

# **HP 150 Personal Computer Owner's Guide**



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### **Printing History**

New editions of this manual will incorporate all material since the previous edition. Update packages may be used between editions and contain replacement and additional pages to be merged into the manual by the user.

The manual printing date and part number indicate its current edition. The printing date changes when a new edition is printed. (Minor corrections and updates which are incorporated at reprint do not cause the date to change.)

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### **Federal Communications Commission Radio Frequency Interference Statement**

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# **Chapter 1**

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## **INTRODUCTION**

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Hewlett-Packard's HP 150 is a personal computer with two personalities. Your HP 150 can function as a self-contained computer, using VisiCalc, WordStar, Series 100/ Graphics and other application programs you associate with personal computing. This manual tells you how to use your HP 150 as a computer.

The HP 150 can also function as a terminal, giving you the same performance and reliability that HP terminals have always provided. Another manual, the *HP 150 Terminal User's Guide*, provides the information on using the HP 150 as a terminal.

## **How To Use This Manual**

The rest of this manual contains information on the operation of your HP 150.

### **Chapter 2 Installing Your Equipment**

Read Chapter 2 to set up your HP 150, disc drive, printer, plotter, and accessory board(s).

### **Chapter 3 Using Your Equipment**

Read Chapter 3 to find out what your equipment is designed to do, and what to expect from it. Find out how much memory you need, what a plotter is used for, and how to use a printer. Instructions for starting up your HP 150 are also in this chapter.

## **Chapter 4 Files**

Chapter 4 explains files. How is information created? How is it stored? What do I name a file? How do I use HP 120/125 files on an HP 150?

## **Chapter 5 P.A.M. - The Personal Applications Manager**

In Chapter 5, learn about P.A.M., the manager that keeps in touch with everything on your system. Let P.A.M. run applications and perform commands for you with File Manager.

## **Chapter 6 Applications**

Find out about applications in Chapter 6. What are they? How do I put them into P.A.M. so that P.A.M. runs them? How do I make my favorite application appear on the screen every time I turn on my drive and computer?

## **Chapter 7 Discs**

Chapter 7 explains how to prepare a disc for first time use (FORMAT), how copy or back up a disc, and how to take care of your discs.

Hewlett-Packard has given you some programs (on the Disc Applications disc) to format and copy your discs.

## **Chapter 8 Issuing Commands From MS-DOS**

The MS-DOS operating system has many commands; most of these are shipped to you on your operating system disc. (Some come with the Programmer's Pac.) P.A.M. performs the most common of these commands for you when you touch the screen. However, Chapter 8 gives a brief description of each command sent on the OS disc, and tells you how to issue them.

## **Appendix A Configuration**

The HP 150 is a versatile computer. There are choices you can make to tailor it to your exact needs. The choices are made in the Configuration Menus, as described in Appendix A.

MS-DOS is also versatile; it has its own configuration choices, as described in Appendix A.

## **Appendix B Keyboards**

See Appendix B for drawings of the math symbol set, the line drawing set, the Roman 8 character set, and all foreign keyboards.

## **Appendix C Maintenance**

Find out how to change the backup battery, clean and adjust the touch screen, and generally take care of your equipment in Appendix C.

## **Appendix D Error Messages**

When the computer gets confused, it issues a message to tell you what it thinks the problem is. Appendix D tells you what those messages are, the possible cause, and the remedy for the problem.



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## **Chapter 2**

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# **INSTALLING YOUR HP 150 PERSONAL COMPUTER**

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## **INTRODUCTION**

Installing your HP 150 Personal Computer is as easy as:

- unpacking the components of your system,
- connecting the cables and power cords,
- making a few preparations (such as setting switches, putting ribbon and paper in your printer, etc.)

This chapter guides you through the steps required to install your system. The various components are sectioned by the use of "shadow tabs" at the edge of the pages. (If you did not purchase all of the components, such as a plotter, just skip that section of the chapter.)

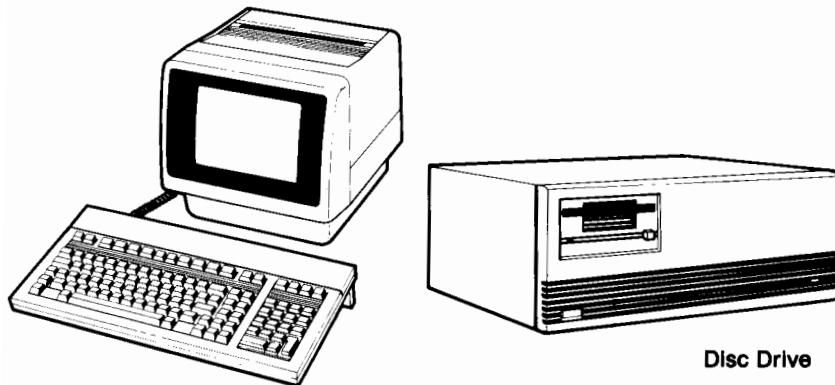
After you set up your system, be sure to read Chapter 3 which discusses the FUNCTION of each of the components, as well as how they all work together.

### **How Do I Get Started?**

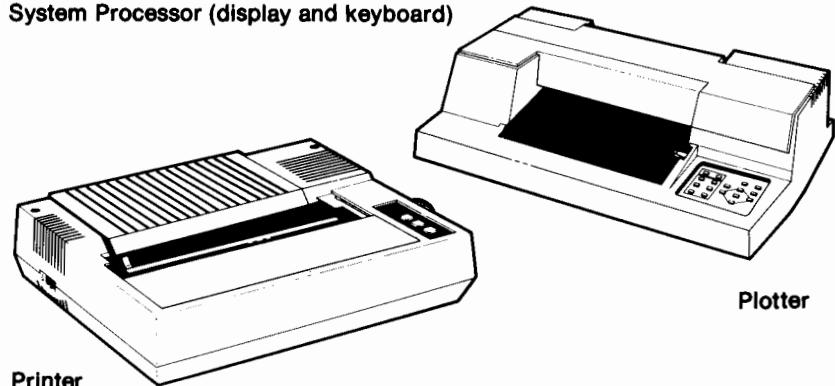
Now that you've unpacked the boxes containing the components of your HP 150, you need a regular flathead screwdriver to set up your system. No other tools are required.

You'll set up your HP 150 Personal Computer in the following order:

- the system processor (keyboard and display unit)
- disc drive
- printer
- plotter



System Processor (display and keyboard)



Printer

Plotter

If you plan to install accessory board(s), do so after you set up your system processor and before you install any peripherals (disc drive, printer or plotter).

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**NOTE**

Before installing each part of the system, be sure to read the entire procedure for installing that component. Be sure you understand all of the steps in the procedure before you try installing any piece of equipment. If you have any questions, contact the person from whom you purchased your system before you try to install that part of the system.

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**What About My Work Environment?**

Hewlett-Packard's Series 100 Computers are designed to operate in a typical office setting.

Even though there are no extensive preparations that need to be made for your HP 150 Personal Office Computer, you should give some thought to the area in which you install your computer system. Recommended temperature and humidity levels, along with electrical considerations (such as radio or electrical interference) are discussed in the appendix on "Maintenance".

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**CAUTION**

DO NOT USE EXTENSION CORDS UNDER ANY CIRCUMSTANCES. Such use may result in data errors and increase the risk of safety hazards. If you wish to use a multiple outlet strip to plug in the components of your system, you must use one which utilizes grounded three-prong outlets and incorporates a circuit breaker.

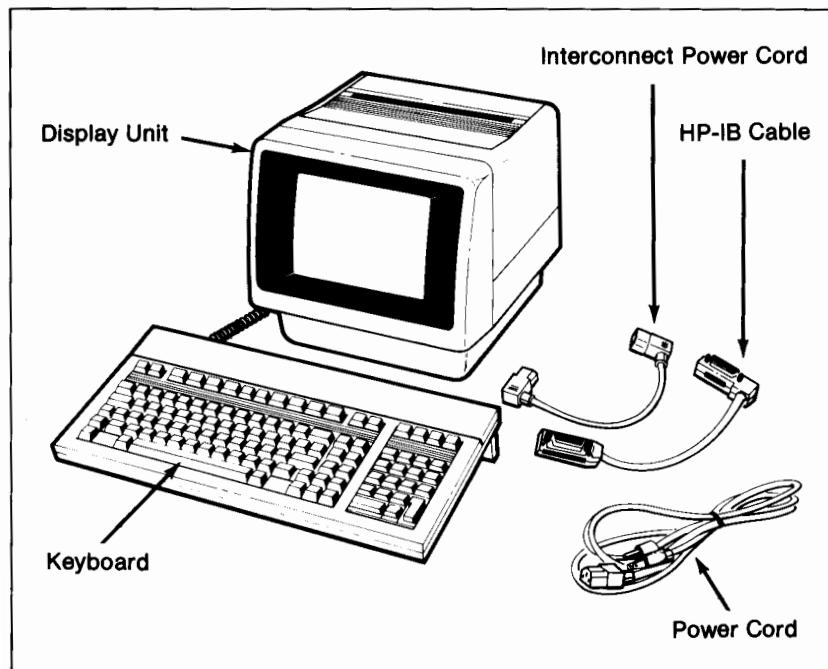
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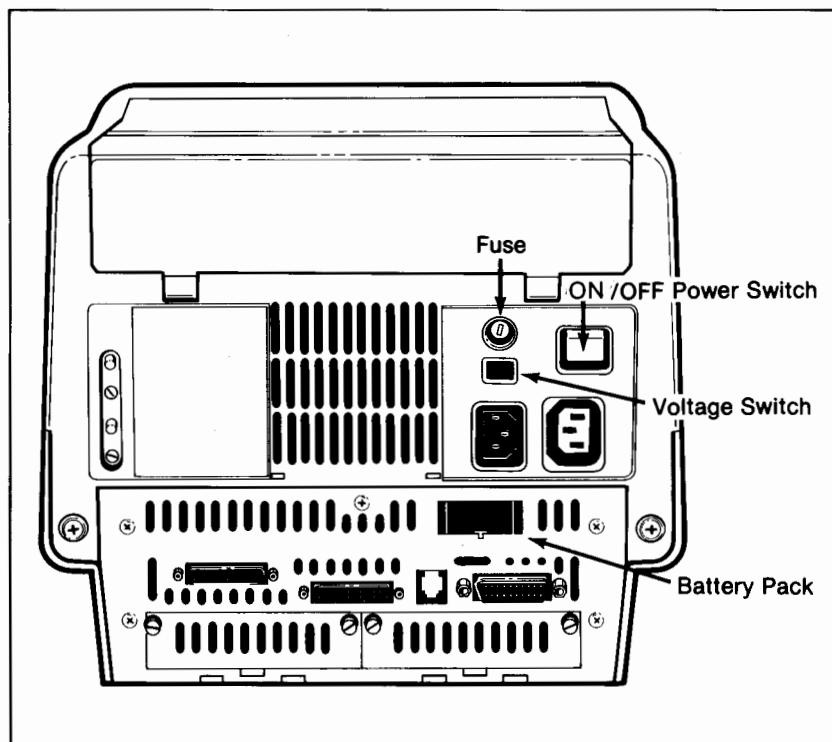
## Installing the System Processor

The first component of the HP 150 you install is your system processor. The system processor includes the following:



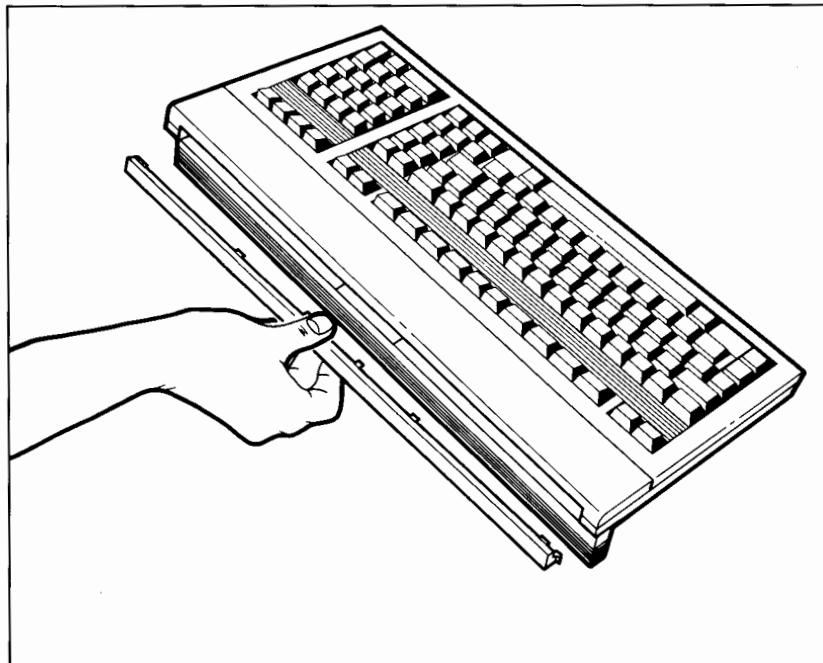
Install your system processor as follows, using the illustration below:

1. Set the power switch on your display unit to the OFF position.
2. Make sure the fuse is installed and the voltage switches are set according to the voltage in your area. (Check with your local electric company to be sure. For installations in the U.S., the switch on the rear panel should be set to 115 volts.)
3. Check that the battery pack is securely installed in the rear panel of the display unit.

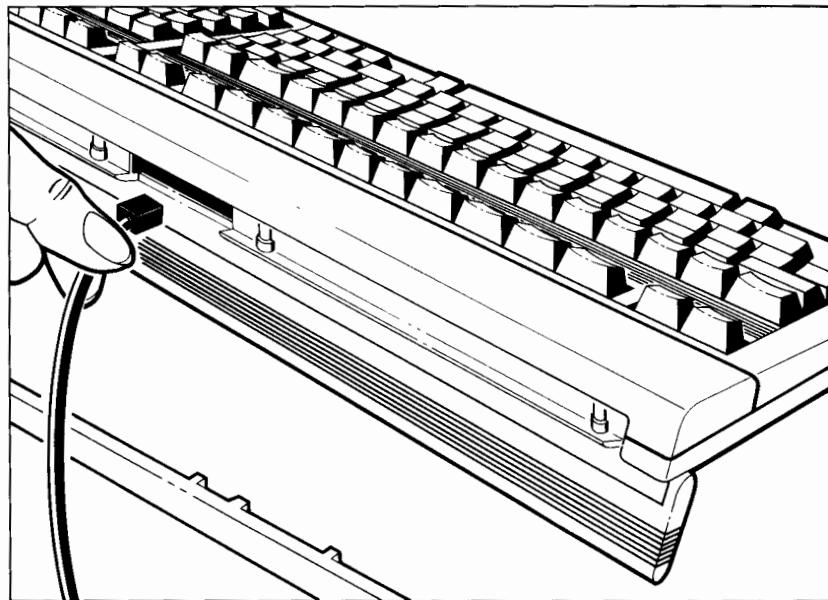


4. Connect the keyboard to the display unit as follows:

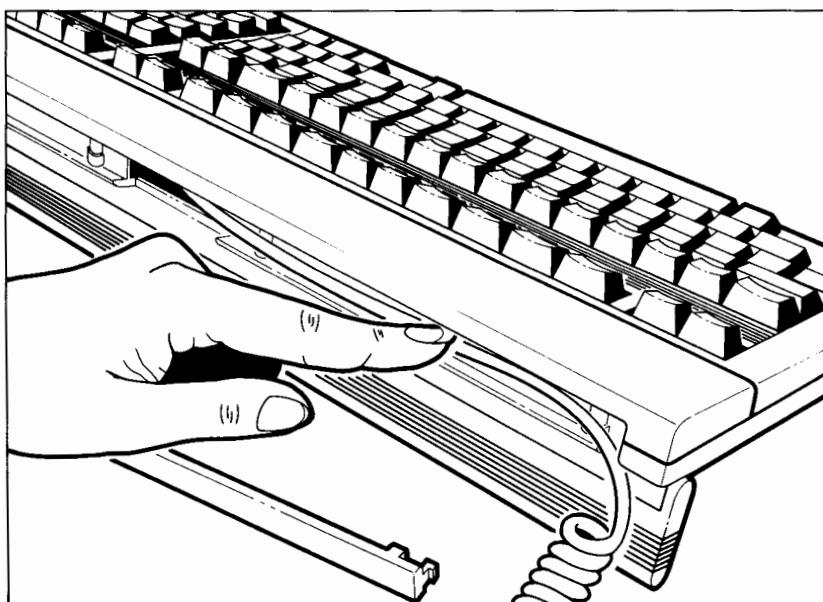
- a. Remove the keyboard cable cap at the back of the keyboard by gently squeezing the cap in the center and pulling straight out.



b. Unwrap the cable. Take the longest flat portion of the cable and plug the connector into the jack at the rear of the keyboard (recessed in the center back).

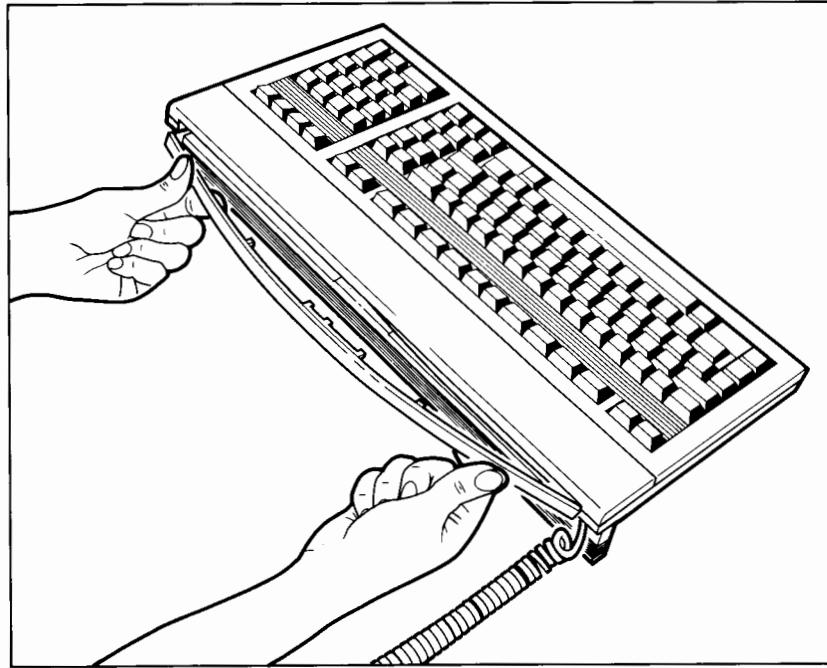


c. Place the flat portion of the cable in the cable channel at the rear of the keyboard. Make sure you direct the cable into the slot at the end of the cable channel in the keyboard, as shown in the illustration below:

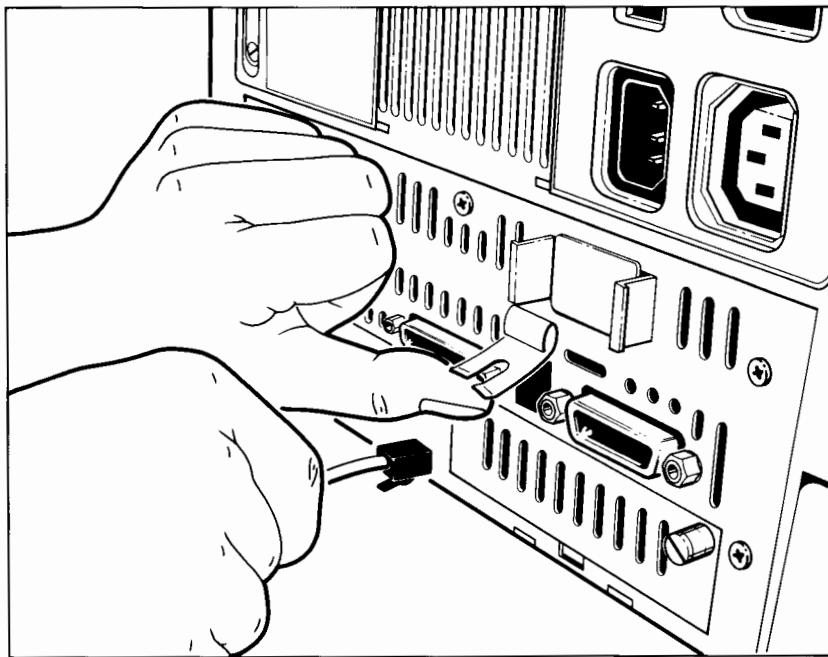


d. Place the cable cap over the channel on the keyboard as follows:

- (1) As you hold the cable cap in both hands, bend each end towards the keyboard. Tuck in the cap over the cable end first, then snap the other end into place in the back of the keyboard.
- (2) Push in the center of the cable cap until it snaps.



- e. Connect the keyboard cable to the connector on the rear panel of the system processor. Lift the keyboard interface cover and insert the cable plug.



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**CAUTION**

To avoid damage to your computer, you must connect the keyboard to the designated keyboard connector ONLY on the rear panel. Do not connect telephone line or modem cable connectors to the keyboard connector.

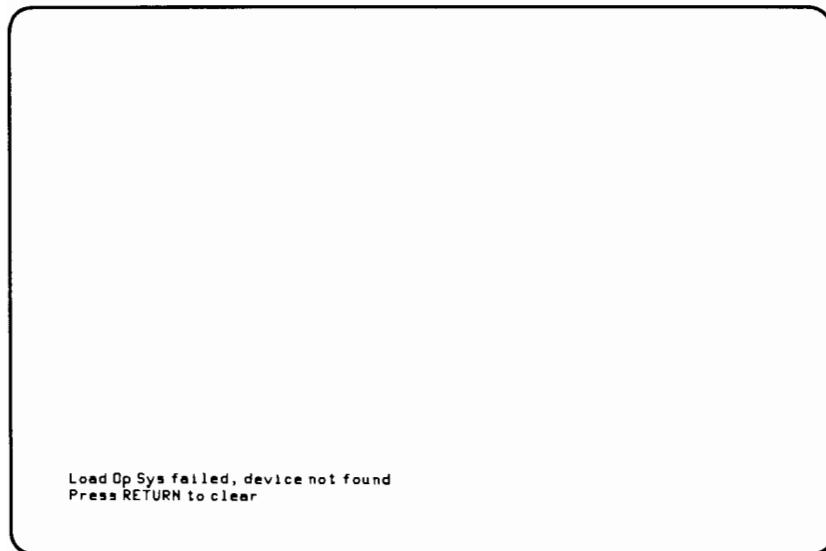
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5. Remove the tape covering the power cord receptacle. Plug the power cord first into the display unit's rear panel, then into the wall outlet, and turn the power switch ON.

## **What Happens When I Turn It On?**

As the unit warms up, the internal fan quietly turns on. Your HP 150 System Processor automatically initiates a Power-On Self-Test, which takes a few seconds. (This test is performed each time the system is turned on.)

1. If the Power-On Self-Test is successful, the following screen is displayed on your HP 150:



Load Op Sys failed, device not found  
Press RETURN to clear

This message indicates that your personal computer cannot find a disc drive with the Operating System, and you need to simply press **Return** to clear the screen. You are given instructions on how to connect a disc drive in the next section of this chapter, and how to load the Operating System in the next chapter.

2. If the Power-On Self-Test fails, the following error message appears on the screen:

**Power on test failed (and a code number)**

At this time, call the person from whom you purchased your system and report the error code number displayed on the screen.

If nothing appears, wait another 60 seconds (since new display units sometimes take longer to warm up). If there is still nothing on the screen, check the following:

- You installed the fuse and the voltage setting is correct.
- The system processor power switch is ON.
- The system processor is plugged in.
- The circuit breaker for your power outlet is ON. (You may check this by plugging in a lamp or another electrical appliance into the same outlet.)
- The screen brightness is turned up to the desired level (by adjusting the BRIGHT adjustment on the rear panel).

If you verify each of the above and your system processor still is not working, then you need to call the person from whom you purchased your system.

## How Do I Adjust My Display Screen?

Just as with a new television set, you may wish to make some adjustments to your screen. To adjust the focus and brightness, type a few characters on the screen and proceed as follows:

1. Adjust the focus using the FOCUS knob on the rear panel.
2. Adjust the brightness with the BRIGHT knob on the rear panel.

In addition, since your HP 150 allows you to touch the screen to select the things you wish to do, you may need to align this feature after shipment.

1. You must first display an alignment grid as follows:

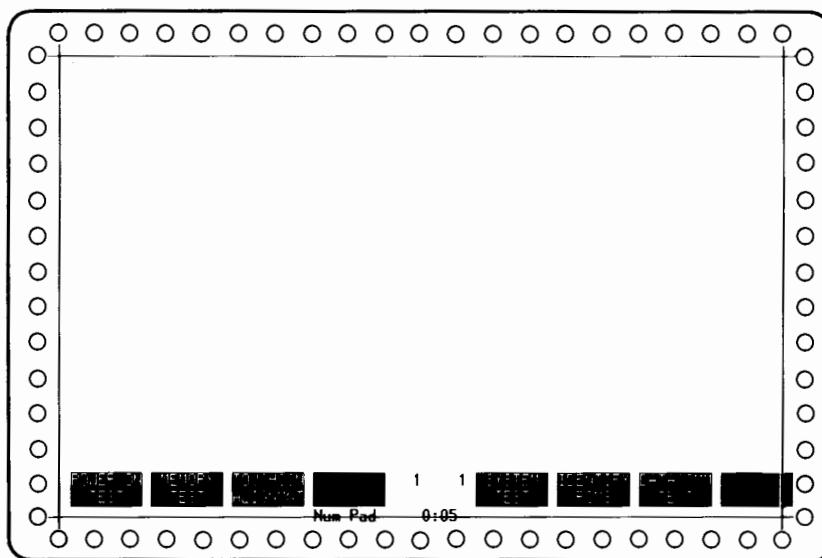
- a. Make sure the power switch is ON.
- b. Press **User System** twice to display the following function keys:



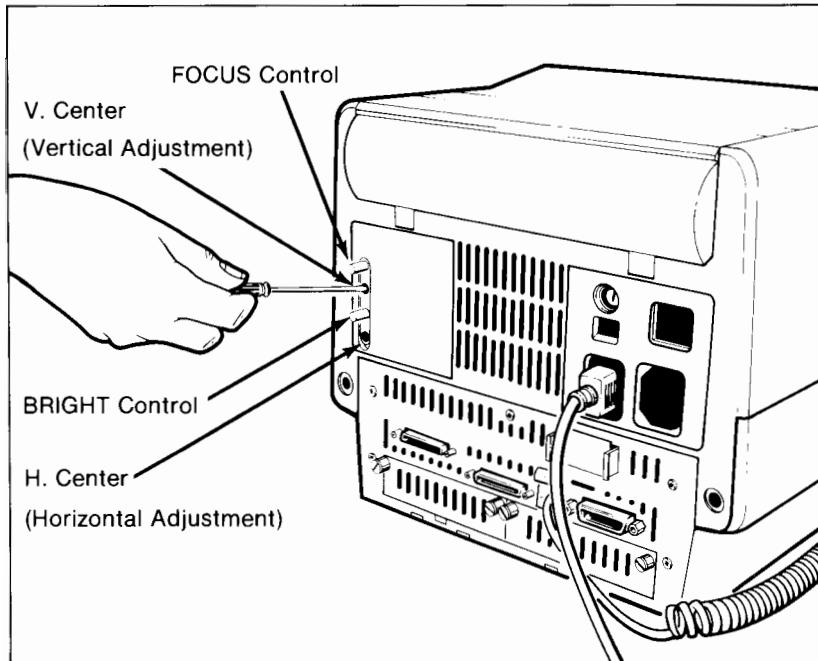
- c. Press **service keys** to display the following:



- d. Press **TOUCHSCN ALIGNMNT** to display the following screen:



2. Adjust the vertical level until the horizontal lines line up with the touch screen holes. Use your screwdriver with the V. CENTER blue adjustment button on the rear panel.



3. Adjust the horizontal level until the vertical lines line up with the touch screen holes. Use your screwdriver with the H. CENTER green adjustment button on the rear panel.

To clear the screen, press **CTRL** **Shift** **Clear Display** at the same time.

## **What's Next?**

Congratulations! You've taken the first step in setting up your personal computer by installing the system processor.

The next section discusses how to connect a disc drive to your HP 150. When you are ready to connect a printer or a plotter, see the following sections (grouped by "shadow tabs") for installation instructions.

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### **NOTE**

If you plan to install an accessory board, do so before connecting your disc drive, printer or plotter. Otherwise, you must disconnect any peripherals before installing an accessory board.

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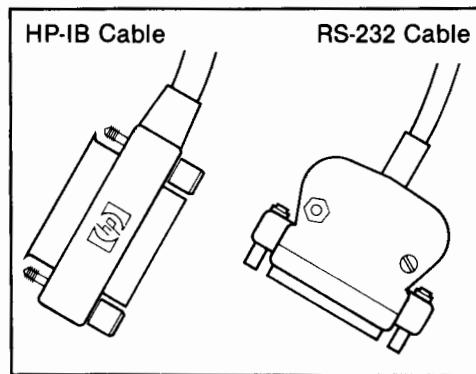
In order to connect a disc drive, printer or plotter, you must attach a cable from the peripheral to the system processor.

### **Which Cable Do I Use?**

There are two different types of cables available:

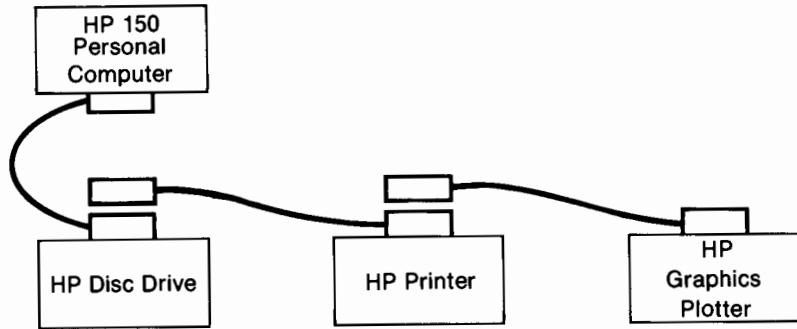
- an HP-IB cable, or
- an RS-232 serial cable

As you can see from the illustration below, the cable ends are significantly different.



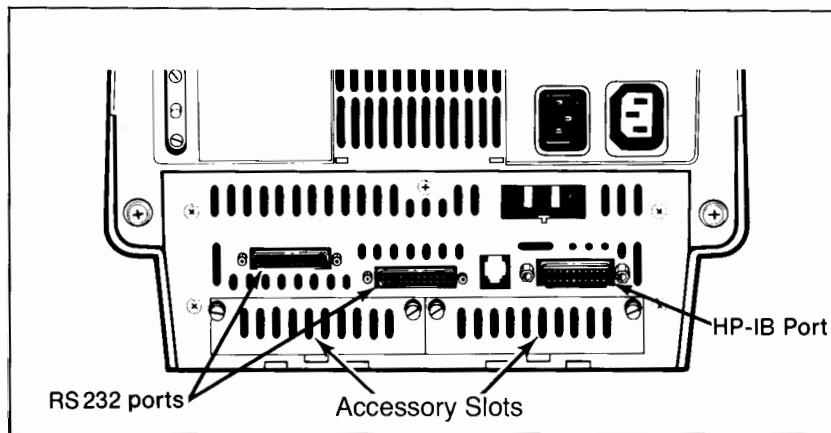
Hewlett-Packard disc drives listed in this manual use an HP-IB cable. Your printer or plotter may connect with either one (which you select at the time you purchase the equipment).

Usually each disc drive, printer, or plotter is directly connected by one cable to the computer. However, an HP-IB cable is special in that it can be used to connect more than one peripheral device to your computer. If you want to connect an additional peripheral device using an HP-IB cable, the second peripheral device must be connected to the top of the HP-IB cable on the first peripheral device and so on, as shown below:



### Connecting the Cables to the HP 150

Let's take a quick look at the back of the HP 150. Near the bottom, directly above the accessory slots, are three ports—"outlets" where the cables are attached to the computer. You connect the HP-IB cable to the port labeled HP-IB on the right-hand side (as you look at the back of the computer). The other two ports, labeled DATACOMM (PORT 1) and DATACOMM (PORT 2), are both used with an RS-232 cable. (If you install the Extended I/O Accessory in one of the slots, you'll have two more ports, one for a Centronics cable and one for an HP-IL cable.)



# How Do I Install a Disc Drive?

Each Hewlett-Packard disc drive comes with its own user's manual. You may refer to your disc drive user's manual for installation instructions, or you may use the following pages to install your disc drive. Be sure you keep your disc drive user's manual, because you may have questions that are not answered in this manual.

Following is a list of Hewlett-Packard disc drives that you may use with your HP 150 system:

HP 9122D	Dual 3½" Double-Sided Flexible Disc Drive
*HP 9122S	Single 3½" Double-Sided Flexible Disc Drive
HP 9121D	Dual 3½" Single-Sided Flexible Disc Drive
*HP 9121S	Single 3½" Single-Sided Flexible Disc Drive
† HP 9133A	5 MB Fixed Disc Drive with 3½" Single-Sided Flexible Disc Drive
† HP 9133B	10 MB Fixed Disc Drive with 3½" Single-Sided Flexible Disc Drive
HP 9133D	15 MB Fixed Disc Drive with 3½" Double-Sided Flexible Disc Drive
HP 9133V	5 MB Fixed Disc Drive with 3½" Single-Sided Flexible Disc Drive
HP 9133XV	15 MB Fixed Disc Drive with 3½" Single-Sided Flexible Disc Drive
†*HP 9134A	5 MB Fixed Disc Drive
†*HP 9134B	10 MB Fixed Disc Drive
*HP 9134D	15 MB Fixed Disc Drive (enhanced performance)
*HP 9134XV	15 MB Fixed Disc Drive
† HP 9135A	5 MB Fixed Disc Drive with 5¼" Flexible Disc Drive
HP 82901M	Dual 5¼" Flexible Disc Drive
*HP 82902M	Single 5¼" Flexible Disc Drive



## NOTE

\* These disc drives are supported only as add-on drives.

† These disc drives can no longer be ordered.

## Disc Drive Installation Checklist

Installation instructions for Hewlett-Packard disc drive(s) are discussed in the following pages. However, the steps listed below are common to installing any of these disc drives. In order to install a disc drive, you must:

- prepare your disc drive for installation (install the fuse and set the voltage switch, if not already done)
- set the address switches on your disc drive
- connect the disc drive to your HP 150 via an HP-IB cable
- connect the power cord

These steps are discussed in greater detail below.

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### NOTE

After installing a disc drive and setting the address switches, you must then configure the disc drive before you can use it with your HP 150. When you finish this section on disc drives, go to Appendix A and read "Configuring MS-DOS" and "Setting Up a Disc Drive."

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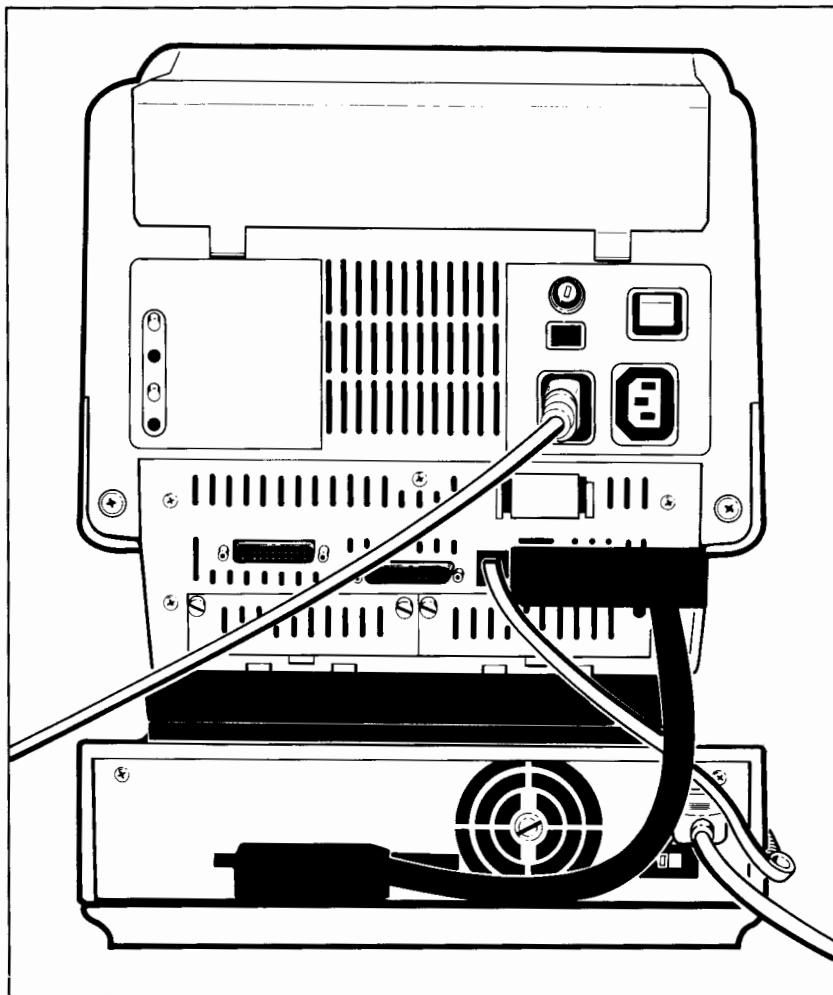
1. To install the fuse and set the voltage switch, refer to instructions for your specific disc drive in the following pages.
2. Set the address switches on the rear panel of the disc drive using a ball point pen or a small screwdriver. An "address" is a label, letter or number identifying the location to which your HP 150 may send and receive data.)

The switches on your disc drive are set according to the address in the MS-DOS Device Configuration Menu. Switch settings are shown for each disc drive in this section, and additional information is provided in Appendix A.

When you first set up your system (and whenever you add or change a disc drive), you'll need to place a letter (A,B,C,...etc.) over your disc drive as outlined below:

- **IF YOU HAVE A DUAL FLEXIBLE DISC DRIVE,** place the letter "A" over the drive on the left side of the unit (as you look at the front of the unit). Place the letter "B" over the right drive. (The MS-DOS Device Configuration Menu is set to default to drives A: and B:.)

- **IF YOU HAVE A FIXED DISC DRIVE WITH A FLEXIBLE DISC UNIT,** place the letter "A" over the fixed disc drive and the letter "B" over the flexible disc drive.
  - **IF YOU HAVE A SINGLE FLEXIBLE DISC DRIVE UNIT,** you must also install either a fixed or dual flexible disc drive unit. (Single flexible disc drives are only supported as add-on drives.) The letter you place on your single flexible disc drive unit will depend on the other disc drive installed. Refer to Appendix A for more information.
3. Connect the HP-IB cable from the disc drive to the system processor, as shown below:



4. Plug in the power cord by either of the following methods:
- 

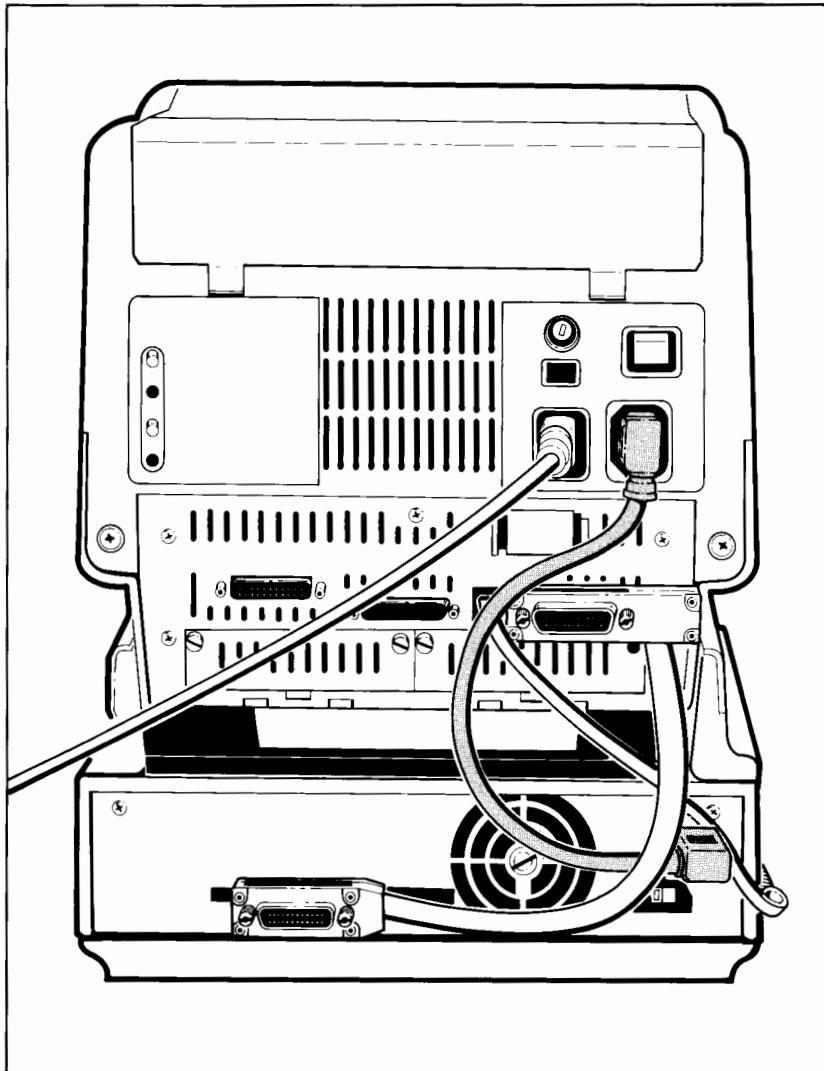
**CAUTION**

DO NOT USE EXTENSION CORDS UNDER ANY CIRCUMSTANCES. Such use may result in data errors and increase the risk of safety hazards. If you wish to use a multiple outlet strip to plug in the components of your system, you must use one which utilizes grounded three-prong outlets and incorporates a circuit breaker.

---

- a. Either plug the power cord into the disc drive and then into the wall outlet.
- b. Plug the interconnect power cord provided with your HP 150 into the disc drive and then into the system processor. (Refer to the your disc drive model on the following pages to determine if you may use the interconnect power cord.) You should store the disc drive's power cord for future use.

When you leave the disc drive power switch ON, the system processor's power switch controls the disc drive's power. Turn the system processor ON and OFF to turn your disc drive on and off. You may still turn your drive on and off with its own power switch, if you wish.



### **How Do I Install More Than One Disc Drive?**

You may connect any combination of fixed and flexible disc drives to your HP 150, up to the total number of addresses available in the MS-DOS Device Configuration Menu (described in Appendix A).

In order to install more than one disc drive, you must:

1. Prepare your disc drive for installation according to the instructions for your particular model in this section.
2. Set the address switches on your disc drive and change the address in the MS-DOS Device Configuration Menu. (Refer to Appendix A for details.)
3. Connect the disc drive to your HP 150 by connecting your second HP-IB cable on top of the HP-IB cable on the first disc drive.
4. Connect the power cord from the disc drive(s) to the wall outlet.

---

#### **CAUTION**

DO NOT USE EXTENSION CORDS UNDER ANY CIRCUMSTANCES. Such use may result in data errors and increase the risk of safety hazards. If you wish to use a multiple outlet strip to plug in the components of your system, you must use one which utilizes grounded three-prong outlets and incorporates a circuit breaker.

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### How Do I Check the Connection?

To check the connection from the disc drive to your system processor, turn on the drive (and the system processor, if you used the interconnect power cord). You should hear a whirring noise (which is the drive and fan starting) and see a light blink on and off once or twice, rather quickly.

If you don't hear the whir or see the light blink (though you may have missed the light), check that:

1. The disc drive power switch is ON.
2. The disc drive is plugged into an AC power outlet.
3. The controlling circuit breaker is ON.

If you still are not getting a response from your disc drive, contact the person from whom you purchased your system.

After the connection is verified, the next steps include:

- installing the remaining components (i.e., printer, plotter or any accessory boards);
- formatting your disc; and
- installing your Operating System and application software.

These steps are discussed in the following section and chapters.

### Let's Get Specific

Installation instructions for Hewlett-Packard disc drives supported by the HP 150 are detailed in the following sections.



## Installing Your HP 9121D, HP 9122D, or HP 9121S Disc Drive

1. Be sure the disc drive is OFF.
2. Install the fuse and set the voltage switches according to the voltage in your area. (Check with your local electric company to be sure. For installations in the U.S., set the switch to 115 volts.)
3. Set the address switches using a ball-point pen or a small screwdriver as shown in the illustration.

If you have a 9121D or 9122D, place the letter "A" over the drive on the left side (as you face the front of the disc drive), and the letter "B" on the right side of the disc drive.

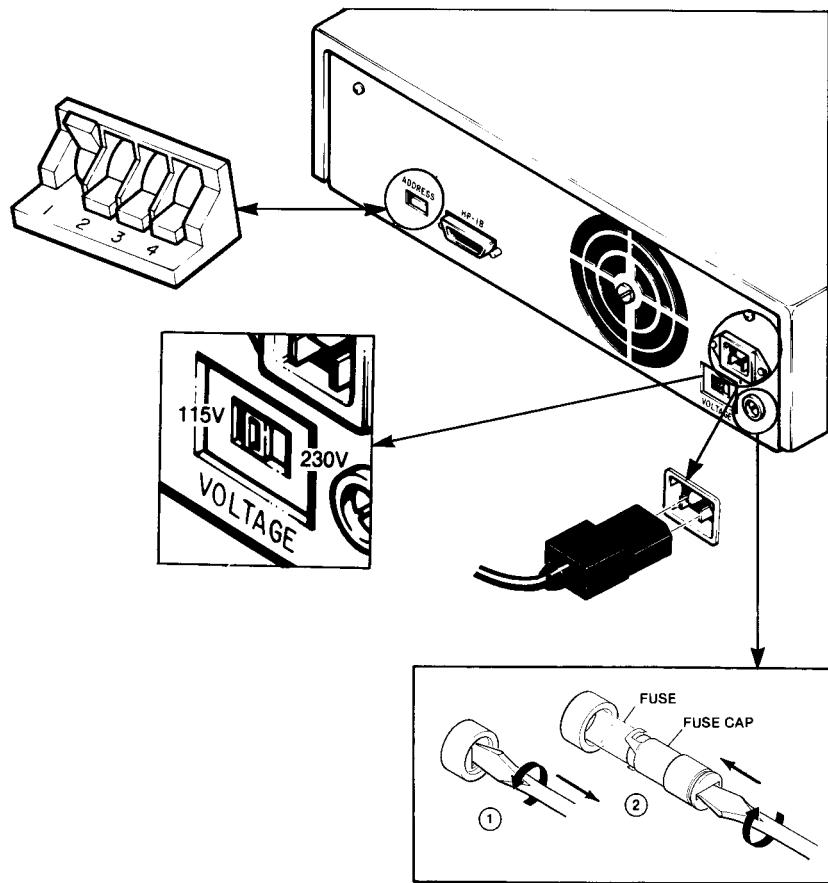
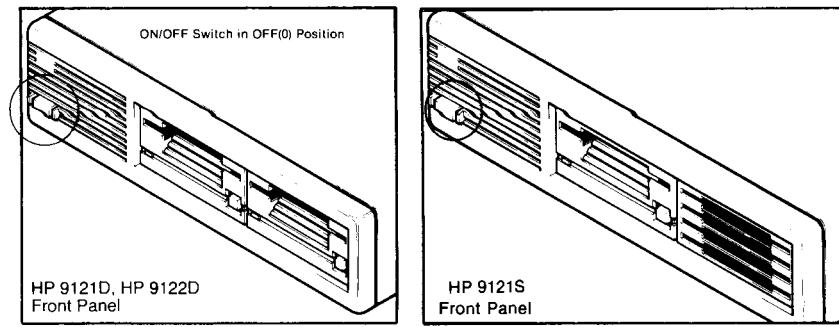
4. Turn the system processor OFF.
5. Connect the HP-IB cable to the system processor and the disc drive.
6. Plug the power cord into the disc drive and then into the wall outlet, OR plug the interconnect power cord into the disc drive and then the system processor (as described in the Disc Drive Installation Checklist).

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### NOTE

The HP 9121S Disc Drive is supported only as an add-on drive.

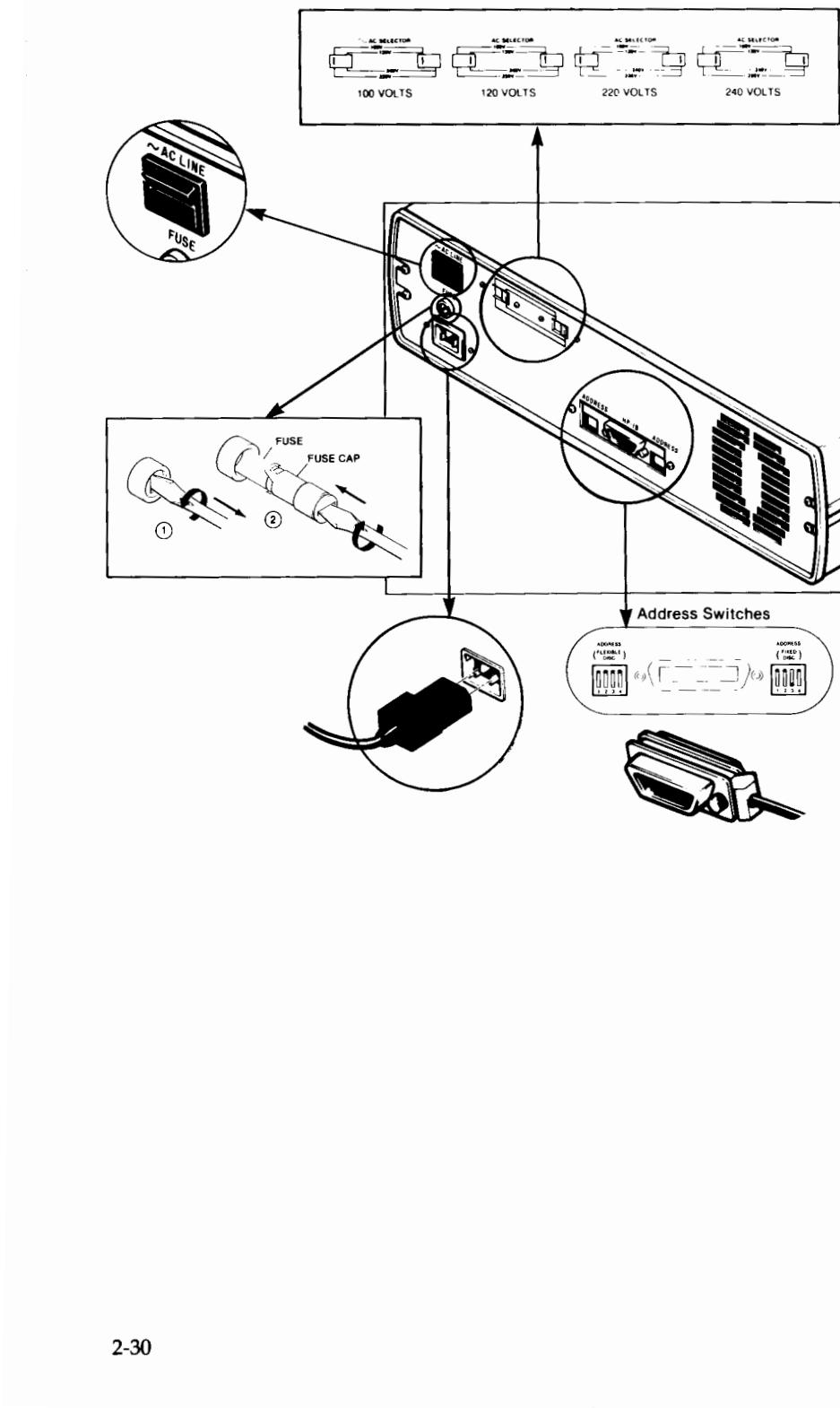
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## Installing Your HP 9133A or HP 9133B Disc Drive

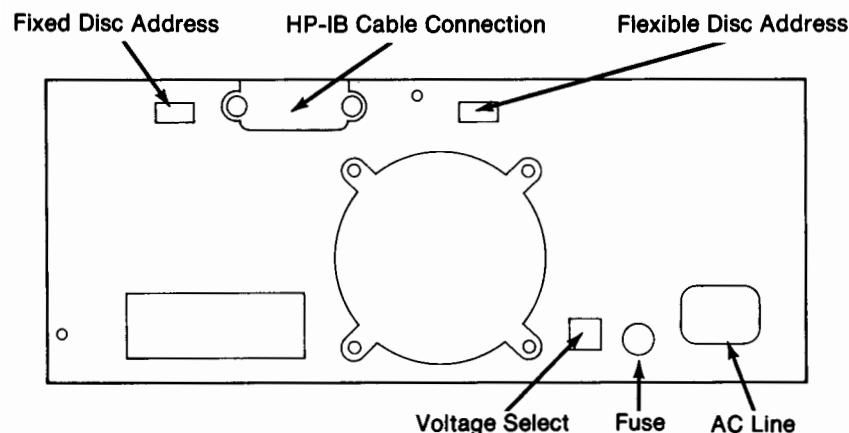
1. Be sure the disc drive is OFF.
2. Install the fuse and set the voltage switches according to the voltage in your area. (Check with your local electric company to be sure. For installations in the U.S., set the switch to 115 volts.)
3. Set the address switches using a ball-point pen or a small screwdriver. Place the letter "A" over the fixed disc drive and the letter "C" over the flexible disc drive. (Refer to Appendix A for instructions on changing switch settings and installing the Operating System on a fixed disc.)
4. Turn the system processor OFF.
5. Connect the HP-IB cable to the system processor and the disc drive.
6. Plug the power cord into the disc drive and then into the wall outlet, OR plug the interconnect power cord into the disc drive and then into the system processor (as described in the Disc Drive Installation Checklist).





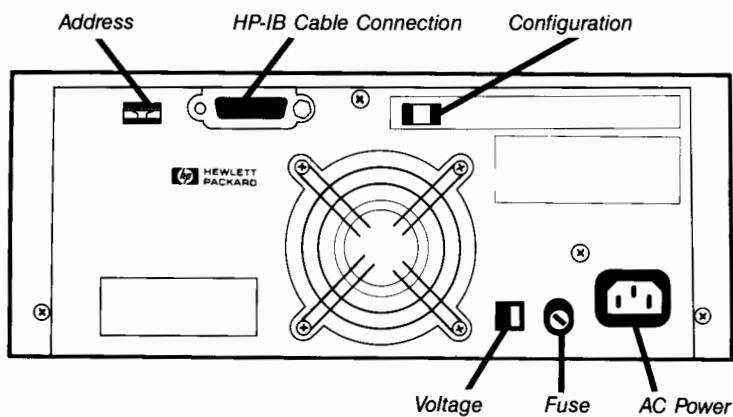
## Installing Your HP 9133V or HP 9133XV Disc Drive

1. Be sure the disc drive is OFF.
2. Install the fuse and set the voltage switches according to the voltage in your area. (Check with your local electric company to be sure. For installations in the U.S., set the switch to 115 volts.)
3. Set the address switches using a ball-point pen or a small screwdriver. Place the letter "A" over the fixed disc drive and the letter "C" over the flexible disc drive. (Refer to Appendix A for instructions on changing switch settings and installing the Operating System on a fixed disc.)
4. Turn the system processor OFF.
5. Connect the HP-IB cable to the system processor and the disc drive.
6. Plug the power cord into the disc drive and then into the wall outlet.



## Installing Your HP 9133D Disc Drive

1. Be sure the disc drive is OFF.
2. During the manufacturing process, Hewlett-Packard installs the fuse and sets your voltage. However, you should verify that the voltage switch on the back of your disc drive is set correctly for your local power. (Check with your local electric company if you are not sure of the voltage in your area. For installations in the U.S., make sure the voltage is set to 115 volts.)
3. Set the address wheel on the back of your disc drive to 9.
4. Be sure the HP 150 is off.
5. Connect the HP-IB cable to the HP 150 and to your disc drive.
6. Plug the power cord into the socket on the back of the disc drive labeled "AC line," and then into the wall outlet.

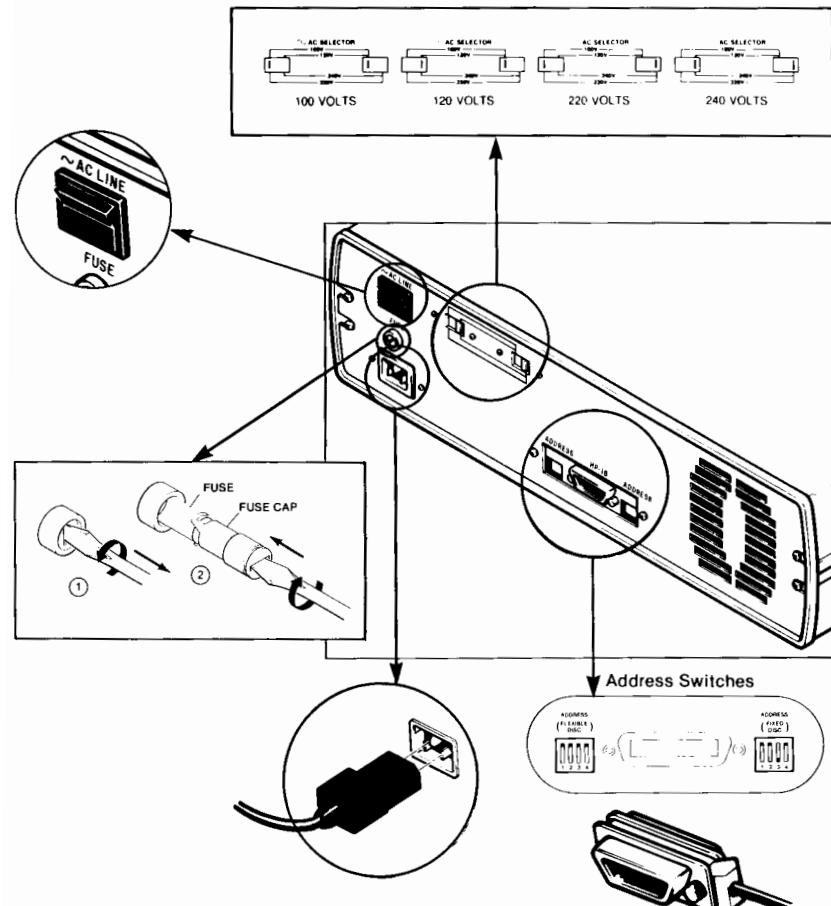


## Installing Your HP 9134A or HP 9134B Disc Drive

### NOTE

These Disc Drives are supported only as an add-on drive. You must first install a flexible disc drive in order to install the Operating System. Refer to Appendix A for details.

1. Be sure the disc drive is OFF.
2. Install the fuse and set the voltage switches according to the voltage in your area. (Check with your local electric company to be sure. For installations in the U.S., set the switch to 115 volts.)
3. Set the address switches using a ball-point pen or a small screwdriver. (These address depends on which other disc drive is installed first. Refer to Appendix A for details on changing switch settings and installing the Operating System on a fixed disc.)
4. Turn the system processor OFF.
5. Connect the HP-IB cable to the system processor and the disc drive.
6. Plug the power cord into the disc drive and then into the wall outlet, OR plug the interconnect power cord into the disc drive and then the system processor (as described in the Disc Drive Installation Checklist).

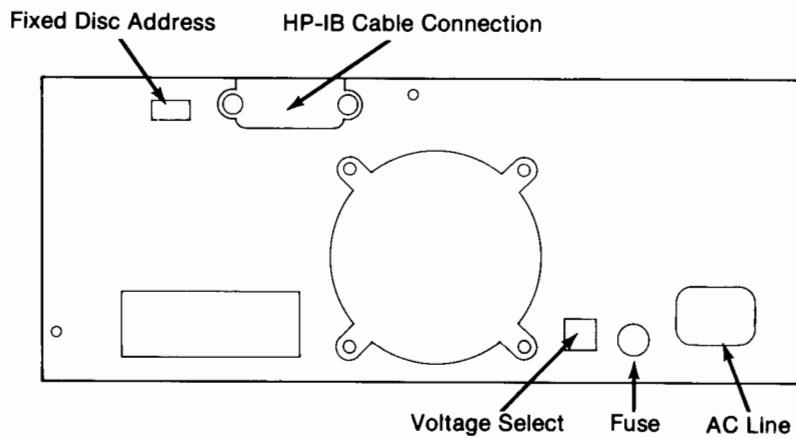


## Installing Your HP 9134XV Disc Drive

### NOTE

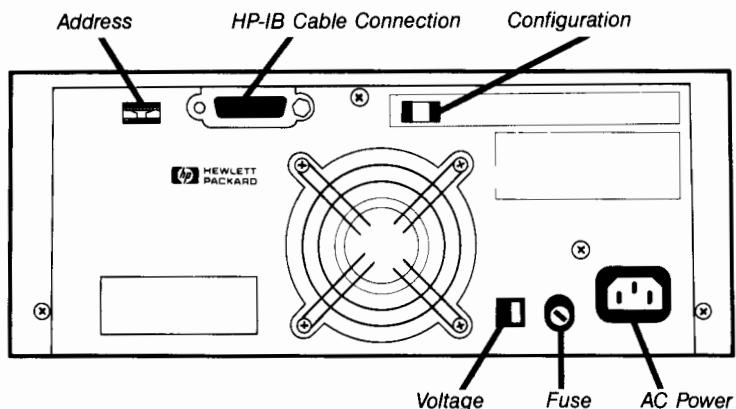
These Disc Drives are supported only as an add-on drive. You must first install a flexible disc drive in order to install the Operating System. Refer to Appendix A for details.

1. Be sure the disc drive is OFF.
2. Install the fuse and set the voltage switches according to the voltage in your area. (Check with your local electric company to be sure. For installations in the U.S., set the switch to 115 volts.)
3. Set the address switches using a ball-point pen or a small screwdriver. (The address depends on which other disc drive is installed first. Refer to Appendix A for details on changing switch settings and installing the Operating System on a fixed disc.)
4. Turn the system processor OFF.
5. Connect the HP-IB cable to the system processor and the disc drive.
6. Plug the power cord into the disc drive and then into the wall outlet, OR plug the interconnect power cord into the disc drive and then the system processor (as described in the Disc Drive Installation Checklist).



## Installing Your HP 9134D Disc Drive

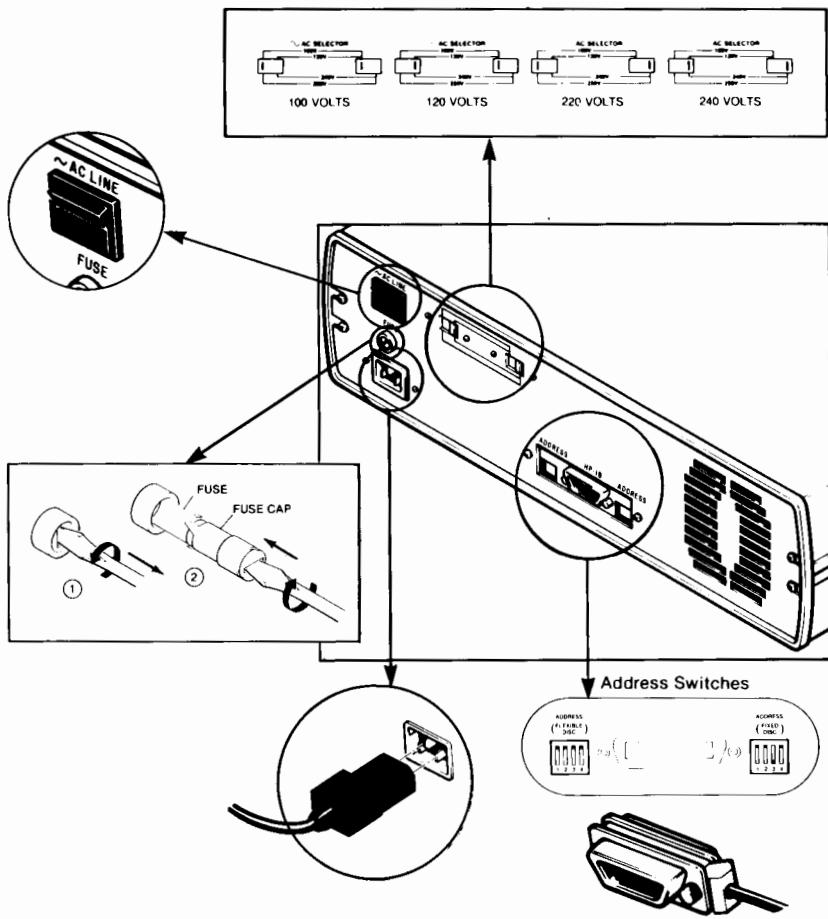
1. Be sure the disc drive is OFF.
2. During the manufacturing process, Hewlett-Packard installs the fuse and sets your voltage. However, you should verify that the voltage switch on the back of your disc drive is set correctly for your local power. (Check with your local electric company if you are not sure of the voltage in your area. For installations in the U.S., make sure the voltage is set to 115 volts.)
3. During the manufacturing process, Hewlett-Packard also sets your address switch. Verify that the address wheel on the back of your disc drive is set at "0."
4. Be sure the HP 150 is OFF.
5. Connect the HP-IB cable to the HP 150 and to your disc drive.
6. Plug the power cord into the socket on the back of the disc drive labeled "AC line," and then into the wall outlet.



## Installing Your HP 9135A Disc Drive

1. Be sure the disc drive is OFF.
2. Install the fuse and set the voltage switches according to the voltage in your area. (Check with your local electric company to be sure. For installations in the U.S., set the switch to 115 volts.)
3. Set the address switches using a ball-point pen or a small screwdriver. Place the letter "A" over the fixed disc drive and the letter "C" over the flexible disc drive. (Refer to Appendix A for instructions on changing switch settings and installing the Operating System on a fixed disc.)
4. Turn the system processor OFF.
5. Connect the HP-IB cable to the system processor and the disc drive.
6. Plug the power cord into the disc drive and then into the wall outlet, OR plug the interconnect power cord into the disc drive and then the system processor (as described in the Disc Drive Installation Checklist).





## Installing Your HP 82901M or HP 82902M Disc Drive

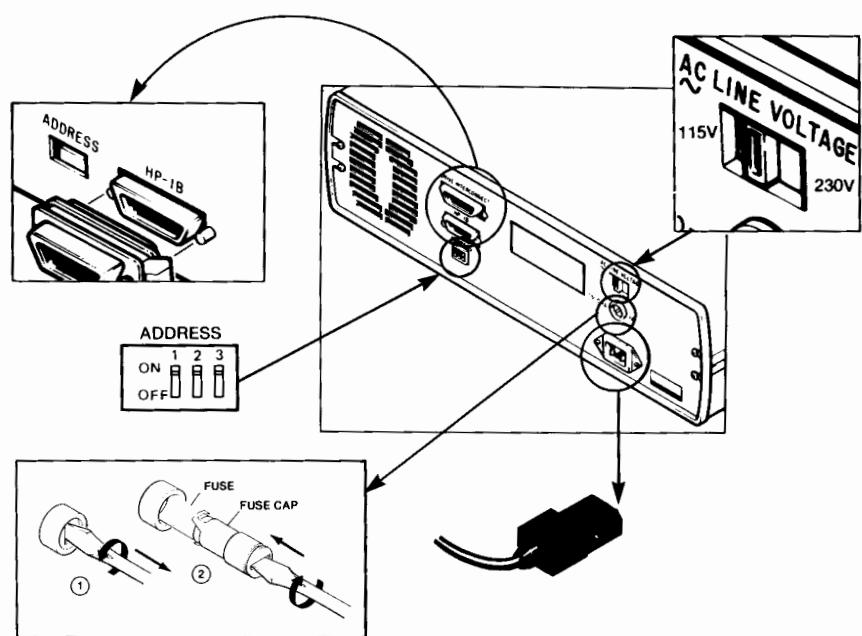
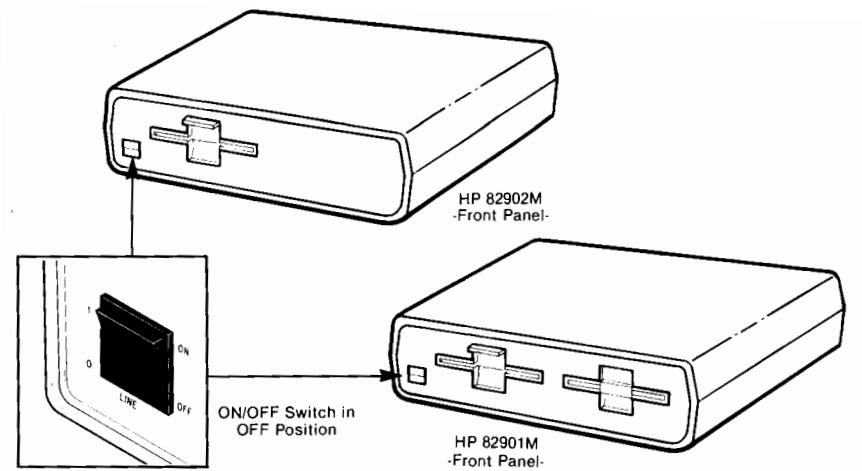
1. Be sure the disc drive is OFF.
2. Install the fuse and set the voltage switches according to the voltage in your area. (Check with your local electric company to be sure. For installations in the U.S., set the switch to 115 volts.)
3. Set the address switches using a ball-point pen or a small screwdriver as shown in the illustration. Place the letter "A" over the drive on the left side (as you face the front of the disc drive), and the letter "B" over the drive on the right side of the disc drive.
4. Turn the system processor OFF.
5. Connect the HP-IB cable to the system processor and the disc drive.
6. Plug the power cord into the disc drive and then into the wall outlet, OR plug the interconnect power cord into the disc drive and then the system processor (as described in the Disc Drive Installation Checklist).

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### NOTE

The HP 82902M Disc Drive is supported only as an add-on disc drive.

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# How Do I Install A Printer?

The following Hewlett-Packard printers can be connected to your HP 150.

In order to use your printer, you need a certain kind of interface. An interface consists of a cable and a port on the back of the computer. Choose the appropriate cable when you purchase the printer.

Printer	Interface Type Available			
	HP-IB	RS-232	Parallel	HP-IL
HP 2674A Internal Thermal Printer			(has internal cable)	
HP 2601A Daisywheel Printer	—	*	—	—
HP 2602A Daisywheel Printer	*	*	—	—
LaserJet (HP 2686A) Laser Printer	—	*	—	—
HP 293X Dot Matrix Printer	*	*	—	—
HP 82905B Dot Matrix Printer	*	*	—	—
HP 82906A Dot Matrix Printer	*	—	—	—
ThinkJet (HP 2225A) Ink Jet Printer	*	—	—	—
*ThinkJet (HP 2225B) Ink Jet Printer	—	—	—	*
*ThinkJet (HP 2225C) Ink Jet Printer	—	—	*	—

\* These printers can only be connected if you have first installed the Extended I/O Accessory. Please refer to the user guide for this accessory for complete installation instructions.

Printers

## Printer Installation Checklist

Although installation procedures vary for each printer, the following steps are generally required. Refer to the model number of your printer in the following pages (listed in the order shown above) for specific installation instructions.

1. Be sure the power switch is OFF for the printer and the system processor.
2. Install the ribbon cartridge and paper. If required, install the print wheel.
3. Set the switches as required for your particular printer. (If you wish to first run the self-test for the printer, you need to go through these steps but use different switch settings. Refer to instructions for your particular printer model.)

4. Connect either the HP-IB or RS-232 cable to the printer and then to the system processor. (If you have installed the Extended I/O Accessory board, then you can also use the Centronics parallel and HP-IL cables to connect a printer.)
  5. Plug the power cord into the printer and then the wall outlet.
- 

#### **NOTE**

After installing a printer and setting the address switches, you must then configure the printer before you can use it with your HP 150. When you finish this section on printers, go to Appendix A and read "Configuring MS-DOS" and "Setting Up a Printer".

---

#### **How Do I Install a Second Printer?**

Installing a second printer is much like installing the first one. Just look at the model number of your printer and find the section with specific instructions for that printer. You should also remember the important difference between the HP-IB cable and other cables, described under "Which Cable Do I Use?". If you're connecting two printers that require an HP-IB cable, you can connect the first printer to the HP 150 and connect the second printer to the first one. Any printer not using an HP-IB cable must be connected directly to the HP 150.

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#### **CAUTION**

**DO NOT USE EXTENSION CORDS UNDER ANY CIRCUMSTANCES.** Such use may result in printing errors and increase the risk of safety hazards. If you wish to use a multiple outlet strip to plug in the components of your system, you must use one which utilizes grounded three-prong outlets and incorporates a circuit breaker.

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#### **Let's Get Specific**

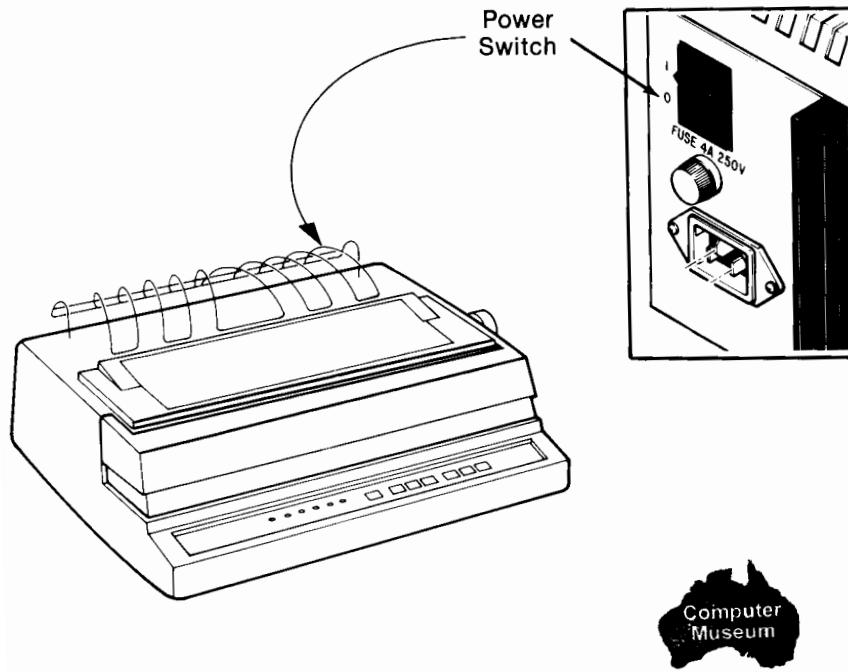
Installation instructions for Hewlett-Packard printers supported by the HP 150 are detailed in the following sections. The model number of each printer is listed on the edge of the page for quick reference.

After you connect your printer(s), you may begin using your HP 150 personal computer. However, if you wish to use a plotter, go to the next section for installation instructions.

# Installation Procedures

## Installing Your HP 2601A Printer

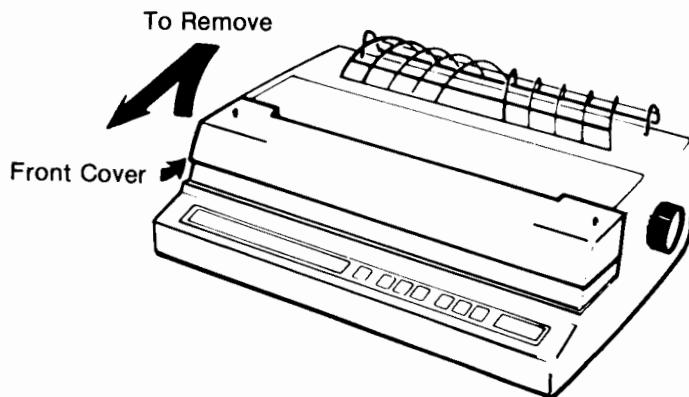
1. Be sure the printer power switch is OFF.



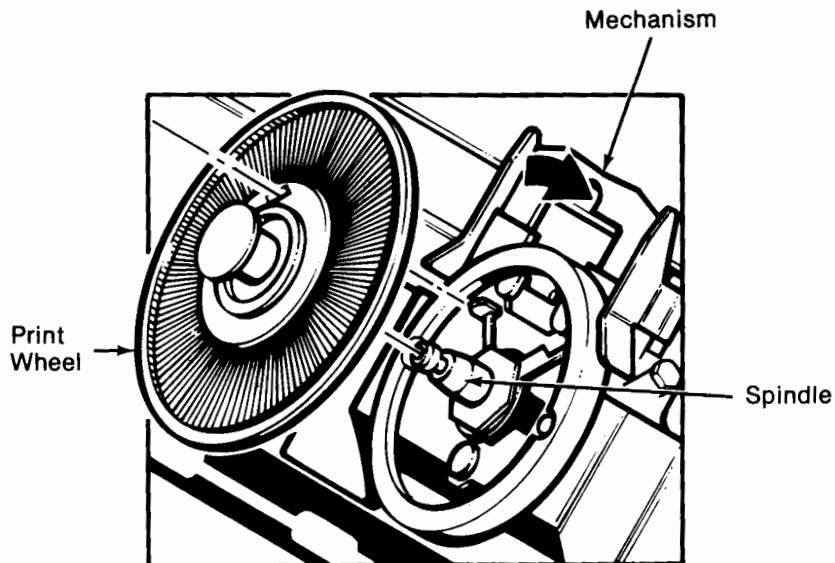
Printers



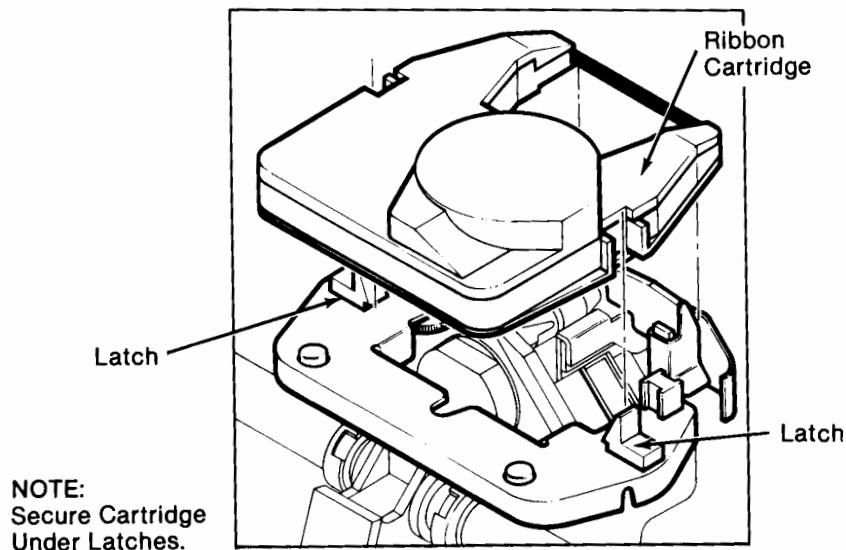
2. Remove the front cover.



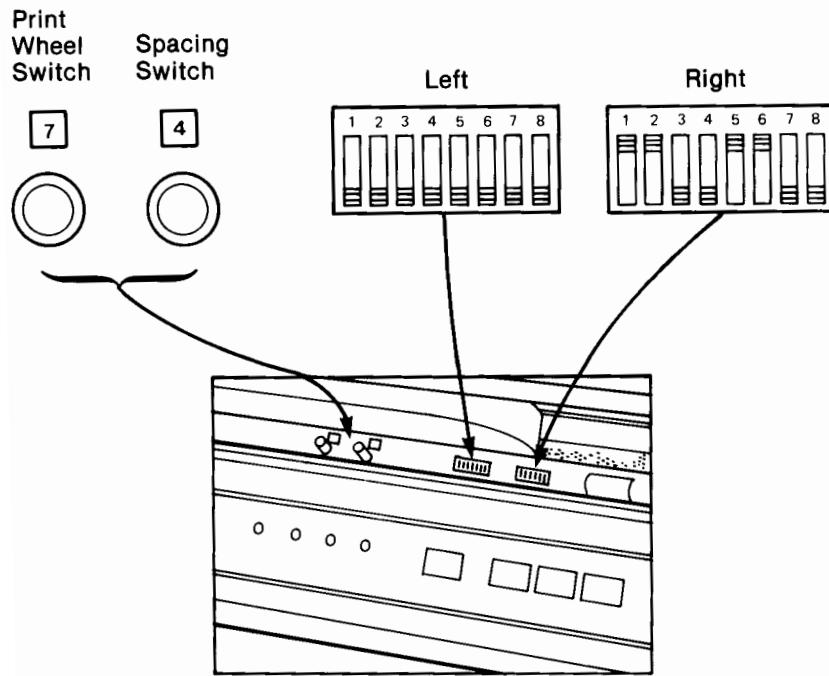
3. Install the print wheel.
  - a. Rock Mechanism Back...
  - b. Press Print Wheel Onto Spindle.



4. Install the ribbon cartridge

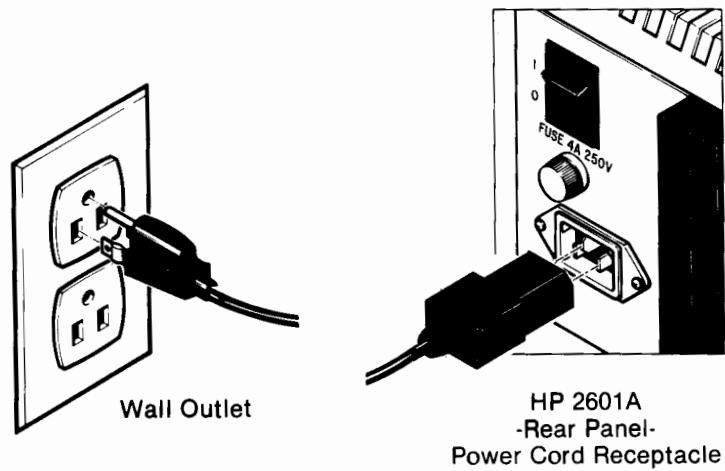


5. Set the switches for self-test and replace the front cover.



Printers

6. Plug the power cord into the printer and then the wall outlet.



7. Install the paper as you would in a typewriter.

- #### **8. Turn the printer ON.**

HP 2601A Test Pattern

## NOTE

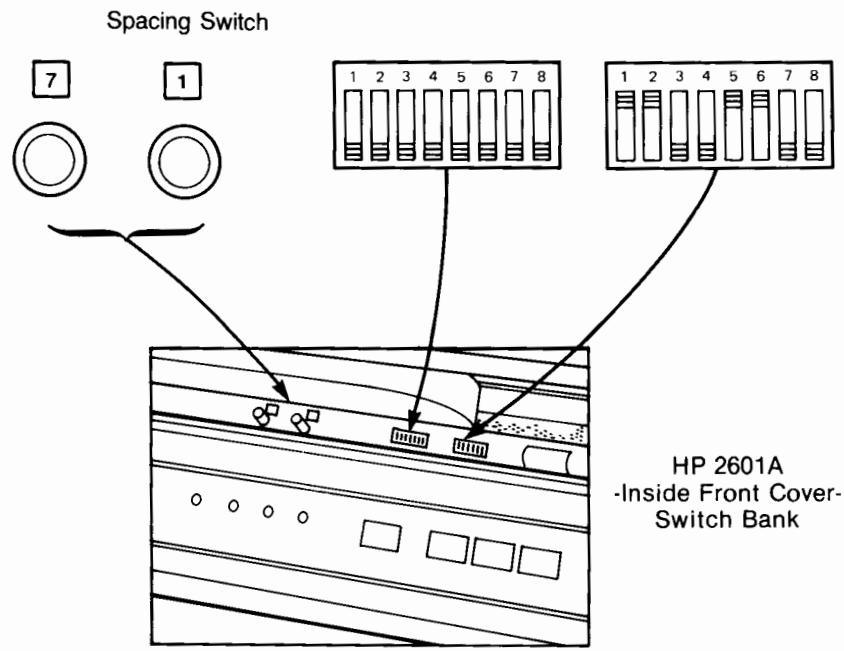
If nothing happens check the following:

- a. the printer is ON.
  - b. the printer is plugged in.
  - c. the wall outlet's circuit breaker is ON.

