DECpc

600-MB SCSI CD–ROM Drive Installation Guide

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1
Introduction

The RRD42 disk drive is a half-height, 5¼-inch, Compact Disk – Read-Only Memory (CD–ROM) device. It connects to your personal computer (PC) with the Small Computer System Interconnect (SCSI) bus.

You can use the drive to play audio CDs as well as to read computer data CDs. To listen to audio CDs, use software such as the Media Player application included with Microsoft Windows, Version 3.1.

The drive has the following features:

- 600-MB capacity
- Data transfer rate of 150 KB per second
- Burst rate of 1.5 MB per second
- Average seek time of less than 500 milliseconds
- Audio output jacks and a headphone jack

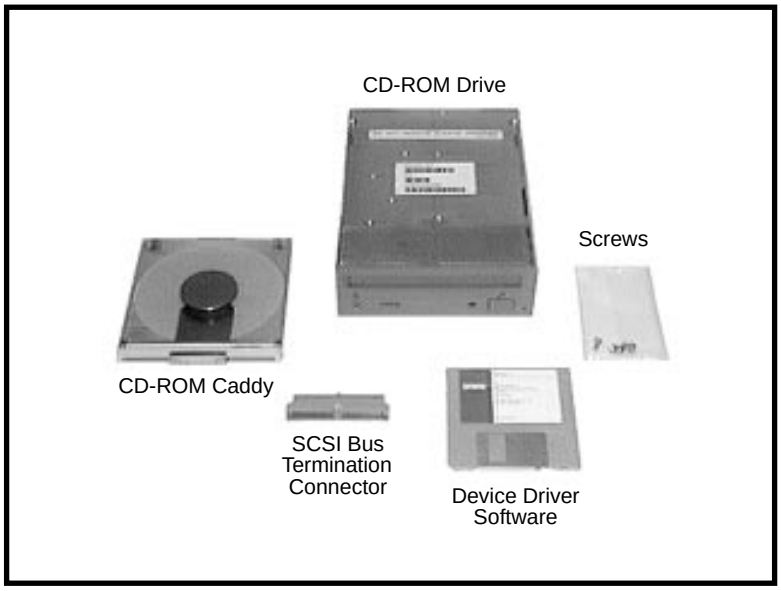
2

Package Contents

The CD–ROM drive kit (order number PCXCA–AA) contains the following items (Figure 2–1):

- CD–ROM drive (order number RRD42–AA)
- Caddy for a compact disk (CD) (order number RRD4X–CA/CDA for a pack of five caddies)
- SCSI bus termination connector
- Screws for mounting the CD–ROM drive
- Diskette(s) with device driver software

Figure 2–1 PCXCA–AA Kit Contents



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3

Preinstallation

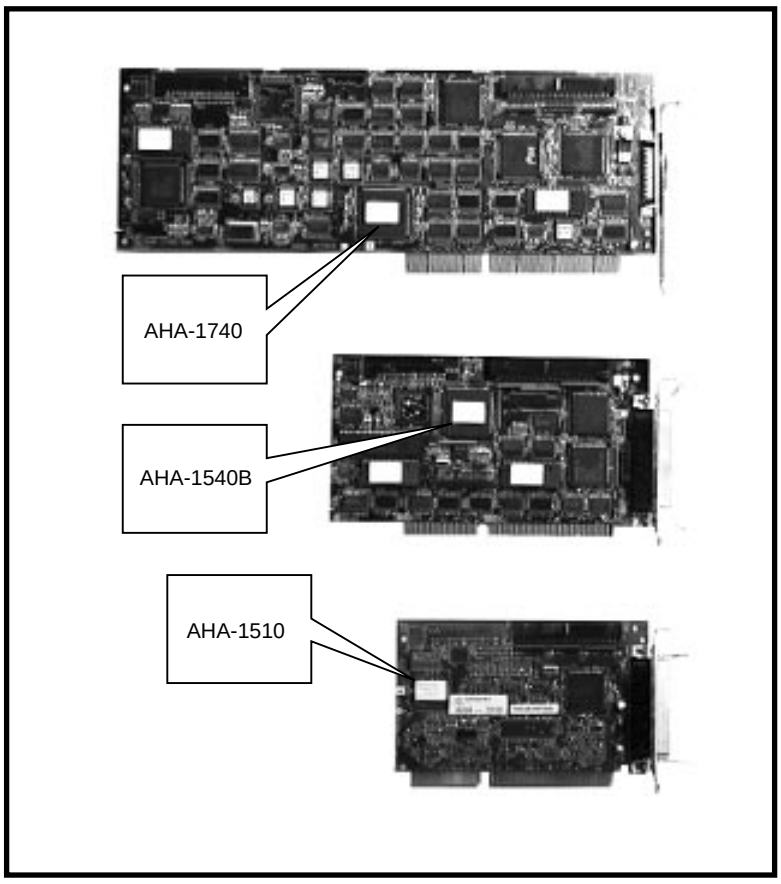
Determining Your Adapter Type

To install the CD–ROM drive, you must have one of the following Adaptec SCSI host adapter boards in your PC:

- AHA–1510
- AHA–1520
- AHA–1540
- AHA–1740

If you are not sure whether you have one of these adapter boards, remove the cover of your PC and check now. Some of these adapter boards are shown in Figure 3–1. Make a note of which board you have because you will need this information later to install the correct device driver software.

Figure 3–1 SCSI Host Adapter Boards



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If you do not have one of these SCSI host adapters boards, you must install one. The order numbers for new adapter boards are listed in Table 3–1.

