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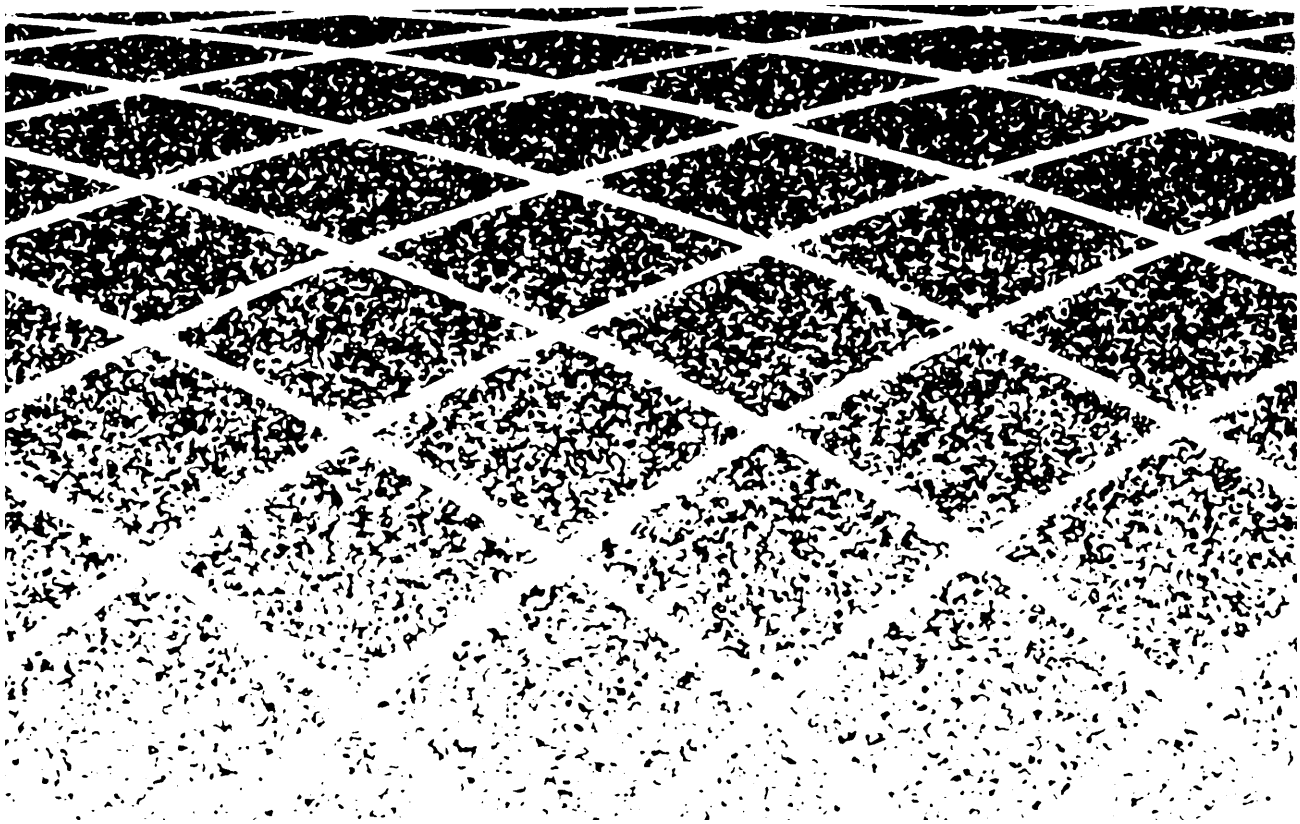
Issue 1

AT&T

StarServer S
User's Guide



System Description

1

This chapter introduces the features and capabilities of the AT&T StarServer S. Before installing the StarServer S, please read this chapter and familiarize yourself with the following:

- Important system features
- The system configuration
- The optional expansion kits available for the system

Summary of System Features

The AT&T StarServer S is a high-performance, Extended Industry Standard Architecture (EISA)-compatible system operating at a clock speed of 33 MHz. Developed using Intel's i486 microprocessor, the AT&T StarServer S is more advanced and far more versatile than earlier systems. The system's design provides substantially faster processing speed, greater storage capacity, and greater multitasking functionality.

The AT&T StarServer S maintains compatibility with software created for previous microprocessors such as the 8088, 8086, 80286, and 80386. By providing the ability to simulate slower system speeds, the AT&T StarServer S ensures that timing-dependent and copy-protected applications operate without modification.

The combination of high-speed processing and greater memory capacity allows the StarServer S to easily accommodate the needs of memory-intensive software, such as large spreadsheet and database applications, computer-aided design/computer-aided engineering (CAD/CAE) applications, multiuser and multitasking operating systems, telecommunications, and network servers.

If your application requirements increase, you can easily upgrade the StarServer S with a variety of expansion boards, peripheral devices, video and graphic devices, floppy and hard disk drives, and streaming tape units (STUs).

The Basic System Configuration

The StarServer S consists of three major modules, as illustrated in Figure 1:

- The system module (1,A)
- The keyboard (1,B)
- The video display (1,C) (optional)

System Module

The system module contains the system board, slots for expansion boards, internal magnetic peripherals, and a power supply.

The high performance features of the StarServer S include:

- A 33 MHz 80486 central processing unit (CPU)
- A base configuration of four megabytes of onboard system random access memory (RAM). The system can be expanded to 64MB of RAM.
- A 128KB external cache

- Extended Industry Standard Architecture (EISA) for high speed CPU, direct memory access (DMA), and I/O data transfers
- An EISA Small Computer System Interface (SCSI) host adapter with caching capabilities for high data throughput rates
- Support for a Weitek 4167 numeric coprocessor
- Shadow RAM for fast system basic input/output system (BIOS) and video BIOS access

The StarServer S also features:

- Two 25-pin parallel ports
- Two 9-pin serial communication ports
- One mini-DIN keyboard interface
- One mini-DIN mouse interface
- One internal speaker
- One real-time clock/calendar complementary metal oxide semiconductor (CMOS) chip with integral lithium battery
- An 8KB non-volatile random access memory (NVRAM) chip
- Ten EISA expansion slots
- Support for 128KB erasable programmable read-only memory (EPROMs)

System Module Configurations

The StarServer S is offered in different system module configurations. These configurations include a 1.44MB (3.5-inch) floppy disk drive with either a 300MB or a 600MB hard disk drive. The system module configurations available include:

- CPU 362: 1.44MB (3.5-inch) floppy disk drive and a 300MB (5.25-inch) hard disk drive
- CPU 363: 1.44MB (3.5-inch) floppy disk drive and a 600MB (5.25-inch) hard disk drive

System Module Controls and Indicators

Figure 2 illustrates the front panel and the location of the following controls and indicators:

- Rest button (2,A). Use the reset button to reset the system module without turning the system off.
- Chassis lock (2,B). Turn the key to the locked position 8,B) to lock the system module cover onto the chassis.
- Hard disk drive access indicator (2,C). The indicator lights (amber) when a hard disk drive is being accessed.
- Power indicator (2,D). The indicator lights (green) when the system module power is on.
- Fault indicator (2,G). The indicator lights (amber) when the power-on self test (POST) is executing and remains lit if an error is found.
- Power switch (2,E). Use the power switch to turn the system module on and off.
- Floppy disk drive access indicator (2,F). The indicator lights (amber) when the drive is being accessed.
- Floppy disk drive release button (2,H). Use the floppy disk drive release button to release a floppy disk from drive A.
- Peripheral compartment lock (2,J). Turn the key to the locked position (8,A) to lock the peripheral compartment door.

System Module I/O Panel Cover

The I/O panel cover provides access to the following connectors:

- Parallel interface connectors (3,E,F)
- Serial interface connectors (3,D,J)
- Mouse interface connector (3,C)
- Keyboard interface connector (3,B)
- Expansion board connectors (if installed) (3,A)

To access the I/O panel and expansion board connectors, lift up on the rear of the I/O panel cover (3,G) located at the top-rear of the system.

System Module Power Connections

The rear panel provides an AC input power socket and a power outlet for the video display. These connectors are located at the bottom of the rear panel (4,D,F).

System Memory

The StarServer S provides two types of memory: random access memory (RAM) and read only memory (ROM) (refer to Table 1-1 and Figure 5).

RAM

RAM exists in two formats: conventional memory and extended memory.

Conventional Memory

Conventional memory is located within an address range of 00000H to 9FFFFH (640KB of memory).

Table 1-1. System Memory Allocation

Address	Amount	Usage
00000H to 7FFFFH	512KB	Conventional (0-512KB)
80000H to 9FFFFH	128KB	Conventional (512KB-640KB) (enabled in SETUP utility)
A0000H to BFFFFH	128KB	Video controller RAM for plug-in cards
C0000H to C7FFFH	32KB	Video BIOS/video BIOS shadow for plug-in cards
C8000H to DFFFFH	96KB	Available for expansion card ROM and RAM
E0000H to FFFFFH	128KB	System BIOS/system BIOS shadow
F80000H to FFFFFFH	512KB	System BIOS/system BIOS shadow or RAM
0000000H to 3FFFFFFH	64MB	Maximum range of system memory
0000000H to 0FFFFFFFH	256MB	User assigned attributes
0000000H to FFFFFFFFH	4GB	Physical addressing limit of the i486 CPU

Extended Memory

Extended memory is memory above 100000H (one megabyte). Extended memory can be accessed only when the CPU is operating in protected mode.

Onboard RAM

The system board contains four single in-line memory module (SIMM) banks. Each bank holds two SIMMs. The base configuration of the system is 4MB of RAM (two 2MB SIMMs); SIMMs must be installed in pairs of the same size. Each 2MB SIMM is double-sided and organized as 256K $\times$ 36 bits per side. Each of the 36-bit sets comprises four independently-accessible 9-bit units consisting of eight bits of data and one parity bit. The system board also supports 8MB SIMMs. The 8MB SIMMs are double-sided and arranged as 1M $\times$ 36 bits per side. The maximum system configuration is eight 8MB SIMMs (64MB).

Note

Both SIMM sizes can reside on the system board at the same time. However, you must install them in pairs and you must install them starting with the farthest vacant socket to the right. Refer to Appendix C, "Expansion Kits," for detailed information on installing SIMMs.

ROM

The system board ROM contains the BIOS, POST, and ROM-based SETUP. The ROM occupies the highest 128KB of the first megabyte (E0000H to FFFFFH) of memory.

Shadow RAM

An option is available that allows the system BIOS to be copied into RAM for faster ROM access. This option is referred to as "shadowing." In addition to shadowing system BIOS, a shadow option is also provided for video BIOS residing on the video display controller board.

When ROM is copied into the RAM, the CPU accesses the BIOS at the same speed it accesses other RAM. The system board architecture makes sure the ROM data copied into the RAM is write-protected. This prevents inadvertent overwriting of BIOS information.

ROM-Based SETUP

Note

All system setup parameters should be defined and modified using the EISA Configuration Utility (ECU). If you choose to use the ROM-based SETUP utility, conflicts between the Industry Standard Architecture (ISA) and EISA CMOS values can result in unpredictable system behavior. It is recommended that you do not use the ROM-based SETUP utility.

The system ROM-based SETUP allows you to set a limited number of system options. Refer to Appendix B, "ROM-Based SETUP," for detailed information on using SETUP.

128KB External Cache

The 128KB external cache module increases system performance by reducing the average number of wait states seen by the 80486. The external cache plugs into a socket on the system board (6,H).

SCSI Interface

The small computer system interface (SCSI) is a local I/O bus that provides a uniform interface for peripheral devices. You can add different disk drives, streaming tape units, printers, and communication devices to the system without having to modify the system's hardware or software. SCSI transfers much of the intelligence of the I/O interface to the controller on a peripheral device. This frees up the CPU to perform other tasks while the peripheral device is responding to a command.

SCSI devices are connected using a common cable. Both ends of the cable are terminated and all signals are common to all devices.

Video Display

The AT&T video display options for the StarServer S include VGA-compatible color displays and compatible video display controllers. These displays provide high resolution text and graphics modes.

An instruction booklet, packed with each video display, shows the locations of the controls on the video display. These controls allow you to adjust the brightness and contrast of the screen.

Keyboard

The keyboard allows you to interact with the StarServer S by entering data or commands. The AT&T 305C keyboard (Figure 7) is a 101-key keyboard having a mini-DIN type connector (7,A). Chapter 4, "Operating Your System," describes the layout of the keyboard and explains how to use the different groups of keys.

The coiled flexible cable (7,B) connects the keyboard to the system module. The keyboard also has adjustable feet allowing you to change its angle for comfortable typing.

Expanding Your System

You can expand the StarServer S by installing RAM, peripherals, and other options. Expansion capabilities include:

- A socket for a 33 MHz Weitek 4167 numeric coprocessor
- Sockets on the system board for additional onboard RAM

- Ten EISA expansion slots
- A peripheral device bay that holds up to four half-height and two full-height 5.25-inch peripheral devices

Note
Each system is also equipped with four extra pairs of drive mounting rails and four power connectors.

Expansion Kits

Several expansion options are available from AT&T in ready-to-install expansion kits. Refer to Appendix C, "Expansion Kits," for installation instructions. Also, contact your AT&T Sales Representative or authorized dealer for the latest information on expansion options and kits.

Numeric Coprocessor

Adding a 33 MHz Weitek 4167 numeric coprocessor increases the numeric processing performance of the StarServer S. The 4167 plugs into a socket on the system board (6,A). The 4167 performs mathematical computations faster than the built-in 80387-compatible coprocessor in the 80486, resulting in higher performance for math-intensive applications that support Weitek coprocessors, such as spreadsheets and graphics.

System RAM

You can expand system RAM (up to 64MB total RAM) by adding additional 4MB or 16MB increments of RAM in the system board SIMM sockets.

Additional Magnetic Peripherals

You can add additional magnetic peripherals to the system module. These magnetic peripherals increase the storage capacity and flexibility of the StarServer S. The following AT&T magnetic peripherals are available:

- A 1.44MB 3.5-inch floppy disk drive
- A 1.2MB 5.25-inch floppy disk drive
- A 300MB, 600MB, or 1GB hard disk drive
- A 120MB or 320/525MB SCSI streaming tape unit

System Security

Your system contains the following security features:

- A system module chassis lock
- A peripheral compartment lock
- Password features

Refer to Chapter 4, "Operating Your System," for instructions on using these system security features.

Note

Be careful not to lose the system keys. Losing the system keys prevents you from opening the locked peripheral compartment or removing the system module cover. Contact your AT&T Service Representative or authorized dealer for information on replacing lost keys.

Getting Started

3

This chapter provides information on how to set up and configure the AT&T StarServer S. This chapter explains:

- How to start the system
- What happens when the system starts the first time
- How to set up and configure the system using the StarServer S Configuration Utilities and the Extended Industry Standard Architecture (EISA) Configuration Utility (ECU)

If this is the first time you are starting the system, use the ECU to initially configure it. If your system has already been configured, and you want to change system hardware or if the real-time clock chip or NVRAM have been replaced, run the ECU to configure the system for the new hardware and to set new system parameters.

If the system does not operate as described in this chapter, refer to Chapter 5, "Problem Solving." If error messages appear on the screen, refer to Appendix G, "Messages," for possible causes and suggested solutions.

Starting the System

Start the system by performing the following:

1. Remove any drive protection card(s) (if present) from the floppy disk drive(s) (see Figure 18).
2. Turn on the video display.

Note
Use the Copy Floppy Disk option from the System Configuration floppy disk and make a backup copy of the original System Configuration floppy disk. Store the original in a secure place and use only the backup copy when setting up and configuring the system.

3. Insert the System Configuration floppy disk back-up copy into drive A.
4. Turn on the system (2,E).
5. Adjust the video display to obtain a readable screen display. (Refer to the video display manual for instructions.)

Note
You may have to enable or disable the onboard floppy disk controller with the ROM-based SETUP program to be able to access the floppy disk drive, depending upon your system configuration. Refer to Appendix B, "ROM-based SETUP," for further information.

Note
If your CMOS or NVRAM is corrupted, and you need to reset using the clear NVRAM jumper, remove all Industry Standard Architecture (ISA) expansion boards (with the exception of the video display controller board) and all secondary Extended Industry Standard Architecture (EISA) bus master expansion boards prior to rebooting the system. Follow the procedures in Chapter 2, "Installing Expansion Boards," in reverse order.

Power-on Self Test

Each time the system is turned on or reset, the power-on self test (POST) runs automatically and checks the CPU, keyboard, video display, memory, and most peripheral devices. While POST is running, the fault indicator, located on the system module front panel, lights.

During the POST memory test, the amount of memory being tested is displayed on the screen. Depending on the amount of extended memory installed, the POST memory test could take up to 90 seconds to complete. During a soft boot ([Ctrl] + [Alt] + [Del],) the system executes all POST tests except the memory test.

When POST completes, the fault indicator goes out, the system beeps once (if no configuration errors are detected), and then displays a message similar to the following:

```
Phoenix 80486 EISA ROM BIOS Version x.xx.yy
Copyright (c) 1985-1990 Phoenix Technologies Ltd.
All Rights Reserved

Copyright (c) 1990 AT&T. All Rights Reserved.

Resident Diagnostics
CPU (i80486, 33 MHz)  PASS
CMOS RAM              PASS
ROM Checksum          PASS
Memory Refresh        PASS
DMA Controllers       PASS
Interrupt Controller  PASS
Keyboard              PASS
Dedicated Memory      0384 KB
Base Memory           0640 KB
Extended Memory       3072 KB
Total Memory          4096 KB
Clock/Calendar        PASS
Coprocessor           PASS
Floppy Disks          1 Present
Fixed Disks           1 Present
Primary Boot-Strap
```

Note

If the system halts before POST completes the first six tests (down to and including the interrupt controller test), a fatal system error has occurred. A fatal system error requires immediate attention. Note the screen display, write down the number of beeps the system emitted (if any), and then contact your AT&T Service Representative for assistance.

If configuration errors are detected, the fault indicator remains lit, POST beeps twice, and then displays the following message:

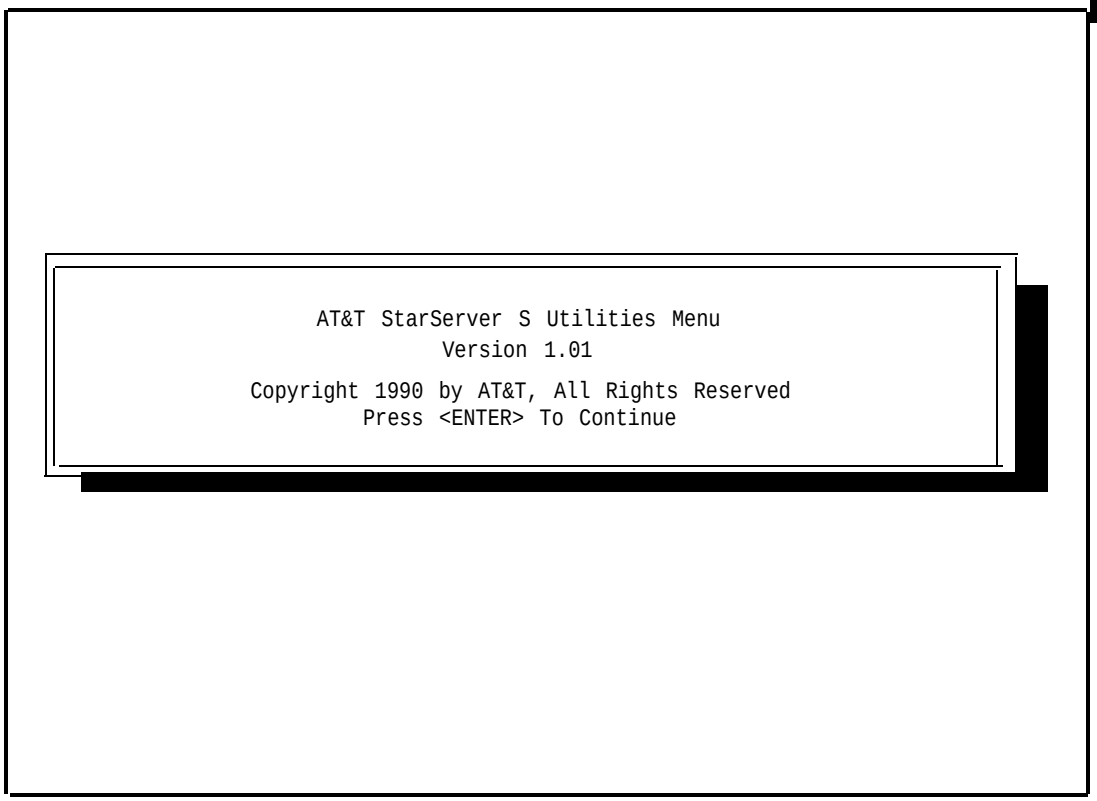
```
Invalid configuration information -
please run SETUP program
Strike the F1 key to continue
```

Note

It is not unusual for this message to appear the first time you start the system.

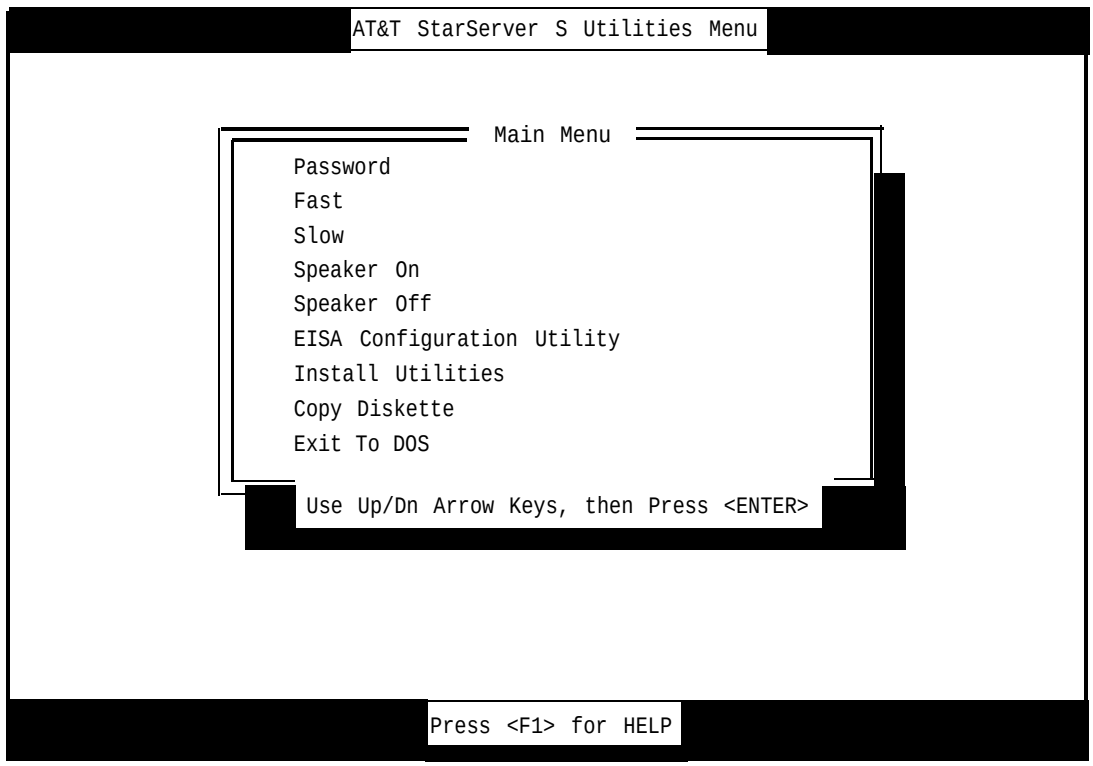
Press [F1] to continue. The system operates correctly, but not at full potential.

After pressing [F1], the system boots from the System Configuration floppy disk and displays the StarServer S Utilities Menu Introductory Screen:



OM-00477

Press [Enter] to continue to the Utilities Menu itself:



OM-00478

Use the [↑] and [↓] keys to highlight "EISA Configuration Utility" and press [Enter]. The ECU Introductory Screen appears:

OM-00395

Execute the ECU as described in the following sections to set system parameters and to correct the configuration information.

Executing the ECU

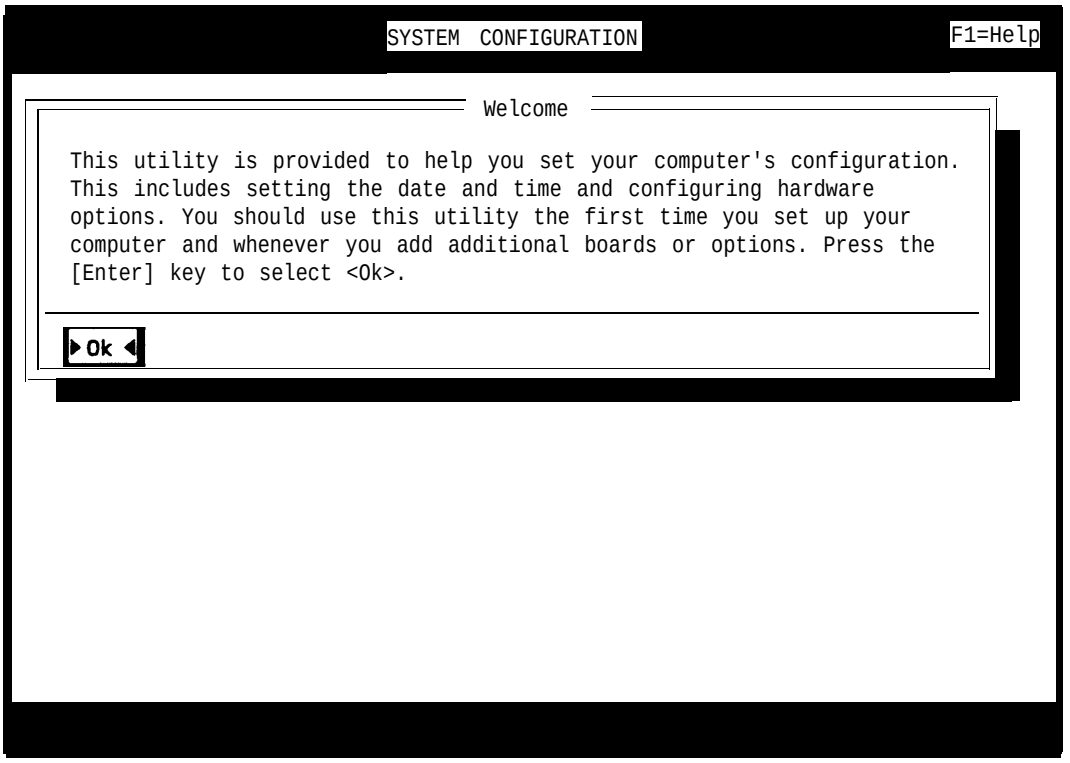
This section describes how to use the keyboard to move through the ECU, how to familiarize yourself with the ECU, and then how to use the ECU to set the system date and time.

Procedures for configuring your system are described in "System Configuration" later in this chapter.

Note

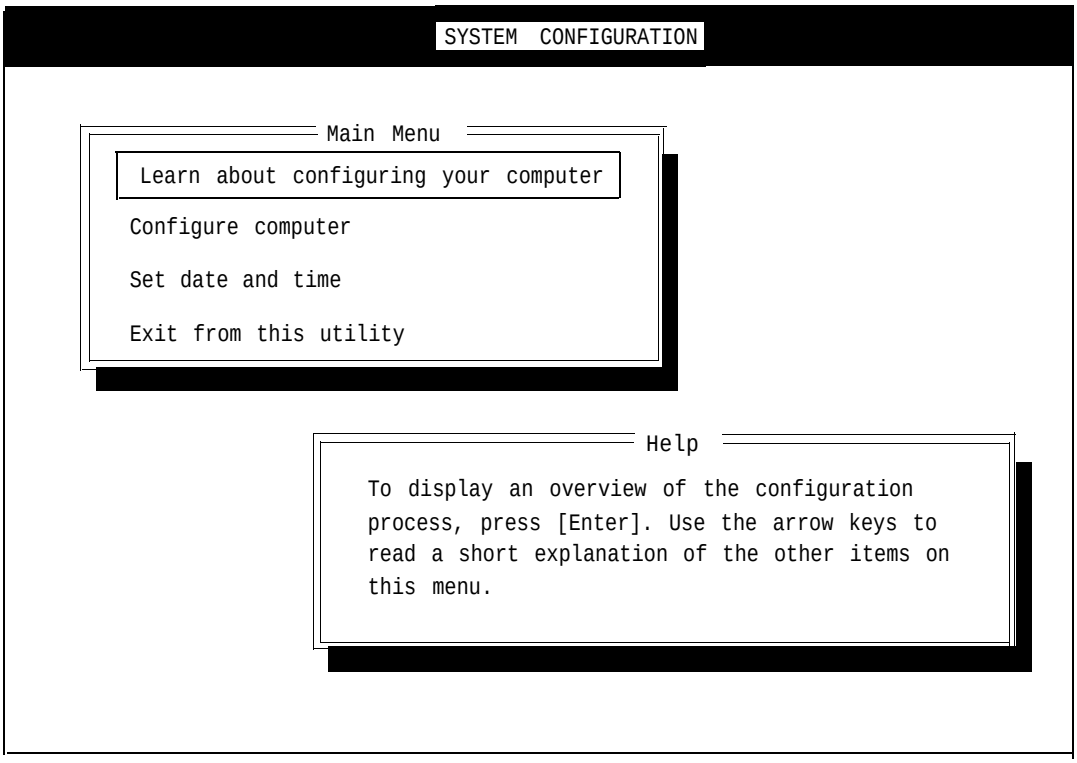
To highlight window choices with your mouse, click the left mouse button while pointing to the desired choice. To select a choice, click the left mouse button twice (without moving the mouse) while pointing to the desired choice. To select pull-down menu items, press and hold the left mouse button while pointing to the desired menu, then slide the mouse down to highlight the desired menu choice. Release the mouse button to select the highlighted menu choice.

With the ECU Introductory Screen displayed, press any key to display the following Welcome Message:



OM-00387

After reading the ECU Welcome Message, press [Enter] to display the following Main Menu Screen:



OM-00388

Move the highlight bar in the Main Menu window with the [↑] and [↓] keys to select the desired task. As you highlight different choices, a help window provides additional information about the highlighted choice and instructs you to press [Enter] to execute that choice.

To familiarize yourself with the ECU, highlight the first choice, "Learn About Configuring Your Computer," and press [Enter]. A scrollable window appears that describes the purpose of the ECU, configuration (CFG) files, both basic and advanced methods of configuring your system, and how to use the ECU to configure a new expansion board installed in your system. Press [Page Up] or [Page Down] to scroll the window up or down one screen at a time. Press the [↑] or [↓] keys to scroll the window up or down one line at a time. When you finish reading this information, press [Enter] to return to the Main Menu.

To set the system date and time, highlight "Set Date and Time," press [Enter], type the correct date and time (in the specified formats), and then press [Enter] again. To cancel, use the [Tab] key to highlight "Cancel" and press [Enter]. Press [F1] at any time to display further information on setting the system's date and time.

System Configuration

Two steps are required to configure your system:

1. Organize system configuration information
2. Configure your system using either the basic method or the advanced method

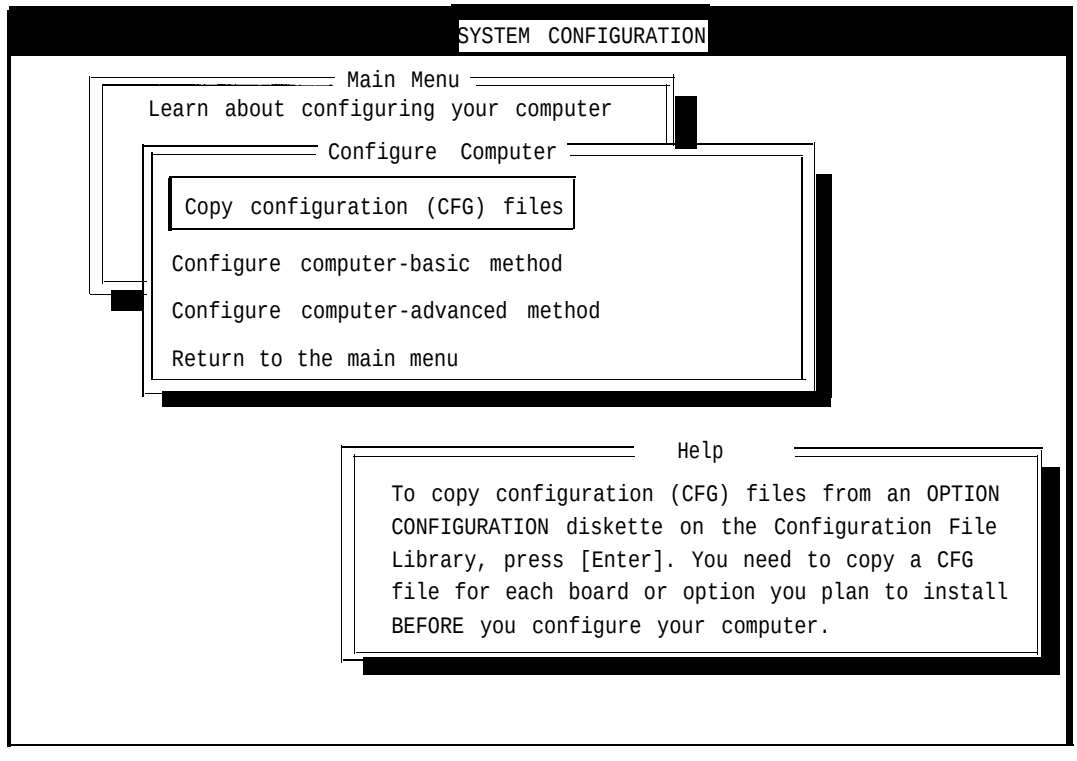
The following sections discuss organizing system configuration information, using the basic configuration method, and using the advanced configuration method.

Organizing System Configuration Information

Note

The System Configuration floppy disk supplies most of the EISA or ISA configuration (CFG) files needed to organize system configuration information. However, you may need to add additional CFG files to the System Configuration floppy disk in order to configure an EISA or ISA expansion board for which a CFG file is not present. If this is the case, continue with the following procedure. If not, skip to the basic or advanced configuration procedures described later in this chapter.

To organize system configuration information and to begin configuring your system, highlight the "Configure Computer" choice. Once highlighted, press [Enter] to display the following Configure Computer Screen.



OM-00389

Move the highlight bar in the Configure Computer Screen with the [↑] and [↓] keys to select the desired choice. As you highlight different choices, a help screen provides additional information about the highlighted choice and instructs you to press [Enter] to execute that choice.

The first choice in the Configure Computer Screen allows you to copy CFG files from an option configuration floppy disk or a configuration file library to the System Configuration floppy disk.

To copy CFG files, follow this procedure:

1. Use the [↑] and [↓] keys to highlight "Copy Configuration (CFG) Files" and press [Enter]. A window appears instructing you to insert the option configuration or configuration file library floppy disk into drive A.

   To cancel the "Copy Configuration (CFG) Files" choice, use the [Tab] key to highlight "Cancel" and then press [Enter] to return to the Configure Computer Screen.

2. Mark the desired files for copying by highlighting each file with the [↑] and [↓] keys and pressing [Space Bar]. You can also change the directory search path, sort the files using various sort keys, or cancel this screen by pressing the [Tab] key to highlight the appropriate choice and then pressing [Enter].

3. When the desired CFG files are marked, press the [Tab] key to highlight "Ok" and then press [Enter]. A window appears instructing you to insert the System Configuration floppy disk into drive A.

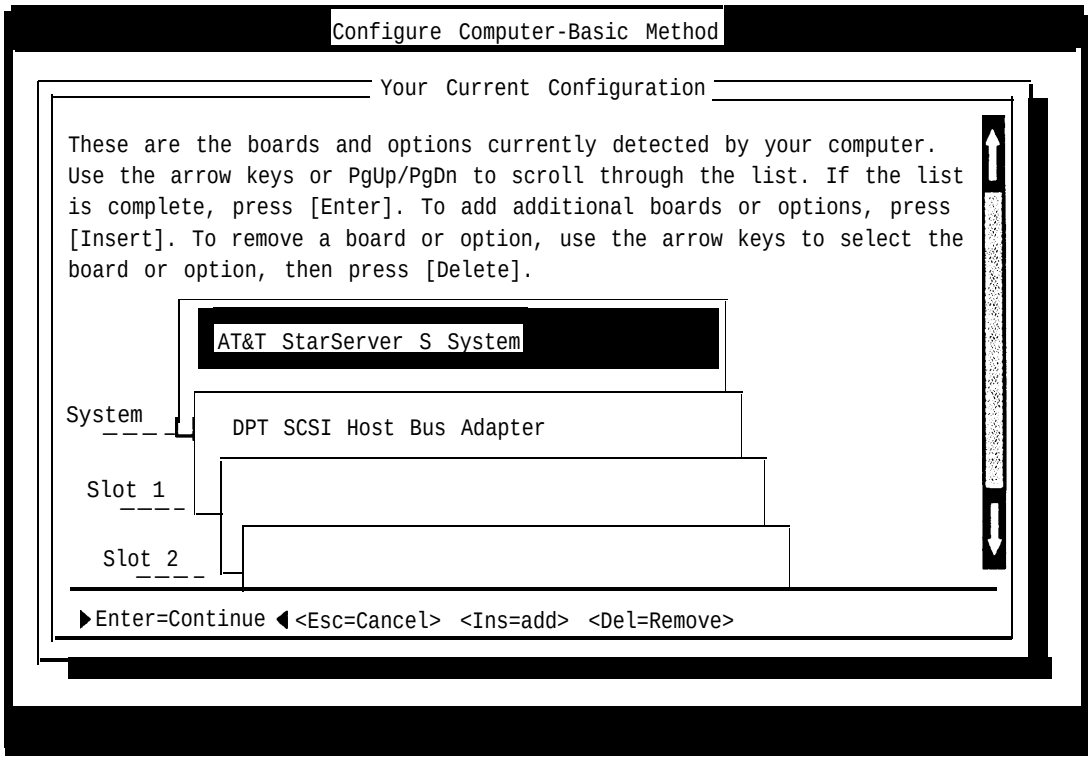
4. Insert the System Configuration floppy disk into drive A and press [Enter].The system copies the new CFG files onto the System Configuration floppy disk.

