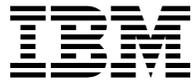


7210 Model 025 External DVD-RAM Drive

7210 Model 025 DVD-RAM Drive
Service Guide

SY44-0080-00





7210 Model 025 External DVD-RAM Drive

7210 Model 025 DVD-RAM Drive
Service Guide

SY44-0080-00

Note!

Before using this information and the product it supports, be sure to read the general information under “Notices” on page v.

First Edition (May 2001)

This edition, SY44-0080-00, applies to Model 025 of the 7210 External DVD-RAM Drive and to all subsequent releases and modifications until otherwise indicated in new editions. This edition applies only to the specified model of the device.

© **Copyright International Business Machines Corporation 2001. All rights reserved.**

US Government Users Restricted Rights - Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Contents

Notices	v	Step 2	12
Safety and Environmental Notices	vi	Step 3	12
Danger Notices	vi	Step 4	13
Caution Notices	vii	Step 5	13
Attention Notices	vii	Step 6	13
Product Recycling and Disposal	vii	Step 7	14
Battery Return Program	vii	Step 8	14
Environmental Design	viii	Step 9	14
Electronic Emission Notices.	viii	Step 10	15
Federal Communications Commission (FCC)		Step 11	15
Statement.	viii	Step 12	16
Trademarks.	x	Step 13	16
		Step 14	16
		Step 15	17
		Step 16	17
		Step 17	18
		Step 18	19
		Step 19	19
About This Guide	xi		
Related Publications	xi		
How to send your comments	xii		
Chapter 1. Reference Information	1	Chapter 3. Removal and Replacement	
Front View	1	Procedures	21
Operator Controls	2	Handling Static-Sensitive Devices	21
Indicator Lights	3	Removing and Replacing the Cover	21
Rear View	4	Removing and Replacing the DVD-RAM Drive	22
Internal View	5	Removing and Replacing the Power Supply	23
Rear View of the DVD-RAM Drive	6	Removing and Replacing the Cooling Fan	25
Cleaning the DVD-RAM Drive	6	Manually Removing a DVD Disc from the Drive	26
Specifications	7		
Chapter 2. Maintenance Analysis		Chapter 4. Parts Diagram and Parts	
Procedures	9	List	27
Purpose of the MAPs	9	How To Use This Parts List	27
MAPs Flowchart for the RS/6000 and pSeries Host		Example of Parts Listing	27
Systems	10	Assembly 1: Parts Diagram	28
MAPs Flowchart for the AS/400 and iSeries Host			
Systems.	11		
Step 1	12	Appendix. Power Cables	31

Notices

This information was developed for products and services offered in the U.S.A. IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
500 Columbus Avenue
Thornwood, NY 10594
U.S.A.

For license inquiries regarding double-byte (DBCS) information, contact the IBM Intellectual Property Department in your country or send inquiries, in writing, to:

IBM World Trade Asia Corporation
Licensing
2-31 Roppongi 3-chome, Minato-ku
Tokyo 106, Japan

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law:

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product and use of those Web sites is at your own risk.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level

systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurement may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

All statements regarding IBM's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

If you are viewing this information softcopy, the photographs and color illustrations may not appear.

The drawings and specifications contained herein shall not be reproduced in whole or in part without the written permission of IBM.

IBM has prepared this publication for use by hardware service representatives in the maintenance or repair of the specific machines indicated. IBM makes no representations that it is suitable for any other purpose.

Safety and Environmental Notices

Danger Notices

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

Use the following danger notices throughout this book.

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

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)

DANGER

To prevent a possible electrical shock when installing the device, ensure that the power cord for that device is unplugged before installing signal cables. (RSFTD204)

DANGER

Do not attempt to open the covers of the power supply. Power supplies are not serviceable and are to be replaced as a unit. (RSFTD217)

Caution Notices

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

Use the following caution notices throughout this book.

CAUTION:

Do not remove the covers of the unit. An invisible laser beam may be present. The repair of this unit should be performed by trained service personnel only. (RSFTC242)

Attention Notices

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

Product Recycling and Disposal

Components of the system, such as structural parts and circuit cards, can be recycled where recycling facilities exist. IBM does not currently collect and recycle used IBM products from customers in the United States other than those products that are involved in trade-in programs. Companies are available to disassemble, reutilize, recycle, or dispose of electronic products. Contact an IBM account representative for more information.

The system unit contains batteries and circuit boards with lead solder. Before you dispose of this unit, these batteries and circuit boards must be removed and discarded according to local regulations or recycled where facilities exist. This book contains specific information on each battery type where applicable.

Battery Return Program

In the United States, IBM has established a collection process for reuse, recycling, or proper disposal of used IBM batteries and battery packs. For information on proper disposal of the batteries in this unit, please contact IBM at 1-800-426-4333.

Please have the IBM part number that is listed on the battery available when you make your call. For information on battery disposal outside the United States, contact your local waste disposal facility.

Environmental Design

The environmental efforts that have gone into the design of the system signify IBM's commitment to improve the quality of its products and processes. Some of these accomplishments include the elimination of the use of Class I ozone-depleting chemicals in the manufacturing process, reductions in manufacturing wastes, and increased product energy efficiency. For more information, contact an IBM account representative.

Electronic Emission Notices

The following Statement applies to this IBM product. The statement for other IBM products intended for use with this product will appear in their accompanying manuals.

Federal Communications Commission (FCC) Statement

Note: This equipment has been tested and found to comply with the limits for a class B digital devices, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an IBM authorized dealer or service representative for help.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from IBM authorized dealers. IBM is not responsible for any radio or television interference caused by using other than recommended cables or 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 interferences, and (2) this device must accept any interferences received, including interference that may cause undesired operation.

Responsible Party:

International Business Machines Corporation
New Orchard Road
Armonk, NY 10504

Telephone: 1-919-543-2193

Industry Canada Compliance Statement

This Class B 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 B 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.

This product has been tested and found to comply with the limits for Class B Information Technology Equipment according to CISPR 22 / European Standard EN 55022. The limits for Class B equipment were derived for typical residential environments to provide reasonable protection against interference with licensed communication devices.

Properly shielded and grounded cables and connectors (IBM part number 75G5958 or its equivalent) must be used in order to reduce the potential for causing interference to radio and TV communications and to other electrical or electronic equipment. Such cables and connectors are available from IBM authorized dealers. IBM cannot accept responsibility for an interference caused by using other than recommended cables and connectors.

Germany Only: This product is in conformity with the EN55022 Class B emission limits.

Japanese Voluntary Control Council for Interference (VCCI) Statement

This product is a Class B Information Technology Equipment and conforms to the standards set by the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). This product is aimed to be used in a domestic environment. When used near a radio or TV receiver, it may become the cause of radio interference. Read the instructions for correct handling.

Korean Government Ministry of Communication (MOC) Statement

Please note that this device has been approved for non-business purposes and may be used in any environment including residential areas.

Trademarks

The following terms are trademarks of International Business Machines Corporation in the United States, or other countries, or both:

AIX
Application System/400
AS/400
eServer
IBM
iSeries
Operating System/400
OS/400
pSeries
RISC System/6000
RS/6000
400

Other company, product, and service names may be the trademarks or service marks of others.

About This Guide

This guide describes how to service the 7210 Model 025 DVD-RAM Drive. It contains the following chapters:

Chapter 1. Reference Information, describes the operator controls, indicator lights, connector locations, and hardware specifications of the 7210 DVD-RAM Drive. It also provides cleaning information about the DVD-RAM drive and discs.

Chapter 2. Maintenance Analysis Procedures, provides the maintenance analysis procedures (MAPs) required to service the 7210 DVD-RAM Drive.

Chapter 3. Removal and Replacement Procedures, provides the removal and replacement procedures required to service the 7210 DVD-RAM Drive.

Chapter 4. Parts Diagram and Parts List, provides a parts diagram and parts list required to service the 7210 DVD-RAM Drive.

The appendix, "Power Cables," provides power cable information for different countries.

Store this guide with your system manuals.

Related Publications

- *7210 Model 025 DVD-RAM Drive Setup and Operator Guide*, SY44-0079, provides information about installing and operating the 7210 DVD-RAM Drive.
- *IBM Externally Attached Devices Safety Information SA26-2004*, provides translations of danger and caution notices.

How to send your comments

Your feedback is important in helping to provide the most accurate and high-quality information. If you have any comments about this book or any other IBM documentation, fill out the readers' comment form at the back of this book.

