External Hard Drive SC

Exploded View

External Hard Drive SC

Exploded View

Cover

HDA-to-Case Cable

Fan Frame

LED Cable Assembly

Fan

SCSI Select Switch

SCSI Select Switch Cable

Hard Drive Mechanism
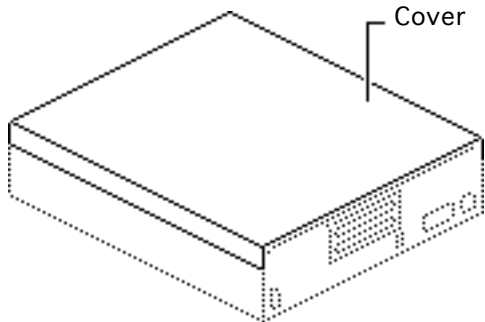
Power Supply
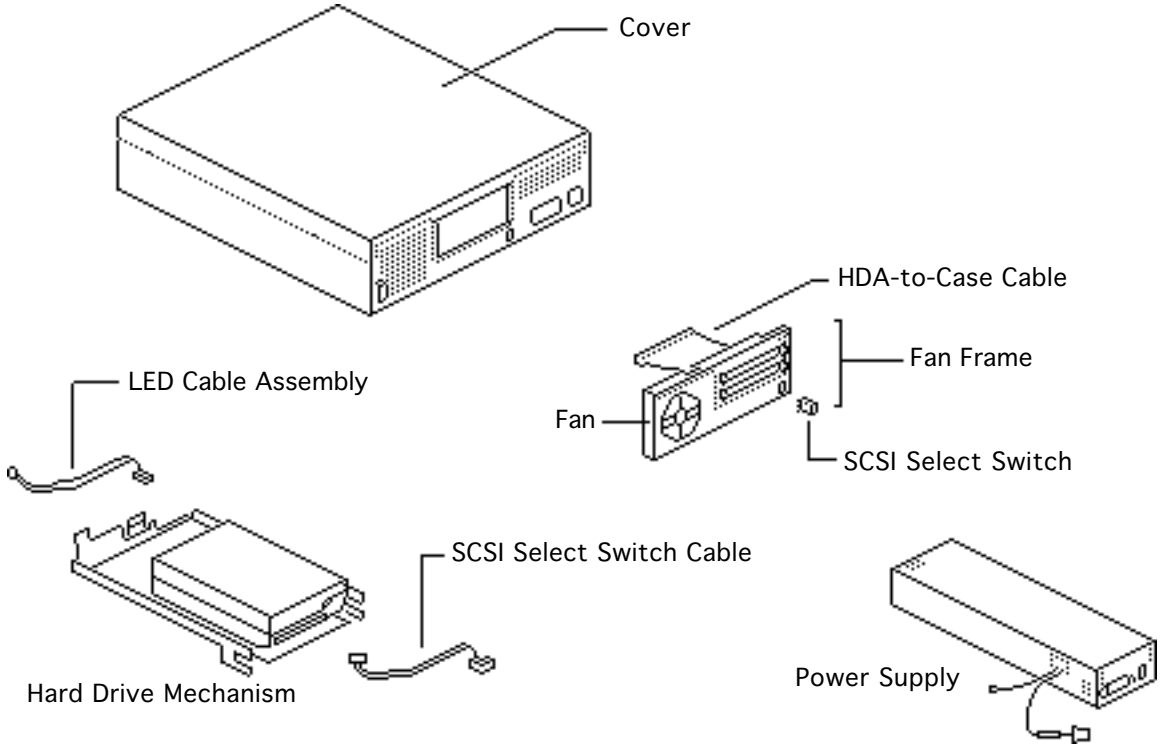
Take Apart
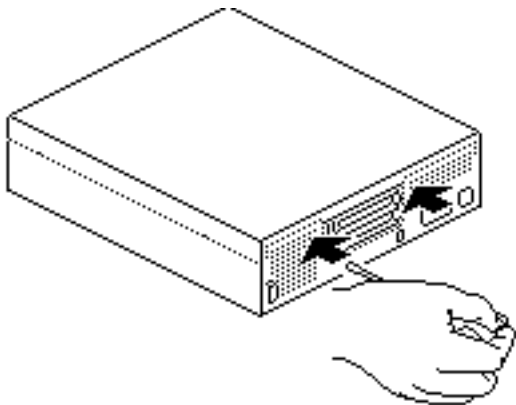
External Hard Drive SC

Cover

No preliminary steps are required before you begin this procedure.

Note: This Take Apart chapter applies only to the Apple external hard drive series (20SC, 40SC, 80SC, or 160SC). For Take Apart procedures internal drives, see the manual for the computer that contains the drive.
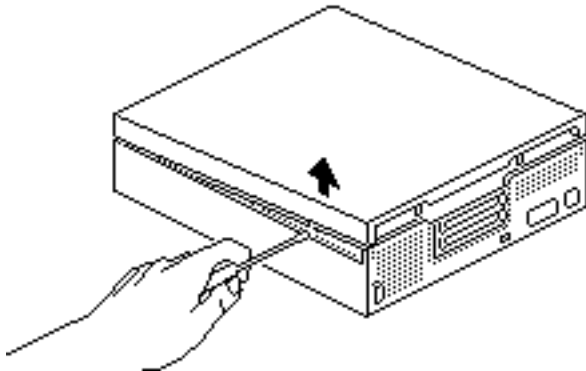
Cover

1. Locate the two holding tabs on the rear of the hard drive, inside the ventilation slots.

2. Using a jeweler's screwdriver, press in gently on the two holding tabs as you push the cover up slightly.
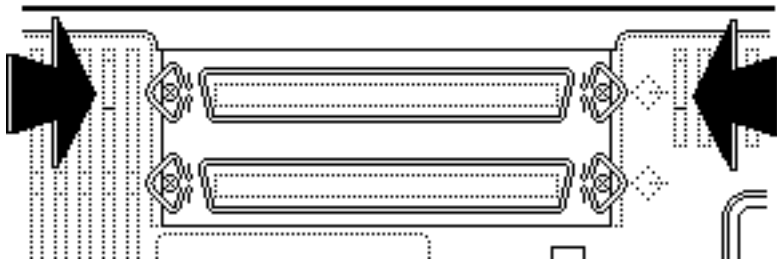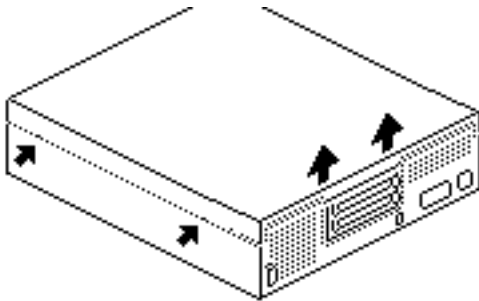
3 Locate the four tab holes, two on each side of the hard drive.

4 Starting with the rear holes, insert the jeweler's screwdriver straight into each of the holes. Nudge the cover upward as you release each tab.

