

2 U Universal Tape Autoloader



# User's Guide



2 U Universal Tape Autoloader



# User's Guide

**Note:** Before using this information and the product it supports, read the information in Appendix D, "IBM Statement of Limited Warranty Z125-4753-08 04/2004," on page 37 and Appendix E, "Notices," on page 55.

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## Safety

Before installing this product, read the Safety Information.

مج، يجب قراءة دات السلامة

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

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

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

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

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

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

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

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

A termék telepítése előtt olvassa el a Biztonsági előírásokat!

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

製品の設置の前に、安全情報をお読みください。

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

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

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

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

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

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

Перед установкой продукта прочтите инструкции по  
технике безопасности.

Pred inštaláciou tohto zariadenia si prečítajte Bezpečnostné predpisy.

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

Antes de instalar este producto lea la información de seguridad.

Läs säkerhetsinformationen innan du installerar den här produkten.

安裝本產品之前，請先閱讀「安全資訊」。

**Statement 1:**



OK

**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:**

1. Turn everything OFF.
2. First, attach all cables to devices.
3. Attach signal cables to connectors.
4. Attach power cords to outlet.
5. Turn device ON.

**To Disconnect:**

1. Turn everything OFF.
2. First, remove power cords from outlet.
3. Remove signal cables from connectors.
4. Remove all cables from devices.

**Statement 15:**



**CAUTION:**

**Make sure that the rack is secured properly to avoid tipping when the unit is extended.**

**Statement 23:**



**CAUTION:**

**Do not place any object weighing more than 50 kg (110 lb) on top of rack-mounted devices.**



**>50 kg (110 lb)**



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## Chapter 1. Introduction

The IBM® Universal Tape Autoloader is an automated tape storage and retrieval device for high-end xSeries and System x™ servers. The autoloader supports 1 tape drive and can store up to 23 LTO3 tape cartridges in 2 magazines.

The Universal Tape Autoloader comes with a limited warranty. For more information, see Appendix D, “IBM Statement of Limited Warranty Z125-4753-08 04/2004,” on page 37.

**Note:** The terms *library* and *autoloader* are used interchangeably in this document.

Contact your place of purchase if an item is missing or damaged. Be sure to retain your proof of purchase. It might be required for you to receive warranty service.

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## The IBM xSeries Documentation CD

The IBM xSeries *Documentation* CD contains documentation for your option in Portable Document Format (PDF) and includes the IBM Documentation Browser to help you find information quickly.

### Hardware and software requirements

The IBM xSeries *Documentation* CD requires the following minimum hardware and software:

- Microsoft Windows NT 4.0 (with Service Pack 3 or later), Windows 2000, or Red Hat Linux.
- 100 MHz microprocessor.
- 32 MB of RAM.
- Adobe Acrobat Reader 3.0 (or later) or xpdf, which comes with Linux operating systems. Acrobat Reader software is included on the CD, and you can install it when you run the Documentation Browser.

### Using the Documentation Browser

Use the Documentation Browser to browse the contents of the CD, read brief descriptions of the documents, and view documents, using Adobe Acrobat Reader or xpdf. The Documentation Browser automatically detects the regional settings in use in your system and displays the documents in the language for that region (if available). If a document is not available in the language for that region, the English-language version is displayed.

Use one of the following procedures to start the Documentation Browser:

- If Autostart is enabled, insert the CD into the CD drive. The Documentation Browser starts automatically.
- If Autostart is disabled or is not enabled for all users, use one of the following procedures:
  - If you are using a Windows operating system, insert the CD into the CD drive and click **Start --> Run**. In the **Open** field, type  
`e:\win32.bat`

where *e* is the drive letter of the CD drive, and click **OK**.

- If you are using Red Hat Linux, insert the CD into the CD drive; then, run the following command from the /mnt/cdrom directory:

```
sh runlinux.sh
```

Select your server from the **Product** menu. The **Available Topics** list displays all the documents for your server. Some documents might be in folders. A plus sign (+) indicates each folder or document that has additional documents under it. Click the plus sign to display the additional documents.

When you select a document, a description of the document appears under **Topic Description**. To select more than one document, press and hold the Ctrl key while you select the documents. Click **View Book** to view the selected document or documents in Acrobat Reader or xpdf. If you selected more than one document, all the selected documents are opened in Acrobat Reader or xpdf.

To search all the documents, type a word or word string in the **Search** field and click **Search**. The documents in which the word or word string appears are listed in order of the most occurrences. Click a document to view it, and press Ctrl+F to use the Acrobat search function or Alt+F to use the xpdf search function within the document.

Click **Help** for detailed information about using the Documentation Browser.

---

## Notices and statements in this documentation

The caution and danger statements that appear in this document are also in the multilingual *Safety Information* document, which is on the IBM *Documentation CD*. Each statement is numbered for reference to the corresponding statement in the *Safety Information* document.

The following notices and statements appear in this document:

- **Note:** These notices provide important tips, guidance, or advice.
- **Attention:** These notices indicate potential damage to programs, devices, or data. An attention notice is placed just before the instruction or situation in which damage could occur.
- **Caution:** These statements indicate situations that can be potentially hazardous to you. A caution statement is placed just before the description of a potentially hazardous procedure step or situation.
- **Danger:** These statements indicate a situation that can be potentially lethal or extremely hazardous to you. A danger statement is placed just before the description of a potentially lethal or extremely hazardous procedure step or situation.

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## Components

This section describes the major components of the autoloader.

The following illustration shows the components on the front of the autoloader.

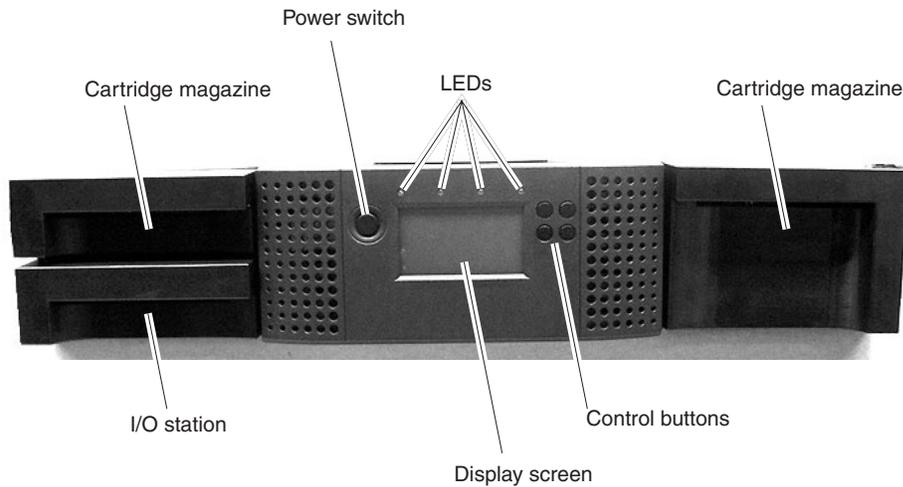


Figure 1. Front panel components

The following illustration show the back panel components.

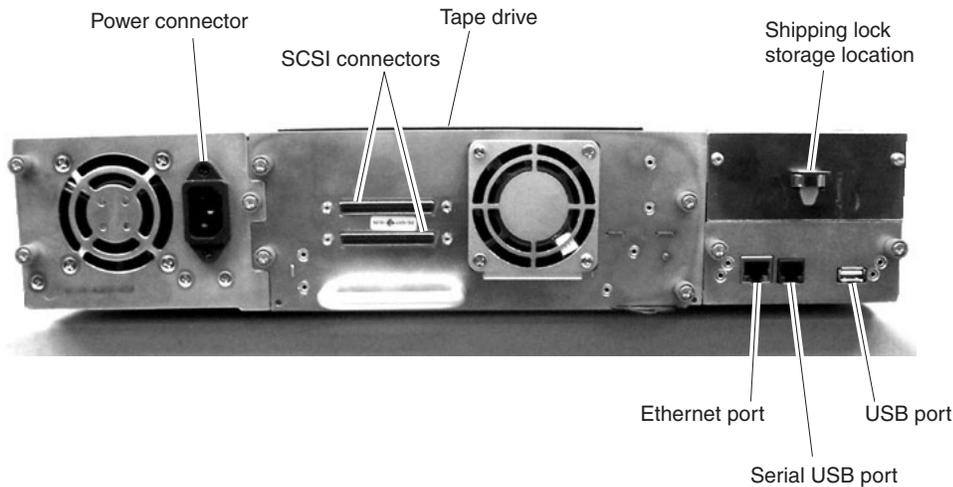


Figure 2. Back panel components

## Operator control panel LEDs

Table 1 describes the LED functions.

Table 1. LED function

LED	Description
Activity	This LED is lit when power is turned on. It flashes when the autoloader is active.
Clean drive	This LED is lit when a drive needs to be cleaned. The LED will go out when the drive has been cleaned.
Media attention	This LED indicates that a cartridge is not usable. The LED will go out when the cartridge is replaced.
Error	This LED is lit when there is an error condition. A message about the error is also displayed on the operator panel. The LED will go out when the error is corrected.

The following illustration shows the location of the LEDs.

