



IBM ThinkPad

Dock I
User's Guide







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Note

Before using this information and the product it supports, be sure to read the general information under Appendix E, "Product Warranties, Notices, and Statements" on page E-1.

First Edition (July 1993)

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CAUTION:

Do not operate the Dock I when the bottom cover is removed. To install the bottom cover, see “Installing the Bottom Cover” on page 4-5.

Electrical Safety Notice



DANGER:

The Dock I has no power switch. Power is controlled by the computer’s power switch. For emergencies, always use easily accessible electrical outlets to turn off the power by unplugging the Dock I power cord.



DANGER:

To avoid a shock hazard, do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.





DANGER:

To avoid a shock hazard:

The power cord must be connected to a outlet that has been properly wired and grounded according to your local wiring rules.

This equipment must have an earth ground.

Apparaten skall anslutas till jordat uttag när skyddsklenspänningsutgången ansluts till ett nät som passerar såväl ojordad som jordad miljö.

Jordet stikkontakt skal benyttes når apparatet tilkoples datanett.

Laite on liitettävä suojakosketinspistorasiaan.

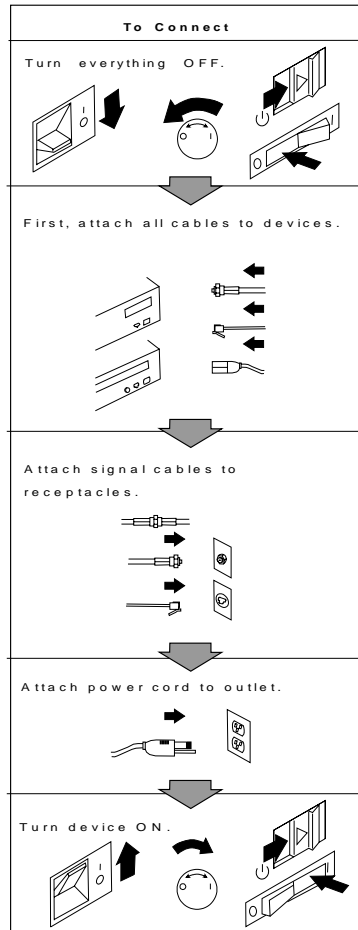
Any equipment to which this product is attached must also be connected to a outlet that has been properly wired and grounded according to your local wiring rules.



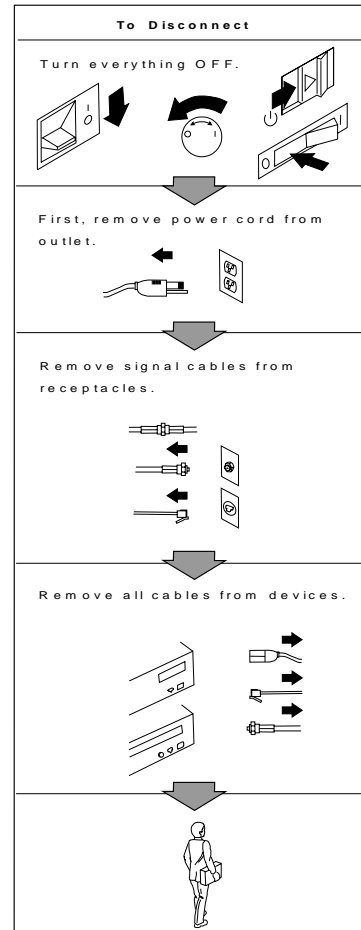


DANGER:

Electrical current from power, telephone, and communication cables is hazardous. To avoid shock hazard, connect and disconnect cables as shown below when installing, moving or opening the covers of this product or attached devices. The power cord must be used with a properly-grounded outlet.



Note: In the U.K., by law, the telephone line cable must be connected after the power cord.



Note: In the U.K., by law, the power cord must be disconnected after the telephone line cable.





About This Manual

This manual contains the information that is needed when you use the IBM^{*} ThinkPad^{*} Dock I (hereinafter referred to as the *Dock I*). It is organized into the following chapters and appendixes:

Chapter 1, "Introduction" introduces the Dock I and describes its features.

Chapter 2, "Using the Dock I" provides the procedures for setting up the Dock I. Basic operations are also described.

Chapter 3, "Using the Security Features" describes the ways you can protect your Dock I against unauthorized use.

Chapter 4, "Installing and Removing IBM Options" describes how to install IBM options using both the documentation provided with the option and this documentation.

Chapter 5, "Using the SCSI Controller and Support Software" provides information about the setup of the SCSI controller's configuration, the installation of the option device drivers, and the SCSI diagnostics utility program.

Chapter 6, "Solving Problems" describes how you can detect and resolve Dock I problems.

Appendix A, "Starting up the OS from the Dock I" describes a way to start up an operating system that resides on a device attached to the Dock I.

Appendix B, "SCSI Information" provides information about SCSI device ordering, connectors, termination, and cable lengths.

Appendix C, "Using the Selectable Program Load" shows how to automatically load application programs into the memory of the computer that enable the options installed in the Dock I when only the computer is attached.

Appendix D, "Specifications" describes the specifications associated with your Dock I, the power cords, and the ports.

Appendix E, "Product Warranties, Notices, and Statements" contains the warranty statement of the Dock I, notices,

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trademarks, service marks, FCC statement, CDCC statement,
and EC directive conformance statement.



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Chapter 1. Introduction

The Dock I provides expandability for your IBM ThinkPad notebook models (hereinafter referred to as the *computer*), while providing the same usability as a desktop computer system. Option cables connected or disconnected to your computer can be connected to the Dock I so you can easily carry your computer.

Because the Dock I is designed to be both multimedia-oriented and portable, for example, you can give presentations at a customer's office more effectively with the full-motion images and stereo sound of multimedia material.

The Dock I has enhanced security features to protect it from being used by unauthorized persons.

The following summarizes the standard features or options on the Dock I.

Multimedia-Oriented Features	Audio and Video	Speaker-in jacks Audio-out jacks A Headphone jack Stereo speakers A less than 1-inch-high drive location for a CD-ROM player
Portable-Oriented Features	Warning function to tolerate most of the inadvertent miss-operations when docking and undocking the computer. Handle Security lock Security hook	
Cable Management Features	An external diskette drive connector A keyboard/numeric keypad connector A mouse/pointing device connector A parallel connector A serial connector	



Desktop-Equivalent Features	One full-size or half-size, AT-bus 16-bit slot A less than 1-inch-high drive location for an internal storage device An internal and external SCSI device connectors
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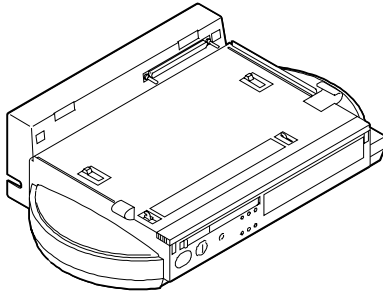


Checking the Items

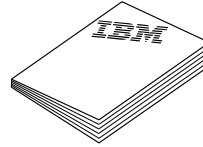
Check that you have the following items.

If any are missing or damaged, call your IBM marketing representative or dealer.

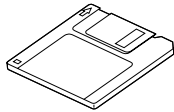
Dock I



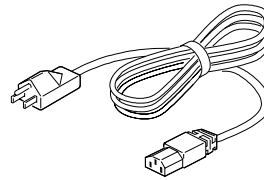
Manual



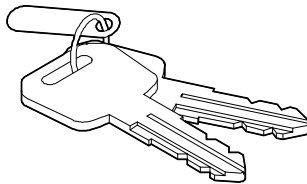
Option Diskette



Power Cord



Security Lock Keys



Notes

1. An extra key is provided as a spare.
2. The key number is necessary when replacing lost keys. See "Ordering Additional Security Lock Keys" on page 3-5.

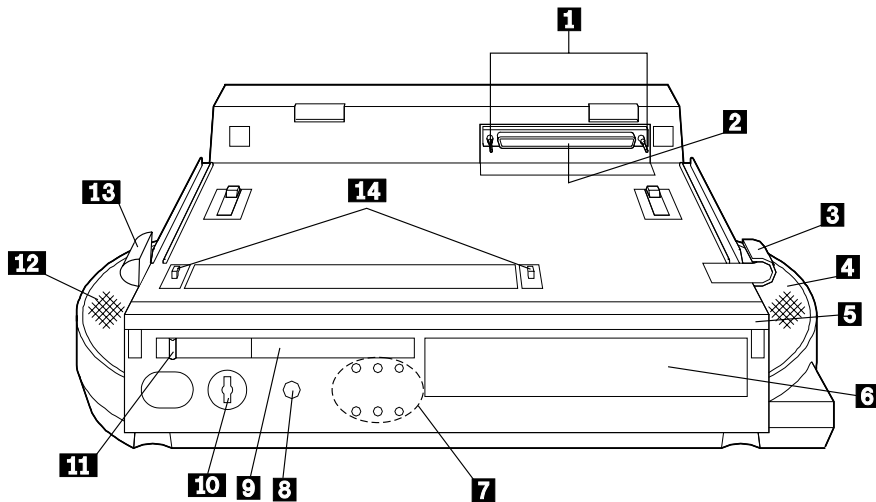




Locating Dock I Features

This section identifies the features for the Dock I. Symbols for connectors are embossed on the back of the Dock I above each connector for easy identification.

Front View

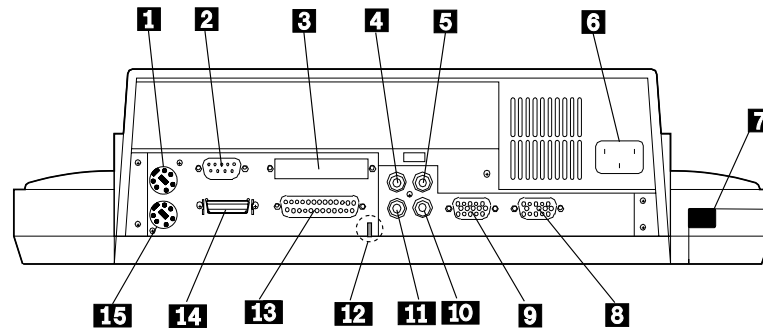


	Name of Feature	Description
1	Guide Pins	The guide pins are used as guides when attaching the computer. There are the matching alignment holes on the computer.
2	Docking Connector	The docking connector (male-type, 240-pin) fits into the system expansion connector.
3	Lever Cover	This cover is used to prevent the locking lever on the computer from being slid inward; the hard disk drive is removed from the computer when the lever is slid inward. This cover also be used as a handhold with the docking-knob 13 when attaching the computer to the Dock I.
4	Right Speaker	
5	Handle	This handle is used when carrying the Dock I for short distances in an indoor environment.

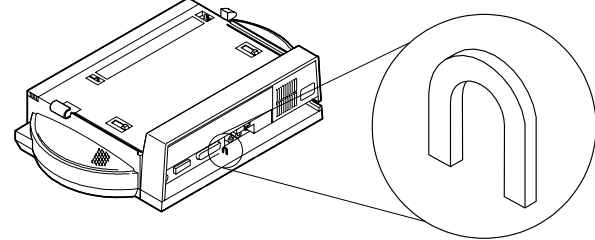


	Name of Feature	Description
6	Location for less than 1-inch-High Drive	The Dock I can accommodate one storage device here. The blank bezel is removed when installing an internal option.
7	Status Indicators	<p>The status indicators are LEDs (light-emitting diode) that indicate the current status of the Dock I by their On/Off states. Each status indicator has a matching special symbol below it.</p> <p>For more information about the status indicators, see “Dock I Status Indicators” on page 1-9.</p>
8	Headphone Jack	<p>The headphone jack is where the plug of the stereo headphone is connected.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;">Headphone or Speakers</p> <p>When the stereo headphone plug is connected to this jack, the speakers do not operate.</p> </div>
9	Release/Lock Lever	When the release/lock lever protrudes from the Dock I, snapping it closed secures the computer by engaging the computer with the hooks 14 . Sliding the slide-knob 11 to the left snaps the release/lock lever open.
1	Security Lock	The security lock is used to secure different features on the Dock I, depending on the position of the key. This prevents the bottom cover of the Dock I from being removed, prevents unauthorized persons from using the Dock I by securing the power, and prevents the computer from being removed from the Dock I. (For more information, see “Using the Security Lock” on page 3-2.)
11	Slide-Knob	Sliding this knob to the left snaps the release/lock lever open.
12	Left Speaker	
13	Docking-Knob	This knob is as a finger-hold with the lever cover 3 when attaching the computer to the Dock I.
14	Hooks	Snapping the release/lock lever 9 closed engages the computer with the hooks.

Rear View



	Name of Feature	Description
1	Mouse/Pointing Device Connector	The mouse/pointing device connector (6-pin) connects a mouse or other pointing device cable.
2	Serial Connector	The serial connector (9-pin) usually connects a modem or serial-printer signal cable.
3	External SCSI Connector	The external SCSI connector (60-pin) connects an external SCSI (small computer system interface) device cable.
4	Audio-Out-Left Jack	The audio-out-left jack (left-output sound, 2-pin) connects the audio-out-left plug of the audio cable. For stereo speaker sound of multimedia on external stereo speakers, use this jack with the audio-out-right jack 11 through an amplifier.
5	Speaker-In-Left Jack	The speaker-in-left jack (left-input sound, 2-pin) connects the speaker-in-left plug of the audio cable. Use this jack with the speaker-in-right jack 11 for stereo speaker sound of multimedia on the Dock I.
6	Power Cord Connector	The power cord connector connects the power cord. Power is supplied to the Dock I and the computer. The battery pack inside the computer is charged at the same time. Because the Dock I does not have a power switch, power for it is controlled by the power switch on the computer.
7	Cable Opening	Used to route a cable from inside the Dock I without a slack.

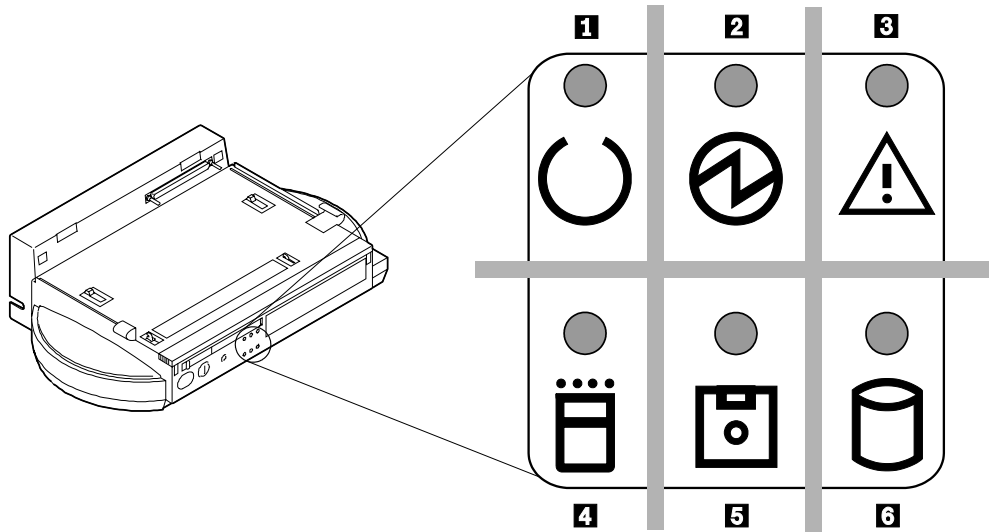
	Name of Feature	Description
8	Video-In Connector	The video-in connector (15-pin) is used to view video images of multimedia on the TFT LCD of the computer. CAUTION: The removable cap prevents damage to the pins of the external display signal cable connector if it is inadvertently connected.
9	External Display Connector	The external display connector (15-pin) connects the display signal cable of the external display that supports Video Graphics Array (VGA) of 640 by 480 resolution and Super VGA (SVGA) of 1024 by 768 resolution. CAUTION: Do not connect the external display signal cable connector to the video-in connector 8 .
1	Speaker-In-Right Jack	The speaker-in-right jack (right-input sound, 2-pin) connects the speaker-in-right plug of the audio cable. Use this jack with the speaker-in-left jack 5 for stereo speaker sound of multimedia on the Dock I.
11	Audio-Out-Right Jack	The audio-out-right jack (right-output sound, 2-pin) connects the audio-out-right plug of the audio cable. For stereo speaker sound of multimedia on external stereo speakers, use this jack with the audio-in-left jack 4 through an amplifier.
12	Security Hook	The security hook secures the Dock I. For more information, see “Securing the Dock I with the Security Hook” on page 3-4.
		
13	Parallel Connector	This parallel connector (25-pin) connects a printer signal cable.



	Name of Feature	Description
14	External Diskette Drive Connector (26-pin)	Connects the 3.5-inch diskette drive that has been removed from the computer and set up with the IBM ThinkPad 750 FDD External Attachment Kit (an IBM option).
15	Keyboard/Numeric Keypad Connector	The keyboard/numeric keypad connector (6-pin) connects the keyboard or numeric keypad cable. Important <ol style="list-style-type: none">1. Use this connector if you use an external keyboard or a numeric keypad.2. The keyboard (numeric keypad) on the computer cannot be used when the external keyboard (external numeric keypad) is attached through this connector.3. You cannot connect a mouse or other pointing device to a external numeric keypad that is connected to this connector. Connect the mouse or other pointing device directly to the mouse/pointing device connector 1 .





Dock I Status Indicators

The LED status indicators indicate the current status of the Dock I by their On/Off states or their colors (green and orange). Each LED indicator has a matching special symbol below it.

The following figure and table show the name, color, and meaning of each LED indicator.



	Symbol	Name of LED Indicator	LED Color	Meaning
1		Docked	Green	Turns on when the computer has been correctly docked with the Dock I.
2		Power-On	Green	Turns on when the Dock I power is turned on using the power switch on the computer.

Symbol	Name of LED Indicator	LED Color	Meaning
3		Orange	<p>Turns on or blinks when you attempt any of the following operations. This LED warns you not to continue the operation. For what happens if you continue the operation, see “Warning Function” on page 1-12.</p> <ul style="list-style-type: none"> Removing a computer that is working with a Dock I. Removing a computer that is in suspend mode with a Dock I. Removing a computer that is in standby mode with a Dock I. Attaching a computer that is in suspend mode to a Dock I.
4		Orange	Turns on when an inserted PC card (PCMCIA card) is accessed.
5		Orange	Turns on when the diskette drive in the computer is used. When an external diskette drive is used, the indicator on the IBM ThinkPad 750 FDD External Attachment Kit turns on.
6		Orange	<p>Turns on when either of the following is accessed.</p> <ul style="list-style-type: none"> The ThinkPad hard disk drive in the computer. The ThinkPad hard disk drive in the Dock I. <p>SCSI Hard Disk</p> <div style="border: 1px solid black; padding: 5px;"> <p>This indicator does not turn on when a SCSI hard disk is accessed.</p> </div>

Changing Modes

When you are operating a computer that has been attached to the Dock I, you cannot put the computer in hibernation mode. You will hear a warning beep from the computer if you attempt this. However, you can enter suspend and standby modes. The following table summarizes these conditions.

