



100/200 GB LTO Internal Tape Drive

User's Guide

Be sure to read the important
maintenance information on page 2-1.

Note: Before using this information and the product it supports, be sure to read the information under Appendix H, "Product warranty and notices" on page 2-12.

First Edition (June 2000)

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Before installing this product, read the Safety Information.

مج، يجب قراءة دات السلامة

Antes de instalar este produto, leia as Informações de Segurança.

在安装本产品之前，请仔细阅读 **Safety Information** (安全信息)。

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

Ennen kuin asennat tämän tuotteen, lue turvaohjeet kohdasta Safety Information.

Avant d'installer ce produit, lisez les consignes de sécurité.

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

Πριν εγκαταστήσετε το προϊόν αυτό, διαβάστε τις πληροφορίες ασφάλειας (safety information).

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

A termék telepítése előtt olvassa el a Biztonsági előírásokat!

Prima di installare questo prodotto, leggere le Informazioni sulla Sicurezza

製品の設置の前に、安全情報をお読みください。

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

Пред да се инсталира овој продукт, прочитајте информацијата за безбедност.

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

Les sikkerhetsinformasjonen (Safety Information) før du installerer dette produktet.

Przed zainstalowaniem tego produktu, należy zapoznać się z książką "Informacje dotyczące bezpieczeństwa" (Safety Information).

Antes de instalar este produto, leia as Informações sobre Segurança.

Перед установкой продукта прочтите инструкции по технике безопасности.

Pred inštaláciou tohto zariadenia si pečítajte Bezpečnostné predpisy.

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

Antes de instalar este producto lea la información de seguridad.

Läs säkerhetsinformationen innan du installerar den här produkten.

安裝本產品之前，請先閱讀「安全資訊」。

About this book

This manual contains information on the IBM 100/200 GB LTO Internal Tape Drive. It is divided into the following parts:

Part 1: Installation, use, and maintenance guide

This section contains the product description, installation and operating instructions, and maintenance information in the following languages:

- English
- German
- French
- Spanish
- Italian
- Brazilian Portuguese
- Traditional Chinese
- Japanese

Part 2: Appendixes

This section contains power-on self-test sequence, problem-solving, service, warranty, and notice information.

Be sure to retain your proof of purchase. It might be required for warranty service.

<p>Note: The illustrations in this manual might be slightly different from your hardware.</p>
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Product registration

Thank you for purchasing OPTIONS by IBM®. Please take a few moments to register your product and provide us with information that will help IBM to better serve you in the future. Your feedback is valuable to us in developing products and services that are important to you, as well as in developing better ways to communicate with you. Register your option on the IBM Web site at:

<http://www.ibm.com/pc/register>

IBM will send you information and updates on your registered product unless you indicate on the Web site questionnaire that you do not want to receive further information.

Part 1: Installation and user's guide

This guide contains product description, hardware and software installation instructions, and product use and maintenance information. For information on solving problems, see Appendix E, "Problem solving" on page 2-10.

Product description

The IBM® 100/200 GB¹ LTO Internal Tape Drive is a fast/wide Ultra2 (low voltage differential) SCSI tape drive for backing up and restoring data and archiving files. These files can include multimedia, imaging, transaction processing, large databases, and other storage-intensive applications. Each tape cartridge can store up to 100 GB of data (uncompressed), or up to 200 GB of data (compressed), assuming a 2:1 compression ratio.

In addition to this book, the option package contains:

- IBM 100/200 GB LTO Internal Tape Drive
- Mounting screws
- Jumpers
- Data cartridge
- Backup application CDs (trial versions)
- Safety Information manual
- Cleaning cartridge
- Device driver diskette

Contact your place of purchase if an item is missing or damaged. Be sure to retain your proof of purchase and packing material. They might be required to receive warranty service.

Software description

The IBM® 100/200 GB LTO Internal Tape Drive includes trial-version backup application CDs. These CDs contain popular backup and restore applications for Microsoft® Windows NT®, Novell NetWare, and other operating systems. You can install the application you choose for your computer system by following the installation instructions that come with the CD you select. However, these trial versions of the software expire after 30 to 90 days, depending on the application you use.

You can use the trial period to determine the best application for your specific computer configuration. For information on purchasing a permanent installation copy of the desired tape drive backup application, go to the IBM tape drive Web site at

¹ GB equals approximately 1 000 000 000 bytes.

<http://www.ibm.com/pc/us/solutions/accessories/tapedrives.html> and follow the software links.

The CDs also contain backup applications that are used with other products but are not applicable to the 100/200 GB LTO Internal Tape Drive. Supported tape drive configurations can be found on the IBM Netfinity® Server Compatibility Web page at <http://www.ibm.com/pc/compat>

Installation requirements

To install this drive, you must have the following:

- Low voltage differential (Ultra2) or a single-ended (SE)² SCSI host adaptor.
- Documentation for your computer, SCSI bus adapter, or external enclosure
- An Ultra2 LVD active terminator if you are installing the tape drive at the end of an Ultra2 LVD SCSI device chain³, or an SE active terminator if you are installing the tape drive at the end of an SE SCSI device chain³
- Phillips and flat blade screwdrivers for the mounting screws, and for opening your computer
- Flat-nose pliers (optional) to install and remove jumpers
- An available 5.25-inch full high drive bay

² This tape drive can be installed on a single-ended (SE) SCSI device chain, but doing so might limit the performance of the drive.

³ SCSI termination might be provided with your computer or SCSI adapter. Refer to the documentation that comes with your computer or SCSI adapter for more information.

Installing the drive

This section contains information on installing the tape drive in IBM servers and in other computers.

Installing the drive in IBM servers

The tape drive is compatible with the IBM Netfinity 5500 M20, 5600, 6000R, 7100, 7600, and 8500R possibly other⁴ servers. Refer to the documentation that comes with the server for instructions on installing the tape drive

If you are using a Netfinity 6000R server, you must install the tape drive in a SCSI external storage enclosure such as the IBM 3551-001 or IBM 3503-BOX.

Installing the drive in other computers

Follow these steps to install the tape drive in other computers.

Step 1. Selecting a SCSI ID

Each device on a SCSI bus must have a unique SCSI ID. You can select a SCSI ID from 0 to 6 for the tape drive. The SCSI ID must be supported by your SCSI adapter. Refer to your SCSI adapter documentation for the range and the relative priority of the IDs supported. The tape drive is shipped with the SCSI ID preset to 5.

Follow these guidelines to select a SCSI ID:

- Assign the tape drive to one of the higher priority IDs available (0–6).
- Assign the lower priority ID numbers (8–15) to those devices that are most often used or are faster than other devices in the chain.
- Do not assign an ID of 7, because this is usually used as the SCSI adapter ID.

Depending on your computer, there are several ways to view your current SCSI ID settings:

- For many IBM computers, press F1 during the startup after the memory check completes. Other adapters show SCSI settings when you press Ctrl+A. Check the documentation that comes with your computer or SCSI adapter for information on how to view configuration information.
- Use SCSI adapter utility programs, if available.
- Inspect the installed SCSI devices to see how the jumpers that determine the IDs are set.

