

CDU415

CD-ROM Drive Unit

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User's Guide
Mode d'emploi
Bedienungsanleitung

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Owner's Record

The model and serial numbers are located on the top side of the drive. Record these numbers in the spaces provided below. Refer to them whenever you call upon your sales representative regarding this product.

Model No. _____ Serial No. _____

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

This unit uses CD-ROM discs with the following mark.



When you use this unit as a CD player, use compact discs with the following mark.



CAUTION	INVISIBLE LASER RADIATION WHEN OPEN. DO NOT STARE INTO BEAM OR VIEW DIRECTLY WITH OPTICAL INSTRUMENTS.
VORSICHT	UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET. NICHT IN DEN STRAHL BLICKEN, AUCH NICHT MIT OPTISCHEN INSTRUMENTEN.
ADVARSEL	USYNLIG LASERSTRÅLING VED ÅBNING SE IKKE IND I STRÅLEN-HELLER IKKE MED OPTISKE INSTRUMENTER.
ADVARSEL	USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES. STIRR IKKE INN I STRÅLEN ELLER SE DIREKTE MED OPTISKE INSTRUMENTER.
VARNING	OSYNLIG LASERSTRÅLNING NÅR DENNA DEL ÄR ÖPPNAD. STIRRA EJ IN I STRÅLEN OCH BETRakta EJ STRÅLEN MED OPTISKA INSTRUMENT.
VARO!	AVATTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ TUJOTA SÄTEESEEN ÄLÄKÄ KATSO SITÄ OPTISEN LAITTEEN LÄPI.

This Label is located on the top of the drive.

Dieser Aufkleber befindet sich an der Oberseite des Gehäuses.

INFORMATION

You are cautioned that any changes or modifications not expressly approved in this manual could void your warranty covering this equipment.

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

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CLASS 1
LASER PRODUCT

LASER KLASSE 1
PRODUKT

LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

This CD-ROM Drive Unit is classified as a CLASS 1 LASER PRODUCT. The CLASS 1 LASER PRODUCT label is located on the top of the drive.

Bei diesem CD-ROM-Laufwerk CDU415 handelt es sich um ein Laser-Produkt der Klasse 1. Ein entsprechender Aufkleber mit der Beschriftung LASER KLASSE 1 PRODUKT befindet sich auf der Oberseite des Geräts.

Trademarks

- MS-DOS is a registered trademark of Microsoft Corporation.
- IBM PC, PC/XT, and PC/AT are registered trademarks of International Business Machines Corporation.
- HP Vectra is a registered trademark of the Hewlett-Packard Company.
- Molex is a registered trademark of Molex, Inc.
- AMP is a registered trademark of AMP, Inc.
- 3M is a registered trademark of the Minnesota Mining and Manufacturing Company.
- JAE is a registered trademark of Japan Aviation Electronics Industry, Ltd.

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Introduction

Features

The CDU415 is an internal CD-ROM (Compact Disc Read-Only Memory) drive unit designed for use with an IBM PC, HP Vectra, or compatible computer. It can read as much as 650 Mbytes of digital data stored in a single CD-ROM disc.

The CDU415 has the following features:

General

- 5 1/4 inch half-height drive form factor.
- Embedded SCSI bus interface (SCSI-2).
- 256-kbyte buffer memory.
- Audio CD like drawer loading of a disc without using a caddy.
- Power loading and power eject of a disc. The disc can also be ejected manually.
- Housed in an airtight frame casing.
- Equipped with a parity on/off switch.

Supported disc formats

- Reads data in CD-ROM, CD-ROM XA, CD-I and CD-I Ready standard formats.
- Reads data in CD-BRIDGE format including PHOTO-CD.
- Reads standard CD-Digital Audio encoded discs.
- Reads VIDEO-CD and CD EXTRA discs.

Performance

- Supports standard, double and quadruple speed operations with real time error correction.
- Fast access time ensuring reliable high-speed data access.

Audio

- Outputs 16-bit digital audio data over the SCSI interface.
- Equipped with audio line output and headphones jack for audio CD playback.

Note:

The CDU415 is not equipped with an ADPCM audio circuitry required to support CD-ROM XA and CD-I compatible audio modes. In addition, the unit does not support the CD-I graphic decoding function; it has to be provided by the system.

