IBM

2U Tape Autoloader User's Guide

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IBM

> **Note:**
>
> Before using this information and the product it supports, be sure to read the information under Appendix C, "Service and Support," Appendix D, "IBM Statement of Limited Warranty Z125-4753-08 04/2004," on page D-1, and Appendix E, "Notices."

Contents

Safety

Before installing this product, read the Safety Information.

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

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

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

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

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

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

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

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

A termék telepítése előtt olvassa el a Biztonsági előírásokat!

Prima di installare questo prodotto, leggere le Informazioni sulla Sicurezza.

製品の設置の前に、安全情報をお読みください。

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

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

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

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

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

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

Перед установкой продукта прочтите инструкции по
технике безопасности.

Pred inštaláciou tohto produktu si prečítajte bezpečnostné informácie.

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」。

附属の電源コードセットは他の電気機器で使用しないでください。

Chapter 1. Product overview

The 3623xxx family of tape autoloaders provides automated data storage, archiving, backup, and retrieval for a range of IBM xSeries servers.

This family of autoloaders includes the following features:

- Storage for up to eight data cartridges. Cartridges are stored in cartridge slots mounted on the carousel. One of these cartridge slots can contain a cleaning cartridge.
- A cartridge access port for importing or exporting a single cartridge from the autoloader.
- An LCD that allows you to monitor autoloader operations, select configuration options, and control the cartridge loader and carousel from the front panel.
- Standard barcode reader (BCR) provides enhanced cartridge management by reading the barcode label IDs from the individual cartridges and sending them to the host software for additional processing.
- Standard remote management unit (RMU) provides remote access to the autoloader for access to autoloader status via a standard web browser.
- Standard rackmount kit enables installation in supported IBM racks.

Front view

This section provides information on the features located on the front panel of the 2U Tape Autoloader. (See the following figure.)
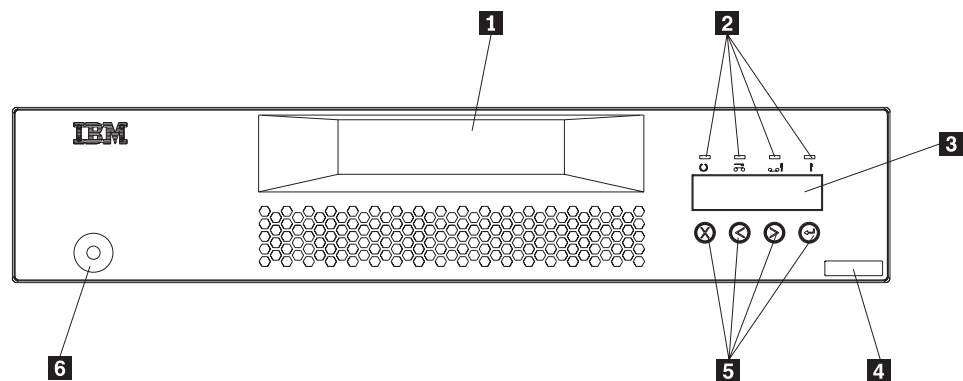
1	Cartridge access port	The cartridge access port allows you to insert or remove cartridges from the autoloader.
2	LEDs	Four status LEDs on operator panel.
3	Liquid crystal display	The liquid crystal display on the operator panel contains 16 characters per line, with two lines.
4	MT/MD/SN label	This label contains the autoloader's machine type (MT), model (MD), and serial number (SN). If you require service, IBM may ask for the SN located on this label.
5	Keypad	For more information about the four-button keypad, see "Using the operator panel" on page 3-1
6	Power switch	The power switch allows you to turn power on and off for the autoloader and the enclosed tape drive. The switch is recessed into the front panel to prevent the autoloader from being accidently turned off during operation.

Back view

This section provides information on the features located on the back panel of the 2U Tape Autoloader. (See the following figure.)
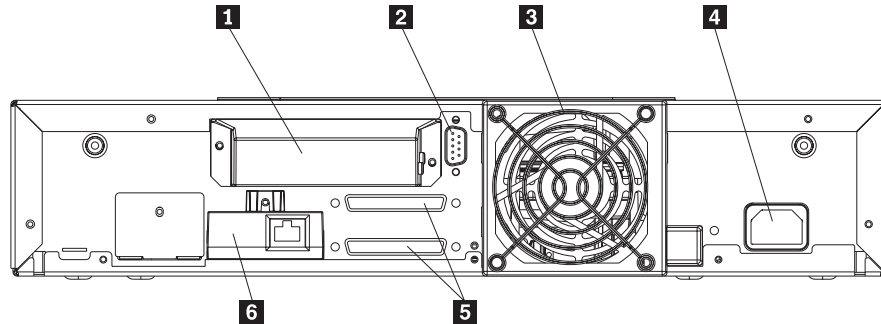
1	Barcode reader (BCR)	The BCR feature provides enhanced storage management by reading the barcode numbers from each of the data cartridges and providing their location information to the backup management software.
2	Diagnostic port (service only)	This port should only be used by IBM authorized service personnel.
3	Fan	The system fan provides cooling for the autoloader and the tape drive.
4	Power cord connection	The power cord connection provides AC power and chassis grounding to the autoloader and the tape drive.
5	SCSI connectors	The autoloader has two wide SCSI connectors for connecting the autoloader and tape drive to a single SCSI bus. The connectors can accommodate either of the following:
		• A shielded male, high-density wide (68-pin) SCSI cable, or
		• A wide external terminator
6	Remote Management Unit (RMU)	The RMU feature allows users to remotely control the autoloader and/or review current status via an Ethernet connection.

Internal view

This section provides information on the features located inside the 2U Tape Autoloader. (See the following figure.)
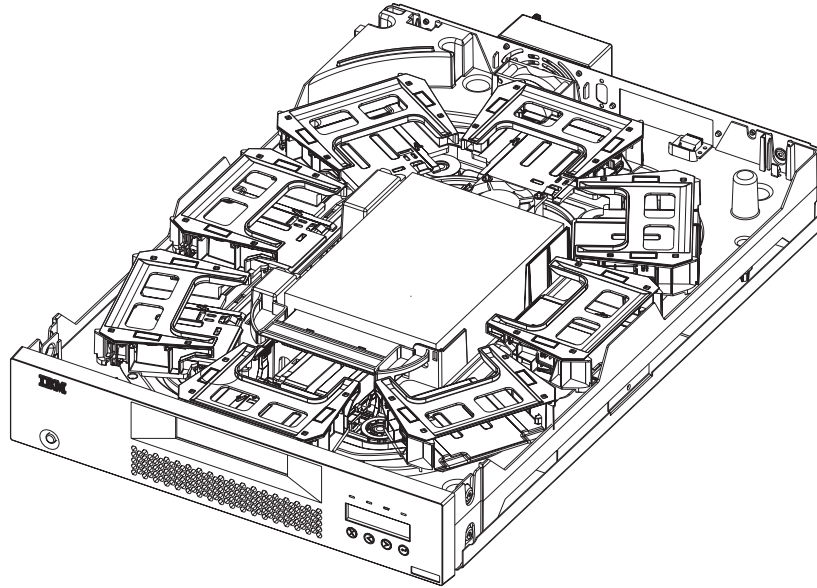
The autoloader consists of an eight cartridge carousel surrounding the tape drive. A robot manipulates the cartridges between the carousel and the tape drive, or out to the user via the front panel access port.

Chapter 2. Installation and configuration

This chapter provides information on installation requirements and on how to rack-mount and configure the autoloader.

Laser Compliance Statement

When laser products (such as CD-ROMs, DVD drives, fiber optic devices, or transmitters) are installed, note the following:

- Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.
- Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.

DANGER

Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following:

Laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam.

Preparation

Before you install your new autoloader, unpack it carefully and inspect it for any damage that might have occurred during shipping. The Quick Start card included in the packaging will help those familiar with tape products to quickly install and use the autoloader.

Safety guidelines

Review the documentation that comes with your rack enclosure for safety and cabling considerations. When installing your autoloader in a rack, follow these guidelines:

- Make sure that two people are used to rack-mount your autoloader.
- Install the autoloader in a maximum 32°C environment.
- To ensure proper air flow, it is recommended that air vents not be blocked; usually 15 cm (6 in.) of air space is sufficient.
- To ensure stability, take precautions to prevent uneven loading of the rack. Begin loading at the bottom of the rack, and ensure the heaviest devices are installed near the bottom of the rack.
- When multiple components are installed in a rack, take precautions to prevent overloading of power outlets.
- Always connect the autoloader to a properly grounded outlet.

• Do not extend more than one device out from the rack at one time.

Unpacking the autoloader

No special tools are required for unpacking the autoloader. Save all the original packing materials, including the accessory box, in case you need to ship or move the autoloader later.

Your 2U Tape Autoloader is shipped with the following:
• This documentation CD
• Quick Start guide
• AC power cord
• PDU power cord, when plugging into the rack's power distribution unit
• 3 meter (host to device) external SCSI cable
• External SCSI terminator
• Cleaning cartridge
• Rackmount hardware
• Autoloader assembly
• Barcode labels
• Standard power cord, when plugging into a wall outlet

Installation requirements

To install the 2U Tape Autoloader, you will need the following:
• Supported IBM rack
• Supported IBM server
• Ethernet connection (for remote management feature)
• #2 Phillips screwdriver
• T10 Torx wrench or small flat blade screwdriver

Note: IBM supported racks and servers can be found at http://www.pc.ibm.com/us/compat/storage/matrix.html.

Installing the autoloader in the rack

This section describes procedures for installing the autoloader in the rack.

Installing the rail assemblies to the rack

Note: The autoloader comes with two different style nuts: cage nuts that support installation in the IBM standard rack, and clip nuts that support installation in the IBM Enterprise rack. Please use the appropriate hardware in the following steps:

1. Position the left rails as shown in the following figure, and attach to the rack, using either the cage or clip nuts, and the mounting screws provided.
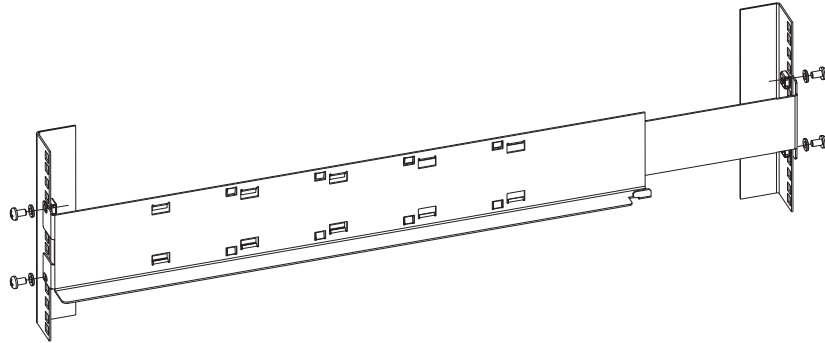
2. Repeat the previous step with the right rail.

Installing the L-brackets to the autoloader

To install the L-brackets to the autoloader, complete the following procedure:

1. Using a small flat blade screwdriver, remove the front screws that secure the right and left side of the autoloader cover (two screws on each side). Save the screws for step 2.

2. Match the holes on the L-brackets to the holes on the autoloader cover. (Verify that the hole on the front flange is placed at the top of the flange.) Using a small flat blade screwdriver, attach the L-brackets to each side of the autoloader with the screws from step 1.
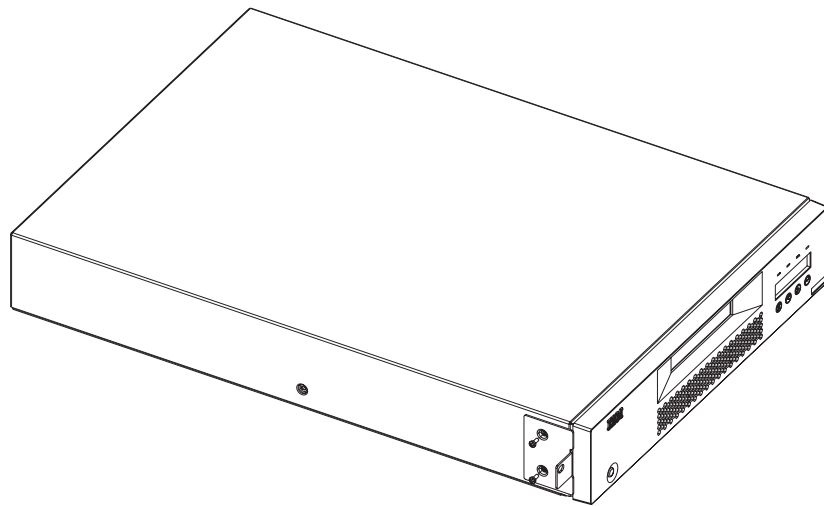
Installing the autoloader to the rack

Once you attach the L-brackets to your autoloader, you can slide the autoloader into the rails. To install the autoloader to the rack, complete the following

procedure:
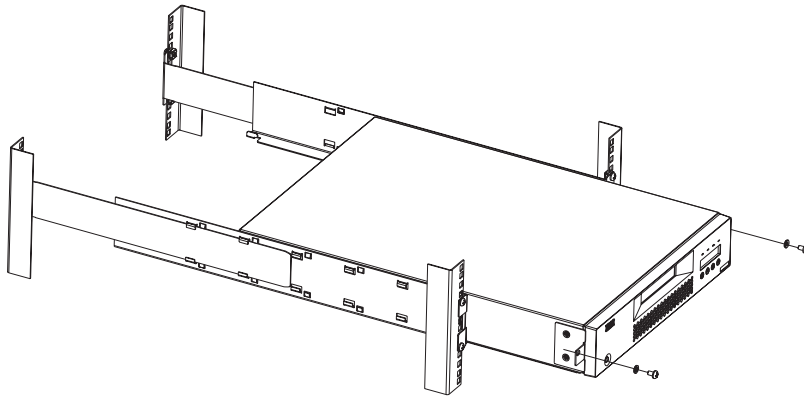
1. Position the autoloader in the rack by sliding it into the rail assembly and matching the holes in the rack with the holes on the L-brackets.
2. Verify that the restraint tabs at the rear of the rail assembly slide into the back of the autoloader and that the L-bracket is fully seated against the front flange of the rack.
3. Using a #2 Phillips screwdriver, attach the L-brackets on each side of the autoloader to the rack with the two remaining Phillips screws and washers.

Your autoloader is now ready for use as a rack-mounted unit.

Attaching the SCSI cable

The SCSI connection permits the host computer to communicate with the autoloader.

Note: You must have already installed a SCSI host adapter card in the host computer. The adapter card must be LVD-compatible.

