



# 2X/4X/24X CD-Re Writable Internal IDE Option Kit

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*User's Guide*

OPTIONS  
*by IBM*

**Note:** If you are using this product in the United States, Canada, or Puerto Rico, be sure to read the information under Appendix F, “Product warranty and notices” on page 3-31 before using this information and the product it supports.

*For all other countries, the warranty terms and conditions applicable in the country of purchase are available from IBM or your reseller.*

### **First Edition (January 1999)**

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## Safety: Read first



**CAUTION:** Read the Safety Information in the Appendix, page 3-1, before installing this product.

**Bitte beachten:** Vor der Installation dieses Produkts bitte die Sicherheitsinformationen im Anhang (Seite 3-1) durchlesen.

**ATTENTION:** Lire les Consignes de Sécurité en Annexe, page 3-1, avant d'installer ce produit.

**Precaución:** Antes de instalar este producto, lea la información sobre seguridad que aparece en el apéndice, páginas 3 a 1.

**注意:** この製品をインストールする前に、付録ページ3-1の安全に関する表示をお読み下さい。

**ATTENZIONE:** Prima di procedere all'installazione di questo dispositivo, leggere le Informazioni sulla sicurezza nell'Appendice a

**ADVERTÊNCIA:** Leia a informação sobre segurança no Apêndice, página 3-1, antes de instalar este produto.

**OPOZORNĚNÍ:** Před instalací tohoto výrobku si přečtěte Informace o bezpečnosti v Dodatku, str. 3-1.

**BEMÆRK:** Læs sikkerhedsinformationen i tillægget, side 3-1, før du installerer dette produkt.

**LET OP:** Voordat dit produkt wordt geïnstalleerd dient de informatie over veiligheid in de bijlage op pagina 3-1 gelezen te worden.

**ATTENTION:** Avant d'installer ce produit, veuillez lire les renseignements en matière de sécurité à la page 3-1 de l'Annexe.

**VAROITUS:** Lue liitteen sivulla 3-1 olevat turvallisuusohjeet, ennen tämän laitteen asentamista.

**זהירות:** קרא את הוראות הבטיחות המופיעות בנספח, עמ' 3-1, לפני התקנת מכשיר זה.

**FIGYELMEZTETÉS:** Mielőtt beszerelné a terméket, olvassa el a függelék 3-1 oldalán található biztonsági információkat.

**주의:** 본 제품을 설치하기 전에 부록의 3쪽 1항에 있는 안전 수칙을 숙독한다.

**ADVARSEL:** Les informasjonen om sikkerhet i Appendiks, side 3-1, før du installerer dette produktet.

**UWAGA:** Przed zainstalowaniem tego wyrobu należy przeczytać informację dotyczącą bezpieczeństwa w Załączniku na str. 3-1.

**CUIDADO:** Leia as Informações de Segurança no Anexo, página 3-1, antes de instalar este produto.

**小心:** 請在安裝本產品之前仔細閱讀3-1頁附錄中的安全信息。

**Opozorilo:** Upoštevajte varnostna obvestila v dodatku, stran 3-1., preden napravo instalirate.

**WARNING:** Läs säkerhetsinformationen i bilagan, sid. 3-1 innan du installerar denna produkt.

## *Product registration*

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

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

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

## *About this book*

This manual contains information on the IBM 2X/4X/24X CD-ReWritable Internal IDE Option Kit. It is divided into the following parts:

**Part 1:** Quick installation guide

This section contains product and software descriptions, installation requirements, and abbreviated installation instructions.

**Part 2:** User's guide

This section contains device handling precautions, detailed operating instructions, and CD handling instructions.

**Part 3:** Appendixes

This section contains safety, product specifications, device driver configuration settings, service, warranty and notice information.

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

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## Part 1: Quick installation guide

This guide contains installation instructions in an abbreviated form. If you are knowledgeable about IDE products and experienced in installing options, use these instructions to quickly install your CD-ReWritable drive. For detailed operating instructions, go to “Part 2: User’s guide” on page 2-1. For problem-solving information, go to Appendix D, “Problem solving” on page 3-20.

### *Product description*

The IBM 2X/4X/24X CD-ReWritable Drive can write and read CD-ReWritable (CD-RW) and CD-Recordable (CD-R) discs, and can read mass-produced stamped CDs. As a result, the drive is compatible with Multi-Read (MR) CD-ROM and DVD-ROM drives that can read CD-RW discs and other media types, and with older non-MR CD-ROM drives that can read only CD-R and CD-ROM discs.

The drive writes to CD-RW and CD-R discs at different speeds. The drive can write to a CD-RW disc at up to two times the standard CD-ROM speed, recording data at up to 300 KB<sup>1</sup> per second. At this rate, the drive can record approximately 650 MB<sup>2</sup> of information on a CD-RW disc in about 36 minutes. The drive can write to a CD-R disc

at up to four times the standard CD-ROM speed, recording data at up to 600 KB per second. At this rate, the drive can record approximately 650 MB of information on a CD-R disc in about 18 minutes. The drive can also read data at up to 24 times the standard CD-ROM speed, or 3600 KB per second.

**Note:** To use the drive’s CD-recording function, you must install the *Easy CD Creator/DirectCD* software (included) for Microsoft Windows 98, Windows 95, or Windows NT 4.0. For more information on the *Easy CD Creator/DirectCD* software, see “Software description” on page 1-2.

The IBM 2X/4X/24X CD-ReWritable Drive can be installed only in a computer that uses the integrated drive electronics (IDE) or the enhanced IDE architecture.

In addition to this book, the option kit includes:

- CD-ReWritable drive
- Two audio cables
- Four mounting screws (M3 x 5 mm, slotted)
- IDE cable
- Two faceplates for use with certain systems

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<sup>1</sup> KB equals approximately 1024 bytes when referring to data transfer speeds.

<sup>2</sup> MB equals approximately 1 000 000 bytes when referring to storage capacity.

Blank CD-RW disc  
Blank CD-R disc  
*Easy CD Creator/DirectCD* software package  
*IBM 2X/4X/24X CD-ReWritable Drive Option Diskette*  
*Laser Safety Guide for CD-ROMs*

Contact your place of purchase if an item is missing or damaged. Be sure to retain your proof of purchase. It might be required to receive warranty service. See Appendix E, "Help and service information" on page 3-28 for technical support information.

## ***Software description***

The *Easy CD Creator/DirectCD* software CD contains programs that work with Windows 98, Windows 95, and Windows NT 4.0 or later. You can use the programs with your CD-ReWritable drive to create audio and data CDs, to copy CDs, and to make jewel case inserts or CD labels.

The *IBM 2X/4X/24X CD-ReWritable Drive Option Diskette* contains device drivers for Windows 98, Windows 95, Windows NT 4.0, Windows 3.x, OS/2, and DOS that enable you to access the drive as a CD-ROM drive in DOS mode. The diskette also includes an audio CD-player program for DOS and a diagnostic program.

**Note:** The software included in this option kit does **not** enable the drive's CD-recording capabilities with DOS, Windows 3.x, or OS/2 operating systems.

## ***Installation requirements***

To install the CD-ReWritable drive you must have:

### **Documentation**

You will need the documentation that comes with your computer, operating system, or IDE bus adapter if the adapter is separate from the computer.

### **Required hardware**

You must have the following hardware.

IBM computer or compatible computer with an Intel Pentium processor and 16 MB<sup>3</sup> RAM (random-access memory)

3.5-inch, 1.44 MB or 2.88 MB diskette drive

### **IDE bus adapter**

Your computer must have an IDE port on the system board or on an IDE bus adapter. If the interface cable connectors in your computer have 40 pins, your computer uses the IDE architecture. If

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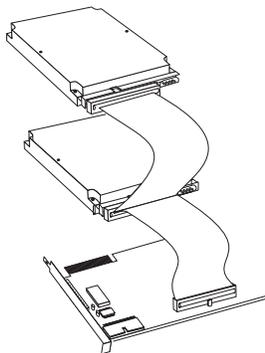
<sup>3</sup> When referring to memory storage capacity, MB means approximately 1 000 000 bytes; total user-accessible capacity may vary depending on operating environment.

you are not sure about your IDE bus adapter, see the documentation that comes with your computer.

#### **IDE cables and connectors**

The IDE cables connect the IDE port on the system board, or on an IDE adapter, to your IDE storage devices. IDE storage devices are hard disk drives, CD-ROM drives, and tape drives.

If your computer has one IDE port, you can attach a maximum of two devices, as shown in the following illustration.



If your computer has two IDE ports (one IDE cable on each port), you can attach up to four devices (two devices on each cable).

If your IDE cables have only one connector, you can replace one of the cables with the two-connector IDE cable that comes with this option package.

If you are attaching the CD-ReWritable drive to the same port as another device, such as a hard disk drive or tape drive, you might

need to change the configuration of that device. For more information, refer to the documentation that comes with the device. You cannot install some devices, such as a high speed tape drive, on the same port as a CD-ReWritable drive.

#### **Power connector**

You will need an unused power connector on a cable coming from the computer power supply in order to provide power to the drive. If all power cables are in use, purchase a dc Y-connector (available at many electronic stores) and split a connection to provide power for more devices.

#### **CD-ReWritable drive mounting**

You can install the CD-ReWritable drive in a vertical or horizontal 5.25-inch mounting bay. You might need both a flat-blade and a Phillips-head screwdriver for the installation.

## Installing the drive

The instructions in this section are general guidelines that apply to most computers. For specific information on installing a drive in your computer, see the documentation that comes with your computer.

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### Step 1. Opening the computer

1. Turn off the computer and all attached devices.
2. Unplug from the electrical outlets all cables for your computer and attached devices.

It is now safe to open your computer.

For specific information about opening your computer, see the documentation that comes with your computer.

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### Step 2. Unpacking the drive

Follow these steps when you unpack the drive.

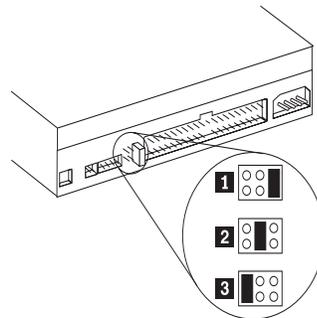
1. Do not open the antistatic bag until you are ready to install the drive. Static electricity can damage the drive and other computer components.
2. Touch your hand and the inner conductive surface of the antistatic bag containing the drive to an unpainted metal surface on the computer for two seconds. This drains static electricity from the bag and your body.

3. Before handling the drive, ground yourself by touching an unpainted surface on the computer. Ground yourself again after leaving and returning to your work area.
4. Always handle the drive by its edges. Do not touch any exposed printed circuitry, components, or connector pins.
5. While installing the drive, avoid all unnecessary handling. Rough handling can damage the components inside the drive housing.
6. If you must put the drive down, place the antistatic bag on a flat padded surface, such as a magazine, and place the drive on the bag.

---

### Step 3. Setting the configuration jumpers

You can configure your drive as Master 1, Slave 2, or Cable Select 3, as shown.



Use the following guidelines to determine the correct configuration for your CD-RW drive.

Configure the CD-ReWritable drive as a Master if it will be the only device connected to an IDE cable. (This is the preset configuration.)

Configure the CD-ReWritable drive as a Slave if it will be the second device on an IDE cable. Be sure to configure the other device as a Master. In some cases, a hard disk drive might require a Master with Slave Present jumper setting when another device on the same cable is configured as a Slave. For further information on setting configuration jumpers on other devices, refer to the documentation that comes with your computer system or with the device.

Some non-IBM computers use special ATA cables with two wires reversed in the device connectors so that the drives can be configured by the cable instead of by jumper position. Use the Cable Select position only for systems equipped with these special cables. See the documentation that came with your computer to determine if your ATA adapter requires that you place the jumpers in the Cable Select position.

If you place the jumpers in the Cable Select position, the IDE cable automatically assigns the Master and Slave settings based on the position of the drive on the cable. You must use the Cable Select setting for this cabling system whether the CD-ReWritable drive is the only device or the second device connected to the cable. The drive closest to the IDE controller is automatically the Master drive. Any other devices on the IDE cable must also be set to Cable Select.

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#### Step 4. Mounting the drive in the bay

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|---|
| <p><b>Attention:</b> Be sure to use the M3 x 5 mm mounting screws that come with the option package. You might damage the drive if you use mounting screws that are too long.</p> |
|---|

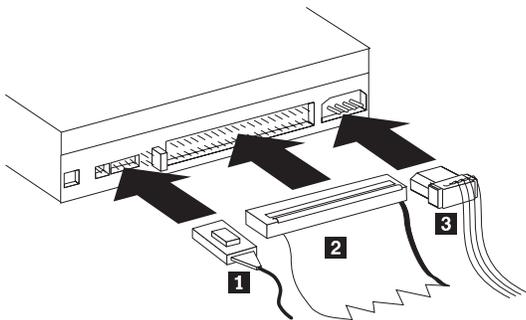
You can mount the CD-ReWritable drive horizontally or vertically in the computer. If you mount the drive vertically, you must secure any CDs you place into the drive before closing the drive tray, or the drive will not be able to read from the CD properly. For further instructions on securing your CDs in a vertically mounted drive, go to page 2-5.

1. Slide the drive into the bay. Your computer might require unique installation procedures for storage devices. Refer to the documentation that comes with your computer for further instructions on installing storage devices.
2. Align the drive-bay screw holes with the threaded holes in the drive housing or mounting bracket.
3. Loosely hand thread the screws in the screw holes to check the alignment of the screws with the screw holes. Usually two screws are used on each side. If the screws are correctly aligned with the screw holes, tighten them to secure the drive. *Do not overtighten.*

---

## Step 5. Attaching the cables to the drive

The diagram below shows where to connect cables to the drive.



