EQUITY

EQUITY™LT™-386SX **User's Guide**

EPSON®

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 B 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 B 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.**

DOC COMPLIANCE STATEMENT FOR CANADIAN USERS

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.

Conformation á Les Normes d'Emission Radioélectriques Canadiennes

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.

EPSON®

EQUITY™LT™-386SX

User's Guide

IMPORTANT NOTICE

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Epson America makes no representations or warranties, either express or implied, by or with respect to anything in this manual, and shall not be liable for any implied warranties of merchantability and fitness for a particular purpose or for any indirect, special, or consequential damages. Some states do not allow the exclusion of incidental or consequential damages, so this exclusion may not apply to you.

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Torrance, California 9100-0005-001

IMPORTANT SAFETY INSTRUCTIONS

1. Read all of these instructions and save them for later reference.
2. Follow all warnings and instructions marked on the product.
3. Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
4. Do not use this product near water.
5. Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.
6. Slots and openings in the cabinet and the back or bottom are provided for ventilation; to ensure reliable operation of the product and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.
7. This product should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
8. This product is equipped with a three-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the purpose of the grounding type plug.
9. Do not locate this product where the cord will be walked on.
10. If an extension cord is used with this product, make sure that the total of the ampere ratings on the products plugged into the extension cord do not exceed the extension cord ampere rating. Also, make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes.
11. Never push objects of any kind into this product through cabinet slots, as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.

12. Except as specifically explained in the User's Guide, do not attempt to service this product yourself. Opening or removing those covers that are marked "Do Not Remove" may expose you to dangerous voltage points or other risks. Refer all servicing in those compartments to service personnel.

13. Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

    A. When the power cord or plug is damaged or frayed.

    B. If liquid has been spilled into the product.

    C. If the product has been exposed to rain or water.

    D. If the product does not operate normally when you follow the operating instructions. Adjust only those controls that are covered by the operating instructions, since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.

    E. If the product has been dropped or the cabinet has been damaged.

    F. If the product exhibits a distinct change in performance, indicating a need for service.

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Introduction

Your Epson®' Equity LT-386SX 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-386SX comes with the following:

- ❑ An 80386SX microprocessor
- ❑ 2MB (megabytes) of internal RAM memory
- ❑ One 1.44MB, 3 1/2-inch diskette drive
- ❑ A high-contrast, paper-white, backlit LCD (liquid crystal display) screen
- ❑ A slot for a 2MB RAM card
- ❑ 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-386SX, rubber pads for the battery pack, and installation instructions
- ❑ Built-in interfaces for serial, parallel, video, external diskette drive, and external keyboard connectors
- ❑ An AC adapter and power cord.

The 80386SX microprocessor inside your Equity LT-386SX can run at an execution speed of 16 MHz or 8 MHz. Ordinarily, you'll want to use the 16 MHz speed to get faster performance from your computer. A few application programs may require 8 MHz, and the 8 MHz speed consumes less energy, if you want to conserve battery life.

You can establish the default execution speed in the SETUP program, which you can run when you turn on or reset the computer. During operation, you can change the execution speed by holding down the Ctrl key and pressing the left Shift and F keys simultaneously.

The Equity LT-386SX has a built-in socket for an 80387SX math coprocessor. This socket is easily accessible from the bottom of the computer, so you can install the chip yourself. Or, if you prefer, have an authorized Epson dealer or Customer Care Center install the coprocessor for you.

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-386SX.

You can connect a VGA color monitor to the computer to take advantage of the color and larger display. When you insert a connector into the port labeled RGB VIDEO before turning on the Equity LT-386SX, the computer automatically recognizes the presence of an external monitor. The LT-386SX supports VGA video monochrome and color modes.

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

The following optional equipment is available from your Epson dealer:

- ❑ A 16 MHz 80387SX math coprocessor
- ❑ A 2400-baud, Hayes-compatible, auto-dial internal modem
- ❑ An internal RAM memory card to expand memory to 4MB
- ❑ An external 1.2MB, 5 1/4-inch diskette drive
- ❑ The GW-BASIC programming language
- ❑ One or more 20MB or 40MB hard disk drives
- ❑ An additional battery pack
- ❑ An additional AC adapter
- ❑ An adapter for an external, Epson keyboard
- ❑ Carrying case.

Your Equity LT-386SX comes with MS-DOS? version 4.01, by Microsoft? MS-DOS 4.01 provides a 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 following MS-DOS manuals packed in the box with the computer:

- ❑ 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 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-386SX. You may also want to use powerful 32bit software-such as Microsoft Windows/386-with your computer.

In addition to the MS-DOS operating system, you can use OS/2, version 1.1, if your computer has a hard disk. Among other capabilities, OS/2 provides multitasking, dual-mode processing, **and** on-line help.

Note
A video driver provided on your Reference diskette lets you run OS/2 on the LCD display. See Appendix E for a complete explanation of this video driver.

How To Use This Manual

This manual explains how to set up and care for your Equity LT-386SX. 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-386SX; 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-386SX.

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

Appendix B explains how to attach options, such as an external color monitor, external diskette drive, or keyboard to your Equity LT-386SX 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-386SX hardware specifications.

Appendix D describes the Equity LT-386SX system diagnostics.

Appendix E explains how to install the LCD video driver for OS/2.

Appendix F explains how to install other utilities on the Reference diskette, including the LCD VGA video driver for Microsoft Windows/386.

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-386SX 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-386SX. After assembling these parts, you start the computer and run the system SETUP program. Then turn to Chapter 2 for information about using the computer.

WARNING
When you connect any external device to the Equity LT-386SX, such as a printer, an external monitor, or an external diskette drive, you must use good quality shielded cables to comply with FCC regulations. The use of cables that are not properly shielded causes the computer to emit excess amounts of radio frequency interference and invalidates FCC certification.

The LT-386SX has one set of DIP switches that provide the computer with information about its configuration each time you turn it on. The DIP switches are located on the bottom of the computer.

When the LT-386SX is shipped from the factory, the DIP switches are set for the following type of system:

- ❑ The internal diskette drive is drive A
- ❑ If an external drive is attached, it is drive B
- ❑ The primary display is a color display
- ❑ The RS232C port is the primary serial port
- ❑ The PRINTER port is the primary parallel port.

The standard DIP switch settings are appropriate whether your computer uses the LCD or an external color monitor and whether your computer uses only the internal diskette drive or also uses a hard disk drive and an external diskette drive.

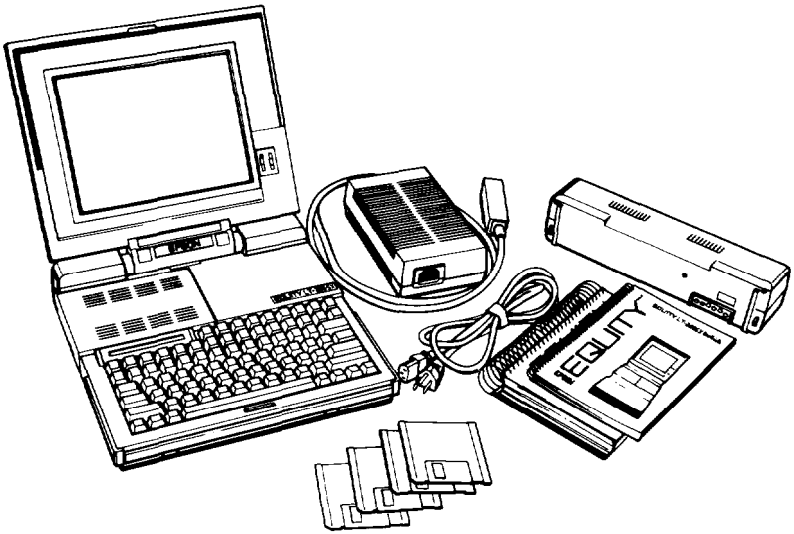
If you plan to keep this standard setup, continue with the instructions in this chapter.

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 (if purchased)
- ❑ The Equity LT-386SX Reference diskette
- ❑ 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

The computer comes with an empty hard disk box installed in the main unit. Your hard disk drive, which may be either 20MB or 40MB, comes in its own package.

Your dealer may have installed the hard disk. If the hard disk drive is installed, you can skip this step. If your dealer has not installed the hard disk, your computer contains a box with a label that says, "This box is empty!".

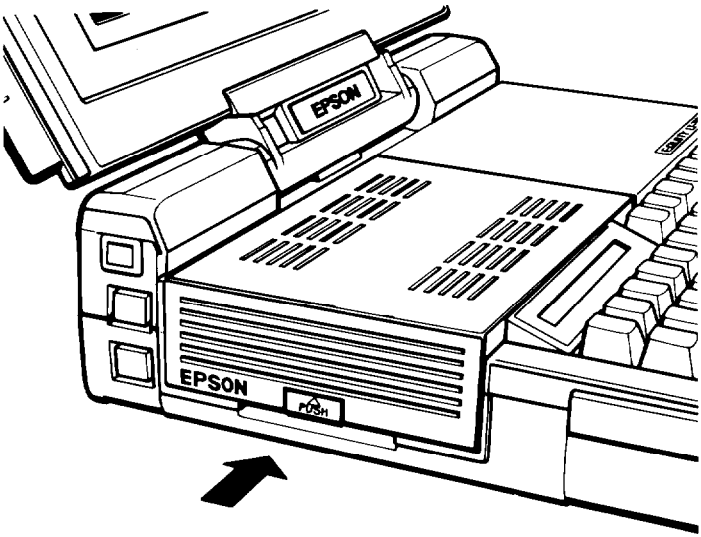
You install the hard disk drive above the keyboard panel on the computer. To access the slot for the hard disk drive, open the screen by pressing the latch release button in the center of the computer. Then lift the screen up and back.

Follow these steps to install the hard disk drive:

1. Unwrap the hard disk drive.

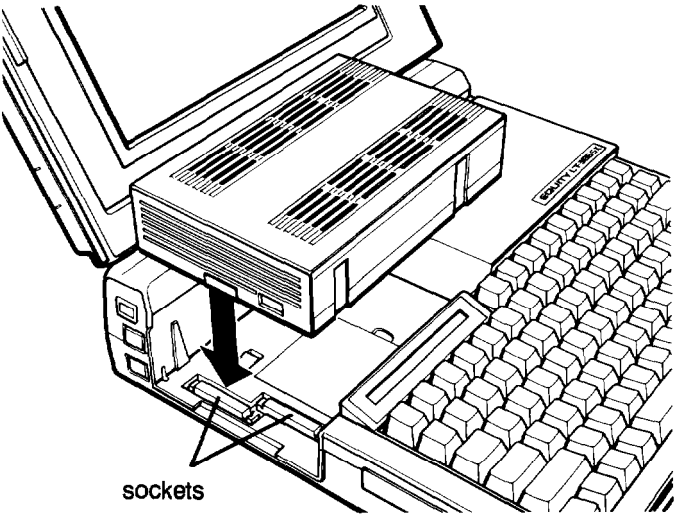
Note
Notice the SHOCK INDICATOR on the bottom of the hard disk. The indicator box is clear when the hard disk is in normal condition. If the hard disk has been jarred severely, the indicator turns red. If the indicator box is red, do not use the hard disk. Take the hard disk to your Epson dealer or a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

2. To remove the empty hard disk box, press in on the PUSH button. When the box releases, lift it straight up and out. Store the empty hard disk box with your other packing materials.



3. 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.

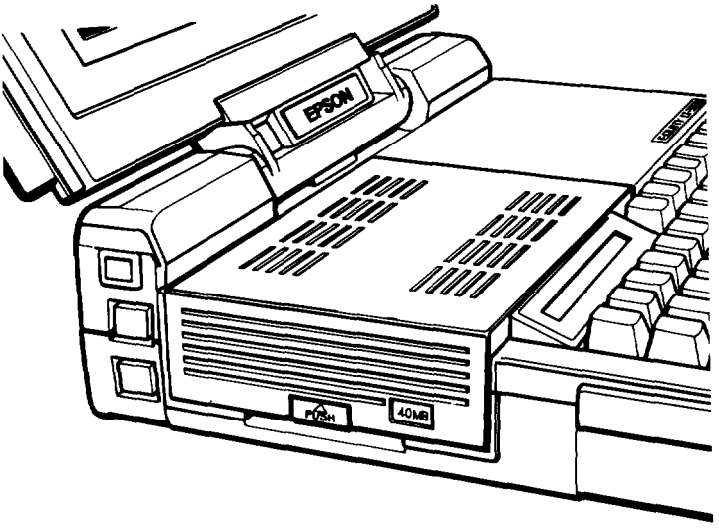
4. Position the hard disk drive directly above the hard disk drive slot on the computer.



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

5. Keep the hard disk drive level and lower it straight down into the slot. If you lower either side first, the connectors do not fit into the sockets.

6. Press firmly (but carefully) on the hard disk drive until it snaps into place.



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 instructions after you complete the remaining steps in this chapter.

3 Connecting a Printer

The Equity LT-386SX 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

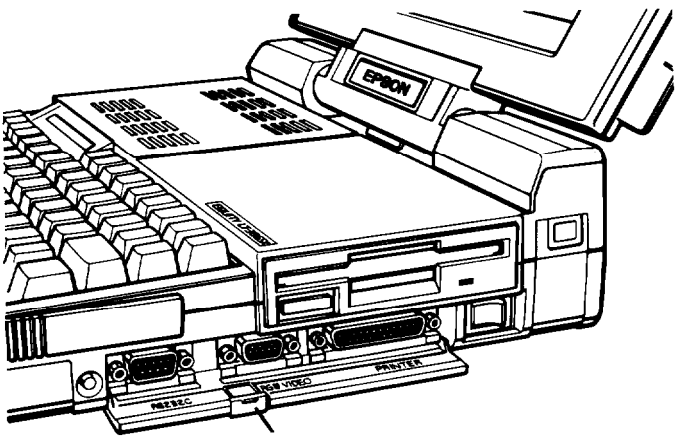
The computer's Centronics-compatible parallel interface provides a 25-pin, D-shaped female connector. Most Epson printers have parallel interfaces. To connect a printer to the computer, you need an IBM PC-compatible printer cable. If you're not sure which one you need, consult your Epson dealer.

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.

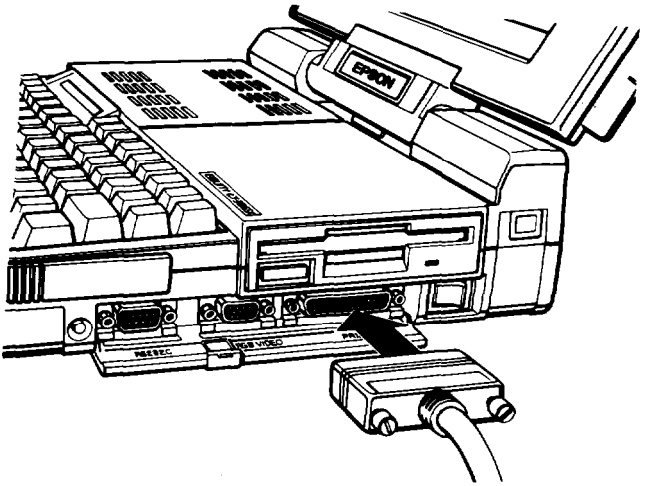
2. Before you connect the printer, make sure the power switches on the computer and printer are off. (The power switch for your computer is located on the right side of the machine).

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

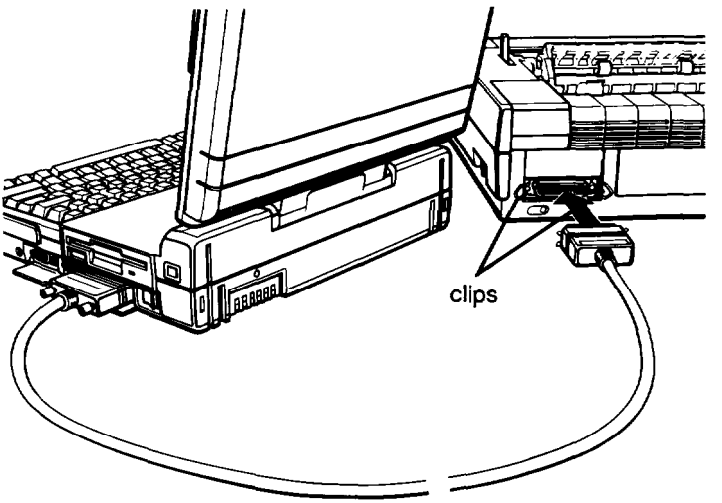


4. One end of the printer cable has a 25-pin, D-shaped male connector. (See your printer manual if you cannot identify this connector.) Connect this end to the parallel connector

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.

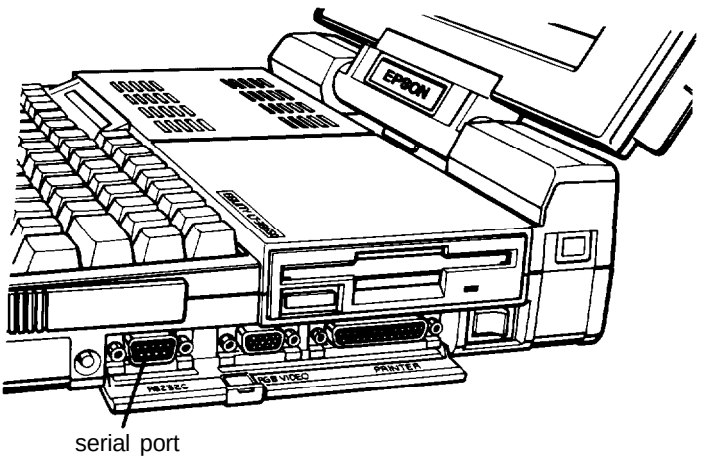


6. Plug the printer's power cable into an electrical outlet.

The standard DIP switch settings for the LT-386SX define your PRINTER port as the primary parallel port. If you think the DIP switch settings have been changed or you would like a different setting, see 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 RS232C on the right side of the computer.



The Equity LT-386SX 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 same steps as 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-386SX define your RS232C port as the primary serial port. If you think the DIP switch settings have been changed or you would like a different setting, see Appendix A.

Note
If you plan to connect a color monitor or an external 5¼-inch diskette drive to your computer, do so now. For instructions on connecting the external drive, see Appendix B.

If you connect either of these devices to your Equity LT-386SX, be sure the computer's DIP switches are set correctly before using the computer. See Appendix A for information. After turning on the Equity LT-386SX, run the SETUP program to change the settings for "Floppy Drive B:" and "Primary Display" as necessary. (SETUP is described in greater detail later in this chapter.)

