



CRW-2410S

24x/10x/40x CD-RW Drive

User's Manual



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Product Name:	CRW-2410S
Manual Revision:	1.00 E806
Release Date:	July 2001

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FCC/CDC Statements

Federal Communications Commission Statement

This device complies with FCC Rules Part 15. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received including interference that may cause undesired operation.

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 manufacturer's 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 to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

WARNING! The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

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

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Safety Information

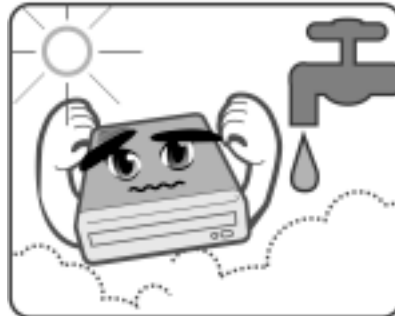
Observe the following precautions before installing and using the ASUS CRW-2410S Drive!

Installation Notices

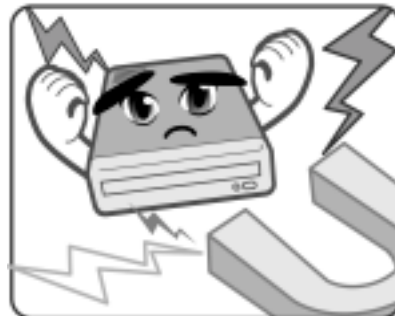
Do not place this device in an unstable position, or in one that vibrates.



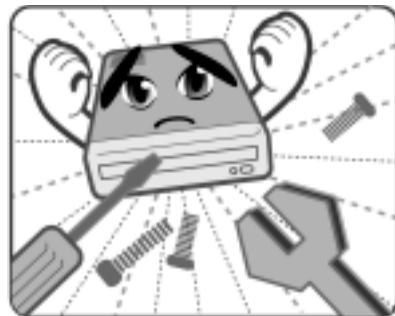
Do not place this device in areas where there is direct sunlight, high humidity, or damp condition.



Do not use or place this device near magnetic fields, televisions, or radios, where there is interference that may affect the performance of the drive.



Do not attempt to disassemble or repair the drive. Opening the drive may result to exposure to laser radiation.



Safety Information

Using the Device

- Do not move the device from a cold to a warm or hot environment. Drastic change of temperature is harmful to the device.
- Before moving or uninstalling the drive, remove a disc from it, if any.
- Prevent liquids or any metal to get into the device. If this situation occurs, contact your retailer for help.
- Do not use any evaporating solvents to clean the device. If you accidentally sprayed any solvent on the device, use a clean cloth to wipe it. You may also use a neutral cleaner to dilute the solvent to easily wipe it from the device.
- Try not to interrupt the supply of power while the device is in reading or writing mode.
- Do not place damaged discs inside the device.
- Do not place discs into the device immediately if they came from a cold environment, specially during cold seasons. Wait until the discs have reached room temperature.

Package Contents

Upon opening your ASUS CRW-2410S drive package, check if all the following items are present and in good condition. If any of the items is damaged or missing, contact your retailer immediately.

- ASUS CRW-2410S drive
- IDE cable
- Drive screws
- Nero 5 Burning ROM disc
- ASUS 24X CD-R disc
- ASUS 10X CD-RW disc
- User's Manual

Welcome!

Thank you for buying the ASUS CRW-2410S Drive!

To ensure proper installation and use of this device, read the instructions and other important information contained in this manual.

Product Introduction

Specifications

The CRW-2410S has the following specifications.

- **Speeds** 24X writes
10X rewrites
40X reads
- **Interface** ATAPI specification
- **Technology support** BURN-Proof technology
Zone CLV Recording technology
FlexSS-BP Speed Control technology
- **Buffer size** 2MB
- **Application discs** 12cm or 8cm diameter, 1.2mm thick
CD-ROM, Video CD, CD-DA, Photo CD, CD-I,
CD-G, CD-TEXT, CD Extra
- **Recording form** Orange Book Part 2, 3
Disc-at-once, Track-at-Once
Fixed packet, Variable packet
- **OS compatibility** MS-Windows 95/98/98SE/ME/2000/NT4.0
- **Power supply** DC 5 x (1 +/- 10%)V
DC 12 x (1 +/- 10%)V
- **Dimensions** 148.0 (w) x 192.4 (d) x 42.3 (h) mm
- **Mass** 950 g

NOTE: Refer to the section "Technical Information" on page 24 for detailed specifications.

