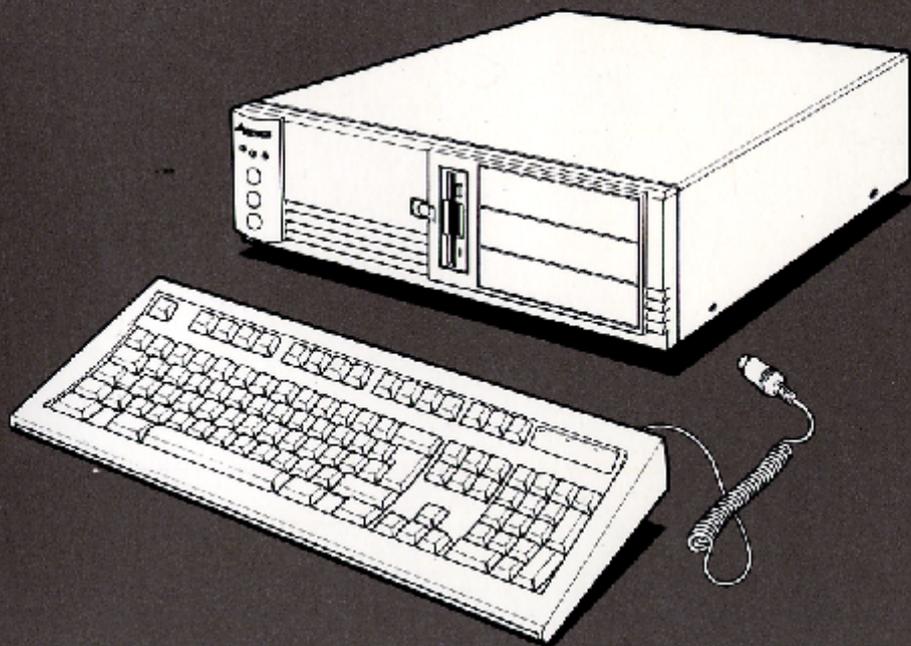


ATARI®

ABC 386DXII™
ABC 386SXII™



OWNER'S MANUAL



ABC386SX II

ABC386DX II

User's Guide

Bescheinigung des Herstellers/importeurs

Hiermit wird bescheinigt, daß der/die/das

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(Gerät, Typ, Bezeichnung)

in Übereinstimmung mit den Bestimmungen der

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INTRODUCTION

INTRODUCTION

Congratulations on your purchase of an Atari personal computer! The ABC386SX II and ABC386DX II system provide you with the chance to have a powerful computing tool in your home or office at a very affordable price. At the same time, you will enjoy the benefits of modern processor technology in an easy-to-use machine.

With the --SX II, you have all the power inherent in the Intel 80386 microprocessor. The central processing unit, with its 32-bit internal bus, executes instructions at 20MHz and provides a full 8 megabytes of main memory.

The advanced --DX II, also with a 32-bit bus, gives you twice the speed (40MHz), a cache system, and four times the memory capacity (32 megabytes). With performance truly approaching that of a workstation, this much power for the price only lived in the imagination until now.

This manual will provide all you need to know to get the most out of your new computer, from installation to getting it running to adding cards and peripherals. Whichever model you purchased, and whether you use it for business or pleasure or both, we are certain you will enjoy this fine Atari product for years to come.

CHAPTER ONE

SYSTEM OVERVIEW

FRONT PANEL
REAR PANEL
COMMUNICATION PANEL

SYSTEM OVERVIEW

When you unpack the cardboard box, you may find a case, utility diskettes, the DOS manuals, this manual, a keyboard, a mouse, an AC power cord, and a small accessory box which contains two keys and some screws, as shown in the Fig 1.1.

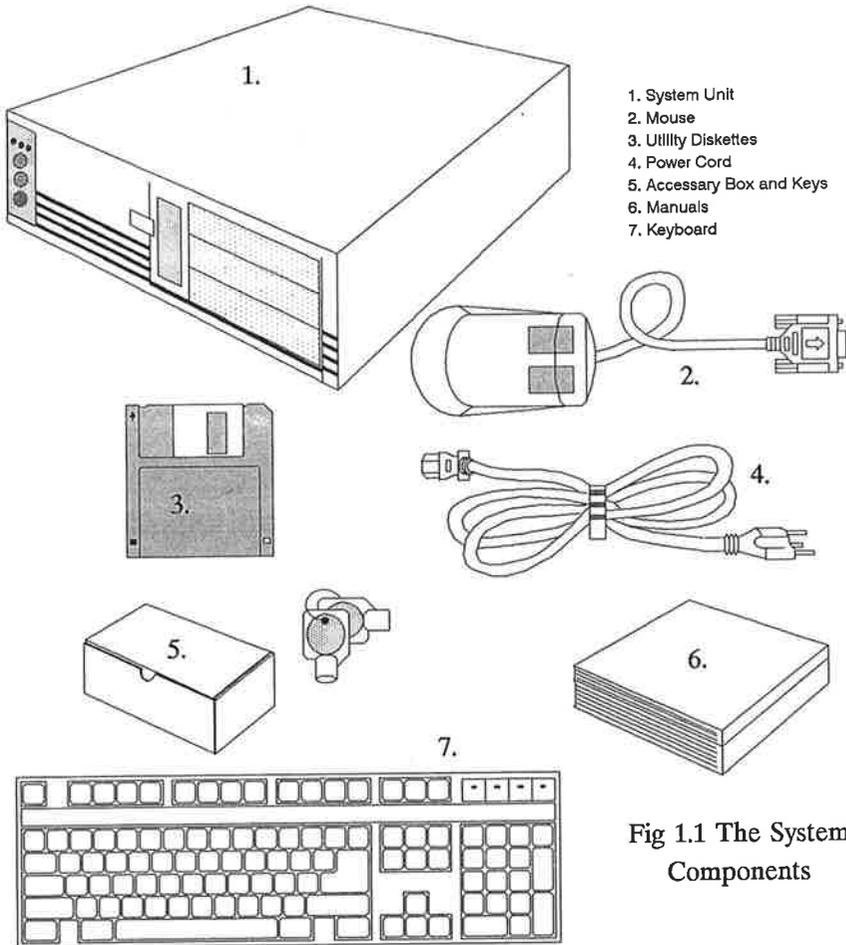


Fig 1.1 The System Components

In this chapter, we only introduce the functions of the system unit's panels. The basic operations of the keyboard will be described in Chapter 3. The MS-DOS manuals explain the DOS commands in detail.

Inside the system unit is an assembly of important components (see Fig 1.2) :

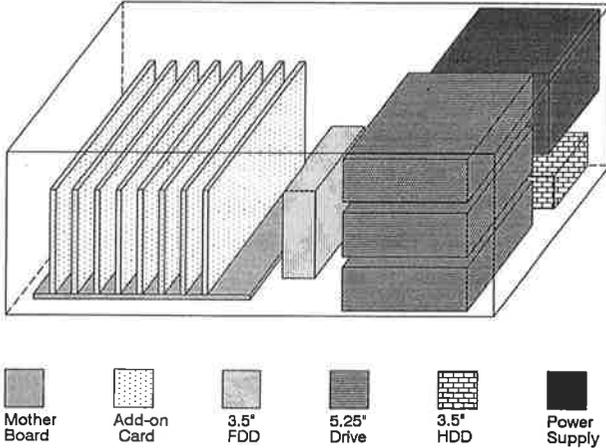


Fig 1.2 The Organization of the System Unit

THE FRONT PANEL

On the front panel of the System Unit, you can easily find all the principal controls for operating your machine.

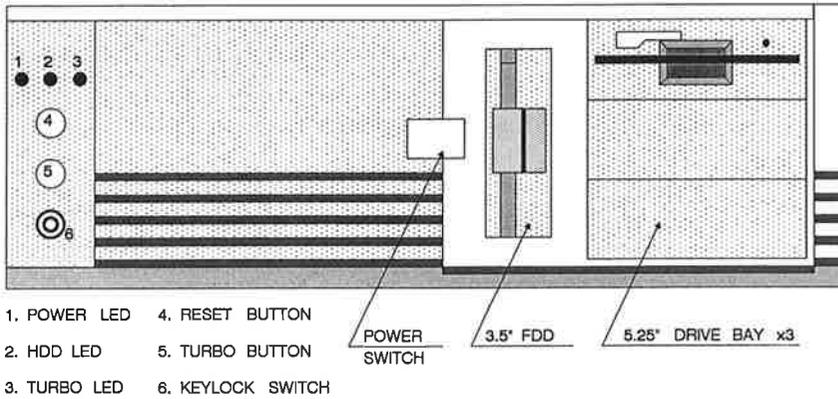


Fig 1.3

Keylock Switch

Using the key provided, you can lock keyboard input to the computer and no one can intrude upon it without your authorized entry.

Power LED

This LED is green, and lights up when power is on.

HDD LED

This LED is red and lights up whenever the Hard Disk Drive (if installed) is being accessed.

Turbo LED

This LED is yellow, and lights up if your system is running under the high-speed clock.

Turbo Button

If this button is depressed, the system switches to the high-speed clock and the yellow LED lights up. And if the button is pressed again, the yellow LED goes off and the system switches to a low speed.

To make sure what high and low speed is run, please refer to page 7-6.

Reset Button

This is also known as the Hardware Reset Switch.

The system will reboot when this switch is pressed, as if you turned the power off and then on.

There is specific terminology for this situation : 'cool start' (cf. Chapter 3 for 'warm start' by keyboard reset).

Power Switch

When this switch is pressed down, the machine power is on and the green power LED lights up. Press it again to cut the power and switch the machine off.

Drive Slots

In each 5.25" bay can be installed either a 5.25" floppy or fixed disk drive. Your system should have installed at least one floppy disk drive with a capacity of 1.2 MB.

The locations of 3.5" FDD and HDD are reserved for a 3.5" floppy disk drive and a 3.5" hard disk drive, respectively.

THE REAR PANEL

The rear panel of the system unit is the location of ports through which the computer effects communications. From the rear panel you can also see a part of the power supply. The diagram below shows the main features of the rear panel.

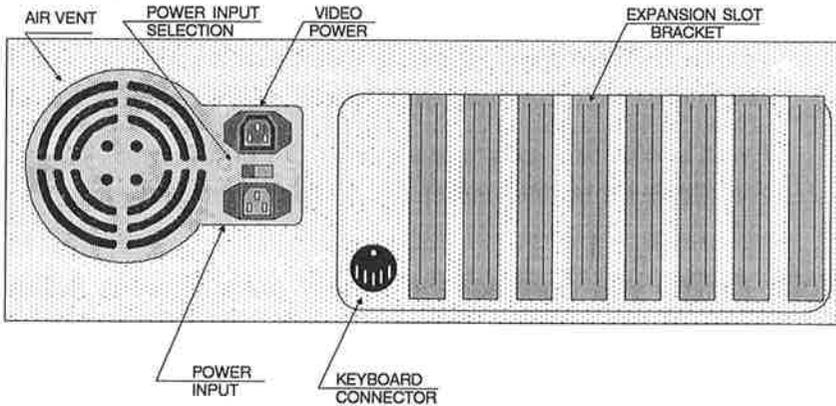


Fig 1.4

Power Unit Air Vent

The System Unit power supply is located right behind the round vent and draws air through it.

Make sure the vent always has adequate free space.

Power Input

This is a three-pin male socket. The power cable available with your system connects your local power supply with the machine through this socket.

Power Select

The system is designed to function by using a local voltage supply of either 115V or 230V. Use this switch to configure the machine suitable for your local voltage.

Video Power

The system unit power supply can sustain a monochrome display monitor. Use this three-pin female socket and the cable provided with your monitor to connect your monochrome monitor.

If your monitor is a color monitor (ex. VGA or multisync), use the local supply for monitor power. See Chapter 2 for illustration.

Note: Before you connect the power cord, please make sure of the voltage range in your office or home. If it is 100-120V, select the 115 position; if it is 200-250V, select the 230 position.

THE COMMUNICATION PANEL

The communication panel occupies the full right side of the rear panel. Usually, a computer system has two serial ports (25-pin and 9-pin), a printer port, a keyboard connector and a video output port.

Keyboard Connector

This round DIN-type socket connects directly to the system keyboard. An AT-style keyboard usually has the correct cable and jack attached.



Keyboard Connector

Serial Ports

The serial ports make communication possible with serial devices such as a terminal. Each port is a standard RS-232 interface configured as a 25-pin or 9-pin male socket.



9-pin serial port



25-pin serial port

Standard Male Serial Ports

Parallel Port

The 25-pin parallel port provides communication with parallel devices such as a printer. The interface is of standard 'Centronics' type. The figure below shows this 25-pin female parallel connector.



Parallel Port

Video Output Connector

This interface provides output signals to a display monitor. But the output ports vary depending on the adapter available.

There are two kinds of standard video port, 9-pin and 15-pin. Please check the cable provided with your monitor to know which of them is the suitable one.

(See the next page for a description of the two different kinds of video connectors)



9-pin video output of MGA , CGA and EGA, or digital video output of VGA



15-pin analog video output of VGA

Video Output Connectors

CHAPTER TWO

PERIPHERALS INSTALLATION

KEYBOARD CONNECTION
DISPLAY MONITOR CONNECTION
SYSTEM POWER CONNECTION
CONNECTION TO PARALLEL DEVICES
CONNECTION TO SERIAL DEVICES

PERIPHERALS INSTALLATION

When connecting useful peripherals to the system, take care to:

- Make sure you have the right cable for each device.
- Don't try to force any jacks into sockets if they don't fit each other.
- Make sure that the pins and pin-holes are identical.
- Put your system unit where you can have easy access to the rear panel.
- Follow the simple connection procedures explained in this chapter

Note: Never power up any component until everything is properly connected.

KEYBOARD CONNECTION

Check your keyboard and find the switch making your keyboard compatible with an XT or AT system. Please set this switch to the AT position. If your keyboard doesn't have this switch, it's okay that you need not set anything.

The keyboard cable ends with a five-pin jack of DIN type. Insert it into the keyboard socket on the rear panel.

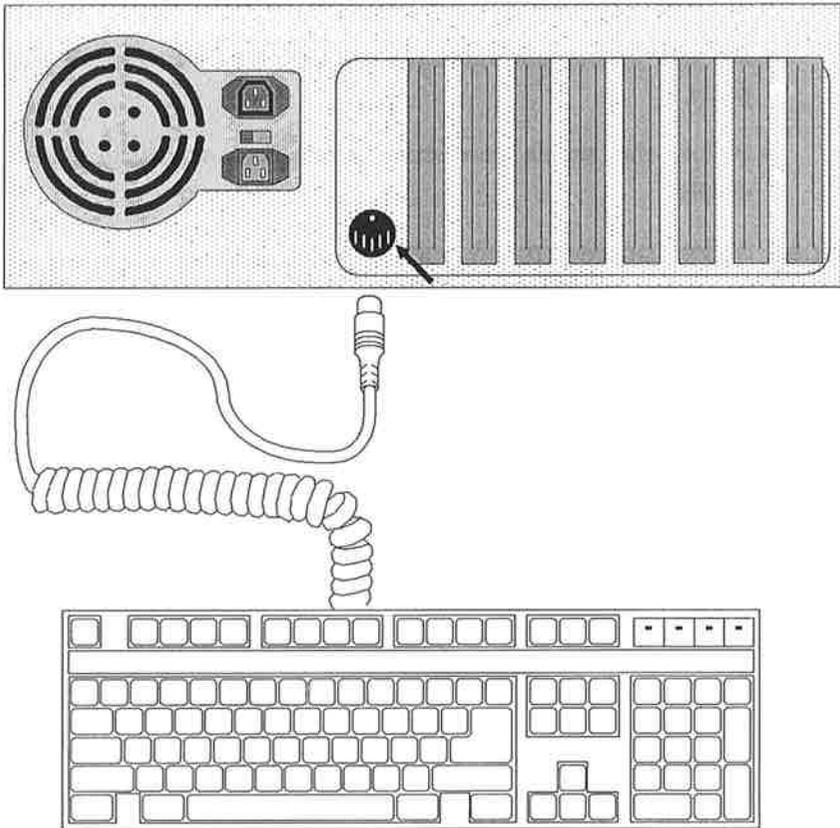


Fig 2.1

DISPLAY MONITOR CONNECTION

Before connecting your monitor with the system, make sure you have the right type of display adapter already installed for the kind of monitor you choose (CGA, VGA, . . . etc).

The 15-pin female connector is designed for an analog monitor (VGA or multi-frequency monitor)

The 9-pin one for a digital monitor (MGA, CGA, EGA).

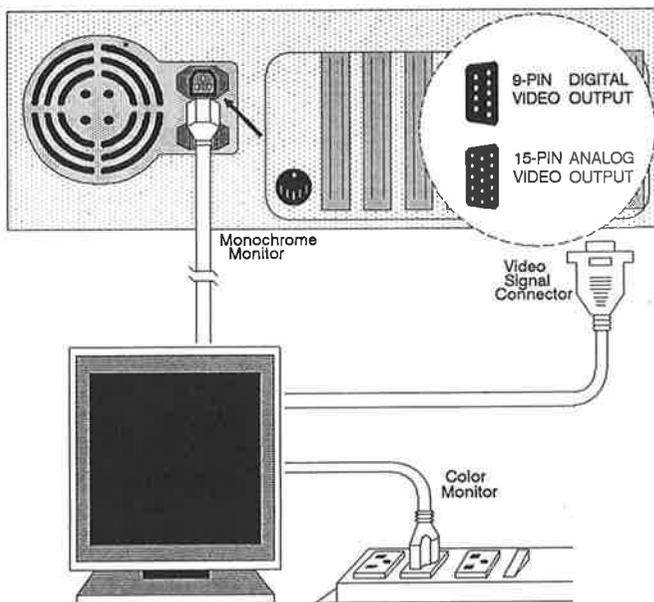


Fig 2.2

As mentioned in the previous chapter, monochrome monitors can use the video output on the rear panel, but color monitors should be plugged into your local socket. Distinguish between the video power and system power sockets. The female video power socket is indicated by the upper black arrow.

SYSTEM POWER CONNECTION

With the power cable available, you can easily power on this system by pressing the power switch described in the previous chapter.