Table 3–1 SCSI Adapter Order Numbers

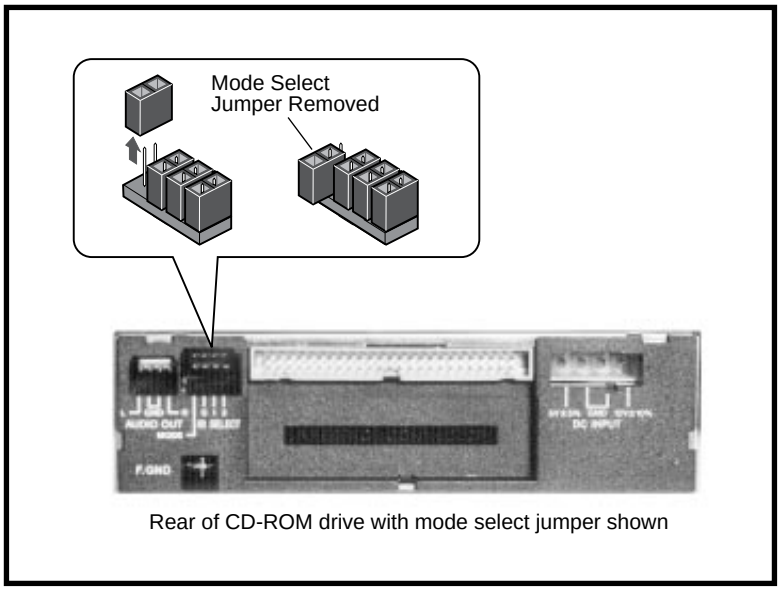
Adaptec Number	Digital Order Number	Description
AHA–1520	PCTAZ–AA	Basic adapter
AHA–1540	PCTAZ–AD	Higher performance adapter with Direct Memory Access (DMA) capabilities
AHA–1740	PCTAZ–AB	Adapter for use with 32-bit EISA bus only

Removing the Mode Select Jumper

The mode select jumper on the back of the CD–ROM drive sets the data transfer block size to 512 bytes for use with VMS and ULTRIX operating systems or 2 kilobytes for use with MS–DOS and OS/2 operating systems.

Set the block size to 2 kilobytes by removing the mode select jumper and placing it on the lower pin for storage (Figure 3–2). Use a small knife or other sharp object such as a bent paper clip to poke under the jumper and lift it off the pins.

Figure 3–2 Mode Select Jumper



Rear of CD-ROM drive with mode select jumper shown

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Setting the SCSI ID Jumpers

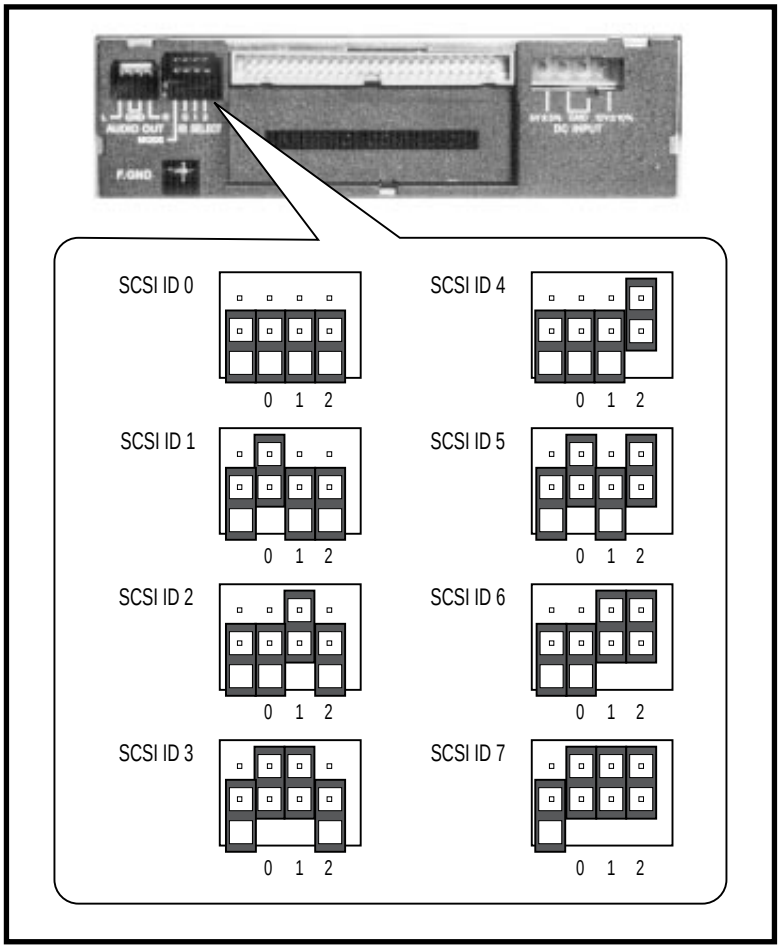
The SCSI bus on your Adaptec SCSI host adapter board can connect up to seven disk, tape, or other SCSI devices. Each of these devices must have a different SCSI ID number.

Check to see whether you have other SCSI devices connected to your Adaptec SCSI host adapter board. One or more internal SCSI devices can be connected to the ribbon cable at the top edge of the adapter board. External SCSI devices can be connected to the adapter board at the back panel of your PC.

The number of devices on your SCSI bus will be like one of the following two cases:

- **CASE 1:** If you have no other devices connected to your SCSI adapter, set the SCSI ID of your CD–ROM drive to 0. To set the ID to 0, remove all three jumpers and place them in the storage position on the lower pins (Figure 3–3). Any SCSI ID from 0 to 6 will work, but with settings other than 0, the boot time will be many seconds longer when you turn on your PC.
- **CASE 2:** If you have other SCSI devices already attached to your Adaptec SCSI host adapter board, you must choose a SCSI ID for your CD–ROM drive that is not already used by one of the other devices. If you do not know the SCSI IDs of the other devices, reboot your PC and watch the Adaptec device driver program display the information on your screen. As your PC reboots, watch for a line with "ASPI Manager for DOS." You should see something like Example 3–1.