Software Requirement

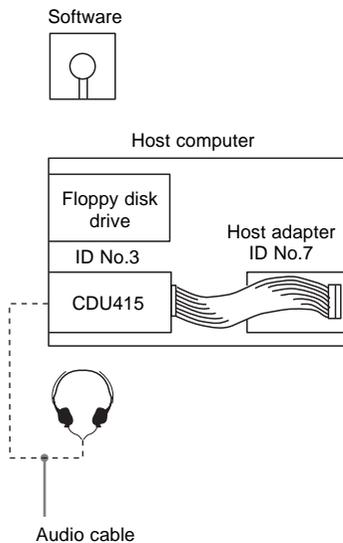
To access data on CD-ROM discs, the appropriate device driver and MSCDEX (supplied with the host adapter) must be installed in your computer. See the manual that comes with the host adapter for details. The application software you need for using the data on a CD-ROM disc depends on the type and format of the target data. See the manual supplied with your CD-ROM disc for instructions.

Example of System Setup

To use the CD-ROM drive unit, the following components are required:

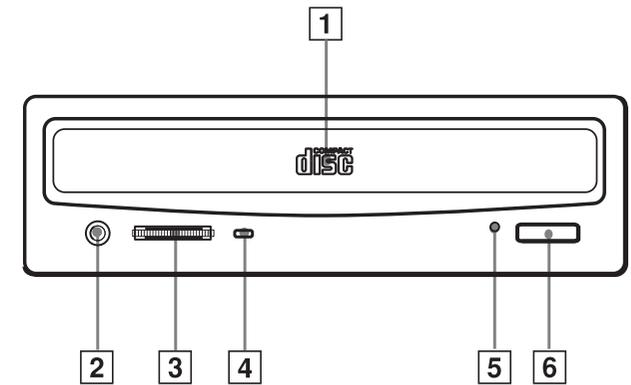
- Computer (IBM PC, PC/XT, PC/AT, HP Vectra, or equivalent)
- Host adapter
- Floppy disk drive
- Interface cable (50 to 50 pin flat cable)
- Software (Device driver, Utilities)

The following is an example of system setup.



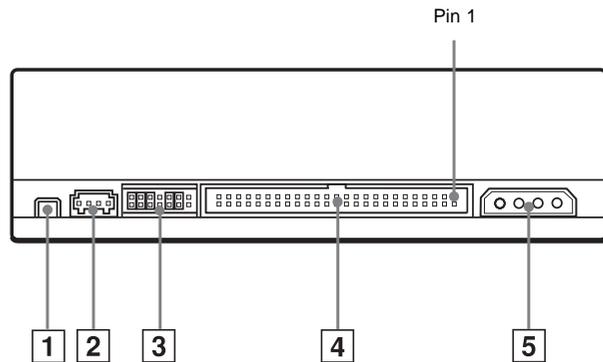
Location and Function of Parts and Controls

Front Panel



- 1 Disc drawer**
Accepts a CD-ROM disc on its tray.
- 2 Headphones jack**
Accepts a stereo headphones set. Analog audio signals are output.
- 3 Volume control**
Controls the volume level of sound output from the headphones jack **2**.
- 4 Busy indicator**
The amber indicator lights up or flashes to indicate one of the following unit conditions:
 - Steady lit: TOC (table of contents) read, seek, data read or audio playback in progress
 - Flashing: Drawer in motion
- 5 Emergency eject hole**
Used to open the disc drawer manually when neither the eject button **6** nor a software command works. Insert a pointed object, such as a paper clip, into this hole and push (approx. 40 mm stroke).
- 6 Eject button**
Opens and closes the disc drawer.

Rear Panel



1 F. GND (Frame ground) tab

Connect to one of the host computer's ground cables when the drive's frame is not in direct contact with the computer.

2 AUDIO OUT connector

Outputs analog audio signals.

3 SCSI bus setting jumper block

Specifies various SCSI bus settings. See page 11 for details.

4 INTERFACE CONNECTOR (SCSI bus)

Connect to the SCSI host adapter using a connecting cable.

5 DC INPUT (power-in) connector

Connect to the power supply of the host computer.

Precautions

■ Installation

- Avoid placing the drive in a location subject to:
 - high humidity
 - high temperature
 - excessive dust
 - mechanical vibration
 - direct sunlight
- The drive can be used in either a horizontal or vertical position.
- Do not force the power cable. It is keyed to protect the drive.

■ Operation

- Do not move the drive when it is in use. Doing so may cause data error and damage the optical pick-up.
- Avoid exposing the drive to sudden changes in temperature as condensation may form on the lens inside the drive. Should the surrounding temperature suddenly rise while the drive is turned on, stop using the drive and leave the power on at least one hour before operating it or turning it off. Operating the drive immediately after a sudden increase in temperature may result in a malfunction.

■ Transportation

- Close the disc drawer before moving the drive.
- Keep the original packing materials. When you need to ship the drive to another location, repacking it in its original container will help you transport it safely.

