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## Chapter 3. Installing Options

This chapter provides instructions to help you add options to your system unit. If you have several internal options to install, you should install them all at one time, while the system unit is still open. You should install all SBC options first to prevent removing newly installed adapters or drives to access the SBC.

Use the figures in "General Layout of Components" on page 1-2 to locate components. Before performing any installation procedures, be sure to read the information in "Safety Information" on page E-7 and in "Handling Electrostatic-Discharge-Sensitive Devices" on page E-12. That information will help you work more safely with your computer and options.

### CAUTION:

- **Power must always be removed before performing any removal or replacement procedures. Electrical power and any backup power source also should be disconnected. To make sure that power is off and disconnected correctly, start each removal and replacement procedure with "Switching Off Power and Disconnecting Cables."**
- **Depending on the options installed, the system unit could weigh more than one person can comfortably lift. Do not attempt to lift it by yourself; get another person to help you.**

### Attention

Whenever handling electronic components, use precautions to prevent component damage due to electrostatic discharge. See "Handling Electrostatic-Discharge-Sensitive Devices" on page E-12 for a list of those precautions.

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## Switching Off 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 data media (diskettes, optical discs, and tapes).
2. Turn off the computer and all attached devices.
3. Record the location of all cables connected to the system unit to prevent confusing them while they are unplugged.
4. If you have a modem or fax machine attached, disconnect the telephone line from the wall outlet and then from the system unit.
5. Disconnect all electrical power and any backup power source.
6. Disconnect all other cables connected to the system unit. Where applicable, unplug the cable at the receptacle end first, and then at the device end.

When reassembling the system unit, reverse these steps.

Now you are ready to proceed.

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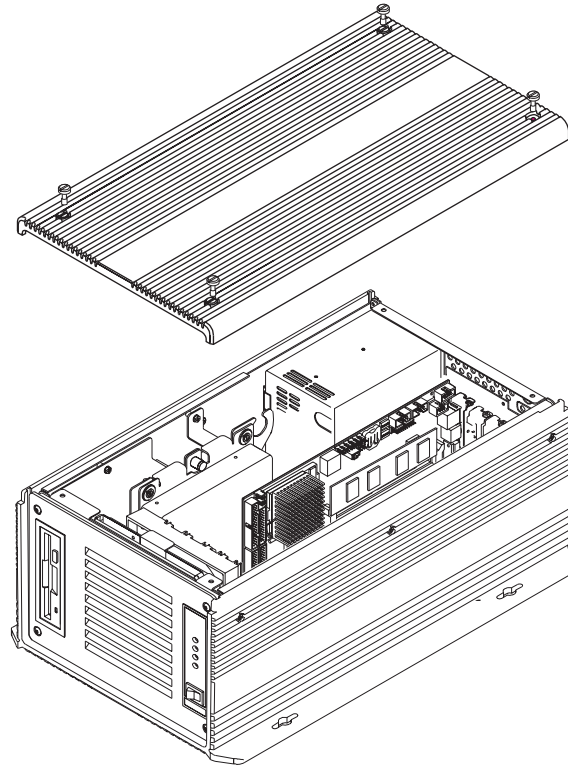
## Removing the Cover

In most cases, you do not need to remove the system unit from its mounting. If you do need to remove the unit, do so before continuing.

### **CAUTION:**

**The unit weighs 12.5 kilograms (27.5 pounds); you should not try to hold the unit while you are removing the screws. Have another person hold the unit as you remove the screws.**

To open the system unit, loosen the four cover screws and lift off the cover, as shown.



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## Installing Memory

The SBC has two memory connectors (bank 0 and bank 1). 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 either must be empty or have only a small adapter installed, or have the USB removed). The height restriction for bank 1 is 1.375 inches (34.9 millimeters). The dimension is affected by the adapter in slot 5.