Once all the desired CFG files are copied onto the System Configuration floppy disk, a window appears instructing you to press [Enter] to return to the Configure Computer Screen. Choose the basic or advanced method on the Configure Computer Screen to configure your system. Refer to the following sections for details about using both methods.

Basic Configuration Method

Use the basic configuration method to add expansion boards to or delete them from your system configuration. Added boards have their options set to the default state. If you want to perform additional configuration functions, you must use the advanced configuration method. The section following this one details the use of the advanced configuration method.

To configure your system using the basic configuration method, use the [↑] and [↓] keys to highlight "Configure Computer - Basic Method" on the Configure Computer Screen and press [Enter]. After a pause for processing, the ECU displays a Current Configuration Screen similar to the following:



OM-00390-2

The ECU attempts to identify the expansion boards installed in your system before displaying the configuration screen. The screen graphically shows which expansion boards are installed in which slots. For example, the StarServer S system board is shown installed as the system board and the SCSI controller board is shown installed in slot one.

Use [Page Up] and [Page Down] or the [↑] and [↓] keys to view the graphical representation of the expansion slots.

To add one or more expansion boards, follow this procedure:

1. Press [Ins] or use the [Tab] key to highlight "Ins=Add" and then press [Enter]. A window appears showing the CFG files loaded on the System Configuration floppy disk, with a one-line description of each configuration file.
2. Press the [Page Up], [Page Down], [↑], and [↓] keys to highlight the desired CFG file.
3. Press the [Space Bar] to mark the file. Repeat steps two and three to mark as many files as you want to add to your system configuration, and then press [Enter].

   A window appears showing the manufacturer's comments for the first expansion board marked for addition.

Note

You can also sort the files using various sort keys or cancel the files by pressing the [Tab] key to highlight the appropriate choice and then by pressing [Enter].

4. If adding an expansion board, press [Enter] after reading these comments. A board addition screen appears prompting you for the slot number in which to add the specified expansion board. The screen displays a list of available slots in their recommended order.
5. Use the [↑] and [↓] keys to highlight your preferred choice, and then press [Enter]. To cancel this addition, use the [Tab] key to highlight "Cancel" and press [Enter].
6. Repeat steps four and five for any other expansion boards marked for addition.

To delete one or more expansion boards, follow this procedure:

1. Use the [Tab] or [↑] and [↓] keys to highlight the expansion board to delete and then press [Del]. A window appears prompting you to verify whether to delete the specified expansion board from the system configuration.

2. Press [Enter] while "Ok" is highlighted to delete the specified expansion board. To cancel this deletion, use the [Tab] key to highlight "Cancel" and press [Enter].
3. Repeat steps one and two to delete additional expansion boards from the configuration.

When the system configuration is correct, press [Enter]. A window appears allowing you to save the configuration settings and exit the basic configuration method, display the configuration settings, or print the configuration settings.

Note
Make sure the switches and jumper settings displayed on the screen match those on the expansion board. Note any system resource allocation (board memory, port assignments) information that may be necessary for installing software drivers.

To view, print, or cancel the configuration settings, press the [Tab] key to highlight the appropriate choice and then press [Enter]. To save the system configuration settings and exit the basic configuration method, press [Enter] while "Exit" is highlighted.

An information window appears informing you to turn off the system to change expansion boards, change switch and jumper settings, or press [Enter] to reboot the system. If you changed any system configuration settings, you must reboot the system for the configuration information to take effect. Turn off the system or press [Enter] to reboot.

Note
The ECU might suggest settings which are different from the manufacturer's defaults.

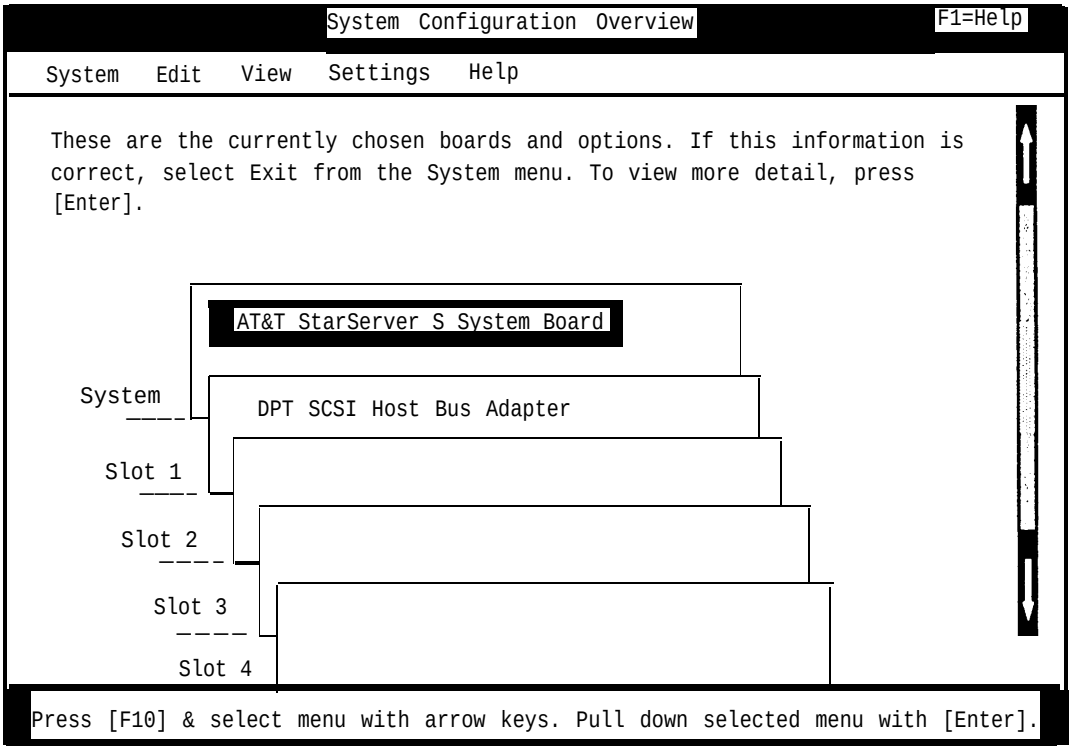
Advanced Configuration Method

Use the advanced configuration method to perform configuration functions other than adding or deleting expansion boards, such as when the options of added boards must be changed. If you only want to add expansion boards or options to or delete them from the system configuration, use the basic configuration method. The previous section details the use of the basic configuration method.

The advanced configuration method provides the following functions in addition to those provided by the basic configuration method:

- Changing system configuration information (SCI) files
- Printing switch and jumper settings
- Verifying proper system configuration
- Moving expansion boards
- Changing expansion board functions and resources
- Locking and unlocking the system configuration

To configure your system using the advanced configuration method, use the [↑] and [↓] keys to highlight "Configure Computer - Advanced Method" on the Configure Computer Screen and then press [Enter]. After a short pause, the ECU displays a current configuration screen similar to the following:



OM-00394-2

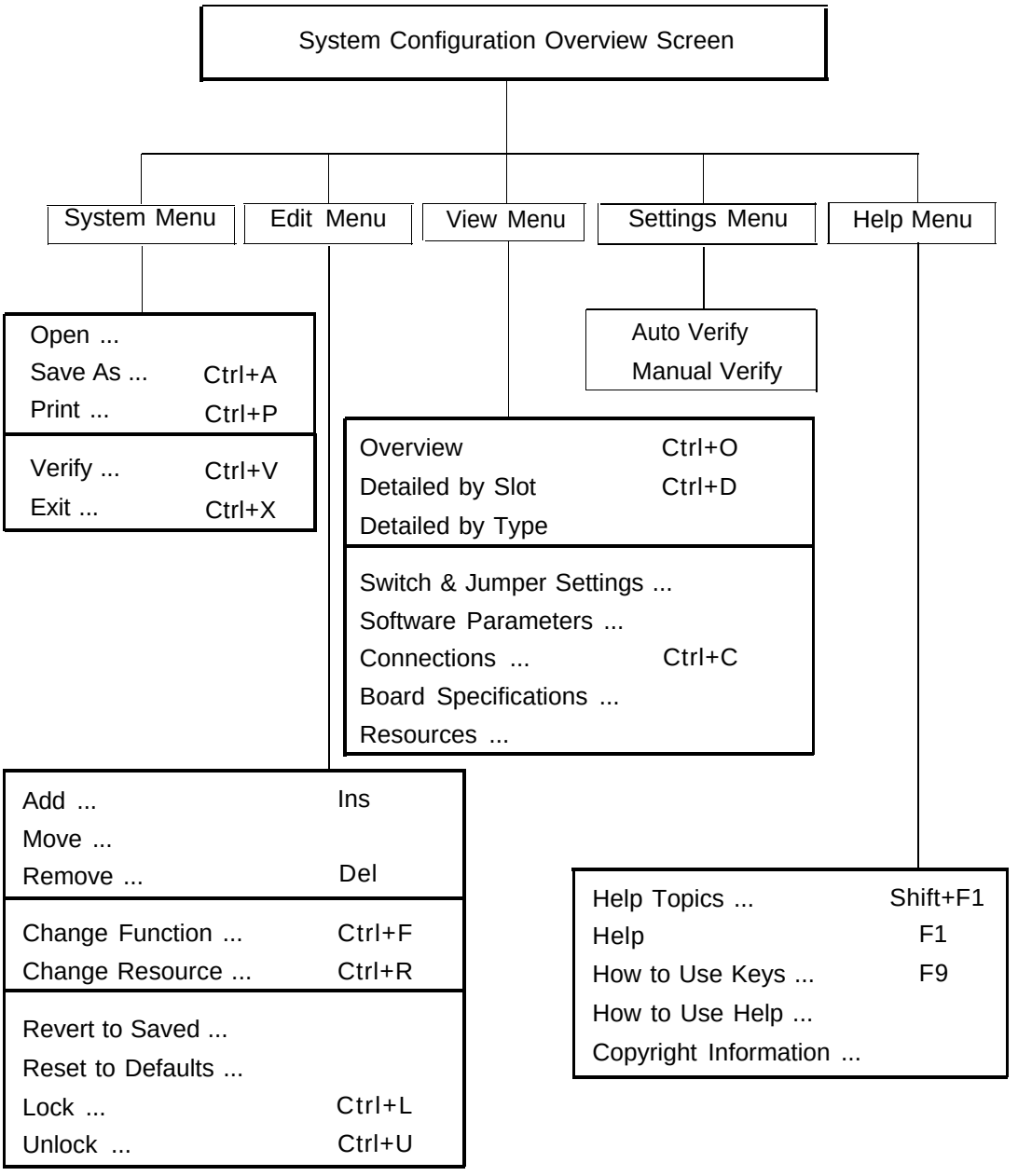
The ECU attempts to identify the expansion boards installed in your system before displaying the configuration screen. The screen graphically shows which expansion boards are installed in which slots. For example, the StarServer S system board is shown installed as the system board and the SCSI controller board is shown installed in slot one.

In the advanced configuration method, you use pull-down menus to select desired functions. To activate the menus, press [F10] or [Alt] and select the appropriate menu with the [←] and [→] keys. To pull down the highlighted menu, press [Enter]. Use the [↑] or [↓] keys to highlight desired menu items or enter the highlighted letter of the desired menu item. Typing the highlighted letter of the menu title, after pressing [F10], also selects and pulls down the desired menu. The following screen illustrates all pull-down menus available in the advanced configuration method.

System Menu

The System pull-down menu contains the following system commands. Use the [↑] and [↓] keys to highlight the desired command and then press [Enter] to execute the command:

Open...	Select a different SCI file. AT&T provides a custom SCI file for configuring the StarServer S. However, you can create your own SCI files and select them using the Open command. Use the [↑] and [↓] keys to highlight the appropriate SCI file and then press [Enter] to display the new configuration. To change the path, use the [Tab] key to highlight the path field and type in the new path.


System Configuration Overview Screen
System Menu
Edit Menu
View Menu
Settings Menu
Help Menu
Open ...
Save As ... Ctrl+A
Print ... Ctrl+P
Verify ... Ctrl+V
Exit ... Ctrl+X
Auto Verify
Manual Verify
Overview Ctrl+O
Detailed by Slot Ctrl+D
Detailed by Type
Switch & Jumper Settings ...
Software Parameters ...
Connections ... Ctrl+C
Board Specifications ...
Resources ...
Add ... Ins
Move ...
Remove ... Del
Change Function ... Ctrl+F
Change Resource ... Ctrl+R
Revert to Saved ...
Reset to Defaults ...
Lock ... Ctrl+L
Unlock ... Ctrl+U
Help Topics ... Shift+F1
Help F1
How to Use Keys ... F9
How to Use Help ...
Copyright Information ...

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Save As...

Save the defined SCI file using the specified filename. After defining your system configuration, save the configuration in an SCI file. A window appears prompting you for the filename of the SCI file to save. Use "SCI" as the filename extension.

To create a new SCI file, type a filename for the new file. To update an existing SCI file, use the [↑] and [↓] keys to highlight the desired SCI file and then press [Enter]. You can also change the directory path or cancel this operation by using the [Tab] key to highlight the appropriate choice and then pressing [Enter].

After pressing [Enter], while "Ok" is highlighted, a window appears prompting you for an SCI file description. Type a new description or use the existing description, and then press [Enter] to save.

Press the [Ctrl] + [A] keys to select the Save As command without pulling down the menu.

Print...

Print the defined switch settings, jumper settings, and configuration information for the entire system or the currently highlighted expansion board. A window appears prompting you to print the entire system or just the current board. Use the [↑] and [↓] keys to highlight your desired choice and then press [Enter]. You can also press the highlighted keys to print the entire system or the selected expansion board information, respectively. The information prints to the printer connected to the LPT1 port.

Press the [Ctrl] + [P] keys to select the Print command without pulling down the menu.

Verify...

Make sure the defined configuration has no resource conflicts. If Auto Verify is selected in the Settings pull-down menu, the system configuration is verified automatically each time you make a configuration change. In this case you do not need to use the Verify command. If Manual Verify is selected, use the Verify command to check the system configuration at regular intervals.

If no conflicts exist, a window display states that the system is configured correctly. Press [Enter] to continue.

If conflicts exist (for example, if two expansion board choices specify different serial ports as Serial Port #1), the graphical slot representation displays a "Conflict" flag. When you execute the Verify command, a message appears describing the problem. Use the [Tab] key to highlight the "Continue" choice. Change the conflicting expansion board's resources to resolve the conflict. If you cannot resolve the conflict, you must remove one of the conflicting expansion boards.

Press the [Ctrl] + [V] keys to select the Verify command without pulling down the menu.

Exit...	Exit the advanced configuration method and return to the Configure Computer menu. When you select the Exit command, you can save system configuration changes (the system will reboot rather than return to the Configure Computer menu) or exit without saving. You can also view switch and jumper settings by pressing the [Tab] key to highlight "View Switch, Jumper, and Software Settings" and then pressing [Enter]. Press the [Ctrl] + [X] keys to select the Exit command without pulling down the menu.

Edit Menu

The Edit pull-down menu contains the following edit commands. Use the [↑] and [↓] keys to highlight the desired command and then press [Enter] to execute the command:

Add...	Add expansion boards to your system configuration. Follow steps two through six from the procedure for adding expansion boards using the Basic Configuration method, outlined in the previous section. Press the [Ins] key to select the Add command without pulling down the menu.
Move...	Move the highlighted expansion board from one slot to another vacant slot. When you select the Move command, a window appears showing the manufacturer's comments for the highlighted expansion board. Press [Enter] after reading these comments.

A window appears prompting you for the slot number to which to move the highlighted expansion board. The window displays a list of available slots in their recommended order. Use the [↑] and [↓] keys to highlight your preferred choice and then press [Enter]. To cancel this operation, use the [Tab] key to highlight "Cancel" and then press [Enter].

Remove...

Delete the highlighted expansion board from the system configuration. A window appears prompting you to verify whether to delete the specified expansion board from the system configuration. Press [Enter] while "Ok" is highlighted to delete the specified expansion board. To cancel this operation, use the [Tab] key to highlight "Cancel" and then press [Enter].

Press the [Ctrl] + [F] keys, or [Enter] with the selected function highlighted, to select the Change Function command without pulling down the menu.

Change Function...

Change the specified choice for the highlighted expansion board function. The Change Function command is available only when Detailed by Slot or Detailed by Type is selected in the View pull-down menu. The change function window displays a list of possible choices for the highlighted function. Use the [↑], [↓], and [Tab] keys to select the preferred choice for each function box, and then press [Enter]. To cancel this operation, use the [Tab] key to highlight "Cancel" and then press [Enter].

Press the [Ctrl] + [F] keys to select the Change Function command without pulling down the menu.

Change Resource...	Change the specified choice for the highlighted expansion board resource. The Change Resource command is available only when Detailed by Slot or Detailed by Type is selected in the View pull-down menu. The change resource window displays a list of possible choices for the highlighted resource. Use the [↑], [↓], and [Tab] keys to select your preferred choice for each resource, and then press [Enter]. To cancel this operation, use the [Tab] key to highlight "Cancel" and then press [Enter]. Press the [Ctrl] + [R] keys to select the Change Resource command without pulling down the menu.
Revert to Saved...	Return system configuration settings, for the highlighted expansion board or the entire system, to the previously saved settings. The Revert to Saved command is available only when Overview or Detailed by Slot is selected in the View pull-down menu. A window appears prompting you for the extent of the Revert to Saved operation. Use the [↑] and [↓]keys to highlight the desired choice and then press [Enter]. You can also press the highlighted key to save the previous settings for the entire system or the selected expansion board, respectively. A window appears prompting you to verify whether to Revert to Saved to the specified extent. Press [Enter] while "Ok" is highlighted to verify the Revert to Saved operation. To cancel this operation, use the [Tab] key to highlight "Cancel" and then press [Enter].

Result to Defaults...

Return system configuration settings, for the highlighted expansion board or the entire system, to the manufacturer's default settings. If Auto Verify has been selected, only those defaults which do not cause the system to be incorrectly configured will be reset. Otherwise, all defaults will be reset even if they cause a resource conflict.

The Reset to Defaults command is available only when Overview or Detailed by Slot is selected in the View pull-down menu. A window appears prompting you to reset to defaults the entire system or the current board. Use the [↑] and [↓] keys to highlight the desired choice and then press [Enter]. You can also press the highlighted key to return to the default settings for the entire system or the selected expansion board, respectively.

A window appears prompting you to verify whether to Reset to Defaults to the specified extent. Press [Enter] while "Ok" is highlighted to verify the Reset to Defaults operation. To cancel this operation, use the [Tab] key to highlight "Cancel" and then press [Enter].

Lock...

Lock the current configuration settings for the highlighted expansion board or the entire system. When an expansion board is locked, the graphical slot representation displays a "Locked" flag. When the entire system is locked, individual expansion boards can be added or removed, but existing expansion board settings cannot be changed.

A window appears prompting you for the extent of the Lock operation. Use the [↑] and [↓] keys to highlight the desired choice and then press [Enter]. You can also press the highlighted key to lock the current configuration settings for the entire system or the selected expansion board, respectively.

A window appears prompting you to verify the specified extent of the Lock operation. Press [Enter] while "Ok" is highlighted to verify the Lock operation. To cancel this operation, use the [Tab] key to highlight "Cancel" and then press [Enter].

Press the [Ctrl] + [L] keys to select the Lock command without pulling down the menu.

Unlock...

Unlock the current configuration settings for either the highlighted expansion board or the entire system. The Unlock command is available only when Overview or Detailed by Slot is selected in the View pull-down menu. A window appears prompting you to unlock the entire system or just the current board. Use the [↑] and [↓] keys to highlight the desired choice and then press [Enter]. You can also press the highlighted key to unlock the current configuration settings for the entire system or the selected expansion board, respectively.

A window appears prompting you to verify whether to Unlock to the specified extent. Press [Enter] while "Ok" is highlighted to verify the Unlock operation. To cancel this operation, use the [Tab] key to highlight "Cancel" and then press [Enter].

Press the [Ctrl] + [U] keys to select the Unlock command without pulling down the menu.

View Menu

The View pull-down menu contains the following commands. Use the [↑] and [↓] keys to highlight the desired command and then press [Enter] to execute the command:

Overview — Display a general overview of your system's configuration. You can use Overview (default), Detailed by Slot, or Detailed by Type to view configuration information. A check mark appears next to the currently active option.

When Overview is selected, the ECU displays a graphical representation of the system's expansion slots and boards. Each graphical expansion board representation is labeled with the name of the expansion board for which it is configured. The Change Function and Change Resource commands are not available from the Edit pull-down menu when Overview is selected. Choose the Detailed by Slot or Detailed by Type option to use the Change Function and Change Resource commands.

Press the [Ctrl] + [O] keys to select Overview without pulling down the menu.

Detailed by Slot — Display a detailed screen of your system's configuration using the Overview (default), Detailed by Slot, or Detailed by Type options. A check mark appears next to the currently active option.

When Detailed by Slot is selected, the ECU displays detailed system configuration information about each expansion board installed in your system. The Change Function and Change Resource commands are available from the Edit pull-down menu when Detailed by Slot is selected.

	Press the [Ctrl] + [D] keys to select the Detailed by Slot view without pulling down the menu.
Detailed by Type	Display a detailed screen of your system's configuration using the Overview (default), Detailed by Slot, or Detailed by Type options. A check mark appears next to the currently active view. When Detailed by Type is selected, the ECU displays detailed system configuration information about various functional areas of the expansion boards. For example, the configuration functions might be labeled "Mass Storage Functions," "Parallel Port Functions," and "Miscellaneous Functions." The Revert to Saved, Reset to Defaults, Lock, and Unlock commands are not available on the Edit pull-down menu when Detailed by Type is selected.
Switch & Jumper Settings...	Display switch and jumper settings for changed settings, entire system settings, or highlighted expansion board settings. These are graphical representations of how the switches and jumpers on your expansion board should be set. A window appears prompting you to change all settings on the entire system or just the current board. Use the [↑] and [↓] keys to highlight your desired choice and then press [Enter]. You can also press the highlighted keys to select your choice. A scrollable switch and jumper settings window appears showing manufacturer-provided switch and jumper information for the expansion boards specified. Use the [↑], [↓], [Page Up], and [Page Down] keys to view this information. Press [Enter] after viewing the switch and jumper information. To cancel viewing, press the [Tab] key to highlight "Cancel" and then press [Enter].

Note

Be sure to note any switches or jumpers where the "default factory settings" are different from the "change settings to."

Software Parameters...

Display software parameters for changed parameters, entire system parameters, or highlighted expansion board parameters. A window appears prompting you to display software parameters for the entire system or just the current board. Use the [↑] and [↓] keys to highlight your desired choice and then press [Enter]. You can also press the highlighted keys to select your choice.

A scrollable software parameters window appears showing manufacturer-provided software parameters for the expansion boards specified. Use the [↑], [↓], [Page Up] and [Page Down] keys to view this information. Press [Enter] after viewing the software parameters. To cancel viewing, press the [Tab] key to highlight "Cancel" and then press [Enter]. Be sure to record information that may be needed to install software drivers or packages.

Connections...

Display information about external cable connections for the current configuration.

A scrollable connections window appears showing manufacturer-provided connection information for the entire system. Use the [↑], [↓], [Page Up], and [Page Down] keys to view this information. Press [Enter] after viewing the connection information.

Press the [Ctrl] + [C] keys to select the Connections command without pulling down the menu.

Board Specifications...	Display expansion board specifications such as manufacturer, ID, slot type, and expansion board size for the highlighted expansion board. board specifications window appears showing manufacturer-provided specifications for the selected expansion board. To view summary information about the entire system when the pop-up menu is displayed, press the [Tab] key to highlight "System Information" and then press [Enter]. A system information window appears showing this information. When you finish reading this information, press the [Tab] key to highlight "Ok" and then press [Enter].
Resources...	Display system resource information such as DMA channels, I/O port address space, IRQ levels, and memory address space. A scrollable resource map window appears showing this information. Use the [↑], [↓], [Page Up], and [Page Down] keys to view this information. Press [Enter] after viewing the system resource information.

Settings Menu

The Settings pull-down menu contains the following commands. Use the [↑] and [↓] keys to highlight the desired command and then press [Enter] to execute the command:

Auto Verify	Automatically verify your system's configuration after each configuration change is made. You can use Auto Verify (default) or Manual Verify mode. A check mark appears next to the currently active mode.

Manual Verify — Verify your system's configuration only after you execute the Verify command from the System pull-down menu. You can use Auto Verify (default) or Manual Verify mode. A check mark appears next to the currently active mode. If a board is added or resources or functions are changed which cause conflict, the ECU will mark the conflicting choice with an asterisk.

Help Menu

The Help pull-down menu contains the following help commands. Use the [↑] and [↓] keys to highlight the desired command and then press [Enter] to execute the command:

Help Topics... — Display a list of help topics that can be selected to display further information. A Help Topics window appears prompting you for the area of help information you need. Major "how to" subjects are shown at the top of the list. Other help topics are alphabetized.

Use the [↑], [↓], [Page Up], and [Page Down] keys to highlight your desired help topic and press [Enter]. To cancel the help operation, press the [Tab] key to highlight "Cancel" and then press [Enter].

After highlighting a help topic and pressing [Enter], a scrollable window appears providing detailed information about the specified help topic. Use the [↑], [↓], [Page Up], and [Page Down] keys to scroll through and read the information. Press [Enter] after viewing the help information.

Press [Shift] + [F1] to select the Help Topics command without pulling down the menu.

Help	Display context-sensitive help information about the highlighted menu, expansion board, choice, or function. The Help command provides information at any time during use of the advanced configuration method. A window appears describing the highlighted items. Use the [↑], [↓], [Page Up], and [Page Down] keys to scroll through and read the help information. After reading the help information, press [Enter]. Press [F1] to select the Help command without pulling down the menu. You must use [F1] to display help information about menu choices.
How to Use Keys...	Display help information about using the keyboard to execute ECU advanced method commands. The How to Use Keys command displays in reference format how to move, highlight choices, select choices, and execute commands using the keyboard. Use the [↑], [↓], [Page Up] and [Page Down] keys to scroll through and read the information. After reading the help information, press [Enter]. Press [F9] to select the How to Use Keys command without pulling down the menu.
How to Use Help...	Display information about using the help feature and displaying help topics. A window appears describing how to use the ECU's help features. After reading the help window, press [Enter].
Copyright Information...	Displays the name of the ECU, its release number, and a copyright notice. Read the information, and then press [Enter].

Exiting the ECU

To exit the ECU, remove the System Configuration floppy disk from drive A while at the reboot display, highlight "Exit" and then press [Enter]. After pressing [Enter], the system reboots and the new configuration information takes effect.

Other Configuration Utilities

To use any of the configuration utilities other than the ECU, start the system just as you would to run the ECU after making hardware changes: insert the System Configuration floppy disk into drive A and then power up the system.

When you power up the system, it boots from the System Configuration floppy disk and displays the StarServer S Utilities Menu Introductory Screen. Press [Enter] to continue to the Utilities Menu itself. Use the [↑] and [↓] keys to highlight the choice that you wish to execute, then press [Enter].

Password

If you select the Password Utility, it presents a menu with the following options:

- Initial setting of power-on password
- Activate/deactivate network password
- Set/change keyboard password
- Lock keyboard
- Exit

Power-on Password

The first selection lets you enter a password for which you will be prompted when the system is powered-on or rebooted. The utility requires you to enter the password a second time for verification.

To change the password, power-on the system and at the password prompt type the old password, a slash ("/"), the new password, another slash, the new password again (for verification), and then press [Enter]:

```
oldpassword/newpassword/newpassword[ Enter ]
```

To remove the password, power-on the system and at the password prompt type the password, a slash, and then press [Enter]:

```
password/[ Enter ]
```

Network Password

When the network password security lock is activated, the system will execute power-on diagnostics and will be allowed to boot from the hard disk. Access to the system through the keyboard or mouse is disabled until the password is entered. The network password is the same as the power-on password, which must be installed before the network password can be activated. This scheme enables the system to be set up as a network server, allowing remote users to access the file server.

Keyboard Password

The third selection lets you enter a password for the keyboard. The utility requires you to enter the password a second time for verification. If a keyboard password already exists, then the utility asks if you want to change it. If yes, then it prompts you for the old password, the new password, and then the new password again for verification. The keyboard password is removed when you reboot the system.

After you have installed a keyboard password, you can lock the keyboard with the fourth selection, "Lock keyboard." To unlock the keyboard, you must type the keyboard password and press [Enter].

Changing Effective CPU Speed

To change the effective CPU speed to emulate an 8 MHz 80286, select "Slow" from the Utilities Menu. The system displays a message to indicate that it is operating in slow mode. The slow mode is necessary in some applications, such as installing copy-protected software.

To change the CPU speed back to 33 MHz, select "Fast" from the Utilities Menu. The system displays a message to indicate that it is operating in fast mode.

Enabling the Speaker

The Speaker On selection lets you turn on the system speaker. To use the utility, select "Speaker On" from the Utilities Menu.

Disabling the Speaker

The Speaker Off selection lets you turn off the system speaker. To use the utility, select "Speaker Off" from the Utilities Menu.

Install Utilities

This selection lets you install the configuration utilities on your hard disk. To use, select "Install Utilities" from the menu and follow the instructions on the screen.

Copy Diskette

The Copy Diskette Utility lets you copy a floppy disk. To use this utility, select it from the menu and follow the instructions on the screen.

ROM-based SETUP

The StarServer S also has a SETUP utility in ROM that allows you to set a limited number of system parameters. Refer to Appendix B, "ROM-based SETUP," for further information.

Problem Solving

5

This chapter helps you identify and solve problems that might occur while using the AT&T StarServer S. Refer to "Identifying and Solving System Problems" for a quick troubleshooting checklist and "Additional Troubleshooting Procedures" for more detailed information.

This chapter contains the following sections:

- Identifying and Solving System Problems — identifies common problems and provides suggestions on how to solve them.
- Additional Troubleshooting Procedures — provides detailed step-by-step procedures to help you troubleshoot the system using the diagnostic software options provided in this manual.
- Customer Diagnostics — describes how to use the software utilities on the Customer Diagnostics floppy disk.
- Diagnostic Tests — provides detailed test procedures for testing all modules supported by the system.

Identifying and Solving System Problems

This section describes how to identify and solve problems that can occur:

- At initial system startup
- When running a new application program after other programs have been running correctly
- During system operation after hardware and software have been running correctly

The following list identifies some specific problems and refers to the page describing possible solutions:

Power indicator LED does not light	5-12
System cooling fan does not rotate	5-12
No characters appear on screen	5-13
Characters appear on the screen, but are distorted or incorrect	5-13
No beep pattern or incorrect beep pattern	5-14
LED fault indicator remains lit after POST completes	5-14
Floppy disk drive access indicator does not light	5-14
Hard disk drive access indicator does not light	5-15
ECU does not boot	5-15
Problems with application software	5-16

Problems at Initial System Startup

Problems occurring at initial system startup are usually caused by incorrect installation or configuration. Hardware failure is a less frequent cause. Until you configure the system with the EISA Configuration Utility (ECU), you will probably see configuration errors.

Remedial Actions

- Are all cables correctly connected and secure?
- Are all jumper and switch settings on expansion boards and peripheral devices correct? Refer to the documentation shipped with expansion boards or other peripheral devices to check jumper and switch settings. If applicable, make sure there are no conflicts; e.g., two expansion boards sharing the same interrupt.
- Are all SIMMs installed correctly? Refer to Appendix C, "Expansion Kits," for installation instructions.
- Are all expansion boards, floppy disk drives, and hard disk drives installed correctly? Refer to Appendix C, "Expansion Kits," for installation instructions.
- Are system option values correct? (Run the ECU to review the values.) Refer to Chapter 3, "Getting Started," for complete details on running the ECU. Be sure that the NVRAM Reset jumper is in the normal (off) position before running the ECU. Refer to Appendix A, "Technical Characteristics," for details on the NVRAM Reset jumper.
- If the ECU does not load, make sure the floppy disk drive type and the onboard floppy controller enable settings are correct by using the ROM-based SETUP utility.
- Is the operating system compatible with the system and loaded properly? (Refer to your operating system documentation.)

If these items are correct and the problem recurs, or if you experience a problem making it impossible to complete the checklist, refer to the detailed troubleshooting instructions described later in this chapter.

Problems When Running a New Application Program (Other Programs Run Correctly)

Problems occurring when running a new application program are usually software-related. Faulty equipment is much less likely, especially if other programs run normally.

Remedial Actions

- Does the system meet the hardware requirements for the program, such as minimum memory, disk storage, and video display capabilities? (Refer to the software documentation.)
- Is the software an authorized copy? Unauthorized copies often do not work. Obtain an authorized copy of the software.
- If using the program from a floppy disk, is it a good copy?
- If using the program from a hard disk, was the program installed correctly? Were all necessary files installed?
- Are the correct device drivers installed?
- Is the program configured correctly for the system?
- Are you using the program correctly?

If problems persist, please contact the software vendor's Customer Service Representative before contacting AT&T.

Problems After the System and Software are Running Correctly

Problems occurring after system hardware and software are running often indicate an equipment failure. However, a number of easy-to-correct situations can also cause problems.

If a problem occurs while running a program from a floppy disk, try another copy of the program. If the new floppy disk works, make another copy of the program. (Refer to Chapter 4, "Operating Your System," for instructions on copying floppy disks.)

If a problem occurs while running a program from a hard disk, try running the program from a floppy disk. If the program runs correctly, there may be a problem with the copy of the program on the hard disk drive. Copy the program to the hard disk drive according to the instructions supplied with the program. Make sure all necessary files are installed.

If the problem recurs, the hard disk drive may need to be reformatted, or the drive Small Computer System Interface (SCSI) controller, or system board may be faulty. Refer to the "Customer Diagnostics" discussion later in this chapter.

Intermittent problems can result from a loose cable, dirt in the keyboard (if keyboard input is incorrect), a marginal power supply, or other random component failures.

If you receive any error messages, refer to Appendix G, "Messages," for an explanation of the messages and suggested corrective actions.

Remedial Actions

- Has a transient voltage spike occurred on a power line? (To check, reload the software and attempt the operation again.)
- Has a power outage or brownout occurred? (This condition requires the same remedial procedures as those described for power line transients.)

CAUTION
Voltage spikes occasionally cause disk drive heads to make contact with the disk. This can result in data files being corrupted or destroyed. If you are experiencing voltage surges or spikes on the power line, install a surge suppressor between the power outlet and the system module power cord.

If the problem recurs after all of these items have been checked and corrected, or the problem makes it impossible to complete the checklist, follow the additional troubleshooting procedures described in the next section.

Additional Troubleshooting Procedures

This section provides a more detailed approach to identifying a problem and locating its source.

Error Checking

The StarServer S has considerable error checking ability, including POST, Customer Diagnostics, and operating system error checking.

POST activates each time you power up the system, and checks certain functions of the system memory, system board, video display controller, floppy disk and hard disk drives, controllers, and peripheral devices.

If an error is encountered, an error message appears on the screen. If there is a problem with the video display, you may not see the error message. However, in addition to the screen messages, the fault indicator and various beep codes inform you of problems. The fault indicator remains lit if POST detects any errors; it goes out when POST executes successfully. The beep codes consist of a pattern of long and short beeps. One beep indicates the system passed POST.

Refer to Tables G-1, G-2, and G-3 in Appendix G for a list of items to check for each error code, and for an explanation of the error beep codes.

Customer Diagnostics allow you to perform detailed tests on all major components in the system.

Operating systems have varying degrees of error checking capability. Refer to the operating system manual for a list of possible error messages.

Troubleshooting Guide

Use the following step-by-step troubleshooting procedure to help you identify a problem. This general procedure leads you through the following process:

- Prepare the system for diagnostic testing
- Verify proper operation of key system indicators
- Monitor POST execution
- Confirm operating system loading
- Run Customer Diagnostics to isolate the faulty module

To prepare the system for testing, perform the following:

WARNING

Turn off the system power and the power to any peripheral devices before disconnecting peripheral cables from the system module. Failure to do so can cause permanent equipment damage.

1. Turn off the system power (2,E) and all power to external peripherals.
2. Disconnect all external system peripherals, excluding the keyboard and video display, from the system module. These devices can include printers, plotters, and modems.
3. Make sure the system module is connected to a properly grounded power outlet.
4. Make sure the video display and keyboard are correctly connected to the system module. Turn on the video display and then turn the video display brightness and contrast controls to at least two-thirds the maximum (refer to the documentation shipped with the video display).
5. If the operating system typically loads from the hard disk drive, make sure there is no floppy disk in drive A. Otherwise, place a floppy disk containing the operating system files in drive A.

After preparing the system module for testing, according to the previous procedures, turn on the system module and check for the following indications:

- The system module cooling fan rotates. Check for airflow from the vented area at the rear of the system (3,K). If not, refer to "System Cooling Fan Does Not Rotate" later in this section.
- The power-on LED is lit. If not, refer to "Power Indicator LED Does Not Light" later in this section.
- The video display power-on indicator is lit. If not, check the power connection to the system module. If the power connection is tight, contact your AT&T Service Representative.