Installing the Drive in Your Computer

This section provides the basic instructions you need to install the drive and host adapter in your computer. You should also read the manual of your computer for specifications of how to install internal devices.

Preparation

You need the following parts and tools (these are not supplied with the drive):

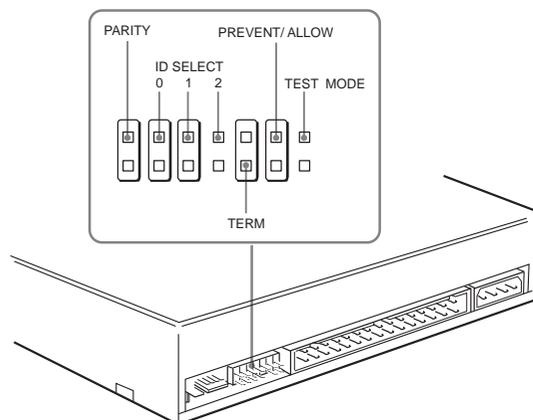
- A flat-blade screwdriver
- Four screws 3 mm in diameter and 6 mm in length.
- Two mounting rails if your computer has mounting tracks.

Unplug the computer and disconnect the cables attached to the back to give yourself more room to work. Do not turn on the power of the computer before completing the entire installation process.

Setting the Jumpers

Set the jumpers on the rear of the drive in accordance with the configuration of your computer system.

The jumpers are preset as illustrated at the factory.
(default preset value may be changed depending on the configuration)



Removing the jumper from a jumper pin pair disables its corresponding function, and installing the jumper enables it.

The recommended jumper for use is AMP Shunts (14227-1), JAE Short Socket (PS-2SH4-1) or equivalent.

The following table shows the function of each pair of jumper pins.

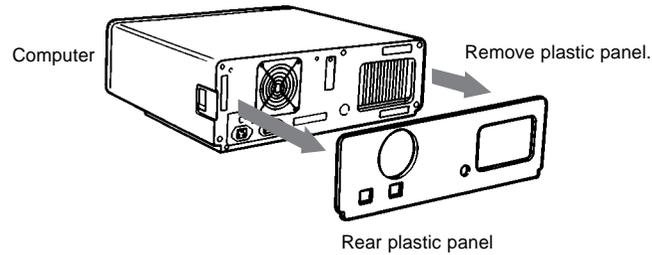
Jumper	Function																																							
PARITY	Enables/Disables the SCSI bus parity check function.																																							
ID SELECT	<p>Assigns the drive's SCSI ID. Select an ID number which is not used by other SCSI devices connected to the bus. ID numbers and corresponding jumper pin settings are as follows:</p> <table border="1"> <thead> <tr> <th rowspan="2">ID number</th> <th colspan="3">Jumper pin settings</th> </tr> <tr> <th>0</th> <th>1</th> <th>2</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>×</td> <td>×</td> <td>×</td> </tr> <tr> <td>1</td> <td>○</td> <td>×</td> <td>×</td> </tr> <tr> <td>2</td> <td>×</td> <td>○</td> <td>×</td> </tr> <tr> <td>3</td> <td>○</td> <td>○</td> <td>×</td> </tr> <tr> <td>4</td> <td>×</td> <td>×</td> <td>○</td> </tr> <tr> <td>5</td> <td>○</td> <td>×</td> <td>○</td> </tr> <tr> <td>6</td> <td>×</td> <td>○</td> <td>○</td> </tr> <tr> <td>7</td> <td>○</td> <td>○</td> <td>○</td> </tr> </tbody> </table> <p> × : Without jumper ○ : With jumper ◻ : Factory setting </p>	ID number	Jumper pin settings			0	1	2	0	×	×	×	1	○	×	×	2	×	○	×	3	○	○	×	4	×	×	○	5	○	×	○	6	×	○	○	7	○	○	○
ID number	Jumper pin settings																																							
	0	1	2																																					
0	×	×	×																																					
1	○	×	×																																					
2	×	○	×																																					
3	○	○	×																																					
4	×	×	○																																					
5	○	×	○																																					
6	×	○	○																																					
7	○	○	○																																					
TERM	× : Active terminator OFF ○ : Active terminator ON (Factory setting)																																							
PREVENT/ALLOW	Enable: The disc drawer can be opened by pressing the eject button or by a software command. Disable: The disc drawer cannot be opened either by the eject button or a software command.																																							
TEST MODE	Reserved for use at the factory only.																																							

Notes:

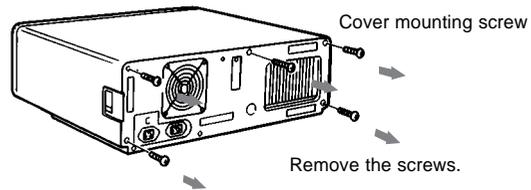
- The lower row of pins are ground.
- ID SELECT, PREVENT/ALLOW, and TEST MODE are recognized only when the power is turned on or SCSI is reset.
- TEST MODE is reserved for use at the factory only. Do not put a jumper over TEST MODE pins. Doing so may cause an unexpected result.