Connect the drive to an available 40-pin connector on the IDE interface cable, as shown 2 . Align the cable so that the color-coded edge is closest to the power-cable connector 3 . The interface cable can have up to three connectors. For the best signal quality when you are connecting only one device to the IDE cable, attach the connector on one end of the cable to the IDE port and the connector on the other end of the cable to the device. Do not use the middle connector. Use the IDE cable provided with this option if there is no cable attached to the computer IDE port, or if there is only one device connector on the computer IDE cable.

If you are connecting two devices to the IDE cable, attach the connector on one end of the cable and the remaining cable connectors to the Master and Slave devices. Many computers have two cables for attaching up to four ATA devices. For best performance, attach fast

devices (hard disk drives) to the cable connected to the primary IDE port, and the CD-ReWritable drive or other slower devices (CD-ROM drives, tape drives, removable media) to the cable connected to the secondary IDE port.

Attach a four-pin power-cable connector 3 to the device dc-power connector, as shown.

If you have a sound adapter, connect one of the included audio cables 1 to the device audio-out connector. Use the audio cable that has a connector that fits your sound adapter. Keep the other cable in case you use a different sound adapter in the future.

Be sure that the cables will not be pinched or crowded by the computer cover and that all other cable and power connections are secure.

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## Step 6. Completing the hardware installation

To complete the installation of the drive:

1. Verify that the drive is securely mounted and the connectors are firmly attached.
2. Verify that the cables do not interfere with the computer cover and do not block the power-supply fan blades or air-flow paths.
3. Reinstall the computer cover.
4. Reconnect all devices. Make sure that the keyboard, mouse, and monitor cables are firmly attached.
5. Reconnect all ac power cords and turn on the computer.

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### Step 7. Attaching the faceplates

This option kit includes two faceplates which conform to the curved design of some computers. If your computer has a curved design, you can attach one of the included faceplates so that the front of the CD-ReWritable drive matches the exterior cabinet. Select the faceplate that best fits your computer, and attach the faceplate after you have mounted the CD-ReWritable drive in the appropriate bay.

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### Step 8. Updating your computer configuration

When you restart your computer, the configuration-setup information screen might appear because you changed the hardware in your computer. Some computers require you to make configuration choices the first time you restart after installing a new device. If the screen does not display, see your computer documentation for information about how to access it. For most IBM computers, you can see the configuration information during computer startup by pressing F1 when the configuration graphic displays in the upper right corner of your screen. When you have finished reviewing the configuration information, save the changes and exit.

**Note:** Some older computers with one IDE port might not display the CD-ReWritable drive information when you review the configuration-setup information. However, you can still use the CD-ReWritable drive.

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### Step 9. Installing the Easy CD Creator/DirectCD software

**Note:** Be sure to see the README file for the latest information about the *Easy CD Creator/DirectCD* software.

The *Easy CD Creator/DirectCD* disc contains the following programs:

Easy CD Creator  
DirectCD  
UDF Reader

To fully utilize the capabilities of your CD-ReWritable drive, you will need to install both the *Easy CD Creator* and *DirectCD* programs. If you also have a Multi-Read CD-ROM or DVD-ROM drive in your computer, you might need to install the *UDF Reader* program to read certain CD-R or CD-RW discs in these drives.

To install the *Easy CD Creator/DirectCD* software for Windows 98, Windows 95 or Windows NT 4.0 or later:

1. Insert the *Easy CD Creator/DirectCD* CD into your CD-ReWritable drive.
2. If the *Adaptec Easy CD Creator* Installation window opens, go to step 7 below.
3. Click **Start**.
4. Select **Settings**.
5. Click **Control Panel**.
6. Double-click **Add/Remove Programs**.

7. Follow the on-screen instructions to complete the installation. Repeat as necessary to install each of the *Easy CD Creator*, *DirectCD*, and *UDF Reader* components.
8. Restart Windows.

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## Step 10. Using CD-R and CD-RW discs

The CD-ReWritable drive can write to both CD-R and CD-RW discs. CD-R discs cannot be erased, but can be used with standard CD-ROM drives and CD players. You can use CD-R discs to record audio tracks, store data, archive files, and copy files from another CD.

CD-RW discs can be erased and re-written, but can be used only with newer Multi-Read and CD-RW compatible CD-ROM and DVD-ROM drives. You can use CD-RW discs to back up, store and update files, or to copy files from another CD.

**Note:** CD-R discs are playable on audio CD players. CD-RW discs are *not* playable on most audio CD players.

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## Step 11. Using the Easy CD Creator/DirectCD programs

To use the *Easy CD Creator/DirectCD* software, insert a blank or partially-recorded CD-R or CD-RW disc (this option kit includes a blank CD-R disc and a blank CD-RW disc) into your CD-RW drive

and follow the displayed menu instructions to select the type of CD you would like to create. If the menu does not display, use the following procedure to start *Easy CD Creator* or *DirectCD*:

1. Click **Start**.
2. Select **Programs**.
3. Select **Adaptec Easy CD Creator** or **Adaptec Direct CD**.
4. Click **Easy CD Creator** or **Adaptec DirectCD**.

The *Easy CD Creator* or *DirectCD* Wizard window will open.

## Formatting CDs

You must format a blank CD-RW disc before you can copy files to it.

To format a CD<sup>4</sup> with the *DirectCD* program:

1. Use one of the following methods to begin writing data to your CD:

Insert a blank disc (included) in the drive. After a few seconds a window opens prompting you to "Please select the type of CD you wish to create." Select: **(Click to create a data CD that will be accessible through a drive letter...)**.

Double-click the CD icon on the Windows taskbar. Follow the on-screen instructions in the *DirectCD* Wizard window to prepare the CD so you can write data directly to it.

The *DirectCD* Wizard Welcome screen displays.

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<sup>4</sup> Some CDs, such as multisession CDs, do not require formatting. For more information, see the online manual.

2. Click **Next** twice. The Format Disc window opens.

**Attention:** Formatting **completes in about an hour**. The *DirectCD* program configures the disc to receive data, verifies the integrity of the disc surface, and writes *DirectCD* file system structures to the disc.

**Note:** You can do other tasks on your computer while the disc is being formatted.

3. Click **Next** to continue. The Name Your Disc window opens.
4. Type the title of your disc in the Name Your Disc window.  
**Note:** The disc name can be up to 11 characters.
5. Click **Finish** in order to start disc formatting.

The *DirectCD* Disc Ready window opens when disc formatting completes.

6. Click **OK**.

You can now write information to the disc.

**Note:** If you have a problem formatting a CD-RW disc, go to Appendix D, “Problem solving” on page 3-20.

If you want to read a *DirectCD*-formatted disc in another computer that has a Multi-Read drive, you might have to install a *UDF Reader* program in the other computer.

## Creating data or audio CDs

To create data or audio CDs:

1. Select **Programs, Adaptec Easy CD Creator**.
2. Click **Easy CD Creator**.
3. Click **Data** or **Audio** in the *Easy CD Creator* Wizard window.

The *Easy CD Creator* window will display the list of data files or audio tracks that are being added to the CD.

4. Follow the on-screen instructions.

For information on advanced features such as making a multisession CD, or creating a CD using the **File** menu instead of the Wizard, go to the online manual by clicking **Help Topics** in the **Help** menu.

## Making a jewel case insert

You can use *Easy CD Creator* to create a jewel case insert or CD cover. When you create a data or audio CD, the *Easy CD Creator* program creates a jewel case insert using the information in your CD layout, such as CD title, artist name, and song list.

To print a jewel case insert or disc label:

1. Click the **Jewel Case Layout** tab.
2. Make preferred changes in the displayed jewel case layout.
3. From the **File** menu, click **Print**.
4. Click **OK**.

For more information on changing the information in the Jewel Case Layout window, go to the online manual by clicking **Help Topics** in the **Help** menu.

## Backing up a CD

**Attention:** *CD Copier*, the utility program on the software CD, can help you copy material for which you own the copyright or have obtained permission to copy from the copyright owner. If you do not own the copyright or do not have permission to copy from the copyright owner, you might be violating copyright law and might be subject to payment of damages or other remedies. For more information on copyright law, consult your legal advisor.

To back up a CD using your CD-ReWritable drive:

1. Click **Start**.
2. Select **Programs**.
3. Select **Adaptec Easy CD Creator**.
4. Click **CD Copier Deluxe**.

The *CD Copier* window will open.

5. From the **Source** menu, select one of the following:

Your CD-RW drive letter if the source CD will be loaded from this drive

**Image File** if you want to make a copy of a CD from a disc image.

6. Select the Source and Destination drives for this copying procedure. Be sure that there is a blank CD-R or CD-RW disc in the CD-ReWritable drive.

7. Make changes, if needed, in the **Advanced** tab settings.

8. Select the **Test and Copy** options.

For more information on the last two steps, click **Help Topics** in the **Help** menu to go to the online manual.

9. Select the desired number of copies.
10. Click **Copy** to start copying your CD.
11. Follow the on-screen instructions, and, when prompted, insert in the Source drive the CD you would like to copy.

**Attention:** See the online manual if you have a CD-ROM drive in addition to a CD-ReWritable drive and would like to copy directly from a CD-ROM drive.

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## Step 12. Installing the Option Diskette software

**Note:** Be sure to see the READ.ME file for the latest information about the Option Diskette software.

The *IBM 2X/4X/24X CD-ReWritable Drive Option Diskette* contains device drivers for Windows 98, Windows 95, Windows 3.x, OS/2, DOS, and Windows NT 4.0 that allow you to access the drive as a CD-ROM drive in DOS mode.

To install the *IBM 2X/4X/24X CD-ReWritable Drive Option Diskette* device drivers for Windows 98, Windows 95, Windows 3.x, OS/2 or DOS:

1. Insert the *IBM 2X/4X/24X CD-ReWritable Drive Option Diskette* into the diskette drive.
2. Type `A : CDSETUP` in a command line and press Enter.
3. Click **Setup**.
4. Follow the on-screen instructions to install the software.
5. Click **Exit** after software installation completes.
6. Restart your computer so the new settings take effect.

Windows NT 4.0 will automatically detect the presence of the drive. No additional steps are required to activate the device drivers.

Some IBM Windows NT pre-loads contain a **piixide** device driver. This device driver replaces the Windows NT native **atapi** device driver, and provides DMA support. The drive will **not** work if both the **atapi** and **piixide** device drivers are enabled at the same time. If both device drivers are enabled at the same time, go into the **Control Panel** and set the Startup parameter of one of the drivers to **Disabled**.

For optional information about configuring the *IBM 2X/4X/24X CD-ReWritable Drive Option Diskette* device drivers for Windows 3.x, DOS, OS/2, Windows 98, and Windows 95, go to Appendix C, "Customizing device driver configuration settings" on page 3-13.



### *Before you begin*

This guide contains information on using your drive with CDs after installation. If you have not already installed your CD-ReWritable drive, go to "Installing the drive" on page 1-4.

### *Protecting the drive after installation*

To protect your CD-ReWritable drive during operation, observe the following precautions:

- Remove any CD from the drive before moving the drive.
- Do not insert foreign objects into the drive.
- Do not stack objects on the drive.
- Do not remove the drive cover or attempt to service the drive.
- Do not operate the drive under any of the following conditions:
  - High temperature, high humidity, or direct sunlight
  - Excessive vibration, sudden shock, or inclined surface
  - Excessive dust

### *Using CD-R and CD-RW discs*

The CD-ReWritable drive can write to both CD-R and CD-RW discs. CD-R discs cannot be erased, but can be used with standard CD-ROM drives and CD players. You can use CD-R discs to record audio tracks, store data, archive files, and copy files from another CD.

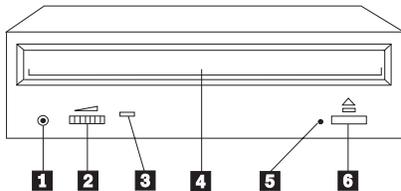
CD-RW discs can be erased and re-written, but can be used only with newer Multi-Read and CD-RW compatible CD-ROM and DVD-ROM drives. You can use CD-RW discs to back up, store and update files, or to copy files from another CD.

**Note:** CD-R discs are playable on audio CD players. CD-RW discs are *not* playable on most audio CD players.

## Using the drive controls and connectors

The following diagrams show the location and functions of the drive controls and connectors. For a detailed description of the CD-ReWritable drive, go to “Product description” on page 1-1.

### Front view of the drive



#### 1 Headphone jack

This jack provides audio output to the headphones.

#### 2 Volume control

This dial controls the headphone volume.

#### 3 Busy indicator

This light comes on when the drive reads from, writes to, or plays a CD.

#### 4 CD tray

This tray is where you load and unload a CD.

#### 5 Manual-eject hole

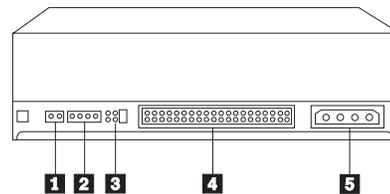
This hole provides access to the eject mechanism to remove a CD from the drive.

#### 6 Eject/Load button

This button opens and closes the CD tray when you push it.

---

### Rear view of the drive



#### 1 Reserved

#### 2 Audio-out connector

This port connects the analog audio signals to a sound adapter.

#### 3 Configuration pins

These pins are used to set the drive configuration.

#### 4 IDE connector

This port connects the CD-ReWritable drive to the IDE cable.

#### 5 DC-power connector

This port connects the dc-power cord to the CD-ReWritable drive.

