Silicon Graphics® 230 Visual Workstation User's Guide

This device has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This device generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

For additional Regulatory Information, refer to the label attached to the back of the system.

Record of Revision

Version	Description
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About This Guide

This guide provides information on using and administering a Silicon Graphics 230 Visual Workstation.

The following topics are covered in this manual:

- Chapter 1, "System Setup," describes how to prepare the system for installation and how to connect it to its peripheral devices.

- Chapter 2, "Installation of Customer Replaceable Components," describes how to install customer replaceable components. This includes the removal and replacement of drives, the power supply, the fans, expansion cards, the system board, and the I/O gasket.

- Chapter 3, "System Board," describes the system board and all its major components. It contains the system board layout, jumper settings, cache and memory configurations, and information on other internal devices.

- Chapter 4, "Setup Utility," gives information about the system BIOS and tells how to configure the system by changing the settings of the BIOS parameters.

- Appendix A, "Connector Pinouts," contains port pinout information for the rear panel ports.

- Appendix B, "Physical Environment Specifications," details the physical environment specifications for the Silicon Graphics 230 Visual Workstation system.

- Appendix C, "Regulatory Information," provides regulatory information.

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System Setup

This chapter details the steps required to install a Silicon Graphics 230 Visual Workstation. It describes how to prepare the system for installation and how to connect it to its peripheral devices. It also provides a general description of the external and internal structure of the Silicon Graphics 230 Visual Workstation.

External Structure

This section describes the external features of the system housing (the front bezel and the rear panel).

- Front Bezel

  As illustrated in Figure 1-1, the floppy drive and up to three 5.25-inch devices are accessible from the front panel. The top 5.25-inch drive bay is occupied by a CD-ROM drive. The power switch, the reset button, and the floppy disk eject button are also located on the front bezel.
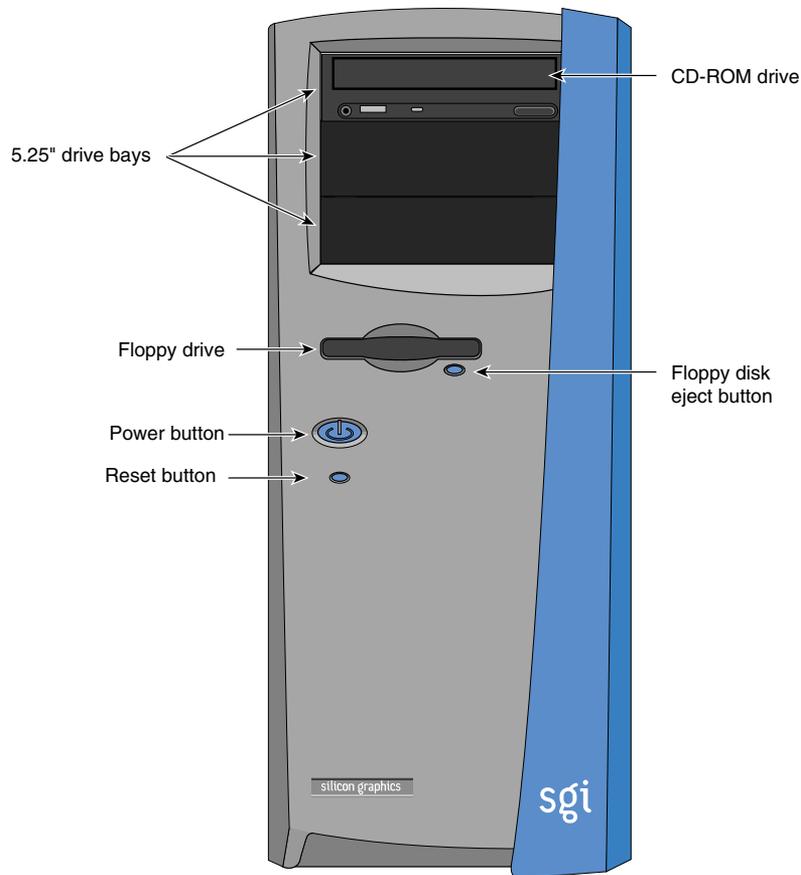
Figure 1-1   Front Bezel

• Rear Panel

As shown in Figure 1-2, the rear panel includes the AC power input socket, the rear system fans, six expansion slots, and the I/O panel. Figure 1-3 shows a detailed view of the I/O panel.
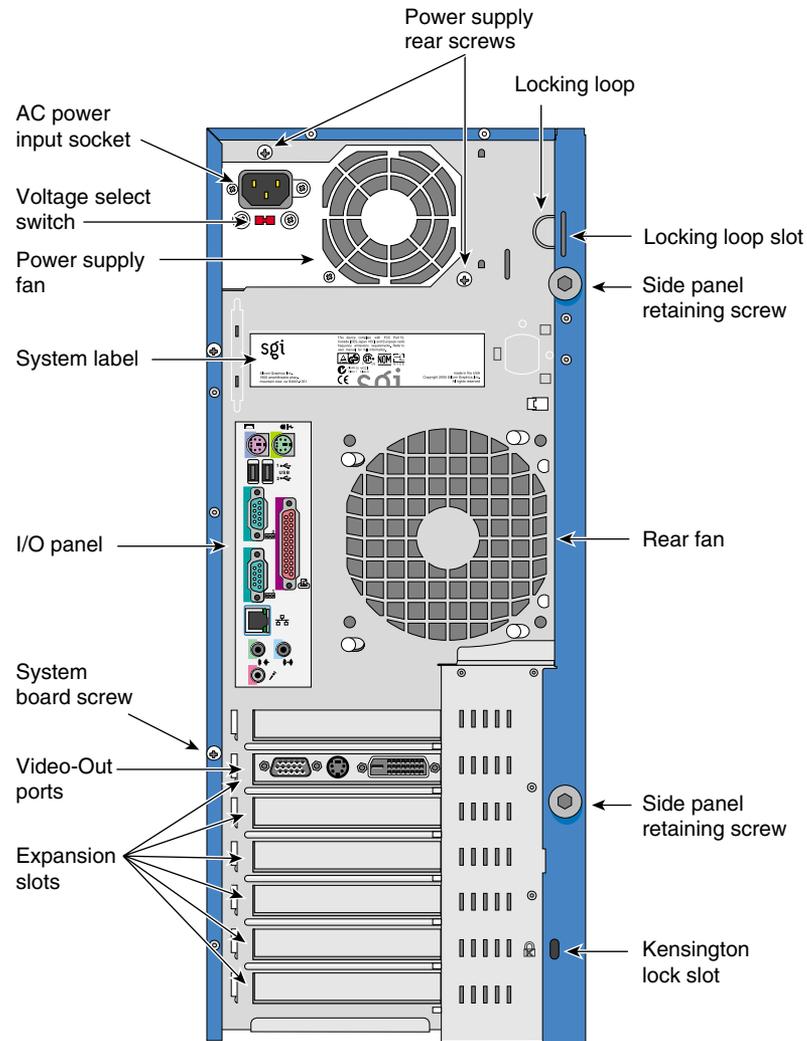
Figure 1-2   Rear Panel
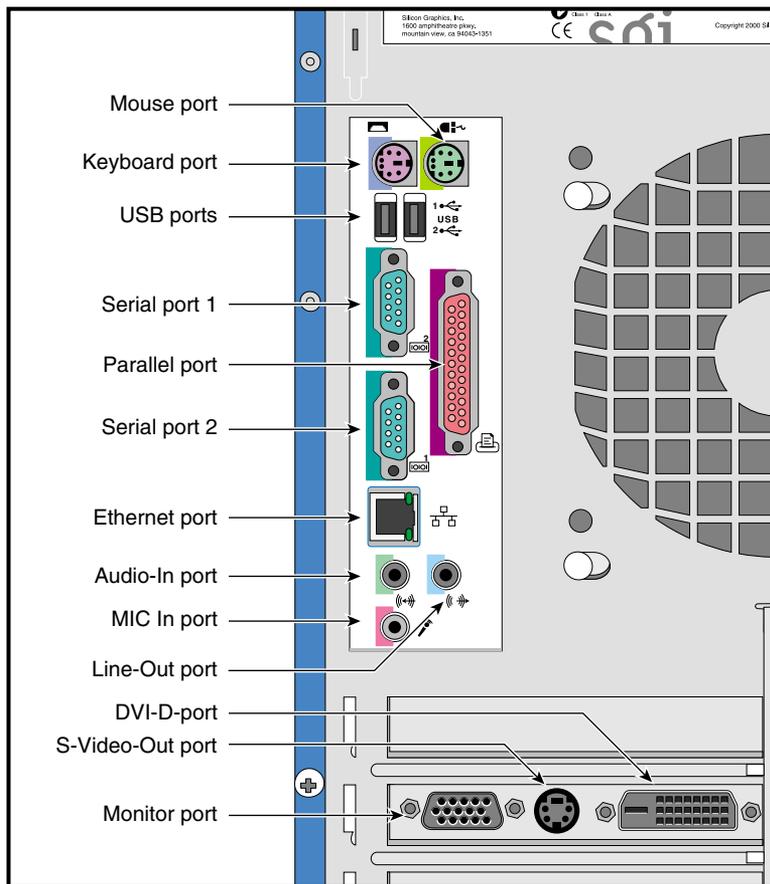
Figure 1-3   I/O Ports

Internal Structure

This section describes the location of the main components inside the Silicon Graphics 230 Visual Workstation chassis as illustrated in Figure 1-4.