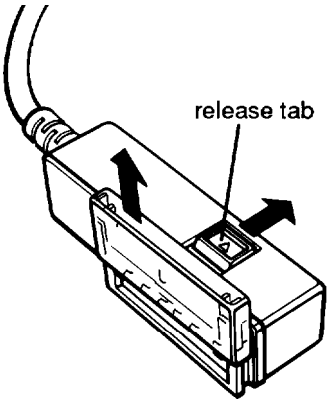
4 Connecting the AC Adapter

Follow these steps to connect the AC adapter:

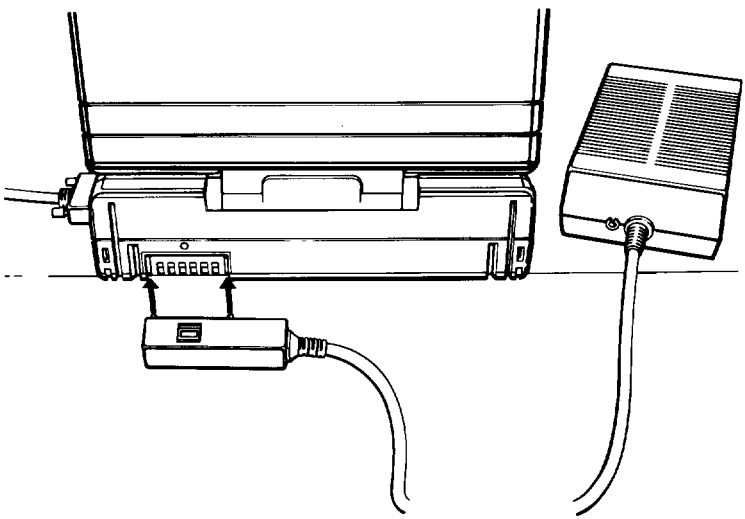
1. Make sure the computer's power switch (located on the right side of the computer) is turned off.

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.

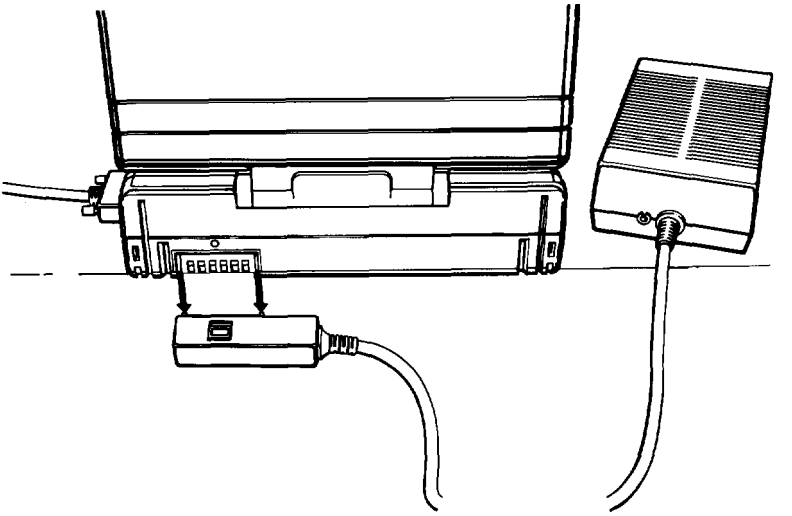


4. Slide this box up into the slots on the connector on the back panel of the computer. Press the connector box up until it snaps into place.



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. When you want 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.

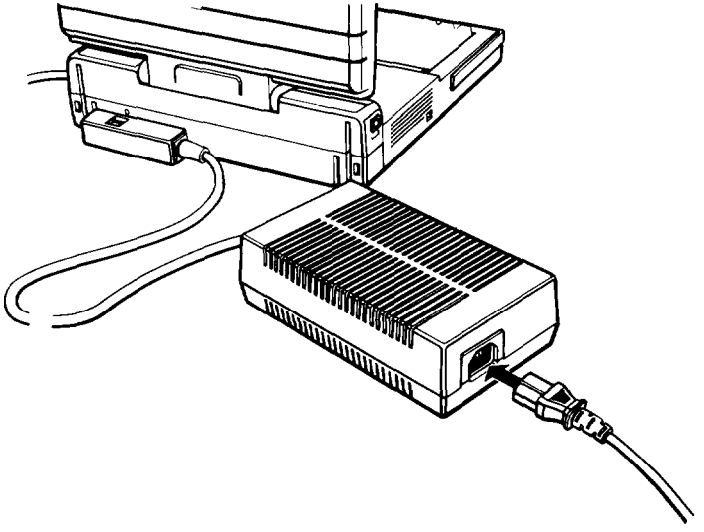
WARNING
Do not connect or disconnect the AC adapter when the computer is turned on.

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-386SX 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 left disk-in-use icon indicates that the hard disk drive is in use. The right disk-in-use icon indicates that the built-in diskette drive is in use. (See "Status Indicator Bar" in Chapter 2 for further information.)
- ❑ 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.

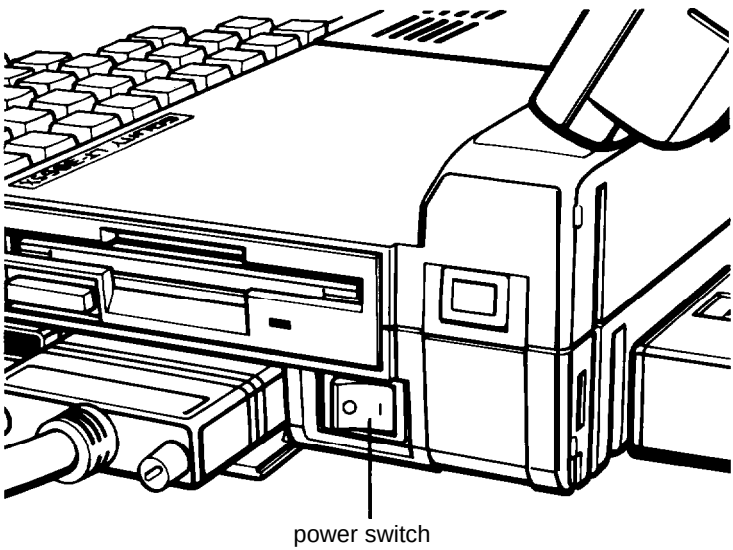
You can turn on your computer with or without a system diskette in the diskette drive. For now, leave the drive empty.

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.

Note
If you have connected an external 5¼-inch diskette drive to your computer, you must turn it on before you turn on the computer. Otherwise, the computer does not recognize its existence.

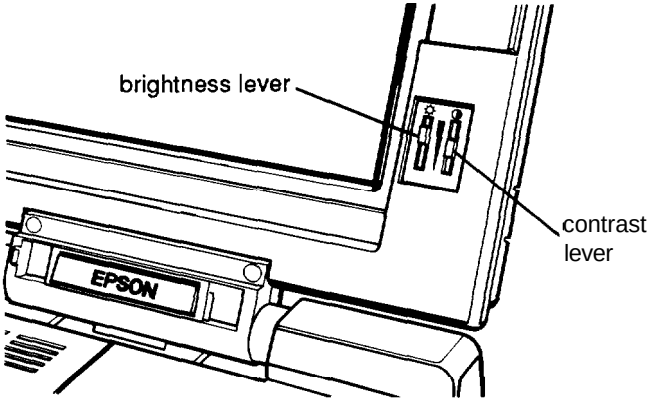
2. Turn on the computer by pressing the power switch on the right side of the computer. Press the switch toward the back of the computer.



The speed indicator on the status bar shows your operating speed (16 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:

01920 KB OK

Next you are prompted to run the SETUP program:

Press <DEL> if you want to run SETUP utility.

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 the computer's read-only memory (ROM). You can access this program whenever you turn on or reset the computer.

The SETUP program lets you specify the following:

- ❑ The current date and time
- ❑ Whether you have installed an external 5 1/4-inch diskette drive
- ❑ The type of hard disk drive you have
- ❑ The type of display you're using
- ❑ The location for scratch RAM
- ❑ The initial clock speed

- ❑ Whether or not to enable shadow RAM
- ❑ The amount of time the computer is to use for its power-saving standby mode
- ❑ The LCD display contrast (positive: white letters on a black background; or negative: black letters on a white background).

The SETUP menu automatically displays the base memory size, the extended memory size, and whether or not a numeric processor (i.e., math coprocessor) is installed.

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 SETUP again or change your DIP switch settings.

Starting the SETUP Program

When you turn on or reset the computer, the following message displays at the completion of the self-test:

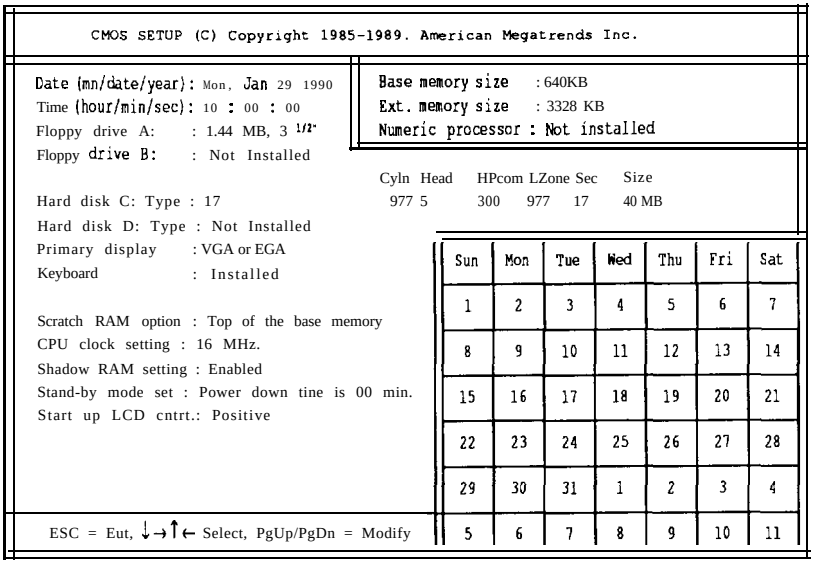
```
Press <DEL> If you want to run SETUP utility.
```

To start SETUP, press Delete. You see the following menu:

```
EXIT FOR BOOT
RUN CMOS SETUP
```

The first option is highlighted. Press the down arrow to highlight RUN CMOS SETUP, and then press Enter.

The Equity LT-386SX displays the menu below.



Press the arrow keys to move through the menu selections. Press Page Up or Page Down to change the selected setting.

Setting the Date

The computer's setting for the current month is highlighted. A calendar in the lower right-hand portion of the menu displays the current month, and the current day flashes in this calendar. To correct the month setting, press either Page Up or Page Down. Use any of the arrow keys to move to the next menu item. Use Page Up or Page Down to correct the day and year.

Setting the Diskette Drive(s)

The possible selections for drives A and B are:

- ❑ Not installed
- ❑ 1.44MB 3 1/2"
- ❑ 720KB 3 1/2"
- ❑ 1.2MB 5 1/4"
- ❑ 360KB 5 1/4".

Unless you have changed the setting for DIP switch 1, designate drive A as the internal 1.44MB, 3 1/2-inch diskette drive. If you have installed an external 1.2MB 5 1/4-inch drive, choose that as the setting for drive B.

Note
To be recognized by the system, the external diskette drive must be connected and turned on before the computer is turned on.

If you have set DIP switch 1 to off to reverse the designations of the A and B drives, set drive B to 1.44MB 3 1/2", and if you have attached an external diskette drive, set drive A to 1.2MB 5 1/4". See Appendix A for more information on the DIP switches.

Setting the Hard Disk Drive

You may have either of two types of hard disk drives installed in the Equity LT-386SX. Type 2 is the 20MB hard disk drive. Type 17 is the 40MB hard disk drive. Define `Hard disk C` appropriately as either type 2 or type 17.

`Select Not installed` for `Hard disk D.`

Setting the Primary Display

The computer considers the LCD your primary display, unless you connect an external monitor to the RGB VIDEO port before turning on the Equity LT-386SX. The following definitions are available for the primary display:

- ❑ VGA or EGA
- ❑ Color 80x25
- ❑ Not installed
- ❑ Monochrome
- ❑ Color 40x25.

The default selection is VGA or EGA. If you are using the LCD and you choose color 80x25, monochrome, or color 40x25, the computer displays the error message `CMOS display type mismatch` at the completion of the self-test. If you select `Not installed`, the computer skips the display self-test when you turn on or reset the computer.

Setting the Keyboard

There are two options for the keyboard: installed or not installed. Selecting `Not installed` causes the computer to skip the keyboard test when you turn on or reset it.

Setting the Scratch RAM Option

Scratch RAM is an area of memory that OS/2 and some application programs use. The Equity LT-386SX lets you pick what area of memory you want to use for scratch RAM. If you are not using OS/2, VDISK, or a user-defined drive type, choosing BIOS stack area 30:00 provides a little bit more memory for your MS-DOS programs. (See Appendix D in this manual for further information on user-defied drive types.)

For best results when using OS/2, a user-defined disk drive type, or a RAM disk program, choose the top of base memory as the scratch RAM location.

Setting the CPU Clock Setting

This setting determines the execution speed the Equity LT-386SX uses every time you turn on the computer. During operation, you can change the speed by holding down the Ctrl key and then pressing the left Shift and F keys simultaneously. The CM-left Shift-F "hot key" combination does not change the setting the computer uses when you turn it on or reset it.

Setting the Shadow RAM

Enabling shadow RAM causes the Equity LT-386SX to copy the contents of BIOS into RAM. This speeds up processing operations, because the computer can read RAM much faster than ROM. (Enabling shadow RAM does not reduce the amount of memory you can define as expanded memory.)

Setting the Standby Mode

Standby mode increases battery life by shutting off the LCD backlight, slowing down the CPU clock speed to 8 MHz, and decreasing the VGA controller clock rate. Standby mode is valid only when the Equity LT-386SX is not attached to an external monitor. The time you select for standby mode (00 to 60 minutes) is the length of time that can pass without keyboard input before the computer enters standby mode. Setting the standby period to 00 turns it off.

Once you have specified a time for standby mode in SETUP, you can enable or disable this feature during operation by holding down the Ctrl key and pressing the left Shift and L keys simultaneously. When standby mode is enabled, the computer sounds two short beeps. Hold down Ctrl and press left Shift and L again to disable standby mode. The computer sounds a single beep to signal that standby mode is disabled.

If you are installing or running software that requires a lot of disk access time, during which there is little or no keyboard input, it is best to set standby mode to 00 (off) to prevent the LCD from going dark.

Setting the LCD Contrast

This setting determines whether the LCD displays black letters on a white background (negative contrast) or white letters on a black background (positive contrast).

During operation, you can invert the LCD screen contrast at any time. Hold down Ctrl and press the left Shift and I keys simultaneously to invert screen contrast. Using this key sequence does not affect the LCD contrast the computer uses each time you turn on or reset it.

Saving Your Settings

After you have made your selections for SETUP, press Esc to exit from the SETUP menu. The Equity LT-386SX asks, `Write data into CMOS and exit? (Y/N).` Press N and Enter to return to the menu to make corrections. Press Y and Enter to save the settings in CMOS RAM.

The Equity LT-386SX runs through the power-on tests again and asks you to press Delete if you want to run SETUP again. At the completion of the self-test, the computer displays a table listing the current settings for the Equity LT-386SX. An example of this table is shown below:

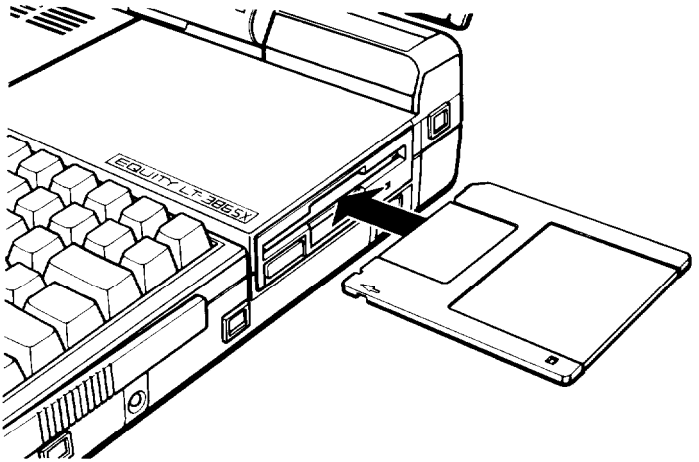
Main Processor:	80386	Base Memory Size:	640 KB
Numeric Processor:	Present	Ext. Memory Size:	3328 KB
Floppy Drive A:	1.44MB. 3 1/2"	Hard Disk C: Type:	17
Floppy Drive B:	1.2MB, 5 1/4"	Hard Disk D: Type:	None
Display Type:	VGA or EGA	Serial Port(s):	3F8
ROM-BIOS Date:	09/15/89	Parallel Port :	378

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

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. Reset the LT-386SX and 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

Use the Equity LT-386SX

This chapter describes some basic procedures for using your computer.

Using the AC Adapter

The Equity LT-386SX 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 120 to 240 volts, you can use your Equity LT-386SX 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-386SX 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 may 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 or more. 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-386SX. 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 three 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-386SX using the battery, follow these guidelines:

- ❑ Lower the brightness of the backlight to its lowest readable level. Use the brightness lever on the right side of the screen.

- ❑ Select a clock speed of 8 MHz. In the SETUP menu, choose the 8 MHz option for CPU clock setting. Or, during operation, you can hold down Ctrl and press left Shift and F simultaneously to change the computer's clock speed. (The status indicator bar displays the current clock speed.)

- ❑ Using the Standby mode setting in SETUP, turn off the backlight to the LCD when you are not using the keyboard.

- ❑ Using HDDPSAVE, turn off the hard disk drive when you are not using it. (The HDDPSAVE utility program is described in "Turning Off the Hard Disk," later in this chapter.) Remember that powering up the hard drive uses power, so set a realistic time period for the power to be turned off.

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.

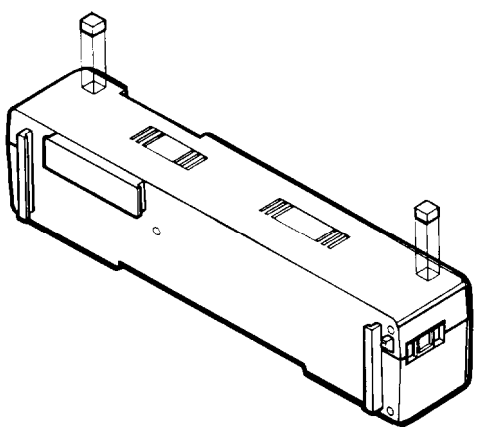
3. Leave the computer on, but do not use it. After about 10 to 20 minutes, the icons on the status indicator bar go dark, indicating the battery is discharged.

4. Now give the battery a full, eight-hour charge.

Connecting the Battery Pack

Before you can use the Equity LT-386SX without the AC adapter, you must install the battery pack. Follow these steps:

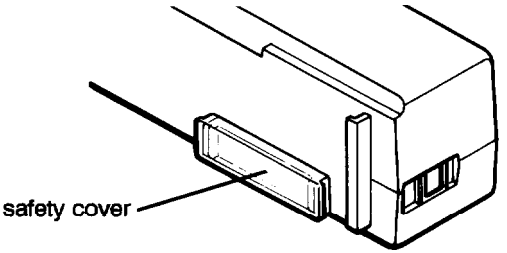
1. Enclosed in the box with the battery pack is a set of rubber pads. Attach these pads to the bottom of the pack, as shown below. This provides additional stability to keep the computer from tilting backward when you push on the LCD or the rear of the computer.



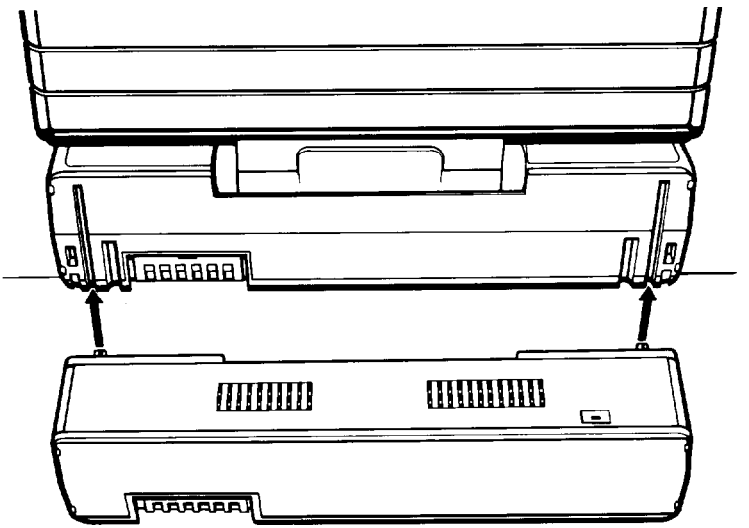
2. Make sure the power switch on the computer is off.

