

3527-001 User Guide
Book Cover

COVER Book Cover

3527 Model 001
SSA Entry Storage Subsystem

User's Guide

Document Number SA26-7199-00

Part Number 90H6141

3527-001 User Guide
Notices

NOTICES Notices

```
+--- Take Note! -----+
|
| Before using this information and the product it supports, be sure
| to read the general information under "Product Warranties and
| Notices" in topic BACK_1.
|
+-----+
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3527-001 User Guide
Edition Notice

EDITION Edition Notice

First Edition (October 1996)

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3527-001 User Guide
About This Guide

PREFACE About This Guide

This publication provides you with information for installing, setting up, operating, and upgrading of the 3527 SSA Entry Storage Subsystem.

Subtopics

PREFACE.1 Terminology

PREFACE.2 Numbering Convention

PREFACE.3 Related Publications

PREFACE.1 Terminology

The terms used throughout this publication to describe the 3527 Storage Unit include:

001 The model number of the serial storage architecture (SSA) version of the 3527 Storage Unit.

3527 Refers to the 3527 SSA Entry Storage Subsystem.

The 3527 Storage Unit is part of the IBM StorageSmart family of products.

disk drive module A device that provides data storage in the 3527 Storage Unit.

The disk drive module provides data storage that can be directly accessed by your host system.

slot A compartment or shelf in the 3527 Storage Unit that houses a disk drive module.

SSA Serial storage architecture--data is transmitted serially.

SSA loop A data path that starts at one connector of the SSA adapter, passes through the SSA cable to one or more disk drives or adapters, then returns to a second connector on the SSA adapter.

host system The processor for which the 3527 Storage Unit provides data storage--for example, a PC Server 320 or 720.

PREFACE.2 Numbering Convention

In this book, one gigabyte (GB) equals 1 000 000 000 bytes.

3527-001 User Guide
Related Publications

PREFACE.3 Related Publications

For additional information see:

3527 SSA Entry Storage Subsystem Service Guide, SY32-0403, which provides service information for the 3527 Storage Unit.

Translated Safety Notices For External Storage Devices, SA26-7197 which provides translation of the general safety notes in this publication into various languages.

IBM SSA RAID Adapter for PC Servers Installation and User's Guide, S32H-3816.

IBM SSA RAID Adapter for PC Servers Hardware Maintenance Manual Supplement, S32H-3817.

Technical Reference, SA33-3269.

You will also need the management and hardware publications for your host system when installing or upgrading the 3527 SSA Entry Storage Subsystem.

1.0 Chapter 1. Overview of the 3527 Storage Unit

This chapter gives an overview of the 3527 Storage Unit and describes its features and operating requirements.

The 3527 Storage Unit is a compact, desk-side data storage tower that connects to a host system, such as a PC Server 320 or 720. The minimum configured 3527 Storage Unit contains IBM's high performance disk drive modules in two of its slots and dummy drive modules in three of its slots. When the 3527 Storage Unit is configured with five disk drive modules no dummy drive modules are required. Figure 1 shows a front view of the 3527 Storage Unit, with the front cover closed. Figure 2 in topic 1.1.1.1 shows the front cover open, providing a view of the slots.

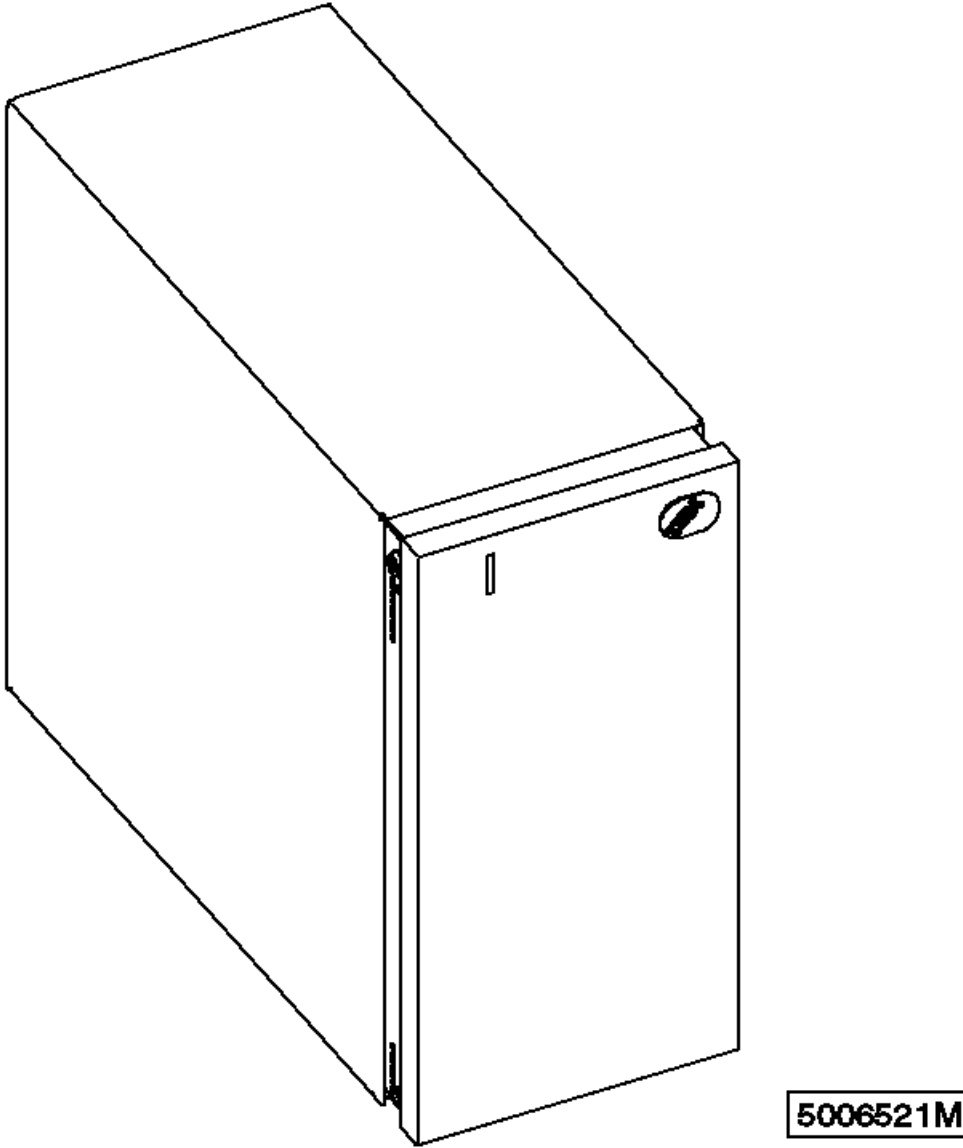


Figure 1. The 3527 SSA Entry Storage Subsystem

Subtopics

1.1 Major Features

1.2 Operating Environment

3527-001 User Guide
Major Features

1.1 Major Features

The 3527 Storage Unit provides up to 22.5 GB of storage using 4.5 GB disk drives. You have the option of linking multiple 3527 Storage Units to your host system.

The 3527 Storage Unit Model 001 offers the following advantages over other data storage towers:

Enhanced performance and flexibility, using serial storage architecture (SSA)
Easily upgradable and expandabl

Subtopics

- 1.1.1 SSA Performance and Flexibility
- 1.1.2 Upgrading and Expanding
- 1.1.3 Software Requirements
- 1.1.4 Line Cord Requirements

3527-001 User Guide
SSA Performance and Flexibility

1.1.1 SSA Performance and Flexibility

Using two 3527 Storage Units, you can mirror data to provide low-cost backup storage to protect critical data. The multiple-system attachment capability of SSA also makes the IBM 3527 Storage Unit ideal for configurations in an environment of clustered PC Servers.

You have a choice of high-performance disk drive modules that you can install in the slots.

Subtopics

1.1.1.1 3527 Storage Unit Options

1.1.1.1 3527 Storage Unit Options

The 3527 Storage Unit must have five devices installed for operation. The minimum configured 3527 Storage Unit contains IBM's high performance disk drive modules in two of its slots and dummy drive modules in three of its slots. The disk drive modules must be installed in slots one and five. The dummy drive modules are installed in slots two, three, and four.

Figure 2 shows the 3527 Storage Unit with the front cover open giving a view of the five slots and the control panel. The control panel consists of the power switch and the power light.

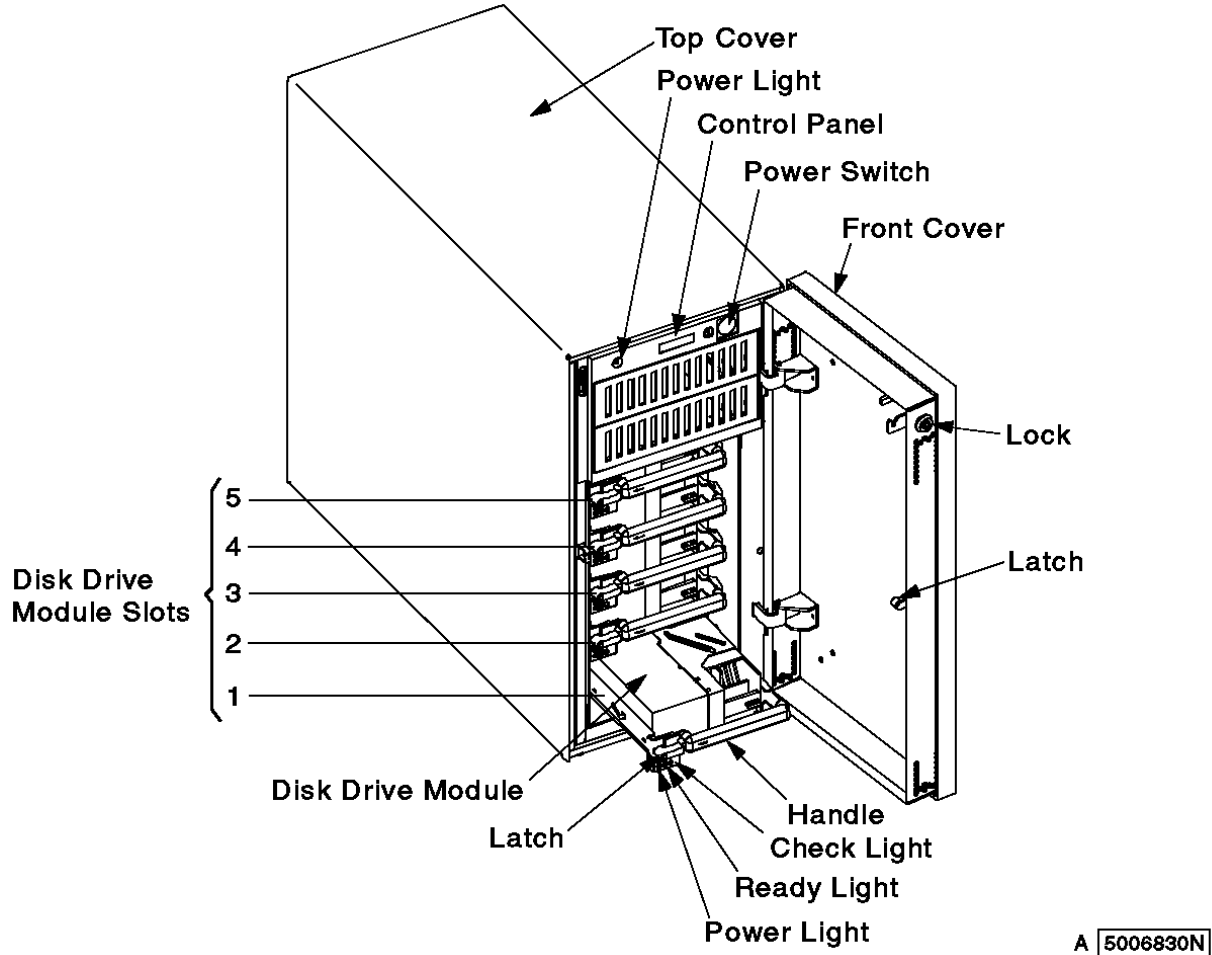


Figure 2. Interior of the 3527 Storage Unit

Table 1 lists the choices of disk drive modules you can order for Slots 1 and 5 of the minimum configured 3527 Storage Unit.

Table 1. 3527 Storage Unit Options		
Feature	Options	Capacity
05J6414	Disk drive modules	4.5 GB each
05J6413	Disk drive modules	2.2 GB each
05J6411	Dummy disk drive modules	

1.1.2 Upgrading and Expanding

The minimum configured 3527 Storage Unit comes with two disk drive modules installed in the slots. As your requirements change, you can expand your storage capacity by installing any of the options listed in Table 1.

As a further upgrade, you can attach multiple 3527 Storage Units to a single host system or multiple host systems. For example configurations, see "Connecting the 3527 Storage Unit in a Minimum Configuration" in topic 3.2.2.

Instructions for upgrading your 3527 Storage Unit are in Chapter 6, "Adding and Removing Disk Drive Modules."

1.1.3 Software Requirements

The 3527 Storage Unit Model 001 is supported or scheduled to be supported on the following operating systems. Refer to your SSA Adapter documentation for a list of the current device drivers that are available.

OS/2 2.11 SM

OS/2 WarpServer Version

Novell NetWare 4.1, 4.1 SM

Windows NT 3.51 Serve

Windows NT 4.0 Serve

1.1.4 Line Cord Requirements

See Appendix A, "Line Cord Requirements" in topic A.0 for the requirements for your country.

1.2 Operating Environment

This section describes the physical specifications for the 3527 Storage Unit and the requirements for the operating environment. Use the information in this section to plan the location of your 3527 SSA Entry Storage Subsystem.

Subtopics

1.2.1 Physical Specifications

3527-001 User Guide
Physical Specifications

1.2.1 Physical Specifications

Attention: When installing more than one 3527 Storage Unit, you must leave a minimum space of 2.5 cm (1 in.) between each 3527 Storage Unit, and 15 cm (6 in.) in the back to meet cooling requirements.

Dimensions

Height 407 mm (16.0 in.)
Depth 483 mm (19.0 in.)
Width 197 mm (7.75 in.)
Weight 20 kg (44 lb) Minimum configuration (2 devices)

Power Requirements

	115 V AC	230 V AC
kV-A	0.76	0.96
Range	90-137 V ac	180-265 V ac
Frequency	47 to 63 Hz	47 to 63 Hz
Watts	378	480
Power factor	0.5 minimum	0.5 minimum
Maximum altitude	2135 m (7000 ft)	2135 m (7000 ft)

Japan Energy Saving Law Data: The machine type and model is 3527 Model 001. Maximum usable storage capacity is 22.5 GB.

Energy consumption	115 V ac	230 V ac
Watts	378	480
Watts per MB	.01	.01

Temperature Requirements

Operating 16-32°C (60.8-89.6°F)

Relative Humidity Requirements

Operating 20 to 80%

Wet Bulb Temperature Requirements

Operating 23°C (73.4°F maximum)

Noise Level

Power sound level (LwAu)--idling, 5 drives 5.6 Bels
Power sound level (LwAu)--operating, 5 drives 6.0 Bels

3527-001 User Guide
Chapter 2. Preparing for Installation

2.0 Chapter 2. Preparing for Installation

The procedures and guidelines in this chapter help you to prepare for installation and verify the safe condition of a 3527 Storage Unit by:

- Gathering tools and informatio
- Preparing the host syste
- Verifying SSA suppor
- Checking the electrical outlets at the 3527 Storage Unit sit
- Checking the inventor
- Checking the external 3527 Storage Uni
- Checking the internal 3527 Storage Uni

Be sure to install, setup, operate, or relocate a 3527 Storage Unit under safe conditions.

Subtopics

- 2.1 Tools and Information
- 2.2 Preparing the Host system
- 2.3 Checking the Electrical Outlets
- 2.4 Checking the Inventory
- 2.5 Checking the External 3527 Storage Unit
- 2.6 Checking the Internal 3527 Storage Unit

2.1 Tools and Information

Before you begin installation, be sure you have available the tools, publications and information listed in the following paragraphs.

Tools: You will require SSA tool P/N 32H7059 for securing the cable connectors or a small flat-head screwdriver.

Publications and Information:

Translated Safety Notices For External Storage Devices, SA26-7197 which provides translation of the general safety notes in this publication into various languages.

3527 SSA Entry Storage Subsystem Service Guide, SY32-0403 which provides service information for the 3527 Storage Unit.

Your host system management or system hardware publications. You need the following information from these publications for installing an external SSA device:

- Location where you will connect the SSA adapter on the host system
- Controlled shutdown and start up procedures for your host system

IBM SSA RAID Adapter for PC Servers Installation and User's Guide, S32H-3816.

IBM SSA RAID Adapter for PC Servers Hardware Maintenance Manual Supplement, S32H-3817.

2.2 Preparing the Host system

For successful 3527 Storage Unit installation, ensure that your host system is ready by verifying the following conditions exist:

An SSA adapter is either available for installation or already installed in the host system

The host system software is at the correct level for the 3527 Storage Unit

The correct level of microcode for the SSA adapter and disk drive modules has been loaded (diskettes and instructions are supplied with the SSA adapter).

3527-001 User Guide
Checking the Electrical Outlets

2.3 Checking the Electrical Outlets

To check the electrical outlets:

DANGER