Power supply

Tamper switch

CPU

Rear fan

AGP 4X slot

PCI slots

Memory sockets

System disk

Front fan
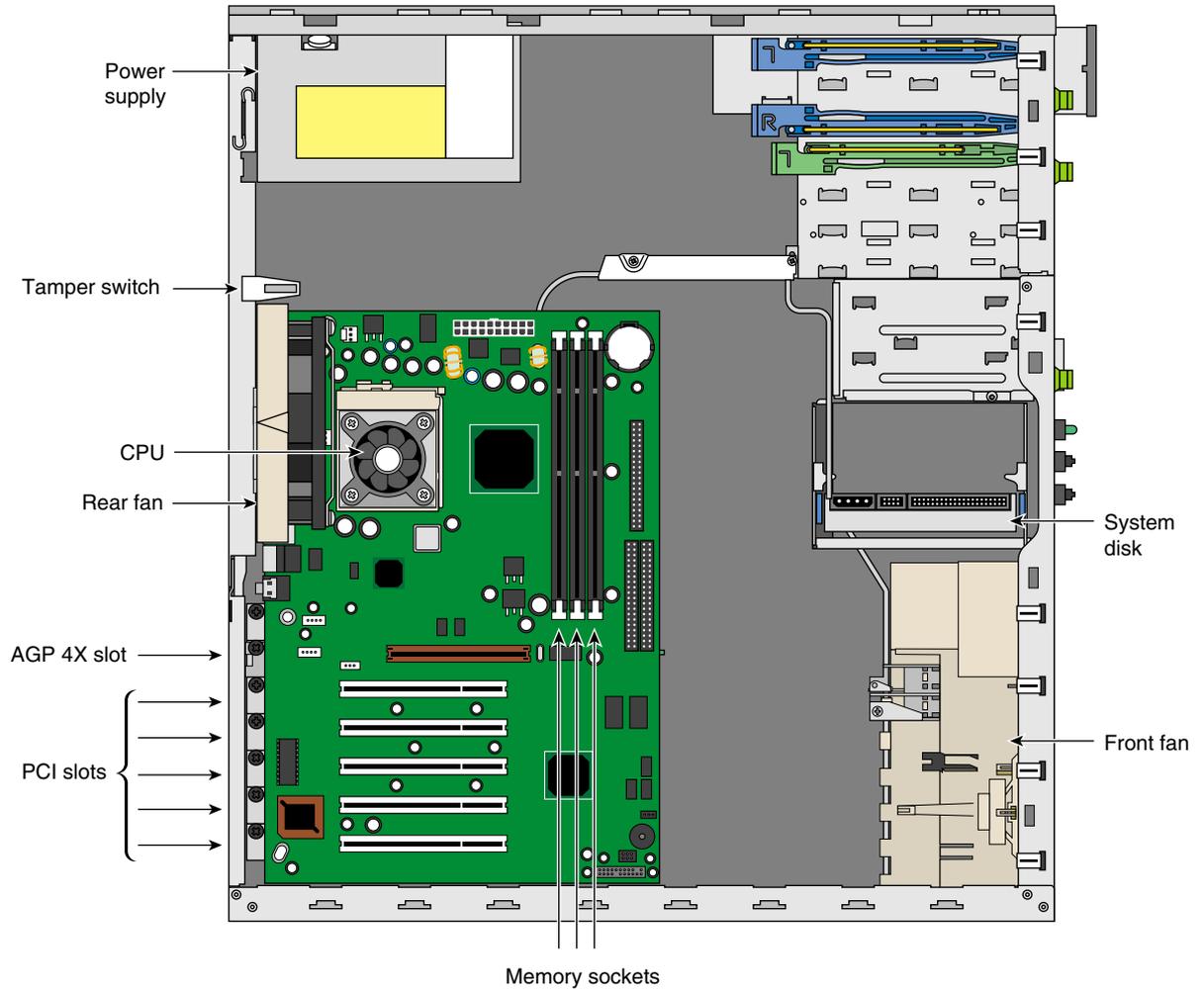
Figure 1-4   Internal Structure

- The Silicon Graphics 230 Visual Workstation has three 5.25-inch and four 3.5-inch drive bays, as shown in Figure 1-5. All three 5.25-inch drive bays are externally accessible from the front panel. Two of the 3.25-inch drive bays are located on the front panel—the other two are housed and accessible inside the chassis.

- The Silicon Graphics 230 Visual Workstation is cooled by three fans—one front system fan and two rear system fans (see Figure 1-4). The front fan pulls the cool air into the chassis, while the two rear fans pull the warm air out of the chassis. One rear fan is located on the rear panel; the other rear fan is located in the power supply.

- The power supply is switch-selectable for 110V versus 220V AC power. The power supply converts AC power to DC voltages which are used by the system board, the fans, and the 3.5-inch and 5.25-inch drives. It is located above the system board on the rear panel.

- The system board is mounted parallel to the right side panel using a one-screw mounting system (see Figure 1-2 for the location of the system board screw). For an overview of the system board and its components, see Chapter 3.

5.25" drive bay
(CD-ROM drive installed)

5.25" drive bay

5.25" drive bay

3.5" drive bay

3.5" drive bay
(floppy disk drive
installed)

Internal 3.5"
drive slot

Internal 3.5"
drive bay
(hard disk drive installed)
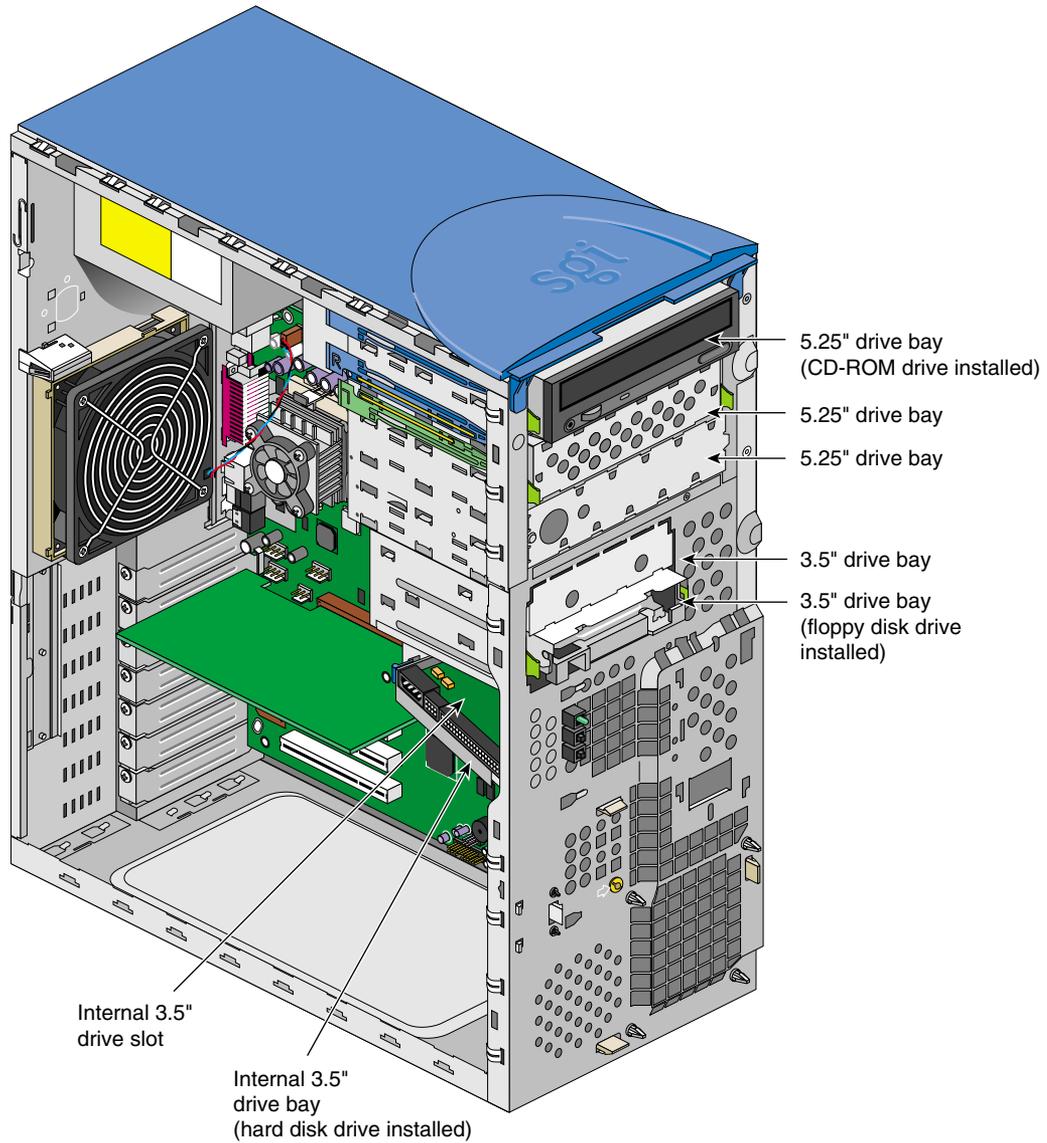
Figure 1-5   5.25-inch and 3.5-inch Drive Bays

Pre-installation Instructions

Before proceeding with the installation, select a suitable site that will allow for continued maximum performance of the unit, and for easy access to its components.

Consider the following questions before selecting a site for the system:

- Will the intended location allow for convenient access to areas of routine procedures, such as the power switch, the drive bays, and the rear panel connectors?

- Is the intended location free of dust, spills, or any other condition inappropriate for a high-performance computing system?

- Will the system be stable and free from vibration?

- Is the intended location well-ventilated and away from any source of heat? For the cooling system to perform properly, it is essential that the system be located in an area where airflow is unrestricted. Refer to Appendix B, "Physical Environment Specifications" for physical environment specifications.

Connecting External Devices

Follow the instructions in this section to connect the system to the power source and to its external peripheral devices.

1.   Connect the AC power cable to the system as shown in Figure 1-6.

Caution: The power supply is switch-selectable for 110V or 220V AC power. Verify the voltage setting before plugging in the power cord.
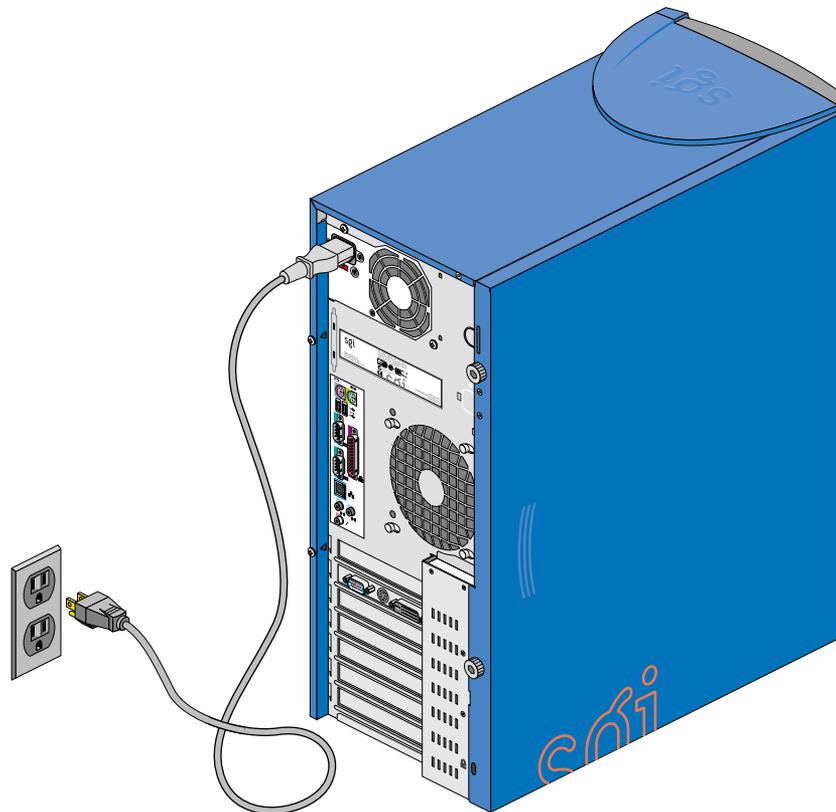
Figure 1-6   Connecting AC Power Cable