Figure 3–3 Setting the SCSI ID Jumpers



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Example 3–1 Adaptec Device Driver Display

```
AHA--1540/1542/1640 ASPI Manager for DOS
Version 3.0
Copyright 1991 Adaptec, Inc.

     Host Adapter #:        0        Host Adapter SCSI ID:   7 ❶
     I/O Port Address       330      DMA Channel:            5
     Interrupt Level:       11       VDS Support Level:      MultiSegRW

     Host Adapter #0 - SCSI ID 0 - LUN 0:QUANTUM P40S 940-40-94xx ❷
     Host Adapter #0 - SCSI ID 1 - LUN 0:QUANTUM P105S 910-10-94xx ❸

     Int 13H active for drive C: and D:

Int 13 H routed through ASPI manager
ASPI4DOS.SYS Installation Successful
```

In Example 3–1, the SCSI host adapter board is using SCSI ID 7 (❶). Two other devices are on the SCSI bus (❷ and ❸). They are both Quantum disk drives and their SCSI IDs are 0 and 1. In this case, you can set the ID for your CD–ROM drive to any number from 2 to 6 (Figure 3–3).

If the "ASPI Manager for DOS" line is displayed, but you do not get information about the device SCSI IDs, then follow these steps:

1. Edit your CONFIG.SYS file.
2. Find the line that looks like:

   ```
   DEVICE=C:\SYS\ASPI4DOS.SYS
   ```

   This line may have "ASPI2DOS.SYS," "ASPI4DOS.SYS," or "ASPIEDOS.SYS."
3. Add the /D switch (Display) to the line:

   ```
   DEVICE=C:\SYS\ASPI4DOS.SYS /D
   ```
4. Reboot your PC and watch for the device SCSI ID information.

Attaching Mounting Brackets

Attach mounting brackets to your CD–ROM drive with the screws provided in this kit. The mounting brackets are not included in this kit and should have come with your PC. Instructions for attaching the mounting brackets should also have come with your PC.

4

Completing the Installation

Mounting the Drive

Mount the CD–ROM drive in a 5¼-inch bay.

Note

Depending on the layout of your PC, it may be easier to connect the cables before or after you mount the drive in the bay. The instructions for mounting the drive in a bay should have come with your PC.

Providing SCSI Bus Termination

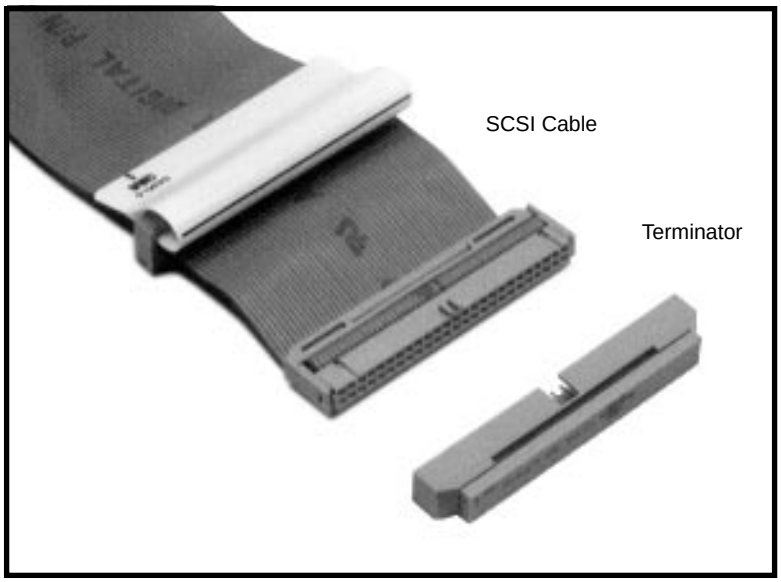
You must have termination resistors at each end of the SCSI bus. In its fullest configuration, the SCSI bus extends:

1. From the last external SCSI device outside your PC
2. To the rear connector on your Adaptec SCSI host adapter board
3. Through the adapter board to the internal SCSI ribbon cable
4. To the last device on the internal SCSI ribbon cable

The configuration of your SCSI bus will be like one of the following five cases:

- **CASE 1:** If you have a SCSI terminator at the end of your SCSI ribbon cable (Figure 4–1), this takes care of your bus termination requirements. Connect your CD–ROM drive to any other connector on the SCSI cable.

Figure 4–1 SCSI Terminator at the End of the SCSI Cable



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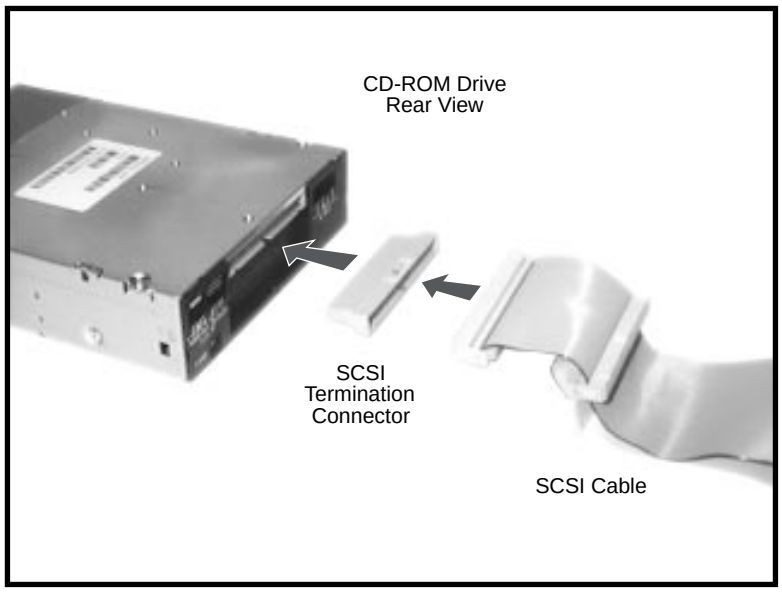
- **CASE 2:** If you have no SCSI devices connected to your SCSI host adapter board and your SCSI cable has no terminator, follow these steps:

  1. Insert the SCSI termination connector (included in this kit) into the CD–ROM drive and then connect the SCSI cable to the connector (Figure 4–2).
  2. Connect the other end of the SCSI cable to the SCSI host adapter board. The SCSI termination resistors in the SCSI host adapter board are installed at the factory.

Figure 4–2 Connecting the SCSI Cable with the Termination Connector



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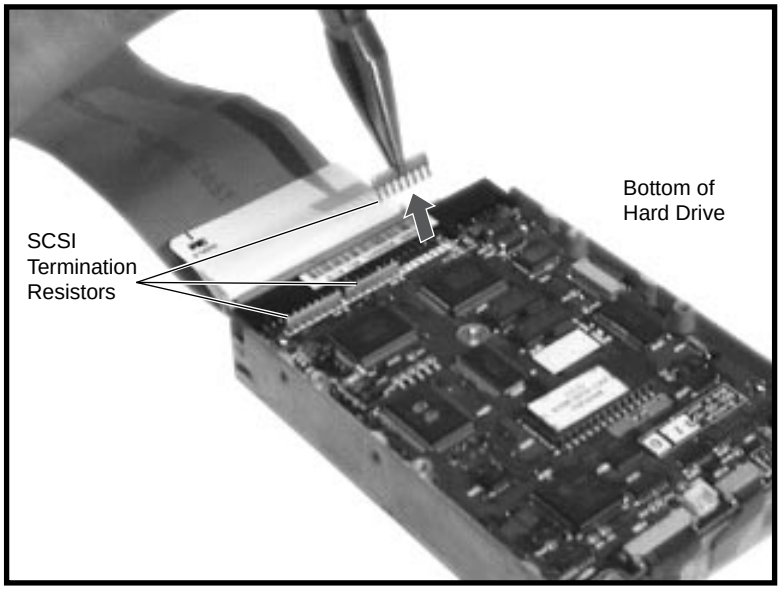
- **CASE 3:** If you already have internal SCSI devices connected to the SCSI host adapter board, you have no SCSI terminator on your SCSI cable, and you are connecting your CD–ROM drive near the end of the SCSI cable past your last device, you must follow these steps:

  1. Insert the SCSI termination connector into your CD–ROM drive.
  2. Remove the termination resistors from the SCSI device that was previously the last device on the SCSI bus.

  For most SCSI devices, the termination resistors are in three resistor packs that are next to the SCSI connector (Figure 4–3).

Figure 4–3 Removing SCSI Termination Resistors from a Hard Drive



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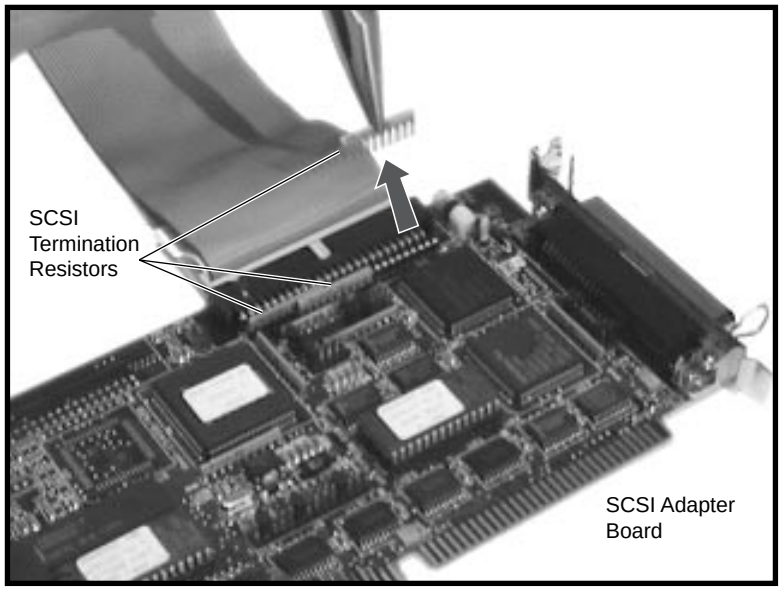
- **CASE 4:** If you are connecting the CD–ROM drive to the middle of the SCSI bus so that another device remains at the end of the bus, connect the SCSI cable directly to the CD–ROM drive without using the SCSI termination connector.
- **CASE 5:** If you have only external SCSI devices connected to your SCSI host adapter board and are installing the CD–ROM drive on the internal SCSI ribbon cable, you must follow these steps:
  1. Remove the termination resistors from the adapter board (Figure 4–4).
  2. Connect one end of the SCSI cable to the SCSI host adapter board.
  3. If you have a SCSI terminator at the end of your SCSI cable, connect the SCSI cable to the CD–ROM drive without using the SCSI termination connector.
  4. If you do not have a SCSI terminator at the end of your SCSI cable, insert the SCSI termination connector into your CD–ROM drive. Then connect the SCSI cable to the termination connector.

