



60/120 GB, 8 mm Internal tape drive

User's Guide

Important maintenance information;
Starting on Page 2-3

Note: Before using this information and the product it supports, be sure to read the information under Appendix F, “Product warranties and notices” on page 2-6.

First Edition (March 2000)

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Safety: Read first



Before installing this product, read the Safety information manual.

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).

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」。

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.

About this book

This manual contains instructions for installing and using your IBM 60/120 GB, 8 mm Internal Tape Drive. The manual is divided into the following parts:

Part 1: Installation and user's guide

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

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

Part 2: Appendixes

This section contains cartridge format capability information, product specifications, problem-solving, help and service, product warranties, and notices.

Note: The illustrations in this manual might be slightly different from your hardware.

Part 1: Installation and user's guide

This guide contains the product description, installation instructions, and product use information.

Product description

The IBM® 60/120 GB¹, 8 mm Internal Tape Drive is an Ultra2 SCSI LVD tape drive for backing up and restoring data and file archiving. Each tape cartridge can store up to 120 GB of data, using the drive's onboard data compression feature and assuming a 2:1 compression ratio.² The tape drive is a high capacity tape drive for handling multimedia, imaging, transaction processing, large databases, and other storage-intensive applications.

In addition to this manual, the option package contains:

- 60/120 GB, 8 mm Internal Tape Drive
- Data cartridge
- Four M3 x 0.5 x 6 mm (.02 x .24 in) mounting screws
- Safety information manual
- Four SCSI address jumpers
- Trial version of Veritas backup software (three CDs)
- Diskette containing SCSI drivers for various operating systems

Software description

The tape drive comes with CDs that contain trial versions of popular backup-and-restore applications for Microsoft® Windows NT® Server, Novell NetWare, and other operating systems. You can install an application for your operating system by following the installation instructions that come with the CD that you use. However, the applications expire after 30 days.

You can use the 30-day 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-and-restore application, go to the IBM tape drive Web site at

<http://www.ibm.com/pc/us/solutions/accessories/tapedrives.html>

and follow the software links.

¹ GB equals approximately 1 000 000 000 bytes.

² Compression ratios vary depending on data type.

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

Before you begin

To install this drive, you must have the following:

- An Ultra2 low voltage differential (LVD) or a single-ended (SE)³ SCSI host adapter
- Documentation for your computer, SCSI host adapter, or external enclosure
- A sixteen-bit SCSI active, in-line LVD SCSI terminator (AMP 756051-1, 79605-1, or equivalent) if the drive is the last device on an LVD SCSI device chain⁴
- A sixteen-bit SCSI active, in-line SE SCSI terminator (AMP 859516-1 or equivalent) if the drive is the last device on an SE³ SCSI device chain⁴
- A screwdriver for the mounting screws
- Flat-nose pliers to remove and set jumpers (optional)
- An AMP 1-111623-7-7 cable to make the connection to the SCSI jumper block (if you will be using a remote switch on a storage enclosure to set SCSI ID)
- An AMP 382575-2 for replacement SCSI ID jumpers

³ This tape drive works on a single-ended SCSI device chain but the performance may be limited.

⁴ SCSI termination might be included in your system. Refer to your computer documentation for more information on termination.

Installing the drive

This section contains information on installing the drive.

Note: For computer-specific installation instructions for supported Netfinity and IBM IntelliStation® computers, refer to the manuals listed in the following table.

