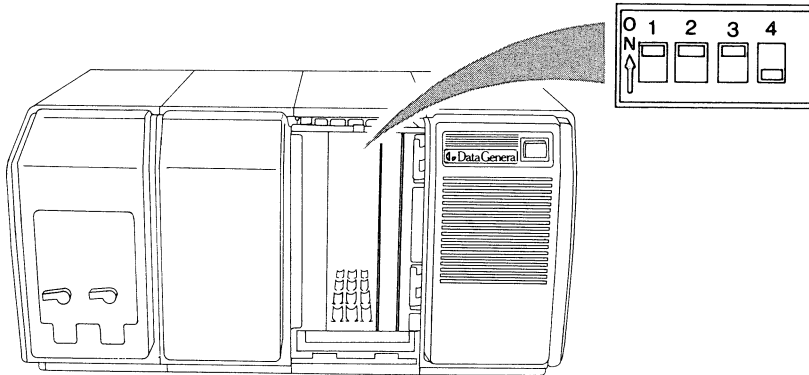
DG-26286

If you remove a card or move it to another slot, always remember to note the change on the configuration label. This way the configuration label always correctly identifies the card in each slot.

## Priority Switches

The cards in your system pass important control signals back and forth between certain equipment and the SPU cards. If a slot in a logic module is unoccupied, some control signals are not passed and your system will not function as it should.

To allow these signals to pass across unoccupied slots, each logic module has a switch set containing four switches. These are the priority switches. They are inside the module at the back, and are accessible through the front of the module.



DG-26221

Slot 1 of the CPU logic module must contain a card, so it does not need a switch. Switch 1 is for slot 2, switch 2 is for slot 3, and so on. When a switch is in the closed (down) position, it allows control signals to cross its slot even though the slot is unoccupied. If the slot is occupied, its priority switch must be open (up).

Your system's priority switches were set at the factory according to the cards originally installed in your system. You should not need to change the settings of these switches unless you remove or install a card.

If you remove a card and leave its slot empty, place the priority switch for the slot in the on (up) position. If you install a new card in a slot previously unoccupied, place the switch for the slot in the closed (down) position.

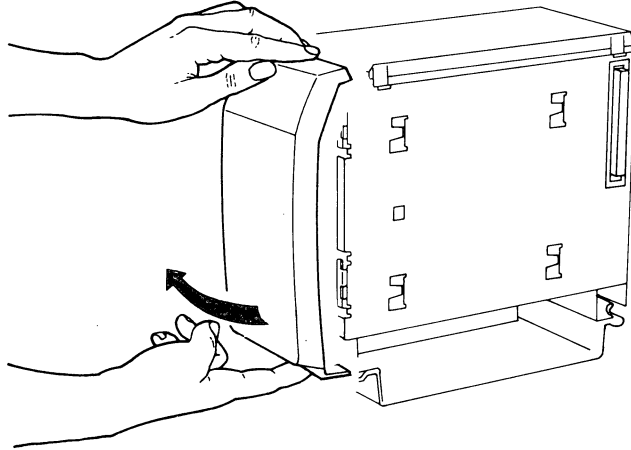
## Removing Cards

If you are removing any card except the color controller card, take the following steps. To remove or install the color controller card, skip ahead to "Installing a Color Controller Card." If you are installing any other card, turn to the next section, "Installing Cards."

1. Turn off the computer unit.

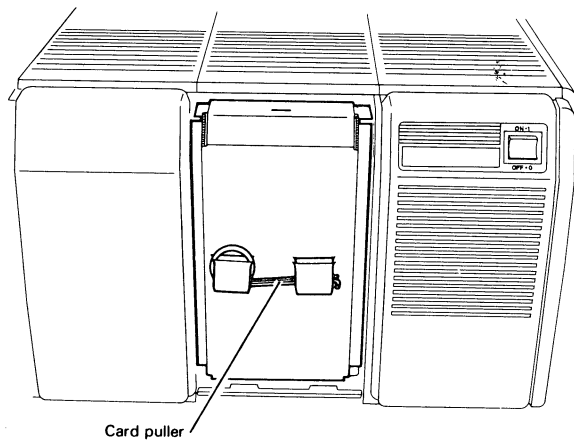


2. Turn off any equipment connected to the card you are removing.
3. Remove the plastic front cover of the module containing the card by pressing up on the bottom of the cover and pulling it away from the module.



