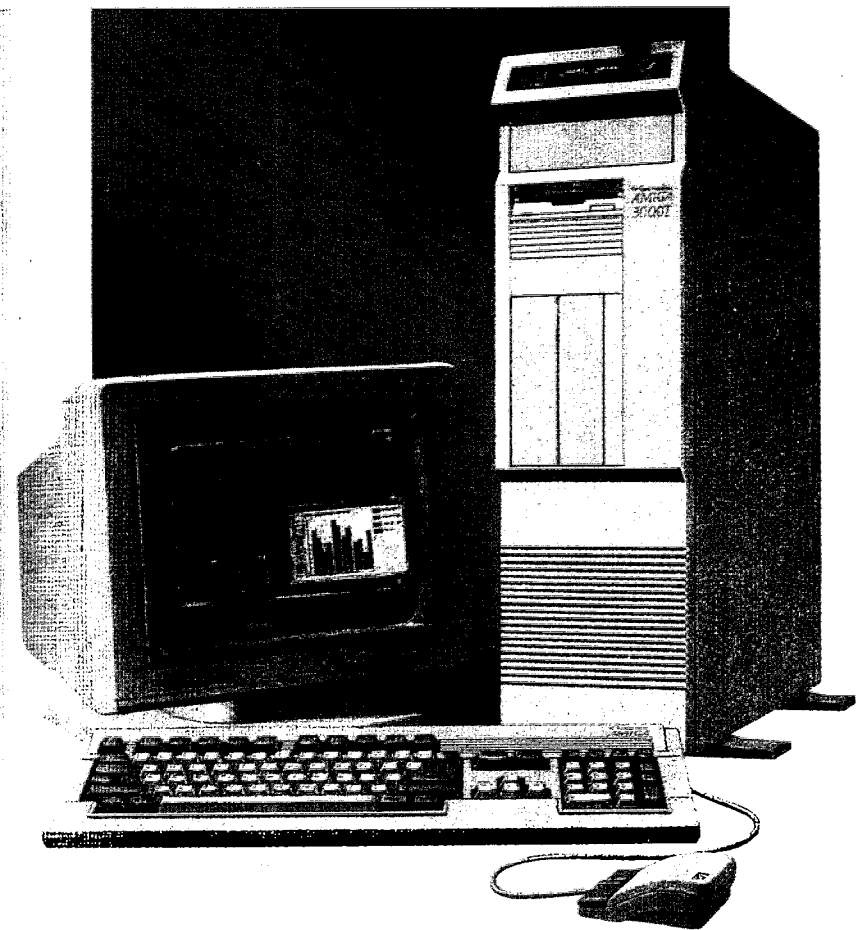


Introducing The Commodore® Amiga® 3000T™



Introducing the

C[®] Commodore[®]

AMIGA[®]

3000T[™]

C[®] Commodore[®]

C[®] Commodore[®]
AMIGA[®]

Commodore Business Machines
1200 Wilson Drive • West Chester, PA 19380

About this Book

This book introduces you to the Commodore®-Amiga® 3000T computer. Major features and components of the Amiga 3000T and how each works are briefly described in the first two chapters. Getting started using your Amiga 3000T is covered in the third chapter. The fourth chapter explains the variety of expansion options available for the Amiga 3000T. Technical information and use of the Display Enhancer and the Keyboard is provided in the appendices.

If you carefully read this book and Chapter 1 of the Using the System Software manual included with your computer, you should know enough to begin using programs like word processors, spreadsheets, etc. Of course you will also have to read the manual for each program you want to use.

The Amiga 3000T is a sophisticated, powerful machine. As you are using it you will probably find that you need or want more detailed information on its general operation and specific features. You can find all this information in the Using the System Software manual.

NOTE: You can read this introductory book either before or after you unpack and set up your computer. **HOWEVER, WHEN YOU DO SET UP YOUR COMPUTER BE SURE TO FOLLOW THE INSTRUCTIONS GIVEN IN THE AMIGA 3000T QUICK CONNECT.**

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FCC USER'S MANUAL STATEMENT

This device complies with Part 15 of the FCC rules and Standard C108.8-M1983 of the Canadian Standards Association's Regulations. Operation is subject to two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation. If you suspect this device is causing interference, you can test this device by turning it off and on. If this equipment does cause interference, the user is encouraged to correct inference by one of the following means:

- Reorient the receiving antenna or AC plug.
- Change the relative positions of the computer with respect to the receiver.
- Plug the computer into a different outlet so the computer and receiver are in different branch circuits.

CAUTION: Only peripherals with shielded-ground cables (computer, input-outlet devices, terminals, printers, etc.), certified to comply with Class B limits can be attached to this device. Operation with non-certified peripherals may result in communications interference. Changes or modifications to this device not expressly approved by the party responsible for the compliance could void the user's authority to operate the equipment.

Your house AC wall receptacle must be three-pronged type (AC ground). If it is not, contact an electrician to install the proper receptacle. If a multi-connector box is used to connect the computer and peripherals to AC, the ground must be common to all units.

If necessary, the user should consult the dealer or an experienced radio-television technician for additional suggestions. The user may find the following booklet helpful prepared by the Federal Communication Commission: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402, stock no. 004-000-00345-4.

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Chapter 1

Overview of the Amiga® 3000T™

The Amiga 3000T (also known as the A3000T) is an extremely advanced, high-speed personal computer that is conveniently housed in an upright tower. This tower design allows increased expansion space when compared to desktop computers. The A3000T has space for several internal expansion cards, up to five externally accessible devices (floppy drives, tape drives, etc.), up to two internal full-height devices (hard drives, tape drives, etc.), and up to four internal half-height hard drives.

Incorporating all the unique features of earlier Amiga computers, the A3000T offers a high-speed microprocessor, a numeric coprocessor, and additional input and output features for significantly enhanced computing speed and versatility. The A3000T is remarkably sophisticated and powerful, yet it is also affordable and accessible—even a computer novice can be up and running with a minimum of effort.

The A3000T is shipped with a minimum of five megabytes of Random Access Memory (RAM). This RAM is divided up into four megabytes of *FAST* RAM and one megabyte of *CHIP* RAM (see below). The A3000T's motherboard has open sockets for up to twelve more megabytes of *FAST* RAM and one more megabyte of *CHIP* RAM. This allows you to install up to eighteen megabytes of system RAM without taking up an expansion slot.

The minimum of five megabytes of standard RAM include one megabyte of *graphics* or *CHIP* RAM, which is memory that is available for graphics and sound processing. The A3000T's motherboard can accommodate up to two megabytes of *CHIP* RAM. This allows the A3000T to improve on the already impressive graphics and sound capabilities of earlier Amiga models.

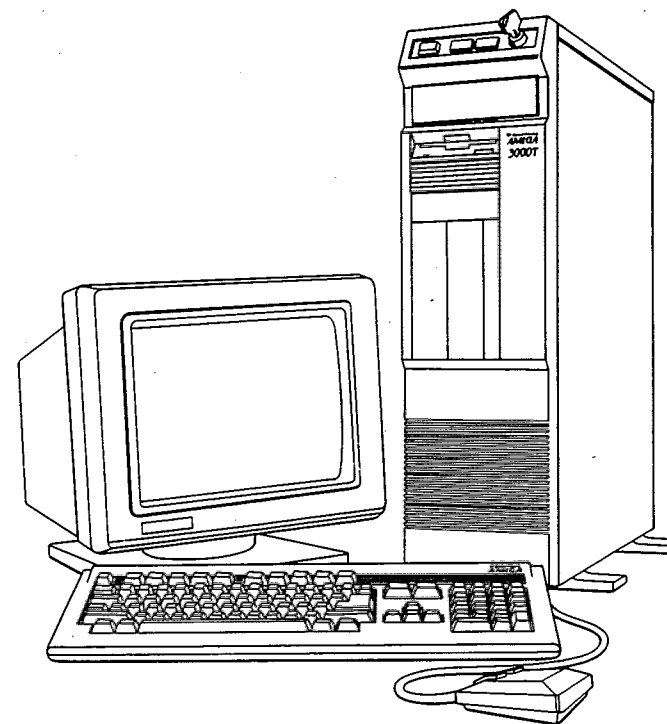
The A3000T is an open-architecture machine. The A3000T internal expansion slots are compatible with Amiga 2000 expansion cards (like the Commodore PC Bridgeboard™ emulation cards), while offering increased performance for new devices developed specifically for the A3000™ and A3000T. These expansion slots allow a wide variety of specialized circuit cards to be quickly and easily installed in your A3000T, adding networking capability, video processing, microprocessor enhancements, and other resources — all within the main chassis of the computer. Such cards, available from Commodore and from many third parties, increase the power of the A3000T without increasing its footprint.

Many devices commonly considered add-on devices now come standard with the Amiga 3000T, saving you money and freeing up valuable expansion slots for other uses. For instance, included with the A3000T motherboard is a SCSI controller for managing hard disks and other SCSI devices. The A3000T also has built-in *Display Enhancer* circuitry that can produce flicker free screen output in selected graphics modes (this requires a multiscan-type monitor). This leaves the video expansion slot free for other video devices, such as an internal genlock or other graphics cards.

The new ECS (Enhanced Chip Set) circuitry supports two new video modes: the *Productivity* mode and the *Superhires* mode, only available when using AmigaDOS™ 2.0. (These modes are described in the *Using the System Software* manual).

For the technical specifications and other technical information on the A3000T, see the appendices to this manual.

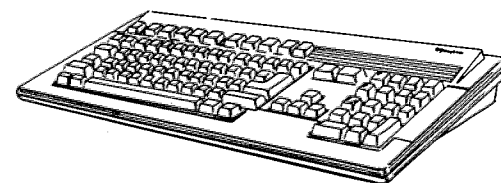
The Parts of the A3000T™ System



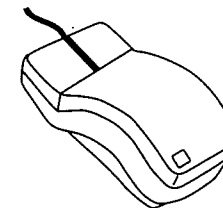
- **The Main Unit** — Houses the 68030 CPU (central processing unit), the “brain” of the Amiga 3000T. The main unit also contains:
 - *memory and processing chips and specialized components, including:*
 - system RAM
 - 68882 numeric coprocessor
 - sound and graphics chips
 - Display Enhancer circuitry
 - DMA SCSI controller

- *disk drives*, including:
 - one hard drive
 - one 3.5 inch 880KB (kilobyte) floppy drive
- space for additional floppy drives or devices (externally accessible)
 - one 3.5 inch device oriented horizontally
 - two 5.25 inch device(s) oriented vertically
 - one 5.25 inch device oriented horizontally
- space for additional hard drives or devices (internally oriented)
 - up to four half-height hard drives
 - up to two full-height devices
- *expansion slots*, for optional internal devices like:
 - expansion cards for memory, communications, etc.
 - PC emulation cards (Bridgeboards)
 - special video processing cards, etc.
- *external connectors*, for optional external peripheral equipment such as:
 - printers
 - modems
 - disk drives
 - video equipment
 - audio equipment, etc.
- *internal speaker*
- *keyswitch*, allows you to disable keyboard/mouse and reset the computer
- *power supply and fan*

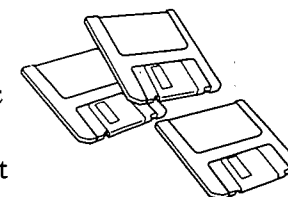
- **The Keyboard** — Provides a full typewriter style layout, plus a standard numeric keypad, and a set of program-activated function keys. The keyboard is used to communicate information and instructions to the computer, and to respond to messages from the computer. Many mouse functions (see below) can be performed via the keyboard. *The keyboard connects to the keyboard port on the back of the main unit.*



- **The Mouse** — Controls the movement of a small, arrow-shaped pointer on the display screen. When you move the mouse over a flat surface like a desk, the pointer on the screen moves accordingly. By clicking on the mouse buttons you can transmit instructions to the Amiga. *The mouse connects to the mouse 1 port on the back of the main unit.*

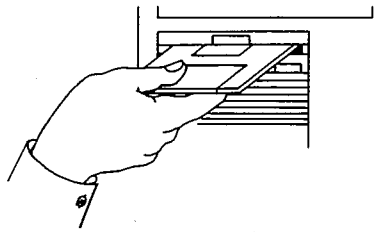


- **Floppy Disks** — A circular piece of magnetically coated material enclosed in a protective hard plastic housing. Floppy disks are used to store information and programs that tell the computer what to do. Amiga floppy disks are 3.5 inches square and can hold 880,000 characters of information.

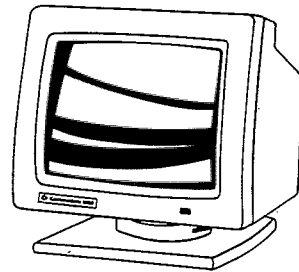


- **Floppy Disk Drive(s)** —

When a floppy disk is inserted into the disk drive, the computer can be instructed to obtain (*read*) information from the disk, or send (*write*) information to it. *The standard A3000T includes one floppy disk drive, located on the front of the main unit.*



- **Monitor** — Displays information generated by the computer's operating system and your programs. The monitor may be one of several types, and may or may not be included as part of the Amiga 3000T package, depending on the country of purchase. *Depending on its type, the monitor connects to either the 15 or 23 pin video port on the back of the main unit.*



- **Hard Drive** — Stores very large amounts of information (many times more than a standard floppy disk). *The standard A3000T hard drive is located inside the main unit.*
- **Built-In Clock/Calendar** — Maintains the time and date even when the computer is turned off, via a battery back-up. *The clock/calendar and battery back-up are located inside the main unit.*

- **Peripherals** — Internal and external peripherals (printers, modems, disk drives, Bridgeboard PC emulators, genlocks, etc.) can be added to your Amiga 3000T system. See the *Amiga 3000T Quick Connect* for the basic external A3000T setup and connection instructions. See Chapter 4 in this manual for information on internal expansion options (memory, expansion cards, etc.).

The A3000T Documentation

In addition to this manual, the A3000T package includes the following documentation:

- **QUICK CONNECT—How to Set Up the Commodore Amiga 3000T**

This is a 6 inch by 9 inch booklet that tells how and where to connect the A3000T equipment, including optional devices. The booklet folds out to become a large poster. You can hang the poster in a convenient spot while you follow the connection instructions.

- **USING THE SYSTEM SOFTWARE**

This manual provides comprehensive information on Amiga software and is divided into four tabbed parts. The first part includes detailed coverage of Workbench, the graphic user interface for the Amiga. This part begins with a tutorial aimed at the first-time user with subsequent sections building on this base, and introducing advanced Workbench features. The second part covers AmigaDOS, the Keyboard-based interface that manages the Amiga's computing resources. The AmigaDOS material includes a chapter describing the AmigaDOS text editors, plus an AmigaDOS command reference.

The third tabbed part of this manual documents AREXX, the Amiga's programming language. This includes an introduction to using AREXX, sample programs, and a complete language reference. The fourth part contains appendices listing technical information, a glossary providing definitions of Amiga terminology, and an index for quick page reference.

Additionally, your *Using The System Software* includes a Command Reference foldout. This foldout provides an easy-to-find format for most AmigaDOS, ED, MEmacs, and Edit commands.

Chapter 2

Features of the Amiga® 3000T™

Hardware Features

68030 Microprocessor

The A3000T includes a Motorola® 68030™ CPU and a Motorola 68882™ Floating Point Unit (also known as a numeric coprocessor or a math coprocessor). Both processors run at clock speeds of 25 MHz. (Clock speed, given in MHz, is one measure of how fast a computer's microprocessor(s) can perform tasks.)

The Motorola 68030 microprocessor vastly increases processing speed over previous Motorola 68000™ class microprocessors in several important ways:

- It has full 32-bit architecture — that is, it reads and writes data in 32-bit blocks (compared with the 16-bit architecture of earlier Amiga models).
- Its cache memory allows faster performance, even with 16-bit memory.
- It works directly with the A3000T's built-in Floating Point Unit (Motorola 68882™ numeric coprocessor) for very fast mathematical calculations.

68882 Numeric Coprocessor

As noted above, the A3000T is also equipped with a Motorola 68882 Floating Point Unit, running at a clock speed of 25 MHz (matching the clock speed of the 68030 CPU). The addition of a numeric coprocessor greatly increases the processing speed for numeric-intensive applications like spreadsheets, graphics, and CAD programs.

Hard Disk

The A3000T comes with a built-in hard disk drive. This hard disk drive has a storage capacity equivalent to that of dozens of floppy disks. With a hard disk drive, storage and retrieval of information is considerably faster than with a floppy disk drive.

For information on using the hard disk, refer to the *Using the System Software* manual, especially Chapter 6.

Display Enhancer

The A3000T includes special video display circuitry known as the *Display Enhancer*, that offers additional display capabilities.

The action of the Display Enhancer is software-compatible with the function of many existing software packages and internal Amiga plug-in cards, as well as the new *Productivity* mode available with the new Enhanced Denise chip and AmigaDOS 2.0.

Refer to Appendix C for detailed information on the features and use of the Display Enhancer.

SCSI Controller

The A3000T has a built-in DMA SCSI (Small Computer Standard Interface) Controller that provides a link between the hard disk and the Amiga, allowing you to boot (start operations) directly from the hard drive. There is no need to insert a disk into the floppy disk drive to get the system up and running.

The A3000T has internal and external SCSI connectors for additional hard disks or other SCSI devices.

Standard Amiga Features

Following are brief descriptions of features that are included in all Amiga computers. For more details on these features, see the *Using the System Software* manual.

Graphical User Interface (GUI) Processing

A *Graphical User Interface (GUI)* allows you to tell the computer what to do by selecting graphic symbols (in the form of *icons*, or small pictures), rather than having to type in words or commands. Because the icons are displayed automatically by the computer, you don't have to memorize a long list of commands or keystrokes to get the computer to respond correctly to your instructions. This makes a GUI extremely easy to use.

Amiga computers provide a versatile GUI known as the *Workbench*. For an introduction to the basics of the Workbench, see Chapter 3 of this manual. For complete details on the Workbench, refer to the *Using the System Software* manual included with your computer.

Command Line Processing

In *command line processing*, you type in each command or instruction to the computer. Although command line processing is not as simple to use as GUI processing, command line instructions can be made very precise. Command line processing can therefore be very useful — even essential — in advanced processing situations.

Amiga computers offer a highly sophisticated, easy-to-use command line processing system known as the *Shell*. With the Amiga's multitasking capabilities, you can even open a number of Shells at one time.

For added versatility, the Workbench and Shell work together. You can load the Workbench using the Shell, and you can call up the Shell from the Workbench. (See the *Using the System Software* manual for details on the Shell.)

Multitasking

Multitasking is the ability of a computer to handle a number of tasks or programs simultaneously. This concurrent activity does not require any action by the user and does not depend on special programming techniques. Multitasking ability is a feature of the Amiga family of computers.

Text-To-Speech Conversion

The Amiga has the ability to convert English text input directly to speech. There are controls for rate, pitch, volume, inflection, and even type of voice (male, female, computer). This is another ability standard to the Amiga family of computers.

Stereo Sound

The Amiga has four independent sound channels, normally configured as two stereo channels. The Amiga sound system can reproduce complex waveforms and can perform 8-bit digital-to-analog conversions.

The A3000T has the ability to produce either mono or stereo sound. Mono sound is produced through the internal speaker. Stereo sound is produced through two external speakers, or through one external speaker and the internal speaker. Refer to the *A3000T Quick Connect* for information on stereo connections and audio ports.

Listed below are the audio connection combinations using the A3000T's audio ports, RCA plugs, and internal/external speakers.

- Mono from internal speaker—default—no connection necessary.
- Mono from external connectors—RCA plug in Left audio port to external speaker. (This will disable the internal speaker.)
- Stereo from internal and external speaker—RCA Plug in Right audio port to external speaker.
- Stereo from external connectors—RCA plugs in both audio ports to external speakers. (This will disable the internal speaker.)

AUTOCONFIG™

All expansion slots are controlled by a feature known as AUTOCONFIG, which automatically recognizes most expansion cards installed in the A3000T. AUTOCONFIG ensures that the system is aware of the added capability; the user does not have to run a special setup program or change hardware switches.

Graphics Capabilities

This section summarizes the types of screen displays that you can use with your A3000T. (The type of screen display is also referred to as **display mode**.) For details on the display modes available, see Chapter 3 in the *Using the System Software* manual.

Changing the display mode changes the number of pixels that make up the screen. This is also known as screen resolution. The higher the number of pixels, the sharper the resulting display image.

The standard Workbench screen that appears when you turn on (boot) your A3000T is known as a Hires (high-resolution) interlaced screen. It is 640 pixels wide (left to right). Its height is determined by your country's video standard: NTSC, the video standard used in most of North America, parts of Latin America, and Japan; or PAL, the video standard used in Europe, Australia, and New Zealand. For an NTSC display, a Hires interlaced screen is 400 pixels high (top to bottom); for a PAL display it is 512 pixels high.

Certain software, like desktop publishing, or CAD/CAM programs, require this higher resolution in order to present the information clearly. For instance, if a desktop publishing program is used in a low-resolution screen (320 x 200/256 pixels), the text will not be clearly defined—circular letters may have jagged edges or portions of letters may appear to be missing. You will not be able to see a true representation of your page. However, the same page on an Amiga Hires-interlaced screen (640 x 400/512 pixels) will be sharp and crisp. It will more closely resemble the printed output.

The display modes available to you may depend upon the type of monitor you are using. Interlaced screens may flicker when used with certain monitors. The A3000T's built-in Display Enhancer is designed to eliminate the flicker when used with a multiscan-type monitor.

The following chart lists the display modes, the hardware needed to use that mode, and the standard screen sizes.

Note that the display mode you choose only pertains to the Workbench screen. (See Chapter 3 in this manual and the Workbench chapters in the *Using the System Software* manual for information on the Workbench.) If your application opens its own screen, you should check the application's documentation for supported display modes.

A3000T Workbench Display Modes			
Graphics Display Mode	Special Requirements	Standard Screen Size (Pixels)	Maximum Number of Colors
Hires		640 x 200/256	16
Hires Interlaced		640 x 400/512	16
SuperHires		1280 x 200/256	4
SuperHires Interlaced		1280 x 400/512	4
Productivity	MULTISCAN monitor	640 x 480	4
Productivity Interlaced	MULTISCAN monitor	640 x 960	4
A2024/10Hz	A2024 monitor	1008 x 800	4 shades of grey
A2024/15Hz	A2024 monitor	1008 x 800	4 shades of grey

Your Amiga 3000T additionally supports the following display modes, which are not used by Workbench but which are available to applications which open their own screens.

A3000T Display Modes		
Graphics Display Mode	Standard Screen Size (Pixels)	Maximum Number of Colors
Lores	320 × 200/256	32
Lores Interlaced	320 × 400/512	32
HAM	320 × 200/256	4096
HAM Interlaced	320 × 400/512	4096

For More Information . . .

The features briefly noted in this chapter have been selected to show the A3000T's wide range of capabilities. Refer to the appendices of this manual for more information on A3000T hardware features. Refer to the *Using the System Software* manual for more information on A3000T software features.

Chapter 3 Getting Started

This section introduces the basics for using your Amiga® 3000T™.

For full details on using your Amiga 3000T, you should read the *Using the System Software* manual packaged with your Amiga computer. The *Using the System Software* manual provides complete information on the Workbench, which is the primary software for the Amiga. The *Using the System Software* manual includes step-by-step tutorials on each feature of the Workbench. You will of course have to follow the instructions given in the user's manual for each program that you want to use.

NOTE: As a result of Commodore's ongoing product development, the displays shown in this manual may differ slightly from those that appear on your monitor screen.

About Software

Software is a set of instructions (often called a *program*) that tells your computer what to do. There are many kinds of software, including:

- application programs, such as word processors, video titlers, spreadsheets, databases, games, drawing programs, music programs, etc.
- programming languages, such as C, AREXX, etc.

