# GATEWAY 2000®
## 4X IDE CD-ROM

# Sanyo 3-Disk

## USER'S GUIDE

4X-SPEED 3 COMPACT DISC

SEL

1 2 3

COMPACT disc

# Notices

This manual was created electronically with a Gateway 2000 4DX2-66V computer system, MS-DOS 6.2, Windows for Workgroups 3.11, PageMaker 5.0, CorelDraw 5.0, Adobe Type Manager, and Adobe Postscript fonts.

# FCC Statement

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.

(2) This device must accept any interference received, including interference that may cause undesired operation.

*Class B Digital Device.* 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 of 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 Gateway 2000 or an experienced radio/TV technician for help.

**Caution to the user:** The Federal Communications Commission warns the users that changes or modifications of the unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**CAUTION:** Since the laser beam used in this CD-ROM drive unit is harmful to the eyes, do not attempt to disassemble the cabinet. Refer servicing to qualified personnel only. **Use of controls of adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.**

This CD-ROM drive is classi-
fied as a CLASS 1 LASER
product. The CLASS 1 LASER
PRODUCT label is located on
the top of the drive unit.

| CLASS 1 |
| LASER PRODUCT TO IEC 825 |
| --- |
| LASER KLASSE 1 |
| PRODUKT NACH IEC 825 |

# Compact disc information

This unit uses CD-ROM discs with the following marks:

# Contents

# Specifications

*Specifications are subject to change without notice or obligation.*

| | |
|---|---|
| *Data capacity* | 630MB/disc maximum |
| *Data transfer rate* | 600KB/sec 4x mode<br>150KB/sec 1x mode |
| *Burst transfer rate* | 8.33Mb/sec. (PIO mode 2) |
| *Access time* | 250ms average |
| *Rotational speed* | 800–2,120 rpm (4x mode)<br>200–530 rpm (1x mode) |
| *Interface* | IDE (ATAPI rev. 1.2) |
| *Memory buffer* | 256K |
| *Hard error rate* | $<10^{-12}$ |
| *Audio* | Stereo headphone jack: 80mV<br>Line output: 0.7V |
| *Sampling frequency* | 44.1KHz |
| *Quantifying bit number* | 16 bit linear |
| *Channels* | 2 |
| *Frequency response* | 20Hz to 20KHz |
| *Dynamic range* | 85db |
| *S/N ratio* | 85db |
| *THD* | 0.05% |
| *Channel separation* | 70db |
| *Operating environment* | 5–45°C, 70% noncondensing humidity |
| *MTBF* | 50,000 POH, 10% duty cycle |
| *Certification* | FCC Class B, UL, CSA, TUV |
| *Power consumption* | DC5V, 0.5A; DC12V, 1.0A |

# Introduction

The amount and variety of material you can access with CD-ROM is amazing; a CD can hold over 600MB of data. This unit accepts standard CD-ROM data discs, music CDs, and photo CDs, but not Macintosh CDs. This CD-ROM drive can hold up to three CDs at a single time, allowing for ease of switching between discs and operations. Because it is ATAPI compliant, this unit conforms to industry standards for ease of configuration.

If your CD-ROM drive is already installed, skip the following sections and go directly to the section titled "Operating the drive."

If installing the CD-ROM drive yourself, go to the section titled "Installing the CD-ROM drive" below. For details regarding the removal and replacement of your system's parts, refer to the *Step-by-step Installation Guide*.

# Installing the CD-ROM drive



Drive bay cover    System case
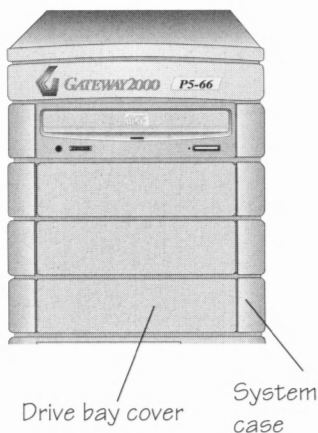
*Tower system drive bays*

The CD-ROM drive cannot be used as an external device and must be installed in a half-height drive bay. Check the length of your IDE cable to determine in which bay the drive can be placed. (If your cable is very short, install the drive in a lower bay.) Remove or rearrange devices as necessary to create space for the CD-ROM drive.