Note: Prying is not necessary and may damage the case.
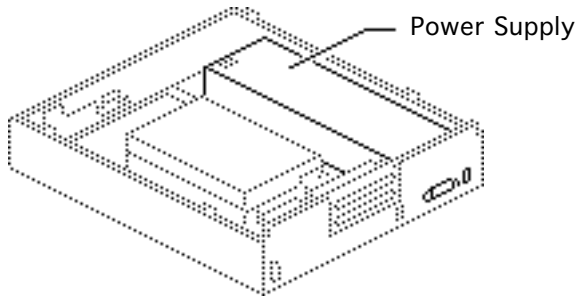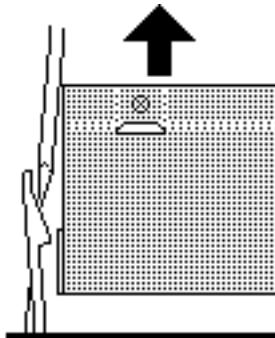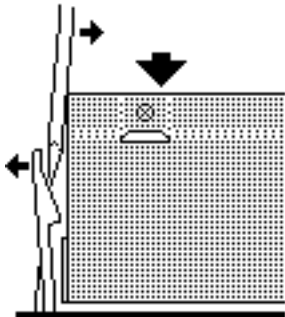
Power Supply

Before you begin, remove the cover.

Caution: Review the ESD precautions in Bulletins/Safety.

Power Supply

1 Press down on the back of the power supply, push back the power supply tab, and lift the power supply.

Fan Cable

Power Supply

Power Supply Connector
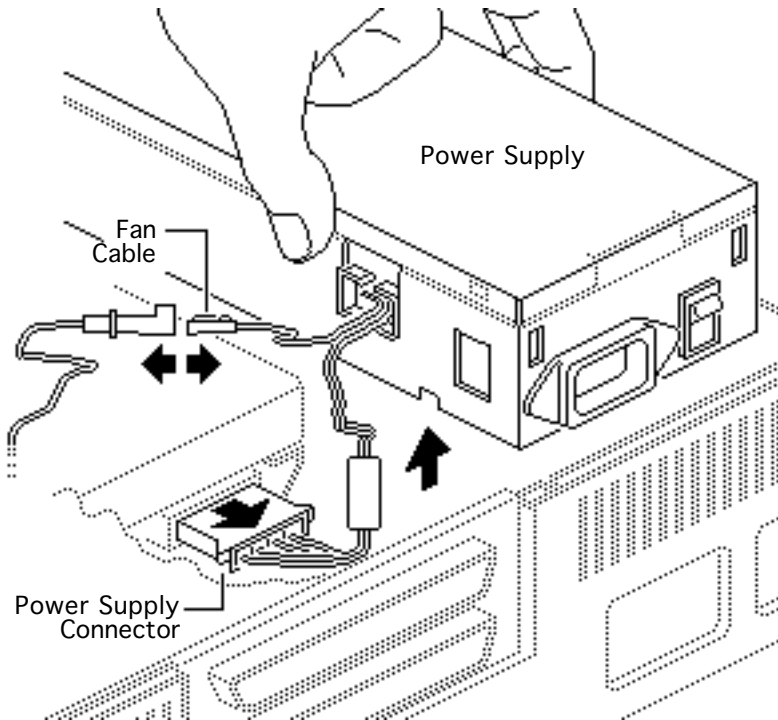
2 Disconnect the power supply connector from the hard drive mechanism.

Note: On some hard drive mechanisms, the power supply connector is on the opposite side of the hard drive.

3 Disconnect the fan cable.

4 Lift the power supply free.

Hard Drive Mechanism

Before you begin, remove the cover.

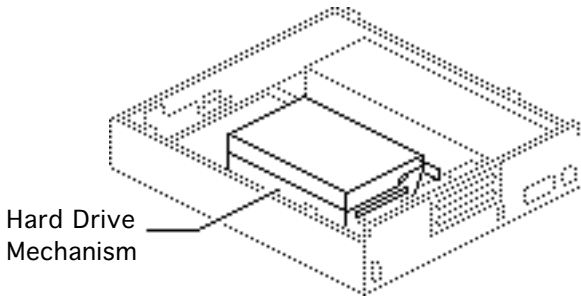**Caution:** Review the ESD precautions in Bulletins/ Safety.

Hard Drive Mechanism

1 Push back the large tab, slide the hard drive mechanism up, and rest it on the edge of the case.

Tab

Hard Drive
Mechanism

SCSI Select
Switch Connector

Power
Supply
Connector

HDA-to-Case
Cable

Hard Drive Mechanism
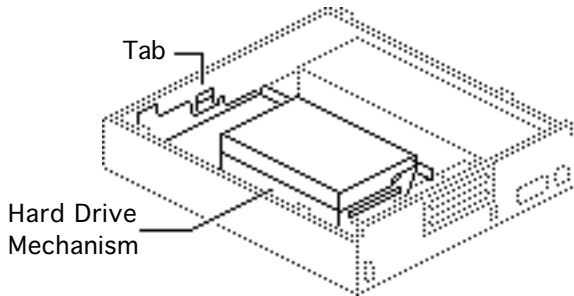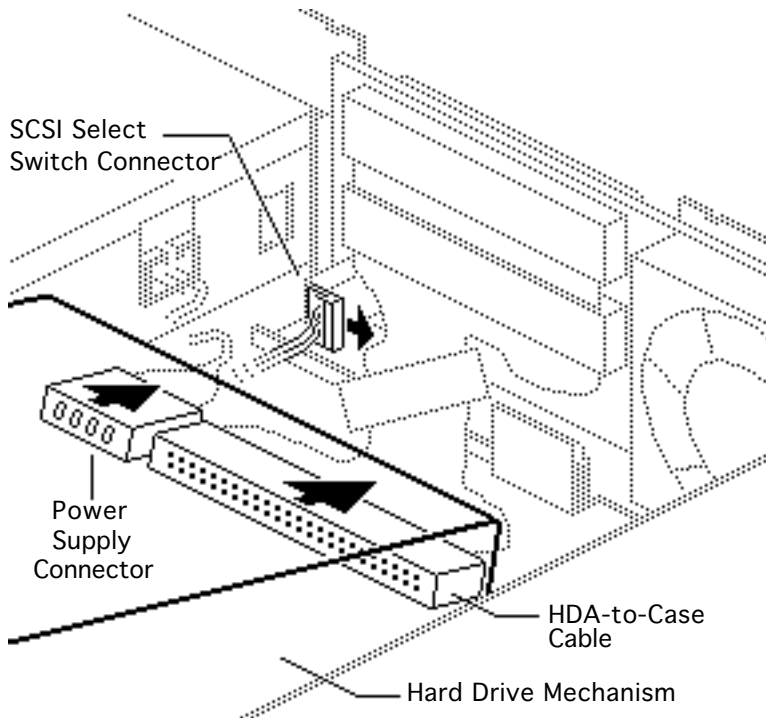
2 Disconnect the power supply.

Note: On some hard drive mechanisms, the power supply connector is located on the opposite side of the hard drive.

3 Open the end tabs (if present) on the hard drive data cable connector and disconnect the cable from the hard drive mechanism.

