Note!

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

Second Edition (March, 2001)

This edition, SA41–0050–01, applies to Model 440 of the 7205 Digital Linear Tape 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.
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 106-0032, 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 customer personnel for operating and planning for the specific machines indicated. IBM makes no representations that it is suitable for any other purpose.

---

**Safety and Environmental Notices**

Translations of the danger and caution notices contained in this book can be found in the *IBM Externally Attached Devices Safety Information* manual, SA26-2004. Refer to this book using the safety notice number to find the notice translated into the desired language.

**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)

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.

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
IBM
RISC System/6000
RS/6000

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

This guide describes how to install and use the 7205 Digital Linear Tape Drive. It contains the following chapters:

Chapter 1, “General Information,” describes the 7205 Digital Linear Tape Drive, gives the system requirements, and lists hardware specifications.

Chapter 2, “Setting Up the 7205 Digital Linear Tape Drive,” tells how to install the tape drive.

Chapter 3, “Using the 7205 Digital Linear Tape Drive,” describes the operator controls and indicator lights on the tape drive. It also tells how to load and unload a tape cartridge.

Chapter 4, “Removing the 7205 Digital Linear Tape Drive,” tells how to remove the tape drive after it has been installed.

Chapter 5, “Using the Media,” describes the media to use in the 7205 Digital Linear Tape Drive.

Appendix A, “Power Cables,” provides power cable information for different countries.


Store this guide with your system manuals.

Related Publications

- 7205 Model 440 Digital Linear Tape Drive Service Guide, SY44–0077, provides service and maintenance information for the 7205 Digital Linear Tape Drive.
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, Canada, and Puerto Rico: 1-800-937-3430
  – Other countries: 1-507-253-5192

• If you prefer to send comments electronically, use the following e-mail address:
  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. General Information

The 7205 Digital Linear Tape Drive is a high-performance, high-capacity, streaming tape drive that connects to the host computer to provide additional external storage of data.

This device is available as a desktop model, attaching to selected host computers using a SCSI-II, 68-pin, low voltage differential (LVD) interface.

The 7205 Digital Linear Tape Drive is a half-inch tape drive that can:
- Perform unattended backup of files
- Archive important records

The sections that follow describe the operator controls and indicator lights on the 7205 Digital Linear Tape Drive. This chapter also shows connector locations, lists hardware specifications, and describes how to clean the tape drive.

Figure 1 shows the front view of the 7205 Digital Linear Tape Drive.

Figure 1. Front View of 7205 Model 440 Digital Linear Tape Drive
Product Features

The 7205 Model 440 Digital Linear Tape Drive features the following:

- Drive capacity of up to 80GB\(^1\) per cartridge (at 2:1 compression ratio)

  **Note:** The actual capacity per cartridge varies, depending on the type of data, block size, and streaming. Small block sizes have a significant negative impact on performance and only a minimal negative impact on capacity; therefore 32KB block sizes or greater are recommended for optimum performance.

- Data transfer rate of up to 12MB\(^2\) per second (at 2:1 compression ratio)
- A read/write data cache of up to 8MB for high data rate
- Downward read and write compatibility with tape formats of 10, 15, 20, and 35GB
- Embedded diagnostic software that indicates when cleaning is required, gives diagnostic results, and describes the operating status

System Requirement

The system requirement for the 7205 Digital Linear Tape Drive is a pSeries platform or RS/6000 host system with any AIX operating system at level 4.3.3, or higher and an LVD SCSI adapter.

---

1. 1 GB = 1,000,000,000 bytes.
2. 1 MB = 1,000,000 bytes.
Specifications

The specifications related to the 7205 Digital Linear Tape Drive are illustrated in the following table:

Table 1. Specifications for the 7205 Digital Linear Tape Drive

<table>
<thead>
<tr>
<th>Physical Specifications</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>250 mm (9.8 in.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depth</td>
<td>290 mm (11.5 in.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>122 mm (4.8 in.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>6.0 kg (13 lb)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Power Specifications</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>kVA</td>
<td>0.047</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V ac</td>
<td>100 to 127, or 200 to 240</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hertz</td>
<td>50 to 60</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Btu Maximum</td>
<td>150 Btu/hr (44 watts)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Factor</td>
<td>0.90</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other Specifications</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Altitude</td>
<td>2135 m (7000 ft.)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Recommended Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Factor</td>
</tr>
<tr>
<td>Operating</td>
</tr>
<tr>
<td>Storage</td>
</tr>
<tr>
<td>Shipping</td>
</tr>
<tr>
<td>Temperature</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Relative Humidity</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Maximum Wet Bulb</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Note: The operating limits include media. The storage and shipping limits do not include media. For media storage see "Storage and Shipping Environments" on page 30.

Environment and Usage Guidelines

It is the goal of IBM to provide you with a product that you can configure and use reliably. Tape drives require specific maintenance and environmental conditions to operate optimally over time. Using high quality, data grade media, handling and storing this media properly, operating the tape drive in a clean environment, and keeping the tape drive properly cleaned can help you to avoid problems with your IBM tape drive.

Use the following sections as guidelines when using the 7205 Digital Linear Tape Drive.
Media Grades

IBM uses two different grades of media. Program Transmittal Fixes (PTFs) are supplied on a tape that is designed to be written to only once and read from several times. This tape is not designed to be used as a backup medium.

IBM also sells media designed to be used for storage. The data grade tape sold by IBM is the medium recommended and supported for use in the 7205 Digital Linear Tape Drive. If IBM service personnel analysis indicates a problem with non-IBM media it may be necessary for the customer to replace the media.

Tape Handling and Storage

Most tape is supplied in a sealed cartridge. It is provided this way so that the tape will remain in a clean environment. The tape also is held under proper tension inside the cartridge. If the cartridge is dropped, this tension can be relaxed. Inserting a dropped cartridge into a tape drive can cause incorrect loading and result in a jam. This will ruin the tape and can cause physical damage if the cartridge is not removed properly.

