



DRW-0402P/D
DVD±R/RW Drive
Dual Format

User Manual



Disclaimer/Copyrights

Copyright © 2003 ASUSTeK COMPUTER INC. All Rights Reserved.

No part of this manual, including the products and software described in it, may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language in any form or by any means, except documentation kept by the purchaser for backup purposes, without the express written permission of ASUSTeK COMPUTER INC. ("ASUS").

ASUS PROVIDES THIS MANUAL "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL ASUS, ITS DIRECTORS, OFFICERS, EMPLOYEES OR AGENTS BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES (INCLUDING DAMAGES FOR LOSS OF PROFITS, LOSS OF BUSINESS, LOSS OF USE OR DATA, INTERRUPTION OF BUSINESS AND THE LIKE), EVEN IF ASUS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES ARISING FROM ANY DEFECT OR ERROR IN THIS MANUAL OR PRODUCT.

Product warranty or service will not be extended if: (1) the product is repaired, modified or altered, unless such repair, modification or alteration is authorized in writing by ASUS; or (2) the serial number of the product is defaced or missing.

The product name and revision number are both printed on the product itself. Manual revisions are released for each product design represented by the digit before and after the period of the manual revision number. Manual updates are represented by the third digit in the manual revision number.

SPECIFICATIONS AND INFORMATION CONTAINED IN THIS MANUAL ARE FURNISHED FOR INFORMATIONAL USE ONLY, AND ARE SUBJECT TO CHANGE AT ANY TIME WITHOUT NOTICE, AND SHOULD NOT BE CONSTRUED AS A COMMITMENT BY ASUS. ASUS ASSUMES NO RESPONSIBILITY OR LIABILITY FOR ANY ERRORS OR INACCURACIES THAT MAY APPEAR IN THIS MANUAL, INCLUDING THE PRODUCTS AND SOFTWARE DESCRIBED IN IT.

Products and corporate names appearing in this manual may or may not be registered trademarks or copyrights of their respective companies, and are used only for identification or explanation and to the owners' benefit, without intent to infringe.

| |
|--|
| Product Name: ASUS DRW-0402P/D |
| Manual Revision: First Edition V1 E1351 |
| Release Date: July 2003 |

Contents

| | |
|---|-----------|
| Disclaimer/Copyrights | 2 |
| Notices | 4 |
| ASUS Contact Information | 5 |
| Safety Information | 6 |
| Installation Notices | 6 |
| Using the Device | 7 |
| Package Contents | 8 |
| Welcome! | 9 |
| Product Introduction | 9 |
| Specifications..... | 9 |
| Features | 10 |
| Front Panel | 11 |
| Rear Panel | 12 |
| Installation | 14 |
| System Requirements | 14 |
| Setting the Jumper Terminals | 15 |
| Installing the DRW-0402P/D Drive | 16 |
| Connecting the Drive Cables | 18 |
| DRW-0402P/D Drive Basics | 19 |
| Placing a Disc into the Drive | 19 |
| Ejecting a Disc from the Drive | 20 |
| Using the Emergency Eject Pinhole | 21 |
| Using Compact Discs | 22 |
| Cleaning a Disc | 22 |
| Handling a Disc | 22 |
| Technical Information | 23 |
| Environmental Specifications | 23 |
| Electrical and Audio Specifications | 23 |
| DVD Region Codes | 24 |

Notices

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.

ASUS Contact Information

ASUSTeK COMPUTER INC. (Asia-Pacific)

Address: 150 Li-Te Road, Peitou, Taipei, Taiwan 112
General Tel: +886-2-2894-3447
General Fax: +886-2-2894-3449
General Email: info@asus.com.tw

Technical Support

MB/Optical Drives (Tel): +886-2-2890-7121 (English)
Notebook (Tel): +886-2-2890-7122 (English)
Desktop/Server (Tel): +886-2-2890-7123 (English)
Support Fax: +886-2-2890-7698
Web Site: www.asus.com.tw

ASUS COMPUTER INTERNATIONAL (America)

Address: 44370 Nobel Drive, Fremont, CA 94538, USA
General Fax: +1-502-933-8713
General Email: tmd1@asus.com
Web Site: usa.asus.com

Technical Support

Support Fax: +1-502-933-8713
General Support: +1-502-995-0883
Notebook Support: +1-877-918-ASUS (2787)
Support Email: tsd@asus.com

ASUS COMPUTER GmbH (Germany and Austria)

Address: Harkort Str. 25, D-40880 Ratingen, Germany
Website Address: www.asuscom.de
Online Contact: www.asuscom.de/sales
Telephone: +49-2102-95990
General Fax: +49-2102-959911

Technical Support

Component Support: +49-2102-95990
Notebook Support: +49-2102-959910
Support Fax: +49-2102-959911
Online Support: www.asuscom.de/support

Safety Information

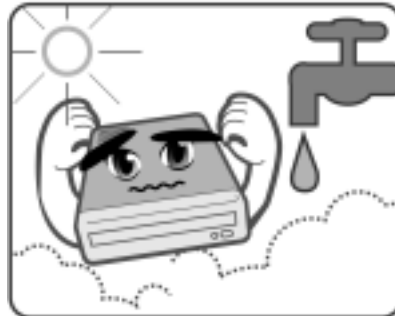
Observe the following precautions before installing and using the ASUS DRW-0402P/D Drive!

