



PowerBook Duo MiniDock





Basics

PowerBook Duo MiniDock



System Overview

PowerBook Duo System

The PowerBook Duo system includes the following products:

- PowerBook 200 Series computer (PowerBook Duo 210/230/250/270c/280/280c)
- PowerBook Duo Dock/Duo Dock II/Duo Dock Plus

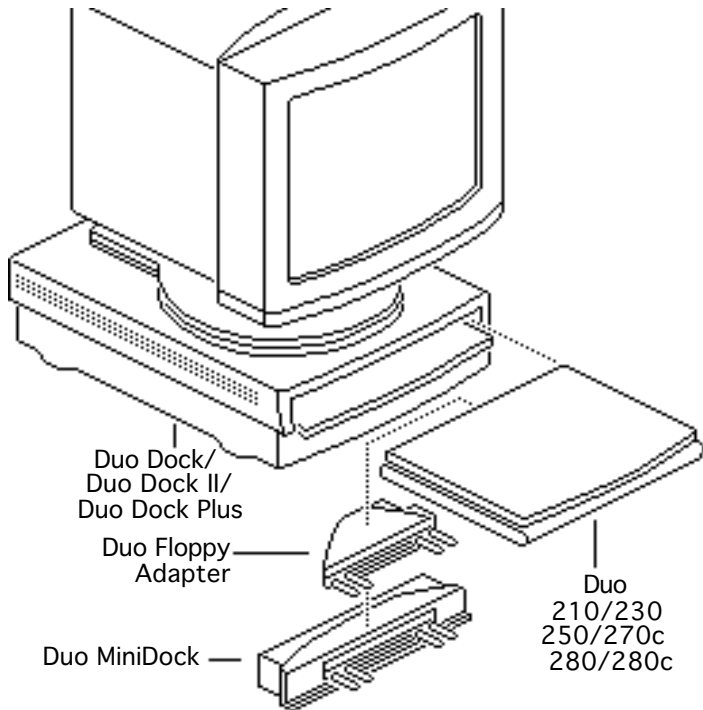




Figure: PowerBook Duo MiniDock

- PowerBook Duo Floppy Adapter
- PowerBook Duo MiniDock

This manual includes information about the PowerBook Duo MiniDock.





For information about the floppy adapter and the PowerBook 200 Series computers, refer to the PowerBook 200 Series manual. For information about the Duo Docks, refer to the PowerBook Duo Dock manual.





Repair Strategy

Service the PowerBook Duo MiniDock through module exchange and parts replacement. Customers can request on-site service from an Apple Authorized Service Provider Plus (AASP+) Apple Assurance (US only), or request a courier through the Apple Canada Technical Answerline (Canada only). They can also choose carry-in service from an AASP.





Ordering

Apple Service Providers planning to support the product covered in this manual may purchase Service modules and parts to develop servicing capability. To order parts, use the AppleOrder (US only) or ARIS (Canada only) system and refer to “Service Price Pages.”

Large businesses, universities, and K-12 accounts must provide a purchase order on all transactions, including orders placed through the AppleOrder (US only) or ARIS (Canada only) system.

USA Ordering

US Service Providers not enrolled in AppleOrder may fax their orders to Service Provider Support (512-908-8125) or mail them to





Apple Computer, Inc.
Service Provider Support
MS 212-SPS
Austin, TX 78714-9125

For US inquiries, please call Service Provider Support at 800-919-2775 and select option #1.

Canadian Ordering

Canadian Service Providers not enrolled in ARIS may fax their orders to Service Provider Support in Canada (1-800-903-5284). For Canadian inquiries, please call Service Provider Support at 905-513-5782 and select option #3.





Warranty/AppleCare/ARIS

US Only

The PowerBook Duo MiniDock is covered under the Apple One-Year Limited Warranty. The AppleCare Service Plan is also available for this product. Service Providers are reimbursed for warranty and AppleCare repairs made to this product. For pricing information, refer to “Service Price Pages.”