To remove a drive bay cover, insert a small flathead screwdriver between the side of the bay cover and the front of the system case. Gently pry the cover out. Behind each bay cover you remove is a metal plate. On some sytems, these plates can be popped out by hand. On many models, you have to remove screws, and on

some of these, you must remove all the plates in order to remove the lowest one, because they are interlocked. (See the *Step-by-step Installation Guide* for details.) Be sure to observe all the static electricity precautions below.

## Important static electricity precautions!

❏ Before handling any components or touching anything inside the system unit, discharge your body's static electric charge by touching a grounded surface. If the system unit is connected to a grounded outlet, you can touch any part of the system's **metal** chassis.

❏ Do not remove parts from their antistatic bags until you are ready to install them.

❏ Do not lay parts **on** the antistatic bags! Only the insides are antistatic.

❏ When handling parts, hold them by their edges and their metal mounting bracket. Avoid touching components or edge connectors that plug into slots.

❏ Never slide parts over any surface.

❏ Avoid plastic, vinyl, styrofoam, and furs in your work area.

❏ Wear a grounding wrist strap if one is available.

Generally, the CD-ROM drive is installed as the master device on the secondary IDE controller. (The hard disk drive is the master on the primary IDE controller.) We recommend this type of installation to maximize CD-ROM performance. To complete this type of installation, begin with step 1 of the instructions titled "To install the CD-ROM drive as a master" below.

(Alternately, the CD-ROM drive may be installed as a slave device on the primary IDE controller, but this type of installation may affect the drive's performance. If you choose this method of installation, go to the instructions titled "To install the CD-ROM drive as a slave" and begin with step 1.)

## To install the CD-ROM drive as a master:

In order to install the CD-ROM drive as a master, it must be connected to the secondary IDE controller. Check your system's *Technical Reference* manual to find the number of available IDE controllers.
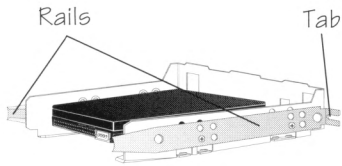
1. Power down the computer.
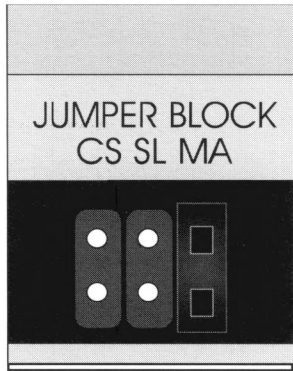
*Fig. 1: Hard drive with rails attached*



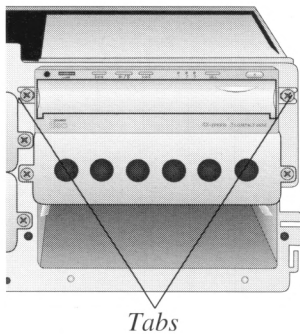*Fig. 2: Configuration jumper set to "Master"*



*Fig. 3: CD-ROM installed with tabs*

2. Remove the computer's cover. Refer to chapter 1 of your *Step-by-step Installation Guide* for detailed instructions. Be sure to observe all static electricity precautions.

3. If your system requires rails, install them on the CD-ROM drive exactly as they are installed on your hard drive. (See Figure 1.)

4. Locate the configuration jumper on the back of the CD-ROM and place the jumper over the right (MA) pair of pins. (See Figure 2.) This configures the CD-ROM as the **master** device.

5. Slide the drive into an empty drive bay and fasten it into place using two screws on each of its sides.

   If your system requires rails, fasten the tabs on the front. (See Figure 3.)

6. Attach a large, 4-pin power supply cable to the power supply connector on the back of the drive. The cable is keyed so it only goes on the correct way. (See Figure 4.)

