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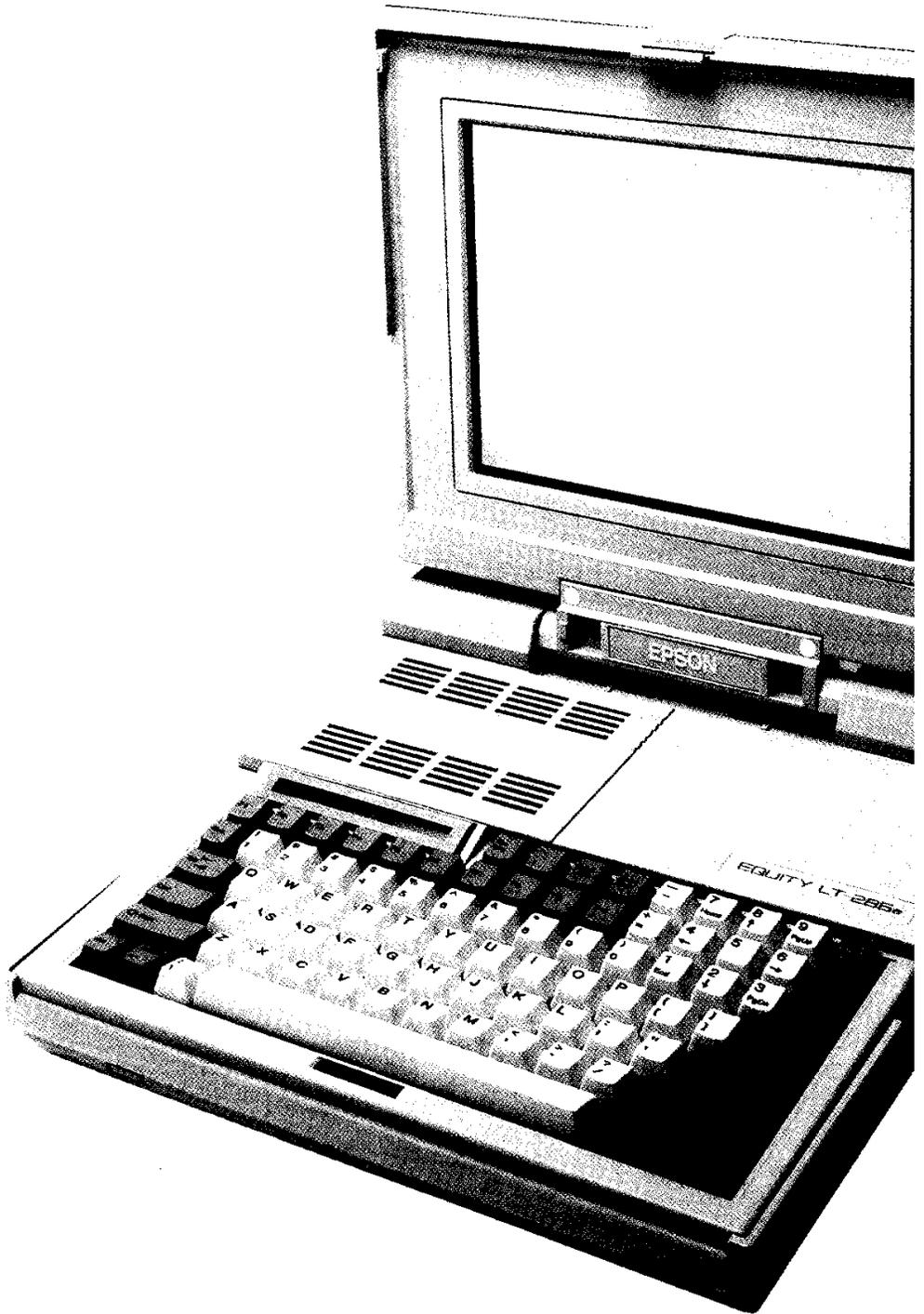
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EPSON®

EQUITY™ LT™-286e User's Guide



Epson® Equity™ LT-286e

User's Guide Corrections

- ❑ Please note that your Epson Equity LT-286e provides support for an 80287 math coprocessor. Pages 2,1-17, and C-1 of your User's Guide incorrectly refer to a CMOS 80C287 math coprocessor. Do **not** attempt to install an 80C287 math coprocessor in the computer. You can install an 8 MHz 80287 math coprocessor only.
- ❑ Please note that your video display has two modes:
 1. The default mode displays white characters on a black background. Note that this is the default mode rather than the normal mode as stated in your User's Guide.
 2. The reverse video mode displays black characters on a white background.

You may want to use the reverse video mode, for most applications because the black characters on a white background provide enhanced readability. See page 2-15 in your User's Guide for instructions.

- ❑ The Equity LT-286e comes with an empty plastic box in the slot for the hard disk drive. If your dealer has not already installed the hard disk drive in your computer, you must remove the empty box before you install the hard disk drive. See pages 1-3 through 1-5 of your User's Guide for instructions on installing the hard disk drive.
- ❑ You must run the SETUP program after installing the following optional devices:

- External diskette drive
- 1MB RAM card
- 80287 math coprocessor

The SETUP program is described in Chapter 1.

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EQUITY[™]LT[™]-286e

User's Guide

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FCC COMPLIANCE STATEMENT FOR AMERICAN USERS

This equipment generates and uses radio frequency energy and if it is not installed and used properly, that is, in strict accordance with the manufacturer's instructions, it 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 and television reception, which can be determined by turning the equipment off and on, you are 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, consult your dealer or an experienced radio/television technician for additional suggestions. You 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 computer 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 noncertified peripherals is likely to result in interference to radio and TV reception.

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

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de Classe B prescrites dans le règlement sur le brouillage radioélectriques édicté par le Ministère des Communications du Canada.

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Glossary

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Introduction

Your Epson® Equity™ LT™-286e portable computer is a compact, high-performance system you can use just about anywhere: at the office, at home, or on the road. Its rechargeable battery lets you use it in remote locations when you don't have access to an electrical outlet. With the AC adapter connected, you can use the computer as long as you like and recharge the battery in the process.

The Equity LT-286e comes with the following:

- ❑ An 80C286 microprocessor
- ❑ 1MB (megabyte) of internal RAM memory
- ❑ One 20 or 40MB removable hard disk
- ❑ One 1.44MB, 3 1/2-inch diskette drive
- ❑ A high-contrast, paper-white, backlit LCD (liquid crystal display) screen
- ❑ An internal, proprietary modem slot
- ❑ A 2/3-size, IBM® PC AT™-compatible, 8/16-bit internal expansion slot
- ❑ A high-capacity battery pack to power the LT-286e for up to 2 1/2 hours of operation
- ❑ Built-in interfaces for serial, parallel, video, external diskette drive, and external keyboard connectors
- ❑ An AC adapter and power cord.

The 80C286 microprocessor inside your Equity LT-286e can run at an execution speed of either 12 MHz or 8 MHz. Ordinarily, you'll want to use the 12 MHz speed to get faster performance from your computer; a few application programs may require the 8 MHz speed. A slide switch allows you to change the speed.

The Equity LT-286e also has a built-in socket for an 80C287 math coprocessor, which you can easily install or have installed by an authorized Epson dealer or Customer Care Center.

The built-in serial and parallel interfaces allow you to attach almost any peripheral device, such as an Epson printer or external modem, to your Equity LT-286e.

You can connect a color monitor to the computer to take advantage of the color and the larger display. A slide switch lets you change between the LCD and an external CRT display. The LT-286e supports MDA, CGA, EGA, and extended EGA video modes.

You can also connect an Epson external 5 1/4-inch diskette drive to the computer to easily exchange data with other computers that use 5 1/4-inch diskette drives.

The following optional equipment is available from your Epson dealer:

- An 80C287 math coprocessor
- A 2400-baud, Hayes®-compatible, auto-dial internal modem
- An internal RAM memory card to expand memory to 2MB
- An external 1.2MB, 5 1/4-inch diskette drive
- The GW-BASIC® programming language
- An additional 20MB or 40MB hard disk drive

- An additional battery pack
- An additional AC adapter
- An adapter for an external, Epson keyboard
- Carrying case.

Your Equity LT-286e comes with MS-DOS? version 4.01, by Microsoft? MS-DOS 4.01 provides a new Shell feature that lets you run programs and choose operating system commands from menus instead of the MS-DOS command prompt. Designed for both new and experienced users of MS-DOS, the Shell program lets you tailor your system to your own needs and manage your programs and data more efficiently.

You'll find the MS-DOS manuals packed in the box with the computer. MS-DOS includes the following manuals:

- MS-DOS Installation Guide-Use this manual to install MS-DOS on your hard disk.
- MS-DOS Reference Manual-Use this manual to learn about the features of MS-DOS and for a complete description of each MS-DOS command.
- MS-DOS Shell User's Guide-Use this manual to learn about the new MS-DOS Shell feature.
- MS-DOS Command Summary-Use this as a quick reference when you need to check on the format of a command.

In addition to MS-DOS, Epson has included two time-saving utilities that make MS-DOS easier to use: HELP and MENU. The HELP program lets you display information on the screen about any MS-DOS command. MENU provides an easy way to run some MS-DOS commands for routine operations, such as file copying and disk management.

You can use any application program designed for the IBM Personal Computer, PC XT™ or PC AT on your Equity LT-286e.

How To Use This Manual

This manual explains how to set up and care for your Equity LT-286e. It also describes how to use your computer and run diagnostic checks.

The eight steps in Chapter 1 explain how to set up your computer and prepare it for use. On the inside back cover is a foldout with illustrations of the LT-286e; you may want to refer to these illustrations while you set up the computer.

Chapter 2 describes general operating procedures for your computer and explains how to use and care for your disks and disk drives.

Chapter 3 provides basic instructions for using MS-DOS with your computer. You can find more detailed information about MS-DOS in the MS-DOS manuals.

Chapter 4 provides troubleshooting guidelines you can follow if you encounter any problems while using your Equity LT-286e.

Appendix A describes the DIP switches and slide switches you need to change if you modify your system's configuration.

Appendix B explains how to attach an external color monitor, external diskette drive, or keyboard to your Equity LT-286e and how to install the Epson internal modem, the Epson RAM card, an option card, or a math coprocessor. To install other options, see the instructions that come with the option. For dealer-installed options, contact an authorized Epson dealer or Customer Care Center. (See the next section, "Where To Get Help," for details.)

Appendix C lists the Equity LT-286e hardware specifications.

At the back of the manual is a glossary of computer terms.

Where To Get Help

Customer support and service for Epson products is provided by a network of authorized Epson dealers and Customer Care Centers throughout the United States. Epson America provides product information and support to its dealers and Customer Care Centers.

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

Epson is confident that this policy will provide you with the assistance you need.

Call the Epson Consumer Information Center at 1-800-922-8911 for the following:

- The location of the nearest Epson dealer
- The location of the nearest Customer Care Center
- Information on Epson User Groups.

To locate or purchase accessories or supplies, contact your nearest Epson dealer or call 1-800-873-7766.

Chapter 1

Setting Up Your System

Setting up your Epson Equity LT-286e portable computer is easy. Just follow the steps in this chapter. They describe how to attach the hard disk, connect a printer, and attach the AC adapter and power cord that come with your Equity LT-286e. After assembling these parts, you start the computer and run the system SETUP program.

After you perform these steps, turn to Chapter 2 for information about using the computer.

The LT-286e has two sets of switches that provide the computer with information about its configuration each time you turn it on. The switches are called DIP switches and slide switches. Both sets of switches are located on the bottom of the computer.

When the LT-286e is shipped from the factory, these switches are set for the following type of system:

- The internal diskette drive is drive A
- The LCD screen is set for EGA mode
- The slide switch is set for the LCD screen
- The serial port is the primary serial port
- The parallel port is the primary parallel port
- The CPU clock speed is 12 MHz.

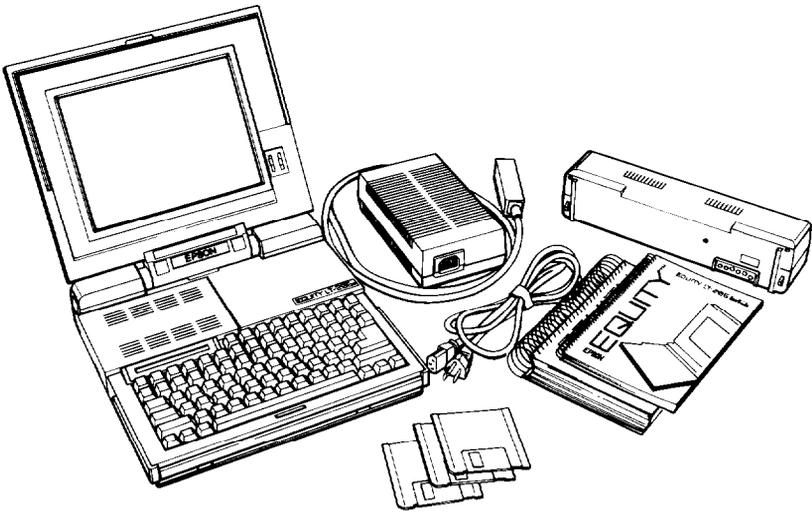
If you plan to use this standard setup, continue with the instructions in this chapter.

If your system does not match this configuration, you need to change the appropriate switches as described in Appendix A before you begin. If you plan to modify your computer by attaching an external monitor or diskette drive, see Appendix B for instructions.

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

1 Unpacking

As you unpack the components, be sure to inspect each item. If anything is missing or damaged, consult your Epson dealer.



In addition to this manual, you should have the following items:

- The main unit
- The battery pack
- The AC adapter
- The power cord
- The hard disk drive
- The three MS-DOS diskettes: Install, Operating, and Shell
- The MS-DOS manuals: MS-DOS Installation Guide, MS-DOS Reference Manual, MS-DOS Shell User's Guide, MS-DOS Command Summary.

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.

Please keep a copy of your sales receipt for warranty verification. Your receipt is all that is required for warranty service.

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

2 Installing the Hard Disk Drive

Your hard disk drive, which is either 20MB or 40MB, comes in its own package. Your dealer may have installed the hard disk; if so, you can skip this step.

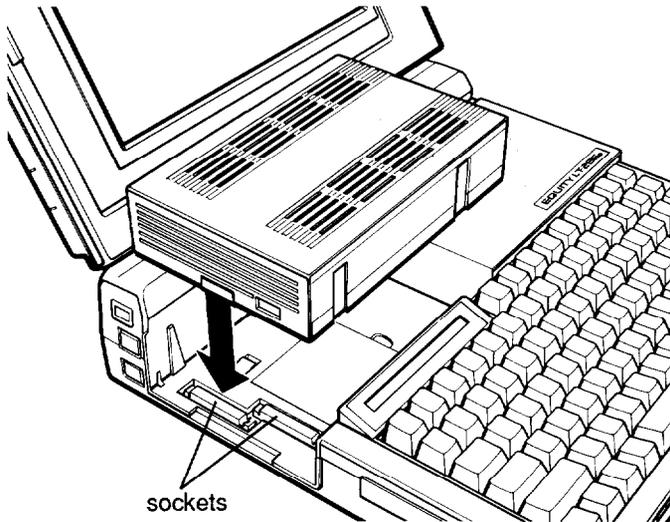
You install the hard disk drive above the keyboard panel on the computer. To access the slot for the hard disk drive, open the screen by pressing the latch release button in the center of the computer. Then lift the screen up and back.

Note

Notice the SHOCK INDICATOR on the bottom of the hard disk. The indicator box is clear when the hard disk is in normal condition. If the hard disk is jarred severely, the indicator turns red. If the indicator box is red do not use the hard disk. Take the hard disk to your Epson dealer or a Customer Care Center for service.

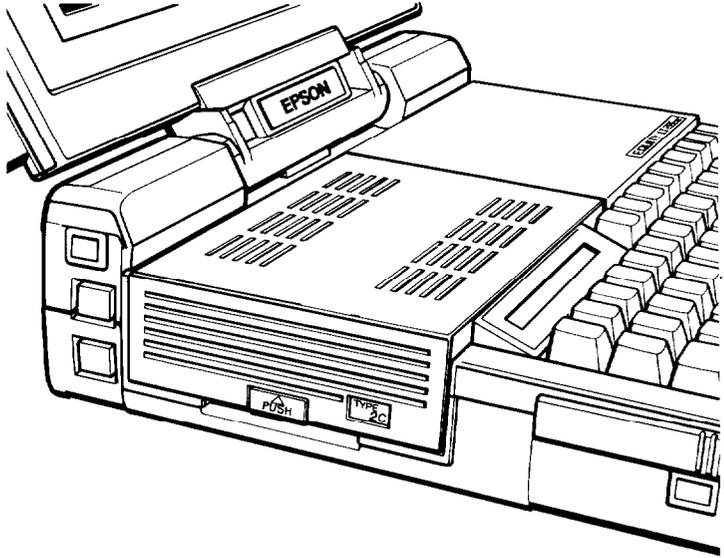
Follow these steps to install the hard disk drive:

1. Unwrap the hard disk drive.
2. Face the front of the computer and hold the hard disk drive with the PUSH button on the left and the retractable tabs on the right.
3. Position the hard disk drive directly above the hard disk drive slot on the computer.



The connectors on the hard disk drive fit into the sockets on the computer.

4. Keep the hard disk drive level and lower it straight down into the hard disk drive slot. If you lower either side first, the connectors do not fit into the sockets.
5. Press firmly (but carefully) on the hard disk drive until it snaps into place.



The TYPE indicator on the left side identifies the type of hard disk drive. You use this TYPE for the SETUP program. A 20MB hard disk is TYPE 2; a 40MB hard disk is TYPE 17.

A new hard disk drive must be partitioned and formatted to run an operating system. The MS-DOS installation program, called SELECT, performs these functions. See your MS-DOS Installation Guide for details after you complete the remaining steps in this chapter.

3 Connecting a Printer

The Equity LT-286e has both parallel and serial interfaces (ports). You can easily connect a printer or plotter that has either type of interface. Just follow the instructions below. Of course, Epson offers a full range of printer products; consult your Epson dealer for more information.

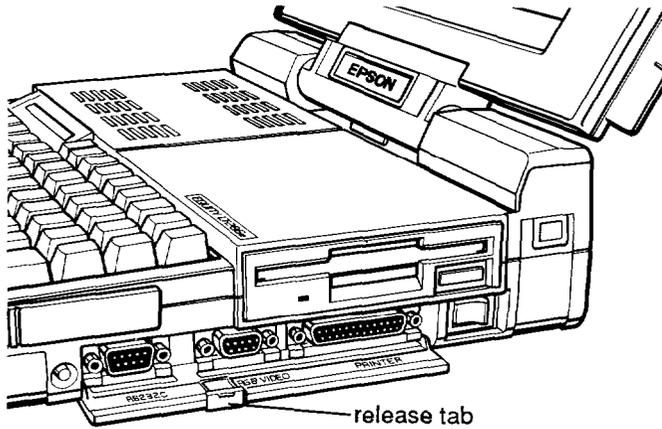
Using the Parallel Interface

The computer's Centronics®-compatible parallel interface provides a 25-pin, D-shaped female connector. Most Epson printers have parallel interfaces. To connect a printer to the computer, you need an IBM PC-compatible printer cable. If you're not sure which one you need, consult your Epson dealer.

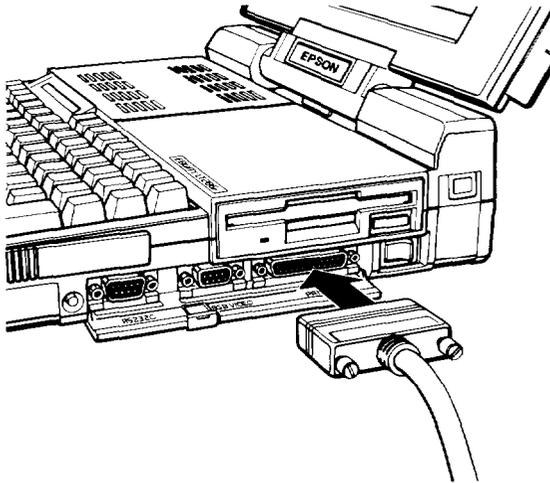
Once you have a printer cable, follow these steps to connect your printer to the parallel interface labeled PRINTER on the computer:

1. Place the printer next to your computer.
2. Before you connect the printer, make sure the power switches on the computer and printer are off. (The power switch for your computer is located on the right side of the machine).