Installation Notices

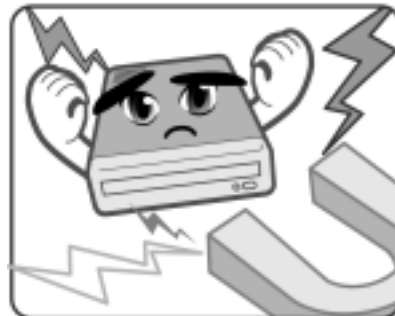
Do not place this device in an unstable position, or on vibrating surfaces.



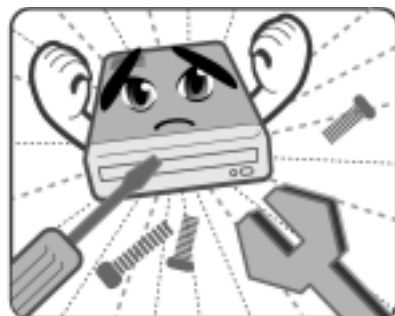
Do not place this device under direct sunlight, or in humid or damp places.



Do not use or place this device near magnetic fields, televisions, or radios to avoid electronic interference that affects drive performance.



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



Safety Information

Using the Device

- Use of any controls, adjustments, or procedures other than those specified in this manual may result to hazardous radiation exposure.
- Do not attempt to disassemble the drive.
- 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 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 or warped discs inside the device. A warped disc may break while in use and damage 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.

Conventions used in this guide

To make sure that you perform certain tasks properly, take note of the following symbols used throughout this manual.



WARNING/DANGER: Information to prevent injury to yourself when trying to complete a task.



CAUTION: Information to prevent damage to the components when trying to complete a task.



IMPORTANT: Information that you **MUST** follow to complete a task.



NOTE: Tips and additional information to aid in completing a task.

Welcome!

Thank you for buying the **ASUS DRW-0402P/D Drive!**

Read the instructions and important information in this manual for proper use and installation of this device.

Product Introduction

Specifications

The DRW-0402P/D has the following specifications.

| | |
|-----------------------------|--|
| Write Speeds | 4X/2.4X on DVD+R 2.4X on DVD+RW 4X/2X/1X on DVD-R 2X/1X on DVD-RW 16X/12X/8X/4X on CD-R 10X/4X on CD-RW |
| Maximum Read Speeds | 12X on DVD-ROM 32X on CD-ROM |
| Interface | Enhanced IDE/ATAPI |
| Data Buffer Size | 2 MB |
| Random Access Time | DVD-ROM: 140 ms CD-ROM: 130 ms |
| Application discs | DVD Single/Dual layer discs, DVD+R, DVD+RW, DVD-R, DVD-RW, CD-ROM Mode 1 CD-ROM/XA Mode 2 (form 1, form 2) Photo CD (single and multiple session) CD-DA, CD-Extra, Video CD, CD-Text, CD-R, CD-RW |
| Recording Format | DVD-R DAO, Incremental/Multi-Border Recording DVD-RW Restricted Overwriting DVD+R Incremental Recording DVD+RW Random Recording CD-R/RW DAO, TAO, SAO, Packet Write |
| OS Compatibility | Windows® 98SE/ME/2000/NT/XP |
| Mounting Orientation | Vertical/Horizontal |
| Dimensions | 148 (w) x 42.3 (h) x 197.7 (d) mm |
| Mass | 1100 g (2.42 lbs) |



Refer to the section "Technical Information" on page 23 for detailed specifications.

Package Contents

Upon opening your **ASUS DRW-0402P/D** 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 DRW-0402P/D internal IDE drive
- IDE cable
- Mounting screw set
- Audio cable
- Emergency eject pin and instruction slip
- ASUS DVD-R blank disc
- ASUS CD-R blank disc
- User Manual (English and Traditional Chinese)
- Multi-language quick installation guide
- Bundled software CD



The above items are available in retail boxes only.