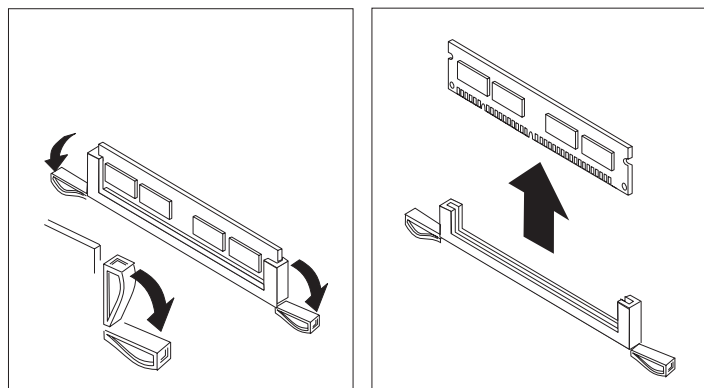
Before installing memory, use the following procedures to remove the SBC.

1. Remove the cover (refer to page 3-2).
2. 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 7-35).
3. Remove the screw that secures the SBC to the chassis.
4. Disconnect all cables from the SBC.
5. 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.)
6. Place the SBC on a flat, clean, static-free surface, with the component-side facing up and the backplane connector toward you.
7. If you are replacing the DIMM in bank 0, continue with "Installing Memory in Bank 0." If you are installing memory in bank 1, go to "Installing Memory in Bank 1" on page 3-5.

## Installing Memory in Bank 0

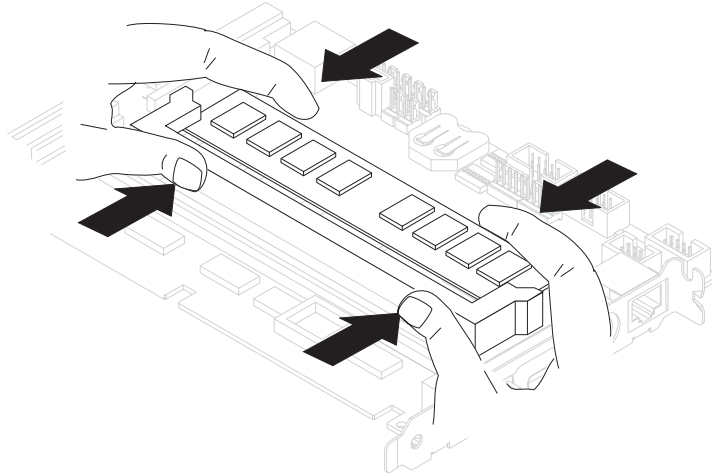
Use the following procedures to install memory in bank 0.

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.

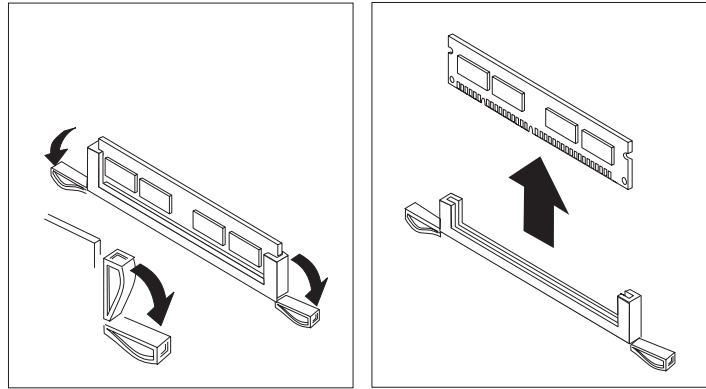


4. Record the configuration changes in Appendix A, "System Records."
5. If you are also installing memory in bank 1, continue with "Installing Memory in Bank 1." Otherwise, reinstall the SBC and reconnect all internal cables.
6. Reinstall any adapters into the same slots from which they were removed.