Features

The ASUS CRW-2410S is a CD-RW drive with 24X-write, 10X-rewrite, and 40X-read capabilities. The drive complies with the AT Attachment Packet Interface (ATAPI) specification and comes equipped with a host of the latest innovative technologies in CD recording.

BURN-Proof Technology

The BURN-Proof technology, which stands for **Buffer Under RuN Proof**, prevents the buffer underrun error caused by an empty data buffer. It does so by means of a controller that continuously monitors the status of the data buffer throughout the write process.

If the available data drops below 10% of the total buffer capacity, the controller initiates a controlled interrupt to the writing process and sets a write marker. New data is then loaded to the cache, and the laser is repositioned. The drive synchronizes the data already written with the new data in the buffer, and repositions the laser behind the sector most recently written.

This technology also ensures that your PC remains fully operational throughout the writing process, and available for other applications.

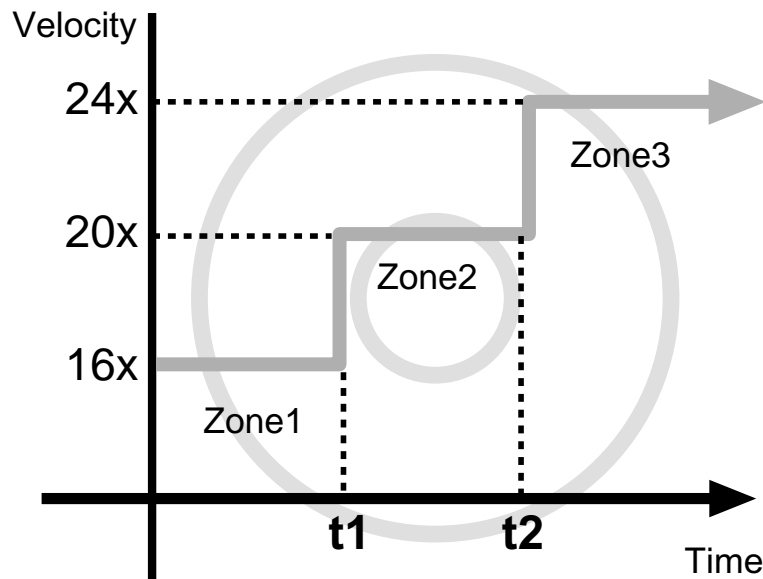
Zone CLV Recording Technology

The Zone Constant Linear Velocity (CLV) recording method allows you to achieve a higher recording speed by using a different speed for each of the three zones partitioned from the inner to the outer area in a disc.

When using the Zone CLV, the recording in Zone 1 is 16x speed, then increases to 20x speed in Zone 2, after t_1 time. In Zone 3, the recording reaches 24x speed, after t_2 time. When the recording is complete, the drive accesses and checks the recorded data area to execute synchronization between Zones 1 and 2, then between Zones 2 and 3. The BURN-Proof technology is used to execute this synchronization, preventing any gap between the zones.

The illustration on the next page shows the Zone CLV process.

Zone CLV Recording Method



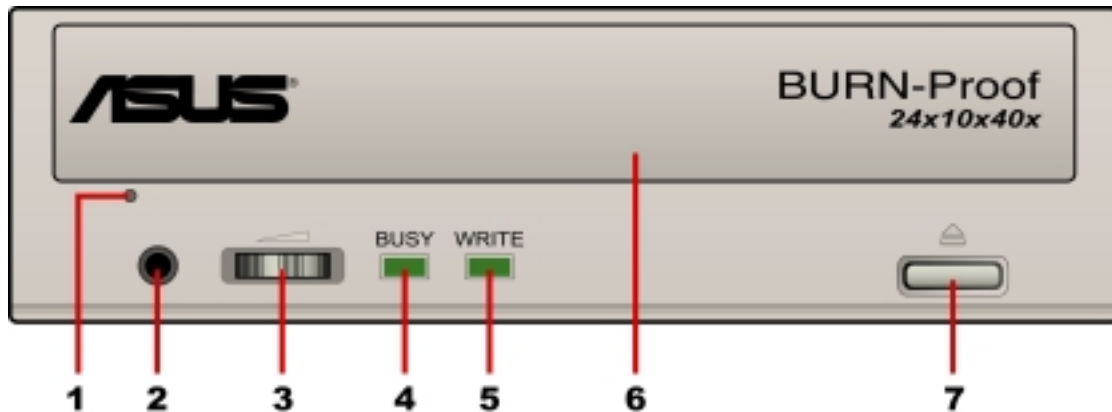
FlexSS-BP Speed Control Technology

The FlexSS-BP technology stands for “Flexible Speed” and “Flexible Strategy”. This technology prevents problems with recording media when writing at high speeds like 20x or 24x.