- If you prefer to send comments by mail, use the readers' comment form with the address that is printed on the back. If you are mailing a readers' comment form from a country other than the United States, you can give the form to the local IBM branch office or IBM representative for postage-paid mailing.
- If you prefer to send comments by FAX, use either of the following numbers:
 - United States and Canada: 1-800-937-3430
 - Other countries: 1-507-253-5192
- If you prefer to send comments electronically, use the following e-mail addresses:

RCHCLERK@us.ibm.com

Be sure to include the following:

- The name of the book.
- The publication number of the book.
- The page number or topic to which your comment applies.

Chapter 1. Reference Information

The 7210 Model 025 DVD-RAM Drive is an external storage device that connects to an IBM host system and stores additional data using a small computer system interface-2 (SCSI-2). The 7210 DVD-RAM Drive operates at speeds dependant on the type of media used.

- CD-ROM media maximum speed is 3.6 MB/second
- DVD-ROM media maximum speed is 2.7 MB/second
- DVD-RAM media maximum speed is 1.3 MB/ second Write, 2.7 MB/second Read

The media used in this device determines the operations possible. The 7210 DVD-RAM Drive can read and write to DVD-RAM media. The 7210 DVD-RAM Drive can only read media marked as CD-R, CD-R/W, and CD-ROM.

The 7210 DVD-RAM Drive supports the distribution and use of online databases, such as an online reference for a softcopy publication.

The sections that follow describe the operator controls, indicator lights, connector locations, and hardware specifications of the 7210 Model 025 DVD-RAM Drive.

Front View

Figure 1 shows a front view of the 7210 Model 025 DVD-RAM Drive.

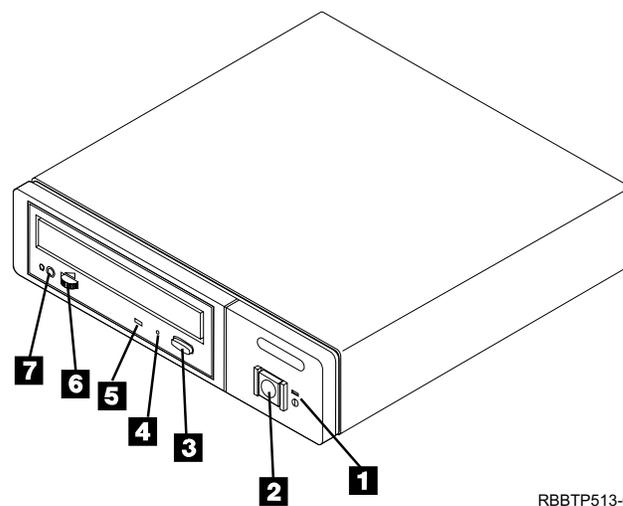


Figure 1. Front View of the 7210 Model 025 DVD-RAM Drive

Operator Controls

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)

The 7210 Model 025 DVD-RAM Drive has the following operator controls.

Power Switch

The power switch (**2** in Figure 1 on page 1) is a push button switch that enables the power to be turned on or off. When the 7210 DVD-RAM Drive is on, the power-on light **1** is on and is green.

Note: The  symbol under the power-on light is an International Organization for Standardization (ISO) symbol for a push button switch.

Load/Unload Button

The load/unload button **3** enables the DVD-RAM tray to be inserted or ejected. To insert or eject the tray, press and hold the load/unload button for about one second. The load/unload button operates only when the 7210 DVD-RAM Drive power is on.

Manual Unload Hole

When a power failure or a DVD-RAM drive failure prevents the DVD disc from ejecting, the disc can be removed manually. Insert a solid metal rod (such as a paper clip or bristol wrench) into the manual unload hole **4** until resistance is met, then gently push to unlatch the DVD disc tray.

Note: This step may have to be repeated several times.

Volume Control

For headphones, the volume control **6** raises or lowers audio volume. Rotate the volume control to the right to increase the volume, and rotate it to the left to decrease the volume.

Headphone Jack

The 7210 DVD-RAM Drive has a standard miniature stereo headphone jack **7** located next to the volume control.

Audio Jacks

On the rear panel, the 7210 DVD-RAM Drive has left and right audio jacks that can be cabled to a stereo amplifier (see "Rear View" on page 4).

Indicator Lights

The 7210 Model 025 DVD-RAM Drive has the following indicator lights.

Power-On Light

When the 7210 DVD-RAM Drive is turned on, the power-on light (**1** in Figure 1 on page 1) comes on and is green.

Status Light

The status light (**5** in Figure 1 on page 1) can be in one of several states:

- The light is off when the DVD-RAM drive is on but not in use (with or without the DVD disc loaded).
- The light is green and blinking:
 - After the DVD tray has been inserted and while the drive is running the Power-On Self Test (POST).

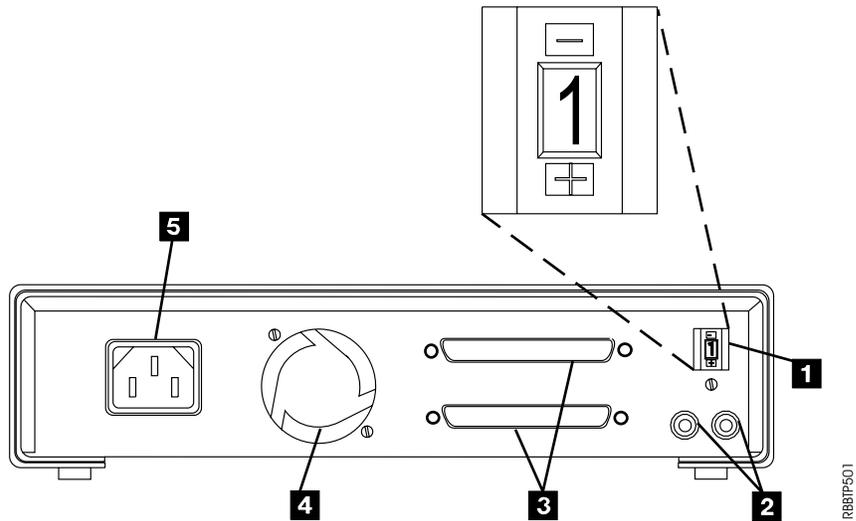
Note: When the POST completes successfully, the light goes out.

- During data transfer operations.
- When the DVD-RAM drive is playing audio through the front headphone jack or rear audio jacks.
- The light is amber and blinking when a DVD-RAM drive error exists.

Rear View

The following shows the elements on the rear of the 7210 Model 025 DVD-RAM Drive.

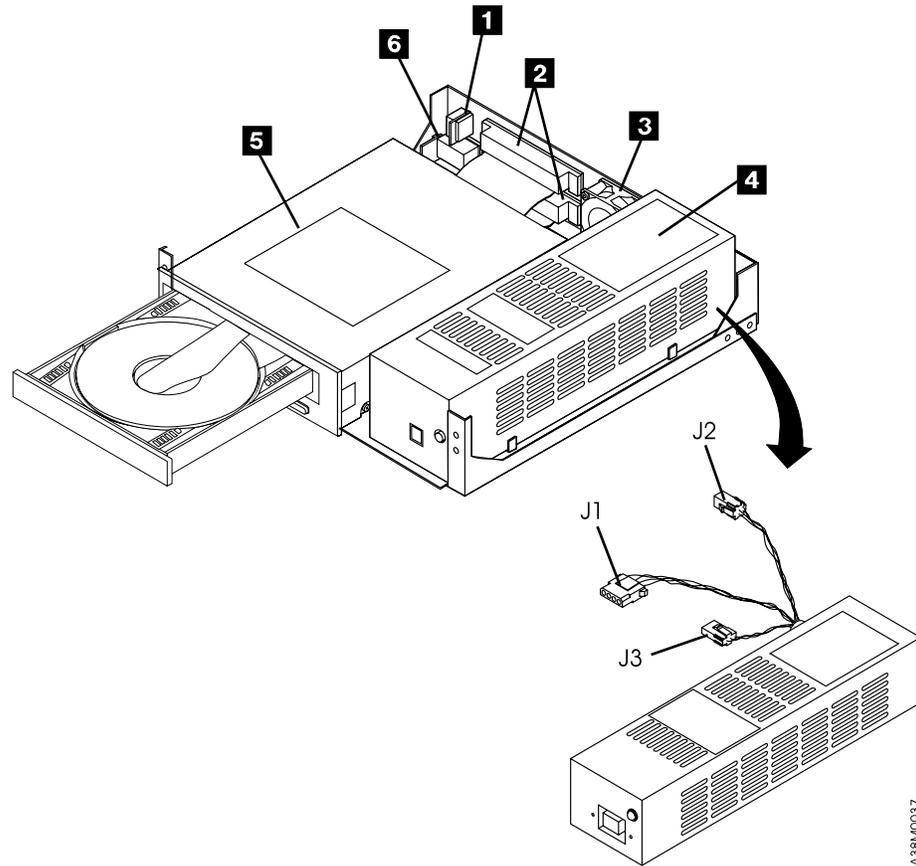
- | | | | |
|----------|---------------------------|----------|-----------------------|
| 1 | SCSI address switch | 4 | Cooling fan |
| 2 | Audio jacks | 5 | Power cable connector |
| 3 | SCSI bus cable connectors | | |



Internal View

The following shows the inside of the 7210 Model 025 DVD-RAM Drive.