Figure 4–4 Removing SCSI Termination Resistors from the Adapter Board



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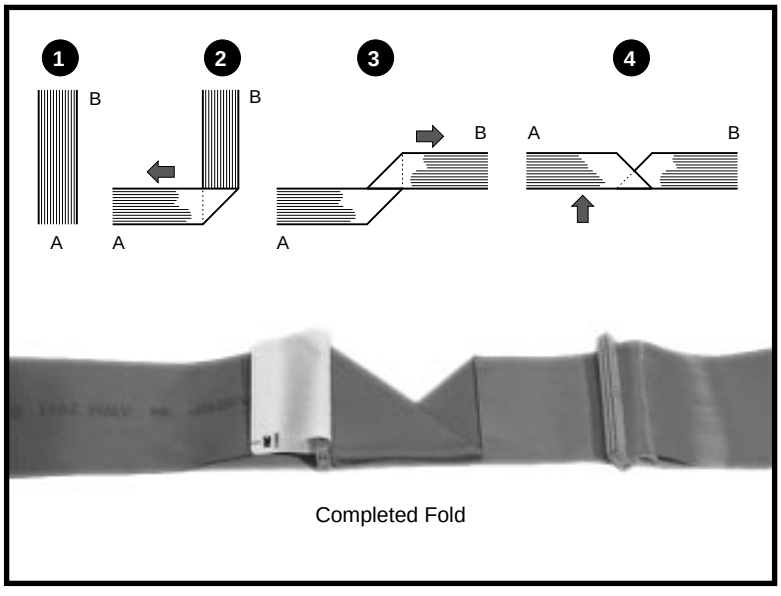
Connecting the SCSI Cable

Connect the internal SCSI ribbon cable to the CD–ROM drive. Note the following conditions:

- The edge of the cable with the colored stripe must be connected to pin 1 of the connector. The cable and connector are keyed so that you cannot connect them backwards.
- The SCSI ribbon cable may have more than one connector. It does not matter which connector you use.
- The SCSI connector on the CD–ROM drive is up-side-down compared to the connectors on most disk drives. If you must twist the cable to connect it, you can make a neat, compact twist by folding the cable as shown in Figure 4–5.

Figure 4–5 Inverting the SCSI Connector by Folding the Cable



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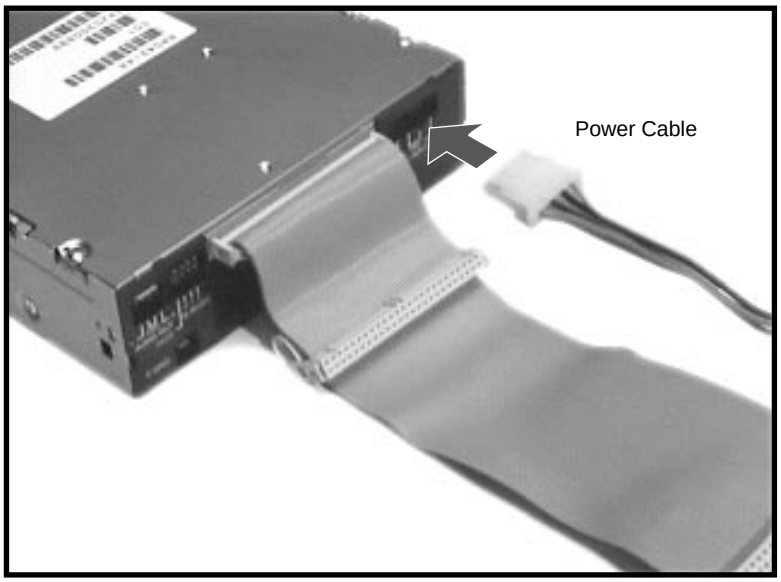
Connecting the Power Cable

Connect the 4-pin power cable to the CD–ROM drive (Figure 4–6).

Figure 4–6 Connecting the Power Cable



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5

Installing Device Drivers

Loading Device Driver Files

Copy the device driver files from the diskette(s) into your system area. Which files you must copy depends on which Adaptec SCSI host adapter board you have. Table 5–1 lists which files to copy. The device driver kits in the table may be subdirectories on a single diskette or they may be on separate diskettes.

Table 5–1 Copying Device Driver Files

If You Have	Copy These Files
AHA–1510 or AHA–1520	ASPI2DOS.SYS from the ASW1210 device driver kit ASWCDDEC.SYS and MSCDEX.EXE from the ASW410 device driver kit
AHA–1540 or AHA–1740 (16-bit mode)	ASPI4DOS.SYS from the ASW1410 device driver kit ASWCDDEC.SYS and MSCDEX.EXE from the ASW410 device driver kit
AHA–1740 (32-bit mode)	ASPIEDOS.SYS from the ASW1410 device driver kit ASWCDDEC.SYS and MSCDEX.EXE from the ASW410 device driver kit

Editing the CONFIG.SYS File

Make the following changes to your CONFIG.SYS file:

1. Some earlier SCSI host adapters used a device driver called SCSIHA.SYS. If your CONFIG.SYS file has a line with "SCSIHA.SYS" such as DEVICE=C:\SYS\SCSIHA.SYS, delete the line.
2. Add two new lines to your CONFIG.SYS file (unless you already have these lines). These lines should go at the beginning of the file, after the lines "BUFFERS=*n*" and "FILES=*n*". The lines you must add depend on which SCSI host adapter board you have (Table 5–2).

