

NOTICE

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 communication.

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.

FCC WARNING

Changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

- a Pay careful attention not to let the invisible laser beam emitted from the optical pickup enter into your eyes.
- b When you find a troubled state of the component in the optical pickup containing the laser diode, change to the specified new optical pickup. Do not open the optical pickup housings.

Akustischer Geräuschpegel

Dieser Drucker überschreitet einen Geräuschpegel von 70 dB (A) während dem Betrieb nicht.



Declaration of Conformity

“The Product complies with the requirements of the EMC Directive 89/366/EEC and the **Low Voltage Directive 73/23/EEC.**”

- Please take notice that the manufacturer of this equipment does not offer any warranty against data loss due to inappropriate installation or handling, or direct or indirect damages.
- Please take notice that the manufacturer will bear no responsibility for direct or indirect damages caused by the use of this product or its malfunction.
- Please take notice that the manufacturer will bear no responsibility for damage to data caused by this product.
- Please backup (copy) all important data as protection against data loss.

- PC DOS is a trademark of IBM Inc.
- Adaptec, and the Adaptec logo are trademarks of the Adaptec Corporation.
- MS-DOS, Windows, and Windows® 95 are trademarks registered in the United States and other countries by the Microsoft Corporation.
- The company names and product names written in this manual are trademarks or registered trademarks.

Handling Procedures

Obey the following cautions when handling the drive or discs.

Cautions During Installation

- Install the drive in accordance with the specifications. Be careful to avoid locations likely to cause vibration or shock.
- Avoid locations where there is high humidity, much dust, or poor ventilation.
- Avoid locations in direct sunlight, with severe changes in humidity, or places where there are extremely high or low temperatures.
- Don't use the drive near radio or television receivers. It may interfere with their reception.
- Dismantling the drive to attempt repairs or for other reasons is dangerous because the laser may radiate outside the unit. Do not disassemble the drive.

Cautions During Use

- Don't suddenly move the drive from a cold place to a warm one, or suddenly raise the room temperature. Condensation may occur, causing abnormal operation.
- Make sure to remove the disc before moving the drive. The disc may be damaged, causing data loss.
- Be careful to prevent foreign objects such as liquids or metal from entering the drive. Should by chance a foreign object enter the drive, please consult the dealer where the drive was purchased.
- Don't use benzene or thinner to clean dirt from the drive. Don't allow chemicals such as insecticides to contact the drive. Use a soft cloth to wipe the drive, or moisten a cloth with neutral detergent diluted with water and use it to clean particularly dirty areas.
- Don't cutoff the electric power while the drive is operating.
- If two different devices with the same SCSI ID are connected to the SCSI bus, the system may fail to function. Be careful that none of the SCSI IDs are the same when installing the equipment.
- Keep the total length of the SCSI cable within 6 meters.
- When connecting the SCSI cable to the drive, make sure the power is OFF.
- Never insert a damaged disc into the drive.
- In wintertime, don't use a disc soon after bringing in from outdoors. Use it only after it has reached room temperature.

Cautions Concerning Disc Cleaning

- Remove the disc by pressing the eject button.
- Use compressed air to clear dust from the drive. (Spray the compressed air for about 5 seconds). (See Fig. 1)
- Check to see if there is dirt on the surface of the disc. Be careful not to touch the disc with the fingers when doing this. (See Fig. 2)
- After cleaning the disc with compressed air, place it on the disc tray and load in the drive.

We suggest using Perfect Duster II (80z.) as compressed air for cleaning.

Disc tray

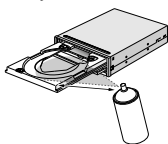
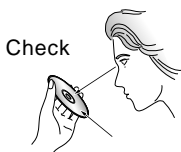


Fig. 1



Recording surface

Fig. 2

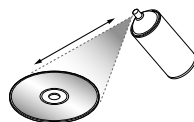


Fig. 3

Other Cautions

- When moving the equipment, make sure that the disc has been removed from the drive.
- When connecting connectors, make sure that the power is OFF. If the power is ON, there is a possibility of short circuit.
- When not using the drive for a long period, dust may adhere to the disc tray. Before using the drive again, use dry air cleaner to remove the dust from the tray.

Introduction

Thank you for purchasing the Multimedia Printer Series (Compact Disc Recorder/ReWriter) MP 7040S series (abbreviated CD-R/RW drive).

Be sure to read this manual carefully before using this product.

This manual explains everything you need to know to operate this product. Keep it in a safe place and refer to it whenever necessary.

Writing software must be installed in the host computer in order to write on the CD-R/RW discs. Refer to the software manual for details.