When the tapes are stored, they must be replaced in their protective containers and stored on their end. The storage area must be clean, dry, normal room temperature and away from any magnetic fields. For guidelines to be followed when using DLT tape cartridges, see “Chapter 5. Using the Media” on page 27.

Environmental Issues

Tape drives are designed to operate in a clean environment. Dirt, dust, fibers, and airborne particles can cause problems if allowed to contaminate the tape drive or cartridges. Airborne particles are the most difficult to control. When a tape is installed in the tape drive, the clearance between the heads and the tape is smaller than the width of a speck of dust. Particles can damage the tape or the head if they come in contact with either. IBM offers a tape drive filter enclosure for some systems to solve this problem. The enclosure draws air in through a filter and supplies the tape drive with clean air. Customers are responsible to provide a clean operating environment for the tape drive and system.

Tape Drive Cleaning

No matter how clean the environment, debris may build up on the heads of any tape drive. Every time tape motion occurs, some of the media surface comes off on the heads. Over time, this builds up and causes errors in reading and writing. Customers are responsible to clean the tape drive in accordance with the cleaning information provided with the tape drive.

IBM only recommends and supports the use of IBM cleaning cartridges for IBM tape drives.

Cleaning cartridges can be used a limited number of times. Once a cleaning cartridge has been used to its maximum number of times, the cartridge is considered expired. When cartridges expire, they must be replaced. Never reuse an expired cleaning cartridge as this can allow previously removed dirt to be reintroduced to the tape drive. When you have cleaned the tape drive, mark the usage on the cartridge in order to best determine when your IBM cleaning cartridge has expired.

See “Cleaning the Tape Drive” on page 23 for the proper procedures to be used to clean the 7205 Digital Linear Tape Drive.
**SCSI Hardware Issues**

SCSI bus cables and terminators may affect tape drive performance. IBM cables and terminators are designed specifically to keep the SCSI bus as free of noise as possible. Use of non-IBM cables or terminators may adversely affect the SCSI bus performance. If IBM service personnel analysis indicates a problem with non-IBM cables, it may be necessary for the customer to replace them with the appropriate IBM cables.

**Microcode Updates**

IBM constantly works to provide the best possible tape drive products. To make certain that the drives work their very best, IBM occasionally releases changed microcode for the tape drives. When a microcode change is developed, IBM makes it available to you through the service organization or by electronic delivery.

RS/6000 customers can download microcode changes from the following IBM Web site:

http://www.rs6000.ibm.com/support/micro

Microcode can be installed by your authorized IBM Customer Service Representative or your system administrator.

**Summary**

Your tape drive must be installed in the cleanest possible environment. Additionally, IBM tape drives require high quality, data grade tapes and cleaning on a regular basis. Media must also be stored and handled properly. Improper use, storage or handling of tape drives or media may void your IBM warranty or service agreement.

If a tape drive stops functioning due to a component failure during the tape drive warranty or maintenance time, IBM will replace the tape drive unit. IBM will replace any defective tape drive under the terms and conditions of the IBM warranty or service agreement. It is our objective to work with you to identify the cause of any tape drive problems and provide a solution.
Chapter 2. Setting Up the 7205 Digital Linear Tape Drive

This chapter provides step-by-step instructions on how to properly install the 7205 Model 440 Digital Linear Tape Drive.

**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)

**Note:** If the package arrives damaged, contact your shipper immediately.

**Attention:** The 7205 Digital Linear Tape Drive is a precision device that requires reasonable care in handling to prevent data loss or permanent damage. Avoid bumping or dropping the 7205 Digital Linear Tape Drive.

To unpack the 7205 Digital Linear Tape Drive, simply remove the packing material from the box it was shipped in.

### Performing the Installation

To install the 7205 Digital Linear Tape Drive, complete the following steps.

**Step 1. Using the Inventory Checklist**

Make sure that you received the following items:

- Power cable (for the appropriate cable see the appendix, “Power Cables,” on page 37)
- The External Devices Warranty Information (U.S., Canada, and Puerto Rico only)
- The 7205 Model 440 Digital Linear Tape Drive Setup and Operator Guide (this guide)
- The 7205 Model 440 Digital Linear Tape Drive Service Guide
- The IBM Externally Attached Devices Safety Information manual

One of the following:

- A system-to-device SCSI bus cable and a terminator (if the 7205 Digital Linear Tape Drive is the first external device on the SCSI bus)
- A device-to-device SCSI bus cable (if the 7205 Digital Linear Tape Drive is to be connected to another SCSI device)

- Data cartridge
- Test cartridge
- Cleaning cartridge
Step 2. Checking 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)

Make sure that the electrical outlets you use are properly grounded.

Step 3. Assembling the Materials

Refer to your system management or system hardware manuals to locate the information that you need to connect the 7205 Digital Linear Tape Drive.

Get your system unit books now. You may find the needed information under the topics:
• Installing an external SCSI tape drive
• SCSI adapters
• External SCSI devices

Do not continue until you have located the manual that describes how to:
1. Determine where the SCSI adapter is located (where you make the cable connection).

   Record the adapter location here

2. Determine an unused SCSI address for the 7205 Digital Linear Tape Drive.

   Record the SCSI address here

Notes:

a. IBM recommends that you set the SCSI address for the 7205 Digital Linear Tape Drive in the range of 0 through 6. The SCSI address priorities range from highest to lowest as 7, 6, 5, 4, 3, 2, 1, 0, then 15, 14, 13, 12 11, 10, 9, 8.

b. If you change the SCSI address, you must power off the 7205 Digital Linear Tape Drive, then power on again in order for the new SCSI address to take effect.

Step 4. Setting the SCSI Address

The SCSI address is a unique address that identifies the 7205 Digital Linear Tape Drive to your system unit. Use the SCSI address switch 1 to set the SCSI address of the 7205 Digital Linear Tape Drive. The switch is located on the rear of the tape drive (see Figure 2 on page 9). When setting a SCSI address, do not select one that is already in use.
To set the SCSI address, do the following:

Press the + or − push-button to set the SCSI address switch to the address that you have previously determined in “Step 3. Assembling the Materials” on page 8.