- utilities, such as file management programs or font editors
- operating systems, such as AmigaDOS™, which is the operating system that controls how your Amiga interacts with you and with the equipment in your system

Software is contained on some form of *storage medium*, most often a *floppy disk* or a *hard disk*. For those new to computing in general or to Amiga computing in particular, the next section provides an introduction to floppy and hard disks.

About Disks

There are two main types of computer disks: floppy disks and hard disks. Floppy disks offer low cost and transportability. Hard disks offer high speed and relatively large storage capacity.

Information on disks is stored magnetically, in somewhat the same way that sound is recorded on audio tape. You can copy the information on a disk to another floppy disk or hard disk, or to other storage media (e.g., tape).

A computer can include both floppy drives and hard disk drives, as well as other storage devices, such as a tape unit. Your A3000T includes one floppy disk drive and one hard drive. Additional floppy disk drives are available from Commodore and third party manufacturers as internal or external add-on peripherals. Additional hard disk drives are available from third party manufacturers as internal or external add-on peripherals.

Floppy Disks

Floppy disks are pieces of magnetically coated material enclosed in a square protective cover. In order for the computer to *read* (retrieve) information from a disk or to *write* (save) information to a disk, you must insert the disk in a floppy disk drive.

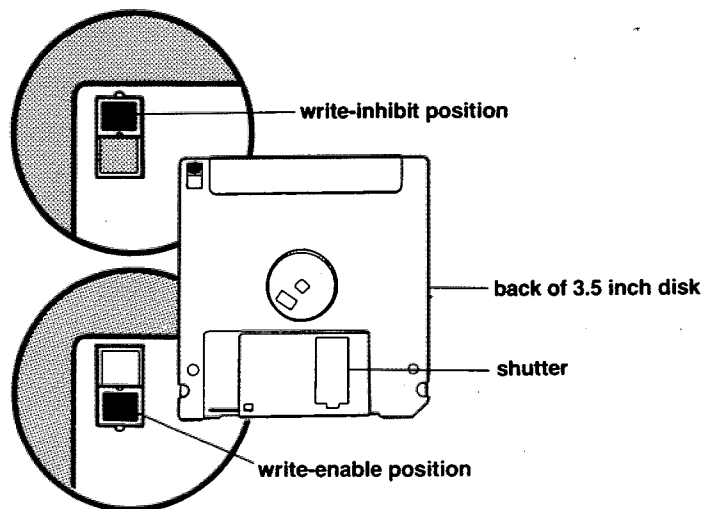
The 3.5 inch floppy disks used with the A3000T have a rigid plastic shell and a metal cover (known as a *shutter*) for protection against damage, fingerprints, etc. Each 3.5 inch floppy disk holds 880 *kilobytes* (abbreviated **880KB**) of data. This is roughly equivalent to 400 typewritten pages.

Protecting Floppy Disk Information

Note the small plastic tab on the back of each floppy disk. This is known as a *write-protect* tab. When you receive your Amiga, the tab on each disk should be in the upper position (i.e., at the top edge of the disk). This position is known as the *write-inhibit* position. When the tab is in this position, you should be able to see through a small hole in the plastic disk cover.

With the tab in this position, you can *read* (that is, retrieve) the information on the disk, but you cannot *write* to the disk (that is, you cannot change the information or add new information).

If you want to *write* to the disk, you move the tab down (i.e., toward the middle of the disk), so that it covers the hole. This position is known as the *write-enable* position.



Although the disk housing is relatively sturdy, you should follow certain rules in handling the disks. For a list of these rules, see the *Caring For Your Amiga* section at the end of this chapter.

IMPORTANT: In addition to the 3.5 inch Amiga disks packaged with your computer, you should always have some blank 3.5 inch floppy disks ready. (You can get blank disks from various sources — your Amiga dealer, computer stores, office supply stores, etc.). Use only double-sided, double-density disks.

Chapter 1 of the *Using the System Software* manual tells how to copy the information from the original disks onto these blank disks. This is important because it will allow you to work with the copies (known as *working disks*) and keep the originals in a safe place. You can use the originals to make new backups if the first copies become damaged in any way.

Hard Disks

Hard disks typically hold from 10 megabytes to hundreds of megabytes of data (the upper limit for storage capacity is being raised continually). Information moves to and from the hard disk electronically — the disk is never touched physically by the user.

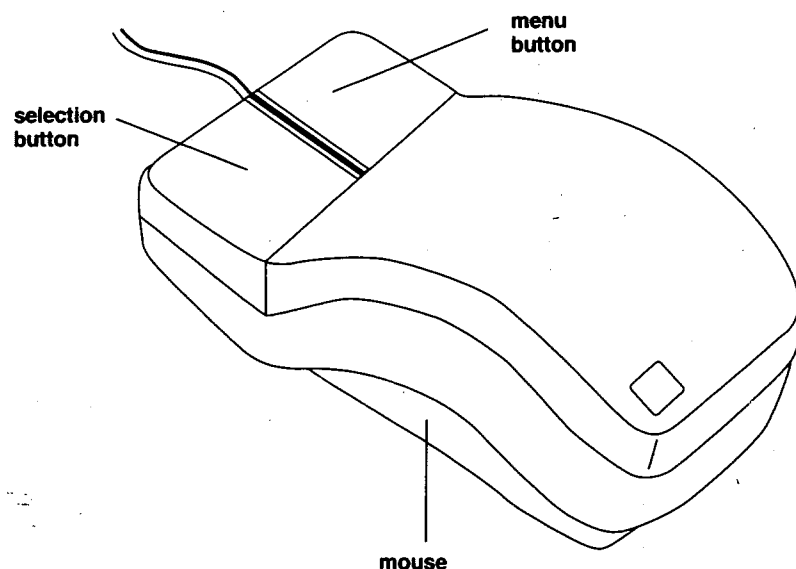
The A3000T includes an internal hard disk, located in a bay at the rear center of the main unit. This hard disk is enclosed in sealed housing.

See *The A3000T Hard Disk* later in this section and Chapter 6 in the *Using the System Software* manual for more information on the hard disk.

About the Mouse

While working with your computer you will generally be using the *mouse*. The mouse controls the movement of a small, arrow-shaped pointer on the display screen. When you move the mouse over a flat surface like a desk or table top, the pointer on the screen moves in the same direction as the mouse.

There are two buttons on the mouse. The left mouse button is called the *selection* button; the right button is called the *menu* button. These terms are explained later in this section.



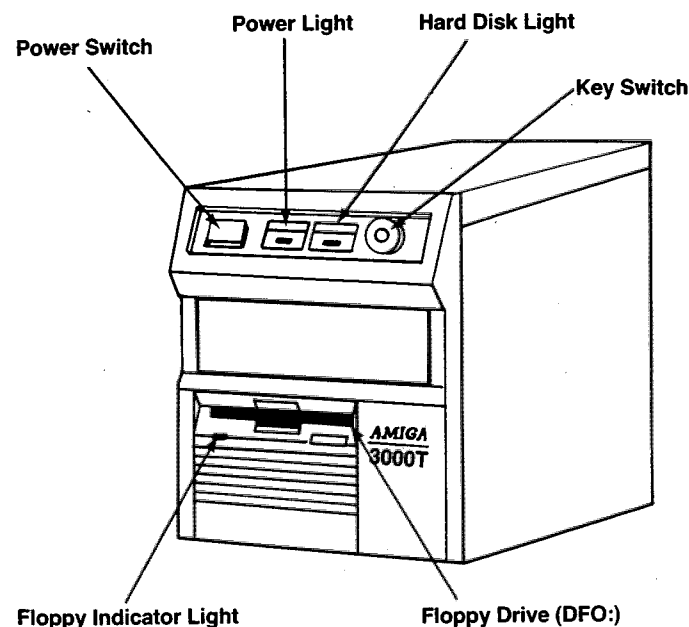
For details on caring for the mouse see *Caring For Your Amiga* at the end of this chapter.

NOTE: The descriptions in this chapter and throughout the rest of this manual assume that you are using a mouse. However, there are certain keys on the keyboard that you can use in place of the mouse. For details, see Chapter 2 in the *Using the System Software* manual.

Turning On the A3000T™

NOTE: Before you turn on your A3000T, be sure that you have correctly installed and connected all the equipment in your A3000T system. See the *Amiga 3000T Quick Connect* for instructions on connecting equipment to your computer.

First, turn on the monitor and any other equipment attached to your A3000T. (See your equipment manuals for further information.)



Next, insert the key into the Key Switch and turn it to the right (unlock position). This will enable the keyboard and the mouse. Finally, press the power switch located on the upper left front of the A3000T. The power light on the front of the A3000T will illuminate indicating that power is on.

Key Switch/Reset

The A3000T's Key Switch, located on the top right of the main unit, provides the capability to lock the computer to prevent unauthorized use and to reset your computer. Two keys come with the A3000T: keep one handy to lock the computer after use and keep the other in a safe place as a spare.

The Key Switch locks/unlocks the keyboard/mouse and has three positions. The first position is the locked position: this disables the keyboard/mouse, and is the position in which the key is inserted or removed. The second position is the unlock position: this enables the keyboard/mouse. You insert the key into the Key Switch and turn it to the right for the unlocked position. The third position is the reset: by inserting the key into the Key Switch and turning it to the far right you will reset (or reboot) your computer. This reset function is similar to the simultaneous depressing of the Control, the Left Amiga, and the Right Amiga keys. See Appendix D for information on resetting the Amiga from the keyboard.

NOTE: Do not reset your Amiga while a hard or floppy drive indicator light is illuminated. This may destroy information being read/written to the disk.

Once a key is inserted into the Key Switch and turned to the far right, your Amiga computer will reset and all information stored in memory will be erased. Resetting your Amiga computer is similar to turning it off and on again. Be careful to save any information stored in memory before resetting your Amiga.

Booting the A3000T

The process of starting a computer is often referred to as *booting*. The Amiga 3000T can be booted from either the hard or floppy disk drive.

Booting from the Hard Disk Drive

The A3000T normally is set to boot from the hard disk. Simply turn on the computer and in a short time the *Workbench screen* appears on your monitor. (For an introduction to the Workbench screen, see pages 3-11 through 3-15.)

Booting from the Floppy Disk Drive

You can also boot the A3000T from the floppy drive. To do this, BEFORE you turn on the A3000T, insert the Workbench disk or a bootable program disk in Drive DF0:. (This is the A3000T's internal floppy disk drive. If you have two internal floppy drives, DF0: is the top 3.5 inch drive). If the A3000T finds a bootable floppy disk in Drive DF0:, the computer will boot from that disk rather than the hard disk.

For details on booting from a floppy disk, see Chapter 1 of the *Using the System Software* manual.

Workbench™ — The Amiga® Graphical User Interface

An easy way for users to operate a computer is through a *Graphical User Interface (GUI)*, which is a pictorially oriented system. When working with a typical GUI, you use a *mouse* to move an arrow-shaped symbol called a *pointer* around the monitor screen. The pointer is used to select *icons*, which are small pictures that identify items such as files or functions.

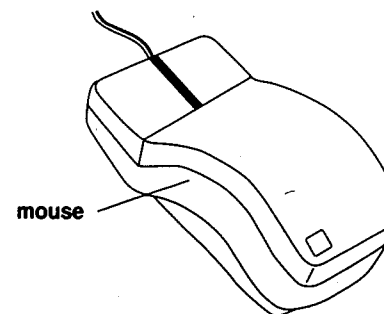
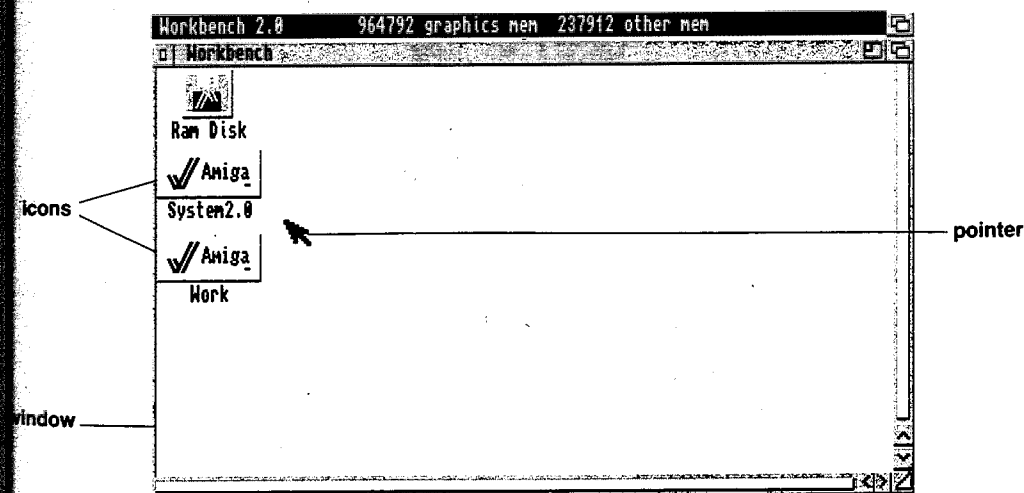
In some cases the selection involves a *menu*, which is a list of options from which you can pick the item or function you want.

The process may also involve one or more *windows*, which are special areas of the screen that can accept and/or display information.

The Amiga provides a powerful GUI known as the *Workbench*. The Workbench combines the mouse, pointer, icons, menus and windows with its own special Amiga tools. The result is that the Workbench places sophisticated computing power right at your fingertips, in a very easy-to-use package.

The Workbench Screen

NOTE: The section provides a brief introduction to the Workbench screen. For complete information, on all elements of the Workbench, including tutorials, see Chapters 1 through 6 of the *Using the System Software* manual.



Notice the *title bar* at the top of the screen. This identifies the screen as the *Workbench*. On the Workbench are several *icons* (small pictures or symbols). The icons on the screen represent the currently available A3000T storage devices (hard disk, floppy disk, RAM disk, etc.). To learn all about these icons, see the *Using the System Software* manual.

Moving the Pointer and Selecting

The small arrow on the screen is known as the *pointer*. You use the mouse to move the pointer to select items on the screen.

If, while you are moving the mouse, you run out of desk space and your pointer still is not where you want it to be, just lift the mouse off the desk and put it down where there is room. Lifting the mouse does not move the pointer.

NOTE: The size and shape of the pointer, as well as the rate at which it moves, can be changed. See the *Using the System Software* manual for details.

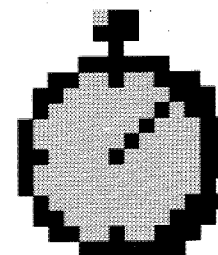
As noted previously, *icons* are used to represent various Amiga items, such as files, drawers, and tools. When you want to use an icon, you must move the pointer to that icon and *select* it.

To perform the selection function, you use the *left* button on the mouse. For this reason, the left mouse button is known as the **selection** button.

As an example, use the mouse to move the pointer to the *Work* icon. Then click (press) twice on the **selection** (left) button. (This action is known as *double-clicking*.) Be sure to press the button twice in rapid succession.

Notice that the *Work* icon is highlighted at the first press of the mouse button. This indicates that the icon has been selected. After the second press of the left button, the *Work* window will appear.

Sometimes when you double-click on an icon, the pointer changes shape and becomes a *Wait* pointer.



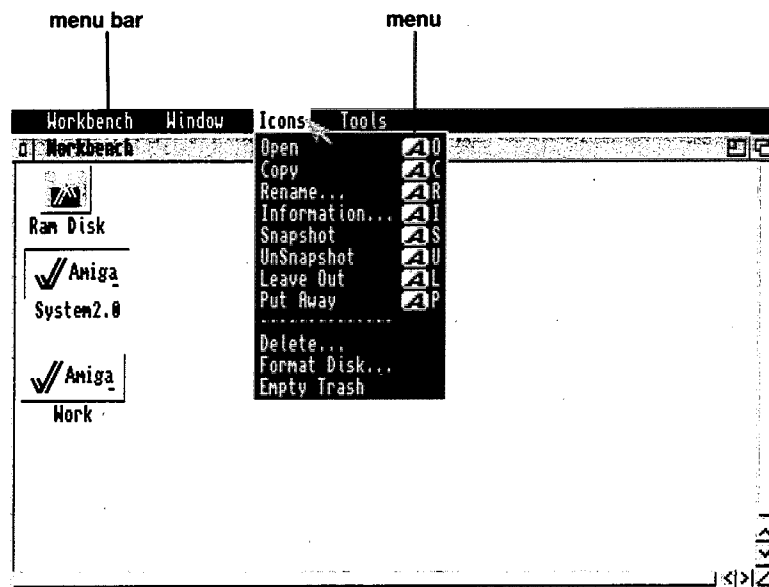
When you see this pointer, it means that the Workbench is busy doing what you asked it to do. When the pointer returns to its original shape, you can continue working.

If you decide you no longer want an icon selected, move the pointer to any other location on the Workbench screen that is not occupied. Then click *once* on the **selection** (left) button.

About Menus

Menus provide a list of the choices available to you. To make a choice from a menu, you use the *right* mouse button. For this reason, the right mouse button is known as the **menu** button.

Holding down the menu (right) button causes a **menu bar** to appear across the top of the screen. The menu bar shows the headings of any menus that are available to you.



NOTE: For full details on selecting icons and using menus, see the *Using the System Software* manual.

Additional Workbench Features

There are many special features available in the Workbench system to ensure peak performance. For example, since the Amiga is a *multitasking* system, it is possible to open a number of windows and have a variety of programs running at the same time. This can put a premium on screen space. The Workbench therefore provides ways to manage the screen output and functions for optimum results.

You may have noticed the *gadgets* — the small symbols in the border and corner areas of windows. These *gadgets* allow you to customize the size, position, and other characteristics of windows shown on the Workbench screen.

For example, you can use gadgets to move windows by a process known as *dragging*. To drag a window you point to its title bar, hold down the selection button and move the mouse. The window is repositioned at whatever point you release the selection button.

You can position one window in front of or behind another. You can also scroll the contents of a window when the window holds too many items to be displayed all at one time.

For detailed instructions on using all the Workbench features, including the gadgets, see the *Using the System Software* manual.

Backing Up Your Original Disks

Before you do anything else with your A3000T, you should **BACK UP** (that is, make a copy of) your floppy disks. By backing up your floppy disks, you will ensure that even if a disk is lost or damaged you will still have a copy of the disk.

Also, if your hard disk is damaged, you will need to use the floppy disks to restore the contents of the hard disk. This makes it especially important to back up your original floppy disks.

For step-by-step instructions on how to copy floppy disks, refer to Chapter 1 of the *Using the System Software* manual.

When you've made a copy of a disk, put the original in a safe place and use the copy, called a *working disk*, for everyday use. If you lose or damage a working disk, you'll always be able to make another working disk from the original.

Loading Programs from a Floppy Disk

In order to use a program on your Amiga 3000T, the program must first be placed into the memory of the computer. This is often referred to as *loading* the program.

The method you use to load programs from a floppy disk depends on the software you are using. In some cases the program disk contains not only the program itself, but also the Workbench files required to boot the Amiga and perhaps a routine that allows you to copy the program to a hard disk. To load a program properly, be sure to follow the loading instructions included with the software package you are using.

When you are loading a program from a floppy disk, the light on the disk drive will come on, indicating that the disk drive is active. **DO NOT ATTEMPT TO INSERT OR REMOVE A DISK WHILE THE DRIVE ACTIVITY LIGHT IS ON.** Once the program is loaded, follow the operating instructions supplied in the software documentation.

Refer to the *Using the System Software* manual for detailed instructions on how to load and run programs.

Saving Your Work

Most software has a specific procedure for saving your work. For exact instructions on saving your work, see the user's manual for whatever software you are using.

Turning Off the A3000T

When you finish a computing session and want to turn off the A3000T, first save any work that you want to keep. Next, remove any disk(s) from the floppy drive(s). Then press the power switch on the upper left front of the A3000T. The power light will go out. Turn off the monitor and any peripherals.

WARNING!

- **DO NOT TURN OFF THE A3000T OR REMOVE A DISK FROM A DRIVE IF ITS FLOPPY DISK DRIVE ACTIVITY LIGHT IS ON.**
- **WAIT AT LEAST 5 SECONDS AFTER THE HARD DISK ACTIVITY LIGHT GOES OUT BEFORE TURNING OFF YOUR A3000T.**

IMPORTANT: *Turning off or rebooting the computer erases whatever is in the memory of the computer, so be sure to save your work before you use these procedures. See the Using the System Software manual for details on saving and rebooting.*

The A3000T Hard Disk

Your Amiga 3000T comes with a built-in hard disk. This hard disk has a storage capacity equivalent to that of dozens of floppy disks. The hard disk will usually allow faster storage and retrieval of information than a floppy disk.

Following is general information about the hard disk. For specific instructions on hard disk use, see the *Using the System Software* manual, especially Chapter 6.

Formatting prepares the disk to receive data in a form compatible with the Amiga's operating system. The A3000T hard disk has already been *formatted* at the factory. If you install another hard disk, that disk must be formatted by you or your dealer.

Copying Programs to the Hard Disk

The Workbench2.0 and Extras software have been factory-installed on the A3000T hard disk. You will also want to transfer other programs to your hard disk. The documentation for many programs that you purchase will tell you how to do this. If a program lacks such documentation, see the *Using the System Software* manual for copying instructions. The System Software manual also gives complete instructions on how to perform all file handling procedures, such as moving a file, combining one file with another one, deleting a file, etc.

Loading Programs from the Hard Disk

If the floppy disk for a program is not *copy-protected* (that is, if the originator has not made it impossible for a copy to be made using standard copying procedures), you can copy the program to the hard disk. You will then be able to load and run the program from the hard disk, usually much faster than you could from the floppy disk.

Saving/Retrieving Hard Disk Files

You can save files to and retrieve files from the hard disk as you would a floppy disk. See the *Using the System Software* manual for instructions on how to save and retrieve hard disk files.

Backing Up the Hard Disk

The information on a disk (hard or floppy) may be damaged or destroyed by hardware or software failure. To ensure that you have a copy of your important programs and files, you should back up your floppy and hard disks. Since a hard disk can store large amounts of information, it is especially important that you back up the hard disk periodically.

Special software is included with your A3000T computer to allow you to back up the hard disk by copying the information stored on the hard disk to another storage medium like floppy disks or an optional streaming tape drive. See Chapter 6 and Appendix C in the *Using the System Software* manual for information on hard disk backup procedures.

You should backup the hard drive frequently — daily or weekly, depending on how often the information is used and how important the information is. Without a backup copy, it will be impossible for you to replace any files that may be lost due to user error, or to system or hard disk failure.

Contents of the Hard Disk

A hard disk's storage area can be divided into a number of *partitions*, or subdivisions. As shown in the Workbench screen on page 3-11, the A3000T hard disk has two partitions:

WORK and **SYSTEM2.0**. The Work partition is empty when you receive your A3000T. You can use this partition to store your programs and files. The SYSTEM2.0 partition includes a copy of the Workbench software you use in working with the A3000T, the startup files that tell the computer how the system is to be set up, directories and files that are on the Workbench and the Extras floppy disks, plus various other software, such as utilities.

*** IMPORTANT ***

For complete information on using the hard disk, including how to use the backup software, refer to the Using the System Software manual.

Caring For Your Amiga® 3000T™

Your Amiga computer needs very little care to keep it working at its best. Observe the following precautions to keep your Amiga computer in top shape.

