LCD PORTABLE COMPUTERS

USER'S MANUAL
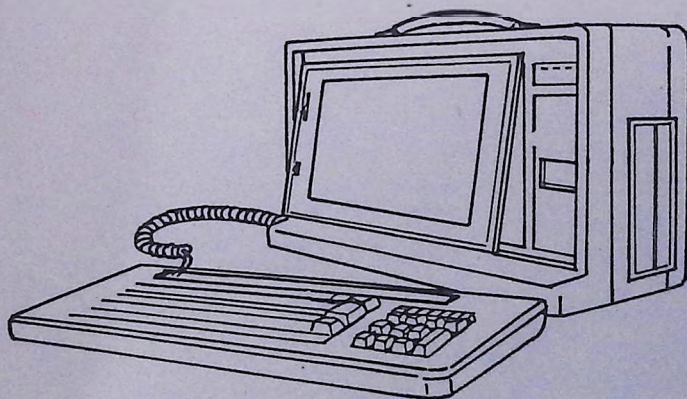
LCD PORTABLE COMPUTER USER'S MANUAL

FCC NOTICE

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

— CONTENTS —

CHAPTER 1 INTRODUCTION

LCD Portable Computer series is a state-of-the-art and high technology product. This compact integrated and light-weight system provides you a move convenient environment in portability, versatality and reliability.

LCD Portable Computer is designed for these people who need to carry their business outside of the office. This product allows you to take a great adventage of the latest technology from 8088, 80286, 80386 compatible machine, no matter where you are. Since this portable computer is using standard PC components, it is very easy to maintain and expand.

Computer Specification

CPU   : 8088, 80286 or 80386.
Disk drives   : two 5¼" half-high disk drive space.
Display   : High resolution Liquid Crystal Display (LCD)
                  80 Columns and 25 lines.
                  640 horizontal and 200 vertical pixels.
Display controller : Dual LCD or standard monitor display.
Keyhoard   : 86 Keys detachable keyboard.
Power supply   : 200 watts switching power supply with AC Cable. Input Electrical power could be run from 110V to 240V AC.

Weight   :   9 Kgs (include dual disk drives)

Dimension   :   40W x 24H x 20.7D cm.

* (reference only)

Important Notes

1. Read all of these instructions.
2. Save these instructions for later use.
3. Follow all warnings and instructions marked on this product.
4. Do not use liquid cleaners or aerosol cleaners.
5. Ventiltion slots and openings on cabinet must not be blocked or covered.
6. This computer uses open ended design which makes it adaptible to other electronic boards, peripherals and options designed for PC or compatibles. Please refer to enclosed manual for further details about you model of electronic board.
7. It is possible that raido and television interference can occur when running the system therefore use the equipment away from radios and televisions or other similar equipment.
8. Reinsert protection card or blank disk into drives before transporting.
9. Do not expose it to direct sunlight, extreme temperature or high humidity for long.
10. Latch foldaway keyboard firmly before transporting.
11. Do not disassemble the computer yourself. If serviceing is required, send it to an authorized service center instead.

Parts Identification

Here's how the standard hardware looks when the system is set up.
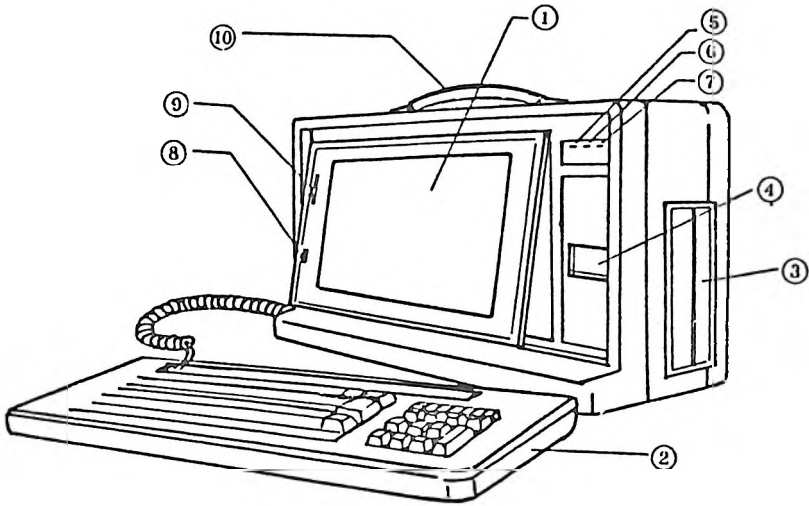
① LCD Display   ⑥ Turbo status indicator
② Keyboard   ⑦ Hard Disk indicator
③ Disk Drives   ⑧ Reverse switch
④ Tilt button   ⑨ LCD contrast
⑤ Power status indicator   ⑩ Handle

Figure 1−1

1. LCD Display

   high-contrast backlight LCD display

   80 x 25 text display

   640 x 200 graphic display.

2. Keyboard

   Detachable 86 keys, low profile soft touch keytops, with enhanced 12 programble keys.

3. Disk drives

   Two 5¼" floppy disk drives or

   One hard disk drive and one floppy disk drive.

4. Expansion window

   Push down the window holder to remove the cover for connecting other computer periphery. (fig. 2-5)

5. AC Power inlet

   Insert AC power cord with jack into this inlet. (fig. 1-3)

6. System unit power switch

   Turns the computer on or off. (fig. 1-3)

7. Keyboard latch button

   Press both buttons to release the keyboard. (fig. 2-3)

8. Keyboard connection jack

   Connect the coiled cable plug from the keyboard into this jack. (fig. 2-5)
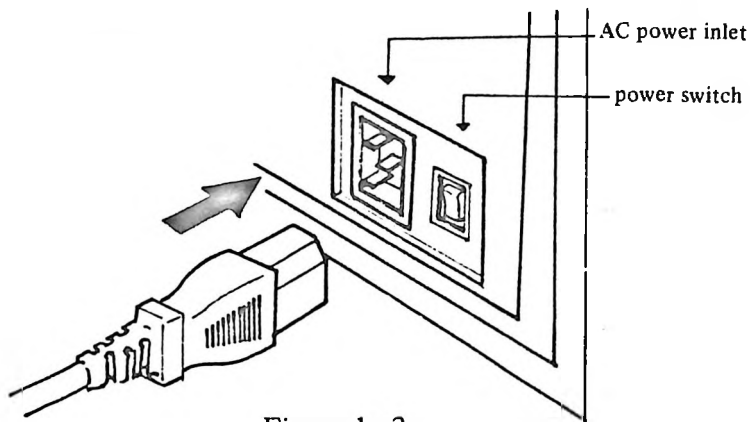
Figure 1—3

9. **Tilt button**

For easy viewing the screen can be tilted to different angles by pressing gently on the screen button. Push the screen buttom gently to revert to vertical position.

10. **Power status indicator**

Lights when the computer is turned on.

11. **Turbo status indicator**

When the computer is in Turbo mode, this indicator lights. To get into Turbo mode. Please refer to your system board manual for detail information.

12. **Hard Disk indicator**

When the computer accesses the Hard Disk, this indicator is ON.

13. Reverse switch

    This switch changes background of screen. The cursor is not seen in reverse mode. (UP).

14. LCD contrast

    The contrast between the screen imprints and background can be adjusted by sliding the control located on the left of the screen.

15. Handle

    To carry the unit around.

CHAPTER 2 INSTALLATION

Unpacking

Carefully unpack the Computer. Do not use a sharp or
pointed instrument to open the box, as this may pierce the
protective covering and scratch the machine. Remove the
computer from the shipping box and inspect for external
damage. If any damage is noted, please notify dealer and file
a claim with the shipping carrier. Do not discard the carton
and any of the related packages as these should be used to
return the machine to dealer in the event of a hardware mal-
function. Please repack as received. Assuming that there is
no damage, position the computer in such a way that there is
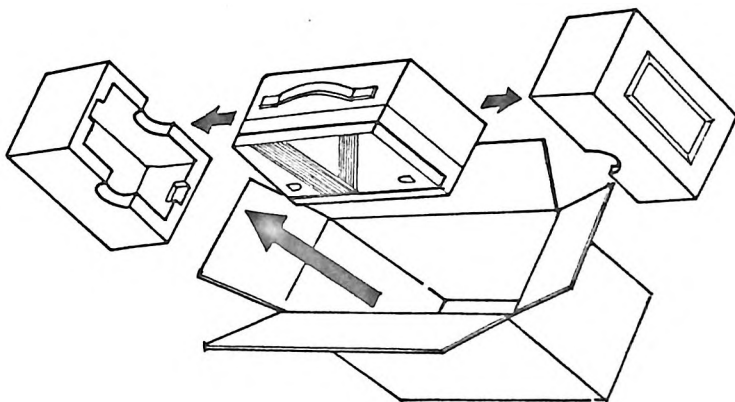clear access to the front and rear panels. (fig. 2-1)