Notes:
1. IBM recommends that you set the SCSI address for the 7205 Digital Linear Tape Drive in the range of 0 through 6. The SCSI address priorities range from highest to lowest as 7, 6, 5, 4, 3, 2, 1, 0, then 15, 14, 13, 12, 11, 10, 9, 8.

2. If you change the SCSI address, you must power off the 7205 Digital Linear Tape Drive, then power on again in order for the new SCSI address to take effect.

Step 5. Placing the 7205 Digital Linear Tape Drive

The 7205 Digital Linear Tape Drive can be located anywhere that is convenient to your system unit. The only restrictions are the length of the power cord and the SCSI cable. **Recommended locations are:**

- Away from the floor
- In a location that is table height
- In a horizontal position (IBM does not support placing the tape drive vertically)
- Where the tape cartridge can be easily inserted
- Where the indicator lights can be easily viewed (for information about indicator lights, see “[Chapter 3. Using the 7205 Digital Linear Tape Drive” on page 15](#))
- In an environment that is free from excessive dust

**CAUTION:**
Be careful when removing or installing this part or unit. This part or unit is heavy, but has a weight smaller than 18 kilograms (39.7 pounds). (RSFTC201)
To place the 7205 Digital Linear Tape Drive, do the following in sequence:
1. Set the tape drive in the location that you have previously determined.
2. Connect the power cable to the 7205 Digital Linear Tape Drive. (Do not plug it into the electrical outlet at this time.)

Some of the external devices that attach to the system unit can be stacked. When stacking external devices, do not place more than 30 pounds on top of the 7205 Digital Linear Tape Drive.

**Step 6. Performing a System Shutdown**

**Attention:** Do not attach the 7205 Digital Linear Tape Drive to a system unit that is powered on. This can damage the 7205 Digital Linear Tape Drive, the system unit, or both.

To perform a system shutdown, do the following:

**Note:** Before doing a controlled shutdown of the system unit, notify other users who may be using the system.

1. If it is on, do a controlled fast shutdown of the system unit by typing `shutdown -F` from the system console. (You must have root authority to perform the shutdown; see your system administrator.) Depending on your system configuration, the shutdown may take several minutes.

**Note:** For additional information about doing a controlled shutdown, refer to your system documentation or see your system administrator.

2. When the message *Halt Completed* displays on the system console, turn off the power to the system unit (this may occur automatically).

3. Turn off the power to all external devices connected to the system unit.

**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 power cables for all external devices and the system unit from their electrical outlets.

**Step 7. Connecting the SCSI Bus Cable**

To connect the SCSI bus cable, do the following:

1. On the rear of the 7205 Digital Linear Tape Drive(1 in Figure 3 on page 11), insert the device connector end of the SCSI bus cable(3) into one of the connectors(3). See Figure 3 on page 11.

2. Push in until the cable is seated.

3. Tighten the two thumbscrews(4) (finger tight).
4. Connect the other end of the SCSI bus cable as follows:
   - If the 7205 Digital Linear Tape Drive is the only device on the SCSI bus, connect the cable to the system unit (see Figure 4).
   - If the 7205 Digital Linear Tape Drive is part of a multiple-device configuration, connect the SCSI cable to the next device (see Figure 5 on page 12).
   - If the 7205 Digital Linear Tape Drive is part of a multiple-device configuration, consisting of both wide and narrow devices, the 7205 Tape Drive must be connected closer to the system on the bus than any narrow devices.

Step 8. Installing the SCSI Terminator

Make sure to install a terminator on the last device in the configuration and ensure the terminator matches the system SCSI adapter type. For example, if the system is using an LVD SCSI adapter, the terminator must also be an LVD type terminator.

To install the SCSI terminator, do the following:

Align the SCSI terminator with the appropriate connector, push in until the terminator is seated, and tighten the thumbscrews finger tight.

- If the 7205 Digital Linear Tape Drive is the only SCSI device on the SCSI bus, install the terminator on one of the dual connectors of the 7205 Digital Linear Tape Drive (see Figure 4).

Figure 3. Connecting the SCSI Bus Cable to the 7205 Digital Linear Tape Drive

Figure 4. Example of Attaching One SCSI Device to the System Unit
If there is more than one device on the SCSI bus, move the terminator to the last device as shown in Figure 5.

Notes:
1. The terminator and the SCSI bus cable can be connected to either the top or bottom SCSI connector on the 7205 Digital Linear Tape Drive.
2. Only one terminator is required on the last device on the bus to terminate the SCSI bus. You do not need to use the terminator shipped with the 7205 Digital Linear Tape Drive if an IBM terminator has been previously installed.

Step 9. Connecting the Power Cables
To connect the power cables, do the following:
1. Plug the 7205 Digital Linear Tape Drive power cable into an electrical outlet.
2. Plug the power cables for all other external devices into electrical outlets.
3. Plug the system unit power cable into an electrical outlet.
4. Turn on the power to all of the external devices except for the 7205 Digital Linear Tape Drive.
5. Turn on the power to the 7205 Digital Linear Tape Drive while watching for the following to occur during the Power-On Self Test (POST):
   a. The lights on the right front panel come on sequentially from top to bottom. All lights stay on for a few seconds.
   b. All lights on the left front panel of the drive turn on at the same time for about 3 seconds, then turn off.
   c. The following lights turn off:
      • Green Operate Handle
      • Green Write Protected
      • Yellow Use Cleaning Tape
      The green Tape in Use light blinks while the tape drive initializes.
   d. After initialization, the 7205 Digital Linear Tape Drive is in one of four states:
      • No cartridge is present
      • A cartridge is present and the handle is down
      • A cartridge is present, but the handle is up (not recommended). The blinking green Operate Handle light will display.
      • The 7205 Digital Linear Tape Drive detects an error

Note: For information about all indicator lights, see Table 2 on page 17.
Note: If the POST does not complete successfully, the 7205 Digital Linear Tape Drive has detected an internal fault. Refer to Chapter 3, “Maintenance Analysis Procedures” in the 7205 Model 440 Digital Linear Tape Drive Service Guide. Do not continue with the installation at this time.