Because of disc variations caused by serpentine tracks or off-centered discs, Flexible Speed allows the drive to assess the physical condition of the disc then determine the suitable recording speed for the disc. While recording, the drive continues to monitor the disc condition and flexibly switches to different speeds to maintain the optimum recording condition.

Flexible Strategy measures and evaluates the recording condition of recorded area at switching zones. This feature can restart the recording after checking the pit condition at the recording stop position and the optimization of the recording parameters.

Front Panel



1. Emergency eject pinhole

In cases when you cannot eject a disc from the drive using the eject button due to power failure or software problems, insert a pin into this hole to mechanically eject the tray and the disc.

2. Headphone jack

This jack allows you to connect a headphone with a stereo mini-plug.

3. Headphone volume dial

This volume dial allows you to control the volume of the headphone connected to the drive. Turning the dial to the left decreases the volume, turning to the right increases volume.

4. BUSY indicator

This LED indicates three types of conditions.

<i>OFF</i>	Paused or stopped
<i>ON</i>	Reading and accessing a disc
<i>BLINKING</i>	TOC reading, ejecting a disc

5. WRITE indicator

This LED turns ON while data is being written on the disc.

6. Disc tray

This tray holds the disc.

7. Eject button

This button allows you to eject the disc tray to place a disc or remove a disc.

Rear Panel



1. Digital audio connector

This connector is for a digital signal output cable.

2. Analog audio connector

This connector is for an analog signal output cable.

3. Factory test pins

These pins are used for factory testing.

NOTE: *DO NOT* cover these pins with jumper blocks.

4. CS/SL/MA pins

These pins are used to set the drive to either a master or slave device.

5. IDE connector

This connector is for a 40-pin IDE cable to connect the drive to the IDE interface on the motherboard.

6. Power connector

This DC connector is for a 4-pin power cable from the system power supply.

Installation

System Requirements

Before installing and using the CD-RW drive, make sure that your computer system meets the following requirements.

- IBM-compatible Pentium 166MHz or higher PC
- MS-Windows 95/98/98SE/ME/2000/NT4.0 operating system
- At least 64MB system memory, 128MB is recommended
- An empty 5.25-inch external drive bay
- HDD empty storage capacity of 100MB or more
Average seek time: 20ms or less
Transmission rate: 2 MB/s or more

NOTE: *Do not use a hard disk that calibrates thermally during operation.*

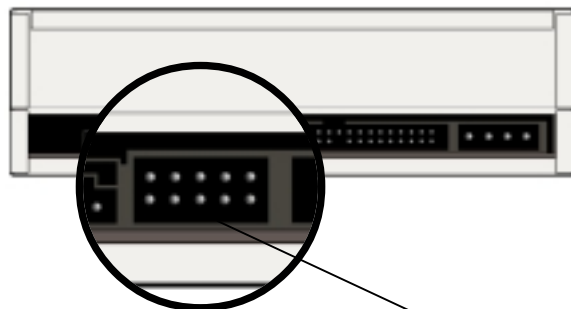
- Recommended media:

CD-R (x2 ~ x24)	TAIYOYUDEN, MITSUMI CHEMICAL, MITSUBISHI CHEMICAL, RICOH, RITEK, PRINCO
CD-R (x2 ~x16)	TDK, HITACHI MAXELL, FUJI FILM, PIONEER VIDEO, KODAK
CD-RW (x2 ~ x10)	MITSUBISHI CHEMICAL, RICOH

Setting the Jumper Terminals

Configure the the jumpers to set the device to master or slave mode before physically installing it to your computer chassis. Use jumper blocks to short the pins to your desired setting.

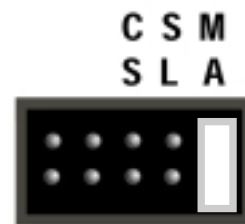
CAUTION: Make sure to correctly place the jumper blocks over the pins. Failure to do so may cause irreparable damage to the drive!



