

BA42 Storage Expansion Box

Installation Guide

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Contents

Using This Guide	xiii
1 Installing BA42 Storage Expansion Boxes	
Checking Your Shipment	1-2
Setting Up Expansion Boxes	1-3
Determining Which SCSI ID Numbers Are Available	1-4
Setting SCSI ID Switches for Hard Disk Drives	1-5
Remove the SCSI ID Switch Cover from the Expansion Box	1-5
Check the SCSI ID Switch Settings on the Expansion Box	1-6
Change the SCSI ID Switch Settings If Necessary	1-7
Setting SCSI ID Switches and Jumpers on Floppy Disk, Tape, and Compact Disc Drives	1-8
Remove the Cover from the Expansion Box	1-8
Check the SCSI ID Switch or Jumper Settings on the Drive	1-9
Change the SCSI ID Switch or Jumper Settings If Necessary	1-9
Replace the Cover on the Expansion Box	1-10
Installing an Expansion Box	1-11
Turn Power Off	1-11
Remove the Cover or Terminator from the SCSI Connector on the System Unit	1-11
Connect the System-Unit-to-Expansion-Box Cable to the System Unit	1-13
Connect the System-Unit-to-Expansion-Box Cable to the Expansion Box	1-14

Connect the Terminator	1-15
Connect the Power Cord	1-16
Connecting One Expansion Box to Another Expansion Box	1-17
Turn Power Off	1-17
Remove the Terminator	1-17
Connect the Box-to-Box Expansion Cable and Terminator	1-18
Connect the Power Cords	1-20
Verifying Your System Configuration	1-21
Turn Power On	1-21
Check the Configuration Display	1-21
Using Floppy Disk or Tape Drives	1-22

2 Installing a BA42 Storage Expansion Box Upgrade

Checking Your Shipment	2-2
Determining Available SCSI ID Numbers	2-3
Preparing the Expansion Box	2-4
Turn Power Off	2-4
Remove the Cover from the Expansion Box	2-4
Installing an RZ5x Series Hard Disk Drive	2-6
Attach the Internal Cables to the Drive	2-6
If Your Expansion Box Contains an RZ25 Hard Disk Drive, Attach the 6-Pin SCSI ID Switch Cable	2-7
Insert the Drive into the Expansion Box	2-8
Tighten the Captive Screw	2-9
Installing an RZ25 Hard Disk Drive	2-10
Remove the 24-Pin SCSI ID Switch Cable from the Expansion Box	2-11
Attach the 6-pin SCSI ID Switch Cable That Came with the RZ25 Hard Disk Drive	2-12
Attach the Internal Cables to the Drive	2-13
Insert the Drive into the Expansion Box	2-15
Tighten the Captive Screw	2-16
Replace the Cover on the Expansion Box	2-17
Check the SCSI ID Switch Settings on the Expansion Box	2-18
Change the SCSI ID Switch Settings If Necessary	2-20
Installing a Floppy Disk, Tape, or Compact Disc Drive	2-21
Check the SCSI ID Switch or Jumper Settings on the Drive	2-21
Change the SCSI ID Switch or Jumper Settings If Necessary	2-21

Connect the Internal Cables	2-22
Insert the Drive into the Expansion Box	2-23
Tighten the Captive Screw	2-24
Remove the Blank Panel from the Front of the Expansion Box Cover	2-25
Install the Open Bezel Insert on the Front of the Expansion Box Cover	2-26
Replace the Cover on the Expansion Box	2-27
Verifying Your System Configuration	2-28
Turn Power On	2-28
Check the Configuration Display	2-28
Using Floppy Disk or Tape Drives	2-29

A Equipment Specifications

BA42 Storage Expansion Box Equipment Specifications	A-2
RZ25 SCSI Hard Disk Drive Equipment Specifications	A-3
RZ55 SCSI Hard Disk Drive Equipment Specifications	A-5
RZ56 SCSI Hard Disk Drive Equipment Specifications	A-7
RZ57 SCSI Hard Disk Drive Equipment Specifications	A-9
RZ58 SCSI Hard Disk Drive Equipment Specifications	A-11
TZ30 Tape Drive Equipment Specifications	A-13
TZK10 QIC Tape Drive Equipment Specifications	A-15
RX23 Diskette Drive Equipment Specifications	A-17
RX33 Diskette Drive Equipment Specifications	A-19

B BA42 Configurations and Part Numbers

C TZ30 Tape Drive

Setting the SCSI ID Switches	C-2
Attaching the Internal Expansion Box Cables to a Drive	C-4
Using a TZ30 Tape Drive	C-5
TZ30 Tape Cartridge	C-5
External Controls and Indicators	C-6
Write-Protecting a Tape Cartridge	C-8
Write-Enabling a Tape Cartridge	C-9
Inserting a Tape Cartridge into a Drive	C-10
Removing a Tape Cartridge from a Drive	C-13
Handling and Storing Tape Cartridges	C-14

D RX23 Floppy Disk Drive

Setting the SCSI ID Switches	D-2
Attaching the Internal Expansion Box Cables to a Drive ...	D-4
Using an RX23 Floppy Disk Drive	D-5
RX23 Floppy Diskette.....	D-5
External Controls and Indicators	D-6
Write-Protecting a Floppy Diskette	D-7
Write-Enabling a Floppy Diskette	D-8
Inserting a Floppy Diskette into a Drive.....	D-9
Removing a Floppy Diskette from a Drive	D-11
Handling and Storing Floppy Diskettes.....	D-12

E RX33 Floppy Disk Drive

Setting the SCSI ID Switches	E-2
Attaching the Internal Expansion Box Cables to a Drive ...	E-4
Using an RX33 Floppy Disk Drive	E-5
RX33 Floppy Diskette.....	E-5
External Controls and Indicators	E-6
Write-Protecting a Floppy Diskette	E-7
Write-Enabling a Floppy Diskette	E-7
Inserting a Floppy Diskette into a Drive.....	E-8
Removing a Floppy Diskette from a Drive	E-9
Handling and Storing Floppy Diskettes.....	E-10
Formatting RX33 Floppy Diskettes	E-11
Using VMS.....	E-11
Using ULTRIX Version 4.1 or Higher	E-11
Using Versions of ULTRIX Prior to ULTRIX Version 4.1	E-13

F TZK10 QIC Tape Drive

Setting the SCSI ID Jumpers	F-2
Attaching the Internal Expansion Box Cables to a Drive ...	F-4
Using a TZK10 QIC Tape Drive	F-5
TZK10 QIC Tape Cartridge	F-5
External Controls and Indicators	F-6
Write-Protecting or Write-Enabling a Tape Cartridge ...	F-7
Inserting a Tape Cartridge into a Drive	F-8
Removing a Tape Cartridge from a Drive	F-10
Handling and Storing Tape Cartridges	F-12

G RRD42 Compact Disc Drive

Setting the Mode Select and SCSI ID Jumpers	G-2
Attaching the Internal Expansion Box Cables to a Drive ...	G-4
Using an RRD42 Compact Disc	G-6
Inserting a Compact Disc into a Caddy	G-7
Removing a Compact Disc from a Caddy	G-10
Using an RRD42 Compact Disc Drive	G-11
External Controls and Indicators	G-11
Inserting a Disc Caddy into a Drive	G-12
Removing a Disc Caddy from a Drive	G-14
Handling and Storing Compact Discs	G-15

Figures

1-1	The parts of a BA42 expansion box shipment	1-2
1-2	On/off switch in the off position	1-3
1-3	Removing the SCSI ID switch cover from the expansion box	1-5
1-4	SCSI ID switches for hard disk drives	1-6
1-5	Removing the cover from the expansion box	1-8
1-6	Replacing the cover on the expansion box	1-10
1-7	Removing the SCSI connector cover from the system unit ...	1-11
1-8	Removing the SCSI terminator from the system unit	1-12
1-9	Connecting a system-unit-to-expansion-box cable to the system unit	1-13
1-10	Connecting a system-unit-to-expansion-box cable to the expansion box	1-14
1-11	Connecting a terminator to the expansion box	1-15
1-12	Connecting a power cord to an expansion box	1-16
1-13	Removing a terminator from an expansion box	1-17
1-14	Connecting the box-to-box cable and terminator to the final expansion box	1-19
1-15	Connecting power cords to expansion boxes	1-20
2-1	Removing the cover from the expansion box	2-4
2-2	Inside the BA42 expansion box	2-5
2-3	Attaching the internal cables to an RZ5x Series hard disk drive	2-6
2-4	Attaching a 6-pin SCSI ID switch cable to an RZ5x Series hard disk drive	2-7
2-5	Inserting the RZ5x Series hard disk drive in the expansion box	2-8

2-6	Tightening the captive screw on the drive	2-9
2-7	6-pin and 24-pin SCSI ID switch cables	2-10
2-8	Disconnecting the 24-pin SCSI ID switch cable from the expansion box	2-11
2-9	Attaching the 6-pin SCSI ID switch cable to the expansion box	2-12
2-10	Attaching the internal SCSI signal and power cables to an RZ25 hard disk drive	2-13
2-11	Attaching the internal 6-pin SCSI ID switch cable to an RZ25 hard disk drive	2-14
2-12	Inserting an RZ25 hard disk drive in the expansion box	2-15
2-13	Tightening the captive screw on the drive	2-16
2-14	Replacing the cover on the BA42 expansion box	2-17
2-15	SCSI ID switches for hard disk drives	2-19
2-16	Inserting the drive in the expansion box	2-23
2-17	Tightening the captive screw	2-24
2-18	Removing the blank panel from the front of the expansion box cover	2-25
2-19	Installing the open bezel insert on the front of the expansion box cover	2-26
2-20	Replacing the cover on the expansion box	2-27
C-1	SCSI ID switches on the TZ30 tape drive	C-3
C-2	Attaching the internal expansion box cables to a TZ30 tape drive	C-4
C-3	A TZ30 tape cartridge	C-5
C-4	External controls and indicator lights on the TZ30 tape drive	C-6
C-5	Write-protecting a TZ30 tape cartridge	C-8
C-6	Write-enabling a TZ30 tape cartridge	C-9
C-7	Opening the door on a cartridge	C-10
C-8	A tape leader positioned correctly in a cartridge	C-11
C-9	Inserting a tape cartridge into a TZ30 tape drive	C-12
C-10	Removing a tape cartridge from a TZ30 tape drive	C-13
D-1	SCSI ID switches on the RX23 floppy disk drive	D-3
D-2	Attaching the internal expansion box cables to an RX23 floppy disk drive	D-4
D-3	An RX23 floppy diskette	D-5
D-4	External controls and indicators on the RX23 floppy disk drive	D-6
D-5	Write-protecting an RX23 floppy diskette	D-7

D-6	Write-enabling an RX23 floppy diskette	D-8
D-7	Inserting a floppy diskette into an RX23 floppy disk drive...	D-9
D-8	A floppy diskette positioned correctly in an RX23 floppy disk drive	D-10
D-9	Removing a floppy diskette from an RX23 floppy disk drive	D-11
E-1	SCSI ID switches on the RX33 floppy disk drive	E-3
E-2	Attaching the internal expansion box cables to an RX33 floppy disk drive	E-4
E-3	An RX33 floppy diskette	E-5
E-4	External controls and indicators on the RX33 floppy disk drive	E-6
E-5	Write-protecting an RX33 floppy diskette	E-7
E-6	Inserting a floppy diskette into an RX33 floppy disk drive...	E-8
E-7	Removing a floppy diskette from an RX33 floppy disk drive	E-9
F-1	SCSI ID jumpers on the TZK10 QIC tape drive.....	F-3
F-2	Attaching the internal expansion box cables to a TZK10 QIC tape drive	F-4
F-3	A TZK10 QIC tape cartridge	F-5
F-4	External controls and indicators on the TZK10 tape drive ...	F-6
F-5	Write-protect and write-enable switch positions on a TZK10 QIC tape cartridge	F-7
F-6	Inserting a tape cartridge into the TZK10 QIC tape drive ...	F-8
F-7	Closing the drive door on the TZK10 QIC tape drive	F-9
F-8	Removing a tape cartridge from the TZK10 QIC tape drive	F-11
G-1	Mode select and SCSI ID jumpers on the RRD42 compact disc drive	G-3
G-2	The SCSI signal cable connector and key	G-4
G-3	Attaching the internal expansion box cables to an RRD42 compact disc drive.....	G-5
G-4	An RRD42 compact disc	G-6
G-5	Removing the protective film from a compact disc caddy	G-7
G-6	Opening a compact disc caddy	G-8
G-7	Inserting a disc into a compact disc caddy	G-9
G-8	External controls and indicators on the RRD42 compact disc drive	G-11
G-9	Inserting a compact disc caddy into an RRD42 compact disc drive	G-12
G-10	Pushing a caddy into an RRD42 compact disc drive	G-13

G-11	Removing a compact disc caddy from an RRD42 compact disc drive	G-14
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Tables

1-1	SCSI ID Numbers and Switch Settings for Hard Disk Drives	1-7
2-1	SCSI ID Numbers and Switch Settings for Hard Disk Drives	2-20
A-1	BA42 Storage Expansion Box Description	A-2
A-2	BA42 Storage Expansion Box Operating Conditions	A-2
A-3	BA42 Storage Expansion Box Nonoperating Conditions	A-2
A-4	RZ25 SCSI Hard Disk Drive Description	A-3
A-5	RZ25 SCSI Hard Disk Drive Operating Conditions	A-3
A-6	RZ25 SCSI Hard Disk Drive Nonoperating Conditions	A-4
A-7	RZ55 SCSI Hard Disk Drive Description	A-5
A-8	RZ55 SCSI Hard Disk Drive Operating Conditions	A-6
A-9	RZ55 SCSI Hard Disk Drive Nonoperating Conditions	A-6
A-10	RZ56 SCSI Hard Disk Drive Description	A-7
A-11	RZ56 SCSI Hard Disk Drive Operating Conditions	A-7
A-12	RZ56 SCSI Hard Disk Drive Nonoperating Conditions	A-8
A-13	RZ57 SCSI Hard Disk Drive Description	A-9
A-14	RZ57 SCSI Hard Disk Drive Operating Conditions	A-9
A-15	RZ57 SCSI Hard Disk Drive Nonoperating Conditions	A-10
A-16	RZ58 SCSI Hard Disk Drive Description	A-11
A-17	RZ58 SCSI Hard Disk Drive Operating Conditions	A-11
A-18	RZ58 SCSI Hard Disk Drive Nonoperating Conditions	A-12
A-19	TZ30 Tape Drive Description	A-13
A-20	TZ30 Tape Drive Operating Conditions	A-13
A-21	TZ30 Tape Drive Nonoperating Conditions	A-14
A-22	TZK10 QIC Tape Drive Description	A-15
A-23	TZK10 QIC Tape Drive Operating Conditions	A-15
A-24	TZK10 QIC Tape Drive Nonoperating Conditions	A-16
A-25	RX23 Diskette Drive Description	A-17
A-26	RX23 Diskette Drive Operating Conditions	A-18
A-27	RX23 Diskette Drive Nonoperating Conditions	A-18
A-28	RX33 Diskette Drive Description	A-19
A-29	RX33 Diskette Drive Operating Conditions	A-20
A-30	RX33 Diskette Drive Nonoperating Conditions	A-20

B-1	BA42 Storage Expansion Box Configurations	B-1
C-1	SCSI ID Switch Settings for the TZ30 Tape Drive	C-2
C-2	Indicator Lights on the TZ30 Tape Drive	C-7
D-1	SCSI ID Switch Settings for the RX23 Floppy Disk Drive ...	D-2
E-1	SCSI ID Switch Settings for the RX33 Floppy Disk Drive ...	E-2
F-1	SCSI ID Jumper Settings for the TZK10 QIC Tape Drive ...	F-2
F-2	Indicator Light on the TZK10 QIC Tape Drive.....	F-6
G-1	SCSI ID Jumper Settings for the RRD42 Compact Disc Drive	G-2

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Using This Guide

Use this guide to install one or more BA42 expansion boxes, to add a drive to a BA42 expansion box, and to verify that SCSI (small computer systems interface) switches have been set correctly for each drive in a BA42 expansion box.

This guide tells you

- How to install one or more expansion boxes
- How to install new drives inside BA42 expansion boxes
- How to make sure the drives inside a BA42 expansion box are recognized by your system and what to do if they aren't
- How to use your floppy disk, tape, or compact disc drive
- What combinations of the Digital-supplied drives can be present in BA42 expansion boxes connected to a SCSI connector on your system unit
- What the equipment specifications are for the BA42 expansion box and for the Digital-supplied drives available for use in it
- What the part numbers are for the components of the BA42 expansion box and of the Digital-supplied drives available for use in it

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Installing BA42 Storage Expansion Boxes

This chapter tells you how to

- Check your shipment to make sure nothing is broken or missing
- Set up a BA42 expansion box
- Select SCSI ID numbers and set SCSI ID switches for Digital-supplied hard disk, floppy disk, tape, and compact disc drives installed in BA42 expansion boxes
- Attach an expansion box to your system unit
- Attach one expansion box to another expansion box
- Make sure the system recognizes the drive or drives inside an expansion box

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.

Checking Your Shipment

When you unpack the carton that contains a BA42 expansion box, you should find all of the items shown in Figure 1-1.

In addition, if you have a floppy disk drive preinstalled in your expansion box, you should also receive two floppy diskettes. If you have a tape drive preinstalled, you should receive one tape cartridge. If you have a compact disc drive, you should receive one compact disc and cartridge.

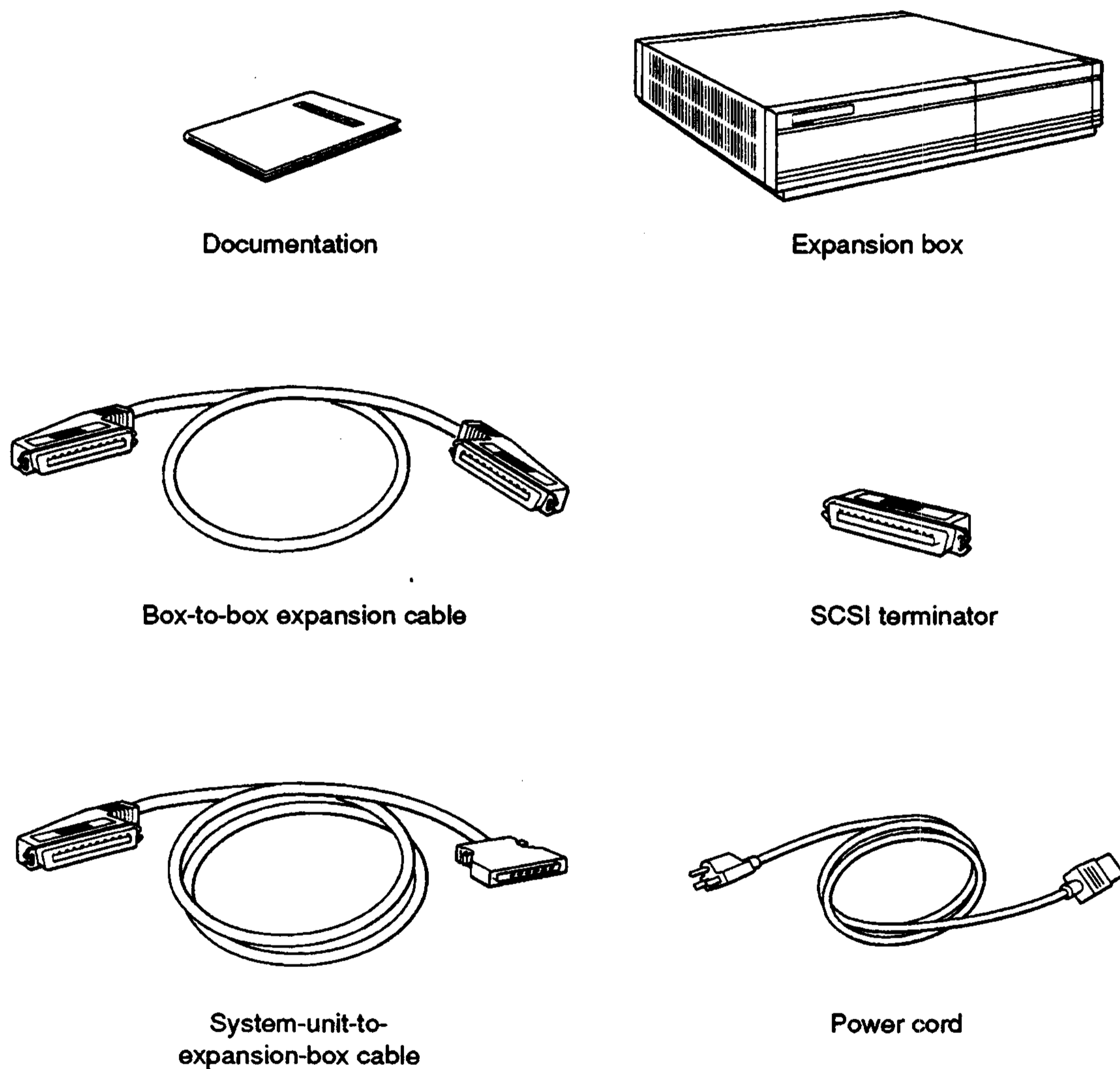


Figure 1-1. The parts of a BA42 expansion box shipment

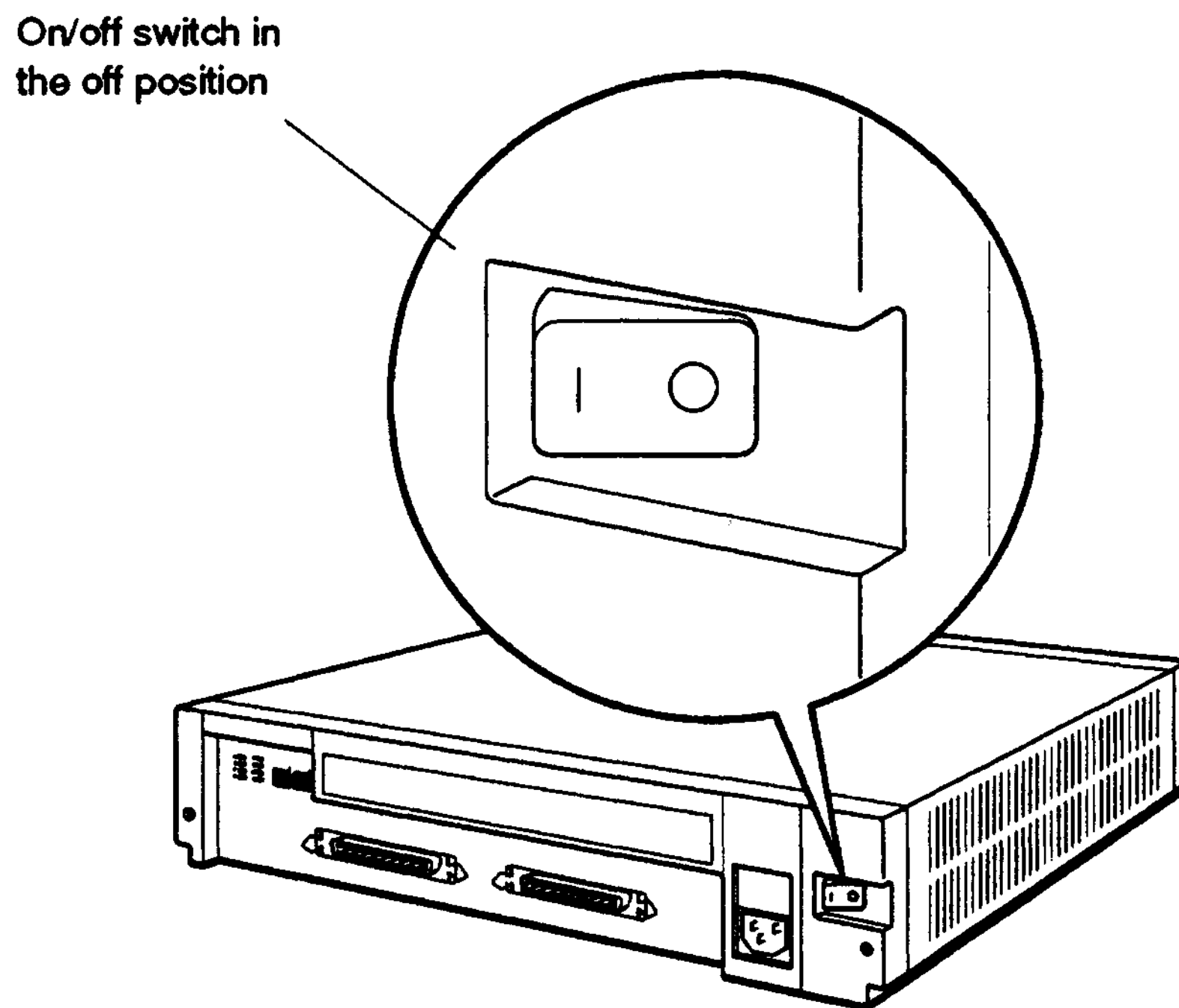
Setting Up Expansion Boxes

Warning: *It takes two people to unpack and set up a BA42 expansion box safely.*

Caution: *Standing an expansion box on its side blocks vents and can damage the expansion box and any drives it contains.*

Set up your BA42 expansion box on a flat surface as near as possible to your system unit. If you are installing more than one expansion box, you can stack the boxes on top of one another.

Make sure the on/off switch on the expansion box is in the off position.



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Figure 1-2. On/off switch in the off position

Determining Which SCSI ID Numbers Are Available

You can connect up to seven SCSI drives to a given SCSI connector on the system unit.

You must assign a SCSI ID number to each drive installed in a BA42 expansion box. Numbers that can be used range from 0 to 7, and you can assign each number only once. To find out what SCSI ID numbers are available, see the option installation instructions in the installation guide or user's guide for your system.

To set SCSI ID switches for hard disk drives, turn to page 1-5.

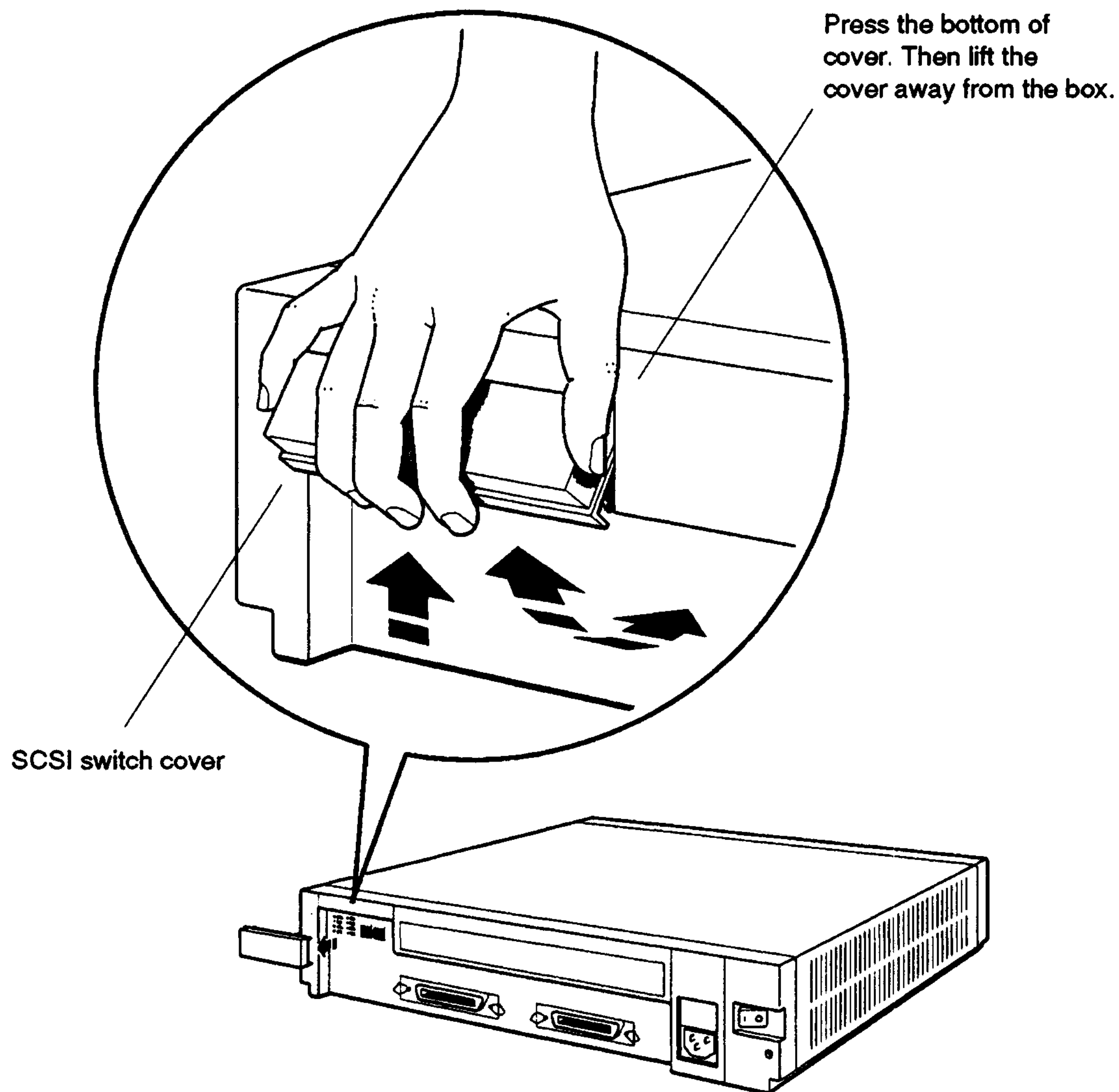
To set SCSI ID switches for floppy disk, tape, or compact disc drives, turn to page 1-8.

Setting SCSI ID Switches for Hard Disk Drives

SCSI ID switches for hard disk drives installed in a BA42 expansion box are located on the back of the expansion box.

If you have one or two hard disk drives preinstalled in your expansion box, check the SCSI ID switch settings for each drive and change the settings if necessary.

Remove the SCSI ID Switch Cover from the Expansion Box



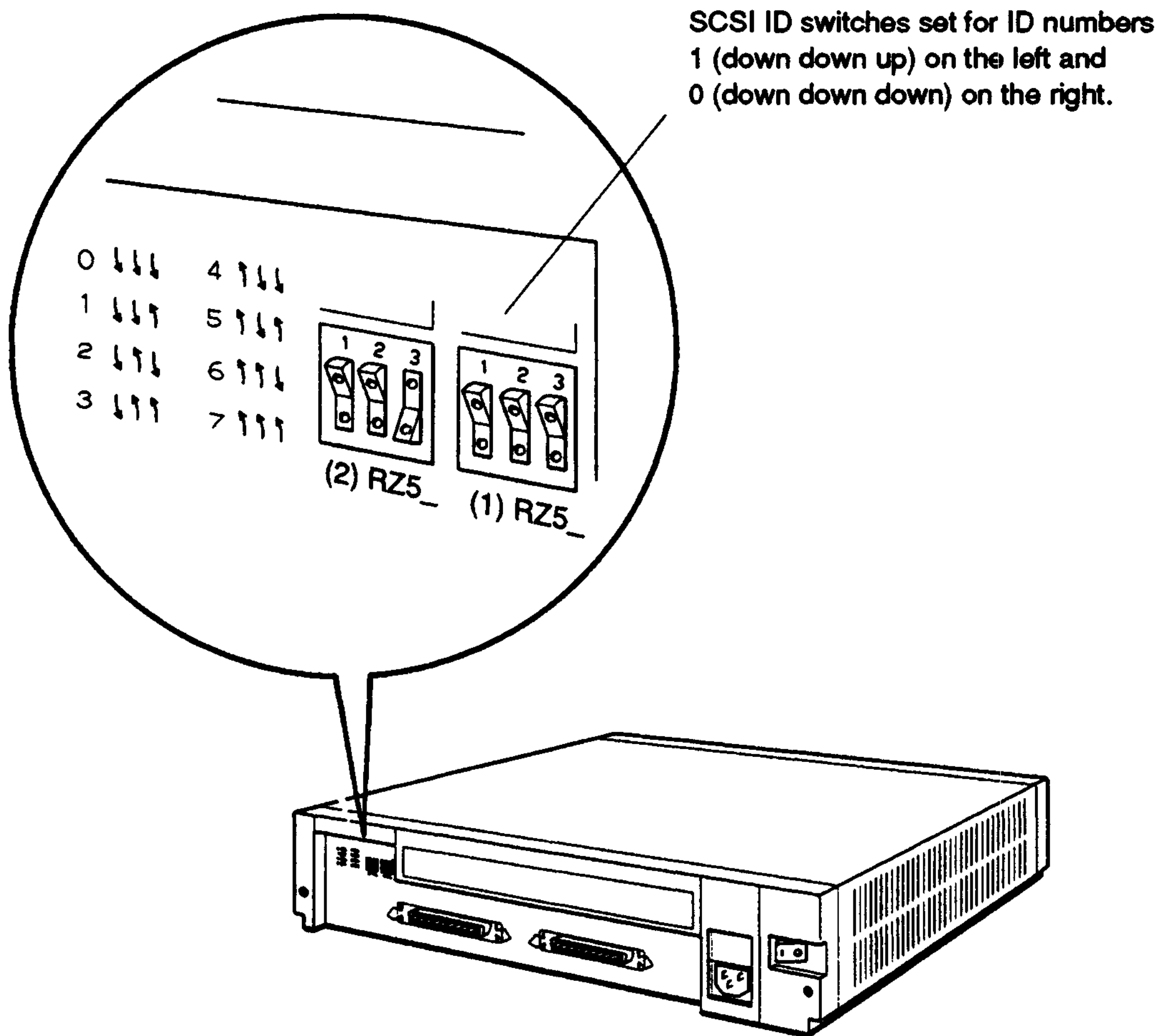
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Figure 1-3. Removing the SCSI ID switch cover from the expansion box

Check the SCSI ID Switch Settings on the Expansion Box

If you have one hard disk drive installed in your expansion box, the right three SCSI ID switches on the back of the box determine the SCSI ID switch setting for that drive. These switches are preset to ID number 0, down down down.

If you have two hard disk drives installed in your expansion box, the left three SCSI ID switches on the back of the box determine the SCSI ID switch setting for the second hard disk drive. These switches are preset to ID number 1, down down up.



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Figure 1-4. SCSI ID switches for hard disk drives

Change the SCSI ID Switch Settings If Necessary

If the switches on your expansion box are set for a SCSI ID number that is not available for use, use a pen or small pointed object to flip the switches you need to change.

Table 1-1 shows the SCSI ID switch settings for hard disk drives.

Table 1-1. SCSI ID Numbers and Switch Settings for Hard Disk Drives

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

To attach the expansion box to your system unit, turn to page 1-11.

Setting SCSI ID Switches and Jumpers on Floppy Disk, Tape, and Compact Disc Drives

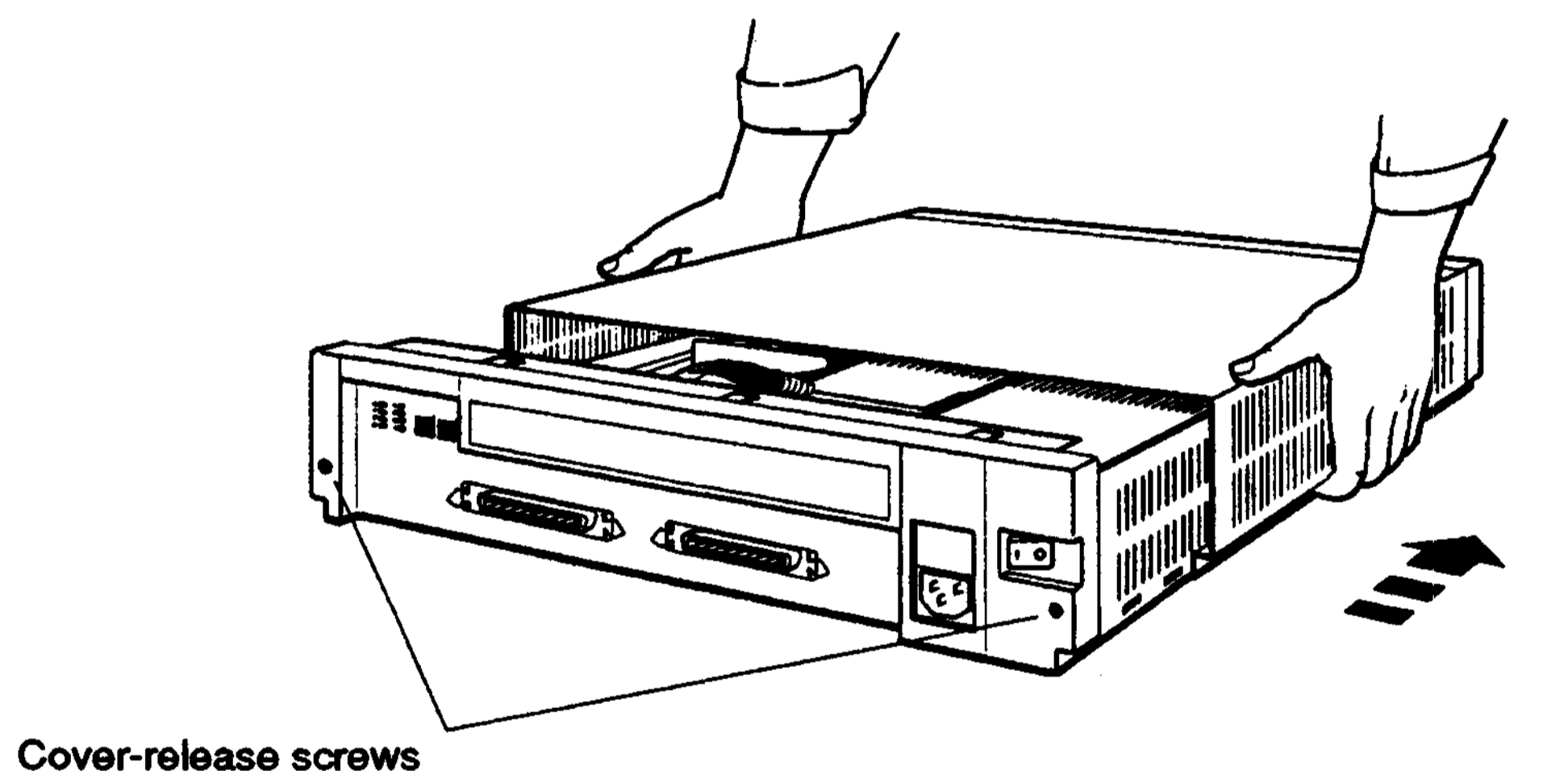
SCSI ID switches and jumpers for floppy disk, tape, and compact disc drives are located directly on the drives. If you have one of these types of drives installed in your BA42 box, use the switches or jumpers on the drive itself instead of the switches on the expansion box.

SCSI ID switches and jumpers on floppy disk and tape drives are preset to ID number 5. SCSI ID jumpers on compact disc drives are preset to ID number 4.

To check the SCSI ID switch or jumper settings on the drive, you will need to remove the cover from the expansion box.

Remove the Cover from the Expansion Box

Loosen the two cover-release screws on the back of the expansion box. Grasp each side of the cover and pull it toward you. Then pull the cover up and away from the box.



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Figure 1-5. Removing the cover from the expansion box

Check the SCSI ID Switch or Jumper Settings on the Drive

See the following appendixes for SCSI ID switch and jumper locations and settings for the various drives:

- TZ30 tape drive—Appendix C
- RX23 floppy disk drive—Appendix D
- RX33 floppy disk drive—Appendix E
- TZK10 QIC tape drive—Appendix F
- RRD42 compact disc drive—Appendix G

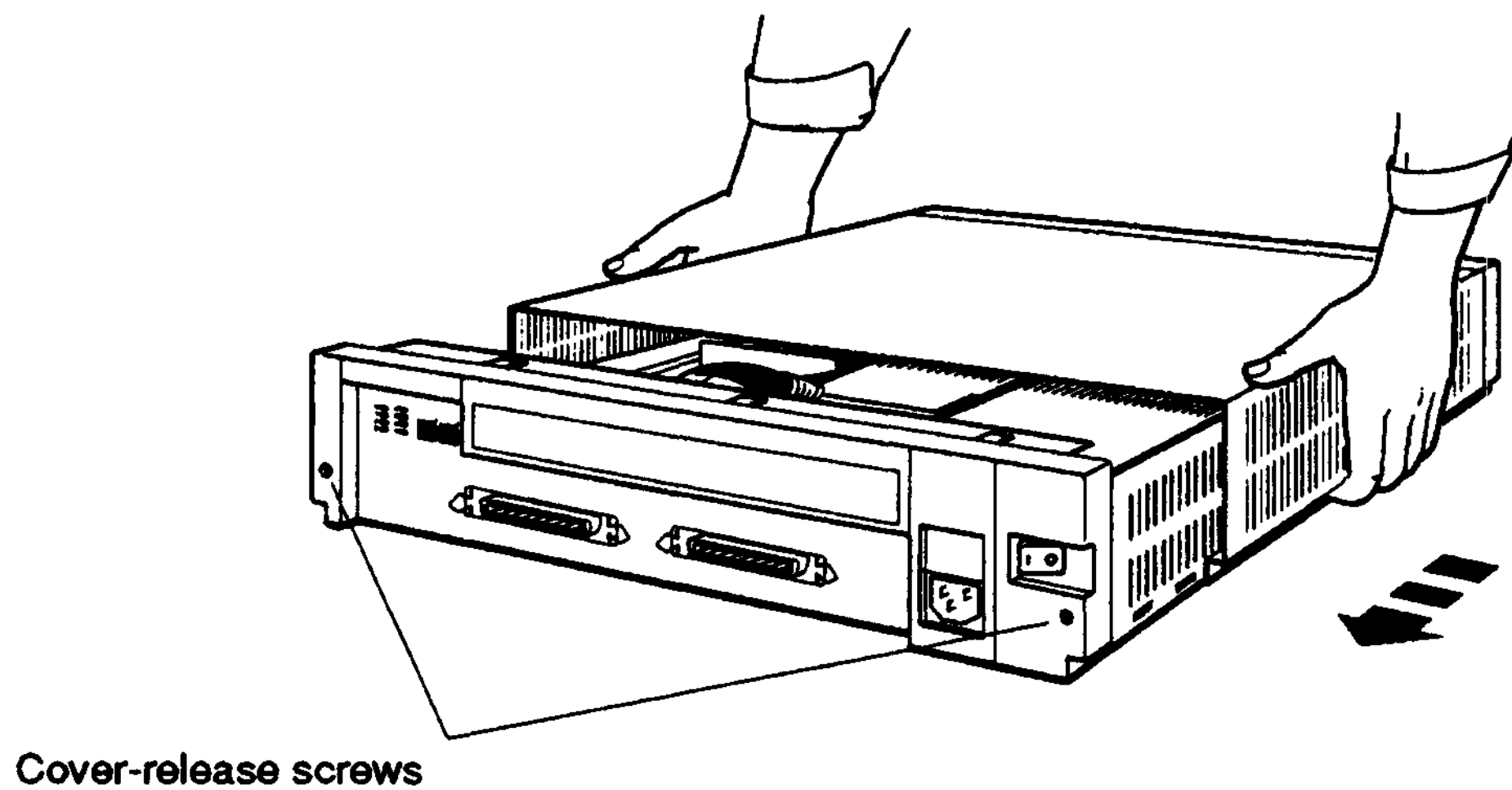
Change the SCSI ID Switch or Jumper Settings If Necessary

If the switches or jumpers on the drive are set to a SCSI ID number that is not available for use, use a pen or small pointed object to flip the switches you need to change, or use a small set of needle-nose pliers to remove and replace the jumpers you need to change.

Replace the Cover on the Expansion Box

Position the cover so it rests on top of the box about 3 inches short of the back of the box. Move the cover straight toward the back of the box until it slips into place. Tighten the two cover-release screws on the back of the box.

Caution: Make sure the internal cables are pushed down into the box before replacing the cover. Closing the cover on the cables may damage the cables.



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Figure 1-6. Replacing the cover on the expansion box

Installing an Expansion Box

If you are adding an expansion box to a system that already has one or more expansion boxes fully installed, turn to page 1-17 for instructions on how to connect one expansion box to another.

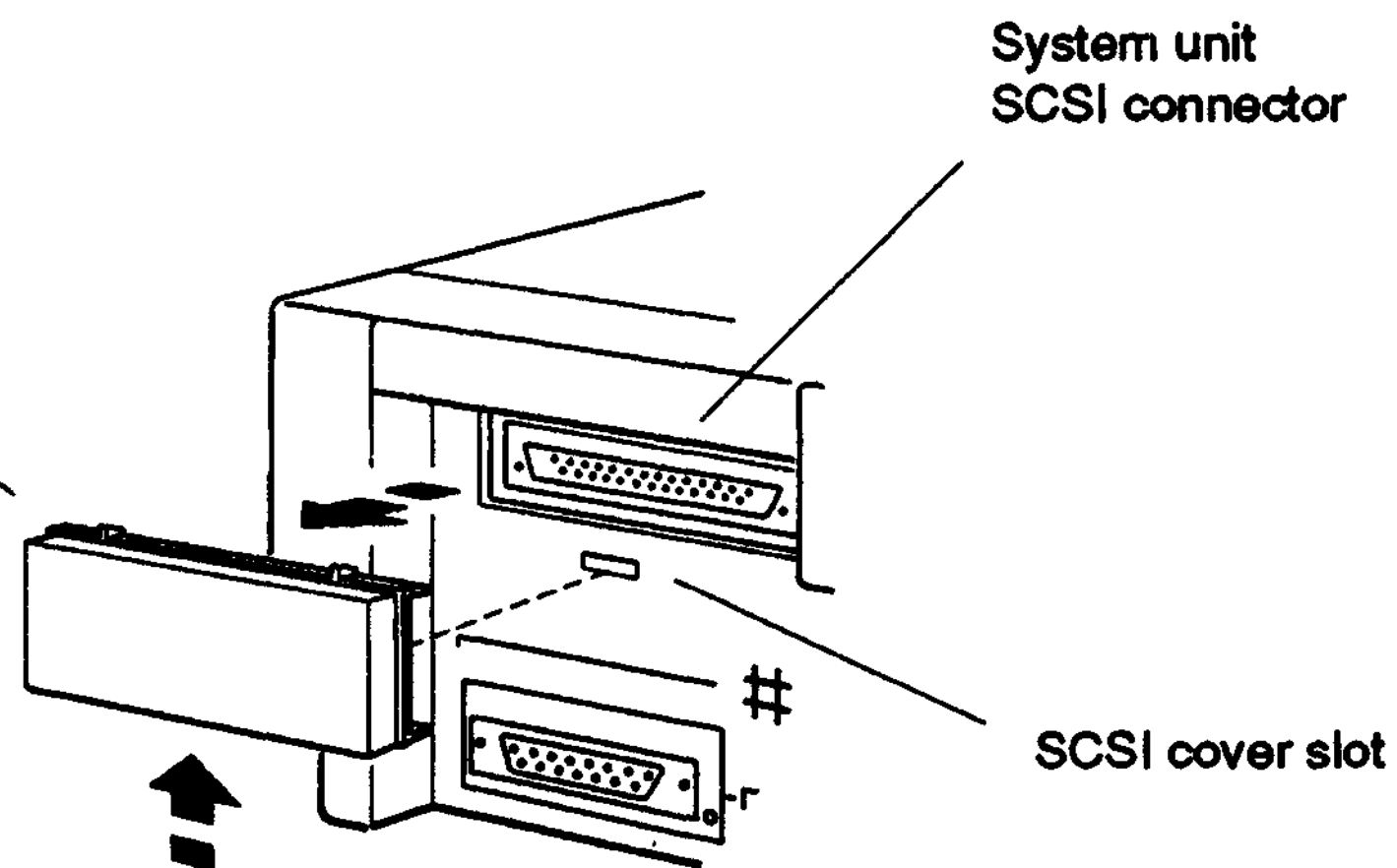
Turn Power Off

Turn off power to the monitor and then the system unit.

