
B42

EK-BA42A-MG-003

BA42 Storage Expansion Box

Maintenance Guide

digital equipment corporation
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BA42 Storage Expansion Box Maintenance Guide

This maintenance guide for the BA42 storage expansion box and the drives the box supports describes

- BA42 storage expansion box hardware
- How to remove and install drives used in the BA42 storage expansion box
- The BA42 storage expansion box power supply
- Hardware and specific installation requirements for these drives:
  - RZ55, RZ56, and RZ57 hard disk drives
  - TZK10 1/4 inch cartridge (QIC) tape drive
  - TZ30 1/2 inch cartridge tape drive
  - RX23 3-1/2 inch floppy disk drive
  - RX33 5-1/4 inch floppy disk drive
  - RRD42 5-1/4 inch compact disc drive

Since the BA42 storage expansion box uses drive configuration part numbers beginning with SZ12, the box is also often referred to as the SZ12 storage expansion box.

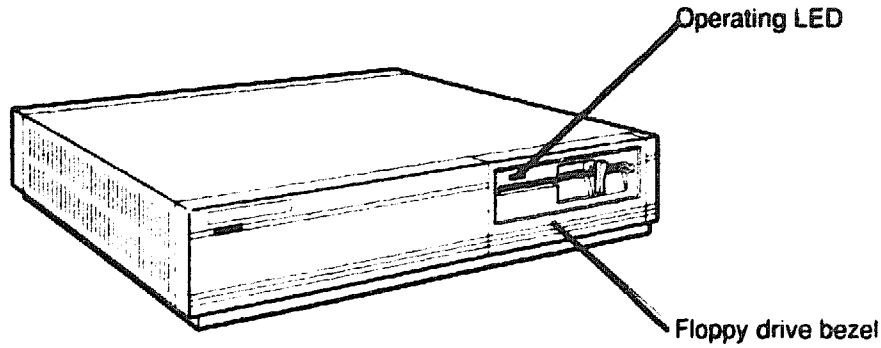
A Look at the BA42 Storage Expansion Box and Its Drives

The BA42 storage expansion box houses one or two drives that connect to form part of a SCSI bus.

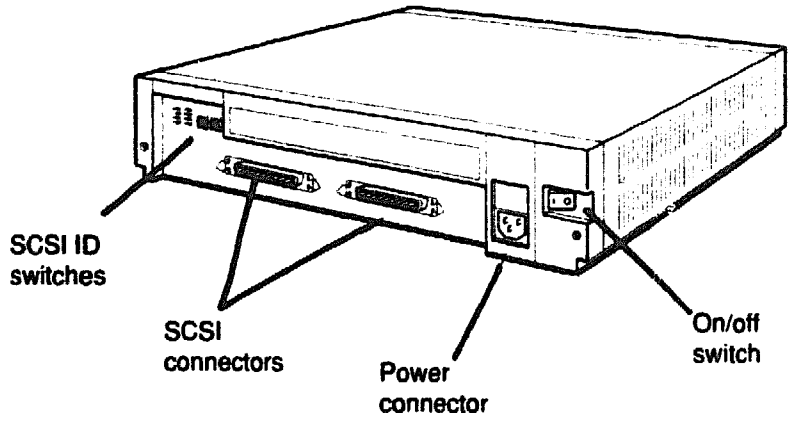
External BA42 Storage Expansion Box Connectors and Switches

Figure 1 shows the outside of the BA42 storage expansion box and its connectors and switches.

- The power connector connects the BA42 storage expansion box to an external power source.
- The on/off switch turns the BA42 storage expansion box power on and off.
- The SCSI connectors link the drives inside the BA42 storage expansion box to a SCSI bus.
- The SCSI ID switches set the SCSI IDs for any RZ55, RZ56, or RZ57 drives inside the BA42 storage expansion box. Other drives use SCSI ID switches or jumpers that are on the individual drive.
- The power supply LED glows green whenever the power supply is operating properly.
- A bezel in the front of the BA42 storage expansion box adapts the cover for the drive installed nearest the bezel.
  - Drives with removable media require a bezel with an opening that allows cartridges to be inserted and removed. The bezel shown in Figure 1 is a bezel for a floppy disk drive.
  - Hard disk drives use a bezel that has no opening.



Front view



Back view

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Figure 1. BA42 storage expansion box connectors and switches

Inside the BA42 Storage Expansion Box

The BA42 storage expansion box contains a power supply; space for two drives; and internal power, SCSI signal, and SCSI ID cables. Figure 2 shows the inside of a BA42 storage expansion box.

- The internal SCSI signal cable connects drives inside the BA42 storage expansion box to a SCSI bus. The SCSI signal cable has one connector for each drive in the box. Brackets with screws attach the ends of the SCSI signal cable to the back of the box.
- The internal power cable has two drive connectors and connects to the 5-pin power supply cable. An inline load resistor, which is part of the power supply cable, is located under the power supply.
- The SCSI ID cable connects RZ55, RZ56, and RZ57 drives to the SCSI ID switches on the back of the BA42 storage expansion box. Drives other than the RZ55, RZ56, and RZ57 have SCSI ID switches or jumpers on the individual drive and do not connect to the SCSI ID cable.

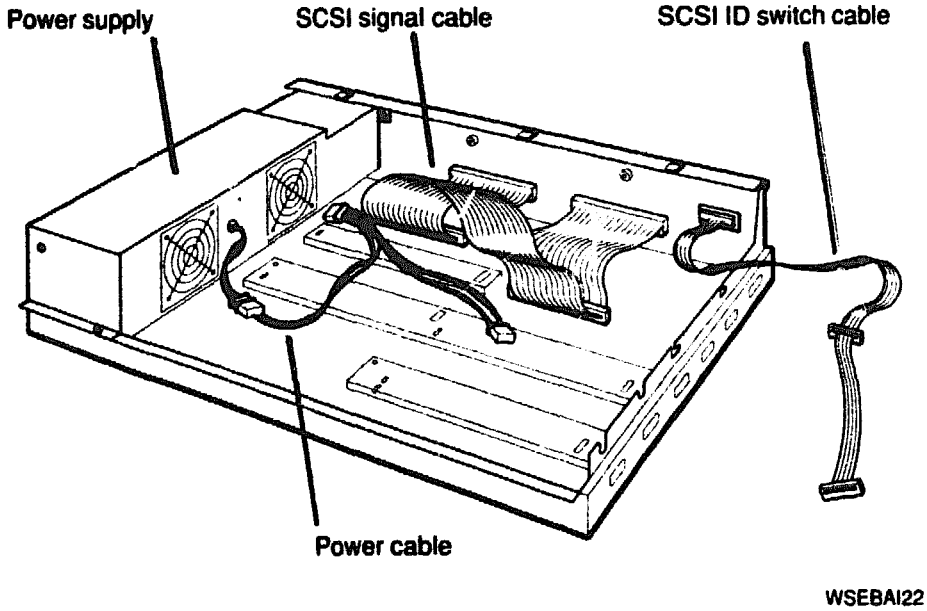

Figure 2. Internal BA42 storage expansion box hardware

To Remove a Drive from a BA42 Storage Expansion Box

The following steps are the general procedure for removing a drive from a BA42 storage expansion box. For a detailed explanation of any of these steps, refer to the section later in this guide that discusses the step about which you want information.

Caution: *Always follow antistatic procedures when handling drives and other static-sensitive items.*

1. Turn off the expansion box.
2. Remove the box cover.
3. Remove the drive and mounting bracket from the expansion box chassis.
4. Disconnect the internal power and SCSI cables connected to the drive. Also disconnect the SCSI ID cable if it is attached to the drive.
5. Remove the mounting bracket from the drive.
6. Replace the expansion box cover.

To Install a Drive in a BA42 Storage Expansion Box

The following steps are the general procedure for installing a drive in a BA42 storage expansion box. For a detailed explanation of any of these steps, refer to the section later in this guide that discusses the step about which you want information.

Caution: *Always follow antistatic procedures when handling drives and other static-sensitive items.*

1. Before you install the drive, determine where in the box the drive belongs and which internal cable connectors to use for a drive at that location.
2. Set the drive SCSI ID. Refer to the section later in this guide that discusses the drive you are installing to find
   - Where the drive SCSI switches or jumpers are located
   - The SCSI ID settings for the drive you are installing
3. Turn off the expansion box.
4. Remove the expansion box cover.
5. If you are installing a removable media drive and the expansion box cover has a solid front bezel, remove the solid bezel and insert an open bezel.
6. Attach the mounting bracket that the drive requires. For directions, refer to the section later in this booklet that discusses the drive that you are installing.
7. Identify the SCSI and power connectors on the drive. To find where the drive connectors are located, refer to the section later in this booklet that discusses the drive you are installing.
8. Connect the internal SCSI and power cables.
9. Mount the drive, in its bracket, at the location you selected.
10. Make sure that the internal power cable is connected to the power supply.
11. Replace the expansion box cover.
12. Connect the external SCSI cables to the expansion box, if the cables are disconnected.

13. Check whether the new drive appears in the configuration display and operates properly.

To Choose Drive Locations and Cable Connections

Figure 3 is an overhead view of the BA42 storage expansion box chassis.

- Install RZ55, RZ56, or RZ57 drives in either drive location.
- Install drives with removable media in the drive location farthest from the power supply. If you install a drive that uses removable media, make sure the expansion box cover has an open bezel.
- Connect the drive to the appropriate cable connectors for the drive location in which you install the drive.

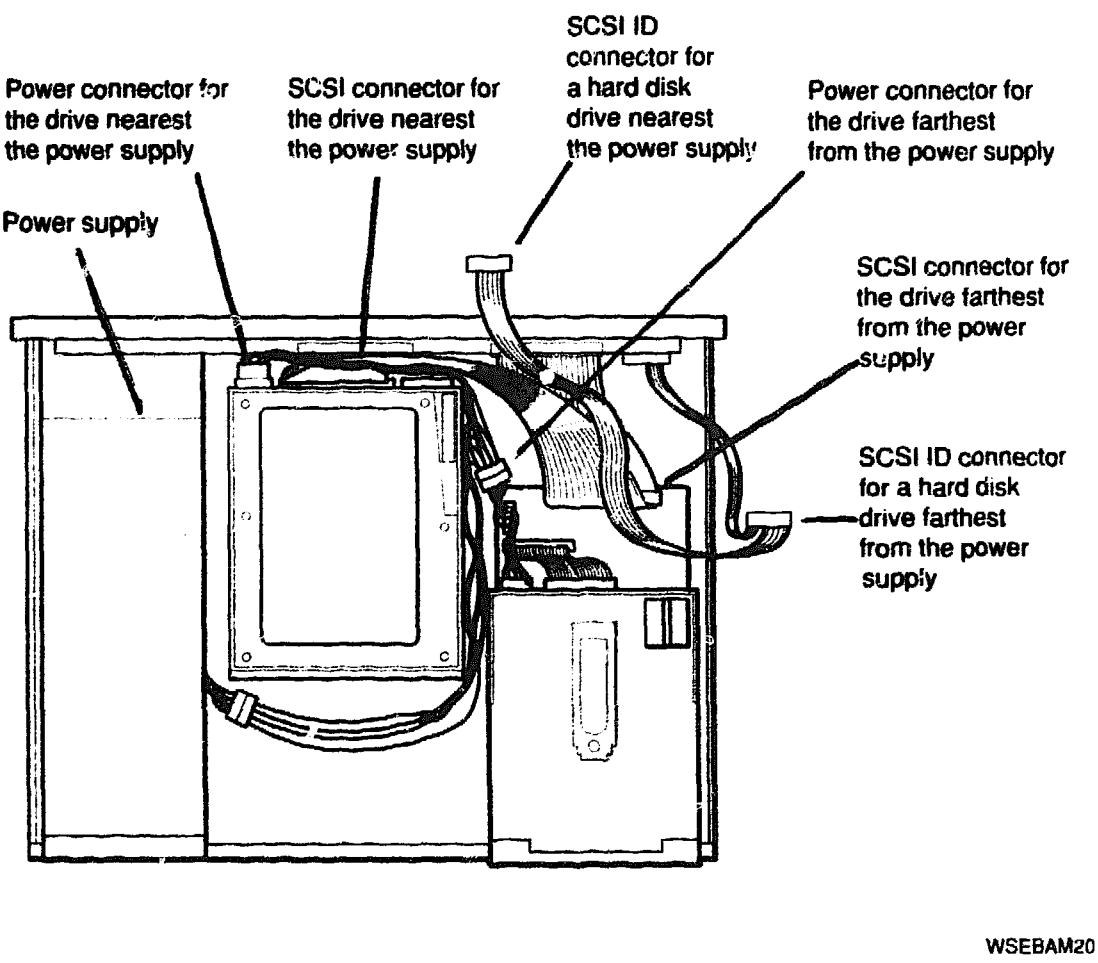

Figure 3. Drive and cable positions in a BA42 storage expansion box

To Set the Drive SCSI ID

1. Display the system configuration to find a SCSI ID that no other SCSI device is using. For directions on how to display the system configuration table, refer to the documentation for the system you are using.
2. Use the switches or jumpers on the drive to set the SCSI ID. For directions, refer to the section later in this guide that discusses the drive for which you want to set the SCSI ID.

To Turn the BA42 Storage Expansion Box On and Off

Use the on/off switch to turn the BA42 storage expansion box on and off.

- Press down the 1 on the on/off switch to turn on the expansion box.
- Press down the 0 on the on/off switch to turn off the expansion box.

To Remove and Install the BA42 Storage Expansion Box Cover

Figure 4 shows how to remove and install the BA42 storage expansion box cover.

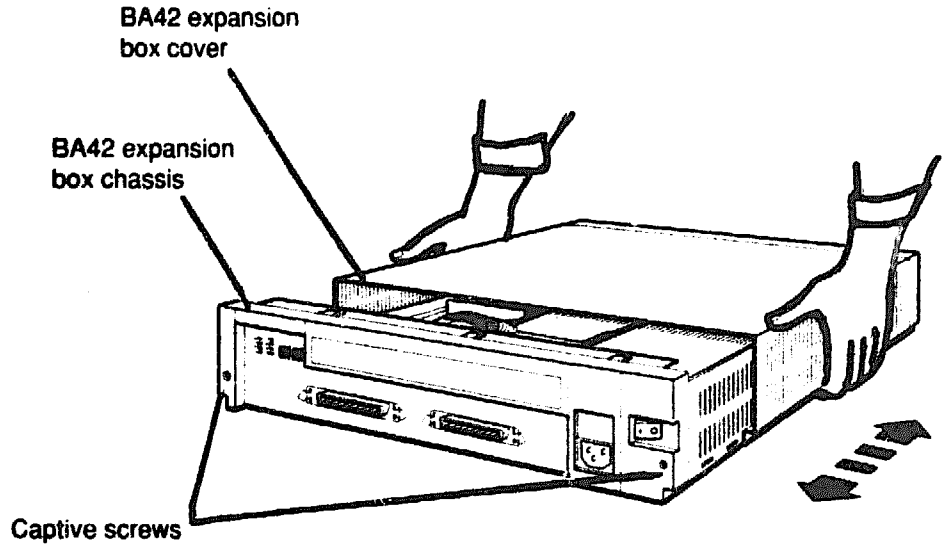

Figure 4. Removing and installing the BA42 storage expansion box cover

To remove the BA42 storage expansion box cover

1. Loosen the two screws on the back of the system unit.
2. Face the front of the expansion box and grip the sides of the box with both hands.
3. Slide the cover toward you until the cover comes loose from the guides. Use care not to catch or remove any spring fingers.

