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## Chapter 3. Installing Options

This chapter provides instructions on installing options in your system unit. Use the following considerations when installing options.

- Before performing any installation procedures, read the information in “Safety Information” on page E-9 and in “Handling Electrostatic-Discharge-Sensitive Devices” on page E-14.
- Install the SBC options first to prevent having to remove newly installed options.
- Install all of the options at one time to prevent having to repeatedly install and remove the system-unit cover.

### **CAUTION:**

- **Always remove the source of power to the system unit before starting any removal or replacement procedures. The electrical power and any backup-power source should be unplugged from the wall outlet or disconnected from its source. To make sure power is removed properly, start each removal or replacement procedure with “Turning Off the Power and Disconnecting Cables” on page 3-2.**
- **Depending on the options installed, the system unit could weigh more than one person can lift comfortably. Do not attempt to lift the system unit by yourself. Get another person to help you.**

### **Attention**

Whenever handling electronic components, use precautions to prevent damage from electrostatic discharge. Refer to “Handling Electrostatic-Discharge-Sensitive Devices” on page E-14 for a list of those precautions.

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## Turning Off the Power and Disconnecting Cables

Use the following procedure to power-down the system unit and disconnect all cables before beginning any removal or replacement procedure. If you need to remove the system unit from its mounting place, use this procedure before removing the system unit.

1. Remove any removable media, such as diskettes, optical discs, or tapes, from the system unit.
2. Turn off the computer and any attached devices.
3. Mark all cables connected to the system unit, or record their respective connectors, to prevent confusing the cables when they are unplugged.
4. If you have an internal modem, disconnect the telephone line from the wall outlet and then from the system unit (the line can cause an electrical shock if its number is called).
5. Unplug or disconnect all electrical power cords and any backup-power source. Where applicable, unplug all cables at the outlet first, then at the device.
6. Disconnect all other cables from the system unit.

When reassembling the system unit, reverse these steps.

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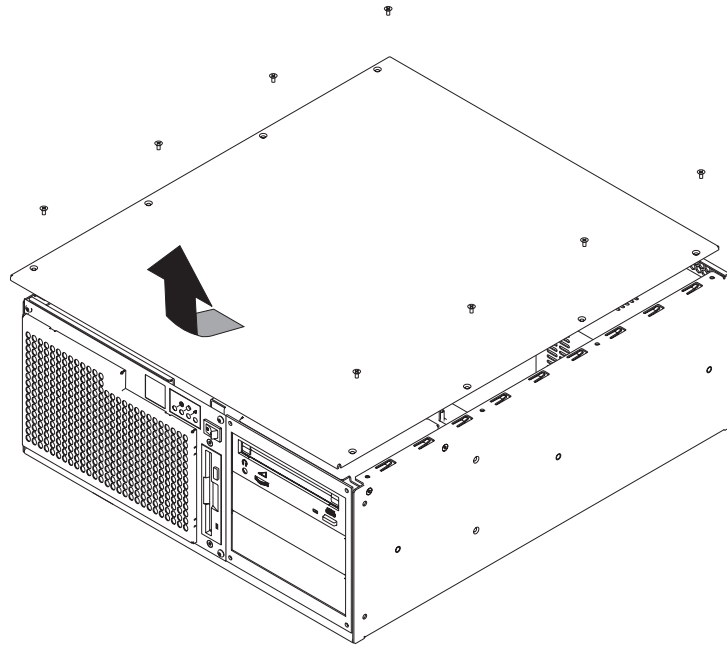
## Removing the Cover

In most cases, you do not need to remove the system unit from its mounting to service it. However, if you must, do so before removing the cover.

### CAUTION:

**The system unit can weigh more than one person can comfortably lift. Do not attempt to lift it by yourself; have another person help you.**

To remove the cover, remove the cover screws. Then slide the cover forward about two inches and lift it off.



## Installing Memory

The SBC has two memory connectors. Each connector supports 32-MB, 64-MB, 128-MB, and 256-MB non-parity DIMMs.