Jumper Terminals

Master Mode

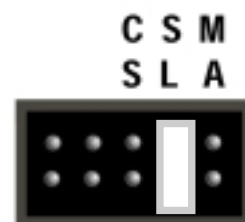
Cover the two pins below the label MA to set the CD-RW drive as a Secondary Master drive. This is possible only if your computer supports four IDE devices. The hard disk in the computer is set as Primary Master.



Slave Mode

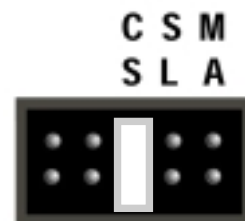
Cover the two pins below the label SL to set the CD-RW drive as a Slave device if your computer supports only two IDE devices.

If your computer supports four IDE devices, this setting sets your CD-RW drive as a Primary Slave or Secondary Slave.



Cable Select Mode

Cover the two pins below the label CS if your computer supports a Cable Select (CSEL) signal. You need an exclusive interface cable for this setting. Refer to your computer manual for details.

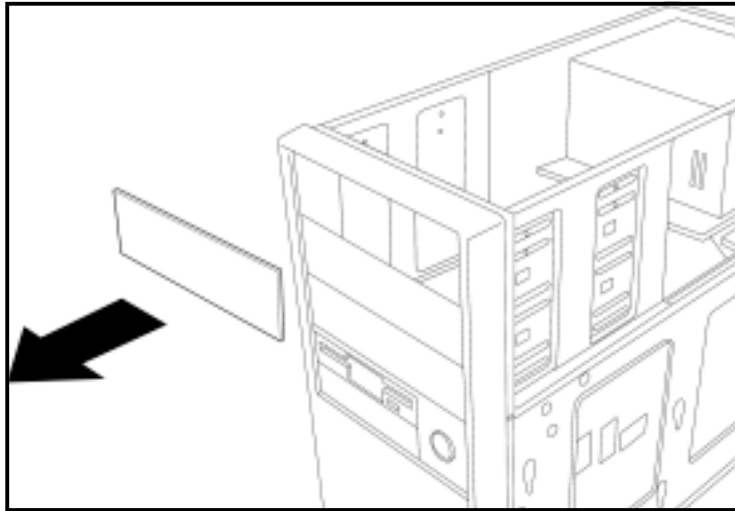


Installing the CD-RW Drive

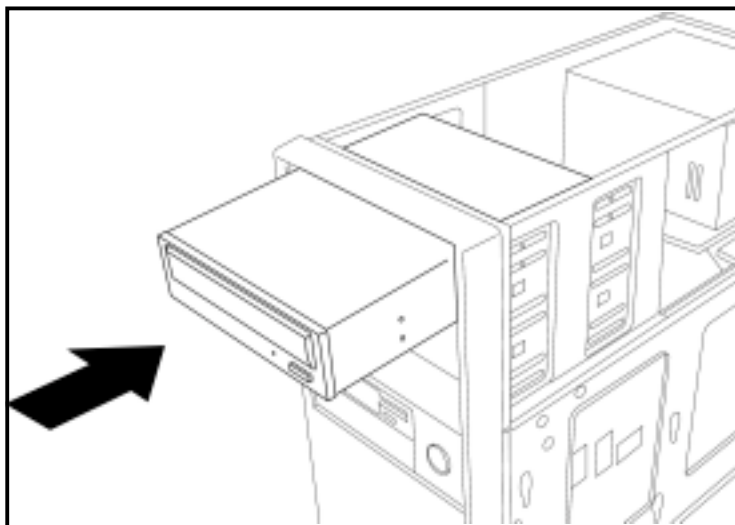
Follow these steps to install the drive into the computer chassis.

NOTE: Refer to your computer manual for specific instructions on opening the chassis and installing drives.