Remove the Cover or Terminator from the SCSI Connector on the System Unit

If there is a cover over the SCSI connector on the back of your system unit, remove it.

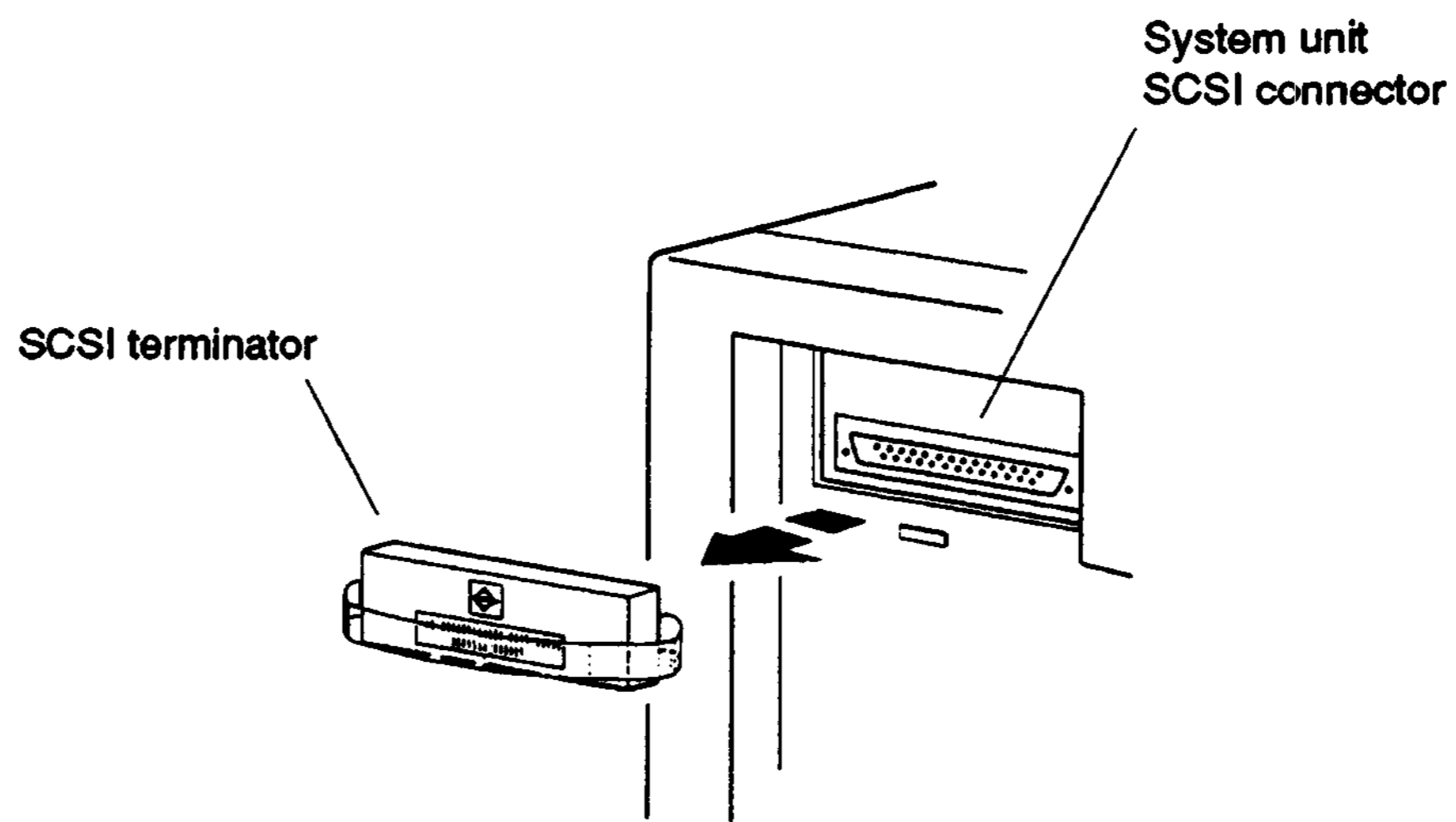
Press up on the tab on the bottom of the cover until you can pull the cover away from the box.



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Figure 1-7. Removing the SCSI connector cover from the system unit

If there is a terminator on the SCSI connector on the back of your system unit, remove it.

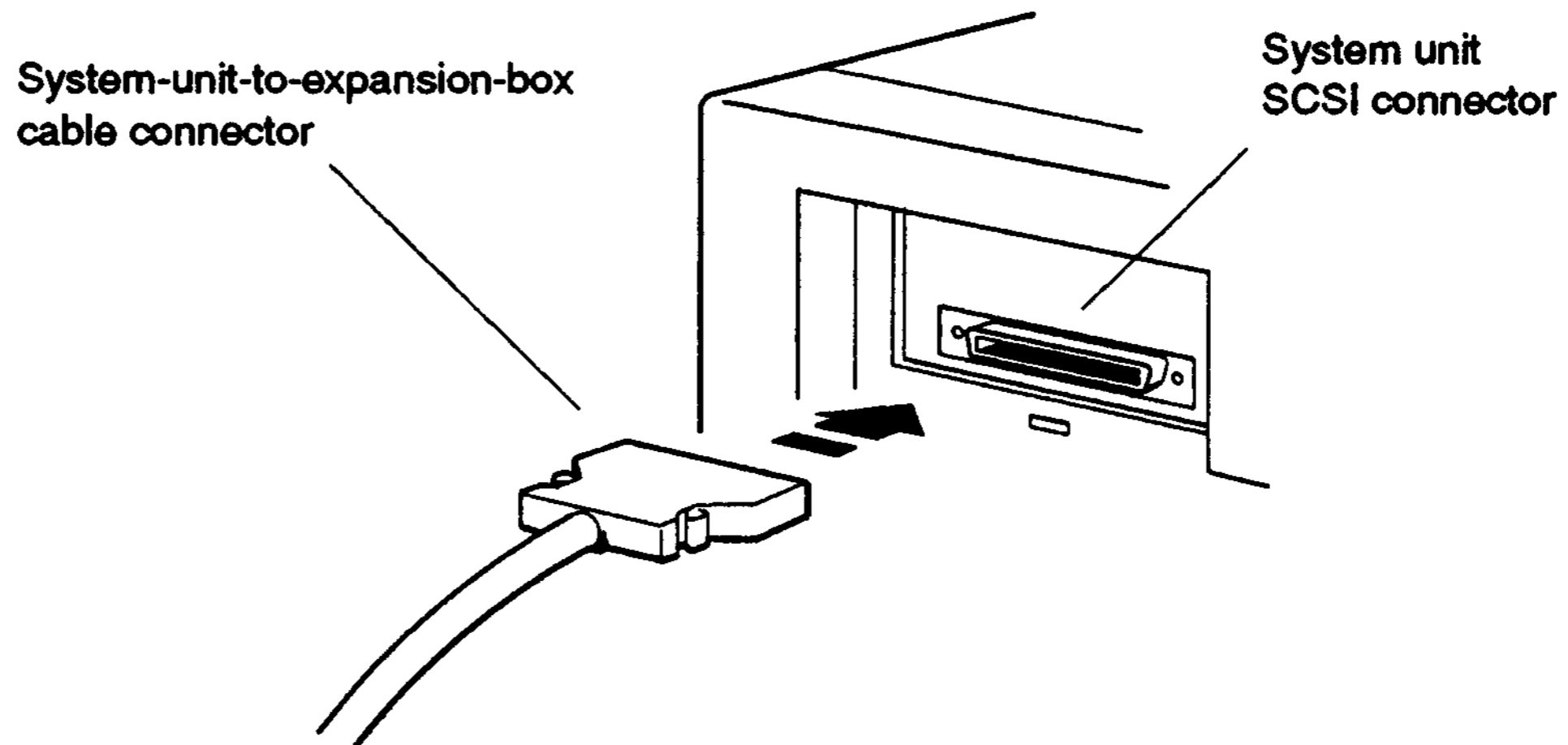


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Figure 1-8. Removing the SCSI terminator from the system unit

Connect the System-Unit-to-Expansion-Box Cable to the System Unit

Important: If you have a DECstation 5000 Model 200 workstation, use the system-unit-to-expansion-box cable that came with your workstation. Otherwise, use the system-unit-to-expansion-box cable that came with your expansion box.



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Figure 1-9. Connecting a system-unit-to-expansion-box cable to the system unit

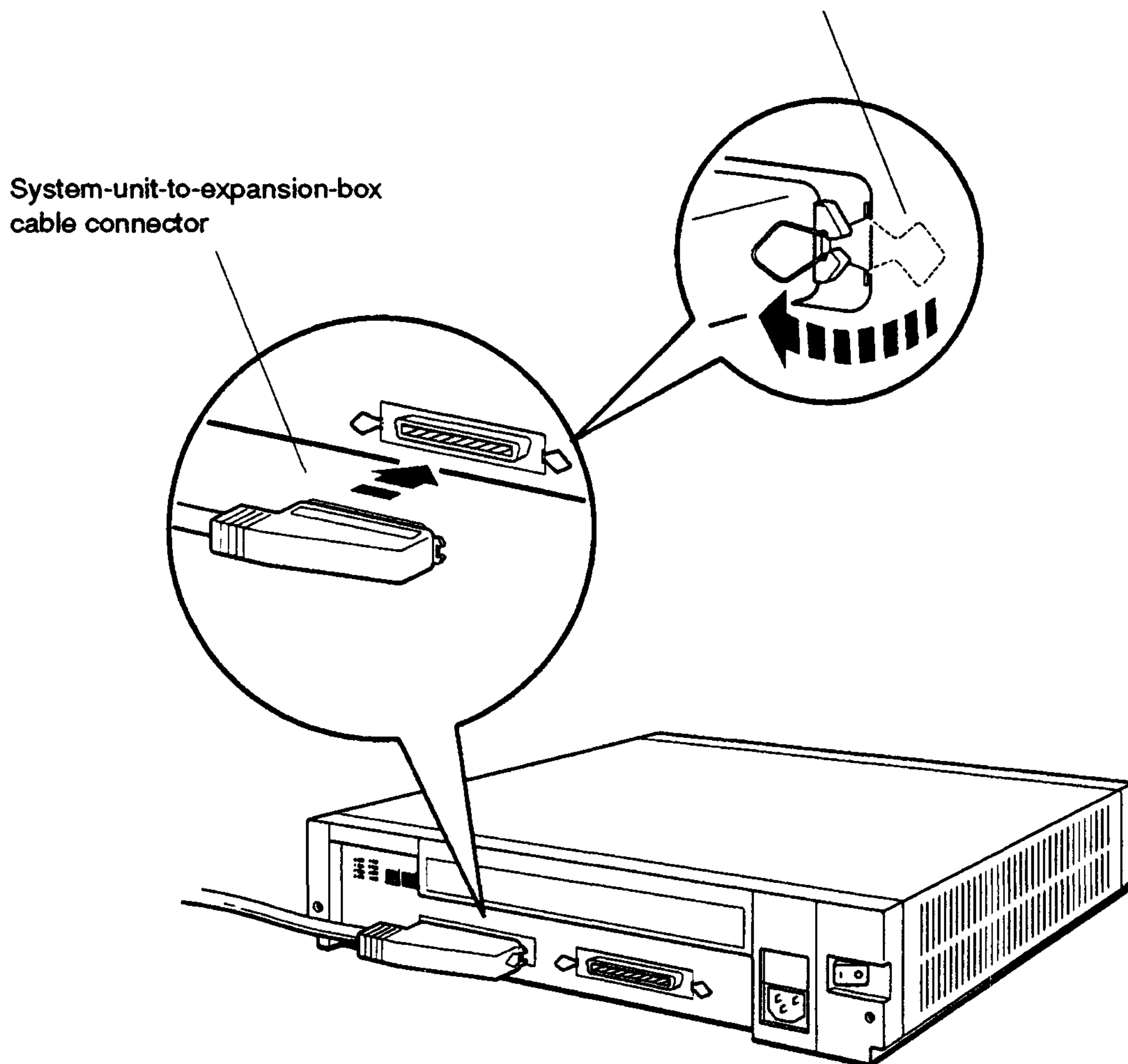
Connect the System-Unit-to-Expansion-Box Cable to the Expansion Box

Connect the free end of the system-unit-to-expansion-box cable to one of the connectors on the expansion box.

If you are installing more than one expansion box, turn to page 1-18 after you connect the system-unit-to-expansion-box cable to the first expansion box.

If you are installing only one box, turn to page 1-15 to connect the terminator.

Be sure the wire brackets are locked into the grooves on the sides of the connector.



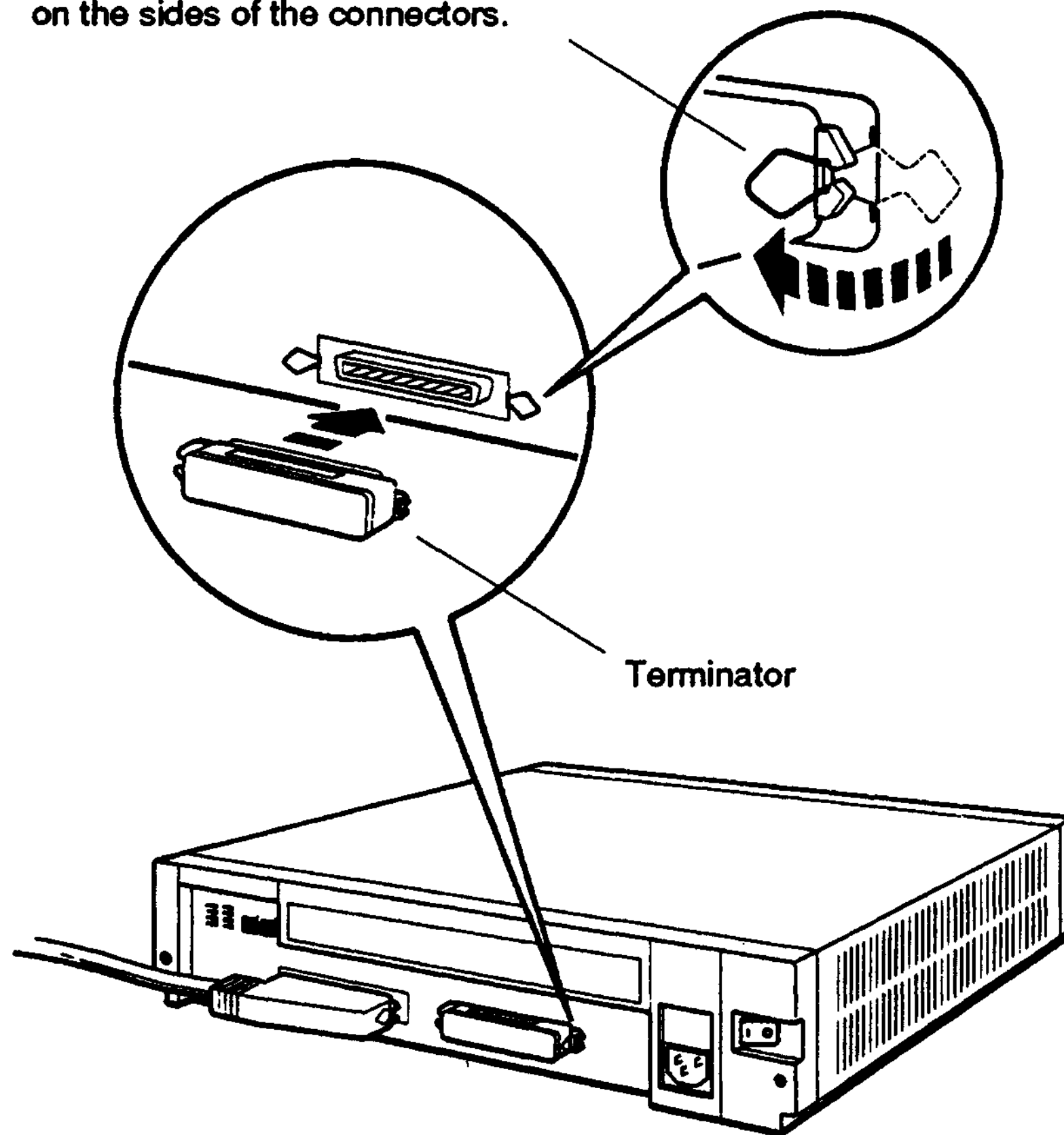
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Figure 1-10. Connecting a system-unit-to-expansion-box cable to the expansion box.

Connect the Terminator

Connect the terminator to the empty connector on the expansion box.

Be sure the wire brackets are locked into the grooves on the sides of the connectors.



WSEBAI29

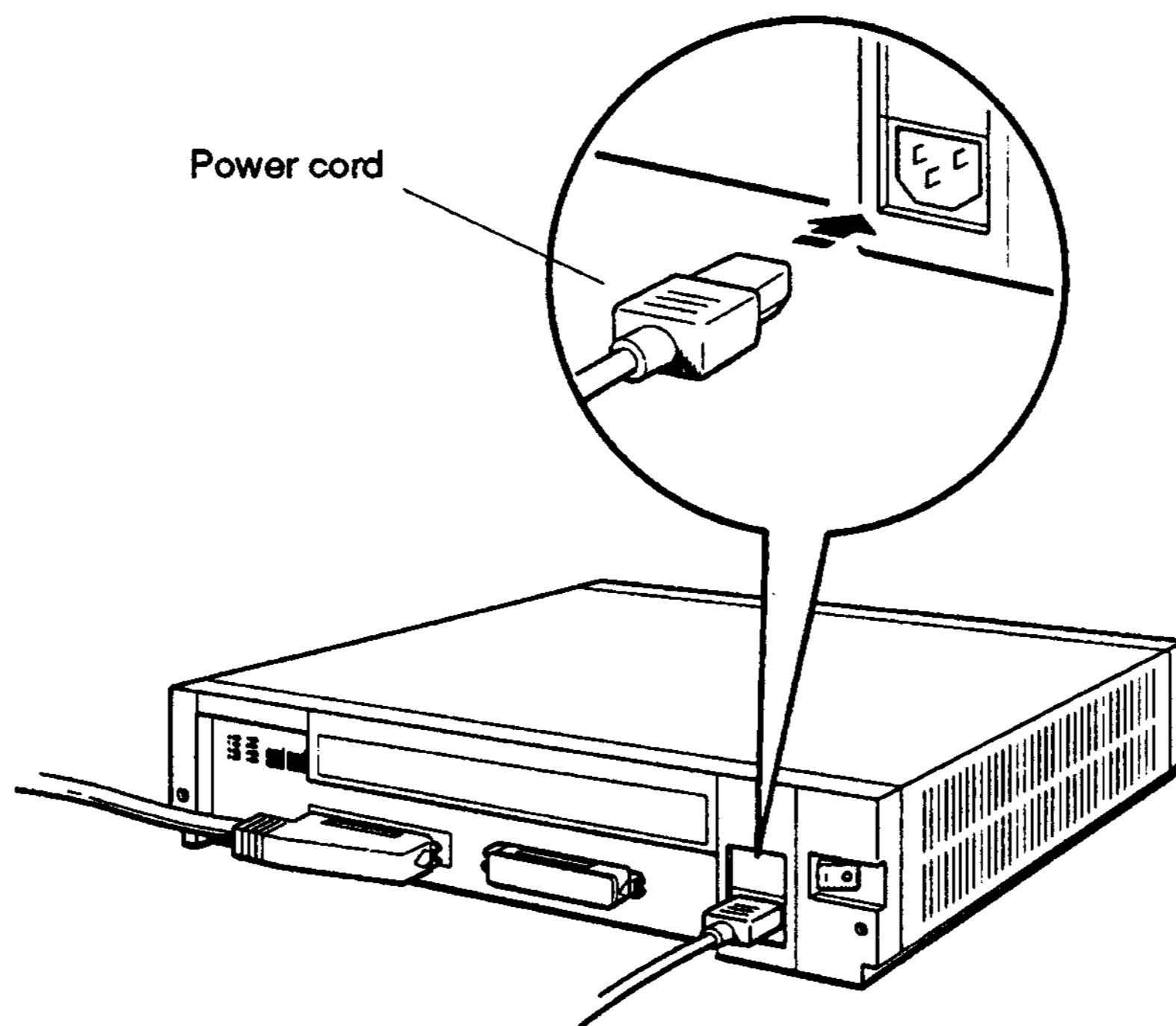
Figure 1-11. Connecting a terminator to the expansion box

Connect the Power Cord

Connect the prongless end of the power cord to the expansion box and plug the pronged end into a power outlet or power strip.

After connecting the power cord, turn to page 1-21 to verify your system configuration.

Note: *Digital suggests that all power cords for the system be plugged into a single source of power, such as a power strip.*



WSEBA104

Figure 1-12. Connecting a power cord to an expansion box

Connecting One Expansion Box to Another Expansion Box

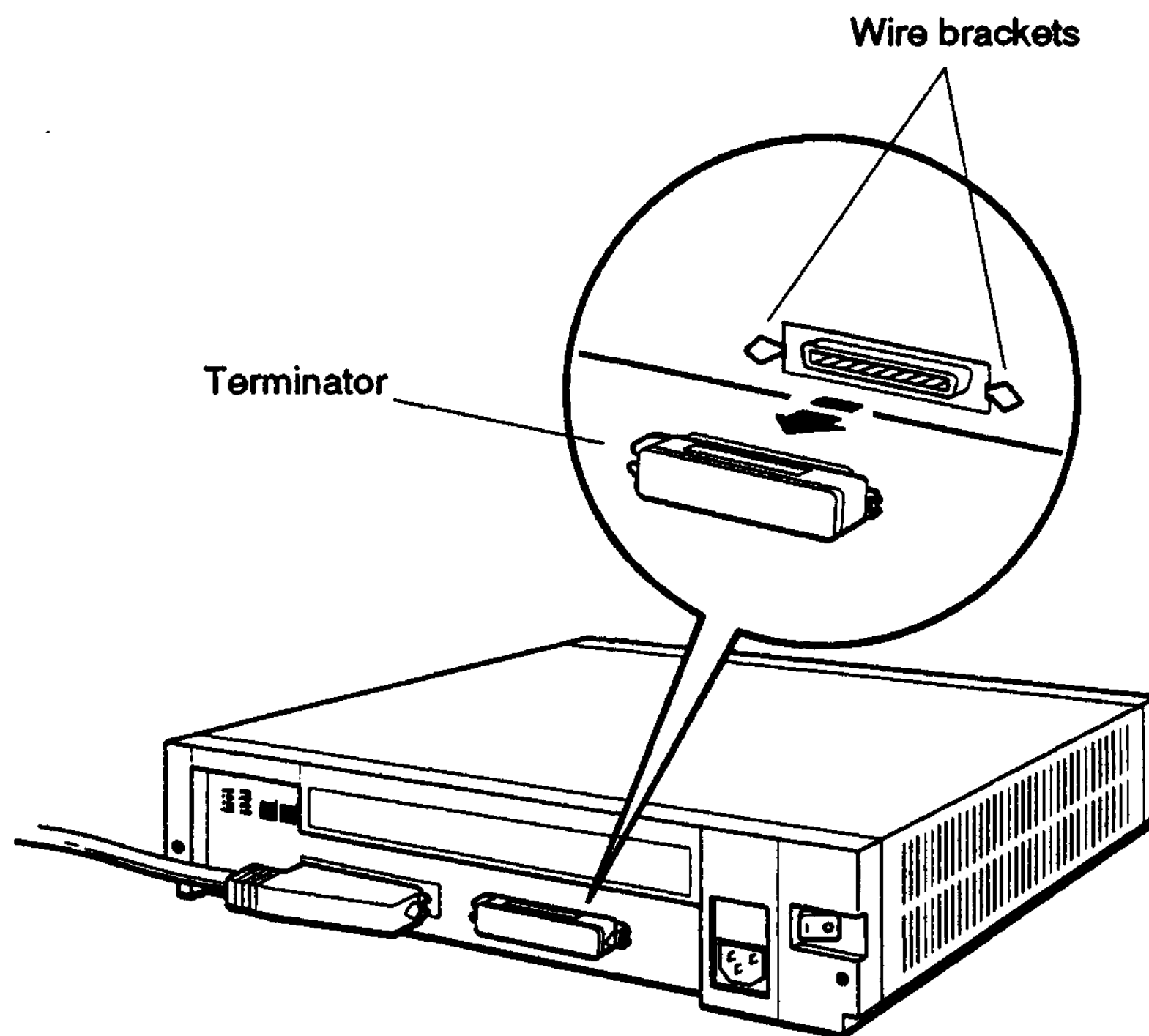
If you are attaching an expansion box to a system that already has one or more expansion boxes fully installed, do the following.

Turn Power Off

Turn off power to the expansion boxes and then the system unit.

Remove the Terminator

Remove the terminator from the last expansion box attached to that SCSI connector on the system unit by unlocking the wire brackets from the sides of the terminator and pulling the terminator out of the connector.



WSEBA124

Figure 1-13. Removing a terminator from an expansion box

Connect the Box-to-Box Expansion Cable and Terminator

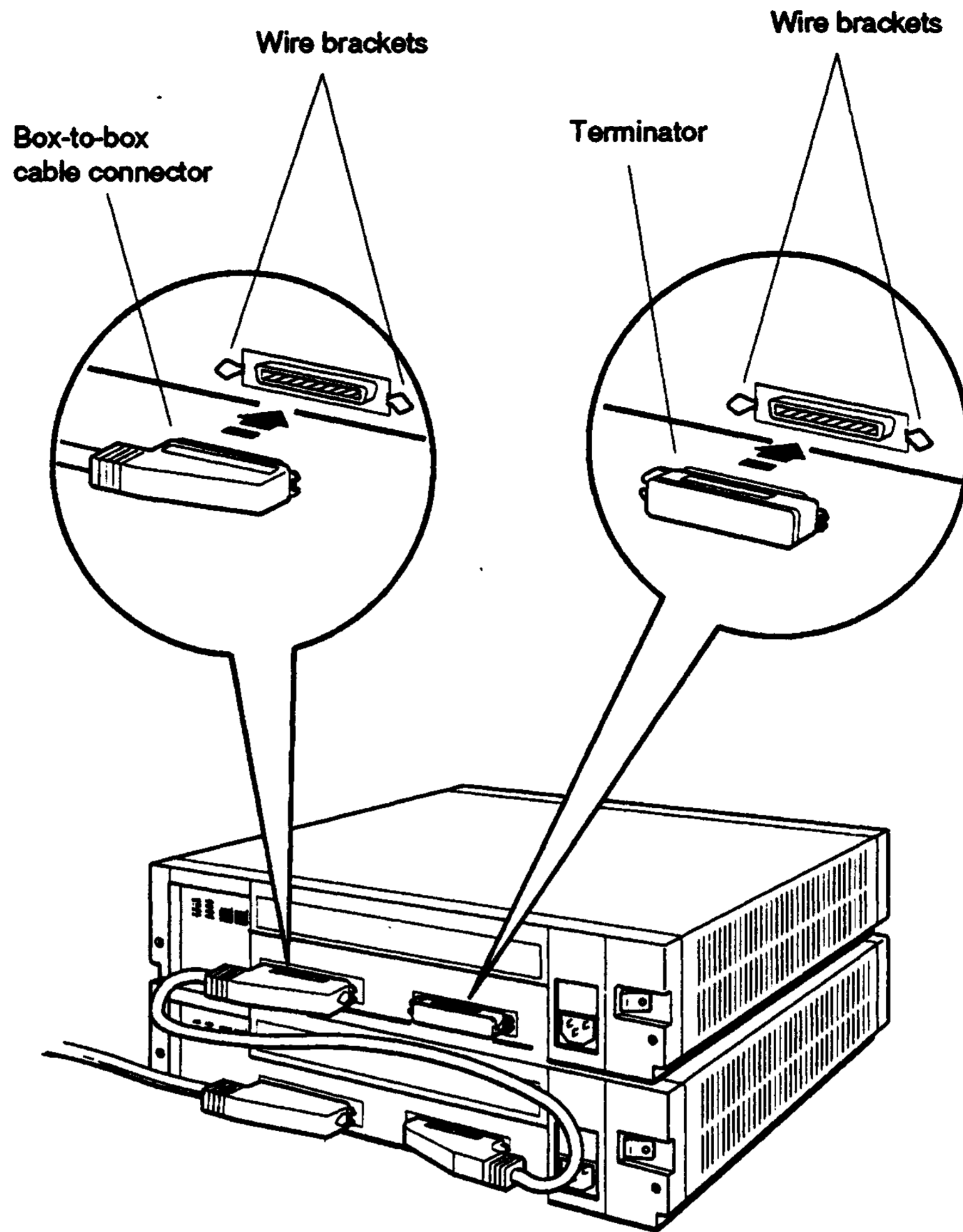
Connect the box-to-box expansion cable to the empty connector on the last box connected to your system unit. Then connect the other end of the cable to one of the connectors on the box you are installing.

If you are installing more than one additional BA42 expansion box, repeat these steps for each box.

Note: You may connect up to three BA42 expansion boxes to your system unit.

Connect the terminator to the empty connector on the final expansion box.

Figure 1-14 shows how to connect the box-to-box expansion cable and the terminator.



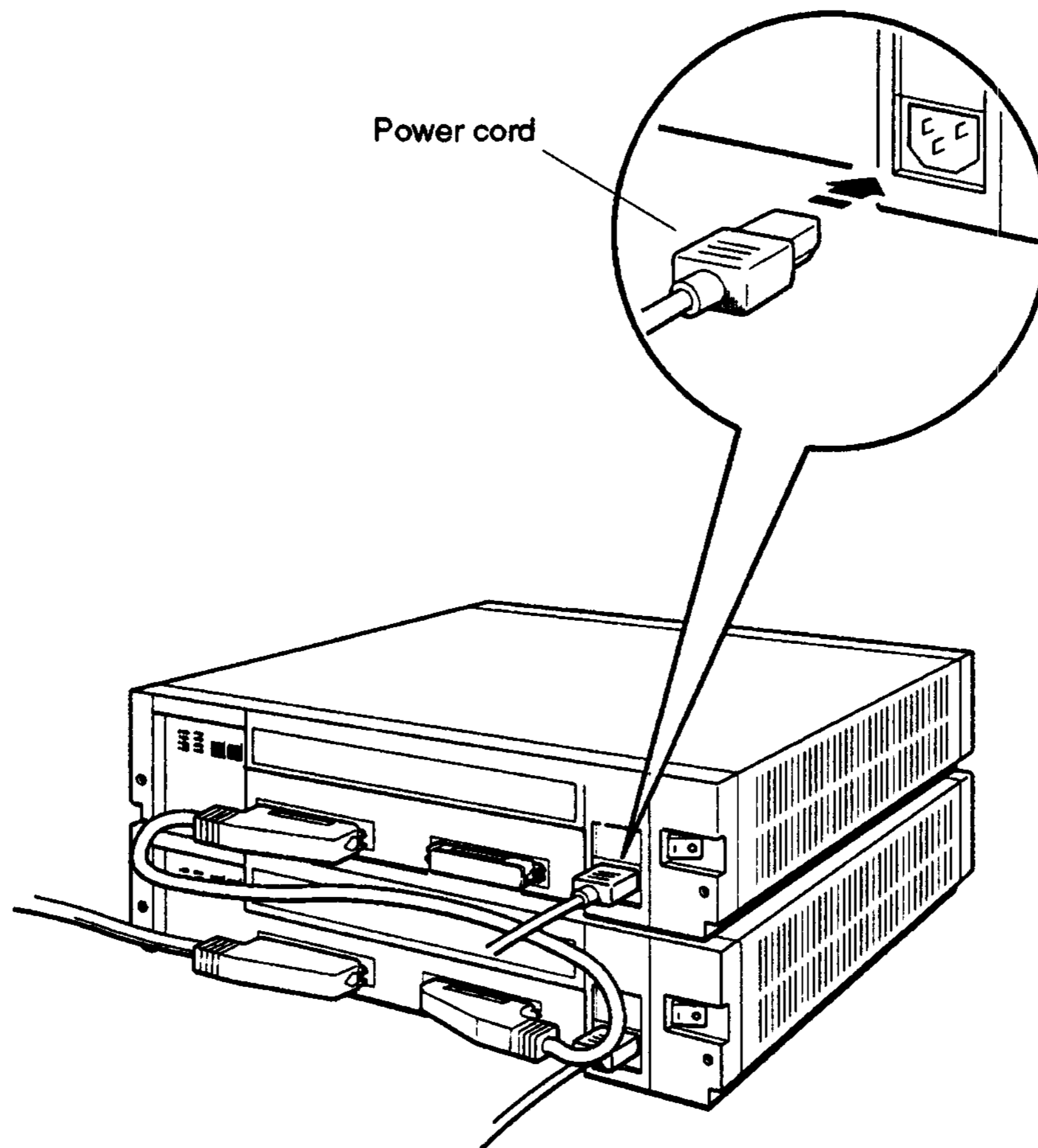
WSEBA105

Figure 1-14. Connecting the box-to-box cable and terminator to the final expansion box

Connect the Power Cords

Connect the prongless end of a power cord to each expansion box and plug the pronged end of each cord into a power outlet or power strip.

Note: *Digital suggests that all power cords for the system be plugged into a single source of power, such as a power strip.*



WSEBA123

Figure 1-15. Connecting power cords to expansion boxes

Verifying Your System Configuration

Turn Power On

Turn on power to all expansion boxes and then the system unit.

Check the Configuration Display

The configuration display for your system tells you whether the system recognizes the drives in your expansion boxes.

To display and read your system configuration, follow the instructions provided in the hardware installation guide or user's guide that came with your system.

If an expansion box drive does not appear in the configuration display, follow this procedure:

1. Press the 1 on the on/off switch on the expansion box to be sure the switch is securely in the on position.
2. Turn off your system unit and expansion boxes.
3. Be sure all expansion box cables are connected securely.
4. Be sure all power cords are connected securely.
5. Be sure the SCSI terminator is attached securely to the expansion box.
6. Be sure the internal cables are connected securely to the drive.
7. Check the expansion box cable connector for damaged pins.
8. Check the SCSI ID switch settings.
9. Turn on all expansion boxes and the system unit; then check the configuration display again.
10. If the configuration display still does not show the drives in the expansion box, contact your system manager or Digital service representative.

Once SCSI ID switch settings for the hard disk drives installed in your expansion box are recognized by your system, replace the cover on the SCSI ID switches on the back of your expansion box by inserting the notch on the bottom of the cover into the opening below the switches on the back of the expansion box, and snapping the cover into place.

Using Floppy Disk or Tape Drives

For instructions on how to use floppy disk, tape, or compact disc drives, see the following appendixes:

- TZ30 tape drives—Appendix C
- RX23 floppy disk drives—Appendix D
- RX33 floppy disk drives—Appendix E
- TZK10 QIC tape drive—Appendix F
- RRD42 compact disc drive—Appendix G

Installing a BA42 Storage Expansion Box Upgrade

This chapter tells you how to

- Check your shipment to make sure nothing is broken or missing
- Select SCSI ID numbers and set SCSI ID switches or jumpers for Digital-supplied hard disk, floppy disk, tape, and compact disc drives you plan to install
- Install a hard disk, floppy disk, tape, or compact disc drive inside an expansion box
- Make sure the drives inside the expansion box are recognized by your system, and what to do if they aren't

Checking Your Shipment

Important: In addition to the items that make up your shipment, you will need a Phillips screwdriver and a standard screwdriver.

If you ordered an RZ5x Series hard disk drive, your shipment should include:

- The drive
- The document you are now reading

If you ordered an RZ25 hard disk drive, your shipment should include:

- The drive
- A SCSI ID switch cable
- The document you are now reading

If you ordered a floppy disk, tape, or compact disc drive, your shipment should include:

- The drive
- An open bezel
- Two floppy diskettes, one tape cartridge, or one compact disc and cartridge
- The document you are now reading

If any item is broken or missing, contact your system manager or Digital service representative.

Determining Available SCSI ID Numbers

You can connect up to seven SCSI drives to a given SCSI connector on the system unit.

You must assign a SCSI ID number to each drive installed in a BA42 expansion box. Numbers that can be used range from 0 to 7. You can assign each number only once. To find out what SCSI ID numbers are available, see the option installation instructions in the installation guide or user's guide for your system.

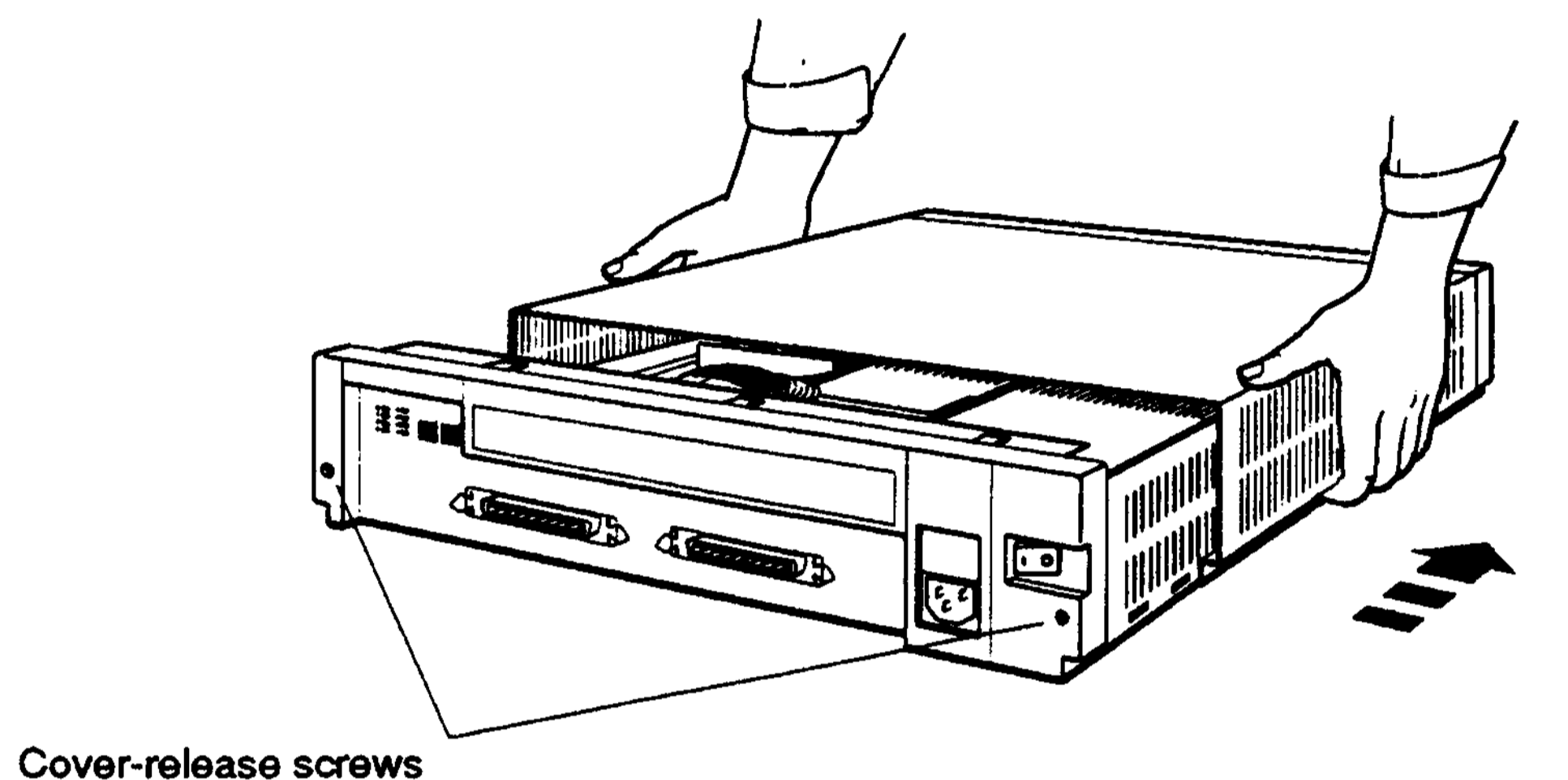
Preparing the Expansion Box

Turn Power Off

Turn off power to all expansion boxes and then the system unit.

Remove the Cover from the Expansion Box

Loosen the two cover-release screws on the back of the expansion box. Grasp each side of the cover and pull it toward you. Then pull the cover up and away from the box.



WSEBAI20

Figure 2-1. Removing the cover from the expansion box

Figure 2-2 shows the internal SCSI signal cable, SCSI ID switch cable, power cable, and power supply inside the BA42 expansion box.

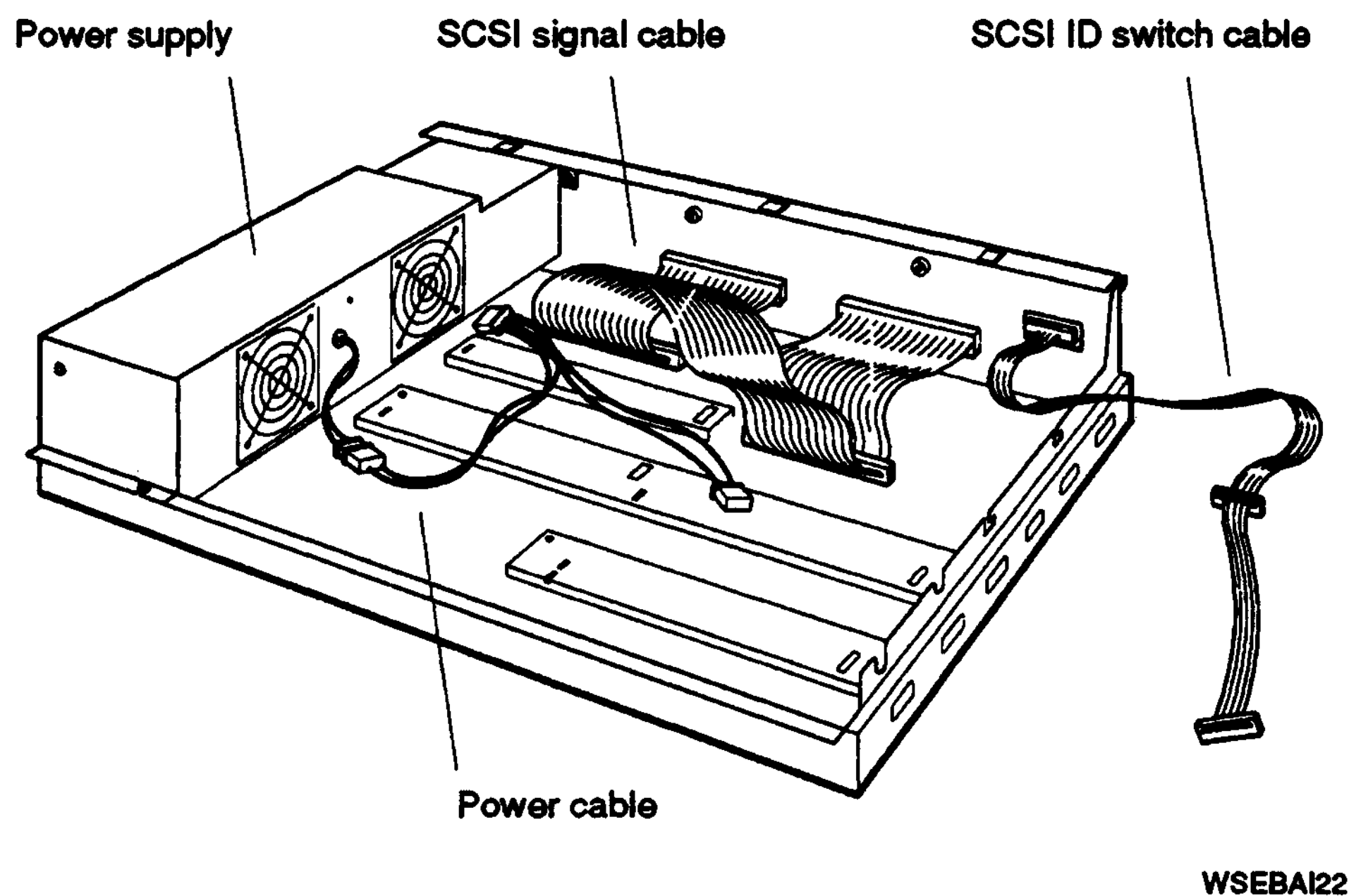


Figure 2-2. Inside the BA42 expansion box

To install an RZ5x Series hard disk drive, turn to page 2-6.

To install an RZ25 hard disk drive, turn to page 2-10.

To install a floppy disk, tape, or compact disc drive, turn to page 2-21.