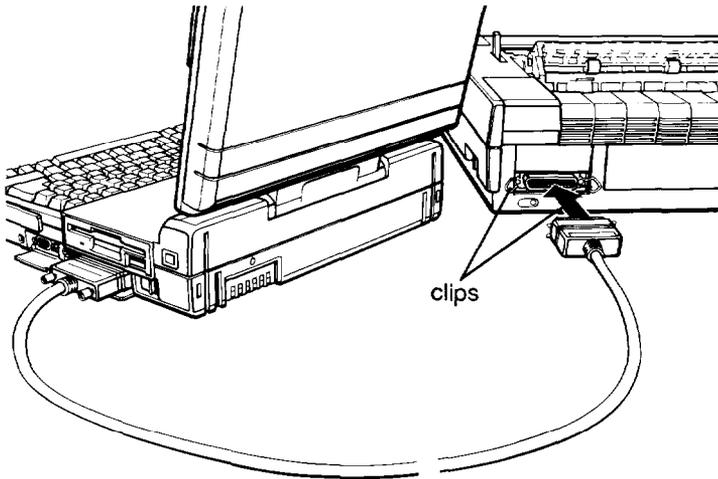
3. Press down on the release tab to open the computer's interface cover, as shown below.



4. One end of the printer cable has a 25-pin, D-shaped male connector. (See your printer manual if you cannot identify this connector.) Connect this end to the parallel connector labeled PRINTER on the right side of the computer, as shown below. If the plug has retaining screws, tighten them by hand or with a screwdriver.



5. 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.

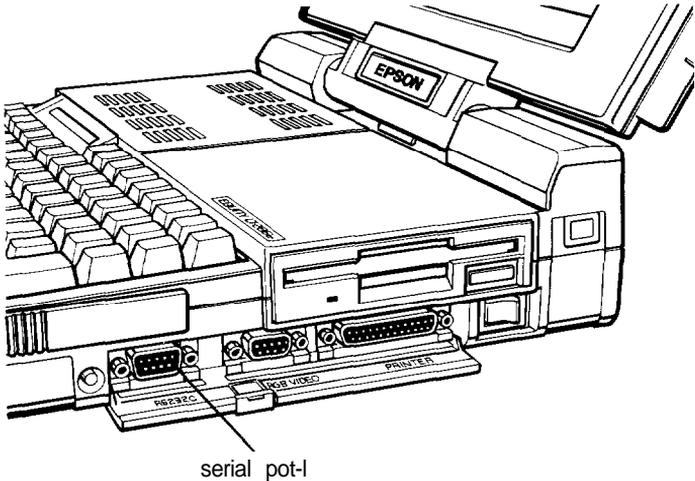


6. Plug the printer's power cable into an electrical outlet.

The standard DIP switch settings for the LT-286e define your parallel port as the primary parallel port. If you think the DIP switch settings have been changed or you would like a different setting, see "Setting the DIP Switches" in Appendix A.

Using the Serial Interface

If you have a printer or other peripheral device that uses a serial interface, connect it to the serial interface labeled RS-232C on the right side of the computer.



The Equity LT-286e uses an IBM PC AT-compatible, 9-pin, D-shaped male connector, so be sure you have a compatible cable or an adapting cable that converts the 9-pin output to the standard 25-pin output. To connect a serial device, follow the steps above for connecting a parallel device.

Make sure the serial port is set up to function properly. If you are using the port for a serial printer, you must also redirect printer output from the parallel port to the serial port. Use the MS-DOS MODE command (or the Epson MENU program) to make these changes. See your MS-DOS Reference Manual for instructions.

The standard DIP switch settings for the LT-286e define your serial port as the primary serial port. If you think the DIP switch settings have been changed or you would like a different setting, see “Setting the DIP Switches” in Appendix A.

Note

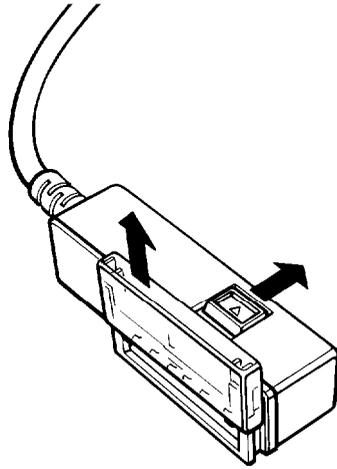
If you plan to connect a color monitor or an external 5 1/4-inch diskette drive to your computer, do so now. For instructions on connecting the monitor or external diskette drive, see Appendix B.

If you connect either of these devices to your Equity LT-286e, be sure to set the computer's DIP switches and slide switches correctly before using the computer. See Appendix A for details.

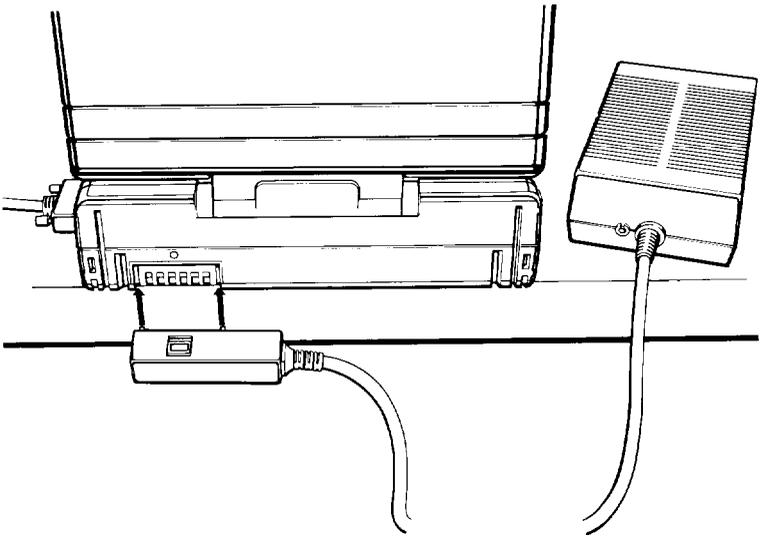
4 Connecting the AC Adapter

Follow these steps to connect the AC adapter:

1. Make sure the computer's power switch (located on the right side of the computer) is turned off.
2. Turn the computer around so the back panel is facing you. Position the back panel slightly over the edge of the desk or table.
3. The end of the AC adapter cable is shaped like a box. Notice the plastic safety cover that protects the connector on the AC adapter. Slide the release tab in the direction shown on the tab to release the safety cover. Lift off the cover and store it in a safe place.



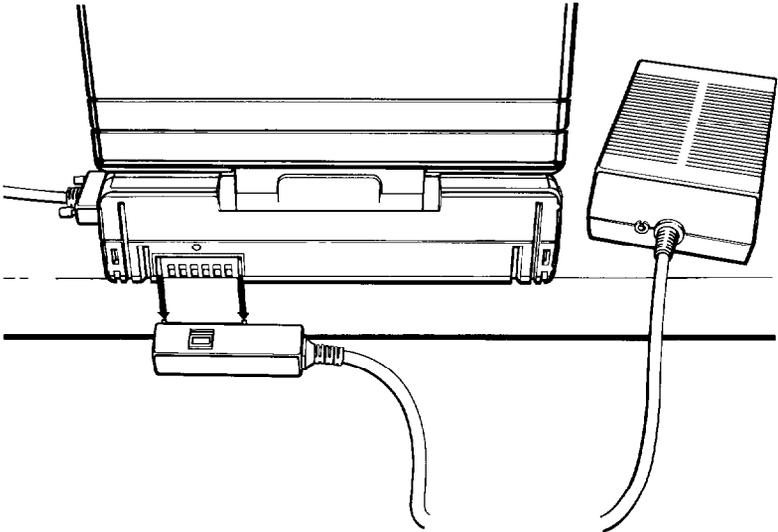
4. Slide this box up into the slots on the connector on the back panel of the computer. Press the connector box up until it snaps into place.



Be sure to read “Using the AC Adapter” in Chapter 2 for more information about the AC adapter.

Note

The design of the AC adapter cable prevents it from being accidentally disconnected from the computer. To disconnect it, slide the button on the top of the connector toward you (when the back of the computer is facing you) and press down on the connector box to detach it from the computer. Do not try to unplug the adapter by pulling on the connector box or the cord.



When you are not using the AC adapter, replace the safety cover that protects the connector.

WARNING

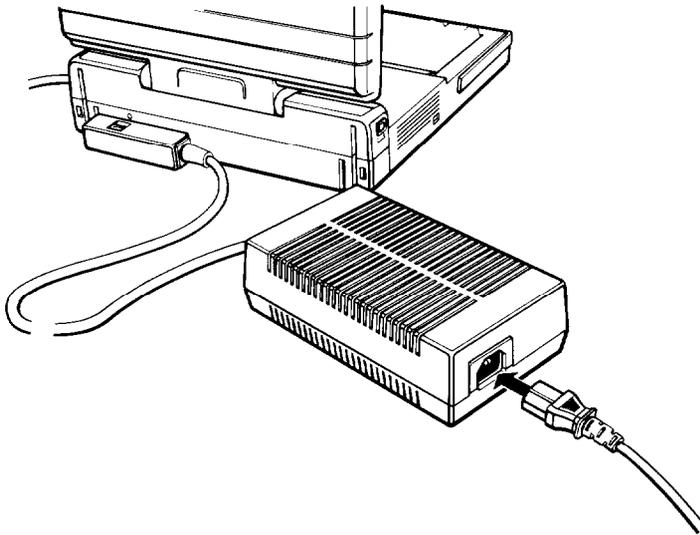
Do not connect or disconnect the AC adapter when the computer is turned on.

Keep the AC adapter at least six inches away from your computer and disks.

5 Connecting the Power Cord

Follow these steps to connect the power cord:

1. Connect the power cord to the adapter's input socket.



2. Plug the other end of the power cord into a grounded, 120-volt, AC wall outlet.

6 Starting the System

After you complete steps 1 through 5, you're ready to turn on the power and start using your Equity LT-286e computer. Read these safety rules first to avoid accidentally damaging your computer or injuring yourself:

- ❑ Do not attempt to dismantle any part of the computer. If there is a hardware problem you cannot solve after reading Chapter 4 on troubleshooting, consult your Epson dealer.
- ❑ Never turn off or reset your computer while a disk drive is in use; this can destroy data stored on the disk or make the entire disk unusable. The disk drive indicators are located on the status indicator bar. The right disk-in-use icon indicates that the hard disk drive is in use. The left disk-in-use icon indicates that the built-in diskette drive is in use.
- ❑ 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. Spilled liquid can damage the circuitry of your components.

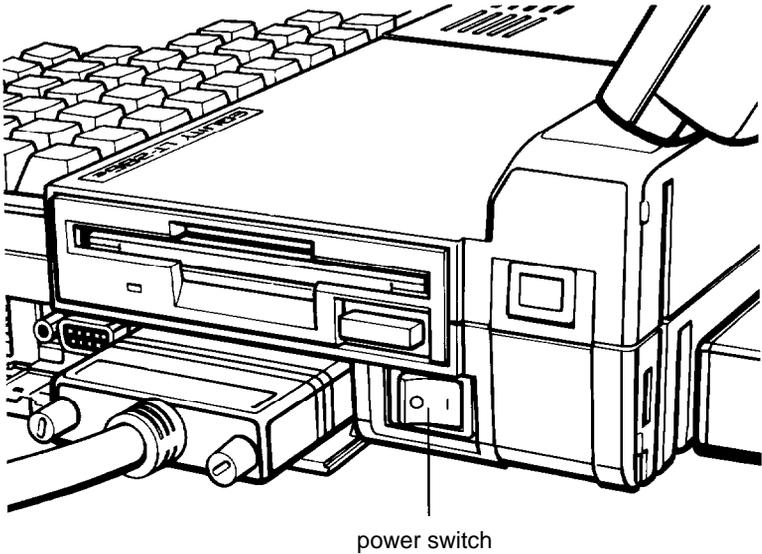
Turning On the Computer

After you have connected the AC adapter and power cord, you can turn on your computer. Leave the AC adapter connected while you use the computer.

You can turn on your computer with or without a system diskette in the diskette drive. For now, leave the drive empty.

To turn on your computer, follow these steps:

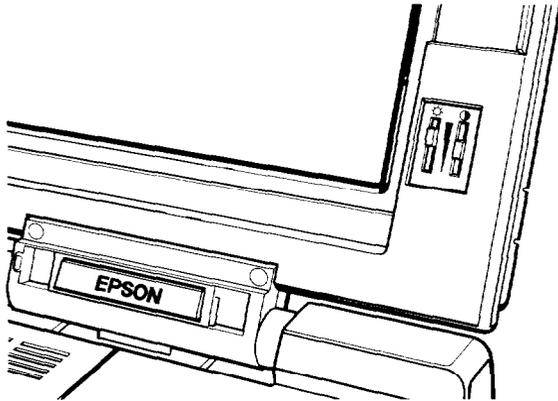
1. Turn on any peripheral devices, such as a printer, an external diskette drive, or a color monitor.
2. Turn on the computer by pressing the power switch on the right side of the computer. Press the switch toward the back of the computer.



The speed indicator on the status bar shows your operating speed (12 MHz), and after a few seconds the computer begins to perform an internal self test. This is a diagnostic program the computer runs whenever you turn it on. The power-on self test checks the RAM (random access memory), keyboard, system board, and peripheral interfaces before the computer begins normal operation.

Adjusting Screen Contrast and Brightness

If you cannot see text on the screen clearly, use the levers on the right side of the screen to adjust the screen's contrast and brightness. The levers are shown below:



The contrast lever on the right determines how bright the characters appear against the background. To increase the contrast, move the lever up. To decrease it, move the lever down.

The brightness lever on the left controls the intensity of the screen's backlighting. To make the backlighting brighter, move the lever up. To decrease the backlighting, move the lever down. When you're running the computer on the battery, do not make the screen brighter than necessary to read the text clearly. This helps to conserve the battery's charge.

Initial Screen Display

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

01024 KB OK

Next you are prompted to run the SETUP program.

7 Running the SETUP Program

When you turn on your computer for the first time, run the SETUP program to define how your computer is set up. This is a simple procedure that you must do at least once. You may need to do it again later if you want to change a setting.

The SETUP program is stored in read-only memory (ROM). You can access this program only when you turn on or reset the computer.

The SETUP program lets you specify the following:

- The current date and time
- The type of hard disk drive you have
- The type of diskette drive you have
- Whether you have installed an external 5 1/4-inch diskette drive.

The SETUP program automatically displays these configuration settings:

- The type of display you're using, including screen width
- The amount of RAM in your computer
- Whether you have installed an 80C287 math coprocessor.

The settings you specify with the SETUP program are recorded in a special area of memory called CMOS RAM. This memory is backed up by a battery, so it will not be erased when you turn off or reset the computer. Whenever you turn on the computer, it reads the settings stored in CMOS RAM. If there are any differences between those settings and the DIP switch settings, you see an error message. If this occurs, run the SETUP program or correct your DIP switch settings.

Starting the SETUP Program

After the self test completes, you see this prompt:

```
Press <DEL> key to run SETUP utility.
```

To start the SETUP program, follow these steps:

1. Press Del.
2. You see this message and prompt:

```
Want to run SETUP utility (Y/N)?
```

Press Y and Enter.

3. You see a screen titled CMOS SETUP. The first prompt is:

```
Current date is . . . . .mm-dd-yyyy  
Enter new date (MM-DD-YYYY)?...
```

Enter the correct date in the format shown, or press Enter to use the displayed date.

If you type an invalid entry, the program beeps. The cursor returns to the beginning of the field so you can enter the correct value.

4. Next you see this prompt:

```
Current time is . . . . .hh.mm.ss  
Enter new time (HH:MM:SS)?....
```

Enter the correct time in the format shown, or press Enter to use the displayed time.

5. The SETUP program now displays the type of display you are using and the current screen width. You cannot change these definitions; the computer automatically determines the type of display you are using based on your DIP switch settings.

The first time you run SETUP, you must define the type of hard disk drive you have installed. You see this warning:

```
***WARNING***  
Entering the wrong disk drive TYPE causes  
improper operation of the disk.  
If disk not installed, press <RETURN>.
```

SETUP then displays these prompts:

```
Enter disk drive C type (1-47)? . . .  
For disk TYPE details, press <ESC>.
```

If you press Esc, SETUP displays a list of hard disk types. The detail in this list is for service personnel only. If you have a 20MB hard disk, the type is 2. A 40MB hard disk drive is type 17.

Enter the disk type for drive C, either 2 or 17, and press Enter.

6. SETUP displays this prompt:

```
Fixed disk drive D type . . .
```

Press Enter because an external hard disk is not installed.

7. You now identify the type of diskette drives attached to the computer. You see this prompt:

```
Enter diskette drive A type (1-3)? . . . .
```

The screen shows you these values to enter for diskette drives:

- (1) = 1.2 MB, 5 1/4" diskette drive
- (2) = 720 KB, 3 1/2" diskette drive
- (3) = 1.44 MB, 3 1/2" diskette drive

Press 3 and Enter for drive A.

8. SETUP displays this prompt:

```
Enter diskette drive B type (1-3)? . . . .
```

If you have an external diskette drive attached, enter type 1.
If you have not installed an external drive, press Enter.

9. After you specify the disk drive types, SETUP displays other system parameters. The screen looks similar to the following:

```

                          CMOS SETUP
=====
Current date is . . . . .04-17-1989
Enter new date (MM-DD-YYYY)?..
Current time is . . . . .10:00:00
Enter new time (HH:MM:SS)?....
Primary display is . . . . .Color display
Current screen width is . . . .80 column

Fixed disk drive C type ..... 2
Fixed disk drive D type .... ..Not installed
Diskette drive A is .....
Diskette drive B is ..... ..Not installed
Base memory size ..... ..640 KB
Expansion memory size ..... ..384 KB
Numeric processor.....Absent

Are these options correct (Y/N)?
```

If you need to make corrections to the settings, press N and Enter. SETUP returns to the date and time prompts, and you can make corrections to your selections.

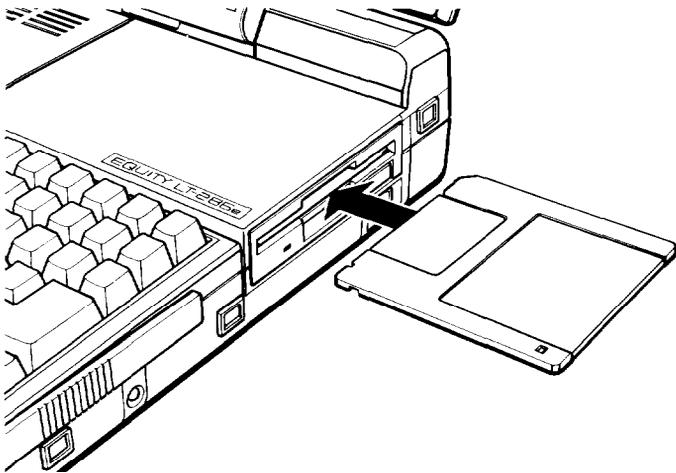
If the settings are correct, continue with step 8, "Inserting the Install Diskette."

When you run the SETUP program again, you are not asked to specify the hard disk drive types. SETUP automatically displays the type you specified the first time you ran the program.

8 Inserting the Install Diskette

Follow these steps to insert the MS-DOS Install diskette:

1. Hold the diskette with the printed label facing up and the arrow pointing into the diskette drive, as shown below.



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 2.

2. Now press Y and Enter in response to the SETUP program prompt:

Are these options correct (Y/N)?

The system reboots with the new setup information. You see the self test and the SETUP prompt.