### DIMM Considerations

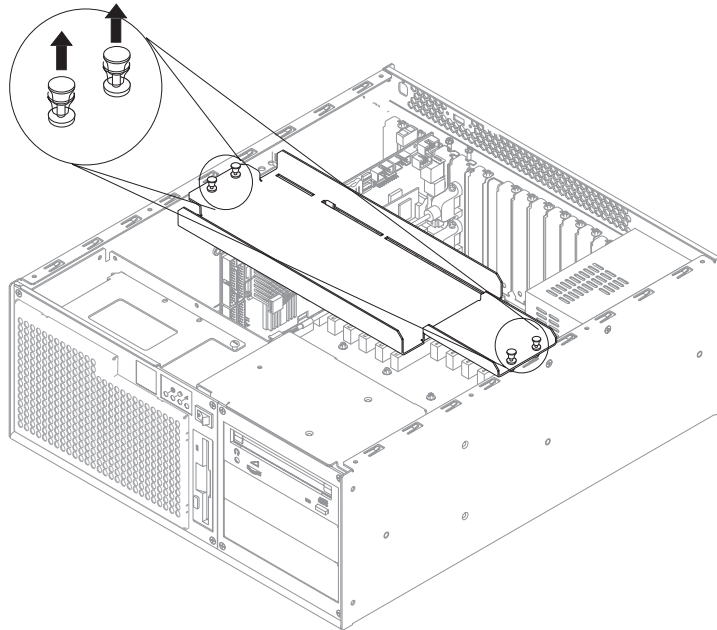
Use only IBM-approved memory. Contact your IBM representative for memory upgrades.

The DIMM in Bank 0 has a height restriction of 1.5 inches (38.1 millimeters).

The DIMM in Bank 1 is limited by the adapter in expansion slot 5 (slot 4 must be empty). The height restriction for bank 1 is 1.25 to 1.375 inches (31.8 to 34.9 millimeters). The dimension is affected by the adapter in slot 5.

Before installing memory, use the following procedures to remove the SBC.

1. Remove the cover (refer to page 3-3).
2. Release the latches, then remove the card hold-down bracket.

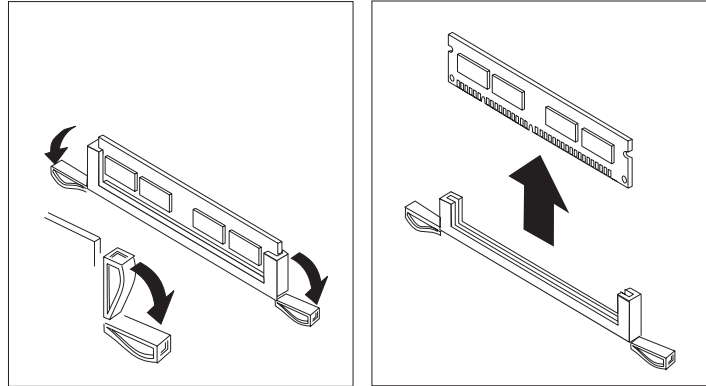


3. Record the position of any adapters that interfere with disconnecting cables from the SBC and remove those adapters (see "Removing and Replacing Adapters" on page 7-36).
4. Remove the screw that secures the SBC retaining bracket to the chassis.
5. Disconnect all cables from the SBC.
6. Pull the cables away from the SBC and carefully lift the SBC out of the system unit. (You might have to rock the SBC slightly from front to rear to loosen it from the connector.)
7. Place the SBC on a flat, clean, static-free surface, with the component-side facing up and the backplane connector toward you.
8. If you are replacing the DIMM in bank 0, continue with "Installing Memory in Bank 0" on page 3-5. If you are installing memory in bank 1, go to "Installing Memory in Bank 1" on page 3-6.

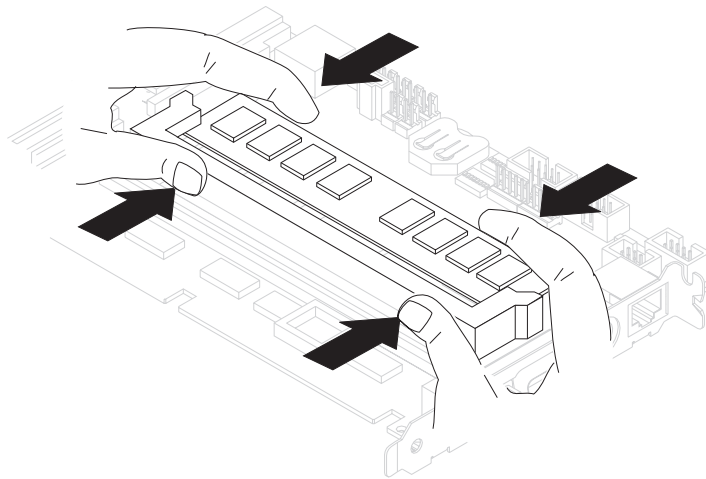
## Installing Memory in Bank 0

Use the following procedures to install memory in bank 0.

1. Push outward against the release levers at both ends of the DIMM connector. The DIMM will rise about 0.25 inch.



2. Lift the DIMM out of the connector.
3. Align the centering notches on the new DIMM with the keys in the connector (the keys are in the center slot of the connector). Then insert the DIMM into the connector and squeeze the DIMM into the connector as shown. The release levers will move to the closed position when the DIMM is fully seated in the connector.