4 Disconnect the SCSI
   select switch connector
   and lift the hard drive
   mechanism out of the
   case.

Note: Skip the following
steps if you are replacing a
20 MB or a 160 MB
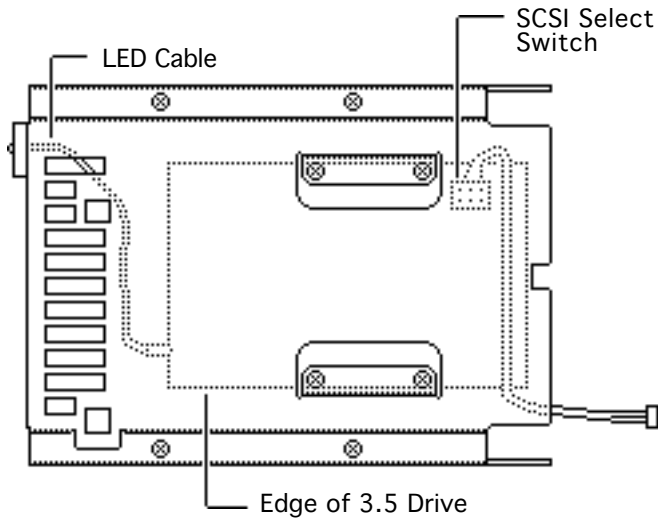external hard drive. Return
these drives to Apple in
their original carriers.

LED Cable

SCSI Select Switch

Edge of 3.5 Drive

Note: Four screws hold the 5.25-inch hard drive along the bottom edge of the carrier.

5   Turn the drive over and remove the four screws near the center of the metal carrier. Use this carrier to install the service replacement module.

6   Disconnect the LED cable and SCSI select switch from the hard drive mechanism.

Note: Review "Carrier Removal," "Modifying 5.25 Drives," or "Modifying 3.5 Drives" in Additional Procedures before you install the new service replacement drive.
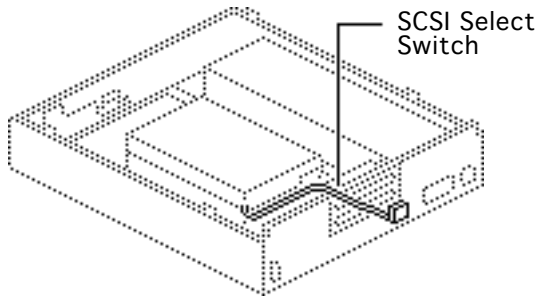
SCSI Select Switch Cable
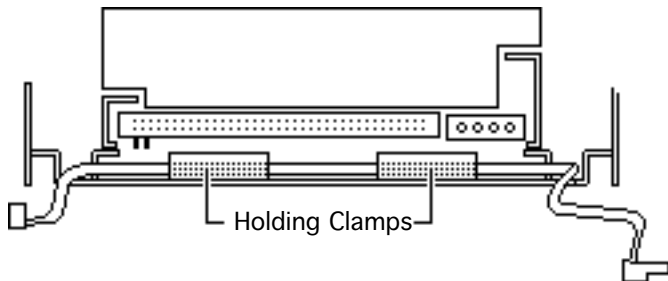
Before you begin, remove the following:

- Cover
- Hard drive mechanism

Caution: Review the ESD precautions in Bulletins/ Safety.

SCSI Select Switch

Slide the cable out of the holding clamps attached to the carrier.
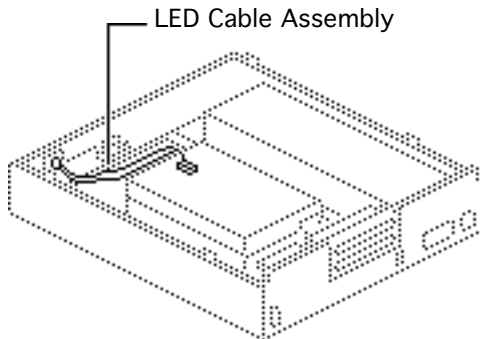

Holding Clamps

LED Cable Assembly

LED Cable Assembly

Before you begin, remove the following:

- Cover
- Hard drive mechanism

Caution: Review the ESD precautions in Bulletins/ Safety.

1. If you are repairing a hard drive160SC, remove the four screws and pull the end bracket and the LED cable from the hard drive.

Retaining Ring

2 Using a jeweler's screwdriver, pry the small plastic retaining ring from around the LED holder. Slide the ring up the wires and out of the way.
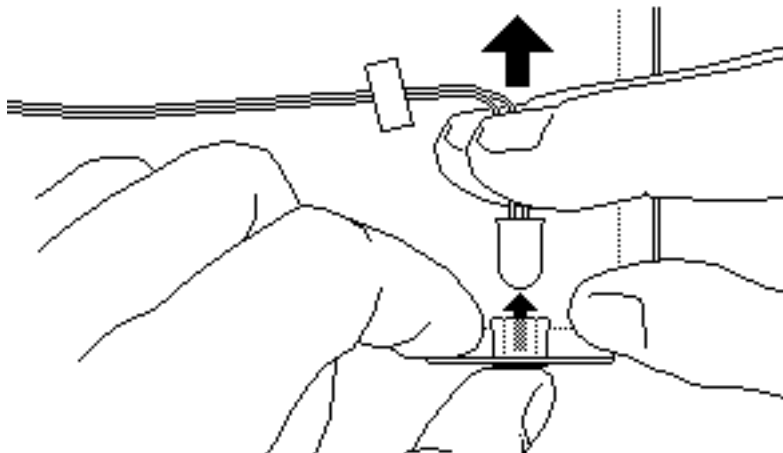
3 Press the face of the LED toward the inside of the metal carrier until the LED snaps free of the plastic holder.

4 Remove the LED cable assembly.

Fan Frame

Fan Frame

Before you begin, remove the cover.

Caution: Review the ESD precautions in Bulletins/Safety.

Note: It is not necessary to disconnect the power supply when you remove the hard drive mechanism for this procedure.
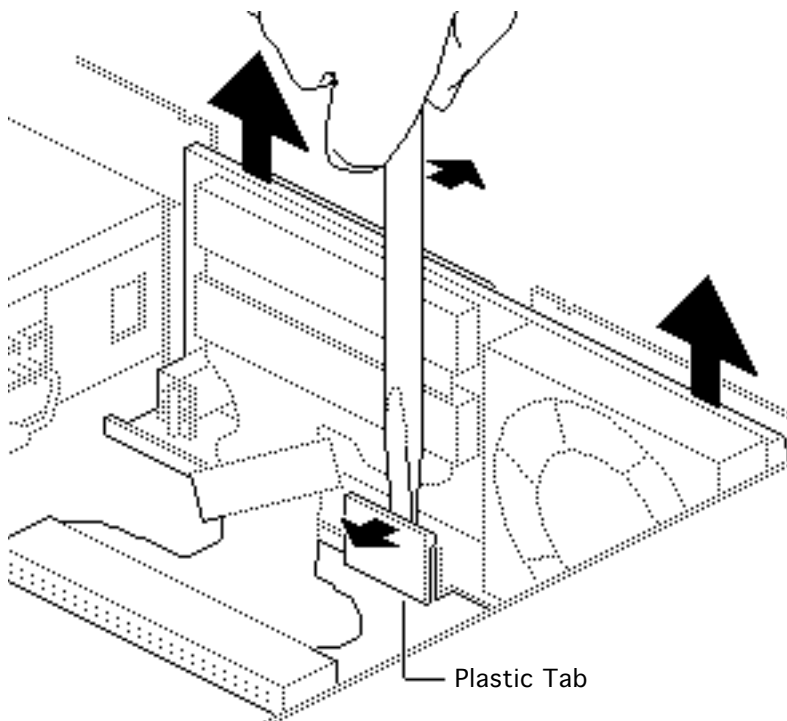
Using a flat-blade screwdriver, push back the plastic tab and lift out the metal fan frame (with fan, HDA-to-case cable, fan cable, and SCSI select switch attached).

