QX-10

OPERATION MANUAL

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INTRODUCTION

Congratulations on your purchase of the QX-10, a small business computer which offers unprecedented performance and flexibility for a computer in its class. With its MultiFonts CP/M® operating system and powerful MultiFonts BASIC language, the QX-10 accomodates a wide range of programs and peripheral equipment which can make it an indispensable member of your office family, whether used for text editing, scientific calculations, or conventional data processing. In its basic configuration, the QX-10 provides 192K bytes of user memory; this can be expanded to up to 256K bytes through the addition of expansion memory. It has three standard interfaces for telecommunications and peripheral equipment, as well as five option slots to allow the addition of interface cards for a variety of specialized equipment. Your QX-10 can also be equipped with an interface for a color display monitor.

This manual covers all of the basic hardware configurations of the QX-10 up to its maximum memory capacity of 256K bytes, as well as the standard interfaces, the color display interface, and the MultiFonts CP/M operating systems. MultiFonts BASIC for the QX-10 is described in the QX-10 MultiFonts BASIC Reference Manual. Chapters 1 to 3 describe the hardware and optional equipment and procedures for unpacking the QX-10 and setting it up, and explain how to power up the QX-10 under the CP/M operating system. Chapters 4 and 5 introduce the MultiFonts CP/M operating system and explain use of the MultiFonts CP/M commands. Chapter 6 describes the various standard interfaces and the color display interface. Chapter 7 goes into more detail with descriptions of CP/M's basic disk operating system and basic input/output system interface. Specifications, details on the eight international character sets provided, and MultiFont style selection, and use of the QX-10 diagnostic programs are covered in the Appendices.

To ensure that you get off to a smooth start, be sure to read Chapters 1 to 3 with particular care.

NOTES:

1. *CP/M® is a registered trademark of Digital Research™.*
2. *MultiFonts BASIC (Copyright 1982 Microsoft and Epson) is software developed by Epson which is upward compatible with the BASIC-80 specifications of Microsoft, Inc.*

CAUTION

Do not use power cables other than the one supplied.

TABLE OF CONTENTS

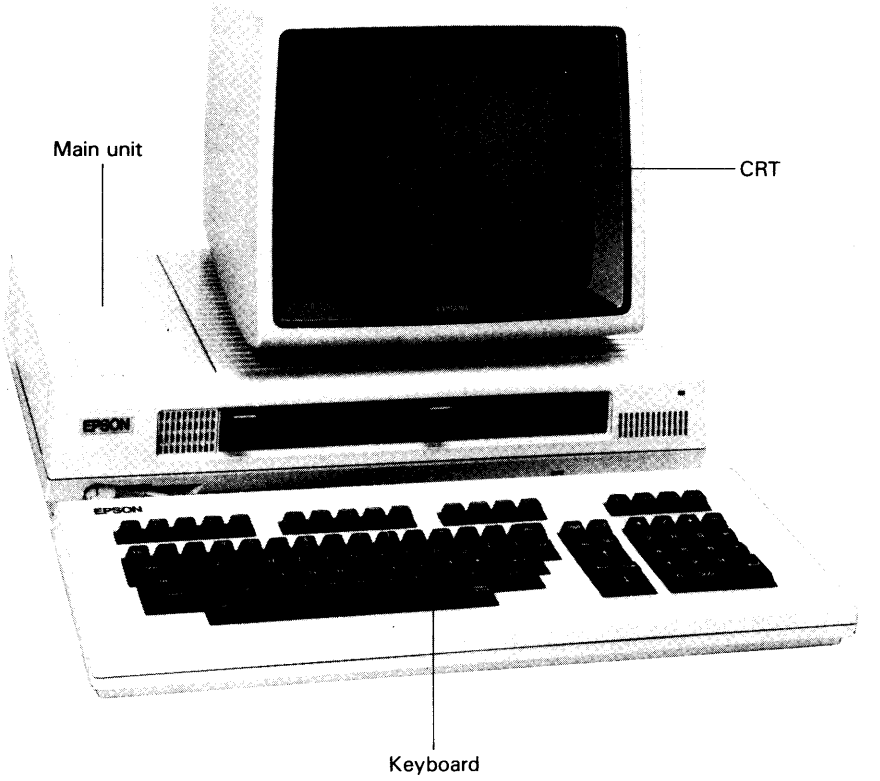
Chapter 1 SYSTEM CONFIGURATION

This chapter describes the hardware of the QX-10, explains funtions of the keys and outlines expansion options which are available for the QX-10.
The symbols used to indicate binary, decimal and hexadeciml numbers in the explanation of special function key and the remainder of this manual are as follows.

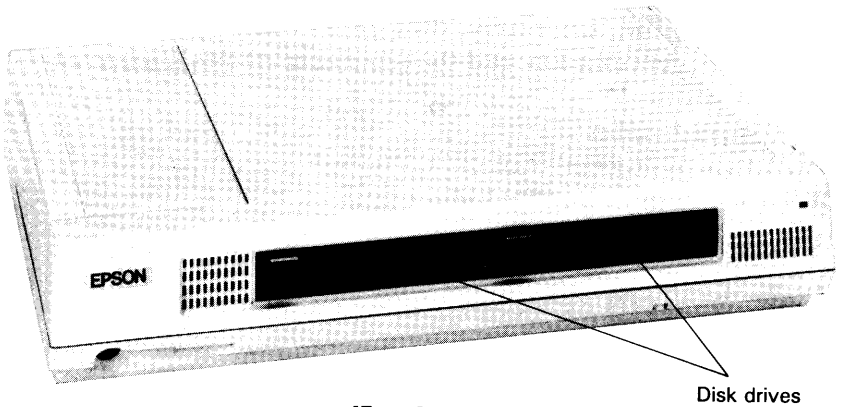
( )$_2$: Binary number
( )$_D$: Decimal number
XXH: Hexadecimal number

1.1 Basic System

The hardware of the QX-10 consists of a CRT display monitor, a keyboard, and a main unit.