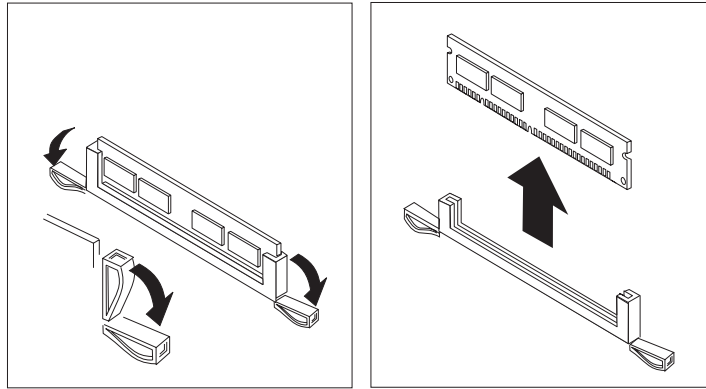


4. Record the configuration changes in Appendix A, "System Records."
5. If you are also installing memory in bank 1, continue with "Installing Memory in Bank 1." Otherwise, reinstall the SBC and reconnect all internal cables.
6. Reinstall any adapters into the same slots from which they were removed.

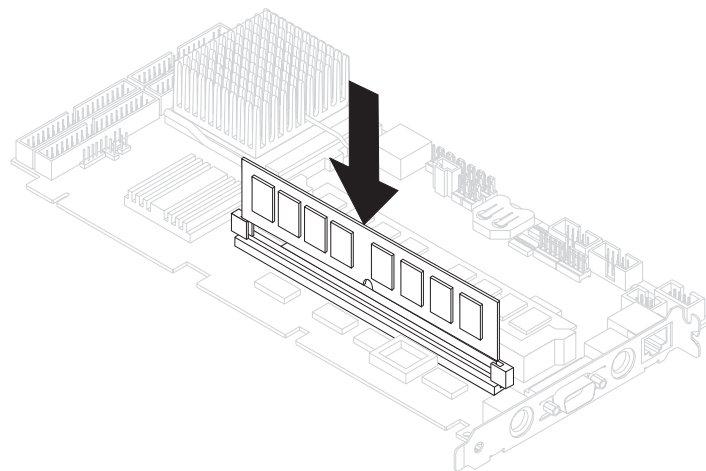
## Installing Memory in Bank 1

Use the following procedures to install memory in bank 1.

1. If you are replacing the DIMM in bank 1, continue with the next step. Otherwise, go to step 4.
2. Push outward against the release levers at both ends of the DIMM connector. The DIMM will rise about 0.25 inch.



3. Lift the DIMM out of the connector.
4. Align the centering notches on the new DIMM with the keys in the connector (the keys are in the center slot of the connector). Then insert the DIMM into the connector and press the DIMM into the connector as shown. The release levers will move to the closed position when the DIMM is fully seated in the connector.

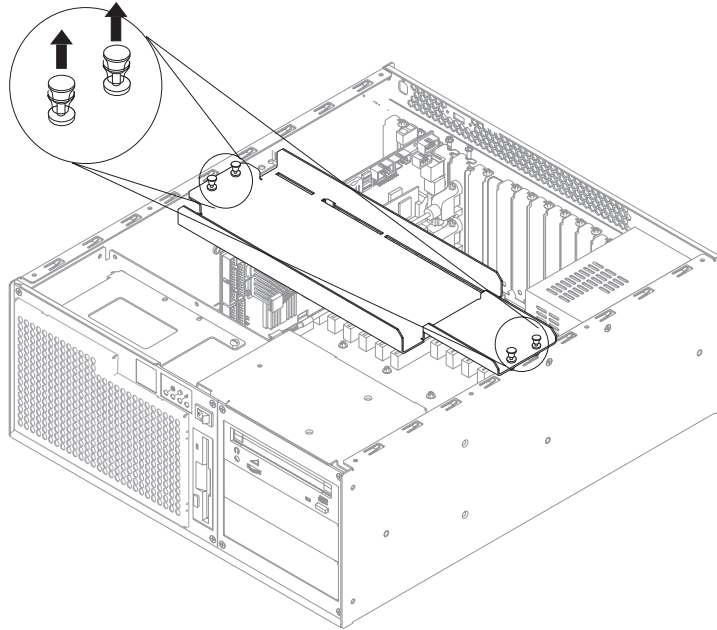


5. Record the configuration changes in Appendix A, "System Records."
6. Reinstall the SBC and reconnect all internal cables.
7. Reinstall any adapters into the same slots from which they were removed.