To install the BA42 storage expansion box cover

1. Place the expansion box cover over the chassis. Leave at least 2 inches between the cover and the back of the box.
2. Slide the cover toward the back panel to engage the guides. Use care not to catch or remove any spring fingers.
3. Tighten the two screws on the back of expansion box.

To Remove and Insert a Bezel into the BA42 Storage Expansion Box Cover

Figure 5 shows how to remove the blank panel from the BA42 storage expansion box cover.

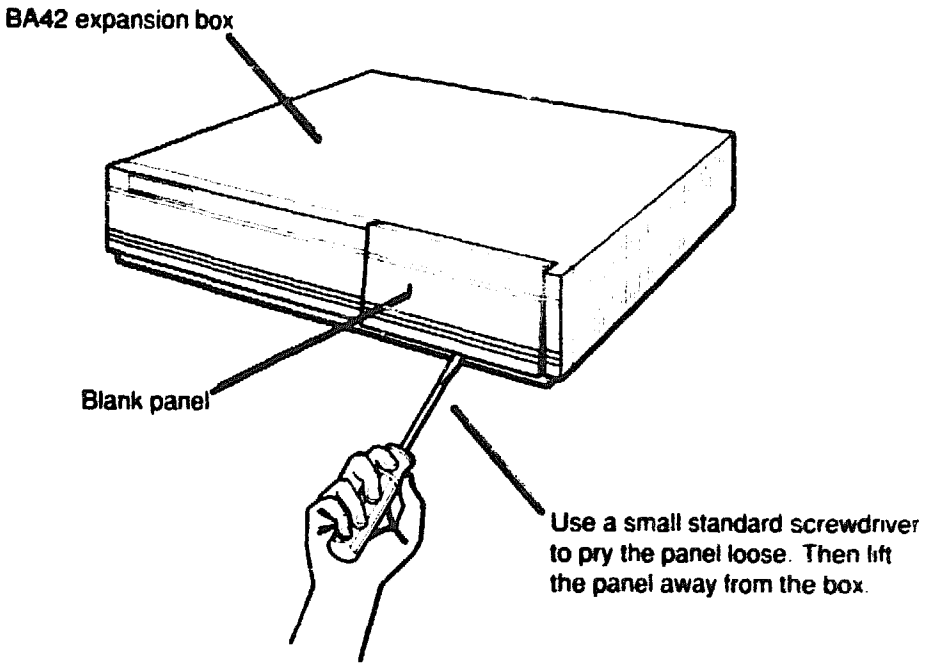

Figure 5. Removing a BA42 storage expansion box cover blank panel

To remove a blank panel from the front bezel

1. Insert a small standard screwdriver under the edge of the panel.
2. Use the screwdriver to lift up the panel until it comes loose from the cover.
3. Lift the panel away from the cover.

To insert a bezel into a BA42 storage expansion box cover

1. Hold the top of the new bezel against the top of the opening in the front of the expansion box cover.
2. Pivot the bezel down until the posts inside the bezel enter the holes in the expansion box cover.
3. Press the bottom of the bezel against the expansion box cover until the posts inside the bezel snap into place.

To Remove and Install the Drive Mounting Brackets

Drives in the BA42 storage expansion box require an RZ bracket or half-height bracket to mount the drive onto the expansion box chassis. To find which mounting brackets a specific drive requires, refer to the section later in this guide that describes the drive you want to mount.

To remove and install an RZ mounting bracket

Figure 6 shows how to remove and install an RZ mounting bracket.

To remove an RZ mounting bracket,

1. Remove the four Phillips-head screws that hold the drive in the mounting bracket.
2. Hold the bracket in one hand and pull the drive up and out of the bracket.

To install an RZ mounting bracket,

1. Align the drive over the RZ mounting bracket. Make sure that the captive screw on the bracket is on your right as you face the back of the drive.
2. Slide the drive into the mounting bracket.
3. Insert the four Phillips-head screws that attach the bracket to the drive.

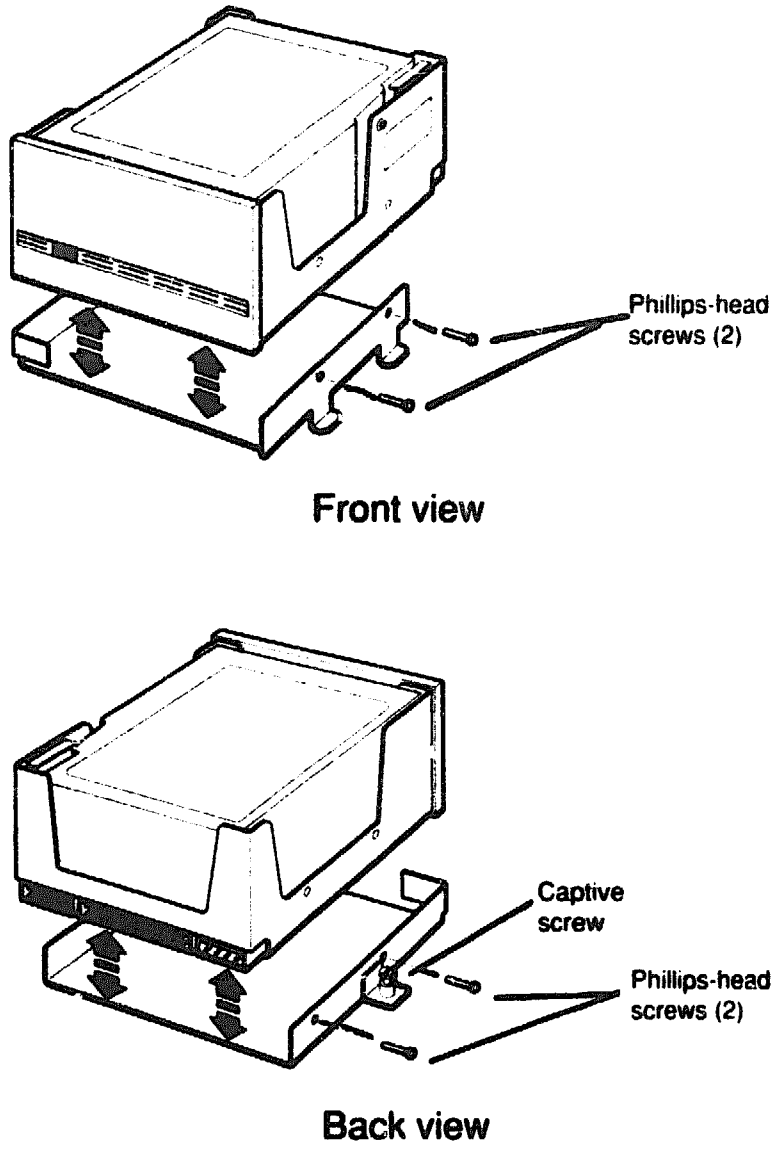

Figure 6. Removing and installing an RZ mounting bracket

To remove and install a half-height mounting bracket

Figure 7 shows how to remove and install a half-height mounting bracket.

Figure 8 shows how to loosen and tighten the screws that hold a drive to a half-height mounting bracket.

The half-height brackets for some drives contain the drive controller. Refer to the section that discusses the drive you are installing for a complete description of the brackets that a specific drive requires.

To remove a half-height bracket from a drive,

1. Loosen the four mounting screws that hold the drive to the half-height mounting bracket.
2. With the front of the drive facing you, hold the half-height bracket in one hand. Then slide the drive to the left until it stops.
3. Lift the drive up and away from the bracket.

To install a half-height bracket onto a drive,

1. Loosely install the four standoffs and threaded mounting screws into the bottom of the half-height drive.
2. Align the four mounting screw heads over the large opening in the keyhole-shaped slots on the top of the bracket.
3. Pass the four screw heads through the keyhole-shaped slots. The standoffs should remain on top of the half-height bracket.
4. With the front of the drive facing you, slide the drive to the right until it stops.
5. Tighten the four threaded screws that hold the drive to the half-height mounting bracket.

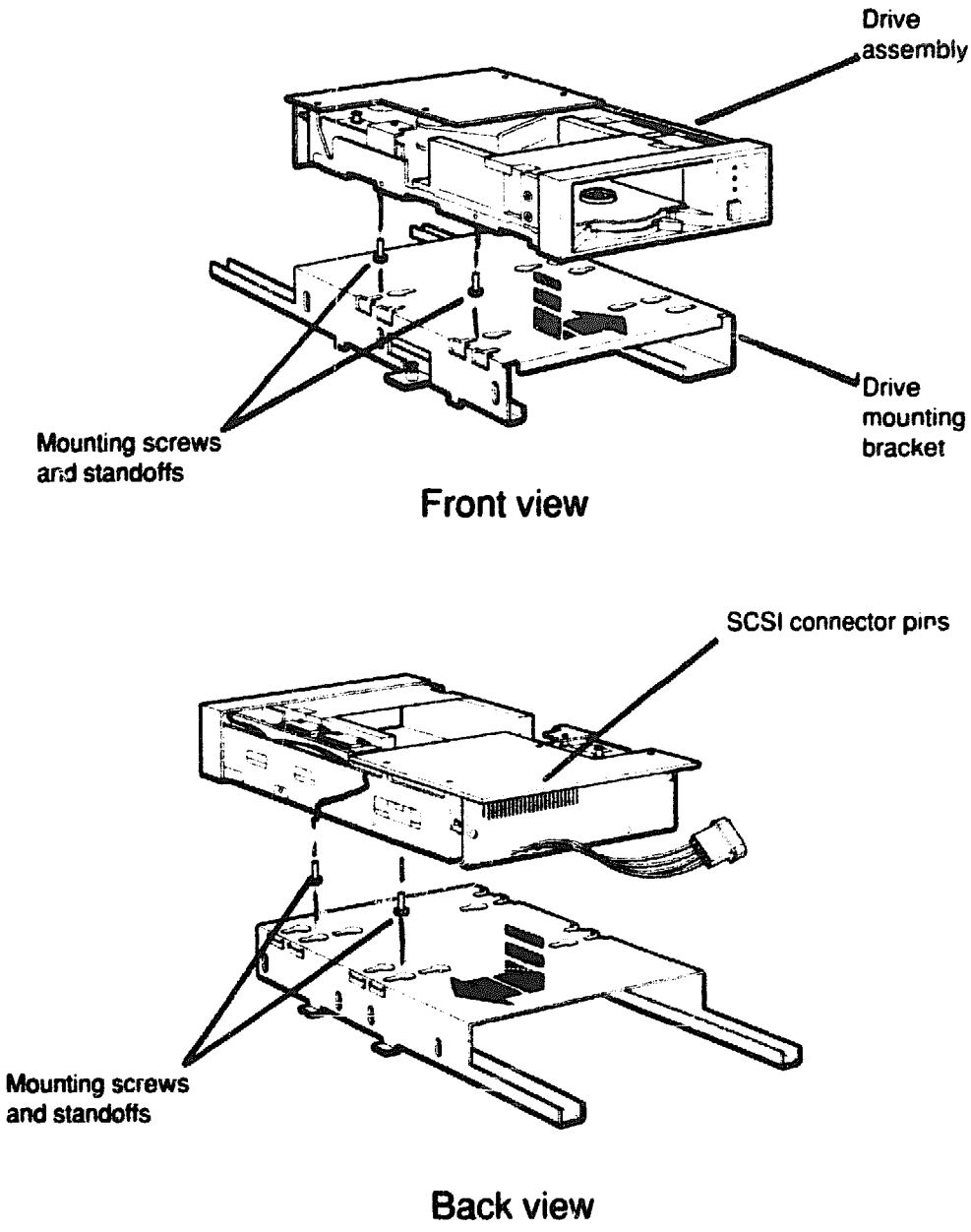

Figure 7. Removing and installing a half-height mounting bracket

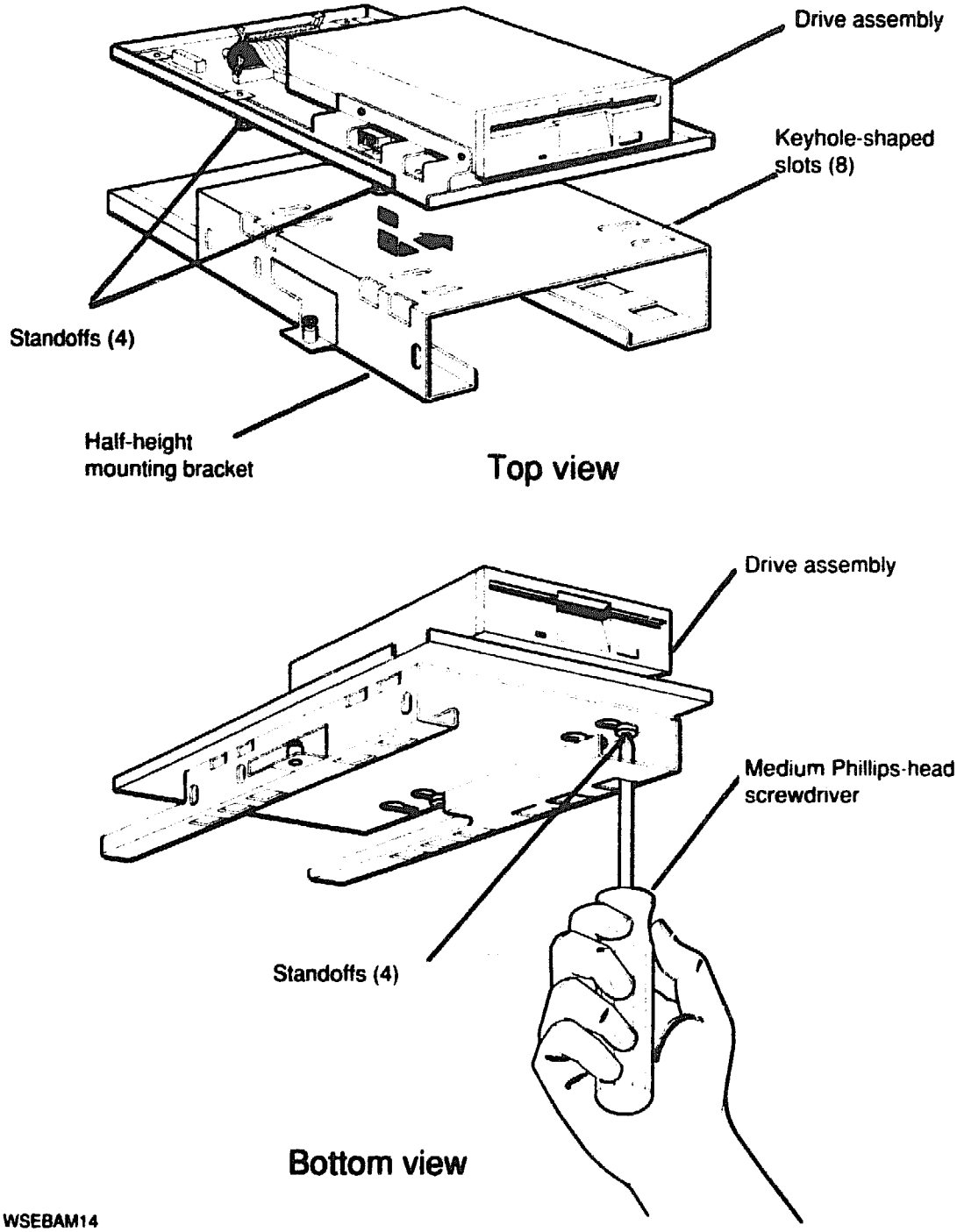

Figure 8. Loosening and tightening mounting screws on a half-height bracket

To Detach and Connect Internal SCSI Signal and Power Cables

Figure 9 shows how to remove and connect internal SCSI signal and power cables.