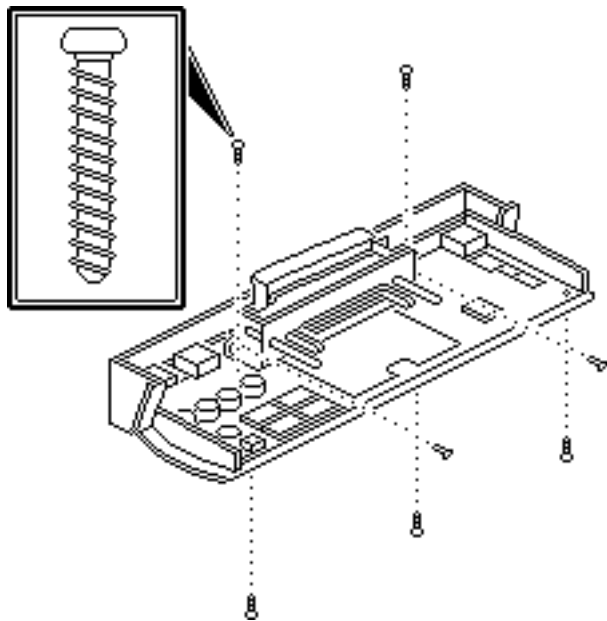
Canada Only

The PowerBook Duo MiniDock is covered under first-year AppleCare. The Extended AppleCare Service Plan is also available for this product. Service Providers are reimbursed for first-year warranty and Extended AppleCare repairs made to this product. For pricing information, refer to “Service Price Pages.”





Self-Threading Screws



Self-Threading Screws

Caution: Improperly installed self-threading screws could damage the Duo MiniDock.

The PowerBook Duo MiniDock uses self-threading screws. When you are replacing a self-threading screw, follow these guidelines:

- Never overtighten self-threading screws.





- Before tightening a self-threading screw, back the screw off slightly to be sure it is threaded properly.



Specifications

PowerBook Duo MiniDock



Introduction

You can also find specifications information for this product in the Spec Database, which you can access in one of three ways:

- Launch it directly by double-clicking the Apple Spec Database runtime alias at the top level of the Main Service Source CD.
- Select "Apple Spec Database" from the Service Source drop-down main menu.
- Click the Acrobat toolbar icon for the database, which is near the right end of the toolbar with the letters "SP."





Processor

Addressing

32-bit internal registers

32-bit address bus

32-bit data bus





Memory

VRAM

512K VRAM

Supports all Macintosh monitors up to 16-in. color

Supports some VGA monitors with adapter and NuBus card

Supports 256 colors or shades of gray



I/O Interfaces

Docking Connector

Internal 152-pin processor-direct slot (PDS) connector to
PowerBook Duo
32-bit expansion bus

Floppy Drive

HDI-20 port for external 1.4 MB floppy drive (MS-DOS
compatible)

SCSI

HDI-30 SCSI port with 1.5 MB/sec. transfer rate
Supports up to five external SCSI devices
Includes built-in terminator
Connection to another computer requires HDI-30 SCSI system
cable





Apple Desktop Bus	Apple Desktop Bus (ADB) port (recommend maximum of three low-speed, synchronous ADB devices); mini DIN-4 connector 200 mA maximum current draw for all ADB devices
Serial	Two RS-422 serial ports; mini DIN-8 connectors
Sound	Monaural sound-in port (requires 20 dB attenuation cables and adapters to accommodate audio equipment with line level outputs) Monaural sound output jack for external audio amplifier
Video	DB-15 connector supports Macintosh and VGA monitors (requires 15-pin-to-VGA adapter)
Modem	Pass-through telephone jack for optional internal PowerBook Express Modem RJ-11 domestic; mini DIN-8 international





Electrical

Power Supply

Universal AC power supply, 85–270 VAC
47–63 Hz, single phase input line frequency



Physical

Dimensions

Height: 2.1 in. (53 mm)

Width: 10.6 in. (269 mm)

Depth: 3.2 in. (81 mm)

Weight

1.24 lb. (0.56 kg)





Environmental

**Operating
Temperature**

50–104° F (10–40° C)

**Storage
Temperature**

–40 to 116° F (–40 to 47° C)

Relative Humidity

20–95% noncondensing

Altitude

0–15,000 ft. (0–4722 m)





Other

Options

Slot for security cable

Modem expander (domestic or international telephone jack)



Troubleshooting

PowerBook Duo MiniDock





General

The Symptom Charts included in this chapter will help you diagnose specific symptoms related to your product. Because cures are listed on the charts in the order of most likely solution, try the first cure first. Verify whether or not the product continues to exhibit the symptom. If the symptom persists, try the next cure. (Note: If you have replaced a module, reinstall the original module before you proceed to the next cure.)