## Using the drive to record files on CDs

The following table summarizes the CD format capabilities of the *Easy CD Creator* program. Be sure to refer to the online manual for up-to-the-minute information on CD format capabilities.

| Format                    | Copy Capability | Create Capability |
|---------------------------|-----------------|-------------------|
| CD-DA (Red Book)          | Yes             | Yes               |
| CD+G                      | No              | No                |
| CD TEXT                   | Yes             | No                |
| CD-ROM (Yellow Book)      | Yes             | Yes               |
| CD-ROM XA (Mode 2)        | Yes             | Yes               |
| CD-I (Green Book)         | Yes             | No                |
| CD-I Bridge               | No              | No                |
| Video CD (White Book)     | Yes             | No                |
| CD-R (Orange Book P II)   | Yes             | Yes               |
| CD-RW (Orange Book P III) | Yes             | Yes               |
| Multisession CD           | Yes             | Yes               |
| CD Extra (Blue Book)      | Yes             | Yes               |
| Photo CD                  | Yes             | No                |
| Mixed-Mode CD             | Yes             | Yes               |
| Bootable CD               | Yes             | Yes               |
| Disc at Once              | Yes             | Yes               |
| Track at Once             | Yes             | Yes               |
| Session at Once           | Yes             | Yes               |

The CD-ReWritable drive uses the following methods to write files to CDs:

**Disc at Once:** The drive writes to the entire disc in a single pass; data cannot be added at a later time.

**Track at Once:** The drive copies one track at a time to the disc.

**Multisession:** The drive writes several sessions to a disc; each session has at least one track.

Listed below are descriptions of different CD formats that appear in the table.

### CD-Digital Audio

This format records audio CDs that can be played on audio CD players.

### CD Extra

This format records audio and data in a multisession format.

### CD TEXT

This format records audio CDs with the album names and song titles encoded. CD TEXT information is displayed on CD TEXT Compatible CD Players and CD-ROM drives.

### CD-ROM (Mode 1)

This format is used for most CD-ROM applications.

CD-ROM XA (Mode 2 Form 1 and Mode 2 Form 2) or  
CD-ROM Extended Architecture

This standard was created for playback of multimedia content.

CD-I (Mode 2 Form 1 and Mode 2 Form 2) and CD-I Ready<sup>5</sup>

This format is used for home entertainment systems.

CD-Bridge

This format records a combination of Kodak Photo CDs and  
Video CDs that can be played on TV set-top players and personal  
computers.

Photo CD (single and multisession)

This format records Kodak Photo CDs.

Video CD

This format records CDs that are playable on TV set-top video  
CD players and most DVD systems.

## *Using CD handling precautions*

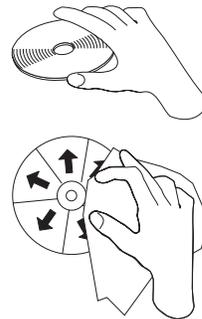
This section includes instructions for the proper care of CDs.

---

### **Caring for a CD**

Carefully handle and clean CDs, especially writable media types such  
as CD-R and CD-RW discs, so that they remain readable. You can  
prolong the life of your CDs by using the following precautions.

**Attention:** Wiping a CD using a circular motion can cause loss  
of data.



---

<sup>5</sup> The CD-ReWritable drive does not have the necessary audio circuitry and decoding functions for CD-I playback, but it can read from and write to CDs in this format.

Handle the CD by the edges or the center hole. Do not touch the surface of the CD.

To remove dust or fingerprints, wipe the CD from the center to the edge with a soft, lint-free cloth.

Do not write on the surface.

Do not place the CD in direct sunlight.

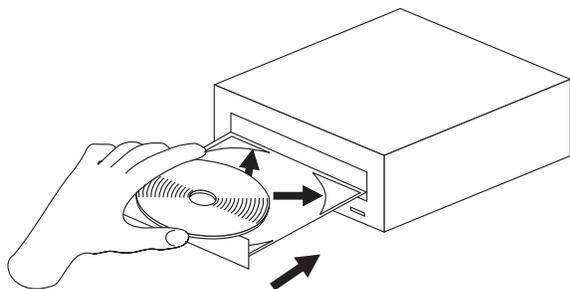
Do not use commercial cleaners to clean the CD.

Do not bend the CD.

---

## Loading a CD

To load a CD into a drive in a horizontal bay:



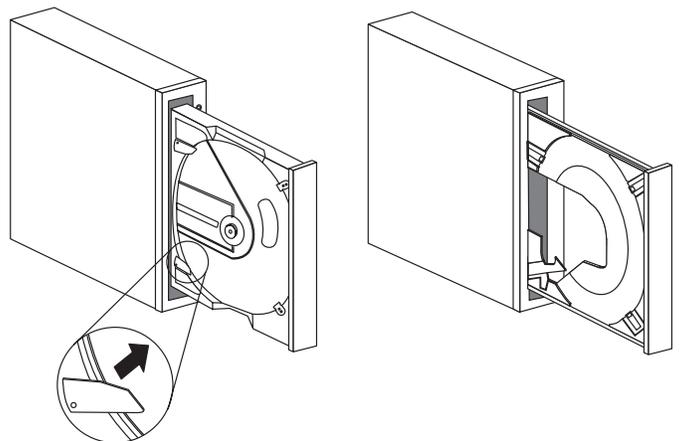
1. Press the Eject/Load button. The tray slides out of the drive.
2. Place the CD in the tray with the label facing up.
3. Close the tray by pressing the Eject/Load button, or by gently pushing the tray in.

**Attention:** Do not use force or insert foreign objects to open the CD tray.

If you have mounted your CD-ReWritable drive in a vertical bay, consult the following illustration to determine which kind of loading tray your drive has.

If the tray looks like the figure on the left, go to “Securing a CD in a tray with rotating clips” on page 2-6.

If the tray looks like the figure on the right, go to “Securing a CD in a tray with pullout clips” on page 2-6.



### Securing a CD in a tray with rotating clips

The drive tray shown on the left side of the illustration has four plastic clips that rotate over the edges of a CD to secure it in a vertical drive.

To load a CD in a drive tray with four plastic clips:

1. Push the Eject/Load button to open the loading tray.
2. Place your CD into the loading tray.
3. Using your fingernail or something similar, gently rotate the clips toward the center of the tray until they cover the edges of the CD.
4. Close the tray, either by pushing the Eject/Load button again, or by gently pushing on the tray.

### Securing a CD in a tray with pullout clips

The drive tray on the right side of the illustration has clips that pull out to secure a CD in a vertical drive.

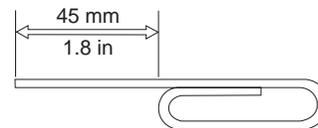
To load a CD in a drive tray with pullout clips:

1. Push the Eject/Load button to open the loading tray.
2. Place your CD into the loading tray.
3. Using your fingernail or something similar, gently pull the clips out, toward the center of the tray, until they cover the edges of the CD.
4. Close the tray, either by pushing the Eject/Load button again, or by gently pushing on the tray.

---

### Manually ejecting a CD

If you press the Eject/Load button and the tray does not slide out, turn off the computer and straighten a large paper clip to form a tool, as shown in the illustration. The straightened end must extend at least 45 mm (1.8 in.). Insert the extended end into the manual-eject hole on the front of the drive (see "Front view of the drive" on page 2-2). Push the paper clip until the tray opens. Gently pull out the tray until you can remove the CD.



---

### Playing an audio CD

To play an audio CD, you must have an audio-CD program installed in your computer. If you are using the CD-ReWritable drive with Windows 98, Windows 95, Windows NT 4.0, Windows 3.x, or OS/2, the operating system includes multimedia extensions for audio-CD player programs. If you are using the CD-ReWritable drive with DOS, you must use the utility program included on the *IBM 2X/4X/24X CD-ReWritable Internal IDE Option Kit Option Diskette* in order to play audio CDs on your computer.

If you are using Windows 98, Windows 95 or Windows NT 4.0, go to “Using the audio-CD program for Windows 98, Windows 95, or Windows NT 4.0” for information on using the audio-CD program.

If you are using Windows 3.x, go to “Using the audio-CD program for Windows 3.x” for information on using the audio-CD program.

If you are using OS/2, go to “Using the audio-CD program for OS/2” on page 2-8 for information on using the audio-CD program.

If you are using DOS, go to “Using the audio-CD program for DOS” on page 2-8 for information on using the audio-CD program.

### **Using the audio-CD program for Windows 98, Windows 95, or Windows NT 4.0**

To use the audio utility for Windows 98, Windows 95, or Windows NT 4.0:

1. Turn on the computer.
2. Load an audio CD into the CD tray.
3. Click **Start**.
4. Move the cursor up to **Programs**, then to **Accessories**, then to **Multimedia**, then to **Media Player**.
5. When the Media Player window opens, double-click **Media Player**.
6. Double-click **Device**.
7. Double-click **CD Audio**.

If you do not see the **Media Player** or **CD Audio** icons in the Media Player folder, you must install the Windows CD Audio device driver as follows:

1. Double-click the **My Computer**, then double-click **Control Panel**, then double-click **Multimedia**.
2. Click **Advanced**.
3. Double-click **Media Control Devices**.
4. Click **CD Audio Devices**.
5. Make sure that the CD device driver is enabled. If the driver is not present or is disabled, install the driver.

### **Using the audio-CD program for Windows 3.x**

To use the Windows 3.x audio utility:

1. Turn on the computer.
2. Load an audio CD into the CD tray.
3. Double-click **Accessories**.
4. Double-click **Media Player**; then double-click **Device**.
5. Click **CD Audio**.

If you do not see the **Media Player** icon or the **CD Audio** icon in the Media Player folder, you must install the Windows CD Audio device driver as follows:

1. From the Program Manager, select the **Main** folder.
2. Click **Control Panel**; then click **Drivers**.
3. Click **MCI CD Audio** if it is not already installed.
4. Follow the on-screen instructions.

If you select **New**, you will need your Windows 3.x diskettes.

If you select **Current**, continue with the instructions on the screen.

## Using the audio-CD program for OS/2

To use the OS/2 audio utility:

1. Turn on the computer.
2. Load an audio CD into the CD tray.
3. Double-click **Multimedia**.
4. Double-click **Compact Disc** and follow the on-screen instructions.

## Using the audio-CD program for DOS

The DOS operating system does not have a built-in program for playing audio CDs. To listen to audio CDs using DOS, you must use the IBMCDPLY.EXE program that is included on your *Option Diskette*. To use the program:

1. Be sure you have correctly installed the device drivers for the IBM 2X/4X/24X CD-ReWritable Internal IDE Option Kit. For further instructions on installing the device drivers, refer to Appendix C, "Customizing device driver configuration settings" on page 3-13.

The DOS audio playback software is installed on your hard disk drive during the installation of the device drivers.

2. Go to a command prompt.

3. Type **IBMCDPLY** and press Enter.

4. The program will begin, and you will see a graphic that looks like the control panel of a CD player. The controls are labeled with text below each icon. Use your mouse to select the control you want to use.

5. Press the F3 key to exit from the program.

---

## Using a data CD

You can use a data CD to read data files, play games, or run applications. The following instructions provide information on reading data CDs using Windows 98, Windows 95, Windows NT 4.0, Windows 3.x, OS/2, and DOS.

### Using a data CD in Windows 98, Windows 95, or Windows NT 4.0

To read from a data CD in Windows 98, Windows 95, or Windows NT 4.0:

1. Turn on the computer.
2. Load a data CD into the CD tray.
3. Double-click **My Computer**.
4. Verify that the CD-ROM icon is displayed.
5. Double-click the CD-ROM icon to view the files located on the CD.

## Using a data CD in Windows 3.x

To read a data CD in Windows 3.x:

1. Turn on the computer.
2. Load a data CD into the CD tray.
3. Double-click **File Manager**.
4. Verify that the CD-ROM icon is displayed.
5. Double-click the CD-ROM icon to view the files located on the CD.

## Using a data CD in OS/2

To read a data CD in OS/2:

1. Turn on the computer.
2. Load a data CD into the CD tray.
3. Double-click **OS/2 System**; then click **Drive**.
4. Verify that the CD-ROM icon is displayed.
5. Double-click the CD-ROM icon to view the files located on the CD.

## Using a data CD in DOS

To read a data CD in DOS:

1. Turn on the computer.

The operating system displays the following messages (drive D is the CD-ROM drive in this example):

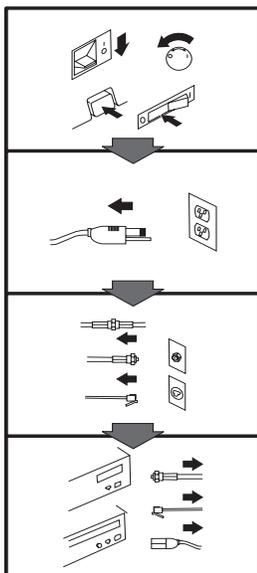
```
MSCDEX Version 2.2.3  
Copyright (c) Microsoft Corp. 1986-1993
```

```
Drive D:=Driver IBMCD1 unit
```

2. Load a data CD into the CD tray.
3. At the DOS prompt, type `dir d:`, and press Enter to view the CD file directory.



### Appendix A. Safety Information



#### **To Disconnect:**

**⚠ Danger:**

Electrical current from power, telephone, and communication cables is hazardous. To avoid shock hazard, disconnect cables as shown before opening the computer covers to install this product. The power cord must be used with a properly grounded outlet.

- Turn Everything OFF.
- First, remove power cord from outlet. (In the U.K., by law, the power cord must be disconnected after the telephone line cable.)
- Remove signal cables from receptacles.
- Remove all cables from devices.

#### **Vor dem Entfernen der Anschlüsse:**

**⚠ Vorsicht:**

Befolgen Sie die folgenden Schritte, um gesundheitliche Schäden durch stromführende Telefon- und Verbindungskabel auszuschließen. Um eine Berührungsspannung zu vermeiden, Kabel vor dem Öffnen der Computerabdeckungen bei der Installation dieses Produktes, wie abgebildet, herausziehen. Das Netzkabel darf nur an eine ordnungsgemäß geerdete Steckdose angeschlossen werden.