Features

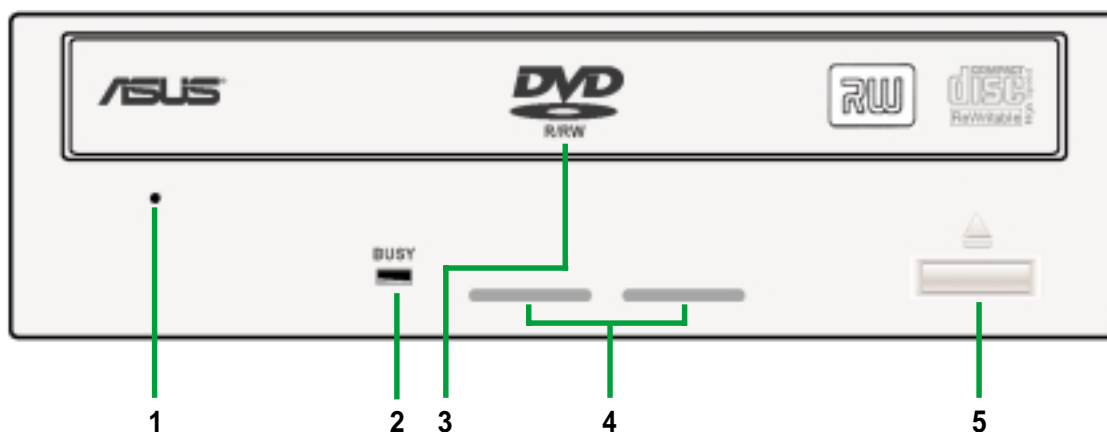
The ASUS DRW-0402P/D is a DVD±R/RW drive capable of reading data from and writing data on DVD+R/RW or DVD-R/RW formats. The dual compatibility feature of the DRW-0402P/D allows you to create DVDs that can be played or read by most DVD-ROM drives and DVD players. This function provides you with flexibility and efficiency in terms of multimedia data storage and sharing.

The DRW-0402P/D drive complies with the Enhanced-IDE Attachment Packet Interface (ATAPI) specification and comes equipped with the latest innovative technologies in DVD recording.

Check out other ASUS DRW-0402P/D features:

- Compatible with a wide range of disc formats
- Buffer underrun errors prevention for CD and DVD recording
- Supports UltraDMA Mode 2 for 33.3 MB/s data transfer rate
- Operates on horizontal or vertical mounting
- Supports DAO, TAO, SAO, Packet Write
- Windows® 98SE/ME/2000/NT/XP compatible

Front Panel



1. Emergency Eject Pinhole

The Emergency Eject Pinhole allows you to manually eject a disc when the Eject Button does not work due to power failure or software problems. Insert the emergency eject pin or a paper clip into this hole to manually eject the tray and the disc. Refer to page 21 for details.



Turn off your computer before using the Emergency Eject Pinhole.

2. READ/WRITE Indicator

This LED is lit (Green) when data is being read or written on the disc.

3. Disc Loading Tray

This tray holds the disc. Open the loading tray by pressing the Eject Button. Place a CD or DVD on the tray with the label side up. Press the Eject Button or push the front part of the tray to load the disc.

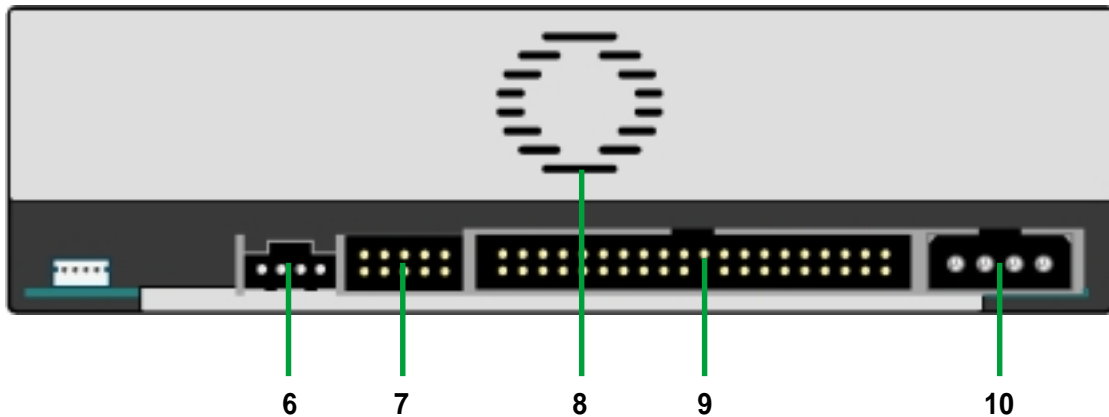
4. Ventilation Holes

These holes allow air intake to maintain ideal drive temperature.