3. 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.

4. Remove the safety cover that protects the metal connector on the battery pack.



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



6. 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.

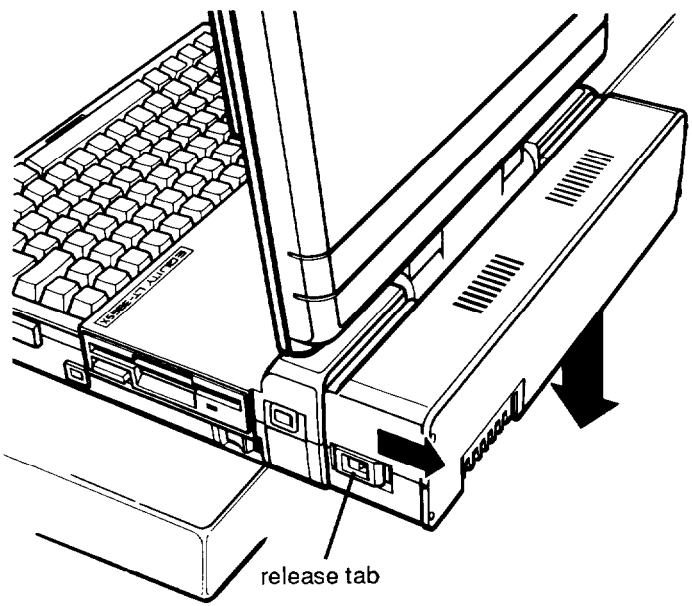
To remove the battery pack, follow these steps:

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.

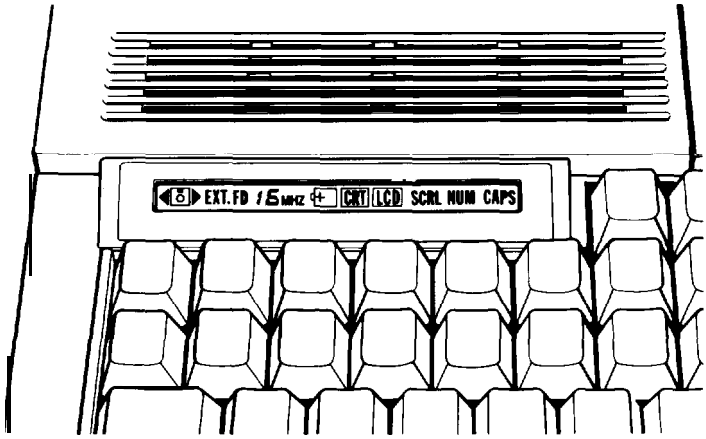
4. While pulling the release tabs (on each side of the battery pack) toward you, press down on the battery pack. Slide the battery pack down and off the computer.



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 that the DIP switches are configured for an external diskette drive. (See Appendix A.)
16 MHZ	Displays the current CPU clock speed, either 8 MHz or 16 MHz.
🔋+	Indicates when you are using the battery pack; blinks when the battery pack charge is low.
CRT	Indicates when you select an external monitor.

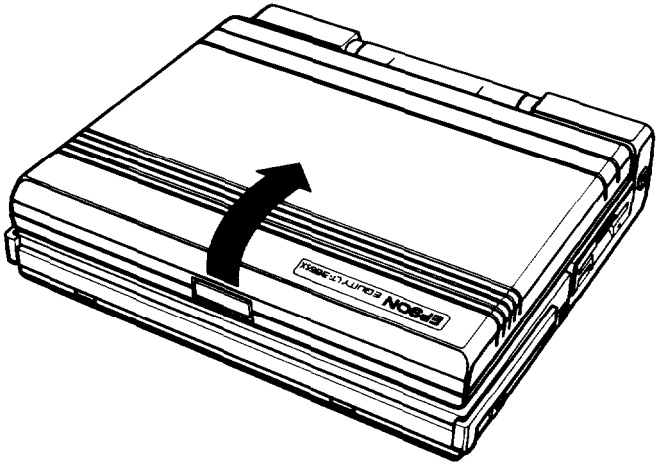
LCD	Indicates when you can use the LCD display; blinks when the display is in standby mode.
SCRL	Indicates when the internal keyboard is in Scroll Lock mode; does not respond to the modes of an external keyboard.
NUM	Indicates when the internal keyboard is in Num Lock mode; does not respond to the modes 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.

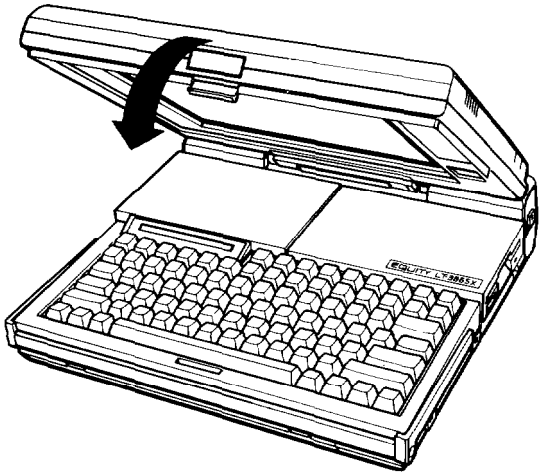
The SCRL, NUM, and CAPS icons indicate whether the corresponding key functions are enabled. See "Special Keys on the Equity LT-386SX Keyboard" later in this chapter.

Opening and Closing the Screen

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.



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.

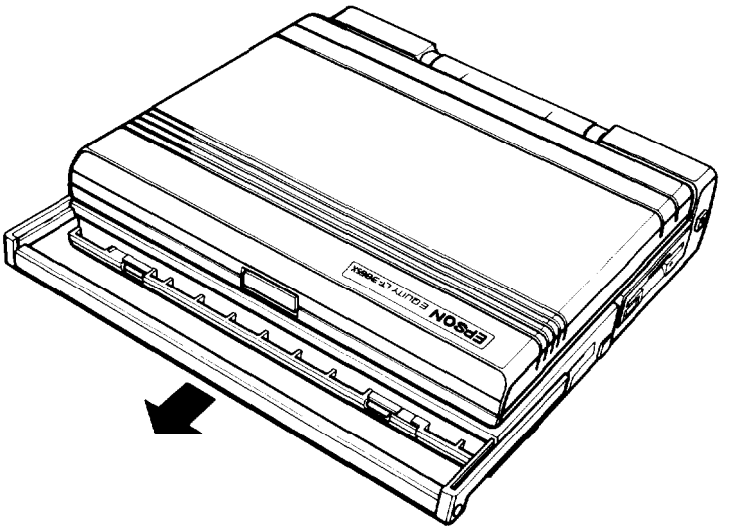


Note
Always set the computer in a flat, horizontal position before opening it.

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

Using the Handle

The Equity LT-386SX 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-386SX, 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-386SX can operate at two execution speeds: 8 MHz and 16 MHz. At the higher speed, the computer performs all tasks more quickly. Select the slower speed to run application programs that have specific timing requirements and to prolong the battery's charge.

You can select the CPU clock setting in the SETUP menu. (See the description of running the SETUP program in Chapter 1.) The Equity LT-386SX always starts at the clock speed established in the SETUP menu.

While the computer is operating, you can change the clock speed by holding down Ctrl and pressing left Shift and F simultaneously. (The status indicator bar displays the current clock speed.)

Selecting LCD Screen Contrast

The LCD can display white letters on a black background (positive LCD contrast) or black letters on a white background (negative LCD contrast). You can select the contrast in the SETUP menu. (See the description of running the SETUP program in Chapter 1.)

At any time while the computer is operating, you can invert the contrast by holding down Ctrl and pressing left Shift and I simultaneously. Hold down Ctrl and press left Shift and I again to change the contrast back. Using this key sequence during operation does not affect the setting the Equity LT-386SX uses when you turn on or reset it.

Changing the Gray Scale Pattern for Any Color

The Equity LT-386SX assigns VGA colors to 16 shades of gray (or gray scales). There is a utility program called SETLCD on the Reference diskette that lets you modify the shade of gray assigned to any color. This capability is useful if you have trouble reading text that an application program displays in a particular color.

Note
You can use SETLCD only in text mode. If you attempt to use SETLCD in graphics mode, the Equity LT-386SX beeps to inform you that SETLCD is unavailable.

You may want to copy the file SETLCD.EXE to your hard disk so that it is easily accessible when you need it. You also can start the program using the Reference diskette. To start the program from the Reference diskette, follow the steps below:

1. Insert the Reference diskette into drive A.

2. Type `A:` and press Enter.

3. Type `SETLCD` and press Enter.

   or

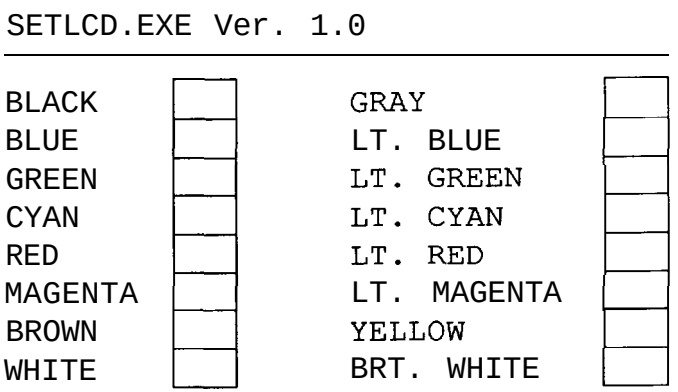
   If you want to use run SETLCD as a memory-resident program, type `SETLCD/R` and press Enter.

If you start the program without using the /R option, the menu appears immediately. When you run SETLCD as a memory-resident program, the LCD displays the message:

```
SETLCD Ver. 1.0 is installed.
Press [Ctrl]+[Left Shift]+[S] to
invoke.
```

If you are running SETLCD as a memory-resident program, hold down Ctrl and press left Shift and S simultaneously whenever you want to display the menu that allows you to change the gray scales.

The LCD displays a menu similar to the one below:



You use the following keys to make menu selections.

Key	Function
↑↓	Selects the color you want to change.
←	Darkens the level of gray.
→	Lightens the level of gray.
F7	Moves the menu to the right half of the screen when pressed the first time and to the left half of the screen when pressed again.
F8	Hides the menu. Pressing F8 again returns the menu to the screen.
F9	Resets all gray scale levels to their default values.
F10	Allows you to exit.

The table below provides the default gray scale value for every color.

Color	Color number	Gray scale number
Black	0	0
Blue	1	5
Green	2	17
Cyan	3	28
Red	4	8
Magenta	5	11
Brown	20	20
White	7	40
Gray	56	14
Light blue	57	24
Light green	58	45
Light cyan	59	50
Light red	60	32
Light magenta	61	36
Yellow	62	56
Bright white	63	63

The 16 gray scale numbers listed in the right column above represent the only shades available to define any color.

You also can change the gray scale number for specific colors without displaying the SETLCD menu by entering the color number and the desired gray scale number as parameters in the SETLCD command. The format for this function of SETLCD is:

SETLCD/cc:gg[/cc:gg]

Items in brackets are optional. (Do not type the brackets into the command.)

cc is the color number. This may be any one- or two-digit number from the column titled "Color Number" in the table above.

gg is the gray scale number you want to use to represent this color. This may be any one- or two-digit number from the column titled "Gray Scale Number" in the table above.

[/cc:gg] is the parameter for changing the gray scale for a second (or subsequent) color. You can change as many colors as you want by using a slash between the parameters.

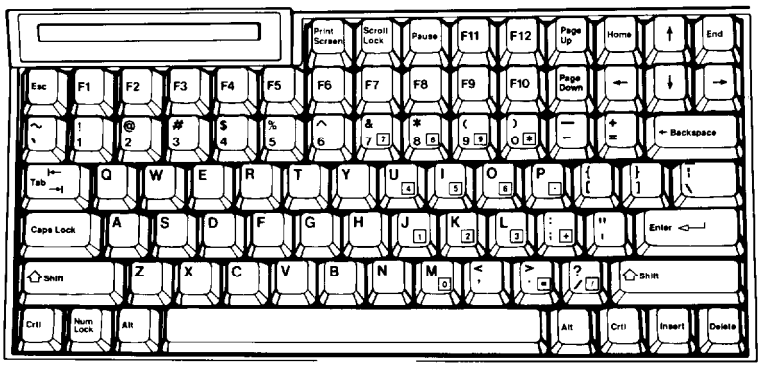
For example, the following command sets color number 0 (black) to gray scale number 63, and it sets color number 7 (white) to gray scale number 0:

```
SETLCD /0:63/7:0
```

Note
The method some application programs use to create colors on the screen may cause the SETLCD program to reset gray scale settings to their default values. If this occurs, make SETLCD memory-resident, start the application program, and then change the gray scale values from within the application program.

Special Keys on the Equity LT-386SX Keyboard

The illustration below shows the Equity LT-386SX 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 icon on the status indicator bar is displayed. When a function is off, the icon disappears.

The following table describes special keys on the Equity LT-386SX 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 displayed, changes letter keys from uppercase to lowercase.
Alt	Works with other keys to enter alternate character codes.
Print Screen	Sends text on the screen to the printer.
Scroll Lock	Used by some application programs.
Break + Ctrl	Used by some application programs.
Num Lock	Turning on Num Lock activates the keypad and scroll functions for the keys assigned to those functions. Other character functions are disabled while Num Lock is on. For example, with Num Lock on, pressing j on the Equity LT-386SX keyboard produces the number 1; when the Shift and j keys are pressed, the cursor moves to the end of the line. On the LT-386SX keyboard, the keypad functions are boxed in the lower right-hand portion of the key cap. The scroll functions are printed along the front side of the key cap.

Key	Purpose
Caps Lock	Changes 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 or the keypad and scrolling functions enabled when Num Lock is on.
Ins	Inserts characters at the cursor or turns the insert function on and off. (The function is dependent on the application program.)
Del	Deletes the character at the cursor.
Enter J	Ends a line of keyboard input or executes a command.
← (Backspace)	Moves the cursor back one space, deleting the character to the left.
Home, End Page Up Page Down ↑ → ↓ ←	Control cursor location within application programs.
SysRq + Alt	Used by some application programs.

Using Diskettes

Use diskette drives to store data on diskettes and retrieve and use stored data. The Equity LT-386SX 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-386SX

Be sure to buy high-quality diskettes to use in your Equity LT-386SX. 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-386SX.

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, 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.

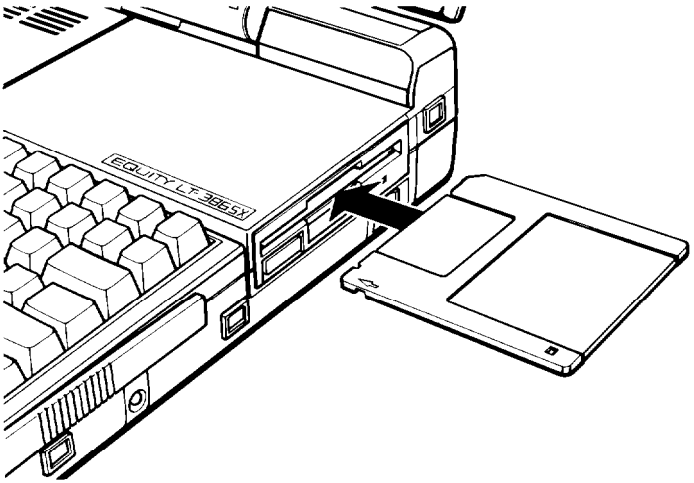
- ❑ Never wipe, brush, or try to clean diskettes in any way.

- ❑ 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

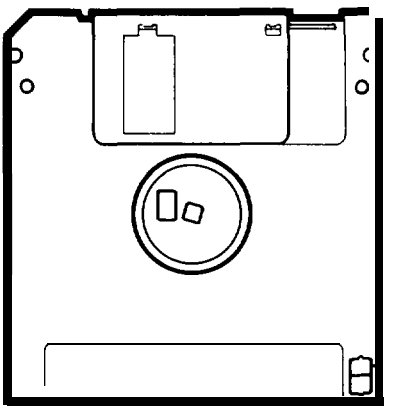
Copy all diskettes that contain programs. After you make your copies, store the originals in a safe place away from your working diskettes and use only the copies.

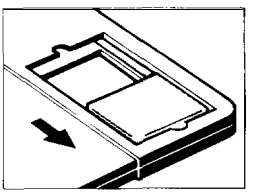
For general instructions on copying diskettes or hard disk files, see Chapter 3 or your MS-DOS Reference Manual.

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 comer 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.





-write-protect switch

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 the appropriate 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 on the Reference diskette 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:

```
HDDP SAVE /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 may also want to add the HDDPSAVE utility to your AUTOEXEC.BAT file. By adding this utility, you can set the power-off period for the hard disk each time you power on the computer.

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

1. At the MS-DOS command prompt in the root directory (`C:\>`), type the following and press Enter:

   ```
   COPY AUTOEXEC.BAT+CON AUTOEXEC.BAT
   ```

2. Type `HDDPSAVE /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).

3. 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-386SX. 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-386SX 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-MDOS

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 1 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 (or hard disk) 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.

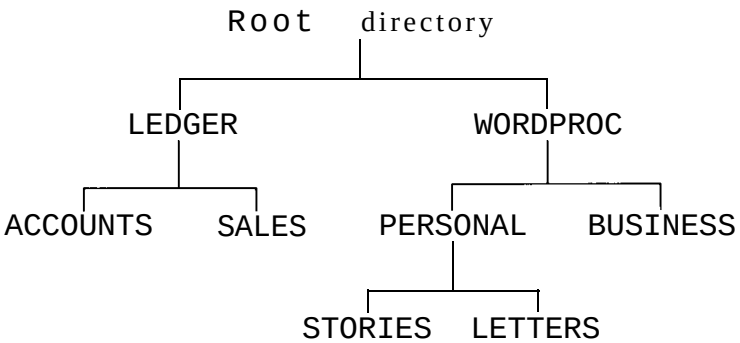
Using Directories

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 PERSONAL and BUSINESS. 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:

```
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," later in this chapter.)

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 1.44MB 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 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 Page Up 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 Page Up 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 Page Up 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-386SX 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, ATT-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.

Using Memory Beyond 640KB

Your Equity LT-386SX comes with at least 2MB of random access memory (RAM). MS-DOS and your application programs that run under MS-DOS use the first 640KB of memory.

By converting the extended memory above 1MB to expanded memory, you may use this memory for certain application programs (for example, Lotus 1-2-3) that support the Lotus/ Intel/Microsoft Expanded Memory Specification (LIM EMS).

To use expanded memory, you must copy the file EMM386.SYS from your MS-DOS Shell diskette to the root directory of the hard disk. Then modify the file CONFIG.SYS, which is stored in the root directory of the hard drive or the diskette from which you load MS-DOS.