- | | | | |
|----------|--------------------------|----------|-----------------|
| 1 | SCSI address switch | 4 | Power supply |
| 2 | Internal SCSI bus cables | 5 | Drive |
| 3 | Cooling fan | 6 | Audio jack plug |



A38M0037

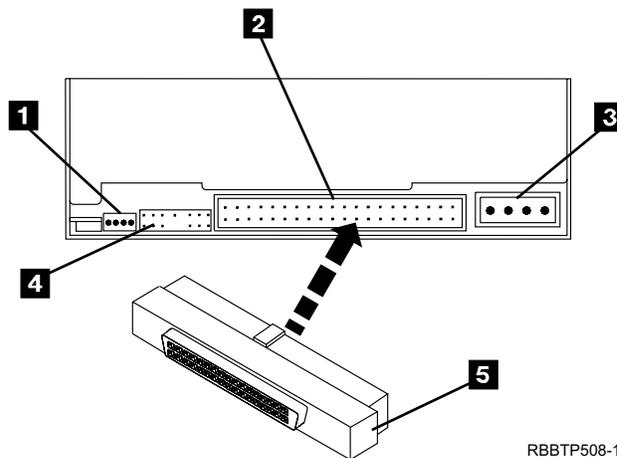
Rear View of the DVD-RAM Drive

The following shows the rear of the DVD-RAM drive.

Notes:

1. The 7210 DVD-RAM Drive uses a 68-pin internal SCSI bus connector.
2. The parity jumper must not be removed. When connecting the internal SCSI address cable, insert the cable into the left side of the remote SCSI address connector.

1	Analog audio output jack	4	SCSI address connector
2	Internal SCSI bus connector	5	Adapter
3	Power supply connector		



RBBTP508-1

Cleaning the DVD-RAM Drive

The DVD-RAM drive is designed to limit air flow in the area where the optical components are located. However, the DVD media and drive heads occasionally need to be cleaned. Use the IBM DVD cleaning kit shipped with the device, which includes a cloth and cleaning disc, to clean the media and drive heads.

To avoid fingerprints, always handle DVD discs by the edges. Wipe DVD discs with a soft, lint-free cloth or lens tissue, always wiping in a straight line from the inner hub to the outer rim. Do not rub in a circular motion.

Specifications

Table 1. Specifications for the 7210 Model 025 DVD-RAM Drive

Physical Specifications		
Width	250 mm (9.8 in.)	
Depth	275 mm (10.8 in.)	
Height	55 mm (2.2 in.)	
Weight	3.6 kg (8.0 lb)	
Power Specifications		
kVA	0.023 @ 120 V ac	
V ac	100 to 125, or 200 to 240	
Hertz	50 to 60	
Btu Maximum (watts)	41.6 Btu/hr (12.2 watts) @ 240 V ac	
Power Factor	0.4 to 0.6	
Altitude	2135 m (7000 ft)	
Performance Specifications		
Dependant on media type		
Recommended Environment		
Environmental Factor	Operating	Non-operating
Temperature	16 to 32°C (60 to 90°F)	10 to 52°C (50 to 126°F)
Relative Humidity (noncondensing)	20 to 80%	8 to 80%
Maximum Wet Bulb	23°C (73°F)	23°C (73°F)

Chapter 2. Maintenance Analysis Procedures

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

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)

Purpose of the MAPs

Maintenance analysis procedures (MAPs) are used to check the:

Power cable	SCSI address	Drive
Power supply	SCSI cable	Fan
Terminator	Configuration	CD-ROM disc

If a problem is detected, the procedure isolates the problem to the failing field replaceable unit (FRU), such as the 7210 DVD-RAM Drive cover, drive, power supply, or cooling fan.

For instructions about removing or replacing a FRU, refer to "Chapter 3. Removal and Replacement Procedures" on page 21

Figure 2 on page 10 and Figure 3 on page 11 provide flowcharts to be used as guides to the MAPs. For detailed instructions on how to perform each procedure safely and correctly, refer to the steps in this chapter.

MAPs Flowchart for the RS/6000 and pSeries Host Systems

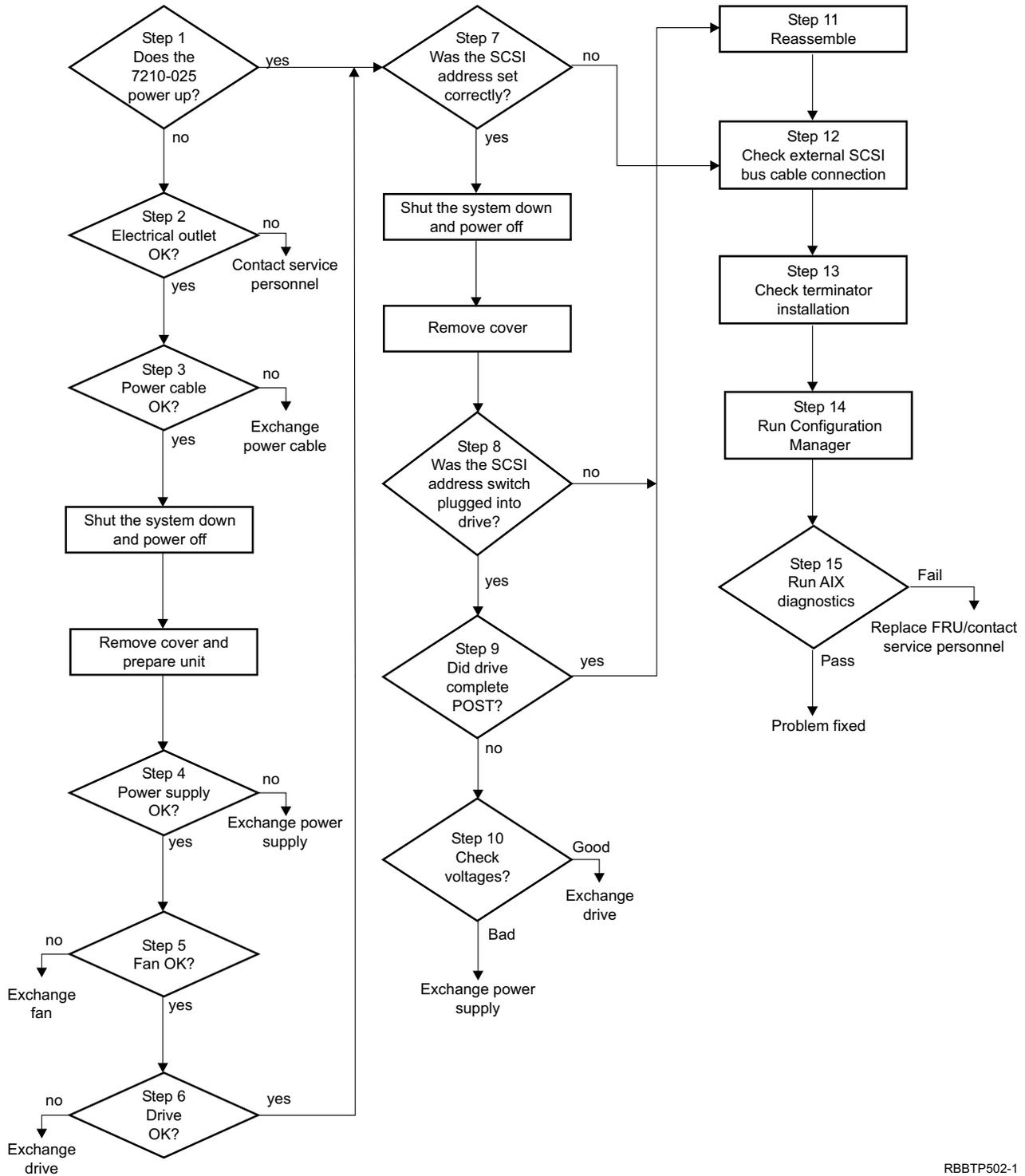
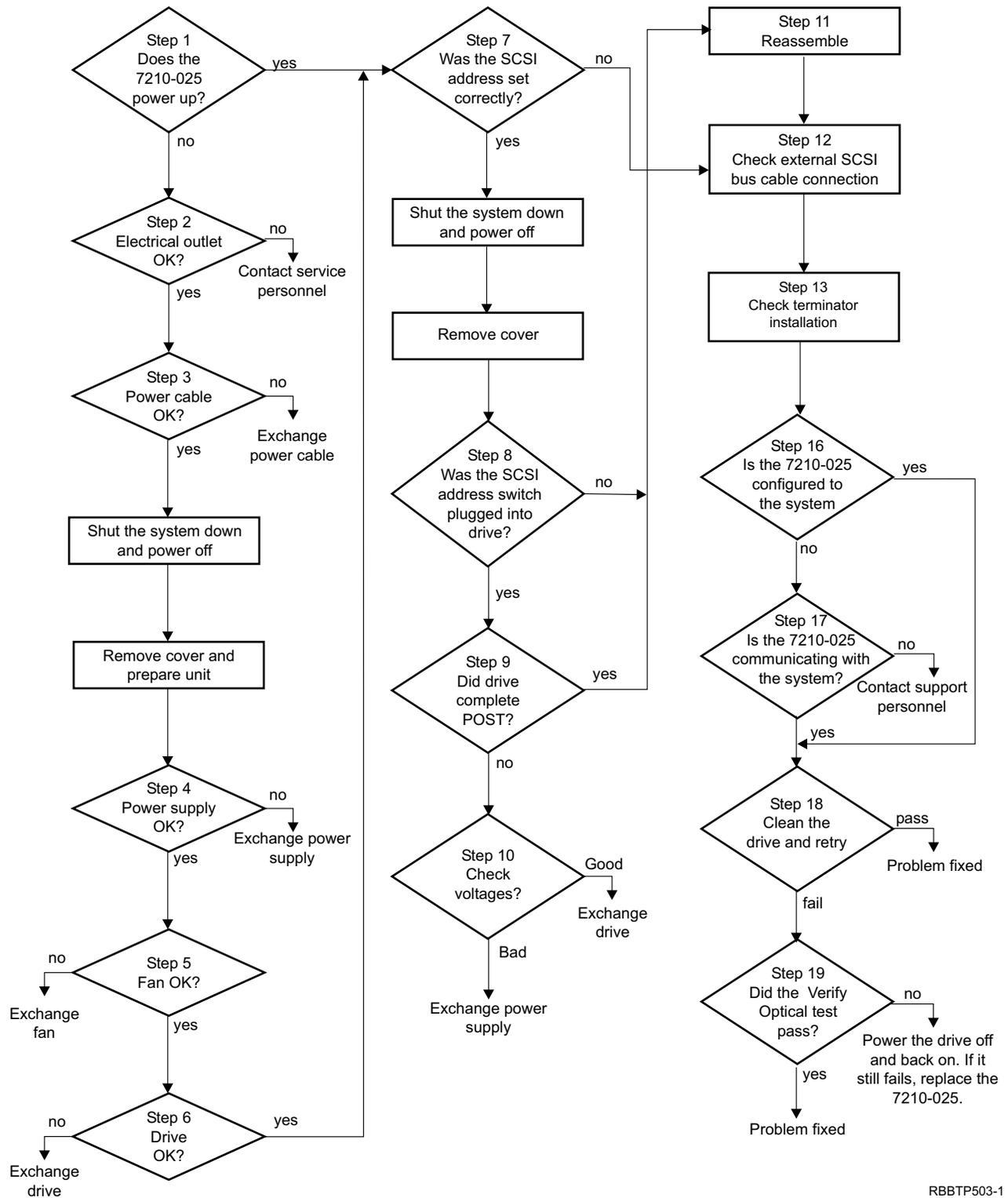


