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IBM Mobile Systems

S84H-4552-00

**Hardware Maintenance Manual
SelectaDock II Supplement**

November 1996

**Use this supplement with the
IBM Mobile Systems
Hardware Maintenance Manual**

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Note

Before using this information and the product it supports, be sure to read the general information under "Notices" on page 56.

First Edition (November 1996)

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ThinkPad SelectaDock Docking System

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Read This First

Before you go to the checkout guide, be sure to read this section.

Important Notes

- **Only certified trained personnel should service the computer.**
- **Be extremely careful during write operations such as copying, saving, or formatting.** Drives in the computer that you are servicing might have been rearranged; or the drive startup sequence might have been altered. If you select an incorrect drive, data or programs can be written over.
- **Replace FRUs only for the correct model.** When you replace the FRU, make sure the model of the machine and FRU part number are correct by referring to the part list.
- **FRUs should not be replaced because of a single, unreproducible failure.** Single failures can occur from a variety of reasons that have nothing to do with a hardware defect; such as: cosmic radiation, electrostatic discharge, or software errors. FRU replacement should be considered only when a recurring problem exists. If you suspect an unreproducible failure, clear the error log and run the test again. Do not replace any FRUs if log errors do not reappear.
- **Do not replace a nondefective FRU.**

How to Use Error Messages: Use the error codes displayed on the screen to diagnose failures. If more than one error code is displayed, begin the diagnosis with the first error code. The cause of the first error code can result in false error codes being displayed. If no error code is displayed, see if the error symptom is listed in the "Symptom-to-FRU Index" on page 18.

How to Diagnose Multiple FRUs: When the adapter or device has more than one FRU, the error code could be caused by either FRU. Before replacing multiple FRUs, try removing or exchanging each FRU, one by one in the designated sequence, to see if the symptoms change.

What to Do First: The servicer must include the following in the FRU exchange form or FRU return form that is attached to the returned FRU.

- ___ 1. Name and phone number of servicer
- ___ 2. Date of service
- ___ 3. Date when FRU failed
- ___ 4. Date of purchase

- ___ 5. Failure symptoms, error codes appearing on display, and beep symptoms
- ___ 6. Procedure index and page number in which failing FRU was detected
- ___ 7. Failing FRU name and FRU number
- ___ 8. Machine type, model number, and serial number
- ___ 9. Customer's name and address

Before checking problems with the computer, refer to the following to determine if the warranty applies.

Warranty Note

During the warranty period, the customer may be responsible for repair costs if the computer damage was caused by misuse, accident, modification, unsuitable physical or operating environment, or improper maintenance by the customer.

The following is not covered under warranty:

- LCD panel cracked by applying excessive force or by being dropped.
- Scratches, cracked, or broken plastic parts, broken latches, broken pins, or broken connectors caused by excessive force.
- Damage caused by liquid spilled into the system.
- Damage caused by improperly inserting a PCMCIA card or installation of an incompatible card.
- Damage caused by foreign material in the UltraBay or half-height bay.
- Diskette drive damage caused by pressing the diskette drive cover or inserting diskettes with multiple labels.
- Damaged or bent diskette eject button.
- CD-ROM drive damage caused by excessive force, shock, or by being dropped.
- Fuses blown by attaching a nonsupported device.
- Forgotten computer or hard disk password (making computer or hard disk unusable).

If the following symptoms are present, they may indicate damage caused by nonwarranted activity:

- Missing parts may be a symptom of unauthorized service or modification.
- HDD spindles can become noisy if subjected to excessive force or by being dropped.
- 19990303 errors can be caused by exposure to strong magnetic fields.

General Preparation

Note

In this manual, *Base Model* means the SelectaDock Base Model I, *SelectaDock* means the SelectaDock II, and *SelectaDock Docking System* means the Base Model and SelectaDock when docked together as one unit.

1. The SelectaDock supports the ThinkPad 760E, 760ED, and 760ELD. When any other model is docked to the SelectaDock, a beep sounds. Check which model of the ThinkPad is docked to the SelectaDock before maintenance.
2. Verify the Base Model is correctly docked (connected) to the SelectaDock.
3. Verify the computer is correctly docked (connected) to the SelectaDock Docking System.
4. Dock a known-good computer to the Base Model and verify proper operation. If there is a problem, replace the Base Model.
5. If possible, make sure there are no hardware setting conflicts, such as in interrupt levels, memory addresses, DMA channels, and I/O addresses.
6. If the PCI or the ISA card is installed, verify the card is supported by the computer.
7. Verify the SCSI ID is set correctly.
8. Test and correct any computer problems before you test it with the SelectaDock Docking System. Use the computer documentation to resolve any computer problems.
9. Test the computer with the external keyboard, external display, mouse, and parallel and serial device connectors. (Use the keyboard/mouse connector to test the external keyboard and mouse.) If no problems are found, connect the external keyboard, mouse, parallel and serial devices to the SelectaDock Docking System. Then connect the SelectaDock Docking System to the computer and test it.
10. If external devices are attached to the SelectaDock Docking System, such as an audio amplifier, check the device by referring to the manual shipped with it.
11. If the user did not bring the computer with a SelectaDock Docking System when service is needed, use a computer that works correctly with the SelectaDock Docking System.

Checkout Guide

Use the following procedure as a guide for computer problems.

Note

The diagnostic tests are intended to test only IBM products. Non-IBM products, prototype cards, or modified options can give false errors and invalid system responses.

Important

When the problem determination procedure in the operation manual that is supplied with the adapter or device says "Have the system unit serviced", this means both the computer and the SelectaDock Docking System.

1. Obtain the failing symptoms in as much detail as possible.
2. Verify the symptoms by attempting to re-create the failure by running the diagnostic test or by repeating the same operation.

Note

To run the diagnostics, refer to "How to Run the Diagnostics" on page 11.

3. Use the following table with the verified symptom to determine which page to go to. Search the symptoms column and find the description that best matches your symptom; then go to the page shown in the "Go to" column.

Symptoms (Verified)	Go to
Power failure. (The power indicator does not go on or stay on.)	"Power Supply" on page 6.
POST does not complete. No beeps or error code are indicated.	"Symptom-to-FRU Index" on page 18, and then use the No Beep Symptoms table.
The configuration is not the same as the installed devices.	"Checking the Installed Devices List" on page 8.
POST beeps, but no error codes are displayed.	"Symptom-to-FRU Index" on page 18, and then use the Beep Symptoms table.

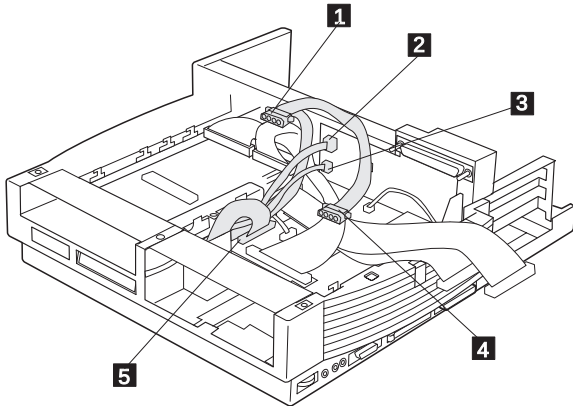
Symptoms (Verified)	Go to
POST detected an error and displayed numeric error codes.	"Symptom-to-FRU Index" on page 18, and then use the Numeric Error Codes table.
The diagnostic test detected an error and displayed a FRU code.	"Diagnostic Error Codes" on page 21.
Other symptoms (such as LCD display problems).	"Symptom-to-FRU Index" on page 18, and then use the other symptom table.
Symptoms cannot be re-created (intermittent problems).	Use the customer reported symptoms and go to "Symptom-to-FRU Index" on page 18.

Power Supply

If the power-on indicator is not on but the power supply fan is not turning, check the power cord for continuity and correct installation.

If the power cord is not the problem, either the power supply is defective, or another component is defective causing the power supply to cut off. To verify the power supply is operating correctly, do the following:

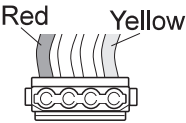
1. Power-off the computer and disconnect the SelectaDock Docking System power cord.
2. Remove all internal devices, external devices, and the computer from the SelectaDock Docking System.
3. Undock the Base Model.
4. Remove the half-height bay frame (see "1050 Half-Height Bay Frame" on page 39).
5. Remove connectors **1**, **2**, **3**, **4**, and **5** from the each device, tray, or card.



6. Short-circuit 1 and 3, 2 and 8 of the connector **5**. Then check the power supply voltages on each connector. If the voltage is not correct, replace the power supply.

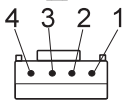
If any of the voltages is not correct, replace the power supply. If replacing the power supply does not correct the problem, replace the main card.