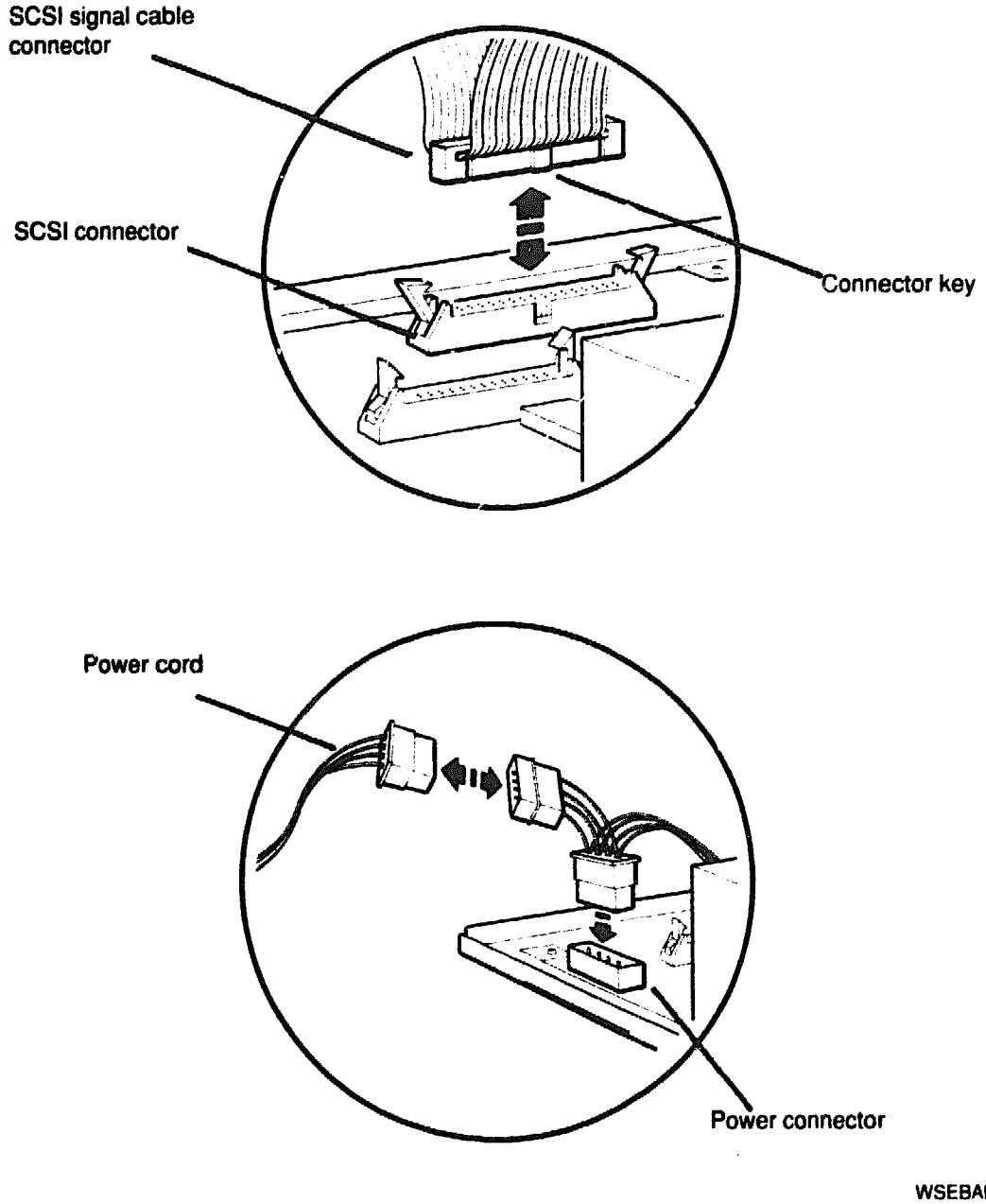

Figure 9. Removing and connecting internal SCSI signal and power cable connectors

To connect internal SCSI signal and power cables

Connect the following cables when you connect a drive:

- Connect the internal SCSI signal and power cables to the drive.
- Connect the internal power cable to the power supply cable.
- If you are connecting an RZ55, RZ56, or RZ57 drive, connect the SCSI ID cable.

To connect the internal power cable to the drive, align the beveled sides of both power connectors. Then press the two connectors all the way together.

To connect an internal SCSI signal cable, align the keyed sides of the connectors. Then push the connectors all the way together.

To detach internal SCSI signal and power cables

To detach internal power cables, pull the power connectors in opposite directions.

To detach an internal SCSI signal cable connector, pull the cable straight out of the connector on the drive.

If the SCSI signal cable connector is held by latches, first push the connector latches in opposite directions away from the connector. Then pull the connector up and away from the system module.

To Mount and Remove Drives on the BA42 Storage Expansion Box Chassis

Figures 10 and 11 show how to remove and mount drives in both locations on the BA42 storage expansion box chassis.

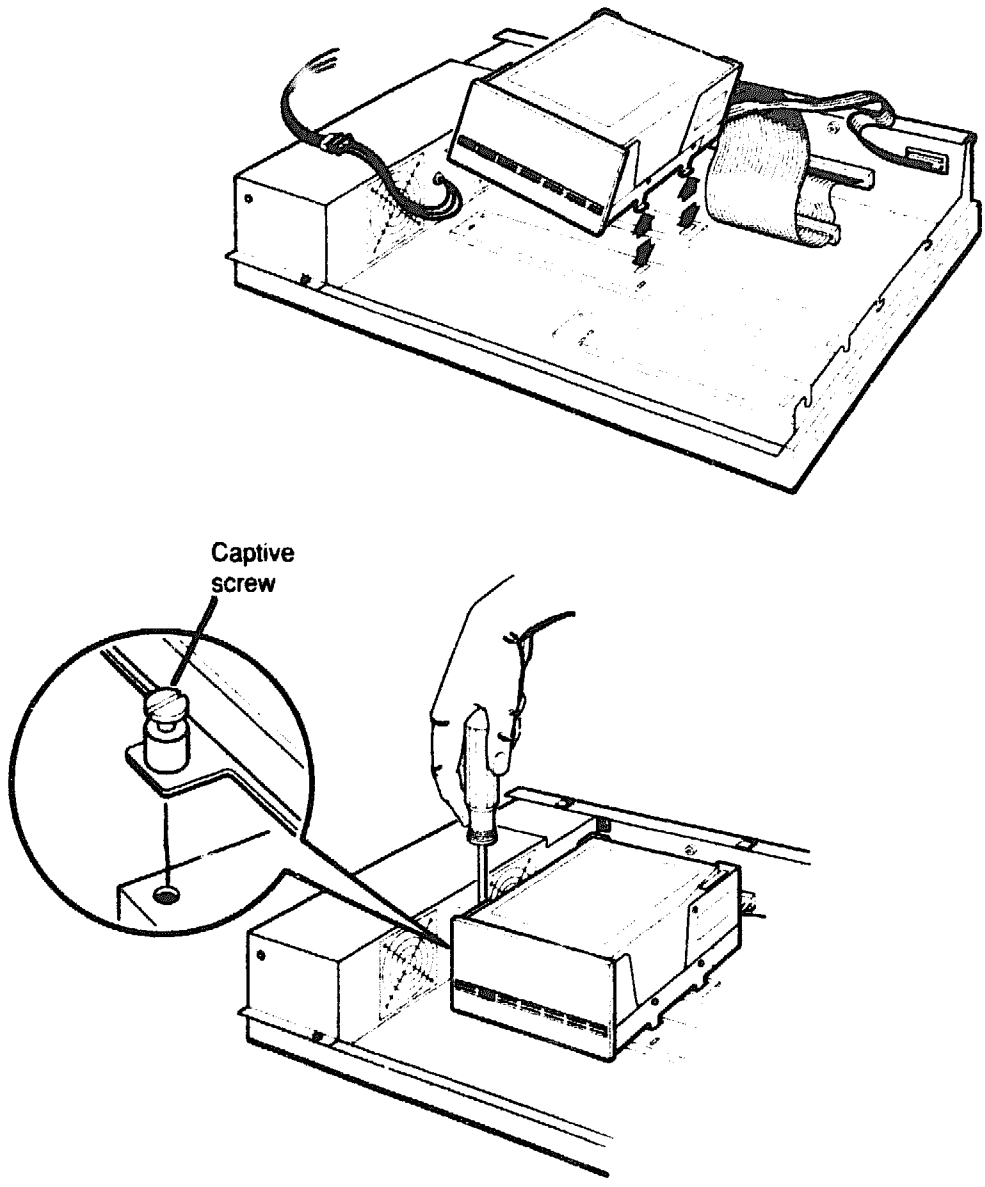

Figure 10. Removing and mounting a drive in the drive location closest to the power supply

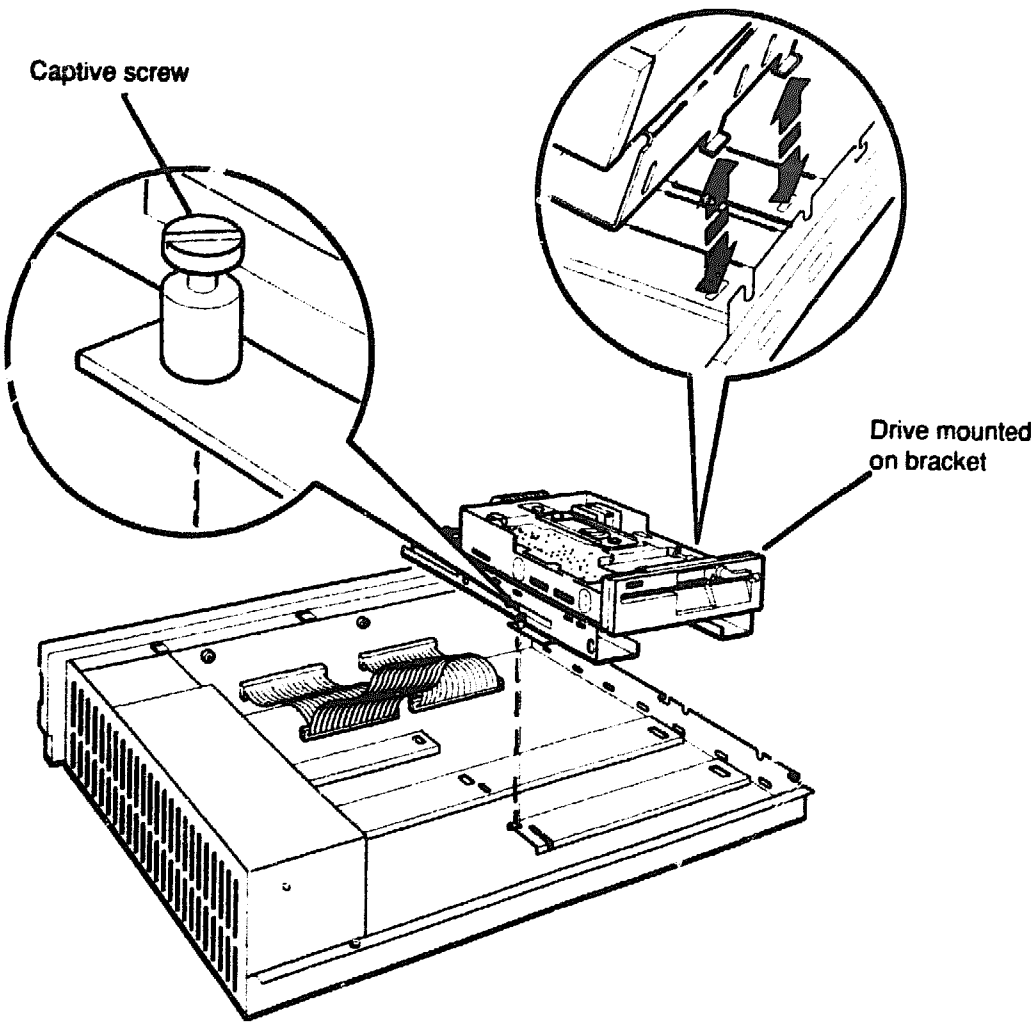

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Figure 11. Removing and mounting a drive in the drive location farthest from the power supply

To remove a drive from the BA42 storage expansion box chassis

1. Loosen the captive screw that holds the drive to the expansion box chassis.
2. Tilt up the side of the drive that has the captive screw.
3. Pull up on the drive mounting bracket so that the bracket tabs come out of the mounting rail on the expansion box chassis.
4. Lift the drive away from the chassis.

To mount a drive onto the BA42 storage expansion box chassis

Refer again to Figures 10 and 11 and do the following:

1. Slide the tabs on the drive mounting bracket into the slots on the mounting rails.
2. Tilt the drive down onto the expansion box chassis.
3. Tighten the captive screw that holds the drive to the chassis.

To Remove and Connect the External SCSI Cables on the BA42 Storage Expansion Box

Connect the external SCSI cables to link the drives to a SCSI bus. You can install SCSI cables on either SCSI connector. However, if the expansion box you are connecting is on the end of a chain of drives, you must insert a SCSI-chain terminator on the SCSI connector that has no cable connected to it.

Figure 12 shows how to remove and connect the external SCSI cables on the BA42 storage expansion box.

To remove an external SCSI cable or SCSI chain terminator from the BA42 storage expansion box

1. Push back the latches that hold the SCSI cable or terminator to the connector.
2. Grip the cable connector and pull the external SCSI cable or terminator off the SCSI connector on the back of the expansion box.

To install an external SCSI cable or SCSI chain terminator on the BA42 storage expansion box

1. Push back the latches on the sides of the SCSI connector on the expansion box.
2. Align the cable connector or terminator with the SCSI connector on the expansion box.
3. Firmly press the cable connector onto the SCSI connector on the expansion box.
4. Press the latches onto the SCSI connector or terminator until the latches lock into place.

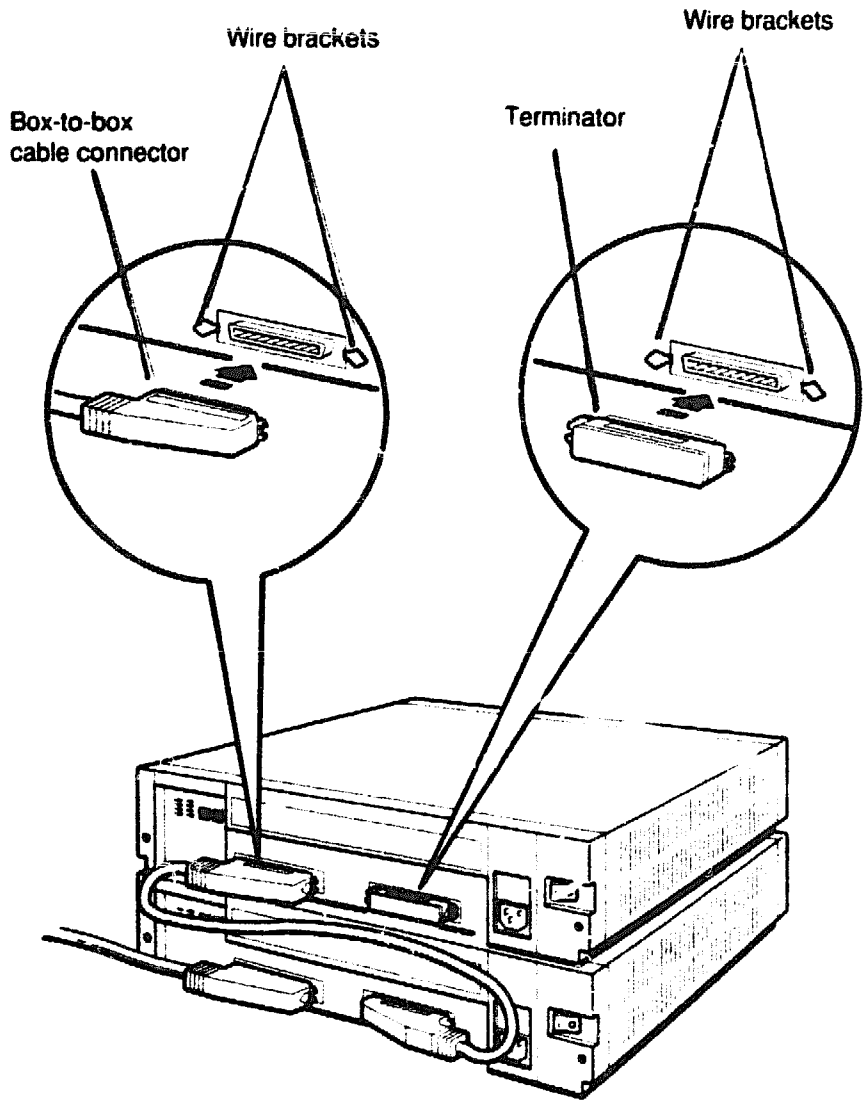

Figure 12. Removing and connecting external SCSI cables

To Check the Drive after Installation

After you install a drive, make sure that the new drive operates properly. To check the new drive,

1. Replace the expansion box cover.
2. Turn on the expansion box. Then turn on the system unit.
3. Check the power-up self-test results. Correct any problems that the power-up self-test reports.
4. Display the system configuration table and check whether the new drive appears in the configuration display. Refer to the documentation for the system you are using for directions on how to display the system configuration.
5. Make sure the number of drives listed equals the number of drives on the SCSI bus. If the configuration display does not show all the drives that are on the SCSI bus, do the following:
   - Make sure that the drive is connected properly.
   - Make sure that each drive has a different SCSI ID and that no drive has the same SCSI ID as the SCSI controller.
6. Run the read and write test for the specific drive you installed. Correct any problems that the read and write test reports. If the read and write test reports an error, refer to the service guide for the drive you are testing for troubleshooting directions.