If you are not sure what the problem is, or if the Symptom Charts do not resolve the problem, refer to the Flowchart for the product family.

For additional assistance, contact Apple Technical Support.





Symptom Charts

Startup

RAM failure occurs
(eight-tone error
chord sequence
sounds after startup
chord)

- 1 Disconnect Duo MiniDock from PowerBook. Reboot and troubleshoot computer only.
- 2 Replace Duo MiniDock logic board.

Hardware failure
occurs (four-tone
error chord sequence
sounds after startup
chord)

- 1 Disconnect Duo MiniDock from PowerBook Duo. Reboot and troubleshoot computer only.
- 2 Replace Duo MiniDock logic board.





Power

System doesn't respond

- 1 Disconnect Duo MiniDock from PowerBook Duo. Reboot and troubleshoot computer only.
- 2 Check all Duo MiniDock logic board cable connections.
- 3 Replace Duo MiniDock logic board.

System intermittently crashes or locks up

- 1 Make sure system software is 7.1 or higher.
- 2 Make sure software is known-good.
- 3 Disconnect Duo MiniDock from PowerBook Duo. Reboot and troubleshoot computer only.
- 4 Replace Duo MiniDock logic board.





Video

No external display,
but computer
appears to operate
correctly

- 1 Adjust screen contrast.
- 2 Reseat video cable.
- 3 Replace video cable.
- 4 Try known-good external display. If now OK, replace and troubleshoot original display.
- 5 Replace Duo MiniDock logic board.

Raster or video
display problems at
external monitor

- 1 Reseat video cable.
- 2 Replace video cable.
- 3 Try known-good external display. If now OK, replace and troubleshoot original display.
- 4 Replace Duo MiniDock logic board.





Floppy Drive

Audio and video present, but external floppy drive does not operate

- 1 Try known-good floppy disk.
- 2 Check floppy drive cable connection.
- 3 Replace floppy drive cable.
- 4 Replace floppy drive.
- 5 Replace Duo MiniDock logic board.

Disk ejects while booting; display shows Mac icon with blinking X

- 1 Try known-good system disk.
- 2 Verify that mouse or trackball button is not stuck.
- 3 Check floppy drive cable connection.
- 4 Replace floppy drive cable.
- 5 Replace floppy drive.
- 6 Replace Duo MiniDock logic board.





Floppy Drive (Continued)

Disk does not eject

- 1 Switch off system. To eject disk, hold mouse or trackball button down while you switch system on.
- 2 Insert straightened paper clip into hole next to drive opening and eject disk.
- 3 Check floppy drive cable connection.
- 4 Replace floppy drive cable.
- 5 Replace floppy drive.
- 6 Replace Duo MiniDock logic board.

Disk initialization fails

- 1 Verify that you are using correct media.
- 2 Try known-good floppy disk.
- 3 Check floppy drive cable connection.
- 4 Replace floppy drive cable.
- 5 Replace floppy drive.





Floppy Drive (Continued)

Read/write/copy
error

- 1 Verify that you are using correct media.
- 2 Try known-good floppy disk.
- 3 Check floppy drive cable connection.
- 4 Replace floppy drive cable.
- 5 Replace floppy drive.





Hard Drive

Internal PowerBook hard drive does not operate

Disconnect Duo MiniDock from PowerBook Duo. Reboot and troubleshoot computer only.

External hard drive does not operate

- 1 Check hard drive cable connection.
- 2 Replace hard drive cable.
- 3 Run Macintosh Hard Disk Test.
- 4 Use HD SC Setup to reinitialize drive.
- 5 Replace hard drive.
- 6 Replace Duo MiniDock logic board.