Opening the Computer

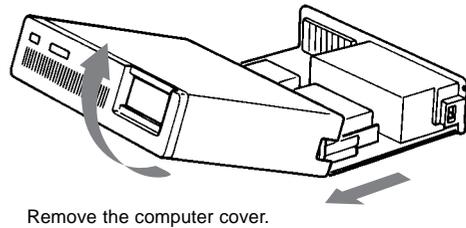
- 1 If your computer has its rear side covered by a plastic panel attached with plastic hook pad, pull it off.



- 2 Remove the cover mounting screws.

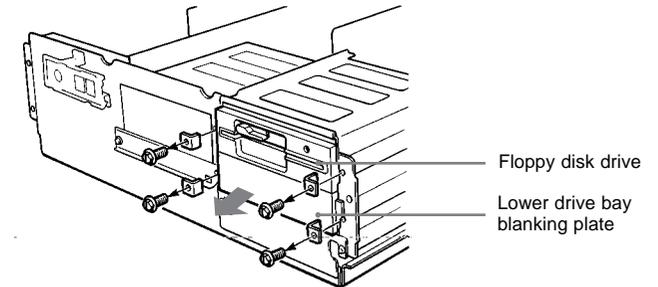


- 3 Remove the cover of the computer.

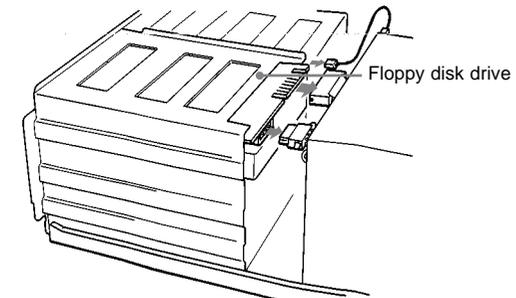


Preparing a Space for the Drive

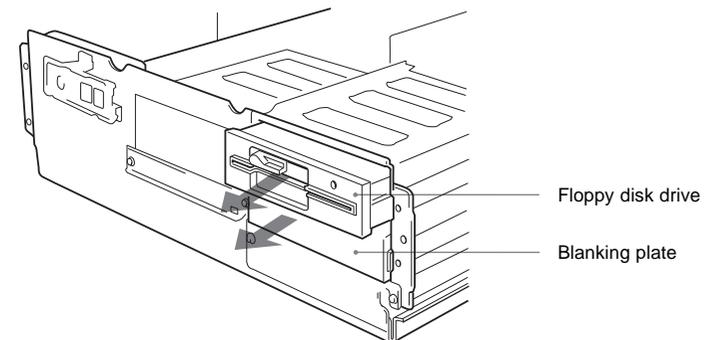
- 1 Remove the screws and brackets securing the floppy disk drive and the lower drive bay blanking plate.



- 2 Disconnect the floppy disk drive.

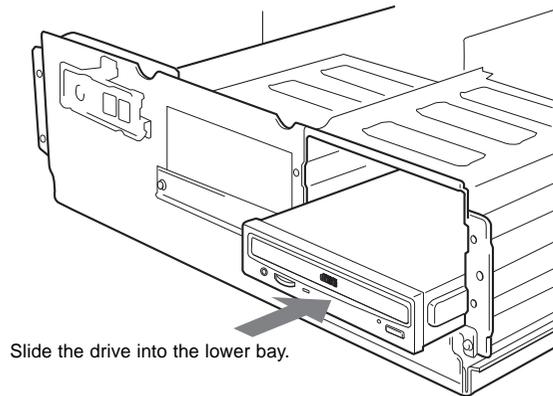


- 3 Remove the floppy disk drive and the blanking plate.



Mounting the Drive

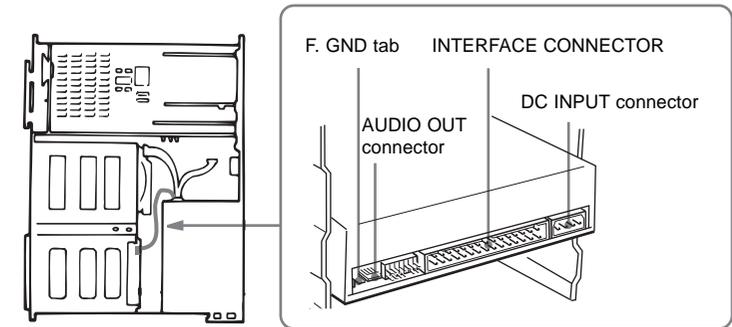
If mounting rails are necessary, attach them to the drive in the same way as your floppy disk drive and slide the drive into the lower drive bay.
If mounting rails are not required in your system, screw the drive in place.