2. Connect the keyboard and mouse to the system as shown in Figure 1-7.

3. Connect the Ethernet cable to the system as shown in Figure 1-7. The built-in Ethernet port is designed for use with 10-Base-T or 100-Base-TX Ethernet networks and will automatically switch to the proper speed.
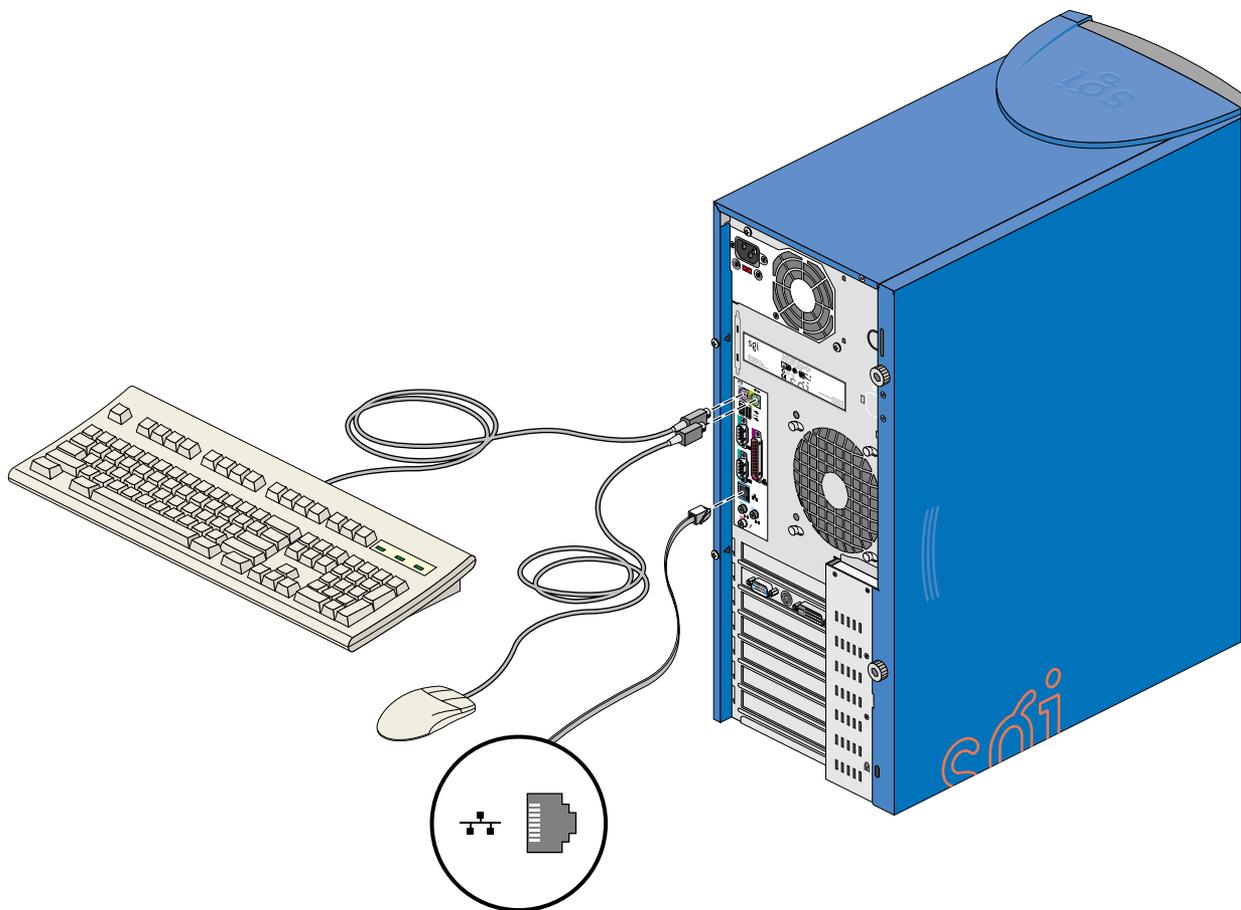
Figure 1-7   Connecting Keyboard, Mouse, and Ethernet Cable

4. Connect a DB15 HD video cable to the system as shown in Figure 1-8.

5. Connect the monitor to the power source as shown in Figure 1-8.
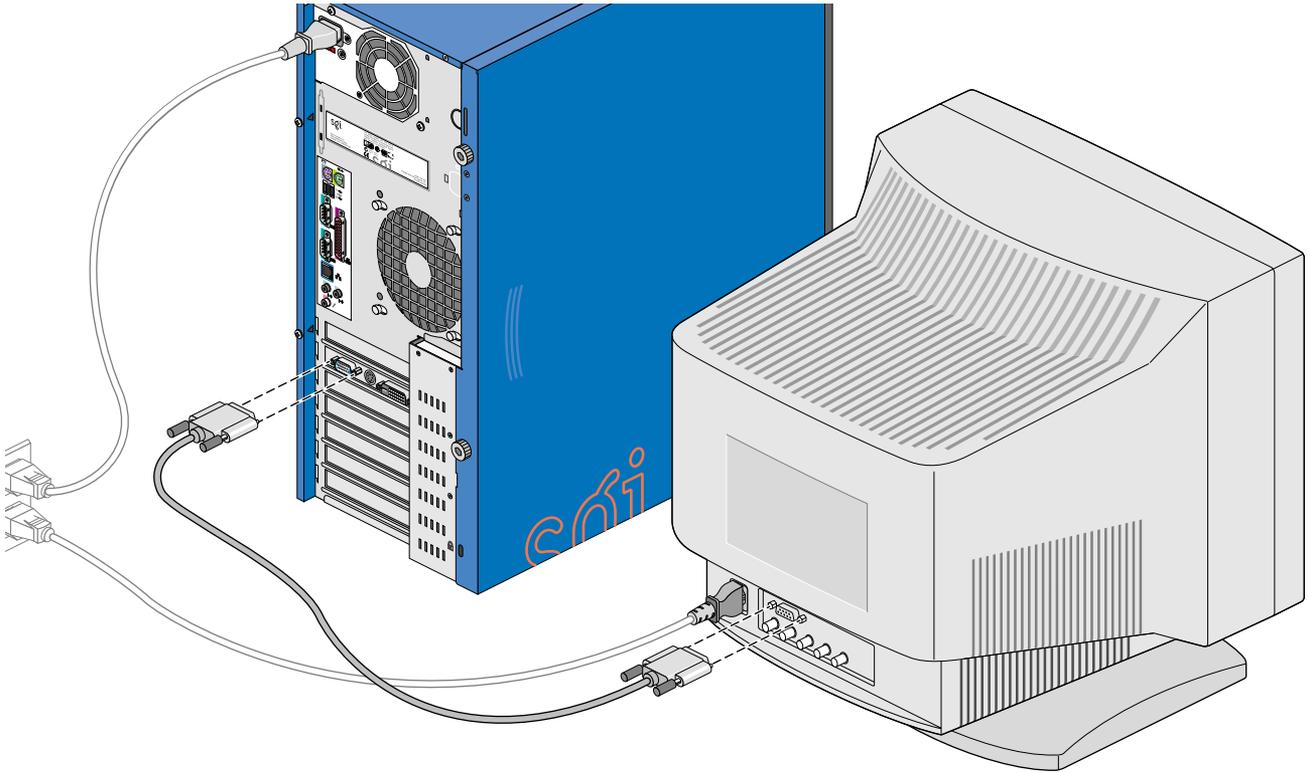
Figure 1-8   Connecting DB15 HD Video Cable

6. Follow these directions to connect speakers to the system. Figure 1-9 illustrates the procedure:

Note: Speakers on your Silicon Graphics 230 Visual Workstation may be an optional feature.

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a. Read the operating precautions in the Speaker Installation Guide before connecting the speakers to the system.

b. Connect the power cable to the right speaker (the speaker with control buttons and four ports).

c. Connect the right speaker to the system by plugging the cable into the system line-out port and the speaker input signal port. Refer to Figure 1-10 for the location of the line-out port.

d. Connect the right speaker to the left speaker, as shown in Figure 1-9.

e. Plug the speaker power supply into an AC power outlet.
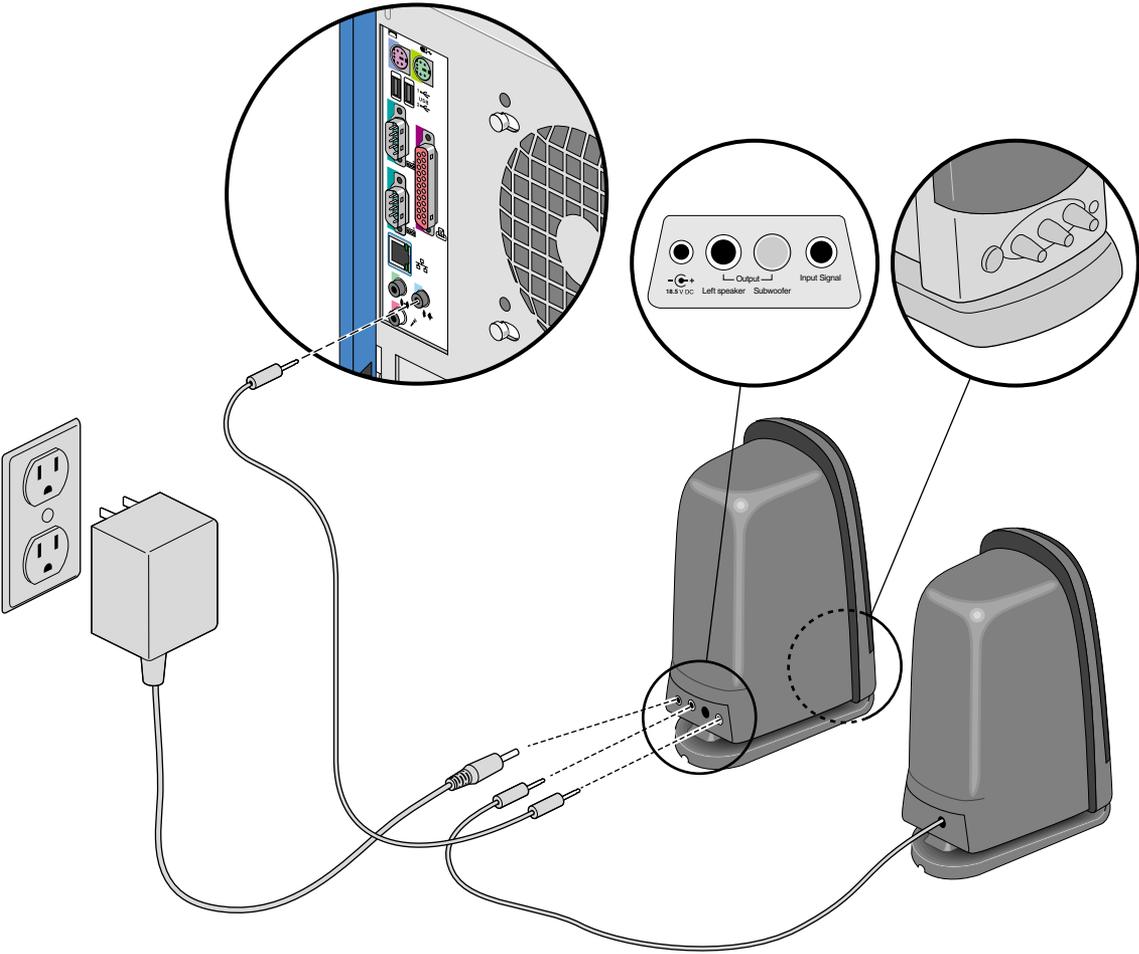
Figure 1-9   Connecting Speakers