3. This time ignore the SETUP prompt. The computer automatically loads the operating system and starts the MS-DOS installation program, which is called SELECT.

The SELECT program automatically partitions and formats your hard disk, creates an AUTOEXEC.BAT file and a CONFIG.SYS file based on your responses to prompts, and copies the MS-DOS files to the hard disk.

After you have copied the MS-DOS files onto the hard disk, your original MS-DOS diskettes become your backup copies. Store these diskettes in a safe place.

See your MS-DOS Installation Guide for a complete description of SELECT and how to install MS-DOS on your computer.

Chapter 2

Using the Equity LT-286e

This chapter describes some basic procedures for using your computer.

Using the AC Adapter

The Equity LT-286e can be powered by its external battery pack or by the AC adapter. When you connect the AC adapter to the computer and to an electrical outlet, the outlet supplies the power to the computer. To preserve the battery's charge, use the AC adapter whenever you have access to an electrical outlet.

If the battery pack is connected to the computer, and you connect the AC adapter to the battery pack and to an electrical outlet, the AC adapter recharges the battery. See the next section for details.

If you are not using the AC adapter and the Battery in Use icon on the status indicator bar starts flashing, save all your work and power off the computer before connecting the AC adapter. (When the battery is low, connecting the AC adapter may reset the computer.)

Because the adapter can operate at voltages from 100 to 240 volts, you can use your Equity LT-286e in countries other than the United States provided you have the appropriate adapter plug.

Use the AC adapter to recharge the battery as described in the next section.

WARNING

Keep the AC adapter at least six inches away from your computer and any disks. Do not connect or disconnect the AC adapter when the computer is turned on.

Using the Battery

The battery pack that comes with the Equity LT-286e contains NiCad (nickel cadmium) batteries that power the computer when the AC adapter is not connected. The battery pack is rechargeable.

You need to recharge the battery pack at the following times:

- Before using the battery pack with the computer for the first time
- If the battery has not been used for a long time
- If the Battery in Use icon on the status indicator bar starts flashing and you hear a beep.

After the Battery in Use icon starts to flash, you have a maximum of 10 to 15 minutes before the battery charge is completely gone. If you continue using the computer without connecting the adapter, power runs out and you will lose data.

To recharge the battery, leave the battery pack connected to the computer and connect the AC adapter to the battery pack. Then connect the power cord to the AC adapter and to an electrical outlet. You can charge the battery whether the computer is on or off. For the maximum charge, leave the AC adapter connected for eight hours. The battery pack cannot be overcharged, so don't worry if you leave it connected for more than eight hours.

Remember the following when you are charging the battery:

- ❑ Use only the AC adapter that comes with the Equity LT-286e. Using a different adapter can damage the computer and/or the battery pack.
- ❑ Charge the battery for at least eight hours. If you charge the battery for short periods, it runs low sooner.

The length of time the battery provides power after being charged depends on how you are using the computer. A fully charged battery provides approximately one to four hours of use. If you are working with a program that makes extensive use of the hard disk or if you are using the diskette drive, you may need to recharge the battery sooner.

To increase the amount of time you can operate the LT-286e using the battery, follow these guidelines:

- ❑ Lower the brightness of the backlight to its lowest level. Use the brightness lever on the right side of the screen.
- ❑ Select a clock speed of 8 MHz. Set the CLOCK slide switch on the bottom of the computer.
- ❑ Using HDDPSAVE, turn off the hard disk drive when you are not using it. Remember that powering up the hard disk drive uses power, so set a realistic time period for the power to be turned off.
- ❑ Using SETLCD, turn off the backlight to the LCD when you are not using the keyboard.

To maximize the charge time your battery supplies, completely discharge and then recharge the battery from time to time. To do this, follow these steps:

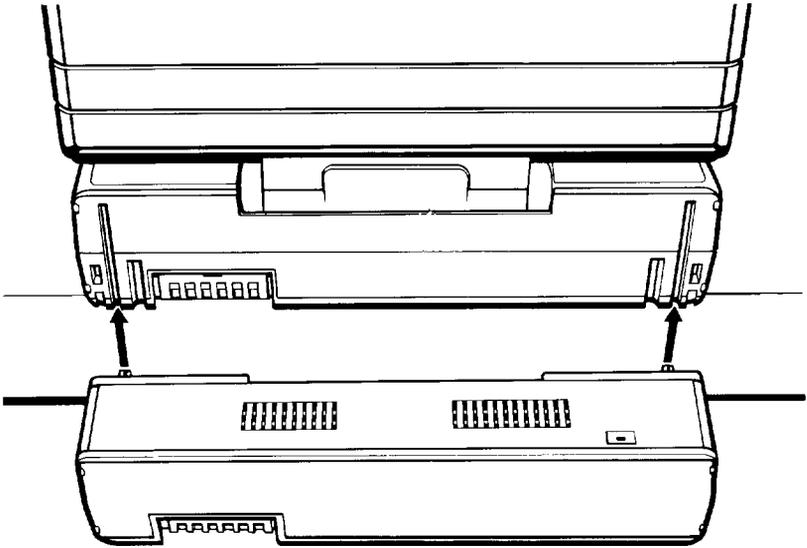
1. Let the battery drain all the way down.
2. When the Battery in Use icon starts to flash, save your work in progress (if any) and exit any program you are using.
3. Leave the computer on, but do not use it. After about 10 to 20 minutes, the icons on the status indicator bar go dark, indicating the battery is discharged.
4. Now give the battery a full, eight-hour charge.

Connecting the Battery Pack

Before you can use the LT-286e without the AC adapter, you must install the battery pack. Follow these steps:

1. Make sure the power switch on the computer is off.
2. Turn the computer around so its back is facing you. Position the back of the computer slightly over the edge of the desk to make it easier to slide the battery pack into place.
3. Remove the safety cover that protects the metal connector on the battery pack.

4. Align the two metal connectors on the battery pack with the slots on the back of the computer, as shown below.



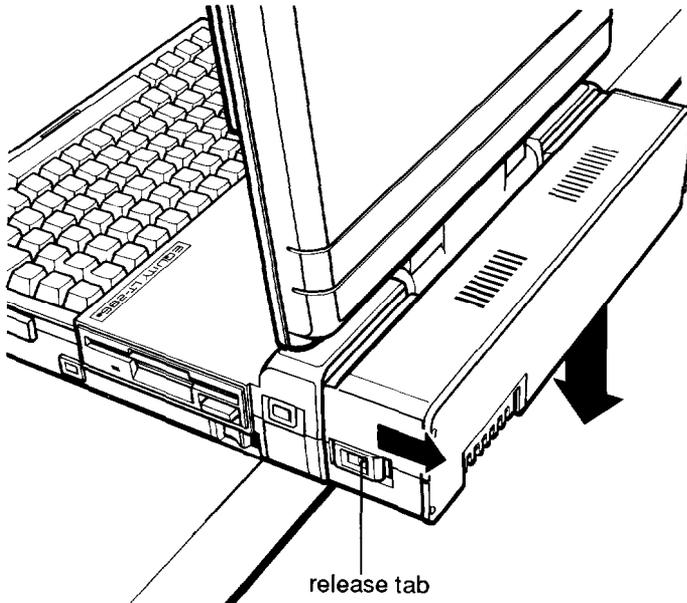
5. Pull the battery pack up until it snaps into place.

When the battery pack is connected, you can either use the power from the battery pack or attach the AC adapter for unlimited power.

To remove the battery pack, follow these steps:

1. Make sure the computer is off.
2. Disconnect the AC adapter.
3. Turn the computer around so the back is facing you. Make sure the back of the computer is slightly over the edge of the desk so you can slide the battery pack down.

4. While pulling the release tabs (on each side of the battery pack) toward you, press down on the battery pack. Slide the battery pack down and off the computer.

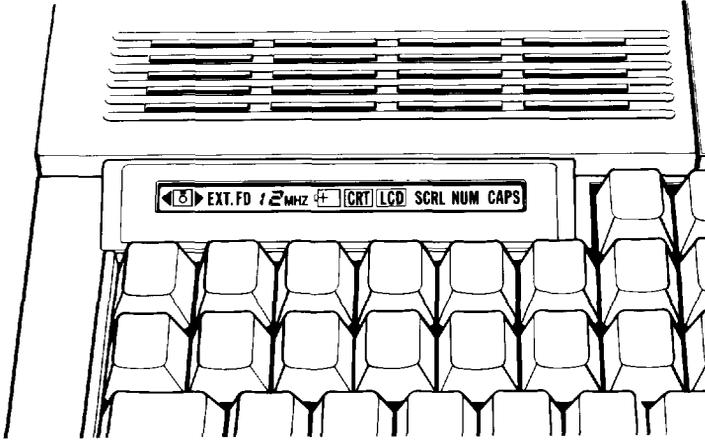


Note

When you are not using the battery pack, replace the safety cover that protects the metal connector.

Status Indicator Bar

The status indicator bar above the keyboard provides information about the computer's operation.



Indicates when you are accessing the hard disk drive.



Indicates when you are accessing the internal diskette drive.

EXT.FD

Indicates when the FDD EXTANT slide switch is in the EXT position.

12 MHz

Displays the current CPU clock speed, either 8 MHz or 12 MHz.



Indicates when you are using the battery pack; blinks when the battery pack charge is low.



Indicates when you select an external CRT.

LCD

Indicates when you can use the LCD display; blinks when the display is in standby mode.

SCRL

Indicates when the internal keyboard is in Scroll Lock mode; does not respond to the modes of an external keyboard.

NUM

Indicates when the internal keyboard is in Num Lock mode; does not respond to the modes of an external keyboard.

CAPS

Indicates when the internal keyboard is in Caps Lock mode; does not respond to the modes of an external keyboard.

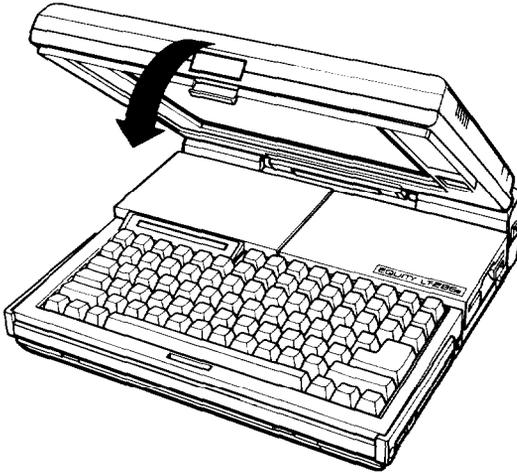
WARNING

Do not turn off your computer when either disk drive indicator is illuminated. Also, do not remove a diskette when the right diskette indicator is illuminated. If you do, you may lose data.

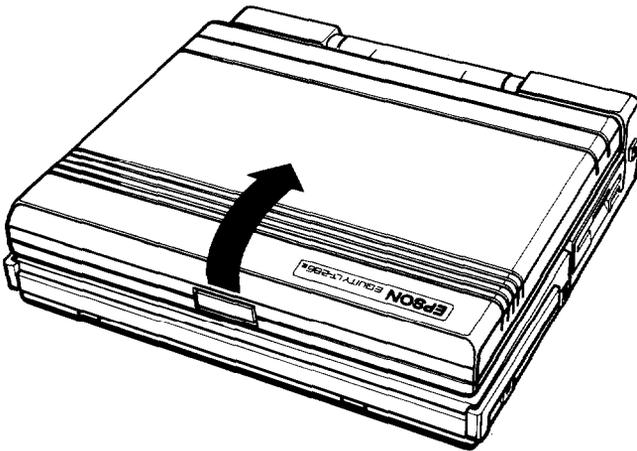
The SCRL, NUM, and CAPS icons indicate whether the corresponding key functions are enabled. See “Special Keys on the Equity LT-286e Keyboard” later in this chapter.

Opening and Closing the Screen

When you are not using the computer or you want to move it, turn it off and close the screen, as shown below. Be sure the screen locks into the bottom part of the computer.



To open the screen, press the latch release button in the center of the computer (shown below). Then lift the screen back. You can position the screen at a variety of viewing angles.



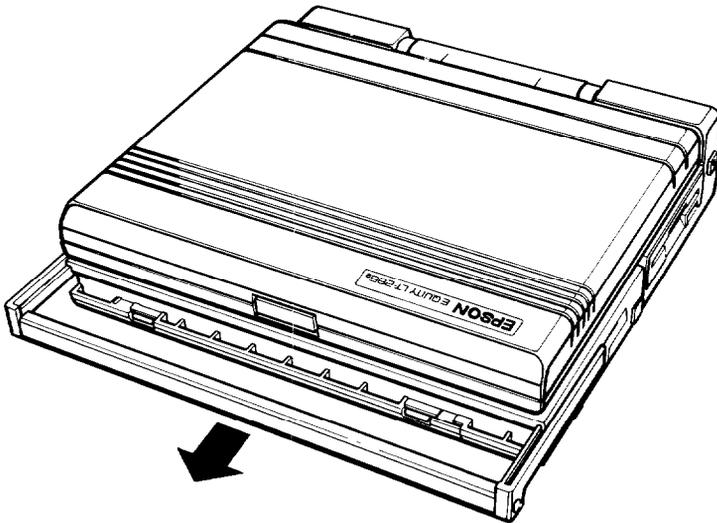
Note

Always set the computer in a flat, horizontal position before opening it.

If you close the screen while the computer is running, you hear a warning beep. Always turn off the computer before closing the screen.

Using the Handle

The Equity LT-286e has a convenient carrying handle. To use the handle, pull it out from the computer, as shown below.



Be sure the screen is closed whenever you carry the computer by its handle.

To avoid accidental damage to your Equity LT-286e, always store the computer in a flat, horizontal position. Do not leave it standing upright on its back panel.

Selecting Execution Speed

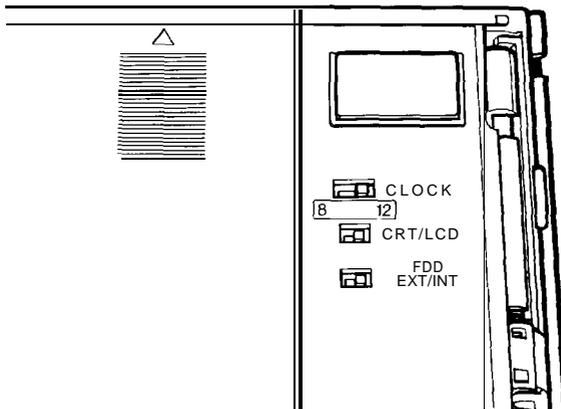
The Equity LT-286e can operate at two execution speeds: 8 MHz and 12 MHz. At the higher speed, the computer performs all tasks more quickly. You can select the slower speed to run application programs that have specific timing requirements and to prolong the battery's charge.

WARNING

Do not change the execution speed while you are running a program. Always complete your current operation and exit the program first. You must turn the computer off before changing execution speed.

To change the speed follow these steps:

1. Turn off the computer.
2. Turn the computer upside down.
3. Move the CLOCK switch located on the bottom of the computer.



The CLOCK switch has two positions. The left position is 8 MHz; the right position is 12 MHz.

Defining LCD Options

The SETLCD utility defines certain options for your LCD screen:

- ❑ The backlight period-You can turn off backlighting on the LCD screen if the computer is not used for a period of time; this prolongs the battery's charge.
- ❑ The gray scale-You can select one of four available gray scale modes. The gray-scale mode governs the way your LCD screen displays color information.
- ❑ The reverse video mode-You can display in normal mode, white on black, or in reverse mode, black on white.

Backlight Period

Use the SETLCD program to specify a backlight period, which is the length of time the LCD screen remains illuminated before the computer turns it off. Initially, the screen is always on.

When the computer turns off the screen's backlighting, the screen is in standby mode.

To conserve the battery's charge when you are running your computer without the AC adapter, specify a backlight period using the SETLCD program. The backlight period is a number of minutes from 1 to 60.

You can change the value for the period of time the computer waits before darkening the screen using the SETLCD program. To specify a backlight period, type the following at the system prompt:

```
SETLCD /xx
```

where xx can be any value from 1 to 60. Then press Enter. For example, to turn off the screen's backlighting after two minutes, type:

```
SETLCD /2
```

and press Enter. If you don't press any key for two minutes, the system automatically turns off the screen's backlighting. To turn it on again, press any key. To do this without disturbing a program running on your computer, press Shift, Ctrl, or Alt.

To make sure backlighting is always on, type one of the following:

```
SETLCD /0  
SETLCD /00  
SETLCD /ALL
```

and press Enter.

Note

When you are running a memory-resident program that intercepts keyboard entries, the computer cannot restore the screen's backlighting after it has been turned off. If the screen's backlighting does not come back on when you press a key, you may want to set the backlight so it is always on,

If you do not use the SETLCD program, the screen is always on.

LCD Adjustment Options

After you load the SETLCD program (by typing SETLCD /xx and pressing Enter), you see these messages:

Follow these steps to change the LCD display performance:

Step 1: Press "Ctrl" & "left-shift" simultaneously.

Step 2: Press "S" to change the LCD color palette on the screen.

Step 3: Press "I" to invert the BLACK/WHITE on the LCD.

Step 4: Press ANY OTHER KEY to resume the keyboard function.

The backlight will turn off after xx minute(s).

Press Ctrl and the Shift key on the left to enter LCD adjustment mode. In this mode, you can adjust the gray scale and select reverse video mode.

Gray scale modes

You can use the LCD adjustment mode of the SETLCD program to select one of four available gray scale modes. The gray scale mode governs the way the LCD displays color information.

After you load the SETLCD program, load one of your programs that displays a graphics screen. Now press Ctrl and the left Shift key to enter LCD adjustment mode. In this mode, you can adjust the gray scale; just press S to see the different gray scale levels. Select the level that works best with the graphics being displayed.

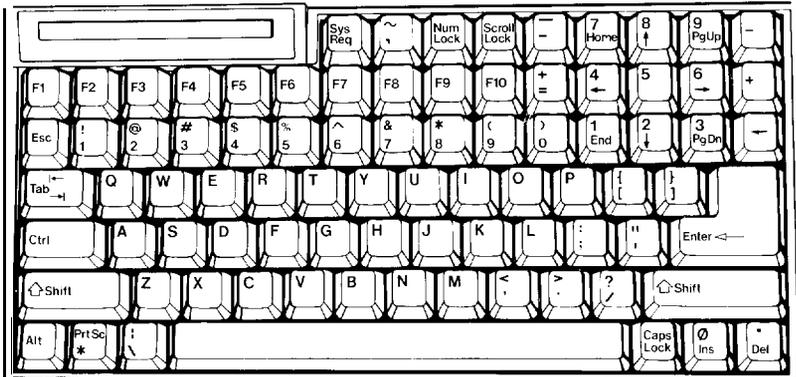
Reverse video mode

The reverse video function lets you display text on the LCD screen in normal or reverse mode. In normal mode, the LCD displays white characters on a black background. In reverse mode, the LCD displays black characters on a white background.

After you load the SETLCD program and enter the LCD adjustment mode as described above, press I to reverse the display mode. (The I stands for invert.) Press I again to switch back to normal mode. Press Enter to exit this function.

Special Keys on the Equity LT-286e Keyboard

The illustration below shows the Equity LT-286e keyboard.



Certain keys on your keyboard serve special functions when your computer is running application programs. For instructions on how to use keys for specific software functions, consult the manual that came with the program you're running.

The Num Lock, Scroll Lock, and Caps Lock keys work as toggles; press them once to turn on a function and again to turn it off. When a function is on, the corresponding light on the status indicator bar is illuminated. When a function is off, the light is off.

The following table describes special keys on the Equity LT-286e keyboard.

Key	Purpose
F1 - F10	Perform special functions within application programs.
Esc	Cancels the current command line or operation in some application programs.
Tab  	Moves the cursor one tab to the right in normal mode and one tab to the left in Shift mode.
Ctrl	Works with other keys to perform special functions, such as editing operations in MS-DOS.
Shift	Changes the letter keys from lowercase to uppercase while held down and changes other keys from their normal characters or functions to their alternate characters or functions. When the Caps icon is illuminated, changes letter keys from uppercase to lowercase.
Alt	Works with other keys to enter alternate character codes.
Shift + Prt Sc	Prints text on the screen to the printer.
Scroll Lock	Used by some application programs.
Break	Used by some application programs.
Num Lock	Changes the function of the cursor keys. For example, when the Num Lock function is on and you press 1, you get the number 2.