Figure 3. LED locations

---

## SCSI host bus adapter

To get optimum performance from your autoloader, use a SCSI bus that can transfer data at a rate that supports the maximum data transfer rate of the autoloader. See Appendix A, “Specifications,” on page 27 for more information.

If necessary, install a SCSI host adapter, software, and compatible drivers. Refer to the manuals for the host computer and the SCSI host adapter for detailed information. Use a SCSI-3 LVDS host bus adapter with the autoloader. To ensure optimum performance it is recommended that you use an Ultra320 HBA for the autoloader.

A single-ended (SE) SCSI host bus adapter will severely degrade performance and limit cable length. Also, if there are any SE devices on the same SCSI bus, the entire SCSI bus will run at the single-end speed, severely degrading performance.

---

## LUN scanning

The autoloader uses a single SCSI or loop ID per drive and dual logical unit numbers (LUNs) to control the tape drive (LUN 0) and autoloader accessor (LUN 1). The autoloader requires a host bus adapter that supports LUN scanning. If LUN scanning is not enabled, your host system will not scan beyond LUN 0 and it will fail to discover the autoloader; it will only discover the tape drive.

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## Chapter 2. Using the autoloader

This chapter describes how to use the autoloader operator controls.

---

### Using the operator control panel

Use the operator control panel to navigate through the menus. The autoloader menus are organized in a tree structure that consists of four main menus with submenus and selections. Table 2 provides a description of the operator panel buttons.

Table 2. Operator control panel button functions

Button	Description
Enter	Use this button to select menu items and values.
Next	Use this button to navigate forward through the menus.
Previous	Use this button to navigate backward through the menus.
Cancel	Use this button to cancel an action and return to the last menu that was displayed.

The following illustration shows the location of operator control panel buttons.

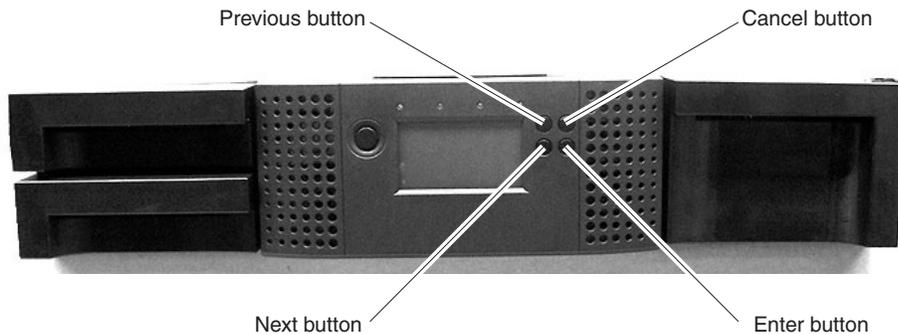


Figure 4. Control panel buttons

Table 3 describes the type of values that can be selected and how to select them.

Table 3.

Value	Description	Procedure
Predefined	Some menus provide predefined values to choose from.	To select a predefined value, use the Next or Previous buttons to select the value and press the Enter button.
Toggle	Toggle values are used to switch between two different values, for example, on and off.	To select a toggle value, use the Next or Previous buttons to change the value and press the Enter button.

Table 3. (continued)

Value	Description	Procedure
Numerical	Numerical values are used for network address, password entries, and other configuration entries.	<p>To select a numerical value, complete the following steps:</p> <ol style="list-style-type: none"> <li>1. Use the Next or Previous buttons to display the value that you want to specify and press Enter. The cursor moves to the next digit.</li> <li>2. Repeat step 1 until all values are specified.</li> <li>3. Press Enter after the last digit is specified to apply the new value.</li> </ol>

## Menu flow charts

Use the following flow charts to determine how to navigate to the menu that you want to use.