Power Supply Connector **1** and **4**



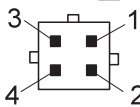
Pin	V dc
Red cord	+ 5 V
Yellow cord	+ 12 V

Power Supply Connector **2**



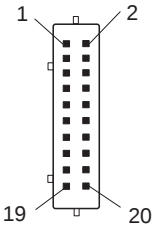
Pin	Signal	V dc Min.	V dc Max.
1, 2	CVCC	+ 19 V	+ 21 V
3, 4	GND	–	–

Power Supply Connector **3**



Pin	Signal	V dc Min.	V dc Max.
1	– 12 V	– 11.4 V	– 13.2 V
2, 3	GND	–	–
4	– 5 V	– 4.53 V	– 5.5 V

Power Supply Connector **5**



Pin	Signal	V dc Min.	V dc Max.
2, 3	GND	—	—
4	SUB 12	+11.4	+12.6
5	GND	—	—
6, 7	+12 volts	+11.4	+12.6
8	GND	—	—
9—11	+3.3	+3.0	+3.6
12—14	GND	—	—
15—17	+5	+4.75	+5.25
18—20	GND	—	—

Checking the Installed Devices List

If a device is installed but the icon appears in a gray shade rather than a dark shade on the basic diagnostics screen, the device is defective. Reseat the device connectors. If the symptom remains, replace the device or the system board. If needed, adjust the contrast control to clearly distinguish the shades of the icon.

If a device that is not installed appears in a dark shade (for example, FDD-2 appears in a dark shade when *NO* second FDD is installed), do the following:

1. Replace the **first** device in the configuration, such as an FDD-1, HDD-1.
2. If the problem remains, replace the system board.

The PCMCIA-1, parallel, and serial icons are always displayed in a dark shade because the icons represent subsystems of the system board and not the attachment of the devices.

The FDD-1, HDD-1, or PCMCIA-1 icons represent the **first** drive in the system configuration for each type of device. Similarly, the HDD-3, FDD-2, or PCMCIA-2 icons represent the **second** drive, usually attached through a port replicator or an expansion unit.

The HDD-2 icon represents the hard disk drive in the UltraBay of the computer. The HDD-3 or HDD-4 icons represent the hard disk drive in the SelectaDock Docking

System (except the SCSI hard disk). The FDD-2 or PCMCIA-2 icons represent the FDD or PCMCIA attached through a port replicator or in the SelectaDock Docking System.

Printer

Test the printer by connecting it to the computer before testing it on the SelectaDock Docking System.

1. Make sure the printer is correctly connected and is powered on.
2. Run the printer self-test.

If the printer self-test does not run correctly, the problem is in the printer. Refer to the printer service manual.

If the printer self-test runs correctly, connect a wrap plug on the parallel connector on the rear of SelectaDock Docking System and run the advanced diagnostic tests to determine the failing FRU.

If the advanced diagnostic tests (with the wrap plug connected) did not detect a failure, replace the printer cable.

If the problem is not corrected, do one of the following:

- If the printer is attached to the parallel connector of SelectaDock Docking System, replace the main card of SelectaDock Docking System.
- If the printer is attached to the parallel connector on the adapter, replace the FRUs in the following order one at a time until the problem is corrected:

Note

If the replaced FRUs do not resolve the problem, put the original FRUs back in the SelectaDock Docking System. Do not replace nondefective FRUs.

1. Adapter
2. Main card of SelectaDock Docking System

External Display

If the screen is rolling, replace the external display.

If the problem is not corrected, replace FRUs in the following order one at a time until the problem is corrected:

Note

If the replaced FRUs do not resolve the problem, put the original FRUs back in the SelectaDock Docking System. Do not replace nondefective FRUs.

- If the external display is attached to the SelectaDock Docking System:
 1. Main card of SelectaDock Docking System

- If the external display is attached to the display adapter:
 1. Display adapter
 2. Main card of SelectaDock Docking System
 3. Riser card

If the screen is not rolling, do the following to run the display self-test:

1. Power-off the computer on the SelectaDock Docking System and the external display.
2. Disconnect the external display signal cable from the SelectaDock Docking System.
3. Power-on the external display.
4. Turn the contrast control to its maximum position.
5. Turn the brightness control to its center detect position.

Check for the following conditions:

- The screen should be white or light gray, with a black margin. See the appropriate display manuals for the correct self-test condition.
- The screen contrast and brightness controls should change the intensity of the screen.

If the external display does not meet these specifications, replace the external display.

If the external display meets these specifications, replace FRUs in the following order one at a time until the problem is corrected.

Note

If the replaced FRUs do not resolve the problem, put the original FRUs back in the SelectaDock Docking System. Do not replace nondefective FRUs.

- If the external display is attached to the SelectaDock Docking System:
 1. Main card of SelectaDock Docking System
 2. External display
- If the external display is attached to the display adapter:
 1. Display adapter
 2. Main card of SelectaDock Docking System
 3. Riser card
 4. External display

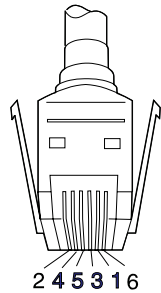
External Keyboard

Notes

- If a mouse or other pointing device is attached, remove it and see if the error symptom goes away. If the symptom goes away, the mouse or other pointing device is defective.
- The computer keyboard does not work when an external keyboard is connected.

1. Power-off the computer.
2. Disconnect the keyboard cable from the external keyboard.
3. Power-on the computer and check the keyboard cable connector for the following voltages. All voltages have a $\pm 5\%$ voltage tolerance.

Pin	Voltage (V dc)
1	+5.0
2	Not used
3	Ground
4	+5.0
5	+5.0
6	Not used



4. If all voltages are correct, replace the external keyboard.
5. If the voltages are not correct, replace the following FRUs one at a time until the problem is corrected.

Note

If the replaced FRUs do not resolve the problem, put the original FRUs back in the SelectaDock Docking System. Do not replace nondefective FRUs.

- a. Keyboard cable
- b. Main card of the SelectaDock Docking System

How to Run the Diagnostics

This section describes how to run the diagnostics for both the computer and the SelectaDock Docking System.

Diagnostics for ThinkPad

Use either the TrackPoint III or the cursor move keys to interact with the tests. The **Enter** key works the same as selecting the **OK** icon to reply OK.

1. Press and hold **F1**; then power-on the computer.
Hold **F1** down until the Easy-Setup screen appears.
2. Select **Test** and press **Enter**.

3. Select a device and press **Enter** to run the test.
4. The test progress screen appears.
5. **OK** appears when the test ends without any errors.
6. Start the **Advanced Diagnostic test** by pressing **Ctrl+A** on the basic diagnostic menu screen.
7. Select **Tool** to install the tools.
8. Select a device and press the **Spacebar** and install the tool. You can select multiple devices by repeating this step. A ✓ mark appears beside the selected devices.
9. Select **OK** and press **Enter** if the selection is OK.
10. Select a device and press **Enter** to start the tests.
11. Select **Test All** to test all devices.
12. Select **Loop Test** to run the tests in a repeated loop.
A loop option menu appears in which a device loop or all-device loop can be selected. Select a device and press the **Spacebar** to select a device. Repeat this step to select multiple devices. Press **Enter** to start the diagnostic loop. If no device is selected, all device tests are looped.
13. To exit the loop, keep pressing **Ctrl+Pause** until the test exits. A beep sounds to notify that the exit interrupt is sensed by the test program.

Error Log: Diagnostic errors are printed on a printer that is attached to the parallel port when the error is detected. The error is also logged in the system memory.

Use the following procedure to display the errors:

1. End the test, if it is running.
2. Press **Ctrl+A** to select the advanced diagnostic mode.
3. Press **Ctrl+E**.
4. The error log appears.
5. To exit the screen, select the cancel icon or press **Esc**.

The error log is not saved when the system is powered off.

How to Run the Keyboard Test: Use the following procedure to run the keyboard key test.

1. Power-off the computer.
2. Remove the external keyboard, if one is attached.
3. Press and hold **F1**, then power-on the computer. Hold **F1** until the **Easy-Setup** screen appears.
4. Select **Test** and press **Enter**. The basic diagnostic screen appears.
5. Press **Ctrl+A** to go to the advanced diagnostic screen.
6. Press **Ctrl+K**. A keyboard picture appears on the screen.
7. When you press a key, a mark appears or disappears on the corresponding key position on the screen. Repeat this step for any keys that need to be tested.
8. To exit the test, press **Esc** or select the cancel icon.

PC Test Card LED: The green LED on the PC test card lights when the PCMCIA test is running. If the LED does not light, check that the card is installed correctly by reseating the card. If it still does not light after reseating, try using another slot for the test. If the LED still does not light and the test fails, replace the FRU shown in the diagnostic error code.

Errors during the POST: If the POST detects an error, a three- to eight-digit error code displays.

Memory Errors: If the POST detects a memory error in the first 640 KB of system memory, all the first bank memory is deallocated and the test continues with the second 640 KB of memory. If the total amount of error-free memory becomes less than 2 MB, a 2XX POST error occurs and the system stops. All the remaining memory is used as system memory. When the POST memory test has completed, the usable memory size is compared with the configuration data. If a mismatch is detected, a 2XX error code occurs. Press **Esc**, and **F1** after restart to continue system operation.