⁴ System compatibility changes on a regular basis. Refer to the Netfinity Server Compatibility Web page at <http://www.ibm.com/compat> for the latest information.

Step 2. Preparing for installation

To prepare for installation:

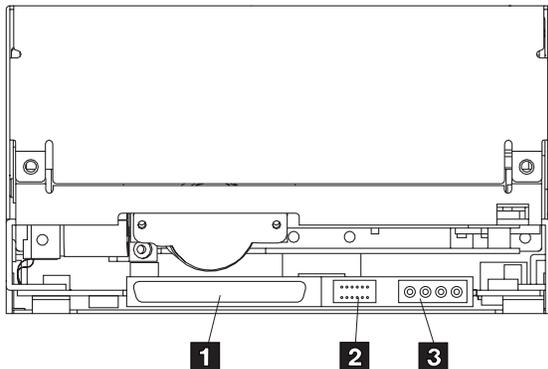
1. Unpack the tape drive and store the packaging. You will need the packaging if you return the drive for service.
2. If you are installing the drive in an external storage enclosure, turn off the enclosure.
3. Turn off all attached devices.
4. Turn off the computer.
5. Disconnect all cords from the computer and all attached devices; then open the computer. For specific information on opening your computer, refer to the documentation that comes with your computer.

Attention: Tape drives are sensitive to static electricity discharge. The drives are wrapped in a static-protective bag to prevent damage.

6. Before opening the static-protective bag containing the tape drive, touch the bag to an unpainted metal surface on the computer for at least two seconds. Remove the drive from the static-protective bag. If you must put the drive down, place the drive on the static-protective bag. Do not touch any exposed components of the tape drive. Instead, handle it carefully by the edges.

Step 3. Setting the SCSI ID

Refer to the following diagram when setting the SCSI ID.



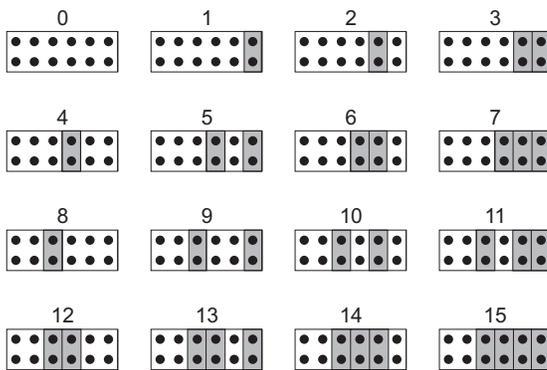
- 1** SCSI connector
- 2** SCSI ID connector
- 3** Power connector

Notes:

1. When setting the SCSI ID, use the jumpers that come with the tape drive.
2. If your enclosure uses a remote SCSI ID switch, remove the jumpers from the jumper pins on the tape drive and connect the remote switch.

1. Set the SCSI ID.

- a. Locate the SCSI ID connector **2**.
- b. Decide on the SCSI ID number you want before you attach the SCSI bus cable to the host. Make sure that the ID number you want is not already being used by another device.
- c. Find the jumper pin setting that corresponds to the SCSI ID number you choose; then place jumper pins on the SCSI ID blocks as shown. You can use a pair of flat-nose pliers to place the jumpers on the jumper pins.



2. Terminate the SCSI bus.

If the drive is the last device on the SCSI bus, you must terminate the drive.

To terminate the bus internally, locate one of the jumpers shipped with the 100/200 GB LTO Internal Tape Drive and place it on the SCSI ID connector as shown.



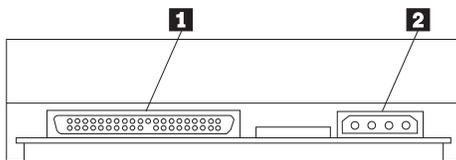
Step 4. Mounting the drive

Mount the tape drive; then attach the SCSI and power cables to it. If there is insufficient working space to attach the connectors after mounting the drive, attach the cables first. To mount the drive, follow these steps:

1. Locate an available 5.25-inch bay or space in your computer to mount the tape drive. Remove the cover plate from the bay selected. Place the drive horizontally or vertically.
2. Align the drive-bay screw holes with the threaded holes in the drive housing. When you mount the tape drive, follow these guidelines:
 - Ensure that no objects such as screw heads, cables, or adjacent devices are pressing against the frame.
 - Ensure that nothing blocks the ventilation slots on the bottom and rear of the tape drive.

3. Insert a screw through each of the drive-bay holes into the threaded holes in the drive and tighten the screws with a screwdriver. Use only the screws that come with the tape drive. Other screws might be too long and cause electrical shorts.

Step 5. Attaching cables



The rear tape drive connections are:

- 1** SCSI cable connector
- 2** Power connector

To attach the SCSI and power cables to the tape drive:

1. Locate the SCSI cable on your computer (a 68-pin ribbon cable with one end connected to the SCSI adapter) and find the next available connector that is farthest from the adapter. Use all empty bus connectors beginning with the one farthest from the adapter to ensure better signal quality.

Note: The SCSI adapter might be part of the computer system board or might be an adapter installed in an expansion slot.

2. Attach the SCSI cable from your computer to the tape drive 68-pin SCSI connector **1**. The SCSI cable connector at the end of the SCSI cable will attach to the drive only one way. Do not force the cable onto the drive.

Attention: Do not force the power cable into the tape drive power connector. If the power cable is upside down and you force the connection, you might damage the drive.

3. Connect the power cable connector to the four-pin connector **2** on the tape drive as shown in the illustration. If all the power cables are in use, purchase a dc Y-splitter cable, which is available at most electronics stores, and split a connection to make a connection available for the tape drive.

Step 6. Completing the installation

Check your work before closing the computer.

1. Be sure that the power and SCSI connectors are securely attached. Be sure that the cables are neatly routed.
2. Replace the computer cover and secure it in place. Reconnect the power cords and cables.

Step 7. Turning on the device

Turn on all attached devices; then turn on your computer. The tape drive performs a power-on self-test (POST) within 15 seconds and then performs a drive reset.

Step 8. Updating the configuration

For most computers, the configuration-setup utility program automatically recognizes the new tape drive. However, you might have to provide information about your system changes after you restart your computer.

Ensure that the appropriate advanced SCSI programming interface (ASPI) device drivers are installed to support the tape drive. Device drivers are usually provided with the SCSI adapter.

If your computer does not recognize the tape drive after startup or if you receive startup errors, run the configuration-setup utility program as described in the documentation that comes with your computer.

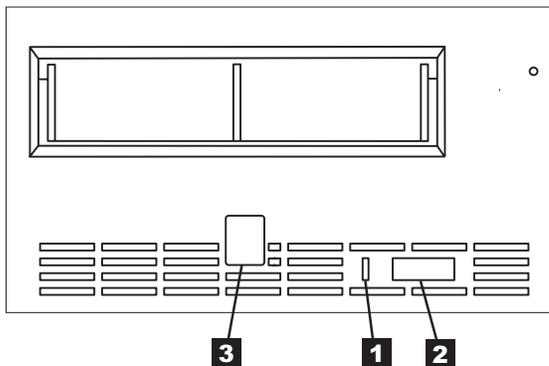
If all the indicators on either side of the tape drive blink in unison, there is a problem with the tape drive. Press the **Unload** button on the right side of the drive front panel to eject any tape that might be inserted and to reset the drive. If the problem persists, turn off the computer; then turn it back on. If the problem continues, see Appendix E, “Problem solving” on page 2-10 for further steps.

