ThinkPad

SelectaDock II
Hardware Maintenance
Manual Supplement

84H4552

ThinkPad SelectaDock Docking System

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.

Read FRU service procedures before replacing any FRUs.

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.

Be careful not to 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 parts exchange form or parts return form that is attached to the returned FRU.

___ 1. Name and phone number of servicer
___ 2. Date of service

  ___ 3. Date when part 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 part 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 whether the damage applies the warranty:

Note for Warranty: 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 list provides some common items that are not covered under warranty and some symptoms that may indicate the system was subjected to stresses beyond normal use:

The following is not covered under warranty:

LCD panel cracked by applying excessive force or by being dropped.

Scratched (cosmetic) parts.

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.
>
> I9990303 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. Check that the Base Model is correctly docked (connected) to the SelectaDock.

3. Check that the computer is correctly docked (connected) to the SelectaDock Docking System.

4. Dock a computer that has no problem to just the Base Model and check that there is no problem. If there is any problem, replace the Base Model.

5. If possible, make sure that 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, check that the card is supported by the computer.

7. Check that 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.

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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.
POST detected an error and displayed numeric error codes.	"Symptom-to-FRU Index" on page 18, and then use the **Numeric Error Codes** table.

Symptoms (Verified)	Go to
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 that the power supply is operating correctly, do the following:

1. Turn 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 40).

5. Remove connectors 1 , 2 , 3 , 4 , and 5 from the each device, tray, or card.
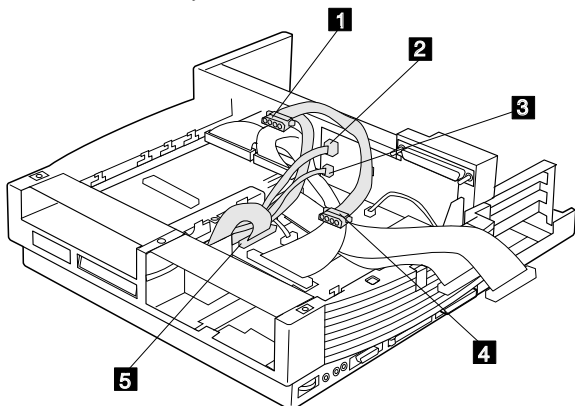
6. Short-circuit 1 and 3, 2 and 8 of the connector 5 . Then check the power supply voltages on each

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

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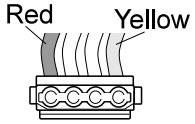
Pin	V dc
Red cord	+ 5 V
Yellow cord	+ 12 V

Power Supply Connector 2

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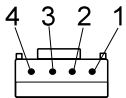
Pin	Signal	V dc Min.	V dc Max.
1, 2	CVCC	+ 19 V	+ 21 V
3, 4	GND	–	–

Power Supply Connector 3

3   1

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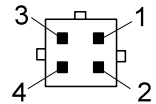
Pin	Signal	V dc Min.	V dc Max.
1	– 12 V	– 11.4 V	– 13.2 V
2, 3	GND	–	–
4	– 5 V	– 4.53 V	– 5.5 V

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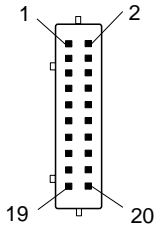
Pin	Signal	V dc Min.	V dc Max.
2, 3	GND	—	—
4	SUB 12	+11.4	+12.6
5	GND	—	—
6, 7	+12 volts	+11.4	+12.6
8	GND	—	—
9—11	+3.3	+3.0	+3.6
12—14	GND	—	—
15—17	+5	+4.75	+5.25
18—20	GND	—	—

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

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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 the power is turned 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 parts did not resolve the problem, put the original parts back in the SelectaDock Docking System. Do not replace nondefective parts.

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 parts did not resolve the problem, put the original parts back in the SelectaDock Docking System. Do not replace nondefective parts.

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

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3. Riser card

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

1. Turn 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. Turn 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 parts did not resolve the problem, put the original parts back in the SelectaDock Docking System. Do not replace nondefective parts.

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. Turn off the computer.
2. Disconnect the keyboard cable from the external keyboard.

3. Turn on the computer and check the keyboard cable connector for the following voltages. All voltages have a ±5% voltage tolerance.

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

2 4 5 3 1 6
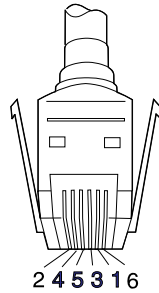
4. If all voltages are correct, replace the external keyboard.
5. If the voltages are not correct, replace the following FRUs one at a time until the problem is corrected.

   Note: If the replaced parts did not resolve the problem, put the original parts back in the SelectaDock Docking System. Do not replace nondefective parts.

   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 system power is turned off.

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

1. Turn off the computer.
2. Remove the external keyboard, if one is attached.
3. Press and hold **F1**, then turn 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 go on, 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 go on 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 is displayed.

Memory Errors: If the POST detects a memory error in the first 640KB of system memory, all the first bank memory is deallocated and the test continues with the second 640KB of memory. If the total amount of error-free memory becomes less than 2MB, 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. The user can continue with system operation by pressing **Esc**, and **F1** after restart and call for service at a later time.

The memory sizes that are deallocated because of the POST process is kept by the hibernation or suspend functions. To test this memory, it must be reconfigured as part of the original memory size. You 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 after you have completed the installation of your SelectaDock Docking System and SCSI devices to verify that these devices work correctly. Do the following:

1. Turn off the computer on the SelectaDock Docking System and external SCSI devices.

2. Insert the Option Diskette into drive A.

3. Turn 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

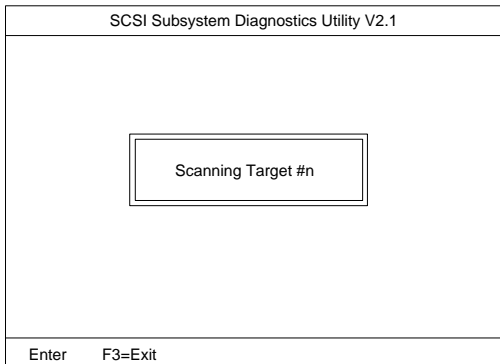1. The **Test Selection Menu** appears when you select **Test Expansion Unit** on the **Main Menu**.

```
                    Test Selection Menu      V1.00


     Select one

     1. Run the tests one time
     2. Run the tests continuously






    Enter    F1=Help    F3=Exit
```
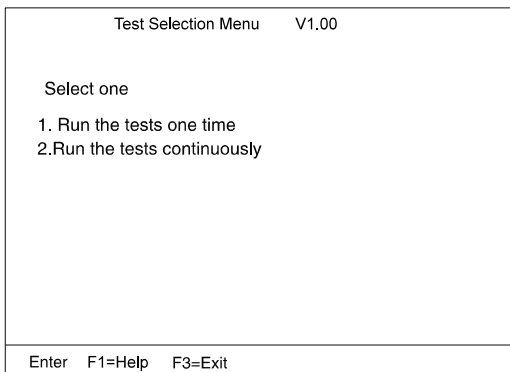
2. Select an item on the screen and follow the instructions that appear on the screen.