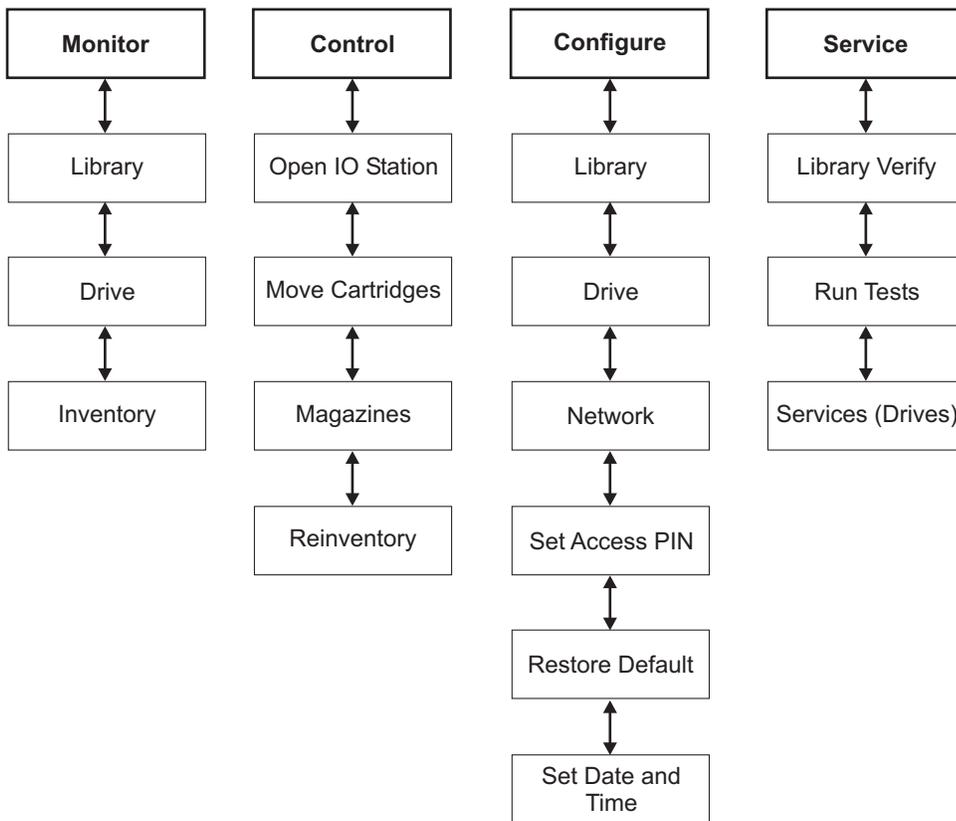


Figure 5. Main menus

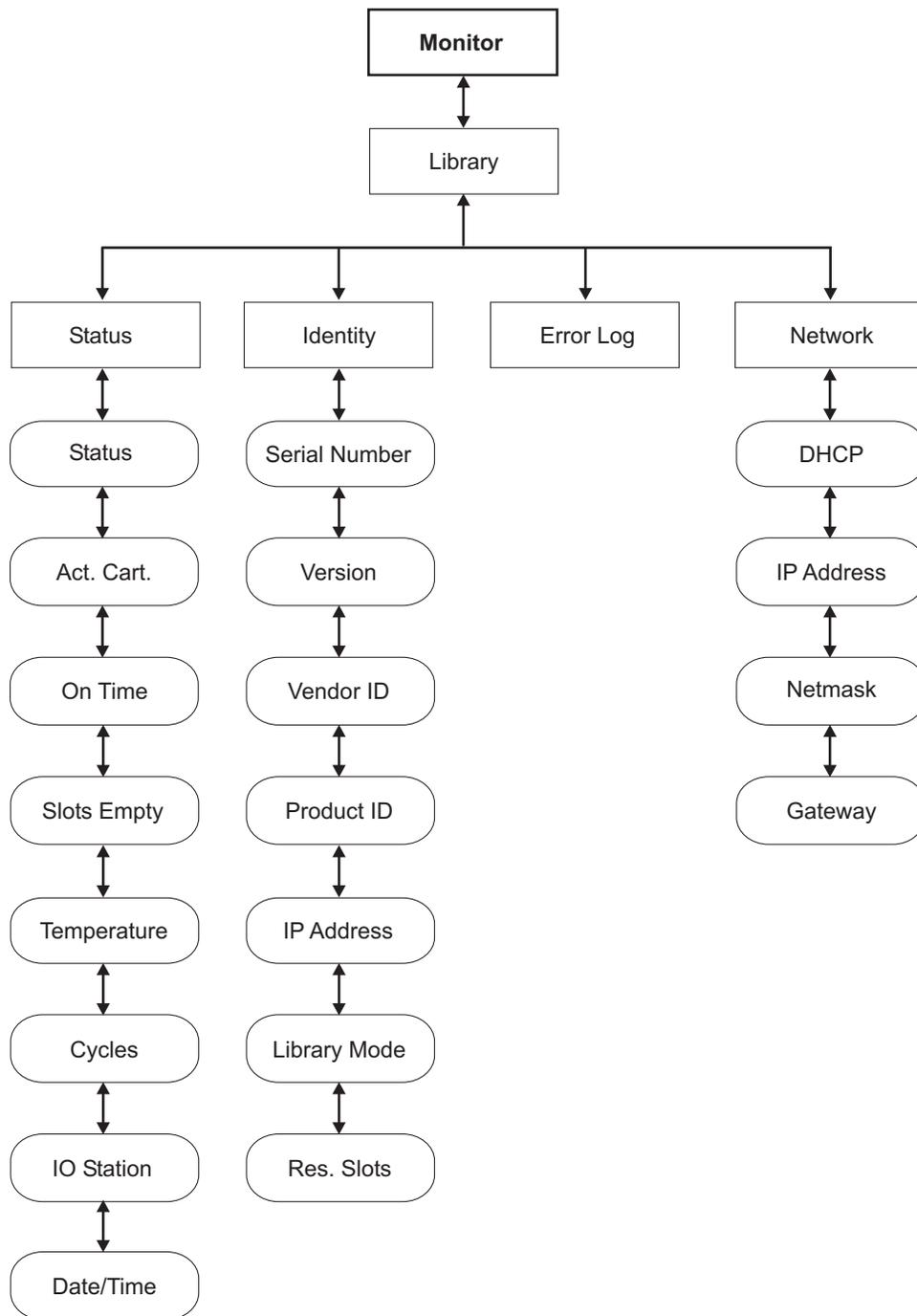


Figure 6. Library menu

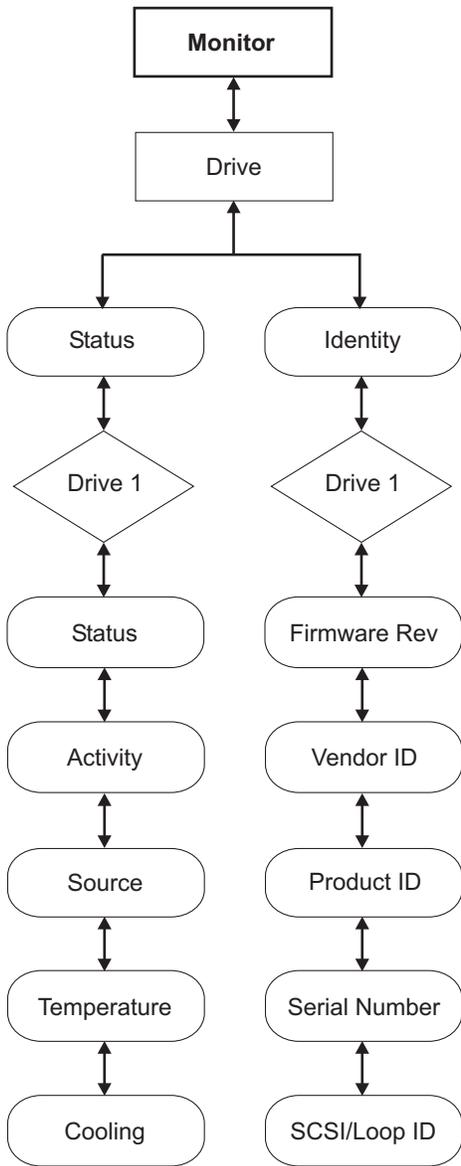


Figure 7. Drive menu

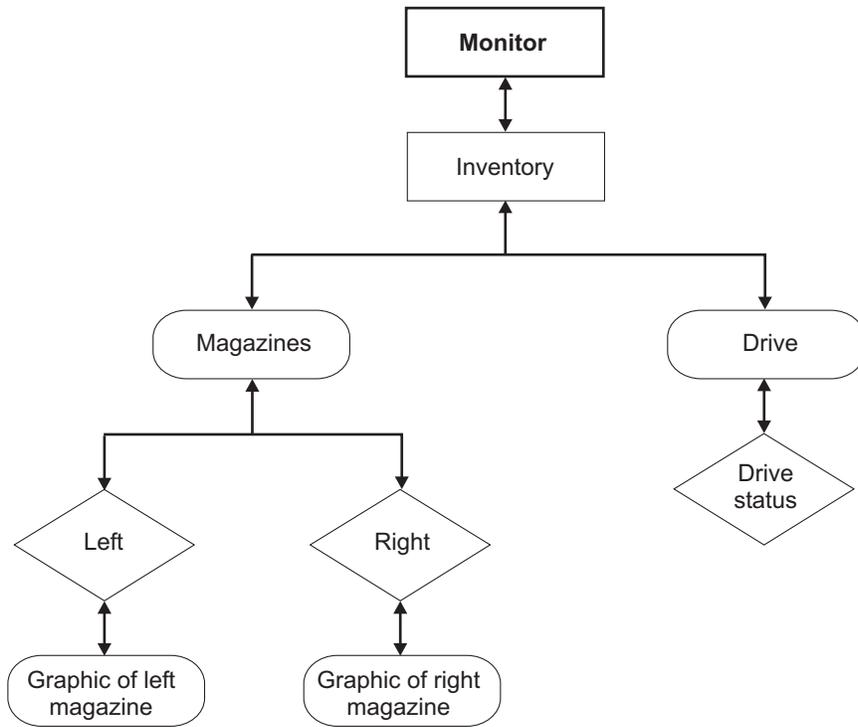


Figure 8. Inventory menu

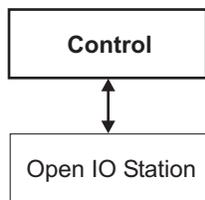


Figure 9. Open I/O station menu

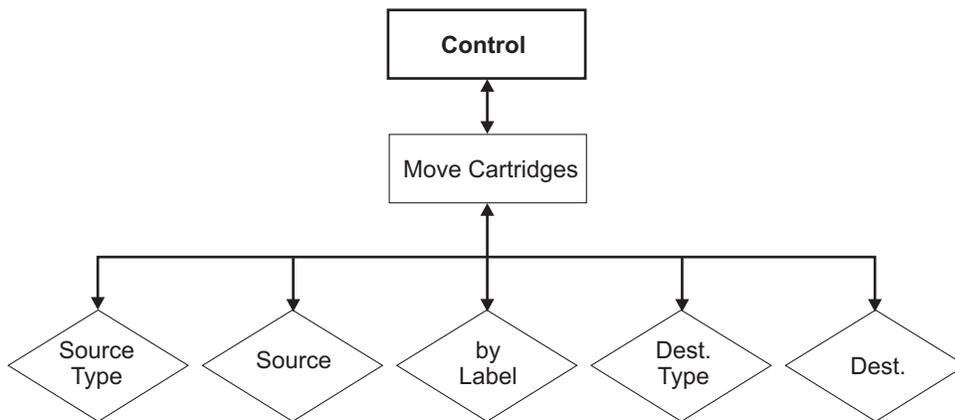


Figure 10. Move medium menu

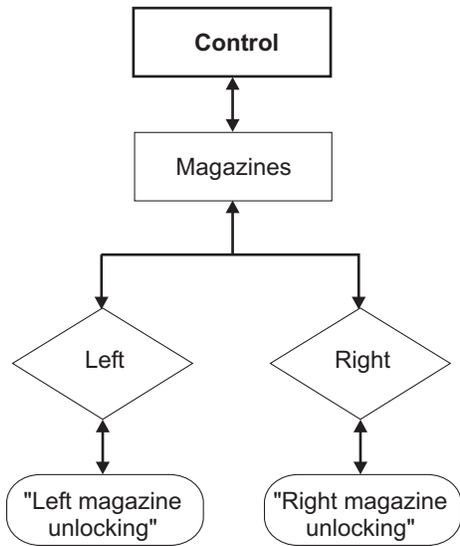


Figure 11. Magazines menu

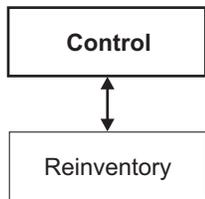


Figure 12. Reinventory menu

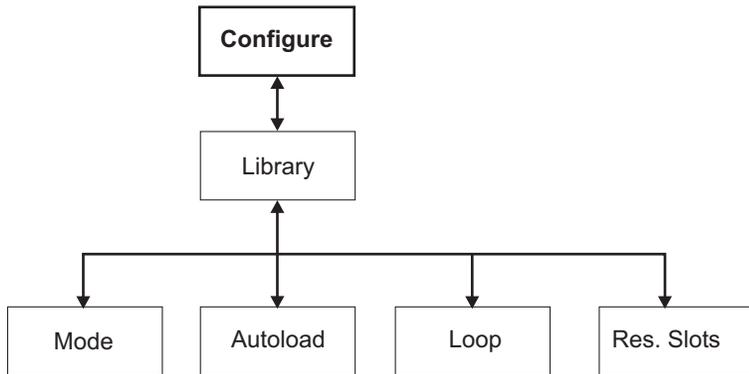


Figure 13. Library configure menu

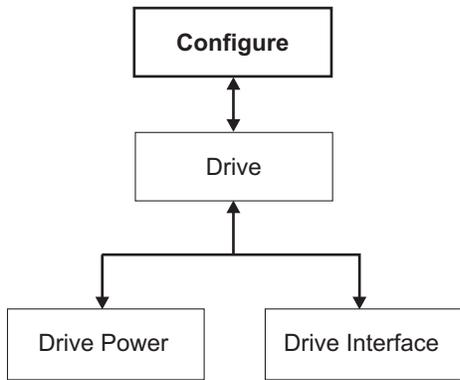


Figure 14. Drive configure menu

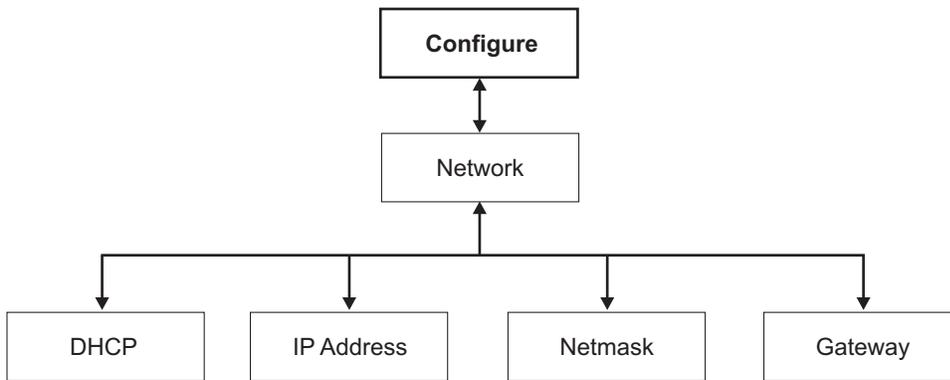


Figure 15. Configure network menu

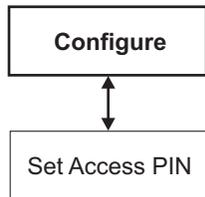


Figure 16. Configure password menu

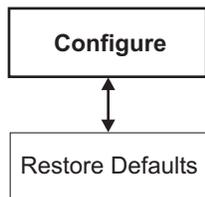


Figure 17. Restore defaults menu

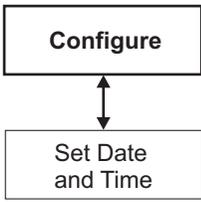


Figure 18. Set date and time menu

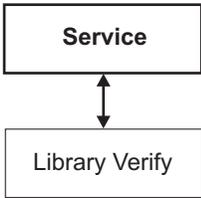


Figure 19. Library verify menu

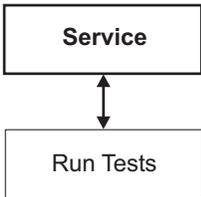


Figure 20. Run tests menu

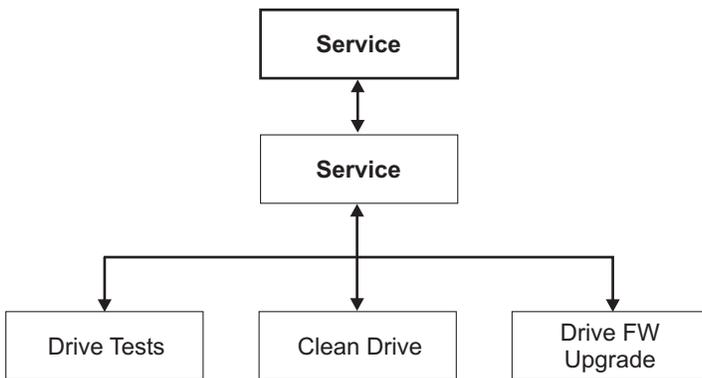


Figure 21. Service drive menu

## Chapter 3. Using the Remote Management utility

This chapter describes the Remote Management utility. The default password for the User ID is `usr001` and the default password for the Admin ID is `adm001`.

Table 4. Monitor library

Page	Description	Access procedure
Library Identity	This page provides the following information about the autoloader: <ul style="list-style-type: none"> <li>• Serial number</li> <li>• Product ID</li> <li>• Firmware level installed</li> <li>• Boot code firmware revision</li> <li>• IP address</li> <li>• Library mode</li> </ul>	This page is displayed when you log on to the Remote Management utility.
Drives Identity	This page provides the following information about the drive: <ul style="list-style-type: none"> <li>• Vendor ID</li> <li>• Product ID</li> <li>• Serial number</li> <li>• Firmware revision</li> <li>• SCSI ID</li> <li>• Physical drive number</li> <li>• SCSI element address</li> </ul>	To display this page, click <b>Monitor Library</b> → <b>Drives Identity</b> .
Library Status	This page provides the following information about the autoloader: <ul style="list-style-type: none"> <li>• Status</li> <li>• Cartridge in transport</li> <li>• Number of moves</li> <li>• Total power-on time</li> <li>• Robotic status</li> <li>• Left magazine</li> <li>• Right magazine</li> </ul>	To display this page, click <b>Monitor Library</b> → <b>Library Status</b> .
Drives status	This page displays the following information about the tape drives: <ul style="list-style-type: none"> <li>• Status</li> <li>• Cartridge in drive</li> <li>• Drive error code</li> <li>• Drive temperature</li> <li>• Cooling fan active</li> <li>• Drive activity</li> </ul>	To display this page, click <b>Monitor Library</b> → <b>Drives Status</b> .
Inventory	This page provides summary information about the cartridges. Click the > sign to display more information.	To display this page, click <b>Monitor Library</b> → <b>Inventory</b> .

Table 5. Configure library

Page	Description	Access procedure
General	Use this page to display and change the following configuration values: <ul style="list-style-type: none"> <li>• Library name</li> <li>• Library mode</li> <li>• Active slots</li> </ul>	To display this page, click <b>Configure Library</b> → <b>General</b> .