Key	Purpose
Caps Lock	Changes the letter keys from lowercase to uppercase; changes back to lowercase when pressed again. This key does not affect the numeric/symbol keys on the top row of the keyboard.
Ins	Turns the insert function on and off.
Del	Deletes the character at the cursor.
Enter J	Ends a line of keyboard input or executes a command.
←	Moves the cursor back one space, deleting the character to the left (Backspace).
Home, End, PgUp, PgDn ↑ → ↓ ←	Control cursor location within application programs. With Num Lock on, you can use these keys as a numeric keypad.
Sys Req	Used by some application programs.

Using Diskettes

Use diskette drives to store data on diskettes and retrieve and use stored data. The Equity LT-286e has a 1.44MB, 3 1/2-inch diskette drive; it also supports an optional, external 1.2MB, 5 1/4-inch diskette drive. This section explains how diskettes work and tells you how to do the following:

- Choose diskettes
- Care for diskettes
- Make backup copies
- Write-protect diskettes.

How Diskettes Work

The diskettes you use are flexible plastic, coated with a magnetic material and enclosed in a protective plastic case. Information is recorded in magnetic patterns on both surfaces of the diskette. Because data is stored magnetically, you can retrieve, record, and erase data, just as you play, record, and erase music on cassette tapes.

When you insert a diskette in a drive, a metal shutter above the diskette's access area moves aside to expose the diskette surface. When your computer reads data from or writes data to the diskette, it causes the diskette to spin within its plastic casing. Then the drive's read/write head locates the appropriate position on the diskette and performs the operation you specify.

Choosing Diskettes for the Equity LT-286e

Be sure to buy high-quality diskettes to use in your Equity LT-286e. You can use two kinds of diskettes:

- 3 1/2-inch, 720KB, double-sided, double-density diskettes
- 3 1/2-inch, 1.44MB, double-sided, high-density diskettes.

On a 720KB diskette, you can store the equivalent of about 300 pages of text. You can store twice as much information on 1.44MB diskettes, but the 3 1/2-inch diskette drives on some computers cannot use these high-capacity diskettes. If you are planning to exchange data with a computer that has a 720KB diskette drive, use 720KB diskettes in your Equity LT-286e.

If you have an external, 5 1/4-inch, 1.2MB (high-capacity) diskette drive, use 5 1/4-inch, double-sided, high-density diskettes in this drive. These diskettes can hold the equivalent of about 500 pages of text and are compatible with the high-capacity diskette drives used on some models of the IBM AT. The 1.2MB diskette drive can read 360KB diskettes.

Because of their size difference, you cannot use a 3 1/2-inch diskette in a 5 1/4-inch drive or vice versa. If you have both types of drives, however, you can copy individual files or groups of files from one drive to the other with the COPY and XCOPY commands. See Chapter 3 or your MS-DOS manuals for information about the COPY and XCOPY commands.

You need to format new diskettes before you can use them. Formatting prepares a diskette to receive data. Formatting also erases any data previously stored on a diskette, so be sure to format only new blank diskettes or diskettes that contain data you want to erase. See Chapter 3 for information about formatting diskettes.

Note

You must format double-sided, double-density, 3 1/2-inch diskettes to store 720KB of data, if you are using double-sided, high-density, 3 1/2-inch diskettes, you must format them to store 1.44MB of data.

Caring for Diskettes

The 3 1/2-inch diskettes are sturdy and reliable, but are not indestructible. To avoid damaging your diskettes and losing data, take these precautions:

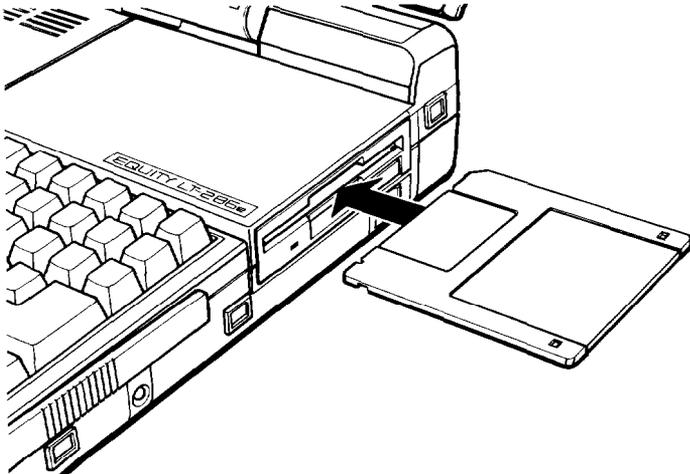
- Do not remove a diskette or turn off the computer while the diskette drive icon is on. This icon indicates that the computer is copying data to or from a diskette. If you interrupt this process, you may destroy data.
- Remove all diskettes before you turn off the computer.
- Keep diskettes away from 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, diskettes store data magnetically; strong magnetic fields can scramble that data.) Do not set your diskettes on such common magnetic sources as electrical appliances, telephones, television sets, and loudspeakers. Do not place your diskettes near your hard disk drive or the AC adapter.
- ❑ 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 a diskette's magnetic surface by sliding the metal shutter. Never touch a diskette's magnetic surface. The oil on your fingertips can damage the diskette and also the drive.
- ❑ 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.

If you use an external, 5 1/4-inch diskette drive, be especially careful with your 5 1/4-inch diskettes. Because they are more flexible, and because they do not have a metal shutter protecting their magnetic surfaces, they are more easily damaged than 3 1/2-inch diskettes. Always keep 5 1/4-inch diskettes in their protective envelopes when you are not using them.

Inserting and Removing Diskettes

To insert a diskette into the 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 diskette drive icon is on. This might cause loss of data. Also, be sure to remove all diskettes before you turn off the computer.

Making Backup Copies

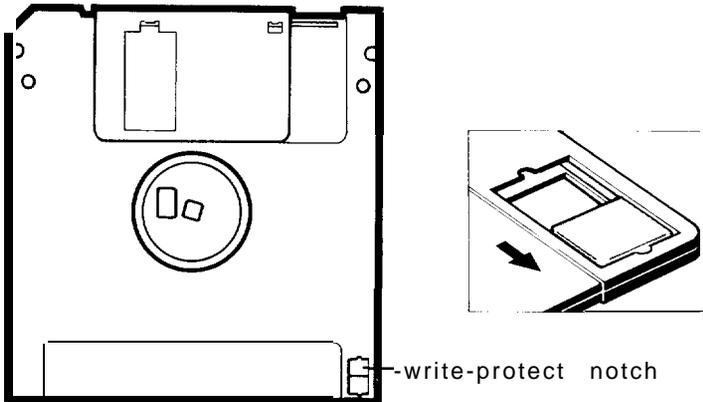
Copy all diskettes that contain programs. After you make your copies, store the originals in a safe place away from your working diskettes and use only the copies.

For general instructions on copying diskettes or hard disk files, see Chapter 3 or your MS-DOS Reference Manual.

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, modify existing data, erase files, or format the diskette.

The write-protect mechanism 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 to expose a small opening.



To remove the write protection, move the switch up toward the center of the diskette to cover the opening.

Using the 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. A hard disk stores data the same way as a diskette, but it works much faster and has a much larger storage capacity.

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 that you always have plenty of space available, keep only files you use regularly on the hard disk. Store your other files on diskettes.

Note

You must prepare a new hard disk before using it for the first time. Perform all procedures in your MS-DOS Installation Guide.

Caring for the Hard Disk

To avoid damaging your hard disk, take these precautions:

- 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 computer's power or remove the hard disk when the hard disk icon is on. This icon indicates that the computer is currently copying data to or from the hard disk. If you interrupt this process, you may lose data.

- ❑ Never remove the hard disk unit when the computer's power is on.
- ❑ Never attempt to open the hard disk unit. The disk itself is enclosed in an airtight container to protect it from dust.
- ❑ Keep the AC adapter at least six inches away from your computer and disks.

Protecting the Data on Your Hard Disk

Although the hard disk is very reliable, you must back up your hard disk files onto diskettes in case you lose some data accidentally.

Make backup copies of all your system and application program diskettes before copying the program files to the hard disk. Copy your data files frequently 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 3 or your MS-DOS manuals.

Improving Hard Disk Performance

MS-DOS includes a program called FASTOPEN, and a device driver called SMARTDRV.SYS, that can improve your hard disk's performance. For information about using these features, see your MS-DOS Reference Manual.

Turning Off the Hard Disk

If you are running the computer on its battery and you do not need to use the hard disk, you can use the HDDPSAVE utility to turn off the hard disk to prolong the battery's charge. If you are using the AC adapter, you don't need to turn off the hard disk.

You specify the amount of time (between 1 and 18 minutes) you want the computer to wait before it turns off the hard disk. After the hard disk drive is off, the computer must turn the hard disk back on to access it. So be sure to set a realistic time period.

To specify a power-off time, type the following at the system prompt:

```
HDDPSAVE /xx
```

-- where xx can be any value from 1 to 18. Then press Enter. To keep the hard disk drive on at all times, type one of the following and press Enter:

```
HDDPSAVE /0
HDDPSAVE /00
HDDPSAVE /ALL
```

Modifying the AUTOEXEC.BAT File

The SELECT program you use to install MS-DOS creates a file named AUTOEXEC.BAT on your hard disk. This file contains instructions MS-DOS executes every time you boot your system from the hard disk. These instructions do the following:

- Tell MS-DOS where to find its essential system files
- Allow you to define certain system parameters

- Install the appropriate keyboard information for the country in which you're using your computer
- Allow you to start the MS-DOS Shell program.

These instructions ensure that your system starts up properly each time you boot it from the hard disk. See your MS-DOS Installation Guide for details.

You'll also want to add the SETLCD and HDDPSAVE utilities to your AUTOEXEC.BAT file. By adding these utilities, you can set the backlight period for the LCD screen and the power-off period for the hard disk each time you power on the computer. Also, by adding the SETLCD utility to the AUTOEXEC.BAT file, you can modify the gray-scale modes at any time.

To modify the AUTOEXEC.BAT file created by SELECT, follow these steps:

1. Type `COPY AUTOEXEC.BAT + CON AUTOEXEC.BAT` and press Enter.
2. Type `SETLCD /5` and press Enter. This turns off backlighting after five minutes. Use any time period you want (between 1 and 60).
3. Type `HDDP SAVE / 5` and press Enter. This turns off power to the hard disk if you do not access the hard disk for five minutes. Use any time period you want (between 1 and 18).
4. Press F6 and then Enter.

Resetting the Computer

You can reset the computer to reload the operating system or to restart a program. You may also need to do this if an error occurs and the computer does not respond to anything you type. Resetting, however, erases any data in the computer's temporary memory (RAM) that you have not stored; so be careful when you reset your computer.

In MS-DOS, you can hold down Ctrl and press C or Break 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 cannot exit any other way. 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. 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 and press Del. The screen goes blank for a moment and then the computer reloads MS-DOS (MS-DOS must be either on the hard disk or on a diskette in drive A.) If this does not correct the problem, try the second method.
2. Press the RESET button on the right side of the computer. This method works even when the keyboard does not respond to your commands. If this does not correct the problem, try the third method.
3. Turn off any peripheral devices and then turn off the LT-286e. 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 then remove all diskettes from the disk drives. First turn off any peripherals, such as a printer, a monitor, or an external diskette drive. Then turn off the computer.

Chapter 3

Using MS-DOS With Your Computer

Your Equity LT-286e comes with version 4.01 of MS-DOS. MS-DOS manages the routine work of your computer system, such as keeping the computer's memory organized, controlling the screen 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 use it only for running application programs, the few MS-DOS commands you need are introduced in this chapter. If you use advanced features or create your own programs, see your MS-DOS manuals for a complete description of the features of the operating system.

This chapter describes the following MS-DOS functions:

- Starting and exiting MS-DOS
- Changing the current drive
- The MS-DOS command format
- Entering MS-DOS commands
- Storing data
- Using directories
- Formatting diskettes
- Copying data
- Deleting data

- ❑ Using the MS-DOS Shell program
- ❑ Using the Epson HELP utility
- ❑ Using the Epson MENU utility
- ❑ Using an AUTOEXEC.BAT file
- ❑ Starting an application program

The information presented in this chapter assumes you are running MS-DOS from the MS-DOS command prompt, not from the MS-DOS Shell program. If you plan to use Shell, see the MS-DOS Shell User's Guide for a complete description of how to execute commands using Shell.

Starting and Exiting MS-DOS

Before you can run an MS-DOS application program, MS-DOS must be running in memory. If you have prepared your hard disk according to the procedures in the MS-DOS Installation Guide, MS-DOS loads automatically from your hard disk whenever you turn on your computer (provided you do not have a diskette in the diskette drive).

Before you turn off the computer, make sure the MS-DOS command prompt (such as `C>` or `C : \ >`) appears on the screen. Then remove your diskettes, turn off any peripheral devices, and turn off the computer.

Changing the Current Drive

MS-DOS identifies the hard disk as drive C and the 3 1/2-inch diskette drive as drive A. If you have an external 5 1/4-inch diskette drive, MS-DOS identifies that drive as drive B.

The C> prompt that appears when you load MS-DOS from the hard disk tells you that drive C, your hard disk, is the current drive (also called the default drive). The current drive is the one that MS-DOS uses for all commands unless you specify a different drive. For example, if the current drive is drive C and you type the name of a program, MS-DOS searches drive C for the program.

If you want to run a program or find a data file on a different drive, you must specify the name of that drive. You can do this either by logging onto that drive (making it the current drive) or by including the drive letter with the filename.

To log onto another drive, type the name of the drive followed by a colon. Then press Enter. For example, if the current drive is C and you want to log onto drive A, type A: and press Enter. Your screen now displays the A> prompt, showing that you are operating from drive A. Drive A continues to be the current drive until you log onto a different drive or turn off or reset your computer.

To access a program or file on another drive without first logging onto that drive, specify the drive identifier (the name of the drive followed by a colon) along with the filename. For example, if you are logged onto drive C and you want to run a program called WP that is stored on drive A, type A :WP and press Enter. MS-DOS runs the program on drive A but remains logged onto drive C.

Note

You can reverse the drive identifiers for the internal 3 1/2-inch and the external 5 1/4-inch diskette drives by setting DIP switch SW2-2 to OFF. See "Setting the DIP Switches," in Appendix A.

The MS-DOS Command Format

To enter an MS-DOS command, you need to type the command in the correct format. The MS-DOS command format consists of the command name, parameters, and delimiters. The command name tells MS-DOS the task you want to perform. Parameters are items that identify the data you want to process (such as a filename) and change the way a command works. 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.

Pathnames may be required in a command if you are specifying files that are not on the current drive or directory. A pathname tells MS-DOS where to find a file, and consists of one or more directory names separated by backslashes. See "Using Pathnames," later in this chapter.

There are two kinds of MS-DOS commands: internal and external. Internal commands are commands that are built into MS-DOS and can be used any time 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 on a system diskette or on your hard disk. If the file is not stored in the current drive and directory, you may need to use a pathname when you enter an external command.

See your MS-DOS manuals for more information on the command format and for a detailed description of each command.

Entering MS-DOS Commands

You can enter an MS-DOS command when 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 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 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

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

The kind of file you create depends on the MS-DOS commands or application program you use to create it. Because each program you use stores data files in its own particular format, you are likely to encounter problems if you try to read a file using a different program.

Each file must have a unique filename so that MS-DOS can find it when you need to retrieve it. The filename consists of two parts, the *name* and the extension.

The name can be up to eight characters in length. It is a good idea to choose a name that describes the contents of the file. You can use any characters except blank spaces and the following symbols:

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

The extension is optional and can be up to three characters long. You can use the extension to describe the type of data contained in the file—for example, TXT for a text file. When you use an extension, separate it from the filename with a period, like this:

DATA.TXT

Many application programs automatically add extensions to the data files you create. Lotus® 1-2-3® Release 2, for example, automatically uses the extension .WK1 for worksheet files. Microsoft Word® uses .DOC for its word processing files. Such default extensions help an application program distinguish its own data files from files created by other programs. If you have programs that use default extensions, avoid using those particular extensions in other contexts.

You can type the name and the extension in either lowercase or uppercase letters, but do not use uppercase or lowercase letters to distinguish between files. After you type the filename, MS-DOS converts all lowercase letters to uppercase.

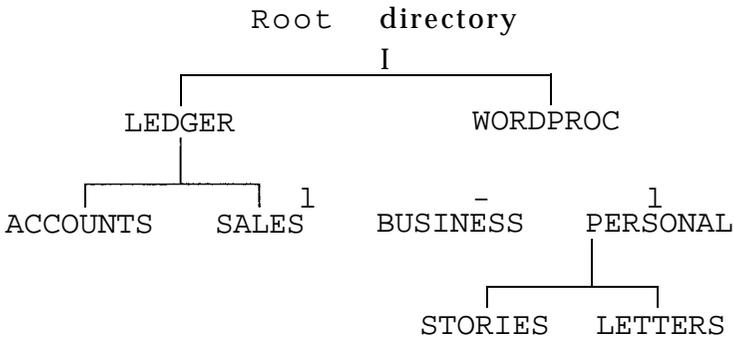
Using Directories

MS-DOS organizes files by storing them in directories. This makes it easy for you to find and manage your files. Directories also list specific information about each file, including the filename, the size of the file, and the date and time you last modified the file.

When you format your hard disk, MS-DOS creates a single directory for the disk. This directory is called the root directory. Because the hard disk has room for hundreds of files, MS-DOS allows you to create additional directories, called *subdirectories*. Subdirectories allow you to organize your hard disk to keep files of similar type or purpose together. Without subdirectories, it would be difficult to keep track of all the files on your hard disk.

You can also create subdirectories on your diskettes. You may find this useful for organizing the files on your backup diskettes.

The subdirectory structure of a hard disk can be represented with a tree-like diagram, like this:



In this example, the original directory (the root directory) has two subdirectories, named LEDGER and WORDPROC. Each of these subdirectories has subdirectories of its own. LEDGER has two, named ACCOUNTS and SALES; WORDPROC also has two, named BUSINESS and PERSONAL. The PERSONAL subdirectory of WORDPROC also has two subdirectories, named STORIES and LETTERS.

On your own hard disk, you can create a subdirectory structure that is more complex than this one. Or you may prefer to keep things simple. Organize your disk to suit your own needs; you can modify the structure as your needs change.

When creating subdirectories, note the following points:

- Any directory can have any number of subdirectories (except the root directory, which is limited in the number of files and subdirectories).
- You name subdirectories in the same way as files. The name can include as many as eight characters (letters or numbers), and you can add an optional extension consisting of up to three characters.
- The root directory does not have a name; it is identified by a backslash (\).

The Current Directory

MS-DOS always recognizes one directory as the current, or default, directory, just as it always recognizes one drive as being the current, or default, drive. The current directory is the directory in which MS-DOS performs your commands, unless you tell it otherwise. If you want to run a program or access a data file that is not stored in the current directory, you can change directories (making a different directory the current directory) or include a pathname in your command.

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 Shell, an MS-DOS program that makes it easier to perform these functions, as well as others. You can use Shell to generate a visual diagram of your subdirectory structure, to move quickly between directories, to add and remove directories, and so on. Shell is described in the MS-DOS Shell User's Guide.

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 onto drive C but want to see a directory of the files on the diskette in drive A, type `DIR A:` and press Enter.