Installing an RZ5x Series Hard Disk Drive

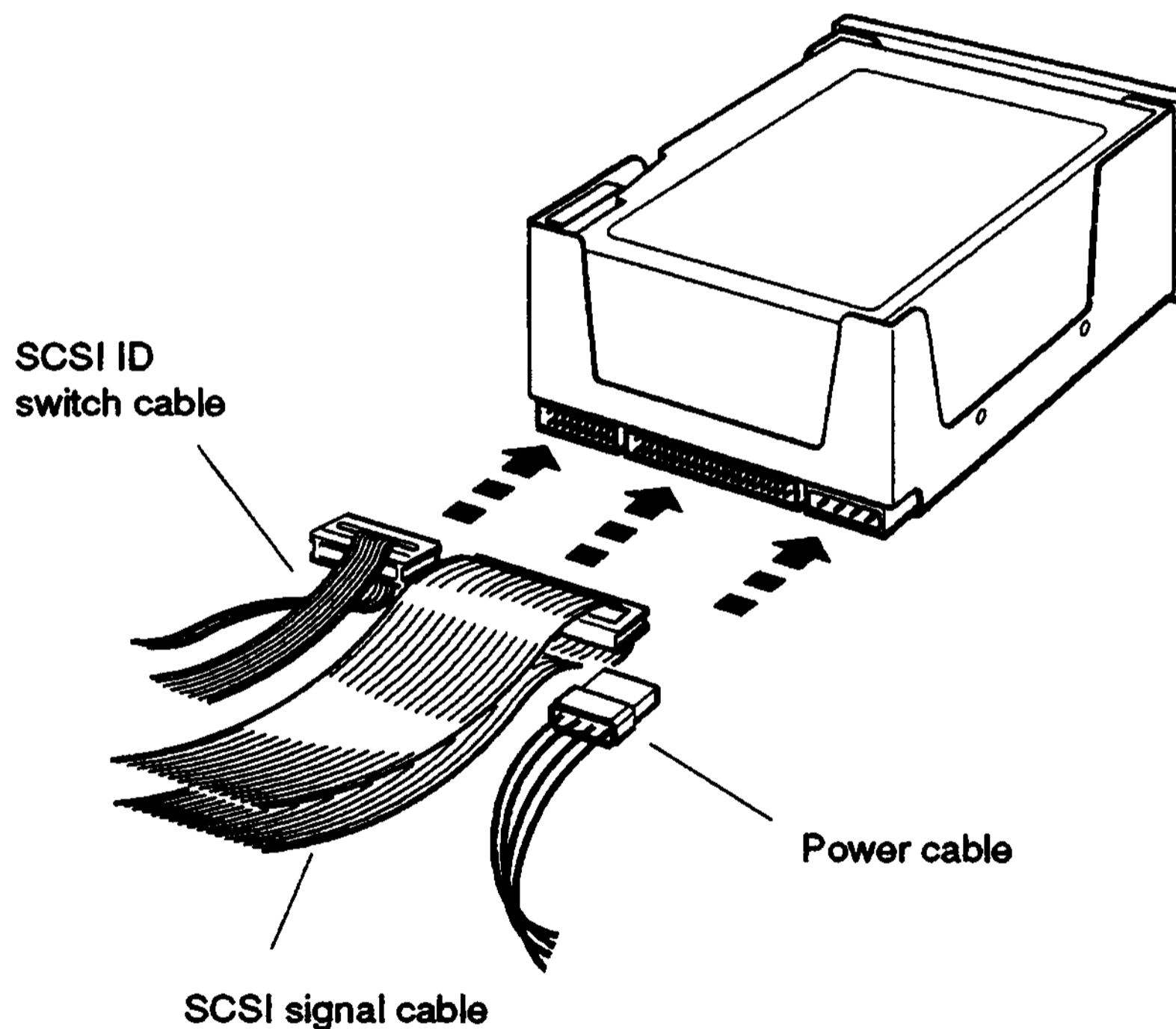
You can install an RZ5x Series hard disk drive in either drive location in a BA42 expansion box.

Attach the Internal Cables to the Drive

Attach the internal SCSI signal cable, SCSI ID switch cable, and power cable to the drive.

Attach the connector in the middle of the SCSI ID switch cable to a hard disk drive you are installing in the position furthest from the power supply. Attach the connector on the end of the SCSI ID switch cable to a hard disk drive you are installing in the position next to the power supply.

If your BA42 expansion box contains an RZ25 hard disk drive, the SCSI ID switch cable is different than the one shown in the figure below. Turn to page 2-7 to attach the type of cable that connects to an RZ25 drive.



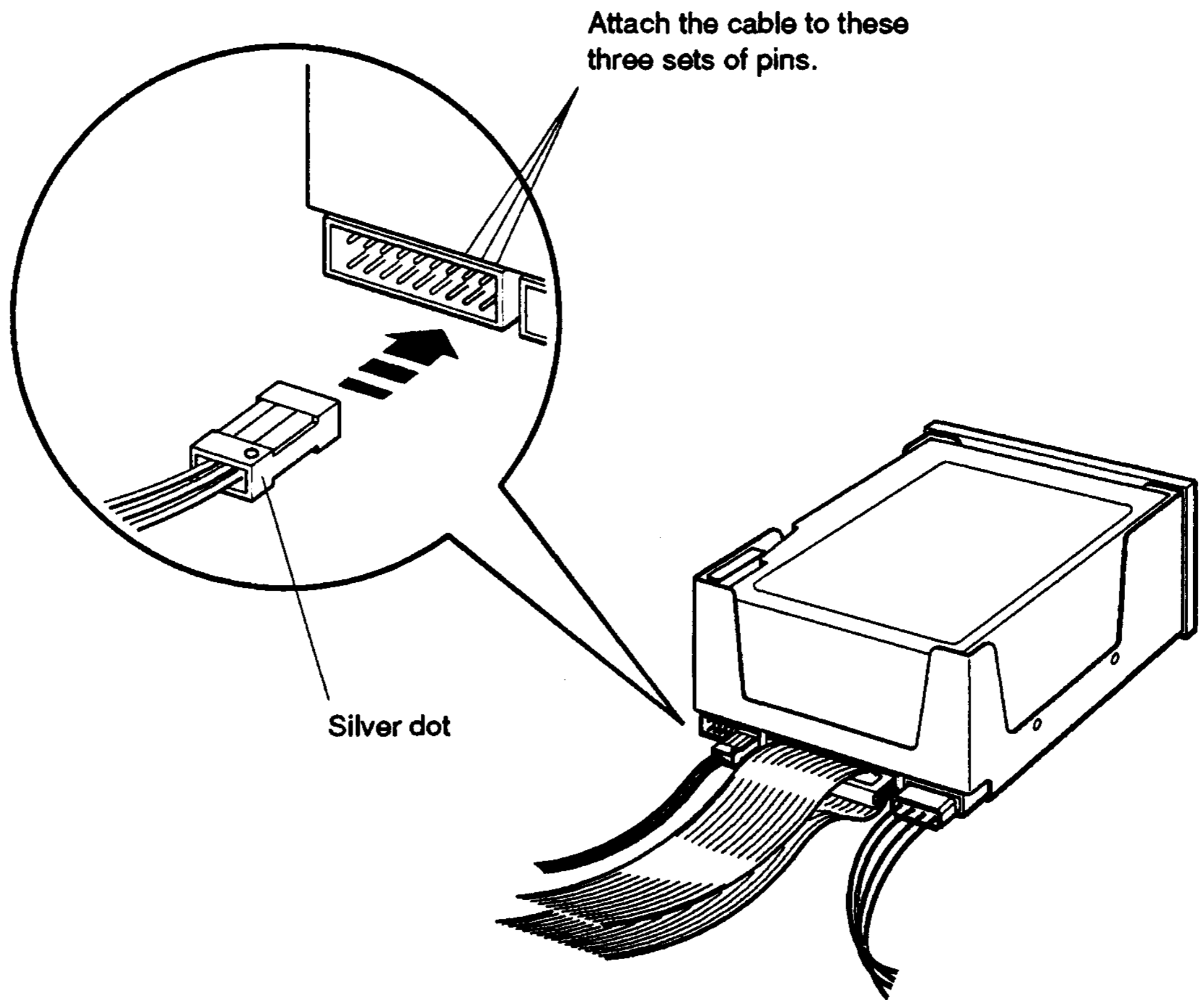
WSEBAI25

Figure 2-3. Attaching the internal cables to an RZ5x Series hard disk drive

If Your Expansion Box Contains an RZ25 Hard Disk Drive, Attach the 6-Pin SCSI ID Switch Cable

If your BA42 expansion box has an RZ25 hard disk drive installed, the SCSI ID cable has 6-pin connectors rather than 24-pin connectors.

To attach a 6-pin SCSI ID switch cable to an RZ5x hard disk drive, position the cable connector with the silver dot facing upward and attach it to the three rightmost sets of pins in the connector on the drive.

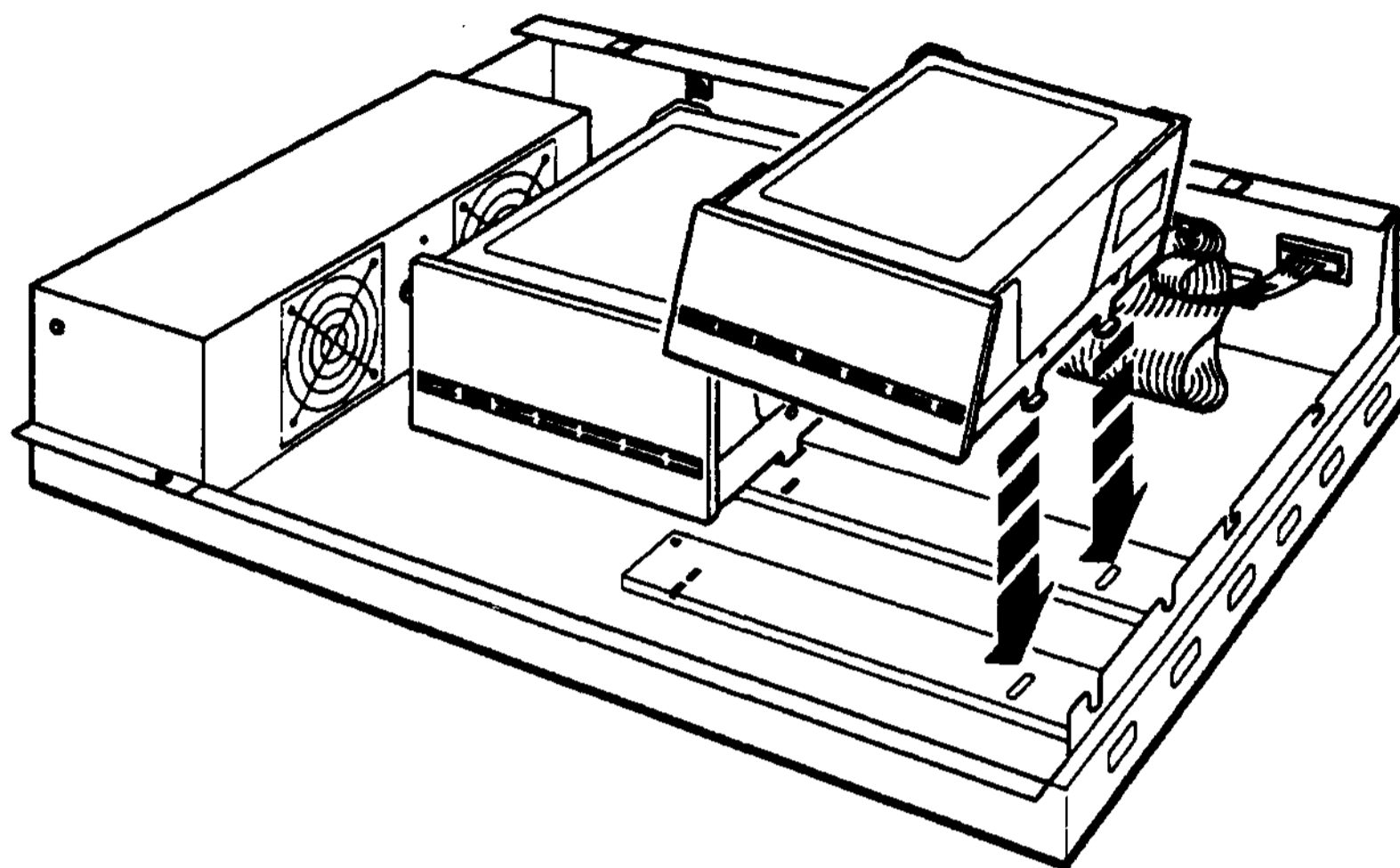


WSEBA184

Figure 2-4. Attaching a 6-pin SCSI ID switch cable to an RZ5x Series hard disk drive

Insert the Drive into the Expansion Box

Tilt the drive until you can place the metal tabs on the bottom of the drive into the openings in the floor of the box.

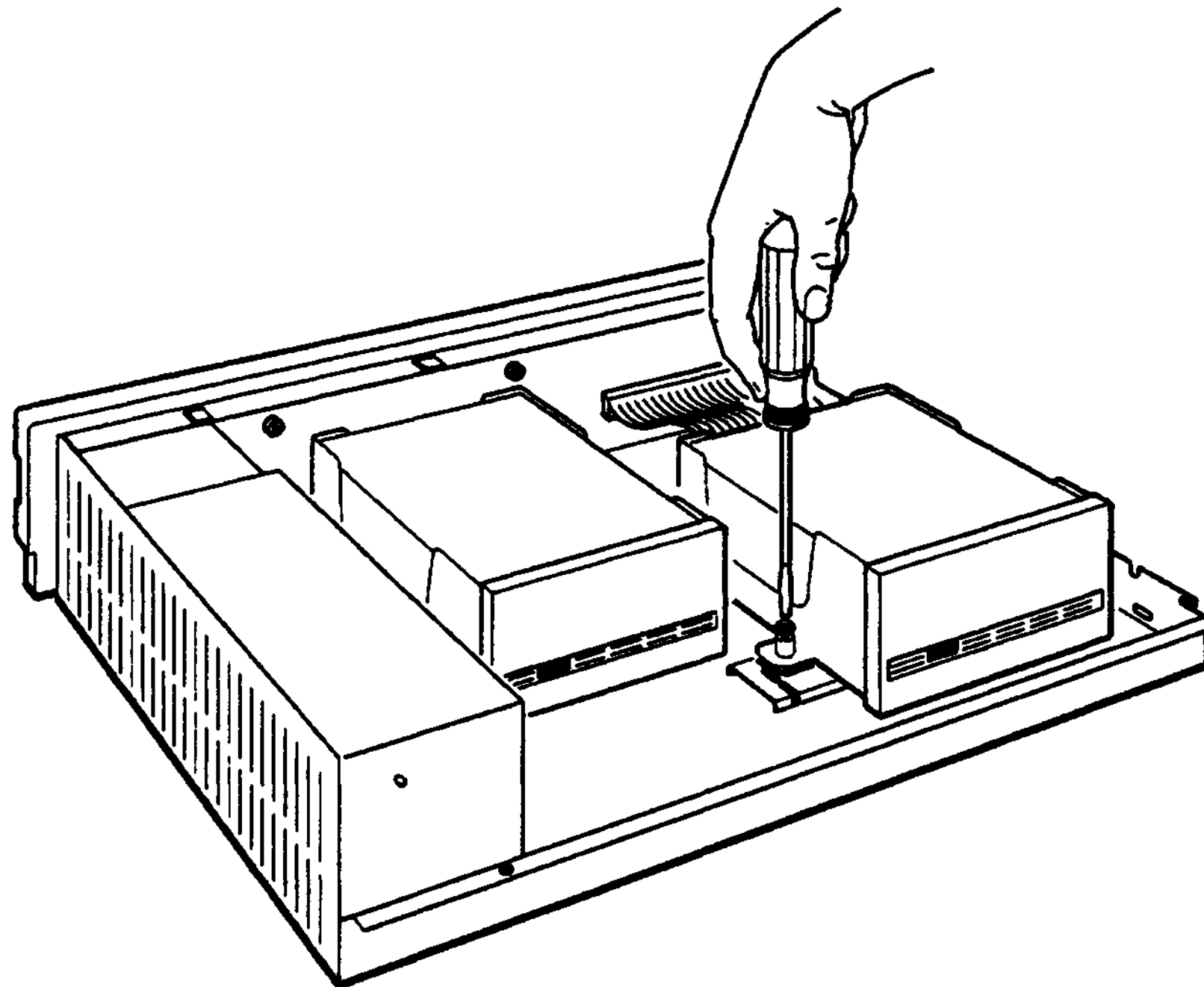


WSEBAI26

Figure 2-5. Inserting the RZ5x Series hard disk drive in the expansion box

Tighten the Captive Screw

Tighten the captive screw to hold the drive in place.



WSEBA127

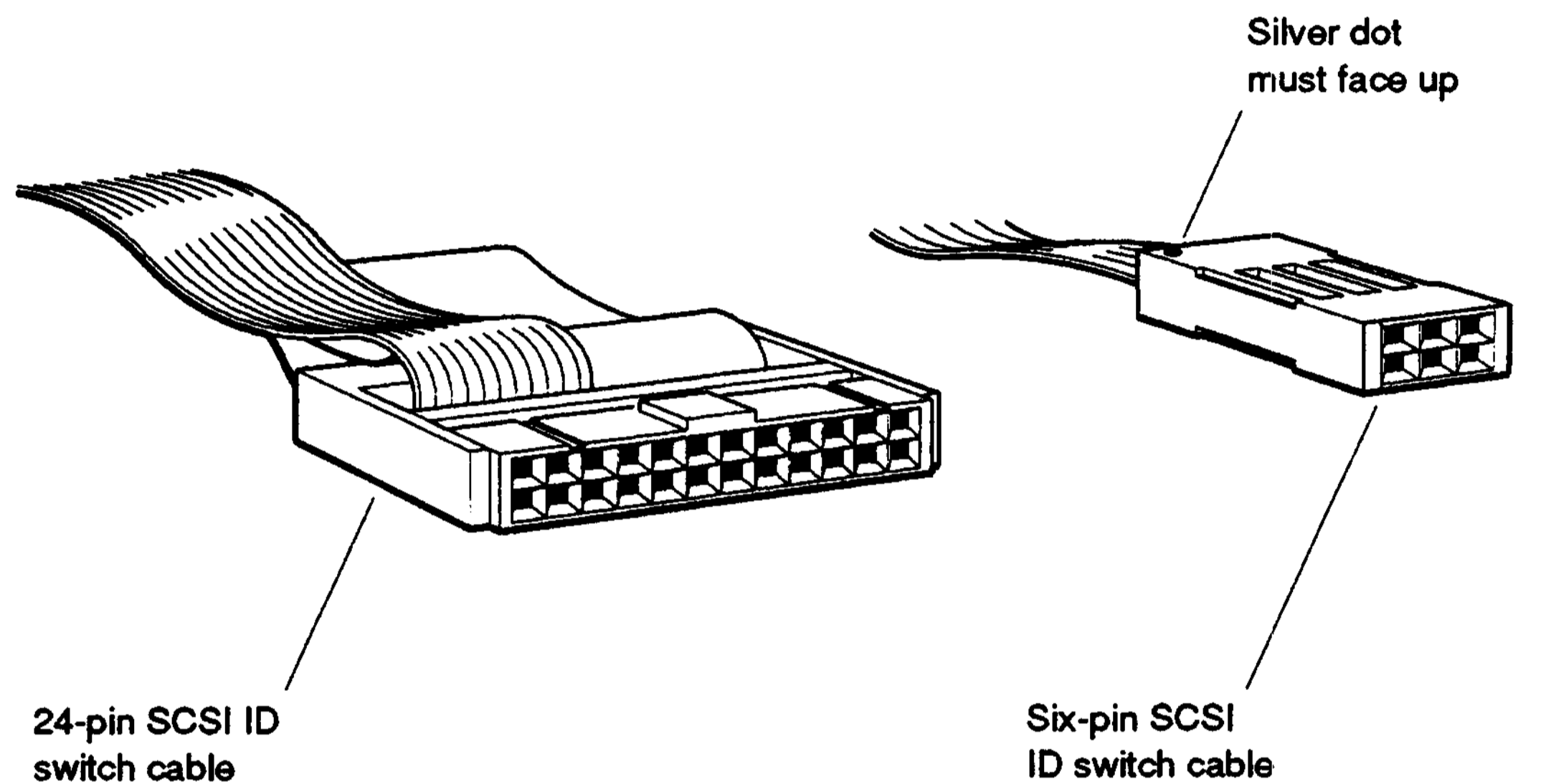
Figure 2-6. Tightening the captive screw on the drive

To finish installing the drive, see “Replace the Cover on the Expansion Box” on page 2-17 for directions.

Installing an RZ25 Hard Disk Drive

You can install an RZ25 hard disk drive in either drive location in a BA42 expansion box.

If there is not already a 6-pin SCSI ID switch cable in your expansion box, you will need to remove the 24-pin SCSI ID switch cable from the box and replace it with the 6-pin SCSI ID switch cable that came with the RZ25 drive you are installing. The 24-pin SCSI ID switch cable is used with RZ5x Series drives only. The 6-pin SCSI ID switch cable is used with both RZ5x series drives and the RZ25.

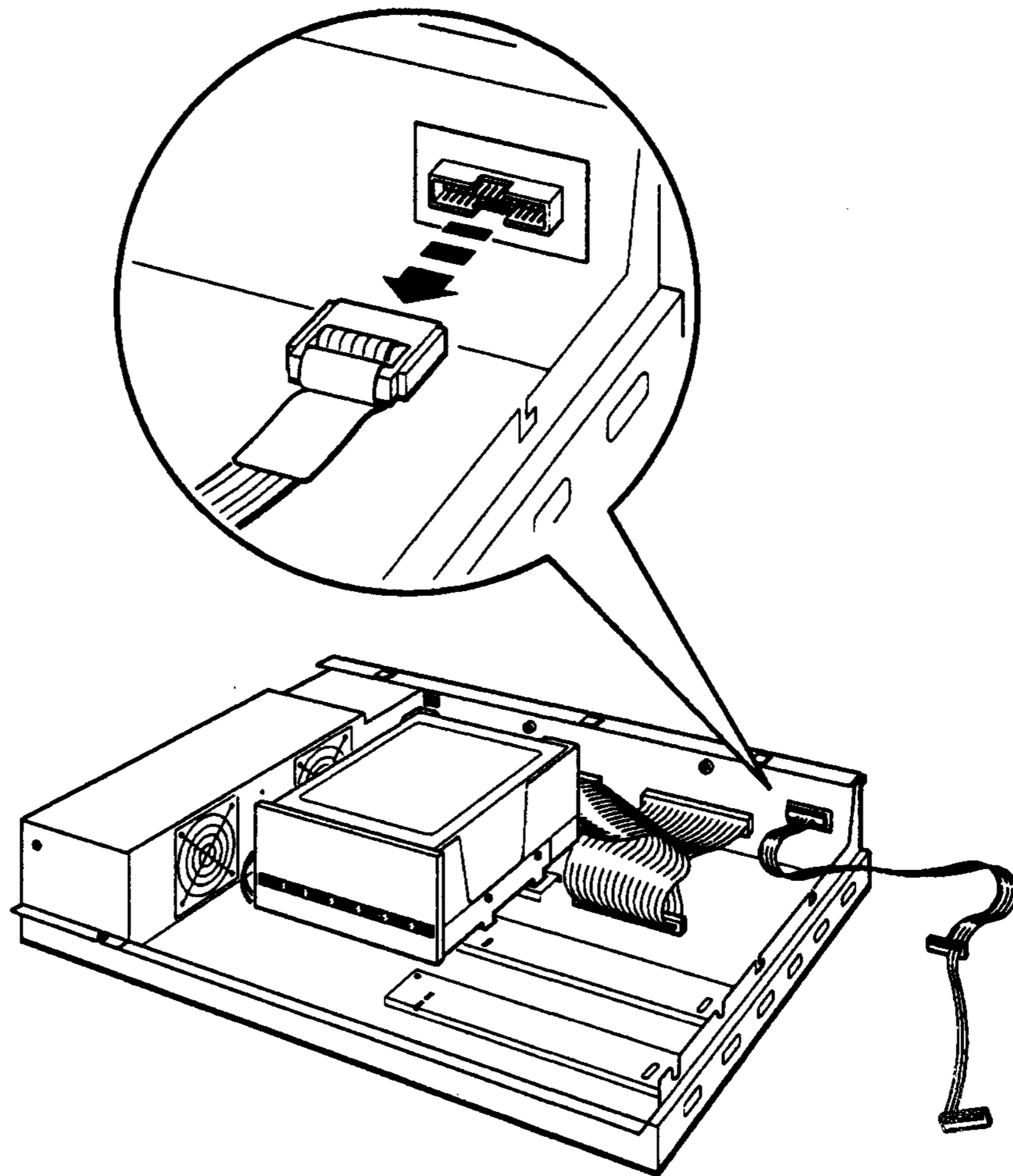


WSEBAM31

Figure 2-7. 6-pin and 24-pin SCSI ID switch cables

Remove the 24-Pin SCSI ID Switch Cable from the Expansion Box

Disconnect the 24-pin SCSI ID switch cable from any drive that may already be installed in your expansion box. Then disconnect the cable from the connector on the expansion box.

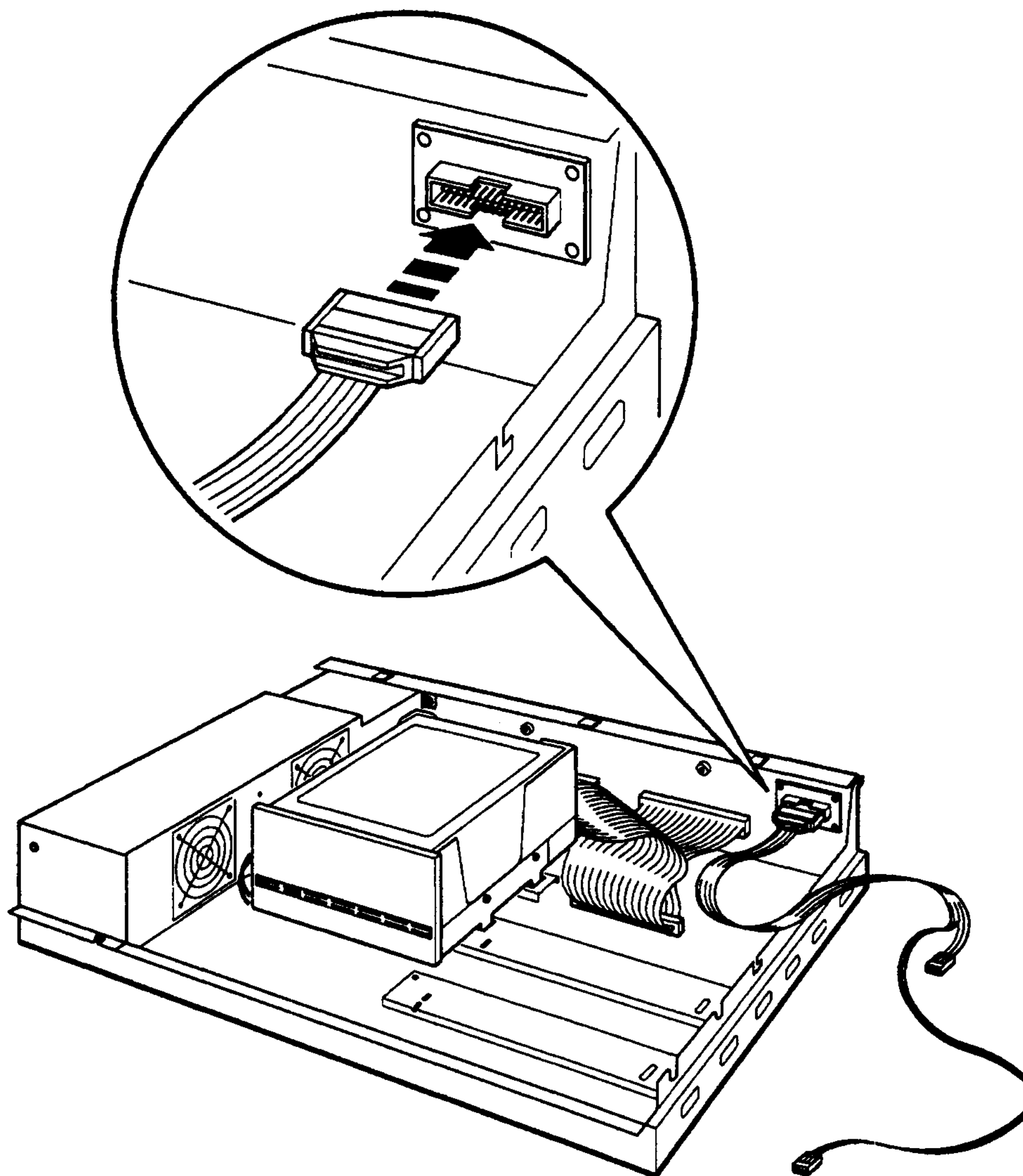


WSEBA185

Figure 2-8. Disconnecting the 24-pin SCSI ID switch cable from the expansion box

Attach the 6-pin SCSI ID Switch Cable That Came with the RZ25 Hard Disk Drive

Attach the 6-pin SCSI ID switch cable that came with the RZ25 hard disk drive to the expansion box. If there is an RZ5x Series hard disk drive in the position closest to the power supply, see Figure 2-4 to attach the 6-pin cable to the drive.



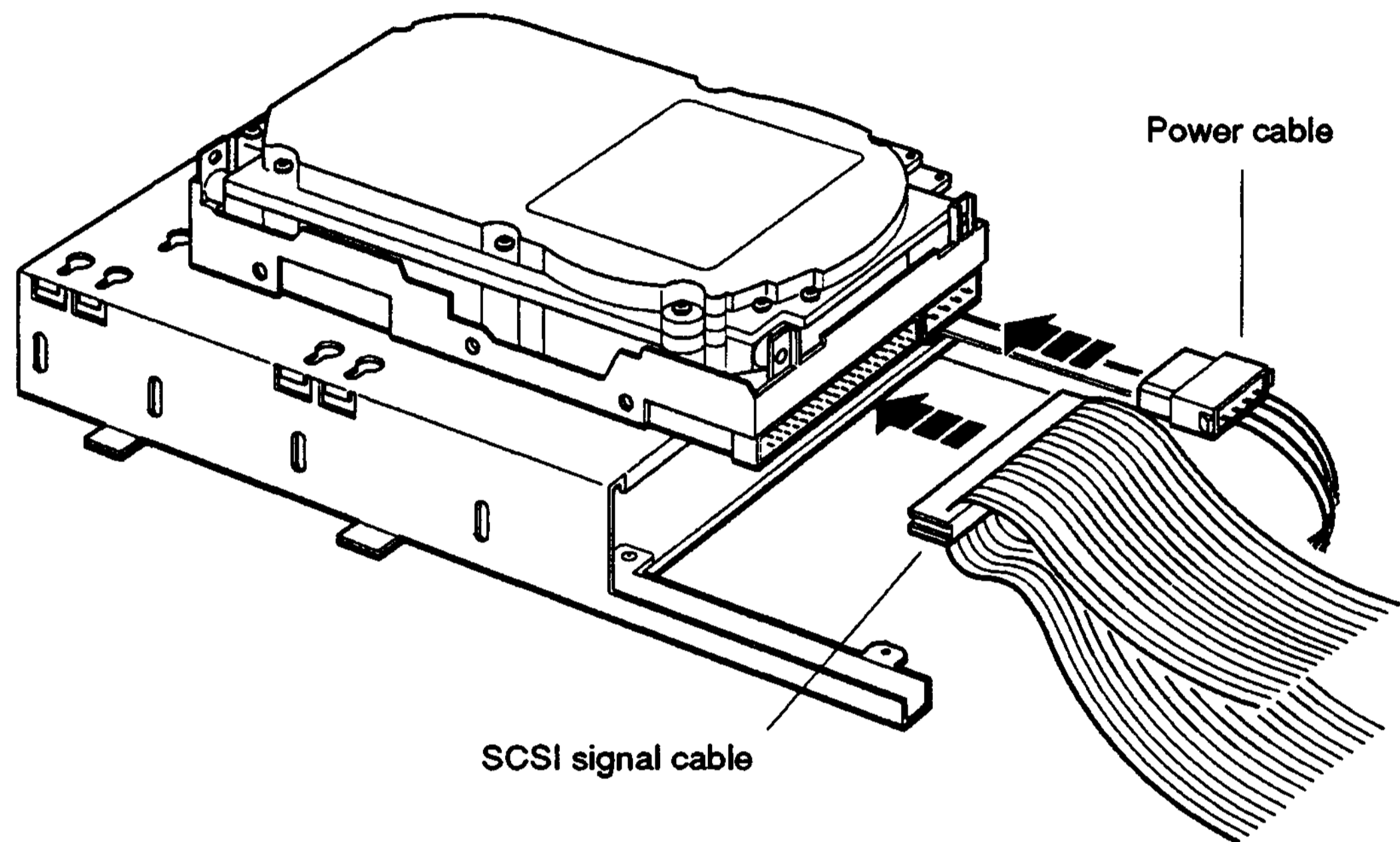
WSEBA186

Figure 2-9. Attaching the 6-pin SCSI ID switch cable to the expansion box

Attach the Internal Cables to the Drive

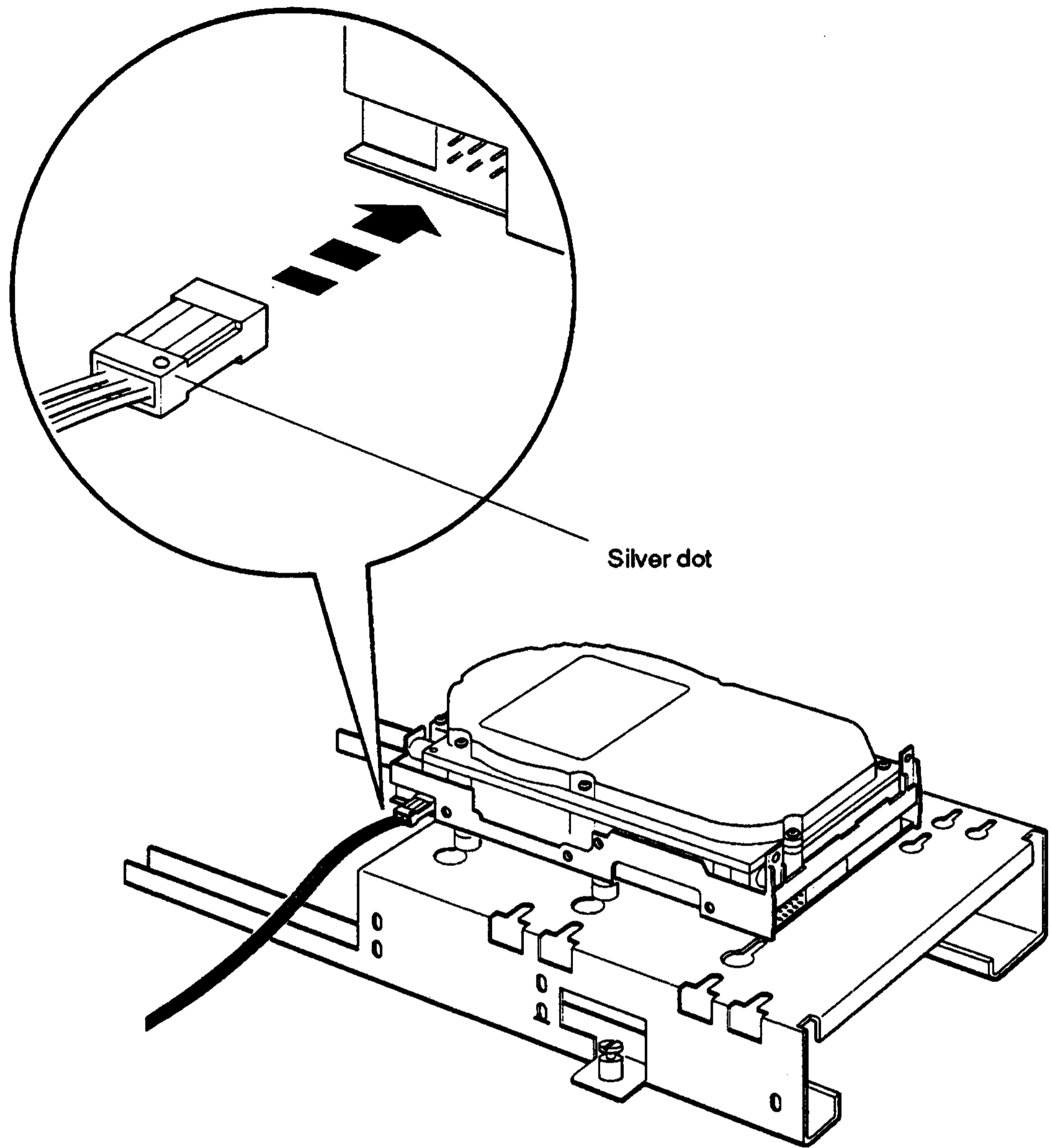
Attach the internal SCSI signal cable and power cable to the drive. Then attach the 6-pin SCSI ID switch cable. When attaching the SCSI ID switch cable, make sure the silver dot on the cable connector is facing upward.

Attach the connector in the middle of the SCSI ID switch cable to a hard disk drive you are installing in the position furthest from the power supply. Attach the connector on the end of the SCSI ID switch cable to a hard disk drive you are installing in the position next to the power supply.



WSEBA179

Figure 2-10. Attaching the internal SCSI signal and power cables to an RZ25 hard disk drive

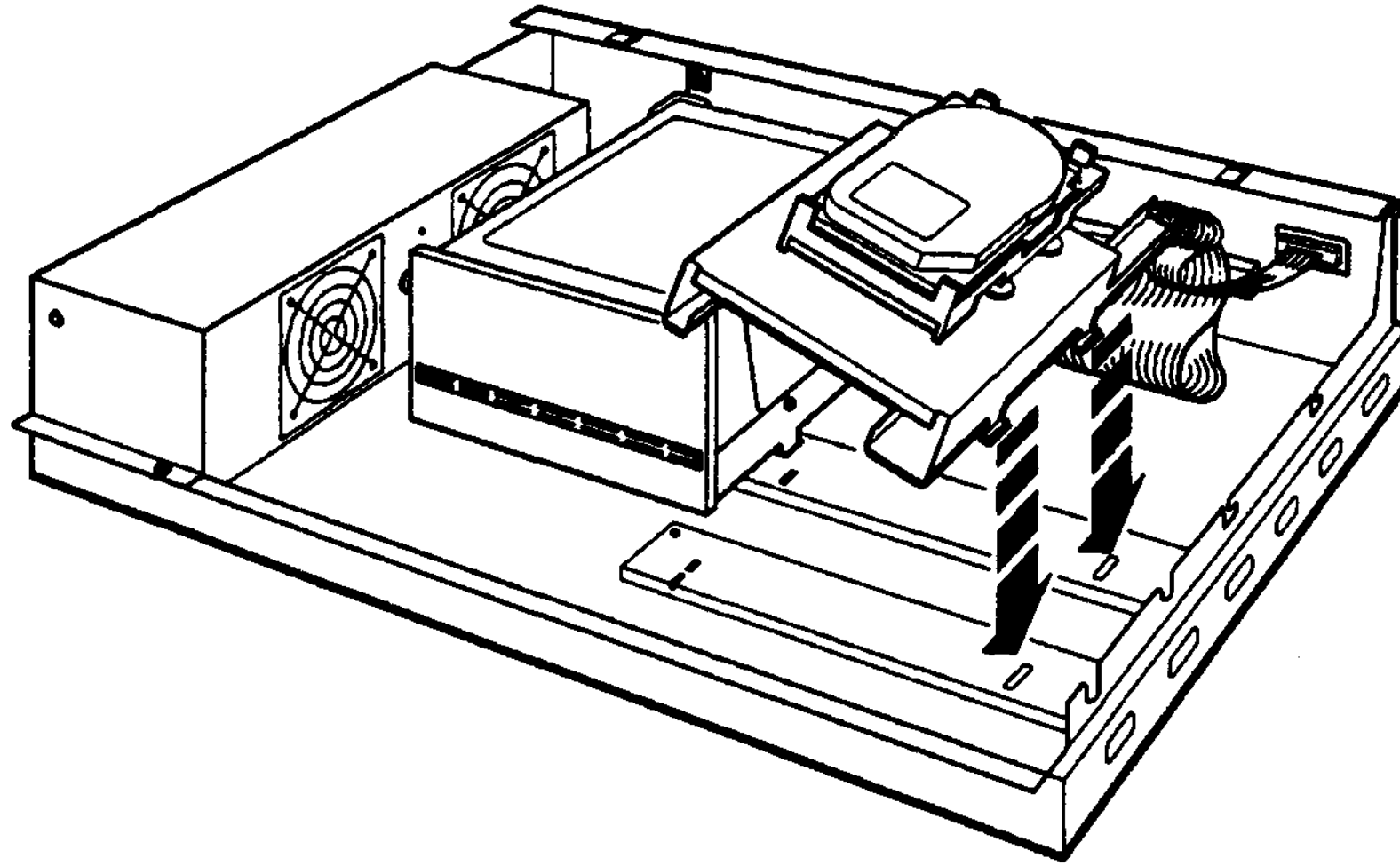


WSEBA189

Figure 2-11. Attaching the internal 6-pin SCSI ID switch cable to an RZ25 hard disk drive

Insert the Drive into the Expansion Box

Tilt the drive until you can place the metal tabs on the bottom of the drive into the openings in the floor of the box.

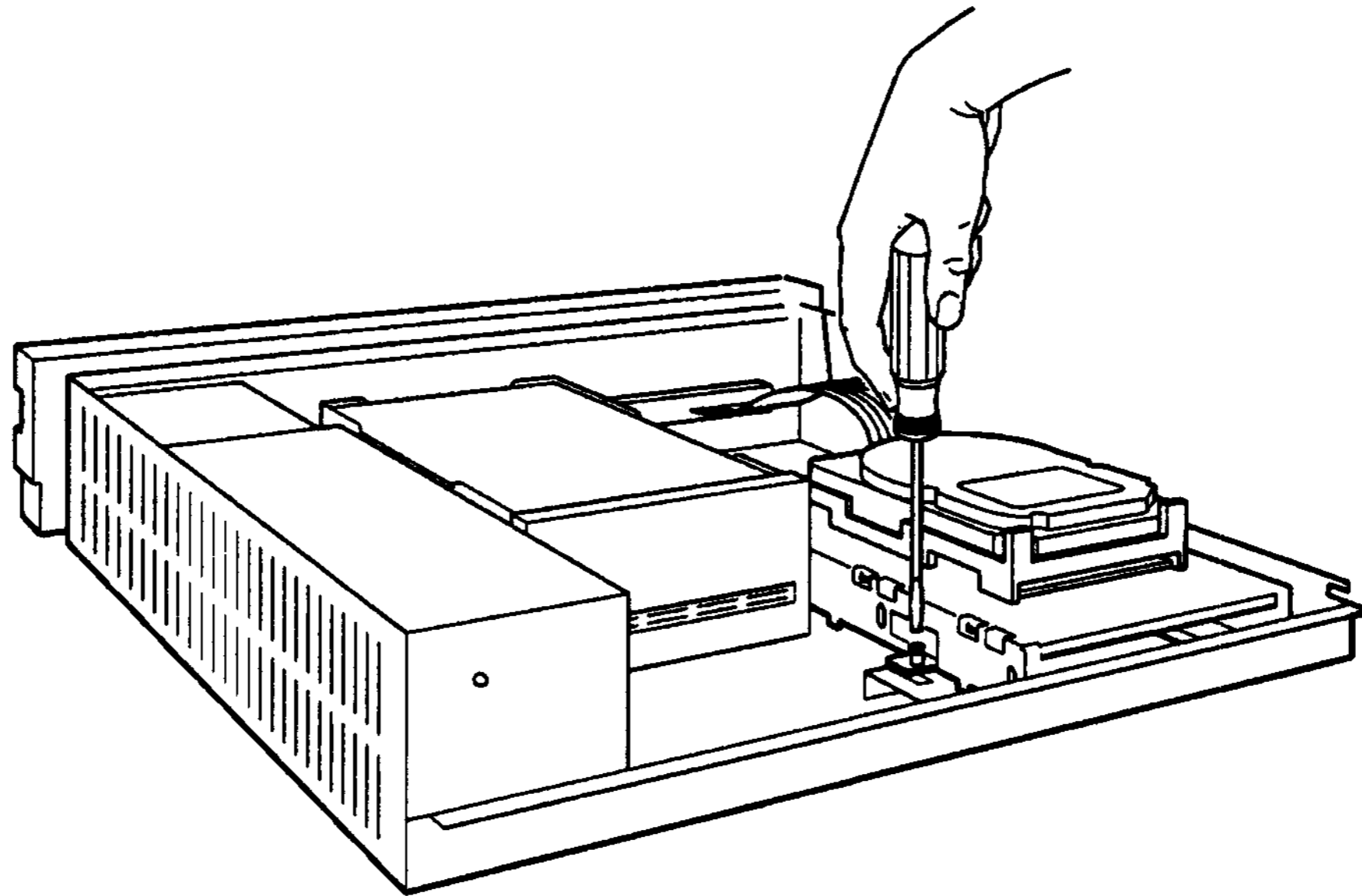


WSEBA187

Figure 2-12. Inserting an RZ25 hard disk drive in the expansion box

Tighten the Captive Screw

Tighten the captive screw to hold the drive in place.



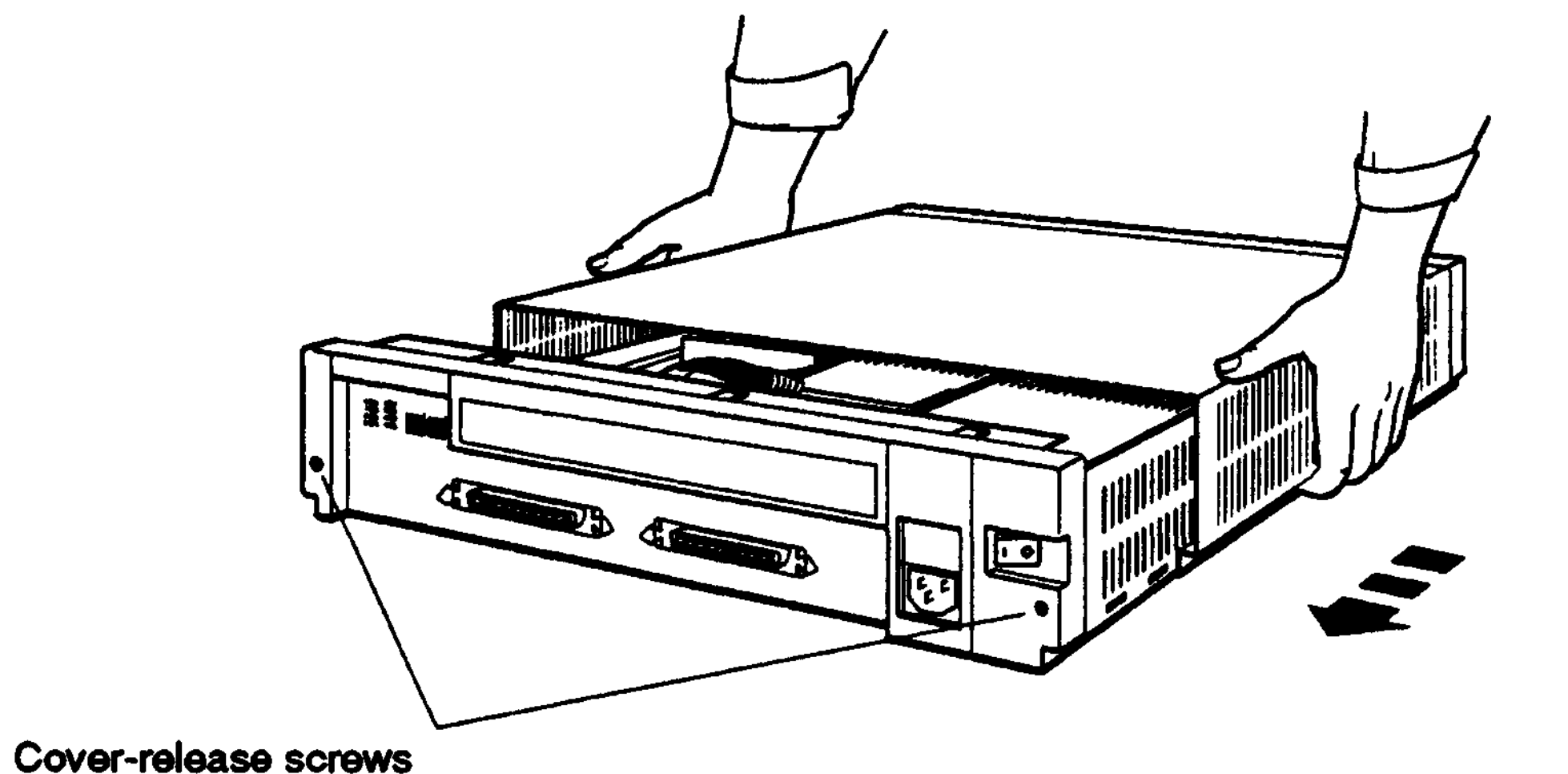
WSEBA188

Figure 2-13. Tightening the captive screw on the drive

Replace the Cover on the Expansion Box

Position the cover so it rests on top of the box about 3 inches short of the back of the box. Move the cover straight toward the back of the box until it slips into place. Tighten the two cover-release screws on the back of the box.