If you have a word processing program that allows you to save the file as an unformatted, text-only file (also called an ASCII text file), you can use that program to modify the CONFIG.SYS file. Start the word processing program, load the file \CONFIG.SYS, then add the following line to the file:

```
DEVICE=EMM386.SYS
```

You can add one or more of the optional switches explained in the next section to this command line. Save the file as an ASCII text file, and then reset your computer.

If you do not have a word processing program capable of saving an ASCII text file, you can modify CONFIG.SYS using the MS-DOS COPY or EDLIN command. To modify CONFIG.SYS using the COPY command, follow these steps:

1. Log onto the root directory of the hard disk or diskette from which you boot MS-DOS.

2 Type the following and press Enter:

```
COPY  CONFIG.SYS+CON:  CONFIG.SYS
```

3. Type the following and press Enter:

```
DEVICE=EMM386.SYS
```

   You can add one or more of the optional switches explained in the next section to this command line.

4. Press the F6 key, and then press Enter.

5. Reset your computer.

This procedure makes the memory in your computer above 1MB available to any application program that supports LIM EMS version 4.0.

About EMM386.SYS

EMM386.SYS is an expanded memory manager that lets you use extended memory above 1MB to emulate expanded memory so that you can use application programs that support LIM 4.0.

Note
Do not use EMM386.SYS if you installed an expanded memory option card. Use the device driver that came with the memory card. See the documentation provided with the card for instructions.

The full syntax for the command line that activates EMM386.SYS is:

```
DEVICE=[d:][path]EMM386.SYS[size]
 [X:mmmm-nnnn][Mx]
```

The items in brackets are optional; you do not type the brackets when you enter the command. The following paragraphs describe the items in the command line.

d:path specifies a pathname. You need to add the pathname if the file EMM386.SYS is not in the root directory of the disk used to boot MS-DOS. For example, if EMM386.SYS is in a directory called \DOS on drive C:, be sure to include a pathname, like this:

```
DEVICE=C:\DOS\EMM386.SYS
```

size allows you to specify the number of kilobytes of extended memory to use as expanded memory. The default is 256KB. For example, to convert 1MB (1024KB) of extended memory to LIM 4.0 expanded memory, include this command in your CONFIG.SYS file:

```
DEVICE=EMM386.SYS  1024
```

X:mmmm-nnnn represents a range of memory in hexadecimal to be excluded from the EMM386.SYS page frame or other mappable pages. This parameter is necessary only when there is a conflict with your expansion option board. You can use more than one X: parameter to exclude more than one range of memory.

Note
Do not use the X: parameter unless you experience a memory conflict with a memory option card.

Mx indicates the address of the EMM386.SYS page frame. Do not include this parameter unless you want to force EMM386.SYS to use a particular address. The options for x are shown below.

if x is	page frame begins at segment
0	C000
1	C400
2	C800
3	CC00
4	D000
5	D400
6	D800
7	DC00
8	E000

Note
If you install devices that use expanded memory, be sure the DEVICE=EMM386.SYS command appears in your CONFIG.SYS file before the commands to install those devices.

For example, to convert 512KB of extended memory to expanded memory and ensure that EMM386.SYS does not locate its page frame or other mappable pages in the ranges C400 to C7FF and E000 to E3FF, include this command in your CONFIG.SYS file:

```
DEVICE=EMM386.SYS  512  X:C400-C7FF
X:E000-E3FF
```

Once EMM386.SYS is installed in MS-DOS, the Equity LT-386SX displays a message when you turn it on or reset it listing the device parameters. For instance:

```
MICROSOFT Expanded Memory Manager 386 Version 4.00
 (C) Copyright MICROSOFT Corporation 1988
Page Frame Base Address adjusted.
EMM386.SYS Installed.
        Extended memory allocated:     2048 KB
        System memory allocated:        385 KB

        Expanded memory available:     3432 KB
        Page frame base address:      C8000 H

FASTOPEN installed

MS-DOS Version 4.01
Resident part of PRINT installed
PRINT queue is empty
C:\>
```

Chapter 4

Troubleshooting

You should not encounter any difficulties as you set up and use your Equity LT-386SX. You can correct most problems by adjusting a cable connection, changing a DIP 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 (1-800-922-89 11) 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 set a time period for standby mode in the SETUP menu, so that the computer turns off the LCD screen automatically after a specified period of time with no key input. If this happens, press any key to restore the display.

   To turn off the standby mode feature, hold down Ctrl and press left Shift and L simultaneously. The computer beeps once to inform you that standby mode is disabled. If you want to change the time limit for standby mode or to turn the feature off in SETUP, reset the computer, run SETUP again, and set standby mode to 00 in the SETUP menu.

3. If you are using OS/2, refer to Appendix E for information on how to install the LCD video driver from the Reference diskette.

4. If you are using Microsoft Windows/386, see Appendix F for information on how to install the LCD VGA video driver from the Equity LT-386SX Reference diskette.

5. 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. 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.

5. 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.

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.

Diskette Drive Problems

If you are having problems with the internal or external diskette drive, check the following:

1. Have the drive designations been exchanged using DIP switch 1 ? (See Appendix A.)

2. If your problem is with the external drive, be sure that DIP switch 7 is OFF. (See Appendix A.)

3. If your problem is with the external drive, have you defined the drive correctly to the Equity LT-386SX by running SETUP?

Note
Always be sure to turn on the external drive before turning on the computer.

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 description of installing the hard disk drive in Chapter 1. Check the shock indicator on the bottom of the hard disk to verify that the disk has not sustained a severe shock. Reread the section on caring for the hard disk drive in Chapter 2. Also 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

This appendix describes the DIP 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-386SX settings--that is, you are using the LCD screen in VGA mode, a parallel printer, and your internal diskette drive as the A drive-you do not need to change the DIP switches.

If you are not using these 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-386SX has one set 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.

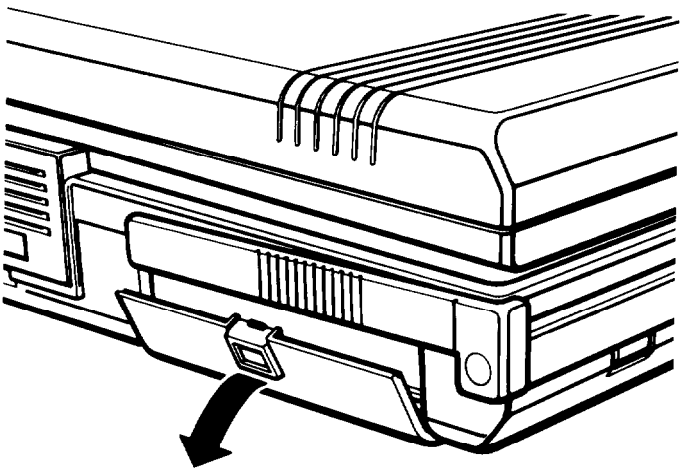
Read this section to make sure the current DIP switch settings match your system configuration.

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:

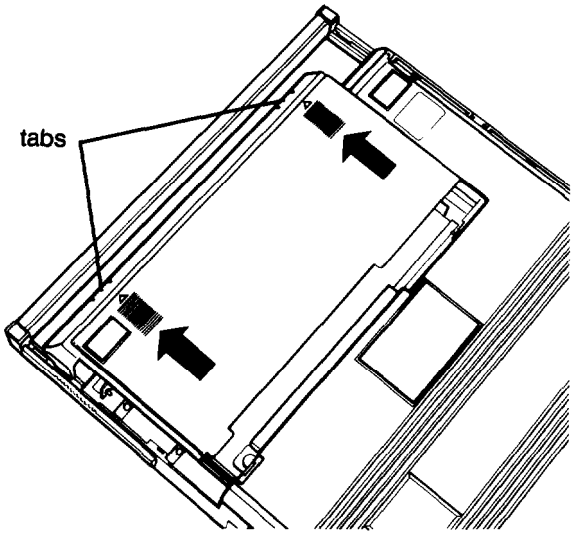
1. Remove the expansion slot cover on the left side of the computer. Press down on the release tab and lift off the expansion slot cover.



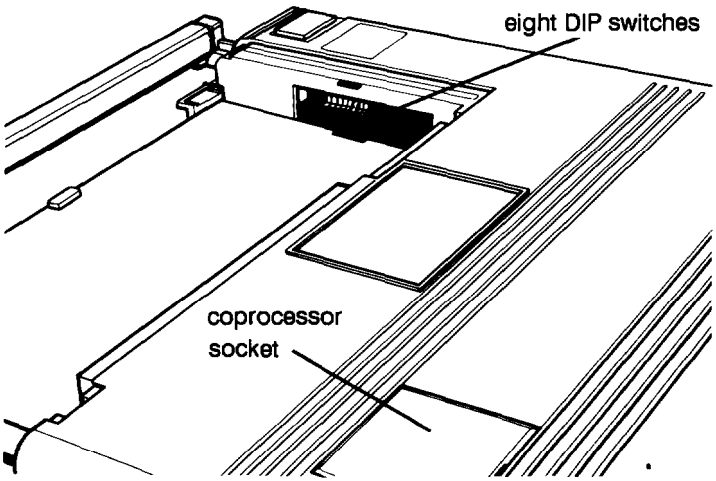
2. Pull out the carrying handle.

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 switch 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 PICTURE SHOWS FACTORY SETTING

SWITCH	DESCRIPTION	
SW-1	SWAP THE FDD	ON: A: IS A: AND B: IS B: OFF : A: IS B: AND B: IS A:
SW -2	PRIMARY DISPLAY	ON: PRIMARY IS COLOR DISPLAY OFF : PRIMARY IS MONOCHROME DISPLAY
SW-3	SELECT SERIAL PORT	ON: SERIAL PORT IS 3F8H THROUGH 3FFH OFF : 2F8H THROUGH 2FFH
SW-4	ENABLE SERIAL PORT	ON: ENABLE THE SERIAL PORT OFF: DISABLE THE SERIAL PORT
SW-5	SELECT PARALLEL PORT	ON: PARALLEL PORT IS 378H THROUGH 37FH OFF. 278H THROUGH 27FH
SW-6	ENABLE PARALLEL PORT	ON: ENABLE PARALLEL PORT OFF : DISABLE PARALLEL PORT
SW-7	SELECT B DRIVE	ON INTERNAL 13 DRIVE OFF : EXTERNAL 8 DRIVE
SW-8	NOT USED	MUST ALWAYS BE ON

The following table lists the system functions these switches control.

DIP switch settings

Switch	Setting	Function
1	ON'	Defines the internal 1.44MB, 3½-inch diskette drive as A and the external 1.2MB, 5¼-inch drive as 8.
	OFF	Defines the internal 1.44MB, 3½-inch diskette drive as B and the external 1.2MB, 5¼-inch drive as A.
2	ON*	The primary display is color.
	OFF	The primary display is monochrome.
3	ON*	Selects serial port 1 (COM1, I/O addresses 3F8H through 3FFH) as the serial port.
	OFF	Selects serial port 2 (COM2, I/O addresses 2F8H through 2FFH) as the serial port.

Switch	Setting	Function
4	ON‘	Enables the serial port.
	OFF	Disables the serial port.
5	ON*	Selects parallel port 1 (LPT1, I/O addresses 378H through 37FH) as the parallel port.
	OFF	Selects parallel port 2 (LPT2, I/O addresses 278H through 27FH) as the parallel port.
6	ON*	Enables the parallel port.
	OFF	Disables the parallel port.
7	ON	Defines the internal diskette drive as drive B. (When this switch is ON, the internal drive is defined as both A and B, and an optional external drive is effectively disabled.)
	OFF*	Defines the external diskette drive as drive B.
8	ON’	Must be ON.

*Default setting

Switch **1** allows you to exchange the definitions for diskette drives A and B. When switch 1 is ON (the factory setting) drive A is the internal 3 1/2-inch diskette drive and drive B is an optional external 5 1/4-inch diskette drive. By turning switch 1 to OFF, you define the internal diskette drive as B and the optional external drive as A.

Switch 2 defines the primary display. The LT-386SX recognizes the LCD as the primary display, unless it detects that an external monitor has been connected to the RGB VIDEO port. If an external monitor is connected, it becomes the primary display. When switch 2 is ON (the factory setting) the primary display is defined as a color display. The LCD translates colors into 16 shades of gray. When switch 2 is OFF, the primary display is monochrome.

Switch 3 tells the computer whether you want the internal serial port (labeled RS232C on the right side of the computer) to be COM1 or COM2. When switch 3 is ON (the factory setting), the serial port is COM1; when it is OFF, the port is COM2.

When **switch 4** is ON (the factory setting), the internal serial port is enabled; if it is OFF, the serial port is disabled. If the RS-232C port on the Equity LT-386SX conflicts with the serial port on an option card you have installed, you will not be able to use the port on the option card unless you disable the internal serial port.

Switch 5 defines the internal parallel port (labeled PRINTER on the right side of the computer) as LPT1 or LPT2. If the switch is ON (the factory setting), the port is LPT1; if it is OFF, the port is LPT2.

When **switch** 6 is ON (the factory setting), the internal parallel port is enabled; if it is OFF, the parallel port is disabled.

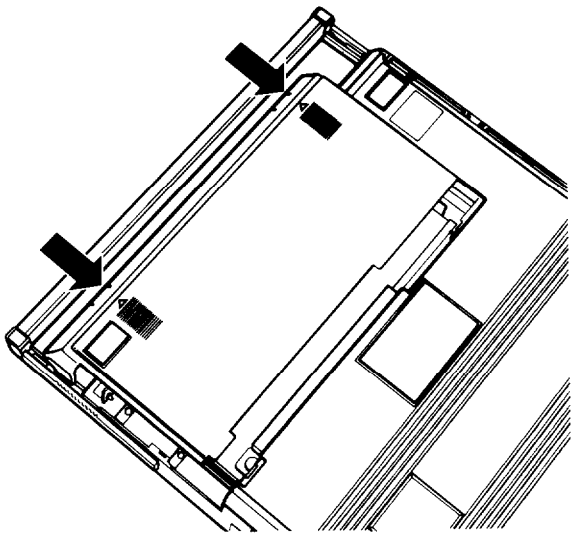
When **switch** 7 is ON, the internal drive is defined as both drives A and B. When switch 7 is OFF (the factory setting), the external drive is B.

Switch 8 is not used, and always must be ON.

Replacing the Expansion Card Cover

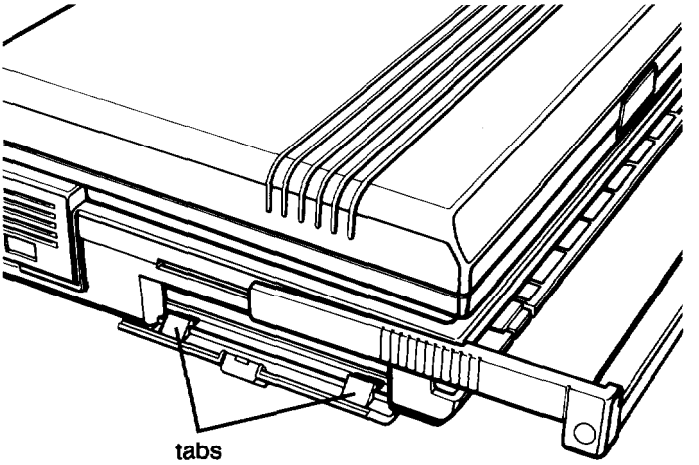
After you verify or change your DIP switch settings, you need to replace the expansion card cover. Follow these steps:

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

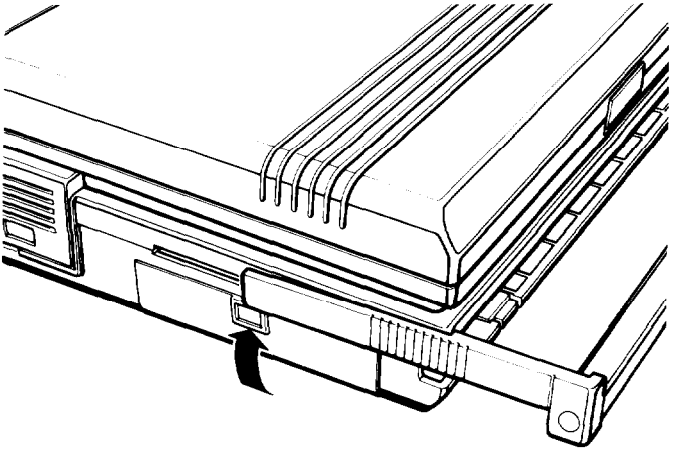


2. Turn the computer right side up with the handle facing you.

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.

Appendix B

Installing Options

This appendix describes how to install the following optional devices in your LT-386SX:

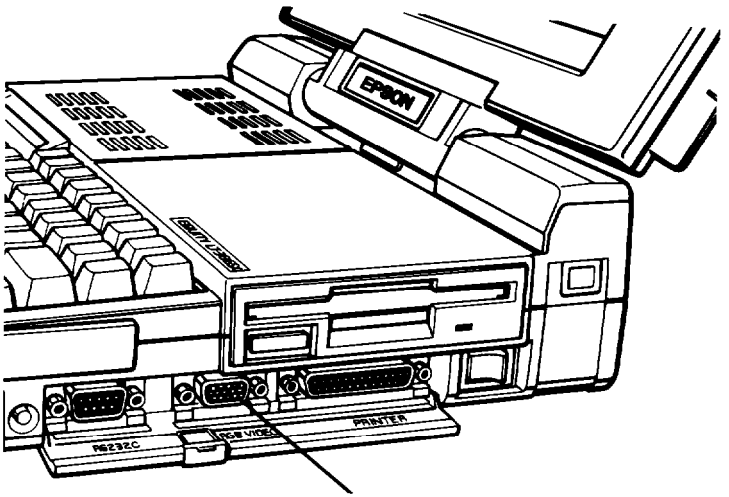
- ❑ External monitor
- ❑ External diskette drive
- ❑ Internal modem
- ❑ Internal 2MB memory card
- ❑ External keyboard
- ❑ 2/3-size, IBM AT-compatible expansion card
- ❑ Math coprocessor.

Connecting an External Color Monitor

If you plan to use an external monitor with your Equity LT-386SX, follow the instructions below to connect it to your computer.

1. Be sure both the computer and monitor (as well as any other peripheral devices) are turned off.
2. Place your monitor near the Equity LT-386SX.
3. If necessary, connect the monitor cable to the monitor. (Some monitors come with permanently attached cables.)
4. Lower the interface cover on the right side of the computer.

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



RGB VIDEO port

6. If the connector has retaining screws, tighten them with a screwdriver.

7. 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

Follow these steps to connect the optional, 1.2MB, 5 1/4-inch diskette drive to your LT-386SX:

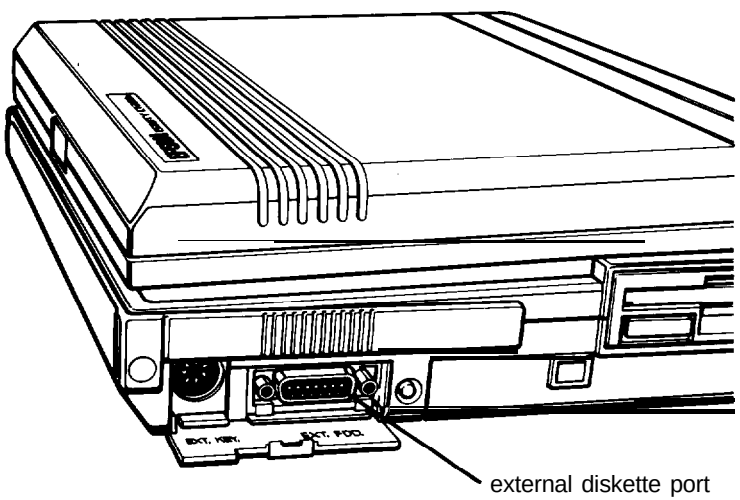
1. Make sure both the computer and external diskette drive (as well as any other peripheral devices) are turned off.