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:

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```
┌──────────────────────────────────────────────┐
│       SCSI Subsystem Diagnostics Utility V2.1  │
├──────────────────────────────────────────────┤
│                                                │
│                                                │
│           ┌──────────────────────────┐         │
│           │                          │         │
│           │  SCSI Initialization Failed │      │
│           │                          │         │
│           └──────────────────────────┘         │
│                                                │
│                                                │
│                                                │
├──────────────────────────────────────────────┤
│  Enter      F3=Exit                            │
└──────────────────────────────────────────────┘
```
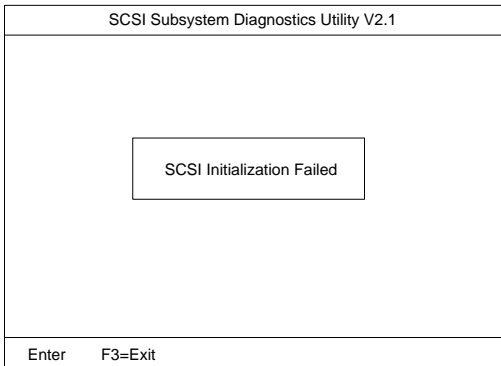
If the initialization ends successfully, the following
screen appears. Select an item.

```
┌──────────────────────────────────────────────┐
│        Test Selection Menu      V1.00          │
│                                                │
│                                                │
│    Select one                                  │
│                                                │
│    1. Run the tests one time                   │
│    2.Run the tests continuously                │
│                                                │
│                                                │
│                                                │
│                                                │
│                                                │
├──────────────────────────────────────────────┤
│  Enter   F1=Help    F3=Exit                    │
└──────────────────────────────────────────────┘
```
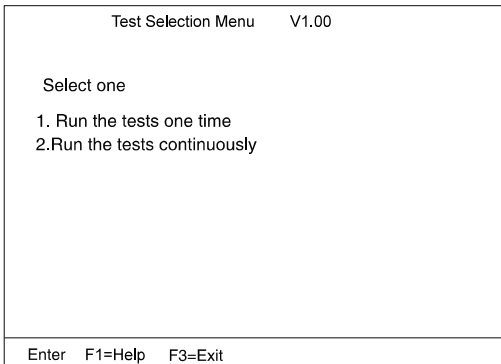
3. The **SCSI Devices Test Menu** appears. Select one
    of the devices.

```
┌──────────────────────────────────────────────┐
│        SCSI Subsystem Diagnostics Utility V2.1  │
├──────────────────────────────────────────────┤
│    ┌──── SCSI Devises 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                            │
└──────────────────────────────────────────────┘
```
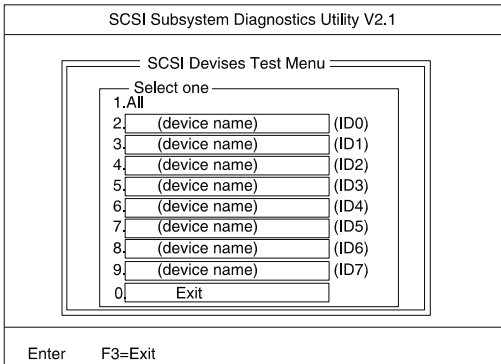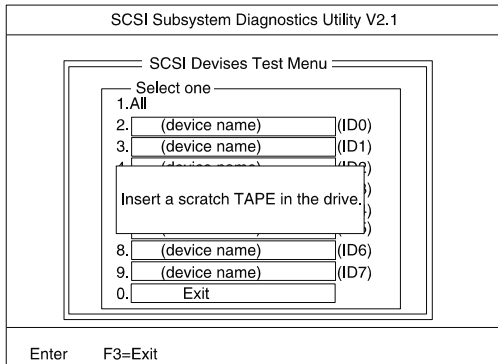
The device name may be any of the following:

    SCSI hard disk

    SCSI tape drive
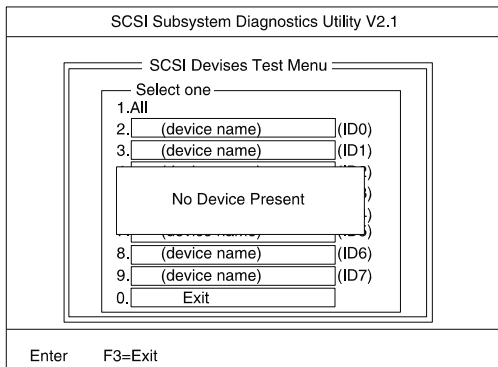
    SCSI CD-ROM

    SCSI optical drive

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No device

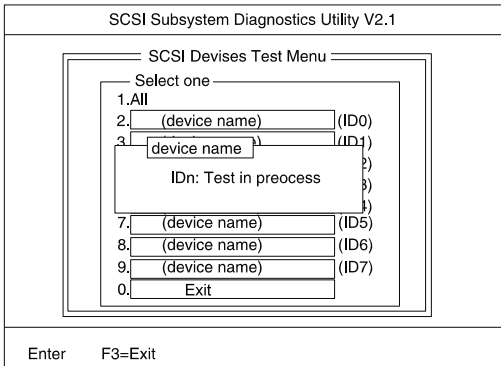The SCSI controller of SelectaDock Docking System appears as ID7 on the screen.

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).
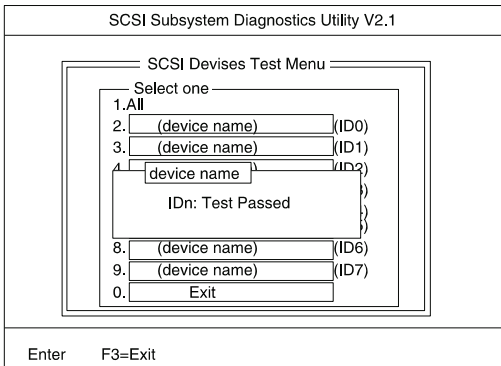
```
                  SCSI Subsystem Diagnostics Utility V2.1