- *Keep the Amiga dry.* Keep liquids away from the Amiga. An accidental spill can seriously damage disks or the Amiga itself.
- *Keep the Amiga out of temperature extremes.* Working temperature range is 0° to 45°C (32 to 113°F). Storage temperature is 0° to 60°C (32 to 140°F). If the system experiences excessive heat or cold, the Amiga may not function reliably.
- *Keep connectors and the ends of cables clean.* Any substance that adheres to connectors or the ends of cables can prevent a good electrical connection or damage the connector.
- *Keep magnets away from the monitor, and all components of the computer setup.* Although magnets won't damage the monitor, they can distort the video display and they can damage disks. In addition to more obvious magnets, beware of magnets in telephones, electronics equipment (especially loudspeakers), and electric motors.
- *Do not attempt to service your A3000T yourself.* If your Amiga needs service, take it to an authorized Amiga Service Center. Attempting to service the computer on your own will void the warranty.

Cleaning The Mouse

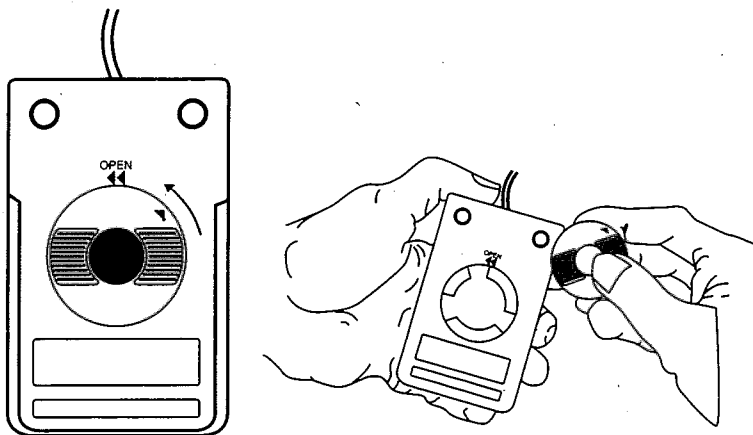
Use the mouse on a clean surface. The ball on the bottom of the mouse must be clean to work properly. If the mouse behaves erratically, it may need cleaning.

To clean the mouse, you will need:

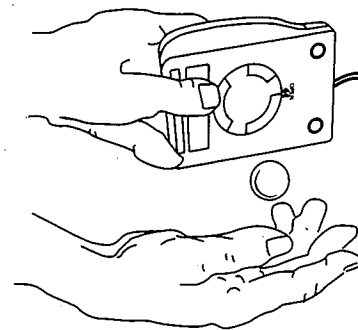
- a soft, dry, lint-free cloth
- alcohol or head cleaning fluid for tape recorders
- cotton swabs

Here's how to clean the mouse:

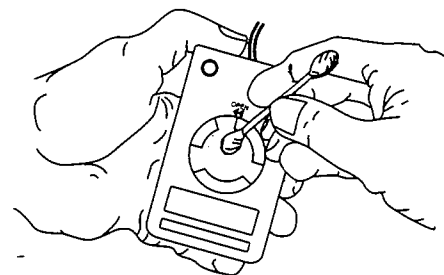
- Turn the mouse upside down with its cable away from you. Hold the mouse in both hands and put your thumbs on the ridged panels on either side of the ball cover.
- With your thumbs, firmly turn the ball cover counterclockwise to the open position. Remove the cover.



- Put your hand over the opening, turn the mouse right side up, and catch the ball.



- In the opening, you will see small rollers. Moisten a cotton swab with alcohol or tape head cleaning fluid and gently swab the surface of each roller. Turn each roller as you swab to clean it all the way around.



- Use the cloth to wipe off the mouse ball. (Do not use any liquid when cleaning the mouse ball.) When you are done, blow gently into the opening to remove any dust, replace the ball, and replace the cover for the ball.

Taking Care of Floppy Disks

To protect the information on your floppy disks, observe these precautions:

- *Make copies (working disks) of important disks.* Work with the copies and keep the originals in a safe place for use as backups if the copies become damaged. See the *Using the System Software* manual for details on copying disks.
- *Never remove a disk from a drive when the drive light is on.* The disk drive light tells you that the Amiga is using a disk.
- *Don't touch the surface of the disk.* The metal shutter on a floppy disk closes automatically whenever you remove the disk from a disk drive. Do not touch the surface of the disk underneath the cover.
- *Keep disks away from magnets.* Disks store information magnetically. Magnets can ruin the information on a disk.
- *Keep disks away from extreme heat or cold.* Do not leave disks in direct sunlight, near heat sources, or in cars parked in the sun.

Chapter 4

Expanding the Amiga® 3000T™

This chapter summarizes the expansion options available with the A3000T and is divided into two sections. The first section (4-1 through 4-16) generally describes each expansion option. The second section (4-17 through 4-28) illustrates each of these options and provides procedures you will follow to install your device. Also included in the second section is a detailed list of the installation hardware. First read the general information for the expansion option you are concerned with, and then follow the installation illustrations and procedures for your specific device. You should also read the documentation included with your expansion device.

Available Expansion Options

There is a large and continually growing list of options you can choose from to take advantage of the extensive expansion capabilities of the A3000T.

Using Expansion Slots

There are five 100-pin Amiga bus expansion slots, one 32-bit fast slot, and the video expansion slot. The 100-pin slots are located on the motherboard. Two of the 100-pin Amiga bus expansion slots also have 98-pin PC/AT™ slots in line with them. The video expansion slot is in line with one of the 100-pin slots.

The 100-pin internal expansion slots are compatible with Amiga 2000 expansion cards (ZORRO II cards), while offering increased performance for new devices developed specifically for the A3000T (ZORRO III cards). These slots can accept a variety of options, including video digitizers, audio samplers, multiport I/O boards, etc.—all within the main chassis of the computer. Such options, available from Commodore and from many third parties, increase the power of your A3000T without increasing its footprint.

The **Fast** slot on the local 68030 bus can be used for future expansion, such as a Motorola 68040 microprocessor or other high-performance options.

Memory Expansion on the Motherboard

RAM is expandable up to 18 Mb on the motherboard with currently available memory chips. All this RAM can be directly addressed by the operating system.

There are two types of RAM used by the A3000T: CHIP RAM (also known as graphics RAM) and FAST RAM. The A3000T comes with one megabyte of CHIP RAM. You can add another megabyte of CHIP RAM on the motherboard. The A3000T comes with four megabytes of FAST RAM. Another twelve megabytes of FAST RAM can be added on the motherboard. Refer to the Expansion Guide section beginning on page 4-17 for information on installing FAST and CHIP RAM.

Video Expansion

The A3000T provides a video expansion slot for internal video expansion, such as a television encoder or a genlock interface. Using this slot keeps all video circuitry in the metal housing of the A3000T's main unit, helping to minimize RF problems.

The video slot is located on the motherboard, in line with a standard Amiga bus expansion slot. This allows a video expansion card to be designed to incorporate, or be easily connected to, a standard Amiga expansion card.

Genlocks can be connected to the A3000T, either internally (via the video slot) or externally. This provides a cost-effective way to add sophisticated Amiga computer graphics, special effects, and titles to video output, videotapes, etc.

The analog RGB output of the A3000T directly supports encoders and genlocks. These optional devices allow the A3000T to conform to television standards (either the European PAL or North American NTSC). This means that the A3000T can be connected to standard video equipment, including monitor and projection-type television displays. With the exception of the genlock or encoder itself and possibly the cabling, no special equipment is needed. The A3000T can also work in conjunction with television studio equipment for a wide variety of tasks, such as paintbox graphics, character generation, and animation.

Adding Disk Drives

The A3000T's tower configuration allows for greater expansion possibilities than a standard desktop computer. The expansion area for adding drives can accommodate up to seven drives (two are currently populated with the standard hard and floppy drive). The A3000T's drive expansion area is configured as follows:

- 1 5.25 inch internal front-access horizontal bay. This bay is adjustable for 3.5 inch devices.
- 2 3.5 inch internal front-access horizontal bays (one is currently occupied by the standard floppy drive).
- 2 5.25 inch internal half-height vertical bays (these bays can also be used together as a single full-height bay).
- 2 5.25 inch internal half-height vertical bays (these bays can also be used together as a single full-height bay. One is currently occupied by the standard hard drive.)

A floppy drive can also be added externally using the floppy disk connector on the rear of the main unit.

Adding SCSI Devices

The A3000T's built-in SCSI controller allows the installation of up to seven SCSI devices, including hard drives, scanners, tape units, CD-ROMs, etc. There are internal and external SCSI connectors.

PC Emulation With Bridgeboards

Commodore produces a line of PC emulator cards known as *Bridgeboards*. Each Bridgeboard™ is a fully functional PC emulator that includes its own microprocessor and the circuitry needed to interface between the PC and Amiga systems. Since the Amiga has multitasking capability, the Bridgeboard can run concurrently with Amiga programs. The Amiga emulates CGA/MDA types of PC displays in a

window on its monitor. You can also connect a separate PC only monitor. (This requires installation of a PC video adapter board.)

The Bridgeboard/Amiga hybrid architecture may be used for applications where the PC system functions as a coprocessor. The dual-port RAM provides the path for the communications between the two systems. There is full access to the complete range of PC compatible add-ons. You can also set up a single A3000T hard disk drive for use by both MS-DOS® (the PC Bridgeboard's Operating System) and AmigaDOS.

A Bridgeboard can be installed in one of the two PC/AT-compatible expansion slots on the Amiga motherboard. The other PC/AT-compatible slot can then be used for a PC card (e.g., a video card). With a Bridgeboard installed, the A3000T can run MS-DOS (or other PC-compatible operating systems) and popular MS-DOS compatible software packages.

Installing Options

CAUTION: Before any internal expansion device is installed, the A3000T must first be turned off and disconnected from the power receptacle. All cables for external peripherals should be disconnected from the A3000T.

This section describes the general installation procedures for the A3000T. Refer to the *Expansion Guide* section (4-17 through 4-28) for the procedures and illustrations pertaining to the option you want to install. It is assumed that installing an option inside the A3000T always includes:

1. Turning off the A3000T and disconnecting it from the power socket. Failure to do so could endanger you, the computer, or the expansion device.

2. Removing the A3000T's front bezel and two side panels.
Note that internal device installation requires removal of the left side panel only. Both side panels are removed only when installing a device in the horizontal floppy drive bays.
3. Reassembling the A3000T and replacing the cover.

Removing the A3000T's Cover

To provide adequate access to the A3000T's drive expansion area you will remove the front bezel (the faceplate that fits over the floppy drive and covers the whole of the A3000T's front) and both side panels. It is not necessary to remove the A3000T's top panel.

Removing the Front Bezel

The front bezel is attached to the A3000T's frame with plastic tabs inserted into slots on the frame. These tabs are located on the top and bottom of the bezel. Place your hand underneath the front of the bezel and pull up and out. This will release the bottom tab. Pull the bezel from the bottom outward until it is held in place solely by the tabs at the bezel's top. Gently press on the top of the bezel to release these tabs and remove the bezel completely from the A3000T.

Removing the Side Panels

The side panels are attached to the A3000T by screws. There are four screws per panel. Each panel is held by two screws on the front and two screws on the back. Locate the screws on the front of the A3000T and remove. Move around to the back and remove those screws as well. The panels are removed by gently pulling on the bottom of each panel. Removing the left (as you face the front of the A3000T) panel provides access to the main system area, whereas removal of the right panel provides access to the three horizontal drive bays (2 3.5 inch and 1 5.25 inch).

Installing Hard and Floppy Disk Drives and Expansion Devices

There is internal space in the A3000T for seven devices. The A3000T as shipped uses two of these seven spaces. You can install an additional five expansion devices or hard and floppy disk drives in the available expansions bays. You can also replace the original hard and floppy drives with other drives if you wish.

Following are general comments on installing an expansion device (e.g., a drive or tape unit) in an expansion bay. For more specific installation instructions see the *Expansion Guide* section and refer to the user's manual for the expansion item being installed.

There are two ribbon cables that connect the drives to the motherboard. The wide ribbon cable (50 pins) is used for the hard drive and other SCSI devices. The narrow ribbon cable is used for floppy disk drives. The narrow ribbon cable has two connectors. The wide ribbon cable (50 pins) has three connectors plus an extender to allow connection of an additional cable. Note how the power cable and ribbon cables of the standard drives are oriented before disconnecting them from the drives. Be sure to connect the appropriate ribbon cable to the device being installed.

Connect the ribbon cable to the device. Make sure that the cable is aligned properly and that pin 1 on the ribbon cable is aligned with pin 1 on the device connector.

Connect the device to the A3000T's power supply. Locate the wires running from the power supply. Attach one of the connectors to the device's power connector. The power connector is shaped so that it can fit only one way.

Test the device for proper operation before replacing the cover. Reconnect all peripherals.

Connecting Additional SCSI Devices

WARNING: Before you connect any SCSI device to your A3000T, you will need to read the following information on SCSI devices and any documentation included with the device you intend on installing. There are certain guidelines you need to follow in the installation of SCSI devices. These guidelines are detailed in the next few pages.

You can connect up to a total of seven SCSI devices to the A3000T using the internal SCSI connector and the connector marked SCSI PORT on the rear of the A3000T. One of the total of seven SCSI devices is currently used by the internal hard disk. The other six SCSI connections are determined by available addresses.

SCSI Addresses

There are eight SCSI addresses on the A3000T (numbered 0 through 7). The A3000T SCSI controller is set to SCSI address 7 and the internal hard drive is set to SCSI address 6. This means that SCSI addresses 0, 1, 2, 3, 4, and 5 are available as expansion addresses and can be split in any combination between the internal SCSI connector (50-pin ribbon cable) and the external SCSI connector (marked SCSI PORT located on the rear of the A3000T.)

You must set the address on your SCSI device to match an available address (0-5) on the A3000T system. The documentation included with your SCSI device will instruct you on how to set this SCSI address. Make sure when you set the SCSI address that you set it to an available address (i.e., an address that no other SCSI device in your A3000T system is set to.)

SCSI Terminating Resistor Packs

The SCSI Terminating Resistor Pack included with your A3000T system must be attached to the external SCSI PORT, as described in the A3000T Quick Connect, before you begin using your A3000T. This resistor pack will protect your hard disk and other SCSI devices from potential failure. Each SCSI device contains its own resistor pack. The documentation included with each SCSI device will provide information on the location of these resistor packs and instructions on enabling or disabling resistor packs. Enabling/disabling a SCSI resistor pack is vital to its operation, especially when SCSI devices are connected together in a daisy chain.

Daisy Chain

A daisy chain is an arrangement of devices connected one after the other. In your A3000T system you would use a daisy chain arrangement to connect two or more SCSI devices. For example, the first SCSI device is connected to the A3000T's external SCSI PORT and the second SCSI device is connected to the first SCSI device. The possibility exists for the connection of up to six devices in a daisy chain arrangement.

SCSI Resistor Packs and Daisy Chains

When SCSI devices are connected in a daisy chain arrangement, the resistor packs of all devices, except the last one in the chain, must be disabled in accordance with the instructions provided with that device. The last device in a daisy chain must have its resistor pack enabled. You can enable/disable resistors in daisy chained SCSI devices in one of two ways.

1. Disable the resistors in all SCSI devices in a daisy chain arrangement and attach the SCSI Terminator Resistor Pack included with your A3000T to the last device in the daisy chain. (This is the usual method when connecting external SCSI devices in a daisy chain.)
2. Disable the resistors in all SCSI devices, except for the last device, in the daisy chain. (This is the usual method when connecting internal SCSI devices in a daisy chain.)

NOTE: If the SCSI Terminator Resistor Pack included with your A3000T will not fit on the last device in an external SCSI device daisy chain, you will need to follow Option 2.

External SCSI Devices

To attach an external SCSI device to the SCSI PORT on the rear of the A3000T, simply follow these steps:

1. Set your SCSI device to an available SCSI address (0-5) according to the instructions in that device's documentation.
2. Disable the device's resistor pack according to the instructions in that device's documentation.
3. Remove the SCSI Terminating Resistor Pack from the rear of the A3000T (or from the last SCSI device in the daisy chain, if applicable).
4. Connect the SCSI device to the SCSI PORT on the rear of the A3000T (or to the last SCSI device in the daisy chain, if applicable.)

5. Attach the SCSI Terminating Resistor Pack to the rear of the last device connected.
6. Connect the SCSI device to its own external power supply.

Internal SCSI Devices

The process of connecting internal SCSI devices is similar to that of external SCSI devices, but varies in three important aspects:

- The SCSI Terminating Resistor Pack is not attached to internal SCSI devices.
- Internal SCSI devices are attached to a common ribbon cable.
- Internal SCSI devices are attached to internal power sources.

You attach internal SCSI devices to an internal ribbon cable. One end of this cable is plugged into the motherboard and begins the internal SCSI daisy chain. A male connector is on the cable's opposite end. There are three connectors available to attach SCSI devices. The male connector can be used to connect another section of ribbon cable if you have a need for additional SCSI connections.

Any SCSI device attached to the ribbon cable between the last attached SCSI device and the motherboard connection must always have its resistors disabled. The device that is connected farthest from the motherboard must have its resistors enabled.

To attach internal SCSI devices, simply follow these steps:

1. Set the SCSI device to an available address (0-5) in accordance with the instructions in that device's documentation.
2. Attach the device to an available connector on the ribbon cable.

3. Enable or disable the resistors on the device as necessary (refer to the instructions in that device's documentation). One, and only one, internal device will have its resistors enabled.
4. Internally mount the device.
5. Attach the device to an internal power source.

If the new SCSI device you are adding is now the farthest on the ribbon cable from the motherboard, be sure to disable the resistors on the device that was previously at the end of the chain. Only the device at the end of the chain should have its resistors enabled.

Refer to the illustrations in the Expansion Guide, located on pages 4-17 through 4-28, for mechanical details on installing internal SCSI devices.

Installing Random Access Memory (RAM) Chips

In order to easily add more RAM memory to the A3000T, sockets are provided on the motherboard. These sockets allow you to increase the amount of memory in two of the Amiga's memory subsystems—FAST memory and CHIP (graphics) memory. To increase non-CHIP memory, memory can also be added to the A3000T via ZORRO II/III expansion cards. However, the FAST memory system provided on the motherboard is much more efficient than any currently available expansion cards. It is therefore recommended that RAM be expanded via the sockets provided on the motherboard in order to ensure maximum system performance.

WARNING: Installation of RAM chips should be performed by an authorized Commodore-Amiga Service Center, or by your Commodore-Amiga dealer. Commodore-Amiga will not be responsible or liable for any damages caused by improper installation of RAM chips.

CAUTION: If the A3000T is connected to a power outlet, the power must be turned off and all cables and peripherals must be disconnected from the A3000T, before the A3000T case is opened.

RAM chips are sensitive to static electricity. Contact with a chip when high levels of static electricity are present could ruin a chip. Touching a nearby grounded metal surface before touching the chip can help reduce static levels.

In general, the following steps are required to install RAM chips:

1. Remove the internal installation casing and disconnect any attached devices.
2. Insert the RAM chips.
3. Check that the A3000T recognizes the new memory at power up.
4. Reassemble the A3000T and reconnect all equipment.

FAST Memory

FAST memory (also known as FAST RAM) is non-CHIP memory that resides on the local 32-bit 68030 processor bus. This memory is generally used for program code execution. The FAST RAM is tightly coupled to the 68030 via custom circuitry that has been designed to provide very efficient operation. This allows programs to execute very quickly from this RAM.

The A3000T is shipped with 4 megabytes of FAST RAM. The organization of the RAM chips is 1M × 4. A total of 32 RAM chips can be installed in the FAST RAM section. Using 1M × 4 DRAMs, this results in a total of 16 megabytes of FAST RAM.

There are four *banks* of FAST memory that can be filled. Each bank consists of 8 RAM chips. With $1\text{M} \times 4$ DRAMs, each bank adds 4 megabytes. Bank 0 consists of locations labeled as U850-U857, bank 1 U858-U865, bank 2 U866-U873 and bank 3 U874-U881. FAST RAM MUST begin in bank 0, and is added to banks 1 through 3 in sequence.

The FAST RAM section of the motherboard, illustrated in the *Expansion Guide*, consists of 32 20-pin ZIP sockets (U850-U881). As stated earlier, a maximum of 32 of these locations may be populated with RAM chips.

In the FAST RAM section, the use of static column mode DRAMs allows for improved system performance. It is therefore recommended that this type of DRAM be used when upgrading the system. In order to take advantage of static column mode DRAMs, ALL of the FAST RAM must be static column mode DRAMs. If the FAST RAM section has only page mode DRAMs, or page mode DRAMs and static column mode DRAMs mixed together, then the A3000T will run in its standard mode. If page mode and static column mode DRAMs are intermixed, Bank 0 must contain the page mode DRAMs. Refer to the illustrations in the Expansion Guide section to determine Bank 0.

If the new RAM is functioning properly it will automatically be recognized by the operating system when the A3000T is powered up. The title bar of the Workbench screen (which shows how much "other" memory is available to the system) should indicate the addition of the new memory. If this number does not reflect the expected amount of FAST RAM, then there is a problem. Check that the RAM chips were inserted properly, and check for any bent pins.

The following is a list of required parameters for the new FAST RAM:

Organization:	1 megabit by 4 bits ($1\text{M} \times 4$)
Speed:	80 nanoseconds or less
Type:	page or static column mode
Package:	20-pin ZIP

The following are examples of acceptable DRAMs:

$1\text{M} \times 4$ Page Mode		$1\text{M} \times 4$ Static Column Mode	
TOSHIBA	TC514400	TOSHIBA	TC514402
HITACHI	HM514400	OKI	MSM514402
NEC	μ PD424400		
OKI	MSM514400		

You must specify the ZIP package type you want when ordering these DRAMs (the package type will be a suffix to the part numbers listed).

CHIP Memory

CHIP memory (also known as CHIP RAM) stores graphics, sound and other data that is accessible by the Amiga custom chips. Certain software requiring large amounts of this type of data, or many programs executing concurrently that require this type of data, can quickly exhaust the one megabyte of CHIP RAM that comes in the A3000T. Another megabyte of CHIP RAM can be added. (See the motherboard illustration on page 4-28 for the location of the CHIP RAM.) When adding CHIP RAM, all eight of the empty sockets (U267-U274) must be populated with the new RAM chips.

There are no jumpers to set when adding CHIP RAM. If the new CHIP RAM is functioning properly (a memory test will be performed at power up), it will automatically be recognized by the operating system. The title bar of the Workbench screen (which shows how much "graphics" memory is available to the system) should reflect the addition of the new memory. If this number is not approximately 1 megabyte larger than it was

when the machine was operated without the new CHIP RAM, then the RAM is not working properly. Also, if the video screen turns green when the A3000T is turned on, then none of the CHIP RAM is functioning properly. In either case, check that the RAM chips were inserted properly, and check for any bent pins.