2. Verify that DIP switch 7 is OFF (the factory setting).

3. Place the external diskette drive near the Equity LT-386SX.

4. Lower the interface cover on the front, right side of the computer (when the front of the computer is facing you).

5. Connect the interface cable from the external diskette drive to the EXT.FDD port on the right side of the computer, as shown below.



6. Tighten the retaining screws on the connector with a screwdriver.

7. 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 then turn on the computer. Now run the SETUP program, as described in Chapter 1.

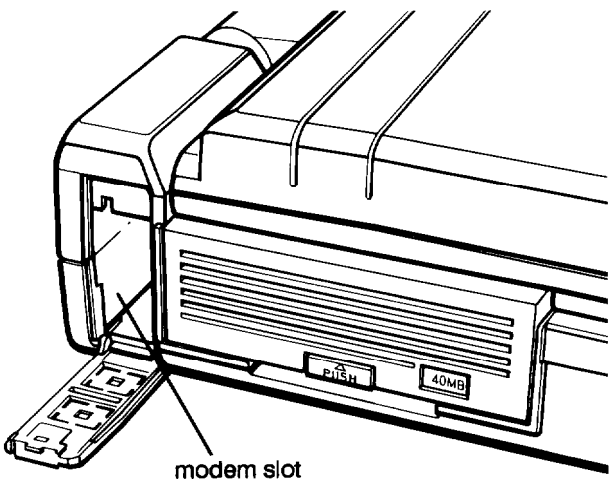
Note
Always turn on peripheral devices before the computer.

Installing the Internal Modem

Follow these steps to install the optional, Epson internal modem in your Equity LT-386SX.

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.

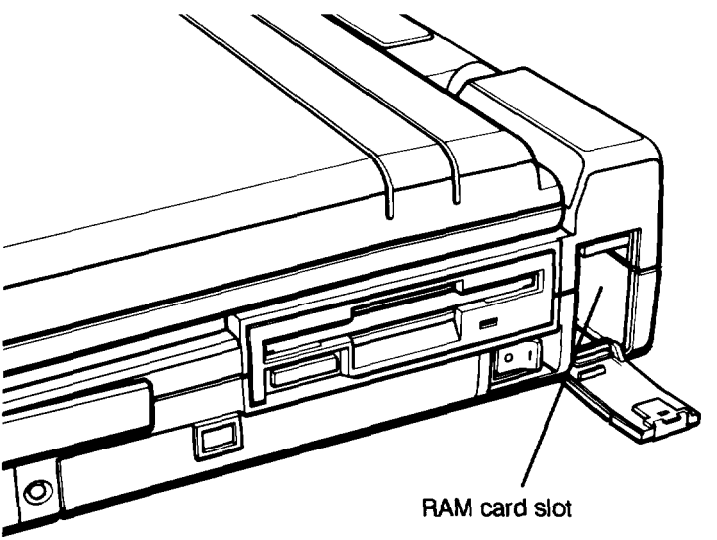
6. Connect the modem to a phone line.

Installing the RAM Card

Follow these steps to install the optional Epson 2MB RAM card in your LT-386SX:

1. Make sure the computer is turned off.

2. Turn the computer so that its right side is facing you, as shown below. Press down on the release tab to lower the RAM card cover.



3. There is a groove in the top left side of the RAM card slot. Fit the card into this groove, and slide the RAM card into the slot. Push the card back as far as possible.

4. Close the RAM card cover. Press up on the release tab to secure the cover.

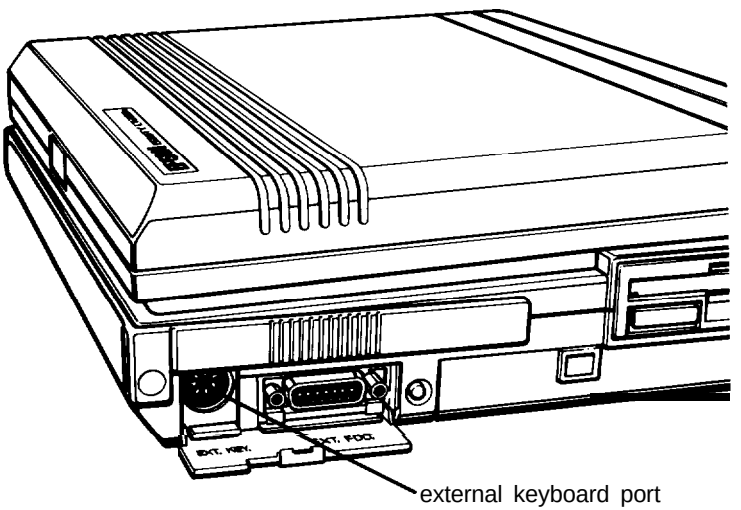
5. Turn on the computer and run the SETUP program to record the new memory size to CMOS RAM. SETUP is described in detail in Chapter 1.

Connecting an External Keyboard

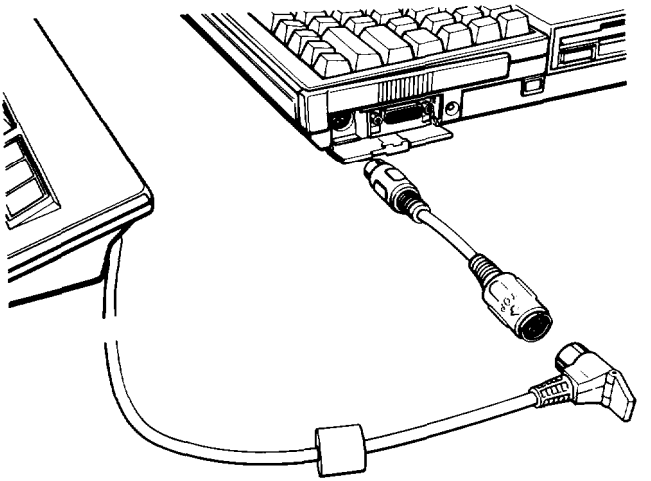
You can attach an external keyboard to your LT-386SX. The socket for the external keyboard is on the front, right side of the computer. Follow these steps:

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 connector to the external keyboard socket, labeled EXT.KEY on your computer. If the keyboard connector interferes with the EXT.FDD port and you are planning to connect an external diskette drive to this port, you need to use the external keyboard adapter, as shown below.



Attach the optional keyboard adapter to the external keyboard port. Then attach the connector from the external keyboard to the adapter.

Installing an Option Card

You can also install a 2/3-size, IBM PC AT-compatible, internal expansion card in your LT-386SX. You can install a 2/3-size option card provided it physically fits in the expansion slot on the LT-386SX. 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 computer.

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

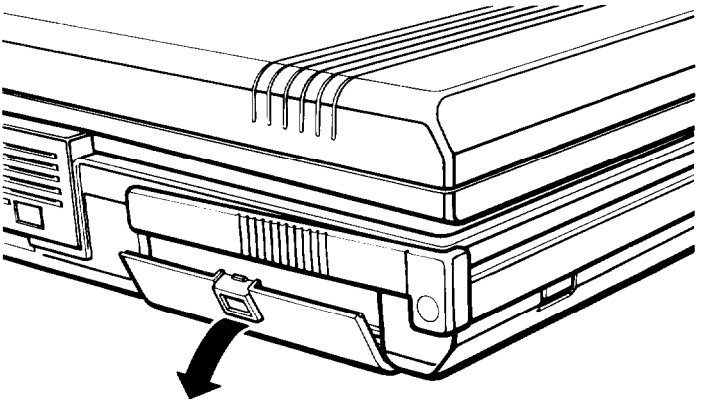
The option card must not interfere with options installed in the internal ports. For example, if you install an option card with a parallel port, you must assign that port as the secondary parallel port (278H) if the internal parallel port is the primary parallel port (378H). If you want the parallel port on the option card to be the primary parallel port, you must define the internal parallel port as the secondary parallel port by setting DIP switch 5 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-386SX. 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.

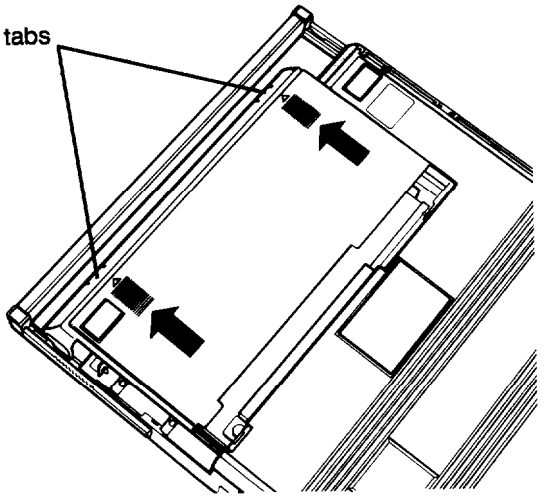
2. Remove the expansion slot cover on the left side of the computer. Press down on the release tab and lift off the expansion slot cover.



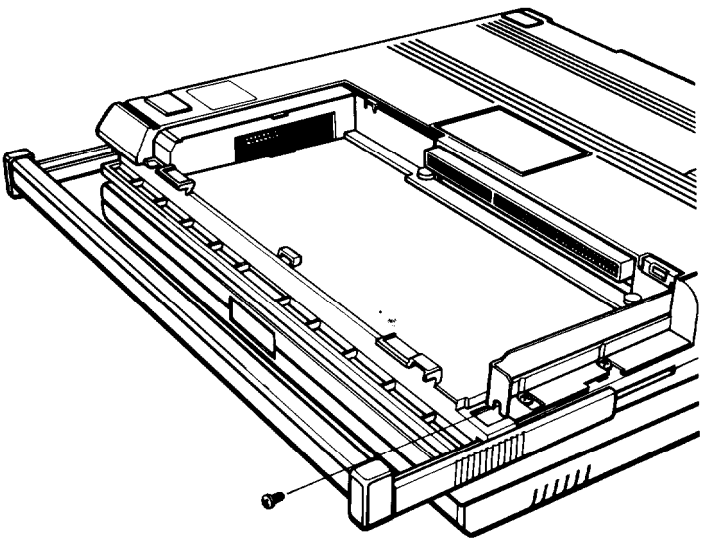
3. Pull out the carrying handle.

4. Turn the computer upside down with the handle away from you.

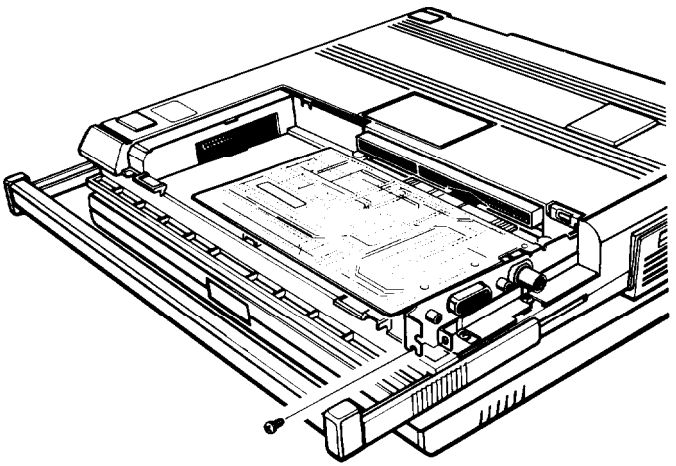
5. Remove the expansion card cover as shown below. Lift up on the two tabs while you press on the grated squares to release the cover. Slide the cover away from you (toward the handle).



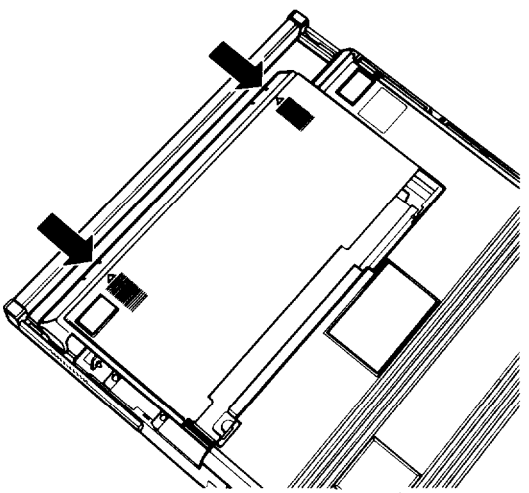
6. Remove the bracket on the side of the computer.



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.

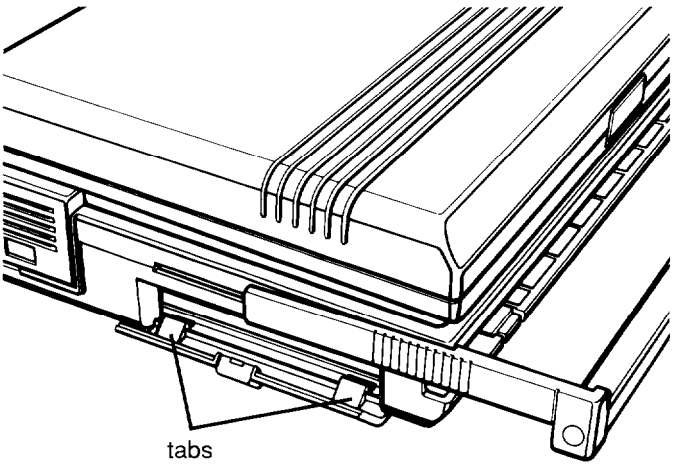


8. Set the cover on the computer and slide it back into position as shown below. Press firmly until the cover snaps into position.

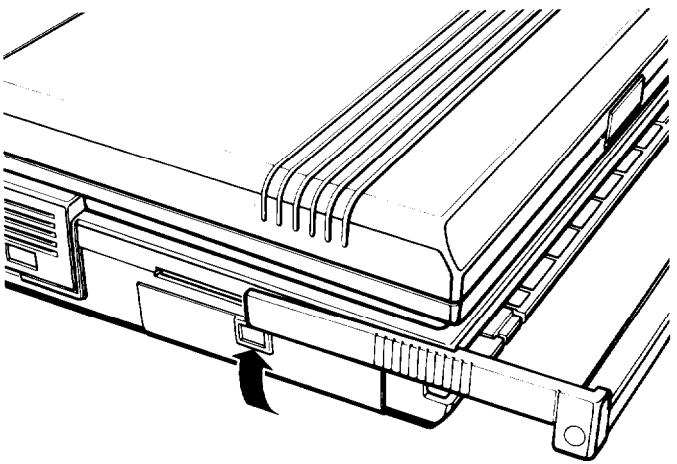


9. Turn the computer right side up with the handle facing you.

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 install a math coprocessor in your Equity LT-386SX easily. If your software supports a math coprocessor, it processes mathematical calculations much faster than without the coprocessor.

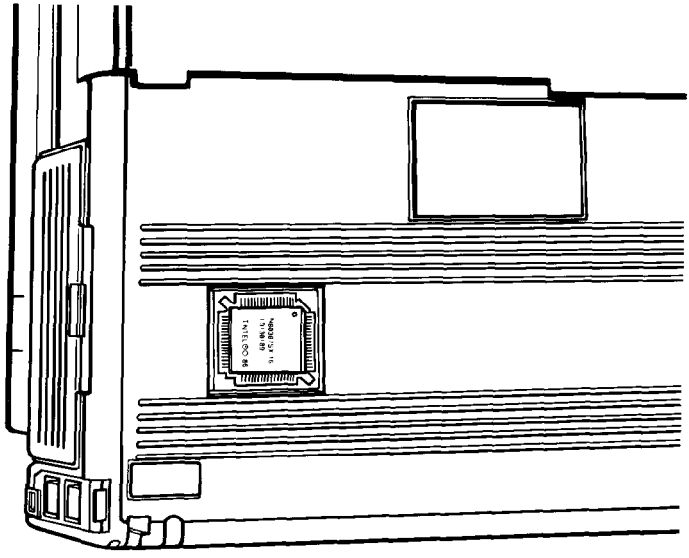
Follow these steps to install the coprocessor:

1. Turn off the computer, close it, and disconnect all cables.

2. Turn the computer upside down, with the handle away from you.

3. Remove the cover for the coprocessor socket by putting your fingernail or a coin into the recession on the bottom of the cover and lifting up.

4. Insert the 80387SX coprocessor chip into the socket so that the round indentation indicating pin 1 is in the upper right-hand corner, and the writing on the chip reads downward, as shown below.



Appendix C

Specifications

Main Unit

CPU	80386SX microprocessor; 8 MHz or 16 MHz clock speed, selectable through SETUP or software command (Ctrl-left Shift-F)
Main memory	2MB (640KB standard and 1280KB extended)
Math coprocessor	80387SX coprocessor (optional)

Interfaces

Parallel	Standard 8-bit parallel, Z-pin, D-type female connector
Serial	RS-232C, programmable, asynchronous, 9-pin, D-type male connector
Video	15-pin, female connector; supports VGA monitor
External diskette drive	15-pin, D-type female connector
External keyboard	Keyboard connector for optional, external keyboard
Speaker	Internal
Option slot	One 2/3-size, IBM PC AT-compatible slot

Memory	Internal RAM memory card slot; allows expansion to 4MB
Modem	Internal modem slot; 34-pin male connector
Clock/calendar	Real-time clock and calendar with battery backup

Keyboard

	85 sculptured keys; status indicator bar icons for Num Lock, Caps Lock, and 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
Diskette drives	One internal, 1.44MB 3 1/2-inch diskette drive
	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 enabled automatically by inserting a connector into the RGB VIDEO port before power on

External RGB monitor supported (VGA-compatible)

Power Supply

Externally attached, rechargeable NiCad battery pack (4000 milliampere-hours); lasts from 1 to 3 hours

12/5-volt AC adapter (can recharge battery pack while operating computer) with automatic 120-240V sensing

Power Requirements

120-240 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	17 lbs (7.7 kg) with battery and hard disk drive

Environmental Requirements

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

WARNING
When traveling by airplane, take your LT-386SX 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	2MB RAM expansion card
Expansion cards	One 2/3-size, IBM PC AT-compatible slot
Carrying case	Soft case for carrying computer

Appendix D

System Diagnostics

This appendix describes how to use the diagnostics program to test the condition of your computer's main unit and peripheral devices. The diagnostics program provides tests to check the following hardware:

- System board
- Memory
- Hard disk drive
- Diskette drive
- Keyboard
- Video adapter board and monitor
- Printer and communications ports.

After you start the diagnostics program, you can create a database that records the location of faulty memory chips, if any exist. This database displays a graphic representing your computer's memory board and identifies the faulty chips.

Once you select a test, you need to specify how long to run it. You use the Run Time Parameters window to specify a certain length of time to run the test, run it continuously until you interrupt it, or specify a number of times to run the test.

Starting the Diagnostics Program

To start the diagnostics program, follow these steps:

1. Insert the Reference diskette in drive A.
2. Turn on or reset the computer.
3. At the MS-DOS prompt, type the following and press Enter:

   ```
   DIAGUS
   ```

   The diagnostics program displays a title screen.
4. Press any key to continue.

Creating a Database

You can create a database to record the location of faulty memory chips that are causing memory errors. To graphically represent the memory board on the screen, you need to identify your system's memory configuration.