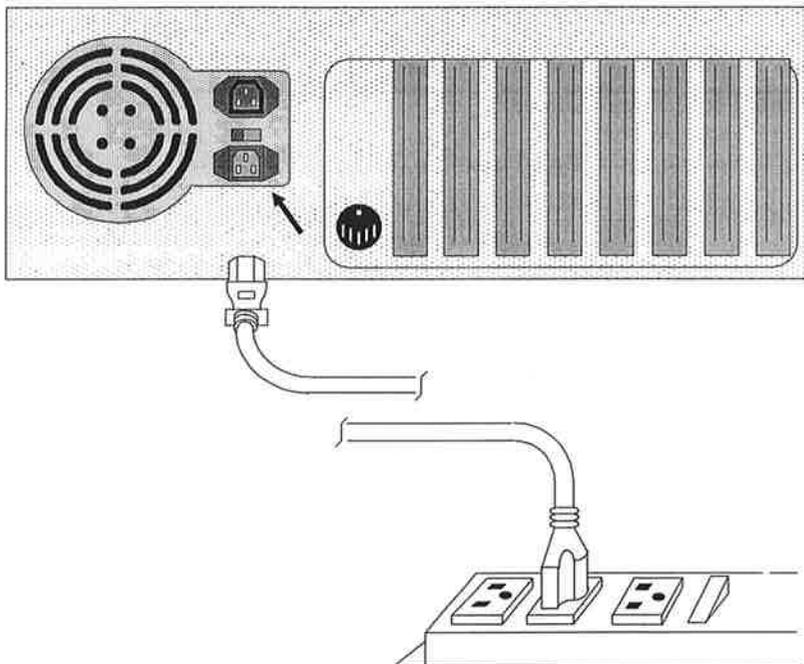


Fig 2.3

- **Make sure that the voltage selected on the rear panel is equivalent to your local supply.**
- Connect the power cable to the rear panel socket and the local electric source.
- The power supply contains a GROUND line which is essential to safe operation of your system. Don't use a power source which does not have a GROUND pin.

CONNECTION TO PARALLEL DEVICES

Connection to parallel devices, such as a printer, is made through the 25-pin, D-shaped connector mounted on the communication panel of the System Unit case. Connect up your devices as shown in the illustration below.

CONNECTION TO SERIAL DEVICES

The system unit case is supplied with two standard RS-232 serial connectors: 25-pin and 9-pin.

Be sure of which (25-pin or 9-pin) your serial device uses. See page 1-7 to distinguish them.

Fig 2.4 is an example of the connection of the mouse, provided with this system. It fits a 9-pin male connector.

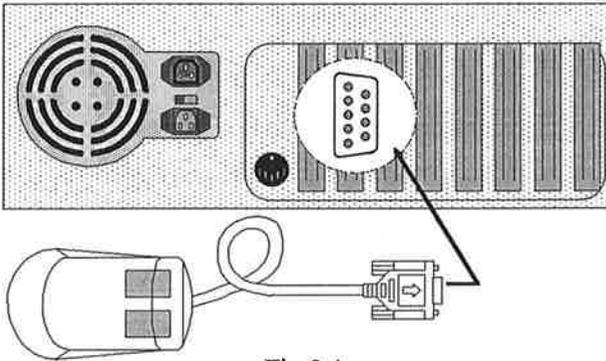


Fig 2.4

NOTE: *If you use a printer or other peripherals that have their own power supply in your system, make sure that you have cut the power to them before cutting the power to the system unit.*

CHAPTER THREE

BOOTING AND OPERATING

BOOTING
FOUR USEFUL DOS COMMANDS
HOW TO USE THE MOUSE
HOW TO USE THE KEYBOARD

BOOTING AND OPERATING

If the configuration is properly set up, the *OS will be loaded into memory after the power is turned on.

Loading the OS is called **Booting**.

This system's configuration setup is described in chapter 6.

BOOTING

The action of booting occurs 1. after the power is turned on, 2. the Reset button is pressed -- (cool start), or 3. key combination Ctrl + Alt + Del is typed -- (warm start).

First, the **POST message shows up on the monitor display - available memory size is shown if cool start, otherwise, if warm start, only the information about the ***BIOS version is shown. See Fig 3.1.

Then, the LEDs of the installed drives alternately light up, the monitor display is cleared and the system begins booting.

*OS - Operating System.

**POST - Power On Self Test

***BIOS - Basic Input Output System

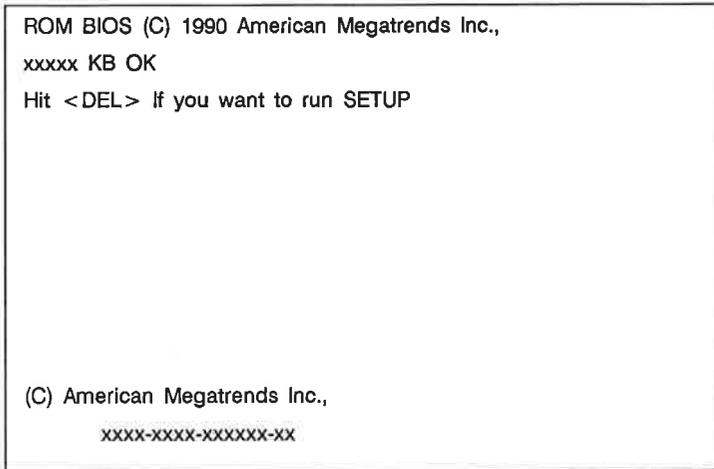


Fig 3.1 The AMI BIOS POST Screen

- Not until the OS (we provide you with an MS-DOS system diskette) is fully loaded into the system memory, does the current date appear on the screen. For example :

Current date is Thu 05-16-1991
Enter new date (mm-dd-yy):

- If the date is correct, press [Enter] to okay it; if not, type the correct date, 06-01-91 [Enter], for example. Then, the current time appears:

Current time is 13:45:01.89
Enter new time :

- If the time is correct, press [Enter] to okay it; if not, type the correct time, 15:05 [Enter], for example. Then, the command prompt appears as:

C:> (if hard disk is installed)

or

A:> (if hard disk is not installed)

- DOS instructions are needed when you wish to tell this computer to do something. Reading the DOS user's reference book in detail, you will be able to happily operate most PC's. Later in this chapter, we will introduce some useful DOS commands.

If booting is not successful, possible problems are:

- The power bundle or interfacing cable for the hard disk or floppy driver is not properly connected up.
- The system diskette is not inserted into drive A.
- The inserted diskette doesn't have any operating system.
- The floppy drive door isn't closed.
- The monitor doesn't have power.
- The hard disk's type number wasn't set right.

FOUR USEFUL DOS COMMANDS

Every DOS command should be inputted after the prompt, such as A> or C:\>.

DIR

This command displays files specified by parameters. If there are no parameters, it displays all files in the current active drive (the first character of the prompt). Type

DIR[Enter]

from the keyboard, where [Enter] is a key on your keyboard.

COPY

This command reads files from an original disk and writes them onto a target disk. Typing

```
COPY A:*.* B:[Enter]
```

makes a backup diskete, where the diskette in drive A is the source and that in drive B is the backup. And typing

```
COPY A:MYDATA.DAT B:[Enter]
```

copies the file named MYDATA.DAT in drive A onto drive B keeping the same file name.

- If a file in drive B with such a name exists, the new data is written over the old data.
- If a file in drive B with such a name doesn't exist, a new file with the same name is automatically created.

FORMAT

Every new diskette needs to be formatted as a standard MS-DOS diskette before this diskette can be used to read or write. Typing

```
FORMAT A:
```

creates a new data disk without booting files. And typing

```
FORMAT A:/S
```

creates a new disk with booting files (so that it can be inserted into drive A to be used to reboot).

After the FORMAT command is completed, the monitor displays:

```
Format another one (Y/N)?_
```

Answer *Y* if yes, *N* if no.

DEL

You can use this command to erase a specific file. Typing

```
DEL MYDATA.DAT
```

erases the file named MYDATA.DAT.

HOW TO USE THE MOUSE

The mouse is a popular input device in many applications, especially in CAD software packages. Before a mouse can be used, the software driver should have been installed in advance. Please check the provided utility diskettes that hold mouse drivers and read the read-me file carefully to install them properly.

The mouse provided with this system has two buttons and a rolling ball. When it is being used, the ball must touch a horizontal plain such as your desk, therefore, the mouse glides easily and the  cursor on the screen will move in the similar way as the mouse does.

In many applications, pressing the left button often inputs the current position, indicated by the mouse cursor, into the computer. You have to read the applications intructions for properly operating.

HOW TO USE THE KEYBOARD

The keyboard is the most important input device in the PC system. The meaning of each key varies depending on the definitions of the applications software being used.

In this section, we don't try to explain the complex definitions of popular word processors, but try to help the first-time users.

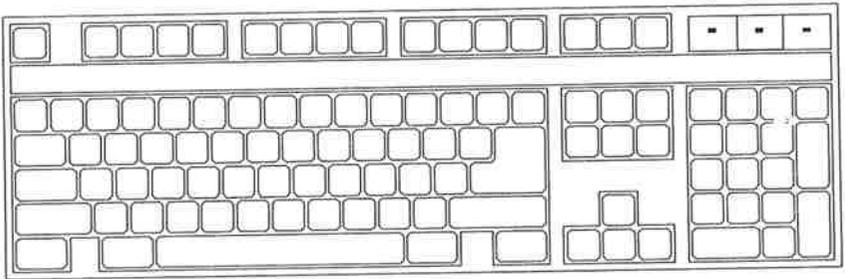


Fig 3.2

With this system, we provide keyboards in various languages. The English keyboard is an example described in this user's guide.

Now we try to explain the function of each key by dividing the keyboard into the following areas:

- The typewriter area
- The cursor control area
- The numeric keypad area
- The function key area
- The special key area
- The status light area

THE TYPEWRITER AREA

This area is much like a standard typewriter. It is used to enter alphanumeric text and some special symbols, marked on the keyboard, into the computer. In addition to the functions of a typewriter, some keys in this area have special definitions described in the following pages.

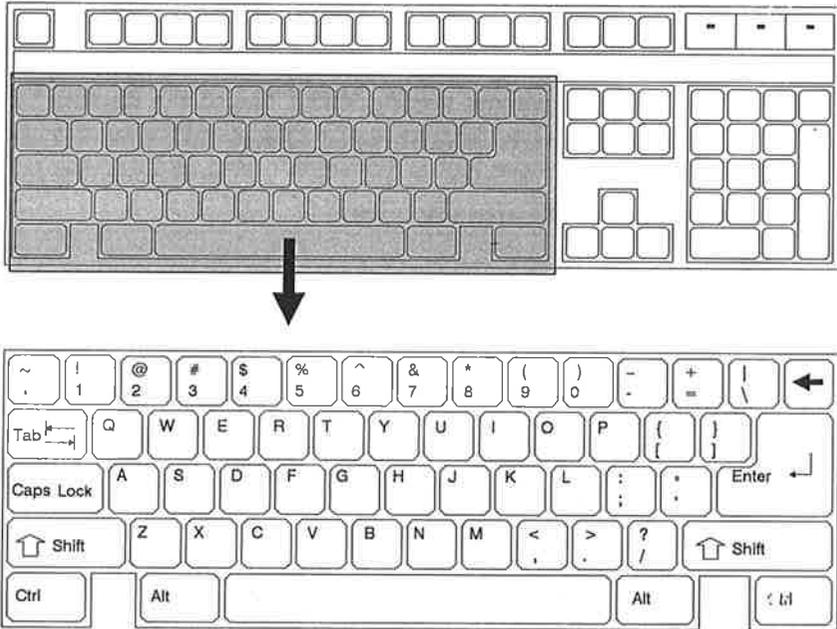


Fig 3.4

● The Caps Lock Key and Shift Key

Caps Lock off without holding Shift : The screen displays "a
b c d e f g h i j k l m n o p q r s t u v w x y z ' 1 2 3 4 5 6
7 8 9 0 - = \ [] ; ' , . /", corresponding to which key in this
area you typed.

Caps Lock off with Shift held down : The screen displays 'A
B C D E F G H I J K L M N O P Q R S T U V W X Y Z
~ ! @ # \$ % ^ & * () _ + | { } : " < > ?',
corresponding to which key in this area you typed.

Caps Lock on without holding Shift : The screen displays "A
B C D E F G H I J K L M N O P Q R S T U V W X Y Z
' 1 2 3 4 5 6 7 8 9 0 - = \ [] ; ' , . /", corresponding to
which key in this area you typed.

Caps Lock on with Shift held down : The screen displays 'a b
c d e f g h i j k l m n o p q r s t u v w x y z ~ ! @ # \$ %
^ & * () _ + | { } : " < > ?', corresponding to which
key in this area you typed.

● The Enter Key

Similar to the carriage return key of a typewriter, the Enter
key will 'enter' a line into the computer system and move the
cursor to the beginning of the next line.

● The Backspace Key ←

This key moves the cursor back one space, deleting charac-
ters as it moves. If the key is held down, the movement will
be continuous..

- **The Control Key**

When used in conjunction with other keys, this key can enter special instructions or functions into your computer system. These are determined by the kind of operating system in use and the application programs being run. Refer to the software.

- **The Alternate Key**

Used in conjunction with other keys, this key allows special instructions or commands to be entered into the system. Like the Control key, it is necessary to refer to the software manuals for specific uses.

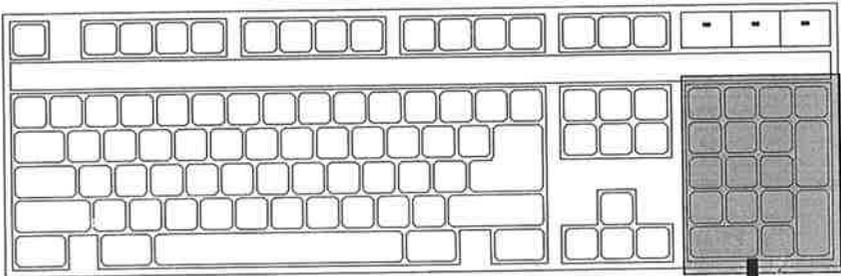
- **The Tab Key**

Normally, this key makes the cursor move to the next table-set column without you having to hold down the Shift key. In some applications, when the shift key is held down, the cursor moves to the previous table-set column. For example, the table-set columns in an 80-column screen are No. 1, 9, 17, 25, 33, 41, 49, 57, 65, 72, 80. If the current cursor position is 45, the cursor will next move to column 49 if the Tab key is pressed once, or to column 41 if the Shift-Tab key is pressed once.

- **The Space Bar Key**

This key moves the cursor one column forward and nothing is displayed.

THE NUMERIC KEYPAD



This area has two operation modes, the cursor control mode and numeric mode. Due to the convenience of the 101(or 102)-Key keyboard, we recommend you select this area for number entry.

The cursor control mode can be chosen with the keys in the cursor control area which will be described in next subsection.

You can choose either the cursor control or numeric mode by pressing the Num Lock key.

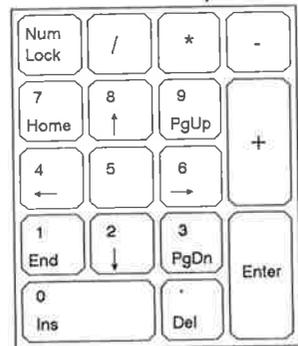


Fig 3.5

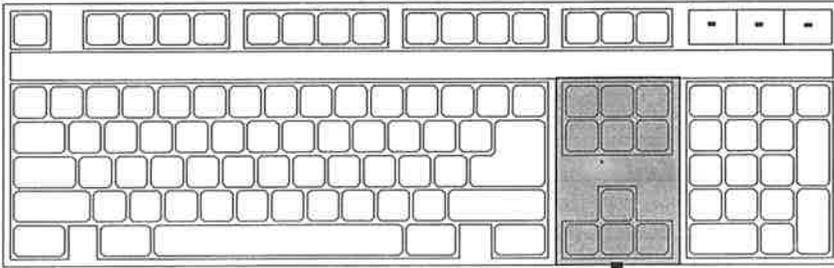
If this key is pressed, the Num Lock LED (the left-most one in the keyboard's LED area) will change from on to off or from off to on. If this LED is on, it means the current mode is numeric; otherwise it is in the cursor control mode.

In numeric mode, you can input numeric data (0-9) including the decimal point (.) to the computer by typing the keys in this area.

The operators, "+", "-", "*", "/", are valid whatever the mode.

The Enter key is identical to that described in the typewriter area.

THE CURSOR CONTROL AREA



The keys in this area usually have different definitions as the applications vary. In this manual, we describe their common definitions in popular word processors or editor applications.

- **The Left, Right, Up and Down Arrow Keys**

These keys move the cursor to the left, right, up or down adjacent position, respectively.

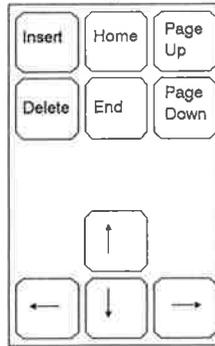


Fig 3.6

- **The Insert Key**

In some applications, this key is used to change the Insert or Replace Mode to its opposite.

When in the Insert Mode, you can insert a character into a line at the cursor location, each time you type, and the rest of the text will be moved to the right of the inserted character.

When the Replace Mode is present, the typed character overwrites the already existing one.

- **The Delete Key**

This key deletes the character at the cursor location. All characters to the right of the erased character are shifted to the left.

- **The Home Key**

This key usually puts the cursor at the beginning of the text line you are editing.

- **The End Key**

This key usually puts the cursor at the end of the text line you are editing.

- **The PageUp Key**

This key is usually defined to display the text of the prior page.

- **The PageDown Key**

This key is usually defined to display the text of the next page.