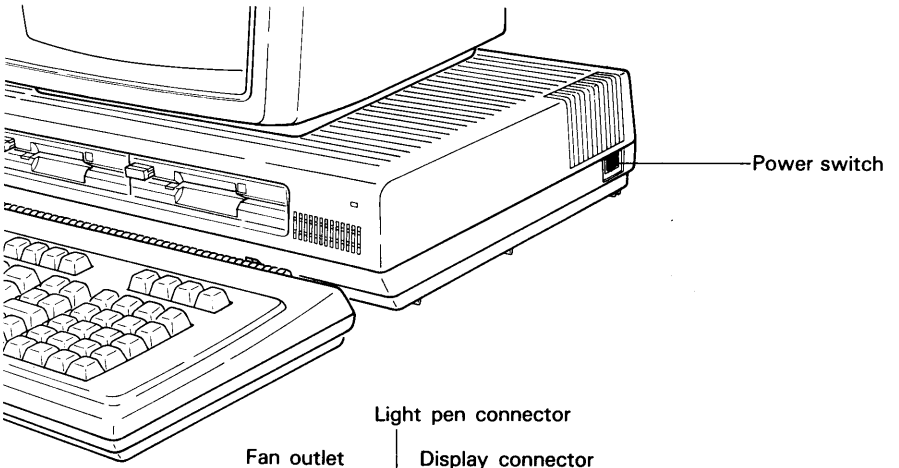


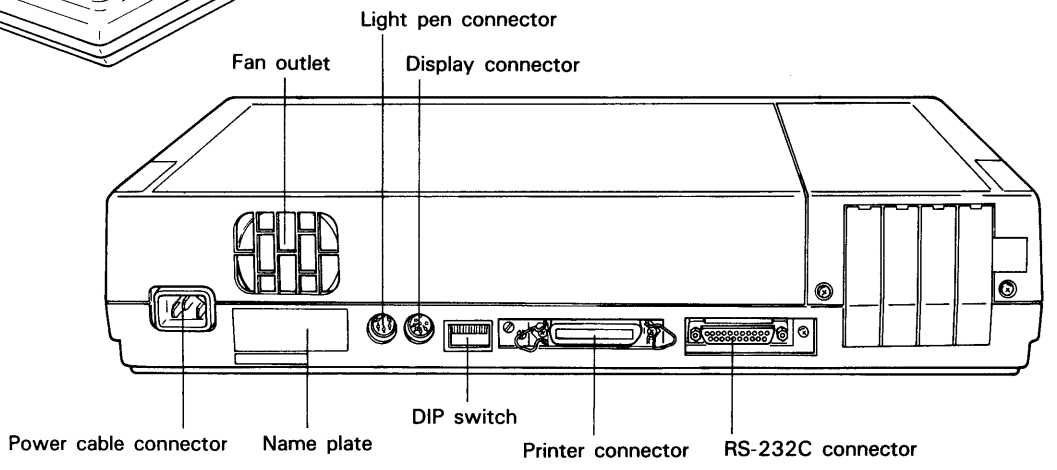
1.1.1 Main unit



[Front]

The main unit includes the system's μPD780-1 CPU (Z80A compatible), the main memory RAM chips, twin disk drives, interfaces for peripheral equipment, and the computer system's power supply, and is connected to the display monitor and keyboard through DIN connectors. All QX-10 power is controlled by a single switch on the back right side of the main unit.



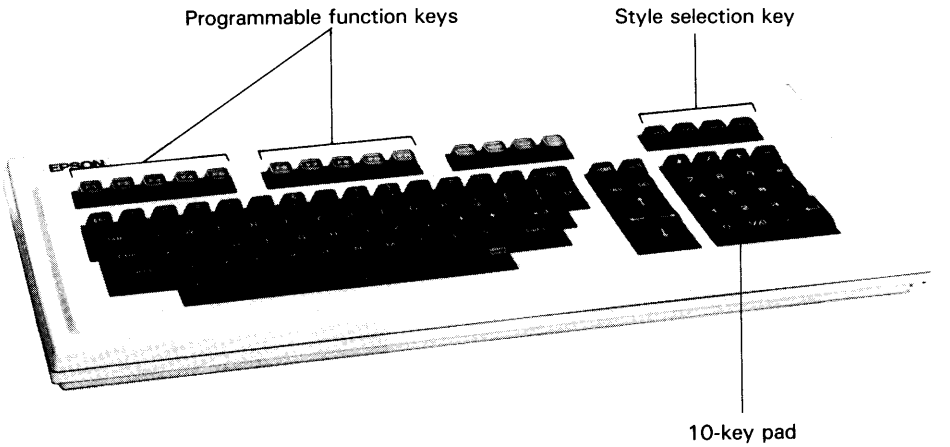


[Rear]

1.1.2 Keyboard unit

The layout of character keys on the QX-10's keyboard varies from country to country. All layouts provided are those which are commonly accepted as standard in the country in which each unit is sold. The keyboard also includes a 10-key pad, and is equipped with 10 programmable function keys and a number of special keys; use of these keys is described below.

Data is transferred between the keyboard and CPU through a serial interface built into the main unit.



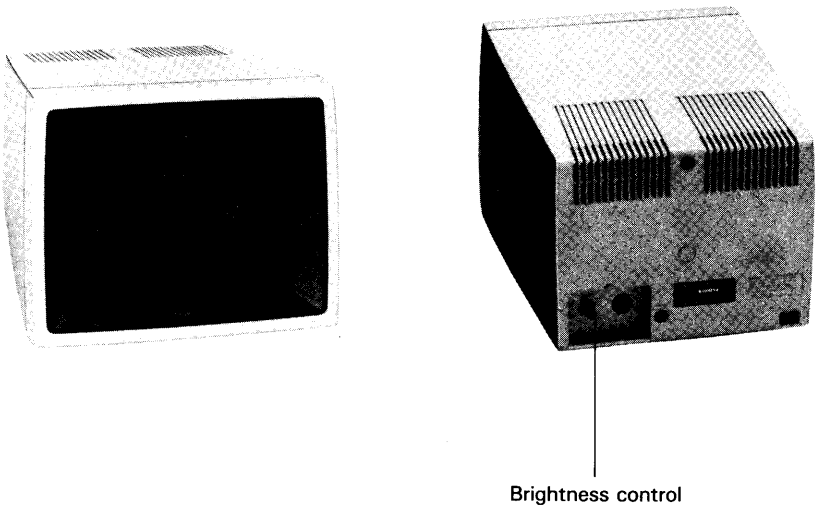
1.1.3 CRT display unit

The high resolution 12″ CRT display used is specially designed for the QX-10; resolution in the horizontal direction is 640 dots and resolution in the vertical direction is 400 dots.

In the non-MFBASIC mode, the maximum number of 1-byte characters which can be displayed are 2000 (25 × 80 character lines). (Each 1-byte character is displayed in a dot matrix of 7 × 13 dots.)

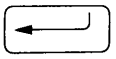
In the MFBASIC mode, the maximum number of 1-byte characters which can be displayed are 1600 (20 × 80 character lines) and the maximum number of 2-byte characters which can be displayed is 800 (20 × 40 character lines). (Each 2-byte characters is displayed in a dot matrix of 14 × 17 dots.)

A brightness control is provided next to the cable connector on the rear panel. Turning it to the right increases brightness, and vice versa.



1.2 Special Keys

The functions of the special keys at the CP/M command level are as shown below. For their functions in the MFBASIC mode, refer to the QX-10 MFBASIC Reference Manual.



This key is used to terminate a command line. Pressing this key enters a CR code $(13)_D$.

Pressing this key erases the character to the left of the cursor and moves the cursor one position to the left.

Pressing this key enters a LF code $(10)_D$.

Pressing this key enters a ESC code $(27)_D$. This key can be used to enter escape sequences from the keyboard.

Pressing this key enters a TAB code $(9)_D$, that is it moves the cursor 8 columns to the right.