Figure 2—1

Setting up your computer

The compute must be installed correctly before use. All devices have a cable that attaches either directly to the system unit or indirectly to another device that in turn attaches to the system. The illustration below shows you what the stantard hardware looks like when the system is closed. As you can see, the entire system can be carried by the handle. (fig. 2-2)
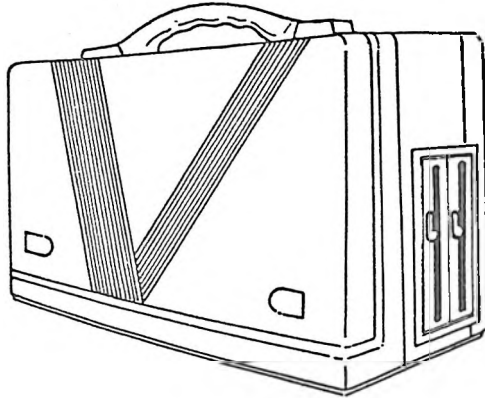
Figure 2—2

1. Press both keyboard latch buttons on the top until the keyboard is released. Be careful not to let the keyboard fall. Guide it away from the main unit and place it in-front of the system. (fig. 2-3)

2. The keyboard can be inclined for typing comfort, to tilt the keyboard. flip back the two pivotal legs at the bottom.
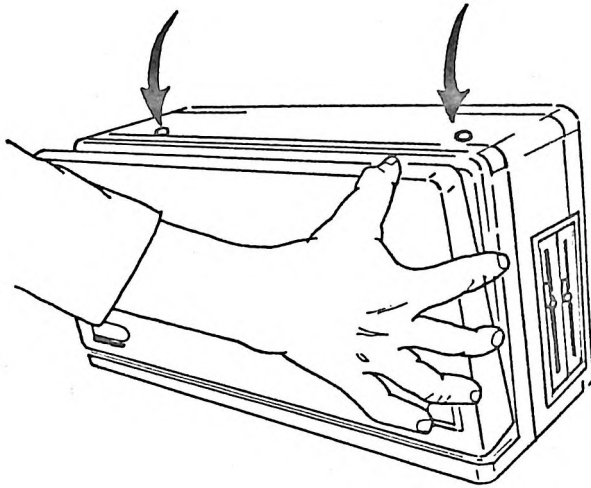
Figure 2—3

3. Connect the keyboard unit to the keyboard connection jack on the left side using the coiled cable. (fig. 2-5)

Expansion window

Keyboard connection jack
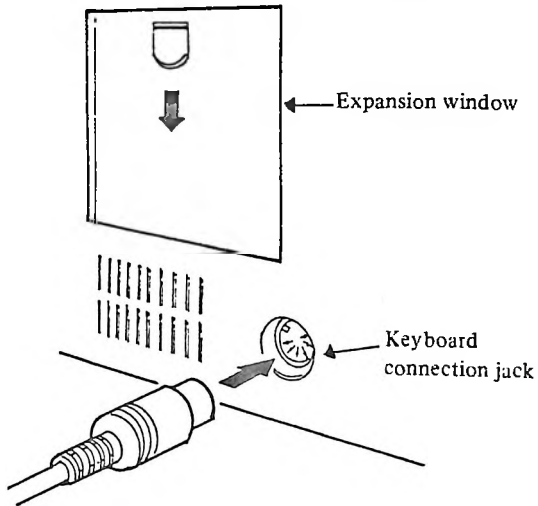
Figure 2—5

4. Press "LCD tilt notch", screen module will automatically spring out. You can then adjust screen to a suitable viewing angle. (fig. 2-6)
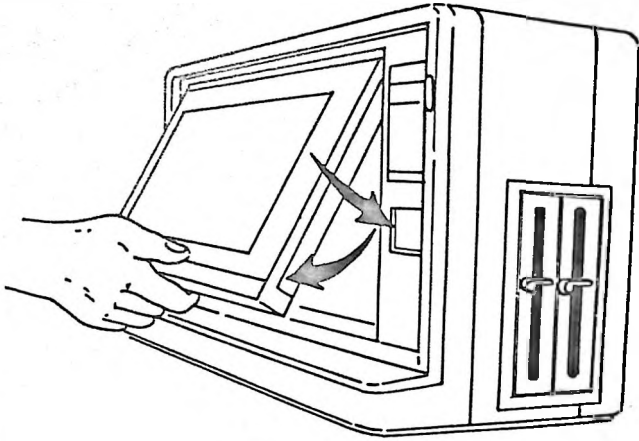
Figure 2—6

5. The computer is supplied with a detachable power cord. Insert the AC power cord with jack into the AC power inlet located on the rear panel of the unit. In order to avoid an electronic shock, be sure to first insert the cord into this inlet before plugging its other end into a wall outlet.

6. Remove the head-protection card from Floppy disk drive. don't throw the card away you will need to reinsert it before transporting the computer. To remove a disk. simply release the lock lever on the disk drive by turning it counterclockwise. Then insert your MS-DOS diskette to drive A and turn the drive lever in the clock-wise direction to close the disk drive. (fig. 2-7)

2—4
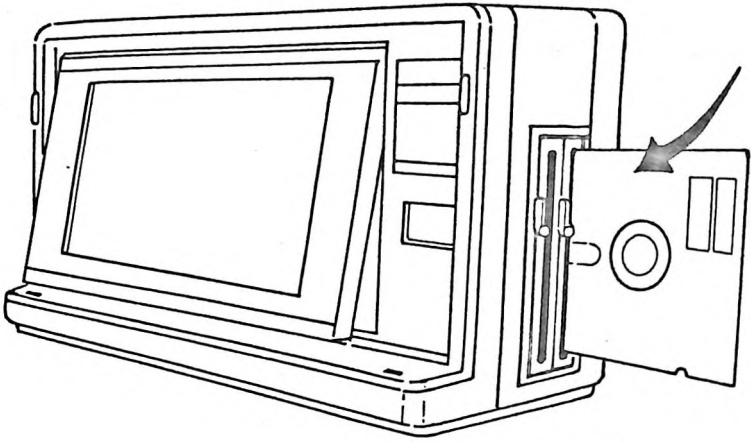
Figure 2—7

7. Flick the power switch to the ON position.

After switching ON the computer power the selftest Diag-
nostic program will do a RAM countdown. A few soconds
later DOS will be loaded from drive A. If nothing appears
adjust screen angle and contrast for best effect.

> Current date is tue 1-01-1984
> Enter new date (mm-dd-yy):

Type the current date, for example 8-15-1987, and press the
Enter key. Be sure to insert a hyphen or slash between each
item. If you input the date improperly, the following mess-
ages will be displayed.

> Invalid date
> Enter new date:
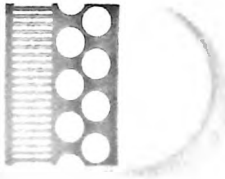
Reinput the date according to correct syntax, inserting hyphens between month, date and year. Next, the computer asks you to input another item:

Current time is 0:00:19.87
Enter new time:

Input the current time by typing on the keyboard, for example, 13:05:00. If you feel that entering the date and time is too complicated, simply press the Enter key at each prompt. The computer will accept this; however, a recording for the update of each file will not be made.

The following prompt will appear.

Microsoft(R) MS-DOS(R) Version x.xx
(C)Copyright Microsoft Corp
1981–1986
A>–

This shows that the DOS is now ready to accept and execute your command entry. This letter "A" means that the computer is ready to access a disk in disk drive A as a system drive. We call this drive A the default drive.

If you are using a dual drive system, you can change the default drive. If you wish to access the disk inserted into drive B, type:

B:

and press the Enter key. The prompt B> will be indicated. To return the default drive to A, type:

A:

and press the Enter key. The prompt A> will be indicated again and the computer accesses drive A.

If your second disk is a Hard drive, do not close the lever of drive A. Switch ON power or press the DEL key while holding down the CTRL and ALT keys. This resets the computer. MS-DOS then takes control.

Initial System Set Up (for 80286 or 80386 system)

If you get following message, please follow the initial Set up procedure described below prior to using the computer for the first time.

CMOS RAM ERRO, CHECK BATTERY/RUN SET UP PRESS F1 KEY . . .

The information you set is stored in the battery backed up RAM, and the computer refers to this information whenever it is turned on to obtain the correct installation information. After switching on the computer power, insert the Diagnostic disk into Drive A and press F1.

Diagnostics
Version 1.XX

SELECT AN OPTION

0–SYSTEM CHECKOUT
1–FORMAT DISKETTE
2–COPY DISKETTE
3–PREPARE SYSTEM FOR MOVING
4–SETUP
9–END DIAGNOSTICS

SELECT THE ACTION DESIRED
?

Press the 4 key to select "Setup", then press the Enter key.

1. Setting the date

   Enter current date in month, day and year order. If the indicated date is correct, simply press the Enter key.

2. Setting the time

   Enter the current time in hour, minute and second order. Press the Enter key if you want the displayed time unchanged. Since the clock function of the computer is backed up by the internal battery, the date and time will always be updated even if the computer is turned off.

3. Diskette Drive Type

   Next, enter the type of disk drives your computer has.

2–8

Select the appropriate indication according to the disk drive you are using. To select high capacity for your 1.2 MB floppy drive.

4. Hard disk drive type
    This item determines the type of hard disk drive. Like the floppy disk drive. First, enter the type of the first hard disk drive (C) typing a number ranging from 1 to 15. Typing 2 for example, corresponds to a 20M byte disk drive.