Drives	Use this page to display and change the tape drive configuration information. <ul style="list-style-type: none"> <li>• Drive SCSI ID</li> <li>• Power on or off</li> </ul>	To display this page, click <b>Configure Library</b> → <b>Drives</b> .
Network	Use this page to display and change the following network information: <ul style="list-style-type: none"> <li>• DHCP</li> <li>• IP address</li> <li>• Network mask</li> <li>• Gateway address</li> </ul>	To display this page, click <b>Configure Library</b> → <b>Network</b> .
User access	Use this page to view or change the following information: <ul style="list-style-type: none"> <li>• User access</li> <li>• Access level</li> <li>• Access level name</li> <li>• New password</li> <li>• Repeat password</li> <li>• Operator control panel pin enabled</li> <li>• Operator control panel pin code</li> <li>• Support name</li> <li>• Support phone</li> <li>• Support e-mail</li> </ul>	To display this page, click <b>Configure Library</b> → <b>User Access</b> .
Date and time	Use this page to set the date and time.	To display this page, click <b>Configure Library</b> → <b>Date &amp; Time</b> .
Logs and Traces	Use this page to control the error log: <ul style="list-style-type: none"> <li>• Error log mode</li> <li>• Trace level</li> <li>• Trace filter</li> </ul>	To display this page, click <b>Configure Library</b> → <b>Logs and Traces</b> .
Event notification	Use this page to configure the following information: <ul style="list-style-type: none"> <li>• Notification errors</li> <li>• Notification warnings</li> <li>• To e-mail address</li> <li>• SMTP server address</li> </ul>	To display this page, click <b>Configure Library</b> → <b>Event Notification</b> .

Table 5. Configure library (continued)

Page	Description	Access procedure
Restore defaults	Use this page to perform the following tasks: <ul style="list-style-type: none"> <li>Restore factory defaults</li> <li>Restore vital product data</li> <li>Save vital product data</li> </ul>	To display this page, click <b>Configure Library</b> → <b>Restore Defaults</b> .

Table 6. Manage library

Page	Description	Access procedure
Move media	Use this page to move cartridges within the autoloader.	To display this page, click <b>Manage Library</b> → <b>Move Media</b> .
Perform Inventory	Use this page to inventory the tape cartridges.	To display this page, click <b>Manage Library</b> → <b>Perform Inventory</b> .
Release Magazines	Use this page to release a magazine so that it can be removed from the autoloader.	To display this page, click <b>Manage Library</b> → <b>Release Magazine</b> .

Table 7. Service library

Page	Description	Access procedure
Clean drive	Use this page to clean the tape drive	To display this page, click <b>Service Library</b> → <b>Clean Drive</b> .
Advanced diagnostics	Use this page to run diagnostics on the tape drive.	To display this page, click <b>Service Library</b> → <b>Advanced Diagnostics</b> .
View logs	Use this page to view the logs.	To display this page, click <b>Service Library</b> → <b>View Logs</b> .
Perform diagnostics	Use this page to run diagnostics.	To display this page, click <b>Service Library</b> → <b>Perform Diagnostics</b> .
Upgrade firmware	Use this page to upgrade the library and tape drive firmware.	To display this page, click <b>Service Library</b> → <b>Upgrade Firmware</b> .
Reboot	Use this page to reboot the library.	To display this page, click <b>Service Library</b> → <b>Reboot</b> .



## Chapter 4. Solving problems

This chapter provides information about solving problems.

Table 8 lists common problems and potential solutions.