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## Installing Adapters

1. Remove the cover (refer to page 3-3).
2. Release the latches, then remove the card hold-down bracket.



3. Record the location of any adapters that are in the way; then remove them.
4. Touch the static-protective bag in which the adapter is packaged to any unpainted metal surface on the system unit. Then, remove the adapter from the bag.
5. Refer to the instructions that came with the adapter to determine switch settings, jumper positions, or other special setup and handling.
6. Install the adapter in the system unit.
  - a. Grasp the adapter at the front and rear.
  - b. Align the adapter with the front and rear adapter guides and slide it into the guides (some adapters do not extend to the front adapter guide).
  - c. Press the adapter firmly to seat it completely in the connector.
  - d. Install and tighten the screw on the adapter-retaining bracket.
7. Record the adapter information and location in Appendix A, "System Records."

8. Refer to Figure 3-1 and determine the number of pads to use for each card size and whether the card requires hold-down spacers.

**Note:** Do not install spacers and pads for card sizes less than 3.7 inches. These adapters are too short for the bracket to work effectively; however, the adapters generally have less mass and are less likely to be affected by vibration and shock.

Card Height (inches/millimeters)	Spacer Required	Number of Additional Pads Needed	
4.8/121.8	No	0	standard <i>tall</i> card
4.7/119.3	No	1	
4.6/116.8	No	2	
4.5/114.2	No	3	
4.4/111.7	No	4	
4.3/109.1	No	5	standard <i>short</i> card
4.2/106.6	Yes	0	
4.1/104.1	Yes	1	
4.0/101.5	Yes	2	
3.9/98.9	Yes	3	
3.8/96.4	Yes	4	
3.7/93.9	Yes	5	

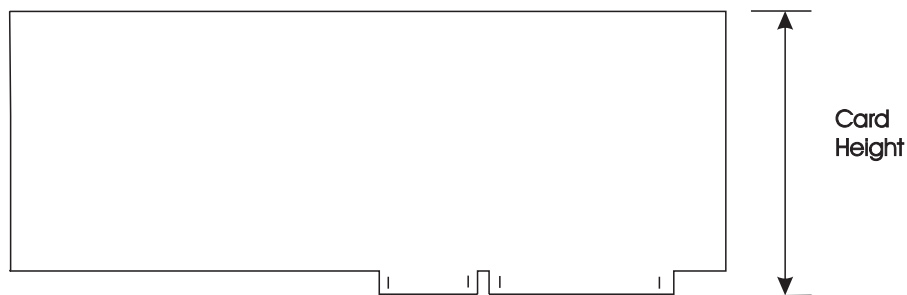
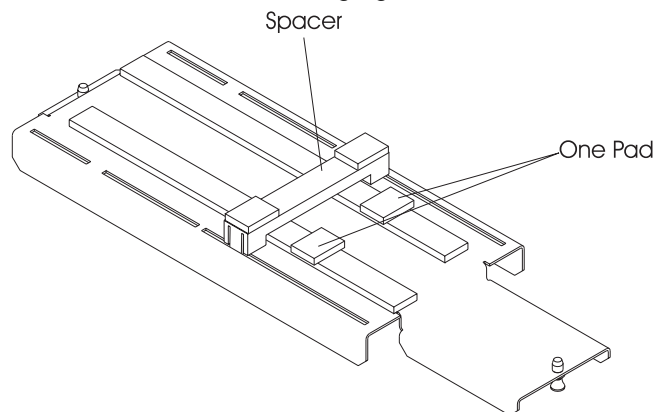


Figure 3-1. Requirements for Adapter Hold-Down Spacers

If spacers are required, continue with step 9; otherwise, go to step 10.

9. Install the spacer and pads as shown in the following figure.



10. Reinstall any adapters you removed (make sure to install them in the original locations).
11. Reinstall the card hold-down bracket and cover.



## Installing an Internal Drive Option

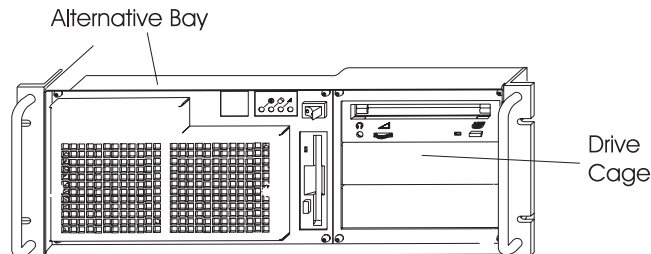
### Important

Not all hard drives meet the rigorous requirements for industrial-usage rating that make up the working environment of the 7581 Computer. Before installing any hard drive that is not designed specifically for use in a 7581 Computer, be sure the hard drive meets all environmental conditions to which it might be subjected.