Drive does not appear on desktop

- 1 Restart system.
- 2 Verify that SCSI devices have unique addresses.
- 3 Use HD SC Setup to initialize drive.





Peripherals

Cursor does not move, or moves erratically

- 1 Simultaneously press <Command> <Control> <Power On> keys to reset computer.
- 2 Check ADB connections.
- 3 Inspect and clean mouse, if necessary.
- 4 If mouse was connected to keyboard, try in ADB port. If OK, replace keyboard.
- 5 Replace mouse.
- 6 Replace Duo MiniDock logic board.

Cursor moves, but clicking mouse button has no effect

- 1 Replace mouse.
- 2 Replace Duo MiniDock logic board.





Peripherals (Continued)

No response to any key on keyboard

- 1 Press <Power On> key or power button.
- 2 Check keyboard cable connection.
- 3 Replace keyboard cable.
- 4 Replace keyboard.
- 5 Replace Duo MiniDock logic board.

Cannot double-click to open application, disk, or server

- 1 Remove any multiple system files.
- 2 Inspect and clean mouse, if necessary.
- 3 Clear parameter RAM and reset mouse controls. To clear PRAM, start system, listen for boot tone, and immediately depress <Option> <Command> <P> and <R> keys.
- 4 If mouse was connected to keyboard, try in ADB port. If OK, replace keyboard.
- 5 Replace mouse.
- 6 Replace Duo MiniDock logic board.





Peripherals (Continued)

After you connect external SCSI device, computer doesn't boot

- 1 Switch on external SCSI device before starting computer.
- 2 Check cable connections.
- 3 Verify that standard Apple terminator terminates SCSI chain.
- 4 Verify that SCSI select switch setting on external device is unique.
- 5 Try known-good external SCSI device.
- 6 Replace Duo MiniDock logic board.

Known-good ImageWriter, ImageWriter II, or LQ does not print

- 1 Verify that System is 7.1 or later.
- 2 Verify that Chooser and Control Panel settings are correct.
- 3 Check cables.
- 4 Replace printer interface cable.
- 5 Try known-good printer.
- 6 Replace Duo MiniDock logic board.





Peripherals (Continued)

Known-good

LaserWriter does not
print

- 1 Verify that System is 7.1 or later.
- 2 Verify that Chooser and Control Panel settings are correct.
- 3 Check cables.
- 4 Replace printer interface cable.
- 5 Try known-good printer. If printer works, troubleshoot network.
- 6 Replace Duo MiniDock logic board.





Peripherals (Continued)

Device connected to external modem port doesn't work

- 1 Verify that External Modem is selected in PowerBook Control Panel.
- 2 Verify that System is 7.1 or later.
- 3 Check cables.
- 4 Test device with known-good computer.
- 5 Disconnect Duo MiniDock from PowerBook and test device at PowerBook external modem/printer port.
- 6 Replace Duo MiniDock modem interface card.
- 7 Replace Duo MiniDock logic board.





Peripherals (Continued)

I/O devices are unrecognized or garbage is transmitted or received

- 1 Verify that System is 7.1 or later.
- 2 Check cables.
- 3 Verify that SCSI devices are terminated properly.
- 4 Verify that SCSI select switch setting on external device is unique and between 2 and 6.
- 5 Test device with known-good computer.
- 6 Replace Duo MiniDock logic board.





Internal Modem

Internal modem
options do not appear
in CDEV

- 1 Verify that System is 7.1 or later.
- 2 Remove and reseal modem interface board.
- 3 Disconnect Duo MiniDock from PowerBook and test PowerBook internal modem.
- 4 Replace modem interface board.
- 5 Replace Duo MiniDock logic board.





Internal Modem (Continued)

Modem does not respond properly to AT command set instructions

- 1 Verify that baud rate and data format settings of communications application are compatible with internal modem and remote modem.
- 2 Check phone cord connection and operation.
- 3 Verify that System is 7.1 or later.
- 4 Remove and reseal modem interface board.
- 5 Disconnect Duo MiniDock from PowerBook and test PowerBook internal modem.
- 6 Replace modem interface board.
- 7 Replace Duo MiniDock logic board.





