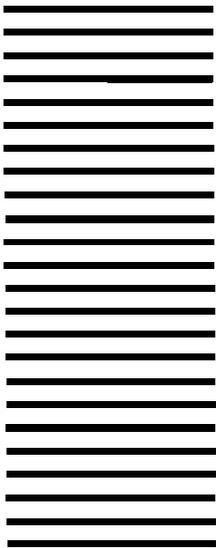




EQUITY™ Ie

User's Guide



EPSON®



EPSON[®]

EQUITY[™] I_e

User's Guide

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This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna
- Relocate the computer with respect to the receiver
- Move the computer away from the receiver
- Plug the computer into a different outlet so that the computer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"Television Interference Handbook"

This booklet is available from the U.S. Government Printing Office, Washington DC **20402**. Stock No. 004-000-00450-7.

Note: If the interference stops, it was probably caused by the computer or its peripheral devices. To further isolate the problem:

Disconnect the peripheral devices and their input/output cables one at a time. If the interference stops, it is caused by either the peripheral device or its I/O cable. These devices usually require shielded I/O cables. For Epson peripheral devices, you can obtain the proper shielded cable from your dealer. For non-Epson peripheral devices contact the manufacturer or dealer for assistance.

WARNING

This equipment has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 of FCC Rules. Only peripherals (computer input/output devices, terminals, printers, etc.) certified to comply with the Class B limits may be attached to this computer. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

The connection of a non-shielded equipment interface cable to this equipment will invalidate the FCC Certification of this device and may cause interference levels which exceed the limits established by the FCC for this equipment.

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Introduction

Your Epson® Equity™ Ie personal computer is both powerful and easy to use. The Equity Ie is available in these three models:

- A single diskette drive system with one 3½-inch 720KB (kilobyte) diskette drive
- A dual diskette drive system with two 3½-inch 720KB diskette drives
- A hard disk drive system with one 20MB (megabyte) hard disk and one 3½-inch 720KB diskette drive.

All models include 640KB of internal memory, four option slots, built-in serial and parallel interfaces, and a mouse interface.

The interfaces and option slots allow you to connect and install a wide variety of optional devices. For example, you can connect a printer, a modem, or a mouse to the computer, or you can install a memory expansion card or other option card. You can use just about any option card designed for the IBM® Personal Computer and PC XT™ on the Equity Ie. You may also want to install an optional 8087 math coprocessor to speed up calculations on your computer. Check with your Epson dealer to find out which options you can use.

Besides your Equity Ie, you probably also have either a color or monochrome VGA (video graphics array) monitor or another type of monitor to use with it. The Equity Ie features a built-in video controller for either of the VGA monitors, so you do not need to install a separate video adapter card. If you are using a non-VGA monitor, you can install a video card in one of the computer's option slots.

The Equity Ie automatically determines the configuration you have and sets its system parameters accordingly. This makes it easy to set up your computer or add options because you do not have to run any special setup programs or set any switches.

Your Equity Ie comes with version 3.3 of MS-DOS®-the operating system by Microsoft?-and version 3.2 of the GW-BASIC® programming language. You'll find reference manuals for both MS-DOS and GW-BASIC packed in the box with the computer. You probably also purchased other software to use with your computer; you can use virtually any application program designed for the IBM PC or PC XT on your Equity Ie.

In addition to MS-DOS and GW-BASIC, Epson has also included several time-saving utilities that make MS-DOS easier to use: HELP MENU, and XTREE®. The HELP program lets you display information on the screen about any MS-DOS command. MENU provides an easier way to run many of the most common MS-DOS commands. XTREE is a file management utility that simplifies all file and directory operations.

How to Use This Manual

This user's manual explains how to set up and care for your Equity Ie. It also describes how to use your computer and run diagnostic checks.

You probably do not need to read everything in this book; some sections may describe an option you do not have. In fact, if you are already familiar with computers, you may need to read only Chapters 1 and 3, and Chapter 2 if you have the hard disk model.

The nine steps in Chapter 1 explain how to set up your computer and prepare it for use. On the inside back cover are illustrations identifying the different parts of the computer; you may want to refer to this as you set up the computer.

If you have the hard disk model, you must follow the instructions in Chapter 2 to prepare the hard disk before you can use it. If you don't have a hard disk, skip Chapter 2.

Chapter 3 describes general operating procedures and explains how to use and care for your disks and disk drives.

Chapter 4 provides basic instructions for using MS-DOS with your computer.

If you want to install or remove an option card, see Appendix A.

If you encounter any problems while using your computer, check the troubleshooting guidelines in Appendix B.

Appendix C provides information on the power-on diagnostics, which you can read if your computer has trouble starting up. Appendix D outlines the system diagnostics checks you can perform on your computer. If you are having trouble with any part of the hardware, you may want to run some or all of these diagnostic checks. Appendix E lists the Equity Ie hardware specifications. Appendix F describes how you do a hardware level format of a hard disk that either you or your dealer install in the Equity Ie.

At the back of the manual is a glossary of computer terms used in this manual. Check the glossary whenever you need to look up an unfamiliar word.

Where to Get Help

Customer support and service for Epson products is provided by a network of authorized Epson dealers and service centers throughout the United States. Epson America provides product information and toll-free support to our dealers and service centers.

Therefore, we ask that you contact the business where you purchased your Epson product to request assistance. If they do not have the answer to your question, they can obtain it through our toll-free dealer support program.

We are confident that this policy will provide you with the assistance you need. If you need to find an Epson dealer or service center in your area, please call our Consumer Information number at 1-800-922-8911.

Chapter 1

Setting Up Your System

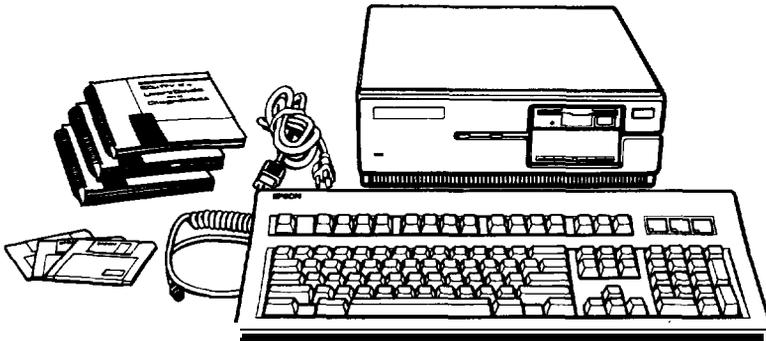
Setting up your Epson Equity Ie computer is easy. Just follow the steps in this chapter. They describe how to set up your computer, start MS-DOS, and copy the system diskettes that come with your Equity Ie. At the back of this manual you'll find a foldout showing the front and back panels of the computer.

Do not turn on the computer, printer, or any peripherals until the instructions tell you to. Otherwise, you may damage some part of your equipment.

If you have the hard disk model, go on to Chapter 2 when you complete the steps in this chapter.

1 Unpacking

As you remove the different components of your system from their cartons, be sure to inspect each piece. If anything is missing or looks damaged, consult your Epson dealer.



Besides this manual, you should have the following items:

- The main unit
- The power cord
- The keyboard and attached cable
- Three diskettes: Startup/Operating 1, Operating 2, and Reference
- An MS-DOS manual and a GW-BASIC manual.

In addition, you may have purchased a compatible monitor.

You'll also find a registration card with the main unit. Fill out this card now and mail it to Epson. With your registration card on file, Epson can send you update information.

Be sure to keep your packing materials. They provide the best protection possible for your computer if you need to move or ship it later.

2 **Choosing a Location**

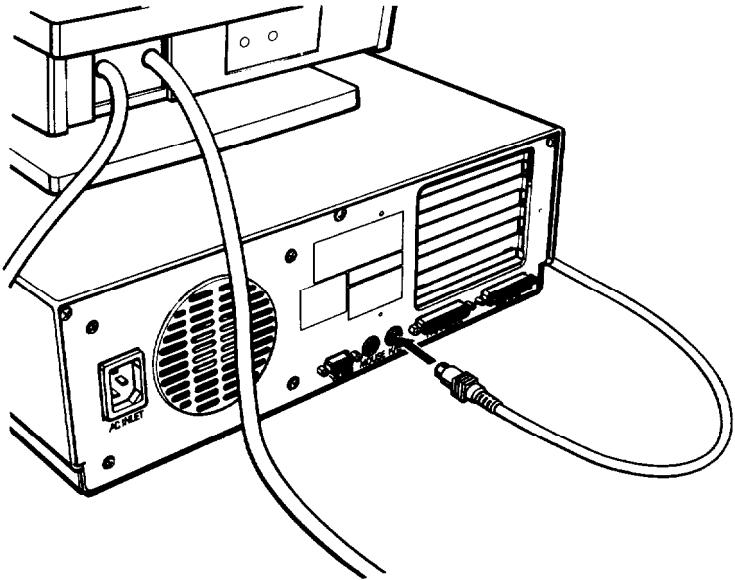
Before you set up your new system, choose an appropriate place. Whether you use your computer at home or in the office, you need to find a comfortable, convenient location where it can run properly. Choose a location that provides the following:

- A large, sturdy desk or table. Make sure it can easily support the weight of your system and its components.
- A flat, hard surface. Soft surfaces like beds and carpeted floors attract static electricity, which erases data on your disks and can damage the computer's circuitry. Soft surfaces also restrict ventilation.
- Good air circulation. Air must be able to move freely under the system as well as behind it. Leave several inches of space around the computer to allow proper ventilation.
- Moderate environmental conditions. Protect your computer from extremes in temperature, humidity, static electricity, dust, and smoke.
- Avoid direct sunlight or any other source of heat. High humidity also hinders operation, so select a cool, dry area.

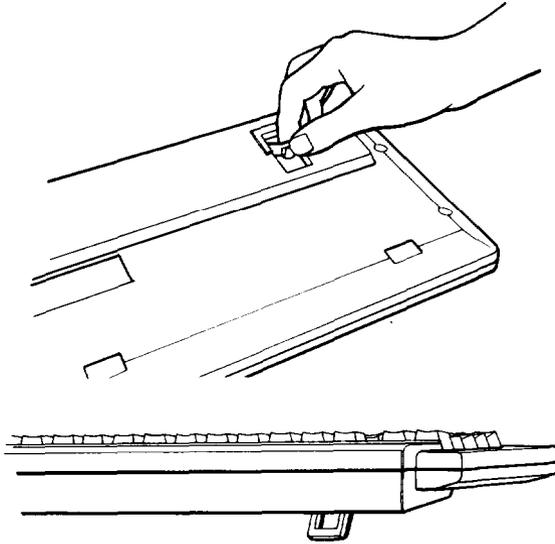
- Appropriate power sources. To prevent static charges, connect all your equipment to 3-prong, 120-volt grounded outlets. You need one outlet for the main unit, another for the monitor, and additional outlets for a printer and any other peripherals.
- No electromagnetic interference. Locate your system away from any electrical device that generates an electromagnetic field. Even a telephone can cause trouble, especially if you keep diskettes right next to it.

3 Connecting the Keyboard

Plug the keyboard cable into the keyboard socket in the back of the main unit, as shown in the following illustration. Since the mouse socket and the keyboard socket are the same size, be sure you insert the cable into the socket labelled K/B. Do not force the connector, but be sure it is inserted



You can change the angle of the keyboard by adjusting the legs on the bottom. To adjust the legs, turn the keyboard over and lift each leg upward until it locks into place. You can adjust the legs to two different positions, or leave them flat.

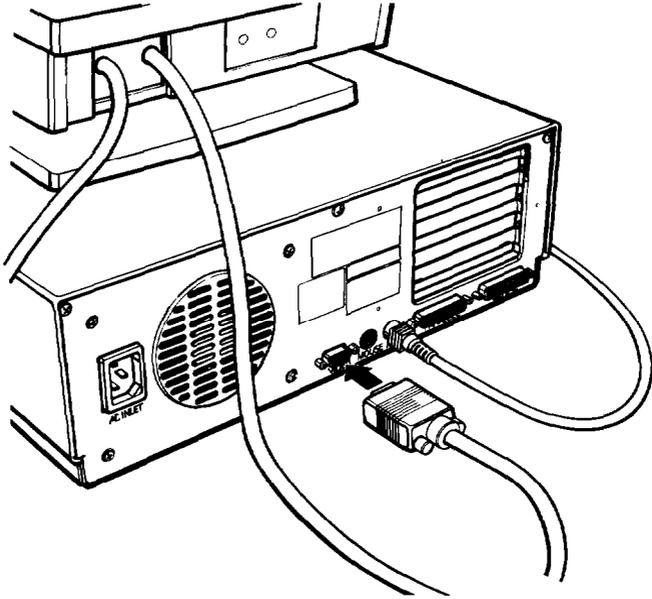


4 Connecting a Monitor

The way you connect your monitor to the main unit depends on the type of monitor you have. See your monitor manual for detailed instructions or follow the general guidelines below.

1. Place your monitor on top of or near the Equity Ie main unit. It is easiest to connect the monitor cable if the backs of the monitor and main unit face you.
2. Make sure the power switch on the monitor is turned off.
3. If necessary, connect the monitor cable to the monitor. (Most monitors come with permanently attached cables.)

4. Connect the appropriate end of the monitor cable to the connector labelled VIDEO at the back of the main unit, as shown in the following illustration. If the plug has retaining screws, tighten them by hand or with a screwdriver, depending on the screw type.



The monitor cable plug must match the connector in the main unit. Make sure the monitor cable has a 15-pin, D-shaped male connector.

5. Plug the monitor's power cable into the power inlet on the monitor if it is not already attached. Plug the other end into an electrical outlet.

5 Connecting a Printer

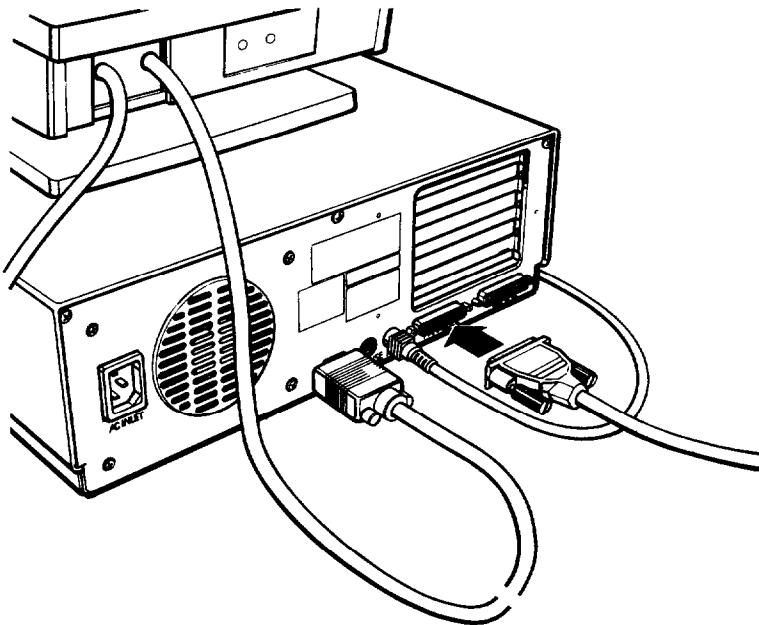
The Equity Ie has both parallel and serial interfaces. You can easily connect a printer or plotter that has either type of interface—just follow the instructions below. Epson offers a full range of printer products. Consult your dealer for more information.

Connecting to the parallel interface

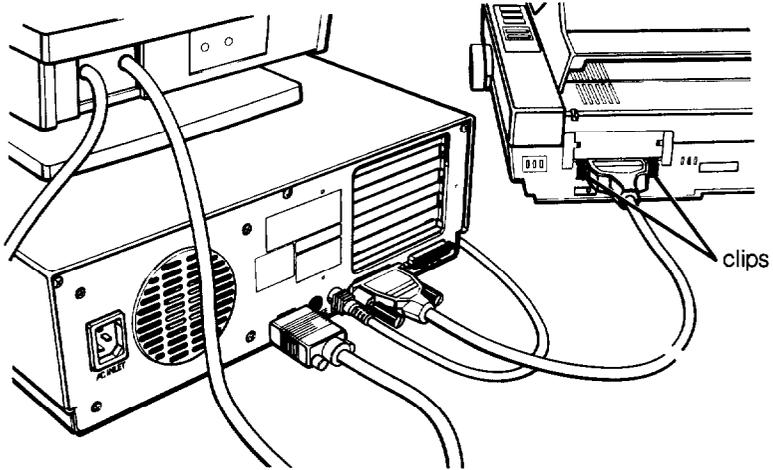
The computer's Centronics[®]-compatible parallel interface uses a 25-pin, D-shaped female connector. Most Epson printers have parallel interfaces.

To connect a printer to the main unit, you need an IBM-compatible printer cable. If you are not sure which one you need, consult your Epson dealer. Once you have a printer cable, follow these steps to connect your printer to the parallel interface on the main unit:

1. Place the printer next to your computer.
2. Before you connect the printer, make sure the power switches on the main unit, monitor, and printer are off.
3. One end of the printer cable has a 25-pin, D-shaped male connector. (See your printer manual if you are not sure which end this is.) Connect this end to the parallel port on the back panel of the main unit, as shown below. If the plug has retaining screws, tighten them by hand or with a screwdriver, depending on the screw type.



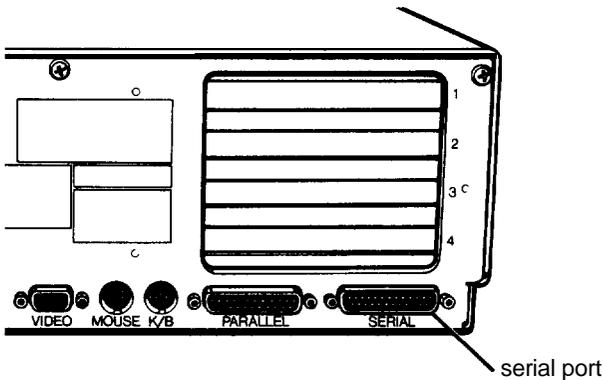
4. Connect the other end of the cable to the printer as shown in the following illustration. To secure the cable, squeeze the clips at each side of the printer connector and push them into place.



5. Plug the printer's power cable into an electrical outlet.

Connecting to the serial interface

If you have a printer (or another peripheral such as a modem) with a serial interface, connect it to the serial (RS232C) port at the back of the main unit.



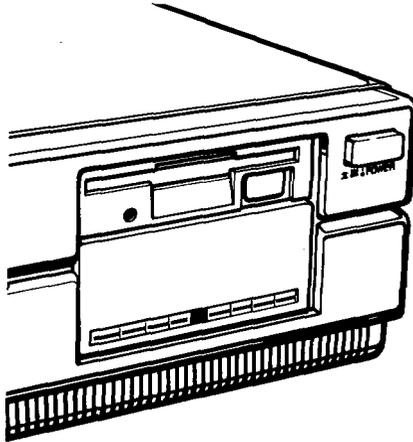
The Equity Ie uses a 25-pin, D-shaped male connector, so be sure you have a compatible cable (or an adapting cable that converts the 25-pin output to 9-pin output). To connect a serial device, follow the steps above for connecting a parallel device.

You need to make sure the serial port is set up so it functions properly. If you are using the port for a serial printer, you must also redirect printer output to the serial instead of the parallel port. Use the MS-DOS MODE command (or the Epson MENU program) to make these changes. See your MS-DOS manual for instructions.