To Troubleshoot Drives in the BA42 Storage Expansion Box

Troubleshooting When the Drives Have No Power

If the drives have no power,

1. Check the power supply LED. If the LED does not glow green, make sure the power is on and the power cord is connected to the back of the expansion box and to a power outlet.
2. If the problem persists, remove the expansion box cover and check the internal power supply cords. Make sure that the internal power supply cord is connected to the internal power cable.
3. If the problem persists, replace the power supply. Refer to "To Remove and Install a Power Supply" later in this guide for directions.

Troubleshooting When a Drive Does Not Appear in the Configuration Display

If a drive does not appear in the configuration display,

1. Make sure the power and SCSI cables are attached to the drive.
2. If the problem persists, make sure that all drives have different SCSI IDs.
3. If the drive still does not appear in the configuration display, refer to the service guide for the problem drive.

Power Supply Hardware

The power supply provides separate 5 volt and 12 volt DC power input to each drive installed in the BA42 storage expansion box. Figure 13 shows the BA42 storage expansion box power supply.

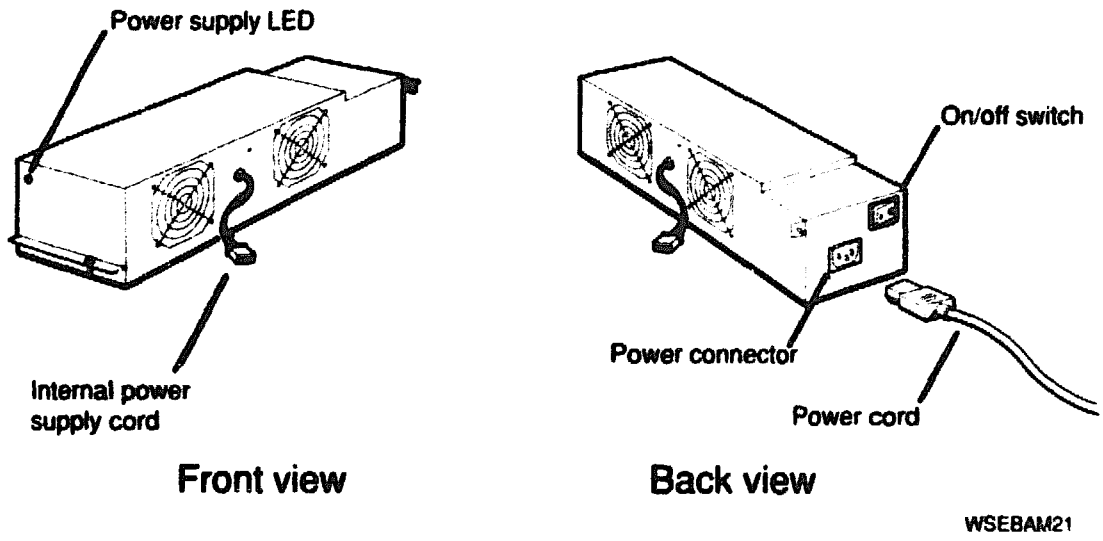

Figure 13. Power supply

To Remove and Install a Power Supply

Figure 14 shows how to remove and install a power supply.

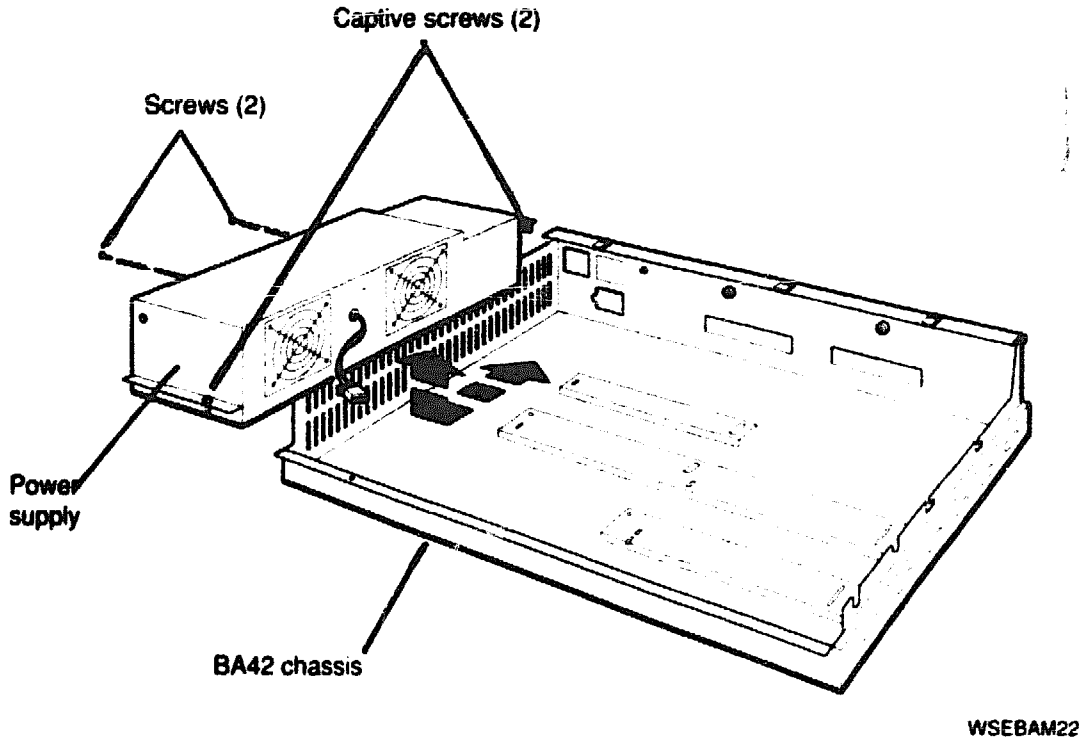

Figure 14. Removing and Installing a power supply

To remove a power supply

1. Turn off the expansion box.
2. Disconnect the expansion box power cord.
3. Remove the expansion box cover.
4. Disconnect the internal power supply cable.
5. Loosen the two TORX screws on the side of the power supply nearest the outside of the chassis.
6. Loosen the two captive screws that hold the power supply to the expansion box chassis.
7. Raise the power supply end that is farthest from the power supply on/off switch and then pull the power supply out of the chassis.

To install a power supply

1. Slide the power supply toward the back of the expansion box.
2. Slide the two TORX screws on the side of the power supply into their slots in the expansion box chassis. Then tighten the screws.
3. Tighten the two captive screws that hold the power supply to the chassis.
4. Connect the power supply power cable to the internal power cable.
5. Connect the power cord.

RZ55, RZ56, and RZ57 Hard Disk Drives

The BA42 storage expansion box supports three types of hard disk drives:

- The RZ55, which is a 332-Mbyte hard disk drive
- The RZ56, which is a 665-Mbyte hard disk drive
- The RZ57, which is a 1.0-Gbyte hard disk drive

The RZ55, RZ56, and RZ57 hard disk drives look similar. A label on the side of the drive states whether the drive is an RZ55, RZ56, or RZ57 hard disk drive.

Figure 15 shows the drive housing, controls, and indicators for an RZ55, RZ56, or RZ57 hard disk drive. Figure 15 also shows the label that identifies the drive as an RZ55, RZ56, or RZ57 hard disk drive.

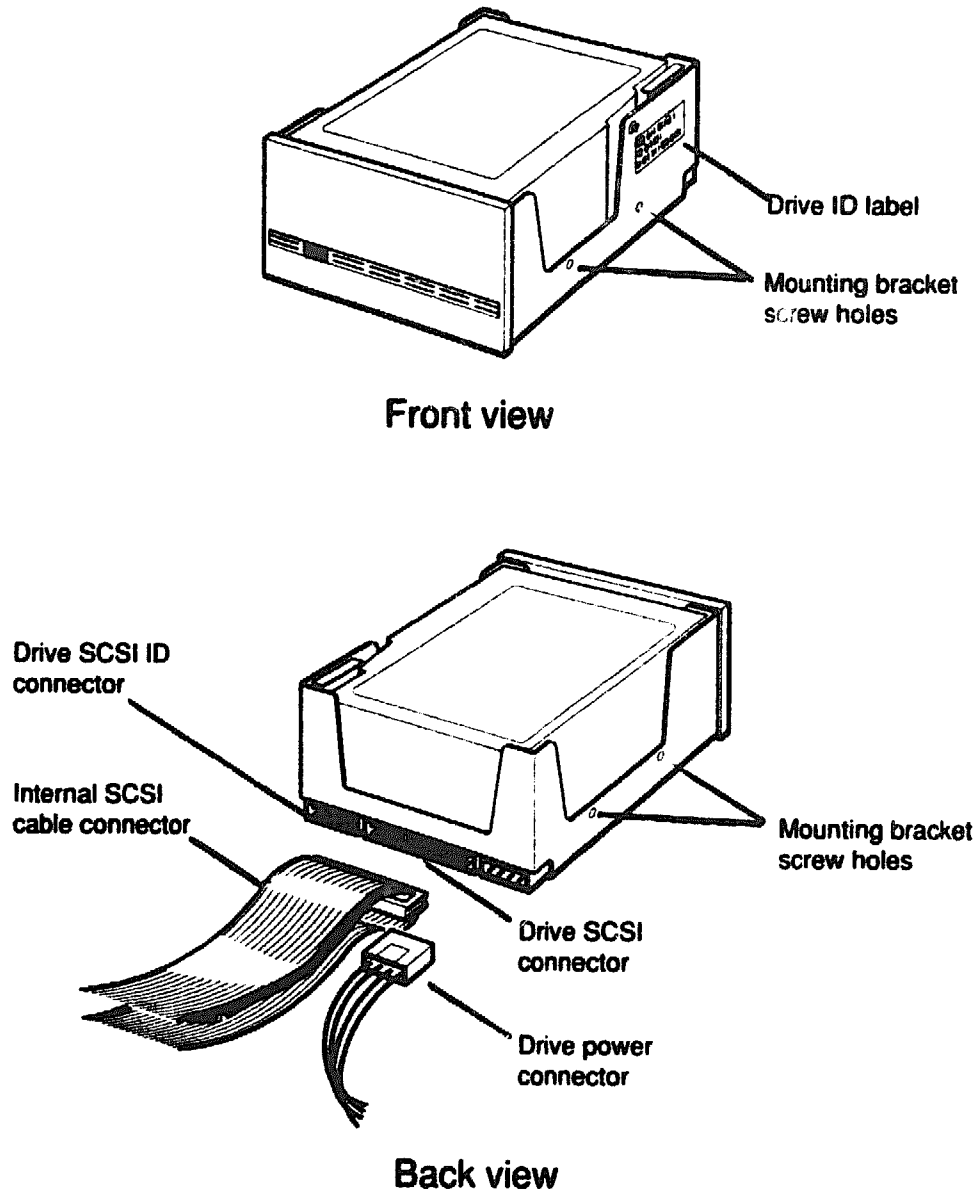

Figure 15. RZ55, RZ56, and RZ57 hard disk drive hardware

To Install an RZ55, RZ56, or RZ57 Hard Disk Drive

- Install RZ55, RZ56, and RZ57 drives in either drive location.
- Use an RZ mounting bracket to mount an RZ55, RZ56, or RZ57 drive onto the expansion box chassis.
- Insert a solid bezel in the expansion box cover if an RZ drive is in the drive location farthest from the power supply.
- Use the SCSI switches on the back of the expansion box to set the drive SCSI ID.
  - The switches on the right set the SCSI ID for the drive nearest the power supply.
  - The switches on the left set the SCSI ID for the drive farthest from the power supply.
- Connect the SCSI ID cable to the RZ drive.

Table 1 lists the RZ drive switch settings for each SCSI ID.

Figure 16 shows how to remove the SCSI switch cover to find the SCSI switches.