To make the SCSI connection, complete the following procedure:

1. If the host computer is connected to a network, check with the system administrator before turning off power.
2. Properly turn off all peripheral devices connected to the host computer.
3. Turn off the host computer.
4. Install the supplied 68-pin SCSI cable to the double-stacked SCSI connector that is on the back of the autoloader and tighten the screws. You can install the SCSI cable in either port. (See the following figure.)
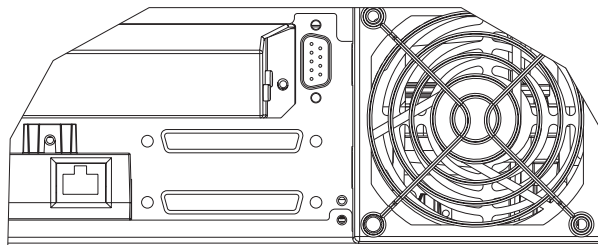
5. Install the supplied SCSI terminator to the remaining connector that is on the autoloader and then tighten the screws.
6. Attach the other end of the SCSI cable to the SCSI host adapter card.
7. Turn on any peripheral devices that you turned off in Step 2.

Note: Do not turn the host computer back on at this time. You must first configure the autoloader.

Attaching the RMU cable

To attach the RMU cable, complete the following procedure:

1. Plug an Ethernet cable into the RMU on the back of the autoloader (see the following figure.)
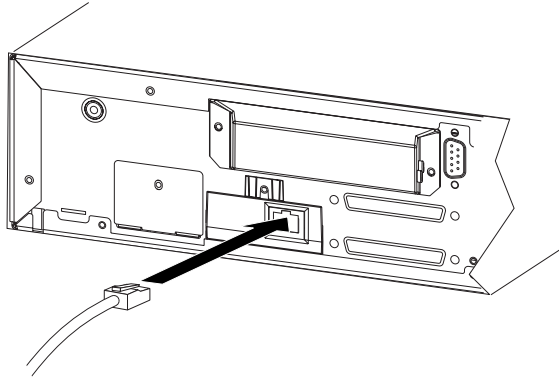
2. Plug the other end of the Ethernet cable into your network switch or hub.

Turning on the autoloader

Statement 1:

DANGER

Electrical current from power, telephone, and communication cables is hazardous.

To avoid a shock hazard:
- **Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.**
- **Connect all power cords to a properly wired and grounded electrical outlet.**
- **Connect to properly wired outlets any equipment that will be attached to this product.**
- **When possible, use one hand only to connect or disconnect signal cables.**
- **Never turn on any equipment when there is evidence of fire, water, or structural damage.**
- **Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.**
- **Connect and disconnect cables as described in the following table when installing, moving, or opening covers on this product or attached devices.**

To Connect:	To Disconnect:
1. Turn everything OFF.	1. Turn everything OFF.
2. Attach all cables to devices.	2. Remove power cords from outlet.
3. Attach signal cables to connectors.	3. Remove signal cables from connectors.
4. Attach power cords to outlet.	4. Remove all cables from devices.
5. Turn device ON.	

A power cord was supplied with your autoloader. Inspect it carefully and make sure that it is the correct one for your country or region. If the supplied power cord is not correct, contact your customer service representative or your point of sales person.

Connecting the power cord

To connect the power cord, complete the following procedure:

1. Be sure the power switch on the front of the unit is off.
2. Connect the female end of the power cord to the power connector on the back of the autoloader.
3. Plug the male end of the power cord to a wall outlet (if using the standard power cord) or to the rack's power distribution unit (PDU) if using the PDU power cord. (See the following figure.)
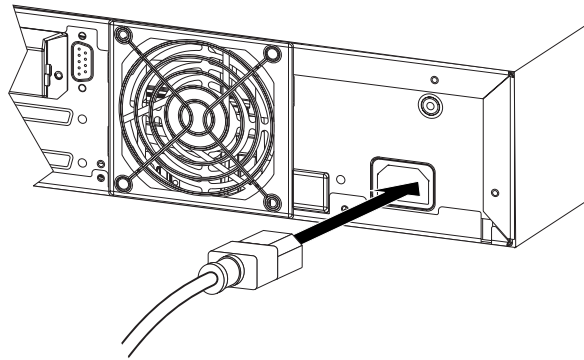
Turning on the autoloader

To turn on the autoloader, press the white recessed power switch to turn on the autoloader. Wait until the autoloader performs its power on sequence consisting of:

1. All LEDs turn on briefly once power is applied
2. The Ready LED flashes
3. The LCD panel displays `Connecting Drive xxxxx SEQ`
4. The LCD panel displays `Initializing xxxxx SEQ`
5. The LCD panel displays `Scanning all 8 slots`
6. The LCD panel displays `Drive Empty xxxxx SEQ`
7. The Ready LED stops flashing and remains solid On

The autoloader is now ready for normal operation. If the autoloader does not turn on at all, or if the Error LED is lit, perform one of the following:

- Ensure the power switch is turned on.
- Ensure the power cord is inserted correctly.
- Ensure the SCSI cables and terminators are positioned correctly.
- If an error code is displayed on the LCD, see Appendix A, "Troubleshooting," on page A-1 for more information.

Verifying the installation

To verify the installation, complete the following procedure:

Note: The control panel buttons referred to in the following sections are displayed graphically in "Using the operator panel" on page 3-1.

1. Press **Enter** on the control panel, which brings you to the Information menu.
2. Press **Next** three times until you get to the Diagnostic menu.
3. Press **Enter**. The Loader Diagnostic menu opens.
4. Press **Enter**. The Library Verify feature opens.
5. Press **Enter** to begin the test. You will be asked to load a cartridge through the front access port and the front panel LCD will display status during the test.
   - If the test fails, see Appendix A, "Troubleshooting," on page A-1.
   - If the test succeeds, proceed to the next step.
6. Press **Enter** to exit the Library Verify test.
7. Remove the cartridge when prompted.
8. Press **Enter** to exit the Diagnostic menu.

Installing the Windows driver

During the initialization of Windows 2003, the operating system will install a generic driver for the Autoloader. The following instructions will guide you through replacing the generic driver with the correct IBM 2U Tape Autoloader driver:

1. Press **Start/Programs/Administrative Tools/Computer Management**.
2. Press **Device Manager**.
3. Press **Medium Changers**.
4. Press **Unknown Medium Changer**.
5. Press the **Driver** tab.
6. Press **Update Driver**. A message will display:

   ```
   Welcome to the Update Device driver Wizard
   ```
7. Press **Next**.
8. Select **Display a list of known drivers for this device...** and then press **Next**. A window opens and displays the IBM 2U Autoloader Changer as an:

   ```
   Unknown Medium Changer Device
   ```
9. Press the **Have Disk** button. The Install from Disk window opens.
10. Press the **Browser** button, and then select the floppy disk or directory where the driver files are located.
11. Press **Open** and then press **OK** at the Install from Disk window.
12. Select **IBM 2U Autoloader** in the Manufacturers window and the name in the Model window will be:

    ```
    IBM 2U Autoloader Medium Changers
    ```
13. Press **Next**.
14. The Wizard tells you it is ready to install the driver. Click **Next**.
15. Press **Finish** to close the Wizard.
16. Close the Device Manager and Computer Management windows.

Windows 2003 will now take inventory of the cartridges in the autoloader.

After the inventory is complete you will be able to use your mouse and select **Start/Programs/Administrative Tools/Computer Management**. Expand the Storage, Removable Storage, Physical Locations and IBM 2U Autoloader directories. If you select Media you will see a list of all the media in the autoloader and the drive attached to the 2U Tape Autoloader.

Configuring the autoloader

This section describes how to configure your autoloader.

Setting the SCSI ID

Each SCSI device attached to a server or workstation must have a unique SCSI ID. You need to set only one SCSI ID for the autoloader; you do not need to set up separate SCSI IDs for the tape drive and autoloader. The autoloader uses a single SCSI ID and two logical units, one for the tape drive and the other for autoloader operations. Because the autoloader controls the tape drive, only the autoloader requires a SCSI ID.

Note: Most SCSI host adapters require a special setting for "Multiple LUN support." Please check the instructions for your SCSI Host Adapter and set accordingly.

The default ID for the autoloader is 05, but you can select any unused number between and including 00 and 15.

To set the SCSI ID, complete the following procedure:

1. If the Information menu is not displaying, press any button once to display this menu.
2. Press **Next** twice to reach the Configuration menu.
3. Press **Enter** and then **Next** twice. The Change SCSCI ID window opens.
4. Press **Enter**. The Change SCSI ID Drive (XX) window opens.
5. Press **Enter**. The Change SCSI ID New SCSI ID window opens.
6. Use the **Next** and **Previous** buttons to select the desired SCSI ID (there are two digits to select), pressing **Enter** each time to confirm your selections.
7. After you have selected your SCSI ID, turn the autoloader off and then on to reset the autoloader to the new SCSI ID.

Setting the SCSI speed

To set the SCSI speed, complete the following procedure:

1. If the Information menu is not displaying, press any button once to display this menu.
2. Press **Next** twice to reach the Configuration menu.
3. Press **Enter** and then **Next** twice. The SCSI Speed window opens.
4. Press **Enter**. The Change SCSI Speed To screen opens.
5. Use the **Next** and **Previous** buttons to select **80 MB/s** and **Max Speed**, pressing **Enter** each time to confirm your selections.
6. After you have selected your SCSI speed, turn the autoloader off and then on to reset the autoloader to the new speed.

Setting a password (optional)

To set a password, complete the following procedure:

1. If the Information menu is not displaying, press any button once to display this menu.
2. Press **Next** twice to reach the Configuration menu.
3. Press **Enter**, then press **Next** nine times. The Protection Mode window opens.
4. Press **Enter**. The Protection Mode Change To window opens.
5. Use the **Next** and **Previous** buttons to select either **ON** or **OFF**; then press **Enter** to confirm your selection.
6. After you have changed your password, turn the autoloader off and then on to reset the autoloader to the new Protection Mode.

Configuring the RMU

To configure the RMU, see "Re-configuring the RMU" on page 4-4

Configuring the barcode reader (BCR)

To configure the BCR, complete the following procedure:

1. If the Information menu is not displaying, press any button once to display this menu.
2. Press **Next** twice to reach the Configuration menu.
3. Press **Enter** and then **Next** seven times. The Barcode Reader window opens.
4. Press **Enter**. The Barcode Reader Change To window opens.
5. Use the **Next** and **Previous** buttons to select either **ON** or **OFF**; then press **Enter** to confirm your selection.
6. You have now completed configuring the BCR and can press **Cancel** twice to reach the home window.

Chapter 3. Operation

This chapter provides information on using the autoloader and its operator panel and menu options.

Using the operator panel

The following figure identifies the important features on the operator panel:
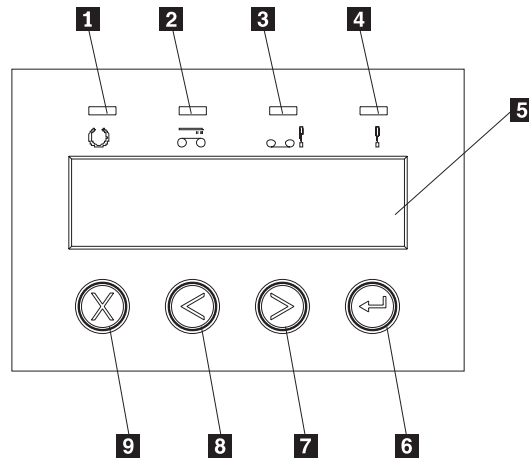
1	Ready/activity LED	This green LED is lit any time the unit is turned on and able to function. It should blink whenever there is autoloader or drive activity.
2	Clean drive LED	This amber LED will be lit when the drive is to be cleaned. The LED will be turned off after the drive is cleaned successfully.
3	Media attention LED	This amber LED will be lit when there has been a failure that indicates that there is a piece of media that is bad, marginal or invalid. It will be cleared when all invalid cartridges have been exported from the autoloader.
4	Error LED	This red LED should be lit when there is an unrecoverable autoloader or drive failure. A message is displayed at the same time on the screen. It will be cleared when the error state is resolved.
5	CD display	The CD display consists of two lines with 16 characters per line. The screen displays actions and status information, menu items or error messages equivalent to the operation mode.
6	Enter button	The Enter button [<-|] is used in interaction mode. Press **Enter** to go to a sub menu or to force a robotic action.
7	Next button	The Next button [+] is used in interaction mode to navigate through menu items.
8	Previous button	The Previous button [-] is used in interaction mode to navigate through menu items.
9	Cancel button	The Cancel button [X] is used in interaction mode. Press **Cancel** to cancel a user action and return to the last menu item.

Home window

The home window displays the autoloader's current status on the top line, and the current cartridge inventory and operating mode on the bottom line.

- Cartridge inventory: An empty slot position will be shown as a dash (i.e., -) and a full slot position will be shown as the slot number (i.e., 1 through 8). In addition, a cartridge that is being loaded or unloaded will be indicated by a blinking slot number. Finally, a cartridge that is faulty or invalid will be displayed as an exclamation point. Therefore, an example of a valid Slot Status display could be -2!-5-!8.
- Operating Mode: When operating in Sequential mode, SEQ is displayed. When operating in Random mode, a blank is displayed. In either case, if the autoloader detects that Write Protected cartridge has been loaded, WP is displayed.

Using and changing menu options

The main operator panel can be used to:
- Monitor autoloader operation and status
- Perform autoloader and tape drive operations

For most installations, you do not need to change the default configuration of the autoloader. However, if necessary, you can use the operator panel to make various changes to the autoloader. These changes are described in the following sections.

Offline menu

After turning on the autoloader, the first menu is the Offline menu. If you have set up a password as part of the initial configuration, you will have to enter your password to enable access to the following menus.

Information menu

The Information menu contains such things as serial numbers, model numbers, firmware levels, and error logs.

To retrieve the Loader information:

1. If the Information menu is not displayed, press any button once to display this menu.
2. Press **Enter**. The Loader Info window opens.
3. Press **Enter** to reach the first item in the Loader Info window, and then press **Next** to reach the additional items.
   - Firmware revision: the current autoloader firmware level
   - Serial number: The autoloader's serial number (should match the MT/MD label from front bezel)
   - Machine type: 3623 (should match the MT/MD label from front bezel)
   - Model number: 2LX (should match the MT/MD label from front bezel)
   - Cycle count: The number of times the autoloader's carousel has made a complete cycle
   - Error log: Displays any errors that have occurred and the time they occurred. At this screen:
     - Press **Enter** to display the most recent error code (xx yy zz)
     - Press **Previous** to scroll through all previous error codes
     - Press **Previous** to display the time of the most recent error (ddd hh mm ss tt)
     - Press **Previous** to scroll through all previous error date stamps
     - Press **Cancel** at any time to back out to the previous screen
   - Barcode reader: Displays whether barcode reader is Present or Not Present.

