ADVANTAGE!

High-Performance, Upgradable,
Minitower Computer

AST COMPUTER

Advantage!
9000 Series
User's Manual

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Contents

Introduction

This manual explains how to set up, use, upgrade, and troubleshoot the hardware that comes with your AST® Advantage!® 9000 Series computer.

For a list of abbreviations used throughout this guide, see the section "Abbreviations" on page 60.

For clarity, some illustrations may not show all components of your system. For example, your modem and Zip drive are included in the appropriate illustrations in your Getting Started guide, but may not be included in system illustrations throughout this user manual.

About Your Computer

Your AST computer provides the following features:

- Upgradable microprocessor. You can upgrade to a faster processor with an Intel OverDrive® microprocessor (see "Upgrading the Microprocessor" on page 37).
- Four SIMM sockets for system RAM memory. You can upgrade memory to 128 MB (see "Adding System Memory" on page 34).
- Local-bus video, which improves video performance by providing a high-speed, 64-bit data path for video signals. Your system comes with 1 MB of video memory installed: you can upgrade to 2 MB (see "Adding Video Memory" on page 39).
- Integrated 16-bit audio and speakers.
- Wavetable audio capability (available on selected models).
- One 3.5-inch high-density floppy drive. The system holds up to seven drives (see "Installing Drives" on page 25). The system board has a floppy controller that supports up to two floppy drives (one comes installed in your system) and two IDE interface connectors that

support up to two IDE devices each (three come installed in your system).

- Seven expansion slots: five slots that accept up to full-length, 8- or 16-bit, ISA-compatible add-in boards; two slots that accept up to full-length 32-bit PCI-compatible add-in boards (see “Installing Add-in Boards” on page 21).
- Flash BIOS, which enables you to update the BIOS easily from a floppy disk (see “Updating the System BIOS” on page 54).
- Power-conservation features that can reduce power consumption while the system is not in use. For more information about using power management, see “Using Your Computer’s Power Management Features” on page 10.
- Plug and Play (PnP) support.
- Security features.
- A Windows® 95 keyboard and a PS/2®-type mouse.
- A keyboard connector, a mouse port, a 25-pin parallel port, and a video connector.
- Two 9-pin serial ports.
- Audio interface connectors: line-in and line out.
- A fax/data/voice modem with microphone connection.

Unpacking Your Computer

Unpack and unwrap the contents of the computer package and examine them before setting up the computer.

Contact your authorized AST reseller immediately if any component is damaged or missing.

Save the packing materials. Should you ever need to ship the computer, pack it in these shock-absorbing materials.

Using Your Computer Safely

To avoid possible injury to yourself or damage to your computer, do not install or remove any component, or alter switch or jumper settings, while your computer is on. If you install a modem, disconnect its phone cord every time you remove the computer cover.

To avoid accidental discharge of static electricity, which could damage computer components, you can use a grounding wrist strap.

As you set up and use the computer, take the following precautions:

- The monitor screen should be at eye level as you sit at the computer. Adjust lighting in the room to reduce glare on the screen. Use the controls on the monitor to adjust the brightness and contrast to comfortable levels.
- If you plan to use the keyboard or mouse for several hours at a time, consider purchasing and using wrist-support padding. Take occasional breaks from using the computer.
- Use a flat, stable work surface with enough space around it for proper air circulation. These are the minimum clearances:

  Rear of system: 3 in (7.6 cm)

  Left side of system: 6 in (15.2 cm)

  Right side of system: 6 in (15.2 cm)

  Top of monitor: 6 in (15.2 cm)
- Use the system in an environment where the air temperature is more than 41 F °(5° C) and less than 104° F (40° C). For nonoperating systems, such as systems in storage, the acceptable temperature range is -4° F (-20° C) to 149° F (65° C).
- Choose a work surface large enough to accommodate the entire system.
- Protect the equipment from wet weather and liquids.
- Avoid dropping, jarring, or shaking the equipment.

- Turn the equipment off, unplug the power cord, and disconnect all peripheral devices if you:
  - Intend to open the computer.
  - Have exposed the equipment to liquid.
  - Have dropped or otherwise damaged the equipment.
- Do not open the power supply or monitor.
- Follow all the instructions and cautions in this manual.

Setting Up Your Computer

Assembling the computer can be as basic as unpacking the system, then connecting the keyboard and mouse, a monitor, and any peripheral devices you want to use (such as a printer) to the system.

You can also add disk drives, add-in boards, an upgrade Intel OverDrive microprocessor, system memory, or video memory to your computer. See “Upgrading Your Computer” on page 18 for more information.

After you assemble or upgrade the computer, you may need to configure it with the System Setup program. See “Configuring Your Computer” on page 41 for more information.

Connecting a Monitor

You can connect a monitor to the 15-pin video port on the back of the system. This makes use of the VGA built into the system. The video port is compatible with the following types of monitors:.

- Super VGA color monitor with DPMS, such as the ASTVision line of monitors. To conserve energy, the computer can cause such a monitor to go into a low-power state when the system is on but not in use. Many other monitors do not support this feature. See “Using Your Computer’s Power Management Features” on page 10 for information on power management.
- VGA and Super VGA color, or compatible monitor
- VGA monochrome monitor.
- Multifrequency monitor.

Optionally, you can install an add-in video adapter. The computer works with most ISA- and PCI-compatible video adapters, including an EGA, VGA, or specialized video adapter. See “Installing Add-in Boards” on page 21 for more information.

To connect a monitor to the computer:

1. Set up your monitor according to the instructions that accompany it.
2. Connect the monitor interface cable to the video port on the back of the computer (Figure 1), or to the add-in video connector if you have installed a video adapter.
3. To use a multifrequency monitor in standard VGA mode, set the monitor to analog mode.
4. Plug the monitor power cord into a grounded outlet.

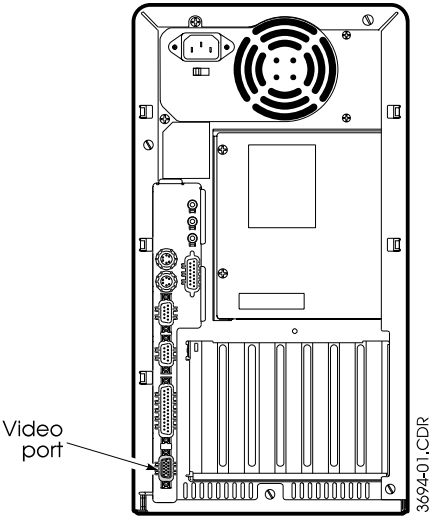

Figure 1. Video Port Location

Connecting the Keyboard, Mouse, and Peripheral Devices

If a plastic cap covers the end of the keyboard cable, remove it. Plug the keyboard and mouse into their connectors at the back of the computer. Be sure that the arrows on the cable plugs point to the right as you face the rear of the system.

To adjust the height of the keyboard, flip the height adjusters on the bottom of the keyboard up to the raised position (Figure 2).

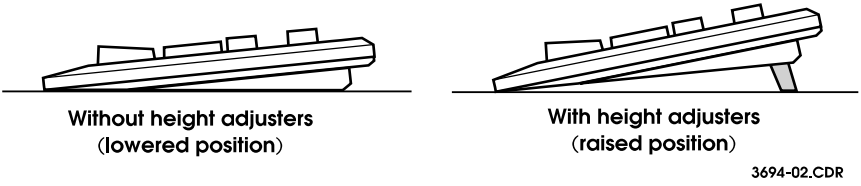

Figure 2. Adjusting Keyboard Height

Two serial ports and one parallel port are located on the back panel of the computer (Figure 3). Connect serial peripheral devices to these ports. For instance, a printer commonly connects to the parallel port, but some types connect to a serial port.

The audio and peripheral ports are also located on the rear panel of the computer. The rear panel Microphone port is disabled: To add a microphone, use the modem's port illustrated in the *Getting Started* guide.

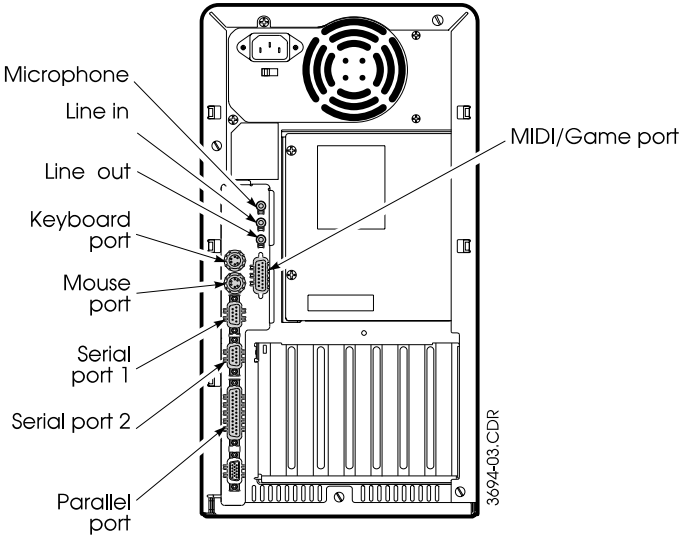

Figure 3. Rear Panel Connectors

If you are uncertain how to connect a peripheral device, see the documentation that accompanied it. Information on connecting your speakers is provided in your *Getting Started* guide.

Connecting the Power Cord

Check that the voltage switch on the power supply is set to the appropriate voltage: 115 V or 230 V (Figure 4). Plug one end of the power cord into the power connector on the rear of the computer and the other into a grounded outlet.

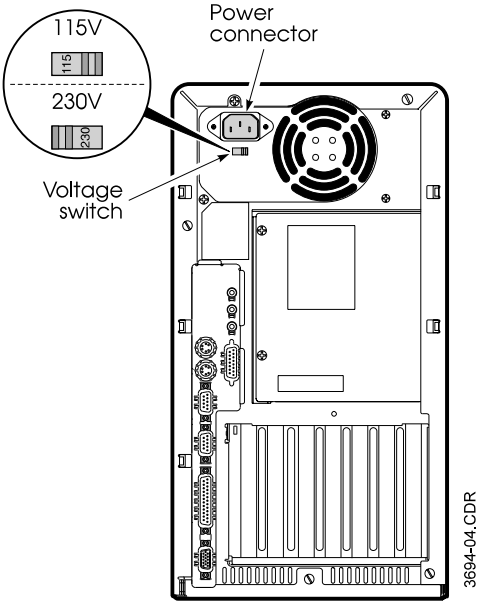

Figure 4. Power Connector Location

Turning the Computer On

Before turning the computer on, press the power button on the monitor. (For its location, see the monitor's user manual.) The computer power button is located at the upper-right corner of

the front panel (Figure 5). Press it to turn the computer on. While the computer is on, the green power light on the front panel of the computer should be on.

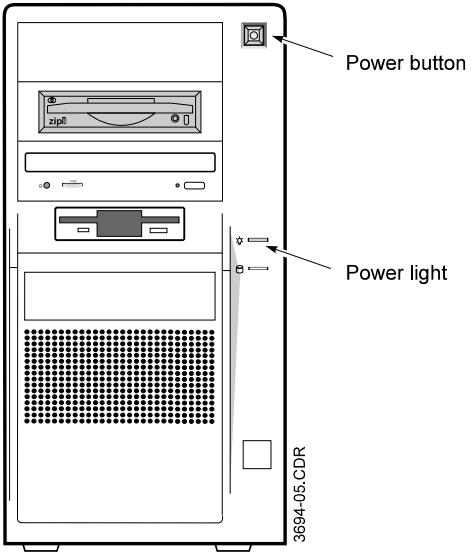

Figure 5. Power Button and Light

As the computer starts, messages appear on the monitor screen. Note the prompt to run System Setup, a program that configures your system.

