



120/240 GB DDS/4 Autoloader

User's Guide

OPTIONS
by IBM

Note: Before using this information and the product it supports, be sure to read the information under Appendix E, "Product warranties and notices" on page 2-5.

First Edition (February 2000)

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Safety: Read first



Before installing this product, read the Safety Information.

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 information on the IBM 120/240 GB DDS/4 Autoloader. It is divided into the following parts:

Part 1: Installation and user's guide

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

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

Part 2: Appendixes

This section contains tape cartridge format compatibility information; product specifications; problem-solving, help, and service information; the 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 usage information. For problem-solving information, go to Appendix C, "Problem solving" on page 2-3.

Product description

The IBM® 120/240 GB¹ DDS/4 Autoloader is an Ultra-2 SCSI or low-voltage differential (LVD) device that comes with a preinstalled IBM 20/40 GB DDS/4, 4-mm internal tape drive and two removable magazines. Each magazine can hold up to six tape cartridges (IBM part number 59H4458 or equivalent IBM-approved tape cartridges). You can use the autoloader to back up and restore data and to archive files. Each tape cartridge can store up to 20 GB of data (uncompressed), or up to 40 GB of data (compressed), assuming a 2:1 compression ratio. When a magazine is fully loaded, the autoloader can store up to 120 GB of data (uncompressed) or up to 240 GB of data (compressed). You can install the autoloader only in a 5.25-inch full-height drive bay in a computer.

In addition to this manual, this option package contains:

- IBM 120/240 GB DDS/4 Autoloader with a preinstalled IBM DDS/4 20/40 GB, 4-mm internal tape drive
- Two magazines
- Five tape cartridges
- Cleaning cartridge
- Trial backup-and-restore software CDs
- Safety Information manual

For information on how to purchase additional supplies such as tape cartridges, cleaning cartridges, magazines, and SCSI terminators, go to the **OPTIONS** by IBM Web site at <http://www.ibm.com/options> and click **Tape drive**.

If an item is missing or damaged, go to Appendix D, "Help and service information" on page 2-3 for information on obtaining help and service. Be sure to retain your proof of purchase. It might be required to receive warranty service.

¹ GB equals approximately 1 000 000 000 bytes.

Software description

The tape drive comes with CDs that contain trial versions of backup-and-restore applications. These CDs contain 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 application expires after 30 or 90 days.

You can use the 30-day or 90-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 OPTIONS by IBM Web site at <http://www.ibm.com/options> and click **Tape drive**. You can also contact the manufacturer of the application for information about purchasing the application.

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>

Installation requirements

To install the autoloader, you must have the following:

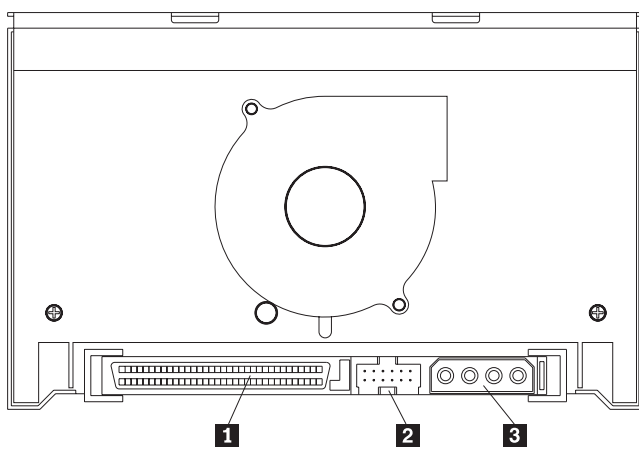
- LVD-compatible SCSI adapter meeting the Ultra-2 SCSI standards
Note: The preinstalled tape drive works with some non-LVD or single-ended SCSI adapters, but at a lower performance rate.
- Documentation for your computer or SCSI adapter
- Screwdriver for the mounting screws
- Needle-nose pliers to remove and set jumpers (optional)
- Backup-and-restore software, if you do not use the trial software that comes with the drive
Note: The required device drivers for the tape drive and the autoloader are usually included in the backup-and-restore application that you use. If the device drivers are not included in your application, check with the software manufacturer for information on obtaining updates.

Before you begin

Before you install the autoloader, read the information in this section on locating the autoloader connectors, controls, and indicators.

Locating the connectors

The following diagram shows the location of the connectors on the autoloader rear panel.



1 SCSI connector

This 68-pin connector is where you connect the computer SCSI cable.

2 SCSI jumper pins

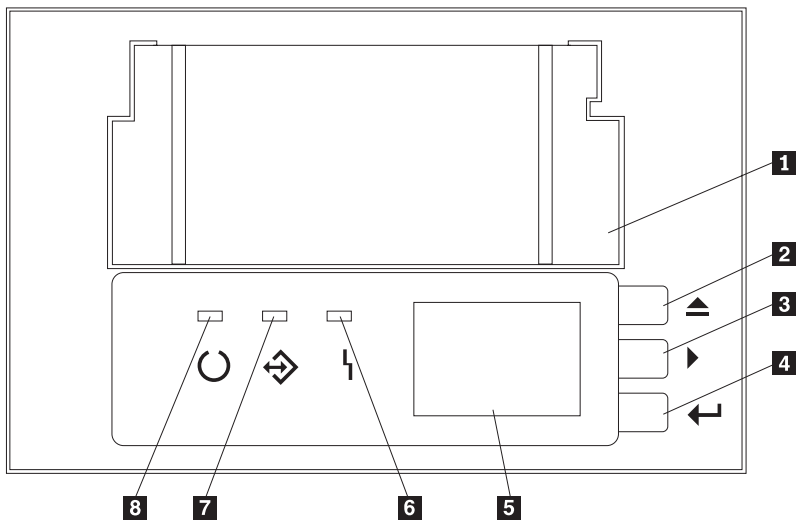
This is where you reposition jumpers to set a SCSI ID.

3 Power connector

This 4-pin connector is where you connect the computer power cable.

Locating the controls and indicators

The following diagram shows the location of the controls and the indicators on the autoloader front panel.



1 Tape drive door

This is where you insert a magazine.

2 Eject button

This button enables you to eject a cartridge from a tape drive.

3 Scroll button

This button enables you to scroll through the menu selections on the Status Panel **5**.

4 Enter button

This button enables you to activate functions.

5 Status Panel

This panel displays autoloader activity messages.

6 Fault LED (amber)

This indicator lights steadily if maintenance or cleaning is required for the tape drive or flashes if there is an error.

7 Activity LED (green)

This indicator lights steadily or flashes during tape drive activity.

8 Ready LED (green)

This indicator lights steadily when there is a cartridge in the drive or flashes when the autoloader is loading or unloading a cartridge.

Installing the autoloader

Follow these steps to install the autoloader.

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 autoloader in the range of 0 to 15. 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 that are supported. The autoloader comes with the SCSI ID preset to 6.

Follow these guidelines to select a SCSI ID:

- Assign the autoloader to one of the lower priority ID numbers available (0–6).
- Assign the higher 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 reserved for the SCSI adapter.

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

- For most IBM computers, press F1 during the startup, after the memory check completes. Other adapters display 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 the SCSI adapter utility programs, if available.
- Inspect the installed SCSI devices to see the jumper settings that determine the IDs.

Step 2. Preparing for installation

To prepare for installation:

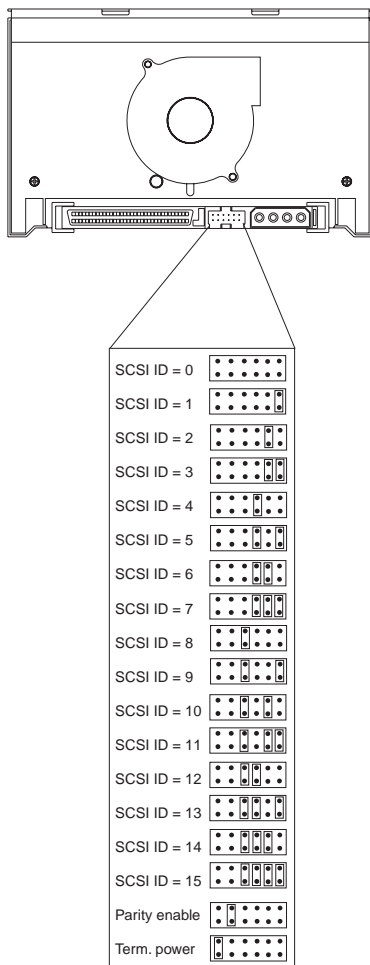
1. Turn off all attached devices. Turn off the computer. Unplug the power cords for the computer and all attached devices; then open the computer. For specific information on opening your computer, refer to the documentation that comes with your computer.