The 7581 Computer supports four IDE hard drives. Drives are installed in the drive cage and the alternative bay, depending on your requirements. These requirements include:

- The type of drives you are installing:
  - 3.5-inch or 5.25-inch drive
  - Removable-media drive or hard drive
- Shock mounting or rigid mounting

The following figure shows the drive-mounting locations.



### Typical Drive Configuration

Typically, drives are installed in the drive cage. The CD-ROM and up to three 3.5-inch hard drives can be installed in the drive cage. Shock mounting is not supported in this configuration.

This configuration is required when using Ultra-DMA hard drives because of a restriction on the cable length.

If you are installing a drive in a typical drive configuration, go to “Installing a Drive in a Typical Drive Configuration” on page 3-10.

### Atypical Drive Configuration

Atypically, drives can be installed in the drive cage and the alternative bay. The CD-ROM and two drives can be installed in the drive cage and a fourth drive can be installed in the alternative drive bay.

This configuration is required if you are installing a 5.25-inch drive or removable-media drive. It is also required when using the shock mount option (the CD-ROM drive cannot be shock mounted).

If you are installing a drive in an atypical drive configuration, go to “Installing a Drive in an Atypical Drive Configuration” on page 3-12.

## Installing a Drive in a Typical Drive Configuration

Use these instructions to install a 3.5-inch hard drive in the drive cage. Three 3.5-inch drives can be installed in the two lower bays using drive-mounting brackets to attach two drives to the hard drive in the lower bay.

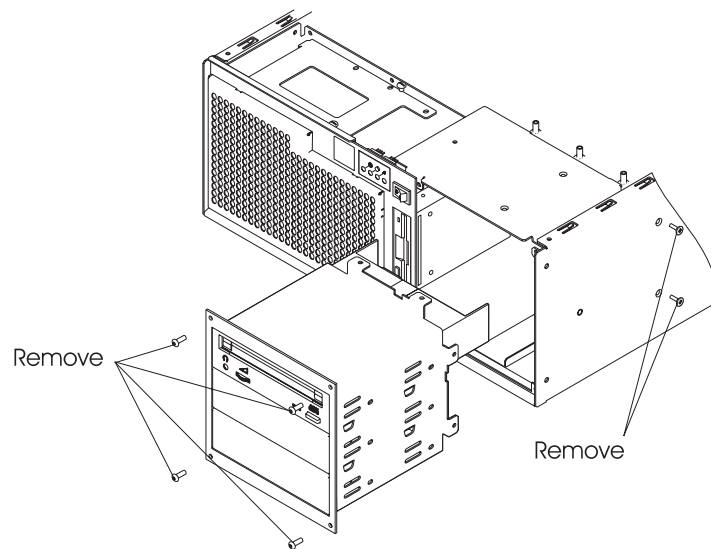
Go to “Installing a Drive in an Atypical Drive Configuration” on page 3-12 if you are installing one of the following.

- A 5.25-inch drive
- A removable-media drive
- A shock-mounted hard drive

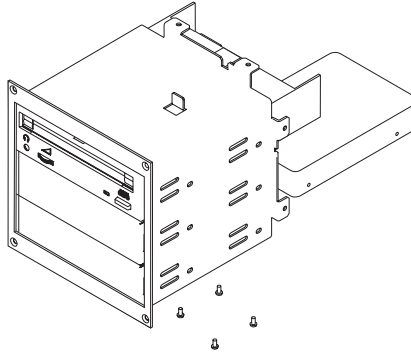
Read the instructions that came with the drive to determine any special instructions.

**Note:** If your hard drive cannot run in the high performance mode (the default IDE-mode selection), be sure to switch to compatible mode. See page 4-14 for information on mode selection.

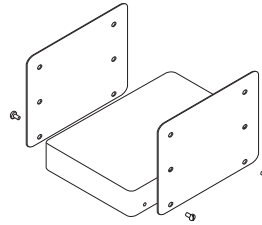
1. Remove the cover (refer to page 3-3).
2. Disconnect the signal and power cables to all drives in the drive cage.
3. Remove the cage-retaining screws for the drive cage. Then slide the drive cage forward and out of the system unit.



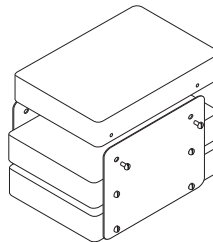
4. With the drive cage on a clean, static-free work area, remove the bottom mounting screws from the drive cage. Then remove the hard-drive assembly from the cage (the assembly can be either a single drive or two hard drives and the drive-mounting brackets).



5. If the drive-mounting brackets are currently installed, go to Step 6. Otherwise, attach the drive-mounting brackets to the primary hard drive as shown.