7. Locate the IDE ribbon cable provided with the CD-ROM drive. (See Figure 5.)

8. Connect the end of the IDE cable to the secondary IDE controller. Make sure the edge with the red stripe is closer to the power supply. (This side of the controller's connector is marked as pin 1.)
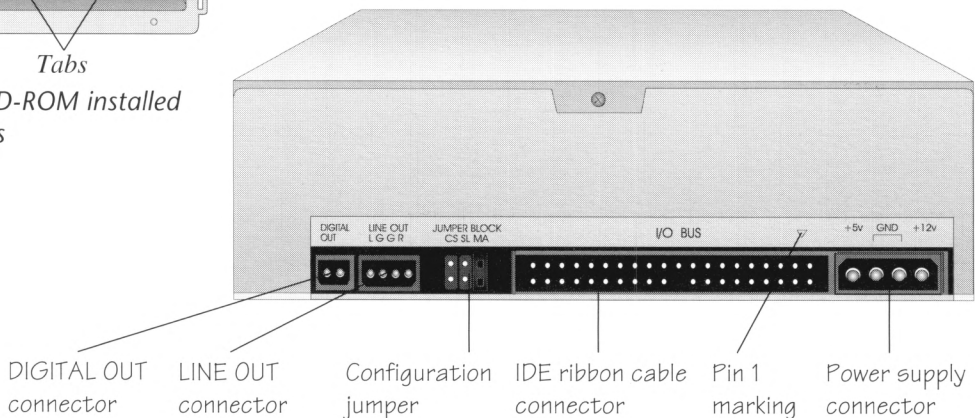


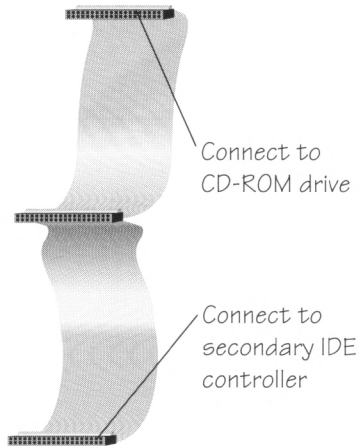*Fig. 4: Back of the CD-ROM drive (configured as master drive)*

Connect to
CD-ROM drive

Connect to
secondary IDE
controller

*Fig. 5: IDE ribbon cable*

9. Attach the connector on the other end of the IDE cable to the connector labelled "I/O BUS" on the back of the drive. Align the cable so its red striped edge (pin 1) is next to the power supply connector. (See Figure 4.)

10. If you have a sound card, connect the sound cable that came with your CD-ROM drive to the connector labeled "LINE OUT" on the back of the CD-ROM drive. (See Figure 4.) Connect the other end to the internal audio input connector on your sound card. (Remove any other sound cables connected to your sound card.)

11. Tighten all connections.

12. Replace the system cover.

13. Go to the section titled "Configuring your system for your CD-ROM."

## To install the CD-ROM drive as a slave:

1. Power down the computer.

2. Remove the computer's cover. Refer to chapter 1 of your *Step-by-step Installation Guide* for detailed instructions. Be sure to observe all static electricity precautions below.

3. If your system requires rails, install them on the CD-ROM drive exactly as they are installed on your hard drive. (See Figure 1.)

4. Locate the configuration jumper on the back of the CD-ROM and place the jumper over the middle (SL) pair of pins. (See Figure 6.) This configures the CD-ROM as the **slave** device.

5. Set your system's hard disk drive as the **master** device by putting a jumper on pins 5 and 6 of its J8 jumper. **Do not touch the underside of the hard drive**. For detailed instructions, see chapter 3 of your system's *Technical Reference* manual.



JUMPER BLOCK
CS SL MA

*Fig. 6: Configuration jumper set to "Slave"*

6. Slide the drive into an empty drive bay. Fasten the drive in place using two screws on each side of the drive.

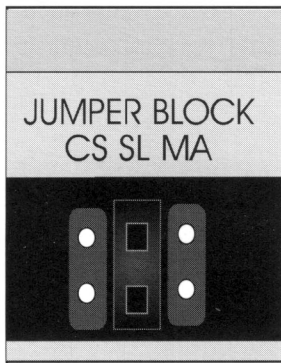If your system requires rails, fasten the tabs on the front. (See Figure 3.)