Computer	Manual
Netfinity 5000	<i>Netfinity 5000 Express Setup and Installation</i> (PN#01K7719)
Netfinity 5500 M10 or M20	<i>Netfinity 5500 User's Handbook</i> (PN#10L9318)
Netfinity 5600	<i>Netfinity 5600 Hardware Information</i> (PN#19K8417)
Netfinity 7000	<i>Netfinity 7000 M10 Hardware Information</i> (PN#33L3906)
Netfinity 8500R	<i>Netfinity 8500R Express Setup and Installation</i> (PN#01K7572)
IntelliStation M Pro	<i>Installing Options in Your IntelliStation M Pro Profession Workstation (Type 6889)</i> (PN#01K4554)
IntelliStation Z Pro	<i>Installing Options in Your IntelliStation Z Pro Profession Workstation (Type 6865)</i> (PN#01K4652)

Step 1. Selecting a SCSI ID

Each device on a SCSI device chain must have its own SCSI ID. You can select a SCSI ID for the tape drive in the range of 0 to 15. The SCSI ID must be supported by your SCSI host adapter and not already assigned to another device. Refer to your SCSI host adapter documentation for the range of and the relative priority of the IDs supported. For optimum performance, install this device on a dedicated LVD controller. The tape drive comes with the SCSI ID preset to 5.

Follow these guidelines to select a SCSI ID:

- Assign the tape drive to the lowest priority ID available.
- Assign the higher ID priority numbers to those devices that are most often used or are faster than other devices in the chain.
- Do not assign an ID of 7 since this is normally the highest priority ID and is used for the SCSI host adapter.

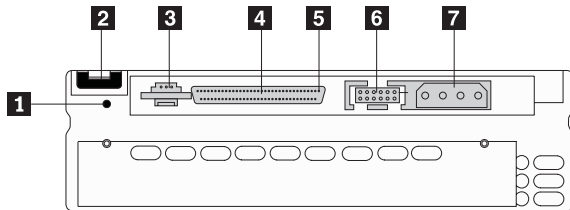
Depending on your computer, you can use one of the following methods to view your current SCSI ID settings:

- For most IBM computers, press F1 during the startup, after the memory check completes.
- Use SCSI adapter utility programs.
- Inspect the installed SCSI devices to see how the IDs are set.

For more information on viewing SCSI ID settings, refer to the documentation that comes with your computer or SCSI host adapter.

Step 2. Preparing for installation

Refer to the following drive back panel illustration during installation.



The tape drive components are:

- 1** Grounding hole
- 2** Grounding tab
- 3** Monitor port
- 4** SCSI connector
- 5** Pin 1 on the SCSI connector
- 6** SCSI ID jumper block
- 7** Power connector

To prepare for installation:

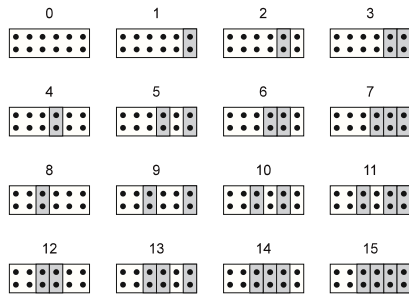
1. Turn off the computer and all attached devices. Unplug the power cords for the computer and all attached devices, then open the computer. For specific information on opening your computer, refer to the documentation that comes with your computer.

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

2. 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.

Step 3. Setting the SCSI ID

Use the SCSI jumper block to set your SCSI ID. Remove and position jumpers to assign the ID. If necessary, use a pair of flat-nose pliers to remove the jumpers. The following illustration shows how to set the jumper block for each ID.



To use a remote switch or dial on an external storage enclosure to set the SCSI ID, connect the remote cable to the SCSI ID jumper block.

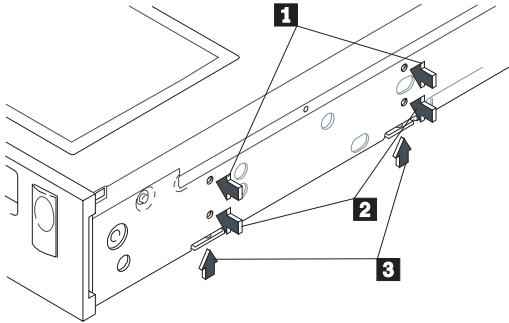
Step 4. Mounting the drive

To mount the drive:

1. Locate an available bay or space in your computer to mount the tape drive. You can mount the drive horizontally or vertically in the computer. Remove the cover plate from the bay selected. If there is insufficient working space to attach cables to the connectors after mounting the drive, attach the cables first. For information on attaching the cables, go to “Step 5. Connecting the cables and terminating the device chain” on page 1-6.
2. The drive housing has three sets of four mounting holes to provide a number of mounting positions. Use one of the three sets of mounting holes that provides the best fit and mounts the drives securely. The following illustration shows only the pairs of holes (**1** , **2** , and **3**) on one side of the drive.