Figure 2. Flowchart of the Maintenance Analysis Procedures (MAPs) for RS/6000 and pSeries Host Systems

MAPs Flowchart for the AS/400 and iSeries Host Systems



RBBTP503-1

Figure 3. Flowchart of the Maintenance Analysis Procedures (MAPs) for AS/400 and iSeries Host Systems

Step 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)

This step verifies whether the power and the fan operate properly.

1. Make sure that the 7210 DVD-RAM Drive power cable is plugged into an electrical outlet.
2. Make sure that the 7210 DVD-RAM Drive power is on by checking that:
 - The power-on light is on.
 - There is airflow from the fan at the rear of the unit.

Is the power-on light on and is there airflow from the fan?

NO While watching for the power-on light to come on, press the power switch again. Repeat this procedure several times. If the power-on light fails to come on or if there is no airflow from the fan, go to Step 2.

YES Go to Step 7.

Step 2

This step tests the voltage at the electrical outlet.

1. Press the 7210 DVD-RAM Drive power switch to turn off the power.
2. Unplug the 7210 DVD-RAM Drive power cable from the electrical outlet and from the 7210 DVD-RAM Drive.
3. Measure the voltage at the electrical outlet.

Is the voltage from the electrical outlet correct?

NO Contact your service personnel for further instructions.

YES Go to Step 3.

Step 3

This step determines whether the power cable is functional.

Make sure that all of the conductors in the power cable have continuity, and that there are no short circuits.

Does the power cable have continuity and are there no short circuits?

NO Replace the power cable, then go to Step 1.

YES Go to Step 4.

Step 4

This step prepares the 7210 DVD-RAM Drive to determine whether the power supply, fan, or DVD-RAM drive is the cause of the problem.

1. Do a controlled system shutdown (refer to the instructions in Chapter 2, “Setting Up the 7210 DVD-RAM Drive,” in the *7210 Model 025 DVD-RAM Drive Setup and Operator Guide*).
2. Ensure that the power to the host is off.
3. Perform the cover removal procedure. Refer to “Removing and Replacing the Cover” on page 21.
4. Press the 7210 DVD-RAM Drive power switch to turn off the power.
5. Plug the 7210 DVD-RAM Drive into the 7210 DVD-RAM Drive and into a grounded electrical outlet.
6. Press the power switch to turn off the power.
7. Disconnect the power supply connector (J1) from the drive.
8. Disconnect the power supply connector (J2) between the power supply and the cooling fan.
9. Press the power switch to turn on the power.

Does the power-on light come on and stay on?

- | | |
|------------|--------------------------------------------------------------------------------------------------------------|
| NO | Exchange the power supply, then go to Step 5. Refer to “Removing and Replacing the Power Supply” on page 23. |
| YES | Go to Step 5. |

Step 5

This step examines the cooling fan as the possible source of the problem.

1. Press the power switch to turn off the power.
2. Reconnect the power supply connector (J2) to the cooling fan.
3. Press the power switch to turn on the power.

Does the power-on light come on and stay on, and is there airflow from the fan?

- | | |
|------------|----------------------------------------------------------------------------------------------------------------|
| NO | Exchange the cooling fan, then return to Step 5. Refer to “Removing and Replacing the Cooling Fan” on page 25. |
| YES | Go to Step 6. |

Step 6

This step examines the drive as the possible source of the problem.

1. Press the power switch to turn off the power.
2. Reconnect the power supply connector (J1) to the drive.
3. Press the power switch to turn on the power.

Does the power-on light come on and stay on, and is there airflow from the fan?

- | | |
|------------|------------------------------------------------------------------------------------------------------------|
| NO | Exchange the drive, then return to Step 6. Refer to “Removing and Replacing the DVD-RAM Drive” on page 22. |
| YES | Go to Step 7. |

Step 7

This step checks that the SCSI address switch setting is correct.

Is the SCSI address set correctly?

- NO** Set the SCSI address switch to the proper address, then go to Step 12. To set the SCSI address switch, refer to the instructions in Chapter 2, "Setting Up the 7210 DVD-RAM Drive," in the *7210 Model 025 DVD-RAM Drive Setup and Operator Guide*.
- YES** Go to Step 8.

Step 8

This step checks whether the SCSI address switch is plugged into the drive.

1. Do a controlled system shutdown (refer to the instructions in Chapter 2, "Setting Up the 7210 DVD-RAM Drive," in the *7210 Model 025 DVD-RAM Drive Setup and Operator Guide*).
2. Perform the cover removal procedure. Refer to "Removing and Replacing the Cover" on page 21.

Is the SCSI address switch plugged securely into the drive?

- NO** Ensure that the SCSI address switch is plugged securely into the drive, then go to Step 11.
- YES** Go to Step 9.

Step 9

This step examines the drive as the possible source of the problem.

1. Press the power switch to turn on the power.
2. Press the load/unload button to eject the DVD tray.
3. Prepare the DVD test disc (part number 19P2410, or any DVD disc) or the CD diagnostics disc (part number 81F8902) by ensuring that it is free from excessive or deep scratches, and by cleaning it if necessary. Refer to the instructions in "Cleaning the DVD-RAM Drive" on page 6.
4. Load the test disc into the DVD-RAM drive.
5. Press the power switch to turn off the power.
6. While turning the power back on, watch for the following:
 - The status light blinks for 3-5 seconds.
 - The status light turns off and stays off if the Power-On Self Test (POST) completes successfully.