- Schalten Sie alle Geräte AUS.
- Ziehen Sie zuerst das Netzkabel aus der Steckdose.
- Entfernen Sie die Signalkabel von den Anschlußbuchsen.
- Entfernen Sie alle Kabel von den Geräten.

#### **Précautions de déconnexion**

**⚠ Danger:**

Le courant électrique des câbles électriques, téléphoniques et de communication est dangereux. Pour éviter tout risque d'électrocution, déconnectez les câbles comme indiqué avant d'ouvrir les capots de l'ordinateur pour installer ce produit. Il convient d'utiliser le câble d'alimentation avec une prise correctement raccordée à la terre.

- Eteignez tous les appareils.
- Débranchez tout d'abord le câble d'alimentation de la prise de courant. (Au Royaume-Uni, la législation exige que le câble d'alimentation soit débranché après le câble téléphonique.)
- Débranchez les câbles de signalisation des prises femelles.
- Débranchez l'ensemble des câbles des périphériques.

#### **Para desconectarse**

**⚠ Peligro:**

La corriente eléctrica procedente de cables de alimentación, teléfono y comunicaciones es peligrosa. Para evitar descargas eléctricas, desconecte los cables tal y como se muestra y abra las cubiertas del ordenador antes de instalar este producto. El cable de alimentación debe utilizarse con una toma debidamente conectada a tierra.

- Desconecte todo.
- En primer lugar, retire el cable de alimentación de la toma. (En el Reino Unido, la legislación determina que el cable de alimentación se desconecte después del cable de línea telefónica.)
- Retire los cables de señal de los receptáculos correspondientes.
- Retire todos los cables de los dispositivos.

取外し時：

**⚠ 危険：**

電源、電話及び通信ケーブルからの電流は危険なものです。電気ショックの危険を避けるために、この製品をインストールするためにコンピューターのカバーを取外す前に、次の順序でケーブルを取外してください。

- すべての電源を切ってください。
- 最初にコンセントから電源コードを取外してください。
- コネクターから通信ケーブルを取外してください。
- 装置から全てのケーブルを取外してください。

**Per scollegare:**

**⚠ Pericolo:**

La corrente elettrica che attraversa i cavi di alimentazione, i cavi telefonici e i cavi per le comunicazioni è pericolosa. Per evitare il rischio di scosse elettriche, prima di procedere all'apertura del coperchio dell'elaboratore per installare il dispositivo, scollegare i cavi nel modo qui indicato. Il cavo di alimentazione deve essere inserito in una presa elettrica collegata correttamente a terra.

- Spegnerne tutto (posizione OFF).
- Innanzitutto, scollegare il cavo di alimentazione dalla presa. (nel Regno Unito, per disposizione di legge, è obbligatorio scollegare il cavo di alimentazione dopo aver scollegato il cavo telefonico).
- Scollegare i cavi di segnale dai connettori.
- Scollegare tutti i cavi dai dispositivi.

**Para desligar**

**⚠ Perigo:**

A corrente elétrica da unidade de alimentação, do telefone e dos cabos de comunicação é perigosa. Para evitar o risco de choques elétricos, desligue os cabos de acordo com as instruções relativas à instalação antes de abrir as tampas do computador para instalar este produto. O cabo de alimentação deve ser usado numa tomada devidamente ligada à terra.

- Desligue tudo
- Primeiro remova o cabo de alimentação da tomada. (De acordo com as leis do Reino Unido, o cabo de alimentação deve ser desligado depois do cabo da linha telefônica.)
- Remova os cabos de sinal dos receptáculos.
- Remova todos os cabos dos dispositivos.

**Odpojení:**

**⚠ Výstraha:**

Elektrický proud ze sit'ových, telefonních a komunikačních kabelů je nebezpečný. Abyste při instalaci tohoto výrobku předešli úrazu elektrickým proudem, před otevřením krytů počítače odpojte kabely dle obrázku. Sit'ový kabel musí být použit s řádně uzemněnou zásuvkou.

- Vypněte všechna připojená zařízení.
- Najdříve odpojte sit'ový kabel ze zásuvky. (Ve Spojeném království musí být podle zákona sit'ový kabel odpojen až po odpojení telefonní přípojky).
- Odpojte signálové kabely.
- Odpojte všechny kabely periferních zařízení.

**Læs følgende inden frakobling:**

**⚠ Fare:**

Elektrisk strøm fra strømførende kabler og telefon- og kommunikationskabler er farlig. For at undgå elektrisk stød skal du sørge for at koble kablerne fra som vist, før du åbner computerens dæksler for at installere dette produkt. Den strømførende ledning skal tilsluttes en javdet stikkontakt.

- SLUK for alt.
- Fjern først den strømførende ledning fra stikkantaten. (I Storbritannien skal den strømførende ledning frakobles efter telefonkablet iflg. lov).
- Fjern signalkabler fra kontakter.
- Fjern alle kabler fra enheder.

### Ontkoppelen

#### Gevaarlijk:

Elektrische stroom afkomstig uit netsnoeren, telefoonkabels en communicatiekabels kan gevaarlijk zijn. Als u dit produkt wilt installeren, moet u, ter voorkoming van elektrische schokken, voordat u de computer openmaakt de kabels, zoals afgebeeld, ontkoppelen. Sluit het netsnoer altijd aan op een geaard stopcontact.

- Zet alles UIT.
- Haal eerst de stekker uit het stopcontact. (In het Verenigd Koninkrijk bent u wettelijk verplicht eerst de telefoonkabel en pas dan het netsnoer los te maken.)
- Haal de signaalkabels uit de ingangen.
- Verwijder alle kabels van de apparaten.

### Pour déconnecter

#### Danger:

Le courant électrique des câbles électriques, téléphoniques et de communication est dangereux. Pour éviter tout risque d'électrocution lors de l'installation de ce produit, déconnectez les câbles tel que montré avant d'ouvrir les couvercles de l'ordinateur. Utilisez le câble d'alimentation avec une prise correctement raccordée à la terre.

- Éteignez tous les appareils.
- Débranchez d'abord le câble d'alimentation de la prise de courant. (Au Royaume-Uni, la réglementation exige que le câble d'alimentation soit débranché après le câble téléphonique.)
- Débranchez les câbles de transmission du signal des prises femelles.
- Débranchez tous les câbles des appareils.

### Irrota laite seuraavasti:

#### Vaara:

Virta-, puhelin- ja tietoliikennejohdoissa liikkuva sähkövirta on vaarallista. Voit tätä laitetta asentaessasi välttää sähköiskut irrottamalla johtimet esitetyllä tavalla ennen tietokoneen kansion avaamista. Virtajohto on liitettävä oikein maadoitettuun pistorasiaan.

- Katkaise kaikista laitteista virta.
- Irrota virtajohto pistorasiasta. (Yhdistyneiden Kuningaskuntien lain mukaan virtajohto on irrotettava ennen puhelinjohdon irrottamista.)
- Irrota signaalkaapelit vastakkeista.
- Irrota kaikki johdot laitteista.

### כדי לנתק:

#### סכנה:

זרם חשמלי מכבלי כח, טלפון ותקשורת מהווה סכנה. כדי למנוע התחשמלות, נתק את הכבלים לפי האיור לפני פתיחת מארז המחשב לשם התקנת מכשיר זה. את כבל החשמל יש לחבר לשקע מוארק כראוי.

- כבה את כל המפסקים.
- נתק תחילה את כבל החשמל מהשקע (בבריטניה החוק דורש לנתק את כבל החשמל אחרי כבל הטלפון).
- נתק את כבלי האותות משקעיהם.
- נתק את כל הכבלים מההתקנים השונים.

### Szétcsatlakoztatás

#### Balesetvesztély:

A hálózati, telefon és kommunikációs kábelben levő elektromos áram veszélyes. Az áramütés veszélyének elhárítása érdekében, a termék beszerelésekor, a számítógép burkolatának felnyitása előtt húzza ki a vezetékeket. A hálózati vezetékek megfelelően földeltnek kell lennie.

- Kapcsoljon mindent KI.
- Először a hálózati vezetéket húzza ki az aljzatból. (Az Egyesült Királyságban előírás, hogy a hálózati vezetéket a telefonvezeték után kell szétcsatlakoztatni.)
- Húzza ki a jel-kábelt az aljzatából.
- Húzza ki az összes vezetéket a berendezésekből.

## 차단하려면 :

### ⚠ 위험 :

전원, 전화, 통신 케이블에서 나오는 전류는 유해하다. 쇼크 위험을 없애려면 본 제품 설치를 위해 컴퓨터 뚜껑을 열기 전에 케이블을 차단한다. 전원 코드는 제대로 접지된 콘덴사와 사용돼야 한다.

- 모든 전원을 차단한다.
- 우선 콘덴사에서 전원 코드를 뺀다. (영국에서는 법으로, 전화선을 뺀 다음 전원 코드를 차단해야 한다.)
- 수신기로 부터 신축 케이블을 뺀다.
- 컴퓨터 장치에서 모든 케이블을 뺀다.

## Frakobling

### ⚠ Fare:

Elektrisk strøm fra strøm -, telefon - og kommunikasjonskabler er farlig. For å unngå fare for støt, må du koble fra kabler, som vist, før du åpner datamaskindeksler for å installere dette produktet. Strømledningen må kun brukes i jordede stikkontakter.

- Slå alt AV.
- Trekk først ut strømledningen fra stikkontakten. (I Storbritannia sier loven at strømledningen må kobles fra etter telefonledningen.)
- Trekk ut signalkablene fra kontaktene.
- Trekk ut alle kablene fra enhetene.

## Aby rozłączyć:

### ⚠ Ostrzeżenie:

Prąd elektryczny obecny w kablach zasilania, telefonicznych lub komunikacyjnych jest niebezpieczny. Aby uniknąć porażenia, przed otwarciem pokrywy komputera w celu zainstalowania tego wyrobu, należy odłączyć kable, jak to zostało pokazane. Musi być użyty przewód zasilania elektrycznego z odpowiednim uziemieniem.

- Wyłącz wszystko (położenie OFF).
- W pierwszej kolejności odłącz przewód zasilania elektrycznego z gniazdka. (W Wielkiej Brytanii prawo nakazuje, by przewód zasilania został odłączony po kablu linii telefonicznej).
- Wyłącz kable sygnałowe z gniazdek.
- Wyłącz wszystkie kable z urządzeń.

## Para desligar:

### ⚠ Perigo:

A corrente eléctrica da unidade de alimentação, do telefone e dos cabos de comunicação é perigosa. Para evitar o risco de choques eléctricos, desligue o cabo de acordo com as indicações antes de abrir a caixa do computador para instalar este produto. O cabo de alimentação deve ser utilizado numa tomada devidamente ligada à terra.

- Desligue tudo.
- Primeiro, retire o cabo de alimentação da tomada. (De acordo com as leis do Reino Unido, o cabo de alimentação deve ser desligado depois do cabo da linha telefónica.)
- Retire os cabos de sinal das tomadas.
- Retire todos os cabos dos dispositivos.

## 斷開步驟 :

### ⚠ 危險 :

動力電纜、電話電纜和通信電纜上的電流是危險的。為避免電擊危險，在打開電腦機蓋安裝本產品之前斷開電纜，如圖所示。動力電纜必須妥善接地。

- 關掉一切電源。
- 首先將動力電纜從輸出端取下。(根據英國法律規定，動力電纜必須在電話電纜之後斷開。)
- 從插座上取下信號電纜。
- 從裝置上取下所有電纜。

### ***Izključenje:***

#### **⚠ Nevarnost:**

Struja iz električnega, telefonskega ali komunikacijskega voda je nevarna. V namenu, da se izognete šoku, izključite vode, kot kaže slika, preden dvignete računalniške pokrove, da bi napravo instalirali. Strujni vod je treba uporabljati s primerno ozemljitvijo.

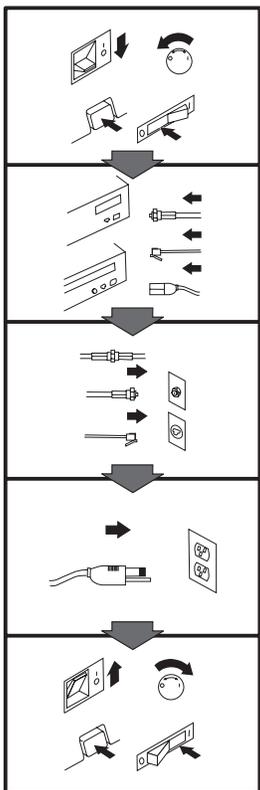
- Izključite vse (na "OFF").
- Najprej odstranite strujni vod iz izhodnega vtikaljšča. (V Veliki Britaniji je po zakonu treba strujni vod izključiti po telefonskem vodu).
- Odstranite signalne vode iz sprejemnikov.
- Odstranite vse vode iz naprav.

### ***Urkoppling***

#### **⚠ Fara:**

Ström från el-, tele- och kommunikationskablar måste behandlas med försiktighet. För att undvika att få en elektrisk stöt måste du innan du öppnar höljet på datorn koppla ur kablarna enligt beskrivningen nedan. Strömkabeln måste alltid användas i ett jordat uttag.

- Stäng av allting.
- Ta först ur strömkabeln från strömuttaget. (I Storbritannien måste enligt lag strömkabeln tas ur efter telefonkabeln.)
- Ta bort signalkablarna från uttagen.
- Ta bort alla kablarna från enheterna.



### To Connect:

#### ⚠ Danger:

Electrical current from power, telephone, and communication cables is hazardous. To avoid shock hazard, connect cables as shown after closing the computer covers. The power cord must be used with a properly grounded outlet.