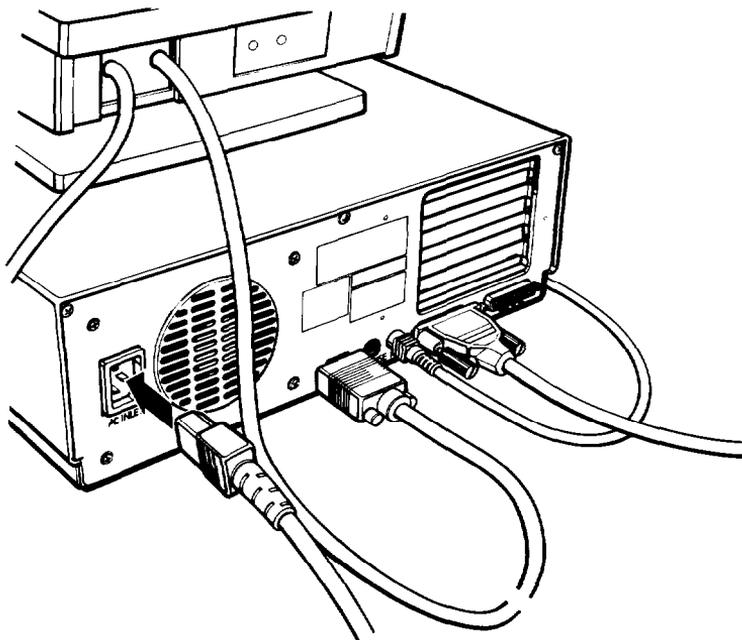
6 Connecting the Power Cord

Follow these steps to connect the power cord:

1. Make sure the power switch on the main unit is turned off.



2. Insert the power cord into the AC power inlet on the left side of the back panel, as shown in the following illustration. To avoid electrical shock, always plug the computer end of the cable into the computer before plugging the other end into the wall socket.

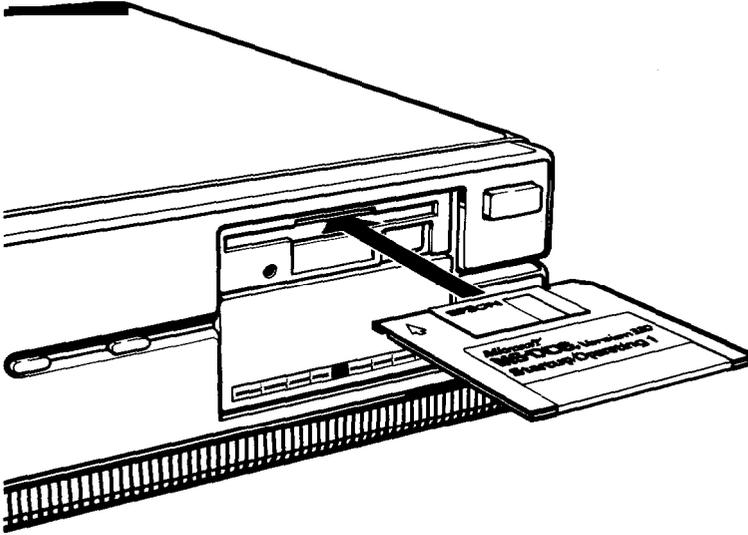


3. Plug the other end of the power cord into a three-prong, 120-volt, grounded electrical outlet.

7 Inserting the Startup Diskette

Follow these steps to insert the Startup/Operating 1 diskette:

- 1 Hold the diskette with the printed label facing up and the arrow pointing into drive A, as shown in the following illustration.



- 2 Insert the diskette in the drive so that it clicks into place. When the diskette is all the way in, the release button pops out.

For more information on inserting, removing, and caring for diskettes, see Chapter 3.

8 Starting the System

After you insert the Startup diskette, you're ready to turn on the power and start up MS-DOS, the computer's operating system.

Before you turn on the computer, read the following safety rules to avoid accidentally damaging your computer or injuring yourself:

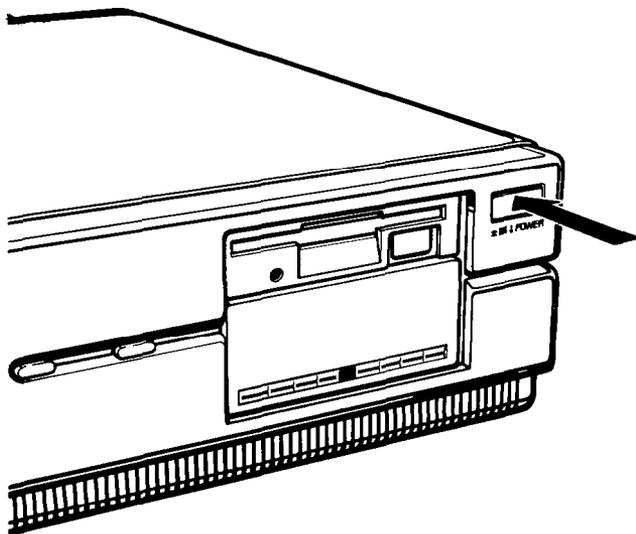
- Do not attempt to dismantle any part of the computer. Only remove the top cover to install and remove option cards. If there is a hardware problem you cannot solve after reading Appendix B on troubleshooting, or if you want to install an optional 8087 math coprocessor, consult your Epson dealer.
- Always turn off the power, disconnect the computer's power cord, and wait about ten seconds before you remove the computer's cover.
- Do not unplug cables from the computer when the power switch is on.
- Never turn off or reset your computer while a disk drive light is on. This can destroy data stored on the disk or make the whole disk unusable.
- Always wait at least five seconds after you switch off the power before switching it back on. Turning the power off and on rapidly can damage the computer's circuitry.
- Do not leave a beverage on top of or next to your system or any of its components. Spilled liquid can damage the circuitry of your components.

Turning on the system

Now you are ready to turn on your system. Follow these steps:

1. Turn on the monitor and then any peripheral devices. (You should always turn on your monitor and peripherals first, before turning on the main unit.)
2. You can turn on your computer with or without a system diskette in drive A, the top diskette drive. At this point, the Startup diskette should be loaded in drive A, as described previously in Step 7.

3. To turn on the computer, press the **POWER** button on the front of the main unit.



The power indicator on the front panel lights up and the cooling fan inside the main unit starts. After a few seconds, the computer begins to perform an internal self test.

If you cannot see the screen display clearly, use the controls on your monitor to adjust the brightness and contrast until the characters on the screen are clear and bright. If the display is not stable, check your monitor's horizontal and vertical hold controls.

Initial screen display

After the computer completes its self test, a message tells you how much RAM is available:

640 KB OK

The computer then boots (starts up) the MS-DOS operating system. The screen displays a date prompt similar to this:

```
Current date is Sat 06-04-88
Enter new date (mm-dd-yy)
```

Type the current date in the format displayed and press **Enter**. For example, to set the date for July 12, 1988, you would type 07-12-88. This sets the real-time clock inside your computer.

From now on, whenever the date prompt appears, you can simply press **Enter** to accept the date shown. You will only need to reset the clock for a leap year.

The screen displays the time prompt next:

```
Current time is 16:21:15
Enter new time
```

Type the current time in the format displayed (you don't need to type seconds) and press **Enter**. MS-DOS uses the 24-hour format, so to set the clock for 7:05 p.m., for example, you would type 19 : 05.

From now on, whenever the time prompt appears, you can simply press **Enter** to accept the time shown. You will only need to reset the clock for daylight savings time.

The screen next displays the MS-DOS version number and copyright information, and then the MS-DOS command prompt appears:

```
A >
```

This means the operating system is ready for you to enter a command. The command prompt identifies the current operating drive: A, B, or C. The prompt appears on the screen whenever you load MS-DOS, complete an MS-DOS command, or exit an application program.

9 Copying System Diskettes

Now that you have set up your system and loaded MS-DOS, it is important that you make copies of your three system diskettes right away. Use only the copies (usually called “working copies”) for daily use and store the originals in a safe place.

The procedure for copying a diskette depends on whether your computer has one or two diskette drives. Follow the instructions given for your model. You will need three blank, double-sided, double-density, **3½-inch 720KB** diskettes.

Before you copy your system diskettes, write-protect them so you can’t accidentally erase data. See Chapter 3 for instructions on write-protecting diskettes. Also, label each copy you make right away.

Copying with two diskette drives

1. **Insert** the Startup/Operating 1 diskette in drive A if it is not there already.
2. Insert a blank **3½-inch 720KB** diskette in drive B, the bottom drive.
3. Type the following and press **Enter**:

```
DISKCOPY A: B:
```

The screen displays this message:

```
Insert SOURCE diskette in drive A:  
Insert TARGET diskette in drive B:  
Press any key when ready . . .
```

4. Drive A already contains the diskette you want to copy (the source) and drive B contains the blank diskette (the target), so just press any key. If the diskette in drive B is not formatted, the DISKCOPY program formats it. Then the program begins copying the data from drive A to the formatted diskette in drive B.
5. When the copy is complete, the screen displays this prompt:

```
Copy another diskette (Y/N)?
```

Press Y so you can make a copy of the Operating 2 diskette. Remove the diskettes from drives A and B by pressing the release buttons on each drive. Then insert the Operating 2 diskette in drive A and another blank diskette in drive B. Follow the prompts on the screen to copy the Operating 2 diskette.

6. Now follow the procedure described in Step 5 to copy the Reference." diskette.
7. When you finish and the Copy another diskette (Y/N) ? prompt is displayed, press N to return to the MS-DOS command prompt.

Copying with one diskette drive

1. Insert the Startup/Operating 1 diskette in drive A if it is not there already
2. Type DISKCOPY and press **Enter**. The screen displays this message:
Insert SOURCE diskette in drive A:
Press any key when ready . . .
3. Drive A already contains the diskette you want to copy (the source diskette), so just press any key. The DISKCOPY program copies the contents of the diskette to the computer's memory.

Note

Because the 720KB MS-DOS diskette holds more data than fits in the computer's 640KB of memory, the computer copies the contents of the diskette in two passes. The screen prompts you when to insert and remove the diskettes.

The screen then displays this message:

Insert TARGET diskette in drive A:
Press any key when ready . . .

4. Remove the Startup/Operating 1 diskette from drive A by pressing the release button and insert the blank diskette (the target diskette) in the drive. Then press any key.

If the diskette in drive A is not formatted, the DISKCOPY program formats it. Then the program begins copying the data from the computer's memory to the formatted diskette. When it has copied all the files from memory, the screen displays this message:

Insert SOURCE diskette in drive A:
Press any key when ready . . .

5. Remove the copy diskette from the drive and insert the original Startup/Operating 1 diskette. Press any key.

The program copies the rest of the files from the original diskette to the computer's memory and then displays this message:

Insert TARGET diskette in drive A:
Press any key when ready . . .

6. Remove the Startup/Operating 1 diskette from drive A and insert the copy diskette in the drive. Then press any key. The program copies the remaining files from the computer's memory to the copy diskette.

When the copy is complete, you see this prompt:

Copy another diskette (Y/N)?

7. Press Y so you can make a copy of the Operating 2 diskette. Follow the instructions above and the prompts on the screen to copy the Operating 2 diskette.
8. When you finish and the Copy another diskette (Y/N) ? prompt appears, press Y so you can make a copy of the Reference diskette. Follow the instructions above and the prompts on the screen to copy the Reference diskette.
9. When you finish copying the Reference diskette, press N to return to the MS-DOS command prompt.

Chapter 2

Preparing a Hard Disk for Use

If your computer has a hard disk, follow the instructions in this chapter to prepare it before using it for the first time.

WARNING

Do not perform any of these procedures if your hard disk has already been prepared for use or has data stored on it; otherwise, you will erase all the data on the hard disk. These instructions apply only to a new hard disk.

The hard disk inside your computer has a capacity of 20 megabytes-about 20 million characters. This is equivalent to approximately 30 720KB diskettes. Using a hard disk reduces the number of diskettes you need and eliminates much of the diskette-swapping you do when you use diskettes. You can do almost all your work on the hard disk and copy your files to diskettes as needed (to make backups, for example).

Although the hard disk is very reliable, it is essential to back up any of your hard disk files that you cannot afford to lose. Use the Epson MENU program or the MS-DOS BACKUP command described in your MS-DOS manual to back up your hard disk files.

Before you can use the hard disk, you must do the following things to prepare it:

- Use the FDISK program to partition the hard disk to run the MS-DOS operating system.
- Use the SELECT program to format the MS-DOS partition and to copy the MS-DOS Startup/Operating 1 files to the hard disk.
- Use the COPY command to copy files from the Operating 2 and Reference diskettes to the hard disk.

These procedures are described in this chapter.

Note

If you plan to use an operating system other than MS-DOS, you need to use that operating system to partition the hard disk and copy the system files to it.

In the following procedures you will be entering MS-DOS commands and using the working copies of your Startup/Operating 1, Operating 2, and Reference diskettes. If you are new to computers and MS-DOS, this may be the first time you have used an operating system. The steps are simple and you should not have any problems; however, if you do have questions, see Chapter 4 for basic information about using MS-DOS or see your MS-DOS manual for complete information on the operating system.

Creating the MS-DOS Partition

You need to partition the hard disk so it can run the MS-DOS operating system. Follow the steps below to create one partition on your hard disk for MS-DOS.

1. Insert your working copy of the Startup/Operating 1 diskette into drive A.
2. Turn on the computer if it is not on already
3. At the A > prompt, type `FDISK` and press **Enter**. The screen displays the FDISK Options menu.
4. Press **1** to select the Create DOS Partition option and press **Enter**. The screen displays the following prompt:

Do you wish to use the entire fixed
disk for DOS (Y/N).....?[Y]

5. Press **Y** to use the entire hard disk for MS-DOS and press **Enter**. The screen displays the following message:

```
System will now restart
Insert DOS diskette in drive A:
Press any key when ready . . .
```

6. Press any key to restart the system (the MS-DOS diskette is already in drive A). Your computer begins reloading MS-DOS. After the preliminary copyright information appears on the screen, the date prompt is displayed.
7. Press **Enter** twice to accept the date and time shown.

The system now recognizes the MS-DOS partition and the **A >** prompt appears again.

Formatting the MS-DOS Partition

Once you have created the MS-DOS partition, you must format it for MS-DOS. You use the **SELECT** command, which automatically does the following:

- Formats the MS-DOS partition
- Labels the root directory
- Copies the MS-DOS Startup/Operating 1 files to the hard disk.

After you have done this, MS-DOS boots automatically from the hard disk, drive C, every time you turn on or reset your computer.

Follow these steps to format the MS-DOS partition:

1. Insert your working copy of the Startup/Operating 1 diskette into drive A.
2. At the **A>** prompt, type the following and press **Enter**:

```
SELECT A: C: 001 US
```

Note

001 and US are the country code and the keyboard code for the United States. If you want to substitute other codes, see your MS-DOS manual.

The screen displays the following message:

```
SELECT is used to install DOS the first time.  
SELECT erases everything on the specified  
target and then installs DOS.  
Do you want to continue (Y/N)?
```

3. Press Y. Formatting does not begin immediately. The screen first displays the following message:

```
WARNING, ALL DATA ON NON-REMOVABLE DISK  
DRIVE C: WILL BE LOST!  
Proceed with Format (Y/N)?
```

4. Press Y to format the DOS partition, erasing any stored files. Then press **Enter**. MS-DOS begins formatting your hard disk's DOS partition. The screen continuously displays the changing head and cylinder numbers.

When the procedure is complete, the screen displays the following:

```
Format complete  
System transferred  
Volume label (11 characters, ENTER for none)
```

5. It is a good idea to enter a name (volume label) for the hard disk to protect it from being accidentally formatted later. If you want to name the hard disk, type up to 11 characters and press **Enter**. If you do not want to name it, just press **Enter**.

The screen first displays disk space information and then displays the following message:

```
Reading source file(s)...
```

MS-DOS then copies the files on the Startup/Operating 1 diskette to the hard disk.

When all the files are copied, the A > prompt reappears. The SELECT procedure is complete.

Note

The SELECT command copies all the MS-DOS files on the Startup/Operating 1 diskette. However, to use the complete operating system as described in this manual and in your MS-DOS manual, you also need to copy the files on the Operating 2 and Reference diskettes to your hard disk. See the next section for instructions.

These procedures copy files to the root directory of drive C. You may, however, want to store these files in separate subdirectories so they are easier to find. For information on subdirectories, see Chapter 4 of this manual and also your MS-DOS manual.

Copying the Reference and Operating 2 Files

Follow the instructions below to copy the files on your Operating 2 and Reference diskettes to the hard disk. If you want to store the files in a separate subdirectory, see Chapter 4 for instructions.

1. Remove the MS-DOS diskette from drive A and insert the Operating 2 diskette in the drive.
2. You should still be logged on to drive A. If not, type A : and press Enter.
3. At the A> prompt, type the following and press Enter:

```
COPY *.* c:
```

MS-DOS copies all the files from the diskette to your hard disk. The file names appear on the screen as they are copied.

4. After copying, remove the Operating 2 diskette from drive A and insert the Reference diskette. Type the following and press Enter:

```
COPY *.* c:
```

5. When the copying is complete, store your diskettes in a safe place.

Booting From the Hard Disk

Now you can boot your system (load MS-DOS) from drive C, your hard disk. Be sure there is no diskette in drive A; if a system diskette is in drive A, MS-DOS boots from the diskette.

Turn off the computer, wait at least five seconds, and then turn it back on. After the computer completes the power-on self test, the screen displays the date prompt. Press **Enter** twice to accept the date and time shown.

The C > prompt then appears, indicating that the system has successfully loaded MS-DOS from your hard disk.

From now on, each time you turn on or reset your computer, it automatically loads MS-DOS from the hard disk. Just make sure drive A is empty.

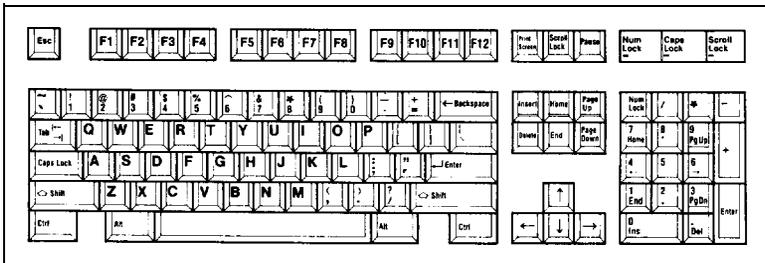
Chapter 3

Using the Equity Ie

This chapter describes some basic procedures for using your Equity Ie computer and keyboard.

Special Keys on the Equity Ie Keyboard

The illustration below shows the standard Equity Ie keyboard.



Certain keys on your keyboard serve special functions when your computer is running application programs. See your software manual for instructions on how to use keys for specific software functions.

The Num Lock, Scroll Lock, and Caps Lock keys work as toggles; you press them once to turn on the function and again to turn it off. When the function is turned on, the corresponding light on the upper-right corner of the keyboard lights up. When the function is off, the light is off.