A directory listing looks like this:

```

Volume in drive C is DOS400

Volume Serial Number is 3728-0CF6

Directory of C:\

COMMAND  COM      37557    12-19-88  12:00a
CONFIG   SYS       146     01-06-89  5:58p
AUTOEXEC BAT       166     03-29-89  4:26p
DOS      <DIR>     01-06-89  5:59p
HDDPSAVE EXE     1693    03-15-89  10:01a
LT       <DIR>     02-31-89  1:43p
BENCH    <DIR>     03-29-89  2:24p
WORD     <DIR>     10-31-88  11:06a
MEMOS    <DIR>     04-18-89  1:34p
  9 File(s) 17717247 bytes free

```

To list the files in a different directory on the current drive, type the pathname of that directory. For example, to list the contents of the LEDGER subdirectory while logged onto drive C, type `DIR \LEDGER` and press Enter. (Pathnames are described below.)

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 pathname consists of one or more directory names separated by backslashes and followed by the filename. The pathname tells MS-DOS where your file is stored.

For instance, in the directory structure shown previously in this chapter, if you had a file named `APRIL.TXT` stored in the subdirectory named `LETTERS`, the full pathname of that file would be:

```
\WORDPROC\PERSONAL\LETTERS\APRIL.TXT
```

This pathname tells MS-DOS to start at the root directory and go through two subdirectories (`WORDPROC` and `PERSONAL`) to find the `LETTERS` subdirectory. Once in the `LETTERS` subdirectory, MS-DOS finds the file called `APRIL.TXT`.

The first backslash tells MS-DOS to begin at the root directory. If you omit the backslash at the beginning of the pathname, MS-DOS begins the search at the current directory. For example, if the current directory is `PERSONAL` and you want MS-DOS to find the file `APRIL.TXT`, which is stored in the subdirectory `LETTERS`, you can specify the pathname like this:

```
LETTERS\APRIL.TXT
```

Because this pathname does not begin with a backslash, MS-DOS starts in the current directory (PERSONAL), moves to the subdirectory LETTERS, then finds the file APRIL.TXT. If you did begin with the backslash, MS-DOS would not find the file, because it is located in a subdirectory of PERSONAL, not of the root directory.

Note

MS-DOS offers some commands that reduce the need to specify pathnames. 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 that you don't have to type a full pathname every time you want to run an application program or use an MS-DOS command. The SUBST command lets you substitute a drive letter for a directory path; this can be helpful when you use a long path. The most convenient way to use these commands is in an AUTOEXEC.BAT file. See your MS-DOS Reference Manual for more information.

Creating Directories

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

```
MKDIR \LEDGER
```

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

```
MD \LEDGER\SALES
```

To check that the LEDGER directory is a subdirectory of the root directory, type DIR \ and press Enter.

The screen displays a list of files in the root directory, along with the names of any subdirectories of the root directory:

```
LEDGER          <DIR>          9-14-89 10:17a
WORDPROC        <DIR>          9-14-89 10:32a
COMMAND  COM    25307      3-17-88 12:00a
CONFIG   SYS     209      9-14-89 10:48a
AUTOEXEC BAT     309      9-14-88 12:11p
```

```
3 File(s) 18625536 bytes free
```

The list identifies the subdirectories by the letters <DIR>.

Changing Directories

You can use any directory as your current or working directory. To change to a different directory, type **CHDIR** (or **CD**) followed by the pathname of the directory you want to use. For example, to change from any directory to the directory LEDGER (which is a subdirectory of the root 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 working within a directory, you can access any of the files it contains without typing the full pathname.

To change to a subdirectory within the current directory, you do not need to type the backslash. For example, to change to the SALES subdirectory while you are working in LEDGER, type the following and press Enter:

```
CD  SALES
```

To change from any directory to its parent directory (the directory of which it is a subdirectory), type the following and press Enter:

```
CD . .
```

The two periods represent the parent directory.

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 this command, you must specify the name of the file you want to copy, as well as the directory to which you want to copy the file.

For example, if you are in the LETTERS directory and want to copy the file APRIL.TXT to the BUSINESS directory, type the following and press Enter:

```
COPY  APRIL.TXT  \WORDPROC\BUSINESS
```

The command has three parts: the word COPY, the name of the file you want to copy (APRIL.TXT), and the name of the directory to which you want to copy this file (\ WORDPROC \BUSINESS). You must include spaces or commas between each of the three parts as delimiters.

Note

You can also copy files using MENU or the MS-DOS XCOPY command. See the section later in this chapter on using MENU, and see your MS-DOS Reference Manual for information about using XCOPY.

Deleting a Directory

If you no longer need a directory, you can remove it with the RMDIR command (which can be abbreviated RD). Before removing a directory, you must delete any files it contains or move them to a different directory. You can only delete a directory that is empty. (To delete files from a directory, use the DEL or ERASE command. See “Deleting Data,” below.)

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

```
RD    \LEDGER\ACCOUNTS
```

Formatting Diskettes

Before you can store data on a new diskette, you must format it. Formatting prepares the diskette so that MS-DOS can store data on it. You need to do this 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 no longer need any files on a diskette before reformatting it.

You can format two kinds of 3 1/2-inch diskettes. Double-sided, double-density diskettes can be formatted to hold 720KB of data. Double-sided, high-density diskettes can be formatted to hold 1.44MB. Ordinarily you may prefer to use high-density diskettes, because they hold more information. But if you need to transfer files to another computer that cannot read 1.44MB diskettes, you can purchase double-density diskettes and use the 720KB format.

Formatting a 1.44 MB Diskette

To format a 1.44MB diskette, follow these steps:

1. If necessary, log onto drive C. If you are not in the directory containing the file FORMAT.COM, change to that directory. For example, if FORMAT.COM is stored in a subdirectory named DOS, type `CD \DOS` and press Enter.
2. Type the following and press Enter:

```
FORMAT A:
```

You see this prompt:

```
Insert new diskette for drive A:  
and strike ENTER when ready...
```

3. Insert the diskette you want to format into drive A and press Enter.

When the diskette is formatted, you see this message and prompt:

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

4. Enter up to 11 characters for the volume label to be stored on the diskette and press Enter. FORMAT displays these messages:

```
1447664 bytes total disk space  
1447664 bytes available on disk  
  
512 bytes in each allocation unit  
2847 allocation units available on disk  
  
Volume Serial Number is 3944-14CA  
  
Format another (Y/N)?
```

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

Formatting a 720KB Diskette

To format a 720KB diskette in a 1.44MB drive, follow these steps:

1. If necessary, log onto drive C. If you are not in the directory containing the file FORMAT.COM, use the CD command to change to that directory.
2. Type the following and press Enter:

```
FORMAT A: /F:720
```

You see this prompt:

```
Insert new diskette for drive A:  
and strike ENTER when ready...
```

3. Insert the diskette you want to format into drive A and press Enter.

When the diskette is formatted, you see this message and prompt:

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

4. Enter up to 11 characters for the volume label to be stored on the diskette and press Enter. FORMAT displays these messages:

```
730112 bytes total disk space
730112 bytes available on disk

1024 bytes in each allocation unit
713 allocation units available on disk

Volume Serial Number is 1C55-14C6

Format another (Y/N)?
```

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

Note

The MENU utility provides an easy way to perform these functions, See the section on MENU later in this chapter,

Copying Data

It is very important to keep backup diskettes containing copies of the files you create. There are several ways to copy data and program files:

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

The COPY command is easier to use when you have only a few files to back up. The BACKUP command has some advantages when you want to back up many files at once.

Note

The MENU utility makes it easy to perform these functions. See the section on MENU later in this chapter. You can also **use the MS-DOS XCOPY command** to copy entire subdirectories of files. See your **MS-DOS** manuals for details.

Using DISKCOPY

The DISKCOPY command lets you copy an exact image of one diskette onto another diskette as long as the two diskettes are the same size and type. You cannot use DISKCOPY to copy data from a 3 1/2-inch diskette to a 5 1/4-inch diskette or to copy data from a 1.44MB diskette to a 720KB diskette. You also cannot use DISKCOPY to copy data between a hard disk and a diskette.

To use DISKCOPY, follow these steps:

1. Make sure your original diskette (the one you are copying from) is write-protected. (See Chapter 2 for instructions.)
2. If necessary, log onto drive C. If you are not in the directory containing the file DISKCOPY.COM, use the CD command to change to that directory.
3. Type the following and press Enter:

```
DISKCOPY A: A:
```

MS-DOS displays this message:

```
Insert SOURCE diskette in drive A:  
Press any key to continue . . .
```

4. Insert the diskette you want to copy from (your source diskette) in the diskette drive and press any key. DISKCOPY copies the contents of the diskette to the computer's memory. When memory is full, the screen displays this message:

```
Insert TARGET diskette in drive A:  
Press any key to continue . . .
```

5. Remove the diskette from drive A and insert the blank diskette (your target diskette) in the drive. Press any key. DISKCOPY formats the diskette, if necessary. The copy operation begins when the format is complete.
6. After DISKCOPY copies the files from memory to the target diskette, it prompts you to reinsert the source diskette so it can copy the remaining data to the computer's memory (if necessary). Insert the source diskette in drive A and press any key.
7. DISKCOPY copies the rest of the source diskette's files to the computer's memory and then prompts you to reinsert the target diskette. Insert the target diskette in drive A and press any key.
8. DISKCOPY copies the remaining data from memory to the target diskette. 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 COPY

The COPY command lets you copy files in several ways:

- Copy individual files from a diskette or the hard disk to another diskette or hard disk
- Copy a group of files using wildcard characters (wildcard characters are explained below)
- Copy one or more files and give them new names
- Combine or merge files into one file.

A few simple rules apply to all uses of COPY:

- You must tell MS-DOS where to find the source file and where to store the target file.
- If an existing file on the target diskette or directory has the same name as the file you are copying, the copy automatically replaces (overwrites) the existing file. MS-DOS does not provide a warning. Be careful you do not accidentally replace a file that 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 named REPORT from the diskette in drive A to the hard disk (drive C), using the same name for the copy as for the original file, type the following and press Enter:

```
COPY A:REPORT C:
```

If you want to copy this file from the diskette in drive A to the hard disk but want to change the name of the copy from REPORT to FACTS, type this command and press Enter:

```
COPY A:REPORT C:FACTS
```

To make a copy of this file on the diskette in drive A and assign the name FACTS to the copy, type the following and press Enter:

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

In this case, you must assign a new name to the copy, because MS-DOS does not allow two files in the same directory to have the same name.

For any of the previous examples, if you omit the drive identifier (A: or C:), the COPY command uses the current drive. For example, if the current drive is C and you want to copy the file REPORT from drive A to drive C without changing the filename, enter the command as follows:

```
COPY A:REPORT
```

MS-DOS writes the copy to drive C because drive C is the current drive. You can save a few keystrokes by omitting the drive identifier of the current drive, but it is equally correct to include all the drive identifiers.

You can use wildcard characters to copy a group of files at one time. A wildcard character stands for some other single character or group of characters in the filenames. MS-DOS recognizes two wildcard characters: * and ?. The asterisk represents any group of characters and the question mark represents any single character.

To copy all files on the diskette in drive A to the current directory on the hard disk, type the following and press Enter:

```
COPY A:*.* C:
```

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? C:
```

You can also use the COPY command 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
```

MS-DOS combines the three files into one file, in the order in which you specified their names.

Using BACKUP

The BACKUP command lets you store files in a special format for archive purposes. You normally use BACKUP to back up hard disk files; however, you can use it to copy files from any disk to another (hard disk to diskette, diskette to hard disk, diskette to diskette, or hard disk to hard disk).

There are advantages to using the BACKUP command:

- ❑ BACKUP can split large files between two or more diskettes. That is, if the diskette to which you are copying has only 200KB of available space, and the next file to be backed up occupies 300KB, the BACKUP command copies the first part of the file to the current diskette and the remainder to the next backup diskette. This results in more efficient diskette use.

- ❑ The BACKUP command can perform incremental backups. That is, you can copy only those files that changed since the last time you used the BACKUP command. This also results in more efficient diskette use.
- ❑ The BACKUP command can format new diskettes as it copies files. You don't have to go through a separate formatting step when you use BACKUP.

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 were modified since the last time you ran BACKUP. This process speeds up the backup procedures you perform on a regular basis.

For complete instructions on the use of BACKUP and RESTORE, see your MS-DOS Reference Manual.

Note

The MENU utility provides an easy way to perform the functions of the BACKUP, RESTORE, COPY, and DISKCOPY commands. See the section on MENU later in this chapter. You can also use the MS-DOS XCOPY command to copy one or more files. See your MS-DOS Reference Manual for details.

Deleting Data

To delete a file, type `DEL` and then the full name (including the extension, if any) of the file you wish to delete. For example, to delete the file named `APRIL.TXT` from the current directory, type the following and press `Enter`:

```
DEL APRIL.TXT
```

You can delete all files in the current directory at once by typing the following and pressing `Enter`:

```
DEL *.*
```

For your protection, when you type `DEL *.*` MS-DOS asks if you are sure that is what you want to do. If you are sure, press `Y`, then `Enter`.

You can also use the `ERASE` command to delete files. `ERASE` works exactly like the `DEL` command.

Using the MS-DOS Shell Program

MS-DOS 4.01 provides a new Shell feature that lets you run programs and choose operating system commands from menus instead of the MS-DOS command prompt. The Shell feature is designed for both new and experienced users of MS-DOS. It lets you tailor your system to your own needs and manage your programs and data more efficiently.

See your MS-DOS Shell User's Guide for complete details.

Using HELP

The Epson HELP utility provides on-line information about the MS-DOS commands and programs. You can use HELP in either of two ways:

- ❑ To display the HELP menu, type `HELP` at the command prompt and press Enter
- ❑ To bypass the menu, type `HELP` plus the name of the command you want information about.

Note

The HELP utility requires the two files `HELP.COM` and `HELP.TXT`. These files are located on the MS-DOS Operating diskette. To run HELP from the hard disk, you must log onto the directory that contains these two files. If you copy `HELP.COM` to another directory on your hard disk or diskette, you must also copy `HELP.TXT` to the same 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, then press Enter.
3. If there is more than one page of information about the command, 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 `ESC`. Press `ESC` again to exit the HELP utility. MS-DOS displays the name of the last command you selected at the command prompt for easy reference.

To bypass the HELP menu and display information about a specific command, follow these steps:

1. At the command prompt, type `HELP` and the name of the MS-DOS command you want information about. Then press Enter. For example, to see information about 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 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` and the names of the commands you want information about. Then press Enter. Separate each command name with a space. For example, to see information about `DISKCOPY`, `FORMAT`, and `COPY`, type the following and press Enter:

```
HELP DISKCOPY FORMAT COPY
```

2. MS-DOS displays help information for the first command. If there is more than one page of information about the command, you see the prompt `PgUp` at the top of the screen. Press `PgUp` to display the rest of the text.
3. Press `ESC` when you are ready to display information about the next command.
4. Press `ESC` again to exit the HELP program.

Using MENU

Your Equity LT-286e comes with an Epson utility called MENU. This program gives you access to several utilities that perform the functions of some of the most commonly used MS-DOS commands. MENU lets you execute several commands without having to remember the exact format for each one.

To access the MENU utility, log onto the directory containing the file MENU.EXE. 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, then press Enter.

Most options contain submenus; keep highlighting your selection and pressing Enter until you select the operation you want.

MENU Utility Options

The MENU utility offers five options:

- | | |
|-------------------|---|
| 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, AI-I-RIB, and XCOPY. |
| Disk Utilities | Lets you check, copy, compare, and format diskettes. This option gives you easy-to-use alternatives 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. |
| Enter DOS Command | Lets you run other MS- DOS commands without leaving the MENU program. |

See your MS-DOS manual for step-by-step instructions for using each option.

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 there is an AUTOEXEC.BAT file in the root directory, MS-DOS executes the commands in that file.

Here are some suggestions for tasks you can perform using an AUTOEXEC.BAT file:

- ❑ Modify the PATH command to include the directories containing application programs you commonly use. This reduces the number of times you need to change directories or specify pathnames.

Add the command that starts your most commonly used application program (such as a word processor or spreadsheet program) so MS-DOS loads it automatically when you turn on or reset the computer.

- ❑ Change the MS-DOS command prompt so it displays the current directory--or your name, or anything else you want.

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

The SELECT program you used to install MS-DOS, created an AUTOEXEC.BAT file in the root directory of your hard disk. SELECT adds commands to the AUTOEXEC.BAT file based on your responses to questions. See your MS-DOS Installation Guide for details.

Creating an AUTOEXEC.BAT File

You can create an AUTOEXEC.BAT file with any program that lets you store a text-only file (also called an ASCII text file). If your word processing program can save a file as a text-only file, you can use that program to create an AUTOEXEC.BAT file. Just be sure to name the file AUTOEXEC.BAT and store it in the root directory of the hard disk.

You can also use the MS-DOS COPY command to create an AUTOEXEC.BAT file. Follow these instructions to use the COPY command:

1. At the C> 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 creates a file named AUTOEXEC.BAT containing all the commands you just typed. MS-DOS stores the file in the root directory of your hard disk. From now on, every time you start or reset your computer, MS-DOS executes all commands in the AUTOEXEC.BAT file.

Starting an Application Program

Any time you see the MS-DOS command prompt (for example, A> or C>), you can start using an application program. Just log onto the drive and directory containing your application program files (if necessary) and type the name of the program's executable file. (See the documentation for your application program if you are not sure what to type.) When you press Enter, MS-DOS runs the application program.

When you exit the program, the MS-DOS command prompt reappears. Be sure to exit the application program properly and return to the command prompt before turning off your computer.

—

—

Chapter 4

Troubleshooting

You should not encounter any difficulties as you set up and use your Equity LT-286e. You can correct most problems by adjusting a cable connection, changing a DIP switch or slide switch setting, repeating a software procedure, or resetting the computer. If anything out of the ordinary happens, turn to this chapter for a solution.

If the suggestions in this chapter 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 Consumer Information number (1-800-922-891 1) for the location of your nearest authorized Epson Customer Care Center.

When you contact your dealer or Epson Customer Care Center, be ready to provide the serial number of your computer (located on the bottom of the computer), its configuration (including the type of disk drives and options), and the names and version numbers of any software programs 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. (Also see the section on hard disk problems later in this chapter.)

1. Check that the status indicator bar above the keyboard is on. If not, remove any diskettes from the diskette 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 status indicator bar still does not come on, turn off the power switch. Check that the AC adapter is securely connected to both the computer (or the battery pack) and an electrical outlet. Make sure the green LED on the AC adapter is illuminated. Then turn the power back on.
3. If the computer still does not start, check the electrical outlet. Plug a lamp into the outlet and turn it on to see if the outlet supplies power.
4. If your computer still won't start, contact your Epson dealer.

The LCD Screen Is Blank

If the computer starts but no image appears on the LCD screen, follow these steps to solve the problem:

1. Use the contrast and brightness levers to adjust the screen display.
2. To save power, you may have defined a backlight period so that the LCD screen turns off automatically after a specified period of time. If this happens, press any key to restore the display. To change the time limit or turn off the backlight feature, see “Backlight Period” in Chapter 2.
3. If an image still does not appear, check that DIP switches SW1-7 through SW1-10 are in the correct position. (See “Setting the DIP Switches” in Appendix A for instructions.) Check that the CRT/LCD slide switch is in the LCD position. (See “Setting the Slide Switches” in Appendix A for instructions.)

4. If you still do not see an image on the screen, contact your Epson dealer.

The Monitor Screen Is Blank

If you are using an external color monitor and no image appears on its screen, follow these steps to solve the problem:

1. Be sure the power switches on the computer and monitor are turned on.
2. Use the controls on the monitor to adjust the brightness and contrast.
3. Remove any diskette from drive A, then turn off the power switches on the monitor and the computer. Check that the monitor's power cable is securely connected to the monitor and to an electrical outlet, and that the monitor cable is properly connected to both the monitor and the computer. Then turn both power switches back on.
4. Check that the CRT/LCD slide switch is in the CRT position. (See "Setting the Slide Switches" in Appendix A for instructions.)
5. Turn off the power switches on both the computer and the monitor. Then check the electrical outlet for power. Plug a portable lamp into the outlet and turn it on to see if the outlet supplies power.
6. If an image still does not appear on your color monitor, contact 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. Some operations take longer than others to perform. For example, a spreadsheet program takes longer to recalculate an entire spreadsheet than to record one figure. Also, programs involving many calculations can take several minutes, or even hours, to complete. Be aware of the task the computer is performing and judge the time accordingly.
2. If the computer remains locked up after you've waited a reasonable amount of time, follow the steps in Chapter 2 to reset the computer.