This key is used together with other keys to enter control codes $(0)_D$ through $(31)_D$. Pressing this key together with keys whose codes correspond to $(64)_D$ (@) to $(95)_D$ (_) enters the code which is equal to the key code minus $(64)_D$.

Pressing this key enters a HOME code $(11)_D$.

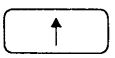
Pressing this key enters a CLS code $(12)_D$.

Pressing this key enters code $(17)_D$.

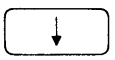
Pressing this key enters a DEL code $(127)_D$.

Pressing this key enters a Cursor Right code $(28)_D$.

Pressing this key enters a Cursor Left code $(29)_D$.



Pressing this key enters a Cursor Up code $(30)_D$.

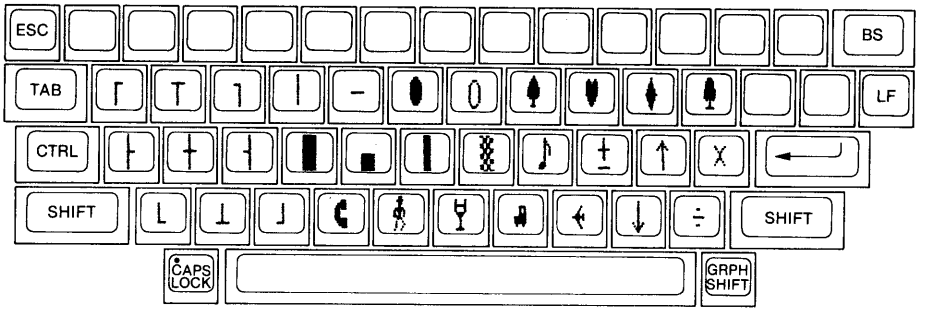


Pressing this key enters a Cursor Down code $(31)_D$.

Pressing this key allows the upper case letters to be entered when the letter keys are pressed. This state is maintained until the CAPS LOCK key is pressed again. The red LED built into this key lights when this key is pressed. Pressing the SHIFT key in this state allows lower case letters to

be entered. This key does not affect the keys other than those for the letters of the alphabet.

GRPH SHIFT — Pressing this key allows the graphic codes assigned to the keys shown below to be entered.



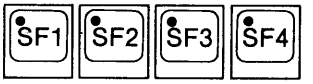
BREAK — Pressing this code enters a BREAK code $(3)_D$, resulting in a warm boot of the CP/M system.

PAUSE — Pressing this key enters a PAUSE code $(19)_D$.

SCRN DUMP — Pressing this key causes the current screen contents to be output to the LST device (normally the printer) in bit image format.

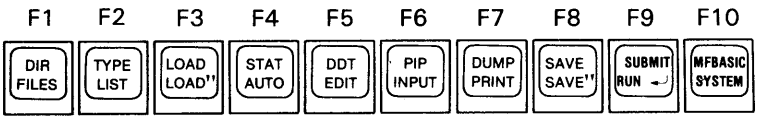
HELP — Pressing this key enters a HELP code $(0)_D$.

Style selection keys SF1 through SF4



These keys are not effective in the normal mode. In the MF mode, pressing these keys makes it possible to select one of the multiple character fonts. The LED built into each style selection key lights when the key is ON. (For multiple character fonts, see Appendix D.)

Programmable function keys F1 through F10



Each programmable function key enters the character string assigned by the system or user PFKSET table. (See 5.4 PFKSET command).

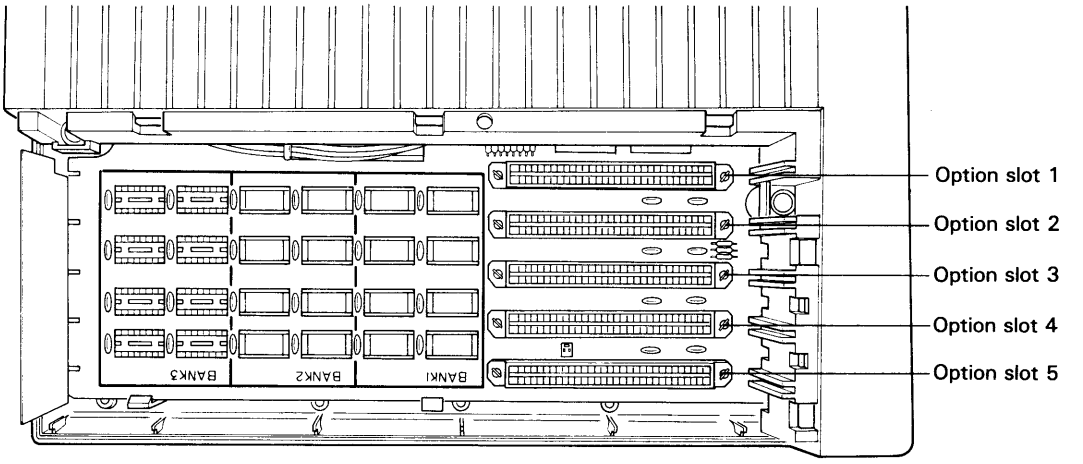
1.3 Expanded Configuration

The basic QX-10 is equipped with 192K bytes of RAM. This can be expanded to 256K bytes through the addition of eight 64K bit RAM chips. See Section 6.5 for installation of expansion RAM.

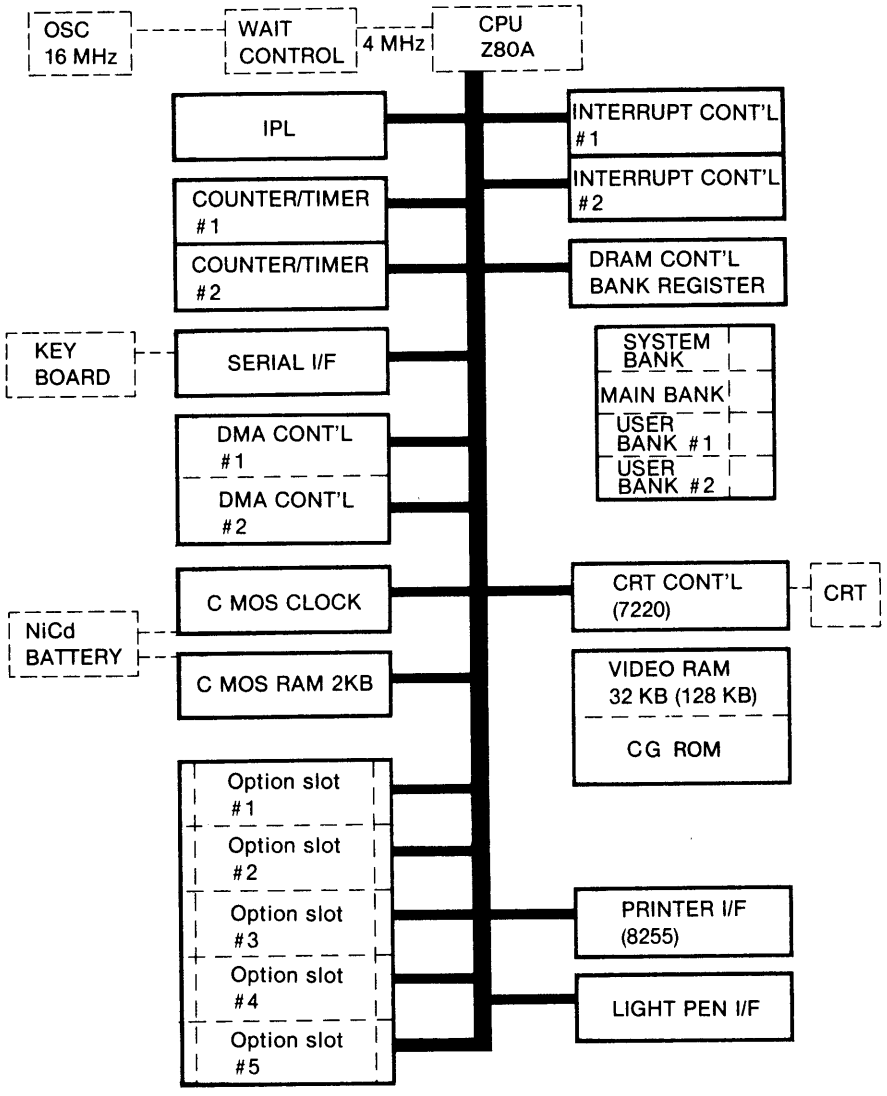
The MultiFonts character generator ROM card is required to use multiple fonts characters. This card can be inserted in any of the five option slots. If the MFONT comand is executed without this card, the message "No MultiFonts Option Board!" appears on the display.