If these system indicators are functioning, monitor POST as it executes to determine if the problem is due to a faulty system board, keyboard circuitry, or improper configuration.

As POST executes, a screen display similar to the following appears:

```
Phoenix 80486 ROM BIOS PLUS Version x.xx.yy
Copyright (c) 1985-1990 Phoenix Technologies Ltd.
All Rights Reserved

Copyright (c) 1990 AT&T. All rights reserved.

Resident Diagnostics
CPU (i80486, 33 MHz)   PASS
CMOS RAM               PASS
ROM Checksum           PASS
Memory Refresh         PASS
DMA Controllers        PASS
Interrupt Controller   PASS
Keyboard               PASS
Dedicated Memory       0384 KB
Base Memory            0640 KB
Extended Memory        3072 KB
Total Memory           4096 KB
Clock/Calendar         PASS
Coprocessor            PASS
Floppy Disks           1 Present
Hard Disks             1 Present
Primary Boot-Strap
```

When POST completes, the system beeps once if no configuration errors are detected.

If the screen does not appear, is unreadable, or of poor quality, refer to "No Characters Appear on Screen" or "Characters Appear on the Screen, but are Distorted or Incorrect" later in this section.

If the system halts before POST completes the first six tests (down to and including the Interrupt Controller test), a fatal system error has occurred requiring immediate attention. Note the screen display and write down any beep codes emitted. This information will be useful to your AT&T Service Representative.

As POST determines the system configuration, a test is performed on each magnetic peripheral installed in the system module to determine its presence. As each magnetic peripheral is checked, each peripheral access indicator should light briefly. Check for the following:

- The floppy disk drive A: access indicator lights briefly. If not, refer to "Floppy Disk Drive Access Indicator Does Not Light" later in this section.
- If a second floppy disk is installed (drive B), its access indicator lights briefly. If not, refer to "Floppy Disk Drive Access Indicator Does Not Light" later in this section.
- The hard disk drive access indicator lights briefly. If not, refer to "Hard Disk Drive Access Indicator Does Not Light" later in this section.

If configuration errors are detected, the system beeps twice, the LED fault indicator remains lit, and a message similar to the following appears:

```
Invalid configuration information -
  please run SETUP program
  Strike the F1 key to continue
```

If no errors are detected, the system beeps once. If no beep or more than one beep sounds, refer to "No Beep Pattern or Incorrect Beep Pattern" later in this section.

Note

Depending on the type of errors detected, different beep codes occur. Refer to Appendix G, "Messages," and Tables G-2 and G-3 for an explanation of each beep code and suggested remedial actions.

If a system password has not been initialized, POST turns system control over to the bootstrap routine. Otherwise a prompt appears requesting the entry of the system password. If this prompt appears, enter the correct system password to complete the boot process.

Once the boot process completes, the operating system prompt appears on the screen. This will vary in appearance, depending on the operating system setup.

If you did not have time to note all of these items, turn the system module power off and repeat this step as many times as necessary.

If POST does not report a system malfunction and your problem still persists, run the Test All Selected Modules option from Customer Diagnostics to isolate the faulty module. Refer to the "Customer Diagnostics" discussion later in this chapter.

Specific Problems and Remedial Actions

This section provides possible solutions for problems identified in the "Troubleshooting Guide" section. The following is a listing of the specific problems covered:

- Power indicator LED does not light
- System cooling fan does not rotate
- No characters appear on screen
- Characters appear on the screen, but are distorted or incorrect
- No beep pattern or incorrect beep pattern

- LED fault indicator remains lit after POST completes
- Floppy disk drive access indicator does not light
- Hard disk drive access indicator does not light
- The ECU does not boot
- Problems with application software

Try the solutions in the order given and, after taking any corrective action, return to step one of the "Troubleshooting Guide" section. If you cannot correct the problem, contact your AT&T Service Representative or authorized dealer for assistance.

Power Indicator LED Does Not Light

Check the following items:

- If the system is operating normally, the LED is probably defective or disconnected. Contact your AT&T Service Representative or authorized dealer for assistance.
- If the system has other problems, check the items listed under "System Cooling Fan Does Not Rotate." If all items are correct and problems persist, contact your AT&T Service Representative or authorized dealer for assistance.

System Cooling Fan Does Not Rotate

Check the following items:

- The power outlet is working and voltage is correct (115VAC) for the system module.
- The power cord is properly connected at both ends.
- The DC power connector is properly connected to the system cooling fan (22,D).

If all connections are tight and the power outlet is functioning, the power supply or power cord has probably failed. Contact your AT&T Service Representative or authorized dealer for assistance.

No Characters Appear on Screen

Check the following items:

- The video display power switch is turned on and its power indicator is lit.
- The video display brightness and contrast controls are adjusted properly.
- The video display signal cable and power cable connections are installed properly.

POST emits one long beep and four short beep or a long-short-long-short beep pattern to indicate a possible problem with the video display controller. If you do not receive a beep pattern and characters do not appear, the video display or video display controller might have failed. Contact your AT&T Service Representative or authorized dealer for assistance.

Characters Appear on the Screen, but are Distorted or Incorrect

Check the following items:

- The video display brightness and contrast controls are turned up. (Refer to the documentation shipped with the video display.)
- The video display signal and power cable connections are installed correctly.

If the problem still persists after checking the video display controls and connections, run the video system test from Customer Diagnostics.

If the video display controller passes the diagnostic tests, the most likely cause for distorted characters is a faulty video display. If you cannot solve the problem with the video display, contact your AT&T Service Representative or authorized dealer for assistance.

No Beep Pattern or Incorrect Beep Pattern

If there was no beep, but the system operates normally, the speaker may be disabled, disconnected, or has failed. Check the status of the speaker using the ECU. If the speaker is enabled and is still not functioning, contact your AT&T Service Representative or authorized dealer for assistance.

Record the beep pattern emitted by POST and refer to Appendix G, "Messages," and Tables G-2 and G-3 for information on beep pattern error messages.

LED Fault Indicator Remains Lit After POST Completes

Check the following:

- Run the ECU to identify and correct the configuration error.
- Run Customer Diagnostics to identify the failed module.

Floppy Disk Drive Access Indicator Does Not Light

Check the following items:

- The floppy disk drive power and signal cable connections are correctly and securely installed.
- All related switches and jumpers are correctly set. Refer to Appendix A, "Technical Characteristics," for switch and jumper information.
- The onboard floppy disk controller is enabled or disabled according to the system hardware configuration. Refer to Appendix B, "ROM-based SETUP," for information on this option.

If the problem persists, there may be a problem with the floppy disk drive, onboard floppy disk controller, system board, drive signal cable, or LED connector. Contact your AT&T Service Representative or authorized dealer for assistance.

Hard Disk Drive Access Indicator Does Not Light

Check the following items:

- The hard disk drive power and signal/data cable connections are correctly and securely installed.
- The hard disk access light cable is attached to the SCSI controller board.
- The SCSI controller board is correctly seated in its slot.
- All related switches, terminators, and jumpers are correct. Refer to Appendix A, "Technical Characteristics," for switch and jumper information.

If you received error messages, refer to Appendix G, "Messages," for an explanation. If you did not receive error messages, check the following:

- Run the ECU and make sure the hard disk drive is correctly configured. Also, make sure the hard disk drive is correctly initialized and partitioned, and the operating system is correctly installed on the boot partition.

If the problem persists, there may be a problem with the hard disk drive, SCSI controller board, system board, or drive cables. Contact your AT&T Service Representative or authorized dealer for assistance.

The ECU Does Not Boot

If the floppy disk drive access light comes on, but the ECU does not load, make sure the floppy disk is inserted correctly in the drive. The drive type for floppy disk drive A may be wrong. Verify that the drive type is correct for your floppy drive, using the ROM-based SETUP utility (see Appendix B). Also verify that the onboard floppy controller is enabled.

If the system still does not boot, the NVRAM contents may be corrupted. Reset the NVRAM contents by using the NVRAM reset jumper (see Appendix A).

Note
Resetting the NVRAM will erase all configuration settings. The system must be reconfigured by running the ECU (see Chapter 3).

If you receive one of the following messages, try booting another copy of the ECU from drive A:

```
Non-system disk or disk error
Replace and strike any key when ready
```

or

```
Sector not found. Error reading drive A.
Abort, Retry, Fail?
```

If the second copy of the ECU loads successfully, the first copy may be defective. If the second copy fails to load, check the floppy disk configuration and the state of the onboard floppy disk controller using the ROM-based SETUP utility described in Appendix B.

Problems With Application Software

Check the following items:

- Make sure the software is properly configured for the system. Refer to the software installation and operation documentation for instructions on setting up and using the software.
- Try a different copy of the software to see if the problem is with the copy you are using.

- Run Customer Diagnostics, running the keyboard and memory tests several times. Refer to Appendix G, "Messages," for an explanation of any diagnostic error message you might receive.
- Check the system board and video display controller board switch and jumper settings. Make sure all cable connections are correctly installed.
- Try running the software in slow mode. Refer to Chapter 3, "Getting Started," for detailed information on setting the system speed.
- If other programs run correctly on the system, contact your application software vendor for the software program that fails.

Customer Diagnostics

Customer Diagnostics helps you isolate problems by testing different components of the system. It lets you test system components individually (Test One Module option) or lets you test an entire set of selected system components at one time (Test All Selected Modules option). For example, if you have an intermittent memory problem, run the memory test (from the Test One Module option) several times to locate the fault.

Customer Diagnostics are designed to run in a system configured with 640KB of base memory. Before attempting to run Customer Diagnostics, please make sure your system is configured for 640KB and that no installed expansion board is configured to use the memory area between 512KB and 640KB.

Running Customer Diagnostics

The Customer Diagnostics program is menu-driven. Each menu has a window at the bottom of the screen that displays prompts, messages, and a list of keys that are active for that menu.

Use the keyboard cursor control keys (19,G) or the mouse (optional) to move the cursor to the menu items. Select menu items by pressing [Enter] or clicking the left mouse button. A beep sounds when inappropriate input is entered or an undefined key is pressed.

A help menu is available by pressing the [F1] key. Select an item on the menu and press [F1] to display information about a specific menu item.

Customer Diagnostics provides high resolution graphics of system modules during test execution. The files containing these graphics are contained on the Customer Diagnostics disk and are not stored in system memory. Because of this, test execution can be expedited by inhibiting the graphics when running the tests. Use the Customization Utilities option from the Main Menu or from the Manual Testing Menu to activate this option.

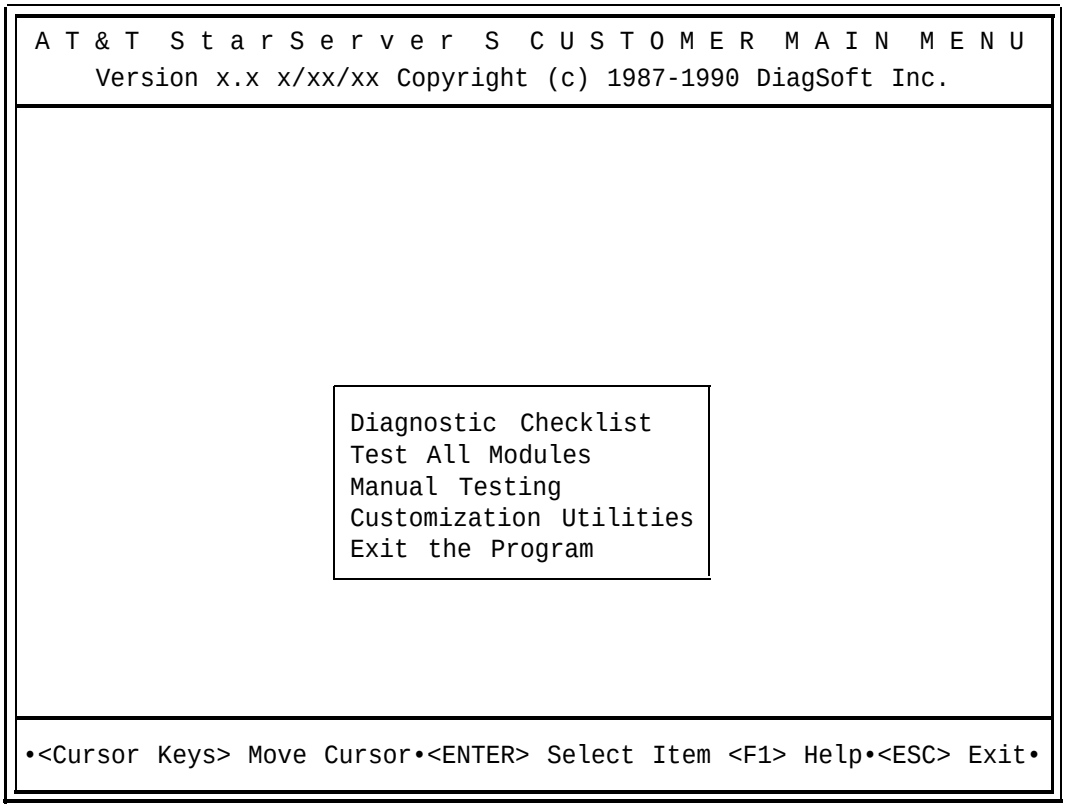
Note
Graphics are not displayed if your system is set for 512KB base memory size.

To run Customer Diagnostics, boot the system with the backup copy of the Customer Diagnostics disk (without write protection) in drive A. (Refer to "Starting the System" in Chapter 3.) After the system boots, the Introductory Screen appears.

If you press [Enter], the Customer Diagnostics Main Menu appears.

Main Menu

The Main Menu lists the major functions and utilities available in Customer Diagnostics. This menu appears as follows:



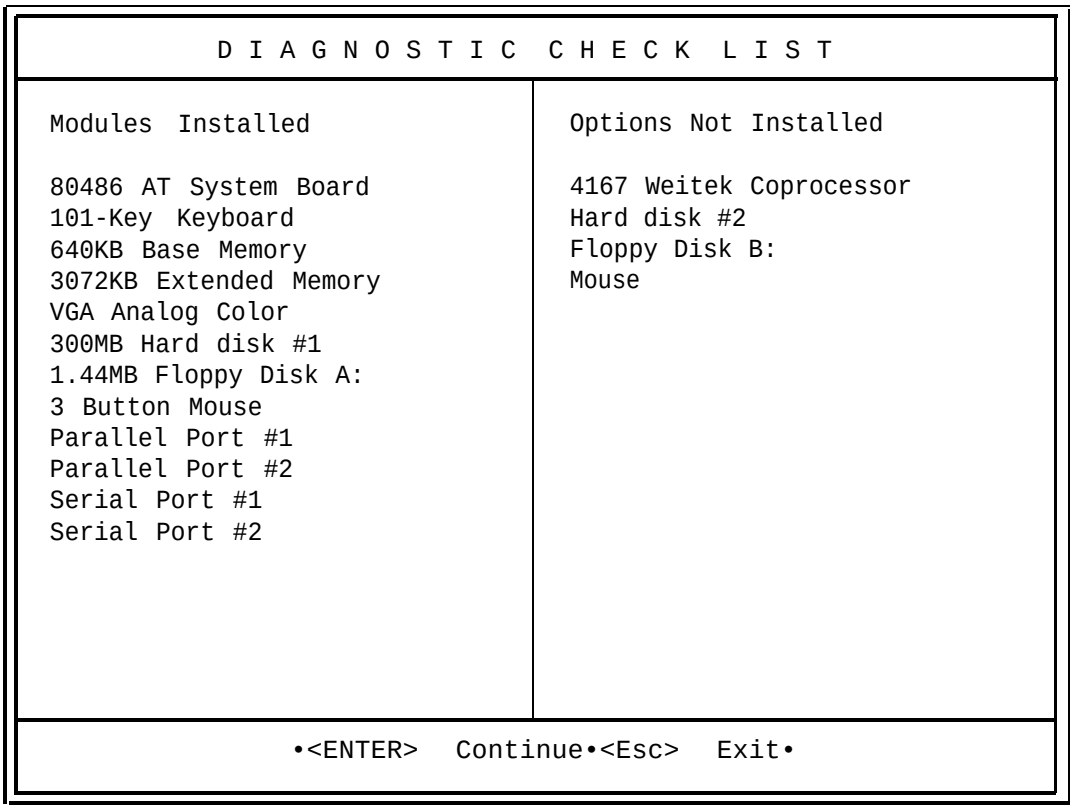
OM-00193-8

The rest of this chapter describes the options and utilities available on the Main Menu and on the Manual Testing Menu. First, an overview of each item is presented; then, details of each test are given (in the "Diagnostic Tests" section).

Diagnostic Check List

The Diagnostic Check List detects all supported modules installed in the system. It also creates a list of test options to be offered for testing. The Diagnostic Check List executes automatically before testing any of the listed test options.

After the Diagnostic Check List detects the supported modules, a report similar to the following appears on the screen. This report is divided into two windows. The left screen window, titled "Modules Installed," lists the modules found during the Diagnostic Check. Any modules not installed appear in the right screen window titled "Options Not Installed."



OM-00194-5

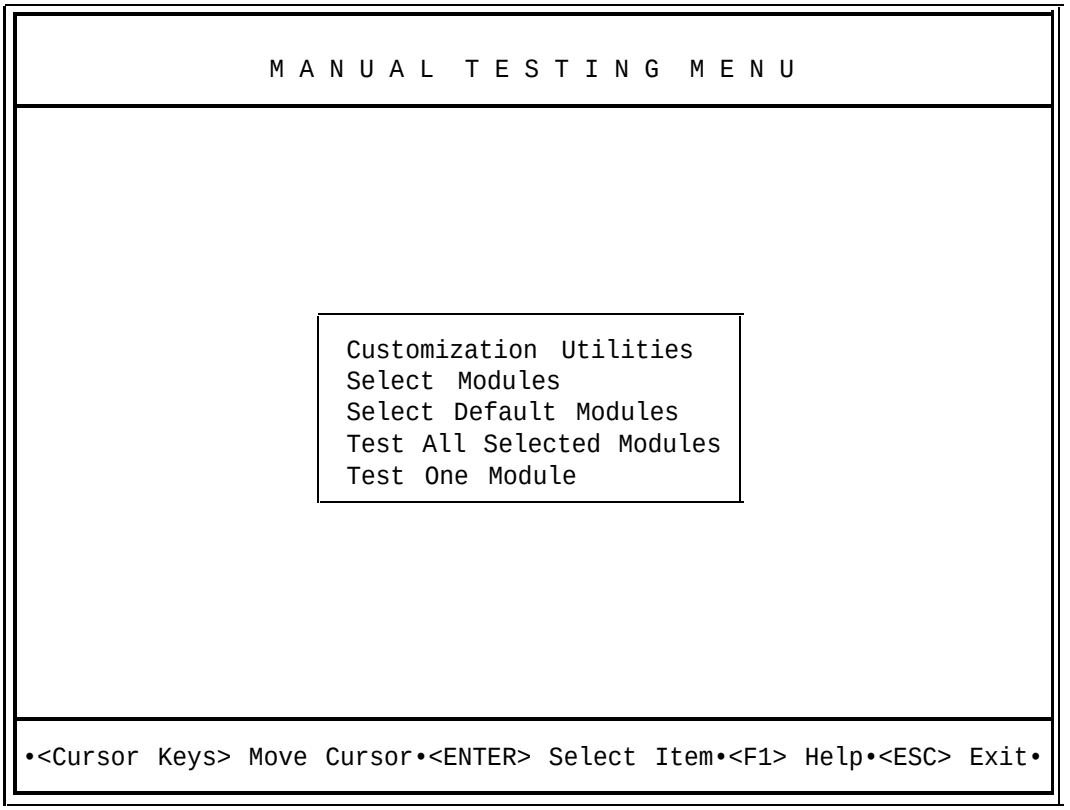
The Diagnostic Check List also verifies the type of video system and mouse installed in the system. If an unsupported video option is detected, the following disclaimer appears on the screen:

```
WARNING – This diagnostic does not support
          the detected video board. Video
          Test results may be unpredictable.
```

If the Diagnostic Check List is unable to identify the installed video system, the words "Not Identified" appear next to the video system item in the report.

Manual Testing

If you select the Manual Testing option, Customer Diagnostics displays the following Manual Testing Menu:



OM-00193-11

The Manual Testing Menu lets you select the modules that you want to test, and then lets you run the tests.

Customization Utilities

The Customization Utilities allow you to set parameters that control the program environment. The following menu items appear when you select the Customization Utilities option:

- Screen settings
- Beep on error
- Interactive mode
- Memory parameters
- Graphics pictures
- Lap count

The Interactive Mode allows either automatic (unattended) or interactive testing to be performed.

Screen Settings allows you to modify the video display colors. Customer Diagnostics automatically sets the most appropriate mode at startup. This setting may be useful if you are using a nonstandard video display controller.

Beep On Error checks the status of the speaker. If the speaker is disabled, then Beep On Error is off. If you want the Beep On Error option enabled, you must first enable the speaker (by using the speaker selection of the system configuration utilities; see Chapter 3, "Getting Started," for more details).

Graphics Pictures allow you to suppress (off option) the graphics displayed at the beginning of each test.

Lap Count allows you to set the number of times a specific test runs.

Memory Parameters allows you to enable or disable memory caching or to set a specified extended memory address range for testing.

Select Modules

The Select Modules option lets you select the modules that you want to test with the Test All Selected Modules option. Modules indicated by a >> symbol are selected for testing. Toggle the symbol on or off using the [Space Bar].

Select Default Modules

The Select Default Modules option lets you return the list of selected modules to the default provided by the Diagnostic Check List.

Test All Selected Modules

The Test All Selected Modules option performs tests on the selected modules with minimal operator intervention. The same tests can be performed one-at-a-time in the Test One Module option, described later in this chapter.

The following supported modules are tested:

- System board
- System memory
- Keyboard
- Video system
- Floppy disk drives
- Hard disk drives
- Numeric coprocessor
- Serial ports
- Parallel ports
- Mouse

When executing "Test All Selected Modules," each test screen includes a photographic representation of the module (unless disabled through the Customization Utilities) and a test progression bar indicating the percentage of the test completed. Refer to the "Diagnostic Tests" discussion later in this chapter for detailed testing procedures.

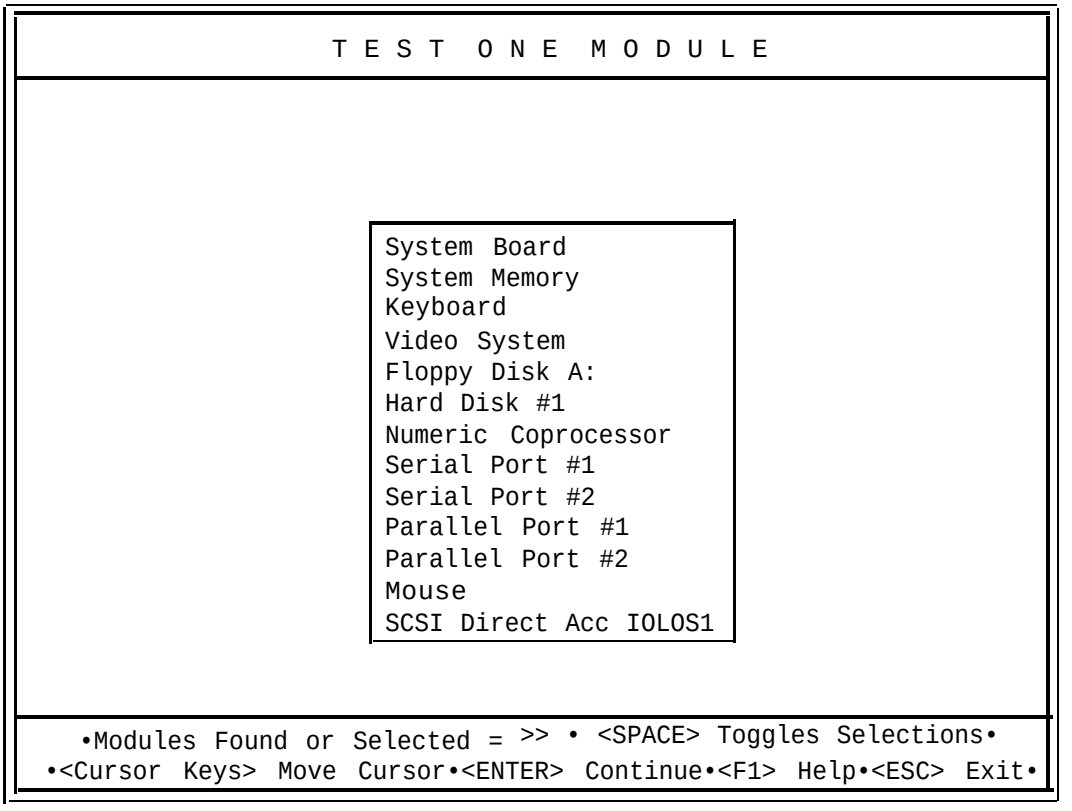
If the interactive mode is off, the following tests are not executed:

- Speaker test
- Floppy disk drive(s) test
- Keyboard keystrokes and typematic test
- Mouse test

The interactive mode can be set using the Customization Utilities option of the Main Menu or of the Manual Testing Menu.

Test One Module

The Test One Module option tests the module that you highlight from the following menu:



OM-00195-3

When executing the Test One Module option, a photographic representation of the module selected, and a test progression bar indicating the percentage of the test completed, appear on the module's test screen. Refer to the "Diagnostic Tests" discussion later in this chapter for detailed testing procedures.

Disk Utilities

Disk Utilities allow you to prepare a scratch floppy disk for testing and copy a floppy disk. When you select Disk Utilities, the following menu items appear:

- Prepare scratch disk A:
- Prepare scratch disk B:
- Copy diskette

Customization Utilities

This option is the same as the Customization Utilities option on the Manual Testing Menu.

Diagnostic Tests

This section provides individual test details for the StarServer S modules. These details are reflected in the Test All Selected Modules and Test One Module options described earlier in this chapter. The menu previously showing the "Test One Module" section lists the system modules that can be tested.

The test screen associated with each of these tests shows a graphic representation of the device being tested (if not suppressed), and a test progression bar showing the percentage of the test completed.

The lower portion of the screen displays the name of the current subtest being executed. Upon completion, the results of the test are displayed.

System Board Test

The System Board test checks the functionality of all major components on the system board. Tests include:

- An 80486 CPU test
- Internal cache test

- Internal coprocessor test
- Sanity timer test
- EISA bus controller (EBC) test
- Integrated system peripheral (ISP) test
- EISA compatible interrupts test

When you select the System Board test, a screen with a graphic representation of the system board appears.

System Memory Test

The System Memory test checks base memory and extended memory. This test does not destroy data in base memory, but does destroy data in extended memory.

Note
Make sure the internal cache and external cache features are turned off when performing system memory tests, and then restored to their initial values after you complete all system memory tests.

The following tests execute during the System Memory test:

- Memory address test
- Fixed pattern memory test
- Bus noise test
- Extended address test
- Shadow RAM test
- Cache test

When you select the System Memory test, a screen with a graphic representation of the system board SIMMs appears.

Keyboard Test

The Keyboard test checks the functionality of the keyboard, verifies the operation of each key, and tests the three indicator lights.

When you select the Keyboard test, a screen with a picture of the keyboard appears.

The screen disappears and a graphic representation of the keyboard appears. As the test progresses, the graphic representation shows the keys pressed and displays the corresponding scan code for those keys. The keyboard test also checks the keyboard indicator lights: Num Lock, Caps Lock, and Scroll Lock.

Video Test

The Video test checks the functionality of the video display and the video display controller.

All video tests are available when an AT&T video display controller and a video display are installed in the system. Otherwise, only the tests supported by the system configuration are available.

The video diagnostics support the following five blocks of video tests:

- AT&T specific
- Generic VGA
- Generic EGA
- Generic CGA
- Monochrome

Each block of tests contain both interactive and non-interactive tests. These categories are determined by the Customization Utilities option. Interactive tests require you to indicate pass, fail, or quit.

Video testing involves both the video display controller and the video display. When you select the Video test, a screen with a picture of the video display appears.

The screen disappears when the video test begins, and a series of screens appear showing the various operating modes of the video display controller.

Floppy Disk Test

The Floppy Disk test checks the functionality of the floppy disk drive(s) and the onboard floppy disk controller.

During the test, a prompt appears directing you to insert a scratch disk into the drive being tested. Insert a scratch disk that is compatible with the floppy disk drive. You will need a scratch disk that is compatible with each type of floppy disk drive being tested.

CAUTION
Do not use floppy disks that contain data. Any data on the floppy disks will be overwritten during the test.

The Floppy Disk test includes the following diagnostic tests:

- Sequential write/read
- Funnel seek
- Random read

When you select the Floppy Disk test, a screen with a picture of a floppy disk drive appears.

SCSI Hard Disk Test

The Hard Disk test performs the following diagnostic tests:

- Host adapter self test
- Reset test
- Device diagnostic test
- Device buffer test
- Random seek/verify
- Funnel seek
- Sequential seek/verify

When you select the Hard Disk test, a screen with a picture of a hard disk drive appears.

Numeric Coprocessor Test

The Numeric Coprocessor test includes:

- NPU functions test
- NPU math functions
- NPU interrupt test

When you select the Numeric Coprocessor test, a screen with a picture of the numeric coprocessor appears.

Serial Port #1 and Serial Port #2 Tests

The Serial Port test performs the following diagnostics:

- Data port test
- Internal loop-back

When you select the Serial Port #1 or Serial Port #2 test, a screen with a picture of the serial ports appears.

Parallel Port #1 and Parallel Port #2 Tests

The Parallel Port test performs the following diagnostics:

- Data port

When you select the Parallel Port #1 or Parallel Port #2 test, a screen with a picture of the parallel ports appears.

Mouse Test

The Mouse test checks the operation of the AT&T 320G Mouse installed in the system. The test can only be run in interactive mode. The Mouse test checks cursor movement and operation of the three mouse buttons.

When you select the Mouse test, a screen with a picture of a mouse appears.

Error Messages

When a diagnostic test fails, the system generates an error message identifying the defective module, along with a more technical description of the failure. If you receive error messages during any test, first retry the test. If it continues to fail, check all switches, jumpers, and connectors related to the system component identified. Also, check the system option values entered during initial system setup. After taking corrective action, retry the test. If the problem persists, contact your AT&T Service Representative or authorized dealer for assistance.

Exiting Customer Diagnostics

To exit Customer Diagnostics press [Esc] as many times as necessary to return to the Main Menu. Select "Exit the Program," and then press [Enter].

Technical Characteristics

A

Introduction

This appendix provides information about the technical characteristics of the AT&T StarServer S. Information includes:

- System specifications
- System board headers/connectors
- Power supply headers
- Video display controller connectors
- Small Computer System Interface (SCSI) connectors
- Supported peripheral jumper and switch settings
- System board jumper settings

System Specifications

System Board

CPU	80486
Word Size	32 bits
System Speed	33 MHz
Bus Clock Speed	8.33 MHz
EISA Burst Transfer Rate	33MB/sec
Data Path	8 bits, 16 bits, 32 bits
System Onboard Memory	4MB (expandable to 64MB)
Memory Speed	80 nsec
System ROM	128KB
Memory Addressing	
Physical Addressing	2^{20} bytes in real mode 2^{32} bytes in protected mode
Virtual Addressing:	2^{46} bytes in protected mode
Expansion Slots	Ten EISA slots

Dimensions

Width	7.75 inches (197 mm) - chassis 13.7 inches (348 mm) - with foot
Height	25.5 inches (648 mm) - with foot
Depth	31.4 inches (798 mm)
Weight	80 pounds (36 kg)

Environment

Operating Temperature	10 °C to 40 °C (50 °F to 104 °F)
Storage Temperature	–40 °C to 60 °C (–40 °F to 140 °F)
Operating Humidity	20% to 80%, noncondensing
Storage Humidity	5% to 92% noncondensing
Altitude	10,000 feet (3050 m) maximum
Noise	<50 dB, typical

Table A-1 lists the AC input power requirements.

Table A-1. AC Input Requirements

Voltage	Input Current	Frequency Limits
100 - 120VAC	8A	47 - 63Hz
200 - 240VAC	5A	47 - 63Hz

System Board Headers/Connectors

This section describes the signals present on all headers and connectors located on the system board. The following headers and connectors are described:

- Serial communications header
- Parallel headers
- EISA expansion slot connectors
- Keyboard and mouse connectors
- Power supply headers
- Onboard floppy disk controller header

Serial Communications Header

J15 is a 2×13 (26-pin) header that provides the serial communications channels. A ribbon cable maps J15 to two DB9 (AT-style) RS-232 connectors Serial Port #1 (3,J) and Serial Port #2 (3,D). The baud rates supported by the system for the serial ports are 300, 1200, 2400, 4800, 9600, 19,200, and 38,400.

Tables A-2 and A-3 list the pinout specifications for each serial connector, giving the header pin number, connector pin number, signal name, and signal function.

Table A-2. Serial Connector #1 Pinouts

J15 Pin #	DB9 Pin #	Signal	Function
1	1	DCD	Data carrier detect
2	6	DSR	Data set ready
3	2	RXD	Receive data
4	7	RTS	Request to send
5	3	TXD	Transmit data
6	8	CTS	Clear to send
7	4	DTR	Data terminal ready
8	9	RI	Ring indicator
9	5	GND	Ground
23	–		Key (pin missing)
24	–	MGTEST	Manufacturing test

Table A-3. Serial Connector #2 Pinouts

J15 Pin #	DB9 Pin #	Signal	Function
10	1	DCD	Data carrier detect
11	6	DSR	Data set ready
12	2	RXD	Receive data
13	7	RTS	Request to send
14	3	TXD	Transmit data
15	8	CTS	Clear to send
16	4	DTR	Data terminal ready
17	9	RI	Ring indicator
18	5	GND	Ground
23	–		Key (pin missing)
24	–	MGTEST	Manufacturing test

Parallel Headers

The system board has two parallel device headers that accept standard TTL-compatible printer cables (J13 and J14). J13 (LPT1) is used for parallel port #1 (3,E), and J14 (LPT2) is used for parallel port #2 (3,F). Table A-4 lists the pinout specifications for J13 and J14, giving the header pin number, parallel connector pin number, ribbon cable signal paths, signal name, and signal function.

Table A-4. Parallel Header/Connector Pinouts

J13 and J14 Pin #	DB25 Pin #	36-pin Ribbon Cable Pin #	Signal	Function
1	1	1	STROBE*	
2	14	14	AUTOFDT*	Auto feed
3	2	2	PRTD0	Data bit 0
4	15	32	ERROR*	
5	3	3	PRTD1	Data bit 1
6	16	31	INIT*	Initializing printer
7	4	4	PRTD2	Data bit 2
8	17	36	SLCTIN*	Select input
9	5	5	PRTD3	Data bit 3
11	6	6	PRTD4	Data bit 4
13	7	7	PRTD5	Data bit 5
15	8	8	PRTD6	Data bit 6
17	9	9	PRTD7	Data bit 7
19	10	10	ACK*	Acknowledge
21	11	11	BUSY	
23	12	12	PE	Paper end
25	13	13	SLCT	Select
10,12, 14,16, 18,22,24	18-25	19-30, 33	GND	Ground
–	–	17		Chassis ground

Expansion Slots

The system board contains ten EISA expansion slots (6,B). These slots accommodate any combination of EISA expansion boards, 16-bit ISA expansion boards, or 8-bit expansion boards (except drop cards).

The maximum available +5V current allowable to any expansion slot depends upon the following parameters:

- The number of +5V pins in the slot providing current
- The power supply capacity
- The current-carrying capability of the power connectors
- The power demands of both the system board and all other slots in use
- The system board circuit traces

WARNING

EISA bus connectors are limited to 3A per +5V pin maximum. The power supply connectors are limited to 5A *per pin maximum. These limitations plus the maximum capacity of the power supply itself may be more restrictive than the current limitations of the pins/connectors and expansion slots. As an overall limitation, do not exceed 30A total when computing total +5V current drain for the system board. This avoids damage to the power supply and system board.*

Table A-5 specifies the nominal current drain for various system board configurations.

Table A-5. Maximum +5V Current Drain on System Board

Element	Maximum +5V Current Required
System board (4MB onboard RAM, no Weitek coprocessor, no expansion boards)	11.5A
Weitek 4167 numeric coprocessor	0.3A

The following section describes the system board expansion slots and provides their pinout specifications.

EISA Expansion Slot Connectors

The system board has ten expansion slot connectors (J1 through J10, EISA slots 10 through 1, respectively) to accommodate EISA, ISA 16-bit, and 8-bit expansion boards. EISA slots one through six (J10-J5) are bus master/slave connectors. EISA slots seven through 10 are slave connectors.

EISA slot connectors are similar to existing 16-bit ISA slot connectors. The main difference between the two is the EISA onnectors have a second set of contacts. Stops or access keys are molded into the EISA connectors to prevent any 16-bit ISA or 8-bit expansion board edge from making contact with the second row of EISA contacts.

The pinout specifications for the EISA slot connectors are listed in Table A-6.