Memory sizes, that are deallocated because of the POST process, are kept by the hibernation or suspend functions. To test this memory, it must be reconfigured as part of the original memory size. Configure by turning the power off and on.

Deallocation support is done only by the POST for memory errors. All irrecoverable memory errors that occur during normal operation cause an interrupt to the operating system.

Diagnostics for the SelectaDock Docking System

The SelectaDock Docking System Options Diskette helps you troubleshoot the expansion unit, SCSI adapter, and SCSI device problems through a series of menus.

Run the diagnostics to verify operation of the SelectaDock Docking System and SCSI devices. Do the following:

1. Power-off the computer on the SelectaDock Docking System and external SCSI devices.
2. Insert the Option Diskette into drive A.
3. Power-on all attached external SCSI devices and the computer on the SelectaDock Docking System.
4. The **Logo Screen** appears.
5. After a few seconds the **Main Menu** appears.
6. Select a device for testing and go to the respective section.

Testing the Expansion Unit

- 1. The **Test Selection Menu** appears when you select **Test Expansion Unit** on the **Main Menu**.

Test Selection Menu V1.00

Select one

1. Run the tests one time

2.Run the tests continuously

Enter F1=Help F3=Exit

- 2. Select an item on the screen and follow the instructions that appear on the screen.

Testing the SCSI Subsystem

Note

If a SCSI adapter is installed in an PCI adapter card slot, remove it before running the SCSI diagnostic program.

- 1. When you select **Test SCSI Subsystem** on the **Main Menu**, the diagnostics program checks the system configuration for SCSI devices and displays the following if no SCSI controller is found.
If a SCSI controller is found, the computer goes on to initialize the SCSI devices and displays the following:

SCSI Subsystem Diagnostics Utility V2.1

Scanning Target #n

Enter F3=Exit

2. If the initialization fails, the following screen appears:

SCSI Subsystem Diagnostics Utility V2.1

SCSI Initialization Failed

Enter F3=Exit

If the initialization ends successfully, the following screen appears. Select an item.

Test Selection Menu V1.00

Select one

1.Run the tests one time

2.Run the tests continuously

Enter F1=Help F3=Exit

3. The **SCSI Devices Test Menu** appears. Select one of the devices.

SCSI Subsystem Diagnostics Utility V2.1

SCSI Devices Test Menu

Select one

1.All

2.(device name) (ID0)

3.(device name) (ID1)

4.(device name) (ID2)

5.(device name) (ID3)

6.(device name) (ID4)

7.(device name) (ID5)

8.(device name) (ID6)

9.(device name) (ID7)

0.Exit

Enter F3=Exit

The device name may be any of the following:

- SCSI hard disk
- SCSI tape drive

- SCSI CD-ROM
- SCSI optical drive
- No device

The SCSI controller of SelectaDock Docking System appears as ID7 on the screen.

4. If a SCSI device exists and a test medium is required to test the SCSI device, the following pop-up menu appears (shows the case of a SCSI tape drive).

SCSI Subsystem Diagnostics Utility V2.1

SCSI Devices Test Menu

Select one

1.All

2.(device name) (ID0)

3.(device name) (ID1)

4.(device name) (ID2)

5.(device name) (ID3)

6.(device name) (ID4)

7.(device name) (ID5)

8.(device name) (ID6)

9.(device name) (ID7)

0.Exit

Insert a scratch TAPE in the drive.

Enter F3=Exit

5. Insert the requested medium and wait approximately 30 seconds until the medium is loaded.
6. Press any key. If no SCSI devices are found, a pop-up menu appears.

SCSI Subsystem Diagnostics Utility V2.1

SCSI Devices Test Menu

Select one

1.All

2.(device name) (ID0)

3.(device name) (ID1)

4.(device name) (ID2)

5.(device name) (ID3)

6.(device name) (ID4)

7.(device name) (ID5)

8.(device name) (ID6)

9.(device name) (ID7)

0.Exit

No Device Present

Enter F3=Exit

7. The test begins and the following pop-up menu appears:

SCSI Subsystem Diagnostics Utility V2.1

SCSI Devices Test Menu

Select one

1. All

2. (device name) (ID0)

3. (device name) (ID1)

4. (device name) (ID2)

5. (device name) (ID3)

6. (device name) (ID4)

7. (device name) (ID5)

8. (device name) (ID6)

9. (device name) (ID7)

0. Exit

IDn: Test in preocess

Enter F3=Exit

8. If the test is successful, the following appears:

SCSI Subsystem Diagnostics Utility V2.1

SCSI Devices Test Menu

Select one

1. All

2. (device name) (ID0)

3. (device name) (ID1)

4. (device name) (ID2)

5. (device name) (ID3)

6. (device name) (ID4)

7. (device name) (ID5)

8. (device name) (ID6)

9. (device name) (ID7)

0. Exit

IDn: Test Passed

Enter F3=Exit

If the test is unsuccessful, the following appears:

SCSI Subsystem Diagnostics Utility V2.1

SCSI Devices Test Menu

Select one

1. All

2. (device name) (ID0)

3. (device name) (ID1)

4. (device name) (ID2)

5. (device name) (ID3)

6. (device name) (ID4)

7. (device name) (ID5)

8. (device name) (ID6)

9. (device name) (ID7)

0. Exit

IDn: Test Failed

Enter F3=Exit

Symptom-to-FRU Index

The Symptom-to-FRU Index lists error symptoms and possible causes. The most likely cause is listed first.

Note

Replace the FRUs one at a time in the sequence shown in the FRUs of the SelectaDock Sequence of Action column. If a replaced part did not resolve the problem, put the original part back in the SelectaDock Docking System. Do not replace nondefective parts.

Always begin with "General Preparation" on page 3. This index also can be used to help you decide which FRUs to have available when servicing the SelectaDock Docking System.

Numeric error codes show the errors detected in the POST or system operation. **Xs**, when included in the error code, can be any number.

FRU codes are used for errors detected by diagnostic tests.

If no error codes are available, use narrative symptoms.

If the symptom is not listed or you cannot correct the problem using this index, go to "Undetermined Problems" on page 30.

If you cannot correct the problem using this index, go to "Undetermined Problems" on page 30.

Important

1. Before replacing any SCSI device, verify there are no duplicate SCSI ID settings.
2. Make sure there are no conflicts of hardware settings, such as, interrupt level, memory address, DMA channel, and I/O address.
3. If you have both an error message and an incorrect audio response, diagnose the error message first.
4. If you cannot run the advanced diagnostic tests, but did receive a POST error message, diagnose the POST error message.
5. If you did not receive an error message, look for a description of your error symptoms in the first part of this index.
6. Check all power supply voltages before you replace the main card, riser card, and audio card of the SelectaDock Docking System. (See "Power Supply" on page 6.)

Numeric Error Codes

Symptom or Error	FRUs of the SelectaDock Sequence of Actions
10X, 11X 101: Interrupt failure. 102: Timer failure. 103: Timer interrupt failure. 104: Protected mode failure. 105: Last 8042 command not accepted. 107: NMI test failure. 108: Timer bus test failure. 109: Low meg-chip select test.	1. Adapter in slot (if used) 2. Riser card 3. Main card
195 (The computer was docked to the SelectaDock Docking System while in hibernation mode.)	1. Do the following steps. Power-off and undock the system. Power-on and shut down the system. Power-off and dock the system.
1XX	1. See the Hardware Maintenance Manual of the computer. If the problem remains, go to “Undetermined Problems” on page 30.
2XX 201: Memory data error. 202: Memory line error 00–15. 203: Memory line error 16–23. 205: Memory test failure on on-board memory. 221: ROM to RAM remap error.	1. See the Hardware Maintenance Manual of the computer. 2. Main card
3XX	1. See “External Keyboard” on page 11.

Symptom or Error	FRUs of the SelectaDock Sequence of Actions
6XX	1. Before changing any devices, run the diagnostic test. (See the "How to Run the Diagnostics" on page 11.) 2. FDD external attachment kit 3. Diskette drive assembly 4. Riser card
11XX, 12XX	1. Serial devices 2. Communication cable 3. Riser card
17XX	1. Hard disk drive (2.5-inch ThinkPad hard disk drive) 2. Main card
24XX	1. Main card 2. Riser card
860X	1. Mouse 2. External keyboard 3. Riser card
I9990301, I9990302 I9990305	1. See the Hardware Maintenance Manual of the computer.
Not shown above	1. See the Hardware Maintenance Manual of the computer. 2. See "Undetermined Problems" on page 30.

Diagnostic Error Codes

A detected error is shown as in the following example:

X



SystemBoard
DEV 001
FRU 02
ERR 0010

- A large X to the left of the device icon
- Device ID (three digit)
- FRU code (four digit)
- Error code (two digit)

The device ID and error code are used to indicate the detail portion of the FRU which caused the error. If replacing a FRU does not correct the problem, see the device ID or error code from the previous failure. If they have changed, the cause might be because the new FRU is defective or that the FRU was incorrectly installed.