If all of the above are OK and your printer still fails to function, contact the person from whom you purchased your system.

9. After a few lines of test pattern have printed, turn the printer OFF.

10. Remove the front cover and set the spacing switch to 1.



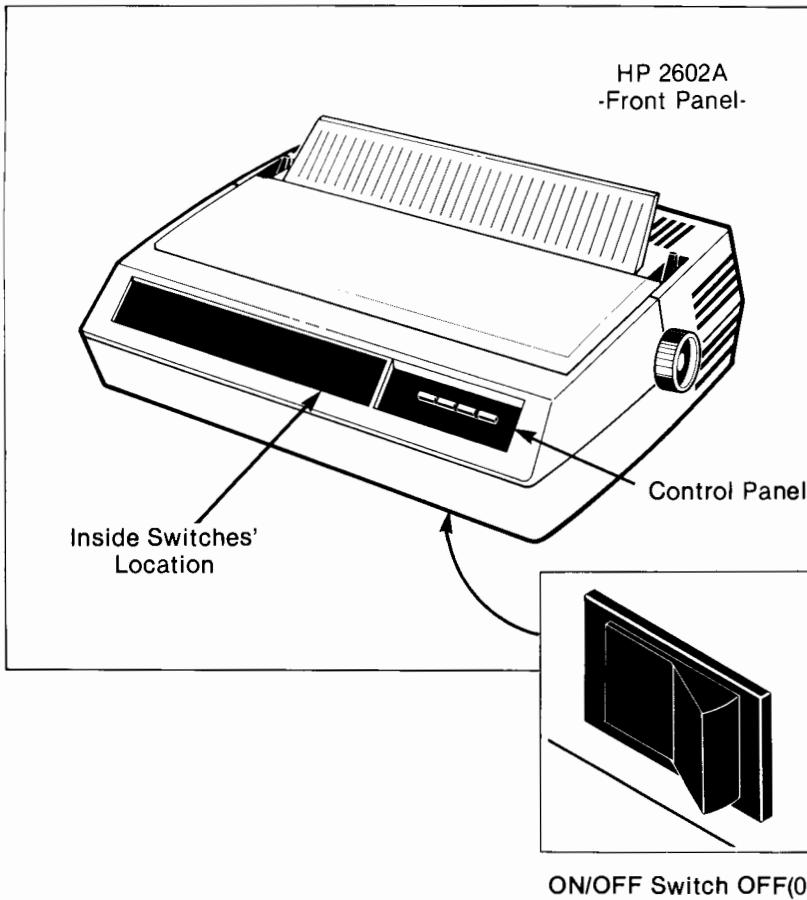
11. Replace the front cover.

12. Connect the RS-232 cable to the system processor and then the printer.



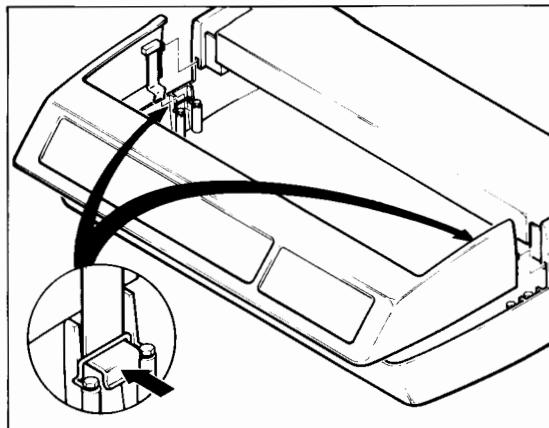
## Installing Your HP 2602A Printer

1. Be sure the printer power switch is OFF.



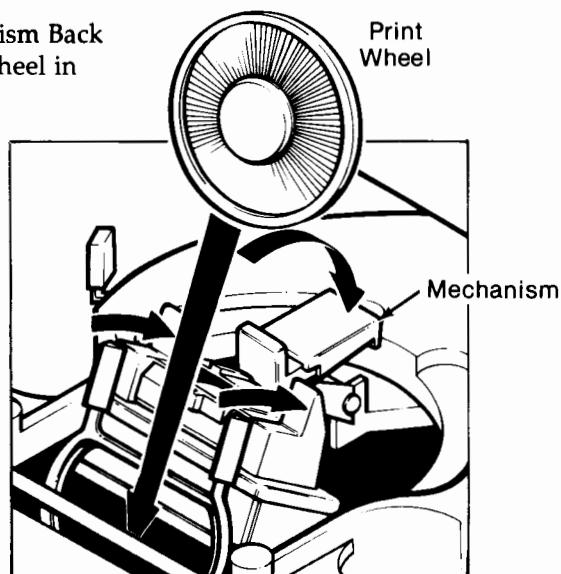
Printers

2. Remove the front cover.

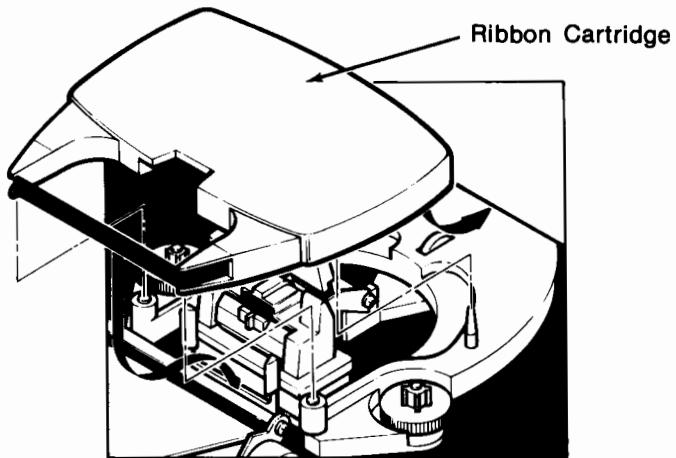


3. Install the print wheel.

- a. Rock Mechanism Back
- b. Slide Print Wheel in

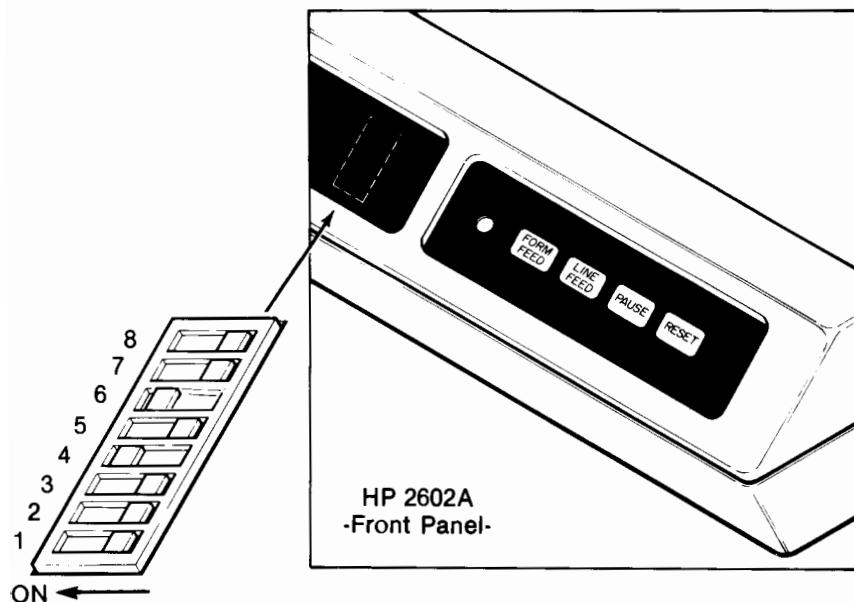


4. Install the ribbon cartridge.

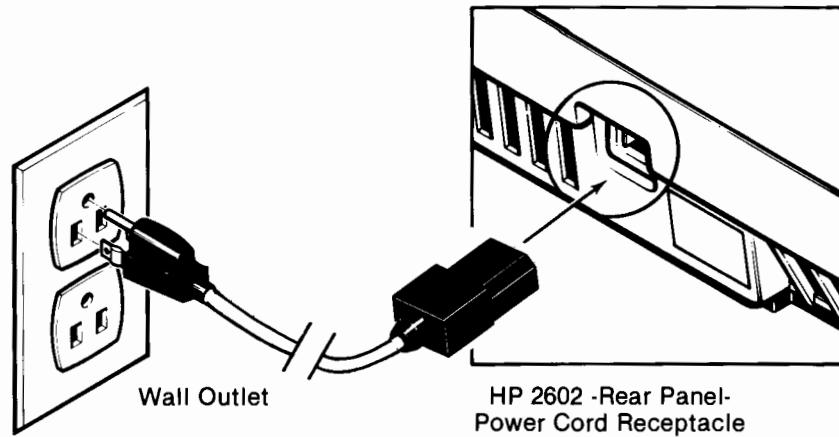


Printers

5. Set the switches for self-test and replace the front cover.



6. Plug the power cord into the printer and then the wall outlet.



7. Install the paper as you would in a typewriter.
  8. Turn the printer ON.

## NOTE

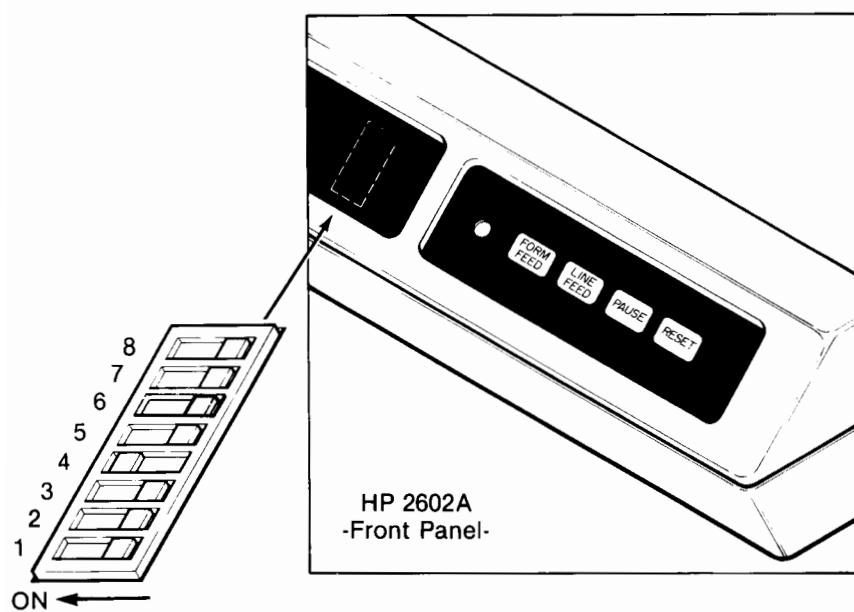
If nothing happens check the following:

- a. the printer is ON.
  - b. the printer is plugged in.
  - c. the wall outlet's circuit breaker is ON.

If all of the above are OK and your printer still fails to function, contact the person from whom you purchased your system.

9. After a few lines of the test pattern have printed, turn the printer OFF.

10. Remove the front cover and set the switches for regular operation. (The switch setting shown below is for an RS-232 cable connection. If you have an HP-IB cable, only switch 3 should be moved to the ON position.)



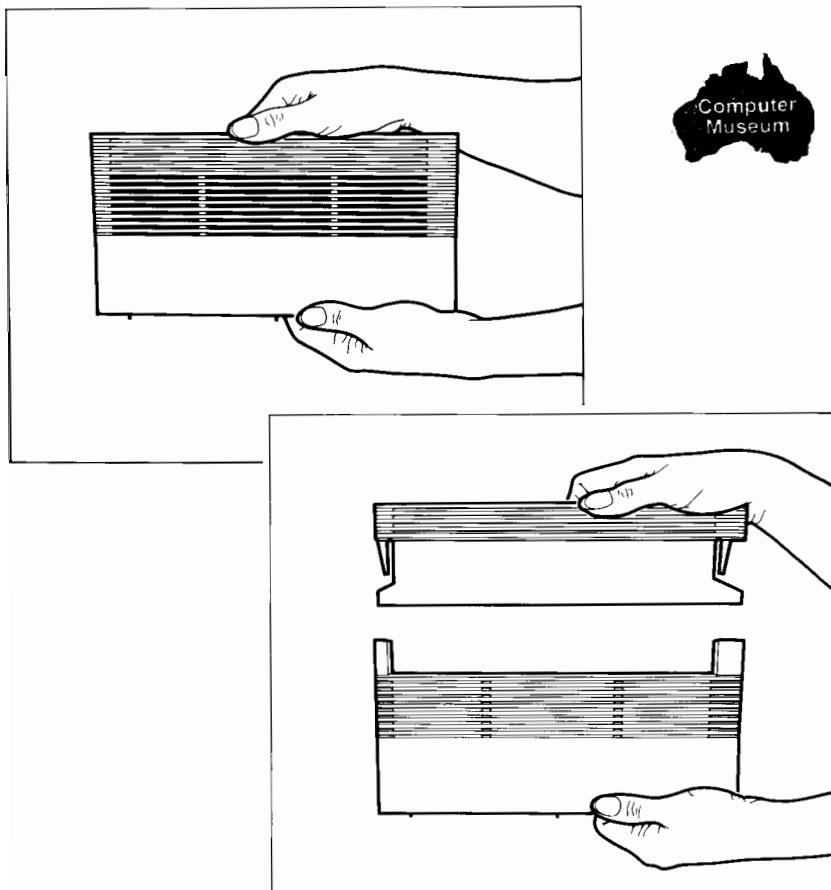
Printers

11. Replace the front cover.  
12. Connect either the HP-IB or the RS-232 cable to the printer and then to your system processor.



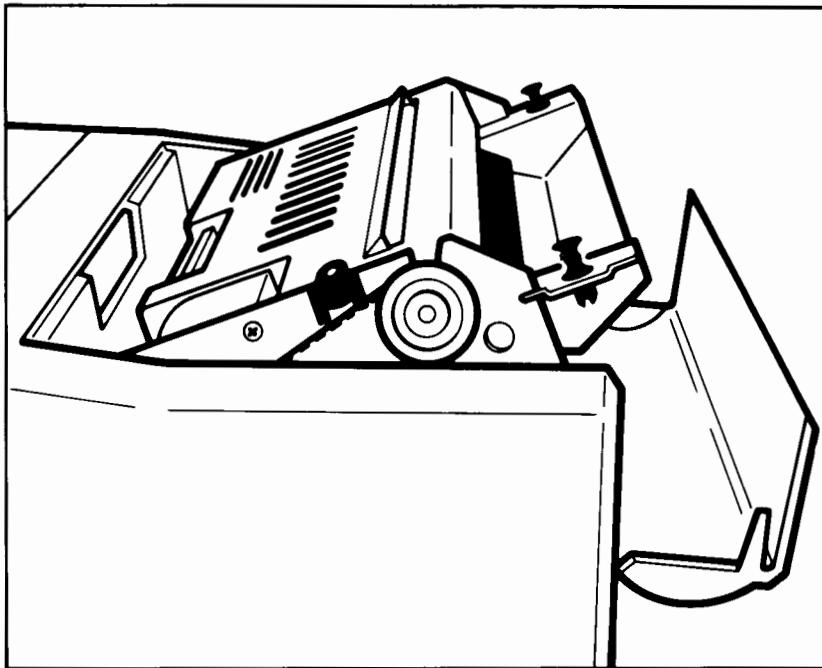
## Installing Your HP 2674A Internal Printer

1. Be sure the power switch on your HP 150 is OFF, and unplug the power cord.
2. Open the paper access door by tilting the door backwards.
3. Remove the printer cover by grasping the last vent toward the rear of the top of the computer and lifting it off.
4. Remove the filler plate. (You may wish to store this part if you plan to take the printer out at a later date.)

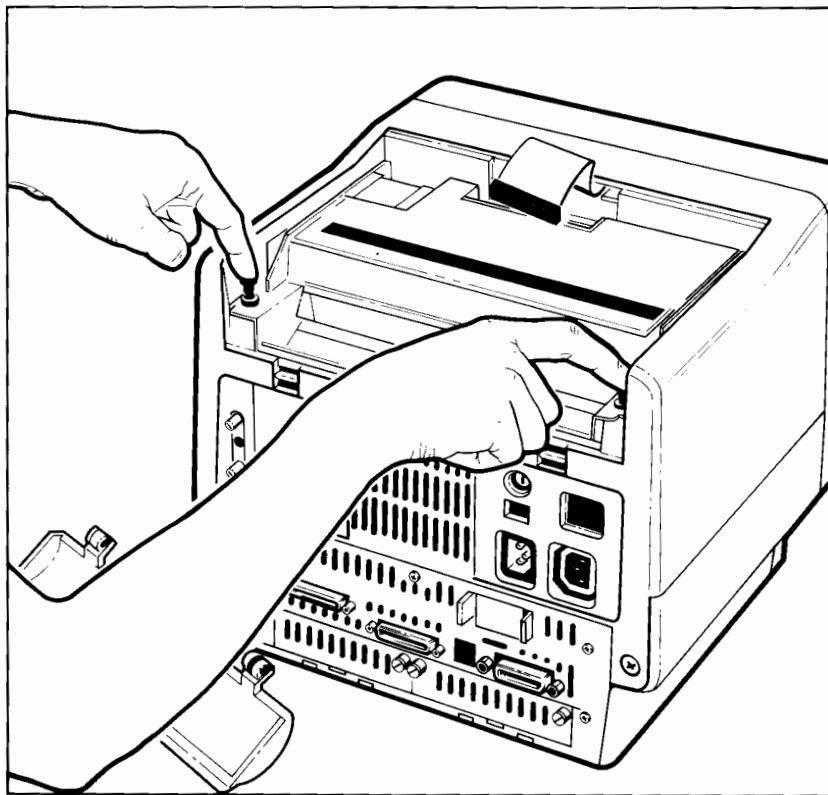


Printers

5. Tilt the front of the printer downward, then slide it forward into the printer compartment.



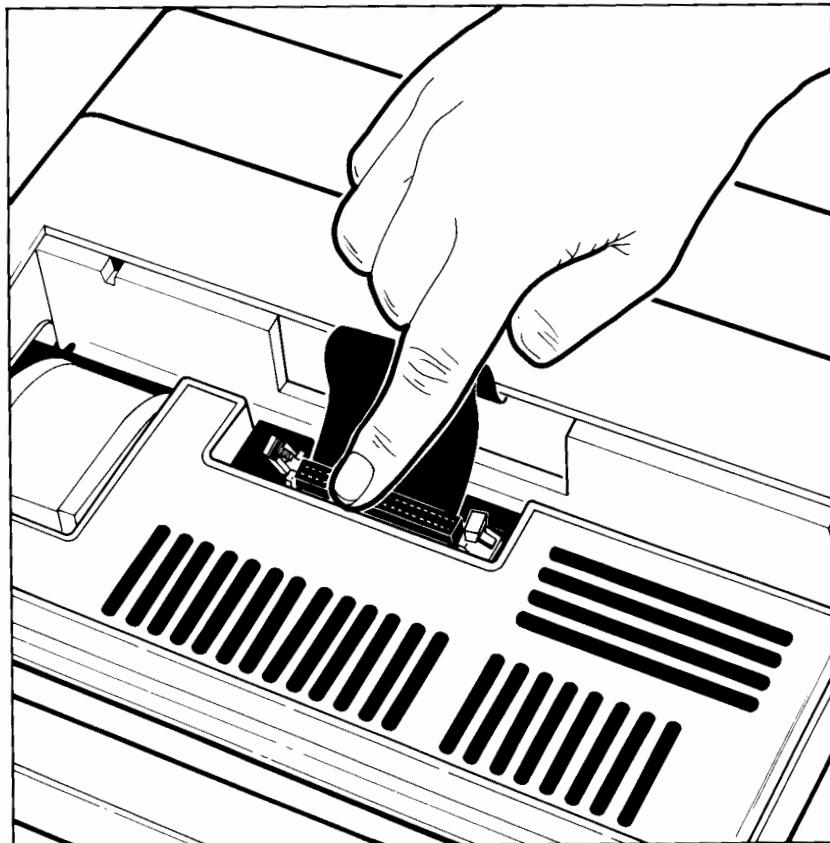
6. Push the black fasteners (located on each side of the paper tray) down firmly so that they click into place.



Printers

7. Connect the computer cable to the printer as follows:

- a. Make sure that the ejector ears on each side of the pin connector in the printer are pointing out.
- b. Place the cable directly over the pin connector in the printer. With one or two fingers, press the connector firmly in place by pushing down firmly in the center. (The connector ears snap up unaided as the cable is connected.)



(If you want to remove the printer, simply press down on both connector ears to release the cable.)

8. Plug your HP 150 power cord into the wall outlet and turn the power switch ON. Check to see that the LED next to the green self-test button is lit. (This light indicates that the cable is connected properly and that power is being supplied to the printer.)

At power on, the printer performs two line feeds, then sweeps the print head across the page and back.

If the LED is not lit, check to be sure the connector is securely attached. If after checking the connection the LED is still not lit, call the person from whom you purchased your system.

9. Replace the printer cover (without the vent), and leave the paper access door open in order to load paper.

### **How Do I Load Paper?**

The thermal paper required for your HP 2674A is available from HP's Computer Supplies Operation (CSO) as follows:

Printers

Part Number 92160A - blue ink

Part Number 92160B - black ink

Part Number 92160C - black ink with page perforations

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#### **NOTE**

Before loading paper, be sure that the power switch for your HP 150 is turned ON.

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1. Carefully separate the cut edge of the paper from the paper roll at the glue spot or tape which anchors the end of the paper to the roll.

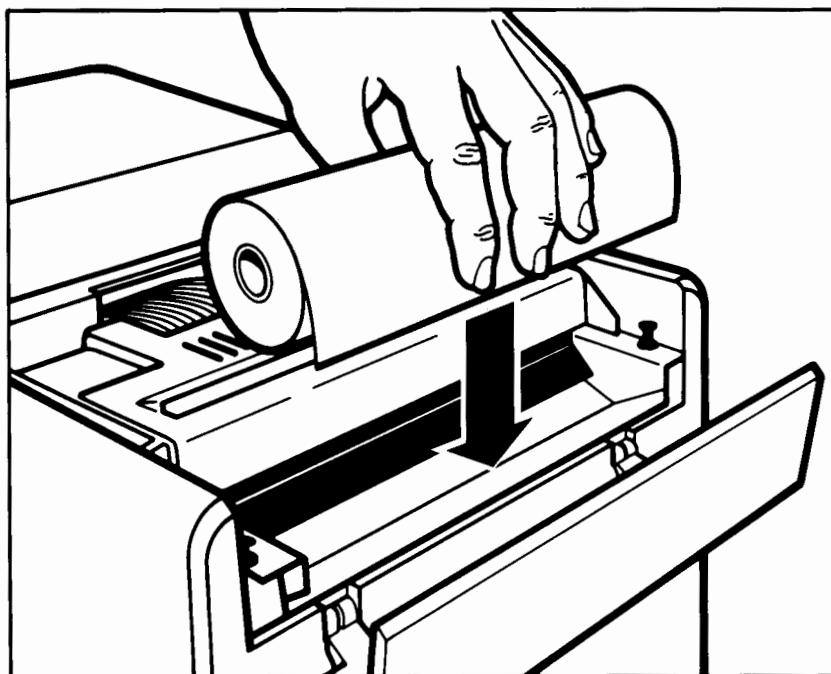
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#### **CAUTION**

Be sure that the glue spot does not touch the print head during operation. (Advance the paper if necessary.)

---

2. First make sure that the paper is rolled tightly, then simply rest the paper roll in the paper tray. (The cut edge of the paper must be straight and should rest on the underside of the roll, against the rear surface of the tray.)
3. With your finger and thumb, gently push the paper forward (in a clockwise motion). The paper is *immediately* pulled through the paper path as soon as the printer detects it.



Close the paper access door, making sure that as the paper advances it will not be trapped inside the unit.

#### How Do I Test the Printer?

To verify that your printer is ready to use, run the system self-test for your internal printer using the following steps:

1. Press **User System** twice to display the following function keys:

device	margins/service	modes		enhance	define	set	config
control	tabs/cols	keys		video	fields	time	keys

2. Press **service keys** to display the following:

POWER ON TEST	MEMORY TEST	TOUCHSCN ALIGNMNT		SYSTEM TEST	IDENTIFY ROMS	DATACOMM TEST	INT PRT TEST
---------------	-------------	-------------------	--	-------------	---------------	---------------	--------------

---

**NOTE**

**INT PRT TEST** only appears on the screen after you install the printer.

---

3. Press **INT PRT TEST** to print the following self-test example:

0123456789: ;<->?@ABCDEFGHIJKLMNPQRSTUVWXYZ{\}^~`abcdefghijklmnopqrstuvwxyz{\}~  
PROM CODE DATE: MM/DD/YY (where MM=Month, DD=Day, and YY=Year)

If the system self-test fails, one of the following occurs:

1. Nothing happens, or
2. The test pattern that prints is different from the example shown above, or
3. The following message appears on the screen:

INTERNAL PRINTER ERROR  
PRESS RETURN TO CLEAR

Printers

---

**NOTE**

The above message may also appear on the screen when the internal printer is out of paper. Before proceeding, check your paper supply.

---

If any of the above occurs, you must then perform a local self-test for the printer, as outlined below:

1. Remove the cover over the printer and press the green self-test button located next to the cable connector.

The following test pattern should print:

0123456789: ;<->?@ABCDEFGHIJKLMNPQRSTUVWXYZ{\}^~`abcdefghijklmnopqrstuvwxyz{\}~  
PROM CODE DATE: MM/DD/YY (where MM=Month, DD=Day, and YY=Year)

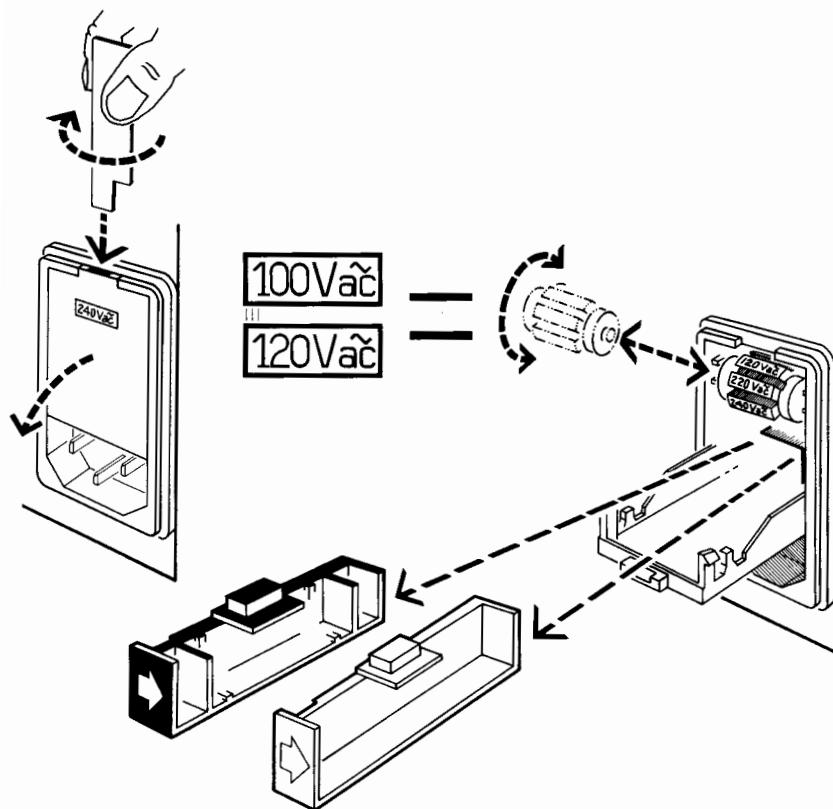
**2. Replace the printer cover.**

If the printer fails the system self-test yet prints the local self-test example shown above, you must return the printer and the computer for repair or replacement (by shipping separately).

For information on using advanced functions, refer to Appendix A under the heading, "Advanced Control of the HP 2674A Internal Printer".

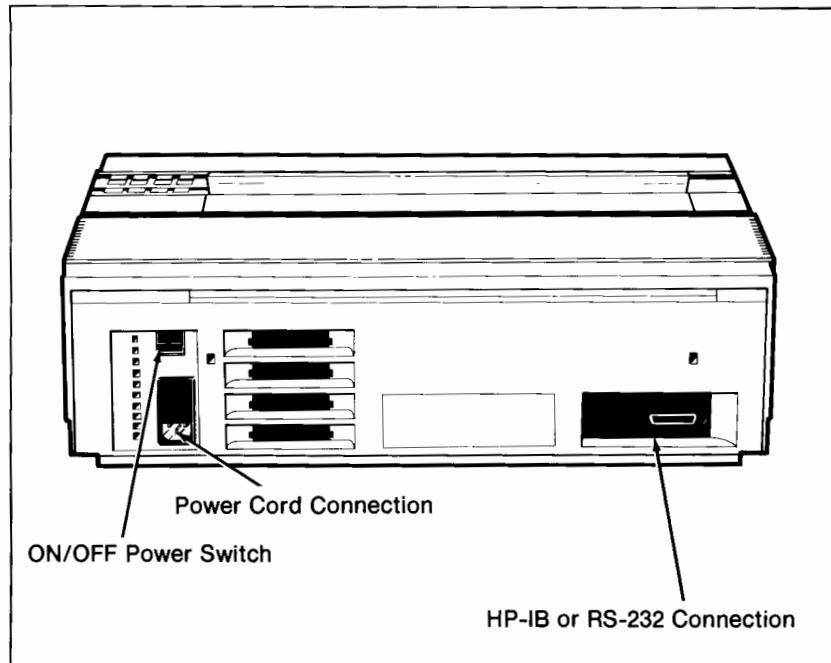
## Installing Your HP 293X Printer (2932A, 2933A, 2934A)

1. Install the fuse and set the voltage setting as below. (Refer to your printer manual for more information.)



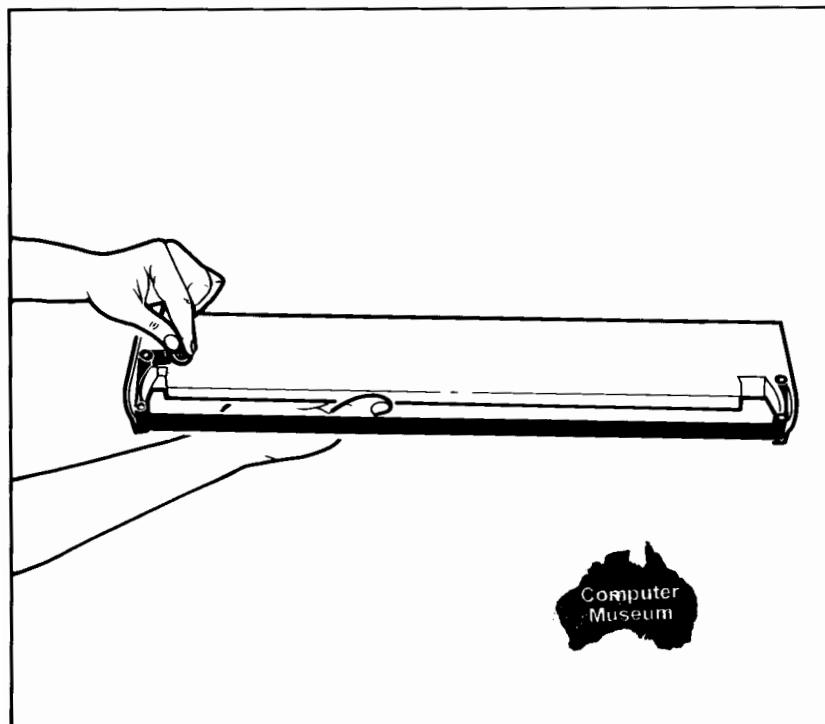
Printers

2. Plug the power cord into the printer and then into the wall outlet.  
Be sure that the power switch on the rear panel is OFF.



3. Lift the printer cover and install the print ribbon as follows:

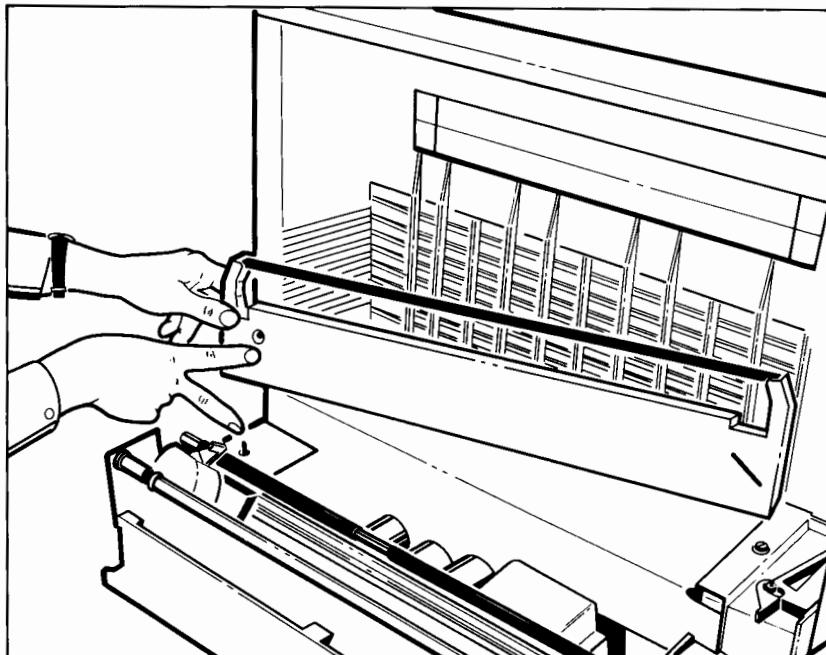
- a. Before loading the ribbon cartridge, tighten any slack in the ribbon by turning the knob on the end.



Printers



- b. Place the ribbon cartridge onto the guideposts in the printer, turning the knob on the ribbon cartridge until it drops into place.



- c. Close the printer cover and turn the power switch on the rear panel ON; the ribbon cartridge automatically threads itself.

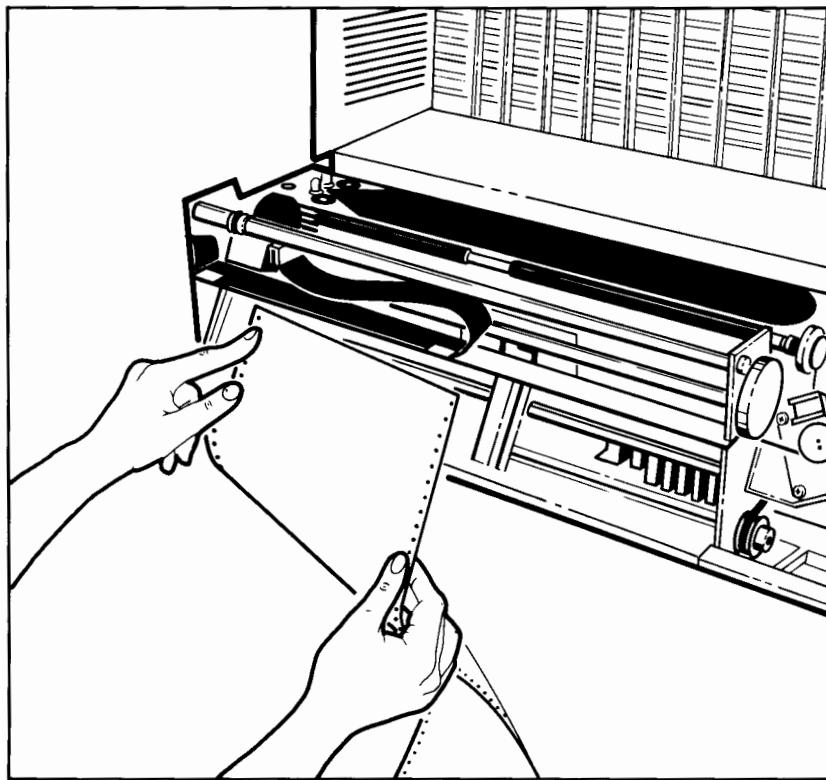
---

#### NOTE

Any time you turn the power switch ON, the print head sweeps across the width of the printer; you will then hear a beep as the indicator lights on the printer keypad are illuminated.

---

4. Turn the printer power switch OFF and load paper according to the illustration below.



Printers

Use **PAGE ▲** on the front panel of the printer to advance the paper.

5. To run the printer's self-test, press **TEST** on the front panel of the printer, and the following message is printed:

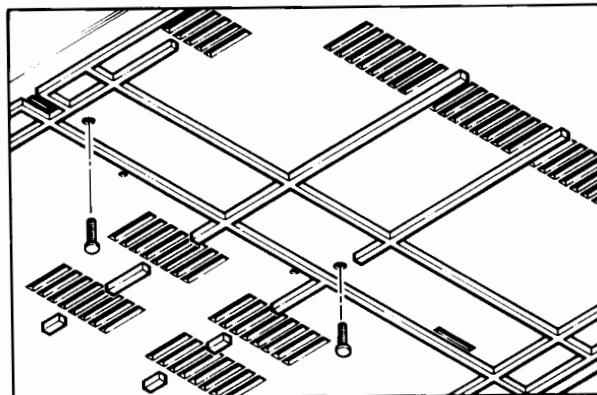
**Self Test Passed**

6. Turn the printer OFF.
7. Connect the HP-IB or RS-232 cable to the rear panel of the printer, then to the connector on the rear panel of the system processor.
8. Turn the system processor and the printer ON.

Your HP 293X printer is now ready to use.

## Installing Your HP 82905B Printer

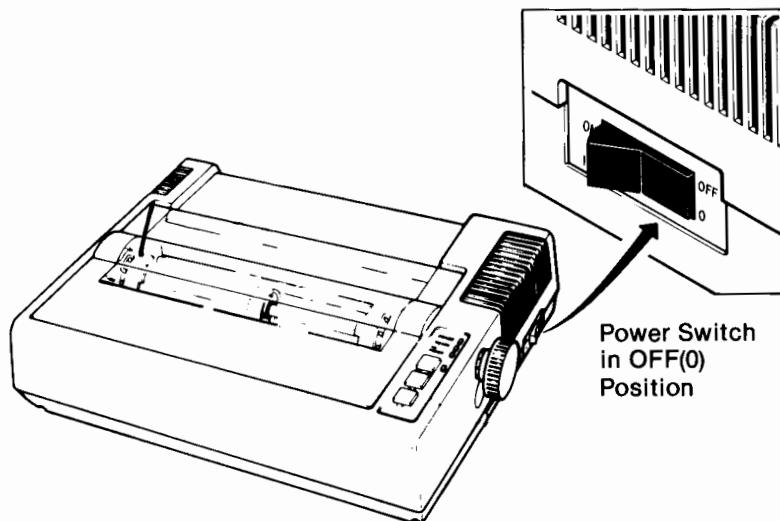
1. Remove the shipping screws and remove the tape covering the top panel control buttons.



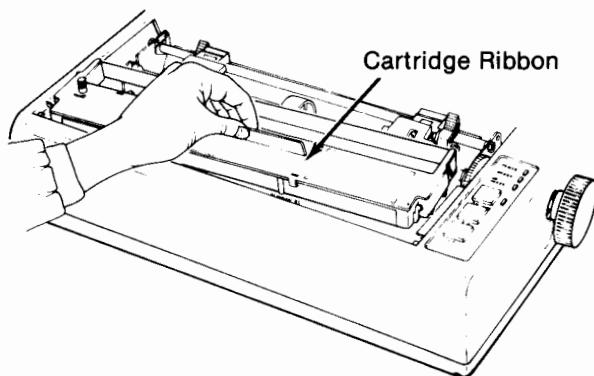
HP 82905  
-Bottom Panel-

Printers

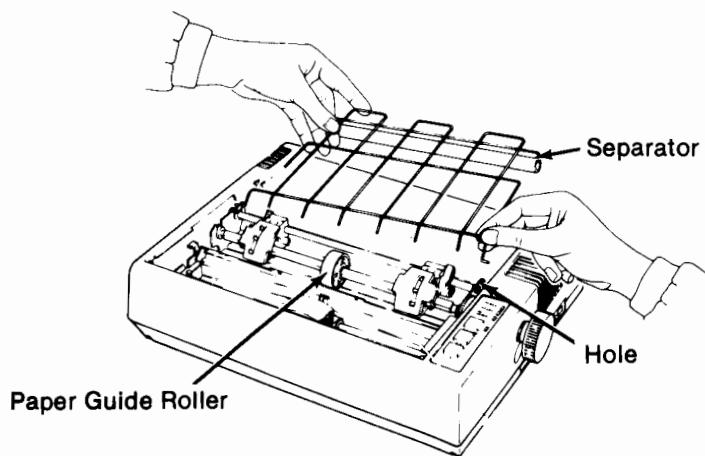
2. Be sure the printer power switch on the right side of the printer is OFF.



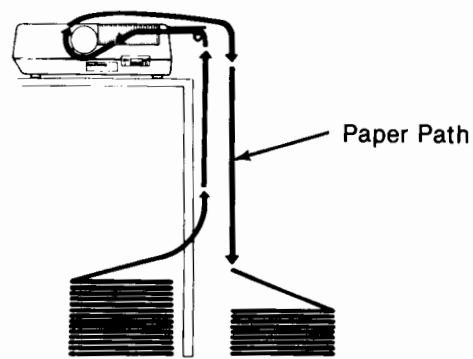
3. Remove the front cover.
4. Install the ribbon cartridge.



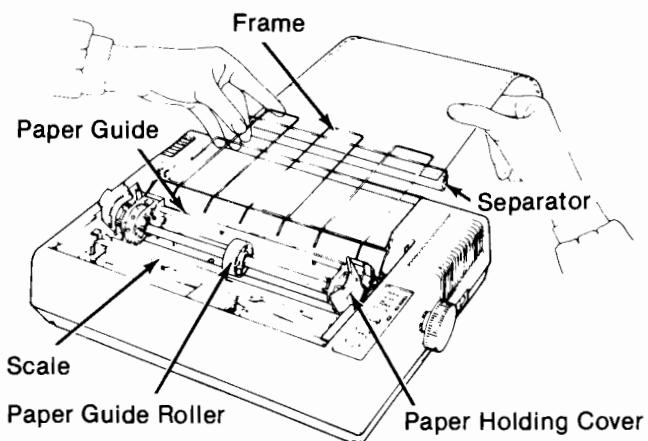
5. Install the separator. (For details, refer to the printer's reference manual.)



6. Install either cut sheet or fanfold paper.

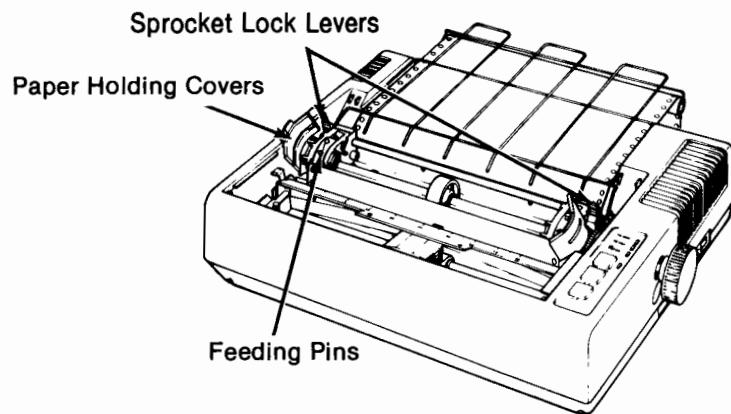


a.

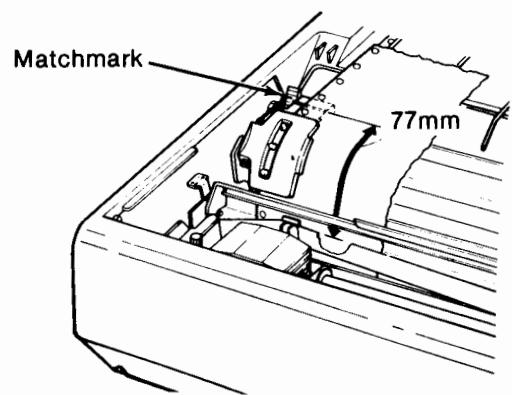


Printers

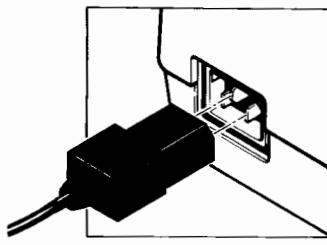
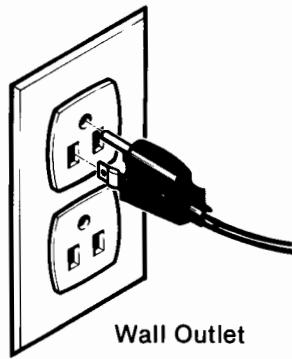
b.



c.

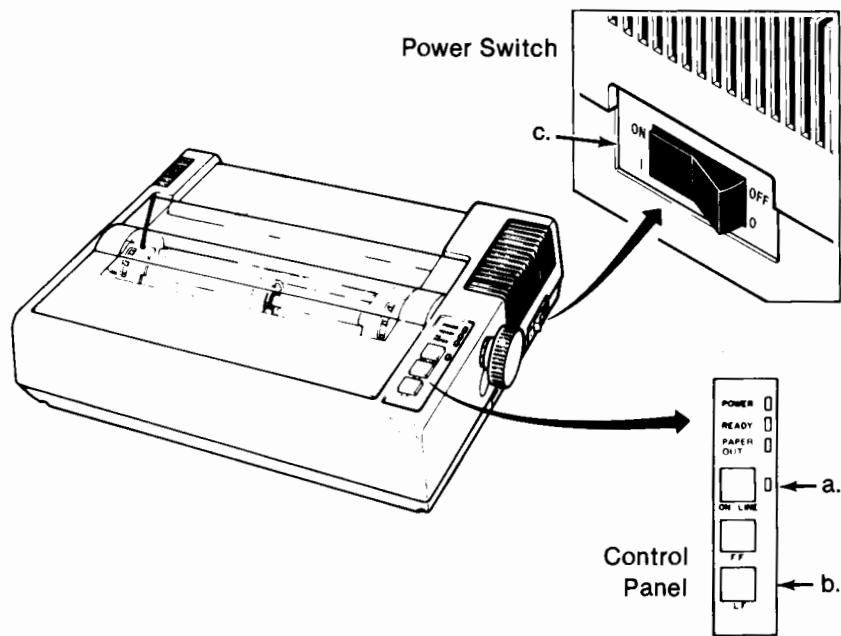


7. Replace the front cover and plug the power cord into the printer, then into the wall outlet.



Printers

8. Run the printer's self-test.



- a. Press the ON LINE button so the light is OFF.
- b. Press the LF button while you turn the power switch ON.
- c. After a few lines of the test pattern have printed, turn the printer OFF.

## HP 82905 Self-Test Pattern

```
789: ;<=>?@ABCDEFGHIJKLMNOFORSTUVWXYZ[\]^_`abcdefg  
89: ;<=>?@ABCDEFGHIJKLMNOFORSTUVWXYZ[\]^_`abcdefgh  
9: ;<=>?@ABCDEFGHIJKLMNOFORSTUVWXYZ[\]^_`abcdefghi  
:; ;<=>?@ABCDEFGHIJKLMNOFORSTUVWXYZ[\]^_`abcdefghi j  
:;<=>?@ABCDEFGHIJKLMNOFORSTUVWXYZ[\]^_`abcdefghi jk
```

9. Connect the cable to the system processor and then the printer.

Printers



## Installing Your HP 82906A Printer

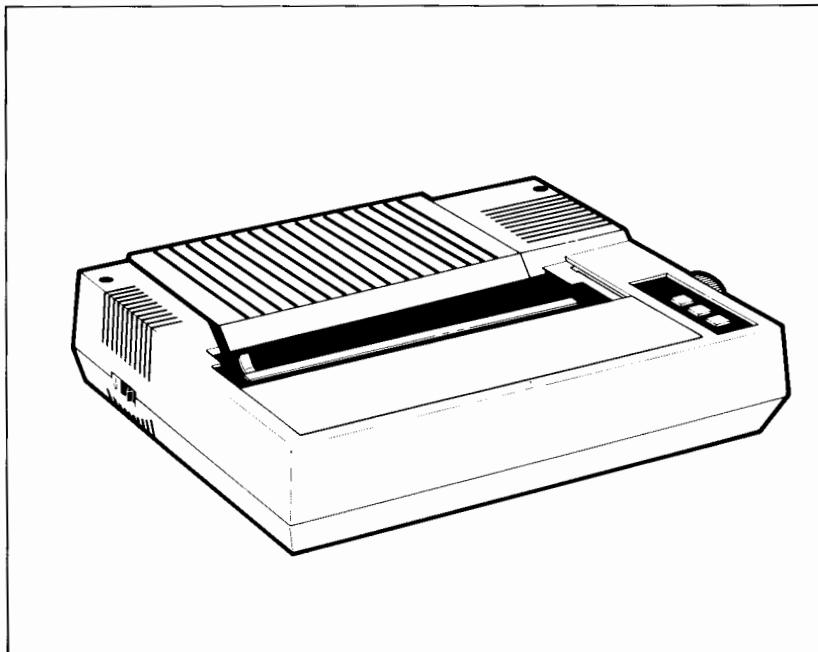
1. Remove the shipping screws and remove the tape covering the top panel control buttons.

---

### NOTE

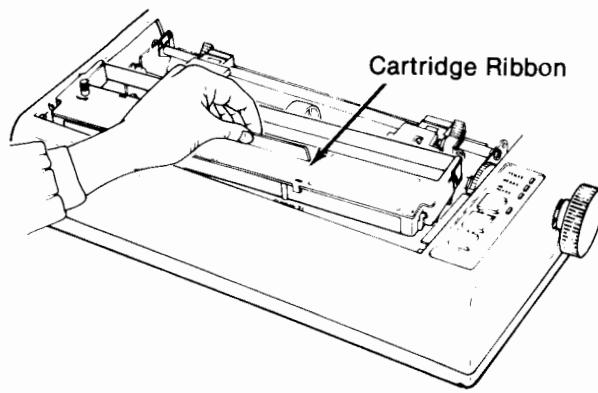
Before your HP 82906B printer was shipped, a protective paper was installed to protect the paper-out detector from vibration during transportation. Before operating the printer, be sure to remove this paper. If the printer is to be reshipped, remember to place a sheet of paper in the original position. (Refer to your printer manual for more details.)

- 
2. Be sure the printer power switch on the left side of the printer is OFF.

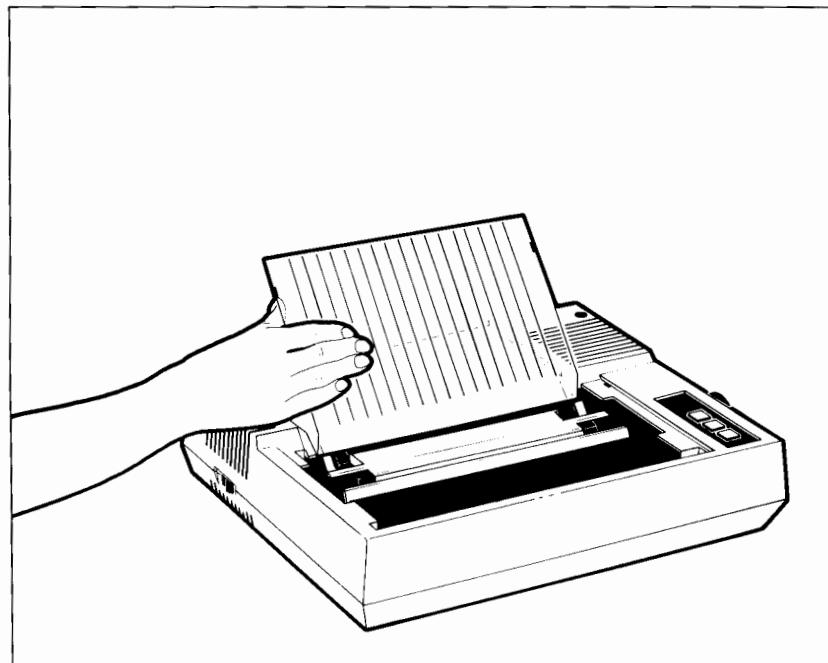


Printers

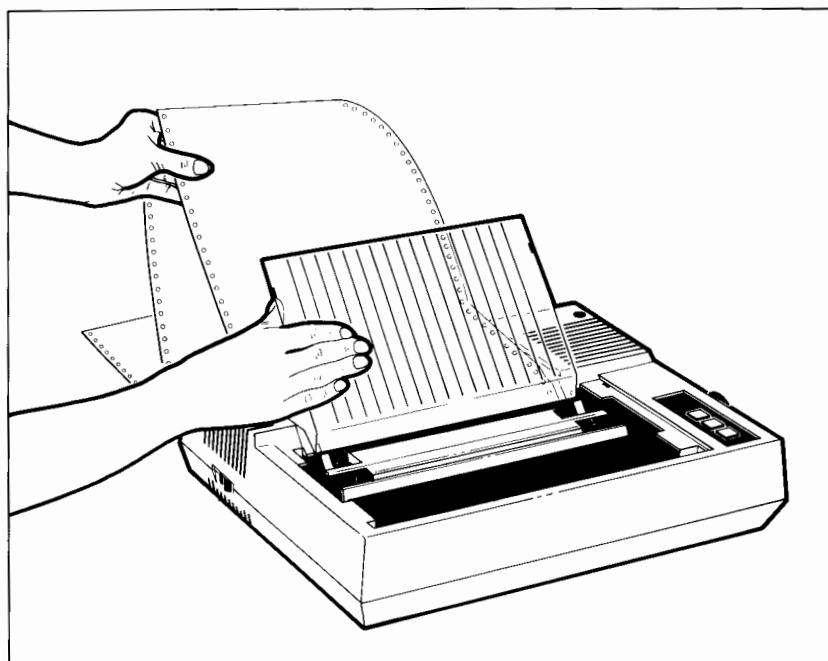
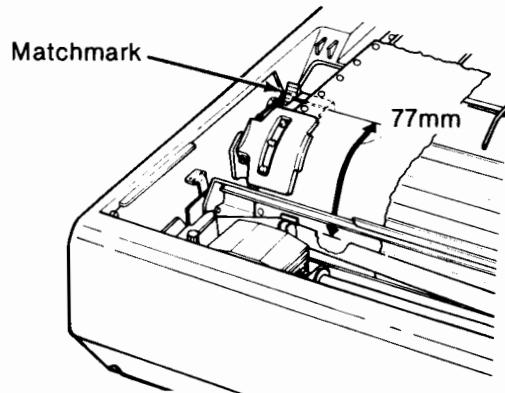
3. Remove the front cover and install the ribbon cartridge.



4. Install the separator. (For details, refer to the printer's reference manual.)

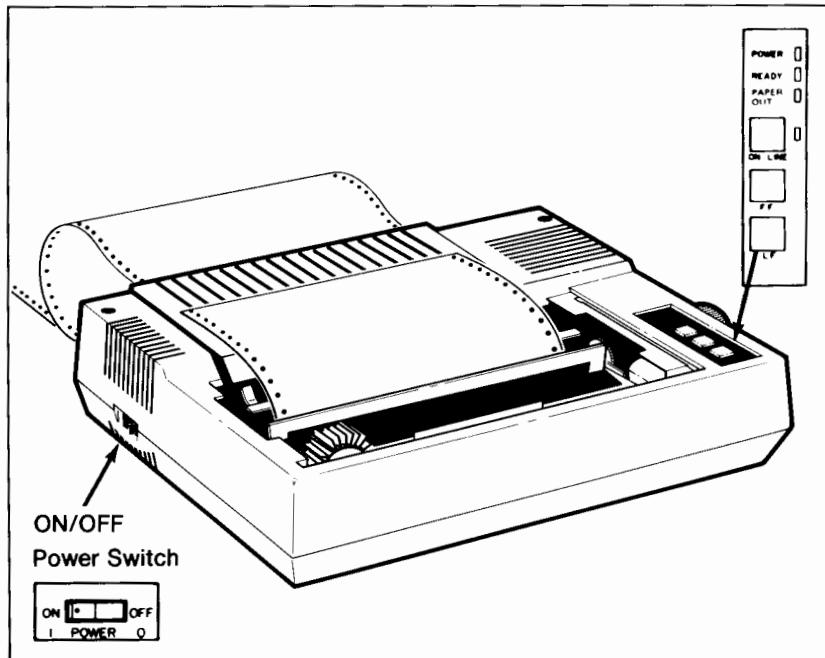


5. Install either cut sheet or fanfold paper and set top of form.



Printers

6. Plug the power cord into the printer and then the wall outlet.
7. Run the printer's self-test by pressing the POWER switch on the left side of the printer to the ON position while, at the SAME time, pressing the LF switch on the printer control panel.



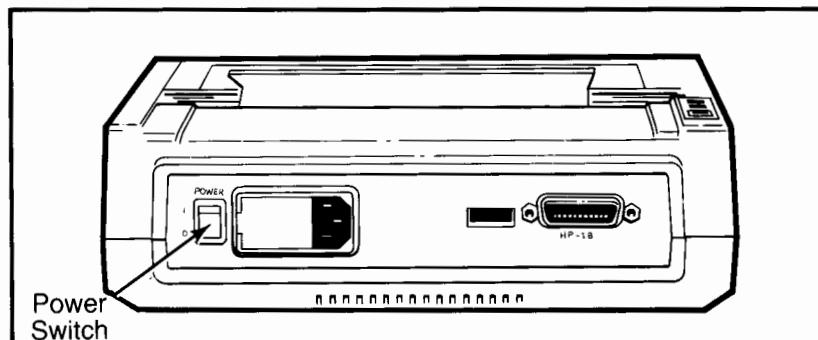
The following characters are then printed, and will continue to repeat until you turn the POWER switch to the OFF position:

```
! "#%& ()**,-./0123456789:;<=>?@ABCDEGHIJKLNMOPQRSTUVWXYZC\J^_ abcdefghijklmno
! "#%& ()**,-./0123456789:;<=>?@ABCDEGHIJKLNMOPQRSTUVWXYZC\J^_ abcdefghijklmnop
! "#%& ()**,-./0123456789:;<=>?@ABCDEGHIJKLNMOPQRSTUVWXYZC\J^_ abcdefghijklmnopq
! "#%& ()**,-./0123456789:;<=>?@ABCDEGHIJKLNMOPQRSTUVWXYZC\J^_ abcdefghijklmnopqr
! "#%& ()**,-./0123456789:;<=>?@ABCDEGHIJKLNMOPQRSTUVWXYZC\J^_ abcdefghijklmnopqrst
! "#%& ()**,-./0123456789:;<=>?@ABCDEGHIJKLNMOPQRSTUVWXYZC\J^_ abcdefghijklmnopqrstu
! "#%& ()**,-./0123456789:;<=>?@ABCDEGHIJKLNMOPQRSTUVWXYZC\J^_ abcdefghijklmnopqrstuw
! "#%& ()**,-./0123456789:;<=>?@ABCDEGHIJKLNMOPQRSTUVWXYZC\J^_ abcdefghijklmnopqrstuwx
! "#%& ()**,-./0123456789:;<=>?@ABCDEGHIJKLNMOPQRSTUVWXYZC\J^_ abcdefghijklmnopqrstuwx
! "#%& ()**,-./0123456789:;<=>?@ABCDEGHIJKLNMOPQRSTUVWXYZC\J^_ abcdefghijklmnopqrstuwxz
```

8. Turn the printer and your system processor OFF.
9. Connect the cable to the printer and then the system processor.

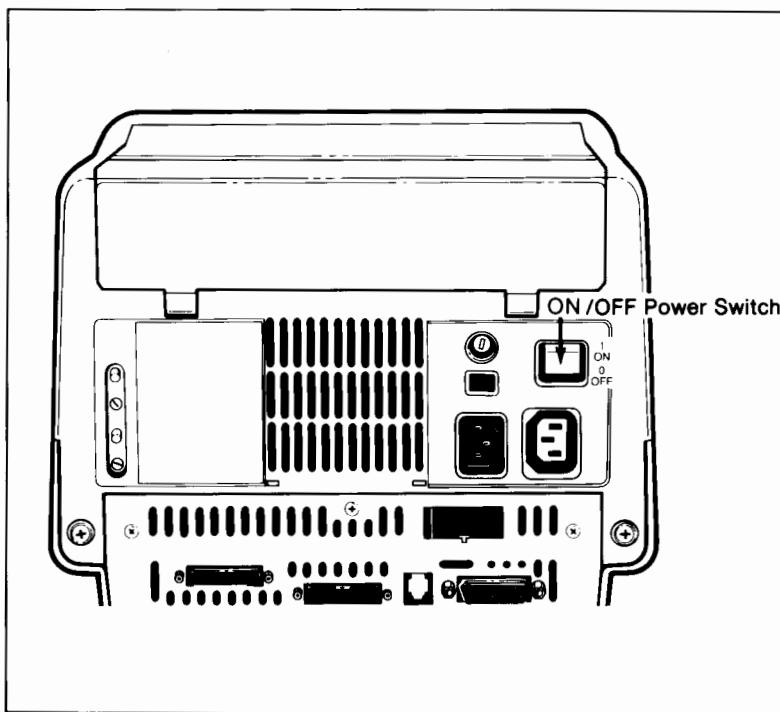
## Installing Your HP ThinkJet Printer (Model 2225A—HP-IB Interface)

1. Be sure the power switches on the backs of the printer and the HP 150 are in the OFF position. (Press the 0 side on both switches.)

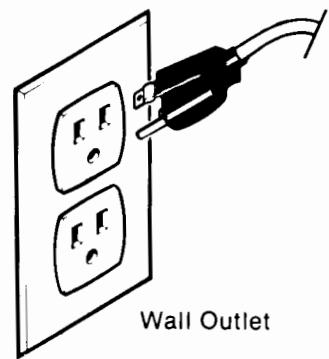
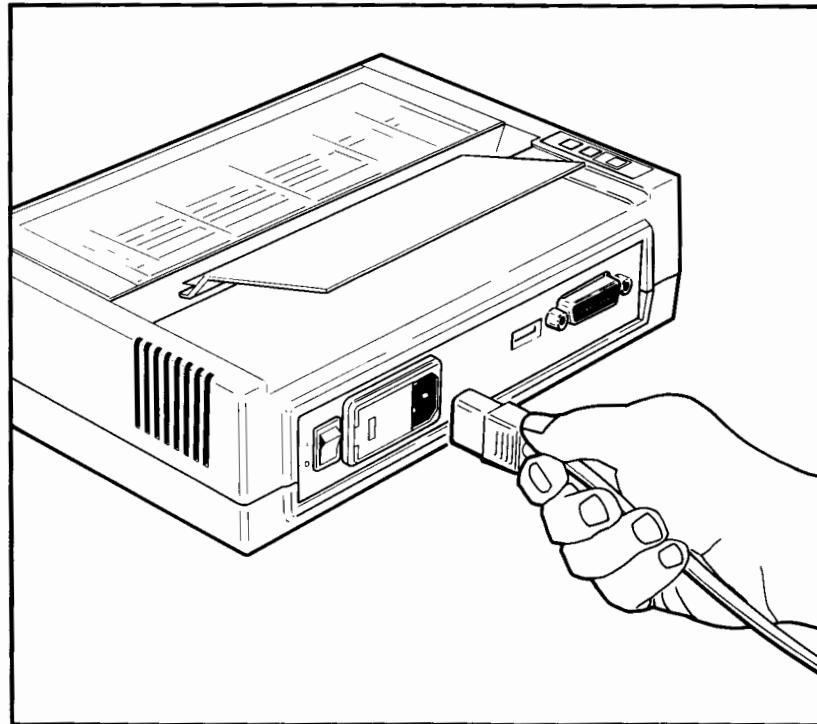


ThinkJet Printer

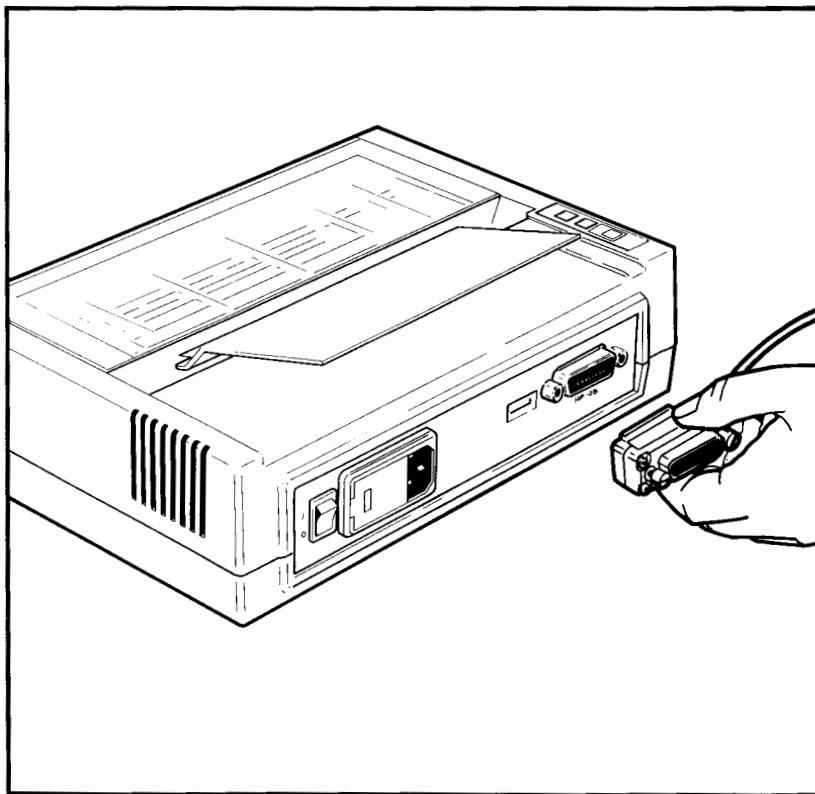
Printers



2. Plug the AC power cord into the printer, then into the wall outlet. (If your printer has an International rear panel, make sure that the voltage setting is correct. See Appendix E of your HP 2225A ThinkJet Reference Manual for more information.)



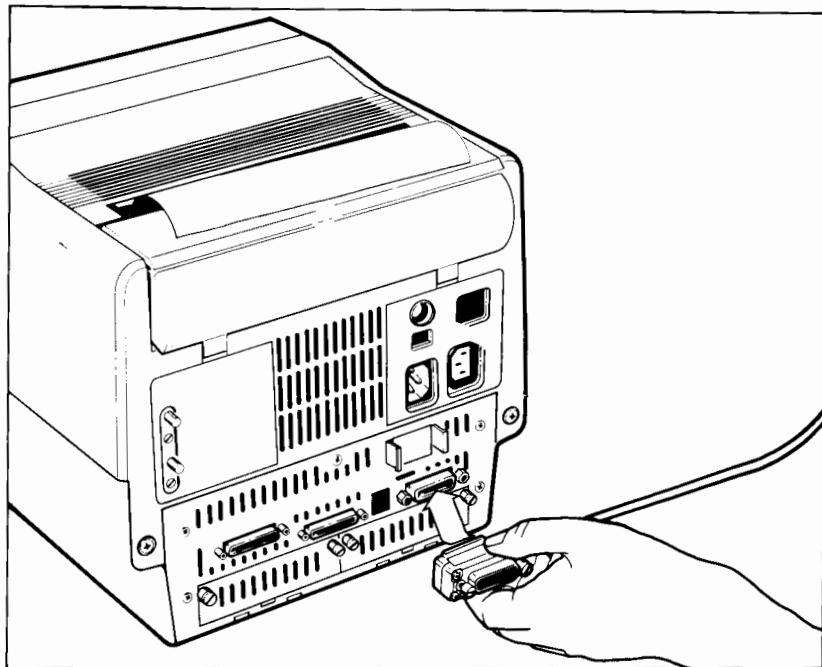
3. Plug the HP-IB cable into the HP-IB port on the back of the printer.



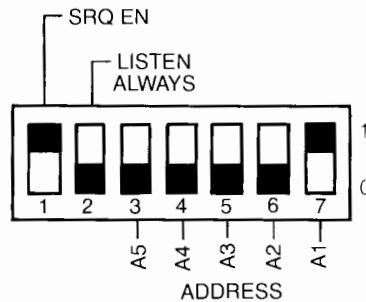
Printers



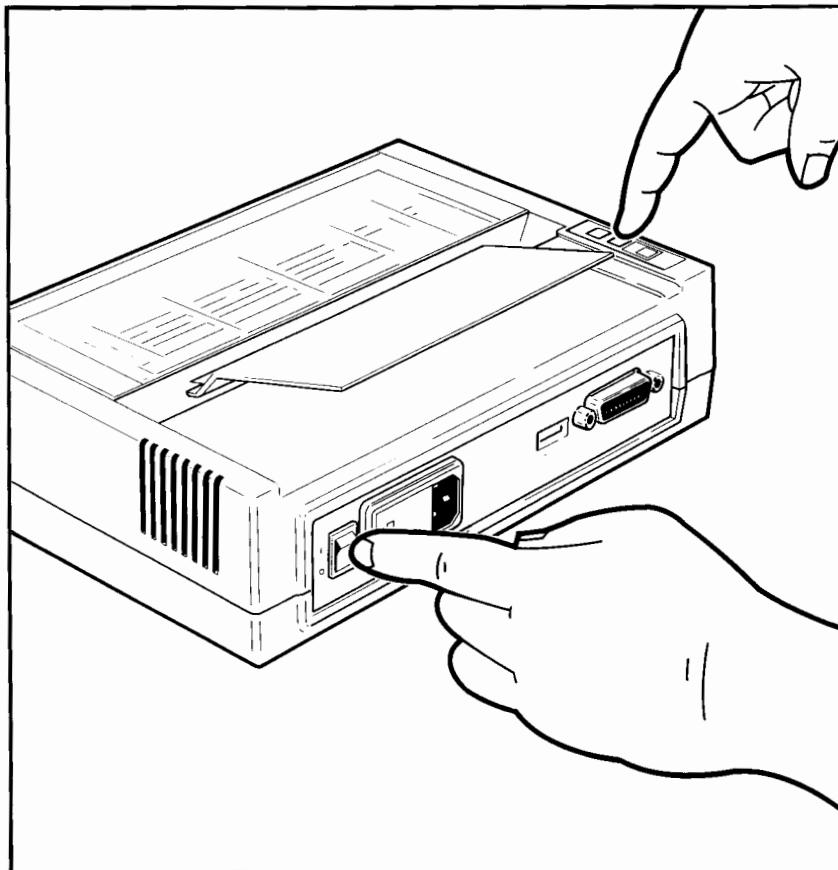
4. Plug the other end of the HP-IB cable into the HP-IB port on the back of the HP 150.



5. Use the tip of a pen or pencil or similar instrument to make the switch settings on the back of the printer match the settings below:



6. Insert paper into the printer as described in the 2225A ThinkJet Reference Manual.
7. Perform the printer's self-test by holding down the LF button while moving the printer's power switch to ON. Release the line feed button to start the test.



Printers

The test pattern starts like this:

If the self-test does not work correctly, check to see that you have plugged the printer in correctly and that the paper is inserted properly. If the self-test still does not work, contact your Hewlett-Packard dealer or an authorized representative.

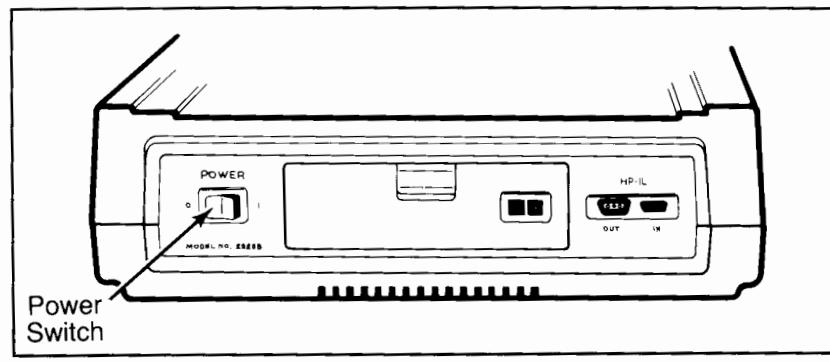
8. Configure the HP 150 so that it can communicate with the 2225A. Set the MS-DOS Device Configuration menu as described in Appendix A of this manual.
9. Check whether the computer communicates with the printer. Turn on your computer and the printer. When the main P.A.M. menu comes up on the screen, do this:
  - a. Touch **File Manager**.
  - b. Touch **Print File/Dir**.
  - c. Type:  
A:\  
followed by **Return**.
  - d. Touch **Start Print**.

If the printer responds by printing the directory associated with A:\, it is ready for use with your computer. If it does not respond properly, review these instructions to make sure you have followed them correctly. If you have followed the instructions correctly and the printer still does not work, contact your Hewlett-Packard dealer or an authorized representative.

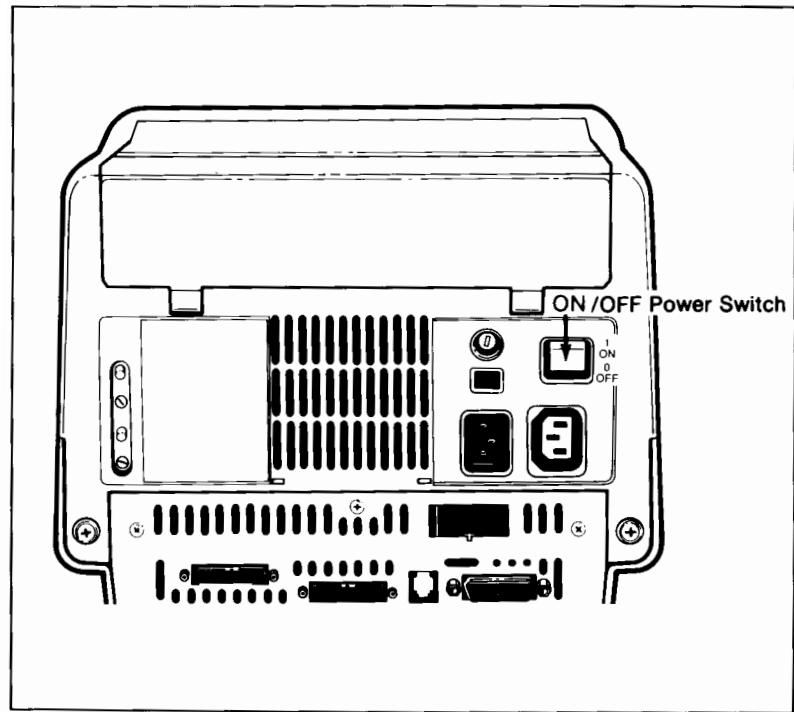
## **Installing Your HP ThinkJet Printer (Model 2225B—HP-IL Interface)**

**IMPORTANT NOTE:** The Model 2225B ThinkJet printer can be used with your HP 150 only after an Extended I/O Accessory board has been installed in the HP 150 and configured. The board provides the HP-IL port needed to communicate with the 2225B. See the Extended Input/Output Accessory User's Manual for further information.

1. Make certain that the printer's battery pack is in place and that it is fully charged as described in the HP ThinkJet Printer Owner's Manual.
2. Be sure the power switches on the backs of the printer and the HP 150 are in the OFF position. (Press the 0 side on both switches.)

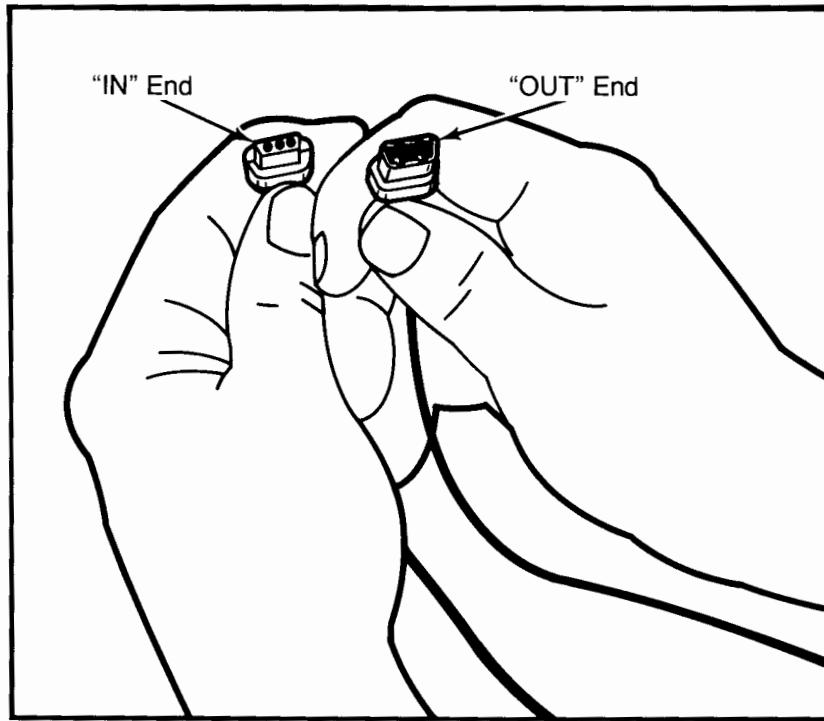


ThinkJet Printer

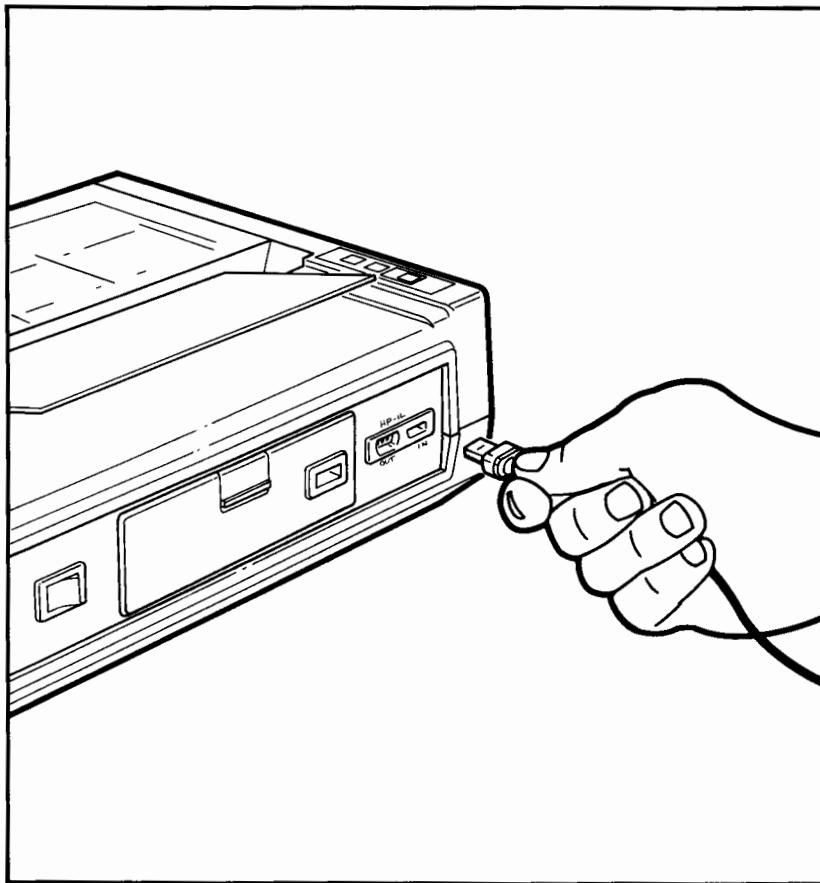


Printers

3. Identify the "IN" end of one of the HP-IL cables.

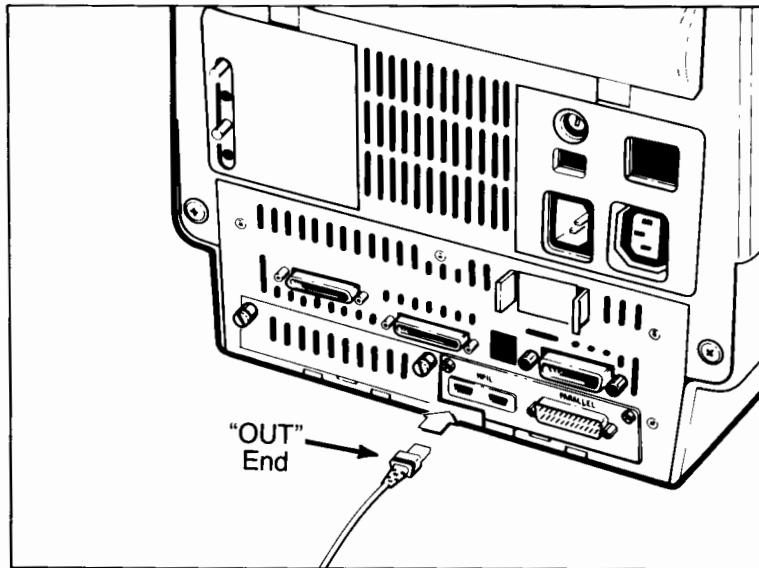


4. Plug the "IN" end of one of the HP-IL cables into the right side of the printer's HP-IL port (labeled IN).

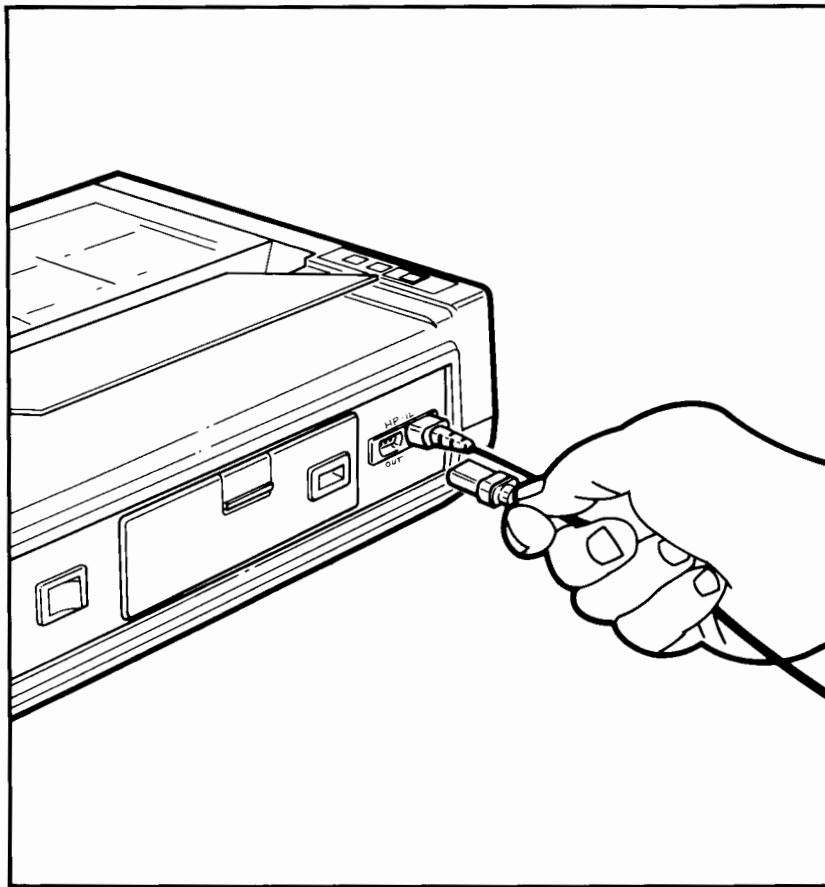


Printers

5. Plug the "OUT" end of the same cable into the left side of the HP-IL port on the back of the HP 150.

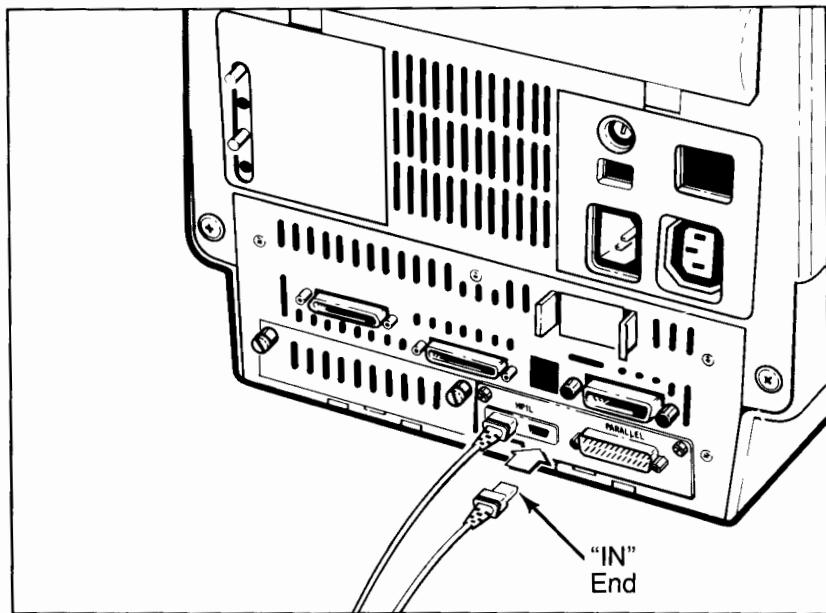


6. Plug the "OUT" end of the second HP-IL cable into the left side of the printer's HP-IL port (labeled OUT).

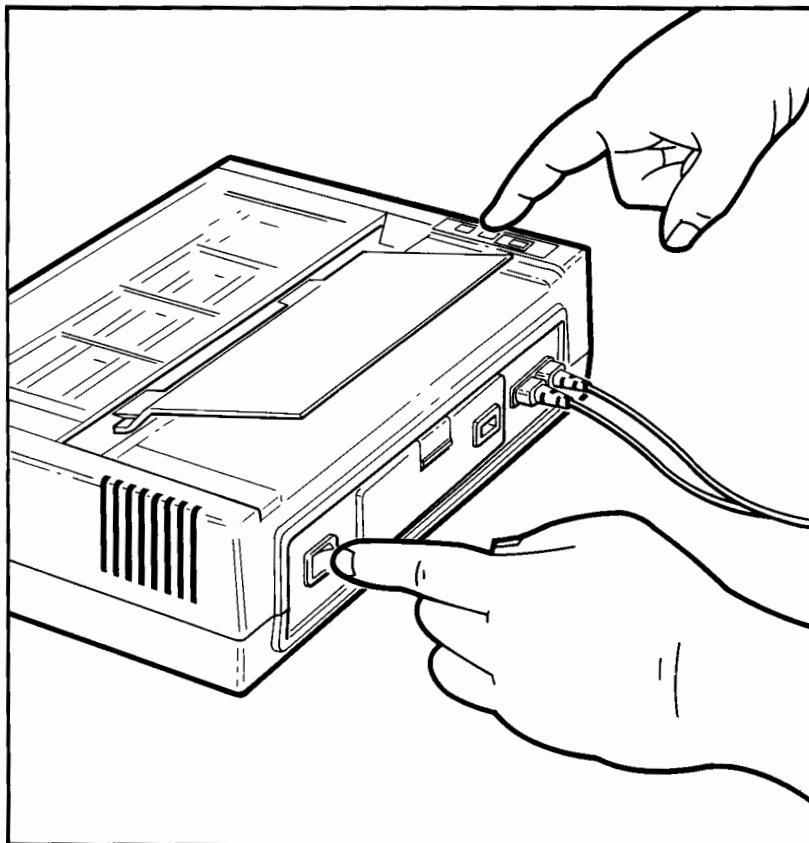


Printers

7. Plug the "IN" end of the second cable into the right side of the HP-IL port on the back of the HP 150.



8. Insert paper and make certain the printer is prepared for printing as described in the 2225B ThinkJet Owner's Manual.
9. Perform the printer's self-test by holding down the LF button on top of the printer while moving the printer's power switch to ON. Release the line feed button to start the test.