To retrieve the Drive information:

1. If the Information menu is not displayed, press any button once to display this menu.
2. Press **Enter**. The Loader Info window opens.
3. Press **Next**. The Drive Info window opens.
4. Press **Enter** to reach the first item in Drive Info.
5. Press **Next** or **Previous** to cycle through the remaining items:
   - Product revision: the current drive firmware level
   - Serial number: the drive's serial number
   - SCSI event log: Displays any errors that have occurred, and the time they occurred. Once on this screen:
     - Press **Enter** to display the most recent error code (xx yy zz vv nn)
     - Press **Previous** to display the time of the most recent error (ddd hh mm ss tt)
     - Press **Cancel** at any time to back out to the previous screen

Commands menu

The Commands menu contains the functional commands to the autoloader, including Bulk Exchange, Import, Export, Load, Unload, and Clean.

1. Bulk exchange: Allows user to import or export all cartridges to/from the autoloader. Complete the following procedure:
   a. Navigate to the Information menu.
   b. Press **Next**. The Commands menu opens.
   c. Press **Enter**. The Bulk Exchange window opens.
   d. Press **Enter** to initiate Bulk Exchange.
   e. When the front cartridge access door opens, remove (Export) or insert (Import) a cartridge.
   f. Press **Enter**. Import/Export options display.
   g. Press **Cancel** at any time to cancel the Bulk Exchange process.

   When all cartridges have been imported/exported, the autoloader returns to the home window.

2. Import: Allows user to import a cartridge to a specific slot in the autoloader. Complete the following procedure:
   a. Navigate to the Information menu.
   b. Press **Next**. The Commands menu opens.
   c. Press **Enter** and then **Next**. The Import window opens.
   d. Press **Enter**. The Import To window opens.
   e. Press **Next** or **Previous** to select the slot number you wish to import to.
   f. Press **Enter** to initiate the import.
   g. When the front cartridge access door opens, insert a cartridge.
   h. Press **Next** or **Previous** to select the next slot you wish to import to, or press **Cancel** to return to the home window.

3. Export: Allows user to export a cartridge to a specific slot in the autoloader. Complete the following procedure:
   a. Navigate to the Information menu.
   b. Press **Next**. The Commands menu opens.
   c. Press **Enter**, then **Next** twice. The Export window opens.
   d. Press **Enter**. The Export From window opens.

e. Press **Next** or **Previous** to select the slot number you wish to export from.

f. Press **Enter** to initiate the Export.

g. When the front cartridge access door open, remove the cartridge.

h. Press **Enter**.

i. Press **Next** or **Previous** to select the next slot number you wish to export from, or press **Cancel** twice to return to the home window.

4. Load Cartridge: Allows user to load a cartridge into the autoloader's tape drive. Complete the following procedure:

a. Navigate to the Information menu.

b. Press **Next**. The Commands menu opens.

c. Press **Enter**, then **Next** three times. The Load Cartridge window opens.

d. Press **Enter**. The Load Cartridge Slot # window opens.

e. Press **Next** or **Previous** to select the slot number you wish to load the tape drive from.

f. Press **Enter** to initiate the Load Cartridge.

When the cartridge has been loaded, the autoloader returns to the home window.

5. Unload Cartridge: Allows user to unload a cartridge from the autoloader's tape drive. Complete the following procedure:

a. Navigate to the Information menu.

b. Press **Next**. The Commands menu opens.

c. Press **Enter**, then **Next** four times. The Unload Cartridge window opens.

d. Press **Enter** to initiate the Unload Cartridge.

When the cartridge has been unloaded, the autoloader returns to the home window.

6. Clean Drive: Allows user to clean the autoloader's tape drive. This operation should be performed whenever the Clean Drive LED is on. Complete the following procedure:

a. Navigate to the Information menu.

b. Press **Next**. The Commands menu opens.

c. Press **Enter**, then **Next** five times. The Clean Drive window opens.

d. Press **Enter** to initiate the Clean Drive.

e. When the front cartridge access door opens, insert a cleaning cartridge. The autoloader will use the cleaning cartridge to clean the tape drive and, when finished, eject the cleaning cartridge out through the front cartridge access door.

f. Press **Enter** to return to the home window.

Note: If all eight slots are filled with data cartridges, you will have to use the Export function to remove one of them before you use the Clean Drive function. Also, if a cleaning cartridge is already present in one of the cartridge slots, the autoloader will use this cleaning cartridge automatically and you will not be required to insert one.

7. Re-inventory: Allows barcode reader (BCR) to scan all installed cartridges and update the inventory status. Complete the following procedure:

a. Navigate to the Information menu.

b. Press **Next**. The Commands menu opens.

c. Press **Enter**, then **Next** six times. The Re-Inventory window opens.

d. Press **Enter** to initiate the Re-Inventory.

When complete, the autoloader returns to the home window.

Configuration menu

The Configuration menu allows the user to setup or change various autoloader parameters such as SCSI ID, SCSI speed, networking features, and operating modes.

1. Reset: Allows user to reset the autoloader. Complete the following procedure:
   a. Navigate to the Information menu.
   b. Press **Next** twice. The Configuration menu opens.
   c. Press **Enter**. The Reset window opens.
   d. Press **Enter** to initiate the Reset.

   When the reset is complete, the autoloader returns to the home window.

2. Change SCSI ID: Allows user to change the autoloader's SCSI ID. To perform this operation, see "Setting the SCSI ID" on page 2-8.

3. SCSI Speed: Allows user to adjust the SCSI bus speed. To perform this operation, see "Setting the SCSI speed" on page 2-9.

4. Drive FW Upgrade from FMR: You should only attempt this procedure if you are instructed by IBM authorized service personnel.

5. Change Loader Mode: Allows user to change the autoloader's operational mode. User can select from:
   - Automatic Mode: The autoloader decides which mode (sequential or random) is used based on the type of SCSI command received.
   - Sequential Mode: Cartridges are used sequentially.
   - Random Mode: Cartridges are selected by the host's backup software.

     To select Change Loader Mode, complete the following procedure:
     a. Navigate to the Information menu.
     b. Press **Next** twice. The Configuration menu opens.
     c. Press **Enter** and then **Next** four times. The Change LDR Mode window opens.
     d. Press **Enter**. The Change LDR Mode To window opens.
     e. Use **Next** or **Previous** to select the mode (Automatic, Sequential, or Random).
     f. Press **Enter** to initiate the Change LDR Mode.
     g. Press **Cancel** to save the new mode and exit the Change LDR Mode process.

6. Loop Mode: Allows user to set up a continuous loop in the backup process by instructing autoloader to re-use the cartridge in slot 1 after the cartridge in slot 8 has been filled. To enable this feature:
   a. Navigate to the Information menu.
   b. Press **Next** twice. The Configuration menu opens.
   c. Press **Enter** and then **Next** five times. The Loop Mode window opens.
   d. Press **Enter**. The Loop Mode Change To window opens.
   e. Use **Next** or **Previous** to select ON or OFF.
   f. Press **Enter** to initiate the Loop Mode change.
   g. Press **Cancel** to back out of the Loop Mode window.

7. Autoload Mode: Enables automatic loading of the first cartridge if the drive is empty. To enable this feature:

a. Navigate to the Information menu.

b. Press **Next** twice. The Configuration menu opens.

c. Press **Enter** and then **Next** six times. The Autolode Mode window opens.

d. Press **Enter**. The Autolode Mode Change To window opens.

e. Use **Next** or **Previous** to select ON or OFF.

f. Press **Enter** to initiate the Autoload Mode change.

g. Press **Cancel** to back out of the Autoload Mode window.

8. Net Parameter: Allows user to set the network parameters when a remote management unit (RMU) is installed. To perform this operation, see the procedure for "Configuring the RMU" on page 2-9.

9. Barcode Reader: Allows user to enable the BCR (when installed). To perform this operation, see the procedure for "Configuring the barcode reader (BCR)" on page 2-9.

10. Protection Mode: Allows user to set up an administrator password (optional). To perform this operation, see the procedure for "Setting a password (optional)" on page 2-9.

11. Serial Number: Allows user to change the autoloader's serial number and should be used whenever user's original autoloader is replaced. This provides a way to match the stored serial number on the front MT/MD label. To perform this operation:

a. Navigate to the Information menu.

b. Press **Next** twice. The Configuration Menu opens.

c. Press **Enter** and then **Next** ten times. The Serial Number window opens.

d. Press **Enter**. The Change Ser Number window opens.

e. Use **Next** and **Previous** to select each digit for the new serial number, pressing **Enter** each time to confirm your selections. (The first three digits of the serial number should be entered as 0).

f. Press **Cancel** to save the new serial number and exit the Change Ser Number process.

Diagnostic menu

The Diagnostic menu allows the user to perform various diagnostic tests. Through the Loader Diag option, users can perform either a Library Verify or a System test:

1. Library Verify test. Please see "Verifying the installation" on page 2-7.

2. System test. Complete this procedure:

a. Navigate to the Information menu.

b. Press **Next** three times to open the Diagnostic Menu window.

c. Press **Enter**. The Loader Diag window opens.

d. Press **Enter** and then **Next**. The System Test window opens.

e. Press **Enter**. The Select Cycles window opens.

f. Press **Next** or **Previous** to select the number of cycles you wish this test to perform.

g. Press **Enter** to initiate the test. When the test is complete, the Drive Empty window will open.

h. Press **Cancel** to return to the previous window.

Chapter 4. Additional features

This chapter provides information on additional features of the autoloader.

Barcode reader (BCR)

Your autoloader comes with the BCR preinstalled. These instructions are provided in case you have to reinstall or reconfigure the BCR.

Removing the barcode reader

To remove the BCR, complete the following procedure:

1. On the operator panel, select menu item **Configuration / Barcode Reader** and set BCR Change to **OFF**.
2. If the Information menu is not showing, press any button once to display this menu.
3. Press **Next** twice. The Configuration menu opens.
4. Press **Enter**, then **Next** seven times. The Barcode Reader window opens.
5. Press **Enter**. The Barcode Reader Change To window opens.
6. Use the **Next** and **Previous** buttons to select **OFF**; then press **Enter** to confirm your selection.
7. Disconnect the power cable from the outlet. Remove the SCSI cables and power cable from the rear panel.
8. Unscrew the screws that fix the BCR to the rear panel.
9. Unplug the BCR connector from the controller outlet.
10. Replace the cover panel on the rear panel.

Re-installing the BCR

Note: You will need a small flat blade screwdriver to install the BCR.
Attention: ESD Sensitive Component. Please touch unit cover or rear panel before installing the barcode reader to avoid electrostatic discharge.

To re-install the BCR, complete the following procedure:

1. Turn off the autoloader.
2. Disconnect the power cord from the outlet. Remove the SCSI cable(s) and power cord from the rear panel of the autoloader.
3. Remove the cover plate from the rear panel (see the following figure). Be sure to save the screws. Save and store the cover plate; you may use this plate later

after removing the BCR.
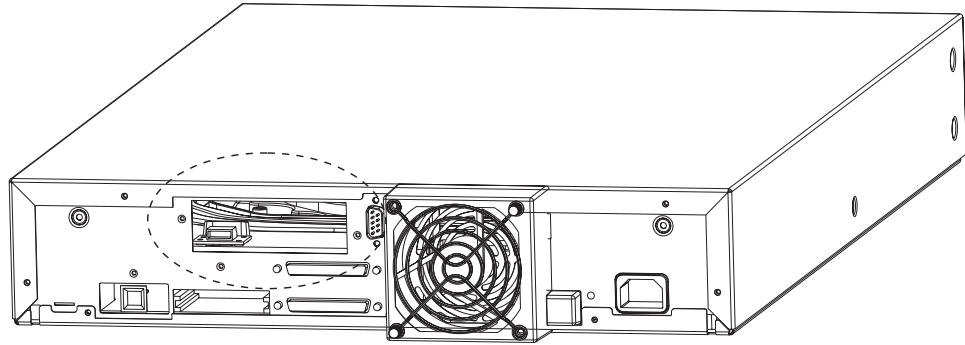
4. Orient the BCR before the slot. There is only one correct orientation. Check to see if the holes align.
5. Connect the cable to the barcode controller outlet.
6. Attach the barcode reader with the screws (see the following figure).
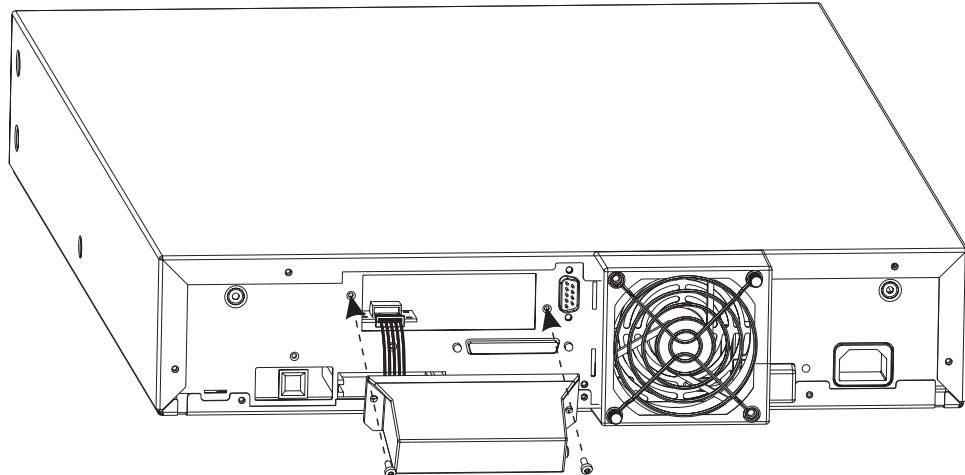
7. Reconnect the SCSI cables and power cord to the autoloader.
8. Turn on the autoloader.

Re-configuring the barcode reader

To re-configure the BCR, complete the following procedure:

1. Select the menu item **Configuration / Barcode Reader** on the operator panel and set BCR Change to **ON**. The autoloader and host system will sense the presence of the barcode reader. The BCR is controlled through the host software.
2. If the Information menu is not displayed, press any button once to display this menu.
3. Press **Next** twice. The Configuration menu opens.
4. Press **Enter**, then **Next** seven times. The Barcode Reader window opens.
5. Press **Enter**. The Barcode Reader Change To window opens.
6. Use the **Next** and **Previous** buttons to select **ON**; then press **Enter** to confirm your selection.
7. You have now completed configuring the BCR and can press **Cancel** twice to reach the home window.