6. Turn on the power to the system unit.

Step 10. Performing the 7205 Digital Linear Tape Drive Checkout Procedure

Note: Use an IBM test cartridge (part number 59H3039) for this procedure. See “Types of Tape Cartridges” on page 28 for more information.

To perform the checkout procedure, do the following:
1. Ensure the 7205 Digital Linear Tape Drive is properly configured to the host system by doing the following:
   a. Log into the host (AIX operating system).
   b. At the system prompt, type `lsdev -Cs scsi` and press Enter. The command lists all of the SCSI devices that are connected to the host. Figure 6 shows an example of the screen that displays. The screen lists:
      1. Device name
      2. Device status
      3. SCSI adapter slot number
      4. Description of the SCSI device
      5. SCSI address

![Figure 6. Screen Display of SCSI Devices Attached to the host](image)

   c. From the list of SCSI devices, identify the 7205 Digital Linear Tape Drive (listed as the Differential SCSI DLT Tape Drive):
      - If the status of the 7205 Digital Linear Tape Drive is displayed as Available, the device has successfully been configured.

      Note: You must have root authority to install or remove the 7205 Digital Linear Tape Drive from the system. To obtain root authority, see your system administrator.
• If the status is not displayed as Available, refer to Chapter 3, “Maintenance Analysis Procedures,” in the 7205 Model 440 Digital Linear Tape Drive Service Guide. For more information about configuring the 7205 Digital Linear Tape Drive to the system software, refer to your AIX or host system manuals.

• Run systems diagnostics on the drive. Refer to your AIX or host system manuals for this procedure.

d. This completes the 7205 Digital Linear Tape Drive installation.

Store the test cartridge and the cleaning cartridge for future use.
Chapter 3. Using the 7205 Digital Linear Tape Drive

This chapter describes the operator controls and indicator lights on the 7205 Digital Linear Tape Drive. It also gives instructions for loading and unloading a tape cartridge, describes how to change the density, and tells how to clean the tape path.

Front View

Figure 7 shows the front of the 7205 Digital Linear Tape Drive.

Status Lights

The following status lights are located on the front panel of the 7205 Digital Linear Tape Drive:

Lights on the Left
10.0/15.0 (density)
20.0 (density)
35.0 (density)
40.0 (density)

Compress
**Lights on the Right**

- Write Protected 📑
- Tape in Use 📑
- Use Cleaning Tape 🔧
- Operate Handle 🔧

The definition of each light is shown in Table 2 on page 17.

**Operator Controls**

The 7205 Digital Linear Tape Drive has the following operator controls.

**Power Switch**

The power switch (1 in Figure 7 on page 15) is a push-button switch that enables the power to be turned on or off. When the 7205 Digital Linear Tape Drive is on, the power-on light is on.

**Note:** The symbol next to the power switch is an International Organization for Standardization (ISO) symbol for a push-button switch.

**Unload Button**

**Note:** The unload button operates only when the 7205 Digital Linear Tape Drive power is on.

The unload button (3 in Figure 7 on page 15) enables a tape cartridge to be removed from the 7205 Digital Linear Tape Drive. To remove a cartridge, press the unload button. After the unload button is pressed, the drive rewinds the tape into the cartridge and illuminates the green Operate Handle light to let you know that the cartridge may be removed.

**Note:** Unloading may take several minutes if the cartridge is at the end of tape.

**Cartridge Insert/Release Handle**

The cartridge insert/release handle (2 in Figure 7 on page 15) enables a cartridge to be loaded or removed. To load a cartridge, lift the handle, insert the cartridge, then lower the handle. To unload the cartridge, reverse this procedure.

**Note:** A tape cartridge cannot be removed until the green Operate Handle light comes on.
Indicators

The 7205 Digital Linear Tape Drive has a power-on light to indicate when the drive is on.

Power-On Light
When the 7205 Digital Linear Tape Drive is turned on, the power-on light comes on and stays on.

Note: During the power on procedure it is normal to hear several seconds of gear noise. This sound is the drive calibrating to ensure the heads are in the correct position.

Definition of Status Lights

For a listing of the status lights located on the front panel of the 7205 Digital Linear Tape Drive, see “Status Lights” on page 15. Table 2 gives the definition of each status light.

Note: The unload button operates only when the 7205 Digital Linear Tape Drive power is on.

Table 2. Definition of Status Light States

<table>
<thead>
<tr>
<th>Status Light</th>
<th>Color</th>
<th>State</th>
<th>Operating Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lights on the Left</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.0/15.0</td>
<td>Green</td>
<td>On</td>
<td>The tape is recorded in 10.0/15.0GB format.</td>
</tr>
<tr>
<td>20.0</td>
<td>Green</td>
<td>On</td>
<td>The tape is recorded in 20.0GB format.</td>
</tr>
<tr>
<td>35.0</td>
<td>Green</td>
<td>On</td>
<td>The tape is recorded in 35.0GB format.</td>
</tr>
<tr>
<td>40.0</td>
<td>Green</td>
<td>On</td>
<td>The tape is recorded in 40.0GB format.</td>
</tr>
<tr>
<td>Compress</td>
<td>Green</td>
<td>On</td>
<td>The compression mode is enabled.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td>The compression mode is disabled.</td>
</tr>
</tbody>
</table>

Note: In a read operation, indicators will reflect the density and compression written on the tape.