Printers

A test pattern that starts like this should be printed:

If the self-test does not work correctly, check to see that you have plugged the printer in correctly and the paper is inserted properly. If the self-test still does not work, contact your Hewlett-Packard dealer or an authorized representative.

10. Configure the HP 150 so that it can communicate with the 2225B. See the Extended Input/Output Accessory User's Manual for HP-IL configuration information.
11. Check whether the computer communicates with the printer:
  - a. Touch **FileManager**.
  - b. Touch **PrintFile/Dir**.
  - c. Type:  
A:\  
followed by **Return**.
  - d. Touch **StartPrint**.



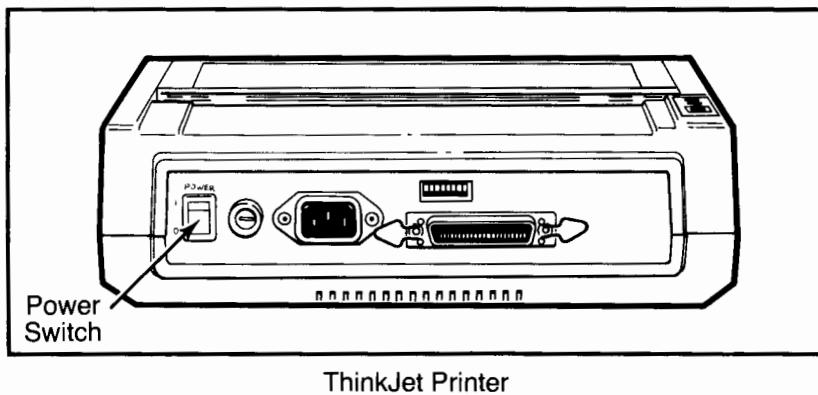
Printers

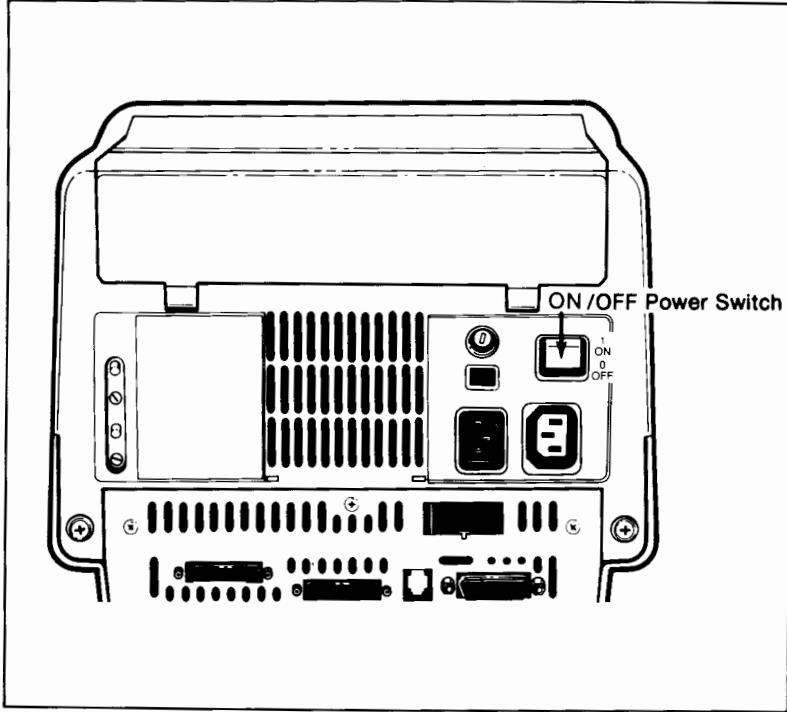
If the printer responds by printing the directory associated with A:\, it is ready for use with your computer. If it does not respond properly, review these instructions to make sure you have followed them correctly. If you have followed the instructions correctly and the printer still does not work, contact your Hewlett-Packard dealer or an authorized representative.

## Installing Your HP ThinkJet Printer (Model 2225C—Parallel Interface)

**IMPORTANT NOTE:** The Model 2225C ThinkJet printer can be used with your HP 150 only after an Extended I/O Accessory board has been installed in the HP 150 and configured. The board provides the parallel port needed to communicate with the HP 2225C. See the Extended Input/Output Accessory User's Manual for further information.

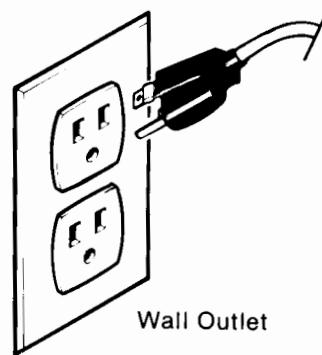
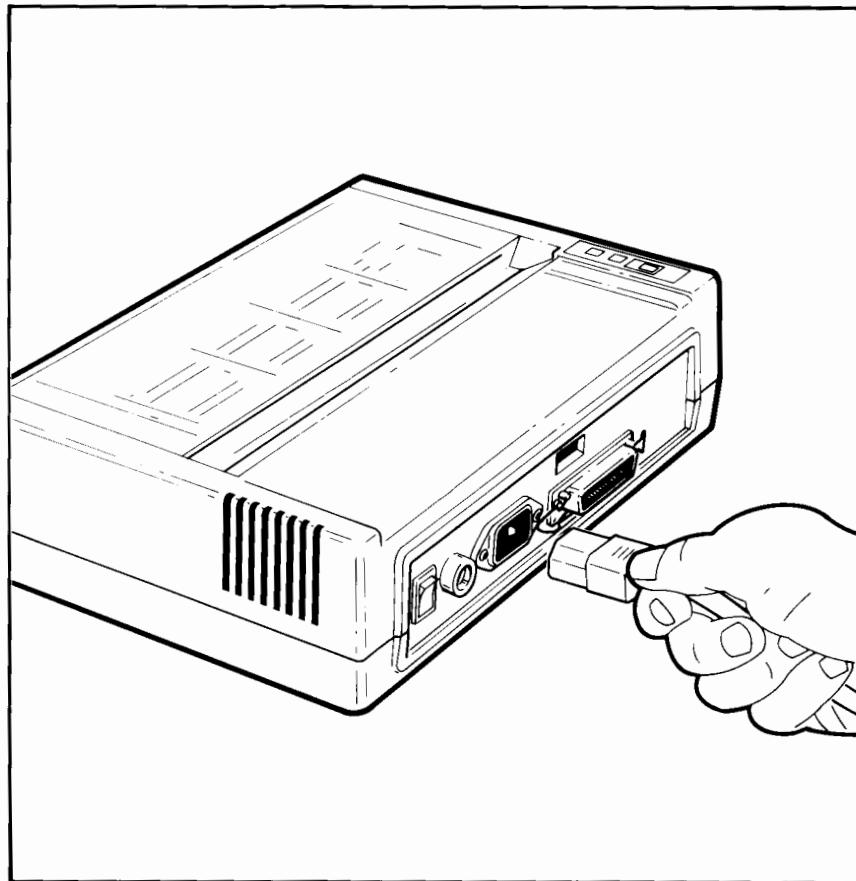
1. Be sure the power switches on the backs of the printer and the HP 150 are in the OFF position. (Press the 0 side on both switches.)



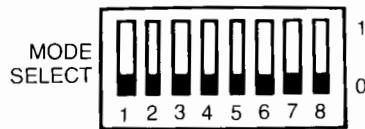


Printers

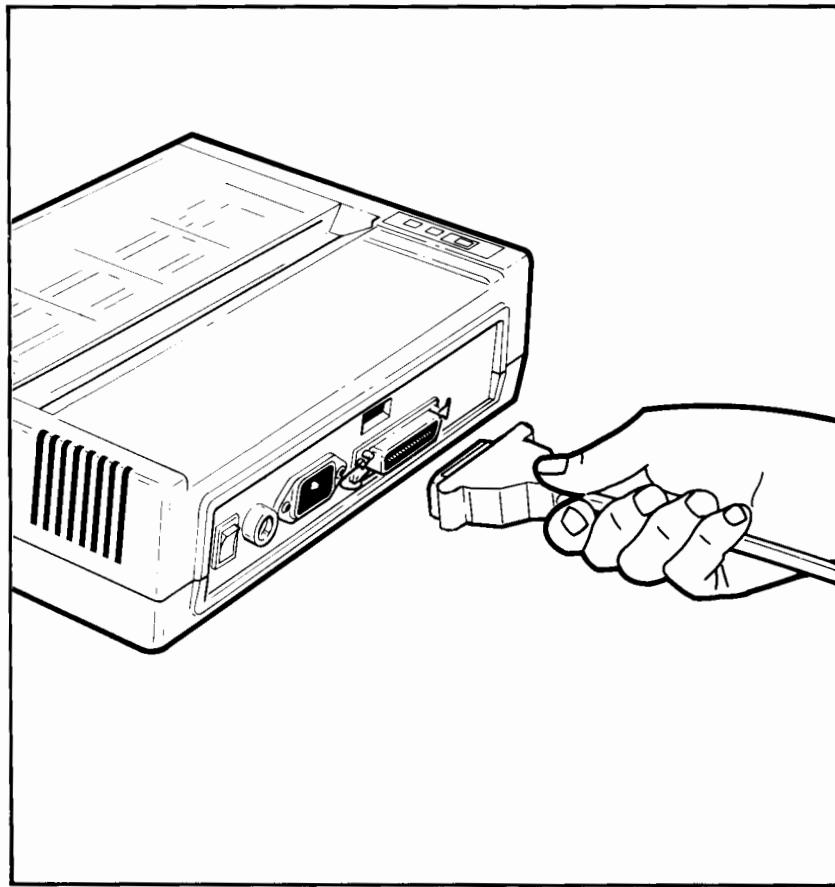
2. Plug the AC power cord into the printer, then into the wall outlet. (If you have an International rear panel, make sure that the voltage setting is correct. See Appendix E of your HP 2225C ThinkJet Reference Manual for more information.)



3. Use the tip of a pencil or other similar instrument to set the mode switches on the back of the printer as shown below. All the switches should be in the "down" position.



4. Plug the parallel cable's 36-pin male connector into the printer's parallel port. Snap the two wire clips onto the end of the cable to hold it securely in place.

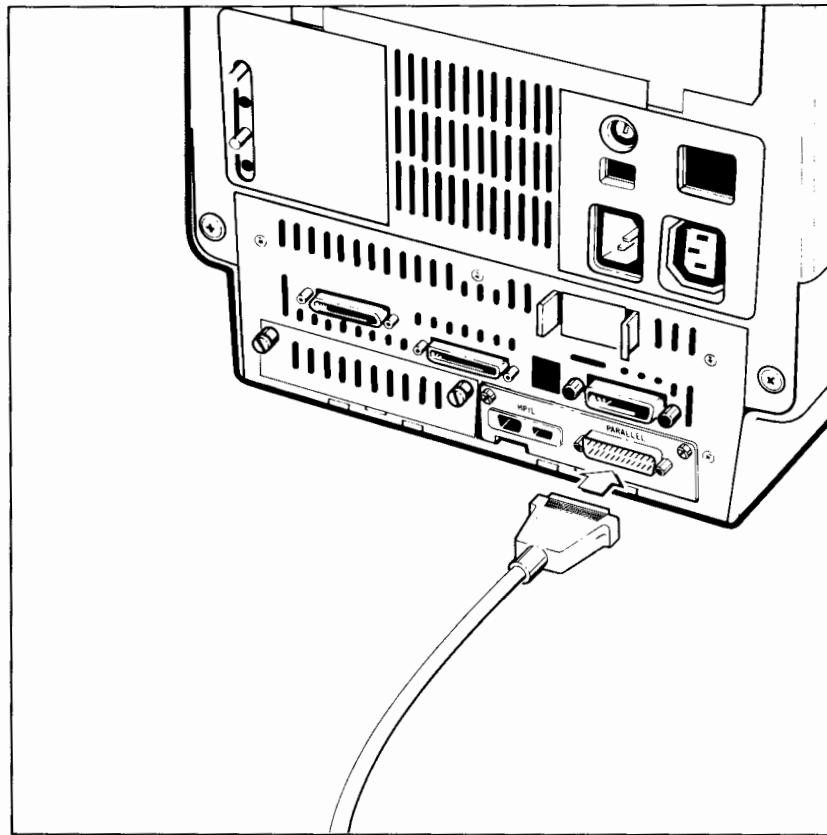


Printers

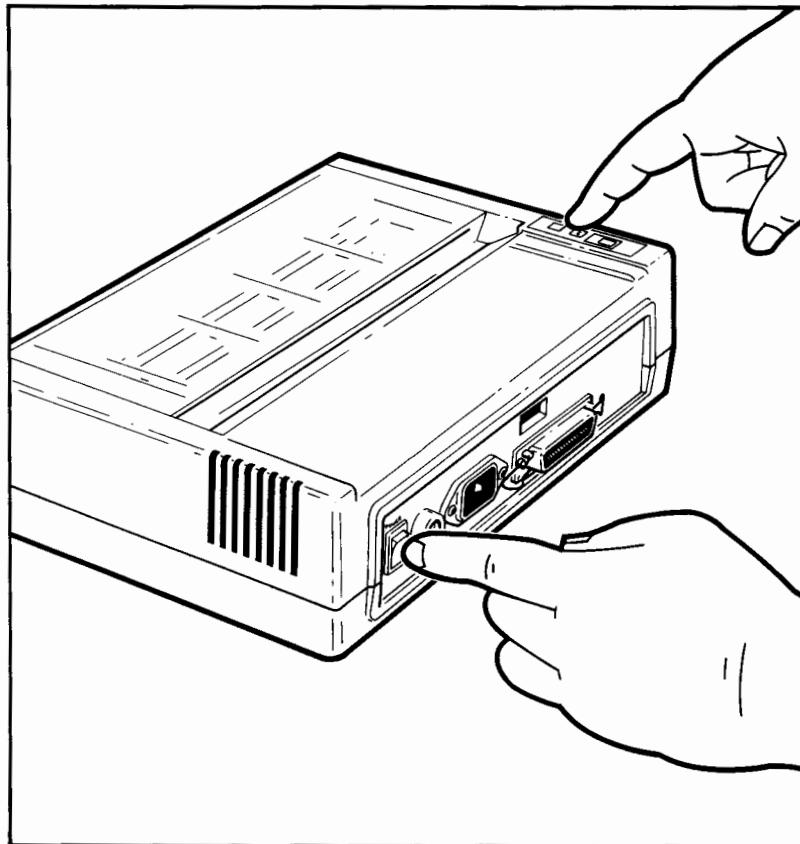
Update 8/84

2-101

5. Plug the cable's 25-pin female connector into the parallel port on the back of the HP 150.



6. Insert paper and make certain the printer is prepared for printing as described in the ThinkJet Reference Manual.
7. Perform the printer's self-test by holding down the LF button on top of the printer while moving the printer's power switch to ON. Release the line feed button to start the test.



Printers

A test pattern that starts like this should be printed:

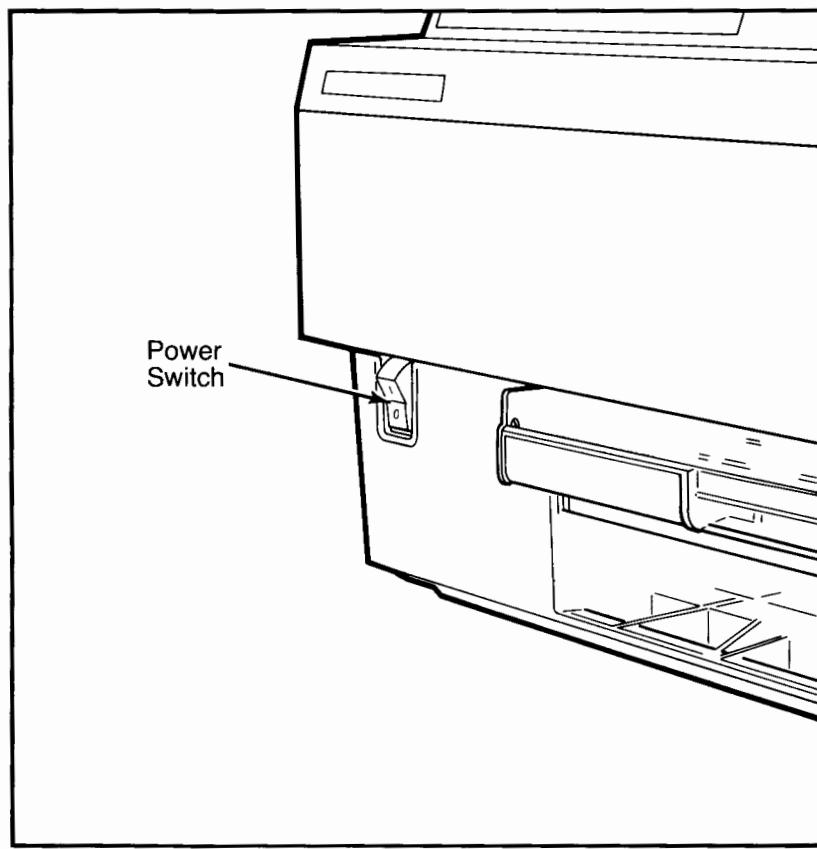
If the self-test does not work correctly, check to see that you have plugged the printer in correctly and the paper is inserted properly. If the self-test still does not work, contact your Hewlett-Packard dealer or an authorized representative.

8. Configure the HP 150 so that it can communicate with the 2225C. Set the MS-DOS Device Configuration menu as described in Appendix A of this manual.
9. Check whether the computer communicates with the printer. Turn on the computer and the printer. When the P.A.M. menu appears on the screen:
  - a. Touch **File Manager**.
  - b. Touch **Print File/Dir**.
  - c. Type:  
A:\  
followed by **Return**.
  - d. Touch **Start Print**.

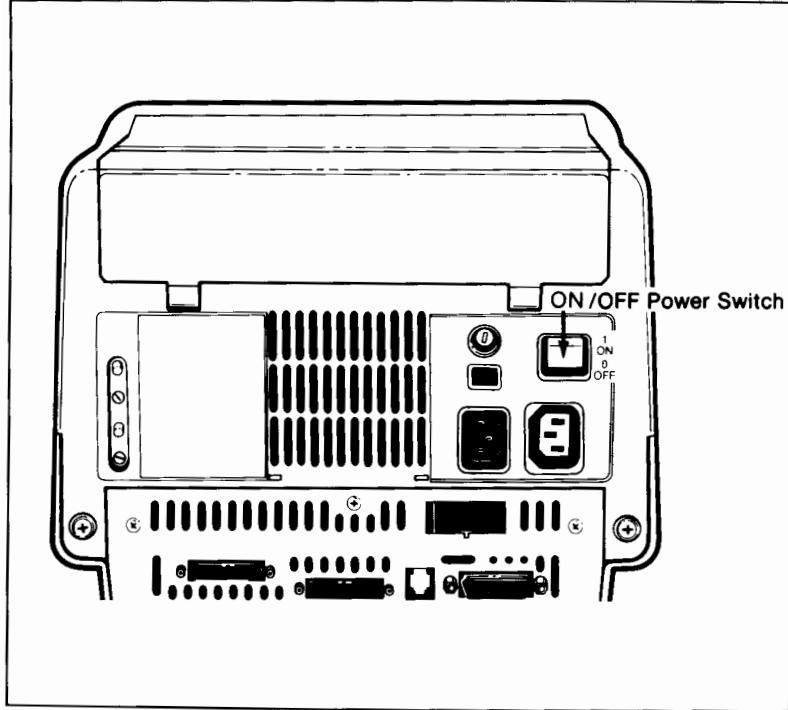
If the printer responds by printing the directory associated with A:\, it is ready for use with your computer. If it does not respond properly, review these instructions to make sure you have followed them correctly. If you have followed the instructions correctly and the printer still does not work, contact your Hewlett-Packard dealer or an authorized sales representative.

## Installing Your HP LaserJet Printer (Model 2686A)

1. Be sure the power switches on the front of the printer and the back of the computer are in the OFF position. (Press the 0 side of both switches.)

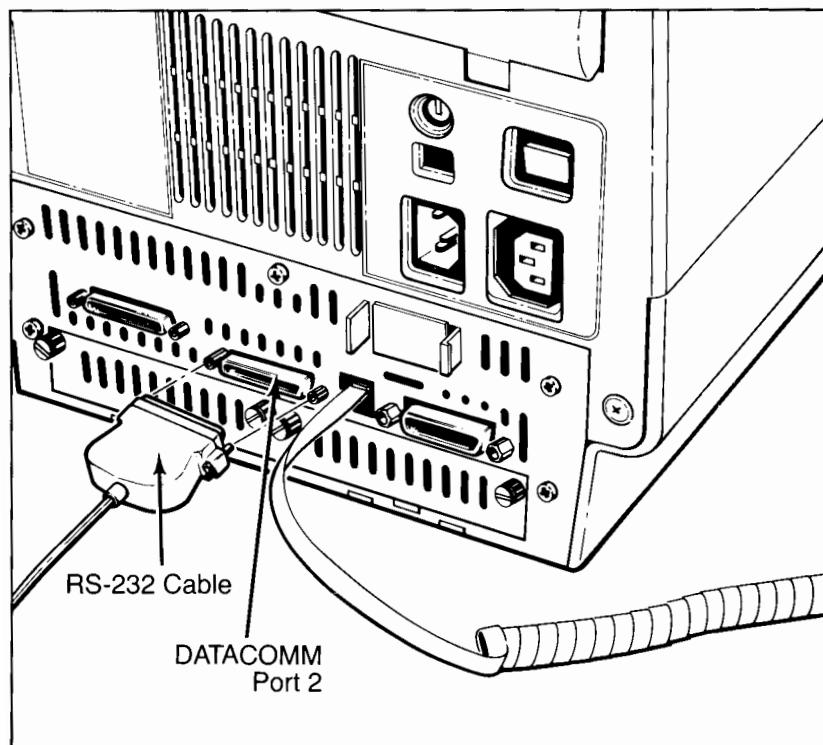


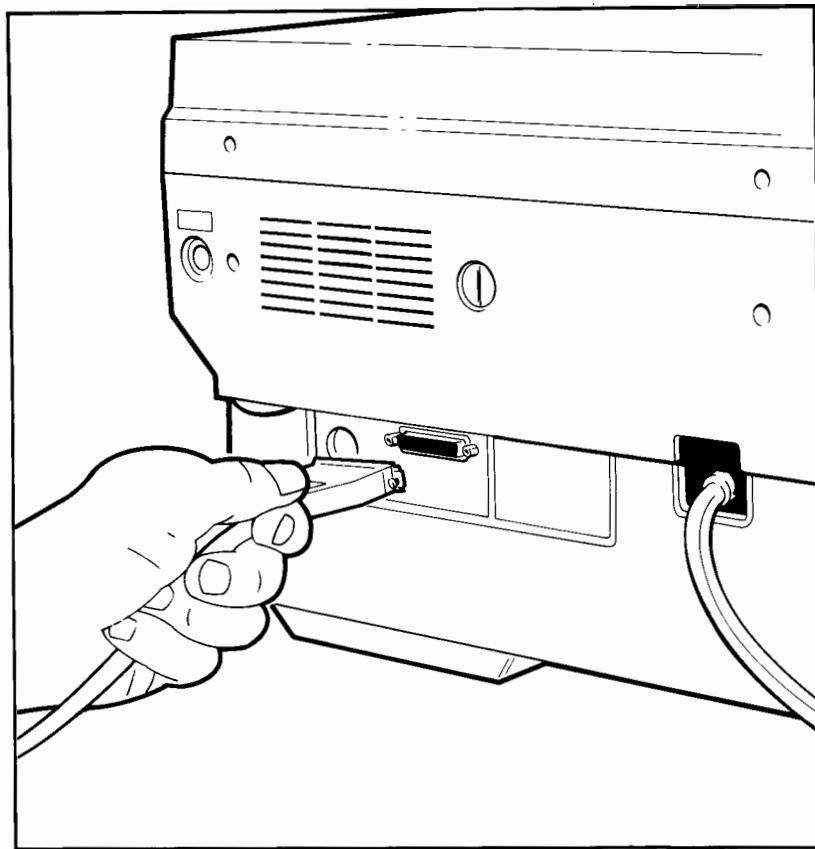
LaserJet Printer



2. Plug the printer's AC power cord into the wall outlet.

3. Use an RS-232C cable (HP P/N 13242G) to connect the printer's RS-232 port and DATACOMM Port 2 of the HP 150.



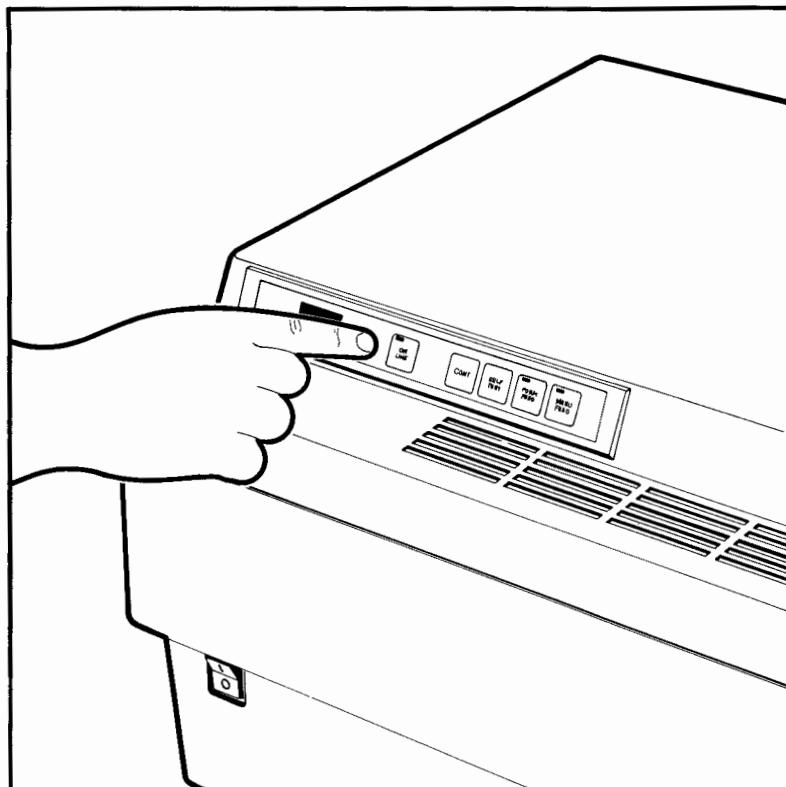


Printers

4. Prepare the printer for printing as described in the HP 2686A Owner's Manual.

5. Perform the printer's self-test to make sure it is in working order:

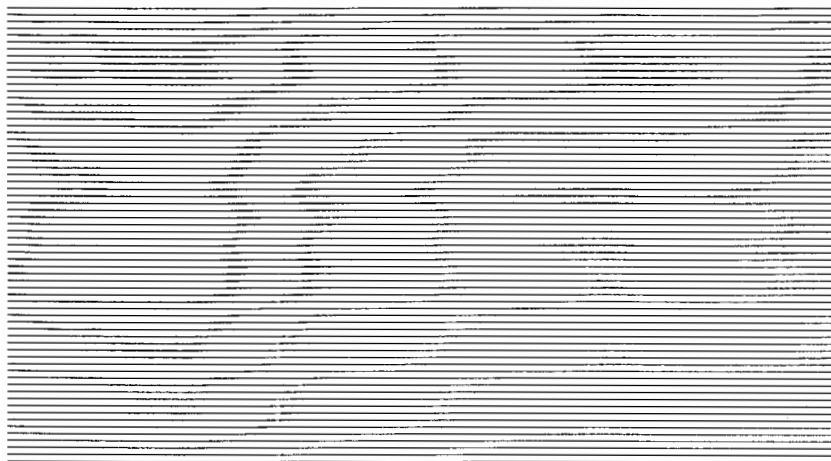
- a. Press the power switch on the front of the printer to turn the printer ON. The printer takes about two minutes to warm up. It is ready to use when the READY indicator stops flashing and the status display displays 00.
- b. Press the printer's ON LINE button so that its light is not on. This indicates that the printer is off-line. (You must hold the key down for about one second.)



c. Press the SELF-TEST button. The printer prints a pattern of letters, numbers, and special characters.

Printers

d. Press the TEST PRINT button located at the left side of the printer. The printer prints a page of stripes.



If both test patterns are clear, with no smudges, missing areas, or other irregularities, proceed to the next step. If there are problems, consult Section V of the 2686A LaserJet Owner's Manual.

5. Configure the HP 150 so that it can communicate with the 2686A. Make the necessary changes in the Global Configuration menu, the Port2 Configuration menu, and the MS-DOS Device Configuration menu as described for the 2686A printer in Appendix A of this manual.
6. Turn on the HP 150. When the P.A.M main menu appears on the screen, check whether the computer communicates with the printer:
  - a. Touch **File Manager**.
  - b. Touch **Print File/Dir**.
  - c. Type:  
A:\  
and press **Return**.
  - d. Touch **Start Print**.

After a short delay, the printer should print the directory associated with A:\. If the printer does not print, check that the ON LINE indicator is lit, that the interface cable is connected securely, and that you have configured your HP 150 correctly. If you have followed the instructions correctly and the printer still does not work, contact your Hewlett-Packard dealer or an authorized sales representative.

# How Do I Install a Plotter?

Each Hewlett-Packard plotter comes with its own manual. You may refer to your plotter user's manual for installation instructions, or you may use the following pages to install your plotter. Be sure to keep your plotter user's manual, because you may have questions that are not answered in this manual.

---

## NOTE

After installing a plotter and setting the address switches, you must then configure the plotter before you can use it with your HP 150.

---

Installation instructions for the following Hewlett-Packard plotters are provided in this section:

HP 7470A  
HP 7475A



These plotters may be connected with either an HP-IB or an RS-232 cable, depending on the option you ordered. (Instructions for connecting either cable to the system processor are discussed in the first part of this chapter.) The voltage for your plotter has been set at the factory.

Plotters

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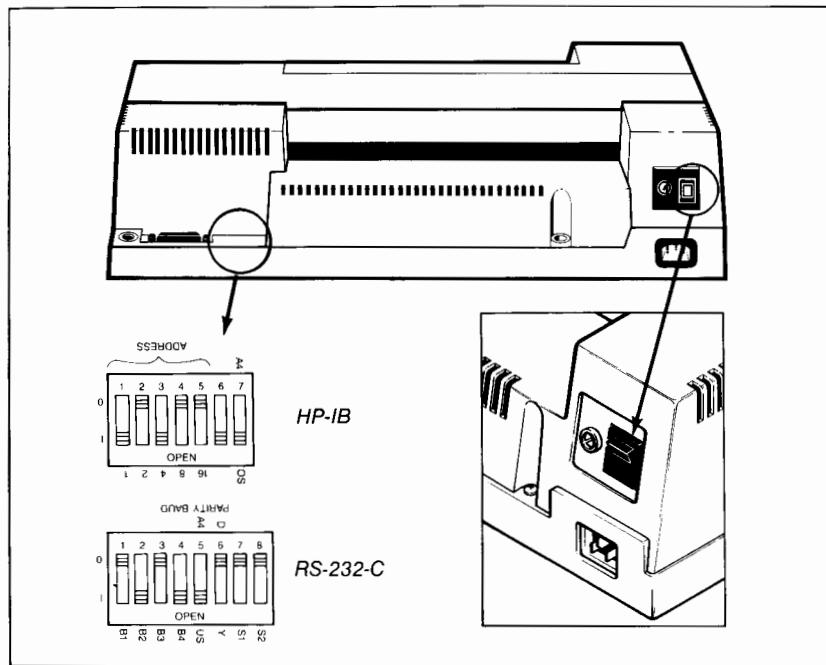
## CAUTION

DO NOT USE EXTENSION CORDS UNDER ANY CIRCUMSTANCES. Such use may result in data errors and increase the risk of safety hazards. If you wish to use a multiple outlet strip to plug in the components of your system, you must use one which utilizes grounded three-prong outlets and incorporates a circuit breaker.



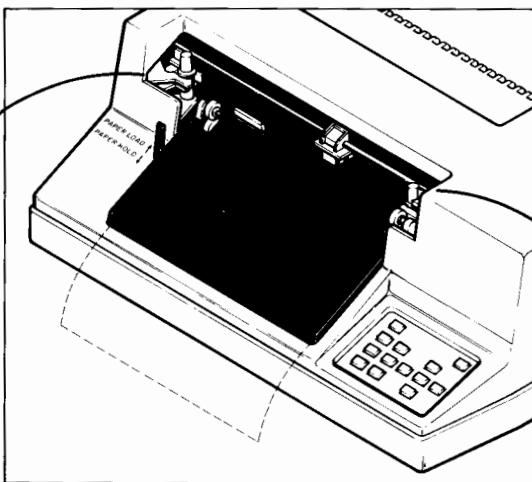
## Installing Your HP 7470A Plotter

1. Be sure the power switch on the rear panel of the plotter is OFF.
2. Set the address switches on the rear panel as shown below:

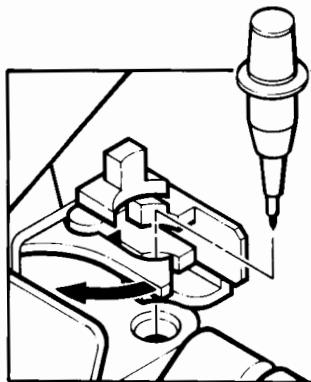


Plotters

3. Plug the power cord into the plotter and then into the wall outlet.
4. Install pen(s). Remember to pull down the pen cappers so that the pens do not dry out.

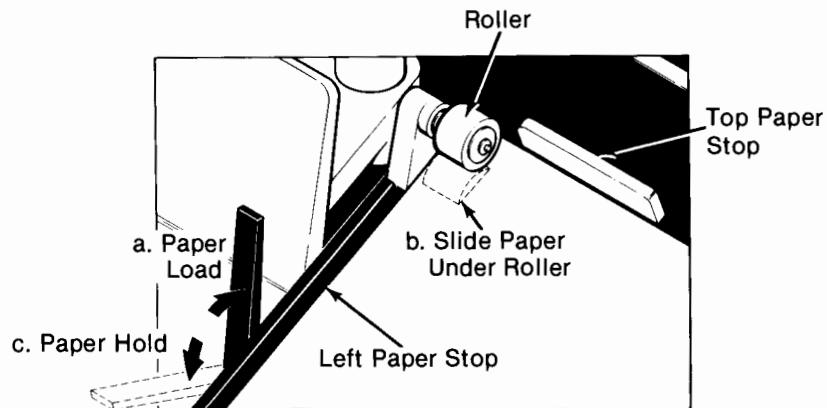


HP 7470A -Front Panel-  
Paper and Pens in Place



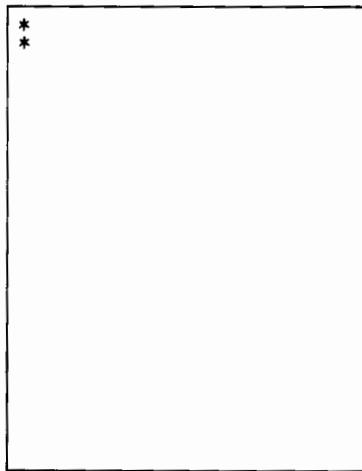
5. Install paper as follows:

- a. Raise the paper load lever.
- b. Slide the paper under the roller.
- c. Lower the paper load lever.



Plotters

6. Run self-test for the plotter by pressing the PEN UP button on the front panel at the same time you turn the power switch ON. The self test prints asterisks (or stars) down the page until you turn the power switch OFF.



Self-Test Example

If there is no action from the plotter, check the following:

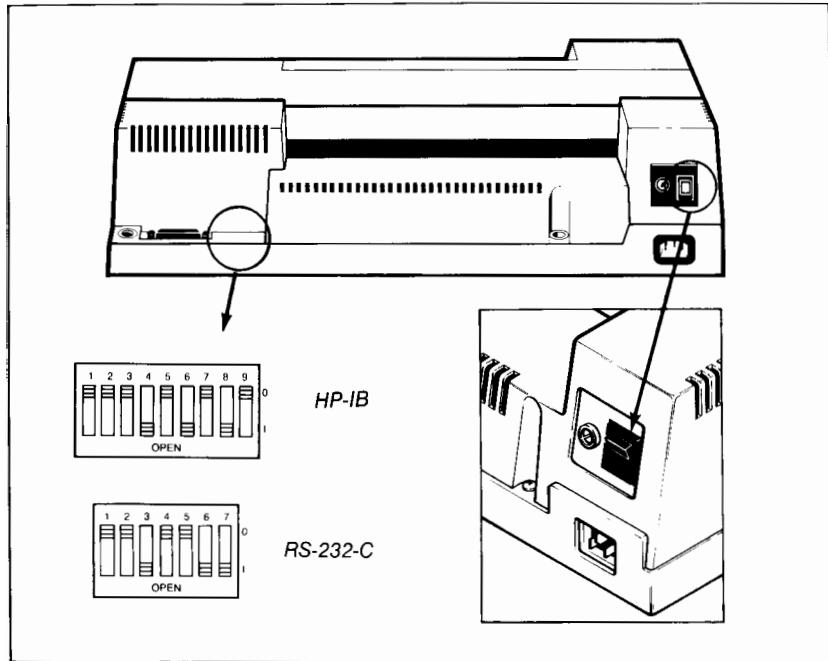
- a. The plotter is ON.
- b. The plotter is plugged in.
- c. The wall outlet's circuit breaker is ON.

If all of the above are verified and your plotter still fails to function, contact the person from whom you purchased your system.

7. Turn the power switches on the plotter and the system processor OFF.
8. Connect either the HP-IB or RS-232 cable to the plotter and then to the system processor.
9. Turn the power switches on the plotter and the system processor ON.

## Installing Your HP 7475A Plotter

1. Be sure the power switch on the rear panel of the plotter is OFF.
2. Set the address switches on the rear panel as shown below:



3. Plug the power cord into the plotter and then into the wall outlet.

4. Load the six-pen carousel as follows:

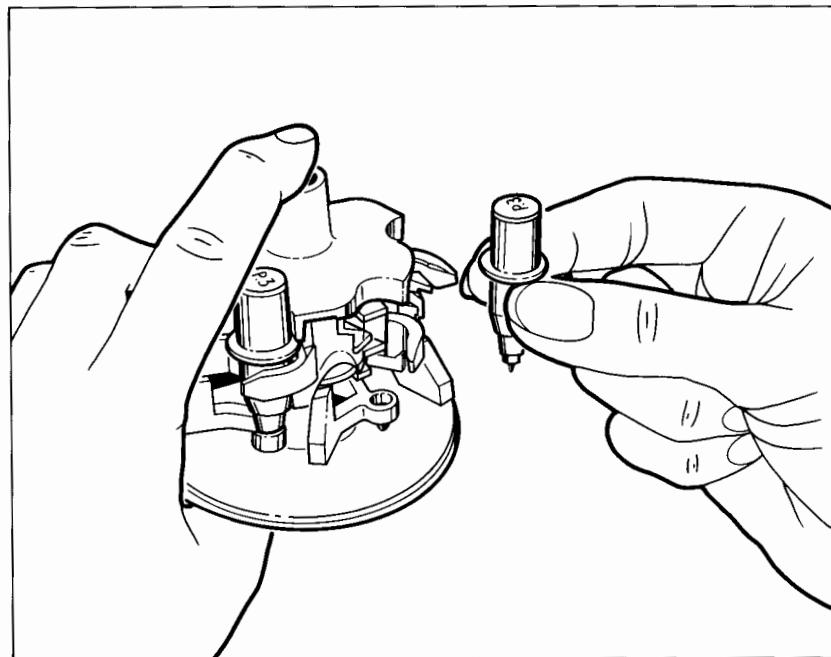
- a. Raise the plexiglass cover and lift the pen carousel straight out.
- b. Load the six-pen carousel with the following pens, as shown in the illustration below. (These pens will be used for self-test after the plotter is set up.)

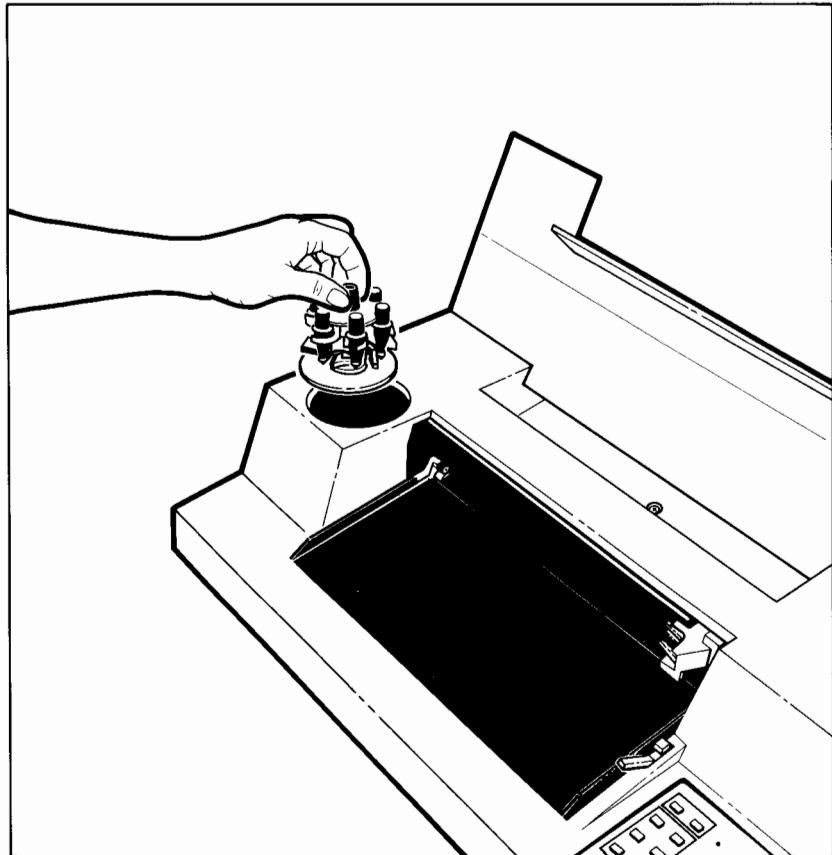
Pen 1 – Thick Black (P.7)  
Pen 2 – Thin Black (P.3)  
Pen 3 – Thin Red (P.3)  
Pen 4 – Thin Green (P.3)  
Pen 5 – Thin Blue (P.3)  
Pen 6 – Thin Violet (P.3)

Plotters

Remember to pull down the pen cappers so that the pens do not dry out.

- c. Drop the pen carousel into the plotter and turn it.



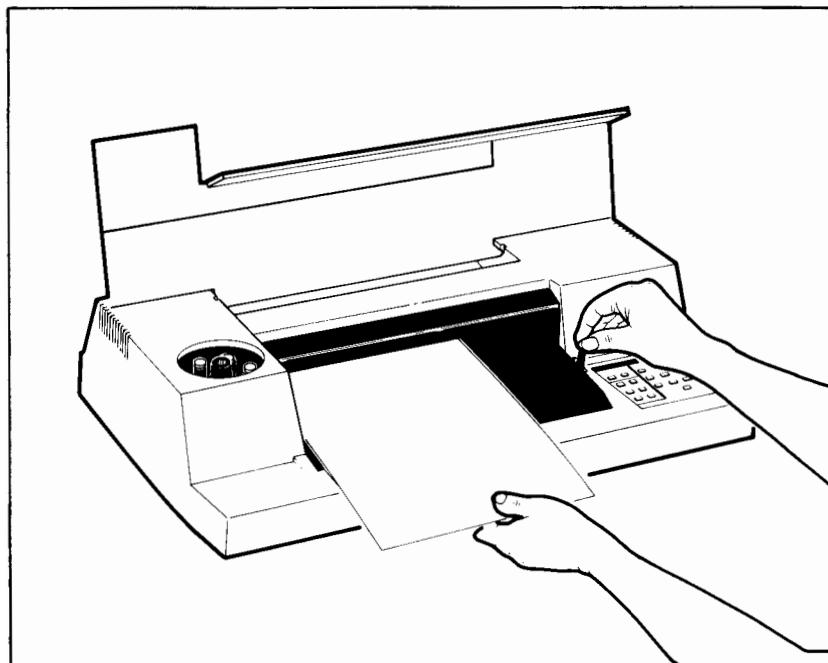


Plotters



5. Install either 8½"×11" (210mm×197mm) or 11"×17"  
(297mm × 420mm) paper as follows:

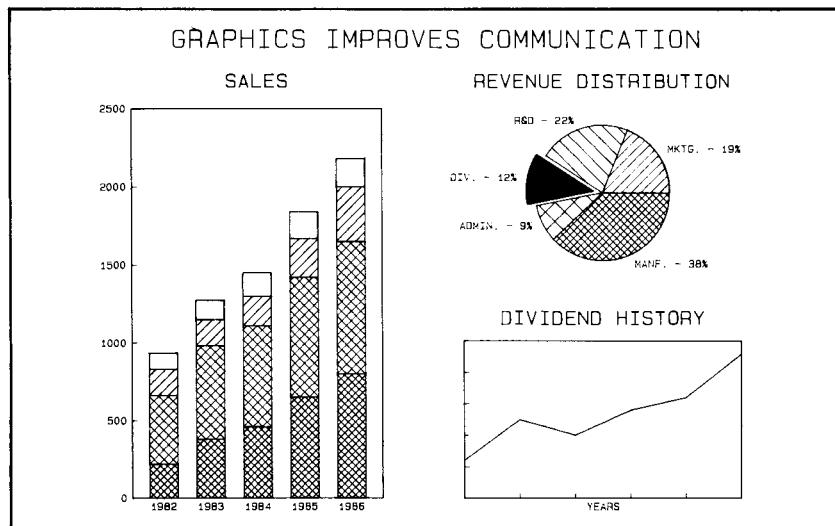
- a. Raise the paper load lever.
- b. Slide the paper under the roller.
- c. Lower the paper load lever.
- d. Select the paper size (refer to the manual shipped with your plotter for instructions).



To change the paper size, refer to instructions in the manual shipped with your plotter.

6. Run self-test for the plotter as follows:

- a. Simultaneously press the P1 and P2 buttons on the front panel while turning the power switch ON.
- b. Continue depressing P1 and P2 until the pen carousel turns.
- c. Release P1 and P2, and the self-test will plot as shown in the example below. (If you wish to stop the self-test plot, simply turn the power switch OFF.)



If there is no action from the plotter, check the following:

- a. The plotter is ON.
- b. The plotter is plugged in.
- c. The wall outlet's circuit breaker is ON.

If all of the above are verified and your plotter still fails to function, contact the person from whom you purchased your system.

7. Turn the power switches on the plotter and the system processor OFF.
8. Connect either the HP-IB or RS-232 cable to the plotter and then to the system processor.
9. Turn the power switches on the plotter and the system processor ON.



# How Do I Install An Accessory Board?

There are several accessory boards available from Hewlett-Packard which you may purchase to install in your HP 150.

Installation instructions are shipped with each accessory board, which you should place in this section of the manual. In addition, a cover plate unique for that accessory board (to cover the accessory slot in the rear panel) may also be shipped with the accessory board you purchase.

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## NOTE

Accessory boards may be damaged by static electrical charges occurring naturally in your work environment. Therefore, to avoid damage, it is important that you follow the directions as closely as possible for installing an accessory board.

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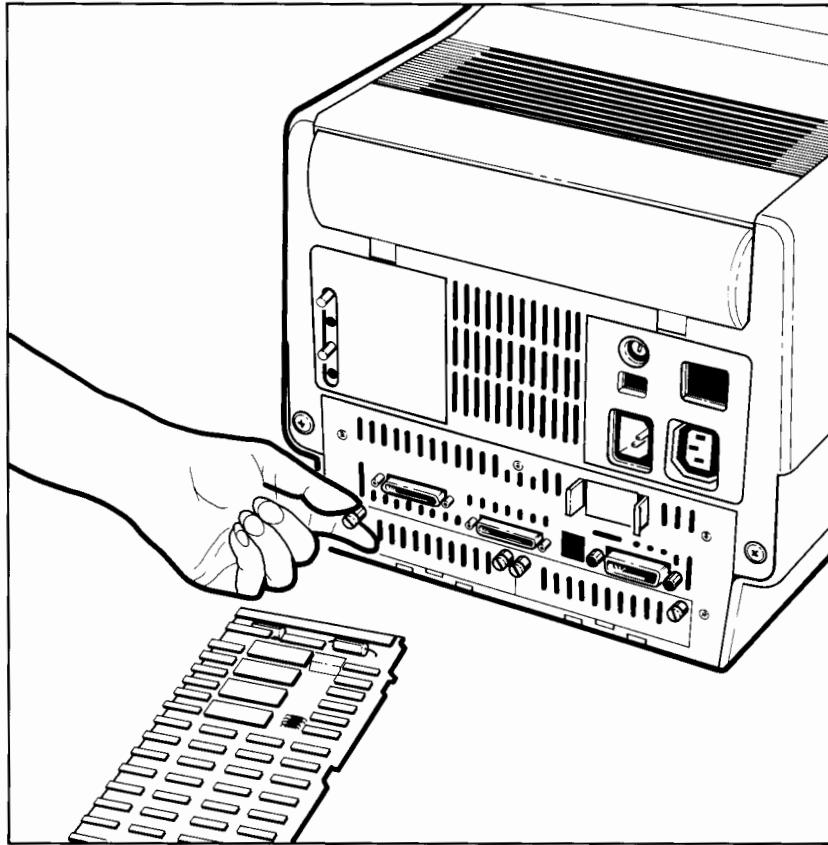
There are two slots available in the rear panel of the HP 150 for installing accessory boards. Any accessory board with the letters RAM indicated beside the part number must be loaded in slot #1 in the rear panel of your system processor.

## Accessory Board Installation Checklist

Although specific instructions are provided for installing each accessory board, the following steps are common to all:

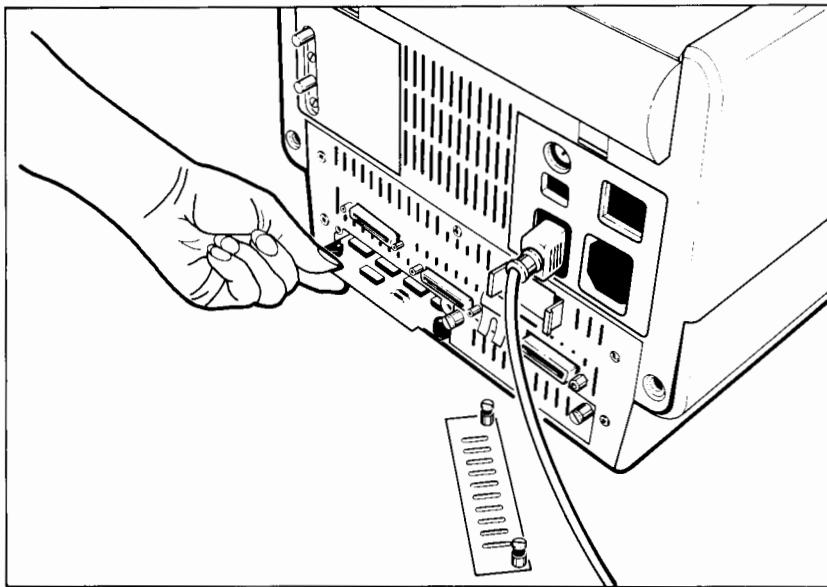
1. Turn the power switch OFF for your system processor, but leave the power cord installed. For ease of installation, you may wish to disconnect cables for your peripherals (disc drives, printers or plotters).

2. Remove the cover plate on the rear panel of your HP 150 for the accessory slot you wish to use by unscrewing the captive fastener. (These fasteners are designed to remain attached to the cover plate). This cover plate may be used again, or may be replaced with another cover plate shipped with your accessory board.



3. Take the accessory board (and cover plate, if provided) out of the package, taking care to handle the accessory board by the edges only. Save the conductive plastic bag for future use, such as if you remove an accessory board.

4. Holding it by the edges, slide the accessory board (with the components facing up) into the accessory slot. Notice that the corner plastic pieces are in a position which allow the accessory board to align in the card guides.



5. To cover the accessory slot:
  - a. Place the cover plate included in the package with your accessory board over the accessory slot on the rear panel. (If no cover plate was included in the package, replace the original cover plate.)
  - b. Align the fastener on the cover plate with the holes on the rear panel.

- c. Press the captive fastener in on one side of the cover plate so that the spring action is held down while you turn the fastener to tighten. Repeat for the other side of the cover plate.
6. If you removed any cables connecting your peripherals, reconnect them at this time.

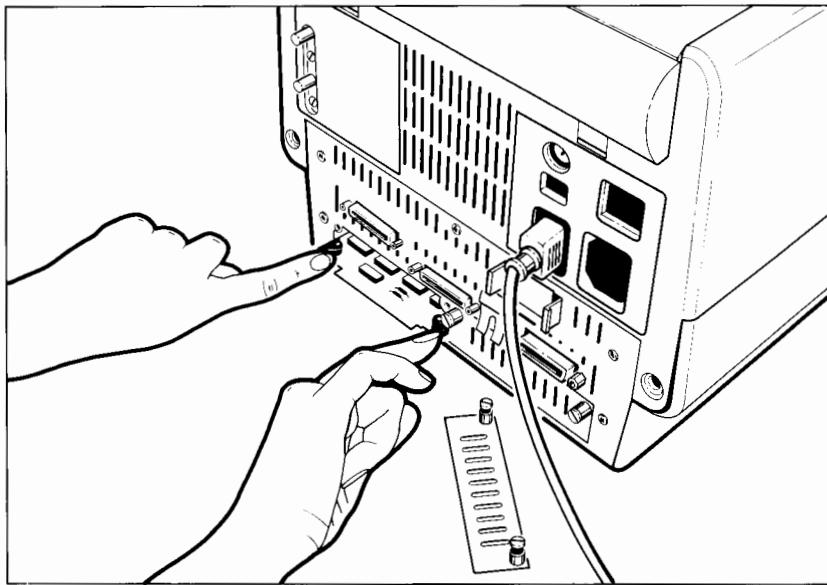
Before you turn your system ON, check in the reference manual shipped with your accessory board to see if you need to attach any other devices (such as a telephone for a modem connection).

### **How Do I Remove An Accessory Board?**

Should you wish to remove an accessory board, simply follow the steps below. (You should also check the reference pages provided with your accessory board for more specific instructions.)

1. Turn your system OFF. For ease of installation, you may wish to remove cables connecting your peripheral equipment. However, remember to leave the power cord installed.
2. Remove the cover plate on the rear panel of your HP 150 covering the accessory slot by unscrewing the captive fastener. (These fasteners are designed to remain attached to the cover plate). Store this cover plate with your accessory board for future use.

3. Push the black plastic pieces at the corners of the accessory board away from the center of the board. The pivot action of the extractor(s) will start sliding the board out from the card guides in the accessory slot.



4. Place the accessory board in the conductive plastic bag in which it was shipped. Remember to handle the board by the edges only!
5. Cover the accessory slot on the rear panel of the HP 150 with the cover plate originally provided on your system processor.

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**CAUTION**

Be sure to replace the cover plate over the accessory slot on the rear panel; otherwise, electrical interference with other equipment may occur.

- 
6. Connect any cables which you may have disconnected.

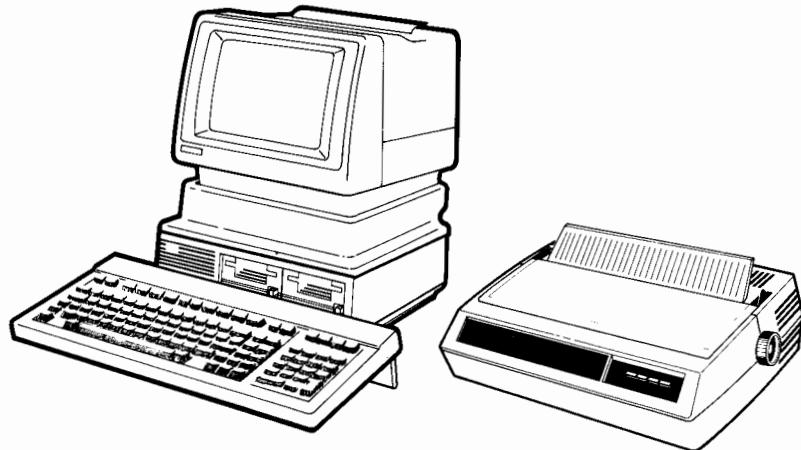


## Chapter 3

### USING YOUR EQUIPMENT



#### **What is a Standard HP 150 System?**

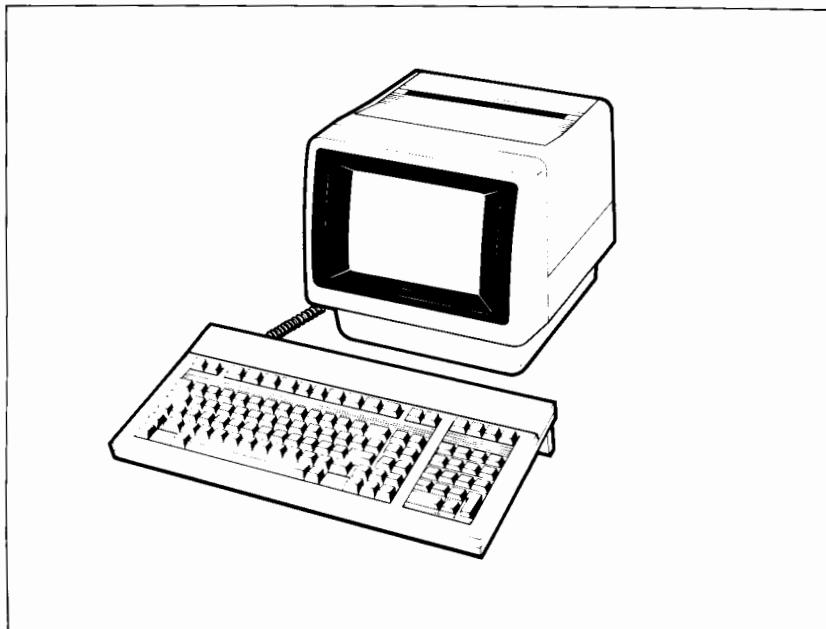


A Hewlett-Packard personal computer includes:

- 256K of memory
- a keyboard
- this manual
- a terminal user's guide
- 1 RS 232 port, 1 RS 232/422 port, and an HP-IB port to connect other components such as printers and disc drives
- an HP-IB cable for connection
- a power cord for the system processor
- an interconnect power cord to connect a disc drive

In addition, you need a disc drive with your HP 150 if you intend to use it as a computer. These subjects are covered in the following paragraphs.

## The HP 150 Computer



Inside the computer pictured above are electronic boards such as memory boards and peripheral boards. The most important board inside the computer is the system processor board.

The system processor is the "brain" of the computer, with the circuitry needed to run the computer inside of it. It also contains your standard 256K\* of memory. (See Memory later in this chapter.) The system processor runs the programs that you buy or write by first loading the program from a disc into memory, then executing each instruction of that program.

## **Computer Memory**

Computer memory refers to the amount of information a computer can hold at one time. The basic capacity for an HP 150 is 256K\* bytes of memory; every machine has a standard 256K on the processor board.

If you ordered extra memory, you received another board that you installed yourself. This memory board contains either 128K, 256K, or 384K of memory, giving you 384K, 512K, or 640K bytes of memory, total.

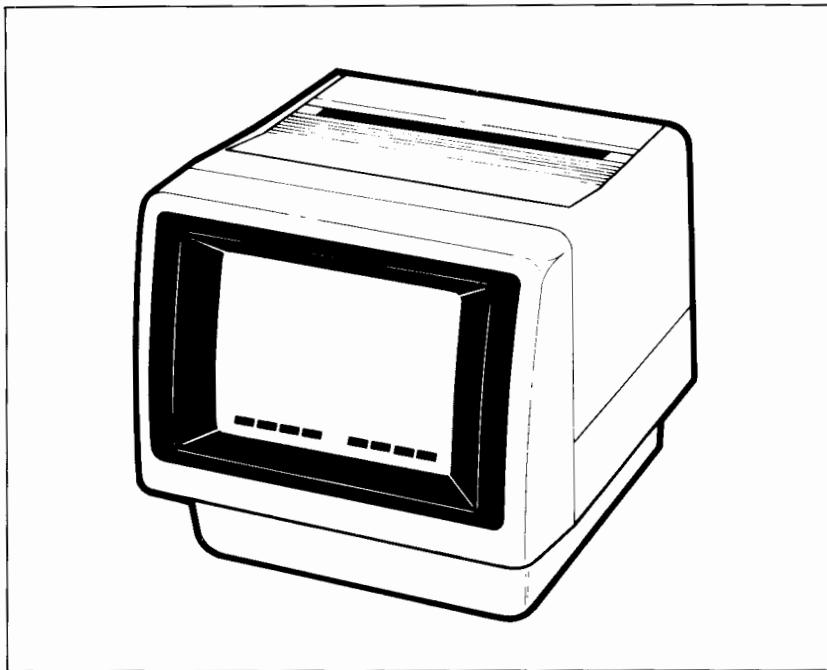
You use memory for two purposes. Programs are loaded into memory, then run from that memory. (Programs do not run from discs, they are only stored on discs.) The other use of memory is for your purposes; for example, if you write a letter, you use memory inside the HP 150 to hold the words while you create the letter.

Memory inside the computer holds onto what ever you load into it until you either remove it yourself, or turn the computer off. For example, let's say you loaded Series 100/Graphics from disc A, and typed some values on the screen. You decide to go to lunch. If you leave the computer as it is while you go to lunch, memory will hold Graphics and your entries until you come back. If someone were to come along and turn off the computer, however, all memory inside the computer would be cleared. You would have to reload Graphics when you came back from lunch. For this reason, save important information on a disc if you are going to leave your HP 150 for any length of time.

Disc memory, unlike computer memory, holds onto anything you store until you specifically erase the information. Turning off a disc drive does not affect information stored on a disc. (Be sure discs are removed before drives are turned off.)

\* K means 1,024. 256K would be  $256 \times 1024 = 262144$ .

# The Screen



The screen is your window into the computer. You know what is going on by looking at the screen; instructions and messages appear on the screen when an application program or disc application is running.

## Touch Screen

This screen on an HP 150 is special, in that it is sensitive to your touching it. Therefore, many times you will touch an area on the screen to tell the computer what to do; this is an alternative to typing words or pressing function keys. Often, you touch an area on the screen to make a choice, and can change your mind about the choice by touching it again to "unselect" it.

If, for some reason, you don't wish to touch the screen, you can move the cursor or pointer with the keyboard **Tab** (forward), **Shift Tab** (backward), and cursor control (**<>▲▼**) keys. When the arrow is where you want it, press **Select** on the keyboard to mark it as chosen.

If you want to turn off touch screen, press **Ctrl Shift Menu** simultaneously. Do it again to turn touch screen back on.

## The Cursor

Your indicator on the screen is the cursor. The cursor is usually a blinking box, but can be changed to a blinking underline in the Global Configuration Menu. Each application can use the cursor in its own way, and each will let you know what to do. The cursor is moved several ways; touching the screen often moves the cursor to the place you touched. The **Tab** and cursor control keys also move the cursor.

## Status Indicators



Look at the words on the bottom line of the screen in the picture above. You may have none or all of them on your screen. The words (called status indicators) each have a different meaning.

### **KB Lockd**

The keyboard is locked either by a program or by your typing ESC c. To unlock your keyboard, press **Shift** **Reset Break**. (This may adversely affect any application program in progress.)

### **Ext Char**

Extended character set indicates that you are using the Roman 8 Keyboard characters shown in the Keyboard appendix of this manual.

**Tab=Spac** When this appears, pressing **Tab** causes the cursor to move to the next tab stop, leaving spaces in its wake. Tab is set to spaces by either a program or by your pressing **User System** twice, **margin/tabs/col**, **TAB-SPACES**. An asterisk appears in the **TABS-SPACES** field to show it is on; press **TAB-SPACES** again to turn it off. (You can also turn it on and off in the terminal configuration menu.) **Tab** will not move to the next line automatically when Tab=Spac.

**Num Pad** Numeric Pad indicates that the numeric pad values are the ones shown on the keys, that is numbers 0 - 9, the /, a comma, **Enter**, tab forward and back, the - + and \* signs, and a period.  
**or**

**Grph Pad** Graphics Pad indicates that the numeric pad on the right side of the keyboard is now a graphics pad; each key now represents a graphics activity such as CLEAR GRAPHICS or COPY GRAPHICS. The numeric pad is changed to a graphics pad and back by pressing **CTRL** and the **[—]** key on the numeric pad. See the *HP 150 Terminal User's Guide* for more information.

12:00

The current time set in the computer is always displayed on a 24 hour clock.

CAPS

Caps are locked when this message appears. You probably pressed the **Caps** key on the keyboard; press it again to remove this message and type lowercase letters.

Ins Char

or

Ins Wrap

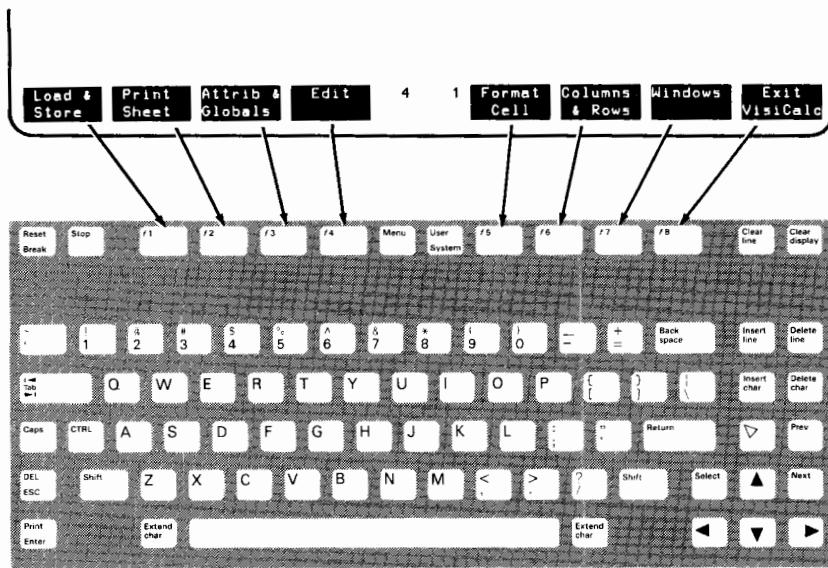
Insert Character indicates that anything you type will be inserted at the cursor position; if you insert characters into a full line, letters are either lost from the last column or wrap around to the next column, depending on which application you are using. You probably pressed **Insert Char** on the keyboard to turn on insert character; press it again to remove this message and turn it off.

Insert Character Wraparound indicates that anything you type will be inserted at the cursor position; if you insert characters into a full line, letters are wrapped to the beginning of the next line. You probably pressed **Shift Insert Char** to turn on insert character wraparound; press it again to remove this message and turn it off.

TouchOFF

If you want to turn off the touch screen feature press **CTRL**, **Shift**, and **Menu** simultaneously. The HP 150 will no longer respond to a touch on the screen and this status indicator will appear. To turn the feature back on, press **CTRL**, **Shift**, and **Menu** again.

# The Keyboard †



The computer keyboard contains a set of typewriter keys, plus some special computer-only keys. The most helpful special keys are called function keys and are labeled f1, f2, f3, f4, ... f8. Often, you will press a function key to tell the computer what to do. You know what a function key will do by looking at its corresponding label on the screen. (See the drawing above.)

As you can see above, some labels have an asterisk in them. These labels represent choices that are turned on (\*) and off (no \*); either touch the label or press the corresponding function key to toggle between on (\*) and off (no \*). You will always be told whether a label represents an action or a choice toggle in the manual describing each application program. Each application can use the key in any way that's appropriate. The following meanings are typical for most applications.

† To use the keyboard math symbols or foreign characters, see the appendix on Keyboards.

Some special keys are as follows:

**Shift** **Reset Break**

The **Reset Break** key is used when the HP 150 is a terminal; see the *HP 150 Terminal User's Guide*.

**Shift** **Reset Break**

Press **Shift** **Reset Break** simultaneously for a "soft reset" of the HP 150 computer. A soft reset clears keyboard lock and screen error messages. It also turns off display functions, stops printing, and resets the internal printer.

**CTRL** **Shift**  
**Reset Break**

Press **CTRL** **Shift** **Reset Break** simultaneously for a "hard reset" of the HP 150 computer. A hard reset means that the operating system (MS-DOS) is restarted from disc A. Any program in progress is exited.

**Stop**

**Stop** is used when the HP 150 is a terminal; see the *HP 150 Terminal User's Guide*.

**Shift** **Stop**

Press **Shift** **Stop** simultaneously to return to P.A.M. from the terminal. (You pressed **terminal** on the P.A.M. screen to become a terminal.)

**CTRL** **Stop**

Same as **Shift** **Stop**.

**Menu**

Press **Menu** to turn the function key labels along the bottom of the screen off and on. Pressing **System**, **Shift** **System** or **CTRL** **System** will also turn them back on.

**CTRL** **Menu**

Press **CTRL** **Menu** simultaneously to display the user keys menu. See the *HP 150 Terminal User's Guide*.

**Shift** **CTRL**  
**Shift** **Menu**

Press these three keys simultaneously to turn touch screen on and off.



User System

Press **Shift User System** to see the last system keys you used. Press **Shift User System** twice to bring the system labels onto the screen (only works from the MS-DOS command prompt, local mode, or from a programming language such as BASIC). See System Function Key Labels later in this chapter.

Shift User System

Shift User System displays function key labels used by the current application program.

CTRL User System

These two keys (used simultaneously) bring the user keys to the screen.

Clear line

Position the cursor. Press **Shift Clear line**; the characters from the cursor to the end of that line are deleted.

Shift Clear line

Press Shift Clear line simultaneously to blank out the line containing the cursor.

Clear display

Position the cursor. Press **Shift Clear display** to delete all characters after the cursor from display memory.

Shift Clear display

Press Shift Clear display simultaneously to clear all lines from display memory.

Backspace

Press Backspace to move the cursor back one space on the screen, erasing the character to the left.

Insert line

Position the cursor. Press Insert line. A blank line appears at the position of the cursor, and following lines are moved down.

Delete line

Position the cursor. Press Delete line to remove the line containing the cursor and move all subsequent lines up.

[Tab]

Press [Tab] to move the cursor to the next set tab. (Tabs are set manually by pressing [User System] twice, then [margins/tabs/col], then [SET TAB]; a tab is set at the cursor position. To remove, press [CLEAR TAB] or [CLR ALL TABS] instead of [SET TAB].)

Some application programs also let you set tabs.

[Insert char]

Position your cursor within a line, press [Insert char], then type characters. (Ins char now appears at the bottom of your screen.) The characters you type will be inserted at the cursor; if you type letters into a full line, the letters in the last column are lost. Press [Insert char] again to turn it off.

[Shift] [Insert char]

Position your cursor within a line, press [Shift] and [Insert char], then type characters. The characters you type will be inserted at the cursor; if you type letters into a full line, the letters in the last column are wrapped to the next line. All following lines are adjusted. Press [Shift] [Insert char] again to turn it off.

[Delete char]

Position the cursor at a character. Press [Delete Char] to remove that character from the screen. Subsequent characters move left to fill the gap.

[Caps]

Press [Caps] to make all letters you type on the screen capitals. (Caps now appears at the bottom of your screen.) Press [Caps] again to return to lowercase.

[CTRL]

Press [CTRL] in combination with another letter to send control characters to the computer; see the *HP 150 Terminal Owner's Guide* for details.

[Return]

Press the Return key to signal completion of an entry. The cursor moves to the next line, column one.

-  Press Cursor Home to move the cursor to line 1 column 1 of the screen (and display memory).
-   Press **Shift**  cursor home simultaneously to move the cursor to the last line, last column of the screen (and display memory).
-  Press Cursor Up to move the cursor up one line.
-   Press **Shift**  and  to move lines of text on the screen up, displaying any lines below.
-  Press Cursor Left to move the cursor left one space. You can keep moving left from the first space of a line to the last space of the previous line.
-  Press Cursor Right to move the cursor right one space. You can keep moving right from the last space of a line to the first space of the next line.
-  Press Cursor Down to move the cursor down one line.
-   Press **Shift**  and  to move lines of text down on the screen, displaying any lines below.
-  Press **Prev**  to see the previous page (24 lines if that many exist) of display memory.
-  Press **Next**  to see the next page (24 lines if that many exist) of display memory.
-  Use the **DEL-ESC** key in combination with other letters, as described in the *HP 150 Terminal User's Guide*.

**Shift**

Press **Shift** combined with other keys to produce uppercase letters and type the symbols above on double function keys. For example, **Shift** **Reset Break** (simultaneously) performs the Reset function. **Shift** **DEL** produces the DEL character.

**Select**

Instead of touching the screen, you can position the cursor or pointer with the **Tab** and **Shift Tab** keys. Then, press **Select** to mark the choice at the cursor or pointer.

**Ext Char**

Press **Ext Char** (Ext Char appears at the bottom of the screen) to use the Extended Roman character set\* on your keyboard. You might do this when composing a letter sent to Europe. (See Appendix B.)

**Enter**

Press **Enter** when the HP 150 is used as a block mode terminal. (See the advanced HP 150 owner's guide or the *HP 150 Terminal User's Guide*.)

**Shift** **Enter**

Press **Shift** **Enter** to print the text on the screen to the default printer. This can be done from Basic or Local Mode, or the MS-DOS command prompt.

Some keys also perform graphics control functions. See the *HP 150 Terminal User's Guide* for more information.

\* To use extended characters, the ASCII 8 bits entry in Terminal Configuration must be set to yes. To print extended characters, parity must be none and the Databits entry (for the port the printer is on) must be 8.

# System Function Labels

device margins/ service modes enhance define set config  
control tabs/col keys video fields time time keys

Touch these labels to bring other sets of labels to the screen. In general:

- Device control allows you to print information on your printer.

See Printing From Basic or MS-DOS in this chapter for more information on device control.

- Margins/tabs/col deals with the screen format when the HP 150 is used as terminal.

See the *HP 150 Terminal User's Guide* for more information on margins/tabs/col.

- Service keys allows you to perform several tests on the system processor.

See the appendix on Maintenance for more information on service keys.

- Modes is explained below.

- Enhance video allows you to change the video enhancements that you can do on the screen when defining forms on the HP 3000.

- Define fields brings up a level of function keys to define forms on the HP 3000. (See the *HP 150 Terminal User's Guide*.)
- Set time allows you to change the time shown at the bottom of the screen.
- Config keys allows you to change the HP 150 configuration; configuration basically controls the operation of your HP 150. A config menu is a list of choices; for example, do you want an HP 150 computer or an HP 150 terminal? Do you want the cursor as a box or a dash? Both the system processor and the operating system (MS-DOS) can be configured.

See the appendix on Configuration for more information on config keys.

**modes** Press **modes** to display the following labels on the screen:

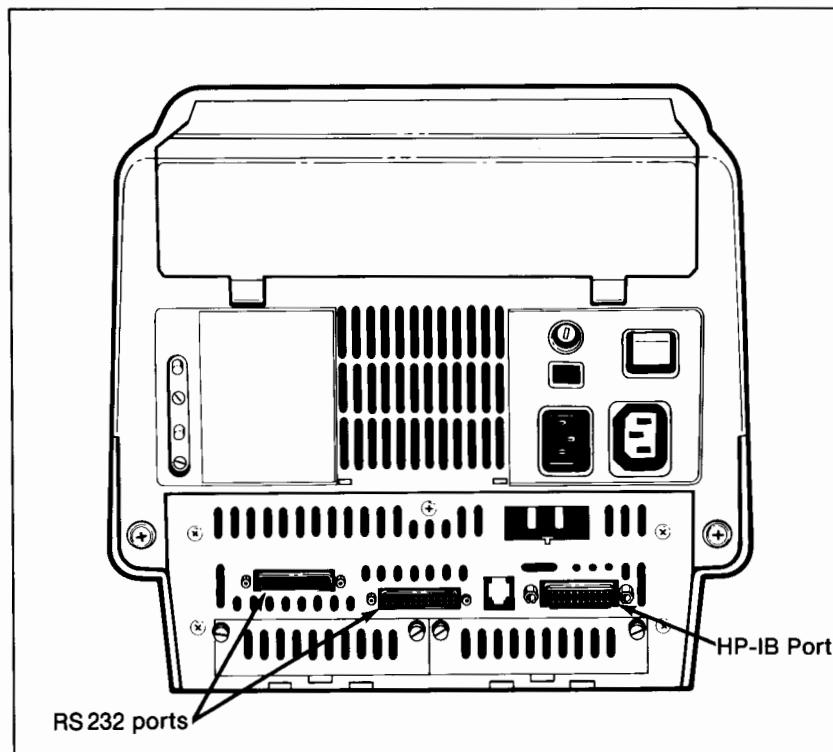
LINE MODIFY BLOCK MODE REMOTE MODE SMOOTH SCROLL MEMORY LOCK DISPLAY FUNCTNS AUTO LF

Touch these labels to activate (\*) or deactivate (no \*) these functions.

Pressing **REMOTE MODE** removes the asterisk in the label; this makes the HP 150 act as neither a computer nor terminal (Local Mode). You can type to the screen, but nothing else. Press **REMOTE MODE** again to restore the asterisk.

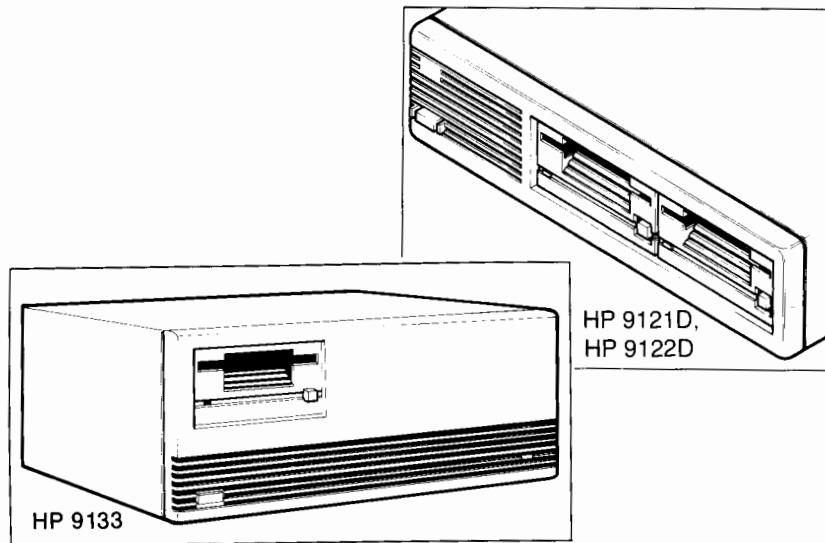
See the *HP 150 Terminal Owner's Guide* for more information about all of the modes keys.

## RS 232 and HP-IB Ports



Ports on a computer are like outlets on a stereo receiver; use them to connect other devices. (A stereo connects with speakers while a computer connects with a printer. A stereo would connect to a tape deck, while a computer connects to a disc drive.) The main thing to keep in mind is to use the correct ports for your devices. In general, this is easy because RS232 connectors won't fit on an HP-IB port and vice versa. (See Chapter 2 for more information.)

# Disc Drives



You use discs to keep information for later use; disc memory is the only place to store files on an HP 150. The equipment that reads information from a disc, and writes information to a disc is a disc drive. (For more information on discs, see the chapter on Discs.)

Flexible discs should be placed in (or removed from) a drive only when the drive is on. This preserves the disc drive head and protects you from loss of data. (The head movement of the drives when the system is turned on or off can damage a flexible disc.) Also, never take out a disc when the red disc access light on the front of the drive is on. To do so will probably damage the disc.

Disc drives are named by letters of the alphabet. If you have a dual flexible disc drive, the drive on the left is named "A" and the drive on the right is "B." If you have a fixed disc with a flexible disc drive, the fixed disc drive is usually named "A" and the flexible one is "B."

## Starting Up the Computer

Before starting up the HP 150 and using it as a personal computer, you must first set up the system processor and keyboard, install the disc drive(s), install any printers or plotters, and configure the HP 150 to work with all the disc drives, printers, and plotters that you have connected to it. After all of this has been done, you are ready to proceed.