Table A-6. EISA Expansion Slot Pinout Specification

Pin #	Signal	Pin #	Signal
A1	IOCHCK*	B1	GND
A2	SD7	B2	RSTDRV
A3	SD6	B3	+ 5V
A4	SD5	B4	IRQ9
A5	SD4	B5	–5V
A6	SD3	B6	DRQ2
A7	SD2	B7	–12V
A8	SD1	B8	NOWS*
A9	SD0	B9	+12V
A10	CHRDY	B10	GND
A11	AENx	B11	SMWTC*
A12	SA19	B12	SMRDC*
A13	SA18	B13	IOWC*
A14	SA17	B14	IORC*
A15	SA16	B15	DACK3*
A16	SA15	B16	DRQ3
A17	SA14	B17	DACK1*
A18	SA13	B18	DRQ1
A19	SA12	B19	REFRESH*
A20	SA11	B20	BCLK
A21	SA10	B21	IRQ7
A22	SA9	B22	IRQ6
A23	SA8	B23	IRQ5
A24	SA7	B24	IRQ4

Table A-6. *(continued)*

Table A-6. EISA Expansion Slot Pinout Specification *(continued)*

Pin #	Signal	Pin #	Signal
A25	SA6	B25	IRQ3
A26	SA5	B26	DACK2*
A27	SA4	B27	T/C
A28	SA3	B28	BALE
A29	SA2	B29	+5V
A30	SA1	B30	OSC
A31	SA0	B31	GND
C1	SBHE*	D1	M16*
C2	LA23	D2	IO16*
C3	LA22	D3	IRQ10
C4	LA21	D4	IRQ11
C5	LA20	D5	IRQ12
C6	LA19	D6	IRQ15
C7	LA18	D7	IRQ14
C8	LA17	D8	DACK0*
C9	MRDC*	D9	DRQ0
C10	MWTC*	D10	DACK5*
C11	SD8	D11	DRQ5
C12	SD9	D12	DACK6*
C13	SD10	D13	DRQ6
C14	SD11	D14	DACK7*
C15	SD12	D15	DRQ7
C16	SD13	D16	+5V

Table A-6. *(continued)*

Table A-6. EISA Expansion Slot Pinout Specification *(continued)*

Pin #	Signal	Pin #	Signal
C17	SD14	D17	MASTER16*
C18	SD15	D18	GND
E1	CMD*	F1	GND
E2	START*	F2	+5V
E3	EXRDY	F3	+ 5V
E4	EX32*	F4	NC
E5	GND	F5	NC
E7	EX16*	F7	NC
E8	SLBURST*	F8	NC
E9	MSBURST*	F9	+12V
E10	EW/R	F10	EM/IO
E11	GND	F11	ELOCK*
E12	RESV1	F12	RESV4
E13	RESV2	F13	GND
E14	RESV3	F14	RESV5
E15	GND	F15	SBE3*
E17	SBE1*	F17	SBE2*
E18	LA31*	F18	SBE0*
E19	GND	F19	GND
E20	LA30*	F20	+5V
E21	LA28*	F21	LA29*
E22	LA27*	F22	GND
E23	LA25*	F23	LA26*

Table A-6. *(continued)*

Table A-6. EISA Expansion Slot Pinout Specification *(continued)*

Pin #	Signal	Pin #	Signal
E24	GND	F24	LA24*
E26	LA15	F26	LA16
E27	LA13	F27	LA14
E28	LA12	F28	+5V
E29	LA11	F29	+5V
E30	GND	F30	GND
E31	LA9	F31	LA10
G1	LA7	H1	LA8
G2	GND	H2	LA6
G3	LA4	H3	LA5
G4	LA3	H4	+5V
G5	GND	H5	LA2
G7	SD17	H7	SD16
G8	SD19	H8	SD18
G9	SD20	H9	GND
G10	SD22	H10	SD21
G11	GND	H11	SD23
G12	SD25	H12	SD24
G13	SD26	H13	GND
G14	SD28	H14	SD27
G16	GND	H16	SD29
G17	SD30	H17	+5V
G18	SD31	H18	+5V
G19	MREQx*	H19	MACKx*

Keyboard and Mouse Connectors

The keyboard connector and mouse connector have six pins each (see Figure 16).

Table A-7 lists pinout specifications for the keyboard and mouse connectors.

Table A-7. Keyboard and Mouse Connector Pinouts

Pin #	Signal
1	Data
2	Reserved
3	Ground
4	+5VDC
5	Clock
6	Reserved

Power Supply Headers

The 12-pin (J30) and 6-pin (J33) headers, located on the system board (6,C,D,E), receive power from power supply connectors PS1, PS2, and PS3. This power is distributed to the system board's components and the ten EISA expansion slots. Tables A-8 and A-9 list the pinouts for the system board power headers J30 and J33.

Table A-8 System Board Power Connector J30 Pinout

J30 Pin #	Description	Power Supply Connector
1	No connection	PS1 - Orange
2	+5V	PS1 - Red
3	+12V	PS1 - Yellow
4	–12V	PS1 - Blue
5	Ground	PS1 - Black
6	Ground	PS1 - Black
7	Ground	PS2 - Black
8	Ground	PS2 - Black
9	–5V	PS2 - White
10	+5V	PS2 - Red
11	+5V	PS2 - Red
12	+5V	PS2 - Red

Table A-9. System Board Power Connector J33 Pinout

J33 Pin #	Description	Power Supply Connector
1	+5V	PS3 - Red
2	+5V	PS3 - Red
3	+5V	PS3 - Red
4	Ground	PS3 - Black
5	Ground	PS3 - Black
6	Ground	PS3 - Black

The remaining power supply connectors, PS4 - PS8 (all identical) supply power to the system cooling fan, power distribution board, and the peripheral devices mounted in the peripheral device bays. The power distribution board provides additional power connections for peripheral devices.

Onboard Floppy Disk Controller Header

A ribbon cable connects the onboard floppy disk controller header to the floppy disk drive. The system board header supporting the floppy disk controller is J21 (6,I). Table A-10 lists the pinouts for the onboard floppy disk controller header, giving the header pin number, signal name, and signal function.

Table A-10. Onboard Floppy Disk Controller Header Pinouts

J21 Pin #	Signal	Function
2	LD	Density select
8	INDEX	Track index
10	MOTENA	Motor enable A
12	DRVSELB	Drive select B
14	DRVSELA	Drive select A
16	MOTENB	Motor enable B
18	DIR	Direction
20	STEP	Step
22	WRDATA	Write data
24	FLPYWE	Floppy write enable
26	TRACK0	Track zero
28	WP	Write protect
30	RDDATA	Read data
32	HDSEL	Head select
34	DSKCHNG	Disk change

Video Display Controller (VDC) Connectors

The VDC 600 and VDC 800 each have a single 15-pin female connector (28,D), (29,D). Table A-11 list the signals present at each pin location.

Note
Pin one is located at the upper left-hand corner of the connector. Pin 15 is at the lower right-hand corner.

Table A-11. Video Display Controller Video Connector

Pin No.	Function
1	Red video
2	Green video
3	Blue video
4	Monitor identification bit 2 (not used)
5	Ground
6	Red return (ground)
7	Green return (ground)
8	Blue return (ground)
9	Key position (no pin)
10	Sync return (ground)
11	Monitor identification bit 0 (not used)
12	Monitor identification bit 1 (not used)
13	Horizontal sync
14	Vertical sync
15	Not used

The VDC 600 and VDC 800 controllers connect to each other via their feature connectors. Details on these connectors may be found in the VDC 600 and VDC 800 User's Guides and the StarServer S Hardware Reference Manual. See Appendix F, "Orderable Documentation."

SCSI Connectors

The SCSI controller board, hard disk drive, and streaming tape unit (STU) each have a single 50-pin male connector (see Figure 30). Table A-12 lists the signals present at each pin location.

Jumper and Switch Settings

This section provides jumper and switch settings for all standard peripheral devices in the system. These include the following:

- Video display controllers
- Hard disk drives
- Floppy disk drives
- Streaming tape units
- SCSI controller board

Table A-12. SCSI Connector Pinouts

Pin No.	Signal
1 – 23 odd	Ground
25	Not connected
27 – 49 odd	Ground
2	DATA BIT 0
4	DATA BIT 1
6	DATA BIT 2
8	DATA BIT 3
10	DATA BIT 4
12	DATA BIT 5
14	DATA BIT 6
16	DATA BIT 7
18	DATA PARITY ODD
20, 22, 24	Reserved
26	TERMINATION POWER
28, 30	Reserved
32	ATTENTION
34	Reserved
36	BUSY
38	ACKNOWLEDGE
40	RESET
42	MESSAGE
44	SELECT
46	CONTROL/DATA
48	REQUEST
50	INPUT/OUTPUT

VDC Switches and Jumpers

The VDC 600 and VDC 800 contain DIP switches and jumpers that are used to alter their operating characteristics. The following sections describe each DIP switch and jumper setting for the VDCs.

VDC 600

The VDC 600 provides four DIP switches (28,A) and two jumpers (28,B,C) for changing its operating characteristics. Table A-13 lists the functions associated with each switch setting.

Table A-13. VDC 600 Switch Functions

Switch No.	Position	Function
1	On	multifrequency display timing
	Off†	fixed frequency and AT&T dual frequency display timing
2	On†	all modes available
	Off	color or mono modes on corresponding display
3	On	not currently used (place in off position)
	Off†	normal operating position
4	On†	16-bit video memory path
	Off	8-bit video memory path

† Default

The two jumpers are W1 and W2. Jumper W1 enables the autosense feature of the VDC 600. The autosense feature automatically determines whether the VDC 600 configures itself for 8- or 16-bit video BIOS access (W1 installed, default), or uses the 16-bit BIOS access only (W1 removed). Jumper W2 is the feature connector clock jumper and must remain across pins one and two in order to use the 800 × 600 graphics and 132-column text modes. Refer to your VDC 600 manual for more information.

VDC 800

The VDC 800 provides four DIP switches (29,B) and three jumpers (29,A,C) for changing its operating characteristics. Table A-14 lists the functions associated with each switch setting.

Table A-14. VDC 800 Switch Functions

Switch No.	Position	Function
1	On†	Onboard BIOS at location C8800H
	Off	Onboard BIOS at location D8800H
2 and 3	On	Display timing compatible with IBM 8514/A video displays
2 and 3	Off†	Generates 70 Hz non-interlaced timing operation
2	Off	Generates 60 Hz non-interlaced timing operation
3	On	
4	On	Sends a signal composed of HSYNC and VSYNC to the video display
	Off†	Sends HSYNC and VSYNC to the video display

† Default settings

The VDC 800 configuration jumpers are used for interrupt generation and bus timing. The interrupt selection jumper allows the VDC 800 to generate system interrupt INT5 or INT10. The other two jumpers control bus timing. Both jumpers must be moved as a pair to select 8514/A timing or other timing. Refer to the VDC 800 User's Guide for more information.

Hard Disk Drive Jumpers

The following sections provide the default jumper settings for the Seagate and Hewlett Packard 300MB, 600MB, and 1GB hard disk drives.

Seagate 300MB Hard Disk Drive Jumpers

Refer to Figures 31 and 32 for the jumper locations.

Table A-15. Seagate 300MB Hard Disk Drive Jumper Settings

Jumper	Setting	Function
J1-1	Not installed	Ground select
J1-2	Not installed	Ground select
J1-3	Not installed	SCSI ID (binary 1)
J1-4	Not installed	SCSI ID (binary 2)
J1-5	Not installed	SCSI ID (binary 4)
J1-6	Not installed	Motor start
J1-7	Installed	Parity

J1-3, J1-4, and J1-5 must be jumpered for the desired SCSI ID.

Hewlett Packard 300MB Hard Disk Drive Jumpers

Refer to Figure 33 for the jumper locations.

Table A-16. HP 300MB Hard Disk Drive Jumper Settings

Jumper	Setting	Function
J2-1	Not installed	SCSI ID (binary 1)
J2-2	Not installed	SCSI ID (binary 2)
J2-3	Not installed	SCSI ID (binary 4)
J2-4	Installed	Motor start
J2-5	Installed	Parity
J2-6	Installed	Drive initiation of synchronous
J2-7	Installed	Reserved
J2-8	Not installed	Synchronous spindle
J2-9	Not installed	Synchronous spindle

J2-1, J2-2, and J2-3 must be jumpered for the desired SCSI ID.

Seagate 600MB Hard Disk Drive Jumpers

Refer to Figures 34 and 35 for the jumper locations.

Table A-17. Seagate 600MB Hard Disk Drive Jumper Settings

Jumper	Setting	Function
J3-1	Installed	Parity
J3-2	Not installed	Motor start
J3-3	Not installed	SCSI ID (binary 1)
J3-4	Not installed	SCSI ID (binary 2)
J3-5	Not installed	SCSI ID (binary 4)
J3-6	Not installed	Terminator power
J3-7	Not installed	Terminator power

A terminator jumper should be installed horizontally across the bottom jumper pins of J3-6 and J3-7.

J3-3, J3-4, and J3-5 must be jumpered for the desired SCSI ID.

Hewlett Packard 600MB Hard Disk Drive Jumpers

Refer to Figure 33 for the jumper locations.

Table A-18. HP 600MB Hard Disk Drive Jumper Settings

Jumper	Setting	Function
J2-1	Not installed	SCSI ID (binary 1)
J2-2	Not installed	SCSI ID (binary 2)
J2-3	Not installed	SCSI ID (binary 4)
J2-4	Installed	Motor start
J2-5	Installed	Parity
J2-6	Installed	Drive initiation of synchronous
J2-7	Installed	Reserved
J2-8	Not installed	Synchronous spindle
J2-9	Not installed	Synchronous spindle

J2-1, J2-2, and J2-3 must be jumpered for the desired SCSI ID.

Seagate 1GB Hard Disk Drive Jumpers

Refer to Figures 36 and 37 for the jumper locations.

Table A-19. Seagate 1GB Hard Disk Drive Jumper Settings

Jumper	Setting	Function
J5-1	Not installed	Reserved
J5-2	Not installed	Parity
J5-3	Not installed	Motor start
J5-4	Not installed	SCSI ID (binary 1)
J5-5	Not installed	SCSI ID (binary 2)
J5-6	Not installed	SCSI ID (binary 4)
J5-7	Installed	Terminator power
J5-8	Not installed	Terminator power

A terminator jumper should be installed horizontally across the bottom jumper pins of J5-6 and J5-7.

J5-3, J5-4, and J5-5 must be jumpered for the desired SCSI ID.

Floppy Disk Drive Jumpers

The AT&T StarServer S can be expanded by adding an additional 1.44MB 3.5-inch floppy disk drive or a 1.2MB 5.25-inch floppy disk drive. The following paragraphs describe jumper information necessary to configure both types of floppy disk drives for installation into the system module.

3.5-inch Floppy Disk Drive Jumpers

The 3.5-inch floppy disk drive allows the system to read and write data on 1.44MB or 720KB 3.5-inch floppy disks. Figure 38 shows the location of all jumpers. The default jumper settings for the 3.5-inch floppy disk drive are:

- Drive select switch (SW3) set to 1
- Spindle motor switch (SW2) set to MO
- PS2/AT switch (SW5) set to PS2
- READY/DISKCHANGE switch (SW1) set to DC
- Interface switch (SW6) set to NC/OUT/NC

If two 3.5-inch floppy disk drives are installed in the system, the jumper settings are the same for each.

5.25-inch Floppy Disk Drive Jumpers

The 5.25-inch floppy disk drive allows the system to read and write data on 1.2MB disks and read data from 360KB disks. Jumpers located on the 5.25-inch floppy disk drive have the default configuration listed in Table A-20. Figure 39 shows the location of all jumpers.

Note
The 360KB disks can be written to by a 1.2MB floppy disk drive, but may not be readable on 360KB floppy disk drives.

If a 5.25-inch floppy disk drive is the second floppy disk drive installed in the system, remove the termination jumper TM. Do not change any other jumpers.

Table A-20. 5.25-inch Floppy Disk Drive Default Jumper Settings

Jumper	Setting
DS0	Not installed
DS1	Installed
DS2	Not installed
DS3	Not installed
MX	Not installed
DA	Installed
UA	Not installed
HA	Not installed
LA	Not installed
OP	Installed
1M	Not installed
MS	Not installed
MM	Installed
BX	Not installed
MDA	Not installed
MDB	Not installed
TM	Installed‡

† Covered by EMI shield

‡ For drive A; remove for drive B

Streaming Tape Units

The following sections provide jumper settings for the 120MB and 320/525MB SCSI streaming tape units (STUs).

120MB SCSI STU

The 120MB SCSI streaming tape unit allows the system to read and write data on 120MB 1/4-inch data cartridges. Figures 40 and 41 show the location of all jumpers on the unit. Table A-21 lists the default settings for the jumpers.

Table A-21. 120MB STU Jumper Settings

Jumper	Setting
HDR1-1	Not installed
HDR1-2	Not installed
HDR1-3	Not installed
HDR1-4	Not installed
HDR1-5	Not installed
HDR1-6	Installed
HDR2-15 to 16	Installed
HDR2-17 to 18	Installed
HDR2-19 to 20	Installed
Other HDR2 pins	Not installed
HDR3-1	Installed (A-B position)
HDR3-2	Not installed
HDR3-3	Installed (A-B position)
HDR3-4	Installed (A-B position)
J10-1	Not installed
J10-2	Not installed
J10-3	Not installed
E1	Installed
E2	Installed
E3	Installed
E4	Not installed
E5	Installed
E6	Installed
E7	Installed
E8	Installed
E9	Installed (1-2 position)
E10	Installed (2-3 position)

J10-1, J10-2, and J10-3 must be jumpered for the desired SCSI ID.

320/525MB SCSI STU

The 320/525MB SCSI streaming tape unit allows the system to read and write data on 320MB/525MB 1/4-inch data cartridges. Figures 42 and 43 show the location of all jumpers on the two board assemblies (numbers 31320 and 33584) of the unit. Tables A-22 and A-23 list the default settings for the jumpers.

Table A-22. 320/525MB STU Jumper Settings (Assy #31320)

Jumper	Setting
JP1-1	Not installed
JP1-2	Not installed
JP1-3	Not installed
JP1-4	Not installed
JP2-1	Not installed
JP2-2	Not installed
JP2-3	Not installed
JP2-4	Not installed
JP2-5	Installed
JP2-6	Not installed
JP2-7	Not installed
JP2-8	Not installed
JP2-9	Not installed
JP3	Not installed
E2	Not installed
E3	Not installed
F1	Installed

JP1-1, JP1-2, and JP1-3 must be jumpered for the desired SCSI ID.

Table A-23. 320/525MB STU Jumper Settings (Assy #33584)

Jumper	Setting
JP1	Installed

System Board Jumper Settings

Jumper settings provide reset information to the CPU (see Figure 44). Each jumper pin is labeled on the system board by the letter E and a number. For example: E5.

You usually will not have to change the factory (default) jumper settings. However, if you forget the system password, for example, you can change the password jumper to clear the password and again make the system operable.

Changing Jumper Settings

To change a jumper setting, remove the jumper from its current location with your fingers. Position the jumper over the two pins designated for the desired setting. Press the jumper evenly onto the pins (see Figure 45). Be careful not to bend the pins.

Jumper Setting Options

Jumper settings provide the following reset information to the CPU:

- System password reset
- NVRAM reset to factory default.

System Password Reset Jumper

Reset the system password by using the following procedure:

Note
Do not change the NVRAM jumper at the same time.

1. Move the password jumper from E3/E4 to E4/E5.
2. Turn the system on and wait for POST to complete.
3. Turn the system off.
4. Move the jumper from E4/E5 back to E3/E4 (refer to Table A-24).

After clearing the system password, run the ECU to specify a new password. Refer to Chapter 3, "Getting Started," for information on how to use the ECU.

Table A-24. Password Reset Jumper Settings

Option	Jumper Pin Setting
Normal operation	E3 to E4†
Clear password	E4 to E5

† Default

NVRAM Reset Jumper

Reset the system's NVRAM to factory default values by using the following procedure:

Note
Do not change the password jumper at the same time.

1. Move the NVRAM jumper from E6/E7 to E7/E8.
2. Turn the system on and wait for POST to complete.
3. Turn the system off.
4. Move the jumper from E7/E8 back to E6/E7 (refer to Table A-25).

After clearing NVRAM, execute the ECU to configure your system. Refer to Chapter 3, "Getting Started," for information on how to use the ECU.

Table A-25. NVRAM Reset Jumper Settings

Option	Jumper Pin Setting
Normal operation	E6 to E7†
Clear NVRAM	E7 to E8

† Default

Messages

G

This appendix describes the various AT&T StarServer S screen and error messages. Information is grouped as follows:

- Power-on self test (POST) and boot error messages
- POST and boot information messages
- Run-time messages
- System board errors
- Beep codes for fatal errors
- Beep codes for non-fatal errors

Table G-1 provides a quick reference of error messages, possible causes, and solutions. Tables G-2 and G-3 list beep codes.

Note
Italics indicate variable parts of a message, such as memory addresses. These can differ at each occurrence.

Table G-1. Quick Reference to Error Messages

Message	Page
Clock chip lost power	G-6
CMOS checksum invalid	G-6
Configuration error for slot x	G-16
Decreasing available memory	G-18
Disk C failed initialization	G-6
Diskette drive 0 seek failure	G-5
Diskette drive 1 seek failure	G-5
Diskette subsystem reset failed	G-18
Display adapter failed ...	G-17
Gate A20 failure	G-6
Hard disk configuration error	G-7
Hard disk controller failure	G-7
Hard disk failure	G-7
Hard disk read failure ...	G-8
hex-valuek base memory	G-18
hex-valuek extended	G-18
hex-value optional ROM ...	G-8
ID information mismatch for slot x	G-17
I/O card parity interrupt . . .	G-19
Incorrect configuration data ...	G-6
Invalid configuration information ...	G-8
Invalid EISA configuration storage	G-17
Keyboard clock line failure	G-9
Keyboard controller failure	G-9
Keyboard data line failure	G-9
Keyboard stuck key failure	G-9
Memory address line failure at ...	G-10
Memory data line failure at ...	G-10
Memory double word logic ...	G-11
Memory high address line ...	G-11
Memory odd/even logic ...	G-12

Table G-1. *(continued)*

Table G-1. Quick Reference to Error Messages *(continued)*

Message	Page
Memory parity failure at ...	G-12
Memory parity interrupt at ...	G-19
Memory size in CMOS invalid	G-6
Memory test terminated by keystroke	G-18
Memory write/read failure at ...	G-13
No boot device available ...	G-13
No boot sector on hard disk ...	G-13
No timer tick interrupt	G-14
Not a boot diskette ...	G-14
Shadow of system BIOS failed ...	G-14
Shadow of video BIOS failed ...	G-14
Shutdown failure	G-15
Strike the F1 key to continue ...	G-19
Time or date in CMOS is invalid	G-6
Time-of-day clock stopped	G-15
Time-of-day not set ...	G-15
Timer chip counter 2 failed	G-15
Timer or interrupt controller bad	G-16
Unexpected interrup ...	G-16
Unexpected HW interrupt at ...	G-20
Unexpected SW interrupt at ...	G-20
Unexpected type 02 interrupt at ...	G-20

POST and Boot Messages

POST displays messages indicating errors in hardware, software, or firmware, or to provide other information.

If a video display is initialized, POST displays the message on the screen and the speaker beeps twice as the message appears. However, if an error occurs before the video display is initialized, POST cannot display messages on the screen and sounds a series of beep codes, indicating an error.

The next three sections provide a general grouping of messages, with each group arranged in alphabetical order. Each message is accompanied by a short paragraph describing the message and gives a recommended solution to the problem.

Note

Italics indicate variable parts of a message, such as memory addresses. These can differ at each occurrence.

POST and Boot Error Messages

Message:	`Diskette drive 0 seek failure`
Possible Cause:	Drive A has either failed or is missing.
Solution:	Verify the settings for drive A using ROM-based SETUP. Verify that the onboard floppy controller setting is correct. Make sure drive A is present and the floppy disk is inserted properly. If they are, then drive A might have failed.
Message:	`Diskette drive 1 seek failure`
Possible Cause:	Drive B has either failed or is missing.
Solution:	Make sure drive B is present and the floppy disk is inserted properly. If they are, then drive B might have failed or the ECU configuration is wrong. Make sure the onboard floppy settings are correct by using the ECU.

Note

The following basic message precedes any of the possible errors numbered one through six. These errors can only occur when SETUP executes.

Message:	Errors have been found during the power on self test in your system. The errors were: 1 Clock chip lost power 2 CMOS checksum invalid 3 Incorrect configuration data in CMOS 4 Memory size in CMOS invalid 5 Disk C: failed initialization 6 Time or Date in CMOS is invalid Hit any key to continue
Possible Cause:	The configuration information stored in the real-time clock chip or NVRAM does not agree with the hardware configuration of your system.
Solution:	Run the EISA Configuration Utility (ECU) to verify system configuration information. Reboot the system.
Message:	Gate A20 failure
Possible Cause:	The system cannot switch into protected mode.
Solution:	Run Customer Diagnostics to diagnose the problem. If the problem persists, call your AT&T Representative or authorized dealer.

Message:	`SCSI hard disk configuration error`
Possible Cause:	The specified configuration is incorrect.
Solution:	Run the ECU and enter the correct hard disk drive type.
Message:	`SCSI hard disk controller failure`
Possible Cause:	The SCSI controller board has failed.
Solution:	Check both ends of the controller's cables, reseat the SCSI controller board, and make sure the SCSl controller board's jumper settings are correct. If the message recurs, replace the SCSI controller board. Verify the jumper settings on SCSI devices.
Message:	`Hard disk failure`
Possible Cause:	The hard disk drive has failed.
Solution:	Check the system configuration and drive type by running the ECU. Check both ends of the controller's cables, and reseat the SCSI controller board.

Message:	`hard disk read failure - strike F1 to retry boot`
Possible Cause:	The hard disk drive has failed.
Solution:	Check the system configuration and drive type by running the ECU. Check both ends of the controller's cables, and reseat the SCSI controller board. Run Customer Diagnostics to test the hard disk drive and SCSI controller board.
Message:	*hex-value* `Optional 41 00:ROM bad checksum = ` *hex-value*
Possible Cause:	An expansion board contains a failed ROM or its address conflicts with another card.
Solution:	Replace the ROM, the expansion board, or correct the address conflict.
Message:	`Invalid configuration information - please run SETUP program`
Possible Cause:	The memory size is incorrect, the display is configured incorrectly, or the number of floppy disk drives is incorrect.
Solution:	Check the system configuration by running the ECU.

Message:	`Keyboard clock line failure`
Possible Cause:	The keyboard or the keyboard cable connection has failed.
Solution:	Check the keyboard connections. If both connections are good, the keyboard might have failed. Run Customer Diagnostics to diagnose the problem.
Message:	`Keyboard controller failure`
Possible Cause:	The keyboard controller has failed.
Solution:	Run Customer Diagnostics to diagnose the problem. If the problem persists, call your AT&T Representative or authorized dealer.
Message:	`Keyboard data line failure`
Possible Cause:	The keyboard or the keyboard cable connection has failed.
Solution:	Check the keyboard connection. If connection is good, the keyboard might have failed. Run Customer Diagnostics to diagnose the problem.
Message:	`Keyboard stuck key failure`
Possible Cause:	One or more of the keys is pressed.
Solution:	Release the key or keys and try again.

Message:	`Memory address line failure at` *`hex-value,`* `read` *`hex-value`* `expecting` *`hex-value`*
Possible Causes:	One of the SIMMs or associated circuitry has failed.
Solution:	Check for failed SIMMs and replace if necessary. Check for correct installation and reseat if necessay. Run Customer Diagnostics. If the message repeats, contact your AT&T Representative or authorized dealer.
Message:	`Memory data line failure at` *`hex-value,`* `read` *`hex-value,`* `expecting` *`hex-value`*
Possible Causes:	One of the SIMMs or associated circuitry has failed.
Solution:	Check for failed SIMM and replace if necessary. Check for correct installation and reseat if necessary. Run Customer diagnostics. If the message repeats, contact our AT&T Representative or authorized dealer.

Message:	`Memory double word logic failure at` *`hex-value,`* `read` *`hex-value`* `expecting` *`hex-value`*
Possible Cause:	One of the SIMMs or associated circuitry has failed.
Solution:	Check for failed SIMM and replace if necessary. Check for correct installation and reseat if necessary. Run Customer Diagnostics. If the message repeats, contact your AT&T Representative or authorized dealer.
Message:	`Memory high address line failure at` *`hex-value,`* `read` *`hex-value`* `expecting` *`hex-value`*
Possible Cause:	One of the SIMMs or associated circuitry has failed.
Solution:	Check for failed SIMM and replace if necessary. Check for correct installation and reseat if necessary. Run Customer Diagnostics. If the message repeats, contact your AT&T Representative or authorized dealer.

Message:	`Memory odd/even logic failure at` *`hex-value`*`, read` *`hex-value`* `expecting` *`hex-value`*
Possible Cause:	One of the SIMMs or associated circuitry has failed.
Solution:	Check for failed SIMM and replace if necessary. Check for correct installation and reseat if necessay. Run Customer Diagnostics. If the message repeats, contact your AT&T Representative or authorized dealer.
Message:	`Memory parity failure at` *`hex-value`*`, read` *`hex-value`* `expecting` *`hex-value`*
Possible Cause:	One of the SIMMs or associated circuitry has failed.
Solution:	Check for failed SIMM and replace if necessary. Check for correct installation and reseat if necessary. Run Customer Diagnostics. If the message repeats, contact your AT&T Representative or authorized dealer.

Message:	`Memory write/read failure at` *`hex-value`*`, read` *`hex-value`* `expecting` *`hex-value`*
Possible Cause:	One of the SIMMs or associated circuitry has failed.
Solution:	Check for failed SIMM and replace if necessary. Check for correct installation and reseat if necessary. Run Customer Diagnostics. If the message repeats, contact your AT&T Representative or authorized dealer.
Message:	`No boot device available - strike F1 to retry boot`
Possible Cause:	If booting from a floppy disk, it is a non-bootable type or the floppy disk drive has failed. If booting from a hard disk drive, it might not be formatted or the drive might have failed. The problem might also be the SCSI controller board.
Solution:	Make sure the floppy disk in drive A contains an operating system. If applicable, make sure the hard disk drive contains an operating system. Check the SCSI controller board.
Message:	`No boot sector on hard disk - strike F1 to retry boot`
Possible Cause:	The hard disk drive is not formatted as a system disk.
Solution:	Format the disk with the /S option (for DOS only).

Message:	`No timer tick interrupt`
Possible Cause:	The timer chip on the system board might have failed.
Solution:	Run Customer Diagnostics to diagnose the problem. If the problem persists, call your AT&T Representative or authorized dealer.
Message:	`Not a boot diskette -` `strike F1 to retry boot`
Possible Cause:	The floppy disk in drive A is not formatted as a system disk.
Solution:	Replace the floppy disk with a bootable system floppy disk and try again.

Message:	`Shadow of System BIOS failed -`
	`Executing from ROM -`
	`Strike the F1 key to continue`

Possible Cause:	System RAM has failed.
Solution:	Run Customer Diagnostics to diagnose the problem. Replace failed SIMM.
Message:	`Shadow of Video BIOS failed - Executing from ROM -` `Strike the F1 key to continue`
Possible Cause:	System RAM has failed or the video BIOS cannot be shadowed.
Solution:	Check for failed SIMMs. If none are found, run the ECU to turn shadow video off.

Message:	`Shutdown failure`
Possible Cause:	The keyboard controller or its associated logic has failed.
Solution:	Run Customer Diagnostics to diagnose the problem. If the problem persists, call your AT&T Representative or authorized dealer.
Message:	`Time-of-day clock stopped`
Possible Cause:	The internal battery for the clock is probably dead.
Solution:	Replace the real-time clock/CMOS/battery device.
Message:	`Time-of-day not set - Please run SETUP program`
Possible Cause:	The date and time information is not set in the real-time clock.
Solution:	Run the ECU to set the date and time.
Message:	`Timer chip counter 2 failed`
Possible Cause:	The Integrated System Peripheral (ISP) chip on the system board might have failed.
Solution:	Run Customer Diagnostics to diagnose the problem. If the problem persists, call your AT&T Representative or authorized dealer.

Message:	`Timer or interrupt controller bad`
Possible Cause:	The ISP on the system board might have failed.
Solution:	Run Customer Diagnostics to diagnose the problem. If the problem persists, call your AT&T Representative or authorized dealer.
Message:	`Unexpected interrupt in protected mode`
Possible Cause:	The system received an interrupt while in protected mode (probably while testing memory).
Solution:	Run Customer Diagnostics to diagnose the problem. If the problem persists, call your AT&T Representative or authorized dealer.
Message:	`Configuration error for slot x`
Possible Cause:	A) The ECU has not been run and the board in slot x has not been configured. B) The board in slot x has been moved, and the ECU has not been run since the move.
Solution:	Run the ECU to configure slot x. If the problem persists, call your AT&T Representative or authorized dealer.

Message:	`ID information mismatch for slot x`
Possible Cause:	A) The board in slot x is bad and returns a bad ID. B) The board ID does not match the ID that the ECU expects for slot x. The mismatch is due to either the wrong board in the slot or the wrong configuration file for the board.
Solution:	Run the ECU to configure slot x, or replace the bad board. If the problem persists, call your AT&T Representative or authorized dealer.
Message:	`Invalid EISA configuration storage`
Possible Cause:	A bad or corrupted NVRAM.
Solution:	Restore the NVRAM to the default state using the clear NVRAM jumper, then reconfigure your system using the ECU. If problems persist, call your AT&T Representative or authorized dealer.
Message:	`Display adapter failed; using alternate`
Possible Cause:	The display is wrong in SETUP, or there is a bad video card or video card jumper positions.
Solution:	Verify that SETUP information is correct. If correct then there is a possible bad video card or wrong video card jumper selections. Call your AT&T Representative or authorized dealer.

Message:	`Diskette subsystem reset failed`
Possible Cause:	The floppy disk controller has failed.
Solution:	Check both ends of the controller's cables. If the message recurs, call your AT&T Representative or authorized dealer.

POST and Boot Informational Messages

Message:	*Hex-valuek* `Base Memory`
Meaning:	Indicates amount of base memory tested successfully.
Message:	*Hex-valuek* `extended`
Meaning:	Indicates amount of extended memory tested successfully.
Message:	`Decreasing available memory`
Meaning:	Follows any memory error message. Informs you that available memory size is adjusted to avoid use of the failed memoy.
Message:	`Memory test terminated by keystroke`
Meaning:	The spacebar was pressed during the memory test. Reboot the system if you want to execute POST.

Message:	`Strike the F1 key to continue`
Meaning:	POST detected an error prior to boot. Pressing [F1] lets the system try to boot.

Execute-time Messages

Execute-time messages are displayed if an error occurs after the boot process is complete.

Message:	`I/O card parity interrupt at` *`address hex-value.`* `Type (S)hut off NMI, (R)eboot, other keys to continue`
Possible Cause:	An expansion board has failed.
Solution:	Type S to shut off the nonmaskable interrupt (NMI). This temporarily allows you to continue. Replace the expansion board.
Message:	`Memory parity interrupt at` *`address hex-value.`* `Type (S)hut off NMI, (R)eboot, other keys to continue`
Possible Cause:	One or more SIMMs has failed.
Solution:	Type S to shut off the nonmaskable interrupt (NMI) This temporarily allows you to continue. Check the seating of the SIMMs and replace them if they have failed.

Message:	`Unexpected HW interrupt at` *`address hex-value.`* `Type (R)eboot, other keys to continue`
Possible Cause:	This might be a problem related to an expansion board.
Solution:	Verify the correct installation of the expansion boards. If the problem persists, call your AT&T Representative or authorized dealer.
Message:	`Unexpected SW interrupt at` *`address hex-value.`* `Type (R)eboot, other keys to continue`
Possible Cause:	There is an error in the software program.
Solution:	Try turning the system off and then on again. If that does not work, check the program.
Message:	`Unexpected type 02 interrupt at` *`address hex-value.`* `Type (S)hut off NMI, (R)eboot, other keys to continue`
Possible Cause:	There is an error in the software program.
Solution:	Try turning the system off and then on again. If that does not work, check the program.

System Board Errors

If POST finds an error and cannot display a message on the video display, it issues a series of beeps to indicate the error, and places a value in I/O port 80H.

For example, a failure of bit 3 in the first 64KB of RAM is indicated by a 2-1-4 beep code (a burst of two beeps, a single beep, and a burst of four beeps). In addition, POST writes a value to I/O port 80H to enable debugging tools to identify the area of failure.

Tables G-2 and G-3 list the beep codes and I/O port values that POST generates when it encounters error conditions. Table G-2 lists fatal errors (errors that halt the system). Table G-3 lists the non-fatal errors (errors that are not serious enough to halt the system). Both tables list other conditions that have no beep codes.

Two beep codes are not listed in Tables G-2 or G-3 a long beep followed by one or more short beeps, or a long-short-long-short beep pattern. Either one indicates a video adapter failure. No beep code is sounded if a test is aborted while in progress.