*Table 8. Problems and solutions*

Problem	Solution
The autoloader does not turn on.	<ol style="list-style-type: none"><li>1. Check all power cord connections.</li><li>2. Make sure the power button on the front panel is in the on position</li><li>3. Make sure that there is power to the outlet. If necessary, try another working outlet.</li><li>4. Replace the power cord.</li></ol>
No messages are displayed.	<ol style="list-style-type: none"><li>1. Make sure the power cord is connected.</li><li>2. Make sure the power button is in the on position.</li><li>3. Power cycle the autoloader.</li><li>4. Download the latest autoloader firmware.</li></ol>
A cartridge will not eject from the tape drive.	<ol style="list-style-type: none"><li>1. Power cycle the autoloader. Allow it to complete initialization, which in rare cases can take as long as 10 minutes; then, retry unloading the cartridge using the autoloader operator control panel.</li><li>2. Allow the drive to complete all operations. This might take as long as 10 minutes if you reset or cycle power on the autoloader while the cartridge is positioned at the physical end of the media.</li><li>3. Make sure that the backup software is not reserving the slot or preventing the drive from ejecting the cartridge. Temporarily disconnect the autoloader from the host server and power cycle the host system to eliminate it as the source of the problem.</li></ol>
A cartridge cannot be removed from a storage slot.	Make sure that a defective cartridge is not lodged in the storage slot. Remove a defective cartridge and replace it with a new cartridge.
A cleaning or data cartridge is incompatible with the tape drive.	Make sure that you are using tape and cleaning cartridges that are compatible with the tape drive and autoloader. The autoloader automatically unloads incompatible cartridges and the Media Attention LED flashes for the indicated slot number. Export the cartridge to resolve the problem.

Table 8. Problems and solutions (continued)

<p>Cannot write to or read from a tape cartridge.</p>	<ol style="list-style-type: none"> <li>1. Make sure that the tape cartridge write-protect switch is in the write-enabled position.</li> <li>2. Make sure that you have the appropriate data cartridge for your autoloader model.</li> <li>3. Make sure that you are using an Ultrium cartridge that has not been degaussed. Do not degauss Ultrium cartridges.</li> <li>4. Make sure that the tape cartridge has not been exposed to harsh environmental or electrical conditions and is not physically damaged in any way.</li> <li>5. Many backup applications do not read or write to cartridges that were created using a different backup application. In this case, you might have to perform an erase, reformat, or label replacement operation on the cartridge.</li> <li>6. Make sure you understand any data protection or overwrite protection schemes that your backup application might be using, which could prevent you from writing to a cartridge.</li> <li>7. Retry the operation with a different, known good cartridge.</li> <li>8. Clean the tape drive.</li> </ol>
<p>Cannot load the cleaning cartridge.</p>	<p>Make sure that you are using an Ultrium universal cleaning cartridge.</p>
<p>There is an error code on the operator control panel display screen.</p>	<p>Look up the error code, resolve the failure, and power cycle the autoloader.</p>
<p>The tape drive SCSI ID was changed, but the host server does not recognize the new SCSI ID.</p>	<ol style="list-style-type: none"> <li>1. Make sure that all SCSI devices on the same bus have unique ID numbers.</li> <li>2. If the SCSI bus is narrow (50-pin) only SCSI IDs 0 through 7 are available.</li> <li>3. Make sure that you cycle power on the autoloader after changing the SCSI ID.</li> <li>4. Reboot the host server.</li> </ol>

Table 8. Problems and solutions (continued)

<p>The autoloader is not efficiently backing up data.</p>	<ol style="list-style-type: none"> <li>1. Check the network bandwidth from the host computer. If you are backing up data over a network, consider comparing it to a local-only backup.</li> <li>2. Make sure the autoloader and tape drive are on their own SCSI bus and not daisy-chained to another tape drive or to the hard drive that is being backed up.</li> <li>3. Make sure the autoloader is connected to an LVD SCSI bus and there are no single-ended (SE) devices on the same bus, because this will cause the entire bus to negotiate down to SE speed.</li> <li>4. Use an Ultra320 SCSI bus and high-quality cabling with the autoloader.</li> <li>5. Do not connect the autoloader to a narrow SCSI bus.</li> <li>6. Try a new cartridge. A marginal cartridge can cause performance problems due to bad spots on the tape requiring retries.</li> <li>7. Backing up data that compresses poorly or is already compressed will lower performance.</li> <li>8. Check the size of the files. Small file size can impact performance.</li> <li>9. Confirm that the backup application is utilizing block sizes of at least 32 KB, preferably 64 KB. See the backup application documentation for more information.</li> <li>10. Make sure that the backup server has enough memory to handle the bandwidth of the backup or restore function.</li> <li>11. Clean the tape drive.</li> </ol>
<p>The autoloader is contaminated by loose debris.</p>	<p>Avoid contamination by ensuring that the autoloader is installed in a clean, contamination-free environment. Store cartridges vertically in their plastic cases. Continue cleaning the tape drive as needed.</p>
<p>A tape cartridge is incompatible with the autoloader.</p>	<p>Make sure you are using an Ultrium universal cleaning cartridge.</p>
<p>The Media Attention LED is lit immediately after a tape cartridge problem has been corrected.</p>	<p>If the Media Attention LED is cleared and (although the drive has been cleaned) immediately each time a particular cartridge is reloaded, the cartridge is defective.</p> <ol style="list-style-type: none"> <li>1. Export the cartridge and load a known good cartridge. In some cases, a cartridge can be worn, have a defective cartridge memory, or have been formatted as a firmware upgrade cartridge.</li> <li>2. Do not use any cartridge that is suspected of being defective or contaminated.</li> </ol>



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## Chapter 5. Removing and replacing autoloader components

Tier 1 customer replaceable unit (CRU): Replacement of Tier 1 CRUs is your responsibility. If IBM installs a Tier 1 CRU at your request, you will be charged for the installation.

For more information about the terms of the warranty and getting service and assistance, see Appendix D, “IBM Statement of Limited Warranty Z125-4753-08 04/2004,” on page 37.

If you are instructed to return a component, follow all packaging instructions, and use any packaging materials for shipping that are supplied to you.

Table 9 lists the replaceable components.

*Table 9. CRU list*

CRU part number	Description	Tier
42C3936	Chassis	1
23R6452	Right magazine	1
23R6471	Left magazine	1
23R3594	Long SCSI cable	1
23R5841	SCSI terminator	1
42C3930	Controller card	1
23R6447	Power supply	1
42C3954	Rack rails	1
39M5081	US power cord	1
39M5377	PDU power cord	1

---

### Removing the autoloader chassis

To remove the autoloader chassis, complete the following steps:

1. Read the safety information that begins on page v and the Installation Guidelines in the *2 U Universal Tape Autoloader Installation Guide*.
2. Turn off the autoloader and disconnect the power cord.
3. Disconnect the Ethernet cable.
4. Remove the magazines. See “Removing a magazine” on page 24.
5. Remove the tape drive. See “Removing a tape drive” on page 24.
6. Remove the screws that secure the autoloader chassis to the rack.

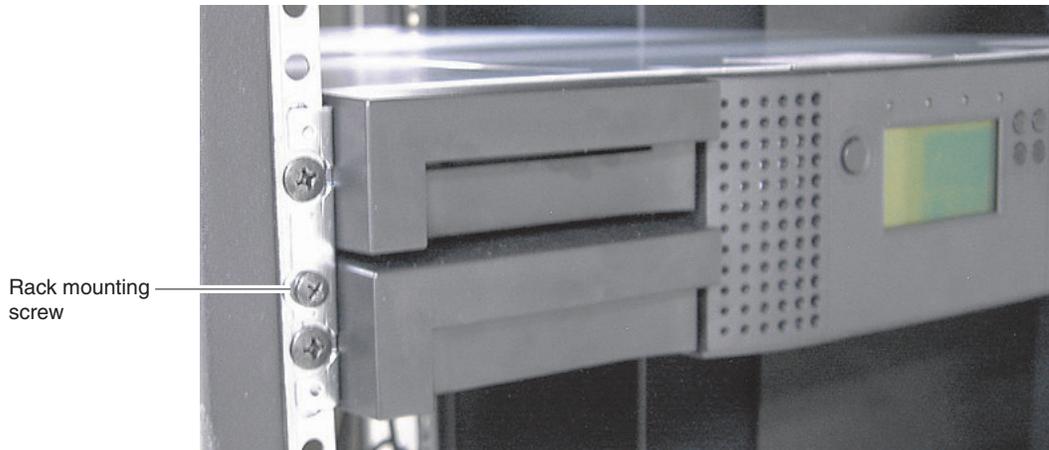


Figure 22. Removing the chassis

7. Remove the chassis from the rack.
8. Remove the mounting brackets and anchors from the autoloader.

---

## Installing the autoloader chassis

To install the chassis, complete the following steps:

1. Read the safety information that begins on page v and the Installation Guidelines in the *2 U Universal Tape Autoloader Installation Guide*.
2. Attach the mounting brackets and anchors to the autoloader.
3. Place the autoloader chassis in the rack.
4. Install the screws that secure the autoloader chassis to the rack.
5. Install the Ethernet cable.
6. Install the tape drive. See “Installing a tape drive” on page 25 for more information.
7. Install the power supply. See “Installing a power supply” on page 24 for more information.
8. Install the magazines. See “Installing a magazine” on page 24 for more information.