To start up the computer, you must:

1. Turn on the disc drive if it has its own power cord. If the disc drive is connected to the HP 150 by an interconnect power cord, then the disc drive will be turned on automatically when the HP 150 is turned on.
2. If you have a dual flexible disc drive, then put the Sys\_Master disc (or your working copy of it) in drive A:. (This is the drive on the left.)

If you have a fixed disc drive with a flexible disc drive unit, and the fixed disc drive is A:, then the operating system should have already been copied onto the fixed disc. (If you have not done this, see "Configuring a Fixed Disc Drive with a Flexible Disc Drive Unit" in Appendix A.)

The Sys\_Master disc has the operating system, which controls the operation of the computer. Your personal computer must always have the operating system in memory before it can do anything.

3. Turn on the HP 150. (If you're facing the display screen, the power switch is located in the top left corner on the back of the computer.) The system processor "looks for" the operating system on a disc, and copies the operating system into memory. This step is known as "loading the operating system" or "booting."

You will know that you have successfully started up your HP 150 when the main menu of the Personal Applications Manager (P.A.M.) appears on the screen. (An example of this menu is at the beginning of Chapter 5.)

If you have used the Sys\_Master disc to load the operating system into memory, you can remove the Sys\_Master disc from the drive if you wish after the HP 150 starts up.

## **Loading Application Programs**

Disc drives are named by letters (A: B: C: ,etc.) When you want to indicate a particular drive, you will use its letter. When you start your system (see above), the Personal Applications Manager (P.A.M.) checks all of your discs. P.A.M. then lists every installed application program it can find on every disc; load and run these programs by touching their name on the screen, then touching **Start Applic.**

See the chapter on Personal Applications Manager for more information.

## **Storing Files**

When you store files that you create, you will specify a disc and a file name. The file is stored under that name on the disc you indicate. If you ever forget to name a disc and only name a file name, the file will be stored on the disc that is the default at the time (usually the A: drive).

If you divide your disc into individual areas called directories (see the chapter on Files), you will not only decide which disc to store a file on, you will also decide under which directory to store the file. In this case, if you name a disc but no directory, the default directory is used (usually the root). The file would be stored in the default directory.

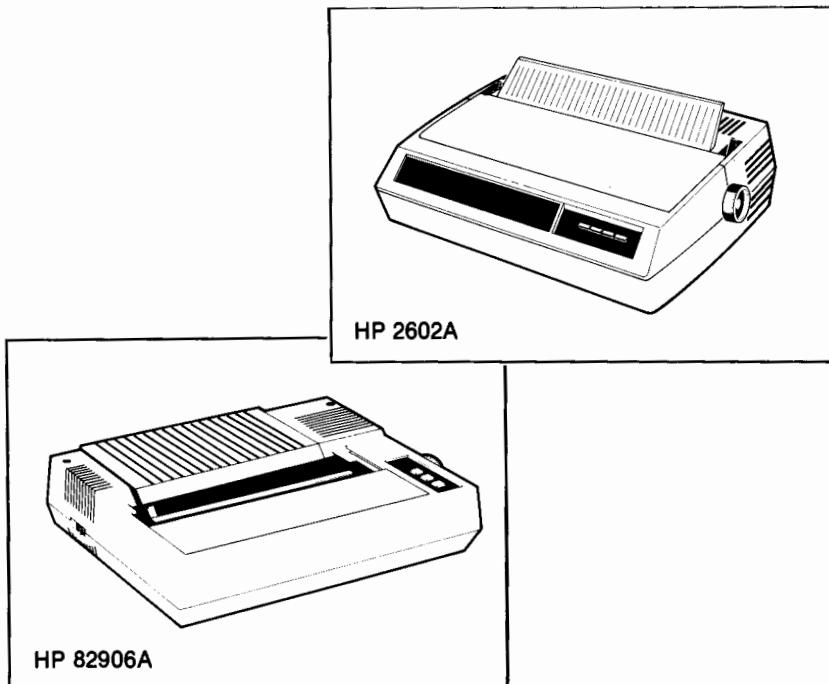
If the message "Op Sys device not found. Press RETURN to clear" appears, be sure disc drive A: is turned on.

## **The HP 150 Terminal User's Guide**

When the HP 150 is a terminal, use its terminal guide of instructions and explanations. This manual was shipped with your HP 150.



# Printers



A printer provides paper copies of any information that you wish to send it. You may have a faster, less expensive printer that forms characters with dots (HP 82906B), or you may have a slower letter-quality printer that prints characters like a typewriter (HP 2602A).

## Printing from Application Programs

Application programs allow you to print information that you've created with that application; many of them use the HP 150 File Manager (discussed in the P.A.M. chapter in this book) to print. See each application manual for specific details about printing.

## Printing From Programming Languages or From MS-DOS

If you are not using P.A.M or any application program, you can still print by using the print features inside the system processor. Do this either from the MS-DOS command prompt, local mode, or from a programming language such as BASIC.

From the MS-DOS command prompt or programming language prompt, press:

**Remote Mode** (the asterisk disappears).

User  
System

User  
System

device margins/ service modes 1 1 enhance define set config  
control tabs/col keys video fields time keys  
Tab-Spac 10:22 CAPS Ins Char

If you want to send everything on the whole screen to your printer just the way it is, position your cursor at the top of the text and touch:

device modes "to" ADVANCE PAGE 1 1 ADVANCE COPY COPY COPY  
control devices PAGE Tab-Spac 10:22 LINE ALL PAGE LINE  
CAPS Ins Char

If you want to alter the way you print, touch:

device modes "to" ADVANCE PAGE 1 1 ADVANCE COPY COPY COPY  
control devices PAGE Tab-Spac 10:22 LINE ALL PAGE LINE  
CAPS Ins Char

To lock the keyboard (except for **BREAK**, **RESET**, and **RECORD MODE**) and have all lines sent to a 256 character buffer before being printed, touch:

device RECORD LOG LOG 1 1 COMPRESS REPORT METRIC  
control MODE BOTTOM TOP 10:25 PRINT PRINT PRINT  
Tab-Spac CAPS Ins Char

---

#### NOTE

After printing, press **RESET** or **RECORD MODE** to turn off record mode.

---

To have each line you type print when you press **Return** \*, touch:

device control	RECORD MODE	LOG BOTTOM	LOG TOP	1 1	COMPRESS PRINT	REPORT PRINT	METRIC PRINT
Tab-Spec				10:25	CAPS	Ins Char	

To later fill display memory with 48 lines, then have only the top line print as you add line 49, touch:

device control	RECORD MODE	LOG BOTTOM	LOG TOP	1 1	COMPRESS PRINT	REPORT PRINT	METRIC PRINT
Tab-Spec				10:25	CAPS	Ins Char	

If you want narrow characters (132 characters per line instead of 80) to print later on your internal printer only, touch:

device control	RECORD MODE	LOG BOTTOM	LOG TOP	1 1	COMPRESS PRINT	REPORT PRINT	METRIC PRINT
Tab-Spec				10:25	CAPS	Ins Char	

If you want Report Format (three line top margin, 60 lines of text when you print, and a three line bottom margin followed by a page mark) to print on your internal printer only, touch: \*\*\*

device control	RECORD MODE	LOG BOTTOM	LOG TOP	1 1	COMPRESS PRINT	REPORT PRINT	METRIC PRINT
Tab-Spec				10:25	CAPS	Ins Char	

If you want Metric Format (three line top margin, 64 lines of text when you print, and a three line bottom margin followed by a page mark) to print on your internal printer only, touch: \*\*

device control	RECORD MODE	LOG BOTTOM	LOG TOP	1 1	COMPRESS PRINT	REPORT PRINT	METRIC PRINT
Tab-Spec				10:25	CAPS	Ins Char	

Choose a printer by touching:

device modes	"to" devices	ADVANCE PAGE	1 1	ADVANCE LINE	COPY ALL	COPY PAGE	COPY LINE
Tab-Spec				10:22	CAPS	Ins Char	

\* LOG BOTTOM and LOG TOP can't both be on together.

\*\* REPORT PRINT and METRIC PRINT can't both be on together.

Press **SERIAL DEVICE** if you are using an RS232 or RS422 printer. Press **HP-IB DEVICE** if you are using an HP-IB printer\*. Press **INTERNAL PRINTER** to use the built in printer (if you have it). **TO DISPLAY** is used when the HP 150 is a terminal.

device control	SERIAL DEVICE	HP-IB DEVICE	INTERNAL PRINTER	1 1	TO DISPLAY			
Tab-Spac				10:26	CAPS	Ins Char		

If you want to move a page of paper through the printer (form feed), touch:

device modes	"to" devices	ADVANCE PAGE	1 1	ADVANCE LINE	COPY ALL	COPY PAGE	COPY LINE
Tab-Spac			10:22	CAPS	Ins Char		

If you want to move the paper in the printer up a line, touch:

device modes	"to" devices	ADVANCE PAGE	1 1	ADVANCE LINE	COPY ALL	COPY PAGE	COPY LINE
Tab-Spac			10:22	CAPS	Ins Char		

If you want to print all text from the cursor to the bottom of text (home the cursor for the whole text), touch:

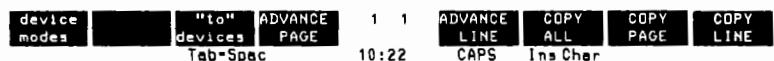
device modes	"to" devices	ADVANCE PAGE	1 1	ADVANCE LINE	COPY ALL	COPY PAGE	COPY LINE
Tab-Spac			10:22	CAPS	Ins Char		

If you want to print the contents of the screen from the cursor to the bottom of the screen (home the cursor to print the whole screen), touch:

device modes	"to" devices	ADVANCE PAGE	1 1	ADVANCE LINE	COPY ALL	COPY PAGE	COPY LINE
Tab-Spac			10:22	CAPS	Ins Char		

\* If you have two HP-IB printers, the one set to address 1 is used. (See Chapter 2 for more about HP-IB addresses.)

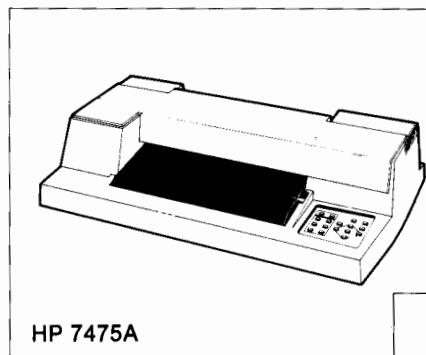
If you want to print the line containing the cursor, touch:



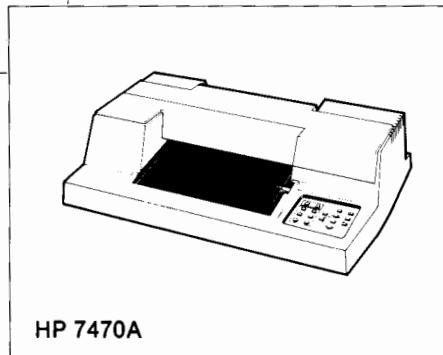
After printing, press Remote Mode to return the asterisk, and have the HP 150 act as a computer again.

You can also print with the P.A.M. print command (see the chapter on P.A.M.), from the MS-DOS print command (see the chapter on MS-DOS), or from the keyboard (see this chapter, the Print Enter key).

## Plotters



HP 7475A



HP 7470A

Use the plotter with the program Series 100/Graphics and with other graphics programs. You will be able to draw pie charts, bar charts, line charts, and words on either paper or overhead transparencies. Learn more about your plotter from the manual shipped with it.

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## **Chapter 4**

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# **FILES**

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A file is a collection of information stored under a certain name on a disc. The steps to create a file are:

### **Creating a File**

- 1) Run an application and create some data
- 2) Choose a file name
- 3) Decide which disc to store the file on (A:, B:, C:, etc)
- 4) Optionally decide which directory to store the file under
- 5) Store the file from the application, using a disc letter, an optional directory path, and a legal file name.

These steps are detailed below.

## **Creating Data**

The most common way to create data is from within applications. You usually run an application, create some data within that application, then save the data under a file name.

The kind of information you save depends on which application you used to create it. For example, VisiCalc is a spreadsheet full of numbers and labels; a file created with VisiCalc would contain numbers and labels. MemoMaker and WordStar, on the other hand, usually create memos and letters; a file created with MemoMaker would contain a lot of words.

Each application tells you how to create a file from within that application.

Another way to create files is by writing a program in the MS-DOS line editor. This process is described in the *HP 150 Advanced User's Guide*.

## Choosing a Filename

Filenames consist of one to eight characters, except for the characters . [ ] ? \ = \* : ; - < >. Those twelve characters are the only ones that cannot be used. For example:

Chapter1  
Myletter  
You&You  
Memo#123  
A  
#2Letter

are all legal file names. They are one to eight consecutive characters with no illegal characters. There are some file names that either MS-DOS or Hewlett-Packard want to use exclusively. Do not use these file names:

AUX	MS-DOS uses this file name for files sent to or from an auxiliary device.
CON	MS-DOS uses this file name for data sent to or from the keyboard.
NUL	MS-DOS programmers use this file name.
PRN	MS-DOS uses this file name to refer to the print device.

In addition to the eight letters, you can add a file extension to a file name if you wish, although it is not necessary. A file extension is a period followed by three letters. The same restrictions ( . [ ] ? \ = \* : ; - < >) apply. For example:

```
Chapter1.Own  
Myletter.MEW  
You&You.1  
Memo#123.RW  
A.NEW  
#2Letter.OLD
```

are all legal file names with legal file extensions. The file name is one to eight consecutive legal characters, and the file extension is one to three legal characters.

Some file extensions are reserved by MS-DOS or by an application program for their own use. Do not use these extensions:

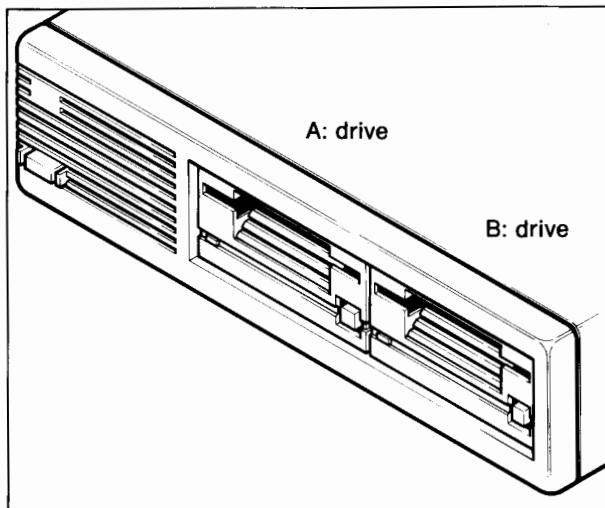
- .BAR         Graphics uses this extension for bar charts.
- .COM         MS-DOS uses this extension for program files.
- .DIF         VisiCalc uses this extension for files created to send data to another application.
- .EXE         MS-DOS uses this extension for program files.
- .IN\$         The install program uses this extension.
- .LIN         Graphics uses this extension for line charts.
- .LNK         The MS-DOS linker uses this extension for files in the MS-DOS editor EDLIN.
- .RM\$         The install program uses this extension to remove files.
- .TXT         The application program Graphics uses this extension for text charts.
- .PIE         Graphics uses this extension for pie charts.
- .VC         VisiCalc uses this extension to refer to its data files.

.VOL P.A.M. uses this extension.

.MSG HP uses this extension for message files.

Once you decide on a file name, you need to decide where to store the file. You have several options to choose from: you can store the file on any of your discs (labeled A, B, C, and so on); once you decide on the disc, you can store the file in any directory on that disc.

A disc is named by the drive it is in at the time. If a disc is in drive A, it is referred to as A (e.g. A:Filename). Move the same disc to drive B and the file name becomes B:Filename.



## What is a Directory Path?

First of all, what is a directory? A directory is a list; think of a phone directory, which is a list of people's names, their addresses and their phone numbers. A disc directory is very similar to a phone directory; it is a list of files, their sizes, and the last date they were altered.

If things are simple, you have only one directory. For example, in Ames, Iowa all the listings are in one phone book. On a flexible disc, you would probably keep it simple and have one directory. Think now of New York; what would happen if all New York phone numbers were in one directory? Queens listings would be included with Manhattan, the Bronx, and so on, all in alphabetical order by last

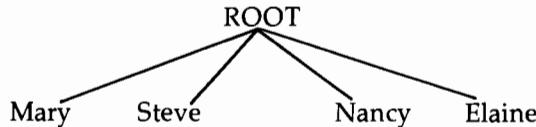
name. To find a name, you would have to look through a huge directory. A 10 megabyte disc is big enough to be a "New York." The root directory (base directory that is always present) could hold 1024 files, which are probably too many for one directory. If you think you have too many files for one directory, you can create subdirectories.

Subdirectories are smaller groups of files. For example, you could divide directories by user; Steve, Nancy, Elaine, and Mary all store their files on a 10 megabyte disc, so you could create four subdirectories named Steve, Nancy, Elaine, and Mary (names are up to eight characters long, with an optional three letter file extension). After that, each person would store their files under their own name.

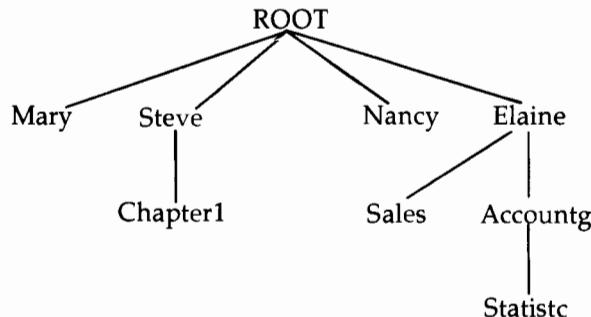
## How Do I Indicate a Subdirectory?

The top level of a directory is called a root. A root is always present on each disc; you don't create a root.

If a directory looked like this:



you would store the file Chapter1 in Steve's directory on disc A: by indicating `A:\STEVE\CHAPTER1`. If Elaine decided to group her files under two subdirectories (Sales and Accountg) in her directory, the directory would then look like this:



If Elaine wanted to access the file Statistic in the subdirectory Accountg on Disc C, she would indicate  
**C:\Elaine\Accountg\Statistic**. This would tell MS-DOS "look under the subdirectory Elaine, then the subdirectory "Accountg" to find the file Statistic; this is the path you want MS-DOS to look at.  
**C:\Elaine\Accountg\Statistic** is the pathname.

## **Creating New Subdirectories**

Create subdirectories by using the Make Dir portion of P.A.M.'s File Manager, explained in the P.A.M. chapter. The new directory you create will become a subdirectory of the directory you are in when you issue the command. (See the chapter on P.A.M..)

## **Removing Subdirectories**

Remove unwanted directories with the Delete File/Dir portion of P.A.M.'s File Manager, explained in the P.A.M. chapter. Always keep in mind that a directory can be deleted only when every one of its files has been deleted.

## **Choosing Default Subdirectories**

You can choose a default directory from any HP application. Use File Manager from the application, and pass a directory back to the application. This directory becomes the default.

---

### **NOTE**

For an explanation of default directories, see the chapter on Using Your Equipment.

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## **Using HP 120 or 125 Files**

Convert HP 120 or 125 data files to HP 150 format by using the Copy/Backup program discussed in the Discs chapter.

## Chapter 5

### P.A.M. — THE PERSONAL APPLICATIONS MANAGER



In the beginning, computers were large and complicated. They only "understood" a few key combinations of letters and symbols, and the people who used the computer had to memorize these combinations. Today, computers are smaller and can "understand" people much better than before. Programs, such as P.A.M., have been written to translate the unfamiliar letters and symbols into actions you are familiar with. For example, computer programs are "run." Formerly, to use a program you typed the word run, maybe some quotation marks, the program name, and then you pressed . With P.A.M., you simply touch the name of the program on the screen, then  P.A.M. "runs" it. P.A.M. is provided, quite simply, so that you don't have to memorize a lot of computerese.

#### **What Is P.A.M.?**

You may have heard the term "shell"; if you have, P.A.M. is a shell that you use instead of typing MS-DOS commands.

Another way to describe P.A.M. is that it is a translator and coordinator. Instead of translating German to English, P.A.M. translates your touching the screen to a series of computer instructions. P.A.M. also coordinates your use of application programs and disc applications.

## What Can P.A.M. Do?

The things P.A.M. can do are:

- Start an application program
- Set the date and time in the HP 150 clock
- List all installed application programs, on available discs
- Start the File Manager
- Help you by giving some simple explanations
- Make your HP 150 act like a terminal

## How Do I Find P.A.M.?

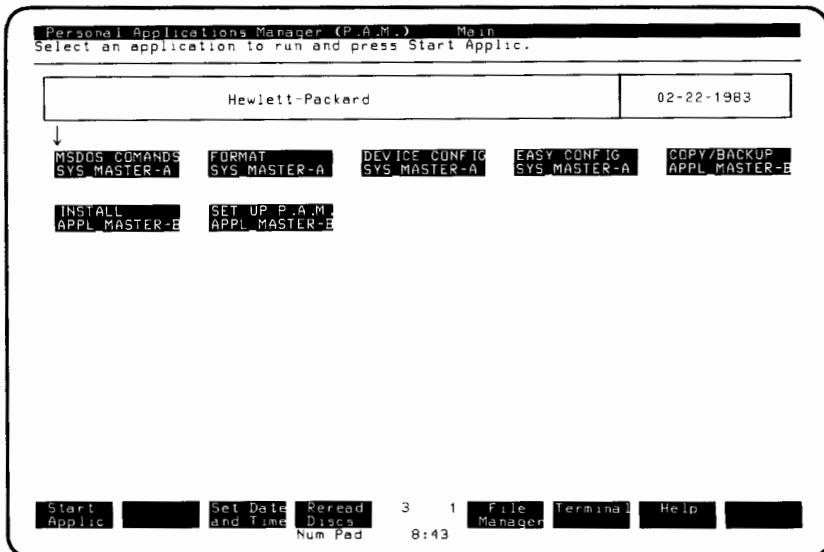
P.A.M. appears on your screen automatically.\* Every time you start the operating system (see Chapter 3), P.A.M. is loaded into the computer and appears on your screen. You turn on your disc drive, insert the proper disc, turn on the computer, and simply wait a few seconds.

If you are already using an application, you can always get to P.A.M. by exiting that application. As soon as you leave it, P.A.M. returns to the screen.

\* If someone has set the Autostart (see the application programs chapter) on your computer, P.A.M. will not automatically appear. You see the application (or MSDOS command prompt) named in Autostart

# How Do I Know When P.A.M. is Ready?

P.A.M. finds all of the installed application programs on the discs in the drives. It lists the names of these programs, disc by disc. As soon as the name of the program you want appears, you can start it by touching its name and **Start Applic.** Here's an example of P.A.M.'s first (Main) menu:



## NOTE

If your screen is full of application programs and the message Press Next/Prev to see more applications is at the bottom of the screen, use the keyboard keys **Next** and **Prev** to see additional pages of application names.

On the other hand, if no application programs are on your screen, be sure that discs are in the drives and the drives are turned on. You may need to install the applications according to the directions in the Applications chapter.

# How Do I Tell P.A.M. What To Do?

## Starting an Application Program

P.A.M. assumes you want to run application programs, so it lists every installed application it can find on available discs. Touch the name of the application you want to use, then touch **Start Applic.** as you remove your finger from the screen, the program is brought into memory and started.

(If you add another disc or turn one off, you can touch **Reread Discs** for a new list.)

---

### NOTE

Discs are searched in order from drive A to B, to C, etc.

---

If, for some reason, you don't want to touch the screen, you can move the arrow without touching the screen. Press the Tab key\* on the keyboard until the arrow is on the application you want; then, press **Select** on the keyboard. The result is the same as if you had touched the screen.

Another way to run an application is by using an MS-DOS command. Refer to Chapter 8 for more information, or to the MS-DOS User's Guide.

## Setting the Date and Time on the Clock

The HP 150 keeps track of the time and date (even if turned off), and shows them on the screen. If the time or date is wrong, you can reset it by following these steps:

Touch the words **Set Date and Time** on the bottom of the screen.

Touch **Cancel** to return to the main screen of P.A.M.

The current date is displayed on the prompt line. You are asked to type a new date, then press **Return**. Type using the format mm/dd/yyyy. If the date that was displayed is correct, just press **Return**.

\* The cursor control keys also move the arrow.

The current time is then displayed and you are asked to type the correct time, then press **Return**. Type using the format hh:mm on a 24 hour clock. If the time is correct, press **Return**.

You are automatically returned to the main menu of P.A.M. after pressing **Return** the second time.

## **Listing Available Application programs**

P.A.M. assumes you want to see your application programs, so it lists them automatically. All discs are checked when P.A.M. is started; if a disc is turned off at that time, the application programs on it won't appear. Later, if you turn on another disc or switch flexible discs in a drive, touch **Reread Discs** to make P.A.M. check all of the discs again. Application programs on the discs are redisplayed.

## **Help**

Touch **Help** on the screen to see a brief description of P.A.M.

Touch **Exit Help** to return to the main menu.

## **Using the HP 150 as a Terminal**

To act as a terminal, the HP 150 has three requirements:

- 1) The host computer (e.g., HP 3000) must know the terminal is there.
- 2) A cable must connect the terminal to the host computer.
- 3) **The HP 150 must be told to stop being a computer and act as a terminal.**

See the *HP 150 Terminal User's Guide* for more details about using the HP 150 as a terminal.

The third requirement above can be accomplished by touching **Terminal** on the P.A.M. screen. (To operate solely as a terminal, use the Power-on entry in the Global Configuration Menu, Appendix A.) When you wish to return to P.A.M. from the terminal, press **Shift Stop**.

# File Manager

The File Manager was created by Hewlett-Packard to use the touch screen feature of the HP 150 to perform the most commonly used MS-DOS functions. These MS-DOS functions can be performed by the File Manager without your memorizing any special words. You tell File Manager what you want to do, and it asks you for any pertinent information that is needed. Many times, your choices are listed on the screen; you pick one by touching one of the choices.

File Manager starts when you touch **File Manager** on the P.A.M. screen. File Manager stops when you touch **Exit FILE MGR.**

Many times, you touch the screen to perform tasks. Occasionally, you type names; all typed characters appear on line 3 until you press **Return**. Make any changes you want to the words on line 3 (by backspacing and typing) before you press **Return**.

The Series 100 File Manager allows you to:

- List files in a directory
- Print a file or directory
- Delete a file or directory from a disc
- Make a new directory on a disc
- "Browse" through the contents of a file
- Make a copy of a file on a disc
- Rename a file on a disc

## **Listing Files in a Directory**

For an explanation of directories, see the chapter on Files.

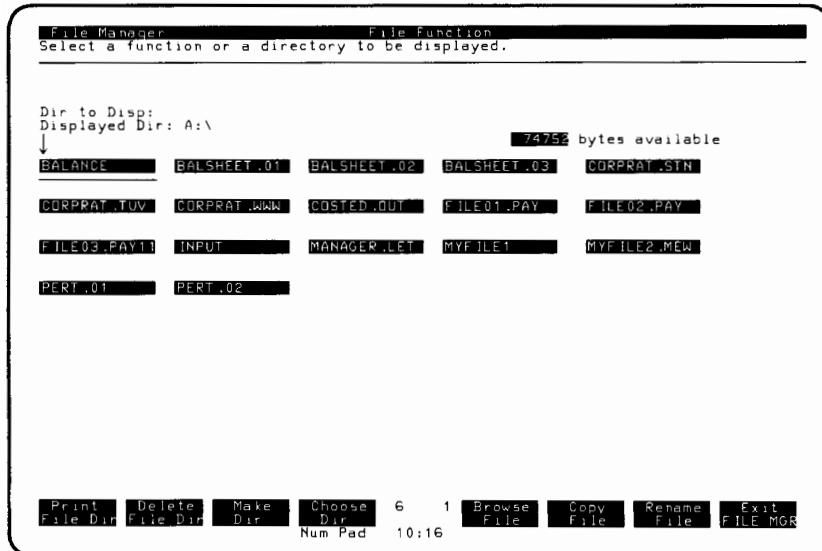
Start the File Manager by touching **File Manager** on the P.A.M. screen. File Manager appears:

---

### **NOTE**

To see more information about the files in this directory or to see a completely new directory, look under Choosing Another Directory in this chapter.

---



The File Manager automatically lists subdirectories first (in bold face, underlined, and alphabetized), then files (alphabetized) in the current directory.\* Think of a directory as a telephone directory; each area has its own listings. In this case, you are looking at the local directory, but if you wish, others are available.

\* If you press **Tab**, the arrow moves to the next file, even if it's on the following page. Press **Shift Tab** to move backwards. (Cursor keys also work.)

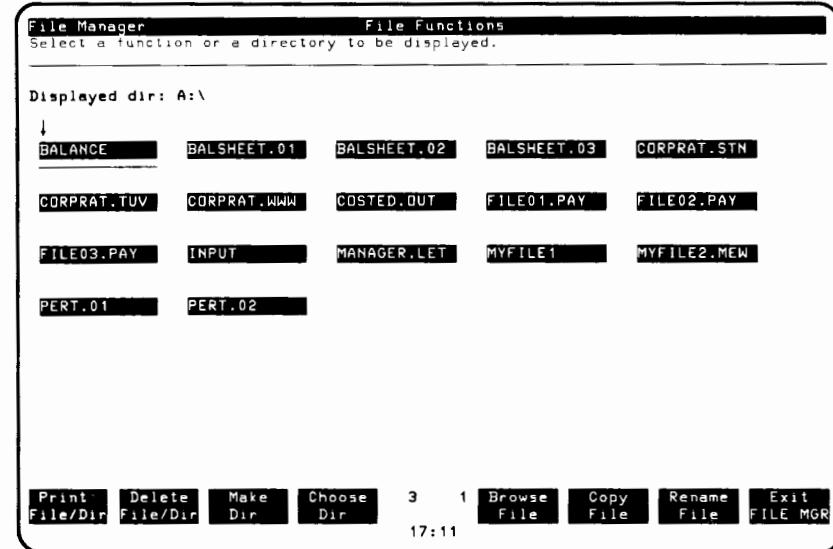
If a directory is very long, it may be continued in memory. Use **Next** and **Prev** to see the next and previous pages of file names.

### Printing a File or Directory

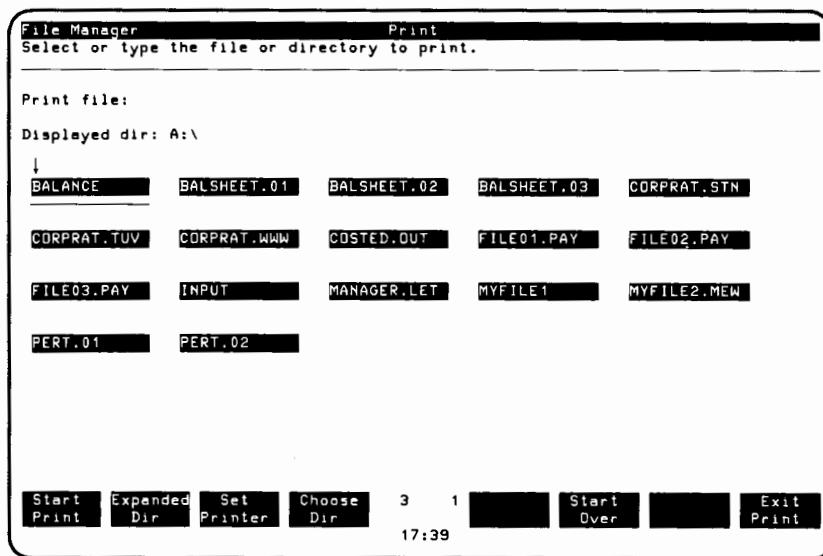
File Manager prints a file in one long page. Therefore, use it with continuous feed paper, not sheets of paper. If you want to change the margins of the file, or use single sheets, etc., use either MemoMaker or Wordstar.

From P.A.M., touch **File Manager**.

Then, touch **Print File/Dir**:



This screen appears:

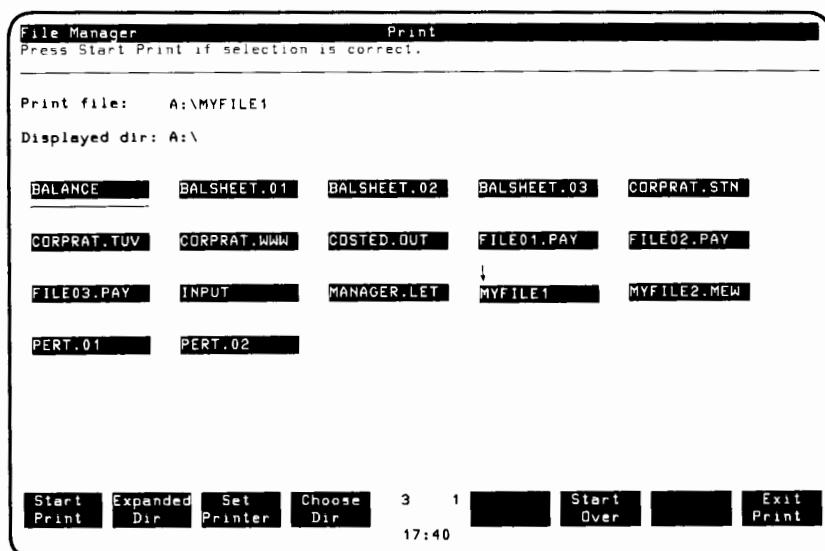


If you want to print all file names with available information about each file, touch **Expanded Dir**. Expanded directory entries look like this:

filename	size in bytes	date of last change	time of last change
Finance.Exe	30256	10-1-83	09:17a
Blackjak.Exe	58	10-5-83	01:40p
Mary	1000	10-1-83	10:10a

If you want to look at another directory, touch **Choose Dir**.

Touch the name of the file or directory you want printed. (You can also type the name and press **Return**.) The full name **(drive:\path\file name)\*** appears after Print file:

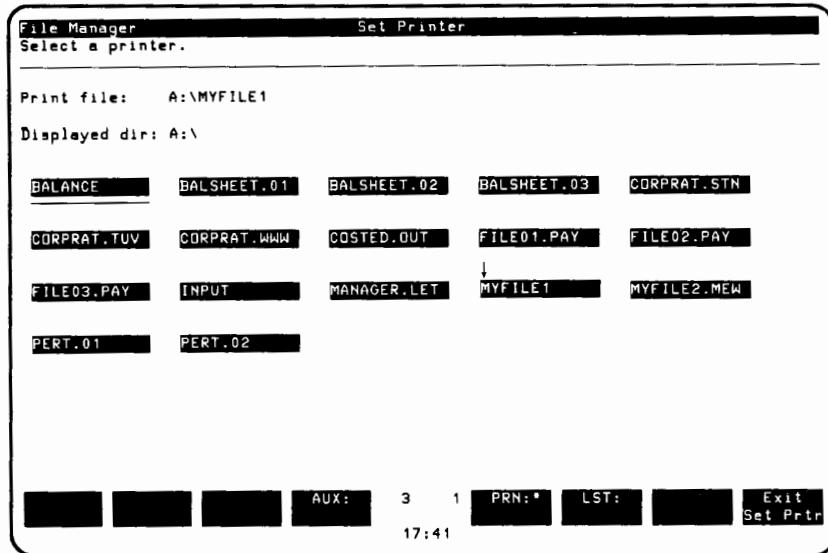


Notice that the file name you chose is highlighted, and that the name appears after Print file:

If you change your mind about which file to print, touch **Start Over** or touch another file name.

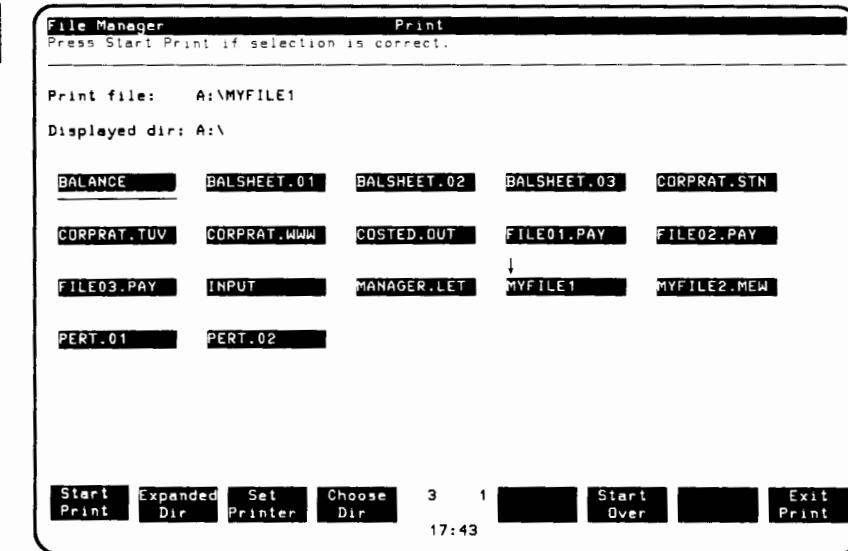
If you have more than one printer, touch **Set Printer** to choose which printer to use. This screen appears:

\* Note the use of backslash, not forward slash.



If you have only one printer, it has probably been named PRN; that is why there is an asterisk in that label. A second printer would probably be named LST. If you want to use that printer, touch **LST:**; an asterisk then appears in LST. AUX can also be a printer. (Look at your MS-DOS configuration for more information.) Touch **Exit Set Prtr.**

Touch **Start Print** to start printing:



While printing, the message "Printing the selected file (or directory)." appears at the top of the screen along with the label **Stop Print** in the lower right corner. Touch **Stop Print** to stop printing and return to the first print screen.

When printing is complete, you are returned to the first print screen. If you don't want to print another file, touch **Exit Print**.

## Deleting a File or Directory

This command allows you to delete either files or directories. A directory, however, can only be deleted when all of the files in it have been deleted.

Touch **File Manager** on the P.A.M. screen.

Touch **Delete File/Dir**; this screen appears:

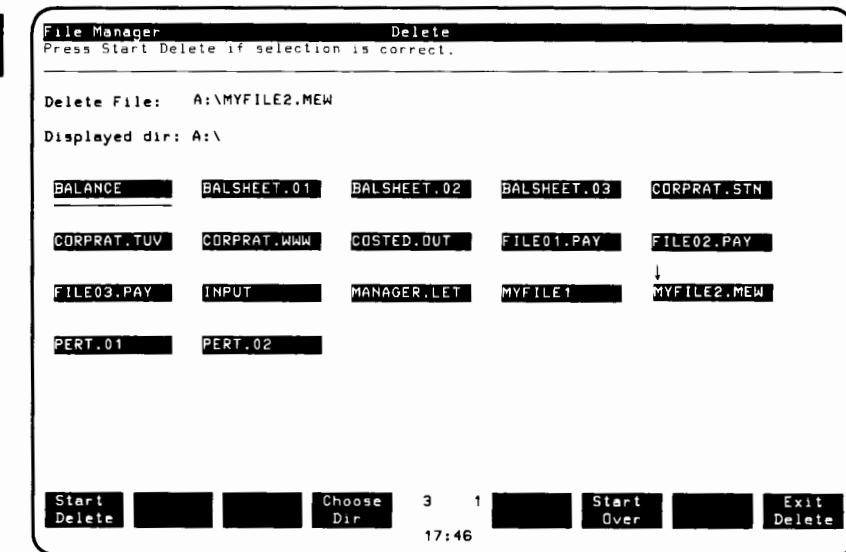


File Manager		Delete				
Select or type a file or directory to delete.						
Delete file:						
Displayed dir: A:\						
↓						
BALANCE	BALSHEET.01	BALSHEET.02	BALSHEET.03	CORPRAT.STN		
CORPRAT.TUV	CORPRAT.WWW	COSTED.OUT	FILE01.PAY	FILE02.PAY		
FILE03.PAY	INPUT	MANAGER.LET	MYFILE1	MYFILE2.MEW		
PERT.01	PERT.02					
Start Delete		Choose Dir	3 1	Start Over		Exit Delete
17:45						

(If you want to look at another directory, touch Choose Dir.)

Remember that you must delete all files (one at a time) in a directory before deleting the directory itself.

Touch one file or directory name on the screen. (If you touch a second file, the first one is "unselected.") The full name (**drive:\path\file name**) appears after Delete file:



Note that the file you touched is highlighted; you can touch it again (or touch another file) to "unselect" it. The highlighted file will be deleted.

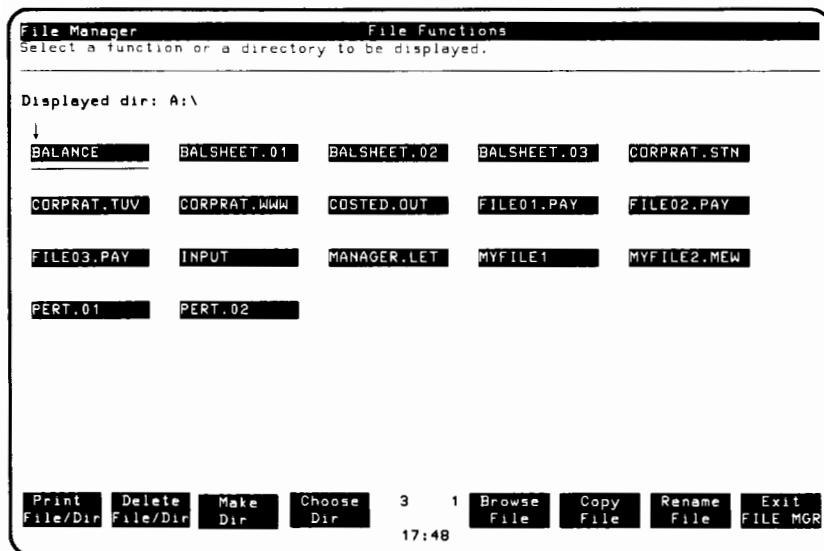
If you change your mind about which file to delete, touch Start Over, then touch a new file name. If you need to switch directories, touch Choose Dir.

Touch Start Delete.

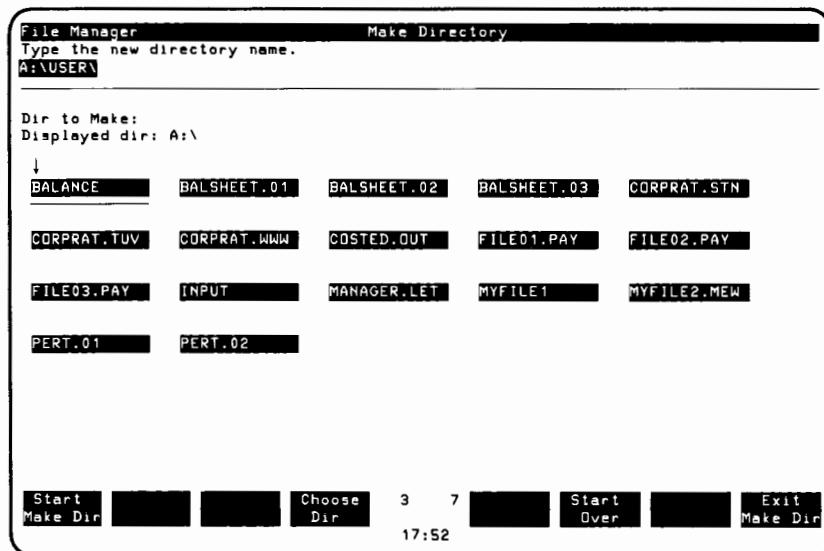
When the deletion is complete, the list of files reappears. Note that the deleted file or directory no longer appears on the screen. Touch Exit Delete.

## Making a New Directory

From P.A.M., touch **File Manager**, then **Make Dir**:

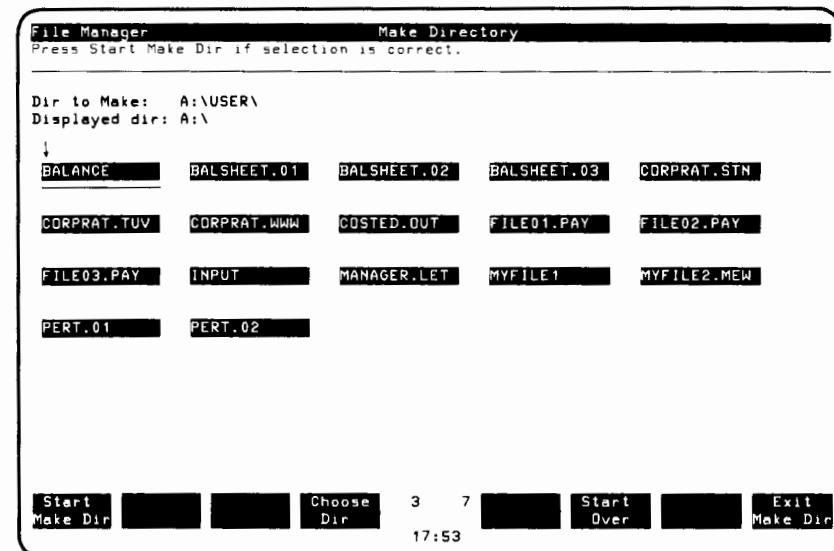


Type the new directory name; the full name (**drive:\path\directory name**) appears on the screen:



Press **Return**.

Touch **Start Make Dir**. The new directory will become a subdirectory of the one on the screen unless you specify otherwise. (If you indicate another directory (e.g., B:\USER\MARY\FILENAME), the file becomes part of the indicated directory. Touch **Start Make Dir**:



While the directory is being created, the message "Making the directory." appears on the screen.

The new directory name appears on the screen if it's part of this directory.

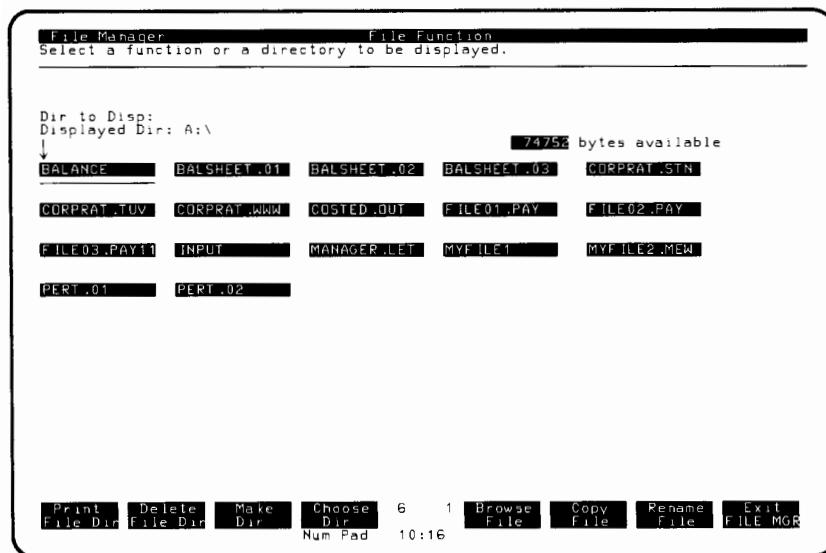
If you don't want to create another directory, touch **Exit Make Dir**.

## Choosing Another Directory

The File Manager allows you to display the contents of directories. Each directory can contain the names of subdirectories or ordinary files. Directories can also be empty.

The directory on the screen is called the current (or displayed) directory. Directories in the current directory are called subdirectories. You can display the contents of a subdirectory in the current directory three ways: by touching the subdirectory name, by entering the subdirectory pathname on a prompt line, or by using the cursor control and tab keys to move the arrow to the subdirectory name, and then pressing **Select** to select it.

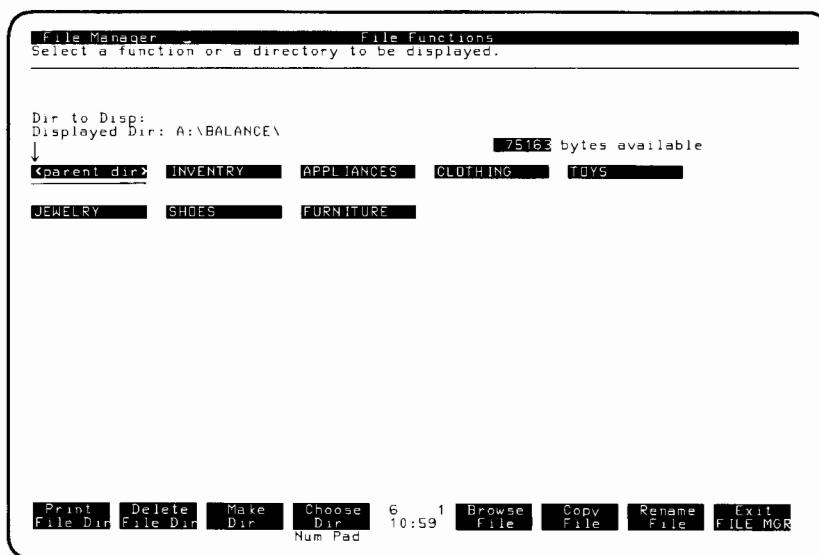
Here is a sample root level directory:



NOTE: If a directory contains more than 200 files, press **NEXT** or **PREV** to see more files.

Notice that subdirectories are listed first; they are underlined and shown in boldface on the screen. When you touch the subdirectory name while the File Functions or Choose Directory menu is on the screen, the File Manager immediately changes the display to show what is in the selected subdirectory.

For example, if you touch the subdirectory name **BALANCE**, then BALANCE becomes the current directory and the display shows all of the subdirectories and files belonging to BALANCE.



All directories below the root directory contain an entry called "<parent dir>." When you touch **<parent dir>**, the File Manager displays the directory directly above the current directory, i.e., the directory in which current directory resides.

The other way to select a directory is to touch **Choose Dir** at the bottom of the screen and type the pathname of the directory you want to get to. When you touch **Choose Dir**, the heading at the top and the labels at the bottom of the screen change:



When you have selected **Choose Dir**, you can either type the pathname of the directory to be displayed, or you can touch the screen as described earlier.

If, for example, you want to display the INVENTORY directory, which is in the BALANCE directory, you would type the pathname:

A:\BALANCE\INVENTORY

This takes you directly to the INVENTORY directory, regardless of which directory is being displayed.

When you are working in the root directory of a disc and start to type a pathname, you can leave out the disc drive letter if the directories that you are specifying are on the same disc as the root directory. When you are in any other directory, you have to specify the entire pathname and the disc drive. This is true whether you want to move to a higher directory, a directory on the same level, a lower directory, or a directory on another disc.

If you want to see the root directory on another disc, for example on drive B:, type:

B:

and then press **Return**.

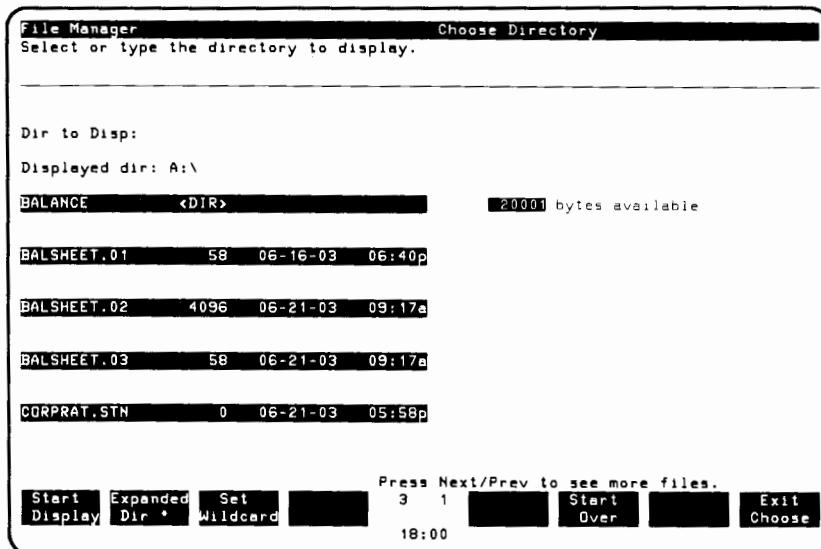
If you get lost among the directories, type:

\

to return to the root directory on the current disc. From there, you can figure out where you want to be.

When you have selected **Choose Dir**, different function labels appear at the bottom of the screen, including **Expanded Dir** and **Set Wildcard**.

When you touch **Expanded Dir**, an asterisk appears in the label. As long as the asterisk remains in the label, additional information is displayed for all directories. The expanded information includes the name of the file, either the word <DIR> to indicate that it is a directory or the number of bytes in the file, and the date and time the file was created or last modified.



To turn off **Expanded Dir**, touch the label so that the asterisk disappears.

If you want to see the names of only a certain group of files, then use the "wildcard" feature. Touch **Set Wildcard** and you will see the current wildcard setting on line three. The default setting, **\*.\***, means that the names of all files will be displayed. The current wildcard setting remains in effect for all files in all directories on all discs until you change the setting.

To choose a certain group of files to be displayed, you must change the wildcard setting by backspacing over it and typing in a new setting. If, for example, you change the wildcard setting to

**\*.PAY**

and then press **Return**, only files with a file extension of PAY and any file name will be displayed. If you change the setting to

**CORPRAT.\***

only files with a file name of CORPRAT and any file extension will be displayed.

You can narrow the choice further by using the asterisk as part of the file's name. For example, if you change the wildcard setting to

**BAL\*.\***

all the files whose file names start with BAL will be displayed.

If you want to make certain that only one character is the wildcard, use a question mark (?) instead of an asterisk. Thus, if you have files named MYFILE1A.DEB, MYFILE2A.DEB, and MYFILE2B.DEB, the wildcard designation

**MYFILE?A.DEB**

displays MYFILE1A.DEB and MYFILE2A.DEB, but not MYFILE2B.DEB.

To show all files again, backspace to clear the current setting. Then type

**\*.\***

and press **Return**.

To leave the Choose Directory menu, touch **Exit Choose**.

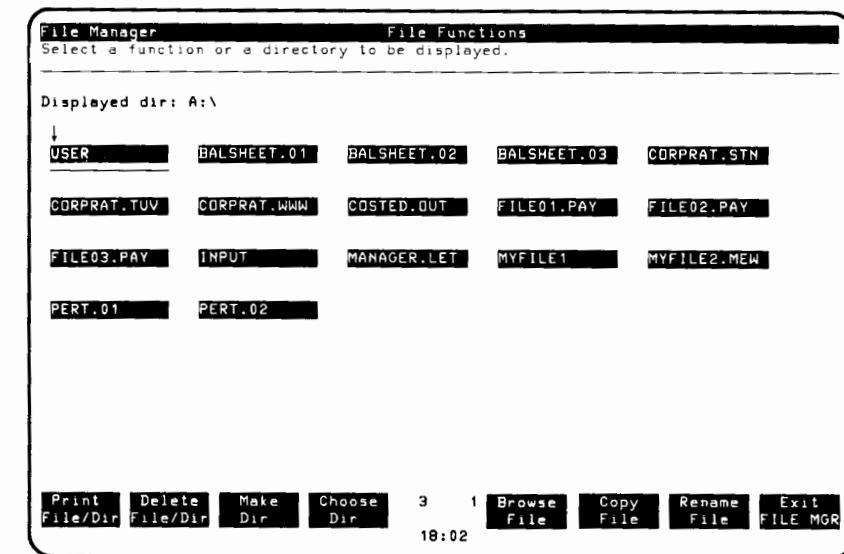
### NOTE

You may see a directory other than the root when you enter File Manager if you changed the default with the CHDIR command from the MS-DOS command processor or changed the default from an application program.

### Browsing a File

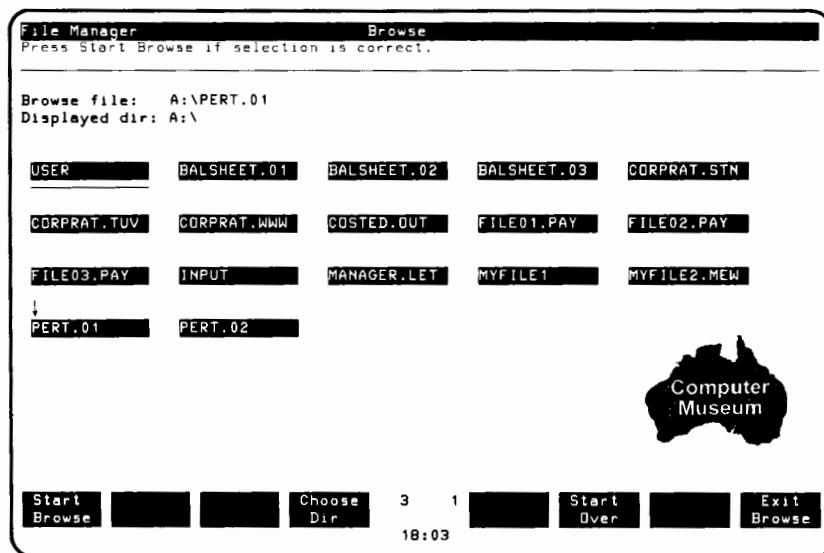
Touch **File Manager** on the P.A.M. screen.

Then, touch **Browse File**:



If you want to look at another directory, touch Choose Dir.

Touch the name of the file you want to look at; the full name (drive:\path\file name) appears on the screen after Browse file:



If you change your mind about which file you want to look at, touch Start Over (or touch the file name again to "unselect" it).

Touch Start Browse.

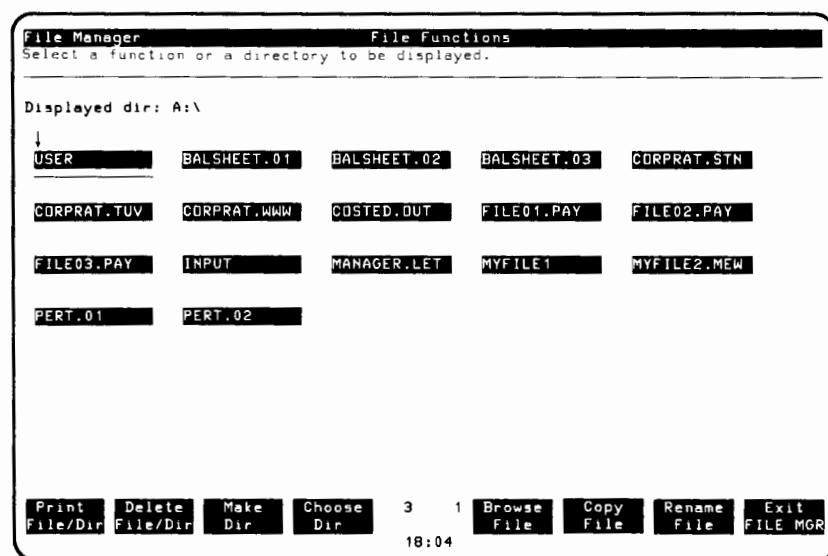
While File Manager looks for the file, the message "Looking for the file to browse." appears at the top of the screen.

The actual file now appears on the screen. Touch Next Page or Next Half Page to see following pages of the file; touch Prev Page or Prev Half Page to see previous pages (home up and down work too). The file appears exactly as it was stored, not exactly as it looks when an application displays it. When you are finished, touch Stop Browse. If you don't want to look at another file, touch Exit Browse.

## Copying a File

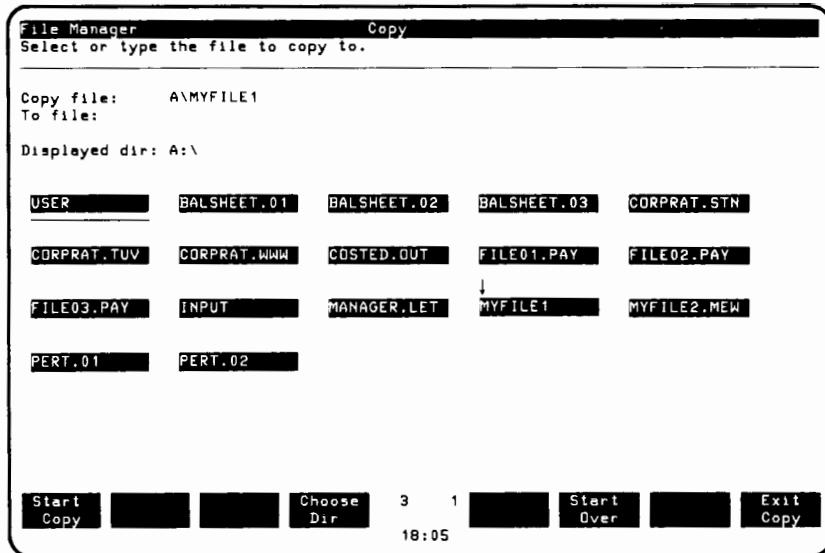
From P.A.M., touch **File Manager**.

Touch **Copy File**:



If you want to look at another directory, touch **Choose Dir**.

Touch the name of the file to be copied; the name appears after **Copy file:** on the screen.

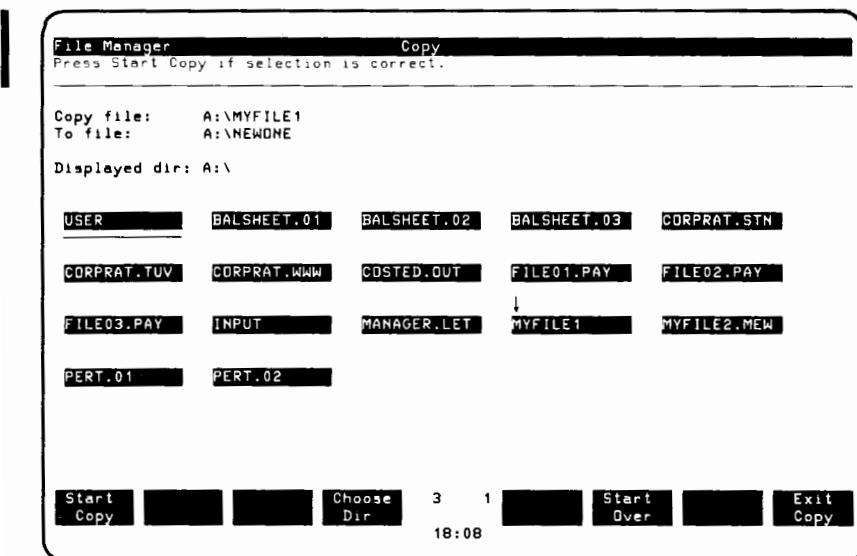


If you decide on another file, press **Start Over**; the file is “unselected.” After you choose the file, you are asked to name the new copy.

You probably want to choose a new name for the new copy; type a valid file name (see the discussion on files earlier in this chapter) and press **Return**. If you want to copy over an existing file, touch that file name on the screen.

If the file copy is to go to another disc, type the full pathname (e.g., C:\Mary\file name or C:\file name) which is the disc, directory, and file name.

The full pathname always appears. If you omit them, the displayed default drive and directory are used with the file name.



If you change your mind about the files, press Start Over.

Press Start Copy and wait for the copy to take place.

The message "Copying the file." appears at the top of the screen, and the label Stop Copy is in the lower right of the screen.

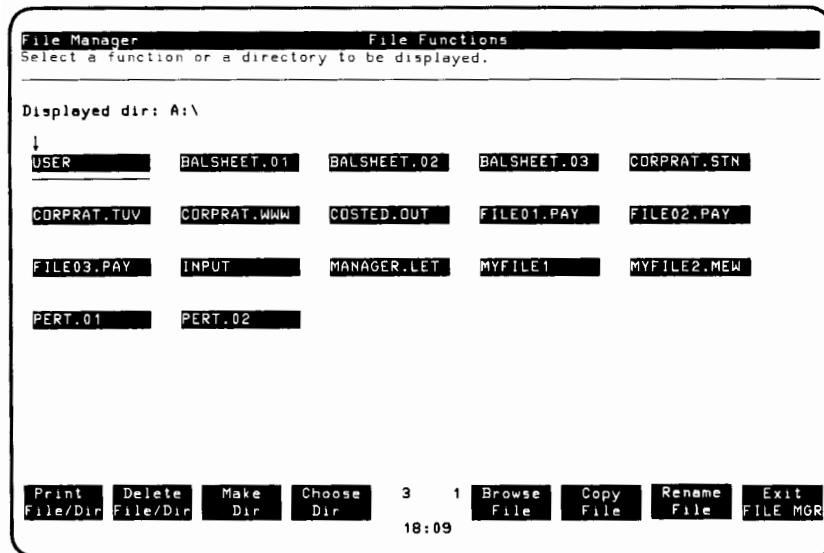
If you want to stop, press Stop Copy; files remain as they were before the copy began.

Press Exit Copy if you don't want to copy any more files.

# Renaming a File

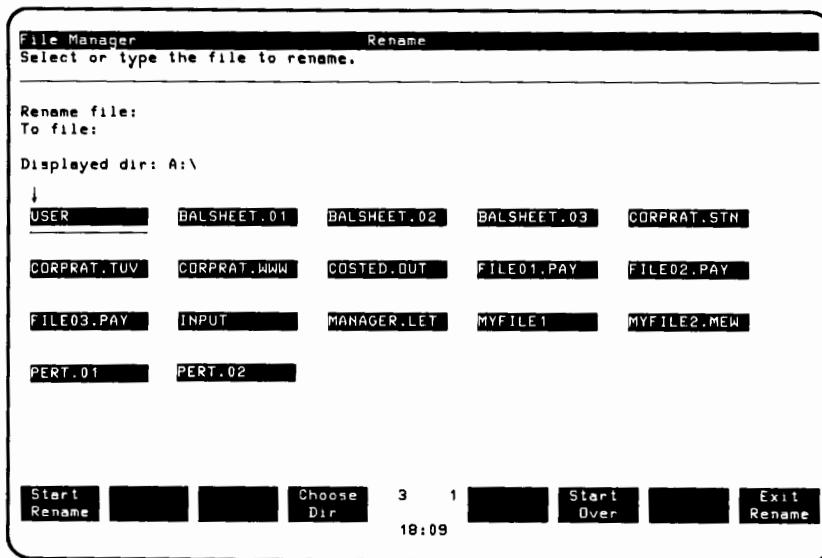
From P.A.M., touch **File Manager**.

Then, touch **Rename File**:

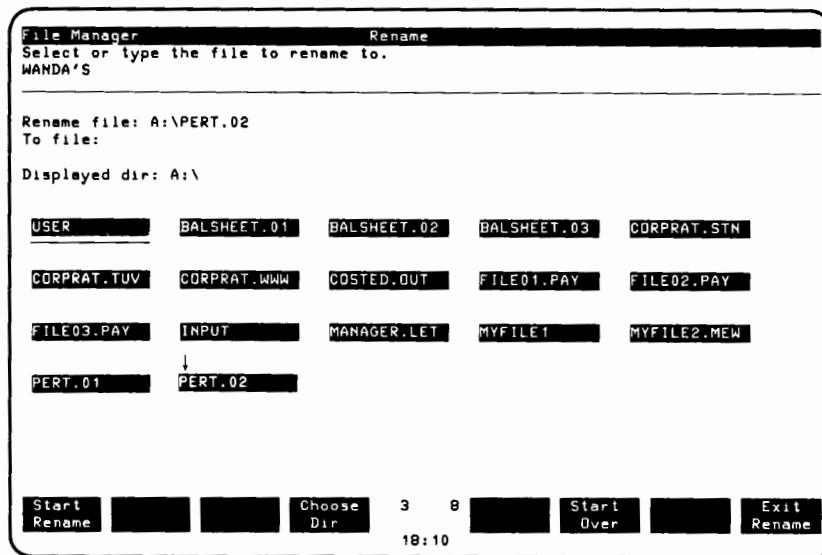


If you want to look at another directory, touch **Choose Dir**.

Touch the file name to be renamed:



The old file name (`drive:\path\file name`) is now on the screen next to Rename file:. Type the new name:

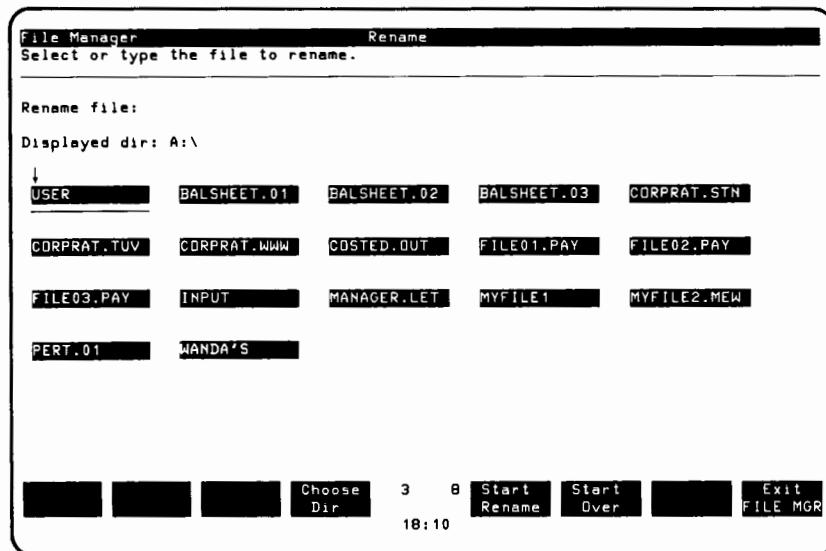


Press **Return**.

If you change your mind, touch **Start Over**.

Touch **Start Rename**.

When the rename is complete, the directory list reappears with the new name:



Touch **Exit Rename** if you don't wish to rename another file.



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## **Chapter 6**

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### **APPLICATIONS**

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You can gain access to installed application programs directly from the P.A.M. main menu. An application program is a program that has been designed to perform a specific task such as word processing, accounting, or graphic charting. To install an application program, you must use the INSTALL program that is included on your HP 150 Appl\_Master disc. You can install HP application programs, applications programs for the HP 150 from other companies, and application programs that you create yourself. (The special instructions for installing application programs from other companies are in the section "Installing Non-HP Application Programs.")

It is possible to use a master disc just as it sent to you from Hewlett-Packard. We strongly recommend, however, that you format another disc, and install the master disc's application programs onto it. This is called your work disc or working copy and you should use it instead of the master disc.

Keep the master discs in a safe place. This way, you can always create another copy (from the master only) if something happens to your work disc. Also, if you ever purchase an updated version of the operating system or an application program, you must send in the master.

Application programs must always be installed; they cannot be copied.

# **Installing HP Application Programs into P.A.M.**

You will need:

- a working copy of your Sys\_Master disc.
- a disc containing the application program to be installed.
- the INSTALL program on your working copy of the Appl\_Master disc.
- one of the following:
  - a newly formatted blank disc.
  - a non-blank disc with enough leftover room on it for the application program.
  - enough room on your fixed disc.

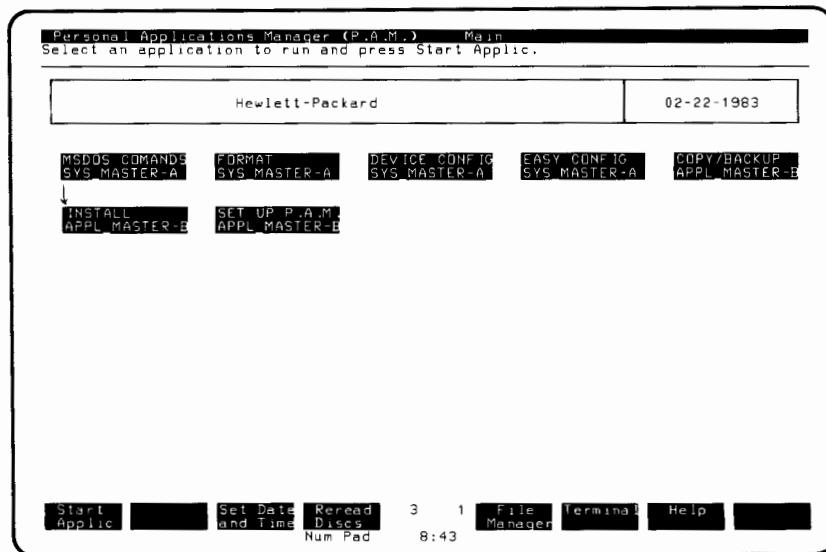
(If you have 3½" single-sided or 5¼" double-sided discs and the programs you want to put on the disc require more than 110K, do not put the operating system on the disc. If you have 3½" double-sided discs and the application programs you want to put on the disc require more than 590K, do not put the operating system on the disc.)

There are many variations in the ways you can install application programs. For example, the uninstalled application program can be on a disc of its own, on a disc with other programs, or on the Sys\_Master or Appl\_Master discs. The INSTALL program is on the Appl\_Master disc and could be on another disc. And when you have installed the application program, it might be on a disc of its own, or on another disc that contains several application programs or files of various types. In addition, the uninstalled application program may be under a root directory or a subdirectory, as can the installed application program.

The instructions that follow describe one scenario for installation. When you become familiar with INSTALL, you will be able to vary these instructions so that you can install an application program from any disc and directory to any disc and directory you wish.

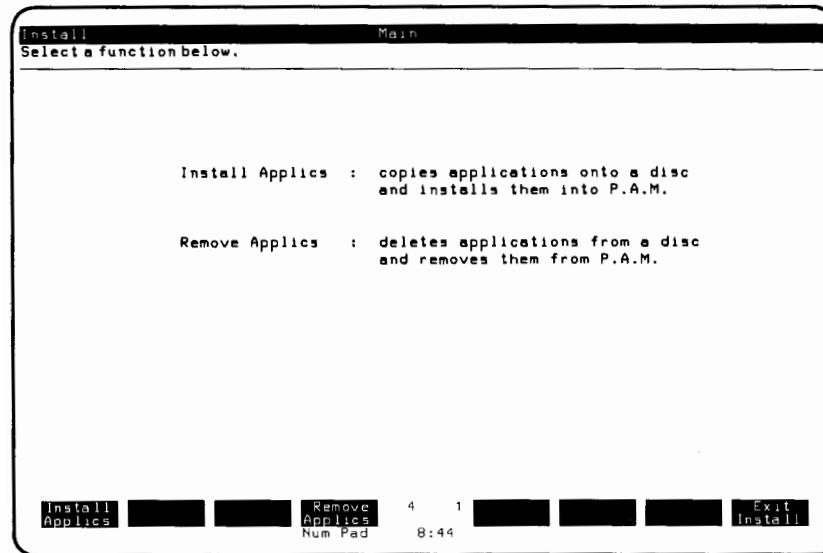
A. Get ready to install:

1. Make sure that the HP 150 and the disc drives are turned on.  
Place your Sys\_Master work disc in drive A:. The main P.A.M. menu should be on your screen.
2. Place the Appl\_Master work disc in drive B:.
3. Touch **Reread Discs**.
4. Touch **INSTALL**, then **Start Aplic.**



- B. Next, specify the operation you want to perform and the directories involved in the installation process.

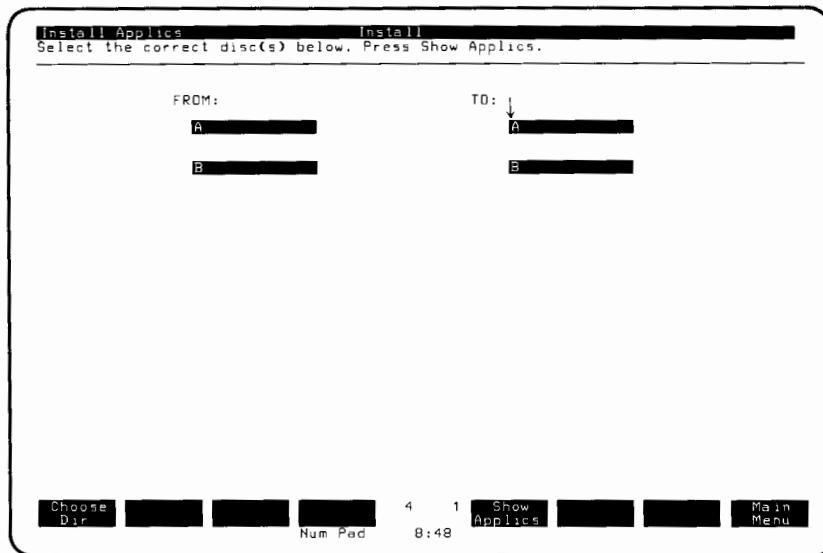
1. Touch **Install Apps**:



2. Under **FROM:** on the next menu, touch the name of the disc drive that has or will have the uninstalled application program. (In this case, you will touch drive B: if the application program is on a separate disc or if it is on the disc that contains the INSTALL program. The uninstalled application program could also be on the disc that has P.A.M.)

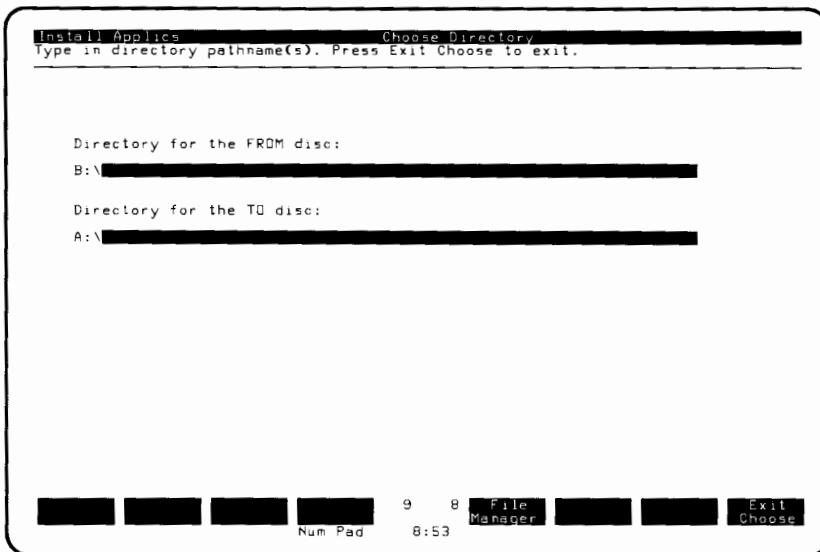
3. Under **TO:**, touch the letter of the drive with the disc that will have the installed application program when the installation process is over.

If the message **Press Next/Prev to see more discs** appears on your screen, you have more discs than can fit on the screen. Press **NEXT** or **PREV** if necessary.



4. If the disc with the application program that you want to install is not yet in a drive, put this disc in the drive that you specified under **FROM:**. (If you must first remove a disc that is already in a drive, this is all right.)

5. If you want to install the program in a directory other than a root directory or if the uninstalled program is in a subdirectory, touch **Choose Dir**. You will see the menu shown below. (If the original copy of the application program is in a root directory and the installed version will also be in a root directory, you can skip steps 5 through 8.)

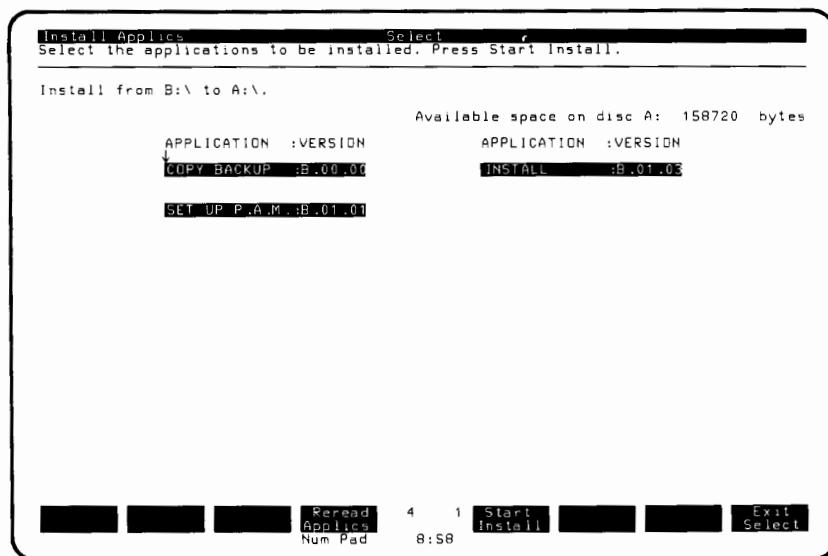


6. Under **Directory for the FROM disc**: type the pathname to the directory in which the application program resides.
7. Under **Directory for the TO disc**: type the pathname to the directory in which the installed application program will reside.
8. Touch **Exit Choose** to return to the previous display.

NOTE: If you can't remember the pathnames you need, see the next section, "What To Do If You Can't Remember the Pathname."

- C. Specify the application program(s) you want to install and install it.

1. Touch **Show Apps**. The Select menu that appears is similar to this:



2. Touch the name of the program or programs you want to install to highlight them. (You can install more than one program at a time.) They will all be placed in the directory you chose earlier, or in the root directory if you did not choose a directory.
3. Touch **Start Install**. During the installation, the application program currently being installed is shown on line 2. Once it is installed, the highlight on the name disappears.

If your application program is on more than one disc, the program pauses at the appropriate times and displays the message:

Insert the next disc of this application  
into drive n. Press New Disc Ready.

If an application program is too large to fit on your T0: disc, a message informs you of this and the previous menu is redisplayed. You can solve the problem by putting another disc with more room in the T0: drive; then touch **Start Install** again. Another option is to "unselect" the application program that is too large and touch **Start Install** again to continue with any other application programs you are installing.

If the same version of an application program already exists on the T0: disc, a message informs you of this and asks if you want to write over the first copy.

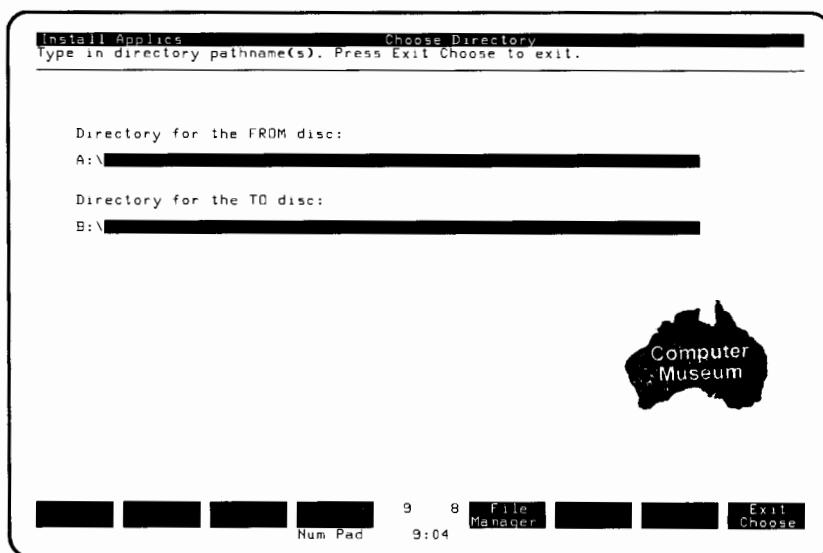
If you have selected more than one application program, **Stop at Next** appears on the screen. Touch **Stop at Next** if you decide to stop installing application programs. The INSTALL program finishes installing the current program and then displays the previous menu. You can then change any selected application programs and touch **Start Install** again.

After installation is complete, return to P.A.M. by touching the right-most function label on the screen to step back through the INSTALL menus until you finally reach P.A.M.

# What To Do If You Can't Remember The Pathname

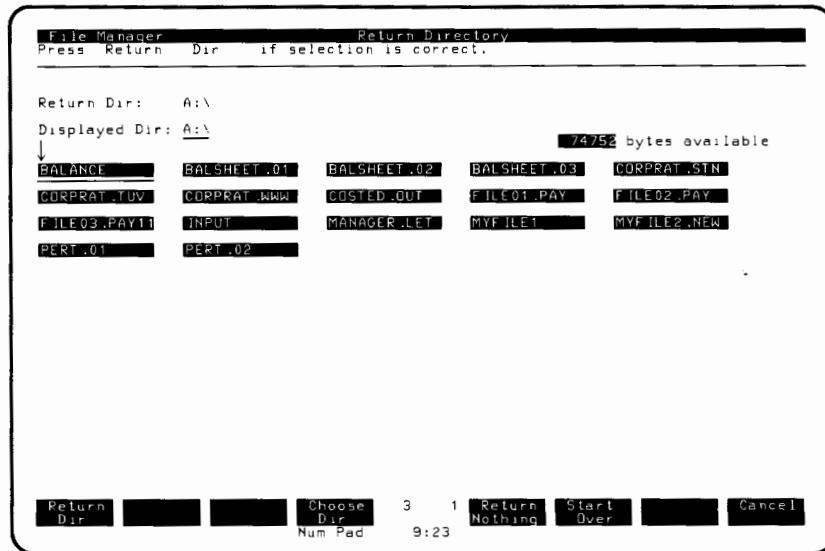
If you can't remember which directory your application program is in, or which directory you want to put the application in or remove it from, then you can go to the File Manager from the Choose Directory menu. When you find the proper pathname, the File Manager inserts it in the Choose Directory menu for you.