1. Remove the cover of an empty 5.25-inch external drive bay.

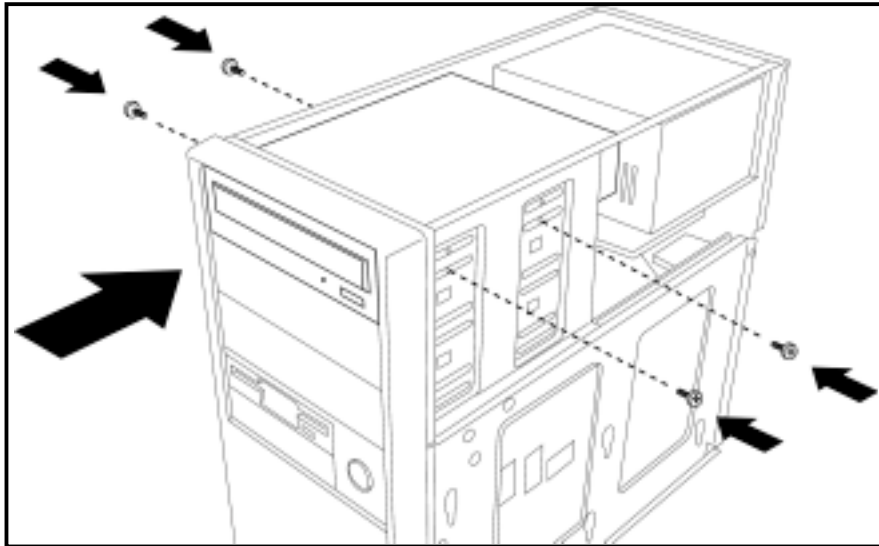


2. Carefully insert the CD-RW drive into the bay and push it inward until it is flushed to the chassis front panel. The holes on the sides of the drive should align with the holes on the drive bay.



3. Secure the drive with screws that came with the drive package. Use two screws on each side of the drive.

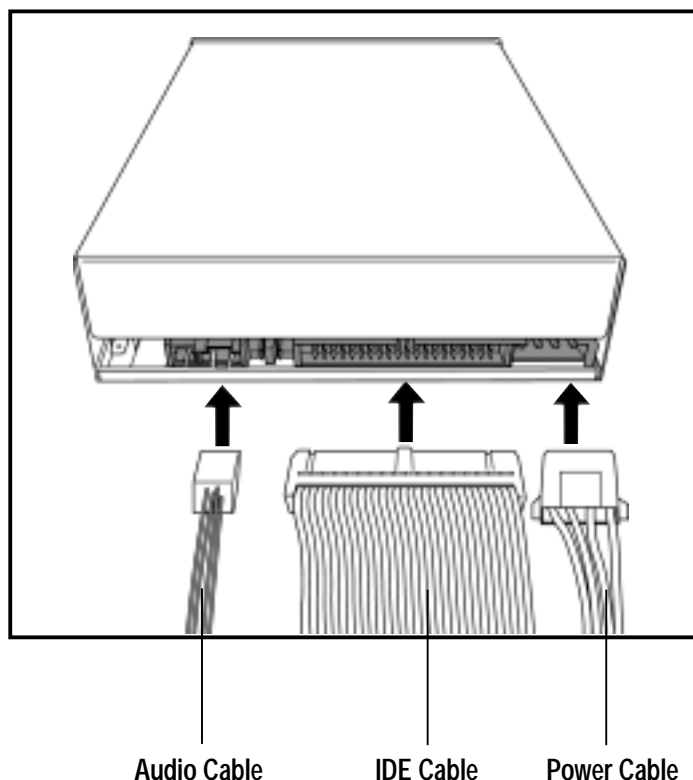
IMPORTANT: Depending on the space on your chassis, you may need to connect the drive cables before securing the drive into the chassis. For cable connections, proceed to the following section, "Connecting the Drive Cables."



Connecting the Drive Cables

1. Connect the power cable plug to the power connector on the rear panel.
2. Connect the 40-pin IDE cable plug to the IDE connector, matching the red pin stripe on the cable with Pin 1 on the connector.
3. If your computer has a sound card or an onboard audio feature, connect an audio interface cable to the 4-pin analog audio connector on the rear of the drive. Connect the other end of the audio cable to the connector on the sound card or on the 4-pin CD connector on the motherboard.

CAUTION! *All the cable plugs are slotted so that they fit in only one orientation. If a plug does not fit in completely, try reversing it. DO NOT use too much force when fitting the cable plugs.*



NOTE: *Replace the computer cover according to your computer manual.*

Installing the Device Driver

Before you can use your CDR-2410S drive, you must first install the device driver.

IMPORTANT! *Make sure you that you have completed the drive installation and have replaced the computer cover before you proceed.*

Follow these steps to install the device driver.