Attempt to Enter	Can the Computer Enter the Mode?	Is a Password Needed?
Suspend Mode	Yes	Power-on password if you have set one. The password prompt and cursor do not appear.
Standby Mode	Yes	None
Hibernation Mode	No	None

Warning Function

When computer power is turned off, attaching or removing the computer to or from the Dock I causes no problems. Make sure that if you attach or remove the computer to or from the Dock I you observe the following rules.

Rules of Attachment and Removal

Rules of Attachment	Rules of Removal
<ol style="list-style-type: none"> 1. Return to operating mode. 2. Shut down the application. 3. Turn off the computer. 4. Attach the computer to the Dock I. 	<ol style="list-style-type: none"> 1. Return to operating mode. 2. Shut down the application. 3. Turn off the computer. 4. Remove the computer from the Dock I.

When computer power is on, attaching or removing the computer, or changing the operation mode can cause a problem. The Dock I informs you with a beep and a warning indicator that you should stop the operation. The following explains this warning function.

Attaching the Computer to the Dock I

Do not attach the computer to the Dock I when:

An application is running on the computer.

The computer has entered standby mode.

The computer has entered suspend mode.

The computer has entered hibernation mode.

The following table shows what will occur.

Current Status	This Will Occur
An application is running on the computer.	These operations are not allowed.
The computer has entered standby mode.	<p>This operation may cause all application memory-related data to be lost even though you stop the attachment in the middle of the operation.</p> <p style="text-align: center;">Power Is Turned Off</p> <p>This operation turns off the power of the computer and the Dock I.</p>
The computer has entered suspend mode.	<p>This operation is not allowed.</p> <p>The Dock I warning indicator turns on and a warning beep sounds.</p> <p style="text-align: center;">Cannot Resume</p> <p>You cannot resume the operation unless you stop and attach the computer immediately.</p>
The computer has entered hibernation mode.	<p>This operation is not allowed.</p> <p>When the computer is turned on, a warning screen appears. In this case, do the following.</p> <ol style="list-style-type: none"> 1. Turn off the the computer. 2. Remove the computer from the Dock I 3. Resume operating mode. 4. Shut down the application. 5. Turn off the computer. 6. Attach the computer to the Dock I



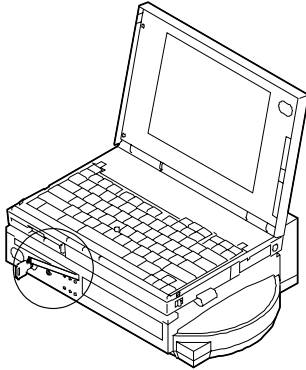
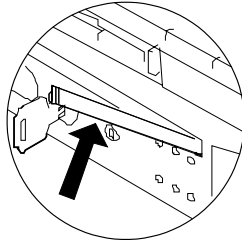
Removing the Computer from the Dock I

Do not remove the computer from the Dock I when the computer is in one of the following modes:

- Operating mode
- Standby mode
- Suspend mode

When the computer is in one of these modes and you inadvertently move the slide-knob, the release/lock lever snaps open 1, the warning indicator blinks, and the warning beep sounds 2.

To recover immediately snap, the release/lock lever closed 3. The computer stays in the same mode before you moved the slide-knob. The following table summarizes the correct operation.

If you slide the slide-knob...	Snap the release/lock lever closed.
<p>1</p>  <p>2 The warning indicator continues to blink.</p> <p>2 The warning beep continues to sound.</p>	<p>3</p> 





Warning: Computer and Dock I power will turn off if you pull the release/lock lever any further after the warning beep is heard and the warning indicator blinks. All application memory-related data may be lost.







Chapter 2. Using the Dock I



This chapter contains the procedures for the initial and basic operations when using the Dock I.

This chapter contains:

Setting Up the Dock I	2-2
Attaching and Removing the Computer	2-3
Attaching the Computer	2-3
Removing the Computer	2-10
Using the Display Stand	2-13
Carrying the Dock I with the Computer Attached	2-14



Setting Up the Dock I

Before you attach the computer to the Dock I, do the following.

	To install the internal CD-ROM drive:	Go to “Installing and Removing the Internal CD-ROM Drive” on page 4-11.
	To install the internal SCSI hard disk:	Go to “Installing and Removing the Internal SCSI Hard Disk” on page 4-14.
	To install the ThinkPad hard disk drive:	Go to “Installing and Removing the ThinkPad Hard Disk Drive” on page 4-17.
	To install the audio cable:	Go to “Installing and Removing the Audio Cable” on page 4-19.
	To install an adapter card:	Go to “Installing and Removing an Adapter Card” on page 4-22.
	To calculate the SCSI cable length:	Go to “SCSI Cable Length Specifications” on page B-4.
	If you have nothing to install or have finished installing all options:	Go to “Attaching and Removing the Computer” on page 2-3.

Attaching and Removing the Computer

CAUTION:

Do not operate the Dock I with the bottom cover removed. To install the bottom cover, see “Installing the Bottom Cover” on page 4-5.

This section describes the procedures for attaching and removing the computer to and from the Dock I.

Attaching the Computer

To attach the computer to the Dock I, do the following:

1.

See “Rules of Attachment and Removal” on page 1-12.

2.

Make sure:

- Your computer is turned off.
- The LCD of your computer is closed.
- All cables of your computer are disconnected.

3.

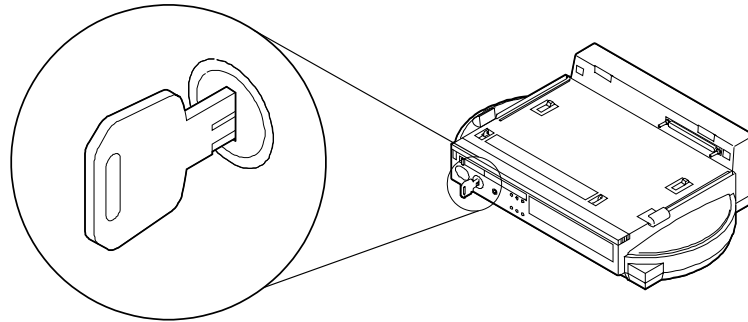
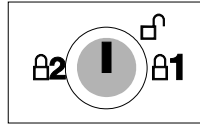
Plug the power cord into the power cord connector of the Dock I.

See page 1-6 for the location of the power cord connector.



4.

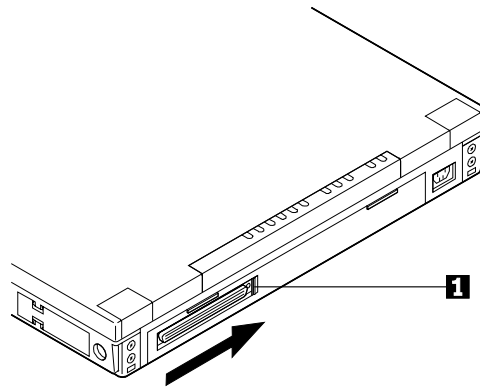
Unlock the security lock on the front of the Dock I by turning the key to the middle position.



5.

Slide and open the door 1 on the rear of the *computer*.

When you have removed the computer, close the door.



6.

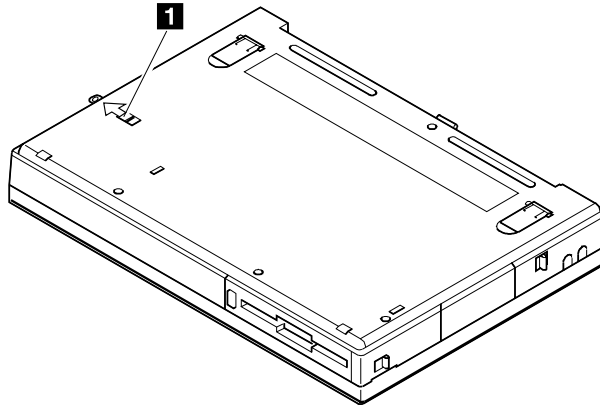
Important

Handle the computer gently; the hard disk is very shock-sensitive.

Turn the *computer* upside down. Slide the locking lever 1 on the bottom of your computer outward.

This is done to make sure that the hard disk inside the computer cannot be removed.

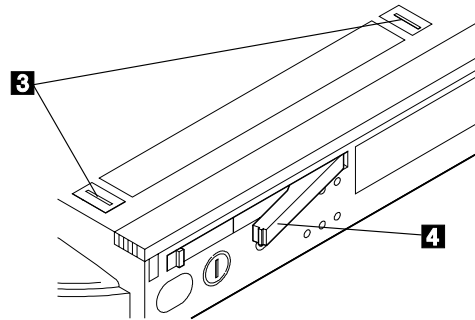
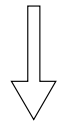
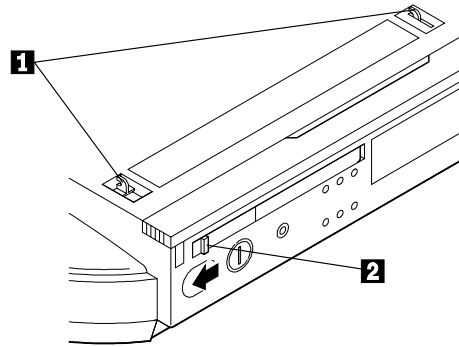
When you have removed the computer, slide the locking lever inward.



7.

Look at the Dock I. If the hooks 1 are raised as shown, you cannot attach the computer. Move the slide-knob 2 to the left.

The hooks 3 are lowered and the release/lock lever 4 snaps open.





8.

Important

Wait at least ten seconds before you re-attach the computer after it has been removed.

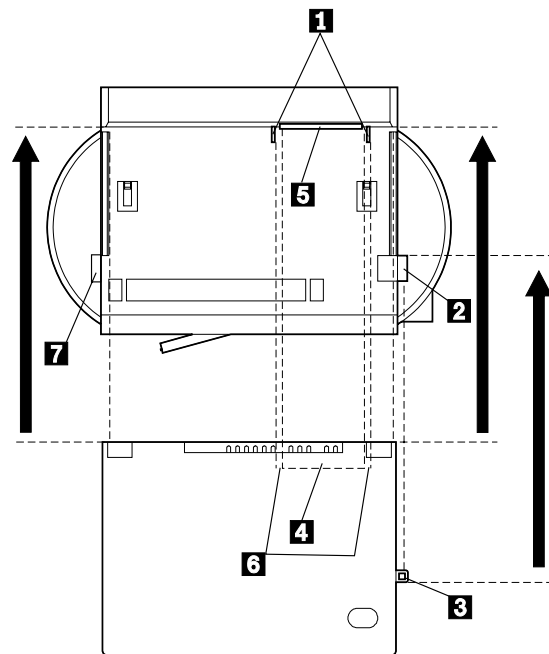
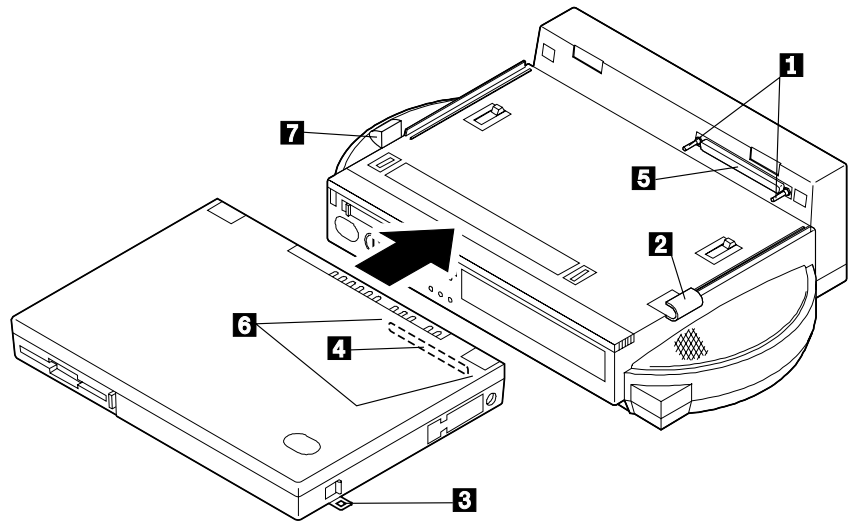
Handle the computer gently; the hard disk is very shock-sensitive.

Place the computer on top of the Dock I and slide the computer in until the guide pins 1 fit into the alignment holes 6.

Use both the docking-knob 7 and the lever cover 2 as finger-holds so that the docking connector 5 fits firmly into the system expansion connector 4.

Note

If the computer is turned off, you can install it with its display (LCD) opened.



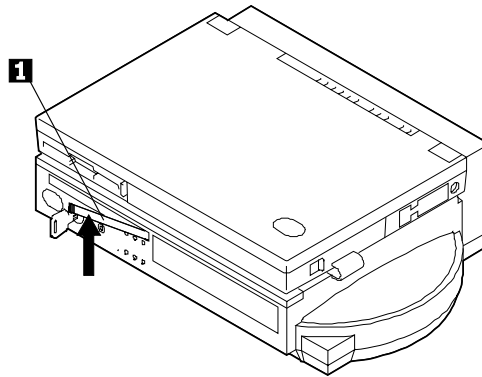


9.

Snap the release/lock lever 1 closed.

Notes

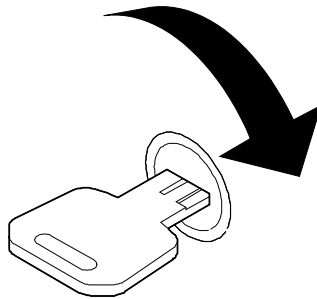
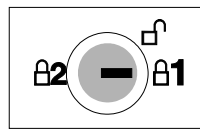
1. Sound from the cooling fan inside the Dock I is normal.
2. When the computer is installed correctly, the docked indicator turns on and stays on.



10.

Lock the security lock on the front of the Dock I by turning the key to the extreme right position.

Remove the key and keep it in a safe place.

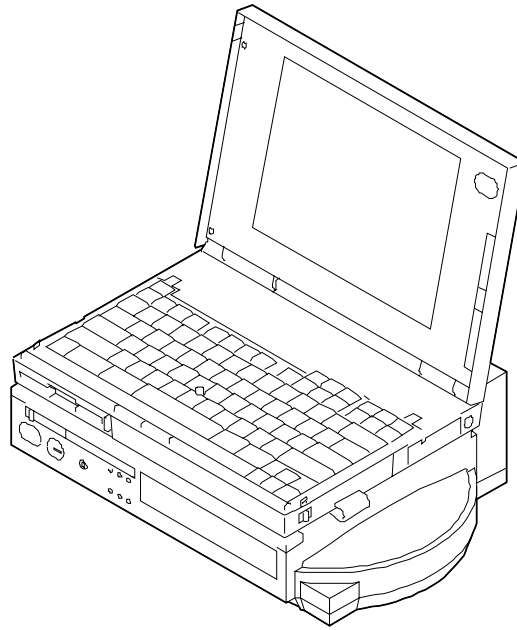


11.

Open the LCD of the computer, turn on all external devices, then turn on the computer.

Notes

1. If the warning beep sounds and the warning indicator blinks, make sure that the release/lock lever is locked. See step 9 on page 2-8.
2. The Dock I is not equipped with a power switch. The power switch of the computer turns on and off the power of itself and the Dock I. If the battery pack is installed in the computer, charging of the battery pack starts automatically.



You can now use the computer.



Removing the Computer

To remove the computer from the Dock I, do the following:

1.

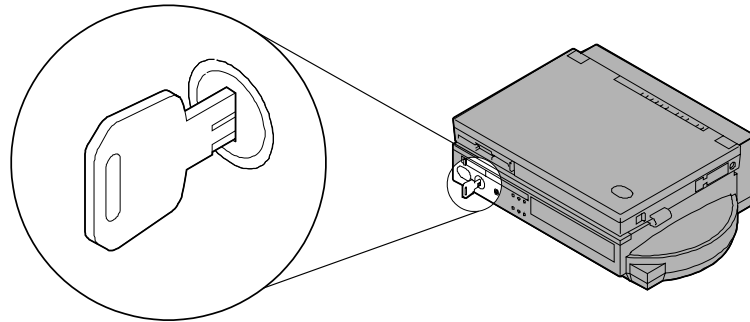
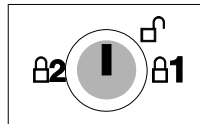
See “Rules of Attachment and Removal” on page 1-12.

2.

Shut down the application program. Turn off the computer; this also turns off the Dock I. Close the LCD of the computer.

3.

Unlock the security lock on the front of the Dock I by turning the key to the middle position.



4.

Slide the slide-knob to the left.

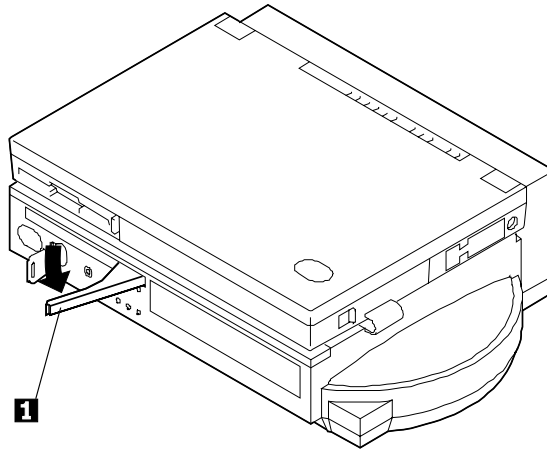
Refer to step 7 on page 2-6.





5.

Pull the release/lock lever 1 until it stops.

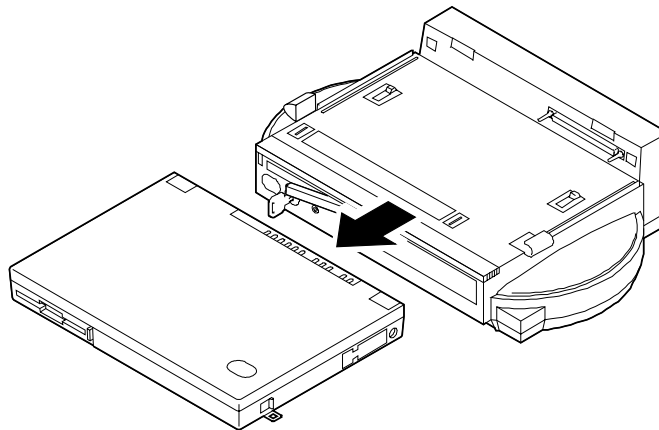


6.

Important

Handle the computer gently; the hard disk is very shock-sensitive.