Step 9. Installing backup and restore software

To use the drive, you must install an appropriate backup and restore application for your computer operating system. If you are using software not included in the option package, follow the directions that come with your software. If you are using the trial software that comes with the option, insert a trial application CD into the CD-ROM drive and follow the on-screen installation and operating instructions.

Using the drive

This is the front of the 100/200 GB LTO Internal Tape Drive



The following tables describe the indicators on the drive front panel.

Status indicator 1. This indicator provides status information on the tape drive.

Indicator activity	Meaning
Off	The tape drive is idle or turned off.
Green, shining steadily	The tape drive is reading from or writing to the tape.
Green, flashing	The tape drive is rewinding the tape, locating data on the tape, or unloading the tape.
Yellow, shining steadily	The tape drive is in maintenance mode.
Yellow, flashing	This indicates one of the following: <ul style="list-style-type: none"> • If the indicator flashes one time per second, an error has occurred and the tape drive or the media might need service. Check the display panel for the error code. • If the indicator flashes two times per second, the tape drive is updating the microcode. • If the indicator flashes four times per second, the tape drive detected an error and is performing a microcode recovery. The tape drive will automatically reset.

Unload button 2. This button unloads tape and issues commands.

Function	How to use the Unload button to perform the function
Rewind the tape in a cartridge and unload the cartridge from the tape unit	Press the Unload button one time. Note: During a rewind and unload operation, the tape drive will not respond to SCSI commands from the host adapter.
Place the tape drive in maintenance mode	Be sure that there is no cartridge loaded in the tape drive. Within a one-second interval, push the Unload button three times. The status light will flash steadily and the display panel will display 0 to indicate that the tape drive is in maintenance mode. Note: During a rewind and unload operation, the tape drive will not respond to SCSI commands from the host adapter.
Scroll through maintenance functions	Using the instructions in the previous row, place the tape drive in maintenance mode. In maintenance mode, press the Unload button one time per second to increment the display characters by one digit. When the diagnostic or maintenance function character displays, press and hold the Unload button for two seconds.
Exit maintenance mode	Press the Unload button one time per second until 0 displays in the display panel. Press and hold the Unload button for two seconds. The status indicator stops lighting, the display panel reads 0 and then goes black when the tape drive discontinues maintenance mode.

Display panel 3. This panel displays diagnostic, maintenance, error, and informational messages.

Function	How to use the Unload button to perform the function
This indicator displays letters and numbers, each indicating different drive messages.	Use the table in Appendix C, "Self test sequence settings" on page 2-4 to determine the meaning of the display panel messages.

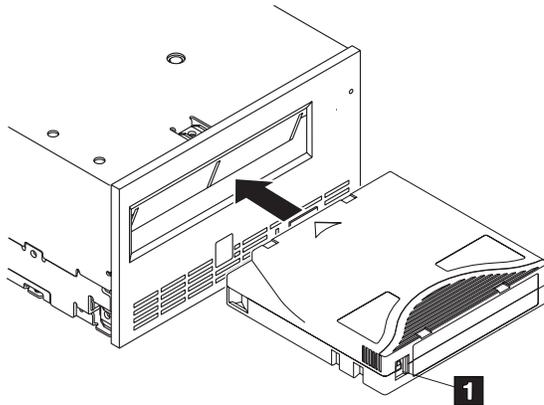
Loading tape cartridges

To load a tape cartridge, perform the following steps.

1. Make sure the tape drive is turned on.
2. Make sure the write-protection switch on the tape cartridge is properly set. See "Setting write protection on the cartridge" on page 1-10.
3. Grasp the tape cartridge so that the **1** write-protect switch faces you.
4. Slide the tape cartridge into the tape load compartment.

Note: If the tape cartridge is already in the unload position (partially ejected) and you want to reload it, remove the cartridge and then load it again.

If the the tape cartridge is already loaded and you turn the power off, then turn the power back on, the tape cartridge will reload.

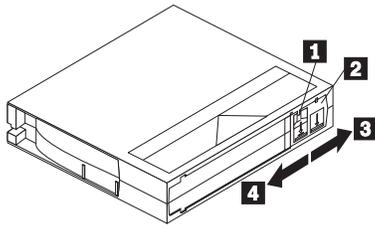


Unloading tape cartridges

To unload a tape cartridge, perform the following steps.

1. Make sure that the 100/200 GB LTO Internal Tape Drive is turned on.
2. Press the Unload button. The drive rewinds the tape and places the tape cartridge in the unload position. The status light will flash green while the tape rewinds, and go out before the cartridge reaches the unload position.
3. After the tape cartridge has reached the unload position, grasp the cartridge and remove it.

Setting write protection on the cartridge



The front of the cartridge has an orange write-protect indicator **1**, and a write-protect switch **2** to prevent accidental erasure. Slide the switch to the right to write-enable **3** or to the left to write-protect **4**. You can change the write-protect switch before or after inserting the tape. If you change the write-protect switch while the tape is inserted, there is a delay of a few seconds before the Write Protect indicator on the tape drive changes.

Resetting the drive

The reset procedure rewinds the tape and clears the buffer of previous tape drive commands and data. To reset the tape drive, press the Unload button, or turn the computer off and back on again.

If you reset the tape drive while a cartridge is loaded, the tape rewinds to the beginning. The reset might take as long as two minutes if the tape is positioned near the end. After the drive has been reset, tape operation starts from the beginning of the data cartridge. After resetting the drive, restart your backup tape software.

Packing the drive for shipping

If you are shipping the tape drive to another location or returning it for repair, pack the tape drive in its original shipping container and packing materials.

Attention: To avoid damaging the tape drive, use the original shipping materials when you ship it. Your proof of purchase might be required to receive warranty service. If you are returning the tape drive for service, remove and keep all cartridges, cables, and terminators.

Part 2: Appendixes

The following appendixes contain product specifications, problem-solving information, help and service information, the product warranty, and notices.

Appendix A. Maintenance

You need to perform regular maintenance on your 100/200 GB LTO Internal Tape Drive. This section explains how to care for the tape cartridges and how to clean the drive head.

Caring for tape cartridges

The following points are guidelines for storing and using the cartridges:

- Do not open the tape access door of the cartridge or touch the tape itself.
- Keep your cartridges away from sources of electromagnetic fields, such as telephones, dictation equipment, mechanical or printing calculators, motors, and bulk erasers. Do not place the cartridges on the computer monitor or on the base unit of the computer.
- Keep cartridges away from direct sunlight and heat sources, such as radiators or warm air ducts.
- Keep cartridges free of moisture. Do not wet or submerge cartridges in any liquid.
- Do not expose cartridges to temperature extremes.
- Retensioning is the winding and rewinding of a tape cartridge. This action restores the proper tape tension to the media. Retension tape cartridges that have not been used for more than a month before restoring or backing up data. It is recommended that you retension regularly used data cartridge once per week. Instructions for performing a manual tape retensioning are available in your backup application user's guide.