Does the status light blink for 3-5 seconds, then turn off?

- NO** Go to Step 10.
- YES** Go to Step 11.

Step 10

This step checks the power supply voltage levels as the possible source of the problem.

1. Press the power switch to turn off the power.
2. Disconnect the power supply connector (J1) from the drive.
3. Disconnect the power supply connector (J2) between the power supply and the cooling fan.
4. Connect the power cable to both the 7210 DVD-RAM Drive and to the electrical outlet.
5. Press the power switch to turn on the power.
6. On the power supply connector J1 (see Figure 4), check the following:
 - The +12V signal falls between a minimum of +11.5 volts and a maximum of +12.6 volts
 - The +5V signal falls between a minimum of +4.8 volts and a maximum of +5.25 volts



+5v Gnd Gnd +12

Figure 4. Power Supply Connector J1

7. On the power supply connector J2 (see Figure 5), check that the +12V signal falls between a minimum of +11.5 volts and a maximum of +12.6 volts.

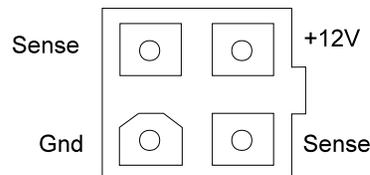


Figure 5. Power Supply Connector J2

Are the voltages good, and does the power-on light come on and stay on?

- | | |
|------------|---------------------------------------------------------------------------------------------|
| NO | Exchange the power supply. Refer to “Removing and Replacing the Power Supply” on page 23. |
| YES | Exchange the DVD-RAM drive. Refer to “Removing and Replacing the DVD-RAM Drive” on page 22. |

Step 11

This step describes the reassembly process.

1. Press the power switch to turn off the power.
2. Unplug the power cable from the electrical outlet.
3. Make sure that the power supply connector (J1) is plugged into the DVD-RAM drive.
4. Make sure that the power supply connector (J2) is plugged into the cooling fan.
5. Make sure that all other cables are properly connected, and that the wires are routed away from the cooling fan.

6. Perform the cover replacement procedure. Refer to “Removing and Replacing the Cover” on page 21.
7. Plug the power cable into the electrical outlet.
8. Press the power switch to turn on the power.

Does the power-on light come and stay on, and is there airflow from the fan?

- NO** Verify that the 7210 DVD-RAM Drive was reassembled correctly. If the power-on light still does not come on and there is no airflow from the fan, go to Step 1.
- YES** Go to Step 12.

Step 12

This step ensures that the external SCSI bus cable connection is proper.

Ensure that the SCSI bus cable is properly connected to both the host system and to the 7210 DVD-RAM Drive.

Is the SCSI bus cable properly connected to the host system and to the 7210 DVD-RAM Drive?

- NO** Plug the SCSI bus cable into both the host system and the 7210 DVD-RAM Drive, then go to Step 13.
- YES** Go to Step 13.

Step 13

This step ensures that the terminator connection is proper.

Ensure that the terminator is properly connected to the last device on the SCSI bus.

Is the terminator properly connected to the last device on the SCSI bus?

- NO** Ensure that the terminator is properly connected to the last device on the SCSI bus, then go to Step 14. If the host is an AS/400 or iSeries system, go to Step 16.
- YES** Go to Step 14. If the host is an AS/400 or iSeries system, go to Step 16.

Step 14

This step verifies that the 7210 DVD-RAM Drive has been properly configured to the host system.

At the host system prompt, type `cfgmgr`:

- If the status of the 7210 DVD-RAM Drive is displayed as *Available*, the device has been successfully configured.
- If the status is not displayed as *Available*, refer to your AIX or host system manuals.

Is the 7210 DVD-RAM Drive properly configured to the host system?

- NO** Go to Step 15.
- YES** The problem is fixed and verified.

Step 15

This step runs the AIX diagnostics to determine the problem or to verify a fix.

1. Press the power switch to turn on the power.
2. Press the load/unload button to eject the DVD tray.
3. Prepare the test disc by ensuring it is free from excessive or deep scratches, and by cleaning it if necessary. Refer to the instructions in "Cleaning the DVD-RAM Drive" on page 6.
4. Load the test disc into the DVD-RAM drive.

Note: For the preceding step, use only the test disc; do not substitute another DVD disc.

5. Run the diagnostics on the 7210 DVD-RAM Drive. For instructions, refer to your AIX manuals.

Do all of the diagnostic routines pass?

NO Exchange the FRU isolated by the diagnostics and identified by the service request number.

Note: If the drive is the FRU that is isolated by the diagnostics, check that the J1 connector is properly seated. If the drive has recently been replaced because of a similar problem, contact your service personnel.

YES The problem is fixed.

This completes the MAPs for the RS/6000 and pSeries systems.

Step 16

You are here because the host system is an AS/400 or iSeries system. This step verifies that the host system has configured the 7210 DVD-RAM Drive properly.

1. At the command line on the Main Menu, type `wrkcfgsts`, then press Enter. The Work with Configuration Status screen displays.
2. In the Type field, type `*dev`.
3. In the Configuration Description field, type `*opt`

then press Enter twice.
4. Load the test disc into the DVD-RAM drive.
5. Run the diagnostics on the 7210 DVD-RAM Drive. For instructions, refer to your host system manuals.

Does the number of the 7210 DVD-RAM Drive that you are configuring appear under the Description column, and can you vary it off and on successfully?

Note: To determine the number of the 7210 DVD-RAM Drive that you are configuring, see "Performing the Checkout Procedure" in the *7210 Model 025 DVD-RAM Drive Setup and Operator Guide*.

NO Continue with Step 17.

YES Go to Step 18.

Step 17

This step verifies whether the 7210 DVD-RAM Drive can communicate with the host system.

1. At the command line on any AS/400 or iSeries menu, type
strsst

then press Enter.
2. At the System Service Tools (SST) screen, type **1** (Start a service tool), then press Enter.
3. At the Start a Service Tool screen, type **7** (Hardware service manager), then press Enter.
4. At the Hardware Service Manager screen, type **2** (Logical hardware resources), then press Enter.
5. At the Logical Hardware Resources screen, type **1** (System bus resources), then press Enter.
6. In the Description column of the Logical Hardware Resources on System Bus screen, locate the input/output processor (IOP) device (the SCSI controller) to which the 7210 DVD-RAM Drive is attached. Type **6** (I/O Debug), then press Enter (refer to "Performing the Checkout Procedure" in the *7210 Model 025 DVD-RAM Drive Setup and Operator Guide*).
7. At the Select IOP Debug Function screen, type **4** (IPL I/O processor), then press Enter twice. The host performs an initial program load (IPL), refreshes its settings, and displays the message Re-IPL of IOP was successful .

Note: Performing an IPL (option **4**) for the IOP also resets any other IOA adapters connect to the host system.

8. After the IPL completes, press F12 to return to the Logical Hardware Resources on System Bus screen.
9. In the Description and Type-Model fields of the Logical Hardware Resources on System Bus screen, locate the IOP storage device (the SCSI controller) to which the 7210 DVD-RAM Drive is attached. Type **9** (Resources associated with IOP), then press Enter.

The Logical Hardware Resources Associated with IOP screen displays with a list of devices that are configured to the SCSI controller. The 6330 device and its optical controller appear in the list and display a status of Operational.

Is the device and a controller listed under the Storage IOP column, and is their status operational?

- | | |
|------------|-----------------------------------------------------------------------------|
| NO | Contact your next level of support for further instructions. |
| YES | Exit the System Service Tool to a command line, then continue with Step 18. |

Step 18

This step cleans the 7210 DVD-RAM Drive and attempts the failing operation again.

Clean the DVD-RAM drive (see **Cleaning the DVD-RAM Drive** in the *7210 Model 025 DVD-RAM Drive Setup and Operator Guide*). Then, attempt the failing operation again.

Does the 7210 DVD-RAM Drive perform the failing operation correctly?

NO Continue with Step 19.

YES Cleaning the 7210 DVD-RAM Drive corrected the problem.

Step 19

This step verifies that the 7210 DVD-RAM Drive can read from a DVD properly.

1. At the command line on any AS/400 or iSeries menu, type
vfyopt

then press Enter.

2. Follow the screen prompts.

Does the verification test complete successfully?

NO Perform the following:

1. Power off the drive to reset the error.
2. Power the drive on again and attempt the operation again. If the test fails again, replace the 7210 DVD-RAM Drive.

YES The problem is fixed.

This completes the MAPs for the AS/400 or iSeries systems.