7. Connect other external devices to their respective ports. Refer to Figure 1-10 for a detailed view of the I/O panel.
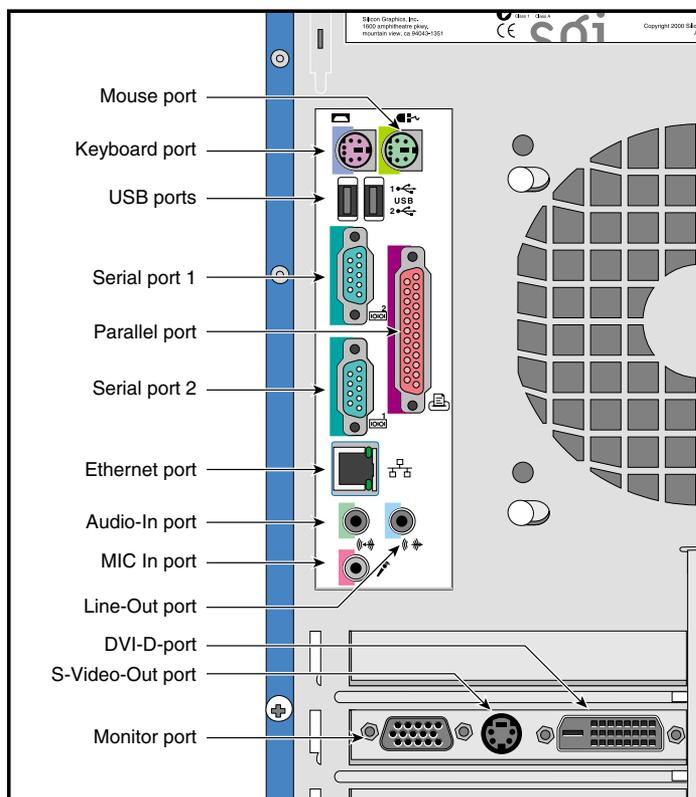
Figure 1-10   I/O Panel

8. To turn on the system, press the power switch on the front panel (see Figure 1-1).

Installation of Customer Replaceable Components

This chapter describes how to install customer replaceable components. This includes the removal and replacement of 3.5-inch and 5.25-inch drives, the power supply, the fans, expansion cards, the system board, and the I/O gasket. A description of the steps to be taken to prepare the system for installation is provided first. The installation of memory modules and a CPU is described in Chapter 3.

Pre-installation Instructions

The following steps describe how to prepare the system for the removal and installation of customer replaceable components:

1. Turn off the system before opening the side panel.

2. Unplug the AC power cable from the wall socket and from the power supply.

3. Follow these instructions to remove the side panel, as shown in Figure 2-1:

    a. Unscrew the two thumbscrews on the back of the case.

    b. Slide the panel toward the rear of the chassis.

    c. Lift the panel up and away from the chassis.
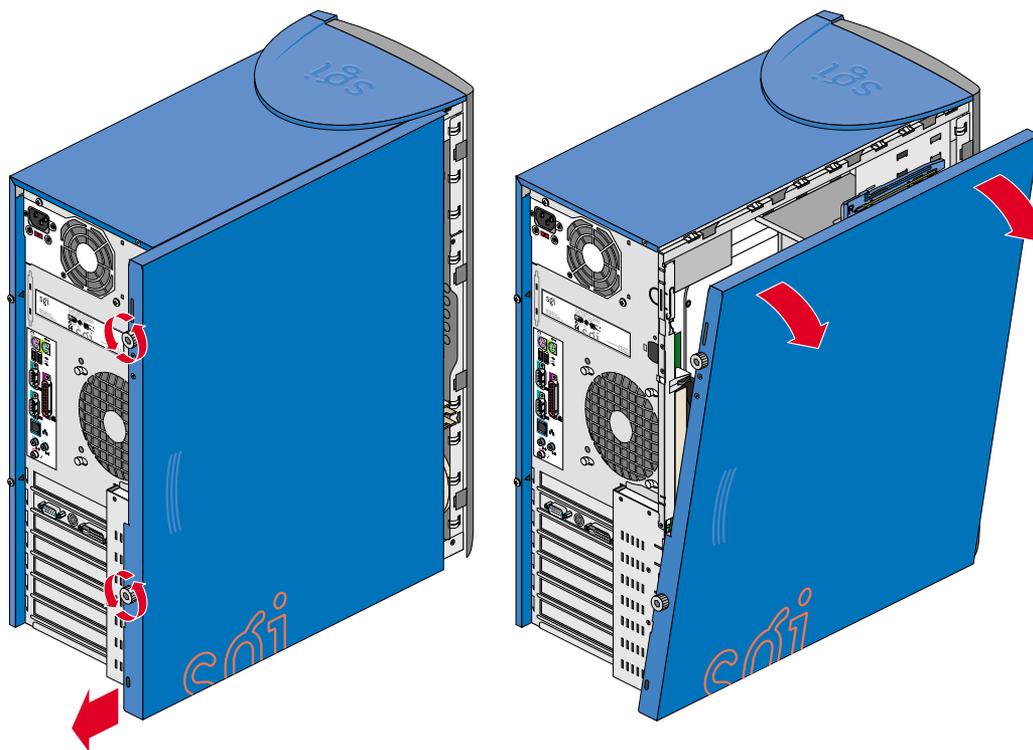
Figure 2-1   Removing Side Panel

4. If you will need access to the front panel drives, you will have to remove the bezel. Follow these instructions if you need to remove the bezel:

   a. Remove the side panel as explained in Step 3.

   b. Release the four tabs on the side of the bezel by gently lifting them out of the chassis while at the same time pulling the bezel away from the system. Figure 2-2 illustrates the procedure.

   c. After the four tabs are released, rotate the bezel away from the chassis.
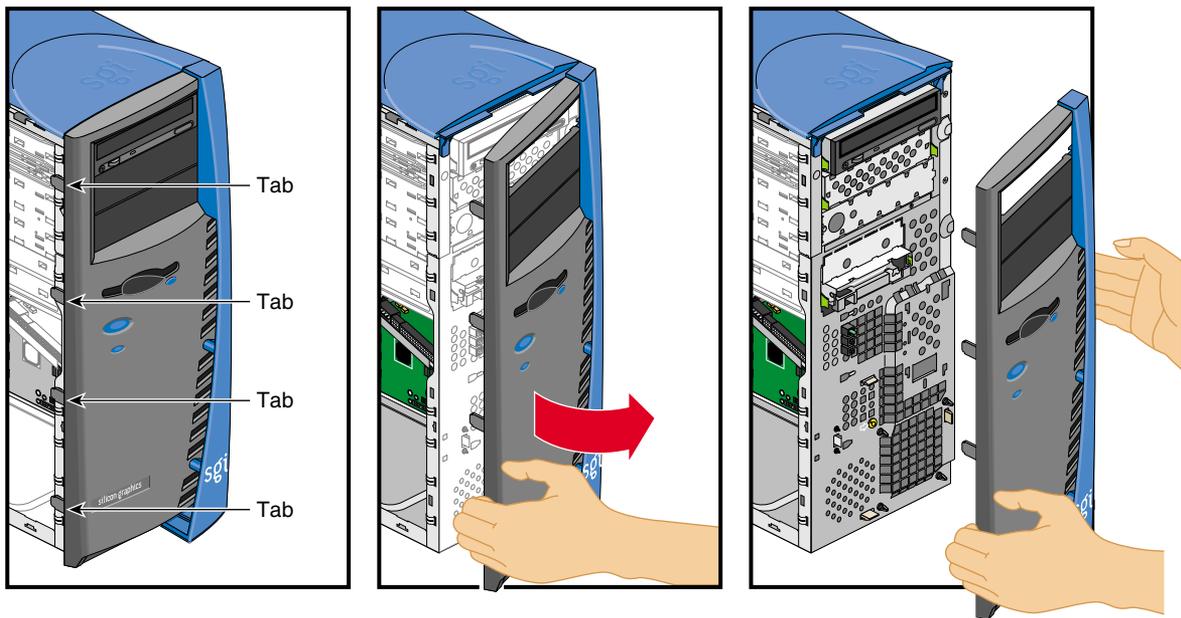
Figure 2-2   Removing Bezel

Removing and Installing Drives

This section covers the removal and installation of 5.25-inch and 3.5-inch drives in the drive bays.

Removing and Installing a 5.25-inch Drive

The following instructions describe how to remove 5.25-inch drives:

1. Remove the side panel and the bezel as described in "Pre-installation Instructions" on page 16.

2. Disconnect all cables from the rear of the drive to be removed.

3. To remove the drive from a drive bay, press the drive rail plastic release tabs on both sides of the drive and pull the drive out of the chassis. Figure 2-6 on page 22 illustrates the procedure (Figure 2-6 illustrates removal of a 3/5-inch drive, but the removal of 5.25-inch is similar).

4. To remove a drive rail from the drive, pull the rail away from the drive by lifting one end of the rail.

Any empty 5.25-inch drive bays should be covered with a drive filler plate. The following instructions describe how to remove and install 5.25-inch drive bay filler plates:

- To remove a drive filler plate, insert a finger into the hole on the filler plate and pull it out of the chassis.

- To install a drive filler plate in an empty drive, insert and push the filler plate into the drive bay until the drive filler plate snaps into place.

The following instructions describe how to install 5.25-inch drives:

1. All drives are mounted on snap-on drive rails. The Silicon Graphics 230 Visual Workstation comes with two sets of spare 5.25-inch drive rails. The spare drive rails are located inside the chassis on the side of the 5.25-inch drive bays.

2. The drive rails for the 5.25-inch drives are interchangeable—they do not have 'R' or 'L' markings that indicate which side they have to be mounted on. Any unmarked drive rail can be mounted on either side of the drive.

3. To mount a drive rail to the drive, place one end of the drive rail wire clip into its drive screw hole. Gently push on the middle of the drive rail until the other end of the wire clip snaps into its screw hole. Figure 2-3 illustrates the procedure.
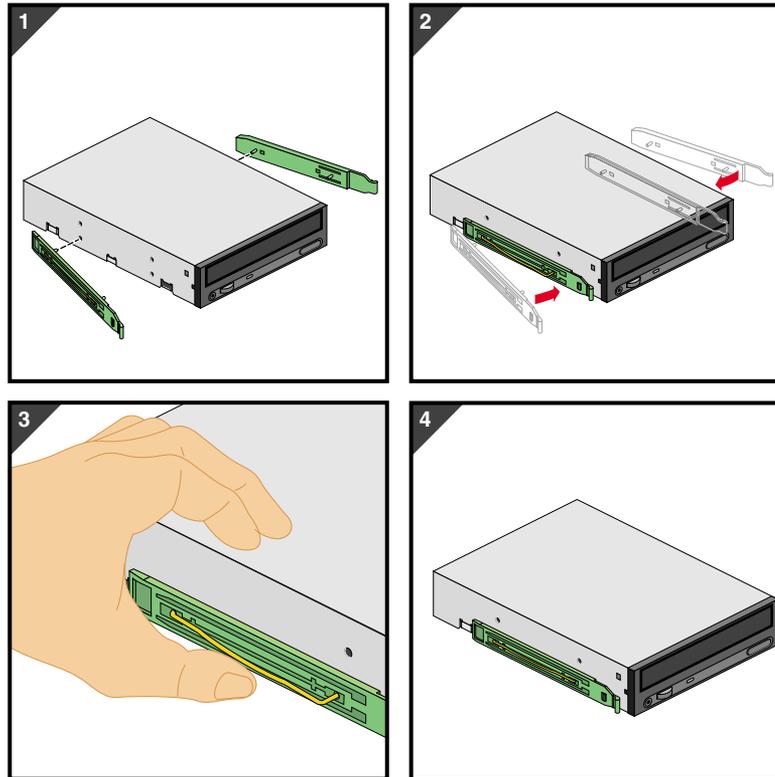
Figure 2-3   Mounting Drive Rails to 5.25-inch Drives

4. To mount a 5.25-inch drive in the drive cage, place the drive in the selected drive bay and slide the drive into the bay until the rails snap into place.