Cleaning the tape head

To properly maintain the drive, periodically clean the tape head. Clean the tape drive after using a new data cartridge. If you backup your data daily, clean the tape drive once a week. You do not need to perform any other periodic maintenance. Use a dry process cleaning cartridge by IBM (P/N 6G8583) or Imation (P/N 0-5122-12132-6), which can be obtained from your local reseller.

To clean the tape drive, wait until the tape drive has stopped any activity and follow these steps:

1. Remove any cartridges from the tape drive.
2. Insert the cleaning cartridge into the tape drive. The drive light will start flashing, indicating that the cleaning process is working.

3. When the drive light stops flashing, the cleaning process has finished.
4. Remove the cleaning cartridge from the tape drive.

Replace the cleaning cartridge after 30 cleaning operations.

Fault diagnosis

If an error occurs with the tape drive, follow these steps to eliminate possible causes.

<p>Note: After each step, retry the backup operation. If the backup still fails, go on to the next step.</p>

- Clean the tape drive.
- Retension the data cartridge.
- Replace your data cartridge.
- Go to the IBM support Web site at <http://www.ibm.com/pc/support>

Appendix B. Tape handling

This section describes how to properly handle your tape cartridges to reduce wear on the 100/200 GB LTO Internal Tape Drive

Tape handling and storage

Most tape is supplied in a sealed cartridge. Tape is provided this way so that the tape will remain in a clean environment. Opening the cartridge allows dirt and airborne particles to enter and then become a source of contamination. The cartridge must only be opened by the tape drive and not by an operator. The tape is also held under proper tension inside the cartridge. If the cartridge is dropped, this tension is relaxed. Inserting a dropped cartridge into a tape drive can often cause a misload that results in a jam. The jam ruins the tape and can cause physical damage if the cartridge is not removed properly. When you store tapes, place them into their protective containers and store them on their ends. Store the tapes in a clean, dry area at normal room temperature and away from magnetic fields.

Environmental issue

The operating environment might adversely affect tape drive operation. The tape drive is designed to operate in a clean environment. When tape is installed in a tape drive, the clearance between the heads and the tape is measured in microns. Even particles of smoke are larger than the space available between the tape and the heads. Other environmental factors that adversely affect tape drive operation are dirt, dust, fibers, and airborne particles.

Tape drive cleaning

Even if the operating environment is clean, dirt might 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 material builds up, causing the tape head clearance to increase. The increased tape head clearance produces reading and writing errors. Most tape drives today have a built-in cleaning indicator to notify you when the tape needs cleaning.

Do not use any non-LTO cleaning cartridges with these tape drives. You can use cleaning cartridges only for a limited number of times. A cleaning cartridge is expired after it has been used for the maximum number of times. When a cleaning cartridge is expired, you must replace it. Never reuse an expired cleaning cartridge. If you continue to use an expired cleaning cartridge, you might reintroduce previously removed dirt to the tape drive and you might not clean the drive. To make sure that you know when your cleaning cartridge expires, make a notation on the cleaning cartridge each time you clean the tape drive.

Appendix C. Self test sequence settings

To perform the diagnostics listed in Appendix C, “Self test sequence settings,” the 100/200 GB LTO Internal Tape Drive must be placed in maintenance mode. To place the drive in maintenance mode, perform the following steps.

Placing the drive in maintenance mode

1. Verify that no tape cartridge is in the drive.
2. Make sure no backup software is running, or about to run.
3. Within a one-second interval, press the unload button 3 times. The status light shines yellow, indicating that the unit is in maintenance mode.

Note: If a tape cartridge is in the drive, it will eject the first time you press the unload button, and the drive will not be placed in maintenance mode.

Maintenance functions cannot be performed concurrently with read or write operations. While in maintenance mode, the drive does not receive SCSI commands from the host.

Selecting maintenance and diagnostic functions

To select a maintenance or diagnostic function, perform the following steps.

1. Make sure the drive is in maintenance mode (see “Placing the drive in maintenance mode”).
2. Locate the number code for the function you wish to perform. See the table “Diagnostic and maintenance functions” on page 2-5 for the complete list of maintenance and diagnostic functions.
3. Press the unload button once per second until the code that corresponds with the maintenance or diagnostic function you wish to perform appears in single-character display.

Note: If you cycle past the desired code, continue pressing the unload button once per second until the code you want redisplay.

4. When the code for the function you wish to perform is displayed in the single-character display, press and hold the unload button for two seconds. The drive will begin to perform the maintenance or diagnostic function you selected.
 - During and after the performance of certain maintenance functions, the drive might display certain characters, or the drive status light might flash.
 - Refer to the following table to learn the meaning of these messages.

Diagnostic and maintenance messages

Symbol	Meaning	Action
C	The diagnostic or maintenance function you chose requires you to load a tape cartridge.	Load a tape cartridge within 60 seconds, or the 100/200 GB LTO Internal Tape Drive will exit the maintenance mode.
7	There is an invalid or a write-protected tape cartridge in the drive.	No action required. The 100/200 GB LTO Internal Tape Drive unloads the tape cartridge and exits the maintenance mode.
0	The function has completed successfully	No action required. The character 0 temporarily displays while the drive exits the maintenance mode.

Note: Certain diagnostic functions will repeat themselves until you terminate them. To terminate one of these functions, press the Unload button. 0 will display in the single character display, and the the drive will exit the diagnostic/ maintenance mode.

If a diagnostic/ maintenance function fails, the status light will flash yellow and the drive will exit the diagnostic/maintenance mode. To reset an error, turn the drive off, then turn the drive back on.

Diagnostic and maintenance functions

Code	Diagnostic or maintenance function	Description
0	Exit the maintenance mode	When 0 displays, press and hold the Unload button for 2 seconds. The steadily shining yellow status light turns off, indicating that the drive is no longer in maintenance mode, making it available to read and write data. The tape drive will also exit the maintenance mode automatically after it completes certain functions, or if there has been no activity for 10 minutes.