Multimedia Printer series

The Multimedia Printer Series Drive (the CD-R/RW Drive) can do much more than read and write the usual CD-R discs. When loaded with a rewritable CD-RW disc, you can record, read and edit any kind of data. This is because the CD-RW discs allow you to rewrite information that has already been recorded.

Features:

- * Ricoh's original completely sealed door construction provides high reliability.
- * Running OPC*¹ gives a flatter writing signal that improves reliability.
- * An improved anti-heat design means that no cooling fan is needed.
- * Easy-to-use tray model.
- * Uses the world standard SCSI II Interface.*²
- * Compliant with industry standard Orange Book Part II (CD-R) and Part III (CD-RW).
- * Can read not only CD-R and CD-RW discs, but also video CDs, music CDs, and photo CDs.
- * Can read data at 20x speed (3MB/sec data transfer rate) and write data at 4x speed (600KB/sec data transfer rate).
- * The recorded CD-RW media can be played in a DVD player or a multiread CD-ROM Player, maintaining future compatibility.
- * Supports random UDF for easy writing to CD-RW discs.

*1 Continuously monitors the signal level during recording and adjusts the laser power to compensate when the disc is dirty, insuring a flat signal.

*2 The SCSI interface board is not included with this product. You need to purchase it separately.

The MP 7040S Series

1. System environment

This unit can be operated in the system environment explained here.

System requirements	CPU	100 MHz (or faster) Pentium (for 4x speed, 166MHz or faster recommended)
	Memory	Windows 98/95: 32MB or greater. Windows NT Workstation Ver. 4.0: 32MB or greater (64MB or over recommended)
Hard disk		Hard disk with average access time of 19msec or less, and data transfer speed of 1,200KB/sec or greater. 75MB or more free space. (The free space needed for writing depends on the quantity of data.)* ¹
SCSI Interface		Adaptec Inc. AHA-154x, 2940 recommended.
Drive bay		5.25-inch half height bay required
Power		+5V/+12V power socket required
Software Required OS		Windows 98/95, Windows NT Workstation Ver. 4.0 (Service Pack 3) or later
CD-R, CD-RW discs		Ricoh, Kao, Mitsubishi Chemical, Taiyo Yuden, Mitsui Toatsu, TDK or Kodak discs are recommended.

- Occasionally the CD-R and CD-RW discs written by the CD-R/RW drive cannot be read by other CD drives*². These unreadable discs should be read using the CD-R/RW drive.

*¹ For write at 4X speed, average access time of 12 msec or less and data transfer speed of 5 MB/sec or greater are recommended.

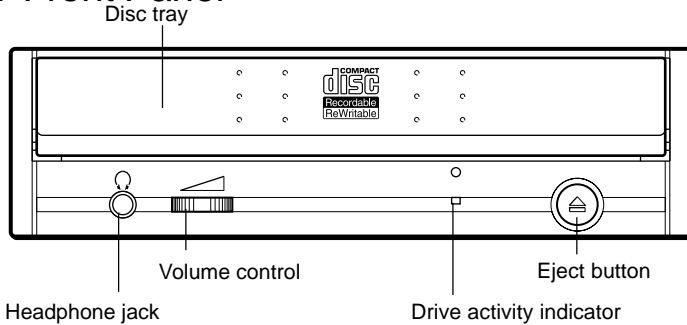
*² The disc written using the CD-R/RW drive might not be readable by CD-ROMs other than Multi-read compatible (Random UDF compatible) CD-ROMs.

Multiread compatible (Random UDF compatible) CD-ROMs are:

- (1) CD-ROMs that can read low reflectance
- (2) CD-ROMs that support Packet Write.