7. Attach a large, 4-pin power supply cable to the power supply connector on the back of the drive. The cable is keyed so it only goes on the correct way. (See Figure 7.)
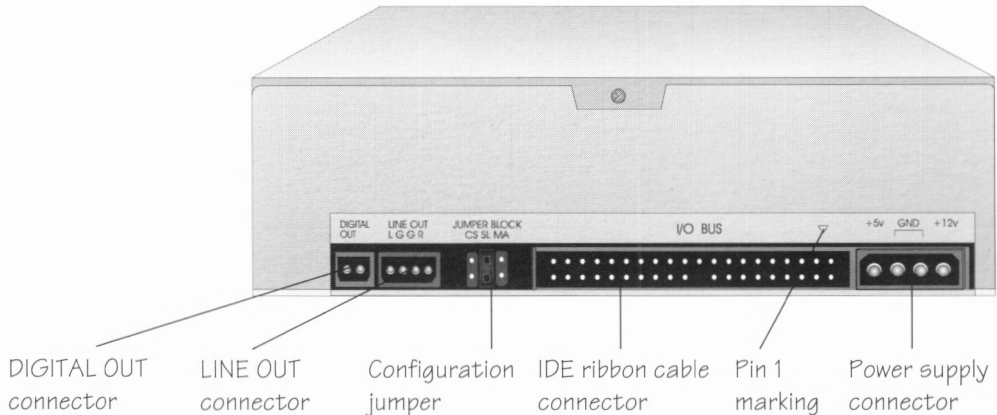


DIGITAL OUT    LINE OUT     Configuration   IDE ribbon cable   Pin 1      Power supply
connector      connector    jumper          connector          marking    connector

*Fig. 7: Back of the CD-ROM drive (configured as slave drive)*



Connect to hard drive

Connect to CD-ROM drive
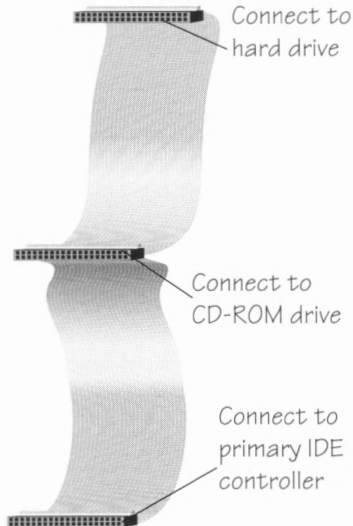
Connect to primary IDE controller

*Fig. 8: IDE ribbon cable*

8. Locate the IDE ribbon cable which connects your hard drive to its IDE controller. (See Figure 8.) If your present IDE cable has at least three connectors on it, proceed to step 9. If it does not, follow the instructions for replacing it below.

Note the way in which your present IDE cable's connectors are positioned (which direction the red stripe is toward). Remove that cable from the IDE controller. Connect the new IDE cable (provided with your CD-ROM drive) to the controller, being careful to position its stripe in the same direction as the old cable.

Remove the old IDE cable from the hard disk drive. Connect the unattached end of the new IDE cable to the hard disk drive.

9. Make sure the IDE controller is connected to the IDE cable at one end and the hard drive is connected at the other. Attach the middle connector on the cable to the connector labelled "I/O BUS" on the back of the drive. Align the cable so its red

striped edge (pin 1) is next to the power supply connector. (See Figure 7.)

10. If you have a sound card, connect the sound cable that came with your CD-ROM drive to the connector labeled "LINE OUT" on the back of the CD-ROM drive. (See Figure 7.) Connect the other end to the internal audio input connector on your sound card. (Remove any other sound cables connected to your sound card.)

11. Tighten all connections.

12. Replace the system cover.

13. Go to the section titled "Configuring your system for your CD-ROM."

# Configuring your system for your CD-ROM

Although your system treats each tray in the CD-ROM drive like a hard drive, you cannot write to them. Since the drive uses the IDE bus, no special controller card is necessary, but your system must be configured to recognize the CD-ROM drive. To accomplish this configuration, run the DOS installation program on the CD-ROM driver diskette provided with your CD-ROM drive.

## To configure your system:

1. Power up the computer.

2. If your system automatically loads Windows, exit Windows.

3. Select the CD-ROM driver disk included with the CD-ROM drive and place it in your floppy drive.
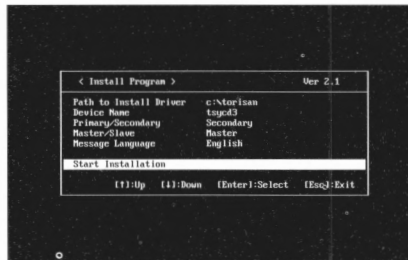
4. At the C prompt (C:\>), type:

    `a:`

and press ENTER.