Chapter 3. Removal and Replacement Procedures

This chapter describes the procedures to follow when removing and replacing the cover, DVD-RAM drive, power supply, and cooling fan. It also describes how to manually remove a DVD disc from the 7210 Model 025 DVD-RAM Drive.

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 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)

Handling Static-Sensitive Devices

Attention: DVD-RAM drives are sensitive to static electricity discharge. When handling a DVD-RAM drive, wrap it in an ESD protective bag to prevent damage.

Take the following precautions:

- Do not remove the DVD-RAM drive from its ESD bag until you are ready to install it.
- Hold the DVD-RAM drive by the frame. Avoid touching the solder joints or pins.
- Handle the DVD-RAM drive carefully to prevent permanent damage.

Removing and Replacing the Cover

To remove the cover from the 7210 DVD-RAM Drive:

1. If a DVD-RAM disc is in the DVD-RAM drive, eject it.
2. Do a controlled system shutdown (refer to the instructions in Chapter 2, "Setting Up the 7210 DVD-RAM Drive," in the *7210 Model 025 DVD-RAM Drive Setup and Operator Guide*).
3. Turn off the power to the 7210 DVD-RAM Drive.

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)

4. Unplug the 7210 DVD-RAM Drive power cable from the electrical outlet.

5. Disconnect the power cable from the 7210 DVD-RAM Drive.

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)

6. Disconnect the SCSI bus cable from the 7210 DVD-RAM Drive.
7. Tilt the 7210 DVD-RAM Drive on its side and remove the four cover mounting screws from the bottom. See Figure 6.
8. Remove the cover by sliding it to the rear (see the directional arrow in Figure 6).

To replace the cover, reverse this procedure.

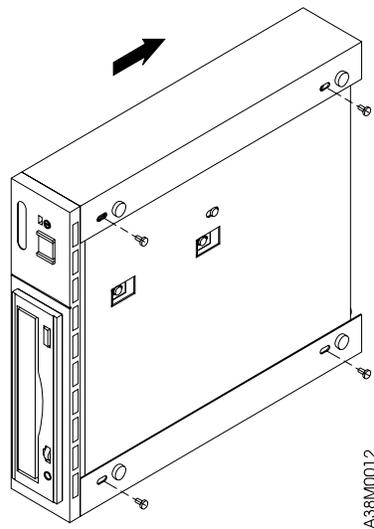
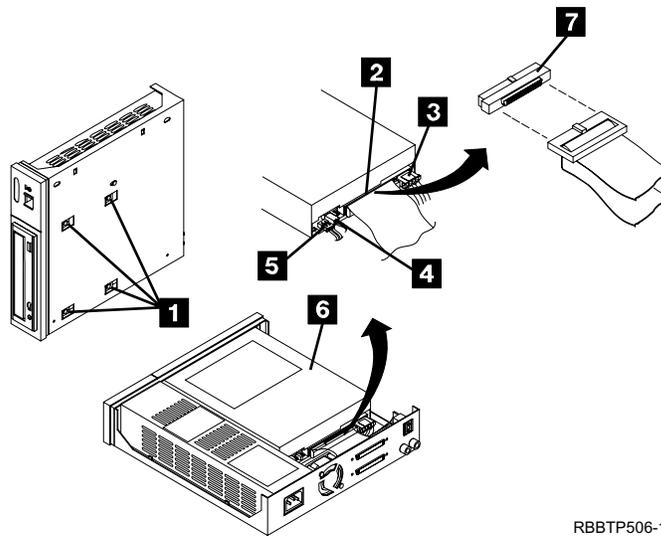


Figure 6. Removing and Replacing the Cover. The 7210 DVD-RAM Drive is shown tilted on its side.

Removing and Replacing the DVD-RAM Drive

To remove the DVD-RAM drive from the 7210 Model 025 DVD-RAM Drive:

1. Perform the cover removal procedure. Refer to “Removing and Replacing the Cover” on page 21.
2. Disconnect the power supply connector (J1) (**3** in Figure 7 on page 23) from the DVD-RAM drive **6**.
3. Disconnect the internal SCSI bus cable **2** from the DVD-RAM drive.
4. Disconnect the internal SCSI address cable **4** from the DVD-RAM drive.
5. Disconnect the audio jack plug **5** from the DVD-RAM drive.
6. Tilt the 7210 DVD-RAM Drive on its side (see Figure 7 on page 23). Support the DVD-RAM drive while removing the four screws **1** that secure the drive to the chassis.
7. Support the drive while returning the 7210 DVD-RAM Drive to its original position.
8. Slide the DVD-RAM drive out the front of the chassis.



RBBTP506-1

Figure 7. Removing and Replacing the DVD-RAM Drive

To replace the DVD-RAM drive, reverse the removal procedure. Make sure to:

- Correctly insert and engage each cable to its proper connector.
- Arrange the cables so that they do not interfere with the cooling fan blades or the replacement of the cover.

Note: The power supply connector J3 is not used in the 7210 DVD-RAM Drive.

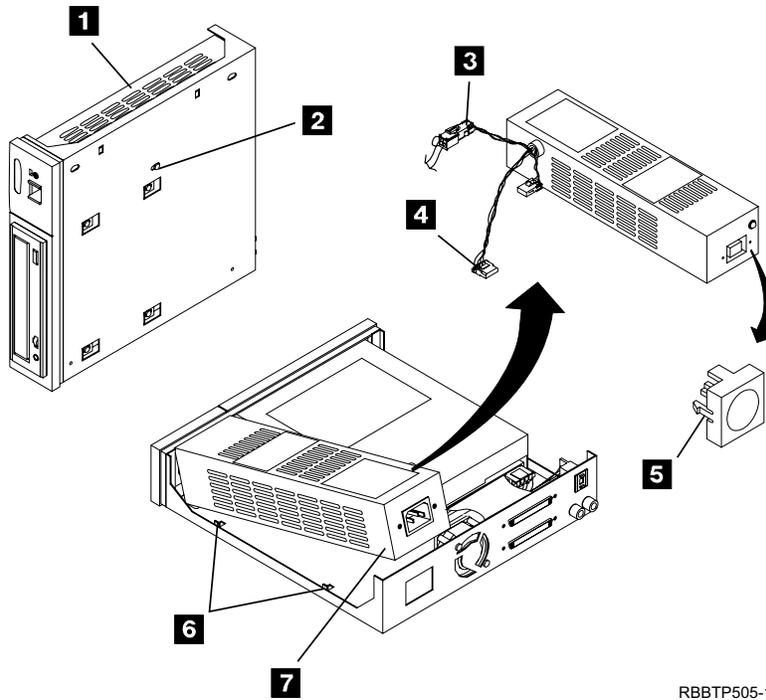
Removing and Replacing the Power Supply

To remove the power supply from the 7210 DVD-RAM Drive:

1. Perform the cover removal procedure. Refer to “Removing and Replacing the Cover” on page 21.
2. Tilt the 7210 DVD-RAM Drive (**1** in Figure 8 on page 24) on its side. Support the power supply while removing the power supply mounting screw **2** from the bottom.
3. Support the power supply while returning the 7210 DVD-RAM Drive to its original position.
4. Disconnect the power supply connector (J1) **4** from the DVD-RAM drive.
5. Disconnect the power supply connector (J2) **3** between the power supply and the cooling fan.
6. Grasp the rear of the power supply **7** and while pressing it toward the front panel, lift the rear of the power supply from the chassis. See Figure 8 on page 24.
7. Push the power switch push button **5** out of the front panel and set it aside.

DANGER

Do not attempt to open the covers of the power supply. Power supplies are not serviceable and are to be replaced as a unit. (RSFTD217)



RBBTP505-1

Figure 8. Removing and Replacing the Power Supply

To replace the power supply, reverse the removal procedure. Make sure to:

- Align the power supply inside the two tabs **6** on the base of the chassis (see Figure 8).
- With its locking features in a horizontal position, insert the power switch push button **5** into the front panel and press until it locks in place.

Note: If the power switch does not work properly, loosen the power supply mounting screw, slide the power supply to the rear of the chassis, and retighten the mounting screw.

- Arrange the cables so that they do not interfere with the cooling fan blades or the replacement of the cover. Ensure that they do not obstruct airflow through the fan.

Note: The power supply connector J3 is not used in the 7210 DVD-RAM Drive.

Removing and Replacing the Cooling Fan

To remove the cooling fan:

1. Perform the cover removal procedure. Refer to “Removing and Replacing the Cover” on page 21.
2. Disconnect the power supply connector (J2) (**2** in Figure 9) between the power supply and the cooling fan.
3. Remove the two screws, lockwashers, and nuts **1** that secure the cooling fan to the rear of the 7210 DVD-RAM Drive.
4. Lift the cooling fan out of the 7210 DVD-RAM Drive.