Caution: Make sure the internal cables are pushed down into the box before replacing the cover. Closing the cover on the cables may damage the cables.



WSEBA19

Figure 2-14. Replacing the cover on the BA42 expansion box

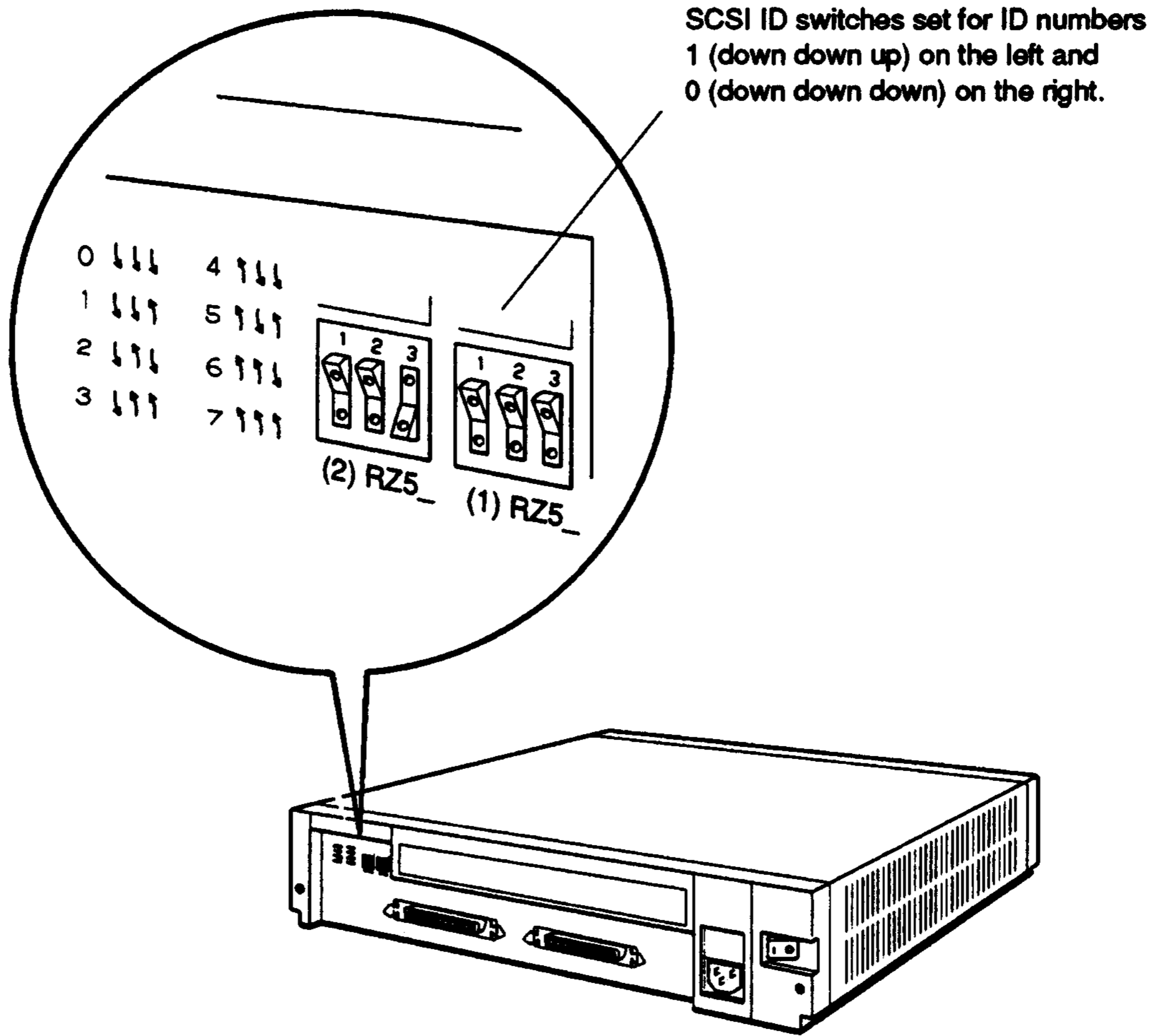
Check the SCSI ID Switch Settings on the Expansion Box

SCSI ID switches for hard disk drives installed in the BA42 expansion box are located on the back of the box.

If you have one hard disk drive installed in your expansion box, the right three SCSI ID switches on the back of the box determine the SCSI ID switch setting for that drive. These switches are preset to ID number 0, down down down.

If you have two hard disk drives installed in your expansion box, the left three SCSI ID switches on the back of the box determine the SCSI ID switch setting for the second hard disk drive. These switches are preset to ID number 1, down down up.

If there is a SCSI ID switch cover over the switches on your expansion box, turn to page 1-5 for instructions on how to remove the cover.



WSEBA106

Figure 2-15. SCSI ID switches for hard disk drives

Change the SCSI ID Switch Settings If Necessary

If the switches on your expansion box are set for a SCSI ID number that is not available for use, use a pen or small pointed object to flip the switches you need to change.

Table 2-1 shows the SCSI ID switch settings for hard disk drives.

Table 2-1. SCSI ID Numbers and Switch Settings for Hard Disk Drives

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

Turn to page 2-28 to verify your system configuration.

Installing a Floppy Disk, Tape, or Compact Disc Drive

Install a floppy disk, tape, or compact disc drive in the position furthest from the power supply.

Check the SCSI ID Switch or Jumper Settings on the Drive

SCSI ID switches and jumpers for floppy disk, tape, and compact disc drives are located directly on the drives. If you are installing one of these types of drives inside your BA42 box, use the switches or jumpers on the drive itself instead of the switches on the expansion box.

SCSI ID switches and jumpers on floppy disk and tape drives are preset to ID number 5. SCSI ID jumpers on compact disc drives are preset to ID number 4.

See the following appendixes for SCSI ID switch and jumper locations and settings for each drive:

- TZ30 tape drive—Appendix C
- RX23 floppy disk drive—Appendix D
- RX33 floppy disk drive—Appendix E
- TZK10 QIC tape drive—Appendix F
- RRD42 compact disc drive—Appendix G

Change the SCSI ID Switch or Jumper Settings If Necessary

If the switches or jumpers on the drive are set to a SCSI ID number that is not available for use, use a pen or small pointed object to flip the switches you need to change, or use a small set of needle-nose pliers to remove and replace the jumpers you need to change.

Connect the Internal Cables

Connect the internal power and SCSI signal cables to the drive.

Note: Because floppy disk, tape, and compact disc drives do not use the SCSI ID switches on the back of the expansion box, you cannot connect the SCSI ID switch cable to the drive.

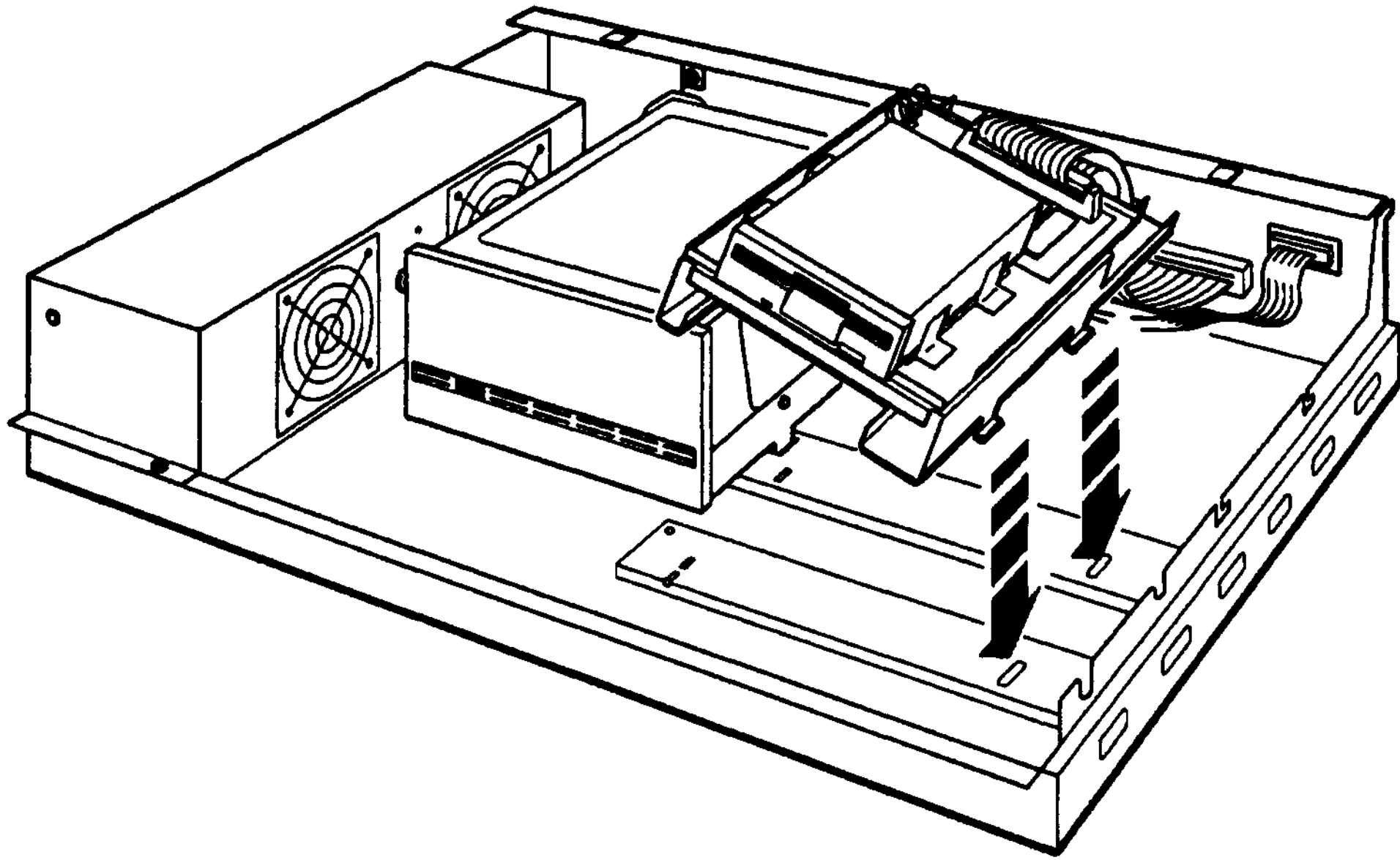
See the following appendixes for instructions on how to connect internal cables to a floppy disk, tape, or compact disc drive.

- TZ30 tape drive—Appendix C
- RX23 floppy disk drive—Appendix D
- RX33 floppy disk drive—Appendix E
- TZK10 QIC tape drive—Appendix F
- RRD42 compact disc drive—Appendix G

Turn to page 2-15 for instructions on how to insert the drive into the expansion box.

Insert the Drive into the Expansion Box

Tilt the drive until you can place the metal tabs on the bottom of the drive into the openings in the floor of the box.

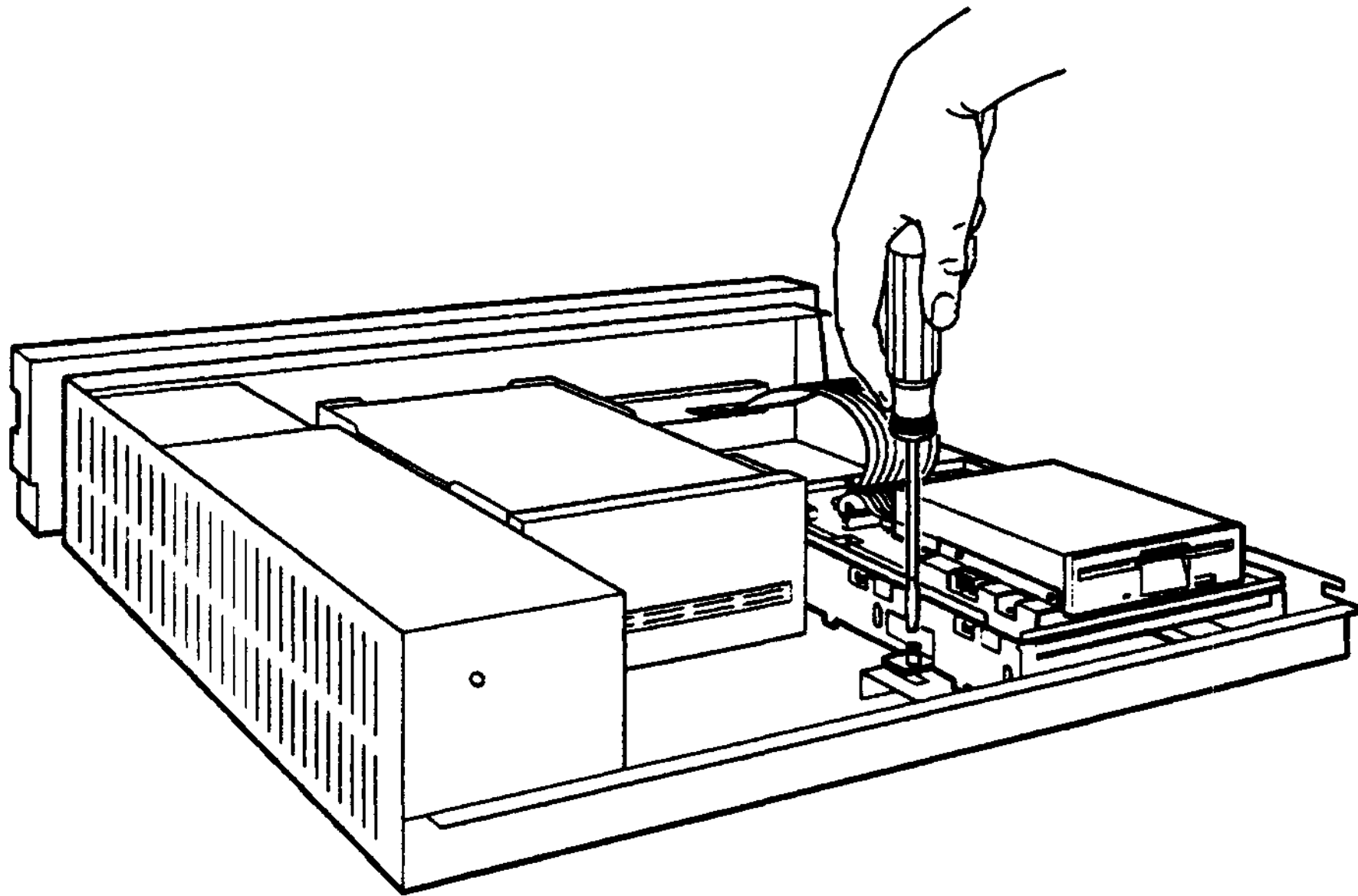


WSEBA135

Figure 2-16. Inserting the drive in the expansion box

Tighten the Captive Screw

Tighten the captive screw to hold the drive in place.

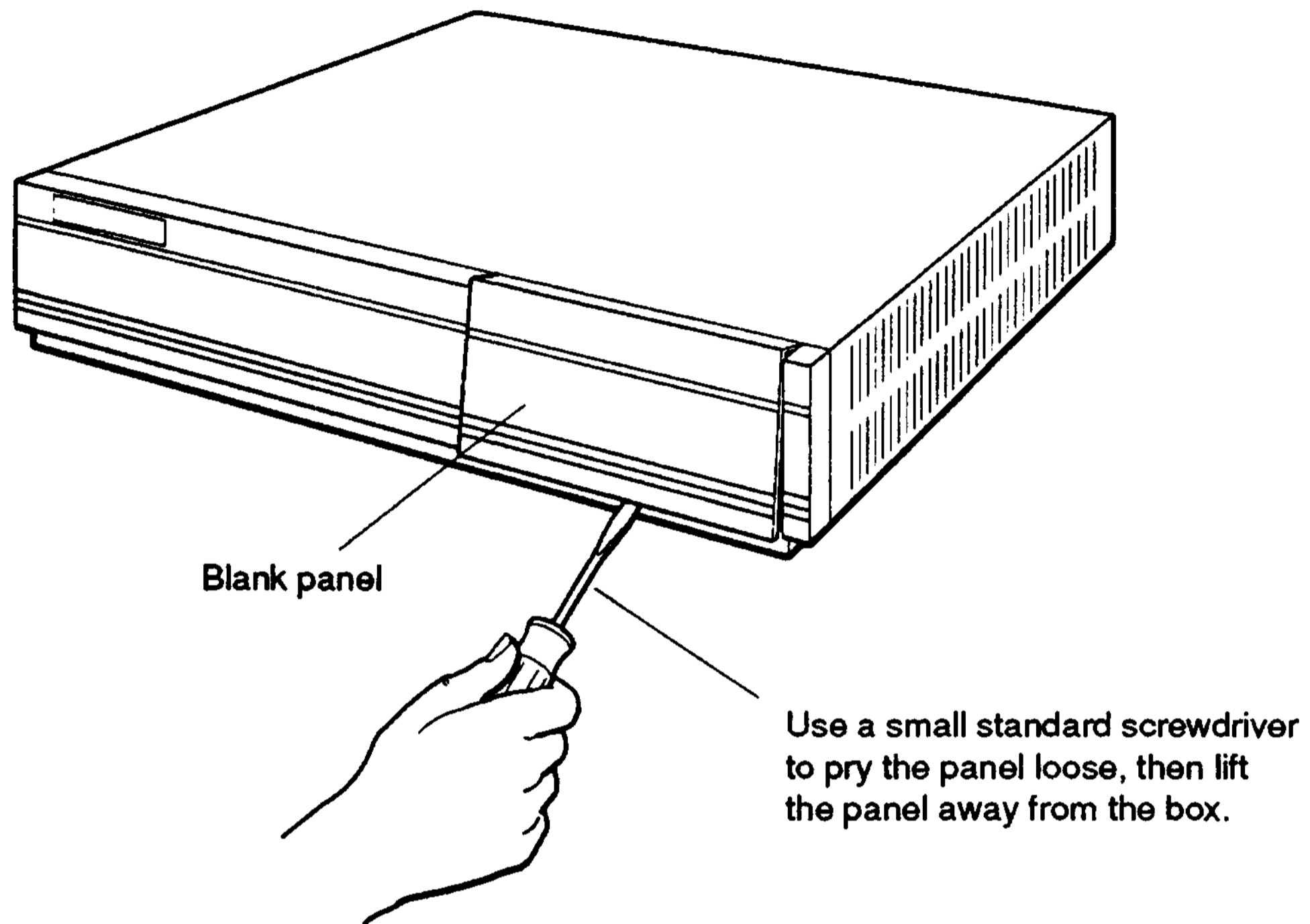


WSEBA136

Figure 2-17. Tightening the captive screw

Remove the Blank Panel from the Front of the Expansion Box Cover

Remove the blank panel from the front of the expansion box cover by inserting a standard screwdriver under the bottom of the panel and pulling outward.



WSEBA114

Figure 2-18. Removing the blank panel from the front of the expansion box cover

Install the Open Bezel Insert on the Front of the Expansion Box Cover

Install the open bezel insert that came with your drive onto the front of the expansion box cover by lining up the locating posts with the holes on the front of the cover and snapping the insert into place.

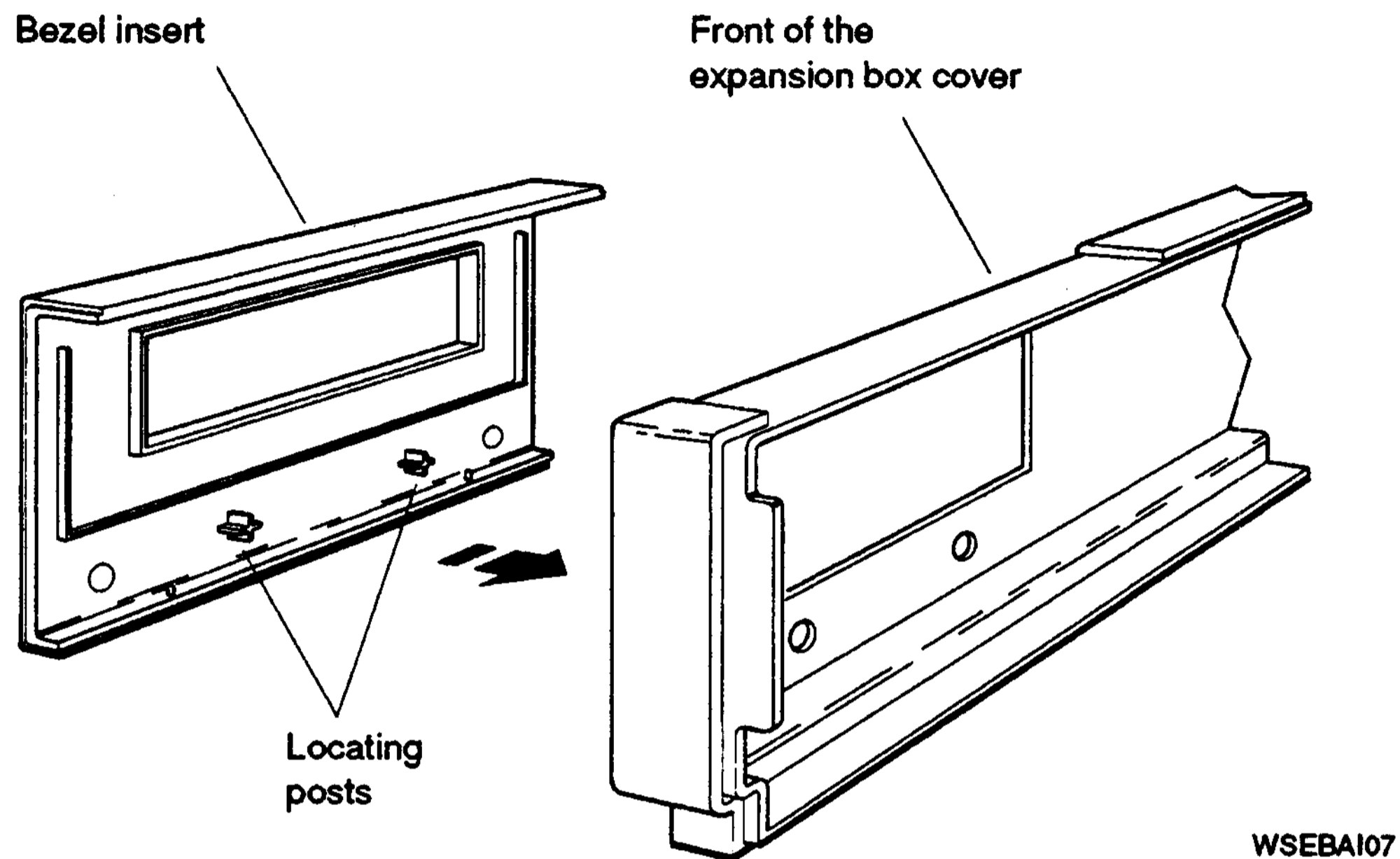
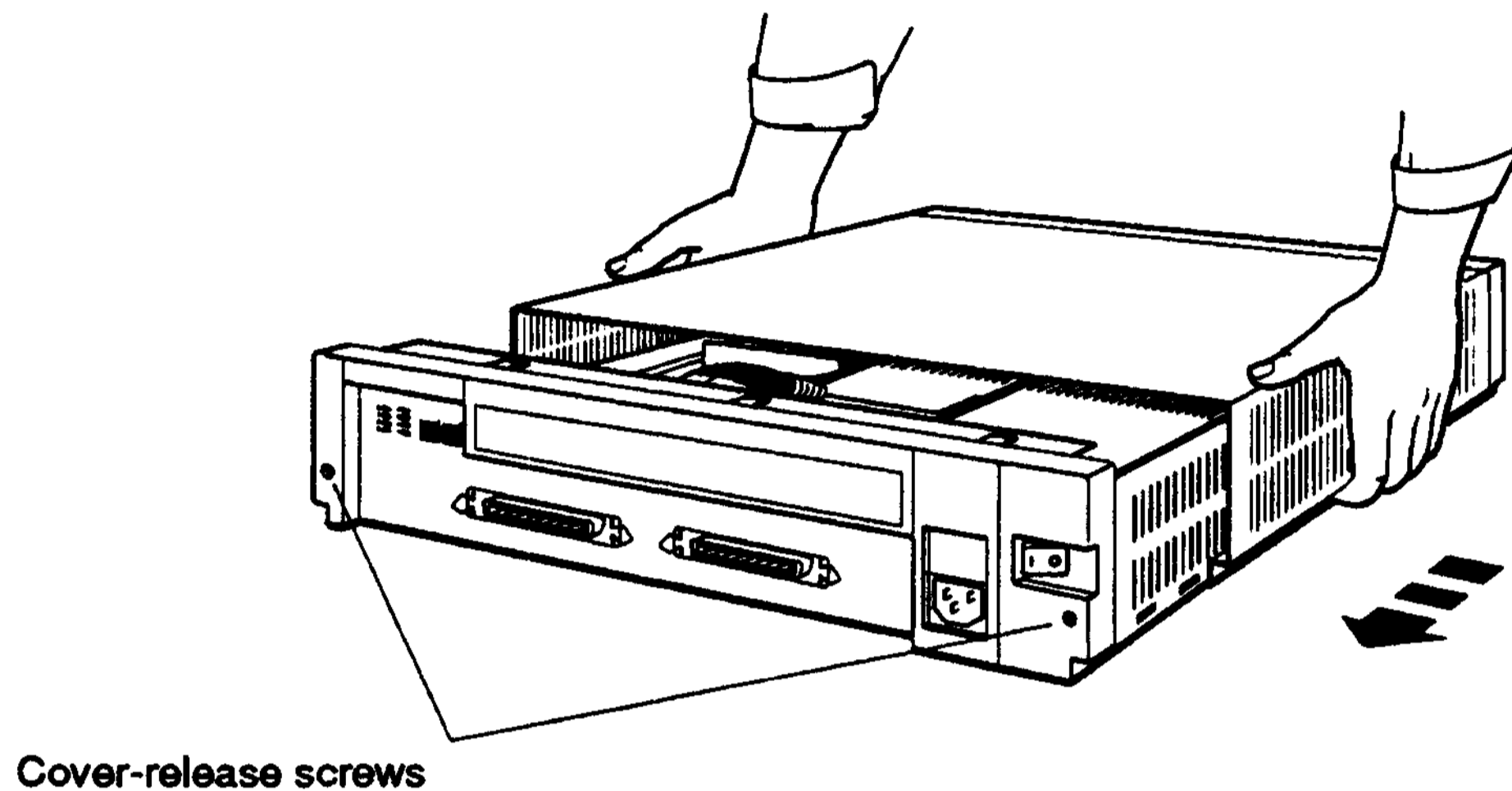


Figure 2-19. Installing the open bezel insert on the front of the expansion box cover

Replace the Cover on the Expansion Box

Position the cover so it rests on top of the box about 3 inches short of the back of the box. Move the cover straight toward the back of the box until it slips into place. Tighten the two cover-release screws on the back of the box.

Caution: Make sure the internal cables are pushed down into the box before replacing the cover. Closing the cover on the cables may damage the cables.



WSEBA19

Figure 2-20. Replacing the cover on the expansion box

Turn to page 2-28 to verify your system configuration.

Verifying Your System Configuration

Turn Power On

Turn on power to all expansion boxes and then the system unit.

Check the Configuration Display

The configuration display for your system tells you whether the system recognizes the drives in your expansion boxes.

To display and read your system configuration, follow the instructions provided in the hardware installation guide or user's guide that came with your system.

If an expansion box drive does not appear in the configuration display, follow this procedure:

1. Press the 1 on the on/off switch on the expansion box to be sure the switch is securely in the on position.
2. Turn off your system unit and expansion boxes
3. Be sure all expansion box cables are connected securely.
4. Be sure all power cords are connected securely.
5. Be sure the SCSI terminator is attached securely to the expansion box.
6. Be sure the internal cables are connected securely to the drive.
7. Check the expansion box cable connector for damaged pins.
8. Check the SCSI ID switch or jumper settings.
9. Turn on all expansion boxes and then system unit. Check the configuration display again.
10. If the configuration display still does not show the drives in the expansion box, contact your system manager or Digital service representative.

Once SCSI ID switch settings for the hard disk drives installed in your expansion box are recognized by your system, replace the cover on the SCSI ID switches on the back of your expansion box by inserting the notch on the bottom of the cover into the opening below the switches on the back of the box, and snapping the cover into place.

Using Floppy Disk or Tape Drives

For instructions on how to use floppy disk, tape, or compact disc drives, see the following appendixes:

- TZ30 tape drives—Appendix C
- RX23 floppy disk drives—Appendix D
- RX33 floppy disk drives—Appendix E
- TZK10 QIC tape drive—Appendix F
- RRD42 compact disc drive—Appendix G



A

Equipment Specifications

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

- BA42 expansion box
- RZ25 hard disk drive
- RZ55 hard disk drive
- RZ56 hard disk drive
- RZ57 hard disk drive
- RZ58 hard disk drive
- TZ30 tape drive
- TZK10 QIC tape drive
- RX23 diskette drive
- RX33 diskette drive

BA42 Storage Expansion Box Equipment Specifications

Table A-1. BA42 Storage Expansion Box Description

Weight	17.24 kg (38.00 lb) maximum
Height	10.16 cm (4.00 in)
Width	46.02 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

¹Reduce 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

RZ25 SCSI Hard Disk Drive Equipment Specifications

Table A-4. RZ25 SCSI Hard Disk Drive Description

Internal drive	
– Weight	0.82 kg (1.8 lb)
– Height	4.14 cm (1.63 in)
– Width	10.16 cm (4.00 in)
– Depth	14.61 cm (5.75 in)
Capacity	
– Bytes per drive	426 MB
– Blocks per drive	832,527
– Block size	512 bytes
Data transfer rate	
– Bus asynchronous mode	3.0 MB per second
– Bus synchronous mode	4.0 MB per second
– To and from media	2.1–3.2 MB per second
Seek time	
	2.5 ms track-to-track
	14 ms average
	26 ms maximum
Average latency	6.8 ms
Interface	SCSI

Table A-5. RZ25 SCSI Hard Disk Drive Operating Conditions

Temperature range¹	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)
Altitude	–300 to 3050 m (–1000 to 10,000 ft)

¹Reduce 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. RZ25 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, noncondensing
Maximum wet-bulb temperature	46°C (115°F) packaged
Altitude	-300 m to 12,200 m (-1,000 ft to 40,000 ft)

RZ55 SCSI Hard Disk Drive Equipment Specifications

Table A-7. RZ55 SCSI Hard Disk Drive Description

Expansion box	
– Weight	13.15 kg (29.00 lb)
– Height	13.97 cm (5.50 in)
– Width	32.39 cm (12.75 in)
– Depth	28.55 cm (11.25 in)
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-8. 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)

¹Reduce 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. 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)

RZ56 SCSI Hard Disk Drive Equipment Specifications

Table A-10. 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-11. RZ56 SCSI Hard Disk Drive Operating Conditions

Temperature range¹	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)

¹Reduce 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. 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)

RZ57 SCSI Hard Disk Drive Equipment Specifications

Table A-13. 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-14. 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)

¹Reduce 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. 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)

RZ58 SCSI Hard Disk Drive Equipment Specifications

Table A-16. RZ58 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	1.38 gigabytes
– Blocks per drive	2,698,061 not including spares
– Block size	512 bytes
Data transfer rate	
– Bus asynchronous mode	1.6 MB per second
– Bus synchronous mode	5.0 MB per second
– To and from media	2.5 MB per second
Seek time	
	2.5 ms track-to-track
	12.5 ms average
	25 ms maximum
Average latency	5.6 ms
Interface	SCSI II

Table A-17. RZ58 SCSI Hard Disk Drive Operating Conditions

Temperature range¹	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%
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)

¹Reduce 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. RZ58 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)

TZ30 Tape Drive Equipment Specifications

Table A-19. 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-20. 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

¹Reduce 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. 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

TZK10 QIC Tape Drive Equipment Specifications

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

¹Reduce 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

RX23 Diskette Drive Equipment Specifications

Table A-25. RX23 Diskette 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-26. RX23 Diskette 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)

¹Reduce 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. RX23 Diskette 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)

RX33 Diskette Drive Equipment Specifications

Table A-28. RX33 Diskette 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-29. RX33 Diskette 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

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

Table A-30. RX33 Diskette 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

BA42 Configurations and Part Numbers

Table B-1. BA42 Storage Expansion Box Configurations

Expansion Box Configuration	Order Number	
	120 Volt	240 Volt
Single RZ25	SZ12G-XA	SZ12G-XB
Double RZ25	SZ12G-GA	
Single RZ25, single TZ30	SZ12G-HA	SZ12G-HB
Single RZ25, single TZK10	SZ12G-EA	SZ12G-EB
Single RZ25, single RRD42	SZ12G-FA	SZ12G-FB
RZ25 upgrade kit	RZ25-UK	
Single RZ55	SZ12A-XA	SZ12A-XB
Double RZ55	SZ12A-AA	SZ12A-AB
Single RZ56	SZ12B-XA	SZ12B-XB
Double RZ56	SZ12B-BA	SZ12B-BB
Single RZ57	SZ12C-XA	SZ12C-XB
Double RZ57	SZ12C-CA	SZ12C-CB
Single RZ55, single RX23	SZ12A-LA	SZ12A-LB
Single RZ55, single RX33	SZ12A-MA	SZ12A-MB
Single RZ55, single TZ30	SZ12A-HA	SZ12A-HB
Single RZ55, single TZK10	SZ12A-EA	SZ12A-EB

(continued on next page)

Table B-1 (Cont.). BA42 Storage Expansion Box Configurations

Expansion Box Configuration	Order Number	
	120 Volt	240 Volt
Single RZ55, single RRD42	SZ12A-FA	SZ12A-FB
Single RZ56, single TZ30	SZ12B-HA	SZ12B-HB
Single RZ56, single TZK10	SZ12B-EA	SZ12B-EB
Single RZ56, single RRD42	SZ12B-FA	SZ12B-FB
Single RZ57, single TZK10	SZ12C-EA	SZ12C-EB
Single RZ57, single RRD42	SZ12C-FA	SZ12C-FB
Single RZ58	SZ12-JX	
Double RZ58	SZ12-JJ	
Single RX23	SZ12X-LA	SZ12X-LB
Single RX33	SZ12X-MA	SZ12X-MB
Single TZ30	SZ12X-HA	SZ12X-HB
Single TZK10	SZ12X-EA	SZ12X-EB

TZ30 Tape Drive

The TZ30 is a 1/2-inch, 95-megabyte, half-height tape drive. This appendix tells you how to

- Set SCSI ID switches on the TZ30 tape drive
- Attach the internal BA42 expansion box SCSI signal and power cables to the TZ30 tape drive
- Use the TZ30 tape drive
- Handle and store tape cartridges

Setting the SCSI ID Switches

SCSI ID switches for the TZ30 tape drive are arranged vertically on the side of the drive. The bottom switch is switch 1. The top switch is switch 4.

To set the SCSI ID number on a TZ30 tape drive, start from the bottom switch and work up, setting the switches to the left or to the right.

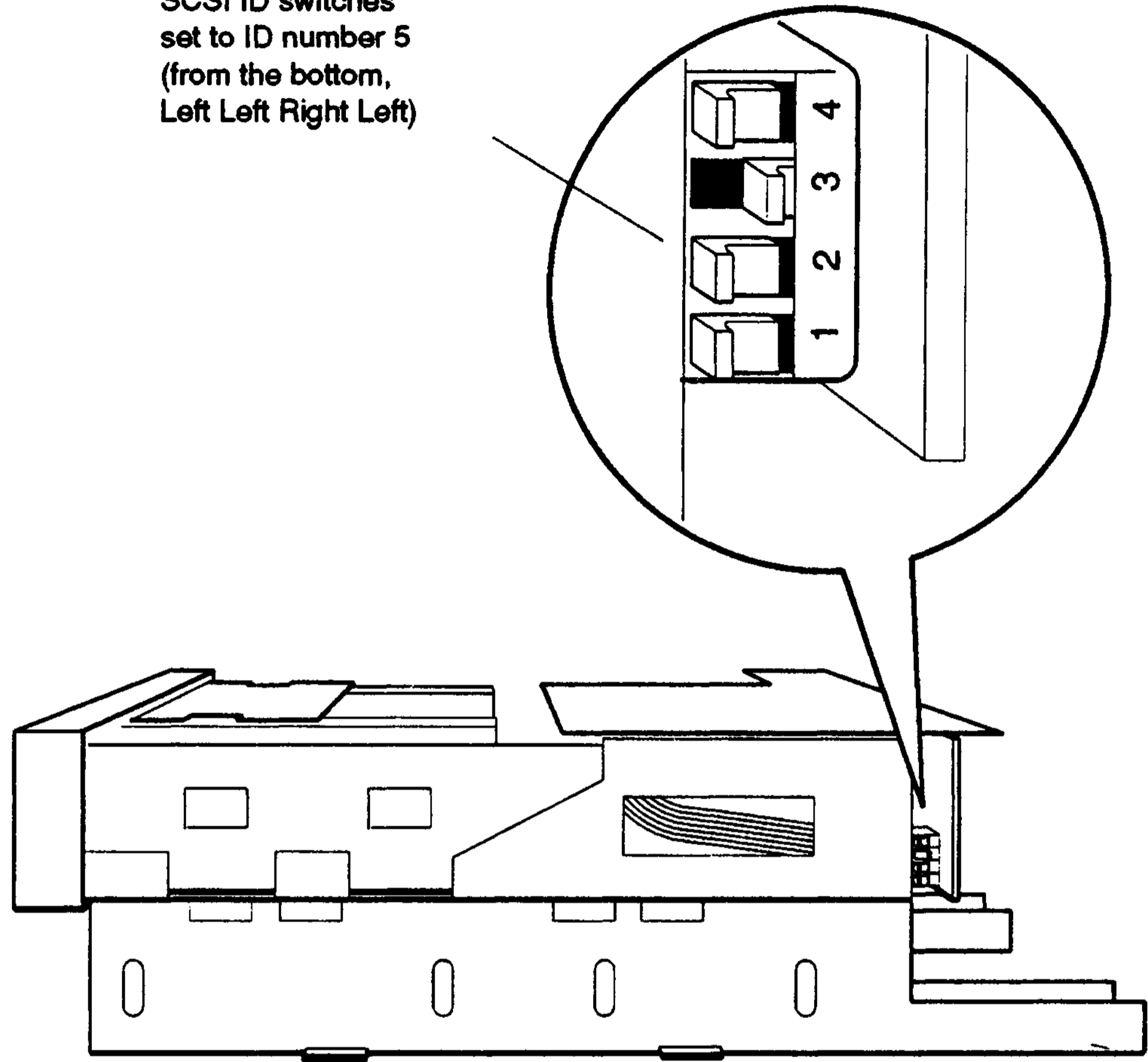
Table C-1 shows the SCSI ID switch settings for the TZ30 tape drive. Figure C-1 shows the SCSI ID switches set to ID number 5.

Table C-1. SCSI ID Switch Settings for the TZ30 Tape Drive

SCSI ID Number	Switch 1 ¹	Switch 2	Switch 3	Switch 4
0	Left	Right	Right	Right
1	Left	Right	Right	Left
2	Left	Right	Left	Right
3	Left	Right	Left	Left
4	Left	Left	Right	Right
5	Left	Left	Right	Left
6	Left	Left	Left	Right
7	Left	Left	Left	Left

¹Switch 1 should always be set to the left.

SCSI ID switches
set to ID number 5
(from the bottom,
Left Left Right Left)

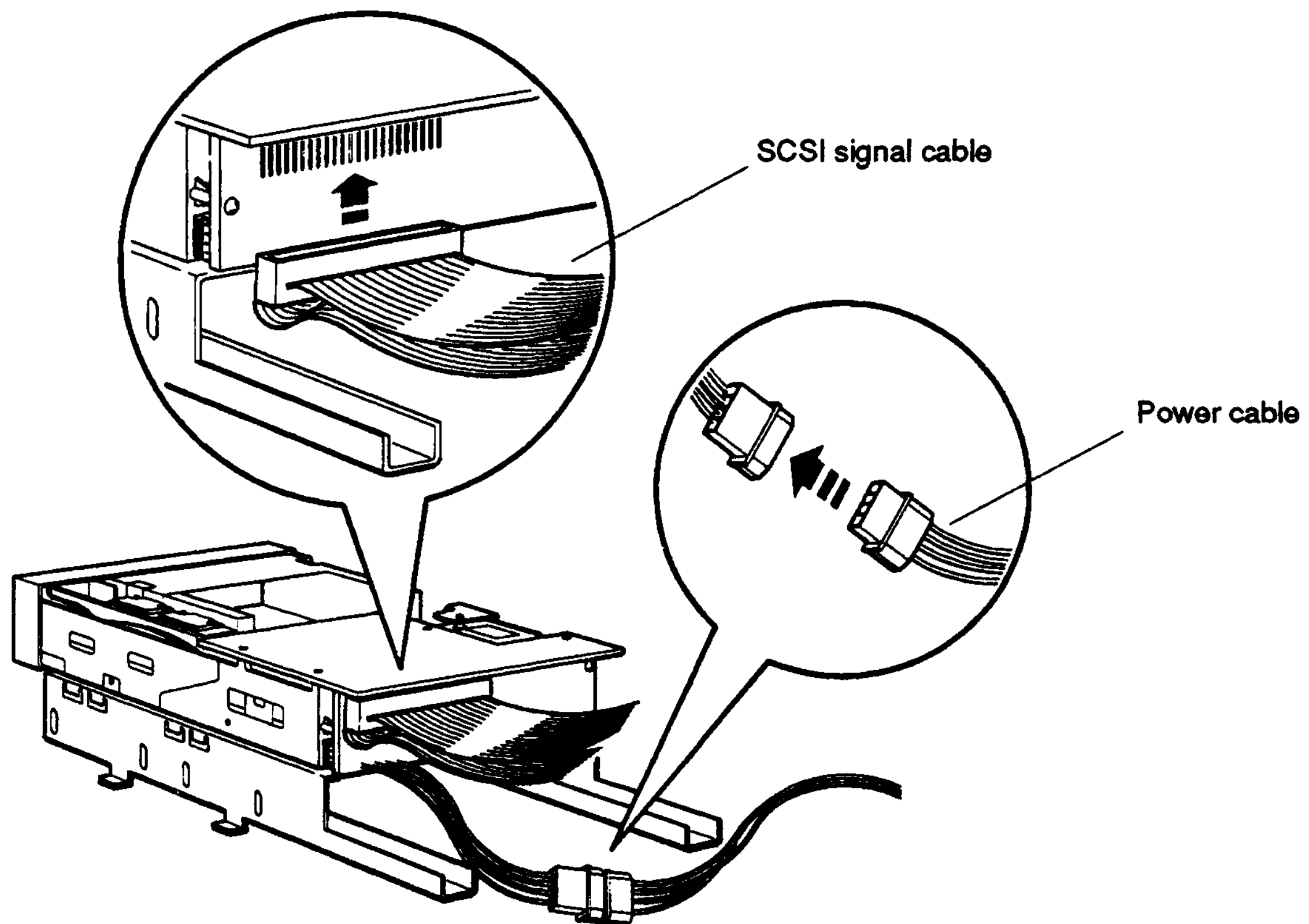


WSEBA158

Figure C-1. SCSI ID switches on the TZ30 tape drive

Attaching the Internal Expansion Box Cables to a Drive

Figure C-2 shows how to attach the expansion box internal SCSI signal cable and power cable to a TZ30 tape drive.



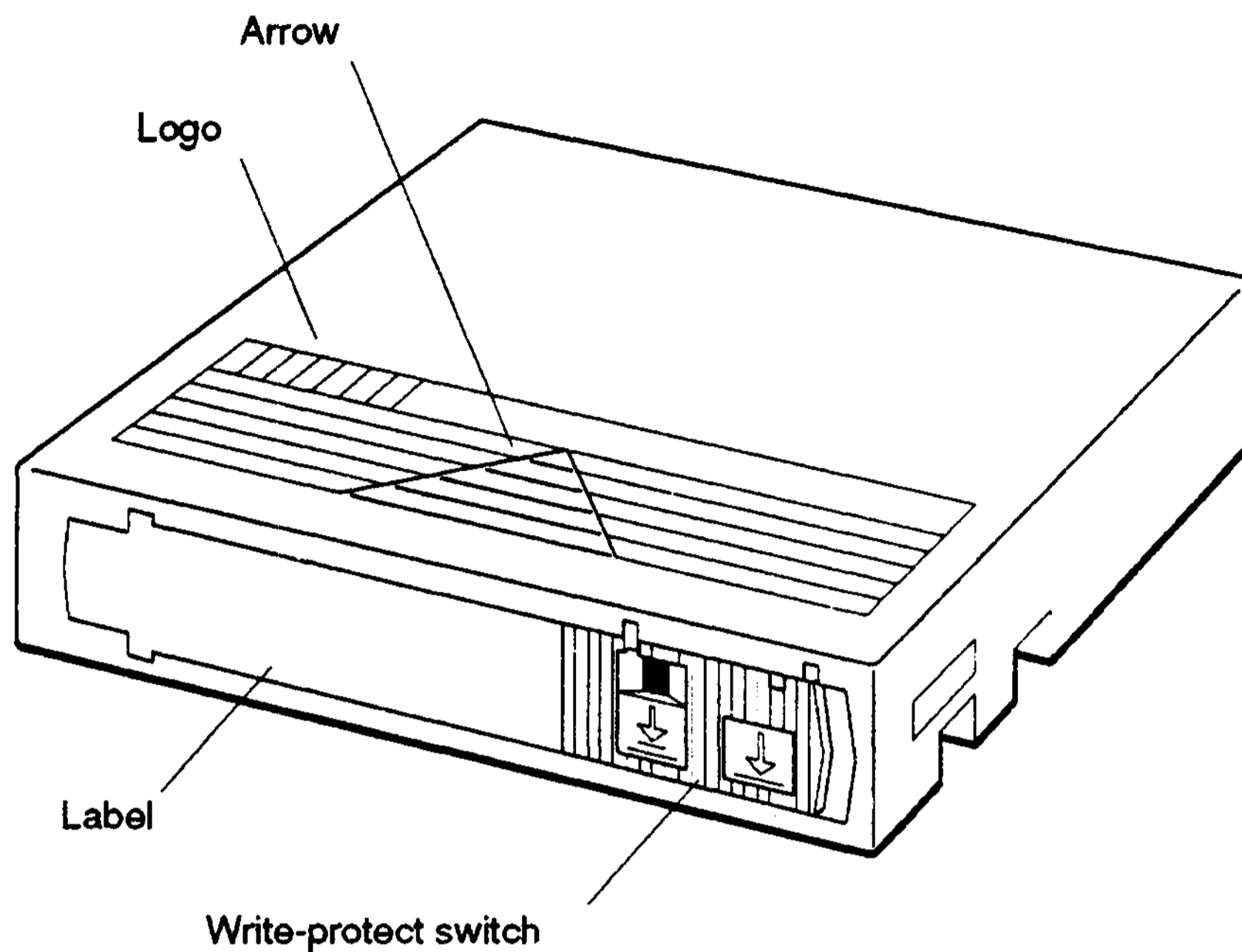
WSEBA133

Figure C-2. Attaching the internal expansion box cables to a TZ30 tape drive

Using a TZ30 Tape Drive

TZ30 Tape Cartridge

The TZ30 tape drive uses CompacTape TK50 tape cartridges.