In the lower portion of the screen, you see this message:

```
Press <Esc> to bypass database creation
```

Press Esc if you do not want to create the database. The diagnostics program main menu appears so you can select the tests you want to run.

If you want to create a database, follow these steps:

1. Type the name (from 1 to 50 characters) that identifies your company or the computer and press Enter in response to this prompt:

   ```
   vendor's  name  :
    (maximum 50 characters)
   ```

   For example, type EPSON and press Enter.

2. Type the computer's model number (from 1 to 8 characters) and press Enter in response to this prompt:

   ```
   model number
   (maximum 8 characters)
   ```

   For example, type LT-386SX and press Enter. The diagnostics program stores this information in a file called DIAGS.CNF.

3. If a database with this vendor name and model number does not exist, you see this message:

   ```
   Database does not exist - press
   any key except <Esc> to continue
   ```

   To create the database, press any key other than Esc. Now you respond to the screen prompts to update the configuration. You can accept the default values that the diagnostics program presents by pressing Enter. When you see the diagram of the motherboard, press Esc to continue the diagnostics.

   If a database with the specified vendor name and model number exists, you see this message:

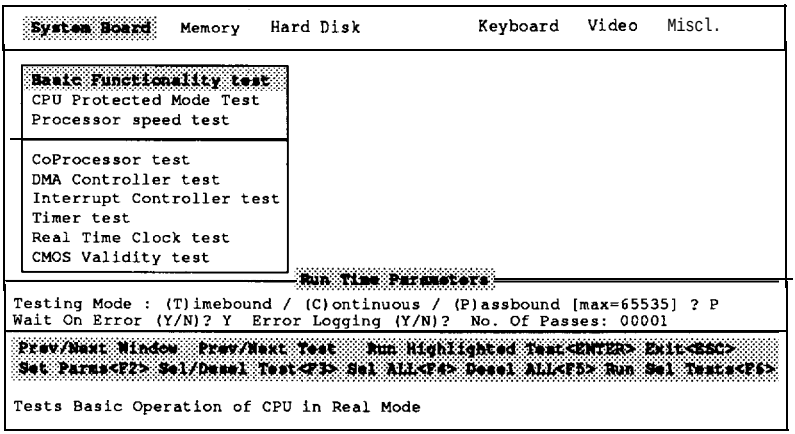
   ```
   Your database already exists -
   want to update (Y/N)? N
   ```

To update the existing database, press Y and Enter. Now you respond to the screen prompts to update the configuration.

If you do not want to update the database, press N and Enter. You see the diagnostics program's main menu.

The Main Menu Screen

The main menu screen looks like this:



The program's title, copyright information, and the date and time appear at the top of the screen.

The options line shows these categories of tests: System Board, Memory, Hard Disk, Floppy, Keyboard, Video, and Miscellaneous.

After you select a category, the diagnostics program provides a submenu of the available diagnostics tests. When the main menu first appears, you see the submenu of diagnostics tests for the System Board category.

The Run Time Parameters window lets you specify how long you want the test to run, whether you want the program to notify you of each error as it occurs, and whether to create a log of all errors that occur during testing.

The Help window shows the keys you use to make menu selections.

A short message describing each test you highlight appears at the bottom of the screen.

You use these keys to make menu selections and run diagnostics tests:

Key	Function
→	Move to the next window (or device)
←	Move to the previous window (or device)
↓	Move to the next test
↑	Move to the previous test
Enter	Start the test
F2	Set the Run Time Parameters
F3	Select or deselect a test
F4	Select all tests
F5	Deselect all tests
F6	Run all selected tests

Selecting Diagnostics Tests

This section describes the various ways you can select the tests you want to run.

To start a single test, move the cursor to highlight the test category on the main menu. Then move the cursor to the submenu and highlight the test you want to perform. Press Enter to start the test.

To select several tests at one time, move the cursor to each test you want to perform and press F3. If you decide you do not want to run a selected test, highlight the test name and press F3 again.

You can press F4 to select all tests for all devices, and press F5 to deselect all selected tests.

Once you select a test, it remains selected until you deselect it. If you run a test or a group of tests and start testing again, the diagnostics program performs the same tests unless you deselect them.

You must enter certain parameters for the hard disk drive and the diskette drive tests. If you use F3 to select these tests, the program prompts you for the information. If you use F4 to select these tests, the program prompts you for the information during the first pass of the test. If you perform more than one pass of the test, the program uses the same parameters for each pass.

You cannot include certain tests in a group. The tests that must run separately include:

Category	Test
System Board	Timer test Real Time Clock test
Hard Disk	Hard Disk Format Auto Interleave Media Analysis Force Bad Tracks
Floppy	Disk Change Line Test
Keyboard	Scan/ASCII Code Test
Miscellaneous	Printer Adapter Test Comm. Adapter Test

After you select the test(s) you want to run, you must set the Run Time Parameters.

Setting the Run Time Parameters

To specify the Run Time Parameters, press F2 to move to the Run Time Parameters window. The diagnostics program displays default values for each of the run time parameters.

You can press Esc at any time to exit the Run Time Parameters window and return to the submenu of diagnostics tests.

The first run time parameter defines how long or how many times to run the test. You see this prompt:

```
Testing Mode:  (T)imebound / (C)ontinuous /
(P)assbound [max = 65535] (T/C/P) ? P
```

Type T and press Enter to run the selected tests in Timebound mode. In Timebound mode, the program runs the tests for the amount of time you specify.

Type C and press Enter to run the selected tests in Continuous mode. In Continuous mode, the tests run until you interrupt them.

Type P and press Enter to run the diagnostics tests in Passbound mode. In Passbound mode, the program executes the selected tests the number of times you specify. This is the default setting.

The next prompt is:

```
Wait on error (Y/N) ? Y
```

Press Y and Enter if you want the program to pause when an error occurs during a test. The program pauses and waits for you to press Enter before continuing. This lets you view the error message and make notes about the error. This is the default setting.

Press N and Enter if you want the diagnostics program to continue when an error occurs.

The next prompt is:

```
Error logging (Y/N) ? N
```

Press Y and Enter to record the errors that may occur during the test. See the "Error Logging" subsection for details.

Press N and Enter if you do not want to create the log. This is the default setting.

If you decide not to wait on errors, you should select error logging so you can review the errors that occur during the tests.

Next, the program requests information it needs to perform the type of testing you selected.

Timebound Testing

If you selected 'Timebound testing, you see this prompt:

```
Period :001 hr 00 min
```

Specify the amount of time you want to run the selected test(s). Type the number of hours, from 000 to 999, and press Enter. Then type the number of minutes, from 00 to 59, and press Enter. You can use the backspace key (←) to edit your input.

Continuous Testing

If you selected Continuous testing, the diagnostics program needs no additional information. After you specify whether to create the error log, the program returns to the main menu. You see this message in the Run Time Parameters window:

```
Test Mode: Continuous
```

Passbound Testing

If you selected Passbound testing, you see this prompt:

```
No. of Passes : 00001
```

Specify the number of times (from 1 to 65535) you want the program to run the test(s). Or press Enter without entering a number to select the default of one pass. You can use the backspace key to edit your input.

Running a test multiple times provides reliability testing of essential functions only. In most cases, running a test once is sufficient.

If you specify a number larger than 65535, the program subtracts 65536 from your entry to determine how many times to run the test. For example, if you enter a value of 65540, the test runs four times.

Error Logging

When you request error logging, the program displays the following pop-up window:

```
Log errors on disk
Log errors to printer (LPT1)
Log errors to serial port (COM1)
Cancel error logging
```

Highlight the device you want to use to store or print the error messages. Press Enter to select the device, or press Esc to exit the pop-up window and return to the Error logging prompt.

If you select Log errors on disk, the program displays another pop-up window:

```
Floppy disk A:
Floppy disk B:
Hard disk C:
```

Highlight the disk where you want to store the error messages. Press Enter to select the specified disk drive.

The program creates a file called ERROR.LOG in the current directory of the specified disk drive. After running the tests, you can open the ERROR.LOG file to review the errors that occurred during the tests.

After selecting error logging, the program uses this device (and/or disk drive) for error logging until you indicate you do not want error logging. You can then specify a new device and/or disk drive by selecting error logging in the Run Time Parameters window. When you specify a new device and/or disk drive, the program erases the existing ERROR.LOG file.

If you select the printer, the program writes the error messages to the device connected to your parallel port assigned LPT1. If you select the serial port, the program writes the error messages to the device connected to your serial port assigned COM1.

If you select Cancel error logging, the program changes the error logging response from Y to N.

When you specify the device for error logging, one of the error messages may appear:

```
Floppy disk A not present
Floppy disk B not present
Hard disk C not present
Printer port not present
Serial port not present
Error in printer status
Error in serial port status
Error in floppy drive A
```

Record the error message and select a different device for error logging.

Executing Diagnostics Tests in Batch Mode

To execute the selected group of diagnostics tests in batch mode, simply press F6. The diagnostics program highlights each test name as it runs the test.

If you selected Passbound testing, the program displays the pass number on the right side of the screen above the Run Time Parameters window. For example:

```
Pass :  00001
```

When the program is executing a group of tests, you can stop the testing and return to the System Board submenu of tests by pressing Ctrl Break. The program completes the current test before it stops.

If you specified Wait on error in the Run Time Parameters, the program pauses each time an error occurs. When you press Enter, the program continues the diagnostics testing.

Running the Tests

When a test completes, you see this prompt:

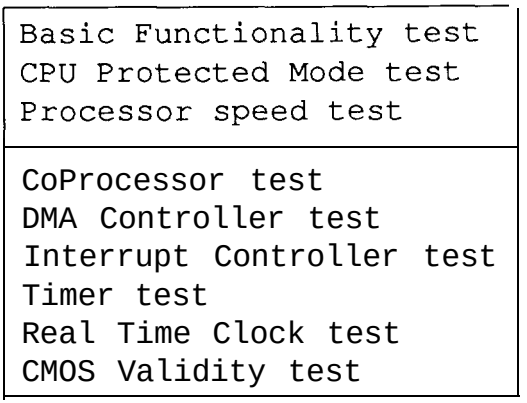
```
Press <ENTER> to return to MAIN MENU.
```

Press Enter to return to the main menu.

If an error occurs during a test, note the error message and 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 (1-800-922-8911) for the location of your nearest authorized Epson Customer Care Center.

System Board Diagnostics

The tests listed in the System Board submenu provide a complete diagnostics check of the system board.



Basic Functionality Test

This test verifies the operation of each major component on the system board. It checks the instructions, registers, and flags of the CPU.

When the test completes successfully, you see this message:

```
Basic functionality test of CPU passed OK.
```

CPU Protected Mode Test

This test switches to protected mode and checks the protected mode instructions, such as LSL, VERR, and LAR.

When the test completes successfully, you see this message:

```
Protected mode test of CPU passed OK.
```

Processor Speed Test

This test identifies the CPU clock speed and displays a message similar to this:

```
Measure CPU speed in Megahertz = 16.00
```

Coprocessor Test

This test checks the math coprocessor.

If the math coprocessor is not installed, you see this message:

```
Numeric Data processor not present.
```

DMA Controller Test

This test performs read/write tests on the memory address registers and page registers of DMA controller 1 and 2.

During the test, you see this message:

```
Testing Programmable DMA Controller.
```

When the test completes successfully, you see this message:

```
Programmable DMA Controller test
passed OK.
```

Interrupt Controller Test

This test performs read/write tests on the interrupt mask registers and checks for invalid interrupts.

During the test, you see this message:

```
Testing Programmable Interrupt
Controller . . . .
```

When the test completes successfully, you see this message:

```
Programmable Interrupt Controller test
passed OK.
```

Timer Test

This test verifies the accuracy of the timer count by comparing it to the periodic interrupt of the system's real time clock (RTC).

During the test, you see this message:

```
Testing Programmable Interval Timer.
```

When the test completes successfully, you see this message:

```
Programmable Interval Timer test
passed OK.
```

RTC Test

This test verifies the accuracy of the real time clock by comparing it to the timer 0 interrupt.

During the test, you see this message:

```
Testing Real Time Clock....
```

When the test completes successfully, you see this message:

```
Real Time Clock test passed.
```

CMOS Validity Test

This test checks the system's CMOS RAM.

During the test, you see this message:

```
Testing CMOS validity....
```

When the test completes successfully, you see this message:

```
CMOS validity test passed OK.
```

Memory Diagnostics

The tests listed in the Memory submenu provide a complete diagnostics check of the system's built-in memory.

BIOS ROM Test
Parity test Pattern test Walking l's test Walking O's test Address test Refresh test

If you have relocated any memory addresses, you must change the addresses to their original locations for the memory tests to work properly.

If an error occurs during a memory test, the program displays this message:

```
PRESS <ENTER> TO VIEW FAULTY MEMORY CHIP.
```

To view the faulty memory chip, you must have created a database. If not, you see this message:

```
<database not created>
```

If you have created a database, the program displays the diagram of the motherboard and highlights the faulty memory chip.

BIOS ROM Test

This test checks the data path of the BIOS ROM.

When the test completes successfully, you see this message:

```
System ROM module test passed.
```

Parity Test

This test checks for parity errors in memory.

During the test, the program displays these messages:

```
Testing from absolute memory location
xxxxxxxxh.

Checking for parity error.
```

When the parity test completes without an error, you see this message:

```
Parity test passed OK.
```

Pattern Test

This test performs a read/write test of memory and identifies any memory faults.

During the test, you see these messages:

```
Testing from absolute base xxxxxxxxh
Performing Pattern test in memory.
```

When the test completes successfully, you see this message:

```
Pattern test in memory passed OK.
```

Walking 1's Test

This test checks the voltage in the data lines for any shorts and checks for any data bits that are always 1.

During the test, you see this message:

```
Testing from absolute base xxxxxxxxh
```

When the test completes successfully, you see this message:

```
Walking 1s test in memory passed OK.
```

Walking 0's Test

This test checks the voltage in the data lines for any shorts and checks for any data bits that are always 0.

During the test, you see these messages:

```
Testing from absolute base xxxxxxxxh
```

When the test completes successfully, you see this message:

```
Walking 0s test in memory passed OK.
```

Address Test

This test checks for any shorts in the address line.

When the test completes successfully, you see this message:

```
Exclusivity test of address lines
passed.
```

Refresh Test

This test checks the refresh interval.

If an error occurs, the program displays this message:

```
Failure in Refresh test.
```

When the test completes successfully, you see this message:

```
Refresh test passed OK.
```

Hard Disk Diagnostics

The tests listed in the Hard Disk submenu provide a complete diagnostics check of the system's hard disk drive.

Hard Disk Format Auto Interleave
Media Analysis
Perform Test Seek Test Read/Verify Test Check Test Cyl.
Force Bad Tracks

Hard disk diagnostics tests may be destructive or non-destructive. Destructive diagnostics destroy data on the hard disk. Non-destructive diagnostics do not destroy **data** on the hard disk.

Destructive diagnostics tests include:

Hard Disk Format
Auto Interleave
Media Analysis
Force Bad Tracks

The non-destructive diagnostics tests include:

Performance Test
Seek Test
Read/Verify Test
Check Test Cylinder

Hard Disk Parameters

The diagnostics program may request any or all of the following parameters before performing a hard disk test:

Disk drive identifier
Disk drive type
Interleave factor
Bad track list
Start cylinder number
End cylinder number
Start head number
End head number

Disk drive identifier

The program displays the following prompt for the disk drive identifier:

```
Disk Drive (C/D)      ?  c
```

If only one hard disk is connected to the computer, the program assumes it is drive C and does not request a response to this prompt.

Disk drive type

The program displays the following prompt for the disk drive type:

```
Disk Drive type     ?  2
```

Select drive type 2 for a 20MB drive or drive type 17 for a 40MB drive. The program determines the type of hard disk drive based on the settings in CMOS RAM.

A pop-up window on the screen lists 47 possible drive types. This allows for the possibility of additional hard disk drives in the future. If you select the User Defied hard disk drive, you must provide the following information:

Number of cylinders
Number of heads
Number of sectors per track
Write precom
Write precom cylinder number
Landing zone

Interleave factor

The program displays the following prompt for the interleave factor:

```
Interleave  (1-16)      ?
```

The interleave factor affects the performance of your hard disk. The default value is 3. When you execute the Auto Interleave test, the diagnostics program determines the best interleave value for your hard disk and formats the hard disk for this interleave factor.

If you enter an interleave value in response to the Interleave prompt, you override the value set by the program. Only do this if the documentation with your hard disk recommends a different value.

Bad track list

The program displays the following prompt for the bad track list:

```
Mark Bad Tracks (Y/N) ?
```

Entering the bad track list is optional. If you respond Y to the above prompt, you see the following menu in a pop-up window:

```
Add an entry
Revise an entry
Delete an entry
Clear Bad Track list
Save and Exit
```

You do not need to enter a bad track list for the hard disk that comes with the Equity LT-386SX.

When you execute the Media Analysis test, the program automatically marks the bad tracks when it formats the hard disk.

Start and end cylinder numbers

The program displays the following prompts for the starting and ending cylinder numbers:

```
Start cylinder number ?
End cylinder number   ?
```

Enter the first and last cylinder numbers on which you want to perform the tests. The default for the start cylinder number is 0, and the default for the end cylinder number is one less than the highest cylinder number of your hard disk. For a 20MB hard disk drive, the highest cylinder number is 614. For a 40MB hard disk drive, the highest cylinder number is 976.

Start and end head numbers

The program displays the following prompts for the starting and ending head numbers:

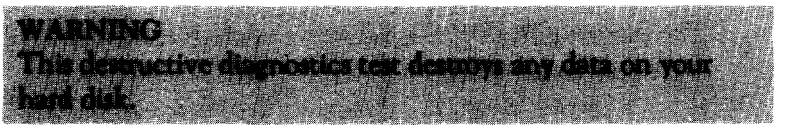
```
Start Head number       ?
End Head number         ?
```

Enter the first and last head numbers on which you want to perform the tests. The default for the start head number is 0, and the default for the end head number is one less than the highest head number of your hard disk. The default end head number for a 20MB disk is 3. The default end head number for a 40MB disk is 4.

After you specify the hard disk parameters required for the selected diagnostics test, the program begins executing the test.

Hard Disk Format

Use this test when installing a new hard disk in your computer. It preformats your hard disk on the hardware level. (You must still format the hard disk for your operating system.)



You may need to reformat **a** hard disk if you have a serious problem with the drive. However, before executing this program on a hard disk with data, try every other recovery procedure described in your operating system manual. Then back up all data on the hard disk before you start the diagnostics program.

The Hard Disk Format program lets you format the entire hard disk or any portion of it.

When you select Hard Disk Format, the program requests the following hard disk parameters:

Disk drive identifier
Disk drive type
Interleave factor
Bad track list (optional)
Start cylinder number
End cylinder number
Start head number
End head number

If you do not specify the bad track list, the program performs an analysis of the surface of the hard disk to determine the bad tracks.

The program displays the following messages after you specify the hard disk parameters:

```
          W A R N I N G
All data on Hard disk you have
specified may be LOST...
Do you still want to continue (Y/N)?
```

Press Y and Enter to start formatting the hard disk. Press N and Enter to stop the operation.

Auto Interleave

This test lets the diagnostics program determine the interleave factor for your hard disk.

WARNING
This destructive diagnostics test destroys any data on your hard disk.