- Turn everything OFF.
- Attach all cables to devices. (In the U.K., by law, the telephone cable must be connected after the power cord.)
- Attach signal cables to receptacles.
- Attach power cord to outlet.
- Turn device ON.

### Vor dem Anschließen:

#### ⚠ Vorsicht:

Befolgen Sie die folgenden Schritte, um gesundheitliche Schäden durch stromführende Telefon- und Verbindungskabel auszuschließen. Um eine Berührungsspannung zu vermeiden, Kabel nach dem Schließen der Computerabdeckungen, wie abgebildet, anschließen. Das Netzkabel darf nur an eine ordnungsgemäß geerdete Steckdose angeschlossen werden.

- Schalten Sie alle Geräte AUS.
- Schließen Sie alle Kabel an die Geräte an.
- Schließen Sie die Signalkabel an die dafür vorgesehenen Anschlußbuchsen an.
- Verbinden Sie das Netzkabel mit der Steckdose.
- Schalten Sie das Gerät EIN.

### Avant de vous connecter

#### ⚠ Danger:

Le courant électrique des câbles électriques, téléphoniques et de communication est dangereux. Pour éviter tout risque d'électrocution, connectez les câbles comme indiqué après avoir replacé les capots de l'ordinateur. Il convient d'utiliser le câble d'alimentation avec une prise correctement raccordée à la terre.

- Mettez tous les appareils hors tension.
- Raccordez l'ensemble des câbles aux périphériques. (Au Royaume-Uni, la législation exige que le câble téléphonique soit branché après le câble d'alimentation).
- Raccordez les câbles de signalisation aux prises femelles.
- Raccordez le câble d'alimentation à la prise de courant.
- Mettez les appareils sous tension.

### Para conectarse

#### ⚠ Peligro:

La corriente eléctrica procedente de cables de alimentación, teléfono y comunicaciones es peligrosa. Para evitar descargas eléctricas, conecte los cables tal y como se muestra después de cerrar las cubiertas del ordenador. El cable de alimentación debe utilizarse con una toma debidamente conectada a tierra.

- Desconecte todo.
- Conecte todos los cables a los dispositivos. (En el Reino Unido, la legislación determina que el cable de teléfono se conecte después del cable de alimentación.)
- Conecte los cables de señal de los receptáculos correspondientes.
- Conecte el cable de alimentación a una toma.
- Active el dispositivo.

接続時：

⚠ 危険：

電源、電話及び通信ケーブルからの電流は危険なものです。電気ショックの危険を避けるために、コンピューターのカバーを取り付け後に、次の順序でケーブルを接続してください。

- すべての電源を切ってください。
- すべてのケーブルを装置に接続してください。
- コネクタに通信ケーブルを接続してください。
- コンセントに電源コードを接続してください。
- 装置の電源を入れてください。

**Per collegare:**

⚠ Pericolo

La corrente elettrica che attraversa i cavi di alimentazione, i cavi telefonici e i cavi per le comunicazioni è pericolosa. Per evitare il rischio di scosse elettriche, collegare i cavi nel modo qui indicato solo dopo aver chiuso l'elaboratore con il coperchio. Il cavo di alimentazione deve essere inserito in una presa elettrica collegata correttamente a terra.

- Spegnerne tutto (posizione OFF).
- Collegare tutti i cavi ai dispositivi. (nel Regno Unito, per disposizione di legge, è obbligatorio collegare il cavo telefonico dopo aver collegato il cavo di alimentazione).
- Collegare i cavi di segnale agli appositi connettori.
- Collegare il cavo di alimentazione a una presa elettrica
- Accendere la periferica (posizione ON)

**Para ligar:**

⚠ Perigo:

A corrente elétrica da unidade de alimentação, do telefone e dos cabos de comunicação é perigosa. Para evitar o risco de choques elétricos, ligue os cabos de acordo com as instruções relativas à instalação depois de fechar as tampas do computador. O cabo de alimentação deve ser usado numa tomada devidamente ligada à terra.

- Desligue tudo
- Ligue os cabos aos dispositivos. (De acordo com as leis do Reino Unido, o cabo de alimentação deve ser desligado depois do cabo da linha telefônica.)
- Ligue os cabos de sinal aos receptáculos.
- Ligue o cabo de alimentação à tomada.
- Ligue o dispositivo.

**Připojení:**

⚠ Výstraha:

Elektrický proud ze síťových, telefonních a komunikačních kabelů je nebezpečný. Abyste předešli úrazu elektrickým proudem, kabely dle obrázku připojte až po uzavření krytů počítače. Síťový kabel musí být použit s řádně uzemněnou zásuvkou.

- Vypněte všechna zařízení.
- Připojte všechny kabely periferních zařízení. (Ve Spojeném království musí být podle zákona telefonní přípojka připojena až po připojení síťového kabelu).
- Připojte signálové kabely.
- Připojte síťový kabel do zásuvky.
- Zapněte přístroj.

**Læs følgende inden tilkobling:**

⚠ Fare:

Elektrisk strøm fra strømførende kabler og telefon- og kommunikationskabler er farlig. For at undgå elektrisk stød skal du sørge for at koble kablerne til som vist, før du lukker computerens dæksler igen. Den strømførende ledning skal tilsluttes en javdet stikkontakt.

- SLUK for alt.
- Tilslut alle kabler til enheder. (I Storbritannien skal telefonkablet tilsluttes efter den strømførende ledning iflg. lov).
- Tilslut signalkabler til kontakter.
- Tilslut den strømførende ledning til stikkontakten.
- TÆND for enheden.

### Aansluiten

#### Gevaarlijk:

Elektrische stroom afkomstig uit netsnoeren, telefoonkabels en communicatiekabels kan gevaarlijk zijn. Ter voorkoming van elektrische schokken, moet u nadat de computer dichtgemaakt is de kabels, zoals afgebeeld, aansluiten. Sluit het netsnoer altijd aan op een geaard stopcontact.

- Zet alles UIT.
- Bevestig de snoeren aan de apparaten. (In het Verenigd Koninkrijk bent u wettelijk verplicht eerst het netsnoer en pas dan de telefoonkabel aan te sluiten.)
- Bevestig de signaalkabels in de juiste ingangen.
- Steek de stekker van het netsnoer in het stopcontact.
- Zet het apparaat AAN.

### Pour connecter

#### Danger:

Le courant électrique des câbles électriques, téléphoniques et de communication est dangereux. Pour éviter tout risque d'électrocution, connectez les câbles tel que montré après avoir fermé les couvercles de l'ordinateur. Utilisez le câble d'alimentation avec une prise correctement raccordée à la terre.

- Mettez tous les appareils hors tension.
- Raccordez tous les câbles aux appareils. (Au Royaume-Uni, la réglementation exige que le câble téléphonique soit branché après le câble d'alimentation.)
- Raccordez les câbles de transmission du signal aux prises femelles.
- Raccordez le câble d'alimentation à la prise de courant.
- Mettez l'appareil sous tension.

### Kytke seuraavasti:

#### Vaara:

Virta-, puhelin- ja tietoliikennejohdoissa liikkuva sähkövirta on vaarallista. Voit välttää sähköiskut liittämällä johdot esitetyllä tavalla, sen jälkeen kun olet sulkenut tietokoneen kannet. Virtajohto on liitettävä oikein maadoitettuun pistorasiaan.

- Katkaise kaikista laitteista virta.
- Liitä kaikki johdot laitteisiin. (Yhdistyneiden Kuningaskuntien lain mukaan virtajohto on liitettävä ennen puhelinjohdon irrottamista.)
- Liitä signaaliikaapelit vastakkeisiin.
- Liitä virtajohto pistorasiaan.
- Kytke laitteeseen virta.

### כדי לחבר:

#### סכנה:

זרם חשמלי מכבלי כח, טלפון ותקשורת מהווה סכנה. כדי למנוע התחשמלות, חבר את הכבלים לפי האיור אחרי סגירת מארזי המחשב. את כבל החשמל יש לחבר לשקע מוארק כראוי.

- כבה את כל המפסקים.
- חבר את כל הכבלים להתקנים (בבריטניה החוק דורש לחבר את כבל הטלפון אחרי כבל החשמל).
- חבר את כבלי האותות לשקעייהם.
- חבר את כבל החשמל לשקע.
- הדלק את המכשיר.

### Csatlakoztatás:

#### Balesetvesztély:

A hálózati, telefon és kommunikációs kábelben levő elektromos áram veszélyes. Az áramütés veszélyének elhárítása érdekében csak a számítógép burkolatának bezárása után csatlakoztassa a vezetékeket. A hálózati vezetéknek megfelelően földeltnek kell lennie.

- Kapcsoljon mindent KI.
- Csatlakoztassa a vezetékeket a berendezésekhez. (Az Egyesült Királyságban előírás, hogy a telefonvezeték a hálózati vezeték után kell csatlakoztatni.)
- Csatlakoztassa a jelkábelt az aljzatába.
- Csatlakoztassa a hálózati vezetéket az aljzatába.
- Kapcsolja BE a készüléket.

연결하려면 :

⚠ 위험 :

전원, 전화, 통신 케이블에서 나오는 전류는 유해하다. 쇼크 위험을 없애려면 본 제품 설치를 위해 컴퓨터 뚜껑을 닫은 후에 케이블을 연결한다. 전원 코드는 제대로 접지된 콘덴사와 사용돼야 한다.

- 모든 전원을 차단한다.
- 장치에 모든 케이블을 연결한다. (영국에서는 법으로, 전화선을 먼저 연결한 다음 전원코드를 연결해야 한다.)
- 수신기에 신호 케이블을 연결한다.
- 콘덴사에 전원 코드를 연결한다.
- 컴퓨터 장치를 켜다.

**Tilkobling**

⚠ Fare:

Elektrisk strøm fra strøm-, telefon- og kommunikationskabler er farlig. For å unngå fare for støt, må du koble til kabler, som vist, etter at datamaskindekslene er lukket. Strømledningen må kun brukes i jordede stikkontakter.

- Slå alt AV.
- Koble alle kablene til enhetene. (I Storbritannia sier loven at telefonledningen må kobles til etter strømledningen.)
- Sett signalkablene i kontaktene.
- Sett strømledningen i stikkontakten.
- Slå apparatet PÅ.

**Aby podłączyć:**

⚠ Ostrzeżenie:

Prąd elektryczny obecny w kablach zasilania, telefonicznych lub komunikacyjnych jest niebezpieczny. Aby uniknąć niebezpieczeństwa porażenia, po zamknięciu pokryw komputera podłącz kable jak to zostało pokazane. Musi być użyty przewód zasilania elektrycznego z odpowiednim uziemieniem.

- Wyłącz wszystko (położenie OFF)
- Podłącz wszystkie kable do urządzeń (W Wielkiej Brytanii prawo nakazuje by kabel linii telefonicznej został podłączony po przewodzie zasilania).
- Podłącz kable sygnałowe do gniazdek.
- Podłącz przewód zasilania do gniazdka.
- Włącz urządzenie. (Polożenie ON).

**Para ligar:**

⚠ Perigo:

A corrente eléctrica da unidade de alimentação, do telefone e dos cabos de comunicação é perigosa. Para evitar o risco de choques eléctricos, ligue os cabos de acordo com as indicações antes de fechar a caixa do computador. O cabo de alimentação deve ser utilizado numa tomada devidamente ligada à terra.

- Desligue tudo.
- Ligue os cabos aos dispositivos. (De acordo com as leis do Reino Unido, o cabo do telefone deve ser ligado depois do cabo de alimentação.)
- Ligue os cabos de sinal as tomadas.
- Ligue o cabo de alimentação à tomada.
- Ligue o dispositivo.

**連接步驟 :**

⚠ 危險 :

動力電纜、電話電纜和通信電纜上的電流是危險的。為避免電擊危險，在蓋上電腦機蓋之後連接電纜，如圖所示。動力電纜必須妥善接地。

- 關掉一切電源。
- 將所有電纜連接於裝置。(根據英國法律規定，電話電纜必須在動力電纜之前連接。)
- 將信號電纜連接於插座。
- 將動力電纜連接於輸出端。
- 打開裝置電源。

### ***Vključenje:***

#### **⚠ Nevarnost:**

Struja iz električnih, telefonskih in komunikacijskih vodov je nevarna. Da se izognete šoku, vključite vode, kot kaže slika, po tem, ko ste zaprli računalniške pokrove. Strujni vod je treba uporabljati s primerno ozemljitvijo.

- Izključite vse (na "OFF").
- Priključite vse vode na napravo. (V Veliki Britaniji je po zakonu treba telefonski vod vključiti po strujnem vodu).
- Priključite signalne vode sprejemnikom.
- Priključite električni vod izhodnemu vtikalšču.
- Vključite napravo (na "ON").

### ***Anslutning***

#### **⚠ Fara:**

Ström från el-, tele- och kommunikationskablar måste behandlas med försiktighet. För att undvika att få en elektrisk stöt måste du sedan du stängt höljet på datorn ansluta kablarna enligt beskrivningen nedan. Strömkabeln måste alltid användas i ett jordat uttag.

- Stäng av allting.
- Anslut alla kablarna till enheterna. (I Storbritannien måste enligt lag telefonkabeln anslutas efter strömkabeln.)
- Anslut signalkablarna till uttagen.
- Anslut strömkabeln till strömuttaget.
- Slå på enheten.