The following is a list of required parameters for the new CHIP RAM:

Organization:	256 kilobits by 4 bits (256K × 4)
Speed:	120 nanoseconds or less
Type:	page or static column mode
Package:	20-pin ZIP

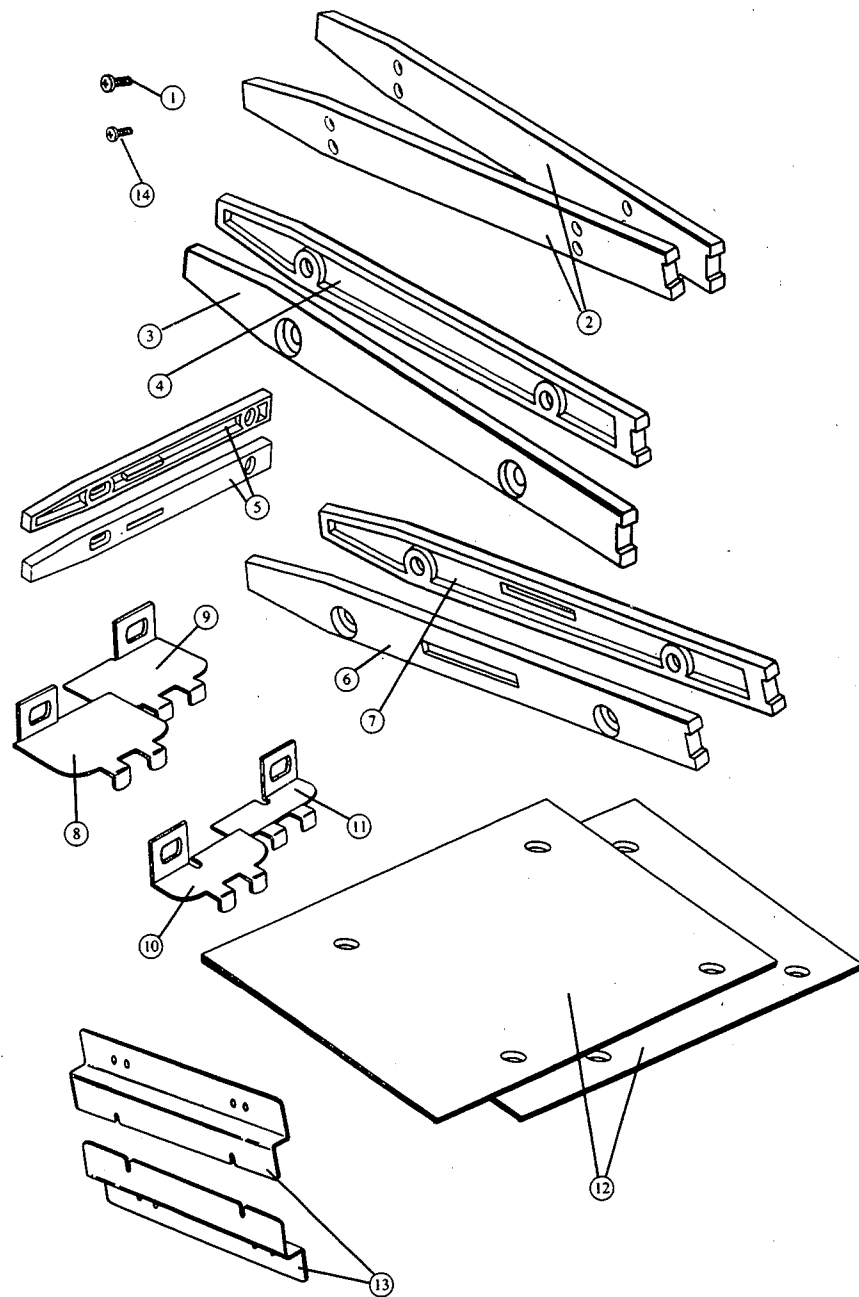
Expansion Guide

This section illustrates how to install expansion devices, such as additional hard or floppy drives and expansion cards. Your computer comes with a plastic accessory packet that includes items (such as screws and retainers) used in the installation procedures. The table below lists all the accessory parts provided in the packet. The first column of the table contains the Amiga part number. The second column lists the quantity of parts included. The third column gives the part description. The fourth column lists the number used to identify the part in the installation drawings on the following pages.

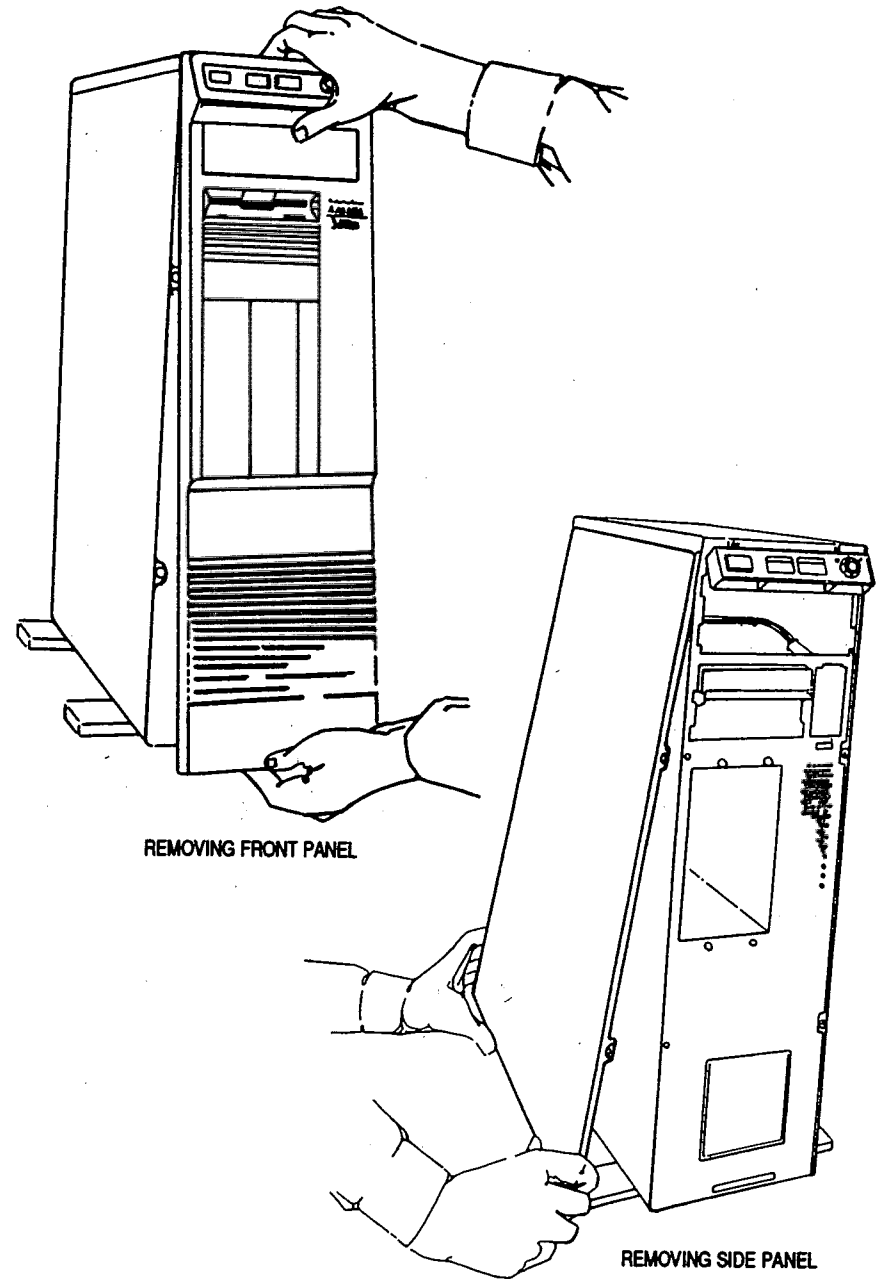
Part Number	Qty.	Description	No. On Dwgs.
325542-02	2	Screw, Ext. Tooth, M 4.0×0.7×6.0	1
380851-03*	2	FDD** Slider, 5.25", Ambidextrous, Long	2
380851-01	1	FDD Slider, 5.25", Left Long	3
380851-02	1	FDD Slider, 5.25", Right Long	4
312953-01	2	FDD Slider, 3.5"	5
390687-01	2	FDD Slider, 5.25", Left Slotted	6
390687-02	2	FDD Slider, 5.25", Right Slotted	7
312958-01	2	HDD*** Slide Retainer, Right Long	8
312958-02	2	HDD Slide Retainer, Left Long	9
312958-03	2	HDD Slide Retainer, Right Short	10
312958-04	2	HDD Slide Retainer, Left Short	11
390927-01	2	HDD Stacking Bracket	12
312950-01	2	HDD Retainer	13
906800-05	4	Screw, Machine, M 3.0×0.5×6.0	14

*May be substituted for Part Numbers 380851-01 and 380851-02

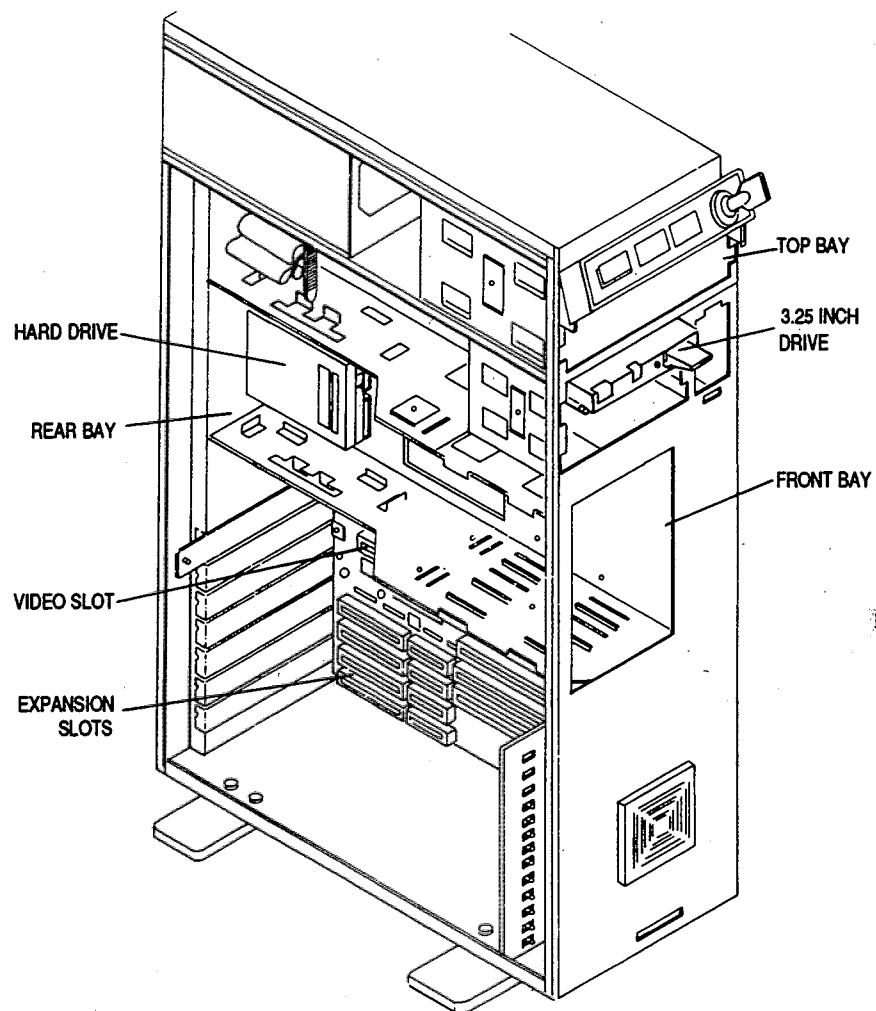
Floppy Disk Drive *Hard Disk Drive



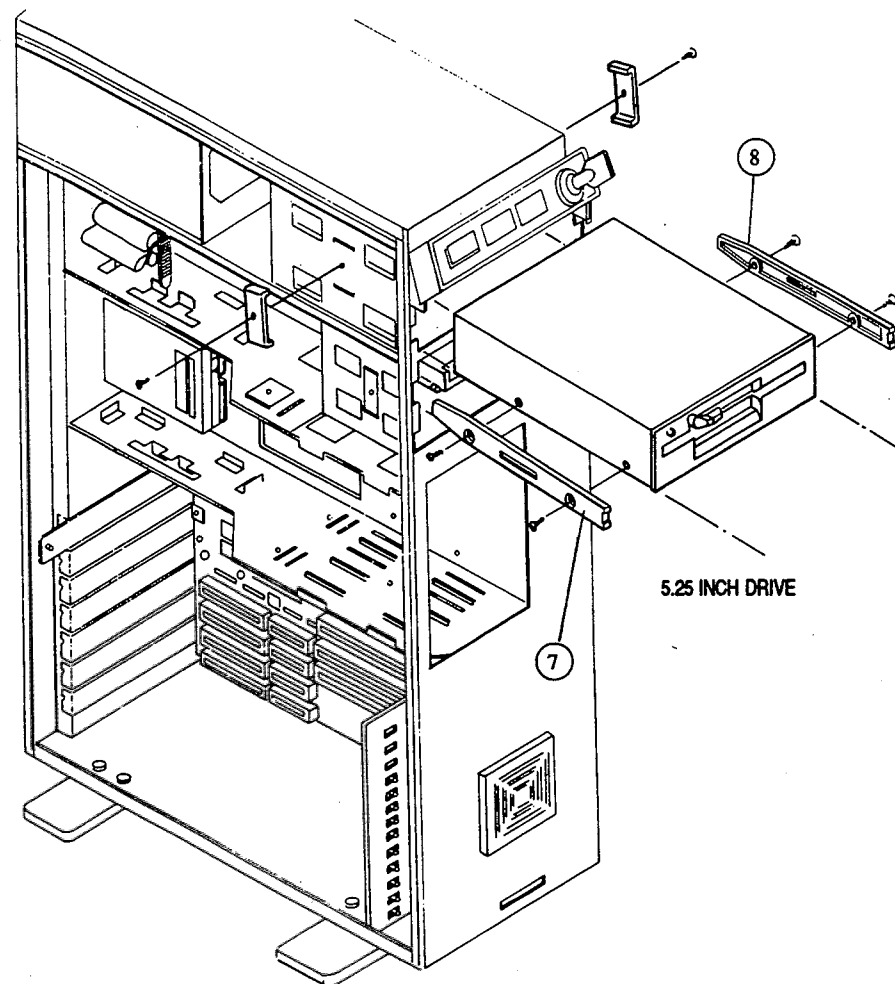
**PARTS CONTAINED IN
ACCESSORY PACKET**



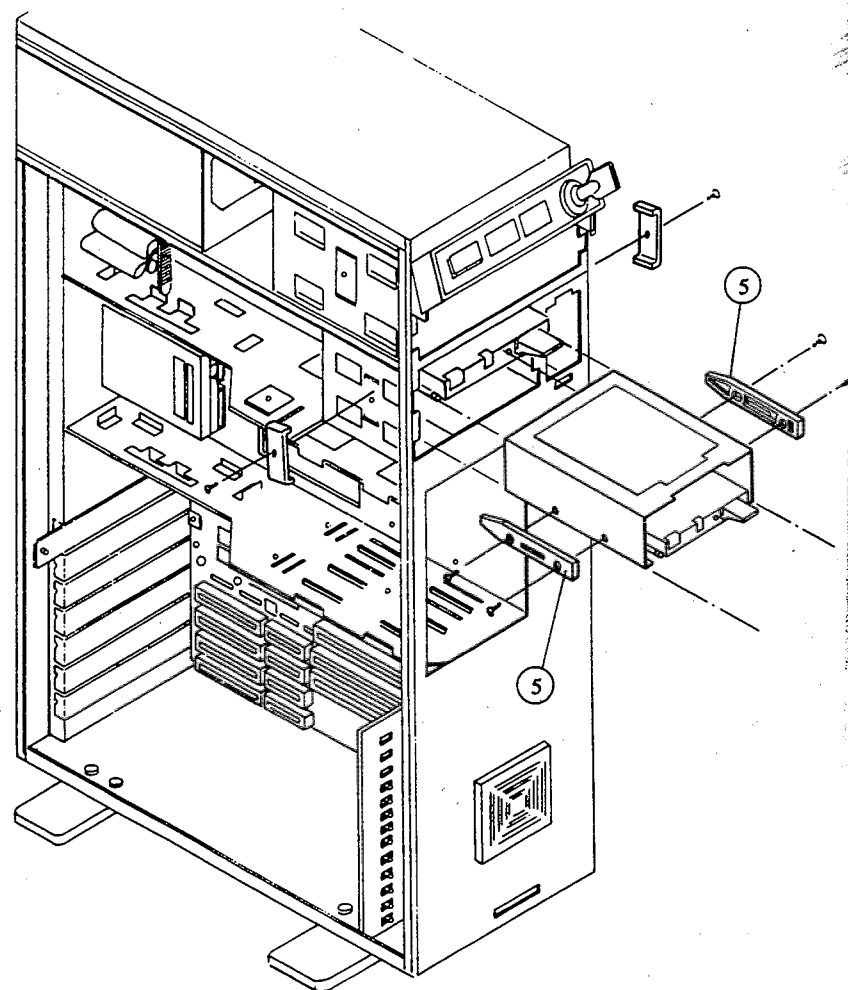
**REMOVING FRONT AND
SIDE PANELS**



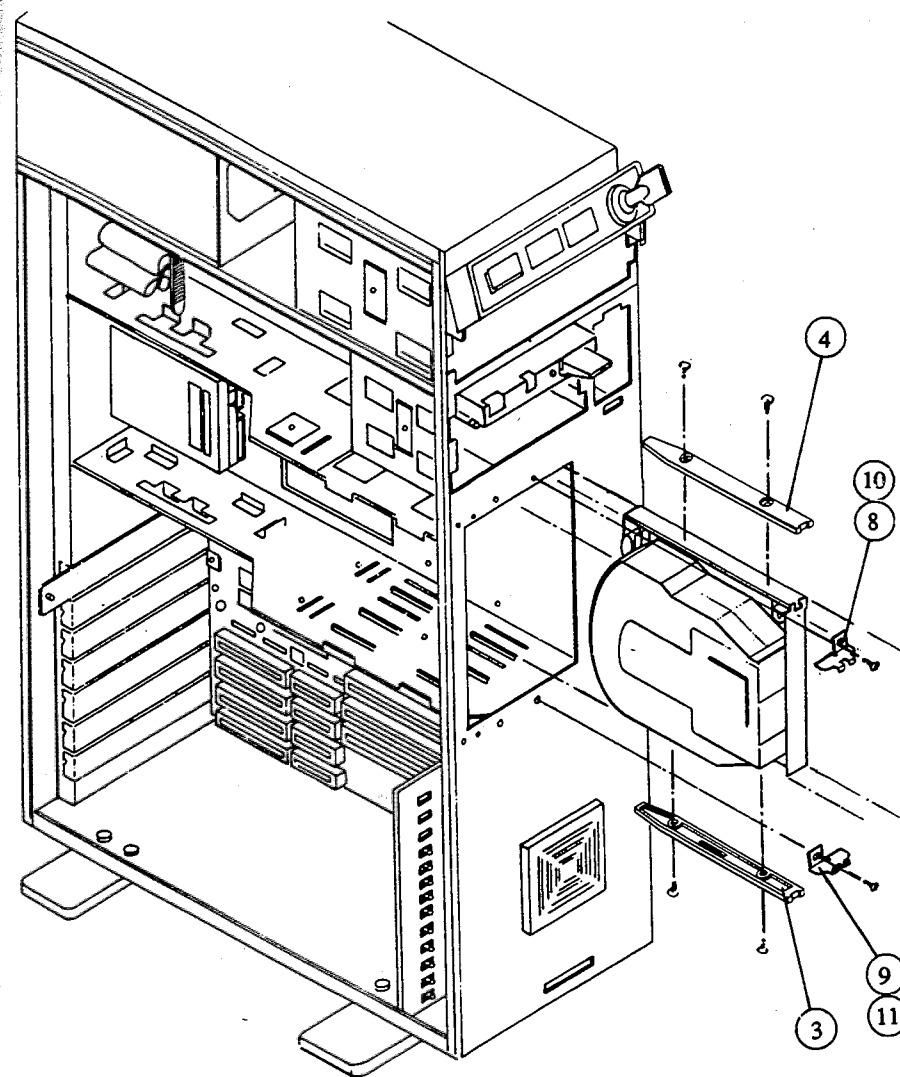
**VIEW OF UNIT WITH
INTERIOR EXPOSED**



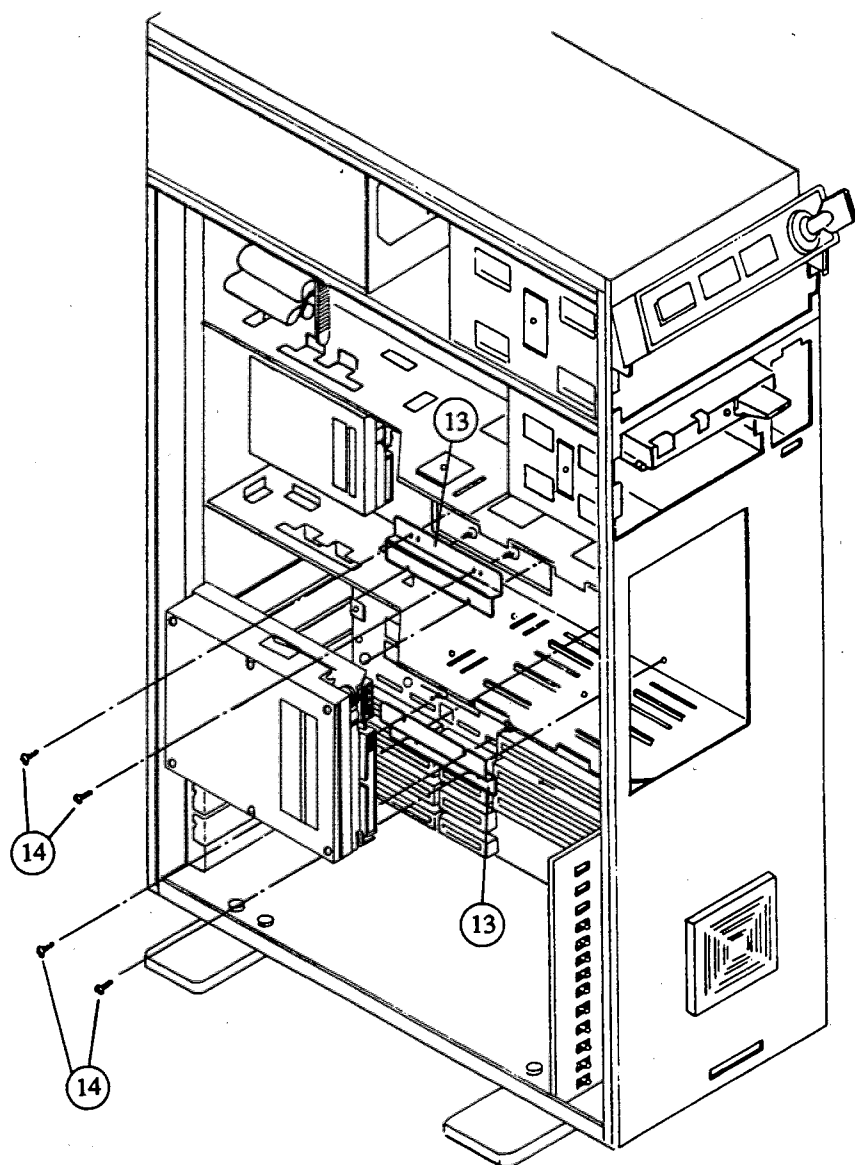
**INSTALLING 5.25 INCH DRIVE
IN TOP BAY**