5. Eject Button

Press this button to load or unload a disc.

Rear Panel



6. Audio Output

This connector is for an analog audio output cable. This connector is compatible with “Molex 70553”.

| Pin | Name | Description |
|-------|------|----------------------------|
| 1 | L | Left channel audio output |
| 2 & 3 | G | Ground |
| 4 | R | Right channel audio output |

7. Device Configuration Jumper

These pins allow you to select either Master, Slave, or Cable Select mode for the DRW-0402P/D. (Refer to page 15 for jumper settings)

| Pin | Name | Switch Status | Description |
|-----|------|---------------|-------------------|
| 1 | MA | ON | Master mode |
| 2 | SL | ON | Slave mode |
| 3 | CS | ON | Cable select mode |
| 4-5 | | | Reserved |

8. Air Vent

This air vent allows air intake to maintain ideal drive temperature. Make sure the air vent is not blocked by cables or other objects inside the system.

9. Host IDE Interface

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

10. DC Input

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

Installation

System Requirements

Before installing the DRW-0402P/D drive, make sure that your computer system meets the following requirements.

- IBM-compatible Pentium III 700MHz or Celeron 700MHz or AMD Duron 850 MHz or higher PC
- Windows® 98SE/ME/2000/NT/XP operating system
- At least 64MB RAM (128MB 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



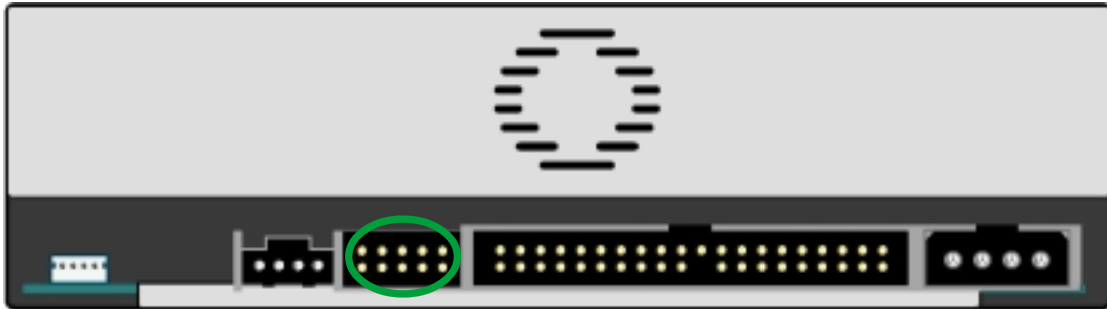
-
1. Avoid using a hard disk that thermally calibrates during operation.
 2. Do not insert damaged or warped disc in the drive to avoid potential body injury or damage to the drive.
-

Setting the Jumper Terminals

Set the jumpers to configure the device to either master or slave mode before installing it into your computer chassis. The different modes are discussed below. Select your desired mode by placing the jumper cap over the pins.



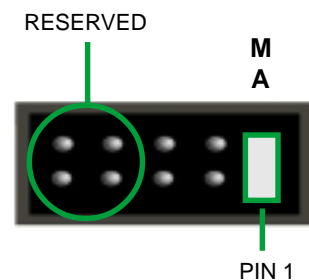
Put the jumper caps properly over the pins to avoid damage to the drive.



Jumper terminals

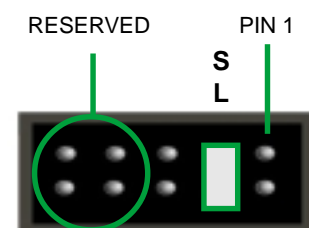
Master Mode

Cover the two pins labeled MA (see illustration) to set the DRW-0402P/D drive as a secondary master drive. Select this mode if your computer supports four IDE devices. The computer hard drive is set as Primary Master.



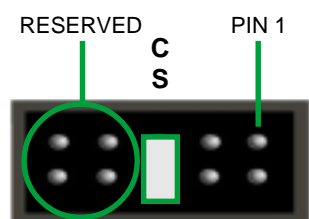
Slave Mode

Cover the two pins labeled SL (see illustration) to set the DRW-0402P/D drive as a slave device if your computer supports only two IDE devices. If your computer supports four IDE devices, this mode sets your DRW-0402P/D drive as either Primary or Secondary Slave.