Plastic Tab

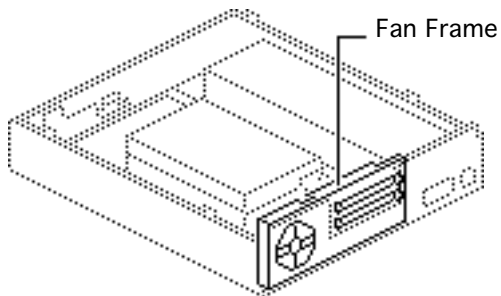# HDA-to-Case Cable

Before you begin, remove the following:

- Cover
- Fan frame

Caution: Review the ESD precautions in Bulletins/ Safety.

HDA-to-Case Cable

1. Remove the four screws that hold the HDA-to-case cable to the frame.

2. Lift the cable free.

Fan Frame

Fan

Before you begin, remove the following:

- Cover
- Fan frame
- HDA-to-case cable

Caution: Review the ESD precautions in Bulletins/Safety.

Fan

1 Remove the two screws
   that hold the fan to the
   frame.

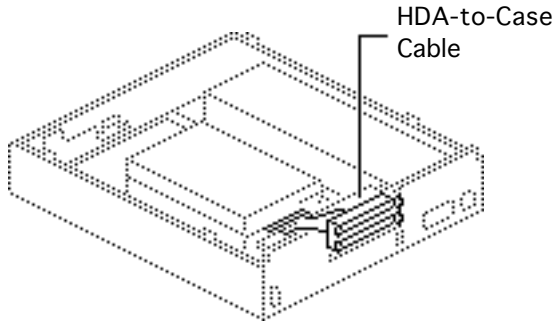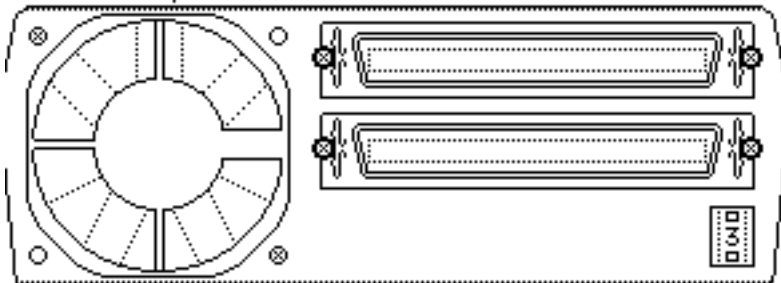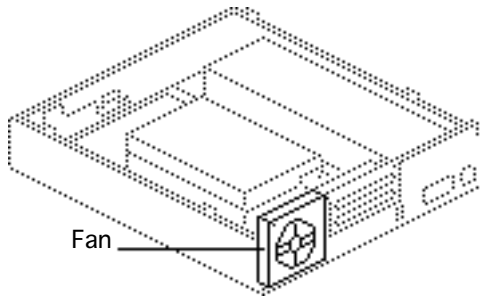2 Lift the fan free.

Fan Frame
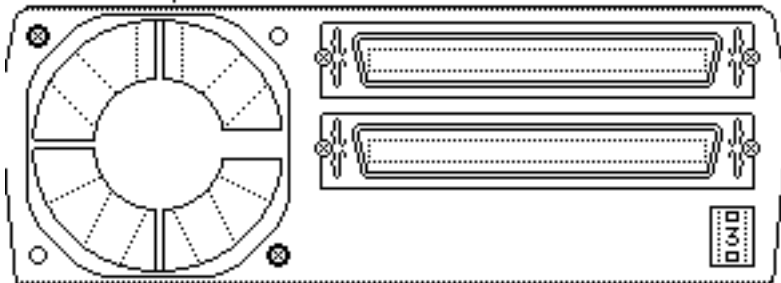
SCSI Select Switch

SCSI Select Switch

Before you begin, remove the following:

- Cover
- Fan frame

Caution: Review the ESD precautions in Bulletins/Safety.
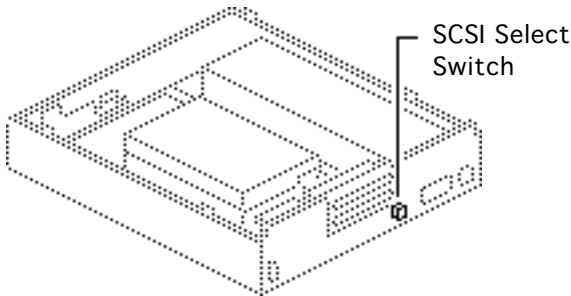
Push the switch through the fan frame. Depress the two plastic tabs—first on one side and then the other.

Fan Frame
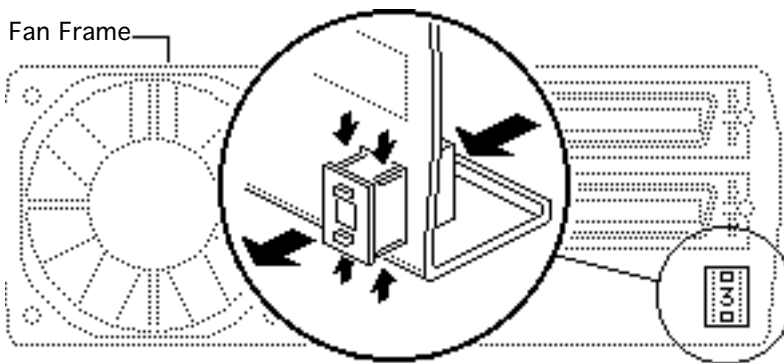
Additional Procedures

External Hard Drive SC

Carrier Removal

No preliminary steps are required before you begin this procedure.

Note: This procedure applies to hard drive mechanisms that have been removed from a computer or an external hard drive, or to replacement drive mechanisms that have not yet been installed in the computer.

Caution: Review the ESD precautions in Bulletins/Safety.

Remove the four screws and lift the carrier from the hard drive.

Replacement Caution: Be sure to properly torque the replacement drive to its carrier. Failure to do so could damage the drive. See "Torque Sequence" in this chapter.

Drive Carrier

Hard Drive

Note: For return information on defective drives, see "General Return Info" in this chapter and refer to the Service Source parts database Note of the drive you are returning.