<table>
<thead>
<tr>
<th>Lights on the Right</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Write Protected</td>
<td>Green</td>
<td>On</td>
<td>The tape is write protected.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td>The tape is write enabled.</td>
</tr>
<tr>
<td>Tape in Use</td>
<td>Green</td>
<td>Blinking</td>
<td>The tape is moving.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>On</td>
<td>The tape is loaded and ready for use.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td>No cartridge is loaded.</td>
</tr>
</tbody>
</table>
### Table 2. Definition of Status Light States (continued)

<table>
<thead>
<tr>
<th>Status Light</th>
<th>Color</th>
<th>State</th>
<th>Operating Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use Cleaning Tape</td>
<td>Yellow</td>
<td>On</td>
<td>The drive needs cleaning, or the data tape is defective.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Remains on after you unload the cleaning tape.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The cleaning tape failed to clean the drive. Try a new cleaning tape.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>After cleaning, turns on again when you reload the data cartridge.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>There is a problem with the data cartridge. Clean the drive again, then try another data cartridge. If the problem persists, refer to “Maintenance Analysis Procedures” in Chapter 3 of the 7205 Model 440 Digital Linear Tape Drive Service Guide.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Comes on after inserting cleaning cartridge.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The cleaning cartridge has expired. Replace the cleaning cartridge.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td>The cleaning is complete, or cleaning is unnecessary.</td>
</tr>
<tr>
<td>Operate Handle</td>
<td>Green</td>
<td>On</td>
<td>It is safe to operate the cartridge insert/release handle.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Off</td>
<td>Do not operate the cartridge insert/release handle.</td>
</tr>
<tr>
<td>All Lights</td>
<td></td>
<td></td>
<td>- An internal error has occurred. Refer to “Maintenance Analysis Procedures” in Chapter 3 of the 7205 Model 440 Digital Linear Tape Drive Service Guide for more information.</td>
</tr>
<tr>
<td>All Lights on the Left</td>
<td>Blinking</td>
<td></td>
<td>An internal error has occurred. Refer to “Maintenance Analysis Procedures” in Chapter 3 of the 7205 Model 440 Digital Linear Tape Drive Service Guide.</td>
</tr>
<tr>
<td>All Lights on the Right</td>
<td>Blinking</td>
<td></td>
<td>An internal error has occurred. Refer to “Maintenance Analysis Procedures” in Chapter 3 of the 7205 Model 440 Digital Linear Tape Drive Service Guide.</td>
</tr>
<tr>
<td>All lights on the Left AND Right</td>
<td>Blinking</td>
<td></td>
<td>An internal error has occurred. Refer to “Maintenance Analysis Procedures” in Chapter 3 of the 7205 Model 440 Digital Linear Tape Drive Service Guide.</td>
</tr>
</tbody>
</table>

### Loading and Unloading the Tape Cartridge

Before loading the tape cartridge:

- Make sure that the 7205 Digital Linear Tape Drive power is on (the power-on light should be on). For power switch information see “Power Switch” on page 16.
- Make sure that the Operate Handle light is on.
- Be aware that the 7205 Tape Drive may take a long time to calibrate a new tape and become ready. During this time, the cleaning light may be illuminated, but should turn off when the drive is ready. Make sure that you allow enough time for the drive to complete its calibrations.
Loading the Tape Cartridge

Figure 8 shows the procedure for loading the tape cartridge:

**Note:** Before loading the tape cartridge, check the tape leader to ensure it is in the correct position and is not damaged. Refer to "Tape Cartridge Inspection" on page 31 for information on inspecting the tape cartridge leader.

1. Grasp the cartridge insert/release handle at its center and lift it up.
2. Grasp the tape cartridge by the outer edges, with the write-protect switch facing you, and slide the cartridge completely into the opening on the front of the 7205 Digital Linear Tape Drive.
3. Push down the cartridge insert/release handle.

After the cartridge insert/release handle is closed, the Operate Handle light goes off and the green Tape in Use light (see "Status Lights" on page 15) starts blinking. When loading is complete, the green Tape in Use light comes on solid.
Unloading the Tape Cartridge

Use the following procedure to unload the tape cartridge:

**Note:** Remove the cartridge from the drive before turning off the 7205 Digital Linear Tape Drive power. Failure to remove a cartridge can result in cartridge and drive damage. When you remove the cartridge from the drive, return the cartridge to its plastic case to prolong the cartridge life.

1. Press the unload button (see 3 in Figure 9 on page 21) or issue the appropriate system or application software command, such as `tctl -f/dev/rmtl offline`.

**Note:** This software command offloads the tape from the tape path. The green Operate Handle light comes on and you must manually remove the tape.

2. When the green Operate Handle light (2 in Figure 9 on page 21) comes on, lift the cartridge insert/release handle to eject the cartridge.

3. Grasp the tape cartridge and remove it from the tape drive (see 4 in Figure 9 on page 21).

4. Push down the cartridge insert/release handle (5 in Figure 9 on page 21).

5. Return the cartridge to its plastic case to prolong the cartridge life. Refer to “Chapter 5. Using the Media” on page 27 for information on storage and inspection of the tape cartridges.
Figure 9. Unloading the Tape Cartridge
Cleaning the Tape Drive

Attention: The 7205 Digital Linear Tape Drive is designed to determine its own cleaning requirements. It is unnecessary to clean the tape drive unless indicated by the LED.

Use an IBM cleaning cartridge (part number 59H3092) for this procedure. Clean the tape drive when the Use Cleaning Tape light comes on (see Table 2 on page 17).

Notes:
1. Cleaning cartridges used with the 7205 Digital Linear Tape Drive are good for a maximum of 20 uses.
2. Over cleaning can damage the tape drive. Cleaning should only be performed when the drive indicates it is needed by illuminating the Use Cleaning Tape LED.
3. Do not operate the 7205 Digital Linear Tape Drive in a poor air-quality environment. An environment which contains an excessive amount of particulates can damage the drive and media, causing poor performance of the 7205 Digital Linear Tape Drive.