Connecting the Drive

Connect the drive to the computer with the following connectors:

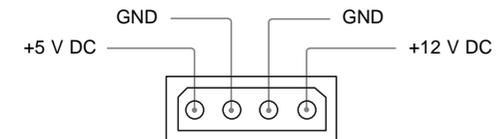
- DC INPUT connector
- F. GND tab (unless the drive's frame is in direct contact with the computer's chassis).
- AUDIO OUT connector (if you plan to connect audio equipment)
- INTERFACE CONNECTOR.



■ DC INPUT connector

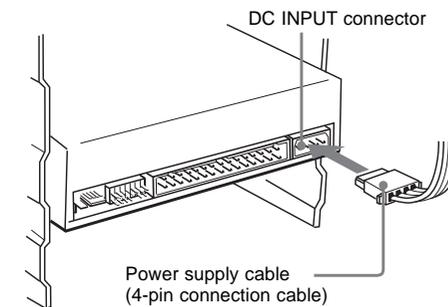
The power supply cables recommended are those using an AMP-1-480424-0 housing and 170147-1 or 170120 contacts.

The pin assignment is as follows.



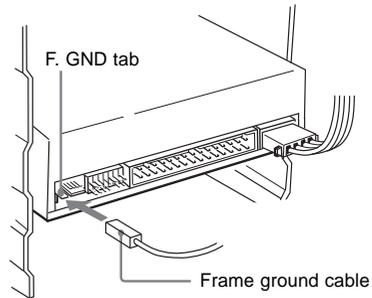
After matching the beveled edges, insert the plug of the power supply cable to the DC INPUT connector and push it firmly in place.

Caution: Improper connection may damage the drive and void the warranty.



■ F. GND tab

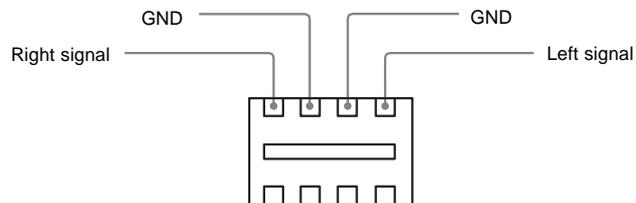
Connect the F. GND tab to one of the host computer's ground cables unless the drive's frame is in direct contact with the computer's chassis (a situation not likely under normal circumstances).



The frame ground cable recommended is the one using an AMP 1-480435-0 housing and 170203-2 or 60711-1 contact.

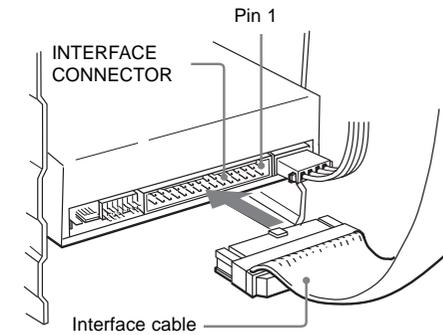
■ AUDIO OUT connector

The audio output cables recommended are those using a Molex 08-50-0113 or 08-50-4114 contacts and a 22-01-3047 housing. The pin assignment is as follows:

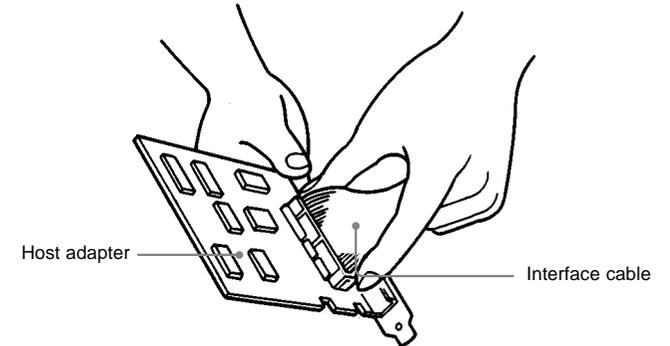


■ INTERFACE connector

- 1 Firmly insert one end of the interface cable into the INTERFACE CONNECTOR.