THE FUNCTION KEYS

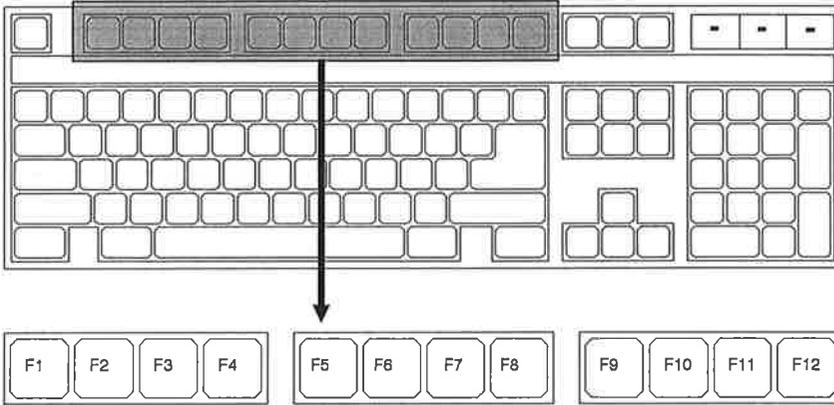


Fig 3.7

The use of the function keys is entirely determined by the kind of the applications being run. Refer to software manuals for further information.

In MS-DOS COMMAND processor, for example, you can duplicate one character of the last entered line, each time you type F1; you can copy the whole line if you strike F3.

THE SPECIAL PURPOSE KEYS

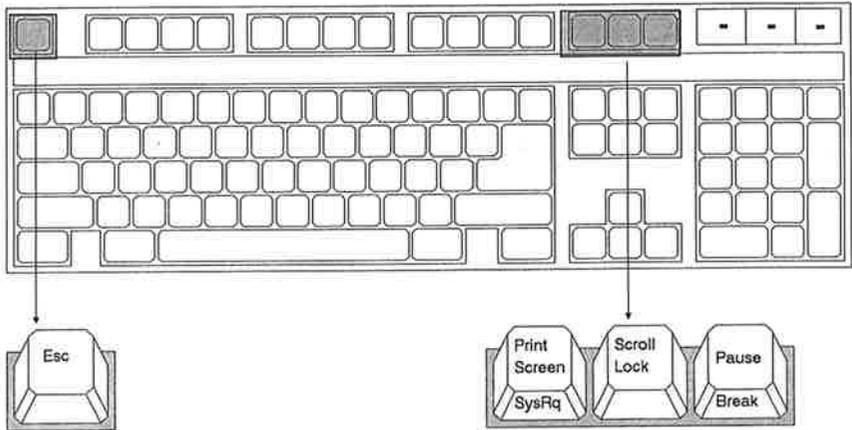


Fig 3.8

The use of these keys is entirely determined by the kind of the applications being run. Refer to software manuals for further information. The following descriptions are examples of some popular applications.

- **The Esc (Escape) Key**

This key is usually used to get out of the current screen and get back to the previous screen.

- **The Print Screen/Sys Req (System Request) Key**

This key is usually used with the Shift key held down, and to make a hot copy (if a printer is connected to this system unit) of the messages on the screen.

● The Scroll Lock Key

If this key is struck once, the Scroll Lock LED will be turned on until it is struck again. When the Scroll Lock LED is on, the text on the screen can not be scrolled again.

This key is not usually used in popular applications.

● The Pause/Break Key

In MS-DOS, this key may halt the movement of the text displayed in a scrolling screen until any key in the typewriter area is pressed (except the Shift, Alternate, Control, Caps Lock and Table keys).

When this key is used with the Control key held down (see descriptions in the typewriter area), the executing process will be interrupted and stop running.

WARM START

First hold down the Control key and Alternate key, and then press the Delete key. This is also remarked as 'Ctrl + Alt + Del' and will cause the system to reboot.

The Delete key can be either in the Numeric Keypad or the Cursor Control area.

THE LED AREA

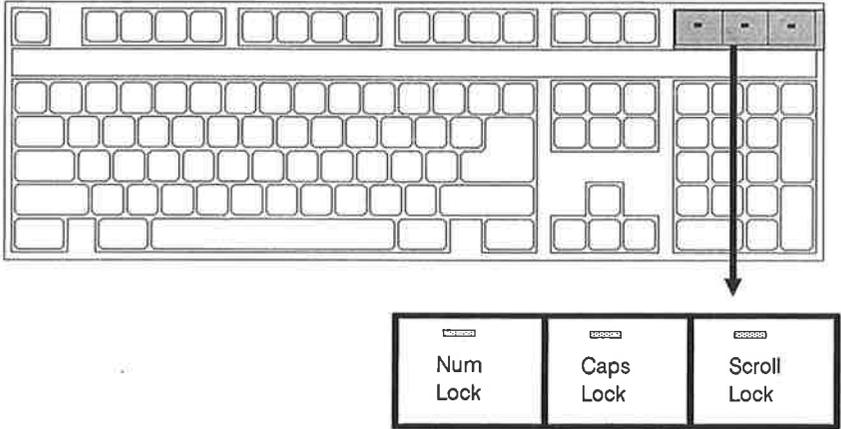


Fig 3.9

- **The Scroll Lock LED**

This LED will switch (on or off) whenever the Scroll Lock key (see the Special Purpose Keys) is struck.

- **The Caps Lock LED**

This LED will switch (on or off) whenever the Caps Lock key (see the Typewriter area) is struck.

- **The Num Lock LED**

This LED will switch (on or off) whenever the Num Lock key (see the Numeric Keypad) is struck.

ADJUSTABLE KEYBOARD LEGS

For optimum comfort, the keyboard is fitted with legs on the base. By unfolding these, you can adjust the angle of the keyboard to suit your typing style.

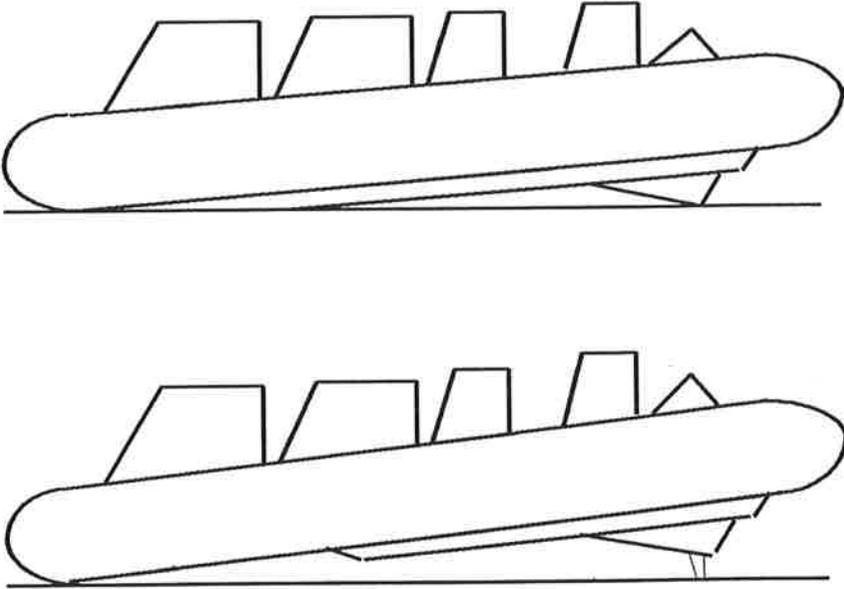


Fig 3.10

CHAPTER FOUR
DISASSEMBLING THE CASE

DISASSEMBLING THE CASE

In some situations, such as installing an optional add-on card, installing new disk drives, adding or replacing components on the motherboard, etc, you may need to remove the outside covers of the system unit.

There are two screws on both sides and three screws on the rear panel of the system unit. Each of them should be carefully removed by a screw driver.

Note: Never power up during unpacking, installing and reassembling.

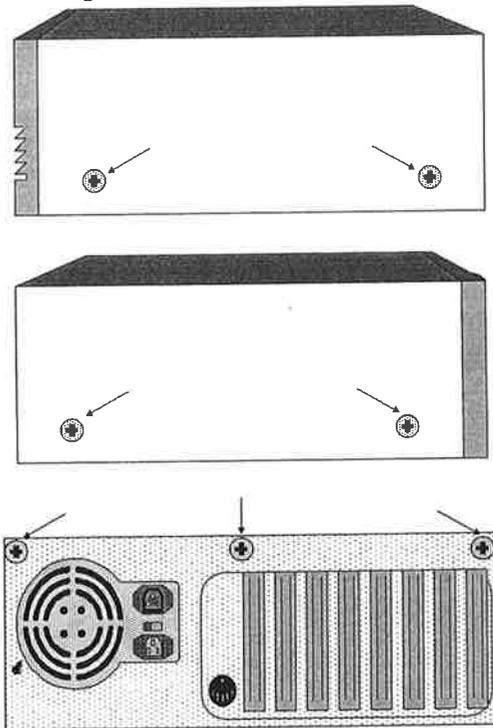


Fig 4.1 Four Screws in Each Side

After removing all the screws shown in Fig 4.1, you may carefully draw the upper cover out in the direction shown in Fig 4.2.

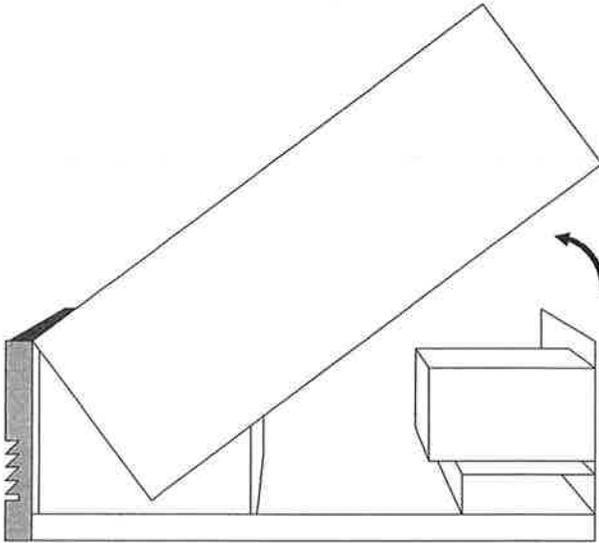


Fig 4.2

After finishing the installation, such as adding memory modules, add-on cards, etc., you need to reassembling the case in the reverse way.

CHAPTER FIVE

ADD-ON CARDS

INSTALLING AN ADD-ON CARD
VGA CARD FOR THE ABC386SX II
VGA CARD FOR THE ABC386DX II
MULTI I/O CARD

ADD-ON CARDS

Add-on cards are designed to expand the functions of the motherboard. There are two cards, the VGA and Multi I/O, that have already been built into this system. We will simply describe their features later in this chapter.

All other cards that are designed for use in PC/XT's, PC/AT's or their compatible machines, can be also used in this system, theoretically.

INSTALLING AN ADD-ON CARD

- Find an empty slot, remove the screw on the bracket behind it.
- Remove the bracket and keep the screw

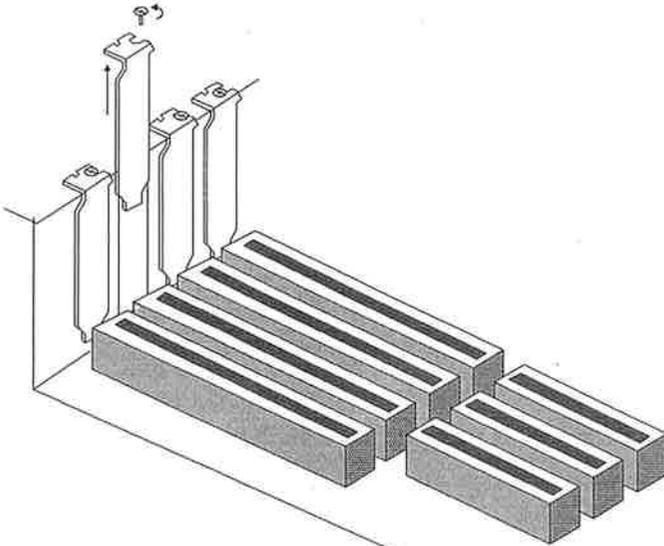


Fig 5.1

- Insert the card's "golden finger" completely into the slot

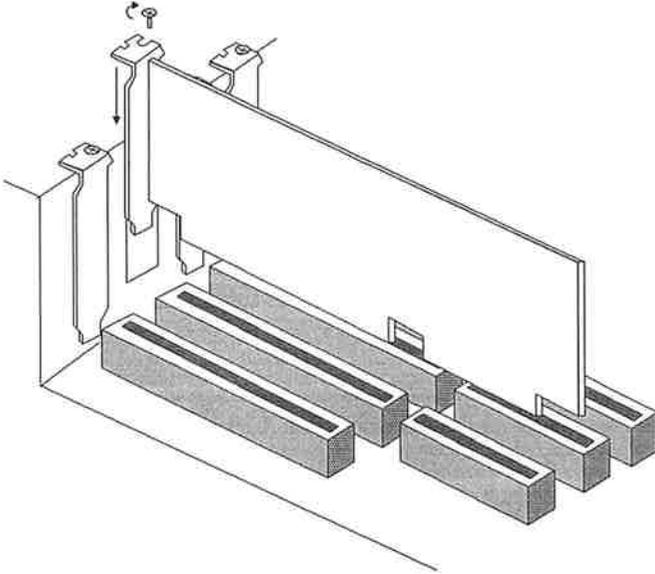


Fig 5.2

- If your card is for use in a PC/AT, please insert it into the long slot in an AT-slot (composed of a long slot and a short one).
- Please check the position of the slots on the motherboard, and don't insert any cards except the dedicate memory card into the 32-bit slot.

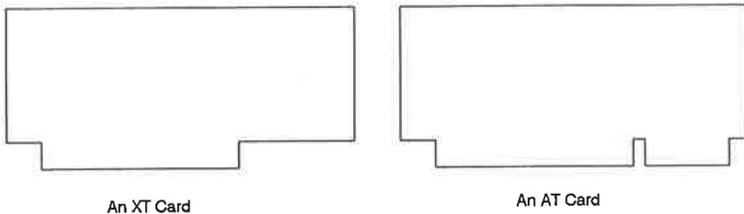


Fig 5.3

- Screw back in the bracket (see Fig 5.2) by using the screw kept from the previous step.

VGA CARD FOR THE ABC386SX II

The VGA Card is for the IBM PC/XT/AT, IBM PS/2 model 25/30 and similar IBM-compatible systems. It offers more functions than a conventional IBM VGA Adapter and it also emulates the adapter standard for the IBM Monochrome Display Adapter (MDA), the monochrome Hercules Graphics board, the IBM Color Graphic Adapter (CGA) and the IBM Enhanced Graphics Adapter (EGA). For analog monitors, the 256 color graphics mode can display 256 out of 256K colors simultaneously through the external palette. Operating up to 35.5 MHz dot clock, it can display the extended 800 by 600 graphics mode and 132-column text mode.

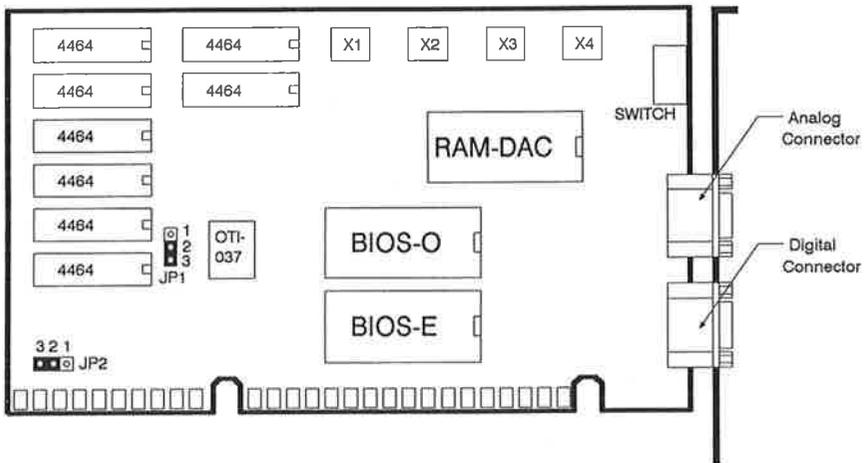
FEATURES

- Hardware and BIOS compatible with Hercules, MDA, CGA, EGA and VGA
- Support 132-column text mode
- 800x600 high-resolution graphics mode with 16 colors
- support analog and digital monitors
- 8/16-bit interface
- 256K bytes memory configuration
- True backward compatibility for emulation modes

SOFTWARE DRIVERS SUPPORTED

- AutoCAD Rel. 10/9, V2.x
- GEM/3 V3.1/V3.0
- Lotus 1-2-3 V2
- Framework II & III
- Windows V3.0, Windows 286/386 V2.11 and Windows 286 V2.0x
- Ventura Publisher V2.0/V1.1
- WordPerfect V5.1/V5.0
- 132-column text mode applications

HARDWARE CONFIGURATION



VGA Adapter

(Default Setting) JP1: IRQ2
JP2: 8-bit, 16-bit

For multi-frequency monitors, use the analog multi-frequency switch settings (such as NEC Multisync). For IBM 8503, 8512, 8513 or compatible color single frequency monitors use the PS/2 switch setting. The switch settings are listed in the following table:

SW1	SW2	SW3	SW4	Configuration
on	on	on	off	MDA Attached
off	on	on	off	CGA Attached
on	off	on	off	EGA Attached
off	off	on	off	NEC Multisync or Compatible
on	on	off	off	NEC Multisync Plus or Compatible
off	on	off	off	NEC Multisync 2A
on	off	off	off	NEC XL
on	off	off	on	NEC 4D or 5D
off	off	off	off	reserved
off	on	on	on	VGA monitor (mono)
on	off	on	on	VGA monitor (color)
off	off	on	on	VGA 16 inches monitor (color)
on	on	on	on	PS/2 monitor
x	x	off	on	reserved

MDA = Monochrome Display (Hsync = 18.4KHz)

CGA = Color Display (Hsync = 15.75KHz)

EGA = Enhanced Color Display (Hsync = 21.85KHz, 15.7KHz)

x = Don't care Off = Open On = Close

Only IBM VGA modes and 800x600 graphics modes (mode 52) are supported on NEC Multisync 2A monitors.