5. Display type
    This item notifies the computer of the display type you are using. For using LCD portable computer please select COLOR/GRAPHICS mode and recommend 80 Columns mode.

6. Main memory
    This item notifies the computer of the amount of memory the main board has   To select "512K" or "640K" as your system board has.

7. Expansion memory
    If your computer has an expansion memory adapter, enter the correct memory size at this time. Select the appropriate value.

Exit from Setup Operation

When installation information concerning your computer is

set correctly. You may exit from the program any time one of the above items are being set. In this case, you are prompted that:

All Data is right? (Y/N)

Press the Y key if installation information is correct. Otherwise, press the N key to repeat the same procedure. If you press the Y key, the computer is reset and it begins to try booting system disks.

Once this procedure is completed, you no longer need to perform Initial Setup before starting the MS-DOS system in later sessions. If you do not understand how to set up your computer please contact your nearest dealer for detail information.

Closing Down

The computer is easily transported. It folds up in seconds and is light enough to carry from one location to another. A dust cover is available to protect the system for extensive travel use.

The following steps must be followed for packing up the system for transportation. Be sure that all power is turned off before you begin to close down the system for transportation.

1. Disconnect any options such as printer or color CRT, then close up the expansion slot window.

2. Disconnect the keyboard from the main unit and put the cable in the slot in front of keyboard base.
3. Disconnect the power cord.
4. Replace the head-protection card into floppy disk drives and lock lever on disk drive.
5. If the screen is tilted out, return it to the vertical position and fold the keyboard legs if they are open.
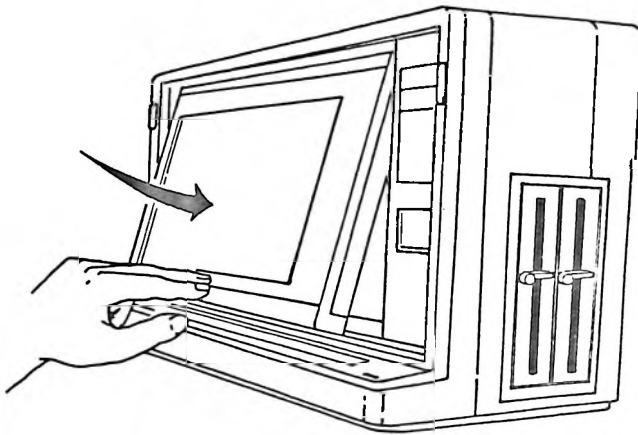
Figure 2−8

6. Push the keyboard toward the main unit until the latches at top of main unit snap shut. (fig 2-9)
7. Put the power cord, manual and your accessory into the side pocket of the dust cover.
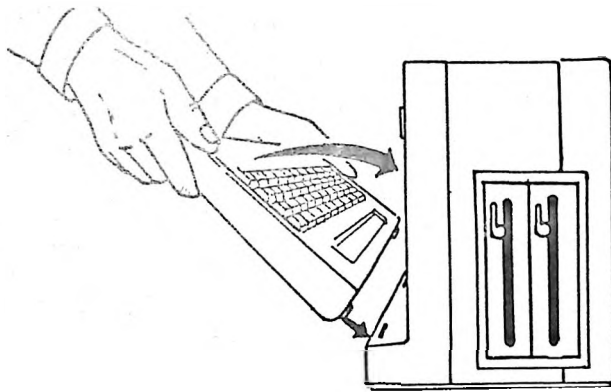
Figure 2—9

Installation of internal options

Notes:

1. Turn the system unit power switch OFF, and unplug system unit or all other options from wall outlet.
2. Disconnect keyboard cable and latch foldaway keyboard firmly before installation.
3. For the detail of System board and Interface card please read enclosed system board and add-on board manual.

Prior to mounting any of the optional item, the rear cover of the main unit must first be removed using the following procedure. (fig. 2-10)

1. Put unit on flat surface rear-up.
2. Using a Philips head screwdriver to remove the cover mounting screws.

2—12
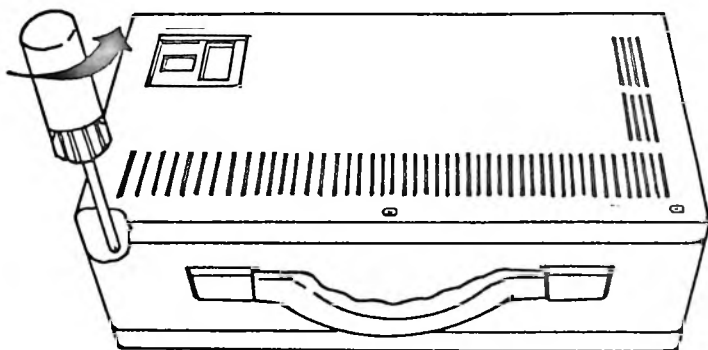
Figure 2-10

3. Push up on the corners until the rear panel swings.

4. Pull the panel hinges out of the main cabinet and place the rear panel aside.

Look at the inside left rear of your system unit. There are six expansion slots. They are designed to accept edge connector of various add-on cards. Each slot contains 62 contacts and is usually refered to as a PC expansion slot. (fig. 2-11)

Disk Drive
Disk Driver Controller
Bracket   Power Supply
LCD Display
Card   I/O Card

Figure 2-11

2-13
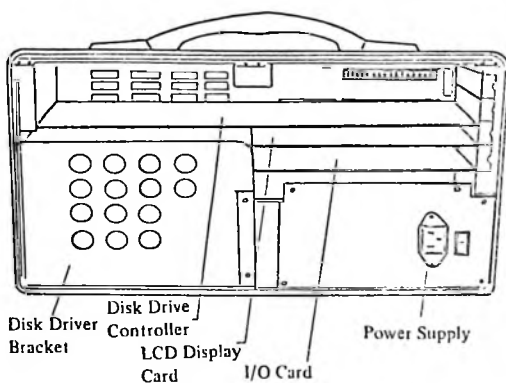
Unfasten the screw securing the cover of expansion slot and
save the removed screw for use when installing the add-on
card. (fig. 2-12)

Holding the add-on card by its top, firmly push it into any
unused expansion slots to make certain the adapter is in the
support bracket.
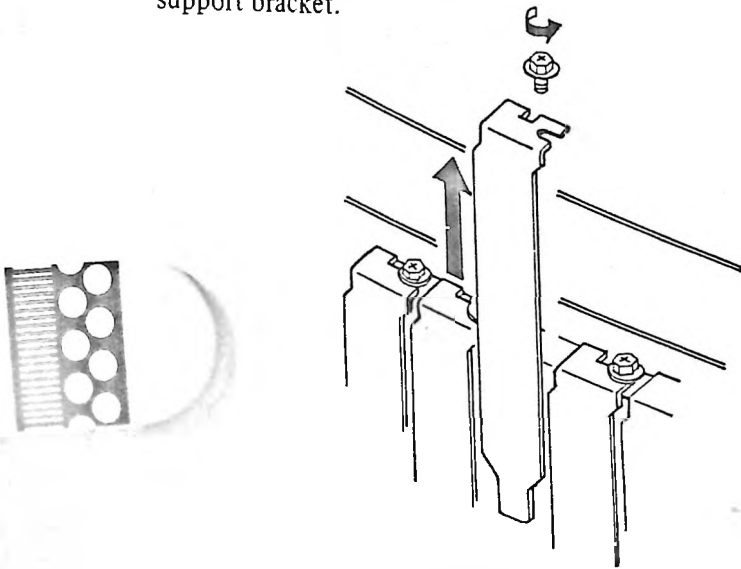
Figure 2-12

An 8087, 80287 co-processor can be added to the system for
faster processing and improved mathematical output. Please
refer to system board manual to find out the socket for co-
processor, insert the co-processor into the socket, make sure
that the notch is facing the same direction as the main pro-
cessor. Press down both edges to make certain the co-
processor is fully inserted.

Once you have installed options, replace the rear panel as
follows using a Philips head screwdriver:

1. Insert the panel hinges into the main unit as shown
   below:
2. Close the panel until it snaps shut. Be careful when
   closing the panel do not pinch any cable inside the main
   unit.
3. Fasten the two corner screws and the middle screw.
   (fig. 2-13)
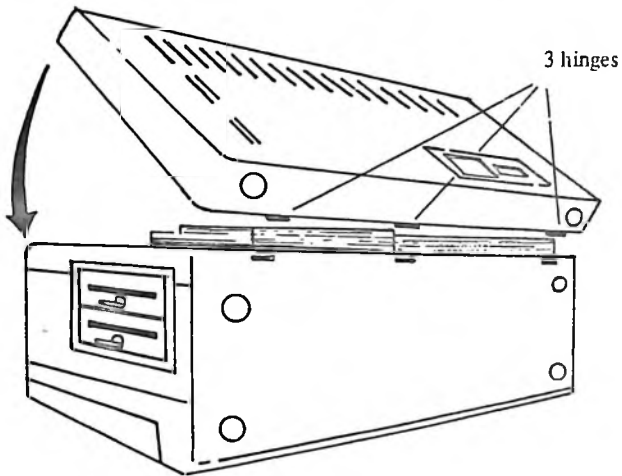
Figure 2—13

CHAPTER 3   KEYBOARD

The keyobard has a permanently attached cable that connects to a 5-pin connector, which is connected to the computer system. This keyboard has 86 keys, arranged in three major groupings. The standard typewriter keys are the large block of light-colored keys right in the middle of the keyboard. Surrounding them on either side are two columns of dark-colored general control keys, many of which are also found on typewriters. At the right edge of the keyboard is a block of keys that serves two purposes. They can function as a numeric keypad like that of a calculator, or can be used for cursor control and screen edit.