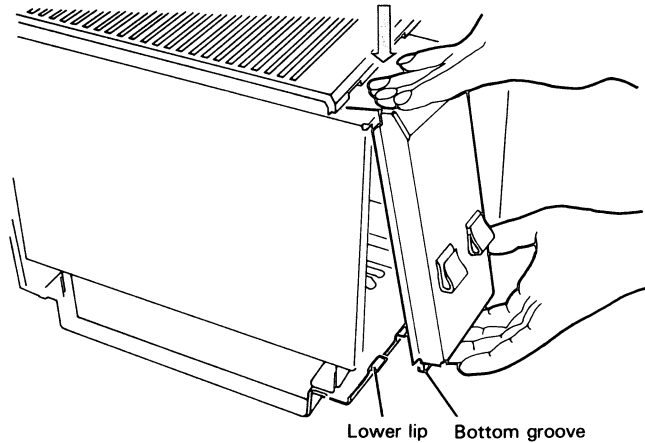
DG-25639

4. Remove the card puller from the metal RFI (radio frequency interference) shield on the front of the module.



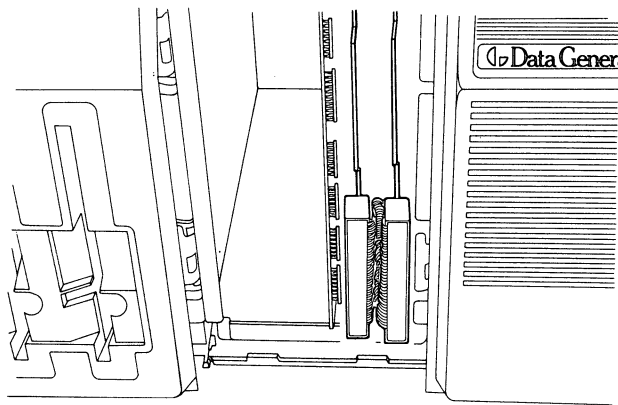
DG-26089

5. Remove the RFI shield by pressing down firmly on the top of the shield until it pops free of the module. Pull it away from the module.



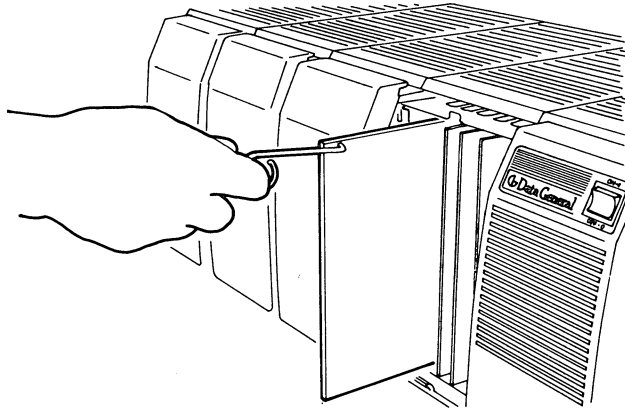
DG-26230

6. If you are removing the FPU card or the SPU card from a Model 30 system, grasp the short cable connecting the two cards between your thumb and forefinger; pull the cable off of the cards' connectors. Then plug the short cable back onto the card remaining in the chassis.