Table 1. RZ55, RZ56, and RZ57 SCSI ID Switch Settings

SCSI ID	Switch 1	Switch 2	Switch 3
7	Up	Up	Up
6	Up	Up	Down
5	Up	Down	Up
4	Up	Down	Down
3	Down	Up	Up
2	Down	Up	Down
1	Down	Down	Up
0	Down	Down	Down

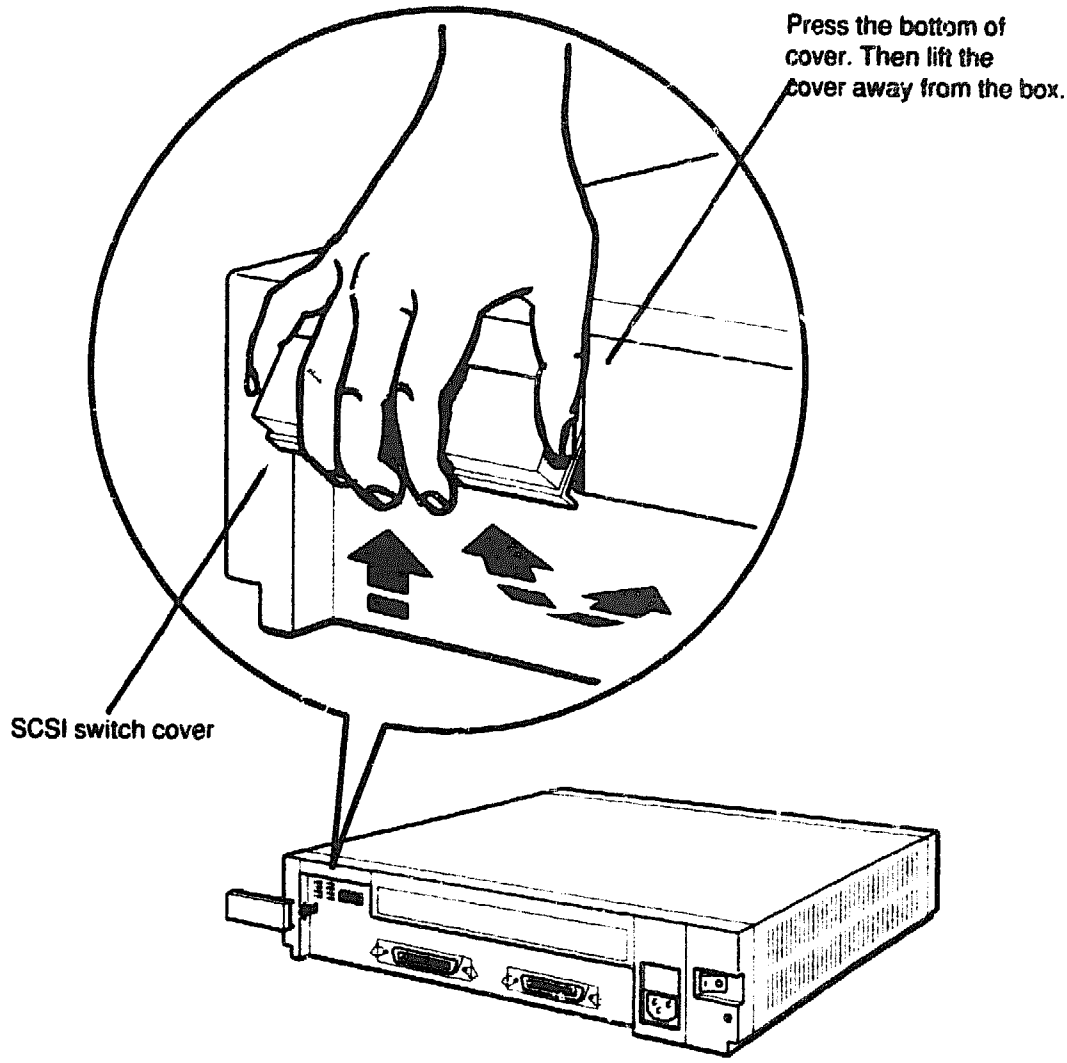

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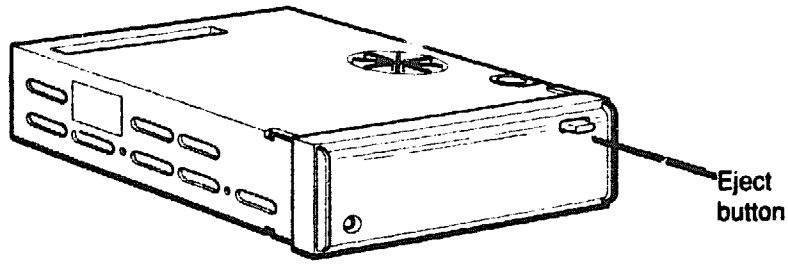
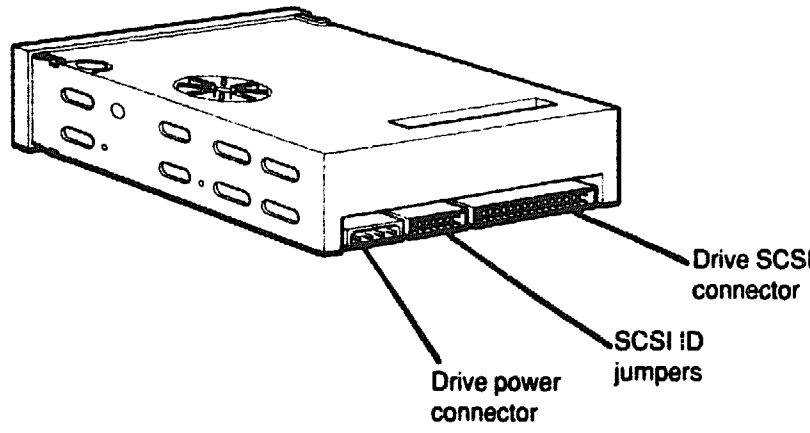
Figure 16. Removing a SCSI switch cover

TZK10 QIC Tape Drive

The TZK10 QIC (quarter-inch cartridge) tape drive is a 320/525 Mbyte, 1/4-inch tape drive. Figure 17 shows the TZK10 QIC tape drive hardware, connectors, and controls.



Front view



Back view

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Figure 17. TZK10 QIC tape drive

To Install a TZK10 QIC Tape Drive

- Install the TZK10 tape drive in the location farthest from the power supply.
- Use a half-height mounting bracket to mount a TZK10 tape drive.
- Use the SCSI ID jumpers to set the TZK10 drive SCSI ID. The jumpers are located in the middle connector on the back of the drive.

Counting from the left side of the connector, the location of jumpers on the seventh, eighth, and ninth sets of pins determines the SCSI ID number. The seventh set is reserved for ID 2, the eighth set for ID 1, and the ninth set for ID 0.

The set of pins to the left of the SCSI ID pins is for disable auto density select. This jumper should always be set to the in position.

The set of pins to the right of the SCSI ID pins is for termination power. This jumper should always be set to the in position.

Table 2 shows the SCSI ID jumper settings for the TZK10 tape drive.

Figure 18 shows the SCSI ID jumpers set to SCSI ID number 5.

Table 2. TZK10 SCSI ID Jumper Settings

SCSI ID	ID 2	ID 1	ID 0
7	In	In	In
6	In	In	Out
5	In	Out	In
4	In	Out	Out
3	Out	In	In
2	Out	In	Out
1	Out	Out	In
0	Out	Out	Out

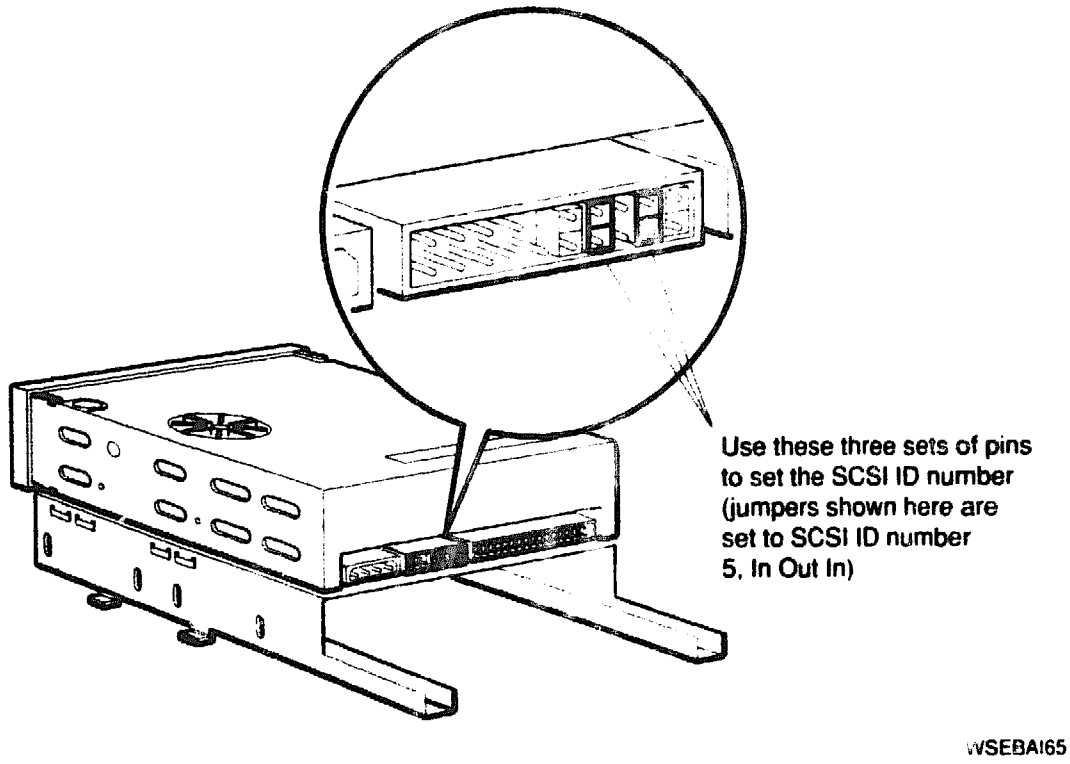


Figure 18. SCSI ID jumpers on the TZK10 QIC tape drive

TZ30 Tape Drive

The TZ30 is a 95-Mbyte half-height tape drive. Figure 19 shows the TZ30 tape drive hardware, controls, and indicators.

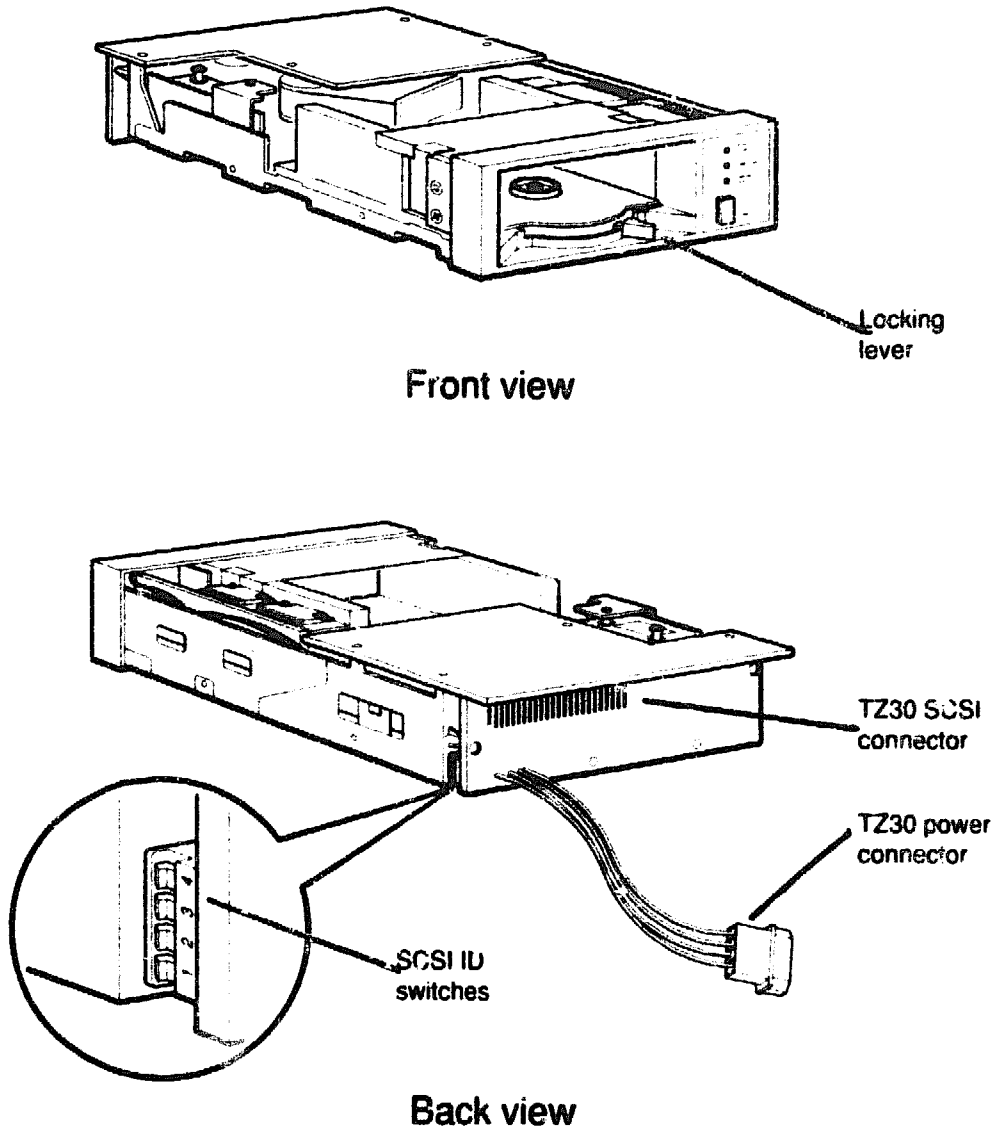


Figure 19. TZ30 tape drive

To Install a TZ30 Tape Drive

- Install the drive in the location farthest from the power supply.
- Use a half-height mounting bracket to mount the TZ30 drive onto the chassis as shown in Figure 7.
- Connect the internal SCSI signal and power cables to the connectors on the back of the TZ30 drive.
- Use the SCSI ID switches to set the SCSI ID for the drive.

Figure 19 shows where to find the SCSI ID switches on the TZ30 tape drive.

Table 3 lists the SCSI ID switch settings for the drive.

Table 3. TZ30 SCSI ID Switch Settings

SCSI ID	Switch 1	Switch 2	Switch 3	Switch 4
7	Up	Up	Up	Up
6	Up	Up	Up	Down
5	Up	Up	Down	Up
4	Up	Up	Down	Down
3	Up	Down	Up	Up
2	Up	Down	Up	Down
1	Up	Down	Down	Up
0	Up	Down	Down	Down

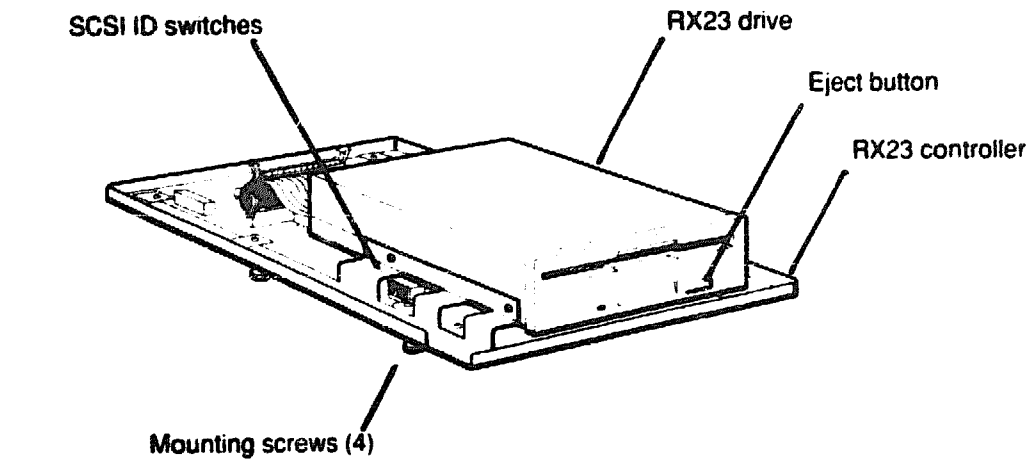
Always set the leftmost switch on the TZ30 drive to the up position. This setting enables the drive parity.

RX23 Floppy Disk Drive

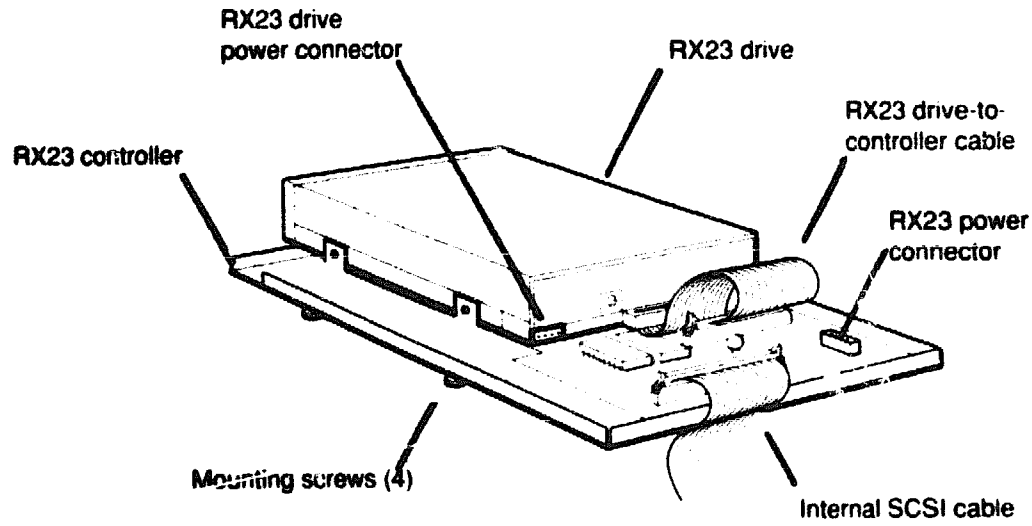
The RX23 is a 1.44-Mbyte 3-1/2 inch floppy disk drive with a detachable drive that mounts on top of the RX23 controller. Drive-to-controller signal and power cables connect the drive and controller.