Here's how to find and insert the pathname on the TO or FROM line in the Choose Directory menu:



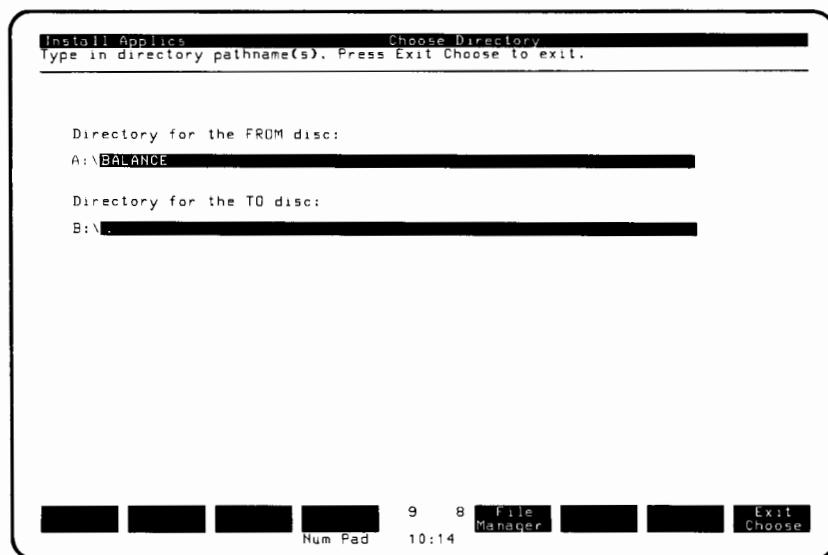
1. Highlight either TO or FROM line on the INSTALL program's Choose Directory menu by touching the line. The highlighted line is where the File Manager will insert the pathname.
2. Touch **File Manager**. (Either the File Functions or Get Directory menu will appear.)
3. Touch **Choose Dir**. (The Choose Directory menu appears.) Work with the File Manager as described in Chapter 5 until the name of the directory is on the screen.

4. Touch **Exit Choose** to return to the File Manager Main menu.  
(Depending on where you entered the File Manager, you may also have to touch **Exit File Fctn**.)
  
5. Touch **Install Dir**. The Return Directory menu that appears is similar to this:



6. Touch or type the full pathname of the directory that is to be placed on the highlighted line in INSTALL's Choose Directory menu. If you make a mistake in choosing the directory, you can touch **Start Over** to make another pathname selection or **Cancel** to return to the original File Functions menu.
  
7. Touch **Return Dir**. This tells the File Manager that the pathname you place on the **ReturnDir** line is the name to place in INSTALL's Choose Directory menu.

8. Touch **Back to Install** (in the Get Directory menu). If you had highlighted the **FROM** line and had placed **A:\BALANCE** on the **Return Dir** line, INSTALL's Choose Directory menu would look like this:



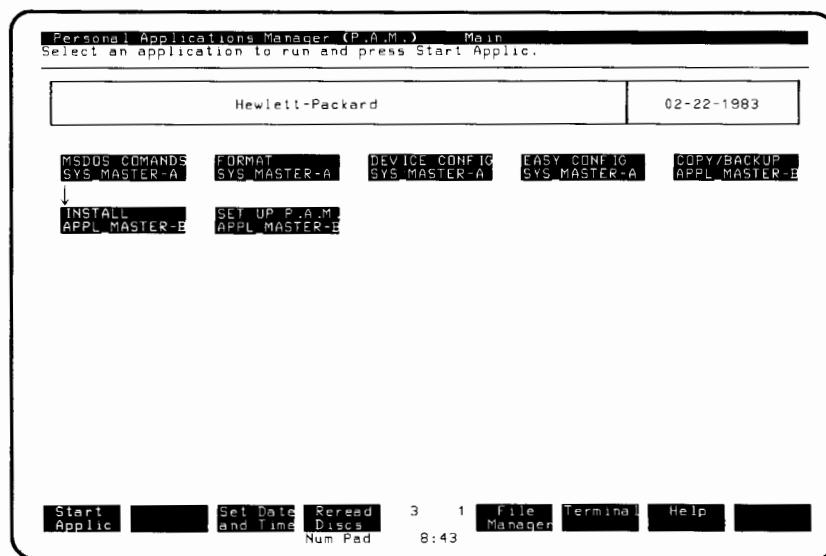
Use these steps any time that you can't remember the pathname for an application program.

# Removing Installed Application Programs

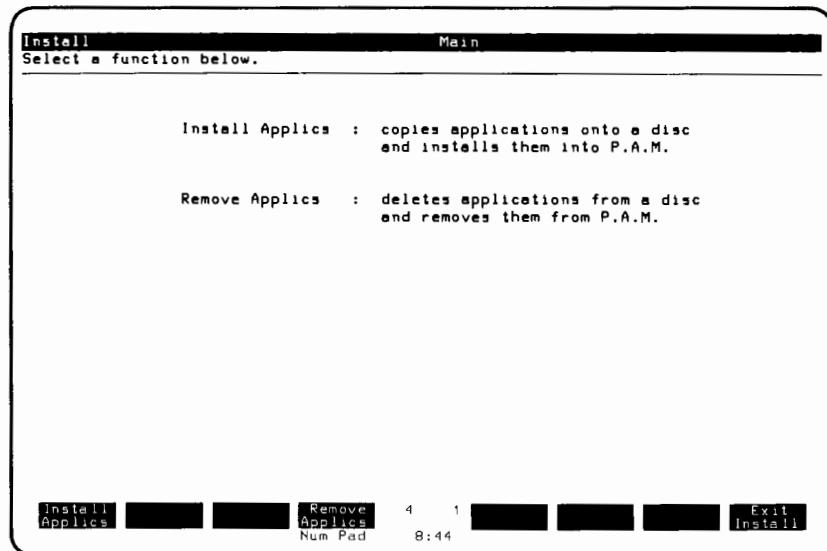
You may want to remove an installed application program from a disc sometime. When you remove an installed program, all of its files are deleted from the disc. Use the INSTALL program to remove the application program.

Follow this procedure:

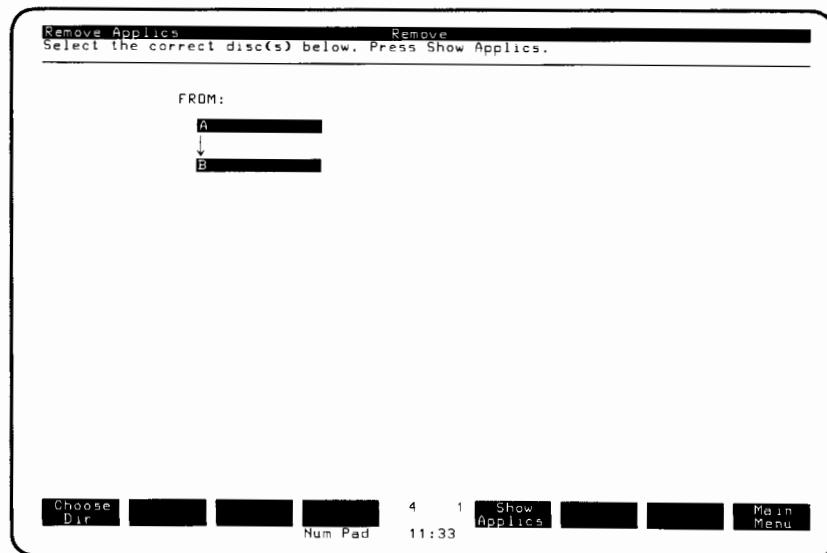
1. Place the disc containing INSTALL in a drive and press **Reread Discs**.
2. Touch **INSTALL**, then **Start Applic.**.



3. Touch **Remove Apps**:

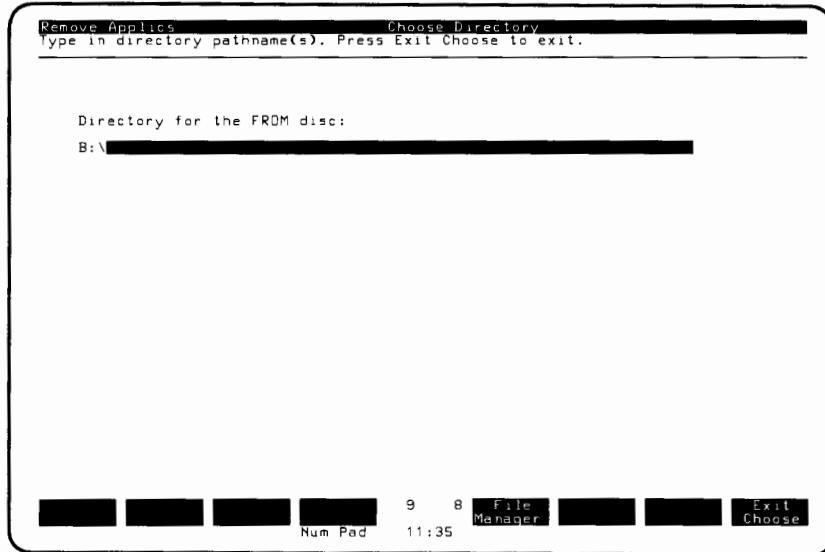


4. Touch the letter of the disc that contains the application program(s) to be removed. The disc designation becomes highlighted when you touch it.



5. If the application program is not in the root directory, touch **Choose Dir**. (If the application program is in the root directory, you can skip steps 5 through 7.)

This menu appears on the screen:



6. Under **Directory for the FROM disc:** type the pathname to the directory in which the application program resides. If you don't know the pathname, touch **File Manager** and follow the directions in the previous section, "What To Do If You Can't Remember the Pathname."
7. Touch **Exit Choose** to return to the previous menu.
8. Touch **Show Apps** in the Remove menu.

9. The Select menu that appears is similar to the one below. Select the application program(s) to be removed by touching its name to highlight it. (You can remove more than one program at a time.)



10. Touch **Start Remove** to remove the selected application program(s).

Only the application programs you want to remove from the disc are now displayed on the screen. Each one is listed on line 2 as it is being removed. After an application is removed, the highlight on its name disappears.

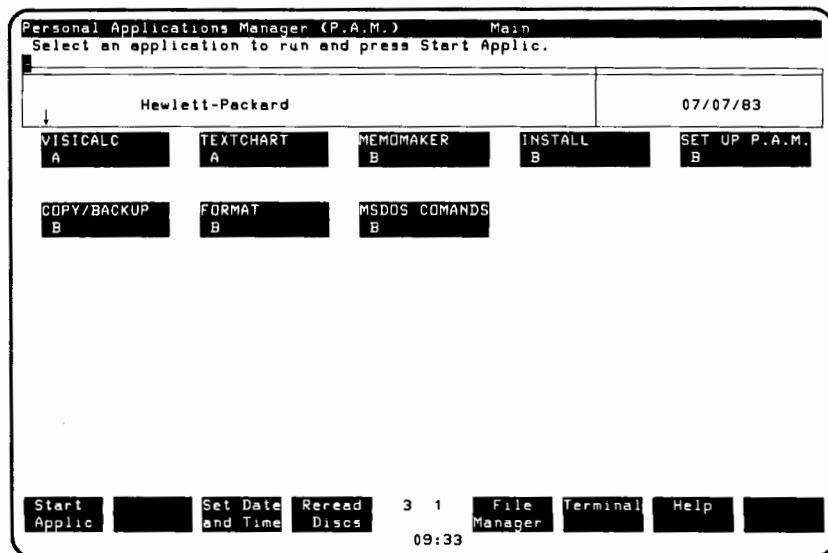
If more than one application program has been selected, **Stop at Next** appears. Touch **Stop at Next** if you want to stop removing application programs. The INSTALL program continues to remove the current program; after it is removed, the previous menu appears. You can then change any selected application programs and touch **Start Remove** again.

If you want to return to the previous menu or leave Remove Applications, touch **Exit Select** and then all the right-most function labels until you have returned to P.A.M.

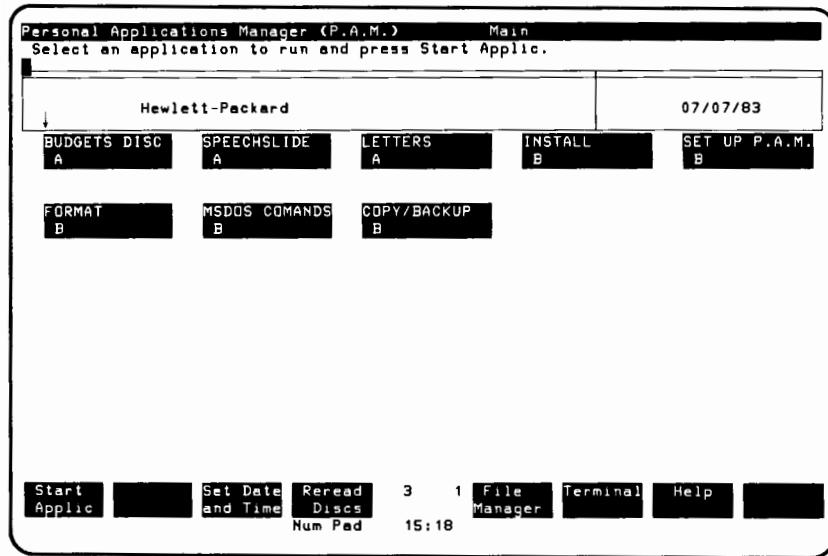
# SET UP P.A.M.

## What Does SET UP P.A.M. Do?

In P.A.M., all installed application programs appear on the screen so that you can run them by touching the name on the screen.



You could, however, change the appearance and order of the names on the screen by using the SET UP P.A.M. program. The application programs themselves wouldn't change; only the name on the screen would be different. You could make the screen above look like this, while still performing the exact same tasks:



Notice that three of the names (on the top row) have been changed, and the order of the bottom row has been changed. You could also have changed the application names on disc B, and order of the application names on disc A.

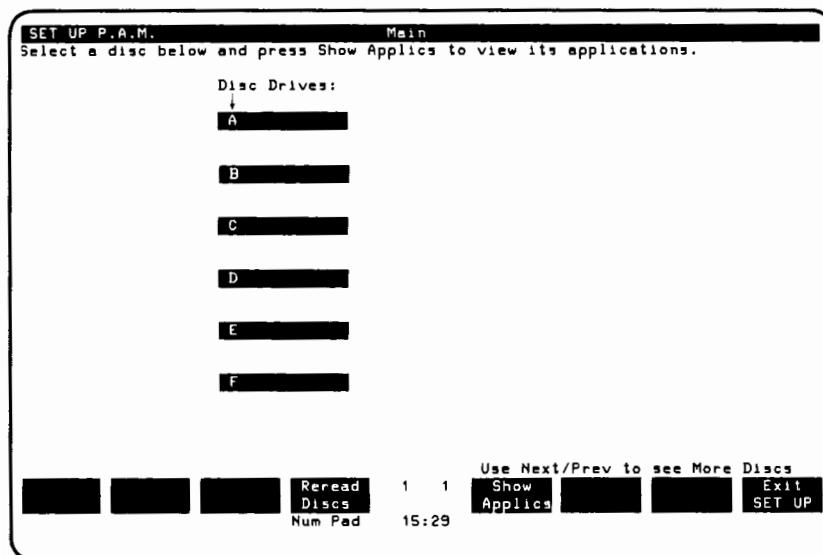
If you wish, you can also choose one application program on each disc to run automatically every time you start the operating system. If you do this, you will not see P.A.M. first; instead, the first thing you see will always be the chosen application program.

You can set an application to autostart on each one of your discs. If you marked one application program on disc A and one on disc B, the one on A would start, because discs are checked from A, B, C, etc. As soon as a marked application is found, it is started.

## How Do I Use the SET UP P.A.M. Program?

SET UP P.A.M. is shipped from Hewlett-Packard on the Disc Applications Disc. You can use it from there, or you can install it onto another disc, as you do other application programs. When P.A.M. appears, SET UP P.A.M. is one of the application program names on the screen:

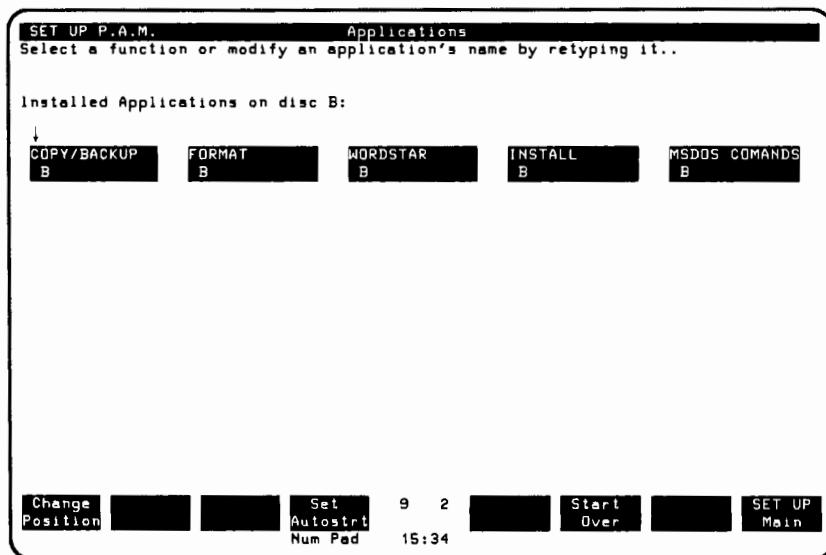
Touch SET UP P.A.M. then Start Applic; this appears on the screen:



If you add another disc, touch Reread Discs to see all available discs listed on the screen.

If you want to return to P.A.M., touch Exit SET UP.

Touch the name of the disc whose applications you want to alter; it is highlighted. Then, touch Show Apps to show all of the application program labels on that disc:



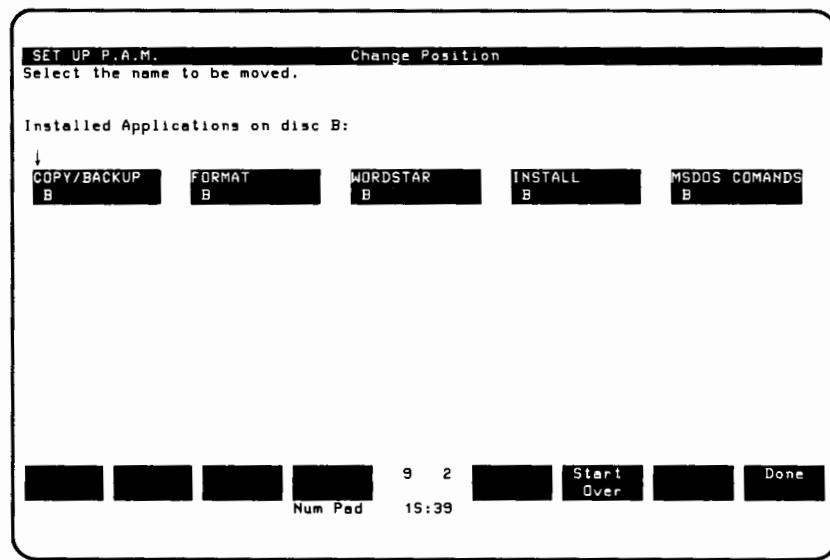
## Changing a Label

If you want to change a label that appears, touch the label, then type the new name. The new name replaces the old one as you type.

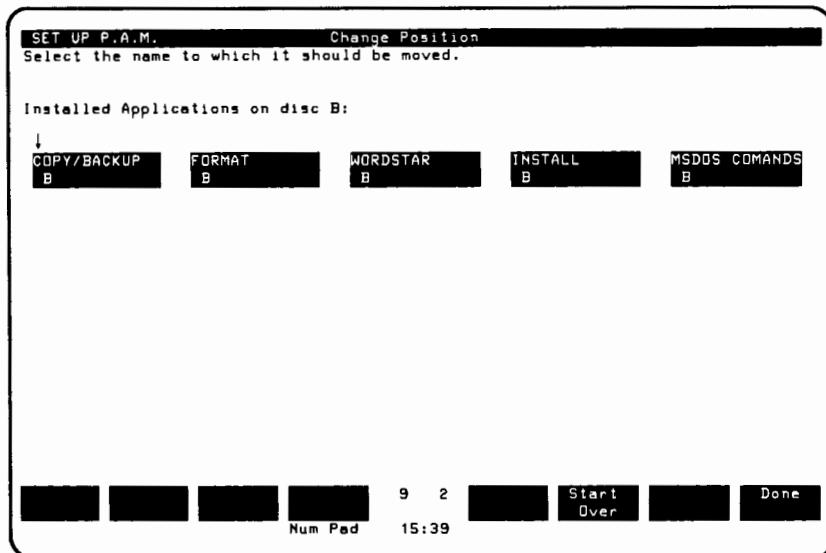
If you change your mind, you can restore labels you just changed to their original appearance by touching Start Over before you press Set Autostrt, Change Position, OR SET UP Main. (Once you touch any of these labels are saved.)

## Changing the Position of a Label

To change the position of a label on the screen, touch Change Position.  
This screen appears:



Touch the label that you want to move; it is highlighted. (If you change your mind, touch the label again to turn it off.) The message on the screen changes:



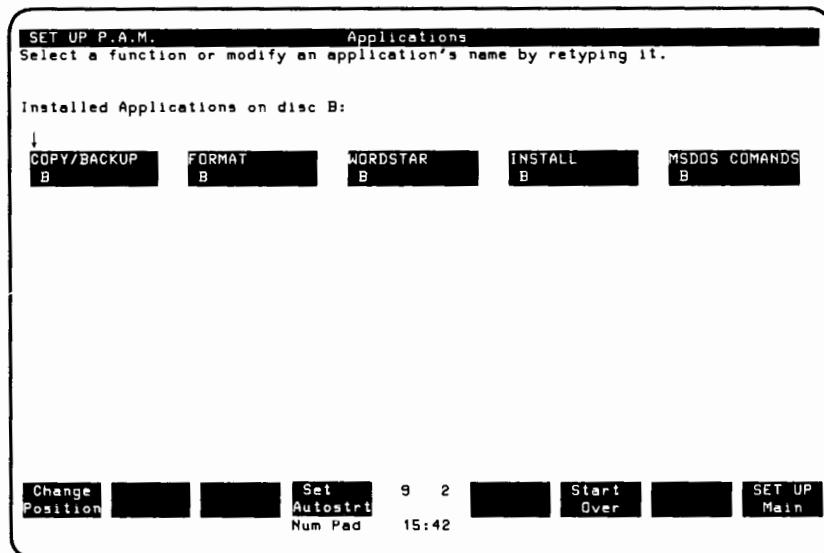
Touch the label that is in the position you want to use; as soon as you do, the highlighted label is moved there. All other labels shift one position backward or forward (depending on whether you moved the label down or up) to make room.

If you change your mind, touch **Start Over** to correct all moves. Press **Undo Last Move** to correct only the last change. When you are finished, press **Done**.

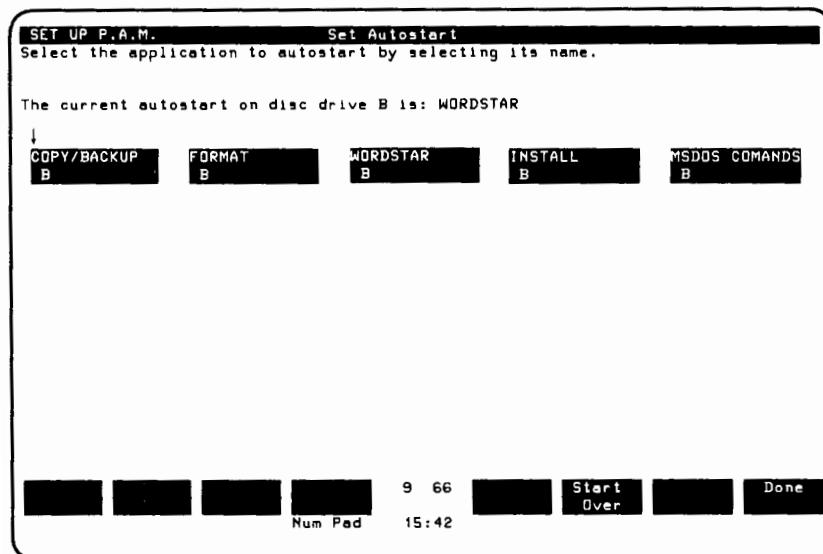


## Autostarting an Application

To choose an application to autostart, touch **Set Autostrt** on the screen that lists applications:



This screen appears:



If an application program is highlighted (like Wordstar in the screen above), it is currently set to automatically start; choose a new one by touching a different application name on the screen. The highlight then appears on the new application name. If you want to change back to the original state, touch **Start Over**.

Is there a highlight on the application program that you want to start automatically? If so, touch **Done** to mark that application program as the automatic first screen.

If you do NOT want any application program to start, but want to see P.A.M. instead, be sure that no highlight appears on the screen. (Touch any selected application to "unselect" it.) Then, touch **Done**.

Touch **SET UP Main** to return to the first screen. Then, touch **Exit SET UP** to return to P.A.M.

# Installing Non-HP Application Programs

If you have an application program for the HP 150 from a company other than Hewlett-Packard, you can install it into P.A.M. The application program must be written or modified specifically for the HP 150.

All you have to do is create a file with a file type of IN\$, put some information in it for INSTALL to use, and then run INSTALL just as you would for an HP application program.

Use WordStar®, MemoMaker, COPY CON or EDLIN to create the file. Each line of the file contains specific information:

	Description	Example
Line 1—	This is the name to be displayed on the P.A.M. main menu label. It can be up to 13 characters long. It does not have to be the same as the name of the application program. End the entry by pressing <input type="button" value="Return"/> .	Bank Prog
Line 2—	This is the version information about the application program. It can be up to 7 characters long. If you put a backslash (\) at the end, then the application program can only be installed at the root directory.  End the entry by pressing <input type="button" value="Return"/> .	Ver 2.1
Line 3—	This is the full name of the application program. It can be up to 12 characters long. The file type must be either EXE or COM. End the entry by pressing <input type="button" value="Return"/> .	BANK.EXE
Line 4—	This is the command line to be passed to line three of the application program. It can be up to 64 characters long. If this line is not used, type Return to provide a blank line.	INTEREST

Line 5— Type only Return on this line. This line must exist in the file and it must be a blank line.

Line 6 and on— Each line from here to the end of the file contains the name of a file used by the application program. List only one file per line. End each line by typing Return.

BANK.1A  
BANK.1B  
BANK.1C

Example of the BANK.IN\$ program:

Bank Prog	←———— Goes on label.
Ver 2.1	←———— Version number.
BANK.EXE	←———— Full name of application program.
INTEREST	←———— Command line to be passed.

BANK.EXE }  
INTEREST }  
BANK.1A }  
BANK.1B }  
BANK.1C }

Files used by the application program.

If the files are on different discs, you can indicate this to the INSTALL program. Group your list of files by disc. Type an asterisk (\*) on a blank line just before the next disc's list of files begins. When you do this, INSTALL prompts you to change discs so that it can continue installing the application.

Example of the BANK.IN\$ program with files on two discs:

Bank Prog	←———— Goes on label.
Ver 2.1	←———— Version number.
BANK.EXE	←———— Full name of application program.
INTEREST	←———— Command line to be passed.

BANK.EXE }  
INTEREST }  
BANK.1A }  
BANK.1B }  
\* }  
BANK.1C }

Files used by the application program.

←———— Last file on second disc.



# IMPORTANT NOTICE TO USERS

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## CAUTION

You should not attempt to remove or change discs while you are running utility or application programs on your system. Specifically, you should never remove or change discs while the red disc access light is lit, or while the application or utility program is processing information. If you do, you risk losing data from one or more discs.

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Most applications will let you know when to remove or change discs; if you should inadvertently remove a disc from its drive while a utility or application program is in process, however, HP has provided you with a safe procedure for recovering without losing data.

When a disc is removed from its drive at the wrong time, you will see an error message indicating that a

*Disc error . . .*

has occurred. Other information may follow the words "Disc error."

To recover, you can perform one of the two following steps:

1. Place the SAME disc back in the SAME drive, and follow instructions on the message line on your screen. This will allow you to continue the operation you were performing without losing any data.
2. If you are not sure which disc you removed from the drive, stop the operation by pressing the appropriate keys to return to the application's main menu, and start over.



In some cases, you will see a message similar to the following:

```
Disc error while <reading>/<writing> on drive <d:>
Abort, Retry, Ignore:
```

To recover, you can perform one of the two following steps:

1. Put the SAME disc back in the SAME drive and type "R" for Retry. This will allow you to continue the operation you were performing without losing any data.
2. If you are not sure which disc you removed from the drive, enter "A" for Abort, then start the operation over.

Do not type "I" for Ignore; you should respond either by Retrying or by Aborting the procedure.

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## **CHAPTER SEVEN**

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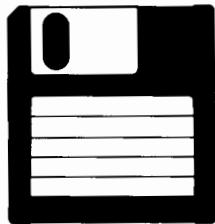
### **DISCS**

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This chapter deals with discs and what you do with them. You learn how to handle discs, prepare discs for use (formatting), create a "work disc" with applications on it, and make a copy or a backup of a disc.

### **Disc Handling and Care**

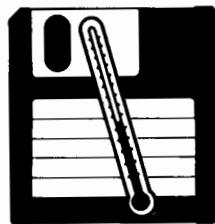
Your discs require a clean, dust-free environment, similar to the environment your computer requires. In addition, keep the following recommendations in mind when using and storing discs.



- DO** Make sure the shutter is closed when the disc is not in use.
- WHY?** Protects the disc from dust, fingerprints, and scratches.



- DO** Use the disc in a clean environment.
- WHY?** Minimizes the risk of dust or dirt particles scratching the disc.



- DO** Keep discs stored upright in a cool, dry place.
- WHY?** Prevents moisture and heat damage.



- DON'T** Put discs near things that generate magnetic fields, such as telephones, magnetic paper clip holders, and appliances with motors—including the top of your own disc drive.
- WHY?** Prevents magnetically erasing the data on your discs.



- DON'T** Touch the surface of the disc.
- WHY?** Particle contamination can scratch the disc or cause the disc to wear out sooner than normal.
- DON'T** Try to clean the disc.
- WHY?** The plastic jacket contains a mechanism for cleaning the disc surface. Other cleaning methods may damage the disc.

# Using Discs

A disc is similar to a phonograph record in a jacket. An opening in the jacket exposes the surface of the disc so that information can be recorded on the disc and read from it.

A disc in a disc drive can also be compared to a tape in a tape deck. Just as a tape deck has magnetic heads that record words and music and play them back, a disc drive has magnetic heads that "write" information on a disc and "read" information from a disc. Unlike records and tapes, however, a disc must be prepared to receive and store information. This preparation is called "formatting" a disc. Instructions for formatting a disc are given later in this chapter.

## Media Monitor

Through a feature called the Media Monitor, your disc drive automatically monitors the cumulative use of each individual disc. When the usage of a disc is approaching a level at which there is a risk of loss of data through normal disc wear, the disc access light on the front panel blinks and a clicking sound is heard. When this Media Monitor warning occurs, copy the disc at your earliest convenience.

Once this point has been reached in the life span of a disc, the disc drive responds to commands from the computer and then immediately resumes its warning. If you continue to use this disc, the disc drive automatically "write protects" the disc. After that time, you will only be able to read from the disc or copy the disc.

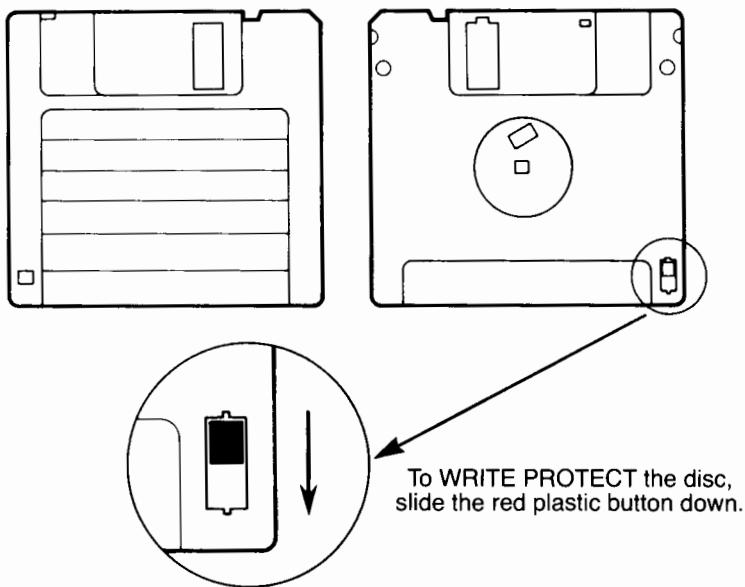
## "Write Protecting" a Disc

"Write protecting" a disc ensures that the disc drive cannot add data or delete data from the disc. If you write protect a disc, information on your disc can be read, but the information cannot be altered until you reverse the write protect. You may want to do this, for example, if you have a disc with data files or programs that you want to make sure aren't destroyed. Follow the instructions below for the type of disc that you have.



**To Write Protect a 3½" Double-sided Disc:**

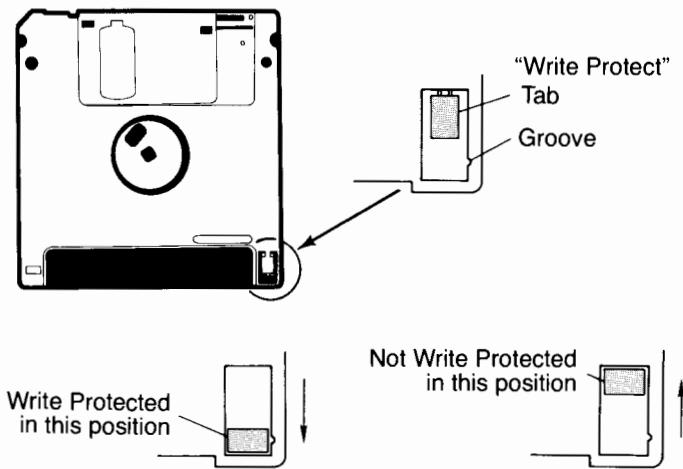
1. Place the tip of a pen in the small notch at the top of the write protect tab.
2. Slide the tab downward until it locks into place.
3. If you no longer wish to protect the disc, slide the red tab up.



You can quickly tell whether or not you can put information on a particular disc. If you look at the front of the disc and see the red tab in the lower left corner, then you can put information on the disc. If the red tab isn't there and you can see through the hole, then you cannot put information on the disc.

**To Write Protect a 3½" Single-sided Disc:**

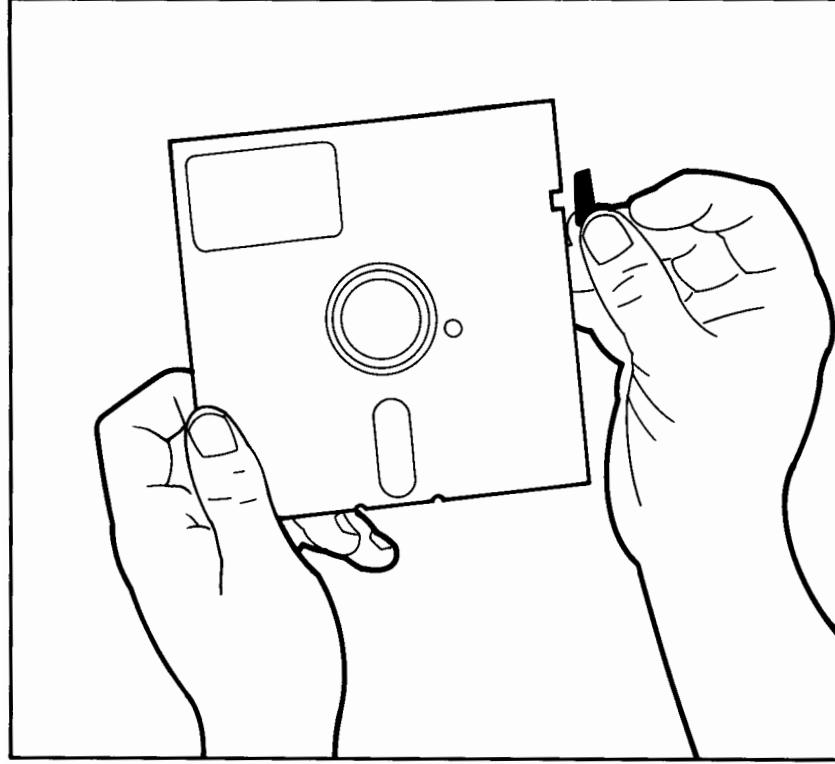
1. Use a screwdriver or the tip of a pen to gently lift up and break off the write protect tab.
2. Turn the tab sideways and position the tab next to the groove.
3. Press firmly on the table until it snaps into place.
4. If you no longer wish to protect the disc, slide the tab up away from the groove.



**To Write Protect a 5¼" Double-sided Disc:**

If the notch on the side of the disc is not covered, then you can put information on the disc. If the notch is covered, then you can only look at what is on the disc.

1. To write protect the disc, cover the notch with one of the adhesive tabs provided.



2. If you want to put information on the disc again, simply take off the tab.

## Kinds of Discs

### Fixed versus Flexible

Flexible discs can be inserted in and removed from disc drives. 5¼" discs are in thin, easily bent jackets and are kept in envelopes to protect them. 3½" discs are in more sturdy plastic cases and have metal shutters to cover the opening in the case where the disc is exposed.

Fixed discs are built into the disc drive and cannot be removed. These discs hold much more information than flexible discs. Also, the computer can usually read from and write to fixed discs much faster than flexible discs.

## **Single-sided versus Double-sided**

The words "single-sided" and "double-sided" are used to describe disc drives, flexible discs, and formatting:

Single-sided Disc Drive:	Has one read/write head. Records data on only one side of a disc.
Double-sided Disc Drive:	Has two read/write heads. Records data on both sides of a disc.
Single-sided Disc:	Data can be recorded on only one side of this disc. Hewlett-Packard flexible 3½" single-sided discs are labeled "single-sided" on the metal Auto Shutter.
Double-sided Disc:	Data can be recorded on both sides of this disc. Hewlett-Packard flexible 3½" double-sided discs are labeled "double-sided" on the metal Auto Shutter. All Hewlett-Packard 5¼" flexible discs are double-sided and are so labeled on the disc jacket.
Single-sided Formatting:	Prepares a disc for one-sided recording of data. Of course, you can only format one side of a single-sided disc. You may choose to format only one side of a flexible double-sided disc.
Double-sided Formatting:	Prepares a disc for two-sided recording of data. You can format both sides of a double-sided disc.

Hewlett-Packard ensures compatibility between double-sided and single-sided Hewlett-Packard products. This compatibility is detailed in the following table.

	<b>Single-sided Disc Drive<sup>1</sup></b>	<b>Double-sided Disc Drive<sup>2</sup></b>
Single-sided Disc (One side formatted)	OK	For transferring files only
Double-sided Disc (One side formatted)	OK	OK
Double-sided Disc (Both sides formatted)	NO	OK

#### Disc Drive Models

<sup>1</sup>9121D, 9121S, 9133V, 9133XV, 9133A, 9133B

<sup>2</sup>9122D, 9122S, 9133D, 9134D

We recommend using single-sided Hewlett-Packard discs with single-sided drives and double-sided Hewlett-Packard discs with double-sided drives. If you are switching from a single-sided drive to a double-sided one, you should copy everything on the single-sided discs to the double-sided discs as soon as possible.

## Disc Capacity

The amount of data a disc can hold is measured in bytes. The table below shows how much data different discs can hold after they have been formatted. Note that:

K = Kilobytes ( 1,000 bytes)

M = Megabytes (1,000,000 bytes)

<b>Disc</b>	<b>Formatted Capacity</b>	<b>Typewritten Pages (approx. number)</b>
<b>Flexible 3½"</b>		
Single-sided	270 K ( 270,000 bytes)	68
Double-sided	710 K ( 710,000 bytes)	150
<b>Flexible 5¼"</b>		
Double-sided	270 K ( 270,000 bytes)	68
<b>Fixed</b>		
	4.8 M ( 4,840,960 bytes)	1,200
	9.7 M ( 9,681,920 bytes)	2,400
	14.5 M (14,522,800 bytes)	3,650

## Formatting a Disc

Before a disc can be used for the first time it must be formatted. Formatting is the process that prepares your disc to receive and store data. Formatting also establishes an empty directory on the disc. This is a place where the name and location of each file that you put on the disc are kept.

You receive a disc with your personal computer labeled HP 150 Sys\_Master. The FORMAT program is on this disc. Use this FORMAT program to format Hewlett-Packard discs so they can be used with the HP 150.

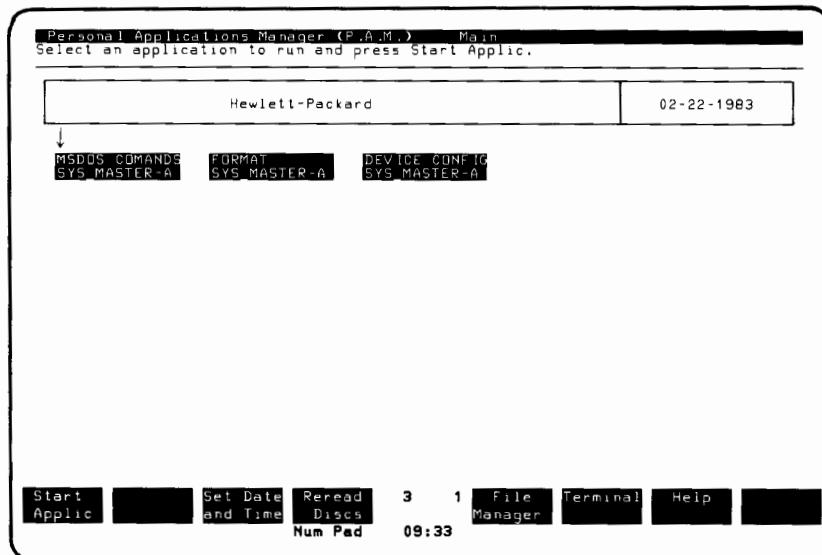
The following 11 steps allow you to format a disc:

1. Make sure the HP 150 and disc drive(s) are turned on. Insert the Sys\_Master work disc (or the Sys\_Master disc itself, if you haven't yet made a working copy of it) in drive A:. (This is the left-hand drive on a dual flexible disc drive.)

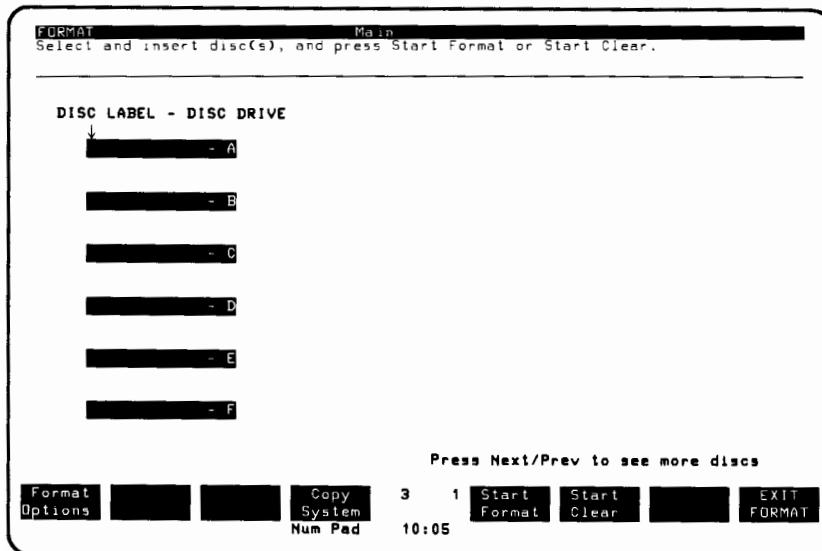
If you have a fixed disc drive with a flexible disc drive unit, either the FORMAT program should be on your fixed disc or you should put the Sys\_Master disc in your flexible disc drive.

2. If P.A.M. is not on your screen at this time, exit any other applications you may be using until P.A.M. returns to the screen. If FORMAT does not appear, be sure that you have placed the Sys\_Master disc (or your working copy of it) in the drive with the label facing up, or that you have FORMAT on your fixed disc. Also be sure you have connected, configured, and turned on the disc drive(s).

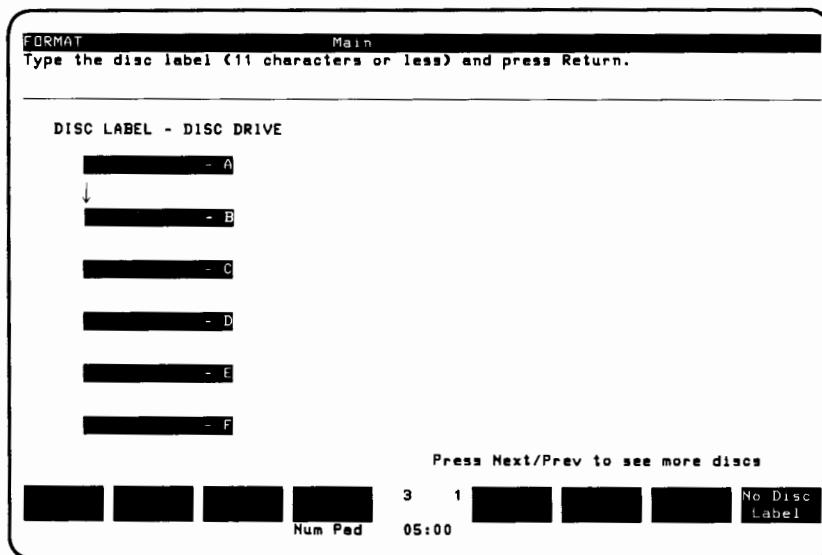
The main P.A.M. menu is shown below. (The names of the application programs that are listed on your screen may be different.)



3. To begin using the FORMAT application, touch **FORMAT** on the screen, and then touch **Start Applc**. The main menu for the FORMAT application program appears:



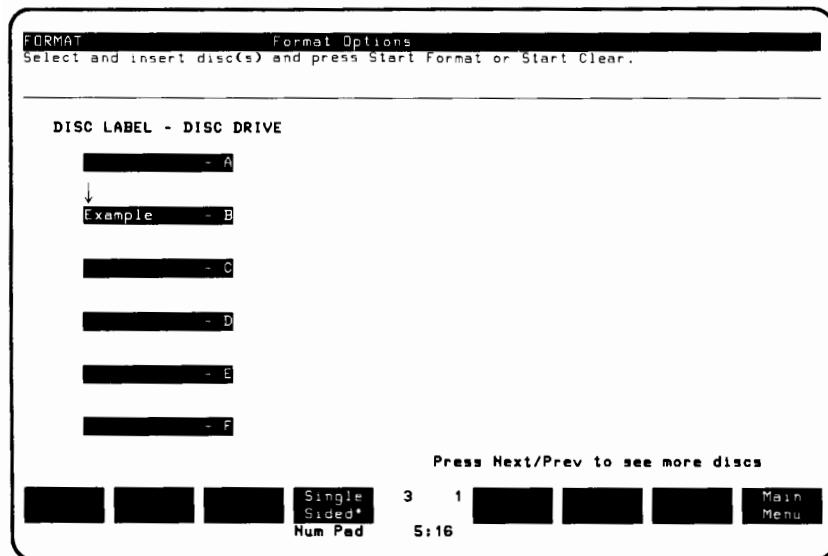
4. If you want to format a flexible disc, place a blank disc in a drive. Then touch the letter of that drive on the screen. If you want to format a fixed disc, touch the letter of the fixed disc drive on the screen. The labels of the disc drives that you have selected will be highlighted. (In this example, the Sys\_Master work disc is in drive A: and a blank disc is in drive B:.)
  
5. Each time you select a disc, the screen displays the message "Type the disc label (11 characters or less) and press Return."



If you want to label the disc, type a label of up to eleven characters and press **Return**. If you do not want to label the disc, touch **No Disc Label**. (It is usually a good idea to label a disc, for the same reasons that you would label a file drawer. This is especially true if the disc has data files.)

If you make a mistake and select the wrong disc, you can correct the error. If, for example, you select the disc in drive C: instead of drive B:, the FORMAT program will immediately continue to the next step of typing a label for the disc. To correct the error and select the right disc:

- a. Touch **No Disc Label**. The first menu for FORMAT will appear again.
  - b. "Unselect" C by touching its label. Its highlight will be removed.
  - c. Select B by touching its label. The label will be highlighted, and the FORMAT program will continue to the next step of typing a label for the disc.
6. After labeling the disc, you see the first FORMAT menu again. If you want to select another disc to be formatted, you can do so now. As before, after you select a disc you are asked to label it. Select and label as many discs as desired.
7. You must now choose between single-sided and double-sided format.
- If you have a double-sided disc drive (such as a 9122D) and double-sided discs, then double-sided format is the typical choice. If this is what you want, proceed to step 8. Double-sided format is automatically chosen for double-sided drives.
  - If you have a single-sided disc drive (such as a 9121D) and single-sided discs, then single-sided format is the correct choice. If this is what you want, proceed to step 8. Single-sided format is automatically chosen for single-sided drives.
  - If you have a double-sided disc drive and want to choose the single-sided format, you can touch **Format Options**. The Format Options menu will appear. Touch **Single-Sided** on this menu. An asterisk (\*) will appear to indicate that this option has been chosen.



Then touch Main Menu to return to the first menu for FORMAT.

8. You can choose to copy the MS-DOS operating system and P.A.M. onto the disc that you are formatting by touching **Copy System**. An asterisk (\*) in the **Copy System** label indicates that this function has been chosen.

Putting the operating system on the same disc as an application program is a fairly common practice. Instead of inserting the Sys\_Master disc in the disc drive to load the operating system and then inserting another disc with the application program, you can simply insert one disc that has both. But you can only do this if there is enough room on the disc for both the operating system and the application program. If you are using a single-sided rather than a double-sided disc, and the application program is large, then you may not be able to do this.

9. At this point you have another choice: **Start Format** (f5) or **Start Clear** (f6).
- If you have a new, blank disc, then touch **Start Format**.
  - If you want to clear files off a disc, touch **Start Clear**. (You don't really need to format a disc more than once.)
  - If you are using a non-HP 150 disc, then touch **Start Format**.

Note that the following steps describe formatting a disc, but they are very similar to the steps for clearing a disc.

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#### CAUTION

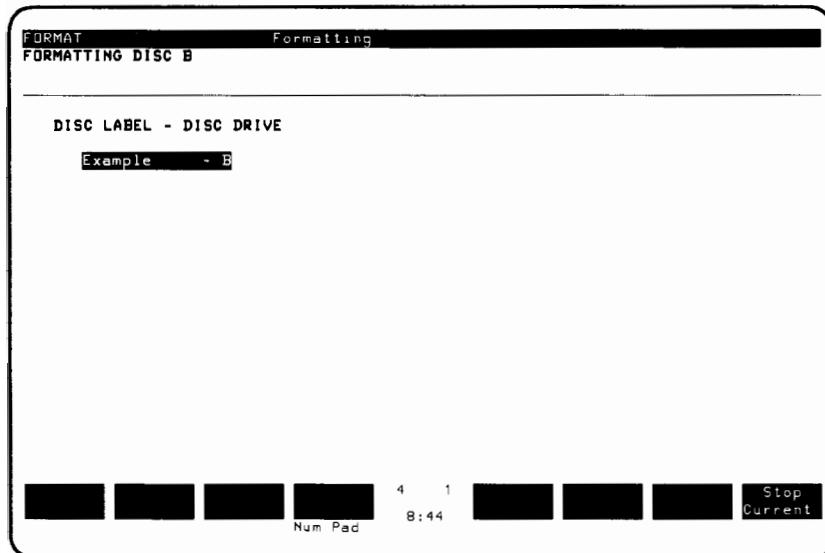
Both formatting and clearing a disc destroys any data already stored on the disc. If you format or clear a disc that has files on it, those files are lost.

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If you try to format a disc that has files on it, you will see the message "This disc has files. Do you want to destroy them? Type Y or N; press Return." If you don't want to destroy the information already on the disc, type N (No) and remove the disc. If you want to destroy the information already on the disc, type Y (Yes) and press **Return**. The formatting process will then begin. You should be aware that the HP 150 can check to see if there are files only on HP 150 discs, not other HP discs or discs from other companies.

10. The Formatting menu appears, in which all the discs that you selected are highlighted. The disc currently being formatted is indicated at the top of the screen. (In this example, the disc in drive B: is being formatted.)

If you touched **Copy System**, then additional information will be given to you at this point. On the second line you'll see the message "Reading System Files". This is followed by "All system files have been read. Insert disc(s) to be Formatted. Press Return to continue". Since you have already inserted a disc, simply press **Return**.

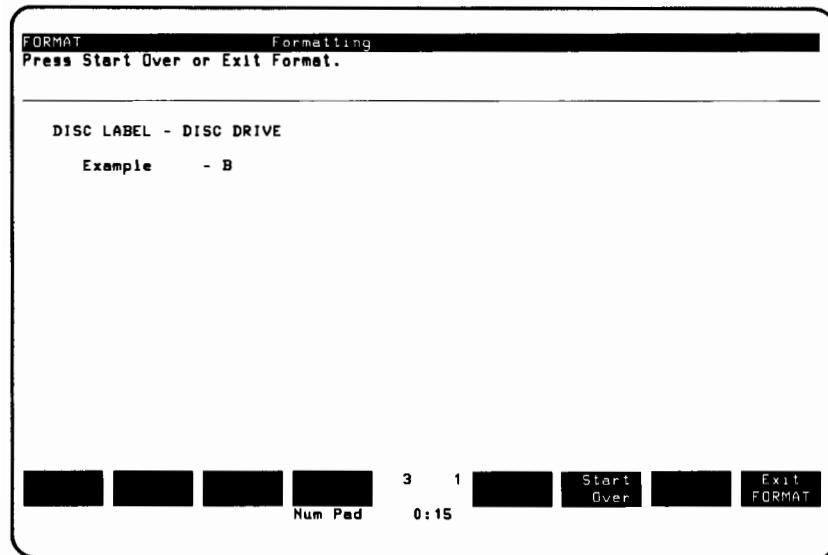


After the disc is formatted, the highlight is removed.

If you want to stop formatting the disc, you can touch **Stop Current**. The formatting will not stop immediately, however, and any data on the disc will still be destroyed. When the formatting process is interrupted you'll see the message "Disc format not complete. Press Return to continue." After you press **Return**, the main Format menu will appear again.

If you have selected more than one disc to format, then the discs will be formatted in alphabetical order. For example, if you selected both drive B: and drive C:, the disc in drive B: will be formatted before the disc in drive C:.

11. When all selected discs have been formatted, this menu appears:



Touch **Start Over** if you want to format a new disc.  
Touch **Exit FORMAT** if you want to return to P.A.M.

## Preparing a Work Disc

A Work Disc is a disc with copies of applications programs or the operating system on it. Creating Work Discs is a good idea, because you can then put your Master Discs from HP in a safe place. Then, if a Work Disc is damaged, you can create another one.

To create a Work Disc, complete the following steps:

- 1) Format a blank flexible disc. (Formatting a disc is described earlier in this chapter.) If this Work Disc is going to be a copy of the operating system, be sure **Copy System** has an asterisk in it when you are formatting the disc.
- 2) Install your application program(s) using the INSTALL program described in Chapter 6, "Applications."

---

### NOTE

You usually don't put a copy of the operating system on a single-sided disc that you put applications on, simply because there often isn't enough room for both. You usually load the operating system from your work copy of the Sys\_Master disc, then remove this disc from drive A. The operating system remains in memory, and you then insert your application disc into the drive.

---

You can put as many applications on a disc as will fit.

## Copying and Backing Up Discs

The best way to protect a file is to make another copy of it, and put that copy in a safe place. For this reason, Hewlett-Packard has sent you a program called COPY/BACKUP.

COPY/BACKUP is shipped to you on the Disc Applications disc. Use it from there, or install it onto another disc.



COPY makes an exact duplicate of a file(s); anything you can do to the original, you can do to the copy. BACKUP, on the other hand, removes extra space for offline storage. A file that has been backed up cannot be read by any application but BACKUP; run BACKUP again and restore the file before you use it with another application.

### **When Should I Use COPY?**

Use COPY whenever you want an exact duplicate of a file. For example, if you want to give a coworker a copy of a report, use COPY to put a copy of the report on another disc.

---

#### **NOTE**

To copy a file to another directory (or other name) on the same disc, use File Manager's Copy command.

---

If you want to, you can COPY your whole disc. The only files that cannot be copied are MS-DOS and application programs. (Use the FORMAT program to copy MS-DOS. Use the INSTALL program to put a copy of an application program onto a disc.)

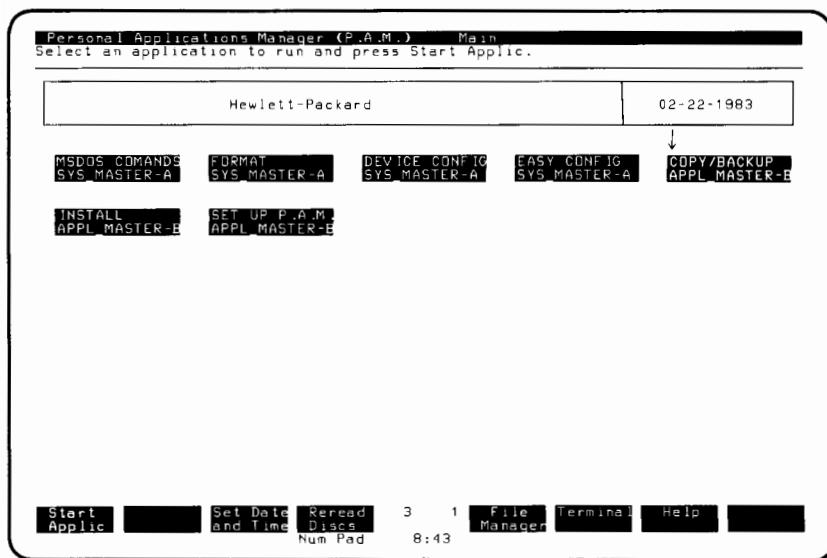
### **When Should I Use BACKUP?**

Use BACKUP whenever you need to conserve space and don't need to use the BACKUP copy with an application. BACKUP is most useful when you are protecting the files on a fixed disc. A large file can be split and backed onto two flexible discs. A 5, 10, or 15 megabyte disc can be backed up to flexible discs (then restored) in case of accident.

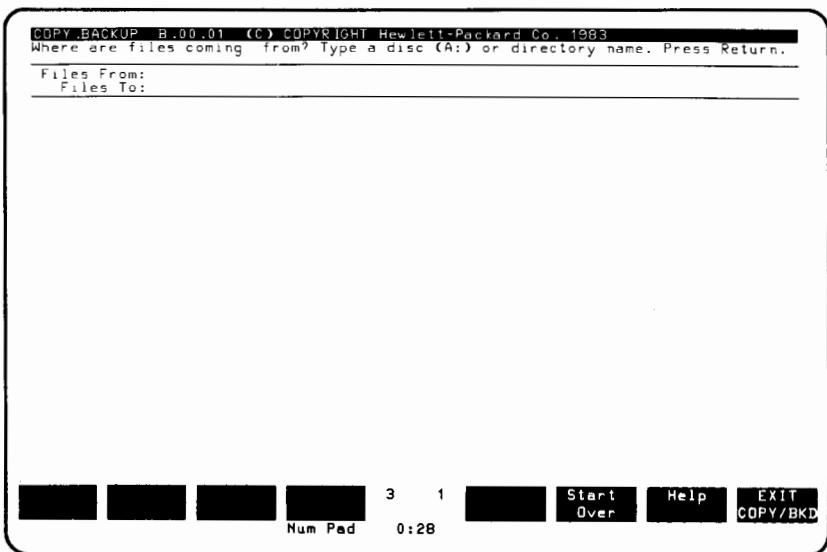
### **Using COPY/BACKUP**

COPY/BACKUP was sent to you on a disc called Disc Applications found inside this manual in a plastic sleeve. Make sure that a disc containing COPY/BACKUP is located in one of your drives.

From P.A.M., touch COPY/BACKUP then START/APPLIC on the screen:



The main screen of COPY/BACKUP appears:



---

**NOTE**

You can now remove the COPY/BACKUP program from the drive.

---

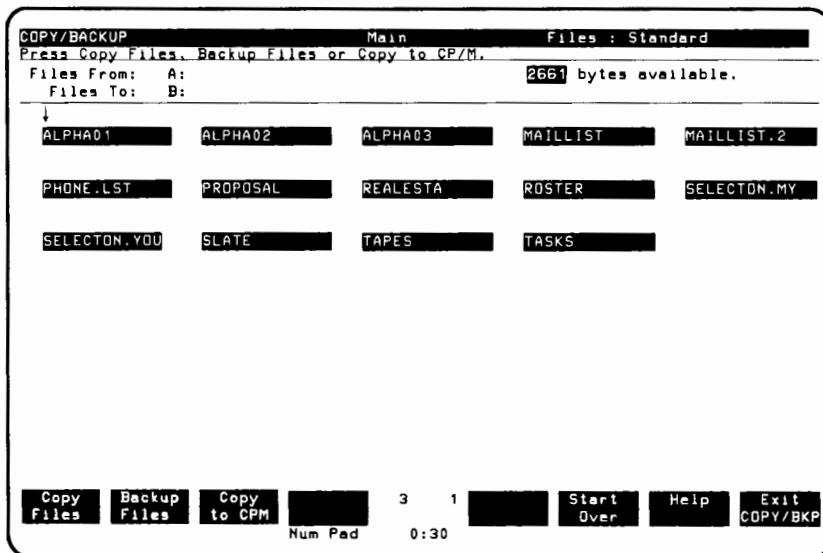
Type a disc letter to look at the current directory files on that disc (e.g., A: would let you see the current directory files on disc A:). Remember that A:\ always means "the root directory on this disc." Press **Return**. To look at only a certain directory (directory names are underlined), touch the directory name on the screen. (Another option is to type the disc and directory name right away, such as A:\USER or A:\USER\MARY.)

After you press **Return**, notice that the disc (directory) name that you selected appears after Files From: on the screen, and the files in that directory are on the screen. The file type (standard, HP150 backup, or CP/M) appears in the upper right of the screen, and the function key labels correspond to the file type.

Type or select the directory to copy or backup files to. Press **Return**. (Remember that BACKUP files cannot go on the same disc as any standard files.)

## Copying or Backing Up a File

If the files you have chosen are standard, the screen now looks like this:



The chosen files will be added to the disc or directory named in Files to on the screen.:

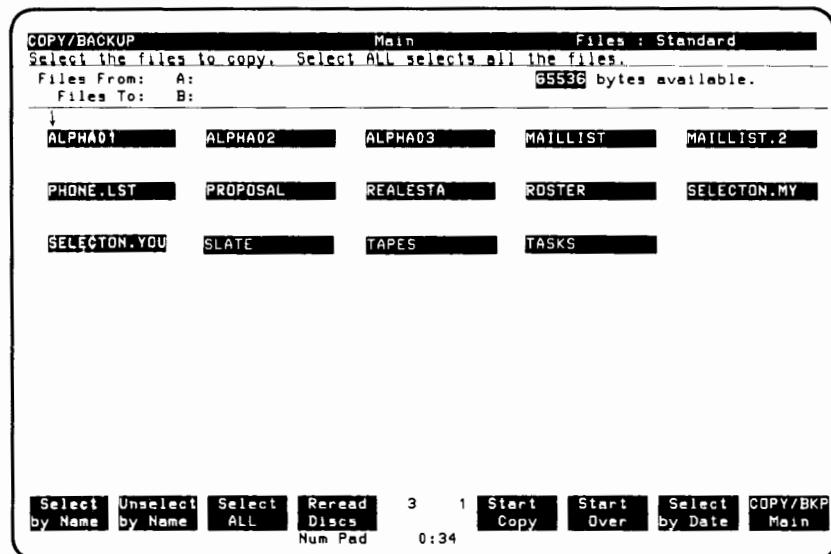
If you decide to back up a different directory, touch **Start Over**.

If you decide not to do any copying or backing up, touch **Exit COPY/BKP**.

If you want more information, touch **Help**.

You have three choices: you copy files to CP/M format, copy files, or create backup files. To convert these files to CP/M format (for use with an HP 120 or HP 125), press **Copy to CPM**. Otherwise, touch **Copy Files** or **Backup Files**; press **Help** if you can't decide which to use.

You are then asked to select files:



The next step is to choose files for copying or backing up. You can choose files, change your mind, and rechoose files until you touch **Start Copy OR Start Backup**. The discs are not modified until you touch either of these start labels.

If you have a lot of files, they may be listed on the second page of the screen display. Press **Next** and **Prev** to switch between the two pages.

Touch a file name on the screen to select it. When a file is selected, its name lights up on the screen. Touch a file again to unselect it.

**Select by Name** allows you to use wildcard symbols to select files. If you press **Select by Name**, you are asked to type a wildcard name. Type either an entire filename, or a filename containing the wildcard \* or ?. The symbol \* means "any letters"; use the wildcard name Mem\* to choose the files Memory, Memo1, and Memo2 from the entire list of file names. Use the wildcard Mem? to choose the files Memo1 and Memo2 from the entire list of file names. The symbol ? means "any one letter."

**Select by Name** allows you to use wildcard symbols to unselect (turn the light off) files. Use the same wildcard symbols (\* and ?) that you use to select files.

**Select All** selects all files.

**Select by Date** allows you to select files altered after a certain date. Touch **Select by Date**. The message "Files modified after a certain date can be selected. Type the date." appears. Type the date (mm-dd-yy or mm/dd/yy) and press **Return**.

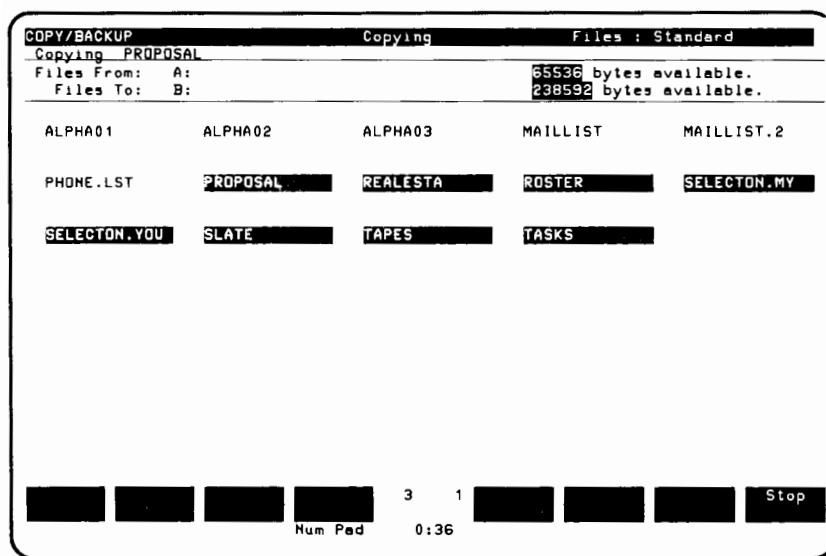
If you switched flexible discs in a drive touch **Reread Discs** to list the files on the screen.

If you change your mind about which files to copy or back up, touch **Start Over**.

If you don't want to copy/backup anything at all (or if you want to change the source or destination), touch **COPY/BKP Main**.

Be sure that a formatted disc is in the destination drive.

Touch **Start Copy** (or **Start Backup**). The selected files are listed (largest to smallest) with highlights on each name:



---

#### NOTE

If COPY/BACKUP detects that a file already exists on the destination disc, it stops, displays the duplicate file names, and asks you if you want to overwrite the files. Answer by touching **Yes** or **No**.

---

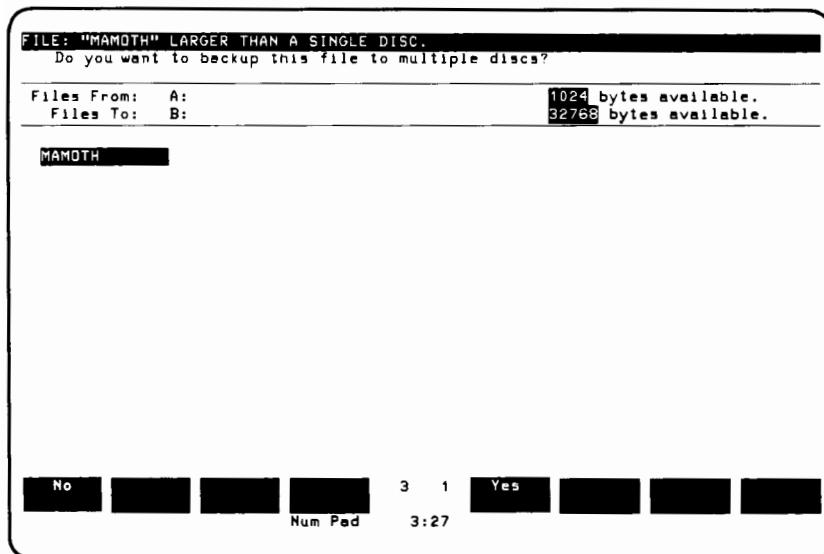
The file being copied (or backed up) is named at the top of the screen. Once a file is copied, the highlight on its name is removed. If a file cannot be copied, the highlight is not removed.

Touch **Stop** to immediately stop copying and return to the previous screen.

When all possible files have been copied, the message "Copy is completed." appears. (If an error occurs, copying also stops.) Any files that are still highlighted have not been copied or backed up. If you want these files copied, take note of their names, press **Continue**, and start again by selecting the files to be backed up.

## Backing Up Large Files

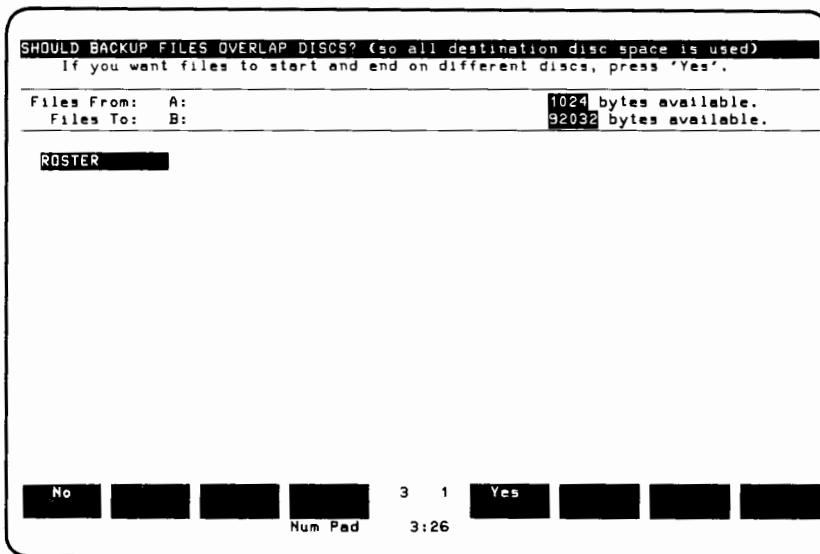
With BACKUP, if a file is larger than an entire flexible disc, you will have to split it between flexible discs to back it up. Since BACKUP starts with the largest file, BACKUP finds the largest file first. A message tells you that this file can only be backed up on more than one disc, and asks if that is all right. Answer by touching **Yes** or **No**:



If you touch **No**, this file is not backed up.

If you touch **Yes**, part of the file is backed up. Then, you are asked to put another formatted destination disc into the drive; the second part of the file is backed up to this disc. If necessary, more destination discs are requested.

If a file is smaller than an empty destination disc, but larger than the room left on the destination disc, that file is skipped and any remaining smaller files are marked for copy. If the last file is larger than the space left (and 25% or more of the destination disc space is available), you are asked if you want to split the file between discs (Should backup files overlap discs?):

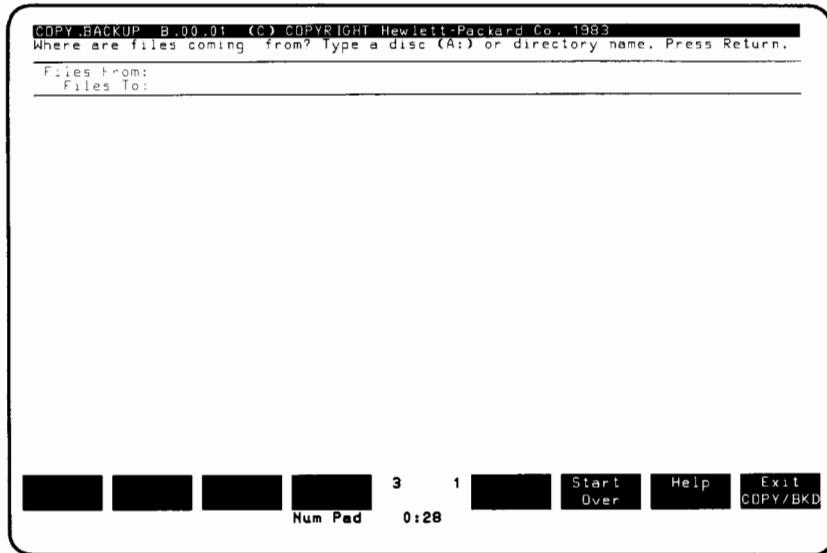


If you touch **No**, this file is not split; you are asked to provide another disc to store this file.

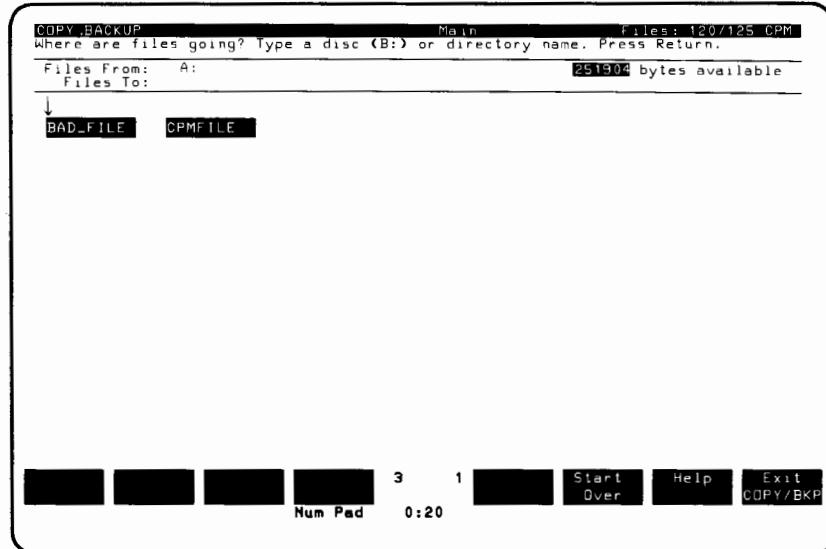
If you touch **Yes**, part of the file is backed up. Then, you are asked to put another formatted destination disc into the drive; the second part of the file is backed onto this disc.

## Converting CP/M Files to MS-DOS Files

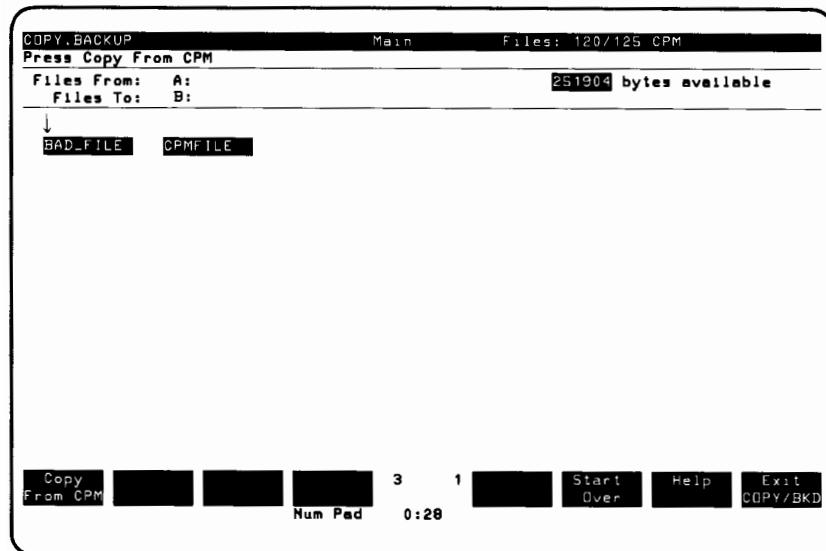
When COPY/BACKUP starts, you are asked to indicate a disc of files that you want to copy or back up and a disc to receive the new copies:



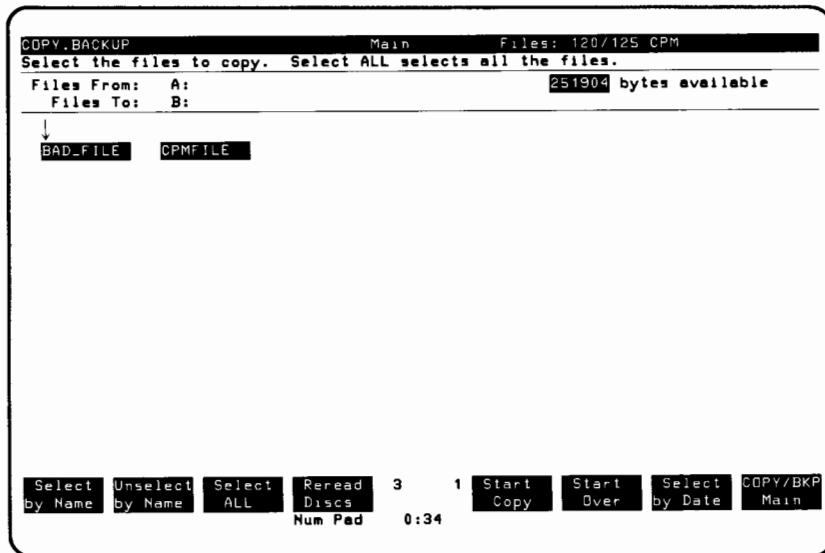
1. Insert your HP 120/125 CP/M disc into one of your disc drives.
2. First type the name of the drive (such as A:) that the files are coming from and press . This name appears after "Files From:". All the files belonging to the disc are listed on the screen. In our example two files are coming from the disc in drive A:.



3. Next you are asked where the files are going. Type in the name of the appropriate disc or directory and press **Return**. The name will appear after "Files To:".



4. Press **Copy From CPM** to see this menu:



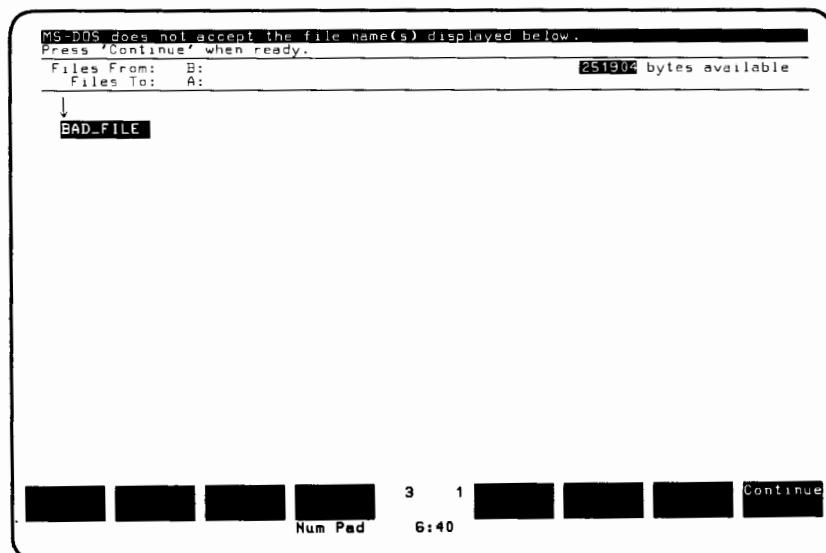
5. Your means to select files are similar to the means used with standard MS-DOS files as discussed under "Copying or Backing up a File" in this chapter. Touch a file to select it, or touch **Select by Name**, **Unselect by Name**, **Select by Date**, or **Select ALL**. The files that you choose to be converted from CP/M format to MS-DOS format will be highlighted.
6. Press **Start Copy** when you're ready to begin copying the CP/M files.

COPY/BACKUP checks each file name to make sure that it is a valid MS-DOS file name. The file name cannot include these symbols:

+ - / \ "



If a file has a name that MS-DOS does not accept, then this name is shown and an error message appears. The screen will look similar to this:



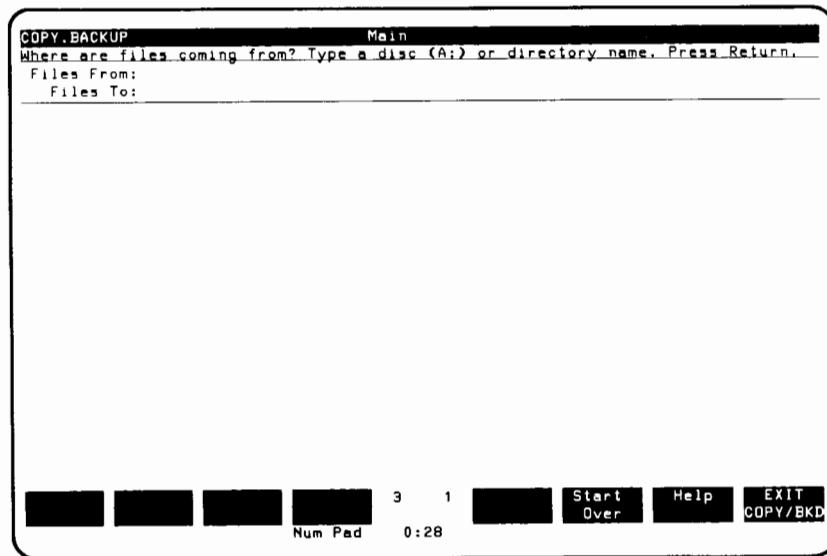
When you press or touch **Continue**, you will once again see the menu in which you select files. The highlight will be removed from the files with unacceptable names, showing that they have been "unselected." (You must use an HP 120 or HP 125 to change these file names, and convert these files to MS-DOS files at a later time.)

7. When you press **Start Copy** each file will be read from the CP/M disc, and changed to an MS-DOS file with the same name on the MS-DOS disc. The original CP/M disc can still be used with an HP 120 or HP 125.

The name of the file being copied will be shown near the top of the screen. When all of the highlighted files have been copied you will see the message "Copy is completed. Press 'Continue' when ready."