Note:

The IBM DLT cleaning cartridge is shipped with labels to be used for tracking the number of times the cartridge has been used. Each label has 20 small boxes. Slide the label into the edge of the cartridge (see Figure 11 on page 28) and each time the cartridge is used, mark a box with a pen. When all of the boxes have been marked (indicating 20 uses), the cartridge should be discarded.

Loading and Unloading the Cleaning Cartridge

To load the cleaning cartridge:
1. Make sure that the 7205 Digital Linear Tape Drive power is on (the power-on light [ should be on).
2. Make sure that the Operate Handle light [ is on.
3. Check the cleaning cartridge to determine whether the maximum number of uses has been reached. If the label indicates that the cartridge has reached the maximum number of uses, discard the cleaning cartridge and use a new cleaning cartridge.
4. Grasp the cartridge insert/release handle [ at its center and lift it up.
5. If a tape cartridge was in the drive, remove the cartridge from the drive.
6. Grasp the cleaning cartridge by the outer edges, with the write-protect switch [ facing you.
7. Slide the cartridge completely into the opening on the front of the 7205 Digital Linear Tape Drive.


After the cartridge insert/release handle is closed, the Operate Handle light goes off and the green Tape in Use light starts blinking and the cleaning procedure proceeds automatically. When cleaning is complete, the Operate Handle light becomes solid. If the cleaning was successful, the cleaning light be turned off (if it was previously on). If the cleaning operation was not successful, the cleaning light will remain illuminated. If this occurs, remove the cleaning cartridge and retry the procedure using a new cleaning cartridge. To unload the cleaning cartridge:

Note: Remove the cartridge from the drive before turning off the drive. Failure to remove a cartridge can result in cartridge and drive damage. When you remove the cartridge from the drive, return the cartridge to its plastic case to prolong the cartridge life.

1. When the green Operate Handle light (2 in Figure 10) comes on, lift the cartridge insert/release handle (4 in Figure 10) to unload the cartridge.

2. Remove the cartridge.

3. Use a pen to mark one of the use boxes on the cleaning cartridge label. This will help in determining when the usefulness of the cartridge has been depleted.

4. Push down the cartridge insert/release handle (4 in Figure 10).
Chapter 4. Moving or Removing the 7205 Digital Linear Tape Drive

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)

Attention: Damage as a result of improper handling may void your equipment warranty.

Removal Checklist

When moving or removing the 7205 Model 440 Digital Linear Tape Drive, perform the following steps:

Attention: Failure to inform the operating system before you add or delete a device may result in data loss or a system fault.

Note: If loaded, remove the tape cartridge from the drive by pressing the unload button while the 7205 Digital Linear Tape Drive power is on. If the cartridge does not unload, see “Manually Removing a Tape Cartridge” in Chapter 4 of the 7205 Model 440 Digital Linear Tape Drive Service Guide, SY44-0077.

Attention: Failure to perform the following steps in sequence before you add or delete a device may result in data loss or a system fault.

1. Remove the 7205 Digital Linear Tape Drive from the system configuration (for instructions, refer to your system manuals).
2. If it is on, do a controlled shutdown of the system unit. See “Step 6. Performing a System Shutdown” on page 10.
3. Turn off the power to the system unit.
4. Turn off the power to the 7205 Digital Linear Tape Drive.
5. Turn off the power to all external devices attached to the system.
6. Unplug the system unit power cable from the electrical outlet.
7. Unplug the power cable for all external devices, including the 7205 Digital Linear Tape Drive, from the electrical outlet.

Attention: When SCSI bus cables are connected to a system unit, they must also be connected to a device. Do not leave the SCSI bus cable connected to the system if the device for that cable has been removed.
8. Disconnect the SCSI bus cable from the 7205 Digital Linear Tape Drive.
9. Ensure that the terminator is on the last device on the SCSI bus (see “Step 8. Installing the SCSI Terminator” on page 11).
10. Remove the 7205 Digital Linear Tape Drive and place it in the new location.
11. Reinstall the 7205 Digital Linear Tape Drive (see “Chapter 2. Setting Up the 7205 Digital Linear Tape Drive” on page 7).
Chapter 5. Using the Media

**Note:** If a prerecorded tape is used and the Write From Beginning of Tape (BOT) command is issued, all data that was on the tape before the write command was issued will be lost. Density settings will also be lost, because new settings will be set when the Write from BOT command is issued.

For read operations of prerecorded tape media, the recorded density will be read back. For write operations, the tape media can be recorded using any of the supported densities of the loaded tape type from BOT, or the default density of the loaded tape type. For write append operations (adding new data to the end of the prerecorded data), the prerecorded data density will be used.

Table 3 gives tape cartridge densities and capacities.

**Table 3. Tape Cartridge Capacity and Density**

<table>
<thead>
<tr>
<th>Type of Cartridge Supported</th>
<th>Density Format</th>
<th>Native Data Capacity</th>
<th>Compressed** Data Capacity</th>
<th>Density Setting in Decimal</th>
<th>Density in Hexadecimal (Reference Only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DLTtapeIII</td>
<td>DLT2000</td>
<td>10.0GB</td>
<td>20.0GB (default for drive)</td>
<td>25</td>
<td>19h</td>
</tr>
<tr>
<td>DLTtapeIIIxt</td>
<td>DLT2000xt</td>
<td>15.0GB</td>
<td>30.0GB (default for drive)</td>
<td>25</td>
<td>19h</td>
</tr>
<tr>
<td>DLTtapeIV</td>
<td>DLT4000</td>
<td>20.0GB</td>
<td>40.0GB</td>
<td>26</td>
<td>1Ah</td>
</tr>
<tr>
<td></td>
<td>DLT7000</td>
<td>35.0GB</td>
<td>70.0GB</td>
<td>27</td>
<td>1Bh</td>
</tr>
<tr>
<td></td>
<td>DLT8000</td>
<td>40.0GB</td>
<td>80.0GB (default for drive)</td>
<td>65</td>
<td>41h</td>
</tr>
</tbody>
</table>

**Note:** This drive is very sensitive to block size. For example, using a block size of 1024 and backing up 32GB of data will take approximately 22 hours. 32GB of data backed up at a block size of 30,000 will take approximately 2 hours. Small block sizes have a significant impact on performance, but only a minimal impact on capacity.