To assemble an RX23 floppy disk drive and controller, refer to "To Remove and Install an RX23 Drive Controller" later in this guide for directions.

Figure 20 shows the RX23 floppy disk drive hardware, controls, and indicators.



Front view



Back view

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Figure 20. RX23 floppy disk drive

To Install an RX23 Floppy Disk Drive

- Install the drive in the location farthest from the power supply.
- Use a half-height mounting bracket to mount the drive and controller assembly onto the chassis as shown in Figure 8.
- Make sure that the drive-to-controller power and signal cables are connected.
- Use the SCSI ID switches to set the SCSI ID for the drive.

Figure 20 shows where to find the SCSI ID switches on the RX23 floppy disk drive.

Table 4 lists the SCSI ID switch settings for the drive.

Table 4. RX23 SCSI ID Switch Settings

SCSI ID	Switch 1	Switch 2	Switch 3
7	Down	Down	Down
6	Down	Down	Up
5	Down	Up	Down
4	Down	Up	Up
3	Up	Down	Down
2	Up	Down	Up
1	Up	Up	Down
0	Up	Up	Up

To Remove and Install an RX23 Drive Controller

Figure 21 shows how to remove and install an RX23 drive controller.

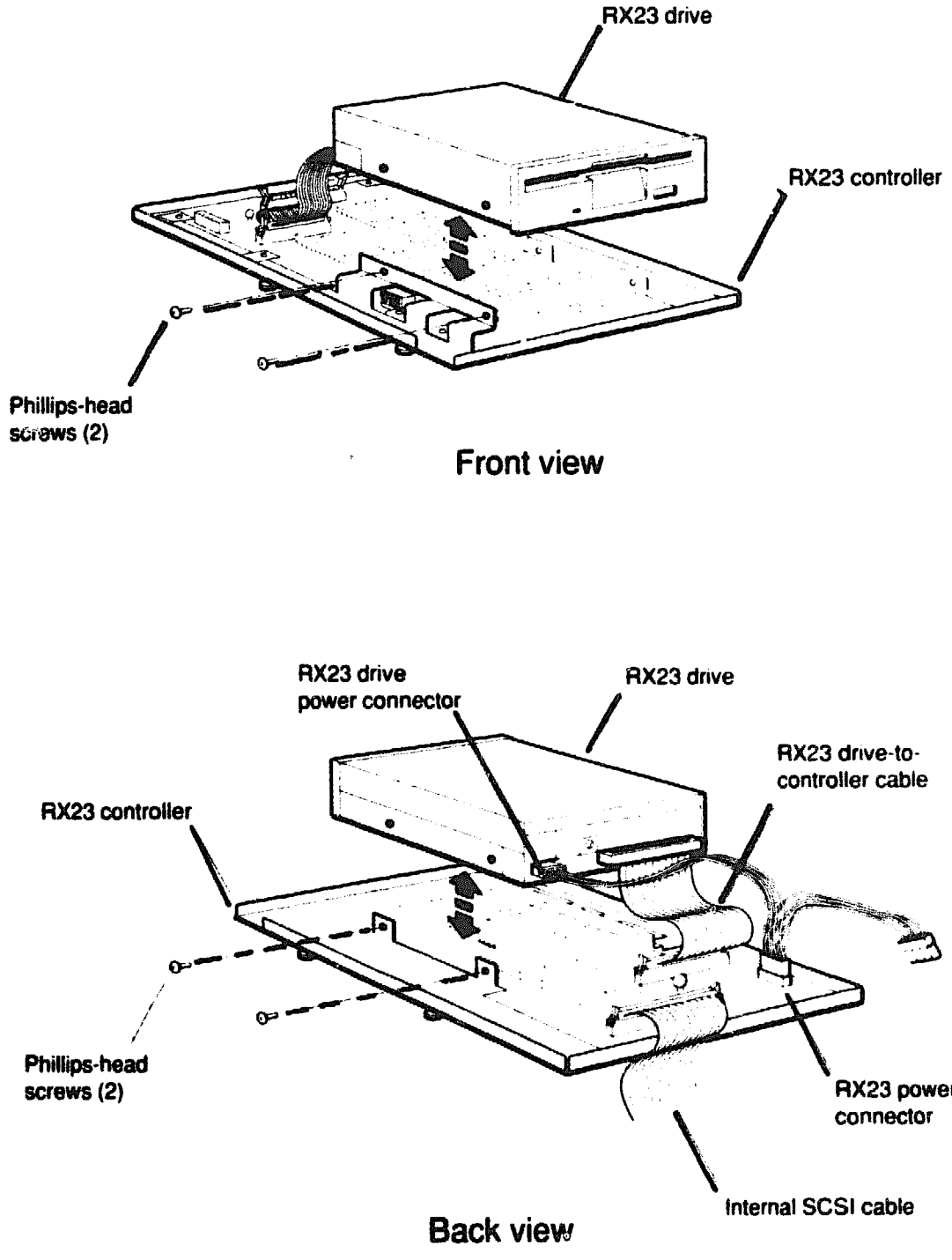


Figure 21. Removing and installing an RX23 drive controller

To remove an RX23 floppy disk drive from an RX23 controller

1. Disconnect the drive-to-controller power cable from the drive.
2. Disconnect the drive-to-controller signal cable from the drive.
3. Remove the four Phillips-head screws that hold the drive to the controller.
4. Pull the drive out of the bracket on the controller.

To install an RX23 floppy disk drive onto an RX23 controller

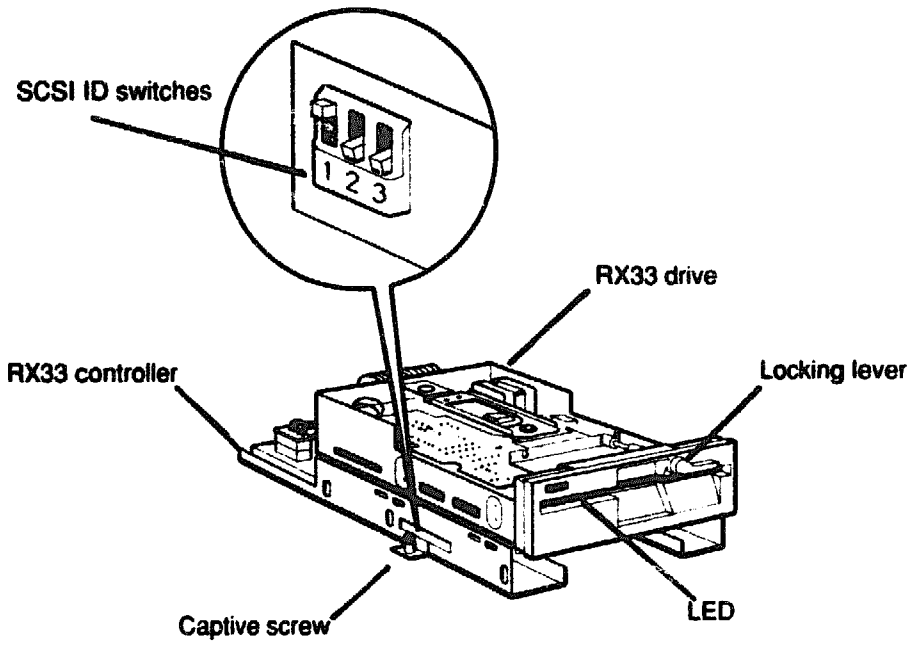
1. Align the drive over the bracket on the controller, with the front of the drive and the front of the controller facing the same direction.
2. Slide the drive into the bracket.
3. Insert and tighten the four Phillips-head screws.
4. Connect the drive-to-controller power cable to the drive.
5. Connect the drive-to-controller signal cable to the drive.

RX33 Floppy Disk Drive

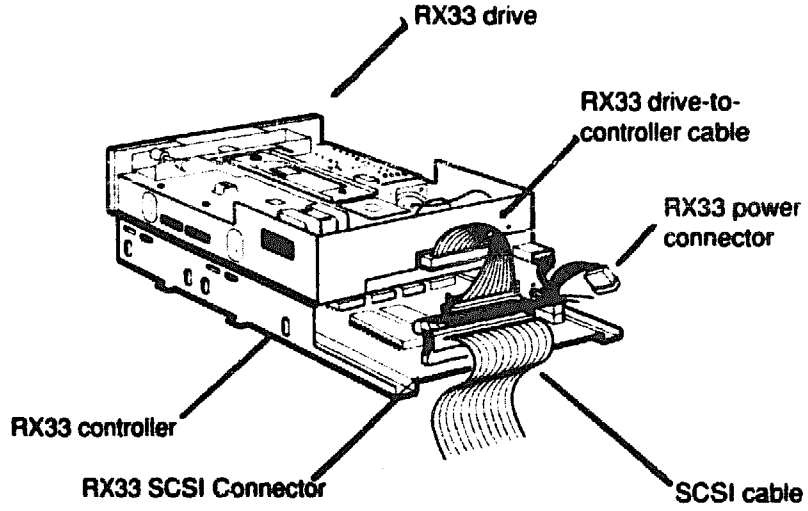
The RX33 is a 1.2-Mbyte 5-1/4 inch floppy disk drive with a detachable controller. The drive mounts directly onto the controller, which is contained in a half-height bracket. Drive-to-controller signal and power cables connect the RX33 floppy disk drive drive and controller.

To connect an RX33 floppy disk drive and controller, refer to "To Remove and Install an RX33 Drive Controller" later in this guide for directions.

Figure 22 shows the RX33 floppy disk drive hardware, controls, and indicators.



Front view



Back view

WSEBAM10

Figure 22. RX33 floppy disk drive hardware

To Install an RX33 Floppy Disk Drive

- Install the drive in the location farthest from the power supply.
- Make sure that the drive is mounted on its controller.
- Mount the drive and controller assembly directly onto the BA42 storage expansion box chassis. The controller housing serves as a half-height mounting bracket.
- Make sure that the drive-to-controller signal and power cables are connected.
- Use the SCSI ID switches on the controller to set the SCSI ID for the drive.

Figure 22 shows where to find the SCSI ID switches on the RX33 floppy disk drive.

Table 5 lists the SCSI ID switch settings for the drive.

Table 5. RX33 SCSI ID Switch Settings

SCSI ID	Switch 1	Switch 2	Switch 3
7	Down	Down	Down
6	Down	Down	Up
5	Down	Up	Down
4	Down	Up	Up
3	Up	Down	Down
2	Up	Down	Up
1	Up	Up	Down
0	Up	Up	Up

To Remove and Install an RX33 Drive Controller

Figure 23 shows how to remove and install an RX33 drive controller.

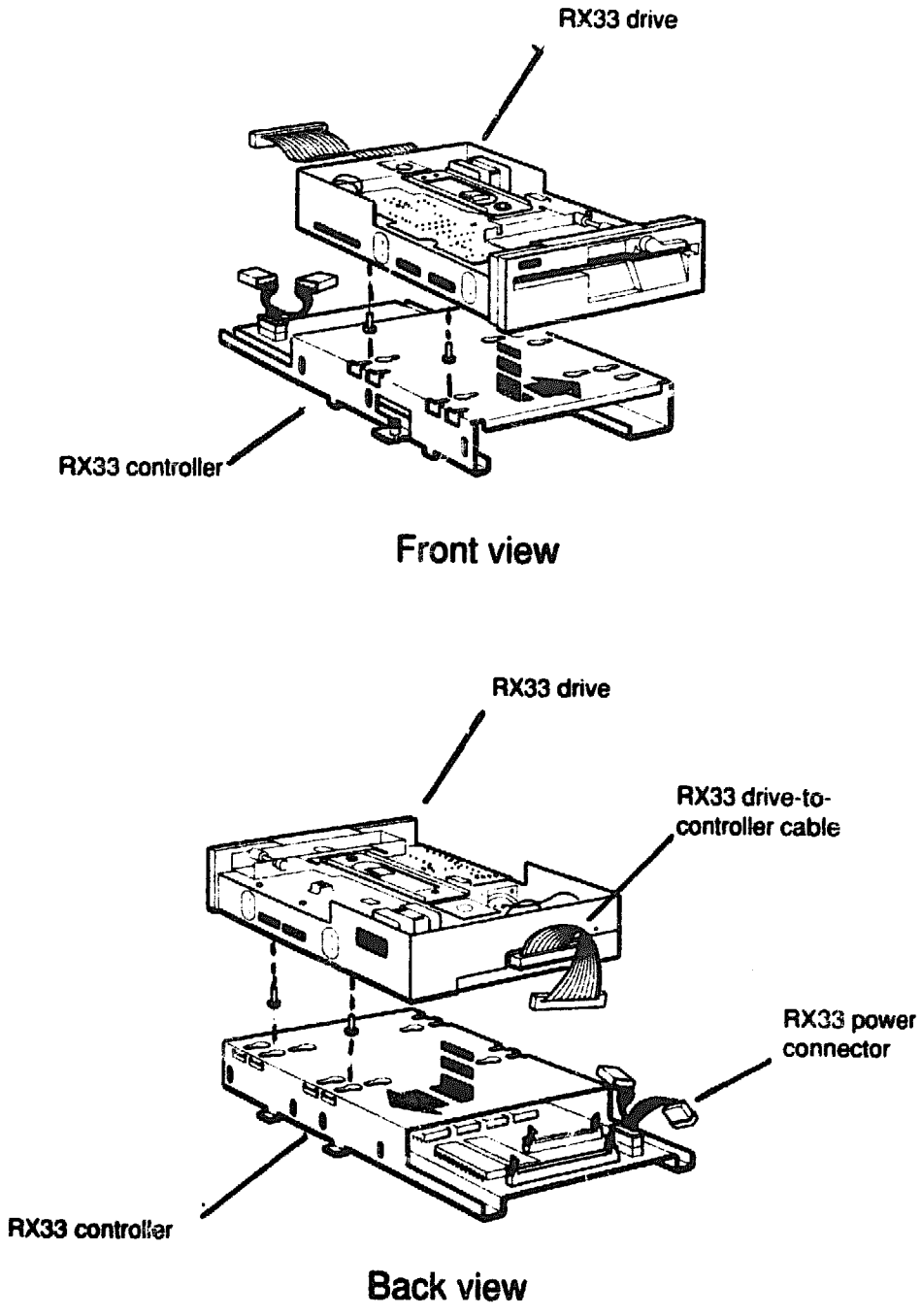


Figure 23. Removing and Installing an RX33 drive controller

To remove an RX33 floppy disk drive from an RX33 controller

1. Disconnect the drive-to-controller power cable from the drive.
2. Disconnect the drive-to-controller signal cable from the drive.
3. Loosen the four mounting screws that hold the drive to the controller.
4. With the front of the drive facing you, hold the controller in one hand. Then slide the drive to your left until it stops.
5. Lift the drive up and away from the controller.