Torque Sequence
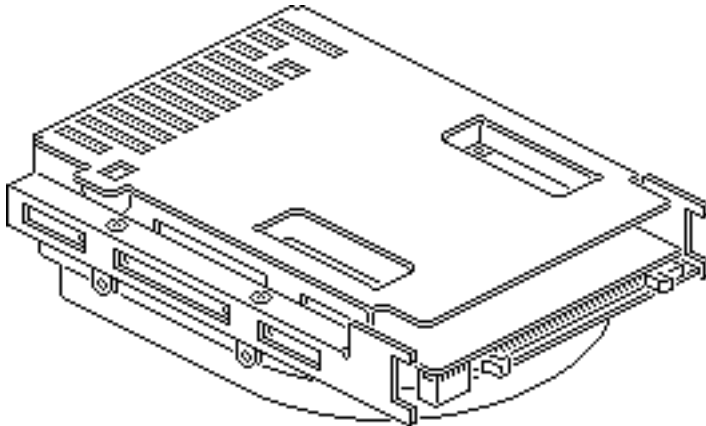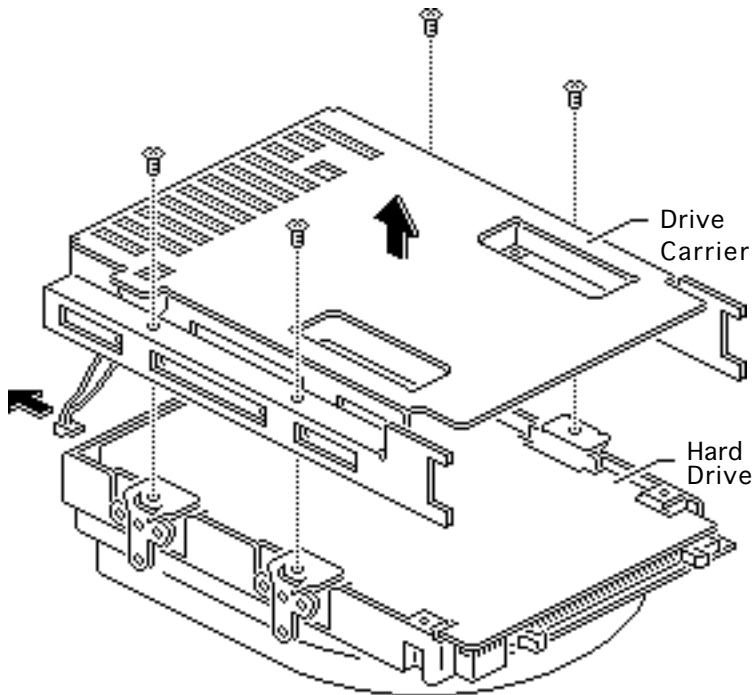
No preliminary steps are required before you begin this procedure.

Note: This procedure applies to hard drive mechanisms that have been removed from a computer or an external hard drive, or to replacement drive mechanisms that have not yet been installed in the computer.
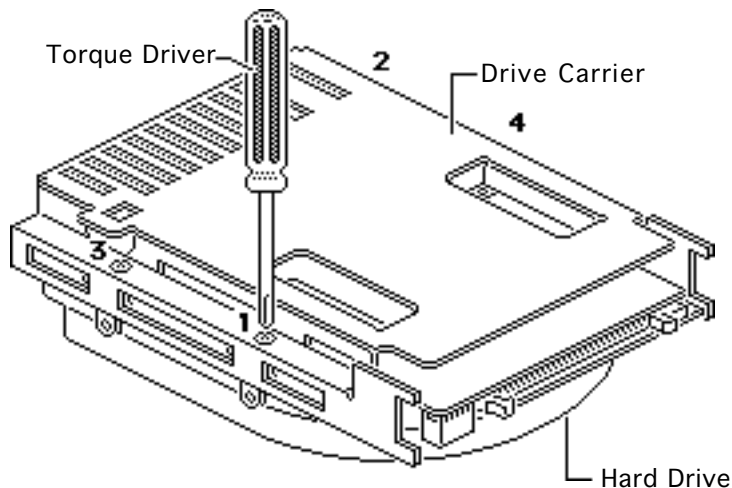
Using a torque driver, tighten the screws in the order shown. Torque the screws to 8.0-inch pounds.

Note: The torque sequence is the same for all types of drives and carriers.

Torque Driver

2

Drive Carrier

4

3

1

Hard Drive

External Hard Drives Only

Modifying 5.25 Drives

No preliminary steps are required before you begin this procedure.

Note: This section describes procedures for modifying 5.25-inch replacement hard drives that are qualified for external hard drives. To learn whether a replacement drive is a qualified external drive, refer to compatibility information in the Service

Customer's
External
Carrier

Power Cable
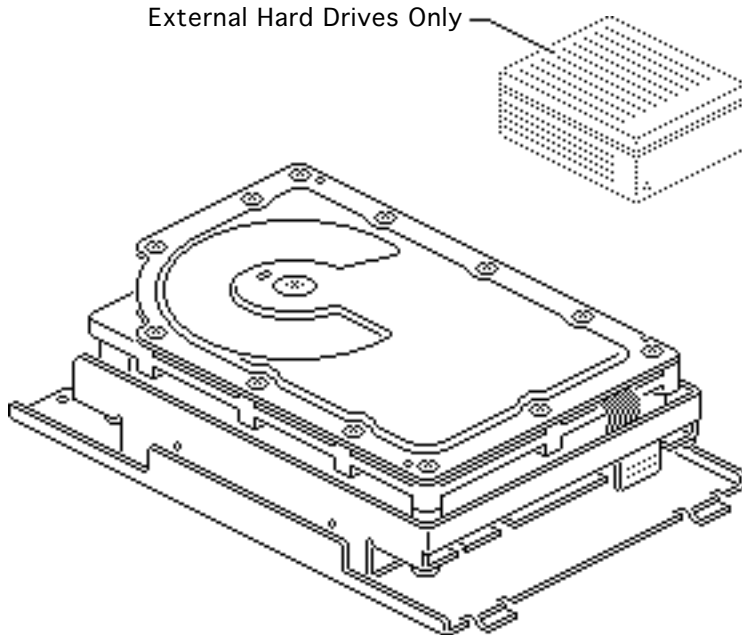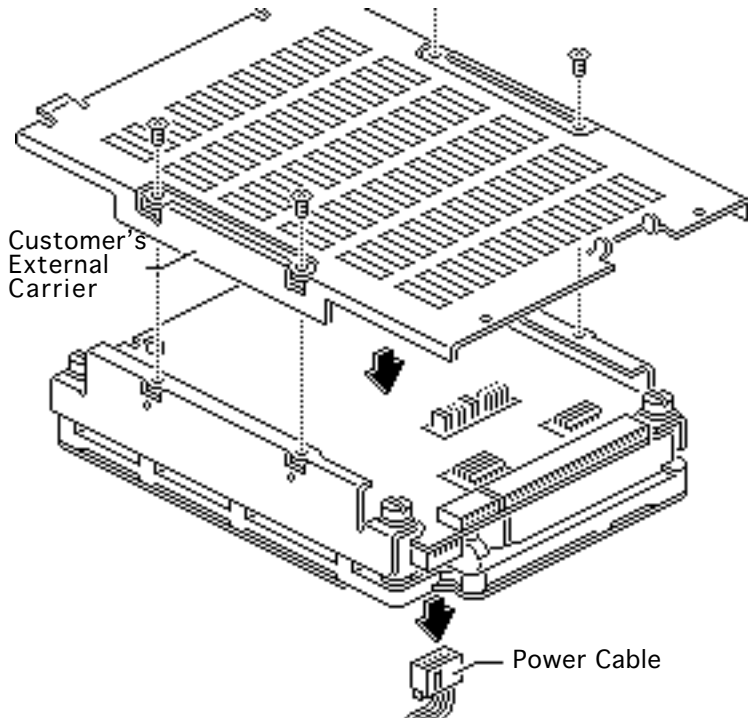
Source parts database Note for the drive.

