

# Welcome!

## Thank you for buying the ASUS CRW-3212A 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-3212A has the following specifications.

- **Speeds** 32X, 24X, 16X, 12X, 8X, 4X writes  
12X, 10X, 8X, 4X, 2X rewrites  
16X~40X reads
- **Interface** ATAPI specification
- **Technology support** FlextraSpeed™ Technology  
FlextraLink™ Technology  
Double Dynamic Suspension System II (DDSS II)  
Zone CLV Recording Technology
- **Data buffer size** 2MB
- **Application discs** 12cm or 8cm diameter, 1.2mm thick  
CD-Audio, CD-ROM, CD-ROM/XA, CD-I,  
Mixed Mode CD-ROM, Photo CD, CD-Extra,  
Video CD, CD-Text, DVCD, CD-G, Karaoke  
CD, I-trax, Bootable CD
- **Recording form** Orange Book Part 2, 3  
Disc-at-once, Track-at-once  
Session-at-once, Packet write,  
Overburn, DAO-RAW mode
- **OS compatibility** MS-Windows 98/98SE/ME/2000/XP/NT  
SCO Unix, Linux, Netware, OS/2 Warp
- **Power supply** DC 5 x (1 +/- 5%)V  
DC 12 x (1 +/- 10%)V
- **Dimensions** 41.5 (h) x 149.0 (w) x 197.5 (d) mm
- **Mass** 997 g

**NOTE:** Refer to the section "Technical Information" on page 26 for detailed specifications.

## Features

The ASUS CRW-3212A is a CD-RW drive with 32X-write, 12X-rewrite, and 40X-read capabilities. The drive complies with the AT Attachment Packet Interface (ATAPI) specification and comes equipped with the latest innovative technologies in CD recording.

Highlighting the major characteristic of ASUS CD-RW drives, the CRW-3212A strategically identifies the media quality at the beginning of the recording so that it can apply the appropriate writing speeds and ensure effective data storage. Thanks to the FlextraSpeed™ and FlextraLink™ technologies developed by ASUS.

FlextraSpeed™ increases accuracy and reliability when rewriting across a broad base of certified media, while FlextraLink™ prevents buffer underrun problems to eliminate the creation of unusable discs. The following sub-sections describe these technologies in detail.

### FlextraSpeed™ Technology

The ASUS FlextraSpeed™ technology provides the optimum solution to ensure quality recording when using discs that require flexible speeds. The CRW-3212A drive employs this technology that allows automatic recording speed adjustment based on the recording media.

In addition to the fact that there are low and high quality recording media, various other factors such as dye layer, temperature, humidity, dust, fingerprints, etc., affect the recording characteristics of CD-R and CD-RW discs. Due to these factors, some discs may not be able to stand the high-speed capabilities of the latest CD-RW drives. The FlextraSpeed™ technology solves this problem by automatic assessment of the disc quality and recording capability. The recording speed is based on these factors. If you use a high quality recording disc, you can maximize the recording capability of the drive and get the best quality output. If you use a low quality disc, the drive speed adjusts to the level that is most appropriate for the disc, still optimizing the disc recording capability.

The FlextraSpeed™ technology also helps maintain the CD-RW drive because of the controlled motor rotation speeds and reduced noise caused by spindle air, thus prolonging the drive motor's life and ensuring high-quality recording.