On the top edge is a row of keys called function keys or sof keys. The effect and meaning of the keys can be changed by programming.

The keyboard interface is designed for maximizing the flexibility of the system software in defining certain keyboard operations. This is accomplished by having the keyboard return scan code, rather than American Standard Code for Information Interchange (ASC II) code. In addition, all keys are typematic and generate both a make and a break scan code.

This keyboard is divided into three general areas:
1.   12 function keys, from F1 through F12, are on the top side of the keyboard.

2. "Typewriter" area is in the middle. That is where you find the regular letter and number keys.

3. The number keypad, similar to a calculator keyboard, is on the right side of the keyboard. (fig. 3-1)
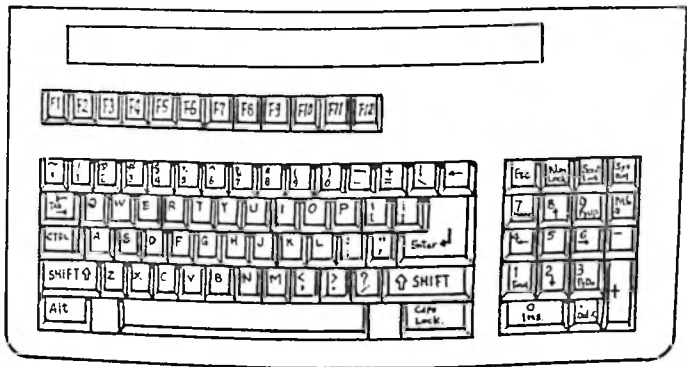
Figure 3-1

Function Keys

The function keypad is designed to relieve you of repetitive entry of typed commands and control functions. The single key entry replaces these ACTIONS as described below.

F1: LIST &	F5: CONT	F9 : KEY &
F2: RUN	F6: "LPT1	F10: SCREEN 0,0,0
F3: LOAD"	F7: TRON	F11: NC
F4: SAVE"	F8: TROFF	F12: NC

Remarks:

1.　& means come with blank space.
2.　Normally F11, F12 are no use. but some application programs may use them for unique purposes, consult their operation instructions for specific details.

Numeric Keypad

1.　Num Lock

Usually you will be using the numeric keypad keys fu. their functions with the program editor. These keys allow you to move the cursor up, down, right, and left. But you can use the Num Lock key to set the numeric keypad so it works more like a calculator keypad. Pressing the Num Lock key shifts the numeric keypad into its own upper-shift mode. In the numeric mode each of the light-colored keys in the numeric keypad generates one of the numerals 0 through 9, or a decimal point, as indicated on the top of the key. The LED indicator will light when the keyboard is in numeric keypad state. (fig. 3-2)

Figure 3—2

2. Cursor-Up

Moves the cursor up to the next display line. If the cursor is already the top of the screen, this key has no effect.

3. Cursor Down

Move the cursor one position down.

4. Cursor Left

Moves the cursor one position left. If the cursor advances beyond the left edge of the screen, the cursor will move to the right side of the screen on the proceeding line.

5. Cursor Right

Moves the cursor one position right. If the cursor advances beyond the right edge of the screen, the cursor will move to left side of the screen on the next line down.

6. Home

Moves the cursor to the upper left-hand corner of the screen. When both Ctrl and Home keys are pressed, the screen is cleared and the cursor moves to the upper left-hand corner of the screen.

7. End

Moves the cursor to the end of the logical line. Also, when press both Ctrl and End keys, erases to the end of logical line from the current cursor position. All physical screen lines are erased until the terminating Enter is found.

8. PgUp

Under the program editors and word processors comment, press both Ctrl and PgUp brings you to the top of the document in the home position.

9. PgDn

Under the program editors and word processors comment, press PgDn key can scroll forward 25 lines and home cursor. And when press both Ctrl and PgDn can delete from cursor to EOS (End of Screen) under the test.

10. Ins

Sets insert mode. If insert mode is off, then pressing this key will turn it on. If insert mode is already on, then you will turn it off when you press this key. When you are in insert mode, the cursor covers the lower half of the character position.

When insert mode is on, characters above and following the cursor move to the right as typed characters are inserted at th current cursor position. After each key stroke, the cursor moves one position to the right. Line folding occurs; that is, as characters advance off the right side of the screen they return on the left on a subsequent line.

When inert mode is off, any character typed replaces existing character on the line.

Besides pressing the Ins key again, insert mode will also be turned off when you press any of the cursor movement keys or the Enter Key.

11. Del

Deletes the character at current cursor position. All characters to the right of the deleted character move one position left to fill in the empty space. Line folding occurs: that is, if a logical line extends beyond one physical line, characters on subsequest lines move left one position to fill in the previous space, and the character in the first column of each subsequent line moves up to the end of the proceeding line.

The main keyboard

The typewriter area of the keyboard behaves much like a standard typewriter. All the letters are there, in their usual places. The numbers 0 through 9 are on the top row, along with some special characters. Capital letters and the spacial characters shown above the numbers on the number keys are displayed by holding down either of the Shift keys and pressing the desired key. The functions of some special keys are described as belows. (fig. 3-3)
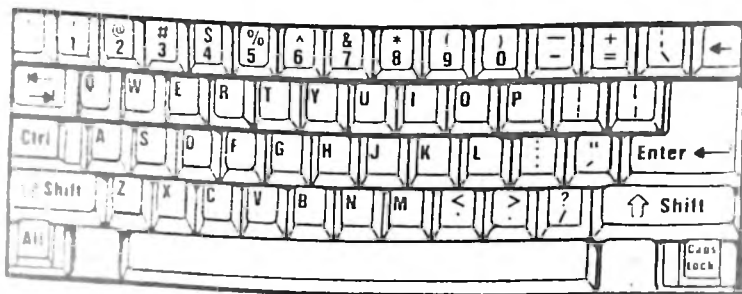
Figure 3-3

1. Caps Lock

This keyboard does not have a normal Shift Lock key. The Caps lock key is similar to a Shift Lock key, but it only gives you capital letters, and will not give you the uppershift characters on the numberic or other keys. After you press this key, you will continue to get capital letters until you press it again. You can get lowercase letters when in Caps Lock state by pressing and holding one of the Shift keys. When you release the Shift key, you will go back to Caps Lock state. Besides, the LED indicator will light when Caps Lock is on.

2. Alt

The Alt key enables easy entry of BASIC statement keywords. This key allows you to type an entire BASIC keyword with a single keystroke.

The BASIC keyword is typed when the Alt key is held down while one of the alphabetic keys A — Z is pressed. Keywords associated with each letter are summarized below. Letters not having reserved words are noted by "NO AVAILABLE".

A	AUTO	I	INPUT	Q	NO WORD
B	BSAVE	J	NO WORD	R	RUN
C	COLOR	K	KEY	S	SCREEN
D	DELETE	L	LOCATE	T	THEN
E	ELSE	M	MOTOR	U	USING
F	FOR	N	NEXT	V	VAL
G	GOTO	O	OPEN	W	WIDTH
H	HEXS	P	PRINT	X	XOR

3. [Shift]

Capital letters and the special characters shown above the numbers on the number keys are displayed by holding down either of the Shift keys and pressing the desired key.

4. [Ctrl]

Ctrl stands for "Control." The control key modfies the effect of another key when the two are pressed at the same time.

Ctrl-G
Bell. When press these two keys, the speaker beeps.

Ctrl-Scroll Lock
Breek. This stops your program while it is running and identifies the line where the program stopped.

Ctrl-Num Lock
Pause. This stops your program; press any key to continue.

Ctrl-Home
Clear Screen. Removes all information on the screen and moves the cursor to the upper left corner.

Ctrl-Alt-Del
System Reset. Holding both the Ctrl and the Alt keys down, then press the Del dey reloads your system or program diskette (An error will appear if you have a data diskette loaded.)

Alt-Esc

When you switch on the power of your computer, the
keyboard buzzer will work automatically and generate a
sound when you press a key. But you can press this two
key to switch off the buzzer. If you repeat to press
this key again, then the buzzer will automatically work
again.

5. Tab

Moves the cursor to the next tab stop. Tab stops occur every
eight character positions; that is, at positions 1, 9, 17, etc.

When insert mode is off, pressing the Tab key moves the
cursor over characters until it reaches the next tab stop.

When insert mode is on, pressing the Tab key inserts blanks
from the current cursor position to the next tab stop. Line
folding occurs as explained under Ins.

6. Esc

When pressed anywhere in the line, erases the entire logical
line from the screen. The line is not passed to BASIC for pro
processing. If it is a program line, it is not erased from the
program in memory.