The following table describes special keys on the Equity Ie keyboard.

| Key | Purpose |
|---|---|
| lab ← → | Moves the cursor to the right in normal mode and to the left in shift mode. |
| Caps Lock | Changes the letter keys from lower- to uppercase; changes back to lowercase when pressed again. |
| Shift | Produces uppercase characters or symbols when used with the main character keys. Produces lowercase characters when Caps Lock is on. |
| Ctrl | Works with other keys to perform special (control) functions, such as editing operations in MS-DOS and GW-BASIC. |
| Alt | Works with other keys to enter alternate character codes. |
| ← Backspace | Moves the cursor back one space, deleting the character to the left. |
| J Enter | Ends a line of keyboard input or executes a command. |
| Insert (Ins) | Turns insert function on and off. |
| Delete (Del) | Deletes characters to the right. |
| Home, End Page Up (Pg Up) Page Down (Pg Dn) ↑ ← ↓ → | Within application programs, control cursor location. |
| Num Lock | Changes the function of the numeric/cursor keys from numeric to cursor positioning; changes back when pressed again. |
| Esc | Cancels the current command line or operation. |
| F1 — F12 | Perform special functions within application programs. |
| Print Screen (Prt Sc) | Prints the screen display on a line printer |
| Sys Req (Rq) | Generates the System Request function. |
| Scroll Lock | In some applications, controls scrolling. |
| Pause | Suspends current operation. |
| Break | Terminates current operation. |

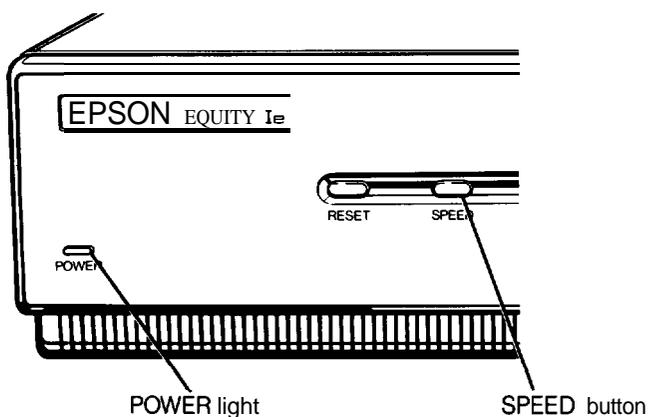
Selecting Execution Speed

The Equity Ie can operate at two execution speeds: 8 MHz or 10 MHz. At the faster speed, the computer performs all tasks more rapidly. You can select the slower speed to run application programs that have specific timing requirements.

WARNING

Do not change the execution speed while you are running a program. Always complete your current operation and exit the program first.

To change the speed, press the **SPEED** button on the front panel. When the computer is running at 8 MHz, the **POWER** light on the left of the front panel is orange, and at 10 MHz, the light is green.



Using Diskettes

Diskette drives allow you to store data on diskettes and retrieve and use stored data. All Equity Ie systems have at least one 720KB diskette drive; you may also have a hard disk drive or a second diskette drive in your system. This section explains how diskettes work and tells you how to do the following:

- Choose diskettes
- Care for your diskettes
- Make backup copies
- Write-protect diskettes
- Use a single diskette drive.

How diskettes work

The diskettes you use are made of flexible plastic coated with magnetic material and enclosed in protective plastic cases. Like a record, a diskette has circular tracks on both sides. The computer stores the data you enter as magnetic patterns on these circular tracks.

A small read/write head in the diskette drive interprets the magnetic patterns. When a diskette is in a drive, the metal shutter above the access area moves aside to expose the diskette surface to the read/write head. The head accesses this part of the diskette when you store, retrieve, and delete data. Because data is stored magnetically, you can retrieve it, record over it, and erase it—just as you play, record, and erase music on cassette tapes.

Choosing diskettes for the Equity Ie

Be sure to buy high-quality diskettes to use in your Equity Ie. Choose 3½-inch diskettes that are 720KB, soft-sectored, double-sided, double-density, and 135 TPI (tracks per inch). Each diskette can hold 720KB of data, or about 300 pages of text. (One kilobyte equals 1024 bytes.) Do not use 1.44MB high-density diskettes.

You need to format new diskettes before you can use them with an operating system. Formatting erases all the data on a diskette and prepares it to receive new data, so be sure to format only new blank diskettes or diskettes that contain data you want to erase. See Chapter 4 for instructions on how to format diskettes.

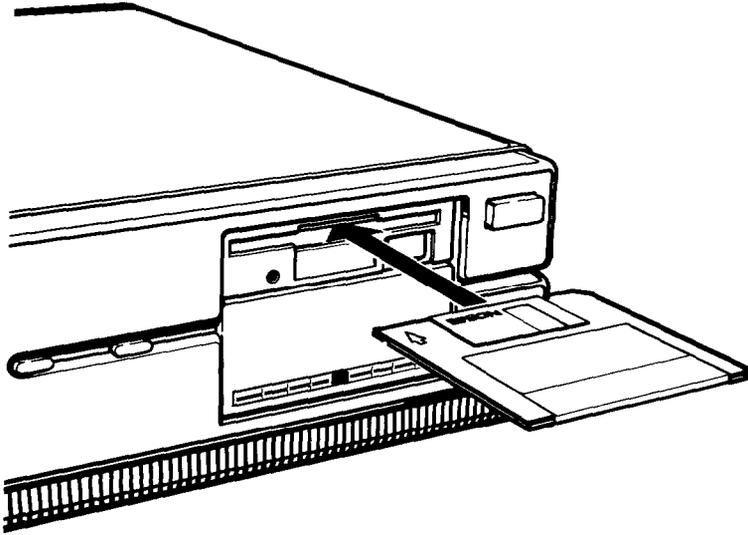
Caring for diskettes

To avoid damaging diskettes, you need to care for them properly. Take these precautions to avoid losing data:

- Do not remove a diskette or turn off the computer while the drive light is on. This light indicates that the computer is copying data to or from a disk. If you interrupt this process, you can destroy data.
- Remove all diskettes before you turn off the computer.
- Keep diskettes away from dust and dirt. Small particles of dust or dirt can scratch the magnetic surface and destroy data. Dust can also ruin the read/write heads in a diskette drive.
- Keep diskettes away from magnetic fields. (Remember that diskettes store data magnetically.) There are many sources of magnetism in your home or office, such as electrical appliances, telephones, and loudspeakers.
- Keep diskettes in a moderate environment. They work best at room temperature and in normal humidity. Never leave diskettes sitting in the sun, or in extreme cold or heat. The temperature in a car in the middle of summer or winter can cause severe damage.
- Do not expose the diskette's magnetic surface by sliding the metal plate. Never touch a diskette's magnetic surface. The oils on your fingertips can damage it.
- Do not place anything on top of your diskettes and make sure they do not get bent.
- Never wipe, brush, or try to clean diskettes in any way.
- Store diskettes properly in diskette containers.

Inserting and removing diskettes

To insert a diskette into a diskette drive, hold it with the label facing up and the arrow on the left side pointing into the computer:



Slide the diskette into the drive until it clicks into place.

To remove a diskette, press the release button on the diskette drive. When the diskette pops out of the drive, pull it out and store it properly in a diskette container.

WARNING

Never remove a diskette or turn off the computer while the drive indicator light is on. You could lose data. Also, be sure to remove all diskettes before you turn off the computer.

Making backup copies

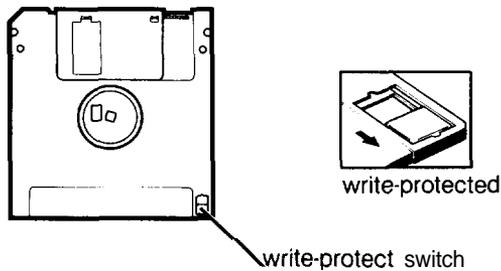
Copy all diskettes that contain programs, as you did the master system diskettes that come with the Equity Ie, and use only the copies. Store your original system diskettes in a safe place away from your working diskettes. Copy your data diskettes (or hard disk files) regularly, as often as you update them. Store backup diskettes away from the originals.

Chapter 1 describes how to make a backup copy of your Equity Ie system diskettes. For general instructions on copying diskettes or hard disk files, see Chapter 4.

Write-protecting diskettes

You can write-protect a diskette to prevent its data from being altered. When a diskette is write-protected, you can copy data from it, but you cannot store new data on the diskette or delete any files it contains. If you try to change data stored on a write-protected diskette, an error message is displayed.

The write-protect device is a small switch on the lower-right corner on the back of the diskette. To write-protect the diskette, slide the switch down toward the edge of the diskette so there is a hole where the switch used to be.



To remove the write-protection, move the switch up toward the center of the diskette so the hole is covered.

Using a single diskette drive

An operating system expects the computer to have at least two physical diskette drives, and it displays prompts and messages accordingly. If your system has only one diskette drive, MS-DOS treats your single drive like two logical drives. This helps you perform operations that normally require two diskette drives.

For example, if you give a command to copy from one drive to another, MS-DOS copies from the first diskette you place in the drive to the computer's memory. Then MS-DOS prompts you to insert another diskette and copies from memory to the diskette you place in the drive. When copying is complete, you see a prompt to insert the original diskette.

Because you may swap diskettes this way often, it is easy to forget which diskette is which. One way to avoid accidentally losing data is to hold the diskette for one drive in your left hand and the diskette for the other in your right. You should also label the diskettes so that you know which is the original and which is the backup copy. Another safeguard you should take is to write-protect your source diskette so you don't accidentally copy to it.

Using a Hard Disk Drive

Unlike a diskette, a hard disk is rigid and fixed in place. It is sealed in a protective environment free of dust and dirt, so you cannot see it. A hard disk stores data the same way as a diskette, only it works faster and has a much larger storage capacity.

Using a hard disk reduces the number of diskettes you need and eliminates much of the diskette-swapping you do when you use diskettes. You can do almost all your work on the hard disk and copy your files to diskettes whenever you need to make backups or transfer data to another computer system. However, to ensure you always have plenty of space available, keep only files you use regularly on the hard disk. Store your other files on diskettes.

There are certain things you must do to prepare a new hard disk. These are explained in Chapter 2. Make sure you have completed all the procedures in that chapter before using your hard disk for the first time.

Caring for the hard disk

To avoid damaging your hard disk, take these precautions:

- Keep the hard disk away from dust and dirt. If you need to remove the computer's cover to install an option card, replace the cover as soon as possible.
- Keep your computer away from magnetic fields such as electrical appliances, telephones, and loudspeakers.
- Keep your computer in a moderate environment. Hard disks work best at room temperature and in normal humidity.
- Never turn off the power to the computer when the hard disk drive light is on. This light indicates that the computer is currently copying data to or from the hard disk. If you interrupt this process, you can lose data.
- Never attempt to open the hard disk unit. The disk itself is enclosed in an air-tight container to protect it from dust.
- If you are going to move your computer (even to another part of the room), you need to prepare your hard disk for moving. See "Moving the Computer" at the end of this chapter.

Protecting the data on your hard disk

While the hard disk is very reliable, it is essential to back up your hard disk files on diskettes in case you lose some data accidentally.

Make copies of all your system and application program diskettes before copying the programs to the hard disk. Copy your data files regularly (as often as you update them) to keep your backup diskettes up-to-date.

Use the Epson MENU utility or the MS-DOS BACKUP command to back up your hard disk files. Use the MENU utility or the MS-DOS DISKCOPY command to make copies of your system and program diskettes. For instructions on using these backup utilities, see Chapter 4 or your MS-DOS manual.

Resetting the Computer

You can reset the computer to reload the operating system or to restart a program. You may need to reset the computer if an error occurs and the computer does not respond to anything you type. However, resetting erases all data in the computer's temporary memory (RAM) that you have not stored, so reset your computer only when necessary.

In MS-DOS, you can hold down Ctrl and press C to stop a program's operation and return to the MS-DOS command prompt. If an error occurs, try this method before you reset the computer.

WARNING

Do not reset the computer to exit a program unless you have to. Some application programs classify and store new data whenever you exit the program properly. If you reset the computer while such a program is running, you may lose data.

There are three ways to reset the computer. Because each is more powerful than the last, try them in the order listed here:

1. If you are using MS-DOS, hold down **Ctrl** and **Alt** while you press the **Del** key. The screen goes blank for a moment and then MS-DOS reloads. (MS-DOS must either be on the diskette in drive A or on the hard disk.) If this does not correct the problem, try the next method described below.
2. Press the **RESET** button on the front panel. This method works even when the keyboard does not respond to your commands. If this does not correct the problem, try the method described below.
3. Remove any diskettes from the diskette drives and turn off all peripherals. Then turn off the computer by pressing the **POWER** button on the front of the main unit. Wait five seconds and then switch the power back on.

Turning Off the Computer

Before you turn off your computer, save your data, exit the program you are using, and remove all diskettes from the diskette drives. Turn off your monitor and peripherals first, and then turn off the main unit by pressing the **POWER** button on the front panel.

Moving the Computer

If you are going to move your computer (even to another part of the room), you need to prepare your computer for moving. Follow these steps:

1. If you have a hard disk, type **HDSIT** at the MS-DOS command prompt and press **Enter**. (You must be in the directory that contains the **HDSITEXE** file.)

Note

If you copied the Reference diskette files to the hard disk as described in Chapter 2, the **HDSITEXE** file should already be on your hard disk. You can also run the **HDSIT** utility by selecting Option 3, Prepare hard disk for moving, from the main menu of the diagnostics program. See Appendix D for instructions on starting the diagnostics program.

2. Turn off all peripherals and then turn off the computer. Next, disconnect all cables.
3. If you are moving the computer any distance outside of the current location (such as to another building or city), repack the components using the original box and packing materials.

Chapter 4

Using MSDOS with Your Equity Ie

Your Equity Ie comes with MS-DOS, version 3.3. MS-DOS manages your computer system by doing such things as keeping the computer's memory organized, controlling the monitor display, accepting keyboard input, and directing external communications.

To communicate with the operating system, you use MS-DOS commands. How much you need to know about MS-DOS depends on how you plan to use your computer. If you plan to use it for running application programs only, the few MS-DOS commands you'll use are introduced in this chapter. If you plan to use advanced features or create your own programs, see your MS-DOS manual for a complete description of MS-DOS.

Starting and Exiting MS-DOS

Before you can run an MS-DOS application program, MS-DOS must be running in memory. If you have a hard disk that you prepared according to the procedures in Chapter 2, MS-DOS loads automatically when you turn on the computer. If you do not have a hard disk, insert your working copy of the Startup/Operating 1 diskette in drive A and turn on or reset the computer. MS-DOS then loads automatically from drive A.

When the date and time prompts appear, press **Enter** to accept the date and time shown. The screen then displays the MS-DOS command prompt, A > or C > . This tells you that MS-DOS is loaded and identifies the current drive.

Before you turn off the computer, make sure the A > or C > prompt is displayed. Then remove your diskettes, turn off any peripherals, and then turn off the computer.

Changing the Default Drive

When you see the A > prompt, you know that MS-DOS is operating from drive A. If you want to run a program or find a file on a different drive, however, you must specify that drive. You can do this either by logging on to that drive or by including the drive identifier (the drive letter followed by a colon) when you type the filename.

To log on to drive B, for example, type B: and press **Enter**. Your screen now displays the B > prompt. This means that you are now operating from drive B as the default drive. The system continues to read from drive B until you log on to another drive, or turn off or reset your computer.

To access a program or file without first changing the default drive, use a drive identifier with the filename. For example, if you are logged on to drive A and type B : README within your MS-DOS command, the computer retrieves the file named README from drive B but stays logged on to drive A.

The MS-DOS Command Format

To enter an MS-DOS command, you need to type the command in the correct format. The command format provides MS-DOS with the information needed to perform a task.

The MS-DOS command format consists of the command name, *parameters*, and delimiters. The command name tells MS-DOS the task you want the computer to perform. Parameters specify details such as what data you want to process and where to locate or store a file. Delimiters are characters such as spaces or commas that separate command names and parameters.

Some commands also have optional switches you can use. A switch is a type of parameter that alters the effect of a command.

Path names may be required in a command if you are specifying files that are not on the current drive or directory. A path name tells MS-DOS where to locate a file, and consists of one or more directory names separated by backslashes. See the section on using pathnames later in this chapter.

Each MS-DOS command is either internal or external. Internal commands are commands that are built into MS-DOS and can be used at any time once MS-DOS is loaded into memory. External commands are stored on your system diskettes as program files. To run an external command, MS-DOS must be able to locate the file from your system diskette or from a directory on the hard disk. This may require you to use the command's path name when you enter the command.

See your MS-DOS manual for more information on the command format. Also see your MS-DOS manual for command descriptions that tell you which parameters and delimiters are required for each command and which optional parameters and switches you can use.

Entering MS-DOS Commands

You can enter an MS-DOS command whenever you see the MS-DOS command prompt. Type the command name and any necessary parameters and delimiters and then press **Enter** to execute the command. You can type command names and parameters in either uppercase or lowercase letters.

If you make a mistake when typing a command and you notice it before you press **Enter**, you can do one of two things:

- Use the backspace key to back up and correct the error
- Press **ESC** and then **Enter** to cancel the command line.

If you press **Enter** when a command line has an error in it, the screen displays an error message. Usually, the command prompt reappears so you can try again. Type the correct command and press **Enter**.

Storing Data

All your work and programs are stored in files on your diskettes or hard disk. A data file contains information, such as words, numbers, or pictures. A program file contains instructions that the computer can understand and execute.

The kind of file you create depends on the MS-DOS command or application program you use to create it. In general, a data file that you

create using an application program is stored in a special format. If you use a different application program to read that file, you may encounter problems.

Each file must have a unique filename so you can retrieve it when you need to. The filename consists of two parts: the name and the extension.

You can choose a name up to eight characters long. Create a name that identifies the information the file contains. The name can contain any characters or numbers except for blank spaces and the following symbols:

* \ / [] : | < > + = ; . ?

The extension is optional and can be up to three characters long. You can use the extension to further identify a file or to describe what type of file it is, such as a text file or program file. When you use an extension, separate it from the filename with a period. For example, an MS-DOS filename might look like this:

DATA.TXT

Some application programs add extensions to the files you create. These application programs use the extension to determine whether it is a compatible data file. Avoid using extensions used by your application programs. Also, do not use uppercase and lowercase letters to distinguish between files. MS-DOS does not recognize the difference and displays all filenames in uppercase.

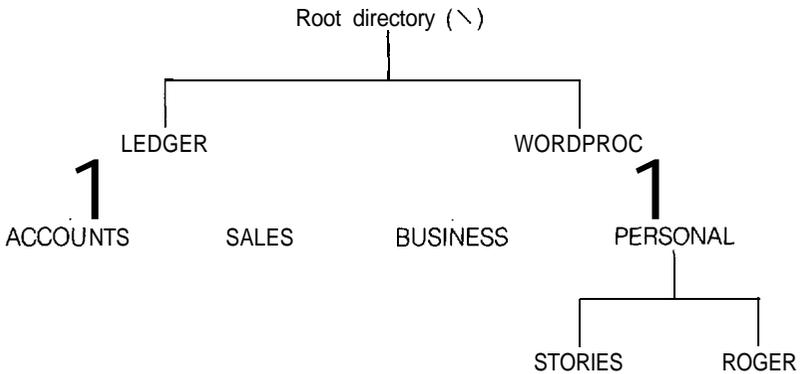
Using Directories

MS-DOS organizes files by storing them in directories. This makes it easy for you to find and manage your files. Directories contain specific information about each file such as the filename, the file size, and the date and time you last updated the file.

To group files more efficiently, you can create subdirectories. This kind of organization is called a tree-structured directory. At the top of the tree-structured directory is the main directory, which is called the root directory

The root directory can contain many subdirectories, and each subdirectory can contain other subdirectories. A directory that contains subdirectories is called a parent directory.