Table 5–2 Adding Lines to Your CONFIG.SYS File

SCSI Host Adapter Board	Lines to Add
AHA–1510 or AHA–1520	DEVICE=C:\SYS\ASPI2DOS.SYS /D DEVICE=C:\SYS\ASWCDDEC.SYS /D:CDROM
AHA–1540 or AHA–1740 (16-bit mode)	DEVICE=C:\SYS\ASPI4DOS.SYS /D DEVICE=C:\SYS\ASWCDDEC.SYS /D:CDROM
AHA–1740 (32-bit mode)	DEVICE=C:\SYS\ASPIEDOS.SYS /D DEVICE=C:\SYS\ASWCDDEC.SYS /D:CDROM

If you have a line with "ASPIDISK.SYS" in your CONFIG.SYS file, add one new line before and the other new line after the ASPIDISK.SYS line, as follows:

```
DEVICE=C:\SYS\ASPIxDOS.SYS /D
DEVICE=C:\SYS\ASPIDISK.SYS
DEVICE=C:\SYS\ASWCDDEC.SYS /D:CDROM
```

The /D switch in the ASPI*x*DOS.SYS line is an optional switch that causes the device driver to display more information on your screen when you turn on your PC.

The /D:CDROM switch in the ASWCDDEC.SYS line specifies a device name, "CDROM" in this case, for your CD–ROM drive. You can use any name you like, but it must be the same as the name that you enter in the MSCDEX.EXE line in your STARTNET.BAT or AUTOEXEC.BAT file. If you have more than one CD–ROM drive, add a /D: switch with a different device name for each drive.

Editing the STARTNET.BAT File

The Microsoft CD–ROM Extension program, MSCDEX.EXE, loads the device driver for your CD–ROM drive(s). You use MSCDEX.EXE for connection to remote CD–ROM drives on the network as well as to local CD–ROM drives in your PC.

Only one of your system boot files, STARTNET.BAT or AUTOEXEC.BAT, should run MSCDEX.EXE. To determine in which file to place the MSCDEX.EXE line, perform the following steps:

1. Check to see if your system boot uses a STARTNET.BAT file by searching your AUTOEXEC.BAT for the line "CALL \DECNET\STARTNET".

   If you do not have this line, add the MSCDEX.EXE line to your AUTOEXEC.BAT file. See the next section, Editing the AUTOEXEC.BAT File.

2. If your system boot does use a STARTNET.BAT file, check to see if an MSCDEX.EXE line is already in your STARTNET.BAT file. The line looks like this:

   ```
   %_SYSD%\LMDOS\DRIVERS\PCSA\MSCDEX.EXE /D:$LADCD /E
   ```

   If you do not have this line, add the MSCDEX.EXE line to your AUTOEXEC.BAT file. See the next section, Editing the AUTOEXEC.BAT File.

3. If you do have an MSCDEX.EXE line in your STARTNET.BAT file, edit the line by adding a /D switch for each CD–ROM drive that you are installing. The line should look like this:

   ```
   %_SYSD%\LMDOS\DRIVERS\PCSA\MSCDEX.EXE /D:$LADCD /E /D:CDROM
   ```

   The device name(s), "CDROM" in this case, must be the same as the device name(s) that you used in the ASWCDDEC.SYS line in your CONFIG.SYS file.

   You can specify a drive letter for your CD–ROM drive with the /L switch as shown:

   ```
   %_SYSD%\LMDOS\DRIVERS\PCSA\MSCDEX.EXE /D:$LADCD /E /D:CDROM /L:G
   ```

   In this example, if you had two remote CD–ROM drives and one local CD–ROM drive, the remote drives would be drives G and H and the local drive would be drive I.

You can use the PATHWORKS command USE /STATUS to get a list of all of your drive letter assignments.

Editing the AUTOEXEC.BAT File

Make the following changes to your AUTOEXEC.BAT file only if you do *not* have an MSCDEX.EXE line in your STARTNET.BAT file:

1. Add the following line:

   ```
   C:\SYS\MSCDEX.EXE /D:CDROM /M:12 /V /L:R
   ```

   Be sure to include the spaces in the line. If you have a network operating system such as the PATHWORKS network operating system, you must enter the MSCDEX.EXE line after any file redirector. In the case of PATHWORKS, place the MSCDEX.EXE line after the CALL \DECNET\STARTNET line as follows:

   ```
   CALL \DECNET\STARTNET
   C:\SYS\MSCDEX.EXE /D:CDROM /M:12 /V /L:R
   ```

   The MSCDEX.EXE software switches have the functions described in Table 5–3.

2. If you use PATHWORKS and your PC connects to Local Area Disk (LAD) drives, you must also add USE /UNFIX to your AUTOEXEC.BAT file.

   To determine whether you have LAD drives, search for the line "DEVICE=C:\DECNET\LADDRV.SYS" in your CONFIG.SYS file. If you have this line, add USE /UNFIX to your AUTOEXEC.BAT file as shown:

   ```
   CALL \DECNET\STARTNET
   USE /UNFIX
   C:\SYS\MSCDEX.EXE /D:CDROM /M:12 /V /L:R
   ```

   The USE /UNFIX line reserves the drive letters that the network software assigns to the LAD drives. Without USE /UNFIX, MSCDEX.EXE may assign a LAD drive letter to your CD–ROM drive.

Table 5–3 MSCDEX.EXE Software Switches

Switch	Function
/D	Specifies the device name that you used in the ASWCDDEC.SYS line in your CONFIG.SYS file. Include one /D switch for each of your CD–ROM drives.
/M:12	Specifies the number of memory buffers.
/V	Specifies verbose mode, which displays more information on your screen when you turn on your PC.
/L:R	Specifies the drive letter for your CD–ROM drive, drive "R" in this case. If you omit this switch, your CD–ROM drive will be assigned the next available drive letter after your hard disk drives, reserved LAD drives, and connected remote file services.
/E	Tells the MSCDEX.EXE program to use expanded memory if your system is using expanded memory.

6

Using the RRD42 CD–ROM Drive

Controls and Indicators

Figure 6–1 shows the front panel of the CD–ROM drive and Table 6–1 describes the controls and indicators.