5. Connect cables to the drive.

6. The Silicon Graphics 230 Visual Workstation comes with two plastic blanking plates installed on the bezel. The following directions show how to remove and install the bezel blanking plates:

    •   To remove a blanking plate, push on the release mechanism at one end of the blanking plate and pull the blanking plate out of the bezel. Figure 2-4 illustrates the procedure.
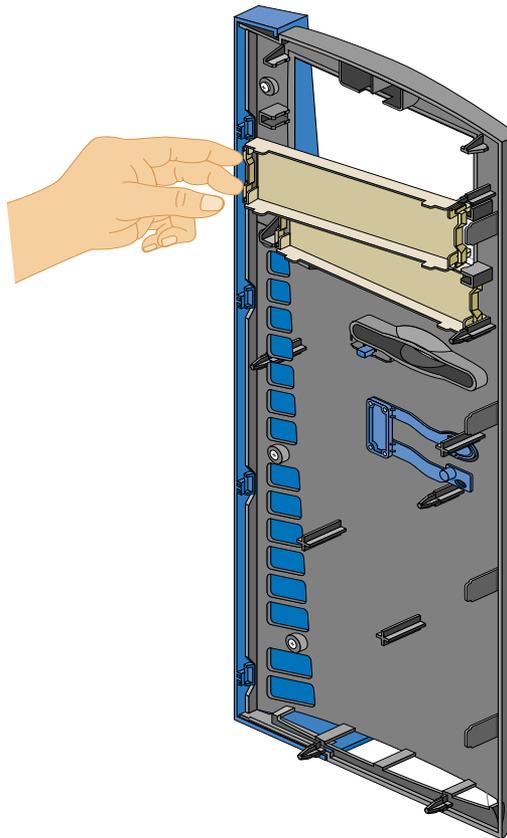
Figure 2-4   Removing Bezel Blanking Plate

- To install a blanking plate, insert one end of the blanking plate into its retaining notches, then push the other end until it snaps into place. See Figure 2-5 for an illustration of the procedure.
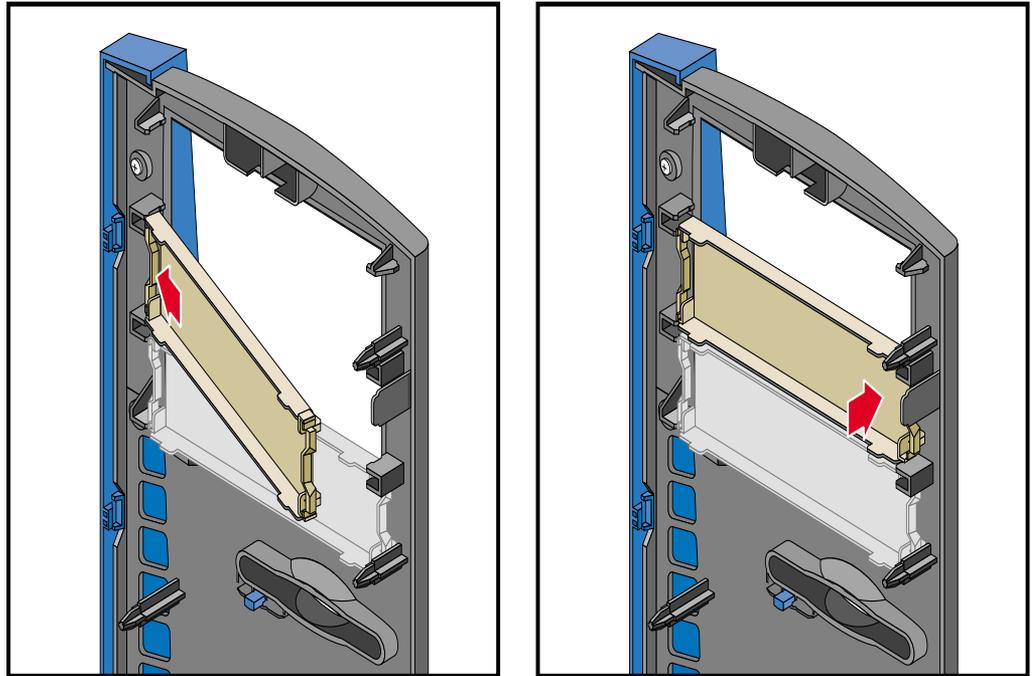
Figure 2-5   Installing Bezel Blanking Plate

7. Replace the bezel and the side panel as described in "Post-installation Instructions" on page 54.

Removing and Installing a 3.5-inch Drive in the Front-Access Drive Cage

The following instructions describe how to remove 3.5-inch drives from the front-access drive cage:

1. Remove the side panel and the bezel as described in "Pre-installation Instructions" on page 16.

2. Disconnect all cables from the rear of the drive to be removed.

3. To remove the 3.5-inch drive from a drive bay, press the drive rail plastic release tabs on both sides of the drive and pull the drive out of the chassis. Figure 2-6 illustrates the procedure.
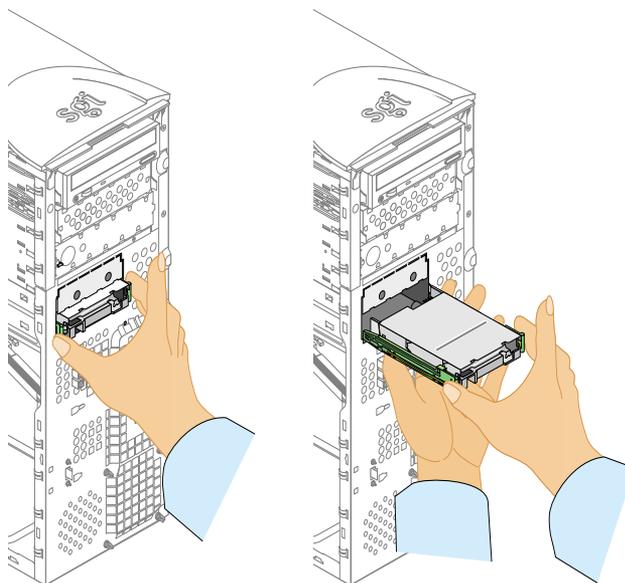
Figure 2-6   Removing Drive from Drive Bay

4. To remove a drive rail from the drive, pull the rail away from the drive by lifting one end of the rail.

The upper 3.5-inch front access drive bay is covered with a detachable filler plate. Follow these instructions to detach the filler plate:

Note: Once removed, the filler plate cannot be re-installed.

- The lower 3.5-inch drive bay needs to be empty to proceed with the removal of the filler plate; refer to the above instructions to remove the 3.5-inch drive from the front-access bay.

- Hold the filler plate by its lower side and pull it. The action of pulling the filler plate will break its connections to the chassis. See Figure 2-7 for an illustration of the procedure.
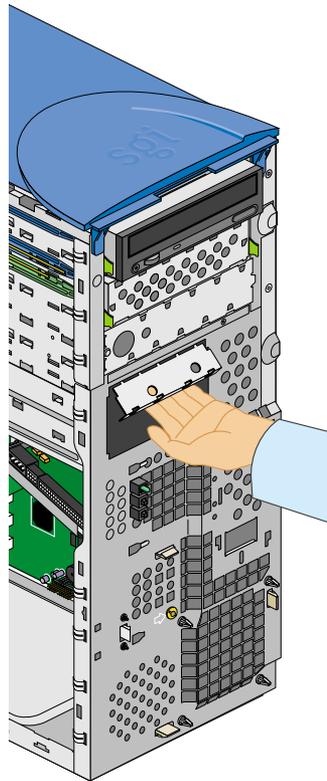
Figure 2-7   Detaching 3.5-inch Drive Filler Plate

The following instructions describe how to install 3.5-inch drives in the front-access drive cage:

Note: Use of 10,000 RPM drives in the front-access drive cage is not recommended.

---

1. All drives are mounted on snap-on drive rails. The Silicon Graphics 230 Visual Workstation comes with two sets of spare 3.5-inch drive rails. One set of spare 3.5-inch drive rails is located inside the chassis on the side of the 5.25-inch drive bays. The other set is located inside a plastic bag attached to the side panel.

2. There are two different sets of drive rails for 3.5-inch drives. The difference between the two sets is the distance between the wire clips. To choose which drive rail fits on your drive, place the drive rail wire clips next to the drive screw holes and verify that the distance between the wire clips is the same as the distance between the two screw holes. If the distance is the same, the drive rail is the correct one.

3. The drive rails for the 3.5-inch drives are not interchangeable. They have 'R' or 'L' markings that indicate which side they have to be mounted on. Before mounting the rails to the drive, check to be sure the rail marked 'L' is on the left side of the drive and the rail marked 'R' is on the right side of the drive, as shown in Figure 2-8.

4. To mount a drive rail to the drive, place one end of the drive rail wire clip into its drive screw hole. Gently push on the middle of the drive rail until the other end of the wire clip snaps into its screw hole. Figure 2-8 illustrates the procedure.
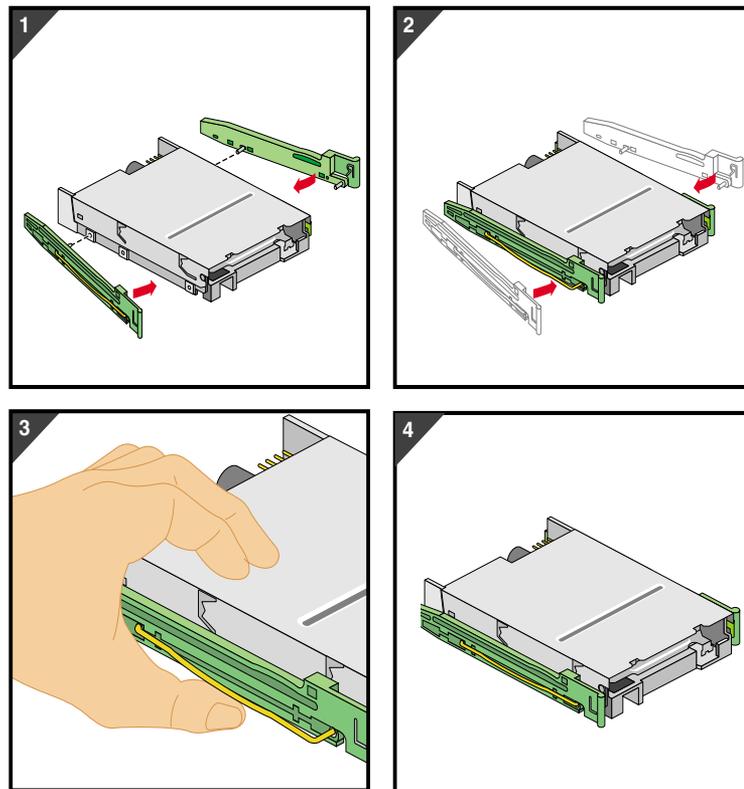
Figure 2-8   Mounting Drive Rails to 3.5-inch drives

5. To mount a 3.5-inch drive in the front-access drive cage, place the drive in the selected drive bay and slide the drive into the bay until the rails snap into place.