Note: Some Netfinity computers come with slide rails that you must mount to the tape drive before you can mount the drive in the server bay. For information on mounting and placing required slide rails in your computer, refer to the documentation that comes with your server.

3. Align the drive-bay screw holes with the threaded holes in the drive housing. When you mount the tape drive, use the following guidelines:
 - Use only one set of mounting holes.
 - Use all four holes in the set you choose; do not use combinations of mounting holes from different sets.
 - Be sure that no objects such as screw heads, cables, or adjacent devices are pressing against the frame.



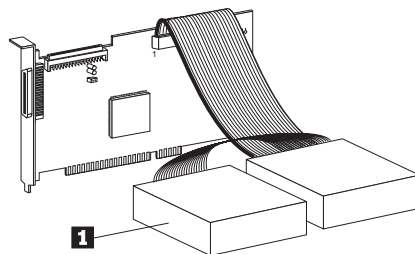
- Be sure that nothing blocks the ventilation slots on the bottom and at the rear of the tape drive.
4. To protect the tape drive from electrostatic discharge, you must attach the drive to the metal chassis of the computer. After mounting the tape drive, if the drive does not contact the metal chassis of the computer, connect a chassis ground wire to one of the grounding points shown on the illustration of the drive back panel in “Step 2. Preparing for installation” on page 1-4.

Step 5. Connecting the cables and terminating the device chain

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

1. Locate the SCSI cable (usually a 68-pin ribbon cable). One end of the cable connects to the SCSI host adapter that can be on the computer board or an adapter installed in an expansion slot. The other end can have several connectors for attaching devices.
2. Locate an available SCSI connector at the opposite end of the SCSI cable from the SCSI host adapter. For optimum performance, use an LVD SCSI controller. You can use the drive with a single-ended SCSI controller, but there will be a degradation of performance. Use the available SCSI connectors at the end farthest from the adapter first to ensure better signal quality. Attach the SCSI cable to the tape drive. Ensure that pin 1 of the SCSI cable (usually color-coded) aligns with pin 1 of the SCSI connector.

The following example shows a SCSI cable with two devices on it. The last device **1** on a SCSI cable must terminate the device chain.



If the tape drive is the last device on the SCSI chain, the chain must be terminated at the drive using a fast/wide, in-line, active SCSI terminator.

Be sure the terminator is compatible with the SCSI device chain you are using. For example, an SE SCSI device chain requires an SE terminator and an LVD SCSI device chain requires an LVD terminator.

To terminate the SCSI device chain:

- a. Attach an in-line, active terminator to the SCSI connector.
- b. Connect the SCSI cable to the terminator.

If you install the device in an external storage enclosure and the device is at the end of the SCSI device chain, refer to the documentation that comes with your enclosure for information on termination. There might be a terminator installed on an external connector on the enclosure.

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 on the tape drive. If all the power cables are in use, purchase a dc Y-connector, available at most electronics stores.

Step 6. Completing the installation

Check your work before closing the computer.

1. Be sure that the power and SCSI cables 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 to the computer.
3. Turn on all attached devices, then turn on the computer.

Be sure 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 ASPI device drivers, refer to the documentation that comes with your computer or the SCSI hot adapter.

Step 7. Updating the configuration

For most computers, the power-on self-test (POST) and the configuration-setup utility program automatically recognize the new tape drive. However, you might be prompted to answer questions about your changes when you restart your computer.