Internal Modem (Continued)

Strange mix of characters appears on screen

- 1 Verify that baud rate and data format settings of communications application are compatible with internal modem and remote modem.
- 2 Check phone cord connection and operation.
- 3 Verify that System is 7.1 or later.
- 4 Remove and reseal modem interface board.
- 5 Disconnect Duo MiniDock from PowerBook and test PowerBook internal modem.
- 6 Replace modem interface board.
- 7 Replace Duo MiniDock logic board.

Modem interferes with system sound

- 1 Remove and reseal modem interface board.
- 2 Disconnect Duo MiniDock from PowerBook and test PowerBook internal modem.
- 3 Replace modem interface board.
- 4 Replace Duo MiniDock logic board.





Internal Modem (Continued)

Modem does not respond to incoming call

- 1 If computer is in sleep mode, verify that “Answer calls” is selected in Remote Access Setup control panel.
- 2 Check phone cord connection and operation.
- 3 Disconnect Duo MiniDock from PowerBook and test PowerBook internal modem.
- 4 Replace modem interface board.
- 5 Replace Duo MiniDock logic board.

Modem has no sound output

- 1 Verify that Control Panel volume setting is 1 or higher.
- 2 Disconnect Duo MiniDock from PowerBook and test PowerBook internal modem.
- 3 Replace modem interface board.
- 4 Replace Duo MiniDock logic board.





Internal Modem (Continued)

Modem connects but
does not communicate
with remote modem

- 1 Verify that remote modem needs error correction (error correction is internal modem default).
- 2 Type AT &Q0 to disable error correction.





Miscellaneous

Can't connect/
disconnect MiniDock

Replace mechanical latch.





Take Apart

PowerBook Duo MiniDock

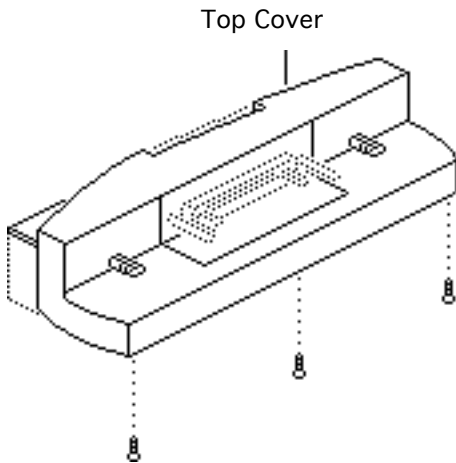


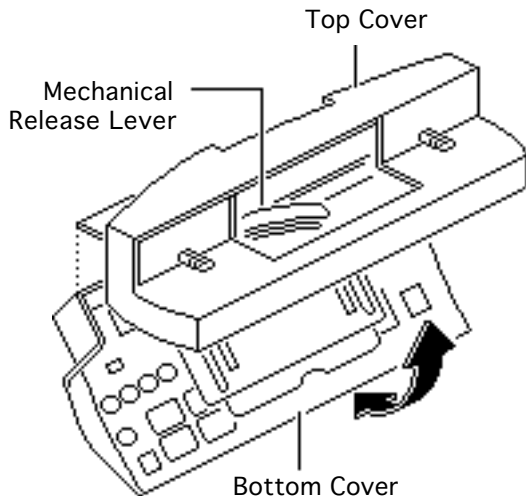
Top Cover

Before you begin,

- Shut down unit
- Disconnect PowerBook Duo
- Disconnect cables

- 1 Using a T-6 torx driver, remove the three self-threading torx screws that secure the top cover to the bottom cover.





- 2 **Note:** To separate the top cover from the base, you must first close the mechanical release lever. Push it in flush with the top cover.