To install an RX33 drive onto an RX33 controller

1. Loosely install the four washers and threaded mounting screws into the bottom of the drive.
2. Align the drive over the controller, with the front of the drive and the front of the controller facing the same direction.
3. Align the four mounting screw heads over the large opening in the keyhole-shaped slots on the top of the controller.
4. Pass the four screw heads through the keyhole-shaped slots. The standoffs should remain on top of the half-height bracket.
5. With the front of the drive facing you, slide the drive to your right until it stops.
6. Tighten the four threaded screws that hold the drive to the controller.
7. Connect the drive-to-controller power cable to the drive.
8. Connect the drive-to-controller signal cable to the drive.

RRD42 Compact Disc Drive

The RRD42 compact disc drive is a half-height, 5-1/4 inch, 600-megabyte compact disc drive. Figure 24 shows the RRD42 compact disc drive hardware, connectors, and controls.

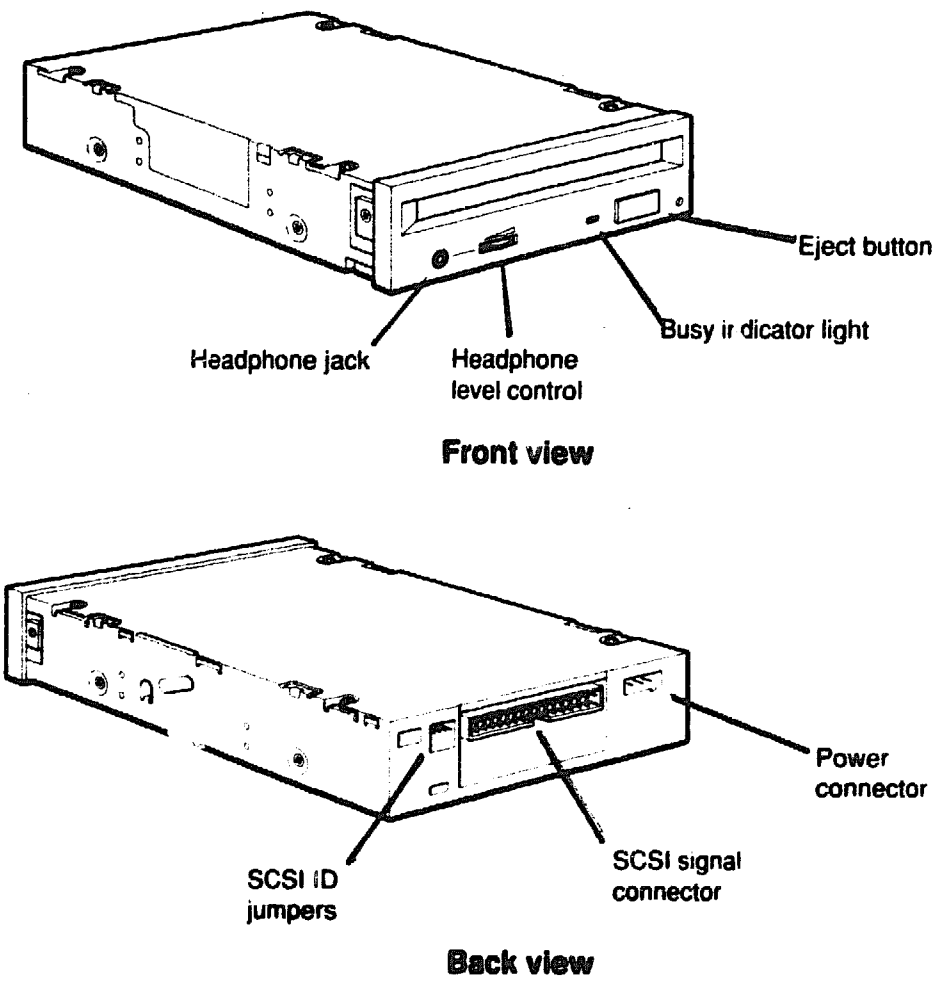


Figure 24. RRD42 compact disc drive

To Install an RRD42 Compact Disc Drive

- Install the RRD42 compact disc drive in the location farthest from the power supply.
- Use a half-height mounting bracket to mount an RRD42 compact disc drive.
- Use the SCSI ID jumpers to set the RRD42 drive SCSI ID. The jumpers are located on the back of the drive.

The jumper on the mode select set of pins determines the mode of operation for the drive. If your operating system is VMS or ULTRIX, the jumper should be in. If your operating system is MS-DOS or SCO UNIX, the jumper should be out. The drive is shipped with the mode jumper in.

The next three sets of pins are used to determine the SCSI ID number for the drive.

Table 6 shows the SCSI ID jumper settings for the drive.

Figure 25 shows the mode select jumper in and the SCSI ID jumpers set to SCSI ID number 4.

Table 6. RRD42 SCSI ID Jumper Settings

SCSI ID	ID 0	ID 1	ID 2
7	In	In	In
6	Out	In	In
5	In	Out	In
4	Out	Out	In
3	In	In	Out
2	Out	In	Out
1	In	Out	Out
0	Out	Out	Out

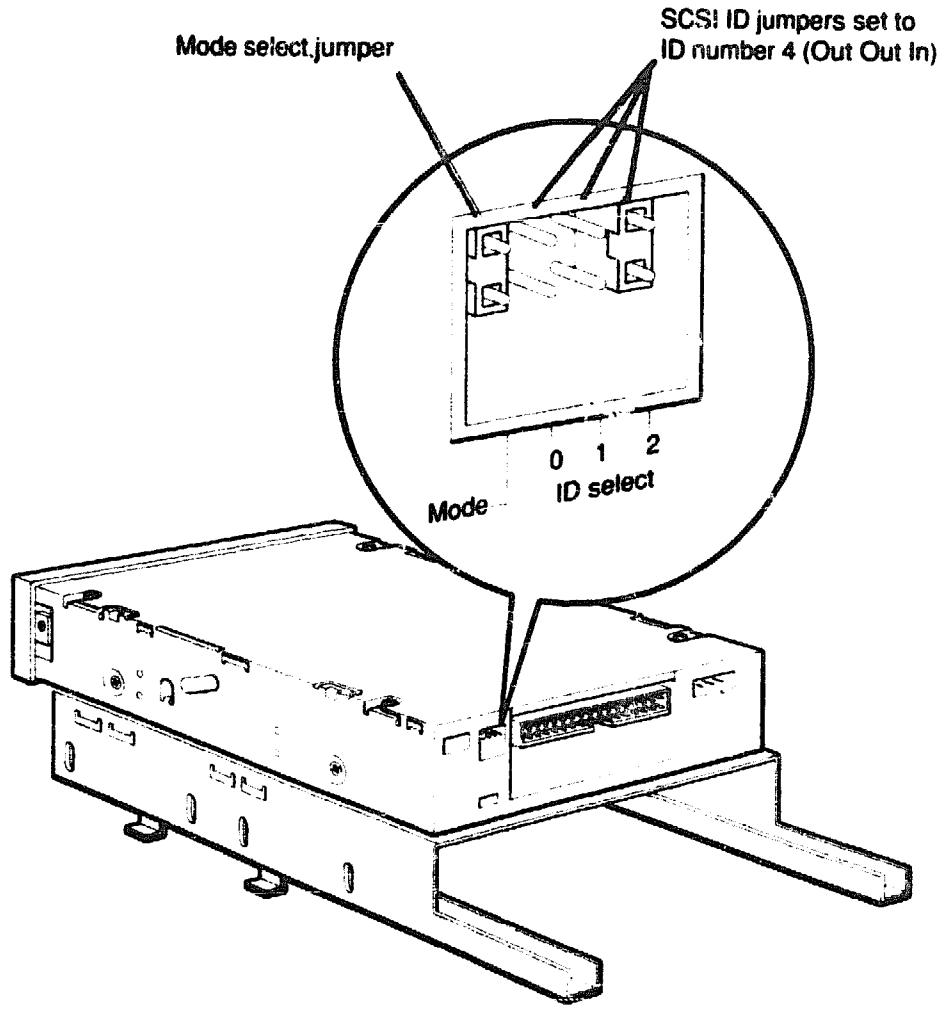
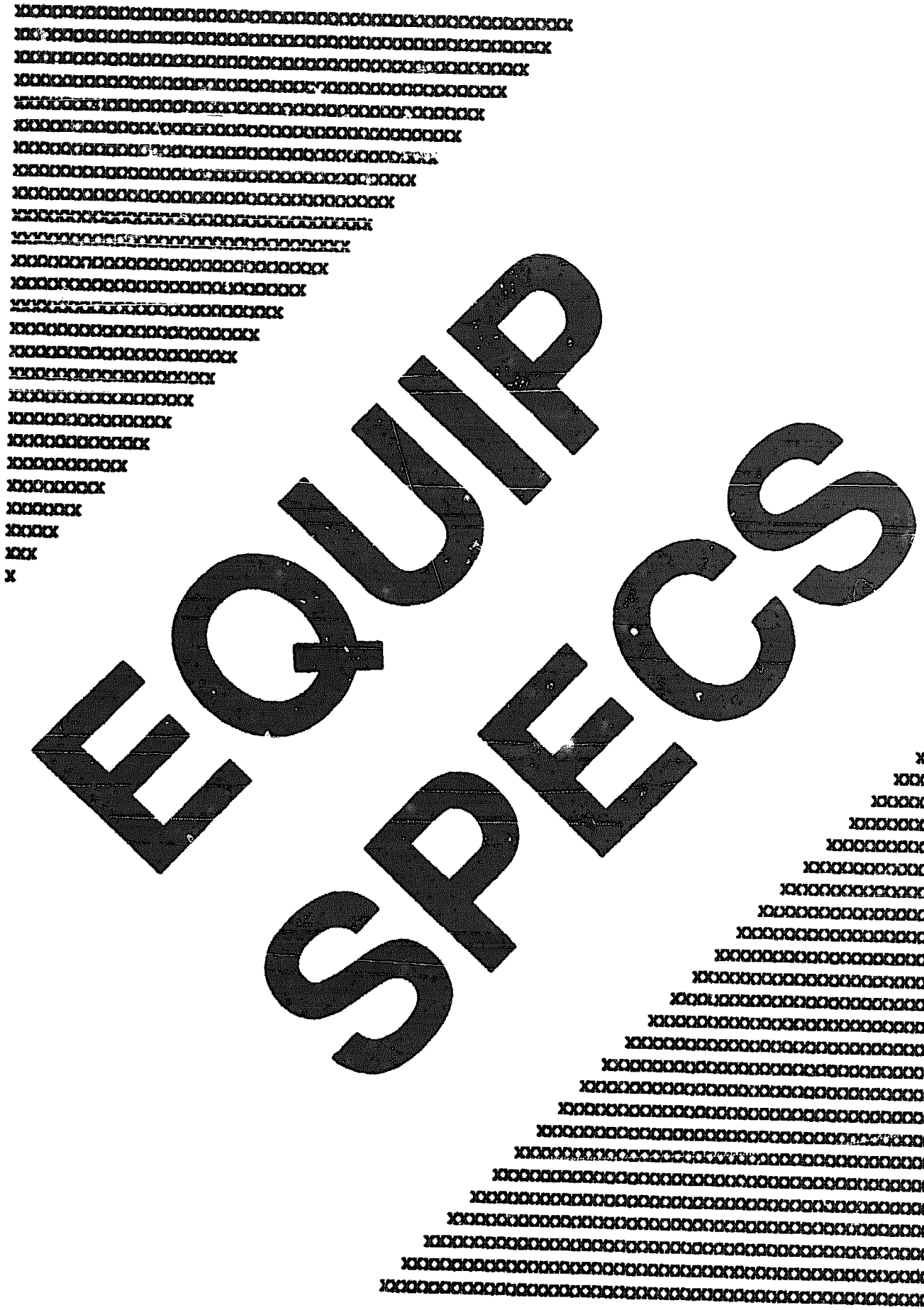


Figure 25. Mode select and SCSI ID jumpers on an RRD42 compact disc drive


EQUIP
SPECS

A

Equipment Specifications

This appendix lists the physical specifications, operating conditions, and nonoperating conditions for the following components:

- BA42 expansion box
- RZ55 hard disk drive
- RZ56 hard disk drive
- RZ57 hard disk drive
- TZ30 tape drive
- RX23 floppy disk drive
- RX33 floppy disk drive
- TZK10 QIC tape drive
- RRD42 compact disc drive

Table A-1. BA42 Storage Expansion Box Description

Weight	17.24 kg (38.00 lb) maximum
Height	10.16 cm (4.00 in)
Width	43.02 cm (18.12 in)
Depth	40.64 cm (16.00 in)
Input voltage	Automatically adjusting ac input 120–240 Vac
Frequency range	47 to 63 Hz
Power	90 watts maximum

Table A-2. BA42 Storage Expansion Box Operating Conditions

Temperature range[1]	10°C to 40°C (50°F to 104°F)
Temperature change rate	11°C (20°F) per hour maximum
Relative humidity	20% to 80% noncondensing
Maximum wet-bulb temperature	28°C (82°F)
Minimum dew-point temperature	2°C (36°F)
Altitude	2400 m (8000 ft) maximum

[1]Reduce maximum temperature by 1.8°C for each 1,000 meter (1.0°F for each 1,000 ft) increase in altitude.

Table A-3. BA42 Storage Expansion Box Nonoperating Conditions

Temperature range	5°C to 50°C (41°F to 122°F)
Relative humidity	10% to 95% noncondensing
Maximum wet-bulb temperature	46°C (115°F) packaged
Altitude	4900 m (16,000 ft) maximum

Table A-4. RZ55 SCSI Hard Disk Drive Description

Internal drive	
– Weight	3.81 kg (8.40 lb)
– Height	8.26 cm (3.25 in)
– Width	14.61 cm (5.75 in)
– Depth	20.83 cm (8.20 in)
Capacity	
– Bytes per drive	332.3 MB
– Blocks per drive	649,040
– Block size	512 bytes
Data transfer rate	
– Bus asynchronous mode	1.5 MB per second
– Bus synchronous mode	4 MB per second
– To and from media	1.25 MB per second
Seek time	4 ms track-to-track 16 ms average 35 ms maximum
Average latency	8.3 ms
Interface	SCSI

Table A-5. RZ55 SCSI Hard Disk Drive Operating Conditions

Temperature range[1]	10°C to 55°C (50°F to 131°F)
Temperature change rate	11°C (20°F) per hour, maximum
Relative humidity	20% to 80% noncondensing
Maximum wet-bulb temperature	25.6°C (78°F)
Minimum dew-point temperature	2°C (36°F)
Altitude	−300 to 4600 m (−1000 ft to 15,000 ft)

[1]Reduce maximum temperature by 1.8°C for each 1,000 meter (1.0°F for each 1,000 ft) increase in altitude.

Table A-6. RZ55 SCSI Hard Disk Drive Nonoperating Conditions

Temperature range	−40°C to 66°C (−40°F to 151°F)
Temperature change rate	20°C (36°F) per hour, maximum
Relative humidity	20% to 95% packaged
Maximum wet-bulb temperature	46°C (115°F) packaged
Altitude	−300 to 12,200 m (−1000 ft to 40,000 ft)

Table A-7. RZ56 SCSI Hard Disk Drive Description

Internal drive	
–Weight	3.81 kg (8.40 lb)
–Height	8.26 cm (3.25 in)
–Width	14.61 cm (5.75 in)
–Depth	20.32 cm (8.00 in)
Capacity	
– Bytes per drive	655.17 MB
– Blocks per drive	1,299,174
– Block size	512 bytes
Data transfer rate	
– Bus asynchronous mode	1.6 MB per second
– Bus synchronous mode	4.0 MB per second
– To and from media	1.875 MB per second
Seek time	4 ms track-to-track 16 ms average 35 ms maximum
Average latency	8.3 ms
Interface	SCSI

Table A-8. RZ56 SCSI Hard Disk Drive Operating Conditions

Temperature range[1]	10°C to 55°C (50°F to 131°F)
Temperature change rate	11°C (20°F) per hour, maximum
Relative humidity	8% to 80% noncondensing
Maximum wet-bulb temperature	25.6°C (78°F)
Minimum dew-point temperature	2°C (36°F)
Altitude	–300 to 4600 m (–1000 to 15,000 ft)

[1]Reduce maximum temperature by 1.8°C for each 1,000 meter (1.0°F for each 1,000 ft) increase in altitude.