Code	Diagnostic or maintenance function	Description
1	Run the tape diagnostics	<p>This causes the tape drive to run tests determining whether or not it can properly load and unload tape cartridges, or read and write data to tape cartridges. This will overwrite any data on the tape cartridge in the drive. Use tape cartridges that are blank, or that contain data you do not need.</p> <p>After you select this function, the drive pauses for approximately 90 seconds. After 90 seconds, c will flash in the single character display.</p> <ul style="list-style-type: none"> • Load a tape cartridge. After the tape cartridge is loaded into the drive, 1 flashes in the single character display. • The drive will take approximately 20 minutes to complete this diagnostic test. • If the diagnostic test fails, the status light will flash yellow and an error code will display. The drive will unload the tape cartridge and exit the diagnostic/ maintenance mode. • If the diagnostic test completes successfully, the drive will begin the test again. Press the unload button to exit the diagnostic/ maintenance mode.
2	Update the drive microcode from a field microcode replacement (FMR) tape	<p>After you select this function, c flashes in the display.</p> <ul style="list-style-type: none"> • Load the FMR tape within 60 seconds. 2 will flash in the display and the drive will load the updated microcode from the FMR tape into the erasable programmable read-only memory (EPROM). • If the drive fails to properly update the microcode, the drive will retry the operation 3 more times. If the update continues to fail, the drive will unload the FMR tape and exit the diagnostic/ maintenance mode. • If the update completes successfully, the drive rewinds and unloads the FMR tape, then the drive resets itself, and is ready to use the new microcode.
3	Reserved	This code should only be used if instructed by a trained IBM service or support person.
4	Reserved	This code should only be used if instructed by a trained IBM service or support person.
5	Reserved	This code should only be used if instructed by a trained IBM service or support person.
6	Reserved	This code should only be used if instructed by a trained IBM service or support person.

Code	Diagnostic or maintenance function	Description
7	Reserved	This code should only be used if instructed by a trained IBM service or support person.
8	Reserved	This code should only be used if instructed by a trained IBM service or support person.
9	Reserved	This code should only be used if instructed by a trained IBM service or support person.
A	Clear the error code log	This function causes the drive to erase the contents of the error code log. After you select this function, the drive erases all errors from the error code log, displays 0 , and exits the diagnostic/ maintenance mode.
C	Insert a tape cartridge into the drive	This message displays when the drive needs a tape cartridge to complete one of the other diagnostic/ maintenance functions. This function cannot be selected by itself.
E	Test a tape cartridge	<p>This function causes the drive to perform tests to verify that a tape cartridge is acceptable. This will overwrite any data on the tape cartridge in the drive.</p> <p>After you select this function, C displays.</p> <ul style="list-style-type: none"> • Load the suspect tape cartridge within 60 seconds. E will display and the drive will take approximately 10 minutes to run the test. • If an error is detected, the drive will display 7, then unload the tape cartridge and exit the maintenance mode. • If no error is detected, the drive will begin the test again. Press the unload button to rewind and unload the tape cartridge, then exit the maintenance mode.
H	Test the tape head	<p>This function causes the drive to verify that the drive head and tape-carriage mechanics are working correctly. After you select his function, C flashes in the display.</p> <ul style="list-style-type: none"> • Load a tape cartridge within 60 seconds. H will flash in the display, and the drive will take approximately 10 minutes to run the test. • If an error is detected, the drive will display 5, then unload the tape cartridge, and then exit the diagnostic/ maintenance mode. • If no error is detected, the drive will begin the test again. Press the unload button to rewind and unload the tape cartridge, then exit the diagnostic/ maintenance mode.

Appendix D. Product specifications

This appendix includes the product specifications and requirements.

<i>Physical specifications</i>	
Height (with bezel)	84.5 mm (3.3 in)
Width (with bezel)	148 mm (5.8 in)
Length (with bezel)	211.5 mm (8.3 in)
Weight	2.9 Kg. (6.4 lb)

<i>Maximum data capacity</i>			
Tape	Lenght	Uncompressed data	Compressed data ⁹
A	609 m	100 GB ¹⁰	200 GB
B	319 m	50 GB	100 GB
C	203 m	30 GB	60 GB
D	87 m	10 GB	20 GB

<i>Input voltages</i>	
Standard +5 V dc and +12 V dc $\pm 5\%$	

<i>Maximum sustained data-transfer rate</i>	
Uncompressed data	15 MB per second

<i>Power</i>		
+5 V ($\pm 5\%$)	4.5 A (max)	4.0 A (typ)
+12 V ($\pm 5\%$)	2.6 A (max)	1.8 A (typ)
Total	45 W (max)	42 W (typ)

⁹ This assumes a 2:1 compression ratio.

¹⁰ GB equals approximately 1 000 000 000 bytes.

¹¹ MB equals approximately 1 000 000 bytes.

<i>Operating environment</i>	
Tape path temperature range	+10°C to +40°C (+50°F to +104°F)
Relative humidity	20% to 80%, noncondensing
Wet bulb	25°C (77°F) maximum
Altitude	-152 to +12 192 m (-500 to +40 000 ft)
Temperature gradient	11°C (20°F) per hour
Humidity gradient	10% per hour

<i>SCSI cable specifications</i>	
Connector	68-pin male, shielded, AMP 786090-7

Appendix E. Problem solving

Computer problems can be caused by hardware, software, or user error. You might be able to use the information in this section to solve problems yourself, or gather helpful information you can pass on to a service technician.

Review the following list for any problem descriptions that might fit your situation.

- **The software does not recognize the tape drive.**

Take the following actions:

1. Check for proper termination of the SCSI device chain. The SCSI device chain must be terminated at both ends.
2. Check for conflicting SCSI ID settings. Each SCSI ID must be unique on the SCSI device chain.
3. Ensure that the appropriate Advanced SCSI Programming Interface (ASPI) device drivers are installed to support the tape drive. ASPI device drivers usually come with the SCSI host adapter. For more information on the device drivers, see the documentation that came with your SCSI host adapter or your computer system.

- **The tape drive does not operate and the amber indicator is flashing.**

Three sets of numbers display on the display panel showing the most recent three errors. The first two digits in error 1 are the fault symptom code. Keep this fault symptom code for reference, and call the HelpCenter.

Appendix F. Help and service information

This section contains information on how to obtain online and telephone technical support.

Online technical support

Online technical support is available during the life of your product. Online assistance can be obtained through the Personal Computing Support Web site and the IBM Automated Fax System.

<i>Online technical support</i>	
IBM Personal Computing Support Web Site	http://www.ibm.com/pc/support
IBM Automated Fax System	1-800-426-3395 (U.S. and Canada)

During the warranty period, assistance for replacement or exchange of defective components is available. In addition, if your IBM option is installed in an IBM computer, you might be entitled to service at your location. Your technical support representative can help you determine the best alternative.

Telephone technical support

Marketing, installation, and configuration support through the HelpCenter will be withdrawn or made available for a fee, at IBM's discretion, 90 days after the option has been withdrawn from marketing. Additional support offerings, including step-by-step installation assistance, are available for a nominal fee.

To assist the technical support representative, have available as much of the following information as possible:

1. Option name
2. Option number
3. Proof of purchase
4. Computer manufacturer, model, serial number (if IBM), and manual
5. Exact wording of the error message (if any)
6. Description of the problem
7. Hardware and software configuration information for your system

If possible, be at your computer. Your technical support representative might want to walk you through the problem during the call.

For the support telephone number and support hours by country, refer to the following table or to the enclosed technical support insert. If the number is not provided, contact your IBM reseller or IBM marketing representative. Response time may vary depending on the number and nature of the calls received.

<i>Support 24 hours a day, 7 days a week</i>	
Canada (Toronto only)	416-383-3344
Canada (all other)	1-800-565-3344
U.S.A./Puerto Rico	1-800-772-2227

Appendix G. Product warranty and notices

Warranty Statements

The warranty statements consist of two parts: Part 1 and Part 2. Part 1 varies by country. Part 2 is the same for both statements. Be sure to read both the Part 1 that applies to your country and Part 2.