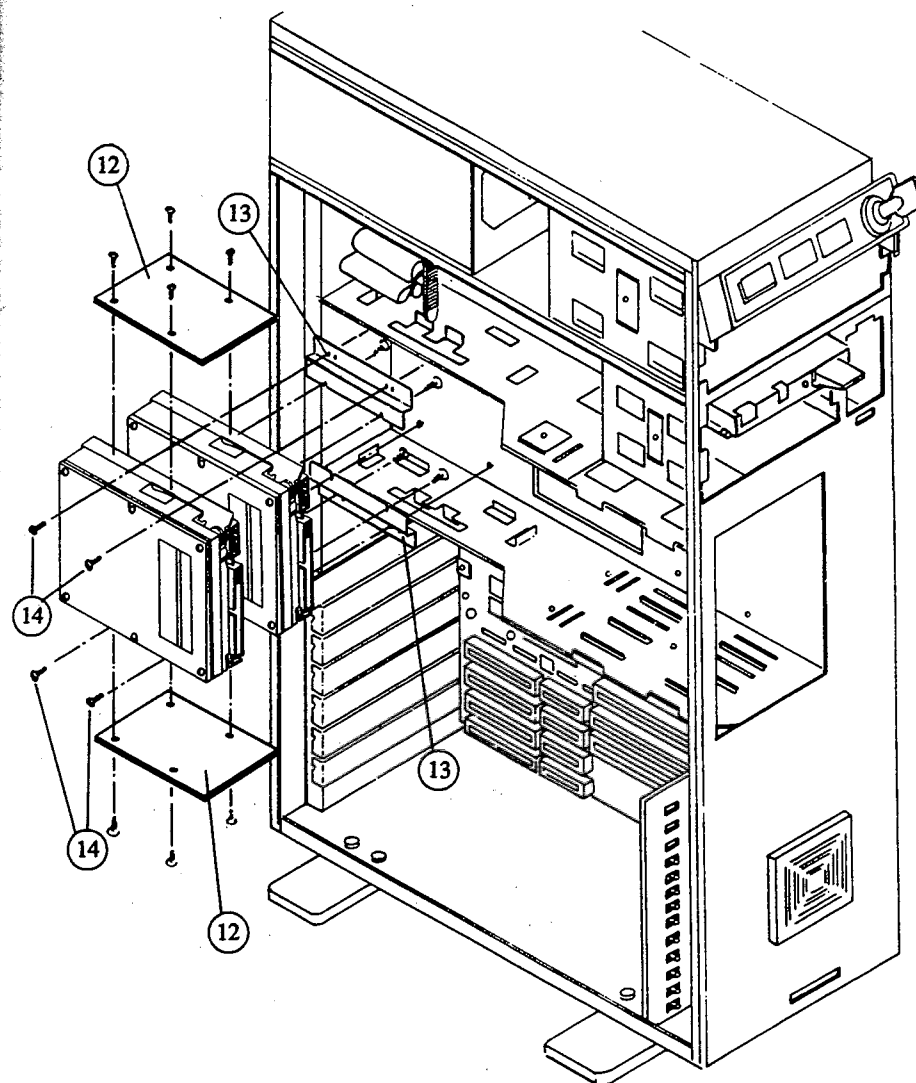
**INSTALLING A SECOND
3.25 INCH DRIVE**



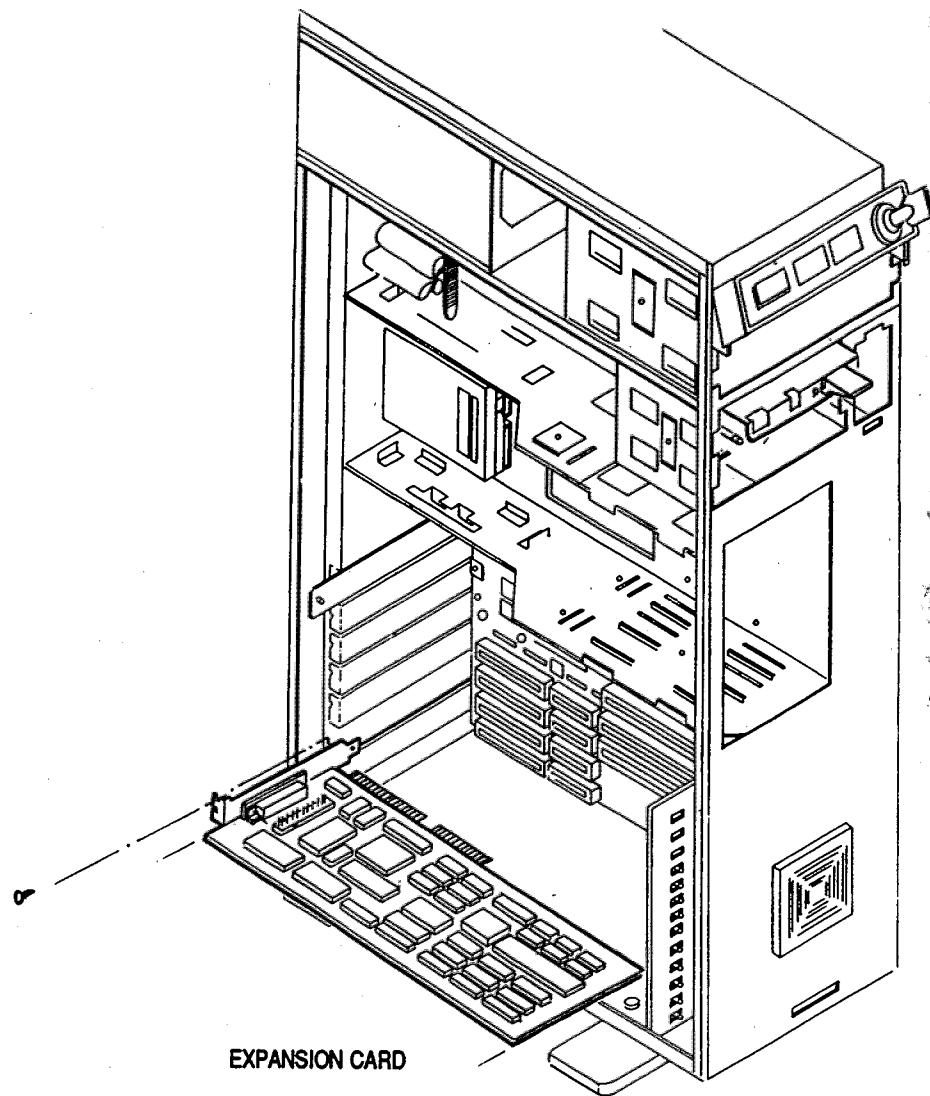
**INSTALLING HARD DRIVE
IN FRONT BAY**



**INSTALLING HARD DRIVE
IN FRONT BAY**

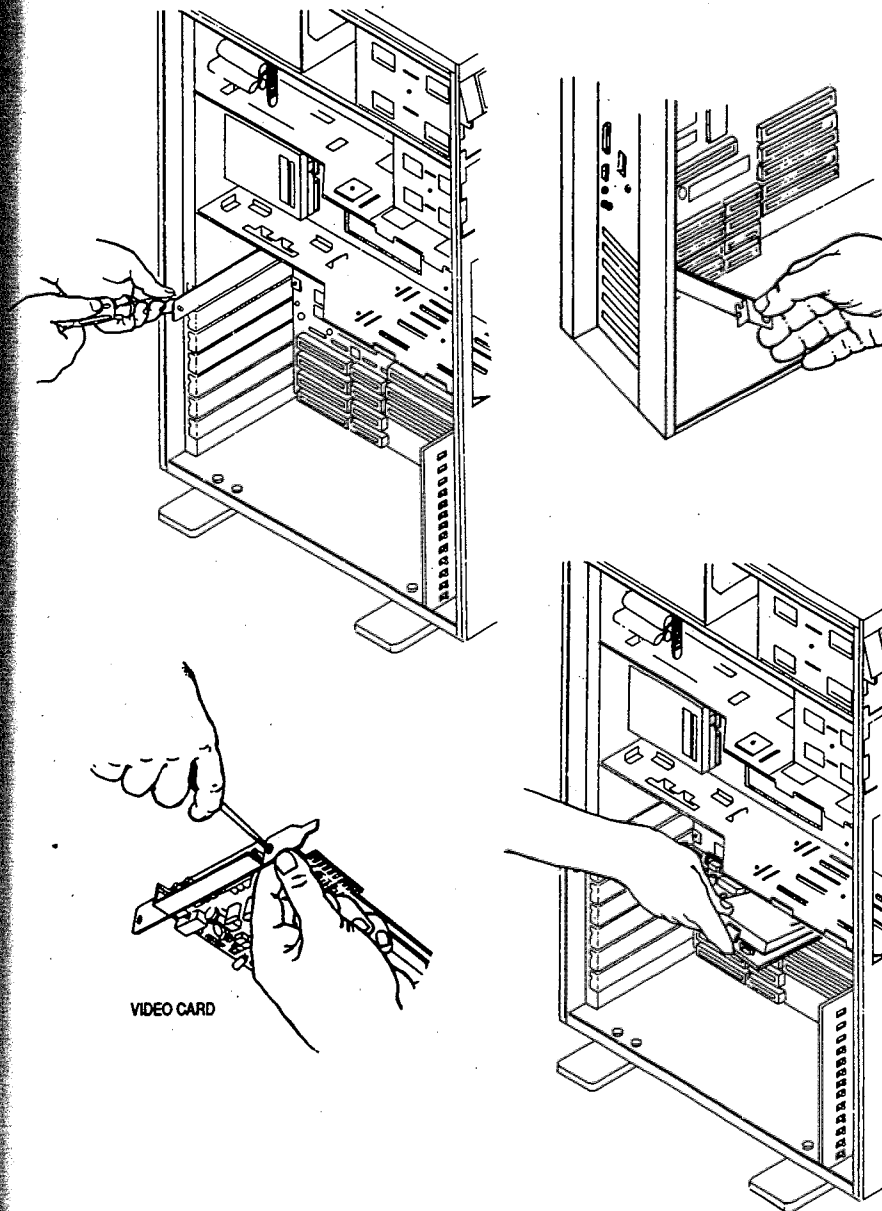


**INSTALLING HARD DRIVE(S)
IN REAR BAY**



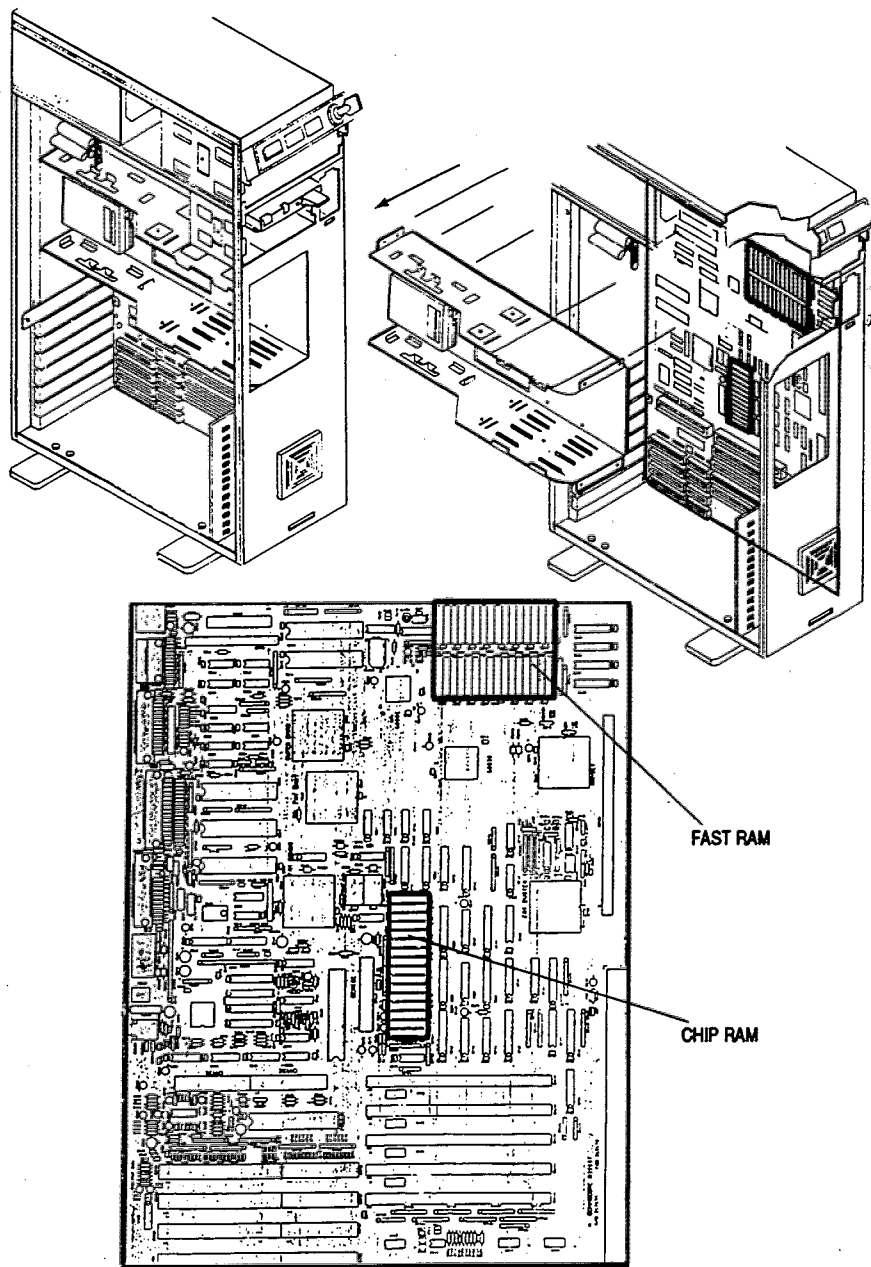
EXPANSION CARD

INSTALLING EXPANSION CARD(S)
IN EXPANSION SLOT(S)



VIDEO CARD

INSTALLING VIDEO CARD
IN VIDEO SLOT



INSTALLING EXPANSION RAM

Appendices

Appendix A

Technical Specifications

CPU:	Motorola® 68030™, 32/32 Bit
Clock Speed:	25 MHz
Co-processors:	Numeric coprocessor 68882 (25 MHz) Multi-chip coprocessor system for DMA video, graphics and sound
Memory:	5 Mb RAM minimum (1 Mb CHIP, 4 Mb FAST); expandable on motherboard up to a total of 18 Mb (2 Mb CHIP, 16 Mb FAST); additional RAM can be added via expansion slots
ROM:	512 KB
Interfaces:	<i>External:</i> Keyboard Mouse/Joystick (2) Serial (RS232, PC compatible) Parallel (Centronics, PC compatible) 2 Video (DB23 15 KHz: RGB analog; DB15 31 KHz: Multiscanning—VGA compatible RGB analog) Stereo Audio <i>Internal:</i> Amiga System Bus: 5 slots (100 pin)— Zorro II & III Secondary Bus System: 2 slots PC compatible (full size, 98 pin) (slots are in line with Amiga 100 pin slots) 2 additional PC slots 1 Fast slot (local 68030 bus) for 68040, etc.

Video Slot:	1 video slot for internal video cards; in line with 100 pin Amiga slot for use with standard Amiga expansion cards
Power Supply:	Switching 280 watts, with dual-speed thermostat controlled fan
Keyboard:	Detachable, 94 keys U.S./96 keys international
Keyboard Switch:	Allows locking of the keyboard to prevent unauthorized access of the A3000T
Mouse:	Optomechanical, two-button type
Disk Drive(s):	Standard: built-in 3.5 inch floppy drive (capacity: 880 KB formatted) Additional internal mounting locations for: 1 3.5 inch floppy drive or device 3 5.25 inch floppy drives or devices 1 hard drive (2 if stacked together) Built-in hard drive Built-in DMA SCSI controller; supports up to 7 SCSI devices
External Disk Drives:	Up to 3 optional Amiga floppy disk drives
Video Display:	Complies with: North America: RGB NTSC International: RGB PAL 4096 Colors

Display Enhancer:	See Appendix C.
Environmental Specification:	Operating: 0°-45°C Storage/Shipping: 0°-60°C
Sound:	4 independent sound channels configured as two stereo channels
Text-to-speech conversion:	Built-in
Clock/Calendar:	Built-in, with battery back-up
System Software:	Multitasking; includes AmigaDOS, Workbench, and various utilities

Appendix B

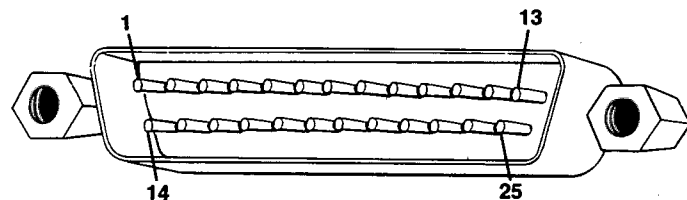
Input/Output Connector Pin Assignments

This section lists pin assignments for input/output connectors on the A3000T. The information in this section is highly technical and is intended only for those expert in connecting external devices to computers. You do not need this information if you use a cable specifically designed for use with the A3000T and the peripheral you want to connect.

If you attach peripherals with cables other than those designed for use with the A3000T, note: some pins on Amiga connectors provide power outputs and non-standard signals. Attempting to use cables not wired specifically for the Amiga may cause damage to the Amiga or to the equipment you connect. The descriptions that follow include specific warnings for each connector. For more information about connecting peripherals, consult your Amiga dealer.

In the descriptions that follow, a horizontal line over the signal name indicates a signal that is *active low* (e.g., STROBE).

Serial Connector-DB25 Male (SERIAL PORT)

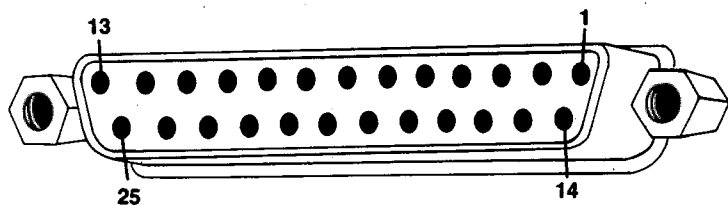


In the following table, the second column from the left gives the Amiga pin assignments. The third and fourth columns from the left give pin assignments for other commonly used connections; the information in these two columns is given for comparison only.

WARNING: Pins 9 and 10 on the Amiga serial connector are used for external power. Connect these pins **ONLY** if power from them is required by the external device. The table lists the power provided by each of these pins.

Pin	A3000T	RS232	HAYES®	Description
1	SHIELD	GND	GND	Shield Ground
2	TXD	TXD	TXD	Transmit Data
3	RXD	RXD	RXD	Receive Data
4	RTS	RTS		Request to Send
5	CTS	CTS	CTS	Clear to Send
6	DSR	DSR	DSR	Data Set Ready
7	GND	GND	GND	System Ground
8	DCD	DCD	DCD	Carrier Detect
9	+12V			+12 Volts DC
10	-12V			-12 Volt DC
11	AUDIO			Audio out of A3000T
12		S.SD	SI	Speed Indicate
13		S.CTS		
14		S.TXD		
15		TXC		
16		S.RXD		
17		RXC		
18	AUDI			Audio into A3000T
19		S.RTS		
20	DTR	DTR	DTR	Data Terminal Ready
21		SQD		
22	RI	RI	RI	Ring Indicator
23		SS		
24		TXC1		
25				

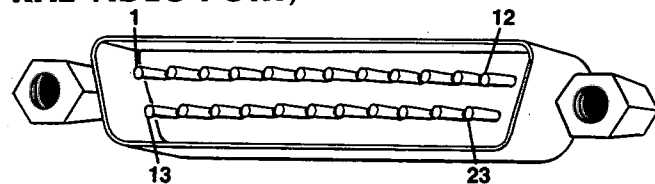
Parallel Connector-DB25 Female (PARALLEL PORT)



WARNING: Pin 14 on the Amiga parallel connector supplies +5 volts of power. Connect this pin **ONLY** if the power from it is required by the external device. **NEVER** connect this pin to an output of an external device or to a signal ground. Pins 17-25 are for grounding signals. **DO NOT** connect these pins directly to a shield ground.

Pin	Name	Description
1	<u>STROBE</u>	Strobe
2	D0	Data Bit 0 (LSB)
3	D1	Data Bit 1
4	D2	Data Bit 2
5	D3	Data Bit 3
6	D4	Data Bit 4
7	D5	Data Bit 5
8	D6	Data Bit 6
9	<u>D7</u>	Data Bit 7 (MSB)
10	<u>ACK</u>	Acknowledge
11	BUSY	Busy
12	POUT	Paper Out
13	SEL	Select
14	+5V PULLUP	+5 Volts DC (10 mA)
15		Not Used
16	<u>RESET</u>	Reset
17	GND	Signal Ground
18	GND	Signal Ground
19	GND	Signal Ground
20	GND	Signal Ground
21	GND	Signal Ground
22	GND	Signal Ground
23	GND	Signal Ground
24	GND	Signal Ground
25	GND	Signal Ground

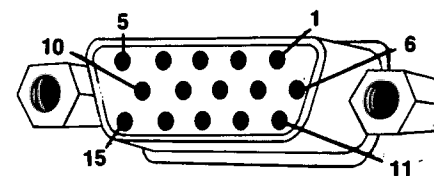
RGB Monitor Connector-DB23 Male (15 KHz VIDEO PORT)



WARNING: Pins 21, 22 and 23 on the RGB monitor connector are used for external power. Connect these pins **ONLY** if power from them is required by the external device. The table below lists the power provided by each of these pins.

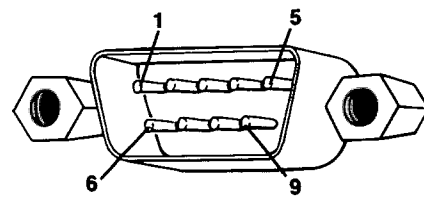
Pin	Name	Description
1	$\overline{\text{XCLK}}$	External Clock
2	$\overline{\text{XCLKEN}}$	External Clock Enable
3	RED	Analog Red
4	GREEN	Analog Green
5	BLUE	Analog Blue
6	DI	Digital Intensity (47 Ohm)
7	DB	Digital Blue (47 Ohm)
8	DG	Digital Green (47 Ohm)
9	DR	Digital Red (47 Ohm)
10	$\overline{\text{CSYNC}}$	Composite Sync
11	$\overline{\text{HSYNC}}$	Horizontal Sync (47 Ohm)
12	$\overline{\text{VSYNC}}$	Vertical Sync (47 Ohm)
13	$\overline{\text{GNDRTN}}$	Return for $\overline{\text{XCLKEN}}$
14	$\overline{\text{ZD}}$	Zero Detect (47 Ohm)
15	$\overline{\text{CI}}$	Clock Out
16	GND	Ground
17	GND	Ground
18	GND	Ground
19	GND	Ground
20	GND	Ground
21	-12V	-12 Volts DC (50 mA)
22	+12V	+12 Volts DC (100 mA)
23	+5V	+5 Volts DC (100 mA)

Display Enhancer Video Connector-VGA DB15 Female (31 KHz VIDEO PORT)



Pin	Description
1	Red Video
2	Green Video
3	Blue Video
4	Monitor Id Bit 2 (Ground)
5	Ground
6	Red Return (Ground)
7	Green Return (Ground)
8	Blue Return (Ground)
9	Key (Not Used)
10	Sync Return (Ground)
11	Monitor Id Bit 0 (Ground)
12	Monitor Id Bit 1 (Not Used)
13	$\overline{\text{Horizontal Sync}}$
14	$\overline{\text{Vertical Sync}}$
15	Not Used

Mouse/Game Controller Connectors—DB9 Male (MOUSE PORTS)



If you use a mouse to control the Workbench, you must attach it to mouse connector 1 (see rear of A3000T). You can attach joystick controllers and light pens to either of the connectors. The following tables describe mouse, game controller, and light pen connections.

WARNING: Pin 7 on each of these connectors supplies +5 volts of power. Connect this pin **ONLY** if power from it is required by the external device.