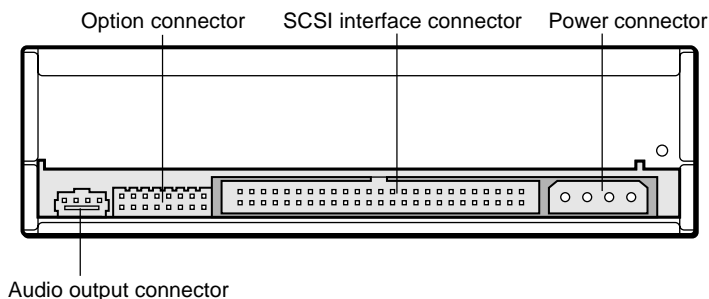
2. Drive functions and settings

2.1 Front Panel



Name	Function
Disc tray	This is the tray for the disc. Place the disc on the ejected disc tray, then lightly push the tray (or push the eject button) and the CD will be loaded. ⚠ Don't use force to pull out or push in the disc tray. This might cause damage to the loading section of the drive.
Eject button	This is the button used to eject or bring in the disc tray.
Volume control	This is used to adjust the output volume of the headphone jack. It can't be used to adjust the output volume for the audio output connectors on the rear panel. ⚠ Turn the volume down before turning on the power. Sudden loud noises can damage your hearing. This indicator is not illuminated unless the disk is currently being accessed.
Headphone jack	This jack is for connecting headphones or mini-speakers.
Drive activity indicator	This indicator lights green when the power is turned on. When a disc is loaded into the drive and the disc is being accessed, it flashes or lights orange. When the disc is not being accessed, it lights green. When an illegal disc is loaded or hardware trouble occurs, the indicator blinks.

2.2 Rear panel



Name	Function
Power Connector	Connects to the power supply (5- and 12-V DC) of the host computer. ⚠ Be careful to connect with the proper polarity. Connecting the wrong way may damage the system (and is not guaranteed).
SCSI interface connector	Use a 50 pin double-end flat SCSI cable to connect to the SCSI interface. ⚠ Connecting or disconnecting connectors while power is on may result in a short circuit, causing damage to the equipment. When connecting or disconnecting connectors, make sure to turn off the power beforehand.
Option connector	Used when selecting the SCSI ID number. Don't use jumpers to change anything besides the SCSI ID, but keep the drive as initially set(no jumper pins: ID 0) SCSI ID changes become valid after power is turned off, then on again. ⚠ Installing jumper pins besides the ones for SCSI ID settings may be the cause of damage or abnormal drive operation.
Audio output connector	Provides output to a sound card.

3. Installing the Drive

3.1 Before Installation

Before installing the drive, please note the following points.

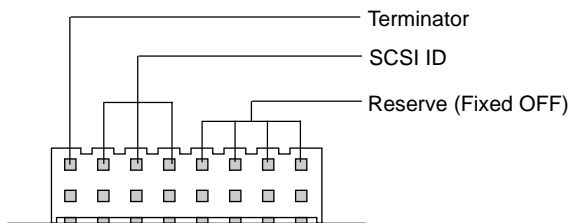
- you will need the following:
 - SCSI interface board and manual (The SCSI interface board is not included with this product. You need to purchase it separately. Also, see page 2 in the "System environment" section for a list of recommended models.)
 - Computer manual (You need the manual in order to find out location of the bus slot for installing the SCSI interface board.)
 - A Phillips head screw driver of a suitable size to fit the securing screws for the drive unit.
- Turn off all peripheral appliances of the computer, and the computer itself, and disconnect their power cords from the wall sockets.
- Discharge any static electricity by touching the computer covers etc.
- Record the serial number of the drive unit in the box below.

Serial No.	
------------	--

3.2 SCSI ID Settings

Before installation, set SCSI ID on the rear panel. A single SCSI interface can connect with a maximum of seven peripheral SCSI devices. When using multiple SCSI devices, a different SCSI ID must be set for each of them.

- ⚠ If two peripheral devices use the same SCSI ID number, it will cause the host computer to operate abnormally or fail to start up.



ON (When the jumper is attached)

OFF (When the jumper is removed)

⚠ Before attaching or removing jumpers, make sure the power to the drive is turned OFF.

⚠ Attach the pins as shown in Figure 1. If the pins are attached sideways as shown in Figure 2, the drive may be damaged.

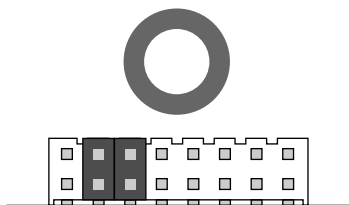


Figure 1.

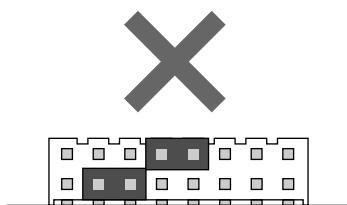










Figure 2.

⚠ The pins besides pins 2-4 don't have any function. If jumpers are attached to them, abnormal operation may result.