7. Backspace

The Backspace key behaves somewhat differently from the
Backspace key on a typewriter. It not only backspaces, it
erases what you have typed as well. You should use the
Cursor Left key to avoid erasing what you have typed. Be-

sides, all characters to the right of the deleted character move left one position to fill in the space. Subsequent characters and lines within the current logical line move up as with Del key.

8. Enter

The key with the symbol on it is the carriage return key. You usually have to press this key to enter information into the computer. We will refer to it as the Enter key from now on.

9. PrtSc

* On the extreme right edge is a ley labeled Prt Sc.
* on the bottom. "PrtSc" stands for "Print Screen". When the keyboard is in lowershift, pressing this key causes an asterisk to be typed. In uppershift, however, this is a special key that causes a copy of what is on the screen to be printed on the printer (LPT1:). So, if you ever need a hard (printer copy of what is currently being displayed, just press and hold one of the Shift keys, and press the PrtSc key. (Note: Characters which are unrecognizable by the printer are printed as blanks.)

10. Scroll Lock

Pressing both Ctrl and Scroll lock, interrupts program execution at the next Basic instruction and returns to Basic command level. It is also used to exit AUTO line numbering mode.

11. Special Symbols

This keyboard has some special symbols that you won't find on a regular typewriter, like , (and); and some characters are not where you might expect them to be if you are used to using a typewriter. For example, the uppershift period(.) is not a period, but > symbol.
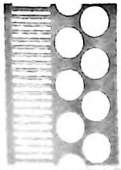
CHAPTER 4 OPERATING LCD PORABLE COMPUTER

Software

LCD portable computer allows you to run a wide variety of application software. In general, application software must be installed before it can be used. Installation procedures vary greatly from one application to another depending upon such factors as software copy protection, the number of diskette required to run the application, additional hardware etc.

In order to properly install a specific application, color mode 640 x 200 of display function is required for running the LCD portable computer. If it is a monochrome software, only TEXT mode could be run in this computer without the GRAPHICS mode.

Disks

This computer comes standard with two floppy disk dri one floppy disk drive and one hard disk drive for stora retrieval of information.

This unit only uses standard 5¼ inch half-height drives. The diskette is a magnetic device that stores information created on a computer. Once information is stored on a diskette, it can be re-used whenever necessary or replaced when no

longer needed.

In order to store information on a diskette, _ the operating system must first prepare "format" the diskette, during formatting, the diskette is divided into 40 circular tracks, similar to those on a record.

To safeguard information stored on diskette, it is important that you handle diskette with care.

Write protect notch: When an adhesive tab (supplied with diskette) is placed over this notch, the computer can not write information on the diskette. This insures that important files are not erased or written over. Most program diskette come with this tab on your data diskettes to protect important files.

*   Never touch any exposed area of the diskette.
*   Never bend or twist the diskette.
*   Never expose the diskette to liquids. If you spill a liquid on the diskette, throw the diskette away.
*   Never expose diskette to excessive heat or direct sunlight.
*   When labelling your diskette, always use a felt-tipped pen. Do not use a ballpoint pen or pencil. (fig. 4-1).
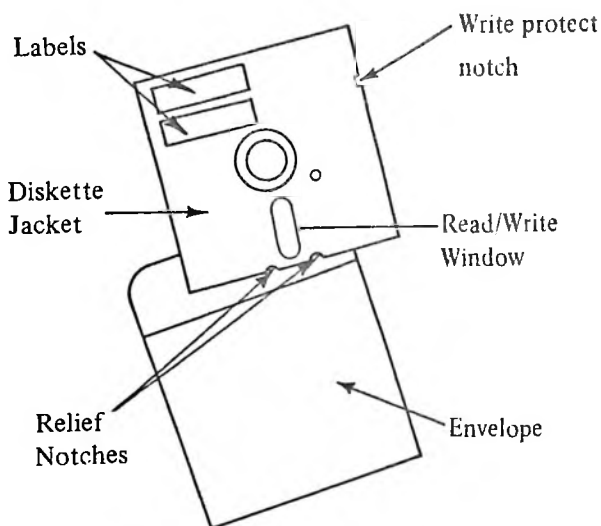
Figure 4−1

LCD Display

LCD Interface card (LD-200)

The LCD display card (LD-200) is designed to be used in 8088, 80286 and 80386 system. It provides the following main features:

1. To control many kind of LCD display and RGB Color monitor, or Monochrome monitor (TTL).
2. In Color mode:
   TEXT   : 40 x 25 characters or 80 x 25 characters
   Graphics : Lower resolution 160 x 200 pixel by 16 colors
                  medium resolution 320 x 200 pixel by 4 colors
                  high resolution   640 x 200 pixel by black/white

3. In monochrome mode:
   TEXT   : 80 x 25 characters
   Graphics: 720 x 348 pixels

Connection:

J1 : to connect a 20 pin flat cable to LCD display.

J2 : to connect color or monochrome monitor.
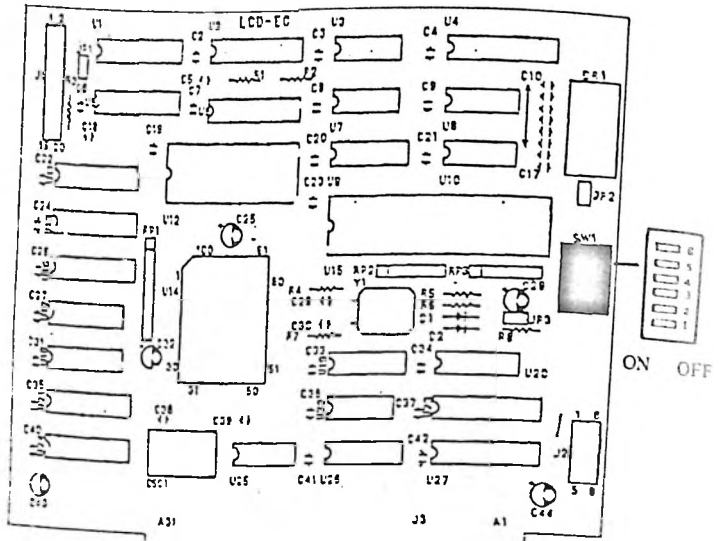
Figure 4—2

Setting the DIP Switch

(1) For LCD-286C series model (1/100 duty of LCD)

Pin 1	Pin 2	Pin 3	Pin 4	
ON	ON	ON	OFF	for LCD Display
OFF	ON	ON	OFF	for Color monitor display

4—4

Pin 5. Normal/Single (to be used under color TEXT mode only)
      OFF to select normal characters mode.
      ON   to select single characters mode.
Remark: single character means change all characters to more
      slim type.

For the monochrome monitor display please setting:

PIN 1	Pin 2	Pin 3	Pin 4	Pin 5
OFF	OFF	OFF	ON	ON

There is no single characters mode for monochrome display.
Also please according to your motherboard manual to change
display mode to monochrome display. Then reset-up the
system again by Advanced Diagnostics program if it is 286 or
386 motherboard.

Pin 6. NC (no use)

Warning   : The monochrome graphic (720 x 348) mode is
             only for monochrome monitor, may not be used
             in LCD display. Because resolution of LCD-286C
             series are different from monochrome monitor.

(2) For LCDA-286C series model (1/200 duty of LCD)

	Pin 1	Pin 2	Pin 3	Pin 4	
(a)	ON	ON	OFF	OFF	for LCD Display
(b)	OFF	ON	ON	OFF	for color monitor display

4—5

Remark : When you select line (b), it could be displayed on LCD and color monitor at the same time. If you want to display on LCD only, we would like to suggest you to select line (a) for a steady display condition.

Pin 5. Normal/Single (to be used under color TEXT mode only)
OFF to select normal characters mode.
ON to select single characters mode.

Remark : single character means change all characters to more slim type.

For the monochrome monitor display please setting:

Pin 1	Pin 2	Pin 3	Pin 4	Pin 5
OFF	OFF	OFF	ON	ON

There is no single characters mode for monochrome display. Also please according to your motherboard manual to change display mode to monochrome display. Then reset-up the system again by Advanced Diagnostics program if it is 286 or 386 motherboard.

Pin 6. NC (no use)

Warnning : The monochrome graphic (720 x 348) mode is only for monochrome monitor, may not be used in LCD display. Because resolution of LCDA-

4—6

286C series are different from monochrome monitor.

(3) For LCDB-286C series model (640 x 400)

Under the color graphics mode:

Pin 1	Pin 2	Pin 3	Pin 4	
OFF	OFF	ON	OFF	for LCD Display
OFF	ON	ON	OFF	for Color monitor display

Pin 5.   Normal/Single (to be used under color TEXT mode only)
       OFF to select normal characters mode.
       ON   to select single characters mode.
Remark   : single character means change all characters to more slim type.

Under the monochrome mode:

	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6
(a)	OFF	OFF	OFF	ON	ON	ON
(b)	OFF	OFF	OFF	ON	ON	OFF

line (a) for display on LCD.
line (b) for display on monochrome monitor.