Remove the computer from the Dock I.





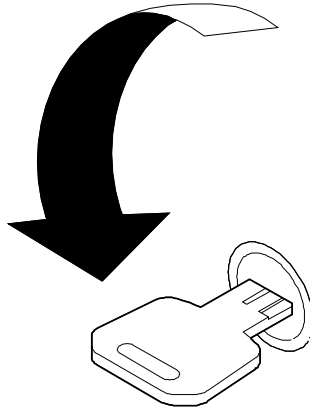
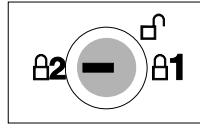
7.

To prevent unauthorized persons from using your Dock I, lock the security lock on the front of the Dock I by turning the key to the extreme left position.

Remove the key and keep it in a safe place.

Key Positions

The key positions and their functions are explained in "Key Positions and Their Functions" on page 3-2.



You have completed the removal of the computer from the Dock I.

Where to Go Next

Installation of the operating system on an additional hard disk: page A-1

Display stand: page 2-13

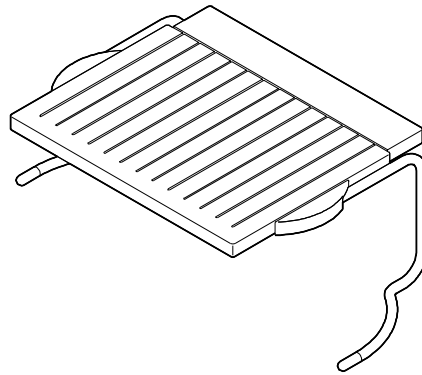
Security hook: page 3-4



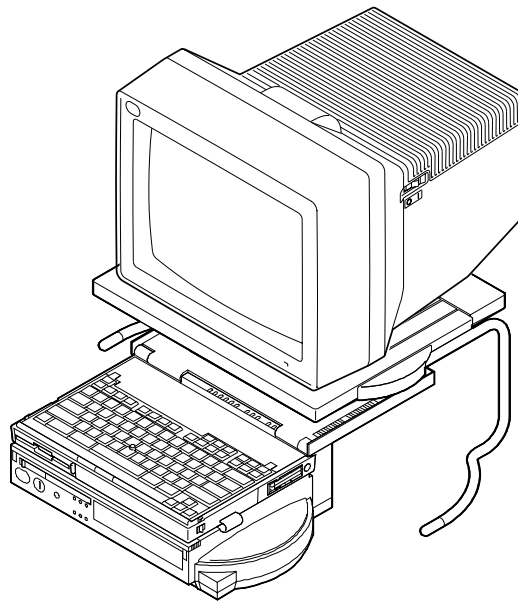


Using the Display Stand

The display stand is available as an IBM option. You can use the display stand separately from the Dock I.



If you are going to view the screen when the external display is on the display stand and are going to type on the keyboard of the *notebook* computer, open the LCD at an angle of 180 degrees and keep it out of the way under the display stand.





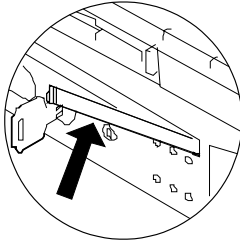
Carrying the Dock I with the Computer Attached

Correctly Attached?

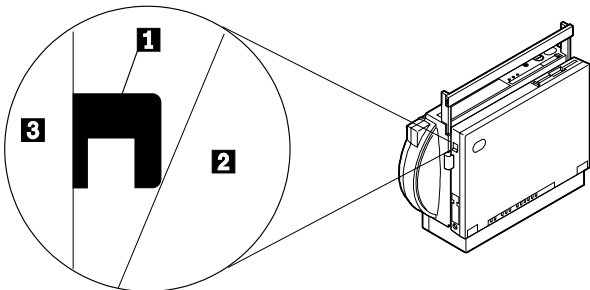
Before you carry the Dock I with the computer attached, make sure that:

1. The release/lock lever is locked.

If it is not locked, the computer could separate from the Dock I.

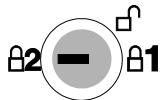


2. The computer (represented by 2) is *not* attached to the Dock I (represented by 3) with the hooks 1 as shown.



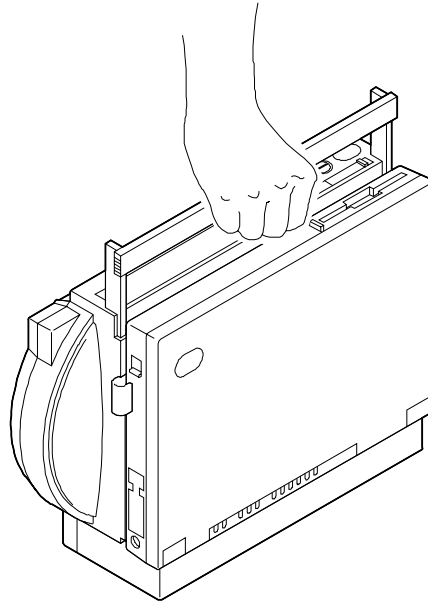
If it is attached in this manner, do the following.

- a. Remove the computer by referring to “Removing the Computer” on page 2-10.
 - b. Re-attach the computer by referring to “Attaching the Computer” on page 2-3.
3. The security lock key is turned to the following position and the key is removed.



The handle in the Dock I can be used to carry the Dock I or carry the Dock I with the computer attached for short distances.





When you carry the Dock I with the computer attached for longer distances, use the carrying case. The carrying case is available as an IBM accessory.

The handle can be used as a palm rest when you operate the computer.

Note: If you are going to use the computer keyboard with the Dock I attached for more than 30 minutes continuously or more than a total of one hour a day, appropriately adjust the height of the system or use an external keyboard.







Chapter 3. Using the Security Features



This chapter contains information on how you can protect your Dock I against theft or unauthorized use. There are two ways to secure the Dock I; use the security lock or attach the it to a work surface.

This chapter contains:

Using the Security Lock	3-2
Security Lock Description	3-2
Key Positions and Their Functions	3-2
Securing the Dock I with the Security Hook	3-4
Ordering Additional Security Lock Keys	3-5





Using the Security Lock

You can secure the Dock I and the computer by using the security lock on the front of the Dock I. The following describes the security lock and shows the various ways to use it.

Security Lock Description


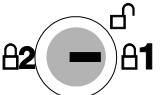
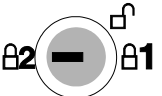
The security lock secures the following:

Bottom Cover	When the bottom cover is locked by the security lock, the bottom cover cannot be removed to protect options installed in the Dock I.
Computer	The computer cannot be removed when the key position is <i>Lock 1</i> or <i>Lock 2</i> . When you attach or remove the computer to or from the Dock I, set the key position to <i>Unlock</i> . For the key positions, see “Key Positions and Their Functions.”
Power	The Dock I power cannot be turned on when the power is locked by the security lock.

Key Positions and Their Functions

The following shows the key positions of the security lock and their corresponding functions.



Key Position	Explanation	Can the Bottom Cover Be Removed?	Can the Dock I Power Be Turned On or Off?	Can the Key Be Removed?
Unlock 	Turn to this position to remove the bottom cover.	Yes	Yes (On or Off).	No
Lock 1 	The key is turned to this position when the Dock I is used.	No	Yes (On or Off).	Yes
Lock 2 	The key is turned to this position to prevent unauthorized persons from turning on and using the Dock I.	No	Cannot be turned on after the Dock I is turned off. <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p style="text-align: center;">Note</p> <p>To turn on the Dock I, turn the key to the extreme right position.</p> </div>	Yes

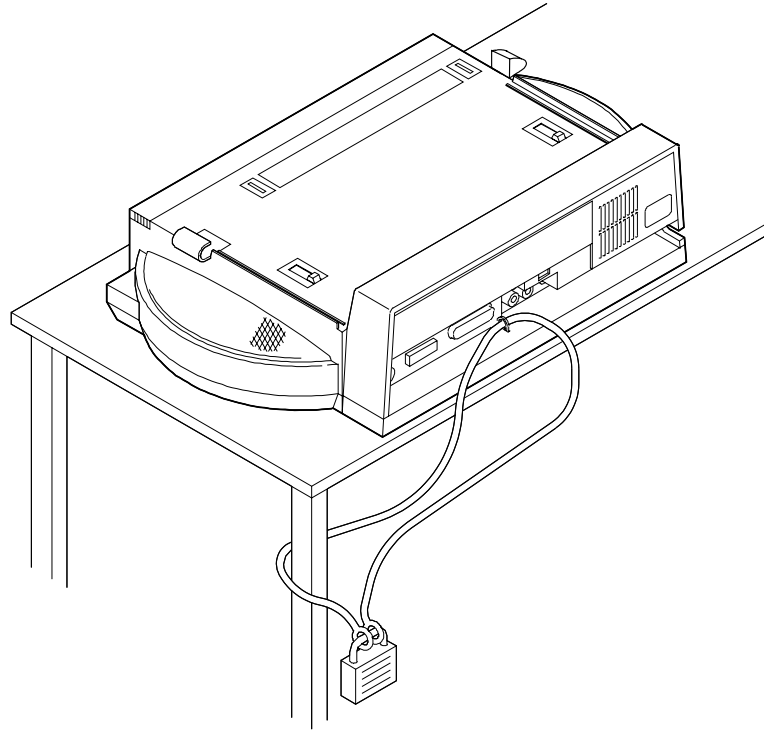


Securing the Dock I with the Security Hook

You can secure the Dock I to a table or desk by routing a chain or cable through the security hook at the rear of the Dock I.

Note

You must purchase the chain or cable and lock. The diameter of the chain or cable must be approximately 4 mm (0.15 in.) or less.



Ordering Additional Security Lock Keys

Information for ordering additional keys may be obtained by writing to the address given on the tag attached to the keys. When requesting additional keys, be sure to include the key number from the tag. An additional charge is required.

The following information should be recorded. *The key number is on the tag that is attached to the keys.*

IBM Product Name	IBM ThinkPad Dock I
Key Number	_____





Chapter 4. Installing and Removing IBM Options



Options are devices that you can attach to or install inside the Dock I to expand the capabilities of your computer. This chapter provides the instructions to add internal options to your computer.

This chapter contains:

- Handling Internal Options 4-2
- Removing and Installing the Bottom Cover 4-3
 - Removing the Bottom Cover 4-3
 - Installing the Bottom Cover 4-5
- Removing and Installing the Blank Bezel 4-7
 - Removing the Blank Bezel 4-8
 - Installing the Blank Bezel 4-9
- Releasing the Latches 4-10
- Installing and Removing the Internal CD-ROM Drive 4-11
 - Installing the Internal CD-ROM Drive 4-11
 - Removing the Internal CD-ROM Drive 4-13
- Installing and Removing the Internal SCSI Hard Disk 4-14
 - Installing the Internal SCSI Hard Disk 4-14
 - Removing the Internal SCSI Hard Disk 4-16
- Installing and Removing the ThinkPad Hard Disk Drive 4-17
 - Installing the ThinkPad Hard Disk Drive 4-17
 - Removing the ThinkPad Hard Disk Drive. 4-18
- Installing and Removing the Audio Cable 4-19
 - Installing the Audio Cable 4-19
 - Removing the Audio Cable 4-21
- Installing and Removing an Adapter Card 4-22
 - Installing an Adapter Card 4-22
 - Removing the Adapter Card 4-23



Handling Internal Options

Warning: Do not open the static-protective package containing the option until you are instructed to install the option. Static electricity can damage the option.

When you are instructed to install the option, observe these precautions as you open the static-protective package:

Touch the static-protective package containing the option to a metallic portion of the Dock I for at least 2 seconds. This action reduces the static electricity from the package and from your body.

Do not touch any exposed circuitry on the option.

Prevent other people from touching the option.

Limit your movement. Movement can cause static-electricity buildup.

Always handle the option carefully and by its edges.

If you *must* put the option down after it has been removed from the package, place the option on the static-protective package on a level surface. Do not place the option on a metal table.

Removing and Installing the Bottom Cover

This section describes the procedures for removing and installing the bottom cover of the Dock I.

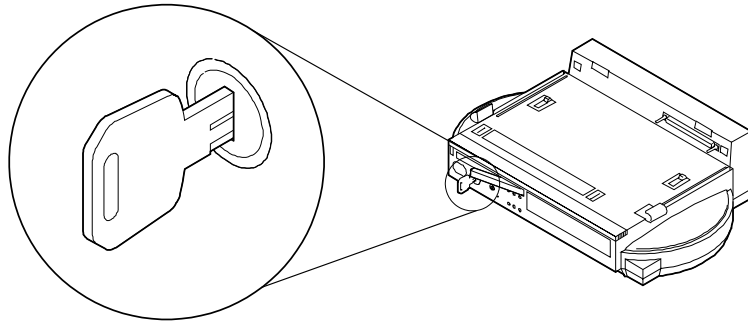
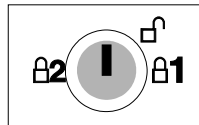
Removing the Bottom Cover

To remove the bottom cover, do the following:

1.

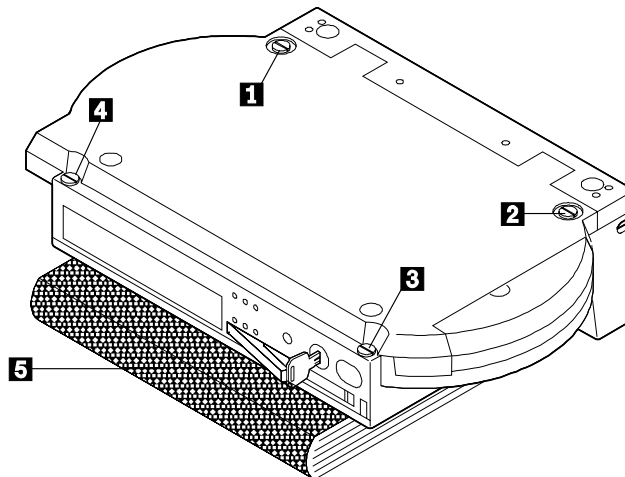
Unlock the security lock on the front of the Dock I by turning the key to the middle position.

Move the slide-knob to the left. (Refer to step 7 on page 2-6.)



2.

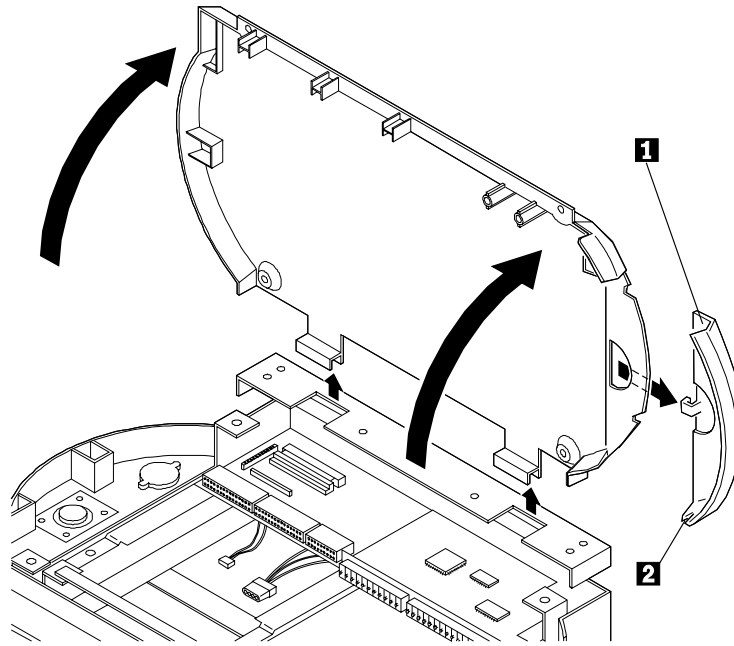
Turn the Dock I upside down and place it on a book 5 as shown. Unscrew the four screws (1 2 3 4) using a coin.





3.

Open the bottom cover. You can remove the cable guide cover **1** if a cable from inside the Dock I cannot be routed through the cable opening **2**.



You have completed the removal of the bottom cover.



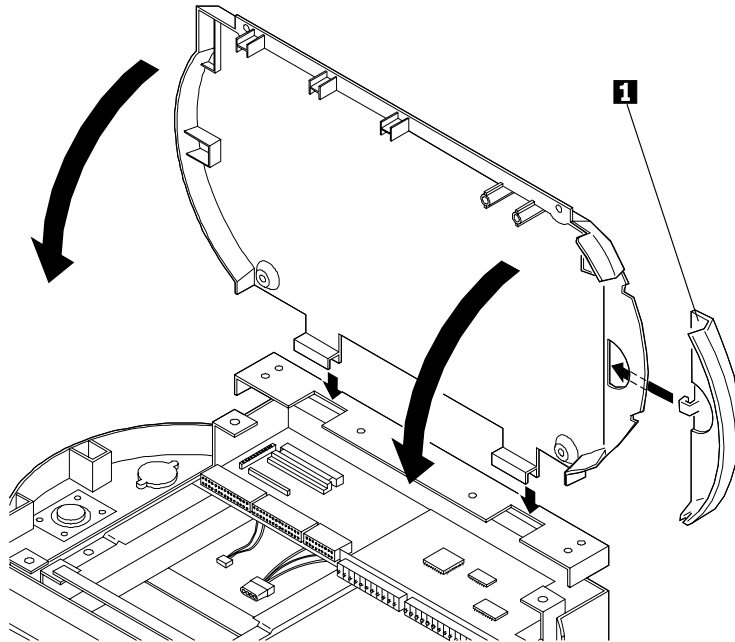


Installing the Bottom Cover

To install the bottom cover, do the following:

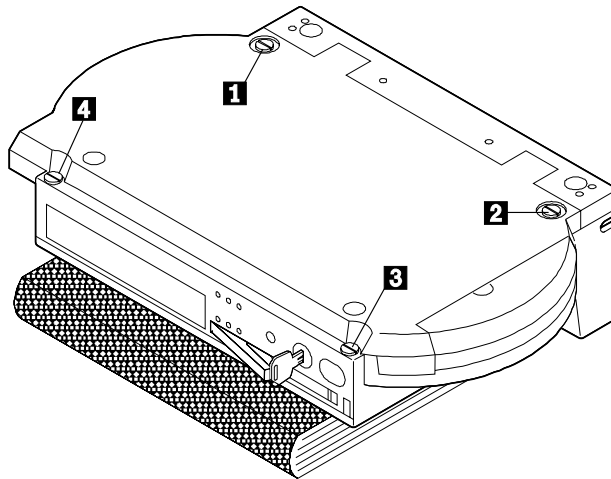
1.

Install the cable guide cover 1 in the bottom cover if a cable from inside the Dock I can be routed through the cable opening. Close the bottom cover.



2.

Tighten the four screws (1 2 3 4) using a coin.