Standard interface circuits provided for peripheral equipment include a Centronics-compatible interface for connection to printers, a light pen interface, a keyboard interface, and an RS232C interface for telecommunications or connection to RS232C-compatible equipment.

The QX-10's five option slots make it possible to add a variety of interfaces for special peripheral equipment. These include an IEEE488 interface for general purpose applications such as telemetry, an optical fiber interface for communications via optical cables, and a direct modem for data transmission.



A block diagram of the QX-10 system is shown in the figure below.



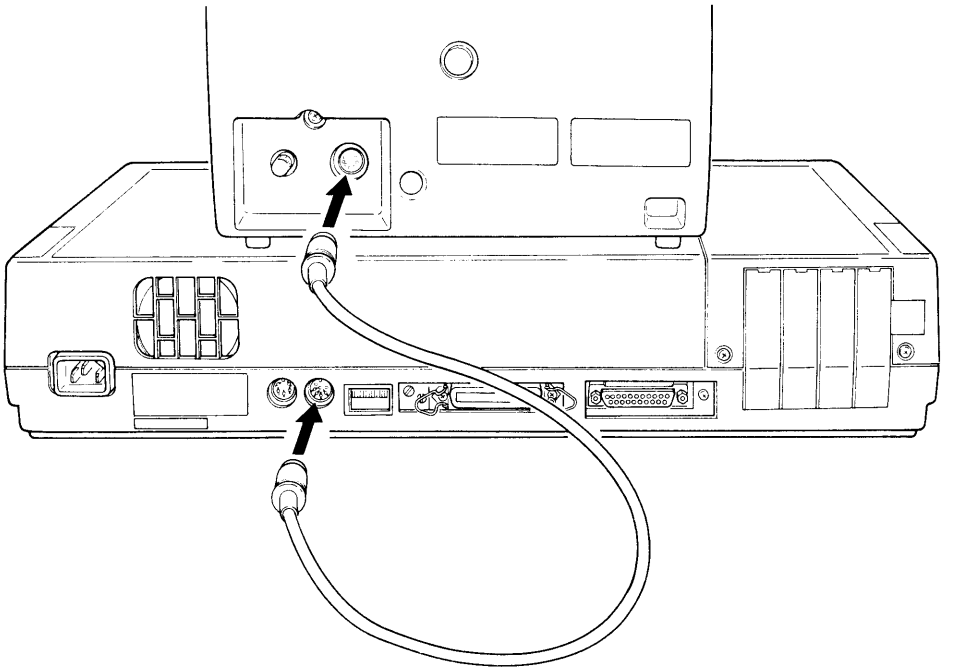
Chapter 2 UNPACKING / SETUP INSTRUCTIONS

For those who have worked with other small business computers, one of the nicest features of the QX-10 is that all of its components including the display, disk drives, and the computer itself are powered off of one wall outlet and controlled with a single power switch. This makes it extremely easy to set up the system as will readily become apparent as you follow the instructions given below.

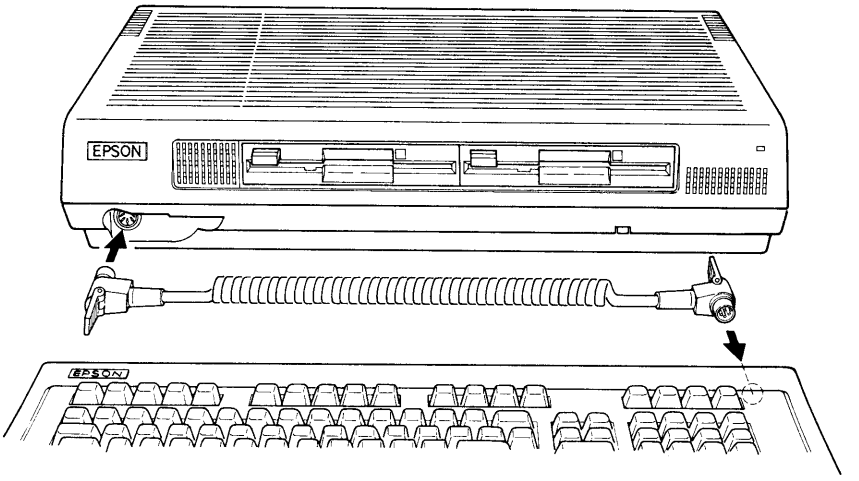
The QX-10 is shipped in three boxes which contain the main unit, keyboard, and CRT display monitor. Cables for connecting the keyboard and display to the main unit are included in the boxes with those units. Open the box containing the main unit by pulling off the tape on top (do not cut the box with a knife, etc.), then carefully lift out the unit with both hands and place it on a stable desk. Remove the packing materials from the unit. Check the label on the back of the main unit and confirm that its electrical requirements (voltage, power frequency, etc.) match those provided in your geographical area; however, do not plug the main unit in at this time.

NOTE:
The power cables of units sold in the United Kingdom are not equipped with a plug; an appropriate plug must be provided by the user.

Next, open the box containing the display monitor and place it on the desk next to the main unit. Remove its packing materials, then place the display on top of the main unit. Plug either end of the cable into the connector marked DISPLAY on the back of the main unit (the round DIN connector with 8 pin holes), then plug the other end into the connector on the back of the display.



Next is the keyboard. Open the box containing the keyboard and place it on the desk in front of the main unit and display. Plug either end of the cable into the connector socket on the left front of the main unit, then plug the other end into the socket on the back of the keyboard.