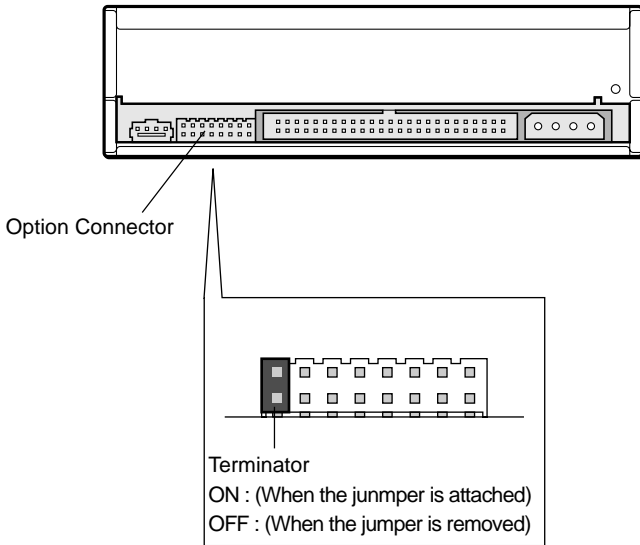
The SCSI ID number is decided by which of the jumper pins Nos.2, 3 and 4 are connected. Refer to the following table when changing the SCSI ID.

SCSI ID	Pin No.2	Pin No.3	Pin No.4	Jumper	Note
0	OFF	OFF	OFF	 234	Initial setting
1	ON	OFF	OFF	 234	
2	OFF	ON	OFF	 234	
3	ON	ON	OFF	 234	
4	OFF	OFF	ON	 234	
5	ON	OFF	ON	 234	
6	OFF	ON	ON	 234	
7	ON	ON	ON	 234	SCSI board

⚠ The initial setting for the SCSI interface board is generally set at SCSI ID 7. Confirm the SCSI ID of the SCSI interface board before setting other numbers.

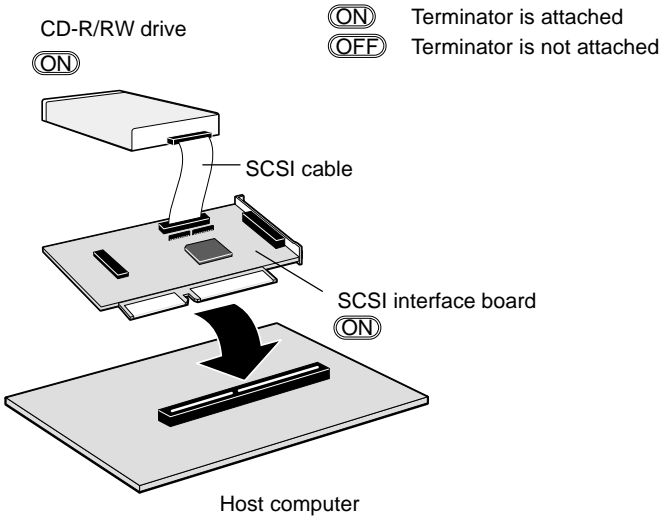
3.3 Terminator Setting

When no other SCSI peripheral devices besides the CD-R/RW drive are connected to the host computer, a terminator must be attached to the drive. Also, when multiple peripheral devices are connected, this drive needs a terminator if it is the last in the line.

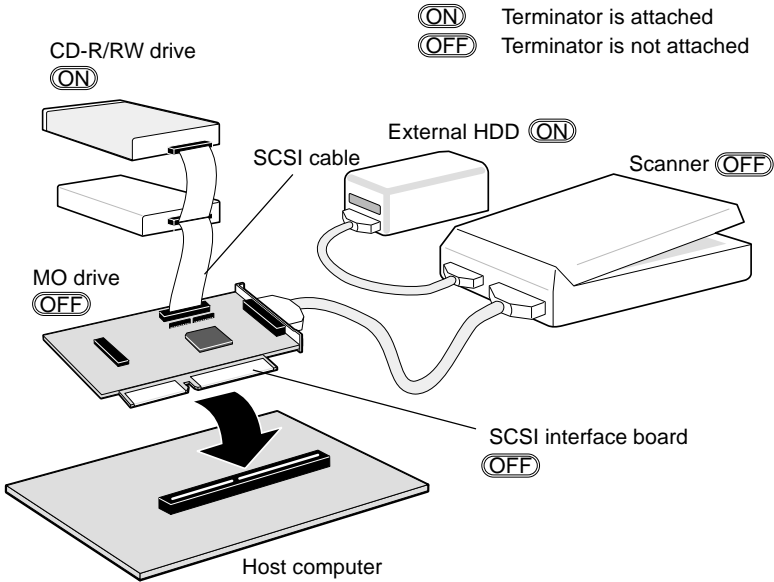


The terminator of this product can be set by installing (terminator: ON) or removing (terminator: OFF) the jumper pin from the option connector. When shipped, the jumper pin is installed (terminator: ON). Install or remove the pin as required.