Note: The 20 MB and160 MB external 5.25-inch replacement hard drives ship prepared for external drives. You must modify other replacement hard drives for use in external hard drives.

1 Remove the four mounting screws and carrier from the 5.25-inch service replacement hard drive.

Termination Resistors

SCSI Select Cable

Jumpers
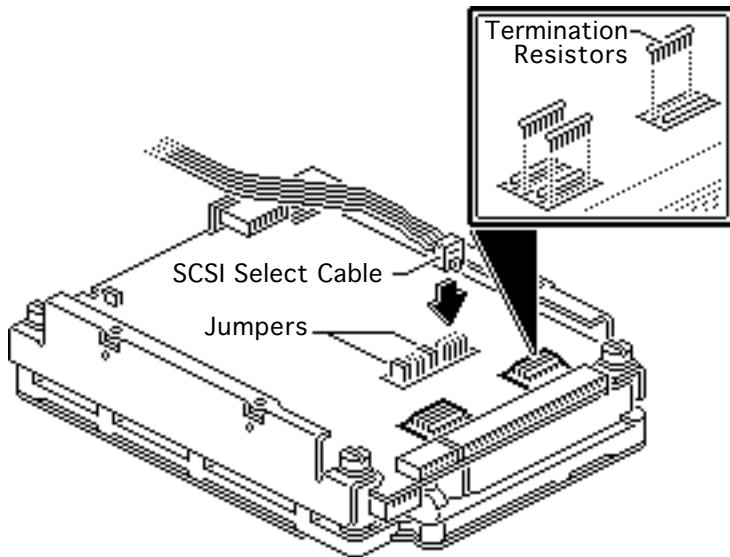
2 Disconnect the power cable (if attached) from the replacement drive.

3 Disconnect the termination resistors from the component side of the service replacement drive. Use needlenose pliers and pull the resistors straight up.

Replacement Note: Be sure that the tab on the SCSI select cable connector points toward the hard drive data cable.

Customer's External Carrier

LED
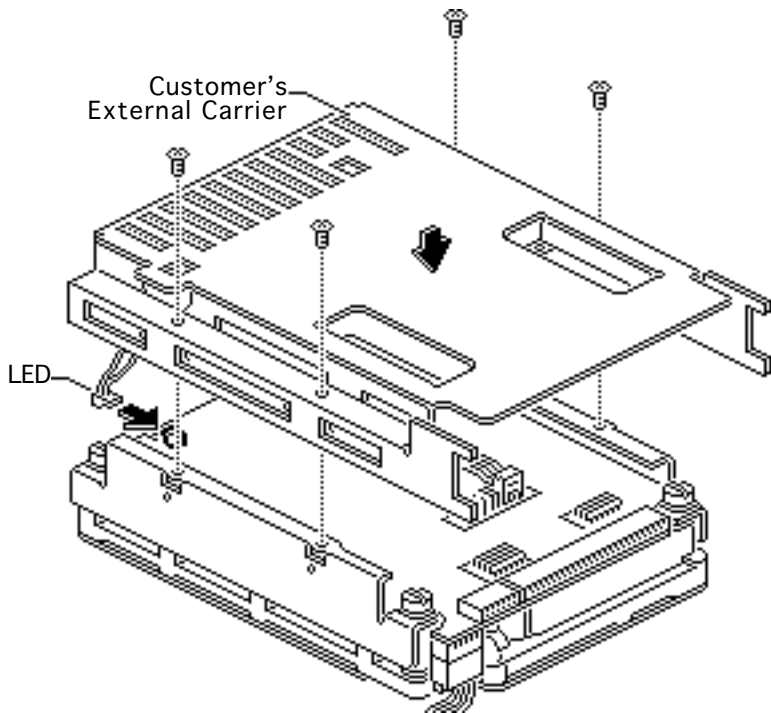
4 Connect the SCSI select cable to the three pairs of pins on the component side of the replacement drive. Leave the black jumpers on the other pins.

5 Connect the LED cable connector from the customer's external carrier to the component side of the replacement drive.

6   Attach the reconfigured
    replacement hard drive
    in the customer's
    external carrier with
    the four screws.

Note: For return
information on defective
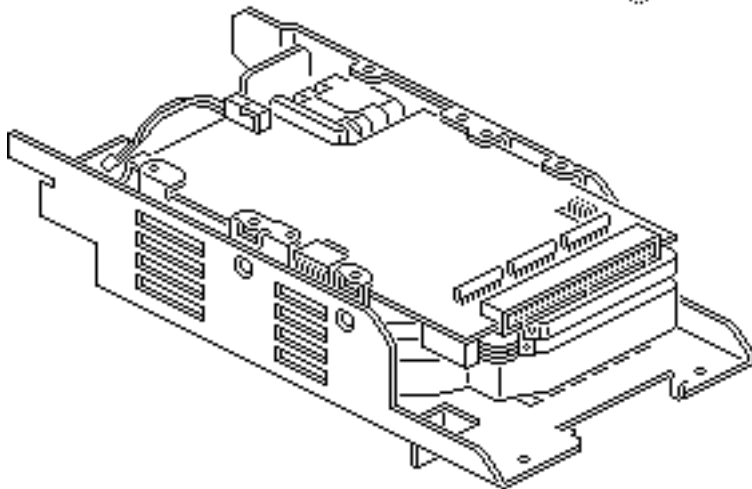drives, see "General Return
Info" in this chapter and
refer to the Service Source
parts database Note of the
drive you are returning.

External Drives Only
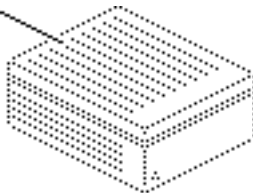
Modifying 3.5 Drives

No preliminary steps are required before you begin this procedure.

Note: This section describes procedures for modifying 3.5-inch replacement hard drives that are qualified for external hard drives. To learn whether a replacement drive is a qualified external drive, refer to compatibility information in the Service Source parts database Note for the drive.