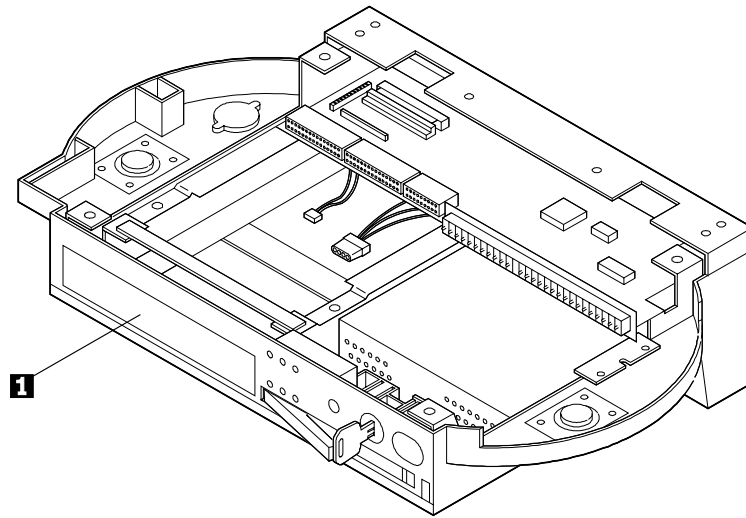
You have completed the installation of the bottom cover.





Removing and Installing the Blank Bezel

This section describes the procedures for removing and installing the blank bezel 1 .



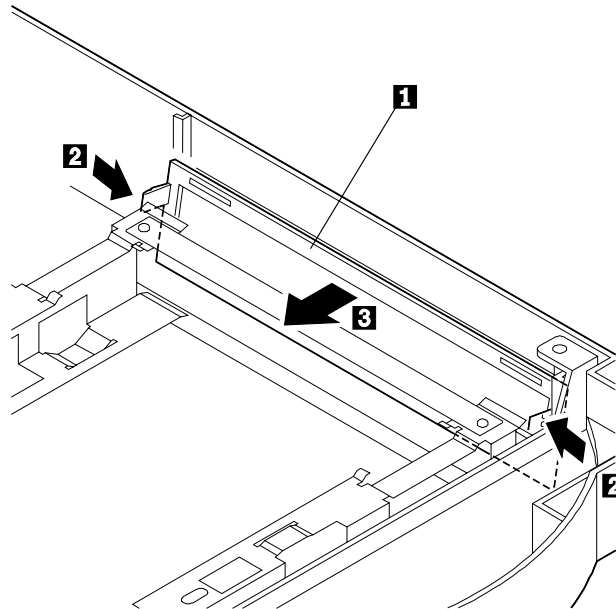


Removing the Blank Bezel

To remove the blank bezel, do the following:

1.

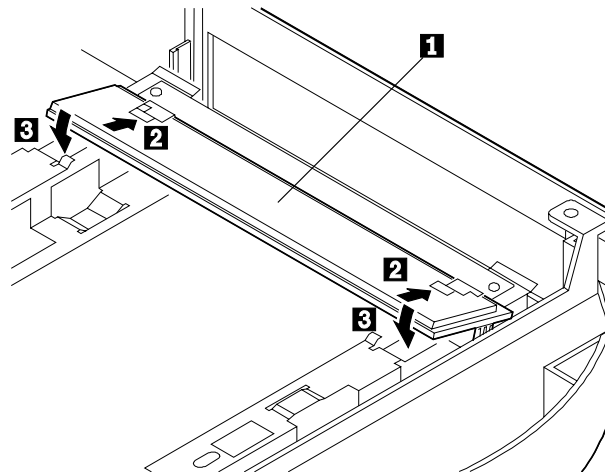
If you install an option in this compartment, press the latches 2 of the blank bezel 1 at the same time to remove it 3 .



2.

If you do not need to reinstall the blank bezel 1 because of an option, for example, the internal CD-ROM drive, place the blank bezel in the order of 2 and 3 .

If you need to reinstall the blank bezel 1 because of an option, for example, the internal SCSI hard disk, perform step 1 in the reverse order.



You have completed the removal of the blank bezel.





Installing the Blank Bezel

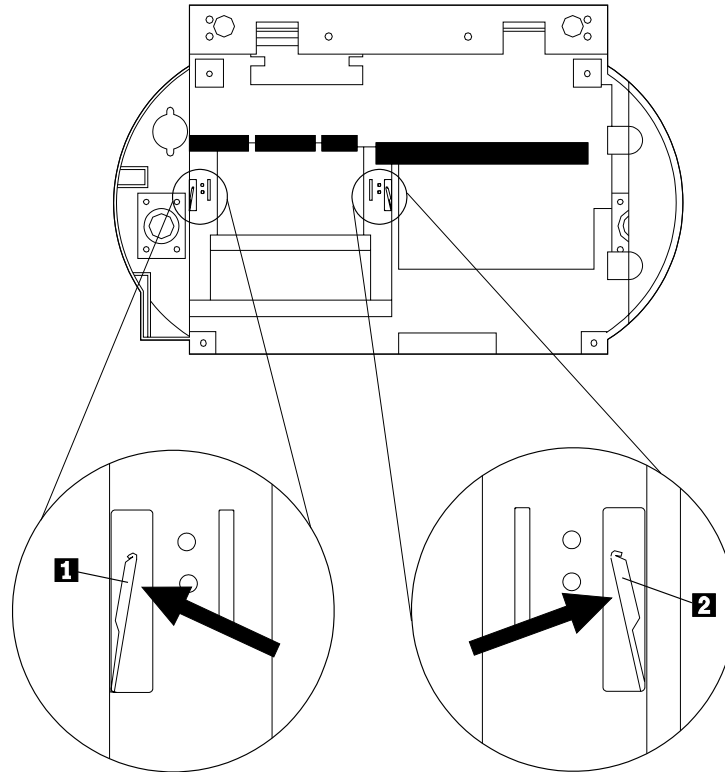
To install the blank bezel, perform the installation procedure in the reverse order.





Releasing the Latches

To release the latches for an internal storage device, press the left and right latches (1 and 2) at the same time as shown.



Installing and Removing the Internal CD-ROM Drive

The Dock I can accommodate one internal CD-ROM drive.

This section describes the procedures for installing and removing the internal CD-ROM drive.

CAUTION:

- 1. This CD-ROM drive uses a laser system. To ensure correct use of this product, read the manual that came with the CD-ROM drive carefully and keep the manual for future reference. Should the unit ever require maintenance, contact an authorized service location.**
- 2. Use of controls, adjustments or the performance of procedure other than those specified may result in hazardous radiation exposure.**
- 3. To prevent direct exposure to the laser beam, do not open the enclosure.**

Installing the Internal CD-ROM Drive

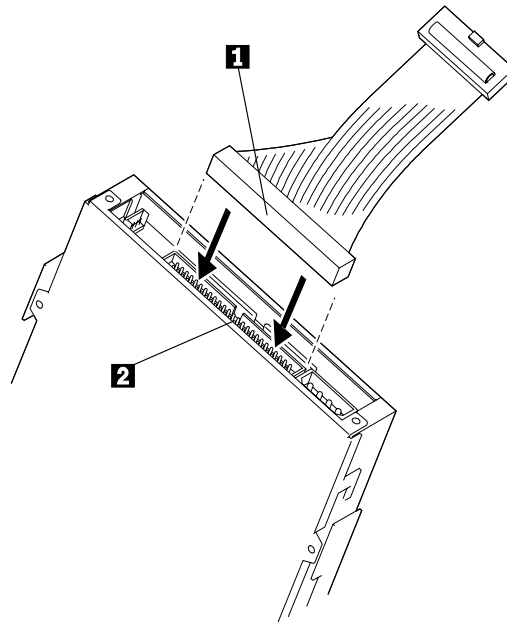
To install the CD-ROM drive in the Dock I, do the following:

- 1.**
Remove the bottom cover. See "Removing the Bottom Cover" on page 4-3.
- 2.**
If you have installed an adapter card, remove it. See "Removing the Adapter Card" on page 4-23.
- 3.**
If the blank bezel is installed, remove it. See "Removing the Blank Bezel" on page 4-8.



4.

Insert the connector 1 of the flat-ribbon cable into the connector 2 of the CD-ROM drive.

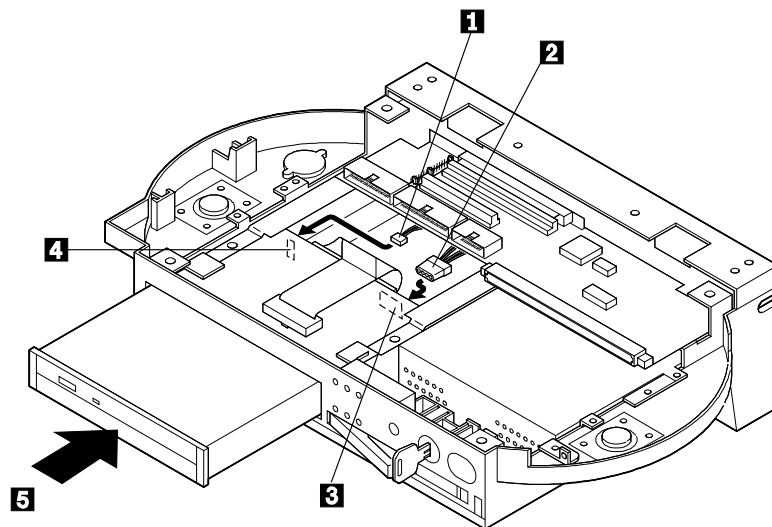


5.

Note

If the audio connector 1 and the power connector 2 are fastened together with a twist-tie, undo the twist-tie and separate them.

Insert the CD-ROM drive into the compartment 5. Insert the power connector 2 into the connector 3. Insert the audio connector 1 into the connector 4.



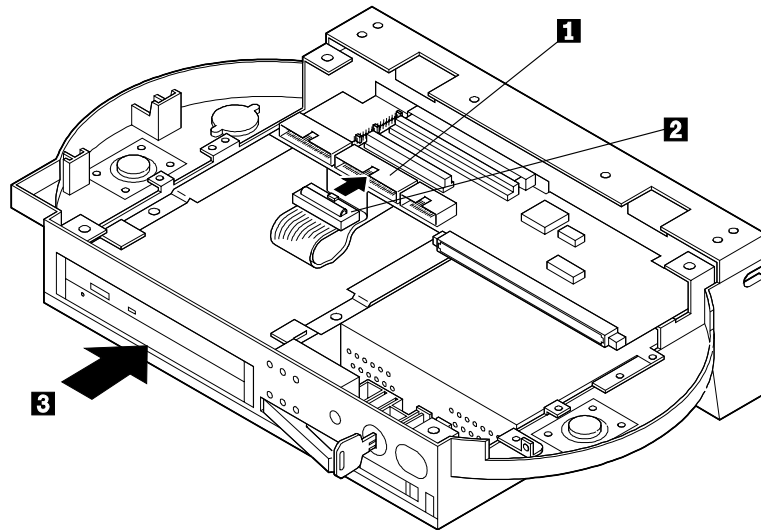


6.

Insert the CD-ROM in until it stops **3** . Insert the connector **2** into the connector **1** .

Latches

If you need to remove the CD-ROM, you must release the latches. See “Releasing the Latches” on page 4-10.



7.

If you have removed an adapter card, reinstall it.

See “Installing an Adapter Card” on page 4-22.

8.

Install the bottom cover.

See “Installing the Bottom Cover” on page 4-5.

You have completed the installation of the internal CD-ROM drive in the Dock I.

Removing the Internal CD-ROM Drive

To remove the internal CD-ROM drive, perform the installation procedure in the reverse order.

Installing and Removing the Internal SCSI Hard Disk

The Dock I can accommodate one, under-1-inch-high internal SCSI hard disk.

This section describes the procedures for installing and removing the internal SCSI hard disk for the Dock I.

Installing the Internal SCSI Hard Disk

To install the internal SCSI hard disk in the Dock I, do the following:

- 1.** Remove the bottom cover. See "Removing the Bottom Cover" on page 4-3.
- 2.** If you have installed an adapter card, remove it. See "Removing the Adapter Card" on page 4-23.
- 3.** If the blank bezel is installed, remove it. See "Removing the Blank Bezel" on page 4-8.
- 4.** Attach the internal SCSI hard disk to the optional Internal SCSI Device Installation Kit. Refer to the manual that came with the option.



5.

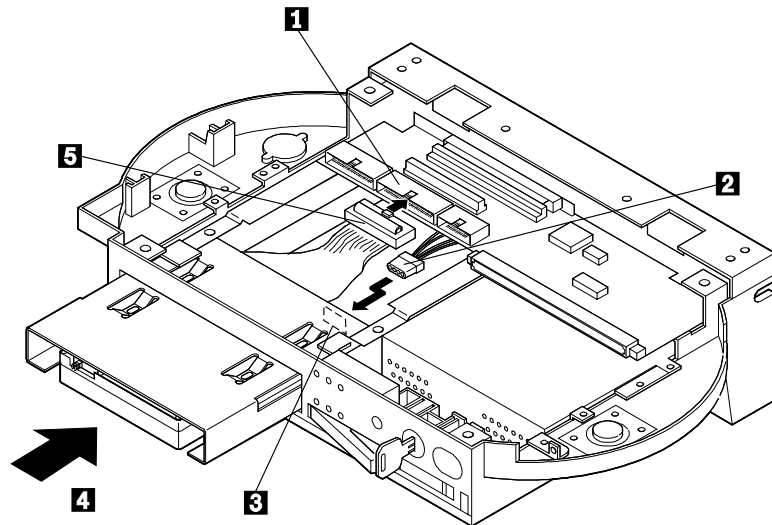
Note

If the power connector 2 and the other small connector (not shown) are fastened together with a twist-tie, undo the twist-tie and separate them.

Insert the SCSI hard disk into the compartment 4. Insert the power connector 2 into the connector 3. Insert the connector 5 into the connector 1. Push the SCSI hard disk in until it stops.

Latches

If you need to remove the SCSI hard disk, you must release the latches. See "Releasing the Latches" on page 4-10.



6.

Install the blank bezel. Perform the removal procedure in the reverse order.

See "Removing the Blank Bezel" on page 4-8.

7.

If you have removed an adapter card, reinstall it.

See "Installing an Adapter Card" on page 4-22.



8.

Install the bottom cover.

See “Installing the Bottom Cover” on page 4-5.

You have completed the installation of the internal SCSI hard disk in the Dock I.

SCSI Information

Read Chapter 5, “Using the SCSI Controller and Support Software” on page 5-1 before you use the internal SCSI hard disk.

Removing the Internal SCSI Hard Disk

To remove the internal SCSI hard disk, perform the installation procedure in the reverse order.

Installing and Removing the ThinkPad Hard Disk Drive

The Dock I can accommodate one ThinkPad hard disk drive.

This section describes the procedures for installing and removing the ThinkPad hard disk drive.

Installing the ThinkPad Hard Disk Drive

To install the ThinkPad hard disk drive in the Dock I, do the following:

- 1.** Remove the bottom cover. See “Removing the Bottom Cover” on page 4-3.
- 2.** If you have installed an adapter card, remove it. See “Removing the Adapter Card” on page 4-23.
- 3.** If the blank bezel is installed, remove it. See “Removing the Blank Bezel” on page 4-8.
- 4.** Attach the ThinkPad hard disk drive to the optional HDD Installation Kit. Refer to the manual that came with the option.

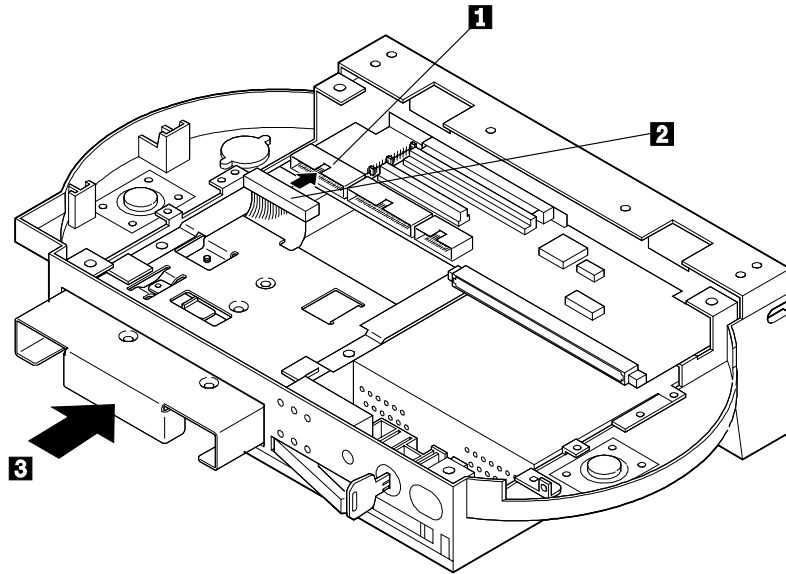


5.

Insert the ThinkPad hard disk drive into the compartment 3 . Insert the connector 2 of the flat-ribbon cable into the connector 1 of the Dock I. Push the ThinkPad hard disk drive in until it stops.

Latches

If you need to remove the ThinkPad hard disk drive, you must release the latches. See "Releasing the Latches" on page 4-10.



6.

Install the blank bezel. Perform the removal procedure in the reverse order.

See "Removing the Blank Bezel" on page 4-8.

7.

If you have removed an adapter card, reinstall it.

See "Installing an Adapter Card" on page 4-22.

8.

Install the bottom cover.

See "Installing the Bottom Cover" on page 4-5.

You have completed the installation of the ThinkPad hard disk drive in the Dock I.

Removing the ThinkPad Hard Disk Drive.

To remove the ThinkPad hard disk drive, perform the installation procedure in the reverse order.



Installing and Removing the Audio Cable

This section describes the procedures for installing and removing the audio cable.

Installing the Audio Cable

To install the audio cable in the Dock I, do the following:

1.

Remove the bottom cover.

See “Removing the Bottom Cover” on page 4-3.