To replace the cooling fan, reverse this procedure. Make sure that the cooling fan is oriented so that air blows out of the 7210 DVD-RAM Drive.

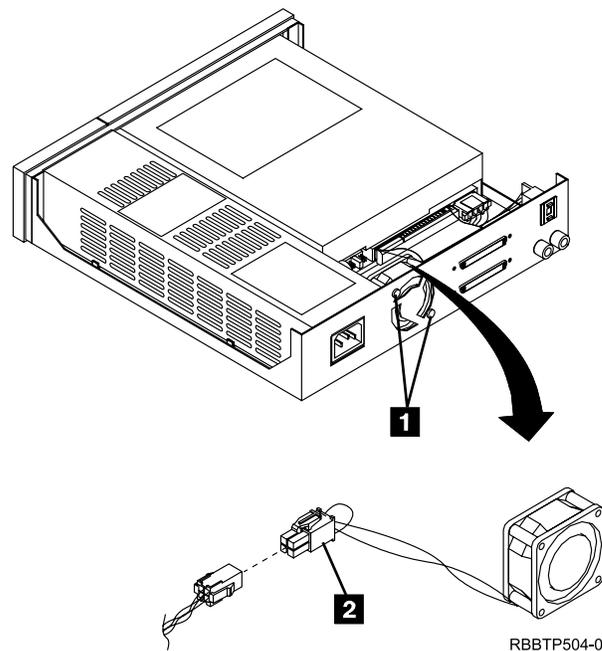


Figure 9. Removing the Cooling Fan

Manually Removing a DVD Disc from the Drive

If a power failure or a DVD-RAM drive failure prevents the DVD disc tray from ejecting, the disc can be removed manually.

To manually remove the DVD disc:

1. Turn off the power to the 7210 DVD-RAM Drive.
2. Insert a solid metal rod (such as a paper clip or bristol wrench) into the manual unload hole until resistance is met, then push to unlatch the DVD disc tray. (Figure 10 shows the manual unload hole **3** in the DVD-RAM drive. The metal rod should have a diameter of 2 mm (0.08 in.) or less.

Note: This step may have to be repeated several times.

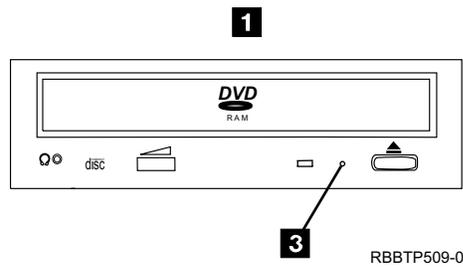


Figure 10. Location of the Manual Unload Hole in the DVD-RAM Drive

3. Gently pull out the DVD disc tray and remove the DVD disc.

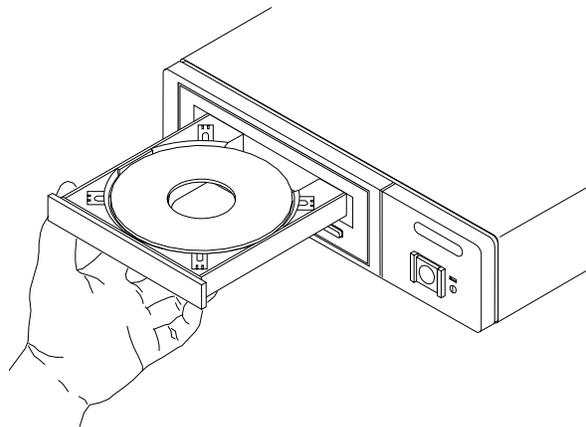


Figure 11. Removing a DVD Disc

Chapter 4. Parts Diagram and Parts List

This chapter provides the parts diagram and parts list required to service the 7210 Model 025 DVD-RAM Drive.

How To Use This Parts List

- AR** (As Required) in the *Units* column indicates that the quantity is not the same for all machines.
- NP** (Non-Procurable) in the *Part Number* column indicates that the part is non-procurable and that the individual parts or the next higher assembly should be ordered.
- NR** (Not Recommended) in the *Units* column indicates that the part is procurable but not recommended for field replacement, and that the next higher assembly should be ordered.
- 00** 00 in the *Asm- Index* column indicates that the part is either not shown or not referenced in the illustration.
- R** (Restricted) in the *Units* column indicates that the part has a restricted availability.

Indent

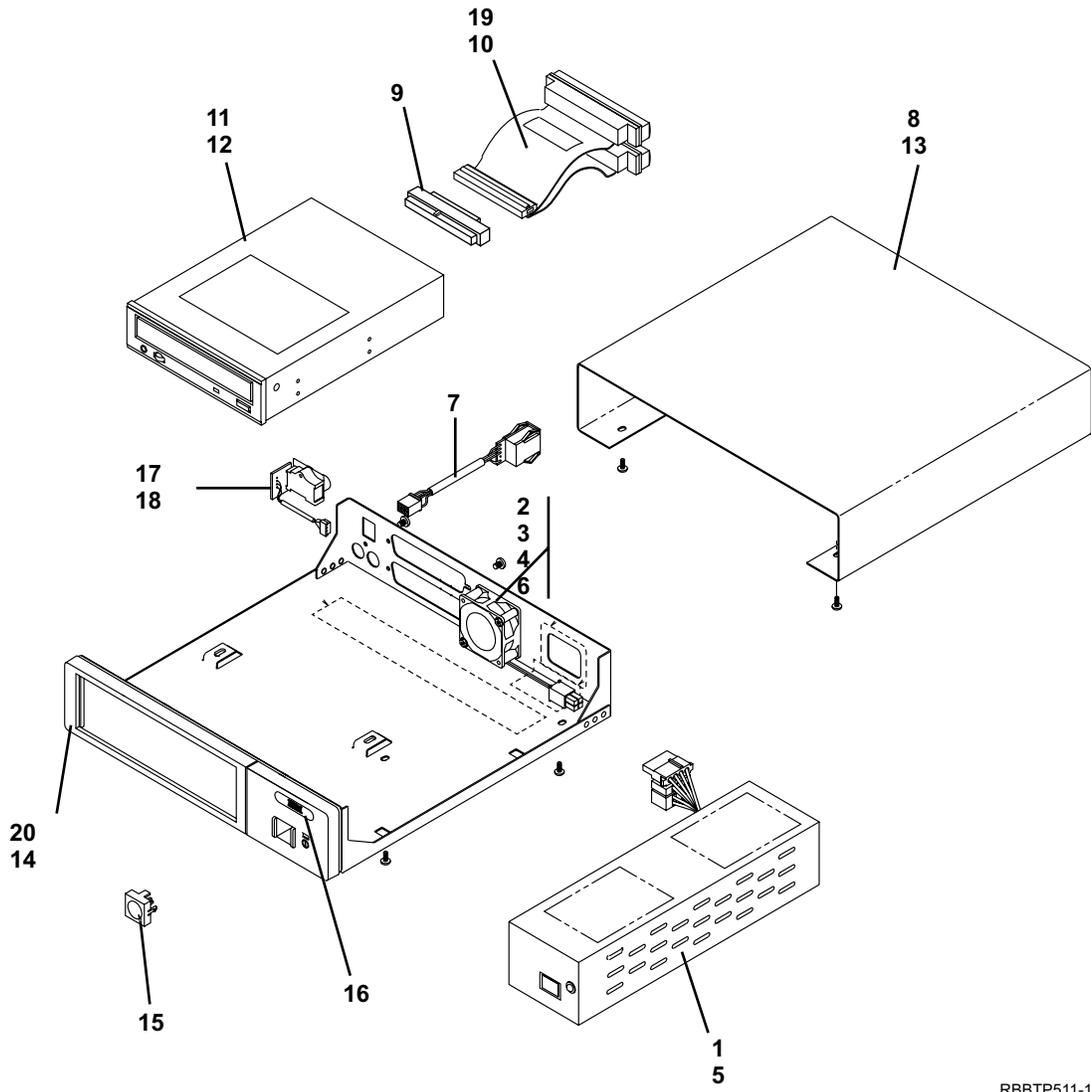
The indenture is marked by a series of dots located before the parts description. The indenture indicates the relationship of a part to the next higher assembly. For example:

Indent	Relationship of Parts
(No dot)	MAIN ASSEMBLY
(One dot)	• Detail or sub assembly parts of a main assembly
(Two dots)	• • Detail or sub assembly part of a one-dot sub assembly
(Three dots)	• • • Detail part of a two-dot sub assembly