```
+-----+
| An electrical outlet that is not correctly wired could place
| hazardous voltage on metal parts of the system or the products
| that attach to the system. It is the customer's responsibility to
| ensure that the outlet is correctly wired and grounded to prevent
| an electrical shock. (RSFTD201)
+-----+
```

Verify that the wiring and grounding of the electrical outlets you use have been checked by a licensed electrician.

2.4 Checking the Inventory

To check the inventory:

1. Verify that all items on your order were received.
2. If you observe shipping damage, do not install the 3527 Storage Unit without IBM approval.
3. Report all observed damage or missing items immediately to your IBM service representative.

2.5 Checking the External 3527 Storage Unit

To perform the external machine check:

1. CAUTION:

The weight of this part or unit is between 18 and 32 kilograms (39.7 and 70.5 pounds). It takes two persons to safely lift this part or unit. (RSFTC204)

Ensure that the weight safety label (Figure 3) is installed on the back of your 3527 Storage Unit.

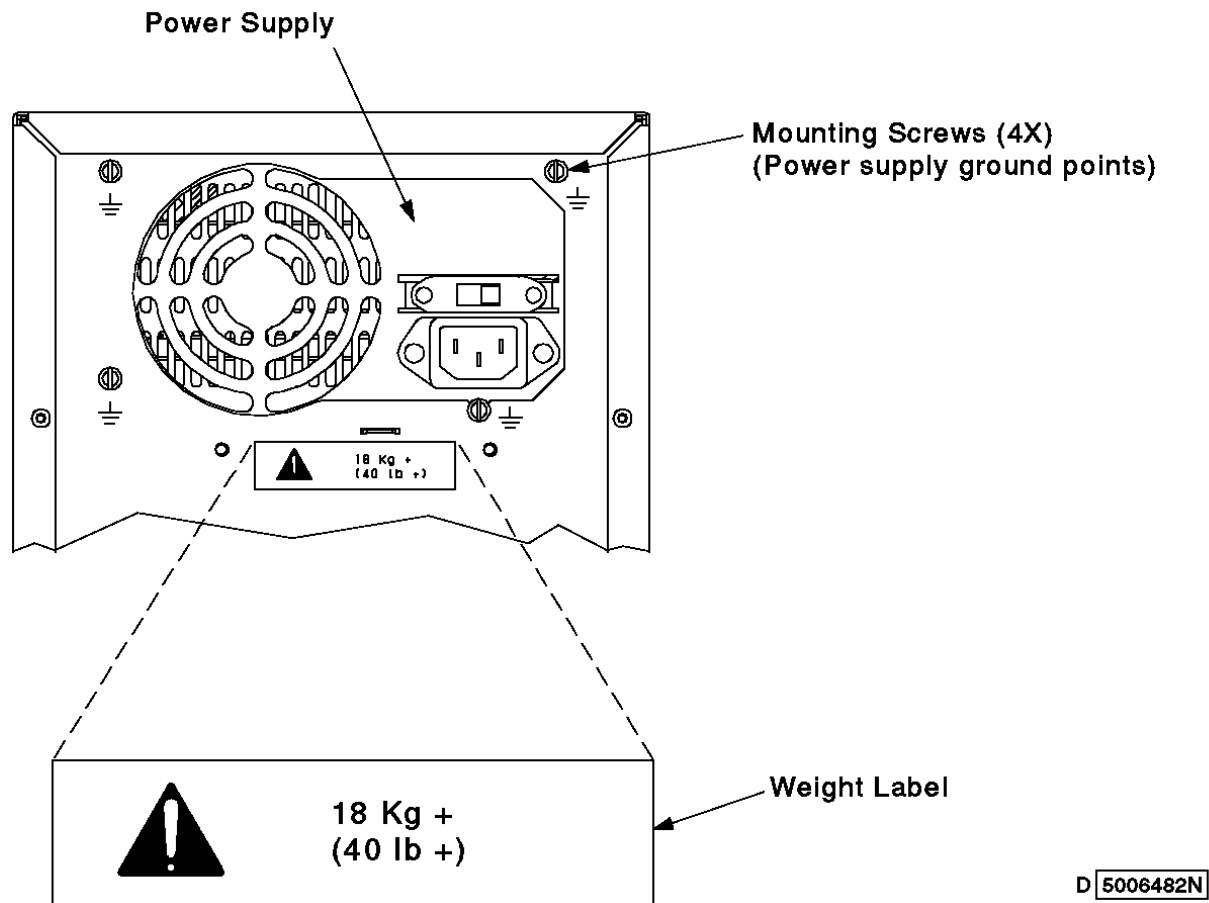


Figure 3. View of Weight Safety Label

2. Check the 3527 Storage Unit for loose or broken feet.
3. Ensure that all latches and hinges are in good operating condition.
4. Report any loose, broken, or missing parts immediately to your IBM service representative.

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2.6 Checking the Internal 3527 Storage Unit

To perform the internal machine check:

1. Open the front cover (Figure 4).

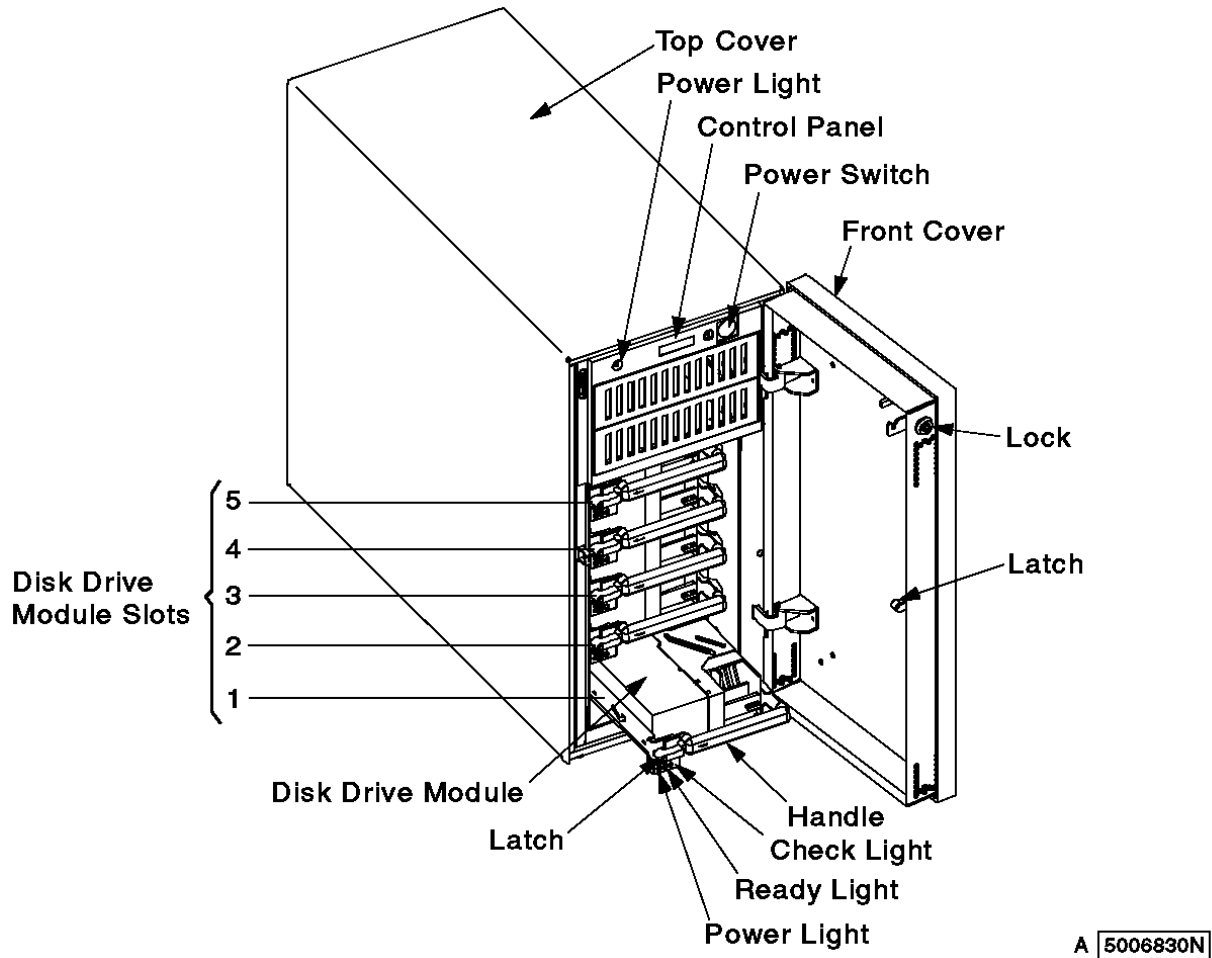


Figure 4. The 3527 Storage Unit with the Front Cover Open

2. Verify that the 3527 Storage Unit contains the five required disk drive modules and/or dummy disk drive modules in the proper locations as indicated below:

- Slot 5** Must contain a disk drive module.
- Slot 4** May contain a disk drive module or dummy disk drive module.
- Slot 3** May contain a disk drive module or dummy disk drive module.
- Slot 2** May contain a disk drive module or dummy disk drive module.
- Slot 1** Must contain a disk drive module.

3. Check for any obvious mechanical problems, such as loose parts.

4. Notify your IBM representative immediately of any problems.

3.0 Chapter 3. Installing the 3527 Storage Unit

This chapter includes guidelines for:

Placing the 3527 Storage Unit

Connecting the 3527 Storage Unit to the host system

- Connecting to the SSA adapter on the host system
- Connecting the 3527 Storage Unit in a minimum configuration
- Connecting 3527 Storage Units in an expanded configuration

Connecting the 3527 Storage Unit to the power source

Powering on the 3527 Storage Unit

Verifying 3527 Storage Unit installation

The last section outlines the guidelines for relocating the 3527 Storage Unit. Chapter 6, "Adding and Removing Disk Drive Modules" describes the procedures for adding devices to the 3527 Storage Unit.

Observe all safety notices when installing or relocating a 3527 Storage Unit. For a translation of a safety notice, see the safety notice with a matching reference number (for example *RSFTD201*) in the *Translated Safety Notices For External Storage Devices Manual, SA26-7197*.

Subtopics

3.1 Placing the 3527 Storage Unit

3.2 Connecting the 3527 Storage Unit to the Host system

3.3 Connecting the 3527 Storage Unit to the Power Source

3.4 Verifying 3527 Storage Unit Installation

3.5 Relocating the 3527 Storage Unit

3527-001 User Guide
Placing the 3527 Storage Unit

3.1 Placing the 3527 Storage Unit

Place the 3527 Storage Unit in a location that is convenient for your host system. The only restrictions are the length of the line cords and the SSA cables connecting the 3527 Storage Unit to the host system.

1. CAUTION:

The weight of this part or unit is between 18 and 32 kilograms (39.7 and 70.5 pounds). It takes two persons to safely lift this part or unit. (RSFTC204)

2. Attention: Take reasonable care to prevent damage to the 3527 Storage Unit. Avoid dropping or bumping it.

3. Place the 3527 Storage Unit to allow adequate clearance:

- a.** Ensure that the 3527 Storage Unit has correct airflow for cooling. Each 3527 Storage Unit should be separated from the host system and other equipment (including additional 3527 Storage Units) by a minimum of 2.5 cm (1 in.).
- b.** Allow 2.5 cm (1 in.) of clearance on the hinge side for opening the cover.
- c.** Because the top cover is lifted vertically for service access, we recommend that you do not place the 3527 Storage Unit under a desk.
- d.** Allow 15 cm (6 in.) of clearance at the rear for the SSA cable and the line cord.

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Connecting the 3527 Storage Unit to the Host system

3.2 Connecting the 3527 Storage Unit to the Host system

This section gives the instructions for connecting the 3527 Storage Unit to the host system.

Subtopics

3.2.1 Connecting to the SSA Adapter on the Host system

3.2.2 Connecting the 3527 Storage Unit in a Minimum Configuration

3527-001 User Guide

Connecting to the SSA Adapter on the Host system

3.2.1 *Connecting to the SSA Adapter on the Host system*

Before you connect the 3527 Storage Unit to the host system be sure you understand the rules for connecting to the SSA adapter on the host system.

Each SSA loop must be connected to a valid pair of connectors on the SSA adapter--either connectors A1 and A2 or connectors B1 and B2.

Only one pair of adapter connectors on the adapter card can be connected to a particular SSA loop

A maximum of 48 disk drives can be connected in a particular SSA loop (dummy disk drives are not counted as part of the 48 drives).

A maximum of three dummy disk-drive modules can be connected next to each other in a particular SSA loop

Subtopics

3.2.1.1 SSA Loops and Links

3.2.1.2 The SSA Adapter

3.2.1.3 Disk Drive Module Strings

3.2.1.1 SSA Loops and Links

The disk drive modules of the 3527 Storage Unit are connected through two SSA links to an SSA adapter that is located on the host system. The disk drive modules, SSA links, and SSA adapter are configured in loops. Each loop provides a data path that starts at one connector of the SSA adapter and passes through an external SSA cable to the disk drive modules. The path continues through the disk drive modules, or dummy disk drive modules, then returns through the other SSA cable to a second connector on the SSA adapter.

3.2.1.2 The SSA Adapter

The adapter card (Figure 5) has four SSA connectors that are arranged in two pairs. Connectors A1 and A2 are one pair; connectors B1 and B2 are the other pair.

The SSA links must be configured as loops. Each loop is connected to a pair of connectors at the SSA adapter card. These connectors *must* be a valid pair (that is, A1 and A2, or B1 and B2); otherwise, the disk drive modules on the loop are not fully configured, and the diagnostics fail. Operations to all the disk drive modules on a particular loop can continue if that loop breaks at any one point.

Each pair of connectors has a green light that indicates the operational status of its related loop:

Status of Light	Meaning
Off	Both SSA connectors are inactive. If disk drive modules are connected to these connectors, either those modules are failing, or their SSA links have not been enabled.
Permanently on	Both SSA links are active (normal operating condition).
Slow Flash	Only one SSA link is active.

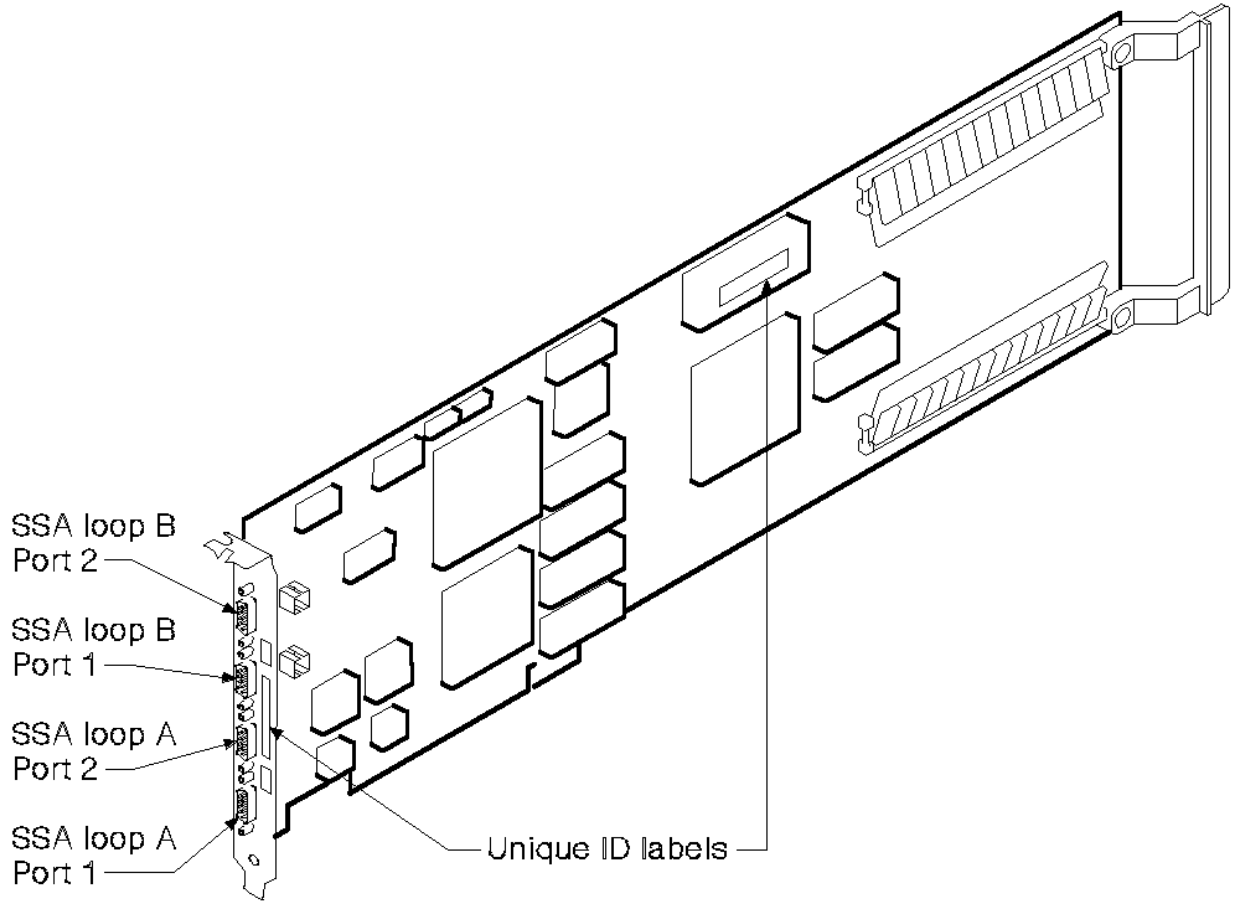


Figure 5. SSA Adapter Card

3.2.1.3 Disk Drive Module Strings

In the 3527 Storage Unit, the devices are arranged in a string of 2, 3, 4, or 5 disk drive modules. The string has its own pair of SSA connectors. The string can be connected through external SSA cables to a pair of connectors on the SSA adapter to make an SSA loop; the SSA cables provide the SSA links. A 3527 Storage Unit can also be connected to other 3527 Storage Units to make bigger loops.

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Connecting the 3527 Storage Unit in a Minimum Configuration

3.2.2 Connecting the 3527 Storage Unit in a Minimum Configuration

A 3527 Storage Unit in a minimum configuration consists of two disk drive modules; one installed in the top slot, Slot 5, and one in the bottom slot, Slot 1. Three dummy disk drive modules are in middle Slots 2, 3, and 4.

In this simplest configuration the SSA loop is completed by connecting the two SSA cables from the 3527 Storage Unit to either adapter ports A1 and A2 or ports B1 and B2 on the host system.

To connect the 3527 Storage Unit to a host system:

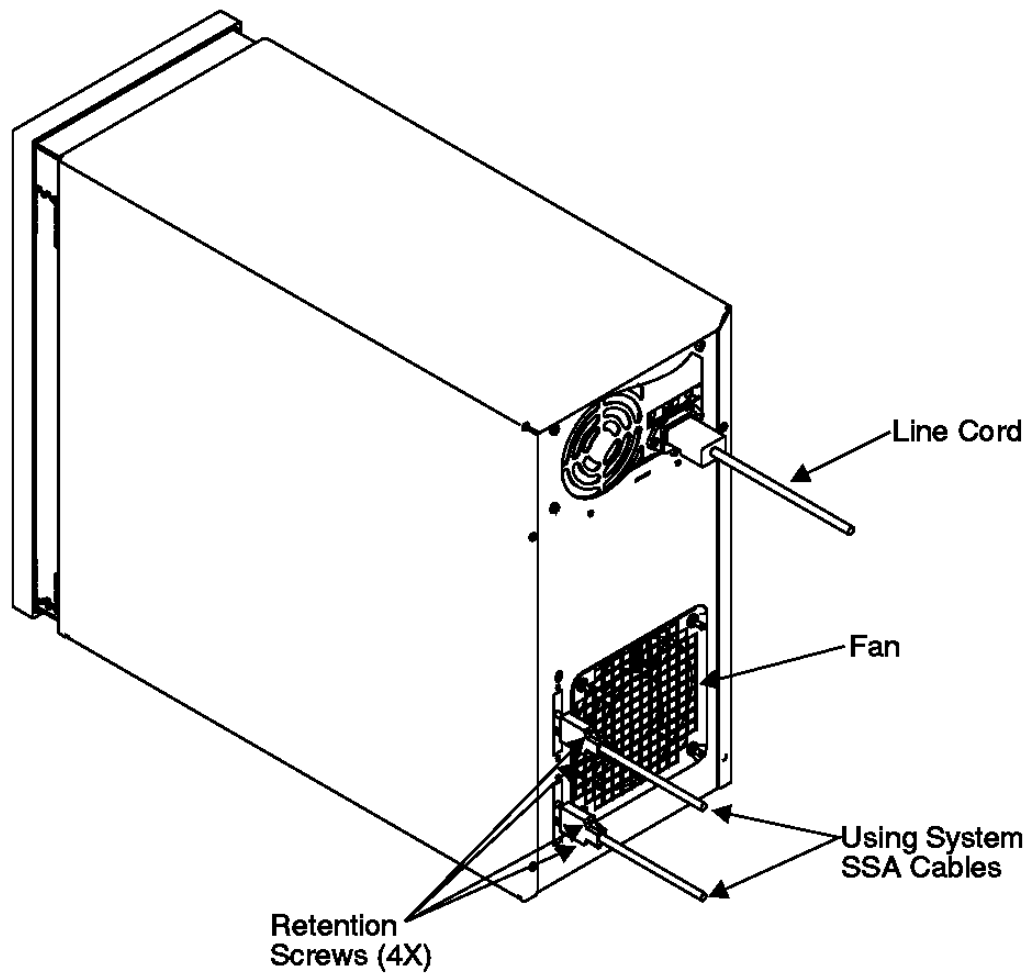
1. Connect the SSA cables (Figure 6) to the back of the 3527 Storage Unit.

DANGER