Device ID: If an error is detected by the diagnostic tests, a three digit device ID is displayed. The device ID indicates suspected device.

Icon	Device ID	Suspected Device
 SystemBoard	001	System board
	003	Keyboard
	007	Math coprocessor
	086	Pointing device
 Memory	002	Memory
 Display	050	Display
	053	Enhanced video
	052	MPEG
 HDD-1	017	Hard disk drive
 HDD-2	151	Hard disk in UltraBay
 HDD-3	067	External Hard disk drive
 HDD-4	152	Second external hard disk drive

Icon	Device ID	Suspected Device
 4 HDD-4	068	External hard disk drive
 1 FDD-1	006	Diskette drive
 2 FDD-2	066	External diskette drive
 1 PCMCIA-1	080	PCMCIA
 2 PCMCIA-2	088	External PCMCIA
 Parallel	009	Parallel
 Serial	011, 012	Serial
 DSP	113	DSP
 1 CDROM-1	215	CD-ROM
 2 CDROM-2	216	External CD-ROM
 Infrared	103	IR
 Audio	150	Audio (ESS)

FRU Codes: If an error is detected by the diagnostic tests, a four-digit FRU code is displayed. The FRU code indicates two suspected FRUs. Replace the FRU that is indicated by the **two leftmost digits** first; then replace the FRU that is indicated by the **two rightmost digits**. No FRU is assigned to code 00. If only one FRU is suspected, the other FRU code is filled with zeros. See the reference page before replacing the FRU.

FRU Code	FRU
10	1. System board
30	Reserved
32	1. External keyboard 2. Main card 3. Riser card
33	1. External mouse 2. Main card 3. Riser card
45	External CRT
51	1. Reseat the diskette drive (FDD-2) 2. Diskette drive (FDD-2) 3. Main card 4. Riser card
61	1. Reseat the hard disk drive in the SelectaDock Docking System (HDD-3) 2. Hard disk drive in the SelectaDock Docking System (HDD-3) 3. Main card
63	1. Reseat the second hard disk drive in the SelectaDock Docking System (HDD-4) 2. Second hard disk drive in the SelectaDock Docking System (HDD-4) 3. Main Card
70	PCMCIA-2 (Replicator)
90	CD-ROM drive
91	CD-ROM drive in the SelectaDock

If the problem still remains after replacement of the FRUs, go to "Undetermined Problems" on page 30.

Beep Symptoms

Symptom or Error	FRUs of the SelectaDock Sequence of Actions
Beep sounds continuously.	1. Verify that the ThinkPad model is correct. (See "General Preparation" on page 3.) 2. Security feature group 3. Main card 4. Audio card

Keyboard-Related Symptoms

Symptom or Error	FRUs of the SelectaDock Sequence of Actions
One or more keys do not work on the external keyboard, but the SelectaDock is otherwise functional.	1. Go to "External Keyboard" on page 11.

Indicator-Related Symptoms

Symptom or Error	FRUs of the SelectaDock Sequence of Actions
Power-good light does not turn on, fan does not run, and the computer is not functional.	1. See "Undetermined Problems" on page 30.
Computer is functional and the fan runs, but the power on indicator does not turn on.	1. Check the connector of LCD Group 2. Main Card 3. Go to "Power Supply" on page 6.
LCD (SelectaDock) for the hard disk drive stays on.	1. 2.5-inch hard disk drive on the UltraBay tray or IDE drive in the half-height bay. of the SelectaDock
LCD (SelectaDock) for the hard disk drive is not working, but the SelectaDock is functional.	1. Check the connector of LCD Group 2. LCD Circuit Board Group 3. Main card

Power-Related Symptoms

Symptom or Error	FRUs of the SelectaDock Sequence of Actions
Although the computer is powered off, the fan of the SelectaDock power supply is running.	1. Power supply unit
The power of SelectaDock cannot be powered off.	1. Power supply unit

Peripheral-Device-Related Symptoms

Symptom or Error	FRUs of the SelectaDock Sequence of Actions
External display screen changes colors.	1. Go to “External Display” on page 9.

UltraBay-Tray-Related Symptoms

Symptom or Error	FRUs of the SelectaDock Sequence of Actions
The HDD or FDD on the UltraBay tray does not work correctly.	1. Reseat the drive. 2. Reseat the power cable and SCSI cable of the of the UltraBay tray. (See “UltraBay tray” on page 37.) 3. Check that: a. The drive works correctly if it is installed in the UltraBay of the computer. b. Whether the IDE connector of the UltraBay tray is connected correctly. c. No more than two IDE devices are installed including a device in the half-height bay. 4. Run the drive test. 5. Main card

PC-Card-Related Symptoms

Symptom or Error	FRUs of the SelectaDock Sequence of Actions
PC Card does not work.	1. Reseat the PC card. 2. Check that: a. The PC card is functional when installed in the computer or another SelectaDock. b. The PC card is correctly set up, including the computer resource assignments and device driver installation. 3. Run the diagnostic test for PCMCIA. 4. Main card

SCSI Device-Related Symptoms

Symptom or Error	FRUs of the SelectaDock Sequence of Actions
The external SCSI device does not work.	1. Verify the SCSI device is powered on. 2. Verify the SCSI device is terminated at the last device. 3. Reseat the drive. 4. Run the drive test. 5. Main card
The internal SCSI device does not work.	1. Reseat the drive. 2. Verify the SCSI cable connections. 3. Verify the terminator on the SCSI drive in the SelectaDock is removed. 4. Run the drive test. 5. Main card

Audio-Related Symptoms

Symptom or Error	FRUs of the SelectaDock Sequence of Actions
Audio equipment does not work.	Verify that: 1. The audio equipment works when connected directly to the computer. 2. The audio equipment is designed to be supported by this product.

Sound Blaster-Related Symptoms

Symptom or Error	FRUs of the SelectaDock Sequence of Actions
The Sound Blaster or compatible adapter card does not work.	Check that: 1. The game switch is set to the OFF position. (See "Game Switch" on page 31.) Because of a resource conflict, the Sound Blaster does not work when the MIDI/joystick port is enabled. 2. The MIDI/joystick of the computer has also been disabled. See the user's guide of the computer.

MIDI/Joystick-Port-Related Symptoms

Symptom or Error	FRUs of the SelectaDock Sequence of Actions
The MIDI/joystick does not work.	Check that: 1. The game switch is set to the ON position. (See "Game Switch" on page 31.) 2. The computer supports the MIDI device, when the problem occurs only during MIDI operation.

Adapter-Related Symptoms

Symptom or Error	FRUs of the SelectaDock Sequence of Actions
The adapter does not work.	Verify that: 1. The adapter is designed for the docking station adapter slot. 2. The system resources are assigned correctly by its utility program, if the adapter card is a non-PnP ISA adapter bus type. 3. The driver diskette is up to date. Contact the driver manufacturer. The accompanying diskette may support only older desktop computers. See the adapter documentation that came with the option to diagnose problems.

Intermittent Symptoms

Symptom or Error	FRUs of the SelectaDock Sequence of Actions
An intermittent problem occurs.	The problem can be difficult to analyze because it occurs intermittently. If your docking station has such a problem, verify that: 1. The computer is firmly attached to the docking station. 2. All cables and power cords are securely connected to the SelectaDock system and to the attached options. 3. The SCSI device is correctly terminated. 4. Do the loop test. (See "How to Run the Diagnostics" on page 11.) If these items are correct and the problem still occurs, go to "Undetermined Problems" on page 30.

Other Symptoms

Symptom or Error	FRUs of the SelectaDock Sequence of Actions
Computer does not work, the power-on indicator does not turn on, but the fan runs.	1. See "Undetermined Problems" on page 30.
Program-load error during remote IPL from the file server.	1. Network Adapter
The HDD-3 or HDD-4 is not recognized and no error codes appear on the screen. (The password of the HDD-3 or HDD-4 is still set.) Note: The HDD-3 or HDD-4 icon indicates the 2.5-inch ThinkPad hard disk drive installed in the SelectaDock.	1. Remove the hard disk password for the ThinkPad hard disk as follows: a. Remove the hard disk drive from the SelectaDock Docking System and install it to the computer. b. Remove the hard disk password.

Undetermined Problems

Use the following procedure when the diagnostic tests do not identify the failing adapter or device.

Check that all cables, wires, and connectors are connected so that they do not cause a short circuit. If any problems are found, reconnect or replace them.

Check the power supply for correct operation (see "Power Supply" on page 6). If the power supply is operating correctly, return here and continue with the following procedure:

1. Power-off the computer.
2. Remove or disconnect the following adapters or devices one at a time from the SelectaDock Docking System. (Do not isolate adapters or devices that are known to be good.)
 - a. Non-IBM devices.
 - b. A modem, printer, mouse, external keyboard, external display, external diskette drive, numeric keypad, or other external devices.
 - c. Any adapter.

Note

Removing an adapter or device may cause configuration errors. Ignore error code 174.