Attention: Before opening the static-protective bag containing the autoloader, touch the bag to an unpainted metal surface on the computer for at least two seconds. Be sure to touch a metal surface before touching the drive, to ground any accumulated static electricity.

2. Remove the autoloader from the static-protective bag. If you must put the autoloader down, place the autoloader on the static-protective bag.

Step 3. Setting the SCSI ID, termination, and parity

Use the following illustration to locate the jumper pins for SCSI ID settings, termination, and parity.



The default SCSI setting for the autoloader is 6. If you need to change the SCSI setting, refer to the SCSI ID settings shown in the illustration. To set the ID, remove and reposition the jumpers that come with your tape drive. If necessary, use a pair of needle-nose pliers to remove the jumpers.

If the autoloader is the last device on the SCSI device chain, the chain must be terminated at the autoloader. Some SCSI cables provide self-termination and do not require SCSI terminators. If your computer SCSI cable does not provide self-termination, attach a SCSI terminator (not provided) to the autoloader SCSI connector before attaching the SCSI cable. For information on purchasing a SCSI terminator, go to "Product description" on page 1-1.

Most SCSI adapters provide termination power. However, if the SCSI adapter on your computer does not provide termination power, you will need to place a jumper on the **Term. power** jumper pins as shown in the above illustration. For more information on termination power, refer to the documentation that comes with the computer or SCSI adapter.

Review the information that comes with your computer regarding parity generation. To generate parity, place a jumper on the **Parity enable** jumper pins as shown in the illustration.

Step 4. Mounting the autoloader

Use these instructions to mount the autoloader in a 5.25-inch full-height drive bay.

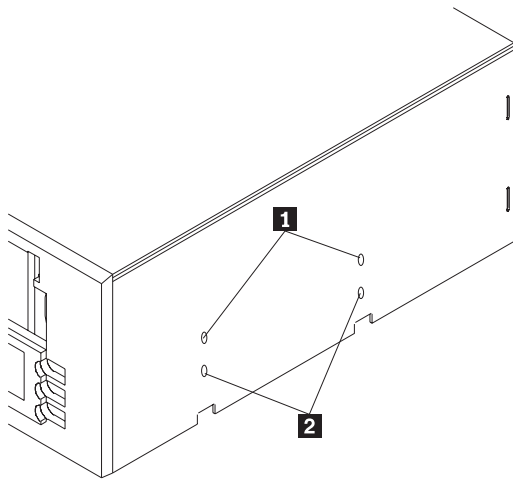
Notes:

1. You can use the mounting hardware that comes with the autoloader to install the autoloader in most computers. However, some computers might require additional mounting rails or faceplates. For more information on mounting requirements and where to obtain required parts, refer to the documentation that comes with your computer.
2. You can mount the autoloader only in a 5.25-inch full-height drive bay.

<p>Attention: Be sure to use the mounting screws that come with your autoloader. You might damage the autoloader or the tape drive if you use mounting screws that are too long.</p>

1. Remove the cover plate from an available 5.25-inch drive bay; then place the autoloader in the bay.

2. Align the top set **1** or the bottom set **2** of the threaded screw holes on the autoloader with the drive-bay holes or the mounting rails. For more instructions on mounting the drive in your computer or external enclosure, see the documentation that comes with your computer or external enclosure.



Use the following guidelines when you mount the autoloader:

- 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 the rear of the autoloader.
3. Thread a screw through each mounting screw hole into each autoloader screw hole; then tighten the screws with a screwdriver.

Step 5. Attaching cables

To attach the SCSI and power cables to the autoloader:

1. Locate the SCSI cable on your computer (a 68-pin, wide ribbon cable with one end connected to the SCSI adapter) and find an available connector that will reach the autoloader.
Note: The SCSI adapter might be on the computer system board or might be installed in an expansion slot.
2. Attach the SCSI cable from your computer to the autoloader 68-pin SCSI connector. The SCSI cable connector attaches to the drive only one way. Do not force the connector onto the drive.

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

3. Locate a power cable connected to the computer power supply. Attach the power-cable connector to the autoloader 4-pin power connector. If all the power cables are in use, purchase a power-splitter, which is available at most electronics stores, and split a connection to make a connection available for the autoloader.

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. Be sure that the air vents to the power supply are not blocked.
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 the computer. The autoloader turns on and the following events occur in sequence:

1. The Fault, Load, and Activity indicators light.
2. The Status Panel displays the active SCSI ID.
3. The indicators flash and the Status Panel displays the WAITING SELF TEST message.
4. If a magazine is loaded, the Status Panel displays the SCAN X message while determining the slots that contain cartridges.
5. As each cartridge is identified, the corresponding cartridge location number displays on the Status Panel.
6. When all tests complete, the READY message displays on the Status Panel if a magazine is loaded in the autoloader. If no magazine is loaded, the NO MAGAZINE message displays on the Status Panel until you load a magazine.
7. To manually load a tape, press the Select button to select the desired tape; then press the Enter button.

Step 8. Updating the configuration

For many computers, the configuration-setup utility automatically recognizes the new SCSI device. However, you might have to provide information about your system changes when you restart your computer.

If your computer does not recognize the autoloader after startup or you receive startup errors, run the configuration-setup utility program using the instructions that come with your computer.

Be sure that the appropriate Advanced SCSI Programming Interface (ASPI) device drivers are installed to support the autoloader. ASPI device drivers usually come with the SCSI adapter. For more information on ASPI device drivers, refer to the documentation that comes with the SCSI adapter.

Step 9. Installing backup-and-restore software and device drivers

To use the autoloader, you must install a backup-and-restore application for your computer operating system. If you are using software that is not included in the option package, follow the installation instructions 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 use instructions. The required device drivers for the tape drive and the autoloader are included in the backup-and-restore application that you use. You must install the tape drive device driver before installing the autoloader device driver. To install the device drivers, follow the on-screen instructions.

Using the autoloader

This section contains information on using the autoloader.

Note: You must install the device drivers included in a backup-and-restore application before you can use the tape drive and the autoloader.

Using the buttons

The following table describes the functions of the autoloader buttons.

Button	Function
Eject	You can use the Eject button to: <ul style="list-style-type: none">• Eject the magazine.• Start the process of unloading a cartridge from the drive. To finish the process, press the Enter button.
Scroll	You can use the Scroll button to: <ul style="list-style-type: none">• Sequentially select cartridges 1–6.• Access loader menus if no magazine is installed.• Scroll through menu items on the Status Panel.
Enter	You can use the Enter button to: <ul style="list-style-type: none">• Load a cartridge into the drive after you have selected the cartridge.• Select menu options.

Understanding the indicators

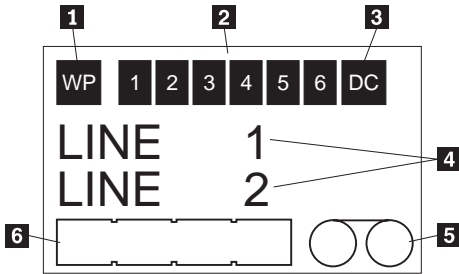
The following table describes the indicator actions during the operation of the autoloader.

Indicator	Action	Message type and action
Fault LED (amber)	Lights steadily	Notice: The drive requires cleaning because it has been in operation for 25 hours without being cleaned. Use the included cleaning cartridge to clean the tape drive. For more information on cleaning the tape drive, see “Cleaning the drive” on page 1-19.
Fault LED (amber)	Flashes	Error: A hardware fault occurred. For information on obtaining help and service, go to Appendix D, “Help and service information” on page 2-3.

Indicator	Action	Message type and action
Ready LED (green)	Lights steadily	Normal: A tape cartridge is inserted in the tape drive and is ready to accept commands.
Ready LED (green)	Flashes	Normal: The loader is inserting or removing a tape cartridge from the drive.
Activity LED (green)	Flickers	Normal: The autoloader is reading from or writing to the tape.

Understanding the Status Panel display

The following illustration shows the information that might be displayed in the Status Panel during operation of the autoloader.