DISPLAY MODES LIST

Mode (HEX)	Type Format	ColxRow Format	Colors	Pages	Map Addr (HEX)	Char Box
00	TEXT	40x25	16	8	B800	8x8
01	TEXT	40x25	16	8	B800	8x8
02	TEXT	80x25	16	8	B800	8x8
03	TEXT	80x25	16	8	B800	8x8
00*	TEXT	40x25	16	8	B800	8x14
01*	TEXT	40x25	16	8	B800	8x14
02*	TEXT	80x25	16	8	B800	8x14
03*	TEXT	80x25	16	8	B800	8x14
00+	TEXT	40x25	16	8	B800	9x16
01+	TEXT	40x25	16	8	B800	9x16
02+	TEXT	80x25	16	8	B800	9x16
03+	TEXT	80x25	16	8	B800	9x16
04	APA	320x200	4	1	B800	8x8
05	APA	320x200	4	1	B800	8x8
06	APA	640x200	2	1	B800	8x8
07	TEXT	80x25	2	8	B800	9x14
07+	TEXT	80x25	2	8	B800	9x16
0D	APA	320x200	16	8	A000	8x8
0E	APA	640x200	16	4	A000	8x8
0F	APA	640x350	2	2	A000	8x14
10	APA	640x350	16	2	A000	8x14
11	APA	640x480	2	1	A000	8x16
12	APA	640x480	16	1	A000	8x16
13	APA	320x200	256	1	A000	8x8
4F	TEXT	132x60	16	2	B800	8x8
50	TEXT	132x25	16	4	B800	8x14
51	TEXT	132x43	16	2	B800	8x8
52	APA	800x600	16	1	A000	8x8

Remarks:

1. Mode 0, 1, 2, 3, 0*, 1*, 2*, 3*, 0+, 1+, 2+, 3+ differ in the CharBox size and the display scan line.
2. Mode 3+ or 7+ is the default mode at power up time.
3. Mode 4F, 50, 51, 52 are Extended Video Modes.

MONITOR TABLE

Supported Modes	Digital Monitors				Analog Monitors	
	Mono	CGA	EGA	Multi-Frequency	Multi-Frequency	Fixed Frequency
0		Y	Y	Y	Y	Y
1		Y	Y	Y	Y	Y
2		Y	Y	Y	Y	Y
3		Y	Y	Y	Y	Y
4		Y	Y	Y	Y	Y
5		Y	Y	Y	Y	Y
6		Y	Y	Y	Y	Y
7	Y		Y	Y	Y	Y
D			Y	Y	Y	Y
E			Y	Y	Y	Y
F	Y		Y	Y	Y	Y
10			Y	Y	Y	Y
11				Y	Y	Y
12				Y	Y	Y
13					Y	Y
4F				Y	Y	Y
50				Y	Y	Y
51				Y	Y	Y
52				Y	Y	Y

UTILITIES

The utility disk contains a file called **README**. It contains the important and new information not stated in this manual. You can read the file by placing the disk in drive A and type:

```
A: {ENTER}
  README [ENTER]
```

VGA CARD FOR THE ABC386DX II

FEATURES

This adapter works with your IBM PC/XT/AT to bring you super-high resolution, 256-color capability, fast screen redraw, and compatibility with most software and hardware.

● Compatibility

- ☐ 486, 386, 286 and PC compatibles
- ☐ Register compatible with Hercules, MDA, CGA, EGA and VGA
- ☐ Non-interlaced or interlaced monitor support
- ☐ Compatible with Multi-Sync and PS/2 monitors
- ☐ 70Hz VESA standard (800x600 resolution)

● Resolution And Color Selection

Memory	256k DRAM	512K DRAM	1MB DRAM
640x400	-	256-NI*	256-NI
640x480	16-NI	16-NI,256-NI	16NI,256-NI
768x1024	-	16-I**	16-I
800x600	16-NI	16-NI,256-I	16-NI,256-NI
1024x768	4-I	4-I,16-I/NI	4-I,16-I/NI,256-I/NI

*NI = Non-interlaced

**I = Interlaced

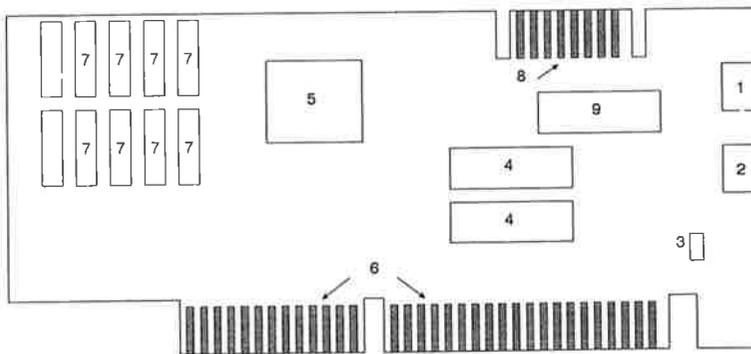
● Extended Text Display

- ☐ 80-column text modes in 30,43, and 60 rows
- ☐ 132-column text modes in 25, 30,43 and 60 rows

● Software Drivers Supported

- | | | |
|---------------|-----------------------|-----------------------------|
| ☐ AutoCAD | ☐ Autoshade | ☐ CADKEY |
| ☐ Framework | ☐ GEM Desktop | ☐ Lotus |
| ☐ MS Windows | ☐ MS Word | ☐ P-CAD |
| ☐ Symphony | ☐ Ventura | ☐ VersaCAD |
| ☐ WordPerfect | ☐ WordStar | ☐ OS/2 Presentation Manager |
| ☐ Quattro | ☐ VESA BIOS Extension | |

HARDWARE CONFIGURATION



VGA Adapter Layout

1. DIP Switch
2. DB-15 connector: For analog monitors.
3. Jumpers J1
4. Video BIOS
5. TVGA 8900 Chip
6. Edge connector: For PC/XT/AT and compatible systems.
7. Video DRAM: up to 1MB
8. Feature connector: For special applications.
9. Video DAC

● **DIP Switch and Jumper Settings**

☐ **Select Scan Rate**

SW#1

ON Less than 48KHz (default)

OFF 48-49KHz

☐ **Selecting Fast And Slow Address Decode**

SW#3

OFF Fast address decode (default)

ON Slow address

☐ **Selecting an 8- or 16-Bit Data Path**

SW#4

OFF 16-bit data path (default)

ON 8-bit data path

☐ **Jumper Settings**

2-3 IRQ9 interrupt control disabled (default)

1-2 IRQ9 interrupt control enabled

DISPLAY MODES LIST

Mode (hex)	Type Format	Alpha Format	Resolution/ Colors	8514 ¹	Fixed	Multisync ² Freq.	Buffer Start	Char Size
0,1	text	40x25	320x200/16	Yes	Yes	Yes	B8000	8x8
2,3	text	80x25	640x200/16	Yes	Yes	Yes	B8000	8x8
0 ³ ,1 ³	text	40x25	320x350/16	Yes	Yes	Yes	B8000	8x14
2 ³ ,3 ³	text	80x25	640x350/16	Yes	Yes	Yes	B8000	8x14
0 ⁴ ,1 ⁴	text	40x25	360x400/16	Yes	Yes	Yes	B8000	9x16
2 ⁴ ,3 ⁴	text	80x25	720x400/16	Yes	Yes	Yes	B8000	9x16
4,5	graphics	40x25	320x200/4	Yes	Yes	Yes	B8000	8x8
6	graphics	80x25	640x200/2	Yes	Yes	Yes	B8000	8x8
7 ³	text	80x25	720x350/mono	Yes	Yes	Yes	B8000	9x14
7 ⁴	text	80x25	720x400/mono	Yes	Yes	Yes	B8000	9x16
D	graphics	40x25	320x200/16	Yes	Yes	Yes	A0000	8x8
E	graphics	80x25	640x200/16	Yes	Yes	Yes	A0000	8x8
F	graphics	80x25	640x350/mono	Yes	Yes	Yes	A0000	8x14
10	graphics	80x25	640x350/16	Yes	Yes	Yes	A0000	8x14
11	graphics	80x30	640x480/2	Yes	Yes	Yes	A0000	8x16
12	graphics	80x30	640x480/16	Yes	Yes	Yes	A0000	8x16
13	graphics	40x25	320x200/256	Yes	Yes	Yes	A0000	8x8
50	text	80x30	640x480/16	Yes	Yes	Yes	B8000	8x16
51	text	80x43	640x473/16	Yes	Yes	Yes	B8000	8x11
52	text	80x60	640x480/16	Yes	Yes	Yes	B8000	8x8
53	text	132x25	1056x350/16	Yes	Yes	Yes	B8000	8x14
54	text	132x30	1056x480/16	Yes	Yes	Yes	B8000	8x16
55	text	132x43	1056x473/16	Yes	Yes	Yes	B8000	8x11
56	text	132x60	1056x480/16	Yes	Yes	Yes	B8000	8x8
57	text	132x25	1188x350/16	Yes	No	Yes	B8000	9x14
58	text	132x30	1188x480/16	Yes	No	Yes	B8000	9x16
59	text	132x43	1188x473/16	Yes	No	Yes	B8000	9x11
5A	text	132x60	1188x480/16	Yes	No	Yes	B8000	9x8
5B ³	graphics	100x75	800x600/16	Yes	No	Yes	A0000	8x8
5B ⁷	graphics	100x75	800x600/16	No	No	Yes ⁵	A0000	8x8
5C ⁷	graphics	80x25	640x400/256	Yes	Yes	Yes	A0000	8x16
5D ⁷	graphics	80x30	640x480/256	Yes	Yes	Yes	A0000	8x16
5E ^{10,12}	graphics	100x75	800x600/256	No	No	Yes ¹¹	A0000	8x8
5E ^{8,11}	graphics	100x75	800x600/256	Yes	No	Yes	A0000	8x8
5E ^{8,11}	graphics	100x75	800x600/256	No	No	Yes ⁵	A0000	8x8
5F ^{7,10}	graphics	128x48	1024x768/16	Yes	No	Yes	A0000	8x16
5F ^{7,11}	graphics	128x48	1024x768/16	No	No	Yes ⁵	A0000	8x16
60 ¹⁰	graphics	128x48	1024x768/4	Yes	No	Yes	A0000	8x16
61 ^{6,7}	graphics	96x64	768x1024/16	No	No	No	A0000	8x16
61 ^{8,10}	graphics	128x48	1024x768/256	Yes	No	Yes	A0000	8x16
62 ^{8,11}	graphics	128x48	1024x768/256	No	No	Yes ⁵	A0000	8x16

Table Notes:

- 1 8514 is an IBM PS/2 monitor.
- 2 Multisync monitors support both Analog and TTL operations (e.g. NEC Multisync 3D).
- 3 EGA text modes with 8x14 and 9x14 character sizes and 350 lines vertical resolution.
- 4 VGA text modes with 9x16 character size and 400 lines vertical resolution.
- 5 Check to see if your multisync monitor supports the interlaced or non-interlaced versions of these modes (monitor must support horizontal scan rate of 48.7KHz or 56.4 KHz for non-interlaced display).
- 6 A portrait monitor is required to run this mode (e.g. Magics - 15FP)
- 7 Supported by 4 and 8 DRAM configuration only.
- 8 Supported by 8 DRAM configuration only.
- 9 Not every multisync monitor works (e.g. NEC 3D does not support low frequency)
- 10 Interlaced mode
- 11 Non-interlaced mode
- 12 Supported by 4 DRAM configuration only.

Note: You may need to adjust your multi-frequency monitor to display these modes properly. Use the horizontal and vertical size and position control on your monitor to display without distortion.

UTILITIES

This section explains how to use the utility software on the Driver & Utilities Diskettes. The diskettes provide the following programs:

- SVM89.EXE (Switch Video Mode)
- High-resolution drivers for Microsoft Windows, GEM Desktop, Lotus 1-2-3, plus many other popular software programs.
- TVGA RAM BIOS (may be used to improve display speed)
- TANSI.SYS (used to replace ANSI.sys to support extended text display, i.e. more than 25 rows)
- BIC.EXE (reports PC system BIOS information).
- MODESTEST checks your monitor's ability to run any display mode
- MAMODE.EXE (select 128K or 64K memory addressing scheme for high resolution programs - e.g. VPIC 2.3 or earlier).
- PMFIX (circumvents display problem when using standard VGA driver and switching to between full screen OS/2 and PM).
- RIXFIX (allows RIX programs - e.g. colorRIX, Present, Rixinfo, Res_test, Q-prior to version 1.38 to operate correctly with products based on the Trident TVGA8900C chip).
- SMONITOR.EXE (for monitors which don't adhere to IBM monitor pinout standards and thus boot up VGA monochrome - e.g. Samsung, Goldstar).

IMPORTANT NOTE: Because we are continuously updating existing drivers and developing new drivers for popular software applications, your Driver & Utility Diskettes may have drivers not listed in the

manual. The README file on Driver & Utility Disk #1 contains a full listing of current drivers and detailed installation procedures, so be sure to check the README file prior to driver installation.

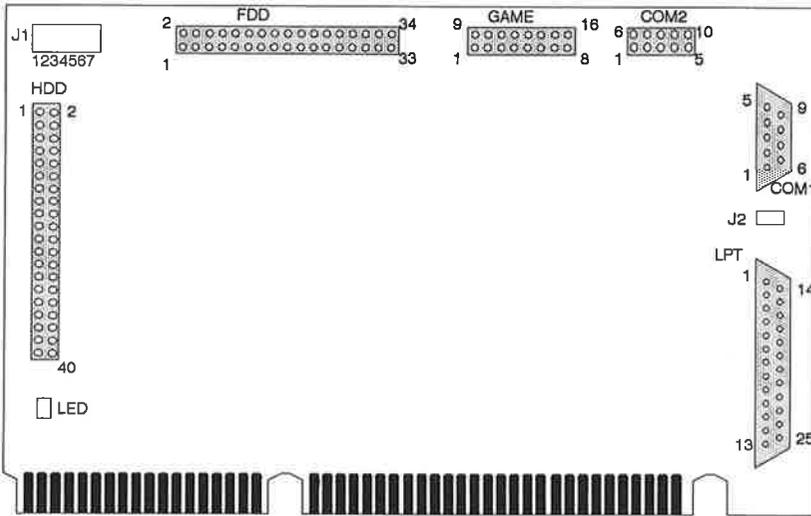
MULTI I/O CARD

SPECIFICATIONS

- Two serial ports
- One parallel port
- One game port
- One FDD interface connector (34-pin)
- One AT-bud HDD interface connector (40-pin)
- AT 16-bit slot
- Main component: ASIC M5105

CONNECTORS

- COM1: 9-pin serial port
- LPT: 25-pin Parallel port
- COM2: connected to another bracket by a 9-25 (Pin) connector
- HDD: 40-pin AT-bus HDD connector
- FDD: 34-pin FDD connector
- LED: HDD LED connector
- GAME: 16-pin game port



MIO Card Layout

JUMPERS SETTING

● J1 Configuration Setup

NO.	FUNCTION	DESCRIPTION	DEFAULT
1	COM2	1:DISABLE 0:ENABLE	1
2	COM1	1:DISABLE 0:ENABLE	0
3	FDC	1:DISABLE 0:ENABLE	0
4	HDC	1:DISABLE 0:ENABLE	0
5	GAME	1:DISABLE 0:ENABLE	0
6,7	PRINTER	6 7	00
		1 1	DISABLE
		1 0	278H-27AH
		0 1	3BCH-3BEH
		0 0	378H-37AH

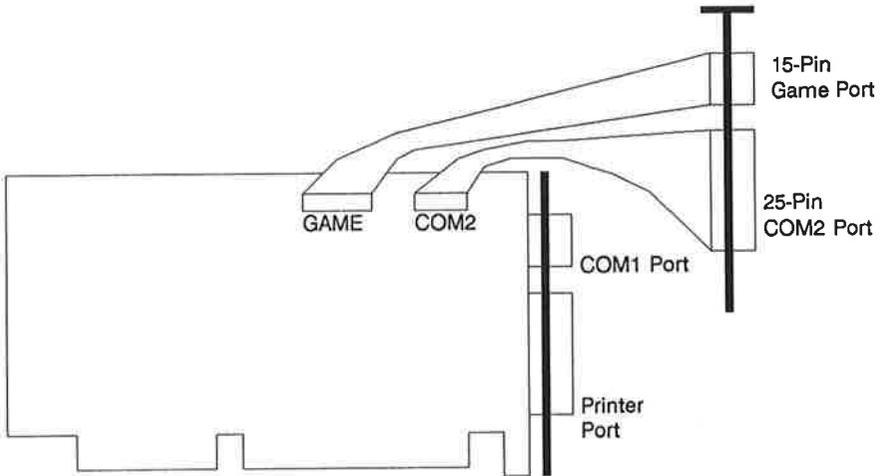
- J2 Ground Setup

Open : Logic Ground and Equipment Ground are Separated (Default)

Close : Logic Ground Connected with Equipment Ground

Note : To install COM2, insert 16450 to U8, 1488 to U10 and 1489 to U6.

- Installation COM2 and Game Port



CHAPTER SIX

HARD & FLOPPY DISKS

CONTROL CARDS
FLAT CABLES
DISK DRIVES
INSTALLING A NEW DRIVE
CARE OF DISKS

HARD & FLOPPY DISKS

The fixed disk or hard disk drive (HDD), used in the PC system, usually can't be seen because it is constructed of several disks inside a box-like drive. It is made such that you can not disassemble the box and replace any of those disks.

There are two sizes of floppy disk drive (FDD), 5 1/4" and 3 1/2", with the floppy diskettes ("floppy" for short in this chapter) replaceable. The 5 1/4" floppy has two different capacities, 360KB and 1.2MB. The 3 1/2" floppy also has two different capacities, 720KB and 1.44MB.

CONTROL CARDS

The HDD and FDD interfaces are often made into a card.

There are two kinds of HDD, traditional and AT-Bus. Thus, there are two kinds of control cards in the market.

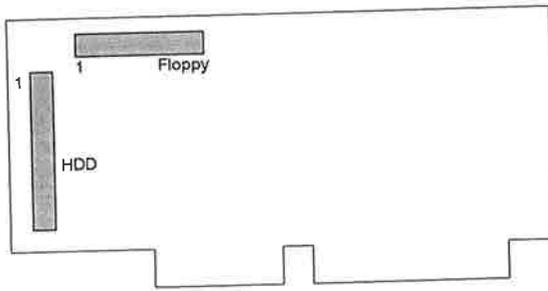
For AT-Bus HDD, the control card usually contains serial and parallel communication interfaces, the acronym being HFSP (HDD, floppy, serial and parallel)

For traditional HDD, the control card is called HFDC (hard disk, floppy drive controller).