Barcode labels

The BCR can only operate if barcode labels are present on the tape cartridges. Make sure that you only use barcode labels similar to those provided with your autoloader. (For more information, see "Re-installing the BCR" on page 4-1.)

Remote management unit (RMU)

Your autoloader comes with the RMU preinstalled. This section describes how to use the RMU as well as provides instructions in case you have to reinstall or reconfigure the RMU.

Using the RMU

To use the RMU, complete the following procedure:

1. Open a web browser.
2. Enter the IP address you selected when configuring the RMU.
3. Press **Administrator**.
4. Type in the initial password: adm001.
5. Click **Login**.
6. After login, you will be at the home window where you have access to a wealth of information and features for your new IBM autoloader, including:
   - Autoloader information
   - Drive information
   - Media information
   - Diagnostics
   - Maintenance
   - Error information

The available menus are similar to those accessible via the operator panel, but you can view and manage the information more easily when you use the RMU browser. Some screens are informational only, while others allow you to change the autoloader's features.

Removing the RMU

To remove the RMU, complete the following procedure:

1. If the Information menu is not showing, press any button once to display this menu.
2. Press **Next** twice. The Configuration menu opens.
3. Press **Enter**, then **Next** six times. The Net Parameter window opens.
4. Press **Enter**. The Network window opens and the current status is shown.
5. Press **Enter**. The Network Change To window opens.
6. Use the **Next** and **Previous** buttons to select **OFF**; then press Enter to confirm your selection.
7. Turn off the autoloader.
8. Disconnect the power cord from the wall outlet or rack PDU.
9. Disconnect the SCSI cable and power cord from back of the autoloader.
10. Remove the RMU from the autoloader by unscrewing the screws holding it in place.
11. Replace the autoloader cover panel or a new RMU.

12. Reconnect SCSI cable and power cord to back of autoloader.
13. Reconnect the power cord to wall outlet or rack PDU.
14. Turn on the autoloader.

Re-installing the RMU

To re-install the LAN card into the autoloader, complete the following procedure:

Note: You will need a flat blade screwdriver for this procedure.

> **Attention: ESD Sensitive Component**
> Please touch unit cover or rear panel before installing the barcode reader to avoid electrostatic discharge.

1. Turn off the autoloader.
2. Remove the protective covering on the RMU (if present). (See the following figure.)
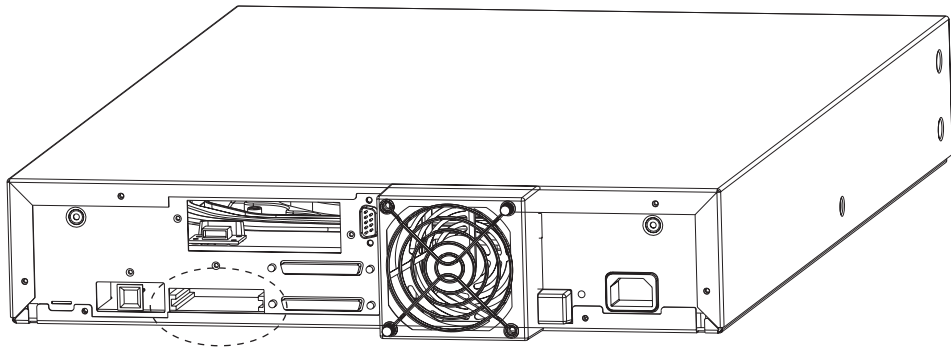
3. Align the LAN card in the rails and insert into the unit.
4. Fix the unit with the supplied screw. (See the following figure.)
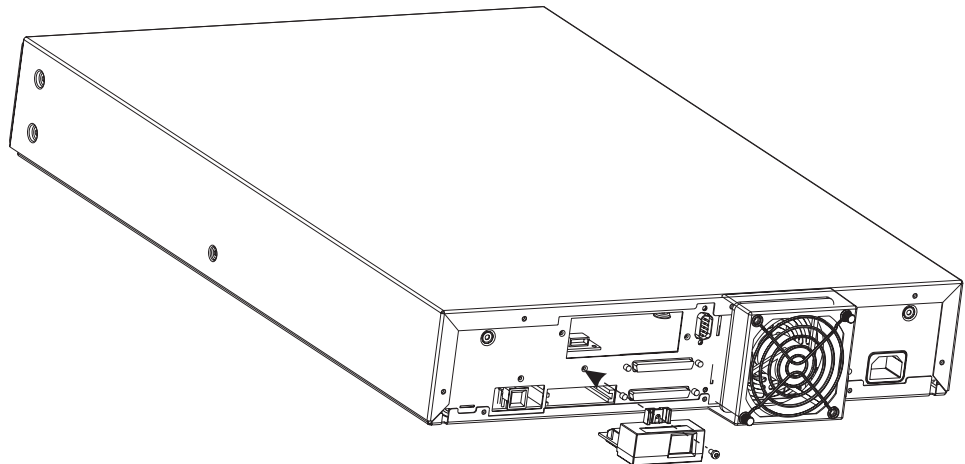
5. Turn on the autoloader.

Re-configuring the RMU

To re-configure the RMU, complete the following procedure:
1. If the Information menu is not showing, press any button once to display this menu.

2. Press **Next** twice. The Configuration menu opens.

3. Press **Enter**, then **Next** seven times. The Net Parameter window opens.

4. Press **Enter**. The Network window opens and the current status is shown.

5. Press **Enter**. The Network Change To window opens.

6. Use the **Next** and **Previous** buttons to select **ON**; then press **Enter** to confirm your selection.

7. Press **Next**. The DHCP window displays and the current status is shown.

8. Press **Enter**. The DHCP Change To window opens.

9. Use the **Next** and **Previous** buttons to select either **ON** or **OFF**; then press **Enter** to confirm your selection.

10. Press **Next**. The IP Address window opens and the current status is shown.

11. Press **Enter**. The Change IP Address window opens.

12. Use the **Next** and **Previous** buttons to select each digit in the new IP Address; then press Enter to confirm your selection.

13. When complete, press **Cancel**. The IP Address window opens.

14. Press **Next**. The Gateway Address window displays and the current status is shown.

15. Press **Enter**. The Change Gateway window opens.

16. Use the **Next** and **Previous** buttons to select each digit in the new Gateway Address, pressing **Enter** each time to confirm your selections.

17. When complete, press **Cancel**. The Gateway Address window opens.

18. You have now completed configuring the RMU and can press **Cancel** to go back out to the home window.

19. Press **Enter**. The Change Netmask window opens.

20. Use the **Next** and **Previous** buttons to select each digit in the new Netmask Address, pressing **Enter** each time to confirm your selections.

21. When complete, press **Cancel**. The Netmask window opens.

22. You have now completed configuring the RMU, and can press **Cancel** to back out to the home window.

Fan

Your autoloader comes with the fan preinstalled. These instructions are only provided in case you have to reinstall the fan.

Removing the fan

To remove the fan, complete the following procedure:

1. Turn off the autoloader.

2. Loosen the thumb-screws attached to the fan box by hand.

3. Carefully remove the fan.

Re-installing the fan

To re-install the fan, complete the following procedure:

Note: A flat-blade screwdriver may be required to remove the old fan box.

1. Turn off the autoloader.

2. Mate the connectors and ensure that the tabs on the fan box are aligned with the slots on the rear plate. (See the following figure.)
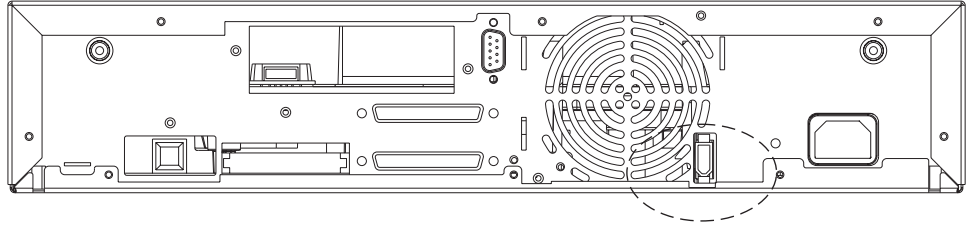
3. Tighten the thumb-screws attached to the fan box by hand. (See the following figure.)
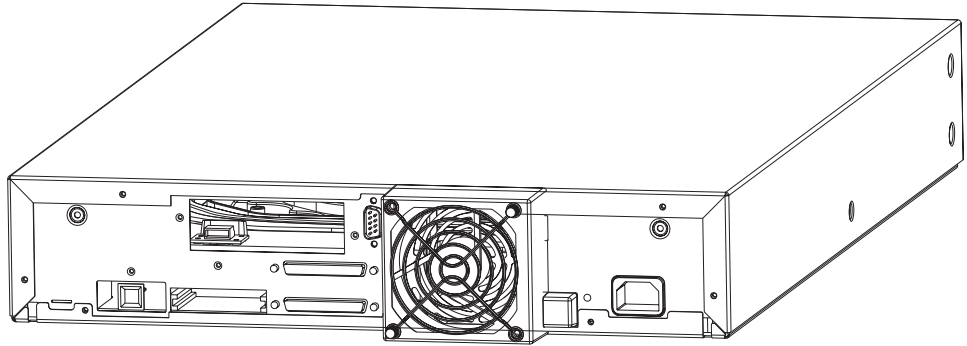
4. Turn on the autoloader.

Chapter 5. Maintenance

Proper maintenance is very important to help maintain error free operation. Failure to follow these procedures may adversely impact the autoloader's warranty terms, and result in billable service charges. To help you understand the important of proper maintenance, please read the Customer's Responsibility Document at http://www-307.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-52989.

This chapter describes tips for protecting, transporting, and storing tape cartridges and other information on ordering barcode labels and media supplies.

Attention: For best results, use only IBM recommended cartridges.A current list of IBM recommended media can be found by going to www-3.ibm.com/pc/support and searching for ?MIGR-39931?.

Protecting your tapes

The following tips will help to extend the life of your tapes:

- Remove dust on the outside of tape cartridges with a damp cloth.
- Do not use adhesive labels or POST-IT notes on the top, side, or bottom of your tape cartridge. Use only the label provided with each cartridge and slide it in the label slot on the cartridge.
- Do not use graphite pencils, water-soluble felt pens, or other debris-producing writing instruments on labels.
- Never erase a label always replace it.
- Put unused cartridge labels in a separate location. A static electricity charge on a cartridge might cause a label to cling to the cartridge. If you accidentally insert a label into the drive along with a cartridge, the label might prevent the hub reel and drive gear from meshing.
- Do not touch or allow direct contact with tape or tape leader. Dust or natural skin oils might contaminate the tape and impact tape performance.
- Do not expose the tape cartridge to moisture or direct sunlight.
- Do not expose cartridges to extreme temperatures or humidity. Refer to the documentation that comes with your tape media for appropriate operating and storage temperatures.
- Do not expose tape cartridges to magnetic fields.
- Avoid unnecessary opening of the cartridge door; this can expose the tape to contamination or physical damage.
- Do not drop the tape cartridges or subject the cartridges to physical shock.
- Do not insert any cartridge that has been dropped into a tape drive without a thorough inspection. A dropped cartridge can have dislodged, loosened, or damaged internal components which can also damage the tape drive.
- Do not take tape cartridges apart.
- Do not leave cartridges in the tape drive when the autoloader power is off.

Transporting your tapes

The following tips will help you move your tapes safely from one location to another:

- Always keep each tape cartridge in its protective plastic case when it is not in the tape drive or autoloader magazine.
- When carrying tape cartridges in their cases, always orient the cases so that the grooves in the cases interlock. This prevents the cases from slipping apart and falling.
- Do not carry cartridges loosely in a box or in any other container. Allowing cartridges to hit together exposes them to unnecessary physical shock.

Storing your tapes

The following tips will help you protect your tapes and the data that they contain when you store them:

- Never stack the tape cartridges in a stack of more than five.
- When placing tape cartridges in archival storage, make sure you stand each tape cartridge vertically.
- Store tape cartridges in their plastic containers and in the environmental conditions recommended in your tape media documentation.
- If storage and/or transportation of a tape cartridge has exposed the tape cartridge to conditions outside the recommended environment, "condition" by letting the tape set in its new environment for a 24-hour period.
- Do not place cartridges on or near devices that might produce magnetic fields such as computer monitors, motors, or video equipment. Such exposure can alter or erase data on the tape.

Barcode labels

Sample bar code labels are included with your purchase. Also included are instructions on ordering additional labels. The following figure shows you how to install a bar code label onto a tape cartridge.

SDLT   LTO
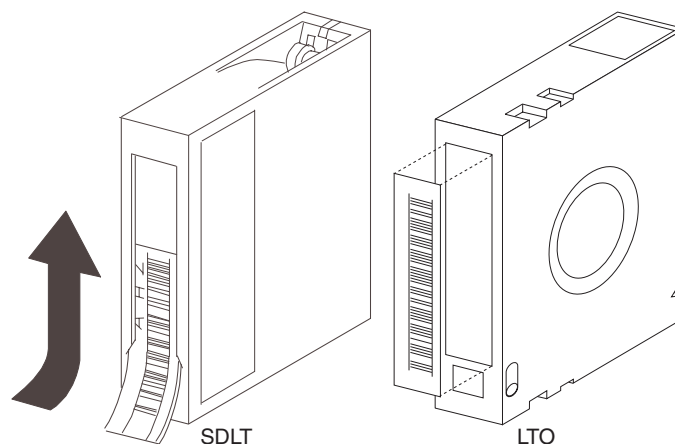
Ordering media supplies

To order additional cleaning and/or data cartridges, please go to
http://www.pc.ibm.com/ww/eserver/xseries/tape.html or call 1-888-IBM-MEDIA.

To order additional barcode labels, please go to:
* **US**: http://www.edp-usa.com or call 800-522-3528
* **Europe**: http://www.edpeurope.com or call 44 (0) 1245-322380

Updating your firmware

IBM periodically releases new firmware to fix problems or provide additional
enhancements. The latest firmware, as well as instructions on how to load it, can
be found by going to
http://www.ibm.com/pc/support/site.wss/document.do?lndocid=TAPE-FILES.

You can also update the autoloader or drive firmware via the RMU web browser.
To use this feature, go to the RMU home window, select the **Maintenance** link, and
then select the **Firmware** link.

Appendix A. Troubleshooting

The autoloader includes features to support troubleshooting and diagnostic operations. If an autoloader error occurs, an error message and error code display on the Status window.

Additionally, the autoloader's internal Tapealert firmware constantly monitors the autoloader's operation for problems. Tapealert is an industry-standardized method for reporting errors and potential difficulties to the software application.