There is no single characters mode for monochrome display. Also please according to your motherboard manual to change display mode to monochrome display. Then reset-up the

4—7

system again by Advanced Diagnostics program if it is 286 or 386 motherboard.

Warnning : It is not fully compatible when you select line (a) for display monochrome graphics (720 x 348) mode on the LCD. Because resolution of LCDB-286C series (640 x 400) are not big enough for monochrome graphics resolution. We would like to suggest you to use color graphics mode on this model.

CHAPTER 5 MS-DOS

What is Dos?

DOS is an abbreviation for Disk Operating System and refers
to a disk-based operating system. This is a program that
coordinates all disk activities.

An OS is a collection of programs that controls execution or
filing in doing a job using a computer. Without an OS, an
operator must establish a working environment by perparing
data or peripherals such as disks before the computer begins
every job. This takes much time while the computer remains
idle. The OS allows the operator to execute an expected pro-
gram by simply keying in its name on the keyboard.

In addition, the OS contains utility programs which enable
the development of a user's program or the handling of files.

The MS-DOS is developed by the Microsoft Corp. In order
for you to become acquainted with MS-DOS, we will describe
its various functions in summary. Refer to the separate MS-
DOS User's Manual for more details.

NOTES:

The examples in this Manual are written in uppercase letters.
During actual input, however, either uppercase or lowercase
letters may be used since the DOS does not distinguish be-

tween them while accepting commands.

All of the following will result in the same entry:

    diskcopy
    DISKCOPY
    DisKcoPy
    diSkCOpY

The Enter Key

When you enter an MS-DOS command or your response to
a prompt, first key in the file names, etc. using the alphan-
umeric keys on the keyboard then press the Enter key to
input the command to the computer. The computer accepts
a keyed-in command only after the Enter key is pressed. so
be sure to press this key after command entry.

Ctrl + C

When you wish to terminate execution of a command, press
the C key while the Ctrl (Control) key is held down. The ex-
ecution will be broken with the sign " C" and the DOS will
return to the command waiting mode prompting A>.

Starting the DOS

You were informed how to start the DOS in Chapter 2 of this
manual. However, we will describe it again for your detailed
reference.

1. Set up your system referring to Chapter 2 of this manual and the user's manual supplied with your peripherals. Make sure that the connections between them are made correctly.

2. Switch on the power of peripherals first and then switch on the computer. The computer has an Initial Power-On Diagnostics program and will begin to check itself with this program.

3. While the Diagnostics program is running, insert the MS-DOS system disk into the drive slot of the FDD unit. If you are using a computer which has a dual drive system, insert the disk into the upper drive, making sure that the disk is inserted correctly. Then, lock the lock lever by turning it clockwise. A short beep tone is heard from the computer and the FDD will begin to access the MS-DOS disk.

4. Now, all the initialization procedures above are completed successfully. The computer makes a first request prompting that shows:

    Current date is Tur 1-01-1984
    Enter new date:

    Type the current date, for example 8-15-1985, and press the Enter key. Be sure to insert a hyphen or slash between each item. If you input the date improperly, the following messages will be displayed.

Reinput the date according to the correct syntax, inserting hyphens between month, day and year. Next, the computer asks you to input another item:

Current time is 0:00:19.87
Enter new time:

Input the current time by typing on the keyboard, for example, 13:05:00. If you feel that entering the date and time is too complicated, simply press the Enter key at each prompt. The computer will accept this; however, a recording for the update of each file will not be made.

5. The following prompt will appear.

A>

This shows that the DOS is now ready to accept and execute your command entry. This letter "A" means that the computer is ready to access a disk in disk drive A as a system drive. We call this drive A, the default drive.

6. If you are using a dual drive system, you can change the default drive. If you wish to access the disk inserted into drive B, type:

B:

and press the Enter key. The prompt B> will be indicated. To return the default drive to A. type:

A:

and press the Enter key. The prompt A> will be indicated again and the computer accesses drive A.

Files

What is a File?

Before you put your documents back to a bookshelf, you might put them into a file folder which has a special name or title. The term "file", as used in this Manual, describes the same concept as this. Just as you would do, the computer takes information from a "bookshelf" called a disk according to the particular file name written on the backbone of the file folder, then opens it to pick up the data which you want. Conversely, the computer closes the file when data processing is finished and puts it back on the "bookshelf" called a disk. Thus, in the example above, a file that has been taken out is returned to the same bookshelf. However, a computer can process files in various ways. For example, the computer copies the data which has been taken out from the bookshelf by using a copier named console. In this way the computer performs its job by handing a collection of information,

How to Name Your Files

A file name consists of two parts; the file name and the file extension. In naming a file, follow the rules below:

* A file name can be from 1 to 8 characters.
* A file extension can be three or fewer characters.
* A period must be inserted between file name and file extension.
* The following characters are allowed for making up file names.

    Letters from A to Z
    Numbers from 0 to 9
    Other characters: $, &, #, %, ', (,), −, @,
    ^, { , } ,~, ', and !

* You may type any file name in lowercase or uppercase letters and MS-DOS will translate these letters into uppercase characters.

Checking a Directory

If you want a list of the files on your disk, type the following after the A> prompt to display the file Directory:

DIR

and press the Enter key

All the files on the DOS disk will be listed on the screen; for example:

```
Volume in drive A has no label
Directory of A:

    ANSI        SYS      1791     10-01-85     12:00p
    ASSIGN      COM      1509     10-01-85     12:00p
    ATTRIB      EXE     15091     10-01-85     12:00p
    BACKUP      EXE     21720     10-01-85     12:00p
    BASIC       COM      2048     10-01-85     12:00p
    BASICA      COM      2048     10-01-85     12:00p
    BASICA      EXE     68448     10-01-85     12:00p
    CHKDSK      COM      9435     10-01-85     12:00p
    COMMAND     COM     23210     10-01-85     12:00p
    COMP        COM      2371     10-01-85     12:00p
    DEBUG       COM     15552     10-01-85     12:00p
    DISKCOMP    COM      2352     10-01-85     12:00p
    DISKCOPY    COM      2643     10-01-85     12:00p
    EDLIN       COM      7261     10-01-85     12:00p
    EXE2BIN     EXE      2816     10-01-85     12:00p
    FDISK       COM      6403     10-01-85     12:00p
    FORMAT     ·COM      7947     10-01-85     12:00p
    GRAPHICS    COM       629     10-01-85     12:00p
    JOIN        EXE     15971     10-01-85     12:00p
    LABEL       EXE      2750     10-01-85     12:00p
    LINK        EXE     38422     10-01-85     12:00p
    MODE        COM      2112     10-01-85     12:00p
    MORE        COM       282     10-01-85     12:00p
    PARK        EXE       281     10-01-85     12:00p
    PRINT       COM      8291     10-01-85     12:00p
    RECOVER     COM      4050     10-01-85     12.00p
    RESTORE     EXE     20156     10-01-85     12:00p
    SHARE       EXE      8304     10-01-85     12:00p
    SORT        EXE      1664     10-01-85     12:00p
```

SORT	EXE	16611	10-01-85	12:00p
SYS	COM	2727	10-01-85	12:00p
TREE	COM	1319	10-01-85	12:00p
VDISK	SYS	4301	10-01-85	12:00p
	34 File(s)		129024 bytes free	

In the example above, the top line indicates Volume Label (a unique name assigned to each disk for identification). The first and second items of each listing line are the file name and file extension. The third item is the size of memory which one file uses on the disk. The fourth and fifth items are the date and time the file was created or edited. The last line denotes the total number of files and free memory area on the disk.

If you want to stop the scrolling on the display, press the "S" key while the Ctrl key is depressed. Listing of the files in the directory will stop temporarily so you can check the contents. To resume listing, simply press any key.

Another way of viewing the file directory is shown below. If you wish to list the entire contents of the disk within the same screen, type:

DIR/W

and press the Enter key.

Volume in drive A has no label
Directory of A:

ANSI	SYS	ASSIGN	COM	ATTRIB	EXE	BACKUP	EXE	BASIC	COM
BASICA	COM	BASICA	EXE	CHDKSK	COM	COMMAND	COM	DOMP	COM
DEBUG	COM	DISKCOMP	COM	DISKCOPY	COM	EDLIN	COM	EXE2BIN	EXE
FDISK	COM	FIND	EXE	FORMAT	COM	GRAPHICS	COM	JOIN	EXE
LABEL	EXE	LINK	EXE	MODE	COM	MORE	COM	PARK	EXE
PRINT	COM	RECOVER	COM	RESTORE	EXE	SHARE	EXE	SORT	EXE
SUBST	EXE	SYS	COM	THREE	COM	VDISK	SYS		
	34 File(s)				129024 bytes free				

In this case, information other than file name and file extensions is not displayed.

Back-Up of MS-DOS Disk

Before you start operation using DOS, it is strongly recommended that you make one or more working disk copies of the original MS-DOS disk. In this way, the unlikely event of the original DOS disk being physically or magnetically damaged can be avoided. This copying process is usually called "back-up".

Before you copy the DOS to another disk, however, you should prepare a suitable disk for the computer by executing the FORMAT command provided in MS-DOS. This FORMAT command prepares the blank areas on the disk to enable it to accept data.