Power Cable   Termination Resistors

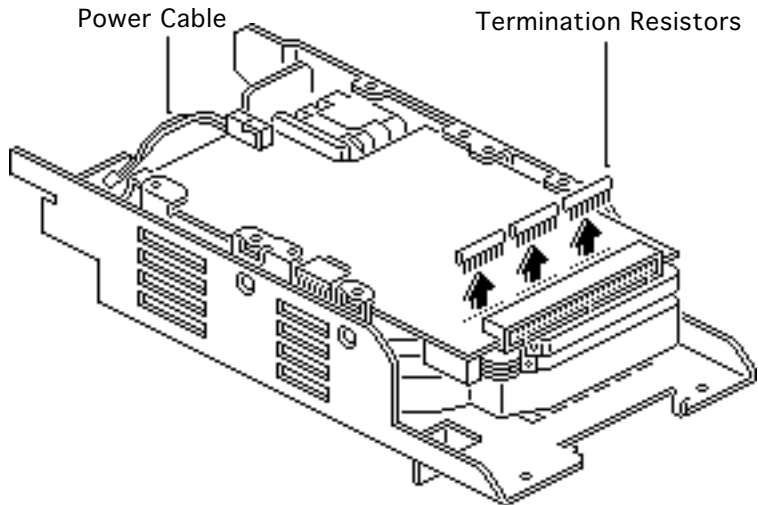**Note:** The External 20MB SCSI, Rev A replacement hard drive ships prepared for use in external hard drives. You must modify other replacement hard drives for use in external hard drives.

1 Remove the 3.5-inch replacement hard drive from its carrier.

2 Disconnect the power cable (if attached) from the replacement drive.

   Note: The location of the termination resistors may differ.

3   Disconnect the three
     termination resistors
     from the component side
     of the replacement drive.
     Use needlenose pliers, if
     necessary.

Important: You must connect
the customer's SCSI select
cable to six unkeyed pins on
the controller board. Be
aware that SCSI select cable
connectors differ in both
design and location among
drives.
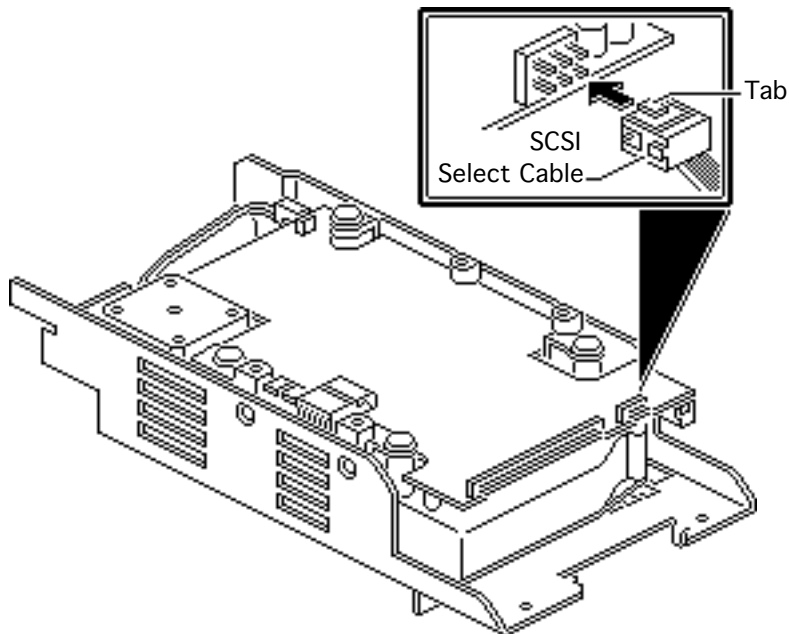
4 For SCSI select cable connectors located on the edge of the drive controller board:
- Remove any black jumpers that may be installed on the outside pins.
- Face the tab up and attach the SCSI cable connector.

Tab

SCSI Select Cable

SCSI
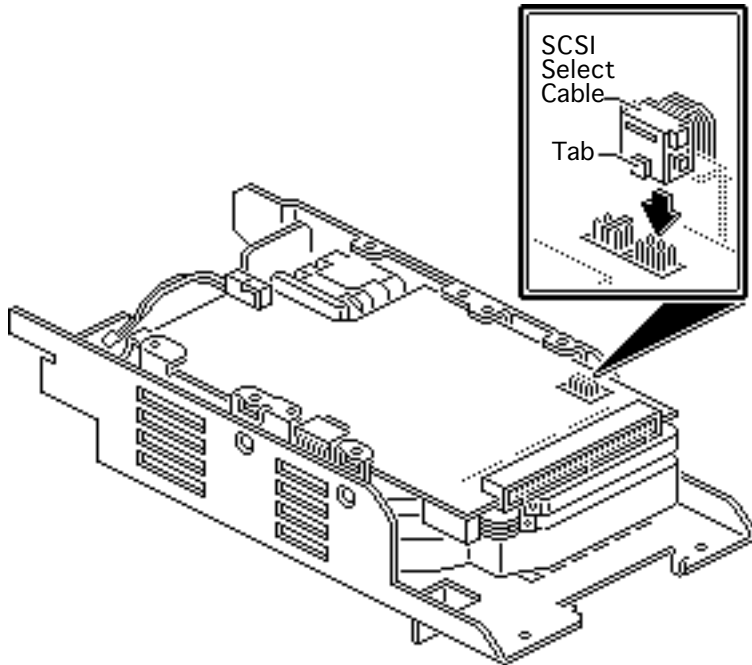Select
Cable

Tab

5 For SCSI select cable connectors located on the surface of the controller board:
- Face the SCSI cable connector tab toward the center of the drive.
- Attach the connector to the six pins closest to the 50-pin SCSI connector.

Important: Combinations of SCSI select connectors and cables vary. To verify the proper position of the SCSI select cable connector, connect the drive to a known-good Macintosh and choose Get Info from the Finder's File menu. If Get Info displays the wrong SCSI ID or drive name, reverse the tab of the SCSI select cable connector.

Customer's External Carrier

LED
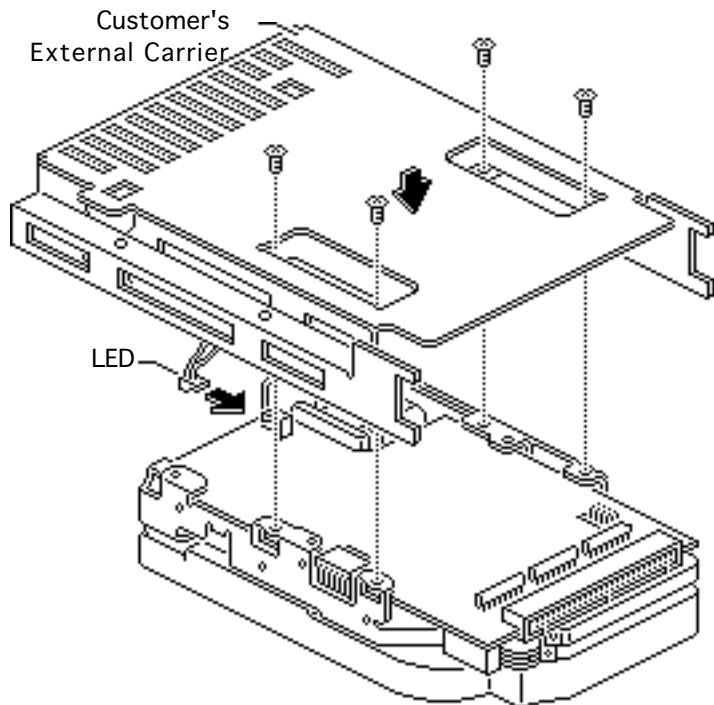
6   Connect the LED cable connector from the customer's external carrier to the component side of the replacement drive.