Users should ensure the block size they select is supported by their application.

**Compression** will depend upon the type of data. A compression ratio of 2:1 is assumed for this compressed capacity.

**Note:** The 7205 Tape Drive only supports the data densities listed in Table 3. Data cartridges written in other formats will not be recognized by the drive and these cartridges will not be readable by the 7205 Model 440 Digital Linear Tape Drive. The 7205 Tape Drive will also overwrite any existing unrecognized format data when a write command is issued.

**Changing Tape Density**

**Note:** Refer to *AIX V4 System Management Guide: Operating Systems and Devices* for more information on changing the tape density.

© Copyright IBM Corp. 2001
Types of Tape Cartridges

The 7205 Digital Linear Tape Drive is shipped with a data cartridge (part number 59H3040), a test cartridge (part number 59H3039), and a cleaning cartridge (part number 59H3092).

Note: IBM only supports the use of IBM media.

Data Cartridge

Use the data cartridge for saving or restoring your programs or data. Place the label in location 1 as shown in Figure 11.

![Figure 11. Placement of Label on the Data Cartridge](image)

Test Cartridge

Reserve the specially labeled test tape cartridge for use on the drive while performing diagnostics. Do not use it to save or restore programs or data.

Cleaning Cartridge

Use the specially labeled cleaning cartridge to clean the 7205 Digital Linear Tape Drive. For more information see "Cleaning the Tape Drive" on page 22.

Note: Cleaning cartridges are good for a maximum of 20 uses.

To order additional cartridges, refer to "Appendix B. Ordering Tape Cartridges" on page 39.
Recommendations for Data Cartridge Usage

Use the following handling guidelines and conduct careful inspections of the tape cartridges on a regular, ongoing basis. By adhering to these guidelines and making sure that the tape cartridges are stored within the specified environmental limits, the chance of experiencing problems due to tape cartridges will be greatly minimized.

- Use only recommended data cartridges with the 7205 Digital Linear Tape Drive.
- **Before using a DLT cartridge, inspect it carefully as described in “Tape Cartridge Inspection” on page 31.**
- Do not drop or bump the data cartridge; this may dislodge or damage its internal components. Cartridges that have been dropped should be thoroughly inspected prior to insertion into a tape drive.
- Store data cartridges vertically and in their plastic cases.
- When carrying the tape cartridges in their cases, always orient the cases so that the grooves in the cases interlock. This prevents the cases from slipping apart and falling.
- Do not carry tape cartridges loosely in a box or any other container. Allowing cartridges to hit together exposes the cartridges to unnecessary physical shock(s).
- Never stack the tape cartridges in stacks of more than five (5).
- Do not place data cartridges near electromagnetic interference sources, such as terminals, motors, and video or X-ray equipment; data on the tape may be altered.
- Avoid opening the cartridge door; this may expose the tape to contamination or physical damage.
- Do not touch the tape or tape leader. Natural skin oils can contaminate the tape and impact tape performance.
- Always observe the proper environmental conditions for the storage of tape cartridges. Refer to the cartridge reference card supplied with each cartridge.
- Do not expose the tape cartridge to excessive moisture or prolonged direct sunlight.
- Do not operate in a dusty environment.
- Clean the 7205 Digital Linear Tape Drive whenever the Use Cleaning Tape light comes on. For more information, see “Cleaning the Tape Drive” on page 22.
- Do not adhere labels to a cartridge anywhere except in the slide-in slot (see Figure 11 on page 28). Never apply adhesive labels or POST-IT notes on the top, side, or bottom of the tape cartridge. Only use the slide-in type labels provided with each cartridge.
Storage and Shipping Environments

Before using a tape cartridge, let it acclimate to the operating environment by placing the cartridge in the operating environment for as long as it has been away from the environment or for 24 hours, whichever is less. (To determine the appropriate operating environment, see “Specifications” on page 3.)

Acclimation is necessary for any data cartridge exposed to a different humidity environment or to temperature changes of 11°C (20°F) or more.

The recommended environment for storage and shipment of data cartridges is shown in Table 4.

Table 4. Recommended Environment for Data Cartridges

<table>
<thead>
<tr>
<th>Environmental Factor</th>
<th>Storage</th>
<th>Shipping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>5°C to 45°C (41° to 113°F)</td>
<td>−17 to 49°C (−1 to 120°F)</td>
</tr>
<tr>
<td>Relative Humidity (noncondensing)</td>
<td>20 to 80%</td>
<td>20 to 80%</td>
</tr>
<tr>
<td>Maximum Wet Bulb</td>
<td>26°C (79°F)</td>
<td>26°C (79°F)</td>
</tr>
</tbody>
</table>

Setting the Write-Protect Switch

The position of the write-protect switch on the tape cartridge determines when you can write to the tape.

- When you slide the switch 1 to the left, data can be read, but not be written, to the tape.
- When you slide the switch 1 to the right, data can be written to and read from the tape.

Figure 12 shows the write-protect switch on the tape cartridge.
Tape Cartridge Inspection

Tape cartridges should be inspected for damage and proper tape leader alignment before each use. Use the following sections as guidelines for inspecting the DLT tape cartridge.

**Inspection Frequency**

DLT tape cartridges should be inspected:

- Before being inserted into a tape drive.
- If a cartridge has been dropped or subjected to a hard physical shock.
- If a tape drive becomes inoperable after loading a tape cartridge.
- If a shipment of tape cartridges is received that shows any signs of shipping damage.