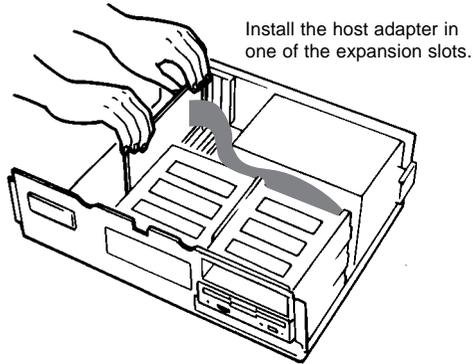


- 2 Attach the other end of the cable to the host adapter.



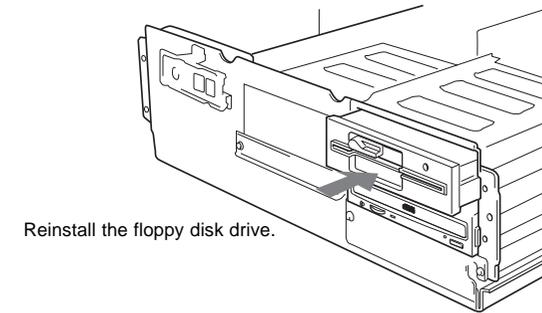
Mounting the Host Adapter

Install the host adapter in one of the available system expansion slots of your computer. Refer to the operating instructions included with the host adapter for complete instructions on installation and settings.

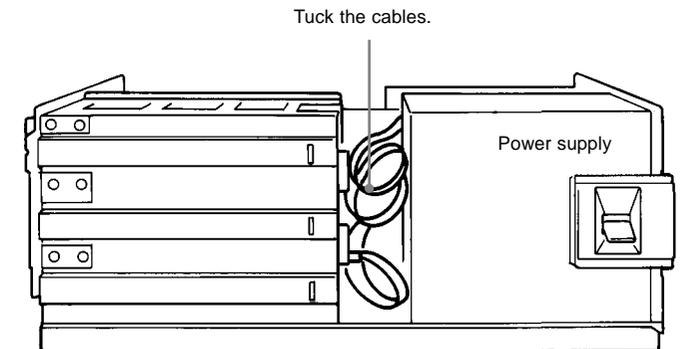


Reassembling the Computer

- 1 Reinstall the floppy disk drive in the top drive bay.



- 2 Reconnect the cables to the floppy disk drive.
- 3 Fasten the screws and front brackets as they were before.
- 4 Tuck the cables behind the drives so that they do not protrude above the power supply module.



- 5 After checking the following points, slide the computer's cover on and fasten the cover mounting screws at the back of the computer.
 - Are the connections between the drive and computer correct?
 - Are the jumpers set to the appropriate positions?
- 6 Remount the rear plastic panel and refer back to the proper installation section if you answered "no" to either of the questions above.

Installing the Software Driver

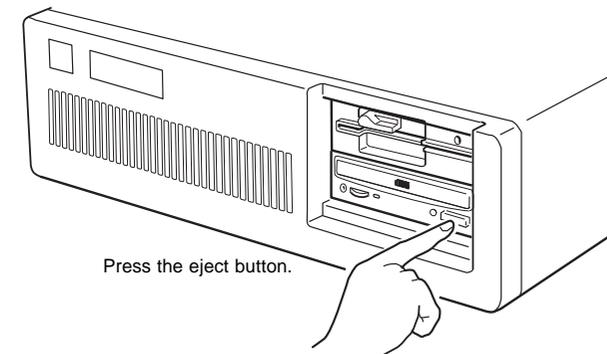
The MSCDEX (or equivalent) and a device driver for the CD-ROM drive are supplied with the host adapter. Install both the MSCDEX (or equivalent) and the device driver in order to use the CD-ROM drive. Refer to the manual supplied with the host adapter for instructions.

Operating the Drive

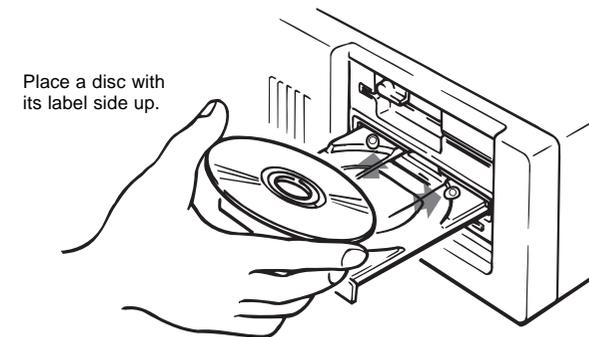
This section describes how to start the drive and eject a disc.

Starting the Drive

- 1 Turn on the power of your computer.
- 2 Press the eject button.
The drawer comes out automatically.