Finally, push the drive lock buttons located next to each of the two disk drives and remove the magnetic head protection sheet from each drive. Keep these sheets; they serve to protect the heads from damage during transport and should be inserted in the main unit whenever it is moved.

This completes setup of the basic system. For connection of peripheral devices such as printers, see the manual provided with the relevant device.

The next chapter of this manual discusses procedures for powering up the system, loading the operating system, and making backup copies of the system disk. Before going on, however, take a moment to read the following general precautions concerning use of the QX-10.

1. Avoid using the QX-10 in any location which is subject to extreme temperature fluctuations, high concentrations of dust, or high humidity. Protect the machine from exposure to direct sunlight, strong shocks or vibration, and corrosive gases.

2. Be sure to maintain a space of at least 15 cm behind the back of the main unit; this is necessary to provide ventilation for the unit's cooling system. Heat is also passively radiated from the top of the display monitor; therefore, books and other objects should not be placed on top of the display.

3. Keep cups of coffee and other fluids away from the machine; in the event that any type of liquid is spilled into the machine, turn it off immediately and call your Epson dealer at once. If you are a smoker (or have smokers in your office), keep cigarettes, ashtrays, and so forth out of the vicinity of the machine. The disk drives are particularly susceptible to problems due to contamination with cigarette ashes and the like.

4. If you make heavy use of the disk drives, it is a good idea to clean the drive heads occasionally. This can be done using a head cleaning sheet; see the package containing the sheets for details.

5. Before using the machine, check to ensure that all cables are properly connected, that the power cables for the computer and all peripherals are plugged in, and (if you have connected a printer) that printer paper is properly loaded, and that the printer ribbon is not twisted.

Chapter 3 OPERATION OF THE QX-10

This chapter describes procedures for powering up the QX-10, loading its operating system, and making backup copies of the system disk. Since you will start handling disks at this point, some comments are in order on the disks used with the QX-10 and their handling.

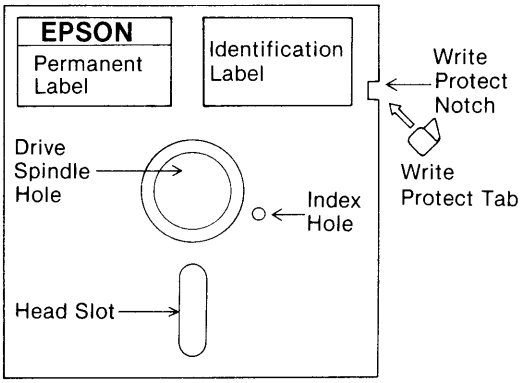
3.1 Flexible Disks

The QX-10 uses double sided, double density disks with a diameter of 5 1/4 inches. Although disks produced by other manufacturers can be used with the QX-10, variations in composition of magnetic media make it impossible to guarantee that such disks will provide normal results.

When formatted, a disk has 40 tracks per side, each of which is divided into 16× 256-byte sectors. This provides a total data storage capacity of 320K bytes per disk; however, since 32K bytes are used for storage of system information, 2K bytes are used for the file directory, and 8K bytes are reserved as alternate tracks, the total file storage capacity of each disk is 278K bytes.

Disks are generally sold in boxes of 10 each, and individual disks are contained in cardboard envelopes. These envelopes protect the disks' magnetic recording medium (visible through the head slot) from dirt and scratches which could destroy data. After removing a disk from either of the drives, be sure to promptly insert it in its protective envelope, then return the envelope to its box for storage. Avoid stacking disks one on top of another for storage, and be careful to avoid folding or bending them; deformed disks can result in irregular drive operation, and may cause damage to the drive itself. When handling disks, keep your fingers away from the head slot; touching the magnetic recording medium will result in an accumulation of grease on the drive heads, and possibly impair their ability to read and write data. To prevent this, hold disks on the label side (the side opposite from the head slot).

Apply identification labels to disks only in the location shown in the figure below. When a disk must be relabeled, peel off the old label before applying a new one; do not apply one identification label on top of another.



Whenever possible, write on the label before applying it to the disk. If you must write on a label after it has been applied to a disk, use a soft tip felt marker and write gently.

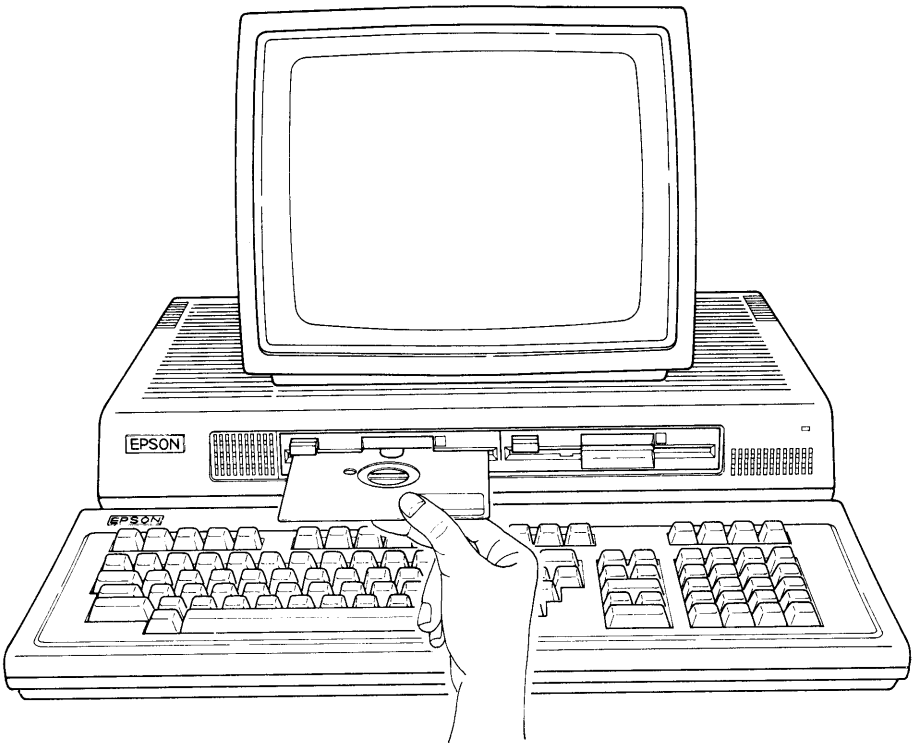
Since data is recorded on a magnetic medium, care must also be taken to keep disks away from magnets and equipment which generates magnetic fields. Failure to observe this precaution is likely to result in destruction of the operating system disk or valuable data. Also take care to protect disks from extreme temperatures. The usable temperature range for disks is from 10 to 50°C. Since disks can be deformed by exposure to high temperatures, do not store disks next to heaters or in places where they might be exposed to direct sunlight.

One of the disks supplied contains the CP/M operating system. Since the computer cannot operate without this system, your first action after turning on the power should be to make one or more backup copies of the system disk. Procedures for doing this are explained below.