                 ┌──────── SCSI Devises Test Menu ────────┐
                 ┌─── Select one ───┐
                 1.All
                 2.│    (device name)      │(ID0)
                 3.│    (device name)      │(ID1)
                   │  ┌─────────────────────────────┐
                   │  │ Insert a scratch TAPE in the drive. │
                   │  └─────────────────────────────┘
                 8.│    (device name)      │(ID6)
                 9.│    (device name)      │(ID7)
                 0.│        Exit           │

              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 Devises Test Menu ────────┐
                 ┌─── Select one ───┐
                 1.All
                 2.│    (device name)      │(ID0)
                 3.│    (device name)      │(ID1)
                   │  ┌─────────────────────────┐
                   │  │    No Device Present     │
                   │  └─────────────────────────┘
                 8.│    (device name)      │(ID6)
                 9.│    (device name)      │(ID7)
                 0.│        Exit           │

              Enter     F3=Exit
```

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

16

```
┌─────────────────────────────────────────────────────┐
│        SCSI Subsystem Diagnostics Utility V2.1        │
├─────────────────────────────────────────────────────┤
│   ┌─── SCSI Devises Test Menu ──────────────────┐    │
│   │  ┌─ Select one ──────────────────────┐      │    │
│   │  │ 1.All                             │      │    │
│   │  │ 2. │ (device name)    │ (ID0)     │      │    │
│   │  │ 3. ┌──────────────┐──┐ (ID1)      │      │    │
│   │  │    │ device name  │   2)          │      │    │
│   │  │    │ IDn: Test in preocess │ 3)   │      │    │
│   │  │    └──────────────┘   4)          │      │    │
│   │  │ 7. │ (device name)    │ (ID5)     │      │    │
│   │  │ 8. │ (device name)    │ (ID6)     │      │    │
│   │  │ 9. │ (device name)    │ (ID7)     │      │    │
│   │  │ 0. │     Exit         │           │      │    │
│   │  └───────────────────────────────────┘      │    │
│   └──────────────────────────────────────────────┘   │
├─────────────────────────────────────────────────────┤
│   Enter      F3=Exit                                  │
└─────────────────────────────────────────────────────┘
```

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

```
┌─────────────────────────────────────────────────────┐
│        SCSI Subsystem Diagnostics Utility V2.1        │
├─────────────────────────────────────────────────────┤
│   ┌─── SCSI Devises Test Menu ──────────────────┐    │
│   │  ┌─ Select one ──────────────────────┐      │    │
│   │  │ 1.All                             │      │    │
│   │  │ 2. │ (device name)    │ (ID0)     │      │    │
│   │  │ 3. │ (device name)    │ (ID1)     │      │    │
│   │  │ 4. ┌──────────────┐──┐ (ID2)      │      │    │
│   │  │    │ device name  │              │      │    │
│   │  │    │ IDn: Test Passed │          │      │    │
│   │  │    └──────────────┘              │      │    │
│   │  │ 8. │ (device name)    │ (ID6)     │      │    │
│   │  │ 9. │ (device name)    │ (ID7)     │      │    │
│   │  │ 0. │     Exit         │           │      │    │
│   │  └───────────────────────────────────┘      │    │
│   └──────────────────────────────────────────────┘   │
├─────────────────────────────────────────────────────┤
│   Enter      F3=Exit                                  │
└─────────────────────────────────────────────────────┘
```

If the test is unsuccessful, the following appears:

```
┌─────────────────────────────────────────────────────┐
│        SCSI Subsystem Diagnostics Utility V2.1        │
├─────────────────────────────────────────────────────┤
│   ┌─── SCSI Devises Test Menu ──────────────────┐    │
│   │  ┌─ Select one ──────────────────────┐      │    │
│   │  │ 1.All                             │      │    │
│   │  │ 2. │ (device name)    │ (ID0)     │      │    │
│   │  │ 3. │ (device name)    │ (ID1)     │      │    │
│   │  │ 4. ┌──────────────┐──┐            │      │    │
│   │  │ 5. │ device name  │              │      │    │
│   │  │ 6. │ IDn: Test Failed │          │      │    │
│   │  │ 7. └──────────────┘              │      │    │
│   │  │ 8. │ (device name)    │ (ID6)     │      │    │
│   │  │ 9. │ (device name)    │ (ID7)     │      │    │
│   │  │ 0. │     Exit         │           │      │    │
│   │  └───────────────────────────────────┘      │    │
│   └──────────────────────────────────────────────┘   │
├─────────────────────────────────────────────────────┤
│   Enter      F3=Exit                                  │
└─────────────────────────────────────────────────────┘
```
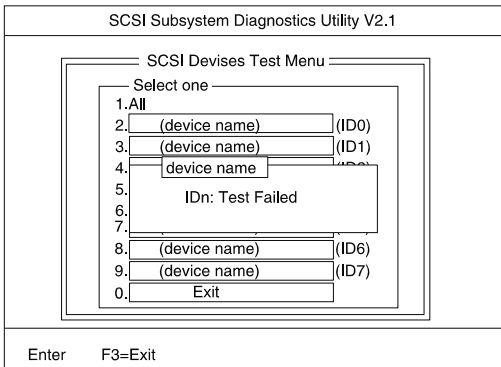
Symptom-to-FRU Index

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. **X**s, 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 31.

If you cannot correct the problem using this index, go to "Undetermined Problems" on page 31.

IMPORTANT:

1. Before replacing any SCSI device, verify that there are no duplicate SCSI ID settings.

2. Make sure that 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.**
	  a. **Turn off and undock the system.**
	  b. **Turn on and shut down the system.**
	  c. **Turn off and dock the system.**

1XX	**See the Hardware Maintenance Manual of the computer. If the problem remains, go to "Undetermined Problems" on page 31.**
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	**See "External Keyboard" on page 10.**

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
I**9990301,** I**9990302** I**9990305**	**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 31.