Cable Select Mode

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



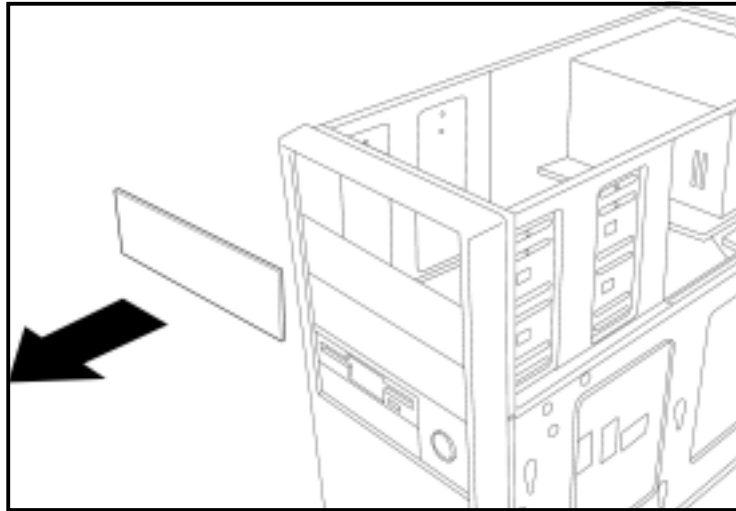
Installing the DRW-0402P/D Drive

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

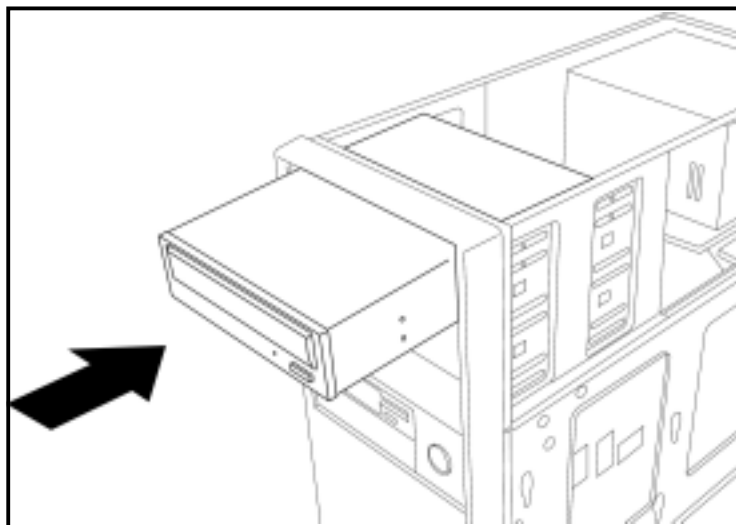


Refer to your computer manual for specific instructions on opening the chassis and installing drives.

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



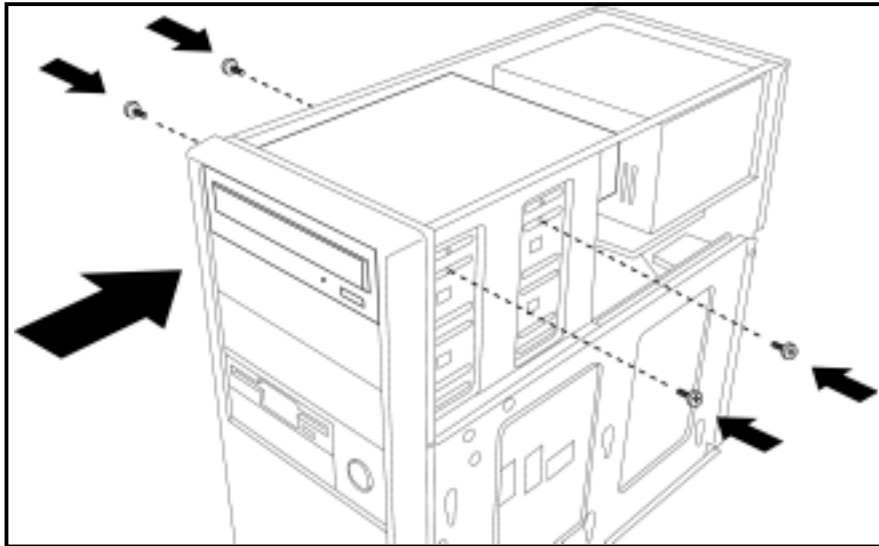
2. Carefully insert the drive into the bay and push it inward until it is flushed to the chassis front panel. The holes on the sides of the drive should align with the holes on the drive bay.



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



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.”