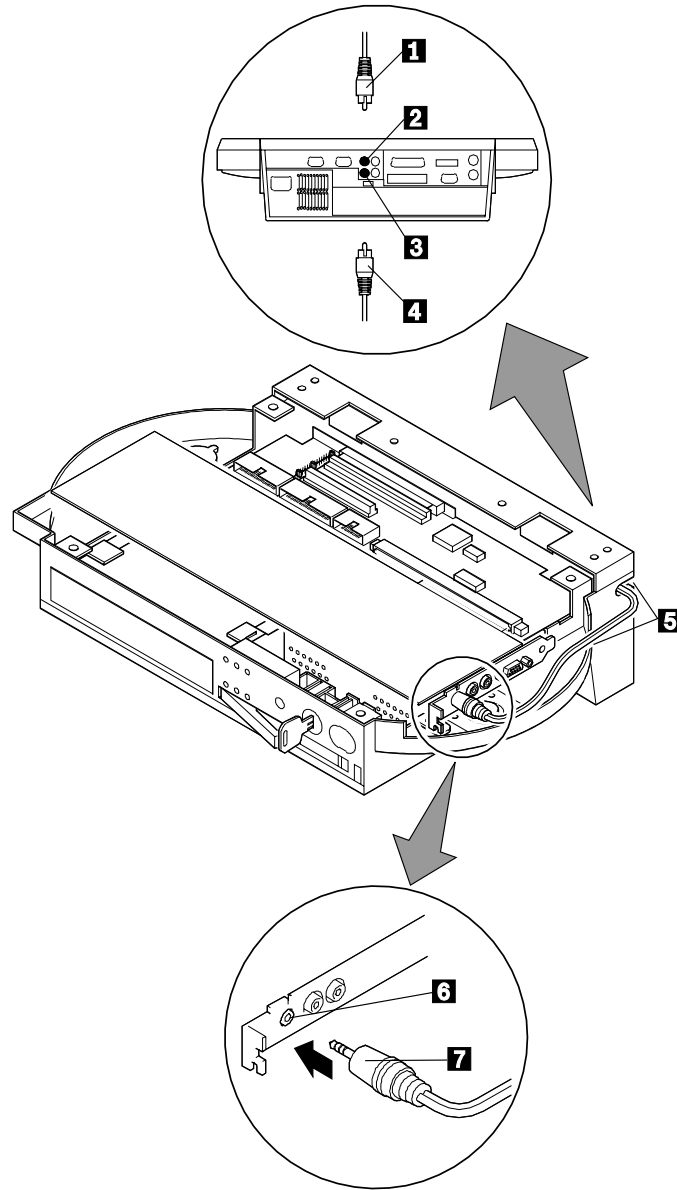


2.

Insert the plug 7 of the audio cable into the speaker-in jack 6 of the adapter card.

Insert the plug (white) 4 of the audio cable into the speaker-in-left jack (white) 3 of the Dock I. Insert the plug (red) 1 of the audio cable into the speaker-in-right jack (red) 2 of the Dock I.

Route the audio cable through the openings 5 .



3.

Install the bottom cover.

See “Installing the Bottom Cover” on page 4-5.

You have completed the installation of the audio cable in the Dock I.

Removing the Audio Cable

To remove the audio cable, perform the installation procedure in the reverse order.



Installing and Removing an Adapter Card

The Dock I can accommodate one full- or half-size, AT-bus 16-bit adapter card. This section describes the procedures for installing and removing the adapter card.

Installing an Adapter Card

To install the adapter card in the Dock I, do the following:

1.

Remove the bottom cover.

See “Removing the Bottom Cover” on page 4-3.

Note

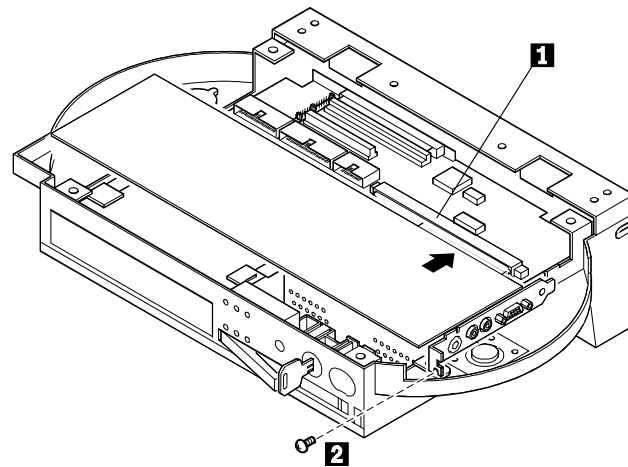
Remove the cable guide cover if the cable cannot be routed through the cable opening.

2.

Remove the screw 2 .

Insert the adapter card into the expansion slot connector of the Dock I 1 .

Tighten the screw 2 .



3.

Install the bottom cover.

See “Installing the Bottom Cover” on page 4-5.

You have completed the installation of the adapter card.



Removing the Adapter Card

To remove the adapter card, perform the installation procedure in the reverse order.
do the following:



Chapter 5. Using the SCSI Controller and Support Software

This chapter explains:

How to set up the SCSI controller's configuration.

How to install the option device drivers that are supported on the Dock I Option Diskette.

The device driver options, when installed, enable your option devices to work in conjunction with your IBM ThinkPad. Installing the options requires a knowledge of IBM DOS and/or OS/2 commands.

How to run the SCSI Diagnostics Utility Program to verify the configuration you just installed.

Important

This chapter must be referenced prior to installation.

This section supersedes all other documents in the event of conflicting instructions. All relevant documents should be utilized.

This chapter contains:

Setting up the SCSI Controller Configuration	5-3
Default Settings	5-3
SCSI Controller's Memory Address Settings	5-5
SCSI Controller's Interrupt Settings	5-5
SCSI ID	5-6
Terminator for a SCSI Device	5-7
Checking Your Work	5-8
Installing Support Software	5-9
Before You Begin	5-9
Special Considerations	5-9
Installing the DOS Device Drivers	5-9
Installation Procedure	5-9
Installing the OS/2 Device Drivers	5-14
SCSI Adapter Support Installation for the Dock I	5-14
SCSI Device Support Installation	5-15
Installing the OS/2 Version 2.1 CD-ROM Device Driver	5-18
Using the SCSI Diagnostics Utility	5-20
Preparing SCSI Drives	5-20



Starting the SCSI Diagnostics Utility 5-21



Setting up the SCSI Controller Configuration

This section explains how to set up the SCSI controller's configuration.

Default Settings

The configuration of the SCSI controller is preset to the default. The default settings will serve most installations.

The default configuration of the SCSI controller and ROM BIOS is set up as follows.

Memory Address Range	CA00h–CBFFh
Interrupt select	IRQ11
I/O Address	None

The SCSI controller uses no DMA channels and no I/O ports. All operations are memory-mapped I/O.

The standard configuration uses 8K of memory space at address CA00h in the system (the area reserved for ROM BIOS), and uses Interrupt Level 11.

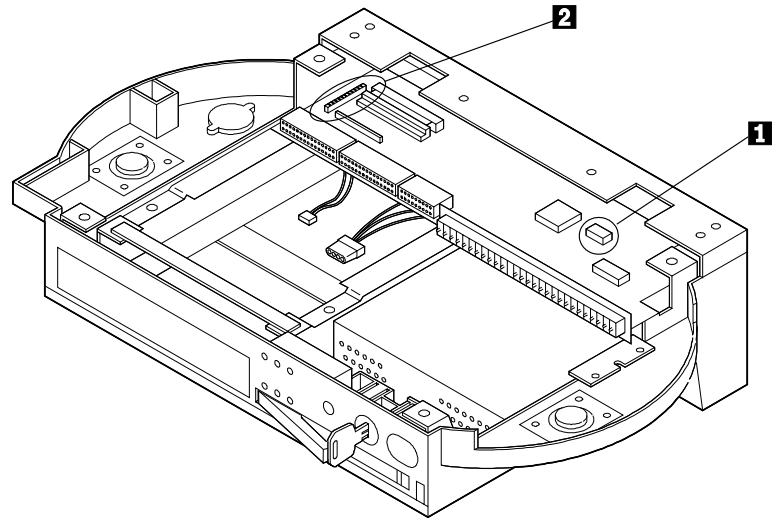
Note: 8KB ROM BIOS is disabled when no SCSI device is installed.



SCSI Controller Board Layout

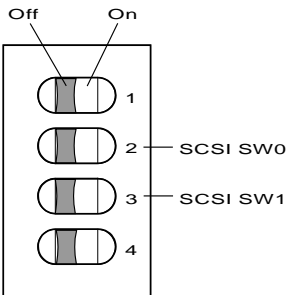
The following figure is a diagram showing the SCSI controller's board layout. Locate the following switches and jumpers in the Dock I

- 1 SCSI Controller's Memory Address Switches
- 2 SCSI Controller's IRQ Jumpers





SCSI Controller's Memory Address Settings

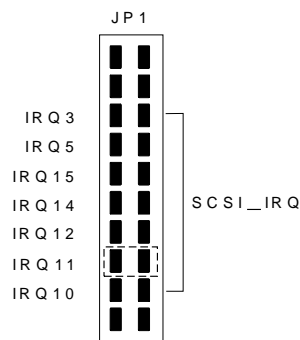
Memory Address Switches	Settings		Memory Address Range
	SCSI SW0	SCSI SW1	
	Off	Off	CA00h-CBFFh
	On	Off	C800h-C9FFh
	Off	On	CE00h-CFFFh
	On	On	DE00h-DFFFh

For future reference, if you select an alternate address, record it here.

SCSI Controller's Alternate Memory Address: _____

SCSI Controller's Interrupt Settings

To select the interrupt level, install the jumper in one of the IRQ jumpers, IRQ 3, 5, 15, 14, 12, 11, 10. The following figure shows the default setting.



To disable the interrupt level setting, install the jumper as shown.

Note: Do not disable the interrupt level setting if you are going to use OS/2.



For future reference, if you select an interrupt, record it here.

IRQ No.: _____

SCSI ID

Important

Ensure that no more than 5 SCSI devices (internal or external) are attached to the Dock I SCSI controller.

Ensure that no more than 3 meters (approximately 10 feet) total maximum of cable length are used.

There are eight SCSI IDs—7 through 0. SCSI ID 7 is reserved exclusively for the SCSI controller. Each device must have a unique SCSI ID. You can set your devices—a maximum of 5—to any of the other available SCSI IDs.

Due to the method by which the SCSI controller services option devices, follow the guidelines below for establishing device SCSI IDs:

If you are installing:

IBM 3.5-inch SCSI Rewritable Optical Disk Drive, or
IBM 5.25-inch SCSI Rewritable Optical Disk Drive

use a lower SCSI ID than used for your hard disk drives.

If you are installing an IBM PS/2 CD-ROM drive (external), use a lower SCSI ID than used for your hard disk drives and the above rewritable optical disk drives.

An example of the recommended SCSI ID assignments is shown below.





SCSI ID	SCSI Device
7	SCSI Controller
6	Hard Disk Drive
5	Hard Disk Drive
4	IBM 3.5-inch SCSI Rewritable Optical Disk Drive, or IBM 5.25-inch SCSI Rewritable Optical Disk Drive
3	IBM PS/2 CD-ROM Drive (external)
2	
1	
0	

Write down the SCSI IDs of SCSI devices attached to your Dock I to complete the following table.

SCSI ID	SCSI Device
7	SCSI Controller
6	
5	
4	
3	
2	
1	
0	

Terminator for a SCSI Device

If you have only one external device, it must be terminated. If you have more than one external device, the last device in the chain (the device farthest from the SCSI controller) must be terminated. If you have an internal device, that device must be terminated.



Checking Your Work

Be sure that your installation meets the following requirements.

	Requirements
	Each SCSI device connected to the SCSI controller is set to a different SCSI ID.
	If you have an internal device, that device is terminated.
	If you have only one external device, that device is terminated.
	If you have more than one external device, the last device in the chain (the device farthest from the SCSI controller) is terminated.
	The cabling is correct and no options or cables are loose.
	Ensure that no more than 3 meters (approximately 10 feet) total maximum of cable length are used.
	Ensure that no more than 5 SCSI devices (internal or external) are attached to the Dock I SCSI controller.



Installing Support Software

This section provides an overview of the installation of support software including the Dock I Option Diskette.

Before You Begin

Some SCSI devices are shipped with diskettes called:

- Option diskettes

- Option/device driver diskettes

Most SCSI hard disk drives do not require these diskettes. Most SCSI devices other than hard disk drives, such as CD-ROMs and optical drives, require an option diskette.

Check for option diskettes in the package containing SCSI devices that you will be connecting to the Dock I SCSI controller. Also check the manuals that came with those devices. If any diskettes were included, keep these for use during the Dock I Option Diskette installation procedures. These diskettes contain files necessary in some installations.

Special Considerations

In this chapter, all references to the IBM PS/2 CD-ROM also refers to IBM PS/2 SCSI CD-ROM II.

Where to Go Next

Installing the DOS Device Drivers	Page 5-9
Installing the OS/2 Device Drivers	Page 5-14
Using the SCSI Diagnostics Utility	Page 5-21

Installing the DOS Device Drivers

This section explains how to install the DOS device drivers for the IBM DOS operating system environment.

SCSI hard disk drives, when attached to the Dock I SCSI controller under IBM DOS, require no device drivers. Follow the instructions with the *IBM DOS User's Guide* to prepare drives for use.

Installation Procedure

To install the DOS device drivers, do the following.





1.

You will need to have IBM DOS installed on your hard disk.

2.

By referring to the instructions supplied with the SCSI device, install the DOS device drivers for the device.

3.

If the SCSI device is one of these, it is required to update the DOS device driver on the Dock I Option Diskette.

If the SCSI device is other than these, the installation of the DOS device driver is complete.

IBM PS/2 CD-ROM Drive

IBM 3.5-inch Rewritable Optical Disk Drive

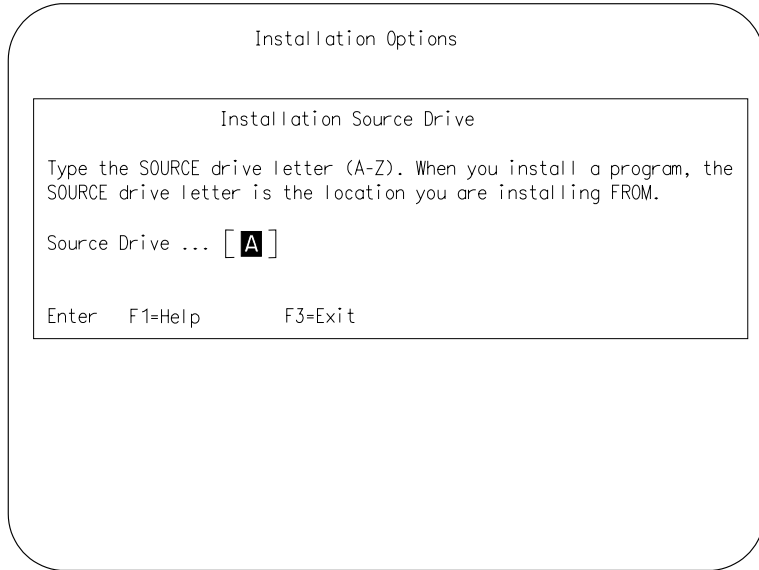
IBM 5.25-inch Rewritable Optical Disk Drive





4.

Insert the Dock I Option Diskette into drive A. At the operating system prompt, type UINSTALL and press **Enter**. This screen appears.

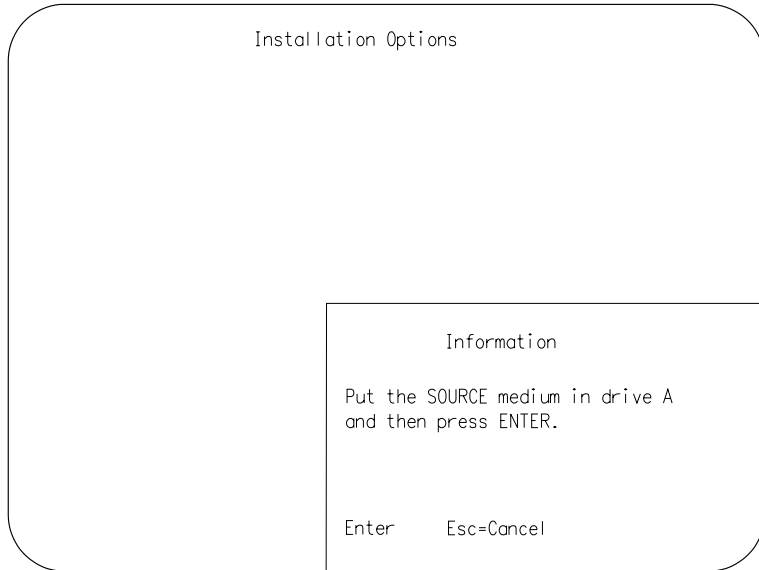


5.

Press **Enter**. This screen appears.

Note

The reference to “SOURCE medium” on this screen means the Dock I Option Diskette.



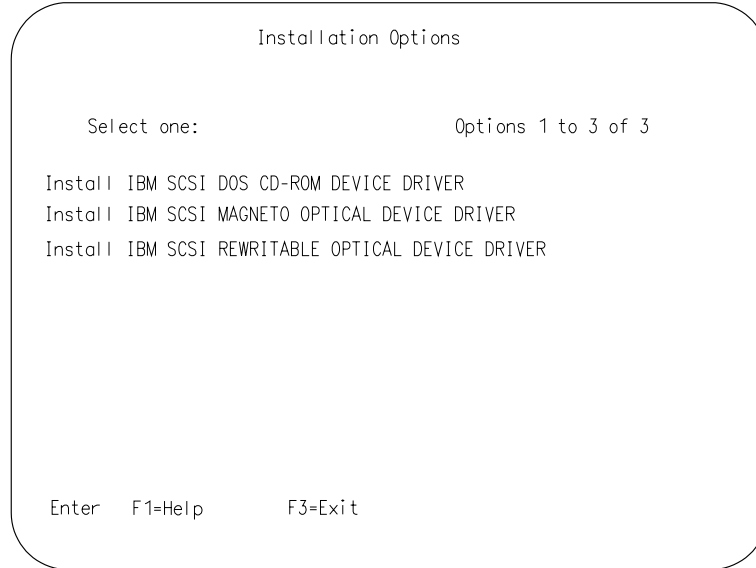


6.

Press Enter. This screen appears.

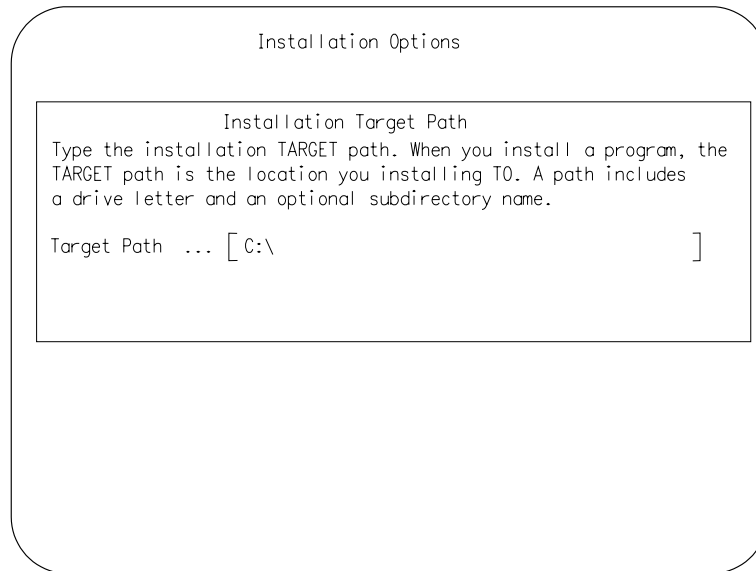
Note

IBM SCSI MAGNETO OPTICAL DEVICE DRIVER is used for the IBM 5.25-inch Rewritable Optical Disk Drive. IBM SCSI REWRITABLE OPTICAL DEVICE DRIVER is used for the IBM 3.5-inch Rewritable Optical Disk Drive.