The service menu is typically only used by technical support and service personnel. It provides commands that can be used to test individual autoloader functions. If you encounter problems with your autoloader that you cannot resolve using the manual, you may be instructed by the manufacturer's Technical Support to perform tests through this menu. Technical support will provide instructions for accessing the menu and running the tests.

Error messages and error codes

Table A-1. Overview

Error code	The error belonging to:
80 - 8F	Robotic control errors
90 - 96	Function errors
A0 - A5	Low level axis errors
B0 - B7	Electronic hardware errors
BA - BF	Drive errors

Table A-2. Robotic control errors

Error code	Description	Action
81h	Invalid command error. This error indicates that the Autoloader received an undefined command or an invalid parameter to a command.	Retry operation. After several occurrences, contact IBM Technical Support.
82h	Device Status not suitable to execute this command. If the autoloader is busy, some commands cannot be executed at the same time. This error will indicate a probable conflict. This is not an error condition, but does result in reporting a busy condition to the server (host) for the requested SCSI command.	Retry operation. After several occurrences, contact IBM Technical Support.

Table A-2. Robotic control errors (continued)

Error code	Description	Action
83h	Inventory is not valid. The cartridge inventory is not valid, because of manual changes or previous fatal errors. In such case, the inventory must be updated by the appropriate "Set Slot Status" commands.	Perform an inventory rescan (Menu item COMMANDS/RE-INVENTORY).
84h	Source element not ready. Transport source element does not have the expected state.	Perform an inventory rescan (Menu item COMMANDS/RE-INVENTORY).
85h	Destination element not ready. Destination element does not have the expected state.	Perform an inventory rescan (Menu item COMMANDS/RE-INVENTORY).
86h	Assigned to a rejected user attempt to access door while media removal is prevented.	Finish IMPORT/EXPORT, afterwards retry operation.
87h	Is used for several robotic command timeout conditions.	Reset the unit (Menu item CONFIGURATION/RESET).
89h	Timeout detected by autoloader on system testing.	Reset the unit (Menu item CONFIGURATION/RESET), restart System Test.
8Fh	No error after autoloader recovery.	Only informational message, no action required.

Table A-3. Function errors

Error code	Description	Action
90h	Mechanical initialization failure. The robotic was not able to get into its safe mechanical init position. Manual intervention will be necessary.	Reset the unit (Menu item CONFIGURATION/RESET), after further occurrences, contact IBM Technical Support.
91h	Scan failure. Fatal error during cartridge scan, building up inventory.	Perform an inventory rescan (Menu item COMMANDS/RE-INVENTORY).
92h	Preposition failed. Belt positioning error.	Run Library Verify Test (Menu item DIAGNOSTICS/LOADER DIAG./LIBRARY VERIFY), after further occurrences, contact IBM Technical Support.
93h	Cartridge mount error. Movement of cartridge into drive failed.	Run Library Verify Test (Menu item DIAGNOSTICS/LOADER DIAG./LIBRARY VERIFY), after further occurrences, contact IBM Technical Support.
94h	Cartridge dismount error. Failure during cartridge removal and transport back to slot.	Run Library Verify Test (Menu item DIAGNOSTICS/LOADER DIAG./LIBRARY VERIFY), after further occurrences, contact IBM Technical Support.

Table A-3. Function errors (continued)

Error code	Description	Action
95h	Import error. Device wasn't able to finish import of new cartridge without error.	Run Library Verify Test (Menu item DIAGNOSTICS/LOADER DIAG./LIBRARY VERIFY), after further occurrences, contact IBM Technical Support.
96h	Export error. Fatal error during cartridge export.	Run Library Verify Test (Menu item DIAGNOSTICS/LOADER DIAG./LIBRARY VERIFY), after further occurrences, contact IBM Technical Support.

Table A-4. Low level axis errors

Error code	Description	
A0h	Belt axis error. Error during cartridge carrier movement (position not found).	Run Library Verify Test (Menu item DIAGNOSTICS/LOADER DIAG./LIBRARY VERIFY), after further occurrences, contact IBM Technical Support.
A1h	Slider axis error. Transport slider unable to reach estimated position.	Run Library Verify Test (Menu item DIAGNOSTICS/LOADER DIAG./LIBRARY VERIFY), after further occurrences, contact IBM Technical Support.
A2h	Gripper position error. Gripper unable to reach position.	Run Library Verify Test (Menu item DIAGNOSTICS/LOADER DIAG./LIBRARY VERIFY), after further occurrences, contact IBM Technical Support.
A3h	Cartridge pick error. Missing cartridge during pick operation of gripper.	Run Library Verify Test (Menu item DIAGNOSTICS/LOADER DIAG./LIBRARY VERIFY), after further occurrences, contact IBM Technical Support.
A4h	Door function error. Slider door in front bezel not in requested position during device operation.	Run Library Verify Test (Menu item DIAGNOSTICS/LOADER DIAG./LIBRARY VERIFY), after further occurrences, contact IBM Technical Support.
A5h	Fan error. Autoloader has detected a fan error. *Sub code*: F1h→Fan at backplane was the originator F2h→Fan at drive was the originator F3H→Both fans are defective	Subcode F1: Replace fan at rear connector plate. Subcode F2: Contact IBM Technical Support Subcode F3: Contact IBM Technical Support

Table A-5. Electronic hardware errors

Error code	Description	Action
B0h	ROM error. A defective ROM was detected.	Retry operation. After several occurrences, contact IBM Technical Support.
B1h	RAM error. A defective RAM was detected.	Contact IBM Technical Support.
B2h	NVRAM error. A defective NVRAM was detected.	Retry operation. After several occurrences, contact IBM Technical Support.
B5h	Display error. A defective Display was detected.	Contact IBM Technical Support.
B6h	Memory error. A defective Memory was detected.	Contact IBM Technical Support.
B7h	Fatal system error.	Contact IBM Technical Support.
B8h	Bar code error.	Perform an inventory rescan (Menu item COMMANDS / RE-INVENTORY). After several occurrences, contact IBM Technical Support.

Table A-6. Drive errors

Error code	Description	Action
BAh	Tape load timeout.	Retry operation. If not successful, contact IBM Technical Support.
BBh	Tape unload timeout.	Cycle power. Retry operation. If not successful, contact IBM Technical Support.
BCh	Over temperature problem. *Subcode*: the original drive error code is reported.	Check ambient temperature (should not exceed 32°C). After further occurrences, contact IBM Technical Support.
BDh	No connection to drive.	Contact IBM Technical Support.
BEh	Generic drive response error.	Contact IBM Technical Support.
BFh	Drive broken, needs repair.	Contact IBM Technical Support.

The autoloader presents each drive error as a single character in the OCP's display. Table A-7 describes these codes.

Table A-7. Drive Error Codes.

Error code	Description
0	**No error occurred and no action is required**. This code displays: • When power is cycled (turned off, then on) to the autoloader. • When diagnostics have finished running and no error occurred.

Table A-7. Drive Error Codes. (continued)

Error code	Description
1	**Cooling problem**. The tape drive detected that the recommended operating temperature was exceeded. Perform one or more of the following actions: • Ensure that the cooling fan is rotating and is quiet. If not, replace the autoloader. • Remove any blockage that prevents air from flowing freely through the autoloader. • Ensure that the operating temperature and airflow is within the specified range. • If the operating temperature is within the specified range and the problem persists, replace the autoloader. The error code clears when you turn off the autoloader or access the Diagnostic menu (see "Diagnostic menu" on page 3-6).
2	**Power problem**. The tape drive detected that the externally supplied power is either approaching the specified voltage limits (the autoloader is still operating) or is outside the specified voltage limits (the autoloader is not operating). Perform the following action: 1. Ensure that the power connector is properly seated. 2. Ensure that the proper DC voltages are being applied within the tolerances allowed. 3. If the proper voltages are being applied but the problem persists, replace the autoloader. The error code clears when you turn off the autoloader or access the Diagnostic menu (see "Diagnostic menu" on page 3-6).

3	**Firmware problem**. The tape drive determined that a firmware error occurred. Perform the following action:
	
	1. Collect a drive dump from one of the following:
	
	   Note: Do not force a new dump; the autoloader has already created one.
	
	   • Server's SCSI interface by using a device driver utility or system tool (for instructions about reading a drive dump from tape, visit the web at http://www.ibm.com/storage/lto)
	
	   • Ultrium Tape Drive.
	
	2. Turn the autoloader off and on, and then retry the operation that produced the error.
	
	3. If the problem persists, download new firmware and retry the operation.
	
	4. If the problem persists, send the drive dump that you collected in Step 1 to your IBM Technical Support Center.
	
	The error code clears when you turn off the autoloader or access the Diagnostic menu (see "Diagnostic menu" on page 3-6).

4	**Firmware or tape drive problem**. The tape drive determined that a firmware or tape drive hardware failure occurred. Perform the following action:
	
	1. Collect a drive dump from one of the following:
	
	   Note: Do not force a new dump; the autoloader has already created one.
	
	   • Server's SCSI interface by using a device driver utility or system tool (for instructions about reading a drive dump from tape, visit the web at http://www.ibm.com/storage/lto)
	
	   • Ultrium Tape Drive.
	
	2. Turn the autoloader off and on, and then retry the operation that produced the error.
	
	3. If the problem persists, download new firmware and retry the operation; if new firmware is not available, replace the autoloader.
	
	The error code clears when you turn off the autoloader or access the Diagnostic menu (see "Diagnostic menu" on page 3-6).

Table A-7. Drive Error Codes. (continued)

Error code	Description
5	**Tape drive hardware problem**. The drive determined that a tape path or read/write error occurred. To prevent damage to the drive or tape, the autoloader will not allow you to insert a cartridge if the current cartridge was successfully ejected. If the problem persists, replace the autoloader. The error load clears when you turn off the autoloader or access the Diagnostic menu (see "Diagnostic menu" on page 3-6).

6	**Tape drive or media error**. The tape drive determined that an error occurred, but it cannot isolate the error to faulty hardware or to the tape cartridge. Perform the following action:
	
	For problems with writing data:
	
	If the problem occurred while the autoloader was writing data to the tape, and if you know the volume serial number (located on the cartridge label) of the tape cartridge loaded in the drive when the problem occurred, retry the operation with a different cartridge:
	• If the operation succeeds, the original cartridge was defective. Copy data from the defective cartridge and discard it.
	• If the operation fails and another autoloader is available, insert the cartridge into the other unit and retry the operation.
	  – If the operation fails, discard the defective cartridge.
	  – If the operation succeeds, insert a scratch cartridge into the first unit and run the tape drive diagnostics:
	    - If the diagnostics fail, replace the autoloader.
	    - If the diagnostics succeed, the error was temporary.
	• If the operation fails and another autoloader is not available, insert a scratch cartridge into the unit and run the tape drive diagnostics:
	  – If the diagnostics fail, replace the autoloader.
	  – If the diagnostics succeed, discard the cartridge.
	
	If the problem occurs with multiple tape cartridges or if you do not know the tape cartridge's volume serial number, run the tape drive diagnostics:
	• If the diagnostics fail, replace the autoloader.
	• If the diagnostics succeed, run the Test Head diagnostic:
	  – If the Test Head diagnostic fails, replace the autoloader
	  – If the Test Head diagnostic succeeds, replace the cartridges that caused the problem
	
	For problems with reading data:
	
	If the problem occurred while the autoloader was reading data from the tape, and if you know the volume serial number of the tape cartridge, perform one of the following procedures:
	• If another autoloader is available, insert the cartridge into the other unit and retry the operation:
	  – If the operation fails, discard the defective cartridge.
	  – If the operation succeeds, insert a scratch cartridge into the first unit and run the tape drive diagnostics:
	    - If the diagnostics fails, replace the autoloader.
	    - If the diagnostics succeeds, the error was temporary.
	• If another autoloader is not available, insert a scratch cartridge into the unit and run the tape drive diagnostics.
	  – If the diagnostics fails, replace the autoloader.
	  – If the diagnostics succeeds, discard the cartridge.

Error code	Description

6 (cont.)	If the problem occurs with multiple tape cartridges or if you do not know the tape cartridge's volume serial number, run the tape drive diagnostics:
	
	• If the diagnostics fail, replace the autoloader.
	• If the diagnostics succeed, run the Test Head diagnostic.
	  – If the Test Head diagnostic fails, replace the autoloader.
	  – If the Test Head diagnostic succeeds, replace the cartridges that caused the problem.
	
	The error code clears when you remove the tape cartridge or access the Diagnostic menu (see "Diagnostic menu" on page 3-6).

7	**A high probability of media error**. The tape drive determined that an error occurred because of a faulty tape cartridge. Try another tape cartridge. If the problem occurs with multiple tape cartridges, use the following procedure:
	
	Attention: When you run the Test Cartridge & Media diagnostic, data on the suspect tape is overwritten. Use only a scratch data cartridge to run the test.
	
	1. If possible, run the tape cartridge in a different autoloader.
	  • If the operation in the other unit fails and 6 or 7 displays, replace the media.
	  • If the operation succeeds, run the Test Cartridge & Media diagnostic.
	2. If the Test Cartridge & Media diagnostic fails, replace the media. If the operation succeeds, clean the drive (for more information, see "Clean Drive" on page 3-4) and run the tape drive diagnostics.
	3. If the tape drive diagnostics fail, replace the autoloader. If the tape drive diagnostics run successfully, perform the operation that produced the initial media error.
	
	The error code clears when you remove the tape cartridge or access the Diagnostic menu (see "Diagnostic menu" on page 3-6).

8	**Tape drive or SCSI bus failure**. The tape drive determined that a failure occurred in the tape drive's hardware or in the SCSI bus. The error code clears 10 seconds after the drive detected the error or when you access the Diagnostic menu (see "Diagnostic menu" on page 3-6).
9	**Tape drive or RS-422 error**. The tape drive determined that a failure occurred in the tape drive's hardware or in the RS-422 connection. Replace the autoloader. The error code clears 10 seconds after the drive detected the error or when you access the Diagnostic menu (see "Diagnostic menu" on page 3-6).
o, c, b, h, E, or F	**No error or message assigned**. There may be a problem with the single-character display. Turn the power off and then on and then determine whether all segments on the single-character display are lit. If so, you may have a down-level version of your autoloader's firmware or this book. Refer to the latest version of the firmware or this book.
A	**Tape drive hardware problem**. The tape drive determined that a problem occurred that degraded the operation of the tape drive, but it did not restrict continued use. If the problem persists, replace the autoloader. The drive is usable. The error code clears when you turn off the autoloader or access the Diagnostic menu (see "Diagnostic menu" on page 3-6).
B	**No error or message is assigned**. See error code 8 in this table.
C	**The tape drive needs to be cleaned**. Clean the tape drive. (See "Clean Drive" on page 3-4.) The error code clears when you clean the tape drive or access the Diagnostic menu (see "Diagnostic menu" on page 3-6).
D	**No error or message assigned**. See error code 0 in this table.