1 WP

This box displays if the currently loaded cartridge or magazine is write-protected.

2 Six numbered boxes

Each box represents a cassette in the magazine. When a cartridge is in use, the corresponding box flashes to indicate the slot position associated with the cartridge.

3 DC

This box displays if the drive is set in data compression mode.

4 Message display

This section displays status, information, or error messages. For more information about the displayed messages, see “Understanding the Status Panel messages” on page 1-13.

5 Tape motion indicator

This indicator displays when the tape is in motion.

6 Tape available indicator

This indicator provides a gauge of how much tape is available in the cartridge. The indicator box fills up as more tape is used.

Understanding the Status Panel messages

The following table describes the messages that might display on the Status Panel.

Note: X represents the number of the magazine slot where the cartridge is located.

Displayed message	Description
NO MAGAZINE	There is no magazine in the autoloader.
LOADING MAGAZINE	The autoloader is loading a magazine.
SCAN X	The autoloader is sequentially scanning the cartridge positions in the magazine that you inserted.
READY	The autoloader has scanned all cartridge positions in the magazine and is ready to perform an action.
READ TAPE X	The tape drive is reading from a tape.
READY TAPE X	The autoloader is ready to accept commands because there is a tape in the tape drive.
WRITE TAPE X	The tape drive is writing to a tape.
ERASE TAPE X	The tape drive is erasing a tape.
REWIND TAPE X	The tape drive is rewinding a tape.
SEARCH TAPE X	The tape drive is searching the contents of a tape.
UNLOAD TAPE X	The autoloader is unloading a tape from the drive.
LOAD TAPE X	The autoloader is loading a tape into the drive.
EJECTING MAGAZINE	The autoloader is ejecting the six-cartridge magazine.
EJECT PREVENT	The autoloader is preventing you from ejecting the magazine because there is a cartridge in the drive, and the software has PMR (Prevent Magazine Removal) enabled.
SELECT PREVENT	The autoloader is preventing you from selecting a tape to load because there already is a cartridge in the drive.
SELECT X PUSH ENTER	This message displays when you press the Scroll button. Press the Scroll button again repeatedly to display the desired tape number (X); then press the Enter button to issue a command.

Displayed message	Description
WAITING SELFTEST	This message displays when the tape drive performs a Power-On Self-Test (POST) during startup.
CLEANING	The autoloader is loading a cleaning cartridge into the drive.
CLEANING REQUIRED	The tape drive requires cleaning.
UPDATING FIRMWARE	You are updating the autoloader or tape drive firmware.
REPLACE CLEANING TAPE	The cleaning cartridge has expired and you need to replace it.
CASSETTE INSTALL PROBLEM	A cartridge has been incorrectly inserted into the magazine. Eject the magazine from the autoloader using instructions given in "Ejecting the magazine" on page 1-18; then remove the cartridge from the magazine and carefully reinsert it.
MEDIA ERROR 03/XX/XX	There is a problem with the media. For problem-solving information, see Appendix C, "Problem solving" on page 2-3.
LOADER ERROR 04/XX/XX	There is a problem with the hardware. For problem-solving information, see Appendix C, "Problem solving" on page 2-3.
DRIVE ERROR 04/XX/XX	There is a problem with the tape drive. For problem-solving information, see Appendix C, "Problem solving" on page 2-3.
FAILURE TAPE EJECT	The autoloader failed to eject a tape. You might need to force an eject. For more information on forcing an eject, see "Forcing an eject" on page 1-18.
CHECK DOOR	The autoloader door is open.
CHECK MAGAZINE	The autoloader door is open.
INSERT EMPTY MAGAZINE	The autoloader cannot unload a tape from the tape drive to the magazine because the magazine in the autoloader is fully loaded. Eject the fully-loaded magazine; then insert an empty magazine into the autoloader. For more information on ejecting a magazine, see "Ejecting the magazine" on page 1-18. For more information on inserting a magazine, see "Loading cartridges and inserting the magazine" on page 1-16.

Displayed message	Description
DOOR LOCKED	The autoloader door is locked.
DOOR UNLOCKED	The autoloader door is unlocked.
NOT ALLOWED	The autoloader will not respond to the command you issued.
FAN FAILURE	There is a problem with the autoloader fan. For problem-solving information, see Appendix C, "Problem solving" on page 2-3.

Using the Status Panel menus

To enter the Status Panel menu mode, make sure that there is no magazine installed in the drive; then press and hold the Scroll button for five seconds. You can use the Scroll button to cycle through the following menus: Version, Language (Language), Contrast (Contrast), Auto/Ld (Auto Load), and Door. To display a menu, scroll to the menu selection and press the Enter button.

In the Version menu, you can use the Scroll button to cycle through the following information messages for the autoloader:

- IBMDDS4 (the name of the autoloader)
- IDX (the autoloader SCSI ID where X is the ID that you assigned to the autoloader)
- F/W 0000 (the autoloader firmware level)
- SN000000 (the autoloader serial number)

In the Language menu, you can enable the autoloader to display messages on the Status Panel in English, French, German, or Spanish by scrolling to the language selection and pressing the Enter button.

In the Contrast menu, you can make the Status Panel brighter or darker. To make the Status Panel brighter, display the Contrast menu and press the Enter button repeatedly until the desired contrast is displayed. To make the Status Panel darker, display the Contrast menu and press the Scroll button repeatedly until the desired contrast is displayed.

In the Auto/Ld menu, you can turn off the autoloader mode by scrolling to OFF and pressing the Enter button or you can turn it on by scrolling to ON and pressing the Enter button.

In the Door menu, you can lock the door by scrolling to LOCK and pressing the Enter button or you can unlock it by scrolling to UNLOCK and pressing the Enter button.

Loading cartridges and inserting the magazine

This section contains information on loading cartridges into the magazine and inserting the magazine into the autoloader.

Notes:

1. Use only IBM tape cartridges (part number 59H4458) or equivalent IBM-approved tape cartridges. For more information on cartridge-format compatibility, see Appendix A, "Cartridge format compatibility" on page 2-1.
2. Do not load a tape cartridge if the autoloader is performing a power-on self-test (POST) or if all the indicators are lit.

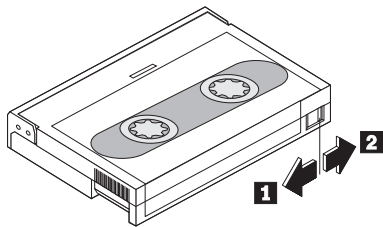
Before you insert a cartridge into the magazine, use the following labeling precautions to prevent the magazine or the cartridges from getting stuck in the autoloader:

- Firmly apply labels only to the recessed label areas.
- Do not extend labels past the edges of the label areas.
- Do not fold labels over the edges of the cartridges.
- Do not apply labels over other labels.

Note: You can load up to six cartridges into the magazine.

To load a cartridge into the magazine:

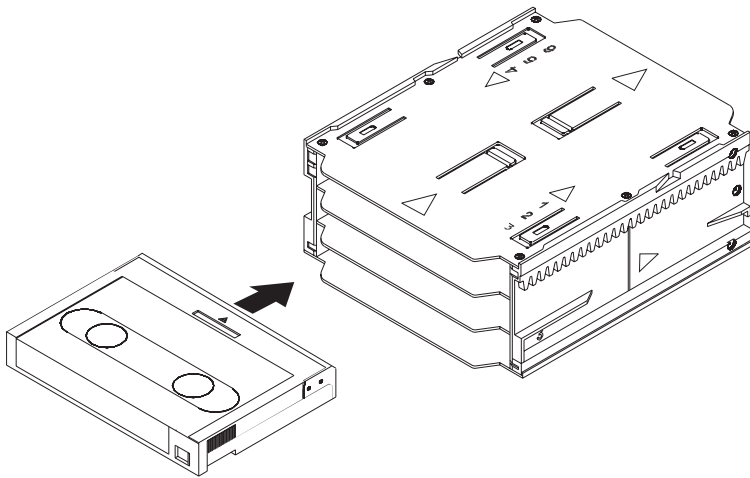
1. On the rear of the tape cartridge, set the switch to the left for write-protect **1** or to the right for write-enable **2**, as shown.



Note: Your backup-and-restore software might also provide write-protection for the cartridge. For more information on write-protection, refer to the documentation that comes with your software.