Figure 6–1 Front Panel of the CD–ROM Drive

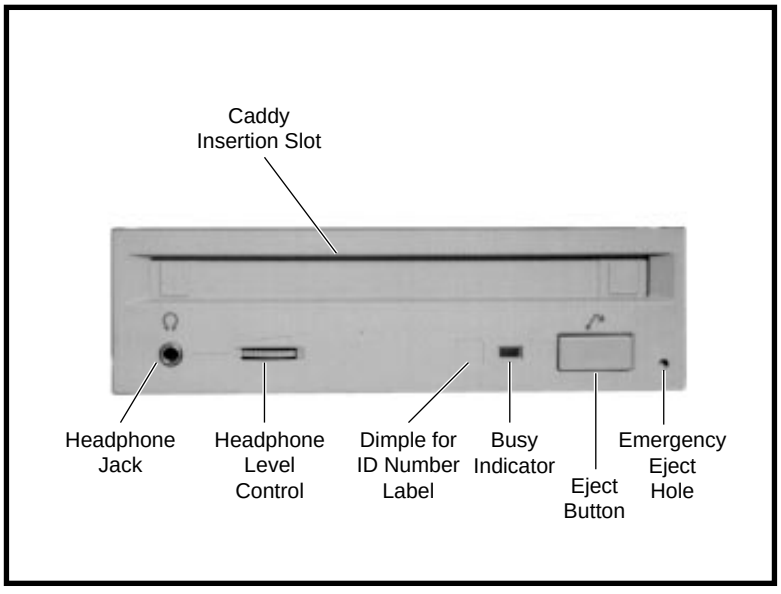

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Table 6–1 Front Panel Controls and Indicators

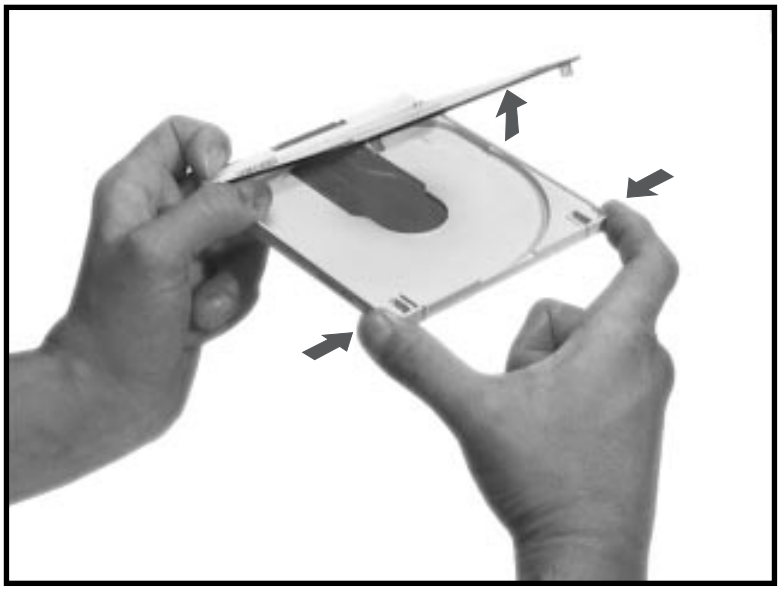
Controls/Indicators	Function
Headphone jack	Accepts a headphone connector.
Headphone level control	Adjusts the volume.
Caddy insertion slot	Accepts a caddy loaded with a disk.
Dimple	You may place a drive letter label (not included) here.
Busy indicator	Lights when data is read from the disk and blinks during seek operations.
Eject button	Ejects the caddy from the drive.
Emergency eject hole	Allows you to eject the caddy manually from the drive when the power is off.

Inserting a Disk into the Drive

Follow these steps to insert a disk into the CD–ROM drive:

1. If a protective film is on the lid of the caddy, remove the film before using the caddy.
2. Open the lid of the caddy by pressing the tabs on both sides and lifting the lid (Figure 6–2).

Figure 6–2 Opening the Caddy



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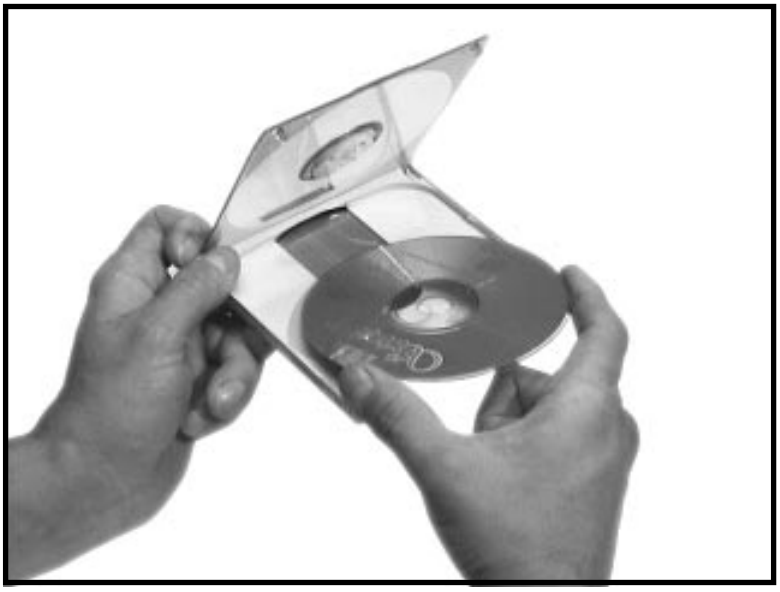
3. Insert the disk into the caddy with the label up (Figure 6–3).

Caution

Hold the disk by the edges. Try not to touch the surface of the disk. The disk can stand only a limited amount of dirt and oils from your skin before developing data errors.