Appendix B. Specifications

This appendix contains specifications for the size, weight, performance, power, and environment of the autoloader.

Size and weight

Length	24.0 inches (60.9 cm)
Width	16.9 inches (42.9 cm)
Depth	3.3 inches (8.4 cm)
Weight	19.5 pounds (8.8 kilograms) without cartridges installed
Shipping Weight	26.2 lbs. (11.9 kg)
Dimensions	28.8 (length) x 21.3 (width) x 6.5 (depth) inches (73.2 x 54.1 x 16.8 cm)

AC power specifications

The autoloader has automatic ac input voltage selection and accepts the input voltages shown in the following table. It is capable of continuous operation when the ac power experiences intermittent operation, voltage surges, and voltage spikes.

Input voltage	100 to 240 V AC ±10%, 47 to 63 Hz
Average heat output while operating[1]	119.4 BTU/hour
Power consumption	**Average while idle:** 20 watts
	Average while operating: 35 watts
	Maximum while operating: 48 watts
[1] Based on the ac true power consumption.	

Environmental specifications

Specification	Operating[1]	Storage[2] or non-operating[3]	Transportation[4]
Ambient temperature range	+10° C to +40° C (+50° F to +104° F)	-40° C to +60° C (-40° F to +140° F)	-20° C to +60° C (-4° F to +140° F)
Temperature variation[5] (thermal gradient)	1° C per minute; max 10° C per hour (2° F per minute; max 18° F per hour)	1° C per minute; max 20° C per hour (1° F per minute; max 36° F per hour)	1° C per minute; max 20° C per hour (2° F per minute; max 36° F per hour)
Relative humidity (humidity gradient)	20% to 80%; non-condensing 10% per hour	10% to 80%; non-condensing 10% per hour	10% to 80%; non-condensing 10% per hour
Wet bulb	26° C (79° F) max	29° C (84° F) max	29° C (84° F) max

Specification	Operating[1]	Storage[2] or non-operating[3]	Transportation[4]
Altitude	-304.8 m to +9,144 m (-1000 ft to +30,000 ft)	-304.8 m to +9,144 m (-1000 ft to +30,000 ft)	-304.8 m to +9,144 m (-1000 ft to +30,000 ft)

[1] All operating specifications include a data cartridge. These measurements assume that the autoloader is installed in accordance with the instructions in the autoloader Installation and Operation manual.

[2] The autoloader is in its original packaging.

[3] The autoloader has been unpacked but is still in its protective antistatic bag. The packaging is designed to protect the autoloader from the condensation caused by extreme temperature variations (15° C or more). When the autoloader is moved from a cold storage environment to a warm operating environment, it must acclimate in its packaging for at least 12 hours before opening to prevent serious condensation damage from occurring.

[4] The autoloader has not been unpacked. The transportation period does not exceed 72 hours.

[5] The temperature and humidity must be allowed to stabilize in the specified ambient environment for 24 hours.

Acoustic noise limits

The overall, averaged A-weighted sound pressure level (in decibels) for the autoloader does not exceed the upper limits in the following table:

Operating mode	LpA[1]
The autoloader is turned on and idle	55 dBA
The autoloader is operational (the carousel or cartridge loader is moving); the tape drive is in streaming mode	55 dBA[2]

[1] LpA is the average A-weighed sound pressure level over the following frequency range: 5 Hz to 12.5 KHz.

[2] Represents a maximum sustained operational level.

Note: Please refer to Chapter 4, "Additional features," on page 4-1 for instructions on installing or removing some of these CRUs.

FRUs/CRUs

Part Number	Description	FRU/CRU
24P7315	Autoloader assembly	CRU
24R0847	Barcode reader	CRU
24R0710	Remote management unit	CRU
24R0783	Rackmount rails	CRU
24R1030	Cooling fan	CRU
09N7278	SCSI cable	CRU
19P0874	SCSI terminator	CRU
36L8886	PDU power cord	CRU

Part Number	Description	FRU/CRU
6952300	Standard power cord	CRU

Note: Please refer to Chapter 4, "Additional features," on page 4-1 for instructions on installing or removing some of these CRUs.

Appendix C. Service and Support

The following information describes the technical support that is available for your product, during the warranty period or throughout the life of the product. Refer to your IBM Statement of Limited Warranty for a full explanation of IBM warranty terms.

Online technical support

Online technical support is available during the life of your product through the Personal Computing Support Web site at http://www.ibm.com/pc/support.

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

Installation and configuration support through the IBM Support Center 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:

* Option name
* Option number
* Proof of purchase
* Computer manufacturer, model, serial number (if IBM), and manual
* Exact wording of the error message (if any)
* Description of the problem
* 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. If the number for your country or region is not listed, contact your IBM reseller or IBM marketing representative. Response time may vary depending on the number and nature of the calls received.

Phone numbers are subject to change without notice. For the latest phone number list, go to http://www.ibm.com/pc/support and click **Support Phone List**.

Country or Region	Telephone Number	Country or Region	Telephone Number
Africa	+44 (0) 1475 555 055	Japan	Desktop: 0120-887-870 • Overseas calls: 81-46-266-1084 ThinkPad: 0120-887-874 • Overseas calls: 81-46-266-1084 IntelliStation and xSeries: 81-46-266-1358 PC Software: 0120-558-695 • Overseas calls: 81-44-200-8666
Argentina	0800-666-0011	Luxembourg	298-977-5063
Australia	131-426	Malaysia	(60) 3-7727-7800
Austria	01-24592-5901	Mexico	001-866-434-2080
Bolivia	0800-0189	Middle East	+44 (0) 1475 555 055
Belgium	Dutch: 02-210 9820 French: 02-210 9800	Netherlands	020-514 5770
Brazil	55-11-3889-8986	New Zealand	0800-446-149
Canada	English: 1-800-565-3344 French: 1-800-565-3344 In Toronto: 416-383-3344	Nicaragua	255-6658
Chile	800-224-488	Norway	66 81 11 00
China	800-810-1818	Panama	206-6047
China (Hong Kong and S.A.R.)	Home PC: 852-2825-7799 Commercial PC: 852-8205-0333	Peru	0-800-50-866
Colombia	980-912-3021	Philippines	(63) 2-995-2225
Costa Rica	284-3911	Portugal	21-892-7147
Denmark	45 20 82 00	Russia	095-940-2000
Dominican Republic	566-4755 or 566-5161 ext. 8201 Toll Free within the Dominican Republic: 1-200-1929	Singapore	(65) 1-800-840-9911
Ecuador	1-800-426911 (option #4)	Spain	91-714-7983

Country or Region	Telephone Number	Country or Region	Telephone Number
El Salvador	250-5696	Sweden	08-477 4420
Finland	09-459 69 60	Switzerland	058-333-0900
France	02 38 55 74 50	Taiwan	886-2-8723-9799
Germany	07032-1549 201	Thailand	(66) 2-273-4000
Guatemala	335-8490	Turkey	00-800-446-32-041
Honduras	Tegucigalpa & Sand Pedro Sula: 232-4222 San Pedro Sula: 552-2234	United Kingdom	0-1475-555 055
India	1600-44-6666	United States	1-800-IBM-SERV (1-800-426-7378)
Indonesia	(62) 21-523-8535	Uruguay	000-411-005-6649
Ireland	01-815-9202	Venezuela	0-800-100-2011
Italy	01-815-9202	Vietnam	Ho Chi Minh: (84) 8-829-5160 Hanoi: (84) 4-843-6675

Appendix D. IBM Statement of Limited Warranty Z125-4753-08 04/2004

Part 1 - General Terms

This Statement of Limited Warranty includes Part 1 - General Terms, Part 2 - Country-unique Terms, and Part 3 - Warranty Information. The terms of Part 2 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. 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. **Nothing in this Statement of Limited Warranty affects any statutory rights of consumers that cannot be waived or limited by contract.**

<u>What this Warranty Covers</u>
*IBM warrants that each Machine 1) is free from defects in materials and workmanship and 2) conforms to IBM's Official Published Specifications ("Specifications") which are available on request. The warranty period for the Machine starts on the original Date of Installation and is specified in Part 3 - Warranty Information. The date on your invoice or sales receipt is the Date of Installation unless IBM or your reseller informs you otherwise. 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. Unless IBM specifies otherwise, these warranties apply only in the country or region in which you purchased the Machine.***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. SOME STATES OR JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF EXPRESS OR IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION MAY NOT APPLY TO YOU. IN THAT EVENT, SUCH WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD. NO WARRANTIES APPLY AFTER THAT PERIOD. SOME STATES OR JURISDICTIONS DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.**

<u>What this Warranty Does not Cover</u>
This warranty does not cover the following:
- any software programs, whether pre-loaded or shipped with the Machine, or installed subsequently;
- failure resulting from misuse (including but not limited to use of any Machine capacity or capability, other than that authorized by IBM in writing), accident, modification, unsuitable physical or operating environment, or improper maintenance by you;
- failure caused by a product for which IBM is not responsible; and
- any non-IBM products, including those that IBM may procure and provide with or integrate into an IBM Machine at your request.

The warranty is voided by removal or alteration of identification labels on the Machine or its parts.
IBM does not warrant uninterrupted or error-free operation of a Machine.
Any technical or other support provided for a Machine under warranty, such as

assistance with "how-to" questions and those regarding Machine set-up and installation, is provided **WITHOUT WARRANTIES OF ANY KIND**.

How to Obtain Warranty Service

If the Machine does not function as warranted during the warranty period, contact IBM or your reseller to obtain warranty service. If you do not register the Machine with IBM, you may be required to present proof of purchase as evidence of your entitlement to warranty service.

What IBM Will Do to Correct Problems

When you contact IBM for service, you must follow the problem determination and resolution procedures that IBM specifies. An initial diagnosis of your problem can be made either by a technician over the telephone or electronically by access to an IBM website. The type of warranty service applicable to your Machine is specified in Part 3 - Warranty Information. You are responsible for downloading and installing designated Machine Code (microcode, basic input/output system code (called "BIOS"), utility programs, device drivers, and diagnostics delivered with an IBM Machine) and other software updates from an IBM Internet Web site or from other electronic media, and following the instructions that IBM provides. If your problem can be resolved with a Customer Replaceable Unit ("CRU") (e.g., keyboard, mouse, speaker, memory, hard disk drive), IBM will ship the CRU to you for you to install. If the Machine does not function as warranted during the warranty period and your problem cannot be resolved over the telephone or electronically, through your application of Machine Code or software updates, or with a CRU, IBM or your reseller, if approved by IBM to provide warranty service, will either, at its discretion, 1) repair it to make it function as warranted, or 2) replace it with one that is at least functionally equivalent. If IBM is unable to do either, you may return the Machine to your place of purchase and your money will be refunded. IBM or your reseller will also manage and install selected engineering changes that apply to the Machine.

Exchange of a Machine or Part

When the 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.

Your Additional Responsibilities

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 service request procedures that IBM or your reseller provides;
    b. backup or secure all programs, data, and funds contained in the Machine;
    c. provide IBM or your reseller with sufficient, free, and safe access to your facilities to permit IBM to fulfill its obligations; and
    d. inform IBM or your reseller of changes in the Machine's location.
4. (a) ensure all information about identified or identifiable individuals (Personal Data) is deleted from the Machine (to the extent technically possible), (b) allow

IBM, your reseller or an IBM supplier to process on your behalf any remaining Personal Data as IBM or your reseller considers necessary to fulfill its obligations under this Statement of Limited Warranty (which may include shipping the Machine for such processing to other IBM service locations around the world), and (c) ensure that such processing complies with any laws applicable to such Personal Data.

Limitation of Liability

IBM is responsible for loss of, or damage to, your Machine only 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 are responsible for any of your confidential, proprietary or personal information contained in a Machine which you return to IBM for any reason. You should remove all such information from the Machine prior to its return.

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), except for any liability that cannot be waived or limited by applicable laws, 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 charges (if recurring, 12 months' charges apply) for the Machine that is subject of the claim. For purposes of this item, the term "Machine" includes Machine Code and Licensed Internal Code ("LIC").

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, ITS SUPPLIERS OR RESELLERS LIABLE FOR ANY OF THE FOLLOWING EVEN IF INFORMED OF THEIR POSSIBILITY: 1) THIRD PARTY CLAIMS AGAINST YOU FOR DAMAGES (OTHER THAN THOSE UNDER THE FIRST ITEM LISTED ABOVE); 2) LOSS OF, OR DAMAGE TO, DATA; 3) SPECIAL, INCIDENTAL, OR INDIRECT DAMAGES OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES; OR 4) LOST PROFITS, BUSINESS REVENUE, GOODWILL OR ANTICIPATED SAVINGS. SOME STATES OR JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. SOME STATES OR JURISDICTIONS DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

Governing Law

Both you and IBM consent to the application of the laws of the country in which you acquired the Machine to govern, interpret, and enforce all of your and IBM's rights, duties, and obligations arising from, or relating in any manner to, the subject matter of this Statement of Limited Warranty, without regard to conflict of law principles.

THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE OR JURISDICTION TO JURISDICTION.

<u>Jurisdiction</u>
All of our rights, duties, and obligations are subject to the courts of the country in which you acquired the Machine.

Part 2 - Country-unique Terms

<u>AMERICAS</u>

ARGENTINA
Jurisdiction: *The following is added after the first sentence:*
Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the Ordinary Commercial Court of the city of Buenos Aires.

BOLIVIA
Jurisdiction: *The following is added after the first sentence:*
Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the courts of the city of La Paz.

BRAZIL
Jurisdiction: *The following is added after the first sentence:*
Any litigation arising from this Agreement will be settled exclusively by the court of Rio de Janeiro, RJ.

CHILE
Jurisdiction: *The following is added after the first sentence:*
Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the Civil Courts of Justice of Santiago.

COLOMBIA
Jurisdiction: *The following is added after the first sentence:*
Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the Judges of the Republic of Colombia.

EQUADOR
Jurisdiction: *The following is added after the first sentence:*
Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the Judges of Quito.

MEXICO
Jurisdiction: *The following is added after the first sentence:*
Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the Federal Courts of Mexico City, Federal District.

PARAGUAY
Jurisdiction: *The following is added after the first sentence:*
Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the courts of the city of Asuncion.