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 detective or that the FRU was incorrectly installed.

Device ID: If an error is detected by the diagnostic tests, a three digits 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
HDD-4	068	External hard disk drive
FDD-1	006	Diskette drive
FDD-2	066	External diskette drive
PCMCIA-1	080	PCMCIA
PCMCIA-2	088	External PCMCIA
Parallel	009	Parallel
Serial	011, 012	Serial
DSP	113	DSP
CDROM-1	215	CD-ROM
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 indicated **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 31.

Beep Symptoms

Symptom or Error	FRUs of the SelectaDock Sequence of Actions
Beep sounds continuously.	1. Check 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.	**Go to "External Keyboard" on page 10.**

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.	**See "Undetermined Problems" on page 31.**
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 hall-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 turned off, the fan of the SelectaDock power supply is running.	1. **Power supply unit**
The power of SelectaDock cannot be turned off.	1. **Power supply unit**

Peripheral-Device-Related Symptoms

Symptom or Error	FRUs of the SelectaDock Sequence of Actions
External display screen changes colors.	**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 38.)
	3. Check that:
	  a. Whether 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. Whether the PC card can be used without any problem when installed in the computer or another SelectaDock that has no problem.
	    b. Whether 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. **Check that the SCSI device is powered on.** 2. Check that 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. Check that the SCSI cables connected correctly. 3. Check that 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. Whether the game switch is set to the **OFF** position. (See "Game Switch" on page 32.) Because of a resource conflict, the Sound Blaster does not work when the MIDI/joystick port is enabled. 