- d. SCSI device.
 - e. Hard disk drive.
3. Power-on the system and check if the problem has changed.
4. If the symptom remains, repeat steps 1 through 3 until you find the failing adapter or device, or until all adapters or devices have been removed.
5. If all adapters or devices have been removed and the problem remains, replace the following the SelectaDock Docking System FRUs one at a time.

Note

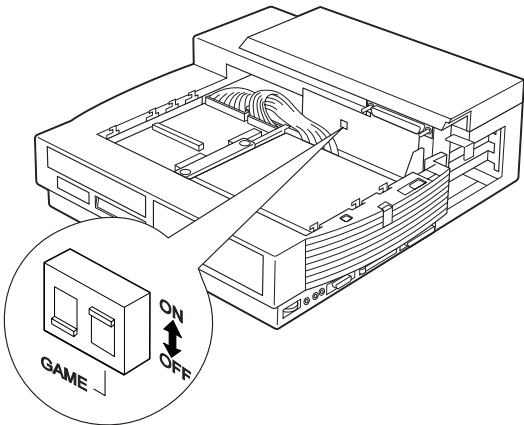
If a replaced FRUs do not resolve the problem, put the original FRU back in the SelectaDock Docking System. Do not replace nondefective FRUs.

- a. Riser card
- b. Main card
- c. SelectaDock Docking System audio card

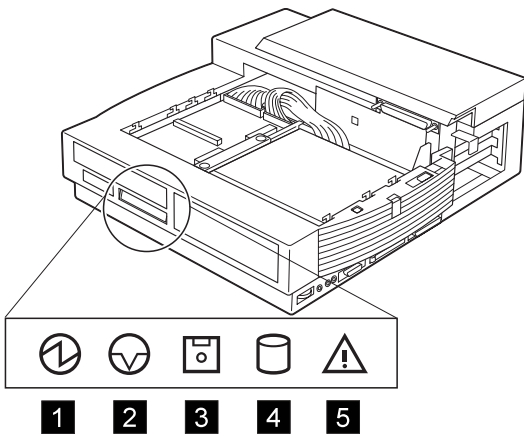
If the problem goes away when you remove an adapter, but replacing the adapter does not correct the problem, replace the main card of the SelectaDock Docking System.

Feature Description

Game Switch: This switch controls the MIDI/joystick port. The Sound Blaster cannot be used when the MIDI/joystick is enabled because of data conflict. Set the game switch to the **OFF** position to disable the MIDI/joystick port. Set the game switch to the **ON** position to enable the MIDI/joystick port.



Status Indicator Check the SelectaDock Docking System status using the following icons:



Icon	Meaning
1	Power on
2	Suspend mode
3	Diskette drive in use
4	Hard disk in use
5	Attention

Product Overview: The following provides an overview of the system features:

Feature	Description
PCI or ISA slot	Two full size PCI slots or one ISA shared slot
Bays	1-inch-high bay - ThinkPad option using the UltraBay tray - CD-ROM/FDD/HDD drive - Half-height bay - All available storage SCSI/IDE devices
Audio subsystem	- Speaker - Audio line-out - Stereo speaker - Stereo audio amplifier - Headphone - Manual volume control
Ports	- MIDI/joystick port - SCSI2 - Docking connector
PCMCIA	One Type-III or two Type-II PC Card
Security	- PCI or ISA card protection - PC card lock - MicroSaver lock hole

Removal and Replacement

This section contains information on removals and replacements, as well as locations.

- The arrows in the removals and replacements show the direction of movement to remove a field replaceable unit (FRU), or to turn a screw to release the FRU. The arrows are marked in numeric order to show the correct sequence of removal.
- When other FRUs must be removed before the failing FRU is removed, they are listed at the top of the page. Go to the removal procedure for each FRU listed, remove the FRU, and then continue with the removal of the failing FRU.
- To replace a FRU, reverse the removal procedure and follow any notes that pertain to replacement. See "Locations" on page 49 for internal cable connections and arrangement information.

In addition to the safety notices below, refer to the Hardware Maintenance Manual for the computer you are servicing.

Caution

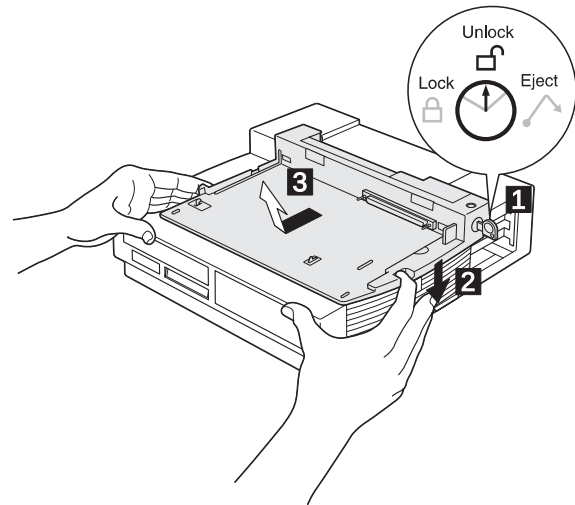
Before removing any FRU, power-off the SelectaDock Docking System, remove the computer, unplug all power cords from electrical outlets, and then disconnect any interconnecting cables.

Warning

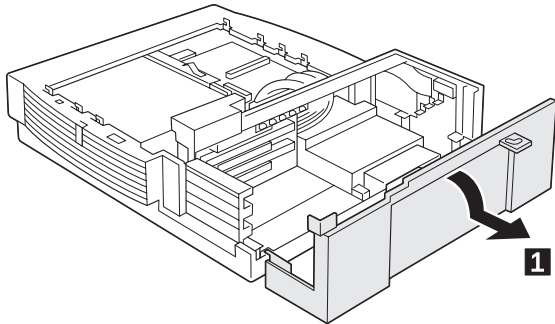
The main board, adapters, and circuit boards on the drives are sensitive to, and can be damaged by, electrostatic discharge. You must use an electrostatic discharge (ESD) strap to establish personal grounding.

1010 Base Model

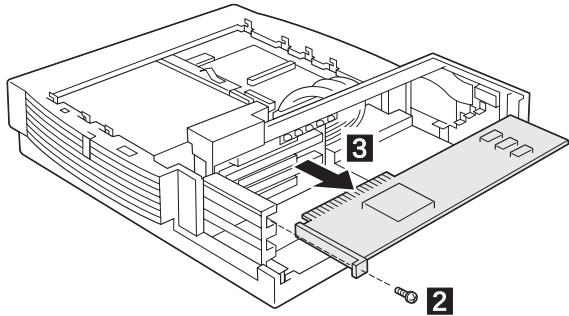
Make sure that the security key is set to the Unlock position **1** and release the latch **2**; then undock the Base Model.



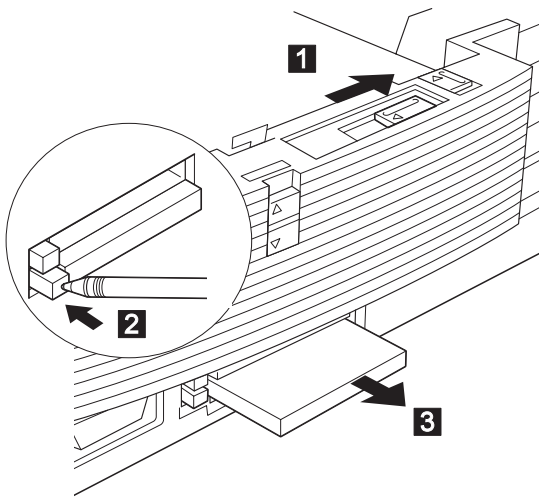
1020 Option Card Cover / Option Card



If an option card is installed, remove it.



1030 PC Card



1040 1-Inch-High Bay

- Base Model (1010)

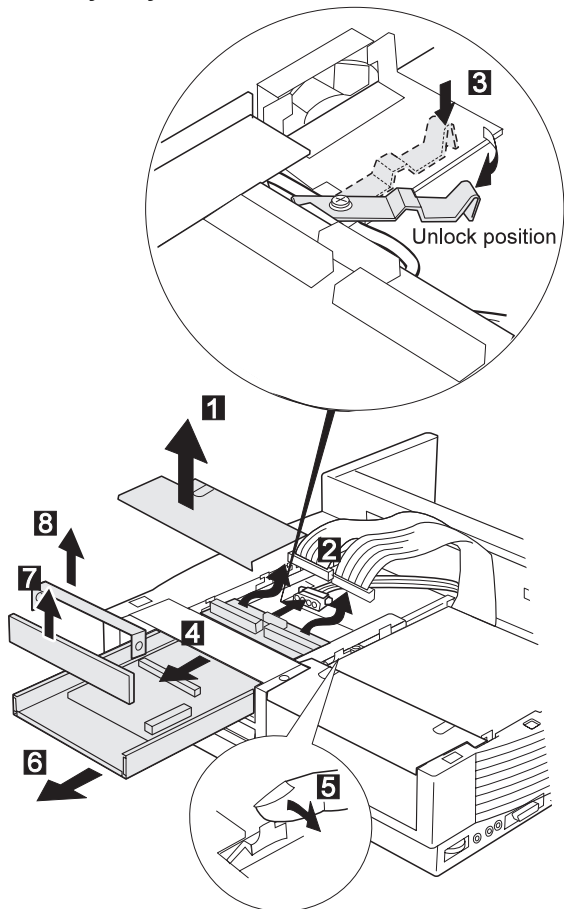
The customer can install the ThinkPad option by using the UltraBay tray and HDD, FDD, or CD-ROM by using the device tray in the 1-inch-high bay.