- **United States, Puerto Rico, and Canada (Z125-4753-05 11/97)**
(Part 1 - General Terms on page 2-12)
- **Worldwide except Canada, Puerto Rico, Turkey, and United States (Z125-5697-01 11/97)**
(Part 1 - General Terms on page 2-15)
- **Worldwide Country-Unique Terms**
(Part 2 - Country-Unique Terms on page 2-18)

IBM Statement of Limited Warranty for United States, Puerto Rico, and Canada (Part 1 - General Terms)

This Statement of Limited Warranty includes Part 1 - General Terms and Part 2 - Country-unique Terms. The terms of Part 2 may replace or modify those of Part 1. The warranties provided by IBM in this Statement of Limited Warranty apply only to Machines you purchase for your use, and not for resale, from IBM or your reseller. The term "Machine" means an IBM machine, its features, conversions, upgrades, elements, or accessories, or any combination of them. The term "Machine" does not include any software programs, whether pre-loaded with the Machine, installed subsequently or otherwise. Unless IBM specifies otherwise, the following warranties apply only in the country where you acquire the Machine. Nothing in this Statement of Warranty affects any statutory rights of consumers that cannot be waived or limited by contract. If you have any questions, contact IBM or your reseller.

Machine - 100/200 GB LTO Internal Tape Drive

Warranty Period* - Three Years

**Contact your place of purchase for warranty service information. Some IBM Machines are eligible for On-site warranty service depending on the country where service is performed.*

The IBM Warranty for Machines

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

During the warranty period IBM or your reseller, if approved by IBM to provide warranty service, will provide repair and exchange service for the Machine, without charge, under the type of service designated for the Machine and will manage and install engineering changes that apply to the Machine.

If a Machine does not function as warranted during the warranty period, and IBM or your reseller are unable to either 1) make it do so or 2) replace it with one that is at least functionally equivalent, you may return it to your place of purchase and your money will be refunded. The replacement may not be new, but will be in good working order.

Extent of Warranty

The warranty does not cover the repair or exchange of a Machine resulting from misuse, accident, modification, unsuitable physical or operating environment, improper maintenance by you, or failure caused by a product for which IBM is not responsible. The warranty is voided by removal or alteration of Machine or parts identification labels.

THESE WARRANTIES ARE YOUR EXCLUSIVE WARRANTIES AND REPLACE ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM JURISDICTION TO JURISDICTION. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF EXPRESS OR IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU. IN THAT EVENT, SUCH WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD. NO WARRANTIES APPLY AFTER THAT PERIOD.

Items Not Covered by Warranty

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

Unless specified otherwise, IBM provides non-IBM machines **WITHOUT WARRANTIES OF ANY KIND.**

Any technical or other support provided for a Machine under warranty, such as assistance via telephone with "how-to" questions and those regarding Machine set-up and installation, will be provided **WITHOUT WARRANTIES OF ANY KIND.**

Warranty Service

To obtain warranty service for the Machine, contact your reseller or IBM. In the United States, call IBM at 1-800-772-2227. In Canada, call IBM at 1-800-565-3344. (In Toronto, call 416-383-3344.) You may be required to present proof of purchase.

IBM or your reseller provides certain types of repair and exchange service, either at your location or at a service center, to keep Machines in, or restore them to, conformance with their Specifications. IBM or your reseller will inform you of the available types of service for a

Machine based on its country of installation. IBM may repair the failing Machine or exchange it at its discretion.

When warranty service involves the exchange of a Machine or part, the item IBM or your reseller replaces becomes its property and the replacement becomes yours. You represent that all removed items are genuine and unaltered. The replacement may not be new, but will be in good working order and at least functionally equivalent to the item replaced. The replacement assumes the warranty service status of the replaced item.

Any feature, conversion, or upgrade IBM or your reseller services must be installed on a Machine which is 1) for certain Machines, the designated, serial-numbered Machine and 2) at an engineering-change level compatible with the feature, conversion, or upgrade. Many features, conversions, or upgrades involve the removal of parts and their return to IBM. A part that replaces a removed part will assume the warranty service status of the removed part.

Before IBM or your reseller exchanges a Machine or part, you agree to remove all features, parts, options, alterations, and attachments not under warranty service.

You also agree to

1. ensure that the Machine is free of any legal obligations or restrictions that prevent its exchange;
2. obtain authorization from the owner to have IBM or your reseller service a Machine that you do not own; and
3. where applicable, before service is provided
 - a. follow the problem determination, problem analysis, and service request procedures that IBM or your reseller provides,
 - b. secure all programs, data, and funds contained in a Machine,
 - c. provide IBM or your reseller with sufficient, free, and safe access to your facilities to permit them to fulfill their obligations, and
 - d. inform IBM or your reseller of changes in a Machine's location.

IBM is responsible for loss of, or damage to, your Machine while it is 1) in IBM's possession or 2) in transit in those cases where IBM is responsible for the transportation charges.

Neither IBM nor your reseller is responsible for any of your confidential, proprietary or personal information contained in a Machine which you return to IBM or your reseller for any reason. You should remove all such information from the Machine prior to its return.

Production Status

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

Limitation of Liability

Circumstances may arise where, because of a default on IBM's part or other liability, you are entitled to recover damages from IBM. In each such instance, regardless of the basis on which you are entitled to claim damages from IBM (including fundamental breach, negligence, misrepresentation, or other contract or tort claim), IBM is liable for no more than

1. damages for bodily injury (including death) and damage to real property and tangible personal property; and
2. the amount of any other actual direct damages, up to the greater of U.S. \$100,000 (or equivalent in local currency) or the charges (if recurring, 12 months' charges apply) for the Machine that is the subject of the claim.

This limit also applies to IBM's suppliers and your reseller. It is the maximum for which IBM, its suppliers, and your reseller are collectively responsible.

UNDER NO CIRCUMSTANCES IS IBM LIABLE FOR ANY OF THE FOLLOWING: 1) THIRD-PARTY CLAIMS AGAINST YOU FOR DAMAGES (OTHER THAN THOSE UNDER THE FIRST ITEM LISTED ABOVE); 2) LOSS OF, OR DAMAGE TO, YOUR RECORDS OR DATA; OR 3) SPECIAL, INCIDENTAL, OR INDIRECT DAMAGES OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES (INCLUDING LOST PROFITS OR SAVINGS), EVEN IF IBM, ITS SUPPLIERS OR YOUR RESELLER IS INFORMED OF THEIR POSSIBILITY. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

IBM Statement of Warranty Worldwide except Canada, Puerto Rico, Turkey, United States (Part 1 - General Terms)

This Statement of Warranty includes Part 1 - General Terms and Part 2 - Country-unique Terms. The terms of Part 2 may replace or modify those of Part 1. The warranties provided by IBM in this Statement of Warranty apply only to Machines you purchase for your use, and not for resale, from IBM or your reseller. The term "Machine" means an IBM machine, its features, conversions, upgrades, elements, or accessories, or any combination of them. The term "Machine" does not include any software programs, whether pre-loaded with the Machine, installed subsequently or otherwise. Unless IBM specifies otherwise, the following warranties apply only in the country where you acquire the Machine. Nothing in this Statement of Warranty affects any statutory rights of consumers that cannot be waived or limited by contract. If you have any questions, contact IBM or your reseller.