## Appendix B. Product specifications

This appendix includes the the following specifications and requirements:

- Physical specifications
- Power requirements
- Environmental requirements
- Drive write/read speeds
- Drive performance

### Physical specifications

The physical specifications<sup>6</sup> of the IBM 2X/4X/24X CD-ReWritable Drive are listed in the following table.

| <i>Physical Specifications:</i> |                   |
|---------------------------------|-------------------|
| Height                          | 42 mm (1.7 in.)   |
| Width                           | 146 mm (5.75 in.) |
| Length                          | 203 mm (8.0 in.)  |
| Weight                          | 940 g (2.1 lb.)   |

### Power requirements

The following table lists the power specifications by voltage level for the IBM 2X/4X/24X CD-ReWritable Drive. The power specifications are measured at the drive power connector and are nominal values.

| <i>Power Specifications:</i> |          |         |
|------------------------------|----------|---------|
| Voltage                      | +12 V dc | +5 V dc |
| Operational current          | 1.2 A    | 1.0 A   |

### Environmental requirements

The following table lists the environmental specifications for the CD-ReWritable drive. You can mount the drive vertically or horizontally.

| <i>Environmental Requirements:</i> |                                    |                                     |
|------------------------------------|------------------------------------|-------------------------------------|
| Specification                      | Operational                        | Nonoperational                      |
| Temperature (non-condensing)       | +5°C to +45°C<br>(+41°F to +113°F) | -40°C to +60°C<br>(-40°F to +140°F) |
| Relative humidity (non-condensing) | 10% to 90%                         | 10% to 90%                          |

<sup>6</sup> Product-description data represents IBM's design objectives and is provided for comparative purposes; actual results might vary, based on a variety of factors. This product data does not constitute a warranty. Data is subject to change without notice.

## Write/Read speeds

The following table lists the CD-ReWritable drive's write/read speeds for different media.

| <i>Drive Write/Read Speeds:</i>    |                              |
|------------------------------------|------------------------------|
| Function                           | Speed                        |
| Read (CD-ROM/CD-R disc)            | 1X, 2X, 4X, 8X, 10-24X (CAV) |
| Read (CD-RW disc)                  | 1X, 2X, 4X, 8X               |
| Read (unfinalized CD-R/CD-RW disc) | 1X, 2X, 4X                   |
| Write (CD-R disc)                  | 1X, 2X, 4X                   |
| Write (CD-RW disc)                 | 2X                           |

## Drive-performance specifications

The following table lists the performance specifications of the CD-ReWritable drive.

| <i>Drive performance:</i>    |  |
|------------------------------|--|
| Feature                      | Specification  |
| Sustained data transfer rate | 150 KB per second (Mode 1, 1X, read/write)<br>1500-3600 KB per second (Mode 1, 10-24X CAV) |

|   |  |
|---|--|
| Burst data transfer rate                | 11.1 MB <sup>7</sup> per second (ATA PIO Mode 3)<br>13.3 MB per second (ATA Multi Word DMA Mode) |
| Average access time (including latency) | 150 ms (10-24X, CAV)   |
| Cache memory (Read/Write)               | 1 MB   |
| Disc diameter                           | 12 cm (8 cm Read only)   |
| Rotational speed innermost track        | 600 rpm (1X)<br>1200 rpm (2X)<br>2400 rpm (4X)<br>4800 rpm (8X)<br>5000 rpm (10-24X, CAV)        |
| Rotational speed outermost track        | 200 rpm (1X)<br>400 rpm (2X)<br>800 rpm (4X)<br>5000 rpm (24X)                                   |
| Mean time between failures (MTBF)       | 100 000 POH (duty 25%)   |

<sup>7</sup> The formatted capacity of 1 MB is approximately 1 000 000 bytes of data.

## Appendix C. Customizing device driver configuration settings

**Attention:** After you install the *IBM 2X/4X/24X CD-ReWritable Drive Option Diskette*, you can use a DOS session in Windows 3.x, DOS, OS/2, Windows 98, and Windows 95 to access the drive as a CD-ROM drive.

This section contains optional configuration information for the *IBM 2X/4X/24X CD-ReWritable Drive Option Diskette* device drivers for Windows 3.x, DOS, OS/2 and Windows 98 and 95. Use the online help during the installation and refer to the READ.ME file on the *IBM 2X/4X/24X CD-ReWritable Drive Option Diskette* for additional information.

Requirements vary, and you might need to customize the configuration that the CDSETUP program installed on your computer. This section provides information and describes parameters that you might need to change or add for your installation.

### Changing device driver parameters for DOS and Windows

Most computers will function adequately with the default settings for the IBMIDECD.SYS device driver file. However, there are some parameters that can be changed if necessary. This section explains the function of each parameter. Use a text editor to modify the appropriate line in your CONFIG.SYS file. For the IBMIDECD.SYS device driver file, the line in CONFIG.SYS is in the following format:

```
DEVICE=[drive:][path]IBMIDECD.SYS /D:device name  
      [/P:xxx,yy] [/A:n] [/U:n]  
      [/L:xx] [/T:n] [/I:n]
```

(Do not truncate the actual device driver entry. Place the complete DEVICE= on one line in the CONFIG.SYS file.)

```
[drive:][path]IBMIDECD.SYS
```

The above parameter specifies the location (drive and directory) and name of the device driver file.

Use the following options to configure the device driver.

#### **/D:***device name*

This parameter specifies the device name of the CD-ROM drive. This name must be identical to the device name specified in the MSCDEX.EXE parameters, as shown:

```
DEVICE=C:\IBMIDECD.SYS /D:IBMCD1
```

#### **/P:***xxx,yy*

This parameter specifies the address and interrupt level of the port to which the IDE CD-ROM drive is connected.

The device driver automatically checks the industry standard primary IDE port (address 1F0, interrupt 14) and secondary IDE port (address 170, interrupt 15). The */P* parameter is not needed if your CD-ROM drive is connected to either of these ports. However, if your computer (or IDE adapter) uses different IDE port addresses or interrupts, you must use this option. Refer to the instructions that come with your computer or IDE adapter for more information about the configuration of your computer or adapter.

*xxx* is the base address of the IDE port.

1F0 for the primary IDE port (Port 1)  
170 for the secondary IDE port (Port 2)

*yy* is the interrupt (IRQ) level.

14 for the primary IDE port (Port 1)  
15 or 10 for the secondary IDE port (Port 2)

When four drives are connected, for example, the syntax in the CONFIG.SYS file would be:

```
DEVICE=C:IBMIDECD.SYS /D:IBMCD1 /P:1F ,14  
/P:17 ,15 /P:1E ,12 /P:16 ,1
```

(Do not truncate the actual device driver entry. Place the complete DEVICE= on one line in the CONFIG.SYS file.)

#### ***/A:n***

This parameter specifies the audio play mode. For a stereo CD, you can type */A:0* or */A:1*. For a monaural CD (left or right channel only), type */A:1* in order to play the monaural audio signal from the right and left channels. The default is *n=0*.

#### ***/U:n***

This parameter specifies if your computer initializes with the CD tray unlocked or locked. */U:0* initializes with the tray *unlocked*. */U:1* initializes with the tray *locked*. The default command is *n=0*. This command might be used if you want to secure your CD in the drive.

#### ***/L:xx***

This parameter specifies the message language where *xx* designates the language.

|           |  |
|-----------|--|
| <b>US</b> | English (default, does not need to be specified) |
| <b>GR</b> | German   |
| <b>FR</b> | French   |
| <b>SP</b> | Spanish  |
| <b>IT</b> | Italian  |
| <b>JP</b> | Japanese   |

#### ***/T:n***

This parameter specifies time delays to be built into the IDE read loop. Use this parameter only in computers that do not support the IOCHRDY signal on the IDE bus, and in computers that read from the IDE port faster than the CD-ROM can provide data. This parameter is usually not required in most computers.

*n* is a relative timing parameter that depends on processor speed. When the value of *n* increases, the drive data-transfer rate decreases. Valid values for *n* are 0 through 99. The default for *n* is 0, and the */T* parameter is not required.

**/I:n**

This parameter enables interrupt sharing. If  $n=1$ , interrupt sharing is enabled. If  $n=0$ , interrupt sharing is disabled. The default value is  $0$ . Set this parameter to enabled when the IDE interrupt must be shared with another device. For example, a PS/2 9577 computer with IDE could share interrupt 14 with the IBM SCSI Adapter /A.

### Using Microsoft CD-ROM Extensions

Microsoft CD-ROM Extensions (MSCDEX.EXE) is an executable program that works in conjunction with the device driver (IBMIIDECD.SYS) to enable your computer to read CDs as DOS-formatted disks. MSCDEX is designed for DOS and Windows.

The CDSETUP program automatically adds an MSCDEX statement to your AUTOEXEC.BAT file. You can modify the default MSCDEX parameters to customize your installation. This section explains the function of each parameter. A text editor can be used to modify the MSCDEX statement in your AUTOEXEC.BAT file.

The following is the syntax of the MSCDEX.EXE entry in AUTOEXEC.BAT where `[drive:][path]MSCDEX.EXE` specifies the location (drive and directory) of the MSCDEX.EXE file.

```
[drive] [path]MSCDEX.EXE /D:device_name
[/M:j] [/E] [/V] [/L:drive_letter]
[/K][/S]
```

(Do not truncate the actual device driver entry. Place the complete entry on one line in the AUTOEXEC.BAT file.)

Use the following options to configure the device driver.

**/D:device name**

This parameter specifies the name of the CD-ROM drive (eight characters maximum). This name must be identical to the device name specified in the device driver in the CONFIG.SYS file. For example:

```
C:\MSCDEX.EXE /D:IBMCD1
```

You might support multiple CD-ROM drives (of different types) by installing each of their device drivers (naming them different names) and placing a `/D:device name` in the MSCDEX line for each drive. For example, if you wanted to support an IBM IDE CD-ROM drive and an IBM SCSI CD-ROM drive, your CONFIG.SYS file might have these statements:

```
DEVICE=C:\IBMIIDECD.SYS /D:IDE_CD
DEVICE=C:\IBMCDROM.SYS /D:SCSI_CD
```

and your AUTOEXEC.BAT file could include this statement:

```
C:\MSCDEX /D:IDE_CD /D:SCSI_CD
```

**/M:nn**

This parameter specifies the number of sector buffers for temporary storage of the most recent CD data. For example, to specify 12 sector buffers you would use:

```
C:\MSCDEX.EXE /D:IBMCD1 /M:12
```

The CDSETUP program sets this value to 10. The default value for MSCDEX with no /M parameter is 4.

You can improve CD-ROM drive performance when you use larger default values. However, each buffer uses about 2 KB of

memory, and too many buffer specifications might slow down your computer or interfere with other programs that have large memory-usage requirements. You might be able to specify a larger number of buffers to enhance CD-ROM drive performance without adversely affecting programs that have large memory-usage requirements if you use expanded memory (see the /E option in this section) or if you load MSCDEX.EXE into high memory using instructions given in the documentation that comes with your operating system or with the memory manager.

#### **/E**

This parameter instructs the computer to use expanded memory, if available. For example:

```
C:\MSCDEX.EXE /D:IBMCD1 /E
```

Note that you must first load an expanded memory device driver before using this option. If no expanded-memory device driver is loaded, the following error message displays:

```
Expanded Memory not present or not usable.
```

#### **/V**

This parameter instructs the computer to display a summary of RAM allocation and expanded memory usage at startup time.

#### **/L:drive letter**

This parameter specifies the drive letter to be assigned to the first CD-ROM drive. Do not assign a letter already used by an existing drive or your computer will not be able to access the CD-ROM drive. For example, you might use:

```
C:\MSCDEX.EXE /D:IBMCD1 /L:F
```

Normally, the CD-ROM drive is assigned to the next available drive letter after devices such as diskette drives and hard disk drives. Therefore, you use this option only if you wish to assign a drive letter beyond the last letter previously allocated by DOS.

#### **/K**

This parameter instructs MSCDEX.EXE to use Kanji (Japanese) file structures, if present, rather than the default alphanumeric file structures.

#### **/S**

This parameter instructs MSCDEX.EXE to allow networked computers to share CD-ROM drives.

### **Conserving DOS conventional memory**

If the CD-ROM drive-support software is loaded in DOS conventional memory (below 640 KB RAM), there might be insufficient memory to run some DOS applications. The CDSETUP program attempts to load the IDE CD-ROM drive device driver and MSCDEX into upper memory, when possible, to avoid this problem.

For more information on techniques to conserve conventional memory, refer to the following topics in the documentation that comes with your operating system:

DOS=UMB, DOS=HIGH,UMB (CONFIG.SYS entry)

This command enables the use of upper memory and loads DOS, MSCDEX, and the IDE CD-ROM device driver in upper memory.

HIMEM.SYS (CONFIG.SYS entry)

This is a device driver that manages extended memory (RAM memory above 1 MB). Windows automatically loads this device driver.

EMM386.EXE (CONFIG.SYS entry)

This is a device driver that allows the extended memory made available by HIMEM.SYS to be used as expanded memory. The MSCDEX /E parameter might be used in conjunction with this device driver to move the cache allocated by MSCDEX into this memory, thus freeing some conventional memory.

MEM /C /P (use from DOS prompt)

This is a useful DOS utility that will display the current memory allocation in your computer to help you understand where device drivers and programs are located. To display the MEM parameters available, at the DOS prompt type mem/?

## Enhancing performance in DOS and Windows

The following two procedures can enhance CD-ROM drive performance.

1. Allocate more MSCDEX cache (see /M parameter for MSCDEX).
2. Allow SMARTDRV to cache CD-ROM accesses.

The CDSETUP program disables the cache CD-ROM data function. Multisession CDs are not compatible with the SMARTDRV caching method. If you do not plan to use PhotoCD or multiple-session CDs, you can enable caching by removing the /U parameter from the SMARTDRV line in your AUTOEXEC.BAT or CONFIG.SYS file. This might improve the performance of some CD-ROM applications. You must have SMARTDRV 5.0 or later to cache CD-ROM data.