PERU
Jurisdiction: *The following is added after the first sentence:*
Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the Judges and Tribunals of the Judicial District of Lima, Cercado.
Limitation of Liability: *The following is added at the end of this section:*In accordance with Article 1328 of the Peruvian Civil Code the limitations and exclusions specified in this section will not apply to damages caused by IBM's willful misconduct ("dolo") or gross negligence ("culpa inexcusable").

URUGUAY
Jurisdiction: *The following is added after the first sentence:*
Any litigation arising from this Statement of Limited Warranty will be settled
exclusively by the City of Montevideo Court's Jurisdiction.

VENEZUELA
Jurisdiction: *The following is added after the first sentence:*
Any litigation arising from this Statement of Limited Warranty will be settled
exclusively by the Courts of the Metropolitan Area Of the City of Caracas.

NORTH AMERICA

How to Obtain Warranty Service: *The following is added to this Section:*
To obtain warranty service from IBM in Canada or the United States, call
1-800-IBM-SERV (426-7378).

CANADA
Limitation of Liability: *The following replaces item 1 of this section:*
1. damages for bodily injury (including death) or physical harm to real property
and tangible personal property caused by IBM's negligence; and
Governing Law: *The following replaces "laws of the country in which you acquired the
Machine" in the first sentence:*
laws in the Province of Ontario.

UNITED STATES
Governing Law: *The following replaces "laws of the country in which you acquired the
Machine" in the first sentence:*
laws of the State of New York.

ASIA PACIFIC

AUSTRALIA
What this Warranty Covers: *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 similar legislation and are only limited
to the extent permitted by the applicable legislation.
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 or other similar legislation, 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.
Governing Law: *The following replaces "laws of the country in which you acquired the
Machine" in the first sentence:*
laws of the State or Territory.

CAMBODIA AND LAOS

Governing Law: *The following replaces* "laws of the country in which you acquired
the Machine" *in the first sentence:*
laws of the State of New York, United States of America.

CAMBODIA, INDONESIA, AND LAOS
Arbitration: *The following is added under this heading:*
Disputes arising out of or in connection with this Statement of Limited Warranty

shall be finally settled by arbitration which shall be held in Singapore in accordance with the Arbitration Rules of Singapore International Arbitration Center ("SIAC Rules") then in effect. The arbitration award shall be final and binding for the parties without appeal and shall be in writing and set forth the findings of fact and the conclusions of law. The number of arbitrators shall be three, with each side to the dispute being entitled to appoint one arbitrator. The two arbitrators appointed by the parties shall appoint a third arbitrator who shall act as chairman of the proceedings. Vacancies in the post of chairman shall be filled by the president of the SIAC. Other vacancies shall be filled by the respective nominating party. Proceedings shall continue from the stage they were at when the vacancy occurred. If one of the parties refuses or otherwise fails to appoint an arbitrator within 30 days of the date the other party appoints its, the first appointed arbitrator shall be the sole arbitrator, provided that the arbitrator was validly and properly appointed. All proceedings shall be conducted, including all documents presented in such proceedings, in the English language. The English language version of this Statement of Limited Warranty prevails over any other language version.

HONG KONG S.A.R. OF CHINA AND MACAU S.A.R. OF CHINA
Governing Law: *The following replaces* "laws of the country in which you acquired the Machine" *in the first sentence:*
laws of Hong Kong Special Administrative Region of China.

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; and
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 Limited Warranty, the charge paid by you for the individual Machine that is the subject of the claim. For purposes of this item, the term "Machine" includes Machine Code and Licensed Internal Code ("LIC").

Arbitration: *The following is added under this heading*
Disputes arising out of or in connection with this Statement of Limited Warranty shall be finally settled by arbitration which shall be held in Bangalore, India in accordance with the laws of India then in effect. The arbitration award shall be final and binding for the parties without appeal and shall be in writing and set forth the findings of fact and the conclusions of law. The number of arbitrators shall be three, with each side to the dispute being entitled to appoint one arbitrator. The two arbitrators appointed by the parties shall appoint a third arbitrator who shall act as chairman of the proceedings. Vacancies in the post of chairman shall be filled by the president of the Bar Council of India. Other vacancies shall be filled by the respective nominating party. Proceedings shall continue from the stage they were at when the vacancy occurred. If one of the parties refuses or otherwise fails to appoint an arbitrator within 30 days of the date the other party appoints its, the first appointed arbitrator shall be the sole arbitrator, provided that the arbitrator was validly and properly appointed. All proceedings shall be conducted, including all documents presented in such proceedings, in the English language. The English language version of this Statement of Limited Warranty prevails over any other language version.

JAPAN
Governing Law: *The following sentence is added to this Section:*

Any doubts concerning this Statement of Limited Warranty will be initially resolved between us in good faith and in accordance with the principle of mutual trust.

MALAYSIA
Limitation of Liability: The word *"SPECIAL"* in item 3 of the fifth paragraph is deleted.

NEW ZEALAND
What this Warranty Covers: *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.

PEOPLE'S REPUBLIC OF CHINA (PRC)
Governing Law: *The following replaces* "laws of the country in which you acquired the Machine" *in the first sentence:*
laws of the State of New York, United States of America (except when local law requires otherwise).

PHILIPPINES
Limitation of Liability: *Item 3 in the fifth paragraph is replaced by the following:*
SPECIAL (INCLUDING NOMINAL AND EXEMPLARY DAMAGES), MORAL, INCIDENTAL, OR INDIRECT DAMAGES FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES; OR
Arbitration: The following is added: under this heading
Disputes arising out of or in connection with this Statement of Limited Warranty shall be finally settled by arbitration which shall be held in Metro Manila, Philippines in accordance with the laws of the Philippines then in effect. The arbitration award shall be final and binding for the parties without appeal and shall be in writing and set forth the findings of fact and the conclusions of law. The number of arbitrators shall be three, with each side to the dispute being entitled to appoint one arbitrator. The two arbitrators appointed by the parties shall appoint a third arbitrator who shall act as chairman of the proceedings. Vacancies in the post of chairman shall be filled by the president of the Philippine Dispute Resolution Center, Inc.. Other vacancies shall be filled by the respective nominating party. Proceedings shall continue from the stage they were at when the vacancy occurred. If one of the parties refuses or otherwise fails to appoint an arbitrator within 30 days of the date the other party appoints its, the first appointed arbitrator shall be the sole arbitrator, provided that the arbitrator was validly and properly appointed. All proceedings shall be conducted, including all documents presented in such proceedings, in the English language. The English language version of this Statement of Limited Warranty prevails over any other language version.

SINGAPORE
Limitation of Liability: *The words* "SPECIAL" *and* "ECONOMIC" *in item 3 in the fifth paragraph are deleted.*

<u>**EUROPE, MIDDLE EAST, AFRICA (EMEA)**</u>

THE FOLLOWING TERMS APPLY TO ALL EMEA COUNTRIES:
The terms of this Statement of Limited Warranty apply to Machines purchased from IBM or an IBM reseller.

How to Obtain Warranty Service:
Add the following paragraph in **Western Europe** *(Andorra, Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, Netherlands, Norway, Poland, Portugal, San Marino, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom, Vatican State, and any country subsequently added to the European Union, as from the date of accession):* The warranty for Machines acquired in Western Europe shall be valid and applicable in all Western Europe countries provided the Machines have been announced and made available in such countries. If you purchase a Machine in one of the Western European countries, as defined above, 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, provided the Machine has been announced and made available by IBM in the country in which you wish to obtain service. If you purchased a Personal Computer Machine in Albania, Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Georgia, Hungary, Kazakhstan, Kyrgyzstan, 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. If you purchase a Machine in a Middle Eastern or African country, you may obtain warranty service for that Machine from the IBM entity within the country of purchase, if that IBM entity provides warranty service in that country, or from an IBM reseller, approved by IBM to perform warranty service on that Machine in that country. Warranty service in Africa is available within 50 kilometers of an IBM approved service provider. You are responsible for transportation costs for Machines located outside 50 kilometers of an IBM approved service provider.

Governing Law:
The phrase "the laws of the country in which you acquired the Machine" *is replaced by:*
1) "the laws of Austria" **in Albania, Armenia, Azerbaijan, Belarus, Bosnia-Herzegovina, Bulgaria, Croatia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, FYR Macedonia, Moldova, Poland, Romania, Russia, Slovakia, Slovenia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan, and FR Yugoslavia;** 2) "the laws of France" **in Algeria, Benin, Burkina Faso, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo Republic, Djibouti, Democratic Republic of Congo, Equatorial Guinea, French Guiana, French Polynesia, Gabon, Gambia, Guinea, Guinea-Bissau, Ivory Coast, Lebanon, Madagascar, Mali, Mauritania, Mauritius, Mayotte, Morocco, New Caledonia, Niger, Reunion, Senegal, Seychelles, Togo, Tunisia, Vanuatu, and Wallis & Futuna;** 3) "the laws of Finland" **in Estonia, Latvia, and Lithuania;** 4) "the laws of England" **in Angola, Bahrain, Botswana, Burundi, Egypt, Eritrea, Ethiopia, Ghana, Jordan, Kenya, Kuwait, Liberia, Malawi, Malta, Mozambique, Nigeria, Oman, Pakistan, Qatar, Rwanda, Sao Tome, Saudi Arabia, Sierra Leone, Somalia, Tanzania, Uganda, United Arab Emirates, the United Kingdom, West Bank/Gaza, Yemen, Zambia, and Zimbabwe;** and 5) "the laws of South Africa" **in South Africa, Namibia, Lesotho and Swaziland.**

Jurisdiction: *The following exceptions are added to this section:*
1) **In Austria** the choice of jurisdiction for all disputes arising out of this Statement of Limited Warranty and relating thereto, including its existence, will be the

competent court of law in Vienna, Austria (Inner-City); 2) **in Angola, Bahrain, Botswana, Burundi, Egypt, Eritrea, Ethiopia, Ghana, Jordan, Kenya, Kuwait, Liberia, Malawi, Malta, Mozambique, Nigeria, Oman, Pakistan, Qatar, Rwanda, Sao Tome, Saudi Arabia, Sierra Leone, Somalia, Tanzania, Uganda, United Arab Emirates, West Bank/Gaza, Yemen, Zambia, and Zimbabwe** all disputes arising out of this Statement of Limited Warranty or related to its execution, including summary proceedings, will be submitted to the exclusive jurisdiction of the English courts; 3) in **Belgium** and **Luxembourg**, all disputes arising out of this Statement of Limited Warranty or related to its interpretation or its execution, the law, and the courts of the capital city, of the country of your registered office and/or commercial site location only are competent; 4) **in France, Algeria, Benin, Burkina Faso, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo Republic, Djibouti, Democratic Republic of Congo, Equatorial Guinea, French Guiana, French Polynesia, Gabon, Gambia, Guinea, Guinea-Bissau, Ivory Coast, Lebanon, Madagascar, Mali, Mauritania, Mauritius, Mayotte, Morocco, New Caledonia, Niger, Reunion, Senegal, Seychelles, Togo, Tunisia, Vanuatu, and Wallis & Futuna** all disputes arising out of this Statement of Limited Warranty or related to its violation or execution, including summary proceedings, will be settled exclusively by the Commercial Court of Paris; 5) in **Russia**, all disputes arising out of or in relation to the interpretation, the violation, the termination, the nullity of the execution of this Statement of Limited Warranty shall be settled by Arbitration Court of Moscow; 6) **in South Africa, Namibia, Lesotho and Swaziland**, both of us agree to submit all disputes relating to this Statement of Limited Warranty to the jurisdiction of the High Court in Johannesburg; 7) **in Turkey** all disputes arising out of or in connection with this Statement of Limited Warranty shall be resolved by the Istanbul Central (Sultanahmet) Courts and Execution Directorates of Istanbul, the Republic of Turkey; 8) in each of the following specified countries, any legal claim arising out of this Statement of Limited Warranty will be brought before, and settled exclusively by, the competent court of a) Athens for **Greece**, b) Tel Aviv-Jaffa for **Israel**, c) Milan for **Italy**, d) Lisbon for **Portugal**, and e) Madrid for **Spain**; and 9) **in the United Kingdom**, both of us agree to submit all disputes relating to this Statement of Limited Warranty to the jurisdiction of the English courts.

Arbitration: *The following is added under this heading:*

In Albania, Armenia, Azerbaijan, Belarus, Bosnia-Herzegovina, Bulgaria, Croatia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, FYR Macedonia, Moldova, Poland, Romania, Russia, Slovakia, Slovenia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan, and FR Yugoslavia all disputes arising out of this Statement of Limited Warranty or related to its violation, termination or nullity will be finally settled under the Rules of Arbitration and Conciliation of the International Arbitral Center of the Federal Economic Chamber in Vienna (Vienna Rules) by three arbitrators appointed in accordance with these rules. The arbitration will be held in Vienna, Austria, and the official language of the proceedings will be English. The decision of the arbitrators will be final and binding upon both parties. Therefore, pursuant to paragraph 598 (2) of the Austrian Code of Civil Procedure, the parties expressly waive the application of paragraph 595 (1) figure 7 of the Code. IBM may, however, institute proceedings in a competent court in the country of installation.**In Estonia, Latvia and Lithuania** all disputes arising in connection with this Statement of Limited Warranty will be finally settled in arbitration that will be held in Helsinki, Finland in accordance with the arbitration laws of Finland then in effect. Each party will appoint one arbitrator. The arbitrators will then jointly appoint the chairman. If arbitrators cannot agree on the chairman, then the Central Chamber of Commerce in Helsinki will appoint the chairman.

EUROPEAN UNION (EU)

THE FOLLOWING TERMS APPLY TO ALL EU COUNTRIES:
The warranty for Machines acquired in EU countries is valid and applicable in all
EU countries provided the Machines have been announced and made available in
such countries.
How to Obtain Warranty Service: *The following is added to this section:*
To obtain warranty service from IBM in EU countries, see the telephone listing in
Part 3 - Warranty Information.
You may contact IBM at the following address:
IBM Warranty & Service Quality Dept.
PO Box 30
Spango Valley
Greenock
Scotland PA16 0AH

CONSUMERS
Consumers have legal rights under applicable national legislation governing the
sale of consumer goods. Such rights are not affected by the warranties provided in
this Statement of Limited Warranty.