7   Install the reconfigured replacement hard drive in the customer's external carrier.

Note: For return information on defective drives, see "General Return Info" in this chapter and refer to the Service Source Parts database Note of the drive you are returning.
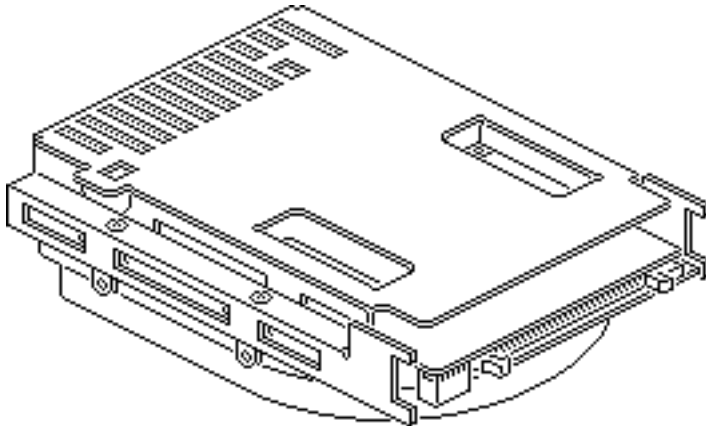
General Return Info

No preliminary steps are required before you begin this procedure.

Note: You must return a defective hard drive to Apple with the correct combination of carrier and cables.
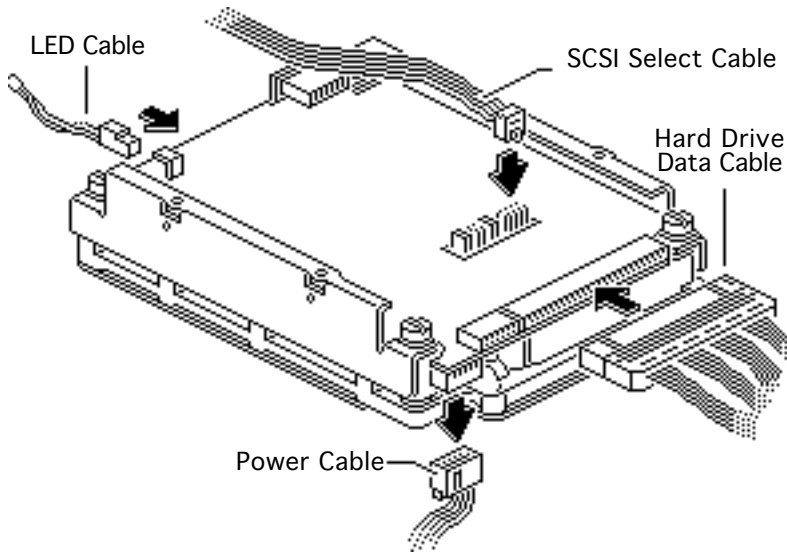
Return defective hard drives in one of three carrier combinations:

- Switch the hard drive carriers.
- Return the drive without a carrier.
- Return the drive with the carrier from the customer's unit.

Note: For specific return requirements, refer to the Service Source Parts database Note of the drive you are returning.

LED Cable

SCSI Select Cable

Hard Drive
Data Cable

Power Cable

Each drive has four cables that may or may not need to be returned:

- Power cable
- Hard drive data cable
- SCSI select switch cable
- LED cable

Note: For specific return requirements, refer to the Service Source parts database Note of the drive you are returning.
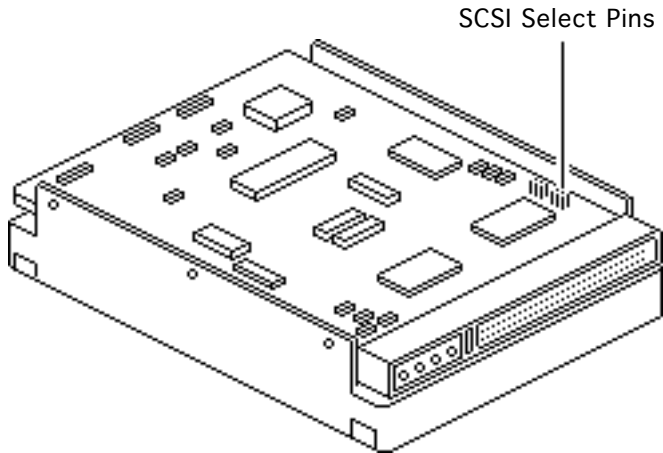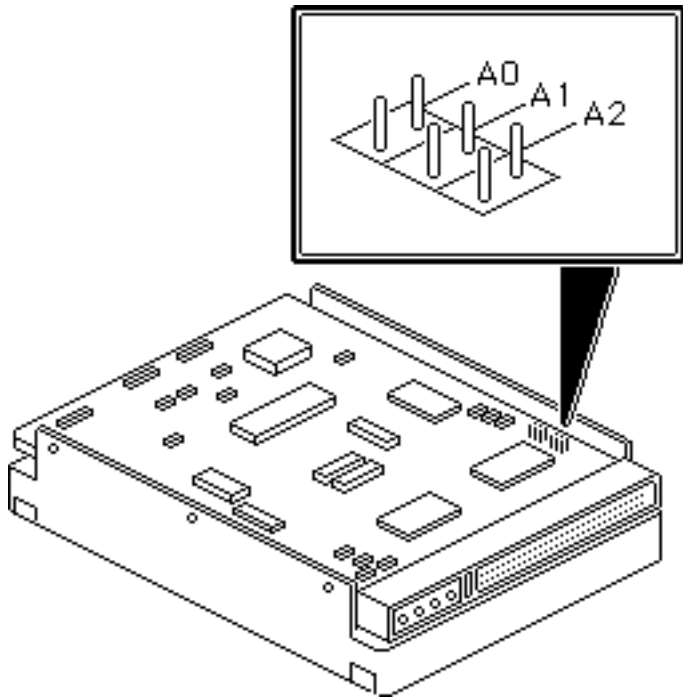
SCSI Select Pins

Setting SCSI ID

No preliminary steps are required before you begin this procedure.

To set the SCSI ID, locate the drive's six SCSI select pins.

Note: If you are installing the drive in a docking station, such as the DuoDock, Apple recommends you change the SCSI ID to 1. If you are installing the drive mechanism in an external drive case, Apple

recommends you change the SCSI ID to any number from 2 to 6.

Note: The location of the SCSI select pins varies among drives. Generally, the group of six (occasionally eight) pins is on the top or side of the printed circuit board.

Place jumpers on the pairs of pins as shown in the table below.

Note: In the following table, the SCSI ID numbers are labeled across the top and the pin numbers are labeled on the side. (The pin pairs may be labeled using either the A0-A1-A2 pin number convention or the E1-E2-E3 convention. Some pin pairs may not be labeled.) The letter "J" indicates a jumper.

	0	1	2	3	4	5	6	7
A0/E1	-	J	-	J	-	J	-	J
A0/E2	-	-	J	J	-	-	J	J
A0/E3	-	-	-	-	J	J	J	J