Table G-2. Beep Codes for Fatal Errors

Beep Code	Description of Error	Contents of I/O Port 80H
None	i486 register test in progress	01H
1-1-3	Real-time clock write/read failure	02H
1-1-4	ROM BIOS checksum failure	03H
1-2-1	Programmable interval timer failure	04H
1-2-2	DMA initialization failure	05H
1-2-3	DMA page register write/read failure	06H
1-2-4	SRAM test and configuration	07H
1-3-1	RAM refresh verification failure	08H
None	1st 64KB RAM test in progress	09H
1-3-3	1st 64KB RAM chip or data line failure multibit	0AH
1-3-4	1st 64KB RAM odd/even logic failure	0BH
1-4-1	1st 64KB RAM address line failure	0CH
1-4-2	1st 64KB RAM parity test in progress or failure	0DH
2-1-1	Bit 0 1st 64KB RAM failure	10H
2-1-2	Bit 1 1st 64KB RAM failure	11H
2-1-3	Bit 2 1st 64KB RAM failure	12H
2-1-4	Bit 3 1st 64KB RAM failure	13H
2-2-1	Bit 4 1st 64KB RAM failure	14H
2-2-2	Bit 5 1st 64KB RAM failure	15H
2-2-3	Bit 6 1st 64KB RAM failure	16H
2-2-4	Bit 7 1st 64KB RAM failure	17H
2-3-1	Bit 8 1st 64KB RAM failure	18H
2-3-2	Bit 9 1st 64KB RAM failure	19H
2-3-3	Bit A 1st 64KB RAM failure	1AH
2-3-4	Bit B 1st 64KB RAM failure	1BH
2-4-1	Bit C 1st 64KB RAM failure	1CH
2-4-2	Bit D 1st 64KB RAM failure	1DH

Table G-2 *(continued)*

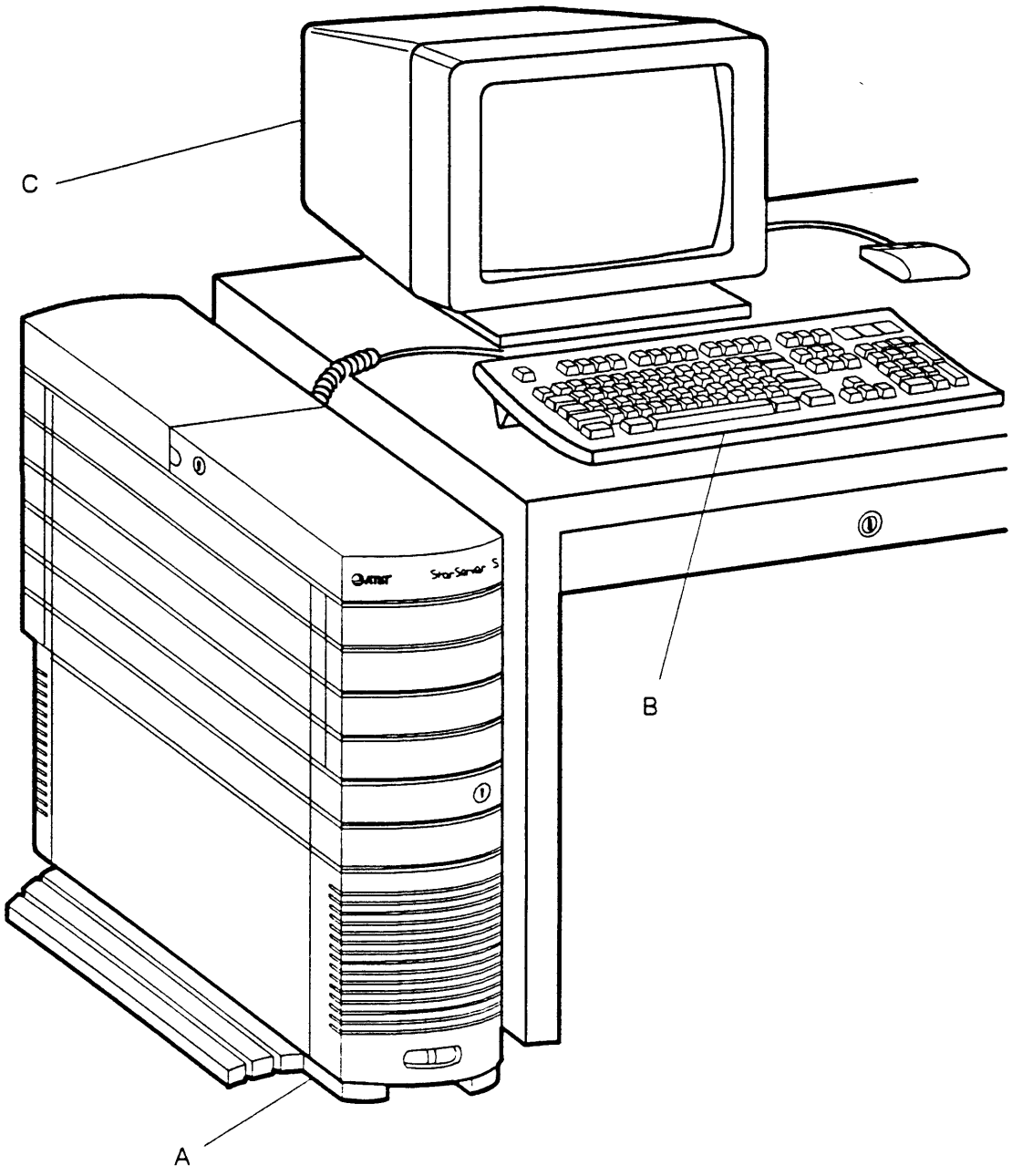
Table G-2. Beep Codes for Fatal Errors *(continued)*

Beep Code	Description of Error	Contents of I/O Port 80H
2-4-3	Bit E 1st 64KB RAM failure	1EH
2-4-4	Bit F 1st 64KB RAM failure	1FH
3-1-1	Slave DMA register failure	20H
3-1-2	Master DMA register failure	21H
3-1-3	Master interrupt mask register failure	22H
3-1-4	Slave interrupt mask register failure	23H
None	Interrupt vector loading in progress	25H
3-2-4	Keyboard controller test failure	27H
None	Real-time clock power failure or checksum failure	28H

Table G-3. Beep Codes for Non-fatal Errors

Beep Code	Description of Error	Contents of I/O Port 80H
none	Real-time clock configuration	29H
3-3-4	Screen memory test failure	2BH
3-4-1	Screen initialization failure	2CH
3-4-2	Screen retrace test failure	2DH
none	Search for video ROM in progress	2EH
none	Screen operating with video ROM	30H
none	Monochrome display operable	31H
none	Color-display (40 column) operable	32H
none	Color-display (80 column) operable	33H

1



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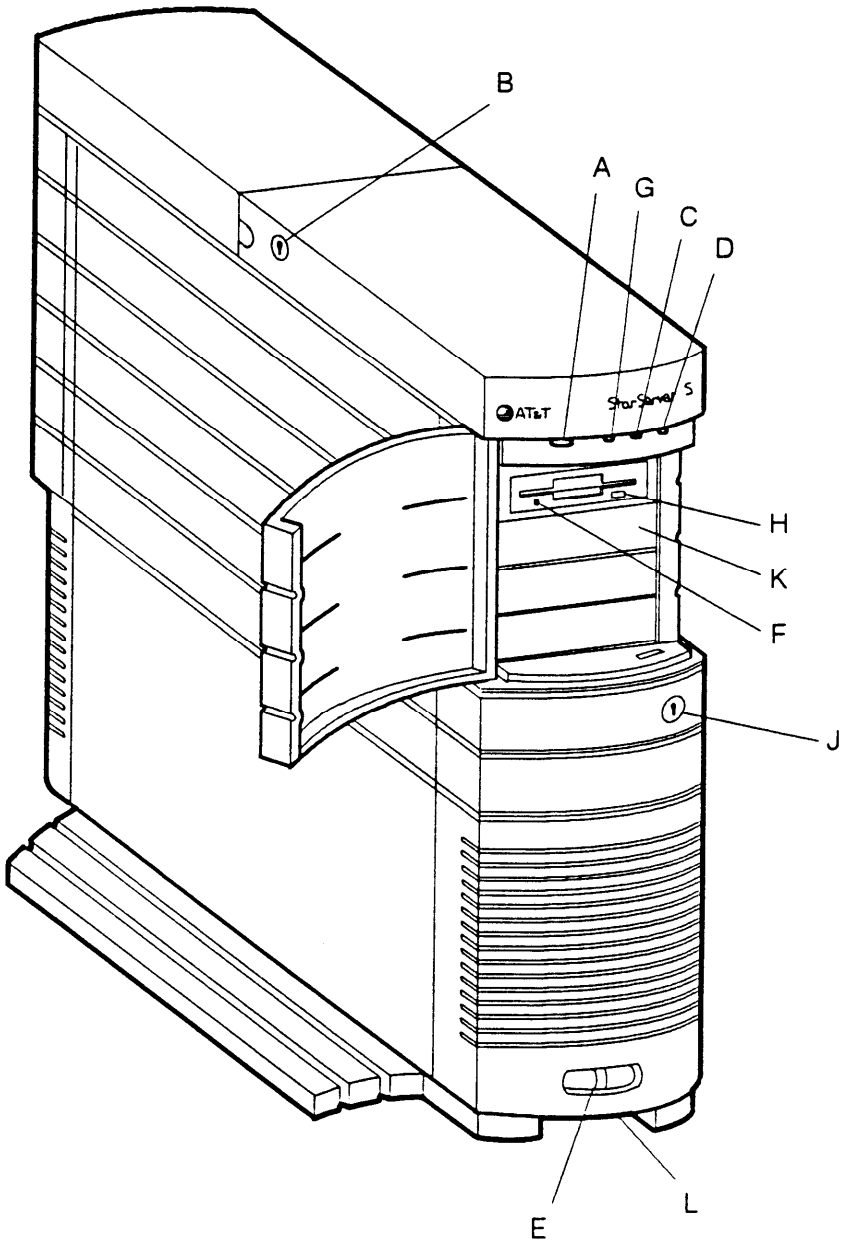

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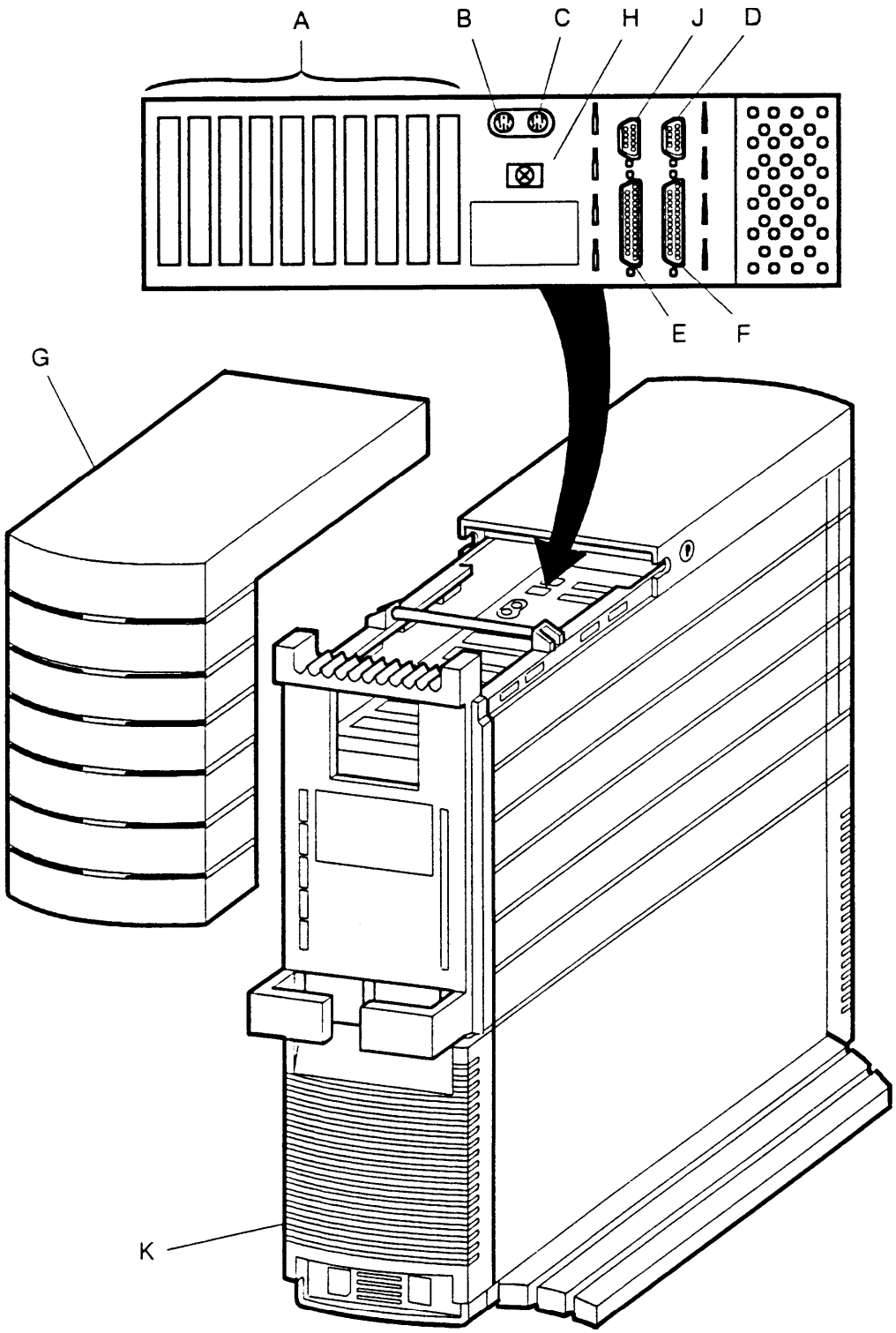

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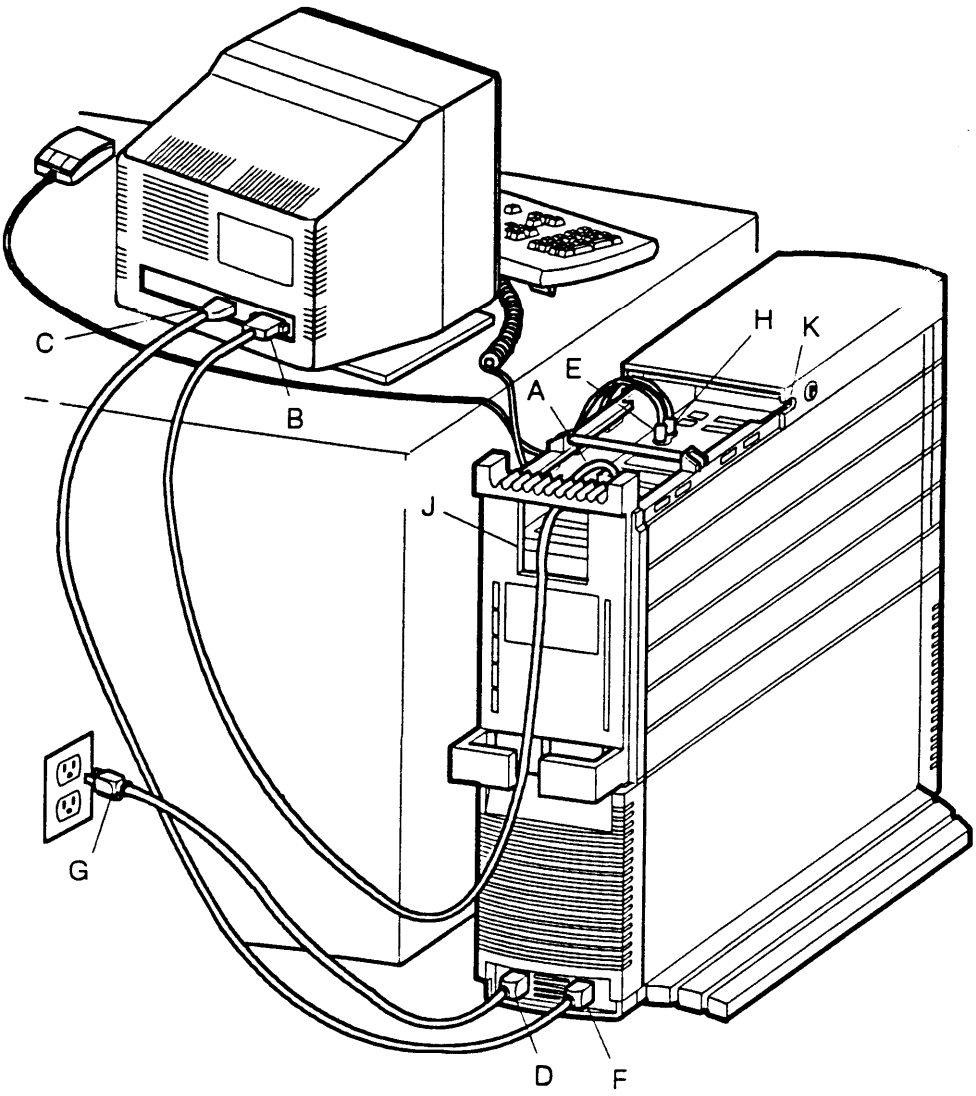

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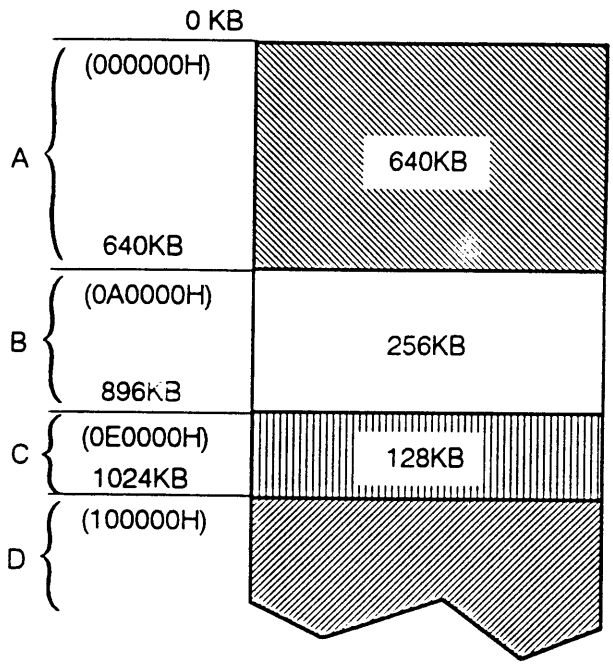

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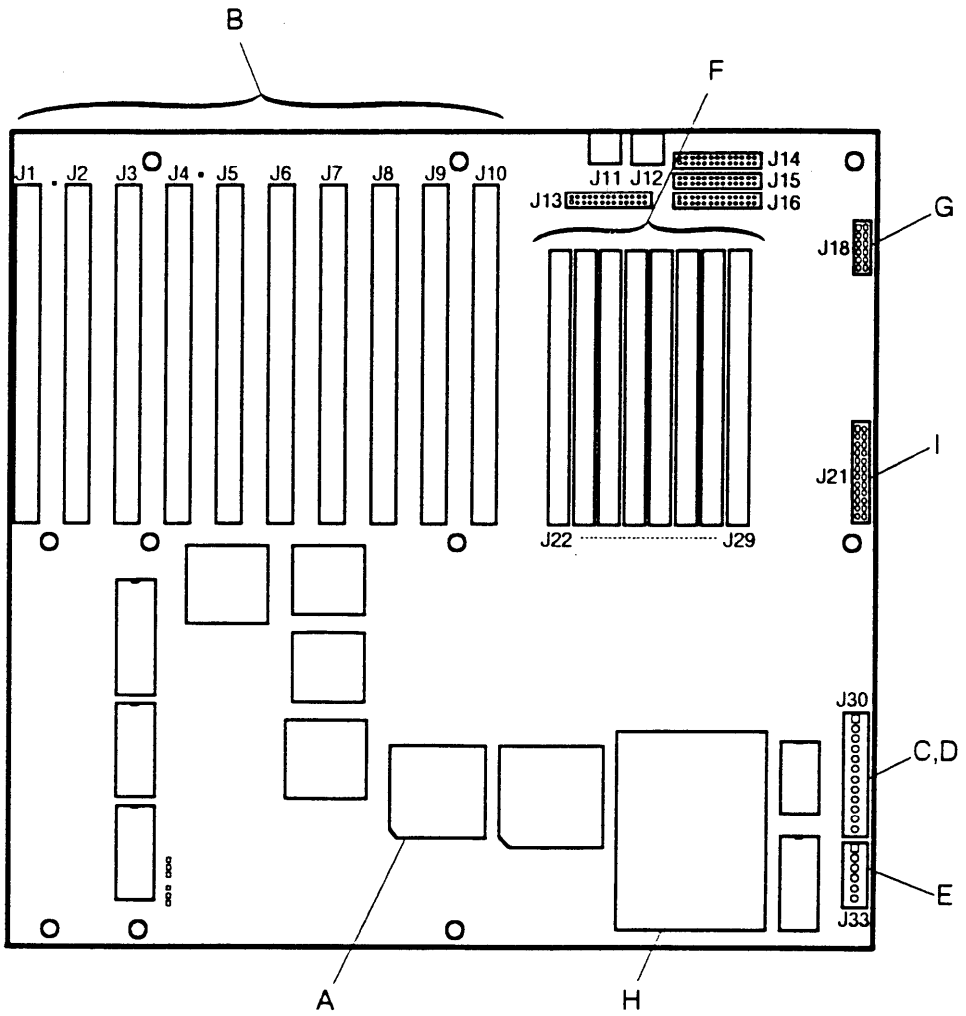

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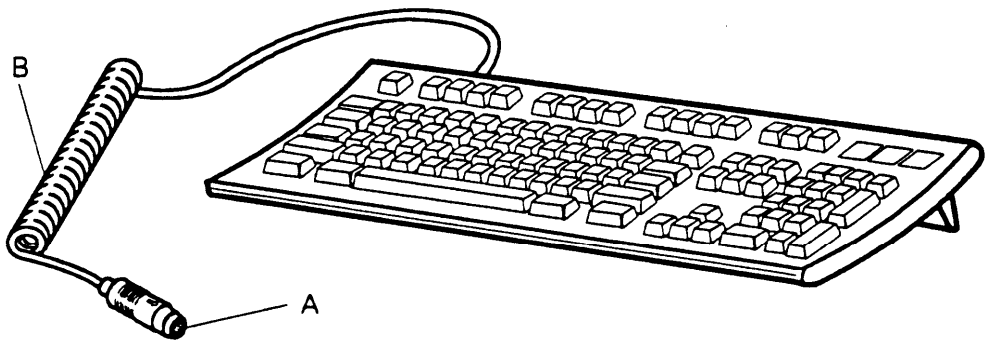

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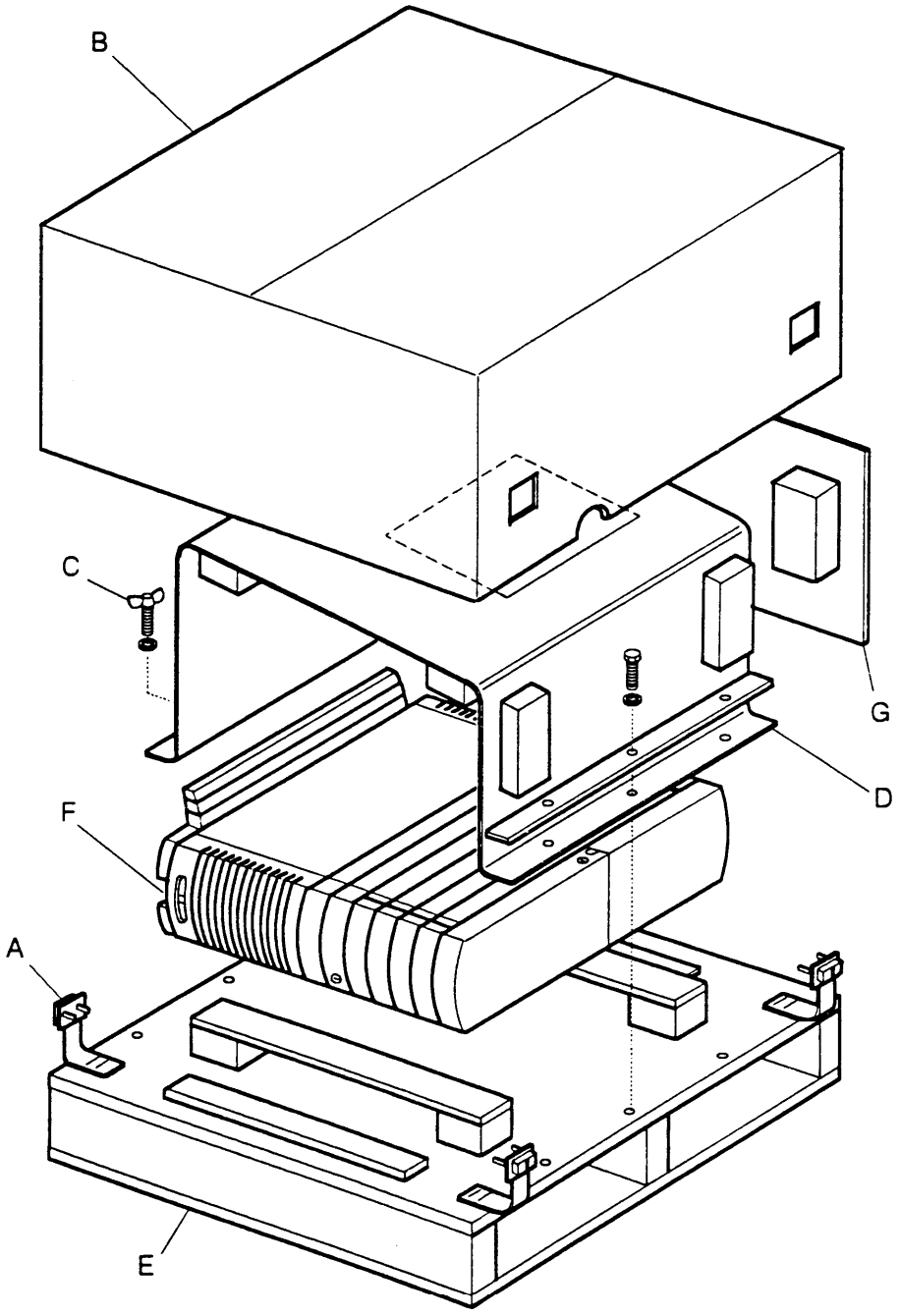

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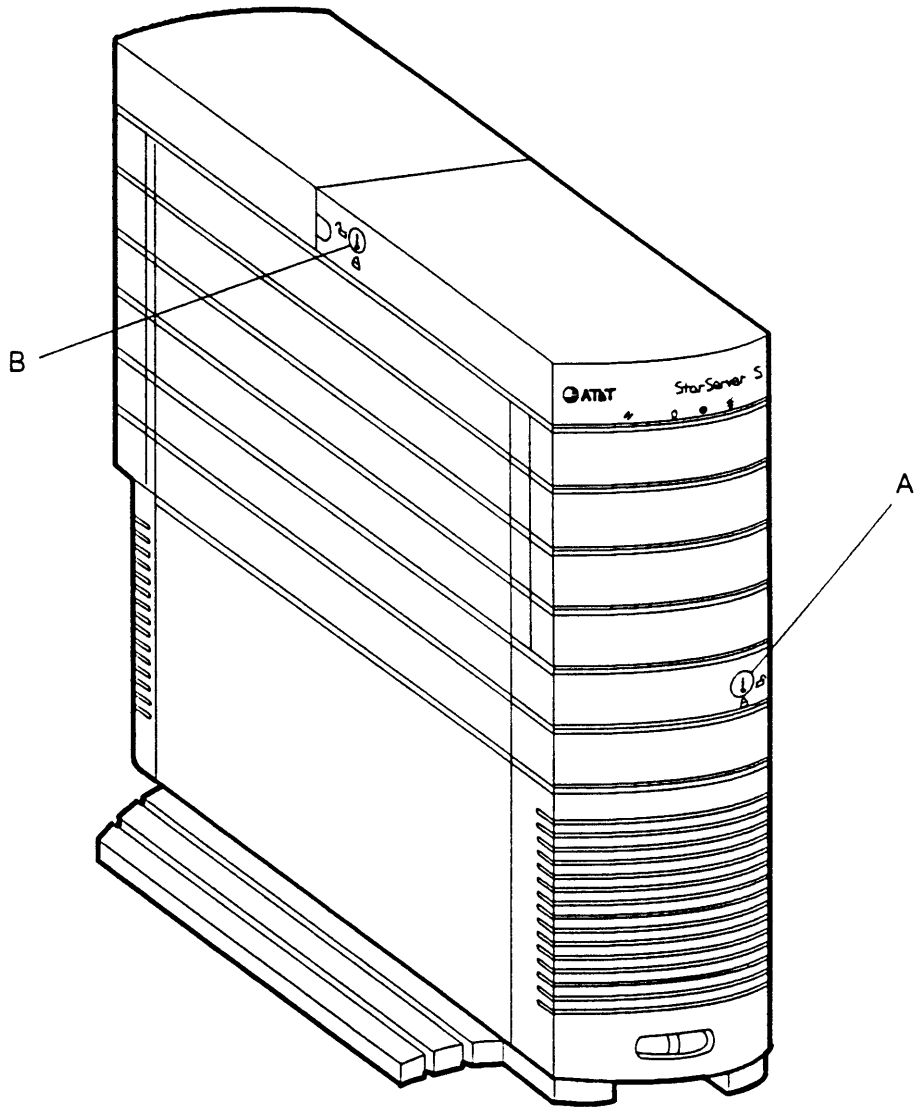

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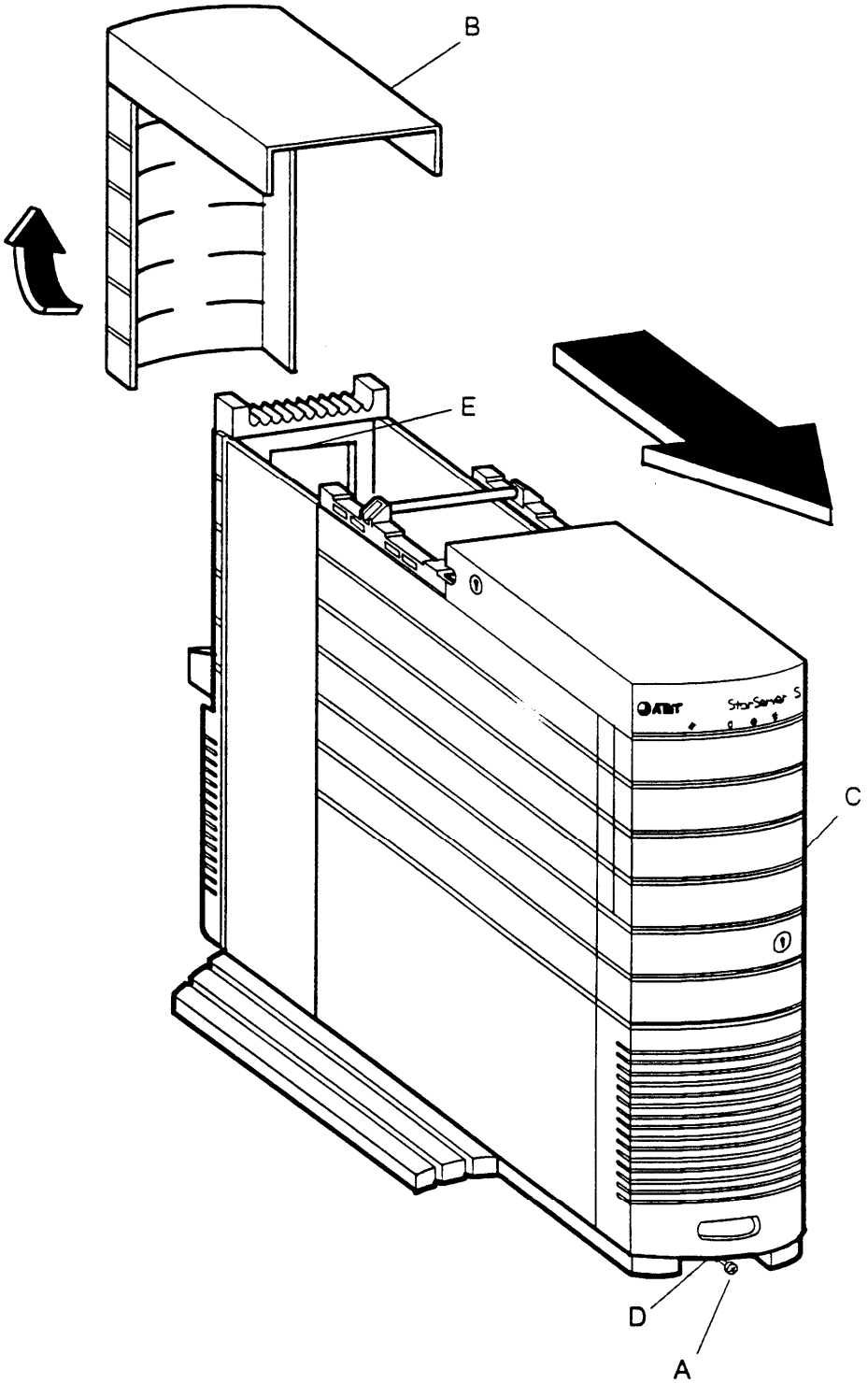

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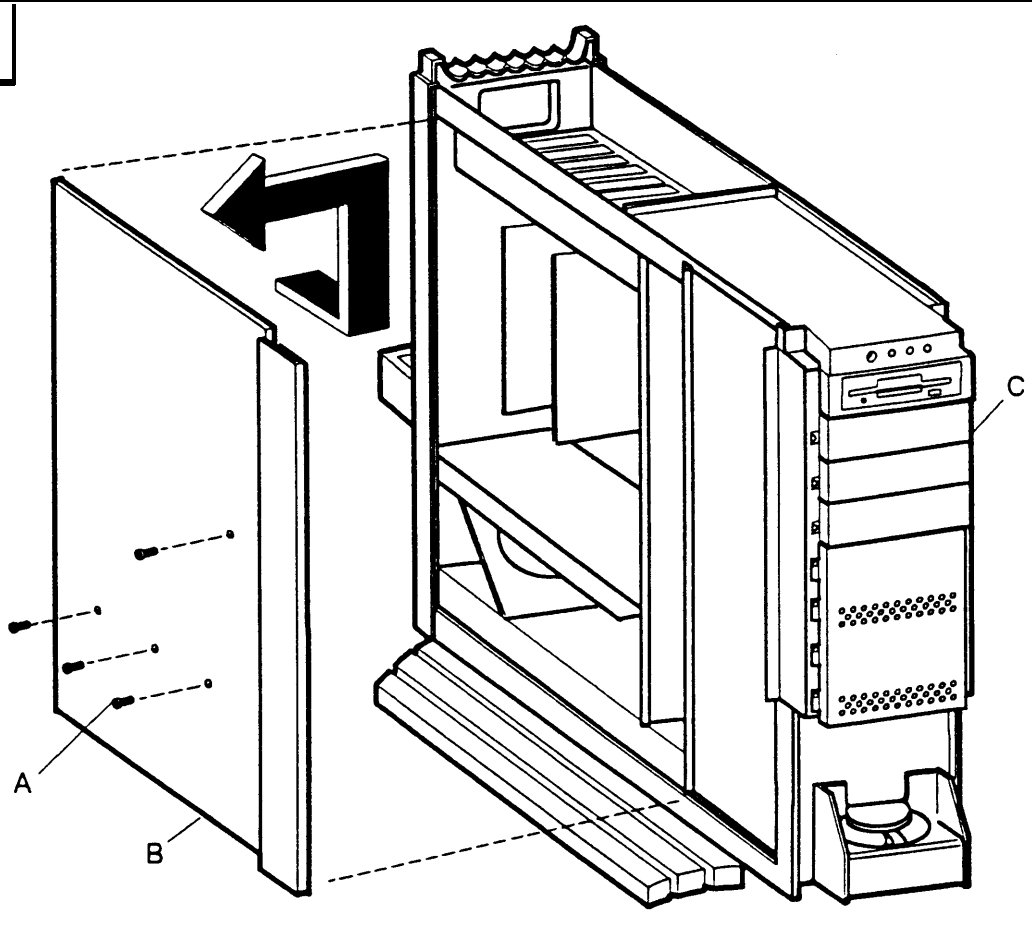

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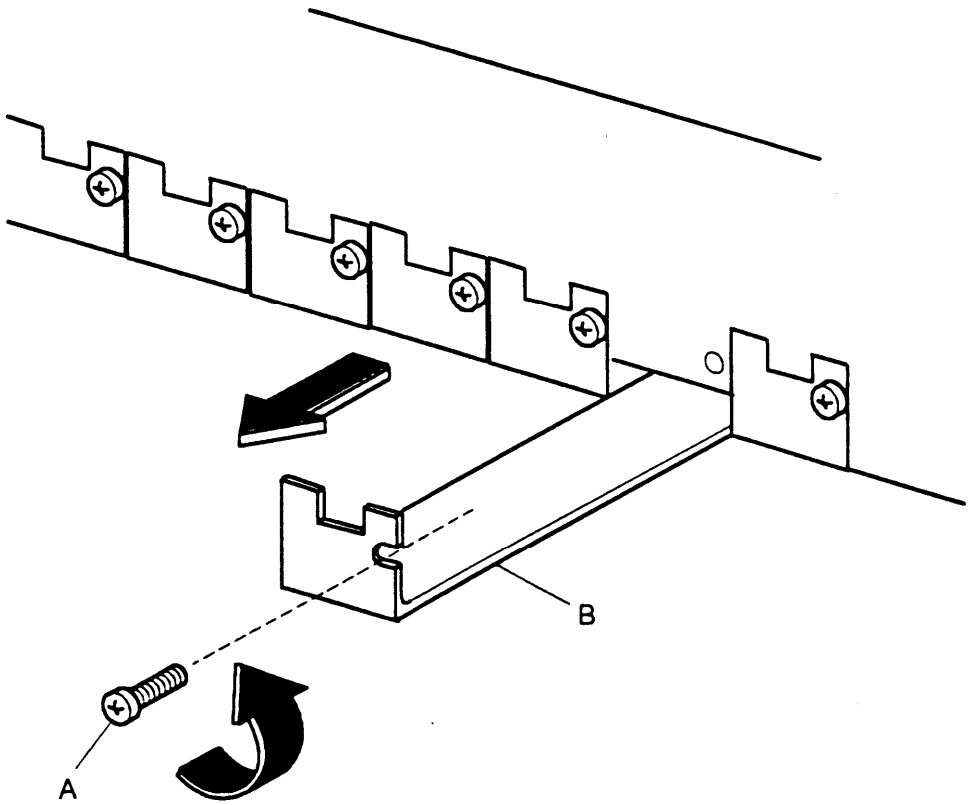