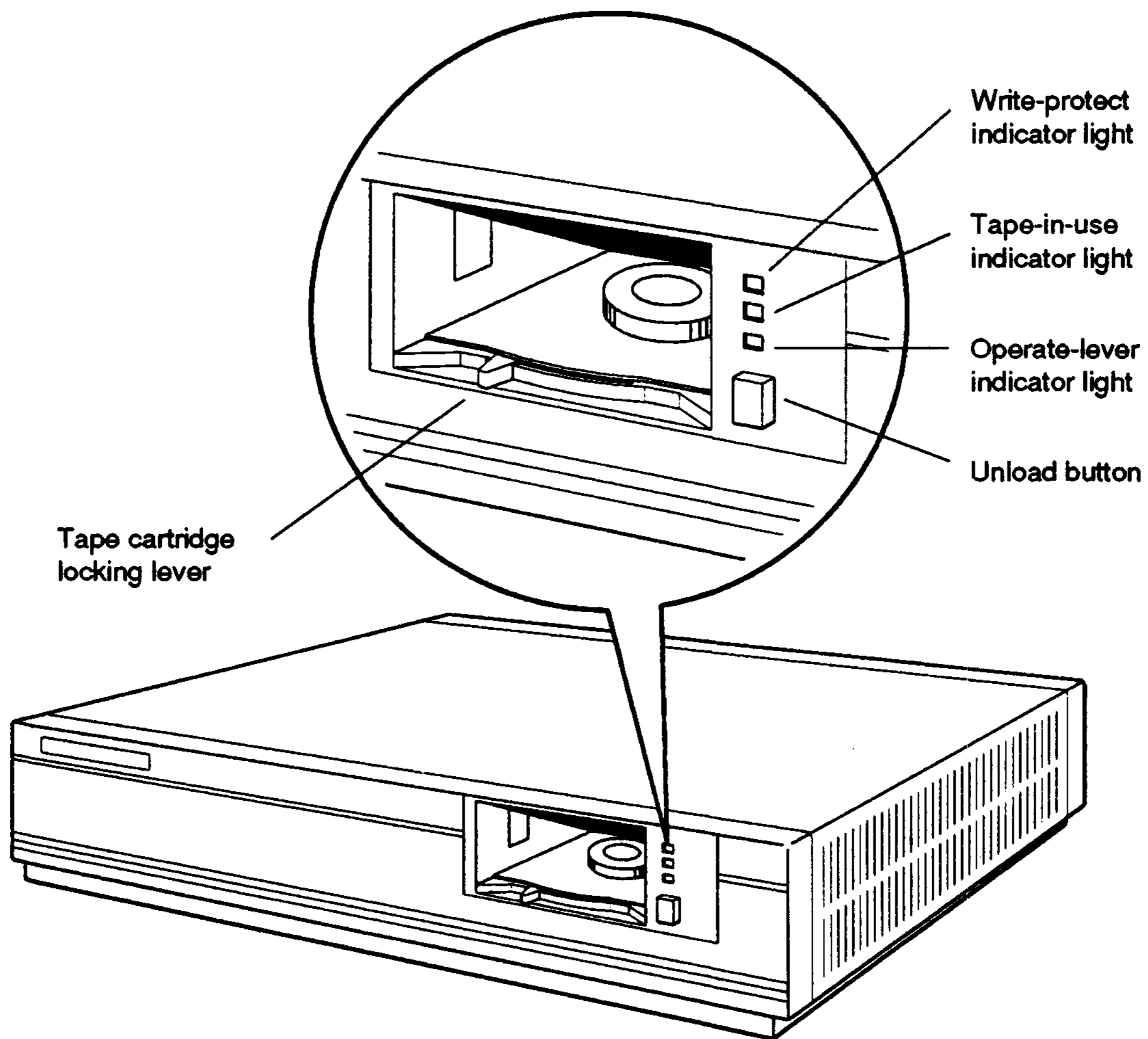


WSEBA159

Figure C-3. A TZ30 tape cartridge

External Controls and Indicators

Figure C-4 shows the external controls and indicator lights on the TZ30 tape drive. Table C-2 explains how to interpret the indicator lights on the drive.



WSEBAI44

Figure C-4. External controls and indicator lights on the TZ30 tape drive

Table C-2. Indicator Lights on the TZ30 Tape Drive

Light	State	Meaning
Orange	On	The tape is write-protected. (Write-protect)
	Off	The tape is write-enabled.
Yellow (Tape-in-use)	Blinking ¹	The tape is in use.
	On	The tape is ready for use.
Green (Operate lever)	On	You can load the tape (move the lever to the right) or unload it (move the lever to the left).
	Off	Do not move the lever.
	Blinking	A cartridge error has been detected.
All three	On ²	The power-up diagnostic test is running.
	Blinking	A drive fault has been detected.

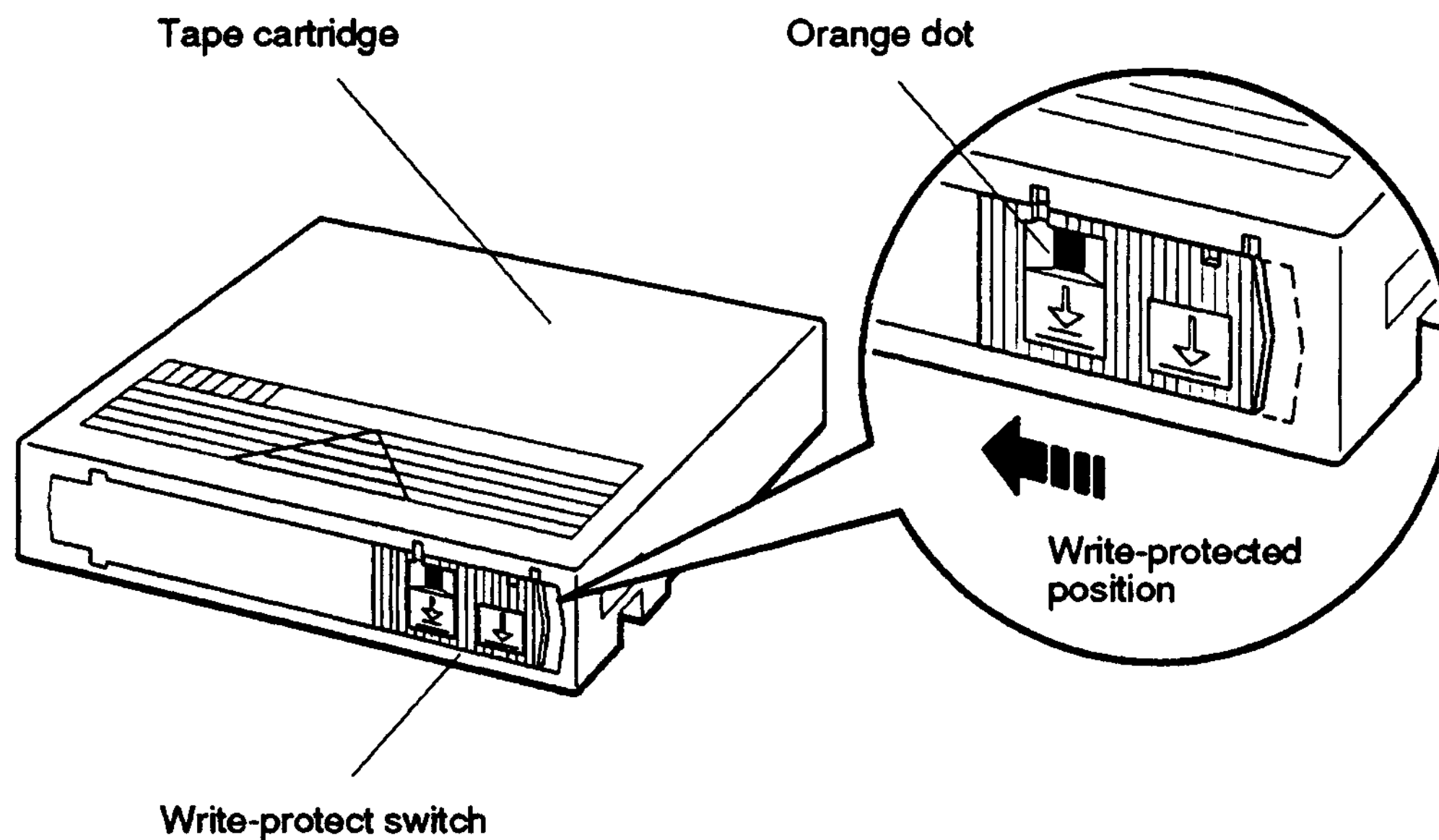
¹Fast blinking (four times a second) indicates that a read or write is in progress. Medium blinking (two times a second) indicates that the tape is loading or unloading. Slow blinking (once a second) indicates that the tape is rewinding.

²All three lights stay on for a few seconds, while the power-up diagnostic test is running. If all three lights stay on for a long time, it means that the power-up diagnostic test has failed.

Write-Protecting a Tape Cartridge

To prevent information on the tape from being written over, write-protect the cartridge. To do this,

1. Find the write-protect switch on the right side of the front of the cartridge.
2. Slide the switch to the left until an orange dot appears above the left arrow on the switch.



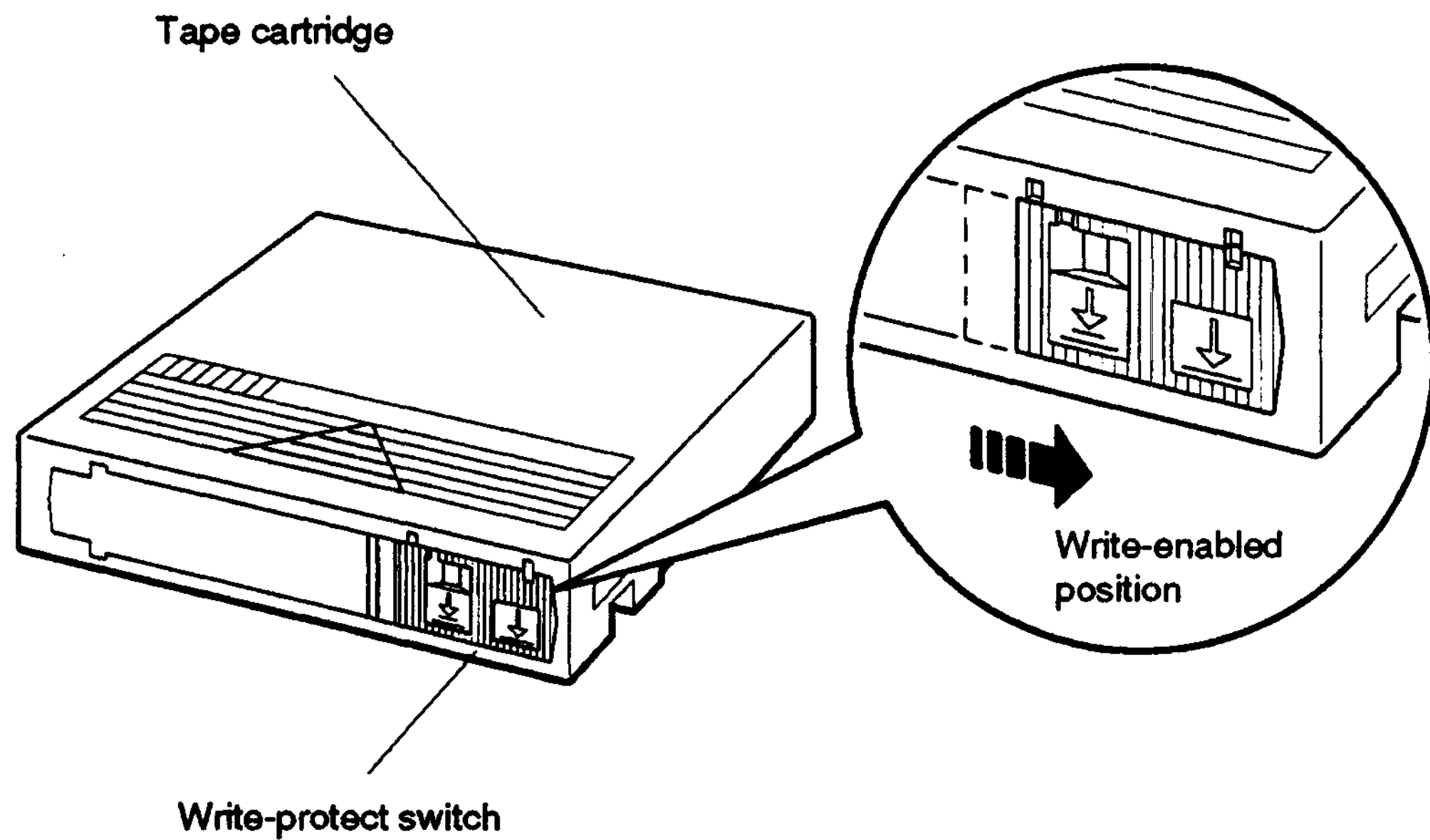
WSEBAI41

Figure C-5. Write-protecting a TZ30 tape cartridge

Write-Enabling a Tape Cartridge

To write data to a cartridge, write-enable it. To do this,

1. Find the write-protect switch on the right side of the front of the cartridge.
2. Slide the switch all the way to the right until the orange dot disappears.



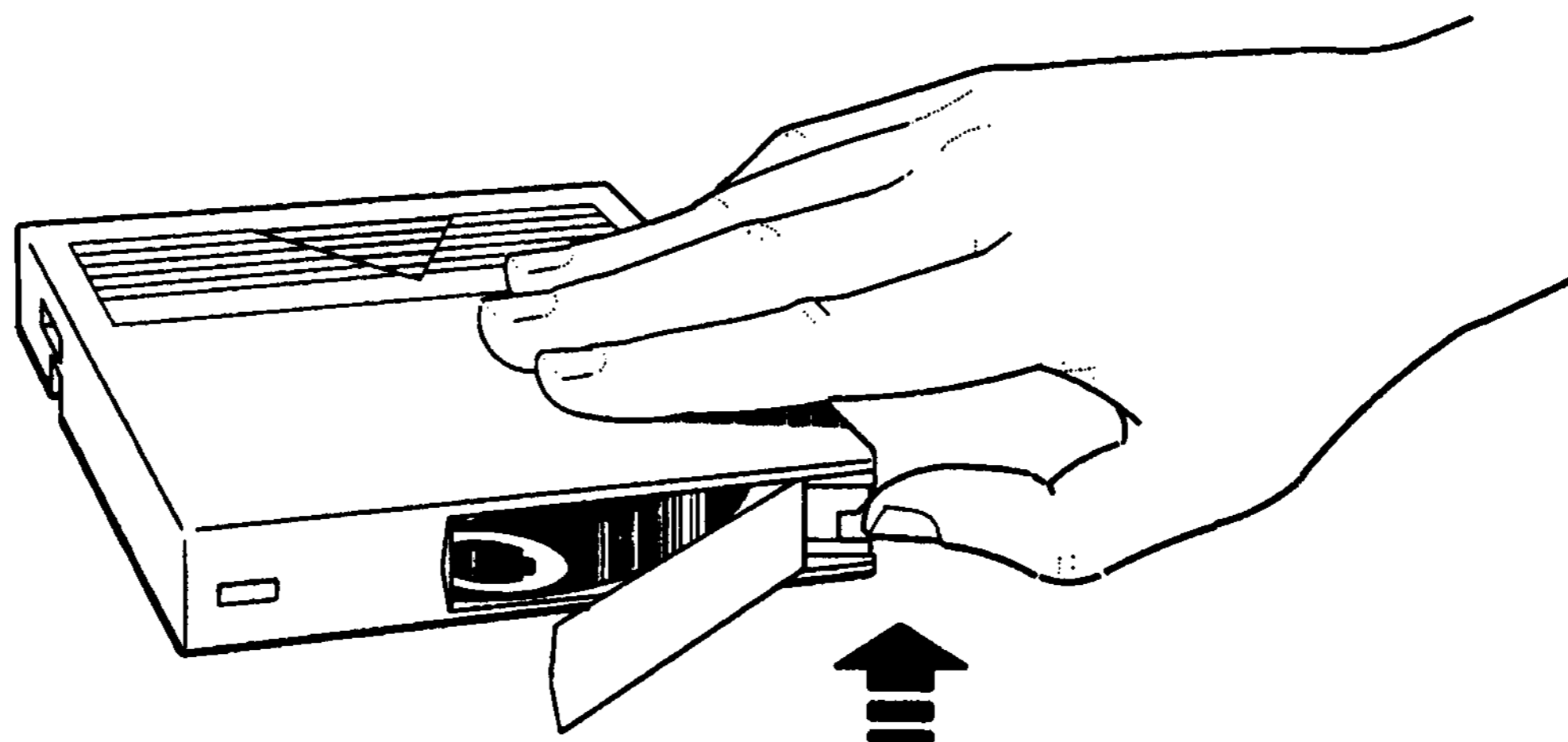
WSEBAI42

Figure C-6. Write-enabling a TZ30 tape cartridge

Inserting a Tape Cartridge Into a Drive

Before using a cartridge, check the position of the tape leader inside it to make sure it is correct.

1. Remove the cartridge from its protective case.
2. Open the door on the back of the cartridge.
 - a. Insert your thumb into the groove on the right corner of the back of the cartridge.
 - b. Press up on the door lock to release it.
 - c. Push the right edge of the door away from you until the door is fully open and you can see the leader.

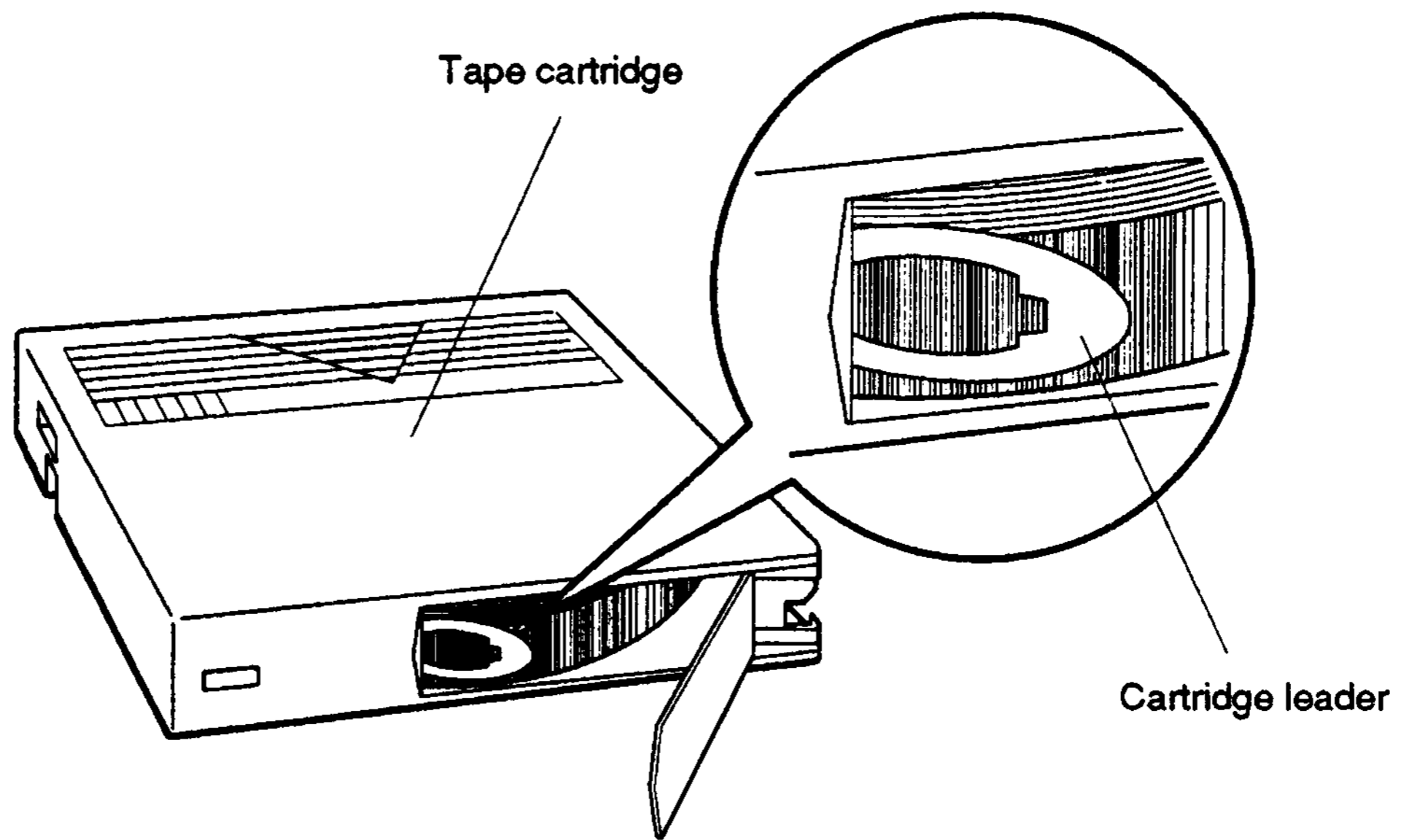


WSEBA139

Figure C-7. Opening the door on a cartridge

3. Be sure the leader is positioned as shown in Figure C-8. If it looks different in any way, use another cartridge.

Caution: *Using a cartridge that has an incorrectly positioned leader can damage your tape drive.*

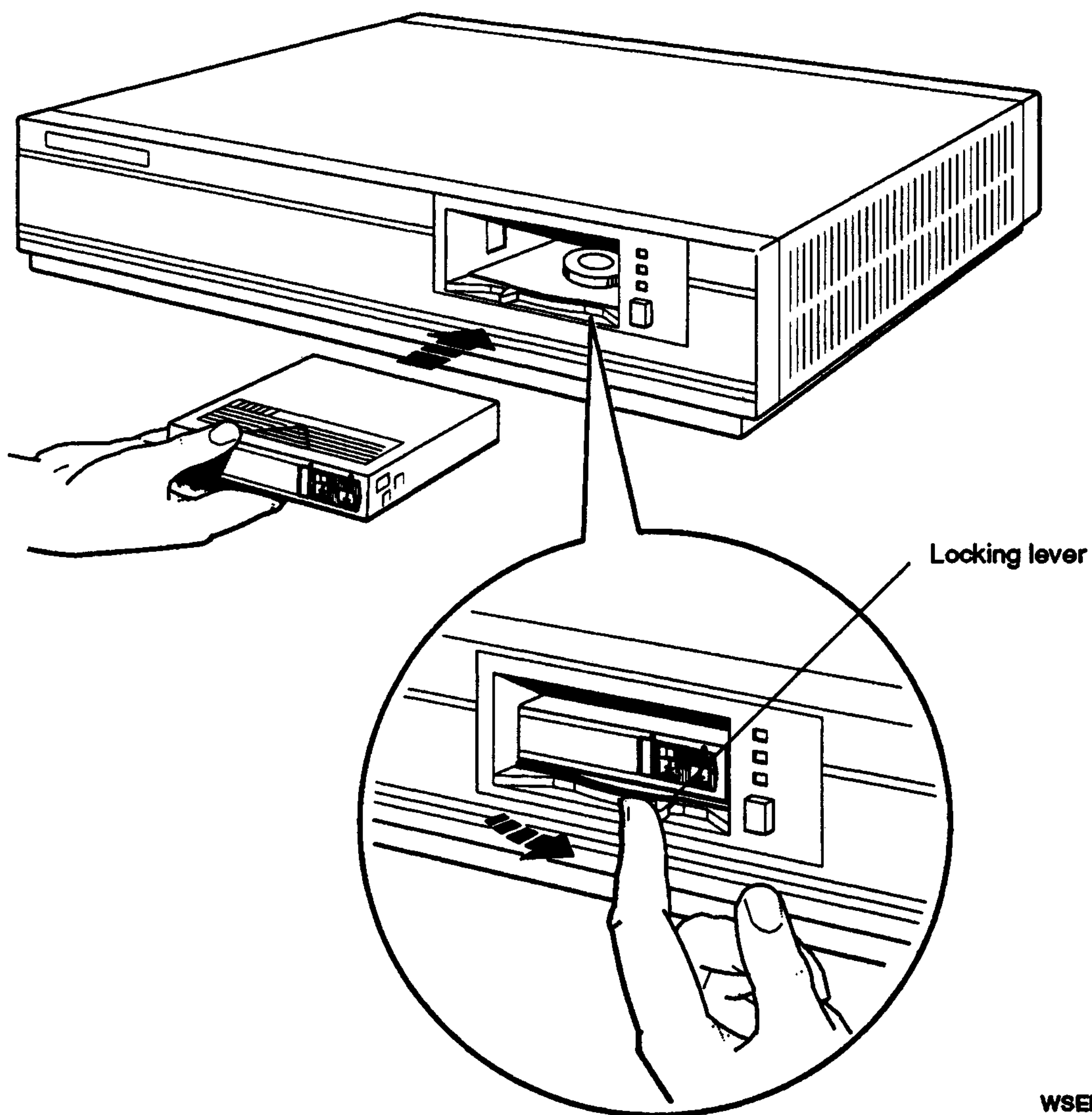


WSEBAI40

Figure C-8. A tape leader positioned correctly in a cartridge

To insert a tape cartridge into the drive,

1. Make sure the system unit is on.
2. The TZ30 operate lever light (green) comes on and a beep sounds.
3. Make sure the lever is to the left in the open position.
4. Insert the tape cartridge into the drive, as shown in Figure C-9.
5. With the cartridge all the way in, slide the lever all the way to the right into the closed position. The green light goes off and the yellow tape-in-use light blinks, indicating that the tape is being loaded.



WSEBA156

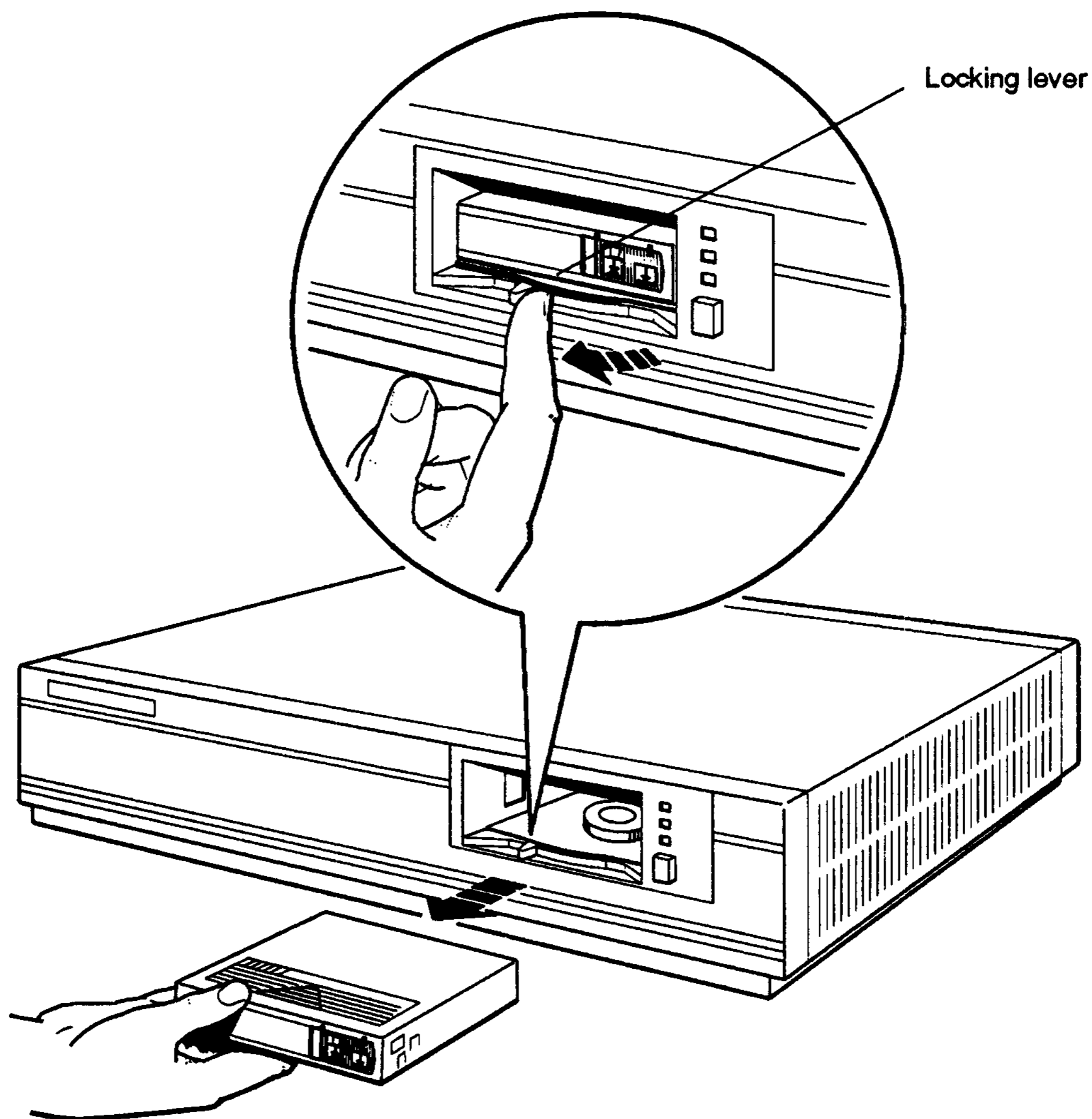
Figure C-9. Inserting a tape cartridge into a TZ30 tape drive

Removing a Tape Cartridge from a Drive

Caution: *The tape cartridge must be removed from a drive before the drive is turned off. Failure to remove the cartridge can result in damage to the cartridge and to the drive.*

To remove a tape cartridge from the drive,

1. Press the unload button. Wait approximately 2 minutes for the tape to rewind.
2. When the green light comes on and the beep sounds, slide the lever to the left. The cartridge ejects. Remove the cartridge, as shown in Figure C-10.



WSEBAI57

Figure C-10. Removing a tape cartridge from a TZ30 tape drive

Handling and Storing Tape Cartridges

Incorrect handling and storing of tape cartridges can damage them and cause loss of data. In turn, damaged cartridges can damage the tape drive. The following precautions should be taken:

- Do not touch the exposed surface of the tape.
- Store tape cartridges in their protective containers.
- Place cartridge labels in the front slide slot to the left of the write-protect switch. Placing labels on the top, bottom, sides, or rear of the cartridge can damage the tape drive.
- Do not drop tape cartridges. Doing so can damage the cartridges.
- Keep cartridges out of extreme temperatures and away from direct sunlight.

RX23 Floppy Disk Drive

The RX23 is a 3-1/2 inch, 1.44-megabyte, half-height floppy disk drive. This appendix tells you how to

- Set SCSI ID switches on the RX23 floppy disk drive
- Attach the internal BA42 expansion box SCSI signal and power cables to the RX23 floppy disk drive
- Use the RX23 floppy disk drive
- Handle and store floppy diskettes

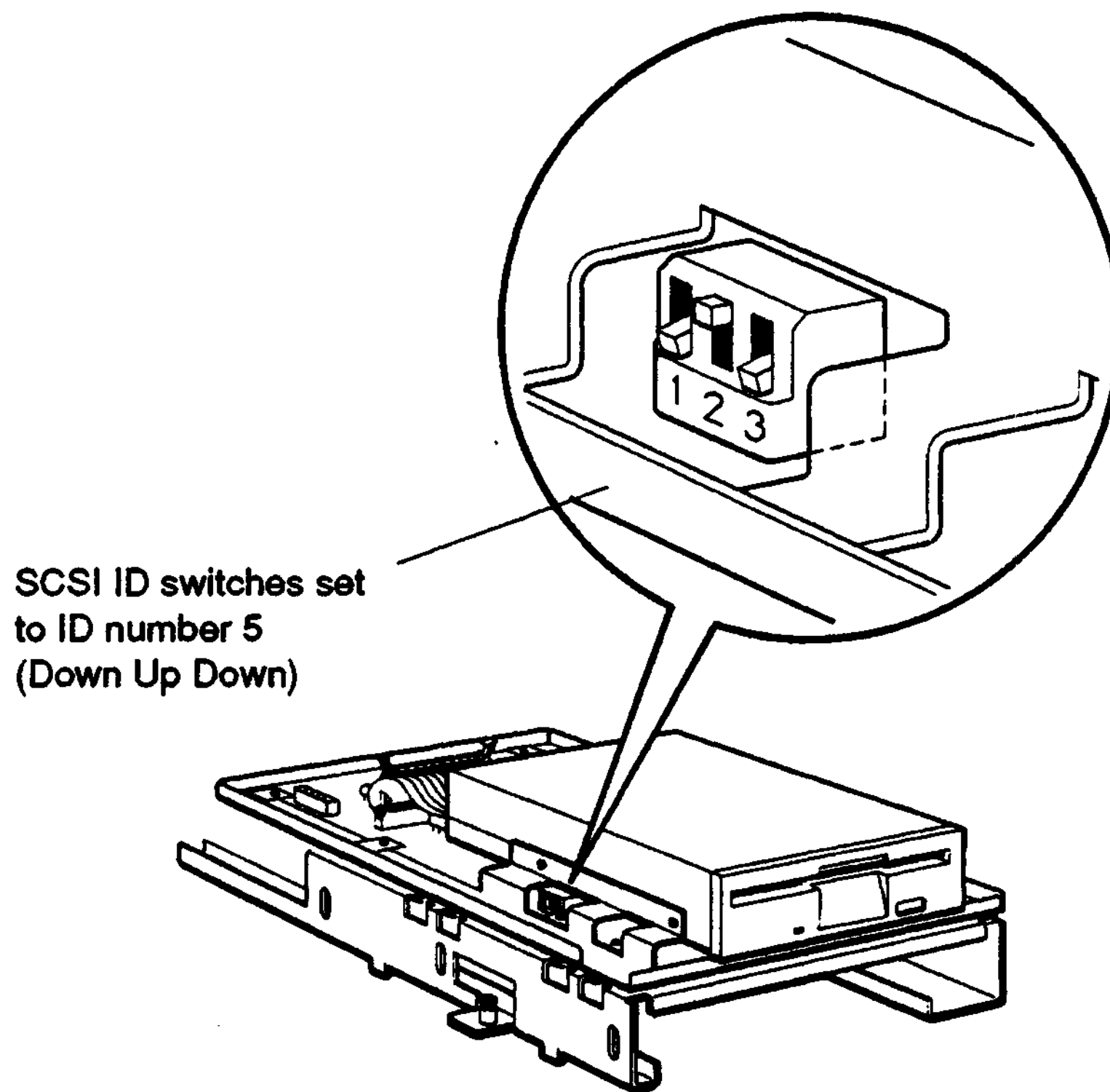
Setting the SCSI ID Switches

SCSI switches for the RX23 floppy disk drive are located on the left side of the drive as you face the front of the drive.

Table D-1 shows the SCSI ID switch settings for the RX23 floppy disk drive. Figure D-1 shows the SCSI ID switches set to ID number 5.

Table D-1. SCSI ID Switch Settings for the RX23 Floppy Disk Drive

SCSI ID Number	Switch Settings		
	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

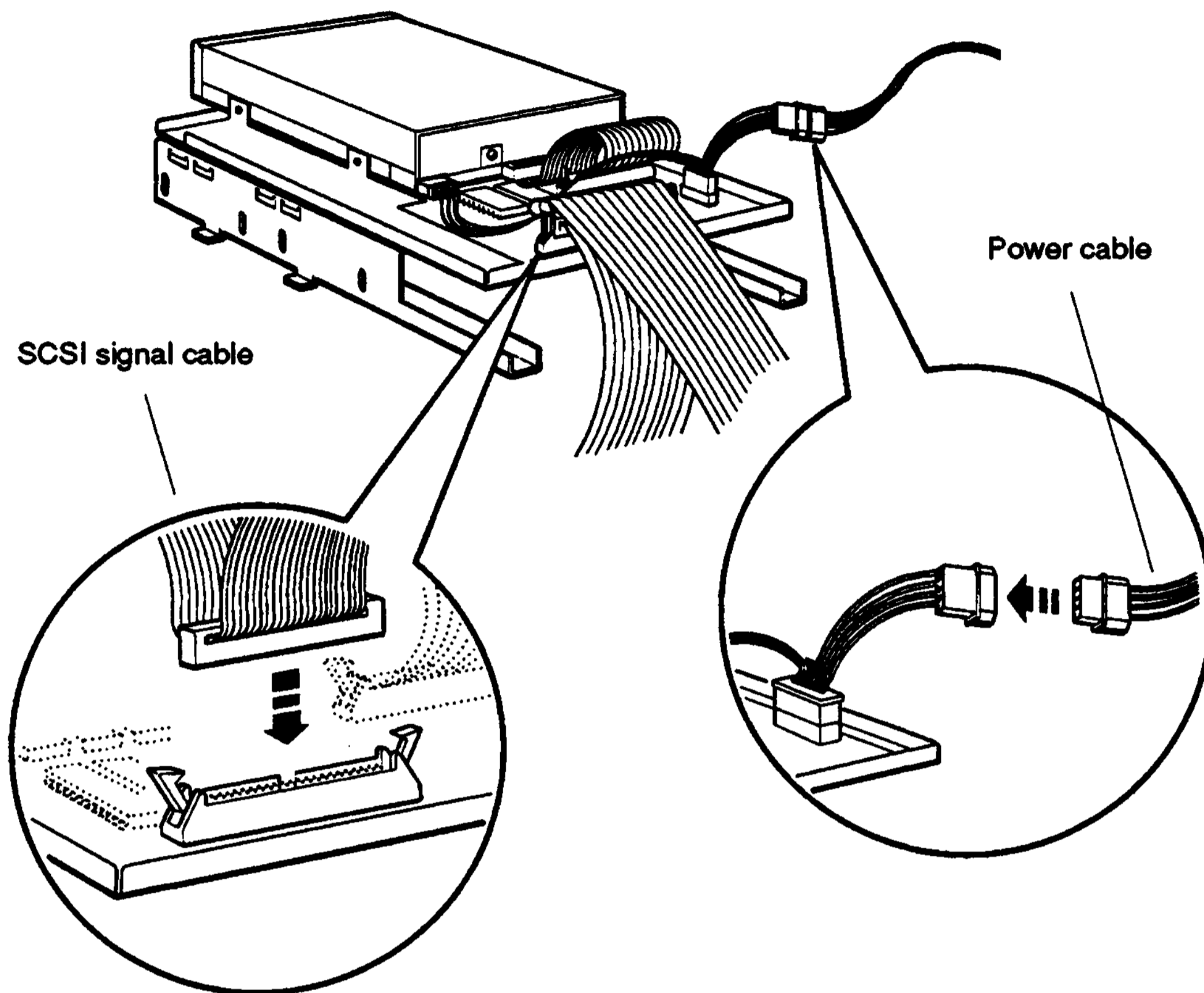


WSEBA134

Figure D-1. SCSI ID switches on the RX23 floppy disk drive

Attaching the Internal Expansion Box Cables to a Drive

Figure D-2 shows how to attach the expansion box internal SCSI signal cable and power cable to an RX23 floppy disk drive.



WSEBA131

Figure D-2. Attaching the internal expansion box cables to an RX23 floppy disk drive

Using an RX23 Floppy Disk Drive

RX23 Floppy Diskette

The RX23 floppy disk drive uses high-density RX23K floppy diskettes. You can identify a high-density diskette by the notches that appear in each lower corner of the diskette. A floppy diskette that has a notch in only one corner is not a high-density diskette.

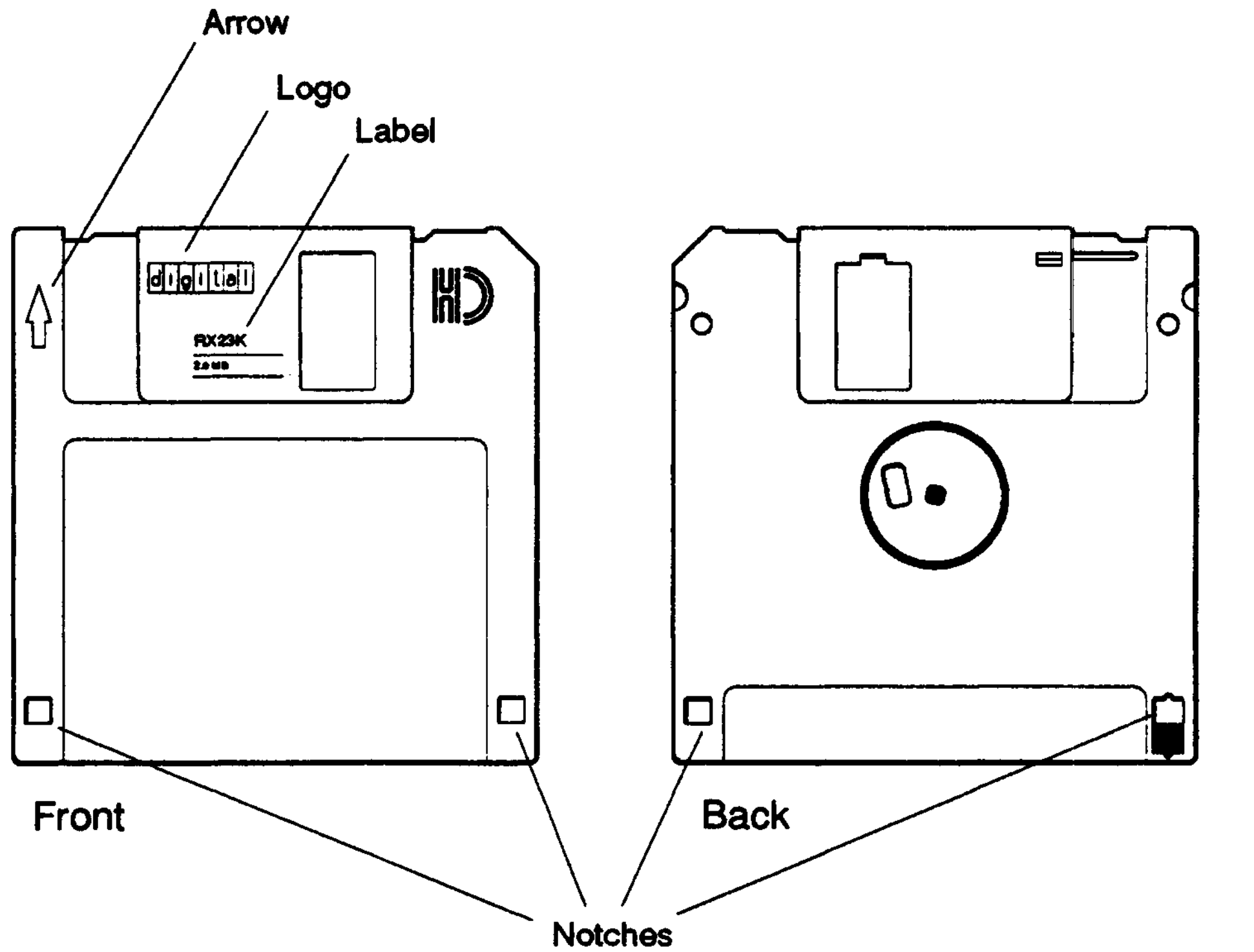
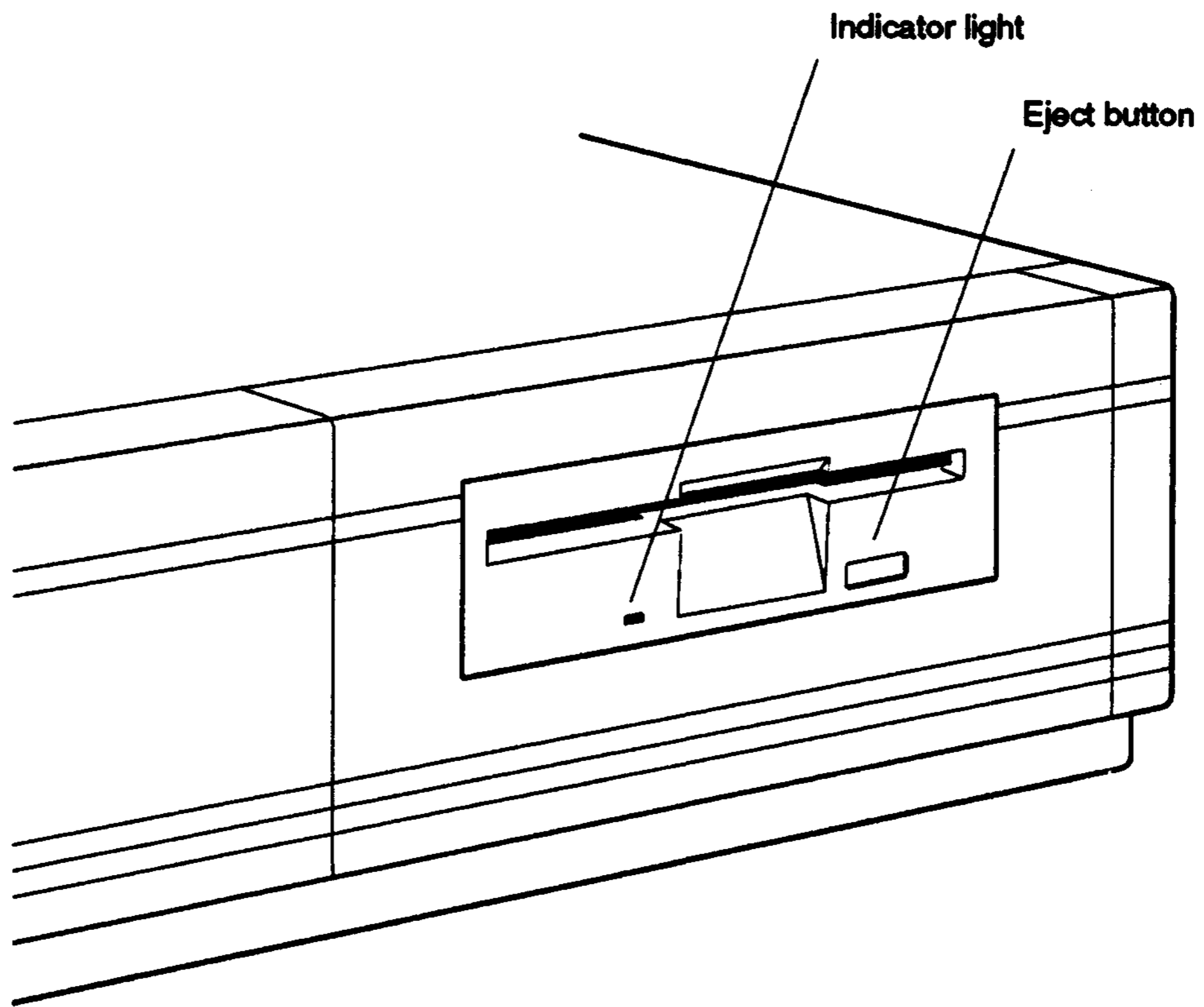


Figure D-3. An RX23 floppy diskette

External Controls and Indicators

Figure D-4 shows the external controls and indicators on the RX23 floppy disk drive.