2. Whether 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. Whether the game switch is set to the **ON** position. (See "Game Switch" on page 32.) 2. Whether 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 just once in a while. 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, write down what the problem is and what the system was doing when the problem occurred.

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.	**See "Undetermined Problems" on page 31.**
Program-load error during remote IPL from the file servicer.	**Network Adapter**

Symptom or Error	FRUs of the SelectaDock Sequence of Actions

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. Turn 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. Turn 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 part did not resolve the problem, put the original part back in the SelectaDock Docking System. Do not replace nondefective parts.

    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.
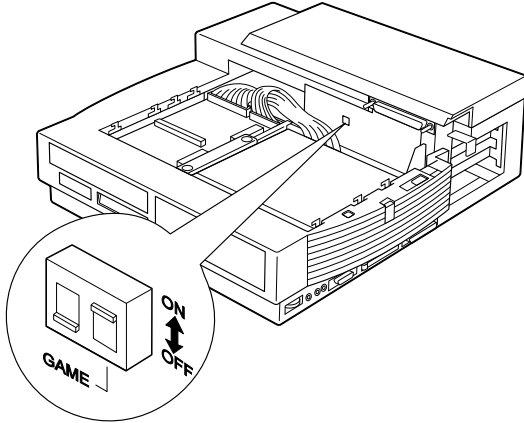
Status Indicator Check the SelectaDock Docking System status using the following icons:
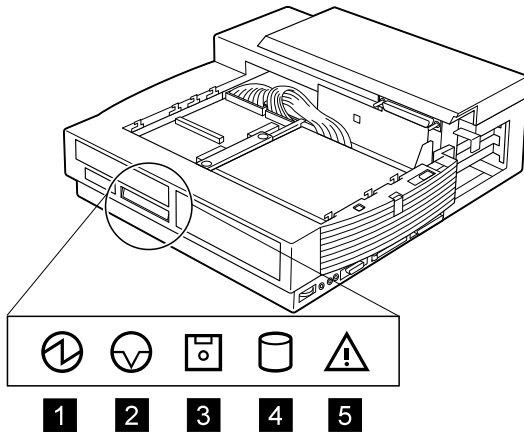
Icon	Meaning
1	Power on
2	Suspend mode
3	Diskette drive in use
4	Hard disk in use
5	Attention

Product Overview: The following table is 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 51 for internal cable connections and arrangement information.

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

CAUTION:
In the U.K., by law, the telephone cable must be connected after or disconnected before the power cord.

Warning: The main board, adapters, and circuit boards on the drives are sensitive to, and can be damaged by, electrostatic discharge. Establish personal grounding by touching a ground point with one hand before touching these units.

Note: 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.
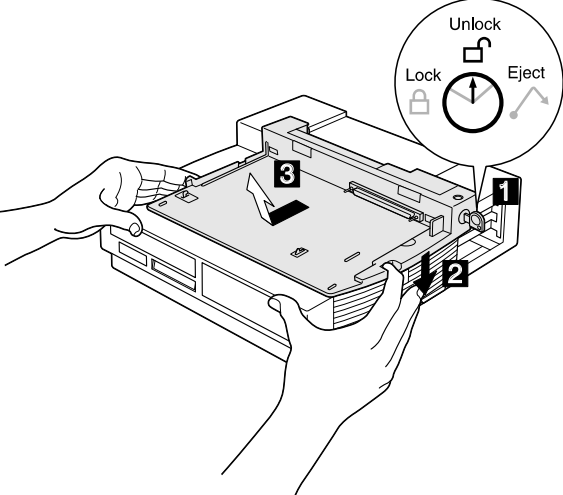
1020 Option Card Cover / Option Card
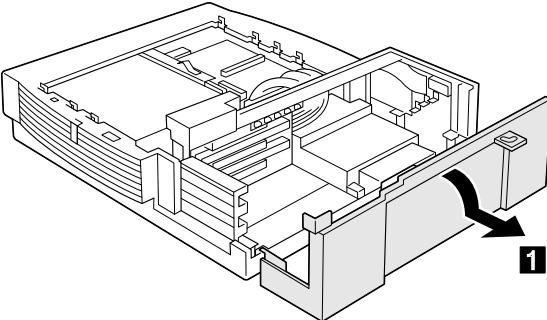
If an option card is installed, remove it.