7.

Select a device name of the SCSI device option you have attached. Press Enter. This screen appears.



8.

Use the letter and path name of the drive where you want this device driver to be installed. The default is C:\. Press **Enter**. The installation process begins. Follow the screen prompts to complete the option installation. This screen appears.

Operation Completed Successfully.

*The installation is complete. Press **F3** to exit the Installation Options menu, or continue with another option.*

Note

If you have an IBM PS/2 CD-ROM option diskette version 1.x and have IBM DOS version 5.0 or later installed, consult the *IBM DOS User's Guide* to execute the **SETVER** command for the MSCDEX.EXE file. Set the version to 4. . CD-ROM option diskette.

Installing the OS/2 Device Drivers

This section explains how to install the device drivers for an IBM OS/2 operating-system environment, Version 2.1.

SCSI Adapter Support Installation for the Dock I

You will need to have installed the SCSI adapter support during or after the installation of the IBM OS/2 version 2.1.

To install the SCSI adapter support, do the following.

1.

Turn on all attached devices, then turn on the computer and wait for the OS/2 2.1 to complete booting.

2.

From the OS/2 desktop, open the “OS/2 System” icon.

3.

From the “OS/2 System” window, open the “System Setup” icon.

4.

From the “System Setup” window, open the “Selective Install” icon. The “System Configuration” panel appears.

5.

In the panel, identify SCSI Adapter Support. Then click on the “OK” button.

Highlight the Future Domain^{**}
85 IBM from the “Select SCSI Adapter(s)” menu. Then click on the “OK” button.

SCSI Device Support Installation

OS/2 version 2.1 ships with a generic hard disk device driver built into the operating system. By adding support for the Dock I according to “SCSI Adapter Support Installation for the Dock I” on page 5-14, any SCSI hard disk drives attached to the SCSI controller will be automatically be recognized by the system. Refer to the OS/2 documentation to prepare your hard disk drives for use.

To install the SCSI device support, do the following.

1.

By referring to the instructions supplied with the SCSI device, install the OS/2 device drivers for the device.

^{**} Trademark of the Future Domain Corporation.



2.

If the SCSI device is one of these, it is required to update the OS/2 device driver on the Dock I Option Diskette.

If the SCSI device is a CD-ROM drive and the instructions supplied with the device contain no information about OS/2 version 2.0, go to “Installing the OS/2 Version 2.1 CD-ROM Device Driver” on page 5-18.

IBM 3.5-inch Rewritable Optical Disk Drive

IBM 5.25-inch Rewritable Optical Disk Drive

3.

Turn on all attached devices, then turn on the computer and wait for the OS/2 2.1 to complete booting.

4.

Make sure that the Dock I Options Diskette is installed in drive A.

5.

From the OS/2 desktop, open the “OS/2 System” icon.

6.

From the “OS/2 System” window, open the “System Setup” icon.



7.

From the “System Setup” window, open the “Device Driver Install” icon. This starts the “OS/2 2.1 Device Driver Install” program (also known as “DDINSTAL”).

8.

Set the source directory to A:\IBMDEV. Accept the default destination directory by clicking on the “Install...” button. This brings up a list of device drivers to be installed.

9.

Click on one of these entries.
Then click on the “OK” button.
The DDINSTAL program automatically copies the necessary files from the Dock I Option Diskette to the system hard disk and automatically updates your CONFIG.SYS file.

Install IBM SCSI Magneto Optical Driver for OS/2 2.
Install IBM SCSI Optical Driver for OS/2 2.1

Note

The IBM SCSI Magneto Optical Driver is used for the IBM 5.25-inch SCSI Rewritable Optical Disk Drive. The IBM SCSI Optical Driver is used for the IBM 3.5-inch SCSI Rewritable Optical Disk Drive.

10.

Click on the “Exit” button to complete the installation procedure.

Installing the OS/2 Version 2.1 CD-ROM Device Driver

To install the OS/2 version 2.1 CD-ROM device driver, do the following.

1.

Turn on all attached devices, then turn on the computer and wait for the OS/2 2.1 to complete booting.



2.

From the OS/2 desktop, open the “OS/2 System” icon.

3.

From the “OS/2 System” window, open the “Selective Install” icon.

4.

In the “System Configuration” window, identify “CD-ROM Device Support” and click on the “OK” button.

5.

Highlight IBM CD-ROM II from “Select CD-ROM Device(s)”.

6.

Follow instructions on the screen to install the CD-ROM device driver.

PLAYCD Utility

The PLAYCD utility program is not installed during this installation procedure. The PLAYCD.EXE and CDPLAY.HLP files are available on the CD-ROM Option/Device Driver Diskette. If these files are needed, use the OS/2 **COPY** command to copy the individual files from the option diskette.

Now installation is complete.

Using the SCSI Diagnostics Utility

This section explains how to prepare your hard disk drives for use with your computer system and how to identify the problems with the SCSI diagnostics utility (FSDA.EXE).

Preparing SCSI Drives

If your SCSI drive has been used previously in another system configuration, it is advisable to run a low-level format first with the SCSI diagnostics utility.

Then run your IBM DOS or OS/2 FDISK and FORMAT utilities to partition and format the drives in accordance with your IBM DOS or OS/2 documentation.

The low-level format prepares a drive to work with an operating system. It also scans the disk surface and builds a defect list to relocate any defective sectors to a known good area of the disk.

If your SCSI drives are new, using the appropriate IBM DOS or OS/2 utility programs is the only step you need.

The SCSI diagnostics utility helps you troubleshoot SCSI controller and device problems through a series of menus.

Starting the SCSI Diagnostics Utility

This section explains how to run the SCSI diagnostics utility from the Dock I Option Diskette to verify the configuration you just installed.

To start the SCSI diagnostics utility, do the following.

1.

Insert the Dock I Option Diskette into drive A.

2.

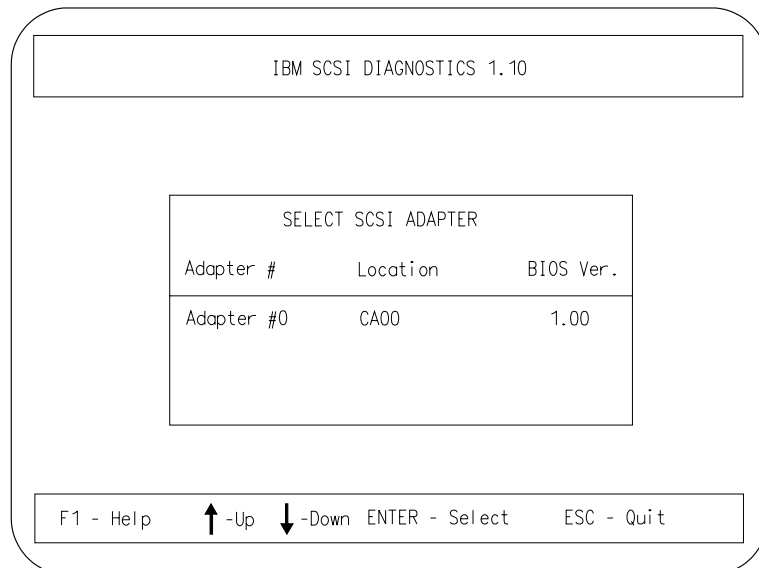
Turn on all attached devices, then turn on the computer.

3.

In the main menu, select “Diagnostics”. Then select “Test SCSI Subsystems”. This screen appears. Note that in this screen the Dock I SCSI controller is referred to as *adapter*. Press **Enter**.

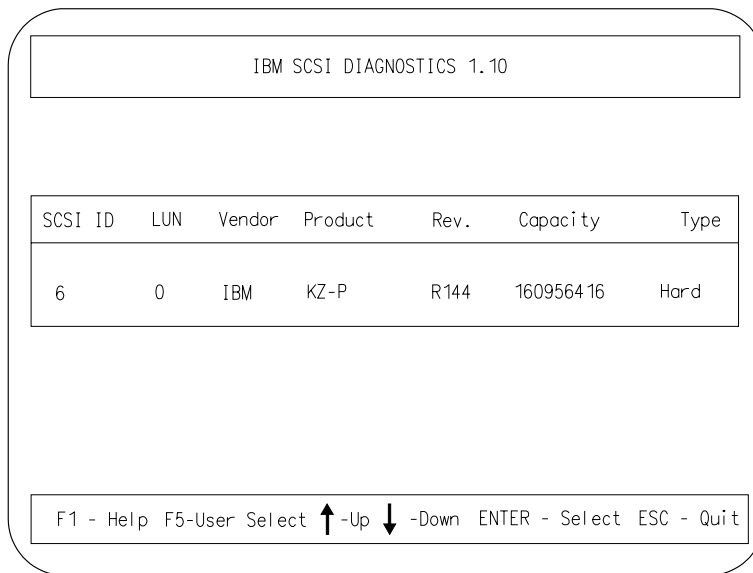
Note

If you have not attached a SCSI device to the Dock I SCSI controller, the diagnostics utility reports an error that no SCSI host adapters were not found.



4.

A screen similar the following appears.

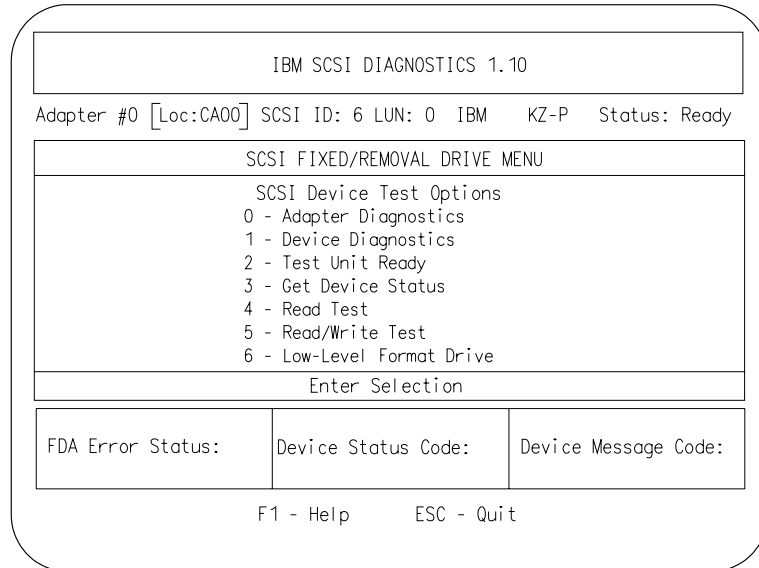


5.

The cursor highlights the first option device, which is the device with the lowest SCSI ID. Select the device you want to test by highlighting the device and pressing **Enter**.

6.

The SCSI FIXED/REMOVAL DRIVE MENU appears. This menu lists 7 possible test options. If your installation has no hard disk drives, only Test Options 0, 1, 2, 3, and 4 appear on this menu. The individual tests are described briefly below the figure of the menu.



Adapter Diagnostics Three pass/fail tests are run on the SCSI controller to check ROM, RAM, and the SCSI data bus.

Device Diagnostics This function issues the Device Diagnostics command to the selected device. If the device is a removable media type, it prompts for media to be inserted. If the command completes successfully, the selected device is installed and functioning properly.

Test Unit Ready This command is issued to each device to check that the device is online and ready to accept command requests.

Get Device Status If either the Test Unit Ready, Read, or Read/Write test resulted in an error condition, you should run Get Device Status to isolate the specific problem causing the error condition.

Read Test This test issues Read commands from the beginning to the end of the entire drive to verify that the drive processes them properly.



Read/Write Test This test issues Write commands, the Reads them back and compares the two to verify that they are handled properly by the drive. This test will destroy any data you may have on the drive.

Low-Level Format Drive This function will perform a low-level format of your drive, destroying any data that it may have on it. It is not necessary to run unless your SCSI device was used previously in another configuration. New drives do not require Low-Level Format Drive.



Chapter 6. Solving Problems

Computer and Dock I problems can be caused by your computer, the Dock I, or both. To simplify diagnosing problems, isolate your computer and diagnose it first. Then test the Dock I with the computer attached. The diagnostic program on your computer diagnoses the Dock I and the computer when attached. Many problems can be diagnosed and solved with the assistance of the self-tests and the diagnostics programs of your computer.

By using the diagnostics programs on your computer, you may be able to solve the problem yourself or provide information to the service representative. Make a note of all error messages and be prepared to give them to the service representative if you need to call for service. If the diagnostics programs on your computer cannot be loaded, refer to the troubleshooting charts and other information supplied with your computer.

The troubleshooting charts and other information in this chapter will help you determine what corrective action to take for the Dock I.

Important

Use this chapter to test *IBM products only*. Other products may cause misleading error information or incorrect computer responses. Refer to the instructions supplied with those products for testing information.

This chapter contains:

Before the Testing Is Started	6-3
Testing Your Dock I	6-5
Troubleshooting Charts	6-7
Computer Keyboard Problems	6-7
External Display (CRT) Problems	6-8
External Keyboard, External Numeric Keypad, or Pointing Device Problems	6-10
Intermittent Problems	6-12
LCD Problems	6-12
Option Problems	6-14
Printer Problems	6-15
Screen Messages	6-15



Other Problems	6-15
Getting Service	6-17



Before the Testing Is Started

Before starting the test, do the following:

Important

You may hear a continuous beep. This beep can be a message from the warning function of the Dock I. See “Warning Function” on page 1-12 for the cause of the beep before you do the following.

1.

Turn off the Dock I using the computer power switch.

2.

Remove the computer from the Dock I. (See “Removing the Computer” on page 2-10.)

3.

Connect the cables, except for the adapters, the storage device, or the external keyboard, to the computer.

4.

Test your computer (refer to the information supplied with your computer.) Did your computer detect any problems?

Yes Refer to any instructions supplied with your computer to resolve the problems.

No Go to step 5 on page 6-4.



5.

You are here because you did not find any problems on your computer.

Connect the cables to the Dock I.

6.

Attach your computer to the Dock I. (See “Attaching the Computer” on page 2-3.)

7.

You will test the Dock I with the computer installed. Go to the next page.



Testing Your Dock I

Important

If you are instructed to get service during the following procedures, take your computer and the security lock key with the Dock I.

In this chapter, the *system unit* stands for both the computer and the Dock I.

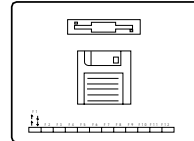
1.

Turn on all external devices, then turn on the computer.

The power-on self-test (POST) runs automatically from your computer.

If the test goes to completion without detecting an error, you will hear one beep and one of the following occurs:

The Diskette and F1 prompts (shown below) appear.



If an operating system or application software is installed, the operating system or application screen appears.

Did one of these screens appear?

Yes Continue with step 2.

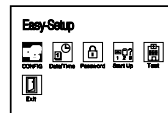
No Refer to the following table. In the table, an X can be any character.

Screen Messages	Action
16X, 17X	Follow the instructions on the screen to correct the problem.

Screen Messages	Action
195 (The computer in hibernation mode might be attached to the Dock I)	<ol style="list-style-type: none"> 1. Turn off the computer. 2. Remove the computer. 3. Attach the computer to the Dock I.
Blank screen or any other screen response	Go to "LCD Problems" on page 6-12.
Other messages	Go to step 2.

2

Turn off the computer. Press and hold **F1**, then turn on the computer.



3

Did the Easy-Setup menu appear on the screen?

Yes The computer has successfully completed the POST and the system programs are loaded. To start the test programs, select the **Test** icon, then select the **Start** icon or press **Enter**.

If you cannot go past the first screen, have the system unit serviced.

If the Dock I stops during testing and does not continue, have the system unit serviced.

If testing does not find a problem and a problem still exists, go to the Troubleshooting Charts on page 6-7 and find the problems.

No If the Easy-Setup menu did not appear, it may have been caused by one of the following:

Power was incorrectly turned on in step 2.

The external keyboard connector may not be securely connected to the Dock I.

Troubleshooting Charts

Troubleshooting Chart	Page
Computer Keyboard Problems	6-7
External Display (CRT) Problems	6-8
External Keyboard, External Numeric Keypad, or Pointing Device Problems	6-10
Intermittent Problems	6-12
LCD Problems	6-12
Option Problems	6-14
Printer Problems	6-15
Screen Messages	6-15
Other Problems	6-15

Computer Keyboard Problems

Problems	Action
All or some keyboard keys on the computer keyboard do not work.	<p>When the external keyboard is connected, the computer keyboard does not work.</p> <p>Verify the connection of the external numeric keypad, external keyboard, or mouse.</p> <p>If the problem still occurs, have the system unit serviced.</p>
A number appears after typing an alphabetic character.	The Numeric Lock indicator is on. Press and hold Shift , then press NumLk .

External Display (CRT) Problems

Problems	Action
Blank screen.	<p>Verify that:</p> <ol style="list-style-type: none"> 1. The power cord for the external display is plugged into a working electrical outlet and into the external display. 2. The external display is turned on and the brightness and contrast controls for the display are turned up. 3. The signal cable for the external display is plugged into the external display connector on the Dock I. Some signal cables may not fit into the external display connector because of the connector type. You cannot connect the external display signal cable connector to the video-in-connector. (See page 1-7.) 4. The external display is selected as the display device using the Fn key Function or the ThinkPad Features. 5. When you are using a video adapter, connect the external display signal cable to the video adapter. <p>If the above items are correct and the screen of the external display remains blank, run the display tests described in the instructions supplied with the external display. If those tests show the external display works correctly, have the system unit serviced.</p>
Screen is unreadable or distorted.	<p>Verify that:</p> <ol style="list-style-type: none"> 1. The ThinkPad 750 video device driver was installed correctly. Refer to the manual that came with the computer. 2. The Display in the Windows ^{**} Setup screen is set to your display resolution type. <p>If the above is correct, run the tests described in the instructions supplied with the external display. If the tests show the external display works correctly, have the system unit serviced.</p>

** Trademark of the Microsoft Corporation



Problems	Action
Wrong characters appear on the screen.	Verify that operating systems and application programs have been installed and configured correctly. If they are already installed and configured, have the system unit serviced.