1. Turn on the computer.
2. Your operating system (OS) detects the new hardware (CD-RW drive) that you installed and automatically looks for the appropriate driver.
3. Follow the screen instructions to install the driver.

Installing the CD-RW Software

The ASUS CRW-2410S drive supports the following software applications.

By AHEAD software gmbh

- Nero Burning ROM
- In CD
- Wave Editor
- Cover Designer

By Microsoft Corporation

- Media Player
- CD Player
- Active Movie

By Kodak

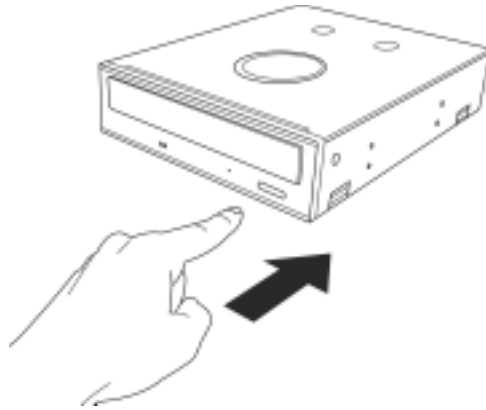
- Kodak Photo CD Player, V2.0 or higher

NOTE: *Refer to the manuals that came with the specific software for installation instructions.*

CD-RW Drive Basics

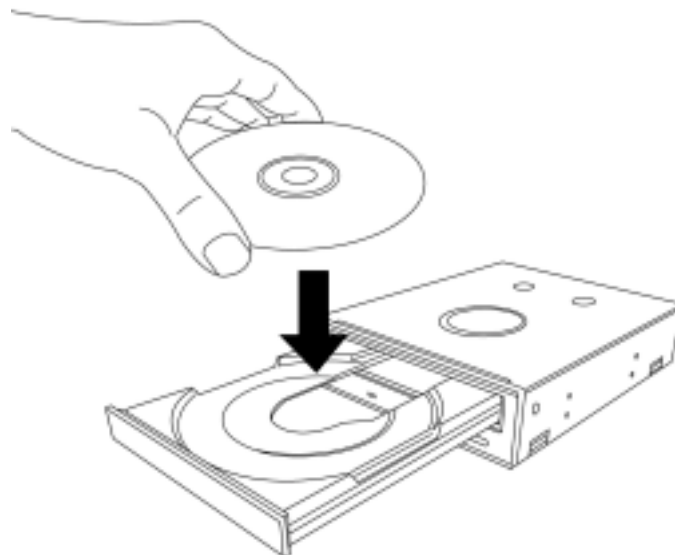
Placing a Disc into the Drive

1. Press the eject button on the front of the drive to eject the tray.



2. Place the disc on the drive tray with the label (printed) side up.

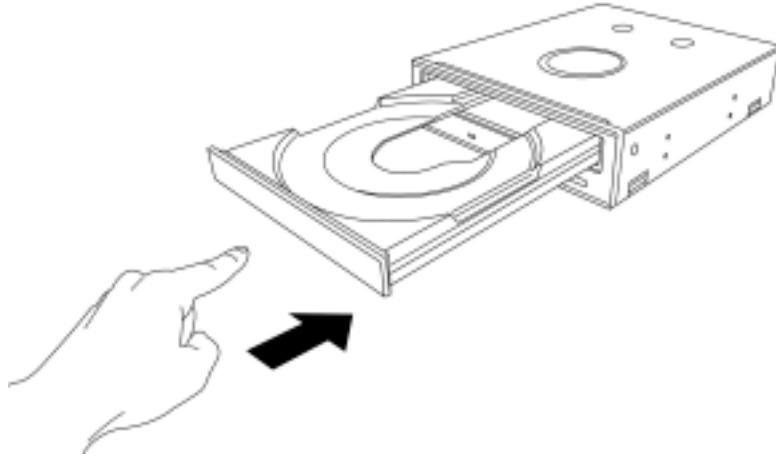
NOTE: *If you are using a 12cm disc, place it on the tray making sure that it fits the outer circular border. This border helps hold the disc in place. If you are using an 8cm disc, place it on the inner circular border on the tray.*



3. Press the drive eject button or lightly push the center of the drive tray to replace the tray inside the drive.

Ejecting a Disc from the Drive

1. Press the eject button on the front of the drive to eject the tray.
2. Carefully remove the disc from the tray.
3. Press the drive eject button or lightly push the center of the drive tray to load the tray back into the drive.