Figure 6–3 Inserting a Disk into the Caddy



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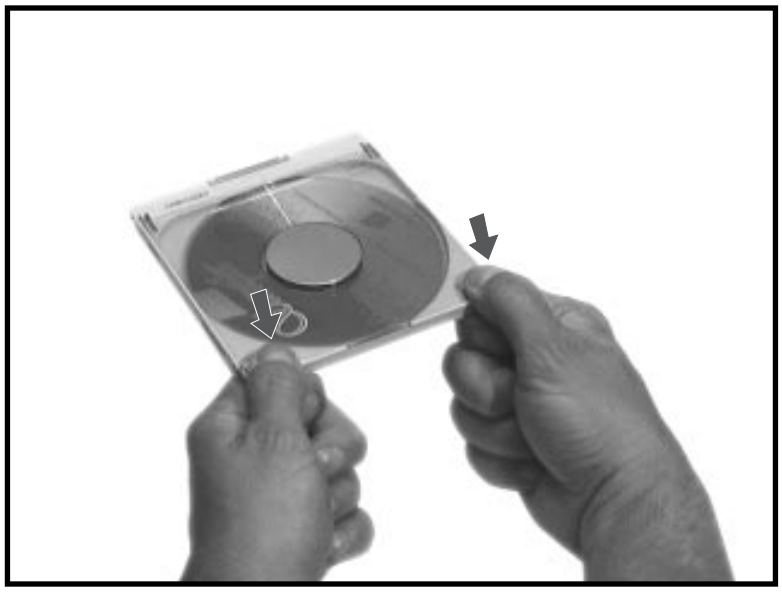
4. Close the lid by pressing both corners firmly (Figure 6–4).

Figure 6–4 Closing the Caddy



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5. Insert the caddy into the drive (Figure 6–5).

Figure 6–5 Inserting the Caddy into the Drive

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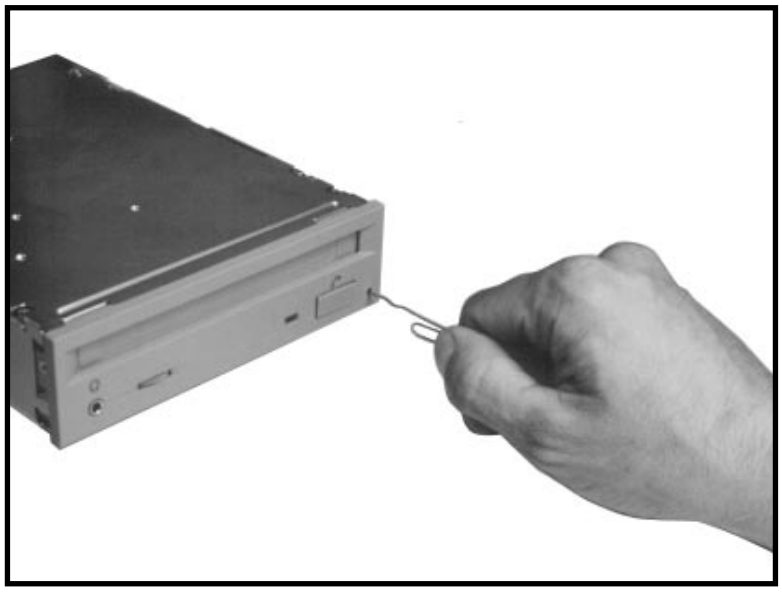
Manually Ejecting the Caddy

You can manually eject the caddy when your PC is turned off or during a power failure by inserting a paper clip or other sturdy object into the emergency eject hole (Figure 6–6). You must push hard. A large size paper clip works better than the standard size.

Figure 6–6 Manually Ejecting the Caddy



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Caring for Your Drive and Disks

The RRD42 CD–ROM drive does not require cleaning. However, ensure that the environment where the drive is installed will be free from dust and dirt.

Avoid placing the disk and caddy in a location subject to:

- Dust
- Direct sunlight
- High temperature
- High humidity

If data errors occur, try cleaning the disk. Wipe the disk from the center out with a clean, lint-free cloth. If this is not sufficient, clean the disk with mild soap and water. Do not use solvents, such as benzene, paint thinner, commercial cleaners, or antistatic sprays.

A
Specifications

Table A–1 lists the RRD42 CD–ROM drive specifications.

Table A–1 RRD42 CD–ROM Drive Specifications

Characteristic	Specification(s)
Acceptable disk	CD–ROM mode–1 data disk CD–ROM mode–2 data disk CD audio disk Audio-combined disk
Rotational speed	The drive varies rotational speed as it moves from track to track. Innermost track: 530 r/min at constant linear velocity (CLV) of 1.4 m/s Outermost track: 200 r/min at CLV of 1.2 m/s
Data transfer rate	Sustained rate: 150 KB/s Burst rate: 1.5 MB/s
Access time	Full stroke: 0.7 s (typical) Average seek: 0.45 s (typical)
Audio output level	Line out: 0.5 V at 47 kΩ Headphone: 0.55 V at 32 Ω (at maximum volume)
Operating environment	Temperature: 5°C (41°F) to 50°C (122°F) Humidity: 10% to 90% Atmosphere: noncondensing
Nonoperating environment	Temperature: –30°C (–22°F) to 55°C (131°F) Humidity: 10% to 90% Atmosphere: noncondensing
Host interface	SCSI-2
Dimensions	148.5 mm W × 42.5 mm H × 208.2 mm D (5.85 in W × 1.67 in H × 8.2 in D)

(continued on next page)

Table A–1 (Cont.) RRD42 CD–ROM Drive Specifications

Characteristic	Specification(s)
Weight	1.3 kg (2.8 lb)
Voltage	+5 V dc ±5% @ 250 mA +12 V dc ±10% @ 800 mA