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

Step 8. Setting up the device

Press the power switch to the ON position. The tape drive then performs a POST within 30 seconds and performs a drive reset. Do not insert a cartridge into the tape drive during the POST because the drive will eject the cartridge.

To change the language the display panel uses to display messages:

1. Press and hold the Unload button after the Reset message displays on the display panel. The display panel cycles through the following languages:
 - English
 - German
 - French
 - Spanish
 - Italian
 - Brazilian Portuguese
2. When the desired language displays, release the button.

During the reset sequence, the tape drive rewinds the tape in the unit and restores the drive to its initial state. When the tape drive is ready to accept a cartridge, the indicators on the front panel of the tape drive turn off. Do not insert a cartridge into the tape drive during the reset sequence because the drive will eject the cartridge.

Step 9. Installing backup and restore software

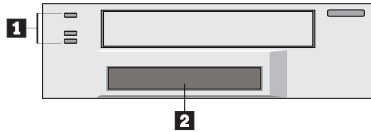
Install your backup and restore the tape software. See “Software description” on page 1-1 for more information. Follow the installation and operating instructions included with your software to begin using the tape drive.

You can install the software from some of the CDs by simply inserting the CD into your CD-ROM drive and selecting **Install** from the startup menu.

Using the drive

This section contains information on using the tape drive.

The following illustration shows the drive front panel.



- 1** Indicators
- 2** Display panel

Understanding the indicators.

The indicators **1** are:

- Top indicator (amber): When this indicator flashes, an error has occurred. When this indicator lights, the tape drive needs cleaning.
- Middle indicator (green): When this indicator lights, the tape cartridge is loaded and the tape drive is operational.
- Bottom indicator (green): When this indicator flashes, the tape is in motion.

The following table lists the indicator **1** combinations that occur during tape operation.

Tape drive condition	Top indicator	Middle indicator	Bottom indicator
POST or reset	Lights	Lights	Lights
Error or failed POST	Flashes	Off	Off
Ready, no tape loaded	N/A ⁵	Off	Off
Ready, tape loaded	N/A ⁵	Lights	Off
Normal tape motion	N/A ⁵	Lights	Flashes
High speed motion	N/A ⁵	Lights	Flashes rapidly
Time to clean	Lights	N/A ⁵	N/A ⁵
Clean in progress	Lights	Lights	Flashes

⁵ Not applicable (N/A): The indicator might be in any state.

If the drive fails with a flashing amber indicator, three sets of numbers appear on the display panel displaying the three most recent errors. The first two digits in error 1 are the fault symptom code for the most recent error. Using this fault symptom code, go to “Error messages” on page 1-12 to help resolve the problem.

Understanding the display panel messages

This section provides information on the messages that display on the display panel

2.

Reset messages

The following table describes the display panel messages that display in sequence when the tape drive is reset.

Reset message	Meaning
*** RESETTING	This is the first message displayed during the power-on sequence.
MODEL: <i>xx</i>	<i>xx</i> represents the model number of the tape drive.
SUBMOD: <i>xx</i>	<i>xx</i> represents the submodel number of the tape drive.
SN: <i>xx</i>	<i>xx</i> represents the serial number of the tape drive.
CODE: <i>xx</i>	<i>xx</i> represent the level of the tape drive microcode.
LASTCLN <i>xx</i> hrs.:	<i>xx</i> represents the number of hours since the tape drive was cleaned.
COMPRESS: ON: or COMPRESS: OFF:	Compression is enabled (default) or compression is disabled.
SINGLE-ENDED or LV DIFFERENTIAL	The tape drive has an SE SCSI configuration or the the tape drive has an LVD configuration.
SCSI ID: <i>xx</i>	<i>xx</i> represents the SCSI ID of the tape drive.
<i>LANGUAGE:</i>	Current language for the display panel displays when you hold the Unload button after the RESETTING message displays. Press and hold the button to cycle through the available languages until the desired language displays.