Once the computer is on, you can:

- Make master disks of the programs installed on your computer's hard drive.
- Use System Setup to configure the computer (see "Using System Setup" on page 43).
- Begin using the computer hardware (see "For the First-Time User" on page 12).

You can also install and use application programs that you have purchased for the computer. See the instructions that accompany the application programs.

When you have finished using the computer, exit all applications, shut down Windows 95, and press the power buttons to turn the computer and monitor off.

Using Your Computer's Power Management Features

Your computer has an advanced power management feature that enables it to automatically save power when it is not in use. "Not in use" is defined as a period during which your computer receives no input from the keyboard or mouse. When your system goes into its power management mode, it will blank the monitor screen, spin down the hard drive, and put the CPU into an "idle" mode.

To wake the system up, press any key on the keyboard or move the mouse. If the password is enabled, enter the password, then move the mouse or press a key.

Power conservation is most effective with DPMS monitors and hard drives.

Your system comes configured from the factory with the advanced power management feature enabled and set to 30 minutes. This means that the computer will go into its power management mode if it does not receive any keyboard or mouse input for 30 minutes.

Some Considerations on Using Power Management

If your computer is engaged in activities that require no keyboard or mouse input for long periods of time, you can either increase the delay period or turn off the advanced power management mode. Under certain conditions, power management may automatically start, interrupting what your computer is doing at the time. Some examples of usage which may lead to this condition include:

- Playing games that use only the joystick
- Transferring long files over your modem or infrared receiver (available on some models)
- Printing long documents
- Making tape backups of your data

- Using programs that schedule events for unattended operation

See “Power Management Configuration” on page 51 for the procedure for changing the inactivity timer for power management.

Be sure to set the Inactivity Timer field to a period of time greater than any activities which may be interrupted by the power management feature.

Disabling Power Management

It is not necessary to go into System Setup to disable power management. Power management can be disabled from within Windows® 95. To disable power management:

1. Click on the *Start* button on the Task Bar, then *Settings,* then *Control Panel*.
2. Double-click on the *Power* icon to open the *Power* window.
3. From within the field labeled “*Power Management*,” select “*none.*”

Power management should now be disabled.

For the First-Time User

This section provides basic information about using the keyboard, mouse, drives, and other features of your computer.

Using the Keyboard

Your system includes an upgraded Windows 95 keyboard, which features special software application keys for use with Windows 95.

The four types of keys found on your keyboard are shown in Figure 6.

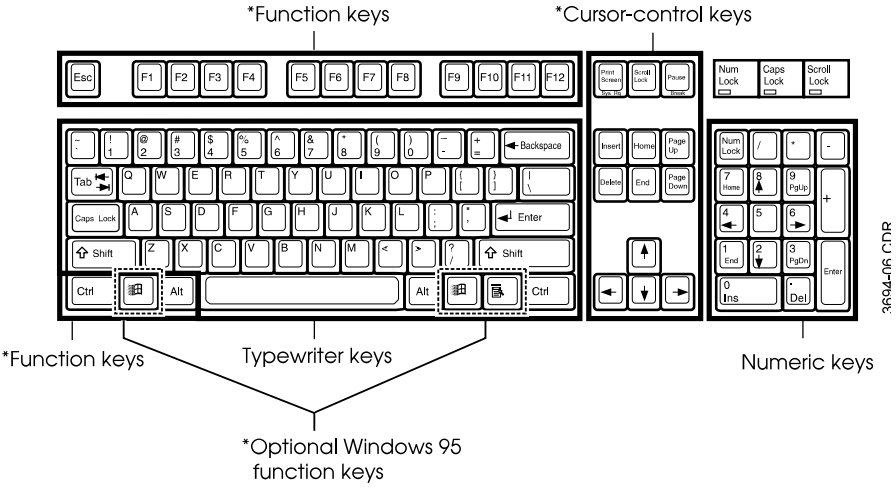

Figure 6. Keyboard Layout

Using the Mouse

Your computer comes with a PS/2-type port for connecting the mouse that came with your system. This port also supports other PS/2-compatible pointing devices.

Optionally, you can attach a serial mouse, but doing so will occupy a serial port.

The function of different mouse types varies. Refer to the device's user manual for more information. Keep the following in mind while using a mouse:

- Use the mouse on a level surface, such as a mouse pad. A mouse pad provides better traction and a cleaner surface than a desktop.
- Be sure there is enough work space in which to move the mouse.
- Keep the contact portion of the mouse free from dust, lint, or hair. You may occasionally need to remove the mouse roller ball and clean the contacts inside the mouse if cursor movement becomes erratic.
- If you use the mouse constantly, give your mouse hand an occasional break.

Using Disks

A computer stores information on floppy or hard disks. A computer retrieves information from these disks, as well as CD-ROM discs if your computer has a CD-ROM drive installed. The operating system determines how you use disks. For more information, read the user's manual for your operating system.

Using Floppy Disks

The computer comes with a 3.5-inch, high-density drive. You can install another floppy drive, either 3.5- or 5.25-inch.

Your 3.5-inch drive can:

- Read, write, and format 3.5-inch, high-density disks. This type of disk stores up to 1.44 MB of data.
- Read, write, and format 3.5-inch, double-density disks. This type of disk stores up to 720 KB of data.

The capability of a 5.25-inch floppy drive depends on whether it is high-density or low-density:

- The high-density drive can read, write, and format 5.25-inch, high-density disks. This type of disk stores up to 1.2 MB of data.
- Either type of drive can read, write, and format 5.25-inch, double-density disks. This type of disk stores up to 360 KB of data. Data written on a 360-KB disk in a high-density drive may not be readable in a double-density drive.

Floppy disks are designed so that you can easily insert one into the computer when you need it, and then remove it when you are finished with it. With the 3.5-inch drive, simply insert the disk; push the button on the drive to eject the disk. If you install a 5.25-inch drive, insert a disk and then flip the drive lever down to lock the disk in place; flip the lever up again to remove the disk.

A light near the floppy disk drive opening (Figure 7) comes on when the computer reads from or writes to a floppy disk.

Do not remove a disk or turn the system off when this light is on – you may damage the disk and its data.

For more information about your Zip drive and disk use, see the Zip drive's *User's Guide*.

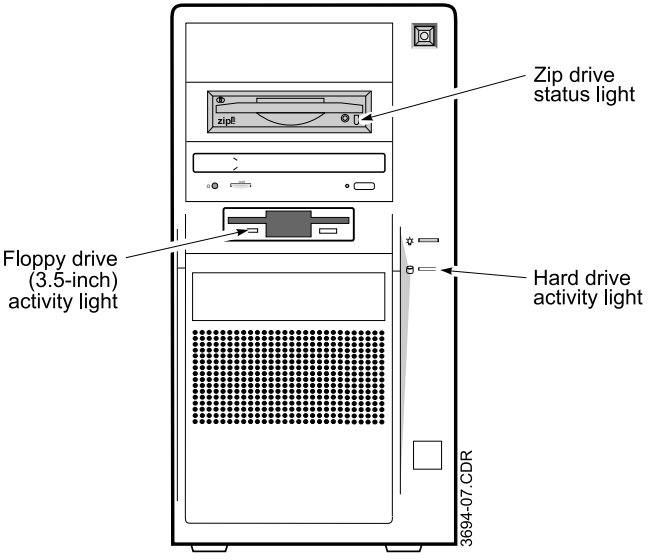

Figure 7. Drive Activity and Status Lights

Once information is saved to a floppy or Zip disk, it remains there until it is overwritten or erased, or the disk is formatted. Turning off the computer does not affect this data.

Using Hard Disks

Unlike a floppy disk, a hard disk (also called a fixed disk) is installed inside the computer and is not meant to be removed routinely. While the storage capacity of hard disks varies according to model, any hard disk holds much more than a floppy. Also, the computer reads and works with a hard disk more rapidly than with a floppy disk.

While the hard drive is searching for information, or storing information to the disk, the hard drive activity light on the front panel of the computer (Figure 7) is on.

Once information is stored on a hard disk, it remains there until it is overwritten. Turning off the computer does not affect the data.

Using Zip Disks

Your computer comes with a 100MB Iomega® Zip™ drive. This drive functions in a manner similar to the 3.5 inch drive, but with an increased capacity of 100MB per disk. A formatted tools disk is included with your computer. You store information on and retrieve data from Zip disks as you would the 3.5 inch disks. For more information about your Zip drive, see its user's guide.

Using Compact Discs

Your computer comes with a CD-ROM drive. This drive retrieves data and runs programs stored on compact discs.

Like floppy disks, compact discs are designed so that you can easily insert one into the computer when you need it, then remove it when you are done. Press the button on the CD-ROM drive, and its tray slides out. (Do not lean on the tray; it does not support much weight.) Insert a CD, label side up (or remove a disk, if you have finished using it). Then press the button again or gently push the tray in to close the drive tray.

Install and start a CD-based program as you would any other. Generally, the name of a CD-ROM drive is the letter following the letter assigned to your last hard drive. For instance, if you have one hard drive, it is drive C and your CD-ROM is drive D. See your operating system or Windows documentation for more information on running programs.

The laser beam used in CD-ROM drives may be harmful to the eyes - do not attempt to disassemble the CD-ROM drive. Service should be performed by qualified personnel only. Do not place reflective objects other than a CD in the disc slot, due to possible hazardous radiation exposure.

Restarting the Computer

You can restart (reboot) the computer in three ways:

- From within Windows 95, restart the computer by:
  - **a.** Clicking on the Start icon
  - **b.** Selecting "*Shut Down*."

c. When the “Shut Down Windows” dialog box appears, select the “*Restart the Computer*” option, then press the “*Yes*” button.

This is the preferred method for restarting your computer (assuming your system is working normally), because it allows Windows 95 to save configuration information and shut down in an orderly manner before it restarts. However, if your system has become erratic or nonresponsive (i.e., “crashed”), you should:

- Press <Ctrl+Alt+Del> twice to perform a warm (or soft) boot. A warm boot clears system memory and restarts the computer.
- If the computer still does not respond, you must do a cold (or hard) boot: press the power button to turn the power off, wait ten seconds, then press the power button again to turn the power on. If a password has been assigned, you will be required to enter it.

When you restart the system, you lose any data that you have not saved.

Upgrading Your Computer

You can enhance the capabilities and performance of your computer by installing upgrade components. You can install any of the following components:

- 8- or 16-bit ISA-compatible add-in boards.
- 32-bit PCI-compatible add-in boards.
- A video adapter board. However, the computer includes built-in 64-bit VGA hardware, which provides enhanced video and graphics capabilities without using an expansion slot. Install a video adapter board *only* if you do not want to use built-in VGA.

  The computer is compatible with most ISA- or PCI-compatible video adapters, including CGA, EGA, VGA, SVGA, and specialized video adapters.
- A 3.5- or 5.25-inch floppy drive.
- A tape-backup drive.
- A 3.5-inch half-height IDE hard drive.
- Additional system memory.
- Additional Video memory
- An upgrade Intel microprocessor.

As part of the upgrade process, you may need to change the system configuration by setting jumpers or running the System Setup program. See “Configuring Your Computer” on page 41 for more information.

If you are not familiar or comfortable with add-in board, floppy drive, hard drive, SIMM or chip handling and installation procedures, ask an authorized AST service technician to upgrade your system. In no case will AST Research, Inc., be liable for damage to the system and its components, or loss of data, caused by improper or faulty installation. Contact your AST reseller for the location of the nearest AST authorized service center.

Removing the System Cover

Before installing internal components, you must turn off and unplug the computer, and remove the system cover.

To remove the system cover:

1. If the computer is on, turn it off.
2. Unplug the power cord and disconnect any peripheral devices.
3. Loosen the three thumbscrews on the rear of the system (Figure 8). If the screws are too tight to remove by hand, use a flat-bladed screwdriver to loosen them.