Note

Changing the execution speed while running an application program could cause the computer to lock up. Always exit the program, and turn off the computer before changing the execution speed.

Diskette Problems

If you have trouble with a diskette, follow these steps to define the problem:

1. Is the diskette damaged? To find out, use DISKCOPY to make a copy of the diskette. Using the copy, repeat the operation that caused the problem. If the operation works using the copy diskette, the original diskette is probably damaged. Discard the original diskette and use the copy instead.

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. Then repeat the operation to see if it works on the copy. If it does, the original diskette is damaged.

2. Is the diskette write-protected? If the write-protect switch is set, first make sure the diskette does not contain files you do not want to change or lose. Then try moving the switch to remove the write protection. (Ordinarily, it's a good idea to leave program diskettes write-protected, but some programs don't work properly on write-protected diskettes.)
3. Try formatting a blank diskette to determine if the diskette drive is operating properly.

If you cannot format a diskette, contact your Epson dealer.

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. See the instructions for setting up the hard disk in your MS-DOS Installation Guide.

If the hard disk still does not 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.

Appendix A

DIP Switches and Slide Switches

This appendix describes the DIP switches and slide switches you set to define your system's configuration. The computer uses this information each time you turn it on.

If you are using the standard LT-286e settings, that is, you are using the LCD screen in EGA mode, a parallel printer, and operating at 12 MHz, you do not need to change the DIP switches or slide switches.

If you are not using the standard settings, you need to define your system configuration using these switches. Then return to Chapter 1 to finish setting up your computer.

Setting the DIP Switches

The Equity LT-286e has two sets of DIP switches that you access from the bottom of the computer. These are small, on/off switches that provide your computer with information each time you turn it on. A DIP switch is either on (up) or off (down). To change a setting, use a hard, thin object, such as a small screwdriver.

The first set has ten switches that control the type of external monitor you are using and the display configuration. The second set has ten switches that control the diskette drive, the CRT/LCD display mode, and the parallel and serial interface configuration.

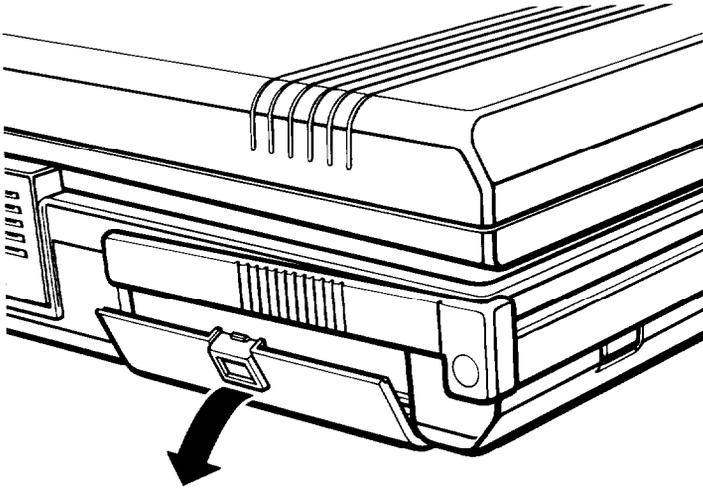
Read this section to make sure the current DIP switch settings match your system configuration.

Before accessing the DIP switches, make sure the power switch is off and all cables, including the AC adapter, are disconnected.

Accessing the DIP Switches

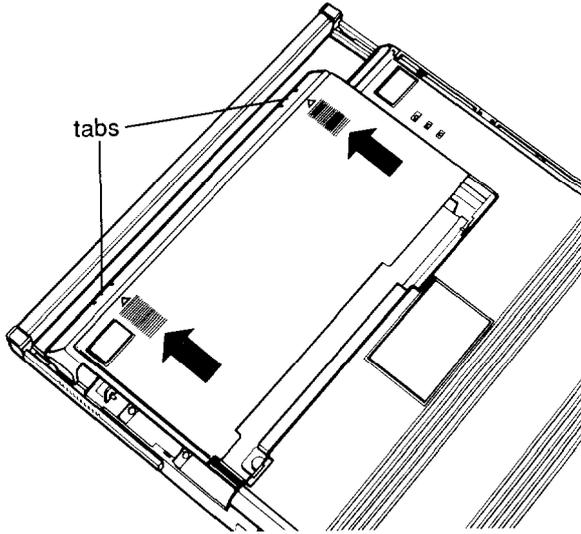
To locate the DIP switches, follow these steps:

1. Remove the expansion slot cover on the left side of the computer. Press down on the release tab and lift off the expansion slot cover.

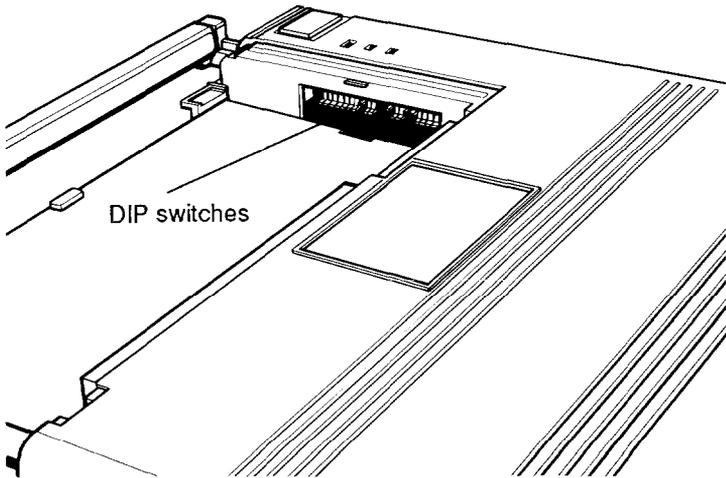


2. Pull out the carrying handle.
3. Turn the computer upside down with the handle away from you.

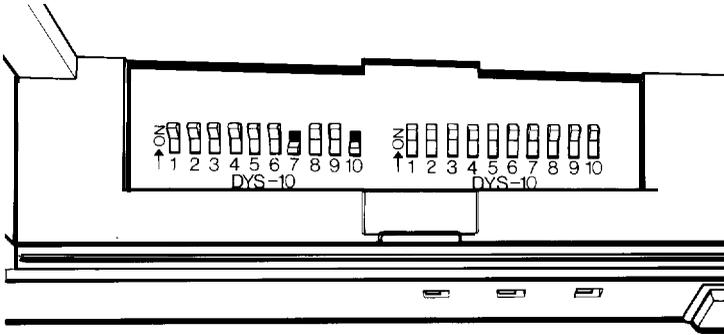
4. Remove the expansion card cover as shown below. Lift up on the two tabs while you press on the grated squares to release the cover. Slide the cover away from you (toward the handle).



The DIP switches are located on the right side of the computer.



Because the computer is upside down, the DIP switches numbers are upside down and the ON/OFF orientation is reversed. Take care when changing a DIP switch setting that you are changing the correct switch.



The following tables list the system functions these switches control.

DIP switch settings (SW1)

Switch	Setting	Function
1	ON*	Not used; must be ON
2	ON*	Selects attached enhanced color display
	OFF	Selects attached monochrome or color display
3	ON*	Reserved; must be ON
4	ON*	Reserved; must be ON
5	ON*	Reserved; must be ON
6	ON*	Selects expanded LCD mode
	OFF	Selects standard LCD mode
7	ON	Selects EGA configuration; see the CRT/LCD switch settings
	OFF*	Selects default EGA configuration
8	ON*	Selects default EGA configuration
	OFF	Selects EGA configuration; see the CRT/LCD switch settings

Switch	Setting	Function
9	ON*	Selects default EGA configuration
	OFF	Selects EGA configuration; see the CRT/LCD switch settings
10	ON	Selects EGA configuration; see the CRT/LCD switch settings
	OFF	Selects default EGA configuration

*Default setting

DIP switch settings (SW2)

Switch	Setting	Function
1	ON*	Not used; must be ON
2	ON*	Selects internal diskette drive as drive A; external diskette drive is drive B
	OFF	Selects external, 5 1/4-inch diskette drive as drive A; internal diskette drive is drive B
3	ON*	Not used; must be ON
4	ON*	Selects color for primary display
	OFF	Selects monochrome for primary display
5	ON	Reserved
6	ON*	Selects internal serial port as primary
	OFF	Selects internal serial port as secondary
7	ON*	Enables internal serial port
	OFF	Disables internal serial port
8	ON*	Selects internal printer port as primary
	OFF	Selects internal printer port as secondary
9	ON*	Enables internal printer port
	OFF	Disables internal printer port
10	ON*	Not used; must be ON

*Default setting

DIP switch settings for video controller (SW1)

CRT/LCD Configuration	Switch settings			
	7	8	9	10
Selects MDA (monochrome display adapter) to use monochrome display (CRT only)	OFF	ON	OFF	OFF
Selects CGA (color graphics adapter) to use color or enhanced color display; 40 characters x 25 lines	ON	OFF	OFF	ON
Selects CGA to use color or enhanced color display; 80 characters x 25 lines	ON	OFF	OFF	OFF
Selects EGA (enhanced graphics adapter) to use enhanced color display in normal mode	OFF	ON	ON	ON
Selects EGA (enhanced graphics adapter) to use enhanced color display in enhanced mode	OFF	ON	ON	OFF

The following switches are located on SW1. These DIP switches define how the video controller is interpreted by the computer.

Switch 1-This switch is not used and must always be set to ON.

Switch 2-This switch defines the type of external monitor attached to the computer.

Set this switch to ON if you have attached an external EGA monitor.

Set this switch to OFF if you have attached an external monochrome or RGB monitor.

Switch 3--This switch is reserved and must always be set to ON.

Switch 4--This switch is reserved and must always be set to ON.

Switch 5--This switch is reserved and must always be set to ON.

Switch 6--This switch selects the LCD mode of your screen. Set this switch to ON for the expanded LCD mode; in this mode, the LT-286e displays larger characters to fill the screen. Set this switch to OFF for the standard LCD mode; in this mode, the LT-286e displays characters in the standard size and you see a one-inch margin on the top and bottom of the screen.

Switch 7, Switch 8, Switch 9, Switch 10--These switches define the EGA configuration.

The following switches are located on SW2. These DIP switches define how the computer identifies peripherals attached to the computer.

Switch 1--This switch is not used and must be set to ON.

Switch 2--This switch defines your diskette drive assignments. Set this switch to ON to identify the internal diskette drive as drive A; an external, 5 1/4-inch drive is drive B. Set this switch to OFF to identify the external diskette drive as drive A; the internal diskette drive becomes drive B.

Switch 3--This switch is not used and must always be set to ON.

Switch 4--This switch defines the primary display.
Set this switch to ON if the primary display is color.
Set this switch to OFF if the primary display is monochrome.

Switch 5--This switch is reserved and must always be ON.

Switch 6--This switch tells the computer whether the serial port on the side of the computer is configured as a primary port or a secondary port.

Set this switch to ON if you want the serial port to be recognized as the primary serial port (\$3F8-\$3FF).

Set this switch to OFF if you want the serial port to be recognized as the secondary serial port (\$2F8-\$2FF).

Switch 7--This switch enables or disables the serial port on the side of the computer. If you install an option card that offers serial ports, you may need to disable the internal serial port if it conflicts with the port on the option card.

Set this switch to ON to enable the serial port.

Set this switch to OFF to disable the serial port.

Switch 8--This switch tells the computer whether the parallel port on the side of the computer is configured as a primary port or a secondary port.

Set this switch to ON if you want the parallel port to be recognized as the primary parallel port (\$378-\$37F).

Set this switch to OFF if you want the parallel port to be recognized as the secondary parallel port (\$278-\$27F).

Switch 9--This switch enables or disables the parallel port on the side of the computer.

Set this switch to ON to enable the parallel port.

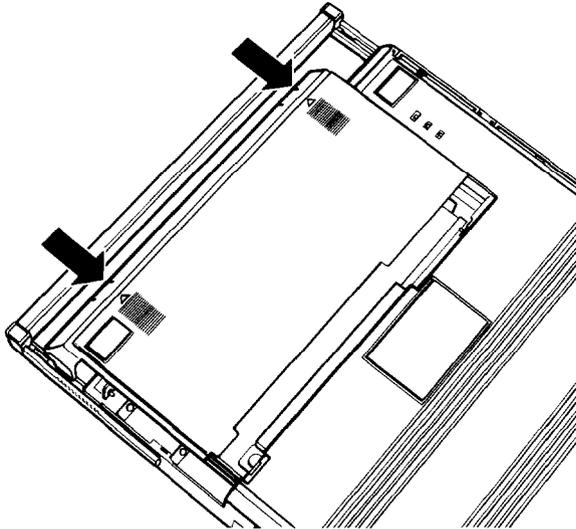
Set this switch to OFF to disable the parallel port.

Switch IO--This switch is not used and must be set to ON.

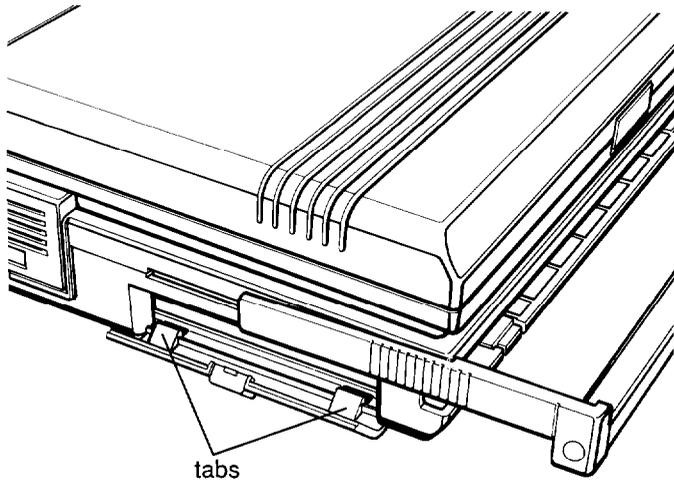
Replacing the Expansion Card Cover

After you verify or change your DIP switch settings, you need to replace the expansion card cover. Follow these steps:

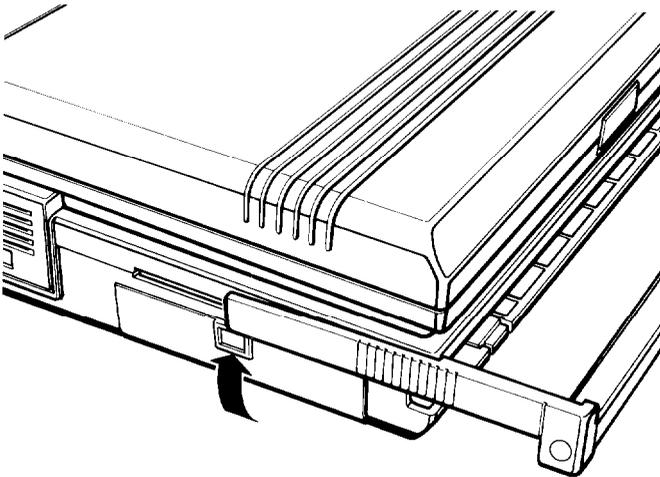
1. Set the cover on the computer and slide it back into position as shown below. Press firmly until the cover snaps into position.



2. Turn the computer right side up with the handle facing you.
3. Replace the expansion slot cover on the left side of the computer. The cover has two tabs that fit into slots on the computer's cover.



4. Lift the cover up into place and slide the release tab up to secure the cover.



5. Slide the handle back into place.

Setting the Slide Switches

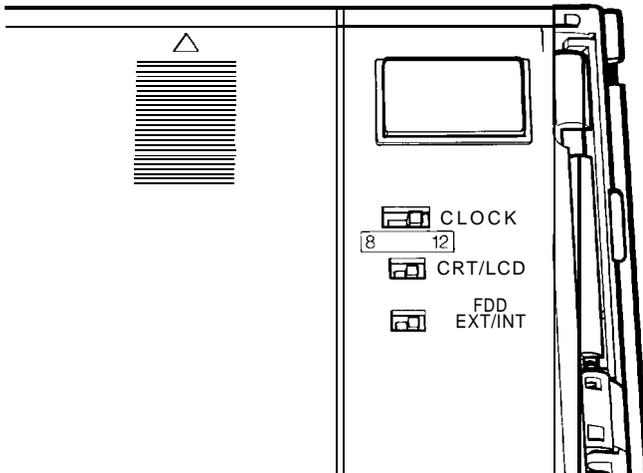
The slide switches let you do the following for your LT-286e:

- Select a CPU clock speed of 12 MHz or 8 MHz
- Select an external CRT
- Select an external diskette drive.

The slide switches are located on the bottom of the computer. Follow these steps:

1. Turn the computer off.
2. Disconnect all cables from the computer, including the AC adapter.
3. Turn the computer upside down with the back panel closest to you.

Set the slide switches only when the computer is turned off.



Clock speed-Slide the CLOCK switch to the left to select a CPU clock speed of 8 MHz. Leave the switch in the right position to select a CPU clock speed of 12 MHz.

Display switch-Slide the CRT/LCD switch to the left if you plan to connect an external CRT to the computer. Leave the switch in the right position if you plan to use the LCD.

External diskette drive-Slide the FDD EXT/INT switch to the left if you plan to connect an external, 5 1/4-inch diskette drive to the computer. Leave the switch in the right position if you do not plan to use an external diskette drive.

You are now ready to set up and use your LT-286e computer. See Chapter 1 for details on setting up your computer.

Installing Options

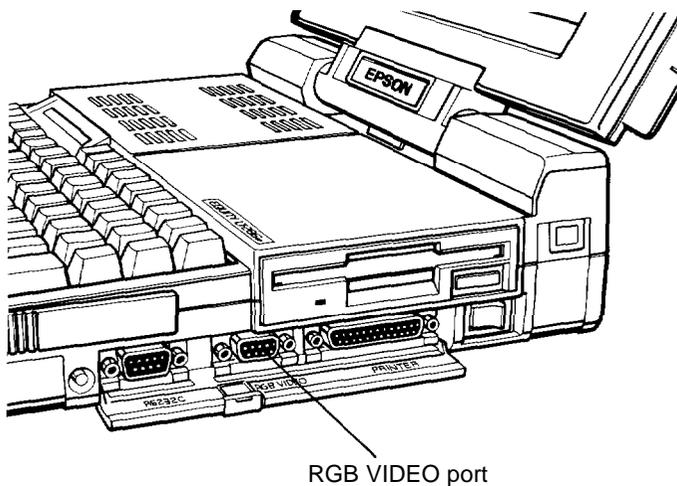
This appendix describes how you install optional devices on your LT-286e. You can install an external monitor, an external diskette drive, an internal modem, an internal 1MB memory card, and an external keyboard. You can also install a $\frac{2}{3}$ -size, IBM AT-compatible expansion card and a math coprocessor.

Connecting an External Color Monitor

If you plan to use an external monitor with your Equity LT-286e, follow the instructions below to connect it to the computer:

1. Be sure both the computer and monitor (as well as any other peripheral devices) are turned off.
2. Turn the computer upside down and set the CRT/LCD slide switch to CRT. This slide switch setting lets the computer know you will be using a monitor instead of the LCD screen. (See "Setting the Slide Switches" in Appendix A for details.)
3. Turn the computer right side up with the front facing you.
4. Place your monitor near the Equity LT-286e.
5. If necessary, connect the monitor cable to the monitor. (Some monitors come with permanently attached cables.)
6. Lower the interface cover on the right side of the computer.

7. Connect the appropriate end of the monitor cable to the port marked RGB VIDEO on the right side of the computer, as shown below.