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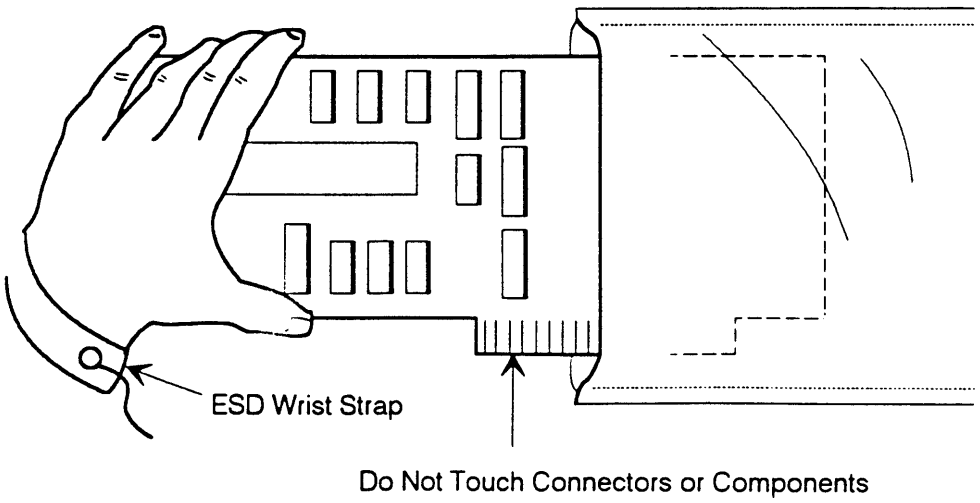

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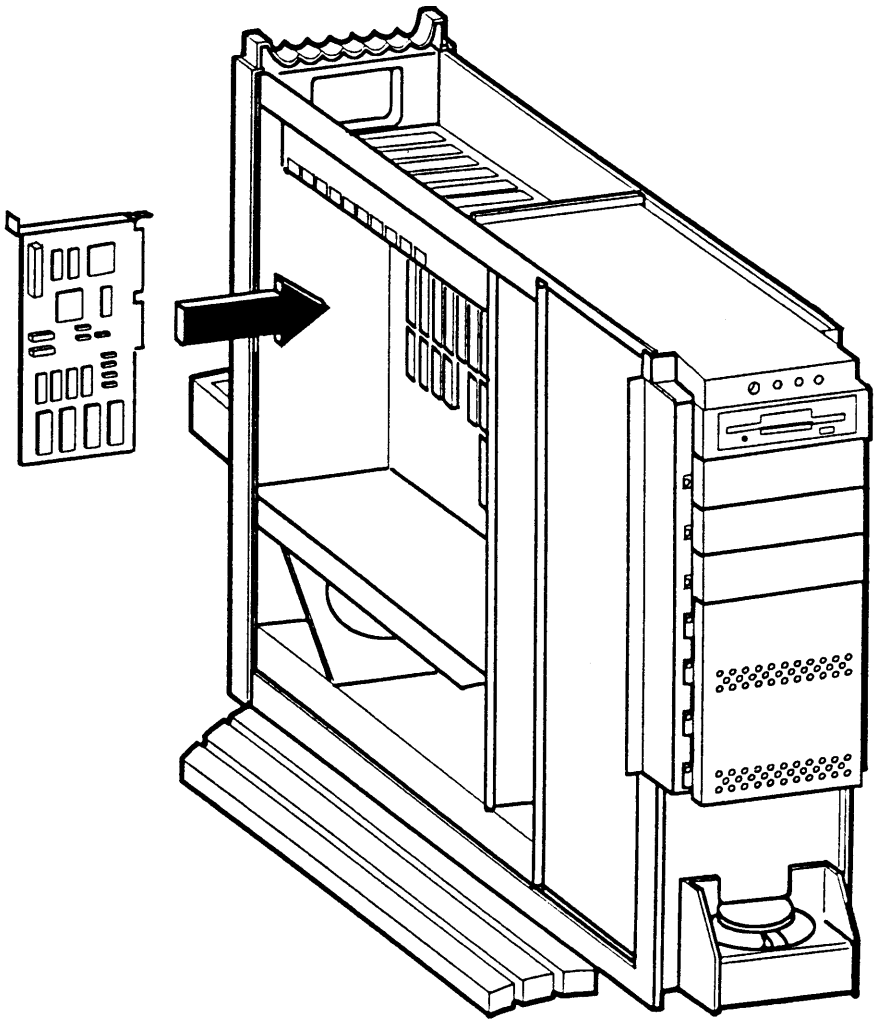

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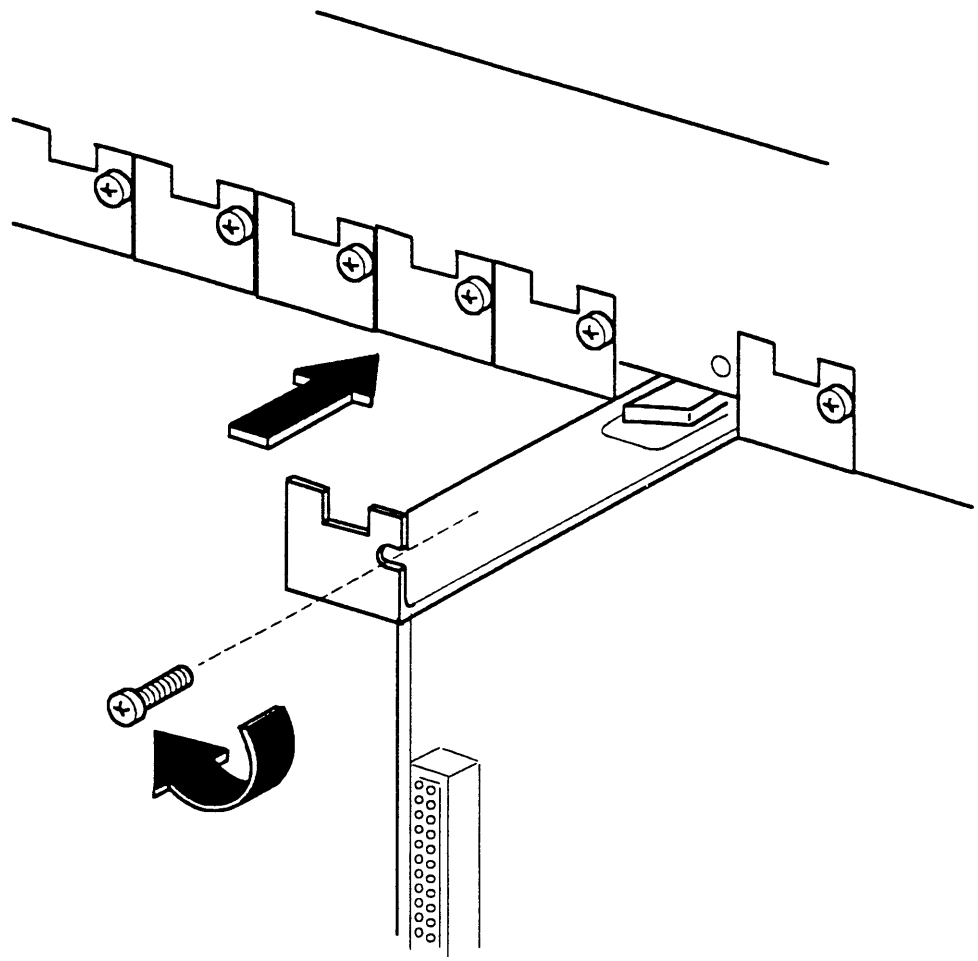

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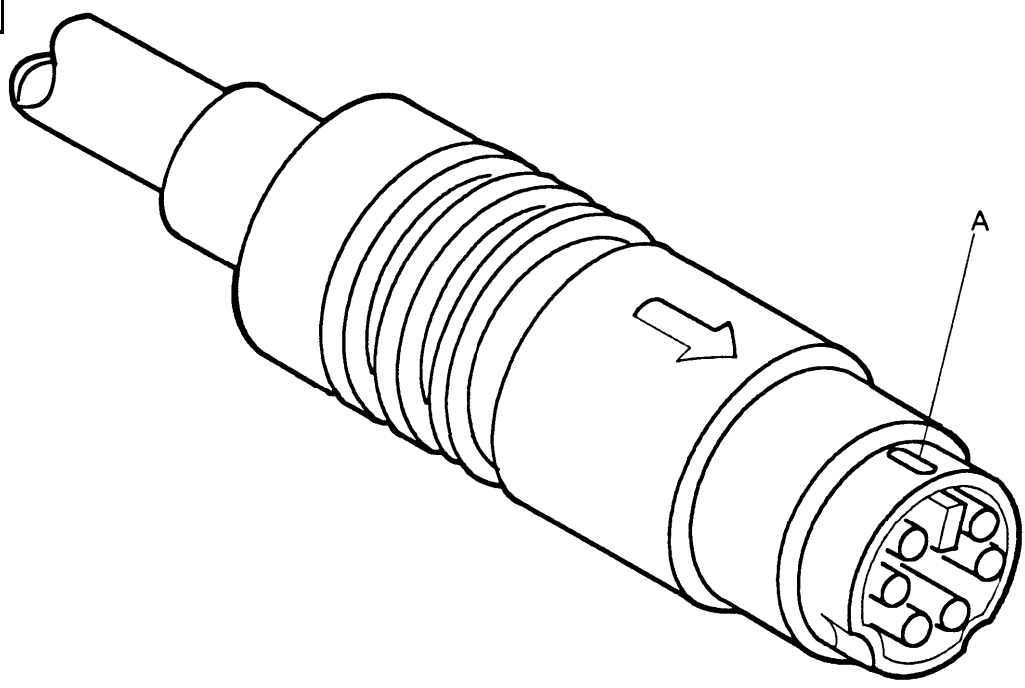

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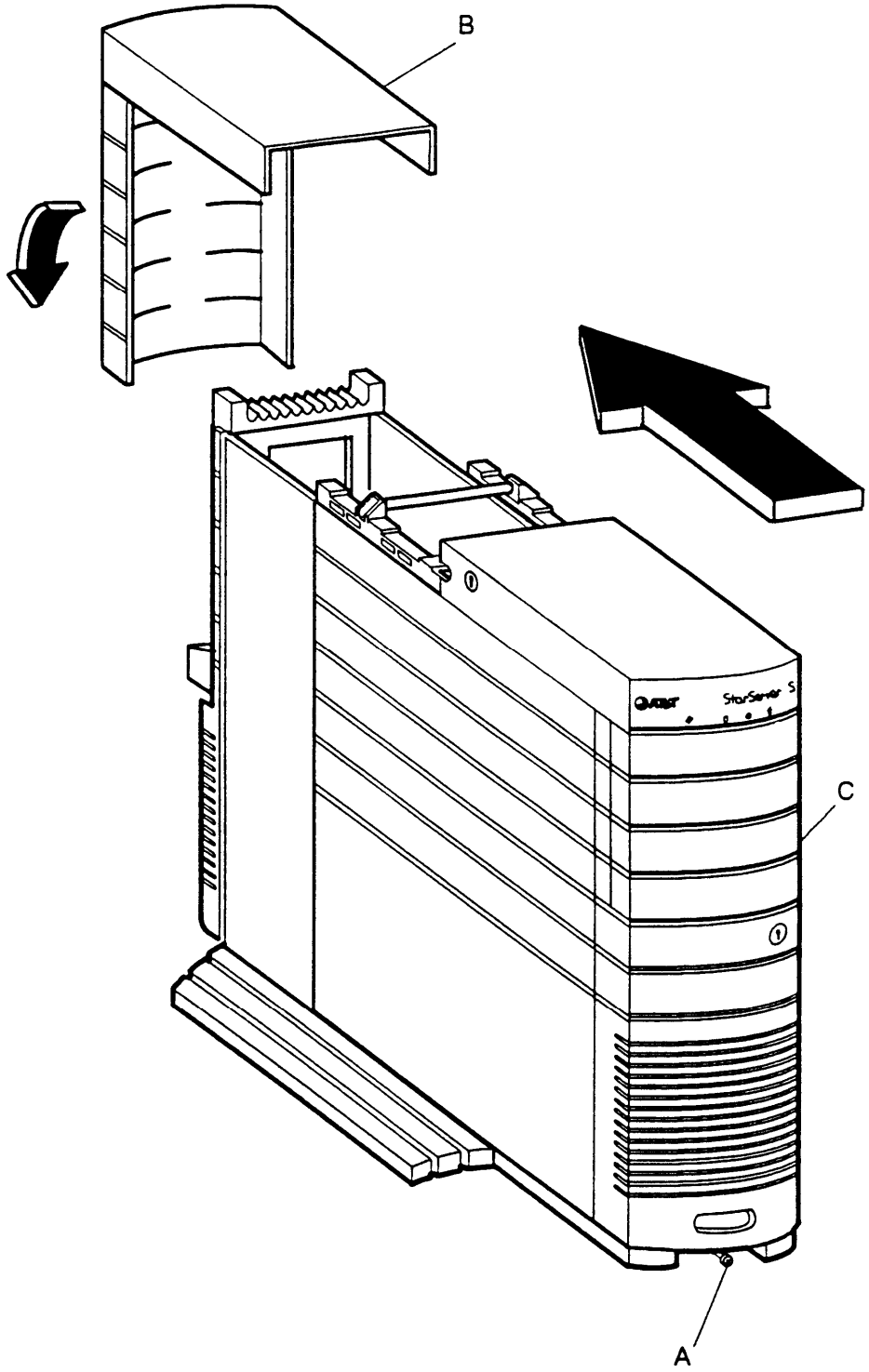

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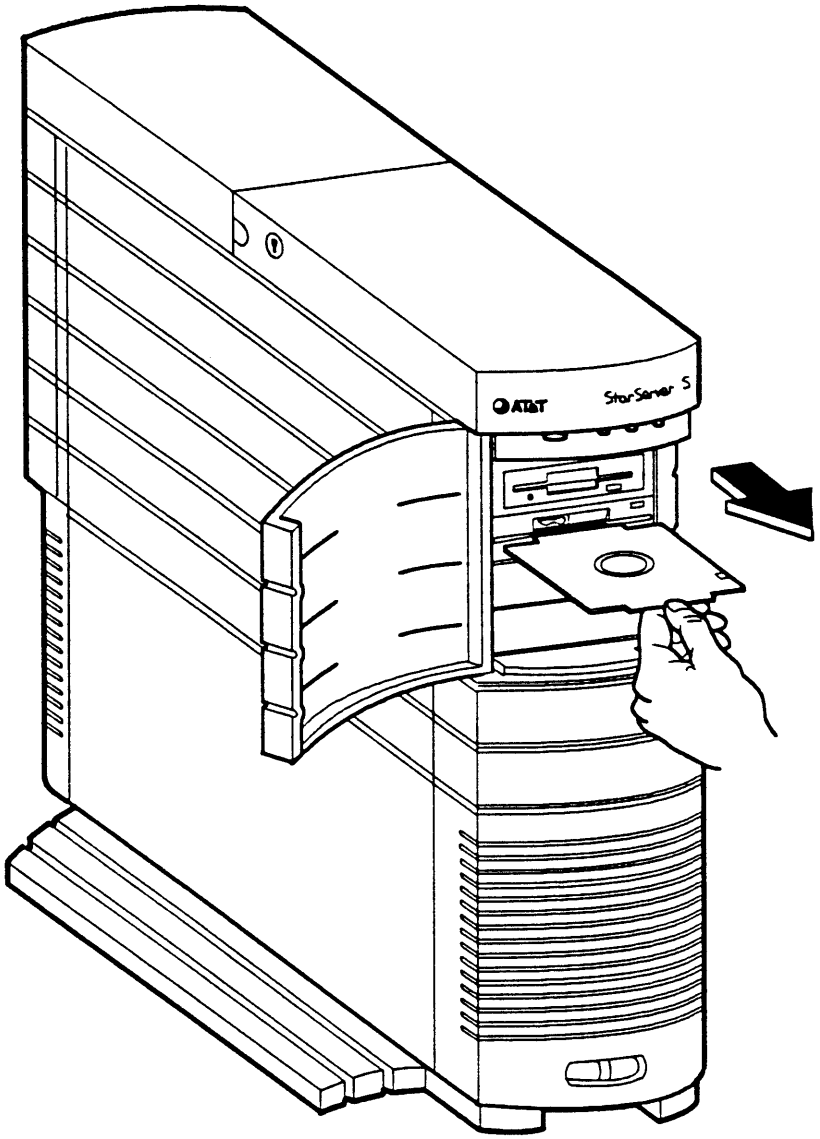

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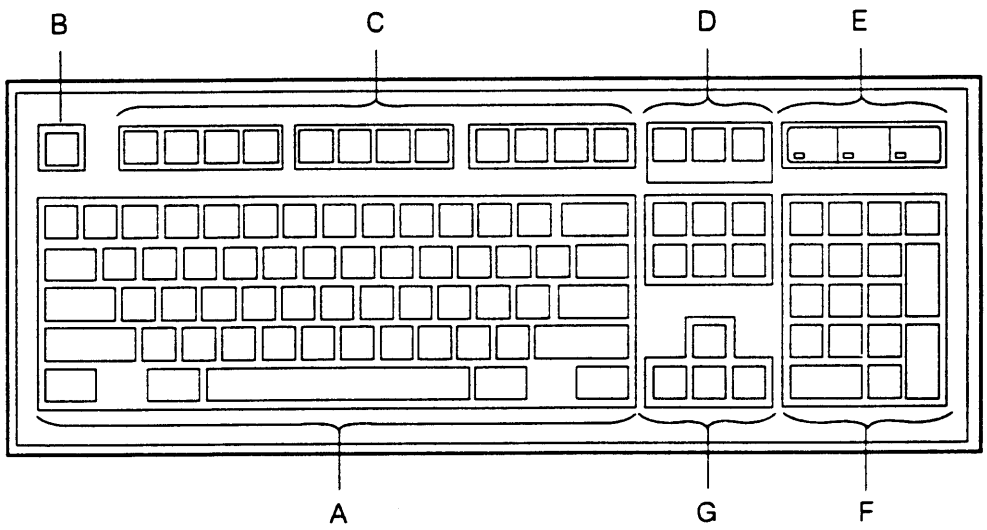

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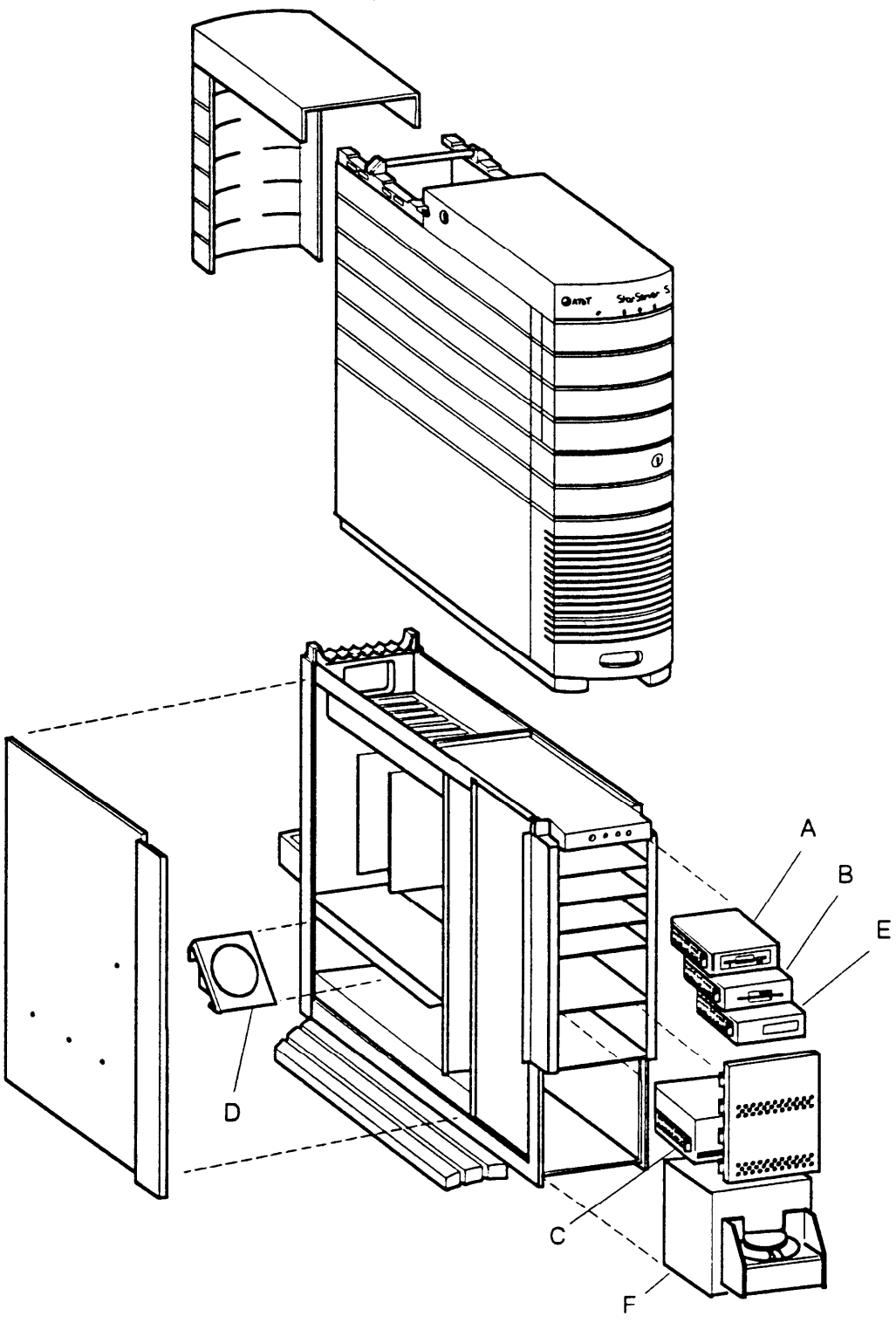

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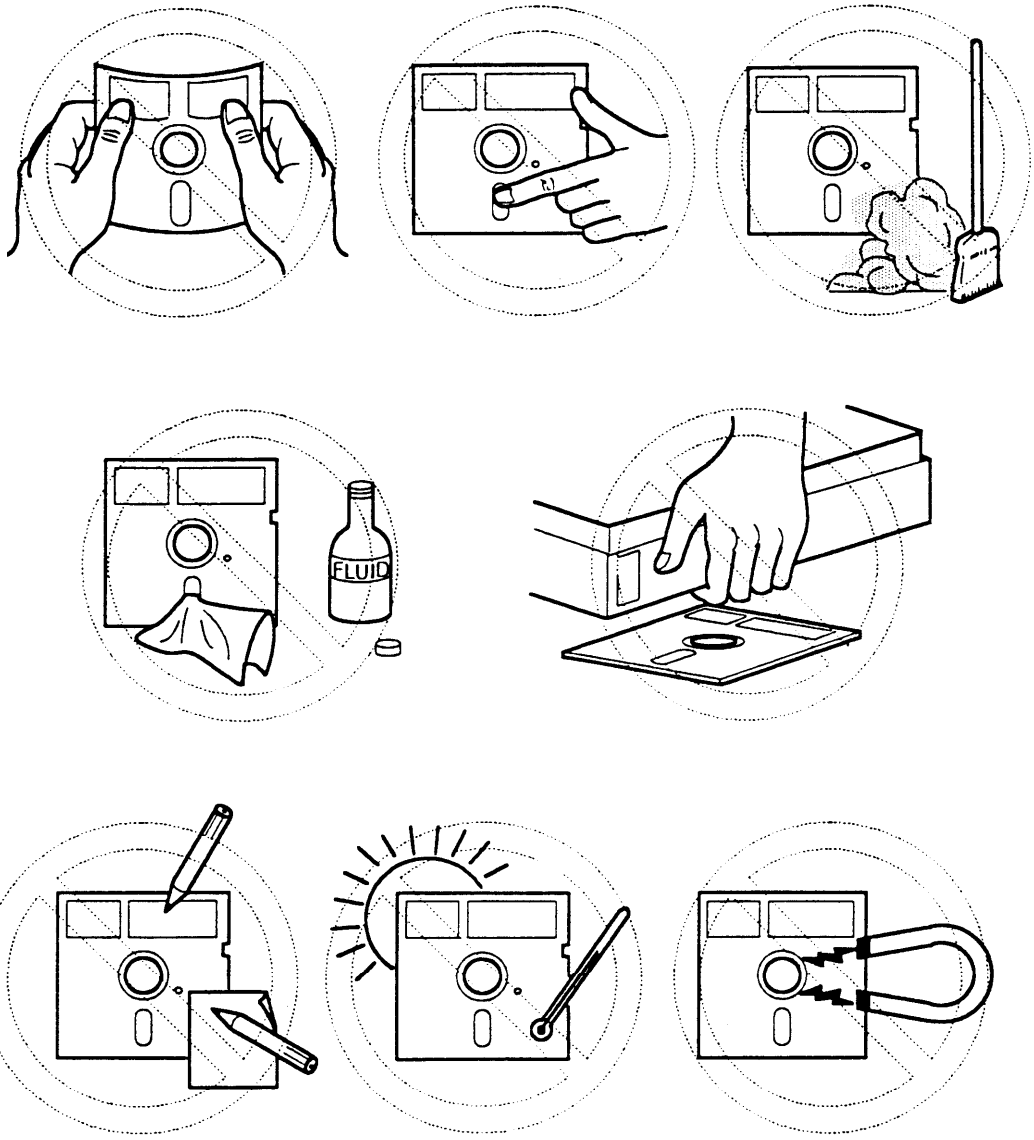

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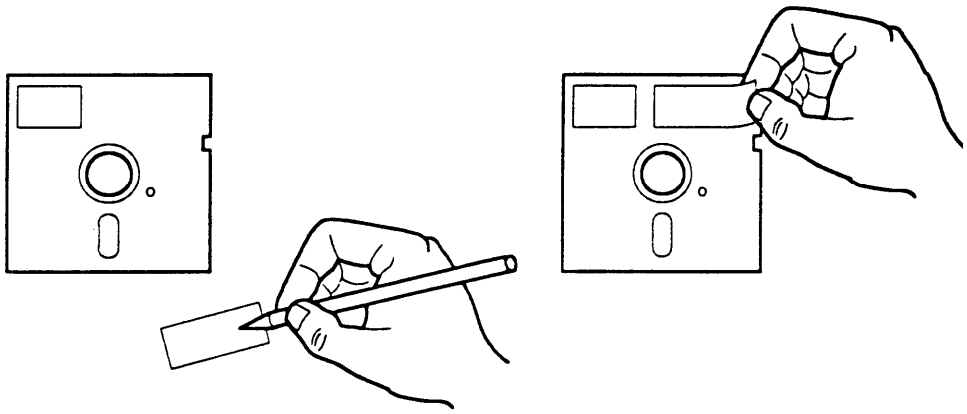

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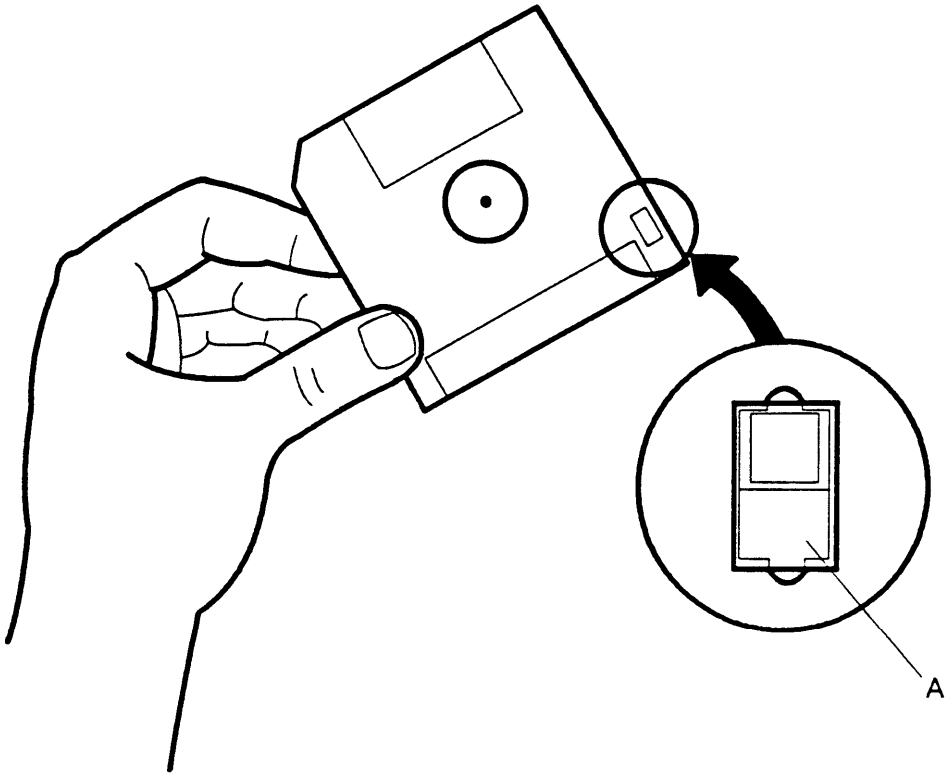

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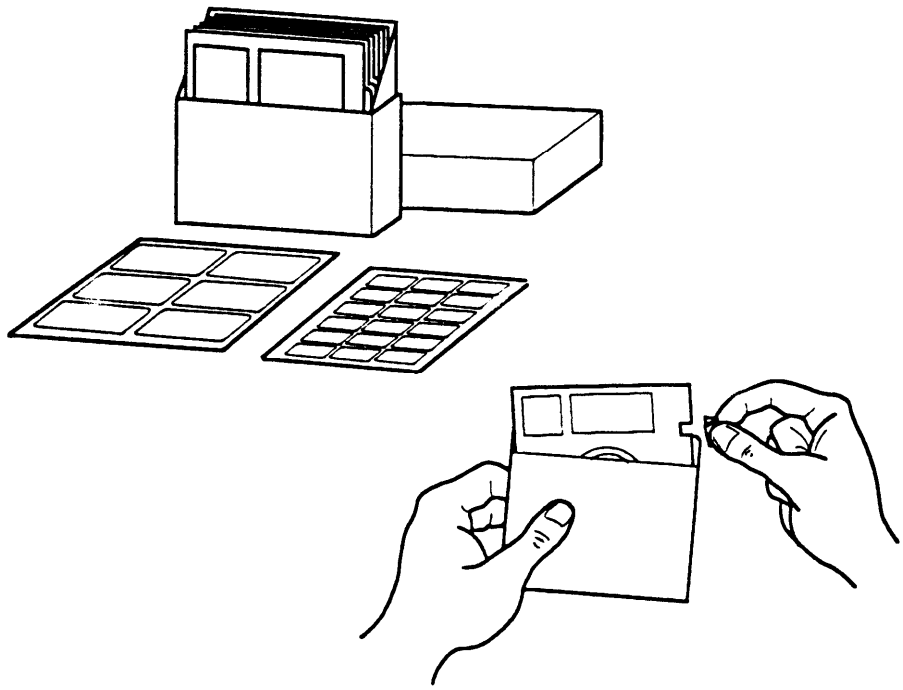

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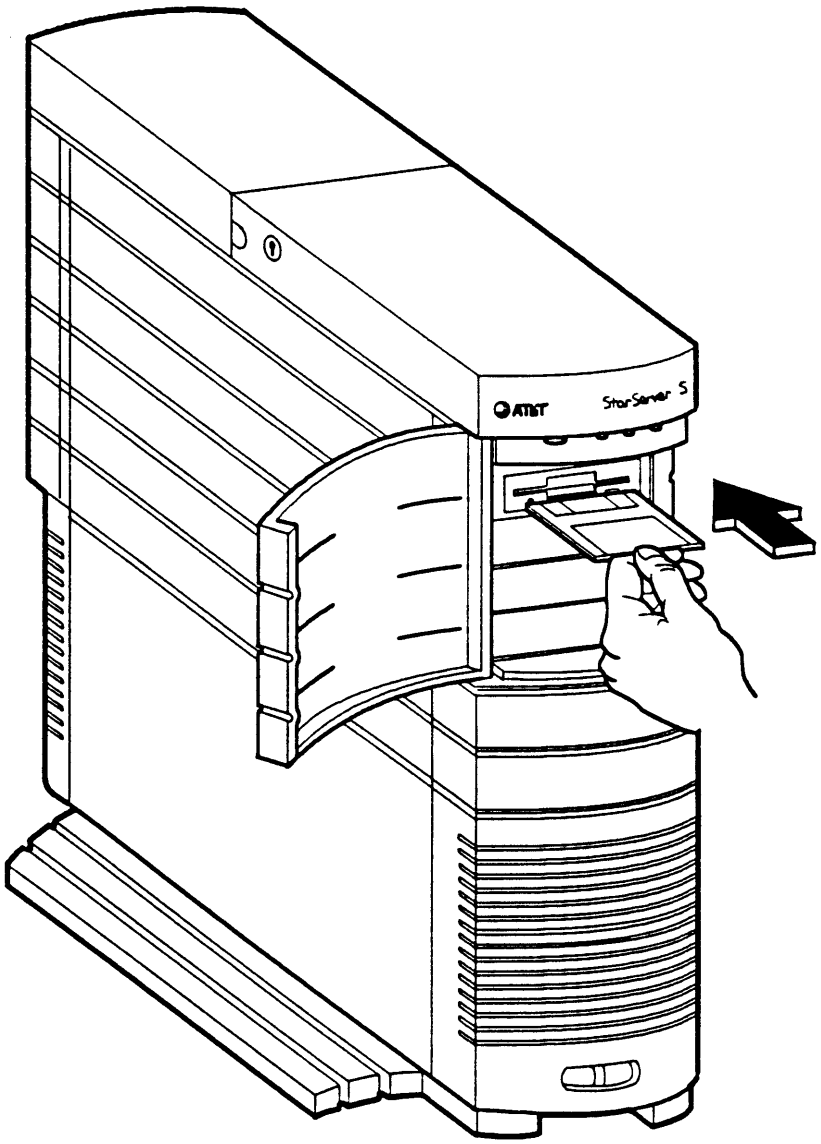

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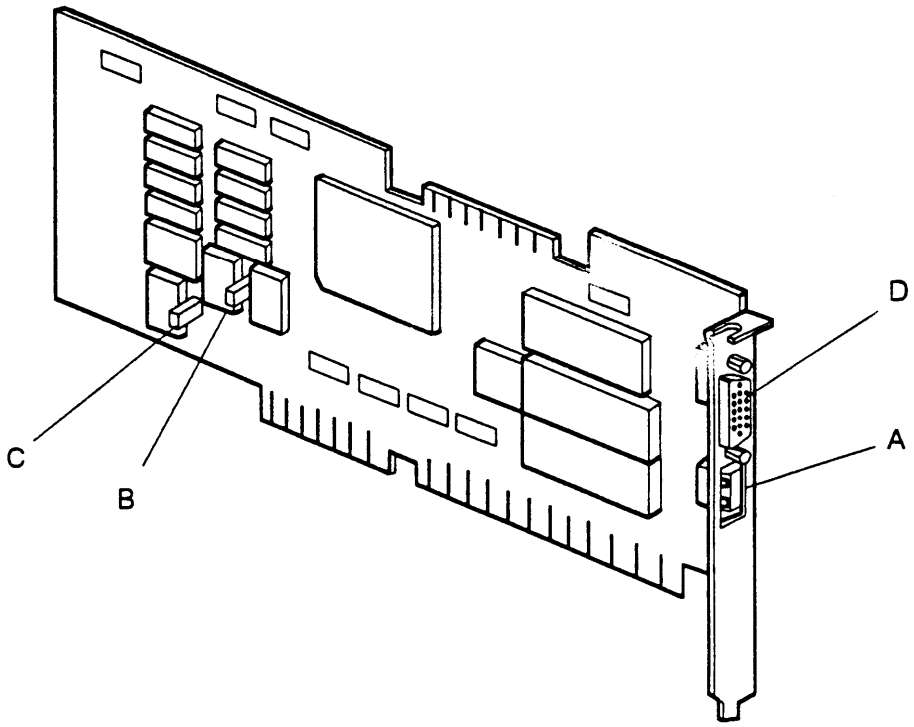

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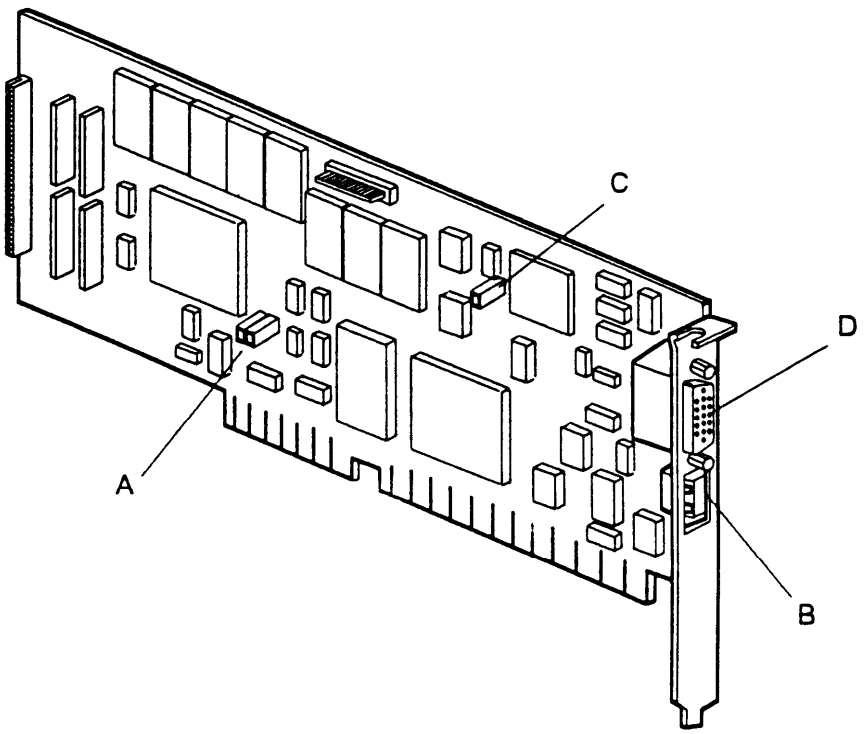