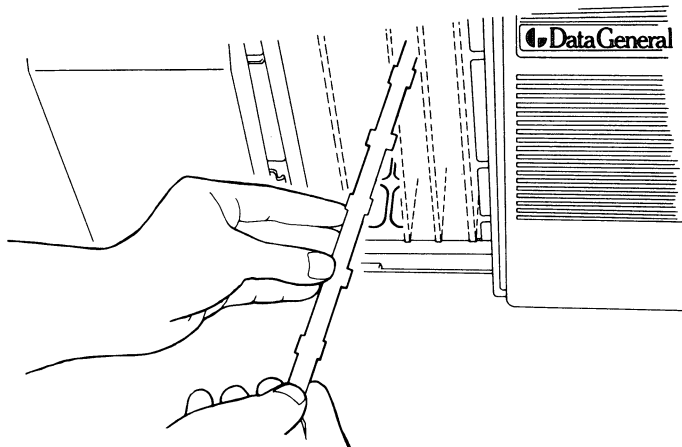
DG-26093

- 7.** Insert the card puller into the small hole in the top of the card; pull the card towards you until it is part-way out of the module. Pull it the rest of the way out with your hands.



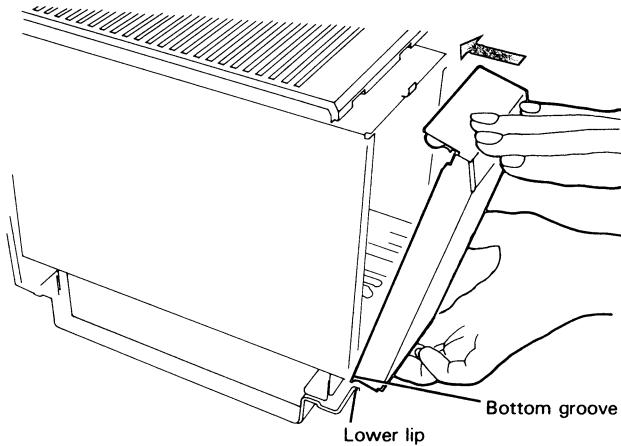
DG-26222

**NOTE** *If you do not replace the card you removed with a new one, reinsert the fiberglass strip into the empty slot on the bottom of the module.*



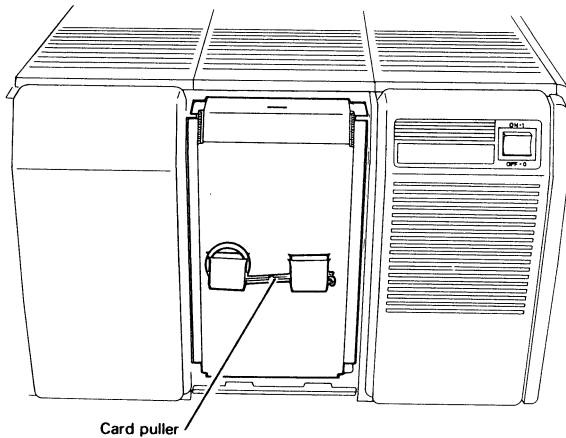
DG-26090

8. Replace the RFI shield on the module by fitting the groove at the bottom of the shield onto the module's bottom lip. Press the shield towards the module until it snaps into place.



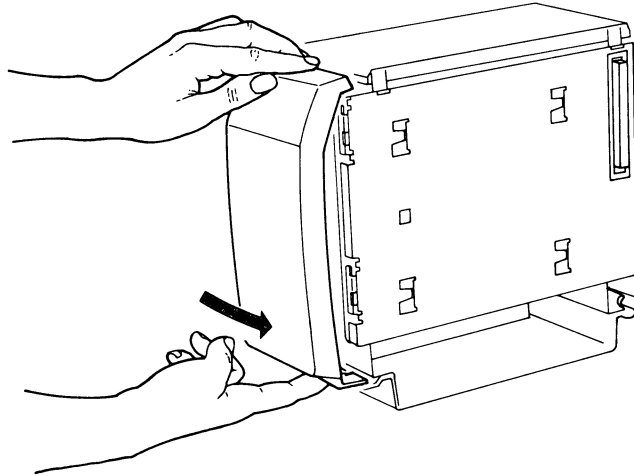
DG-25965

9. Replace the card puller on the front of the RFI shield.



DG-26089

10. Replace the module's front cover by inserting its two fingers under the module's plastic top. Push up on the bottom of the cover while moving it towards the module. The cover will snap into place.