Tape drive status messages

The following table provides information on the tape drive status messages that display on the display panel.

Tape drive status message	Meaning
READY-NO TAPE	The drive is ready to accept a tape cartridge.
○ ⁻ ○ ⁻ LOADING....	The drive is loading the tape cartridge.
○ ⁻ ○ ⁻ READY-TAPE	The drive has successfully loaded the tape cartridge and is ready for read and write operations.
○ ⁻ ○ ⁻ EJECT ■■■====	The Unload button was pressed. The drive will eject the tape cartridge when it completes the current operation.
○ ⁻ ○ ⁻ EJECT PREVENT	The software has disabled the eject function with the PREVENT/ALLOW MEDIA REMOVAL command. The drive will rewind and unload the tape, but will not eject the cartridge.
○ ⁻ ○ ⁻ ILLEGAL TAPE	The drive detected an incompatible tape cartridge and ejected it.
WORN TAPE	The tape currently in the drive must be replaced.

Tape motion messages

The following table provides information on the tape motion messages that display on the display panel.

Tape motion message	Meaning
○ ⁺ ○ ⁺ READ+ ■■■====	The drive is reading data. The + sign displays when the data is compressed. The boxes show the amount of tape used.
○ ⁺ ○ ⁺ WRITE+ ■■■====	The drive is writing data. The + sign displays when the data is compressed. The boxes show the amount of tape used.
○/○ PROTECTED	The drive cannot write data because the tape cartridge is write-protected.
○/○ ILLEGAL WRT	The drive cannot write to the type of tape cartridge inserted. This message displays until the tape is unloaded or ejected.
>> or << SEARCH ■■■====	A high-speed search is in progress. The arrows indicate the direction of the search.
<< REWIND ■■■====	Tape rewind is in progress.

Tape motion message	Meaning
○X○ ERASE ■■■===	The drive is erasing data on the tape.
FORMAT ■■■■■■	The tape drive is repartitioning the tape to the requested format. The icon to the left of the message displays the current operation (write, erase, search, or another operation).

Cleaning messages

The following table provides information on the cleaning messages that display on the display panel.

Cleaning message	Meaning
○^○ CLEAN SOON	Clean the drive at the next convenient time.
○^○ CLEANING ...	Cleaning is in progress.
○^○ DEPLETED	The cleaning tape in the cartridge is depleted; the drive ejects the cleaning cartridge. Use a new cleaning cartridge.

Error messages

The following table provides information on the error messages that display on the display panel.

Error message	Meaning
ERR 1: xx yy zz	The most recent error displays where xx is the fault symptom code, and yy and zz indicate secondary errors (if any).
ERR 2 (or 3): xx yy zz	Previous error messages display.

Diagnostics and loading code messages

The following table provides information on the diagnostics and loading code messages that display on the display panel.

Diagnostics and loading code message	Meaning
DIAG-LOAD TAPE	This message displays if the tape drive receives a SCSI Send Diagnostic command or if a diagnostic tape is inserted.
DIAG-TESTING....	The tape drive is performing the diagnostic tests.
DIAG-PASSED	This message displays for 15 seconds when the test completes successfully.

Diagnostics and loading code message	Meaning
DIAG-FAILED	The test failed. The display panel then cycles through the following messages: DIAG-WRITE, DIAG-READ, and DIAG-ECC.
LOADING CODE....	This message displays when code is loading from a code load tape, through SCSI, or through the monitor port. If the code load is successful, the tape drive automatically resets. If the code load fails, the display panel displays the CODE LOAD FAIL message.
CODE LOAD FAIL, RETRY CODE LOAD	These messages display in sequence after the code load fails.
MAKE CODELOAD TP	The tape drive is making a code load tape.