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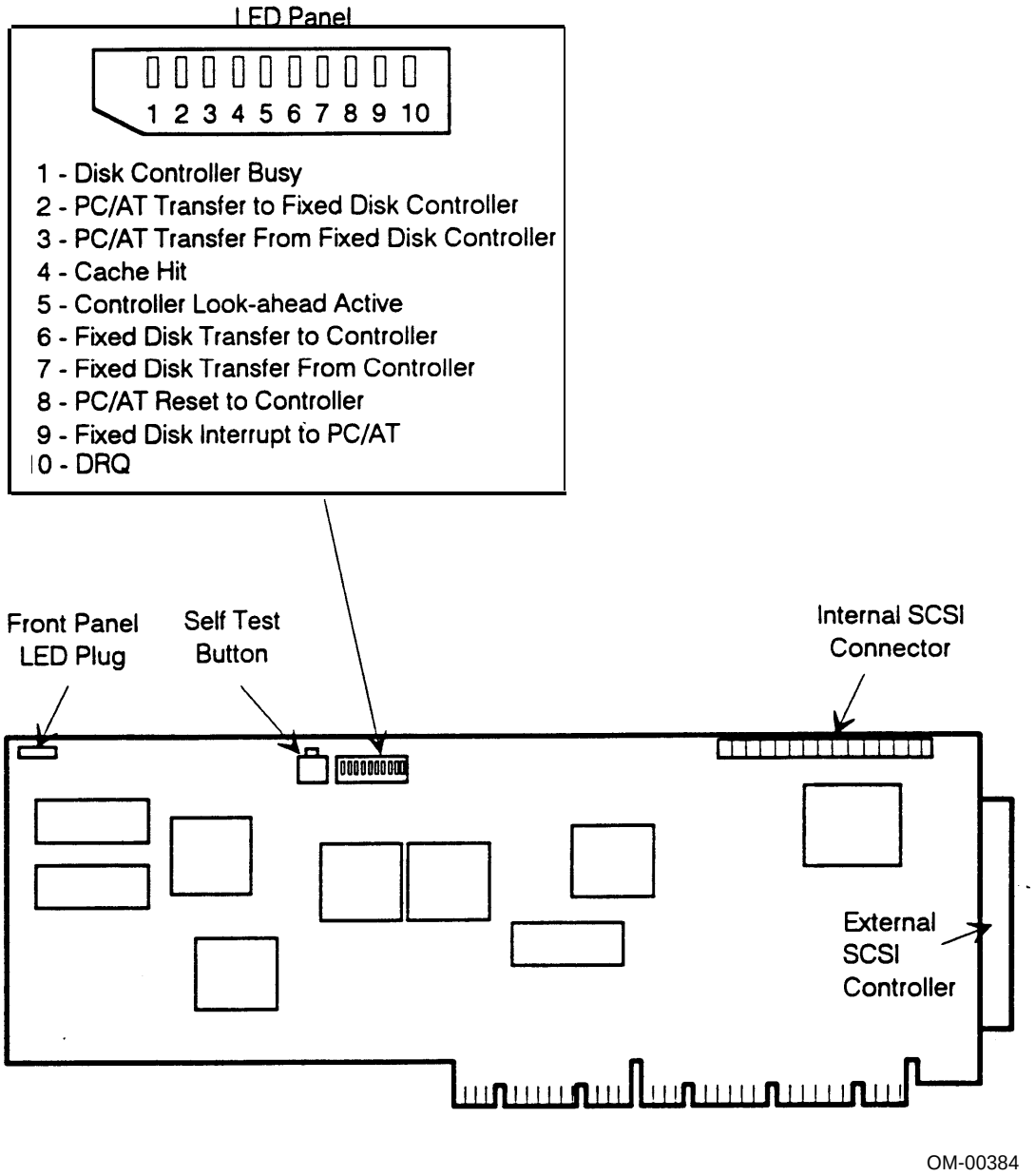
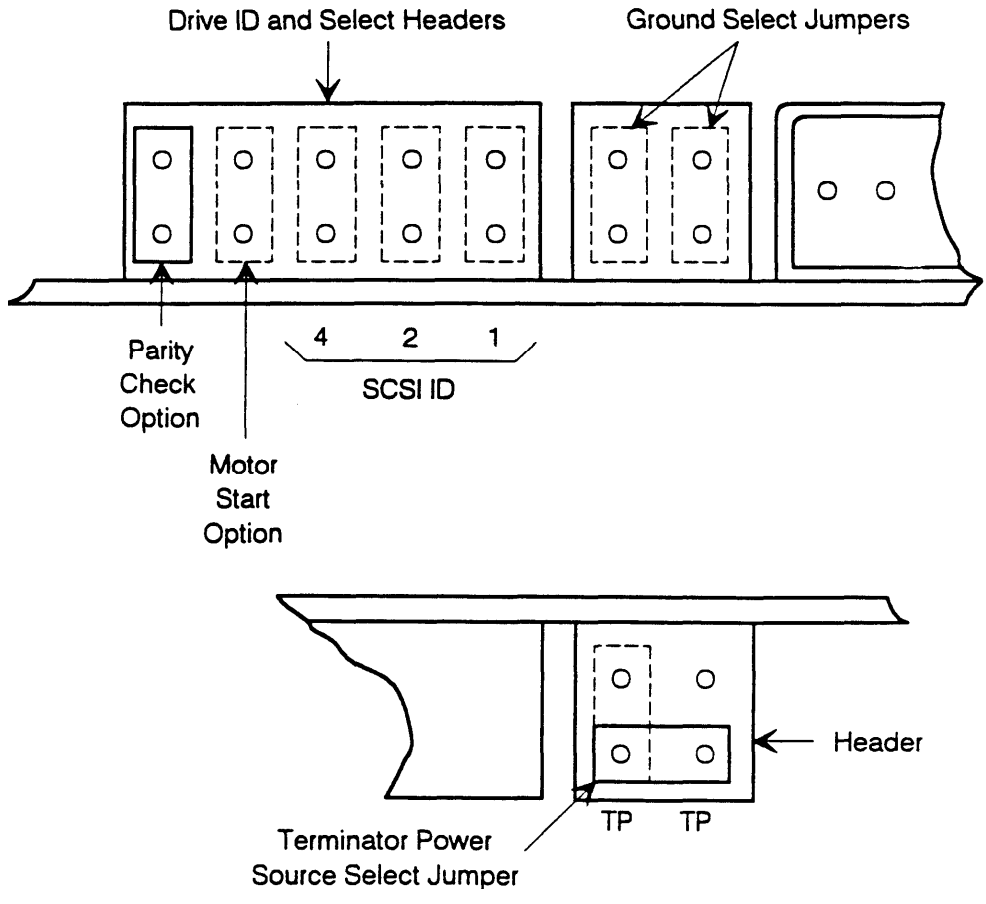

LED Panel
1 2 3 4 5 6 7 8 9 10
1 - Disk Controller Busy
2 - PC/AT Transfer to Fixed Disk Controller
3 - PC/AT Transfer From Fixed Disk Controller
4 - Cache Hit
5 - Controller Look-ahead Active
6 - Fixed Disk Transfer to Controller
7 - Fixed Disk Transfer From Controller
8 - PC/AT Reset to Controller
9 - Fixed Disk Interrupt to PC/AT
0 - DRQ
Front Panel LED Plug
Self Test Button
Internal SCSI Connector
External SCSI Controller
OM-00384

31



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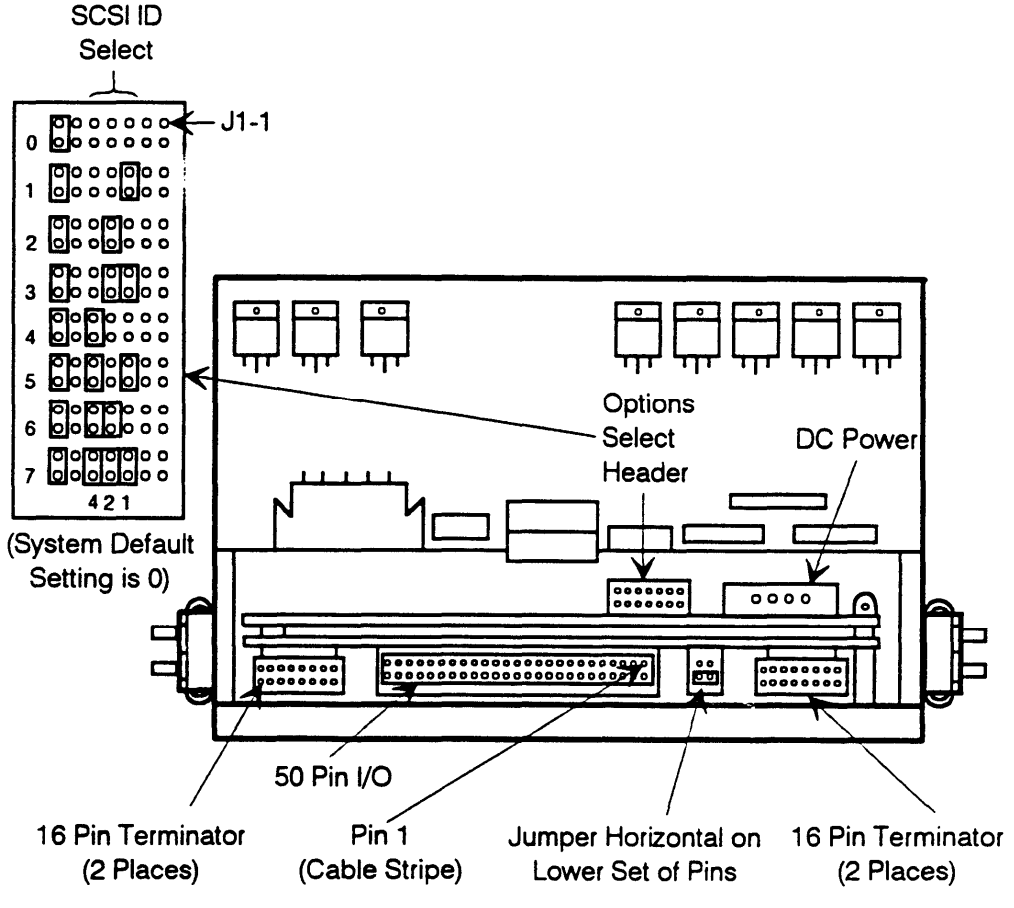

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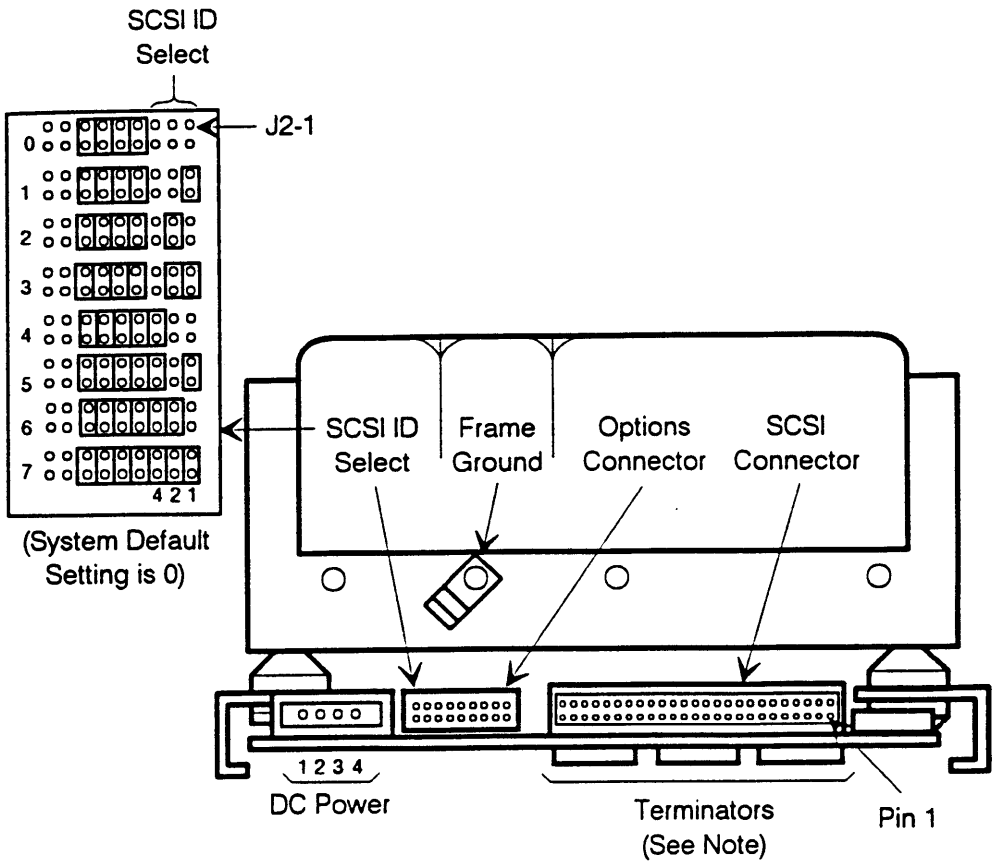
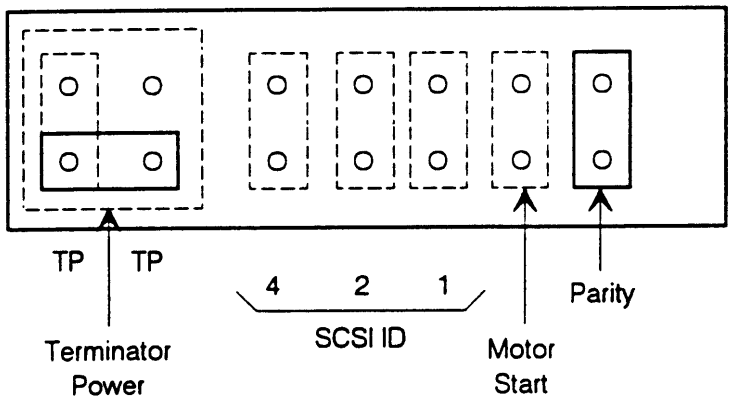


NOTE: Leave the terminators on if the 300/600MB SCSI disk is at the end of SCSI bus cable. Remove terminators if the 300/600MB SCSI disk is in the middle of the SCSI bus cable.

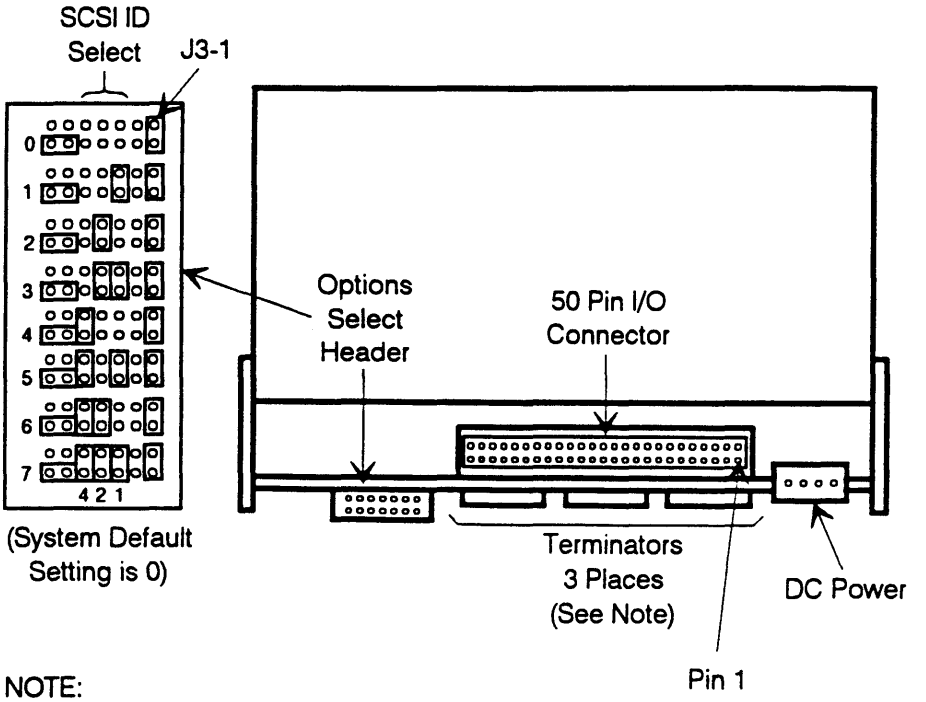
OM-00431-2

34



OM-00436-2

35

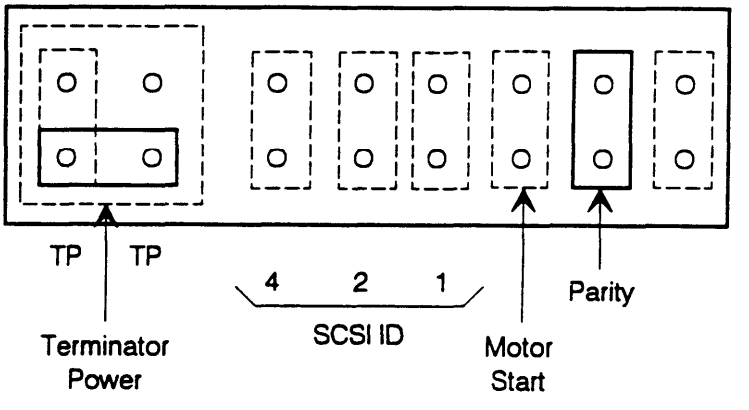


NOTE:

Leave the terminators on if the 600MB disk is at end of SCSI bus. Remove terminators if the 600MB disk is in the middle of the SCSI bus cable. Leave terminators on for kit.

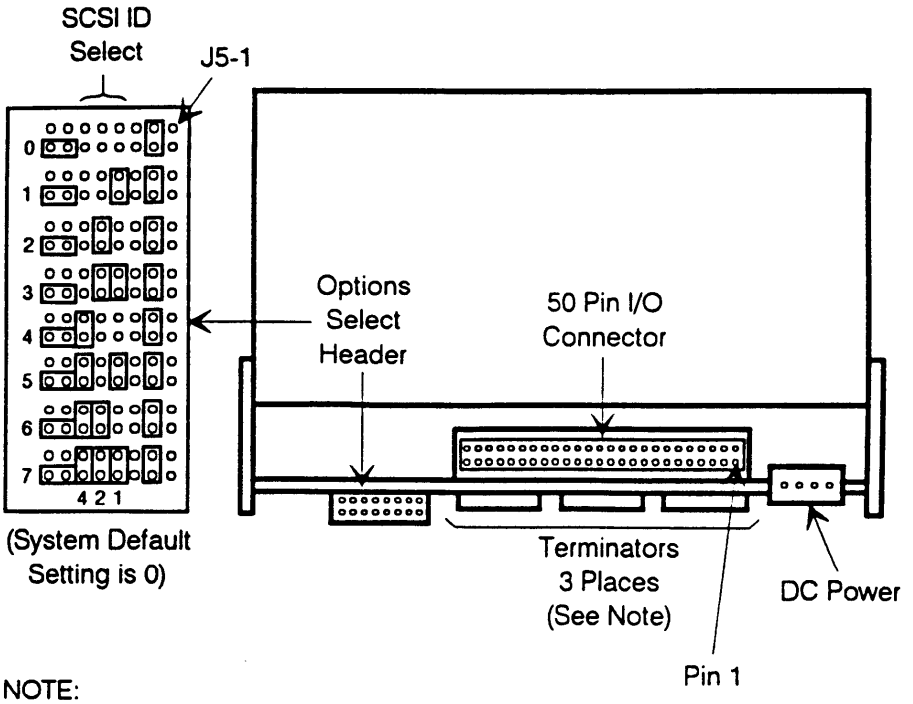
OM-00435-2

36



OM-00436-3

37

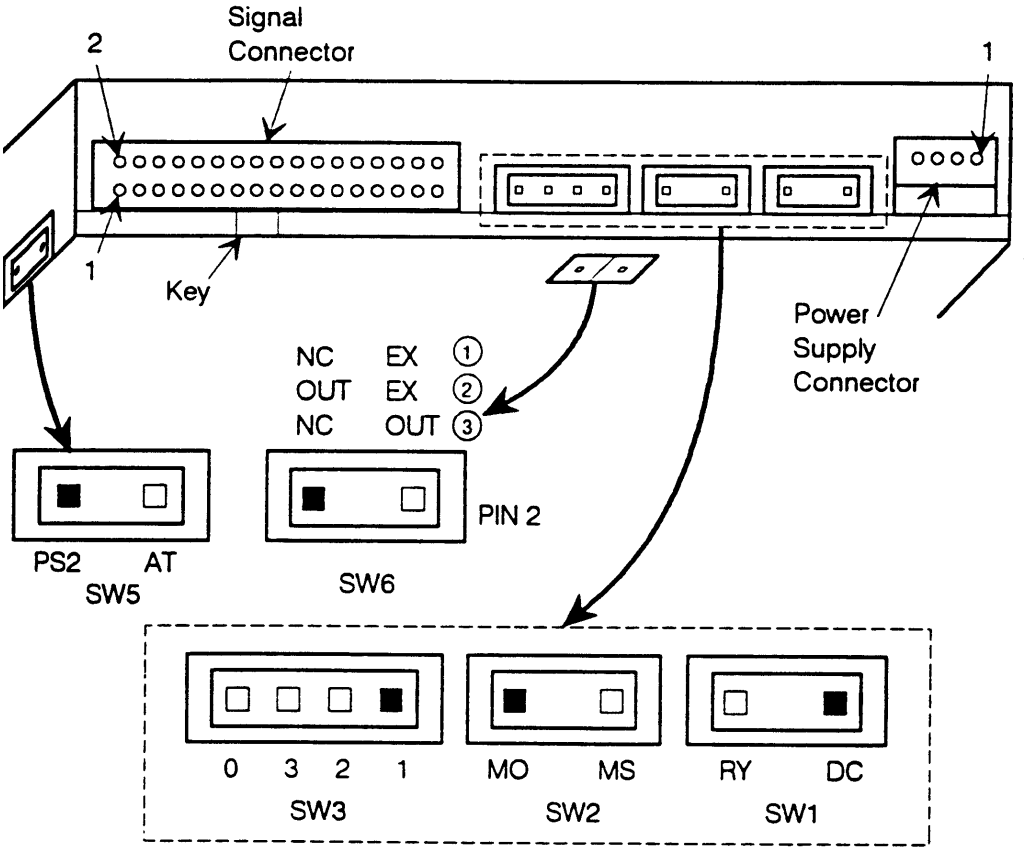


NOTE:

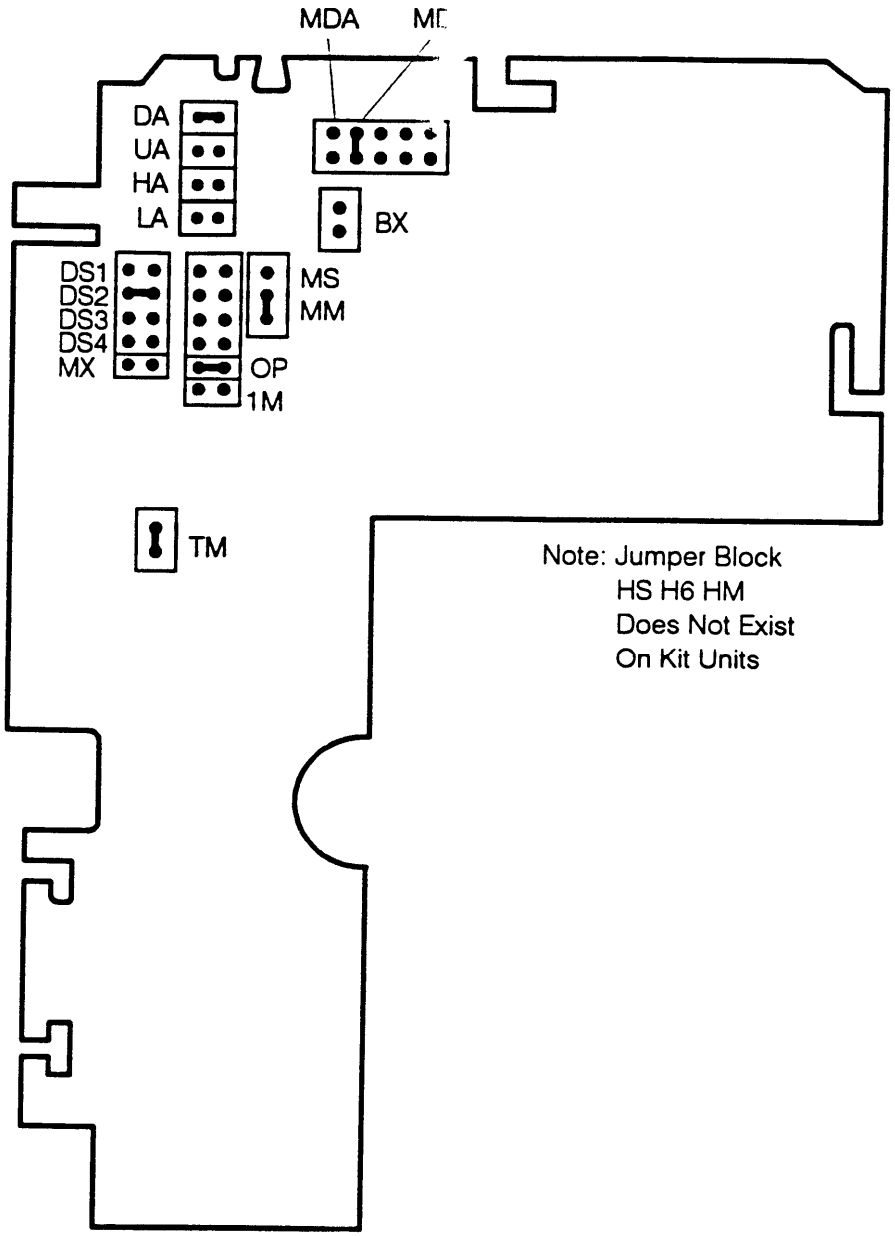
Leave the terminators on if the 1GB disk is at end of SCSI bus. Remove terminators if the 1GB disk isin the middle of the SCSI bus cable. Leave terminators on for kit.

OM-00435-3

38

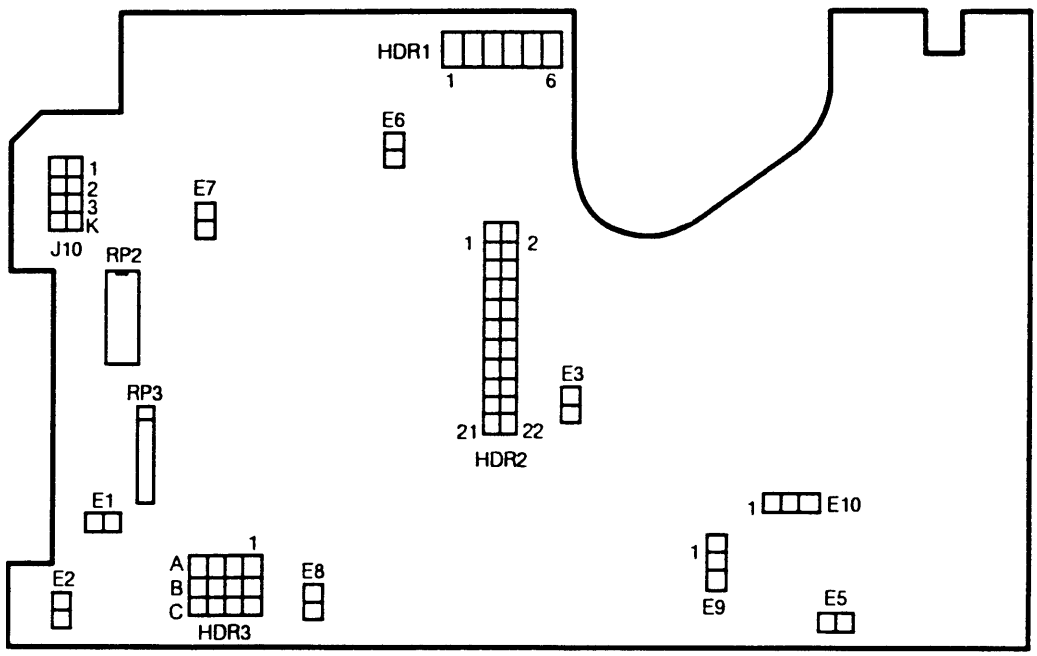


OM-00253-2


MDA
MD
DA
UA
HA
LA
BX
DS1
DS2
DS3
DS4
MX
MS
MM
OP
1M
TM
Note: Jumper Block
HS H6 HM
Does Not Exist
On Kit Units

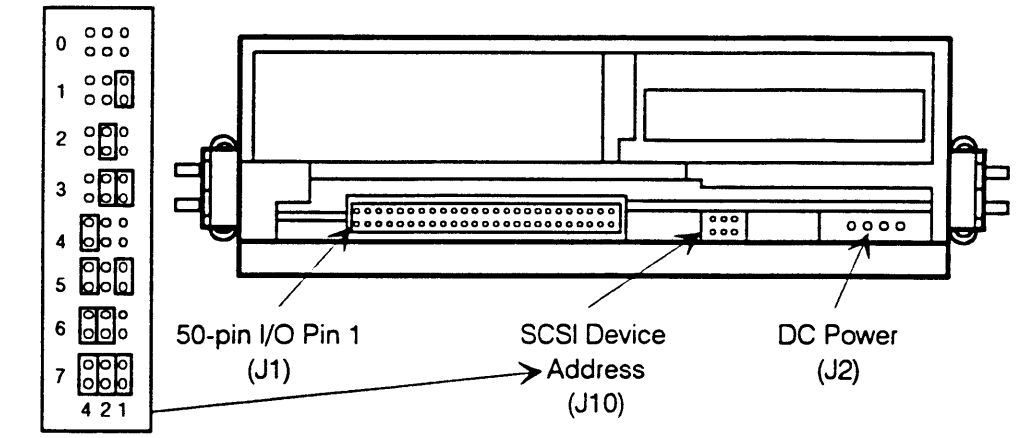
OM-00128

40

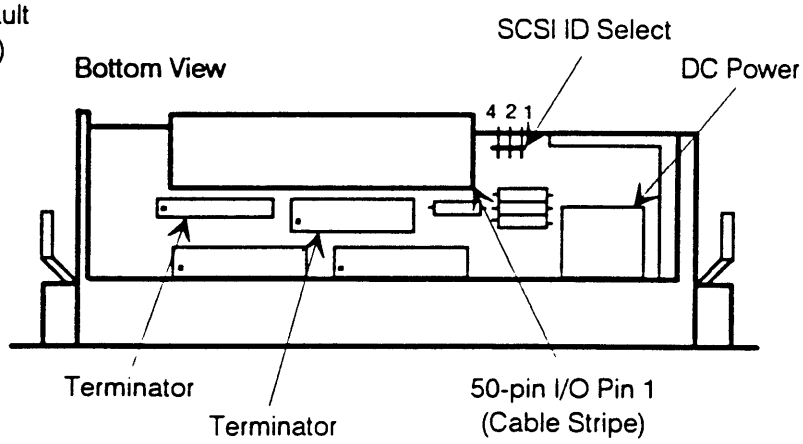


OM-00438

41



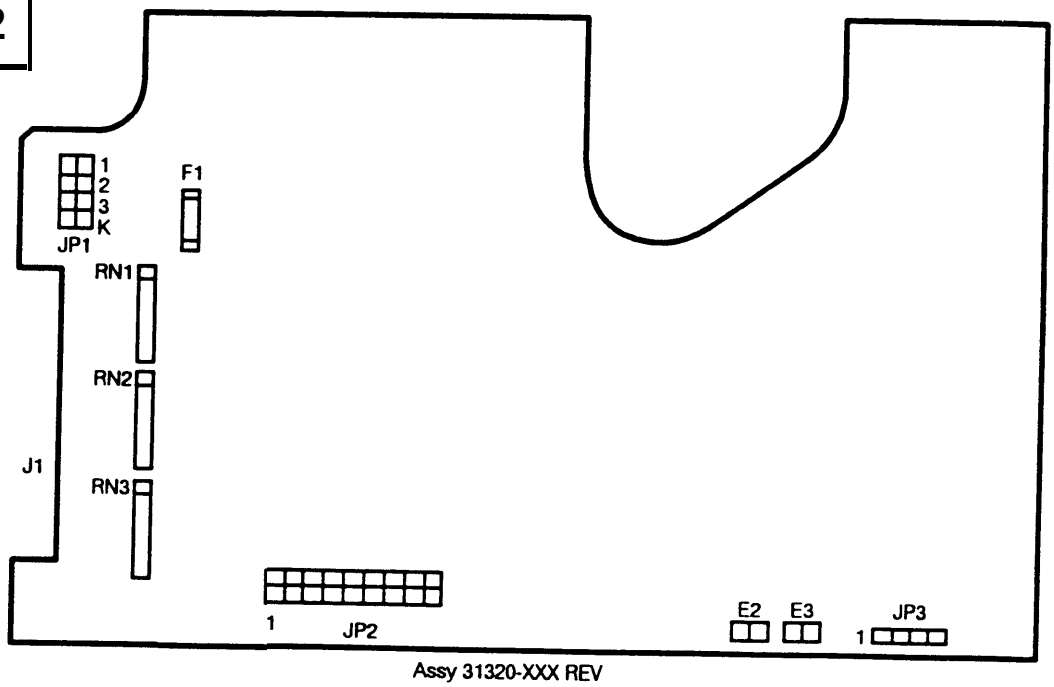
SCSI ID Select
(System Default
Setting is 3)



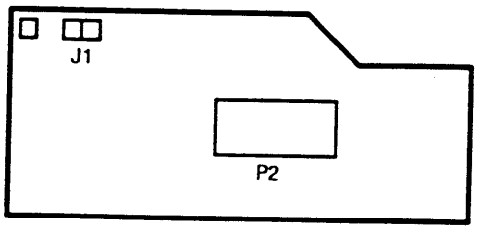
NOTE: Leave the terminator on if the120MB SCSI STU is at the end of SCSI bus cable. Remove terminator if the 120MB SCSI STU is in the middle of the SCSI bus cable.