Connector 1: Mouse

Pin	Name	Description
1	MOUSE V	Mouse Vertical
2	MOUSE H	Mouse Horizontal
3	MOUSE VQ	Vertical Quadrature
4	MOUSE HQ	Horizontal Quadrature
5	MOUSE BUTTON 2	Mouse Button 2
6	MOUSE BUTTON 1	Mouse Button 1
7	+5V	+ 5 Volts DC (100 mA)
8	GND	Ground
9	MOUSE BUTTON 3	Mouse Button 3

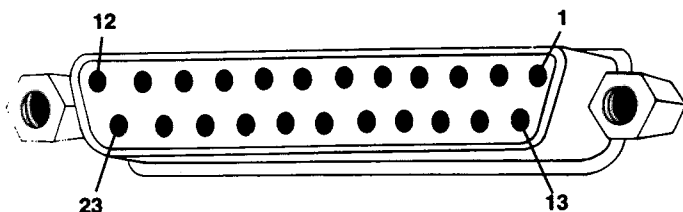
Connectors 1 and 2: Game Controller (Joystick)

Pin	Name	Description
1	FORWARD	Controller Forward
2	BACK	Controller Back
3	LEFT	Controller Left
4	RIGHT	Controller Right
5	POT X	Horizontal Potentiometer
6	FIRE	Controller Fire
7	+5V	+ 5 Volts DC (100 mA)
8	GND	Ground
9	POT Y	Vertical Potentiometer

Connectors 1 and 2: Light Pen

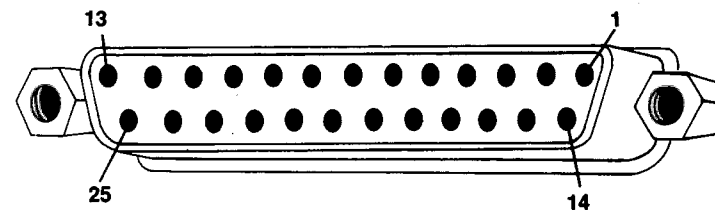
Pin	Name	Description
1		Not Used
2		Not Used
3		Not Used
4		Not Used
5	LIGHT PEN PRESS	Light Pen Switch
6	LIGHT PEN	Capture Beam Position
7	+5V	+ 5 Volts DC (100 mA)
8	GND	Ground
9		Not Used

External Disk Connector—DB23 Female (FLOPPY DISK DRIVE PORT)



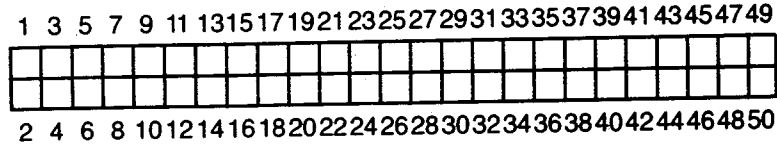
Pin	Name	Description
1	<u>RDY</u>	Disk Ready
2	<u>DKRD</u>	Disk Ready Data
3-7	<u>GND</u>	Ground
8	<u>MTRXD</u>	Disk Motor Control
9	<u>SEL2B</u>	Select Drive 2
10	<u>DRESB</u>	Disk Reset
11	<u>CHNG</u>	Disk Has Been Removed From Drive— Latched Low
12	<u>+5V</u>	+ 5 Volts DC
13	<u>SIDEB</u>	Select Disk Side—0 = Upper, 1 = Lower
14	<u>WPRO</u>	Disk Is Write Protected
15	<u>TK0</u>	Drive Head Position Over Track 0
16	<u>DKWE</u>	Disk Write Enable
17	<u>DKWD</u>	Disk Write Data
18	<u>STEPB</u>	Step The Head—Pulse, First Low, Then High
19	<u>DIRB</u>	Select Head Direction— 0 = Inner, 1 = Outer
20	<u>SEL3B</u>	Select Drive 3
21	<u>SEL1B</u>	Select Drive 1
22	<u>INDEX</u>	Disk Index Pulse
23	<u>+12V</u>	+ 12 Volts DC

External SCSI Connector—DB25 Female (SCSI PORT)



Pin	Description
1	<u>REQ</u>
2	<u>MSG</u>
3	<u>I/O</u>
4	<u>RST</u>
5	<u>ACK</u>
6	<u>BSY</u>
7	Ground
8	Data 0 (LSB)
9	Ground
10	Data 3
11	Data 5
12	Data 6
13	Data 7 (MSB)
14	Ground
15	<u>C/D</u>
16	Ground
17	<u>ATN</u>
18	Ground
19	<u>SEL</u>
20	Parity
21	Data 1
22	Data 2
23	Data 4
24	Ground
25	Termination Power

Internal SCSI Connector (MOTHERBOARD)



Pin	Description
2	Data 0 (LSB)
4	Data 1
6	Data 2
8	Data 3
10	Data 4
12	Data 5
14	Data 6
16	Data 7 (MSB)
18	Parity
20	Ground
22	Ground
24	Ground
26	Termination Power
28	Ground
30	Ground
32	ATN
34	Not Used
36	BSY
38	ACK
40	RST
42	MSG
44	SEL
46	C/D
48	REQ
50	I/O

All odd-numbered pins, except pin 25, are ground pins. Pin 25 is not used.

100 Pin Expansion Slot

Pin	Physical Name	Zorro II Name	Zorro III Address Phase	Zorro III Data Phase
1	Ground	Ground	Ground	Ground
2	Ground	Ground	Ground	Ground
3	Ground	Ground	Ground	Ground
4	Ground	Ground	Ground	Ground
5	+5VDC	+5VDC	+5VDC	+5VDC
6	+5VDC	+5VDC	+5VDC	+5VDC
7	OWN	OWN	OWN	OWN
8	-5VDC	-5VDC	-5VDC	-5VDC
9	SLAVEN	SLAVEN	SLAVEN	SLAVEN
10	+12VDC	+12VDC	+12VDC	+12VDC
11	CFGOUTN	CFGOUTN	CFGOUTN	CFGOUTN
12	CFGINN	CFGINN	CFGINN	CFGINN
13	Ground	Ground	Ground	Ground
14	C3	C3 Clock	C3 Clock	C3 Clock
15	CDAC	CDAC Clock	CDAC Clock	CDAC Clock
16	C1	C1 Clock	C1 Clock	C1 Clock
17	CINH	OVR	CINH	CINH
18	MTCR	XRDY	MTCR	MTCR
19	INT2	INT2	INT2	INT2
20	-12VDC	-12VDC	-12VDC	-12VDC
21	A5	A5	A5	A5

100 Pin Expansion Slot (cont'd)

Pin	Physical Name	Zorro II Name	Zorro III Address Phase	Zorro III Data Phase
22	$\overline{\text{INT6}}$	$\overline{\text{INT6}}$	$\overline{\text{INT6}}$	$\overline{\text{INT6}}$
23	A6	A6	A6	A6
24	A4	A4	A4	A4
25	Ground	Ground	Ground	Ground
26	A3	A3	A3	A3
27	A2	A2	A2	A2
28	A7	A7	A7	A7
29	$\overline{\text{LOCK}}$	A1	$\overline{\text{LOCK}}$	$\overline{\text{LOCK}}$
30	AD8	A8	A8	D0
31	FC0	FC0	FC0	FC0
32	AD9	A9	A9	D1
33	FC1	FC1	FC1	FC1
34	AD10	AD10	AD10	AD2
35	FC2	FC2	FC2	FC2
36	AD11	A11	A11	D3
37	Ground	Ground	Ground	Ground
38	AD12	A12	A12	D4
39	AD13	A13	A13	D5
40	$\overline{\text{INT7}}$	$\overline{\text{(EINT7)}}$	$\overline{\text{INT7}}$	$\overline{\text{INT7}}$
41	AD14	A14	A14	D6
42	$\overline{\text{INT5}}$	$\overline{\text{(EINT5)}}$	$\overline{\text{INT5}}$	$\overline{\text{INT5}}$

100 Pin Expansion Slot (cont'd)

Pin	Physical Name	Zorro II Name	Zorro III Address Phase	Zorro III Data Phase
43	AD15	A15	A15	D7
44	$\overline{\text{INT4}}$	$\overline{\text{(EINT4)}}$	$\overline{\text{INT4}}$	$\overline{\text{INT4}}$
45	AD16	A16	A16	D8
46	$\overline{\text{BERR}}$	$\overline{\text{BERR}}$	$\overline{\text{BERR}}$	$\overline{\text{BERR}}$
47	AD17	A17	A17	D9
48	$\overline{\text{MTACK}}$	$\overline{\text{(VPA)}}$	$\overline{\text{MTACK}}$	$\overline{\text{MTACK}}$
49	Ground	Ground	Ground	Ground
50	E Clock	E Clock	E Clock	E Clock
51	$\overline{\text{DS0}}$	$\overline{\text{(VMA)}}$	$\overline{\text{DS0}}$	$\overline{\text{DS0}}$
52	AD18	A18	A18	D10
53	$\overline{\text{RESET}}$	$\overline{\text{RST}}$	$\overline{\text{RESET}}$	$\overline{\text{RESET}}$
54	AD19	A19	A19	D11
55	$\overline{\text{HLT}}$	$\overline{\text{HLT}}$	$\overline{\text{HLT}}$	$\overline{\text{HLT}}$
56	AD20	A20	A20	D12
57	AD22	A22	A22	D14
58	AD21	A21	A21	D13
59	AD23	A23	A23	D15
60	$\overline{\text{BRN}}$	$\overline{\text{BRN}}$	$\overline{\text{BRN}}$	$\overline{\text{BRN}}$
61	Ground	Ground	Ground	Ground
62	$\overline{\text{BGACK}}$	$\overline{\text{BGACK}}$	$\overline{\text{BGACK}}$	$\overline{\text{BGACK}}$
63	AD31	D15	A31	D31
64	$\overline{\text{BGN}}$	$\overline{\text{BGN}}$	$\overline{\text{BGN}}$	$\overline{\text{BGN}}$

100 Pin Expansion Slot (cont'd)

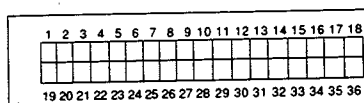
Pin	Physical Name	Zorro II Name	Zorro III Address Phase	Zorro III Data Phase
65	AD30	D14	A30	D30
66	DTACK	DTACK	DTACK	DTACK
67	AD29	D13	A29	D29
68	READ	READ	READ	READ
69	AD28	D12	A28	D28
70	DS2	LDS	DS2	DS2
71	AD27	D11	A27	D27
72	DS3	UDS	DS3	DS3
73	Ground	Ground	Ground	Ground
74	CCS	AS	CCS	CCS
75	SD0	D0	N/A*	D16
76	AD26	D10	A26	D26
77	SD1	D1	N/A*	D17
78	AD25	D9	A25	D25
79	SD2	D2	N/A*	D18
80	AD24	D8	A24	D24
81	SD3	D3	N/A*	D19
82	SD7	D7	N/A*	D23
83	SD4	D4	N/A*	D20
84	SD6	D8	N/A*	D22
85	Ground	Ground	Ground	Ground
86	SD5	D5	N/A*	D21

*N/A = Not applicable to this phase.

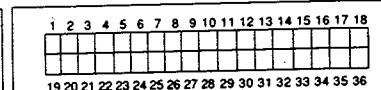
100 Pin Expansion Slot (cont'd)

Pin	Physical Name	Zorro II Name	Zorro III Address Phase	Zorro III Data Phase
87	Ground	Ground	Ground	Ground
88	Ground	Ground	Ground	Ground
89	Ground	Ground	Ground	Ground
90	Ground	Ground	Ground	Ground
91	SenseZ3	Ground	SenseZ3	SenseZ3
92	7M	E7M	7M	7M
93	DOE	DOE	DOE	DOE
94	IORST	BUSRST	IORST	IORST
95	BCLR	GBG	BCLR	BCLR
96	INT1	(EINT1)	INT1	INT1
97	FCS	Not Used	FCS	FCS
98	DS1	Not Used	DS1	DS1
99	Ground	Ground	Ground	Ground
100	Ground	Ground	Ground	Ground

Video Slot



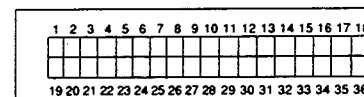
standard video slot



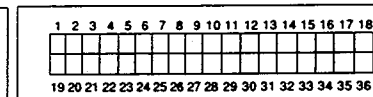
extended video slot

Pin	Signal	Pin	Signal
1	Reserved for Expansion	2	Reserved for Expansion
3	Left Audio Out	4	Right Audio Out
5	Reserved for Expansion	6	+5 Volts DC
7	Analog Red	8	+5 Volts DC
9	Video Ground	10	+12 Volts DC
11	Analog Green	12	Video Ground
13	Video Ground	14	CSYNC
15	Analog Blue	16	XCLKEN
17	Video Ground	18	Burst Gate
19	C4 CLOCK	20	Video Ground
21	Video Ground	22	HSYNC (47 Ohm)
23	B0 = DI	24	Video Ground
25	B3 = DB	26	VSYNC (47 Ohm)
27	G3 = DG	28	Comp Sync (Analog)
29	R3 = DR	30	PIXELSW (47 Ohm)
31	-5 Volts DC	32	Video Ground
33	XCLK	34	CI CLOCK
35	Reserved for Expansion	36	Strobe

Extended Video Slot



standard video slot



extended video slot

Pin	Signal	Pin	Signal
1	Ground	2	R0
3	R1	4	R2
5	Ground	6	G0
7	G1	8	G2
9	Ground	10	B1
11	B2	12	Ground
13	Monochrome Video	14	TBASE
15	CDAC Clock	16	POUT
17	C3 CLOCK	18	Busy
19	LPEN	20	ACK
21	SEL	22	Ground
23	PD0 (LSB)	24	PD1
25	PD2	26	PD3
27	PD4	28	PD5
29	PD6	30	PD7 (MSB)
31	LED	32	Ground
33	Raw Audio Left	34	Audio Ground
35	Raw Audio Right	36	Audio Ground

Appendix C

Display Enhancer

Introduction

The A3000T™ includes special video display circuitry known as the *Display Enhancer*. The Display Enhancer removes flicker and visible scan lines from interlaced and noninterlaced graphics modes.

The Display Enhancer is software-compatible with existing software and internal Amiga plug-in cards, as well as the new ECS *Productivity* and *Superhires* modes available with the new Enhanced Denise chip and AmigaDOS 2.0. The Display Enhancer can be used simultaneously with many external and internal genlocks. The Display Enhancer significantly enhances the graphics presentation capabilities of the Amiga 3000T.

Display Enhancer Main Features

- Compatible with both NTSC (NTSC-M) and PAL (PAL-B, PAL-G, PAL-H) Amiga video formats. (Note: NTSC is the video standard that is used throughout most of North America, parts of Latin America and Japan. PAL is the video standard that is used throughout Europe, Australia and New Zealand.)
- Employs de-interlacing in Amiga interlaced display modes to remove flicker and visible scan lines with full overscan support.
- Employs scan-doubling in Amiga noninterlaced display modes to remove visible scan lines without motion artifacts (ghost effects).
- Severe overscan support.
- Supports the new ECS display modes (such as Productivity mode) under AmigaDOS 2.0. The Display Enhancer automatically detects Productivity mode and bypasses the video data to the multiscan monitor.
- *Enable/Disable* mode switch allows bypassing of the Display Enhancer video for output of the original Amiga video to a multiscan VGA monitor. This is used to display the ECS Superhires mode (1280x200/256 or 1280x400/512) on the monitor.

- Display Enhancer output is not interfered with by many external and internal genlocks (NTSC or PAL), providing high-resolution, flicker-free display of Amiga-only (RGB) output.
- Transparent to software.
- Video output is compatible with standard VGA multiscan monitors.
- A standard female VGA DB15 connector is provided.
- An Amiga monitor (A1084, A1084S, A1080, A2002) or external composite encoder box (A520) can remain attached to the Amiga's 23-pin RGB port, providing a standard video display.
- Fully supports the Amiga's 4096-color palette and HAM (hold-and-modify) modes.

Connecting a MULTISCAN Monitor

The Display Enhancer is compatible with standard VGA multiscan monitors (like the Commodore 1950 MULTISCAN Monitor), and provides a standard VGA DB15 female connector (marked **31 KHz**) for output to a multiscan-type monitor. For instructions on connecting a multiscan-type monitor see the *Amiga 3000T Quick Connect*.

Operation and Compatibility

The Display Enhancer is capable of operation in all the graphics modes available on the Amiga. In the noninterlaced Amiga modes (320x200/256, and 640x200/256), the Display Enhancer will automatically operate in Scan-double mode when the Display Enhancer mode switch is set to the *Enable* (LEFT) position. This means that the Display Enhancer repeats every line to increase the raster scan rate from 15.734 KHz NTSC (15.625 KHz PAL) to 31.46 KHz NTSC (31.25 KHz PAL). In this mode, the Display Enhancer removes visible scan lines and provides full overscan and HAM support, giving text and graphics a solidly professional look. Another benefit of this mode is that there are no motion artifacts (i.e., shearing or ghosting effects with moving objects). This is of great value for animation and game software featuring rapid object animation.

Note: The mode switch is located on the rear of the A3000T main unit, next to the 31 KHz Video connector.

In the interlaced Amiga modes (320x400/512 and 640x400/512), the Display Enhancer automatically operates in Deinterlace mode when the mode switch is set to *Enable* (LEFT) position. Here, the Display Enhancer stores the previous video field and combines it with the current incoming video field to remove flicker and visible scan lines. The raster scan rate is doubled and provides full overscan and HAM support. In this mode you may notice some motion artifacts (i.e., ghosting effects) with fast-moving animated objects.

Another Amiga display mode, which uses the ECS (Enhanced Chip Set) supported under AmigaDOS 2.0, is *Productivity Mode*. This mode has a display of 640x480 with 4 colors out of a palette of 64, and a raster scan rate of 31.46 KHz. In this display mode, the Display Enhancer will automatically bypass the video data to the multiscan monitor, since the raster scan rate is already at 31.46 KHz and has no flicker or visible scan lines.

Still another Amiga display mode which uses the ECS under AmigaDOS 2.0 is *Superhires* mode. This mode has a display of either 1280x200/256 or 1280x400/512, with 4 colors out of a palette of 64, and a raster scan rate of 15.734 KHz NTSC (15.625 KHz PAL). In this mode the Display Enhancer only samples every other pixel and may cause a distorted display, so you should set the mode switch to the *Disable* (RIGHT) position.

If you encounter a display mode that adversely affects the Display Enhancer, simply flip the mode switch RIGHT to Disable mode. Whatever display the Amiga generates will be sent to the monitor as if the Display Enhancer were not in the system.

External/Internal Genlock Compatibility

The Display Enhancer is compatible with many external and internal NTSC and PAL genlocks, including the new genlock extensions supported in AmigaDOS 2.0.

To use the Display Enhancer with an *external* genlock, simply connect the genlock to the A3000T's 23-pin video port (marked **15 KHz**), following the instructions given by the genlock's manufacturer.

To use the Display Enhancer with an *internal* genlock card, install the genlock card as instructed by the manufacturer.

After a genlock (internal or external) is connected or installed, set the Display Enhancer mode switch to the *Enable* (LEFT) position. The Display Enhancer will automatically provide a flicker-free high-resolution display of the A3000T's computer-only output.

Once connected to the A3000T, a genlock should normally provide Amiga graphics and video to the composite monitor or VCR connected to the genlock's video out connector.

If you experience any problems in obtaining a stable display, try adjusting the fine tuning control, using the technique described in the *Adjustment Procedure* section of this appendix. If this does not help, refer to the *Troubleshooting* section of this appendix.

If the problem remains even after you have followed the instructions in the *Adjustment Procedure* and *Troubleshooting* sections, then it is likely that your genlock is incompatible with the Display Enhancer. You can continue to use your genlock with the A3000T, except that you will not be able to use the 31 KHz video output from the Display Enhancer to view your Amiga graphics display.

Adjusting the Display Enhancer Fine Tuning Control

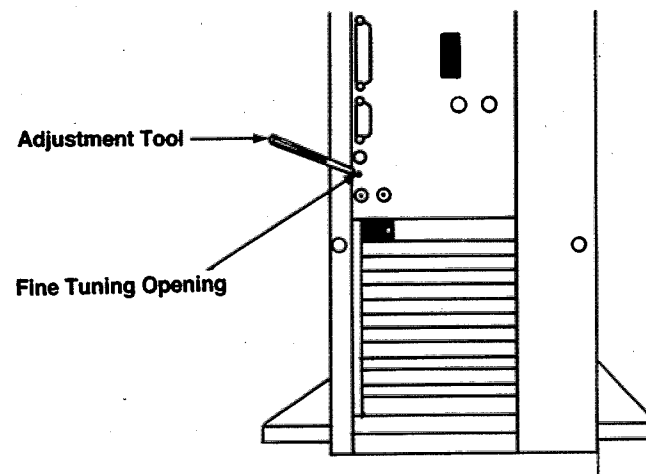
There are two tuning adjustment controls for the Display Enhancer: *Fine* and *Coarse*. These controls have been factory preset to work with both NTSC- and PAL-based Amiga A3000Ts and should normally not require adjustment. The *Coarse* tuning control is not user adjustable; any adjustment must be performed by an authorized Commodore-Amiga service center. The *Fine* tuning control is user adjustable; if you are experiencing display problems such as pixel "jittering", follow the fine tuning adjustment procedure given in the next section.

Adjustment Procedure

NOTE: The following description assumes familiarity with standard Amiga operating features. If you need an explanation of any of these features, such as the using the mouse to select an icon, see the tutorial material in Chapter 1 of the *Using the System Software* manual included with your A3000T computer.

To adjust the Display Enhancer fine tuning control, you must have already connected a multiscan monitor to the Display Enhancer 15-pin video output (marked 31 KHz). Power on the monitor and then the A3000T. Allow the A3000T to warm up for approximately five minutes. Activate the De-interlace/Scan-double mode of the Display Enhancer by flipping the mode switch LEFT to the *Enable* position. The display may look unusual and may have pixels "jittering," but it should otherwise be recognizable. The fine tuning adjustment will stabilize the display.

Locate the fine tuning control opening on the rear of the A3000T, just next to the *Enable/Disable* mode switch. Position the monitor so that you will be able to see the screen while you are working at the rear of the A3000T with the plastic adjustment tool (the adjustment tool is the small, screwdriver-like tool supplied with the A3000T; see the illustration below).



Open the Workbench2.0 *Prefs* drawer and double-click on the *Wbscreen* icon. With the mouse, select the *SuperHires* video mode and click on the *Use* button. Your A3000T will then switch to the 1280×200/256 display mode. You should then flip the mode switch to the *Disable* (RIGHT) position to put the Display Enhancer into Bypass mode. Double-click first on the *Video Adjust* drawer and then on the **Test3** icon to bring up a special test pattern window on your screen.

Now, insert the adjustment tool straight into the opening for the the fine tuning control. Engage the tool in the screw slot. Then slowly turn the fine tuning control clockwise or counterclockwise until all parts of the display are stable and are not jittering. This should occur in one to fifteen full turns of the fine tuning control screw. If you think that you have gone too far, turn the fine tuning control in the opposite direction. You may hear a slight clicking sound as you turn the fine tuning control. This indicates that the screw has reached the end of its travel, and you should turn the screw in the opposite direction.

When you have achieved the best image you can with the **Test3** program, double-click on the **Test1** icon. Flip the mode switch to *Enable* (LEFT) position and, using the adjustment tool, slowly turn the fine tuning control clockwise or counterclockwise until all parts of the **Test1** pattern are stable and are not jittering.

Click anywhere in the lower half of the image to bring up the title bar with the depth gadget in the upper right corner of the screen. Click on the depth gadget to bring up the Workbench screen; double-click on the **Test2** icon, and repeat the same adjustment procedure as with **Test1**. When the display is stable, use the depth gadget to return to the **Test1** pattern and check to make sure that it has not lost stability with the new fine tuning setting. Then return to the *Disable* mode (RIGHT) and recheck the **Test3** pattern as well. Be sure to look closely at

all the colors, lines, and patterns of all three images when adjusting the fine tuning control for a sharp and stable display.

Once all test patterns appear satisfactory, adjustment is complete and you can return the mode switch to the *Enable* position (LEFT).

If after attempting to adjust the fine tuning control you are unable to obtain a stable display, please refer to the Troubleshooting section that follows. Once you have the Display Enhancer operating, you may need to adjust your monitor's size and position controls.

NOTE: If the display at any time develops pixel jitter, you can slightly adjust the fine tuning control to make the display stable again.