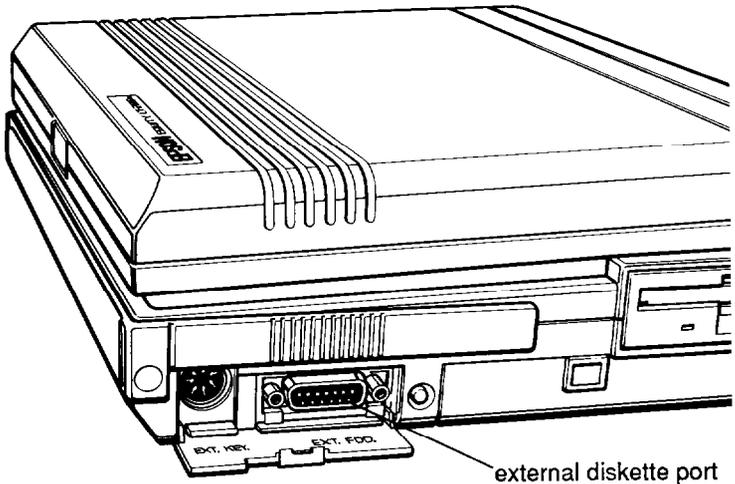
8. If the connector has retaining screws, tighten them with a screwdriver.
9. If necessary, plug the monitor's power cable into the power inlet on the monitor. (Some monitors come with permanently attached power cables.) Then plug the power cable into an electrical outlet.

When you are ready to use the computer, turn on the monitor and any other peripheral devices, then turn on the computer. Text displays on the external monitor screen instead of the computer's LCD screen.

Connecting an External Diskette Drive

You can connect the optional, 1.2MB, 5 1/4-inch diskette drive to your LT-286e. Follow these steps:

1. Make sure both the computer and external diskette drive (as well as any other peripheral devices) are turned off.
2. Set DIP switch SW2-2 to identify the drive. When SW2-2 is ON, the external drive is drive B. When SW2-2 is OFF, the external drive is drive A. See “Setting the DIP Switches” in Appendix A for details.
3. Make sure the FDD EXT/INT slide switch is set to FDD EXT. See “Setting the Slide Switches” in Appendix A.
4. Place the external diskette drive near the LT-286e.
5. Lower the interface cover on the front, right side of the computer (when the front of the computer is facing you).
6. Connect the interface cable from the external diskette drive to the EXT FDD port on the right side of the computer, as shown below.



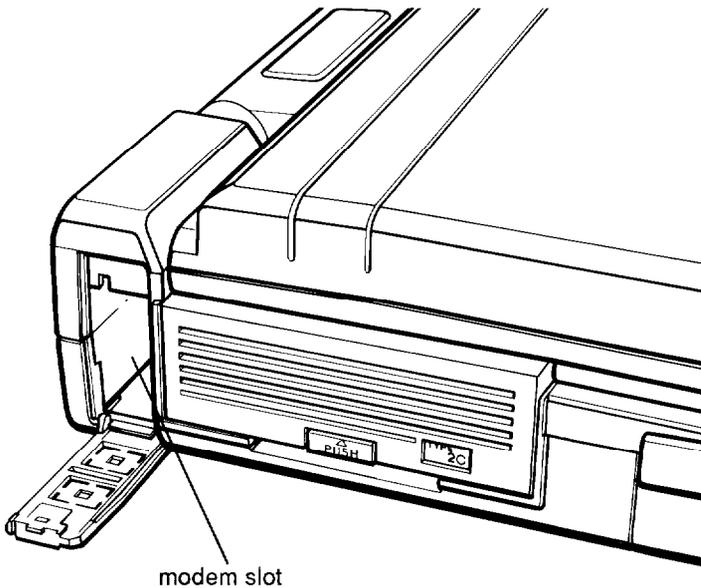
7. Tighten the retaining screws on the connector with a screwdriver.
8. Plug the drive's power cable into an electrical outlet.

When you are ready to use the computer, turn on the external diskette drive and any other peripheral devices, then turn on the computer.

Installing the Internal Modem

You can install the optional, Epson internal modem in your LT-286e. Follow these steps:

1. Make sure the computer is turned off.
2. Press down on the release tab to lower the modem cover on the back, left side of the computer (when the front of the computer is facing you).

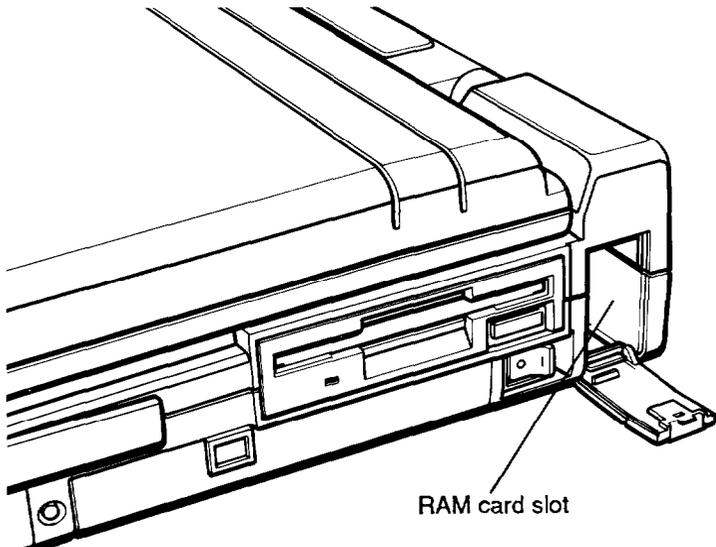


3. Slide the modem card into this slot. Secure the connector on the modem to the socket inside the slot.
4. Snap out the plastic moldings that cover the LINE and PHONE openings on the modem cover.
5. Close the modem cover. Press up on the release tab to secure the cover.
6. Connect the modem to a phone line.

Installing the RAM Card

You can install the optional, Epson 1MB RAM card in your LT-286e. Follow these steps:

1. Make sure the computer is turned off.
2. Press down on the release tab to lower the RAM card cover on the back, right side of the computer (when the front of the computer is facing you).



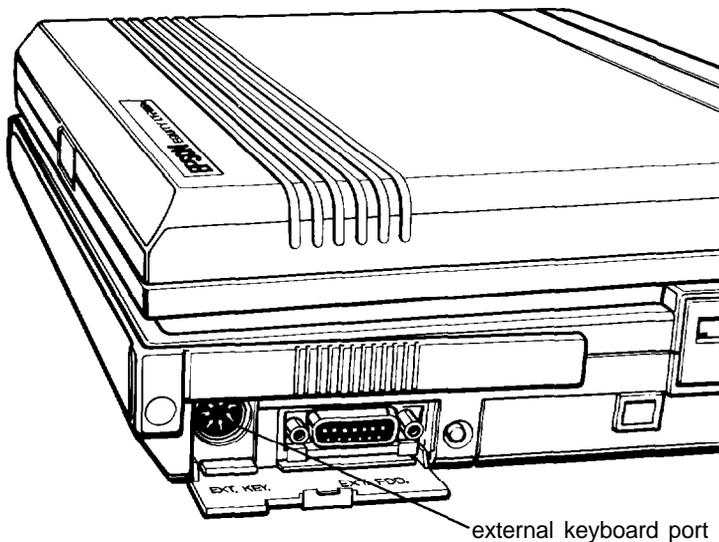
3. You slide the RAM card into this slot. Secure the connector on the RAM card to the socket inside the slot.
5. Close the RAM card cover. Press up on the release tab to secure the cover.

Connecting an External Keyboard

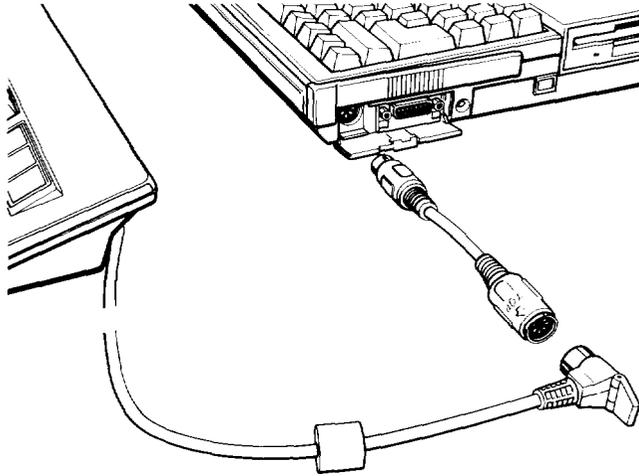
You can attach an external keyboard to your LT-286e. The socket for the external keyboard is on the front, right side of the computer.

Follow these steps:

1. Make sure the computer is turned off.
2. Lower the interface cover on the front, right side of the computer (when the front of the computer is facing you). Press down on the release tab to lower the cover.



3. Attach the keyboard adapter to the external keyboard slot. Then attach the connector from the external keyboard to the adapter.



You only need the keyboard adapter if your keyboard connector interferes with the RGB VIDEO port and you are planning on connecting an external monitor to this port.

Installing an Option Card

You can also install a $\frac{2}{3}$ -size, IBM PC AT-compatible, internal expansion card in your LT-286e. You can install a $\frac{2}{3}$ -size option card provided it physically fits in the expansion slot on the LT-286e. You cannot install a full-length option card. Also, you cannot install an 8-bit card that interferes with the 16-bit connector inside the LT-286e.

An option card must meet certain power supply requirements. The option card cannot draw more than the specified current (Amps):

Supply voltage	Maximum current
+5 Volts	0.8 Amps
+ 12 Volts	0.1 Amps
-5 Volts	0.05 Amps
-12 Volts	0.05 Amps

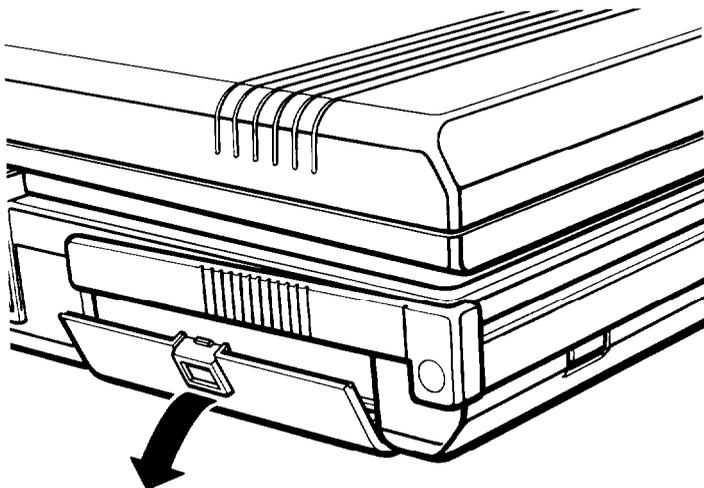
The option card must not interfere with options installed in the internal ports. For example, if you install an option card with a parallel port, you must assign that port as the secondary parallel port (\$278) if the internal parallel port is the primary parallel port (\$378). If you want the parallel port on the option card to be the primary parallel port, you must disable the internal parallel port by setting DIP switch SW2-9 to OFF. See “Setting the DIP Switches” in Appendix A for details.

WARNING

You cannot install an optional video card in the expansion slot; video cards interfere with the built-in video capabilities of the LT-286e. You cannot install an option card that supports a diskette drive, a hard disk drive, or an expansion box that supports multiple cards.

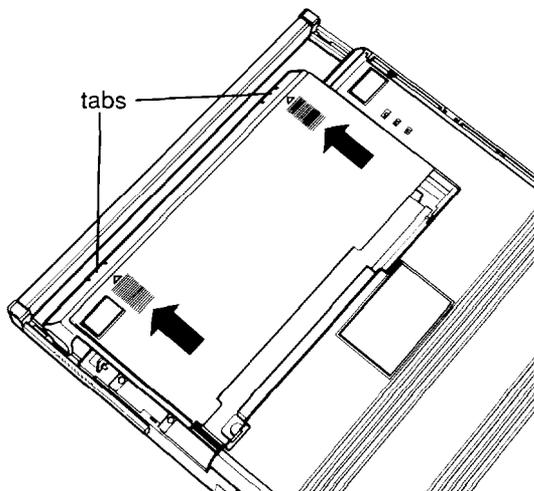
Follow these steps to install an option card:

1. Turn off the computer and disconnect all cables, including the AC adapter.
2. Remove the expansion slot cover on the left side of the computer. Press down on the release tab and lift off the expansion slot cover.

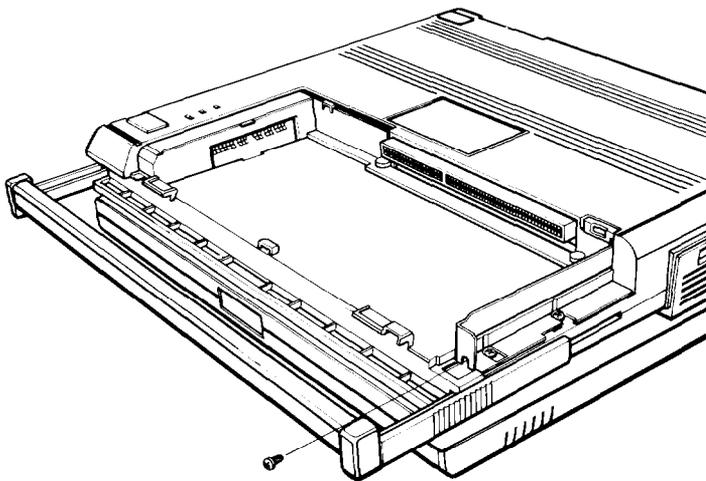


3. Pull out the carrying handle.
4. Turn the computer upside down with the handle away from you.

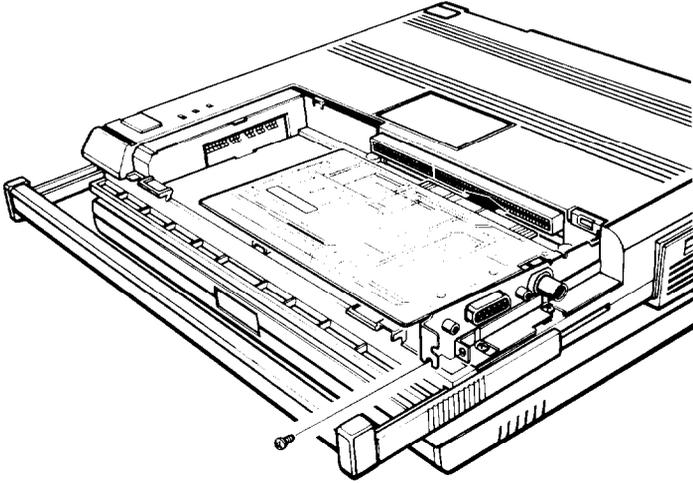
5. Remove the expansion card cover as shown below. Lift up on the two tabs while you press on the grated squares to release the cover. Slide the cover away from you (toward the handle).



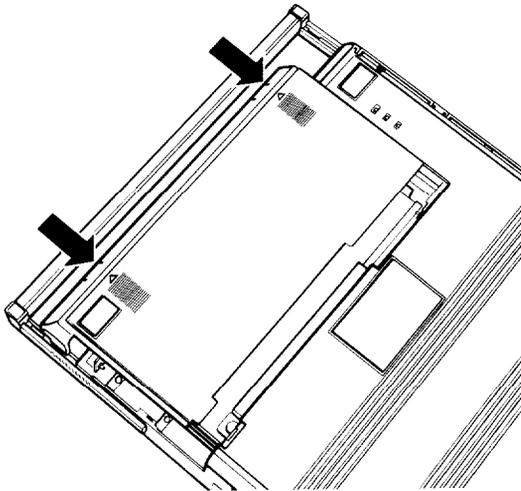
6. Remove the bracket on the side of the computer.



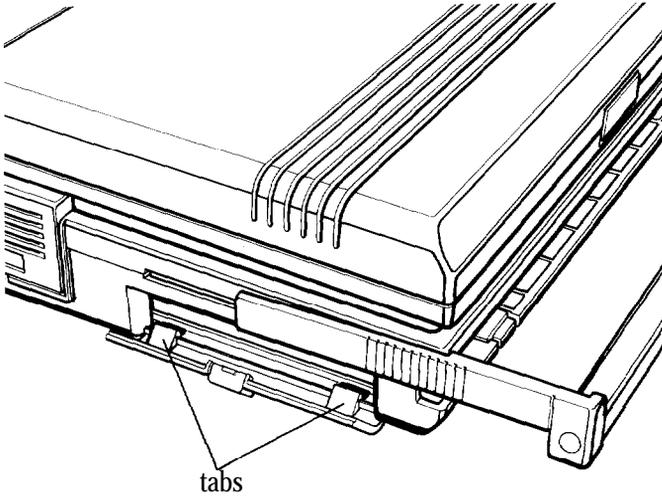
7. Insert the card from the back of the computer. Line up the connector on the card with the socket inside the expansion slot. Insert the connector directly into the socket. Secure the card with the screw you removed from the bracket.



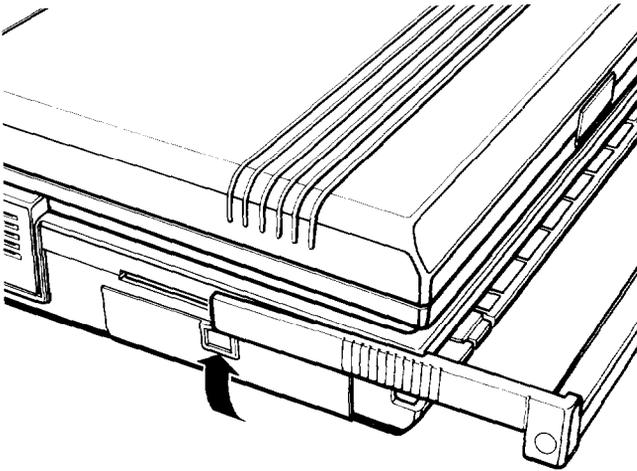
8. Set the cover on the computer and slide it back into position as shown below. Press firmly until the cover snaps into position.



9. Turn the computer right side up with the handle facing you.
10. Replace the expansion slot cover on the left side of the computer. The cover has two tabs that fit into slots on the computer's cover.



11. Lift the cover up into place and slide the release tab up to secure the cover.



12. Slide the handle back into place.

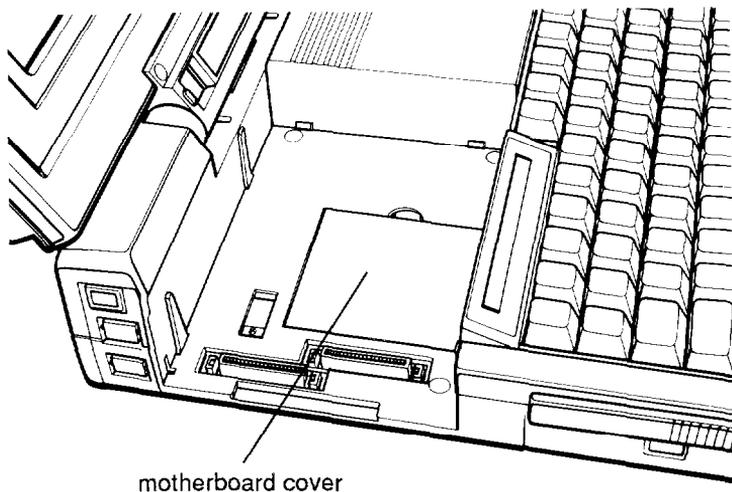
Installing a Math Coprocessor

You can also install a math coprocessor in your LT-286e. If your software supports a math coprocessor, it processes mathematical calculations much faster than without the coprocessor.