Table A-9. RZ56 SCSI Hard Disk Drive Nonoperating Conditions

Temperature range	−40°C to 66°C (−40°F to 151°F)
Temperature change rate	20°C (36°F) per hour, maximum
Relative humidity	8% to 95% packaged
Maximum wet-bulb temperature	46°C (115°F) packaged
Altitude	−300 to 12,200 m (−1000 to 40,000 ft)

Table A-10. RZ57 SCSI Hard Disk Drive Description

Internal drive	
– Weight	3.81 kg (8.40 lb)
– Height	8.26 cm (3.25 in)
– Width	14.61 cm (5.75 in)
– Depth	20.32 cm (8.00 in)
Capacity	
– Bytes per drive	1.0 gigabytes
– Blocks per drive	1,954,050
– Block size	512 bytes
Data transfer rate	
– Bus asynchronous mode	1.6 MB per second
– Bus synchronous mode	4.0 MB per second
– To and from media	2.5 MB per second
Seek time	4 ms track-to-track 14.5 ms average 33 ms maximum
Average latency	8.3 ms
Interface	SCSI

Table A-11. RZ57 SCSI Hard Disk Drive Operating Conditions

Temperature range[1]	10°C to 55°C (50°F to 131°F)
Temperature change rate	11°C (20°F) per hour, maximum
Relative humidity	8% to 80%, noncondensing
Maximum wet-bulb temperature	26°C (78°F)
Minimum dew-point temperature	2°C (36°F)
Altitude	–300 to 4600 m (–1000 to 15,000 ft)

[1]Reduce maximum temperature by 1.8°C for each 1,000 meter (1.0°F for each 1,000 ft) increase in altitude.

Table A-12. RZ57 SCSI Hard Disk Drive Nonoperating Conditions

Temperature range	−40°C to 66°C (−40°F to 151°F)
Temperature change rate	20°C (36°F) per hour, maximum
Relative humidity	8% to 95%, packaged
Maximum wet-bulb temperature	46°C (115°F), packaged
Altitude	−300 to 12,200 m (−1000 to 40,000 ft)

Table A-13. TZ30 Tape Drive Description

Internal drive	
– Weight	1.50 kg (3.31 lb)
– Height	4.14 cm (1.63 in)
– Width	14.48 cm (5.70 in)
– Depth	21.59 cm (8.50 in)
Bit density	2624 bits per cm (6667 bits per in)
Cartridge capacity	95 Mbytes, formatted (approximate)
Media	12.77 mm (0.5 in) unformatted magnetic tape
Mode of operation	Streaming
Number of tracks	22
Tape speed	190 cm per second (75 in per second)
Track format	Multiple track serpentine recording
Data transfer rate	62.5 Kbytes per second

Table A-14. TZ30 Tape Drive Operating Conditions

Temperature range[1]	10°C to 40°C (50°F to 104°F)
Temperature change rate	11°C (20°F) per hour, maximum
Relative humidity	20% to 80% noncondensing
Maximum wet-bulb temperature	25°C (77°F)
Minimum dew-point temperature	2°C (36°F)
Altitude	2400 m (8000 ft) maximum

[1]Reduce maximum temperature by 1.8°C for each 1,000 meter (1.0°F for each 1,000 ft) increase in altitude.

Table A-15. TZ30 Tape Drive Nonoperating Conditions

Temperature range	−40°C to 66°C (−40°F to 151°F)
Temperature change rate	20°C (36°F) per hour, maximum
Relative humidity	10% to 95%
Maximum wet-bulb temperature	2°C (36°F)
Altitude	9100 m (30,000 ft) maximum

Table A-16. RX23 Floppy Disk Drive Description

Internal drive	
– Weight	0.48 kg (1.06 lb)
– Height	3.00 cm (1.18 in)
– Width	10.16 cm (4.00 in)
– Depth	15.01 cm (5.91 in)
Number of tracks	80
Number of heads	2
Step rate	3 ms per track
Diskette size	8.9 cm (3.5 in)
Recording surfaces per diskette	2
Sectors per track	9 double density 18 high density
Capacity	
– Bytes per drive	737 KB double density
	1,474 KB high density
– Blocks per drive	1,440 double density
	2,880 high density
– Block size	512 bytes
Data transfer rate	
– To and from media	250 Kbits per second double density
	500 Kbits per second high density
Operating power	3.0 watts
Standby power	0.3 watts

Table A-17. RX23 Floppy Disk Drive Operating Conditions

Temperature range[1]	5°C to 50°C (40°F to 122°F)
Temperature change rate	11°C (20°F) per hour, maximum
Relative humidity	8% to 80%, noncondensing
Maximum wet-bulb temperature	29°C (80°F)
Minimum dew-point temperature	2°C (36°F)
Altitude	−300 to 3060 m (−1,000 ft to 10,000 ft)

[1]Reduce maximum temperature by 1.8°C for each 1,000 meter (1.0°F for each 1,000 ft) increase in altitude.

Table A-18. RX23 Floppy Disk Drive Nonoperating Conditions

Temperature	−40°C to 66°C (−40°F to 151°F)
Temperature change rate	20°C (36°F) per hour, maximum
Relative humidity	5% to 95%, packaged
Maximum wet-bulb temperature	46°C (115°F), packaged
Altitude	−300 to 12,300 m (−1,000 ft to 40,000 ft)

Table A-19. RX33 Floppy Disk Drive Description

Internal drive	
– Weight	1.10 kg (2.43 lb)
– Height	4.32 cm (1.70 in)
– Width	14.61 cm (5.75 in)
– Depth	20.32 cm (8.00 in)
Number of tracks	80
Number of heads	2
Track density	96 tracks per inch
Step rate	3 ms per track
Diskette size	13.13 cm (5.25 in)
Recording surfaces per diskette	2
Sectors per track	10 normal density 15 high density
Capacity	
– Bytes per drive	409 KB normal density 1200 KB high density
– Blocks per drive	800 normal density 2400 high density
– Block size	512 bytes
Data transfer rate	
– To and from media	250 Kbits per second normal density 500 Kbits per second high density
Operating power	4.1 watts
Standby power	1.5 watts

Table A-20. RX33 Floppy Disk Drive Operating Conditions

Temperature range[1]	10°C to 46°C (50°F to 115°F)
Temperature change rate	11°C (20°F) per hour, maximum
Relative humidity	20% to 80% noncondensing
Maximum wet-bulb temperature	45°C (113°F)
Minimum dew-point temperature	2°C (36°F)
Altitude	2400 m (8000 ft) maximum

[1]Reduce maximum temperature by 1.8°C for each 1,000 meter (1.0°F for each 1,000 ft) increase in altitude.

Table A-21. RX33 Floppy Disk Drive Nonoperating Conditions

Temperature	−34°C to 60°C (−30°F) to 140°F)
Temperature change rate	20°C (36°F) per hour, maximum
Relative humidity	5% to 90%
Maximum wet-bulb temperature	45°C (113°F) packaged
Altitude	9100 m (30,000 ft) maximum

Table A-22. TZK10 QIC Tape Drive Description

Internal drive	
– Weight	1.09 kg (2.40 lb)
– Height	4.39 cm (1.73 in)
– Width	14.61 cm (5.75 in)
– Depth	20.83 cm (8.20 in)
Cartridge capacity	320 MB (approximate) with DC6320 525 MB (approximate) with DC6525
Data density	16,000 bits per in
Drive interface	SCSI-2
Media	DC6320, DC6525, or Digital-approved equivalent
Mode of operation	Streaming
Number of tracks	26
Power consumption, normal	20 watts
Power consumption, peak	33 watts
Transfer rate	200 KB per second at average streaming mode 1.5 MB per second at SCSI maximum
Tape speed	305 cm (120 in) per second
Track format	Multiple track serpentine recording

Table A-23. TZK10 QIC Tape Drive Operating Conditions

Temperature range[1]	5°C to 40°C (50°F to 104°F)
Temperature change rate	11°C (20°F) per hour, maximum
Relative humidity	2% to 80% noncondensing
Maximum wet-bulb temperature	28°C (82°F)
Minimum dew-point temperature	2°C (36°F)
Altitude	3900 m (13,000 ft) maximum

[1]Reduce maximum temperature by 1.8°C for each 1,000 meter (1.0°F for each 1,000 ft) increase in altitude.

Table A-24. TZK10 QIC Tape Drive Nonoperating Conditions

Temperature range	−30°C to 60°(−22°F to 151°F)
Temperature change rate	20°C (36°F) per hour, maximum
Relative humidity	10% to 95%
Maximum wet-bulb temperature	46°C (115°F)
Altitude	12,200 m (40,000 ft) maximum

Table A-25. RRD42 Compact Disc Drive Description

Internal drive	
– Weight	1.3 kg (2.8 lb)
– Height	4.15 cm (1.63 in)
– Width	14.60 cm (5.75 in)
– Depth	20.81 cm (8.2 in)
Capacity	600 MB
Seek time	450 ms average (typical) 700 ms maximum (typical)
Burst transfer rate	1.5 MB per second
Sustained transfer rate	150 KB per second
Heat dissipation	14 watts (typical)
Initialization startup time	2.0 seconds maximum
Interface	SCSI

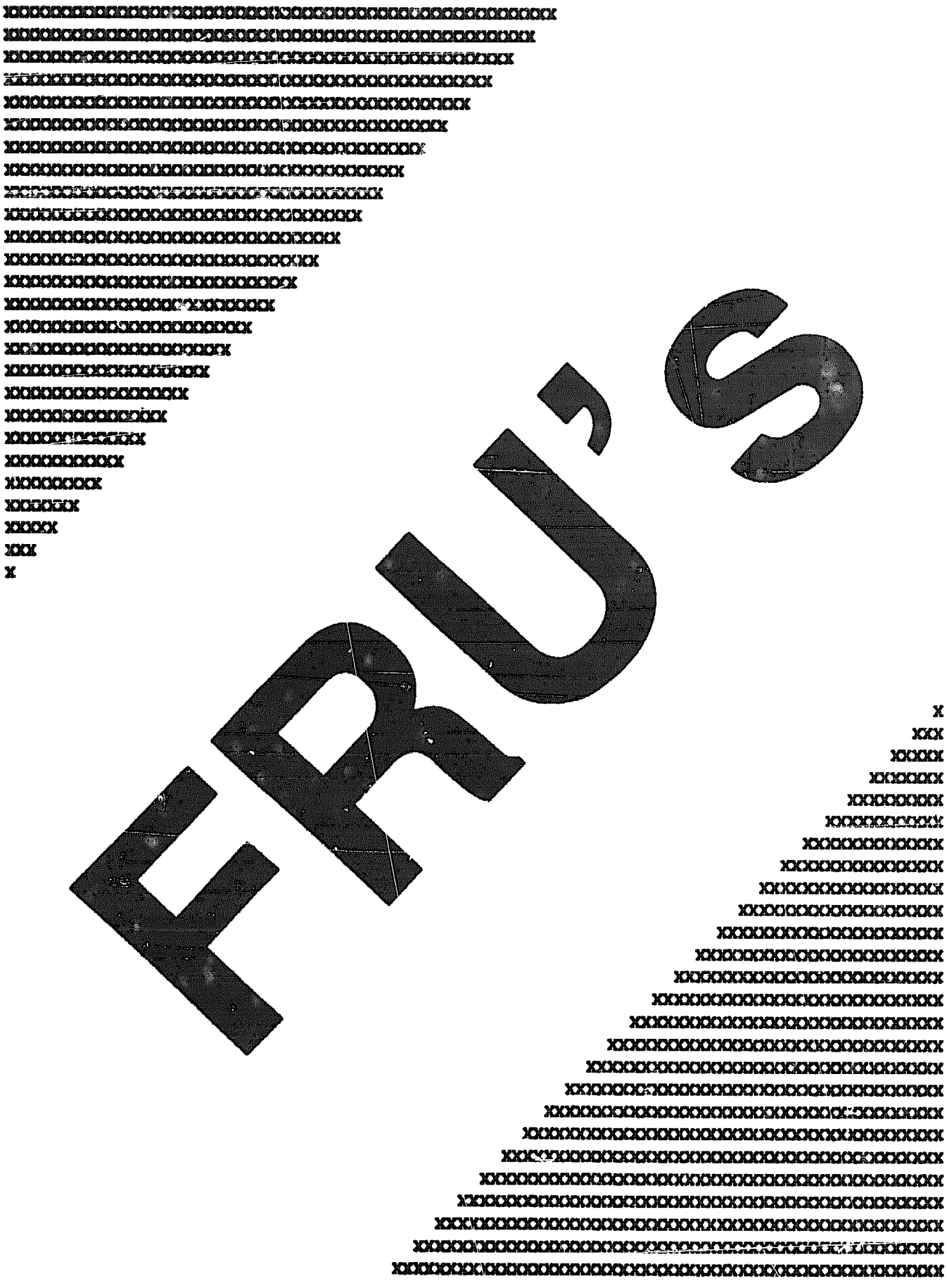
Table A-26. RRD42 Compact Disc Drive Operating Conditions

Temperature range[1]	5°C to 50°C (41°F to 122°F)
Relative humidity	10% to 90% noncondensing
Maximum wet-bulb temperature	28°C (82°F)
Minimum dew-point temperature	2°C (36°F)
Altitude	–300 to 4600 m (–1000 to 15,000 ft)

[1]Reduce maximum temperature by 1.8°C for each 1,000 meter (1.0°F for each 1,000 ft) increase in altitude.

Table A-27. RRD42 Compact Disc Drive Nonoperating Conditions

Temperature range	–30 °C to 55°C (–22°F to 131°F)
Relative humidity	10to 90% packaged, noncondensing
Maximum wet-bulb temperature	46°C (115°F) packaged, noncondensing
Altitude	–300 to 12,200 m (–1000 to 40,000 ft)


FRU'S

B

Field Replaceable Units

Table B-1. BA42 Storage Expansion Box Field Replaceable Units

FRU	Part Number
SCSI/FDI adapter module	54-19288-01
Power supply	H7821-00
Power supply cable with load resistor	17-02447-01
Power cord (USA)	17-00606-10
68 - 50 external SCSI cable	17-02443-01
50 - 50 external SCSI cable	17-02446-01
SCSI ID select switch module	54-19325-02
SCSI ID select cable	17-02445-01
Internal SCSI data cable	17-02444-01
Full-height drive mounting bracket	74-39202-01
Half-height drive mounting bracket	74-41843-01
RZ55 hard disk drive	70-26717-01
RZ55 PCB	29-27347-01
RZ56 HDA	29-27890-01
RZ56 PCB	29-27889-01
RZ57 HDA	70-28158-01
RZ57 PCB	29-28159-01
TZ30 1/2 inch cartridge tape drive	TZ30-AX

(continued on next page)

Table B-1 (Cont.). BA42 Storage Expansion Box Field Replaceable Units

FRU	Part Number
TZK10 quarter inch cassette (QIC) tape drive	TZK10-AA
RX23 3-1/2 inch floppy disk drive	RX23-AA
RX33 5-1/4 inch floppy disk drive	RX33-A
SCSI/FDI module	54-19288-01
RRD42 5-1/4 inch compact disc drive	RRD42-AA