```
+-----+
| To prevent a possible electrical shock during an electrical storm, |
| do not connect or disconnect cables or station protectors for      |
| communications lines, display stations, printers, or telephones.   |
| (RSFTD003)                                                           |
+-----+
```

DANGER

```
+-----+
| To prevent a possible electrical shock from touching two surfaces |
| with different electrical grounds, use one hand, when possible, to |
| connect or disconnect signal cables. (RSFTD004)                   |
+-----+
```



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Figure 6. External 3527 Storage Unit Connectors

2. Secure the SSA cables by tightening the screws on the connectors.
3. Connect the two SSA cables from the 3527 Storage Unit to either adapter ports A1 and A2 or ports B1 and B2 on the host system (Figure 7).

If the SSA adapter has not yet been installed on the host system, install it now.

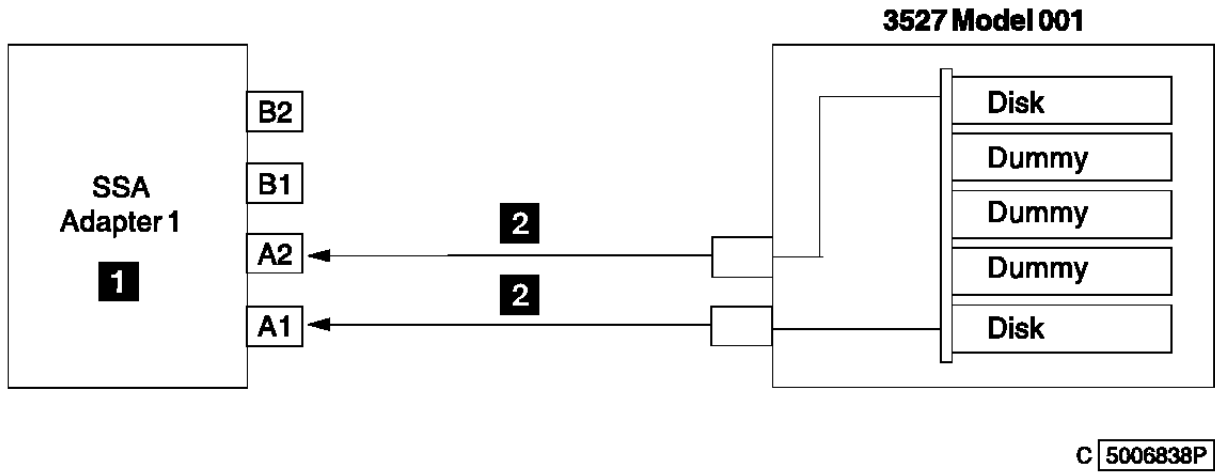


Figure 7. Minimum 3527 Storage Unit Configuration.

Legend

- 1 SSA adapter
- 2 External SSA cables

4. Secure the SSA cables to the SSA adapter by tightening the screws.

3527-001 User Guide

Connecting the 3527 Storage Unit to the Power Source

3.3 Connecting the 3527 Storage Unit to the Power Source

This section describes the procedures for setting the voltage selection switch and connecting the 3527 Storage Unit to the power source.

Subtopics

3.3.1 Setting the Voltage Selection Switch

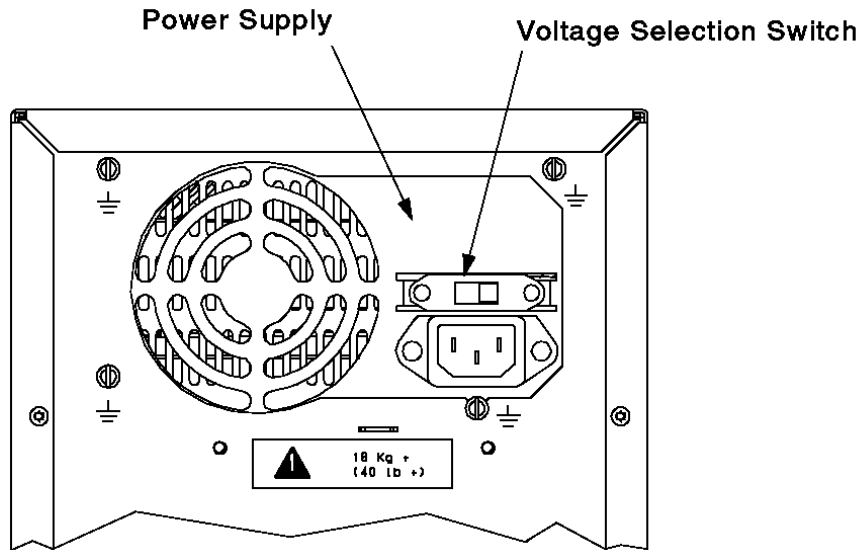
3.3.2 Connecting the Line Cord

3527-001 User Guide
Setting the Voltage Selection Switch

3.3.1 Setting the Voltage Selection Switch

The voltage selection switch (Figure 8) is located on the back of the 3527 Storage Unit.

1. **Attention:** Do not connect the line cord until the voltage selection switch is properly set, or the power supply could be damaged.
2. Move the switch to the 115 V setting or to the 230 V setting, as appropriate for your application.



5006833M

Figure 8. Voltage Selection Switch

3.3.2 Connecting the Line Cord

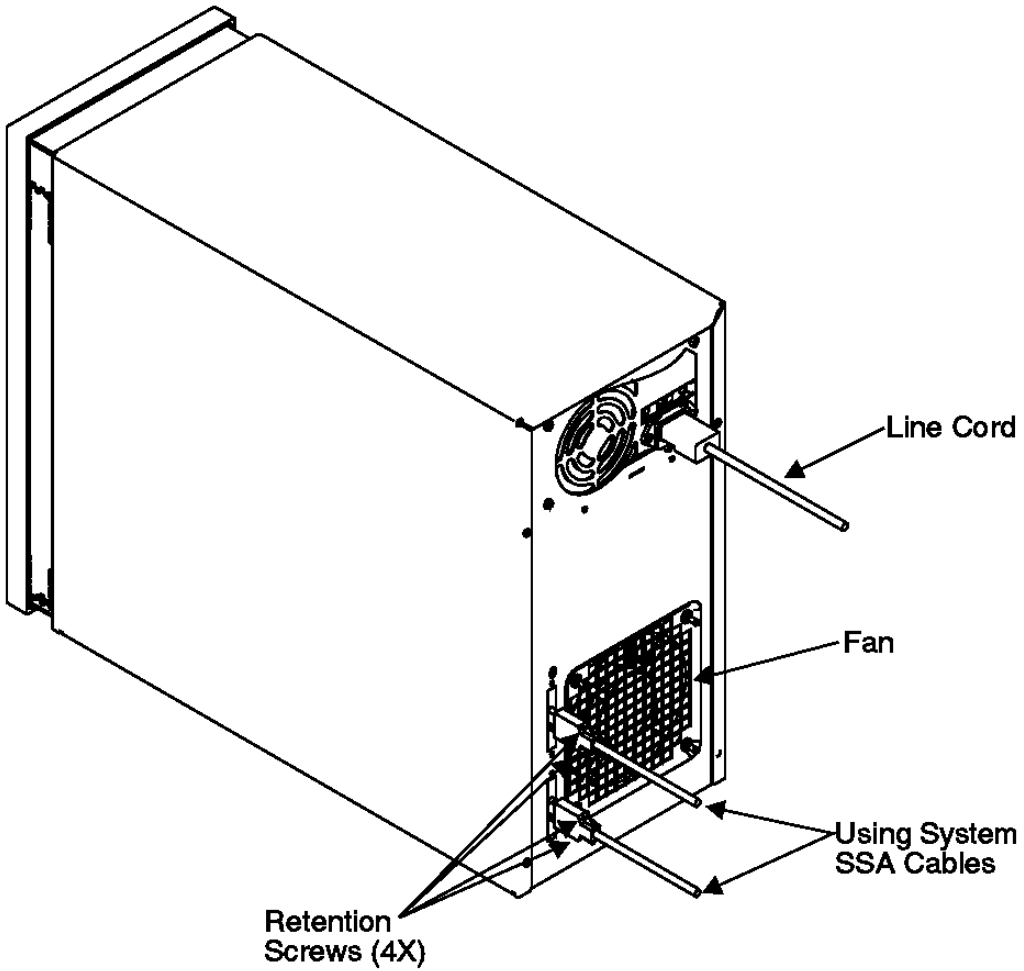
To connect the line cord:

1. DANGER