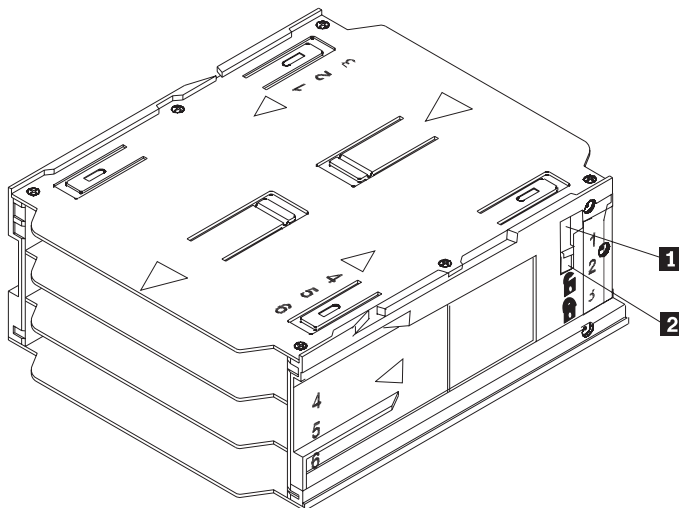
2. Hold the magazine so that the slot numbers are on top of the magazine.

3. Insert the cartridge into a magazine slot, as shown.

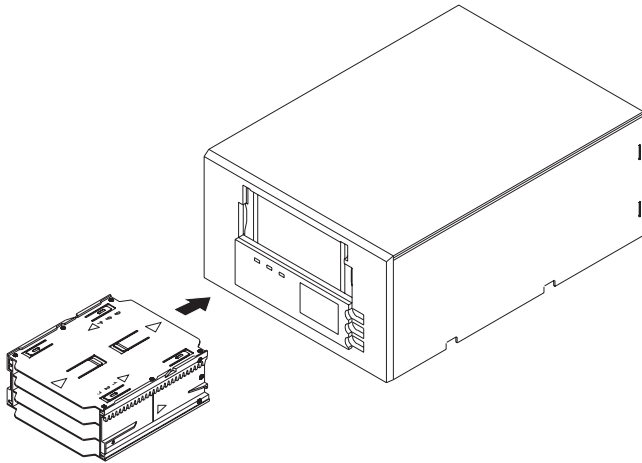


To insert the magazine into the autoloader:

1. Hold the magazine so that the slot numbers are on top of the magazine.
Note: If you will be using the magazine to create a multivolume backup library of stored cartridges, be sure to place an identifying label on the magazine.
2. To write-protect the magazine, slide the switch down **2**. To write-enable the magazine, slide the switch up **1**.



3. Insert the magazine into the autoloader, as shown.



4. Gently push the magazine until the autoloader mechanism senses the magazine and pulls it into the autoloader.

Ejecting the magazine

To eject the magazine from the autoloader, press the Eject button; then press the Enter button. If do not press the Enter button, the EJECT? PUSH ENTER message displays. When you press the Eject and Enter buttons, the following sequence occurs:

1. The tape rewinds to the beginning-of-partition (BOP) mark.
2. If the tape cartridge is not write-protected (read-only), the operating system writes the updated copy of the tape log back to the tape.
3. The tape rewinds to the beginning-of-media (BOM) mark and is unthreaded.
4. If a cartridge is in the tape drive, the changer places the cartridge back into the magazine.
5. The magazine is ejected.

Forcing an eject

If you press the Eject button when the tape drive is busy, the tape drive first completes the current task, and then responds to the eject request so that no data is lost.

However, there might be a time when you will need to force an eject to unload a cartridge, even if you risk losing the data on the cartridge.

Force an eject only when there is no other way to recover a cartridge. Never force an eject to quickly retrieve a cartridge. If you force an eject, the tape might lose its data and be incorrectly formatted.

To force an eject, hold down the Eject button for at least five seconds. When you force an eject, the following sequence occurs:

1. The Status Panel displays the EJECTING MAGAZINE message.
2. The autoloader waits 35 seconds to allow the completion of the normal eject process. When the 35-second period expires, the tape in the tape drive is immediately unthreaded and the cartridge is ejected, even if the tape drive is performing an activity.

Because forcing an eject can interrupt an operation, the tape drive might not write the end of data (EOD) mark on the tape before the cartridge is ejected. If the EOD mark is not written on the tape, the tape might be formatted incorrectly and the data on the tape might be lost. However, the data can usually be read up to the point where the error occurred, if a tape is incorrectly formatted.

3. The cartridge is returned to the magazine slot and the tape drive is reset as though it had been turned off and then turned on.

You can also force an eject when you need to eject the magazine and there is no cartridge loaded in the drive. If you force an eject when a cartridge is not loaded, the autoloader waits 35 seconds, ejects the magazine, and then resets as though it had been turned off and then turned on.

If forcing an eject does not successfully remove a cartridge or the magazine, go to Appendix C, “Problem solving” on page 2-3 for problem-solving information.

Packing the autoloader

If you are shipping the autoloader to another location or returning it for repair, pack the autoloader in its original shipping container and packing materials to avoid damage. If you are returning the autoloader for service, remove all cartridges, cables, and terminators from the autoloader and keep them in a safe place.

Cleaning the drive

Use the following table to determine how often you will need to clean the preinstalled tape drive. You can clean the drive manually or clean it using backup-and-restore software.

Note: If the Cleaning Required message displays on the Status Panel, clean the tape drive immediately.

Number of cartridges processed by the tape drive daily	Optimum cleaning frequency
One	Weekly
Two to three	Twice a week
Four or more	Daily

To manually clean the drive:

1. Place the cleaning cartridge in a magazine slot and insert the magazine into the IBM 120/240 GB DDS/4 Autoloader.
2. Use the Scroll button to select the slot where you placed the cleaning cartridge.
3. Press the Enter button to load the cleaning cartridge into the tape drive. The autoloader starts the cleaning cycle.
4. Press the Eject button to unload the magazine and remove the cleaning cartridge.
5. Record the date of the cleaning on the cleaning cartridge label.

If your backup-and-restore software application contains a tape drive head-cleaning feature, you can use the application to clean the drive.

To use a backup-and-restore application to clean the drive, insert the cleaning cartridge into the magazine using instructions given in “Loading cartridges and inserting the magazine” on page 1-16. Several software packages are preprogrammed to use Slot 6 to automatically clean the drive. The application prompts the autoloader changer to load the cartridge into the tape drive and initiates the cleaning cycle. When the cleaning cycle completes, the tape drive ejects the cleaning cartridge and the changer automatically returns the cartridge to the magazine slot.

Note: Discard the cleaning cartridge after it has reached the end of the cartridge. Do not rewind the cleaning cartridge.

Installation and user's guide (Translate)

This guide contains the product description, installation instructions, and usage information. For problem-solving information, go to Appendix C, "Problem solving" on page 2-3.

Product description

The IBM® 120/240 GB² DDS/4 Autoloader is an Ultra-2 SCSI or low-voltage differential (LVD) device that comes with a preinstalled IBM 20/40 GB DDS/4, 4-mm internal tape drive and two removable magazines. Each magazine can hold up to six tape cartridges (IBM part number 59H4458 or equivalent IBM-approved tape cartridges). You can use the autoloader to back up and restore data and to archive files. Each tape cartridge can store up to 20 GB of data (uncompressed), or up to 40 GB of data (compressed), assuming a 2:1 compression ratio. When a magazine is fully loaded, the autoloader can store up to 120 GB of data (uncompressed) or up to 240 GB of data (compressed). You can install the autoloader only in a 5.25-inch full-height drive bay in a computer.

In addition to this manual, this option package contains:

- IBM 120/240 GB DDS/4 Autoloader with a preinstalled IBM DDS/4 20/40 GB, 4-mm internal tape drive
- Two magazines
- Five tape cartridges
- Cleaning cartridge
- Trial backup-and-restore software CDs
- Safety Information manual

For information on how to purchase additional supplies such as tape cartridges, cleaning cartridges, magazines, and SCSI terminators, go to the OPTIONS by IBM Web site at <http://www.ibm.com/options> and click **Tape drive**.

If an item is missing or damaged, go to Appendix D, "Help and service information" on page 2-3 for information on obtaining help and service. Be sure to retain your proof of purchase. It might be required to receive warranty service.

² GB equals approximately 1 000 000 000 bytes.

Software description

The tape drive comes with CDs that contain trial versions of backup-and-restore applications. These CDs contain 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 application expires after 30 or 90 days.