When one drive is connected



When the drive and multiple peripheral devices are attached

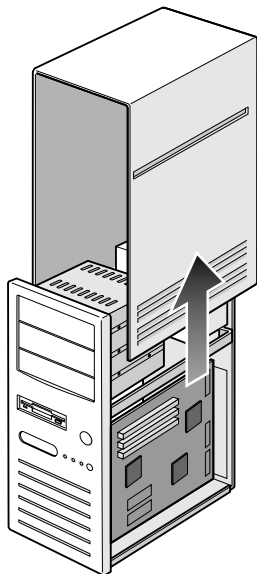


⚠ When attaching terminators to other peripheral devices, use the terminators that came with those devices.

3.4 Removing the Computer Cover

Make sure all peripheral devices of the computer and the computer itself are turned off, and then remove the cover. Refer to the manual for the computer for details about removing the cover.

- ⚠ There may be sharp edges inside the computer so care must be taken to avoid injury.

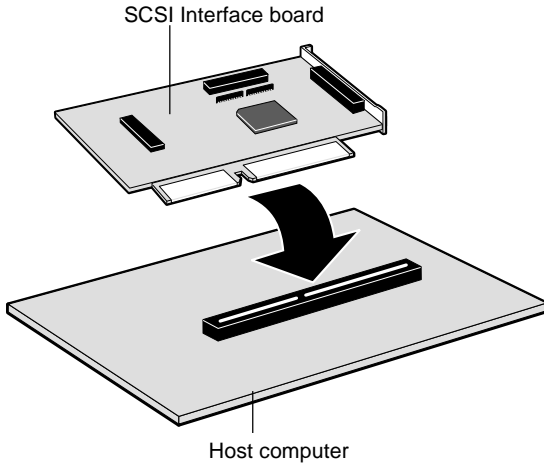


3.5 SCSI Interface Board Installation

Insert the SCSI interface board into the specified bus (ISA, VL, PCI) slots for each of them. Firmly push board until it is all the way in and completely in contact with its slot.

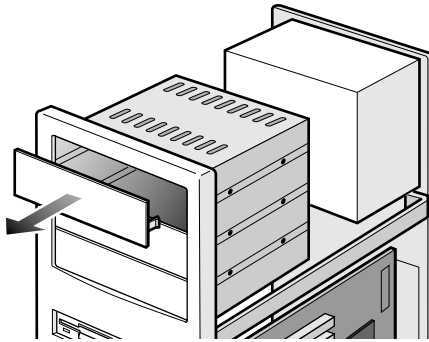


For a detailed explanation, refer to the manuals for the SCSI interface board.

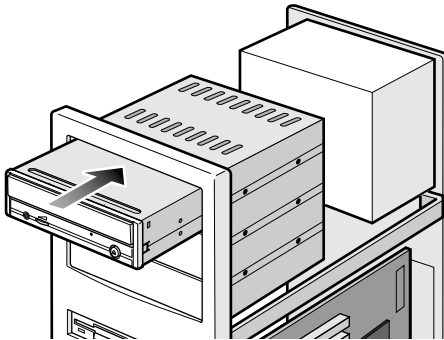


3.6 Mounting the Drive

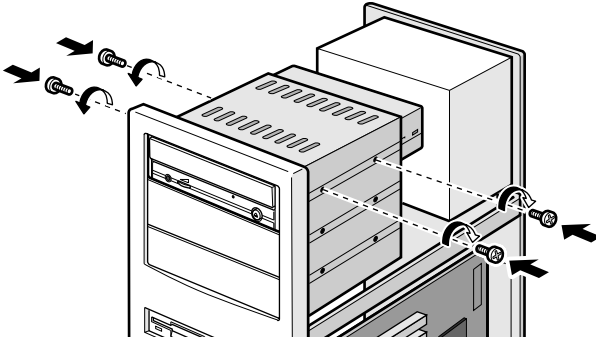
1. Remove the 5 inch drive bay panel from the computer. Refer to the manual for the computer for details.



2. Insert the drive unit into the bay. Do not apply excessive pressure to the cables inside the computer.



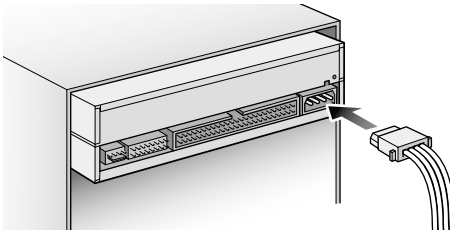
- Secure the drive with the screws provided. If there is not enough space behind the drive, connect the SCSI cables etc. before securing the drive.