The structure of a directory may look like this:



The root directory does not have a name, but is always identified by a backslash (\). You name subdirectories when you create them. A subdirectory name can be up to eight characters long, consisting of letters and numbers. It can also have an extension of up to three characters long, just like a filename.

The directory you are working in is called the current directory. In general, when you first load the operating system the root directory is your current directory.

Six basic directory operations are described on the following pages:

- Listing the contents of a directory
- Using pathnames
- Creating directories
- Changing directories
- Copying from one directory to another
- Deleting a directory

You may also want to read about XTREE, an Epson utility that lets you perform all these functions plus others. XTREE is very easy to use and is described later in this chapter.

Listing the contents of a directory

To list the files in the current directory, type `DIR` and press **Enter**. MS-DOS lists the names of the files in the current directory on the current drive. If you are logged on to drive C but want to see a directory of the files on the diskette in drive A, type `DIR A:` and press **Enter**.

There are two special notations that identify the current directory and the next directory. These two notations are the single period and the double period, the first entries in each directory other than the root directory.

A single period represents the current directory. Typing `DIR.` is the same as typing `DIR` without the period. The double period represents the current directory's parent directory. So, for example, if `SALES` is your current directory, typing `DIR..` displays the contents of its parent directory, the `LEDGER` directory.

Using pathnames

Whenever you want to access a file that is not in the current directory, you must specify the file's pathname. A full path name consists of one or more directory names separated by backslashes and followed by the filename. The path name tells MS-DOS where your file is stored.

For example, in the example directory shown on the last page, the full path name for the file `ROGER` is `\WORDPROC\PERSONAL\ROGER`. `ROGER` is the name of the file located in the `PERSONAL` directory, which is a subdirectory of the `WORDPROC` directory. The `WORDPROC` directory is, in turn, a subdirectory of the root directory.

The filename is always last and is always preceded by a backslash. The backslash at the beginning of the path name represents the root directory, and subsequent backslashes separate the directory levels.

If you want to access a file on a different drive, include the drive letter in the pathname, as in this example:

```
B : \WORDPROC\PERSONAL\ROGER
```

Note

MS-DOS contains some commands that make using pathnames easier. The APPEND command lets you set a search path for data files and executable files. The PATH command lets you specify a search path for commands and program files so you don't have to type a full path name every time you want to call up an application program or an MS-DOS command. The SUBST command lets you substitute a drive letter for a directory path, which is helpful when you use a long path. See your MS-DOS manual for more information on these commands.

Creating directories

The MKDIR command lets you create directories. To create a LEDGER directory under your root directory, for example, you would type the following and press **Enter**:

```
MK DIR\LEDGER
```

You can abbreviate the name of this command to MD. For example, to create a SALES directory under the LEDGER directory, you would type the following and press **Enter**:

```
MD \LEDGER\SALES
```

To check that the LEDGER directory is in the root directory, type DIR and press **Enter**. (You must be in the root directory; if necessary, see the next section for instructions on changing directories.) The screen displays a list of files in the root directory and the new subdirectory, LEDGER < DIR > . The < DIR > after the name identifies it as a subdirectory of the current directory.

Storing files in separate directories is almost the same as storing them on separate disks. You must either specify the path name or change directories to access files in different directories—just as you must specify the drive or log onto a different drive to access files on different disks.

Changing directories

To change directories, type CHDIR (or CD) followed by a backslash and the name of the directory. For example, to change to the LEDGER directory, type the following and press **Enter**:

```
CD \LEDGER
```

The backslash identifies the LEDGER directory as a subdirectory of the root directory. Once you are in a directory, you can access any files it contains without typing the full pathname. To change to a subdirectory of the current directory, you do not need to type the backslash.

For example, to change to the SALES subdirectory while you are in the LEDGER directory, type the following and press **Enter**:

```
CD SALES
```

To return to the root directory from any subdirectory, type the following and press **Enter**:

```
CD \
```

Copying from one directory to another

The COPY command lets you copy files from one directory to another. To use the command, you must specify the path name of the file you want to copy, and specify the directory where you want to copy the file to.

For example, if you are in the WORDPROC directory and want to copy the ROGER file from the PERSONAL subdirectory to the BUSINESS subdirectory, you would type the following and press **Enter**:

```
COPY PERSONAL\ROGER BUSINESS
```

Be sure to type a space between the filename and the new pathname. Do not type a backslash before PERSONAL or BUSINESS because they are both subdirectories of the current directory, WORDPROC. If you do type the backslashes, MS-DOS looks in the root directory for the subdirectories and does not find them.

Note

You can also copy files using XTREE, MENU, or XCOPY. See the sections later in this chapter on using the XTREE and MENU utilities, and see your MS-DOS manual for more information on the XTREE and XCOPY commands.

Deleting a directory

If you no longer need a directory, you can remove it with the RMDIR (remove directory) command. To remove a directory, first delete any files it contains or move them to another directory. You cannot delete a directory that is not empty.

To delete an empty directory, such as the ACCOUNTS directory under LEDGER, type the following and press **Enter**:

```
RMDIR \LEDGER\ACCOUNTS
```

You must give the complete path name when deleting a directory not in the current path.

Formatting Diskettes

Before you can store data on a new diskette, you must format it. Formatting prepares the diskette so that MS-DOS can write to it. You need to do this only once, before you use the diskette for the first time.

You can also reformat previously used diskettes. This process erases all data on the diskette. Always be sure you do not want to save any of the data on a used diskette before you format it.

The formatting procedure you use depends on whether your computer has one or two diskette drives and whether it has a hard disk. Follow the instructions below for your computer model.

Note

Resides the method described below, you can also format diskettes using the Epson MENU utility. This program is easy to use because it lets you select operations from a menu. For more information, see the section on the MENU utility later in this chapter.

Formatting diskettes with a hard disk and one diskette drive

1. If necessary, log on to drive C. If you are not in the directory where the file FORMAT.COM is stored (usually the root directory), change to that directory.
2. When you see the C > prompt, type the following and press **Enter**:

FORMAT A :

You see this prompt:

Insert diskette for drive A:
and strike ENTER when ready

3. Insert the diskette you want to format into drive A and press **Enter**.
4. When the diskette is formatted, you see this message:

Format complete
730112 bytes total disk space
730112 bytes available on disk
Format another (Y/N)?

At this point, you can either format another diskette by pressing **Y** and **Enter**, or return to the MS-DOS command prompt by pressing **N** and **Enter**.

Formatting diskettes with two diskette drives

1. Make sure you are logged on to drive A, with your working copy of the Startup/Operating 1 diskette in the drive.

2. When you see the A> prompt, type `FORMAT B :` and press **Enter**. You see this prompt:

Insert diskette for drive B:
and strike ENTER when ready

3. Insert the diskette you want to format into drive B and press **Enter**.
4. When the diskette is formatted, you see this message:

Format complete
730112 bytes total disk space
730112 bytes available on disk
Format another (Y/N)?

At this point, you can either format another diskette by pressing **Y** and **Enter**, or return to the MS-DOS command prompt by pressing **N** and **Enter**.

Formatting diskettes with one diskette drive (no hard disk)

1. Insert your working copy of the Startup/Operating 1 diskette into drive A.
2. Type `FORMAT A:` at the A> prompt and press **Enter**. You see this prompt:

Insert diskette for drive A:
and strike ENTER when ready

3. Remove the Startup/Operating 1 diskette and insert the diskette you want to format into drive A and press **Enter**.
4. When the diskette is formatted, you see this message:

Format complete
730112 bytes total disk space
730112 bytes available on disk
Format another (Y/N)?

At this point, you can either format another diskette by pressing **Y** and **Enter**, or return to the MS-DOS command prompt by pressing **N** and **Enter**.

Copying Data

It's very important to keep backup diskettes containing copies of the files you create. You can copy data and program files several ways:

- You can use the DISKCOPY command to make an exact duplicate of a diskette.
- You can use the COPY command to copy individual files.
- You can use the BACKUP command to back up the files on a hard disk or diskette in a compressed format.

Note

An easy way to perform the functions listed above is through the MENU and XTREE programs. See the sections on MENU and XTREE later in this chapter. You can also use the MS-DOS XCOPY command to copy one or more files; see your MS-DOS manual for details.

Using the DISKCOPY command

The DISKCOPY command lets you create an exact duplicate of one diskette onto another diskette. (You cannot use DISKCOPY to copy to or from a hard disk.) The procedure for copying diskettes depends on whether you have one or two diskette drives. Follow the instructions below for your computer model.

Using DISKCOPY with two diskette drives:

When you use the DISKCOPY command with two diskette drives, be sure to specify both diskette drives (A: and B:). If you don't, MS-DOS copies the diskette in drive A to a second diskette that you insert in drive A, requiring you to swap diskettes during the copy process. (MS-DOS displays prompts that tell you when you need to change diskettes.)

1. Make sure your original diskette is write-protected. (See Chapter 3 for instructions.)
2. Insert your working copy of the Startup/Operating 1 diskette in drive A.

3. At the A > prompt, type the following and press **Enter**:

DISKCOPY A: B:

MS-DOS prompts you to insert your diskettes:

Insert SOURCE diskette in drive A:
Insert TARGET diskette in drive B:
Press any key when ready . . .

4. Insert the diskette you want to copy from (the source) into drive A and the diskette you want to copy to (the target) into drive B. Then press any key.

DISKCOPY checks to see if the target diskette is formatted. If it is not, DISKCOPY formats the diskette. The copy operation begins when the format is complete.

5. When the copy is complete, you see this message:

Copy another diskette (Y/N)?

Press **Y** and **Enter** to copy another diskette or **N** and **Enter** to return to the MS-DOS command prompt.

Using DISKCOPY with one diskette drive:

1. Make sure your original diskette is write-protected. (See Chapter 3 for instructions.)
2. If you have a hard disk, make sure you are logged on to the directory that contains the DISKCOPYCOM file. If you don't have a hard disk, make sure your working copy of the Startup/Operating 1 diskette is in drive A.
3. At the MS-DOS command prompt, type the following and press **Enter**:

DISKCOPY A: A:

MS-DOS displays this message:

Insert SOURCE diskette in drive A:
Press any key when ready . . .

4. Insert the diskette you want to copy from (the source) in the diskette drive and press any key. DISKCOPY starts to copy the contents of the diskette to the computer's memory.

When the memory is full, the screen displays this message:

Insert TARGET diskette in drive A:
Press any key when ready . . .

5. Remove the diskette from drive A and insert the blank diskette in the drive. Press any key. DISKCOPY checks to see if the new diskette is formatted. If it is not, DISKCOPY formats the diskette. The copy operation begins when the format is complete.
6. When DISKCOPY has copied the files from memory to the copy diskette, the screen prompts you to insert the source diskette again to copy the remaining data to the computer's memory. Insert the original diskette in drive A and press any key.
7. Once DISKCOPY has copied the rest of the original diskette's files to the computer's memory, the screen prompts you to insert the target diskette (the copy) again to copy the remaining data from memory to the diskette. Insert the copy diskette and press any key.
8. When the copy is complete, you see this message:

Copy another diskette (Y/N)?

Press Y and **Enter** to copy another diskette or N and **Enter** to return to the MS-DOS command prompt.

Using the COPY command

You can use the COPY command to copy files in several ways:

- You can copy individual files from a diskette or the hard disk to a diskette or hard disk file.
- You can copy a group of files using wildcard characters.
- You can copy one or more files and give them new names.
- You can combine or merge files into one file.

A few simple rules apply when copying files:

- You must tell MS-DOS where to find the source file and where to store the target file.
- You cannot create a new file with the same name and in the same directory as an existing file.
- If an existing file on the target diskette or directory has the same name as the file you are copying from, the copy automatically replaces the existing file. There is no warning that the existing file is being replaced, so be careful that you do not accidentally erase a file you want to keep.
- If you are copying to a diskette, the diskette must be formatted.

To use the COPY command, type COPY at the command prompt, followed by the drive identifiers and necessary filenames. Then press **Enter** to execute the command.

For example, to copy a file from the diskette in drive A to the diskette in drive B using the same name for the copy as for the original file, type the following and press **Enter**:

```
COPY A:REPORT B:
```

If you want to copy a file from the diskette in drive A to the diskette in drive B using a new name for the copy, type the following and press **Enter**:

```
COPY A:REPORT B:FACTS
```

To copy a file onto the same diskette or directory with a new name, type the following and press **Enter**:

```
COPY REPORT FACTS
```

In the example above, you can omit the drive identifiers because the source and target files are both on the current drive.

An easy way to copy a group of files is by using wildcard characters in the filenames. You can use two wildcard characters: * and ?. The asterisk represents any group of characters and the question mark represents any single character.

For example, to copy all the files on the diskette in drive A to the diskette in drive B, type the following and press **Enter**:

```
COPY A:*.* B:
```

To copy all files with names that begin with the four letters MEMO and end with any single character, type the following and press **Enter**:

```
COPY A:MEMO? B:
```

Another task you can perform with the COPY command is to combine a number of files into one file. For example, to create a new file called DATA that consists of the files REPORT, FACTS, and MEMO, type the following and press **Enter**:

```
COPY REPORT + FACTS + MEMO DATA
```

In the above example, the files are located on the current drive, so no drive identifiers are necessary. To copy REPORT, FACTS, and MEMO from drive A to the DATA file on drive B, type the following and press **Enter**:

```
COPY A:REPORT + A:FACTS + A:MEMO B:DATA
```

Using the BACKUP command

The BACKUP command lets you store files in a compressed format for archive purposes. BACKUP is normally used to back up hard disk files; however, you can use BACKUP to copy files from any disk to another (hard disk to diskette, diskette to hard disk, diskette to diskette, and even hard disk to hard disk).

Unlike DISKCOPY and COPY, which make readable copies of files, BACKUP creates files that you cannot use until you restore them to the disk by using the RESTORE command.

You can use switches with BACKUP to back up files created after a certain date or to specify files stored in a certain directory. You can also tell BACKUP to add only those files that have been modified since the last time you ran BACKUP. This process speeds up backup procedures you perform on a regular basis.

Make sure you have enough formatted diskettes to back up the data on your hard disk drive. It can take about 25 720KB diskettes to copy a 20MB hard disk drive that is completely full (although it is rare that you would store this many files on a hard disk).

Note

BACKUP formats unformatted target diskettes if you use the /F switch when you enter the command. See the description of the BACKUP command in your MS-DOS manual.

See your MS-DOS manual for complete instructions on using BACKUP

Using the Epson HELP Utility

The Epson HELP utility provides on-line information on MS-DOS commands. You can use HELP in one of two ways:

- You can type HELP at the command prompt and press **Enter** to display the HELP menu.
- You can bypass the menu by typing HELP plus the name of the command you want information about.

Note

The HELP utility requires two files, HELPCOM and HELPTXT. These files are located on your Operating 2 diskette. To run HELP from the hard disk, you must be logged on to the directory that contains these two files. If you copy HELPCOM to another diskette or to a directory on your hard disk, you must also copy HELPTXT to the same diskette or directory.

To use the HELP menu, follow these steps:

1. Type HELP at the MS-DOS command prompt and press **Enter**.
2. The screen displays a menu of MS-DOS commands. Use the cursor keys to highlight the command you want information about and press **Enter**.

3. If there is more than one page of information about the command you selected, you see the prompt PgUp at the top of the screen. Press the PgUp key to display the rest of the text.
4. To return to the HELP menu, press the **ESC** key. Press **ESC** again to exit the HELP utility.

To bypass the HELP menu and get information about one command, follow these steps:

1. At the command prompt, type HELP, followed by the name of the MS-DOS command you want information about, and press **Enter**. For example, to see help information for the COPY command, type the following and press **Enter**:

```
HELP COPY
```

2. If there is more than one page of information about the command you selected, you see the prompt PgUp at the top of the screen. Press PgUp to display the rest of the text.
3. Press **ESC** to exit the HELP program.

You can also request help information for more than one command. Follow these steps:

1. At the command prompt, type HELP followed by the names of the commands you want information about. Then press **Enter**. Separate each command name with a space.

For example, to see help information for the DISKCOPY, FORMAT, and COPY commands, type the following and press **Enter**:

```
HELP DISKCOPY FORMAT COPY
```

2. The help information for the first command is displayed first. If there is more than one page of information about the command you selected, you see the prompt PgUp at the top of the screen. Press PgUp to display the rest of the text.
3. Press **ESC** to see the help information for the next command.

4. To exit the program, press **ESC** after viewing the information for the last command.

Using the Epson MENU Utility

Your Equity Ie comes with a utility by Epson called the MENU utility. With this program you can display a menu of utilities and select the one you need. MENU is easy to use because it lets you execute several commands without having to remember the exact format for each command.

To access the MENU utility, either log on to the directory that contains the file MENU.EXE (if you have a hard disk) or insert the Operating 2 diskette into drive A. Type MENU at the command prompt and press **Enter**. You see this main menu:

```
EXIT
File Utilities
Disk Utilities
Mode Settings
Help
Enter DOS Command
```

To select an option, use the arrow keys to highlight your selection and then press **Enter**. Most options contain submenus; keep highlighting your selection and pressing **Enter** until you have selected the desired operation.

Note

If you have a hard disk, you will find it most convenient to use MENU from the hard disk. Make sure all the necessary MENU files are stored in the same directory, or use the PATH or APPEND command to tell MS-DOS where to look for the files. See your MS-DOS manual for information on the files you need to run MENU.

If you do not have a hard disk, see the section below.

Running MENU from a diskette

If you are running the MENU utility from a diskette rather than a hard disk, when you select a specific operation the screen displays a message similar to this:

```
MODE.COM is not on the current disk or PATH
Press any key to continue...
```

At this point you need to switch to the Startup/Operating 1 diskette for the remainder of the operation. Remove the Operating 2 diskette from drive A and replace it with the Startup/Operating 1 diskette and then press any key. The screen that was displayed before reappears and you can continue the operation.

There are two alternatives to the disk-swapping described above:

- Create a MENU diskette containing all the files necessary to run the MENU utility. To do this, you need to understand more about how the MENU utility is structured. See your MS-DOS manual for details.
- Before you run the MENU program, type `PATH B :` at the `A >` prompt and press **Enter**. Then when you run the MENU program, the screen prompts you when to insert the diskette for drive B. At that point, insert the Startup/Operating 1 diskette in drive A if you have only one drive or drive B if you have two drives. Press any key to continue.

MENU utility options

Below is a description of what each option does. Step-by-step instructions for using each option are provided in your MS-DOS manual.

File Utilities

Lets you back up and restore files, replace files, compare files, change file attributes, copy files, and copy directories. This option does the work of these MS-DOS commands: `BACKUP`, `RESTORE`, `REPLACE`, `FC`, `ATTRIB`, and `XCOPY`.

DiskUtilities

Lets you check, copy, compare, and format diskettes. This option provides an easy-to-use

alternative to the MS-DOS CHKDSK, DISKCOPY, DISKCOMP and FORMAT commands.

Mode Settings

Lets you change your configuration settings. This option also lets you select alternate code pages (character sets) and redirect data from the parallel port to the serial port. because you can perform so many tasks from the Mode Settings submenus, this option is a powerful alternative to the MS-DOS MODE command.

Help

Lets you access the Epson HELP utility.

EnterDOS Command

Lets you run other MS-DOS commands without leaving the MENU program.