Fault system codes and possible error recovery procedures

The following table lists fault symptom codes that might display on the LCD, and their possible error recovery procedures. If you attempt one of these error recovery procedures and the tape drive still does not work, go to Appendix C, “Help and service information” on page 2-2. The fault symptom codes are arranged in alphanumeric order.

Fault system codes	Error recovery procedures
02, 05, 10, C0, C1, C2, C3, C4, C7, C8, CA, CB, D8, DC, E0, E1, E2, E3, E4, E5, E6, E7	Restart your software backup procedure.
03, 27, 4C	Move the write protect switch on the data cartridge to write enable the tape.
08, 17, 18, 19, 34, 35, 98, 99, 9A, 9C, A1, A2, A4, A5, A7, A8	You must perform the actions in the following order: <ol style="list-style-type: none"> 1. Reset the tape drive by holding down the Unload button for more than 10 seconds, then restart your backup software procedure. 2. Replace the tape drive.
11, 16, 36, 38, 0B, 3D	You must perform the actions in the following order: <ol style="list-style-type: none"> 1. Clean the tape drive and restart your backup software operation. 2. Replace the tape drive.

Fault system codes	Error recovery procedures
94, 95, 96, 97, 9B, 9D, 9E, 9F, AC, AD, AE, AF, B0, B3, B4, B5	<p>You must perform the actions in the following order:</p> <ol style="list-style-type: none"> 1. Reset the drive using the Unload button. 2. Clean the tape drive and restart your backup software operation. 3. Repeat your backup software operation with a new data cartridge. 4. Replace the tape drive.
47, 74, 1C, C5, C6, DB, DD	Repeat your backup software operation with a new data cartridge
37	<p>You must perform the actions in the following order:</p> <ol style="list-style-type: none"> 1. Clean the tape drive and restart your backup software operation. 2. Reset the tape drive by holding down the Unload button for more than 10 seconds, then restart your backup software procedure. 3. Replace the tape drive.
8C, 8D, A3, A6	<p>You must perform the actions in the following order:</p> <ol style="list-style-type: none"> 1. Power the tape drive off and back on again, then reissue the failed command sequence. 2. Replace the tape drive.
67, 6D, FA, FC, FD	Replace the tape drive.
C9	Insert a data cartridge into the tape drive.
D2, D6	Power the tape drive off and back on again, then reissue the failed command sequence.
D7	Repeat the operation with a different data cartridge; the tape drive cannot read the tape.

Selecting data cartridges

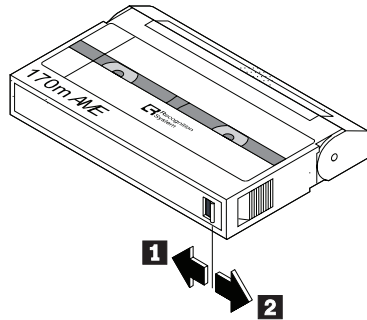
For writing data, use only advanced metal evaporated (AME) data cartridges. For optimum performance, use the kind of data cartridge that comes with the option. The included data cartridge is a combination cleaning and data cartridge that performs a cleaning operation every time you use it. The U-card in the data cartridge case contains information on purchasing additional supplies.

Note: The tape drive cannot use metal-particle (MP) tape cartridges. If an MP tape cartridge is inserted into the tape drive, the drive will automatically recognize and reject it.

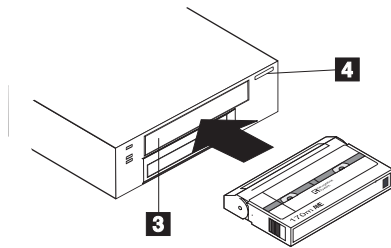
Loading and unloading data cartridges

When the indicators are off, the tape drive is ready to accept a cartridge. Do not insert a data cartridge if the tape drive is still performing a POST. To load a cartridge:

1. Set the cartridge for write-protect **1** or write-enable **2**.



2. Insert the cartridge into the door **3** as shown in the following illustration.



The tape drive loads the tape in approximately 20 seconds. When the middle indicator lights, the tape drive is ready for read and write operations.