Remove the devices that are installed in the bay; then remove the UltraBay tray or device tray as follows:

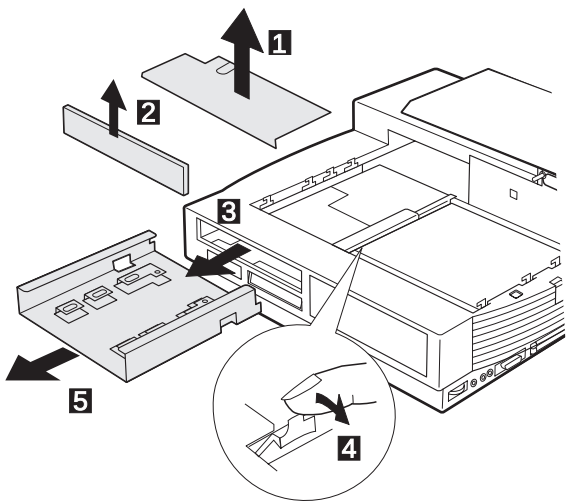
Attention

A hard disk or a diskette drive is sensitive to physical shock. Be careful not to drop or apply any shock to these devices.

UltraBay Tray

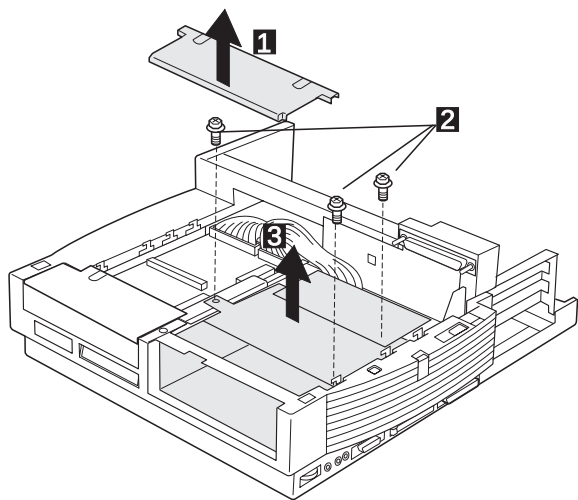


Device Tray



1050 Half-Height Bay Frame

- Base Model (1010)

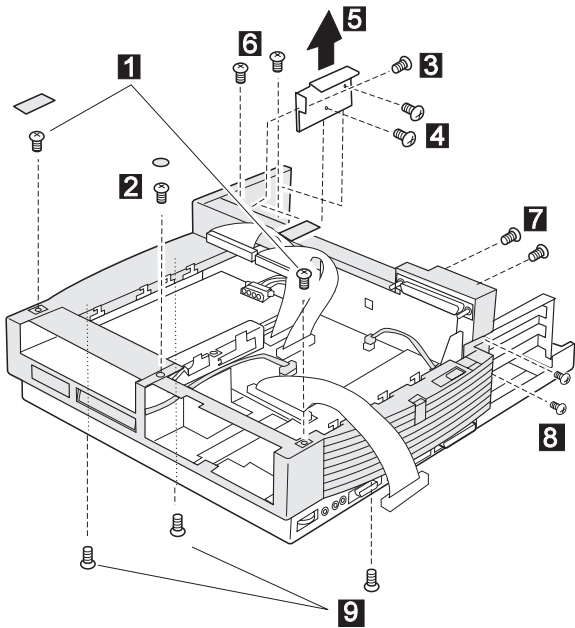


1060 Upper Cover

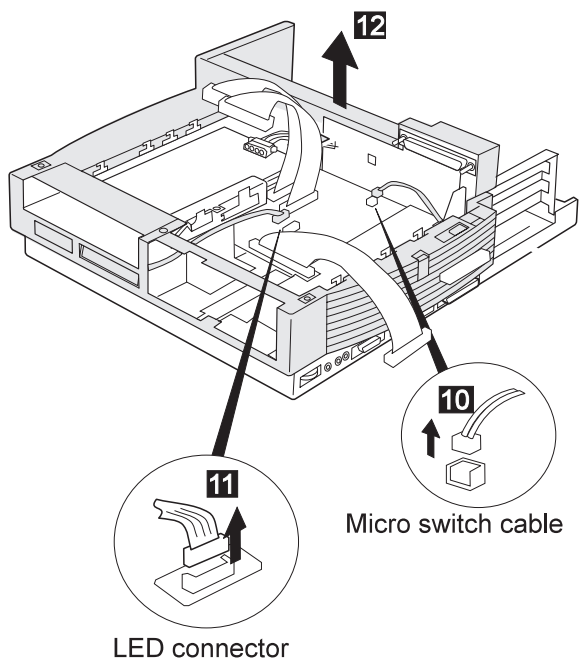
- Base Model (1010)
- Rear Panel / Option Card Cover (1020)
- 1-Inch-High Bay (1040)
- Half-Height Bay Frame (1050)

Caution

Make sure all power cords are unplugged before you remove the upper cover.

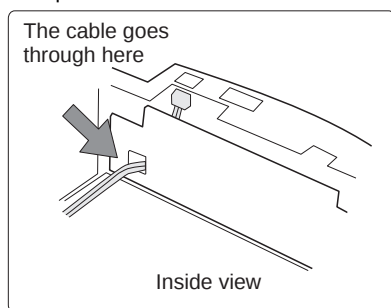


Step	Length (Quantity)	Memo
1	M 2.6 x 5 mm (2)	
2	M 2.6 x 5 mm (1)	Flat head
3	M 2.6 x 2.5 mm (1)	
4	M 2.6 x 5 mm (2)	
6	M 2.6 x 5 mm (2)	Self-tap
7	M 2.6 x 5 mm (2)	Black
8	M 2.6 x 8 mm (2)	Black
9	M 2.6 x 8 mm (3)	Self-tap



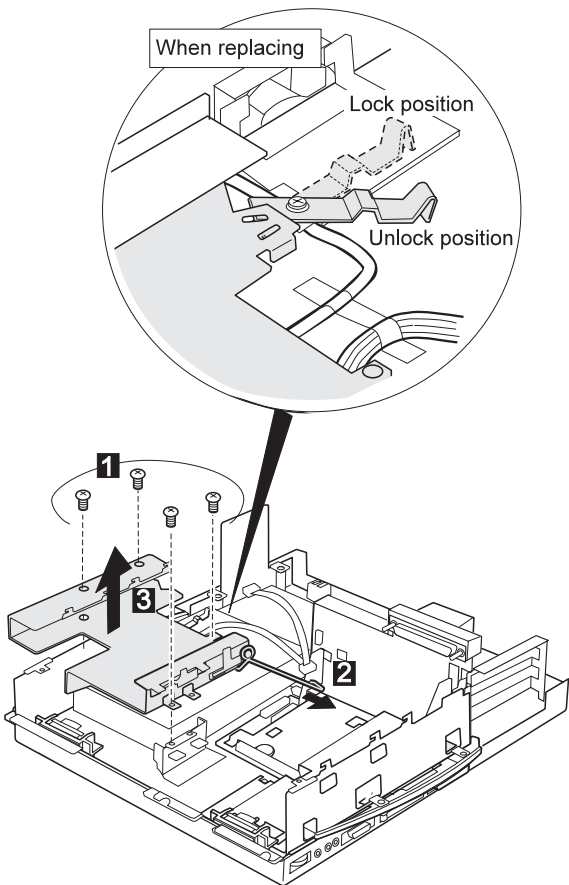
When replacing:

The following figure shows the route of the microphone cable:



1070 Bracket

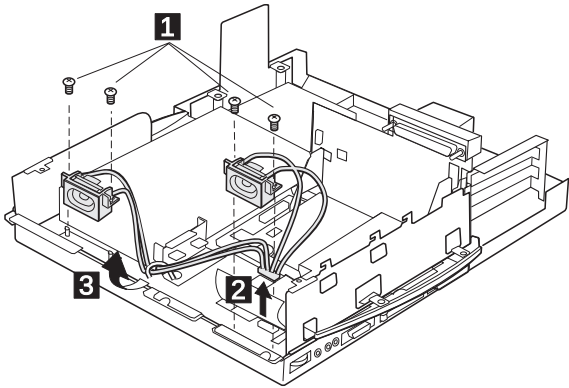
- Base Model (1010)
- Rear Panel / Option Card Cover (1020)
- 1-Inch-High Bay (1040)
- Half-Height Bay Frame (1050)
- Upper Cover (1060)