HFSP

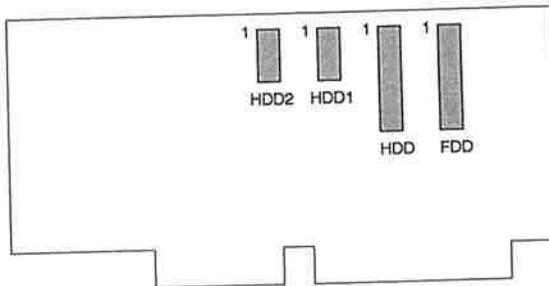
The figure below shows a HFSP card. The position of each connector in different vendor's products may vary, but note that the floppy's connector is a 34-pin one and the AT-Bus HDD's connector is the 40-pin one.

The serial and parallel interfaces are connected to the rear panel for convenient use.



HFDC

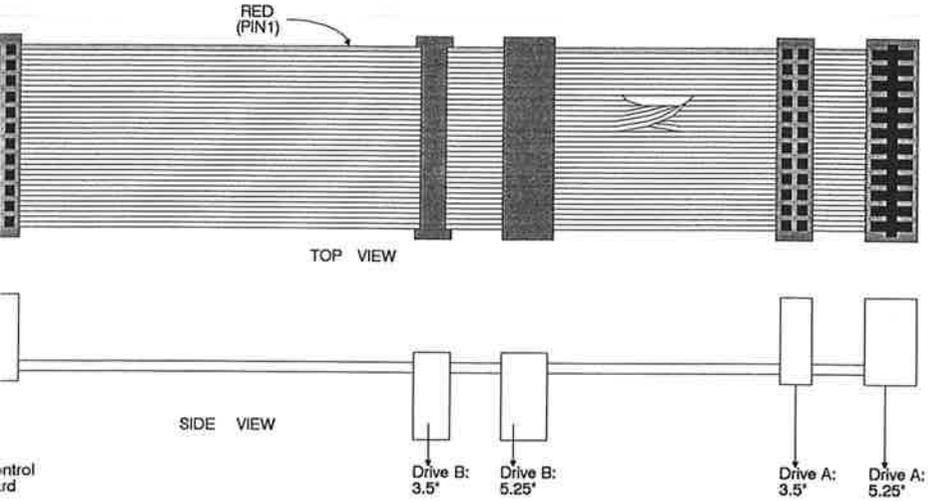
The figure below shows a HFDC card. The position of each connector in different vendor's products may vary, but note the mark on the card you have.



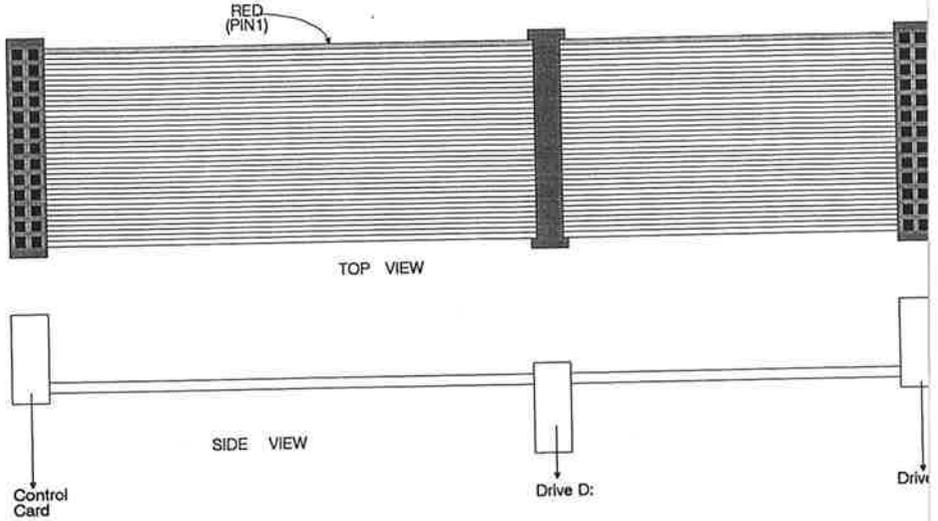
FLAT CABLES

FDD FLAT CABLE

A FDD cable can be connected to two FDDs; the sizes of each drive (Drive A, Drive B) can be either 3.5" or 5.25" but not both.

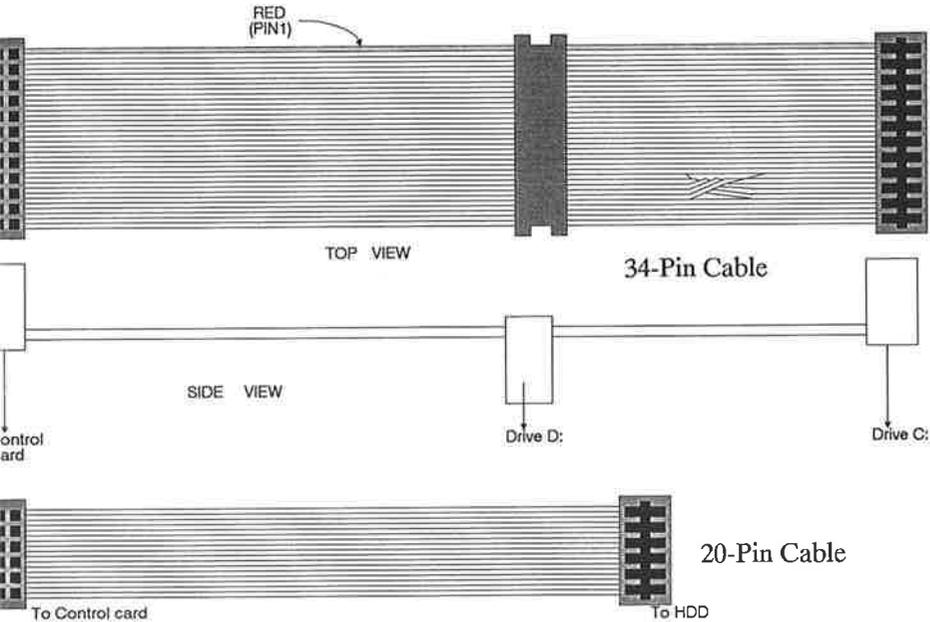


AT-BUS HDD FLAT CABLE



In fact, Drive C: and Drive D: are identical. Setting the jumpers on the HDD is required.

TRADITIONAL HDD FLAT CABLE



The jumper(s) on the HDD has to be properly set.

The 34-pin cable provides connection to two HDDs.

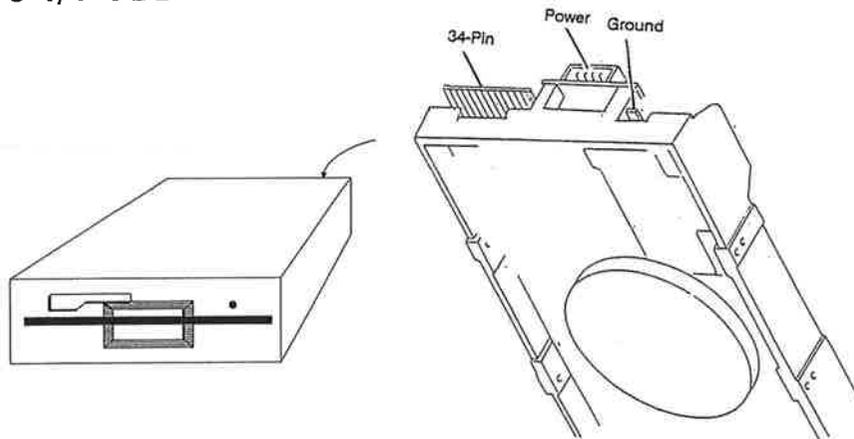
Each HDD has to use one 20-pin cable.

If the HDD is Drive C, its 20-pin cable has to connect to HDD 1 of the HFDC.

If the HDD is Drive D, its 20-pin cable has to connect to HDD 2 of the HFDC.

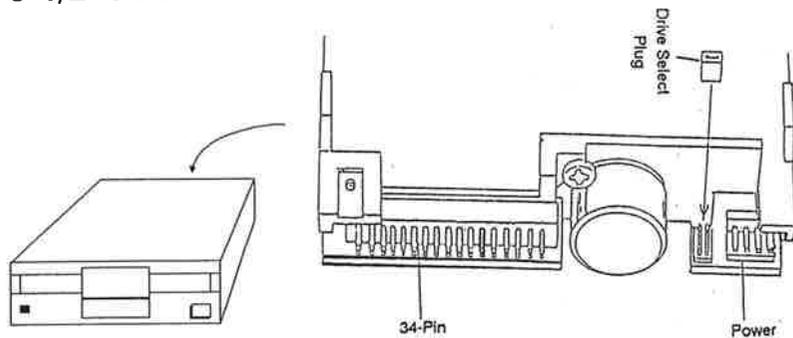
DISK DRIVES

5 1/4" FDD



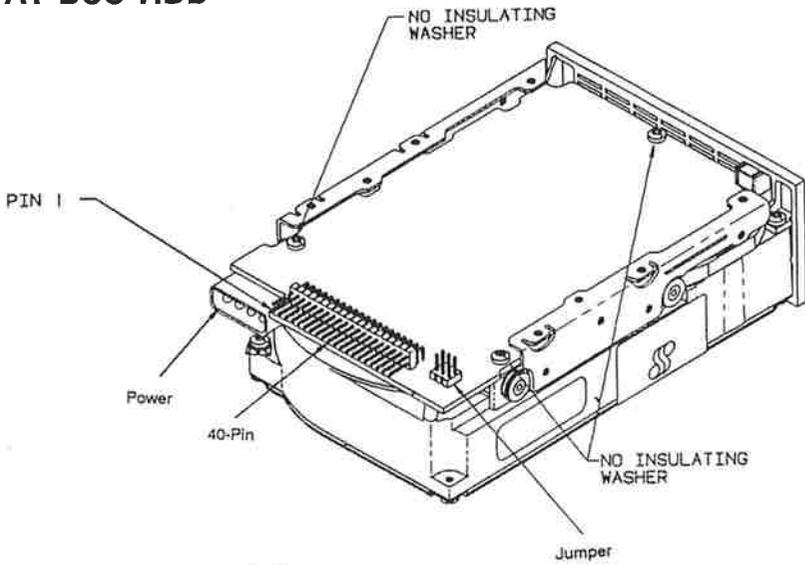
Please check the dealer for it's capacity, 360KB or 1.2MB.

3 1/2" FDD

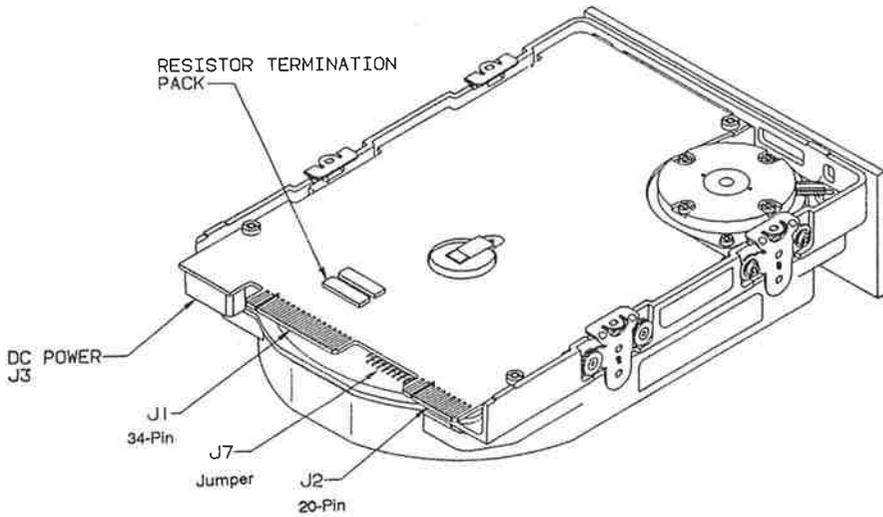


Please check the dealer for it's capacity, 720KB or 1.44MB.

AT-BUS HDD



TRADITIONAL HDD



INSTALLING A NEW DRIVE

Before installing your HDD into this system, please check the manual of the HDD to:

- set the jumpers to define this drive as C or D.
- find out the number of heads in this HDD.
- find out the number of cylinders in this HDD.

To install a new drive, please follow these procedures:

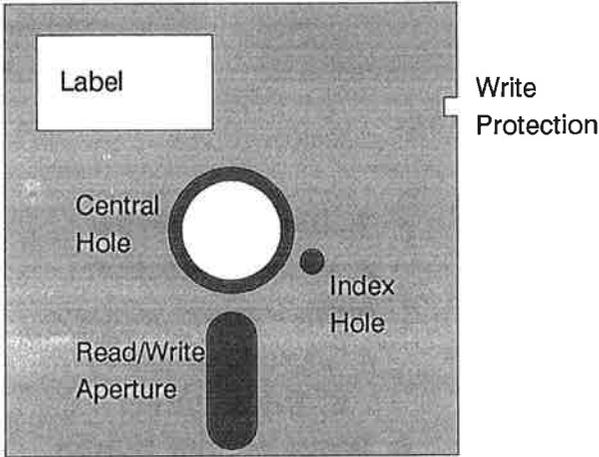
- Push the plastic cover out from inside. (if you install a 3.5" HDD, please use the reserved area in Fig 1.2.)
- Slide your new drive into the slot of a suitable drive bay.
- Adjust the four screws (two on each side) to fix the drive on the drive slot.
- Connect the interface flat cable properly.
- Connect one of the power supply bundles from the system power module to the new drive.
- Power on and run CMOS SETUP. Select a suitable FDD type (size and capacity) or HDD type (number of heads and cylinders).

CARE OF DISKS

All disks store data magnetically, so they should be kept away from all strong magnetic fields such as those generated by electrical motors and appliances.

Floppy diskettes should not be placed in an environment with temperatures outside the 45-105°F or 8-44°C range.

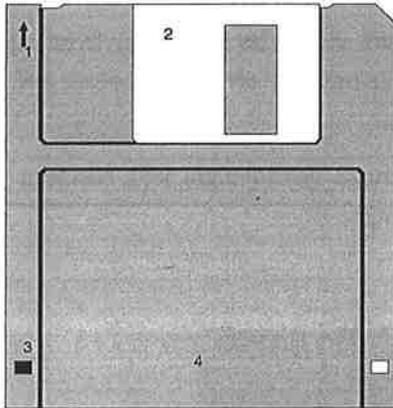
5.25" Floppy Diskette



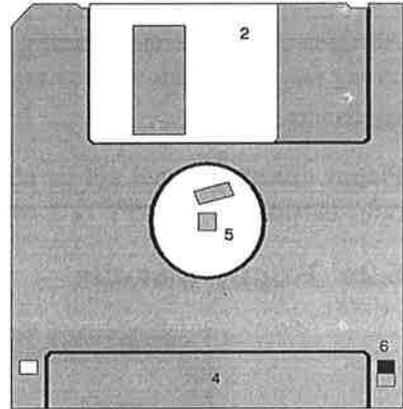
If the write protection notch is covered by a tab, this diskette can only be read but not be written in.

You should insert diskettes into a FDD drive with the label upward and the write protection notch to the left.

3.5" FLOPPY DISKETTE



Front Side



Back Side

1. Direction Arrow
2. Write Protection
3. Write-Protect window
4. Indication Label
5. Drive Wheel
6. Write-Protect Button

The direction arrow should always be on the top when you insert the diskette into the FDD.

The write protection button enables or disables the write-protection feature. When it is open, writing data to this diskette is inhibited. When it is closed, data can be written onto the diskette.