When you select Auto Interleave, the program requests the disk drive identifier and disk drive type. After you specify the parameters, you see these messages:

```
W A R N I N G
All data on Hard disk you have
specified may be LOST...
Do you still want to continue (Y/N)?
```

Press Y and Enter to start the Auto Interleave function. Press N and Enter to stop the operation.

Media Analysis

This test identifies the bad tracks on the hard disk. The diagnostics program performs a comprehensive analysis of the surface of the hard disk to find the bad tracks. The program uses three different bit patterns for this test. It formats the hard disk, marks the bad tracks, and displays the bad track list.

WARNING
This destructive diagnostics test destroys any data on your hard disk.

When you select Media Analysis, the program requests the following hard disk parameters:

Disk drive identifier
Disk drive type
Interleave factor
Start cylinder number
End cylinder number
Start head number
End head number

The program displays the following messages after you specify the hard disk parameters:

```
            W A R N I N G
All data on Hard disk you have
specified may be LOST...
Do you still want to continue (Y/N)?
```

Press Y and Enter to start analyzing the hard disk. Press N and Enter to stop the operation.

Performance Test

This test checks the performance of your hard disk. It determines the data transfer rate and track-to-track seek time based on the transfer size, seek count, and the amount of data transferred.

The interleave factor is the most critical factor in determining disk performance. Changing the interleave factor can drastically change disk performance.

The program measures the data transfer rate in kilobytes per second. To measure the data transfer rate, the program reads 64KB of data 15 times and counts the number of timer ticks using this formula:

Transfer rate = (64KB x 15 x 18.2) /# timer ticks

The program measures track-to-track seek time in milliseconds using this formula:

Seek time = (#timer ticks x 1000) / 18.2 x 200

The number of seeks is 200.

A higher data transfer rate and a lower seek time indicate better disk performance.

When you select the Performance Test, the program requests the disk drive identifier and disk drive type.

Seek Test

This test checks the seek capability of the hard disk on the specified range of cylinders and heads. The program performs a series of sequential seeks followed by random seeks. It reports any errors found.

When you select Seek Test, the program requests the following hard disk parameters:

Disk drive identifier
Disk drive type
Start cylinder number
End cylinder number
Start head number
End head number

Read/Verify Test

This test checks the read and verify capability of the hard disk on the specified range of cylinders and heads. The program performs both sequential and random read and verify operations. It reports any errors found.

When you select Seek Test, the program requests the following hard disk parameters:

Disk drive identifier
Disk drive type
Start cylinder number
End cylinder number
Start head number
End head number

Check Test Cylinder

This test checks the test cylinder, which is the last cylinder on the hard disk.

Perform this test if you receive a hard disk `error when you boot the system.`

When you select Check Test Cylinder, the program requests the disk drive identifier and disk drive type.

Force Bad Tracks

Use this test to mark bad tracks on the hard disk without formatting the disk.

WARNING
This destructive diagnostics test destroys any data on your hard disk.

When you select Force Bad Tracks, the program requests the following hard disk parameters:

Disk drive identifier
Disk drive type
Start cylinder number
End cylinder number
Start head number
End head number

The following message appears after you specify the hard disk parameters:

```
W A R N I N G
All data on Hard disk you have
specified may be LOST...
Do you still want to continue (Y/N)?
```

Press Y and Enter to start the test. Press N and Enter to stop the operation.

Hard Disk Error Messages

The program displays two types of error messages while testing the hard disk: messages the program itself generates and those the controller generates.

The following message appears if you attempt to run the Performance Test with less than 128KB of memory:

```
INSUFFICIENT MEMORY FOR DATA TRANSFER
Minimum memory required is - 128KB
```

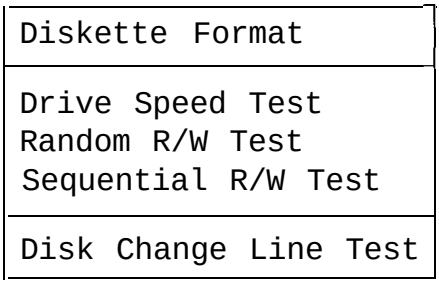
The controller displays one of the following messages when an error occurs during a diagnostics procedure:

```
Address mark not found
Attachment failed to respond
Bad ECC on disk read
Bad sector flag detected
Controller has failed
Drive activity failed
ECC corrected data error
Requested sector not found
Reset failed
Seek operation failed
Write fault on selected drive
```

When you see one of these error messages, check the drive, controller, cables, and power connectors. Remove and reinstall the hard disk cartridge. If you still get an error, contact your dealer.

Floppy Disk Diagnostics

The tests listed in the Floppy Disk submenu provide a complete diagnostics check of the system's diskette drive.



Floppy disk diagnostics tests may be destructive or non-destructive. Destructive diagnostics destroy data on the diskette. These tests include:

Diskette Format
Random R/W Test
Sequential R/W Test

Non-destructive diagnostics do not destroy data on the diskette. These tests include:

Drive Speed Test
Disk Change Line Test

The program requests the following parameter before performing a floppy disk test:

```
Floppy Disk Drive (A/B) ?
```

Diskette Format

This test checks the format of the floppy disk controller and drive. It does not format the diskette for any particular operating system.

This test destroys all data on the diskette.

Drive Speed Test

This test verifies how fast the floppy drive rotates a diskette.

Your internal, 1.44MB, 3 1/2-inch diskette drive should rotate the diskette at 300 rpm, allowing a tolerance of one percent.

An external, 1.2MB, 5 1/4-inch diskette drive should rotate a 1.2MB diskette at 360 rpm and a 360KB diskette at 300 rpm. Again, allow one percent tolerance.

To perform this test, insert a diskette into the drive you plan to test. Use a diskette you have formatted with the Diskette Format test.

Random R/W Test

This test checks the random seek capability of a floppy disk drive. It performs a random read/write operation on the diskette in the specified drive.

To perform this test, insert a diskette into the drive you plan to test. Use a diskette you have formatted with the Diskette Format test.

This test destroys all data on the diskette.

Sequential R/W Test

This test checks the sequential seek, read, and write capabilities of a floppy disk drive. It performs a sequential read/write operation on the diskette in the specified drive.

To perform this test, insert a diskette into the drive you plan to test. Use a diskette you have formatted with the Diskette Format test.

This test destroys all data on the diskette.

Disk Change Line Test

This test checks the status of the disk change line. This line should change when you insert or remove a diskette from a floppy disk drive.

To perform this test, insert a diskette into the drive you plan to test. Use a diskette you have formatted with the Diskette Format test.

Floppy Disk Error Messages

The program displays two types of error messages while testing the floppy disk drive: messages the program itself generates and those the controller generates.

The program may display the following error messages during the Disk Change Line test:

```
Warning - Change line in-operational
```

This message appears if the line is not working properly. This may indicate a problem exists with the floppy drive or the controller.

```
CHANGE LINE Not Available
```

The program displays this message if you attempt to run the Change Line Test on a drive that does not support a change line, such as a 360KB or 720KB drive.

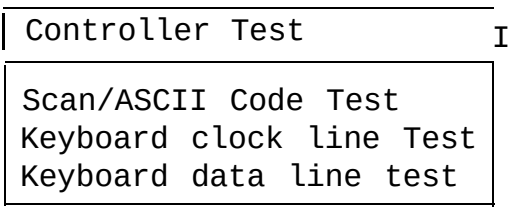
The controller displays one of the following messages when an error occurs during a diagnostics procedure:

```
BAD address mark
BAD CRC error
BAD DMA error
BAD SEEK error
Diskette WRITE PROTECTED
Media change error
Record not found
TIMEOUT error
```

These errors could occur because of a faulty drive, controller, or cable, or if you attempt to run a test on a write-protected or unformatted diskette.

Keyboard Diagnostics

The tests listed in the Keyboard submenu provide a complete diagnostics check of the keyboard.



Controller Test

This test checks the keyboard controller.

Scan/ASCII Code Test

This test checks the scan codes assigned to the keys on the keyboard.

When you select this test, the program displays the layout of your keyboard on the screen.

When you press a key, the program displays the scan code and the ASCII code of the key. See the "Keyboard Scan/ASCII Codes" section later in this appendix for a complete list of the scan codes and ASCII codes for your keyboard.

Press Ctrl Break at any time to end this test.

Keyboard Clock Line Test

This test checks the keyboard clock line.

Keyboard Data Line Test

This test checks the keyboard data line.

Video Diagnostics

The tests listed in the Video submenu provide a complete diagnostics check of the video adapter. Use these tests to check the operation of the LCD or monitor connected to your computer.

```
Adapter Test
Attribute Test
-------------------
80x25 Display Test
40x25 Display Test
320x200 Graphics Test
640x200 Graphics Test
Page Selection Test
Color Test
640x350 Graphics Test
640x480 Graphics Test
```

Adapter Test

This test checks the memory assigned to the display adapter.

Attribute Test

This test checks the display attributes of the video adapter. (In LCD mode, colors are converted to 16 shades of gray.)

80x25 Display Test

This test checks the 80x25 display feature of the display adapter.

40x25 Display Test

This test checks the 40x25 display feature of the display adapter.

320x200 Graphics Test

This test checks the 320x200 graphics display feature of the display adapter. (In LCD mode, colors are converted to 16 shades of gray.)

640x200 Graphics Test

This test checks the high resolution (600x200) graphics display feature of the display adapter.

Page Selection Test

This test checks the paging function of the display adapter.

Color Test

This test checks the background and border color mapping of the display adapter. (In LCD mode, colors are converted to 16 shades of gray.)

640x350 Graphics Test

This test checks the 640x350 graphics display with 16 colors. (In LCD mode, colors are converted to 16 shades of gray.)

640x480 Graphics Test

This test checks the 640x480 graphics display of the VGA adapter. (In LCD mode, colors are converted to 16 shades of gray.)

Video Error Message

The following error message may appear during the Adapter Test:

```
DISPLAY MEMORY R/W ERROR
```

The Adapter Test detected a read/write error in the display memory. This indicates a problem with the display controller. Contact your dealer.

Miscellaneous Diagnostics

The tests listed in the Miscellaneous submenu provide a complete diagnostics check of the parallel and serial ports.

```
Printer Adapter Test
Commu. Adapter Test
```

Printer Adapter Test

This test checks the parallel port and the printer by sending a pattern to the printer. If the printer does not print the pattern, the test has failed.

You may see one of the following error messages during this test:

```
Error - Printer Out of Paper
Error - Printer Not Selected
Error - Printer Interface I/O Error
Error - Time Out On Printer
```

Check that the printer is on-line, paper is loaded, and all connections are secure.

Communication Adapter Test

This test checks the serial port. Before running this test, you must connect a special RS-232C connector to the serial port. The connector requires the following settings:

RD and TD shorted

DSR and DTR shorted

CTS and RTS shorted

You can purchase an AT-type loopback connector from most electronic supply stores. This connector allows the test to send out and receive the same data for the purpose of the test.

This test checks the serial port for the following parameters:

9600 baud rate
Odd parity
2 stop bits
8-bit data length

This test first performs a reset function to check for all possible errors. Then it performs a send function followed by a receive.

You may see one of the following error messages during this test:

```
Error - Break Detected
Error - Framing error
Error - Overrun error
Error - Parity error
Error - Time out!
```

These error messages indicate a problem with the controller or with the test cable.

Make sure the test connector is secure.

If the error persists, contact your dealer.

Keyboard Scan/ASCII Codes

Keystroke	Scan Code	ASCII Code
Print Screen (SYSRq)	**	
Scroll Lock	**	**
-	29	60
Num Lock	**	**
-	0C	2D
Home	47	E0
↑	48	E0
Page Up	49	E0
-	0C	2D
F1	3B	00
F2	3C	00
F3	3D	00
F4	3E	00
F5	3F	00
F6	40	00
F7	41	00
F8	42	00
F9	43	00
F10	44	00
F11	85	00
F12	86	00

** No codes
- Ignored

Keystroke	Scan Code	ASCII Code
=	0D	3D
←	4B	E0
→	4D	E0
Num Lock;	4E	2B
Esc	01	1B
1	02	31
2	03	32
3	04	33
4	05	34
5	06	35
6	07	36
7	08	37
8	09	38
9	0A	39
0	0B	30
End	4F	E0
↓	50	E0
Page Down	51	E0
← (bksp)	0E	08
Tab	0F	09
q	10	71
w	11	77
e	12	65
r	13	72

** No codes
- Ignored

Keystroke	Scan Code	ASCII Code
t	14	74
y	15	79
u	16	75
i	17	69
o	18	6F
p	19	70
[	1A	5B
]	1B	5D
Enter	1C	0D
Ctrl	**	**
a	1E	61
s	1F	73
d	20	64
f	21	66
g	22	67
h	23	68
j	24	6A
k	25	6B
l	26	6C
;	27	3B
' (apostrophe)	28	27
Left Shift	**	**
z	2C	7A
x	2D	78

** No codes
- Ignored

Keystroke	Scan Code	ASCII Code
c	2E	63
v	2F	76
b	30	62
n	31	6E
m	32	6D
, (comma)	33	2C
	34	2E
/	35	2F
Right Shift	**	**
Alt	**	**
\	2B	5C
[space bar]	39	20
Caps Lock	**	**
Insert	52	E0
Delete	53	E0
Shift SysRq	**	**
Shift ` (~)	29	7E
Shift Num Lock	**	**
Shift Scroll Lock	**	**
Shift - (_)	0C	5F
Shift Home	47	E0
Shift ↑	48	E0
Shift Page Up	49	E0
Num Lock P	4A	2D

** No codes
- Ignored

Keystroke	Scan Code	ASCII Code
Shift F1	54	00
Shift F2	55	00
Shift F3	56	00
Shift F4	57	00
Shift F5	58	00
Shift F6	59	00
Shift F7	5A	00
Shift F8	5B	00
Shift F9	5C	00
Shift F10	5D	00
Shift F11	87	00
Shift F12	88	00
Shift = (+)	OD	2B
Shift ←	48	EO
Shift →	4D	EO
Shift Esc	01	1B
Shift 1 (!)	02	21
Shift 2 (@)	03	40
Shift 3 (#)	04	23
Shift 4 ($)	05	24
Shift 5 (%)	06	25
Shift 6 (^)	07	5E
Shift 7 (&)	08	26
Shift 8 (*)	09	2A

** No codes
- Ignored

Keystroke	Scan Code	ASCII Code
Shift 9 (()	0A	28
Shift 0 ())	0B	29
Shift End	4F	E0
Shift ↓	50	E0
Shift Page Down	51	E0
Shift ← (bksp)	0E	08
Shift Tab	OF	00
Shift Q	10	51
Shift W	11	57
Shift E	12	45
Shift R	13	52
Shift T	14	54
Shift Y	15	59
Shift U	16	55
Shift I	17	49
Shift O	18	4F
Shift P	19	50
Shift [({)	1A	7B
Shift] (})	1B	7D
Shift Enter	1C	0D
Shift Ctrl	**	**
Shift A	1E	41
Shift S	1F	53
Shift D	20	44

** No codes
- Ignored

Keystroke	Scan Code	ASCII Code
Shift F	21	46
Shift G	22	47
Shift H	23	48
Shift J	24	4A
Shift K	25	4B
Shift L	26	4C
Shift ; (:)	27	3A
Shift ' (")	28	22
Left Shift	**	**
Shift Z	2C	5A
Shift X	2D	58
Shift C	2E	43
Shift V	2F	56
Shift B	30	42
Shift N	31	4E
Shift M	32	4D
Shift, (<)	33	3C
Shift. (>)	34	3E
Shift / (?)	35	3F
Left Shift Right Shift	**	**
Shift Alt	**	**
Shift PrtSc SysRq	**	**
Shift \ (|)	28	7C
Shift [space bar]	39	20

** No codes
- Ignored

Keystroke	Scan Code	ASCII Code
Shift Caps Lock	**	**
Shift Insert	52	E0
Shift Delete	53	E0
Left Ctrl SysRq	**	**
Left Ctrl '	—	—
Left Ctrl Num Lock	—	—
Left Ctrl Pause (Break) —— exits test		
Left Ctrl –	0C	1F
Left Ctrl Home	77	E0
Left Ctrl ↑	—	—
Left Ctrl Page Up	84	E0
Left Ctrl –	0C	1F
Left Ctrl F1	5E	00
Left Ctrl F2	5F	00
Left Ctrl F3	60	00
Left Ctrl F4	61	00
Left Ctrl F5	62	00
Left Ctrl F6	63	00
Left Ctrl F7	64	00
Left Ctrl F8	65	00
Left Ctrl F9	66	00
Left Ctrl F10	67	00
Left Ctrl F11	89	00
Left Ctrl F12	8A	00

** No codes
- Ignored

Keystroke	Scan Code	ASCII Code
Left Ctrl =	—	—
Left Ctrl ←	73	E0
Left Ctrl →	74	E0
Left Ctrl +	—	—
Left Ctrl Esc	01	1B
Left Ctrl 1	—	—
Left Ctrl 2 (NUL)	03	00
Left Ctrl 3	—	—
Left Ctrl 4	—	—
Left Ctrl 5	—	—
Left Ctrl 6 (RS)	07	1E
Left Ctrl 7	—	—
Left Ctrl 8	—	—
Left Ctrl 9	—	—
Left Ctrl 0	—	—
Left Ctrl End	75	E0
Left Ctrl ↓	—	—
Left Ctrl Page Down	76	E0
Left Ctrl ← (bksp)	73	E0
Left Ctrl Tab	—	—
Left Ctrl Q (DC1)	10	11
Left Ctrl W (ETB)	11	17
Left Ctrl E (ENQ)	12	05
Left Ctrl R (DC2)	13	12

** No codes
- Ignored

Keystroke	Scan Code	ASCII Code
Left Ctrl T (DC4)	14	14
Left Ctrl Y (EM)	15	19
Left Ctrl U (NAK)	16	15
Left Ctrl I (HT)	17	09
Left Ctrl O (SI)	18	0F
Left Ctrl P (DLE)	19	10
Left Ctrl [(ESC)	1A	1B
Left Ctrl] (GS)	1B	1D
Left Ctrl Enter (LF)	1C	0A
Left Ctrl \	2B	1C
Left Ctrl A (SOH)	1E	01
Left Ctrl S (DC3)	1F	13
Left Ctrl D (EOT)	20	04
Left Ctrl F (ACK)	21	06
Left Ctrl G (BEL)	22	07
Left Ctrl H (bksp)	23	08
Left Ctrl J (LF)	24	0A
Left Ctrl K (VT)	25	0B
Left Ctrl L (FF)	26	0C
Left Ctrl ;	-	-
Left Ctrl '	-	-
Left Ctrl Left Shift	**	**
Left Ctrl Z (SUB)	2C	1A
Left Ctrl X (CAN)	2D	18

** No codes
- Ignored

Keystroke	Scan Code	ASCII Code
Left Ctrl C (ETX)	2E	03
Left Ctrl V (SYN)	2F	16
Left Ctrl B (STX)	30	02
Left Ctrl N (SO)	31	0E
Left Ctrl M (CR)	32	0D
Left Ctrl ,	—	—
Left Ctrl .	—	—
Left Ctrl /	—	—
Left Ctrl Right Shift	—	—
Left Ctrl Alt	**	**
Left Ctrl PrtSc SysRq	—	—
Left Ctrl [space bar]	39	20
Left Ctrl CapsLock	—	—
Left Ctrl Insert	—	—
Left Ctrl Delete	—	—
Left Alt SysRq	**	**
Left Alt '	29	00
Left Alt Num Lock	**	**
Left Alt Scroll Lock	**	**
Left Alt Home	—	—
Left Alt ↑	—	—
Left Alt Page Up	—	—
Left Alt –	82	00
Left Alt F1	68	00