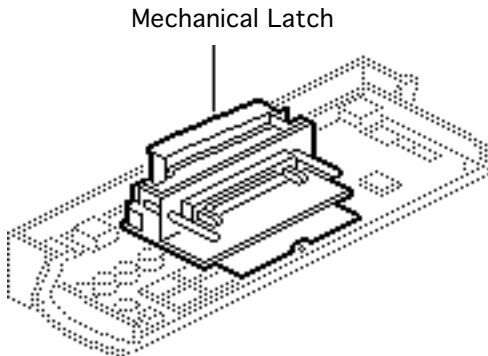
Carefully separate the top and bottom covers until the covers disengage at the rear mounting tabs.

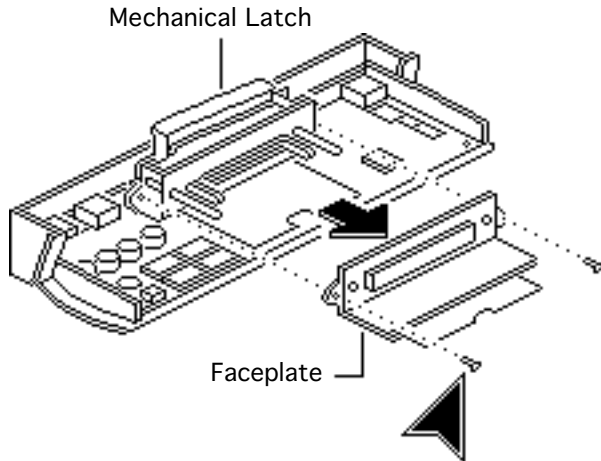


Mechanical Latch

Before you begin, remove the top cover.

Caution: The PowerBook Duo MiniDock contains CMOS devices that are very susceptible to ESD damage. Review the ESD precautions in Bulletins/Safety.

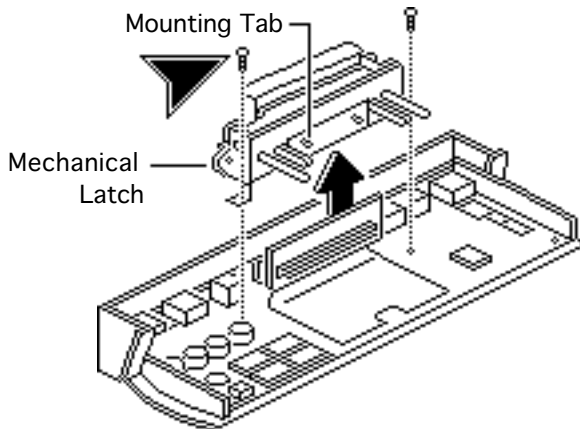




- 1 Using a T-6 torx driver, remove the two self-threading screws that secure the plastic faceplate to the mechanical latch.
- 2 Pull the faceplate straight off the mechanical latch.

Note: Before returning a defective mechanical latch, replace the faceplate on the mechanical latch alignment posts.





- 3 Using a T-6 torx driver, remove the two self-threading torx screws that secure the mechanical latch and logic board to the bottom cover.
- 4 Pull away the flex cable and lift off the mechanical latch.

Replacement Note: When replacing the mechanical latch on the logic board, insert the two mounting tabs on the latch through holes in the flex cable.