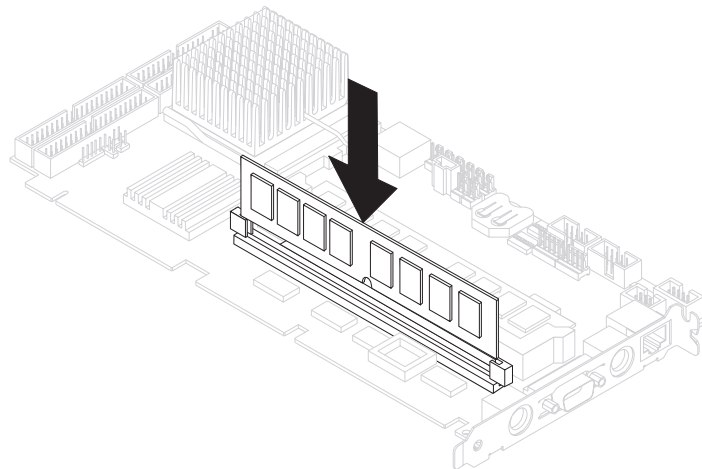
## Installing Memory in Bank 1

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 inches.



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

The 7587 Computer includes card hold-down brackets to retain adapters in their slots during shock and vibration. These brackets are designed to secure the standard sizes of cards.

Plastic spacers and rubber pads are supplied in the ship group and should be installed (see the illustration in "Top Cover" on page 8-3). There are holes in the top cover shield that correspond to the slots. The holes are numbered to match the card slots. The holes for the PCI slots are indicated with an "A."

To install an adapter, do the following:

1. Loosen the four cover screws and lift off the system unit cover.
2. Read the instructions that came with the adapter to determine if the adapter must be installed in a certain slot. If not, you can use any empty slot. Determine which empty slot you will use.
3. Record the location of any installed adapters or drives that are in the way; then remove them.
4. Read the instructions that came with the adapter to determine if you must set any switches or jumpers on the adapter.
5. Touch the static-protective bag in which the adapter was packaged to any unpainted metal surface on the system unit; then remove the adapter from the package.
6. Set any required switches, jumpers, and so forth on the adapter. Also, install any required memory modules on it.
7. 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 are shorter and do not extend to the front adapter guide.)
  - c. Firmly press the adapter into the expansion slot. Full-length adapters slide into the groove on the front adapter guide.
  - d. Install and tighten the expansion slot screw.
8. Record the type of adapter you just installed in Appendix A, "System Records."
9. 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 heights of 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 Installed	Additional Number of 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	
4.2/106.6	Yes	0	standard <i>short</i> card
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	

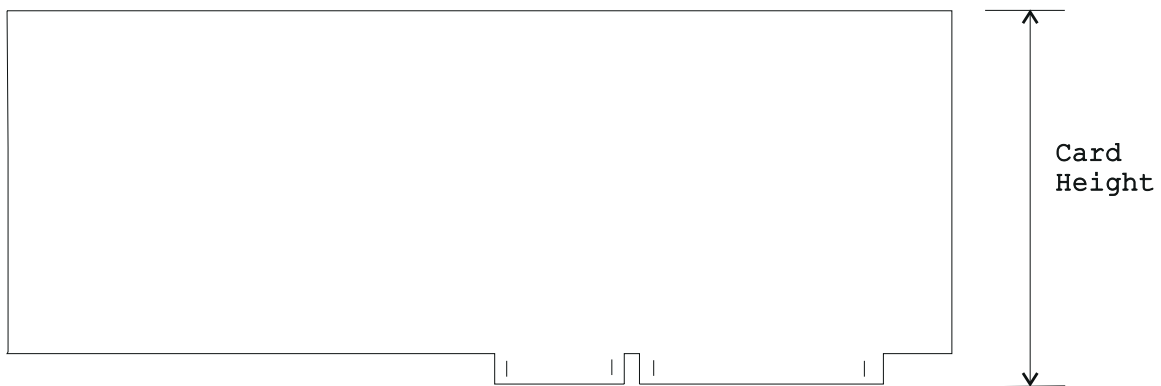
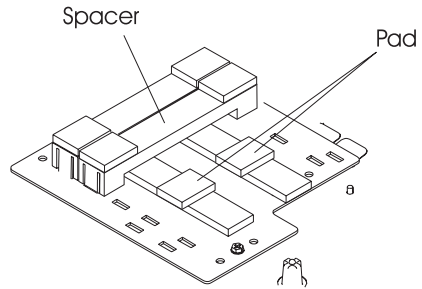


Figure 3-1. Requirements for Adapter Hold-Down Spacers

If spacers are required, continue with step 10 on page 3-8; otherwise, go to step 11.