How to FORMAT Floppy Disks

FORMAT for Single Drive

5—9

First confirm that the MS-DOS system disk is inserted in the drive.

In response to the prompt A>, type:

FORMAT

Then press the Enter key.

The following message will appear on the screen:

Insert new diskette for drive A:
and strike any key when ready

Remove the MS-DOS disk from the drive and insert a new disk into the slot of the drive, turn the drive lever on the drive clockwise and then press any key.

The following will be prompted and the drive will begin to format the magnetic surface on the disk:

Formatting . . .

When the formatting is finished, the completion message below will appear:

Formatting . . . Format complete
392496 bytes total disk space
392496 bytes available on disk

Format another (Y/N)?

Enter "Y" to format another disk or "N" to return to the command waiting mode.

FORMAT for Dual Drive
This formatting procedure is applicable for the dual drive system.

Start MS-DOS and type the following during command waiting mode:

FORMAT B:

and press the Enter key.
Note that a space must be inserted between "FORMA'
"B:".

The following prompt will appear on the screen:

Insert new diskette for drive B:
and strike any key when ready

Insert a new disk into the lower disk drive and then press any key. The prompt below is displayed and the computer starts formatting:

Formatting . . . .

When the formatting is completed, the following message appears:

Formatting . . . Format complete

   362496 bytes total disk space
   362496 bytes available on disk

Format another (Y/N)?

Enter "Y" yo format another disk or "N" to terminate the FORMATting operation and return to the command waiting mode.

Note:

If the write protect notch of your disk to be formatted has been covered with a write protect tab, you cannot format that disk. If you try to format such a disk, the computer will prompt:

   Attempted write-protect violation
   Format failure

   Insert new diskette for drive A: (or B:)
   and strike any key when ready.

Take the disk out of the drive, uncover the write notch on the disk and press any key after you reinsert the disk into the drive.

Back-Up for Single Drive

The following back-up procedure is applicable to the single drive system.

Start MS-DOS and type the following at the command-waiting prompt A>:

DISKCOPY

and press the Enter key. The following message will be displayed:

Insert source diskette in drive A:
Strike any key when ready

At this time, the DOS disk should be in the disk drive or computer. If not, insert it into the drive then press any key. The disk drive will start to read the contents on the DOS disk and the computer will start storing this information into memory. When the memory becomes full, the following message will appear:

Copying 9 sectors per track, 2 side(s)

Insert target diskette in drive A:

Strike any key when ready

Remove the DOS disk from the drive then insert a new "formatted" disk into it. Press any key when ready. The data stored temporarily in memory will then be written to the

5—13

new disk. When this action is finished, the computer asks again:

> Insert source diskette in drive A:

> Strike any key when ready

You must swap disks several times until the following message appears:

> Copy complete
> Copy another (Y/N)?

Enter "Y" if you want to make another back-up copy or enter "N" to terminate this program.

> Note:

If the disks are of 2D type, or if the computer memory capacity is expanded, the disk copy may be completed with a disk exchange operation.

Back-Up for Dual Drive
If your computer is equipped with two disk drives, you can copy the DOS disk to another disk without swapping disks.

First, make sure that the DOS is in command-waiting mode and the DOS disk is inserted into the upper drive. Then type:

DISKCOPY A: B:

The following message will appear on the screen:

Insert source diskette in drive A:

Insert target diskette in drive B:

Strike any key when ready

Insert a new "formatted" disk into drive B and press any key. The computer will then begin to copy the information stored on the DOS disk to the disk inserted in drive B with this message:

Copying 9 sectors per track, 2 side(s)

When the copy is completed, the computer will display the following prompt:

Copy complete

Copy another (Y/N)?

Enter "Y" to make another back-up disk or "N" to quit this disk copy program.

Lastly, write an identification label for the new (copy) system disk and stick the label onto the disk. (Do not write on the label once it is stuck to the disk or you may damage

the disk surface.) Store the original system disk in a safe place.

Preparation of Hard Disk

The steps that must be taken to prepare the hard disk for use by MS-DOS are described in this section.

It is possible to divide the hard disk into as many as four separate areas (partitions) which can be of different size. Partitions are created with hard disk preparation program (FDISK) provided by MS-DOS.

It is possible to specify a partition on the hard disk as the start-up partition. This means that the system will load with the operating system in the start-up partition, if the disk drive lever is not turned clockwise.

Hard disk drives are referred to in same way as disk drives — use a disk drive specifier to store information on or retrieve data from a hard disk. Whether your system has one or two disk drives, MS-DOS assigns the letter C to the first hard disk drive and the letter D to the second hard disk drive.

Preparing Your Hard Disk

The MS-DOS hard disk preparation program (FDISK) can be used to create, change, or erase the MS-DOS partition. (A

partition for use by another operating system can be created, changed or erased only by using that operating system's hard disk preparation program.)

One MS-DOS partition can be created on a hard disk at the location and of the size you desire. Erase the MS-DOS partition if, for example, you want to create it again with a different size or at a different location on the disk. If this is the case, you might want to use the BACKUP command to back up your files in your MS-DOS partition first.

The MS-DOS hard disk preparation program (FDISK) supports the following functions:
1. MS-DOS partition creation
2. Activation of the start-up partition (the one that will take control when the system is started)
3. MS-DOS partition delettion
4. Hard disk partition information display
5. Select the other hard disk

These functions are listed in the FDISK menu. The following section describes the item 1 above. For details of another functions, refer to the separate MS-DOS User's Manual.

Start MS-DOS and type the following when the computer is in command-waiting mode:

FDISK

Press the Enter key. The following menu will appear.

Fixed Disk Setup Program Version 2.00

<FDISK Menu>

Choose one of these options:
1. Create MS-DOS Partition
2. Activate Partition
3. Delete MS-DOS Partition
4. Display Partition Information

Enter your choice:[1]

FDISK allows you to create a start-up partition on any hard disk. MS-DOS (or any other operating system), however, can only be started from the first hard disk.

Before creating an MS-DOS partition, determine where it should be located and how large it should be. Only one MS-DOS partition can be created on a hard disk. If you attempt to create more than one MS-DOS partition, an error message will appear.

A hard disk is divided into cylinders. The number of cylinders and their sizes can vary depending on the hard disk attached to your computer.

When you select Option 1. the following display will appear:

Create MS=DOS Partition

Do you want to use the entire fixed
disk drive for MS-DOS (Y/N) . . . . ?[Y]

If MS-DOS is the only operating system to be used with the
hard disk, press the Enter key to accept the default response.

FDISK will then create the MS-DOS partition, and the
following message will appear.

System will be rebooted:

Insert MS-DOS diskette in drive A:
Press any key when ready . . .

With the MS-DOS disk in drive A, press any key to restart
MS-DOS. Then, MS-DOS can use it, a directory and other
information must be created in the partition using the FOR-
MAT command. For example:

At system promt A>, enter

FORMAT C:/S

This formats the MS-DOS partition you have just created.
The MS-DOS system files are copied onto the MS-DOS parti-
tion at the same time.

If MS-DOS is copied to this hard disk, you should also copy all the files on the MS-DOS disk to this hard disk using the COPY command.

For example:

COPY *.* C:

This copies all of the files in MS-DOS disk directory to the MS-DOS partition.

Starting Up MS-DOS from the Hard Disk.

To start up with MS-DOS in the start-up partition, perform the following steps:

1. Do not lock the lever of drive A by turning it clockwise.
2. Turn the computer on, or press the Del key while holding down the Ctrl and Alt keys when the computer is already turned on.

Then, MS-DOS in the start-up partition will take control.

Starting up GW-BASIC

Since GW-BASIC used by the computer is controlled by MS-DOS, first boot (load and start) the MS-DOS disk, and type the following in response to the prommpt A> (or C> when using the hard disk as default drive):

BASICA

then press the ENTER key.

The disk drive will begin accessing the disk to load the BASIC interpreter. The following messages will then appear on the screen:

GW-BASIC 3.X
(C) Copyright Microsoft 1983, 1984, 1985
XXXXX Bytes free
Ok

The number preceding "Bytes free" indicates the amount of memory that a BASIC program can use. This number depends on the capacity of RAM installed. Below this message, Ok and a cursor (–) will appear waiting for your command entry. CW-BASIC is now ready for use.

Returning to MS-DOS Mode

To return to MS-DOS mode, enter:

SYSTEM

The prompt A> (or C>) will reappear, and the computer will wait in MS-DOS operation mode.

CHAPTER 6   APPENDICES

Appendix A Keyboard

UNDER BASIC KEYBOARD USAGE

ESC
"ESCAPE" removes the list line that the cursor is on for corrections, but the line is not deleted from memory.

<--
"TAB" performs a tab function similar to a typewriter.
Tabs are set every 8 characters.

-->

CTRL
"CONOTROL" key is always used with another key to perform a command or function.

Shift
"SHIFT" changes lower case letters to capitals.

ALT
"ALTERNATE" is used with alpha typing keys to enter BASIC key words.

<--
"BACK SPACE" key removes cursor to the left and removes one character for each key stroke.

Enter
"RETURN" (ENTER) removes the cursor from the last character on one line to the first character of the next line.