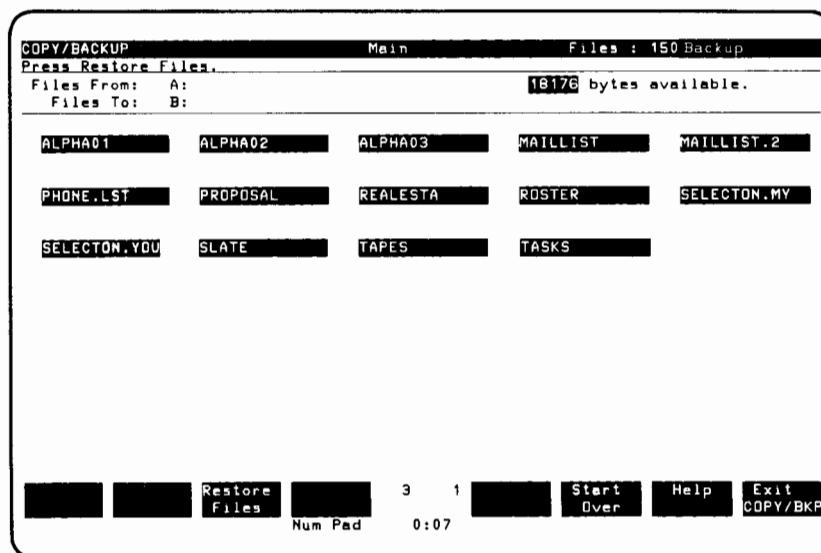
## Restoring Files From a Backup

When COPY/BACKUP starts, you are asked to indicate a disc of files that you want to copy or back up and a disc to receive the new copies:



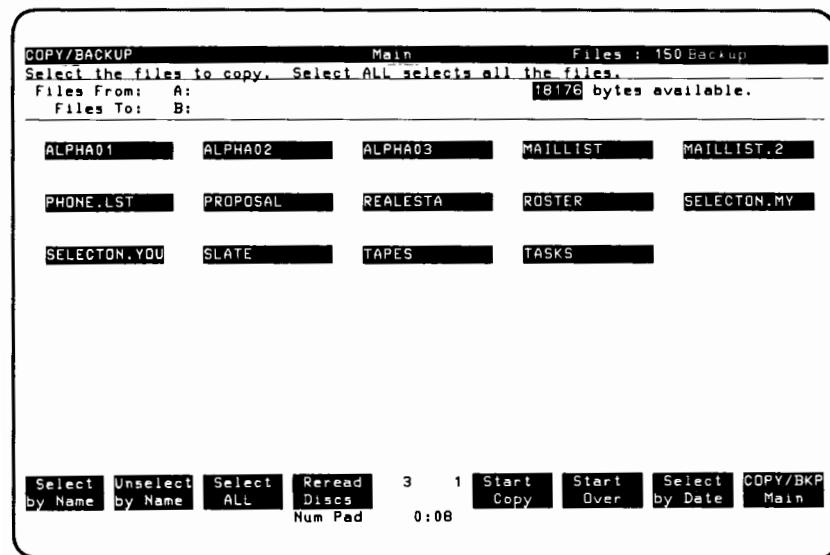
If the disc you indicate contains backup files, the upper right hand corner of the screen says 150 BACKUP, and the first label says

Restore Files:



You can Start Over or Exit COPY/BKP, just as you can with standard files.

Press Restore Files to see this screen:



Your means to select files are the same as they are with standard files. Touch a file to select it, or touch Select by Name, Unselect by Name, Select by Date, OR Select All.

When you have chosen the files to be restored from a previous backup, press Start Restore.

Each file will be read from the backup disc, and restored as a regular file on the destination disc. The backup disc still contains the backup files, and can be restored again.

# **RAM Disc**

A RAM disc is like a normal disc, except that it's inside the computer. A RAM disc consists of a part of computer memory (Random Access Memory) that is set aside to act as a disc in a disc drive. The way you prepare a RAM disc for use is different than the way you prepare disc drives and discs, but the ways these are used are exactly the same. Applications can be installed onto and removed from the RAM disc. Files can be read from and written to it. Applications programs access the RAM disc just as they do a disc in a disc drive.

In order to use the RAM disc feature, you must have installed a memory accessory board (either 128K, 256K, or 348K) in your HP 150. You can use all or part of the extra memory as your RAM disc.

The major advantage of using the RAM disc is speed. A program in memory can get data from the RAM disc (which is also in memory) much faster than it can get data from a disc in a disc drive. An example of when to use the RAM disc feature is given later. You should also be aware, however, that you have to save the contents of the RAM disc before turning off the computer, and that a smaller amount of memory is available for applications when you use the RAM disc feature.

## **Setting up a RAM disc**

To set up a RAM disc you must configure it in the MS-DOS Device Configuration menu. You can also use this menu to determine its size. Just follow these steps:

1. Select and start **DEVICE CONFIG** from the main P.A.M. menu.
2. Decide which disc drive you would like the RAM disc to be—any drive except A: may be chosen. Touch the entry under **Interface** for this drive. It should now be highlighted. Then touch the function key labels **Next Choice** or **Previous Choice** until the entry **RAM Disc** appears.
3. Determine the size of the RAM disc. Touch the entry next to **RAM Disc Size**. Then touch **Next Choice** or **Previous Choice** until the number that you want appears.

4. Touch **Save Config**.
5. Touch **Exit CONFIG**.
6. Do a "hard reset" by pressing **CTRL**, **Shift**, and **Reset Break** at the same time.

This procedure must be used only when you are first establishing a RAM disc. A part of memory will be allocated for the RAM disc from this point on.

If you later want to change the size of the RAM disc, you must:

1. Select and start **DEVICE CONFIG** in the main P.A.M. menu.
2. Touch the entry next to **RAM Disc Size**. Then touch **Next Choice** or **Previous Choice** until the number that you want appears.
3. Touch **Save Config**, then **Exit CONFIG**.
4. Do a "hard reset" by pressing **CTRL**, **Shift**, and **Reset Break** at the same time.

If you later want to change the disc drive designator (B:, C:, etc.) you can simply do this without making any additional changes.

## Using a RAM Disc

Any program that is brought into memory a piece at a time is a good program to install onto a RAM disc. If you are using a program and are working with a large amount of data, this is a good time to transfer all of your data files to a RAM disc. Here is an example of the above: using WordStar to edit a large document.

Let's say you're editing a large document and you press **Delete line**. In order to perform this function, the computer may have to get a certain part of the WordStar program and transfer it to memory. This takes a certain amount of time, which would be greatly reduced if the program were installed onto a RAM disc.

While editing, you decide you want to see the beginning of the document and press **[↑]** (home up). WordStar may have to go to a disc and transfer some data from it to memory in the computer. The time that this takes would be greatly reduced if the data file were on a RAM disc.

To install a program from a master disc to the RAM disc, simply use the **INSTALL** program. Select and start **INSTALL** from the main P.A.M. menu.

To copy files from a disc to the RAM disc, you can choose from a number of options.

1. While working in an application program:
  - a) Use the function the program provides for saving data in a file.
  - b) Use the File Manager's "Copy File" function.
2. After you have finished using an application program:
  - a) Use the MS-DOS "Copy" command. This command is mentioned in Chapter 8, and described fully in the MS-DOS User's Guide. For example, the command

```
A>COPY A:.* B:.*
```

would instruct MS-DOS to copy all files on the disc in the A: drive to the disc in the B: drive.
  - b) Use the File Manager's "Copy File" function. Select **File Manager** from the main P.A.M. menu.
  - c) Use the COPY/BACKUP program. Select and start **COPY/BACKUP** from the main P.A.M. menu.

## Saving the Contents of a RAM Disc

The contents of the RAM disc will be lost when you turn off your HP 150. If you have modified files or created new files on the RAM disc, then you will want to save these. You should also be aware that if the HP 150's power cord is disconnected, if there is a sudden power failure, or if you do a "hard reset," the contents of your RAM disc will be lost.

To transfer files in your RAM disc to another disc, use the same procedures just described for copying files from a disc to the RAM disc. Installed programs, however, cannot be copied. (This is true of installed programs on a RAM disc or on a disc in a disc drive.) When you turn off your HP 150 the program is lost, and you must again install the program from a master disc onto the RAM disc.

## Discontinuing Use of a RAM Disc

When you no longer wish to use part of the computer's memory as a RAM disc:

1. Select and start **DEVICE CONFIG** from the main P.A.M. menu.
2. Locate the disc drive that has been designated as the RAM disc.  
Change the entry under **Interface to No Device**.
3. Touch **Save Config**.
4. Touch **Exit CONFIG**.
5. Do a "hard reset" by pressing **CTRL**, **Shift**, and **Reset Break** at the same time.

The memory previously used for the RAM disc will again be available for applications to use.

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## **Chapter 8**

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### **TYPING MS-DOS COMMANDS**

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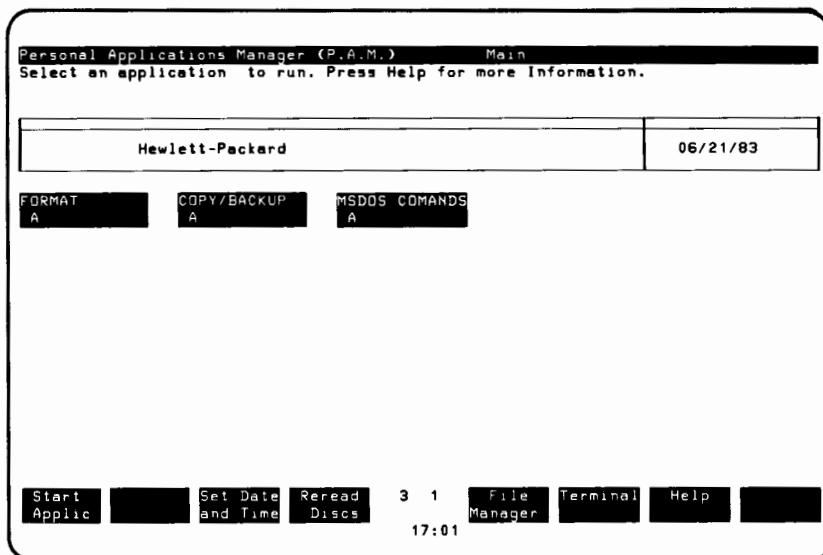
Originally, all operating systems required you to type commands, then press the return key to make anything happen. This is known as issuing system commands.

As you have seen in previous chapters, you can issue commands on the HP 150 by pressing a function key or touching the screen. The operating system reacts the same as if you had used the method of typing. Since P.A.M. only provides the most common system functions, you occasionally still have to type some of the MS-DOS commands.

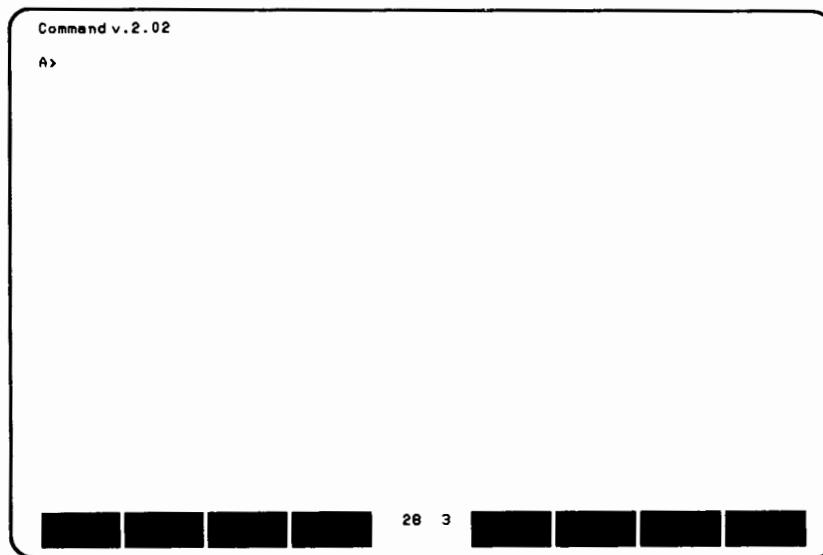
In this chapter, most commands are described briefly; if you need more explanation, refer to the advanced user's manual. Any functions that can be performed by P.A.M. by pressing a function key or touching the screen have an \* after them; this means that they can be performed by P.A.M.

MS-DOS commands are found in the file Command.com. This file must be present on a disc to run commands from that disc. Command.com is shipped from HP on the operating system disc (SYS\_MASTER). You can either use SYS\_MASTER or install Command.Com onto another disc.

Get to the MS-DOS command prompt by touching MS-DOS COMANDS, then Start Applic on the P.A.M. screen.



The command prompt looks like this:



Return to P.A.M. by typing EXIT and pressing Return.

**Break****BREAK ON  
BREAK OFF**

Type BREAK ON if you want to be able to end an application (at the next "break" point) by typing CTRL and C simultaneously; CTRL C will restart the operating system. Type BREAK OFF if you want to be able to type CTRL C within a program without terminating the program.

**CHDIR****CHDIR *pathname***

As described in Chapter 4, files can be stored beneath one another in a "tree" structure; a directory gives you a list of your current "branch." If you wish to change directories (branches), type **CHDIR parent\next level\etc.**, where the pathname is the new branch (You can always use ..\.. to go up a directory tree, and \ to go to the root.)

**CHKDSK****CHKDSK *d:discname /F /V***

Check a disk for errors in its directory by typing CHKDSK. For example, a disc in drive B: named MARYS would be checked and fixed (/F), with messages displayed on the screen (/V) by typing CHKDSK B:MARYS /F /V. These problems can't be fixed by /F:

Message	Solution
Incorrect DOS version	Use 2.0 or higher.
Insufficient memory	Obtain more memory to use
Errors Found, F not specified	Do again; use /F
Invalid Current Directory	Restart the system; do over
Cannot CHDIR to root	Bad disc; try RECOVER
File is cross linked on cluster	Make new copy of File; delete other two cross linked files.

Lost clusters found in chains	Type Y to create a directory entry and file (FILEnnnnnnnn). You are then told how much space has been freed (how much would have been if you typed N.)
Probable non-DOS disc	Type Y to try to check it any way; type N to abandon.
Insufficient room in root directory	Erase files in root; repeat.
Unrecoverable error in directory.	Type Y to convert bad directory to a file; fix or delete file.
<b>CLS</b>	Clears the screen.
<b>COPY *</b>	<b>COPY X: pathname origname X: pathname newname /V</b>  Copy a file to another disc by typing this command; also, create another copy of a file on the same disc, but with a new name. X refers to drive letter; pathname optionally refers to a level in a directory; /V means "verify that copies match."  <b>COPY X:ABC + X:DEF X:BIGFILE</b>  Use this form of the command to combine files.
<b>CTTY</b>	<b>CTTY \Dev</b>  Type CTTY \DEV to issue commands from a new device. For example, to enter and print everything from an auxiliary device (aux), the command would be CTTY \aux.

<b>DATE*</b>	<b>DATE</b> <b>DATE MM-DD-YY</b>
	Type just the word DATE, and you will be asked to supply a date. Type DATE 12-25-83 to change the date inside the computer to December 25th, 1983.
<b>DEL *</b>	<b>DEL X:Filename pathname</b>
	Delete a file by typing the DEL command and the filename. If the file is in another directory, use the optional pathname (\path\path\etc.). To clear all files from a directory, type DEL *.*
<b>DIR *</b>	<b>DIR X:Filename pathname /P /W</b>
	List all files in the default Directory by typing DIR. Type B: <input type="button" value="Return"/> , then DIR to see only files on disc B:. Type DIR Chapter6 to see only information on the file Chapter6 on the current disc. Add the optional pathname if you want to list a directory other than the one you are in. Add /P to show the directory a page at a time. Add /W to strip off all information but filenames; this compacts the list. DIR *.EXT will list all files with EXT as extension.
<b>ECHO</b>	ECHO is used in Batch files. See the advanced user's guide for more information..
<b>EXE2BIN</b>	EXE2BIN is shipped on the Programmer's Pac Disc.
<b>EXIT</b>	<b>EXIT</b>
	Type this from the command prompt to return to P.A.M. from the MS-DOS prompt.
<b>FIND</b>	The FIND command is shipped on the Programmer's Pac disc.
<b>FOR</b>	The FOR command is used primarily in Batch files. See the advanced user's guide for more information.

**FORMAT \*\*****FORMAT**

Type FORMAT to start the Hewlett-Packard FORMAT program, as described in the chapter on Discs.

**GOTO**

GOTO is used in Batch files. See the advanced user's guide for more information.

**IF**

IF is used in Batch files. See the advanced user's guide for more information.

**MKDIR\*****MKDIR *pathname***

Type **MKDIR \name\etc.** to create a subdirectory of the root directory. For example **MKDIR Mary** would create the subdirectory Mary in the current subdirectory Mary in the current directory.

**MORE****MORE**

Type **| MORE** after other commands to see screen listing one page at a time. For example, **TYPE MYFILES.COM | MORE** will type a page of MYFILES onto the screen, then wait for you to touch the return key for another page.

**PATH****PATH *pathname; pathname***

Type **PATH \name\etc.** to tell MS-DOS what directory your operating system commands are stored under. If you haven't moved them, they are all under **\BIN**; **\BIN** will always be searched in addition to the pathnames you give. For example, **PATH \BIN\USER\STEVE;PATH \BIN\USER\AIMEE** would result in three directories being searched when an external command is given.

**PAUSE**

PAUSE is used in batch files. Batch files are explained in the advanced user's manual.

**PRINT \*****PRINT X:*filename* /T /C /S**

Typing **PRINT B:File** prints File on your printer, and lists any other files in the print queue on the screen. Add **/T** to terminate all other files in the print queue. Add **/C** to suspend all printing until another PRINT command with **/P** added continues the printing. The following errors may occur:

Message	Explanation
---------	-------------

Name of list device [PRN]	Appears the first time PRINT is run. Type LST (printer), CON (console), or AUX (auxiliary port); if you type nothing PRN is used.
List output is not assigned to a device	Name of list device (see above) is invalid.
Print queue is full	Only 10 files can be in the queue at once.
Print queue is empty	There are no files in the print queue.
No files match X:Filename	You tried to print a file that can't be found.
Drive not ready	The disc containing the file to be printed isn't ready. Print will keep trying to get to it.
All files canceled	You issued the /T switch.
File canceled by operator	You issued the /C switch.



**PROMPT****PROMPT \$X**

The default prompt for the command processor is A>, where A is the default disc. You can change the MS-DOS prompt by typing PROMPT, a \$, and one of the characters below.

Character	Prompt
\$	\$
t	current time
d	current date
p	current default drive directory
v	MS-DOS version number
n	default drive
g	>
l	<
b	
-	cursor advances one line
s	a space
h	a backspace
e	ASCII code x'1B' (escape)

Type PROMPT to see the default drive as prompt. Type PROMPT \$Time = \$t\$-\_DATE = \$d to see two lines:

Time = 9:00 am

Date = 7/5/83

**RECOVER****RECOVER *Filename***

RECOVER X:

Type RECOVER and a disc letter to recover a disc that is causing read-write errors. MS-DOS reads the disc sector by sector, marking the unreadable sectors as bad. After the disc is recovered, copy the contents to a good disc.

If there is not enough room in the root directory, RECOVER prints a message to that effect, and stores information about the extra files in the File Allocation Table. In this case, delete some files from the root directory, and run RECOVER again.

**REM**

REM is used in batch files. Batch files are explained in the advanced user's manual.

**REN \***

**REN X:*filename1* *filename2***

Type REN with the original filename and the new filename to rename the original. You could use wildcard characters to make global changes. For example, REN B:\*.LST \*.PRN would change all .LST files on disc B to .PRN extensions. REN B:AAA ??B would result in the file named B:AAB.

**RMDIR \***

**RMDIR *pathname***

Type **RMDIR A:\Dir\Subdir** to remove an empty directory. Check to be sure that the directory is empty by using DIR first.

**SET**

SET is primarily used in Batch files. See the advanced user's guide for more information.

**SHIFT**

SHIFT is used in Batch files. See the advanced user's guide for more information.

**SORT**

SORT is shipped on the Programmer's Pac disc.

**SYS**

SYS *Drive name:*  
SYS *Drive name:/M*

The SYS (System command) transfers the MS-DOS operating system files, and Command.Com or P.A.M. files from the disc before the prompt to the disc in the specified drive. Typing "/M" instructs MS-DOS to transfer the operating system and Command.Com. If you don't add "/M," then the operating system and P.A.M. are transferred.

**TIME\***

**TIME**

**TIME *hh:mm***

Use the TIME command to display and set the time.

Type TIME to see the correct time - you are also asked to type a new time. To leave the time the same, press [Return]. To change the time, type a valid time and press [Return].

Type TIME 8:20 and you change the time on the HP 150 clock to 8:20. TIME 23:59 would change the time to the equivalent of 11:59 pm on this 24 hour clock. (Valid hours are 1 - 24. Valid minutes are 00 - 59. Valid seconds are 00-60. Valid hundredths of a second are 00 - 99.) You could add seconds and hundredths of seconds, as in 8:20:33:99.

**TYPE**

**TYPE X:*Filename***

Use the TYPE command to display the contents of a file on the screen. TYPE B:CHAPTER6 would list the file CHAPTER6 on the screen. TYPE B:CHAPTER6 | MORE would list the file one page at a time. (See the MORE command, which is uses with TYPE.)

**VER**

**VER**

Type VER to see the MS-DOS version you are using.

**VERIFY \*\***

**VERIFY ON**  
**VERIFY OFF**

Type VERIFY ON if you want the disc checked every time you write data to it. VERIFY checks for bad tracks, and makes sure files are intact. If you want to know if VERIFY is ON or OFF, just type VERIFY.

**VOL**

**VOL X:**

Type VOL and a disc letter to see the volume ID (name), if there is one, of the disc in the default drive.

- \* Use the File Manager in P.A.M. to do this.
- \*\* Use HP 150 Disc Applications to do this.

Return to P.A.M. by typing EXIT and pressing .

# Running Application Programs from MS-DOS

You can run HP application programs from the MS-DOS command prompt as well as from P.A.M. This is more convenient for some situations.

Recall that line four of the application program's IN\$ file contains information to pass to the program. Some people may want to pass different information to the application program every time they run the program. Running the program from MS-DOS allows you to do this.

First, you must find out the name of the application program and the information passed to it by looking at the application program's IN\$ file. It is located on the application program's master disc. Use WordStar, MemoMaker, EDLIN, or the File Manager's "Browse" function to look at the IN\$ file.

Here is the BANK.IN\$ program for the banking program discussed in "Installing Non-HP Application Programs."

```
Bank Prog
Ver 2.1
BANK.EXE      ← Full name of application program
INTEREST      ← Command line to be passed

BANK.EXE
INTEREST
BANK.1A
BANK.1B
BANK.1C
```

The name of the application program is BANK.EXE. The line to be passed to the application program is the word INTEREST.

To execute the application program from MS-DOS, type the application program's file name, a semicolon, and the line to be passed to the program. For example, to run the banking application program, type at the MS-DOS command prompt:

```
BANK ; INTEREST
```

Sometimes the file extension of the application program is COM. If the entry on line three of BANK.IN\$ is BANK.COM instead of BANK.EXE, you type the command the same way:

```
BANK ; INTEREST
```

If line four of the BANK.IN\$ file is blank, you just type:

```
BANK
```

Some application programs are designed to accept more than one kind of information from line four. For example, if line four contains an interest rate rather than the word INTEREST, the program might accept a variety of interest rates as they change from time to time. One month you might type:

```
BANK ; 10.6
```

Another sad month you might type:

```
BANK ; 14.2
```

Consult your application program's manual to find out when changes of this type are appropriate.



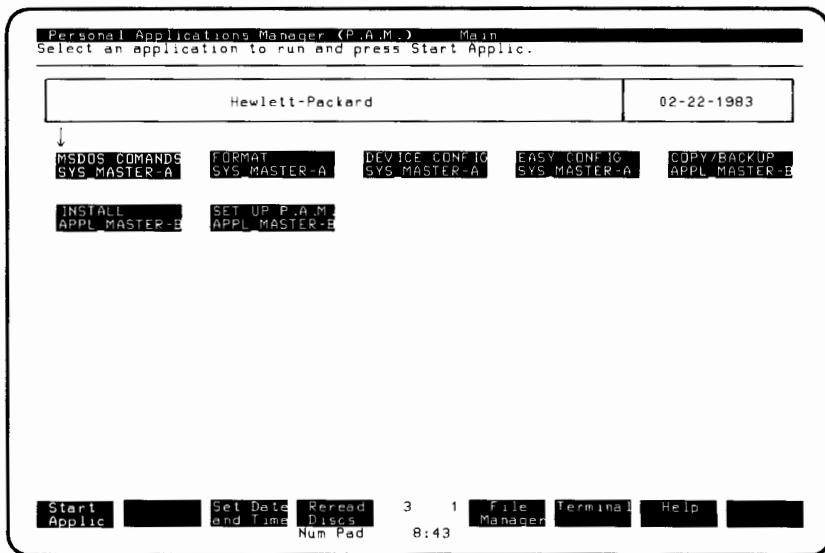
# Starting Your System in the MS-DOS Command Processor

The system you receive from Hewlett-Packard is configured to start up in P.A.M. You can change this configuration so that you start up in the MS-DOS Command Processor. When you do this, the MS-DOS commands are available to you immediately after you turn on your personal computer.

## Getting Rid of Your P.A.M. Start-up Files

Two files cause your computer to start up in P.A.M. These are the AUTOEXEC.BAT file and the CONFIG.SYS file. You don't need these files and their current contents if you start up in the MS-DOS command processor. You should rename these files so that you can easily reconfigure your system to start up in P.A.M. later if you want to. To rename the files, follow this procedure:

1. Touch **MSDOS COMMANDS** and **Start Applc** to go to the MS-DOS command level:



2. Rename AUTOEXEC.BAT to AUTOEXEC.SAV by typing at the MS-DOS command prompt:

```
REN AUTOEXEC.BAT AUTOEXEC.SAV
```

3. Rename CONFIG.SYS to CONFIG.SAV by typing at the MS-DOS command prompt:

```
REN CONFIG.SYS CONFIG.SAV
```

## Responding to the Time and Date Requests

Now when you start up the system or restart it, this message appears on your screen:

```
Microsoft MS-DOS version 2.11  
Copyright 1981,82,83 Microsoft Corp.
```

```
Command v. 2.11  
Current date is Thu nn-nn-nnnn  
Enter new date:
```

At this point, you can either press **Return** to leave the date as it is or you can enter a new date. Use the mm-dd-yyyy format. For example if the date is May 10, 1984, type:

```
5-10-1984
```

Then press **Return**.

The message now adds:

```
Current time is nn:nn:nn:nn  
Enter new time:
```

Press **Return** to leave the date as it is or enter a new time. MS-DOS uses the 24-hour clock. Time begins to register at the moment you press **Return** after you enter the time. For example, if the time will be 3:45 and 18 seconds in the afternoon when you press **Return**, type:

```
15:45:18
```

Then press **Return**.

MS-DOS uses the time and date you enter to list the times and dates you create and edit files.

## Starting Up in P.A.M. Again

If you want to change your start-up configuration so that the computer starts up in P.A.M. again, do this:

1. Rename AUTOEXEC.SAV to AUTOEXEC.BAT. Type at the command prompt:

```
REN AUTOEXEC.SAV AUTOEXEC.BAT
```

2. Rename CONFIG.SAV to CONFIG.SYS. Type at the command prompt:

```
REN CONFIG.SAV CONFIG.SYS
```

Now when you restart the system, you will enter P.A.M. immediately.

If you have erased the files that automatically place you in P.A.M., you can create new ones. Use COPY CON, EDLIN, WordStar, or MemoMaker. CONFIG.SYS should contain the single line:

→ PAMCODE  
ansel  
about → AUTOEXEC should contain the single line:  
→ SHELL=PAMCODE.EXE ROOT

These examples show you how to use COPY CON to create the files.

To create a new CONFIG.SYS file, type at the MS-DOS command prompt:

```
COPY CON CONFIG.SYS [Return]  
SHELL=PAMCODE.EXE ROOT [Return]  
^Z [Return]
```

To create a new AUTOEXEC.BAT file, type at the command prompt:

```
COPY CON AUTOEXEC.BAT [Return]  
PAMCODE [Return]  
^Z [Return]
```

---

## **APPENDIX A**

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### **CONFIGURING THE HP 150**

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Configuration is the means by which you determine various characteristics of your computer or terminal, and characteristics of the communication between it and peripheral devices and other computers. In general, when you configure you can specify:

- what peripheral devices are attached to your computer, where they are attached, and the kind of interface being used.
- the ways in which data is transmitted between your terminal and a computer, and the ways in which your terminal responds to various signals from the computer.
- other characteristics of your computer, such as the type of cursor (an underscore or a box) or keyboard (USASCII, Swedish, etc.).

You make these choices by selecting entries from a number of configuration menus. Five of the HP 150's six configuration menus are described in this appendix. In the first picture of each configuration menu the default entries are shown. These are the entries that have already been chosen because they are appropriate for most situations. The default entries are also listed first in the entry explanations.

Here is an outline of the topics covered in this appendix.

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# Configuring Hardware

To configure the HP 150 as a terminal to an HP 1000 or HP 3000, see the *HP 150 Terminal User's Guide*. This appendix covers only the meanings of each entry.

To access the Config Menus,\* press **User System** twice on the keyboard, followed by **[F8]**:



These labels appear:



The first four configuration menus shown above control:

**global config** the keyboard and system processor. For example, should the keyboard click? Do you want a computer or a terminal?

**port1 config** whatever is connected to port 1. If you transmit directly to a mainframe computer or modem, we recommend that you connect your cable here. Otherwise, any RS232 device can be connected.

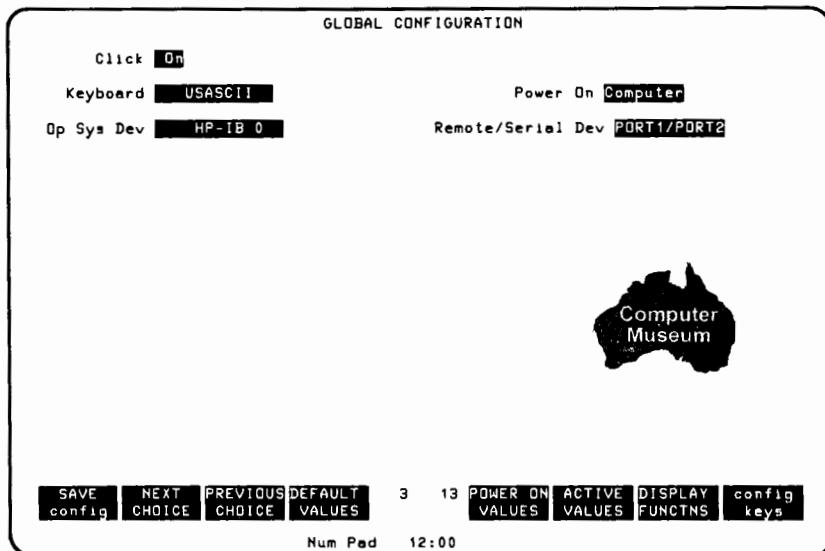
**port2 config** whatever is connected to port 2. This could be a mainframe computer, modem, printer, plotter, or any other RS232 communication.

**terminal config** the HP 150 terminal. What happens when the **Return** key on the keyboard is pressed? When data is sent to the host computer, which columns on the screen should be sent?

**accessory config** this is for future use by Hewlett-Packard.

\* You can access Config Menus from the MS-DOS prompt, from BASIC, from local mode, or from the MS-DOS Configuration program.

## Global Configuration



To change any full-bright configuration entries, cursor to the entry then press **f2** (**NEXT CHOICE**). To change any half-bright entries, cursor to the entry and type the new entry. Press **f4** (**DEFAULT VALUES**) to use the values HP chose as defaults. Press **f5** (**POWER ON VALUES**) to use the values that appeared when the configuration was last saved. Press **f6** (**ACTIVE VALUES**) to use the set of values that are active and in use by the computer.

**DISPLAY FUNCTION** is not useful at this level. (It allows you to create control codes needed in certain fields on other menus.)

Press **f1** (**SAVE CONFIG**) when all values are set the way you want them. These values are then active and in use by the computer. The next time you power on, these values will be used.

**config KEYS** returns you to the original screen. If you didn't press **SAVE CONFIG**, any changes you may have made are not recorded.

\* Make sure that the entry for Remote/Serial Dev matches the entry for "to" devices described in the chapter Using Your Equipment.

The meanings of the entries in the Global Configuration Menu are shown below.

**Click** Click is the noise the keyboard makes when you press a key. It can be silent (OFF) or make a click (ON).

**ON**      **OFF**

**Keyboard** You can use different keyboards with the HP 150.

<b>USASCII</b>	Nederlands
Svensk	Schweiztaste
Suomi	Suisse Roman
Dansk	Canadien
Norsk	Français
Deutsch	Italiana
UK	Vlaams
Español Eur	
Español Lat	

**Power on** Power on determines what the HP 150 will be when you turn on the power switch. Your HP 150 can be a computer or a terminal for a host computer.

**COMPUTER**      **TERMINAL**

**Remote/SerialDev** Remote refers to a mainframe computer; where do you have it connected, port 1 or port 2? Serial Device refers to a printer or plotter; where do you have it connected, port1 or port 2?

**Port1/Port2**      Port2/Port1

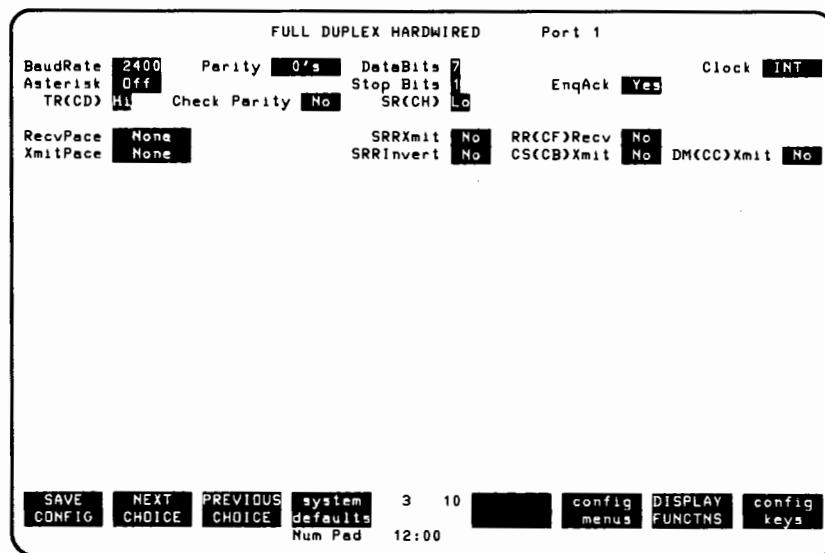
## Op Sys Dev

Operating System Device determines where the HP 150 looks for the operating system. You tell it to look either on the HP-IB port disc drive at address 0-7, or look on the disc drive connected to accessory slots 1 or 2.

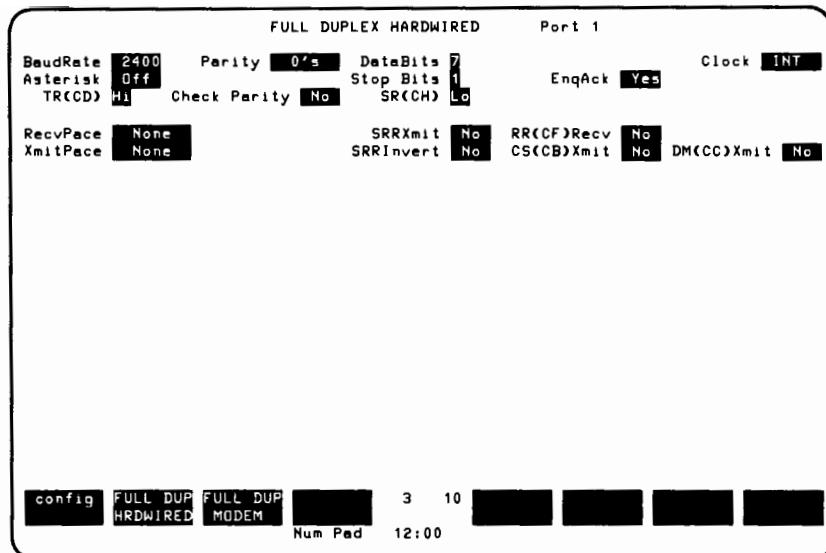
HP-IB 0	HP-IB 1	HP-IB 2	HP-IB 3
HP-IB 4	HP-IB 5	HP-IB 6	HP-IB 7
Accessory 1		Accessory 2	

## Data Communications Configuration – Port 1

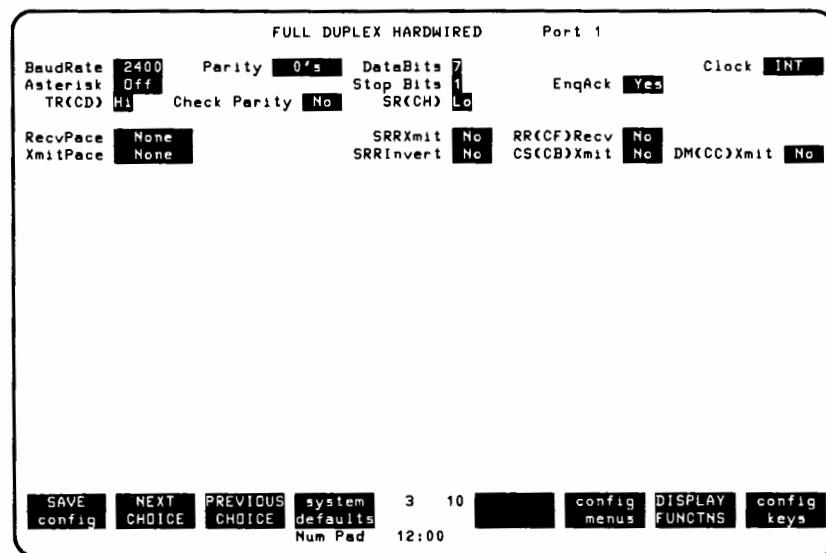
After you press **f3** (Port1 config) this menu appears:



After you press **f6** (config menus), you are given two choices, **FULL DUP HRD WIRED** (connected with a cable), and **FULL DUP MODEM** (connected with a modem.)



Press **f2** (FULL DUP HRD WIRED) to see:



Press **f8** (**config keys**) to change the function keys shown above.

Press **f3** (**FULL DUPLEX MODEM**) to see:

FULL DUPLEX MODEM						Port 1	
BaudRate	300	Parity	Odd	DataBits	7	Clock	INT
Asterisk	RR			Stop Bits	2	EnqAck	Yes
TR(CD)	Hi	Check Parity	Yes	SR(CH)	Lo		
RecvPace	None					RR(CF)Recv	No
XmitPace	None					DM(CC)Xmit	Yes
SAVE CONFIG				3 10	config menus		DISPLAY FUNCTNS
NEXT CHOICE				Num Pad	config FUNCTNS		config keys
PREVIOUS CHOICE				12:00			

## Data Communications Configuration - Port 2

After you press **f4 (Port2 Config)**, this menu appears:

FULL DUPLEX HARDWIRED      Port 2											
BaudRate	2400	Parity	0's	DataBits	7	Stop Bits	1	EnqAck	Yes		
Asterisk	Off										
TR(CD)	Hi	Check Parity	No	SR(CH)	Lo						
RecvPace	None			SRRXmit	No	RR(CF)Recv	No				
XmitPace	None			SRRInvert	No	CS(CB)Xmit	No	DM(CC)Xmit	No		
SAVE config	NEXT CHOICE	PREVIOUS CHOICE	system defaults	3	10		config menus	DISPLAY FUNCTNS	config keys		

After you press **config**, you are given two choices, **FULL DUP HRD WIRED** (connected with a cable), and **FULL DUP MODEM** (connected with a modem).

FULL DUPLEX HARDWIRED      Port 2											
BaudRate	2400	Parity	0's	DataBits	7	Stop Bits	1	EnqAck	Yes		
Asterisk	Off										
TR(CD)	Hi	Check Parity	No	SR(CH)	Lo						
RecvPace	None			SRRXmit	No	RR(CF)Recv	No				
XmitPace	None			SRRInvert	No	CS(CB)Xmit	No	DM(CC)Xmit	No		
config	FULL DUP HRDWIRED	FULL DUP MODEM		3	10						
Num Pad 12:00											

Press **f2** (**FULL DUP HRD WIRED**) to see:

FULL DUPLEX HARDWIRED Port 2					
BaudRate	2400	Parity	0's	DataBits	7
Asterisk	RR			Stop Bits	1
TR(CD)	Hi	Check Parity	No	SR(CH)	Lo
RecvPace	None			SRRXmit	No
XmitPace	None			RR(CF)Recv	No
				SRRInvert	No
				CS(CB)Xmit	No
				DM(CC)Xmit	No
SAVE	NEXT	PREVIOUS	system	3 10	config
config	CHOICE	CHOICE	defaults		menus
Num Pad 12:00					
DISPLAY FUNCTNS config keys					

Press **f6** (**config menus**) to change the function keys shown above.

Press **f3** (**FULL DUP MODEM**) to see:

FULL DUPLEX MODEM Port 2					
BaudRate	300	Parity	Odd	DataBits	7
Asterisk	RR			Stop Bits	2
TR(CD)	Hi	Check Parity	Yes	SR(CH)	Lo
RecvPace	None			RR(CF)Recv	No
XmitPace	None			DM(CC)Xmit	Yes
SAVE	NEXT	PREVIOUS	system	3 10	config
config	CHOICE	CHOICE	defaults		menus
Num Pad 12:00					
DISPLAY FUNCTNS config keys					

A description of the entries in the Port 1 and Port 2 configurations are listed below. The default entry is listed first.

<b>Baudrate</b>	Baudrate tells the terminal how many bits of data it should send per second.
	300 ** 2400 * 110 134.5 600 1200
	1800 2000 4800 9600 19200
<b>Parity</b>	Parity determines what type of checking should take place: NONE (no parity bit), 0's (parity bit always zero), ODD (odd parity), 1's (parity bit always 1), or EVEN (even parity).
	0* ODD** 1 NONE EVEN
<b>DataBits</b>	Data bits specifies how many data bits you want in each character for both sending and receiving. ASCII characters are normally passed as 7-bit data codes. (If you specify 8, parity must be NONE.)
	7 8
<b>Clock</b>	Clock indicates whether the data comm clock source is to be generated by the terminal or by the external device. If an external clock is selected, this field also specifies whether the clock being supplied has 1 or 16 clock pulses per bit.
	INT EXT x1 EXTx16

\* Hardware default

\*\* Modem default

**Asterisk**

Asterisk refers to two indicators on either side of the time (bottom of screen). When the transmit indicator for port 1 is on, the left asterisk appears. When the transmit indicator for port 2 is on, the right asterisk appears. The possible entries for Asterisk are RR and DM. RR stands for Ready Receive; an asterisk appears when the modem or terminal hears a carrier signal from the remote computer. DM stands for Data Mode; an asterisk appears when the modem is on and ready to send data.

**RR\*\*      Off\*      DM**

**StopBits**

StopBits specifies the number of stop bits to be appended to each data character transmitted by the terminal.

**1\*      2\*\***

**EnqAck**

Do you want to use the Hewlett-Packard Enq Ack handshake (when mainframe inquires with Eng, the HP 150 acknowledges with ACK)?

**YES      NO**

**TR(CD)**

Terminal Ready specifies whether the RS-232 TR line should be set high or low when the terminal is powered on or reset. This indicates to the remote computer or printer that the HP 150 is ready.

**HI      LO**

**CheckParity**

Do you want to check the parity on each data character? (If you indicate YES, the Parity field entry (see above) must be set to either odd or even. If Parity is set to NONE, 0, or 1, no checking takes place.)

**YES\*\*      NO\***

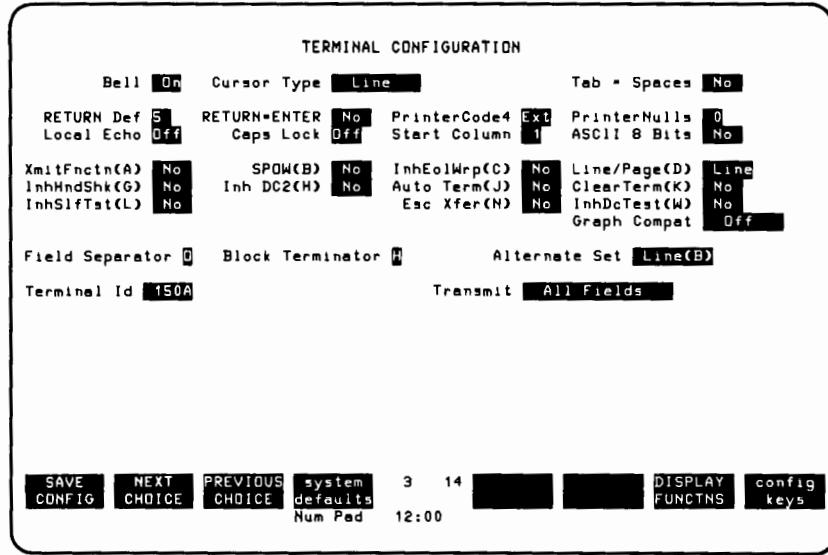
\* Hardware default  
\*\* Modem default



<b>SR(Ch)</b>	Signal Rate specifies whether the RS-232 SR line is set high or low when the terminal is powered on or reset.
	<b>LO</b> <b>HI</b>
<b>RecvPace</b>	Receive pacing is a mechanism by which the terminal automatically halts and resumes the transmission of data from a remote device. (This is only available in full duplex environments.) TR(CD) means the terminal performs receive pacing using the Data Terminal Ready control line. XonXoff means the terminal performs receive pacing using Xon and Xoff control codes; the HP 2601 and HP 2602, for example, use XonXoff. For more information, see the <i>HP 150 Terminal User's Guide</i> .
	<b>NONE</b> <b>TR(CD)</b> <b>XonXoff</b>
<b>SRRXmit</b>	This field specifies whether a true state (+12V) on the RS-232 Receiver Ready (RR) or Data Carrier Detect (CF) control line is a required condition for transmitting data.
	<b>NO</b> <b>YES</b>
<b>SRIInvert</b>	When SRRXmit is set to YES and SRIInvert is set to YES, the true state of the RS-232 Receiver Ready (SRR) or Secondary Carrier Detect (SCF) control line is detected as -12V instead of +12V.
	<b>NO</b> <b>YES</b>
<b>RR(CF)Recv</b>	This field specifies whether a true state (+12V) on the RS-232C Receiver Ready (RR) or Data Carrier Detect (CF) control line is a required condition for receiving data. Note that the Asterisk field can be set to indicate the state of this line when set to RR.
	<b>NO</b> <b>YES</b>

<b>XmitPace</b>	Transmit Pacing is a mechanism by which the host computer can stop and resume the transmission of data from the terminal. This is only available in full duplex environments. The transmit pace can be NONE or Xon Xoff pacing. For more information, see the <i>HP 150 Terminal User's Guide</i> .
<b>NONE    XonXoff</b>	
<b>CS(CB)Xmit</b>	Is a true state (+12V) required on the RS-232 Clear to send line required to transmit data? (With some computers, the answer is yes. With an HP 3000, the answer is no.)
<b>NO    YES</b>	
<b>DM(CC)Xmit</b>	This field monitors pin 6 of the datacommunications port; pin 6 represents dataset ready (CC). Pin 6 is not used by most computers. If you indicate YES, pin 6 must be active before information is sent to a modem. If you indicate NO, pin 6 is ignored.
<b>NO*    YES**</b>	

## Terminal Configuration



To change any full-bright configuration entries, cursor to the entry and press **f2** (**NEXT CHOICE**). Press **f2** (**System defaults**) to use the values HP chose as defaults. To change any half-bright entries, cursor to the entry and type the new entry.

Use **DISPLAY FUNCTIONS** to create the control codes needed for entries such as RETURN Def, field separator, and block terminator. Position the cursor; press **f7** (**DISPLAY FUNCTIONS**) once to turn it on (\* appears); type the key(s) that you want to use; press **f7** (**DISPLAY FUNCTIONS**) again to turn off.

Press **f1** (**SAVE CONFIG**) when all values are set the way you want them. These values go into effect immediately, and are also used the next time you power on.

**CONFIG KEYS** returns you to the original screen.

The meanings of the Terminal Configuration entries are as follows:

<b>Bell</b>	There is a bell inside the HP 150 that rings when you near the end of a line or when the cursor advances to another field in a formatted display. You can turn this bell OFF. The bell will, however, still sound in response to a <b>[CTRL] G</b> typed at the keyboard or sent from a program.
	<b>ON      OFF</b>
<b>Cursor Type</b>	The HP 150 cursor can be represented on the screen by a box or a line.
	<b>Line    Box</b>
<b>Tab-Spaces</b>	If you want the cursor to move to the next set tab (leaving spaces in its wake) when you press <b>[Tab]</b> , set Tab=Spaces to YES. If you want the cursor to skip over characters, leave it set to NO.
	<b>NO      YES</b>
<b>Return Def</b>	The Return definition refers to action you want to take place when you press <b>[Return]</b> . A carriage return is the default (Cr). Position the cursor at this field and type any other key(s) to change it.
	<b>any one or two action generating keys</b>
<b>Return-ENTER</b>	When <b>[Return]</b> is pressed, do you want the information ENTERed at the host computer? (ENTER tells the host "execute this information.") This causes <b>[Return]</b> to use block mode handshaking (useful for HP 3000 VIEW applications). (See the explanation for the <b>[ENTER]</b> key in the <i>HP 150 Terminal User's Guide</i> .)
	<b>NO      YES</b>

**Printer Code4**

PrinterCode4 specifies which printer (external printer or integral printer) will respond to device code 4 when the terminal receives a device control escape sequence from a host computer.

**EXT    INT**

**Printer Nulls**

Printer Nulls specifies how many ASCII null codes (0-255) are transmitted to an external printer after each ASCII control code.

**0    -    255**

**Local Echo**

When Local Echo is ON, characters entered through the keyboard are both displayed on the screen and transmitted to the host computer. When Local Echo is OFF, characters are only sent to the host computer. (Most computers echo the letters back after they receive them, so you would leave Local Echo OFF. In half duplex mode, as with modems, Local Echo should be ON.)

**OFF    ON**

**Caps Lock**

Caps Lock does more than pressing the CAPS key on the keyboard does. When ON, the terminal generates only Telytype-compatible codes: uppercase ASCII (00-5F, hex) and DEL (7F, hex). Unshifted alphabetic keys (a-z) generate the codes for their uppercase equivalents, the **↑** and **↓** keys generate codes for **↖** and **↗** respectively. The keys for generating **~** and **`** are disabled.

**OFF    ON**

**Start Column**

Start Column is used with Modify Line and Modify All. If the line of data being entered is the last typed line in display memory so far, the terminal automatically generates a logical start-of-text pointer indicating the first character of the line. This pointer remains with the line until it is deleted, so the terminal always knows where in the line to start sending characters to the host computer.

If, however, a line has no start of text pointer, the terminal looks to the value in Start Col and uses it as a pointer. When you are operating in MODIFY mode (see the *HP 150 Terminal User's Guide* and press **Return** or **ENTER**, data is sent from the column indicated to the end of the line if a line has no start-of-text pointer. (You can temporarily alter the value of this field by using one of the **margin/tab/col** function keys.)

1 - 80

**ASCII 8 bits**

Standard ASCII codes are 7 bits long; Hewlett-Packard, however uses a full 8 bit code with certain HP line printers. This field is mainly for multilingual purposes.

**NO**    **YES**

**Xmitfnctn(A)**

When this entry says YES, escape code sequences generated by major function keys (such as **V** or **A**) are sent to the host computer. When the entry is NO, the action takes place at the terminal, but the host computer is not contacted.

**NO**    **YES**



**SPOW(B)** When SPOW(B) is set NO, spaces entered through the keyboard overwrite existing characters. When SPOW(B) is set YES, (Enable SPace OverWrite) a teletype or printer is emulated (spaces don't overwrite existing characters.) This is a two part latch, in that it must be 'armed' by setting SPOW(B)=YES and then turned on with ESC & R 1 N and then a carriage return without a linefeed (the cursor remains on the same line). It is turned off with ESC & K 0 N.

**NO**      **YES**

**InhEolWrp(C)** When Inhibit End-of-line Wrap is set to NO, the cursor advances from the last column of a line to the first column of the next line. When Inhibit End-of line Wrap is set to YES, the cursor stops at the end of a line; you have to press **Return** to move it to the beginning of the next line.

**NO**      **YES**

**Line/Page(D)** Lines or Pages deals with Block Mode. Line means the terminal transmits a line of data at a time. Page means the terminal transmits a page of data at a time.

**LINE**    **PAGE**

**InhHndShk(G)  
and  
Inh DC2(H)** Together, the G and H entries determine what kind of handshaking is used when blocks of data are transferred to the host computer.

Various block transfers that may occur are:

- 1) A data transfer initiated by pressing **ENTER** while in character, block-line, or block-page mode.
- 2) A data transfer initiated by pressing **ENTER** or **Return** in key MODIFY mode.
- 3) A data transfer initiated by pressing a transmit only (T) user key (f1 - f8).

- 4) The terminal's response to a cursor sense, terminal ID status, primary status, secondary status, or device status request issued from the host computer.
- 5) The device control completion code (S, F, or U) transmitted by the terminal in conjunction with a device control operation initiated by the host computer.

When doing block transfers, three possible handshakes can be used:

**NONE** No handshake; terminal merely transmits block of data.

**SHORT** Computer sends <DC1>; terminal transmits block of data.

**LONG** Computer sends <DC1>; terminal responds with <DC2>; computer responds with another <DC1>; terminal transmits block of data.

If you set Inhibit Handshake to YES, the first or third options above are used.

If you set Inhibit DC2 to YES, the first or second options above are used.

If BOTH InHndShk(G) and Inh DC2(H) are set to YES, option one above occurs.

For more information on this subject, see the *HP 150 Terminal User's Guide*.

**YES**    **NO**

**Auto Term(J)**

The Automatic Terminator has an effect only when the **ENTER** key is pressed in block mode. If set to YES, pressing **ENTER** inserts a non-displaying terminator at the cursor, then moves the cursor backward to the previous terminator (home if there are none). This allows partial blocks of data to be sent in Block Mode. If set to NO, no terminator is inserted and the cursor does not move backward.

**NO      YES**

**Clear Term**

Clear terminators has an effect only when terminators are terminating a transfer operation. If set to YES, they are removed so the transfer takes place. If set to NO, the terminators are not cleared.

**NO      YES**

**InhS1ftSt(L)**

Inhibit Self Test disables (YES) the power-on test, terminal test, and internal printer test function keys that appear when you press **User System**, then **Service Keys** on the keyboard. If you want these function keys to work, do not inhibit them (NO).

**NO      YES**

**GraphCompat**

Graphics compatibility refers to Tektronics 4010/4014 compatibility. Tektronics values which are in the 4K address range are divided by 8 if this field is set to Scaled (scaled 4010) or Scl 4014 (scaled 4014) and divided by 4 if set to Unscaled (unscaled 4010) or Uns 4014 (unscaled 4014).

**Off      Unscaled      Scaled  
Uns 4014      Scl 4014**

<b>Esc Xfer(N)</b>	Escape transfer deals with sending information to a printer. If you want to send escape sequences relating to the display (e.g., display enhancements, format mode fields, and alternate character sets) along with the rest of your text, set Escape Transfer to YES. If you want to send just data to the printer, set Escape Transfer to NO.
	<b>NO      YES</b>
<b>Inh DcTst(W)</b>	Inhibit datacommunication self test allows you to skip (YES) the datacommunication test; if you press <b>DATACOMM TEST</b> under <b>service keys</b> , the error message "FUNCTION LOCKED" appears. If you want the test to take place, set Inhibit Datacommunication Test to NO.
	<b>NO      YES</b>
<b>FldSeparator</b>	The field separator deals with block page mode. When you press <b>ENTER</b> in block page mode and display memory contains a formatted display, the terminal automatically transmits the specified field separator at the end of each unprotected field (except the final one). To define the field separator, position the cursor, turn on <b>DISPLAY FUNCTIONS</b> , type a character, then turn off <b>DISPLAY FUNCTIONS</b> .
	<b>any ASCII Character</b>
<b>BlockTerminator</b>	The Block Terminator deals with terminal to host data transfers. Under certain circumstances, the specified block terminator character is transmitted at the end of a transfer ("copy" device control operations and <b>ENTER</b> key transmissions). To change the block terminator, position the cursor; press <b>DISPLAY KEYS</b> ; type a character; turn off <b>DISPLAY KEYS</b> .
	<b>any ASCII character</b>

**Alternate Set**

Your keyboard has an alternate set of characters; that is, by typing **[CTRL] N**, you can change the characters your keys produce (**[CTRL] O** returns the standard). Line drawing is standard and the math set are standard.

**@** = Base set (language, such as USASCII)

**A** = MATH SET

**B** = LINE DRAWING

**B** @ A

**Terminal ID**

Terminal ID tells a host computer what kind of terminal to expect the HP 150 to respond as. At this time, the HP 150 is not fully recognized as a terminal by the HP 3000; any application using VIEW will not work properly. The entry 2623A, however, is fully recognized by the HP 3000.

**150A 2623A**

**Transmit**

Transmit determines which fields will be transmitted to the host from the screen when you are in format mode. The default is all fields, but you can send only fields that have been modified if you wish.

**All Fields Modified**

# Configuring MS-DOS

You use the MS-DOS Device Configuration menu to configure peripheral devices such as disc drives, printers, and plotters. Configuring is the way that you let the HP 150 know what devices are connected to it, where they are connected, and what type of interface is being used.

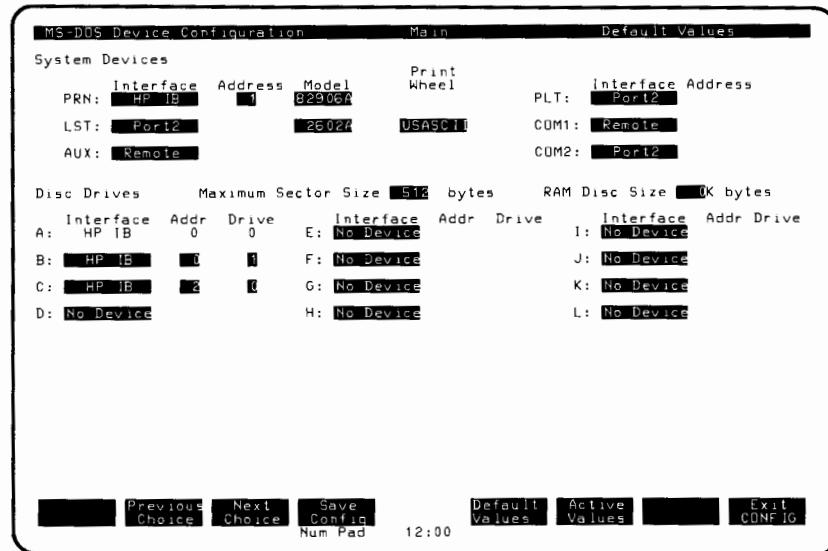
## How Do I Get the MS-DOS Device Configuration Menu on My Screen?

The Sys\_Master disc you received with your HP 150 includes the MS-DOS Device Configuration program. The following steps allow you to get the MS-DOS Device Configuration menu on your screen:

1. Do one of the following, depending on your disc drive:
  - a. If you have a dual flexible disc drive, such as an HP 9122D, HP 9121D, or HP 82901M, insert the Sys\_Master disc into the left flexible disc drive.
  - b. If you have a fixed disc drive with a flexible disc drive unit, such as HP 9133D, insert the Sys\_Master disc into the flexible disc drive. (Using the Sys\_Master disc is necessary only if the MS-DOS Device Configuration program is not already on the fixed disc.)
2. Turn on your disc drive and your HP 150. (If you have used the interconnect power cord, the disc drive powers on when you turn on the HP 150.)



3. When P.A.M. (Personal Applications Manager) appears on the screen, touch **DEVICE CONFIG**. It should now be highlighted. Now, touch **Start Applic** to get the following menu:



#### NOTE

There's an important thing to remember when selecting interface type, address number, and drive number for disc drives. You can make these selections for any drive except A:. The entries for drive A: are copied from the entries for **Sys Device** in the Global Configuration menu. Drive A: is the "booting" drive—the computer always goes to this drive to find the operating system and start up.

---

Even after reading the definitions of the words on the screen, you may still feel confused about this menu. Don't worry. In the following pages, you learn two things that help you better understand this MS-DOS Device Configuration menu:

1. First, you learn how to make changes in the MS-DOS Device Configuration menu.
2. Second, you see illustrations of the correct appearance of the MS-DOS Device Configuration menu for your specific Hewlett-Packard disc drive or printer.

## **How Do I Change the MS-DOS Device Configuration Menu?**

Complete the following steps whenever you wish to make a change in the MS-DOS Device Configuration menu:

1. Touch the entry under the heading (such as `Interface`, `Addr`, or `Drive`) that you need to change. The entry should now be highlighted.
2. Touch `Previous Choice` or `Next Choice` until the desired word or number appears.
3. Continue this process until all the entries are correct.
4. Touch `Save Config`.
5. Finally, touch `Exit CONFIG` to return to the P.A.M. screen.

## **How Do I Know When to Make Changes?**

The following pages tell you how to configure various Hewlett-Packard disc drives and printers. Under each category of disc drive and printer, we show you a picture of the way the MS-DOS Device Configuration menu should appear. When you find your disc drive or printer in the following pages, see if the MS-DOS Device Configuration menu on your HP 150 matches the menu illustrated in the manual. If your menu does not match this one, then you must change the MS-DOS Device Configuration menu on your HP 150.

For the remainder of this chapter, you only need to read the information that pertains to the disc drive or printer that you own. You are now ready to find it in the following pages, and follow the instructions for configuring it.

## What Do the Words on the Screen Mean?

The MS-DOS configuration menu is divided into two parts. The top part is **System Devices** (printers, plotters, computers) and the bottom part is **Disc Drives**.

### System Devices

PRN                  Where is your primary printer connected? Is it on the HP-IB port (if so, what is the address?), on Port 1, on Port 2, is it an internal printer or should it take the Serial value set in the Global Configuration entry Remote/Serial Dev?

HP-IB (Address) No Device Serial  
Port 1    Port 2    Parallel Internal

Model                  What model is your printer? The choices are:

2601A, 2602A, 2932A, 2934A, 82905B,  
82906A, LaserJet, ThinkJet, Special,  
Other

Print Wheel                  If you have a daisy wheel printer, what print wheel are you using? The choices are:

French, German, Italian, Legal, Norsk,  
Spanish, Swedish, WP, and USASCII

LST                  If you have a second printer, where is that printer connected? Is it on the HP-IB port (if so, what is the address?), on Port 1, on Port 2, is it an internal printer, or should it take the Serial value you set the Global Configuration entry Remote/Serial Dev to be?

Port 2    Parallel    Internal  
HP-IB (Address)    No Device    Serial  
Port 1

AUX                  If you have an auxiliary device (such as a digitizer, modem, or RS232 printer or plotter), is it connected to the HP-IB port, Port 1, Port 2, is it internal, or should it take the Serial or Remote value set in the Global Configuration entry Remote/Serial Dev?

Remote    Serial    Port 1    Port 2    Parallel  
Internal    HP-IB    No Device

PLT	Where is your plotter connected? On the HP-IB port, Port 1, or Port 2, or should it take the Serial value set in the Global Configuration entry Remote/Serial Dev?
	Port 2   HP-IB   No Device   Serial   Port 1
COM1	Where is your primary host computer connected? Is it on Port 1, Port 2, or should it take the Remote value set in the Global Configuration Remote/Serial Dev?
	Remote   Port 1   Port 2   No Device
COM2	Where is your secondary host computer connected? Is it on Port 1, Port 2, or should it take the Remote value set in the Global Configuration Remote/Serial Dev?
	Port 2   No Device   Remote   Port 1
<b>Disc Drives</b>	
A: through L:	The letters A: through L: are simply labels for the disc drives connected to your HP 150. Each drive that you connect to your HP 150 requires one of these labels. For example, if you connect a dual disc drive to your HP 150, you are connecting two drives. One of these drives should be drive A: and one should be drive B:.
Interface	Interface refers to a connection between your HP 150 and your disc drive(s). Three different sets of words appear in the Interface column: HP-IB, No Device, and RAM Disc. An entry of HP-IB means that a drive is connected to the HP 150 using the HP-IB cable. For example, if you connect a dual disc drive to your HP 150, you connect two drives. Therefore, both drive A: and drive B: should have an entry of HP-IB under the Interface heading. All other drives (drive C: through drive L:) should have an entry of No Device, because you have connected only two drives to your system. Later, if you use the RAM disc feature, you would change No Device to RAM Disc for drive C:.
	HP-IB   No Device   RAM Disc
Addr	The heading Addr is an abbreviation for address. The entry in this column on your screen should correspond to the setting of the address switch on the back of your disc drive. The numbers typically used for disc drive addresses are 0, 2, 4, and 6.
	0 through 7

**Drive** If you have a dual disc drive, you have two drives. In the column labeled **Drive**, designate the left-hand drive as drive 0 and the right-hand drive as drive 1. If you have a single disc drive, you have one drive. In the column labeled **Drive**, make an entry of 0 for this drive.

0      1

**Maximum Sector Size** A disc is divided into pieces called sectors. The FORMAT program, which you use to prepare a disc to store data, creates these sectors on a disc.

Each sector holds a certain number of bytes. HP disc drives work with discs having sectors of 512 bytes, so this is the default value. The other value of 1024 bytes is reserved for future use by HP.

512    1024

**RAM Disc Size** The RAM Disc feature enables you to use part of the computer's memory (RAM) as a disc in a disc drive. (This feature is explained in Chapter 7.) When you create a RAM disc you must determine how big it will be, in units of a thousand (K) bytes. The possible values of this entry are from 0 to 348. By touching NEXT CHOICE the value will change in increments of 8.

0 to 348

## **Setting Up a Disc Drive**

To set up your disc drive, you must first physically connect the equipment according to the instructions in Chapter 2. You must also correctly set the switches on the rear panel of your disc drive, which specify the location or "address" to which the system processor transmits data.

Any time you wish to change the address or install an additional disc drive, you must:

1. change the MS-DOS Device Configuration Menu, AND
2. set the switches on the rear panel of your disc drive.

If you install a dual disc drive, follow the instructions below. If you install a fixed disc drive with a flexible disc drive unit, such as a 9133D or 9133V/XV, follow the instructions in the next sections. If you wish to install more than one disc drive, refer to the last section "Configuring More Than One Disc Drive."

---

### **NOTE**

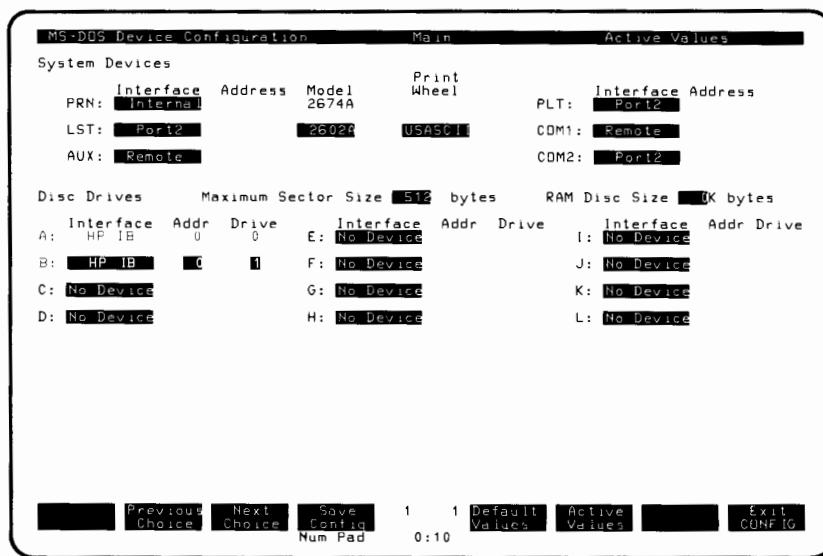
If you wish to install a stand-alone fixed disc drive or a single flexible disc drive, you must first install a disc drive with a flexible disc drive unit. The addresses depend on the disc drives installed, and examples are discussed in "Configuring More Than One Disc Drive."

---

## Configuring a Dual Flexible Disc Drive (9122D, 9121D, 82901M)

If you have a dual flexible disc drive, such as an HP 9122D, HP 9121D, or HP 82901M, install your disc drive as follows:

1. Set up your disc drive according to the instructions in Chapter 2.
2. Set the address switch on the back of your disc drive to an address of 0. If you need assistance, see your disc drive user's manual.
3. On dual flexible disc drives, the "booting" drive (drive A:) is always the left flexible disc drive. Therefore, insert the Sys\_Master disc into the left flexible disc drive, and turn on your HP 150 and disc drive.
4. When P.A.M. appears on the screen, touch **DEVICE CONFIG**. It should now be highlighted. Touch **Start Applic** to get the following menu. You want the disc drive portion of this MS-DOS Device Configuration menu to appear as follows:

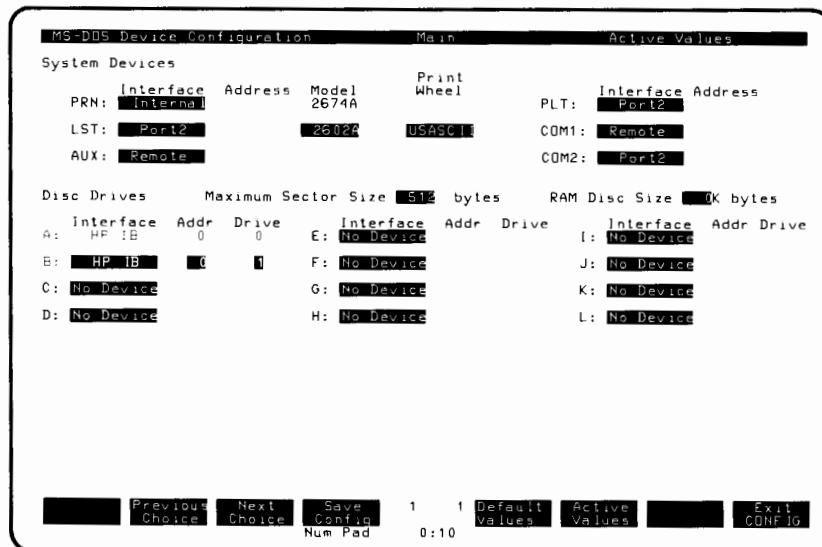


If the values for disc drives A:, B:, and C: do not match those shown above, then change them at this time. If you need assistance, see the section "How Do I Change the MS-DOS Configuration Menu?", earlier in this appendix.

## Configuring a Fixed Disc Drive with a Flexible Disc Drive Unit (9133D)

Install an HP 9133D disc drive as follows:

1. Set up your disc drive according to the instructions in Chapter 2.
2. Set the address wheel on the back of your disc drive to an address of 9. The address setting of 9 on the HP 9133D is a special address setting. When you first set up your HP 9133D, you must "boot" from the flexible disc until you have copied the operating system and P.A.M. to the fixed disc. The special address setting of 9 makes your HP 150 think that the address and drive number of the flexible disc are 0, and therefore, tells the HP 150 that you wish to boot from the flexible disc drive.
3. Insert the Sys\_Master disc into the flexible drive (drive A:). Turn on your HP 150 and your disc drive.
4. When P.A.M. appears on your screen, touch **DEVICE CONFIG**. It should now be highlighted. Touch **Start Applic** to get the following menu. You want the disc drive section of the MS-DOS Device Configuration menu to appear as follows:



5. If the values for disc drives A:, B:, and C: on your screen do not match those shown above, then change them at this time. If you need assistance, see the section "How Do I Change the MS-DOS Device Configuration Menu?", earlier in this appendix.
6. Format the fixed disc, and at the same time copy the operating system and P.A.M. to the fixed disc. If you need assistance, refer to the section "Formatting a Disc" in Chapter 7.

THE FIXED DISC MUST BE FORMATTED BEFORE IT CAN BE USED THE FIRST TIME. FORMATTING OF THE FIXED DISC TAKES APPROXIMATELY 2-3 MINUTES/MBYTE. THE TIME NECESSARY TO FORMAT THE FIXED DISC IS AN EXCELLENT INVESTMENT OF TIME BECAUSE FORMATTING THOROUGHLY CHECKS THE DISC FOR DEFECTS.

7. After formatting is complete, remove any discs from the flexible disc drive, and turn the power OFF on both your HP 150 and your disc drive.
8. In step 6 above, you copied the operating system and P.A.M. to the fixed disc. This means you can now "boot" from the fixed disc. (That is, the computer will start up by going to the fixed disc and getting the operating system.) Booting from the fixed disc is time-saving and convenient. Since you want to boot from the fixed disc, you must now make the fixed disc drive A: with an address of 0. Complete this readdressing of your disc drive as follows:
  - a. Make sure the HP 150 and disc drive are turned off.
  - b. Change the address wheel on the back of your disc drive to an address setting of 0. An illustration of the correct setting is in the section "Disc Drive Settings" near the end of this appendix.
  - c. Turn on your HP 150 and your disc drive. Your HP 150 should now boot from the fixed disc. You know you have succeeded when P.A.M. appears on your screen.

# Configuring a Fixed Disc Drive with a Flexible Disc Drive Unit (9133V/XV)

Install an HP 9133V/XV disc drive as follows:



1. Set up your disc drive according to the instructions in Chapter 2.
2. Your disc drive should be shipped with the address switch for the fixed disc set at address 0, and the address switch for the flexible disc at address 2. When you first set up your disc drive, you must boot from the flexible disc drive (drive A: with an address of 0), until you have copied the operating system and P.A.M. to the fixed disc. Therefore, change the switch settings on the back of your disc drive so that the flexible disc is set at address 0 (drive A:) and the fixed disc is set at address 2 (drive B:). (An illustration of the switch settings for address 0 and address 2 is in the section "Disc Drive Settings" near the end of this appendix.)
3. Insert the Sys\_Master disc into the flexible disc drive (drive A:), and turn on your HP 150 and disc drive.
4. When P.A.M. appears on the screen, touch **DEVICE CONFIG**. It should now be highlighted. Touch **Start Applic** to get the following menu. You want the disc drive section of this MS-DOS Device Configuration menu to appear as follows:

The screenshot shows the MS-DOS Device Configuration menu. The 'Disc Drives' section is selected, displaying the following configuration:

Disc Drives			Maximum Sector Size	512 bytes	RAM Disc Size	8K bytes					
A:	HP IB	0	Drive	Interface	Addr	Drive	Interface	Addr	Drive		
B:	HP IB	2	0	E: No Device	F: No Device	G: No Device	H: No Device	I: No Device	J: No Device	K: No Device	L: No Device

At the bottom of the screen, there is a menu bar with the following options: Previous Choice, Next Choice, Save Config, Num Pad, 1, 1, Default Values, Active Values, and Exit CONFIG.

5. If the values for disc drives A:, B:, and C: on your screen do not match those shown above, then change them at this time. If you need assistance, see the section "How Do I Change the MS-DOS Device Configuration Menu?", earlier in this appendix.
6. Format the fixed disc (drive B:), and at the same time copy the operating system and P.A.M. to the fixed disc. If you need assistance, refer to the section "Formatting a Disc" in Chapter 7.

THE FIXED DISC MUST BE FORMATTED BEFORE IT CAN BE USED THE FIRST TIME. FORMATTING OF THE FIXED DISC TAKES APPROXIMATELY 2-3 MINUTES/MBYTE. THE TIME NECESSARY TO FORMAT THE FIXED DISC IS AN EXCELLENT INVESTMENT OF TIME BECAUSE FORMATTING THOROUGHLY CHECKS THE DISC FOR DEFECTS.

7. After formatting is complete, remove any discs from the flexible disc drive, and turn the power OFF on both your HP 150 and your disc drive.
8. In step 6 above, you copied the operating system and P.A.M. to the fixed disc. This means you can now "boot" from the fixed disc. (That is, the computer will start up by going to the fixed disc and getting the operating system.) Booting from the fixed disc is time-saving and convenient. Since you want to "boot" from the fixed disc, you must now make the fixed disc drive A: with an address of 0. Complete this readdressing of your disc drive as follows:
  - a. Make sure the HP 150 and disc drive are turned off.
  - b. Change the switch settings on the back of your disc drive so that the fixed disc is set at address 0 (drive A:), and the flexible disc is set at address 2 (drive B:). An illustration of the correct settings is in the section "Disc Drive Settings" near the end of this appendix.
  - c. Turn on your HP 150 and your disc drive. Your HP 150 should now boot from the fixed disc. You know you have succeeded when P.A.M. appears on your screen.

## **Configuring More Than One Disc Drive**

If your need for disc storage space increases in the future, you may wish to add another disc drive to your system. The following examples help you configure an added disc drive.

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### **NOTE**

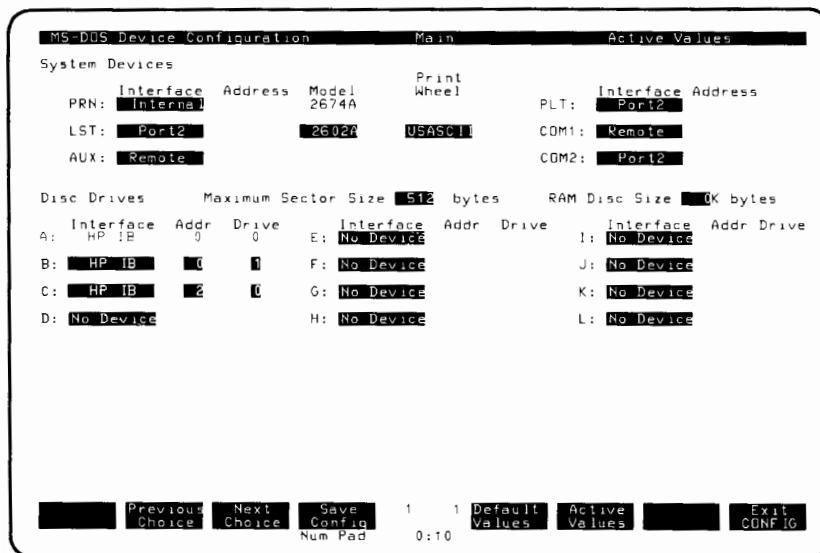
If you wish to install a stand-alone fixed disc drive, such as an HP 9134D or HP 9134XV, or a single fixed disc drive, such as an HP 9122S or HP 9121S, you must first connect another disc drive that has a flexible disc drive.

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## Adding a Stand-alone Fixed Disc Drive

A stand-alone fixed disc drive is a disc drive that has only a fixed disc drive and no flexible disc drive, such as an HP 9134D or an HP 9134XV. To add a stand-alone fixed disc drive, complete the following steps:

1. First, connect a disc drive with a flexible disc drive unit, such as an HP 9122D, to your HP 150. Use the instructions in Chapter 2. Verify that the address setting for this disc drive is address 0. If you need assistance, consult your disc drive manual.
2. Connect the stand-alone fixed disc drive to your HP 150, using the instructions in Chapter 2. Verify that the address setting for this stand-alone unit is address 2. If you need assistance, consult your disc drive manual.
3. Insert the Sys\_Master disc into the left flexible disc drive. Turn on your HP 150 and both disc drives.
4. When P.A.M. appears on the screen, touch **DEVICE CONFIG**. It should now be highlighted. Touch **Start Applc** to get the following menu. You want the disc drive section of the MS-DOS Device Configuration menu to appear as follows:



5. If the values for disc drives A:, B:, and C: on your screen do not match those shown above, then change them at this time. If you need assistance, see the section "How Do I Change the MS-DOS Device Configuration Menu?", earlier in this appendix.
6. Format the fixed disc (drive C:), and at the same time copy the operating system and P.A.M. to the fixed disc. If you need assistance, refer to the section "Formatting a Disc" in Chapter 7.

THE FIXED DISC MUST BE FORMATTED BEFORE IT CAN BE USED THE FIRST TIME. FORMATTING OF THE FIXED DISC TAKES APPROXIMATELY 2-3 MINUTES/MBYTE. THE TIME NECESSARY TO FORMAT THE FIXED DISC IS AN EXCELLENT INVESTMENT OF TIME BECAUSE FORMATTING THOROUGHLY CHECKS THE DISC FOR DEFECTS.

7. You now have a decision to make. Your fixed disc drive may be configured either as drive A: or drive C:. If you decide to configure your stand-alone unit as drive A:, you can boot from the stand-alone unit. If you decide to configure the stand-alone unit as drive C:, the stand-alone unit can be used for storage and backup. However, you CANNOT boot from the stand-alone unit if it is configured as drive C:.

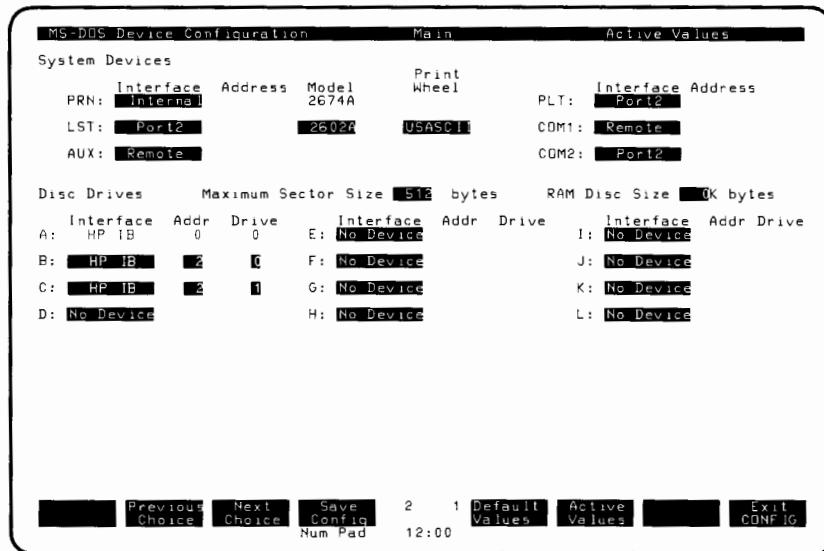
**If you wish to use the stand-alone unit for storage and backup only (drive C):**

After you format the stand-alone disc, you may begin using the disc for storage and backup immediately. Because you configured the stand-alone disc as drive C: in step 4 above, you do not need to readdress or reconfigure the stand-alone unit.

**If you wish to use the stand-alone unit as your "booting" drive (drive A):**

- a. Turn off your HP 150 and disc drives.
- b. Change the address switch setting on your stand-alone fixed disc drive to address 0 (drive A:). Change the address switch on your flexible disc drive to address 2.

- c. Turn on your HP 150 and disc drive. When P.A.M. appears on the screen, touch **DEVICE CONFIG**. It should now be highlighted. Now touch **Start Applic** so that the following menu appears. You want the disc drive section of the MS-DOS Device Configuration menu to appear as follows:



If the values for disc drives A:, B:, and C: on your screen do not match those shown above, then change them at this time. If you need assistance, see the section "How Do I Change the MS-DOS Configuration Menu?", earlier in this appendix.

## Setting Up a Printer

In order for your personal computer to transmit data to your printer, the computer must know where it is connected and the kind of interface being used. This information is required whether you use an HP-IB cable, an RS-232 cable, a Centronics parallel cable, or an HP-IL cable to connect your printer to the system processor. You supply this information in the MS-DOS Device Configuration menu described earlier.