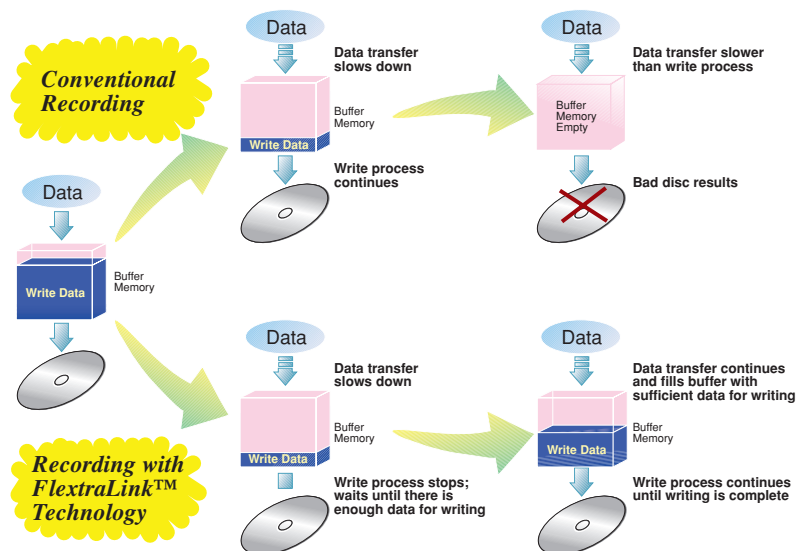
## FlextraLink™ Technology

The ASUS FlextraLink™ technology provides a seamless combination of flexibility and ultra-reliable recording quality.

FlextraLink™ incorporates a flexible strategy that prevents buffer underrun problems caused by an empty data buffer. This CD-RW drive technology allows continuous monitoring of the data buffer status during the write process. Once the available data drops to approximately 1% of the total buffer capacity, the drive stops recording and marks the last write position. When new data is received from the host, it is loaded to the data buffer, and the laser is repositioned to link the new data with the data already written. FlextraLink™ uses minimal system resources so that your PC remains fully operational throughout the writing process, and available for other applications.

The diagram below shows the advantage of the FlextraLink™ recording technology.

### FlextraLink™ Technology Solution





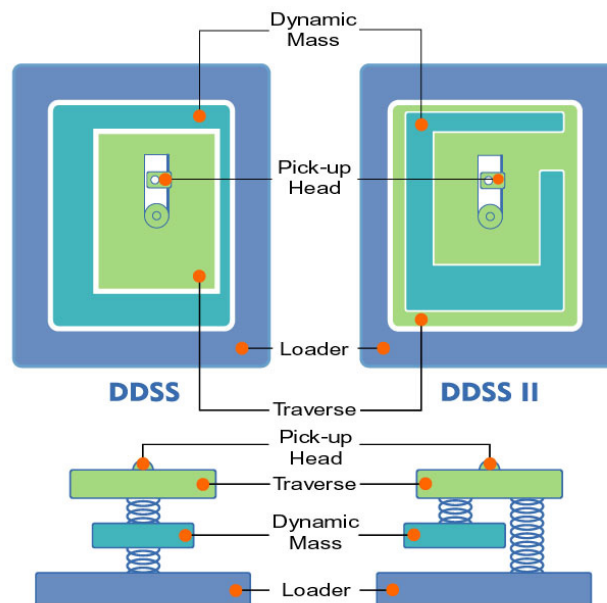
## Double Dynamic Suspension System (DDSS II)

The DDSS II is an enhanced follow up to the DDSS anti-vibration system developed by ASUS. The DDSS CD-ROM technology is designed to reduce the vibration generated from spindle rotation of over 8900 rpm of 40X CD-ROM drives. The DDSS II improves this feature by handling up to over 10,000 rpm of the new 50X drives. In addition, the DDSS II stabilizes the pick-up head of the drive in both horizontal and vertical directions, making tracking and focusing even more precise.

Like the DDSS, the DDSS II vibration absorption structure contains a "dynamic mass" that can absorb the vibration caused by high revolution of spindle motor. However, the DDSS II moves the dynamic mass to be suspended to the chassis, thus providing more stability and accuracy when accessing data from the disc.

The following diagram illustrates the DDSS/DDSS II design structure.