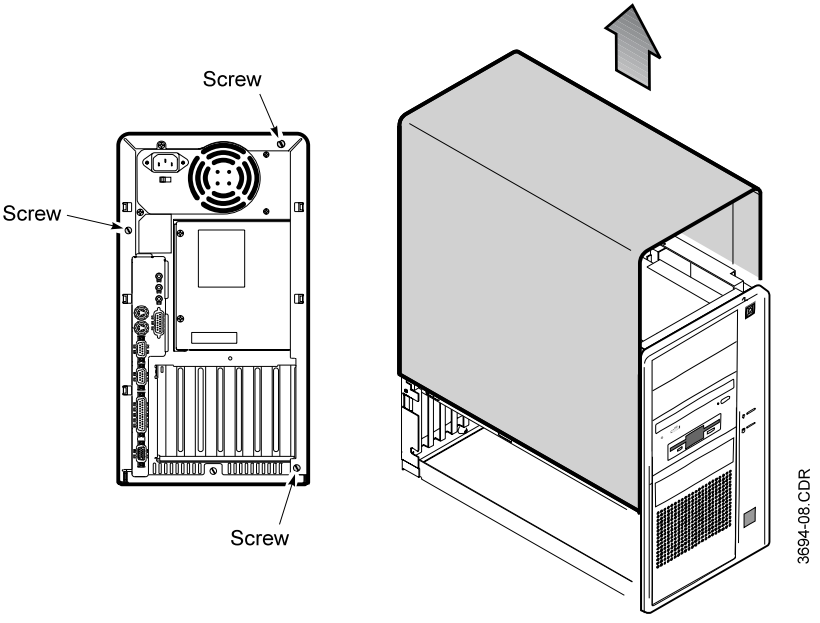

Figure 8. Removing the System Cover

4. Slide the cover back approximately one-half inch, until a space opens between the front of the cover and the front of the system.

5. Lift the cover straight up until it clears the system. Set it aside.

Removing the Front Panel

To remove the front panel of the system:

1. Push in the three tabs that attach the left side of the front panel to the chassis (Figure 9).

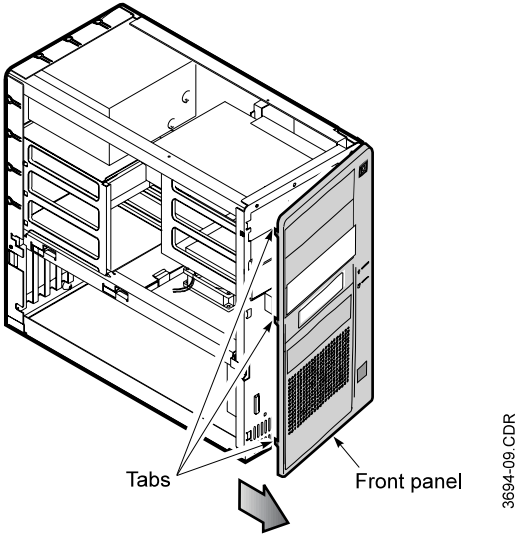

Figure 9. Removing the Front Panel

2. Swing the front panel to the right.
3. Pull out the front panel until the tabs on the right side of the front panel clear their slots.

Replacing the System Cover

After adding optional components and making adjustments, replace the system cover. Follow these steps:

1. Make sure you have not left any tools or loose parts inside the system. Make sure everything is properly installed and tightened.
2. Lower the cover straight down over the chassis.
3. Slide the cover forward until the rear of the cover aligns with the rear of the chassis. Make sure the cover screws fit into the notches on the sides of the system cover.
4. Tighten the screws on the rear of the system.

Installing Add-in Boards

The computer has expansion slots for installing add-in boards, such as modems, sound cards, or video adapters. The system has five 16-bit ISA slots and two 32-bit PCI slots.

The expansion slots are on a circuit board, called the riser card, which is perpendicular to the system board.

Removing the Bottom Panel

Before adding or removing cards from your system, you will need to remove the bottom panel. To remove the bottom panel of the system:

1. Gently tilt the system onto its right side (as you face the front of the system).

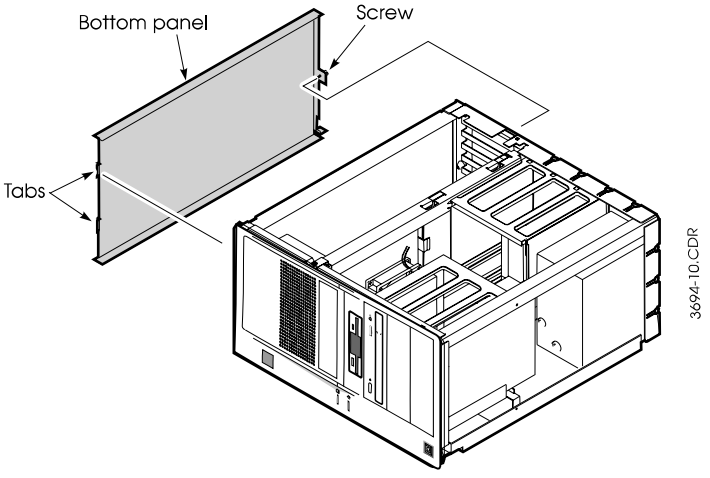

Figure 10. Removing the Bottom Panel

2. Remove the screw that holds the bottom panel in place (Figure 10).
3. Slide the bottom panel toward the rear of the system until the two tabs at the bottom front of the system clear their slots.
4. Remove the bottom panel from the chassis.

Board Installation

Follow this procedure to install an add-in board.

1. Run any software that is required before installing the board:
   - If you are installing an ISA add-in board that does not comply with the Plug and Play specification, you will need to configure it manually, using the Windows 95 Add New Hardware Wizard. See your Windows 95 documentation for more information.
   - If you are installing an ISA or PCI add-in board that complies with the Plug and Play specification, the board is ready to install.

- You may need to run an installation program provided by the board manufacturer before or after installing or removing an add-in board. Refer to the board documentation for more information.

2. Turn the computer off, unplug the power cord, disconnect all peripheral devices, and remove the system cover (see “Replacing the System Cover” on page 21).
3. Set all the necessary jumpers or switches on the add-in board. See the add-in board documentation for details.
4. Determine whether your add-in card is a PCI or ISA card, then select an unused expansion slot (Figure 11). Be aware that any cables that attach the add-in board to the system board must be threaded around the riser card.

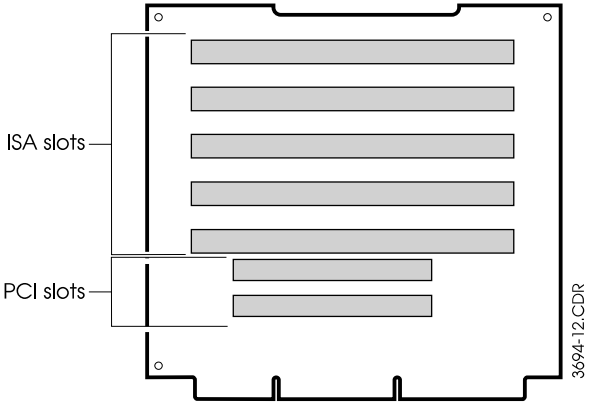

Figure 11. Riser Card Slot Locations

5. Remove the bracket screw and the bracket for the selected expansion slot.
6. Install the add-in board:
    a. Line up the board with the expansion slot (Figure 12).

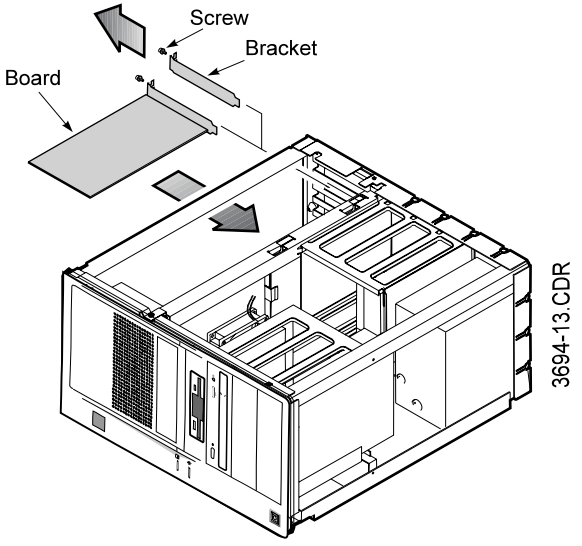

Figure 12. Installing an Add-in Board

b. Insert the board until its edge connector is aligned with an expansion-slot receptacle.

c. Using evenly distributed pressure, push the board straight in until it is fully inserted in the slot.

d. Reinstall the bracket screw you removed in step 5.

7. Attach any cables needed to connect the add-in board to internal components. For more information, see the manufacturer's user's manual. Note the following:

- If the board requires a cable to be attached to a device on the other side of the chassis, a slot on the riser card / fan support provides a way to route cables without interfering with the system cover.
- If the board is a video-capture or other video board that requires a pass-through VGA connection, connect the pass-through cable to the VESA feature connector (see the illustration in the back of this manual).

8. Replace the bottom panel. Set the system upright and replace the system cover. Reconnect peripheral devices, plug in the power cord, and boot the system.

9. Run any configuration software required to complete the installation of the add-in board.

Configuring Add-in Parallel Ports and Sound Cards

If you install an add-in board with a parallel port, it must be configured to use an interrupt other than IRQ7, since that interrupt is reserved for the onboard parallel port. Optionally, you can disable the onboard parallel port. Refer to the Peripheral Configuration section of the Advanced Options part of System Setup for more information.

If you install an add-in sound card, disable the integrated audio adapter. Refer to the Audio Configuration section of the Advanced Options part of System Setup for more information.

Installing Drives

One 3.5-inch floppy drive, one 3.5-inch hard drive, one Zip drive, and one CD-ROM drive come with your computer. You can add one additional floppy drive and one additional IDE drive. Examples of additional drives are:

- Half-height 3.5- or 5.25-inch floppy drives. The system board has a floppy controller that supports up to two floppy drives, one of which is the 3.5-inch drive that comes with the computer.
- Half-height 3.5- or 5.25-inch hard drives.

  The system board has two IDE connectors that support up to two drives each.

  To use another type of hard drive, such as a SCSI drive, install an add-in hard drive controller board.
- Tape backup. Some models of tape backup drive can use the onboard floppy controller; other models require add-in controllers.

Before installing a drive, read the instructions for preparing the drive. You can then install a drive on any of the drive-mounting brackets located inside the computer (Figure 13).

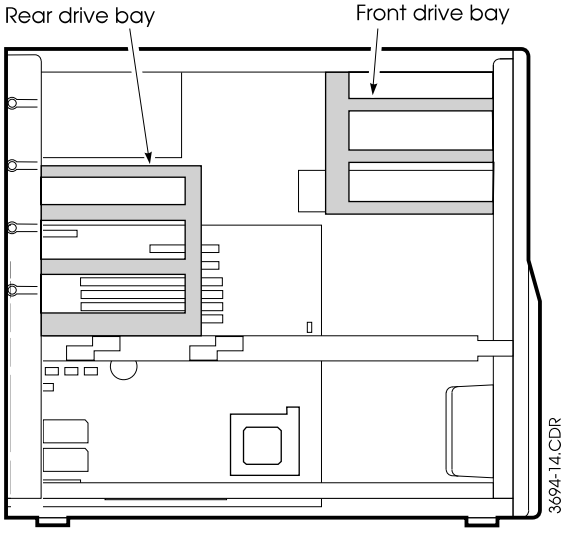

Figure 13. Drive Bay Locations

You can install these drives in a front drive bay or a rear drive bay:

- A 3.5-inch floppy drive comes attached to the underside of the front drive bay. The CD-ROM is mounted in the bottom slot of the bay, and the Zip drive is located in the middle slot directly above the CD-ROM drive. The bay can hold an additional drive in the upper slot, positioned so that it is accessible from outside the computer. Install a floppy or a tape-backup drive there.
- The rear drive bay contains an IDE hard drive and space for two additional drives, positioned so that they are inaccessible from outside the computer. Install only hard drives there.