DG-26216

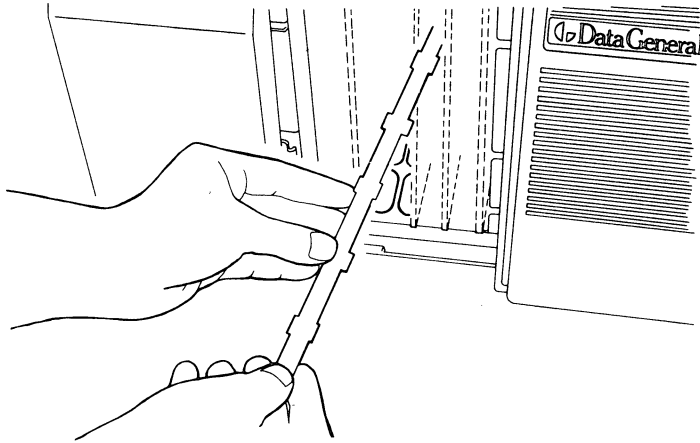
If you are installing another card in place of the one you removed, continue to the next section. If not, skip to "The Next Step" at the end of the chapter.

## Installing Cards

Take the following steps to install any card.

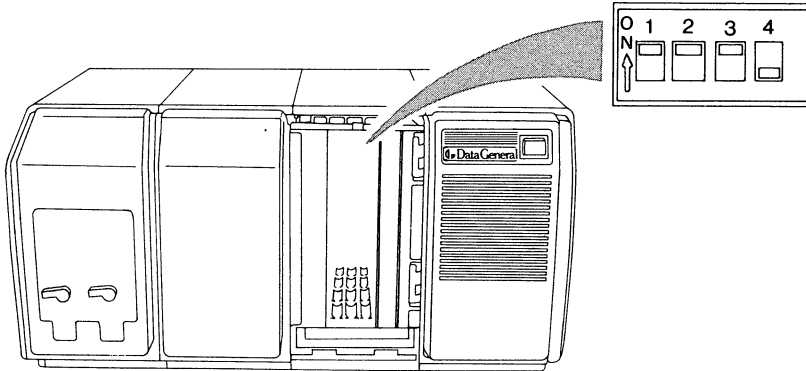
1. Turn off the computer unit.
2. Remove the front plastic cover of the logic module in which you will install the card: press up on the bottom of the cover and pull it away from the module.
3. Remove the metal RFI (radio frequency interference) shield from the front of the module by pressing down firmly on the top of the shield and pulling it away from the module.

4. Locate the slot the card will occupy. Remove the fiberglass strip covering the bottom of the slot, if the strip is there.