6. Slide the new drive into position between the brackets with the connector to the rear and install the four mounting screws (two on each side).



7. Slide the hard drive assembly into the drive cage and install the bottom mounting screws.
8. Slide the drive cage into the system unit and install the cage-retaining screws.
9. Connect the power and signal cables to the drives (the cable connectors are keyed and connect only one way).
10. Record the drive information in Appendix A, "System Records."
11. Reinstall the covers.

## Installing a Drive in an Atypical Drive Configuration

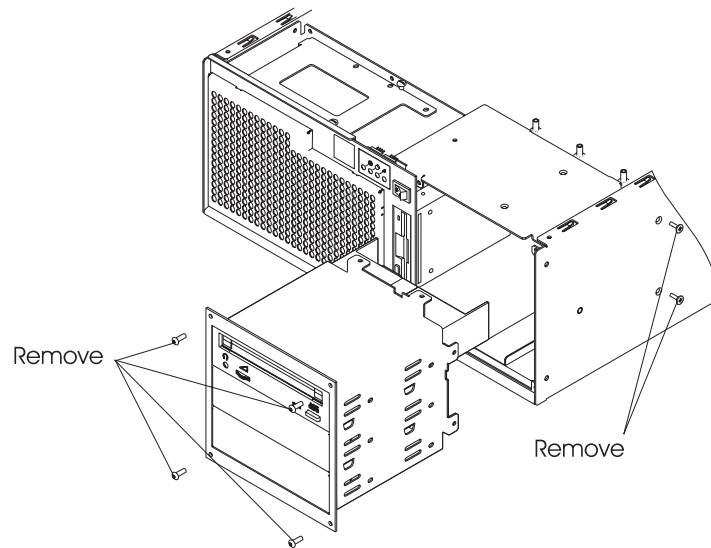
Use these instructions to install one of the following drives in the drive cage.

- A 5.25-inch hard drive
- A hard drive with the shock-mount option
- A removable-media drive

Read the instructions that came with the drive to determine any special instructions.

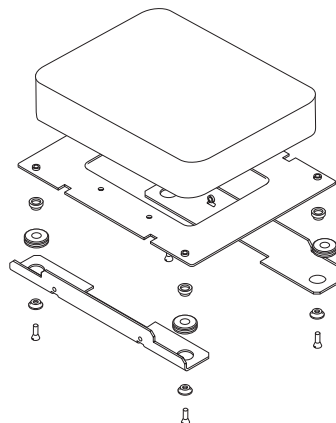
**Note:** If your hard drive cannot run in the high performance mode (the default IDE-mode selection), be sure to switch to compatible mode. See page 4-14 for information on mode selection.

1. Remove the cover (refer to page 3-3).
2. Disconnect the signal and power cables to all drives in the drive cage.
3. Remove the cage-retaining screws from the drive cage. Then slide the drive cage forward and out of the system unit.

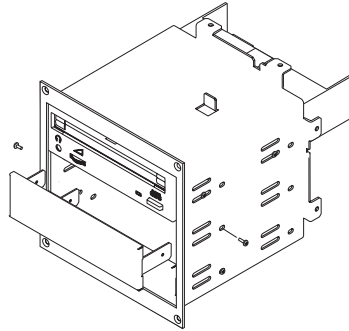


4. If you are installing a 5.25 inch hard drive, go to Step 5 on page 3-13.

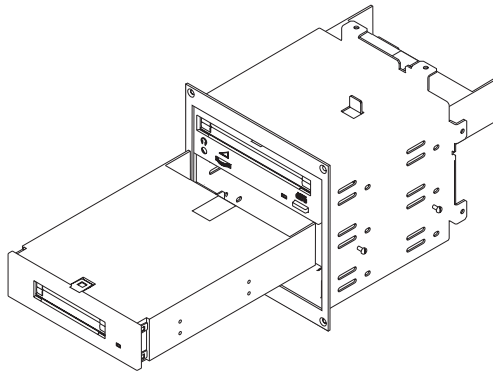
If you are installing the shock-mount option, assemble the drive and mounting as shown. Then go to Step 5 on page 3-13.



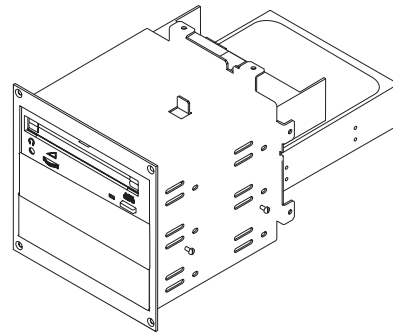
If you are installing a removable-media drive, remove the blank panel from the front of the drive bay. Then go to Step 5.