The system board has three connectors to support the additional drives you may install:

- A built-in floppy controller that supports up to two floppy drives, one of which comes installed on your system.
- Two IDE connectors, each of which supports up to two IDE devices. The Primary connector supports your hard

drive, and has one additional connector available. The Secondary connector supports your CD-ROM as a master and your Zip drive as a slave. To locate these connectors, see the illustration in the back of this manual.

Preparations for Installing Drives

To avoid accidental discharge of static electricity as you handle components or switches, use a grounding wrist strap, or refer this procedure to qualified service personnel.

As you install drives, keep the following in mind:

- AST tests the drives it distributes to ensure that they are compatible with AST computers. These drives are recommended for use in this system.
- To ensure that a newly installed drive is properly grounded, tighten all screws completely.

To prepare a drive for installation, read the documentation that came with it. Also do the following:

- Note its capacity in kilobytes or megabytes.
- For a tape-backup drive, configure the device in accordance with the instructions that came with the drive.
- For an IDE hard drive, position the drive-select jumper to configure the drive as master or slave. Your system ships with the hard drive as master, and the master should be the drive from which the system boots.
- If a hard drive has a defect list, copy down the information and save it.

Installing a Drive in the Front Drive Bay

To install the drive:

1. Turn the computer off, unplug the power cord, and disconnect all peripheral devices. Remove the system cover and the front panel (see “Replacing the System Cover” on page 21 and “Removing the Bottom Panel” on page 21).

2. If you are installing a drive that requires an add-in controller, install the controller board (see "Installing Add-in Boards" on page 21).

3. Remove a face plate from the front panel and the corresponding face plate from the chassis (Figure 14):

    a. From the front of the front panel, press on the sides of the face plate until it comes out of the panel.

    b. Select the face plate on the chassis that corresponds to the face plate you removed from the front panel. Insert a screwdriver into the slot in the center of the face plate, and twist it until the face plate pops off the chassis.

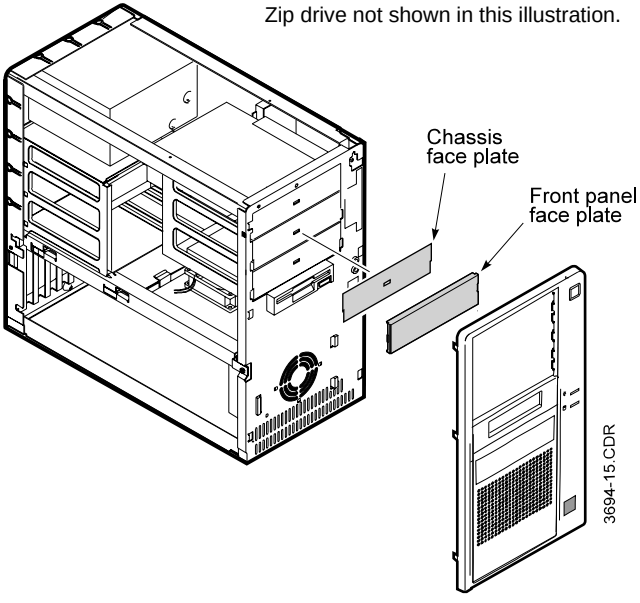

Figure 14. Accessing the Front Drive Bay

4. Attach one guide rail to each side of the drive:

    a. A metal grounding clip should be attached to each guide rail on the side that faces the drive. If the grounding clip has not been attached, slide the grounding clip over the round mounting hole. The

clip fits into indentations at the top and bottom of the rail and snaps into place (Figure 15).

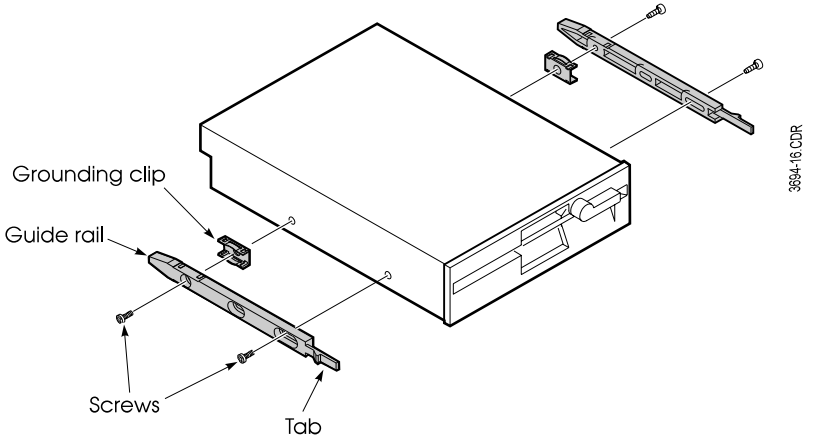

Figure 15. Installing Guide Rails

b. Position each guide rail so that the end with the tab faces the front of the drive, and the grounding clip is next to the drive. Align the mounting holes on the drive with the holes on the guide rail.

c. Attach the guide rails to each side of the drive by installing four mounting screws (Figure 15).

5. Slide the drive into the bay, until the tabs on the guide rails snap into the slots on the drive bay (Figure 16). To remove a drive, press the tabs on the guide rails until the drive slides freely.

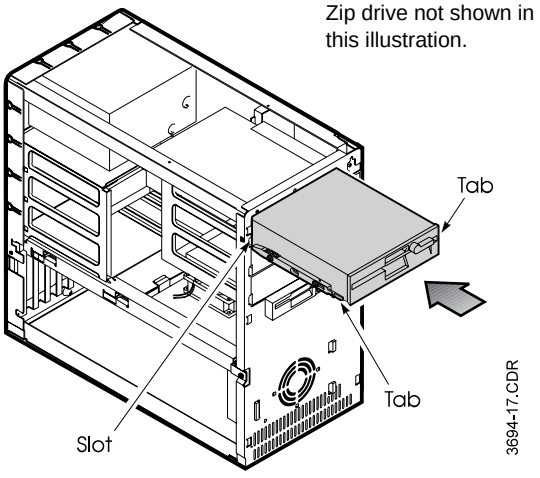

Figure 16. Inserting a Drive Into A Drive Bay

6. Attach a cable (Figure 17) from the power supply to the drive, then attach a controller cable:

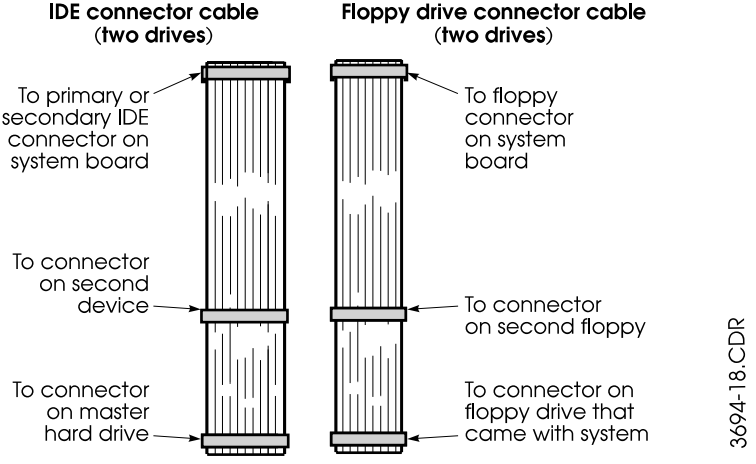

Figure 17. Drive Cables

- To use the built-in floppy controller, connect the controller cable that extends from the floppy drive controller connector on the system board (see the illustration in the back of this manual).

- If you are installing a second hard disk or other device with an IDE interface, connect it to an IDE interface connector on the system board. If only a single hard drive is connected to the primary IDE controller (your shipping configuration), you can connect a new hard drive there. To locate the IDE connectors, see the illustration in the back of this manual.
- To use an add-in controller board, connect the drive to the controller cable extending from the controller board. See the documentation for the add-in controller board for more information.

7. Each controller cable has an indicator (typically a colored stripe) along one side, and the edge connector on the cable has a small triangle on the same side as the stripe. The connector on the drive has a notch on one side. As you connect the cable to the drive, the stripe, triangle, and notch belong on the same side. If the cable connector does not fit easily on the drive connector, check that you have positioned the stripe correctly. Do *not* force the cable connector. For the locations of the system board connectors, see the illustration in the back of this manual.

8. Replace the front panel: Insert the tabs along the right edge of the front panel into their openings on the system. Swing the front panel shut, using its right edge as an axis, until the tabs along the left edge of the front panel snap into place.

9. Replace the system cover. Reconnect peripheral devices and plug in the power cord. Turn on the system.

10. If you have installed a floppy drive or hard drive, run System Setup and indicate the drive. You do not need to run System Setup if you have installed a drive that uses an add-in controller.

11. After installing a new hard drive, refer to the documentation that came with your drive to determine whether you need to partition and format it. Refer to your Windows 95 documentation for details on partitioning and formatting the hard drive.

Do not perform a low-level format on an AST IDE drive; you might damage the format data. IDE drives sold by AST have been low-level formatted at the factory.

You do not need to perform FDISK or FORMAT on the hard drive that came with your computer. If you ever need to repartition or reformat this hard drive, back up its data first. Partitioning and formatting a hard drive deletes all of the data on it

Installing a Drive in the Rear Drive Bay

Before installing a drive in the rear drive bay, you must first remove the rear drive bay panel.

Removing the Rear Drive Bay Panel

To remove the rear drive bay panel from the back panel of the system:

1. Remove the two screws on the left edge of the rear drive bay panel (Figure 18).

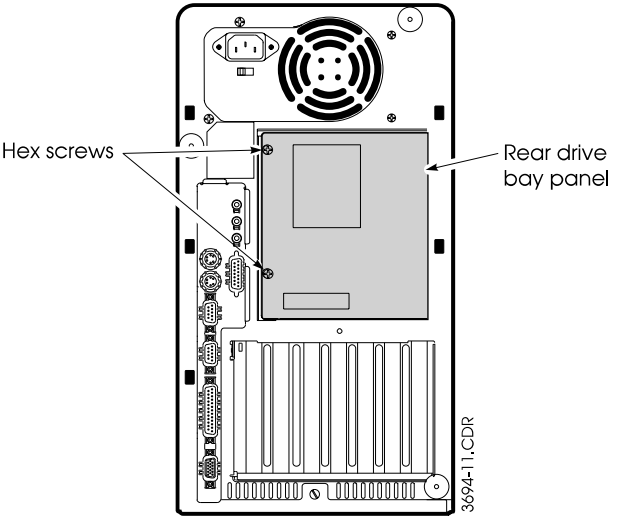

Figure 18. Removing the Rear Drive Bay Panel

2. Lift the panel off the chassis.

After adding optional components and making adjustments to the system, replace the cover and access panels by reversing the removal procedures.

Installing the Drive

1. Turn the computer off, unplug the power cord, and disconnect all peripheral devices. Remove the system cover and rear drive bay panel (see "Removing the System Cover" on page 19).
2. Attach a guide rail to each side of the drive. Attach each rail to the bottom set of holes on the drive. Align each rail so its tapered end is close to the back of the drive.
3. Slide the drive into the bay until it snaps into place. (To remove a drive, press the tabs on the guide rails until the drive slides freely.)
4. Attach a power-supply cable to the drive, then attach the primary IDE controller cable to the drive. Refer to the appropriate step in "Installing a Drive in the Front Drive Bay" on page 27 for details.
5. Close the rear panel, and reinstall the screws you removed in step 1. Replace the system cover. Reconnect peripheral devices and plug in the power cord. Turn on the system.
6. If you have installed a hard drive, run System Setup and use the hard-disk type field under the appropriate menu – *Primary Hard Drives* or *Secondary Hard Drives* – to configure the drive. You do not need to run System Setup if you have installed a drive that uses an add-in controller.
7. After installing a new hard drive, refer to the documentation that came with your drive to determine whether you need to partition and format it. If you are using DOS, perform FDISK and FORMAT (refer to your DOS documentation for details).