You can use the 30-day or 90-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 OPTIONS by IBM Web site at <http://www.ibm.com/options> and click **Tape drive**. You can also contact the manufacturer of the application for information about purchasing the application.

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>

Installation requirements

To install the autoloader, you must have the following:

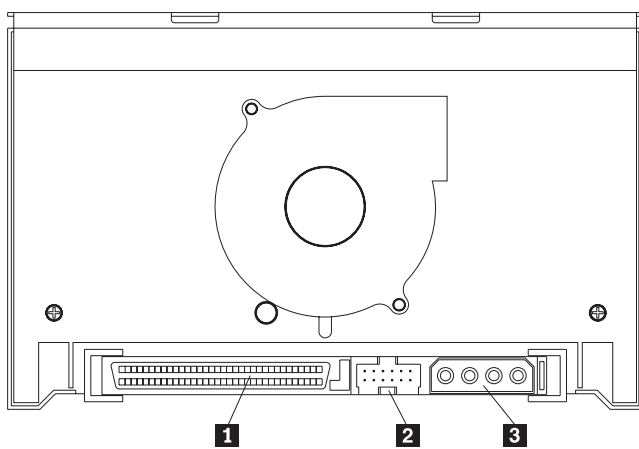
- LVD-compatible SCSI adapter meeting the Ultra-2 SCSI standards
Note: The preinstalled tape drive works with some non-LVD or single-ended SCSI adapters, but at a lower performance rate.
- Documentation for your computer or SCSI adapter
- Screwdriver for the mounting screws
- Needle-nose pliers to remove and set jumpers (optional)
- Backup-and-restore software, if you do not use the trial software that comes with the drive
Note: The required device drivers for the tape drive and the autoloader are usually included in the backup-and-restore application that you use. If the device drivers are not included in your application, check with the software manufacturer for information on obtaining updates.

Before you begin

Before you install the autoloader, read the information in this section on locating the autoloader connectors, controls, and indicators.

Locating the connectors

The following diagram shows the location of the connectors on the autoloader rear panel.



1 SCSI connector

This 68-pin connector is where you connect the computer SCSI cable.

2 SCSI jumper pins

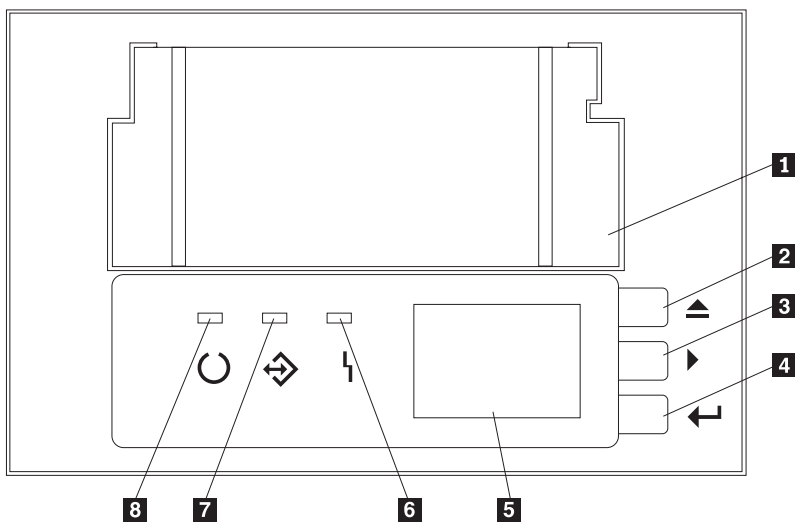
This is where you reposition jumpers to set a SCSI ID.

3 Power connector

This 4-pin connector is where you connect the computer power cable.

Locating the controls and indicators

The following diagram shows the location of the controls and the indicators on the autoloader front panel.



1 Tape drive door

This is where you insert a magazine.

2 Eject button

This button enables you to eject a cartridge from a tape drive.

3 Scroll button

This button enables you to scroll through the menu selections on the Status Panel **5**.

4 Enter button

This button enables you to activate functions.

5 Status Panel

This panel displays autoloader activity messages.

6 Fault LED (amber)

This indicator lights steadily if maintenance or cleaning is required for the tape drive or flashes if there is an error.

7 Activity LED (green)

This indicator lights steadily or flashes during tape drive activity.

8 Ready LED (green)

This indicator lights steadily when there is a cartridge in the drive or flashes when the autoloader is loading or unloading a cartridge.

Installing the autoloader

Follow these steps to install the autoloader.

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 autoloader in the range of 0 to 15. 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 that are supported. The autoloader comes with the SCSI ID preset to 6.

Follow these guidelines to select a SCSI ID:

- Assign the autoloader to one of the lower priority ID numbers available (0–6).
- Assign the higher 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 reserved for the SCSI adapter.

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

- For most IBM computers, press F1 during the startup, after the memory check completes. Other adapters display 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 the SCSI adapter utility programs, if available.
- Inspect the installed SCSI devices to see the jumper settings that determine the IDs.

Step 2. Preparing for installation

To prepare for installation:

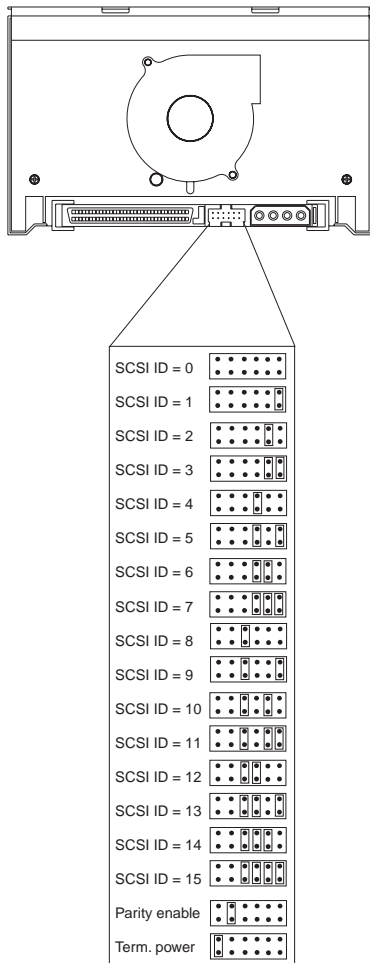
1. Turn off all attached devices. Turn off the computer. Unplug the power cords for the computer and all attached devices; then open the computer. For specific information on opening your computer, refer to the documentation that comes with your computer.

Attention: Before opening the static-protective bag containing the autoloader, touch the bag to an unpainted metal surface on the computer for at least two seconds. Be sure to touch a metal surface before touching the drive, to ground any accumulated static electricity.

2. Remove the autoloader from the static-protective bag. If you must put the autoloader down, place the autoloader on the static-protective bag.

Step 3. Setting the SCSI ID, termination, and parity

Use the following illustration to locate the jumper pins for SCSI ID settings, termination, and parity.



The default SCSI setting for the autoloader is 6. If you need to change the SCSI setting, refer to the SCSI ID settings shown in the illustration. To set the ID, remove and reposition the jumpers that come with your tape drive. If necessary, use a pair of needle-nose pliers to remove the jumpers.

If the autoloader is the last device on the SCSI device chain, the chain must be terminated at the autoloader. Some SCSI cables provide self-termination and do not require SCSI terminators. If your computer SCSI cable does not provide self-termination, attach a SCSI terminator (not provided) to the autoloader SCSI connector before attaching the SCSI cable. For information on purchasing a SCSI terminator, go to "Product description" on page 1-21.

Most SCSI adapters provide termination power. However, if the SCSI adapter on your computer does not provide termination power, you will need to place a jumper on the **Term. power** jumper pins as shown in the above illustration. For more information on termination power, refer to the documentation that comes with the computer or SCSI adapter.

Review the information that comes with your computer regarding parity generation. To generate parity, place a jumper on the **Parity enable** jumper pins as shown in the illustration.

Step 4. Mounting the autoloader

Use these instructions to mount the autoloader in a 5.25-inch full-height drive bay.