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



11. Reinstall any adapters you removed (make sure to install them in the original locations).

12. Reinstall the card hold-down bracket and hard drive.



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## Installing an Internal Hard Drive

### Important:

Some drives do not meet the rigorous requirements for industrial-usage ratings that make up the working environment of the 7587 Computer. Before installing any drive not purchased specifically for use in a 7587 Computer, be sure the drive meets all environmental conditions to which it might be subjected.

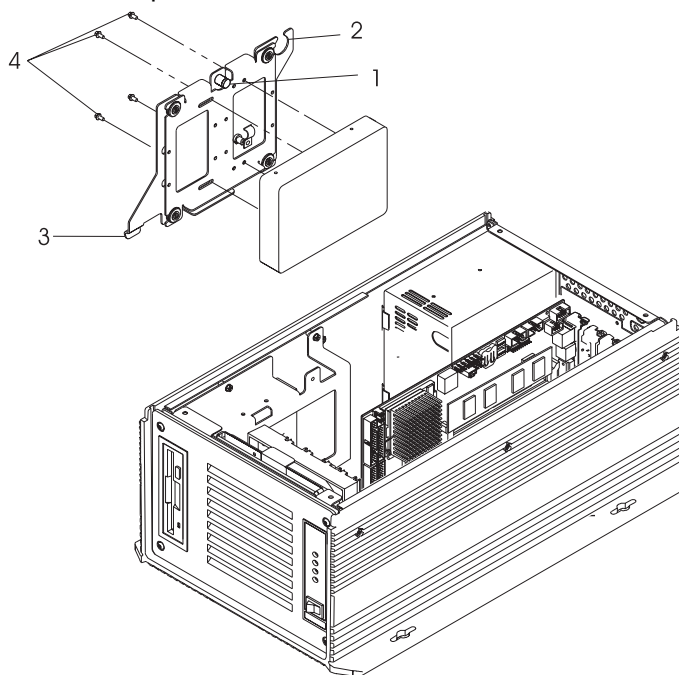
To install an internal hard drive, do the following.

1. Loosen the four cover screws and lift off the system unit cover.
2. Read the instructions that came with the drive to determine any special instructions for:
  - Installing or changing drive installation hardware
  - Setting jumpers or switches
  - Removing or installing a terminator
  - Setting a unique drive ID, for SCSI (small computer system interface) drives only.

**Note:** When you update your configuration information, as explained in “Using the Configuration/Setup Utility Program” on page 4-6, ensure that the hard disk drive you installed is included as a startup device under **Start Options** in the Configuration/Setup Utility screen; otherwise, you will not be able to boot your system unit from your hard disk.

In addition, if you find your hard disk drive is not capable of running in High Performance mode (the default mode selection for the primary and secondary IDE controllers), use the same screen to switch to Compatible mode.

3. Using the illustration, loosen the captive screw.



4. Rotate the plate to the side.
5. Lift the hard drive shock mount assembly out of the unit.
6. If a hard drive is already installed, disconnect the signal and power cables.
7. Four screws hold the hard drive to the shock mount assembly. These screws are accessible without disassembling the shock mount assembly. Use the screws supplied with the drive to mount the hard drive to the shock mount assembly, with the cables facing the rear of the unit.

8. Connect the power and signal cables to the new drive. (Cable connectors are keyed and connect only one way.)
9. Connect the 4-wire power supply cable, if required, to the drive.
10. Insert the tabs at the bottom of the shock mount assembly into the holes in the diskette bracket, and rotate the shock mount assembly into place.
11. Tighten the captive screw.
12. Reinstall the cover.
13. Record the type of drive you just installed in Appendix A, "System Records."