Using the XTREE Utility

Epson has included the XTREE program with MS-DOS to make it easier for you to manage files and run other MS-DOS programs. XTREE is fast and easy to use. It lets you do the work of many MS-DOS commands using a convenient menu format, and provides several features not available elsewhere in MS-DOS.

XTREE lets you view your directories and subdirectories in one tree-structured directory, so you can quickly see the organization of your files. When you highlight a filename, XTREE displays the file's statistics in a window to the side of the screen.

At the bottom of the screen, XTREE displays a menu that lists the functions you can perform by pressing the corresponding letter. Among other things, these XTREE functions let you:

- Display all the files in a directory and the statistics for each file.
- Copy, delete, or move files individually or in groups, to any directory or diskette.

- Make new directories, rename directories, delete empty directories, and change from one directory to another.
- Display data in both ASCII and hexadecimal format.
- Display how much space is available on your disks.

Running XTREE

To run XTREE, log on to the directory where XTREE is located or insert the Startup/Operating 1 diskette in drive A. Type XTRFE at the command prompt and press **Enter**. A title screen appears while XTREE reads your disk's directory, and then the XTREE display appears.

When a directory is highlighted in the upper window, the DIR COMMANDS list is displayed at the bottom of the screen. This list shows you the commands you can use to perform directory management operations. When you press **Enter** to switch to the files in the bottom window, the FILE COMMANDS list is displayed instead. This list shows you the commands you can use to perform file management operations.

You use the cursor keys, letter keys, function keys, the **Ctrl** key, and the **Alt** key to perform various functions in XTREE.

You use cursor keys to select files and directories. To select a file or directory, use the arrow keys to highlight the name of the file or directory. Press **Enter** to move the cursor from the directory (top) window to the file (bottom) window. Press **Enter** again to display the files in the bottom window in an expanded format. Press **Enter** again to return to the directory window.

Letter keys execute XTREE commands. The available XTREE commands appear on the DIR COMMANDS or FILE COMMANDS line at the bottom of your screen. The highlighted letter of the word (the **D** in **Delete**, for example) indicates the key you press to execute the command.

To execute a command on more than one file or directory, press **T** to tag the desired files or directories with the Tag command. Then hold down the **Ctrl** key as you press the highlighted letter of the command name. Pressing **Ctrl-D**, for example, deletes all tagged files.

Alt key commands execute additional XTREE commands. Press the **Alt** key to display the ALT DIR COMMANDS or ALT FILE COMMANDS. These commands appear on the line where the DIR COMMANDS or FILE COMMANDS normally appear. To execute an **Alt** key command, hold down the **Alt** key and press the highlighted letter of the command name.

Function keys control XTREE itself. Press **F1** to quit XTREE, **F2** to display a screen of help information, or **F3** to cancel a command. XTREE displays the available commands and the key that executes each command on the lower right of your screen.

Cautions

With a utility as powerful and as fast as XTREE, you must always be aware of the danger of accidentally erasing important files. Follow these guidelines to protect your files:

- You can cancel commands, even commands in progress, by pressing **F3**. This stops any function.
- Use **Ctrl-A** (the attributes command) to give read-only status to all the files in the directories. Then, in order to erase a file, you must first remove its protection. (See your MS-DOS manual for details.)
- XTREE is limited in the number of files and directories it can handle. If you have more than 2800 files or 180 directories, XTREE displays an error message. If you see this error message, exit XTREE and store your infrequently used files on diskettes, or reorganize and delete some directories. If you use XTREE when you have more files or directories than it can handle, you may accidentally erase or alter files.

Using an AUTOEXEC.BAT File

You may find that there are some commands you need to run every time you turn on your computer.

To run a command or a series of commands automatically upon startup, you can type the commands into a special file called AUTOEXEC.BAT. When

you load MS-DOS, it automatically looks for this file. If MS-DOS finds an AUTOEXEC.BAT file in the root directory, it executes the commands in that file.

Here are some suggestions for commands you can include in an AUTOEXEC.BAT file:

- Modify the PATH command to include the directories containing software programs you commonly use. This reduces the number of times you need to change directories or specify pathnames.
- Add the command to start your most commonly used application program (such as a word processor or spreadsheet program) so that it is loaded automatically when you turn on or reset the computer.
- Change the MS-DOS command prompt so that it displays the current directory-or your name, or anything you want.

See the command summary in your MS-DOS manual for instructions on using the PATH command, the PROMPT command, and any other commands you want to include in your AUTOEXEC.BAT file.

Creating an AUTOEXEC.BAT file

You can create an AUTOEXEC.BAT file by using any command or program that lets you create a text-only file. If you have a word processing program that can save a file as a text-only file (sometimes called an ASCII text file), you can use that program to create your AUTOEXEC.BAT file.

Here's an example of an AUTOEXEC.BAT file:

```
PATH C: \ ;C: \DOS;C: \WP  
PROMPT $P You've just won a million dollars!
```

The first line tells MS-DOS to look for programs or batch files by looking through the root directory, the DOS directory, and then the WP directory. This way you can run programs in those directories without having to specify pathnames.

The second line changes the MS-DOS command prompt so that it displays your current directory and a pleasant message.

The MS-DOS COPY command provides an easy way to create an AUTOEXEC.BAT file. To create an AUTOEXEC.BAT file using this command, follow the instructions below for your computer model.

If you have a hard disk:

1. At the MS-DOS command prompt, type the following and press **Enter**:

```
COPY CON: C:\AUTOEXEC.BAT
```

2. Type the commands you want to include in the file exactly as you want MS-DOS to execute them. Press **Enter** at the end of each line. After you type the last command, press **Enter** to move the cursor to the next blank line.
3. Now press F6 and then **Enter**. COPY copies everything you typed to the AUTOEXEC.BAT file. From now on, the AUTOEXEC.BAT program will be executed every time you turn on or reset the computer.

If you do not have a hard disk:

1. Insert the MS-DOS Startup/Operating 1 diskette into drive A.
2. At the MS-DOS command prompt, type the following and press **Enter**:

```
COPY CON: A:\AUTOEXEC.BAT
```

3. Type the commands you want to include in the file exactly as you want MS-DOS to execute them. Press **Enter** at the end of each line. After you type the last command, press **Enter** to move the cursor to the next blank line.
4. Now press F6 and then **Enter**. COPY copies everything you typed to the AUTOEXEC.BAT file. From now on, the AUTOEXEC.BAT program will be executed every time you load MS-DOS.

Installing Option Cards

Option cards are accessories you can install in your Equity Ie to provide extra capabilities. For example, you can add a modem or a memory expansion board.

The Equity Ie has four option card slots, so it can hold up to four cards. If your Equity Ie has a hard disk, its controller card may occupy one slot.

You can buy option cards from Epson as well as other vendors. Multi-function cards that allow you to add several features using only one option card slot are also available. Consult your dealer for more information.

This chapter describes how to remove the main unit's cover and install and remove option cards.

Removing the Cover

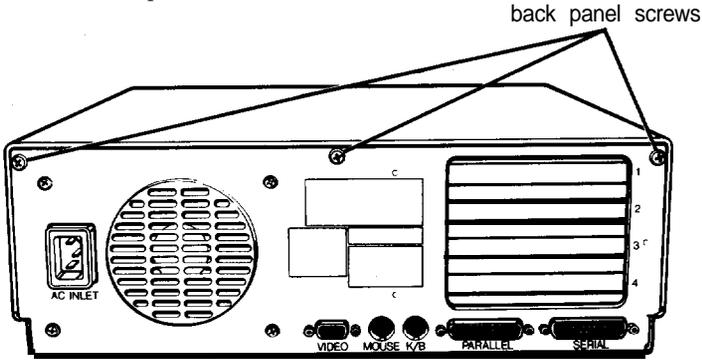
To install an option card, you need to remove the cover from your Equity Ie.

WARNING

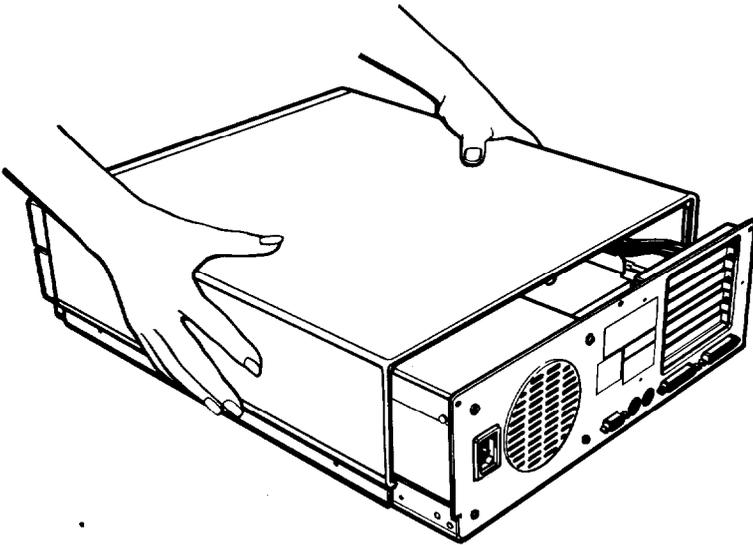
Never open the computer's cover when the computer is plugged into an electrical outlet. Before you open the cover, turn off the power switches—first on the main unit and then on the peripherals. Then let the computer stand for about ten seconds before unplugging the power cable.

1. If the monitor is on top of the computer, lift it off and set it to one side. Turn the main unit around so the back panel faces you.

2. The top cover is secured by three screws along the top of the back panel and two screws on each side of the main unit. Remove the screws and put them in a safe place.



3. Now turn the main unit around so the front panel faces you. Grasp the cover and pull it toward you, away from the back of the computer.

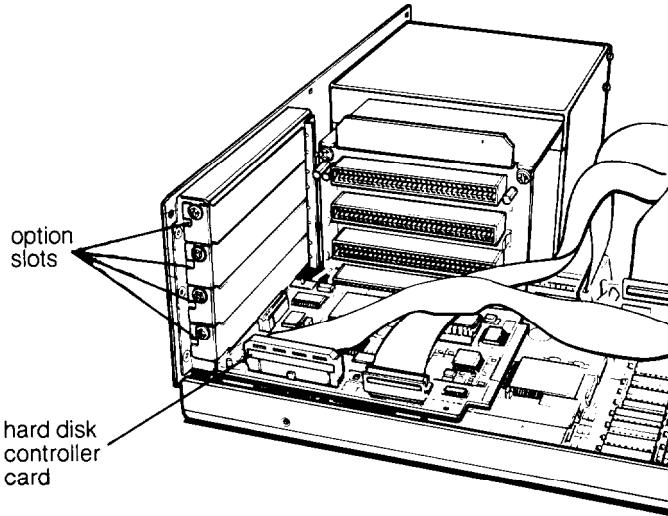


4. When the cover clears the main unit, lift it off and set it aside.

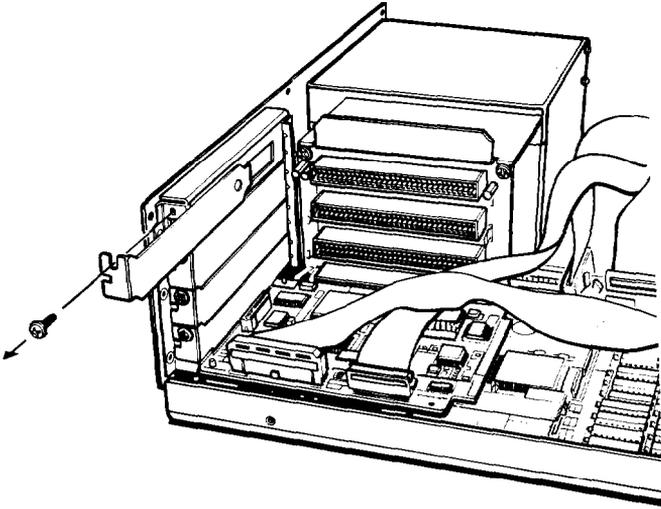
Installing an Option Card

The Equity Ie uses 8-bit option cards. These cards fit in the slots only one way, but be sure to examine the card first and follow the instructions closely.

The Equity Ie has four option slots. If you have a hard disk, its controller card may occupy one slot, as in the illustration below:



1. Decide which option slot you want to use. You need to remove the metal option slot cover at the back of that slot. Remove the retaining screw from the side of the option slot cover as shown in the next illustration. Save the screw so that you can use it to secure the option card in place. Lift out the option slot cover and keep it in a safe place in case you remove the option card later.



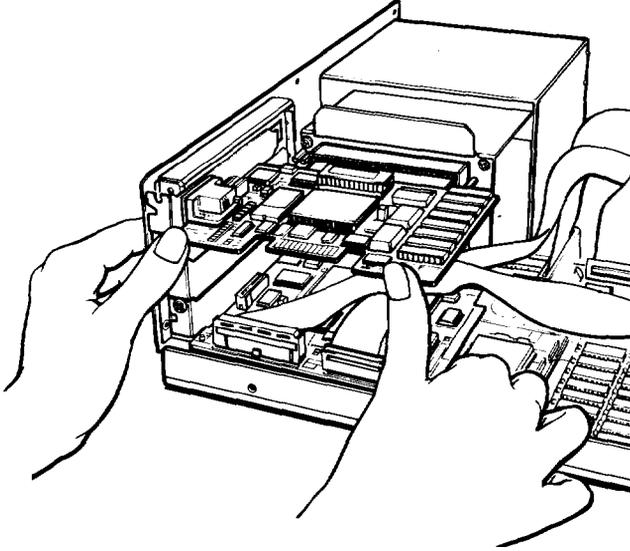
2. Unpack the option card and adjust any of its switches or jumper connections, if necessary. (For example, a memory expansion card usually contains DIP switches that you need to set.) See the instructions that come with the option card.

When you handle the card, be careful not to touch any of the contacts on the circuit board, especially the gold-edged connections. If you need to set the card down, place it on top of its original packing material with the component side facing down.

Keep the card's packing materials in case you remove the card later.

3. Position yourself (or the computer) so that you are on the side of the computer with the option slots. You should be facing the gold connector slots inside the computer.
4. Hold the card by the corners opposite the gold metal pins. Make sure the pins point toward the connector slot and the components face up. The card's metal mounting bracket should be on your left.

5. Insert the card in the slot as shown below. Make sure the card's mounting bracket aligns with the slot at the back of the computer.



6. Once the connector pins are sitting in the connector slot, push the card firmly (but carefully) to fully insert it.
7. Secure the mounting bracket on the end of the card to the back of the computer with the retaining screw you removed earlier.

Removing an Option Card

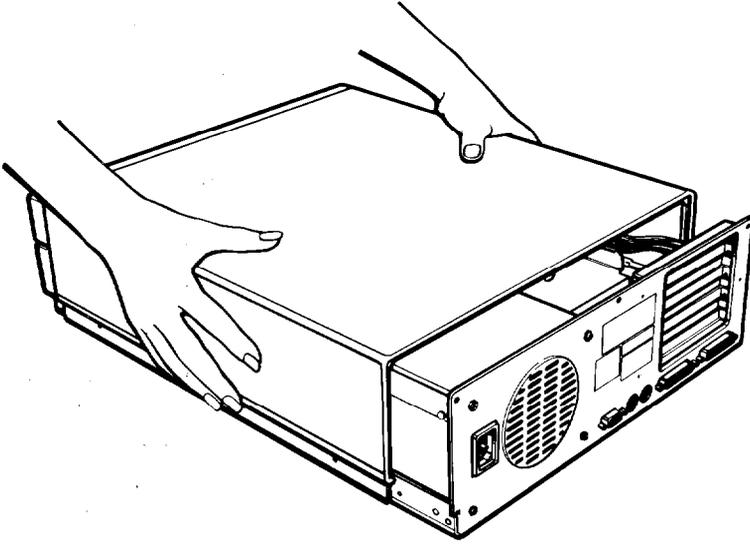
If you need to remove an option card, follow the steps below:

1. Remove the screw holding the option card's mounting bracket and pull the card toward you, out of the connector.
2. Carefully wrap the card, preferably with the original packing materials, and place it inside its box for safe storage.
3. Replace the original metal cover in the empty option slot and secure it with the retaining screw.

Replacing the Cover

After you install (or remove) an option card, follow these steps to replace the main unit's cover:

1. With the front of the computer facing you, slide on the top cover as shown in the following illustration.



2. Slide the cover straight back until the front panel is flush with the diskette drive.
3. To secure the cover, replace the two screws on each side of the computer and the three screws on the back panel.
4. Reconnect the main unit to the monitor, the keyboard, and any other peripherals you have.
5. Check to be sure the power switch on the main unit is off. Then reconnect the power cable to the back of the main unit and to an electrical outlet.

Appendix B

Troubleshooting

You should not encounter any difficulties as you set up and use your Equity Ie. You can correct most problems by adjusting a cable connection, repeating a software procedure, or resetting the computer. If anything out of the ordinary happens, turn to this chapter for a solution.

Besides trying the suggestions in this chapter, you can run a diagnostics check on the various components of your computer system. See Appendix D, Performing System Diagnostics, for instructions.

If the suggestions in this chapter or Appendix D do not solve the problem, contact your Epson dealer. Your dealer may be able to solve the problem; if not, he or she can refer you to an Authorized Epson Customer Care Center. If necessary, call the Epson Customer Information number (1-800-922-8911) for the location of your nearest Authorized Epson Customer Care Center.

When you contact your dealer or Customer Care Center, be ready to provide the serial number of your computer, its configuration (including the type of disk drives, monitor, and option cards), and the names and version numbers of any software you are using.

The Computer Won't Start

If your computer does not start up when you turn on the power switch, follow the steps below. (If you have a hard disk, also see the section on hard disk problems later in this chapter.)

1. Check that the **POWER** light on the front panel of the main unit is on. If it is not, remove any diskettes you have in the drives and turn off the power. Wait five seconds, then turn the power back on.

WARNING

When you turn off the computer, always wait at least five seconds before turning it back on. You can damage your computer if you turn it off and on rapidly

2. If the light still does not come on, turn off the power again. Check that the power cord is securely connected to both the AC inlet on the back panel and an electrical outlet. Then turn the power back on.
3. If the computer still does not start up, check that your electrical outlet is working by plugging a lamp into the outlet and turning it on.
4. If the electrical outlet is working and all the connections are secure but your computer still won't start, see your Epson dealer.

The Computer Locks Up

If the computer does not respond to your keyboard entries, try the following:

1. Wait a few seconds. Remember that some operations the computer performs may take longer than others. For example, it takes the computer much longer to recalculate an entire spreadsheet than to record one figure. Also, GW-BASIC programs involving many calculations can take several minutes, or even hours, to complete.
2. If the computer remains locked up after you've allowed a reasonable amount of time, follow the steps in Chapter 3 to reset the computer.

Video Problems

If your monitor screen displays strange characters or images, or is blank, try the steps outlined below. If you have installed a video controller card in your computer, also see the section on option card problems at the end of this chapter.

1. Make sure the computer is running properly.
2. Check that the monitor's power switch is on and that the power indicator on the monitor is lit. If the power is on but the indicator light is not, turn off the monitor's power, wait five seconds, and turn the power back on. Wait a few seconds to see if the screen displays any text.
3. If the display still doesn't appear on the screen, use the controls on the monitor to adjust the display's brightness and contrast.