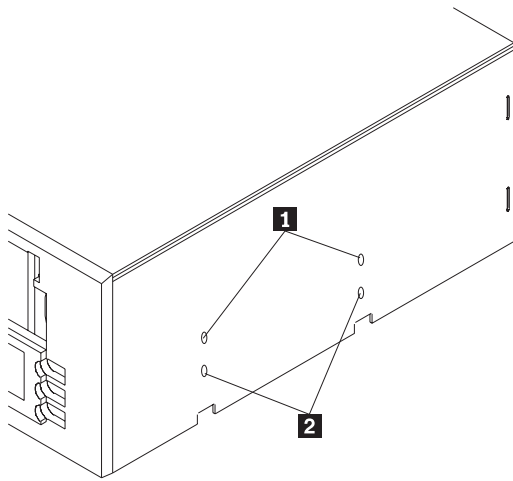
Notes:

1. You can use the mounting hardware that comes with the autoloader to install the autoloader in most computers. However, some computers might require additional mounting rails or faceplates. For more information on mounting requirements and where to obtain required parts, refer to the documentation that comes with your computer.
2. You can mount the autoloader only in a 5.25-inch full-height drive bay.

<p>Attention: Be sure to use the mounting screws that come with your autoloader. You might damage the autoloader or the tape drive if you use mounting screws that are too long.</p>

1. Remove the cover plate from an available 5.25-inch drive bay; then place the autoloader in the bay.

2. Align the top set **1** or the bottom set **2** of the threaded screw holes on the autoloader with the drive-bay holes or the mounting rails. For more instructions on mounting the drive in your computer or external enclosure, see the documentation that comes with your computer or external enclosure.



Use the following guidelines when you mount the autoloader:

- 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 the rear of the autoloader.
3. Thread a screw through each mounting screw hole into each autoloader screw hole; then tighten the screws with a screwdriver.

Step 5. Attaching cables

To attach the SCSI and power cables to the autoloader:

1. Locate the SCSI cable on your computer (a 68-pin, wide ribbon cable with one end connected to the SCSI adapter) and find an available connector that will reach the autoloader.
Note: The SCSI adapter might be on the computer system board or might be installed in an expansion slot.
2. Attach the SCSI cable from your computer to the autoloader 68-pin SCSI connector. The SCSI cable connector attaches to the drive only one way. Do not force the connector onto the drive.

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

3. Locate a power cable connected to the computer power supply. Attach the power-cable connector to the autoloader 4-pin power connector. If all the power cables are in use, purchase a power-splitter, which is available at most electronics stores, and split a connection to make a connection available for the autoloader.

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. Be sure that the air vents to the power supply are not blocked.
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 the computer. The autoloader turns on and the following events occur in sequence:

1. The Fault, Load, and Activity indicators light.
2. The Status Panel displays the active SCSI ID.
3. The indicators flash and the Status Panel displays the WAITING SELF TEST message.
4. If a magazine is loaded, the Status Panel displays the SCAN X message while determining the slots that contain cartridges.
5. As each cartridge is identified, the corresponding cartridge location number displays on the Status Panel.
6. When all tests complete, the READY message displays on the Status Panel if a magazine is loaded in the autoloader. If no magazine is loaded, the NO MAGAZINE message displays on the Status Panel until you load a magazine.
7. To manually load a tape, press the Select button to select the desired tape; then press the Enter button.

Step 8. Updating the configuration

For many computers, the configuration-setup utility automatically recognizes the new SCSI device. However, you might have to provide information about your system changes when you restart your computer.

If your computer does not recognize the autoloader after startup or you receive startup errors, run the configuration-setup utility program using the instructions that come with your computer.

Be sure that the appropriate Advanced SCSI Programming Interface (ASPI) device drivers are installed to support the autoloader. ASPI device drivers usually come with the SCSI adapter. For more information on ASPI device drivers, refer to the documentation that comes with the SCSI adapter.

Step 9. Installing backup-and-restore software and device drivers

To use the autoloader, you must install a backup-and-restore application for your computer operating system. If you are using software that is not included in the option package, follow the installation instructions 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 use instructions. The required device drivers for the tape drive and the autoloader are included in the backup-and-restore application that you use. You must install the tape drive device driver before installing the autoloader device driver. To install the device drivers, follow the on-screen instructions.

Using the autoloader

This section contains information on using the autoloader.

Note: You must install the device drivers included in a backup-and-restore application before you can use the tape drive and the autoloader.

Using the buttons

The following table describes the functions of the autoloader buttons.

Button	Function
Eject	You can use the Eject button to: <ul style="list-style-type: none">• Eject the magazine.• Start the process of unloading a cartridge from the drive. To finish the process, press the Enter button.
Scroll	You can use the Scroll button to: <ul style="list-style-type: none">• Sequentially select cartridges 1–6.• Access loader menus if no magazine is installed.• Scroll through menu items on the Status Panel.
Enter	You can use the Enter button to: <ul style="list-style-type: none">• Load a cartridge into the drive after you have selected the cartridge.• Select menu options.

Understanding the indicators

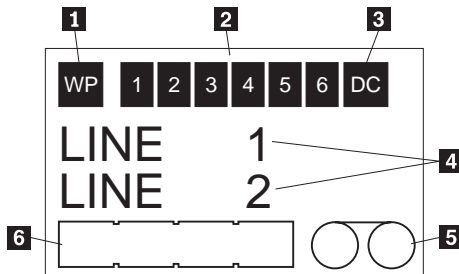
The following table describes the indicator actions during the operation of the autoloader.

Indicator	Action	Message type and action
Fault LED (amber)	Lights steadily	Notice: The drive requires cleaning because it has been in operation for 25 hours without being cleaned. Use the included cleaning cartridge to clean the tape drive. For more information on cleaning the tape drive, see “Cleaning the drive” on page 1-39.
Fault LED (amber)	Flashes	Error: A hardware fault occurred. For information on obtaining help and service, go to Appendix D, “Help and service information” on page 2-3.

Indicator	Action	Message type and action
Ready LED (green)	Lights steadily	Normal: A tape cartridge is inserted in the tape drive and is ready to accept commands.
Ready LED (green)	Flashes	Normal: The loader is inserting or removing a tape cartridge from the drive.
Activity LED (green)	Flickers	Normal: The autoloader is reading from or writing to the tape.

Understanding the Status Panel display

The following illustration shows the information that might be displayed in the Status Panel during operation of the autoloader.



1 WP

This box displays if the currently loaded cartridge or magazine is write-protected.

2 Six numbered boxes

Each box represents a cassette in the magazine. When a cartridge is in use, the corresponding box flashes to indicate the slot position associated with the cartridge.

3 DC

This box displays if the drive is set in data compression mode.

4 Message display

This section displays status, information, or error messages. For more information about the displayed messages, see "Understanding the Status Panel messages" on page 1-33.

5 Tape motion indicator

This indicator displays when the tape is in motion.

6 Tape available indicator

This indicator provides a gauge of how much tape is available in the cartridge. The indicator box fills up as more tape is used.

Understanding the Status Panel messages

The following table describes the messages that might display on the Status Panel.

Note: X represents the number of the magazine slot where the cartridge is located.

Displayed message	Description
NO MAGAZINE	There is no magazine in the autoloader.
LOADING MAGAZINE	The autoloader is loading a magazine.
SCAN X	The autoloader is sequentially scanning the cartridge positions in the magazine that you inserted.
READY	The autoloader has scanned all cartridge positions in the magazine and is ready to perform an action.
READ TAPE X	The tape drive is reading from a tape.
READY TAPE X	The autoloader is ready to accept commands because there is a tape in the tape drive.
WRITE TAPE X	The tape drive is writing to a tape.
ERASE TAPE X	The tape drive is erasing a tape.
REWIND TAPE X	The tape drive is rewinding a tape.
SEARCH TAPE X	The tape drive is searching the contents of a tape.
UNLOAD TAPE X	The autoloader is unloading a tape from the drive.
LOAD TAPE X	The autoloader is loading a tape into the drive.
EJECTING MAGAZINE	The autoloader is ejecting the six-cartridge magazine.
EJECT PREVENT	The autoloader is preventing you from ejecting the magazine because there is a cartridge in the drive, and the software has PMR (Prevent Magazine Removal) enabled.
SELECT PREVENT	The autoloader is preventing you from selecting a tape to load because there already is a cartridge in the drive.
SELECT X PUSH ENTER	This message displays when you press the Scroll button. Press the Scroll button again repeatedly to display the desired tape number (X); then press the Enter button to issue a command.