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## Removing the controller card

To remove the controller card, complete the following steps:

1. Read the safety information that begins on page v and the Installation Guidelines in the *2 U Universal Tape Autoloader Installation Guide*.
2. Turn the autoloader off and disconnect the power cord.
3. Disconnect the Ethernet cable.
4. Loosen the two captive screws.
5. Pull the controller card out of the autoloader chassis as shown in Figure 23 on page 23.



Figure 23. Remove controller card

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## Installing the controller card

To install the controller card, complete the following steps:

1. Read the safety information that begins on page v and the Installation Guidelines in the *2 U Universal Tape Autoloader Installation Guide*.
2. Make sure that the autoloader is turned off and disconnect the power cord.
3. Insert the controller card into the autoloader chassis.
4. Tighten the captive screws.
5. Connect the Ethernet cable.
6. Turn on the autoloader.

---

## Removing a power supply

To remove a power supply, complete the following steps:

1. Read the safety information that begins on page v and the Installation Guidelines in the *2 U Universal Tape Autoloader Installation Guide*.
2. Turn the autoloader off and disconnect the power cord.
3. Loosen the captive screw.
4. Pull the power supply out of the autoloader chassis as shown in Figure 24 on page 24.

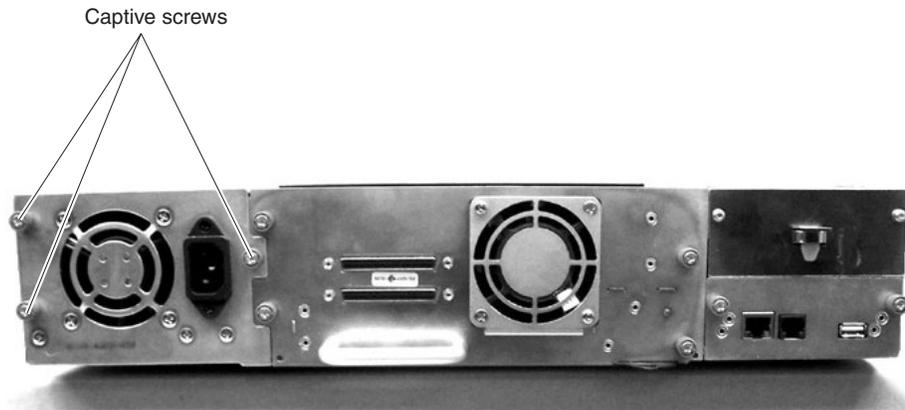


Figure 24. Remove power supply

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## Installing a power supply

To install a power supply, complete the following steps:

1. Read the safety information that begins on page v and the Installation Guidelines in the *2 U Universal Tape Autoloader Installation Guide*.
2. Slide the power supply into the autoloader chassis.
3. Tighten the captive screw.
4. Install the power cord.

---

## Removing a magazine

To remove a magazine, complete the following steps:

1. From the home screen, press the Enter button. The Main menu is displayed.
2. From the Main menu, press the Next button to select **Control**, and press the Enter button. The **Control** menu is displayed.
3. From the **Control** menu, press the Next button to select the magazine that you want to remove (if it is not already selected), and press the Enter button. The magazine is unlocked.
4. Remove the magazine from the autoloader.
5. Remove the tapes from the magazine.

---

## Installing a magazine

To install a magazine, complete the following steps:

1. Install the tape cartridges in the magazine.
2. Slide the magazine into the autoloader chassis. The tape cartridges are automatically inventoried.

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## Removing a tape drive

To remove a tape drive, complete the following steps:

1. Read the safety information that begins on page v and the Installation Guidelines in the *2 U Universal Tape Autoloader Installation Guide*.
2. Turn off the tape drive power:

- a. From the home screen, press the Enter button. The Main menu is displayed.
  - b. From the Main menu, press the Next button to select **Configure** , and press the Enter button. The **Configure** menu is displayed.
  - c. From the **Configure** menu, press the Next button to select **Drive**, and press the Enter button. The **Drive** menu is displayed.
  - d. From the **Drive** menu, press the Next button to select **Drive Power** (if it is not already selected), and press the Enter button. The **Drive Power** menu is displayed.
  - e. From the **Drive Power** menu, press the Next button to select **Drive 1** (if it is not already selected), and press the Enter button. The **Drive Power** menu is displayed.
  - f. From the **Drive Power** menu, press the Next button to select **Proceed** (if it is not already selected), and press the Enter button. The drive is turned off.
3. Remove the host interface cable and the terminator.
  4. Loosen the captive screws that secure the tape drive.
  5. Pull on the tape drive handle to remove the tape drive.



Figure 25. Remove tape drive

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## Installing a tape drive

To install a tape drive, complete the following steps:

1. Read the safety information that begins on page v and the Installation Guidelines in the *2 U Universal Tape Autoloader Installation Guide*.
2. While supporting the bottom of the tape drive, slowly insert the tape drive into the autoloader chassis until the connectors are fully seated.

**Attention:** The connector pins might be damaged if you do not support the bottom of the tape drive while you are installing it.

3. Tighten the captive screws.

4. Install the host interface cable and the terminator.
5. Turn on the tape drive power:
  - a. From the home screen, press the Enter button. The Main menu is displayed.
  - b. From the Main menu, press the Next button to select **Configure** , and press the Enter button. The **Configure** menu is displayed.
  - c. From the **Configure** menu, press the Next button to select **Drive**, and press the Enter button. The **Drive** menu is displayed.
  - d. From the **Drive** menu, press the Next button to select **Drive Power** (if it is not already selected), and press the Enter button. The **Drive Power** menu is displayed.
  - e. From the **Drive Power** menu, press the Next button to select **Drive 1** (if it is not already selected), and press the Enter button. The **Drive Power** menu is displayed.
  - f. From the **Drive Power** menu, press the Next button to select **Proceed** (if it is not already selected), and press the Enter button. The tape drive is turned on.

## Appendix A. Specifications

The following tables provide a summary of the autoloader specifications.

Table 10. Physical specifications

Specification	Value
Height	87.6 mm (3.4 in.)
Width	447.5 mm (17.6 in.)
Depth	740 mm (29.1 in.) from rack mount ears
Weight without media	15.59 kg (34.37 lbs.)
Weight with media	20.67 kg (45.57 lbs.)
AC power voltage	100-127 VAC; 200-240 VAC
Line frequency	50-60 Hz

Table 11. Operational specifications

Maximum storage capacity (22 data cartridges)	Native: 8.8 TB Compressed: 17.6 TB (2:1 compression)
Maximum data transfer rate	Native: 80 MB/s (288 GB/hour) Compressed: 160 MB/s (576 GB/hour (2:1 compression))
Drive type	Ultrium 3 SCSI drive
Number of slots	23 (including I/O Station)
Interface	Ultra160 or Ultra320 SCSI LVD

Table 12. Environmental specifications

Temperature	
Operating	10° to 35° C (50° to 95° F)
Non-operating	-30° to 60° C (-22° to 140° F)
Temperature shock immunity - maximum rate of change	10° C (18° F) per hour
Miscellaneous	
Dust concentration	less than 200 microgram/cubic meter
Altitude (operating)	4200 meters (13,000 ft.) at 25° C ambient
Humidity	
Operating	20% to 80% RH non-condensing
Non-operating	10% to 90% RH non-condensing



## Appendix B. Error codes

Error Code	Description	User Action
80	Bar code reader error: cannot initialize bar code reader.	Replace the autoloader chassis. See "Removing the autoloader chassis" on page 21 for more information.
81	Bar code reader error: no response from bar code reader.	Replace the autoloader chassis. See "Removing the autoloader chassis" on page 21 for more information.
82	EEPROM (Electrically Erasable Programmable Read-Only Memory) error: no response from EEPROM.	Replace the autoloader chassis. See "Removing the autoloader chassis" on page 21 for more information.
83	Accessor controller generic problem	Replace the autoloader chassis. See "Removing the autoloader chassis" on page 21 for more information.
84	Setting of gripper motor parameters failed	Replace the autoloader chassis. See "Removing the autoloader chassis" on page 21 for more information.
85	Setting of slider motor parameters failed	Replace the autoloader chassis. See "Removing the autoloader chassis" on page 21 for more information.
86	Setting of elevator motor parameters failed	Replace the autoloader chassis. See "Removing the autoloader chassis" on page 21 for more information.
87	Setting of rotation motor parameters failed	Replace the autoloader chassis. See "Removing the autoloader chassis" on page 21 for more information.
88	Setting of sled motor parameters failed	Replace the autoloader chassis. See "Removing the autoloader chassis" on page 21 for more information.
89	Gripper blocked	<ol style="list-style-type: none"> <li>1. Remove the left and right cartridge magazines.</li> <li>2. Look inside the autoloader and remove any obvious obstruction that might be preventing the accessor from functioning correctly.</li> <li>3. Cycle autoloader power and retry operation. If the error reoccurs, replace the autoloader chassis. See "Removing the autoloader chassis" on page 21 for more information.</li> </ol>
8A	Slider blocked	<ol style="list-style-type: none"> <li>1. Remove the left and right cartridge magazines.</li> <li>2. Look inside the autoloader and remove any obvious obstruction that might be preventing the accessor from functioning correctly.</li> <li>3. Cycle autoloader power and retry operation. If the error reoccurs, replace the autoloader chassis. See "Removing the autoloader chassis" on page 21 for more information.</li> </ol>
8B	Elevator blocked	<ol style="list-style-type: none"> <li>1. Remove the left and right cartridge magazines.</li> <li>2. Look inside the autoloader and remove any obvious obstruction that might be preventing the accessor from functioning correctly.</li> <li>3. Cycle autoloader power and retry operation. If the error reoccurs, replace the autoloader chassis. See "Removing the autoloader chassis" on page 21 for more information.</li> </ol>