3.7 Connecting the Power Connector.

Connect the power cable from the computer's power supply to the socket on the drive unit, fitting the connector snugly into the socket.

if there is no spare power cable available in the computer, you will have to purchase a splitter cable of a suitable type.



3.8 SCSI Interface and Sound Card Connection

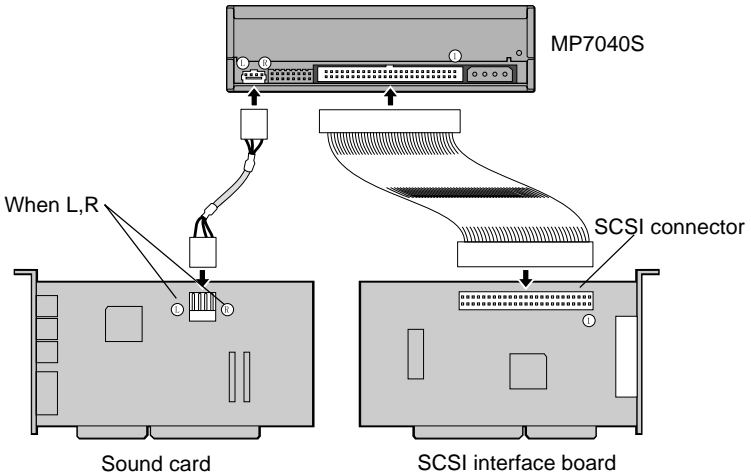
Connect the SCSI interface board to the drive.

If the computer is using a sound card. The drive is connected to the sound card with an audio cable.



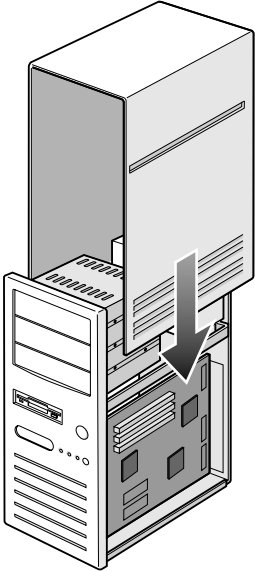
For a detailed explanation, refer to the manuals for the SCSI interface board and the sound card.

- ⚠ Be careful not to reverse the connectors when connecting the SCSI interface board and the sound card to the drive.



3.9 Replacing the Computer Cover


When the installation of the drive unit is complete, replace the computer cover.




4. Device Drivers

When using Windows 98/95 or Window NT Workstation Ver. 4.0, the installation of any special device drivers are not required.

4.1 For Windows 98/95 Users

- In order to ensure normal drive operation, please check the following:
 - The drive is displayed in
[control panels] - [system] - [device manager] - [CD-ROM]
 - 32-bit is displayed in
[control panels] - [system] - [performance]
- If the drive is not recognized by your computer, please check the following items.
 - If a  indicator is displayed on the SCSI adapter in
[control panels] - [system] - [devices manager] - [SCSI controllers], you will need to contact your PC's manufacturer or the motherboard's manufacturer and get the appropriate SCSI controller driver.

4.2 For Windows NT Workstation Ver.4.0 Users

- In order to ensure normal drive operation, please check the following:
 - The drive is displayed on the SCSI controller in
[control panels] - [SCSI adapter] - [devices]
- If the drive is not recognized by your computer, please check the following items.
 - If a  indicator is displayed on the SCSI controller in
[control panels] - [SCSI adapter] - [devices] , you will need to contact your PC's manufacturer or the motherboard's manufacturer and get the appropriate SCSI controller driver.

5. How to Use the Discs

- ⚠ When using CD-ROM discs, CD-R discs or CD-RW discs, don't attach any stickers or labels to the discs. Using discs with them attached not only causes read and write errors, but data on the disc may be lost due to damage to the disc itself.

5.1 Load the disc

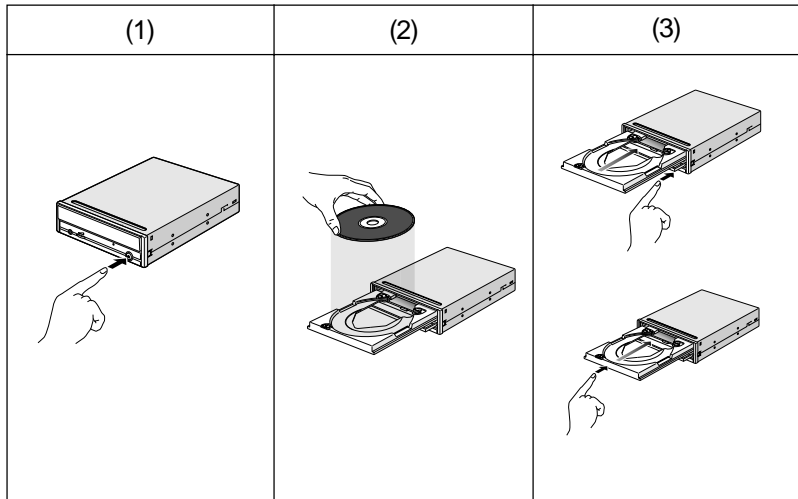
- (1) Press the eject button.
- (2) Place the disc on the disc tray.