5. Slide the new drive into the bay and install the drive mounting screws. Install removable media drives through the front; install all other drives from the rear.



Removable Media Drive



All Other Drives

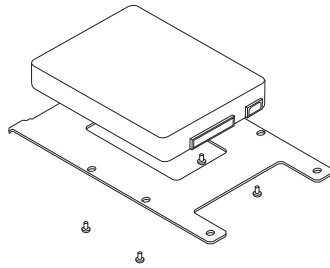
6. Slide the drive cage into the system unit and install the cage-retaining screws.
7. Connect the power and signal cables to all drives (the cable connectors are keyed and connect only one way).
8. Record the drive information in Appendix A, "System Records."
9. Reinstall the covers.

## Installing a Hard Drive in the Alternative Bay

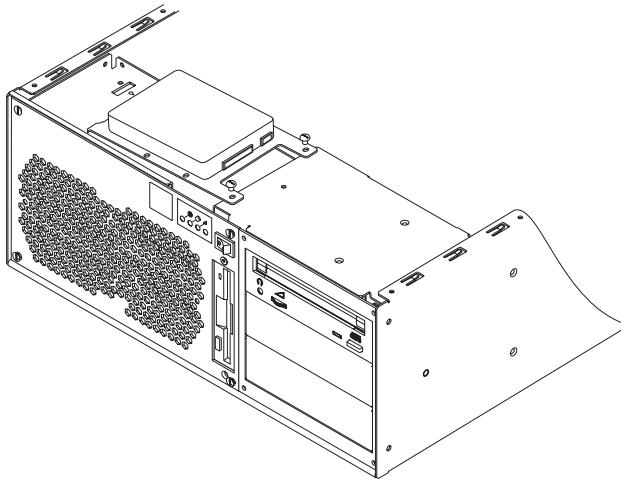
Read the instructions that came with the hard drive to determine any special instructions.

**Note:** If your hard drive cannot run in the high performance mode (the default IDE-mode selection), be sure to switch to compatible mode. See page 4-14 for information on mode selection.

1. Remove the cover (refer to page 3-3).
2. When attaching the drive-mounting brackets to the hard drive, make sure the connectors on the drive face toward the center of the system unit. The brackets are stored in the alternative drive bay.



3. Slide the tabs on the drive-mounting bracket into the slots in the drive bay. Then install the two retaining screws.



4. Connect the power and signal cables to the new drive (the cable connectors are keyed and connect only one way).
5. Record the drive information in Appendix A, "System Records."
6. Reinstall the covers.

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## Installing the Mounting Options

### **CAUTION:**

**The 7581 Computer weighs could weigh more than one person can lift comfortably. Have another person help you lift the system unit.**

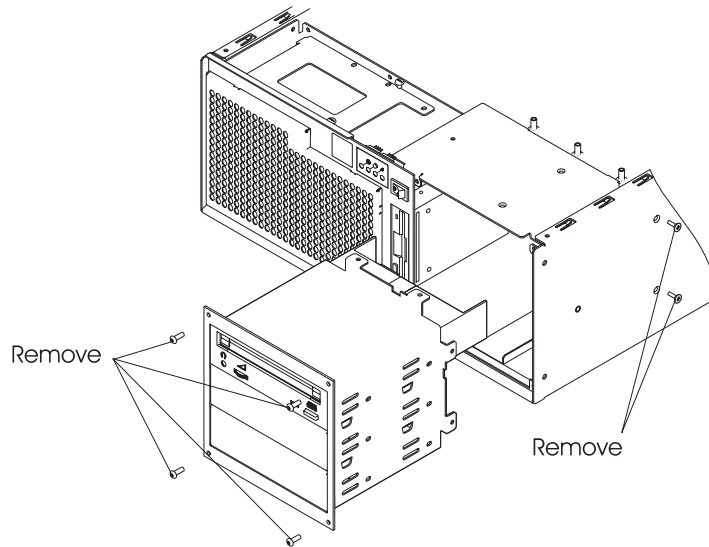
Go to the instructions for the type of hardware to install as follows:

- “Installing the Floor-Stand Option” on page 3-16
- “Installing the Rack-Mount Option” on page 3-18

After you complete this task, go to Chapter 4, “Operating and Configuring Your System Unit.”