When using FDISK and FORMAT, make sure you are addressing the new drive, and not an existing drive that contains data. FDISK and FORMAT will delete all data on a hard drive.

If you are using a different operating system, see its documentation for partitioning and formatting the hard drive. Do not perform a low-level format on an AST IDE drive; you might damage the format data. IDE drives sold by AST have been low-level formatted at the factory.

You do not need to perform FDISK or FORMAT on the hard drive that came with your computer. If you ever need to repartition or reformat this hard drive, back up its data first. Partitioning and formatting a hard drive deletes all of the data on it.

Adding System Memory

By installing SIMMs on the system board, you can increase the amount of system memory to a maximum 128 MB. This generally improves computer performance, especially for graphics- and computation-intensive programs.

Purchase SIMMs from your AST reseller. Use only the SIMMs that AST has specified for your computer. Otherwise, your computer may malfunction. Make sure the SIMMs meet the following specifications:

- 72 tin-plated pins
- 32 bits
- Single- or double-sided
- +5V
- 70 ns fast page mode or 60 ns EDO DRAM.

Memory Configurations

The system board has two banks of SIMMs, Bank 0 and Bank 1. You can use SIMMs of the following sizes:

- 4 MB (1M x 32)
- 8 MB (2M x 32)
- 16 MB (4M x 32)
- 32 MB (8M x 32).

Minimum memory configuration is 8 MB, and maximum is 128 MB. You can mix different sizes of SIMMs to achieve a wide variety of memory configurations, as long as you adhere to the following rules:

- You must use the same size and type of SIMM in both slots of bank 0 or bank 1. The following examples show a correct and an incorrect configuration:

  Correct:

Bank 0		Bank 1	
4 MB	4 MB	2 MB	2 MB
2 MB	2 MB	4 MB	4 MB

  Incorrect:

Bank 0		Bank 1	
4 MB	2 MB	4 MB	2 MB

- Banks cannot be partially populated (i.e., a SIMM in one slot, and none in the other). For example:

  Correct:

Bank 0		Bank 1	
4 MB	4 MB	Empty	Empty

  Incorrect:

Bank 0		Bank 1	
4 MB	Empty	4 MB	Empty

Adding and Removing SIMMs

To add a SIMM, or to replace an existing SIMM, complete these steps:

1. Turn the computer off, unplug the power cord, disconnect all peripheral devices, and remove the system cover.

2. To access the SIMM slots, you must first remove the rear drive bay:

    a. Remove the rear drive bay panel (see “Removing the Rear Drive Bay Panel” on page 32).

    b. Remove any drives that may be mounted in the rear drive bay panel by pressing in on the tabs on the drive rails and pulling the drives out of the drive bay.

    c. Slide the drive cage out of the tabs that secure it to the chassis, and remove from the chassis.

3. Locate the SIMM slots on the system board. Refer to the illustration in the back of this manual.

4. If necessary, remove any add-in boards that block easy access to the SIMM slots.

5. If you need to remove a SIMM, carefully pull the retaining clips from the edges of the SIMM (Figure 19). At the same time, push the SIMM slightly forward from the back. Remove the SIMM carefully to avoid damage.

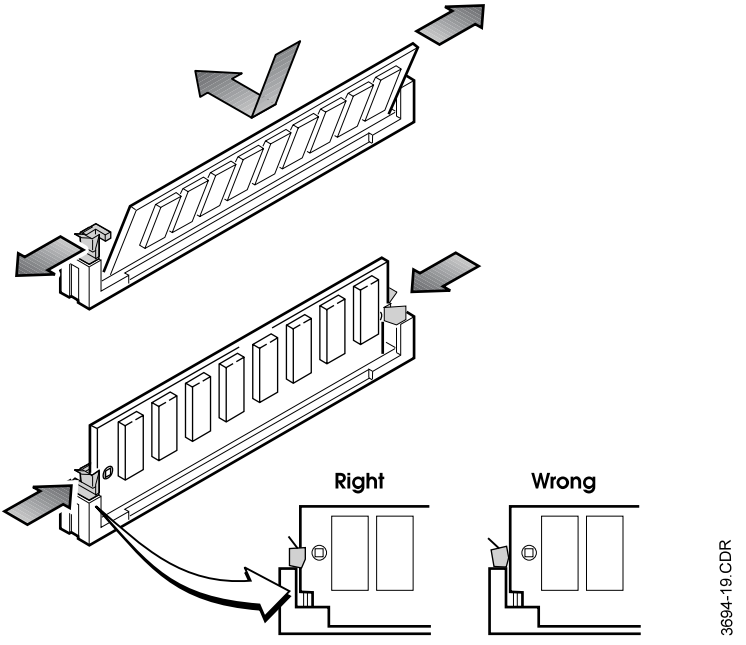

Figure 19. Installing a SIMM

6. To install a SIMM, slide it into the first empty bank and push it back until the retaining clips snap into place (Figure 19). Make sure the SIMM is securely in its bank.
7. If you removed any add-in boards to reach the SIMM banks, replace the add-in boards.
8. Replace the system cover. Reconnect peripheral devices and plug in the power cord. Turn on the system.

Upgrading the Microprocessor

The system board has a ZIF microprocessor socket for installing an upgrade Intel microprocessor for enhanced system performance.

To install an upgrade Intel microprocessor in the socket, do the following:

1. Turn the computer off, unplug the power cord, and disconnect all peripheral devices.
2. Remove the system cover (see “Removing the System Cover” on page 19).
3. Carefully lay the system over on its right side.
4. Remove any add-in boards (see “Installing Add-in Boards” on page 21) that may block access to the microprocessor socket.
5. Locate the microprocessor ZIF socket (see the illustration in the back of this manual).

When you install the microprocessor, do not touch the edges of the empty bracket for the 3.5-inch floppy drive. The edges are sharp.

6. Insert the microprocessor into the socket (Figure 20):
   a. Locate the lever on the side of the socket. Pull the lever slightly away from the socket, then upward until it is perpendicular to the system board.

      Remove the existing microprocessor and store it in an antistatic bag.

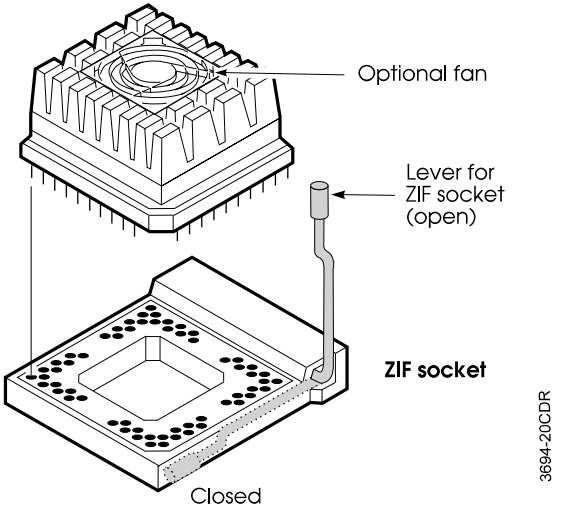

Figure 20. Installing the CPU

b. Align the beveled edge of the upgrade microprocessor with the beveled edge on the microprocessor socket.

c. Insert the microprocessor in the socket. Be careful not to bend any pins.

d. Push the lever down to secure the microprocessor. Be sure to fasten the lever under the retaining clip on the side of the socket.

7. Set the system upright and replace its cover. Reconnect peripheral devices and plug in the power cord. Turn on the system.

Adding Video Memory

Your computer has video memory sockets that enable you to upgrade the system from 1 MB to 2 MB of video memory. To add video memory, obtain a video upgrade kit from your AST reseller.

To install the video memory devices, do the following:

1. Turn the computer off, unplug the power cord, and disconnect all peripheral devices. Remove the system cover (see "Removing the System Cover" on page 19).

2. Gently tilt the system onto its right side (as you face the front of the system).

3. If add-in boards are installed in the system, you will need to remove them to access the video memory sockets. See "Installing Add-in Boards" on page 21 for information on removing add-in boards.

4. Locate the two empty video memory sockets (see the illustration in the back of this manual) on the system board.

5. Install the video memory chips by aligning each device with its socket (Figure 21).

Each device has a small round depression, or a notch in the end that corresponds to the beveled corner of the socket. Make sure the chips are correctly oriented to their sockets before inserting them, or damage to the chips, the computer, or both may result.

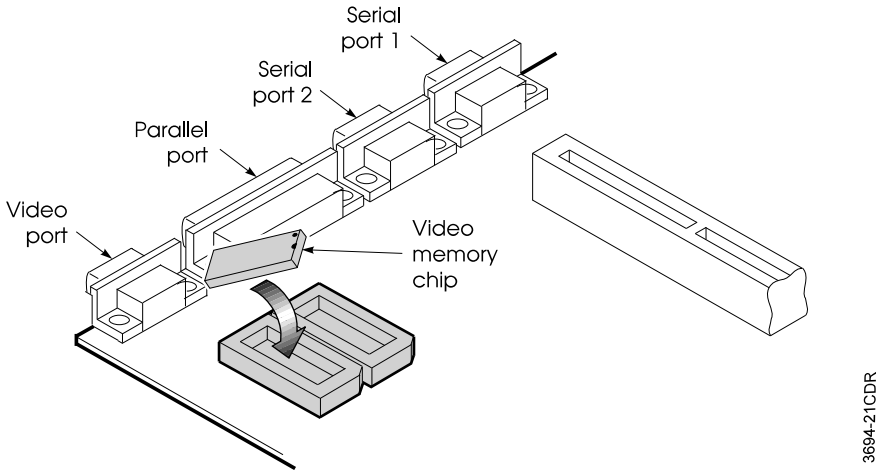

Figure 21. Adding Video Memory

6. Press each device until it is completely inserted in the socket.
7. If you removed add-in boards, replace them.
8. Set the system upright and replace the system cover (see "Replacing the System Cover" on page 21). Reconnect peripheral devices and plug in the power cord. Turn on the system.

The system automsteatically detects and uses the additional video memory.

Configuring Your Computer

This section shows how to change the system configuration by setting system board switches, running System Setup, setting passwords, and updating the BIOS.

Setting Jumpers

The system board contains jumpers that you can use to change the system configuration. You may need to change these jumper settings to prevent conflicts with an add-in board you just installed or to enable or disable passwords. See the illustration in the back of this manual for the location of the jumpers.

Altering jumper settings while the computer is on can permanently damage the computer and its components.

To avoid accidental discharge of static electricity as you handle components or jumpers, you can use a grounding wrist strap. Static electricity can damage computer components.

You can use one of the following methods to change a jumper setting:

- To remove a jumper block, pull it off the pins. (A jumper block is a plastic piece that fits over two jumper pins. When you remove a jumper block, save it for future use.)
- To install a jumper block, slide it onto a pair of pins.
- To move a jumper block from one position to another (such as moving from pins 1 and 2 to pins 2 and 3), pull it off the current pair of pins and then slide it onto the other pair of pins.

Jumper Settings

Table 1 shows the setting options for the system board jumpers (see the illustration at the back of this manual).

Table 1. System Board Jumper Settings

Description	Jumper	Setting Options
CPU Configuration	J1F1-C, D	See “Setting Microprocessor Jumpers”
CMOS Clear	J1F1-A	Pins 4&5: Normal* Pins 5&6: Clear
Password Clear	J1F1-A	Pins 1&2: Password enabled* Pins 2&3: Password clear/disabled
CMOS Setup Access	J1F1-B	Pins 1&2: Enable System Setup* Pins 2&3: Disable System Setup
Processor Voltage**	J1F1-B	Pins 4&5: Standard Voltage (3.3V) Pins 5&6: VRE (3.6 V)

* Default setting.
** Consult the documentation that came with your CPU for voltage requirements

Setting Microprocessor Jumpers

The configuration of the microprocessor-related jumpers varies with the system’s microprocessor speed. Table 2 shows the default settings for the system board jumpers.