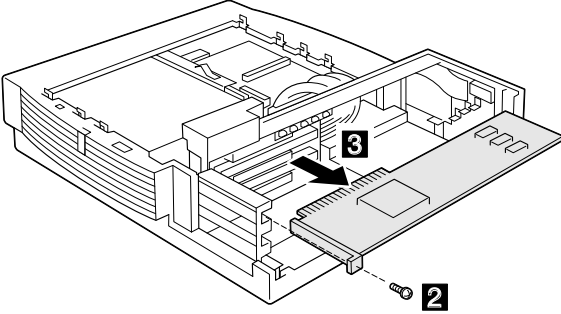
1030 PC Card
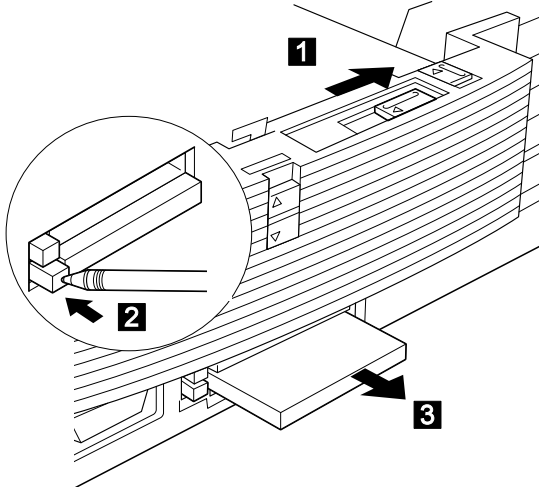
1040 1-Inch-High Bay

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
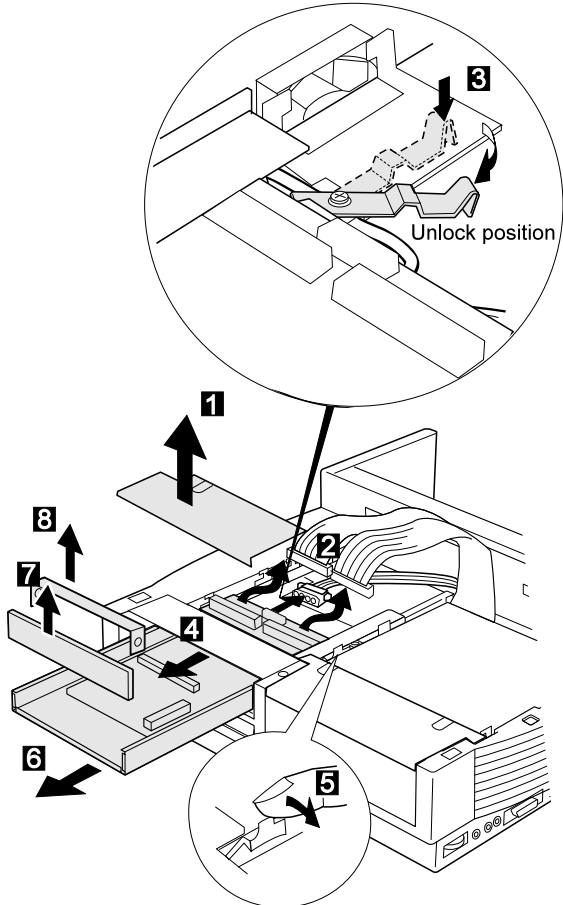
Device Tray
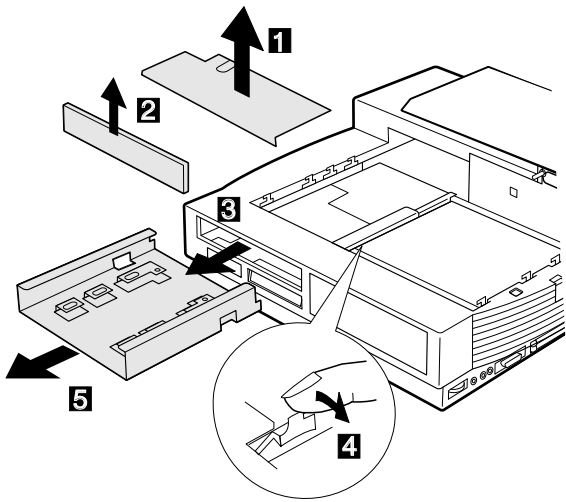
1050 Half-Height Bay Frame

Base Model **(1010)**
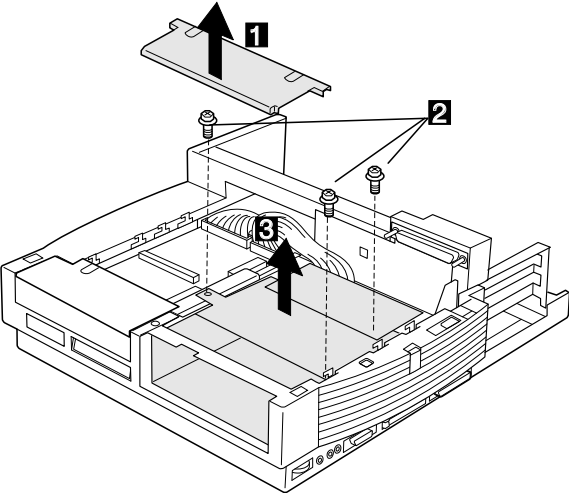
1060 Upper Cover

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

Caution

Make sure that all power cords are unplugged before
you remove the upper cover. After removing the
upper cover, you might easily touch the high voltage
part. Unplug the power cord before removing the
upper cover for safety.
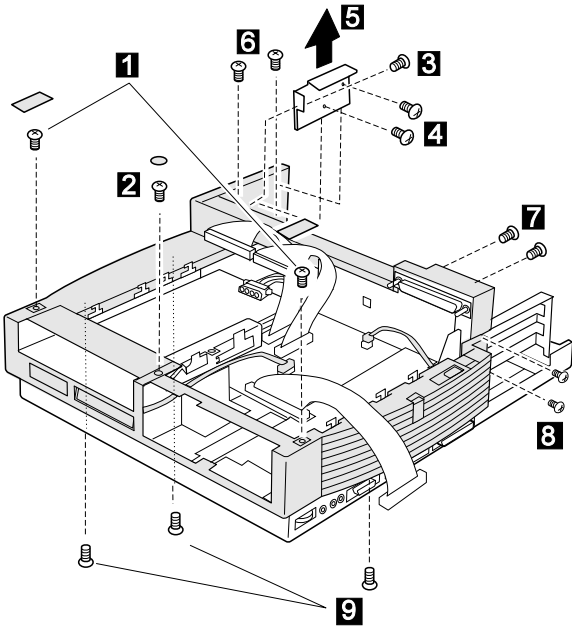
Step	Length (Quantity)	Memo
1	M 2.6 x 5 mm (2)	
2	M 2.6 x 5 mm (1)	Flat head
3	M 2.6 x 2.5 mm (1)	
4	M 2.6 x 5 mm (2)	
6	M 2.6 x 5 mm (2)	Self-tap
7	M 2.6 x 5 mm (2)	Black
8	M 2.6 x 8 mm (2)	Black
9	M 2.6 x 8 mm (3)	Self-tap

Micro switch cable

LED connector
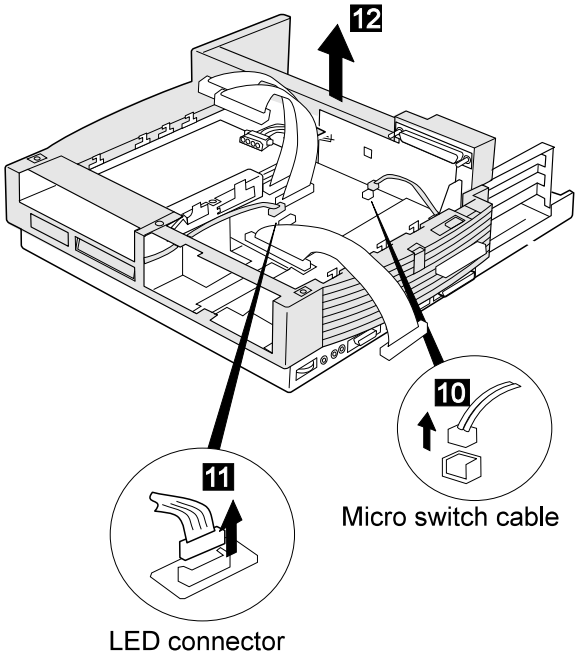
When replacing:

The following figure shows the route of the
microphone cable:

The cable goes
through here

Inside view
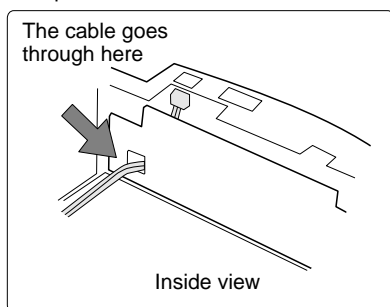
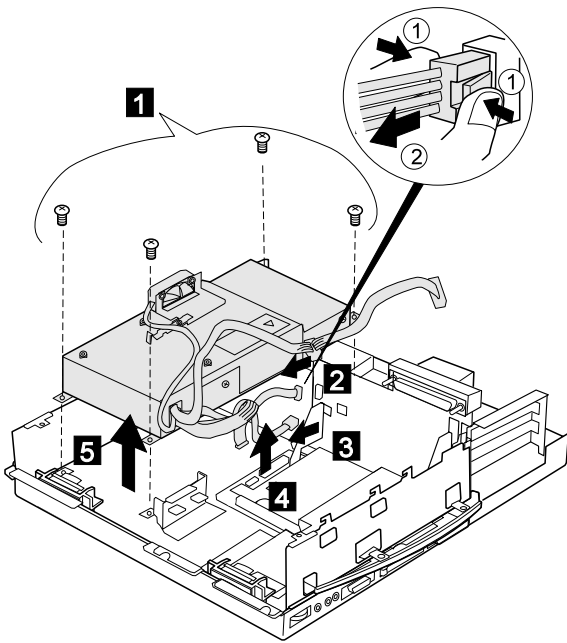## 1070 Bracket

Base Model **(1010)**
Rear Panel / Option Card Cover **(1020)**
1-Inch-High Bay **(1040)**
Half-Height Bay Frame **(1050)**
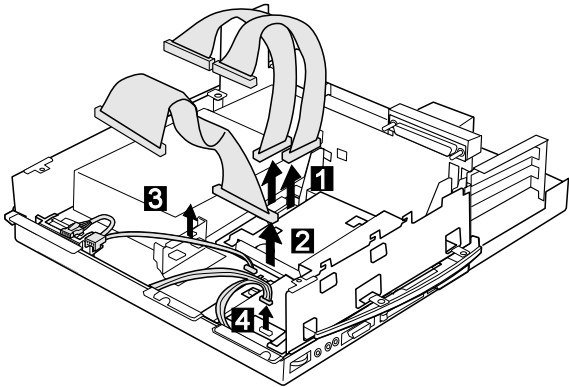Upper Cover **(1060)**
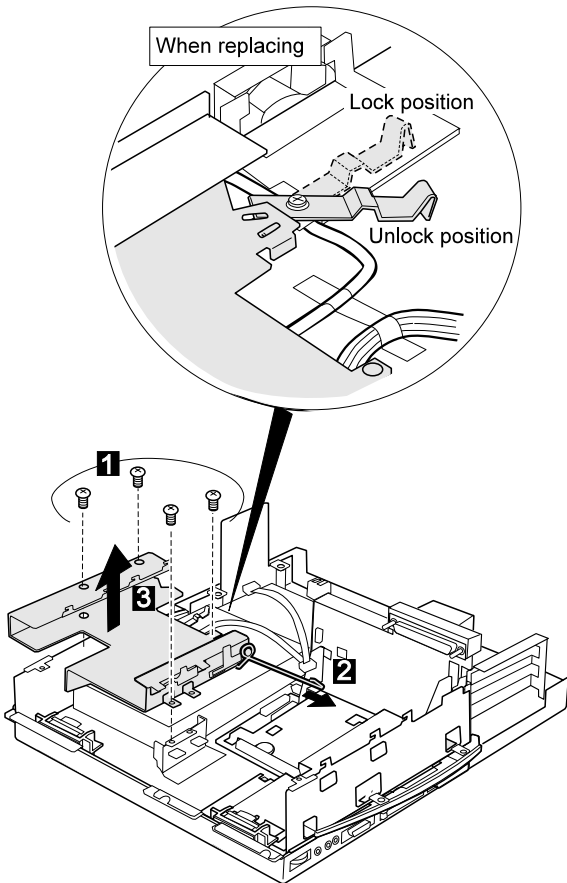
Step	Length (Quantity)	Memo
1	M 2.6 x 5 mm (4)	

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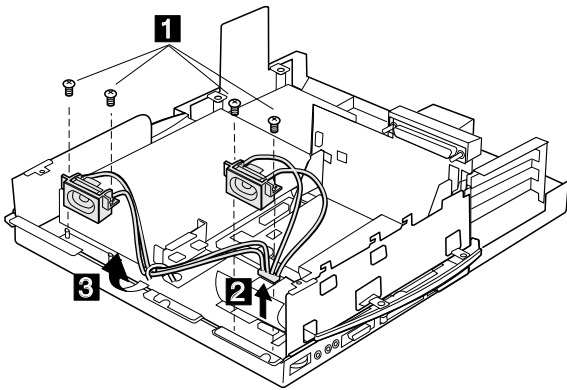
Step	Length (Quantity)	Memo
1	M 2.6 x 7 mm (4)	Self-tap

1090 Power Supply
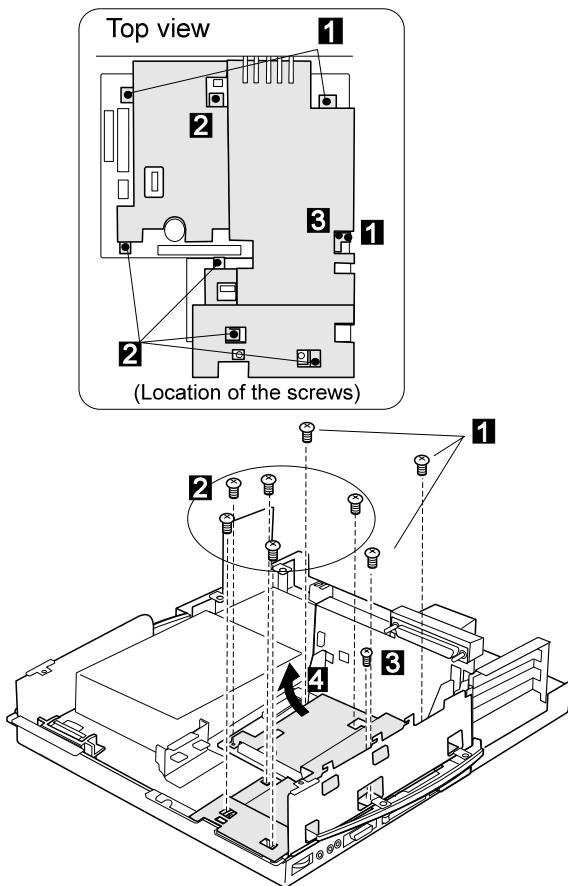
Base Model **(1010)**
Rear Panel / Option Card Cover **(1020)**
1-Inch-High Bay **(1040)**
Half-Height Bay Frame **(1050)**
Upper Cover **(1060)**
Bracket **(1070)**

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)**
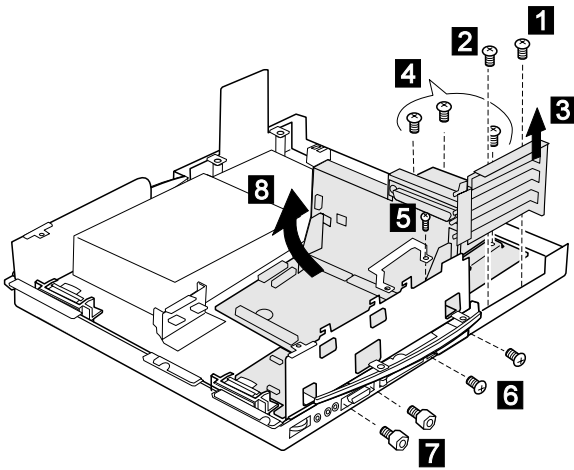Half-Height Bay Frame **(1050)**
Upper Cover **(1060)**