4. Remove any diskettes from your disk drives and turn off the computer and the monitor. Check that the monitor's power cord is securely connected to the monitor, and that the monitor cable is connected to both the monitor and the computer's back panel. Then turn both power switches back on.
5. Check the electrical outlet for power. Turn off your monitor and unplug it from the wall outlet. Plug a lamp into the wall outlet, and turn it on to see if the outlet supplies power.
6. Make sure you have installed your software properly and that you have the appropriate video monitor and controller for your software.

Diskette Problems

If you have trouble with one of your diskettes, see if any of the following questions apply:

1. Is the diskette damaged? To find out, make a copy of the diskette. Using this copy, repeat the operation that caused the problem. If the operation works using the copy diskette, the original diskette is probably damaged. Make another copy to use as a backup.

If you have trouble copying the entire diskette, some of the sectors may be bad. Try using the COPY command to copy one file at a time.

2. Have you inserted the right type of diskette? The Equity Ie uses double-sided, double-density, 135 track-per-inch (TPI), soft-sectored, 720KB 3½-inch diskettes.
3. Is the diskette write-protected? If the write-protect switch is set you cannot write data to the diskette.

Before you move the switch, check the diskette directory to determine the files it contains. If the diskette contains information you do not want to change or lose, leave it write-protected. Although you should normally write-protect all program diskettes, some programs store temporary files on the diskette and do not work if write-protected.

Hard Disk Problems

If you have problems with your hard disk when you first start to use it, make sure it is properly set up. Try the following steps:

1.

MS-DOS system files. Turn off your computer and insert your working copy of the Startup/Operating 1 diskette into drive A. Then turn on your computer and log on to your hard disk drive.

root directory of your hard disk. If the file is not in the root directory, use the COPY command to copy COMMAND.COM from the diskette to the hard disk, and then restart your system.

If COMMAND.COM is already in the root directory, use the MENU utility described in Chapter 4 to compare the COMMAND.COM

disk. If the files don't match, use the COPY command to replace COMMAND.COM on your hard disk with the COMMAND.COM file on your diskette.

2. If the hard disk still doesn't work, the root directory of your hard disk may be missing some hidden system files. (Hidden files are read-only files that are not displayed when you list the files in the root directory using the DIR command.)

To copy the hidden system files from your Startup/Operating 1 diskette to the root directory of the hard disk, log on to the diskette drive, type the following command, and press **Enter**:

```
SYS c:
```

3. If you can boot from a diskette, but cannot access data stored on your hard disk you may have accidentally repartitioned or reformatted part or all of the disk.

Use the FDISK program to see if your hard disk has an active (bootable) DOS partition on it. If it doesn't, back up all your files and then use FDISK to create an MS-DOS partition. If your hard disk does have an active DOS partition, back up your files and then try reformatting your hard disk using FORMAT or SELECT Reformatting destroys all the data currently on your hard disk, so do this only after careful consideration and after trying the preceding steps.

4. If you are still having problems, you can try using the Format Hard Disk option of the OPERATION MENU. This procedure performs a hardware check and format of a hard disk. See Appendix F for details. You may want to contact your dealer before using this option.
5. If none of the above procedures work, contact your Epson dealer or have an Authorized Epson Customer Care Center check your hard disk. Never open the airtight container that encloses the hard disk.

Software Problems

If you are having trouble with a software program, try the following solutions:

1. If a software program does not start, check that you are following the correct procedure for starting the program. If you have a hard disk, make sure you are logged onto the directory containing the application program. If you don't have a hard disk, make sure you have inserted the application diskette in the top drive.
2. If an application routine does not work, check the application software manual and try the routine again according to the instructions. If this does not work, reset the computer, reload the program, and try the routine again.
3. Some programs work at only one operating speed. The Equity Ie can run at either 8 or 10 MHz. Check your software manual for this information and then change the CPU operating speed if necessary.

Printer Problems

Your printer manual describes solutions for most potential printer problems.

If your printer does not work correctly immediately after you install it, check that the printer has power and is properly connected to the computer. Your printer manual provides detailed instructions on how to connect your printer to the computer. Also, see your software manual to make sure your software is set up correctly for your printer.

If you have problems during printing, check the printer manual for the printer's correct DIP switch or control panel settings. These settings help a printer communicate properly with the computer. You may need to make an adjustment for your configuration.

Option Card Problems

If you install an option card and get unexpected results, check the following:

1. Is the option card installed correctly? Check the setup and operation procedures in both Appendix A and in the instructions that come with the option card.
2. Did you set the necessary DIP switches or jumpers on the option card? See your option card instructions for these settings.
3. If you used the option card to add an external device to your computer, did you use the proper cable to connect the device to the option card connector on the back panel?
4. Did you perform the necessary setup procedures for the software you are using? If necessary, see your software manual for instructions on running the software setup procedure.

Appendix C

Power-On Diagnostics

The built-in permanent memory in your computer (ROM) contains a series of diagnostics programs. These programs are run automatically by the system every time you turn on the power. The diagnostics programs check the internal devices such as the ROM, RAM, keyboard controller, timer, video controller, diskette driver, and hard disk controller.

When you turn on the power, the computer performs the tests described in this appendix. If an error is found, an error code and an error message are displayed. If the error is serious, the computer cancels further checking and halts system initialization. The error message remains on the screen but the computer is inoperable.

If the error is not serious, the computer displays an error message and waits for you to resume further checking. You see this prompt:

Press F1 key to resume

Write down the error message and code number, and then press **F1** to resume. Report the error message and code number to your dealer when requesting repairs.

System Device Check

The computer first checks its internal devices such as the ROM. If a malfunction is found, the computer displays an error message. In some cases, the computer may halt with no further information. If this happens, contact your dealer as soon as possible.

If the computer finds an error in the system board, this message is displayed:

101-System board error

Clock and CMOS RAM Check

When the system device check is completed successfully, the computer checks the timer and CMOS RAM. If the system clock has not been set, this message is displayed:

161-Set date and time

RAM Check

The computer now begins to check the RAM installed in the main system board. During the check, this message is displayed:

xxxKBOK

where XXX indicates the amount of memory in which no malfunction is found. This value increases continuously by 64KB up to the amount of RAM installed on the main board, which is 640KB. If the computer detects an error in the first 64KB area, an error message is displayed and the computer halts with no further information.

If there are faulty RAM chips in your system, you see the following message:

20x-Memory error

Keyboard Controller and Keyboard Check

The computer checks the keyboard controller and keyboard for problems such as failure of one of the keys to release. If there are any errors in the connection between the keyboard and computer, you see this error message:

301-Keyboard error

Video and Video Controller Check

The computer next checks the video and video controller. If an error occurs, you see one of these messages:

401-CRT error

501-CRT error

Parallel Port Check

Next, the computer checks its parallel port. If an error is found, you see this message:

901-Parallel port error

Serial Port Check

The computer then checks its serial port. If an error is found, you see this message:

1101-Serial port error

Diskette Drive Seek Check

The computer checks its diskette drives by searching the read/write heads for any malfunction. If any seek errors are found, you see one of these messages:

601-Diskette error

602-Diskette error

If this error occurs, confirm that the system diskette is inserted into drive A. If the message still appears after you insert the diskette, you may then want to run the floppy disk drive and controller check using the system diagnostics program on the Reference diskette (see Appendix D). If the error persists, consult your dealer about having the drive repaired.

Hard Disk Controller and Hard Disk Check

The computer next checks the hard disk controller and drive unit. If a malfunction is found in the hard disk controller, you see one of these error messages:

1701-Disk error

1790-Disk error

Performing System Diagnostics

This appendix describes how to check the operation of the main unit and peripheral devices of your Equity Ie. You check these devices using the diagnostics program on your Reference diskette.

Run the diagnostics program if you are not sure whether a device is performing correctly. The table at the end of this appendix lists the error messages you may see during testing.

Starting System Diagnostics

To start the system diagnostics program, follow these steps:

1. Insert the Reference diskette in drive A.
2. Turn on or reset the computer. The diagnostics program loads automatically and displays the main menu:

OPERATION MENU

- 1 - **System diagnostics**
- 2 - Format hard disk
- 3 - Prepare hard disk for moving
- 0 - Exit to DOS for more utilities

Enter selection number:

3. Press 1 to select **System diagnostics** and then press **Enter**.

When you start the system diagnostics, the computer checks the system's configuration. Once this check is completed, the screen displays the **DEVICE LIST**, a list of the devices available for testing. This list includes only the devices that are installed in the system.

The screen looks something like this:

DEVICE LIST

- 1 - System board
- 2 - Memory
- 3 - Keyboard
- 5 - Video
- 6 - Floppy disk drives and controller
- 7 - Math coprocessor (8087)
- 9 - Parallel port (printer interface)
- 11 - Serial port (RS-232C port)
- 12 - Alternate serial port
- 14 - Dot-matrix printer
- 17 - Hard disk drives and controller
- 21 - Alternate parallel port
- 81 - Parallel port (on video adapter)

Is the DEVICE LIST correct (Y/N)?

4. If the list correctly describes your system, press Y and **Enter**. If a device is missing from the list, or if you wish to change the list, press N and **Enter**.

Modifying the DEVICE LIST

When you press N and **Enter** in response to the prompt Is the DEVICE LIST correct (Y/N)?, the following menu appears:

Modify DEVICE LIST

- 1 - Add devices
- 2 - Delete devices
- 0 - Exit

Press 1 and **Enter** to add devices, or 2 and **Enter** to delete devices. A menu then appears that lists the devices you can add or delete. Type the number of the device you want to add or delete and press **Enter**. You can add or delete as many devices as necessary.

When you are finished, press 0 and **Enter** to display the modified DEVICE LIST for a final check. If the list is correct, press Y and **Enter**. You are now ready to select a test.

Selecting a Test

From the DEVICE LIST, select the device to be tested. Type the number of the device, and then press **Enter**. The following menu appears:

Number of times to test device

- 1 - Run test one time
- 2 - Run test multiple times
- 0 - Exit

Enter selection number:

You can specify that the test be performed one time only or any number of times up to 9999. Running a test multiple times is for reliability testing of essential functions only; in most cases running a test only once is sufficient.

To perform the test only once, press 1 then **Enter**. Depending on the device you have selected, the program may then display a submenu of more detailed tests you can select.

To perform the test multiple times, press 2 and **Enter**. You see this prompt:

Terminate checking if an error is detected (Y/N)?

Press Y and **Enter** to terminate checking if the device produces an error, or press N and **Enter** to repeat the tests regardless of an error. This prompt then appears:

How many times (1-9999)?

Type the number of times you want to repeat the test; then press **Enter**. The tests for the device now start.

Resuming From an Error

If an error occurs during a test, the test stops at that point and an error code and error message are displayed. If you want to record the problem, you can print out the message on your printer. You see this prompt:

Do you want a printout of the error message(s)
(Y/N)?

To continue without printing the error message, press **N** and **Enter**.

To request a printout, first make sure your printer is turned on and on-line, with paper loaded. Then press **Y** and **Enter**. If the printer is not ready, the following message is displayed:

Printer is not installed correctly.
Install correctly and enter Y, or
Enter N to cancel printing.

Correct the problem and press **Y** and **Enter** to continue printing, or press **N** and **Enter** to cancel printing.

After printing the error message, the program displays this prompt:

Printout is finished. Press **Enter** to return to the menu.

The program continues after an error in one of the following ways:

- It returns to the **DEVICE LIST**, or
- If you are running multiple tests and are not terminating on an error, the program repeats the test that caused the error.

The remainder of this appendix describes the tests you can run on the system's internal devices and on the optional devices installed in or connected to your computer. The program displays the titles of each test on the screen.

For a complete list of the error codes and messages that are displayed by these tests, see the table at the end of this appendix.

System Board Check

Use this option to check the operation of each major component on the system board, including:

- The 8086 CPU chip
- The system ROM
- The real-time clock, CMOS RAM, and battery
- The main integrated circuits.

The checks made on the 8086 CPU chip are extremely comprehensive and ensure that the CPU instruction set is functioning correctly. If an error occurs, write down the error message, or print it out, and contact your Epson dealer. Attempting to correct system board errors yourself may violate your warranty agreement.

Memory Check

Use this option to check the computer's built-in memory.

Note

This option does not check expanded memory above the 640KB memory limit imposed by MS-DOS.

For this check, the program writes specific data into memory and then reads it back. The data is written and read in blocks of 64KB. A parity check is also made on each block. A count of memory is displayed after each block that is tested without an error. The final message is usually:

640KB OK

If an error occurs, write down the error message, or print it out, and contact your Epson dealer. Attempting to correct memory errors yourself may violate your warranty agreement.

Keyboard Check

Use this option to check the operation of the keyboard.

The program first checks the keyboard controller. If you specified to run the keyboard check multiple times, only this part of the test is performed. If an error message appears, write it down or print it out so you can contact your Epson dealer when you complete the test.

If no errors are detected, the screen displays a diagram showing two types of **Enter** keys and this prompt:

Which shape is your ENTER key?
Enter selection number (1 or 2):

If you have a U.S. keyboard, your **Enter** key should be rectangular, like the key shown on the left. Press **1** and **Enter**. If you have a keyboard for another country with an **Enter** key shaped like the key shown on the right, press **2** and **Enter**.

The screen then displays a diagram showing the layout of your keyboard. To test the keyboard input, press any key on your keyboard. An asterisk (*) should appear on the corresponding key in the diagram shown on the screen.

You can test as many keys as you like this way. If the location of an asterisk on the screen does not match the actual key you pressed, press the **End** key and then press **Enter**. Write down the error message that appears, or print it out, and contact your Epson dealer.

To end the test, press **ESC** and then **Enter**.

Video Check

Use this option to check the operation of your video monitor and controller. The test includes several checks that allow you to identify specific video problems.

You select the individual checks from a menu that looks similar to the one below (the menu varies according to the type of monitor installed):

- 1 - Video RAM check
- 2 - Attribute check
- 3 - Character set check
- 4 - 40-column character set check
- 5 - 320X200 graphics mode check
- 6 - 640X200 graphics mode check
- 7 - 640X480 graphics mode check
- 8 - Monochrome/Color video check
- 9 - Run all above checks

- 0 - Exit

Enter selection number:

If you specified to run the video check multiple times, only the video RAM check is performed.

If an error occurs during any of these tests, write down the error message, or print it out, and then contact your Epson dealer. When you are finished with the test, press 0 and **Enter** to return to the DEVICE LIST.

Video RAM check

To check your video RAM, press 1 and then **Enter**.

The computer checks the video RAM (display memory) used for monochrome or color graphics by writing certain data to memory, then reading it back and comparing it to the written data.

Attribute check

To check the video display attributes, press 2 and then **Enter**.

If you have a color monitor, the screen displays examples of the possible display attributes (normal intensity, high intensity, blinking), including the available colors. If you have a monochrome monitor, the screen displays examples of the possible display attributes (normal intensity, high intensity, blinking), including all the available shades of gray.

At the bottom of the screen is the prompt:

Is the display correct (Y/N)?

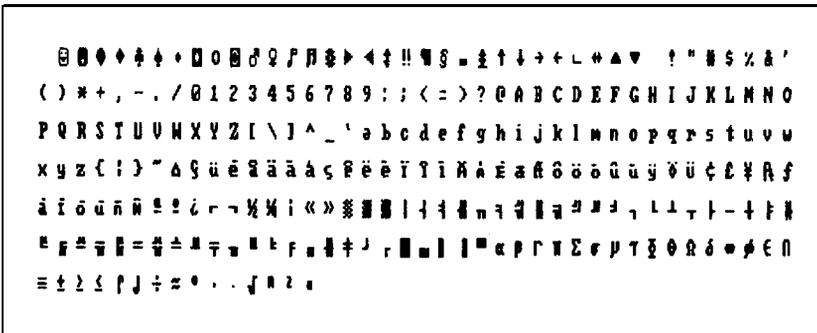
Press **Y** and **Enter** if the display is correct.

If the colors or shades of gray are not correct, adjust the controls on your monitor. If they are still incorrect, or if any of the other attributes are not correct, press **N** and **Enter**.

Contact your Epson dealer to verify any monitor problems.

Character set check

To check your 80-column character set, press 3 and then **Enter**. The character fonts that are included in the internal character generator are displayed. Check the characters displayed on your screen against this illustration:



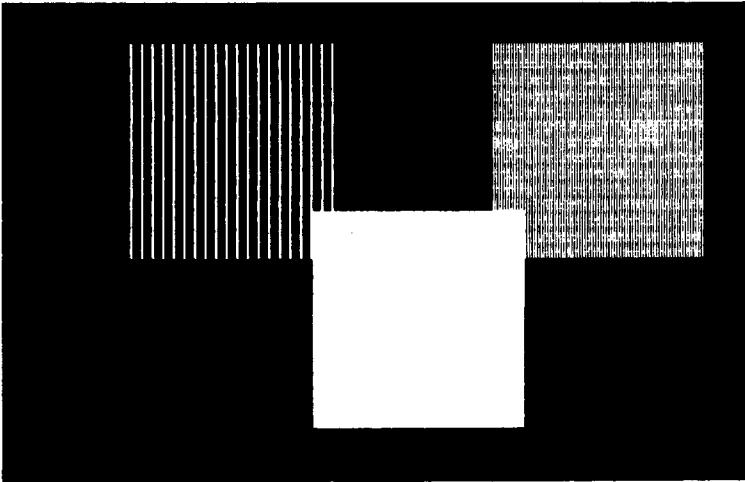
monitor, the screen displays a dark gray, light gray, and black square against a white background. These four colors are Color Set 0. If they are correct, press **Y** and then **Enter**.

The same pattern is now displayed again. This time, the squares are cyan, white, and magenta on a red background if you have a color monitor, or gray, white, and black on a black background if you have a monochrome monitor. These colors are called Color Set 1. If these are also correct, press **Y** and then **Enter** to end the test.

If any colors are incorrect, check the adjustment of your monitor, and then make sure that both ends of the cable are plugged in firmly. If a problem still exists, press **N** and **Enter** to display the error message.

640x200 graphics mode check

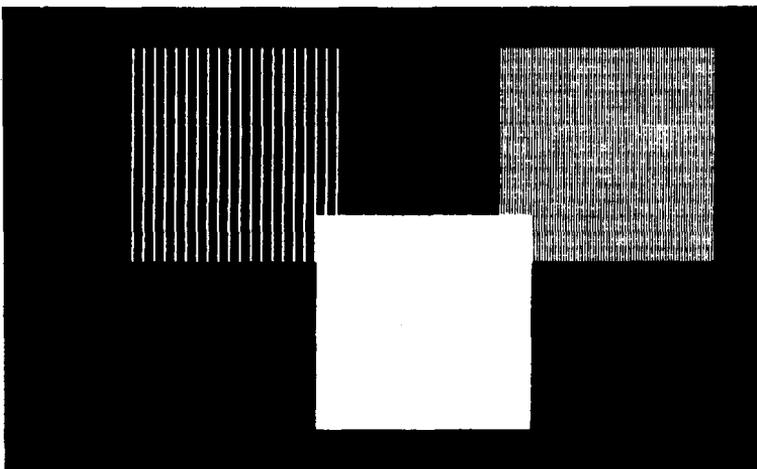
To check your 640x200 graphics mode, press **6** and then **Enter**. The screen displays three patterned squares like the ones shown below:



If the patterns on your screen are clear and distinct, press **Y** and then **Enter**. If any pattern is not displayed clearly, first check the adjustment of your monitor, and then make sure that both ends of the cable are plugged in firmly. If a problem still exists, press **N** and **Enter** to display the error message.