**AUSTRIA, DENMARK, FINLAND, GREECE, ITALY, NETHERLANDS,
NORWAY, PORTUGAL, SPAIN, SWEDEN AND SWITZERLAND**
Limitation of Liability: *The following replaces the terms of this section in its entirety:*
Except as otherwise provided by mandatory law:
1.   IBM's liability for any damages and losses that may arise as a consequence of
     the fulfillment of its obligations under or in connection with this Statement of
     Limited Warranty or due to any other cause related to this Statement of
     Limited Warranty is limited to the compensation of only those damages and
     losses proved and actually arising as an immediate and direct consequence of
     the non-fulfillment of such obligations (if IBM is at fault) or of such cause, for a
     maximum amount equal to the charges you paid for the Machine. For purposes
     of this item, the term "Machine" includes Machine Code and Licensed Internal
     Code ("LIC").
     The above limitation shall not apply to damages for bodily injuries (including
     death) and damages to real property and tangible personal property for which
     IBM is legally liable.
2.   **UNDER NO CIRCUMSTANCES IS IBM, ITS SUPPLIERS OR RESELLERS
     LIABLE FOR ANY OF THE FOLLOWING, EVEN IF INFORMED OF THEIR
     POSSIBILITY: 1) LOSS OF, OR DAMAGE TO, DATA; 2) INCIDENTAL OR
     INDIRECT DAMAGES, OR FOR ANY ECONOMIC CONSEQUENTIAL
     DAMAGES; 3) LOST PROFITS, EVEN IF THEY ARISE AS AN IMMEDIATE
     CONSEQUENCE OF THE EVENT THAT GENERATED THE DAMAGES;
     OR 4) LOSS OF BUSINESS, REVENUE, GOODWILL, OR ANTICIPATED
     SAVINGS.**

FRANCE AND BELGIUM
Limitation of Liability: *The following replaces the terms of this section in its entirety:*
Except as otherwise provided by mandatory law:
1. IBM's liability for any damages and losses that may arise as a consequence of
    the fulfillment of its obligations under or in connection with this Statement of
    Limited Warranty is limited to the compensation of only those damages and
    losses proved and actually arising as an immediate and direct consequence of
    the non-fulfillment of such obligations (if IBM is at fault), for a maximum
    amount equal to the charges you paid for the Machine that has caused the
    damages. For purposes of this item, the term "Machine" includes Machine Code

and Licensed Internal Code (″LIC″).

The above limitation shall not apply to damages for bodily injuries (including death) and damages to real property and tangible personal property for which IBM is legally liable.

2.   UNDER NO CIRCUMSTANCES IS IBM, ITS SUPPLIERS OR RESELLERS LIABLE FOR ANY OF THE FOLLOWING, EVEN IF INFORMED OF THEIR POSSIBILITY: 1) LOSS OF, OR DAMAGE TO, DATA; 2) INCIDENTAL OR INDIRECT DAMAGES, OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES; 3) LOST PROFITS, EVEN IF THEY ARISE AS AN IMMEDIATE CONSEQUENCE OF THE EVENT THAT GENERATED THE DAMAGES; OR 4) LOSS OF BUSINESS, REVENUE, GOODWILL, OR ANTICIPATED SAVINGS.

THE FOLLOWING TERMS APPLY TO THE COUNTRY SPECIFIED:

AUSTRIA
The provisions of this Statement of Limited Warranty replace any applicable statutory warranties.
What this Warranty Covers: *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 limitation period for consumers in action for breach of warranty is the statutory period as a minimum. In case IBM or your reseller is 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.
The second paragraph does not apply.

What IBM Will Do to Correct Problems: *The following is added to this section:*
During the warranty period, IBM will reimburse you for the transportation charges for the delivery of the failing Machine to IBM.

Limitation of Liability: *The following paragraph is added to this section:*
The limitations and exclusions specified in the Statement of Limited Warranty will not apply to damages caused by IBM with fraud or gross negligence and for express warranty.
The following sentence is added to the end of item 2:
IBM's liability under this item is limited to the violation of essential contractual terms in cases of ordinary negligence.

EGYPT
Limitation of Liability: *The following replaces item 2 in this section:*
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. For purposes of this item, the term ″Machine″ includes Machine Code and Licensed Internal Code (″LIC″).
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
What this Warranty Covers: *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 twelve months. In case IBM or your reseller is 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.
The second paragraph does not apply.
What IBM Will Do to Correct Problems: *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.
Limitation of Liability: *The following paragraph is added to this section:*
The limitations and exclusions specified in the Statement of Limited Warranty will not apply to damages caused by IBM with fraud or gross negligence and for express warranty.
The following sentence is added to the end of item 2:
IBM's liability under this item is limited to the violation of essential contractual terms in cases of ordinary negligence.

HUNGARY
Limitation of Liability: *The following is added at the end of this section:*
The limitation and exclusion specified herein shall not apply to liability for a breach of contract damaging life, physical well-being, or health that has been caused intentionally, by gross negligence, or by a criminal act. The parties accept the limitations of liability as valid provisions and state that the Section 314.(2) of the Hungarian Civil Code applies as the acquisition price as well as other advantages arising out of the present Statement of Limited Warranty balance this limitation of liability.

IRELAND
What this Warranty Covers: *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 the terms of section in its entirety:*
For the purposes of this section, a "Default" means any act, statement, omission, or negligence on the part of IBM in connection with, or in relation to, the subject matter of this Statement of Limited Warranty in respect of which IBM is legally liable to you, whether in contract or tort. A number of Defaults which together result in, or contribute to, substantially the same loss or damage will be treated as one Default occurring on the date of occurrence of the last such Default.
Circumstances may arise where, because of a Default, you are entitled to recover damages from IBM. This section sets out the extent of IBM's liability and your sole remedy.
1. IBM will accept unlimited liability for death or personal injury caused by the negligence of IBM
2.   Subject always to the **Items for Which IBM is Not Liable** below, IBM will accept unlimited liability for physical damage to your tangible property resulting from the negligence of IBM.

3. Except as provided in items 1 and 2 above, IBM's entire liability for actual damages for any one Default will not in any event exceed the greater of 1) EUR 125,000, or 2) 125% of the amount you paid for the Machine directly relating to the Default.

Items for Which IBM is Not Liable
Save with respect to any liability referred to in item 1 above, under no circumstances is IBM, its suppliers or resellers liable for any of the following, even if IBM or they were informed of the possibility of such losses:

1. loss of, or damage to, data;

2. special, indirect, or consequential loss; or

3. loss of profits, business, revenue, goodwill, or anticipated savings.

SLOVAKIA
Limitation of Liability: *The following is added to the end of the last paragraph:*
The limitations apply to the extent they are not prohibited under §§ 373-386 of the Slovak Commercial Code.

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

UNITED KINGDOM
Limitation of Liability: *The following replaces the terms of this section is in its entirety:*
For the purposes of this section, a "Default" means any act, statement, omission, or negligence on the part of IBM in connection with, or in relation to, the subject matter of this Statement of Limited Warranty in respect of which IBM is legally liable to you, whether in contract or tort. A number of Defaults which together result in, or contribute to, substantially the same loss or damage will be treated as one Default. Circumstances may arise where, because of a Default, you are entitled to recover damages from IBM. This section sets out the extent of IBM's liability and your sole remedy.
1. IBM will accept unlimited liability for:
    a. death or personal injury caused by the negligence of IBM; and
    b. any breach of its obligations implied by Section 12 of the Sale of Goods Act 1979 or Section 2 of the Supply of Goods and Services Act 1982, or any statutory modification or re-enactment of either such Section.
2. IBM will accept unlimited liability, subject always to the **Items for Which IBM is Not Liable** below, for physical damage to your tangible property resulting from the negligence of IBM.
3. IBM's entire liability for actual damages for any one Default will not in any event, except as provided in items 1 and 2 above, exceed the greater of 1) Pounds Sterling 75,000, or 2) 125% of the total purchase price payable or the charges for the Machine directly relating to the Default.

These limits also apply to IBM's suppliers and resellers. They state the maximum for which IBM and such suppliers and resellers are collectively responsible.

Items for Which IBM is Not Liable
Save with respect to any liability referred to in item 1 above, under no circumstances is IBM or any of its suppliers or resellers liable for any of the following, even if IBM or they were informed of the possibility of such losses:
1. loss of, or damage to, data;

2. special, indirect, or consequential loss; or
3. loss of profits, business, revenue, goodwill, or anticipated savings.

Part 3 - Warranty Information

This Part 3 provides information regarding the warranty applicable to your Machine, including the warranty period and type of warranty service IBM provides.

Warranty Period

The warranty period may vary by country or region and is specified in the table below. NOTE: "Region" means either Hong Kong or Macau Special Administrative Region of China. A warranty period of 3 years on parts and 3 years on labor means that IBM provides warranty service without charge for parts and labor during the 3 year warranty period.

IBM 2U LTO2 Autoloader

Country or Region of Purchase	Warranty Period	Type of Warranty Service
Worldwide	3 years	5

Types of Warranty Service

If required, IBM provides repair or exchange service depending on the type of warranty service specified for your Machine in the above table and as described below. Warranty service may be provided by your reseller if approved by IBM to perform warranty service. Scheduling of service will depend upon the time of your call and is subject to parts availability. Service levels are response time objectives and are not guaranteed. The specified level of warranty service may not be available in all worldwide locations, additional charges may apply outside IBM's normal service area, contact your local IBM representative or your reseller for country and location specific information.

1. **Customer Replaceable Unit ("CRU") Service**

   IBM provides replacement CRUs to you for you to install. CRU information and replacement instructions are shipped with your Machine and are available from IBM at any time on your request. Installation of Tier 1 CRUs is your responsibility. If IBM installs a Tier 1 CRU at your request, you will be charged for the installation. You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge, under the type of warranty service designated for your Machine. IBM specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to IBM. When return is required, 1) return instructions and a container are shipped with the replacement CRU, and 2) you may be charged for the replacement CRU if IBM does not receive the defective CRU within 30 days of your receipt of the replacement.

2. **On-site Service**

   IBM or your reseller will either repair or exchange the failing Machine at your location and verify its operation. You must provide suitable working area to allow disassembly and reassembly of the IBM Machine. The area must be clean, well lit and suitable for the purpose. For some Machines, certain repairs may require sending the Machine to an IBM service center.

3. **Courier or Depot Service ***

You will disconnect the failing Machine for collection arranged by IBM. IBM will provide you with a shipping container for you to return your Machine to a designated service center. A courier will pick up your Machine and deliver it to the designated service center. Following its repair or exchange, IBM will arrange the return delivery of the Machine to your location. You are responsible for its installation and verification.

4. **Customer Carry-In or Mail-In Service**

   You will deliver or mail as IBM specifies (prepaid unless IBM specifies otherwise) the failing Machine suitably packaged to a location IBM designates. After IBM has repaired or exchanged the Machine, IBM will make it available for your collection or, for Mail-in Service, IBM will return it to you at IBM's expense, unless IBM specifies otherwise. You are responsible for the subsequent installation and verification of the Machine.

5. **CRU and On-site Service**

   This type of Warranty Service is a combination of Type 1 and Type 2 (see above).

6. **CRU and Courier or Depot Service**

   This type of Warranty Service is a combination of Type 1 and Type 3 (see above).

7. **CRU and Customer Carry-In or Mail-In Service**

   This type of Warranty Service is a combination of Type 1 and Type 4 (see above).

When a 5, 6 or 7 type of warranty service is listed, IBM will determine which type of warranty service is appropriate for the repair.

* This type of service is called ThinkPad EasyServ or EasyServ in some countries. The IBM Machine Warranty worldwide web site at http://www.ibm.com/servers/support/machine_warranties/ provides a worldwide overview of IBM's Limited Warranty for Machines, a Glossary of IBM definitions, Frequently Asked Questions (FAQs) and Support by Product (Machine) with links to Product Support pages. **The IBM Statement of Limited Warranty is also available on this site in 29 languages.**
To obtain warranty service contact IBM or your IBM reseller. In Canada or the United States, call 1-800-IBM-SERV (426-7378). In Canada or the United States, call 1-800-IBM-SERV (426-7378). For other countries, see the telephone numbers below.

Phone numbers are subject to change without notice. For the latest phone number list, go to http://www.ibm.com/pc/support and click **Support Phone List.**

Country or Region	Telephone Number	Country or Region	Telephone Number

Africa	+44 (0) 1475 555 055	Japan	Desktop:
			0120-887-870
			
			• Overseas calls:
			  81-46-266-1084
			
			ThinkPad:
			0120-887-874
			
			• Overseas calls:
			  81-46-266-1084
			
			IntelliStation and xSeries:
			81-46-266-1358
			
			PC Software:
			0120-558-695
			
			• Overseas calls:
			  81-44-200-8666

Argentina	0800-666-0011	Luxembourg	298-977-5063
Australia	131-426	Malaysia	(60) 3-7727-7800
Austria	01-24592-5901	Mexico	001-866-434-2080
Bolivia	0800-0189	Middle East	+44 (0) 1475 555 055
Belgium	Dutch: 02-210 9820 French: 02-210 9800	Netherlands	020-514 5770
Brazil	55-11-3889-8986	New Zealand	0800-446-149
Canada	English: 1-800-565-3344 French: 1-800-565-3344 In Toronto: 416-383-3344	Nicaragua	255-6658
Chile	800-224-488	Norway	66 81 11 00
China	800-810-1818	Panama	206-6047
China (Hong Kong and S.A.R.)	Home PC: 852-2825-7799 Commercial PC: 852-8205-0333	Peru	0-800-50-866
Colombia	980-912-3021	Philippines	(63) 2-995-2225
Costa Rica	284-3911	Portugal	21-892-7147
Denmark	45 20 82 00	Russia	095-940-2000
Dominican Republic	566-4755 or 566-5161 ext. 8201 Toll Free within the Dominican Republic: 1-200-1929	Singapore	(65) 1-800-840-9911
Ecuador	1-800-426911 (option #4)	Spain	91-714-7983

Country or Region	Telephone Number	Country or Region	Telephone Number
El Salvador	250-5696	Sweden	08-477 4420
Finland	09-459 69 60	Switzerland	058-333-0900
France	02 38 55 74 50	Taiwan	886-2-8723-9799
Germany	07032-1549 201	Thailand	(66) 2-273-4000
Guatemala	335-8490	Turkey	00-800-446-32-041
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E-1

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This section provides electonic emission notices for the 2U Autoloader.

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Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

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Industry Canada Class A emission compliance statement

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

Avis de conformite a la reglementation d'Industrie Canada

Cet appareil numérique de la classe A est conform à la norme NMB-003 du Canada.

Deutsche EMV-Direktive (electromagnetische Verträglichkeit)

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

Der Aussteller der Konformitätserklärung ist die IBM UK, Greenock.

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(Auszug aus dem EMVG vom 9.Nov.92, Para.3. Abs.4)

> **Hinweis:** Dieses Genehmigungsverfahren ist von der Deutschen Bundespost noch nicht veröffentlicht worden.

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