OM-00437

42



Assy 31320-XXX REV

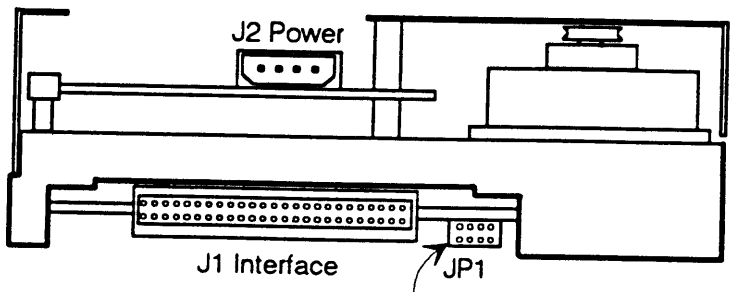


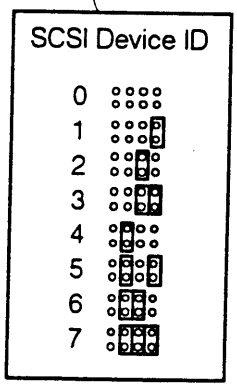
Assy 33584-XXX REV

OM-00440

43

Drive Rear View

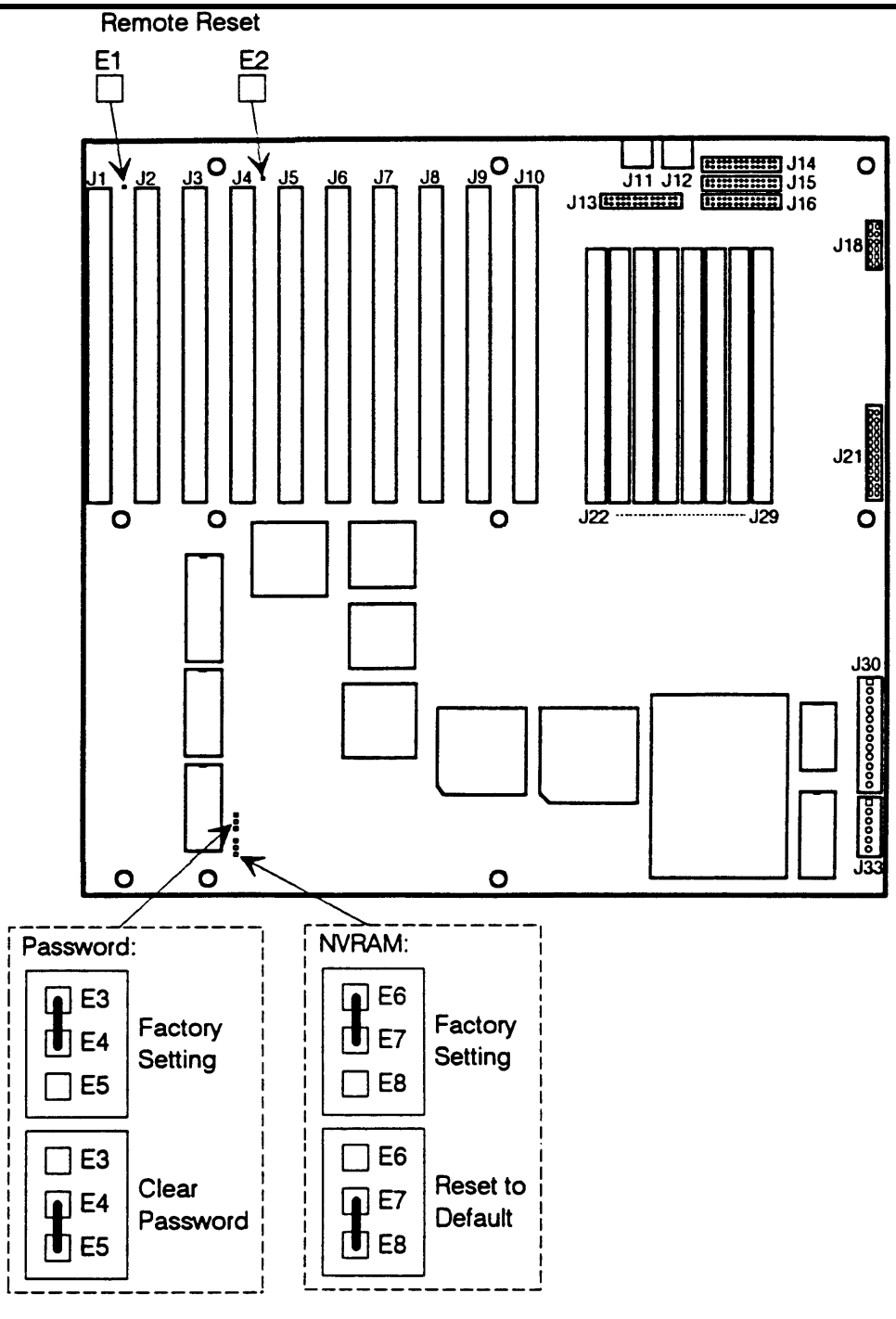




(System Default)

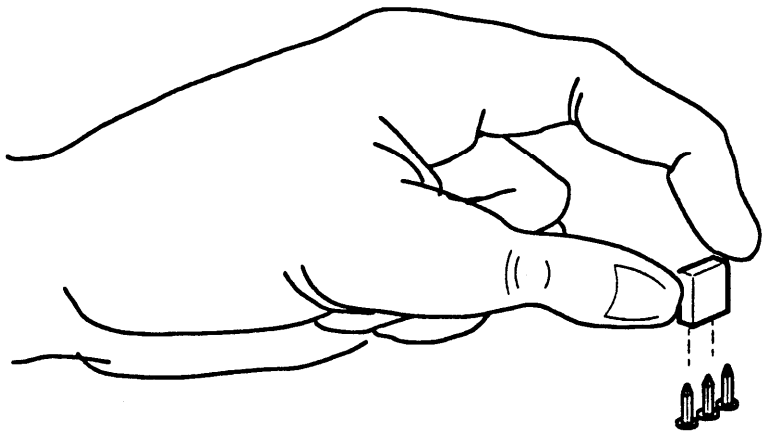
OM-00439

44



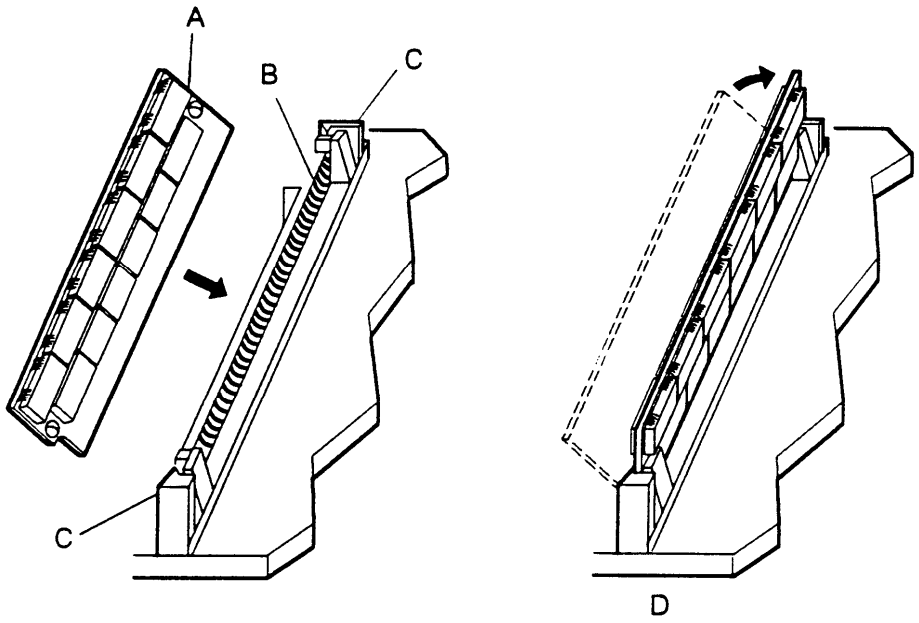
OM-00379-2

45



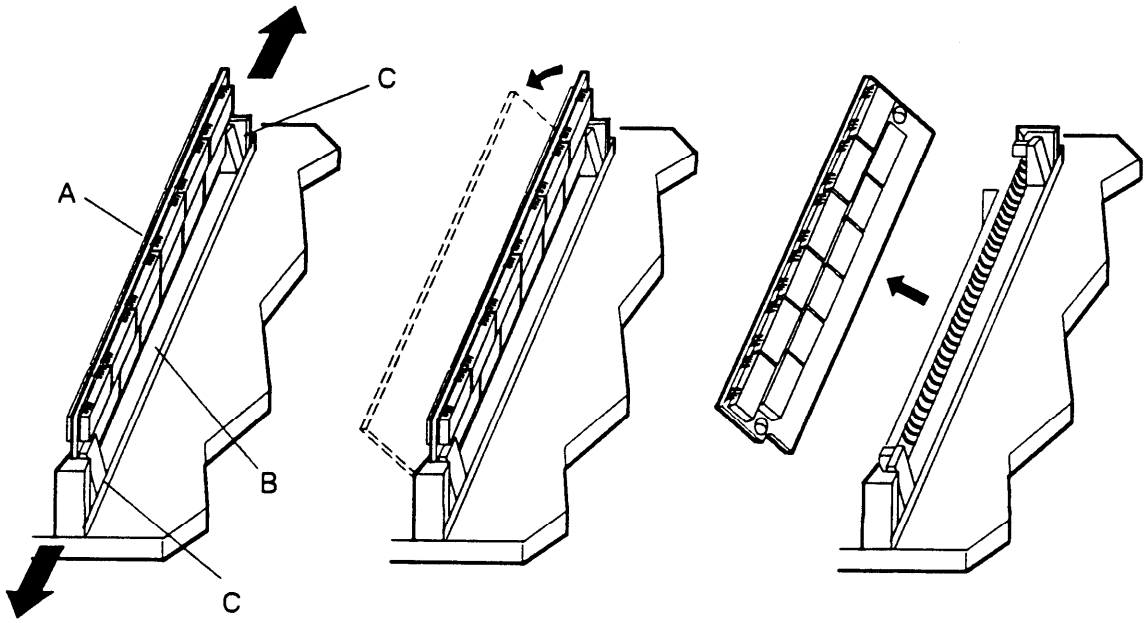
OM-00108

46



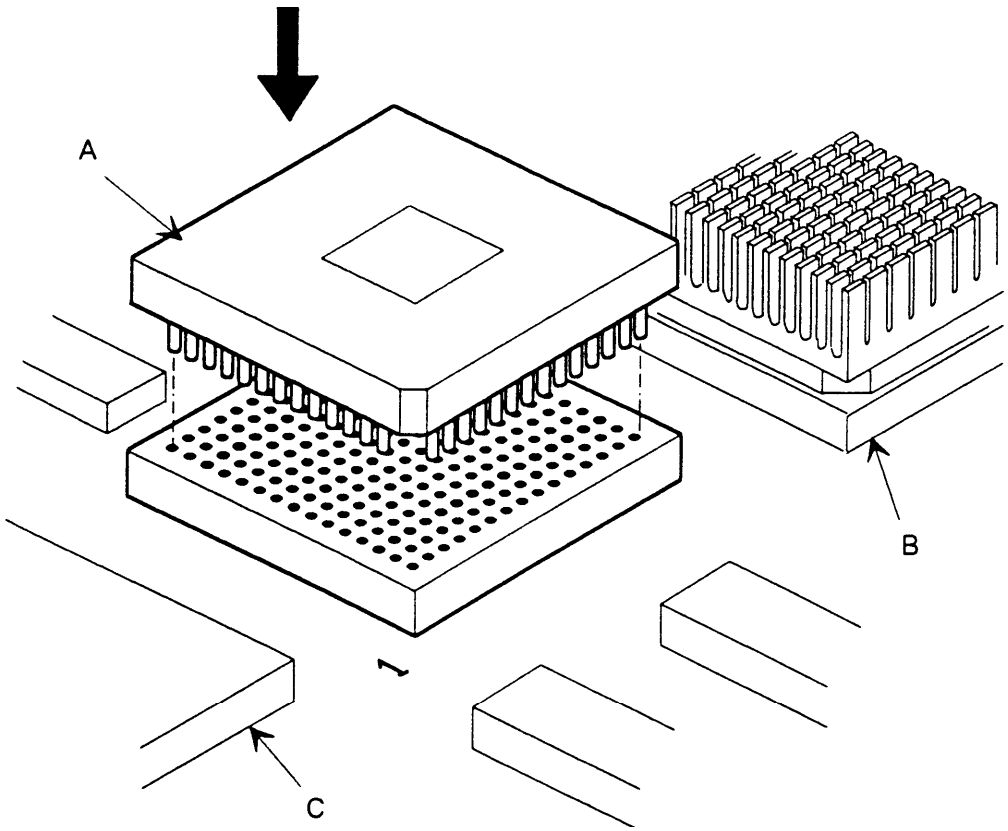
OM-00519-3

47



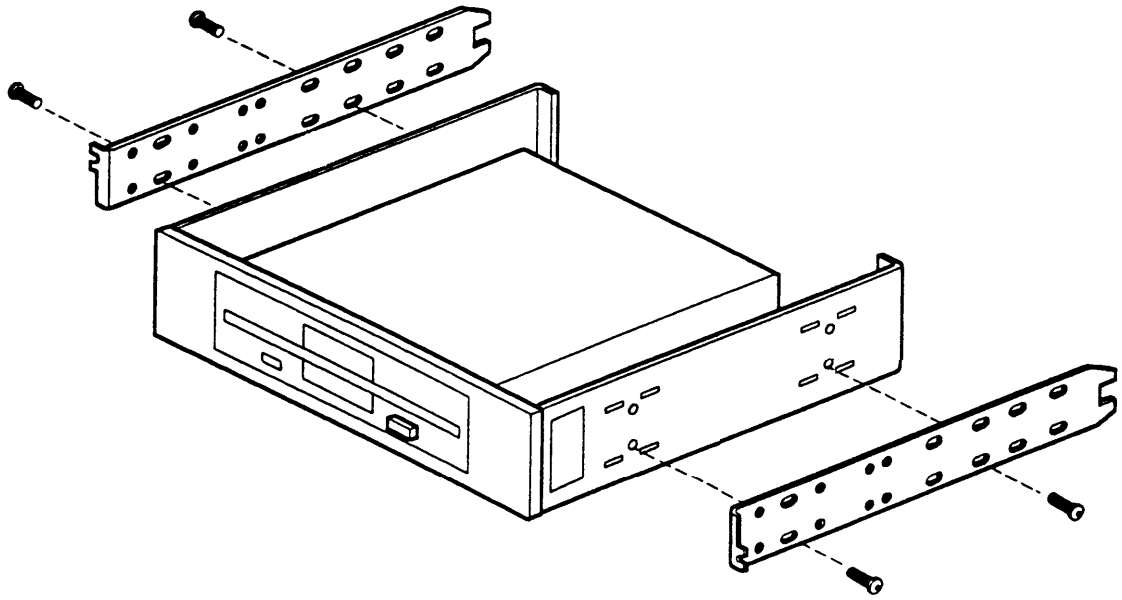
OM-00520-3

48

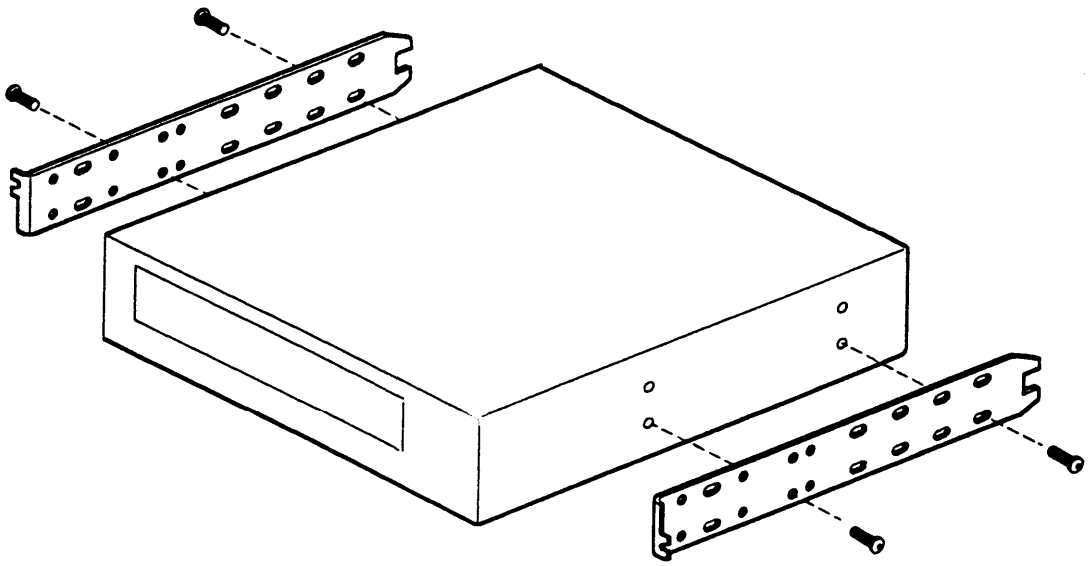


OM-00382-3

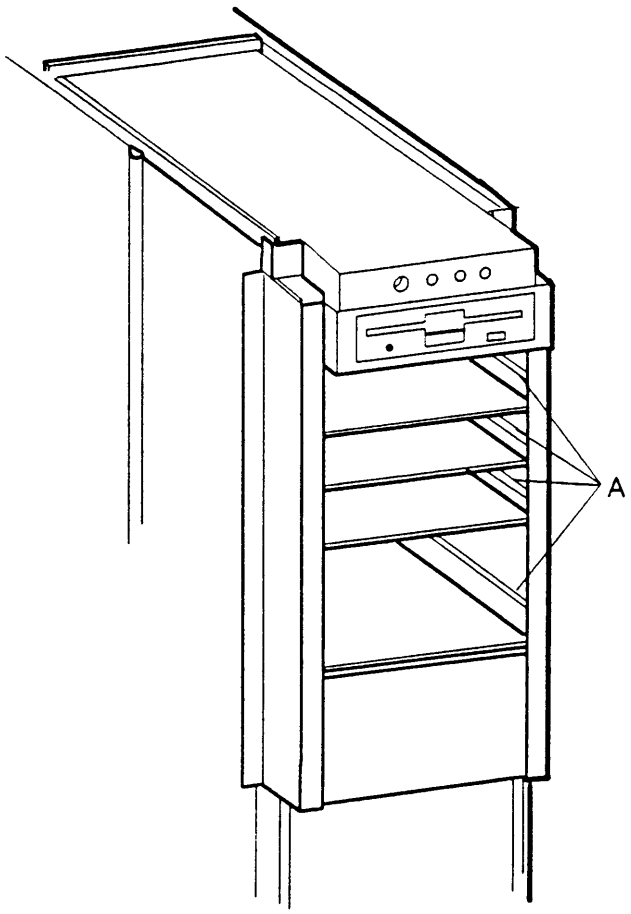
A



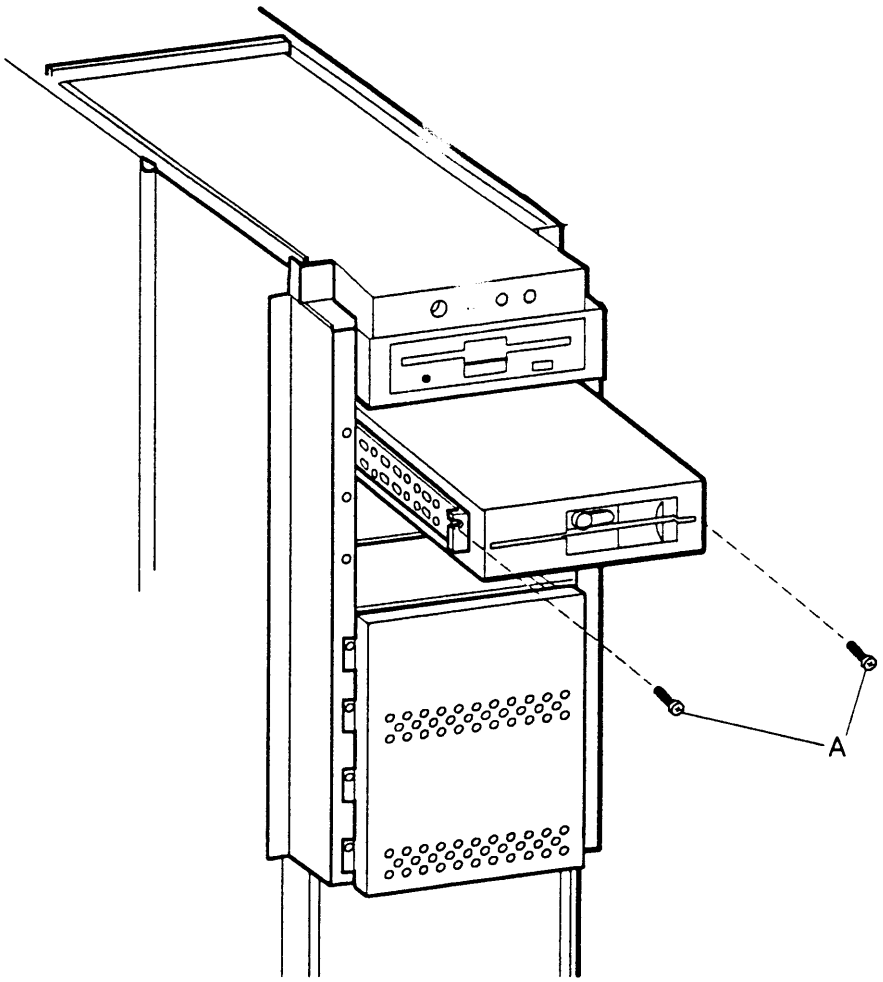
B



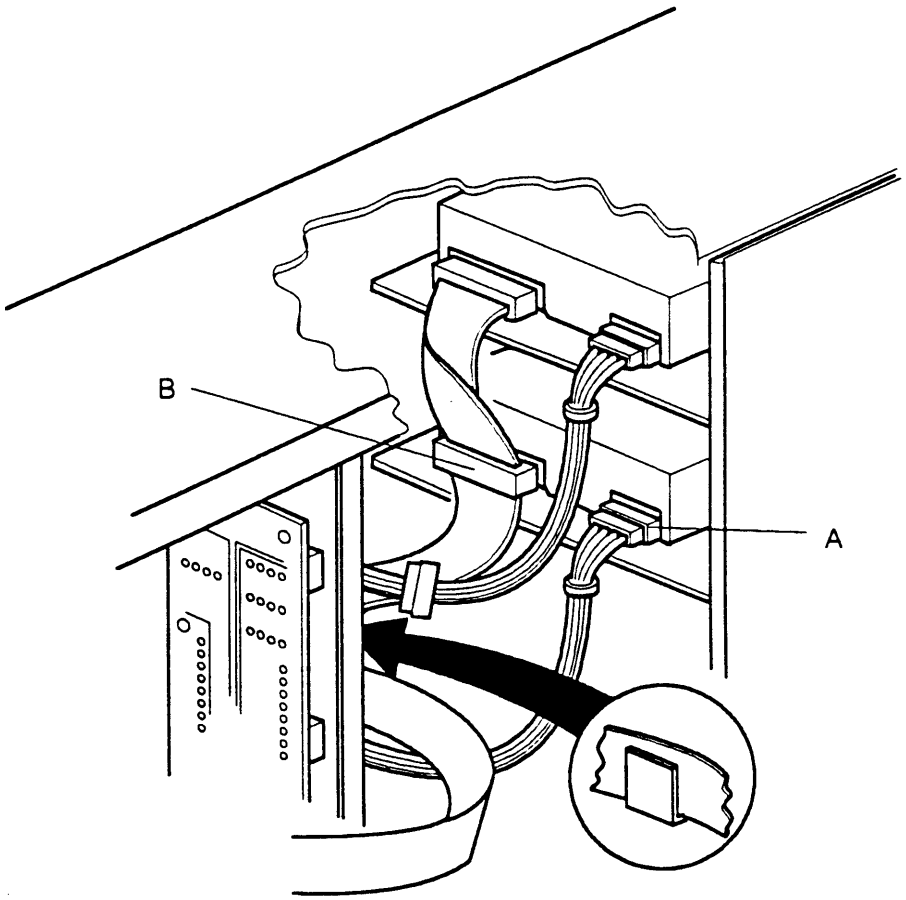
OM-00314



OM-00420-2

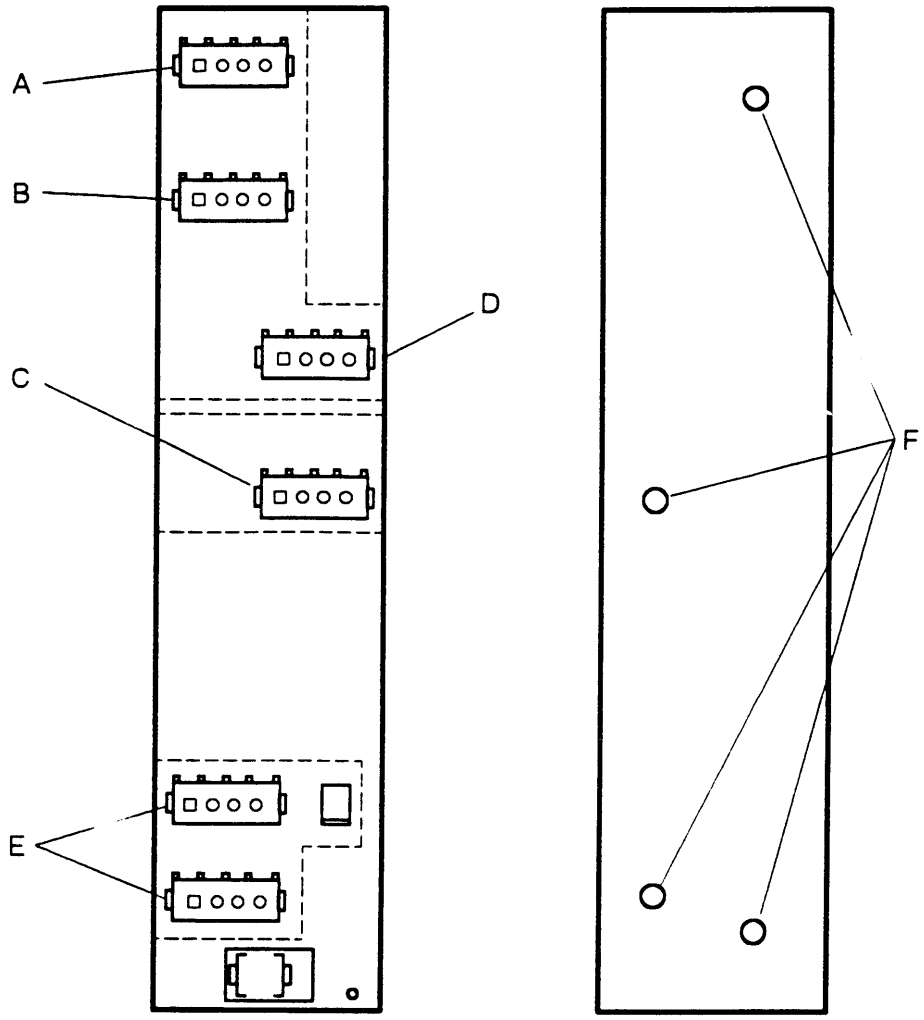


OM-00421-2



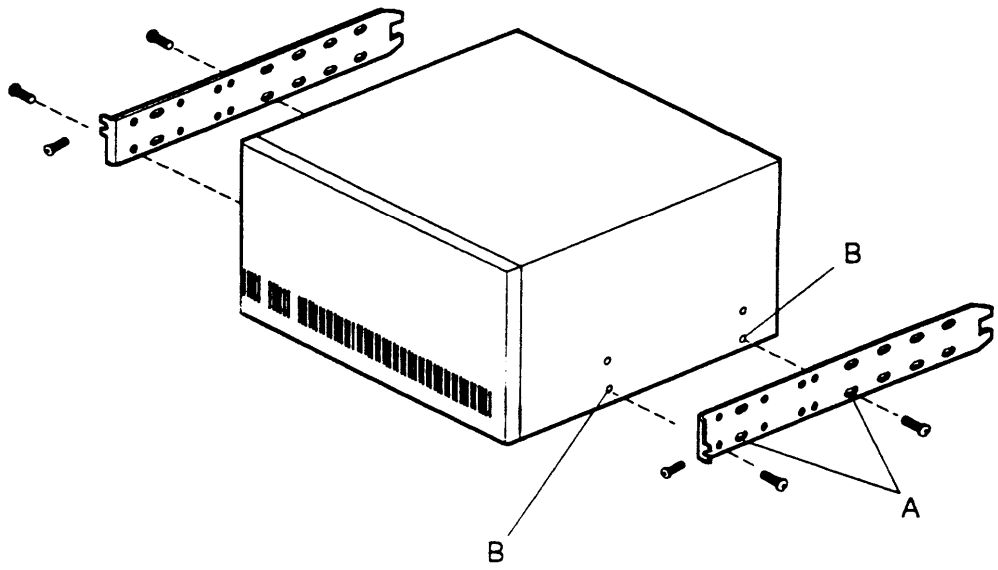
OM-00052-2

53

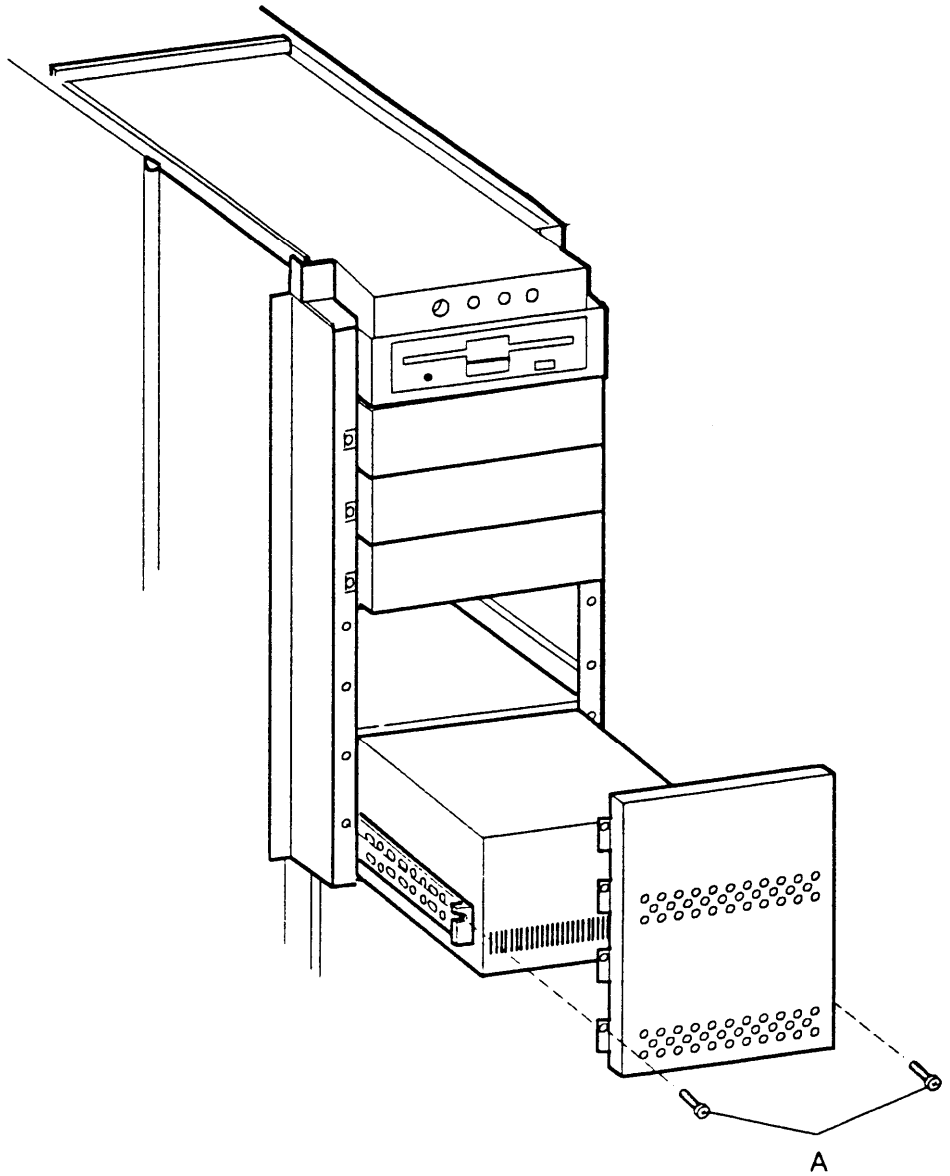


OM-00266-2

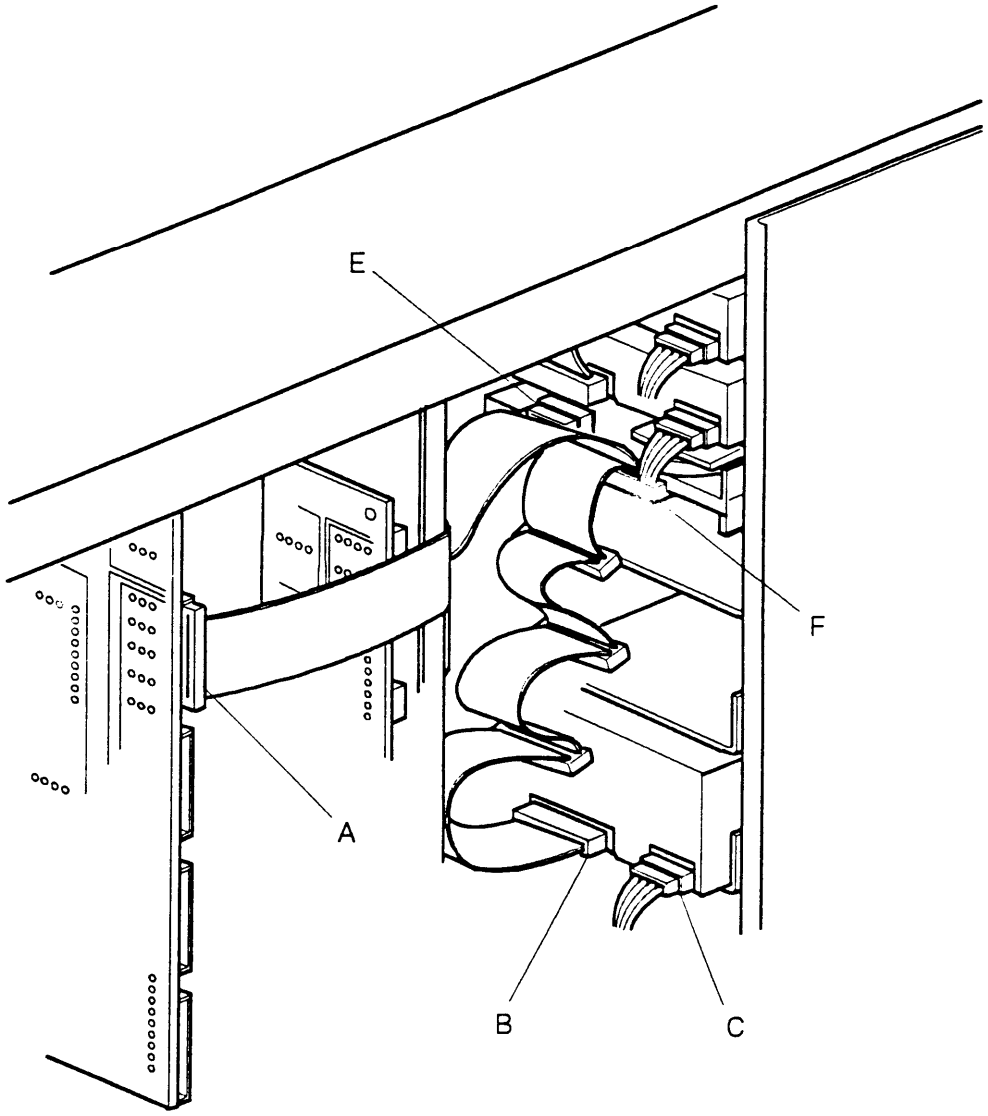
54



OM-00026-3

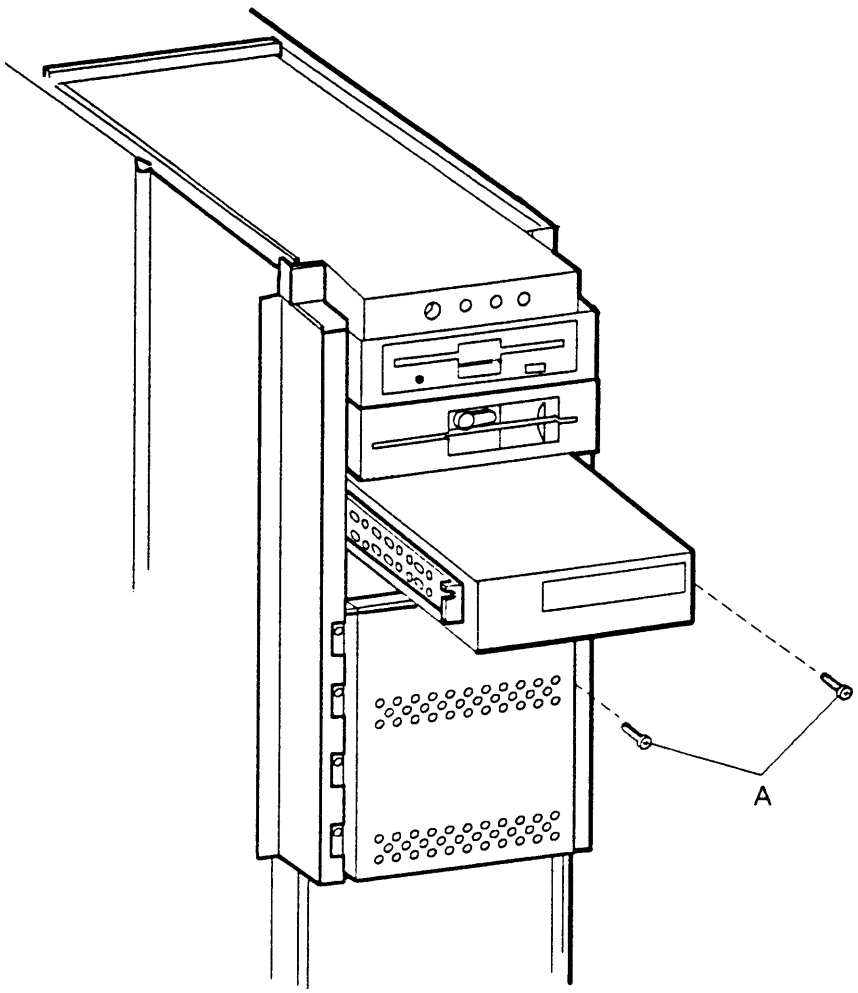


OM-00423-2



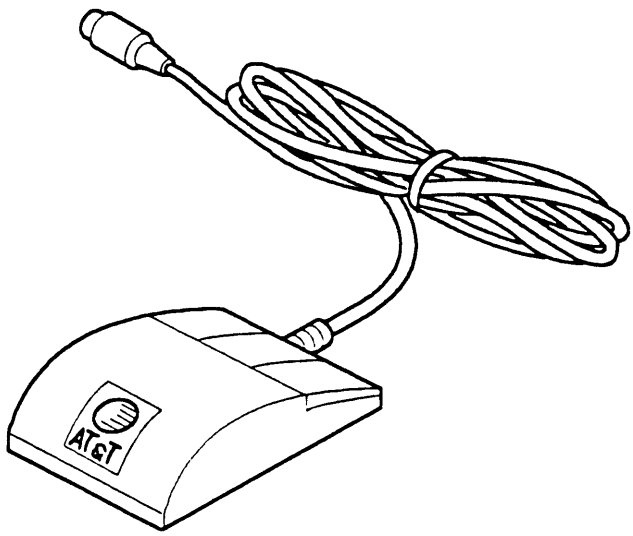
OM-00424-2

57



OM-00422-2

58



OM-00126