F1
"LIST" displays the lines of your program on the screen.

F2
"RUN" causes your program to begin execution from the beginning of the program.

F3
"LOAD" reads your program from auxiliary storage and stores it in main memory.

F4
"SAVE" stores your program on auxiliary storage.

6—1

F5   "CONT" restarts your program after you have inter rupted it by a STOP or CTRL BREAK.

F6   "LTP1:" refers to line printer and transfers data from screen to printer.

F7   "TRON" means trace on and causes the line numbers of program lines to be displayed as the lines are executed.

F8   "TROFF" means trace off an cancels command TRON.

F9   "KEY" is used to change the function of other function keys.

F10   "SCREEN" returns program to character mode from graphics mode and turns off color.

F11   Special Function keys for application software.
ASC II character code under XT version Hex 57
ASC II character code under AT version Hex 58

F12   Special function keys for application software.
ASC II character code under XT version Hex 78
ASC II character code under AT version Hex 07

NUM LOCK ACTIVATE

1 thru 9 With "NUM LOCK" activated ONE through NINE will be operative.

DEL   "DECIMAL POINT" is used with numeric keypad.

0   "ZERO" is used with numeric keypad.

INS

    "MINUS" is used with the numeric keypad.

+   "PLUS" is used with the numeric keypad.

HOME 8	"HOME" removes the cursor the first character of the top line of the screen.
2	Moves the cursor one line up for each key stroke.
4	Moves the cursor down one line for each key stroke.
6	Moves the cursor to the right one character for each key stroke.
1	Moves the cursor to the left one character for each key stroke.
END	"END" moves the cursor to the last character on that line
DEL	"DELETE" the character where the cursor is positioned.
0 INS	"INSERT" sets the keyboard to insert mode so that keys will be entered at the position of the cursor and all data to the right will move to the right. Pressing "INSERT" key again to exit insert mode.
CAPS LOCK	This is a toggle key: pressing the key will cause letters to type in upper case, pressing the key again will return lower case.
Prt Sc *	"PRINT SCREEN" will print an *. When pressed with the "SHIFT" key it will print all data on screen.
SCR LOCK	"SCROLL LOCK" is an inactive key.

```
* CTRL + SCROLL LOCK/BREAK = BREAK
* CTRL + NUM LOCK           = PAUSE
* CTRL + ___>               = TAB
* CTRL + <___               = REVERSE T
* CTRL + HOME               = CLEAR SCRLL.
* CTRL + ALT + DEL          = SYSTEM RESET
```

UNDER DOS KEYBOARD USAGE

F1	Redisplays previously entered line, a character at a time.
F2	Enter F2 followed by a character. Screen will redisplay all of the previously entered line up to the character you entered.
F3	Redisplays entire previously entered line.
F4	Enter F4 followed by a character. Screen will skip all of the characters in the previously entered line up to the character you entered.
F5	Saves the currently displayed line for further editing.

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* CTRL + NUM LOCK          = SUSPEND
* CTRL + PRT SC            = ECHO
* CTRL + SCR LOCK/BREAK    = BREAK
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KEYBOARD CONNECTOR

5-Pin DIN Connector

Pin	TTL Signal	Signal Level
1	Keyboard Clock	+5 VDC
2	Keyboard Data	+5 VDC
3	Keyboard Reset (Not used by Keyboard)	
4	Ground	0
5	+5 Volts	+5 VDC

Appendix B LCD Display Interface

The connector for LCD Display ――― CON 1

Pin	Symbol	Function	Level
1	UD0	Display date for upper half of screen	H/L
2	UD1	. . .	
3	UD2	. . .	
4	UD3	. . .	
5	LD0	Display data for lower half of screen	
6	LD1	. . .	
7	LD2	. . .	
8	LD3	. . .	
9	VSS	GND (0V)	
10	CLP	Shift clock signal for display data	H to L
11	CIP	Display data latch and common driver	H to L
12	FRMB	Liquid crystal AC drive control	H/L
13	FRP	Signal to indicate beginning of frame	H
14	CEO	Chip enable clock signal for segment	H to L
15	VDD	+5V power supply	
16	VSS	GND (0V)	
17	VEE	Power supply for driving liquid crystal	
18	NC	Reverse	
19	NC	No use	
20	NC	No use	

For Color CRT connector the following is a pin location diagram for color monitor. (CON 2)

Pin Number	Signal Name	Input/Output
1	Ground	
2	Ground	
3	Red	Output
4	Green	Output
5	Blue	Output
6	Intensity	Output
7	Not used	
8	Horizontal synch	Output
9	Vertical synch	Output

Appendix C GLOSSARY

alphanumeric

A contraction of the words alphabetic and numeric, an alphanumeric refers to a character that is a letter of the alphabet or a numeric.

back-up disk

A back-up disk consists of a copy of a master disk or of original data, and is used as a working copy to prevent accidental loss or damage of the original data during actual computer operation.

BASIC

An acronym for Beginner's All-purpose Symbolic Instruction Code. BASIC is a procedure-level programming language that is widely used by beginners to computer operation and to

programming.

bit

A contraction of binary digit, a bit is the smallest unit of data in the binary notation, consisting of either "0" or "1".

byte

A byte signifies the number of consecutive measurable bits that represent a character to the computer, usually consisting of 8 bits.

compatibility

(1) A characteristic of computers whereby one computer can accept and process data from another computer without requiring conversion or code modification.

(2) A characteristic of software or hardware (programs, peripheral devices, etc) whereby it can be accepted by another computer system.

CPU

An acronym for Central Processing Unit, the CPU coordinates all activities within the computer and sequences the execution of instructions. It consists of the arithmetic unit and special register groups.

CRT

Cathode Ray Tube; output device on which information is displayed.

diagnostic program

A special self-testing program that is executed to perform troubleshooting of equipment malfunctions and errors.

DIP switch

A DIP switch (or group of miniature DIP switches) is mounted in Dual-Inline Package for easy insertion into an IC socket or printed-circuit board, allowing the pre-setting of various basic conditions of operation.

Disk Operating System (DOS)

A disk operating system is a collection of programs stored on a disk which coordinate and control the overall operation of the computer system.

display

A display refers to the visually observable representation of data on the console screen in the form of text or graphics.

double-density

A charactersitic of a disk that enables it to store twice as much data as the standard single-density disk.

double-sided

A characteristic of disk that enables both sides of that disk to be used for reading and writing.

file

A set of related data or programs that the computer handles as a single unit.

floppy disk

A thin, flexible platter coated with magnetic material and used as the storage medium for a floppy disk drive, supplementing the main memory. It is non-volatile, meaning that it retains its data even after the power supply is switched off.

Formatting (or floppy disk)

The preparation of a disk by setting its track and sector information before use, permitting data structures of a specific type to be accepted by the disk.

function keys

Special keyboard keys which are pre-set or definable, permitting functions to be easily specified to suit a specific applications environment.

hard disk

A magnetic medium used in a hard disk drive system whic. enables the processing of larger volumes of data at faster speeds than a floppy disk drive system.

initialization

As soon as the system power is switched on. initialization is performed by a set of procedures to originate or establish the basic conditions or startup status.

IPL (Initial Program Loader)

An initialization procedure that fetches a program or operating system from an external storage medium to the computer, loading the main memory with the data records which

are involved in the process.

K bytes
1,024 bytes, not to be confused with "k" bytes which equals 1,000 bytes.

keyboard
A typewriter-like device, having an array of lettered or numbered push button keys, that is used to input encoded alphanumeric data upon detecting that its keys have been depressed.

LCD
Liquid crystal display: The screen consists of a thin schematic layer of liquid crystal pressed between two glass plates.

M bytes
1048,576 bytes

memory
A storage area, usually within in the commputer wherein the computer "memorizes" data so that it can be copied, stored, and retrieved.

microprocessor
One of the most important components of a microcomputer, the microprocessor typically designates the large-scale integration (LSI) chip which ontains the CPU.

numeric key pad

An input device, forming a section of a keyboard, that contains those key generally used on simple calculators for extensive numeric input or computation.

Numeric Processor Extension (NPX)

A chip device for processing numeric data exclusively at high speed.

operating system

A collection of procedures and techniques for coordinating and controlling the overall operation of the computer system. According to the system configuration, it may be stored in system memory, a hard disk, a floppy disk, etc. .pa peripheral Various types of input/output devices that operate in combination or conjunction with the computer, but are not a physical part of the computer; e.g., display monitor, printe disk drive, etc.

program

A detailed sequence of instructions that tell a computer th required steps for solving a total problem or application.

RAM

Random Access Memory provides for the temporary storage of data and permits a non-sequential access of memory to be performed at any storage location point, resulting in a faster access speed than that of a ROM.

ROM

An acronym for Read-Only Memory, ROM information is usually preprogrammed either permanently or semi-permanently with a microprogram or fixed program, fitting the computer to a specific application. ROM data can only be read out but not revised during use.

write-protection

The procedure of preventing the accidental destruction of the contents of a disk such that its data can be read out but no new data can be written into the disk.

write-protect notch

By covering the write-protect notch, located on the side of the sealed envelope of a disk, the disk becomes a read-only write-protected disk.