- ⚠ When using a 120mm CD, place it in the large round depression. The face with the label on it should be up. Never place both discs in the tray at the same time.

* This drive cannot be used with 80 mm CDs.

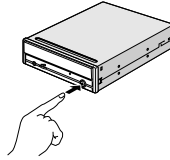
- ⚠ Be careful not to touch the recording surface of the disc.

- (3) Load the disc by pressing the eject button or by lightly pushing in the disc tray.




5.2 Disc ejection

- (1) Press the eject button




- (2) Slowly take the disc out of the disc tray
- (3) Press the eject button or push the disc tray and the tray will be brought back into the drive.


 After ejecting the disc, return the tray inside the unit quickly. When the tray is in the ejected position, dust and other debris will enter, possibly causing read errors, write errors, or drive failure.

5.3 Emergency Eject

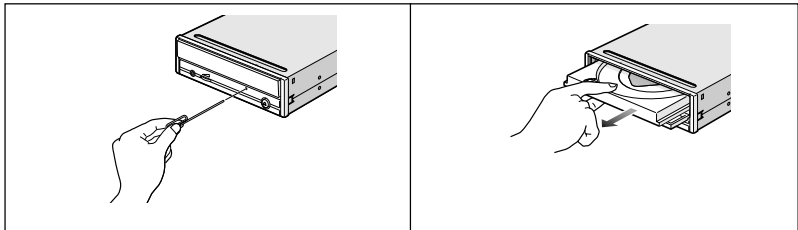
This drive has a function that allows the CD to be ejected manually if this becomes necessary in an emergency such as failure of the drive or a power outage. Follow the following procedures in such a case.

 Don't use this feature except in an emergency.

- (1) Turn the power to OFF.
- (2) Poke a fine tipped object into the small hole above the eject button. The front door pops open and the disk tray comes partway out.
- (3) Pull the front door to open it all the way, then grip the disc tray between thumb and forefinger and gently pull it straight out.

 This feature is a last measure to be used only in an emergency. Using it excessively will cause malfunction.

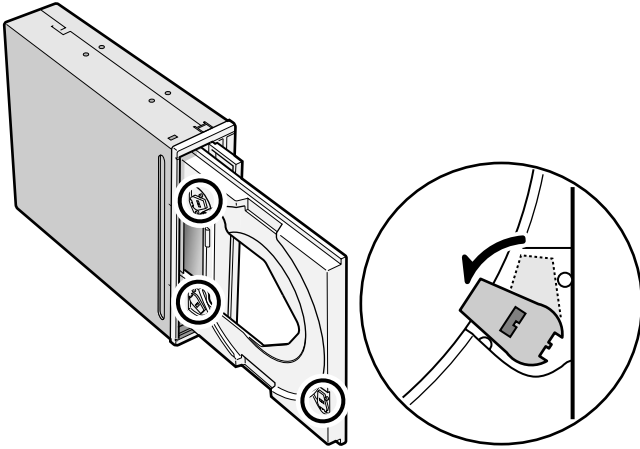
* If you cannot get a good grip on the disc tray with your fingers, use a steel binder clip or spring clamp to pull it out.



5.4 Using the Drive in a Vertical Position

The drive can be installed in a vertical position. If this is done, the tabs on the disk tray will need to be rotated to stop the disk from falling out. With your finger, rotate the tabs inwards until you hear a click, so they face the center of the tray. The disk is inserted on the inside of these tabs.

- ⚠ Make sure the eject button is at the top of the unit when installing the unit in a vertical position.