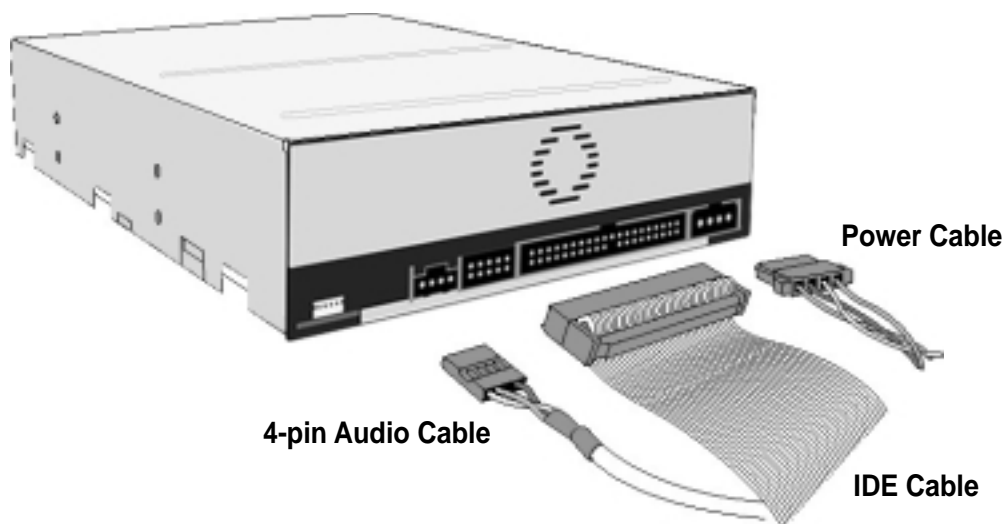


Connecting the Drive Cables

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.



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.

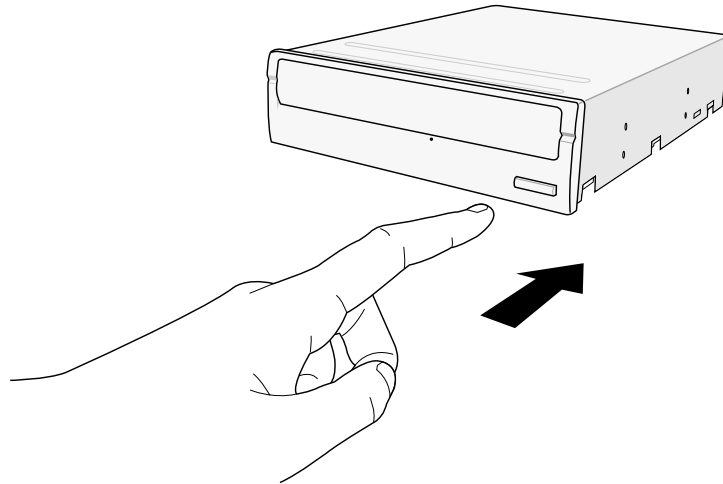


Replace the computer cover according to your computer manual.