5. At the A prompt (A:\>), type:

   `install`

   and press ENTER.

6. The following screen appears.



   To accept the default settings listed, be sure "Start Installation" is selected and press ENTER.

   If you wish to change any of these settings, use the up arrow to select the feature you wish to change and press ENTER. Either select the appropriate setting from the list provided on the screen or type in the corrected setting. After making changes, be sure "Start Installation" is selected and press ENTER.

7. A new dialog box appears and asks: "Start Install Program?"



   Make sure "Yes" is selected and press ENTER.

8. WAIT– The program is installing.

9. A new screen appears which says: "Installation is completed. Push Enter Key."



```
Installation is completed.
Push Enter Key.
```

Press ENTER.

10. The screen returns to an A prompt (A:\>).

11. Remove the CD-ROM driver diskette and reboot your system by pressing CTRL+ALT+DEL simultaneously or pressing the RESET button. (Rebooting loads the CD-ROM drive.)

12. Your CD-ROM is ready to run. (Go to the section titled "Operating the drive" for details.)

# Operating the drive
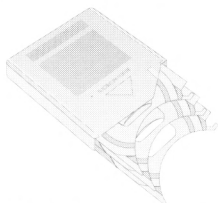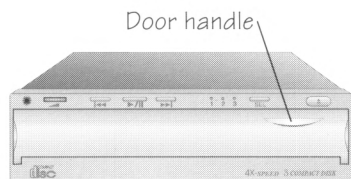


*Fig. 9: 3-disc magazine*
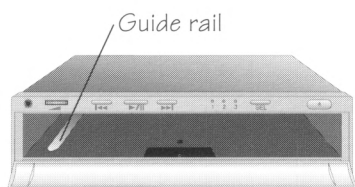


*Fig. 10: CD-ROM drive (closed)*



*Fig. 11: CD-ROM drive (open)*

This CD-ROM drive can hold up to 3 CDs at a time in its 3-disc magazine. (See Figure 9.) This magazine contains three trays and is shipped outside the CD-ROM drive unit. The magazine must be inserted properly in order for your CD-ROM drive to operate.

### To insert the magazine:

1. Open the CD-ROM drive unit door by placing your fingertip on the door handle and pressing downward. The door opens. (See Figures 10 and 11.)

2. Orient the 3-disc magazine according to the instructions on its top side. (The arrow is on top, the open end of the magazine goes into the drive first, and the groove on the bottom of the magazine glides on the guide rail. See Figure 11.)

3. Gently push the magazine into the drive unit until it locks into place.

# Checking installation

After installing and configuring your CD-ROM, check to see that your system recognizes it.

### To check that your CD-ROM is properly installed:

1. Power up the computer.

2. If your system doesn't automatically load it, start Windows by typing:

   ```
   win
   ```

   and pressing ENTER at the C prompt (C:\>).

3. Double-click on the Main icon.

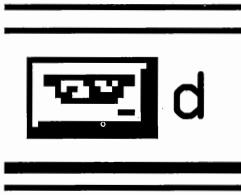4. Double-click on the File Manager icon.

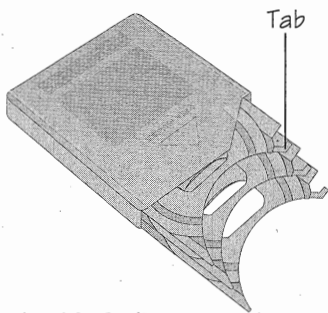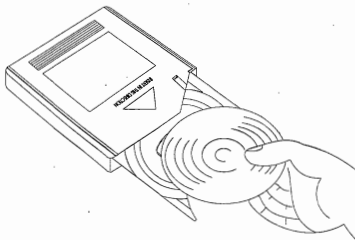*Fig. 12: CD-ROM drive icon (designation D) in File Manager*
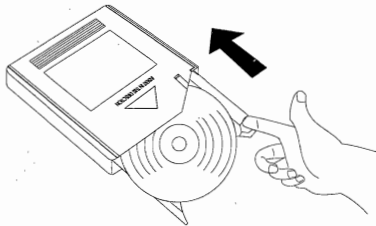
5. Next to the icons for your hard disk drive (C) and your floppy drive (A) are three CD-ROM drive icons, one for each of the trays in your unit's magazine (D, E, and F). (See Figure 12.) Depending upon the number of drives previously installed in your system, your CD-ROM drive trays may have different letter designations, such as E, F, and G.