To unload a cartridge, press the Unload button **4**. Do not press and hold the Unload button for more than 10 seconds or you might reset the drive. If the tape drive is free of errors, it performs the following actions:

- Completes any command in process
- Writes any buffered information to tape
- Rewinds the tape to the beginning
- Unloads the tape and ejects the cartridge

If an error occurs before or during the unload procedure, the tape drive suspends the unload sequence. To clear the error, press the Unload button again.

Important: After pressing the Unload button again, the tape drive starts the unload sequence, but does not write data in the buffer to the cartridge.

Resetting the drive

To reset the tape drive, press and hold the Unload button **4** for at least 10 seconds, or turn the drive off and back on again. The Unload button reset will unload the tape without rewinding.

If your software or SCSI host adapter resets the tape drive while a cartridge is loaded, the tape rewinds to the beginning. If the tape is positioned near the end, the reset might take as long as two minutes. After you reset the drive, tape operation starts from the beginning of the data cartridge. You might have to restart your backup tape software after the drive is reset.

Cleaning the drive

Your option comes with a combination cleaning and data cartridge that performs a cleaning operation automatically as needed. Additional manual cleanings will be required only in harsh environments. If the top (amber) indicator lights, clean the drive as soon as possible with an approved 8 mm cleaning cartridge. For information on purchasing 8 mm cleaning cartridges, go to the IBM Support Web site at <http://www.ibm.com/pc/support> and search for “cleaning cartridges.”

Packing the drive

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 to avoid damage to the tape drive and voiding your warranty. Remove and keep all cartridges, cables, and terminators.

Installation and user's guide (Translate)

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 2: Appendixes

This section contains tape handling information, problem-solving, cartridge format capability information, product specifications, product warranties, and notices.

Appendix A. Tape handling

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 issues

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-IBM 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 B. 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 showing the most recent three errors. The first two digits in error 1 are the fault symptom code. Using this fault symptom code, go to “Understanding the display panel messages” on page 1-10 to help resolve the problem.

The tape operation is unreliable or inconsistent.

Tape drive failures are often caused by contamination in the tape path or by using poor quality media. Try using another tape cartridge.

If the new tape works, discard the original tape.

If that does not correct the problem, use the cleaning tape to clean the drive and try another tape.

Appendix C. 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.

Online technical support	
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 IBM 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.

Support 24 hours a day, 7 days a week	
Canada	1-800-565-3344
U.S.A./Puerto Rico	1-800-772-2227

Appendix D. Cartridge format compatibility

The 60/120 GB, 8 mm Internal Tape Drive requires media recognition system (MRS SmartClean) data cartridges. The tape drive will eject advanced metal evaporated (AME) non-MRS SmartClean cartridges.

Appendix E. Product specifications

This appendix includes the following specifications and requirements:

- Maximum data capacity
- Input voltages
- Maximum sustained data transfer rates
- Operating environment
- SCSI cable specifications

<i>Maximum data capacity</i>		
Tape length	Compressed data⁶	Uncompressed data
75 m	20 GB ⁷	10 GB
150 m	40 GB	20 GB
225 m	120 GB	60 GB

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

<i>Maximum sustained data transfer rates</i>	
Compressed data ⁶	24 MB ⁸ per second
Uncompressed data	12 MB per second

<i>Operating environment</i>	
Tape path temperature range	+5°C (+41°F) to +45°C (+113°F)
Relative humidity	20% to 80%; noncondensing
Wet bulb	26°C (79°F) maximum
Altitude	304.8 m (1 000 ft) below sea level to 3,048 m (10 000 ft) above sea level

⁶ Assume a 2:1 compression ratio

⁷ GB equals approximately 1 000 000 000 bytes.

⁸ MB equals approximately 1 000 000 bytes.