CHAPTER SEVEN

MOTHER BOARD

FOR THE ABC386SXII

SPECIFICATIONS

JUMPERS & CONNECTORS

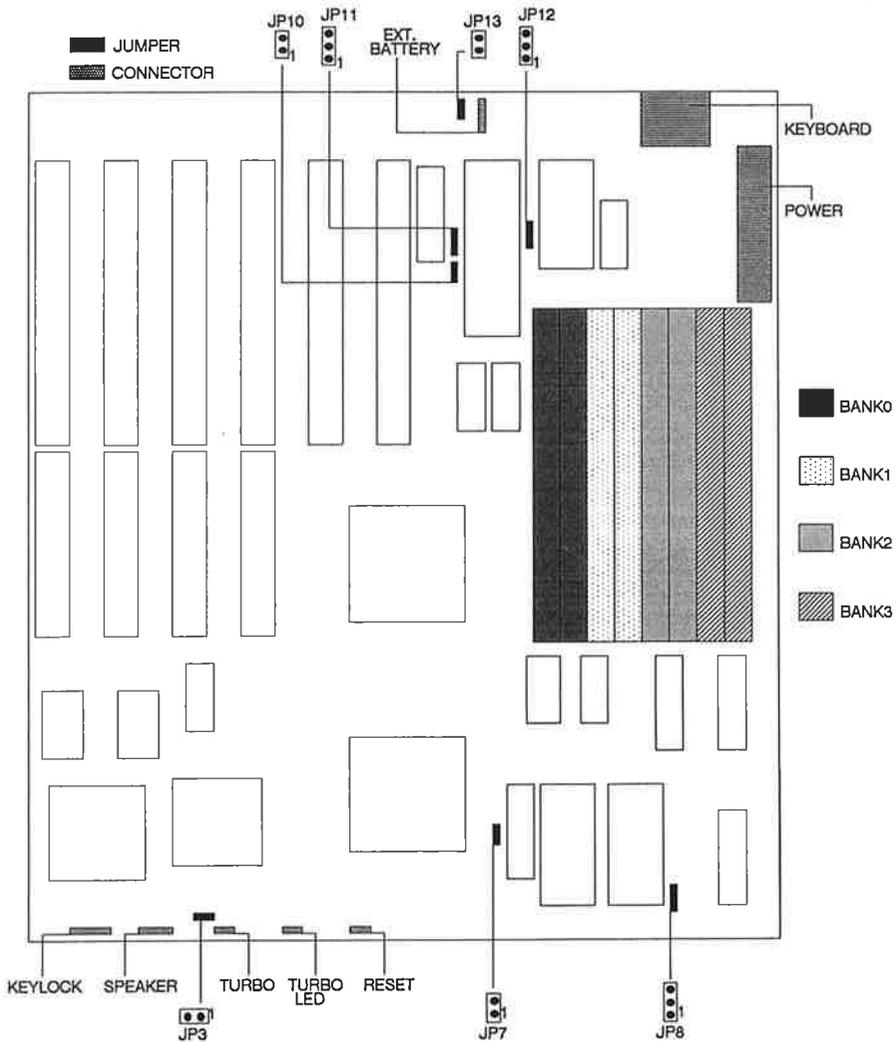
MEMORY CONFIGURATION

CONFIGURATION SETUP

EMS INSTALLATION

SPECIFICATIONS

- CPU : 80386SX-20
- NPU : A socket for 80387SX-16 or -20
- SYSTEM CLOCK : 10 MHz (Normal) and 20 MHz (Turbo)
Selectable by both hardware and software
- BIOS : Phoenix or AMI BIOS 64KB (27256x2 or
27512x1)
- MEMORY : Various combinations up to 8MB. Only sup-
port 256K and 1M SIMMs
- CHIPSET : SUNTAC-ST62C/251/303 Compatible with
PC/AT Circuitry
- EXPANSION SLOTS : Four 16-bit slots, two 8-bit slots
- PCB : 4-layer
- CMOS memory which registers configuration data and realtime
clock/calendar is maintained by an onboard rechargeable 3.6V battery.
- Shadow RAM implemented
- LIM EMS 4.0 Software Driver



JUMPERS & CONNECTORS

JP 1 : Keylock and Power Led Connector

PIN	DESCRIPTION
1	LED POWER
2	KEY
3	GROUND
4	KEYBOARD INHIBITOR
5	GROUND

JP3 : CPU Pipeline Selection

Open : Nonpipeline
Short : Pipeline

JP7 & JP8 : 27256/27512 BIOS Selection

JP7	JP8	Definition
Open	1-2	27256 BIOS
Short	2-3	27512 BIOS

JP10 : Monitor Mode Selection

Open : Mono mode
Short : Color mode

JP11 : 8042 Output Pin Selection

1-2 Short : Select 8042 pin 30 output (for AMI BIOS)
2-3 Short : Select 8042 pin 23 output (for Phoenix BIOS)

JP12 : CMOS Erasing Jumper

1-2 short : Normal

2-3 short : Erase

JP13 : Internal/External Battery Jumper

Open : External battery

Short : Onboard battery

JP14 : External Battery Connector

PIN	DESCRIPTION
1	BATTERY +6V DC
2	KEY
3	GROUND
4	GROUND

MEMORY CONFIGURATION

The memory on NPM/16(20)-S0 is divided into four banks : bank0, bank1, bank2, bank3, as shown in the diagram in page 7-2:

Memory Size	SIMMs			
	Bank0	Bank1	Bank2	Bank3
512K	256K (x2)	Empty	Empty	Empty
1M	256K (x2)	256K (x2)	Empty	Empty
2M	1M (x2)	Empty	Empty	Empty
2M	256K (x2)	256K (x2)	256K (x2)	256K (x2)
3M	256K (x2)	256K (x2)	1M (x2)	Empty
4M	1M (x2)	1M (x2)	Empty	Empty
5M	256K (x2)	256K (x2)	1M (x2)	1M (x2)
8M	1M (x2)	1M (x2)	1M (x2)	1M (x2)

Add memory to the system by installing CMOS Single In-Line Memory Modules (SIMMs) into sockets on the system board. Refer to the table below to determine the memory configuration for the SIMMs :

Note : Use only CMOS SIMMs rated at 100ns or faster.

CONFIGURATION SETUP

UNDER PHOENIX BIOS

The mainboard supports Phoenix BIOS. If Power-On-Self-Test (POST) finds everything all right after power-on, BIOS will load in DOS for operation. But if there is any error detected, error messages

will be shown on the screen and you will be recommended to execute the **Setup** utility. The screen will then display the following :

Invalid configuration information - please run SETUP program
Strike the F1 key to continue , F2 to run setup utility

and waits until you key in either F1 or F2.

When you key in F1, POST ignores the error and BIOS loads the DOS in. But if F2 is the input, first appears a screen with details concerning the errors, and another screen then shows the following if any key is struck.

	Phoenix Technologies Ltd.	Version						
	System Configuration Setup	4.03 01						
Time:	10:59:40							
Date:	Mon Aug 06, 1990							
Diskette A:	5.25 Inch, 1.2 MB							
Diskette B:	Not Installed	Cyl	Hd	Pre	Lz	Sec	Size	
Hard Disk 1:	Not Installed							
Hard Disk 2:	Not Installed							
Base Memory:	640KB							
Extended Memory:	384KB							
Display:	Mono							
Keyboard:	Installed							
Video Shadow:	Disabled							
Coprocessor:	Not Installed							
Up/Down Arrow to select. Left/Right Arrow to change.								
F1 for help. F10 to Exit. Esc to reboot.								

In this menu, use the <↑> as well as <↓> key to move the reverse cursor to the desired item and the <←> as well as <→> key to modify the item.

If you finish the setup, press <Esc> to restart the machine..

You may also use the key combination **Ctrl + Alt + S**, after the DOS prompt, to have the configuration set-up menu appear. Be advised, no matter whether you use <F2> or the key combination, your modifications to the menu (if you make any) have no effect if you press <F10> to exit. To have effect, you need to press <Esc> to reboot the system.

UNDER AMI BIOS

This mainboard also supports AMI BIOS. When the following message appears on the screen after start-up, press the key before loading DOS if you want to change the configuration:

Press IF YOU WANT TO RUN SETUP/EXTD-SET

Right after you press the key, the screen displays the following messages:

EXIT FOR BOOT
RUN CMOS SETUP
RUN DIAGNOSTICS

Use the keys < ↓ > and < ↑ > to place the cursor on the desired item, then depress the <Enter> key to enter your selection.

If the option "RUN CMOS SETUP" is selected, the screen then shows:

(See next page)

CMOS SETUP (C) Copyright 1985-1989. American Megatrends Inc..																																																								
Date (mn/date/year): Fri , Apr 06 1990				Base memory size : 640 KB																																																				
Time (hour/min/sec): 14 : 02 : 01				Ext. memory size : 384 KB																																																				
Floppy drive A: : 1.2 MB, 5¼"				Numeric processor : Not Installed																																																				
Floppy drive B: : 1.2 MB, 5¼"				Cyln Head WPcom LZone Sec Size																																																				
Hard disk C: type : 2				615 4 300 615 17 20MB																																																				
Hard disk D: type : Not Installed																																																								
Primary display : Monochrome																																																								
Keyboard : Installed																																																								
Video BIOS shadow : Disabled																																																								
Scratch RAM option : 1																																																								
Turbo speed : Enabled																																																								
Month : Jan, Feb,....Dec																																																								
Date : 01, 02, 03,...31																																																								
Year : 1901, 1902,...2099																																																								
ESC=EXIT, ↓ ← → = Select , PgUp/PgDn = Modify																																																								
				<table border="1"> <thead> <tr> <th>Sun</th> <th>Mon</th> <th>Tue</th> <th>Wed</th> <th>Thu</th> <th>Fri</th> <th>Sat</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> </tr> <tr> <td>8</td> <td>9</td> <td>10</td> <td>11</td> <td>12</td> <td>13</td> <td>14</td> </tr> <tr> <td>15</td> <td>16</td> <td>17</td> <td>18</td> <td>19</td> <td>20</td> <td>21</td> </tr> <tr> <td>22</td> <td>23</td> <td>24</td> <td>25</td> <td>26</td> <td>27</td> <td>28</td> </tr> <tr> <td>29</td> <td>30</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>6</td> <td>7</td> <td>8</td> <td>9</td> <td>10</td> <td>11</td> <td>12</td> </tr> </tbody> </table>				Sun	Mon	Tue	Wed	Thu	Fri	Sat	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12
Sun	Mon	Tue	Wed	Thu	Fri	Sat																																																		
1	2	3	4	5	6	7																																																		
8	9	10	11	12	13	14																																																		
15	16	17	18	19	20	21																																																		
22	23	24	25	26	27	28																																																		
29	30	1	2	3	4	5																																																		
6	7	8	9	10	11	12																																																		

Make sure the components shown on the screen are those you have. If there are some differences, you can follow the instructions at the bottom of the screen. < ↑ >, < ↓ >, < ← > and < → > are used to move the cursor to the desired item, and keys "PgUp" and "PgDn" are used to change the configuration by scrolling the value in the range which is shown in the reverse area; the key "ESC" is to be pressed if SETUP CMOS is done. When "ESC" is pressed, a question will appear in the reverse area as following:

write the data into the CMOS (Y/N)?

You must answer the question by pressing either "Y" or "N" [Enter].

If the option 'RUN DIAGNOSTICS' is selected, the following screen is displayed:

DIAGNOSTICS. (c) 1986, American Megatrends Inc. Tue, Jun 12, 1990. 1 : 42 : 26

Hard Disk	Floppy	Keyboard	Video	Miscellaneous
-----------	--------	----------	-------	---------------

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

Devices Present						
Harddisk	Floppy	Commu.	Display	Printer	Memory	CO-proc
C:	A:1.2MB	NONE	MONO	#03BC	REAL=640KB EXTD=384KB	ABSENT

Prev/Next Window - ← → Move - ↑ ↓ Select - <ENTER> EXIT DIAG - <ESC>

Preformat Hard Disk

You may take any option to test your system peripherals. To continue with the options, use control keys displayed in the reverse area at the bottom of the screen.

EMS INSTALLATION

Follow the steps below to install the EMS driver.

1. Switch on your system and boot DOS.
2. Copy the file "SUPER.SYS", from a floppy diskette provided with this system, to your DOS diskette or to the DOS directory on your hard disk.
3. Set CONFIG.SYS

Filename : "SUPER.SYS"

Parameters :

A : Memory mode

 /EMS (set EMS driver)

 /EXT (set EXTEND memory)

B : Shadow set

 /VIDEO (set VIDEO shadow)

The following two examples are given for EMS and EXT modes, respectively.

DEVICE = SUPER.SYS /EMS /VIDEO

DEVICE = SUPER.SYS /EXT /VIDEO

These two examples are the best settings for the EMS driver.

Note:

1. If your system's memory size is 1MB (or below 1MB), you can't install both EMS and VIDEO shadow at the same time. You can only install one of them.
2. Don't install EMS when you are running WINDOWS 3.0 or XENIX.
3. If you want to set SUPER.SYS/EMS/VIDEO, you must disable Video BIOS shadow.

CHAPTER EIGHT

MOTHER BOARD

FOR THE ABC386DXII

MAIN FEATURES

INSTALLATION

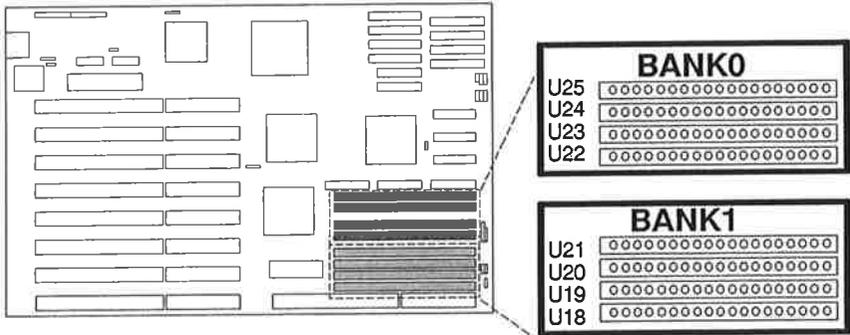
SYSTEM SETUP

MAIN FEATURES

- AMD 80386-40 Microprocessor as the CPU
- A 80387 and WEITEK 3167 Math Coprocessor Socket
- RAM Size, CPU Speed, I/O Speed, Shadow Video BIOS Are Software Adjustable Through the On-board-BIOS
- System Can be Started by 256KB, 1MB or 4MB (-08) Single-in-line Memory Module
- Cache subsystem to execute locality programs much faster
SRAM -20 is required.
- Page/Interleave Memory Controller Allows Slower/Cheaper DRAM
- Memory up to 32MB with Parity Onboard.
- CPU Speed Is Switchable by Hardware or Software (by Keyboard)
- Real-time Clock/Calender with Battery-Backed up to CMOS-Memory for System Configuration Data
- External Battery Connector
- 7-Channel DMA
- 16 Level Interrupts
- Onboard Power-Good-Signal Processing

INSTALLATION

MEMORY INSTALLATION



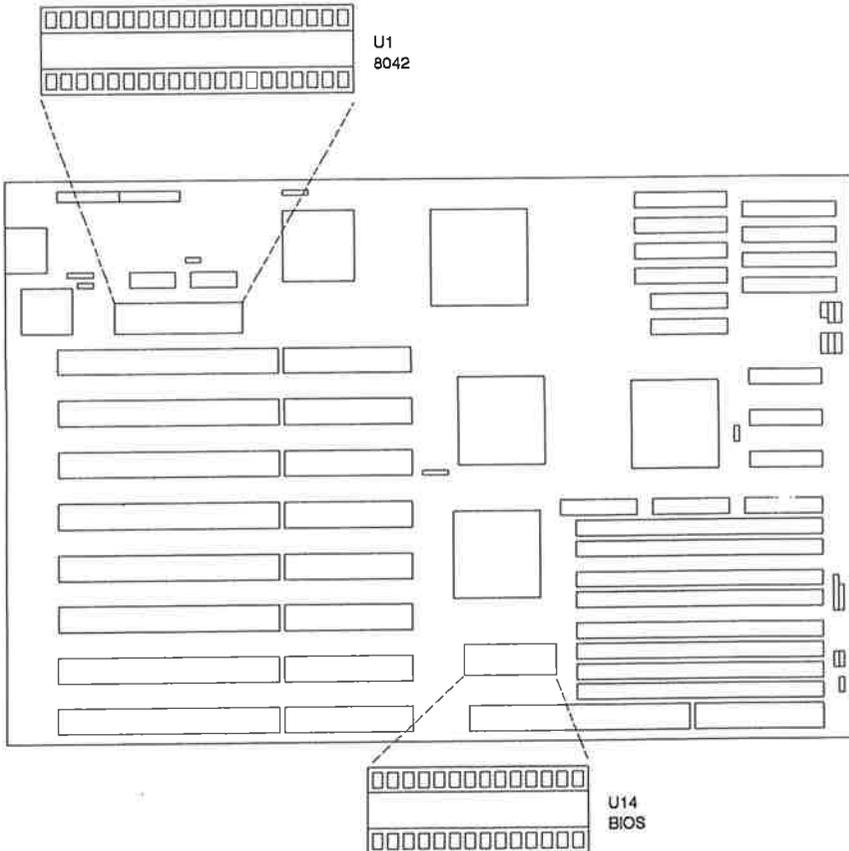
SIMM MODULE USED:

BANK 0	BANK 1	TOTAL
256KB x 4	---	1MB
256KB x 4	256KB x 4	2MB
1MB x 4	---	4MB
256KB x 4	1MB x 4	5MB
1MB x 4	1MB x 4	8MB
4MB x 4	---	16MB
1MB x 4	4MB x 4	20MB
4MB x 4	1MB x 4	20MB
4MB x 4	4MB x 4	32MB

ROM INSTALLATION

The Motherboard's U14 socket holds the BIOS chip (27512). This socket has 28 pins.

The Keyboard BIOS is installed in socket U1 (40 pins)



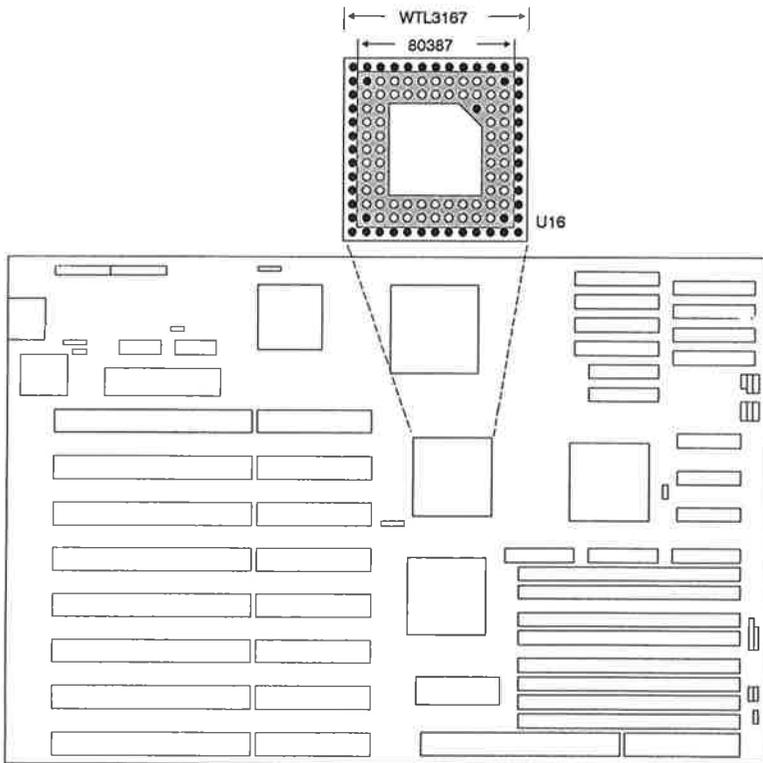
CO-PROCESSOR (WTL 3167/80387)

If you intend to increase the math computation performance in CAD/CAE software, then plug a WTL 3167 or 80387 coprocessor into U16.