### DDSS / DDSS II Design Structure

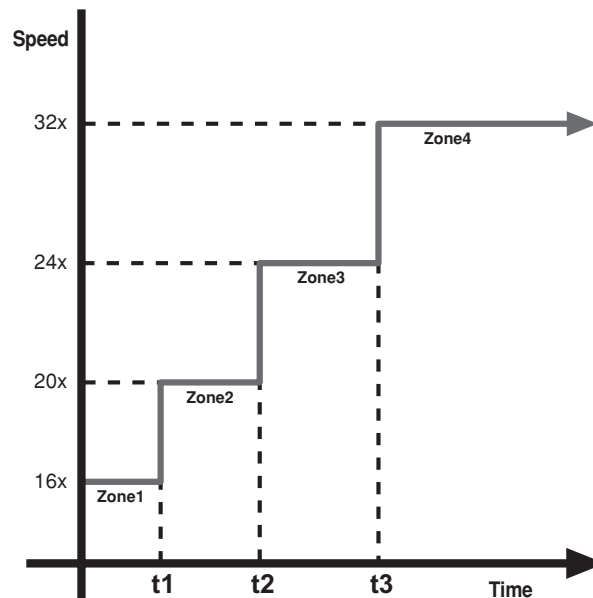


### Zone CLV Recording Technology

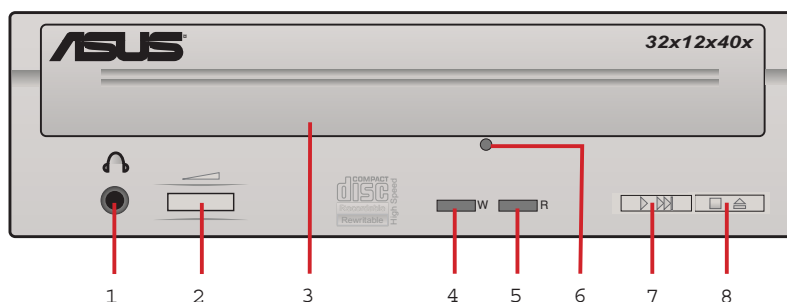
The Zone Constant Linear Velocity (CLV) recording method allows you to achieve a higher recording speed by using a different speed for each of the four zones partitioned from the inner to the outer area in a disc.

When using the Zone CLV, the recording in Zone 1 is 16X speed, then increases to 20X speed in Zone 2, after t1 time. In Zone 3, the recording reaches 24X speed, after t2 time. The recording speed reaches the maximum 32X in Zone 4, after t3.

#### *Zone CLV Recording Method*

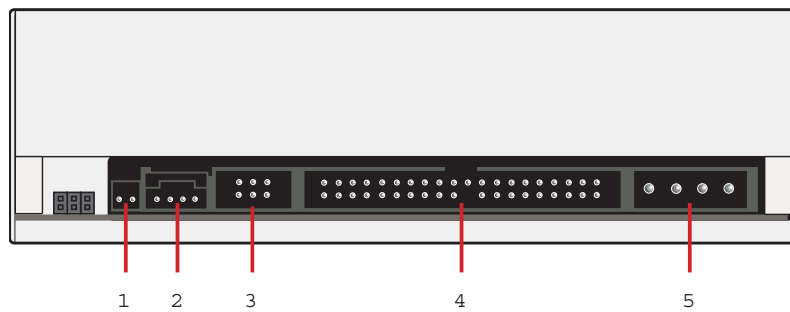


## Front Panel



- 1. Headphone jack**  
This jack allows you to connect a headphone with a stereo mini-plug.
- 2. 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.
- 3. Disc tray**  
This tray holds the disc.
- 4. WRITE indicator (Red LED)**  
This LED flashes while data is being written on the disc.
- 5. READ indicator (Green LED)**  
This LED turns ON when you place a disc on the drive tray, and stays ON until you remove the disc. The LED flashes while data is being read from the disc.
- 6. 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 or a paper clip into this hole to manually eject the tray and the disc.
- 7. PLAY/SKIP button**  
This button has two functions. If the drive is idle, pressing this button will start playing an audio disc (if one is currently loaded in the drive) from the first track. While in the PLAY mode, pressing this button lets you skip to the next track on the disc.
- 8. STOP/EJECT button**  
This button has two functions. Pressing this button at any time ejects the disc tray so you can place or remove a disc. While in PLAY mode, pressing this button stops playing the disc loaded in the drive.

## 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. Jumper terminals**  
These pins allow you to select either Master, Slave, or Cable Select mode for the CD-ROM device.
- 4. IDE connector**  
This connector is for a 40-pin IDE cable to connect the drive to the IDE interface on the motherboard.
- 5. Power connector**  
This DC connector is for a 4-pin power cable from the system power supply.