Table 2. Microprocessor Speed Jumpers

CPU Freq.	J1F1-C Settings	J1F1-D Settings
200	1&2, 5&6	1&2, 5&6
180	2&3, 4&5	1&2, 5&6
166	1&2, 5&6	2&3, 5&6
150	2&3, 4&5	2&3, 5&6
133	1&2, 5&6	2&3, 4&5
120	2&3, 4&5	2&3, 4&5

System Setup

System Setup is a program that configures your computer and saves the configuration in battery-maintained memory.

Ordinarily, you do not need to use this program. However, you may wish to run System Setup to set the date or time, to establish a password, or to alter the settings for other features. You may need to run the program to configure a newly installed piece of hardware.

The computer includes security features, such as password creation, port locking, and screen blanking. These are configured in System Setup.

Starting System Setup

Turn the computer on. The computer will display the following message as it starts:

```
To run System Setup, press <F1> now.
```

To start System Setup, press <F1> while the message is on screen. If you do nothing, the computer bypasses System Setup and continues its start-up routine.

You can deny users access to the System Setup program by setting jumper block J1F1-B on the system board. See "Setting the Password Jumper" on page 54 for more information.

For the location of the jumper, see the illustration in the back of this manual.

Using System Setup

When you start System Setup, the Main Menu appears. From the Main Menu you can:

- Set the date and time.
- View your current hardware configuration
- Access a secondary menu, such as *Floppy* or *Boot*.

- Initiate a BIOS update.
- Exit System Setup.

The System Setup screen is divided into two parts.

The left part of the screen displays the menus and fields you use to run the program. Generally, you select one of the secondary menus listed under the words *Advanced Options* on the Main Menu. The secondary menu contains a list of fields. Move the cursor to a field and select a value for it. (The *Date* and *Time* fields, however, are available directly from the Main Menu.)

The right part of the screen tells you how to use the secondary menus and fields you select. This information changes automatically as you make new selections.

Use the following keys in the System Setup program:

- <Down arrow> or <Tab> moves the cursor forward to a secondary menu or the next field.
- <Up arrow> or <Shift+Tab> moves the cursor backward to a secondary menu or the previous field.
- <Enter> selects a secondary menu – causes it to display a list of fields.
- <Left arrow> and <Right arrow> move the cursor between options in a field.

System Setup Fields

The following descriptions of the System Setup fields are organized by the secondary menus under which the fields appear.

Some fields are for reference only (you cannot enter new values in them). Some fields may not appear at all, depending upon your computer model.

Main Menu

System Date: Use two-digit numbers to indicate month, day, and year.

System Time: Use two-digit numbers to indicate hour, minute, and second. Use a 24-hour clock.

Floppy Options

Press <Enter> to view or change the configuration of the floppy drives.

Floppy A: Indicates whether floppy A is installed. This field is for reference only.

Floppy B: Indicates whether floppy B is installed. This field is for reference only.

Floppy A Type: This field specifies the type of the first floppy drive, if installed. To select the floppy A type, highlight the field and press <Enter>. Scroll up or down through the selections in the dialog box using the direction arrows. Press <Enter> to make your selection. The options are *None*, *360 KB* (5.25-inch), *1.2 MB* (5.25-inch), *720 KB* (3.5-inch), *1.44/1.25 MB* (3.5-inch), or *Disabled*.

Floppy B Type: This field specifies the type of the second floppy drive, if installed. To select the floppy B type, highlight the field and press <Enter>. Scroll up or down through the selections in the dialog box using the direction arrows. Press <Enter> to make your selection. The options are the same as those for Floppy A.

Floppy Access: Allows you to set the floppy drives to either read / write or read only. The default is read / write.

Primary IDE Master, Primary IDE Slave, Secondary IDE Master, and Secondary IDE Slave:

These fields report if an IDE device is connected to the system. When selected, each of these fields brings up an identical secondary menu for configuring the IDE device, as described below.

As described on the last page in your Zip drive *User's Guide*, the Zip drive's IDE Device configuration must be set to *Disabled* (which will allow Windows 95 to perform the configuration) or your system may hang. Your Zip drive will be detected and configured when you start Windows 95. If you enter System Setup and use the option to return to default values, be sure to reset or check that the field for the Zip drive is set to *Disabled*.

See the Zip drive *User's Guide* for information on using the drive in Windows 95 DOS mode.

IDE Device Configuration: In this field, you specify whether the system will automatically configure your IDE device, or whether you intend to manually enter the information. The options are *Auto Configured*, *User Definable*, or *Disabled*.

If you choose the *Auto Configured* option, the Number of Cylinders, Number of Heads, Number of Sectors, and Maximum Capacity fields are automatically calculated by the BIOS; no input is necessary or possible. These fields will be for reference only.

If you choose the U*ser Definable* option, you will need to know how many cylinders, heads, and sectors to specify for your IDE device. Refer to the documentation that came with your IDE device for this information.

Set this field to *Disabled* for any unused IDE connectors.

Notes on Drive Configurations:

If you are configuring your system to use only SCSI or other non-IDE drive(s) connected to an add-in board, they will be installed by the BIOS on the add-in board. Do not attempt to install these drives through this Setup program. Select *Disabled* if you have no IDE drives installed.

Do not set up a second hard-disk type unless you also have set up a first hard-disk type.

If a CD-ROM drive is attached to the secondary IDE connector, its drive type is *Auto.*

Attach an IDE hard drive to the IDE 2 connector *only* if two IDE devices already use the IDE 1 connector. Do not

set up a second hard-disk type unless you also have set up a first hard-disk type.

Do not change the settings for the hard drive that came with your computer.

Boot Options

Press <Enter> to view the boot options:

First Boot Device: Tells the system which device to first check to find an operating system to boot from. The options are *Disabled*, *Floppy*, *Hard Disk*, *CD-ROM*, and *Network*.

Second Boot Device: Tells the system which device to boot from if the first boot device fails. The options are: *Disabled*, *Floppy*, *Hard Disk*, and *Network*.

Third Boot Device: Tells the system which device to boot from if the first two devices fail. The options are: *Disabled*, *Floppy*, *Hard Disk*, and *Network*.

Fourth Boot Device: Tells the system which device to boot from if all three of the other devices fail. The options are: *Disabled*, *Floppy*, *Hard Disk*, and *Network*.

Num Lock: Select this field to make the Num Lock feature either active or inactive when the system starts. Choose *On* to activate the feature or *Off* to deactivate it. (Default is *Off*.)

Video Mode: Displays the video type. This field is for reference only.

Mouse: Reports whether the mouse is active when the computer starts. This field is for reference only.

Base Memory: Reports the amount of base (DOS) memory available. This field is for reference only.

Extended Memory: Reports the amount of extended memory available. This field is for reference only.

BIOS Version: Displays the version number of the installed BIOS. This field is for reference only.

Advanced Menu

Processor Type: Displays the name / type of processor installed. This field is for reference only.

Processor Speed: Displays the speed of processor installed. This field is for reference only.

Cache Size: This field is visible only if a secondary cache memory module is installed. This field is for reference only.

Peripheral Configuration

Press <Enter> for the secondary menu.

Primary IDE Interface: Use this option to enable or disable the onboard primary IDE controller. You would want to disable this controller if you were installing a board with an IDE or SCSI controller on it.

Secondary IDE Interface: Use this option to enable or disable the onboard secondary IDE controller. You would want to disable this controller if you were installing a board with an IDE or SCSI controller on it.

Floppy Interface: Use this option to enable or disable the onboard floppy device. You would want to disable this controller if you were installing a board with a floppy controller on it.

Serial Port 1 Address: Use this option to assign a serial port address to port 1. The following options are available:

Disabled
COM1, 3F8, IRQ4 (Default)
COM2, 2F8, IRQ3
COM4, 2E8, IRQ 3
COM1, 3F8, IRQ3
COM2, 2F8, IRQ4
COM4, 2E8, IRQ4
Auto

Serial Port 2 Address: Use this option to assign a serial port address to port 2. The following options are available:

Disabled
COM2, 2F8, IRQ4
COM3, 3E8, IRQ3
COM4, 2E8, IRQ 4
COM2, 2F8, IRQ3
COM3, 3E8, IRQ4
COM4, 2E8, IRQ3
Auto

Serial Port 2 IR Mode: Enables / disables the onboard IR controller, if your system came configured with the IrDA (Infrared Data Association) feature. If your computer did not come with the IrDA feature, this field should always be set to *Disabled.*

Your computer can support either serial port 2 or the onboard IrDA controller, but not both at the same time. If Serial Port 2 IR Mode is enabled, serial port 2 will be automatically disabled. However, the BIOS field will not be updated to reflect this.

If you are attaching an infrared device, such as a remote control, to the serial port, DO NOT enable Serial Port 2 IR Mode: this field is for the onboard IrDA controller ONLY. If you enable Serial Port 2 IR Mode, you will actually be disabling the serial port you are trying to attach to.

Parallel Port Address: Use this option to assign a parallel port address. The following options are available:

Dis*abled*
LPT3, 3BC, IRQ7
LPT1, 378, IRQ7
LPT2, 278, IRQ7 (Default)
LPT3, 3BC, IRQ5
LPT1, 378, IRQ5
LPT2, 278, IRQ5
Auto

Parallel Port Mode: Select *Compatible* for standard AT-mode, *Bi-Directional* for extended mode, *ECP* for Extended Capability Port, or *EPP* for Enhanced Parallel Port.

Audio Configuration

Press <Enter> to enter the secondary menu. The following fields are available:

Configuration Mode: Tells the system whether you want it to automatically configure your audio system (*Auto* option), whether you intend to configure it yourself (*Manual* option), or whether you want to disable the audio system (*Disabled* option). If you choose *Auto*, the other fields on this screen (except for Game Port) become shaded out, and are for reference only.

SB Base Port Address: Can be set to *220h, 240h,* or *Disabled*.

WSS Base Port Address: Can be set to *530h, E80h, F40h, 604h,* or *Disabled*.

MPU401 Base Port Address: Can be set to *330h, 332h, 334h, 300h,* or *Disabled*.

WSS Interrupt: Can be set to *IRQ 7, 9, 10 or 11*, or *Disabled*.

SB Play/MPU401 Interrupt: Can be set to *IRQ 5, 7, 9, 10,* or *Disabled*.

WSS Play DMA: Can be set to *Channel 0* or *Disabled*. If SB Play / WSS Capture DMA is disabled, WSS Play DMA can be set to channel 0, 1, or 3.

SB Play/WSS Capture DMA: Can be set to *Channel 1* or *Disabled*.

Game Port: Can be set to *Auto, Enabled,* or *Disabled*.

Game Port Status: Shows the current port address. This field is for reference only.

FM Synthesizer Port Status: Shows the current port address. This field is for reference only.

Advanced Chipset Configuration

This screen shows the status of the memory banks. It detects whether the banks are populated, and what mode (EDO or FPM) the installed SIMMs are.

Power Management Configuration

Press <Enter> to enter the secondary menu.

IDE Drive Power Down: Use this option to enable IDE power down during periods of no activity.

AST hard drives recognize when power-conservation is enabled. Other drives, particularly ones that require an add-in controller board, may not.

VESA Video Power Down: Use this field to enable VESA power down during periods of no activity. The proper setting is dependent upon the VESA mode(s) supprted by your monitor. Consult your monitor doccumentation for more details. Options are: *Disabled*, *Standby*, *Suspend*, and *Sleep*.