Machine - 100/200 GB LTO Internal Tape Drive

Warranty Period* - Three Years

**Contact your place of purchase for warranty service information. Some IBM Machines are eligible for On-site warranty service depending on the country where service is performed.*

The IBM Warranty for Machines

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

During the warranty period IBM or your reseller, if approved by IBM to provide warranty service, will provide repair and exchange service for the Machine, without charge, under the type of service designated for the Machine and will manage and install engineering changes that apply to the Machine.

If a Machine does not function as warranted during the warranty period, and IBM or your reseller are unable to either 1) make it do so or 2) replace it with one that is at least functionally equivalent, you may return it to your place of purchase and your money will be refunded. The replacement may not be new, but will be in good working order.

Extent of Warranty

The warranty does not cover the repair or exchange of a Machine resulting from misuse, accident, modification, unsuitable physical or operating environment, improper maintenance by you, or failure caused by a product for which IBM is not responsible. The warranty is voided by removal or alteration of Machine or parts identification labels.

THESE WARRANTIES ARE YOUR EXCLUSIVE WARRANTIES AND REPLACE ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM JURISDICTION TO JURISDICTION. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF EXPRESS OR IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION OR LIMITATION MAY NOT APPLY TO YOU. IN THAT EVENT, SUCH WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD. NO WARRANTIES APPLY AFTER THAT PERIOD.

Items Not Covered by Warranty

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

Unless specified otherwise, IBM provides non-IBM machines **WITHOUT WARRANTIES OF ANY KIND.**

Any technical or other support provided for a Machine under warranty, such as assistance via telephone with "how-to" questions and those regarding Machine set-up and installation, will be provided **WITHOUT WARRANTIES OF ANY KIND.**

Warranty Service

To obtain warranty service for the Machine, contact your reseller or IBM. You may be required to present proof of purchase.

IBM or your reseller provides certain types of repair and exchange service, either at your location or at a service center, to keep Machines in, or restore them to, conformance with their Specifications. IBM or your reseller will inform you of the available types of service for a Machine based on its country of installation. IBM may repair the failing Machine or exchange it at its discretion.

When warranty service involves the exchange of a Machine or part, the item IBM or your reseller replaces becomes its property and the replacement becomes yours. You represent that all removed items are genuine and unaltered. The replacement may not be new, but will be in good working order and at least functionally equivalent to the item replaced. The replacement assumes the warranty service status of the replaced item.

Any feature, conversion, or upgrade IBM or your reseller services must be installed on a Machine which is 1) for certain Machines, the designated, serial-numbered Machine and 2) at an engineering-change level compatible with the feature, conversion, or upgrade. Many features, conversions, or upgrades involve the removal of parts and their return to IBM. A part that replaces a removed part will assume the warranty service status of the removed part.

Before IBM or your reseller exchanges a Machine or part, you agree to remove all features, parts, options, alterations, and attachments not under warranty service.

You also agree to

1. ensure that the Machine is free of any legal obligations or restrictions that prevent its exchange;
2. obtain authorization from the owner to have IBM or your reseller service a Machine that you do not own; and
3. where applicable, before service is provided
 - a. follow the problem determination, problem analysis, and service request procedures that IBM or your reseller provides,
 - b. secure all programs, data, and funds contained in a Machine,
 - c. provide IBM or your reseller with sufficient, free, and safe access to your facilities to permit them to fulfil their obligations, and
 - d. inform IBM or your reseller of changes in a Machine's location.

IBM is responsible for loss of, or damage to, your Machine while it is 1) in IBM's possession or 2) in transit in those cases where IBM is responsible for the transportation charges.

Neither IBM nor your reseller is responsible for any of your confidential, proprietary or personal information contained in a Machine which you return to IBM or your reseller for any reason. You should remove all such information from the Machine prior to its return.

Production Status

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

Limitation of Liability

Circumstances may arise where, because of a default on IBM's part or other liability, you are entitled to recover damages from IBM. In each such instance, regardless of the basis on which you are entitled to claim damages from IBM (including fundamental breach, negligence, misrepresentation, or other contract or tort claim), IBM is liable for no more than

1. damages for bodily injury (including death) and damage to real property and tangible personal property; and
2. the amount of any other actual direct damages, up to the greater of U.S. \$100,000 (or equivalent in local currency) or the charges (if recurring, 12 months' charges apply) for the Machine that is the subject of the claim.

This limit also applies to IBM's suppliers and your reseller. It is the maximum for which IBM, its suppliers, and your reseller are collectively responsible.

UNDER NO CIRCUMSTANCES IS IBM LIABLE FOR ANY OF THE FOLLOWING: 1) THIRD-PARTY CLAIMS AGAINST YOU FOR DAMAGES (OTHER THAN THOSE UNDER THE FIRST ITEM LISTED ABOVE); 2) LOSS OF, OR DAMAGE TO, YOUR RECORDS OR DATA; OR 3) SPECIAL, INCIDENTAL, OR INDIRECT DAMAGES OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES (INCLUDING LOST PROFITS OR SAVINGS), EVEN IF IBM, ITS SUPPLIERS OR YOUR RESELLER IS INFORMED OF THEIR POSSIBILITY. SOME JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

Part 2 - Worldwide Country-Unique Terms

ASIA PACIFIC

AUSTRALIA: The IBM Warranty for Machines: The following paragraph is added to this Section:

The warranties specified in this Section are in addition to any rights you may have under the Trade Practices Act 1974 or other legislation and are only limited to the extent permitted by the applicable legislation.

Extent of Warranty: The following replaces the first and second sentences of this Section: The warranty does not cover the repair or exchange of a Machine resulting from misuse, accident, modification, unsuitable physical or operating environment, operation in other than the Specified Operating Environment, improper maintenance by you, or failure caused by a product for which IBM is not responsible.

Limitation of Liability: The following is added to this Section: Where IBM is in breach of a condition or warranty implied by the Trade Practices Act 1974, IBM's liability is limited to the repair or replacement of the goods or the supply of equivalent goods. Where that condition or warranty relates to right to sell, quiet possession or clear title, or the goods are of a kind ordinarily acquired for personal, domestic or household use or consumption, then none of the limitations in this paragraph apply.

PEOPLE'S REPUBLIC OF CHINA: Governing Law: The following is added to this Statement:

The laws of the State of New York govern this Statement.

INDIA: Limitation of Liability: The following replaces items 1 and 2 of this Section:
1. liability for bodily injury (including death) or damage to real property and tangible personal property will be limited to that caused by IBM's negligence;
2. as to any other actual damage arising in any situation involving nonperformance by IBM pursuant to, or in any way related to the subject of this Statement of Warranty, IBM's liability will be limited to the charge paid by you for the individual Machine that is the subject of the claim.