```
+-----+
| An electrical outlet that is not correctly wired could place
| hazardous voltage on metal parts of the system or the products
| that attach to the system. It is the customer's responsibility to
| ensure that the outlet is correctly wired and grounded to prevent
| an electrical shock. (RSFTD201)
+-----+
```

Connect the line cord to the back of the 3527 Storage Unit (Figure 9).

The 3527 Storage Unit is designed to be connected to various power systems, including an IT power system.



B 5006834N

Figure 9. Line Cord Connection

2. If you did not acquire your 3527 Storage Unit as a new unit, direct from the factory, check your line cord. Replace it if any of the following conditions apply:

Cracked or damaged insulation or pins

Cracked or damaged plug

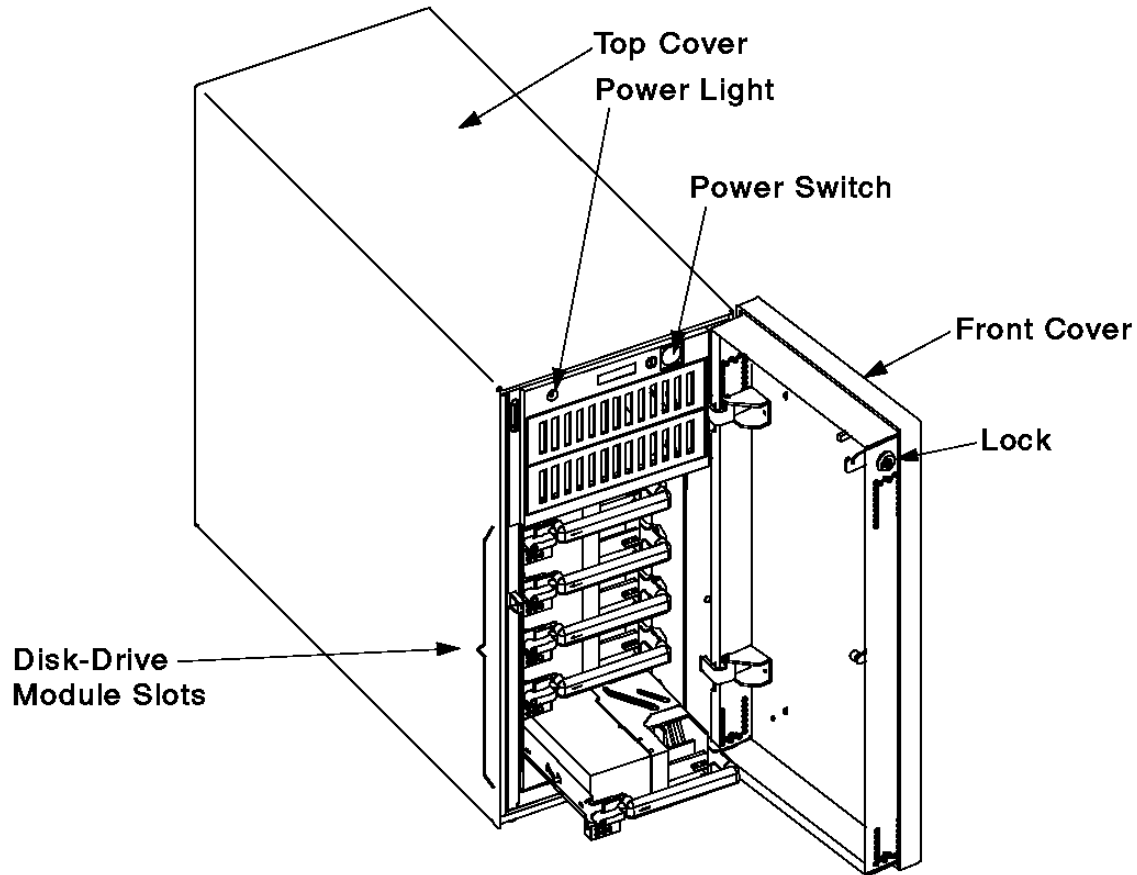
Line cord has been modified; the line cord should be a single molded piece

3. Plug the 3527 Storage Unit line cord into an electrical outlet.

3.4 Verifying 3527 Storage Unit Installation

To verify that the 3527 Storage Unit installation is complete:

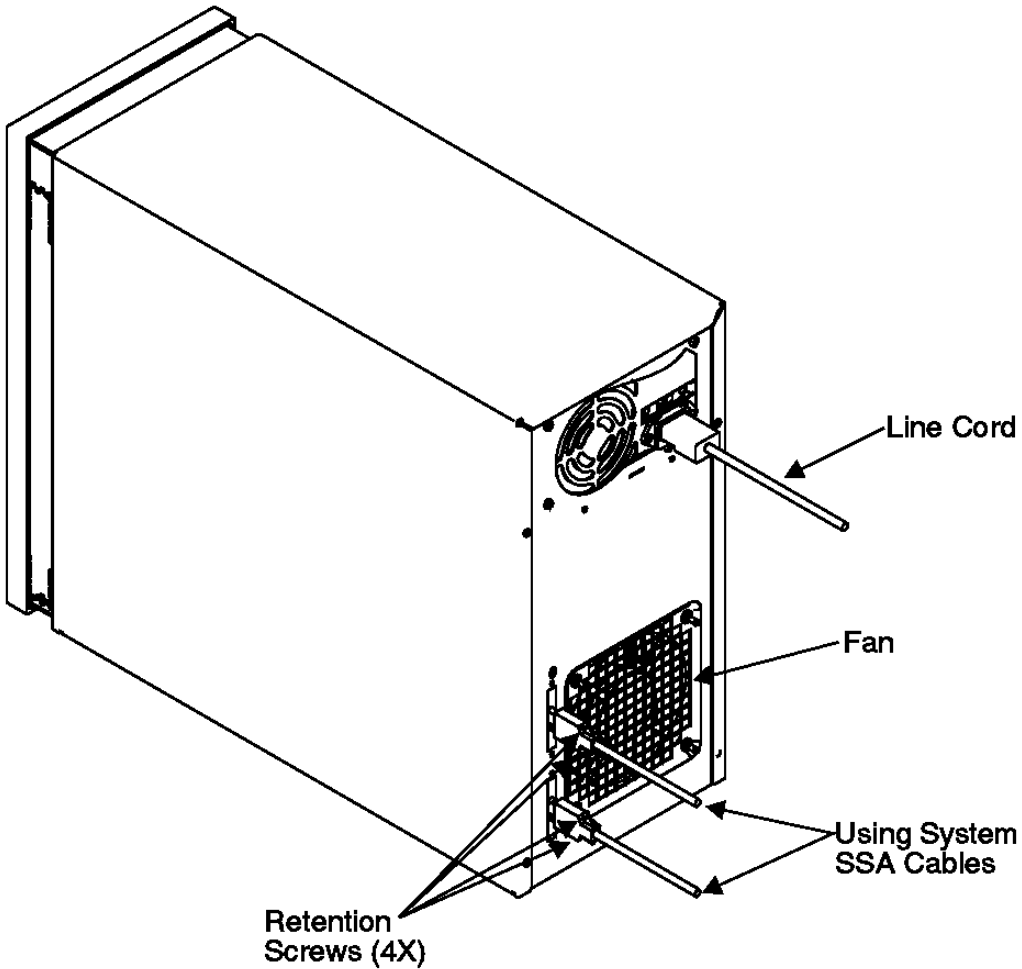
1. Open the front cover of the 3527 Storage Unit (Figure 10).
2. Press the power switch on the control panel.
3. Ensure that the power light comes on.



B 5006847N

Figure 10. Power Switch and Power Light

4. Ensure that the fan is spinning. The fan is located behind the grill at the rear of the 3527 Storage Unit (Figure 11).



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Figure 11. Location of Fan

5. The SSA adapter automatically connects the SSA links when power is supplied to the disk drive modules.

This connection may take a few minutes. When the ready lights of all the disk drive modules are on continuously (not flashing), the connection is complete.

6. Observe the 3527 Storage Unit; verify that all the lights (Figure 12) are as described here:

- The 3527 Storage Unit power light is on.
- All disk drive module power lights are on.
- All disk drive module ready lights are on.
- All disk drive module check lights are off.

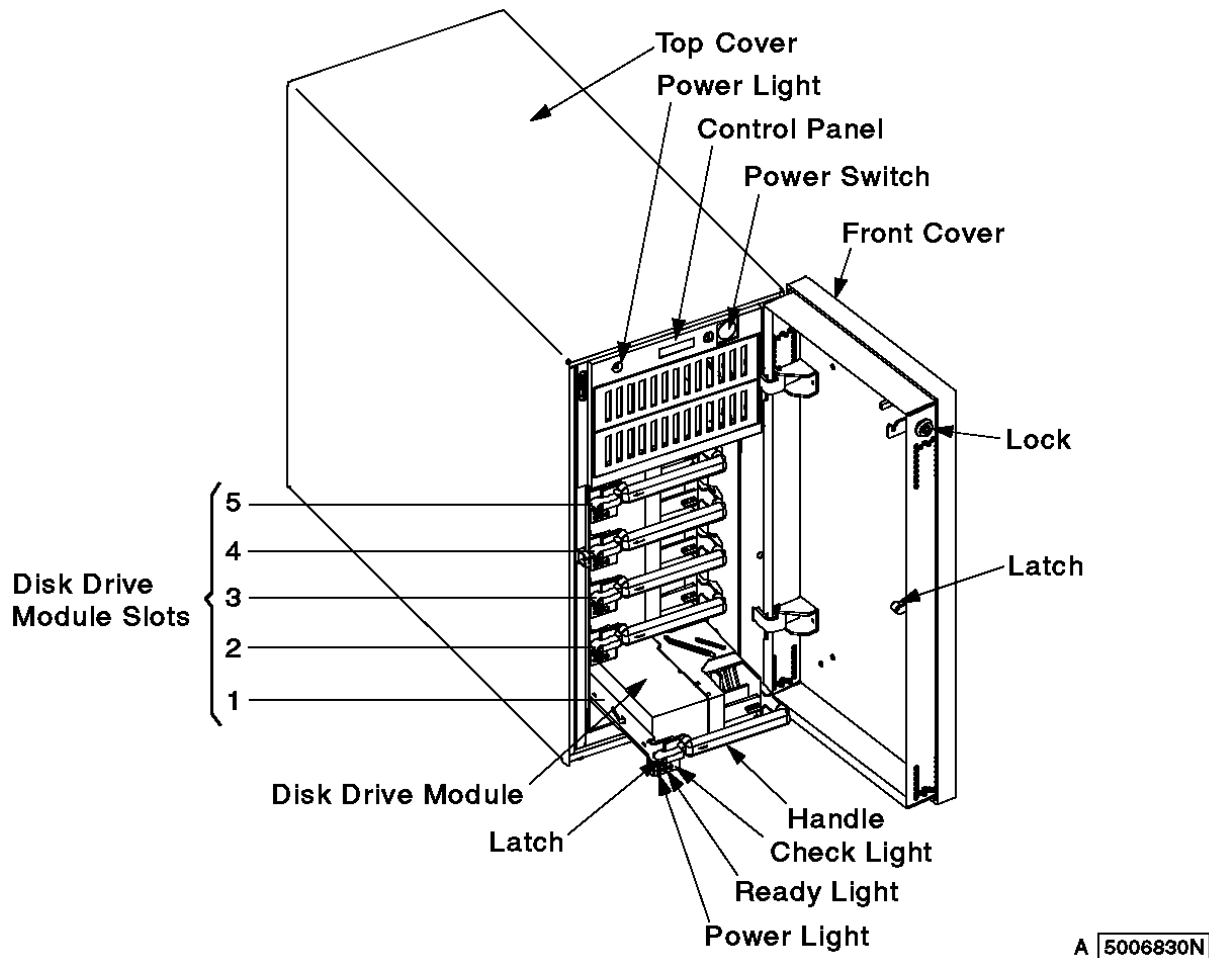


Figure 12. Power Light and Disk Drive Module Lights

7. Call your service representative if:

- Any power light (3527 Storage Unit or disk drive module) fails to come on
- Any disk drive module ready light fails to come on
- Any disk drive module check light fails to go out

8. If all the power lights and ready lights are on, and all the check lights are off, the installation is complete.

9. Close the front cover of the 3527 Storage Unit.

Store this 3527 Storage Unit publication with your host system publications, as you will need both during future upgrades.

10. You are now ready to configure your host system for 3527 Storage Unit installation (Reference "Configuring SSA Subsystems" in the *IBM SSA RAID Adapter for PC Servers Installation and User's Guide, S32H-3816*).

3527-001 User Guide
Relocating the 3527 Storage Unit

3.5 Relocating the 3527 Storage Unit

Attention: Improper handling of the 3527 Storage Unit during relocation can result in a loss of data or a system fault.

CAUTION:

The weight of this part or unit is between 18 and 32 kilograms (39.7 and 70.5 pounds). It takes two persons to safely lift this part or unit. (RSFTC204)

To relocate a 3527 Storage Unit:

1. If the 3527 Storage Unit power light is on, press the power switch to switch off the 3527 Storage Unit.

Attention: Ensure that the disk drive modules are not being utilized by the host system. Switching off the power to the 3527 Storage Unit while the disk drives are being used by the host system can result in a system fault.

2. DANGER

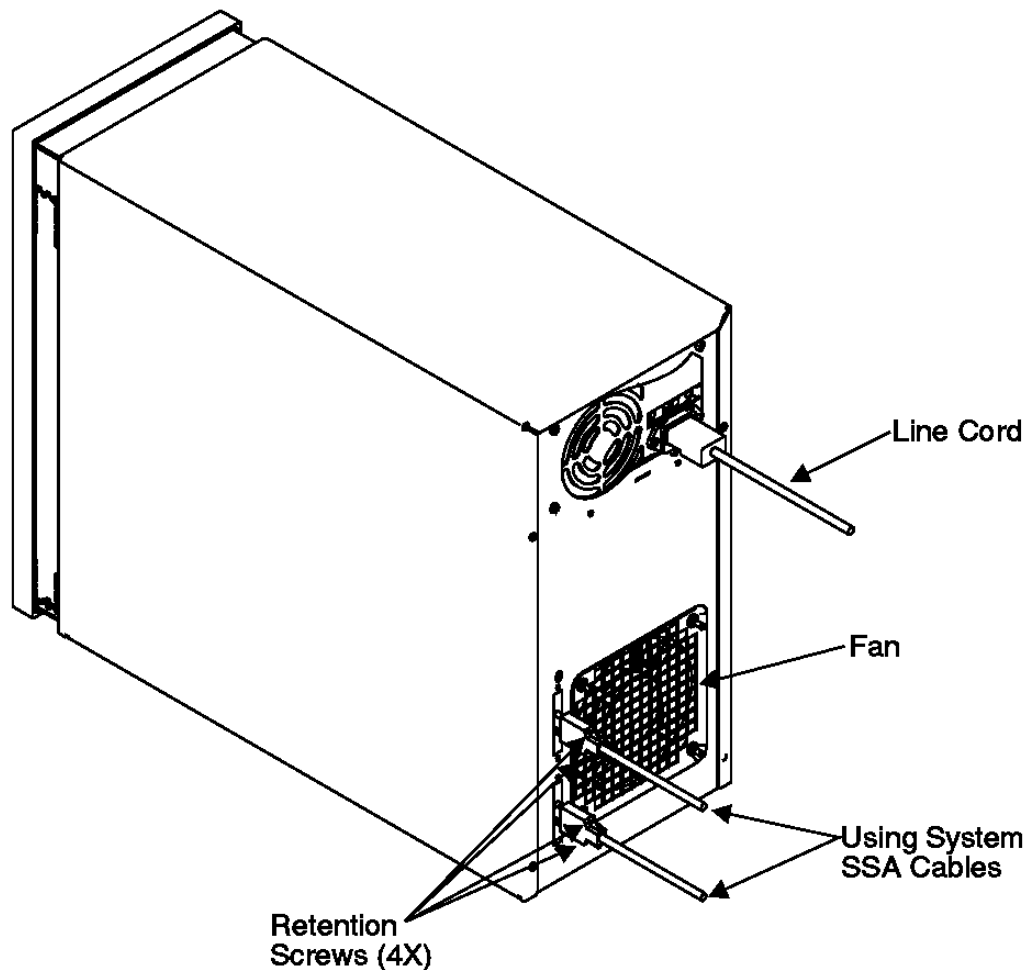
```
+-----+
| To prevent a possible electrical shock when adding or removing any |
| devices to or from the system, ensure that the power cords for    |
| those devices are unplugged before the signal cables are connected |
| or disconnected. If possible, disconnect all power cords from the  |
| existing system before you add or remove a device. (RSFTD203)    |
+-----+
```

Disconnect the line cord.

3. DANGER

```
+-----+
| To prevent a possible electrical shock from touching two surfaces |
| with different electrical grounds, use one hand, when possible, to |
| connect or disconnect signal cables. (RSFTD004)                   |
+-----+
```

Disconnect the SSA cables from the 3527 Storage Unit (see Figure 13) and from the host system.



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Figure 13. Line Cord and SSA Cables

- a. Ensure that all cables from the 3527 Storage Unit to the host system are properly labeled before you disconnect them.
- b. DANGER