## Inserting CDs



*Fig. 13: 3-disc magazine*

Because of the 3-disc magazine, the procedure for loading a CD into this CD-ROM drive is different from the procedure for most CD-ROM drives.

### To insert a CD:

1. Power up the computer.

2. Open the CD-ROM drive unit door.

3. Press the Eject button. After a few seconds, the magazine ejects.

4. Grasp the 3-disc magazine and pull it completely out of the drive unit. Turn the magazine around so the open end faces you.

5. Select a tray and place a fingertip on its tab. Gently pull it out until it stops. (See Figure 13.)

6. Place a CD **label side down** in the circular depression in the tray. (See Figure 14.)

   (Repeat steps 5 and 6 for the other two trays if desired.)

7. Push the tray back into the magazine until it locks into place. (See Figure 15.)

8. Insert the 3-disc magazine back into the unit, being certain to orient it according to the directions on its top. Push it into the unit until it locks into place.

9. Close the door. (The door should be closed whenever possible to keep dust out of the drive unit.)



*Fig. 14: Inserting a CD*



*Fig. 15: Closing the 3-disc magazine*

The drive automatically checks to see the disks are properly loaded and then sets itself to the first track of the lowermost tray containing a CD. If no action is taken, the motor stops after a minute.

## Indicator lights

Although your system designates each of the trays in your CD-ROM drive unit as a letter, the front of the unit represents each tray as a number. The bottom tray is 1, the middle tray is 2, and the top tray is 3. Each tray also has a corresponding indicator light. (See Figure 16.) If a tray is loaded with a CD-ROM data disc, its indicator light is green; if the disc in the tray is an audio CD, the light is orange.



Headphone jack  Drive Door  Volume control  Backward Skip button  Play/ Pause button  Forward Skip button  Indicator lights  Disc Select button  Door handle  Eject button
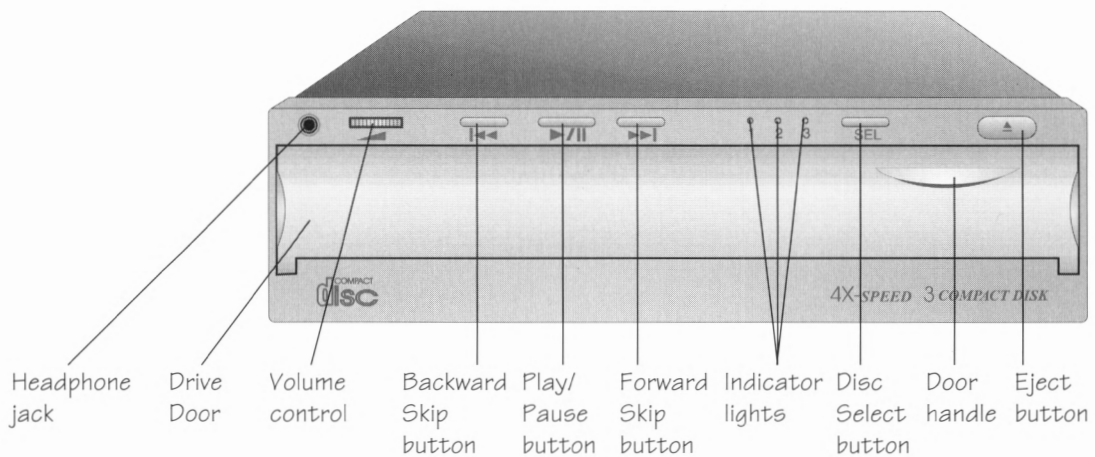
*Fig. 16: Front of the CD-ROM drive*

## CD sound

### To play an audio CD:

1. Insert an audio CD according to the directions in the section titled "Inserting CDs."

2. Press the Select button (SEL) until the indicator light for the drive tray containing your audio CD is lit. (See Figure 16.) The bottom tray is 1, the middle is 2 and the top is 3.