640x480 graphics mode check

To check your 640x480 graphics mode, press 7 and then **Enter**. The screen displays three patterned squares like the ones shown below:



If the patterns on your screen are clear and distinct, press **Y** and then **Enter**. If any pattern is not displayed clearly, first check the adjustment of your monitor, and then make sure that both ends of the cable are plugged in firmly. If a problem still exists, press **N** and **Enter** to display the error message.

Monochrome/Color video check

To check your monochrome or color video, press 8 and then **Enter**.

If you have a color monitor, the test displays 16 different screens, each with a different background color and a message indicating the color. If you have a monochrome monitor, the test displays a black and then a white screen. After the first screen is displayed, press any key to display the next screen.

The colored screens are displayed in the order shown below:

- | | |
|-------------|-----------------------------|
| 1 — Black | 9 ---Gray |
| 2 — Blue | 10 — Light blue |
| 3 - Green | 11 — Light green |
| 4 — Cyan | 12 — Light cyan |
| 5 — Red | 13 — Light red |
| 6 — Magenta | 14 — Light magenta |
| 7 — Brown | 15 — Yellow |
| 8 — White | 16 — White (high intensity) |

When you get to the last screen, you see this prompt:

Is the display correct (Y/N)?

If all the colors or shades are correct, press **Y** and **Enter** to end the test. If any color is displayed incorrectly, first check the adjustment of your monitor, and then make sure that both ends of the cable are plugged in firmly. If a problem still exists, press **N** and **Enter** to display the error message.

Run all above checks

To run all the tests on the menu in sequence, press **9** and **Enter**.

When you choose this option, all video checks are performed automatically in sequential order. Although you do not start each test, you must still supply the appropriate responses to progress from one test to the next.

Floppy Disk Drives and Controller Check

Use this option to test the performance of the floppy disk (diskette) drives installed in your computer. This test includes several checks that allow you to identify particular problems related to your diskette drives.

To run these tests, you need a formatted 720KB diskette so the tests can write data on the diskette in the drive.

Start the tests by selecting option 6 from the DEVICE LIST menu. After you choose the number of times to run the test, the screen displays this menu:

FLOPPY DISK DRIVE(S) AND CONTROLLER CHECK MENU

- 1 - Sequential seek check
- 2 - Random seek check
- 3 - Write, read check
- 4 - Run all above checks

- 0 - Exit

Enter selection number:

Before any checks are performed, the program determines the number of diskette drives installed in your computer. If you have more than one drive, you see this prompt each time you select a test:

Check which drive (A/B)?

Press **A** or **B** and then **Enter**.

If any errors occur during the checks, write down the error message and contact your Epson dealer. Always have the diskette drive serviced by your Epson dealer.

When you finish running the checks, press **0** and **Enter** to return to the DEVICE LIST menu.

Sequential seek check

This test checks the ability of the read/write heads to locate any part of the diskette. This action by a read/write head is called a seek. During this test, each head seeks sequentially from the innermost track to the outermost track. The innermost track is track 79 for 720KB diskettes.

Select option 1 from the menu to start this test. The program displays the number of each track it finds, counting down from 79 to 0.

The seek is performed by each head, so you see the count twice. If no errors occur, the menu is displayed.

Random seek check

This test is identical to the sequential seek check, except that the seek operation is performed on each track in random order instead of sequential order. Select option 2 from the menu to start this test.

Write, read check

This test checks the ability of the selected disk drive to read and write data from a diskette. The test writes to and reads from each track on the diskette, starting at the center. Select option 3 from the menu to start this test.

Note

This test destroys all data on the diskette in the selected drive. If you are testing drive A, you need to remove your Reference diskette from the drive and replace it with a blank, formatted diskette.

If you have only one diskette drive, you are prompted to replace the Reference diskette with a blank diskette before running the test. You see this message:

Use only a formatted blank diskette for this test. Any data present may be erased.

If using drive A, remove your Reference Disk.

Enter Y to start this check.

Enter N to return to the menu.

Make sure you have a blank, formatted diskette in drive A, then press Y and **Enter**.

The program displays the current track number as each cylinder is tested. With a 720KB diskette, the first message you see is:

Current track is 79

Run all above checks

To run all the tests on the menu in sequence, press 4 and then **Enter**.

When you choose this option, all checks for the diskette drive(s) and controller are performed automatically in sequential order. Although you do not start each test, you must still supply the appropriate responses to progress from one test to the next.

Math Coprocessor (8087) Check

Use this option to check the operation of the 8087 math coprocessor if you have one installed in your computer.

To start the test, select option 7 from the DEVICE LIST menu. The program runs a series of checks on the precision with which the coprocessor performs calculations and handles exceptions, and reports any errors that occur,

Parallel Port (Printer Interface) Check

Use this option to test the operation of the computer's primary parallel port.

To perform the test, you must insert a special loop-back connector into the parallel port so that the computer can check the individual pins of the port. Contact your dealer if you need a loop-back connector.

Note

If you connect a parallel printer cable instead of a loop-back connector, you will get errors. Also, you need a different loop-back connector to test the serial port.

When you select option 9 from the DEVICE LIST menu, you see this message:

Attach loop-back connector to parallel port.
Enter Y to start this check when connector is attached, or
Enter N to return to the menu.

Insert the loop-back connector. Then press Y and **Enter** to start the check.

The computer checks the port by writing and reading data and control information, and reports errors for any pins that are faulty.

Serial Port (RS-232C Port) Check

Use this option to test the functions of the primary serial communications (RS-232C) port.

To perform the test, you must insert a special loop-back connector into the serial port so that the computer can check the individual pins of the port. Contact your dealer if you need a loop-back connector. Note that a different loop-back connector is required to test the parallel port.

When you select option 11 from the DEVICE LIST menu, you see this message:

```
Attach loop-back connector to serial port.  
Enter Y to start this check when connector is  
attached, or  
Enter N to return to the menu.
```

Insert the loop-back connector. Then press Y and **Enter** to start the check.

First, the computer checks the serial port control lines to see that they are able to change from high to low and vice versa. No messages are displayed during this part of the test unless an error occurs.

The second test is an echo back check during which the port sends data to itself in a fixed data format, at all the possible baud rates. When this test begins, you see this message:

```
RS232C echo back check - at various baud rates  
Current baud rate is 75  
Current test data is 00
```

Each baud rate is tested in turn, and the display informs you of the progress of the test. If the port does not become ready correctly, a timeout error occurs. If any data received does not match the data sent, a verify error occurs, and the computer reports the transmitted and received data at the time of the error.

The final test is an echo back check during which the port sends data to itself at 9600 baud, using various data formats. At the start of the test, you see this message:

```
RS232C echo back check - with various data
formats
Current data format: 5 data bits, 1 stop bits,
parity - NONE
Current test data is 00
```

Once again, if any data received does not match the data sent, a verify error occurs, and the computer reports the transmitted and received data at the time of the error.

Alternate Serial Port Check

Use this option to test the functions of an additional serial communications (RS-232C) port. To perform the test you must insert a special loop-back connector into the alternate serial port so that the computer can check the port's individual pins.

This test is identical to the check for the primary serial port. For more details, see the section describing the serial port check earlier in this chapter.

Dot-Matrix Printer Check

Use this option to check:

- The operation of your printer in IBM-compatibility mode
- The compatibility of your printer with the extended character set used by the Equity Ie
- The ability of your printer to produce dot graphics and print images of the graphics screen.

When you select option 14 from the DEVICE LIST, you see this prompt:

Is dot-matrix printer on-line (Y/N)?

Check that your printer is connected to the computer, and that it is turned on, loaded with paper, and on-line. Press Y and then **Enter** to continue, or press **↵** and **Enter** to return to the menu.

When you continue the test, the computer checks to see whether the printer is responding correctly. This test detects whether the printer is off-line or whether an interface error exists. If no errors occur, the computer sends a repeating sequence of ASCII characters and dot graphics data to the printer until you press any key. The pattern looks like this:

```
Text data (20H-7FH,A0H-FFH)
!"###$%'()*+,-./0123456789;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnop
pqrstuvwxyz{|}~!"###$%'()*+,-./0123456789;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`
abcdefghijklmnopqrstuvwxyz{|}~
Bit-image data (00H-FFH)

```

The text data includes all the characters commonly used by programs that require foreign languages or graphic characters. If your printer prints characters that are different from the ones you see in the illustration, you may need to take care with certain software.

The dot graphics data is sent to the printer using a command (ESC K) compatible with Epson and IBM printers. If this pattern is printed correctly, you can use the MS-DOS GRAPHICS or GRAPH24 program to print out copies of graphics screens.

Note

Even if you run the test for only a short time, your printer may store many characters in its memory. To stop printing, turn the printer off-line.

Hard Disk Drives and Controller Check

Use this option to test the performance of the hard disk drive installed in your computer. If any errors occur, have your dealer check and service the drive.

When you select option 17 from the DEVICE LIST, you see this menu:

HARD DISK DRIVE AND CONTROLLER CHECK MENU

- 1 - Seek check
- 2 - Write, read check
- 3 - Read, verify check
- 4 - Run all above checks

- 0 - Exit

Enter selection number:

Press the number corresponding to the test you want to run and press **Enter**. When you are finished with all checks, press 0 and **Enter** to return to the DEVICE LIST menu.

Seek check

This test checks the ability of the read/write heads to locate any part of the hard disk. This action by a read/write head is called a seek. During this test, each head seeks each cylinder of the disk in sequence, starting from the center.

Select option 1 from the menu to start this test. The program displays the number of each cylinder it finds, counting down to 0. The seek is performed by the read/write heads simultaneously, so you see the cylinder numbers only once. If no errors occur, the menu is displayed.

Write, read check

This check tests the ability of the hard disk drive to read and write data. The test writes to and reads from each sector of the innermost cylinder of the disk, using each head.

Note

This test destroys all data on the innermost cylinder of the hard disk drive. This cylinder is reserved for diagnostics, however, and is never used for storage by MS-DOS. Therefore, data created by MS-DOS is not destroyed.

Select option 2 from the menu to start this test. You see this message:

The data on the highest physical cylinder may be destroyed by this check.
Enter Y to start this check.
Enter N to return to the menu.

Press Y and then **Enter** to continue the test.

You do not see a cylinder count during the test. If no errors occur, the program returns to the menu.

If an error is reported, consult your dealer.

Read, verify check

This test reads and verifies data from all tracks of the disk, checking each cylinder and using all heads.

Select option 3 from the menu to start this test. The program displays the number of each cylinder it finds. For example, with a 20MB hard disk, the first message you see is:

Current cylinder is 614

The cylinder number counts down to 0. At the end of the test, you see a table showing the results of the test. For example, for a 20MB hard disk with three bad tracks, you see:

```
BAD TRACKS      . . . . . 0
READ ERROR TRACKS . . . . . 3
GOOD TRACKS     . . . . . 2457
```

Press **Enter** to return to the menu after viewing the table. Don't worry if there are some bad tracks on the disk. They have been blocked out by the manufacturer and will not be used to store data.

Run all above tests

To run all the tests on the menu in sequence, press 4 and then **Enter**.

When you choose this option, all checks for the hard disk drive and controller are performed automatically in sequential order. Although you do not start each test, you must still supply the appropriate responses to progress from one test to the next.

When you see a prompt warning you that the data on the highest physical cylinder may be destroyed, press Y and then **Enter** to continue with the test. (The cylinder is reserved for diagnostics, and is never 'used for storage by MS-DOS. Therefore, data created by MS-DOS is not destroyed.)

Alternate Parallel Port Check

Use this option to test the functions of an additional parallel port. To perform the test you must insert a special loop-back connector into the alternate parallel port so that the computer can check the port's individual pins.

This test is identical to the check for the primary parallel port. For more details, see the section describing the parallel port check earlier in this chapter.

Parallel Port (on Video Adapter) Check

Use this option to test the functions of a parallel port on a video adapter card. To perform the test you must insert a special loop-back connector into the port so that the computer can check the port's individual pins.

This test is identical to the check for the primary parallel port. For more details, see the section describing the parallel port check earlier in this chapter.

Exiting System Diagnostics

When you finish running the system diagnostics, press 0 and Enter to return to the OPERATION MENU. Then press 0 and Enter to reset the computer. When the OPERATION MENU appears again, press 0 and Enter again, this time to return to MS-DOS. When the MS-DOS command prompt reappears, remove the Reference diskette.

Error Codes and Messages

The table below lists all the error codes and messages that may appear during diagnostic checks.

| Error code | Message |
|--------------|---|
| System board | |
| 101 | CPU ERROR |
| 103 | TIMER COUNTER REGISTER ERROR |
| 104 | TIMER COUNTER ERROR |
| 105 | DMA CONTROLLER REGISTER ERROR |
| 105 | DMA REFRESH ERROR |
| 108 | KEYBOARD SELF DIAGNOSTIC ERROR |
| 109 | INTERRUPT CONTROLLER ERROR |
| 111 | REAL TIME CLOCK ERROR |
| 113 | CPU INSTRUCTION ERROR |
| Memory | |
| 201 | MEMORY/PARITY ERROR |
| Keyboard | |
| 301 | KEYBOARD CONTROLLER SELF DIAGNOSTIC ERROR |
| 302 | KEYBOARD IS DEFECTIVE |

| Error code | Message |
|---|---|
| Video-adaptor and display 501 503 504 505 506 507 508 510 | V-RAM ERROR ATTRIBUTE ERROR CHARACTER SET ERROR 40-COLUMN CHARACTER SET ERROR 320X200 GRAPHICS MODE ERROR 640X200 GRAPHICS MODE ERROR 640X480 GRAPHICS MODE ERROR COLOR VIDEO ERROR |
| Floppy disk drives and controller 601 602 603 604 605 | FLOPPY DISK CONTROLLER ERROR SEQUENTIAL SEEK ERROR RANDOM SEEK ERROR WRITE ERROR READ ERROR |
| Math coprocessor 701 702 703 704 705 706 707 708 709 710 | COPROCESSOR NOT INSTALLED COPROCESSOR INITIALIZE ERROR COPROCESSOR INVALID OPERATION MASK ERROR COPROCESSOR ST FIELD ERROR COPROCESSOR COMPARISON ERROR COPROCESSOR ZERO DIVIDE MASK ERROR COPROCESSOR ADDITION ERROR COPROCESSOR SUBTRACTION ERROR COPROCESSOR MULTIPLICATION ERROR COPROCESSOR PRECISION ERROR |
| Parallel port 901 | ERROR PIN p |
| Serial port 1101 1101 1102 1103 | ERROR DTR DSR, DSR ALWAYS HIGH/LOW ERROR RTS CTS, CTS ALWAYS HIGH/LOW TIME OUT ERROR VERIFY ERROR |
| Alt. serial port 1201 1201 1202 1203 | ERROR DTR DSR, DSR ALWAYS HIGH/LOW ERROR RTS CTS, CTS ALWAYS HIGH/LOW TIME OUT ERROR VERIFY ERROR |
| Dot-matrix printer 1401 | status: error type |
| Hard disk drive and controller 1701 1702 1703 | SEEK ERROR WRITE ERROR READ ERROR |

Specifications

Main Unit

| | |
|------------------|---|
| CPU | 8086 microprocessor, 8 MHz or 10 MHz clock rate, switchable without rebooting |
| Main memory | 640KB |
| Math coprocessor | 8087-1 microprocessor (optional) for use at 10 MHz |

Interfaces

| | |
|--------------------|---|
| Parallel interface | Standard 8-bit parallel, 25-pin, D-type female connector |
| Serial interface | RS-232C, programmable, asynchronous, 25-pin, D-type male connector |
| Speaker interface | Internal, non-adjustable |
| Option slots | Four IBM XT-compatible, 8-bit, input-output expansion slots (one used by hard disk controller card, if installed) |

Keyboard

| | |
|---------------|--|
| | Detachable, three positions, 101 sculpted keys |
| Layout | 58-key QWERTY main keyboard, 1 7-key numeric/cursor pad, 12 function keys (user-definable), LEDs for lock keys |
| Function keys | Three levels (normal/shift/alternate), user-definable |

Mass Storage

Two internal drives maximum

| | |
|----------|--|
| Standard | One 3½-inch, half-height diskette drive with double-sided, double-density, 720KB storage capacity |
| Optional | One 3½-inch, half-height diskette drive with double-sided, double-density, 720KB storage capacity; one 3½-inch 20MB internal hard disk drive |

Power Requirements

62W (maximum) 72W (peak) power supply
115/230 VAC, 50/60 Hz, auto-sensing
± 3VDC ± 12VDC output

Environmental Requirements

| | |
|-------------|---|
| Temperature | Operating range: 41° to 95° F (5° to 35° C) Non-operating range: -4° to 140° F (-20° to 60° C) |
| Humidity | Operating range: 20% to 80%, non-condensing Non-operating range: 10% to 90%, non-condensing |

Physical Characteristics

| | |
|--------|---|
| Width | 13.76 inches |
| Depth | 15.94 inches |
| Height | 4.5 inches |
| Weight | 18.8 lbs (single-diskette system, including keyboard) |

Video Display

| | |
|----------|---|
| Standard | MCGA video controller, supports Epson- and IBM-compatible VGA color and VGA monochrome monitors |
|----------|---|

Appendix F

Formatting a User-installed Hard Disk

This appendix describes how you check and format a hard disk that you are installing in your computer. You can also use this program on a hard disk if you are having serious problems. This program performs a hardware-level format of the hard disk.

Format hard disk is option 2 on the OPERATION MENU. You can select this option from the OPERATION MENU, or you can execute the MS-DOS HDFMTALL command.

After using this option, you must partition the hard disk and format it for a particular operating system. Remember that formatting destroys all data on the hard disk, in all partitions, so use this program with extreme care.

Starting the Hard Disk Format

To start the program that performs a hardware-level format of a hard disk, follow these steps:

1. Insert the Reference diskette in drive A.
2. Turn on or reset the computer. The diagnostics program loads automatically and displays the main menu:

OPERATION MENU

- 1 - System diagnostics
- 2 - Format hard disk
- 3 - Prepare hard disk for moving
- 0 - Exit to DOS for more utilities

Enter selection number:

3. Press 2 to select Format hard disk and then press Enter.

If you are installing a hard disk drive and want to format it using this program, choose option 1, Conditional format (Normal). After formatting, you need to partition and format the hard disk for your operating system(s). Refer to your MS-DOS manual for details on partitioning and formatting your hard disk for MS-DOS.

If you are reformatting a hard disk because you are having a serious problem with the drive, use the Non-destructive surface analysis test (option 4 on the HARD DISK FORMAT MENU) to decide if formatting is necessary. If errors occur during this test, back up your disk, and run the Conditional format followed by Destructive surface analysis. These tests are described below.

Formatting and Checking Options

When you select option 2, Format hard disk, from the OPERATION MENU, you see a menu of formatting and checking options:

HARD DISK FORMAT MENU

- 1 - Conditional format (Normal)
- 2 - Unconditional format
- 3 -
- 4 - Non-destructive surface analysis

- Ø - Exit

Enter selection number:

The first two options format a hard disk. Normally you use option 1, Conditional format (Normal). This option automatically locates any bad tracks that are *flagged* by the manufacturer and marks them so that they are never used. Option 2, Unconditional format, requires you to enter the list of bad tracks.

The other two options test a hard disk for problems. Use option 3, Destructive surface analysis, to test the entire disk and update the bad track table. Because this option writes data to the disk as well as reads it, all data on any track that produces an error is destroyed. To check for unflagged bad tracks without destroying data, use option 4, Non-destructive surface analysis.