## Updating the device driver for a DOS network server

If you are using the CD-ReWritable drive in a DOS Network server you need to make the following changes:

1. Add the /S parameter to the MSCDEX line in the AUTOEXEC.BAT file.
2. Verify that the MSCDEX line is located after the line that loads the network services (NET START for IBM PC LAN program).
3. Do one of the following, depending on your operating system:

If you are using DOS 3.3, be sure you have *PC Local Area Network (LAN) Program Corrective Service Diskette* level IP00755 or later installed.

If you are using DOS 4.0, be sure you have *DOS Corrective Service Diskette* level UR 29015 or later installed. (The computer cannot be configured as an Extended Services Domain Controller for the IBM PC LAN Program.)

Contact your IBM reseller for more information about the *PC LAN Program Corrective Service Diskette* or the *DOS Corrective Service Diskette*.

### Changing the device driver for OS/2

You might need to customize the setup that the DDINSTAL file has installed on your computer in order to meet your requirements. This section provides information and describes parameters that you might need to change or add for your installation.

OS/2 uses the OS2CDROM.DMD device driver

```
DEVICE=OS2CDROM.DMD [Options]
```

to control all CD-ROM devices. The following parameters are available:

**/V** Instructs the computer to display the installation details.

**/Q** Suppresses messages during initialization.

### Changing the OS/2 device driver filter

OS/2 uses the device driver filter IBMIDECD.FLT for ATAPI (IDE) CD-ROM drives.

```
BASEDEV=IBMIDECD.FLT [Options]
```

The following parameter is available:

**/V** Instructs the computer to display installation details.

### Changing the OS/2 installable file system driver

The file system device driver for OS/2 is CDFS.IFS. The following parameters are available:

**/C:n** Indicates how many 64 KB RAM segments will be used for the sector cache. The default is (/C:2) two 64 KB RAM segments.

**/M:n** Indicates the maximum number of file sectors to be read at a time. The default is eight sectors (/M:8).

**/K** Uses Kanji supplementary volume descriptor.

**/Q** Suppresses messages during initialization.

### Changing the OS/2 IDE adapter device driver

The following IDE device driver is available:

```
BASEDEV=IBML5 6.ADD (for ISA computers)
```

This device driver controls IDE hard disk drives and IDE CD-ROM drives. At the OS/2 command prompt, type `help IBML5 6` to see the optional parameters that are available for ISA computers.

Special parameters are required if your computer has an IDE controller that does not use a standard interrupt. Check the **/A** and **/IRQ** parameters in the OS/2 help utility.

If you have an IBM Micro Channel computer, an IDE device driver is available for Micro Channel architecture on the IBM Web site (<http://www.ibm.com>). Use the Web site search utility, and look for IBM2IDE.ADD.

---

### Changing the Windows 98 and Windows 95 device drivers

Windows 98 and Windows 95 have two device driver configuration parameters: Auto Insert Notify and DMA.

The Auto Insert Notify parameter enables the system to start audio CD software as soon as a CD is inserted into the CD-ROM drive.

The DMA parameter improves system performance by having the system DMA controller take responsibility for moving data from the CD to memory, freeing the system CPU to perform more important tasks. For example, activating DMA might make movies and games run more smoothly because the CPU will have more time to concentrate on video.

### Changing the Auto Insert Notify and DMA parameters

To change these parameter settings from the Windows 98 or Windows 95 desktop:

1. Click **Start**.
2. Select **Settings**.
3. Click **Control Panel**.
4. Double-click **System**.
5. Select **Device Manager**.
6. Double-click **CD-ROM**.
7. Click **Properties**.
8. Select **Settings**.
9. Click **Auto Insert Notification** or **DMA**.
10. Click **OK**.

## ***Appendix D.*** ***Problem solving***

Computer problems can be caused by hardware, software, or user error. You might be able to use the information in this section to solve problems yourself, or gather helpful information you can pass on to a service technician. You might also need to refer to your computer, operating-system, or sound-adaptor publications. You can also use the problem-solving diagnostic program for DOS on the *IBM 2X/4X/24X CD-ReWritable Drive Option Diskette*. For more information on the diagnostic program, see "Diagnostics" on page 3-27.

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

---

### **Your computer or CD-ReWritable drive does not operate correctly or the busy indicator light does not come on.**

Take the following actions:

1. Check that the CD is loaded with the label side up.
2. Check that all devices are properly connected to the computer and the electrical outlet.
3. Turn off the computer, unplug the cables from the electrical outlets for your computer and all attached devices, and remove the computer cover.

4. Check that all power and IDE cables are securely attached. Disconnect the IDE cable and check for bent or misaligned pins. If you do not find any problems, reconnect the interface cable. Replace the computer cover, and reattach all cables and power cords. Turn on the computer, restart the system, and attempt to open the CD tray by pressing the Eject/Load button. If the tray fails to open and the busy indicator light does not come on, turn off the computer and try using another 4-pin dc power cable.
5. Check that the color-coded edge on the IDE cable aligns with pin 1 on the IDE port and is closest to the power cable on the CD-ReWritable drive. See "Step 5. Attaching the cables to the drive" on page 1-6.
6. Check that the IDE cable is connected to the proper IDE port connection. See "Step 5. Attaching the cables to the drive" on page 1-6 for more information.
7. Check the CD-ReWritable drive and any other device on the IDE cable for the proper Master/Slave jumper settings. See "Step 5. Attaching the cables to the drive" on page 1-6 for more information.
8. If the middle connector on the IDE cable is attached to the IDE port on the system board, remove the connector and reattach the cable. If there is only one device on the IDE port, attach the connector at one end of the cable to the IDE port and the connector at the other end to the device, leaving the middle connector (if there is one) open.

If there are two devices on the IDE port, attach the connector at one end of the cable to the IDE port. If there is a hard disk

drive, attach it to the connector at the other end of the cable and attach the CD-ReWritable drive to the middle connector.

---

**You cannot format a CD-RW disc.**

Take the following actions:

1. Verify that your system has the latest level IDE CD-ROM device driver.
  2. Verify that your system has the latest level Busmaster IDE controller device driver.
- 

**You cannot create a multisession disc.**

Be sure that there is enough space left on the media for another session. Writing a session requires lead-in and lead-out space (about 15 MB) in addition to the data that is recorded.

---

**You cannot successfully write to a CD-R or CD-RW disc.**

Take the following actions:

1. Verify that the process is not being interrupted by a screen saver, an antivirus program, an Internet or E-mail program, or other software. Disable the functions that might interrupt the write operation.
2. Verify that the computer system has the minimum processor.
3. Verify that the hard drive has been defragmented.

4. Consult the hard disk drive manufacturer or vendor if an older hard disk drive is conducting a thermal recalibration during a write operation.
  5. Replace media if it is bad or scratched.
  6. Try disabling the Windows Auto Insert Notify function on your CD-ROM and CD-RW drives.
- 

**You cannot eject a CD.**

Take the following actions after ensuring that the drive is not in the process of writing to a disc:

1. Eject the CD through software.
  2. Use the eject button.
  3. Turn off the computer. Wait 45 seconds; then turn on the computer and try using the eject button again.
  4. If other methods do not work, use the manual eject hole, using instructions given in "Manually ejecting a CD" on page 2-6.
- 

**You cannot read from the CD after successfully writing to it.**

The the following actions:

1. If you can read the CD in another CD player or you can see previous sessions, the directory information might be damaged on the volume, making it unreadable. Check the documentation that comes with the software for troubleshooting ideas.
2. You might have a damaged CD-R or CD-RW disc. Try a new CD-R disc or CD-RW disc, or another brand of media.

3. If you read from a CD-RW disc in the writing drive, but not in another Multi-Read drive, be sure that a UDF Reader program is installed in the system. For more information on installing the UDF Reader program, go to “Step 9. Installing the Easy CD Creator/DirectCD software” on page 1-7.
4. Verify that you are not attempting to write the disc under extreme environmental conditions such as the following:
  - low temperature (5°C/41°F or below)
  - high temperature (45°C/113°F or above)
  - excessive shock (>0.5 G)
  - excessive vibration (>0.1 G)
5. Also, try to avoid writing at the slower 1X speed unless required by your computer system.

---

**You cannot access the CD-ReWritable drive or the CD-ROM icon does not display (Windows 98 or 95).**

If the CD-ReWritable drive has been properly installed, there will be a CD-ROM icon in the My Computer window. If you double-click the My Computer icon and there is no CD-ROM present in the displayed window, make sure that the drive has been properly installed, and that the configuration jumper has been correctly set. For more information, see “Step 3. Setting the configuration jumpers” on page 1-4. Next, restart your system. If a drive icon is still not found, continue with the following steps.

1. Click **Start**, and select **Settings**. The Settings window will open.
2. Click **Control Panel**.

3. Click **System**.
4. Click the **Device Manager** tab.
5. Double-click **View Devices by Type**.
  - a. Click **Hard Disk Controllers** on the Device Manager list. Make sure that there are no conflicts with the controller. Be sure that the device status indicates that the controller is working properly.
  - b. Select **CD-ROM** from the Device Manager list. Verify that there is a CD-ROM device and that no conflicts exist. The device status will indicate that the device is working properly.
6. Click **OK**.
7. Restart the computer.

If the device icon is still not present, check cable connections, device jumper settings, and resolve any existing conflicts.

---

**You cannot access the CD-ReWritable drive or the CD-ROM icon does not display (OS/2).**

Your CD-ReWritable drive device driver might not be loaded or cannot be found. Before checking the CONFIG.SYS and AUTOEXEC.BAT file, make a backup copy of CONFIG.SYS and AUTOEXEC.BAT in a preferred directory.

1. At the DOS prompt:
  - a. Type `x:copy CONFIG.SYS CONFIG.IBM` where x is the directory drive letter and press Enter.
  - b. Type `x:copy AUTOEXEC.BAT AUTOEXEC.IBM` where x is the directory drive letter and press Enter.
2. From the OS/2 prompt open a text editor such as EPM or E. The following instructions use the EPM editor. Type EPM CONFIG.SYS and press Enter.
3. Check for the following device driver lines.

```
DEVICE=C:\OS2\BOOT\OS2CDROM.DMD /Q
IFS=C:\OS2\BOOT\CDFS.IFS /Q
DEVICE=C:\OS2\MDOS\VCDROM.SYS
BASEDEV=IBMIDECD.FLT
```

If these lines are not present, add them.

4. Save any changes and exit the CONFIG.SYS file.
5. Check that the device drivers are on the hard disk drive and in the correct directory, as shown.

```
C:\OS2\BOOT\OS2CDROM.DMD
C:\OS2\BOOT\CDFS.IFS
```

If the device drivers are not present, reinstall them. See the README.TXT file on the *IBM 2X/4X/24X CD-ReWritable Drive Option Diskette* for more information.

---

**You cannot access the CD-ReWritable drive (DOS and Windows 3.x) or the CD-ROM icon (Windows 3.x) does not display.**

Your CD-ReWritable drive device driver might not be loaded or cannot be found. Before checking the CONFIG.SYS and AUTOEXEC.BAT files, make a backup copy of these files in a preferred directory.

1. At the DOS prompt:
  - a. Type `x:copy CONFIG.SYS CONFIG.IBM` where x is the directory drive letter and press Enter.
  - b. Type `x:copy AUTOEXEC.BAT AUTOEXEC.IBM` where x is the directory drive letter and press Enter.
2. Use a text editor such as E or Edit. At the DOS prompt, type E (or your editor name) CONFIG.SYS and press Enter.
3. Insert the following line at the top of the CONFIG.SYS file to allow for more than five drive letters, if needed.

```
lastdrive=z
```
4. Check for the following device driver line.

```
DEVICEHIGH=C:\IBMIDECD.SYS /D:IBMCD1
```

If this line is not present, add it.

5. Save the CONFIG.SYS file and exit.
6. Type E (or your editor name) AUTOEXEC.BAT and press Enter.
7. Check for the following device driver line.

```
LH C:\MSCDEX /D:IBMCD1 /M:1
```

If this line is not present, add it.

8. If the Windows screen automatically opens when you start your computer, check that the line

```
LH C:\MSCDEX /D:IBMCD1 /M:1
```

comes before the line that starts Windows (*WIN*). If not, move the MSCDEX statement above this line in the file.

9. Save the AUTOEXEC.BAT file and exit.
10. Make sure that the device drivers are on the hard disk and are displayed in the correct directory, as shown.

```
C:\IBMIDECD.SYS  
C:\MSCDEX
```

If the device drivers are not present, reinstall them. See the READ.ME file on the *IBM 2X/4X/24X CD-ReWritable Drive Option Diskette* for more information.

---

#### The CD-ReWritable drive is not recognized by the operating system or the drive performs erratically.

Some computers, such as IBM PS/ValuePoint models 6472, 6482, 6484, 6492, and 6494, have *compatible* and *high performance* modes for mass storage devices. Normally, the CD-ReWritable drive functions better under the *high performance* mode. However, if your drive is not functioning properly in that mode, you might need to use *compatible* mode.

Check the configuration-setup information for your computer.

1. Access your configuration utility program.
2. Select **Devices**.
3. Scroll down to the **Mass Storage Devices** section.
4. **Mass Storage Devices** contains the entries **Primary IDE Mode** and **Secondary IDE Mode**. These entries are used to set the performance mode of each IDE port. Set the mode to **compatible** for the port on which you have installed your CD-ReWritable drive.

Other IBM and non-IBM computers might have similar settings. Check to see if your BIOS or configuration-setup utility provides for *compatible* and *high performance* modes for IDE performance. For these computers, use the *compatible* mode for slower IDE devices, such as this CD-ReWritable drive. Refer to the documentation that comes with your computer for additional details on selecting IDE performance modes. Many older computers will not have a selection of IDE performance modes.