<b>Error Code</b>	<b>Description</b>	<b>User Action</b>
8C	Rotation blocked	<ol style="list-style-type: none"> <li>1. Remove the left and right cartridge magazines.</li> <li>2. Look inside the autoloader and remove any obvious obstruction that might be preventing the accessor from functioning correctly.</li> <li>3. Cycle autoloader power and retry operation. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.</li> </ol>
8D	Sled blocked	<ol style="list-style-type: none"> <li>1. Remove the left and right cartridge magazines.</li> <li>2. Look inside the autoloader and remove any obvious obstruction that might be preventing the accessor from functioning correctly.</li> <li>3. Cycle the autoloader power and retry operation. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.</li> </ol>
8E	Cannot find gripper block within the expected range	Run the autoloader Verify test; then, retry the operation. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
8F	Cannot find slider block within the expected range	Run the autoloader Verify test; then, retry the operation. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
90	Cannot find elevator block within the expected range	Run the autoloader Verify test; then, retry the operation. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
91	Cannot find rotation block within the expected range	Run the autoloader Verify test; then, retry the operation. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
92	Cannot find sled block within the expected range	Run the autoloader Verify test; then, retry the operation. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
93	Gripper outside range	Run the autoloader Verify test; then, retry the operation. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
94	Slider outside range	Run the autoloader Verify test; then, retry the operation. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
95	Elevator outside range	Run the autoloader Verify test; then, retry the operation. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
96	Rotation outside range	Run the autoloader Verify test; then, retry the operation. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.

<b>Error Code</b>	<b>Description</b>	<b>User Action</b>
97	Sled outside range	Run the autoloader Verify test; then, retry the operation. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
98	Cartridge present sensor not found	Run the autoloader Verify test; then, retry the operation. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
99	Slider home sensor not found	Run the autoloader Verify ; then, then retry the operation. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
9A	Rotation home sensor not found	Run the autoloader Verify test; then, retry the operation. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
9B	Sled position sensor not found	Run the autoloader Verify test; then, retry the operation. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
9C	Gripper range out of specification	Run the autoloader Verify test; then, retry the operation. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
9D	Slider range out of specification	Run the autoloader Verify test; then, retry the operation. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
9E	Elevator range out of specification	Run the autoloader Verify Test; then, retry the operation. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
9F	Rotation range out of specification	Run the autoloader Verify test; then, retry the operation. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
A0	Sled range out of specification	Run the autoloader Verify test; then, retry the operation. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
A1	Open I/O station failed	Replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
B0	Robotic controller response timeout	Replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
B1	NACK (not acknowledged) received from robotic controller	Replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
B2	Accessor controller communication failed	Replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
B3	Accessor controller urgent stop because of a released magazine	Verify that the left and right magazines are completely inserted, then retry operation. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.

<b>Error Code</b>	<b>Description</b>	<b>User Action</b>
B4	Cartridge did not transport completely  The gripper could not pick the cartridge and the CP sensor was not present	Replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
B5	Accessor controller does not respond on command	Replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
C0	Network initialization failed	Check the network cable and the network configuration; then, retry the operation. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
C1	Telnet Interface initialization failed	Check the network cable and the network configuration; then, retry operation. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
C2	Web server initialization failed	Check network cable and network configuration, then retry operation. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
C6	Ping command did not reached target	Check network cable and network configuration, then retry operation. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
C7	Cannot upgrade from USB	Replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.
D0	ROM error: ROM checksum incorrect	Replace the controller card. See “Removing the controller card” on page 22 for more information.
D1	RAM error: Power on Self Test ( POST ) has failed	Replace the controller card. See “Removing the controller card” on page 22 for more information.
D2	NVRAM (Non-Volatile Random Access Memory) error	Replace the controller card. See “Removing the controller card” on page 22 for more information.
D3	CTC (Channel to Channel ) error	Replace the controller card. See “Removing the controller card” on page 22 for more information.
D4	UART (Universal Asynchronous Receiver Transmitter ) error	Replace the controller card. See “Removing the controller card” on page 22 for more information.
D5	Display error	Replace the controller card. See “Removing the controller card” on page 22 for more information.
D6	Memory error: stack and heap overflow	Replace the controller card. See “Removing the controller card” on page 22 for more information.
D7	System error	Replace the controller card. See “Removing the controller card” on page 22 for more information.
D8	Data base error	Replace the controller card. See “Removing the controller card” on page 22 for more information.
D9	No SCSI IC detected	Replace the controller card. See “Removing the controller card” on page 22 for more information.
DA	While running the autoloader Verify test, the bar code reader read different bar code data for the same customer-supplied cartridge label.	<ol style="list-style-type: none"> <li>1. Check the barcode label on the customer-supplied cartridge; then, run the autoloader Verify test again.</li> <li>2. If the error reoccurs, replace the autoloader chassis. See “Removing the autoloader chassis” on page 21 for more information.</li> </ol>

Error Code	Description	User Action
DB	External cooling fan error (fan motion has stopped).  The subcode indicates which drive sled fan is affected. Subcode 00: drive sled 1	Verify that the indicated fan is operational and not obstructed. Check the network cable and network configuration; then, retry operation. If the error reoccurs, replace the tape drive. See “Removing a tape drive” on page 24 for more information.
F0	Drive over temperature condition	Check the ambient temperature conditions, and check all fans. If the error reoccurs, replace the tape drive. See “Removing a tape drive” on page 24 for more information.
F1	Drive communication error, autoloader controller has lost communication to drive	If the error reoccurs, replace the tape drive. See “Removing a tape drive” on page 24 for more information.
F2	Drive sled not present	Verify that the drive sled is properly installed in the autoloader and that all associated cables are properly connected, then retry the operation. If the error reoccurs, replace the tape drive. See “Removing a tape drive” on page 24 for more information.
F3	Drive hardware error	If the error reoccurs, replace the tape drive. See “Removing a tape drive” on page 24 for more information.
F4	Drive load timeout	If the error reoccurs, replace the tape drive. See “Removing a tape drive” on page 24 for more information.
F5	Drive unload timeout	If the error reoccurs, replace the tape drive. See “Removing a tape drive” on page 24 for more information.

Table 13. Suberror codes

Error code	Description
Error Code	Description
Robotics	
01	Mechanical initialization failure
02	Connection to slave robotic failed
03	Error motor initialization
04	Error during gripper close
05	Error slider home positioning
06	Error elevator home movement
07	Error during sled movement to rotation position
08	Error during rotation initialization, get range failed
09	Error elevator init
0A	Error during rotation to far position
0B	Error first sled init, move to sensor failed
0C	Error during sled movement to rotation position
0D	Error during rotation to drive position
0E	Error slider init, get range failed
0F	Error during slider forward movement
10	Error gripper init, get range failed
11	Error during slider home movement
12	Error during rotation to FAR position
13	Error sled init, move to sensor failed

Table 13. Suberror codes (continued)

Error code	Description
20	Error Inventory scan
21	Error during gripper close
22	Error slider home movement
23	Error during move gripper to scan position
24	Error reading barcode label
28	Error Extra inventory scan
29	Error during closing gripper
2A	Error slider preposition movement
2B	Error during opening gripper
2C	Error during sled movement up to sensor
2D	Error slider preposition backwards movement
30	Error slot preposition
31	Error during sled movement in FLMoveRotation function
32	Command sending to robotic failed
33	Error during elevator movement in FLMoveRotation function
34	Error during rotation in FLMoveRotation function
35	Error during elevator movement in FLMoveSled function
36	Error during sled movement in FLMoveSled function
37	Error during sled positioning to sensor in FLMoveSled function
38	Error during sled positioning to mail slot in FLMoveSled function
39	Error during sled positioning without sensor
40	Movement to/from slot failed
41	Error during first slider movement
42	Error during first gripper movement
43	Error during second slider movement
44	Error during second gripper movement: get range failed
45	Error during third slider movement: move home failed
81	Drive wake up failed
88	Error accessing slot status
90	Accessor load did not reach Cartridge Present sensor
91	No activity after Load command
92	Timeout while loading tape
93	No activity after load command
94	Timeout drive Unload
95	Drive terminated unsuccessfully
96	Tape not ejected at robot unload
97	Slot not free at robot unload

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## Appendix C. Getting help and technical assistance

If you need help, service, or technical assistance or just want more information about IBM products, you will find a wide variety of sources available from IBM to assist you. This appendix contains information about where to go for additional information about IBM and IBM products, what to do if you experience a problem with your system or optional device, and whom to call for service, if it is necessary.