---

### NOTE

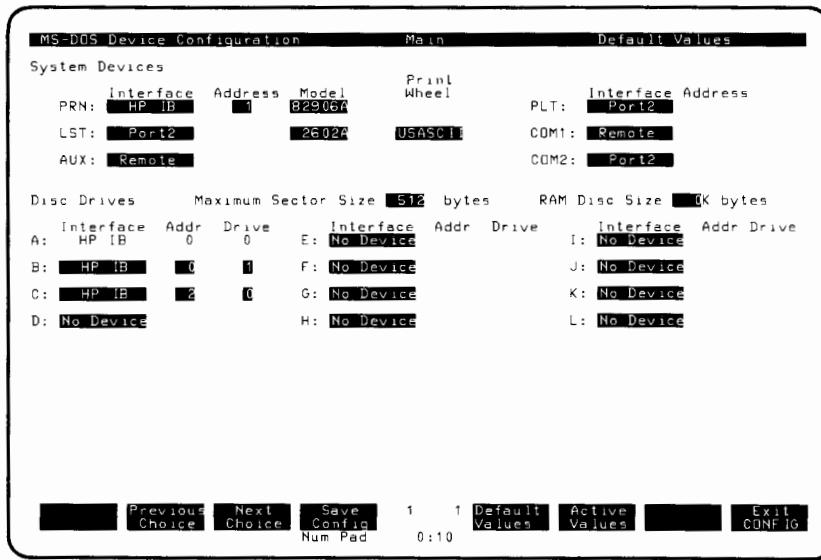
To use this menu, you must first:

- connect a disc drive and a printer to the system processor, AND
  - have the DEVICE CONFIG application. (This application is found on the Sys\_Master disc.)
- 

To use the MS-DOS Device Configuration menu, proceed as follows:

1. Start up your HP 150.
2. Touch **DEVICE CONFIG**.
3. Touch **Start Applic.**

The MS-DOS Device Configuration menu will appear on the screen.  
It will look similar to this:



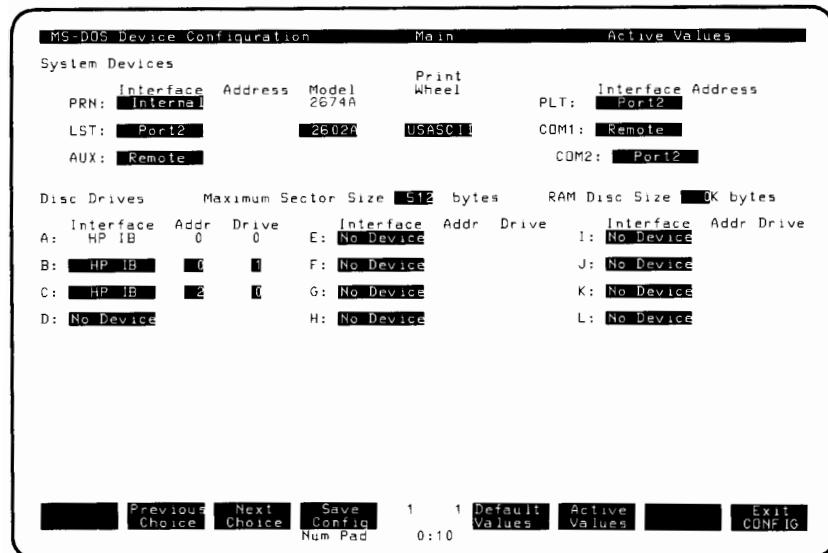
#### NOTE

If your printer is listed on the screen, you do not need to make any changes to this menu. Simply touch **Exit CONFIG** to return to the main P.A.M. menu.

For example, if you wish to use a faster dot matrix printer (such as the HP 82906A) as well as a letter quality printer (such as the HP 2602A), your MS-DOS Device Configuration menu does not need to be changed. (The HP 82906A printer is connected with an HP-IB cable, and the HP 2602A printer is connected with an RS-232 cable to Port 2.)

4. If you wish to use a printer other than one listed in the menu, simply touch the entry you wish to change. To select another printer, touch **Previous Choice** or **Next Choice** until the name of the printer you wish to use appears.

For example, if you wish to use both a letter quality printer (such as the HP 2602A) and the HP 2674A Internal Printer, the MS-DOS Device Configuration menu should look like this:



5. When you complete your selection, touch **Save Config**, then **Exit CONFIG** to return to the main P.A.M. menu.

## NOTE

If you are connecting two or three printers to the HP 150, all of which use an HP-IB cable, then you must give each printer a different address number. To change the number under Address, touch it and then touch **Previous Choice** or **Next Choice** until the number you want appears. Any number you haven't already used could be picked, but 3 and 7 are typical choices for additional printer address numbers.

Disc Drives	Printers	Plotters
0	1	5
2	3	
4	7	
6		

## For Printers Using an RS-232 Cable

If you use an RS-232 cable to connect your printer to the system processor, you must not only tell your computer the location of your printer, but how the printer receives data (speed, etc.). Since the RS-232 cable from your printer is connected to Port 2, use the Port 2 Configuration Menu as follows:

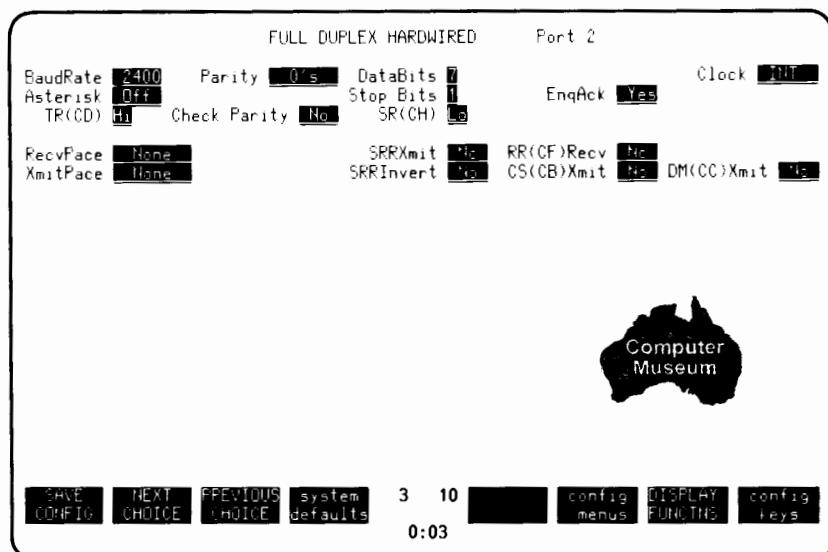
1. Press **User System** twice on the keyboard, and the following function keys are displayed:

The image shows a row of function keys on a computer keyboard. The keys are labeled as follows: Device Control, Margins, Service Keys, Enhance Video, Define Fields, Set Time, and Config Keys. The 'Service Keys' key is highlighted with a black rectangle, indicating it is the active key.

2. Touch **config keys** and the function keys change as follows:



3. Touch **port2 config**. The following menu is displayed (showing default values):



Since data transmission to each printer varies, sample configuration menus are provided below for each printer using an RS-232 cable. Use **Previous Choice** or **Next Choice** to select the areas highlighted.

When you complete your selection, touch **Save Config**. You will be returned to the MS-DOS Device Configuration Menu. (If you wish to return to the P.A.M. screen, touch **Exit CONFIG**.)

---

#### NOTE

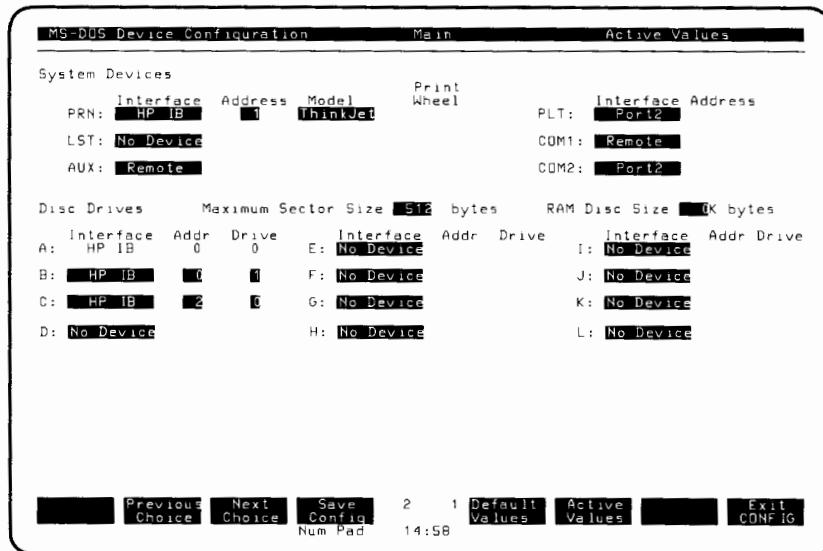
Since the HP 2674A printer uses an internal cable only, no action is required. Refer to the next section in this Appendix for information on using advanced printer functions for the HP 2674A Internal Printer.

---

## Configuration for the HP 2225A ThinkJet Printer

Go to the MS-DOS Device Configuration menu and change **System Devices** as follows:

(Tab to the fields you wish to change, then use **Previous Choice** or **Next Choice** to make your selection. When you complete your selection, touch **Save Config**, then **Exit CONFIG** to return to the P.A.M. menu.)



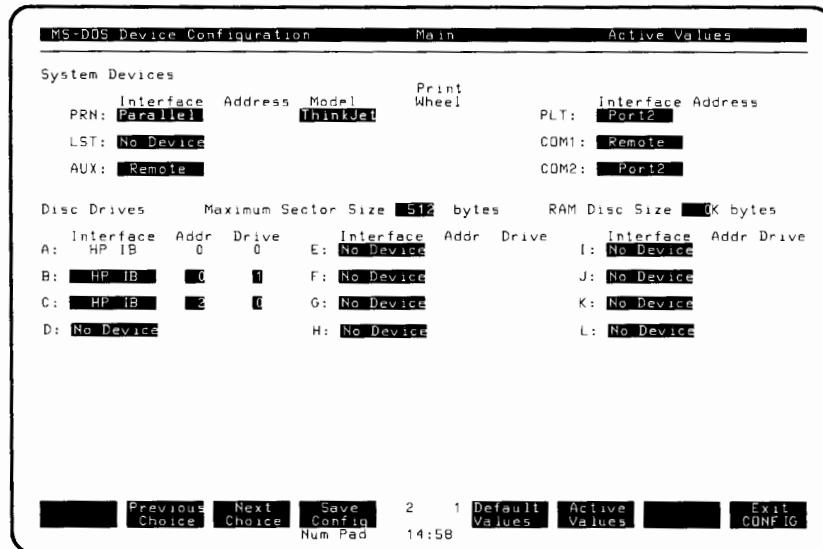
## Configuration for the HP 2225B ThinkJet Printer

This printer uses the Extended I/O HP-IL port. Configuration instructions for devices that use the Extended I/O HP-IL port are in the Extended Input/Output Accessory User's Manual.

## Configuration for the HP 2225C ThinkJet Printer

Go to the MS-DOS Device Configuration menu and change  
System Devices as follows:

(Tab to the fields you wish to change, then use **Previous Choice**  
or **Next Choice** to make your selection. When you complete  
your selection, touch **Save Config**, then **Exit CONFIG** to return to  
the P.A.M. menu.)

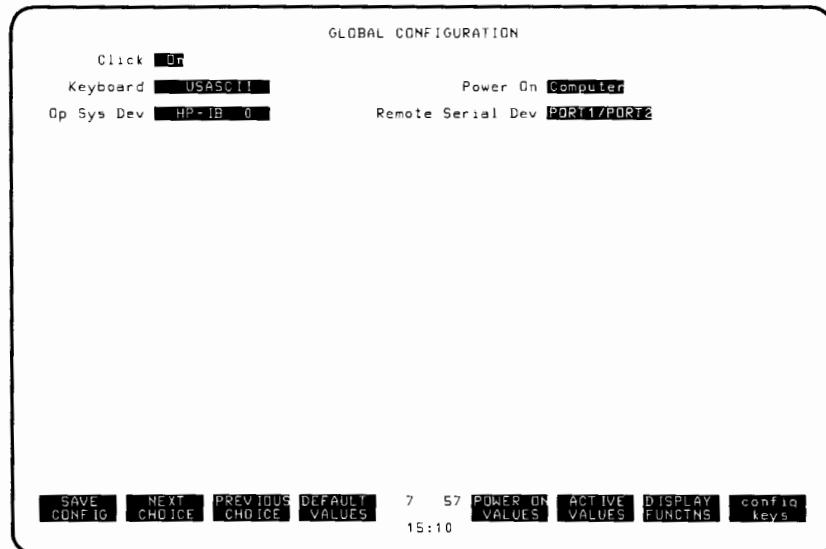


## Configuration for the HP 2686A LaserJet Printer

You must go to three menus and change settings in them in order to use the LaserJet printer with your HP 150.

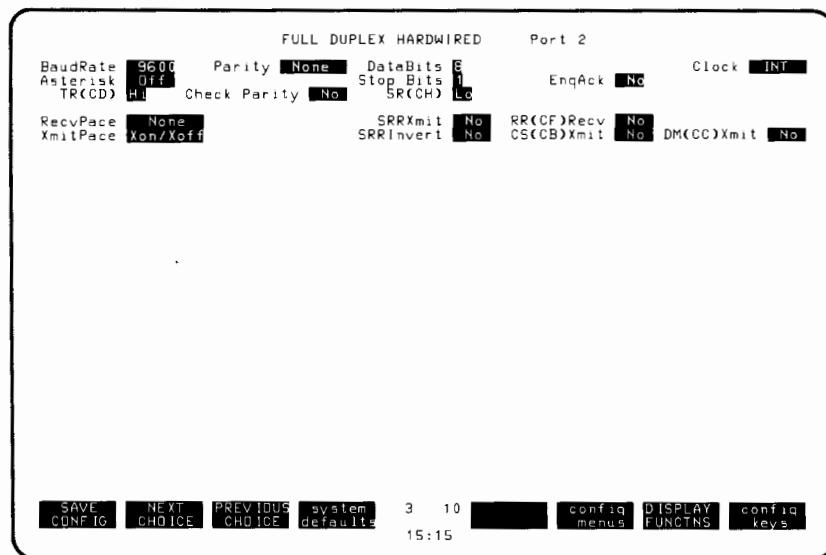
1. Configure the Global Configuration menu. Touch **Terminal**, press **User System**, then touch **config keys** and **global config** to display the Global Configuration menu. Change the settings as follows:

(Tab to the fields you wish to change, then use **Previous Choice** or **Next Choice** to make your selection. When you complete your selection, touch **Save Config**, then **config keys** to return to the previous display.)



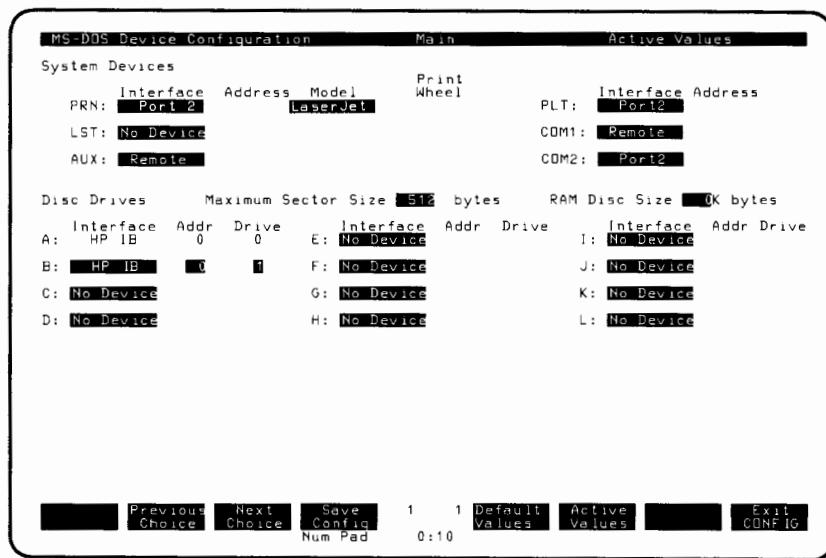
2. Configure the port. Touch **port2 config** to display the Full Duplex Hardwired menu. Change the settings as follows:

(Tab to the fields you wish to change, then use **Previous Choice** or **Next Choice** to make your selection. When you complete your selections, touch **Save Config**, then **config keys** to return to the previous display.)

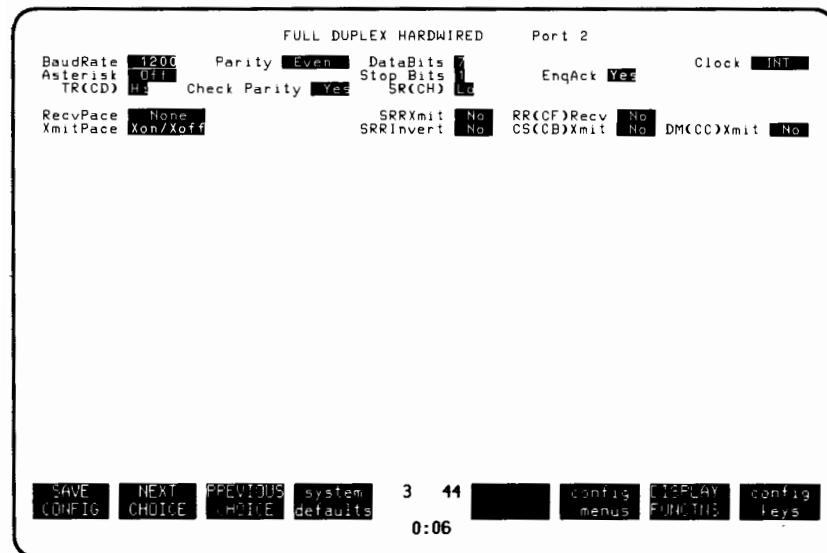


3. Reenter P.A.M. and go to the MS-DOS Device Configuration menu and change **System Devices** as follows:

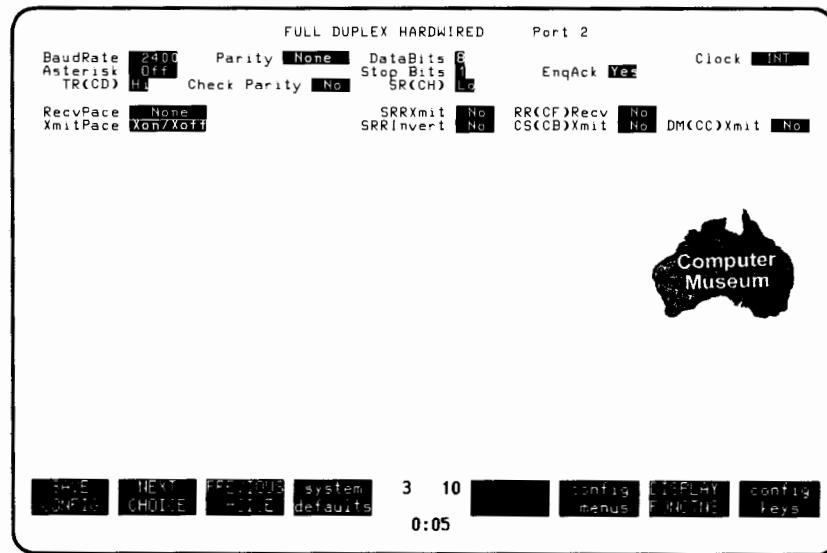
(Tab to the fields you wish to change, then use **Previous Choice** or **Next Choice** to make your selection. When you complete your selection, touch **Save Config**, then **Exit CONFIG** to return to the P.A.M. menu.)



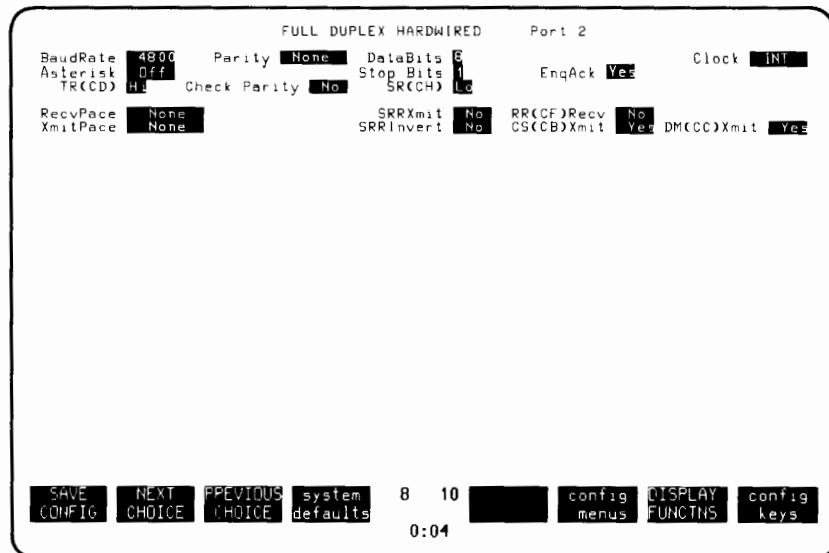
## Configuration for the HP 2601A and HP 2602A Daisywheel Printers:



## Configuration for the HP 293X Dot Matrix Printer Family:



## Configuration for the HP 82905B Dot Matrix Serial Printer:



## **Advanced Control of the HP 2674A Internal Printer**

The internal printer is usually controlled by either touching the screen or pressing a function key on the keyboard. However, printer functions may also be controlled by special character sequences called control codes or escape sequences.

An escape sequence is sent to the internal printer from a program executing in the HP 150. These special characters are not printed, but are used to instruct the internal printer how to print the information that follows the escape sequence.

For example, the special characters in the escape sequence shown below are not printed but instruct the internal printer to print in a compressed mode.

ESC &k2S

The following control codes and escape sequences are used with the HP 2674A Internal Printer:

### **Control Codes**

LF	Line Feed
FF	Form Feed
CR	Carriage Return
SO	Shift Out of Primary Character Set to Secondary
SI	Shift Into Primary Character Set from Secondary
ESC	Escape
SP	Space

### **Specialized Printer Control**

ESC E	Hard Reset (Returns printer to power-on state)
ESC z	Self Test

### **Display Functions**

ESC Y	Turn on Display Functions Mode (prints most control codes rather than executing them)
ESC Z	Turn off Display Functions Mode

### **Underlining Mode**

ESC &dD	Turn on underline
ESC &d@	Turn off underline

### **Vertical Pitches**

ESC &l0L	Disable Auto Page Mode (power-on default)
ESC &l1L	Enable Auto Page Mode
ESC &l6D	Print 6 lines/inch (power-on default)
ESC &l8D	Print 8 lines/inch (approximately 7.5 7.5 lines/inch)

### **User Definable Page Length**

ESC &l#P	Where # = the number of lines per page (<129) (Text length is 1 inch less than page length; power- one default is 66 lines.)
----------	--

### **Primary Character Set Selection**

Primary Character Set is always Roman8

### **Secondary Character Set Selection**

ESC )B or ESC )0L or ESC )L	Line Draw Set (power-on default - use 8/lines/inch)
ESC )A or ESC )9M or ESC )M	Math Symbols Set
ESC )E or ESC )0E or ESC )E	Roman Extension Set*
ESC )8U	Roman8*

---

### **NOTE**

\*Print style is selectable.

---

**Print Style Selection** (where # equals: 1 = ON, 0 = OFF)

ESC (s#B            Bold (primary character set)  
ESC )s#B            Bold (secondary character set)

**Raster Graphics Dump**

ESC \*rA            Prepare for raster data  
ESC \*b#W[data]    Raster data transfer (where # = the number of bytes to be transferred)  
ESC \*rB            Raster graphics complete

**Print Mode Selection**

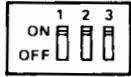
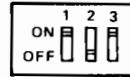
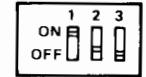
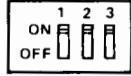
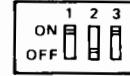
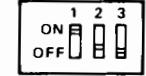
ESC &k0S            Print 10 characters/horizontal inch (power-on default)  
ESC &k2S            Print 16.4 characters/horizontal inch (compressed)

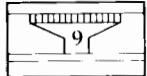
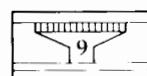
**Transparent Print Data**

ESC &p#X            where # = the number of bytes to be printed.  
This function is similar to display functions  
EXCEPT all characters are printed and not acted upon (including CR, LF and ESC Z) for a specific number of bytes.

# Switch Settings

## DISC DRIVE SETTINGS

Disc Drive	Description	HP-IB Address Switch Settings
		0      2      3
9121D	3.5" Dual Drive	  
9122D	3.5" Double-sided Dual Disc Drive	  
9121S	*3.5" Single Drive	  
82901M	5.25" Dual Drive	  
82902M	*5.25" Single Drive	  
9133A	5 Mb Fixed Disc Drive with a 3.5" Micro Disc Drive	  
9133B	10 Mb Fixed Disc Drive with a 3.5" Micro Disc Drive	  
9133V	5 Mb Fixed Disc Drive (small footprint) with a 3.5" Micro Disc Drive	  

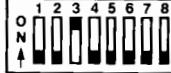
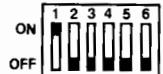
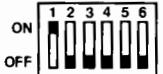
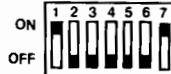
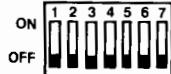
<b>Disc Drive</b>	<b>Description</b>	<b>HP-IB Address Switch Settings</b>
		0      2      3
9133XV	15 Mb Fixed Disc Drive (small footprint) with a 3.5" Micro Disc Drive	  
9133D	15 Mb Fixed Disc Drive (small footprint) with a 3.5" Micro Disc Drive (double-sided)	
9134A	*5 Mb Fixed Disc	  
9134B	*10 Mb Fixed Disc Drive	  
9134XV	*15 Mb Fixed Disc Drive	  
9134D	15 Mb Fixed Disc Drive (small footprint)	
9135A	5 Mb Fixed Disc Drive with a 5.25" Mini Disc Drive	  



#### NOTE

\*These drives are supported as an "add-on" drive only to drives with 3.5" or 5.25" flexible disc drive.

## PRINTER ADDRESS SETTINGS

HP-IB Printer	Description	HP-IB Printer Address Switch Setting "1"
2602A	Daisywheel Serial Printer	
2932A	Dot Matrix Serial Printer	*
2934A	Dot Matrix Serial Printer	*
82905B	Dot Matrix Serial Printer	
82906A	Dot Matrix Serial Printer	
ThinkJet (2225A)	Ink Jet Printer	
ThinkJet (2225C)	Ink Jet Printer	

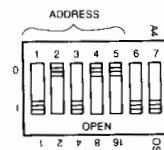
### NOTE

\*Refer to the printer reference manual for instructions on electronically configuring these models for an RS-232 connection. An HP-IB connection requires no changes.

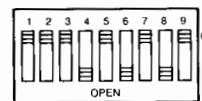
## PLOTTER ADDRESS SETTINGS

HP-IB Plotter	Description	HP-IB Plotter Address Switch Setting "5"
------------------	-------------	---

7470A Two-Pen Plotter



7475A Six-Pen Plotter





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## **Appendix B**

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### **KEYBOARDS**

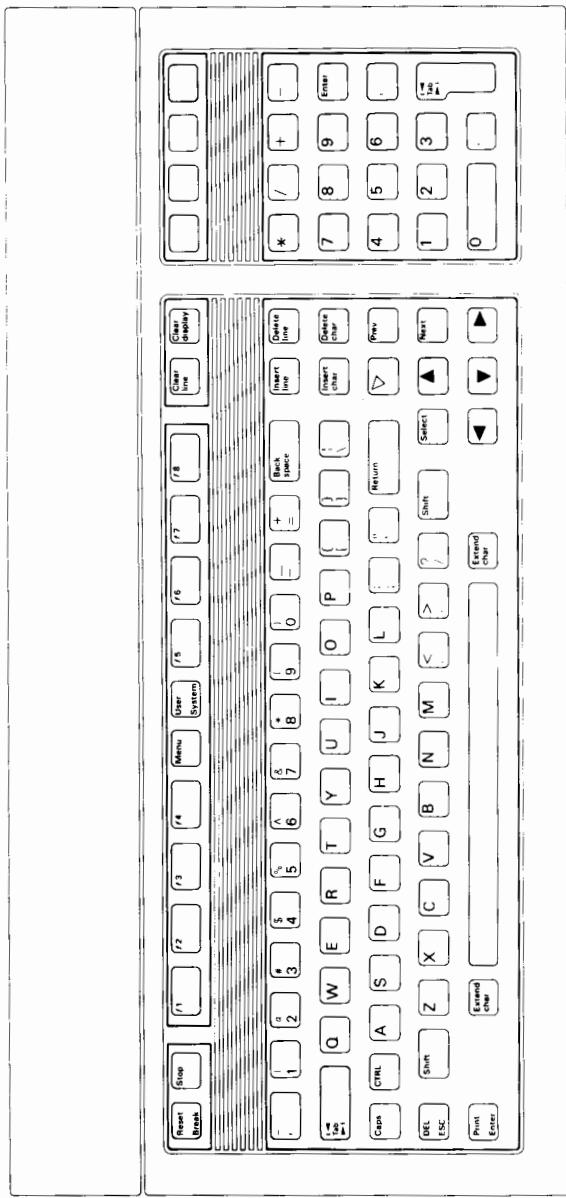
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USASCII Keyboard

If you have a U.S. version of the HP 150, you have a United States, ASCII keyboard. This keyboard looks like this:



## Math Symbol Set

Press **User System /**, **f5** (enhance video), **f8** (etc.), **f12** (CHANGE TO MATH).  
You are now using the Math Keyboard Set.

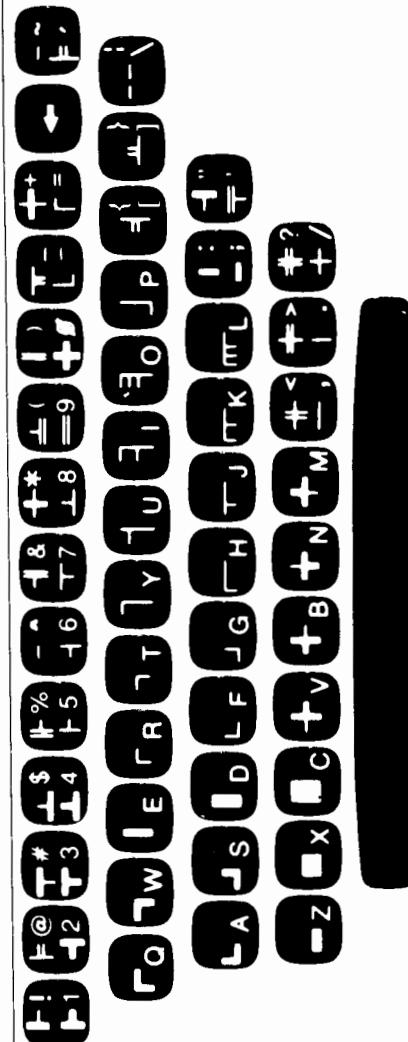


Return to your USASCII set by pressing **User System /**, **f5** (enhance video), **f8** (etc.), **f1** (CHANGE TO BASE).

## Line Drawing Set

Press  User,  System,  t5 (enhance video),  f8 (etc.),  f3 (CHANGE TO LINE).

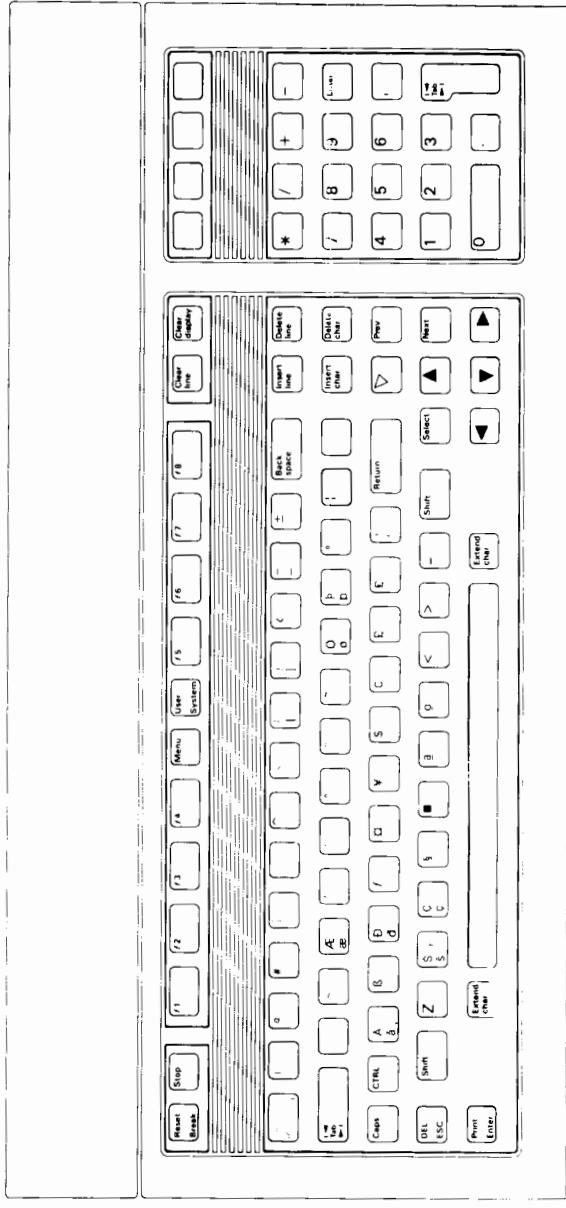
You are now using the Line Drawing Set:



Return to your USASCII keyboard by pressing  User,  System,  t5 (enhance video),  f8 (etc.),  f1 (CHANGE TO BASE).

Roman 8 Foreign Character Keyboard Set

If you are typing a letter, and want to create an occasional foreign character symbol, press Ex Char and a key to create these symbols:

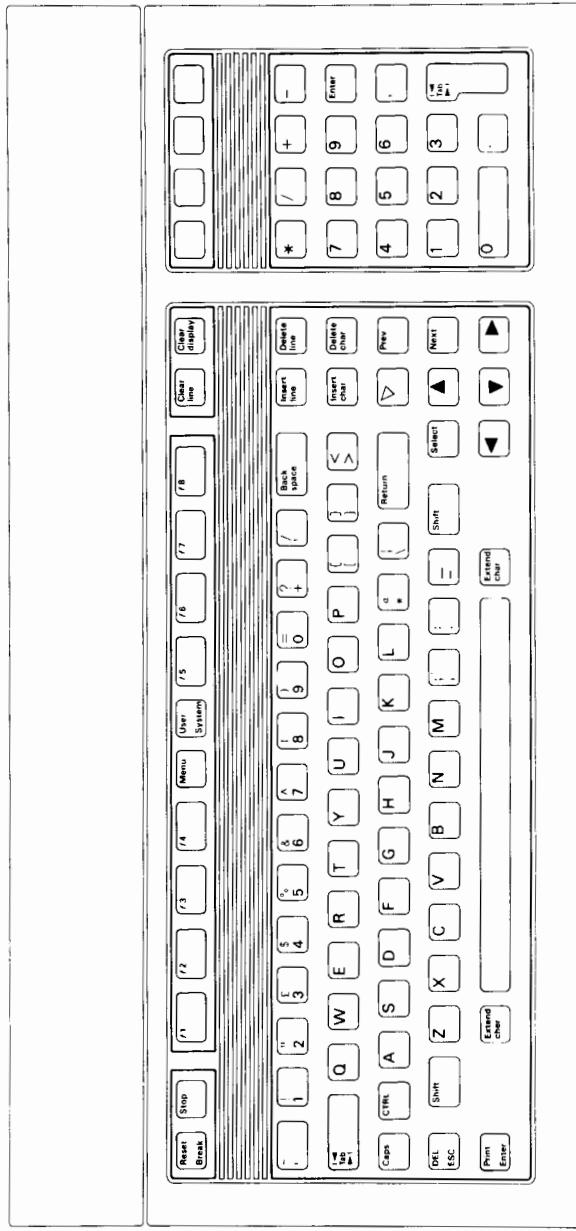




## Foreign Keyboards

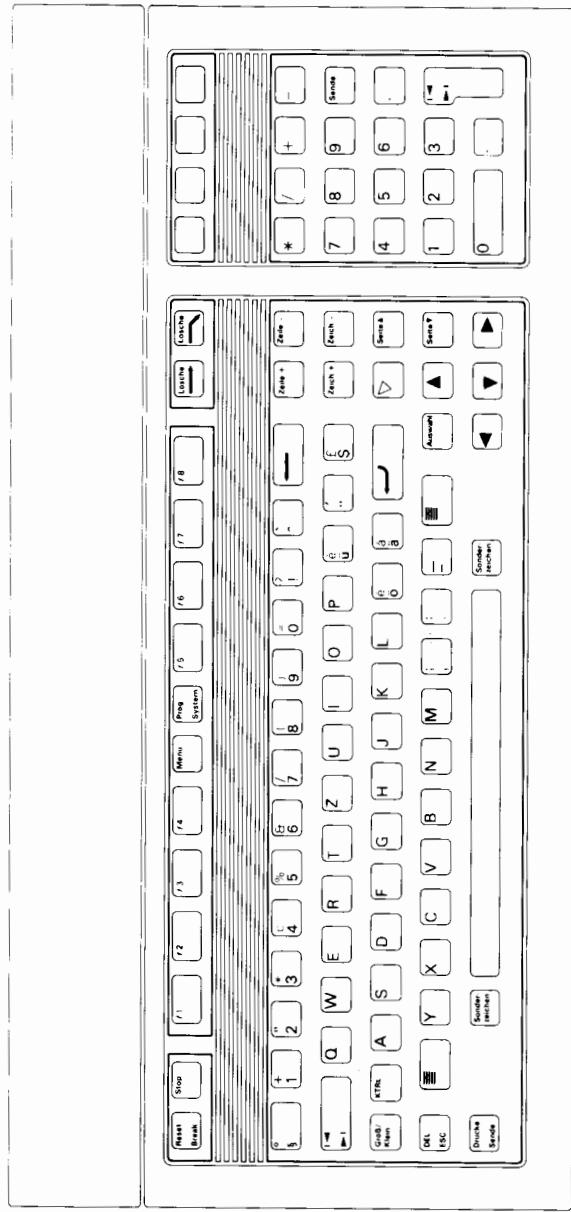
You have the option of choosing any keyboard supported by Hewlett-Packard. The "Keyboard" entry in the Global Configuration Menu lets you do this.

### English Keyboard for the United Kingdom

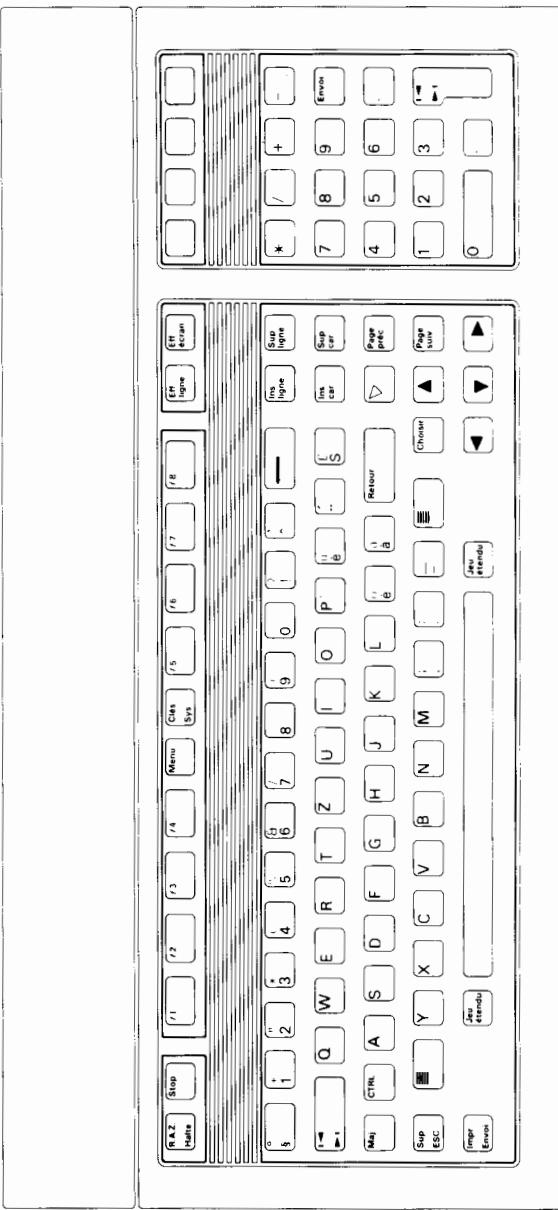


## German Keyboard for Switzerland

B-8

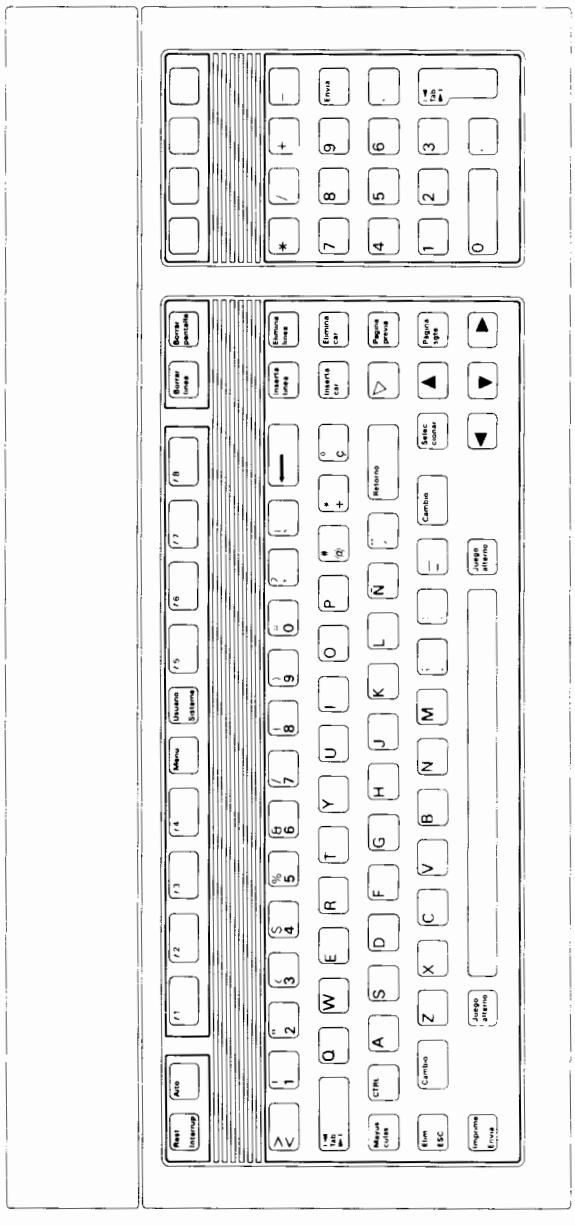


French Keyboard for Switzerland

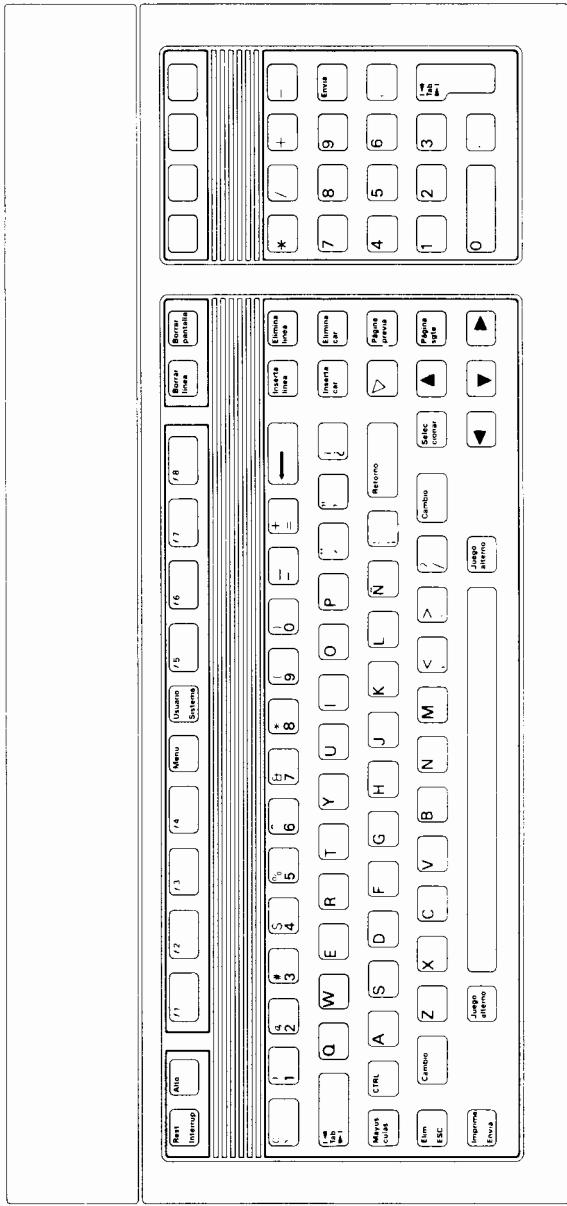


Spanish Keyboard for Spain

B-10

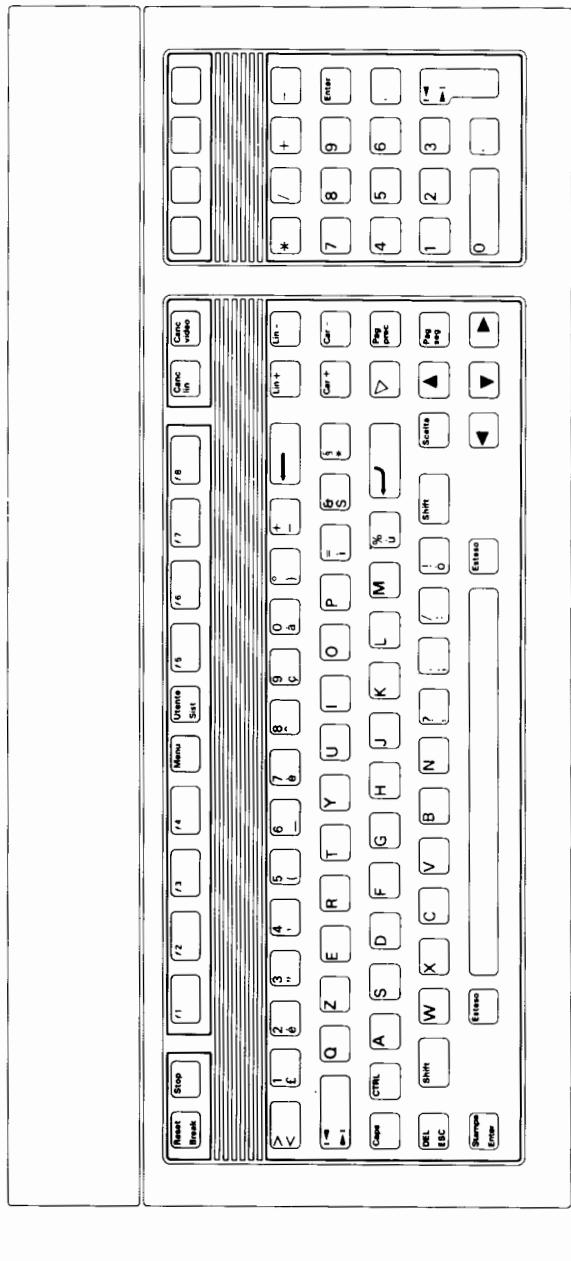


## Spanish Keyboard for Latin America

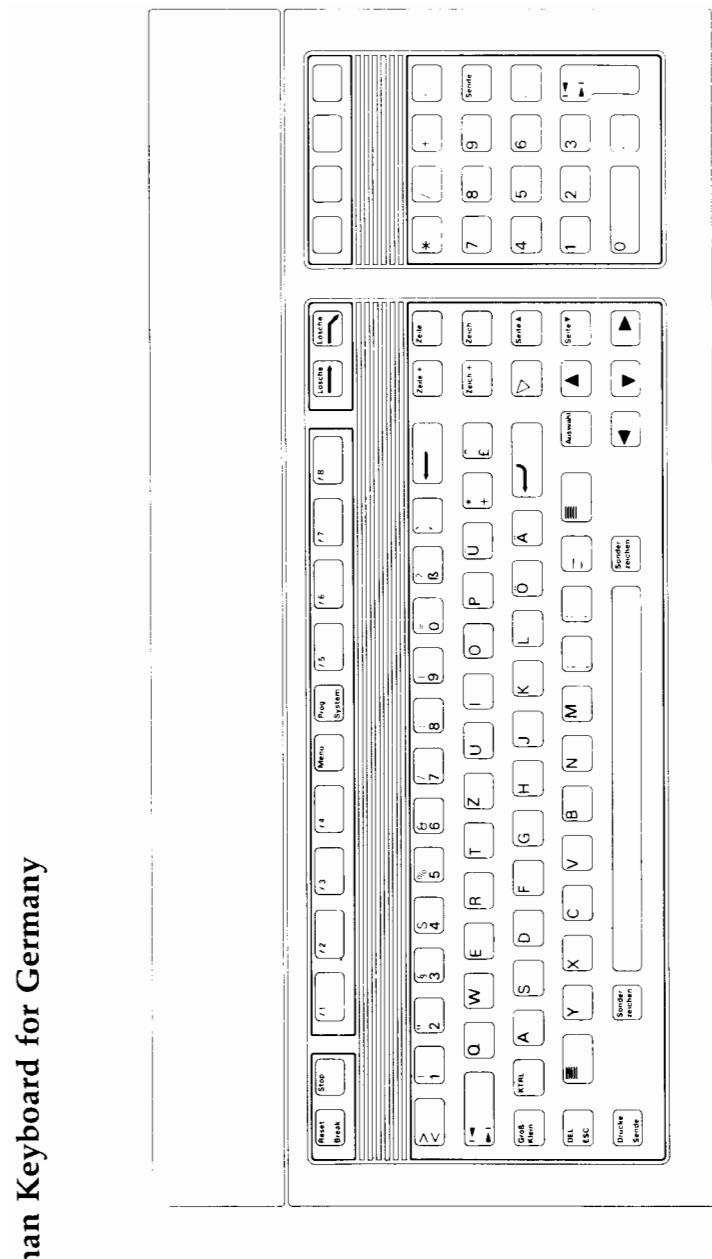


## Italian Keyboard for Italy

B-12

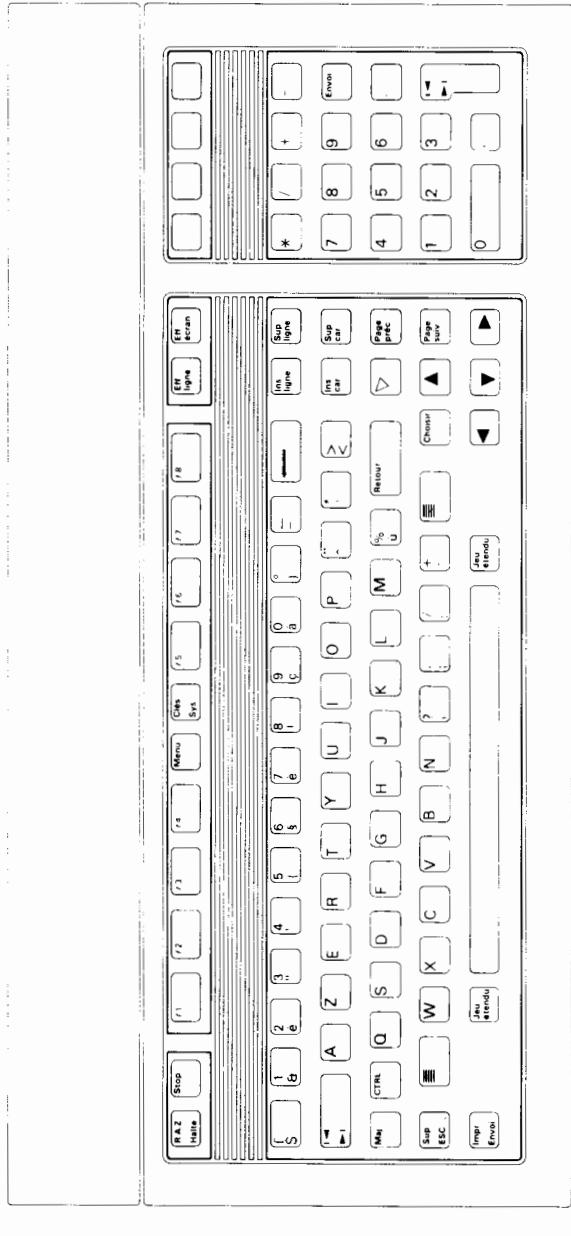


German Keyboard for Germany



## French Keyboard for France and Belgium

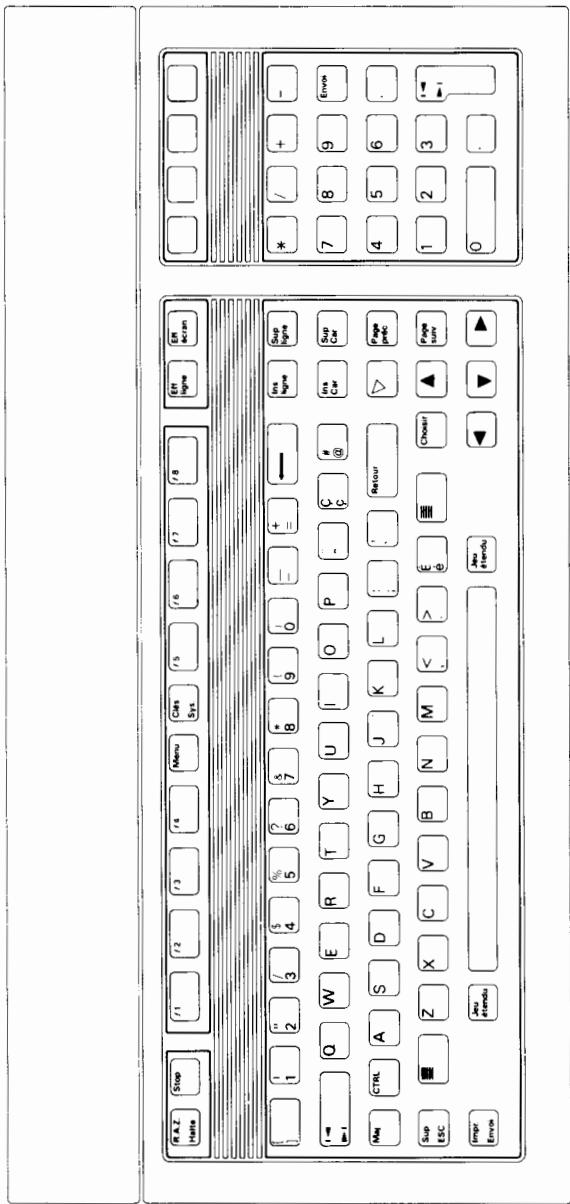
B-14



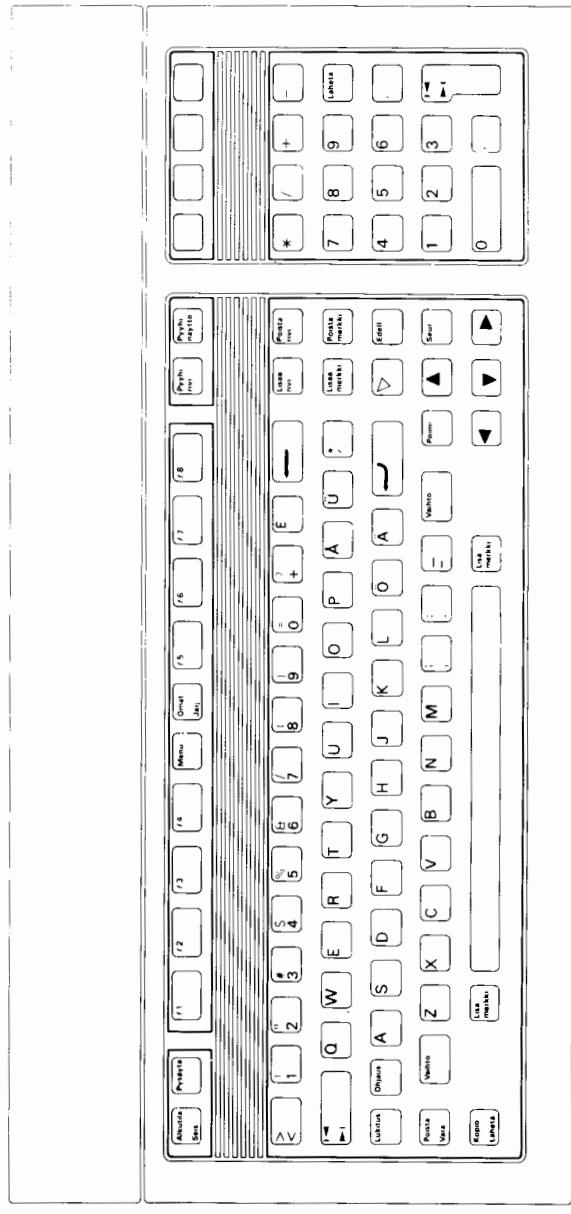


Computer  
Museum

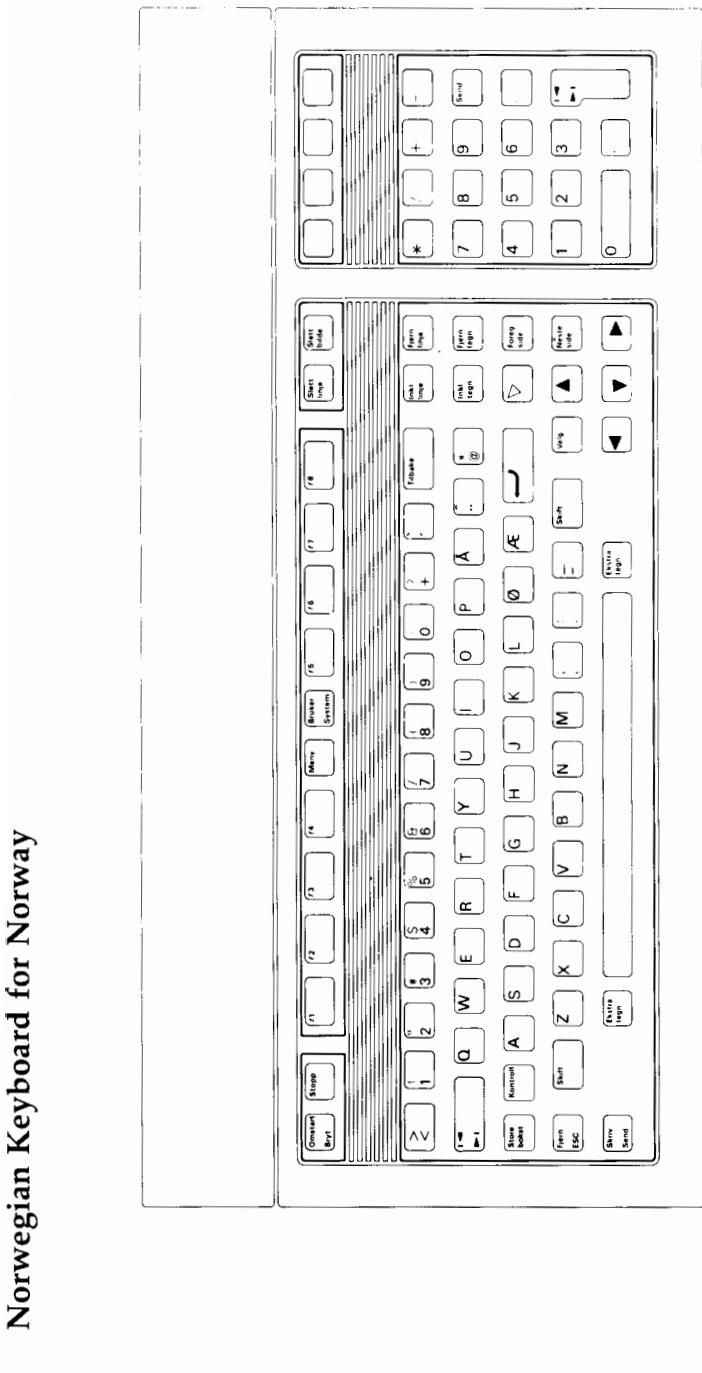
French Keyboard for Canada



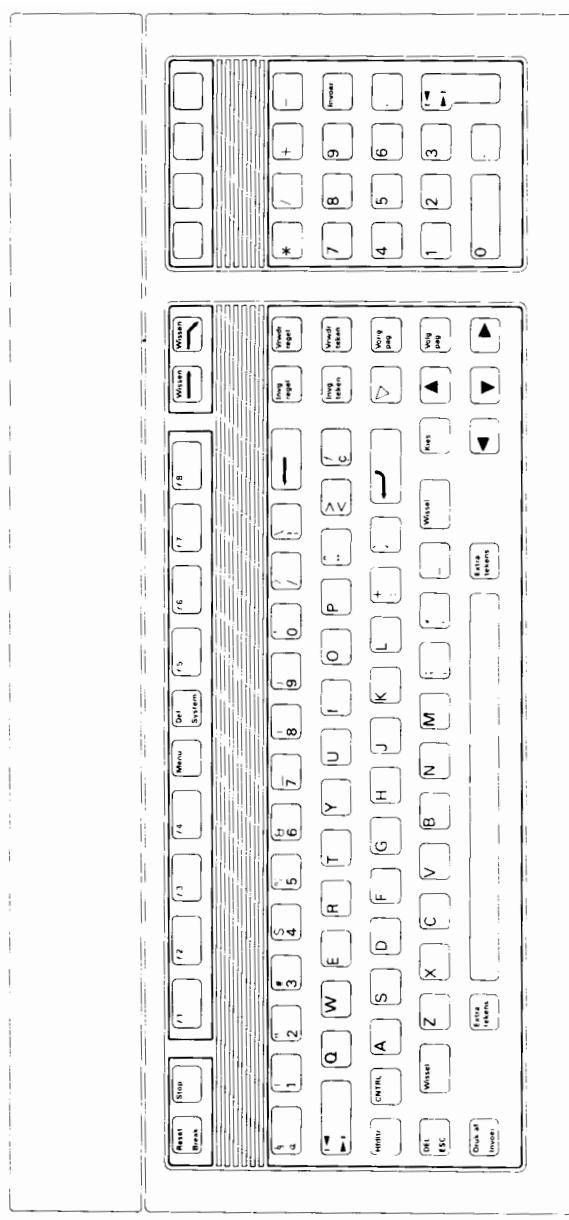
Finnish Keyboard for Finland



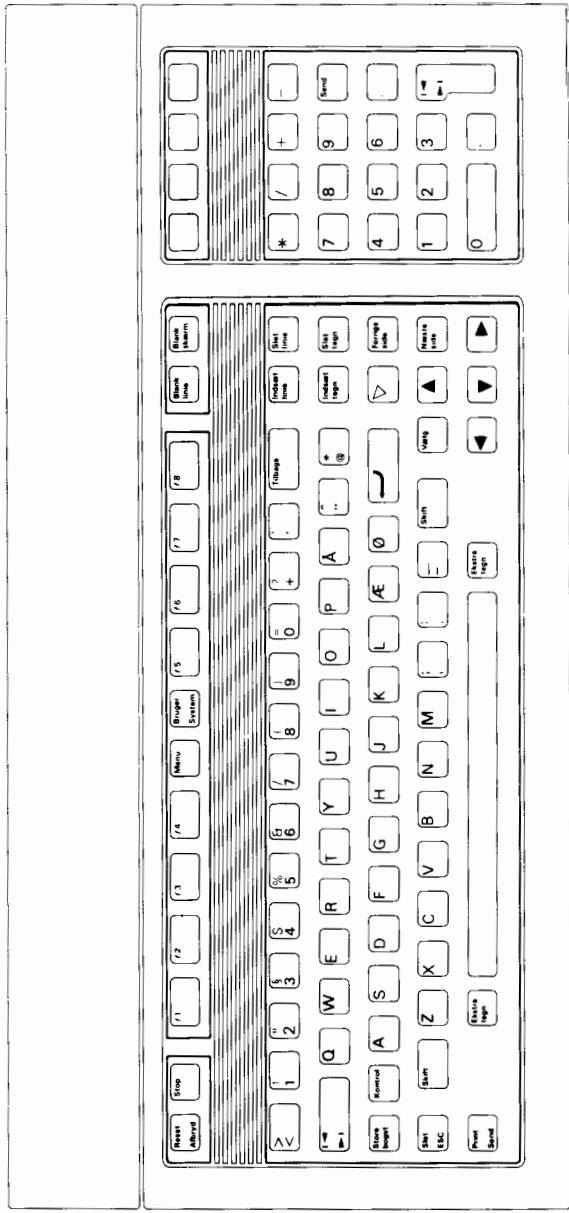
Norwegian Keyboard for Norway



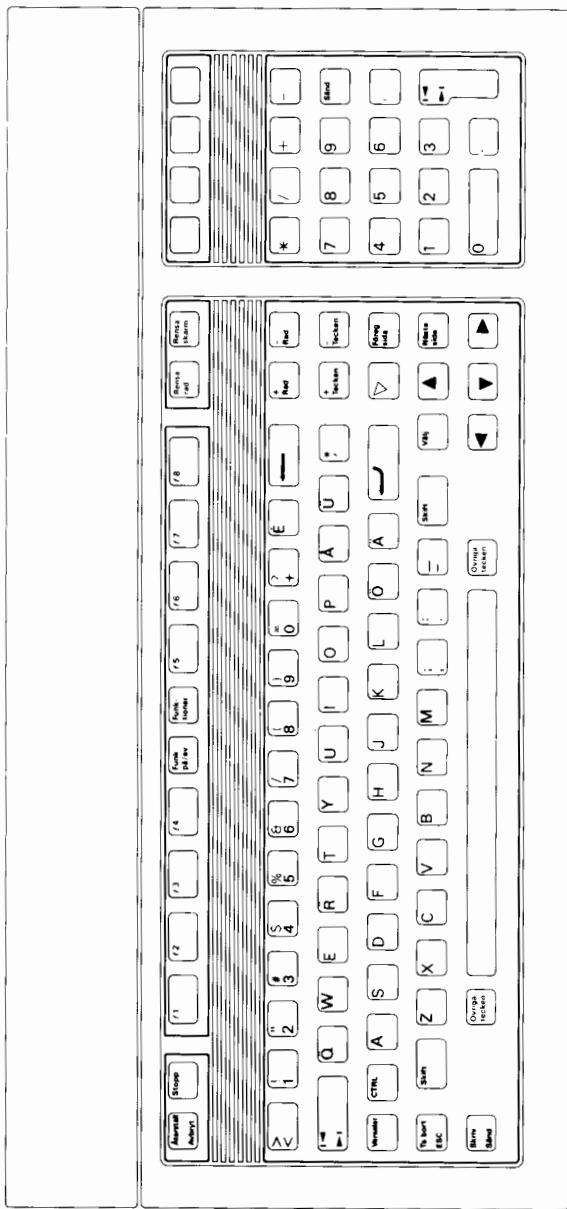
Dutch Keyboard for the Netherlands



### Danish Keyboard for Denmark

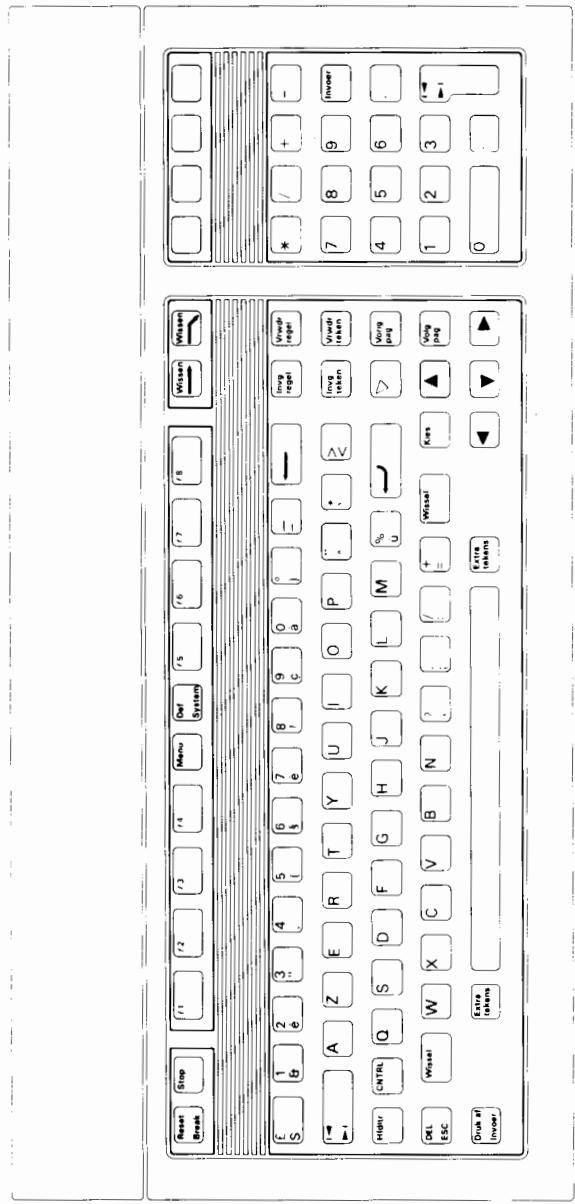


Swedish Keyboard for Sweden



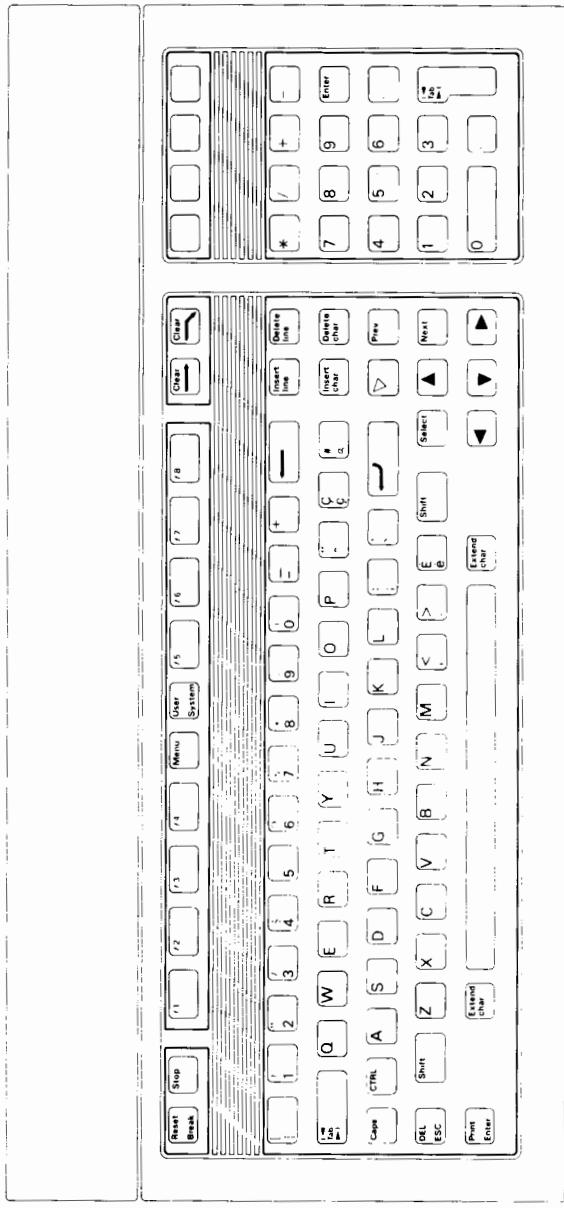


Dutch Keyboard for Belgium



English Keyboard for Canada

B-22



## Appendix C

# TAKING CARE OF THE HP 150



## **Operating Recommendations**

Operating Recommendations covers the requirements for the area in which your computer system will operate (its environment), as well as electrical considerations. If these recommendations are observed, your system should last longer, operate more reliably, and need fewer repairs.

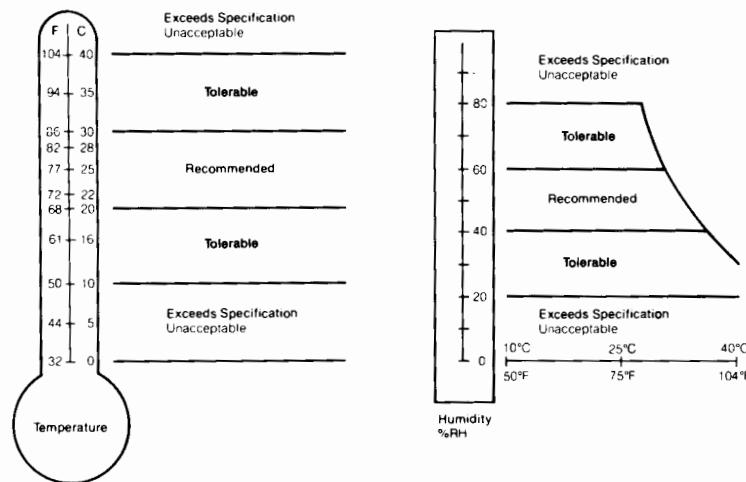
### **Environment**

Fundamental safeguards for the computer system include a location within a building that will be away from sources of potential damage.

The HP 150 System should not be installed or operated in an area where there is a hazard of fire or explosion due to the existence of highly flammable gases, flammable volatile liquids, or combustible dust.

## Temperature and Humidity

Operating temperature and humidity requirements are shown in the following illustration:



The system will operate most reliably if the room temperature is maintained between 10 and 30 degrees Celsius (50 to 86 degrees Fahrenheit). Higher operating temperatures increase the failure rate of electronic circuitry.

Avoid extremes in relative humidity. High humidity levels can cause improper feeding and stacking of printer paper or improper operation of disc drives. Low humidity levels aggravate problems of static electricity and cause excessive flexible disc wear.

Carpeting can be a source of static electricity, especially in dry and cold climates. Static discharge can often be reduced significantly by a humidifier. Other ways to minimize static discharge include using mats (with a ground strap) in front of the system or treating the carpet with anti-static spray. Spray is not recommended, however, because it finds its way into the system and coats the circuitry. If spray is used, it should be applied while the system is turned off.

If the building air conditioning is turned down or off on weekends and you intend to use your system, we recommend you check the temperature and humidity of the computer site during a weekend to determine whether the operating specifications are exceeded. If the specifications are exceeded, you should provide auxiliary air conditioning to prevent system shutdown or damage to equipment. (An inexpensive thermometer and humidity gauge may be purchased at a hardware or department store to determine the temperature and humidity of your site.)



## **Electrical Considerations**

Take some time to observe the electrical aspects of the area in which you are installing your HP 150.

Are there electrical outlets close by? The HP power cords provided with your system are approximately 8 feet (2.4 meters) long.

Do not locate any connecting cables or power cords so that they cross entrances, aisles, other walkways or under carpeting. Cables located in any of those areas are prone to damage that increases the risk of fire and/or shock hazard.

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### **CAUTION**

**DO NOT USE EXTENSION CORDS UNDER ANY CIRCUMSTANCES.** Such use may result in data errors. Only multiple outlet strips which incorporate a circuit breaker are acceptable for use.

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All of the cables and power cords are attached at the rear of the computer system and peripherals. It is therefore recommended that you locate equipment along walls where power outlets are easily accessible and interconnecting cables will be out of the way.

### **Electrical Interference**

Power outlets for other electrical equipment (coffee makers, etc.) should be separate from the computer system's wall outlets. If separate wall outlets are not provided, operation of the equipment can cause electrical interference and abnormal operation of the computer system.

### **Circuit Breakers**

Separate circuit breakers for the system are suggested, but not required. There are two reasons for separate circuit breakers:

1. The first is to ensure that no other electrical devices are connected to the same circuit which prevents unnecessary tripping of a circuit breaker.

For example, if you brew coffee in an automatic coffee maker (12 amperes) at the same time as you are making toast in a toaster (10 amperes), you may trip the circuit breaker if both appliances are on the same circuit.

2. The second reason for dedicated circuits is to ensure that there is sufficient power to run the system. Lack of separate circuit protection and inadequate wiring may cause low voltage (insufficient power) and may cause intermittent system operation--system failures, disc errors, etc.

Circuit breakers are rated in amperes. In the U.S.A., typical circuit breakers are 15 or 20 amperes. The ampere load in each individual circuit breaker should allow a margin for startup and surge currents drawn by the system.

Power requirements for each component are labeled on the rear panel. Contact your local electric company to determine the voltage in your area. (In the U.S.A., the voltage should be set at 110 volts.)

### **Lightning**

In some geographical areas it may be advisable to install lightning protection for personnel and the computer. In the U.S.A., the installation of lightning arrestors on power and communication lines is described in the National Electrical Code, Article 280. The principles of lightning protection and personnel safety are given in the lightning protection code contained in the National Fire Protection Association (NFPA) Handbook.

### **Radio Interference**

Radio interference may cause a variety of problems in computer systems. Most commonly, disc read/write errors may occur.

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**NOTE**

See the FCC statement in the front of this manual for more information.

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The most common sources of radio interference are airports (which have communications and radar installations), business two-way radio transmitters, or broadcast radio/TV transmitters. Hand-held transceivers (i.e., "walkie-talkies") produce the same effect as radio stations when used near computer equipment and should therefore be prohibited from the areas in which computer equipment is installed. Additionally, a microwave link aimed from adjacent buildings could present trouble for a computer system installed in its transmission path.

HP 150 Computer Systems are designed to withstand levels of interference up to 0.5 volt/meter over a frequency range of 14 KHz to 1 GHz.

If you think there could be a problem with radio interference at your site, you may need the assistance of an outside consultant for such measurements and recommendations on shielding the system from external interference. The person from whom you purchased your system may be able to recommend an electrical interference consultant in your area.

**Local Codes**

In some localities, special codes and regulations may exist for computers. It is your responsibility to ensure that the requirements of all local laws, regulations, and codes for mechanical, building, and electrical distribution systems have been complied with for your area prior to the system delivery.

The Federal Communications Commission has prepared a booklet entitled "How to Identify and Resolve Radio - TV Interference Problems" which may be helpful to you. This booklet (stock # 004-000-00345-4) may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

# Maintenance Recommendations

Your HP 150 is designed to perform for long periods of time with no maintenance on your part. However, you will occasionally need to change the battery or fuse, and clean the screen and keyboard. Also, when you first receive the HP 150 (or move it to another room), you need to check the screen to make sure that the touch feature is aligned correctly.

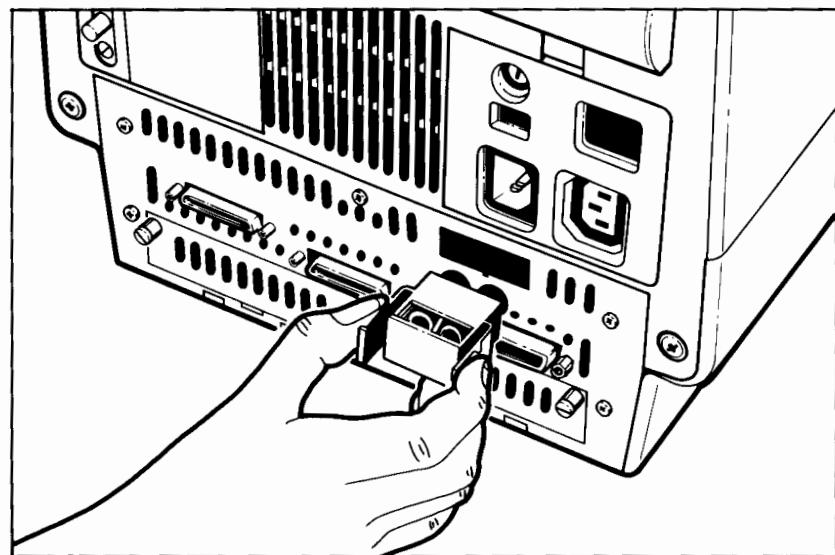
## Changing the Battery

The HP 150 runs on electricity; it does, however, have a battery backup. When you turn off the HP 150, the configuration menu settings (and the time on the clock) that you indicated are saved and maintained by the power in the battery.

The two batteries used in the HP 150 are 1.5 volt, size N. You can buy them yourself, or order them from HP; if you order them from HP, you receive Mallory Duracell 1.5 volt, N size batteries.

Batteries need to be replaced when the message "Default Configs used" appears after you either turn on the unit or press **CTRL SHIFT RESET**. This message means that the battery was too weak to hold your configuration menu settings, and all settings are now HP's defaults (they appear in the pictures in the appendix on Configuration).

Remove the battery holder as shown:



Look at the drawing on the side of the battery pack to see how the batteries should be placed in the holder. Insert the two batteries.

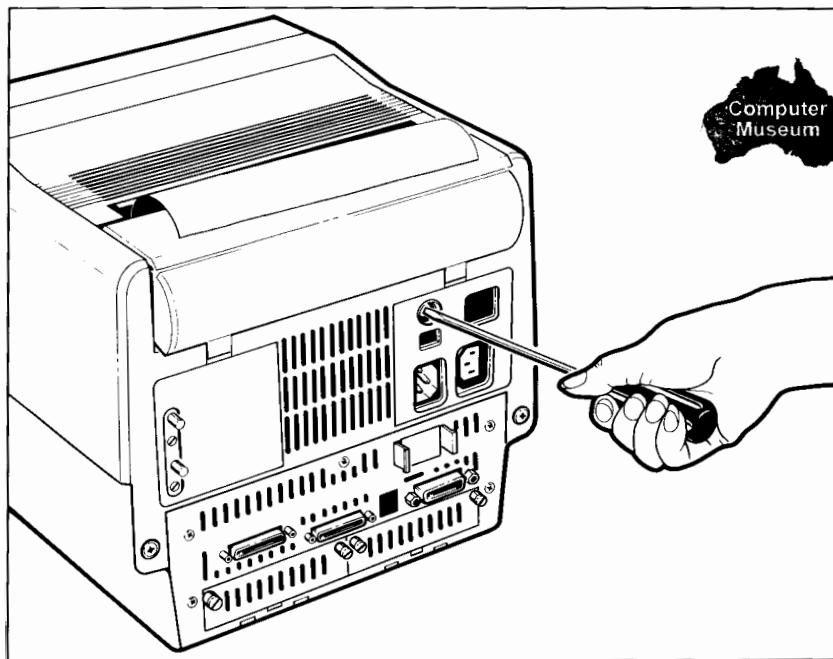
Line up the tab on the bottom of the holder with the groove on the slot. Reinsert the holder.

### Changing the Fuse

You have a fuse in your computer for the same reason you have a fuse in any other electrical appliance. If the computer draws too much current from the line, the fuse protects the computer from the surge of power.

You can tell that your fuse is blown or missing because your computer won't operate, even though the power cord is connected and the power outlet is working.

To change a fuse, turn the HP 150 off and remove the fuse holder as shown below:



Pull the holder straight back. Remove the fuse, and place a new fuse in the carrier. Push the holder back into the slot and turn it a quarter turn clockwise.

## Cleaning the Screen and Keyboard

Clean the display screen regularly to remove dust and fingerprints. Conventional spray cleaners are strong enough to clean your screen and keyboard; do not use petroleum based cleaners (such as lighter fluid), or cleaners containing benzene, trichlorethylene, ammonia, dilute ammonia or acetone as these chemicals could damage the system's plastic surfaces.

Avoid getting cleaner into the spaces between the keyboard or the touch screen holes around the screen. The best way to clean the screen and keyboard is to spray the cloth first, then wipe off the surfaces.

## Testing Procedures

The HP 150 has a number of test routines built into it. By using these programs, you can:

- Perform a power on test
- Align the touch screen
- Perform a system test
- Identify what version of ROMs you have
- Perform a datacommunications test
- Perform a memory test
- Test your internal printer (if you have one)

Press **User System** twice, then **Service Keys** to see the test keys:



### Power On Test

The power-on test consists of several diagnostic tests, the results of which are meaningful to an HP Customer Engineer or other support engineer. These tests are performed every time you power-on the system, or when you press **POWER ON TEST**.

## **Memory Test**

The memory test takes about 5 minutes to check your memory. If the message Memory test failed XXXX Press Return to clear appears, write down the four numbers (XXXX). A support person will be able to interpret the code. If the message Power-on test failed XXXX appears, write down the four numbers (XXXX) that appear. A support person will be able to interpret this code.