Step	Length (Quantity)	Memo
1	M 2.6 x 5 mm (4)	

1080 Speaker Assembly

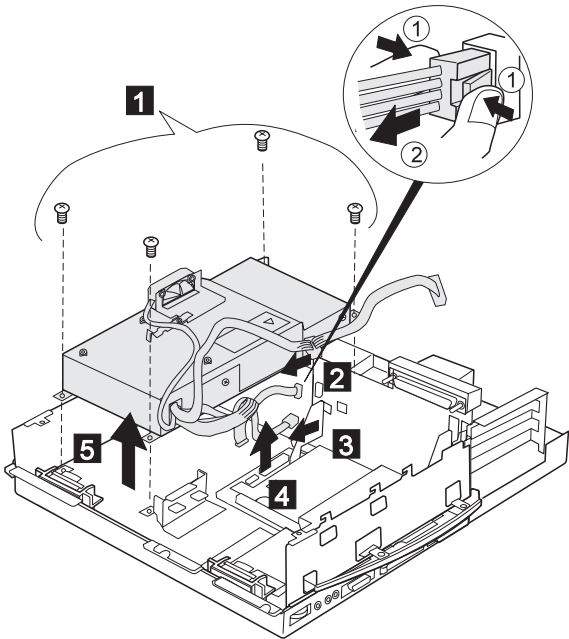
- Base Model (1010)
- Rear Panel / Option Card Cover (1020)
- 1-Inch-High Bay (1040)
- Half-Height Bay Frame (1050)
- Upper Cover (1060)
- Bracket (1070)



Step	Length (Quantity)	Memo
1	M 2.6 x 7 mm (4)	Self-tap

1090 Power Supply

- Base Model (1010)
- Rear Panel / Option Card Cover (1020)
- 1-Inch-High Bay (1040)
- Half-Height Bay Frame (1050)
- Upper Cover (1060)
- Bracket (1070)

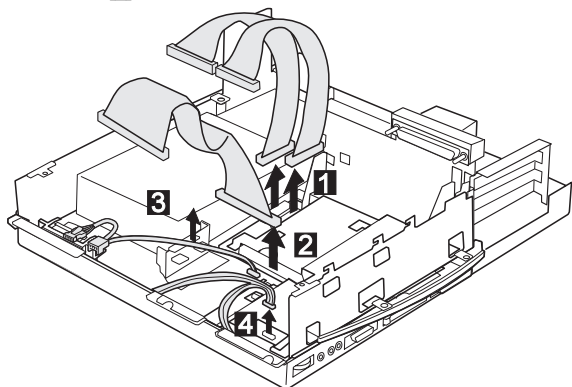


Step	Length (Quantity)	Memo
1	M 2.6 x 5 mm (4)	

1100 Cables

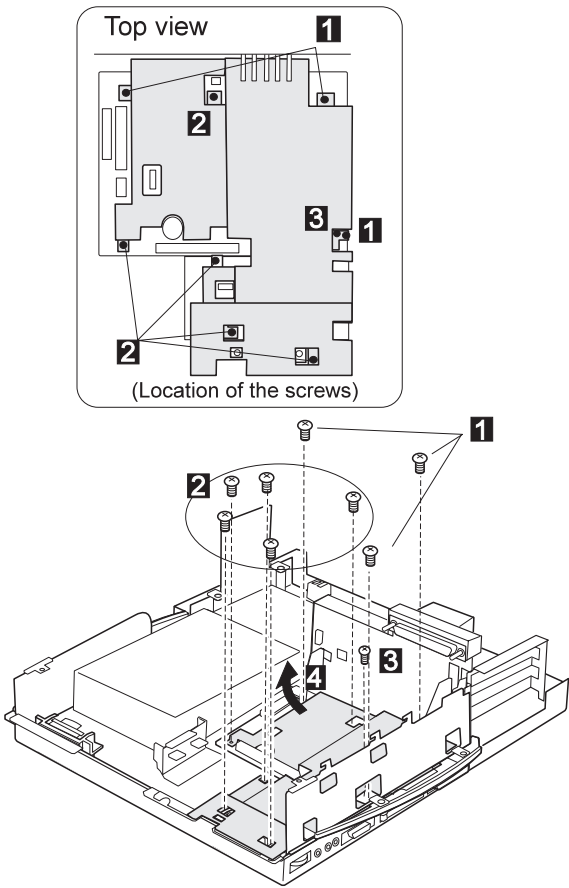
- Base Model (1010)
- Rear Panel / Option Card Cover (1020)
- 1-Inch-High Bay (1040)
- Half-Height Bay Frame (1050)
- Upper Cover (1060)

This step is a preparation for removing the main card assembly. Remove the IDE cables **1**, the SCSI cable **2**, and the audio cable **3**; then disconnect the speaker connector **4**.



1110 Shield Cover

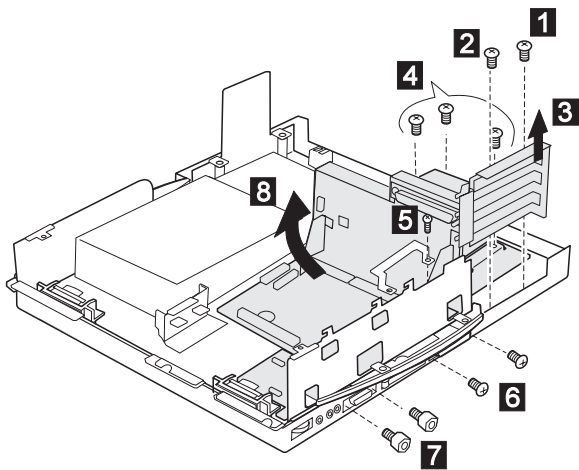
- Base Model (1010)
- Rear Panel / Option Card Cover (1020)
- 1-Inch-High Bay (1040)
- Half-Height Bay Frame (1050)
- Upper Cover (1060)
- Bracket (1070)



Step	Length (Quantity)	Memo
1	M 2.6 x 7 mm (3)	
2	M 2.6 x 6 mm (5)	
3	M 1.5 x 6 mm (1)	

1120 Main Card Assembly

- Base Model (1010)
- Rear Panel / Option Card Cover (1020)
- 1-Inch-High Bay (1040)
- Half-Height bay Frame (1050)
- Upper Cover (1060)
- Bracket (1070)
- Cables (1100)
- Shield Cover (1100)

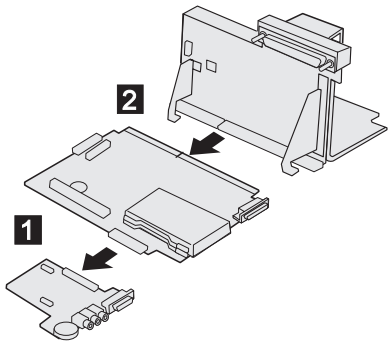


Step	Length (Quantity)	Memo
1	M 2.6 x 5 mm (1)	
2	M 2.6 x 3 mm (1)	
4	M 2.6 x 5 mm (3)	Self-tap
5	M 1.5 x 6 mm (1)	
6	M 2.6 x 5 mm (2)	
7	M 2 x 7 mm (2)	Hex head (5 m/m)

1130 Audio Card / Main Card / Riser Card

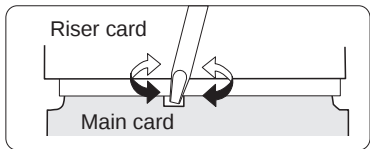
- Base Model (1010)
- Rear Panel / Option Card Cover (1020)
- 1-Inch-High Bay (1040)
- Half-Height Bay Frame (1050)
- Upper Cover (1060)
- Bracket (1070)
- Cables (1100)
- Shield Cover (1100)
- Main Card Assembly (1120)

- 1** : To remove the Audio card
2 : To remove the Riser card
1, **2** : To remove the Main Board



Note

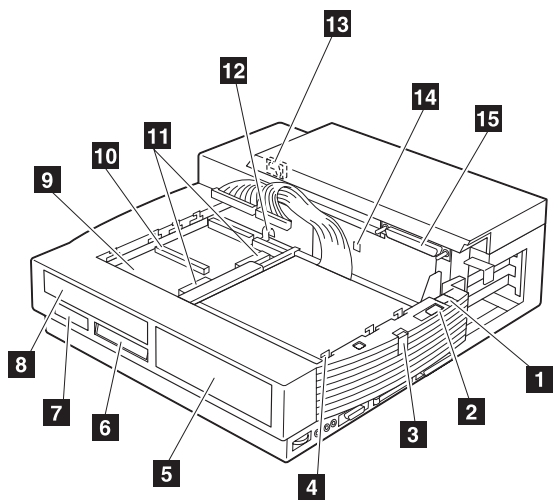
In step **2** , use a tool such as a bladed screwdriver to easily disconnect the riser card and main card. **Be careful not to damage the connector.**