## Installing the Floor-Stand Option

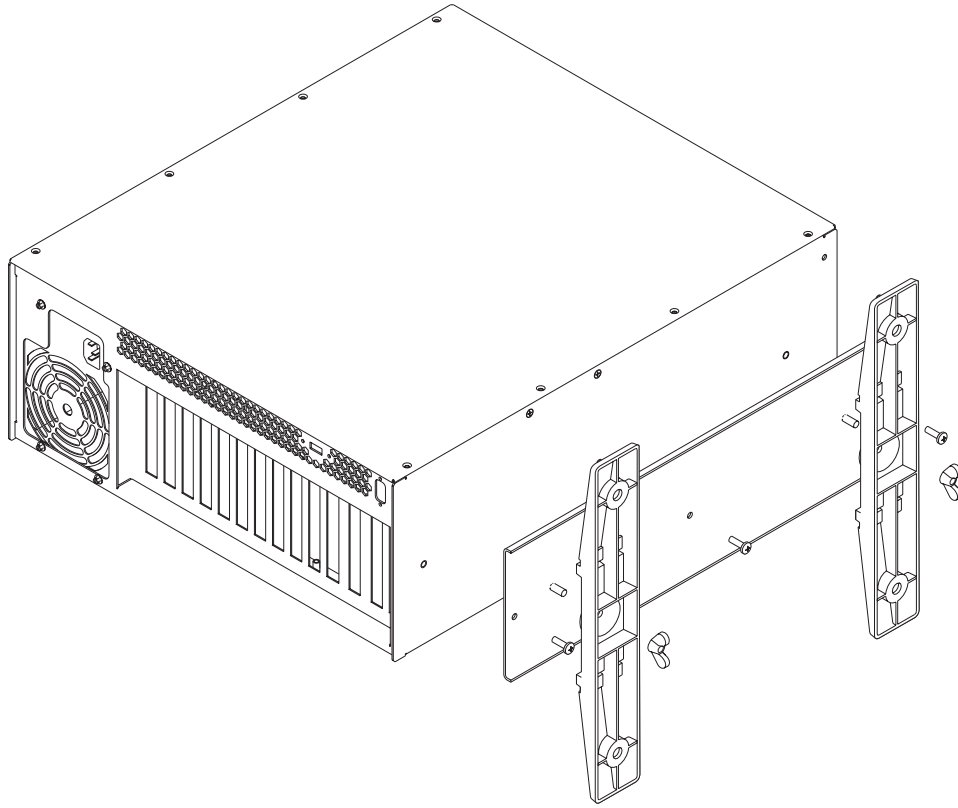
1. Remove the cover (refer to page 3-3).
2. Disconnect the signal and power cables to all drives in the drive cage.
3. Remove the cage-retaining screws for the drive cage. Then slide the drive cage forward and out of the system unit.



4. Rotate the drive cage so that the top of the cage is toward the top of the system unit when the system unit is in the upright position. Then reinstall the drive cage and connect the signal and power cables to all drives.
5. Reinstall the cover.



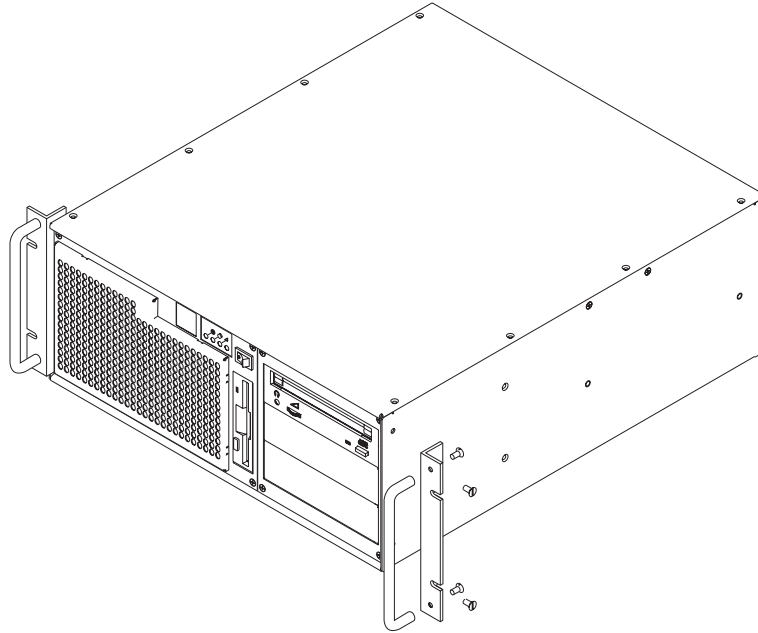
6. Assemble the floor stand by placing the feet on the base plate using the wing nuts provided. Then install the floor stand onto the system unit using the three screws supplied with the kit.



7. Make sure that the orientation of the plate centers the feet on the system unit, and then stand the unit upright.

## Installing the Rack-Mount Option

1. Assemble the handle assemblies onto the system unit as shown.



2. Install the rack-mount rails onto the system unit.