Appendix

1. Specifications

< Drive : MP7040S >

Type	Internal type (bare drive)			
Interface	SCSI-2			
Data buffer memory	2MB			
Data transfer speed	Max. 5 MB/sec.(Async.), 8 MB/sec.(Sync.)			
Write/Read speed (Ave)	20x : 3.00 MB/sec. (Mode1, Mode2, Form1) <only read>*1			
	20x : 3.40 MB/sec. (Mode2, Form2) <only read>*1			
	8x : 1,200 KB/sec. (Mode1, Mode2, Form1) <only read>*1			
	8x : 1,362 KB/sec. (Mode2, Form2) <only read>*1			
	6x : 900 KB/sec. (Mode1, Mode2, Form1) <only read>*1			
	6x : 1,021 KB/sec. (Mode2, Form2) <only read>*1			
	4x : 600 KB/sec. (Mode1, Mode2, Form1)			
	4x : 681 KB/sec. (Mode2, Form2)			
	2x : 300 KB/sec. (Mode1, Mode2, Form1)			
	2x : 342 KB/sec. (Mode2, Form2)			
Average access time	1x : 150 KB/sec. (Mode1, Mode2, Form1)			
	1x : 170 KB/sec. (Mode2, Form2)			
Average access time	120m sec. or less			
Initial processing time	CD-ROM 12 sec.			
	CD-R/RW 17 sec.			
Mounting direction	horizontal/vertical(eject button at top when vertical)			
Compatible formats	Format	<Write>	<Read>	<Play>
	CD-DA	●	●	●
	CD-ROM	●	●	
	CD-Extra	●	●	●
	CD-ROM XA	●	●	●
	Photo CD	●	●	
	CD-I	●	●	
	CD-ROM + CD-DA	●	●	●
	Video CD	●	●	●
Loading system	Tray type (automatic loading/eject)			
Power	DC5V, DC12V			
Power consumption	12w max (normal operation) 6w max (standby)			
Weight	Less than 1.5 Kg.			
Dimensions	146 × 193 × 41.5 mm (Width, depth, height)			
Reliability				
Error Rate	10 ⁻¹² bits or less			
MTBF	100,000 hours or greater			
MTTR	Within 30 minutes			
Environmental Conditions	When operating	When not operating		
Temperature	5°C to 40°C (No air cooling)	-30°C to 65°C		
Humidity	5% to 90% R.H.(Nocondensation)	5% to 95% R.H.(Nocondensation)		

* If you have trouble reading a disc, try reading it at a lower speed.

(continued)

Environmental Conditions	When operating	When not operating
Vibration	0.035mmpp (10 to 45Hz)	1 × 9.8 m/s ² (5 to 300Hz)
	0.025mmpp (45 to 65Hz)	
	0.2 × 9.8 m/s ² (65 to 150Hz)	
Shock	2 × 9.8 m/s ² (6m sec. half sine) (6m sec. half sine)	40 × 9.8 m/s ² (11m sec.)
Environmental dust	Class 3 million or less (3 million particles of 0.5 micron dust per cubic foot or less)	

The drive's appearance and specifications may change without notice.

<Disc>

	CD-R	CD-RW
Characteristic	CD-R	CD-RW
Dimensions (External diameter)	φ120 mm	φ120 mm
(Internal diameter)	φ15 mm	φ15 mm
(Thickness)	1.2 mm	1.2 mm
Recording area (User area)	φ50 to 116 mm	φ50 to 116 mm
Recording capacity (Time)	74 minutes	74 minutes
(Capacity)*	650MB	650 MB
(Linear speed)	1.2 m/s	1.2 m/s
Track pitch	1.6 ± 0.1μm	1.6 ± 0.1μm
Substrate material	Polycarbonate	Polycarbonate
Recording material	Organic pigment (phthalocyanine) / Au or Ag lamination (Organic protective layer attached)	Ag-In-Sb-Te phase change recording material
Reflectance (R to p)	65% or more	15 to 20%
Eccentricity	70μm or less	70μm or less
Maximum camber angle	0.4° or less	0.4° or less
Recommended recording power	6 to 7mW(at λ:785nm, NA:0.5)	8 to 14mW(at λ:785nm, NA:0.5)
Playback power	1mW or less	1mW or less
Playback stability	10 ⁶ times or more (0.7mW)	10 ⁶ times or more (Playback power = 1mW)
Environment for use	-5 to 55°C	10 to 40°C
	5 to 95%RH	10 to 80%RH
Storage life	10 years or more (5 to 25°C, 5 to 60%RH Avoiding direct sunlight)	30 years or more 5 to 25°C, 5 to 60%RH
Number of times rewritable	----	1,000 times or more

* The above specifications are for Ricoh CD-R and CD-RW discs

* Recommended Discs

CD-R : Ricoh, Kao, Taiyo Yuden, Mitsubishi Chemical, Mitsui Toatsu, TDK, and Kodak discs

CD-RW : Ricoh, Kao, Mitsubishi Chemical discs

* This drive cannot be used with 80 mm CDs.

* All references to the product in this document are to specifications in effect when the product was released.

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