Note: For a drive to be correctly mounted in the front-access drive cage, it must be installed right side up.

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6. Connect cables to the drive.

7. Replace the bezel and the side panel as described in "Post-installation Instructions" on page 54.

Removing and Installing a 3.5-inch Drive in the Internal Drive Cage

The following instructions describe how to remove 3.5-inch drives from the internal drive cage:

1. Remove the side panel as described in "Pre-installation Instructions" on page 16.

2. Disconnect all cables from the drive to be removed.

3. To remove the drive from a drive bay, press the drive rail plastic release tabs on both sides of the drive and pull the drive out of the chassis. If the drive is hard to pull out, you can facilitate the removal by gently pushing the drive from behind.

4. To remove a drive rail from the drive, pull the rail away from the drive by lifting one end of the rail.

The following instructions describe how to install 3.5-inch drives in the internal drive cage:

Note: Only low-profile (i.e., one-inch) drives can be mounted in the internal drive cage.

1. All drives are mounted on snap-on drive rails. The Silicon Graphics 230 Visual Workstation comes with two sets of spare 3.5-inch drive rails. One set of spare 3.5-inch drive rails is located inside the chassis on the side of the 5.25-inch drive bays. The other set is located inside a plastic bag attached to the side panel.

2. There are two different sets of drive rails for 3.5-inch drives. The difference between the two sets is the distance between the wire clips. To choose which drive rail fits your drive, place the drive rail wire clips next to the drive screw holes and verify that the distance between the wire clips is the same as the distance between the two screw holes. If the distance is the same, the drive rail is the correct one.

3. The drive rails for the 3.5-inch drives are not interchangeable. They have 'R' or 'L' markings that indicate which side they have to be mounted on. Before mounting the rails to the drive, check to be sure the rail marked 'L' is on the left side of the drive and the rail marked 'R' is on the right side of the drive, as shown in Figure 2-8.

4. To mount a drive rail to the drive, place one end of the drive rail wire clip into its drive screw hole. Gently push on the middle of the drive rail until the other end of the wire clip snaps into its screw hole. Make sure that the connectors face out. Figure 2-8 illustrates the procedure.

5. To mount a 3.5-inch drive in the internal drive cage, place the drive upside down in the selected drive bay and slide the drive into the bay until the rails snap into place. Figure 2-9 shows how to install the drive correctly.

    Caution: For a drive to be correctly mounted in the internal drive cage, it must be installed upside down.

NOTE
Internal 3.5"
drives install
upside down

Connectors
face out
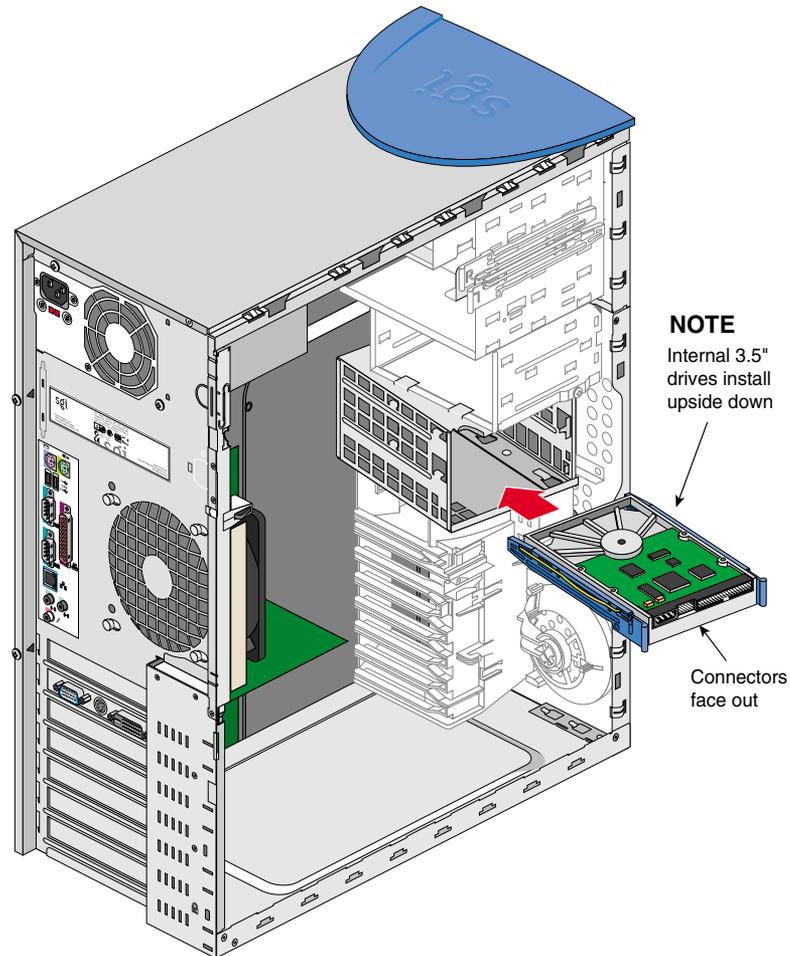
Figure 2-9   Mounting Drives in the Internal Drive Cage

6. Connect cables to the drive.

7. Replace the side panel as described in "Post-installation Instructions" on page 54.

Replacing the Power Supply

Follow the instructions in this section to remove and replace the power supply.

Warning: **Do not open the power supply. Even when unplugged, it may contain dangerous voltages. There are no user-serviceable parts inside.**

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1. Unplug the AC power cable from the wall socket and from the power supply.

2. See "Pre-installation Instructions" on page 16 to remove the side panel.

3. Disconnect all the power supply cables from the system board, the 3.5-inch drives and the 5.25-inch drives. See Figure 2-11 on page 31 for the location of the cable connections.

4. Remove the two screws located on the rear panel. Figure 1-2 on page 3 shows the location of the two screws.

5. In order to gain easier access to the power supply, place the system on its right side on a padded surface so as not to scratch the system.

6. Remove the screw located on the inside of the system's upper panel. See Figure 2-10 for the location of the screw.

Power supply
inside screw
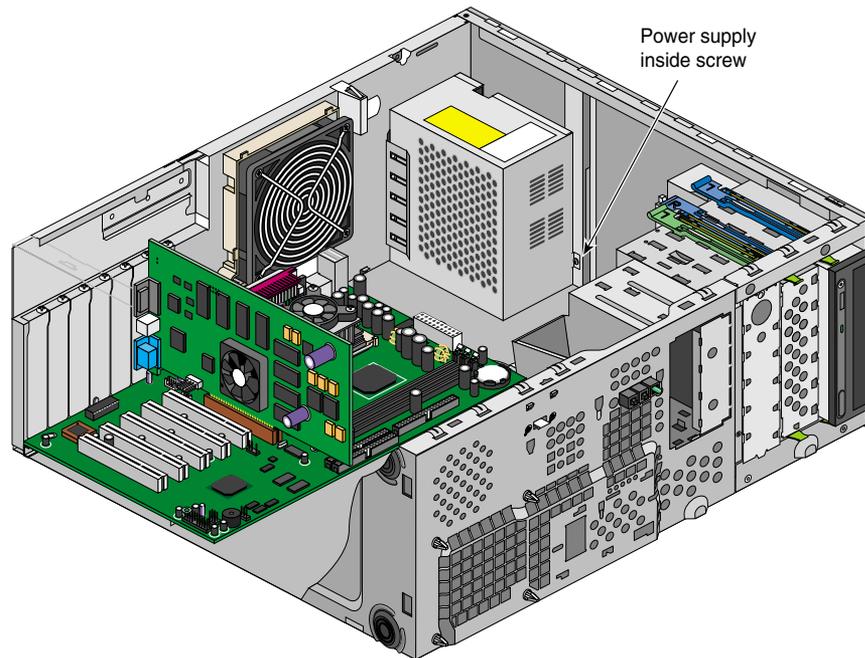
Figure 2-10   Removing Power Supply Inside Screw

7. Pull the power supply out of the system, avoiding any physical contact between the power supply and any system component.

8. To install the power supply, keep the system resting on its right side.

9. Carefully place the power supply into its housing, and push it into place.

10. Replace the inside screw shown in Figure 2-10.

11. Replace the two rear screws shown in Figure 1-2 on page 3.

12. Connect the power supply cables to the system board, the hard drive(s), the CD-ROM drive, and to the floppy disk drive. Refer to Figure 2-11 for the location of the power supply cable connections.
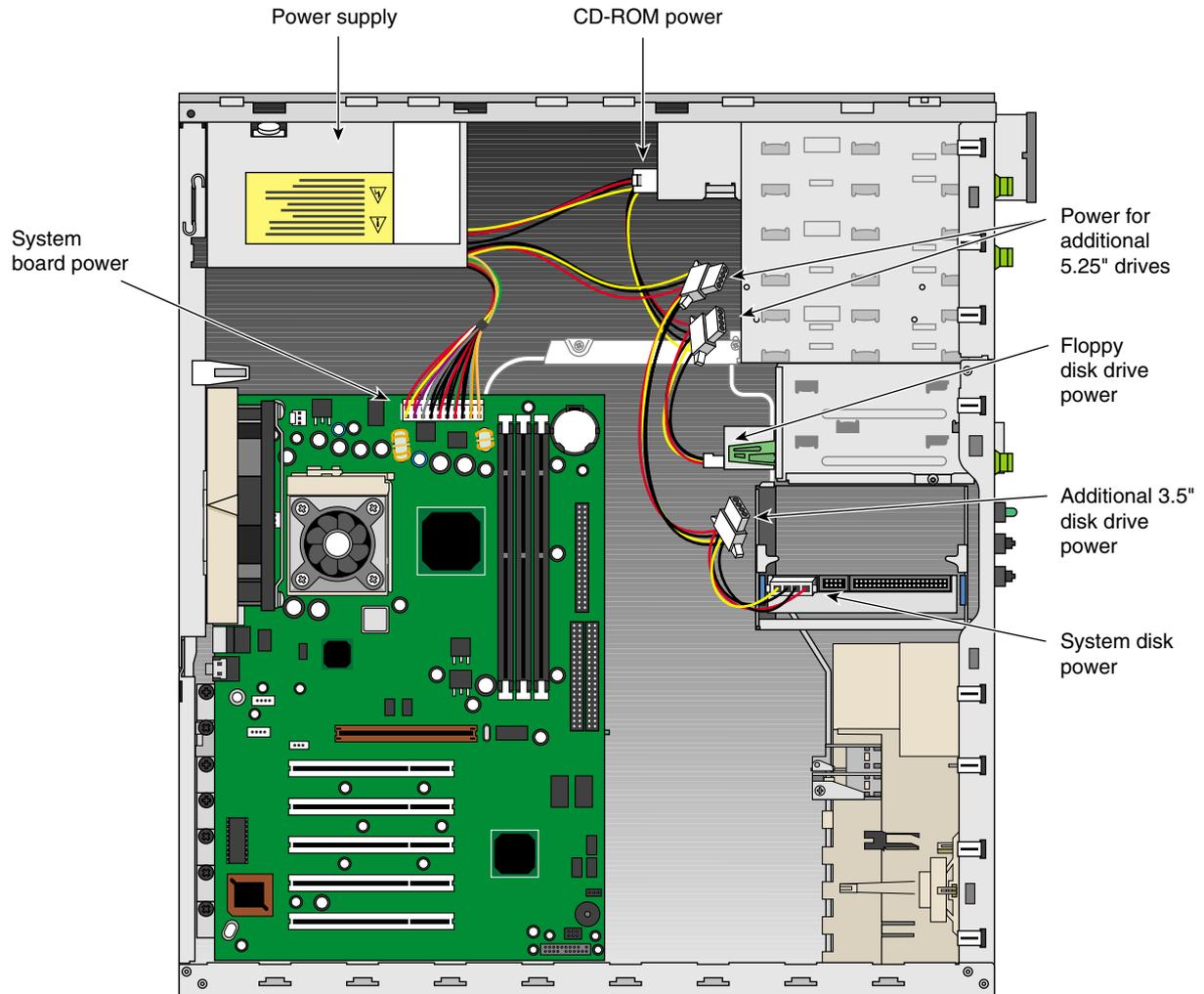
Figure 2-11   Connecting Power Supply Cables

13. Replace the side panel as shown in "Post-installation Instructions" on page 54.

14. Reconnect the AC cable to the power supply and to the wall socket.

Replacing Fans

This section covers the removal and installation of the rear and front system fans.