---

**The computer does not recognize the CD-ReWritable drive after the device drivers are loaded (DOS and Windows 3.X).**

Check for incompatibilities among the CD-RW drive device driver and other device drivers or other hardware in your computer. Create a System Diskette with minimum CONFIG.SYS and AUTOEXEC.BAT system files.

1. Before creating special CONFIG.SYS and AUTOEXEC.BAT files, make a backup copy of these files in a preferred directory.
  - Type `x:copy CONFIG.SYS CONFIG.IBM` where x is the directory drive letter and press Enter.
  - Type `x:copy AUTOEXEC.BAT AUTOEXEC.IBM` where x is the directory drive letter and press Enter.
2. Create a System Diskette and copy the device drivers onto it using the following instructions.
  - a. Insert a blank diskette into the diskette drive.
  - b. At the DOS prompt, type `format a: /s` and press Enter. The `/s` parameter creates the System Diskette. Follow the instructions on the screen.
  - c. When the format process completes, copy the `C:\IBMIDECD.SYS` and `C:\MSCDEX` files from the hard disk to the System Diskette.
  - d. Using a text editor, create a minimum CONFIG.SYS system file on the System Diskette to support only a CD-ReWritable

drive. The following procedure uses the E text editor to create the CONFIG.SYS file from the A prompt.

- 1) Type `e config.sys` and press Enter.
  - 2) In the editor, type `lastdrive=z` and press Enter.
  - 3) Type `device=a:\ibmidecd.sys /d:ibmcd1` and press Enter.
  - 4) Save the CONFIG.SYS file and exit from the editor.
- e. Using a text editor, create a minimum AUTOEXEC.BAT system file on the System Diskette to support only a CD-ReWritable drive. The following procedure uses the E text editor to create the AUTOEXEC.BAT file from the A prompt.
- 1) Type `e autoexec.bat` and press Enter.
  - 2) Type `a:\mscdex /d:ibmcd1 /m:1` and press Enter.
  - 3) Save the AUTOEXEC.BAT file and exit the editor.
3. Turn off the computer and check that the System Diskette is in the diskette drive.
  4. Restart the computer (the computer will start up from the System Diskette).
  5. Observe the startup messages and check that the device driver `IBMIDECD.SYS` loads. When `MSCDEX` loads, observe the drive letter that the computer assigns to the CD-ReWritable drive.

6. Load a data CD into the CD tray; then wait until the busy indicator is not lit.
7. Attempt to read from the CD by typing `dir x:` where *x* is the CD-ReWritable drive letter assigned after the MSCDEX message.

If the computer is able to read the CD, a conflict probably exists between the device drivers loaded in the CONFIG.SYS or AUTOEXEC.BAT files. You need to resolve this device conflict. You might have to set some configuration parameters for your installation; refer to Appendix C, "Customizing device driver configuration settings" on page 3-13 for more information.

If you are unable to access the CD, you might have a hardware problem. If you are unable to read from the CD or a drive letter is not assigned by MSCDEX, go to the next step.

8. Turn off the computer, unplug the cables from the electrical outlets for your computer and all attached devices, and remove the computer cover.
9. Disconnect the IDE and power cable for all IDE devices except the CD-ReWritable drive.
10. Configure the CD-ReWritable drive as a master and connect it to the last IDE connector on the primary IDE port.
11. Reinstall the computer cover. Reconnect all devices; then plug the power cords into electrical outlets.
12. Place the System Diskette in the diskette drive and a data CD in the CD-ReWritable drive.

13. Restart the computer.
14. Attempt to read from the CD by typing `dir C:.` (The CD-ReWritable drive is drive C because it is the only device connected to the IDE port.)

If the computer is able to read the CD, a conflict probably exists with one of the devices that was installed on your computer. You need to resolve this device driver conflict. Check the configuration jumper settings for the other devices or refer to your device documentation.

If you are unable to access the CD, you might have a hardware problem. If the CD-ReWritable drive still does not read from the data CD, the CD-ReWritable drive might be defective. Go to Appendix E, "Help and service information" on page 3-28.

---

**The CD cannot be read.**

Take the following actions:

1. The CD might be dirty; clean it as described in "Caring for a CD" on page 2-4.
2. The CD might be defective; try another CD.
3. The CD is not ISO-9660 or High Sierra Group (HSG) compatible. Check with your place of purchase.

---

**There is no sound from the CD.**

Take the following actions.

1. Check that you are using an audio CD and not a data CD.
2. Adjust the volume control on the drive. See “Front view of the drive” on page 2-2 to locate the volume control if you have connected headphones to the front of the drive.
3. Adjust the sound-adapter volume control. See the documentation that comes with your sound adapter and audio-CD player program.
4. Turn off the computer, unplug the cables from the electrical outlets for your computer and all attached devices, and remove the computer cover. Check that the audio-signal cable connects the CD-ReWritable drive to the sound adapter.

---

**Your screen displays a common error message.**

Take the following actions for two common error messages.

**CDR-103**

The CD in the CD-ReWritable drive is not a High Sierra or ISO 9660 format. The CD-ReWritable drive does not support this format.

**CDR-101**

This message displays when you try to access the CD-ReWritable drive before the drive is ready. The busy indicator lights when

you attempt to access the drive after loading a CD into the CD tray. Wait until the busy indicator stops lighting before attempting to read the drive.

---

**The connectors on the audio cables provided do not fit the connector on your sound adapter.**

Some sound adapters might require a special cable. See the documentation that comes with your sound adapter.

You might have to separately purchase an audio cable for the CD-ReWritable drive. The audio-out connector on the CD-ReWritable drive requires a MPC-2 compliant Molex 70066-G connector. (To locate the drive audio connector, refer to “Rear view of the drive” on page 2-2.) If you are using an IBM computer or IBM sound adapter, refer to Appendix E, “Help and service information” for assistance.

---

**Diagnostics**

The *IBM 2X/4X/24X CD-ReWritable Drive Option Diskette* contains a problem-solving diagnostic program for DOS. You must successfully load the CD-ReWritable drive device drivers before starting the diagnostic program.

To start the diagnostic program, insert the *IBM 2X/4X/24X CD-ReWritable Drive Option Diskette*, type `A:CDDIAG` at the DOS prompt, and press Enter.

---

## **Additional help**

The README file on the *IBM 2X/4X/24X CD-ReWritable Drive Option Diskette* includes troubleshooting hints. If you follow these instructions and still have a problem, go to Appendix E, "Help and service information."

## ***Appendix E. Help and service information***

If you have questions about your new Options by IBM product, or require technical assistance, visit the IBM Personal Computing Support Web site at <http://www.pc.ibm.com/support>. For information about IBM, IBM PC products, or Options by IBM visit the IBM Personal Computing Web site at <http://www.pc.ibm.com>. Additionally, you can receive information from the IBM Automated Fax system at 1-800-426-3395 (in Canada, 1-800-465-3299), or from the Personal Systems Group Bulletin Board System (PSG BBS) at 1-919-517-0001. You can also get help and information through the IBM PC HelpCenter, 24 hours a day, seven days a week. Response time may vary depending on the number and nature of the calls received.

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

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

---

## Step 1: Problem solving

You may be able to solve the problem yourself. Before calling the HelpCenter, please prepare for the call by following these steps:

1. If you are having installation or configuration problems, refer to Appendix D, "Problem solving" on page 3-20, and review any README.TXT files found on the installation diskettes.
2. Visit the Personal Computing Support Web site specific to the model of option you have purchased. Updated installation instructions, hints and tips, or updated system-specific notes are often published in this section. You might find that later device drivers are available that will improve the performance and compatibility for your new option.

If you are installing this option in an IBM computer, also visit the applicable support Web page for that computer model. These pages might also contain useful hints and tips related to installation of this option and might refer to BIOS or device-driver updates required for your computer model. If you are installing the option in a non-IBM computer, refer to the manufacturer's Web site.

3. Uninstall and then reinstall the option. During the uninstallation process, be sure to remove any files that were installed during the previous installation. Many IBM options include uninstallation programs.
4. Check all cabling to be sure that it is correct as shown in this manual. When you connect a cable to a cable connector, pay close attention to the colored stripes along the edge of the cable,

and ensure that they are matched with PIN 1 on both the computer connector and the option connector.

5. If your option contains jumpers or switches, be sure their positions and orientation match the instructions in this manual.

---

## Step 2: Preparing for the call

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

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

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

---

## Step 3: Placing the call to IBM

If you call 90 days or more after the date of withdrawal or after your warranty has expired, you might be charged a fee.

For the support telephone number and support hours by country, refer to the following table or to the enclosed technical support insert. If the number is not provided, contact your IBM reseller or IBM marketing representative.

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

### Additional technical support resources

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

|   |   |
|---|---|
| <i>Online Technical Support</i>         |   |
| IBM Personal Computing Support Web Site | <a href="http://www.pc.ibm.com/support">http://www.pc.ibm.com/support</a> |
| IBM PSG BBS                             | 1-919-517-0001  |
| IBM Automated Fax System                | 1-800-426-3395<br>1-800-465-3299 (in Canada)                              |

### Step 4: Placing the call to computer and BIOS manufacturers

Use the following table for computer manufacturer information. For manufacturers not in the table, contact your IBM reseller.

|              |                |
|--------------|----------------|
| AST          | 1-800-727-1278 |
| Compaq       | 1-800-652-6672 |
| Dell         | 1-800-624-9896 |
| Digital      | 1-800-354-9000 |
| Gateway 2000 | 1-800-846-2301 |
| HP           | 1-208-323-4663 |
| IBM          | 1-800-772-2227 |
| NEC          | 1-800-388-8888 |
| Packard Bell | 1-800-733-4411 |

Use the following table for BIOS manufacturer information. For manufacturers not in the table, contact your IBM reseller.

|                                       |                |
|---------------------------------------|----------------|
| AMI                                   | 1-770-246-8645 |
| Award                                 | 1-415-968-4433 |
| Micro Firmware (Phoenix systems only) | 1-405-321-8333 |
| MR BIOS                               | 1-508-686-6468 |
| Phoenix                               | 1-617-551-4000 |

## Appendix F. Product warranty and notices

The following warranty information applies to products purchased in the United States, Canada, and Puerto Rico. For warranty terms and conditions for products purchased in other countries, see the enclosed Warranty insert, or contact your IBM reseller or IBM marketing representative.

International Business Machines Corporation

Armonk, New York, 10504

### Statement of Limited Warranty

*The warranties provided by IBM in this Statement of Limited Warranty apply only to Machines you originally purchase for your use, and not for resale, from IBM or your reseller. The term "Machine" means an IBM machine, its features, conversions, upgrades, elements, or accessories, or any combination of them. Unless IBM specifies otherwise, the following warranties apply only in the country where you acquire the Machine. If you have any questions, contact IBM or your reseller.*

**Machine:** IBM 2X/4X/24X CD-ReWritable Internal IDE Option Kit (P/N: 20L0551)

**Warranty Period\*:** One Year

\*Contact your place of purchase for warranty service information.

### Production Status

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

### The IBM Warranty for Machines

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

During the warranty period IBM or your reseller, if authorized by IBM, will provide warranty service under the type of service designated for the Machine and will manage and install engineering changes that apply to the Machine.

For IBM or your reseller to provide warranty service for a feature, conversion, or upgrade, IBM or your reseller may require that the Machine on which it is installed be 1) for certain Machines, the designated, serial-numbered Machine and 2) at an engineering-change level compatible with the feature, conversion, or upgrade. Many of these transactions involve the removal of parts and their return to IBM. You represent that all removed parts are genuine and unaltered. A part that replaces a removed part will assume the warranty service status of the replaced part.

If a Machine does not function as warranted during the warranty period, IBM or your reseller will repair it or replace it with one that is at least functionally equivalent, without charge. The replacement may not be new, but will be in good working order. If IBM or your reseller is unable to repair or replace the Machine, you may return it to your place of purchase and your money will be refunded.

If you transfer a Machine to another user, warranty service is available to that user for the remainder of the warranty period. You should give your proof of purchase and this Statement to that user. However, for Machines which have a life-time warranty, this warranty is not transferable.

### Warranty Service

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

IBM or your reseller will provide certain types of repair and exchange service, either at your location or at IBM's or your reseller's service center, to restore a Machine to good working order.

When a type of 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. 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 ensure that the Machine is free of any legal obligations or restrictions that prevent its exchange.

You agree to:

1. obtain authorization from the owner to have IBM or your reseller service a Machine that you do not own; and
2. where applicable, before service is provided —
  - a. follow the problem determination, problem analysis, and service request procedures that IBM or your reseller provide,
  - b. secure all programs, data, and funds contained in a Machine, and
  - c. inform IBM or your reseller of changes in a Machine's location.

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

#### **Extent of Warranty**

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

The warranties may be voided by misuse, accident, modification, unsuitable physical or operating environment, improper maintenance by you, removal or alteration of Machine or parts identification labels, or failure caused by a product for which IBM is not responsible.

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

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2. the amount of any other actual direct damages or loss, up to the greater of U.S. \$100,000 or the charges (if recurring, 12 months' charges apply) for the Machine that is the subject of the claim.

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| Micro Channel     | OS/2       |     |

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## Electronic emission notices

IBM 2X/4X/24X CD-ReWritable Internal IDE Option Kit (P/N: 20L0551)

### Federal Communications Commission (FCC) Statement

**Note:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an IBM authorized dealer or service representative for help.

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

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

Responsible Party:

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

### **Industry Canada Class B emission compliance statement**

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

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

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

### **Deutsche EMV-Direktive (electromagnetische Verträglichkeit)**

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

Der Aussteller der Konformitätserklärung ist die IBM UK, Greenock.

Dieses Gerät erfüllt die Bedingungen der EN 55022 Klasse B.

### **European Union - emission directive**

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

IBM can not accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

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

### **Union Européenne - Directive Conformité électromagnétique**

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