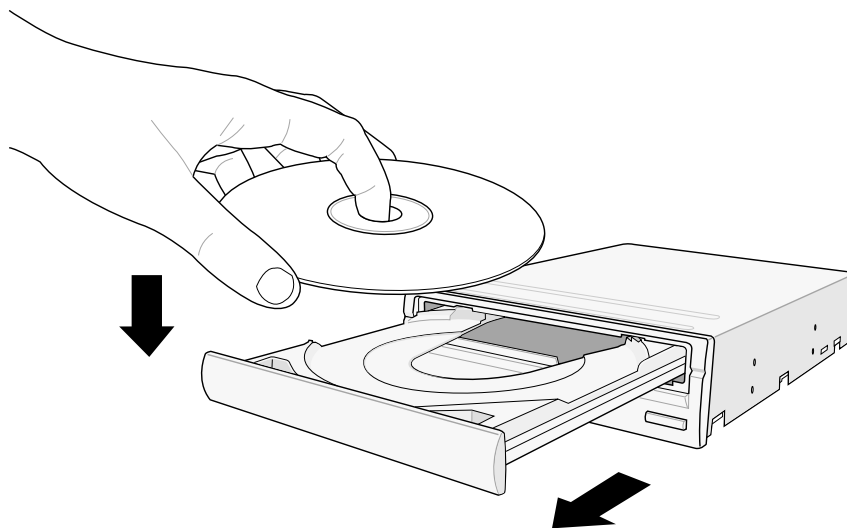
DRW-0402P/D Drive Basics

Placing a Disc into the Drive

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

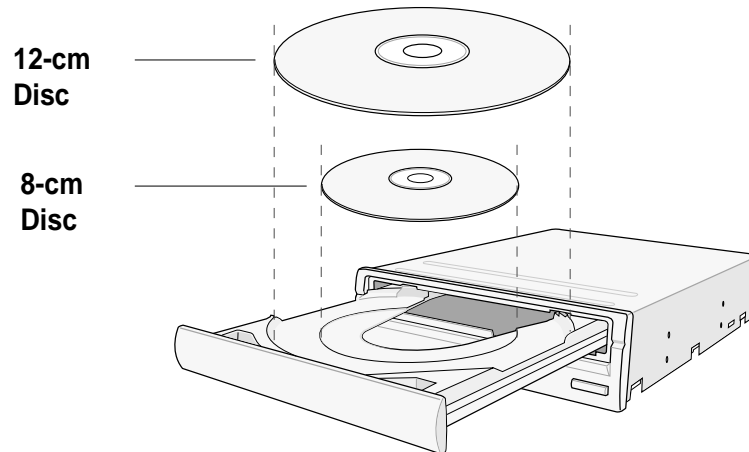


2. When the drive tray ejects out of the drive, place the disc on the tray with the label (printed) side up.

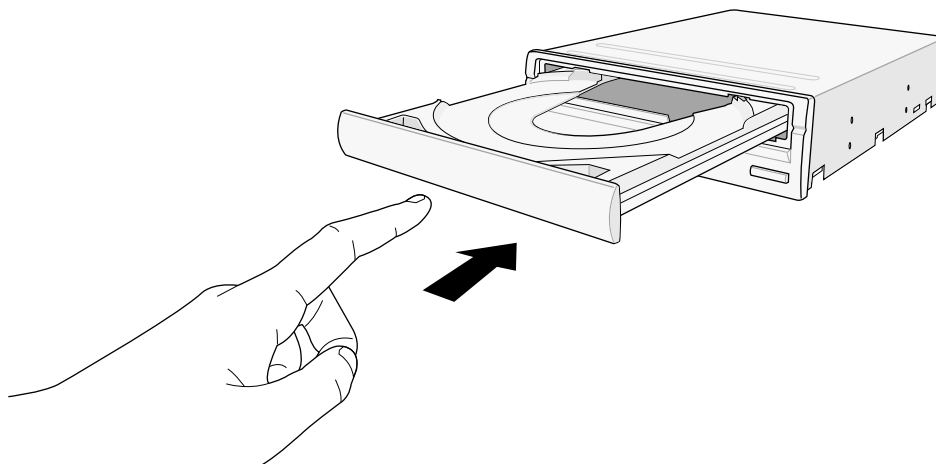




If you are using a 12-cm disc, place it on the outer circular border of the tray. If you are using an 8-cm disc, place it on the inner circular border.



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 panel of the drive allows you to manually eject the drive tray and remove a disc from the drive in case:

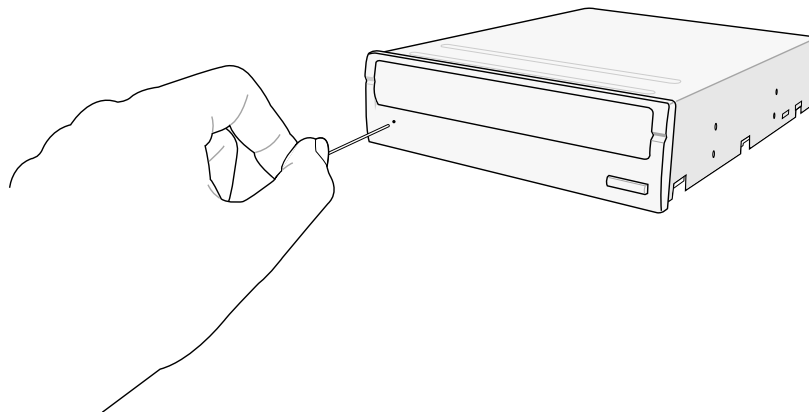
- the supply of power to the computer is cut due to electrical power outage, or
- the drive malfunctions.



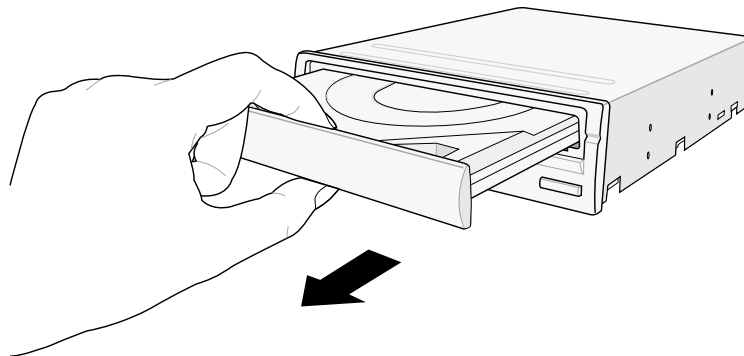
Use the manual method only when the eject button does not work. Turn off your computer before manually ejecting the drive tray.