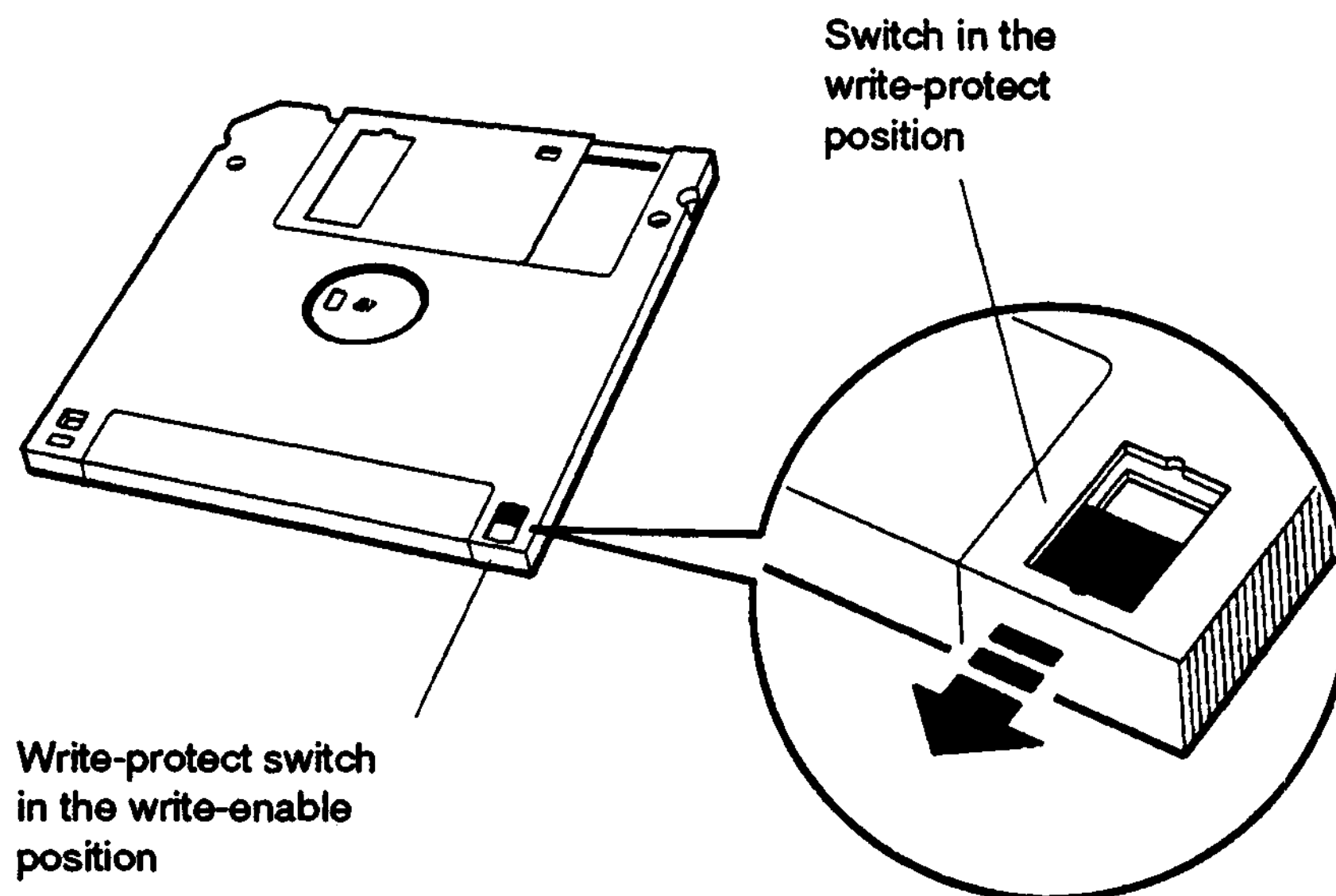
WESBA161

Figure D-4. External controls and indicators on the RX23 floppy disk drive

Write-Protecting a Floppy Diskette

To prevent information on a diskette from being written over, write-protect the diskette. To do this,

1. Find the black write-protect switch in the lower-right corner on the back of the floppy diskette.
2. Move the switch toward the bottom of the floppy diskette until it clicks and locks into place, and a small, square opening appears just above the switch.



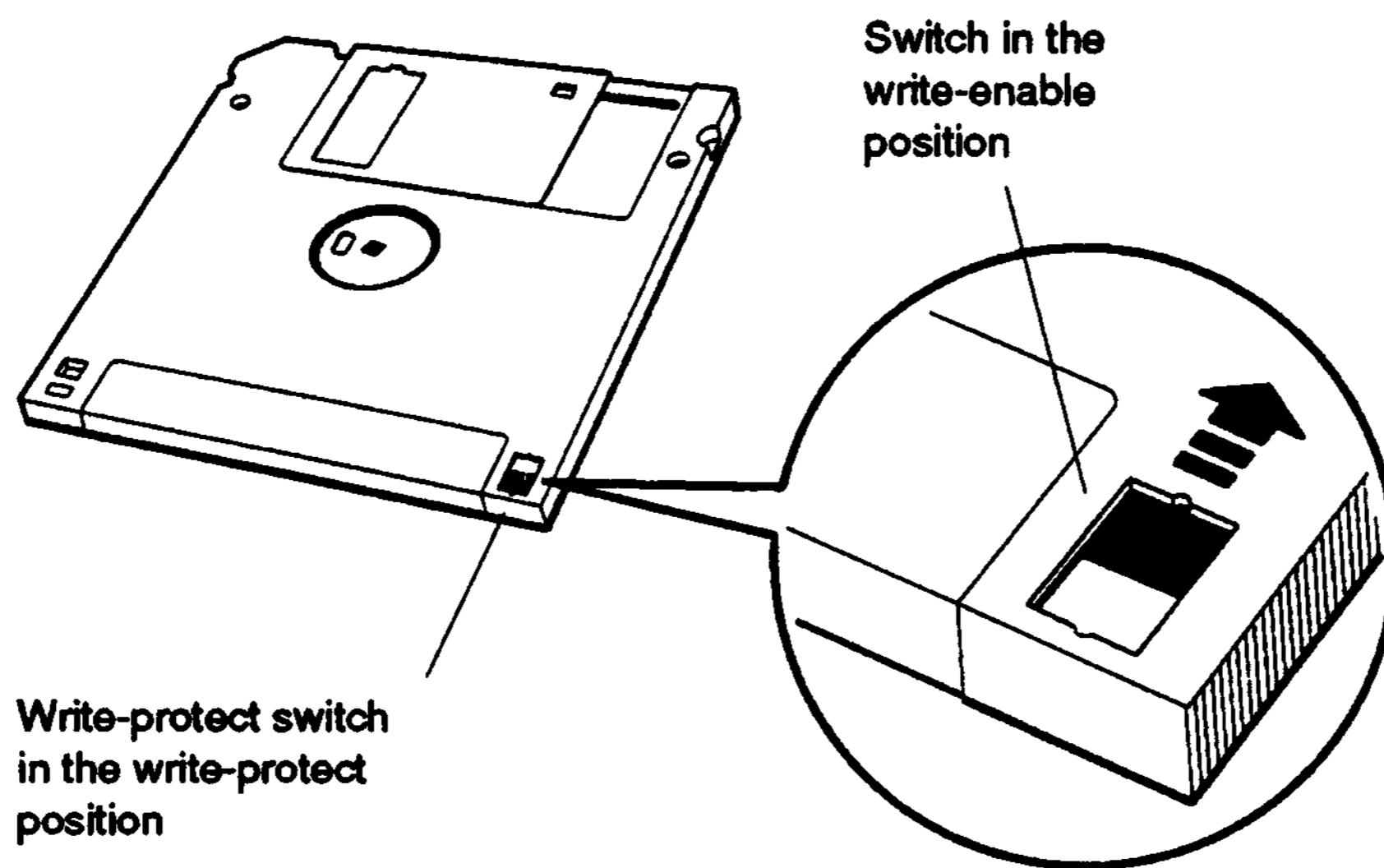
WSEG032

Figure D-5. Write-protecting an RX23 floppy diskette

Write-Enabling a Floppy Diskette

To write data to a diskette, write-enable it. To do this,

1. Find the black write-protect switch in the lower-right corner on the back of the floppy diskette.
2. Move the switch up until the hole in the floppy diskette is closed and the switch clicks and locks into place.



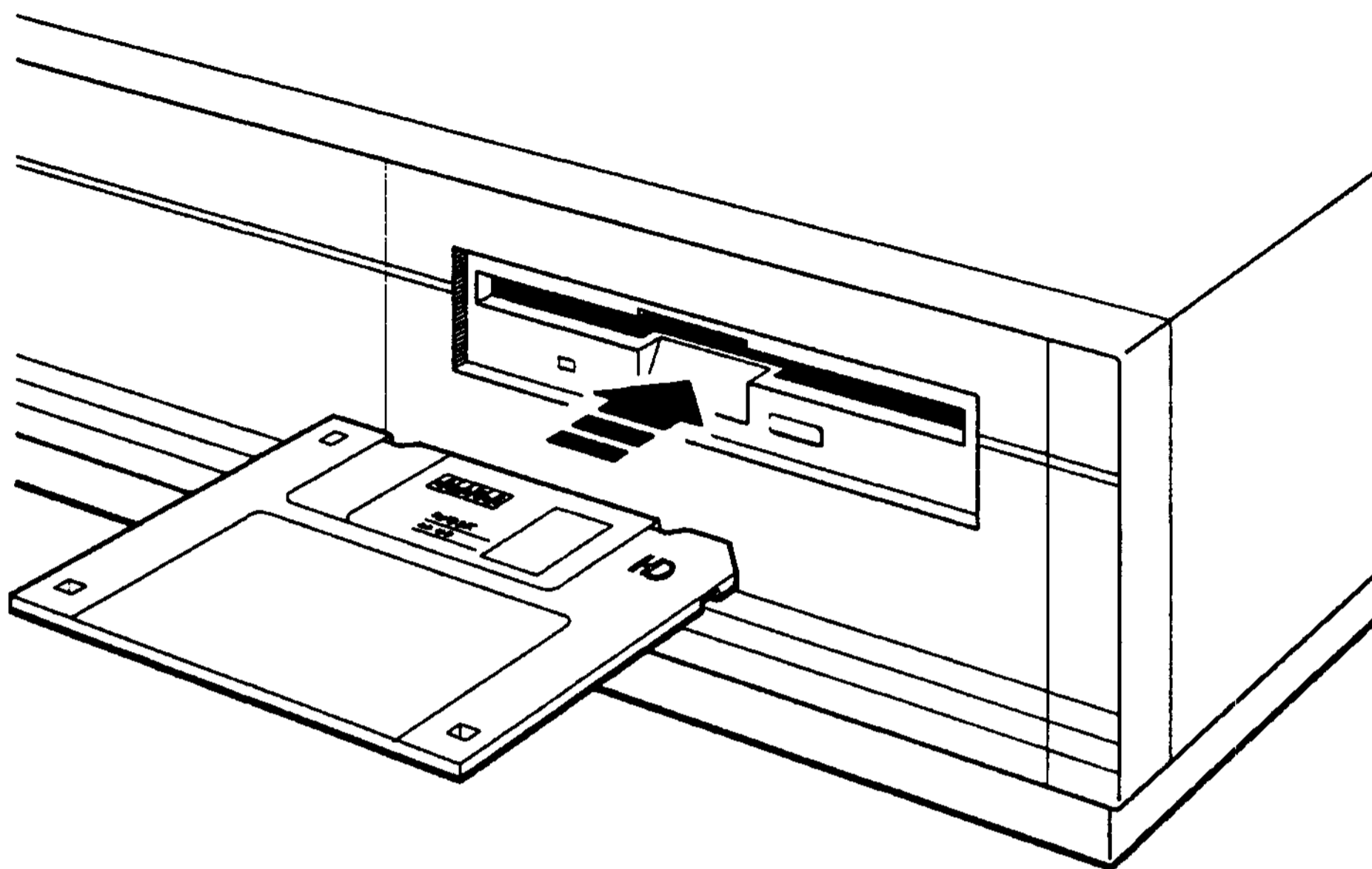
WSEG040

Figure D-6. Write-enabling an RX23 floppy diskette

Inserting a Floppy Diskette into a Drive

To insert a floppy diskette into the drive,

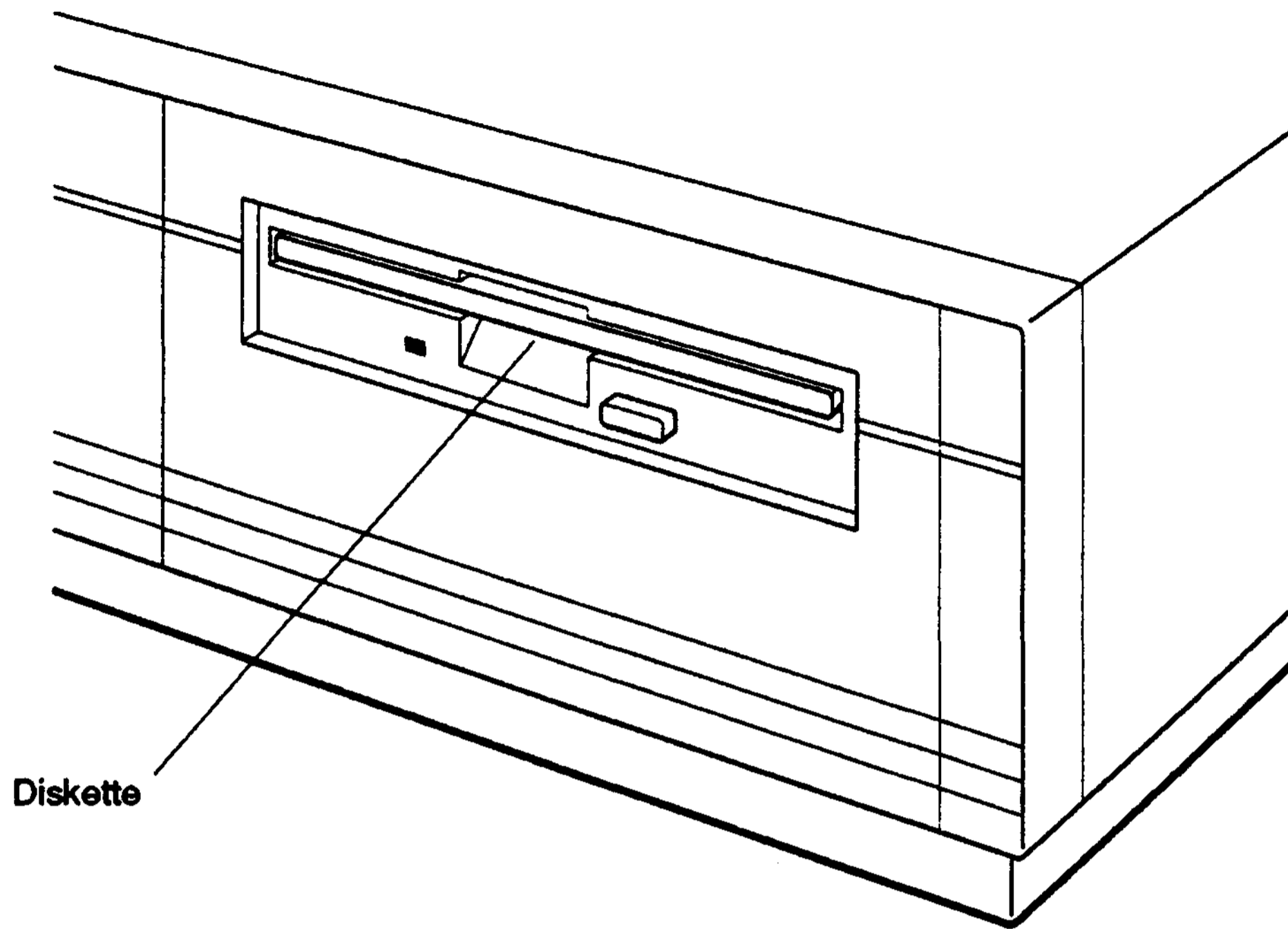
1. Position the floppy diskette so the metal portion on the front of the diskette points to the center of the slot in the drive.



WSEG036

Figure D-7. Inserting a floppy diskette into an RX23 floppy disk drive

2. Gently push the floppy diskette into the slot until it clicks and drops down into place.



WSEG037

Figure D-8. A floppy diskette positioned correctly in an RX23 floppy disk drive

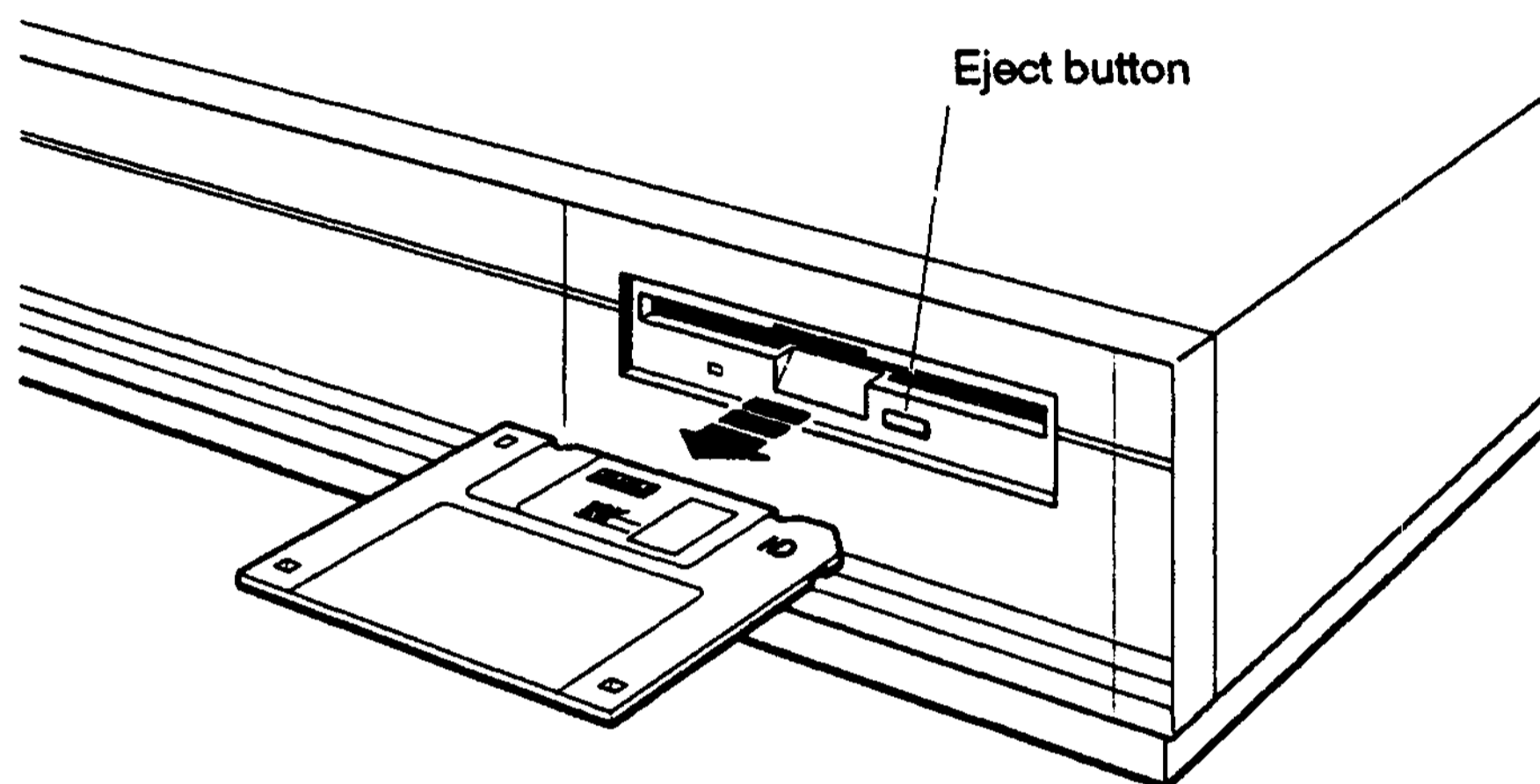
Removing a Floppy Diskette from a Drive

To remove a floppy diskette from the drive,

1. Be sure the indicator light on the front of the drive is not glowing yellow. This shows the drive is still operating.

Caution: Removing a floppy diskette from a drive while the indicator light glows yellow can damage the floppy diskette and the drive.

2. Press the eject button on the lower-right corner of the drive.
3. Pull the diskette out of the drive.



WSEG038

Figure D-9. Removing a floppy diskette from an RX23 floppy disk drive

Handling and Storing Floppy Diskettes

Incorrect handling and storing of floppy diskettes can damage them and cause loss of data. In turn, damaged diskettes can damage the disk drive. The following precautions should be taken:

- **Keep diskettes dry.**
- **Keep diskettes out of extreme temperatures and away from direct sunlight.**
- **Store floppy diskettes away from magnetic fields, such as those produced by motors, transformers, and video terminals and monitors.**

RX33 Floppy Disk Drive

The RX33 is a 5-1/4 inch, 1.2-megabyte, half-height floppy disk drive. This appendix tells you how to

- Set SCSI ID switches on the RX33 floppy disk drive
- Attach the internal BA42 expansion box SCSI signal and power cables to the RX33 floppy disk drive
- Use the RX33 floppy disk drive
- Handle and store floppy diskettes
- Format diskettes in the RX33 floppy disk drive

Setting the SCSI ID Switches

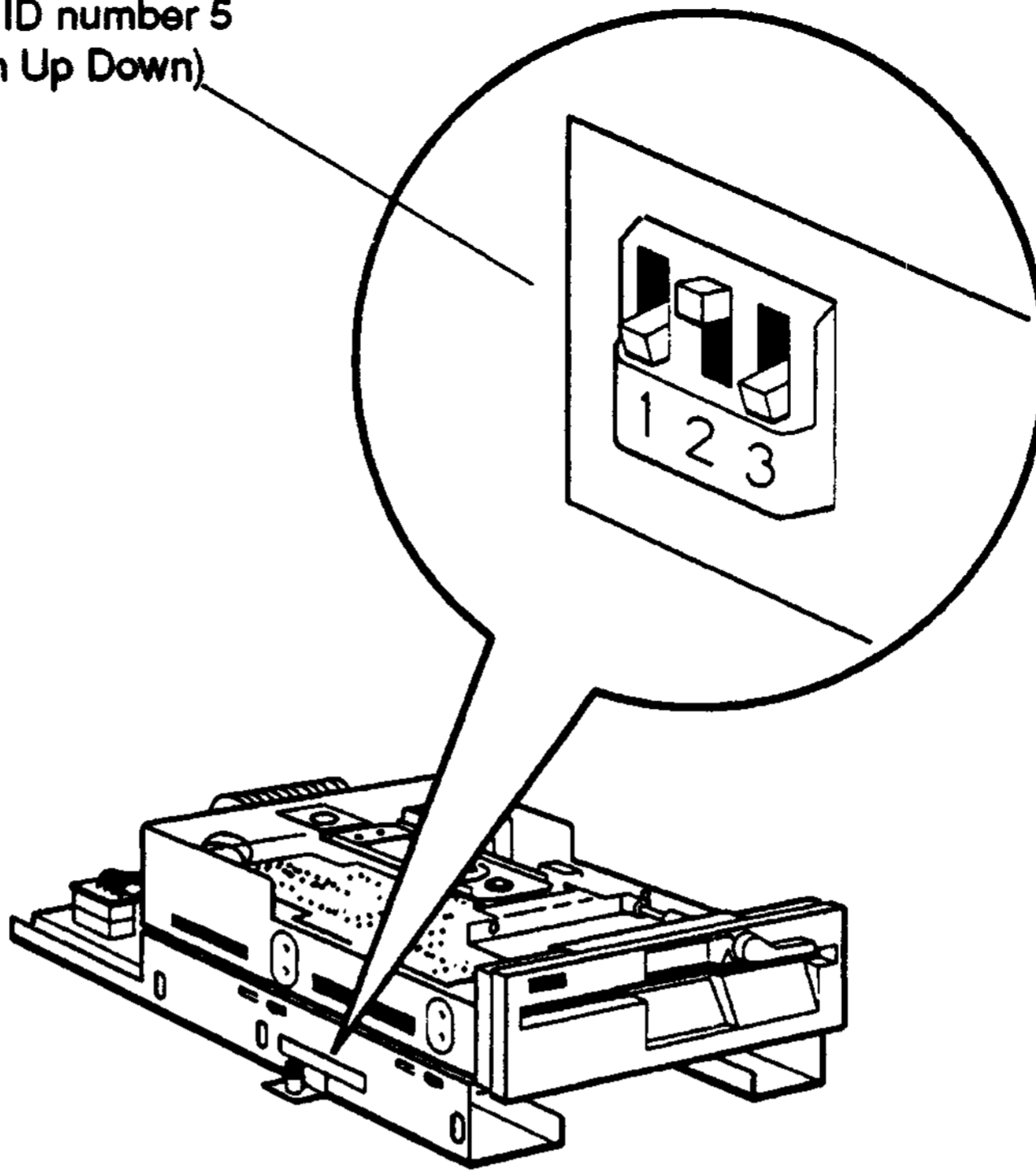
SCSI switches for the RX33 floppy disk drive are located inside the bracket on the left side of the drive as you face the front of the drive.

Table E-1 shows the SCSI ID switch settings for the RX33 floppy disk drive. Figure E-1 shows the SCSI ID switches set to ID number 5.

Table E-1. SCSI ID Switch Settings for the RX33 Floppy Disk Drive

SCSI ID Number	Switch Settings		
	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

SCSI ID switches
set to ID number 5
(Down Up Down)

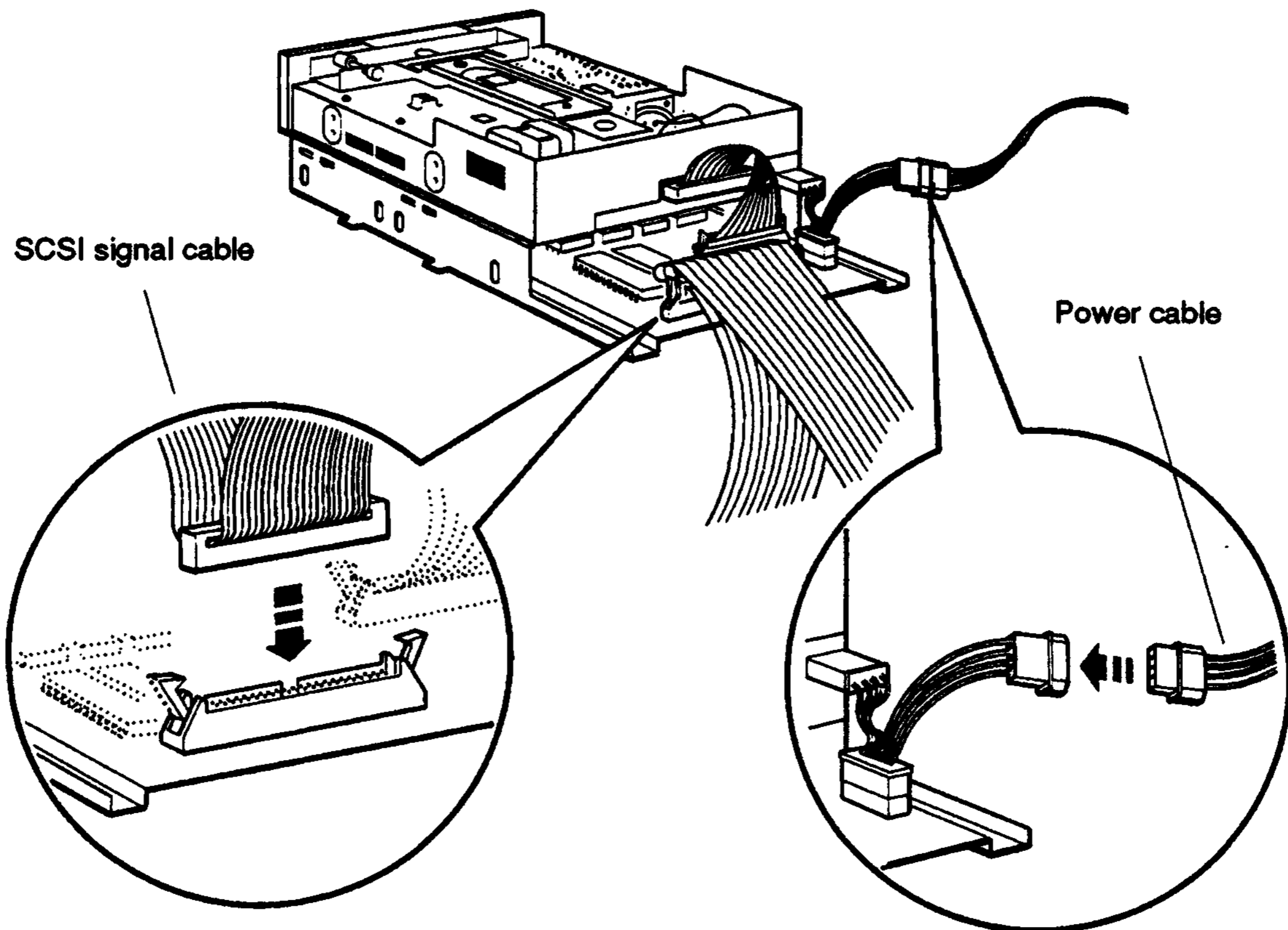


WSEBAI21

Figure E-1. SCSI ID switches on the RX33 floppy disk drive

Attaching the Internal Expansion Box Cables to a Drive

Figure E-2 shows how to attach the expansion box internal SCSI signal cable and power cable to an RX33 floppy disk drive.



WSEBAI32

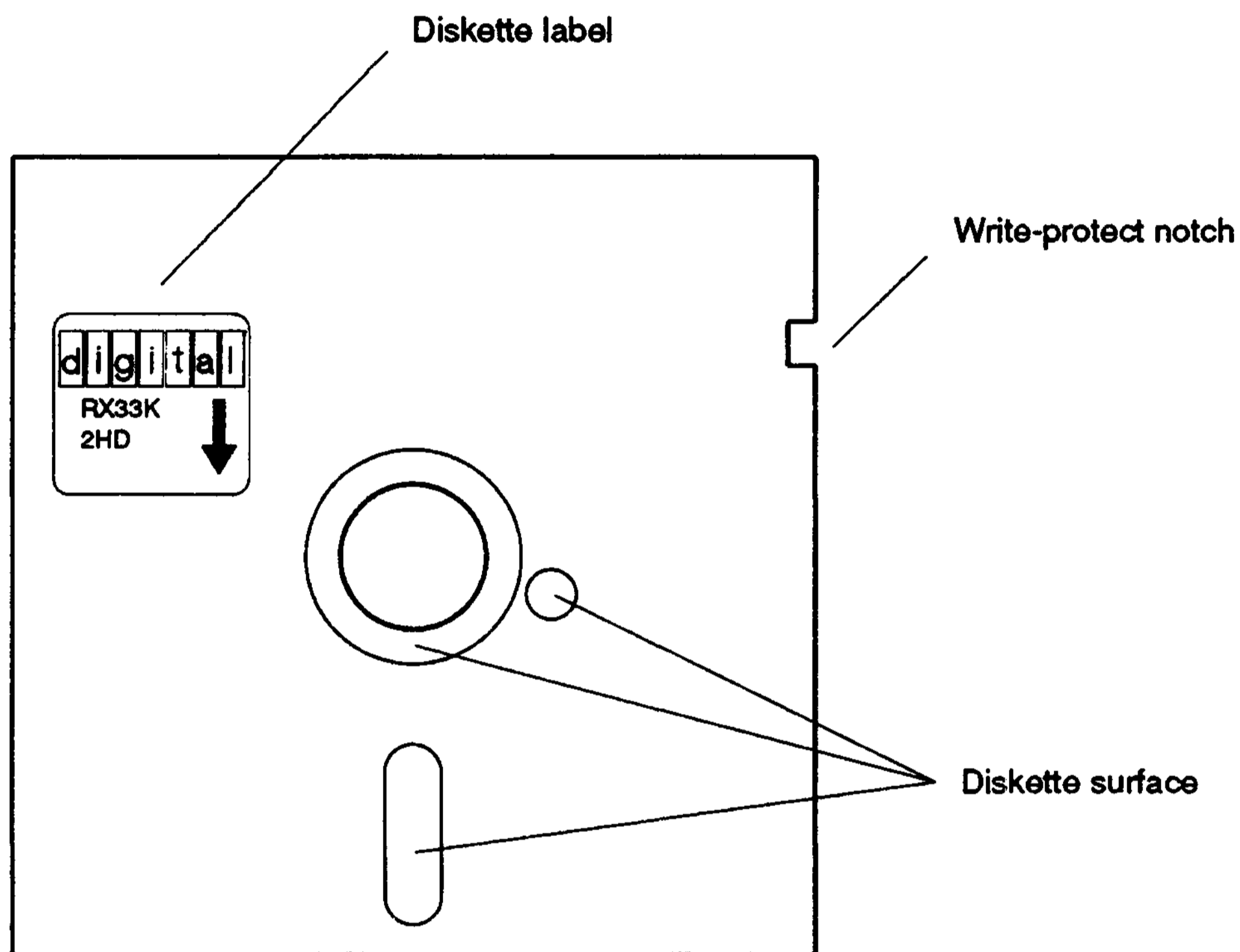
Figure E-2. Attaching the internal expansion box cables to an RX33 floppy disk drive

Using an RX33 Floppy Disk Drive

RX33 Floppy Diskette

The RX33 floppy disk drive uses double-sided, high-density, removable RX33K floppy diskettes.

Caution: *Touching the diskette surface where it shows through its cover can damage the diskette.*

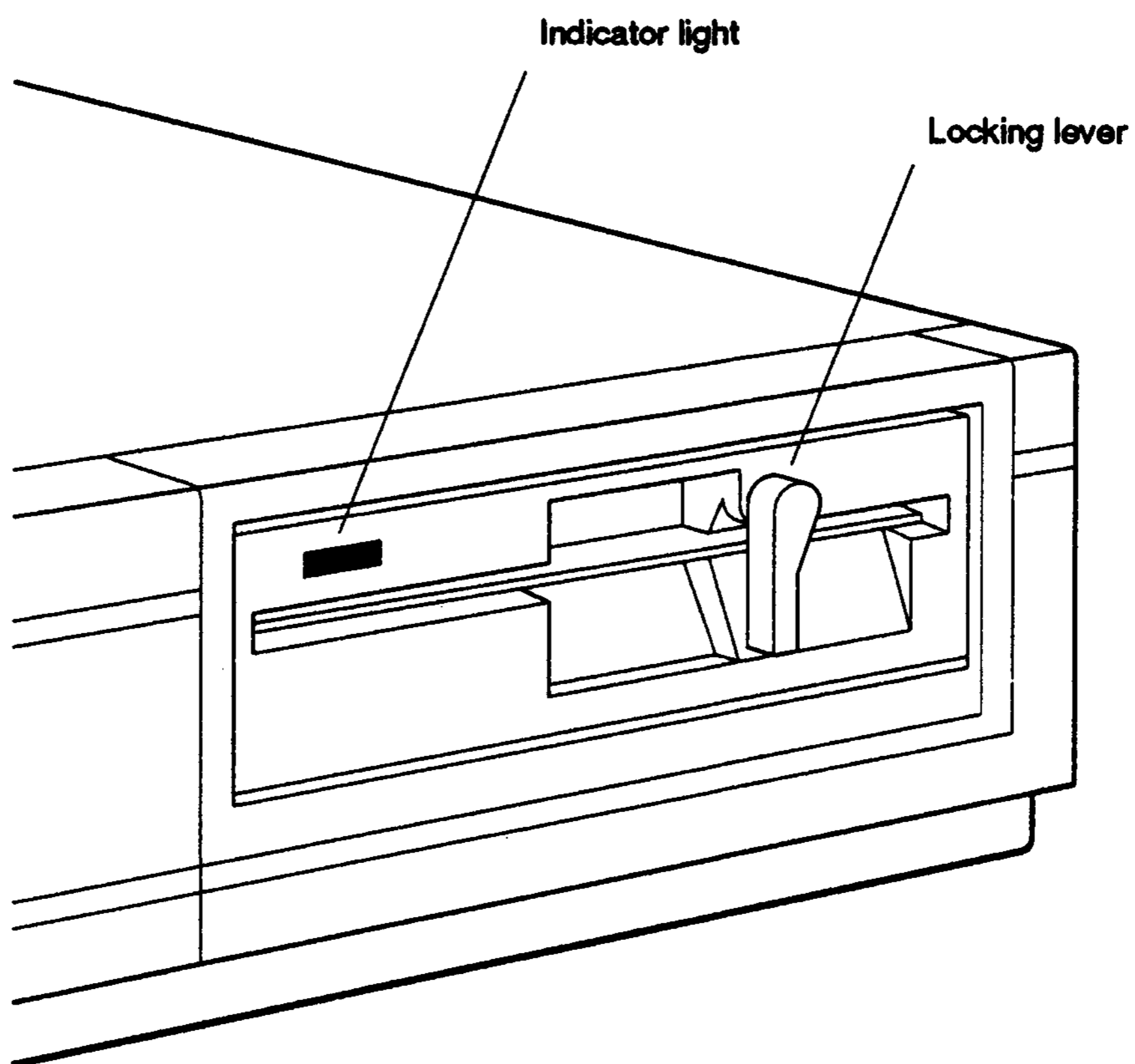


WSEBAI54

Figure E-3. An RX33 floppy diskette

External Controls and Indicators

Figure E-4 shows the external controls and indicators on the RX33 floppy disk drive.

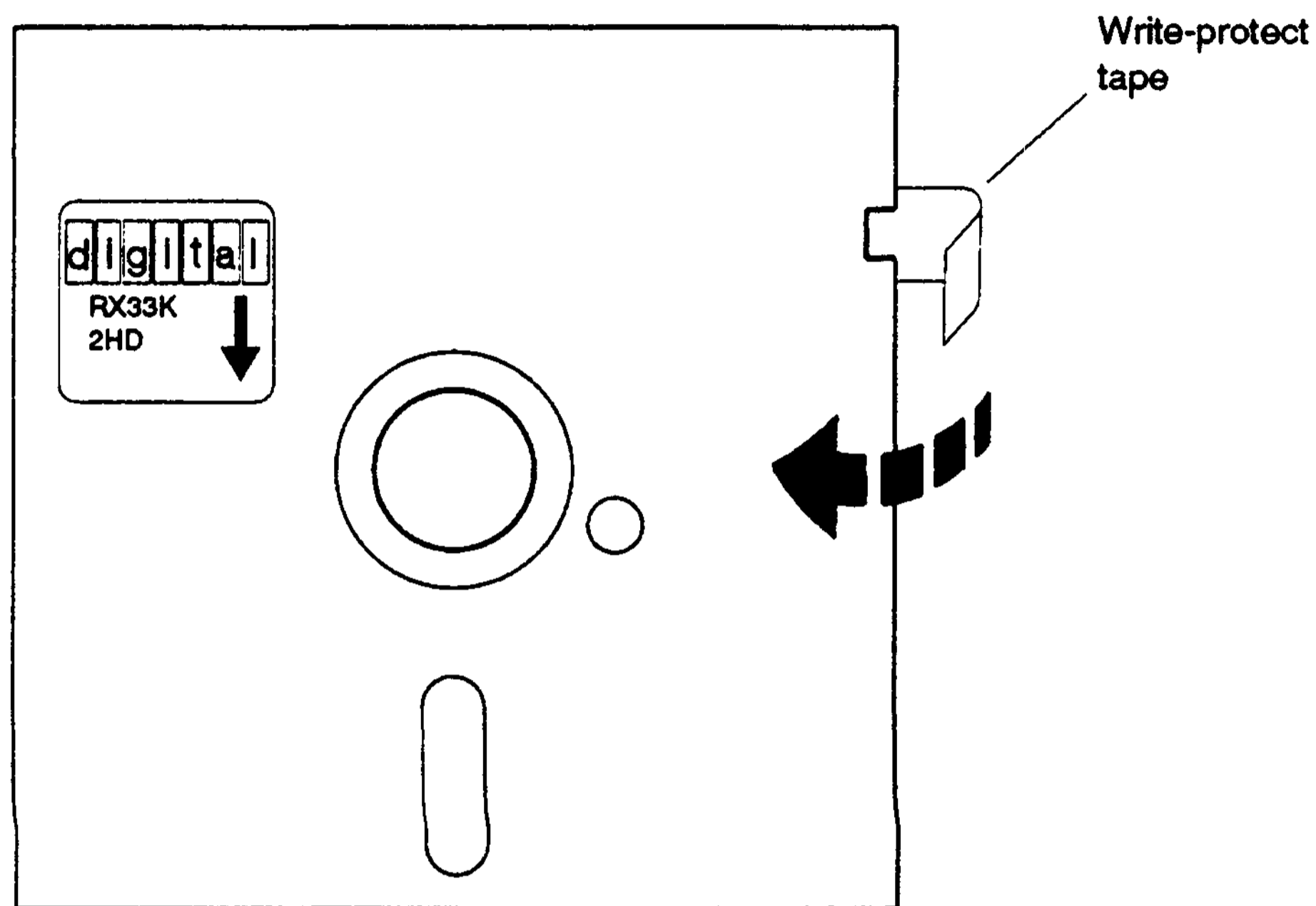


WSEBA162

Figure E-4. External controls and indicators on the RX33 floppy disk drive

Write-Protecting a Floppy Diskette

To prevent information on a diskette from being written over, write protect it. To do this, cover the write-protect notch on the side of the diskette with write-protect tape supplied with your floppy diskettes.



WSEBA155

Figure E-5. Write-protecting an RX33 floppy diskette

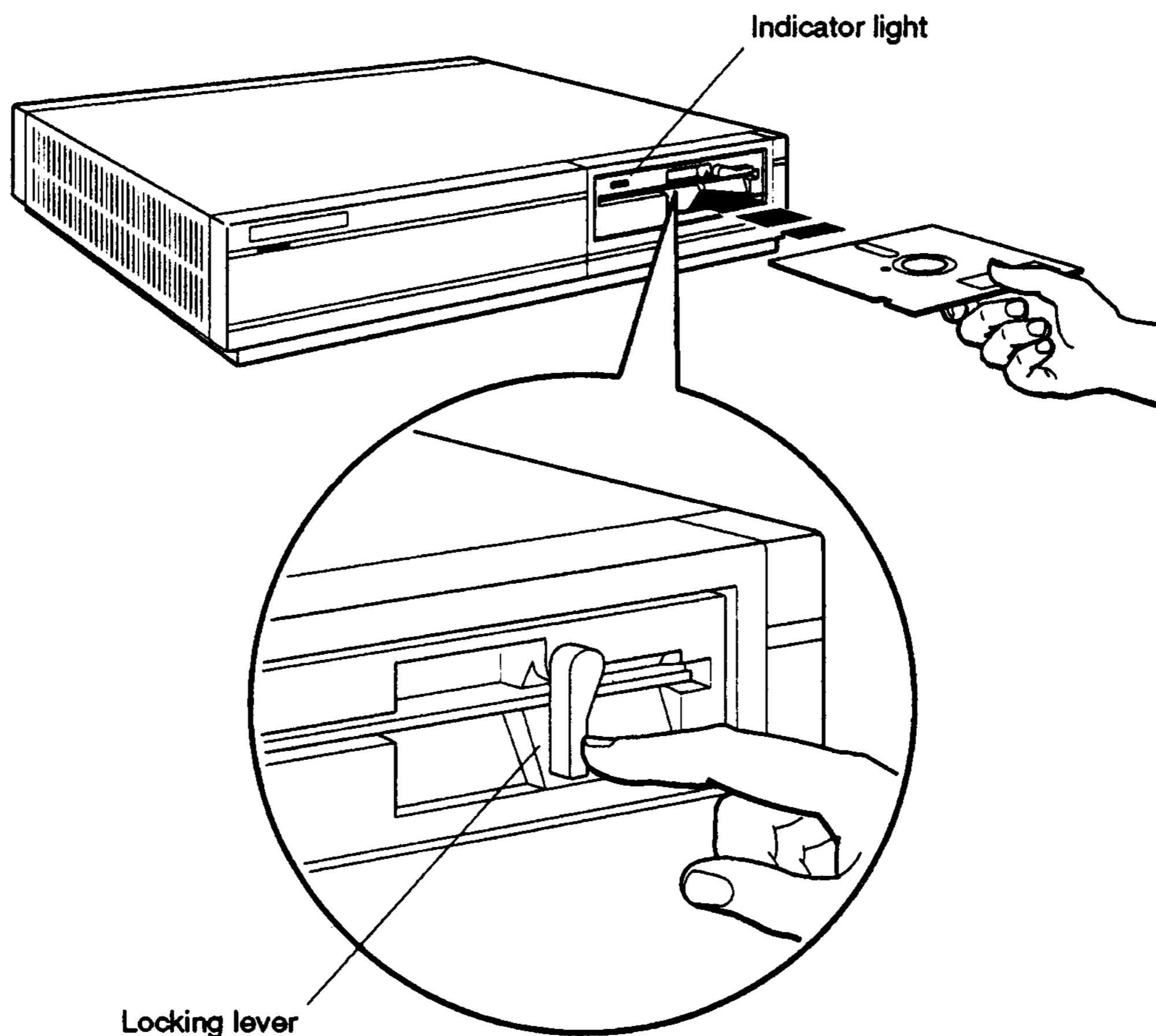
Write-Enabling a Floppy Diskette

To write data to a diskette, write-enable it by peeling off the write-protect tape from the write-protect notch on the diskette.

Inserting a Floppy Diskette into a Drive

To insert a floppy diskette into the drive,

1. Position the diskette so that the arrow on the diskette label is pointing towards the slot opening in the drive.
2. Push the diskette all the way into the slot until it stops.
3. Move the lever clockwise to its vertical position.