3.2 System Activation

Powering up the system is simplicity itself. Just turn on the switch located near the back of the right side of the unit. This can be done with the system disk installed in drive A (the drive on the left); for the moment, however, leave both drives empty.

When you turn on the power, you will notice that the red LED power indicator on the right front of the main unit lights and, after a moment, that the red LED above drive A lights. This indicates that the QX-10 is running and waiting for the system disk to be inserted. Remove the system disk from its envelope and cover its write-protect notch with a write-protect tab (one of the silver-colored tabs included in boxes of new disks). Insert the system disk into drive A (the drive on the left) with the head slot toward the inside of the main unit.



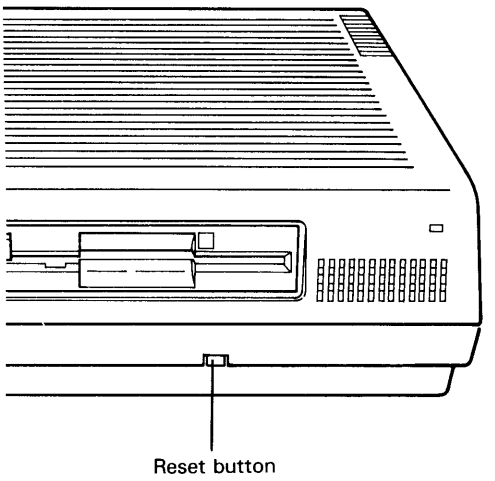
Push the disk in until it reaches the back-stop, then continue pushing until it clicks into place. (If the disk does not go in smoothly, do not apply force; pull it back out and start over, being careful to properly align it with the drive entrance. Forcing the disk can damage it, resulting in destruction of its contents, improper drive rotation, and a variety of other problems.)

After inserting the disk, push the drive button; this enables the drive, allowing the boot strap loader to start loading the operating system. The screen is cleared and the image shown below is displayed.

```
63k CP/M vers 2.2

A>
```

If the operating system is not loaded (this may occur if the system disk is not inserted within 10 minutes after the power has been turned on), press the reset button on the front right side of the QX-10.



If the disk does not contain the system program, the speaker beeps and the message "CAN NOT COLD BOOT!!" appears on the CRT display. In this case, turn off the power and insert a disk containing the system and perform the above procedure. Before going any further, make a copy of the system disk. This is done as follows.

3.3 Copying the System Disk

Leave the system disk in drive A, insert a blank disk in drive B, and press the drive button. (If you use other than an Epson disk for this purpose, format it first by entering FORMAT and pressing the RETURN [↵] key. See Paragraph 5.4.5.) After doing this, type the underlined letters shown in the figure below. After typing each group of letters, press the RETURN key where indicated by the return symbol [↵].

```
A>SYSGEN ↵
QX-10 SYSGEN  ver x.x

Source Drive Name ( or RETURN to skip ) A
Source on A, then press RETURN ↵
Function complete
Destination Drive Name ( or RETURN to reboot ) B
Destination on B, then press RETURN ↵
Function complete
Destination Drive Name ( or RETURN to reboot ) ↵

A>PIP B:=A:*.*[V]

COPYING -
.OSTAB.SYS
DESTINATION IS R/O, DELETE (Y/N)?
```

The above sequence copies the entire contents of the disk in drive A to that in drive B. The message "DESTINATION IS R/O, DELETE (Y/N)?" appears whenever a file whose type is SYS is to be copied. Since these files have already been created by the SYSGEN command, press the N key when this message is displayed. (If the Y key is pressed, files generated by SYSGEN may be changed.) After copying has been completed, remove the original disk from drive A (by pressing the drive button) and store it in a safe place, then remove the copy from drive B and insert it in drive A. Confirm that the system has been copied by pressing the CTRL and C keys together to warm boot the system (a warm boot stops system operation, then starts it back up again from its initial condition). Hereafter, this copy is what is referred to by the term "system disk."

3.4 Initialization

The settings of the printer type supported, the RS-232C communication format, date and time and the international character set must be initialized with the CONFIG command when the system disk is first used. For details on the CONFIG command, see Section 5.4.

3.5 The QX-10 Diagnostic Programs

A variety of diagnostic programs are provided on the EPSON diagnostic disk. These are used to check operation of the QX-10's hardware, including the keyboard, main memory and peripheral devices. Ordinarily, the user need not be concerned with these programs; however, in the event of trouble, they can help you provide your EPSON service representative with information required to restore the system to normal operation in the shortest possible amount of time. Procedures for executing the diagnostic programs are described in Appendix E. When trouble is encountered, execute the diagnostic programs and inform your service representative of the results.

Chapter 4 EPSON MultiFonts CP/M

4.1 Introduction

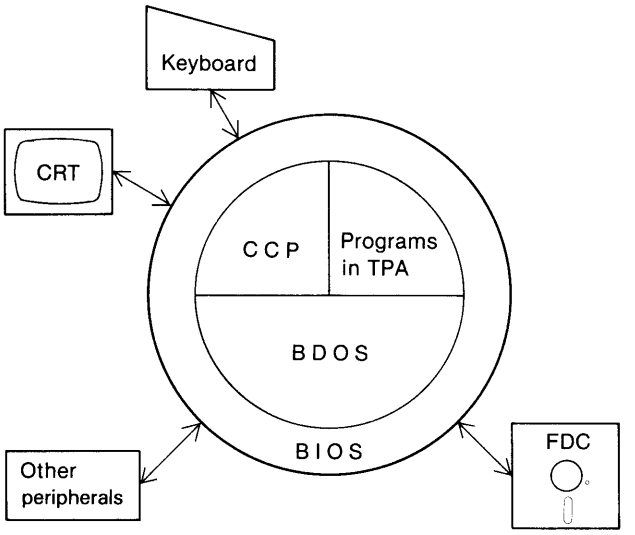
The QX-10 uses the MultiFonts CP/M operating system which is an expanded version of CP/M version 2.2, one of the most popular operating systems for small business computers and personal computers. CP/M is an abbreviation for Control Program for Microprocessors. This operating system was developed by Digital Research and has achieved such popularity because programs developed under CP/M can be used without modification on any computer using the CP/M operating system; many application programs for this system are commercially available. EPSON has added a variety of useful functions to CP/M version 2.2 in developing MultiFonts (MF) CP/M.

The MF CP/M operating system for the QX-10 provides international character sets for 8 countries: the United States, England, Germany, France, Spain, Italy, Denmark and Sweden. Any of these character sets can be selected for display and printout with the CONFIG command or by sending the following codes in succession to the console.

ESC	C	U	U.S.A. (ASCII)
ESC	C	E	England
ESC	C	F	France
ESC	C	G	Germany
ESC	C	I	Italy
ESC	C	S	Spain
ESC	C	W	Sweden
ESC	C	D	Denmark

The character set can also be switched using the OPTION COUNTRY statement of MultiFonts BASIC (MFBASIC). See the QX-10 MultiFonts BASIC Reference Manual for details.