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

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



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



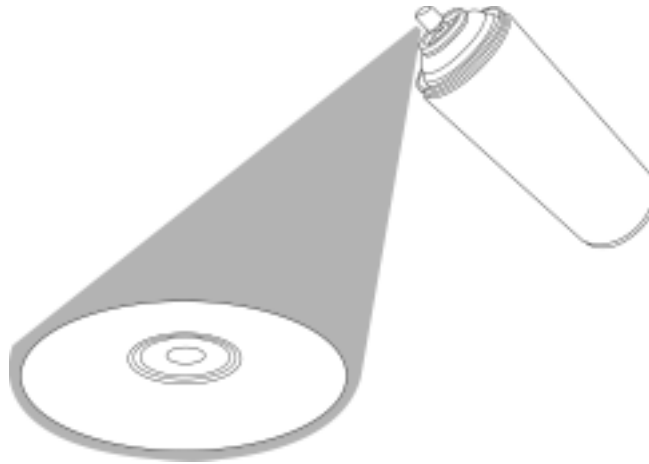
Do not force the tray open. Wait until the eject pin has dislodged the tray to avoid breaking the tray panel.

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 drive.

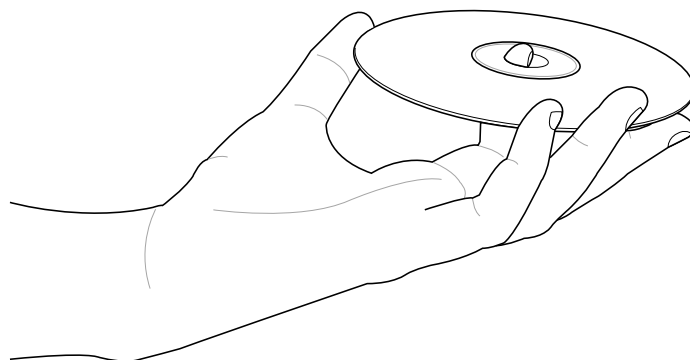
Cleaning a Disc

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: | - 20°C to +60°C |
| Humidity | Operation: | 5% to 85% non-condensing |
| | Storage: | 5% to 90% non-condensing |
| Vibration | Operation: | 0.2G peak at 10 ~ 300 Hz |
| | Storage: | 1.5G peak at 10 ~ 300 Hz |
| Impact | Non-operation: | Less than 50G – no damage (at 11ms/half sine wave, 3 shock/each side) |
| | Packaged: | 60 cm high – no damage (1 corner, 3 edges, 6 surfaces) |
| Acoustic | Sound Power: | 49 dB(A) |
| Reliability | MTBF: | 60,000 power on hours |
| | ODC (Read): | 20% of power on time |
| | ODC (Write): | 2% of power on time |
| Mean Time To Repair (MTTR) | | 30 minutes |

* ODC - Operating Duty Cycle

Electrical and Audio Specifications

| | | | |
|---------------------|--------------------|-----------------------------------|----------|
| Power Source | Voltage | +5V DC | +12V DC |
| | Tolerance | +/- 5% | +/- 10% |
| | Ripple | 100m Vpp | 200m Vpp |
| IO Terminal | Power connector | 4-pin +5V, +12V | |
| | ATAPI terminal | 40-pin | |
| | Audio out | 4-pin (analog) 2-pin (digital) | |
| Audio | No. of channels | 2 (stereo) | |
| | Sampling frequency | 44.1 kHz | |
| | Quantization | 16 bits | |
| | Distortion | 0.2% max. (at 1 kHz) | |
| | S/N ratio | 80 dB | |
| | Output: Line Out | 0.7 +/- 0.2 V rms | |

DVD Region Codes

DVDs and DVD players are regionally coded to protect the DVD industry from piracy and unfair promotions. For example, a DVD encoded for Region 1 may only be played on a Region 1 DVD-ROM or DVD player. Regional codes on DVDs are optional. All DVD players can play DVDs with no specified region code.

Follow the instructions to play a regionally-coded DVD on the drive.

1. Check the region code of the DVD, then insert the disc into the drive.
2. When the DVD playback prompts you to enter your country/location, select a country/location within the region code of the DVD. Refer to the map and table below.

You are only allowed to change your country/location up to five times. This limitation makes the drive adaptable for use in many regions while maintaining compliance with RPC-II regulations.



The ability to switch from one region to another is not an ongoing feature. Set the drive to your local region to avoid incorrect setting.



| Region Code | Area |
|-------------|---|
| 1 | U.S., U.S. Territories, Canada |
| 2 | Europe, Middle East, Japan, Egypt, S. Africa, Greenland |
| 3 | South Eastern Asia, Taiwan, Hong Kong, Korea |
| 4 | Australia, New Zealand, Latin America, Pacific Islands |
| 5 | Russia, Eastern Europe, India, Africa, North Korea |
| 6 | China |