External Keyboard, External Numeric Keypad, or Pointing Device Problems

Problems	Action
All or some keyboard keys do not work.	<p>When the external keyboard is connected, the computer keyboard does not work.</p> <p>Verify that the external keyboard is correctly connected to the keyboard/numeric keypad connector.</p> <p>Verify that the external keyboard cable is firmly connected.</p> <p>If the above items are correct, turn off the Dock I, remove the external keyboard from the Dock I, and turn on the computer. Try to operate the computer keyboard. If the computer keyboard works, have the external keyboard serviced.</p>
All or some external numeric keypad keys do not work.	<p>Verify that the external numeric keypad is securely connected to the keyboard or numeric keypad connector of the Dock I.</p> <p>If the mouse is connected to the Dock I:</p> <ol style="list-style-type: none">1. Turn off the Dock I.2. Remove the mouse.3. Turn on the Dock I and try the keyboard operation again. <p>If the problem still occurs, have the system unit serviced.</p>

Problems	Action
The mouse or pointing device does not work.	<p>The mouse or pointing-device does not work when it is connected to the mouse connector on the numeric keypad. Reconnect it to the mouse or pointing device connector of the Dock I.</p> <p>Verify that the device driver for the mouse is installed.</p> <p>Verify that the mouse or pointing-device cable is securely connected to the Dock I.</p> <p>If you use a mouse that is not compatible with the IBM PS/2 mouse, disable the TrackPoint II by following these instructions.</p> <ol style="list-style-type: none">1. Press and hold down F1, then turn on the computer to start Easy-Setup. Hold down F1 until the Main Menu appears.2. Select "CONFIG" icon.3. Select Keyboard icon.4. Select any icon other than <i>TrackPoint II</i>.5. Press OK button to save the change.6. Restart the computer. <p>If the problem still occurs, have the system unit serviced.</p>

Intermittent Problems

Problems	Action
Does your Dock I have an intermittent problem?	<p>A problem can be difficult to find because it occurs just once in a while. If your Dock I has such a problem, verify that:</p> <ol style="list-style-type: none"> 1. The computer is firmly attached to the Dock I. 2. All cables and power cords are securely connected to the rear of the Dock I and to the attached options. 3. When the Dock I is turned on, air is flowing from the louvers on the back side of the Dock I. If there is no air flow, the fan is not working. This causes the Dock I to overheat and shut down. 4. The SCSI device is correctly terminated. <p>If the above items are correct and the problem still occurs, write down what the problem is and what the system was doing when the problem occurs. Then contact your place of purchase or service representative for help.</p>

LCD Problems

In the following table, an X can be any character.

Problems	Action
<p>Blank screen with no beep.</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>Note</p> <p>If you are not sure about the beep, turn the computer off, then turn the computer on again, and listen for the beep.</p> </div>	<p>Verify that:</p> <ol style="list-style-type: none"> 1. The Dock I power cord is plugged into a working electrical outlet and into the Dock I. 2. The cables connected to the Dock I are securely connected. (For locations where cables are connected, see "Locating Dock I Features" on page 1-4.) 3. The power switch is turned on. 4. The security lock is not in the extreme left position. 5. The computer is firmly installed on the Dock I. <p>If the above items are correct and the screen remains blank, have the system unit serviced.</p>

Problems	Action
<p>Blank screen with one beep.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Note</p> <p>If you are using an external display, go to “External Display (CRT) Problems” on page 6-8.</p> </div>	<p>When you are using an external display with a display adapter, a blank screen is normal.</p> <p>When you return to operating mode from suspend mode, one beep sounds and the suspend LED on the computer blinks and a power-on password is required. The cursor does not appear as you type the power-on password, but it is entered.</p> <p>Verify that:</p> <ol style="list-style-type: none"> 1. Both the brightness and contrast controls on the computer are correctly adjusted. 2. The <i>Display device</i> parameter in the ThinkPad Features menu is correctly specified. Refer to the information supplied with your computer. <p>If the above items are correct and the screen remains blank, have the system unit serviced.</p>
<p>Blank screen with a continuous beep, or two or more beeps.</p>	<p>This beep can be a message from the warning function of the Dock I. See “Warning Function” on page 1-12. for the cause of the beep.</p> <p>If the problem still occurs, have the system unit serviced.</p>
<p>Only the cursor “_” appears.</p>	<p>If you are using an external display with a display adapter, the cursor “_” is normal.</p> <p>Otherwise, have the system unit serviced.</p>
<p>Screen is unreadable or distorted.</p>	<p>Have the system unit serviced.</p>
<p>Wrong characters appear on the screen.</p>	<p>Have the system unit serviced.</p>

Option Problems

Problems	Action
<p>An IBM option that was just installed does not work.</p>	<p>Verify that:</p> <ol style="list-style-type: none"> 1. The computer and Dock I hardware settings do not conflict. 2. The option is designed for the Dock I. 3. Be sure to follow the instructions supplied with the option. 4. The option is installed correctly. 5. You have not loosened any other installed options or cables. <p>If the failing device is a SCSI device, run "SCSI subsystem" diagnostics on the Dock I Option Diskette.</p> <p>If the above items are correct and the test programs found no problems, have the system unit and the option serviced.</p> <p>If the option does not work with a specific computer, have that specific computer serviced with the Dock I.</p>
<p>An IBM option that used to work does not work.</p>	<p>Verify that:</p> <ol style="list-style-type: none"> 1. All of the option hardware and cable connections are securely connected. 2. If the option came with its own test instructions, use those instructions to test the option. <p>If the failing device is a SCSI device:</p> <ol style="list-style-type: none"> 1. Verify that the cables for all external SCSI devices are correctly connected. 2. Verify that all external SCSI devices are turned on. External SCSI devices must be turned on before the Dock I is turned on. <p>If the failing device is a SCSI device, run "SCSI subsystem" diagnostics on the Dock I Option Diskette.</p> <p>If the above items are correct and the test programs found no problems, have the system unit and option serviced.</p> <p>If the option does not work with a specific computer, have that specific computer serviced with the Dock I.</p>

Printer Problems

Problems	Action
The printer does not work.	<p>Verify that:</p> <ol style="list-style-type: none"> 1. The printer is turned on and is ready to print. 2. The printer signal cable is connected to the correct connector on the Dock I. (For the location of the printer connector, see “parallel connector” on “Locating Dock I Features” on page 1-4.) 3. You have correctly assigned the printer connector in your operating system or application. <p>If the above items are correct and the printer still does not work, run the tests described in the printer manual. If the tests show that the printer works correctly, have the system unit serviced.</p>

Screen Messages

Problems	Action
1 4XXXX XXX 2 9XXXX XXX 21 XXXX XXX 211XXXX XXX 212XXXX XXX 213XXXX XXX 214XXXX XXX 215XXXX XXX 216XXXX XXX 217XXXX XXX	<p>Verify that:</p> <ol style="list-style-type: none"> 1. The cables for all external SCSI devices are correctly connected. 2. All external SCSI devices are turned on. External SCSI devices must be turned on before the Dock I is turned on. 3. The internal SCSI device is correctly terminated. 4. The last external SCSI device is correctly terminated. 5. Each SCSI device has a unique SCSI ID. 6. Hardware settings for the SCSI controller and other hardware do not conflict. <p>If the above items are correct and the problem still occurs, run “SCSI subsystem” diagnostics on the Dock I Option Diskette.</p>
Other screen prompts and error codes	Refer to the manual that came with the computer. When the manual tells you to “have the computer serviced,” have the computer and Dock I serviced.

Other Problems

Problems	Action
Broken security lock.	Have the Dock I with the security lock key serviced. See “Ordering Additional Security Lock Keys” on page 3-5.
Cannot read nor write from and to the internal ThinkPad hard disk.	Verify that a hard-disk password is removed.
Status indicators not working.	Have the system unit serviced. <ol style="list-style-type: none">1. The <i>hard disk in-use</i> indicator does not turn on when a SCSI hard disk is accessed.2. When an external diskette drive is used, the indicator on the IBM ThinkPad 750 FDD External Attachment Kit turns on.
XXXXX KB OK and the computer hangs.	Verify that the computer and Dock I hardware settings do not conflict. If the problem still occurs, have the system unit serviced.

Getting Service

Important

When visiting the service representative, take your computer and key for the security lock along with the Dock I.

If your Dock I needs service, you can:

- Call an IBM-authorized service representative to come and repair it.
- Take it to an IBM-authorized service center for repair.
- Call your place of purchase.

When requesting service, describe the error message or problem to the service representative. Error messages help identify what service action is required and help the service representative provide quick and efficient service.

For your convenience, write down service phone numbers here:





Appendix A. Starting up the OS from the Dock I



When the computer is attached to the Dock I, you can start up the operating system from the additional hard disk in the Dock I.

The procedures for starting up the operating system from the additional hard disk varies depending on which operating system you have installed on the additional hard disk.

This appendix contains:

Planning for the Operating System Startup	A-2
Starting DOS	A-4
Starting OS/2 2.1 from the Additional Hard Disk	A-8





Planning for the Operating System Startup

When you attach the computer to the Dock I, keep in mind the following.

When installing the operating system, confirm the following.

- The configuration of all additional hard disks attached to the Dock I.
- All external SCSI devices are turned on.

The drive letter assigned to the partitions on the computer and on the additional hard disk may change when the computer is attached to the Dock I. When the originally-assigned drive letter for the hard disk is changed, as shown in the following examples, the operating system cannot be started up correctly.

Examples:

Hard Disk Drive on the Computer

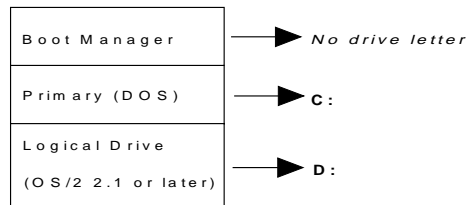


Figure A-1. Drive Letters assigned to the computer. The drive letter assigned to the partition containing OS/2 2.1 is drive D.



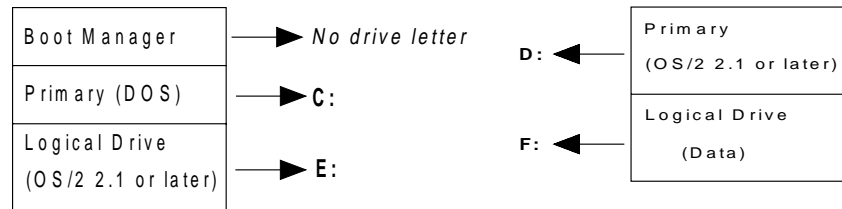
Hard Disk Drive on the Computer**Additional Hard Disk**

Figure A-2. Drive Letters assigned on the computer when attached to the Dock I. The drive letter assigned to the partition containing OS/2 2.1 changes to E when attached to the Dock I.

For more information, refer to the manuals that came with the operating system.

Warning:

The assigned drive letters will vary depending on the defined startup sequence and on the operating system or the device drivers used. If you have changed your startup sequence in the Easy-Setup menu, you must be extremely careful when you do write operations, such as copying, saving, or formatting. Your data or programs will be overwritten if you select the wrong drive.

Only one startup sequence can be stored in the computer. The result of starting up the operating system will vary if the computer is attached to another Dock I that has different configurations for the additional hard disk.

Starting DOS

To start up DOS from the additional hard disk attached to the Dock I, you must change the startup sequence.

To change the startup sequence, do the following.

1.

Install the additional hard disk to the Dock I.














2.

Check the devices you have installed or attached.












Then assign serial numbers (1 through 4) only to the hard disk devices you have checked, from the top to the bottom of the first table.

Then assign serial numbers (1 through 2) to the diskette drives.

The second table shows an example of a completed table.

		Drive Number	Hard Disk/Diskette Drive
			ThinkPad Hard Disk in the computer
			ThinkPad Hard Disk in the Dock I
			SCSI Hard Disk (SCSI ID Number 6)
			SCSI Hard Disk (SCSI ID Number 5)
			SCSI Hard Disk (SCSI ID Number 4)
			SCSI Hard Disk (SCSI ID Number 3)
			SCSI Hard Disk (SCSI ID Number 2)
			SCSI Hard Disk (SCSI ID Number 1)
			SCSI Hard Disk (SCSI ID Number 0)
			Diskette Drive in the computer
			Diskette Drive connected to the Dock I



✓		Drive Number	Hard Disk/Diskette Drive
✓		1	ThinkPad Hard Disk in the computer
			ThinkPad Hard Disk in the Dock I
✓		2	SCSI Hard Disk (SCSI ID Number 6)
			SCSI Hard Disk (SCSI ID Number 5)
✓		3	SCSI Hard Disk (SCSI ID Number 4)
			SCSI Hard Disk (SCSI ID Number 3)
			SCSI Hard Disk (SCSI ID Number 2)
✓		4	SCSI Hard Disk (SCSI ID Number 1)
			SCSI Hard Disk (SCSI ID Number 0)
✓		1	Diskette Drive in the computer
✓		2	Diskette Drive connected to the Dock I

Note

SCSI hard disk drives are recognized by the system in the order of the SCSI ID of each hard disk drive on each SCSI controller in the system, starting at SCSI ID 6 through SCSI ID 0.

3.

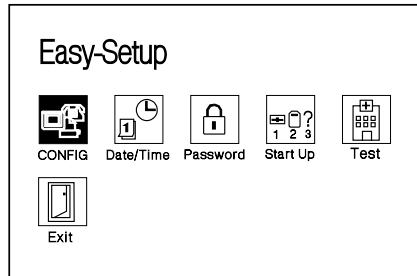
Dock the computer at the Dock I and turn on all external devices. While holding down **F1**, turn on the Dock I using the power switch on the computer.





4.

The Easy-Setup menu appears. Select **Start Up**.

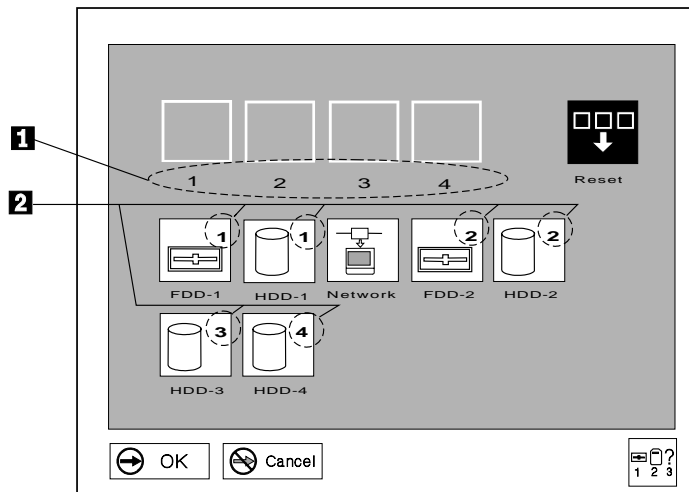


5.

In the **Start Up** menu, 1 indicates startup numbers and 2 indicates drive numbers.

By referring to the table that you have completed in step 2, click up to four drive number icons in the order of the startup numbers.

A diskette drive where the *Installation Diskette* of DOS will be inserted must be clicked first. A additional hard disk where DOS will be installed must be clicked second. A hard disk in the computer must be clicked third.



6.

Insert the *Installation Diskette* of the operating system into the diskette drive and install the operating system on the additional hard disk.



You have completed the setup for starting up the operating system from the additional hard disk installed in to the Dock I. When you turn on the computer attached to the Dock I the next time, the operating system on the additional hard disk will start up.

When the Computer Is Removed

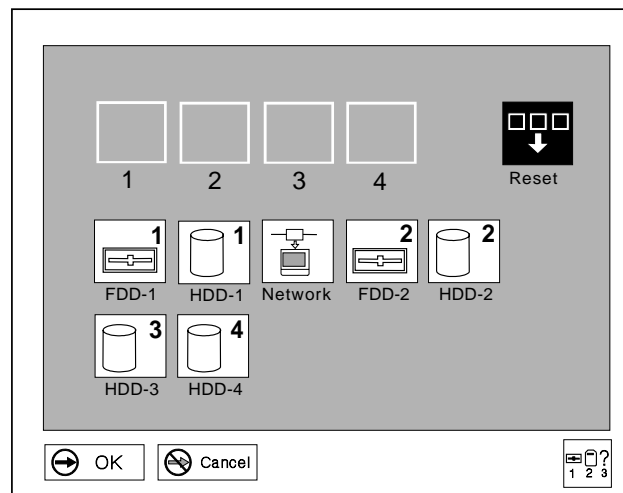
Whenever you remove the computer from the Dock I and turn on the computer, the operating system on the hard disk drive of the computer starts up. Error code `1999 3 1` is displayed to indicate that the *bootable* additional hard disk is not present. You can ignore this error code.

Starting OS/2 2.1 from the Additional Hard Disk

To start up OS/2 2.1 from the additional hard disk, you must use the Boot Manager.

Note

In the **Start Up** menu, click on the “Reset” icon for the Boot Manager to start up correctly.



Have the *OS/2 Installation Diskette* and *Diskette 1* that is supplied with OS/2 2.1. To start up the operating system from the additional hard disk, do the following.

1.

Install the additional hard disk in the Dock I.

2.

Attach the computer to the Dock I.



3.

Insert the *Installation Diskette* into the diskette drive and turn on the Dock I using the power switch of the computer. Follow the instructions on the screen until the Installation Drive Selection screen is displayed.

4.

From the Installation Drive Selection screen, select option 2, **Specify a different drive or partition** to display the FDISK screen.

5.

If you have not created a Boot Manager partition, do so now at the FDISK screen. Otherwise, go to step 6 on page A-9. For more information, refer to the manuals that came with the operating system.

CAUTION:

The Boot Manager requires 1MB of free space. When partitions on a hard disk are modified, all of the data in those partitions are deleted. Make backup copies of all necessary data before you continue.

6.

Add the operating system on the additional hard disk to the Boot Manager menu, by selecting **Add to Boot Manager menu** from the Options menu.



7.

If you are installing the operating system on the additional hard disk, set the partition for the additional hard disk drive to installable, then install the operating system.

8.

If you have already installed OS/2 2.1, save the changes and exit the program.

9.

When the Boot Manager Menu appears on the screen, select the option for the additional hard disk drive.

You have completed the setup for starting up OS/2 2.1 from the additional hard disk.

When the Computer is Removed

If you have set the default value to the hard disk drive in the computer and have removed the computer from the Dock I, no error code appears. When the computer is turned on, the additional hard disk drive is automatically removed from the Boot Manager menu, until the computer is attached to the Dock I.



Boot Manager Menu

The Boot Manager starts up the operating system that is selected from the Boot Manager menu, regardless of its contents, if there is a matching partition assigned the selected drive letter.







Appendix B. SCSI Information



This appendix explains SCSI connectors, termination, and cables of the Dock I.