Displayed message	Description
WAITING SELFTEST	This message displays when the tape drive performs a Power-On Self-Test (POST) during startup.
CLEANING	The autoloader is loading a cleaning cartridge into the drive.
CLEANING REQUIRED	The tape drive requires cleaning.
UPDATING FIRMWARE	You are updating the autoloader or tape drive firmware.
REPLACE CLEANING TAPE	The cleaning cartridge has expired and you need to replace it.
CASSETTE INSTALL PROBLEM	A cartridge has been incorrectly inserted into the magazine. Eject the magazine from the autoloader using instructions given in "Ejecting the magazine" on page 1-38; then remove the cartridge from the magazine and carefully reinsert it.
MEDIA ERROR 03/XX/XX	There is a problem with the media. For problem-solving information, see Appendix C, "Problem solving" on page 2-3.
LOADER ERROR 04/XX/XX	There is a problem with the hardware. For problem-solving information, see Appendix C, "Problem solving" on page 2-3.
DRIVE ERROR 04/XX/XX	There is a problem with the tape drive. For problem-solving information, see Appendix C, "Problem solving" on page 2-3.
FAILURE TAPE EJECT	The autoloader failed to eject a tape. You might need to force an eject. For more information on forcing an eject, see "Forcing an eject" on page 1-38.
CHECK DOOR	The autoloader door is open.
CHECK MAGAZINE	The autoloader door is open.
INSERT EMPTY MAGAZINE	The autoloader cannot unload a tape from the tape drive to the magazine because the magazine in the autoloader is fully loaded. Eject the fully-loaded magazine; then insert an empty magazine into the autoloader. For more information on ejecting a magazine, see "Ejecting the magazine" on page 1-38. For more information on inserting a magazine, see "Loading cartridges and inserting the magazine" on page 1-36.

Displayed message	Description
DOOR LOCKED	The autoloader door is locked.
DOOR UNLOCKED	The autoloader door is unlocked.
NOT ALLOWED	The autoloader will not respond to the command you issued.
FAN FAILURE	There is a problem with the autoloader fan. For problem-solving information, see Appendix C, "Problem solving" on page 2-3.

Using the Status Panel menus

To enter the Status Panel menu mode, make sure that there is no magazine installed in the drive; then press and hold the Scroll button for five seconds. You can use the Scroll button to cycle through the following menus: Version, Language (Language), Contrast (Contrst), Auto/Ld (Auto Load), and Door. To display a menu, scroll to the menu selection and press the Enter button.

In the Version menu, you can use the Scroll button to cycle through the following information messages for the autoloader:

- IBMDDS4 (the name of the autoloader)
- IDX (the autoloader SCSI ID where X is the ID that you assigned to the autoloader)
- F/W 0000 (the autoloader firmware level)
- SN000000 (the autoloader serial number)

In the Language menu, you can enable the autoloader to display messages on the Status Panel in English, French, German, or Spanish by scrolling to the language selection and pressing the Enter button.

In the Contrast menu, you can make the Status Panel brighter or darker. To make the Status Panel brighter, display the Contrast menu and press the Enter button repeatedly until the desired contrast is displayed. To make the Status Panel darker, display the Contrast menu and press the Scroll button repeatedly until the desired contrast is displayed.

In the Auto/Ld menu, you can turn off the autoloader mode by scrolling to OFF and pressing the Enter button or you can turn it on by scrolling to ON and pressing the Enter button.

In the Door menu, you can lock the door by scrolling to LOCK and pressing the Enter button or you can unlock it by scrolling to UNLOCK and pressing the Enter button.

Loading cartridges and inserting the magazine

This section contains information on loading cartridges into the magazine and inserting the magazine into the autoloader.

Notes:

1. Use only IBM tape cartridges (part number 59H4458) or equivalent IBM-approved tape cartridges. For more information on cartridge-format compatibility, see Appendix A, "Cartridge format compatibility" on page 2-1.
2. Do not load a tape cartridge if the autoloader is performing a power-on self-test (POST) or if all the indicators are lit.

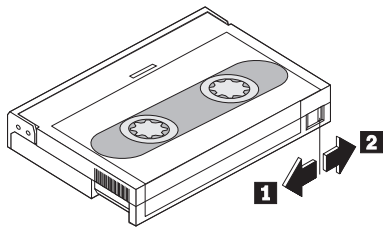
Before you insert a cartridge into the magazine, use the following labeling precautions to prevent the magazine or the cartridges from getting stuck in the autoloader:

- Firmly apply labels only to the recessed label areas.
- Do not extend labels past the edges of the label areas.
- Do not fold labels over the edges of the cartridges.
- Do not apply labels over other labels.

Note: You can load up to six cartridges into the magazine.

To load a cartridge into the magazine:

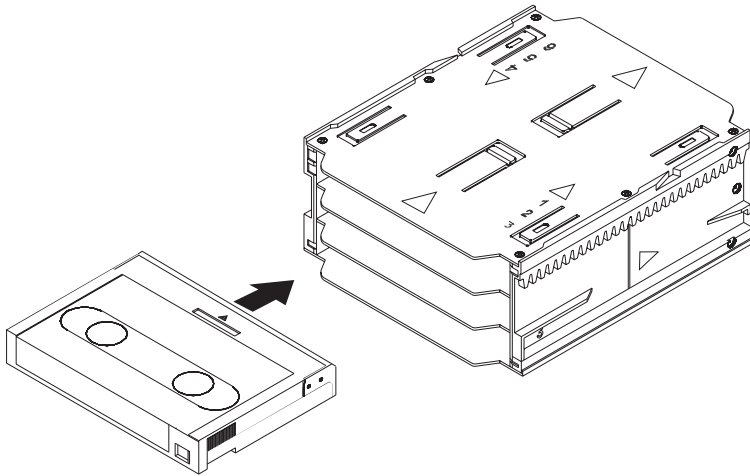
1. On the rear of the tape cartridge, set the switch to the left for write-protect **1** or to the right for write-enable **2**, as shown.



Note: Your backup-and-restore software might also provide write-protection for the cartridge. For more information on write-protection, refer to the documentation that comes with your software.

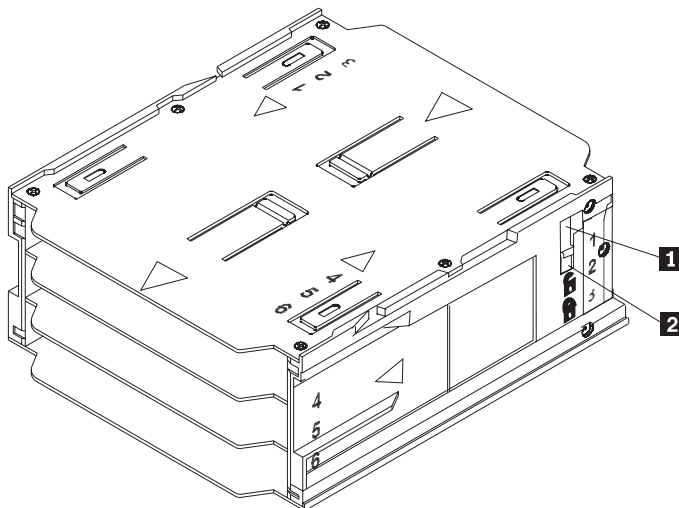
2. Hold the magazine so that the slot numbers are on top of the magazine.

3. Insert the cartridge into a magazine slot, as shown.

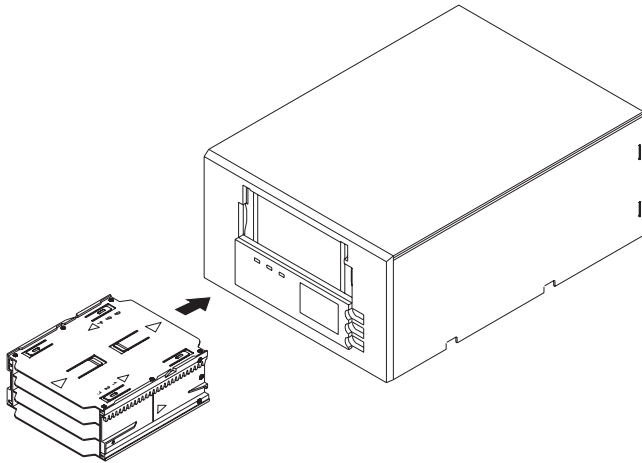


To insert the magazine into the autoloader:

1. Hold the magazine so that the slot numbers are on top of the magazine.
Note: If you will be using the magazine to create a multivolume backup library of stored cartridges, be sure to place an identifying label on the magazine.
2. To write-protect the magazine, slide the switch down **2**. To write-enable the magazine, slide the switch up **1**.