Replacing Rear System Fan

Follow the instructions in this section to remove and replace the rear system fan:

1. Remove the side panel as shown in "Pre-installation Instructions" on page 16.

2. Rest the system on its right side on a padded surface so as not to scratch the system.

3. Disconnect the fan cable from the system board. See Figure 2-13 on page 34 for the location of the fan cable connection.

4. Locate the two fan release buttons on the back side of the rear panel, as shown in Figure 2-12.

5. Using a pointed tool (such as a Phillips-head screwdriver), push on one of the release buttons while at the same time pulling the fan upward until the release button comes out of its notch. Keep upward pressure on the fan while pushing on the second release button until the fan is released from the chassis. Figure 2-12 illustrates the procedure.
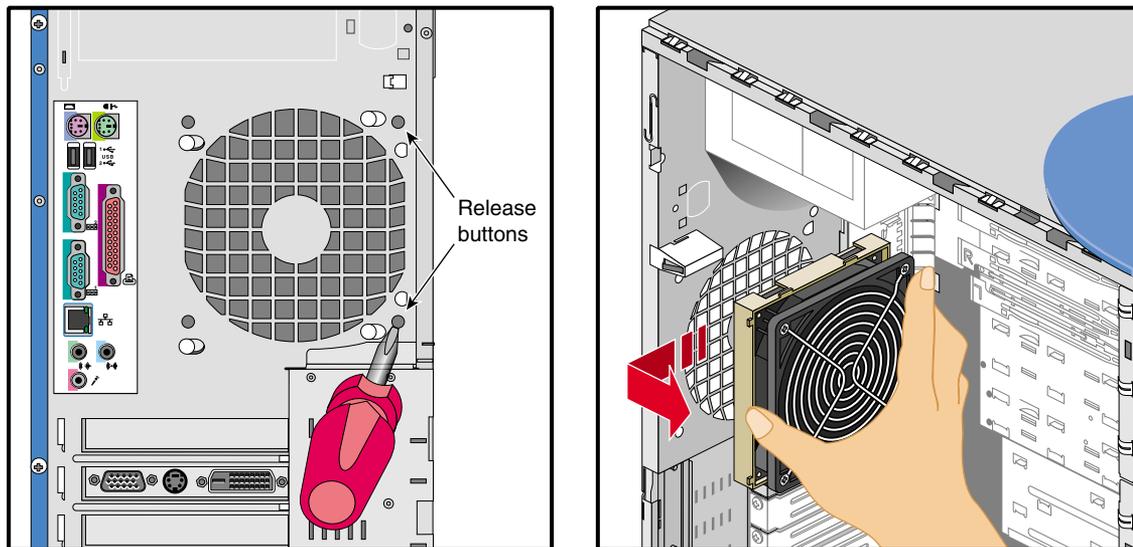
Figure 2-12   Disengaging Release Buttons and Removing Rear Fan

6. Carefully remove the fan from the system without touching any system component.

7. To install the rear fan, keep the system resting on its right side.

8. Insert the fan's four retaining pins into their respective holes. Make sure that the fan is positioned so as to have the two release buttons on the upper side of the fan.

9. Push the fan down until the two release buttons click into place.

10. Connect the fan cable. For the location of the rear fan cable connection, see
Figure 2-13.
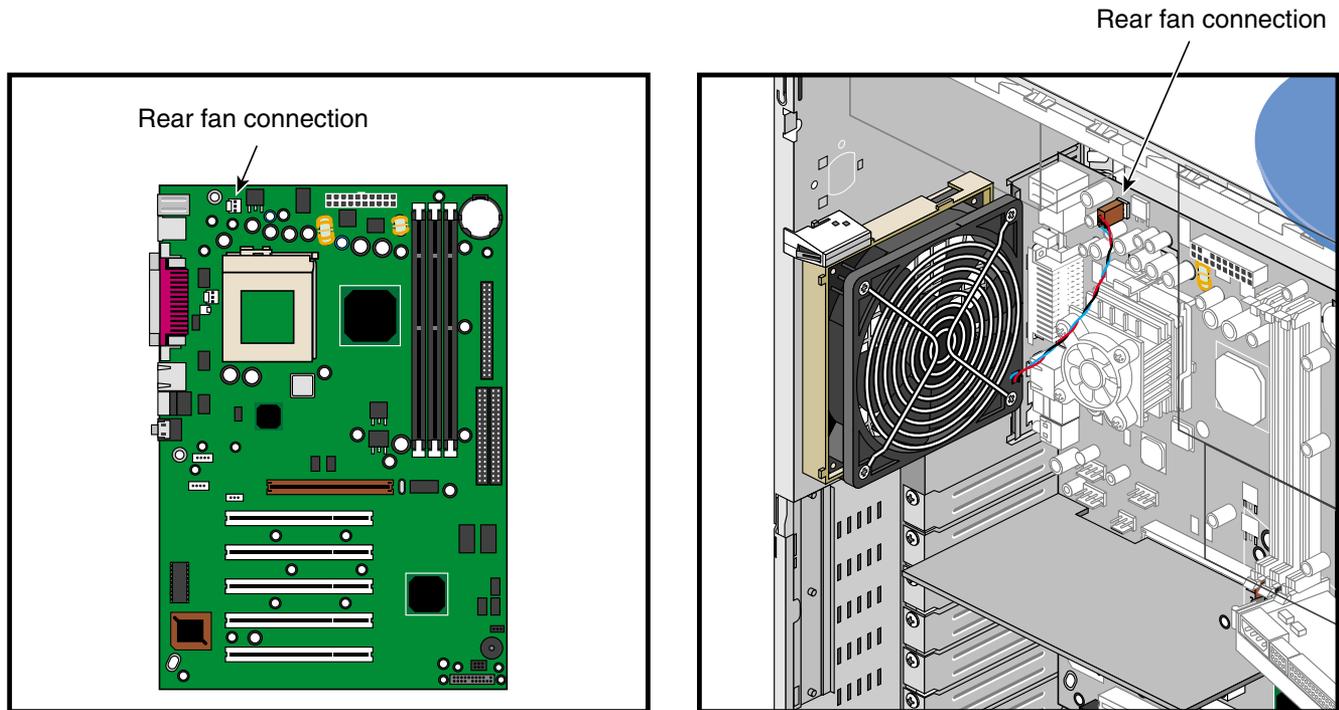
Figure 2-13   Connecting Rear Fan Cable

Replacing Front System Fan

Follow these instructions to remove the front system fan:

1. Remove the side panel and the bezel as shown in "Pre-installation Instructions" on page 16.

2. Disconnect the front fan cable from the system board.

3. Remove the front fan screw located on the front panel. Figure 2-14 shows the location of the screw.

4. Release the three retaining clips shown in Figure 2-14 by pushing on one clip at a time while holding the fan plastic frame inside the chassis.
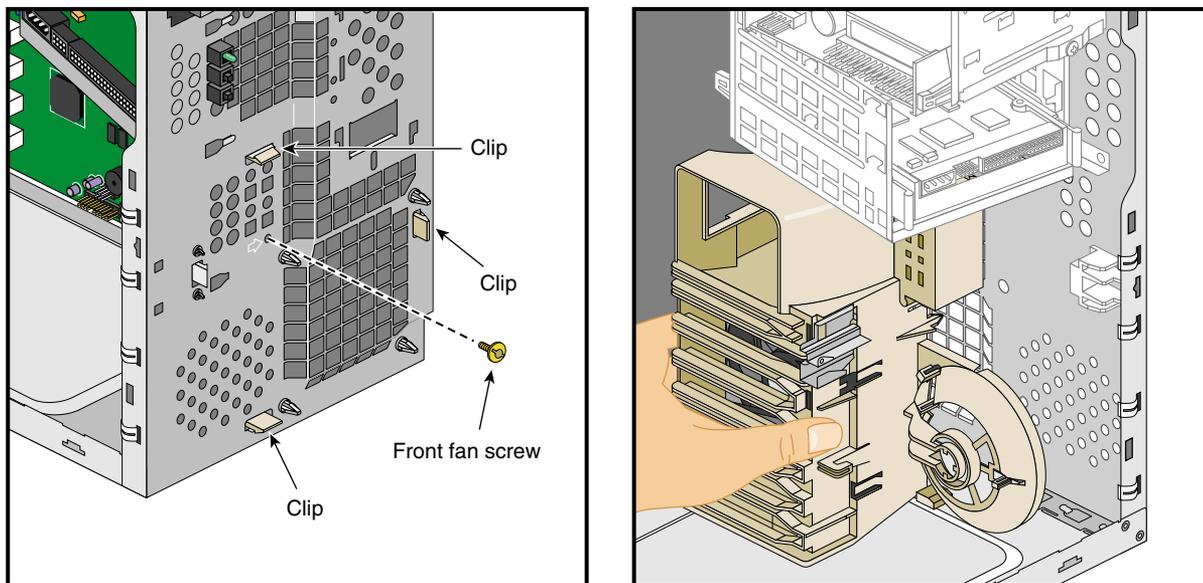
Figure 2-14   Removing Front Fan Screw and Releasing Clips

5. Once the three clips are released, the fan plastic frame can be removed from the system.

6. The fan is held in its plastic frame by four fan retaining clips. To remove the fan from its plastic frame, place the frame on a flat surface, with the frame facing down, as shown in Figure 2-15.

7. Using a flat screwdriver, gently push on the center of the fan. While pushing on the fan, release one fan retaining clip at a time by pulling it away from the fan. The procedure is illustrated in Figure 2-15.