This appendix contains:

Device Ordering and the Boot Drive	B-2
External SCSI Connector	B-2
Internal SCSI Connector	B-3
Termination	B-4
SCSI Cable Length Specifications	B-4



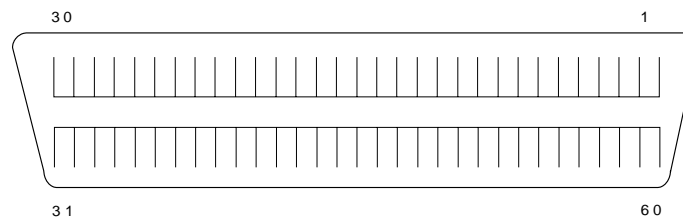
Device Ordering and the Boot Drive

Hard disk drives are recognized by the system in the order of the SCSI controller's memory addresses (for multiple controllers). This is followed by the order of the SCSI ID of each hard disk drive on each SCSI controller in the system, starting at SCSI ID 6 through SCSI ID 0.

If there are only SCSI hard disk drives in a system, the boot drive is located on the SCSI controller at the lowest memory address and on the hard disk drive with the highest SCSI ID number.

External SCSI Connector

The external SCSI connector (60-pin) is used to connect the SCSI bus to an external SCSI device or subsystem. The pin assignments of the 60-pin connector are shown below.

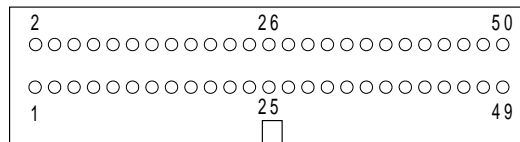


Pin	I/O	Signal	Pin	I/O	Signal
1	N/A	GND	31	N/A	GND
2	I/O	SCSIDATA (0)	32	I/O	ATN
3	N/A	GND	33	N/A	GND
4	I/O	SCSIDATA (1)	34	N/A	GND
5	N/A	GND	35	N/A	GND
6	I/O	SCSIDATA (2)	36	I/O	BSY
7	N/A	GND	37	N/A	GND
8	I/O	SCSIDATA (3)	38	I/O	ACK
9	N/A	GND	39	N/A	GND
10	I/O	SCSIDATA (4)	40	O	RST
11	N/A	GND	41	N/A	GND
12	I/O	SCSIDATA (5)	42	I	MSG
13	N/A	GND	43	N/A	GND
14	I/O	SCSIDATA (6)	44	I/O	SEL
15	N/A	GND	45	N/A	GND
16	I/O	SCSIDATA (7)	46	I/O	C/D

Pin	I/O	Signal	Pin	I/O	Signal
17	N/A	GND	47	N/A	GND
18	I/O	SCSI PARITY	48	O	REQ
19	N/A	GND	49	N/A	GND
20	N/A	GND	50	I/O	I/O
21	N/A	GND	51	N/A	GND
22	N/A	GND	52	(Open)	
23	N/A	GND	53	(Open)	
24	N/A	GND	54	(Open)	
25	(Open)		55	(Open)	
26	N/A	TERMPWR	56	(Open)	
27	N/A	GND	57	(Open)	
28	N/A	GND	58	(Open)	
29	N/A	GND	59	(Open)	
30	N/A	GND	60	(Open)	

Internal SCSI Connector

The internal SCSI connector (50-pin) is used to connect the SCSI bus to an external SCSI device or subsystem. The pin assignments of the 50-pin connector are shown below.



Pin	I/O	Signal	Pin	I/O	Signal
1	N/A	GND	26	N/A	TERMPWR
2	I/O	SCSIDATA (0)	27	N/A	GND
3	N/A	GND	28	N/A	GND
4	I/O	SCSIDATA (1)	29	N/A	GND
5	N/A	GND	30	N/A	GND
6	I/O	SCSIDATA (2)	31	N/A	GND
7	N/A	GND	32	I/O	ATN
8	I/O	SCSIDATA (3)	33	N/A	GND
9	N/A	GND	34	N/A	GND
10	I/O	SCSIDATA (4)	35	N/A	GND
11	N/A	GND	36	I/O	BSY
12	I/O	SCSIDATA (5)	37	N/A	GND
13	N/A	GND	38	I/O	ACK
14	I/O	SCSIDATA (6)	39	N/A	GND

Pin	I/O	Signal	Pin	I/O	Signal
15	N/A	GND	40	O	RST
16	I/O	SCSIDATA (7)	41	N/A	GND
17	N/A	GND	42	I	MSG
18	I/O	SCSI PARITY	43	N/A	GND
19	N/A	GND	44	I/O	SEL
20	N/A	GND	45	N/A	GND
21	N/A	GND	46	I/O	C/D
22	N/A	GND	47	N/A	GND
23	N/A	GND	48	O	REQ
24	N/A	GND	49	N/A	GND
25	(Open)		50	I/O	I/O

Termination

The SCSI controller specification defines cable and termination requirements as listed below.

The Dock I has an active termination. Observe the following rules to use SCSI devices.

Internal SCSI device: Always terminate.

External SCSI devices: Terminate only the last SCSI device.

All SCSI buses require termination. The following guidelines must be followed to ensure proper operation of the SCSI bus and SCSI controllers.

Two terminations must be present on the bus. More than two terminations may damage the SCSI controller or option devices, or compromise data integrity. Make sure that the terminators are in place on the end device on either side of the SCSI bus (a total of two only).

The SCSI controller provides termination power (TERMPWR) to the SCSI bus on Pin 26 of the internal and external SCSI connectors. TERMPWR is protected by a thermal self-resetting fuse located on the SCSI controller.

SCSI Cable Length Specifications

The Dock I SCSI controller specification for the SCSI cable length connected to each SCSI interface is three meters (approximately 10

ft) maximum. This three-meter length includes both internal SCSI cables (inside the Dock I or external SCSI device) as well as external SCSI cables (outside the Dock I or external SCSI device).

The following table shows the SCSI cable length for the Dock I, IBM storage enclosures, and SCSI cables.

Cable	Length
Dock I Model 001 (internal cable)	0.2 m (0.7 ft)
SCSI Storage Enclosure, Model 3510 (internal cable)	0.3 m (1.0 ft)
External Storage Enclosure For SCSI Devices, Model 3511 (internal cable)	1.2 m (3.9 ft)
SCSI Card To Option Cable (60 to 50-pin external cable)	1.2 m (3.9 ft)
SCSI Option To Option Cable (50 to 50-pin external cable)	0.6 m (2.0 ft)

Example:

If you plan to install an SCSI device and two SCSI Storage Enclosures (Model 3510) to your Dock I, a total cable length of 2.6 m satisfies the specification (no more than three meters).

Cable	Length
Dock I internal cable	0.2 m (0.7 ft)
2—SCSI Storage Enclosures (Model 3510)	$0.3 \times 2 = 0.6$ m (2.0 ft)
1—SCSI Card To Option Cable (60 to 50-pin, external)	1.2 m (3.9 ft)
1—SCSI Option To Option Cable (50 to 50-pin, external)	0.6 m (2.0 ft)
Total Length	2.6 m (8.6 ft)



Appendix C. Using the Selectable Program Load

When an adapter card, for example, an audio adapter card, is installed in the Dock I, an application program that enables the adapter card to operate is loaded into the memory of the computer. When you use the computer in a stand-alone mode the application program does not need to be loaded into the memory of the computer.

The application program can be loaded automatically when the computer is attached to the Dock I. To do this, modify the AUTOEXEC.BAT file (for the DOS sample) or the STARTUP.COM file (for the OS/2 sample) as follows. The QExpUnit.EXE file is on the Utility Diskette supplied with the computer.

```
@echo off
QExpUnit > nul
If ErrorLevel 255 goto error
If ErrorLevel 2 goto exp2
If ErrorLevel 1 goto exp1
If ErrorLevel   goto exp

:exp
rem
rem Start the programs here which are to be run when no Dock I,
rem or the port replicator without PCMCIA is connected to the computer
rem
goto end

:exp1
rem
rem Start the programs here which are to be run when the port replicator
rem with PCMCIA slots is connected to the computer
rem
goto end

:exp2
rem
rem Start the programs here which are to be run when the Dock I
rem is connected to the computer
rem
goto end

:error
echo This version of QExpUnit will not run on this computer

:end
```

Appendix D. Specifications

The Dock I has the following specifications. The IBM power cord part numbers available in each country are covered in “Electrical Characteristics” on page D-2.

Physical Characteristics

Depth		251 mm (9.9 in.)
Height	<i>Front</i>	69 mm (2.7 in.)
	<i>Rear</i>	102 mm (4.0 in.)
Width		410 mm (16.1 in.)
Weight (without options)		2.7 kg (6.0 lb)

Environment Requirements

Temperature, Relative Humidity, and Wet Bulb Temperature

Operating Environment	Temperature	5°C to 35°C (41°F to 95°F)
	Relative Humidity	8% to 80% (non-condensing)
	Maximum Wet Bulb	26.7°C (80°F)
Non-operating Environment	Temperature	5°C to 43°C (41°F to 109°F)
	Relative Humidity	8% to 80% (non-condensing)
	Maximum Wet Bulb	26.7°C (80°F)
Storage Environment	Temperature	-40°C to 60°C (-40°F to 140°F)
	Relative Humidity	5% to 100% (non-condensing)
	Maximum Wet Bulb	26.7°C (80°F)

Maximum Altitude

2135 m (7000 ft) under non-pressurized conditions

Electrical Characteristics

Heat Output	Base Configuration		181 BTUs/hr †
	Maximum Configuration		358 BTUs/hr
Input Voltage—Sine-wave Input (50 or 60 Hz) ††	Low Range	Minimum	100 V ac
		Maximum	125 V ac
	High Range	Minimum	200 V ac
		Maximum	240 V ac
Input Kilovolt-Amperes (k VA) (approximately)	Configuration as shipped from IBM		0.053 k VA
	Maximum Configuration		0.105 k VA
Power Cord			See “IBM Power Cords” on page D-3.
<i>Notes:</i>			
† British Thermal Units per hour			
†† This product is also designed for IT power system with Phase to Phase voltage not exceeding 240 V ac.			

Audio-Circuit Specifications

Speaker-In to Audio-Out

Input frequency 1 kHz, Speaker-in level 200 mVrms

Output (mVrms)	170 to 230
S/N ratio (dB)	> 48
Total Harmonic Distortion (THD) (%)	< 1

Speaker-In to Headphone Jack

Input frequency 1 kHz, Headphone impedance 32 Ω , Speaker output 1 W

Output (mW)	> 1
-------------	-----



S/N ratio (dB)	> 50
Total Harmonic Distortion (THD) (%)	< 1

Speaker-In to Embedded Speaker

Input frequency 1 kHz, Speaker impedance 8

Output (W)	> 2 †
S/N ratio (dB)	> 45 ††
Total Harmonic Distortion (THD) (%)	< 2 ††
<i>Notes:</i>	
† Speaker-In level 200 mVrms, Minimum attenuation	
†† Output level 50 mW	

IBM Power Cords

For your safety, IBM provides a power cord with a grounded attachment plug to use with this IBM product. To avoid electrical shock, always use the power cord and plug with a properly grounded outlet.

IBM power cords used in the United States and Canada are listed by Underwriters Laboratories (UL) and certified by the Canadian Standards Association (CSA).

For units intended to be operated at 115 volts: Use a UL-listed and CSA-certified cord set consisting of a minimum 18 AWG, Type SVT or SJT, three-conductor cord, a maximum of 15 feet in length and a parallel blade, grounding-type attachment plug rated 15 amperes, 125 volts.

For units intended to be operated at 230 volts (in the U.S.): Use a UL-listed and CSA-certified cord set consisting of a minimum 18 AWG, Type SVT or SJT, three-conductor cord, a maximum of 15 feet in length and a tandem blade, grounding-type attachment plug rated 15 amperes, 250 volts.

For units intended to be operated at 230 volts (outside the U.S.): Use a cord set with a grounding-type attachment plug rated 15



amperes (minimum), 250 volts. The cord set should be marked <HAR> and have the appropriate safety approvals for the country in which the equipment will be installed. IBM power cords for a specific country are usually available only in that country:

Country	IBM Power Cord Part Number
Abu Dhabi	14F0033
Albania	14F0033
Antigua	14F0033
Argentina	13F9940
Australia	13F9940
Austria	13F9979
Bahamas	13F9959
Bahrain	14F0033
Bangladesh	14F0015
Barbados	13F9959
Belgium	13F9979
Bermuda	13F9959
Bolivia	13F9959
Brunei	14F0033
Bulgaria	13F9979
Canada	13F9959
Cayman Islands	13F9959
Chile	14F0069
Colombia	13F9959
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Denmark	13F9997
Dominican Republic	13F9959
Dubai	14F0033
Ecuador	13F9959
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Country	IBM Power Cord Part Number
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Greece	13F9979
Guatemala	13F9959
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Haiti	13F9959
Honduras	13F9959
Hong Kong	14F0033
Hungary	13F9979
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India	14F0033
Indonesia	13F9979
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Israel	14F0087
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Jamaica	13F9959
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Korea (South)	13F9959
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Macao	14F0033
Malaysia	14F0033
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New Guinea	13F9940
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Nigeria	14F0033
Norway	13F9979
Oman	14F0033
Pakistan	14F0015
Panama	13F9959
Papua	13F9940
Paraguay	13F9940
People's Republic of China	14F0033
Peru	13F9959
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Poland	13F9979
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Saudi Arabia	13F9959
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Sri Lanka	14F0015
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Uruguay	13F9940
Venezuela	13F9959
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Statement of Limited Warranty

The warranties provided by IBM in this Statement of Limited Warranty apply only to Machines you originally purchase for your use, and not for resale, from IBM or an IBM authorized reseller. The term "Machine" means an IBM machine, its features, conversions, upgrades, elements, or accessories, or any combination of them. Machines are subject to these terms only if purchased in the United States or Puerto Rico, or Canada, and located in the country of purchase. If you have any questions, contact IBM or your reseller.

Machine IBM ThinkPad Dock I

Warranty Period* Three Years

** Elements and accessories are warranted for three months. Contact your place of purchase for warranty service information.*

Production Status

Each Machine is manufactured from new parts, or new and serviceable used parts (which perform like new parts). In some cases, the Machine may not be new and may have been previously installed. Regardless of the Machine's production status, IBM's warranty terms apply.

The IBM Warranty

IBM warrants that each Machine 1) is free from defects in materials and workmanship and 2) conforms to IBM's Official Published Specifications. IBM calculates the expiration of the warranty period from the Machine's Date of Installation. The date on your receipt is the Date of Installation, unless IBM or your reseller informs you otherwise.

During the warranty period, IBM or your reseller will provide warranty service under the type of service designated for the Machine and will manage and install engineering changes that apply to the Machine. IBM or your reseller will specify the type of service.

For a feature, conversion, or upgrade, IBM or your reseller may require that the Machine on which it is installed be 1) the designated, serial-numbered Machine and 2) at an engineering-change level compatible with the feature, conversion, or upgrade. Some of these transactions (called "Net-Priced" transactions) may include additional parts and associated replacement parts that are provided on an exchange basis. All removed parts become the property of IBM and must be returned to IBM.

Replacement parts assume the remaining warranty of the parts they replace.

If a Machine does not function as warranted during the warranty period, IBM or your reseller will repair or replace it (with a Machine that is at least functionally equivalent) without charge. If IBM or your reseller is unable to do so, you may return it to your place of purchase and your money will be refunded.

If you transfer a Machine to another user, warranty service is available to that user for the remainder of the warranty period. You should give your proof of purchase and this Statement to that user.

Warranty Service

To obtain warranty service for the Machine, you should contact your reseller or call IBM. In the United States, call IBM at **1-800-IBM-SERV (426-7378)**. In Canada, call IBM at **1-800-465-6666**. You may be required to present proof of purchase.



Depending on the Machine, the service may be 1) a "Repair" service at your location (called "On-site") or at one of IBM's or a reseller's service locations (called "Carry-in") or 2) an "Exchange" service, either On-site or Carry-in.

When a type of service involves the exchange of a Machine or part, the item IBM or your reseller replaces becomes its property and the replacement becomes yours. The replacement may not be new, but will be in good working order and at least functionally equivalent to the item replaced.

It is your responsibility to:

1. obtain authorization from the owner (for example, your lessor) to have IBM or your reseller service a Machine that you do not own;
2. where applicable, before service is provided —
 - a. follow the problem determination, problem analysis, and service request procedures that IBM or your reseller provide,
 - b. secure all programs, data, and funds contained in a Machine,
 - c. inform IBM or your reseller of changes in a Machine's location, and
 - d. for a Machine with exchange service, remove all features, parts, options, alterations, and attachments not under warranty service. Also, the Machine must be free of any legal obligations or restrictions that prevent its exchange; and
3. be responsible for loss of, or damage to, a Machine in transit when you are responsible for the transportation charges.

Extent of Warranty

IBM does not warrant uninterrupted or error-free operation of a Machine.

Misuse, accident, modification, unsuitable physical or operating environment, improper maintenance by you, or failure caused by a product for which IBM is not responsible may void the warranties.

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Limitation of Liability

Circumstances may arise where, because of a default on IBM's part (including fundamental breach) or other liability (including negligence and misrepresentation), you are entitled to recover damages from IBM. In each such instance, regardless of the basis on which you are entitled to claim damages, IBM is liable only for:

1. bodily injury (including death), and damage to real property and tangible personal property; and
2. the amount of any other actual loss or damage, up to the greater of \$100,000 or the charge for the Machine that is the subject of the claim.

Under no circumstances is IBM liable for any of the following:

1. third-party claims against you for losses or damages (other than those under the first item listed above);
2. loss of, or damage to, your records or data; or
3. economic consequential damages (including lost profits or savings) or incidental damages, even if IBM is informed of their possibility.

Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which vary from jurisdiction to jurisdiction.



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The following terms, denoted by an asterisk (*) in this publication, are trademarks of the IBM Corporation in the United States and/or other countries:

IBM	OS/2
ThinkPad	

The following terms, denoted by a double asterisk (**) in this publication, are trademarks of other companies as follows:

Future Domain	Future Domain Corporation
Windows	Microsoft Corporation

Federal Communications Commission (FCC) Statement

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

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an IBM authorized dealer or service representative for help.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from IBM authorized dealers. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Canadian Department of Communications Compliance Statement

This equipment does not exceed Class B limits per radio noise emissions for digital apparatus, set out in the Radio Interference Regulation of the Canadian Department of Communications.

Avis de conformité aux normes du ministère des Communications du Canada

Cet équipement ne dépasse pas les limites de Classe B d'émission de bruits radioélectriques pour les appareils numériques, telles que prescrites par le Règlement sur le brouillage radioélectrique établi par le ministère des Communications du Canada.

European Community (EC) Directive Conformance Statement

This product is in conformity with the protection requirements of EC Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

A Declaration of Conformity with the requirements of the Directive has been signed by IBM United Kingdom Limited, PO Box 30, Spango Valley, Greenock, PA16 0AH Renfrewshire, U.K.

This Product satisfies the Class B limits of EN 55022.



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