Locations

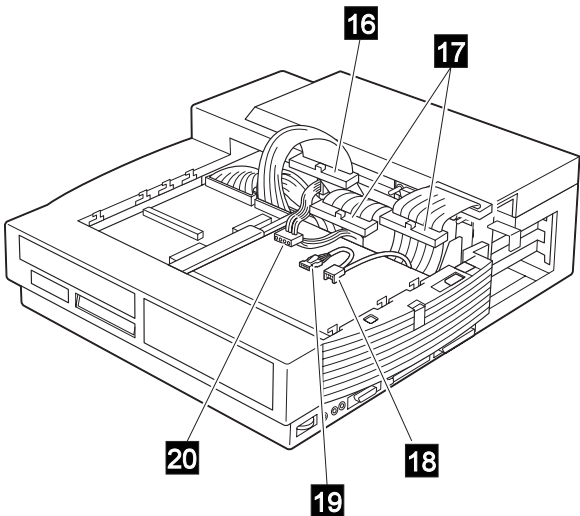
Front View

- 1** Multiuser lock
- 2** PC Card lock
- 3** SelectaDock base lock
- 4** Docking guide
- 5** Half-height bay
- 6** Status indicators
- 7** UltraBay tray eject hole
- 8** 1-inch-high bay
- 9** UltraBay tray
- 10** FDD connector
- 11** HDD connector
- 12** UltraBay tray lock
- 13** MicroSaver lock hole
- 14** Game switch
- 15** Docking connector



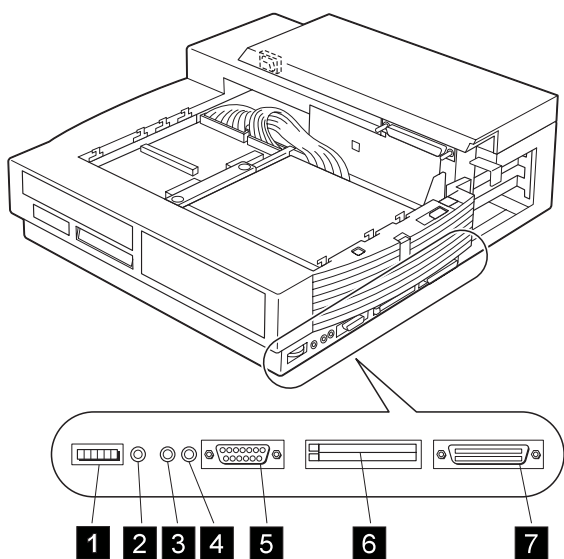
Front View (continue)

- 16** IDE connector
- 17** Internal SCSI connector
- 18** Audio device connector
- 19** Audio device connector
- 20** Power supply connector



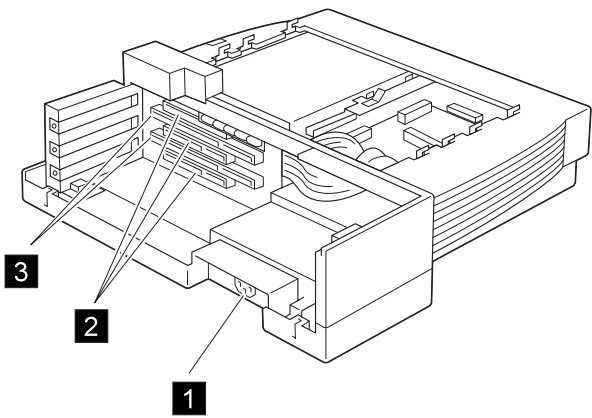
Side View

- 1** Volume knob
- 2** Headphone jack
- 3** Line-out jack
- 4** Speaker-in jack
- 5** MIDI/joystick port
- 6** PCMCIA slots
- 7** SCSI connector

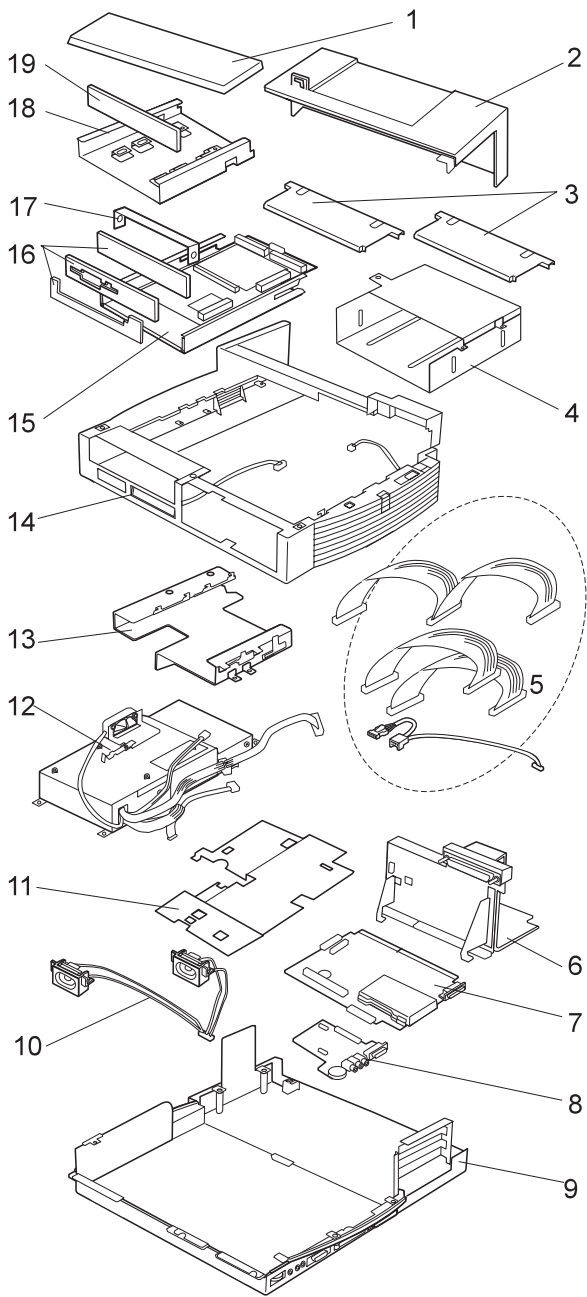


Rear View

- 1** Power jack
- 2** PCI connector
- 3** ISA connector



Parts List

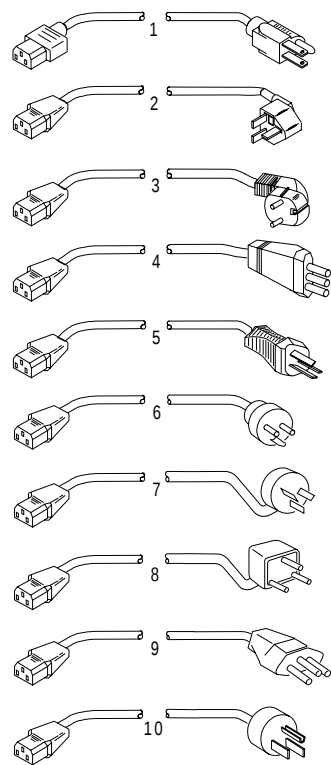


1	Connector cover	73H7450
2	Rear cover	39H7441
3	Bezel (See Upper cover group)	
4	Half-height bay frame	82H6729
5	Cable group	73H7453
6	Riser card	39H7442
7	Main card assembly	39H7443
8	Audio card	39H7444
9	Base cover	39H7439
10	Speaker assembly	39H7446
11	Shield cover (See Main card assembly)	
12	Power supply (See Power supply group)	
13	Bracket (See Power supply group)	
14	Upper cover (See Upper cover group)	
15	UltraBay tray (See UltraBay group)	
16	Blank bezel (See Upper cover group)	
	FDD bezel	
	CD-ROM bezel	
17	Frame (See UltraBay group)	
18	Device tray	82H6728
19	Blank bezel (See Upper cover group)	
	Miscellaneous kit	39H7447
	Power supply group	39H7438
	(Includes the following:)	
	Power supply	
	Bracket	
	SelectaDock Base Model I	39H7416
	UltraBay group	82H6727
	(Includes the following:)	
	UltraBay tray	
	Blank bezel	
	Frame	
	Upper cover group	39H7440
	(Includes the following:)	
	Bezel	
	Upper cover	
	Indicator	

Options

Bracket and bezel	84G1291
Option diskette	73H9454
Shelf	84G3631
Tape drive kit	84G1290
Tray cover	84G3632

Power Cords



Warning
Use the power cord certified for your country.

1	Colombia, U.S., Venezuela	13F9959
	Japan, 2-pin	6454377
	Japan, 3-pin	65F0031
2	Hong Kong, Singapore, U.K.	14F0033
3	France, Germany, Spain	13F9979
4	Italy	14F0069
5	Australia, New Zealand	13F9940
6	Denmark	13F9997
7	Israel	14F0087
8	Bangladesh, Pakistan, Sri Lanka, South Africa	14F0015
9	Switzerland	14F0051
10	Thailand	1838574

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