**Inspection Procedure**

Use the following steps to inspect the DLT tape cartridge:

1. Check for proper operation of the tape cartridge Write Protect Switch. This sliding switch should move back and forth with a definite snap. The orange tab should be visible when the tape cartridge is set to enable Write Protection.
2. Look at the tape cartridge for any obvious signs of cracks or physical damage. Look for broken or missing parts.
3. Gently shake the tape cartridge. Listen for any rattling or sounds of any loose pieces inside the cartridge. If sounds of loose parts are heard, dispose of the cartridge and do not use it.
4. Hold the tape cartridge so that the end of the cartridge that is normally inserted into the tape drive is facing you (as shown in Figure 13). Inspect the small opening on the left-hand side of the tape cartridge. In the opening, you should see a small plastic tab (typically white colored). This tab is one of two cartridge reel locks. The reel locks can be damaged if a cartridge is dropped or mishandled.

**Note:** If either reel lock is not visible, dispose of the cartridge and do not use it.

*Figure 13. Checking the Cartridge Reel Lock*
5. Look at the bottom of the tape cartridge as shown in Figure 14. Inspect the small opening on the right-hand side of the tape cartridge. In the opening, you should see a small plastic tab (typically white colored). This tab is one of two cartridge reel locks. The reel locks can be damaged if a cartridge is dropped or mishandled.

**Note:** If either reel lock is not visible, dispose of the cartridge and do not use it.

6. Make sure the spring loaded cartridge hub is centered within the circular opening of the cartridge. Gently press the hub and make sure it springs back into place and is centered.

**Note:** If the hub is not centered or does not spring back, dispose of the cartridge.

7. Inspect the tape leader that is inside the cartridge. To enable inspection, the cartridge door must be opened. Open the door by using your thumb to gently depress the door locking tab located at the corner of the cartridge. With the tab depressed, gently swing open the cartridge door. With the door open, you should be able to see the tape leader (see Figure 15 on page 33).
8. Ensure the tape leader is not pulled too far into the tape cartridge. If the tape leader has been pulled into the cartridge, the DLT drive cannot hook the tape and use the cartridge. Also, make sure the tape is not loosely wound on the cartridge reel (see Figure 16).

9. The tape leader loop should be in the correct position (see Figure 16) and sticking out about \(\frac{1}{4}\) inch from the tape reel outer diameter (see Figure 17 on page 34).
10. Inspect the tape leader and ensure that it is not damaged, torn, or bent.

Figure 17. Side View of Leader Loop in the Correct Position
Note: If the tape or leader appears to be damaged (see Figure 18), dispose of the cartridge and do not use it.

Figure 18. Damaged Leader Loop on a Tape Cartridge
Appendix A. 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.”


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 5 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 19 on page 38. If your power cable does not match this information, contact your local dealer.

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Country</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>1838574 Japan</td>
<td>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</td>
<td>1</td>
</tr>
<tr>
<td>6952300 US/Canada</td>
<td>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</td>
<td>2</td>
</tr>
<tr>
<td>6952301 6 ft Chicago</td>
<td>Chicago, U.S.A.</td>
<td>2</td>
</tr>
<tr>
<td>13F9940 Australia</td>
<td>Argentina, Australia, New Zealand, Uruguay</td>
<td>3</td>
</tr>
</tbody>
</table>
Table 5. Power Cable Information (continued)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Country</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>13F9979</td>
<td>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</td>
<td>4</td>
</tr>
<tr>
<td>13F9997</td>
<td>Denmark</td>
<td>5</td>
</tr>
<tr>
<td>14F0015</td>
<td>Bangladesh, Burma, Pakistan, South Africa, Sri Lanka</td>
<td>6</td>
</tr>
<tr>
<td>14F0033</td>
<td>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</td>
<td>7</td>
</tr>
<tr>
<td>14F0051</td>
<td>Liechtenstein, Switzerland</td>
<td>8</td>
</tr>
<tr>
<td>14F0069</td>
<td>Chile, Ethiopia, Italy</td>
<td>9</td>
</tr>
<tr>
<td>14F0087</td>
<td>Israel</td>
<td>10</td>
</tr>
<tr>
<td>6952291</td>
<td>Colombia, Paraguay</td>
<td>11</td>
</tr>
</tbody>
</table>

Figure 19. Types of Receptacles
Appendix B. Ordering Tape Cartridges

Table 6 lists the tape cartridges that you can order for the 7205 Model 440 Digital Linear Tape Drive. IBM Media Distribution North America will serve the U.S., Canada, Latin America, and Asia Pacific. IBM Supplies Distribution will serve Europe, the Middle East and Africa. To order media or to obtain the name of the nearest authorized distributor or dealer, IBM customers should call 1–888–IBM-MEDIA.

Table 6. Tape Cartridges for the 7205 Model 440 Digital Linear Tape Drive

<table>
<thead>
<tr>
<th>IBM Part Number</th>
<th>Type of Cartridge</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>59H3411</td>
<td>DLTtapeIIIxt Cartridge</td>
<td>549 m (1800 ft)</td>
</tr>
<tr>
<td>59H3040</td>
<td>DLTtapeIV Cartridge</td>
<td>549 m (1800 ft)</td>
</tr>
<tr>
<td>59H3092</td>
<td>Cleaning Cartridge</td>
<td>--</td>
</tr>
</tbody>
</table>
## Readers’ Comments — We’d Like to Hear from You

7205 Model 440 Digital Linear Tape Drive
7205 Model 440
Digital Linear Tape Drive
Setup and Operator Guide

Publication No. SA41-0050-01

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

<table>
<thead>
<tr>
<th></th>
<th>Very Satisfied</th>
<th>Satisfied</th>
<th>Neutral</th>
<th>Dissatisfied</th>
<th>Very Dissatisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall satisfaction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th></th>
<th>Very Satisfied</th>
<th>Satisfied</th>
<th>Neutral</th>
<th>Dissatisfied</th>
<th>Very Dissatisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accurate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Easy to find</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Easy to understand</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Well organized</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Applicable to your tasks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Name</th>
<th>Address</th>
<th>Company or Organization</th>
<th>Phone No.</th>
</tr>
</thead>
</table>