```
+-----+
| To prevent a possible electrical shock during an electrical |
| storm, do not connect or disconnect cables or station      |
| protectors for communications lines, display stations,     |
| printers, or telephones. (RSFTD003)                        |
+-----+
```

Loosen the screws from the SSA cable connectors on the back of the 3527 Storage Unit and disconnect the cables.

4. Move the 3527 Storage Unit to its new location.

4.0 Chapter 4. Operating the 3527 Storage Unit

This chapter describes the 3527 SSA Entry Storage Subsystem components, and outlines the operating instructions for switching the 3527 Storage Unit on and off. You have already performed other operating tasks during 3527 Storage Unit Installation (Chapter 3, "Installing the 3527 Storage Unit").

This chapter includes:

- The control pane
- The external connector
- The disk drive module

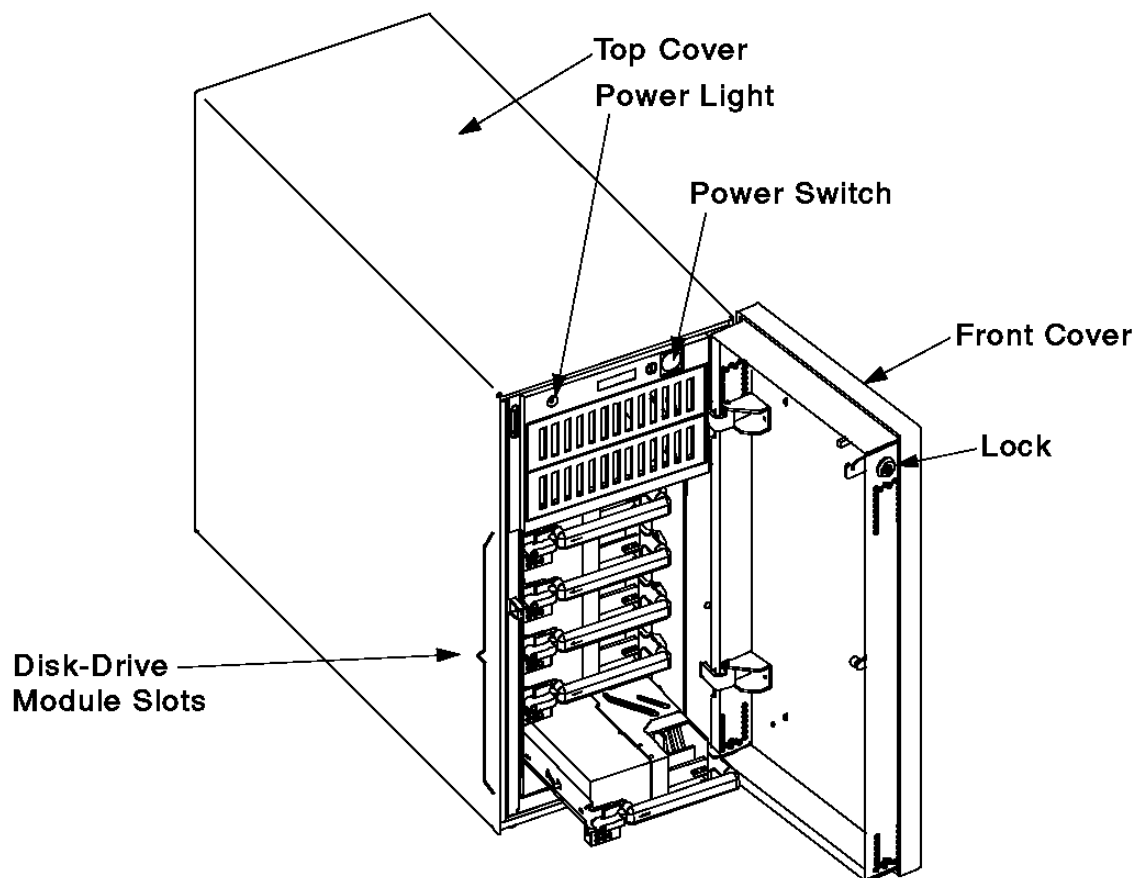
Subtopics

- 4.1 The Control Panel
- 4.2 The External Connectors
- 4.3 The Disk Drive Module Lights

4.1 The Control Panel

This section describes the control panel which includes the power switch and the power light on a 3527 Storage Unit. It also outlines instructions for switching the 3527 Storage Unit On and Off.

The front cover must be open for access to the control panel (Figure 14).



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Figure 14. 3527 Storage Unit Control Panel

Subtopics

4.1.1 Switching 3527 Storage Unit Power On

4.1.2 Switching 3527 Storage Unit Power Off

3527-001 User Guide
Switching 3527 Storage Unit Power On

4.1.1 Switching 3527 Storage Unit Power On

The power switch controls electrical power from the 3527 Storage Unit power-supply unit to the disk drive modules and other components.

To switch on the power:

1. Open the front cover.
2. Press the power switch.

The power light (see Figure 14 in topic 4.1) is illuminated when the 3527 Storage Unit power-supply unit is supplying power to the rest of the 3527 Storage Unit.

3527-001 User Guide
Switching 3527 Storage Unit Power Off

4.1.2 Switching 3527 Storage Unit Power Off

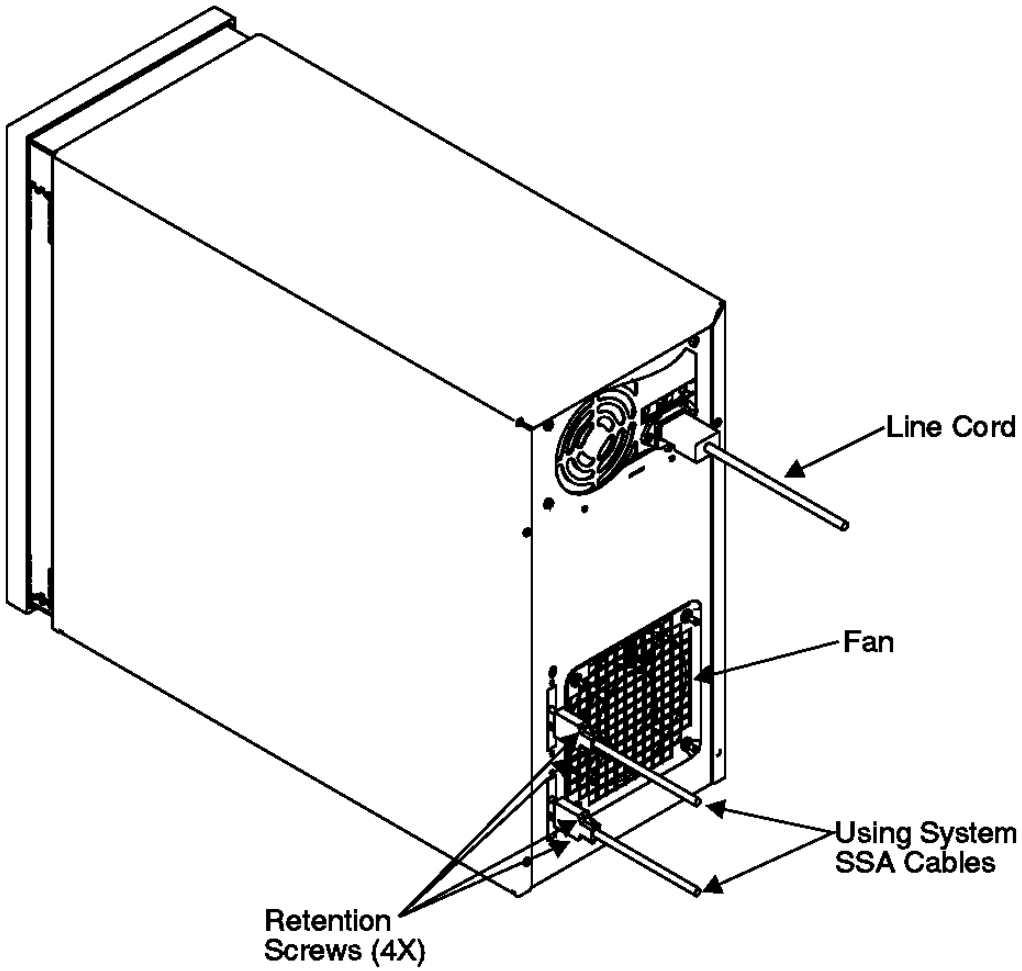
To switch off the power:

1. **Attention:** Ensure that the disk drive modules are not being utilized by the host system. Switching off the power to the 3527 Storage Unit while the disk drives are being used by the host system can result in a system fault.
2. Press the power switch.
3. Electrical power may still be present when the 3527 Storage Unit power light is off. To remove electrical power completely, disconnect the 3527 Storage Unit from the electrical outlet.
4. Close the front cover.

4.2 The External Connectors

The 3527 Storage Unit is a desk-side storage unit that can be attached to PC Server systems.

The external connectors are located at the rear of the 3527 Storage Unit (Figure 15).



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Figure 15. 3527 Storage Unit External Connectors

Follow the instructions and the safety procedures in Chapter 3, "Installing the 3527 Storage Unit" for connecting or disconnecting the line cord and the SSA cables to the 3527 Storage Unit.

4.3 The Disk Drive Module Lights

The front cover must be open for access to the disk drive modules (Figure 16). Up to five SSA disk drive modules can be installed in a 3527 Storage Unit.

To protect your 3527 Storage Unit from unauthorized access, a lock is provided on the front cover (Figure 16).

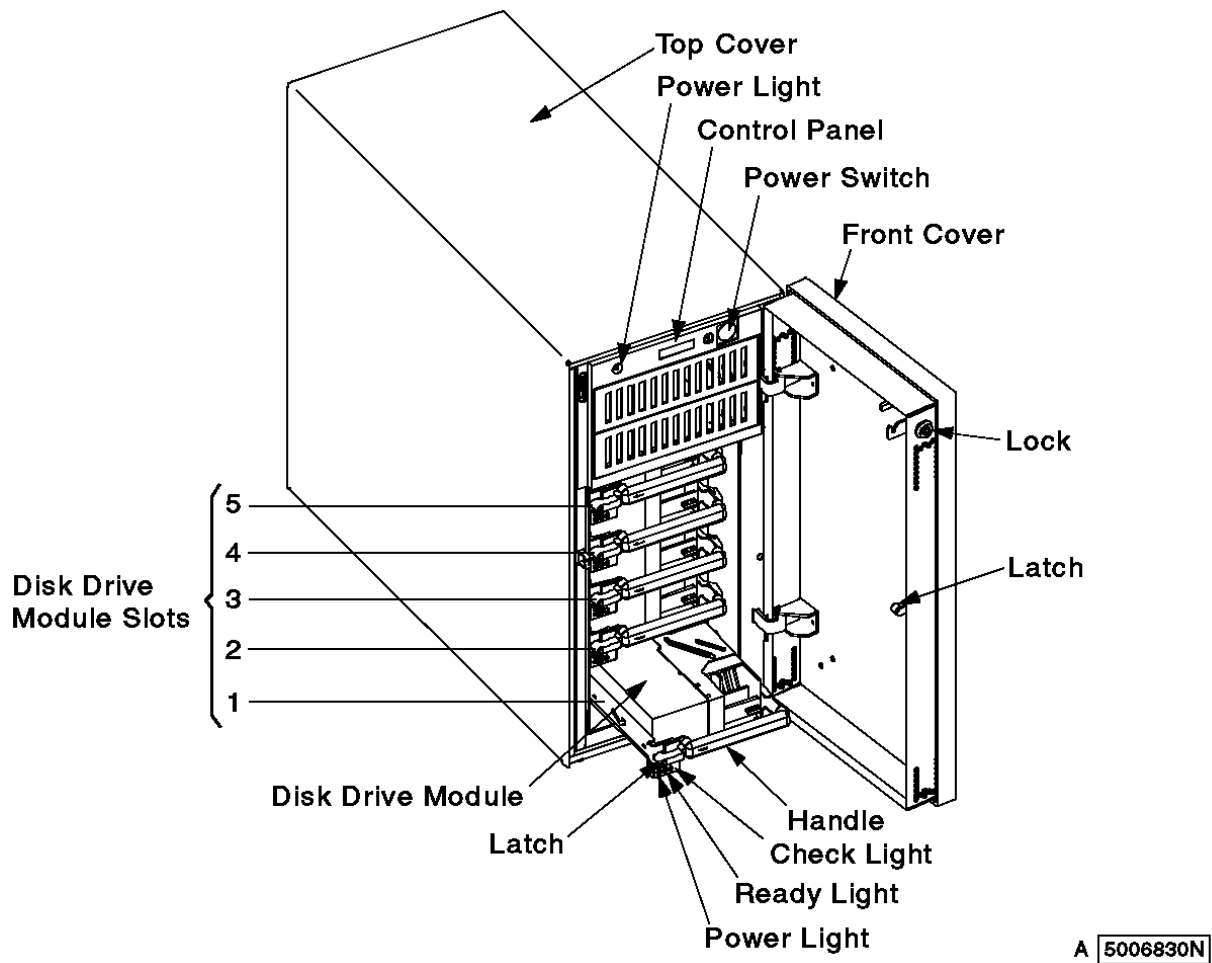


Figure 16. 3527 Storage Unit Front Cover Lock

You can see the lights on the disk drive modules when the front cover is open. Each disk drive module has three lights (Figure 17):

Power light

The power light (green) comes on when the required power is supplied to the disk drive module.

Ready light

The ready light (green) comes on and remains on when both SSA connections to the disk drive module are good and the disk drive is ready to accept commands from the host system.

The light flashes slowly when only one SSA connection is good.

The light flickers when the disk drive is executing a command.

Check light

The check light (amber) comes on and remains on:

If a failure in the disk drive module is detected

While the automatic self-tests are running

To indicate the disk drive module is in *service mode* and the host system is no longer using the disk drive module.

The light flashes when the disk drive has been selected with the identify function.

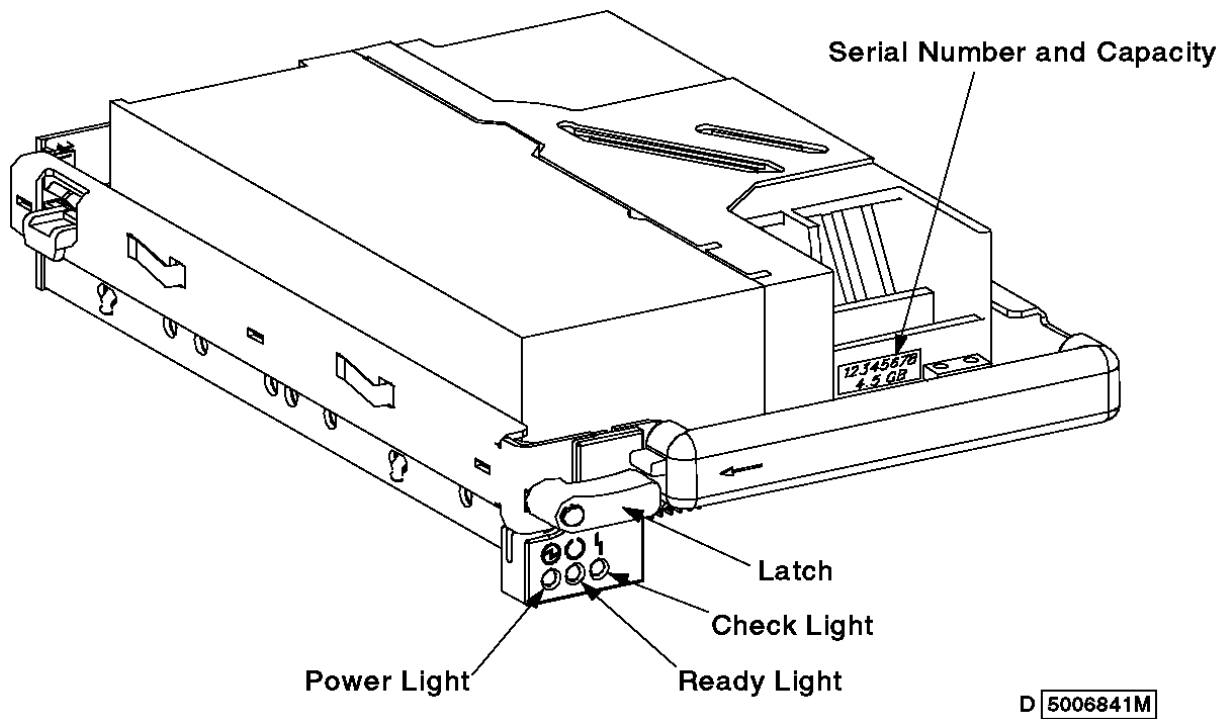


Figure 17. Disk Drive Module Lights

5.0 Chapter 5. Configuring SSA Subsystems

Before new SSA disk drives can be used by the operating system, you must configure them into the SSA subsystem. You use the configuration utility (which is provided on each of the diskettes supplied with the adapter) to do this. The actions that you must perform are:

1. Accept the new disk drives into the subsystem
2. Configure disk arrays, if required
3. Attach the disk arrays or individual disk drives to your system.

Reference "Configuring SSA Subsystems" in the *IBM SSA RAID Adapter for PC Servers Installation and User's Guide, S32H-3816*.

Subtopics

- 5.1 Dealing with Disk-Array Problems
- 5.2 Basic Problems
- 5.3 Array Problems
- 5.4 Changing Failed Disk Drives
- 5.5 Performing Other Disk-Array Tasks

5.1 Dealing with Disk-Array Problems

This section:

Provides general guidance on solving basic problems with your SSA subsystem

Describes how to get detailed information about errors and other events on the adapter and the disk drives attached to it

Describes the actions you must perform with the adapter utility programs while changing a disk drive

5.2 Basic Problems

If the system cannot work with the adapter, check the following:

Is CMOS setup required to enable PCI bus parameters

Is the adapter installed in a bus-master PCI slot

Are all the cables connected correctly

Does the configuration follow the SSA rules for this adapter

If the system cannot access the SSA disk drives, check the following:

Is power turned on to the disk drives

Has the configuration utility been run for all the required disk drives, and do they appear in the list of attached resources

Are the disk drives connected in a loop, either from SSA loop A port 1 to SSA loop A port 2, or from SSA loop B port 1 to SSA loop B port 2?

Is the light next to the adapter-loop ports on, showing that both ports are operational

If the system fails to boot from an SSA disk drive, check the following:

That there **isnot** an IDE disk drive installed

That there **isnot** a SCSI adapter installed in a higher-priority PCI slot than the SSA adapter

That the CBIOS enable

That the SSA device drivers are loaded before the SCSI device drivers

5.3 Array Problems

Many problems within an array are not seen by the users of the server. The RAID function provides a continuing service to the users even when a member of an array has failed. However, unless the failure is corrected, a second failure within that array could cause the whole array to become unavailable. Therefore, it is very important that you check the error log for the adapter regularly. You could do this by making such a check part of the startup procedure for your operating system.

If you are using OS/2, a pop-up window appears when an error is logged for the adapter or the disk drives attached to it. Also, the pop-up window appears every hour while an error likely to affect the operation of the subsystem remains on the log. Reference *IBM SSA RAID Adapter for PC Servers Hardware Maintenance Manual Supplement, S32H-3817* for more information.

5.4 Changing Failed Disk Drives

1. From the Main Menu, select **SSA Adapter List**, select the adapter, and then select **Disk Service Aids**.

A list of physical disk drives is displayed:

```

+-----+
| CONFIG  SSA Configurator and Service Aids      Vyyymmdd      XX Version |
+-----+
|
|   +-----+
|   | Main Me+-----+
|   | +-----+ |           Disk Service Aids
|   | |         | |
|   | | New Disks | | Link      SSA UID  Status
|   | | Free Resourc | |
|   | | System Resou | | Port A1
|   | | SSA Adapter  | |          uidxxxxx  Good
|   | | Event/Error  | |          uidxxxxxy Good
|   | | Service Aids | |          uidxxxxyy Good
|   | | About        | |          uidxxxxzz Good
|   | |              | | Port A2
|   | |              | | Port B1
|   | |              | |          No Disks
|   | |              | | Port B2
|   | +-----+ |
|   | +-----+
|   | |<ESCAPE> Exit  <ENTER> Select  <F1> Help  <F2> Format
|   | |<F3> Certify  <F4> ServiceMode  <F5> Diagnostics  <F9> FlashOn
|   | |<F10> FlashOff
|   | +-----+
|
+-----+

```

If a dotted line appears in the list of disk drives, it indicates that the SSA loop is broken at that place.

2. You can identify a disk drive by highlighting its entry in this list and pressing F9. This causes the Check light on the disk drive to flash (if it is not on already) and a > symbol appears beside the entry in the list. Pressing F10 stops the light flashing.
3. Highlight the entry for the disk drive that you are going to replace and press F4.

This puts that disk drive into service mode; the Check light on the disk drive comes on (it might be on already) and a + symbol appears beside the entry in the list. Only one disk can be in service mode at a time.
4. Replace the physical disk drive (refer to "Guidelines for Adding or Removing a Disk Drive Module" in topic 6.3).
5. Highlight the entry for the disk drive that you are have just replaced and press F4.

This removes that disk drive from service mode.
6. Press Esc to return to the Main Menu. (Leaving the Service Aids window automatically removes any disk drive from service mode.)
7. If the disk drive that failed was a member of an array for which no hot spare was available, the entry for the failed disk drive in the list of members of the array is replaced with **'blank Not Present'**. You must add the new disk drive to the array by exchanging this entry with that for the new disk drive. Reference "Configuring SSA Subsystems" in the *IBM SSA RAID Adapter for PC Servers Installation and User's Guide, S32H-3816*.

If the disk drive that failed was a member of an array for which a hot spare was available, the hot spare will have been exchanged automatically with the faulty disk drive. You can either:

Define the new disk drive as a new hot spare. Reference "Performing Other Disk-Array Tasks" in the *IBM SSA RAID Adapter for PC Servers Installation and User's Guide, S32H-3816*.

or

Exchange the new disk drive with the previous hot spare. Reference "Configuring SSA Subsystems" in the *IBM SSA RAID Adapter for PC Servers Installation and User's Guide, S32H-3816*.

3527-001 User Guide
Performing Other Disk-Array Tasks

5.5 Performing Other Disk-Array Tasks

This section describes some of the other uses of the SSA Configuration Utility. Other service-related tasks are described in the *SSA RAID Adapter: Hardware Maintenance Manual Supplement*.

All these tasks use the SSA Configurator Utility provided on the SSA RAID Adapter diskette for your operating system. To start this utility, execute the following program:

For OS/2:**ISSACFG**

For Novell NetWare:**load ISSACFG**

For Windows NT:**ISSACFG**

For DOS:**ISSACFG**

or, if it is available, double click on the SSA Configurator icon.

6.0 Chapter 6. Adding and Removing Disk Drive Modules

This chapter describes the instructions for adding (installing) and removing Disk Drive Modules in your 3527 Storage Unit. Follow the same procedures for upgrading your 3527 Storage Unit. This chapter includes:

- Handling electrostatic discharge sensitive (ESD) part
- Guidelines for adding or removing disk drive module
- Guidelines for changing faulty disk drive module
- Using the disk drive module light
- Removing a disk drive module from a slo
- Installing a disk drive module in a slo

For all disk drive modules listed in Table 2, follow the instructions in "Installing a Disk Drive Module in a 3527 Storage Unit Slot" in topic 6.6 and in "Removing a Disk Drive Module from a 3527 Storage Unit Slot" in topic 6.5. These devices are plugged into the backplane of the 3527 Storage Unit.

Table 2. Disk Drive Module Options		
Feature	Options	Capacity
05J6414	Disk drive modules	4.5 GB each
05J6413	Disk drive modules	2.2 GB each
05J6411	Dummy disk drive modules	

Subtopics

- 6.1 Handling Electrostatic Discharge-Sensitive Parts
- 6.2 Using the Disk Drive Module Lights
- 6.3 Guidelines for Adding or Removing a Disk Drive Module
- 6.4 Guidelines for Changing a Faulty Disk Drive Module
- 6.5 Removing a Disk Drive Module from a 3527 Storage Unit Slot
- 6.6 Installing a Disk Drive Module in a 3527 Storage Unit Slot

6.1 Handling Electrostatic Discharge-Sensitive Parts

Take the following precautions during installation and removal of the disk drive modules:

1. **Attention:** The disk drive modules and the backplane can be damaged by electrostatic discharge (ESD); they are wrapped in antistatic bags to prevent damage. Handle the ESD-sensitive parts carefully to prevent permanent damage.
2. Do not remove the ESD-sensitive part from the antistatic bag (Figure 18) until you are ready to install it.

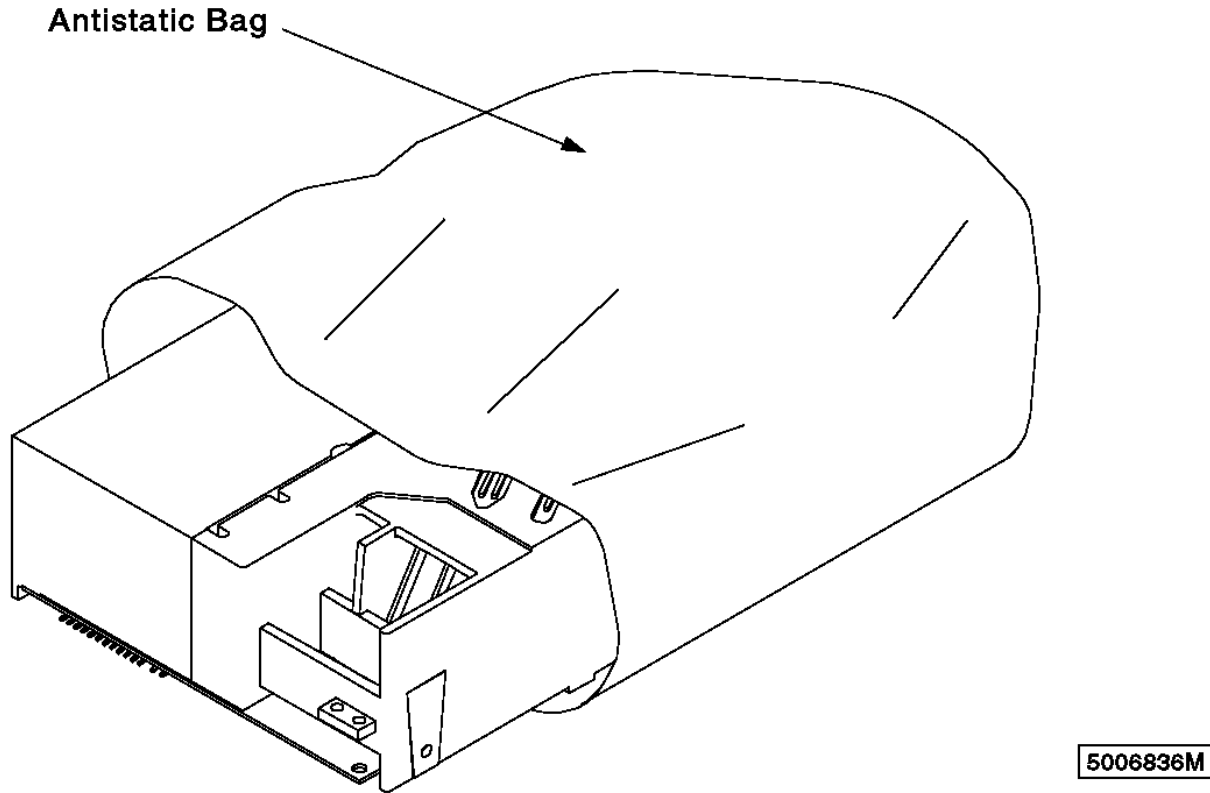


Figure 18. ESD-Sensitive Part in Antistatic Bag

3. Do not place any ESD-sensitive parts on the machine cover or on a metal table because large metal objects can become discharge paths if they are not grounded. If you must set aside an ESD-sensitive part, first place it into an antistatic bag.
4. Be very careful when you work with ESD-sensitive parts in cold weather, as low humidity and heating increase static electricity.

6.2 Using the Disk Drive Module Lights

Each disk drive module has three lights (Figure 19):

Power light

The power light (green) is illuminated on when the required power supply is present in the 3527 Storage Unit.

Ready light

The ready light (green) is illuminated and remains on when both SSA connections to the disk drive module are good and the disk drive is ready to accept commands from the host system.

The light flashes slowly when only one SSA connection is good.

The light flickers when the disk drive is executing a command.

Check light

The check light (amber) is illuminated and remains on:

If a failure in the disk drive module is detected

While the automatic self-tests are running

To indicate that the disk drive is in service mode--use of the disk drive by the host system has ended.

The check light flashes when the disk drive has been selected with the identify function from the Set Service Mode service aid. "Changing Failed Disk Drives" in topic 5.4 describes how to use this aid.

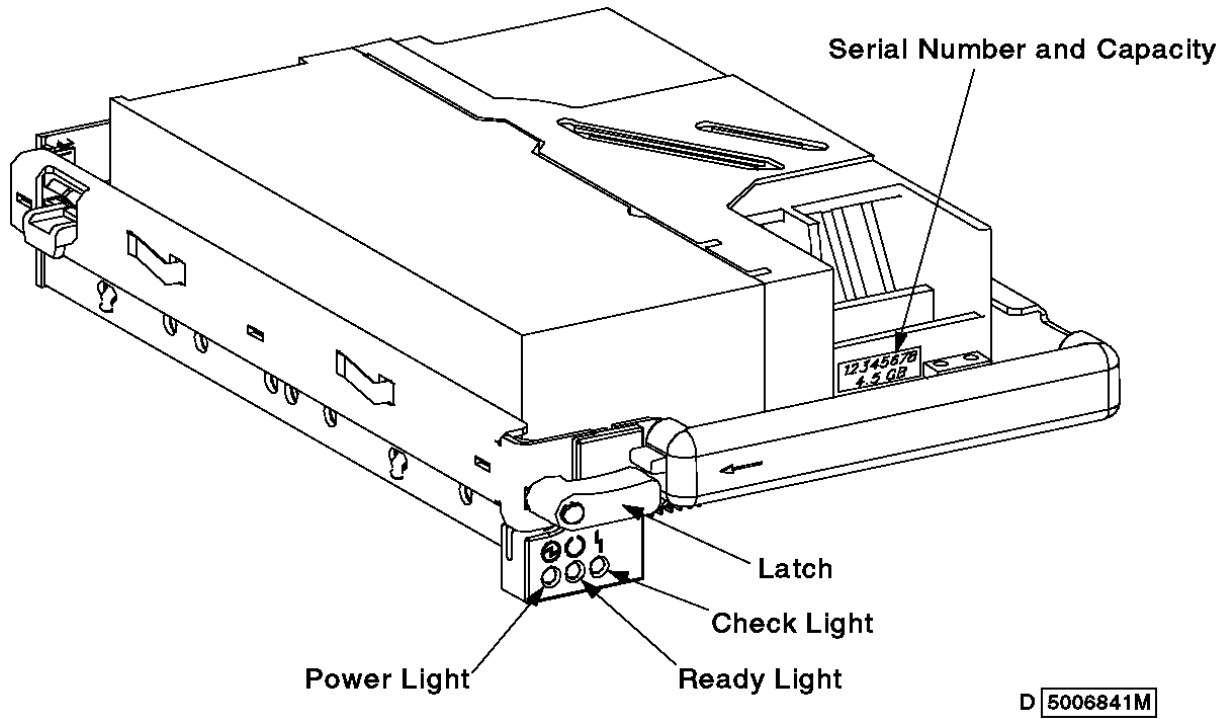


Figure 19. Disk Drive Module Lights

3527-001 User Guide

Guidelines for Adding or Removing a Disk Drive Module

6.3 Guidelines for Adding or Removing a Disk Drive Module

This section describes some general guidelines for adding (installing), removing, or changing disk drive modules.

Ensure that the disk drive module you are removing or installing has been removed from host system configuration

You do not need to remove power from the 3527 Storage Unit when installing, removing, or changing a disk drive module

Remove only one disk drive module from the 3527 Storage Unit at a time

Bottom Slot 1 and top Slot 5 must always contain disk drive modules

Middle slots must contain either disk drive modules or dummy disk drive modules

Disk drive modules are fragile. Handle them with care, following the instructions in "Handling Electrostatic Discharge-Sensitive Parts" in topic 6.1.

After you have changed a disk drive module in a 3527 Storage Unit, you must restore it into your host system configuration. Reference "Configuring SSA Subsystems" in the *IBM SSA RAID Adapter for PC Servers Installation and User's Guide, S32H-3816*.

Understand the purpose of the lights on the disk drive module (see "Using the Disk Drive Module Lights" in topic 6.2).

3527-001 User Guide
Guidelines for Changing a Faulty Disk Drive Module

6.4 Guidelines for Changing a Faulty Disk Drive Module

This section gives you some general guidelines for changing faulty disk drive modules.

Before changing a faulty disk drive module:

1. Check the service request number (SRN) given by the system diagnostic programs.

If the SRN is in the following list, a disk drive module has a fault that can be corrected by exchanging the disk drive module:

```
lxxxx (Any SRN, except 10101 whose first character is '1')  
D0300
```

a. If the SRN is not in this list, do not change the disk drive module; call your service representative and report the problem.

- b.** If the SRN is in the list, identify the failing disk drive module using:

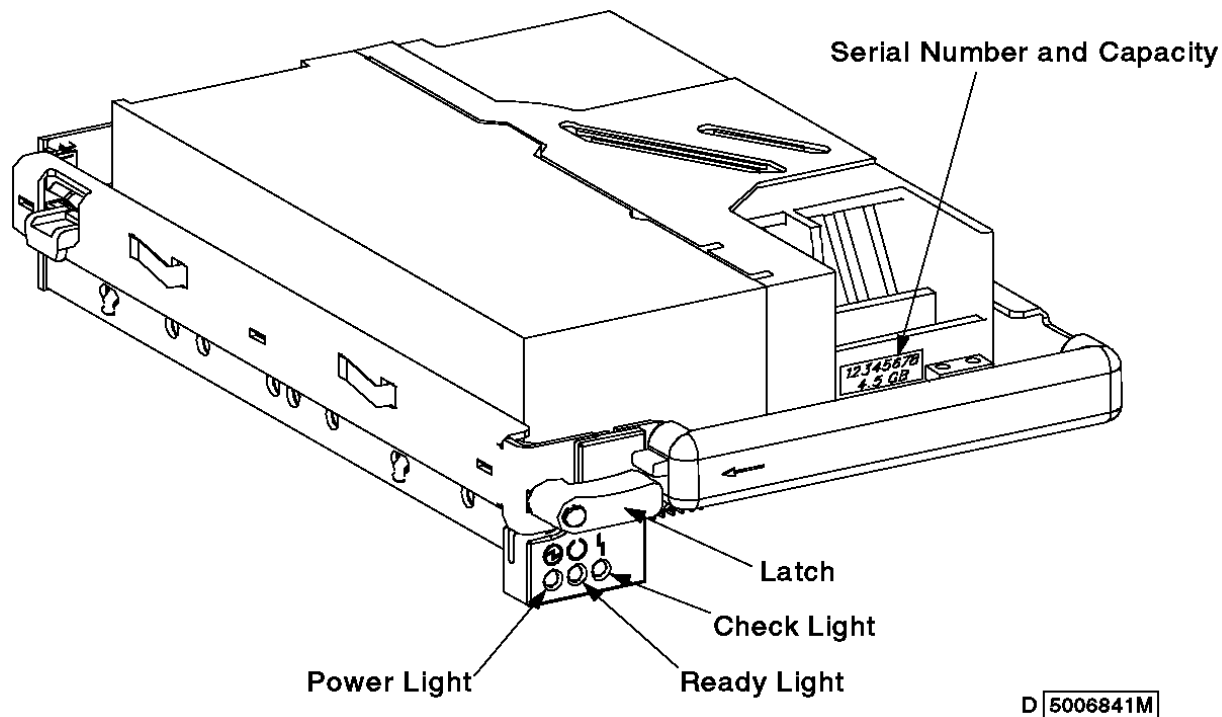
The location code supplied by the system diagnostic programs.

The Set Service Mode service aid. ("Changing Failed Disk Drives" in topic 5.4 describes how to use this aid.)

The service aid gives the storage capacity of the failing disk drive module. Always replace a faulty disk drive module with one that has the same capacity.

- c.** Follow the procedures in "Changing Failed Disk Drives" in topic 5.4 to confirm the disk drive module serial number.

2. Check the lights on this disk drive module (Figure 20).



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Figure 20. Disk Drive Module Lights and Serial Number Label

- a. If the check light is not on, you cannot change the disk drive module; call your service representative and report the problem.
- b. If the check light is on, change the disk drive module, using the procedures in "Removing a Disk Drive Module from a 3527 Storage Unit Slot" in topic 6.5 and "Installing a Disk Drive Module in a 3527 Storage Unit Slot" in topic 6.6.

6.5 Removing a Disk Drive Module from a 3527 Storage Unit Slot

This procedure describes how to remove a disk drive module from a slot when the power to both the host system and 3527 Storage Unit is on. Unless you have a particular reason to do so, do not turn off the host system or the 3527 Storage Unit power when removing disk drive modules.

- 1. Attention:** Follow all ESD-sensitive parts procedures while performing these tasks. For ESD information, see "Handling Electrostatic Discharge-Sensitive Parts" in topic 6.1.
- 2. Attention:** Physically removing a disk drive module from the 3527 Storage Unit before it has been removed from the host system configuration may cause unrecoverable data corruption.

Ensure that the disk drive module is removed from host system configuration before you remove it from the 3527 Storage Unit.

Refer to your host system publications to prepare the host system for device removal or replacement.

- 3.** Open the front cover (Figure 21).

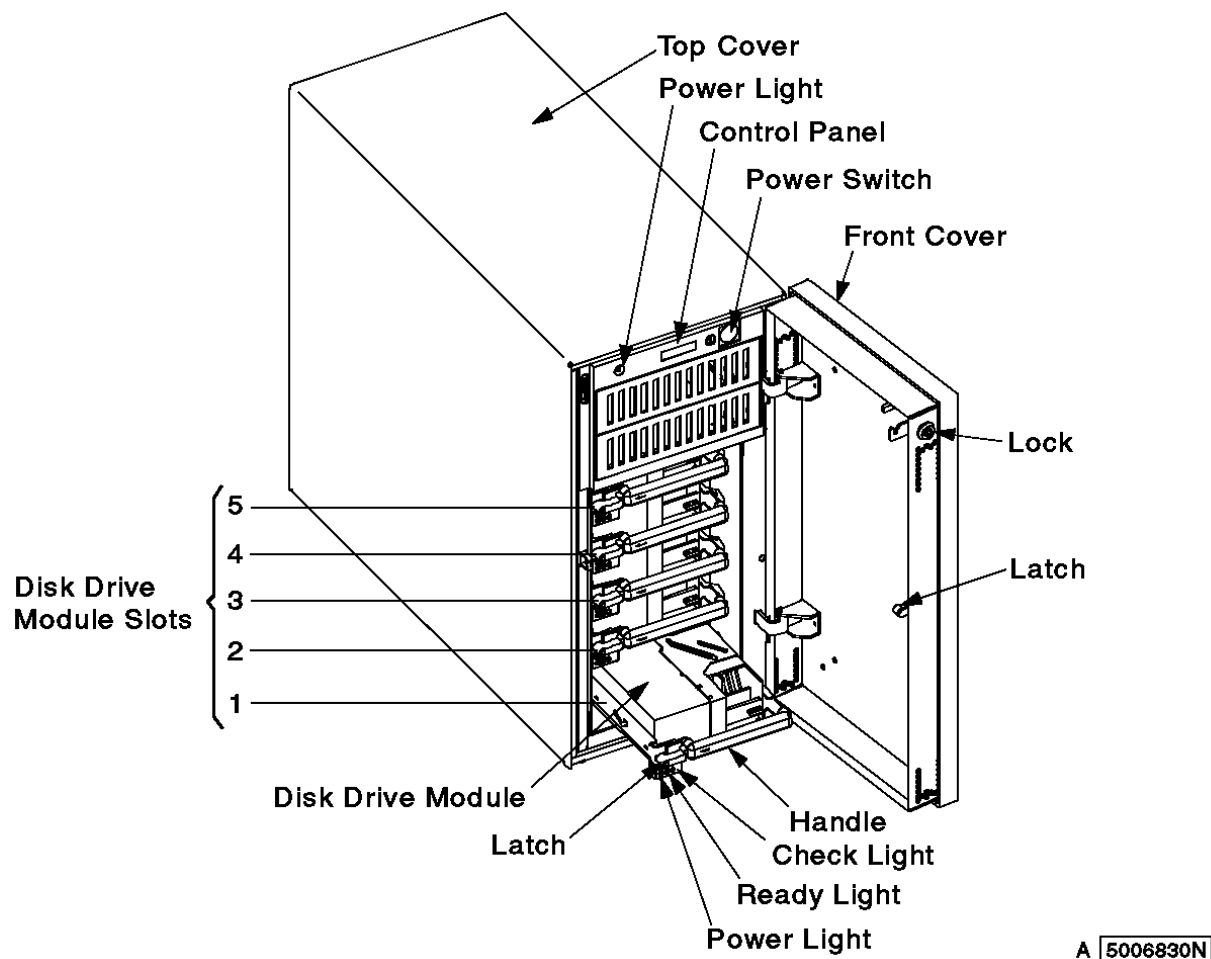


Figure 21. Front Cover and Interior of the 3527 Storage Unit

4. Put the disk drive module into service mode using the example screen and procedures in "Changing Failed Disk Drives" in topic 5.4. Follow these same procedures to identify the disk drive module, if necessary.
5. Verify that the check light on the disk drive module is on steady (Figure 22), which indicates that the device has been removed from host system configuration and set to service mode.
6. Follow the procedures in "Changing Failed Disk Drives" in topic 5.4 to confirm the disk drive module serial number.
7. Move the latch down on the disk drive module (Figure 23 in topic 6.6).

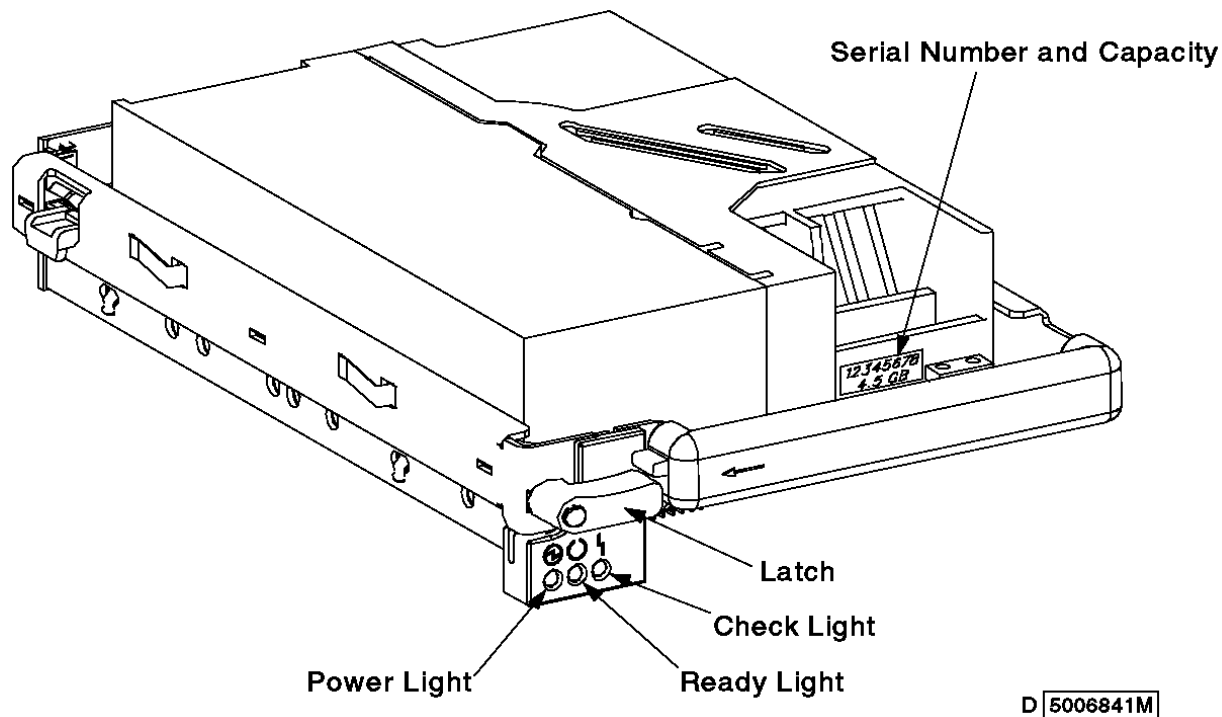


Figure 22. Disk Drive Module Check Light

8. Pull the disk drive module out of the slot, keeping it straight to prevent damage.
9. Place the disk drive module in an antistatic bag if you are going to reuse it.
10. **Attention:** Any slot without a disk drive module must contain a dummy disk drive module to provide continuity of the SSA loop.
11. Close the front cover.

3527-001 User Guide

Installing a Disk Drive Module in a 3527 Storage Unit Slot

6.6 Installing a Disk Drive Module in a 3527 Storage Unit Slot

This procedure describes how to install a disk drive module in a 3527 Storage Unit slot. Unless you have a particular reason to do so, do not switch off the host system or 3527 Storage Unit power when installing disk drive modules.

See "Preparing the Host system" in topic 2.2 and refer to your host system publications to prepare the host system for device installation or replacement.

1. Attention: Follow all ESD-sensitive parts procedures while performing these procedure. For ESD information, see "Handling Electrostatic Discharge-Sensitive Parts" in topic 6.1.

2. Attention: A replacement device might need time to acclimate to its new environment.

When you install a device into an operating environment from an environment whose temperature is outside the specified operating range (see "Operating Environment" in topic 1.2), do not use that device for at least three hours.

This delay allows the drive to acclimate to the operating environment.

3. Remove the new disk drive module from any shipping packaging, but leave it in its antistatic bag (if present) to prevent condensation from forming.

4. After three hours, remove the disk drive module from its antistatic bag.

5. Open the front cover (Figure 23).

6. Remove the dummy disk drive module, if present.

7. Slide the disk drive module into the slot (Figure 23).

8. Press the disk drive module firmly to seat it on the backplane.

9. Move the latch up on the disk drive module.

10. Verify that the front of all the disk drive modules are aligned.

11. Verify that the ready light to the disk drive module is on; light is steady, not flashing (Figure 23).

If the ready light is not steady, check that the new module is properly installed; then run the diagnostic programs on the host system to analyze the fault.

12. If the check light on the disk drive module is on steady (Figure 22 in topic 6.5), the disk drive module is in service mode. Take the disk drive module out of service mode (reset the service mode) following the procedures in "Changing Failed Disk Drives" in topic 5.4.

13. Configure the device on the host system. Reference "Configuring SSA Subsystems" in the *IBM SSA RAID Adapter for PC Servers Installation and User's Guide, S32H-3816* for additional information.

14. Close the front cover (Figure 21 in topic 6.5).

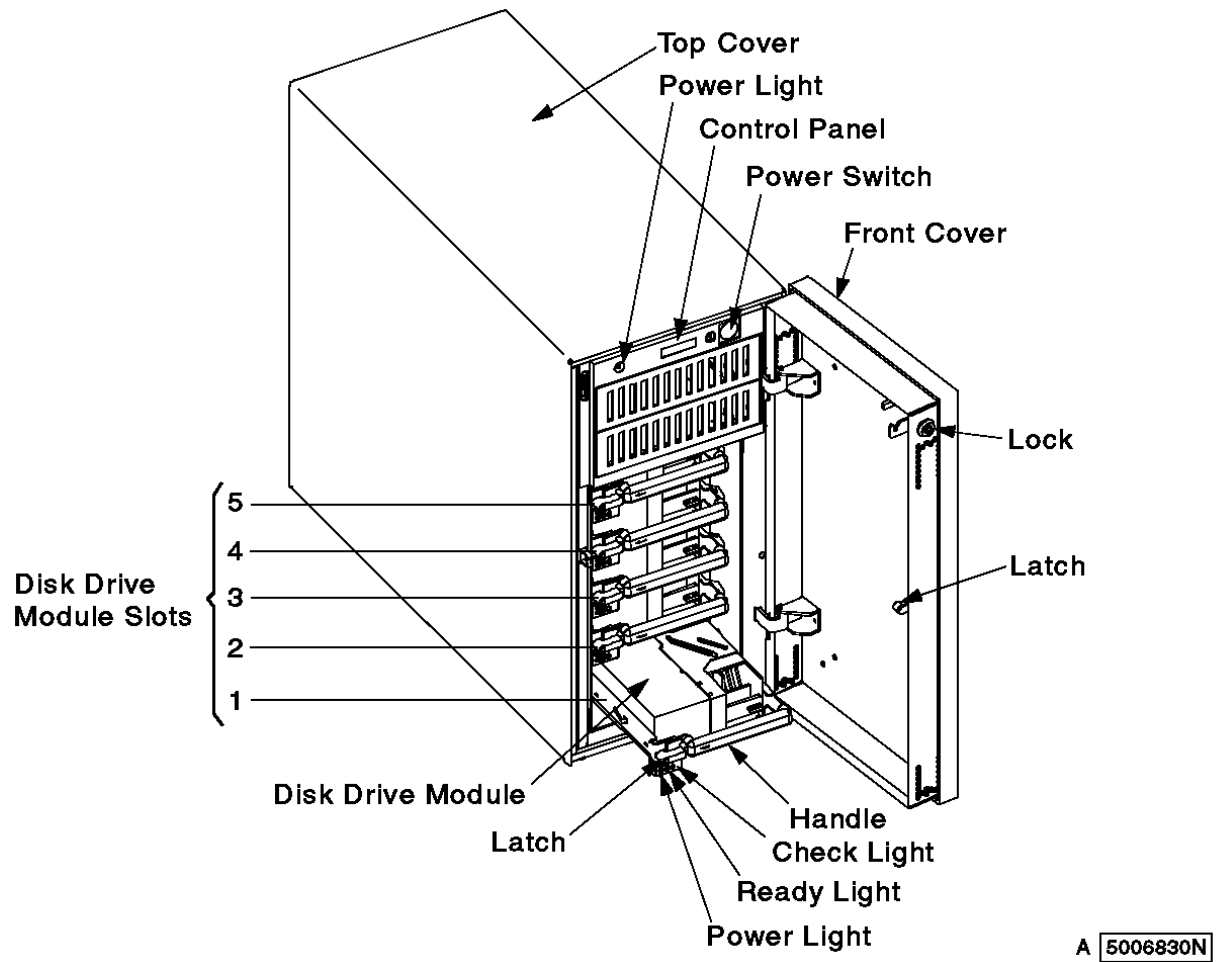


Figure 23. Disk Drive Modules Installed in the Slots

3527-001 User Guide
Appendix A. Line Cord Requirements

A.0 Appendix A. Line Cord Requirements

To avoid electrical shock, a line cord with a grounded attachment plug is provided. Use only properly grounded outlets.

Line cords used in the United States and Canada are listed by Underwriter's Laboratories (UL**) and certified by the Canadian Standards Association (CSA**). These line cords consist of:

Electrical line cords, type SVT or SJ

Attachment plugs complying with National Electrical Manufacturers Association (NEMA) 5-15P

For 115 V operation, use a UL-listed cable set consisting of a minimum 18 AWG, type SVT or SJT 3 conductor cable that is a maximum of 15 feet in length, and a parallel blade, grounding-type attachment plug rated at 15 A, 125 V.

For 230 V operation in the United States, use a UL-listed cable set consisting of a minimum 18 AWG, type SVT or SJT 3 conductor cable that is a maximum of 15 feet in length, and a tandem blade, grounding-type attachment plug rated at 15 A, 250 V.

Appliance couplers complying with International Electrotechnical Commission (IEC) Standard 320, Sheet C1

Line cords used in other countries consist of:

Electrical line cord, type HD2

Attachment plugs approved by the appropriate testing organization for the specific countries where they are use

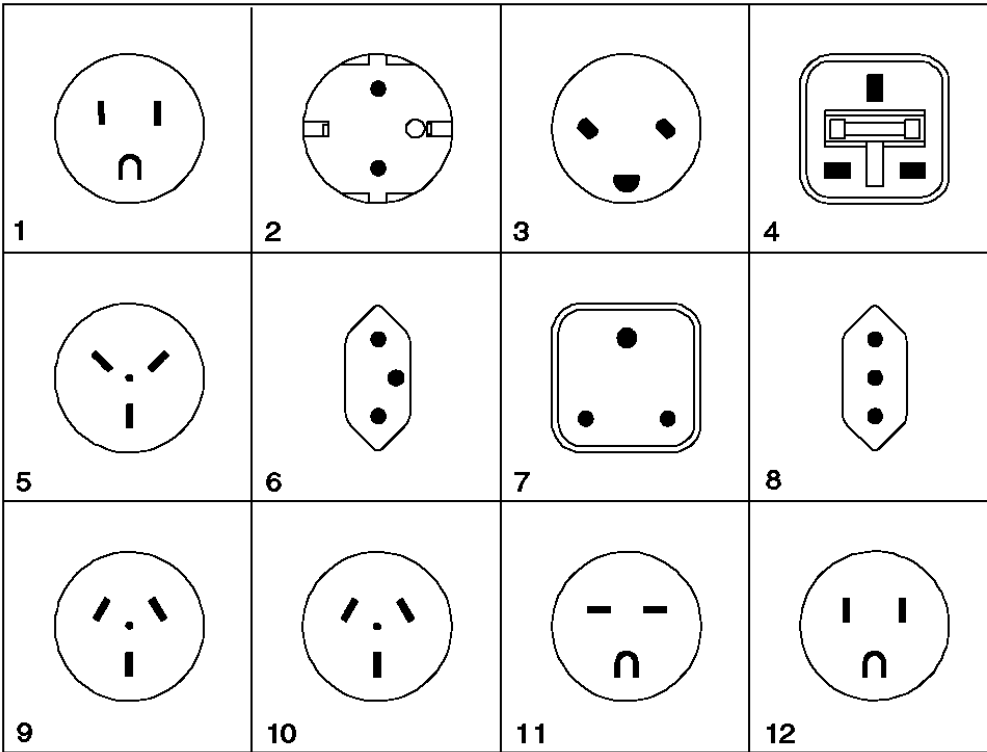
For units set at 230 V (outside of the United States), use a cable set consisting of a minimum 18 AWG cable and a grounding-type attachment plug rated at 15A, 250 V. The cable set should have the appropriate safety approvals for the country in which the equipment will be installed and should be marked "HAR".

Table 3 lists the line cord part number, the country where the line cord can be used, and an index number to be matched with the receptacle illustrations shown in Figure 24. Contact your IBM service representative if your 3527 Storage Unit disk-drive line cord does not match this information.

Table 3. Line Cord and Country Matrix			
Feature Code	Part Number	Specifications and Country	Index
9800	6952300	2.7-m (9-ft) * * line cord, United States and Canada: 110 V to 127 V at 60 Hz Antilles, Balarrus, Barbados, Bermuda, Bolivia, Brazil, Canada, Cayman Islands, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Korea (South), Liberia, Mexico, Netherlands, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Suriname, Taiwan, Trinidad (West Indies), United States, 110 V	1
9820	13F9979	2.9-m (9-ft) line cord, France, 220 V to 240 V at 50 Hz Afghanistan, Algeria, Andorra, Angola, Austria, Belgium, Benin, Bulgaria, Burkina Faso, Burundi, Cameroon, Central African Rep, Chad, Czech Republic, Egypt, Finland, France, French Guiana, Germany, Greece, Guinea, Hungary, Iceland, Indonesia, Iran, Ivory Coast, Jordan, Lebanon, Luxembourg, Macau, Malagasy, Mali, Martinique, Mauritania, Mauritanian, Monaco, Morocco, Mozambique, Netherlands, New Caledonia, Niger, Norway, Poland, Portugal, Romania, Senegal, Slovakia, Spain, Sudan, Sweden, Syria, Togo, Tunisia, Turkey, former USSR, Vietnam, former Yugoslavia, Zaire, Zimbabwe	2
9821	13F9997	2.7-m (9-ft) line cord, Denmark, 220 V to 250 V at 60 Hz	3

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Appendix A. Line Cord Requirements

9825	14F0033	2.7-m (9-ft) line cord, United Kingdom, 220 V to 240 V at 60 Hz Antigua, Bahrain, Brunei, Channel Islands, Cyprus, Dubai, Fiji, Ghana, Hong Kong, India, Iraq, Ireland, Kenya, Kuwait, Malawi, Malaysia, Malta, Nepal, Nigeria, Polynesia, Qatar, Sierra Leone, Singapore, Tanzania, Uganda, United Kingdom, Yemen, Zambia	4
9827	14F0087	2.7-m (9-ft) line cord, Israel, 230 V to 240 V at 50 Hz	5
9828	14F0051	2.7-m (9-ft) line cord, Switzerland, 200 V to 220 V at 50 Hz Liechtenstein, Switzerland	6
9829	14F0015	2.7-m (9-ft) line cord, South Africa, 220 V to 240 V at 50 Hz Bangladesh, Burma, Pakistan, South Africa, Sri Lanka	7
9830	14F0069	2.7-m (9-ft) line cord, Italy, 200 V to 250 V 50 Hz Chile, Ethiopia, Italy, Libya, Somalia	8
9831	13F9940	2.7-m (9-ft) line cord, Australia, 200 V to 240 V at 50 Hz Argentina, Australia, China (PRC), New Zealand, Papua New Guinea, Paraguay, Western Samoa	9
9933	1838574	2.7-m (9-ft) line cord, United States and Canada, 220 V to 240 V at 60 Hz Antilles, Balarrus, Barbados, Bermuda, Bolivia, Brazil, Canada, Cayman Islands, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Korea (South), Liberia, Mexico, Netherlands, Nicaragua, Panama, Peru, Philippines, Saudi Arabia, Suriname, Taiwan, Trinidad (West Indies), United States: 220 V	11
9834	6952291	2.7-m (9-ft) line cord, Uruguay, 200 V to 220 V at 50 Hz	10
9986	6952301	1.8-m (6-ft) line cord, United States and Canada: 115 V to 127 V at 60 Hz	12



5006855M

Figure 24. Receptacles

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Product Warranties and Notices

BACK_1 Product Warranties and Notices

International Business Machines Corporation

Armonk, New York, 10504

Statement of Limited Warranty

The warranties provided by IBM in this Statement of Limited Warranty apply only to Machines you originally purchase for your use, and not for resale, from IBM or an IBM authorized reseller. The term "Machine" means an IBM machine, its features, conversions, upgrades, elements, or accessories, or any combination of them. Machines are subject to these terms only if purchased in the United States or Puerto Rico, or Canada, and located in the country of purchase. If you have any questions, contact IBM or your reseller.

Machine: IBM 3527 SSA Entry Storage Subsystem

Warranty Period*: Three Years

**Elements and accessories are warranted for three months. Contact your place of purchase for warranty service information.*

Production Status

Each Machine is manufactured from new parts, or new and serviceable used parts (which perform like new parts). In some cases, the Machine may not be new and may have been previously installed. Regardless of the Machine's production status, IBM's warranty terms apply.

The IBM Warranty

IBM warrants that each Machine 1) is free from defects in materials and workmanship and 2) conforms to IBM's Official Published Specifications. IBM calculates the expiration of the warranty period from the Machine's Date of Installation. The date on your receipt is the Date of Installation, unless IBM or your reseller informs you otherwise.

During the warranty period, IBM or your reseller will provide warranty service under the type of service designated for the Machine and will manage and install engineering changes that apply to the Machine. IBM or your reseller will specify the type of service.

For a feature, conversion, or upgrade, IBM or your reseller may require that the Machine on which it is installed be 1) the designated, serial-numbered Machine and 2) at an engineering-change level compatible with the feature, conversion, or upgrade. Some of these transactions (called "Net-Priced" transactions) may include additional parts and associated replacement parts that are provided on an exchange basis. All removed parts become the property of IBM and must be returned to IBM.

Replacement parts assume the remaining warranty of the parts they replace.

If a Machine does not function as warranted during the warranty period, IBM or your reseller will repair or replace it (with a Machine that is at least functionally equivalent) without charge. If IBM or your reseller is unable to do so, you may return it to your place of purchase and your money will be refunded.

If you transfer a Machine to another user, warranty service is available to that user for the remainder of the warranty period. You should give your proof of purchase and this Statement to that user.

Warranty Service

To obtain warranty service for the Machine, you should contact your reseller or call IBM. In the United States, call IBM at **1-800-772-2227**. In Canada, call IBM at **1-800-565-3344**. You may be required to present proof of purchase.

Depending on the Machine, the service may be 1) a "Repair" service at your location (called "On-site") or at one of IBM's or a reseller's service locations (called "Carry-in") or 2) an "Exchange" service, either On-site or Carry-in.

When a type of service involves the exchange of a Machine or part, the item IBM or your reseller replaces becomes its property and the replacement becomes yours. The replacement may not be new, but will be in good working order and at least functionally equivalent to the item replaced.

It is your responsibility to:

1. obtain authorization from the owner (for example, your lessor) to have IBM or your reseller service a Machine that you do not own;
2. where applicable, before service is provided --

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Product Warranties and Notices

- a. follow the problem determination, problem analysis, and service request procedures that IBM or your reseller provide,
 - b. secure all programs, data, and funds contained in a Machine,
 - c. inform IBM or your reseller of changes in a Machine's location, and
 - d. for a Machine with exchange service, remove all features, parts, options, alterations, and attachments not under warranty service. Also, the Machine must be free of any legal obligations or restrictions that prevent its exchange; and
3. be responsible for loss of, or damage to, a Machine in transit when you are responsible for the transportation charges.

Extent of Warranty

IBM does not warrant uninterrupted or error-free operation of a Machine.

Unless IBM specifies otherwise, IBM provides non-IBM machines on an "AS IS" basis. However, non-IBM manufacturers may provide their own warranties to you.

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In Canada, warranties include both warranties and conditions.

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1. bodily injury (including death), and damage to real property and tangible personal property; and
2. the amount of any other actual loss or damage, up to the greater of \$100,000 or the charge for the Machine that is the subject of the claim.

Under no circumstances is IBM liable for any of the following:

1. third-party claims against you for losses or damages (other than those under the first item listed above);
2. loss of, or damage to, your records or data; or
3. economic consequential damages (including lost profits or savings) or incidental damages, even if IBM is informed of their possibility.

Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from jurisdiction to jurisdiction.

Subtopics

BACK_1.1 Notices

BACK_1.2 Safety and Environmental Notices

BACK_1.3 Electronic Emission Notices

BACK_1.4 Trademarks

3527-001 User Guide
Notices

BACK_1.1 Notices

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IBM has prepared this publication for use by customer personnel for operating and planning for the specific machines indicated. IBM makes no representations that it is suitable for any other purpose.

3527-001 User Guide
Safety and Environmental Notices

BACK_1.2 Safety and Environmental Notices

Note: For a translation of these danger notices, see *Translated Safety Notices For External Storage Devices, SA26-7197*. Use the reference numbers in parentheses, for example (RSFTD201), at the end of each note to match the desired translation.

Subtopics

- BACK_1.2.1 Danger Notices
- BACK_1.2.2 Caution Notices
- BACK_1.2.3 Attention Notices
- BACK_1.2.4 Product Recycling
- BACK_1.2.5 Product Disposal
- BACK_1.2.6 Environmental Design

3527-001 User Guide
Danger Notices

BACK_1.2.1 Danger Notices

A danger notice calls attention to a situation that is potentially lethal or extremely hazardous to people.

DANGER