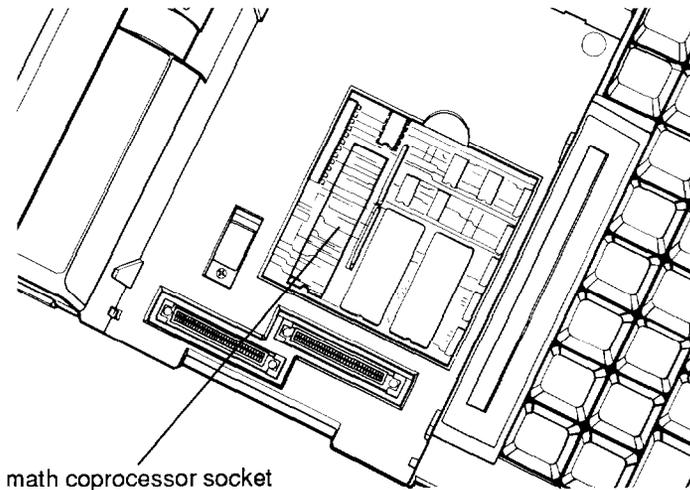
You can easily install the math coprocessor in your LT-286e. However, to do so, you need to access the motherboard which contains sensitive circuitry. If you have any doubts about the installation procedure, ask your Epson dealer for assistance or contact a Customer Care Center.

To install the math coprocessor, follow these steps:

1. Turn off the computer.
2. To remove the hard disk, press the PUSH button to release the hard disk and lift it straight up.



3. Lift off the motherboard cover.
4. Notice the outline for the math coprocessor on the motherboard.



5. Make sure the notch on the math coprocessor lines up with the notch on the outline on the motherboard. Press the math coprocessor firmly into place.
6. Replace the motherboard cover.
7. Reinstall the hard disk. Insert the hard disk drive straight down; it will not go in correctly if you attempt to press it in at an angle.

Appendix C

Specifications

Main Unit

CPU	80C286 microprocessor, 8 MHz or 12 MHz clock speed; switch selectable
Main memory	1MB (640KB standard and 384KB extended)
Math coprocessor	80C287 coprocessor (optional), 8 MHz

Interfaces

Parallel	Standard 8-bit parallel, 25-pin, D-type female connector
Serial	RS-232C, programmable, asynchronous, 9-pin, D-type male connector
Video	9-pin, female connector supports MDA, CGA, EGA, and extended EGA
External diskette drive	15-pin, D-type female connector
Expanded keyboard	Keyboard connector
Speaker	Internal
Option slot	One $\frac{2}{3}$ -size, IBM PC AT-compatible slot
Memory	Internal RAM memory card slot allows expansion to 2MB; 40-pin male connector

Modem	Internal modem slot; 34-pin male connector	—
Clock/calendar	Real-time clock and calendar with battery backup	

Keyboard

84 sculpted keys; LCD indicator icons for Num Lock, Caps Lock, Scroll Lock

Optional, external keyboard

Mass Storage

Hard disk	Interchangeable, pop-out, 20MB or 40MB hard disk designed for low power consumption; 28ms average access time; built-in, 16-bit bus AT-compatible controller
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Diskette drives	One internal 1.44MB 3 1/2-inch diskette drive
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Optional, external 5 1/4-inch (1.2MB) diskette drive

Display

Large (640x480 dots), high contrast, paper-white, backlit LCD display with 16-level gray scale; continuous brightness and contrast controls; power-saving feature

CRT mode supports ECD (enhanced color display), monochrome display, color display, and multisync-compatible CRTs

External RGB monitor supported (EGA-compatible)

Power Supply

Externally attached, rechargeable NiCad battery pack (4000 milliampere-hours); up to 2 1/2 hours

12/5-volt AC adapter (can recharge battery pack while operating computer) with automatic 100-240V sensing

Power Requirements

100-240 VAC, 50/60 Hz

NiCad rechargeable battery pack, 9.6 volts 4 ampere-hours

Physical Dimensions

Height	3.46 inches (88 mm)
Width	12.9 inches (318 mm)
Depth	11.7 inches (296.5 mm), with handle retracted; 13.9 inches (354 mm) with battery pack
Weight	16.4 lbs (7.4 kg) with battery and hard disk drive

Environmental Requirements

Temperature	Operating: 41° to 95° F (5° to 35°C) Non-operating: -4° to 122° (-20° to 60°C)
Humidity	Operating: 20% to 80% (non-condensing) Non-operating: 8% to 80% (non-condensing)

Note

When traveling by airplane, take your LT-286e into the passenger compartment as carry-on luggage to prevent it from being stored in an unpressurized storage compartment.

Options

Modem	Internal 2400-baud, Hayes-compatible, auto-dial
Memory	1MB RAM expansion card
Expansion cards	One $\frac{2}{3}$ -size, IBM PC AT-compatible slot
Carrying case	Soft case for carrying computer

Glossary

80C286

A CMOS integrated circuit, or chip; the central processing unit (CPU) of your Equity LT-286e. The CMOS type chip provides low power consumption.

80C287

A special-purpose CMOS integrated circuit used to assist the 80C286 and speed up certain kinds of mathematical calculation. The computer's motherboard has a socket to accommodate an optional 80C287 math coprocessor.

AC adapter

The device that converts AC voltage from a wall socket into the proper DC voltage to power your Equity LT-286e. The AC adapter provides enough power to recharge the NiCad battery pack while you operate the computer.

Application program

A software program that performs a specific task, such as word processing, spreadsheet analysis, or database management.

ASCII

American Standard Code for Information Interchange. A standard system for encoding text characters, such as letters, numbers, and punctuation symbols. An ASCII character occupies one byte of storage. Many different computers, printers, and programs can use files stored under the ASCII code.

Asynchronous

A method of data transmission in which one device sends data one bit at a time to another device. This method allows for delays of any length between characters.

AUTOEXEC.BAT file

A special kind of batch file MS-DOS executes automatically each time you turn on or reset the computer.

Backlighting

The internal fluorescent illumination of the computer's LCD screen. LCD screens that are not backlit are not legible without an external source of light.

Backlight period

The length of time your LCD screen stays illuminated in the absence of keyboard activity. To restore backlighting to your screen after the backlight period has elapsed, press any key. To change the backlight period, run the SETLCD program (see Chapter 2).

Backup

A copy of a program, data file, or disk, kept in case the original is damaged or lost.

Batch file

A text file containing one or more MS-DOS commands, each stored on a separate line. You use batch files to automate MS-DOS operations. When you type the name of the batch file (with or without its .BAT extension), each command in the file executes in sequence.

Baud rate

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

Bit

A binary digit (0 or 1). The smallest unit of information a computer can store. Eight bits make one byte.

Boot

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

Byte

A sequence or group of eight bits. In the ASCII encoding system, a byte represents one character of data.

CGA

Color Graphics Adapter. A type of color monitor that can display graphics. You can plug a CGA monitor directly into the built-in CRT connector on the side panel of the Equity LT-286e.

Character

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

Chip

A hardware component of your system (formally known as an integrated circuit). Examples of chips include memory chips and the 80C286 microprocessor.

CMOS

Complementary Metal-Oxide Semiconductor. A method of making low power, integrated circuits (chips).

CMOS RAM

A special type of low-power memory in your Equity LT-286e that records information about your system's configuration. Unlike ordinary RAM, CMOS RAM is backed up by a small battery and is not erased when you turn off the computer.

Code

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

COM1

The name that MS-DOS uses to identify the primary serial port.

COM2

The name that MS-DOS uses to identify a secondary serial port.

Command

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

COMMAND.COM

The program file that enables MS-DOS to perform commands such as DIR, COPY, and ERASE. You must store this file in the root directory of your hard disk if you want to boot MS-DOS from the hard disk.

Command prompt

The characters MS-DOS displays to indicate it is loaded and ready to receive instructions. The MS-DOS command prompt ordinarily displays the current operating drive (A> or C>, for example). You can add other information to the command prompt using the PROMPT command.

Configuration

The particular arrangement of the hardware components of your computer. Your configuration, for example, might include a printer and an internal modem, as well as your hard disk and diskette drive.

Control code

A character (generated by holding down the Ctrl key and pressing another key on the keyboard) that instructs the computer to perform a specific function.

Controller

A hardware component of your computer that oversees the operation of the hard disk or diskette drive.

Coprocessor

An optional integrated circuit (chip) that assists the CPU in performing numeric calculations.

CPU

Central Processing Unit. The integrated circuit (chip) responsible for interpreting program instructions, performing calculations, and controlling input and output operations.

CRT

Cathode Ray Tube. A type of video display. A color monitor or a TV screen is an example of a CRT.

CRT connector

The socket on the side of your Equity LT-286e where you plug in the cable of a color monitor.

CRT/LCD switch

A slide switch located on the bottom of the computer that identifies the type of display you are using. You can use either the built-in LCD or an external CRT display.

Current directory

The directory in which you are working. MS-DOS executes a command in the current directory unless you include a pathname with the command. Also called the default directory.

Current drive

The disk drive (A or C, for example) you are currently using. MS-DOS executes a command in the current drive unless you include a drive identifier with the command. Also called the default drive.

Cursor

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

Cylinder

A storage area on a hard disk. A cylinder on a hard disk is similar to a track on a diskette.

Data

The information a computer stores or processes.

Data diskette

A formatted diskette you use to store data files.

Data file

This term usually refers to files you create using an application program (for example, a memo created by a word processor), as opposed to files containing program code.

Data length

The number of bits per character in serial transmissions.

Default

A value or setting that takes effect when you turn on or reset the computer. Also, a response to a command the system uses unless you provide a different response.

Default directory

A synonym for current directory.

Default drive

A synonym for current drive.

Delimiter

A character (usually a semicolon, comma, or a 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. Examples include your hard disk, diskette drive, monitor, and printer.

DIP switch

A small, two-position switch you use to supply configuration information to the computer (or to a device). DIP stands for Dual Inline Package. The LT-286e includes two sets of DIP switches, with 10 switches in each set.

Directory

A list of files on a hard disk or diskette.

Disk

A general term meaning either a diskette or a hard disk.

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 disk. A diskette drive has a slot into which you insert a diskette. A hard disk is permanently sealed inside its own container.

Diskette

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

Diskette drive

The physical device that enables the computer to read from and write to a diskette.

DOS

Short for MS-DOS. The Disk Operating System that controls the computer's input and output functions. See Operating system.

Double-density

A type of diskette. Double-density, 3 1/2-inch diskettes have a capacity of 720KB.

Drive identifier

The letter name of a diskette drive or hard disk, followed by a colon (for example, A: or C:).

ECD

Enhanced Color Display.

EGA

Enhanced Graphics Adapter. A type of video monitor that can display graphics.

Executable file

A file containing program instructions. In MS-DOS, executable files must have an extension of .BAT, .COM, or .EXE. To perform the instructions in the file, type its name at the command prompt (with or without the extension).

Execution speed

The speed at which the CPU can execute commands. The Equity LT-286e can run at 8 MHz or 12 MHz. Also called clock speed or operating speed.

Expansion slot

A particular kind of connector that can accommodate an option card. You can use the expansion slot in your Equity LT-286e, for example, to connect a $\frac{2}{3}$ -size, IBM AT-compatible option card, such as a LAN card or FAX board.

Extension

A suffix of up to three characters you can add to a filename.

External command

A command MS-DOS stores in a program file. The FORMAT command, for example, is stored in the file FORMAT.COM. To perform an external command, MS-DOS must be able to find the appropriate program file. External commands are distinguished from internal commands (such as DIR or ERASE), which are not stored in separate program files.

File

A group of related pieces of information (sometimes called records or entries) stored together on a disk. Text files consist of words and sentences. Program files consist of code. Computers use program files to perform instructions.

Filename

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

FL backlighting

The LCD screen panel type. It consists of a double-layered structure to provide a high-contrast font pattern on a white background. Brightness originates from two fluorescent tubes. The display is black on white or white on black.

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.

Gray scale mode

The mapping of colors to shades of gray on the LCD screen.

GW-BASIC

Microsoft's extended version of the BASIC programming language.

Hard disk

A sealed mass storage device you use to store data permanently. A hard disk can process data more rapidly and can 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 commonly used by programmers.

Hidden file

A file whose name is not listed by the DIR command. MS-DOS stores two hidden files in the root directory of your hard disk. Some application programs also create hidden files.

High-density

A type of diskette. High-density, 3 1/2-inch diskettes have a capacity of 1.44MB.

Input/output (I/O) port

See Port.

Interface

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

Internal command

A command, such as DIR or ERASE, that MS-DOS does not store in a separate program file. You can execute internal commands from any drive or directory.

Kilobyte (KB)

A unit used to measure storage space in a computer's memory or on a disk. One kilobyte equals 1,024 bytes.

LCD

Liquid Crystal Display. A form of flat panel display.

Log on

To make a drive or directory the current drive or directory.

Main unit

The part of the computer that houses the central processing unit, random access memory, disk drives, and other supporting circuitry.

MDA

Monochrome Display Adapter.

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 the oscillation frequency of a computer's internal timing clock. One megahertz is one million cycles per second. The Equity LT-286e operates at 8 or 12 MHz.

Memory

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

Memory expansion module

An optional component that adds memory to your computer.

Memory-resident program

A program you can access while another program is running. An example might be a notepad utility that you can use while working in a spreadsheet program.

Microprocessor

A CPU chip, such as the 80C286. See CPU.

Modem

A device that allows a computer to send or receive data over a telephone line.

Monitor

The screen of a CRT.

Motherboard

The main circuit board of your computer. Also called the system board.

MS-DOS

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

NiCad

The type of battery used by your Equity LT-286e. NiCad stands for nickel-cadmium.

Numeric keypad

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

Operating speed

The speed at which the CPU can execute commands. The Equity LT-286e has operating speeds of 8 MHz and 12 MHz. Also called execution speed or clock speed.

Operating system

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

Option card

A circuit board you install in a slot in your main unit. Option cards provide additional capabilities, such as a mouse, fax, or network. The expansion slot on the LT-286e is accessed from the bottom of the computer.

Parallel

A type of interface that transmits data in groups of bits. Distinguished from serial, a type of interface in which bits are transmitted one at a time.

Parameter

A term added to a command that tells the computer how to perform the command (for example, what data file to use or what particular conditions to expect).

Parity

A bit used to verify the accuracy of data.

Partition

To divide a hard disk into logical sections for use by one or more operating systems. You must partition a hard disk before you can use it, even if you intend to install only one operating system on the disk.

Pathname

The list of directories the operating system must search through to locate a file. For example, the pathname for a file named CONTRACT.TXT that is located in the BUSINESS subdirectory is \ BUSINESS \CONTRACT.TXT.

Peripheral

An external device, such as a printer or modem, connected to a computer.

Port

An input/output connection on a computer to which you can attach a peripheral.

Power-on diagnostics

A set of self-testing routines the computer performs automatically every time you turn it on.

Program

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

Prompt

A message on the screen that requests information or tells you the action you need to perform next.

RAM

Random Access Memory. The portion of the computer's memory that runs programs and temporarily stores 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.

RGB

Red-Green-Blue. A type of color monitor.

ROM

Read Only Memory. The portion of the computer's memory that contains permanent instructions and cannot be modified. The power-on diagnostic programs, for example, are stored in ROM. Unlike RAM, ROM retains its contents even after you turn off the computer.

Root directory

The top-level directory on a diskette or hard disk. The root directory is designated by a backslash (\). All other directories are subdirectories of the root directory or of other subdirectories.

RS-232C

A standard serial interface. You can easily connect an RS-232C-compatible device to your Equity LT-286e.

Sector

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

Self test

A diagnostic procedure the computer performs automatically when you turn it on.

Serial

A type of interface in which data is transmitted one bit at a time (as distinguished from parallel, a type of interface in which data bits are transmitted in groups).

Shell

An MS-DOS program that lets you run programs and perform operating system commands from menus.

Slide Switch

A switch on the bottom of the LT-286e that controls certain operational features.

Software

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

Source diskette

The diskette from which you are copying files, as opposed to the target diskette (the diskette to which you are copying files).

Status indicator bar

A built-in LCD indicator panel that shows how you are using the computer.

Stop bit

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

Subdirectory

A disk directory that branches down from another subdirectory or from the root directory.

Switch

An option you can add to an MS-DOS command that affects the way the command works. See Parameter.

System board

See motherboard.

System diskette

A diskette from which you can boot the operating system. An MS-DOS system diskette must contain the file COMMAND.COM plus two hidden MS-DOS program files.

To create a system diskette, use the /S switch with the FORMAT command (for example, FORMAT A: /S).

Target diskette

The diskette to which you are copying files, as opposed to the source diskette (the diskette from which you are copying files).

TPI

Tracks Per Inch. A measure of the density with which data can be stored on a diskette.

Track

A circular region on a diskette, which is divided into sectors. Each side of a 1.44MB or 720KB diskette has 80 concentric tracks. Each side of a 360KB 5 1/4-inch diskette has 40. On a hard disk, tracks are called cylinders.

Utility program

A type of application program designed to perform housekeeping chores, such as copying files, creating directories, and so on. HELP and MENU are examples of utility programs.

Volume label

A name (up to eleven characters in length) you can assign to a diskette or hard disk. To add or change a volume label for a diskette or hard disk that has already been formatted, use the MS-DOS LABEL command.

Wildcard character

A character that represents an unknown character or group of characters. MS-DOS recognizes two wildcard characters: * and ?. The asterisk represents a group of characters, and the question mark represents a single character.

Write

To record 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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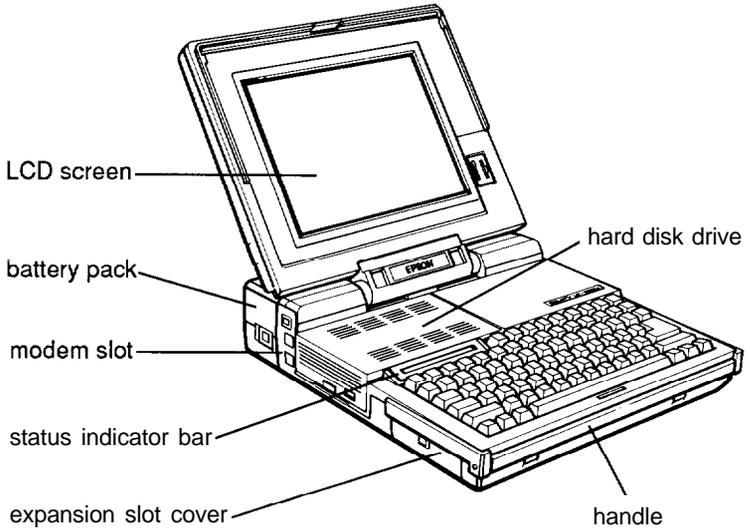
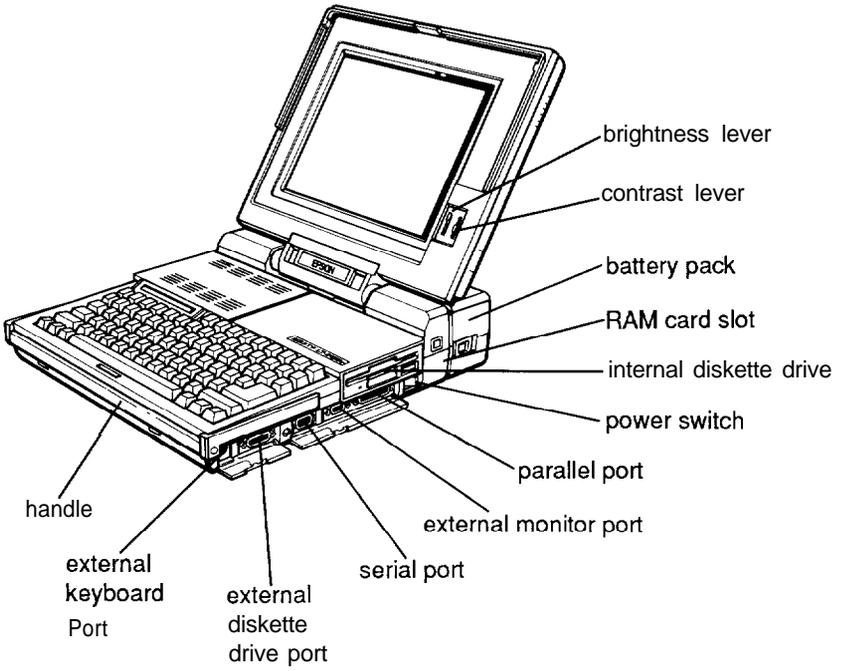
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