Inactivity Timer (Minutes): Use this option to specify the number of minutes of inactivity before power management is activated. The acceptable range is 1-255. To deactivate this feature, set the value to *0*.

Plug and Play Configuration

Boot With PnP OS: Enables the PC to boot with an operating system capable of managing Plug and Play add-in cards. The options are *None*, *Other*, and *Windows 95*.

Security Menu

User Password is: Reports whether a User password is enabled. This field is for reference only.

Set User Password: Use this option to specify, change, or delete the password. For more information on passwords, see "Using Passwords" on page 52.

Exiting System Setup

To exit System Setup, go to the Exit menu. Choose from one of the options below:

Exit Saving Changes: Saves the new values you have entered in System Setup and exits the setup program.

Exit Discarding Changes: Cancels any new values entered and exits the setup program.

Load Setup Defaults: Resets all of the setup options to their defaults.

Discard Changes: Restores the values in System Setup to their previously saved state. This undoes any changes you may have made to System Setup.

Using Passwords

A password prevents an unauthorized person from using the computer.

Creating or Changing a Password

To create a user password, use System Setup:

1. From the Main Menu, select *Security*.
2. Move the cursor to the *Set User Password* field.
3. Select *Enable*. Then press <Enter>**.**
4. The cursor moves to the *Enter the Password* field. Type the password you want to use. No characters appear on screen as you type, so that other people cannot see the password.
5. As you type, follow these rules:
   - Create a password of one to seven characters. If you type more than seven keystrokes and press <Enter>, the computer beeps, and you must reenter the password. Use any combination of letters and numbers.

- The system distinguishes between numeric keys above the letter keys and those in the numeric keypad at the right of the keyboard. For instance, if you enter a keypad *8* when enabling the password, you may not enter the *8* above the letter keys to use the password.
- The system does not distinguish between uppercase and lowercase letters in a password. For instance, *D* is the same as *d*.
- If you press an invalid key, the computer beeps, and you must reenter the password.
- If you make a mistake, use <Backspace> to erase the characters up to the mistake, then retype the correct characters.
- You cannot leave the *Enter the Password* field without establishing a password. If you begin to create a password and decide you do not want to use it, finish creating it and then cancel it. See the next section, "Canceling a Password."

6. When you finish typing, press <Enter>. The cursor moves to the *Verify* field. Reenter the password and press <Enter>.

If the passwords match exactly, the password is enabled. If not, the computer beeps. Press <Enter> again and repeat the process.

To change a password, cancel the existing password and then create a new one. See the next section, "Canceling a Password."

Canceling a Password

To cancel a password, use System Setup or turn off the password jumper on the system board. To use System Setup:

1. From the Main Menu, select *Security*.
2. Move the cursor to the *Set User Password* field.
3. Use the left or right arrow key to select *None*. Then press <Enter>. The password is canceled.

Setting the Password Jumper

The password jumper allows you to disable the passwords entered in System Setup.To set the password jumper:

1. Turn off the computer and open the system cover (see“Removing the System Cover”).

Altering jumper settings while the computer is on can permanently damage the computer and its components.

To avoid accidental discharge of static electricity as you handle components or jumpers, use a grounding wrist strap. Static electricity can damage computer components.

2. Locate jumper block J1F1-A (see “Jumper Settings” on page 41 for an illustration of this jumper).
3. Move the jumper from pins 1 and 2 to pins 2 and 3.
4. Turn the computer on again.
5. After the BIOS messages appear, turn the system off.
6. Move the jumper back from pins 2 and 3 to pins 1 and 2. Close the system cover and restart the computer. Once you have cleared the password, you can create a new one. Refer to the section “Set User Password” for directions on how to create a user password.

Updating the System BIOS

Your computer uses flash BIOS, which enables you to update the BIOS easily from a floppy disk. If AST releases a BIOS update for your computer, contact your AST reseller to obtain a copy of the BIOS update disk. Or, if you have a modem, copy the necessary files from the AST On-Line BBS or Website onto a high-density floppy disk. See the customer-service reference that accompanied your computer for connecting online to AST.

It is rare, though possible, for the flash BIOS contents to become corrupted, causing certain configuration parameters to be lost. If this occurs, the following message appears on your screen:

```
"Personality Identification Data has been
lost.  Contact AST Technical Support."
```

If this occurs, your system will still operate, but less efficiently. Contact your local AST Technical Support.

Performing the BIOS Update

To perform the BIOS update:

1. Turn off the computer.
2. Place the BIOS Update disk in drive A. If you have downloaded the BIOS file from a BBS, you need to make sure that you have copied the file to a bootable, system disk.
3. Turn the computer back on. A title screen should appear, with the words "FLASH Memory Update Utility."
4. Follow the prompts on the screen to install the new BIOS. If the update is completed successfully, the program will inform you of this fact. Proceed to step 4. If the program indicates that the BIOS did not install successfully, refer to the next section, "Troubleshooting the BIOS Update" on page 55 for more information.
5. Remove the BIOS Update disk from drive A and press <Enter>. The program will end, and the computer will begin its normal boot-up sequence. When prompted, press <Ctrl+Alt+Esc> to access System Setup. Verify your configuration by reading the BIOS version field of the Main menu.
6. Once you have verified your configuration, reboot your system to use the new BIOS.

Troubleshooting the BIOS Update

If the FLASH BIOS Update Utility indicates that the BIOS upgrade was unsuccessful, make sure that:

- You have the correct BIOS update disk for your machine.
- The system battery does not need to be replaced. If you have received low-battery warnings, replace the system

battery (see “Replacing the Computer Battery” on page 58).

Retry the BIOS update. If the problem persists, contact your AST reseller.

Troubleshooting

If your computer does not start, check the following:

- Are all the cables properly connected to the computer? (See “Connecting a Monitor” on page 5 and subsequent sections.)
- If you have installed an add-in board, have you installed it correctly? (See “Installing Add-in Boards” on page 21.)
- Is the voltage setting on the back panel set to 115 V, or 230 V if your power outlet uses that voltage? (See “Connecting the Power Cord” on page 8.)

If the computer starts, but nothing appears on the screen, check the following:

- Is the monitor cable attached to the monitor port on the back of the computer? Is the monitor turned on? Are the brightness and contrast controls correctly adjusted? Check your monitor manual.
- Is your software correctly configured for your monitor and video adapter? Check the software user’s manual.
- If you installed an add-in video board, have you installed and configured it correctly?

If the computer comes on, but does not finish booting, check the following:

- Are the Num Lock, Caps Lock, and Scroll Lock lights flashing? If so, type the user password (see “Using Passwords” on page 52).
- Does the computer beep more than once when you turn it on? The computer might not be configured correctly. Run System Setup to fix the configuration (see “Configuring Your Computer” on page 41).
  If the computer still beeps more than once, your computer may have a malfunction. Contact your AST reseller for assistance.
- Does a configuration error message appear on the screen? If so, run System Setup to correct the problem (see “Configuring Your Computer” on page 41).

- Does the computer report a CMOS or battery failure error? Run System Setup to check your configuration. If the configuration settings are lost, the computer battery has run out and needs to be replaced (see "Replacing the Computer Battery" on page 58).

As you use the CD-ROM drive, you may encounter one of three errors:

- A Windows "Invalid Path" dialogue box presents the message, "The working directory is invalid." In this case, there is no CD in the drive. Press <Esc>, insert the correct CD, and double-click the icon again.
- A Windows "Application Execution Error" dialogue box appears on the screen. The wrong CD is in the drive. Press <Esc>, insert the correct CD, and double-click the icon again.
- No error message appears but the program does not run. Insert the correct CD and run the program again.

If the computer boots but your printer does not print, make sure the printer is properly connected and turned on. Most printers require that you install printer driver software from a floppy disk before the printer works correctly with the computer. (See the manual for the device for instructions.)

If the computer boots but does not run properly, is the computer unable to use the hard disk you installed? Make sure it is configured in System Setup (see "Configuring Your Computer" on page 41). Also, make sure you have partitioned and formatted the drive (See your Windows 95 documentation).

Replacing the Computer Battery

If the computer reports a CMOS or battery failure error, you may need to replace the battery. Run System Setup to check your configuration settings. If the settings are lost, replace the battery.

To replace the battery:

1. Turn off the computer, unplug the power cord, and disconnect any peripheral devices. Remove the cover (see "Removing the System Cover" on page 19).
2. Locate the battery socket (see the illustration in the back of this manual).
3. Remove any add-in boards that prevent you from reaching the battery.
4. Remove the old battery by holding it by its metal rim and pulling it out of the socket. (Pull on the battery, not the socket.)
5. Insert the new battery into the socket with the "+" side facing up. Press down on the battery until it snaps into place.

Replace the battery with AST part number 175000-015 (3.3-V) only. Use of other batteries may present a risk of fire or explosion.

Batteries may explode if mishandled. Do not recharge, disassemble, heat above 100 C, incinerate, or expose contents to water.

Batteries contain hazardous material and should be recycled. In some cases, it is illegal to dispose of these batteries as solid waste. Make sure you follow all state and local regulations. If you want, send used batteries to the following address:

AST Computer
1001 N.E. Loop 820 Dock 5
Fort Worth, TX 76131
Attn. Safety Department

6. Replace any add-in boards you removed. Replace the system cover. Reconnect peripheral devices and plug in the power cord. Turn on the system.
7. Run System Setup to configure the system (see "Configuring Your Computer" on page 41).

Abbreviations

The following abbreviations are used in this manual:

APM. . . . . Advanced power management
BIOS . . . . . Basic input/output system
BBS . . . . . Bulletin board system
CD-ROM . . Compact disc, read-only memory
CGA. . . . . Color graphics adapter
CMOS . . . . . Complementary metal-oxide semiconductor
DMA . . . . . Direct memory access
DPMS . . . . . Display power-management signaling
DOS. . . . . Disk operating system
DRAM. . . . . Dynamic random-access memory
ECP . . . . . Extended Capabilities Port
EGA. . . . . Enhanced graphics adapter
EPP. . . . . Enhanced Parallel Port
EPROM . . . Erasable programmable read-only memory
Hz. . . . . Hertz
I/O . . . . . Input/output
IDE. . . . . Integrated drive electronics
IrDA. . . . . Infrared Data Association
IRQ . . . . . Interrupt request
ISA. . . . . Industry standard architecture
KB . . . . . Kilobyte
MB. . . . . Megabyte
MDA . . . . . Monochrome display adapter
MHz. . . . . Megahertz
PCI. . . . . Peripheral Connect Interconnect
PnP. . . . . Plug and Play
POST. . . . . Power-on self test
PS/2 . . . . . Personal System/2®
RAM . . . . . Random-access memory
SIMM . . . . . Single in-line memory module

VGA. . . . . Video graphics array
ZIF . . . . . Zero-insertion force

Glossary

AUTOEXEC.BAT file

A DOS file on your boot disk that contains commands carried out automatically whenever you start the computer.

Base I/O address

The memory location that the computer uses to communicate with a device attached to it. Unless otherwise specified, each device installed in or attached to the computer uses its own unique I/O address.

BIOS (basic input/output system)

Software (independent of any operating system) built into the computer that communicates with the screen, keyboard, and other peripheral devices.

Boot

The computer's starting process. You can start the computer with either of the following methods:

- Cold boot: If you turn the computer on or press the reset button, the computer clears out RAM, resets, runs through all computer self-tests, and loads the AUTOEXEC.BAT and CONFIG.SYS files.
- Warm boot: If you press <Ctrl+Alt+Del> while the computer is on, the computer clears out RAM only.

Boot disk

A disk containing programs required to start your computer. A boot disk can be a floppy disk or hard disk.

Built-in VGA (video graphics array)

The video display adapter that is built into the system board. This adapter is compatible with software that runs in VGA, a high-resolution video standard. You do not need to install a separate video display adapter if you are using a VGA-compatible monitor.