Troubleshooting

If you are unable to produce a stable display, check the following:

1. Make sure the monitor you are using is a multiscan VGA-compatible monitor. Be sure that the monitor cable is correctly installed, and that the signal connections between your monitor and the A3000T's 15-pin 31 KHz video connector are correct. Also check that your cables are screwed tightly into the connectors at both ends, and that your monitor is set for the correct mode (analog, RGB, etc.).
2. Make sure that all external peripherals are properly connected to the A3000T and that their cables are screwed tightly into their connectors.

3. Make sure that the Display Enhancer mode switch is in the correct position for the fine tuning control adjustment. The mode switch should be flipped to the LEFT position (the Deinterlace/Scan-double *Enable* mode setting.).
4. Recheck your fine tuning, using the procedure described previously. You may need to make sure that you have turned the fine tuning control completely through the range of fifteen full turns and slowly back again in order to correctly fine tune the Display Enhancer.

NOTE: If you are still unable to properly adjust the Display Enhancer and obtain a stable display with your specific A3000T/monitor setup, please contact your local authorized Commodore service center.

Display Enhancer Technical Specifications

- Horizontal Frequency:** NTSC—31.468 KHz unbypassed, 15.734 KHz bypassed
PAL—31.25 KHz unbypassed, 15.625 KHz bypassed
- Vertical Frequency:** NTSC—60 Hz
PAL—50 Hz
- Video Signal Outputs:** Analog, 0.7 Vp-p/75 Ohms, positive polarity
- Video Sync Signals:** Separate, TTL level, negative polarity
- Pixel Output:** NTSC—35nS wide, 910 pixels/line output with 802 active
PAL—35nS wide, 908 pixels/line output with 802 active
- Horizontal Sync Pulse:** NTSC—2.4 μ S wide, active low, TTL level
PAL—2.4 μ S wide, active low, TTL level
- Vertical Sync Pulse:** NTSC—190 μ S wide, active low, TTL level
PAL—160 μ S wide, active low, TTL level
- Overscan Support:** NTSC—768 \times 489 worst case
PAL—768 \times 576 worst case
Note: Certain software packages may use overscan this severe; however, the operating system nominally does not perform to this level.
- Video Bandwidth:** 30 MHz @ -3 dB

Appendix D

Using the A3000T™ Keyboard

The A3000T keyboard is divided into four sections:

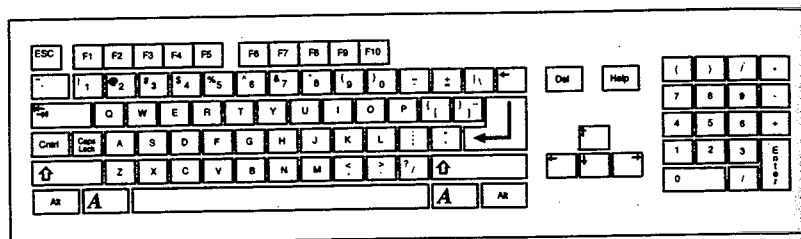
- The Main Keyboard
- The Cursor Keypad plus Del and Help keys
- The Numeric Keypad
- The Function Keys

The general keyboard is illustrated on the following page.

When using the keyboard, keep the following points in mind:

- Keys can be program-controlled—that is, their use can be defined by the software being used (e.g., an application program, such as a word processor or spreadsheet). For specific information on the program control of keys, refer to the manual for the particular software package you are using.
- The keys on the keyboard usually repeat for as long as they are held down.
- You cannot interchange the numeral 0 and the upper case letter O, or the numeral 1 and the lower case letter l.
- In some cases several keys may be used together, either simultaneously or in a special sequence.

You can use the keyboard as well as the mouse to move around the screen and select icons, gadgets, etc. In many programs you use the keyboard to enter information. You can use the keys to tell the computer what you want it to do, and to reply to messages or questions the computer displays on the screen, these messages and questions are sometimes called "system requestors" or simply "requestors."



NOTE: The international keyboards have two additional keys on the main keyboard, located at the Shift key positions.

The Main Keyboard Area

The **main keyboard area** (see keyboard illustration) provides a standard alphanumeric typewriter keyboard plus additional keys with special uses and capabilities. The special keys include:

Esc

The Esc (Escape) key, located at the top left of the keyboard, is a program-controlled key, often used to expedite leaving or entering a program or a program function.



Tab



The Tab key, located two rows below the Esc key, can be program-controlled to perform tab functions. The Tab key is used extensively in word processing and desktop publishing programs.

Ctrl



The Ctrl (Control) key, located just below the Tab key, is a program-controlled key that is often used with other keys to perform special functions. The Ctrl key modifies other keys in a way similar to the way that the Shift key does.

Caps Lock



The Caps Lock key is located next to the Ctrl key. When the Caps Lock key is first pressed a light on that key is illuminated. The alphabetic characters (A through Z) are displayed in upper case as long as the light is on. However, the upper characters on the numeric row at the top of the main keyboard area (!, ", # through /) are not affected by the Caps Lock key. To type these characters, you must simultaneously depress one of the Shift keys and the key for the desired character. To release the Caps Lock key, press it again so that its light goes out.

Shift Keys



There are two Shift keys, marked with an upward arrow (⇧) and located on either side of the bottom row of letters (z, x, c, etc.). These keys can perform the same function as the shift keys on a standard typewriter—that is, depressing either Shift key simultaneously with any alphabetic key or with any key on the top row of the main keyboard area causes the upper character on that key to be displayed. In addition, the Shift keys are often used with other keys to perform special functions.

Alt Keys

There are two Alt (Alternate) keys, located at the extreme left and right sides of the bottom row of the keyboard. These keys are also often used with other keys to perform special functions. This key may modify other keys in a way similar to the way the Shift key does.

A

This key, known as the left Amiga key, is located on the bottom row of the keyboard, just to the left of the space bar. The left Amiga key is also used with other keys to perform special functions. This key may modify other keys in a way similar to the way the Shift key does.

A

This key, known as the right Amiga key, is located on the bottom row of the keyboard, just to the right of the space bar. The right Amiga key is also used with other keys to perform special functions. This key may modify other keys in a way similar to the way the Shift key does.

NOTE: Simultaneously depressing the Ctrl key and the left and right Amiga keys resets the A3000T. See Chapter 1 in the *Using the System Software* manual for details.

Enter

The Enter key is located on the right side of the main keyboard area, in the middle two rows. You use this key to transmit a command or information to the computer. In manuals, you may see this key referred to by the symbol "↵", or the words "Return" or "Carriage Return."

Backspace

The Backspace key is the key farthest right on the top row of the main keyboard area. Pressing the Backspace key deletes any characters to the left of the cursor and causes the cursor, and any characters to the right of it, to move to the left.

The Cursor Keypad

The four cursor keys are grouped in a small keypad located on the bottom right side of the keyboard, between the **main keyboard area** and the **numeric keypad**. These keys control the movement of the cursor (up, down, left, right) on the screen display. The direction in which each key moves the cursor is indicated by the direction of the arrow displayed on the top of the individual key. These keys may also have special functions, depending on the software application.

Del and Help Keys

Above the cursor keypad are the Del and Help keys.

Del

The Del (Delete) key is located just to the right of the top row of the main keyboard area. Pressing the Del key deletes the character at the cursor position. Any characters to the right of the cursor move to the left.

Help

The Help key, located to the right of the Del key, is a program-controlled key that can be programmed to provide user assistance while a program is being run.

The Numeric Keypad

The Numeric Keypad is located to the far right of the keyboard. The keys are arranged in a calculator layout to facilitate numeric data entry. The numeric and arithmetic symbol keys on the keypad act just like the numeric and arithmetic symbol keys in the main keyboard area of the keyboard. You use the Enter key on the numeric keypad just as you use the Return key on the main keyboard—that is, to transmit data and commands to the computer.

The Function Keys

The Function Keys, located at the top of the keyboard and numbered F1 through F10, are program-controlled keys.

Using the Amiga Without a Mouse

On the Amiga, what you can do with the mouse you can generally also do from the keyboard. See Chapter 2 in the *Using the System Software* manual for details on using the Amiga without a mouse.

Appendix E Using the A3000T™ Install Disk

NOTE: Protect the information on your original A3000T Install disk by using the write-protect tab. Make a copy of the disk and put the original in a safe place. Always use the copy, NOT the original.

The A3000T Install disk included with your computer contains the following software, designed to let you reinstall your original system software on the A3000T's hard disk:

PrepHD
FormatHD
InstallHD

This appendix tells how to use this software.

The A3000T Install disk also includes a number of Workbench drawers, including Prefs, Shell, System, Expansion, Tools, Utilities and Trashcan. For descriptions of how to use these drawers, see the *Using the System Software* manual.

CAUTION: The Install software is concerned with reinstalling the system software only, and does not deal with any application software that you may have installed on your disk. To make sure that you have a backup copy of all application software on the hard disk, it is extremely important that you regularly use the HDBackup or the BRU (Backup and Restore Utility) software described in the *Introducing the System Software* manual.

About the Installation Software

As noted above, the reinstallation procedure involves the PrepHD, FormatHD and InstallHD programs. These programs are used in reverse order to address problems at increasing levels of severity.

Before you use these programs, you should try less drastic measures. For example, if only a few files or directories on your disk have been corrupted, you should restore the corrupted files from your regular backups. In other words, you should always try to recover your disk by using the least severe procedures first.

The PrepHD, FormatHD and InstallHD programs are summarized below:

PrepHD—Under severe conditions, your hard drive may be so damaged that a complete reconstruction is necessary. PrepHD performs a *low-level format* of the hard disk—that is, PrepHD sets up the disk information required to manage the disk as a whole prior to a complete reformatting. This program should be run only as a final resort, since all information stored on the hard disk will be destroyed. *If you use this program, you must follow it with FormatHD and InstallHD, in that order.*

FormatHD—Performs a *high-level format* of the hard disk—that is, FormatHD sets up the disk to receive the information (such as programs and data) that the user actually works with. FormatHD should be used only as a last resort when a complete reconstruction is necessary, since all user information stored on the hard disk will be destroyed. *If you use this program, you must follow it with InstallHD.*

InstallHD—Installs the system software on the selected partition. *You can use this program by itself, without having used FormatHD or PrepHD.*

Reinstalling the System Software on the Hard Disk

To do a low-level and high-level format of the hard disk and reinstall the system software, follow the instructions below.

Bootting the A3000T Install Disk

Boot the Amiga with the A3000T Install disk in the internal floppy drive (DF0:). Do not boot from the hard disk. When the system boots, you will see the A3000T Install icon on the screen. Double-click on the icon, and the A3000T Install window will appear.

Using PrepHD

To prepare the entire hard disk, double-click on the PrepHD icon, and a new window will appear. The window will provide a series of prompts that will guide you through the process of performing a low-level format of your hard disk. In this process, the drive will be re-partitioned to the standard configuration.

NOTE: This operation can take up to half an hour. All information on the hard disk will be erased.

You will be asked if you are sure that you want to continue with the procedure. Type a Y for yes or an N for no, and then press Return. If you type Y, the Amiga automatically begins the PrepHD process. Note that the hard disk LED on the Amiga's front panel will not be lit during PrepHD. When PrepHD is complete, the system will display the message "Hard disk prep completed". You should then reboot the machine and run the FormatHD utility.

Be sure to leave the Install disk in the floppy disk drive when you reboot. When the Workbench screen reappears, open the A3000T Install window and proceed with the formatting process as described below.

Using FormatHD

To reformat the entire hard disk, double-click on the FormatHD icon. A new window will appear, displaying the following message:

WARNING: This will reformat hard disk WB2.x:
All information on the hard disk will be lost!
Are you sure you want to continue?

Again, type either a Y for yes or a N for no and press Return.

The system must format the partition cylinder by cylinder, so do not be alarmed if it seems to be taking a long time. You will be able to follow the progress on the screen. The system displays which cylinder is being formatted/verified and how many cylinders are left to be formatted.

When formatting is complete, a message like the following appears:

Hard disk format complete.
Would you like the system software to be installed
on your hard disk?

If you want to proceed with the installation, type Y and press the Return key. The FormatHD program will then start the InstallHD program. If you type N and press Return (or just press Return), the FormatHD program will end without calling the InstallHD program.

Using InstallHD

To reinstall the system software on the hard disk drive, double-click on the InstallHD icon. This program copies the files from the Workbench and Extras disks (versions 1.3 and 2.0) and the A3000T Kickstart disk onto the hard disk. You will have to insert the diskettes into the disk drive(s) at the proper time. Be sure to keep unaltered copies of all these floppy disks for this purpose.

After double-clicking on the InstallHD icon, you will see a message telling you that the program will reinstall the system software on your hard disk, and that the files on the hard disk will be overwritten. You will then be asked:

Are you sure you want to continue?

Type Y for yes or N for no and press Return. If you type Y, watch the screen for requesters that ask you to insert a disk into the floppy drive so that the appropriate files can be copied to the hard drive.

The first requester that appears asks you to insert your Workbench2.x disk into any drive. When the disk is inserted, the program will copy the files onto the hard drive. Subsequently, you will be prompted to insert each of the five original system disks into any drive.

When the system software has been reinstalled and the system has been properly configured, you will see the following message:

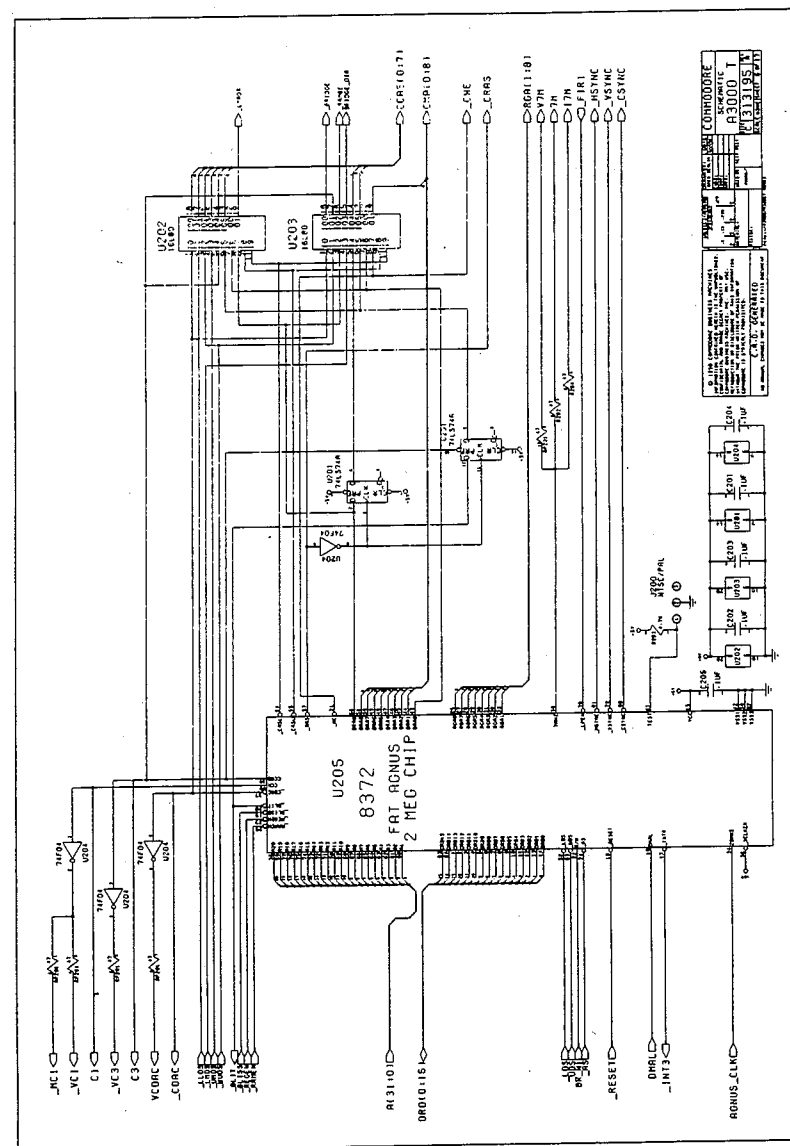
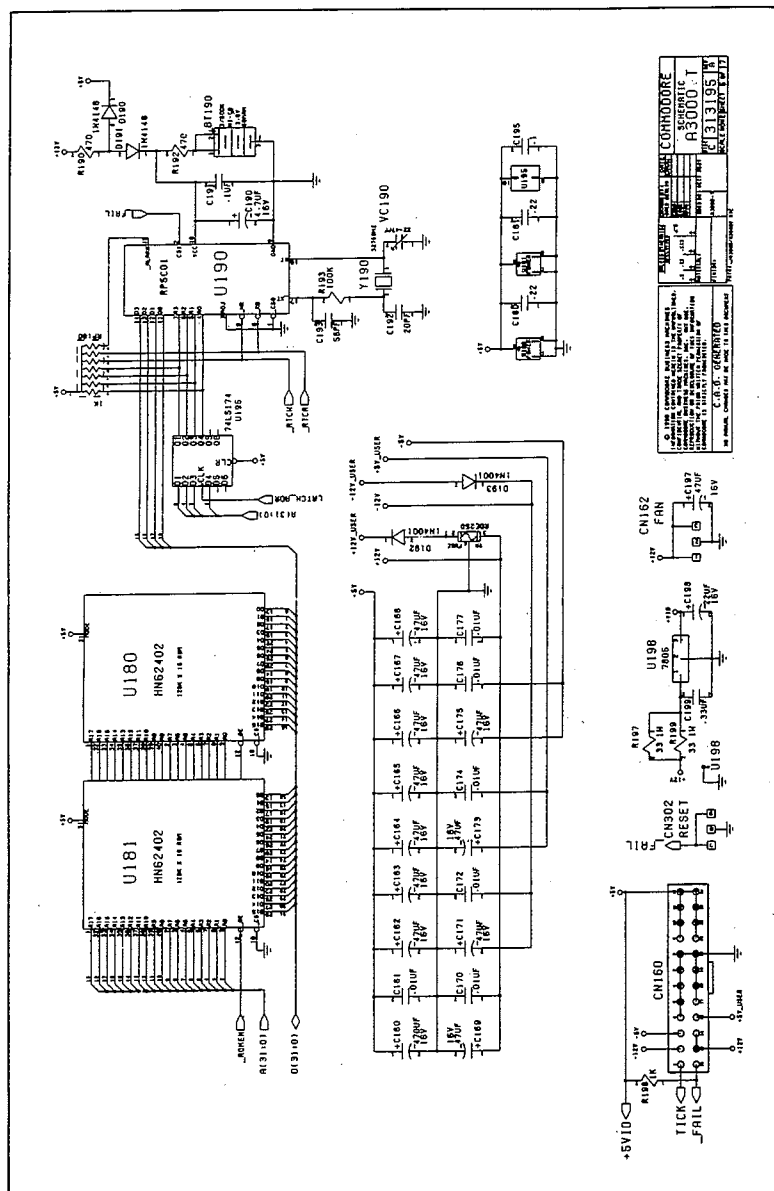
Software installation is now complete.

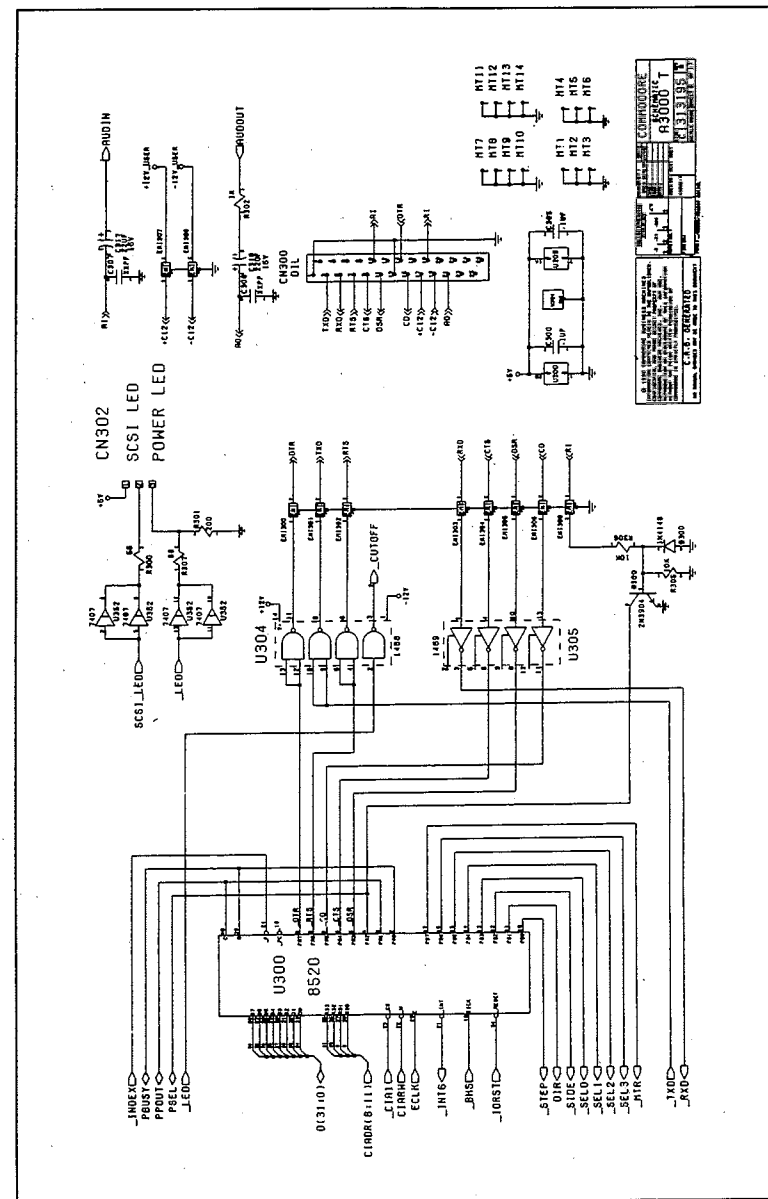
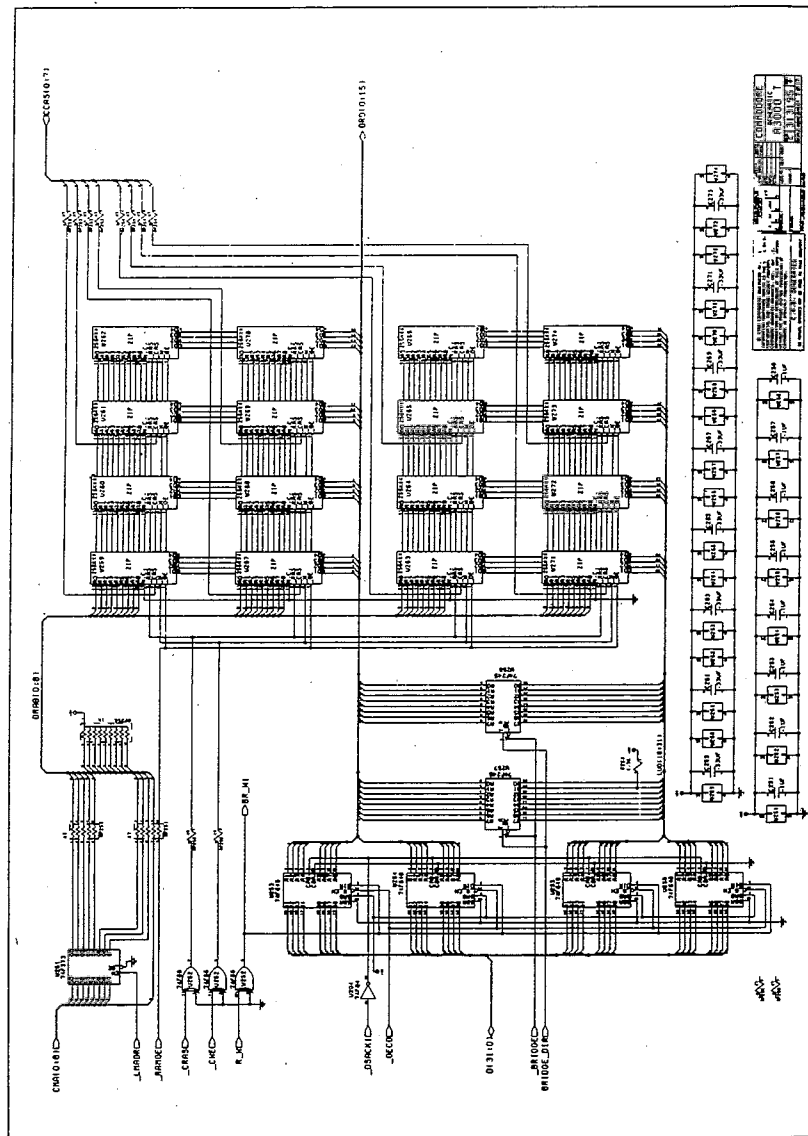
Remove all floppy disks from the Amiga and reboot the machine.