```
+-----+
| To prevent a possible electrical shock during an electrical storm, do |
| not connect or disconnect cables or station protectors for          |
| communications lines, display stations, printers, or telephones.    |
| (RSFTD003)                                                           |
+-----+
```

DANGER

```
+-----+
| To prevent a possible electrical shock from touching two surfaces with |
| different electrical grounds, use one hand, when possible, to connect |
| or disconnect signal cables. (RSFTD004)                             |
+-----+
```

DANGER

```
+-----+
| To prevent a possible electrical shock, disconnect the power cord from |
| the electrical outlet before relocating the system. (RSFTD015)      |
+-----+
```

DANGER

```
+-----+
| An electrical outlet that is not correctly wired could place hazardous |
| voltage on metal parts of the system or the products that attach to  |
| the system. It is the customer's responsibility to ensure that the    |
| outlet is correctly wired and grounded to prevent an electrical shock. |
| (RSFTD201)                                                           |
+-----+
```

DANGER

```
+-----+
| To prevent a possible electrical shock when adding or removing any   |
| devices to or from the system, ensure that the power cords for those  |
| devices are unplugged before the signal cables are connected or      |
| disconnected. If possible, disconnect all power cords from the      |
| existing system before you add or remove a device. (RSFTD203)      |
+-----+
```

BACK_1.2.2 Caution Notices

A caution notice calls attention to a situation that is potentially hazardous to people because of some existing condition.

BACK_1.2.3 Attention Notices

An attention notice indicates the possibility of damage to a program, device, system, or data.

BACK_1.2.4 Product Recycling

This unit contains recyclable materials. These materials should be recycled where facilities are available and according to local regulations. In some areas IBM will provide a product take-back program that ensures proper handling of the product. Contact your IBM representative for more information.

3527-001 User Guide
Product Disposal

BACK_1.2.5 Product Disposal

This unit may contain batteries. These batteries must be removed and discarded or recycled according to local regulations and where facilities exist. Specific information per battery type will be referenced throughout the manual where applicable.

BACK_1.2.6 Environmental Design

The environmental efforts that have gone into the design of this unit signifies IBM's commitment to improve the quality of its products and processes. Some of these activities include elimination of the use of CFCs, development of reusable or recyclable packaging, and reductions in manufacturing wastes.

3527-001 User Guide
Electronic Emission Notices

BACK_1.3 Electronic Emission Notices

Federal Communications Commission (FCC) Statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Industry Canada Compliance statement

This Class A digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Community Compliance Statement

This product is in conformity with the protection requirements of EC Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

Germany Only: This product is in conformity with the EN55022 class A emission limits. Products in this class are not allowed to be operated within a residential area without a special permit of local PTT authority (ref. GERMAN EMV Law, Nov.92 and regulation 177/93).

Japanese Voluntary Control Council for Interference (VCCI) Statement

This equipment is Class 1 Equipment (information equipment to be used in commercial and industrial districts) which is in conformance with the standard set by Voluntary Control for Interference by Data Processing Equipment and Electronic Office Machines (VCCI) with an aim to prevent radio interference in commercial and industrial districts.

This equipment could cause interference to radio and television receivers when used in and around residential districts.

Please handle the equipment properly according to the instruction manual.

Korean Government Ministry of Communication (MOC) Statement

Please note that this device has been approved for business purpose with regard to electromagnetic interference. If you find this is not suitable for your use, you may exchange it for a non-business purpose one.

3527-001 User Guide
Trademarks

BACK_1.4 Trademarks

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3527-001 User Guide
 Reader Comments--We'd Like to Hear from You!

COMMENTS Reader Comments--We'd Like to Hear from You!
 3527 Model 001 SSA Entry Storage Subsystem User's Guide

Publication No. SA26-7199-00

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	Very Satisfied	Satisfied	Dissatisfied	Very Dissatisfied
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