## **Screen Alignment**

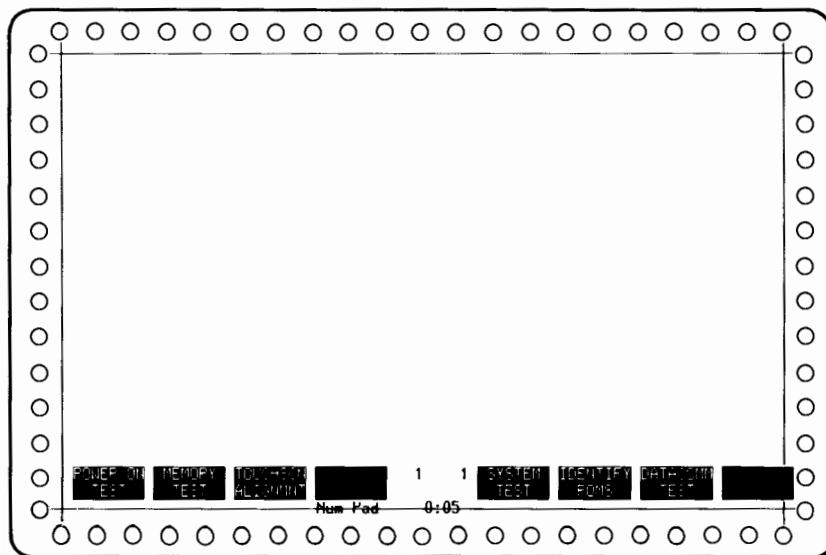
Touch screen works by sending signals between the small holes around the edge of the screen. If a field on the screen is not directly under the signal, touch screen will not work properly.

When an HP 150 is shipped (or even moved to another room), the screen is often jarred. Therefore, you should always check the screen alignment after an HP 150 is moved.

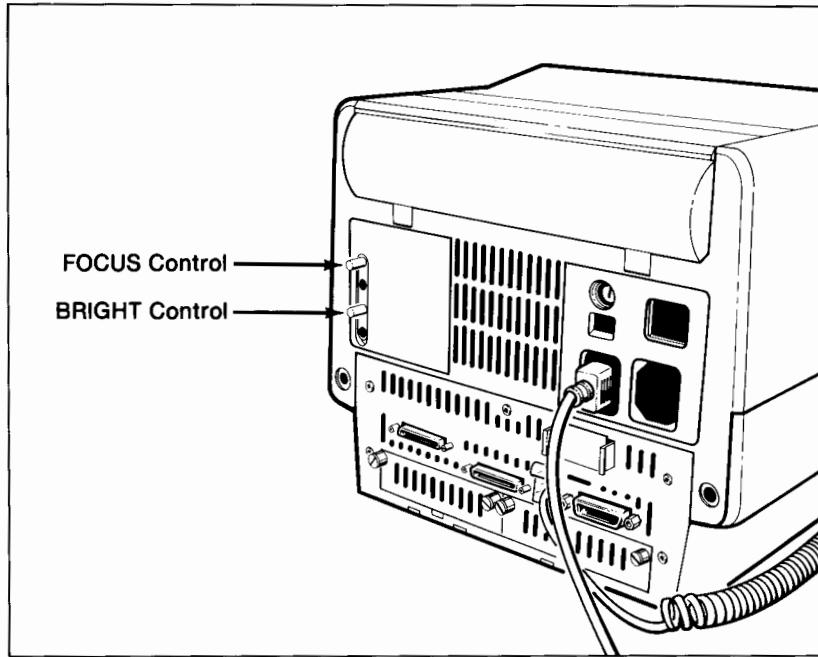
Be sure that any graphics information already on the screen has been saved, as screen alignment clears graphics information.

Follow these steps:

- 1) Press the **SYSTEM** key twice, then **service keys**, then **TOUCHSCR ALIGNMNT**.  
This screen appears:

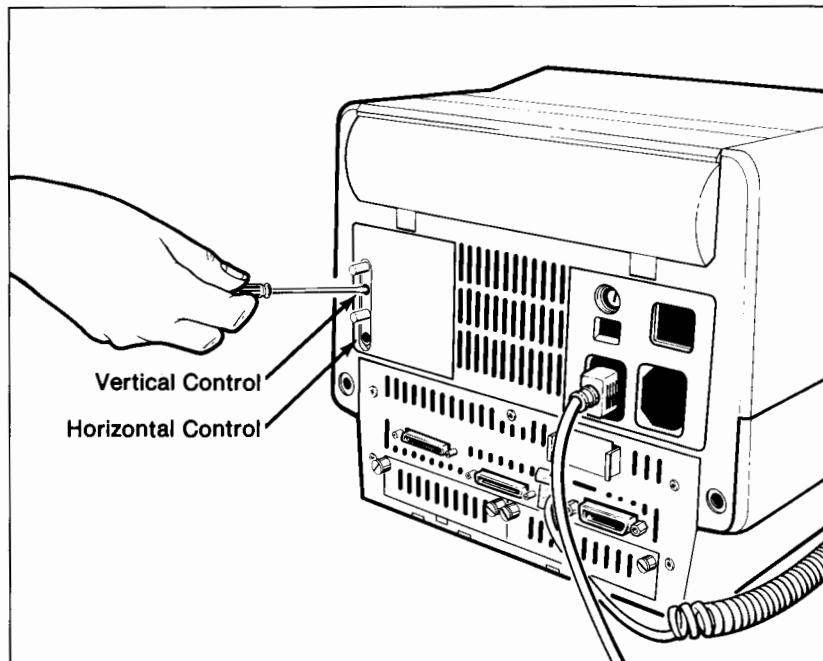


- 2) Adjust the focus of the screen using the FOCUS adjustment shown below:



- 3) Adjust the brightness of the screen with the BRIGHT adjustment shown above.

- 4) Adjust the horizontal until the vertical lines line up with the touch screen holes. Use the HORIZ CENTER adjustment as shown below:



- 5) Adjust the vertical until the horizontal lines line up with the touch screen holes. Use the VERT CENTER adjustment shown above.
- 6) Press **CTRL** **Shift** **Clear Display** to clear the screen.



## **System Test**

This test is very similar to the power-on test. If the message System test failed XXXX Press RETURN to clear appears when you press **System Test**, write down the four numbers (XXXX); a support person will be able to interpret the code.

## **Identify ROM Test**

Press **IDENTIFY ROMS** if you ever need to know what version your firmware (ROMs) is. You might be asked to do this by a support person.

## **Datacommunications Test**

**DATACOMM TEST** consists of a number of tests performed on datacommunication ports 1 and 2. If you are having trouble communicating with a host computer, press **DATACOMM TEST**. If the message Datacomm test failed A2XX appears, write down the A2XX number. A support person will be able to interpret this code.

## **Internal Printer Test**

Press **INT PRT TEST** (if you have one) to check your internal printer. Two lines of characters should print at the internal printer. If they do not, contact your hardware support person.

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## **Appendix D**

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### **ERROR MESSAGES**

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- Message:** <application program name> was not found on disc drive X.
- Cause:** P.A.M. tried to run an application program that is no longer in the drive.
- Remedy:** Be sure the drive is turned on and the disc is inserted correctly. Touch Reread Discs to see the applications that are on the discs.
- Message:** <application program name> is too large to install onto X. Touch Stop Install to remove incomplete application from X.
- Cause:** You tried to install the application program on a disc that does not have enough room for the program.
- Remedy:** Touch Stop Install. Then install the application program on another disc with enough room on it.
- Message:** <directory name> is not a valid directory on disc X.
- Cause:** You typed an invalid directory name or specified the wrong disc for the directory.
- Remedy:** Use the File Manager's Choose Directory function to find out the correct location and name of the directory. Then try again.

<b>Message:</b>	<function> locked.
<b>Cause:</b>	Functions, such as terminal test, can be locked out by a setting in the terminal configuration menu, or by escape sequences generated by a program. Any attempt to use a locked function results in this message.
<b>Remedy:</b>	Press Return to clear the message from the screen. Avoid using the locked function, or unlock it in the Terminal Configuration menu.
<b>Message:</b>	<application program name> was not found in <pathname>.
<b>Cause:</b>	The application program you tried to run is not on the specified disc in the specified subdirectory.
<b>Remedy:</b>	Make certain that the disc containing the application program is in the proper disc drive at the time you attempt to run the program.
<b>Message:</b>	A directory file must be empty before it can be deleted.
<b>Cause:</b>	You tried to delete a directory that contains files; you must delete all files in a directory before you can delete the directory.
<b>Remedy:</b>	From File Manager, touch Delete File/Dir. Touch the name(s) of the file(s) on the screen, then touch Start Delete.

**Message:** A directory file was not chosen. No action taken.

**Cause:** In the File Manager, you neglected to select a directory file for an operation.

**Remedy:** If the directory name is on the screen, touch it. If not, type the pathname of the directory and press Return.

**Message:** A file cannot be renamed to another disc.

**Cause:** You tried to use the Rename feature of the File Manager to rename a file onto another disc (for example, B:SAMPLE to A:EXAMPLE).

**Remedy:** Use the same disc letter: change only the name of the file (for example, B:SAMPLE to B:EXAMPLE), not its location.

**Message:** A file or directory is not selected.

**Cause:** In File Manager, you tried to use PRINT without naming a file or directory.

**Remedy:** Press Return to remove the message. Select a file or directory. Try again.

**Message:** **A read-only file cannot be deleted.**

**Cause:** You tried to use the File Manager's Delete program to delete a read-only file.

**Remedy:** The file must be modified by the programmer so that it is no longer read-only.

**Message:** **A write-protected disc or a read-only file cannot be changed.**

**Cause:** You tried to change data on a disc or file to which write access is denied.

**Remedy:** If the disc is write-protected, copy the file to a read/write disc, or make the disc read/write. If the access status of the file is read-only, change the status to read/write.

**Message:** **Access to browse file interrupted.**

**Cause:** The File Manager is having a problem finding information in a browse file.

**Remedy:** Make sure the disc containing your file is in a drive. Make sure the door on the drive is closed (if there is a door), and the cables from the drive to the HP 150 are secure. Try again.

**Message:** **Access to directory interrupted.**

**Cause:** The File Manager is having a problem finding information in a directory.

**Remedy:** Make sure the disc containing your file is in a drive. Make sure the door on the drive is closed (if there is a door), and the cables from the drive to the HP 150 are secure. Try again.

<b>Message:</b>	<b>Access to file interrupted.</b>
<b>Cause:</b>	The File Manager is having a problem finding information in temporary file.
<b>Remedy:</b>	Make sure the disc containing your file is in a drive. Make sure the door on the drive is closed (if there is a door), and the cables from the drive to the HP 150 are secure. Try again.
<b>Message:</b>	<b>Access to input file interrupted.</b>
<b>Cause:</b>	The File Manager is having a problem finding information in an input file.
<b>Remedy:</b>	Make sure the disc containing your file is in a drive. Make sure the door on the drive is closed (if there is a door), and the cables from the drive to the HP 150 are secure. Try again.
<b>Message:</b>	<b>Access to output file interrupted.</b>
<b>Cause:</b>	The File Manager is having a problem finding information in an output file.
<b>Remedy:</b>	Make sure the disc containing your file is in a drive. Make sure the door on the drive is closed (if there is a door), and the cables from the drive to the HP 150 are secure. Try again.
<b>Message:</b>	<b>Access to printer interrupted.</b>
<b>Cause:</b>	The File Manager was using the printer, and something happened to interrupt that use.
<b>Remedy:</b>	Check the cable from the printer to the HP 150. Be sure the printer is turned on. Check any error lights (such as "out of ribbon") on the printer. Try printing again.

<b>Message:</b>	<b>Access to temporary file interrupted.</b>
<b>Cause:</b>	The File Manager is having a problem finding information in a temporary file.
<b>Remedy:</b>	Make sure the disc containing your file is in a drive. Make sure the door on the drive is closed (if there is a door), and the cables from the drive to the HP 150 are secure. Try again.
<b>Message:</b>	<b>Ambiguous name, read-only disc, or full directory on disc. No action taken.</b>
<b>Cause:</b>	You named a file or pathname in such a way that the program could not identify it, the program could not read the specified disc, or the directory in the disc is full and nothing more can be added to it.
<b>Remedy:</b>	Enter the pathname correctly, make certain the disc is not read-only, and that its directory is not full.
<b>Message:</b>	<b>Application is too large to install onto disc X. Select the applications to be installed. Press Start Install.</b>
<b>Cause:</b>	There is not enough room on the disc for the application you chose.
<b>Remedy:</b>	Put the application program on another disc.
<b>Message:</b>	<b>***Backup aborting : Out of Memory.</b>
<b>Cause:</b>	There is not enough memory available in the system to run COPY/BACKUP.
<b>Remedy:</b>	Do a "hard reset" and try to run COPY/BACKUP again. If this error message appears again, then call your hardware support person.

<b>Message:</b>	<b>Bad command or filename.</b>
<b>Cause:</b>	You are using MS-DOS from the command prompt, and either mistyped a command, or tried to use an external command not present on the disc.
<b>Remedy:</b>	Type DIR to see if the command is on the disc. If it is, retype the command.
<b>Message:</b>	<b>BAD tracks found — disc unusable.</b>
<b>Cause:</b>	You are using the FORMAT program to format a disc that is damaged.
<b>Remedy:</b>	Do not use this disc; use another disc.
<b>Message:</b>	<b>Cannot close file.</b>
<b>Cause:</b>	The File Manager tried to close a file and could not; the disc was probably removed in the middle of an operation.
<b>Remedy:</b>	Reinsert the original disc, and try again.
<b>Message:</b>	<b>Cannot delete the displayed directory.</b>
<b>Cause:</b>	While in File Manager, you tried to delete the current directory.
<b>Remedy:</b>	Go to the parent directory of the directory you want to delete and delete it from there. (Remember, the directory must be empty before you can delete it.)
<b>Message:</b>	<b>Cannot find file &lt;.IN\$ file name&gt; to install &lt;application program name&gt;.</b>
<b>Cause:</b>	The INSTALL program cannot find one of the files listed in the .IN\$ file.
<b>Remedy:</b>	Find the missing file and move it to the disc containing the application program, the .IN\$ file, and the other associated files listed in the .IN\$ file.

<b>Message:</b>	<b>Cannot find the correct files on X to install &lt;application program name&gt;. Insert the correct disc into drive X and touch New Disc Ready.</b>
<b>Cause:</b>	You chose an application program to install, then removed the disc containing the application program's files and inserted another disc before you touched Start Install.
<b>Remedy:</b>	Place the correct disc back into the disc drive and then touch New Disc Ready.
<b>Message:</b>	<b>Cannot open browse file.</b>
<b>Cause:</b>	The File Manager tried to open a browse file and could not.
<b>Remedy:</b>	Make sure the disc containing your file is in a drive. Make sure the door on the drive is closed (if there is a door), and the cables from the drive to the HP 150 are secure. Try again.
<b>Message:</b>	<b>Cannot open input file.</b>
<b>Cause:</b>	The File Manager tried to open an input file and could not.
<b>Remedy:</b>	Make sure the disc containing your file is in a drive. Make sure the door on the drive is closed (if there is a door), and the cables from the drive to the HP 150 are secure. Try again. Check your pathname to be sure you used a legal disc letter, directory name(s) and file name, separated by backslashes.
<b>Message:</b>	<b>Cannot open output file.</b>
<b>Cause:</b>	The File Manager tried to open an output file and could not.
<b>Remedy:</b>	Make sure the disc containing your file is in a drive. Make sure the door on the drive is closed (if there is a door), and the cables from the drive to the HP 150 are secure. Try again. Check your pathname to be sure you used a legal disc letter, directory name(s) and file name, separated by backslashes.

<b>Message:</b>	<b>Cannot open temporary file.</b>
<b>Cause:</b>	The File Manager wants to open a temporary file, but can't because a file named \$\$\$\$\$\$.\$\$\$ already exists on the disc.
<b>Remedy:</b>	Delete any file or directory named \$\$\$\$\$\$.\$\$\$. Try again.
<b>Message:</b>	<b>Cannot open "To" file (illegal filename). Created temporary file \$\$\$\$\$\$.\$\$\$.</b>
<b>Cause:</b>	In the File Manager's Copy command, you tried to give a copy of a file an illegal name.
<b>Remedy:</b>	Use the File Manager or MS-DOS Copy command to rename the temporary file with a legal name. Do not leave the temporary file name on the disc because the File Manager needs to use this file name for other purposes.
<b>Message:</b>	<b>Cannot use printer.</b>
<b>Cause:</b>	The File Manager tried to use your printer and could not.
<b>Remedy:</b>	Make sure your printer is turned on, the cables are secure, you have selected the correct printer, and the device configuration is correct for your system.
<b>Message:</b>	<b>COMMAND.COM not found on source disc.</b>
<b>Cause:</b>	The file COMMAND.COM was not found on the source disc.
<b>Remedy:</b>	You can either: — use a SYS_MASTER disc as the source disc, or — copy the file COMMAND.COM onto the source disc.

**Message:** \*\*\*Could not find files on disc drive X:.

**Cause:** There were no files on the disc in the source drive.

**Remedy:** Specify a disc in a source drive that contains files.

**Message:** Could not identify disc. Check drive.

**Cause:** FORMAT could not identify this disc drive as one that is supported (3½", 5¼", 8", fixed 5 Mb., 10 Mb., 15M., or IBM 3740 format).

**Remedy:** Be sure the drive is turned on. Check your cables to be sure they are secure. Only format supported discs.

**Message:** \*\*\*Create error on disc X:, (may exist as a hidden file).

**Cause:** The directory of the destination disc is full, or the file already exists on the destination as a hidden file.

**Remedy:** If the directory is full, then delete some of the files on the destination disc, or use a different disc. In the second case, COPY/BACKUP will not copy over a hidden file on the source disc.

**Message:** Datacomm test failed.

**Cause:** The HP 150 firmware has detected an error during the datacommunications test.

**Remedy:** Press Return to clear the message from the screen. Be sure that the cable or test hood is connected correctly. Contact your hardware support person.

<b>Message:</b>	<b>Default configurations used.</b>
<b>Cause:</b>	The battery in the HP 150 was too weak to hold any changes you may have made to the configuration menus. The entries used to start the system were the default entries.
<b>Remedy:</b>	Press Return to clear the message from the screen. Change the two batteries in the battery pack (see the appendix on Maintenance). If the error persists with new batteries, you may be running a program that resets your configuration entries as it runs, or you may be experiencing a CMOS chip failure. Contact your support person.
<b>Message:</b>	<b>DESTINATION DISC FULL: To continue, put next disc in drive X, then press 'Yes'.</b>
<b>Cause:</b>	No free space is available on the destination disc.
<b>Remedy:</b>	Remove the destination disc and insert another disc in the destination drive, and press the Yes function key.
<b>Message:</b>	<b>***Destination disc in disc drive X: is Write Protected.</b>
<b>Cause:</b>	The disc specified as the destination disc is write protected.
<b>Remedy:</b>	Move the write protection tab to allow the computer to read from and write to the disc.
<b>Message:</b>	<b>***Destination disc is a backup disc.</b>
<b>Cause:</b>	There are two different causes for this message: <ul style="list-style-type: none"> <li>— you have pressed the Copy Files function key, but the destination disc is formatted as a backup disc.</li> <li>— you have specified a sub-directory as the destination and pressed the Backup Files function key.</li> </ul>



<b>Remedy:</b>	Depending upon the cause, you should: <ul style="list-style-type: none"> <li>— use the same destination disc, but press Backup Files after specifying the source and the destination drive.</li> <li>— use a regular MS-DOS or CP/M formatted disc and press either Copy Files or Copy to CPM if you want to copy files.</li> </ul> <p>(Note that COPY/BACKUP will not allow you to back up to a sub-directory.)</p>
<b>Message:</b>	<b>Destination disc is too fragmented.</b>
<b>Cause:</b>	The available memory on the disc is broken into too many small pieces for the operating system to be copied onto the disc.
<b>Remedy:</b>	You can either delete some of the files on the disc, or use a different disc.
<b>Message:</b>	<b>DESTINATION DISC X NOT EMPTY: Do you want disc to be cleared before the copy starts?</b>
<b>Cause:</b>	The destination disc is a backup disc that already has files.
<b>Remedy:</b>	If you want to add the selected files to the files already on the backup disc, press the No function key. If you want only want the selected files on the backup disc, press the Yes function key.
<b>Message:</b>	<b>Destination disc must be formatted on an HP 120/125</b>
<b>Cause:</b>	You have pressed the Copy to CPM function key, but the destination disc is not formmatted as a CP/M disc.
<b>Remedy:</b>	Specify a CP/M formatted disc as the destination disc.

<b>Message:</b>	<b>Directory does not exist.</b>
<b>Cause:</b>	In File Manager, you asked for a directory that is not on the system or on the selected disc.
<b>Remedy:</b>	Be sure you are looking on the correct disc for the directory. Be sure you are spelling the directory name correctly.
<b>Message:</b>	<b>***Disc access error on disc drive X:.</b>
<b>Cause:</b>	There's no disc in the source drive or no disc in the destination drive, or the disc drive has not been configured.
<b>Remedy:</b>	There must be a disc in both the source and the destination drive. Also, make sure that you have configured the disc drive using the MS-DOS Device Configuration program or the EZ Configuration program.
<b>Message:</b>	<b>Disc change detected in drive X. Restore original and hit RETURN to continue.</b>
<b>Cause:</b>	At some point after the INSTALL program has checked a disc drive a disc has been removed and a disc has been put back in the drive. When the INSTALL program checks the drive again it detects this has happened but can not determine whether the disc currently in the drive is the same one as before.
<b>Remedy:</b>	If you have changed discs, then put the first disc back in and press RETURN to continue.
<b>Message:</b>	<b>Disc drive address is already in use for device X.</b>
<b>Cause:</b>	In the Device Config menu you touched Save Config after choosing the same interface/ address/ unit number as the one already assigned to device X.
<b>Remedy:</b>	Change the values of one of the devices so that each is unique.

**Message:** **DISC DRIVE X ERROR:**

**Do you want to try again? (insert new disc before pressing 'yes')**

**Cause:** This message sometimes follows other error messages. These first messages appear when the computer is trying to access a disc but can't read from or write to it (because the disc isn't in the drive, the disc drive hasn't been turned on, etc.). This second message allows you to try an action again, or decide not to do something that you were trying to do before.

**Remedy:** If you want to try again, insert the proper disc in the drive, making sure that the drive door (if there is one) is closed and the drive is turned on. If you don't want to try again, press 'No'.

**Message:** **Disc drive is empty, off, or undefined.**

**Cause:** COPY/BACKUP has tried to find a disc drive and failed.

**Remedy:** Touch continue to remove the message from the screen. Be sure that the drive indicated is turned on. Be sure that you are indicating the correct disc letter (see the chapter on installation) for the drive. If these criteria are met, and the error still occurs, you may have a bad disc or disc drive.

**Message:** **Disc drive X is empty, off, or write protected.  
Check disc drive and touch New Disc Ready to continue or Stop Install to exit.**

**Cause:** In the INSTALL program, you indicated a drive with no disc in it or a drive that is turned off.

**Remedy:** Put a disc into drive X if it is a flexible drive, or turn the drive on if it is off.

<b>Message:</b>	<b>Disc drive X is not on the system.</b>
<b>Cause:</b>	You specified a disc drive that has not been identified on the MS-DOS Configuration menu.
<b>Remedy:</b>	Use the MS-DOS Configuration menu to reconfigure the system so that it recognizes the specified disc drive.
 <b>Message:</b>	 <b>Disc error.</b>
<b>Cause:</b>	The disc may be incorrectly formatted or defective or you may have a bad disc drive.
<b>Remedy:</b>	Check the status and condition of the disc. If this message appears frequently, have your disc drive checked for malfunction.
 <b>Message:</b>	 <b>Disc error on browse file.</b>
<b>Cause:</b>	The File Manager has encountered a disc problem while browsing a file.
<b>Remedy:</b>	Make sure the disc containing your file is in a drive. Make sure the door is closed on the drive, and the cables from the HP 150 are secure. Try again.
 <b>Message:</b>	 <b>Disc error on directory file.</b>
<b>Cause:</b>	The File Manager has encountered a disc problem while using a directory.
<b>Remedy:</b>	Make sure the disc containing your file is in a drive. Make sure the door is closed on the drive, and the cables from the HP 150 are secure. Try again.
	If none of these measures works, you may have a bad disc; in this case use the MS-DOS Recover command to recover as much information as possible, and put it on another disc.

<b>Message:</b>	<b>Disc error on input file.</b>
<b>Cause:</b>	The File Manager has encountered a disc problem while using an input file.
<b>Remedy:</b>	Make sure the disc containing your file is in a drive. Make sure the door is closed on the drive, and the cables from the HP 150 are secure. Try again.  If none of these measures works, you may have a bad disc; in this case use the MS-DOS Recover command to recover as much information as possible, and put it on another file.
<b>Message:</b>	<b>Disc error on output file.</b>
<b>Cause:</b>	The File Manager has encountered a disc problem while using an output file.
<b>Remedy:</b>	Make sure the disc containing your file is in a drive. Make sure the door is closed on the drive, and the cables from the HP 150 are secure. Try again.  If none of these measures works, you may have a bad disc; in this case use the MS-DOS Recover command to recover as much information as possible, and put it on another disc.
<b>Message:</b>	<b>Disc error on print file.</b>
<b>Cause:</b>	The File Manager has encountered a disc problem while using Print with one of your files.
<b>Remedy:</b>	Make sure the disc containing your file is in a drive. Make sure the door is closed on the drive, and the cables from the HP 150 are secure. Try again.  If none of these measures works, you may have a bad disc; in this case use the MS-DOS Recover command to recover as much information as possible, and put it on another disc.

<b>Message:</b>	<b>Disc error on temporary file.</b>
<b>Cause:</b>	The File Manager has encountered a disc problem while using a temporary file.
<b>Remedy:</b>	<p>Make sure the disc containing your file is in a drive. Make sure the door is closed on the drive, and the cables from the HP 150 are secure. Try again.</p> <p>If none of these measures works, you may have a bad disc; in this case use the MS-DOS Recover command to recover as much information as possible, and put it on another disc.</p>
<b>Message:</b>	<b>Disc error reading drive X.</b>
<b>Cause:</b>	Your disc may be worn or damaged.
<b>Remedy:</b>	<p>Touch Continue to remove the message from the screen. Try again. If the next read works, duplicate this disc right away. (Use COPY/BACKUP's Copy.) If it doesn't work, try using the MS_DOS Recover Command.</p>
<b>Message:</b>	<b>Disc is no longer in the drive. Reinsert disc and press Try Again.</b>
<b>Cause:</b>	The disc was removed from the drive.
<b>Remedy:</b>	Reinsert the disc in the same drive and touch Try Again.
<b>Message:</b>	<b>Disc is not formatted.</b>
<b>Cause:</b>	Using File Manager, you tried to use a disc that was not formatted.
<b>Remedy:</b>	Format the disc according to the directions in the chapter on discs.

<b>Message:</b>	<b>Disc X is write-protected. Correct disc, re-insert, and press Return.</b>
<b>Cause:</b>	You tried to write data on a disc that is write-protected.
<b>Remedy:</b>	Remove the write-protect tab from the disc.
<b>Message:</b>	<b>Disc read error on disc drive X.</b>
<b>Cause:</b>	COPY/BACKUP has tried to read your disc and failed.
<b>Remedy:</b>	Touch Continue to remove the message from the screen. Be sure the drive door is shut (if flexible drive). If the door is shut and the disc is inserted properly, you may have a bad disc.
<b>Message:</b>	<b>Disc unsuitable for system disc.</b>
<b>Cause:</b>	You are using FORMAT with the Copy System option on. FORMAT is unable to copy the operating system to the disc being formatted because this disc has bad sectors where the operating system should be placed.
<b>Remedy:</b>	You could possibly use this disc to store information other than the operation system. If you need a copy of the operating system on your disc, use another disc.
<b>Message:</b>	<b>Disc write error on disc drive X.</b>
<b>Cause:</b>	COPY/BACKUP has tried to write on your disc and failed.
<b>Remedy:</b>	Touch Continue to remove the message from the screen. Try again. If the next write works, duplicate this disc immediately (use COPY/BACKUP's copy). If it doesn't work try using the MS_DOS Recover command.

<b>Message:</b>	<b>Disc write error or cannot create file on disc drive X:.</b>
<b>Cause:</b>	Your disc may be worn or damaged.
<b>Remedy:</b>	Touch Continue to remove the message from the screen. Try again. If the next read works, duplicate this disc right away. (Use COPY/BACKUP's Copy.) If it doesn't work try using the MS_DOS Recover Command.
<b>Message:</b>	<b>Drive X is empty. Re-insert disc and press Return.</b>
<b>Cause:</b>	You tried to access a disc, but the disc was not in the specified drive.
<b>Remedy:</b>	Place the disc in drive X.
<b>Message:</b>	<b>Duplicate files (displayed below) on backup disc.</b>
<b>Cause:</b>	You are using COPY/BACKUP to back up files and indicated a destination disc that already contains a copy of the files.
<b>Remedy:</b>	BACKUP will not overwrite files with duplicate names. Touch Continue to clear the message from the screen. Use another destination disc, or clear these files with the FORMAT program.
<b>Message:</b>	<b>Entered date is invalid.</b>
<b>Cause:</b>	In COPY/BACKUP, you are selecting files by the last date altered. You entered an illegal date.
<b>Remedy:</b>	Touch Continue and type a date in the format MM-DD-YY or the format MM/DD/YY. Do not type a date before 1/1/80 or after 12/31/43 (12/31/2043).
<b>Message:</b>	<b>ERROR 1 — NO XXXX.MSG.</b>
<b>Cause:</b>	A vital part of your software cannot be found.
<b>Remedy:</b>	Call your support person.



<b>Message:</b>	<b>Error accessing drive X:.</b>
<b>Cause:</b>	In INSTALL, you selected a disc that the program cannot access. The disc may be write-protected, worn out, or the wrong format.
<b>Remedy:</b>	Remove the write-protect tab, check for how much use the disc has had, or check whether the disc is formatted properly.
<b>Message:</b>	<b>ERROR ACCESSING DRIVE X. Check that the correct disc is in and is not write-protected. Touch Continue to resume or Setup Main.</b>
<b>Cause:</b>	In SET UP P.A.M. you chose a disc to alter that cannot be found.
<b>Remedy:</b>	Check the disc's write-protect tab to make sure that the disc is not write-protected.
<b>Message:</b>	<b>Error occurred while reading saved configuration. Default assignments assumed.</b>
<b>Cause:</b>	The Device Configuration program could not read the configuration information saved by the last Save Config, or the information that was read was invalid.
<b>Remedy:</b>	Change the values to those you want to use. Touch Save Config.
<b>Message:</b>	<b>FILE ALLOCATION TABLE BAD FOR DRIVE X.</b>
<b>Cause:</b>	One of the allocation tables in memory points to non-existent blocks of memory on the disc. The disc may have been incorrectly formatted, or not formatted at all.
<b>Remedy:</b>	Type R (Retry) and press Return. If this does not work, use the MS-DOS Chkdsk command to get information about the disc. If the disc is incorrectly or not formatted, format the disc before trying to use it again.

**Message:** FILE: <filename> LARGER THAN A SINGLE DISC. Do you want to back up this file to multiple discs?

**Cause:** The file is too big to fit on the destination disc.

**Remedy:** If you press Yes, Backup will ask for more than one disc in order to back up all of your files. You can also choose not to back up this file by pressing No.

**Message:** File <filename> was too large to copy.

**Cause:** The file displayed is too big for COPY/BACKUP to copy.

**Remedy:** Touch Continue to remove the message. You can use BACKUP instead of COPY if you simply want to save the files; however, an application program cannot access backed up files. You have to restore these files to use them with an application program.

**Message:** File Manager not on system.

**Cause:** You have booted the system without P.A.M. and now want to use the File Manager while you are in the INSTALL program.

**Remedy:** If you have P.A.M. on your system, enter INSTALL from P.A.M. If you must enter INSTALL from MS-DOS, you can still perform all of the File Manager's functions in MS-DOS, but not while you are in the INSTALL program.

**Message:** File option switch should be "/m".

**Cause:** The drive designator (such as B:) was followed by something other than "/m".

**Remedy:** To copy the system files and COMMAND.COM type the destination drive letter followed by a colon (:) and /M. Example: A> SYS B: /M.

<b>Message:</b>	<b>Format failure. No disc in drive.</b>
<b>Cause:</b>	You tried to use the FORMAT program to format a disc that was not in the drive.
<b>Remedy:</b>	Be sure a disc is in the drive, the cables are secure between the disc drive and the HP 150, the drive is turned on, and the door is closed.
<b>Message:</b>	<b>Format failure. One or more discs could not be Cleared.</b>
<b>Cause:</b>	You tried to use the FORMAT program to format a disc that was damaged in some way, or in a drive with the door open.
<b>Remedy:</b>	A damaged disc should not be used; use another disc. Be sure the disc is in the drive, the drive door is closed, and the drive is turned on.
<b>Message:</b>	<b>Format Failure. One or more discs could not be formatted.</b>
<b>Cause:</b>	You tried to use the FORMAT program to format a disc that was damaged, is write protected, taken out of the drive in mid-format, or had the door opened.
<b>Remedy:</b>	A damaged disc should not be formatted: use another disc. Be sure the disc is present in the drive, the door is closed, and the drive is turned on.
<b>Message:</b>	<b>Format failure. Write-protected disc.</b>
<b>Cause:</b>	You tried to use the FORMAT program to format a disc that was write-protected.
<b>Remedy:</b>	Check the write-protect tab on the disc to be sure the disc is not write-protected. Try again.

<b>Message:</b>	<b>HP-IB Device Error</b>
<b>Cause:</b>	A non-recoverable error has occurred as the HP 150 firmware tried to access the HP-IB device.
<b>Remedy:</b>	Press Return to clear the message. Check the HP-IB cables for firm connections. Check HP-IB addresses as described in Chapter 2.
 <b>Message:</b>	 <b>HP-IB ERROR</b>
<b>Cause:</b>	An error occurred while the HP 150 firmware was sending information on the HP-IB port.
<b>Remedy:</b>	Press Return to clear the message. Check the HP-IB cables for firm connections. Check printers, drives, etc. to be sure they are turned on and operating properly. Check HP-IB addresses as described in Chapter 2.
 <b>Message:</b>	 <b>HP-IB printer error</b>
<b>Cause:</b>	The HP 150 tried to send information to a printer connected via the HP-IB port, and got no response.
<b>Remedy:</b>	Press Return to clear the message from the screen. Be sure the printer is turned on. Be sure the printer is correctly configured according to the directions in Chapter 2 of this manual.
 <b>Message:</b>	 <b>Illegal for edit type: ALPHABETIC</b>
<b>Cause:</b>	The HP 150 firmware has detected that the data in this field doesn't match the field's data type.
<b>Remedy:</b>	Press Return to clear the message from the screen. Use only alphabetic data in this field (no numbers).

<b>Message:</b>	<b>Illegal for edit type: NUMERIC</b>
<b>Cause:</b>	The HP 150 firmware has detected that the data in this field doesn't match the field's data type.
<b>Remedy:</b>	Press Return to clear the message from the screen. Use only numeric data in this field (no letters).
<b>Message:</b>	<b>Illegal or no Destination Device</b>
<b>Cause:</b>	The HP 150 firmware has looked for your "To" device entry and either can't find or can't understand it.
<b>Remedy:</b>	Press Return to clear the message from the screen. Be sure a printer is named as a "To" device, as described in Chapter 2.
<b>Message:</b>	<b>Illegal or no Source Device</b>
<b>Cause:</b>	The HP 150 firmware has looked for your "From" device entry and either can't find or can't understand it.
<b>Remedy:</b>	Touch Return to clear the message from the screen. Be sure a printer is named as a "From" device, as described in Chapter 2.
<b>Message:</b>	<b>Illegal Unit Device</b>
<b>Cause:</b>	The HP 150 firmware.
<b>Remedy:</b>	Press Return to clear the message from the screen.

<b>Message:</b>	<b>Incompatible version of operating system.</b>
<b>Cause:</b>	You're in the main P.A.M. menu and select the terminal function key. The version of P.A.M. that you are using is incompatible with the version of the operating system.
<b>Remedy:</b>	You must use the version of P.A.M. that came on the same disc as the operating system that you are using. Check the version numbers displayed for P.A.M. and HP BIOS against the version numbers on the SYS_MASTER disc.
<b>Message:</b>	<b>Incorrect DOS version</b>
<b>Cause:</b>	You are trying to copy a version of MS-DOS that is not between 1.54 and 2.11.
<b>Remedy:</b>	Use the version of SYS that came with the version of MS-DOS being copied.
<b>Message:</b>	<b>Insert system disc in drive X and strike any key when ready.</b>
<b>Cause:</b>	The source disc did not contain the MS-DOS system files.
<b>Remedy:</b>	Insert a SYS_MASTER disc into the source drive and strike any key to continue copying the system files to the destination disc.
<b>Message:</b>	<b>Install version is incompatible with PAM directory on disc X.</b>
<b>Cause:</b>	You are trying to use a version of the INSTALL program that is not designed to be used on your current MS-DOS.
<b>Remedy:</b>	Use the INSTALL version that is designed to be used with your current P.A.M.

<b>Message:</b>	<b>Insufficient memory for system transfer.</b>
<b>Cause:</b>	You are using the FORMAT program with the Copy System option on. There is not enough memory available inside the HP 150 to copy the operating system to the new disc.
<b>Remedy:</b>	Press Return to remove the message from the screen. Make sure P.A.M. and MS-DOS commands are not both in memory while formatting (EXIT). Contact your hardware support engineer.
<b>Message:</b>	<b>Integral Printer Error.</b>
<b>Cause:</b>	The HP 150 firmware has detected a problem with the printer built into your HP 150.
<b>Remedy:</b>	Press Return to clear the message from the screen. If the problem persists, check the printer with the internal printer test. If the internal printer test fails, contact your hardware support person.
<b>Message:</b>	<b>Internal P.A.M. error. Bad MS-DOS command issued.</b>
<b>Cause:</b>	P.A.M. had problems loading a program.
<b>Remedy:</b>	Restart your system; try again. If this does not work, call your support person.
<b>Message:</b>	<b>Invalid characters in volume label.</b>
<b>Cause:</b>	In FORMAT, you supplied a name for a disc to be formatted; this name contained illegal characters.
<b>Remedy:</b>	Press Return to clear the message. Type a new name that does not contain the characters.

<b>Message:</b>	<b>Invalid Configuration.</b>
<b>Cause:</b>	The HP 150 firmware has detected that the configuration you selected isn't supported by the datacommunications hardware that you have installed.
<b>Remedy:</b>	Press Return to clear the message from the screen. Use a different configuration, or add the optional hardware (printer, plotter, accessory boards, internal hardware, etc.).
<b>Message:</b>	<b>Invalid date format. Be sure to enter Month/Day/Year.</b>
<b>Cause:</b>	You are trying to set the HP 150 data from P.A.M.'s 'Set Date and Time', and typed an unacceptable date.
<b>Remedy:</b>	Backspace to the beginning of the line. Type a date that is in the Month/Day/Year format, with the year greater than 1980 or 80 and less than 2100.
<b>Message:</b>	<b>Invalid destination disc or directory.</b>
<b>Cause:</b>	You are using COPY/BACKUP, and typed a disc or directory name. You probably forgot a necessary part of the name.
<b>Remedy:</b>	Press 'Continue' to clear the message from the screen. For a disc, type the letter and a colon (A: B: C:). For a directory, type the disc letter, colon, backslash, and directory names (A:\DIRNAME1\DIRNAME2).
<b>Message:</b>	<b>Invalid drive specification.</b>
<b>Cause:</b>	You are trying to use the same drive as the source and destination.
<b>Remedy:</b>	Specify a destination drive that is different from the default drive.

<b>Message:</b>	<b>Invalid parameter.</b>
<b>Cause:</b>	You are typing a destination drive letter without a colon (:) following it.
<b>Remedy:</b>	Type the destination drive letter and follow it with a colon (:). Example: A> SYS B:.
<b>Message:</b>	<b>Invalid source disc drive or directory.</b>
<b>Cause:</b>	You are using COPY/BACKUP, and typed a disc or directory name. You probably forgot a necessary part of the name.
<b>Remedy:</b>	Press 'Continue' to clear the message from the screen. For a disc, type the letter and a colon (A: B: C:). For a directory, type the disc letter, colon, backslash, and directory names (A:\DIRNAME1\DIRNAME2).
<b>Message:</b>	<b>Invalid time format. Be sure to enter Hours:Minutes.</b>
<b>Cause:</b>	You are trying to set the HP 150 time from P.A.M.'s Set Date and Time, and type an unacceptable time.
<b>Remedy:</b>	Backspace to the beginning of the line. Type a time that is in the Hours:Minutes format on a 24 hour clock.
<b>Message:</b>	<b>List of files to be removed was not found. Touch Continue to remove P.A.M. label.</b>
<b>Cause:</b>	INSTALL's Remove option could not remove the files associated with the application program because they were installed with a different version of the INSTALL program. Or the .RM\$ file no longer exists.
<b>Remedy:</b>	First touch Continue to remove the P.A.M. label. Then use the File Manager to remove the files.

<b>Message:</b>	<b>Load Op Sys failed, device not found.</b>
<b>Cause:</b>	The HP 150 can't find your disc drive or accessory board.
<b>Remedy:</b>	Press Return to remove the message from the screen. Be sure the disc drive is turned on, and a copy of the operating system is in the A: drive (or in the drive you load the operating system from if you changed from A: in the Global Configuration menu).
<b>Message:</b>	<b>Load Op Sys failed, no Op Sys on disc.</b>
<b>Cause:</b>	The operating system is not on your A: disc.
<b>Remedy:</b>	Press Return to remove the message from the screen. Replace the disc in drive A: with one that contains the operating system. If you changed the boot disc from A:, then be sure the operating system is in that disc.
<b>Message:</b>	<b>Load Op Sys failed, not enough memory.</b>
<b>Cause:</b>	The amount of memory (inside the HP 150) is not enough to load the operating system.
<b>Remedy:</b>	Call your hardware support person.
<b>Message:</b>	<b>Load Op Sys failed, Op Sys disc not found.</b>
<b>Cause:</b>	The HP 150 can't find the operating system disc.
<b>Remedy:</b>	Press Return to remove the message from the screen. Be sure the disc drive is turned on, and a copy of the operating system is in the A: drive (or in the drive you load the operating system if you changed from A:). Then press CTRL, SHIFT, and RESET simultaneously. This causes the computer to "look for" the operating system on a disc again.



**Message:** **MEMORY FULL.**

**Cause:** The HP 150 alpha memory (memory that contains characters that are read to the screen) is full, and can't contain all of the enhancements plus the data sent.

**Remedy:** Some data was probably lost. Press Return to clear the message from the screen. Press SHIFT, CLEAR DISPLAY when possible. Retype the data.

**Message:** **Memory test failed**

**Cause:** The HP 150 firmware has detected an error during the memory test (run from the USER SYSTEM keys).

**Remedy:** Write down any numbers that appeared on the screen. Contact your hardware support person.

**Message:** **MS-DOS does not accept the file names displayed below.**

**Cause:** You are copying from CP/M to MS-DOS. Some CP/M filenames are not legal in MS-DOS.

**Remedy:** Using an HP 120/125, change the filenames to ones that are accepted by MS-DOS and try to copy these files again. MS-DOS will not accept the following characters in filenames from CP/M:

\ / + " -

**Message:** **MUST SELECT A DISC TO CLEAR.**

**Cause:** You are using the FORMAT program and pressed CLEAR DISC before you chose a disc.

**Remedy:** Press Return, then select a disc. Touch CLEAR DISC again.

<b>Message:</b>	<b>MUST SELECT A DISC TO FORMAT.</b>
<b>Cause:</b>	You are using FORMAT, and touched START FORMAT before you selected a disc to format.
<b>Remedy:</b>	Press Return, then touch a disc letter on the screen. Touch START FORMAT.
 <b>Message:</b>	 <b>No device driver.</b>
<b>Cause:</b>	The HP 150 firmware can't find a program called a device driver for this printer, plotter, or other device.
<b>Remedy:</b>	Press CTRL SHIFT RESET. If the error persists, contact your hardware support person.
 <b>Message:</b>	 <b>No disc is selected.</b>
<b>Cause:</b>	In SET UP PAM's Choose Disc menu, you have neglected to select a disc or you "unselected" a disc. When you then touched Show Apps, this error message was displayed.
<b>Remedy:</b>	Access the Choose Disc menu and select a disc.
 <b>Message:</b>	 <b>No discs were found. Insert a disc and press Reread Discs or press Exit.</b>
<b>Cause:</b>	SET UP P.A.M. looked for discs and found none.
<b>Remedy:</b>	Be sure drives are turned on and discs are properly inserted in drives. Press REREAD DISCS.
 <b>Message:</b>	 <b>No files were selected for copy.</b>
<b>Cause:</b>	In COPY/BACKUP, you pressed START COPY before you selected any files to be copied.
<b>Remedy:</b>	Touch CONTINUE, then a file name(s) on the screen. Touch START COPY again.

<b>Message:</b>	<b>No room for system on destination disc.</b>
<b>Cause:</b>	<p>This message will appear if you are:</p> <ul style="list-style-type: none"> <li>— trying to put the system on a disc that is already full of files.</li> <li>— trying to put the system on a disc that has a full directory.</li> <li>— specifying a destination drive that does not exist or using an invalid character as the destination drive letter.</li> </ul>
<b>Remedy:</b>	<p>Depending on the causes listed above, you can:</p> <ul style="list-style-type: none"> <li>— delete some files.</li> <li>— use a different disc.</li> <li>— the destination drive letter must be a letter between A and L, followed by a colon (:).</li> </ul>
<b>Message:</b>	<b>Non-DOS disc error reading/writing drive X.</b>
<b>Cause:</b>	The disc in drive X has not been properly formatted to run on an HP 150.
<b>Remedy:</b>	Type A to abort the read or write, and reformat the disc (if you don't mind losing all of the data on it).
<b>Message:</b>	<b>Not enough memory to boot. Press RETURN to clear.</b>
<b>Cause:</b>	Your HP 150 is having a memory problem. You need at least 45K to load MS-DOS.
<b>Remedy:</b>	Do a "hard reset" to start up the computer again. If the same message appears, do the Memory Test and call your support person.
<b>Message:</b>	<b>Not enough memory to run.</b>
<b>Cause:</b>	There is not enough memory to run File Manager.
<b>Remedy:</b>	Call your support person.

<b>Message:</b>	<b>Not enough memory to run &lt;application program name&gt;.</b>
<b>Cause:</b>	P.A.M. tried to run the application you indicated, but could not because there is not enough memory available to do so.
<b>Remedy:</b>	Make sure that only one copy of P.A.M. is in memory. Then try booting directly into the MS-DOS command interpreter without P.A.M. Another remedy is to buy more memory.
<b>Message:</b>	<b>Not enough space on disc. No action taken.</b>
<b>Cause:</b>	File Manager tried to create a new file or perform a task that required disc space. Not enough disc space was available.
<b>Remedy:</b>	Use another disc, or delete some of the files on this disc.
<b>Message:</b>	<b>NOT READY ERROR READING DRIVE X.</b>
<b>Cause:</b>	You tried to read from a disc that isn't ready.
<b>Remedy:</b>	Make sure drive X is turned on, a disc is in the drive, and the door is shut. Type R (Retry) and press Return or touch A (terminate operation) and press Return.
<b>Message:</b>	<b>P.A.M. files not found on source disc.</b>
<b>Cause:</b>	One of the following files was not found on the source disc: CONFIG.SYS PAM.BAT PAM.MSG PAMCODE.EXE
<b>Remedy:</b>	You can either: — use a SYS_MASTER disc as the source disc, or — determine which file is missing and copy it onto the source disc.

<b>Message:</b>	<b>Pathname too long.</b>
<b>Cause:</b>	You typed a pathname that was longer than 64 characters.
<b>Remedy:</b>	If the path is longer than 64 characters, type half of it first. When you get the named directory, type the rest of the pathname to the desired file.
<b>Message:</b>	<b>Pod/Driver Types Not Matched.</b>
<b>Cause:</b>	The HP 150 firmware has detected a bad datacommunications port, or the wrong type of datacommunications port for the configuration you set.
<b>Remedy:</b>	Press Return to clear the message. Check your datacommunications port configuration as described in the appendix on configuration. If the problem persists, contact your hardware support person.
<b>Message:</b>	<b>Power-on test failed.</b>
<b>Cause:</b>	The HP 150 firmware tests the system every time you turn it on, and this test failed.
<b>Remedy:</b>	Try starting the system again. If the message appears again, contact your hardware support person.
<b>Message:</b>	<b>Root directory of "To" file full. Unable to open temporary.</b>
<b>Cause:</b>	Your root directory is full; it has 512 files in it (including subdirectories).
<b>Remedy:</b>	Delete one file. Then create a subdirectory. Move some of the files to the subdirectory you have created.

<b>Message:</b>	<b>SEEK ERROR READING DRIVE X.</b>
<b>Cause:</b>	Disc X is improperly formatted.
<b>Remedy:</b>	Reformat this disc (if you don't mind losing the data on it), or use the MS-DOS RECOVER command.
 <b>Message:</b>	 <b>SEEK ERROR WRITING DRIVE X.</b>
<b>Cause:</b>	Disc X is improperly formatted.
<b>Remedy:</b>	Reformat this disc (if you don't mind losing the data on it), or use the MS-DOS RECOVER command.
 <b>Message:</b>	 <b>Selected file(s) not on disc X.</b>
<b>Cause:</b>	In COPY/BACKUP you have indicated that you want to copy files from disc X. The files on disc X, however, do not match the list of files on the screen. You probably took the disc in drive X out after COPY/BACKUP read the file names from it.
<b>Remedy:</b>	Reinsert the disc containing the selected files into drive X. Touch Continue, the Start Copy or Start Backup. ( To copy files from a new disc, touch Continue, Reread Disc, then select files from the new list.)
 <b>Message:</b>	 <b>Since a new directory is unique, the name must be typed in.</b>
<b>Cause:</b>	You attempted to create a new directory by touching an existing directory's name.
<b>Remedy:</b>	Type a different directory name.



**Message:** **Source = Destination.**

**Cause:** An attempt was made to send data from a device to itself.

**Remedy:** If the error occurred while using the printer from a programming language, the MS-DOS prompt, or Local Mode, go to the "to devices" level of function labels and turn off the incorrect device (usually display). If the error occurred while an application program was running, call your support person for that program.

**Message:** **Source and destination directory/disc are the same.**

**Cause:** You are using COPY/BACKUP, and chose the same disc to copy from and to copy to.

**Remedy:** Press Continue, and indicate the different discs for Copy From: and Copy To:.

**Message:** **Syntax incorrect.**

**Cause:** You did not enter the pathname or file name in the way required by the operating system or P.A.M.

**Remedy:** Check for the correct syntax in the User's Manual.

**Message:** **System error.**

**Cause:** File Manager has detected a system error.

**Remedy:** Call your support person.

**Message:** **System test failed.**

**Cause:** The HP 150 firmware has detected an error during the System test.

**Remedy:** Write down any numbers that appeared with this test. Contact your hardware support person.

<b>Message:</b>	<b>The browse failed. Check pathname.</b>
<b>Cause:</b>	You are using File Manager's Browse function, and your command is not working.
<b>Remedy:</b>	Make sure you are using a legal pathname (X:\dir\subdir\file).
<b>Message:</b>	<b>The copy failed. Check pathname.</b>
<b>Cause:</b>	You are using File Manager's Copy, and your command is not working.
<b>Remedy:</b>	Make sure you are using a legal pathname (X:\dir\subdir\file).
<b>Message:</b>	<b>The delete failed. Check pathname.</b>
<b>Cause:</b>	You are using File Manager's Delete, and your command is not working.
<b>Remedy:</b>	Make sure you are using a legal pathname (X:\dir\subdir\file).
<b>Message:</b>	<b>THE DESTINATION DISC IN DISC DRIVE X IS NOT SET UP FOR BACKUP FILES. Do you want to destroy existing data and initialize as a backup disc?</b>
<b>Cause:</b>	The specified destination disc is in MS-DOS or CP/M format and you have pressed the Backup Files key.
<b>Remedy:</b>	If you want to use the disc as a backup disc and delete the files that are already on the disc, touch Yes. If you want to keep the files already on the disc, touch No and use a different disc.
<b>Message:</b>	<b>The directory already exists. No action taken.</b>
<b>Cause:</b>	You are using File Manager to create a directory that already exists.
<b>Remedy:</b>	Choose another name for a new directory.

<b>Message:</b>	<b>The directory cannot be read. Check disc.</b>
<b>Cause:</b>	File Manager cannot read the directory you have indicated. You may have changed discs since this list was generated.
<b>Remedy:</b>	Try to read the directory again. If this does not work, then call your HP support person.
<b>Message:</b>	<b>The directory contains no files.</b>
<b>Cause:</b>	You tried to list the contents of an empty directory.
<b>Remedy:</b>	You can delete an empty directory, or add files to it.
<b>Message:</b>	<b>The drive name plus pathname must not exceed 64 characters.</b>
<b>Cause:</b>	You typed a pathname that was longer than 64 characters.
<b>Remedy:</b>	No remedy. You cannot enter a pathname in the File Manager that is longer than 64 characters.
<b>Message:</b>	<b>The file exists.</b>
<b>Cause:</b>	In File Manager, you tried to name a file with the name of an existing file.
<b>Remedy:</b>	Name the file with a unique file name.
<b>Message:</b>	<b>The file name is a device or volume id.</b>
<b>Cause:</b>	You have used a word reserved by the operating system to designate a device, or volume.
<b>Remedy:</b>	Choose another file name that does not contain a reserved word.

<b>Message:</b>	<b>The file name is a device, directory, or volume id. No action taken.</b>
<b>Cause:</b>	The file name you have chosen is a word reserved by the operating system to designate a device, directory or volume. Reserved words that are embedded in file names are acceptable.
<b>Remedy:</b>	Choose another file name that does not contain a reserved word.
<b>Message:</b>	<b>The file to copy cannot be found. No action taken.</b>
<b>Cause:</b>	The file does not exist, you spelled the file name wrong, or you gave an incorrect pathname.
<b>Remedy:</b>	Enter the pathname correctly and make certain that you have the disc containing the file in the correct disc drive.
<b>Message:</b>	<b>The file to delete cannot be found. No action taken.</b>
<b>Cause:</b>	The file does not exist, you spelled the file name wrong, or you gave an incorrect pathname.
<b>Remedy:</b>	Enter the pathname correctly and make certain that you have the disc containing the file in the correct disc drive.
<b>Message:</b>	<b>The file to print cannot be found. No action taken.</b>
<b>Cause:</b>	The file does not exist, you spelled the file name wrong, or you gave an incorrect pathname.
<b>Remedy:</b>	Enter the pathname correctly and make certain that you have the disc containing the file in the correct disc drive.

<b>Message:</b>	<b>The full pathname must be less than 64 characters.</b>
<b>Cause:</b>	In File Manager, you named a drive/directory/file that was too long.
<b>Remedy:</b>	You cannot have a pathname that is more than 64 characters. Check the pathname again.
<b>Message:</b>	<b>The operation requires two unique file names.</b>
<b>Cause:</b>	You tried to rename or copy a file to the name the file already has.
<b>Remedy:</b>	Provide a new file name for the renamed file or the new copy of the file.
<b>Message:</b>	<b>The parent directory does not exist.</b>
<b>Cause:</b>	In File Manager, you gave a pathname that contains a non-existent directory name.
<b>Remedy:</b>	Find out what the real parent file name is. Touch Choose Dir and supply the directory name “\” to get to the root directory. Look at the list of subdirectories to find out the name and correct spelling of the directory.
<b>Message:</b>	<b>The pathname is not valid.</b>
<b>Cause:</b>	You have named a pathname in File Manager that is not legal.
<b>Remedy:</b>	Be sure you are using back slashes (not forward). Be sure you are typing the names of the directories correctly (8 characters that are legal file name characters, as shown in Chapter 4).
<b>Message:</b>	<b>The print failed. Check pathname.</b>
<b>Cause:</b>	You probably specified the pathname incorrectly.
<b>Remedy:</b>	Make sure you are using a legal pathname (X:\dir\subdir\file).

<b>Message:</b>	<b>The rename failed. Check pathname or disc.</b>
<b>Cause:</b>	You probably specified the pathname incorrectly.
<b>Remedy:</b>	Make sure you are using a legal pathname (X:\dir\subdir\file).
<b>Message:</b>	<b>The root directory cannot be deleted.</b>
<b>Cause:</b>	You are using File Manager, and tried to delete the root directory on a disc.
<b>Remedy:</b>	Do not try to delete the root; it contains all of your applications programs and disc "housekeeping" information.
<b>Message:</b>	<b>The root directory is full. No action taken.</b>
<b>Cause:</b>	You are only allowed 512 files in a directory; you are trying to add 513 with the File Manager.
<b>Remedy:</b>	Regroup your files into subdirectories or delete unneeded files.
<b>Message:</b>	<b>The selected disc is not presently on the system. Please select again.</b>
<b>Cause:</b>	You are using SET UP P.A.M., and chose to alter a disc that is not available.
<b>Remedy:</b>	Be sure the disc you want to use is in the drive, and the drive is turned on. Try again.
<b>Message:</b>	<b>The "To" file already exists as a directory file.</b>
<b>Cause:</b>	In File Manager's Copy command, you tried to name the new copy a name that has already been used for a directory.
<b>Remedy:</b>	Use another name, or delete the directory before naming the file.



**Message:** **The values shown are NOT ACTIVE. Default values are being used.**

**Cause:** You have touched Exit CONFIG without first touching Save Config.

**Remedy:** Touch Save Config, then Exit CONFIG. Reload MS-DOS to make the new values active.

**Message:** **There are no installable applications on X.**

**Cause:** You are attempting to install an application program, but there are no installable application programs on the specified disc.

**Remedy:** It may be that there is no .IN\$ file to go with the application program. Use the File Manager to see if there is an .IN\$ file. If there is not, create one.

**Message:** **There are no installed applications on disc X.**

**Cause:** In SET UP PAM, you are looking at the Choose Disc menu and there are not installed applications on the chosen disc.

**Remedy:** Choose another disc, or insert a new disc, touch Reread Discs and then choose the new disc.

**Message:** **There are no installed applications to run. Press Help for more information.**

**Cause:** No applications have been installed on the checked discs.

**Remedy:** Install applications according to the directions in the Applications chapter or put in the disc that has the installed applications.

<b>Message:</b>	<b>There are no removable applications on X.</b>
<b>Cause:</b>	You are attempting to remove an application program, but there are no removable application programs on the specified disc. No application programs are displayed on the Show Apps display.
<b>Remedy:</b>	No remedy; you cannot remove nonremovable application programs.
<b>Message:</b>	<b>There are no selected applications. Select the applications to be installed. Touch Start Install.</b>
<b>Cause:</b>	You are using the INSTALL Application program, and pressed START INSTALL before you pressed an application name on the screen.
<b>Remedy:</b>	Press the name of the application you want installed or removed, and press START INSTALL.
<b>Message:</b>	<b>There's no operating system on the source disc, so no files were transferred.</b>
<b>Cause:</b>	The source disc did not contain the MS-DOS system files.
<b>Remedy:</b>	Use the Sys_Master disc as the source disc.
<b>Message:</b>	<b>This disc has files. Do you want to destroy them? Type Y or N; press Return.</b>
<b>Cause:</b>	You are trying to clear or format a disc that has files on it.
<b>Remedy:</b>	If you don't want to destroy the information on the disc, then type N (No), press Return, and remove the disc. If you want to destroy the information on the disc, then type Y (Yes) and press Return. The formatting or clearing process will then begin.

<b>Message:</b>	<b>This is not an HP 150 disc, so it must be reformatted rather than cleared.</b>
<b>Cause:</b>	You are trying to clear a disc other than an HP 150 disc.
<b>Remedy:</b>	CLEAR will not work with other HP discs or discs from other companies. If you want to remove all of the files from this disc then you must format it instead.
<b>Message:</b>	<b>This program cannot be used with this version of the operating system.</b>
<b>Cause:</b>	You have attempted to run a program designed to run on a different version of MS-DOS.
<b>Remedy:</b>	Use the Device Configuration program that goes with your current version of MS-DOS.
<b>Message:</b>	<b>Too many files open.</b>
<b>Cause:</b>	The File Manager has determined that the MS-DOS open file tables are full, probably because File Manager was run from an application program that has opened several files.
<b>Remedy:</b>	Exit from the application program and run File Manager from P.A.M.
<b>Message:</b>	<b>Unable to access selected disc. Check drive id and disc.</b>
<b>Cause:</b>	You identified the disc incorrectly or the disc is not in the disc drive.
<b>Remedy:</b>	Check the location of the disc and the disc drive's identification letter.

<b>Message:</b>	<b>Unable to save new configuration.</b>
<b>Cause:</b>	You pressed SAVE CONFIG in the MS-DOS Configuration program, and the information could not be written and successfully read back from memory.
<b>Remedy:</b>	Change the batteries in the HP 150, and try again.
<b>Message:</b>	<b>Use NEXT or PREVIOUS key. Press RETURN to clear.</b>
<b>Cause:</b>	You tried to type characters into a next/prev type of configuration field in a configuration menu.
<b>Remedy:</b>	Press Return to clear the message. Position the cursor at the field you want to change. Then touch NEXT CHOICE or PREV CHOICE.
<b>Message:</b>	<b>Value out of range. Press RETURN to clear.</b>
<b>Cause:</b>	You are using the HP 150 configuration menus, and entered a value for a field that is either too great or too small for the field.
<b>Remedy:</b>	Press Return to clear the message. Retype the entry, using a valid entry as described in the appendix on configuration.
<b>Message:</b>	<b>Version n of &lt;application program name&gt; already exists on X. Touch Continue Install to overwrite. or Touch Continue Install to overwrite or Skip To Next to install next application.</b>
<b>Cause:</b>	A version of the application program to be installed already exists on the installation disc.
<b>Remedy:</b>	Touch Continue Install to overwrite the existing application program, touch Skip To Next to install the next program in your installation list, or touch Stop Install to return to the previous menu.

<b>Message:</b>	Version n of <application program name> exists as <application program name> on X. Press Continue Install to overwrite.
	or
	Press Continue Install to overwrite or Skip To Next to install next application.
<b>Cause:</b>	A version of the application program already exists in the same directory, but it has a different name.
<b>Remedy:</b>	Touch Continue Install to overwrite the existing application program, touch Skip To Next to install the next program in your installation list, or touch Stop Install to return to the previous menu.
<b>Message:</b>	<b>Warning: Configuration has been changed and not saved.</b>
<b>Cause:</b>	In the MS-DOS Configuration program, you pressed Exit Config after you changed some of the values.
<b>Remedy:</b>	This is only a warning. If you want to permanently change the menu to reflect the changes, press Save Config then Exit Config. Otherwise, press Exit Config.
<b>Message:</b>	<b>Warning: Disc drive A: is not assigned to Op Sys Dev in GLOBAL CONFIGURATION.</b>
<b>Cause:</b>	In MS-DOS Config, you pressed Save Config when Op Sys Dev was not set to A: (usual state). There are three entries that must be set: Op Sys Dev, Op Sys Dev address, and Drive A. The address should match the number following HP-IB in the Op Sys Dev field, and the drive A: value would be zero.
<b>Remedy:</b>	This is only a warning. Press Save Config again to override the warning, or change the Drive A or Op Sys Dev entry in the Global Configuration menu.

<b>Message:</b>	<b>WARNING — DUPLICATE FILENAMES:</b> The filenames displayed below are duplicates. Do you want to replace old files on destination disc with new ones?
<b>Cause:</b>	The names of the files that you have chosen to copy from the source disc are the same as the names of files already on the destination disc. If the copy is allowed to continue, the files having the same names on the destination disc will be deleted and replaced with the files from the source disc.
<b>Remedy:</b>	If you want to copy over the files with the same names on the destination disc, touch Yes. If you want to keep the files on the destination disc, touch No.
<b>Message:</b>	<b>***WARNING: Unable to display all files on disc X:.</b>
<b>Cause:</b>	The specified source directory contains more than 512 files.
<b>Remedy:</b>	COPY/BACKUP cannot display more than 512 files at one time. In order for COPY/BACKUP to access the extra files they must be moved into a sub-directory.
<b>Message:</b>	<b>WRITE PROTECT ERROR WRITING DRIVE X.</b>
<b>Cause:</b>	You tried to store a file on a flexible disc that is write-protected.
<b>Remedy:</b>	If the disc is 3½", move the small plastic tab in the lower corner down or put tape over the hole. If the disc is a 5¼" disc, remove the write protect tab from the square hole. If it is an 8" disc, put a tab on the round hole. Replace the disc in the drive, type R (for Retry), and press Return.



<b>Message:</b>	***Wrong source disc; expected disc X:.
<b>Cause:</b>	You are using COPY/BACKUP, and restoring a backup of more than one disc. The discs are data stamped, and numbered in the order that you backed them up. The disc you are using is either in the wrong order, or the date on it doesn't match the first disc.
<b>Remedy:</b>	Press Continue, and insert the correct disc into the drive. Try again.
<b>Message:</b>	<b>You must allocate memory for the RAM Disc.</b>
<b>Cause:</b>	You have assigned the RAM disc as one of your devices, but you have neglected to specify the RAM disc size.
<b>Remedy:</b>	Enter the MS-DOS Configuration menu, specify the RAM disc size, save the new configuration, and reload MS-DOS.

**Message:** You must reload MS-DOS to change the Maximum Sector Size from <old sector size>.

**Cause:** The old sector size is still active.

**Remedy:** Reload MS-DOS.

**Message:** You must reload MS-DOS to change the RAM Disc Size from <old size>.

**Cause:** You have specified a changed RAM disc size but the old RAM disc size is still in effect.

**Remedy:** Reload MS-DOS.

# IMPORTANT NOTICE TO USERS

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## CAUTION

You should not attempt to remove or change discs while you are running utility or application programs on your system. Specifically, you should never remove or change discs while the red disc access light is lit, or while the application or utility program is processing information. If you do, you risk losing data from one or more discs.

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Most applications will let you know when to remove or change discs; if you should inadvertently remove a disc from its drive while a utility or application program is in process, however, HP has provided you with a safe procedure for recovering without losing data.

When a disc is removed from its drive at the wrong time, you will see an error message indicating that a

*Disc error . . .*

has occurred. Other information may follow the words "Disc error."

To recover, you can perform one of the two following steps:

1. Place the SAME disc back in the SAME drive, and follow instructions on the message line on your screen. This will allow you to continue the operation you were performing without losing any data.
2. If you are not sure which disc you removed from the drive, stop the operation by pressing the appropriate keys to return to the application's main menu, and start over.

In some cases, you will see a message similar to the following:

```
Disc error while <reading>/<writing> on drive <d:>
Abort, Retry, Ignore:
```

To recover, you can perform one of the two following steps:

1. Put the SAME disc back in the SAME drive and type "R" for Retry. This will allow you to continue the operation you were performing without losing any data.
2. If you are not sure which disc you removed from the drive, enter "A" for Abort, then start the operation over.

Do not type "I" for Ignore; you should respond either by Retrying or by Aborting the procedure.

## **Additional Assistance**

If you have questions which are not answered here, call your dealer or Hewlett-Packard for phone-in software assistance.

### **Call Your Dealer**

If your system has been purchased from a dealer or system house, they have worked with you to define your application and configure your system. In this case, your dealer is the best source of assistance, as he knows your needs and your configuration.

If your dealer is designated as a Personal Computer Dealer Repair Center, you may contact them for hardware repair.

### **Call a Toll-Free Number at Hewlett-Packard**

To provide answers to your questions, HP's Phone-In Software Assistance is available to you at no charge. You call a Phone-In Software Assistance Center in your region or country; a coordinator evaluates the question and arranges for the appropriate HP support representative to call you.

Here's how to obtain your Personal Computer Phone-In Software Assistance number:

- In the U.S., call toll-free 800-for-HPPC. You will then be given the toll-free telephone number for your area.
- Outside the U.S., call your dealer or your local HP office to obtain the number for your country.

If your hardware should fail, refer to the Support Guide shipped with this manual for information on obtaining service during or after warranty. The Guide includes the Series 100 Hardware Warranty, a Repair Information Form and a directory of Hewlett-Packard Field Repair Centers.

If you need further assistance call your local Hewlett-Packard Sales and Service Office.

# Glossary

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<b>Access</b>	To locate and retrieve information from the computer's memory.  Typical access time for a microcomputer like the one you are presently using is a few microseconds.
<b>Accessory Card</b>	An accessory card is a printed circuit board that fits into the main board and extends the computer's capabilities.
<b>Accessory Slot</b>	An accessory slot is a slot in the main board where an option card can be plugged in.
<b>Acoustic Coupler</b>	A hardware device that allows the computer to send and receive data over telephone lines.  This term is sometimes used to refer to the entire modem.
<b>Address</b>	"Where a bit has its mail sent."  A number that identifies the exact location of information stored in the computer's memory.
<b>Application Program</b>	A software program written to solve a specific problem or accomplish a specific task, for example: spreadsheets, word processing, business graphics, database management, communications, scheduling.

<b>ASCII</b>	Acronym for American Standard Code of Information Interchange. ASCII is a code that represents upper and lower case characters, numbers, and special symbols in binary code. The ASCII code is standardized so that computers can talk to each other.
<b>Assembly Language</b>	Assembly language is a low level computer language that resembles the electronic code of the computer while allowing the use of mnemonic instructions.
<b>Backup</b>	"Data processing's cheapest insurance." A backup is a duplicate copy of a disc made in case the original is lost or damaged.
<b>BASIC</b>	Acronym for Beginners All-purpose Symbolic Instruction Code. BASIC is the most common high level programming language for personal computers.
<b>Baud</b>	"A bit on the fast side." Baud is a measure of the speed at which bits travel between a computer and a peripheral device, or between two computers.
<b>Binary</b>	The native language of all computers. Binary is a number system that uses only two numerals, 0 and 1, to represent any character or symbol.
<b>Bit</b>	Acronym for Binary Digit, either a 0 or a 1. A bit represents an "on" or "off" electrical condition, and is therefore the smallest unit of information that can exist.
<b>Board</b>	A board is a fiberglass or pressed paper sheet used for mounting the microcomputer's electronic circuits and integrated circuits.

<b>Booting</b>	The computer “picking itself up by its own bootstraps”.  Booting up your computer puts it in a ready-to-run condition. Your bootstrap program, which is often called an operating system, is stored in memory and automatically activates other software.
<b>Buffer</b>	A temporary part of the computer’s memory where data is held until it can be transmitted or processed.
<b>Bug</b>	A bug is a flaw in the software or in the hardware which stops the computer from working correctly, if at all.  This term was first coined from early computer days when a singed butterfly was found to have caused a malfunction in the Mark I computer.
<b>Byte</b>	A set of eight bits.  A byte is used to represent one character; a single letter, number, or other symbol.
<b>Cable</b>	Cables are connectors between computers and peripherals (printers, plotters, disc drives). The HP 150 uses 2 kinds of cables: 1) HP-IB cables are used with only HP equipment, 2) RS-232 cables are used with all personal computers.
<b>CAI</b>	Acronym for Computer Assisted Instruction.  Using the computer as a teaching tool involves a two-way conversation between the student and the computer. The computer informs the student of the right and wrong answers as he makes them, and provides feedback regarding the student’s progress.
<b>Character</b>	A symbol such as a number or letter, that can be shown on a screen or typed on a keyboard.  In a small computer, a character is usually represented by 8 bits (one byte).

<b>Chip</b>	The seed of micro-technology. A chip is a slice of silicon imbedded with thousands of microscopic electronic circuits. Chip is a nickname for integrated circuit. Typical chips used in microcomputers are: RAM, ROM, PROM, EPROM
<b>COBOL</b>	Acronym for COmmon Business Oriented Language. Cobol is a high level programming language used primarily for business applications.
<b>Compiler</b>	A compiler is a software program that translates programs written in high level language (source code) into a lower level language (object code) which the computer can then execute.
<b>Computer</b>	A main frame, a minicomputer, or a microcomputer. A computer is any device that can receive and then follow instructions to manipulate data.
<b>CPU</b>	"The brain of the computer." Acronym for Central Processing Unit. The CPU controls all operations and does the actual calculations by collecting, decoding, and executing instructions.
<b>Crash</b>	System failure caused by a hardware breakdown or software error.
<b>CRT</b>	Acronym for Cathode Ray Tube. A CRT is the video screen with which the computer communicates with you.
<b>Cursor</b>	A position indicator on the screen. The cursor is the flashing rectangle or thin line of light on the screen that indicates where the next character will be inserted or deleted.
<b>Daisy Wheel Printer</b>	A type of printer that prints characters by striking metal or plastic character images against a ribbon.

<b>Data Communications</b>	Transmitting information from one computer/terminal to another.
<b>Data Transfer</b>	Sending data from one (part of a) system to another.
<b>Debug</b>	The process of finding and correcting errors in a program.
<b>Default Directory</b>	The directory the HP 150 assumes you want to use if you don't name one. (This is always the root directory if you haven't created subdirectories.)
<b>Directory</b>	<p>A group of files on a disc.</p> <p>The table of contents or index to a group of files stored on a disc. A directory can be referred to as a root directory, default directory, or subdirectory.</p>
<b>Disc Application</b>	<p>A program that assists in the operation of the computer.</p> <p>Disc application programs generally perform housekeeping functions such as copying and sorting, and are usually supplied as standard software that is packaged with the computer.</p>
<b>Disc</b>	<p>A microcomputer's storage unit.</p> <p>A disc is a circular plate of magnetically coated material used to store computer information.</p> <p>A disc may be either floppy (flexible) or hard (fixed).</p>
<b>Disc Drive</b>	A disc drive is a device which allows a computer to read data from (or write data to) a flexible or fixed disc.
<b>Display</b>	The video screen with which the computer communicates with you.
<b>Display Memory</b>	Memory used to display information on the screen. The HP 150 has 54 lines available for the screen display (2 pages).

<b>DOS</b>	Acronym for Disc Operating System. DOS is a program that controls the communication between the microcomputer, the disc drive, and other peripheral units.
<b>Dot-Matrix Printer</b>	A type of impact printer that prints characters as a set of fine dots within a grid of rows and columns, called a matrix.
<b>Drives</b>	Disc drives read information from discs. An open slot indicates that a drive reads information from flexible discs. Grillwork indicates a fixed disc inside. Disc drives are labeled with letters and colors (A: B: C:).
<b>Electronic Mail</b>	The use of a computer to send and receive letters.
<b>Emulator</b>	An emulator is a combination of hardware and/or software that allows one computer to accept software developed for a different computer.
<b>EPROM</b>	Acronym for Erasable Programmable Read-Only Memory. An EPROM chip is a memory chip that can be programmed, erased, and reprogrammed.
<b>File</b>	A file is a collection of related records located together on a disc, or other memory device, and given a common name or label.
<b>Firmware</b>	A cross between hardware and software. Firmware is a computer program that is permanently stored in memory—usually on a ROM (Read-Only Memory) chip.

<b>Fixed Disc</b>	Large capacity disc that holds either 5 mb, 10 mb, or 15 mb of information; this disc is fixed inside a disc drive.
<b>Function Keys</b>	Special keyboard keys labeled f1, f2, f3, ..., f8 that correspond to the lighted labels on the bottom of the screen.
<b>Formatting</b>	The process by which a disc is prepared to receive and store data. Formatting is usually done by a special formatting or initialization program.
<b>FORTRAN</b>	Acronym for FORmula TRANslatiOn. FORTRAN is a high level computer language built around mathematical equations, used mainly for engineering and scientific work.
<b>Handshake</b>	A greeting between computers. When one computer transmits data to another each transmission is ended with an electronic code that means "Did you get that OK"? The other machine answers with a signal that means "Yes I did, what's next?"
<b>Hardcopy</b>	A paper copy or printout of information.
<b>Hard Disc</b>	A disc made from a rigid, ceramic-like material with a magnetic coating. Hard discs are enclosed permanently in dustfree, sealed cases, and are faster, more reliable, and have a larger memory storage capacity than floppy discs.
<b>Hard Reset</b>	Restarting the computer by turning it off and then on again, or by pushing <b>CTRL</b> <b>Shift</b> <b>Reset</b> .
<b>Hardware</b>	The physical parts or equipment of the computer system.
<b>High Level Language</b>	Any programming language in which statements resemble normal human language. Some common high level languages are: BASIC, COBOL, FORTRAN, Pascal.



<b>IBM 3740 Format</b>	A single-sided, single-density format on 8 inch flexible discs that allows you to exchange data with IBM mainframes in many cases.
<b>Initialize</b>	Establish basic conditions for use. Format.
<b>Input</b>	The data or instructions that are put into the computer, or the process of entering data or instructions into the computer.
<b>Install</b>	Process of putting an HP application on a disc other than the master disc.
<b>Interface</b>	A link or connection between the computer and other hardware or software. Interfaces are composed of hardware and/or software.
<b>Interpreter</b>	A program that acts as a translator. An interpreter translates high level language into machine language, which the computer can recognize and execute. Interpreters are more convenient but less efficient than compilers.
<b>K</b>	Abbreviation for Kilobyte, a unit of measurement for memory storage. One Kbyte is equal to 1,024 bytes. Therefore, a 64K memory equals 65,536 bytes of stored data.
<b>Kilobyte</b>	More commonly referred to as K.
<b>Language</b>	A computer language is designed to tell a computer what it is to do, and how to perform a specific task. Programs can be written in either high level or low level languages.  High level: COBOL, BASIC, FORTRAN, Pascal Low level: Assembly language Machine language
<b>Load</b>	To read data or programs into a computer.

<b>Local Mode</b>	In local mode, the HP 150 is neither a computer nor a terminal. Local mode is useful for printing the contents of the screen.
<b>Low Level Language</b>	A computer language that is closer to the microprocessor's native language of electrical signals and binary codes than to human language. Low level languages are more efficient and faster than high level languages.
<b>M</b>	More commonly known as a Megabyte.
<b>Machine Language</b>	Instructions written in the computer's "native language" of binary code (1's and 0's), which the computer is able to recognize and execute without the assistance of an interpreter or compiler.
<b>Main Frame</b>	A large computer, for example, the HP 3000. Though a personal computer and a mainframe have roughly the same speed and internal memory capacity, a main frame has the potential to serve many users as well as peripherals such as printers and external memory devices.
<b>Master Disc</b>	Discs shipped from HP with your original copies of application programs and the operating system on them.
<b>Megabyte</b>	One million bytes, more or less. Actually a megabyte, abbreviated Mbyte or M, is 1,048,576 bytes.
<b>Memory</b>	The size of the computer's brain. Memory is the combination of chips and/or discs in which data is stored in the form of binary codes. Memory is measured in K (Kilobytes) or M (Megabytes). You have at least 256K of memory in your HP 150, and as much as 640K.

<b>Menu</b>	A table of contents. Menus are used in many software programs to allow the user to choose the program options available.
<b>Microcomputer</b>	Also known as a personal computer. A microcomputer is usually small, inexpensive, and designed to serve one user at a time.
<b>Microprocessor</b>	A computer on a chip. A microprocessor is a single chip which can interpret and execute instructions, perform arithmetic calculations, and retain information in its memory.
<b>Minicomputer</b>	An intermediate sized computer, for example, the HP 1000. Although a microcomputer and a minicomputer have roughly the same speed and internal memory capacity, a minicomputer can serve multiple users, and often has large capacity hard discs.
<b>Mode</b>	(See Remote Mode, Local Mode)
<b>Modem</b>	Acronym for MODulator/DEModulator A modem is a peripheral device that allows a computer to communicate over telephone lines. There are two types of modem: Acoustic Coupler, designed to hold a telephone headset on special outlets; and Hardwired, where the modem is part of the system's electronics with no external connections.
<b>MS-DOS</b>	Acronym for MicroSoft-Disc Operating System. MS-DOS is a popular single-user/multitasking operating system developed by Microsoft Corp.
<b>Number Crunching</b>	Using the computer to perform complicated numerical and arithmetic operations.

<b>Object Code</b>	Object code is a program written in machine language and which is directly executable. Object code is generally produced when source code is compiled.
<b>On-Line</b>	Directly connected to the computer system. For example, a printer is on-line when it is used to print out computer data.
<b>Operating System</b>	The computer's housekeeper and manager. An operating system is software that controls the computer's operations, from the way the computer accepts data to the way it directs peripherals. Your operating system is MS-DOS.
<b>Output</b>	Information processed by the computer and displayed to the terminal, printer, or other similar peripherals.
<b>P.A.M.</b>	The Personal Applications Manager lists a menu of the available programs currently on the HP 150.
<b>Parity</b>	A count performed to check data in computer operations.
<b>PASCAL</b>	A high level programming language. Pascal is a general purpose programming language, which features English-based commands and an easily adapted structure. Pascal takes its name from the 17th century French mathematician and philosopher, Blaise Pascal.
<b>Path</b>	The name that indicates the location of a file. A file at the root directory of disc A: would be A:filename. A file at the subdirectory Tuesday on disc A: would be A:\Tuesday\filename.

<b>Peripheral</b>	Hardware that is external to and controlled by the computer.  Peripherals are so called because they are not part of the computer. Nevertheless, you can't use a computer without them. Commonly used peripherals include: disc drives, hard discs, keyboards, modem, printers.
<b>Port</b>	An electrical outlet.  A port is the point where the electrical connection is made between the microcomputer and a peripheral.
<b>Printer</b>	A peripheral device that produces hardcopies of computer data.  There are two basic types of printers: Dot-matrix: high speed, low quality; and Daisywheel: high quality, low speed.
<b>Program</b>	A set of instructions or steps telling the computer how to handle a problem or task.  Programs are also known as software.
<b>PROM</b>	Acronym for Programmable Read-Only Memory.  A PROM chip contains programs which are permanently encoded in the microcomputer, and which cannot be altered by the user.
<b>RAM</b>	Acronym for Random Access Memory.  A RAM chip contains information which is temporarily stored in the microcomputer. Unlike ROM, information stored in RAM is erased when the computer is turned off.
<b>Remote Mode</b>	When an asterisk appears in <b>Remote Mode 1</b> , the HP 150 is either a computer or terminal, depending on the Global Configurative setting Power-up.

<b>ROM</b>	Acronym for Read-Only Memory. A ROM chip contains information which is permanently stored in the microcomputer. Unlike RAM, information in ROM does not disappear when the computer is turned off, and can never be erased by the user.
<b>Root Directory</b>	A disc always contains a root directory—this directory is created when a disc is formatted. You can create subdirectories of the root directory.
<b>Sector, Disc</b>	A triangular section of a disc surface. Sector addresses are established by the FORMAT program.
<b>Soft Reset</b>	Restarting the computer without turning the computer off and back on again. To soft reset your personal computer, press two keys simultaneously: the <b>Shift</b> key and the <b>Reset</b> key.
<b>Software</b>	A computer program or set of programs. This term was coined to contrast with hardware, which is the physical equipment and circuitry of a computer.
<b>Source Code</b>	A program written in high-level programming language. Source code can be understood by the computer only after it has been compiled into object code.
<b>Spreadsheet</b>	A visual calculator. An electronic spreadsheet is a software program, such as VisiCalc, that models a page of an accounting ledger. Because of the simplicity and flexibility of this program, it is widely used in scientific, medical, and mathematical, as well as financial applications.
<b>Storage Unit</b>	Storage unit is the general term for any memory device capable of holding data to be retrieved later.

<b>Strap</b>	Settings formerly done by placing jumpers on pins. These settings are now done in configuration menus.
<b>Subdirectory</b>	A subgrouping of files on a disc. You can have a subdirectory of a root directory, and a subdirectory of a subdirectory.
<b>System Functions</b>	Some functions are built into the HP 150, and appear as lighted labels on the bottom of the screen.
<b>Terminal</b>	A point of communication with a computer. A terminal usually consists of a keyboard, a screen and printer. The terminal is used to communicate with a computer which may be at another location.  The HP 150 can be used as a terminal.
<b>Wildcard</b>	A wildcard is a symbol (*) or (?) used in place of characters when naming a file(s). A * means "any characters". A ? means "any <i>one</i> character".
<b>Work Disc</b>	A disc containing a copy of a Master Disc.
<b>Write Protect</b>	A method of preventing information from being erased from or written onto a disc.  To write-protect a 3½" disc, remove the tab from the backside and insert it into the slot provided.

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