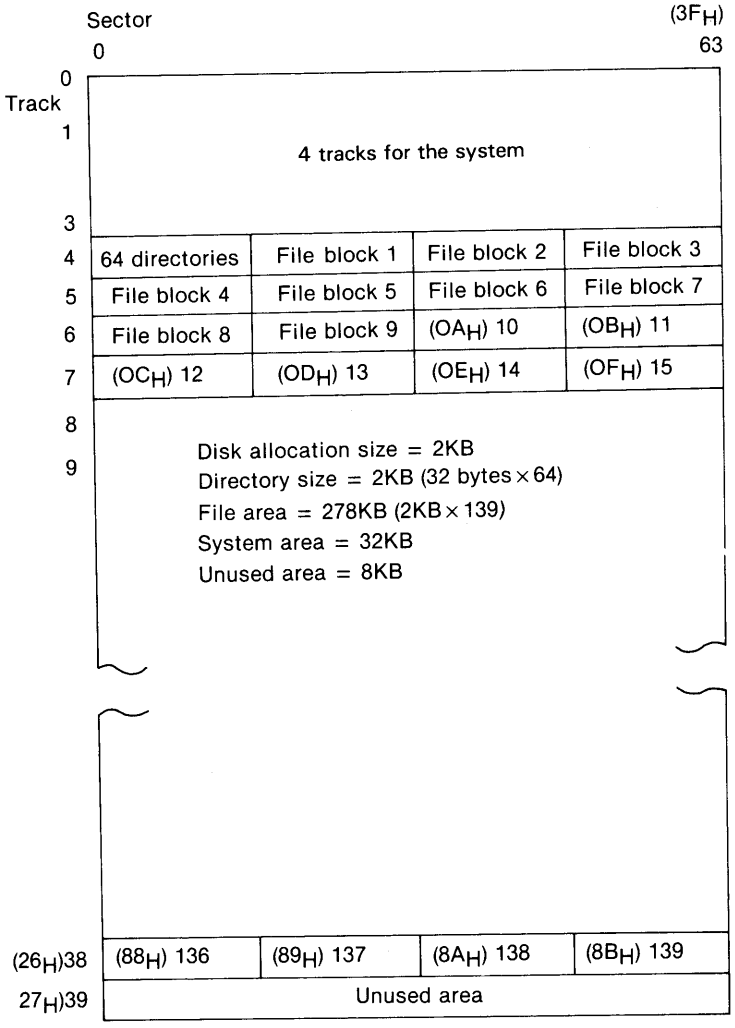
The CP/M system consists of 3 program modules: CCP (the Console Command Processor), BIOS (the Basic Input/Output System) and BDOS (the Basic Disk Operating System). The relationship between these modules and other components of the system is shown below.



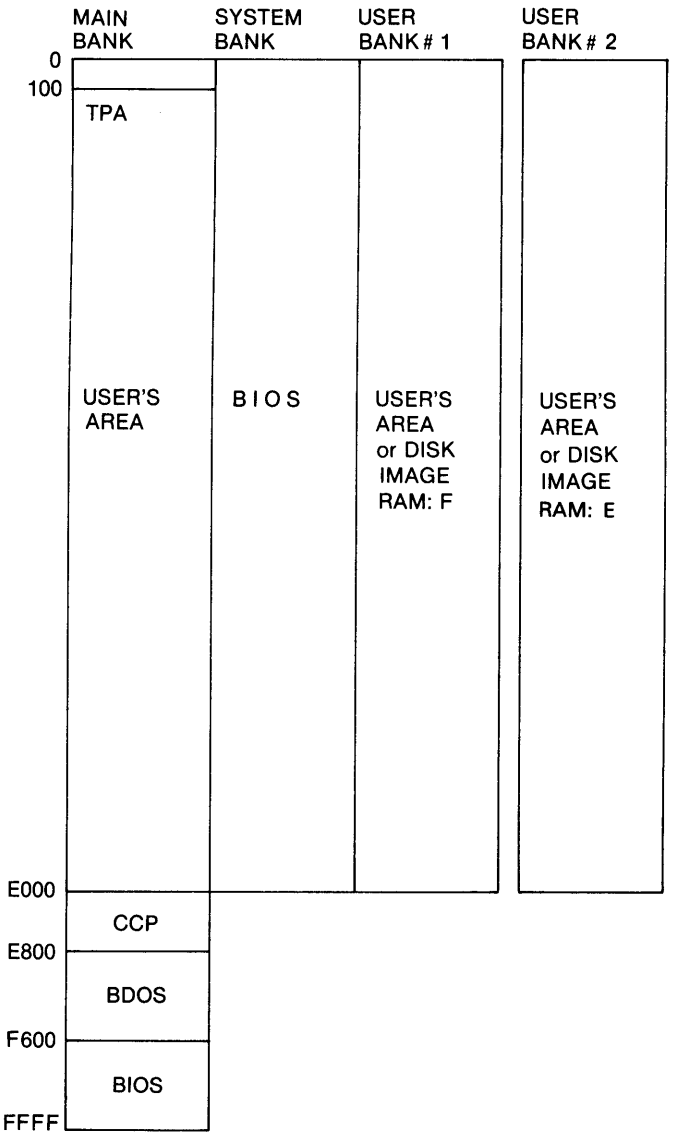
CCP reads and interprets commands input from the keyboard. BIOS provides an interface between peripheral devices and the other modules of CP/M. BDOS performs disk file management, and is the nucleus of CP/M. BIOS and BDOS are explained in more detail in Chapter 7. For further details, refer to any of the various books available on CP/M.

4.2 Starting MF CP/M

The CP/M operating sytem for the QX-10 is supplied in the form of a flexible disk, which is referred to as the system disk. The configuration of the system disk is shown below.



It is recommended that a copy of the system disk be used for day-to-day operation. Copies can be made using the procedures described in Chapter 3. To start CP/M, insert a copy of the system disk in drive A, then turn on the QX-10's power switch; this automatically loads the system program into the computer's memory. The memory map after loading is as shown below.



The following prompt (the system prompt) is displayed on the CRT screen after the system has been loaded; this indicates that the disk drive currently logged in (the disk drive currently under control of the system) is drive A, and that the system is ready to accept entry of commands. At this time, the system is said to be at the command level.

A>

Drive A is always logged in when the power is turned on, and remains logged in until another drive is logged in. This is done by typing the following from the keyboard.

B: 

The system then responds as follows. (If no disk is installed in drive B when that drive is logged in for the first time, the speaker will beep and the FDD TIMEOUT-XX message is displayed.)