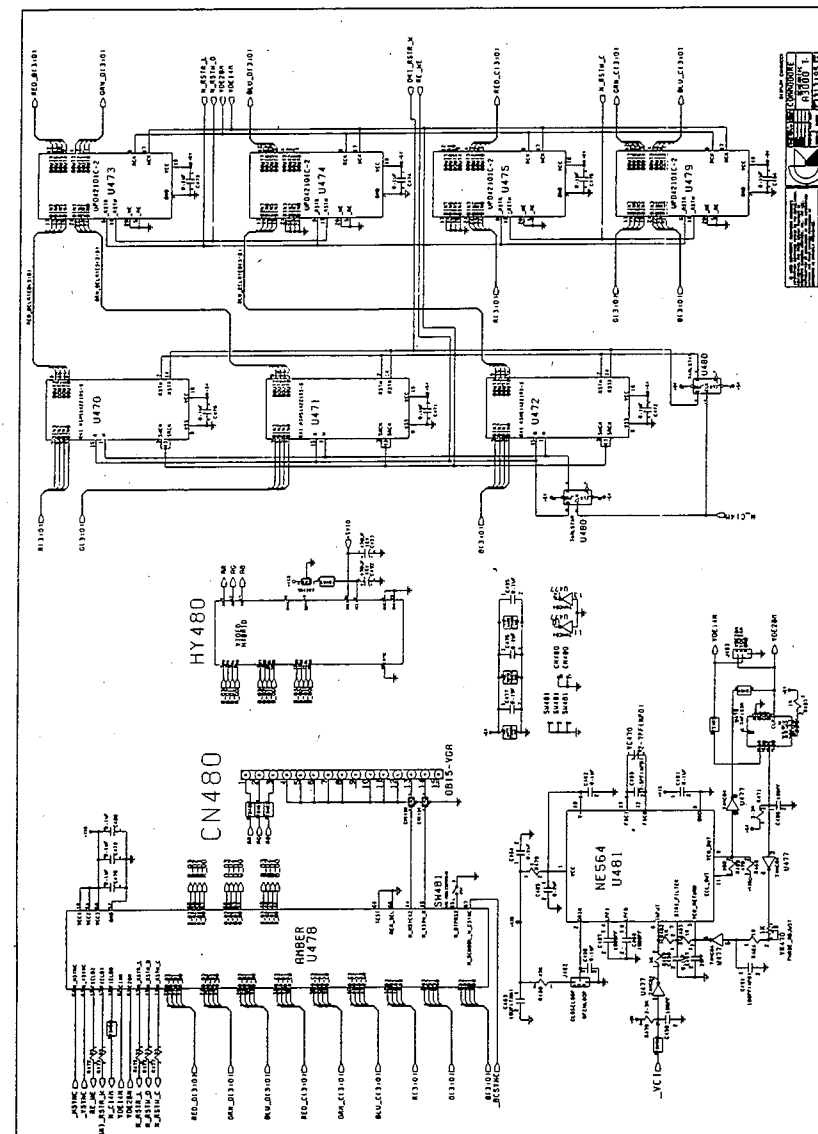
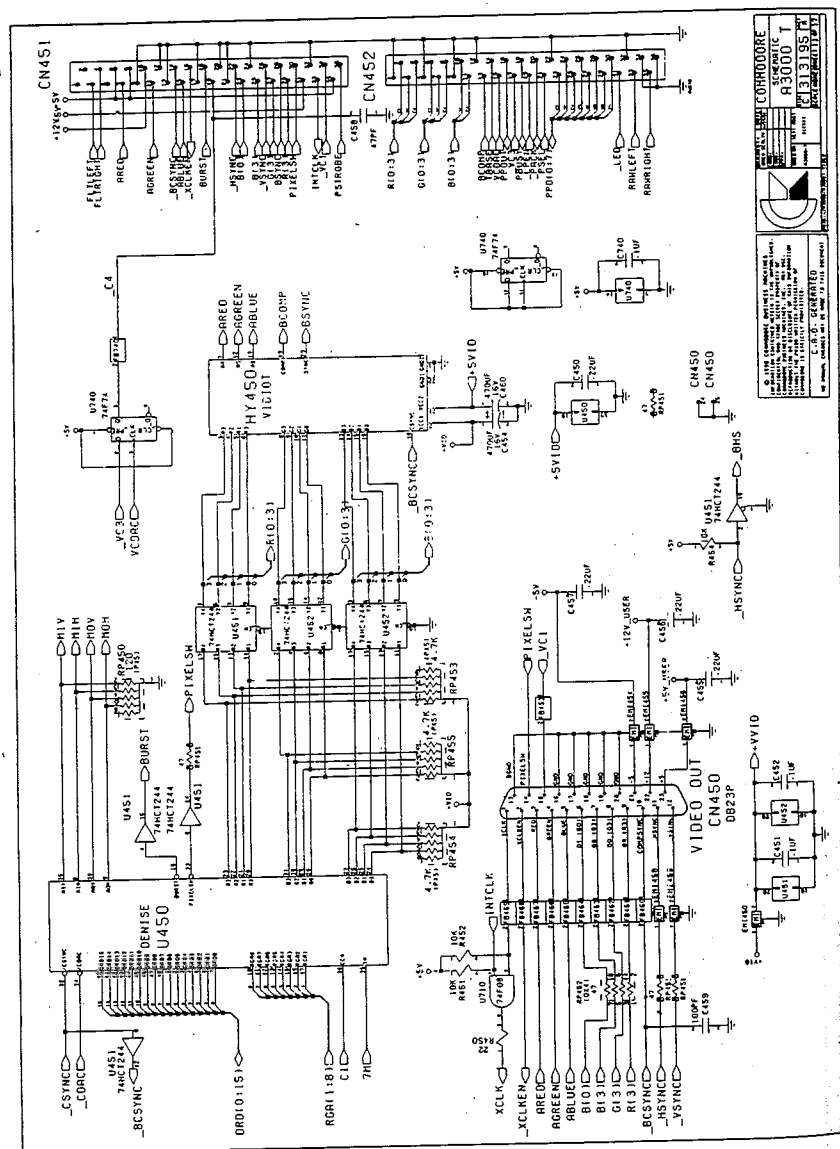
When the Workbench screen appears, you will note that the hard disk has been returned to the configuration it had when shipped from the factory: that is, only the system software is on the disk, and the disk contains only the default partitions. Therefore, any changes that you had made to the hard disk (e.g., adding partitions or installing application software) will have to be redone. If you had added partitions, you can use HDToolbox to reinstall them. (See Chapter 6 in the *Using the System Software* manual for details on using HDToolbox.) If you had installed application software, you should have used HDBackup or BRU (Backup and Restore Utility) to make backup copies of these programs. Use the backup copies to reinstall the software. (See the *Using the System Software* manual for details on using HDBackup and BRU.)

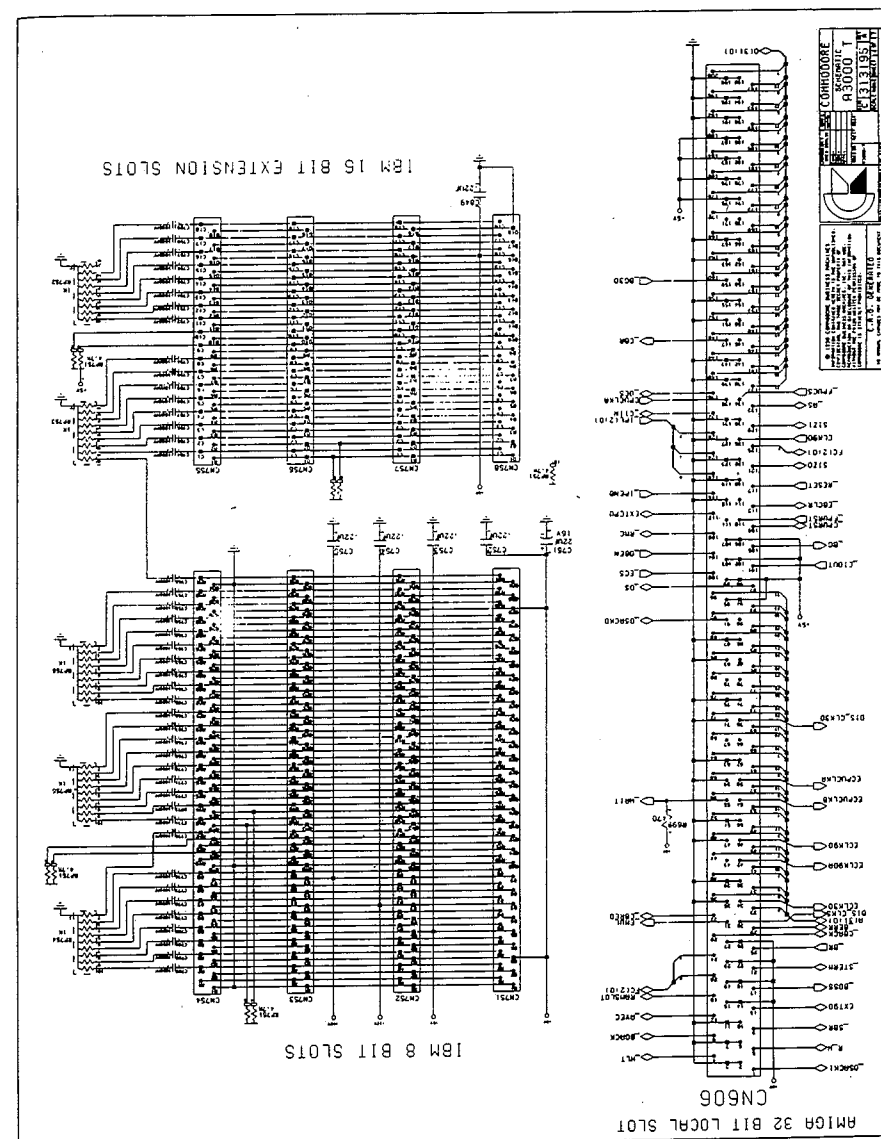
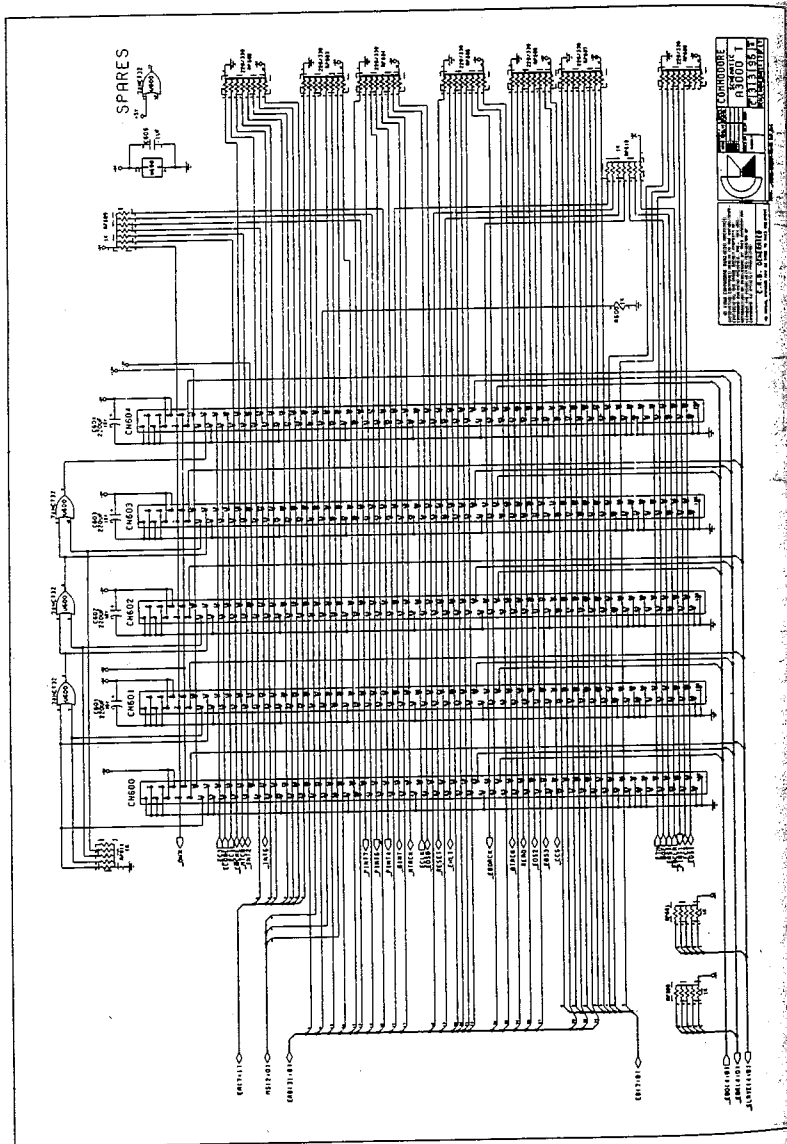
Appendix F Schematics

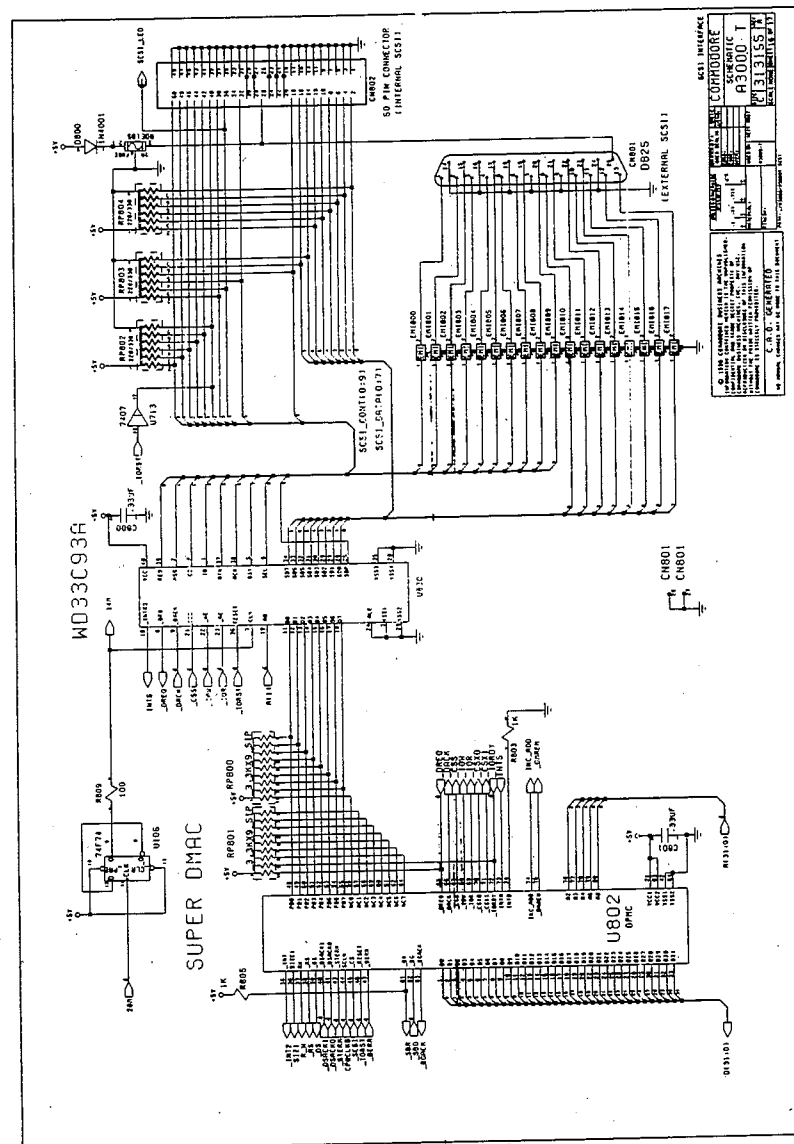
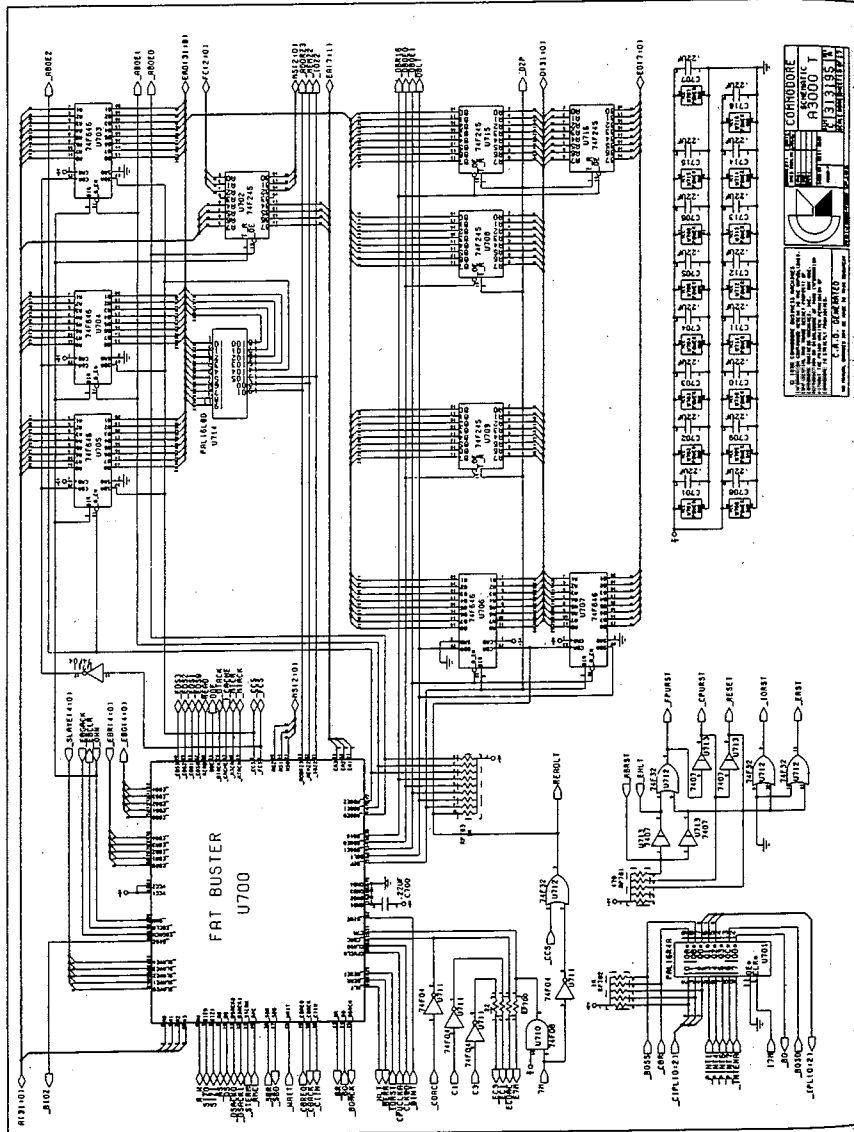
NOTE: The drawings in this appendix are for reference only and are subject to change without notice as required by product improvements.

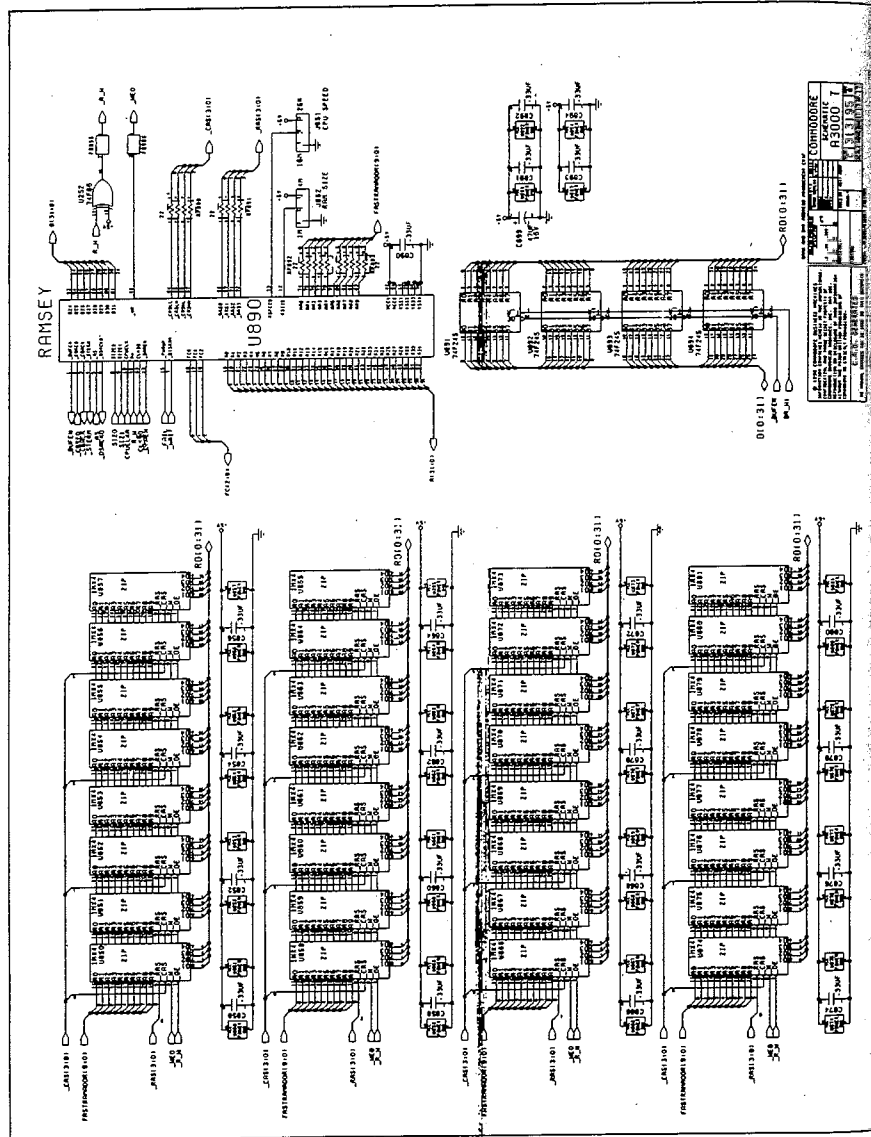












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Certificate of the manufacturer

Herewith we certify that our device Personal Computer

Commodore Amiga 3000 T

is eliminated of radio interference corresponding to the
 regulations

Amtsblattverfügung Nr. 1046/1984.

The German Bundespost has been informed that this unit is on
 the market and has got the right to check on the mass production
 if the limits are kept.

COMMODORE BUSINESS MACHINES LIMITED

Bescheinigung des Herstellers

Hiermit wird bestätigt, daß der Personal-Computer

Commodore Amiga 3000 T

in Übereinstimmung mit den Bestimmungen der

Amtsblattverfügung Nr. 1046/1984

funk-entstört ist.

Der Deutschen Bundespost wurde das Inverkehrbringen dieses
 Gerätes angezeigt und die Berechtigung zur Überprüfung der
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