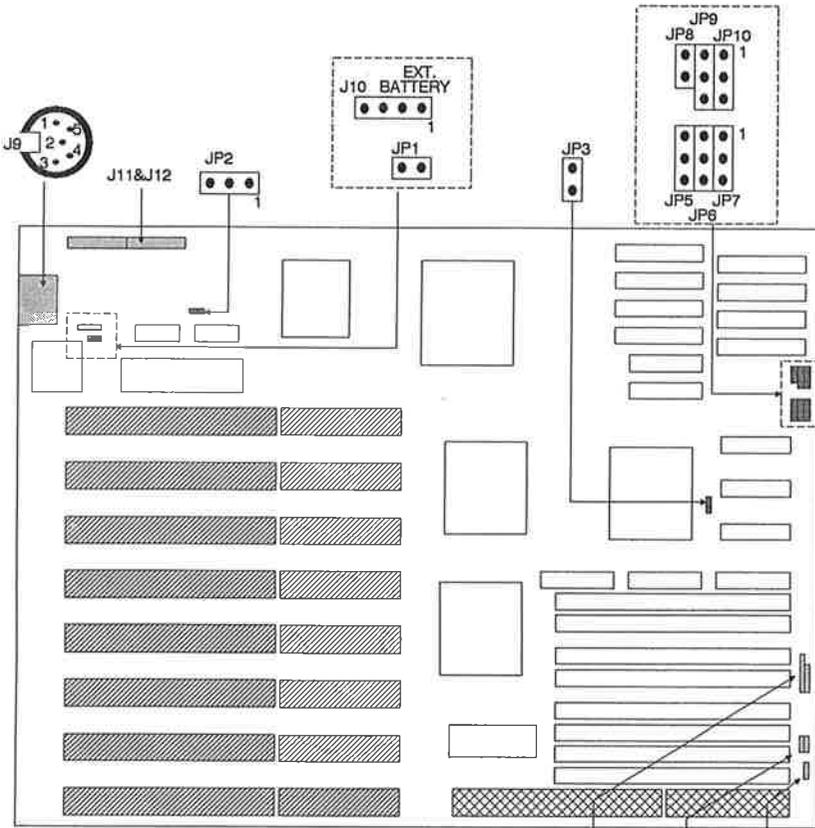
If you want to install an 80387, the 68 pins in this socket's center are used. Please use ULSI 387-33 or -40 or Intel 80387-33 with date code later than '88.

If you want to install WTL 3167, all 121 pins in the socket are used.

After installing a Weitek coprocessor, you have to run **ADVANCED CMOS SETUP** to set the Weitek coprocessor options to "present".



JUMPERS AND CONNECTORS



-  Connector
-  AT-SLOT
-  Jumper
-  32-BIT SLOT

JP4: Turbo LED
 J23: Keylock
 J24: Speaker
 J10: External Battery

SW1: Reset Switch
 SW2: Turbo Switch
 JP4: Turbo LED

● JP1 - JP3 Setting Definition

Functions	JP1	JP2	JP3
Mono Monitor	Open		
Color Monitor	Close		
Charge CMOS		2-3	
Discharge CMOS		1-2	
ATCLK/8			Close
ATCLK/6			Open

● Cache RAM Configuration

U34-U37	U43-U46	U32,33	JP5	JP6	JP7	JP8	JP9	JP10	Total
8Kx8	---	4Kx4	1-2	1-2	1-2	Open	2-3	2-3	32KB
8Kx8	8Kx8	4Kx4	2-3	1-2	1-2	Open	2-3	1-2	64KB
32Kx8	---	16Kx4	2-3	1-2	2-3	Close	2-3	1-2	128KB
32Kx8	32Kx8	16Kx4	2-3	2-3	2-3	Close	1-2	1-2	256KB

● Turbo And Normal Modes

If SW2 is closed, the system clock will switch to the turbo mode with a high speed CPU clock of 40MHz; if not, it is the normal mode with a low speed CPU clock of 10MHz.

SYSTEM SETUP

AMI BIOS SETUP UTILITY

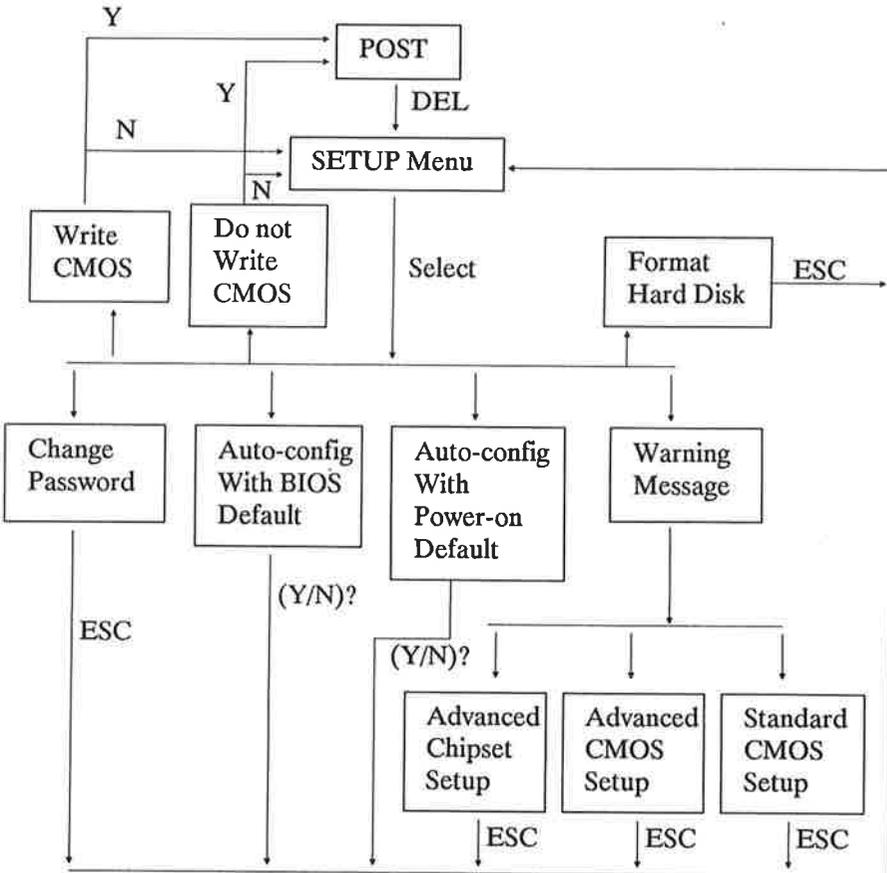


Fig 8.1

POST MESSAGES

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines.

After the POST routines are completed, the following message appears:

"Hit if you want to run SETUP"

To access the AMI BIOS SETUP program, press the key. The screen in Figure 8.3 will be displayed at this time.

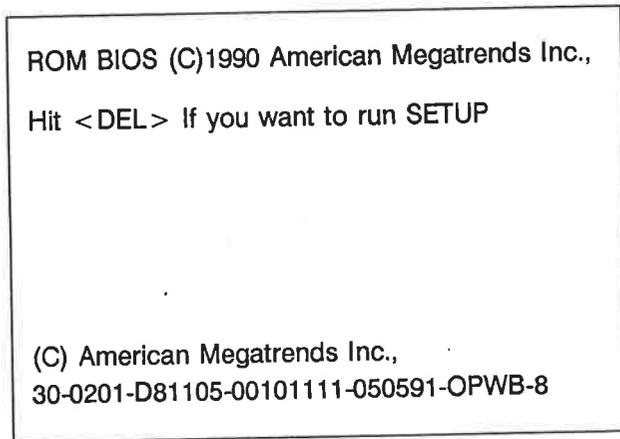


Fig 8.2

BIOS SETUP MENU

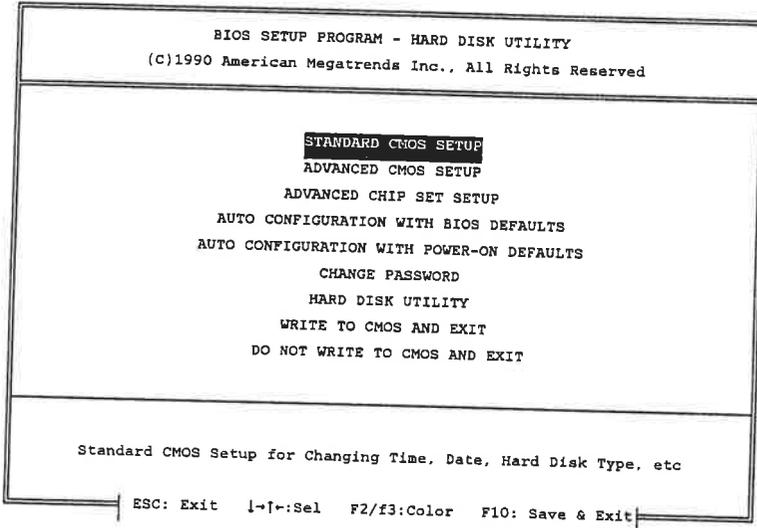


Fig 8.3

Listed below is an explanation of the keys, displayed at the bottom of the screens, accessed through the BIOS SETUP program:

ESC: Exit to previous screen.

ARROW KEYS: Use arrow to move cursor to desired selection.

PGUP/PGDN/CTRL-PGUP/CTRL-PGDN: Modify the defaults value of the options for the highlighted feature. If there are less than 10 available options, the Ctrl PgUp and PgDn keys function the same as the Pgup and PgdN keys.

F1: Displays the help screen for selected features.

F2/F3: Changes background and foreground colors.

F5: Retrieves the values which were resident when current setup session was started. These values will be CMOS values if the CMOS was uncorrupted at the start of the session, or they will be the BIOS Setup default values.

F6: Loads all features in the Advanced CMOS Setup/Advanced Chip Set Setup with the BIOS Setup defaults.

F7: Loads all features in the Advanced CMOS Setup/ Advanced Chip Set Setup defaults.

F10: Saves all changes made to Setup and exits program.

Note: The default value for the prompts which occur when the <F5>, <F6>, <F6> and <F7> keys are pressed is always <N> (No). Actually executing these options requires changing the <N> to <Y> (Yes and pressing <ENTER>.

A warning message, shown in Figure 8.4, is displayed each time one of first three options (Standard CMOS Setup, Advanced CMOS Setup, and Advanced Chip Set Setup) is selected, before any changes are allowed to any of the setup parameters.

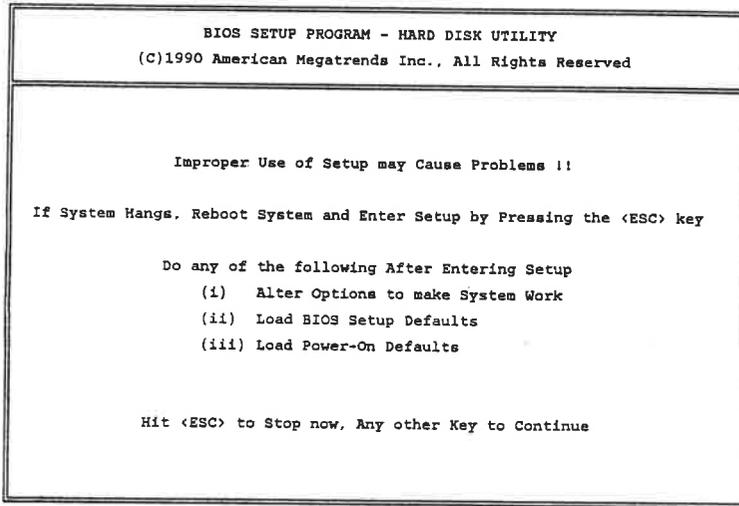


Fig 8.4

● AUTO CONFIGURATION WITH BIOS DEFAULTS

The Auto Configuration With BIOS feature uses the default system values before the user has changed any CMOS values. If the CMOS is corrupted, the BIOS defaults will automatically be loaded.

If you wish to use the BIOS defaults, change the prompt to <Y> and press <Enter>. The following message will appear on the screen:

"Default values loaded. Press any key to continue."

● AUTO CONFIGURATION WITH POWER-ON DEFAULTS

You may use this option as a diagnostic aid if your system is behaving erratically.

If you wish to use the POWER-ON defaults, change the prompt to <Y> and press <Enter>. The following message will appear on the screen:

"Default values loaded. Press any key to continue."

● WRITE TO CMOS AND EXIT

The features selected and configured in the Standard Setup, Advanced CMOS Setup, Advanced Chip Set Setup, and the New Password Setup will be stored in the CMOS when this option is taken.

The CMOS checksum is calculated and written to the CMOS

Pressing <N> (No) and <Enter> will return you to the Main Menu.

Pressing <Y> (Yes) and <Enter> will save the system parameters and continue with the booting process.

● DO NOT WRITE TO CMOS AND EXIT

This option passes control back to BIOS without writing any changes to the CMOS.

Pressing <N> (No) and <Enter> will return you to the Main Menu.

Pressing <Y> (Yes) and <Enter> will save the system parameters and continue with the booting process.

STANDARD CMOS SETUP

Fig 8.5 shows the standard CMOS Setup Screen

```

          BIOS SETUP PROGRAM - STANDARD CMOS SETUP
          (C)1990 American Megatrends Inc.. All Rights Reserved

```

Date (mn/date/year): Tue, Jan 01 1980	Base memory : 640 KB
Time (hour/min/sec): 11 : 24 : 01	Ext. memory : 1024 KB
Daylight saving : Enabled	Cyln Head Wfcom LZone Sec Size
Hard disk C: type : 47=USER TYPE	980 5 0 0 17 41 MB
Hard disk D: type : Not Installed	
Floppy drive A: : 1.2 MB, 5¼"	
Floppy drive B: : 1.2 MB, 5¼"	
Primary display : Monochrome	
Keyboard : Installed	

Sun	Mon	Tue	Wed	Thu	Fri	Sat
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2
3	4	5	6	7	8	9

Month : Jan, Feb,....Dec
Date : 01, 02, 03,...31
Year : 1901, 1902,...2099

ESC:EXIT ←→:Select F2/F3:Color PU/PD:Modify

Fig 8.5

Please follow the keys displayed at the bottom of the screen to complete the setup.

When an entry is selected (highlighted), ranges for each value are listed below in prompt box in the lower left corner of the screen.

In entries Hard Disk C and Hard Disk D, types from 1 to 46 are standard values. Type 47 is user definable and may be different under Hard Disk C and Hard disk D. "Not Installed" could be used for diskless workstations or SCSI hard disks.

ADVANCED CMOS SETUP

The Advanced CMOS Setup screen in this motherboard is shown below in Fig 8.6.

BIOS SETUP PROGRAM - ADVANCED CMOS SETUP	
(C)1990 American Megatrends Inc., All Rights Reserved	
Typematic Rate Programming : Disabled	Video ROM Shadow C400,16K: Enabled
Typematic Rate Delay (msec): 500	Adaptor ROM Shadow C800,16K: Disabled
Typematic Rate (Chars/Sec) : 15	Adaptor ROM Shadow CC00,16K: Disabled
Above 1MB Memory Test : Enabled	Adaptor ROM Shadow D000,16K: Disabled
Memory Test Tick Sound : Enabled	Adaptor ROM Shadow D400,16K: Disabled
Memory Parity Error Check : Enabled	Adaptor ROM Shadow D800,16K: Disabled
Hit Message Display : Enabled	Adaptor ROM Shadow DC00,16K: Disabled
Hard Disk Type 47 RAM Area : 0:300	Adaptor ROM Shadow E000,16K: Disabled
Wait For <F1> If Any Error: Enabled	Adaptor ROM Shadow E400,16K: Disabled
System Boot Up Num Lock : On	Adaptor ROM Shadow E800,16K: Disabled
Numeric Processor Test : Enabled	Adaptor ROM Shadow EC00,16K: Disabled
Weitek Processor : Absent	System ROM Shadow F000,64K: Enabled
Floppy Drive Seek At Book : Disabled	
System Boot Up Sequence : A:, C:	
Cache Memory : Enabled	
Turbo Switch Function : Enabled	
Password Checking Option : Disabled	
Video ROM Shadow C000,16K : Enabled	

ESC:Exit |←|→|Sel (Ctrl)Pu/Pd:Modify F1:Help F2/F3:Color
F5:Old Values F6:BIOS Setup Defaults F7:Power-On Defaults

Fig 8.6

This menu is equipped with a series of help screens, accessed by the <F1> key, which will display the options available for a particular configuration feature and special help for some of the options.

A short description follows for each of the options on the Advanced CMOS Setup Screen.

- **Typematic Rate Programming**

By enabling this option, the user can adjust the rate at which a keystroke is repeated. The options "Typematic Rate Delay" and "Typematic Rate" affect this rate. When a key is pressed and held down, the character appears on the screen and after a delay set by the Typematic Rate Delay, it keeps on repeating at a rate set by the Typematic Rate value. When two or more keys are pressed and held down simultaneously, only the last key pressed will be repeated at the typematic rate. This stops when the last key pressed is released, even if other keys are pressed.

- **Extended Memory Test**

This feature, when enabled, will invoke the POST memory routines on the RAM above 1MB (if present on the system). If disabled, the BIOS will only check the first 1MB of RAM.

- **Memory Test Tick Sound**

This option will enable (turn on) or disable (turn off) the "ticking" sound during the memory test.

- **Memory Parity Error Check**

If the system board does not have parity RAM, the user may disable the memory parity error checking routines in the BIOS. The user should check with the manufacturer regarding the proper setting of this option.

- **Hit Message Display**

Disabling this option, will prevent the message: "Hit if you want to run SETUP" from appearing on the screen when the system boots-up.

- **Hard Disk Type 47 Data Area**

The AMI BIOS SETUP features two user-definable hard disk types. Normally, the data for these disk types is stored at 0:300 in lower system RAM. If a problem occurs with other software, this data can be located at the upper limit of the DOS shell (640KB). If the option is set to "DOS 1KB," the DOS Shell is shortened to 639KB, and the top KB is used for the hard disk data storage.

- **Wait for F1 If Any Error**

Before the system boots-up, the BIOS will execute the POST routines, a series of system diagnostic routines. If any of these tests fail, but a non-fatal error has occurred and the system can still function, the BIOS will respond with an appropriate error message followed by the following statement:

"Press <F1> to continue."

If this option is disabled, any non-fatal error which occurs will not generate the above statement, but the BIOS will still display the appropriate error message. This will eliminate the need for any user response to a non-fatal error condition message.

- **System Boot Up Num Lock**

The user may turn off the "num lock" option on his Enhanced Keyboard when the system is powered on. This will allow him to use the arrow keys on the numeric keypad instead of using the other set of arrow keys on the Enhanced Keyboard. The BIOS will default to turning the "num lock" on.