B>

To return to drive A, type:

A: 

4.3 System Files

4.3.1 File directory

CP/M and other programs are recorded on the system disk in the form of files. It is possible to display a list of the files recorded on a disk by executing the DIR (directory) command. Type

DIR ↵

following the system prompt; names of files and their types are then displayed on the screen as follows.

```
A>DIR
A: MOVCPM  COM : .OSTAB  SYS : .PFKTAB  SYS : .FOREIGN SYS
A: .GAIJI  SYS : PIP     COM : SUBMIT   COM : ED       COM
A: STAT    COM : ASM     COM : LOAD     COM : DDT      COM
A: SYSGEN  COM : DUMP    COM : XSUB     COM : DUMP     ASM
A: BIOS    ASM : CBIOS   ASM : DEBLOCK  ASM : DISKDEF  LIB
A: FORMAT  COM : CONFIG  COM : PFKSET   COM : DIRINIT  COM
A: TERM    COM : DISKCOPY COM : CHARADEF COM : MFONT    COM
A: NORM    COM : AUTOST  COM : MFBASIC  COM :
A>
```

4.3.2. File names

All programs and data are stored as files. A file name identifies a particular file or group of files on a disk. Individual files are stored under "unambiguous" file names (ufn); "ambiguous" file names (afn) are used to identify groups of files.

- **Unambiguous file names**

An unambiguous file name identifies a single file. It consists of a file name and a file type (typ), which are separated by a period (.) as shown below.

filename.typ

The file name consists of up to 8 characters and the file type consists of up to 3 characters. All alphanumerics and special characters other than the following can be used in file names.

< > . , ; : = ? * [ ] _ % | ( ) / \

- **Ambiguous file names**

Ambiguous file name is used to find files whose file names and/or file types include common character strings. The form for specifying ambiguous file names is similar to that used for unambiguous file name, except that the question mark (?) can be used as a wild card character to indicate any character of a filename in a particular position. An example of an ambiguous file name is shown below.

```
AB?D.C?M
```

Some of the files to which this file name could apply are as follows.

```
ABCD.COM
ABZD.COM
ABCD.CAM
```

The asterisk (*) can also be used as a wild card character in place of eight question marks for a file name or three question marks for a file type. That is,

```
*.*
```

is equivalent to

```
????????.???
```

Of course either the file name or file type may be uniquely specified as

```
filename.*
```

or

```
*.typ
```

4.3.3. Drive names

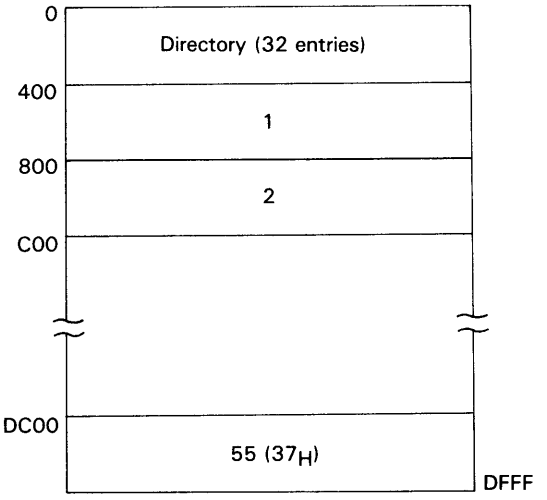
When a file stored on a disk in a drive other than that currently logged-in drive is specified, the drive name must be specified ahead of the file name as shown below.

```
>A DIR B:*.COM
>A PIP LST:=B:SAMPLE.PRN
```

- **Disk Image RAM**

CP/M for the QX-10 supports 2 disk drives plus 2 virtual disk drives in memory. Therefore, drive names A, B, E and F may be specified in commands. Drive names A and B are assigned to the standard disk drives. Drive name E is assigned to a 56K byte memory area (user bank #2) which becomes available when optional RAM chips are installed for 256K byte system. Drive name F is assigned to a 56K byte memory area which is usually used as the user area for MultiFonts BASIC (user bank #1). (Drive F cannot be used by MultiFonts BASIC.) These memory areas can be used as if they were disks. Each memory area has the directory area and data can be accessed in file units by system commands. The maximum number of directory entries is 32. These memory areas are referred to as disk image RAM.

Since the access speed of the disk image RAM is several times as great as that of flexible disks, it is convenient when assembling programs. The contents of disk image RAM are lost when the power is turned off.
The layout of disk image RAM is as follows.



4.3.4 Logical device names

The CP/M operating system for the QX-10 supports 4 logical I/O devices, CON:, RDR:, PUN: and LST:. These logical device names can be treated as file names as shown below.

```
PIP LST: = ABC.PRN
```

The above command outputs the contents of file ABC.PRN on PRN: (printer unless IOBYTE is changed).

4.4 CP/M Operation Mode

The CP/M system for the QX-10 operates in either the normal or MultiFonts (MF) mode.

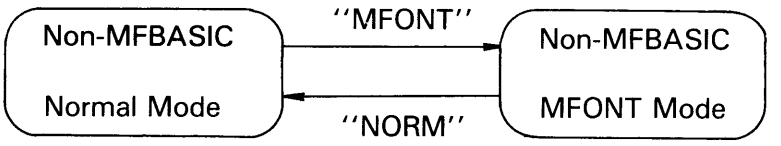
4.4.1 Normal mode

This is the mode entered immediately after the CP/M is cold started or the NORM command is executed in the MF mode. In the normal mode, all keys on the keyboard except the style selection keys can be used for data entry. The character set used in this mode is that specified by the CONFIG command or "ESC" + "C" + "country code key" (see 4.1). Each character is displayed as a matrix of 7 (horizontal) × 13 (vertical) dots.

4.4.2 MultiFonts mode (MF mode)

This is the mode entered after the MFONT command is executed in the normal mode. In this mode, the style of characters displayed can be selected with the style selection keys. The international character sets which can be used in this mode are the same as with the normal mode. Each character is displayed as a matrix of 14 (horizontal) × 17 (vertical) dots in the style specified by the style selection keys.

Since style information is not included in the internal character codes for Multiple Font characters, they are not printed on the printer or transmitted through the RS-232C interface in the same style as displayed. To return to the normal mode, execute the NORM command.



4.5 CP/M BDOS Error Messages

The system reports four types of errors related to BDOS operation. These error conditions are indicated with message.

```
Bdos Err On d: error
```

Here, "d:" is the name of the drive on which the error occurred and "error" is one of the following.

```
Bad Sector
Select
R/O
File R/O
```

Bad Sector
This message indicates that the disk drive or flexible disk is defective. This error also occurs when no flexible disk is installed in the drive when access is attempted. This error condition can be cleared by one of the following actions: (1) rebooting the system (that is, pressing the BREAK key or CTRL plus C keys), or (2) pressing the [←┘] key. With the latter method, the error is ignored and program execution continues. However, note that this method does not ensure integrity of the flexible disk.

Select
This error occurs when a drive other than A through F is specified; the condition can be cleared by pressing any key.

R/O
This error occurs when an attempt is made to write data to a flexible disk which has been designated as read-only by the STAT command, BDOS function or a write protect tab. This condition can be cleared by pressing the BREAK key (or CTRL and C keys together). This error also occurs when a write is attempted without making a warm boot after the disk has been replaced or moved to another drive.

File R/O
This error occurs when an attempt is made to write a file for which the read only attribute is set. This condition is recovered by pressing any key.