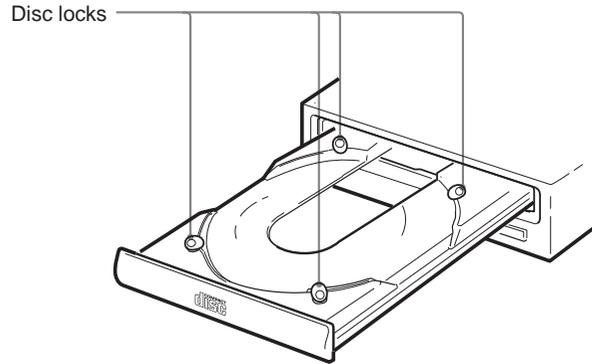


- 3 Place a disc in the drawer with its label side up.



Note:

When the drive is set up in vertical position, use the appropriate disc locks to prevent your disc from falling.



- 4** Gently push the drawer or press the eject button to close the drawer. The drive may begin reading the Table of Contents (TOC) data when it accepts the disc. The busy indicator lights up in amber while the drive is reading the TOC. For subsequent drive operations, follow the instructions provided with the application software you are using.

Note:

The busy indicator stays lit in amber if:

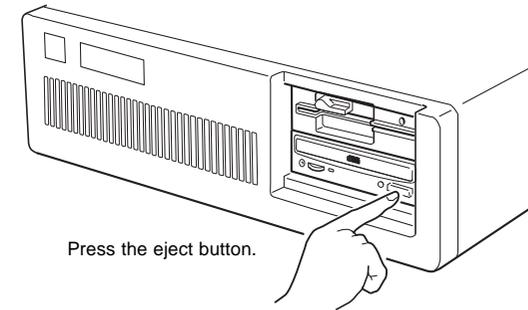
- the disc is not properly placed on the loading tray
- a malfunction occurs.

In either case, eject the disc and place it in the loading tray again making sure that it sits properly in the tray. If doing this does not solve the problem and the busy indicator still remains lit in amber, consult your dealer or qualified service personnel.

Caution: Do not forcibly close the disc drawer. Applying excessive force may damage the loading mechanism. The tray's mechanism is designed to operate with a "feather touch".

Ejecting the Disc

To eject the disc, press the eject button on the front panel. The drawer comes out automatically.



Note:

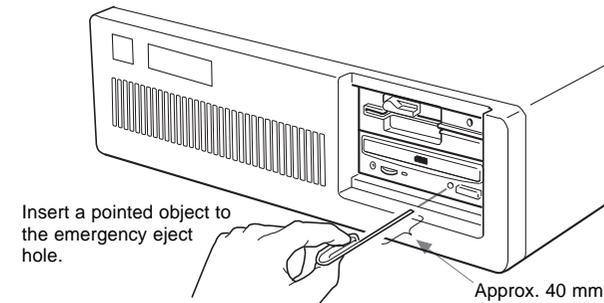
The eject button does not work if it is disabled by:

- the software you are using
- the PREVENT/ALLOW jumper

■ Opening the drawer manually in an emergency

You can open the drawer manually when it fails to come out by means of the eject button or software commands. To do this, follow the procedure below:

- 1** Turn off the power of your computer.
- 2** Insert a pointed object, such as a paper clip, into the emergency eject hole and push.



After removing a disc from the drive unit, consult your dealer or qualified service personnel.

Specifications

■ General

Host interface	SCSI-2
Disc	
Acceptable discs	CD-Digital Audio discs CD EXTRA discs CD-ROM mode-1 data discs CD-ROM mode-2 data discs CD-ROM XA discs (readable) Audio-combined CD-ROM discs CD-I discs (readable) CD-I Ready discs (readable) CD Bridge discs Photo CD discs (single and multisession) VIDEO-CD discs
Disc diameter	12 cm or 8 cm

■ Drive performance

Data transfer rate	
Sustained rate	150 kbytes/s (1X mode) 600 kbytes/s (4X mode) 1160–1800 kbytes/s (8X–12X P-CAV mode)
Burst rate	4 Mbytes/s (asynchronous) 10 Mbytes/s (synchronous)
Random access time	130 ms (typical/8X–12X P-CAV mode)

■ Reliability

Read error rate (includes retry, with a standard disc)	
L-EC on	1 block /10 ¹² bits
L-EC off	1 block /10 ⁹ bits

■ Audio

Output level	
Line out	0.75 V at 47 kΩ
Headphone	0.55 V at 32 Ω

■ Environmental conditions

Operating	
Temperature	5 °C to 50 °C (41 °F to 122 °F)
Humidity	10 % to 90 % (Max wet bulb 29 °C)
Atmosphere	Non-condensing
Non-operating/Storage	
Temperature	–30 °C to 50 °C (–22 °F to 122 °F)
Humidity	10 % to 90 %
Atmosphere	Non-condensing