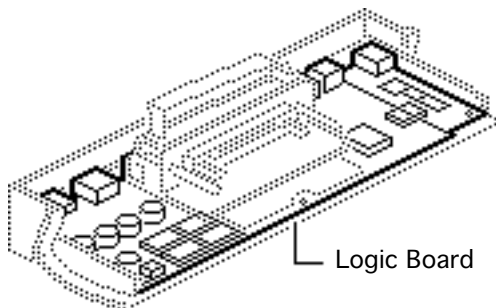


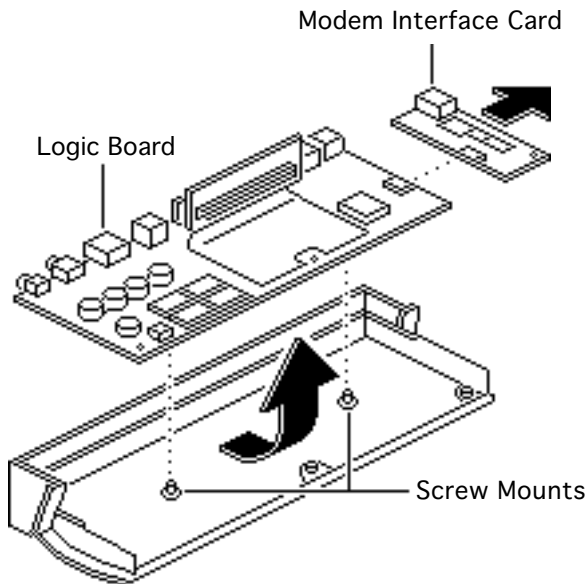
Logic Board

Before you begin, remove the following:

- Top cover
- Mechanical latch

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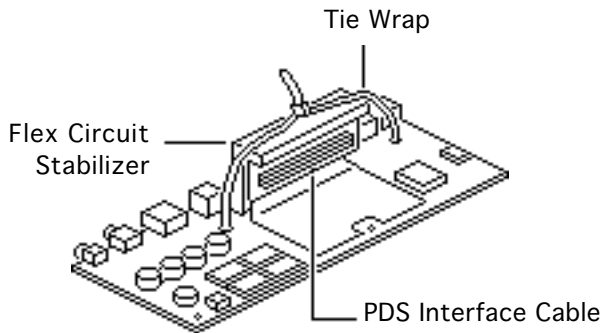




- 1 Slightly raise the front of the logic board and pull the board out of the bottom cover.
- 2 Disconnect the modem interface card (if installed) from connector J6.

Replacement Note: When replacing the logic board, be careful not to bend the metal grounding tabs on the bottom cover, and make sure the logic board snaps onto the two bottom-cover screw mounts.



**Replacement Caution:**

Before returning a defective logic board, always install the flex circuit stabilizer on the PDS interface cable. Remove the flex cable stabilizer from the replacement module and position it behind the flex cable as shown. Secure the stabilizer to the logic board with a tie wrap.

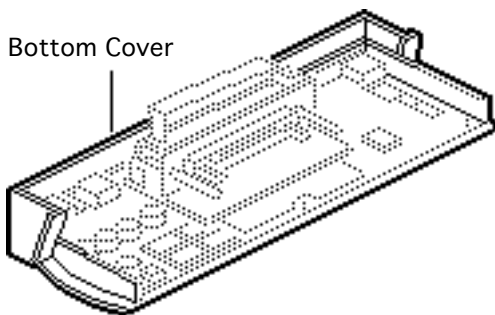




Bottom Cover

To access the bottom cover, remove the following:

- Top cover
- Mechanical latch
- Logic board



Caution: The PowerBook Duo MiniDock contains CMOS devices that are very susceptible to ESD damage. Review the ESD precautions in Bulletins/Safety.

Note: The bottom cover includes a white insulator.