Many hard disk drives are supplied with a list of bad tracks, but without the bad tracks flagged on the disk. Other hard disks are supplied with the bad tracks already flagged. In all cases, run Non-destructive surface analysis before formatting the disk; this routine finds all bad tracks that are not flagged.

If the analysis shows that all the tracks listed as bad are already flagged, you can then use the Conditional format (Normal) option to format the disk. If the analysis matches the list of bad tracks, but they are not flagged, run the Destructive surface analysis (to flag the tracks) before formatting the disk. If the list provided by the drive manufacturer contains bad tracks that the analysis does not detect, you can use the Unconditional format option to flag all the bad tracks manually.

When you select an option from the HARD DISK FORMAT MENU, the program determines the number of hard disk drives installed in your computer. If you have more than one drive, then each time you select a test you see this prompt:

Enter drive letter (C/D)?

Press C or D, and then press **Enter**.

If you have only one hard disk drive, the option you select starts immediately.

Conditional Format (Normal)

Use this option to format the hard disk. All flagged tracks are marked so that they are never used.

To start the Conditional format, press **1** and then **Enter**.

The program starts to scan the disk to find all tracks flagged as bad, starting from the innermost cylinder of the disk. During the scan, you see the number of the cylinder being checked. For example, if you have a 20MB hard disk, the first messages you see are:

```
Format Hard Disk
Scanning for flagged bad tracks...
Current cylinder is 614
```

When the scan is complete, the program displays information about the condition of the disk. For a 20MB hard disk with no bad tracks, the display looks like this:

```
Scanning finished.
Count of tracks flagged bad           = 0
Count of tracks with other errors     = 0
Count of good tracks                  = 2460
```

The program then displays a warning about the consequences of proceeding with formatting:

```
WARNING! ALL DATA WILL BE DESTROYED IN ALL
PARTITIONS OF HARD DISK, NOT JUST IN MS-DOS
PARTITION!
```

```
Do you want to start formatting (Y/N)?
```

If there are no tracks with other errors, and you are absolutely sure that you want to format the hard disk, press **Y** then **Enter**.

The program then asks you once more if you want to continue. You see this message and prompt:

```
DOUBLE CHECK THAT YOU HAVE BACKUP DISKETTE
COPIES OF ALL YOUR FILES.
```

```
Do you want to exit and check your file copies
(Y/N) ?
```

When you are certain no valuable data will be destroyed, press **N** and **Enter**.

If you cancel formatting at either stage, you see these messages:

Format cancelled.

Press ENTER to return to the menu.

If you continue with formatting, you see:

Now formatting . . .

When formatting is complete, any bad tracks are flagged, and you see a series of messages like these:

Format finished.

Flagging bad tracks...

Cylinder is xxxx, head is yy

Format completed.

Press ENTER to return to the menu.

Flagged tracks are identified by xxxx and yy. At this point, press **Enter** to return to the **HARD DISK FORMAT MENU**.

If there are any tracks with other errors, scanning stops and you see the message:

Scanning cancelled.

Warning: This drive has an unflagged error track(s), or is unformatted.

Press ENTER to return to the menu.

Press **Enter**.

This may mean that the drive has never been formatted or that an error was not flagged. If you see this message, it is best to consult your dealer.

If you want to format the disk after receiving this error message, do the following:

1. If the drive is not formatted, run the Unconditional format (option 2) and enter any tracks you know are bad in the Bad Track Table. (See “Unconditional Format” below.)
2. Run the Destructive surface analysis (option 3) to flag any remaining bad tracks. (See “Destructive Surface Analysis,” below.)
3. Run the Conditional format again. No errors should occur; if one does, contact your dealer.

Unconditional Format

Use this option to format your hard disk when you want to enter the list of bad tracks before formatting. The main difference between unconditional and conditional formatting is the way in which bad tracks are identified. With the unconditional format, you must enter the list of bad tracks before formatting begins.

To start the Unconditional format routine, press 2 and then **Enter**.

You are first given the option to change the interleave factor for formatting from the default value of three. Only do this if the documentation with your hard disk recommends a different value. You see this prompt:

Do you want default interleave of 3 (Y/N)?

To accept the default, press Y and **Enter**. To change the value, press N and **Enter**. You see this prompt:

Enter interleave factor (1-16):

Type the recommended value, and press **Enter**.

The next screen allows you to enter the list of bad tracks. The empty bad track table looks like this:

Bad Track Table

| Cylinder | Head |
|----------|------|----------|------|----------|------|----------|------|----------|------|
|----------|------|----------|------|----------|------|----------|------|----------|------|

TABLE EMPTY: A = Add track, F = Finish editing

Enter command letter:

To add a bad track, follow these steps:

1. Press **A**. You see this prompt:

Enter cylinder number (1 - xxxx):

2. Type the number of the cylinder containing the missing bad track, and press **Enter**. You see this prompt:

Enter head number (0 - yy):

3. Type the head number for the bad track, and press **Enter**. The maximum valid cylinder and head numbers (xxxx and yy) vary according to the type of the hard disk.

To cancel this operation, press **Enter** without entering a value. You see this message:

Table unchanged.

If you enter an invalid cylinder or head number, a reminder of the range of values is displayed, and the program asks you to enter the value again.

When you complete a valid entry, it appears in the table, and you can select another command.

If you make a mistake, move the cursor block to the incorrect track, and press C to alter the track data. Or you can press D to remove the track from the table. Change the track data just like you add a track.

When you have finished editing, check the entries in the table once more. When you are sure the table is correct, press F.

The program displays a warning about the consequences of proceeding with formatting, and the remaining steps are exactly the same as for a normal conditional format.

Destructive Surface Analysis

Use this option to accurately locate any bad tracks on a hard disk, and to flag any bad tracks that are not flagged.

WARNING: If any errors occur during this check, all data on the track that produces the error is destroyed. For this reason, if you think that an unflagged bad track is causing trouble, first run option 4, Non-destructive surface analysis, to check the disk surface.

This test operates by a complex process of writing, reading, and verifying information on every track of the hard disk, except for tracks that are already **flagged as** bad tracks.

To start the test, press 3 and then Enter. You see these messages:

```
Analyze Hard Disk
Read/Save/Write/Read/Restore/Read check for all
tracks...
Current cylinder is xxxx
```

As each track is checked, the cylinder number (xxxx) counts down to zero.

When the analysis is complete, the program displays a complete report on the status of the disk, including a table of unflagged tracks that produced write, read errors. For a 20MB hard disk with one flagged bad track, you see this display:

```
Analysis finished.
Count of tracks flagged bad           =    1
Count of tracks with write, read errors =    0
Count of good tracks                   = 2459
No write, read error was detected.
No data was destroyed.
Press ENTER to return to the menu.
```

If the program finds one bad track that is not flagged, the summary above shows one track with a write, read error, and only 2458 good tracks. The report is then followed by a table like this:

```
Write, Read Error Tracks
=====
Cylinder Head Cylinder Head Cylinder Head Cylinder Head
-----
237      2
```

Confirm to register the tracks in the Write, Read Error Track Table as bad tracks.

Do you want to register the error tracks as bad tracks (Y/N)?

To flag the error tracks as bad, press **Y** and **Enter**. You then see a list of the tracks as they are flagged. You see these messages:

```
Flagging bad tracks...
Cylinder is 237, head is 2
Press ENTER to return to the menu.
```

Press **Enter** to return to the **HARD DISK FORMAT MENU**.

Non-destructive Surface Analysis

The Nondestructive surface analysis is slightly simpler than the Destructive surface analysis described in the previous section. This option does not destroy any data, and can safely be used to check the condition of your hard disk drives. However, this test will not flag any bad tracks that are detected.

To start the test, press 4 and then **Enter**. You see these messages:

```
Analyze Hard Disk
Read/Verify check for all tracks...
Current cylinder is xxxx
```

As each track is checked, the current cylinder is displayed. The cylinder number counts down to zero as the disk is checked.

When the analysis is complete, the program displays a summary of the status of the disk. This summary lists these counts:

- Flagged bad tracks
- Tracks with read, verify errors
- Good tracks.

If no errors occur, you see this message:

```
No read, verify error was detected.
```

If errors are found, the program displays a table of the tracks that gave errors, similar to the one displayed by the destructive analysis.

After the status reports you see this message:

```
Press ENTER to return to the menu.
```

Check the information displayed, then press **Enter**.

Glossary

Application program

A software program designed to perform a specific task, such as a word processing or spreadsheet program.

ASCII

American Standard Code for Information Interchange. A standardized coding system for representing characters, such as numbers, letters, and graphic symbols. An ASCII character occupies one byte of storage. Files transmitted in ASCII code can be used by many different computers, printers, and programs.

Asynchronous

A method of data transmission in which one machine sends data one character at a time to another, without either machine preparing for the transmission.

Backup

An extra copy of a program, data file, or disk, kept in case your working copy is damaged or lost.

Batch file

A type of file that lets you execute a series of MS-DOS commands by typing one command. Batch files are text files with the filename extension .BAT.. In a batch file, each command is entered on a separate line. When you type the filename, all the commands in that file are executed sequentially.

Baud rate

A measure of the speed of data transmission. Usually equivalent to bits per second.

Bit

A binary digit (0 or 1). The smallest unit of computer storage. The value of a bit represents the presence (1) or absence (0) of an electric charge.

Boot

To load a program or an operating system into the computer's memory.

Byte

A sequence or group of eight bits that represents one character.

Character

Anything that can print in a single space on the page or the screen. Includes numbers, letters, punctuation marks, and graphic symbols.

CMOS

Complementary Metal-Oxide Semiconductor. A method of making silicon chips.

Code

A system of symbols for representing data or instructions. Also, any software program or part of a program.

Command

An instruction you enter on a keyboard to direct the computer to perform a specific function.

Command prompt

The message that tells you MS-DOS is loaded and ready to receive instructions. The MS-DOS command prompt displays the current operating drive (A > or C > , for example), unless you change the format using the PROMPT command. See also Prompt.

Configuration

The particular setup of your computer hardware. For example, a typical system configuration consists of a main unit with two diskette drives and a monitor, connected to a printer.

Control code

A command (generated when you hold down Ctrl and press another key on the keyboard) that instructs the computer to perform a specific function.

C P U

Central Processing Unit. The processor inside your computer that interprets instructions, performs tasks, keeps track of stored data, and controls all input and output operations.

Current directory

The directory you are working in.

Cursor

The highlighted marker that shows your position on the screen and moves as you enter and delete data.

Cylinders

Concentric storage areas on a hard disk.

Data

Information stored or processed by a computer.

Data diskette

A formatted diskette used to store data files.

Data length

The number of bits per character in serial transmissions.

Defaults

Values or settings that take effect when the computer is turned on or reset. A default value stays in effect unless you override it temporarily by changing a setting or you reset the default value itself.

Delimiter

A character (usually a semicolon) or space used to separate different parts of an MS-DOS command.

Device

A piece of equipment that is part of a computer system and performs a specific task, such as a disk drive, monitor, or printer.

DIP switches

Small switches on a piece of hardware such as an option card or a printer. DIP switch settings control various functions and provide a system with information about itself. DIP stands for Dual In-line Package.

Directory

A list of files stored on a disk or on part of a disk.

Disk

The collective term for diskettes and hard disks.

Disk drive

The physical device (either a hard disk drive or a diskette drive) that allows the computer to read from and write to a hard disk or a diskette. A diskette drive has a slot into which you insert a diskette. A hard disk is permanently fixed inside the main unit.

Diskette

A flat piece of flexible plastic coated with magnetic material and used to store data permanently. Also called floppy disk.

DOS

The Disk Operating System that controls the computer's input and output functions. See *Operating* system.

Double-density

A type of diskette format that allows you to store twice as much data as the standard-density format. The double-density diskettes for the Equity Ie have a storage capacity of 720KB.

Execution speed

The speed at which the central processing unit can execute commands. The Equity Ie can run at 8 or 10 MHz. Also called operating speed.

Extension

A suffix of up to three characters that can be added to a filename.

File

A group of related pieces of information called records, or entries, stored together on a disk. Text files consist of words and sentences. Program files consist of code and are used by computers to interpret and carry out instructions.

Filename

A name of up to eight characters that MS-DOS uses to identify a file.

Floppy disk

See Diskette.

Format

To prepare a new disk (or erase an old one) so that it can store information. Formatting a disk divides it into tracks and sectors and creates addressable locations on it.

Graphics

Lines, angles, curves, and other non-alphanumeric data.

GW-BASIC

Microsoft's extended version of the Beginner's All-purpose Symbolic Instruction Code. A programming language designed to be easy to use and understand.

Hard disk

The enclosed unit used to store data permanently. Unlike a diskette, it is fixed in place inside the computer. It can process data more rapidly and store many more files than a diskette.

Hardware

Any physical component of a computer system, such as a monitor, printer, keyboard, or CPU.

Hexadecimal

A base 16 numbering system frequently used by programmers. Any decimal number between 0 and 255 can be represented by a two-digit hexadecimal number.

High-density

A type of diskette format that allows you to store more data than normal. The Equity Ie uses double-density diskettes only; high-density diskettes cannot be used in the Equity Ie diskette drives.

Input/output (I/O) port

See Port.

Interface

A hardware or software connection that is used to transmit data between equipment or programs.

Joystick

A pointing device that uses a moveable stick mounted in a socket. When you push the stick in a certain direction, the cursor moves in the same direction on the screen.

Keyboard

A device resembling a typewriter keyboard that is used to enter letters and numbers to the computer.

Kilobyte (KB)

A unit used to measure storage space in a computer's memory or on a disk. One kilobyte equals 1024 bytes.

LED

Light Emitting Diode. A substance that is illuminated when electricity passes through it, like the indicator lights above the Equity Ie keyboard.

Main unit

The part of the computer that houses the central processing unit and the disk drives.

MCGA

The built-in video controller that runs either a color or monochrome VGA monitor.

Megabyte (MB)

A unit used to measure storage space in a computer's memory or on a disk. One megabyte equals 1,048,576 bytes.

Megahertz (MHz)

A unit used to measure oscillation frequency of a computer's internal timing clock. One megahertz is one million cycles per second. The Equity Ie computer operates at 8 or 10 MHz.

Memory

The area where the computer stores data. Memory contents can be permanent (ROM) or temporary (RAM). See also ROM and RAM.

Microprocessor

A version of a CPU that is contained on one semiconductor chip.

Modem

A device that allows a computer to transmit signals over telephone lines so it can send and receive data. Modem stands for Modulator/DEModulator.

Monitor

The piece of hardware that contains the screen and displays information.

Monochrome monitor

A monitor that displays only one color (as opposed to a color monitor, which can display several colors).

Mouse

A hand-held pointing device, usually with buttons. When you slide the mouse over a flat surface in a certain direction, the cursor moves in the same direction on the screen.

MS-DOS

The operating system from Microsoft that comes with your computer. See Operating system.

Numeric keypad

The number keys grouped on the right side of the keyboard.

Operating speed

The speed at which the central processing unit can execute commands. The Equity Ie can run at 8 or 10 MHz. Also called execution speed.

Operating system

A collection of programs that allow a computer to control its operations. The operating system determines how programs run on the computer and supervises all input and output. Your computer comes with MS-DOS, the operating system by Microsoft.

Option card

A circuit board that you install inside your computer's main unit to provide additional capabilities, such as more memory or an internal modem.

Parallel

The type of interface that transmits data in groups of bits. See also *Interface* and serial.

Parameter

A qualifier added to a command that tells the computer what particular conditions to look for.

Parity

Data signals sent during communications to detect errors in transmitting or receiving data.

Partition

To divide a hard disk drive into separate sections for use by different operating systems.

Pathname

The list of directories and subdirectories the computer must search through to locate a file. For example, the pathname for a file named CONTRACT that is located in the BUSINESS subdirectory of the root directory (\) is \BUSINESS\CONTRACT.

Peripheral

A device (such as a printer or a modem) connected to a computer that depends on the computer for its operation.

Port

An input/output socket on a computer to which you can connect a peripheral device.

Program

A disk file that contains coded instructions telling a computer what to do and how to do it.

Prompt

A message displayed on the computer screen that tells you what action you need to perform next.

RAM

Random Access Memory. The portion of the computer's memory used to run programs and store data while you work. All data stored in RAM is erased when you turn off the computer, so you must store any data you want to save on a diskette or hard disk.

Read

To copy data from one area to another. For example, when you open a text file stored on disk, the computer reads the data from the disk and displays it on the screen.

Read/write head

The physical device inside a disk drive that reads and records data on the magnetic surface of a disk.

Real time clock

A battery-powered clock in the computer that keeps track of the current time and date even when the computer's power is turned off.

Reset

To reload a computer's operating system so you can retry a task or begin using a different operating system. Resetting erases the computer's RAM.

ROM

Read Only Memory. The portion of the computer's memory that can only be read and cannot be used for temporary storage. ROM retains its contents even when you turn off the power.

Root directory

The top level directory in MS-DOS, designated by a \ (backslash). All other directories are subdirectories of the root directory.

RS-232C

A standard serial interface. You can easily connect an RS-232C compatible device to your computer.

Sector

A contiguous section of a disk track that provides an address at which the computer can access data.

Self test

The diagnostics procedure the computer performs to check its hardware whenever you turn on or reset the computer.

Serial

The type of interface that transmits data one bit at a time. See also *interface* and *Parallel*.

Software

The programs that enable the computer to perform the tasks and functions you indicate.

Stop bit

A signal sent in serial communications to mark the end of a character.

Subdirectory

A directory or group of files that branches down from another subdirectory or from the root directory.

Switch

An option added to an MS-DOS command that redirects the way the command works. Switches must be preceded by a / (forward slash). For example, if you add the /S switch to a FORMAT command, MS-DOS installs the operating system on a diskette as it formats it.

System diskette

A diskette that contains the operating system.

Tracks

Addressable, concentric circles on a diskette, resembling the grooves on a record, which divide the diskette into separate accessible areas. There are 80 tracks on each side of a double-sided, double-density diskette.

VGA

Video Graphics Array. A type of high-resolution color monitor that can display monochrome text and graphics at 720 x 400 resolution, 16-color graphics at 640 x 480 resolution, or 256-color graphics at 320 x 200 resolution. See also MCGA.

Wildcard

A character that represents an unknown character or group of characters. The wildcard character * (asterisk) represents a group of characters, and the wildcard character ? (question mark) represents a single character.

Write

To store data on a disk.

Write-protect

To prevent a diskette from being overwritten. When a diskette is write-protected, you cannot erase, change, or record over its contents.

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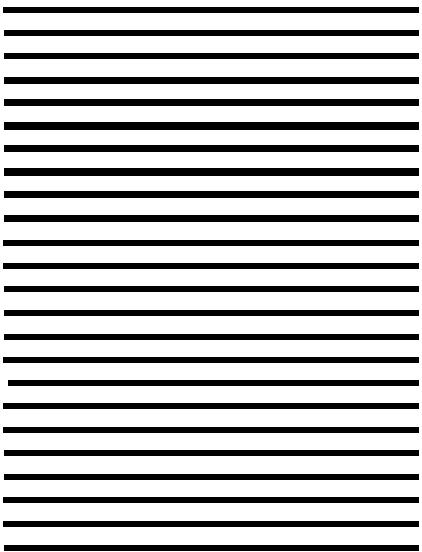


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