**NOTE:** *The jumper pins on the leftmost part of the rear panel are factory test pins. DO NOT cover these pins with jumper blocks.*

# 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
- Windows 98/98SE/ME/2000/XP/NT 4.0, Linux, or OS/2 Warp 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:

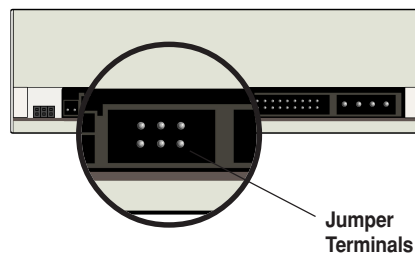
CD-R	Sony, TDK, Ricoh, Kodak, Mitsubishi Chemical, Taiyo Yuden, Yamaha, Philips, Ritek, Prodisc, AMT, Princo, Hitachi Maxwell, CMC
CD-RW	Sony, TDK, Ricoh, Yamaha, Mitsubishi Chemical, Ritek, Prodisc, AMT, CMC



## Setting the Jumper Terminals

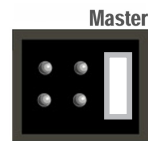
Configure the the jumpers to set the device to master or slave mode before physically installing it to your computer chassis. Use jumper blocks to short the pins to your desired setting.

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



### Master Mode

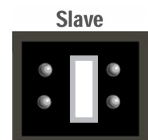
Cover the two pins labeled MASTER to set the CD-RW drive as a secondary master drive. This is possible only if your computer supports four IDE devices. The hard disk in the computer is set as Primary Master.



### Slave Mode

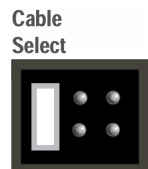
Cover the two pins labeled SLAVE to set the CD-RW drive as a slave device if your computer supports only two IDE devices.

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



### Cable Select Mode

Cover the two pins labeled CABLE SELECT 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.

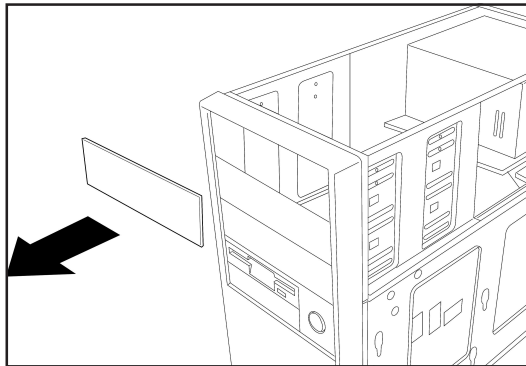


## Installing the CD-RW Drive

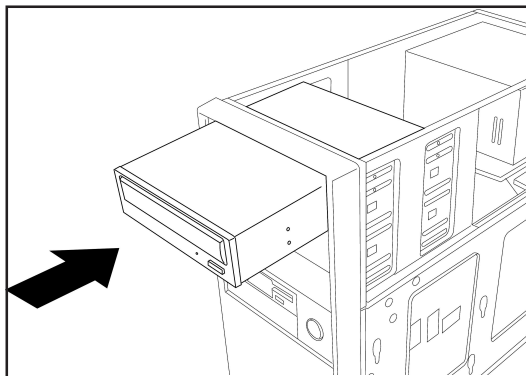
Follow these steps to install the drive into the computer chassis.

**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.

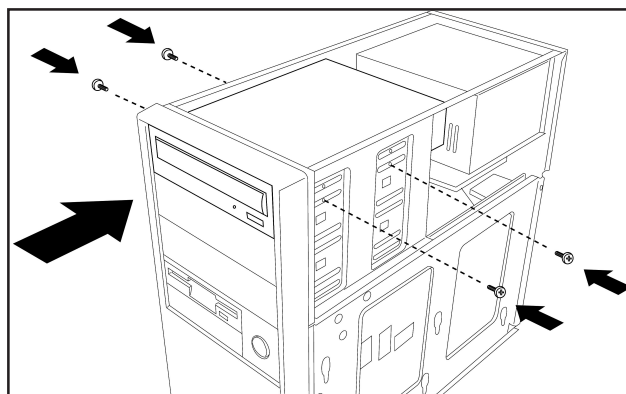


2. Carefully insert the CD-RW drive into the bay and push it inward until it is flushed to the chassis front panel. The holes on the sides of the drive should align with the holes on the drive bay.