- **Numeric/Weitek Processor(s)**

These options allow the user to mark the numeric processor (Intel 80387 or compatible) or the Weitek numeric processor (WTL3167) as present or absent.

- **Floppy Drive Seek At Boot**

The default for this option is "Disabled" to allow a fast boot and to decrease the possibility of damage to the heads.

- **System Boot Up Sequence**

The AMI BIOS will normally attempt to boot from floppy drive A: (if present), and if unsuccessful, it will attempt to boot from hard disk C: This sequence can be switched using this option. If the option is set to "C:, A:," the system will attempt to boot from the hard drive C:, and then A:. If the option is set to "A:, C:," the sequence is reversed.

● Cache Memory

With this option, you may specify whether you want the cache feature to be or not to be used.

● Password Check Option

Controlled by the system manufacturer's preferences, the password feature can be used to prevent unauthorized system boot-up or unauthorized use of BIOS SETUP. The option in the BIOS SETUP only allows the user to enable the password check option every time the system boots or upon entering SETUP only. A third option is to disable the password option entirely.

The default option is "Disabled." The prompt for the password will not appear when the system is re-booted.

If the "Always" option is chosen at Setup, the password prompt will not appear when the system is turned on, but will appear if the user attempts to enter the Setup program.

The program allows three attempts to key in the correct password. After each incorrect attempt, the prompt to enter the current password will appear, followed by an "X." After the third incorrect attempt, the system will lock and it will be necessary to reboot. The screen will not display the characters entered.

See the Section in page 8-21 for instructions on changing the user password.

- **Video or Adaptor ROM Shadow**

ROM shadow is a procedure in which BIOS code is copied from slower ROM to faster RAM. The BIOS is then executed from the RAM. These options are chip set specific and are dependent on the system hardware. They may or may not appear on the BIOS screen. Each option, when it does appear, allows for a segment of 16MB to be shadowed from ROM to RAM. If one of these options is enabled, and there is BIOS present in that particular 16MB segment, the BIOS will be shadowed.

- **System ROM Shadow**

The same concept applies here as above, except that in this case, the system BIOS (64KB in length) is shadowed.

ADVANCED CHIP SET SETUP

This portion of the BIOS Setup is entirely chip set specific and requires knowledge about the particular chip set in use. This option is used to change the register values for the chip set registers. These registers control most of the system options in the computer.

BIOS SETUP PROGRAM - ADVANCED CHIPSET SETUP	
(C)1990 American Megatrends Inc., All Rights Reserved	
Hidden Refresh	: Enabled
Slow Refresh	: Disabled
Single ALE Enabled	: No
Keyboard Reset Control	: Disabled
Master Mode Byte Swap	: Disabled
AT Cycle Wait State	: Disabled
DRAM Read Wait State	: 1 W/S
DRAM Write Wait State	: 1 W/S
Cache Write W/S (See Help)	: 1 W/S
Non-Cacheable Block-1 Size	: Disabled
Non-Cacheable Block-1 Base	: 0 KB
Non-Cacheable Block-2 Size	: Disabled
Non-Cacheable Block-1 Base	: 0
Cacheable RAM Address Range	: 64MB
Video BIOS Area Cacheable	: No

ESC:Exit |←|→:Sel (Ctrl)Pu/Pd:Modify F1:Help F2/F3:Color
F5:Old Values F6:BIOS Setup Defaults F7:Power-On Defaults

Fig 8.7

Unless you completely understand the meaning of the entry, we don't recommend you change the initial values in anyway.

The default setting shown in Fig 8.7 is rated the best performance in the LANDMARD SPEED.

PASSWORD CHANGE

Depending on the particular hardware manufacturer or system integrator, the system may be configured so that the user is required to enter a password every time the system boots, or whenever an attempt is made to enter the SETUP programs. The password function may also be disabled, which means that the prompt will not appear under any circumstances.

This section of the manual deals with changing the user password. The password check function is enabled or disabled in Advanced CMOS Setup (refer to Page 8-18).

The password, which will be stored in the CMOS, cannot exceed 6 characters in length. A default password, to be used if the CMOS is corrupted, is stored in the ROM. The default password is <AMI>.

To change the user password, select the Change Password option from the main Setup screen. The screen in Figure 8.8 (see next page) will appear.

- The first time you select this option, enter the default password <AMI>, then press <Enter> to complete your selection.
- The screen will not display the characters entered. After the current password has been correctly entered, the central prompt box in Figure 8.8 will display:

Enter NEW Password:

- After the new password is entered, the prompt box will display:

Re-Enter NEW Password:

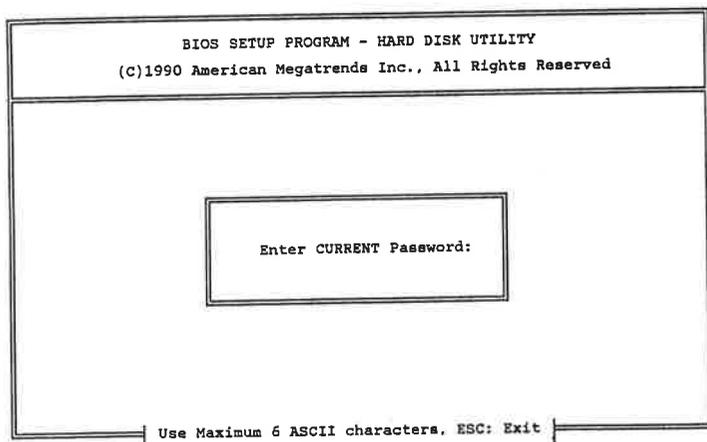


Fig 8.8

- Rekey the new password and press <Enter>. If the password confirmation is miskeyed, the prompt box will display:

ERROR, Press Any Key

- If the new password confirmation is entered without error, the prompt box display:

NEW Password Installed

- Press <ESC> to return to the Main Setup Menu.

Once Setup is completed and the changed values have been stored in the CMOS, when the system next boots, the user will be prompted for password if the password function is present and has been enabled.

HARD DISK UTILITIES

Note : These routines are not valid for a SCSI Disk Drive.

Once the Hard Disk Utility option is taken by pressing <Enter> at the Main Setup Menu, the screen in Fig 8.9 will appear.

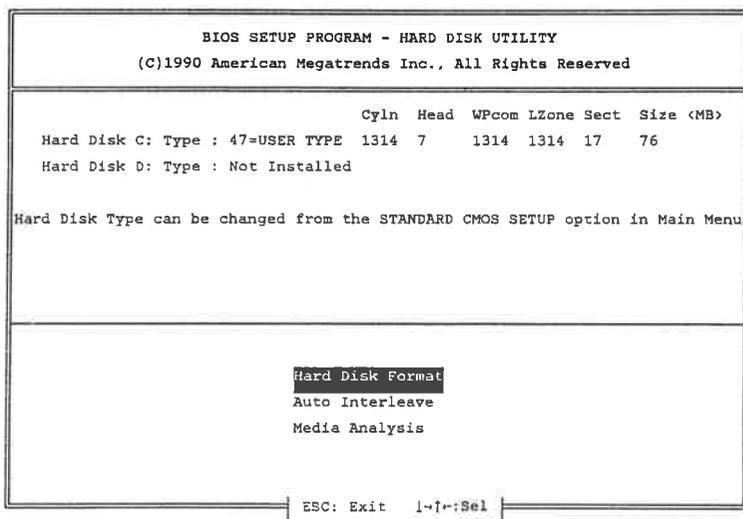


Fig 8.9

● Hard Disk Format

Use this option to integrate a new hard disk to the system, or to reformat a used hard disk which has developed some bad patches as a result of aging or poor handling. To find these bad patches on a used drive, you may select the Media Analysis option.

When you press <Enter> at the Hard Disk Format option, the screen in Fig 8.10 appears.

```
BIOS SETUP PROGRAM - HARD DISK UTILITY
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```

	Cyln	Head	WPcom	LZone	Sect	Size <MB>
Hard Disk C: Type : 47=USER TYPE	1314	7	1314	1314	17	76
Hard Disk D: Type : Not Installed						

Hard Disk Format

Disk Drive (C/D) ? C

Disk Drive Type ? 47

Interleave (1-16) ? 3

Mark Bad Tracks (Y/N) ?

Proceed (Y/N) ?

ESC: Exit |->F1:Sel

Fig 8.10

The box on the left of the screen contains a series of questions (prompts) which must be answered before performing the Hard Disk Format. The first two questions may already have been answered for you if the value was previously entered for one disk only at the standard CMOS Setup screen.

The manufacturer of the hard drive usually provides a list of "bad tracks" with the hard drive. These tracks should be entered with this option, and they will then be marked as "bad" in order to prevent data from being stored there in the future..

The screen in Fig 8.11 is displayed when the prompt to Mark Bad Tracks is changed to <Y> and the <Enter> key is pressed and an option add, delete, revise, or clear is selected from the Bad Track Edit Menu.

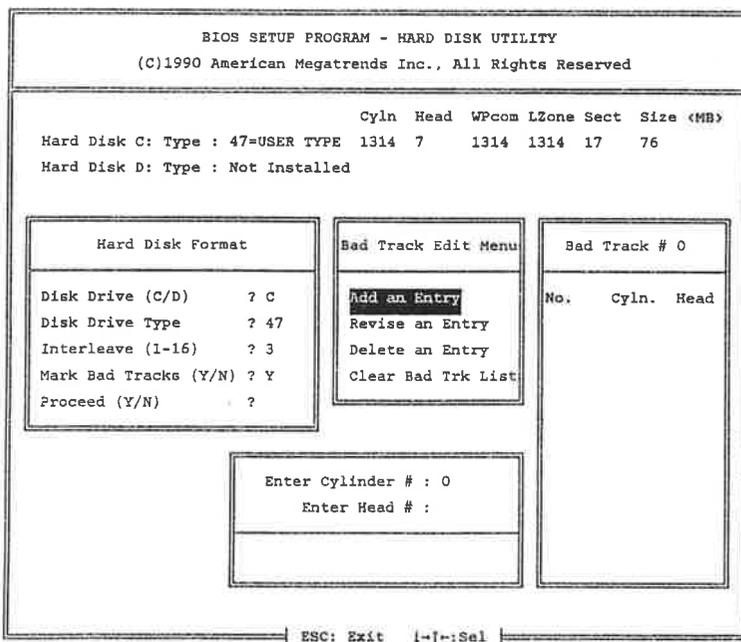


Fig 8.11

When the Proceed prompt is changed to <Y> and the <Enter> key pressed, the warning screen in Fig 8.12 will be displayed.

The default for the Continue prompt is <N>. Once this prompt is changed to <Y> and the <Enter> key pressed, any data residing on the hard drive will be irrevocably lost.

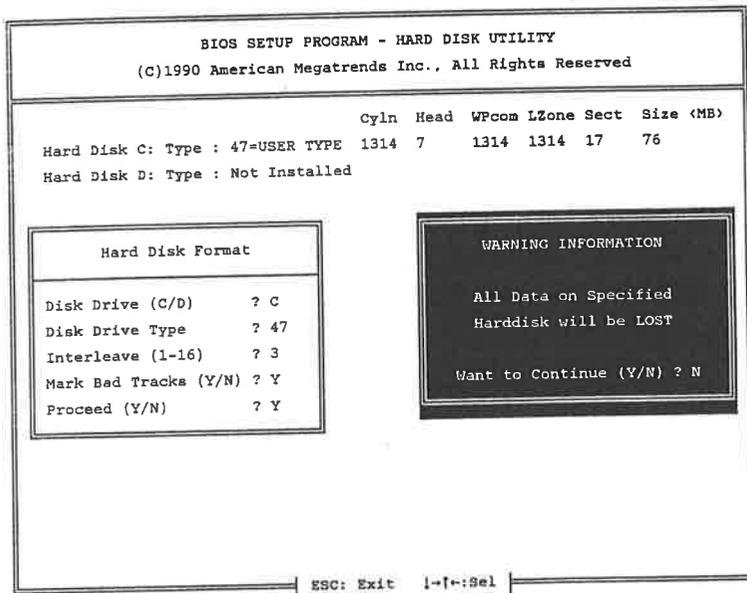


Fig 8.12

The cursor will be placed at the Mark Bad Tracks prompt. The default for this prompt is <N>. To mark additional bad tracks, change the prompt to <Y> and press <Enter>. The screen in Figure 8.14 will appear.

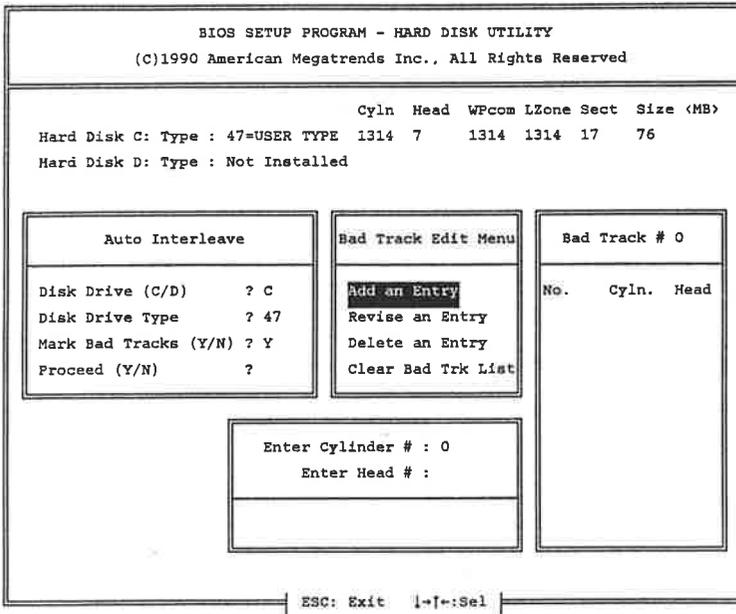


Fig 8.14

After you have made the desired selections at Bad Tracks Edit Menu, press <ESC>. The cursor will be move to the Proceed prompt.

To proceed with the Auto Interleave process change the prompt to <Y> and press <Enter>. The following warning screen in Figure 8.15 will appear.

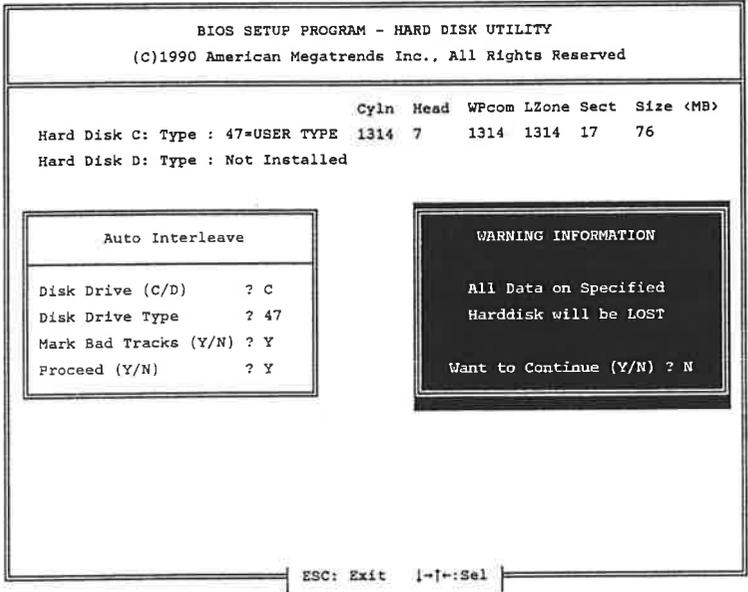


Fig 8.15

If you do not wish to proceed, press <Enter> and you will return to the main Hard Disk Utility screen. To proceed, change the warning prompt to <Y> and press <Enter>.

• Media Analysis

This option performs a series of tests to locate bad or damaged patches on the hard disk as a result of aging or poor handling. This utility locates all bad tracks on the hard disk and lists them in Bad Track List Box. Since this test writes to all cylinders and heads on the hard disk to verify any bad tracks, the test may require several minutes to complete. For best results, run this test in its entirety.

To run the Media Analysis utility, use your arrow keys to select the option from the main Hard Disk Utility Menu and press <Enter>. The following screen (Figure 8.16) will appear.

```
BIOS SETUP PROGRAM - HARD DISK UTILITY
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```

	Cyln	Head	WPcom	LZone	Sect	Size (MB)
Hard Disk C: Type : 47=USER TYPE	1314	7	1314	1314	17	76
Hard Disk D: Type : Not Installed						

Media Analysis

Disk Drive (C/D)	? C
Disk Drive Type	? 47
Proceed (Y/N)	? N

```
ESC: Exit  F10: Sel
```

Fig 8.16

The cursor will appear at the Proceed prompt. When you press <Enter>, the warning screen in the Figure 8.17 will appear.

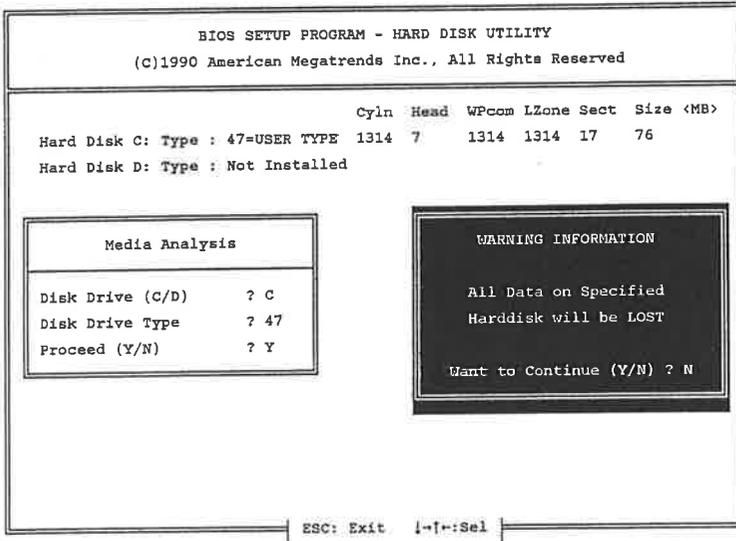


Fig 8.17

If you do not wish to proceed at this point, press the <Enter> key and you will be returned to the main Hard Disk Screen (Figure 8.9). If you wish to proceed with the analysis, change the prompt to <Y> and press <Enter>.

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