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### Before you call

Before you call, make sure that you have taken these steps to try to solve the problem yourself:

- Check all cables to make sure that they are connected.
- Check the power switches to make sure that the system and any optional devices are turned on.
- Use the troubleshooting information in your system documentation, and use the diagnostic tools that come with your system. Information about diagnostic tools is in the *Hardware Maintenance Manual and Troubleshooting Guide* or *Problem Determination and Service Guide* on the IBM Documentation CD that comes with your system.

**Note:** For some IntelliStation® models, the *Hardware Maintenance Manual and Troubleshooting Guide* is available only from the IBM support Web site.

- Go to the IBM support Web site at <http://www.ibm.com/servers/eserver/support/xseries/index.html> to check for technical information, hints, tips, and new device drivers or to submit a request for information.

You can solve many problems without outside assistance by following the troubleshooting procedures that IBM provides in the online help or in the documentation that is provided with your IBM product. The documentation that comes with IBM systems also describes the diagnostic tests that you can perform. Most systems, operating systems, and programs come with documentation that contains troubleshooting procedures and explanations of error messages and error codes. If you suspect a software problem, see the documentation for the operating system or program.

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### Using the documentation

Information about your IBM system and preinstalled software, if any, or optional device is available in the documentation that comes with the product. That documentation can include printed documents, online documents, readme files, and help files. See the troubleshooting information in your system documentation for instructions for using the diagnostic programs. The troubleshooting information or the diagnostic programs might tell you that you need additional or updated device drivers or other software. IBM maintains pages on the World Wide Web where you can get the latest technical information and download device drivers and updates. To access these pages, go to <http://www.ibm.com/servers/eserver/support/xseries/index.html> and follow the instructions. Also, some documents are available through the IBM Publications Center at <http://www.ibm.com/shop/publications/order/>.

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## Getting help and information from the World Wide Web

On the World Wide Web, the IBM Web site has up-to-date information about IBM systems, optional devices, services, and support. The address for IBM System x and xSeries information is <http://www.ibm.com/systems/x/>. The address for IBM IntelliStation information is <http://www.ibm.com/intellistation/>.

You can find service information for IBM systems and optional devices at <http://www.ibm.com/servers/eserver/support/xseries/index.html>.

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## Software service and support

Through IBM Support Line, you can get telephone assistance, for a fee, with usage, configuration, and software problems with System x and xSeries servers, BladeCenter<sup>®</sup> products, IntelliStation workstations, and appliances. For information about which products are supported by Support Line in your country or region, see <http://www.ibm.com/services/sl/products/>.

For more information about Support Line and other IBM services, see <http://www.ibm.com/services/>, or see <http://www.ibm.com/planetwide/> for support telephone numbers. In the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378).

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## Hardware service and support

You can receive hardware service through IBM Services or through your IBM reseller, if your reseller is authorized by IBM to provide warranty service. See <http://www.ibm.com/planetwide/> for support telephone numbers, or in the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378).

In the U.S. and Canada, hardware service and support is available 24 hours a day, 7 days a week. In the U.K., these services are available Monday through Friday, from 9 a.m. to 6 p.m.

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

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## Part 1 - General Terms

### 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.***

### What this Warranty Covers

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.**

### What this Warranty Does not Cover

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.**

#### **Jurisdiction**

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

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## **Part 2 - Country-unique Terms**

### **AMERICAS**

#### **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 Statement of Limited Warranty 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**

**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.*

## **EUROPE, MIDDLE EAST, AFRICA (EMEA)**

### ***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 this 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 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.

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## **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 1 year on labor means that IBM provides warranty service without charge for:

1. parts and labor during the first year of the warranty period; and
2. parts only, on an exchange basis, in the second and third years of the warranty period. IBM will charge you for any labor provided in performance of the repair or replacement(s) in the second and third year of the warranty period.

### **2 U Universal Tape Autoloader**

<b>Country or Region of Purchase</b>	<b>Warranty Period</b>	<b>Type of Warranty Service*</b>
Worldwide	3 years	1
* See " <u>Types of Warranty Service</u> " for the legend and explanations of warranty-service types.		

### **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 World Wide Web site at [http://www.ibm.com/servers/support/machine\\_warranties/](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 the EU countries, see the telephone numbers below.

### **EU Country Telephone List**

Phone numbers are subject to change without notice. For the warranty service contact telephone number in a country subsequently added to the EU and not yet reflected in the list below, contact IBM in that country or visit the website above for a current telephone listing.

Austria -- +43-1-24592-5901	Latvia -- +386-61-1796-699
Belgium -- +32-70-23-3392	Lithuania -- +386-61-1796-699
Cyprus -- +357-22-841100	Luxembourg -- +352-298-977-5063
Czech Republic -- +420-2-7213-1316	Malta -- +356-23-4175
Denmark -- +45-4520-8200	Netherlands -- +31-20-514-5770
Estonia -- +386-61-1796-699	Poland -- +48-22-878-6999
Finland -- +358-8001-4260	Portugal -- +351-21-892-7147
France -- +33-238-557-450	Slovakia -- +421-2-4954-1217
Germany -- +49-1805-253553	Slovenia -- +386-1-4796-699
Greece -- +30-210-680-1700	Spain -- +34-91-714-7983
Hungary -- +36-1-382-5720	Sweden -- +46-8-477-4420
Ireland -- +353-1-815-4000	United Kingdom -- +44-0870-550-0900
Italy -- +39-800-820-094	

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## Appendix E. Notices

This information was developed for products and services offered in the U.S.A.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

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IntelliStation  
System x  
xSeries

Microsoft, Windows, and Windows NT are trademarks of Microsoft Corporation in the United States, other countries, or both.

Linux is a trademark of Linus Torvalds in the United States, other countries, or both.

Other company, product, or service names may be trademarks or service marks of others.

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## Product recycling and disposal

This unit must be recycled or discarded according to applicable local and national regulations. IBM encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. IBM offers a variety of product return programs and services in several countries to assist equipment owners in recycling their IT products. Information on IBM product recycling offerings can be found on IBM's Internet site at <http://www.ibm.com/ibm/environment/products/prp.shtml>.



**Notice:** This mark applies only to countries within the European Union (EU) and Norway.

This appliance is labeled in accordance with European Directive 2002/96/EC concerning waste electrical and electronic equipment (WEEE). The Directive determines the framework for the return and recycling of used appliances as applicable throughout the European Union. This label is applied to various products to indicate that the product is not to be thrown away, but rather reclaimed upon end of life per this Directive.

注意: このマークは EU 諸国およびノルウェーにおいてのみ適用されます。

この機器には、EU 諸国に対する廃電気電子機器指令 2002/96/EC(WEEE) のラベルが貼られています。この指令は、EU 諸国に適用する使用済み機器の回収とリサイクルの骨子を定めています。このラベルは、使用済みになった時に指令に従って適正な処理をする必要があることを知らせるために種々の製品に貼られています。

**Remarque :** Cette marque s'applique uniquement aux pays de l'Union Européenne et à la Norvège.

L'étiquette du système respecte la Directive européenne 2002/96/EC en matière de Déchets des Equipements Electriques et Electroniques (DEEE), qui détermine les dispositions de retour et de recyclage applicables aux systèmes utilisés à travers l'Union européenne. Conformément à la directive, ladite étiquette précise que le produit sur lequel elle est apposée ne doit pas être jeté mais être récupéré en fin de vie.

In accordance with the European WEEE Directive, electrical and electronic equipment (EEE) is to be collected separately and to be reused, recycled, or recovered at end of life. Users of EEE with the WEEE marking per Annex IV of the

WEEE Directive, as shown above, must not dispose of end of life EEE as unsorted municipal waste, but use the collection framework available to customers for the return, recycling, and recovery of WEEE. Customer participation is important to minimize any potential effects of EEE on the environment and human health due to the potential presence of hazardous substances in EEE. For proper collection and treatment, contact your local IBM representative.

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## Electronic emission notices

### Federal Communications Commission (FCC) statement

**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.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

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

### Industry Canada Class A emission compliance statement

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

#### Avis de conformité à la réglementation d'Industrie Canada

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

### Australia and New Zealand Class A statement

**Attention:** This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

### United Kingdom telecommunications safety requirement

#### Notice to Customers

This apparatus is approved under approval number NS/G/1234/J/100003 for indirect connection to public telecommunication systems in the United Kingdom.

### European Union EMC Directive conformance statement

This product is in conformity with the protection requirements of EU Council Directive 89/336/EEC on the approximation of the laws of the Member States

relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a nonrecommended modification of the product, including the fitting of non-IBM option cards.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to CISPR 22/European Standard EN 55022. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

**Attention:** This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

## Taiwanese Class A warning statement

警告使用者：  
這是甲類的資訊產品，在  
居住的環境中使用時，可  
能會造成射頻干擾，在這  
種情況下，使用者會被要  
求採取某些適當的對策。

## Chinese Class A warning statement

聲 明  
此為 A 級產品。在生活環境中，  
該產品可能會造成無線電干擾。  
在這種情況下，可能需要用戶對其  
干擾採取切实可行的措施。

## Japanese Voluntary Control Council for Interference (VCCI) statement

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に  
基づくクラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を  
引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求  
されることがあります。

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