** No codes
- Ignored

Keystroke	Scan Code	ASCII Code
Left Alt F2	69	00
Left Alt F3	6A	00
Left Alt F4	6B	00
Left Alt F5	6C	00
Left Alt F6	6D	00
Left Alt F7	6E	00
Left Alt F8	6F	00
Left Alt F9	70	00
Left Alt F10	71	00
Left Alt F11	8B	00
Left Alt F12	8C	00
Left Alt =	83	00
Left Alt ←	—	—
Left Alt →	—	—
Left Alt Esc	01	00
Left Alt 1	78	00
Left Alt 2	79	00
Left Alt 3	7A	00
Left Alt 4	7B	00
Left Alt 5	7C	00
Left Alt 6	7D	00
Left Alt 7	7E	00
Left Alt 8	7F	00
Left Alt 9	80	00

** No codes
- Ignored

Keystroke	Scan Code	ASCII Code
Left Alt 0	81	00
Left Alt End	—	—
Left Alt ↓	—	—
Left Alt Page Down	—	—
Left Alt ← (bksp)	—	—
Left Alt Tab	—	—
Left Alt Q	10	00
Left Alt W	11	00
Left Alt E	12	00
Left Alt R	13	00
Left Alt T	14	00
Left Alt Y	15	00
Left Alt U	16	00
Left Alt I	17	00
Left Alt O	18	00
Left Alt P	19	00
Left Alt [	1A	00
Left Alt]	1B	00
Left Alt Enter	1C	00
Left Alt Ctrl	**	**
Left Alt A	1E	00
Left Alt S	1F	00
Left Alt D	20	00
Left Alt F	21	00

** No codes
- Ignored

Keystroke	Scan Code	ASCII Code
Left Alt G	22	00
Left Alt H	23	00
Left Alt J	24	00
Left Alt K	25	00
Left Alt L	26	00
Left Alt ;	27	00
Left Alt '	28	00
Left Alt Left Shift	**	**
Left Alt Z	2C	00
Left Alt X	2D	00
Left Alt C	2E	00
Left Alt V	2F	00
Left Alt B	30	00
Left Alt N	31	00
Left Alt M	32	00
Left Alt ,	33	00
Left Alt .	34	00
Left Alt /	35	00
Left Alt Right Shift	**	**
Left Alt	**	**
Left Alt \	2B	00
Left Alt [space bar]	39	20
Left Alt Caps Lock	**	**
Left Alt Ins	—	—

** No codes
- Ignored

Keystroke	Scan Code	ASCII Code
Left Alt Del	—	—
Num Lock 7	47	37
Num Lock 8	09	38
Num Lock 9	0A	39
Num Lock 0	37	2A
Num Lock U	4B	34
Num Lock I	4C	35
Num Lock O	4D	36
Num Lock P	4A	2D
Num Lock J	4F	31
Num Lock K	50	32
Num Lock L	51	33
Num Lock ;	4E	2B
Num Lock M	52	30
Num Lock .	53	2E
Num Lock /	—	—
Num Lock Shift 7	47	00
Num Lock Shift 8	48	00
Num Lock Shift 9	49	00
Num Lock Shift 0	37	2A
Num Lock Shift U	4B	00
Num Lock Shift I	4C	00
Num Lock Shift O	4D	00
Num Lock Shift P	4A	2D

** No codes
- Ignored

Keystroke	Scan Code	ASCII Code
Num Lock Shift J	4F	00
Num Lock Shift K	50	00
Num Lock Shift L	51	00
Num Lock Shift ;	4E	2B
Num Lock Shift M	52	00
Num Lock Shift >	53	00
Num Lock Shift /	-	—

** No codes
- Ignored

Appendix E

Using OS/2

If you have purchased OS/2 (version 1.1) for your Equity LT-386SX, you need to install the LCD video driver Epson has provided on your Reference diskette to run OS/2 on the LCD display. The steps below describe how to install this file.

1. Follow the instructions in your MS-DOS 4.01 Installation Guide to install MS-DOS on your hard disk.

2. Make a duplicate of the OS/2 Installation diskette on a blank 1.44MB diskette using the DISKCOPY command. You can do this using the Epson MENU utility or the MS-DOS Shell, or you can type the following at the `C:\DOS>` prompt and press Enter:

   ```
   DISKCOPY A: A:
   ```

   (The DISKCOPY command is described in detail in your MS-DOS Reference Manual.)

3. Remove the diskette in drive A and insert your Reference diskette. To copy the BVSCALLS.DLL file from the Reference diskette to the hard disk, type the following and press Enter:

   ```
   COPY A:BVSCALLS.DLL C:
   ```

4. Remove your Reference diskette and insert the copy you made of the OS/2 Installation diskette.

5. To copy the BVSCALLS.DLL file from the hard disk onto the copy you made of the OS/2 Installation diskette, type the following and press Enter:

```
COPY  C:BVSCALLS.DLL  A:
```

6. Follow the instructions in your OS/2 Setup Guide to install OS/2 and use the copy of the OS/2 Installation diskette you made.

Adding the Driver After OS/2 Is Installed

If you used an external monitor to install OS/2 and you did not replace the OS/2 video driver, in order to use OS/2 with your LCD you must replace the original BVSCALLS.DLL file with the version of that file on your Reference diskette.

1. Create a new directory in the OS/2 directory on your hard disk. For this example, the new directory name is LCD. Type `CD \OS2` and press Enter to change to the OS2 directory. Then type `MD LCD` and press Enter to make a new directory.

2. Copy all the files from the DLL directory into the LCD directory.

3. Insert your Reference diskette into drive A and type the following and press Enter:

```
COPY  A:BVSCALLS.DLL  C:\LCD\
```

4. Type CD\ and press Enter to change to the root directory.

5. Type the following and press Enter:

```
COPY  CONFIG.SYS+CON:  CONFIG.SYS
```

6. Type the following and press Enter:

```
LIBPATH=C:\OSZ\LCD
```

7. Press F6 and then press Enter.

8. Reboot the computer.

You can now use OS/2 with the LCD. If you want to place the LCD driver in your DLL directory and remove the LCD directory you created, use the steps below.

1. Insert the Reference diskette into drive A. Type the following and press Enter:

```
COPY  A:BVSCALLS.DLL  C:\DLL\
```

2. Type `CD\` and press Enter to change to the root directory.

3. Type the following and press Enter:

```
COPY  CONFIG.SYS+CON:  CONFIG.SYS
```

4. Type the following and press Enter:

```
LIBPATH=C:\OSZ\DLL
```

5. Press F6 and then press Enter.

6. Reboot the computer.

7. Delete the files in the LCD directory, and then delete the LCD directory.

The reason this procedure is required after OS/2 has been installed is that OS/2 protects files currently in use and does not allow you to delete or replace them.

Appendix F

Using Other Reference Diskette Utilities

This appendix describes how to use the following utility files on your Reference diskette:

- LCD video drivers for Microsoft Windows/386
- LCD drivers for Microsoft Windows, version 3.0
- VGARAM (which copies the contents of the video BIOS into the MS-DOS memory area)
- SCROLL (which improves the LCD display for certain graphics scrolling programs).

Using Microsoft Windows/386

Epson provides LCD video drivers for Windows/386 on your Reference diskette. If you have purchased Microsoft Windows/386 (version 2.11), for your Equity LT-386SX, you can use these drivers to display Windows/386 on your LCD.

Follow the steps below to install these drivers:

1. Make a duplicate of the Windows/386 Setup and Build diskette on a blank 720KB diskette using the DISKCOPY command. You can do this using the Epson MENU utility or the MS-DOS Shell, or you can type the following at the C : \DOS>prompt and press Enter:

   ```
   DISKCOPY A: A:
   ```

   (The DISKCOPY command is described in detail in your MS-DOS Reference Manual.)

2. Be sure that your copy of Setup and Build is installed in the diskette drive. Type A: and press Enter to change to the diskette drive.

3. Type SETUP and press Enter to begin installing Windows/386.

4. When the Setup program displays a list of computers and asks you to choose the one on which you are installing Windows/386, select:

   ```
   COMPAQ 80386-Based Personal
   Computers and compatibles
   ```

5. The next menu shows a list containing the display adapter, keyboard type, and mouse that the Setup program has assumed the LT-386SX has. Use the down arrow key to highlight VGA in this list and press Enter.

6. The Setup program shows a list of display adapters. The last item on this list is:

   ```
   Other (requires disk provided by a
   hardware manufacturer)
   ```

   Use the down arrow key to highlight this selection, and press Enter.

7. When Setup asks you to insert the diskette for your display driver, insert your Reference diskette.

8. For a resolution of 640x480, select the following driver files:

   ```
   LCD48O.DRV
   LCD480.GRB
   LCD480.LGO
   LCD480.386
   LCD480.3EX
   ```

Using Microsoft Windows, Version 3.0

Epson provides drivers to allow Microsoft Windows (version 3.0) to function properly on the LCD. If you have purchased this version of Windows for your Equity LT-386SX, follow the steps below to install these drivers:

1. Follow the instructions in the Windows documentation and on the display to begin running the Setup program. Setup displays a menu similar to the one below:

```
Windows Setup

Setup has determined that the following components make
up your computer system. Please review the list below
to confirm that your system includes these hardware and
software components.

   Computer:           MS or PC DOS System
   Display:            VGA
   Mouse:              Microsoft, or IBM PS/2
   Keyboard:           Enhanced 101 or 102 key US and
                              Non US keyboards
   Keyboard Layout:    Standard (US)
   Language:           English (American)
   Network:            No network installed

   No Changes:         The above list matches my computer
```

2. Use the arrow key to highlight VGA and press Enter.

3. On the next menu that Windows displays, use the down arrow key to highlight the following selection:

   ```
   Other (requires disk provided by a
   hardware manufacturer)
   ```

4. Insert the Equity LT-386SX Reference diskette so that the Windows program can copy the appropriate LCD drivers into the Windows directory.

5. Continue with the Setup procedure according to the directions in the Windows documentation and on the screen.

Using VGARAM

The VGARAM utility loads the contents of the video BIOS into the MS-DOS memory area. This increases the display speed for the Equity LT-386SX.

Follow these steps to use VGARAM:

1. Insert your Reference diskette into the diskette drive.
2. Type A : and press Enter to log onto drive A.
3. Type the following and press Enter:

   ```
   VGARAM
   ```

4. The LT-386SX displays the message below:

   ```
   VGA mode is active.
   ```

The video BIOS remains in RAM until you reset or turn off the Equity LT-386SX.

Using SCROLL

The SCROLL utility improves the LCD display for running certain graphics scrolling programs. When you are running your application program, if you notice that the top half of the screen scrolls but the bottom half does not, you can use this utility.

Follow these steps to use SCROLL:

1. Insert your Reference diskette into the diskette drive.
2. Type A : and press Enter to log onto drive A.
3. Type SCROLL and press Enter. You see the following message:

```
Extended panel support enabled.
```

The SCROLL utility remains active in memory until you reset or turn off the Equity LT-386SX.

If you frequently need to use SCROLL, you may want to add this utility to your AUTOEXEC.BAT file. Once placed in the AUTOEXEC.BAT file, the utility becomes active every time you turn on or reset the computer. (See Chapter 3 for a complete description of the AUTOEXEC.BAT file and how it functions.)

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

1. At the MS-DOS command prompt in the root directory (C :\>), type the following and press Enter:

```
COPY AUTOEXEC.BAT+CON AUTOEXEC.BAT
```

2. Type SCROLL and press Enter.
3. Press F6 and then Enter.

Glossary

80386SX

A CMOS integrated circuit, or chip; the central processing unit (CPU) of your Equity LT-386SX. The CMOS-type chip provides low power consumption.

80387SX

A special-purpose CMOS integrated circuit used to assist the 80386SX and speed up certain kinds of mathematical calculations. The computer's motherboard has a socket to accommodate an optional 80387SX math coprocessor.

AC adapter

The device that converts AC voltage from a wall socket into the proper DC voltage to power your Equity LT-386SX. 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.

Backup

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

Base memory

The amount of memory in the computer below **1MB** that is available to MS-DOS and application programs--usually 640KB. Also called main memory.

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.

BIOS

Basic Input/Output System. Routines in ROM memory that handle basic input/output functions of the operating system.

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 bits (usually eight). In the ASCII encoding system, a byte represents one character of data.

Character

Any number, letter, punctuation mark, or graphic symbol which can be represented by one byte of data.

Chip

A hardware component of your system (formally known as an integrated circuit). Examples of chips include memory chips and the 80386SX microprocessor.

Clock speed

See Execution speed.

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-386SX 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.

Copy-protected program

A type of program that cannot be copied. Some copy-protected programs require you to leave the program diskette in the diskette drive while you are using it. Some also require the computer to be running at 8 MHz instead of **16 MHz.**

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-386SX where you plug in the cable of a VGA monitor.

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. Also, DEVICE is the MS-DOS (or OS/Z) command you use to install a device driver in the CONFIG.SYS file.

Diagnostics

The tests and procedures the computer performs to check its internal circuitry and set up its configuration.

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-386SX has one set of eight DIP switches.

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 ½-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-386SX can run at 8 MHz or 16 MHz. Also called clock speed or operating speed.

Expanded memory

Memory that specially written MS-DOS application programs can use with an Expanded Memory Specification (EMS) device driver, e.g., EMM386.SYS.

Expansion slot

A particular kind of connector that can accommodate an option card. You can use the expansion slot in your Equity LT-386SX, for example, to connect a 2/3-size, IBM AT-compatible option card, such as a LAN card or FAX board.

Extended memory

Memory above the 1MB that is accessed by the protected mode of the 80386SX microprocessor and is available to some application programs and some operating systems.

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

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 ½-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.

LED

Light-emitting diode. An indicator light like those used for the LT-386SX battery and external diskette drive.

LIM EMS 4.0

Version 4.0 of the Lotus/Intel/Microsoft Expanded Memory Specification-a protocol that allows certain application programs to use paged memory. To take advantage of LIM EMS 4.0, you must have the file EMM386.SYS on your hard disk and must modify the CONFIG.SYS file. See Chapter 3 of this guide.

Log on

In MS-DOS, this is to make a drive or directory the current drive or directory.

Main memory

See Base memory.

Main unit

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

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-386SX operates at 8 or 16 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 card

An optional card that adds 2MB of memory to your computer.

Memory-resident program

A program that remains in RAM so that you can access it while another program is running. An example is the SETLCD program when you start it by typing `SETLCD/R` and pressing Enter.

Microprocessor

A CPU chip, **such** as the 80386SX. 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-386SX. NiCad stands for nickel-cadmium.

Numeric keypad

The number keys grouped on the right side of the keyboard. The keys used for the keypad show numbers and characters in boxes in the lower right portion of the key cap. Keypad functions are activated by turning on Num Lock. To access the scroll functions shown along the front side of the key, press Shift with the appropriate cursor key while Num Lock is on.

Numeric coprocessor

See Coprocessor.

Operating speed

See *Execution 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. You can access the expansion slot on the LT-386SX 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

The area defined on a hard disk to run an operating system; to divide a hard disk into separate drives.

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.

Power-on self-test

See Power-on diagnostics.

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. Also, the port used to connect an external VGA monitor is labeled RGB VIDEO.

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-386SX.

Scratch RAM

A portion of RAM used for running OS/2, VDISK, or certain other programs. The SETUP menu gives you the option to choose BIOS stack area 30:00 or the top of base memory as the location for scratch RAM.

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).

SETUP

A program you can run when you turn on or reset the computer. In SETUP you define the configuration settings for your Equity LT-386SX.

Shadow RAM

The feature provided by the Equity LT-386SX that allows you to copy ROM BIOS and video ROM to RAM to speed up processing.

Shell

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

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).

Standby mode

A power-saving feature you can define in SETUP and enable or disable with a hot key sequence (Ctrl-left Shift-L). After the computer has not received any keyboard input for the period of time defined in SETUP, it turns off the LCD backlighting, reduces the CPU speed to 8 MHz, and decreases the VGA controller clock rate. Press any key to terminate standby mode.

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. Also see Parameter and DIP switch.

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.

VGA

Video Graphics Array. A type of high-resolution display adapter that can display monochrome text at up to 720x400 resolution, 16-color graphics at 640x480 resolution, or 256-color graphics at 320x200 resolution.

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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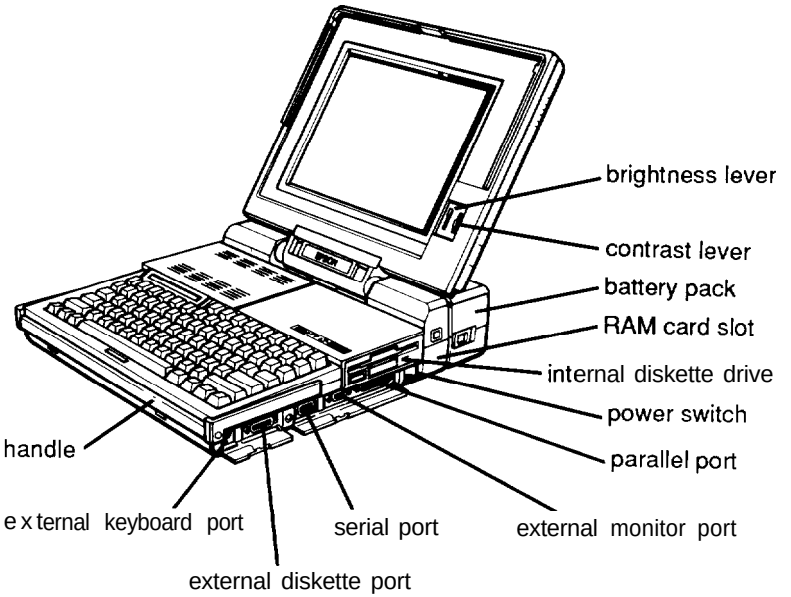
brightness lever
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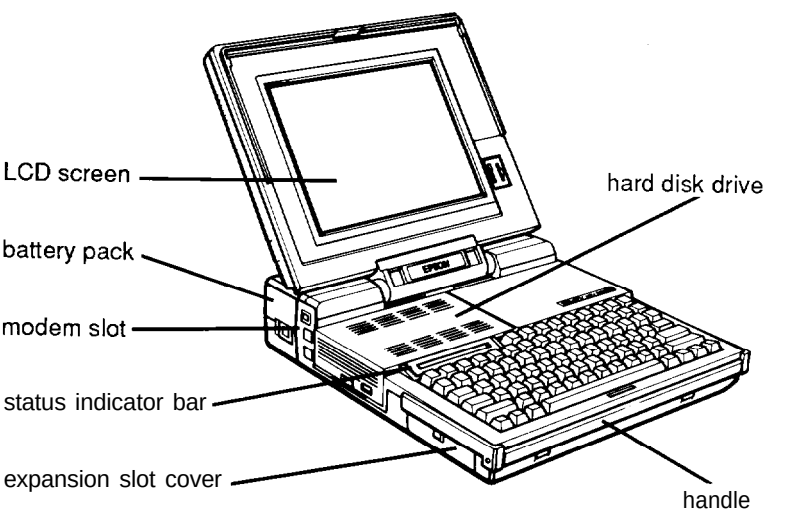
LCD screen
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