■ Dimensions and Mass

Dimensions	Approx. 146 x 41.4 x 208 mm (w/h/d) (5 ¾ x 1 ⅞ x 8 ¼ inches)
Mass	Approx. 0.84 kg (2 lb 3 oz)

■ Power requirement

Voltage	+5 V DC ± 5 % and +12 V DC ± 10 %
Ripple	+5 V DC: ≤ 100 mVpp +12 V DC: ≤ 200 mVpp
Current	+5 V DC: 800 mA (typical) +12 V DC: 300 mA (typical)

■ Connectors

(with DC INPUT connector)	AMP 179376-1 or equivalent
AUDIO OUT connector	Molex 70066C or G, 700400C or G and 70430C or G, or equivalent

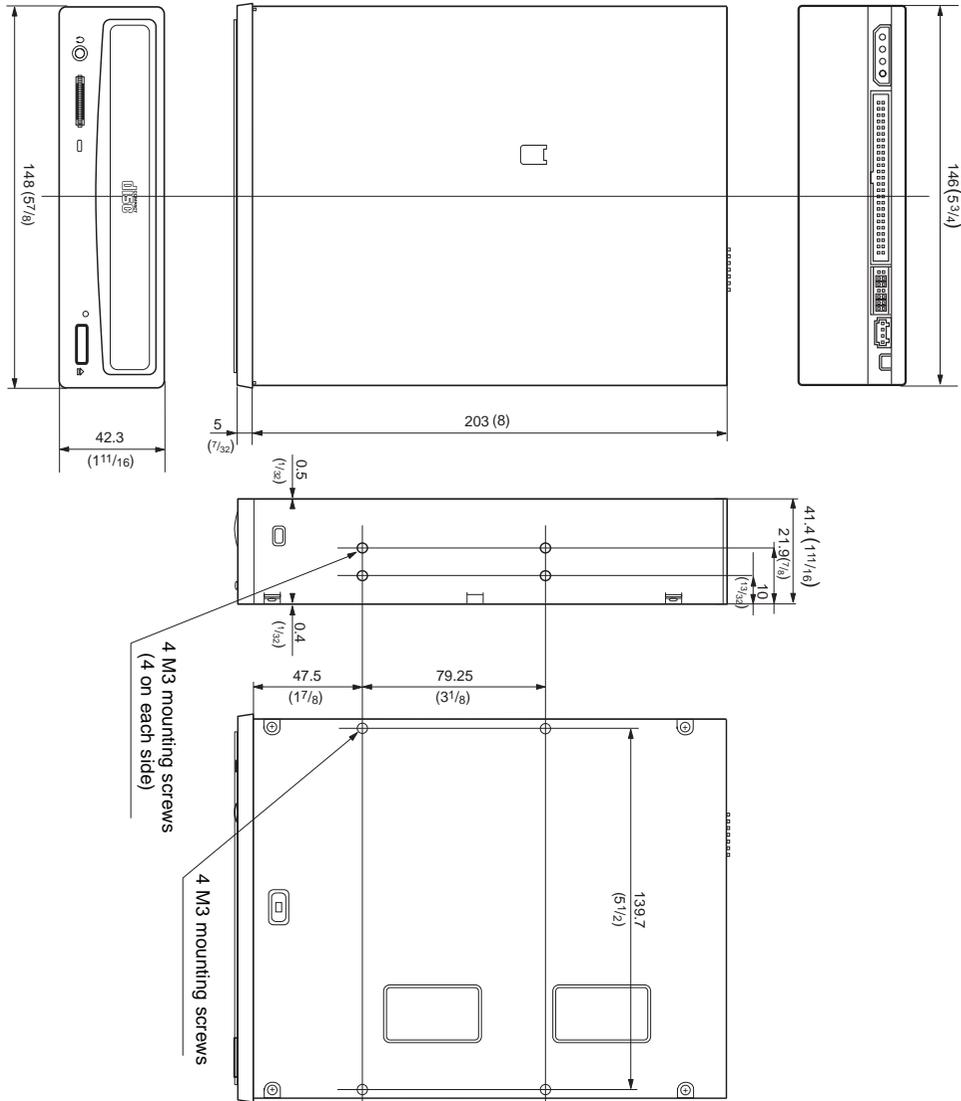
■ Laser

Type	Semiconductor laser GaAlAs
Wave length	780 nm
Output power	0.3 mW

■ Dimension diagram

Important:

The overhang of the screws should not exceed 6.0 mm from the surface of the side panels or the bottom plate.



Design and specifications are subject to change without notice.