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

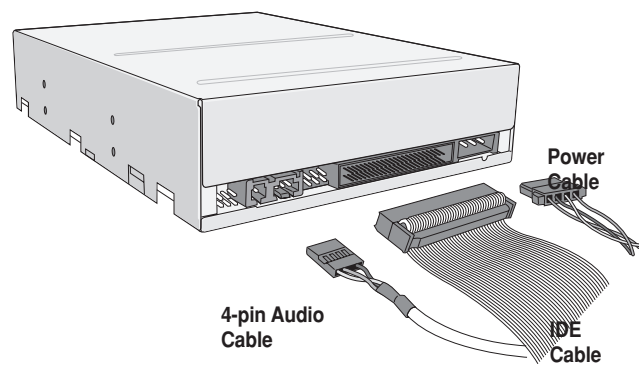
**IMPORTANT:** Depending on the space on your chassis, you may need to connect the drive cables before securing the drive into the chassis. For cable connections, proceed to the following section, "Connecting the Drive Cables."



## 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 CRW-3212A 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-3212A 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

### By NewTech Infosystems, Inc.

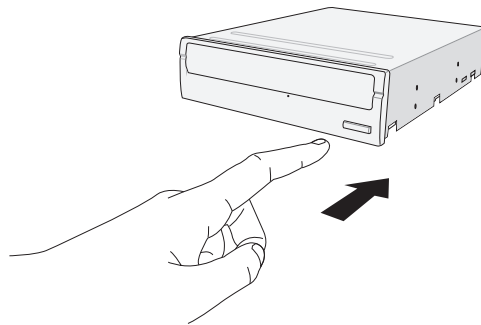
- CD-Maker
- File CD
- Overburn™ Support
- Advanced Caching
- Playlist (M3U File) Support
- SVCD Support

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

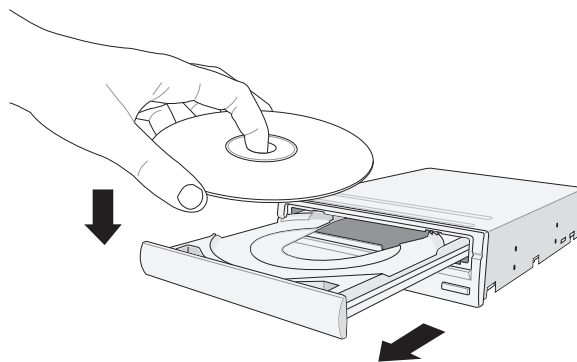
## CD-RW Drive Basics

### Placing a Disc into the Drive

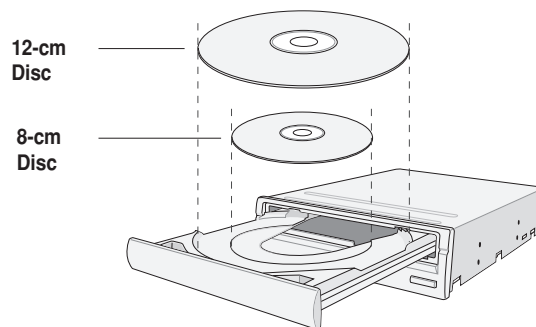
1. Press the eject button on the front of the drive to eject the tray.



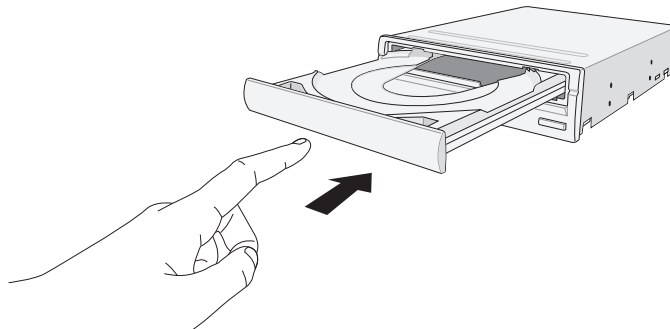
2. When the drive tray ejects out of the drive, place the disc on the tray with the label (printed) side up.