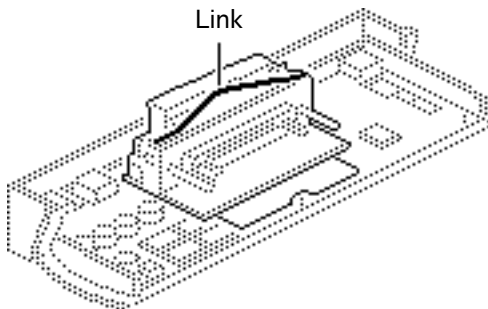


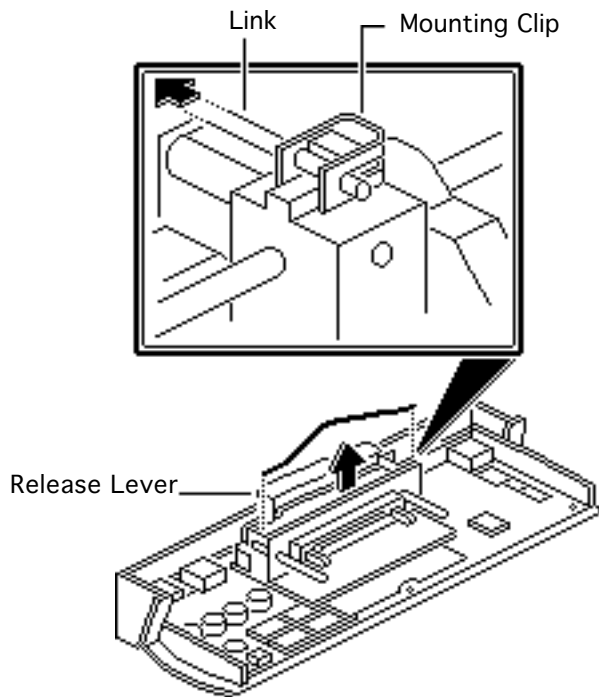


Link

Before you begin, remove the top cover.

Caution: The PowerBook Duo MiniDock contains CMOS devices that are very susceptible to ESD damage. Review the ESD precautions in Bulletins/Safety.





⚠ Warning: Never remove the mounting clips from the posts at the ends of the latch. These clips secure the link, which is under pressure, and prevent the link from springing up and striking you.

- 1 Open (pull up) the mechanical release lever.
- 2 Remove the center of the link from the metal mounting brace.
- 3 Slide the ends of the link from the mounting clips.





Upgrades

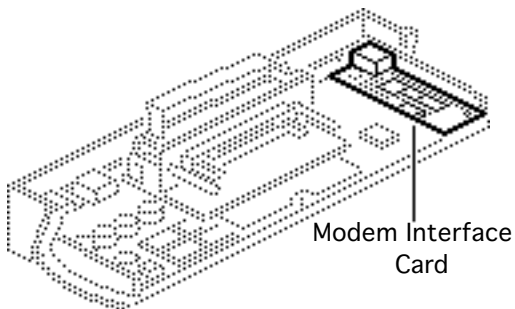
PowerBook Duo MiniDock



Modem Interface Card

Before you begin, remove the following:

- Top cover
- Mechanical latch
- Logic board





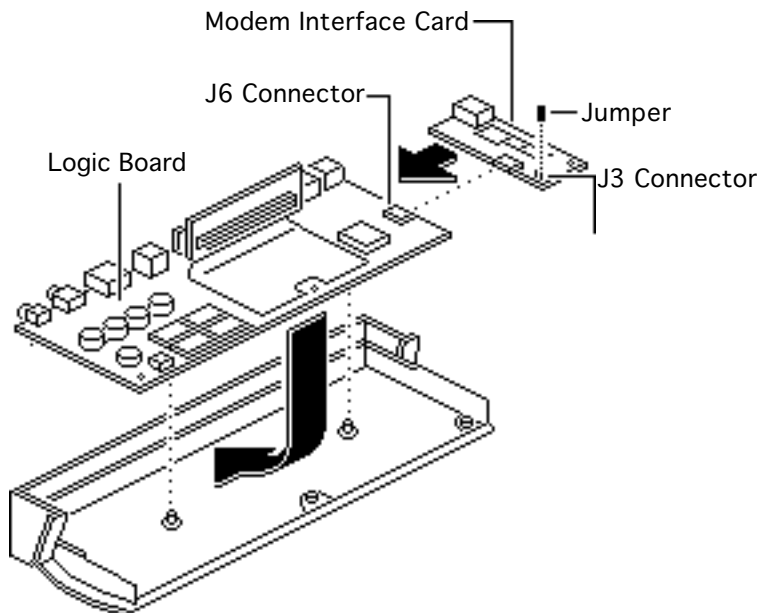
Note: The modem interface card provides telephone line interface (DAA) circuitry for a PowerBook Duo with an internal modem. To address the differences in telephone interfaces and specifications, Apple provides both domestic and international versions of the modem interface card.





Caution: The PowerBook Duo MiniDock contains CMOS devices that are very susceptible to ESD damage. Review the ESD precautions in Bulletins/Safety.





Connect the modem interface card to logic board connector J6.

Important: In Japan only, install a jumper on modem interface connector J3. A jumper is included with every modem interface card.



Exploded View

PowerBook Duo MiniDock



PowerBook Duo MiniDock Exploded View