<i>SCSI cable specifications</i>	
Connector	68-pin male, high-density, shielded, AMP 786090-7
Maximum length	
Single-ended	3 m (9.8 ft) A maximum cable length of 6 m (20 ft) is acceptable if the transfer rate is less than 5 MB per second.
LVD	12 m (39 ft) If only two devices are attached to the chain in a point-to-point configuration, the maximum cable length is 25 m (82 ft).

Appendix F. Product warranties and notices

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 2-6)
- **Worldwide except Canada, Puerto Rico, Turkey, and United States (Z125-5697-01 11/97)**
(Part 1 - General Terms on page 2-9)
- **Worldwide Country-Unique Terms**
(Part 2 - Country-Unique Terms on page 2-12)

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 - 60/120 GB, 8 mm 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. 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 - 60/120 GB, 8 mm 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:

1. death or personal injury or physical damage to your real property solely caused by IBM's negligence;
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The following item is added to this paragraph:

3. breach of IBM's obligations implied by Section 12 of the Sale of Goods Act 1979 or Section 2 of the Supply of Goods and Services Act 1982.

Applicability of suppliers and resellers (unchanged).

The following is added to the end of this Section:

IBM's entire liability and your sole remedy, whether in contract or in tort, in respect of any default will be limited to damages.

NORTH AMERICA

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UNITED STATES OF AMERICA: Warranty Service: The following is added to this Section:

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Appendix G. Electronic emissions notices

60/120 GB, 8 mm 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.

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 and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

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

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.

IBM can not 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.

Union Européenne - Directive Conformité électromagnétique

Ce produit est conforme aux exigences de protection de la Directive 89/336/EEC du Conseil de l'UE sur le rapprochement des lois des États membres en matière de compatibilité électromagnétique.

IBM ne peut accepter aucune responsabilité pour le manquement aux exigences de protection résultant d'une modification non recommandée du produit, y compris l'installation de cartes autres que les cartes IBM.

Ce produit a été testé et il satisfait les conditions de l'équipement informatique de Classe B en vertu de CISPR22 / Standard européen EN 55022. Les conditions pour l'équipement de Classe B ont été définies en fonction d'un contexte résidentiel ordinaire afin de fournir une protection raisonnable contre l'interférence d'appareils de communication autorisés.

Unione Europea - Directiva EMC (Conformidad electromagnética)

Este producto satisface los requisitos de protección del Consejo de la UE, Directiva 89/336/CEE en lo que a la legislatura de los Estados Miembros sobre compatibilidad electromagnética se refiere.

IBM no puede aceptar responsabilidad alguna si este producto deja de satisfacer dichos requisitos de protección como resultado de una modificación no recomendada del producto, incluyendo el ajuste de tarjetas de opción que no sean IBM.

Este producto ha sido probado y satisface los límites para Equipos Informáticos Clase B de conformidad con el Estándar CISPR22 y el Estándar Europeo EN 55022. Los límites para los equipos de Clase B se han establecido para entornos residenciales típicos a fin de proporcionar una protección razonable contra las interferencias con dispositivos de comunicación licenciados.

Union Europea - Normativa EMC

Questo prodotto è conforme alle normative di protezione ai sensi della Direttiva del Consiglio dell'Unione Europea 89/336/CEE sull'armonizzazione legislativa degli stati membri in materia di compatibilità elettromagnetica.

IBM non accetta responsabilità alcuna per la mancata conformità alle normative di protezione dovuta a modifiche non consigliate al prodotto, compresa l'installazione di schede e componenti di marca diversa da IBM.

Le prove effettuate sul presente prodotto hanno accertato che esso rientra nei limiti stabiliti per le apparecchiature di informatica Classe B ai sensi del CISPR 22 / Norma Europea EN 55022. I limiti delle apparecchiature della Classe B sono stati stabiliti al fine di fornire ragionevole protezione da interferenze mediante dispositivi di comunicazione in concessione in ambienti residenziali tipici.

Korean B급 규격 증명서

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