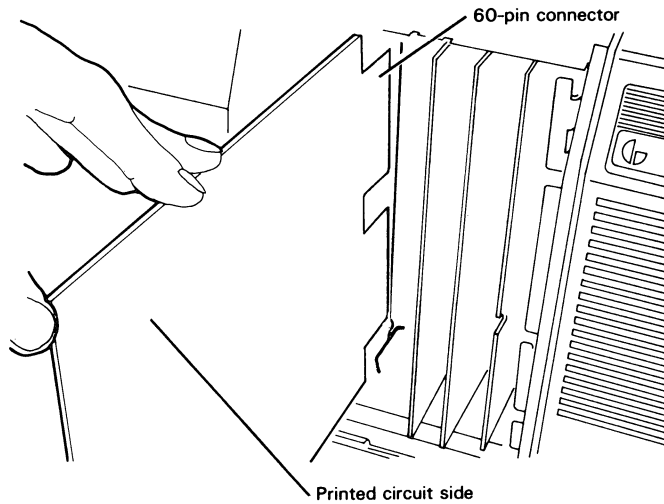
DG-26090

5. Locate the priority switch for the slot and make sure it is in the open (up) position.



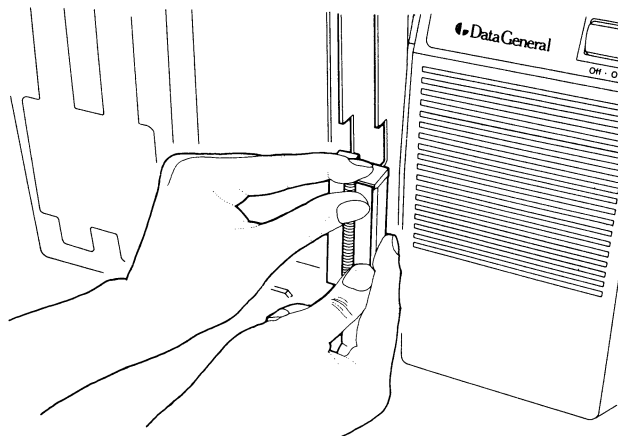
DG-26221

- 6.** Holding the card by its edges, place the bottom edge of the card into its slot. Make sure the printed circuit side is to the right and the 60-pin connector on top. Fit the top edge of the card into the corresponding top slot and, gently but firmly, push the card into the module until it clicks into place.



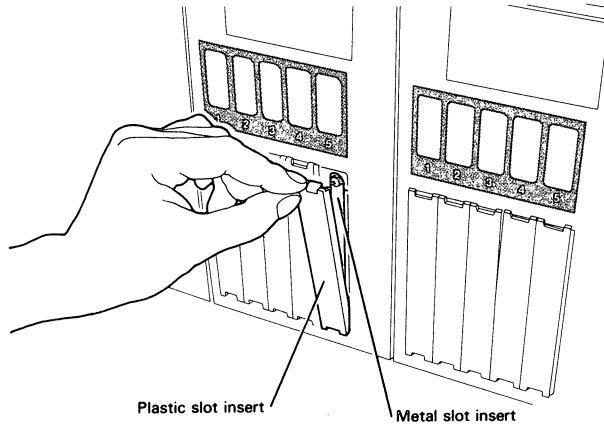
DG-26223

- 7.** If the card is the SPU or FPU card in a Model 30 system, plug the short cable (which interconnects the two cards) onto the top edge connector of the card.



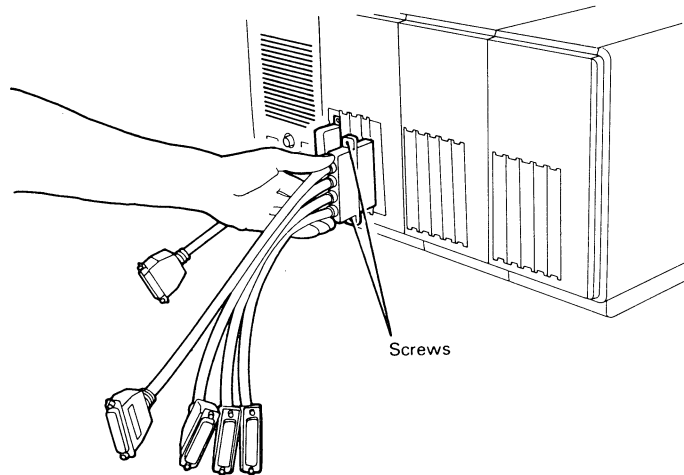
DG-26092

8. Replace the RFI shield on the module by fitting the groove at the bottom of the shield onto the module's bottom lip. Press the shield towards the module until it snaps into place.
9. Replace the module's front cover by inserting its two fingers under the module's plastic top. Push up on the bottom of the cover while moving it towards the module. The cover will snap into place.
10. If the card controls peripheral equipment, such as a data tablet or printer, remove the plastic and metal slot inserts covering the opening for the slot behind the module.





**11.** If the card is the SPU, USAM, or 4207 card, plug its adapter cable onto the card through the opening for the slot behind the module. Make sure the arrow and word "TOP" on the cable's connector are in the up position. Tighten the two screws that hold the cable in place. (The figure below shows the connection of the adapter cable for a 4-line USAM card in slot 5.)



DG-26085

## The Next Step

If you installed a card that controls peripheral equipment such as a printer, connect this component to the card with the help of one of the earlier chapters. After installing your system, get acquainted with its operation by reading *Operating Model 20 and 30 Systems*. Then turn to *Testing Model 20 and 30 Systems* to verify your system's operation with diagnostic software.



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