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 **:** For removing the Audio card

2 **:** For removing the Riser card

1 **,** 2 **:** For removing the Main Board
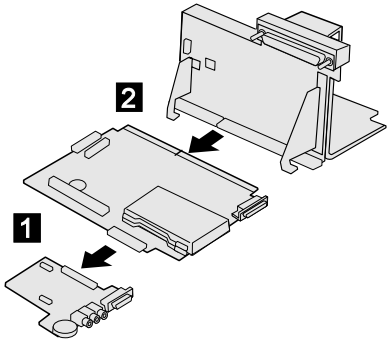
Note: In step 2 , use a tool such as a bladed screwdriver to disconnect the riser card and main card easily. **Be careful not to damage the connector.**
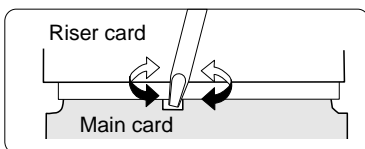
Locations

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
1	FDD connector
11	HDD connector
12	UltraBay tray lock
13	MicroSaver lock hole
14	Game switch
15	Docking connector
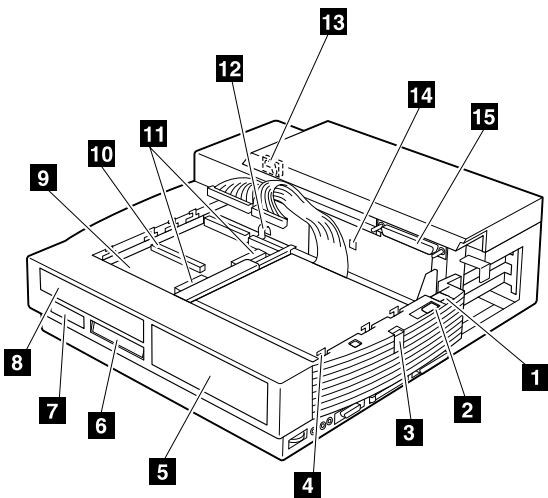
Front View (continue)

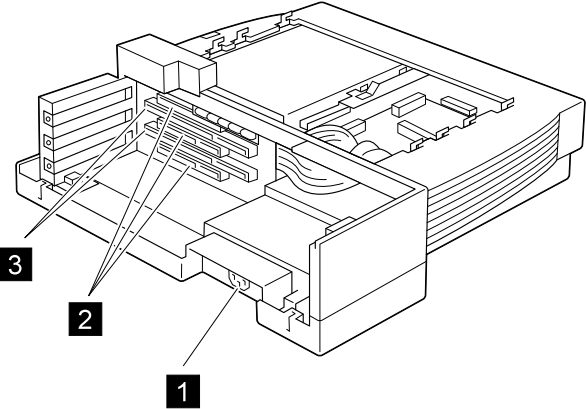|	
16	IDE connector
17	Internal SCSI connector
18	Audio device connector
19	Audio device connector
2	Power supply connector
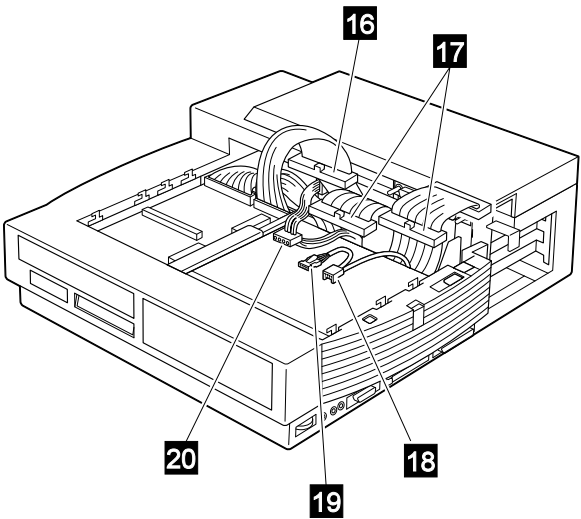
Side View

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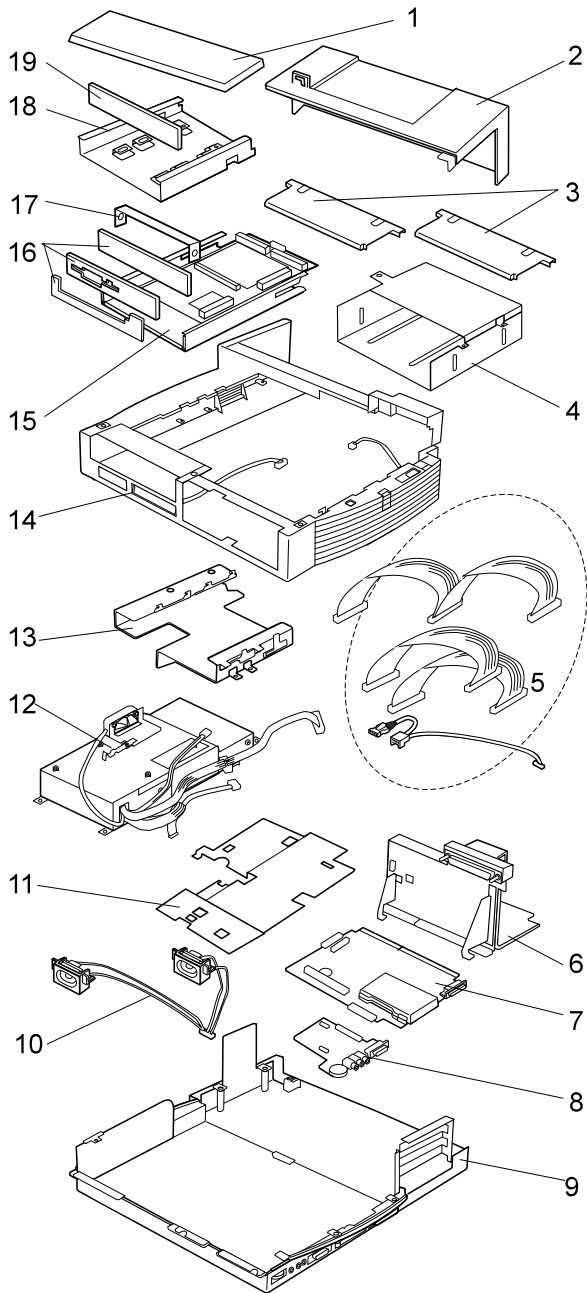7   SCSI connector
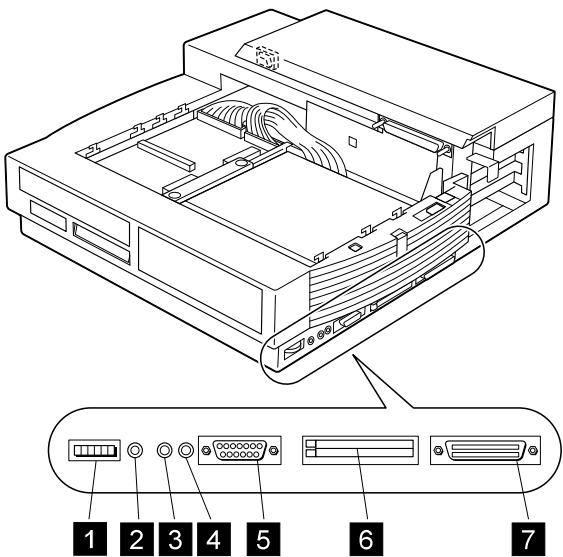
Rear View

  1   Power jack
 2   PCI connector
  3   ISA connector

Parts List

1	Connector cover	73H7450
2	Rear cover	39H7441
3	Bezel	(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	(Main card assembly)
12	Power supply	(Power supply group)
13	Bracket	(Power supply group)
14	Upper cover	(Upper cover group)
15	UltraBay tray	(UltraBay group)
16	Blank bezel	(Upper cover group)
	FDD bezel	
	CD-ROM bezel	
17	Frame	(UltraBay group)
18	Device tray	82H6728
19	Blank bezel	(Upper cover group)

Upper cover group	39H7440
(Includes the following:)	
Bezel	
Upper cover	
Indicator	
Power supply group	39H7438
(Includes the following:)	
Power supply	
Bracket	
UltraBay group	82H6727
(Includes the following:)	
UltraBay tray	
Blank bezel	
Frame	
Miscellaneous kit	39H7447
SelectaDock Base Model I	39H7416

Options

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

Power Cords
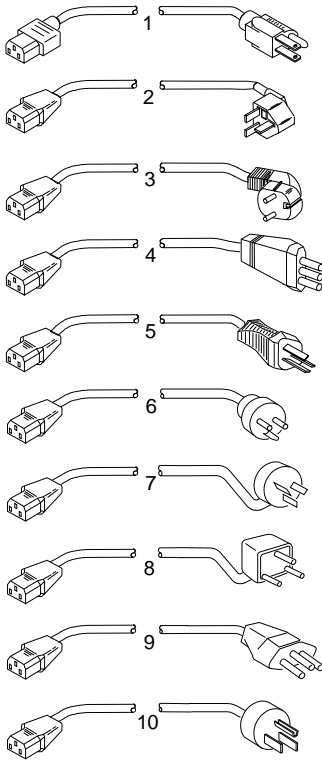
Warning:
Use the power cord certified for your country.

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

Printed in the United States of America