3. Insert the magazine into the autoloader, as shown.



4. Gently push the magazine until the autoloader mechanism senses the magazine and pulls it into the autoloader.

Ejecting the magazine

To eject the magazine from the autoloader, press the Eject button; then press the Enter button. If do not press the Enter button, the EJECT? PUSH ENTER message displays. When you press the Eject and Enter buttons, the following sequence occurs:

1. The tape rewinds to the beginning-of-partition (BOP) mark.
2. If the tape cartridge is not write-protected (read-only), the operating system writes the updated copy of the tape log back to the tape.
3. The tape rewinds to the beginning-of-media (BOM) mark and is unthreaded.
4. If a cartridge is in the tape drive, the changer places the cartridge back into the magazine.
5. The magazine is ejected.

Forcing an eject

If you press the Eject button when the tape drive is busy, the tape drive first completes the current task, and then responds to the eject request so that no data is lost. However, there might be a time when you will need to force an eject to unload a cartridge, even if you risk losing the data on the cartridge.

Force an eject only when there is no other way to recover a cartridge. Never force an eject to quickly retrieve a cartridge. If you force an eject, the tape might lose its data and be incorrectly formatted.

To force an eject, hold down the Eject button for at least five seconds. When you force an eject, the following sequence occurs:

1. The Status Panel displays the EJECTING MAGAZINE message.
2. The autoloader waits 35 seconds to allow the completion of the normal eject process. When the 35-second period expires, the tape in the tape drive is immediately unthreaded and the cartridge is ejected, even if the tape drive is performing an activity.

Because forcing an eject can interrupt an operation, the tape drive might not write the end of data (EOD) mark on the tape before the cartridge is ejected. If the EOD mark is not written on the tape, the tape might be formatted incorrectly and the data on the tape might be lost. However, the data can usually be read up to the point where the error occurred, if a tape is incorrectly formatted.

3. The cartridge is returned to the magazine slot and the tape drive is reset as though it had been turned off and then turned on.

You can also force an eject when you need to eject the magazine and there is no cartridge loaded in the drive. If you force an eject when a cartridge is not loaded, the autoloader waits 35 seconds, ejects the magazine, and then resets as though it had been turned off and then turned on.

If forcing an eject does not successfully remove a cartridge or the magazine, go to Appendix C, “Problem solving” on page 2-3 for problem-solving information.

Packing the autoloader

If you are shipping the autoloader to another location or returning it for repair, pack the autoloader in its original shipping container and packing materials to avoid damage. If you are returning the autoloader for service, remove all cartridges, cables, and terminators from the autoloader and keep them in a safe place.

Cleaning the drive

Use the following table to determine how often you will need to clean the preinstalled tape drive. You can clean the drive manually or clean it using backup-and-restore software.

Note: If the Cleaning Required message displays on the Status Panel, clean the tape drive immediately.

Number of cartridges processed by the tape drive daily	Optimum cleaning frequency
One	Weekly
Two to three	Twice a week
Four or more	Daily

To manually clean the drive:

1. Place the cleaning cartridge in a magazine slot and insert the magazine into the IBM 120/240 GB DDS/4 Autoloader.
2. Use the Scroll button to select the slot where you placed the cleaning cartridge.
3. Press the Enter button to load the cleaning cartridge into the tape drive. The autoloader starts the cleaning cycle.
4. Press the Eject button to unload the magazine and remove the cleaning cartridge.
5. Record the date of the cleaning on the cleaning cartridge label.

If your backup-and-restore software application contains a tape drive head-cleaning feature, you can use the application to clean the drive.

To use a backup-and-restore application to clean the drive, insert the cleaning cartridge into the magazine using instructions given in “Loading cartridges and inserting the magazine” on page 1-36. Several software packages are preprogrammed to use Slot 6 to automatically clean the drive. The application prompts the autoloader changer to load the cartridge into the tape drive and initiates the cleaning cycle. When the cleaning cycle completes, the tape drive ejects the cleaning cartridge and the changer automatically returns the cartridge to the magazine slot.

Note: Discard the cleaning cartridge after it has reached the end of the cartridge. Do not rewind the cleaning cartridge.

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.

Product service and warranty information

For technical support, support hours, and warranty terms and conditions, see the enclosed inserts, or contact your IBM reseller or IBM marketing representative.

Part 2: Appendixes

The following appendixes contain tape cartridge format compatibility information; product specifications; problem-solving, help, and service information; the product warranties and notices.

Appendix A. Cartridge format compatibility

You can use tape cartridges from other tape drives with the preinstalled tape drive if the cartridge format is compatible. The following table lists compatible cartridge formats.

<i>Cartridge format</i>	<i>Type of compatibility</i>
DDS-4 (150 m)	Read and write
DDS-3 (125 m)	Read and write
DDS-2 (120 m)	Read and write
DDS (90 m)	Read and write

Use only media recognition system (MRS) tape cartridges with the tape drive. The autoloader might become unreliable if you use non-MRS metal particle (MP) tape cartridges.

Appendix B. Product specifications

This appendix includes the following specifications and requirements for the preinstalled tape drive:

- Typical data capacity
- Power specifications
- Typical data-transfer rates
- Environmental specifications

<i>Typical data capacity</i>		
Cartridge format	Uncompressed data	Compressed data³
DDS-4 (150 m)	20 GB	40 GB
DDS-3 (125 m)	12 GB	24 GB
DDS-2 (120 m)	4 GB	8 GB
DDS (90 m)	2 GB	4 GB

³ Assumes a 2:1 compression ratio; actual compression ratio depends on data type.

<i>Power specifications</i>	
Voltage tolerance	± 10% (+12 v dc) ± 7% (+5 v dc)
Operational current (average)	700 milliamps (+12 v dc) 1.7 amps (+5 v dc)
Peak	2.4 amps (+12 v dc) 2 amps (+5 v dc)

<i>Typical sustained data-transfer rates</i>	
Compressed data	2.75 MB ⁴ per second
Uncompressed data	5.5 MB per second



<i>Environmental specifications</i>	
Temperature range Operating Nonoperating	+5°C (+41°F) to +45°C (+113°F) -40°C (-40° F) to +65°C (+149°F)
Relative humidity (noncondensing) Operating Nonoperating	20% to 80% 0% to 90%
Maximum wet bulb temperature Operating Nonoperating	26°C (78.8°F) maximum No condensation
Altitude Operating Nonoperating	100 m (330 ft) below sea level to 4575 m (15 000 ft) above sea level 300 m (985 ft) below sea level to 15 200 m (49 900 ft) above sea level

⁴ MB equals approximately 1 000 000 bytes.

Appendix C. 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.

- **An error message displays during POST.**

Run POST again. If tests are still not complete, the autoloader needs service. For information on obtaining help and service, see Appendix D, “Help and service information.”

- **The tape cartridges are not functioning properly.**

Take the following actions.

- Use IBM-approved cartridges.
 - Note:** Do not touch the exposed magnetic tape. If the tape leader is not in the correct position, use a new cartridge.
- Be sure you are not loading a write-protected cartridges when issuing write commands.
- Be sure you are not selecting the incorrect cartridge slot from which to initialize operations.
- If an error does occur, read the Status Panel display to help determine the problem. If the Status Panel is not on, or your system does not recognize the autoloader:
 - Ensure the power cable is firmly connected to the autoloader and the computer power supply.
 - Verify that the autoloader SCSI ID does not conflict with a SCSI ID assigned to another device. For more information on assigning SCSI IDs, see “Step 1. Selecting a SCSI ID” on page 1-5.

Appendix D. 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 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 E. Product warranties and notices

This section contains your product warranties, legal notices, trademark acknowledgments, and other 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 2-5)
- **Worldwide except Canada, Puerto Rico, Turkey, and United States (Z125-5697-01 11/97)**
(Part 1 - General Terms on page 2-8)
- **Worldwide Country-Unique Terms**
(Part 2 - Country-Unique Terms on page 2-11)

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 - IBM 120/240 GB DDS/4 Autoloader

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 - IBM 120/240 GB DDS/4 Autoloader

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:

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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:
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Der Aussteller der Konformitätserklärung ist die IBM UK, Greenock.

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Korean B급 규격 증명서

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