WSEBA152

Figure E-6. Inserting a floppy diskette into an RX33 floppy disk drive

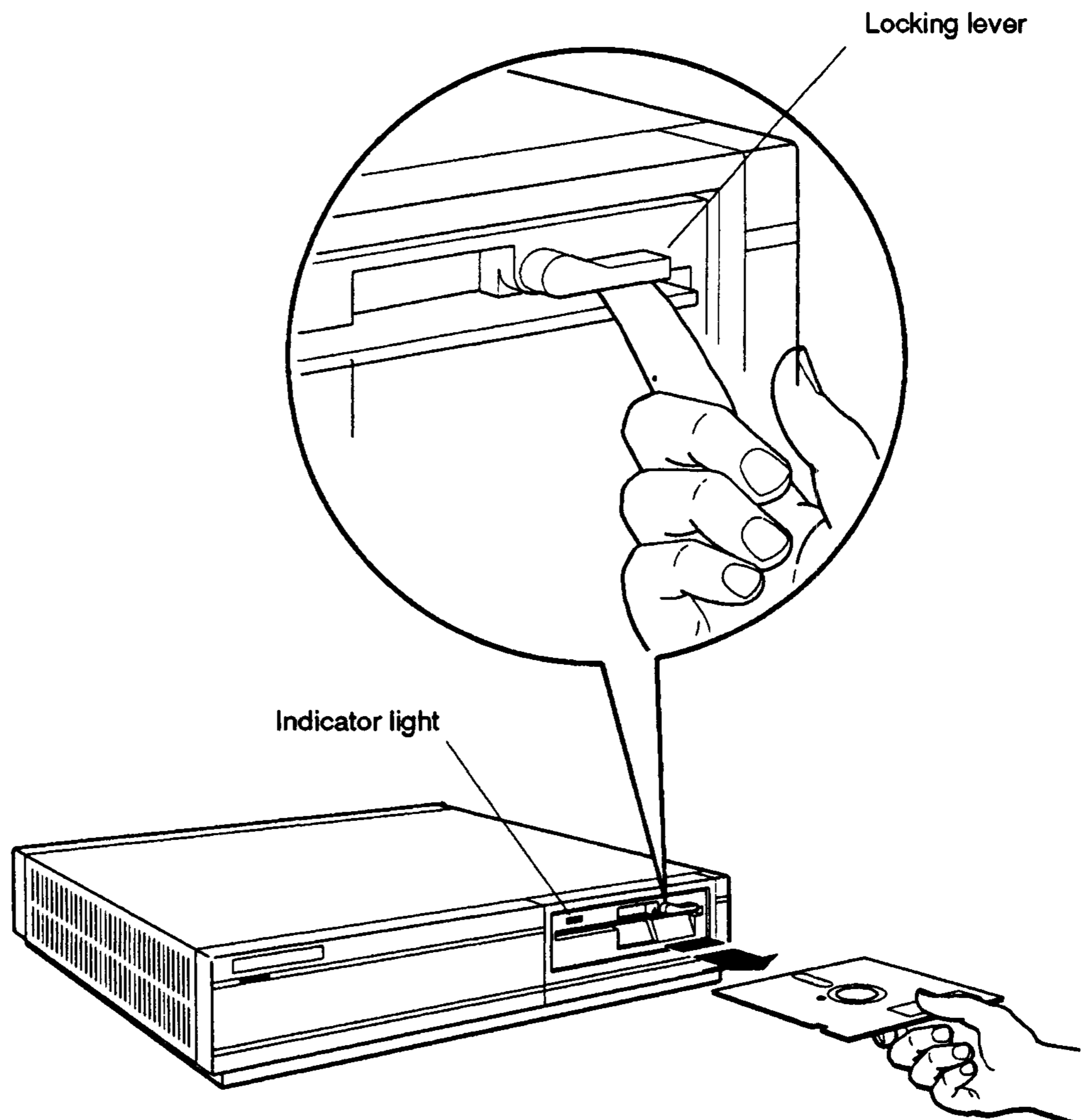
Removing a Floppy Diskette from a Drive

To remove a floppy diskette from the drive,

1. Check the light on the front of the drive. If the light glows red, the drive is active. Do not attempt to remove a diskette when the drive is active, or the diskette may be damaged.

Note: If during software installation, the light remains lit when the drive is not active, follow the instructions in your software documentation.

2. Once the light is off, move the lever to the horizontal position and remove the diskette.



WSEBA153

Figure E-7. Removing a floppy diskette from an RX33 floppy disk drive

Handling and Storing Floppy Diskettes

Incorrect handling and storing of floppy diskettes can damage them and cause loss of data. In turn, damaged floppy diskettes can damage the disk drive. Take the following precautions:

- Keep floppy diskettes in paper envelopes when not in use.
- Do not fold or bend floppy diskettes.
- Do not touch the exposed surface of floppy diskettes. Handle only the top label area.
- Store floppy diskettes vertically. To prevent warping, avoid packing them tightly.
- Use only a felt-tip pen when labeling floppy diskettes. The pressure of a sharp instrument, such as a pencil or pen, can damage diskette surfaces.
- Keep diskettes out of extreme temperatures and away from direct sunlight.
- Store floppy diskettes away from magnetic fields, such as those produced by motors, transformers, and video terminals and monitors.

Formatting RX33 Floppy Diskettes

Each new RX33 floppy diskette must be formatted and initialized before it can be used.

The following pages tell you how to format RX33 floppy diskettes when using VMS or ULTRIX.

Using VMS

To format and initialize RX33 floppy diskettes using VMS, do the following:

1. Insert the RX33 floppy diskette into the disk drive.
2. Enter the following command at the VMS \$ prompt:

initialize/density=double

Note: This command may fail the first time. Repeat the command if you receive an error message or if you receive a message that the device you are using is offline.

Refer to the VMS documentation set for additional information on the initialize/density=double command.

Using ULTRIX Version 4.1 or Higher

Note: If you are using a version of ULTRIX prior to ULTRIX Version 4.1, turn to page E-13 for instructions.

To format and initialize RX33 floppy diskettes using ULTRIX Version 4.1 or higher, use the following rzdisk utility program.

For the purposes of this discussion we will assume that your drive has been installed as special device file rrz5. Use whatever address is convenient and available on your system.

To format a diskette,

1. Insert an RX33 floppy diskette into the drive.
2. Type the command line **rzdisk -f /dev/rrz5c** at the ULTRIX prompt and press Return to invoke the rzdisk utility program.

The indicator light on the front of the drive will glow red as the drive accesses the diskette. In a few moments, the following format option menu will appear on your screen:

Please enter one of the following format options:

- 1 - 1.44MB 3.5" HD diskette (18 sector, 80 cylinder, 2 head)
- 2 - 720KB 3.5" DD diskette (9 sector, 80 cylinder, 2 head)
- 3 - 1.2MB 5.25" HD DISKETTE (15 sector, 80 cylinder, 2 head)
- 4 - 400KB 5.25" SD DISKETTE (10 sector, 80 cylinder, 1 head)
- 5 - 360KB 5.25" SD DISKETTE (9 sector, 40 cylinder, 2 head)
- 6 - OTHER FORMAT TYPE (you supply format parameters)
- 7 - CANCEL FORMAT OPERATION

Format type:

3. Select option 3 to format an RX33K HD diskette. Enter it at the prompt, and press Return. Your system will then format the diskette.

Note: Use options 4 or 5 to format single density diskettes.

When the formatting operation is complete, use the ULTRIX `newfs` command to build the file system on the diskette. Type **`newfs -n /dev/rrz5c rx33`** at the prompt and press Return.

The following is sample output received as a result of applying this command to a diskette that has a 1.2MB, 15 sector-per-track layout:

```
Warning: missing disk partition table
/dev/rrz5c: 2400 sectors in 80 cylinders of 2 tracks, 15 sectors
          1.2Mb in 5 cyl groups (16 c/g, 0.25Mb/g, 32 i/g)
super-block backups (for fsck -b#) at:
          32, 528, 992, 1488, 1952,
```

Using Versions of ULTRIX Prior to ULTRIX Version 4.1

To format and initialize RX33 floppy diskettes using versions of ULTRIX prior to ULTRIX Version 4.1, use the following rzdisk utility program.

For the purposes of this discussion we will assume that your drive has been installed as special device file rrz5. Use whatever address is convenient and available on your system.

To format a diskette,

1. Insert an RX33 floppy diskette into the drive.
2. Type the command line **rzdisk -f /dev/rrz5c** at the ULTRIX prompt and press Return to invoke the rzdisk utility program.

The indicator light on the front of the drive will glow red as the drive accesses the diskette. In a few moments, the following format option menu will appear on your screen:

Please enter one of the following format options:

- 1 - 1.44MB 3.5" HD diskette (18 sector, 80 cylinder, 2 head)
- 2 - 720KB 3.5" DD diskette (9 sector, 80 cylinder, 2 head)
- 3 - OTHER FORMAT TYPE (you supply format parameters)
- 4 - CANCEL FORMAT OPERATION

Format type:

3. Select option 3 for "other format type."

The following series of prompts for information appear on the screen:

- Number of sectors
- Number of heads
- Number of cylinders
- Number of step pulses per cylinder
- Transfer rate (kbits per second)

Refer to the following table when answering the prompts.

Media Type	Formatted Capacity	Number of Sectors	Number of Heads	Number of Cylinders	Number of Step Pulses per Cylinder	Transfer Rate (kblts per second)
HD	1.2 Mbytes	15	2	80	0	500
HD	720 Kbytes	9	2	80	0	250
HD/DD	360 Kbytes	9	2	40	0	250
HD/DD	400 Kbytes	10	2	40	0	250

When the formatting operation is complete, use the ULTRIX `newfs` command to build the file system on the disk. Type **`newfs -n /dev/rrz5c rx33`** at the prompt and press Return.

The following is sample output received as a result of applying this command to a diskette that has a 1.2MB, 15 sector-per-track layout:

```
Warning: missing disk partition table
/dev/rrz5c: 2400 sectors in 80 cylinders of 2 tracks, 15 sectors
          1.2Mb in 5 cyl groups (16 c/g, 0.25Mb/g, 32 i/g)
super-block backups (for fsck -b#) at:
          32, 528, 992, 1488, 1952,
```

TZK10 QIC Tape Drive

The TZK10 QIC (quarter-inch cartridge) tape drive is a half-height, 5 1/4-inch streaming tape drive. This appendix tells you how to

- Set SCSI ID jumpers on the TZK10 QIC tape drive
- Attach the internal BA42 expansion box SCSI signal and power cables to the TZK10 QIC tape drive
- Use the TZK10 QIC tape drive
- Handle and store tape cartridges

Setting the SCSI ID Jumpers

Instead of SCSI ID switches, the TZK10 QIC tape drive uses jumpers inserted on pins inside the middle connector on the back of the drive to determine the SCSI ID number for 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 of pins is reserved for drive select ID 2, the eighth set for ID 1, and the ninth set for ID 0.

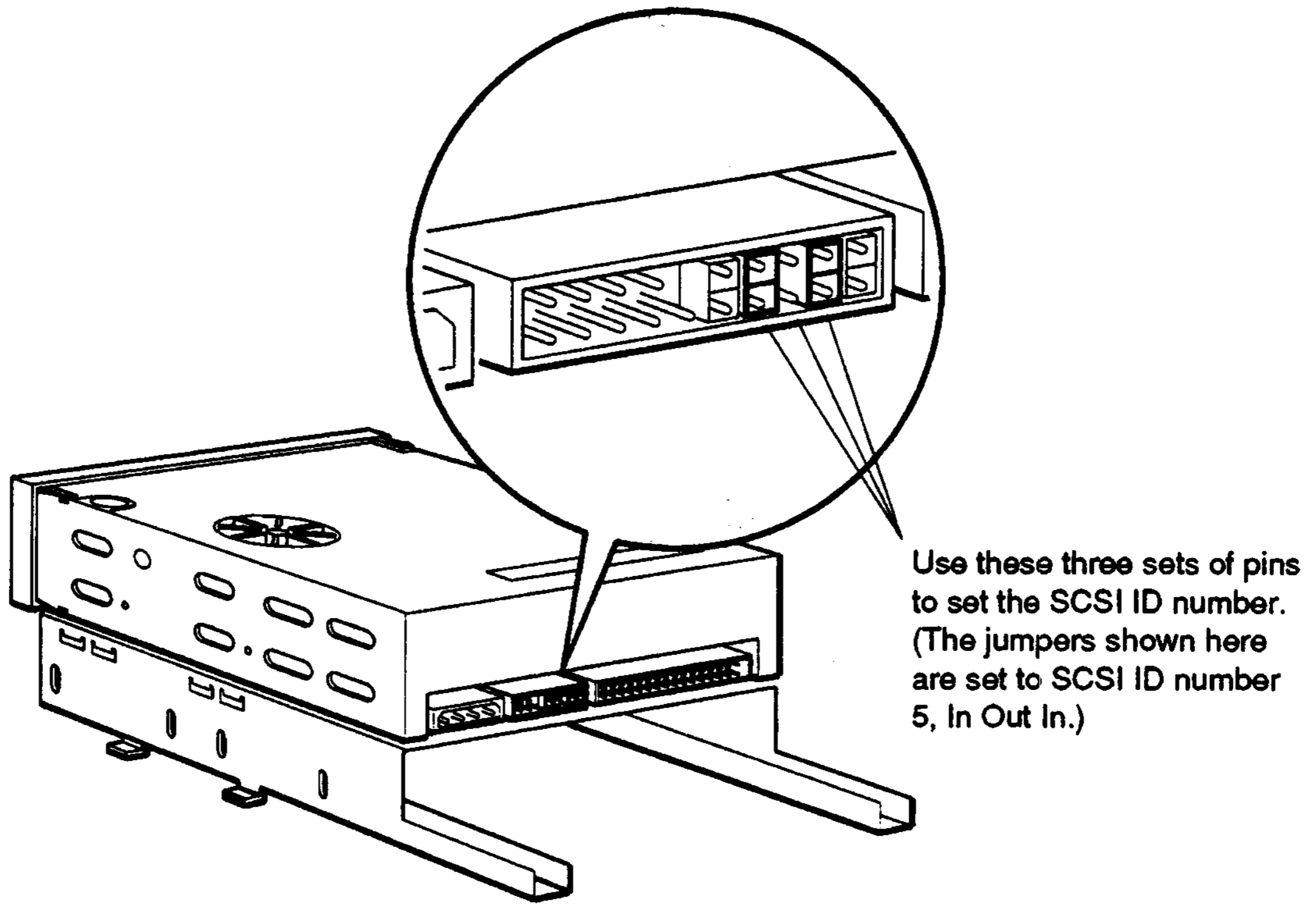
Note: Jumpers located on the sixth and last sets of pins should always be set to the in position. These jumpers are not related to setting the SCSI ID.

Table F-1 shows the SCSI ID jumper settings for the TZK10 QIC tape drive.

Figure F-1 shows the SCSI ID jumpers set to SCSI ID number 5.

Table F-1. SCSI ID Jumper Settings for the TZK10 QIC Tape Drive

SCSI ID Number	ID 2 Jumper	ID 1 Jumper	ID 0 Jumper
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

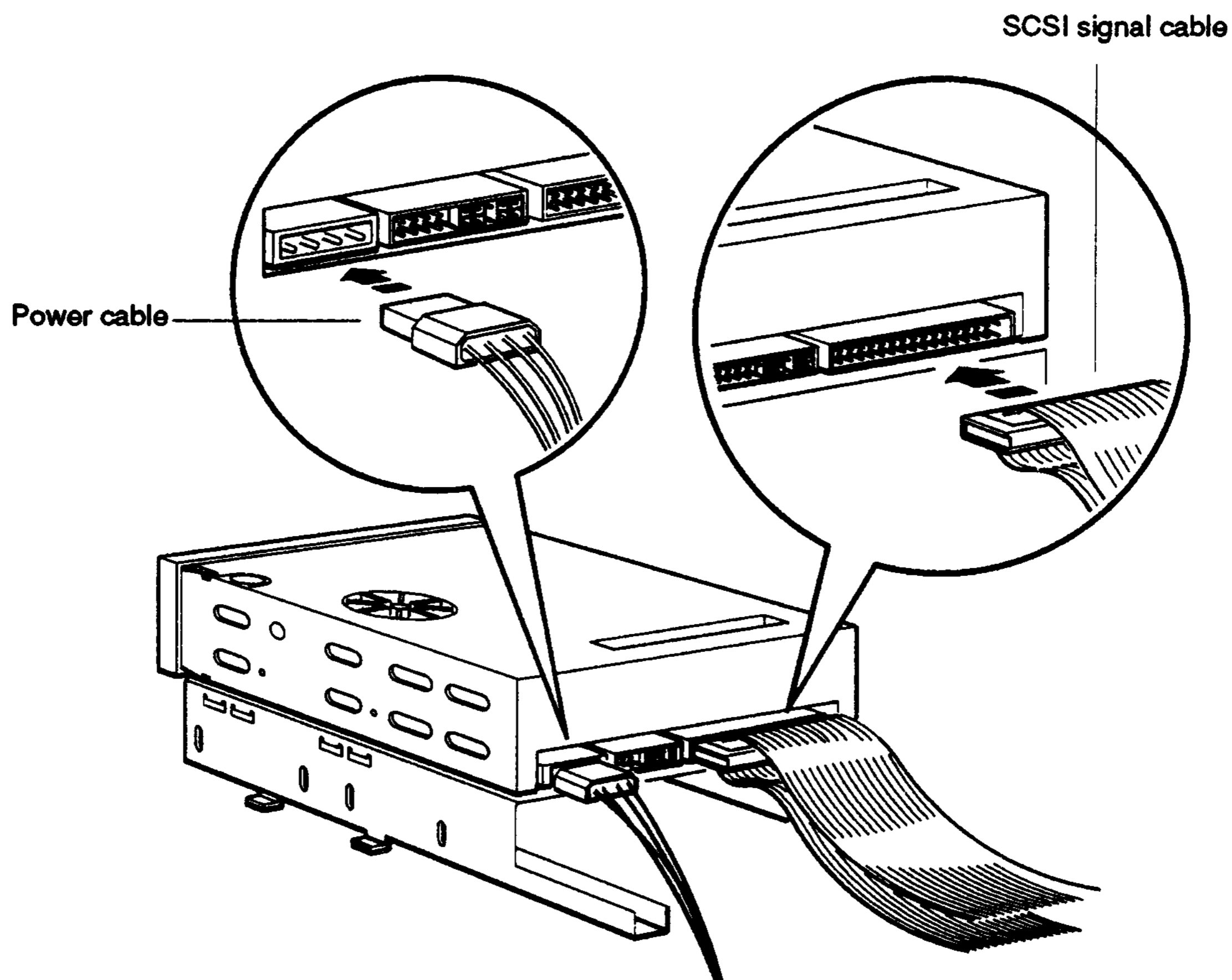


WSEBA165

Figure F-1. SCSI ID jumpers on the TZK10 QIC tape drive

Attaching the Internal Expansion Box Cables to a Drive

Figure F-2 shows how to attach the expansion box internal SCSI signal cable and power cable to a TZK10 QIC tape drive.



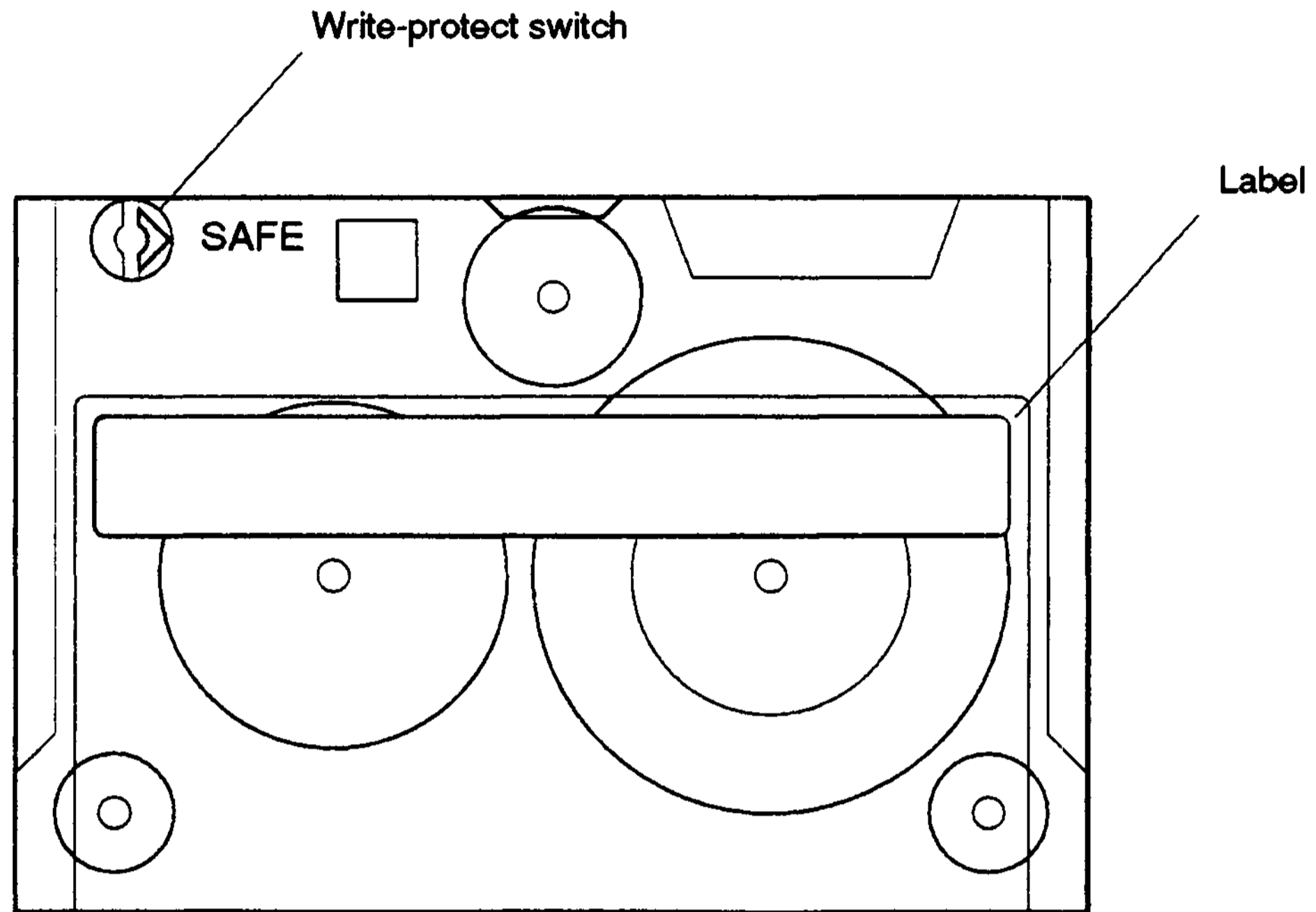
WSEBA164

Figure F-2. Attaching the internal expansion box cables to a TZK10 QIC tape drive

Using a TZK10 QIC Tape Drive

TZK10 QIC Tape Cartridge

The TZK10 QIC tape drive uses a DC6320 or DC6525 or equivalent tape cartridge.



WSEBA160

Figure F-3. A TZK10 QIC tape cartridge

External Controls and Indicators

Figure F-4 shows the external controls and indicators on the TZK10 QIC tape drive. Table F-2 explains how to interpret the indicator light on the drive.

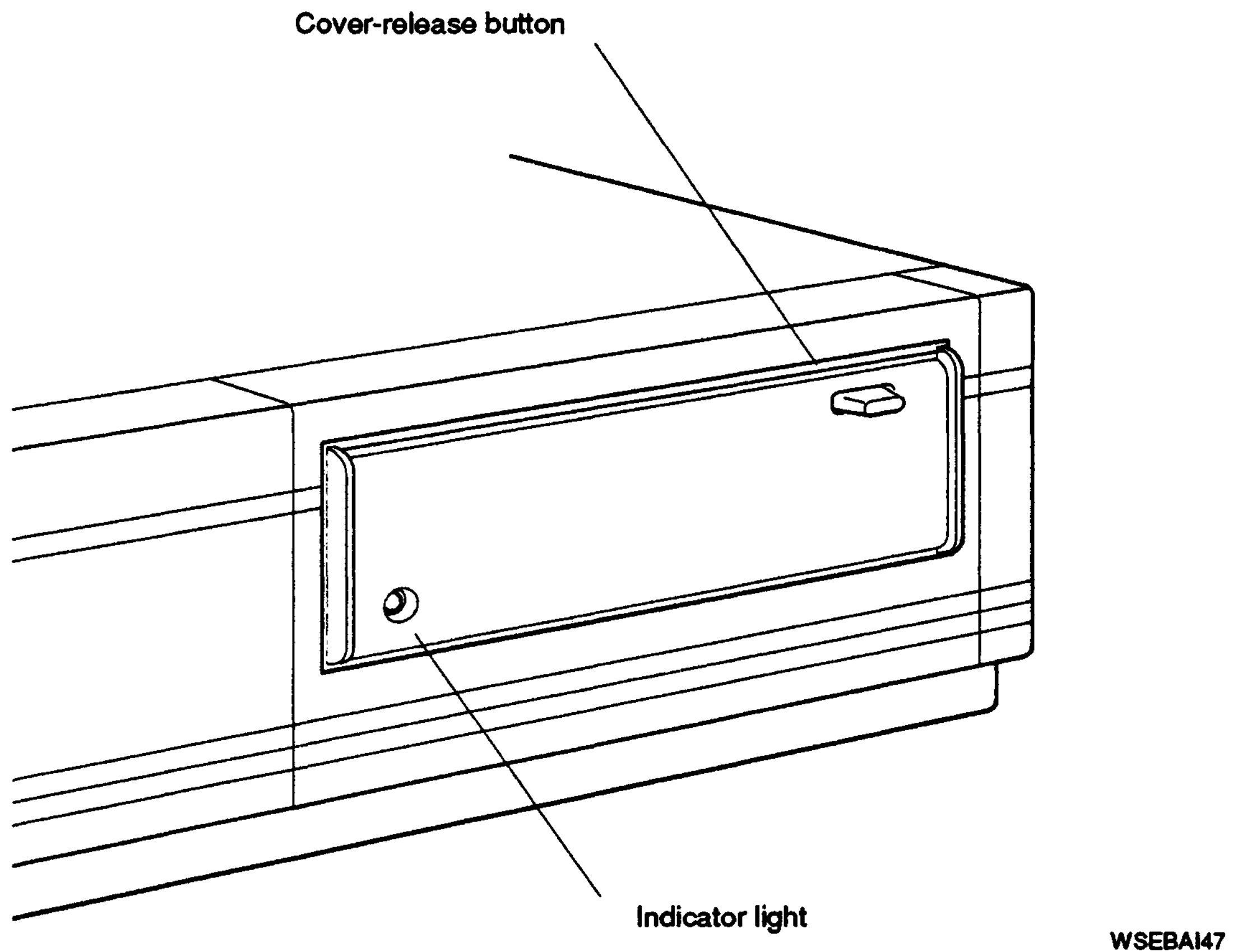


Figure F-4. External controls and indicators on the TZK10 tape drive

Table F-2. Indicator Light on the TZK10 QIC Tape Drive

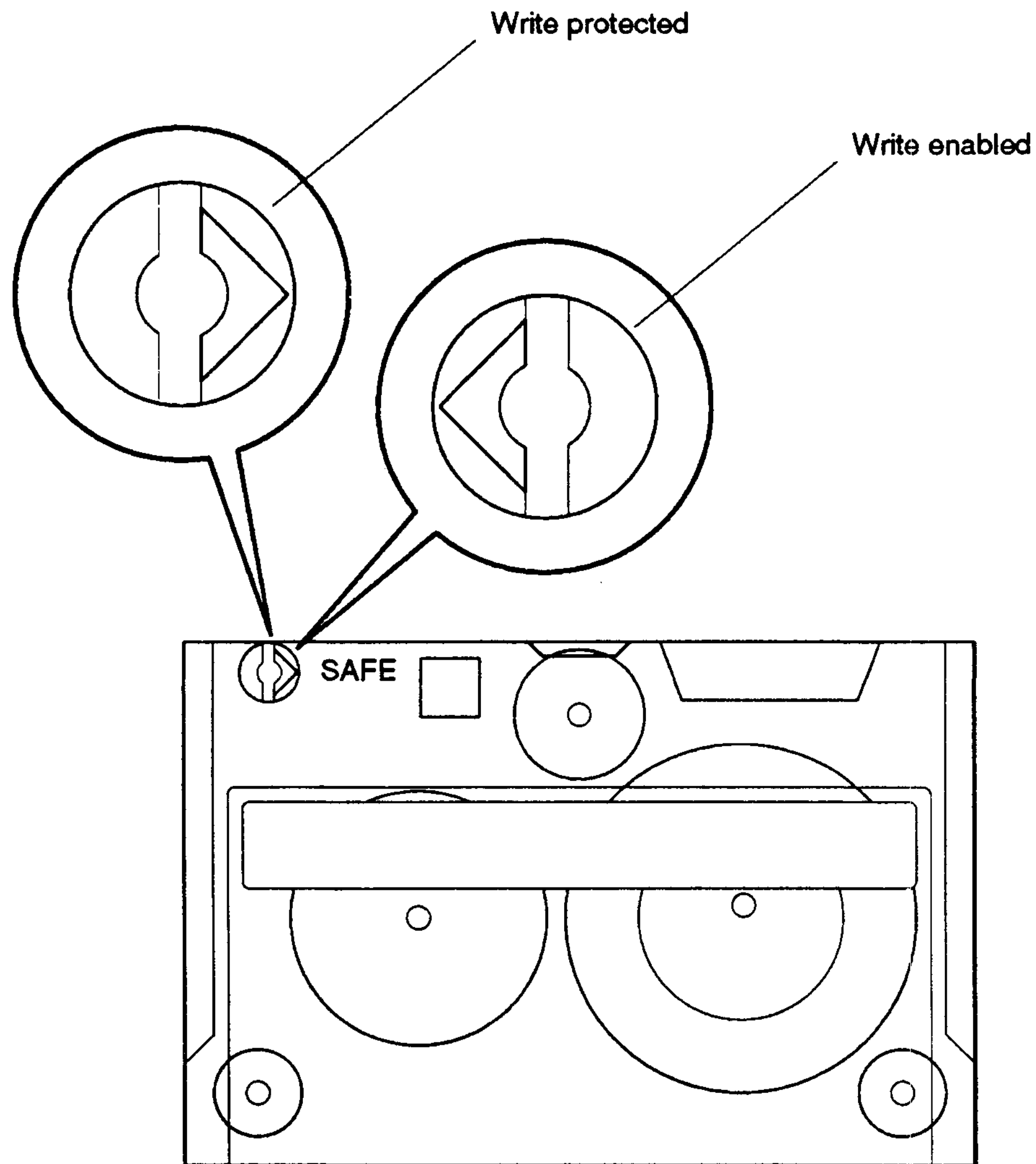
State	Meaning
Off	A tape is not present in the drive or the tape is present but has been unloaded via software.
Solid green	The tape is loaded. ¹
Blinking green	The tape is in motion
Solid yellow	A drive fault has been detected.

¹The tape cartridge is automatically loaded upon insertion.

Write-Protecting or Write-Enabling a Tape Cartridge

To prevent information on a tape from being written over, write-protect the cartridge. To do this, set the write-protect switch with the arrow pointing toward the SAFE label on the tape cartridge.

To write data to a tape, write-enable the cartridge. To do this, set the write-protect switch with the arrow pointing away from the SAFE label on the tape cartridge.



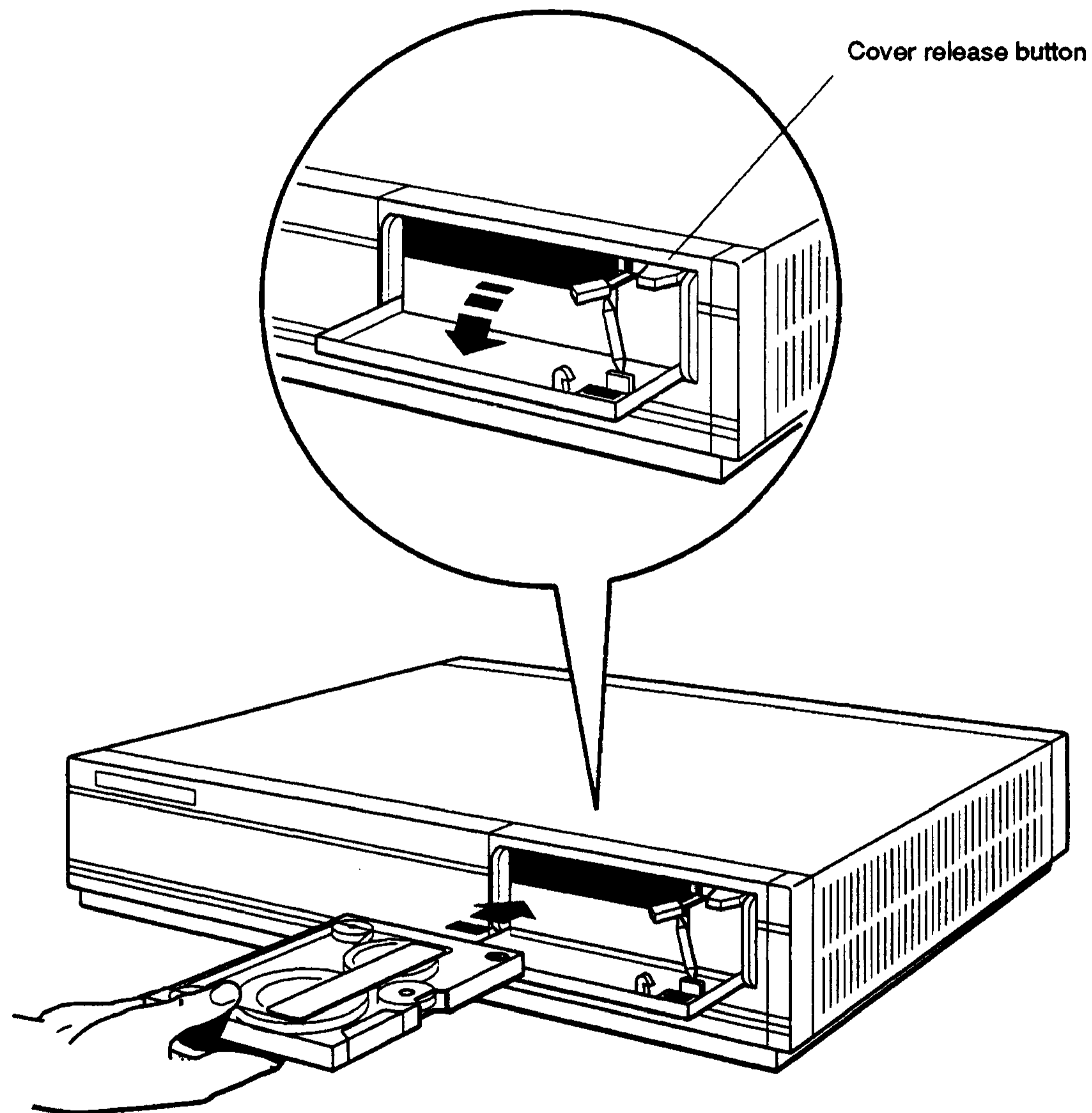
WSEBA151

Figure F-5. Write-protect and write-enable switch positions on a TZK10 QIC tape cartridge

Inserting a Tape Cartridge into a Drive

To insert a tape cartridge into the drive,

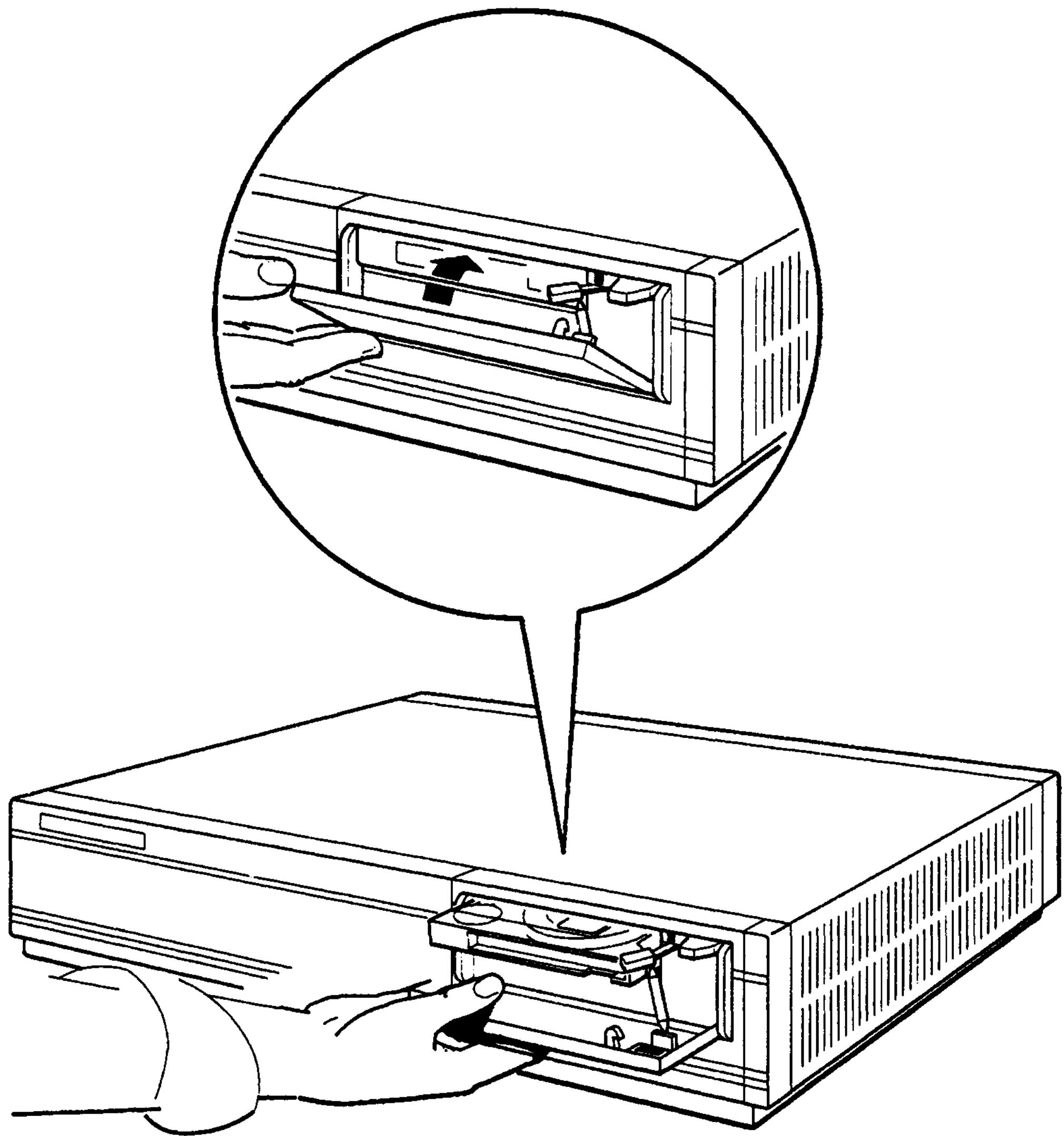
1. Open the drive door by pressing the cover-release button.
2. Insert the cartridge into the drive opening by positioning the cartridge so the write-protect switch is in the forward upper right corner.
3. Slide the cartridge straight into the drive until you feel resistance.



WSEBAI48

Figure F-6. Inserting a tape cartridge into the TZK10 QIC tape drive

4. Close the drive door.



WSEBAI49

Figure F-7. Closing the drive door on the TZK10 QIC tape drive

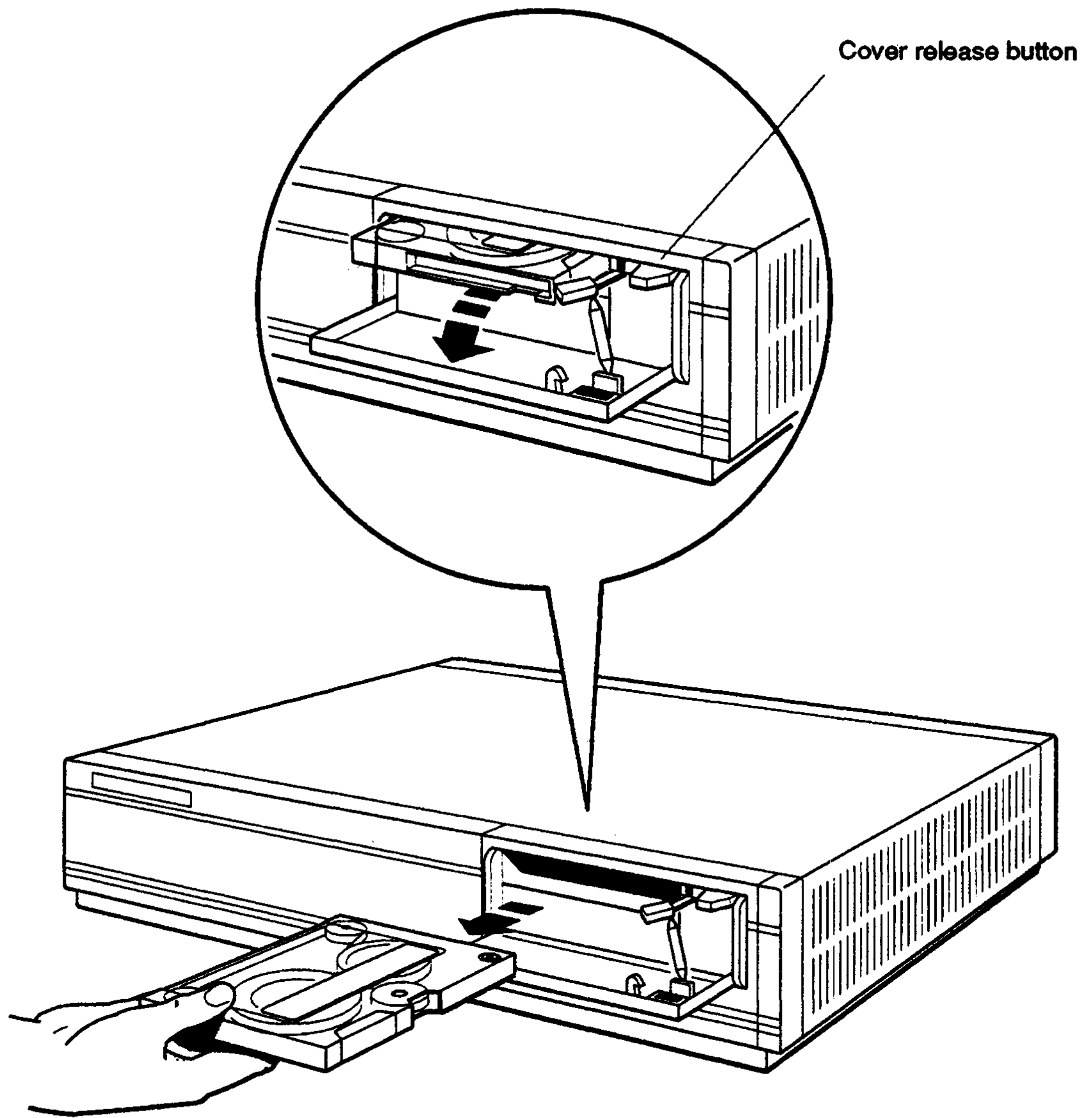
Removing a Tape Cartridge from a Drive

To remove a tape cartridge from the drive,

1. Check to see that the green indicator light on the front of the drive cover is glowing solid or is off. This ensures the tape cartridge is not in motion.

Note: The green indicator light may be off if the tape is present but has been unloaded via software.

2. Press the cover-release button to open the drive door.
3. Pull the drive door down, grasp the cartridge and slide it out of the drive.



WSEBA150

Figure F-8. Removing a tape cartridge from the TZK10 QIC tape drive

Handling and Storing Tape Cartridges

Incorrect handling and storing of tape cartridges can damage them and cause loss of data. In turn, damaged cartridges can damage the tape drive. The following precautions should be taken:

- Do not drop tape cartridges. Doing so can damage the cartridges.
- Store cartridges in their protective containers on edge or stacked.
- Place cartridge labels in the space provided on the top of the cartridge. Placing labels on the front, bottom, sides, or rear of the cartridge can damage the tape drive.
- Keep cartridges out of extreme temperatures and away from direct sunlight.
- Store cartridges away from magnetic fields, such as those produced by motors, transformers, and video terminals and monitors.

RRD42 Compact Disc Drive

The RRD42 is a half-height, 5 1/4-inch, 600-megabyte compact disc drive. This appendix tells you how to

- Select the mode of operation and set the SCSI ID jumpers on the RRD42 compact disc drive
- Attach the internal BA42 expansion box SCSI signal and power cables to the RRD42 compact disc drive
- Insert and remove a compact disc from a disc caddy.
- Use the RRD42 compact disc drive
- Handle and store compact discs

Setting the Mode Select and SCSI ID Jumpers

The RRD42 compact disc drive uses jumpers inserted on sets of pins on the back of the drive to determine the mode of operation and SCSI ID number for the drive.

The presence or absence of a 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.

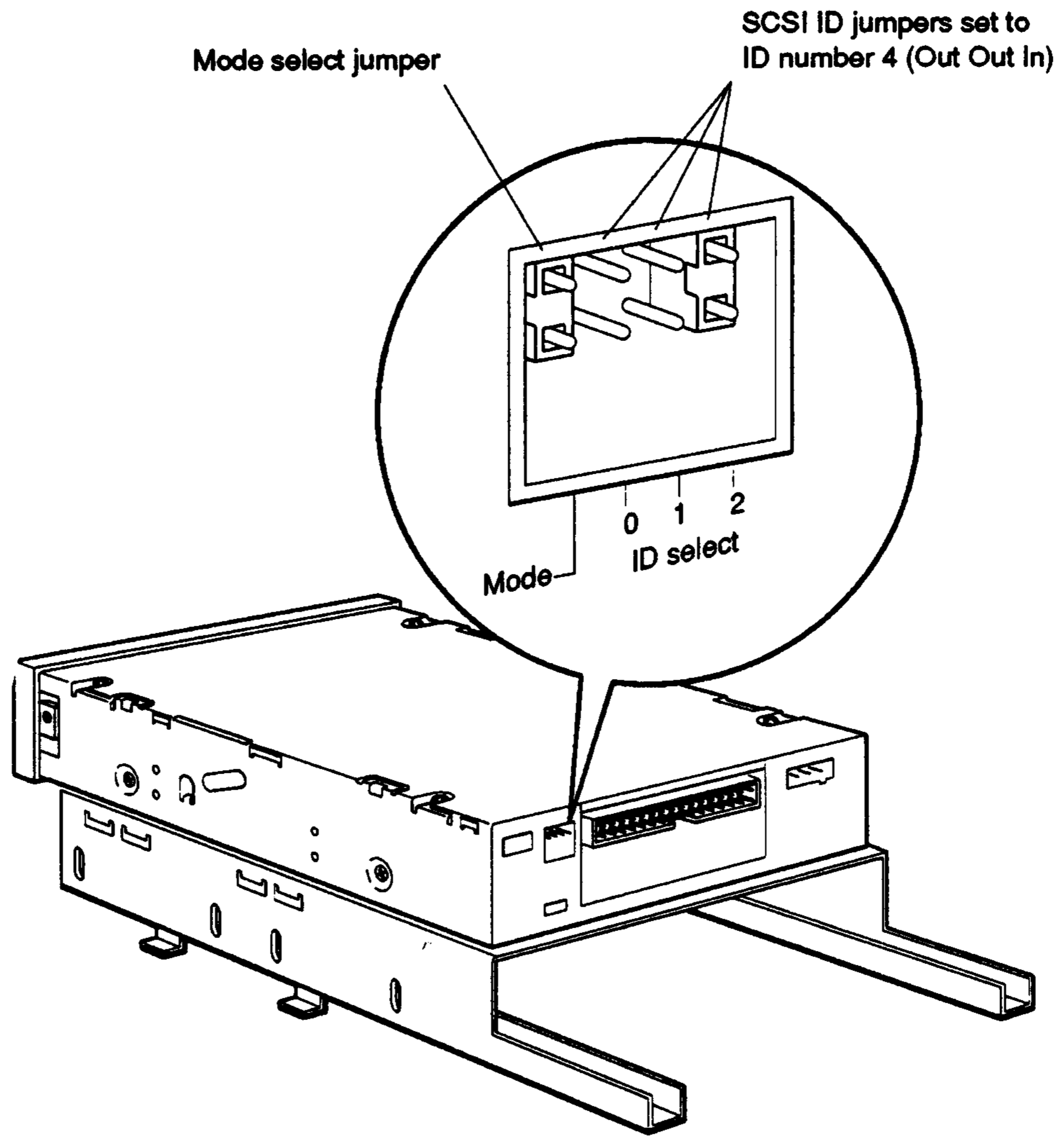
The location of jumpers on the next three sets of pins determines the SCSI ID number for the drive.