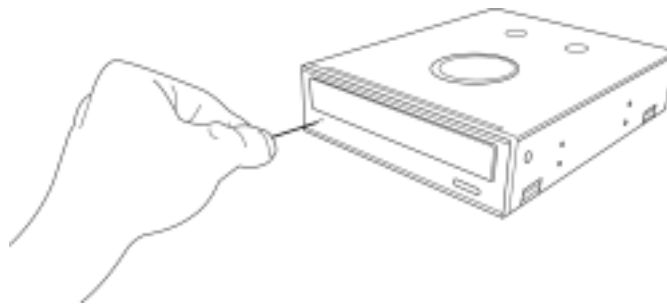
Using the Emergency Eject Pinhole

The emergency eject pinhole on the front of the drive allows you to manually eject the drive tray and remove a disc from the drive in the following instances:

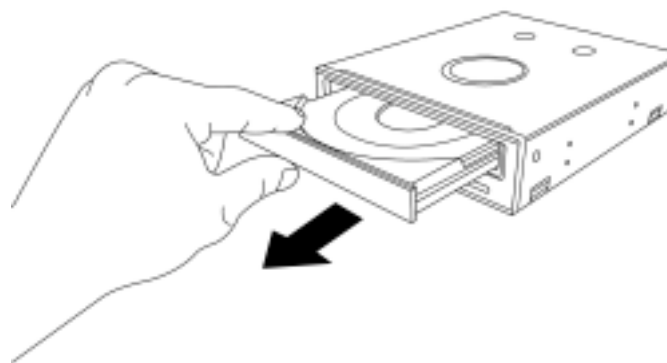
- supply of power to the computer is cut due to electrical power outage
- the drive malfunctions

Follow these steps to eject the drive tray using the emergency pinhole.

1. Insert a pointed rod, such as a pin, a needle, or paper clip, small enough to fit into the emergency pinhole.



2. Carefully pull the tray out and remove the CD.

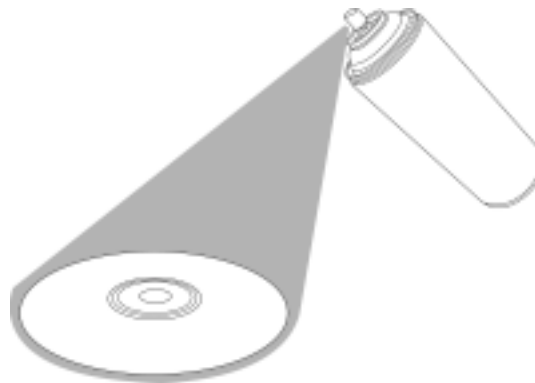


Using Compact Discs

Take note of the instructions in this section when using compact discs. These instructions will help you avoid damaging the discs and your CD-RW drive.

Cleaning a Disc

Spray the disc with compressed air for about five seconds to get rid of the dust on a disc.



Handling a Disc

Hold a disc by the edges. Do not touch the disc surface.



Technical Information

Environmental Specifications

Temperature	Operation: 5°C < to < 45°C Storage: -30°C to < 60°C
Humidity	Operation: 20% to 80% non-condensing Storage: 90% (40°C, 48 h)
Mean-Time-Between-Failure (MTBF)	30000 POH DUTY* 20% (read operation)
Life	Tray Loading: 20000 cycles Traverse mechanism: 1000000 seek
Vibration	Operation: Read 0.98 m/s ² (0.1 G) [(10 to 500) Hz] Random vibration Non-operation (transport): 800 cpm (13.3 Hz) 3 mm (1.06 G) Up/Down 20 min.
Impact	Drop impact: 490 m/s ² (50 G), 3 directions, 6 ms

* POH - Power On Hour (live current time)
DUTY - Actual operation time

Electrical Characteristics

Power Consumption	DC 5V DC 12V	2.0A (peak) 2.0A (peak)
I/O Terminal	Power connector ATAPI terminal Audio out	4-pin +5V, +12V 40-pin 4-pin (analog) 2-pin (digital)
Audio	Sampling T.H.D. Line out Headphone	44.1 kHz 0.15% at 1 kHz 0.2% at 1 kHz (Vol.=1mW)
		(Vol.=Max.)
	Channel separation:	70 dB 28 dB
	S/N ratio:	70 db 65 dB
	Output:	0.7V (typical) 0.9V (typical)