**NOTE:** If you are using a 12-cm 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 8-cm 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

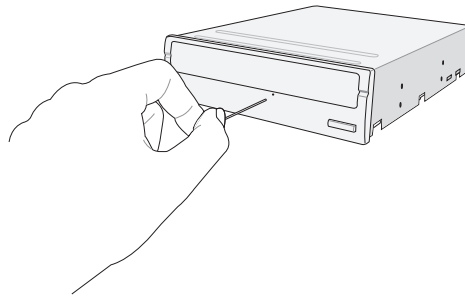
The emergency eject pinhole on the front of the drive allows you to manually eject the drive tray and remove a disc from the drive in the following instances:

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

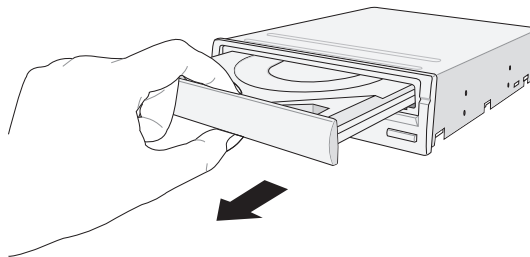
**CAUTION!** Use the manual method only as a last resort when the eject button does not work. Make sure that you have turned off your computer before ejecting the drive tray.

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

1. Insert the eject pin that came with the drive package. You may also use a paper clip or any pointed rod small enough to fit into the emergency pinhole.



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



**CAUTION!** Do not force the tray open; wait until the eject pin has dislodged the tray to avoid breaking the tray panel.

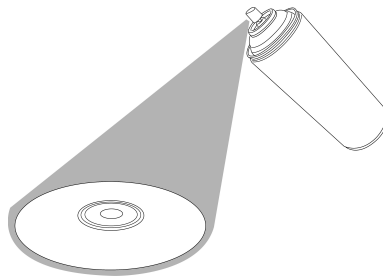


## Using Compact Discs

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.

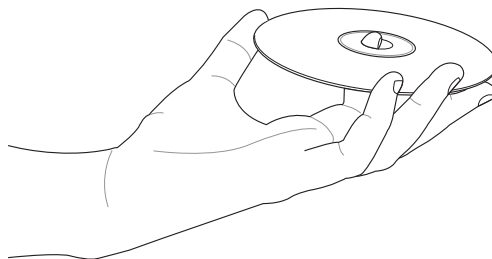
### Cleaning a Disc

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

<b>Temperature</b>	Operation:	5°C < to < 45°C
	Storage:	- 20°C to < 60°C
<b>Humidity</b>	Operation:	20% to 80% non-condensing
	Storage:	15% to 85% non-condensing
<b>Vibration</b>	Operation:	0.3G peak at 5 ~ 500 Hz
	Storage:	2.0G peak at 10 ~ 500 Hz
<b>Impact</b>	Non-operation:	1 oct/min – no damage Less than 50G – (at 11ms/half sine wave, 3 shock/each side)
	Packaged:	1 oct/min – no damage 91 cm high – (1 corner, 3 edges, 6 surfaces)
<b>Acoustic</b>	Access mode:	41.5 dB TYP
	Read mode:	44.5 dB TYP
(Microphone located 50cm in front of the drive, 120cm above the drive at 30° angle.)		
<b>Reliability</b>	MTBF:	100,000 power on hours
	ODC (Read):	20% of power on time
	ODC (Write):	1% of power on time
<b>Mean Time To Repair (MTTR)</b>		30 minutes

\* ODC - Operating Duty Cycle

### Electrical and Audio Specifications

<b>Power Source</b>	Voltage	+5V DC	+12V DC
	Tolerance	+/- 5%	+/- 10%
	Ripple	150m Vpp	300m Vpp
	Rating	900mA	1500mA
<b>I/O Terminal</b>	Power connector	4-pin +5V, +12V	
	ATAPI terminal	40-pin	
	Audio out	4-pin (analog) 2-pin (digital)	
<b>Audio</b>	No. of channels	2 (stereo)	
	Sampling frequency	44.1 kHz	
	Quantization	16 bits	
	Distortion	0.2% max. (at 1 kHz)	
	S/N ratio	70 dB	
	Output: Headphone	0.7 V rms (typical)	
	Line Out	0.7 V rms (typical)	

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