Bus

A communication channel carrying signals from any device used by the system to another device. For example, data being transferred to and from a hard disk travels on a bus.

Byte

The basic unit of measure for computer memory. A character, such as a letter of the alphabet, uses one byte of memory. Computer memory is often measured in kilobytes or megabytes. Each byte is made up of eight bits.

Check box

An element of a dialog box. A check box is either filled or left blank, indicating a yes-or-no decision.

Click

To press the left mouse button and then release it.

CD-ROM (compact disc read-only memory)

A disk, which is similar in appearance to an audio compact disc, that can store large amounts of data, video, and sound. Data can be read from, but not written to, a CD-ROM.

CMOS (complementary metal-oxide semiconductor) memory

The memory that stores the configuration you establish by running the computer's setup program. CMOS memory uses very little power and stores the configuration information even when the computer is turned off.

Command

A word or series of words you use to initiate an operating system action.

Command line

The commands and their parameters that you type at the (MS-DOS) command prompt of an operating system.

Command prompt

A character or string of characters that indicate the beginning of the operating system command line.

CONFIG.SYS file

A file on the boot disk that configures MS-DOS. The commands in a CONFIG.SYS file (if one exists on your boot

disk) are carried out before those in an AUTOEXEC.BAT file. Usually, the commands load device drivers, which are files that enable the computer to use specialized hardware and software.

Configuration file

A file that contains resource assignment options for a particular board. The configuration management software uses this information to configure the board.

Current directory

The directory in which you are currently working.

Cursor

A flashing character that indicates where the text that you type will appear on the screen.

Dialog box

A temporary window that asks you for information or a decision before it executes a command

Default

For hardware, the way a switch or jumper is set at the factory. For software, the value of a parameter unless you specify otherwise.

Device driver

A program that controls how software communicates with a physical device (e.g., a mouse, memory, or a printer).

Directory

A group of files on a disk. A directory can also contain other directories.

Disk

The device used by the computer to store and retrieve information. Disk can refer to a floppy disk or hard disk.

Display adapter

Computer circuitry that produces video images on the monitor. Your computer includes built-in VGA, a display adapter that is built into the system board. You can also install an add-in video board, a display adapter on a separate plug-in board.

DMA (direct memory access)

The process of transferring data directly between memory and peripheral devices without microprocessor intervention.

Double click

Press twice, in rapid succession, on a mouse button.

DPMS (data power-management signaling)

Describes monitors that can conserve power when the system is inactive by blanking the screen.

Drag

To press and hold down the left mouse button when the mouse pointer is positioned over an object, and then move the mouse to a new position and release the mouse button. The object moves along with the mouse pointer to the new position.

Drive

A hierarchical organization of directories, stored on a disk. A drive usually corresponds to the medium stored in a specific physical storage device, such as a floppy disk in a disk drive. *See* directory, directory tree, subdirectory.

Driver

See Device driver.

ECP (extended capabilities port)

A parallel port that supports bi-directional and DMA data transfer.

EPP (enhanced parallel port)

A parallel port that supports high-speed, bidirectional data transfer.

Extended memory

System memory above 1 MB that can be accessed directly by some operating systems.

FDISK

A DOS utility program that enables you to create partitions, which DOS can recognize as a drive, on a hard disk. FDISK

can turn an entire hard disk into a single partition or divide a hard disk into smaller partitions.

File

A collection of information that has been stored in an operating system file system.

Filename

The name of a file. A filename has two parts that are separated by a period. To the left of the period is the name of the file, which can contain one to eight characters, and to the right of the period is the extension. The filename usually describes the contents of the file. *See* extension.

Floppy disk

A removable disk, also called "floppy" or "diskette." Data written to a floppy disk remains until it is overwritten or erased.

Hard disk

A large-capacity data-storage device that is installed inside the computer. Data written to the hard disk remains until it is overwritten or erased.

IDE (integrated drive electronics) hard drive

A hard drive with a built-in controller. You can install an IDE drive without installing a separate controller board, thereby freeing an expansion slot for other uses.

I/O (input/output)

Describes the transfer of data to and from the computer – primarily between the computer and peripheral devices such as printers.

ISA (industry standard architecture) expansion slot

An expansion slot that is designed for 8- or 16-bit ISA add-in boards. The ISA expansion bus operates at 8 MHz.

KB (kilobyte)

1,024 bytes. For example, 8 KB is shorthand for 8,192 bytes.

Local bus

A bus that connects peripheral devices directly to the microprocessor. The bus usually runs at the external clock

rate of the microprocessor and can transfer at one time the maximum number of bits supported by the microprocessor and peripheral devices (for example, 32 bits).

MB (megabyte)

1,024 kilobytes or 1,048,576 bytes. For example, 16 MB is 16,384 KB or 16,777,216 bytes.

Menu bar

The horizontal stripe across the top of a window containing the names of an application program's menus.

MHz (megahertz)

A measure of frequency that equals a million cycles per second. The speed of the microprocessor is measured in MHz.

ns (nanosecond)

A measure of speed that equals a billionth of a second. The speed at which memory and other chips communicate with the system is measured in ns.

Parameter

Information that you need to provide before MS-DOS can execute a command.

Partition

A portion of a hard disk that DOS recognizes as an individual drive. For example, you can divide an 80-MB hard disk into two 40-MB partitions that DOS would identify as drives C and D.

PCI (peripheral component interconnect)

A 32-bit local bus that provides connections for 32-bit +5-V add-in boards and on-board video. The bus operates at the external clock speed of the microprocessor (up to 33 MHz). PCI devices are configured automatically by the system.

Plug and Play boards

Boards that comply with the Plug and Play specification. Such boards are configured automatically when the system starts.

POST (power-on self-test)

A test performed by the computer whenever you turn on the power or press the reset button. POST checks system integrity.

RAM (random-access memory)

A portion of the computer system's memory that is designed as a temporary storage area for data and programs. RAM includes conventional and extended memory. You can write to and read from RAM. Information stored in RAM is erased when the system is turned off. To preserve your data, you need to save it to a disk.

ROM (read-only memory)

Permanent computer memory dedicated to a particular function. For example, the instructions for starting the computer when you first turn on power are contained in ROM. You cannot write to ROM. (ROM is not the same as random-access memory).

Root directory

The main directory in a drive.

SIMM (single inline memory module)

A small circuit board with memory chips.

Window

A rectangular area on you screen in which you view an application program or a file.

Appendix A: Regulatory Information

FCC Class-B Warning

This computer generates and uses radio-frequency energy. If not installed and used properly, the computer may interfere with radio or television reception. The computer has been tested and certified to comply with the limits for a class-B digital device, as defined in part 15 of the FCC rules. Class-B limits are designed to provide reasonable protection against radio / television interference in a residence. To comply with FCC regulations, you must use shielded cables with this computer. Operation with unapproved equipment or unshielded cables is likely to result in interference with radio or television reception. Changes made to this computer without the approval of AST Research could void your authority to operate the computer. The computer may cause interference even though it meets class-B limits. (As a test, turn the computer off and on, and gauge the effect on an operating radio or television.) If there is interference, try to eliminate it by:

- Reorienting or relocating the receiving antenna of the radio or television.
- Increasing the distance between the computer and receiver.
- Connecting the computer to an outlet on a circuit different from that to which the receiver is connected.
- Consulting your authorized AST reseller or an experienced radio / television technician for help.

DOC Notice

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled “Digital Apparatus”, ICES-003 of the Department of Communications.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matérial brouilleur: “Appareils Numériques”, NMB-003 édictée par le ministre des Communications.

Warning

Replace the battery with an AST battery part number 175000-015, contact your authorized AST reseller for a replacement. Use of another battery may present a risk of fire or explosion. Do not disassemble, heat above 100 C or incinerate. Make sure that you follow all state and local requirements when you dispose of the old battery.

Avertissement

Ne remplacez la batterie que par un modèle AST 175000-015, commandez-en un autre à votre revendeur agréé AST. L’emploi de tout autre modèle présente des risques d’incendie ou d’explosion. Ne démontez pas la batterie, ne portez pas sa température au-dessus de 100 C et ne l’incinérez pas. Pour vous débarrasser d’une batterie usagée, veillez à respecter tous les règlements nationaux et locaux en vigueur.

Advarsel

Eksplosjonsfare ved fellektig skifte av batteri. Benytt samme batteritype eller en tilsvarande type anbefalt av apparatfabrikanten. Brukte batterierr kasseres i hanhold til fabrikantans instruksjoner.

CE Compliance

CE marked AST computers comply with the following standards:

Electromagnetic Compatibility – Application of Directives: 89/336/EEC, 92/31/EEC, 93/68/EEC

Emissions – **EN 55022** (1987) Performance criteria: **Class B**

Immunity – **EN 50082-1** (1992) subset:

IEC 801-2 (1991) – CD Level 2 (4 kV), AD Level 3 (8 kV) Performance criteria: **Level 2**

IEC 801-3 (1984) – Level 2 (3 V/m, 80% AM modulation w/ 1 kHz signal) Performance criteria: **Level 1**

IEC 801-4 (1988) – Level 2 (1 kV AC power input, 0.5 kV I/O lines) Performance criteria: **Level 2**

Product safety – Application of Directives: 73/23/EEC. 93/68/EEC

Safety of ITE – **EN 60950** (1992) and amendments 1 and 2

Manufacturer: AST Research Incorporated (AST Computer)

16215 Alton Parkway
Irvine, CA 92718 USA

Signed Declaration of Conformity documents for AST products are on file at the AST Ireland facility.

European Address: AST Ireland Limited

National Technology Park
Plassey
Limerick
Ireland

This product contains a Class 1 laser product with a Class 1 laser source employing a laser diode that emits invisible laser radiation at 5mW. The wavelength of the laser radiation is 760-800nm.

CLASS 1 LASER PRODUCT

CAUTION

The laser beam used by this CD-ROM drive unit can be harmful to the eyes. Do not attempt to open the unit. All service procedures should be performed by an authorized dealer or distributor.

WARNING

Never use any optical instruments in conjunction with this unit. To do so will greatly increase the hazard to your eyes.

ADVARSEL

USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. SE IKKE IND I STRÅLEN - HELLER IKKE MED OPTISKE INSTRUMENTER.

ADVARSEL

USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES OG SIKKERHEDSLÅS BRYTES. STIRR IKKE INN I STRÅLEN ELLER SE DIREKTE MED OPTISKE INSTRUMENTER.

LUOKAN 1 LASERLAITE

VAROITUS

LAITTEEN KÄYTTÄMINEN MUULLA KUIN TÄSSÄ KÄYTTöOHJEESSA MAINITULLA TAVALLA SAATTAA ALTISTAA KÄYTTÄJÄN TURVALLISUUSLUOKAN 1 YLITTÄVÄLLE NÄKYMÄTTöMÄLLE LASERSÄTEILYLLE.

KLASS 1 LASERAPPARAT

VARNING

OM APPARATEN ANVÄNDS PÅ ANNAT SÄTT ÄN I DENNA BRUKSANVISNING SPECIFICERATS, KAN ANVÄNDAREN UTSÄTTAS FöR OSYNLIG LASER-STRÅLNING, SOM öVERSKRIDER GRÄNSEN FöR LASERKLASS 1.

Labels appearing on the drives:

CAUTION - INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.

VORSICHT! UNSICHTBARE LASERSTRAHLUNG TRITT AUS, WENN DECKEL GEöFFNET. NICHT DEM STRAHL AUSSETZEN!

VARNING - OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR öPPNAD. STRÅLEN ÄR FARLIG.

ADVARSEL - USYNLIG LASERSTRÅLING VED ÅBNING. UNDGÅ UDS/ETTELSE FOR STRÅLING.

CLASS 1 LASER PRODUCT LASERSCHUTZKLASSE 1 PRODUKT TO EN 60825

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