Example of Parts Listing

Asm- Index	Part Number	Units	Description
3-	2512667	1	Cover Asm, Rear, Red
	2513714	1	Cover Asm, Rear, White
			For Next Higher Asm, see Assembly 1-2.
-1	5373637	1	•Seal, Top
-2	5356429	2	•Clip, Retaining
-3	1847630	1	•Finger Stock Asm
-4	1847602	NR	••Channel, Finger Stock
-5	5373639	AR	•Seal, Bottom
-6	NP	1	•Cover, Rear, Without Paint
-7	0416629	R	•Screw, Panel

Assembly 1: Parts Diagram



RBFTP511-1

Assembly 1: (continued)

Asm-Index	Part Number	Units	Description
1-1	19P2064	1	Power supply
-2	1622401	2	Nut, cooling fan, M3 hex
-3	1622344	2	Washer, cooling fan, optional P/N 0338169
-4	42F7300	1	Cooling fan
-5	46G2677	1	Screw, power supply, M3 x 6mm
-6	46G2676	2	Screw, cooling fan, M3 x 25mm
-7	87G1816	1	Cable, SCSI address
-8	46G2677	4	Screw, cover
-9	92F0324	1	Interposer
-10	74G8270	1	Cable, SCSI-2 internal
-11	04N5967	1	DVD-RAM drive
-12	46G2677	4	Screw, drive, M3 x 6mm
-13	59H3846	1	Cover (black), includes feet
-14	1622673	2	Screw, bezel
-15	74G8497	1	Push button, power supply
-16	19P3272	1	Logo
-17	19P3276	1	Audio jack assembly
-18	1622673	1	Screw, audio jack
-19	06H8511	4	Screw, internal SCSI cable
-22	59H3844	1	Bezel assembly (black), 7210 DVD-RAM Drive
-00	19P0873	1	Device-to-device SCSI bus cable, 0.7 meter (2 feet)
-00	34L0145	1	Terminator, LVD
-00	81F8902	1	Test CD-ROM disc
-00	19P2410	1	Test DVD-RAM disc
-00	19P0489	1	Cleaning kit (disc and lens)

Appendix. Power Cables

To avoid electrical shock, a power cable with a grounded attachment plug has been provided. Use only properly grounded outlets.

Power cables used in the United States and Canada are listed by Underwriter's Laboratories (UL) and certified by the Canadian Standards Association (CSA). The power cables consist of:

- Electrical cables, type SVT or SJT.
- Attachment plugs complying with National Electrical Manufacturers Association (NEMA) 5-15P, that is:
 - “For 115 V operation use a UL Listed Cable Set consisting of a minimum 18 AWG, Type SVT or SJT three conductor cable 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 three conductor cable 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 C13.

Power cables used in other countries consist of:

- Electrical cables, type HD21.
- Attachment plugs approved by the appropriate testing organization for the specific countries where they are used.
 - “For units set at 230 V (outside of U. S.): Use a Cable Set consisting of a minimum 18 AWG cable and grounding type attachment plug rated 15 A, 250 V. The Cable Set should have the appropriate safety approvals for the country in which the equipment is to be installed and marked 'HAR'.”

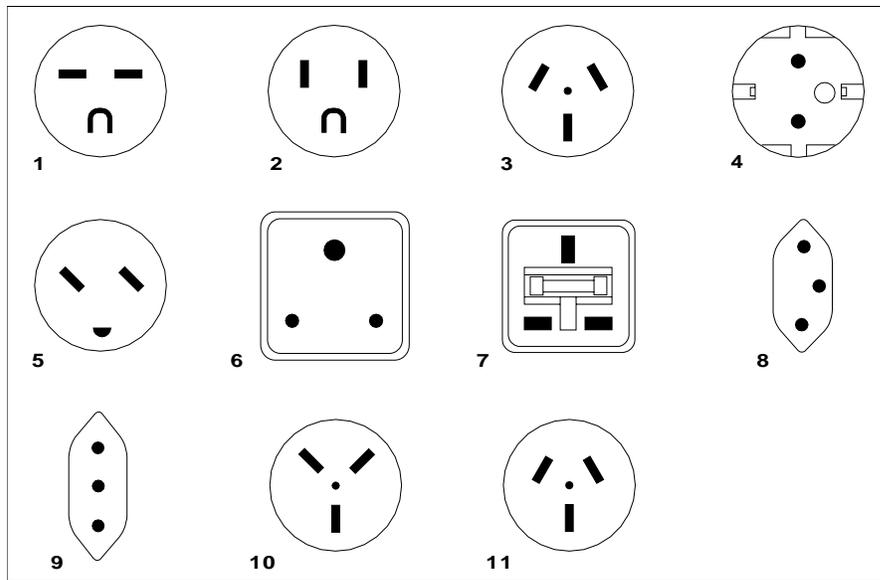
Table 2 lists the power cable part number, the country where the power cable can be used, and an index number to be matched with the receptacles shown in Figure 12 on page 32. If your power cable does not match this information, contact your local dealer.

Table 2. Power Cable Information

Part Number	Country	Index
1838574 Japan	Bahamas, Barbados, Bolivia, Brazil, Canada, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Netherlands Antilles, Panama, Peru, Philippines, Taiwan, Thailand, Tobago, Trinidad, U.S.A. (except Chicago), Venezuela	1
6952300 US/Canada	Bahamas, Barbados, Bermuda, Bolivia, Brazil, Canada, Cayman Islands, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Haiti, Honduras, Jamaica, Japan, Korea (South), Mexico, Netherlands Antilles, Nicaragua, Panama, Peru, Philippines, Puerto Rico, Saudi Arabia, Suriname, Taiwan, Trinidad, U.S.A. (except Chicago), Venezuela	2

Table 2. Power Cable Information (continued)

Part Number	Country	Index
6952301 6 ft Chicago	Chicago, U.S.A.	2
13F9940 Australia	Argentina, Australia, New Zealand, Uruguay	3
13F9979 France	Abu Dhabi, Austria, Belgium, Bulgaria, Botswana, Egypt, Finland, France, Germany, Greece, Iceland, Indonesia, Korea (South), Lebanon, Luxembourg, Macau, Netherlands, Norway, Portugal, Saudi Arabia, Spain, Sudan, Sweden, Turkey, Yugoslavia	4
13F9997 Denmark	Denmark	5
14F0015 South Africa	Bangladesh, Burma, Pakistan, South Africa, Sri Lanka	6
14F0033 United Kingdom	Bahrain, Bermuda, Brunei, Channel Islands, Cyprus, Ghana, Hong Kong, India, Iraq, Ireland, Jordan, Kenya, Kuwait, Malawi, Malaysia, Nigeria, Oman, People's Republic of China, Qatar, Sierra Leone, Singapore, Tanzania, Uganda, United Arab Emirates (Dubai), United Kingdom, Zambia	7
14F0051 Switzerland	Liechtenstein, Switzerland	8
14F0069 Italy	Chile, Ethiopia, Italy	9
14F0087 Israel	Israel	10
6952291 Colombia	Colombia, Paraguay	11



26415-00

Figure 12. Types of Receptacles

Readers' Comments — We'd Like to Hear from You

7210 Model 025 External DVD-RAM Drive
7210 Model 025 DVD-RAM Drive
Service Guide

Publication No. SY44-0080-00

Overall, how satisfied are you with the information in this book?

	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Overall satisfaction	<input type="checkbox"/>				

How satisfied are you that the information in this book is:

	Very Satisfied	Satisfied	Neutral	Dissatisfied	Very Dissatisfied
Accurate	<input type="checkbox"/>				
Complete	<input type="checkbox"/>				
Easy to find	<input type="checkbox"/>				
Easy to understand	<input type="checkbox"/>				
Well organized	<input type="checkbox"/>				
Applicable to your tasks	<input type="checkbox"/>				

Please tell us how we can improve this book:

Thank you for your responses. May we contact you? Yes No

When you send comments to IBM, you grant IBM a nonexclusive right to use or distribute your comments in any way it believes appropriate without incurring any obligation to you.

Name

Address

Company or Organization

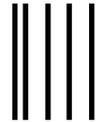
Phone No.



Fold and Tape

Please do not staple

Fold and Tape



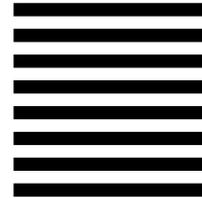
NO POSTAGE
NECESSARY
IF MAILED IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 40 ARMONK, NEW YORK

POSTAGE WILL BE PAID BY ADDRESSEE

International Business Machines Corporation
Information Development
Department 542
3605 Hwy 52 North
Rochester, Minnesota 55901-7829



Fold and Tape

Please do not staple

Fold and Tape



Part Number: 19P3663

Printed in U.S.A.

SY44-0080-00



(1P) P/N: 19P3663