NEW ZEALAND: The IBM Warranty for Machines: The following paragraph is added to this Section:

The warranties specified in this Section are in addition to any rights you may have under the Consumer Guarantees Act 1993 or other legislation which cannot be excluded or limited. The Consumer Guarantees Act 1993 will not apply in respect of any goods which IBM provides, if you require the goods for the purposes of a business as defined in that Act.

Limitation of Liability: The following is added to this Section: Where Machines are not acquired for the purposes of a business as defined in the Consumer Guarantees Act 1993, the limitations in this Section are subject to the limitations in that Act.

EUROPE, MIDDLE EAST, AFRICA (EMEA)

The following terms apply to all EMEA countries.

The terms of this Statement of Warranty apply to Machines purchased from an IBM reseller. If you purchased this Machine from IBM, the terms and conditions of the applicable IBM agreement prevail over this warranty statement.

Warranty Service

If you purchased an IBM Machine in Austria, Belgium, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland or United Kingdom, you may obtain warranty service for that Machine in any of those countries from either (1) an IBM reseller approved to perform warranty service or (2) from IBM.

If you purchased an IBM Personal Computer Machine in Albania, Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Georgia, Hungary, Kazakhstan, Kirghizia, Federal Republic of Yugoslavia, Former Yugoslav Republic of Macedonia (FYROM), Moldova, Poland, Romania, Russia, Slovak Republic, Slovenia, or Ukraine, you may obtain warranty service for that Machine in any of those countries from either (1) an IBM reseller approved to perform warranty service or (2) from IBM.

The applicable laws, Country-unique terms and competent court for this Statement are those of the country in which the warranty service is being provided. However, the laws of Austria govern this Statement if the warranty service is provided in Albania, Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Federal Republic of Yugoslavia, Georgia, Hungary, Kazakhstan, Kirghizia, Former Yugoslav Republic of Macedonia (FYROM), Moldova, Poland, Romania, Russia, Slovak Republic, Slovenia, and Ukraine.

The following terms apply to the country specified:

EGYPT: Limitation of Liability: The following replaces item 2 in this Section:

2. as to any other actual direct damages, IBM's liability will be limited to the total amount you paid for the Machine that is the subject of the claim.

Applicability of suppliers and resellers (unchanged).

FRANCE: Limitation of Liability: The following replaces the second sentence of the first paragraph of this Section:

In such instances, regardless of the basis on which you are entitled to claim damages from IBM, IBM is liable for no more than: (items 1 and 2 unchanged).

GERMANY: The IBM Warranty for Machines: The following replaces the first sentence of the first paragraph of this Section:

The warranty for an IBM Machine covers the functionality of the Machine for its normal use and the Machine's conformity to its Specifications.

The following paragraphs are added to this Section:

The minimum warranty period for Machines is six months.

In case IBM or your reseller are unable to repair an IBM Machine, you can alternatively ask for a partial refund as far as justified by the reduced value of the unrepaired Machine or ask for a cancellation of the respective agreement for such Machine and get your money refunded.

Extent of Warranty: The second paragraph does not apply.

Warranty Service: The following is added to this Section:

During the warranty period, transportation for delivery of the failing Machine to IBM will be at IBM's expense.

Production Status: The following paragraph replaces this Section:

Each Machine is newly manufactured. It may incorporate in addition to new parts, re-used parts as well.

Limitation of Liability: The following is added to this Section:

The limitations and exclusions specified in the Statement of Warranty will not apply to damages caused by IBM with fraud or gross negligence and for express warranty.

In item 2, replace "U.S. \$100,000" with "1.000.000 DEM."

The following sentence is added to the end of the first paragraph of item 2:
IBM's liability under this item is limited to the violation of essential contractual terms in cases of ordinary negligence.

IRELAND: Extent of Warranty: The following is added to this Section:
Except as expressly provided in these terms and conditions, all statutory conditions, including all warranties implied, but without prejudice to the generality of the foregoing all warranties implied by the Sale of Goods Act 1893 or the Sale of Goods and Supply of Services Act 1980 are hereby excluded.

Limitation of Liability: The following replaces items one and two of the first paragraph of this Section:

1. death or personal injury or physical damage to your real property solely caused by IBM's negligence; and 2. the amount of any other actual direct damages, up to the greater of Irish Pounds 75,000 or 125 percent of the charges (if recurring, the 12 months' charges apply) for the Machine that is the subject of the claim or which otherwise gives rise to the claim.

Applicability of suppliers and resellers (unchanged).

The following paragraph is added at the end of this Section:
IBM's entire liability and your sole remedy, whether in contract or in tort, in respect of any default shall be limited to damages.

ITALY: Limitation of Liability: The following replaces the second sentence in the first paragraph:
In each such instance unless otherwise provided by mandatory law, IBM is liable for no more than: (item 1 unchanged) 2) as to any other actual damage arising in all situations involving non-performance by IBM pursuant to, or in any way related to the subject matter of this Statement of Warranty, IBM's liability, will be limited to the total amount you paid for the Machine that is the subject of the claim.

Applicability of suppliers and resellers (unchanged).

The following replaces the second paragraph of this Section:
Unless otherwise provided by mandatory law, IBM and your reseller are not liable for any of the following: (items 1 and 2 unchanged) 3) indirect damages, even if IBM or your reseller is informed of their possibility.

SOUTH AFRICA, NAMIBIA, BOTSWANA, LESOTHO AND SWAZILAND: Limitation of Liability: The following is added to this Section:
IBM's entire liability to you for actual damages arising in all situations involving nonperformance by IBM in respect of the subject matter of this Statement of Warranty will be limited to the charge paid by you for the individual Machine that is the subject of your claim from IBM.

TURKIYE: Production Status: The following replaces this Section:
IBM fulfils customer orders for IBM Machines as newly manufactured in accordance with IBM's production standards.

UNITED KINGDOM: Limitation of Liability: The following replaces items 1 and 2 of the first paragraph of this Section:

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100/200 GB LTO Internal Tape Drive

Federal Communications Commission (FCC) Statement

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, 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.

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

Responsible Party:

International Business Machines Corporation
New Orchard Road
Armonk, NY 10504
Telephone: 1-919-543-2193



Tested To Comply
With FCC Standards

FOR HOME OR OFFICE USE

Industry Canada Class B emission compliance statement

This Class B digital apparatus complies with Canadian ICES-003.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de classe B est conforme à la norme NMB-003 du Canada.

Deutsche EMV-Direktive (electromagnetische Verträglichkeit)

Dieses Gerät ist berechtigt in Übereinstimmung mit dem deutschen EMVG vom 9.Nov.92 das EG-Konformitätszeichen zu führen.

Der Aussteller der Konformitätserklärung ist die IBM UK, Greenock.

Dieses Gerät erfüllt die Bedingungen der EN 55022 Klasse B.

European Union - emission directive

This product is in conformity with the protection requirements of EU Council Directive 89/366/ECC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

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Union Europea - Normativa EMC

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Korean B급 규격 증명서

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