*Note:* You may wish to play audio CDs through the Microsoft multimedia software on the *Gateway 2000 System CD* or, if your system has it, through your sound card software.

If using *System CD* software, refer to the directions in the CD's jewel case booklet.

If using your sound card software, refer to the directions that came with the card.



Backward Skip button     Play/ Pause button     Forward Skip button

*Fig. 17: Audio CD controls*



*Fig. 18: Headphone jack*



*Fig. 19: Volume control*

3. Press the Play/Pause button once. (See Figure 17.) The indicator light begins flashing. The first track on the CD begins playing.

**Pausing/resuming play:**

To pause, press the Play/Pause button once. (The motor will stop after 10 minutes if no function is selected.)

To resume, press the Play/Pause button once again.

**Changing tracks:**

To skip to a later track, press the Forward Skip button once (or the number of tracks you wish to advance).

To skip to an earlier track, press the Backward Skip button once (or the number of tracks you wish to go back).

**Fast forwarding/reversing play:**

To advance at high speed while playing, press and hold down the Forward Skip button.

To reverse at high speed while playing, press and hold down the Backward Skip button.

The hole near the left edge of the drive is a mini stereo jack suitable for headphones or powered speakers. (See Figure 18.) You can also use it as an AUX input to a larger stereo system.

The wheel to the right of the headphone jack is a volume control. (See Figure 19.) We recommend you turn it all the way left (minimum volume) before you put on headphones, and then turn the volume up (to the right) after the CD starts.
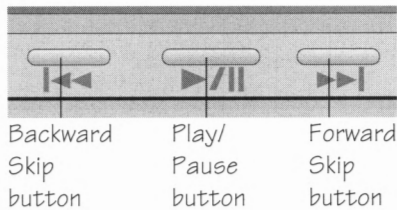
# CD software

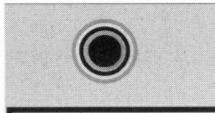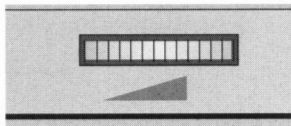There are many software programs available on CD, and these can be installed on your system as easily as programs on floppy disks.

## To install software from a CD through Windows:

*Note:* When a tray containing a data CD is selected, the Play/Pause, Forward Skip, and Backward Skip buttons do not work.

1. Insert a CD-ROM data disc according to the directions in the section titled "Inserting CDs."

2. If your system doesn't automatically load it, start Windows by typing:

   `win`

   and pressing ENTER at the C prompt (C:\>).

3. From Windows Program Manager, select the File menu and choose *Run*.

4. When asked for a command line, type:

   `d:\setup`

   and press ENTER (or type:

   `d:\install`

   and press ENTER.)

   Check your software documentation for the correct command line.

   (This manual assumes you are installing software from the CD-ROM tray designated as drive D, the bottom tray. If using a drive tray with a different designation, substitute the appropriate letter when using these command lines: For example, `e:\setup`.)

6. Follow any directions provided.

# Troubleshooting checklist

Complete the following checklist if you encounter any difficulty operating your CD-ROM drive. Before checking any internal devices or connections, power down the system and remove the cover. After checking each item, replace the cover (don't fasten the screws), and power up the system to see if it works. When everything works, fasten the cover in place.

❏   Are volume levels set properly?

❏   Are headphones or audio connections securely inserted in the proper jacks or connectors?

❏   Is amplifier or speaker power turned on?

❏   Is the CD free of scratches and residue and inserted **label side down** in the magazine tray ?

❏   Are all power switches turned on? If the system is plugged into a power strip or surge protector, is it turned on?

❏   Are the ends of the IDE ribbon cable and the power cord securely attached and not frayed?

❏   Are the edges of the colored cables aligned correctly?

❏   Are the jumper settings correct for the CD-ROM and the hard disk drive?

❏   Do the sound card settings match its manual?

❏   Was the CD-ROM driver properly loaded?

❏   If these procedures fail to correct the problem, check the *Technical Reference* manual that came with your system or consult your warranty manual for our FaxBack service phone number.

**GATEWAY 2000**®