Table G-1 shows the SCSI ID jumper settings for the RRD42 compact disc drive.

Figure G-1 shows the mode select jumper in and the SCSI ID jumpers set to SCSI ID number 4.

Table G-1. SCSI ID Jumper Settings for the RRD42 Compact Disc Drive

SCSI ID Number	ID 0 Jumper	ID 1 Jumper	ID 2 Jumper
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



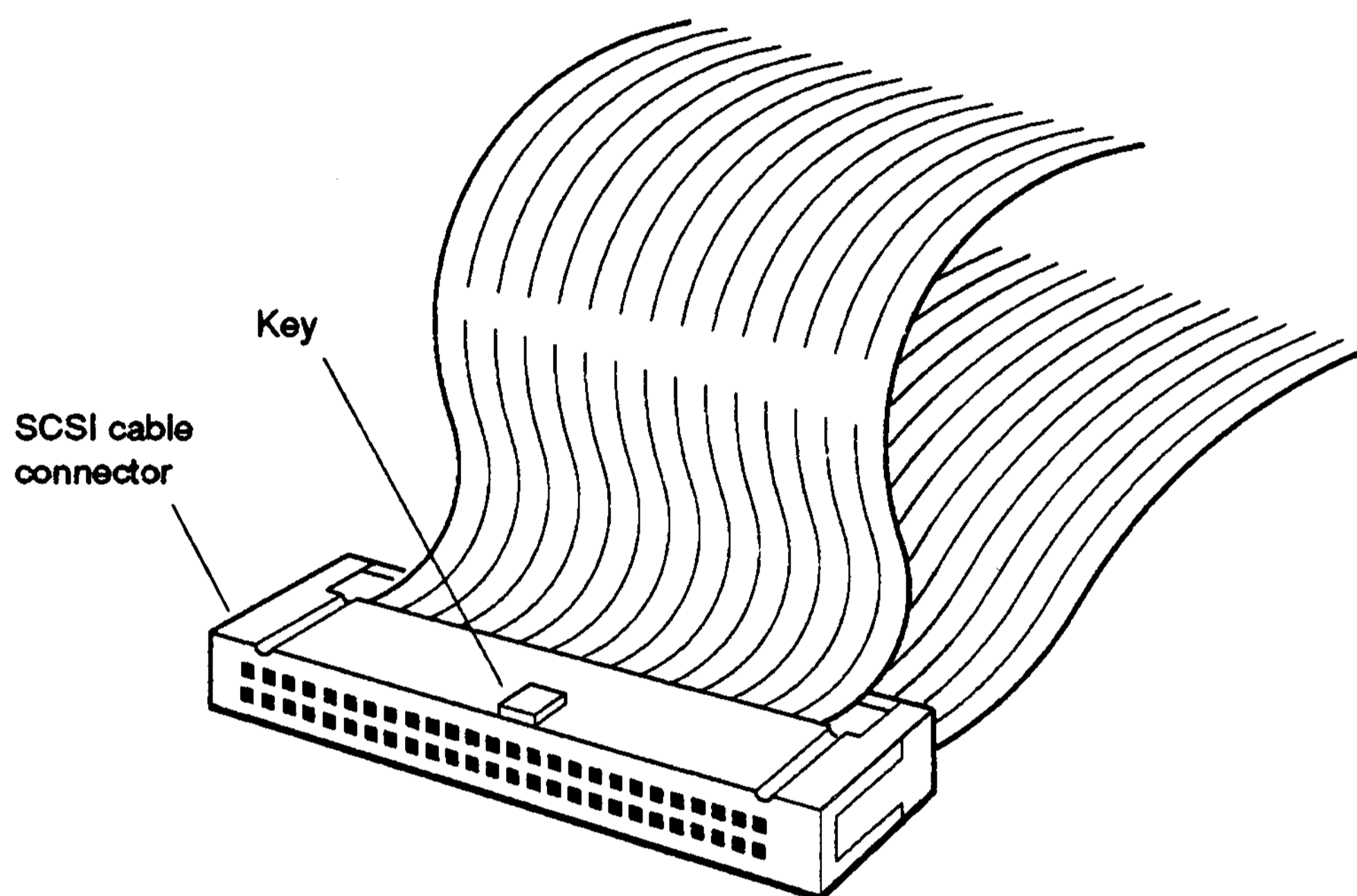
WSEBAI66

Figure G-1. Mode select and SCSI ID jumpers on the RRD42 compact disc drive

Attaching the Internal Expansion Box Cables to a Drive

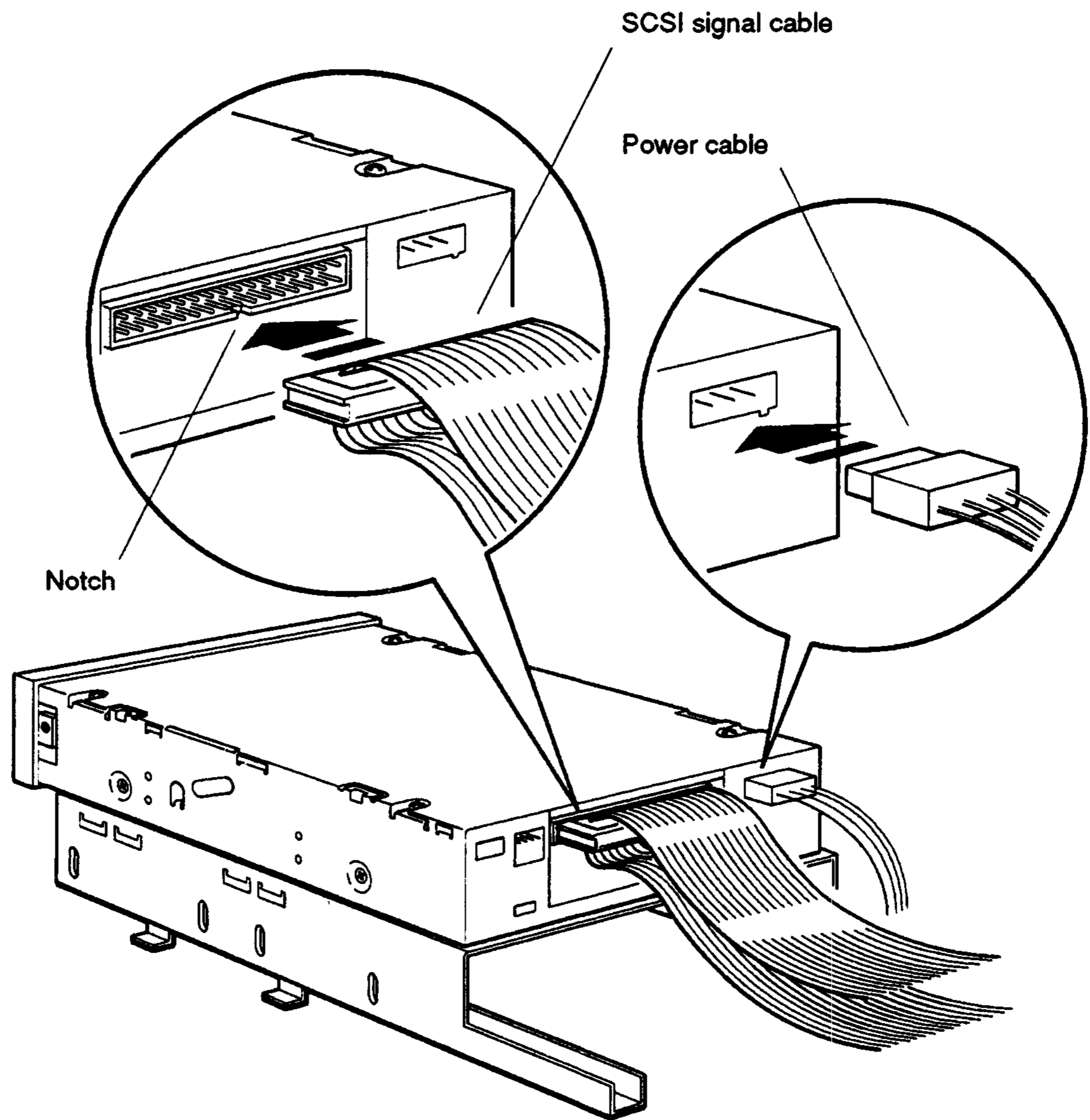
When attaching the SCSI signal cable to the drive, match the key on the cable connector with the notch in the connector on the drive. To do this, twist the cable a half turn before attaching it to the drive. Figure G-2 illustrates the location of the key on the SCSI signal cable.

Figure G-3 shows how to attach the expansion box internal SCSI signal cable and power cable to an RRD42 compact disc drive.



WSEBAI77

Figure G-2. The SCSI signal cable connector and key

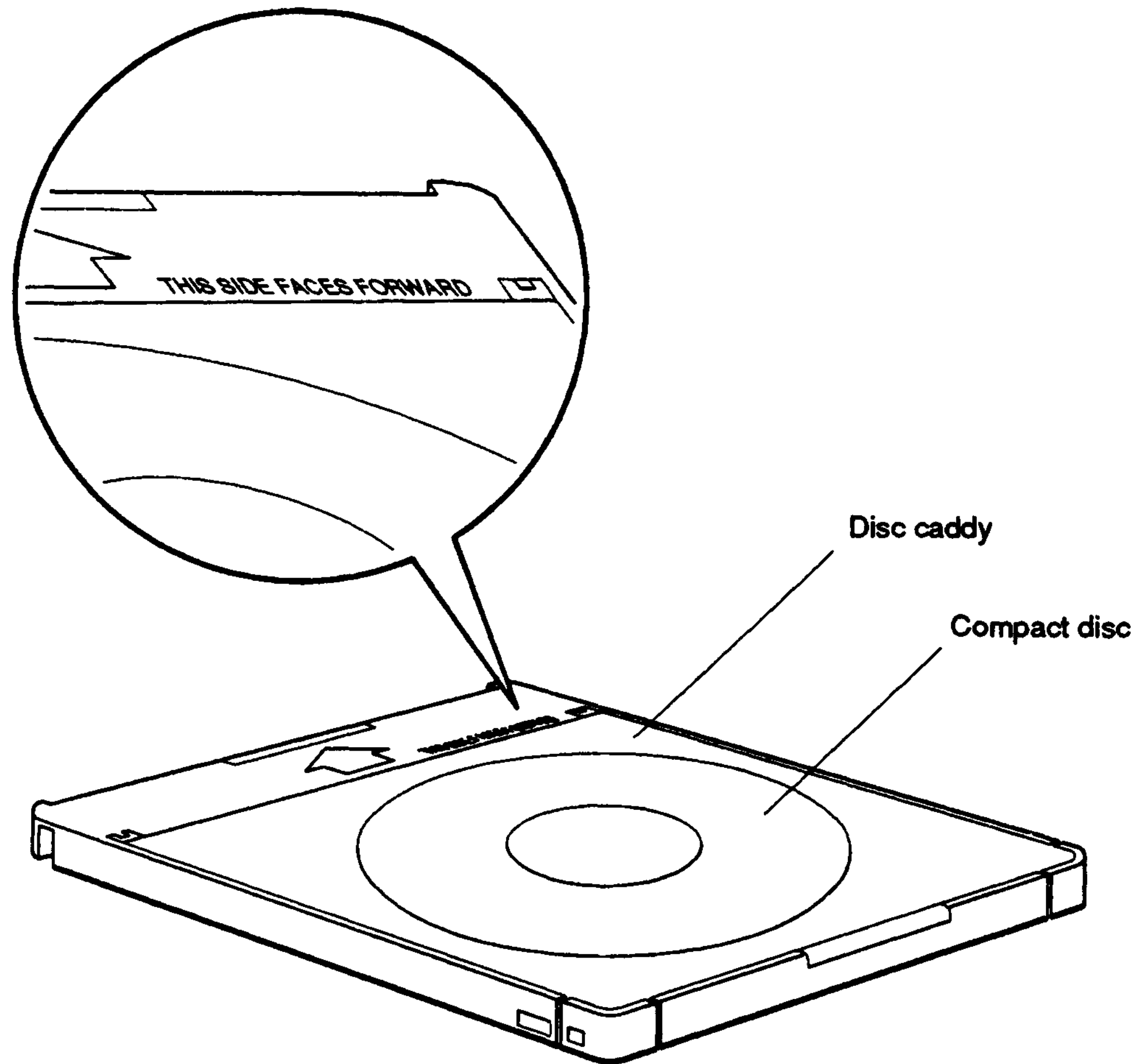


WSEBAI75

Figure G-3. Attaching the internal expansion box cables to an RRD42 compact disc drive

Using an RRD42 Compact Disc

Figure G-4 shows an RRD42 compact disc in its caddy.



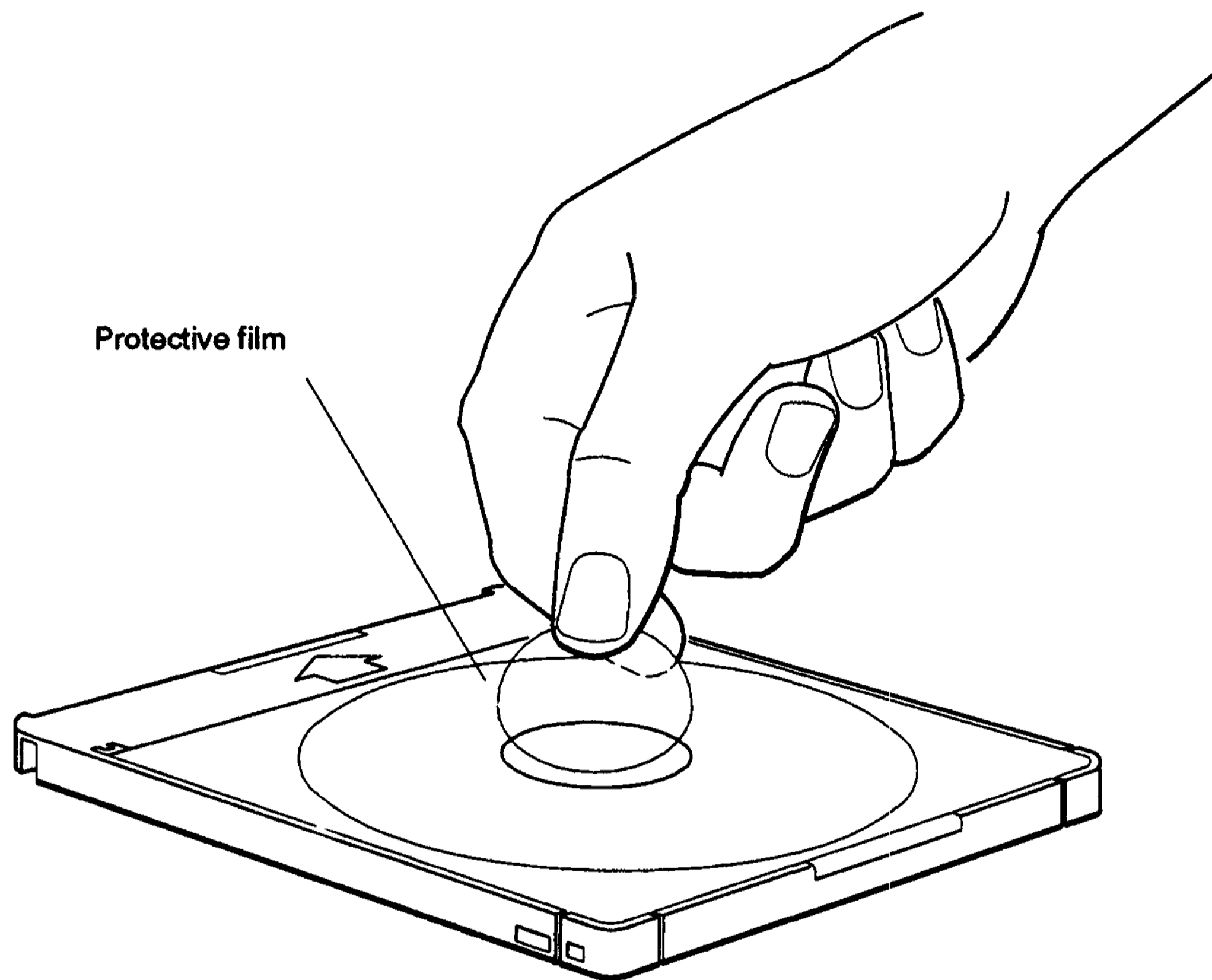
WSEBAI74

Figure G-4. An RRD42 compact disc

Inserting a Compact Disc into a Caddy

To insert a compact disc into a caddy,

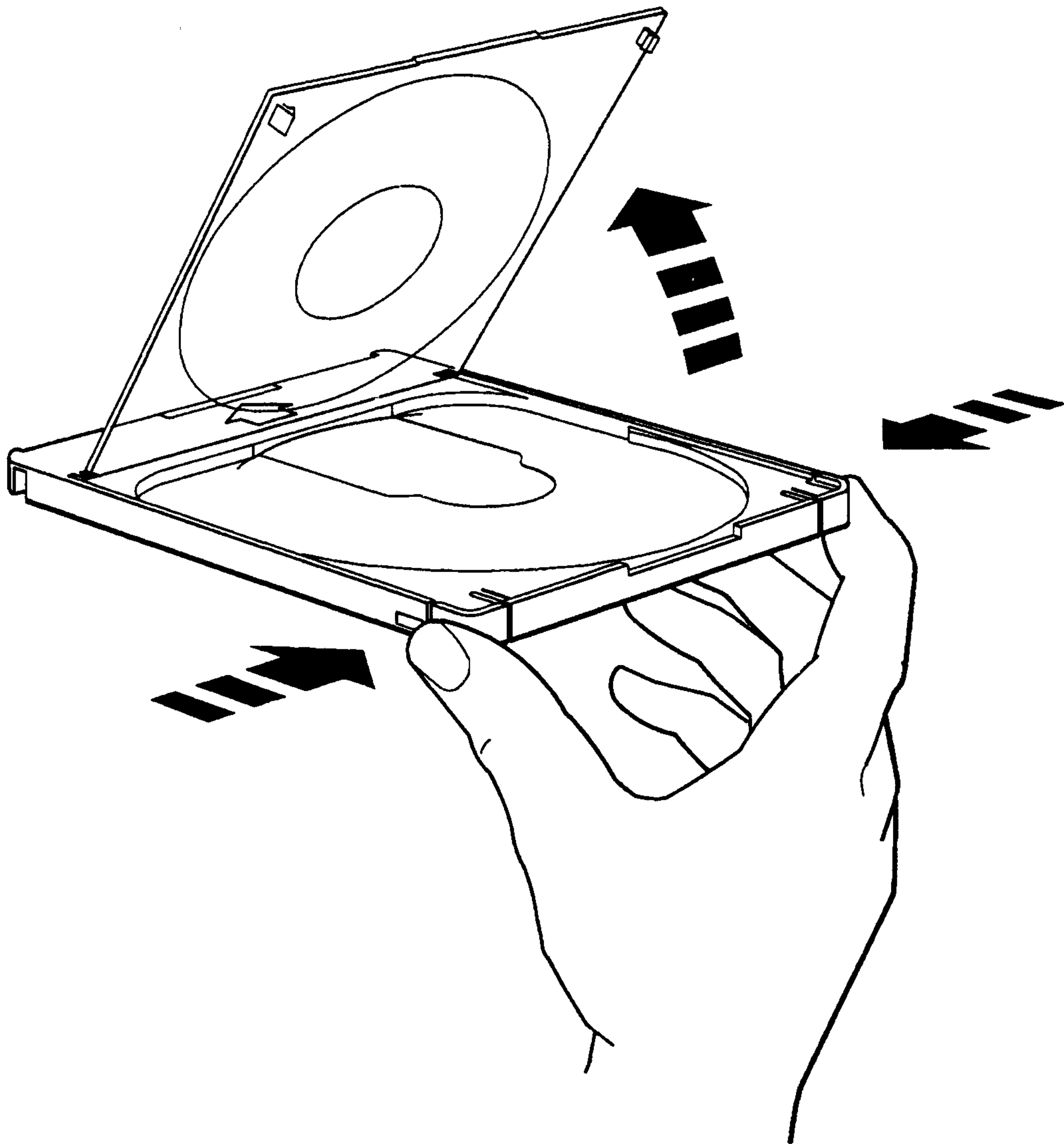
1. If there is a protective film on the outside of the disc caddy, remove it.



WSEBA167

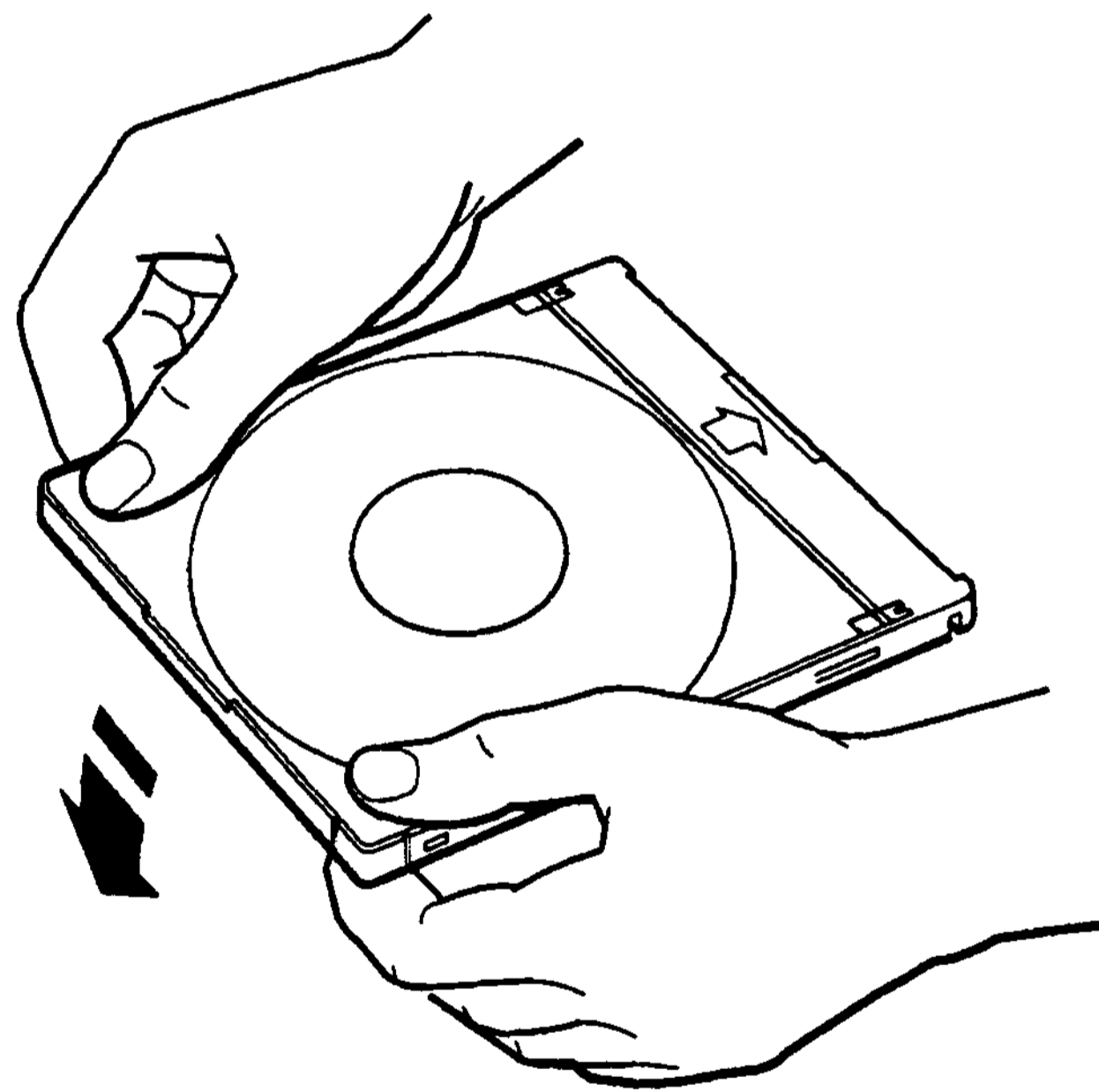
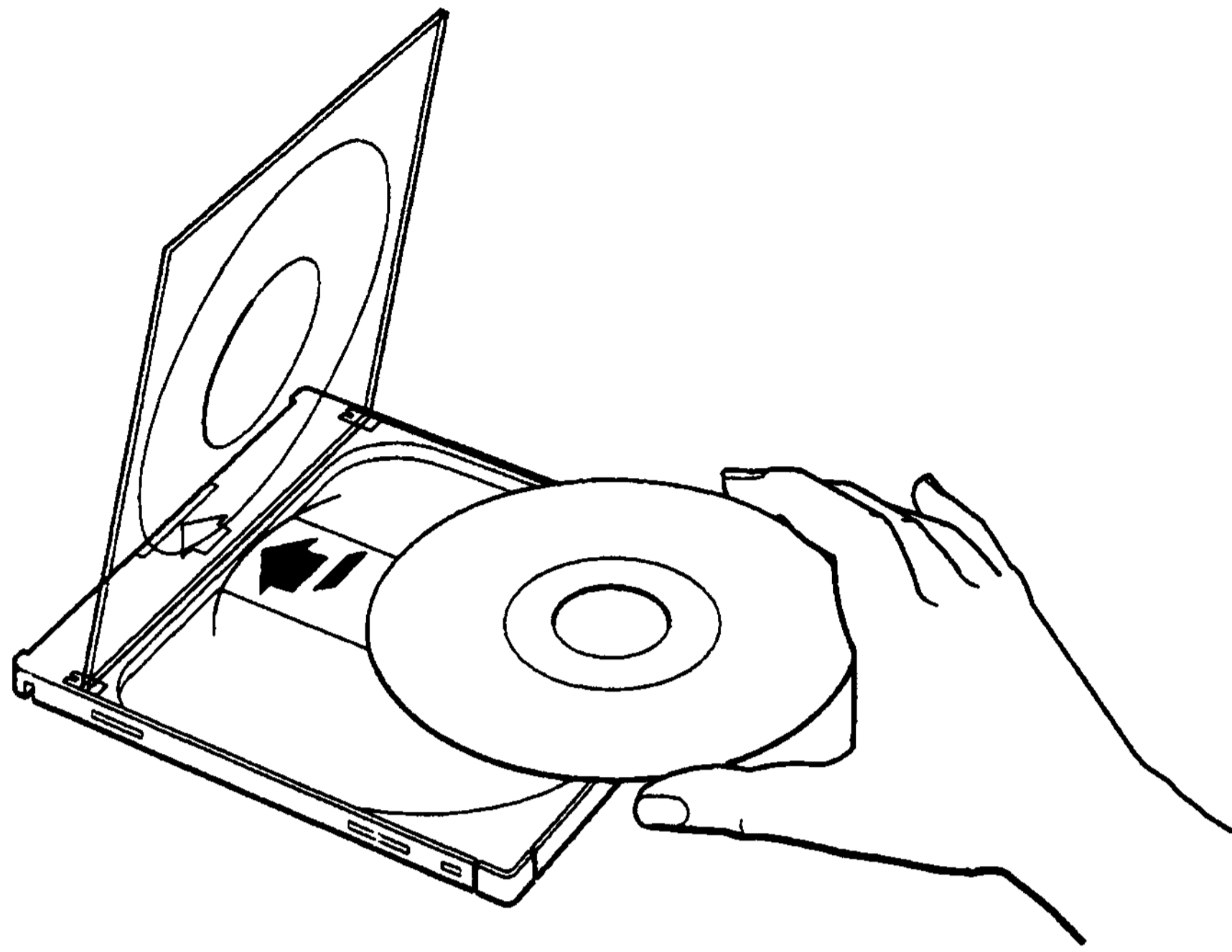
Figure G-5. Removing the protective film from a compact disc caddy

2. Open the cartridge by pressing in on the tabs on the edge of the cartridge and lifting up the cover (Figure G-6).
3. Pick up the disc by placing your fingers on the edges of it. Be careful not to touch the surface of the disc.
4. Position the disc with the printed side upward, and set it into the caddy (Figure G-7).
5. Close the lid by pressing down firmly on each corner, locking the lid into place.



WSEBA168

Figure G-6. Opening a compact disc caddy



WSEBA169

Figure G-7. Inserting a disc into a compact disc caddy

Removing a Compact Disc from a Caddy

To remove a compact disc from a caddy,

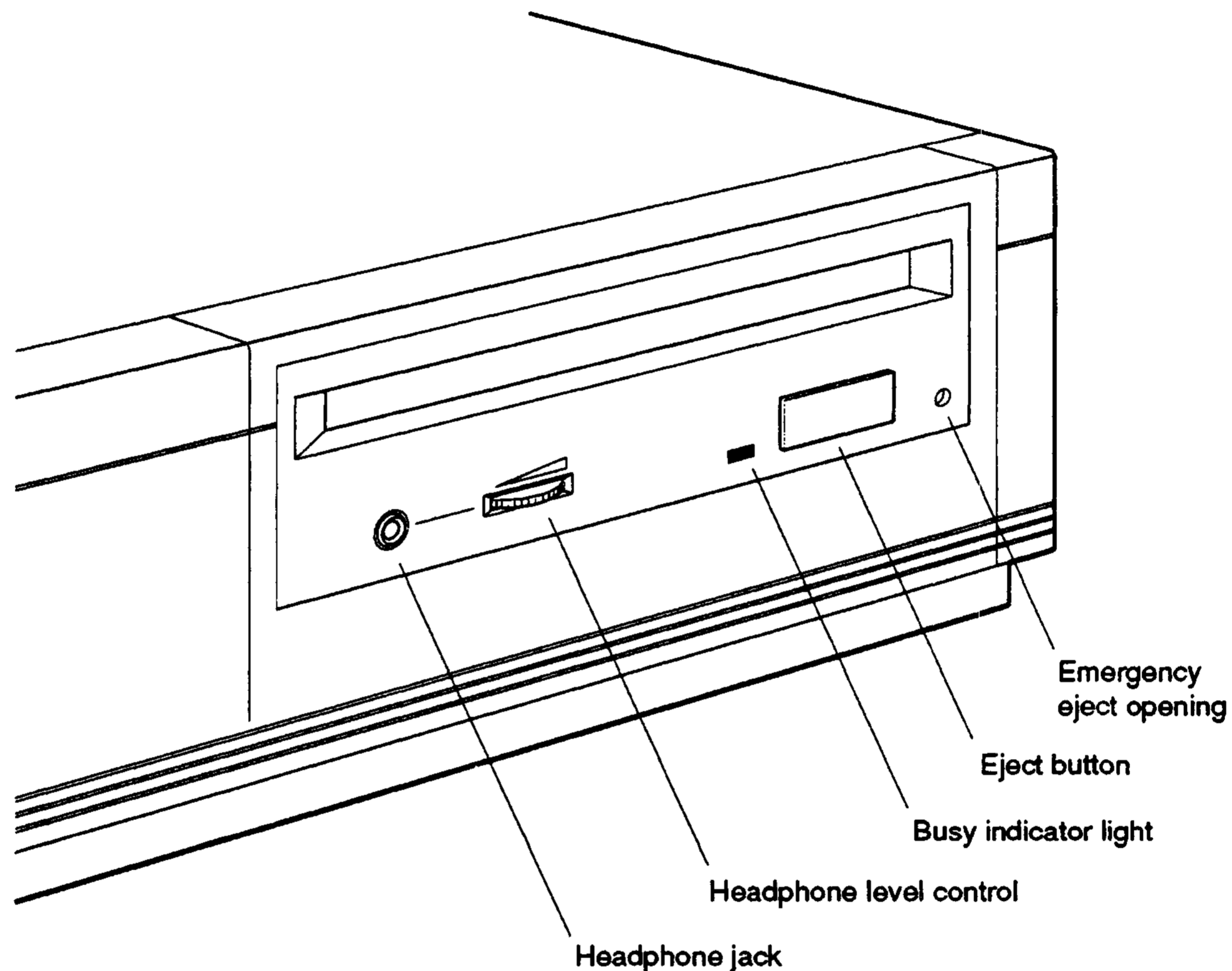
1. Open the caddy as shown in Figure G-6.
2. Remove the disc carefully by placing your fingers on the edges of the disc and lifting it out of the cartridge.

Using an RRD42 Compact Disc Drive

External Controls and Indicators

Figure G-8 shows the external controls and indicators on the RRD42 compact disc drive. Note that audio playback may not be supported by your operating system software.

Warning: The audio feature is meant for audio disc listening only.



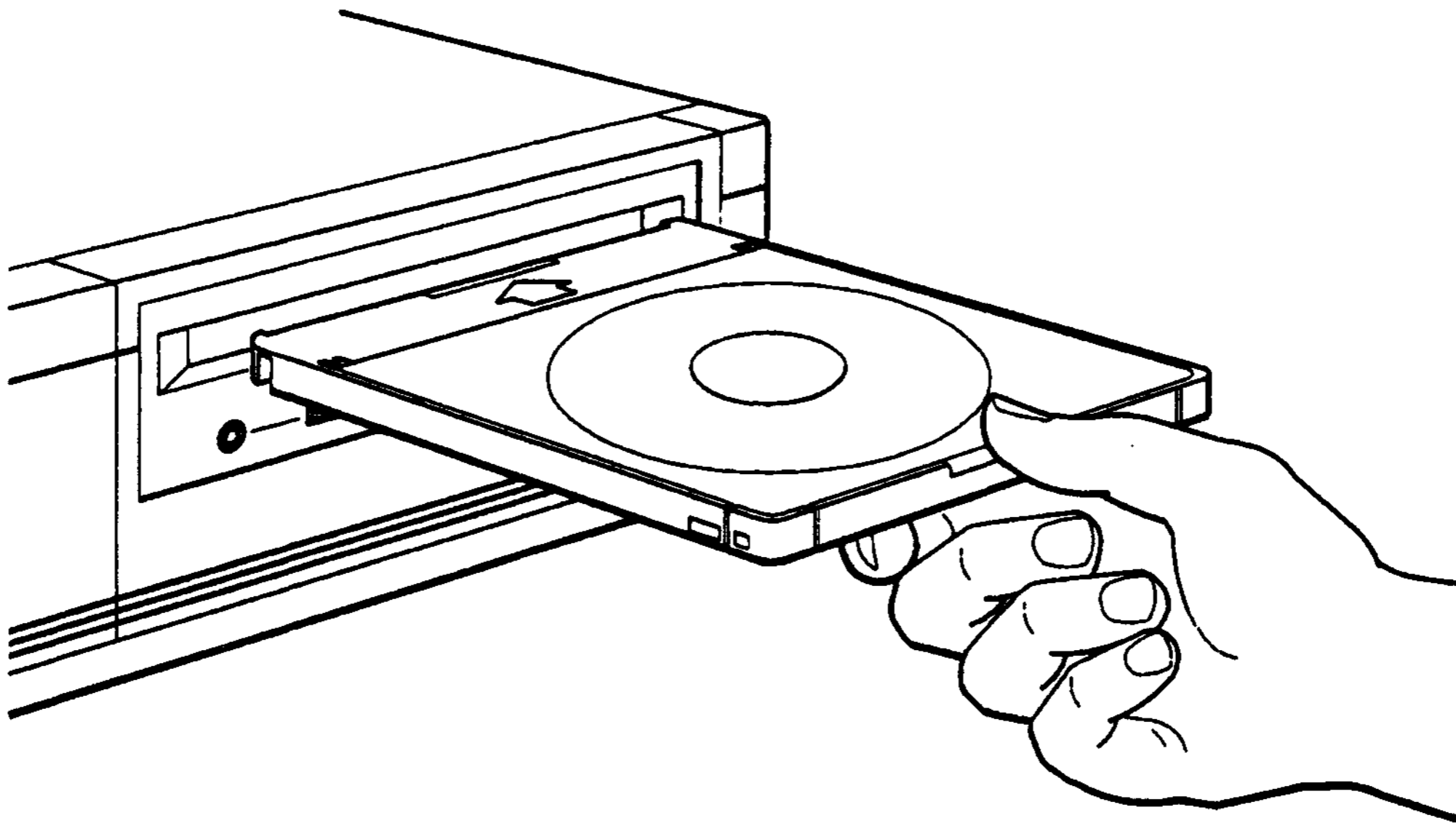
WSEBA170

Figure G-8. External controls and indicators on the RRD42 compact disc drive

Inserting a Disc Caddy into a Drive

To insert a compact disc caddy into the drive,

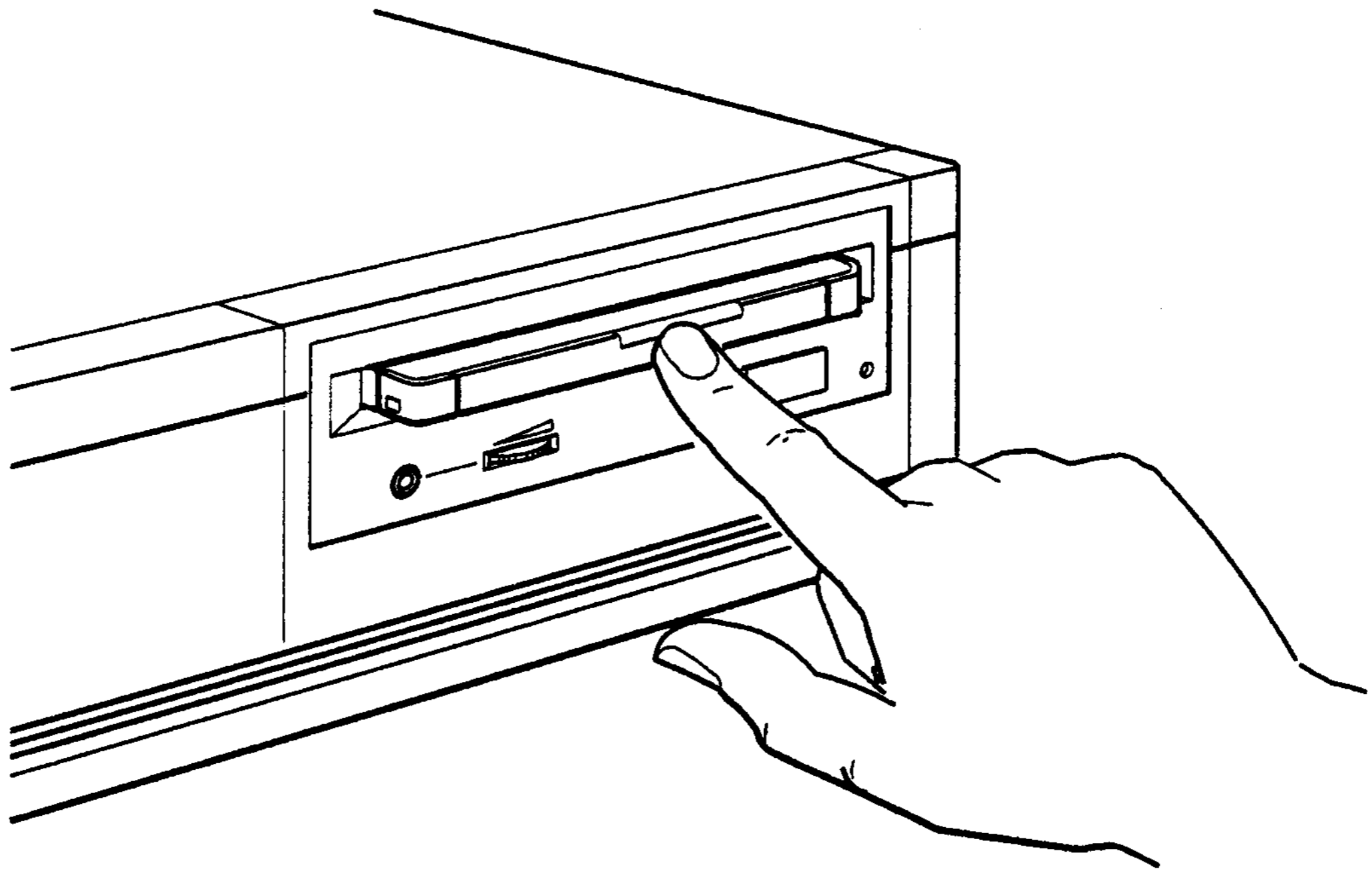
1. Position the disc caddy so the disc label faces upward and the arrow on the top edge of the caddy faces the opening in the drive.
2. Insert the caddy into the drive.



WSEBAI71

Figure G-9. Inserting a compact disc caddy into an RRD42 compact disc drive

3. Use your finger to push the caddy all the way into the drive.



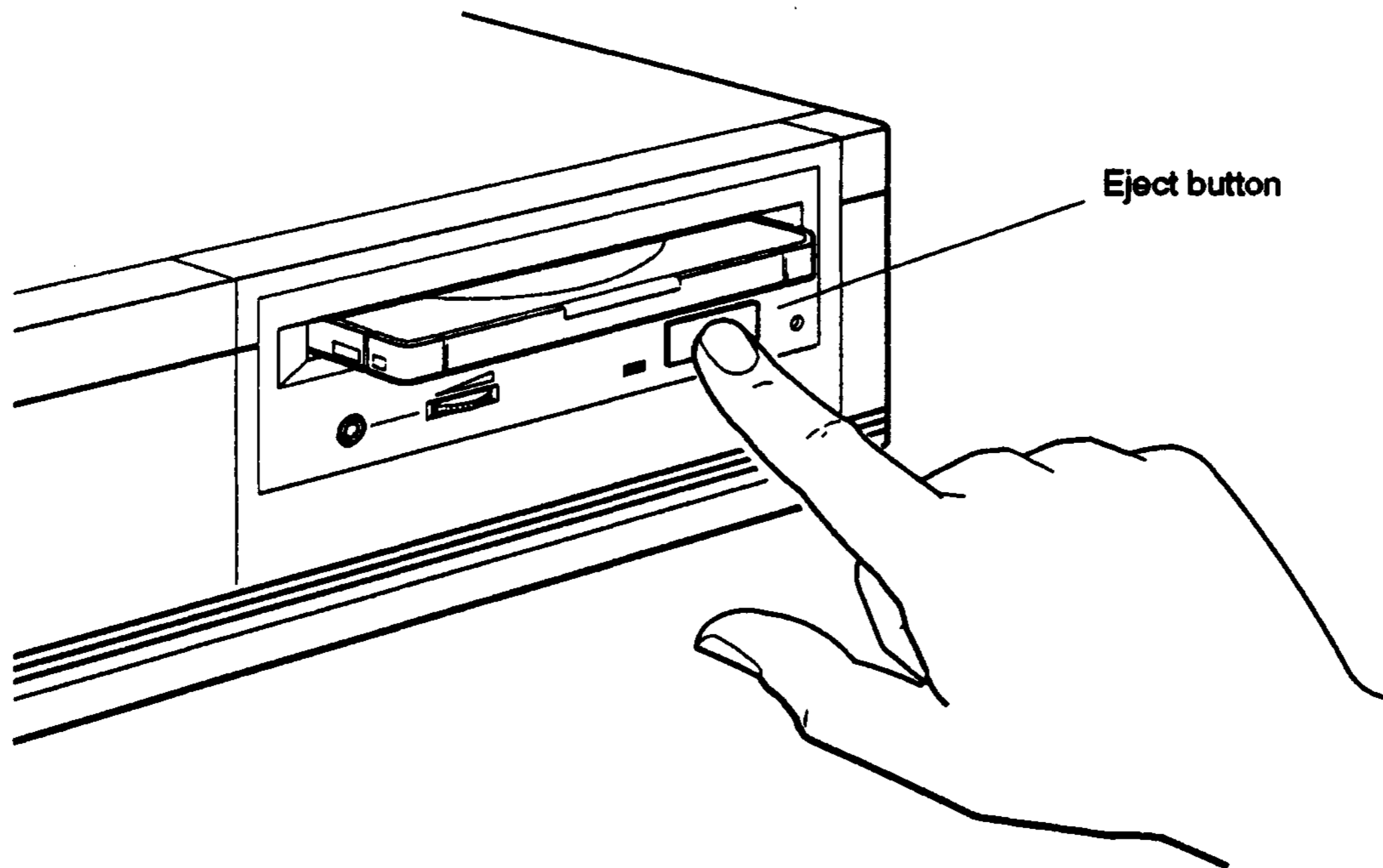
WSEBAI72

Figure G-10. Pushing a caddy into an RRD42 compact disc drive

Removing a Disc Caddy from a Drive

To remove a compact disc caddy from the drive,

1. Make sure the expansion box power is on.
2. Press the eject button on the outside of the drive. After a few seconds, the drive will partially eject the disc caddy from the drive.
3. Remove the disc caddy from the drive.



WSEBAI73

Figure G-11. Removing a compact disc caddy from an RRD42 compact disc drive

Handling and Storing Compact Discs

Incorrect handling and storing of compact discs can damage them and cause loss of data. In turn, damaged compact discs can damage the disc drive. The following precautions should be taken:

- Do not drop the disc or caddy.
- The caddy's shutter automatically opens when it is inserted into the drive. Do not open the shutter manually and touch the disc.
- When transporting the drive, remove the caddy from the drive.
- Keep the disc and caddy away from dust, direct sunlight, high temperature, and high humidity.
- When a disc is dirty, clean it with a clean, lint-free cloth. Wipe the disc from the center out. Do not use solvents, such as benzene, thinner, commercial cleaners, or antiseptic sprays.