8. Once all four clips have been released, the fan can be removed from the plastic frame.
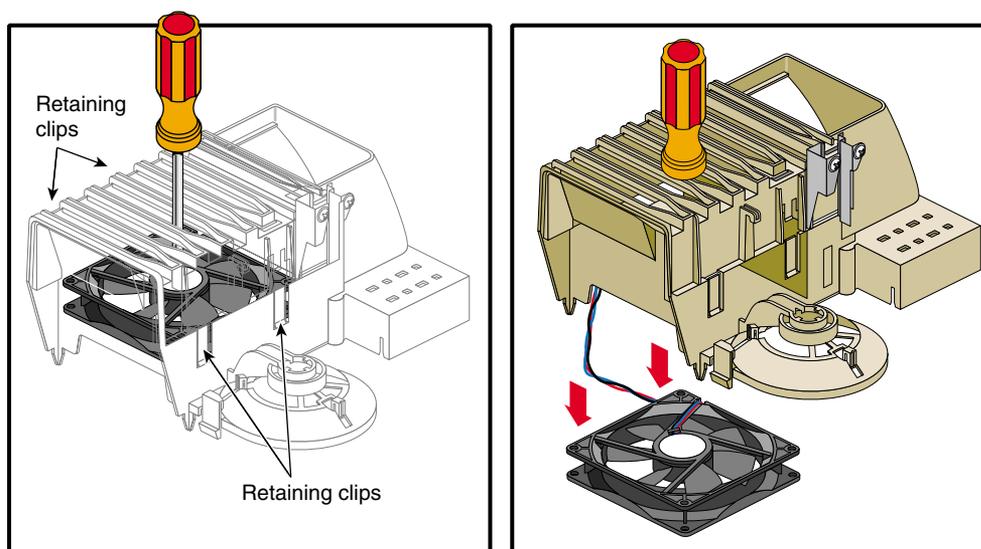
Figure 2-15   Removing Fan from Plastic Frame

Follow these instructions to install the front system fan:

1. To install the front fan, place the plastic frame on a flat surface with its retaining clips facing up.

2. Insert the fan in its housing. Make sure that the fan cable comes out next to the slot in the plastic frame, as shown in Figure 2-16.

3. Insert the fan cable into the slot.

4. Pass the cable connector and pull the cable through the hole located next to the cable slot, as shown in Figure 2-16.

Cable hole
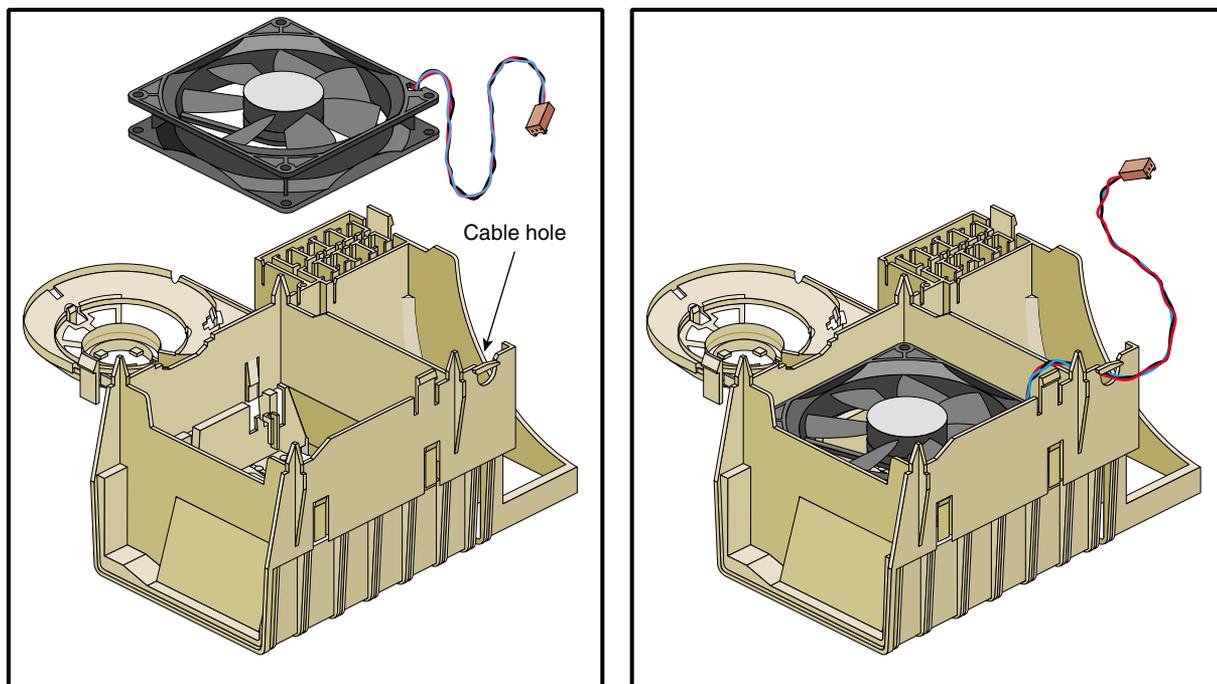
Figure 2-16   Installing Fan into Plastic Frame

5. Place the fan plastic frame in the chassis and insert the frame guiding pins into their corresponding holes on the front panel. Push the fan frame until its retaining clips snap into place.

6. Connect the front fan cable. For the location of the front fan cable connection, refer to Figure 2-17.

Fan power
connection
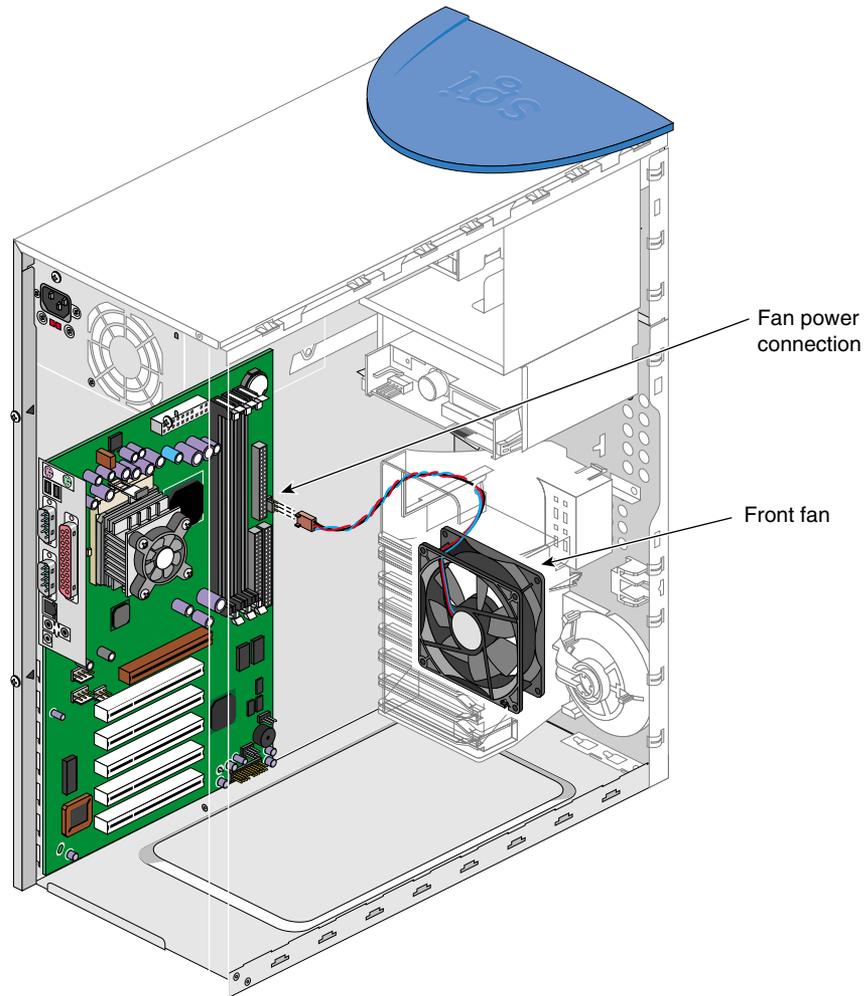
Front fan

Figure 2-17   Connecting Front Fan Cable

Replacing Expansion Cards

This section describes how to remove and install PCI (Peripheral Component Interconnect) and AGP (Accelerated Graphics Port) cards. Refer to "System Board Layout" on page 61 for the location of the expansion card slots.

Follow electrostatic discharge (ESD) precautions. Electronic equipment can be irreparably damaged by ESD. Always follow these preventative measures when handling a system component:

- Remove a component from its antistatic bag only when you are ready to install it.

- If you have to handle a component before installation, do not place it on surfaces that produce ESD (carpeting, for example), or near devices that create static electricity.

- Attach a static wrist strap to a grounded connection on your system when installing or removing a component.

The following instructions describe how to remove expansion cards:

1. Remove the side panel as described in "Pre-installation Instructions" on page 16.

2. Remove the retaining screw for that expansion card, as shown in Figure 2-18.

3. Gently pull the card straight up out of the slot (away from the system board).

Retaining screw
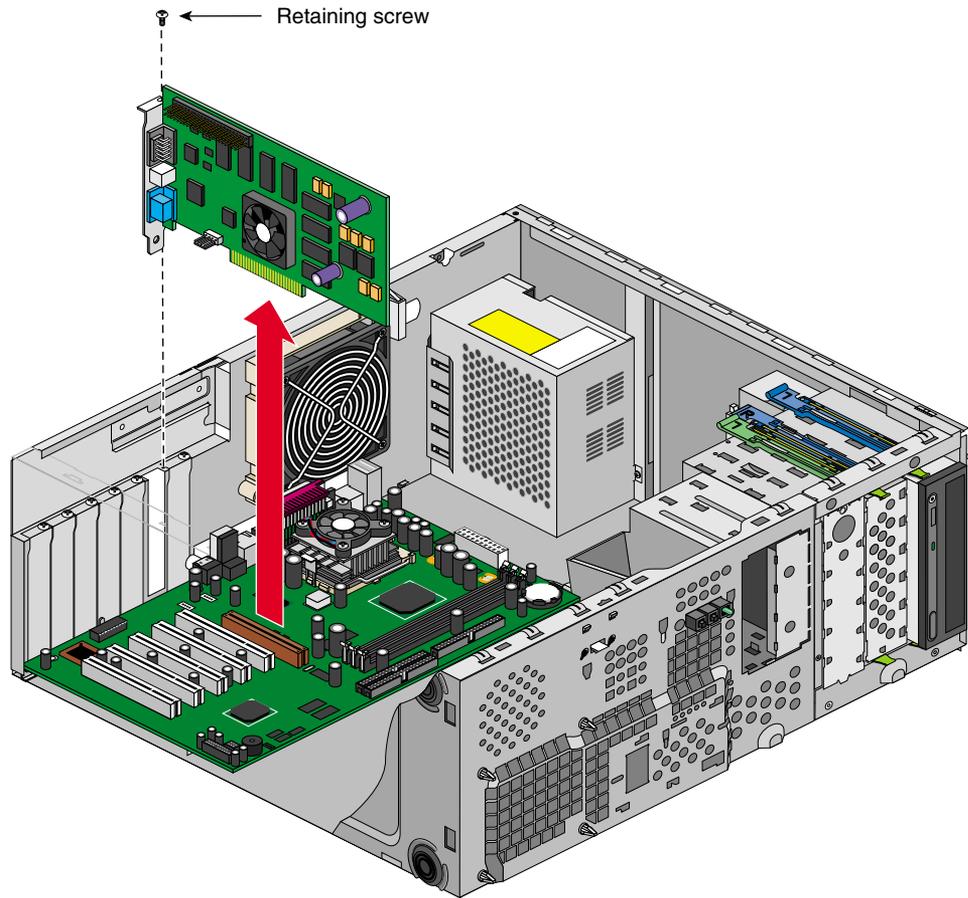
Figure 2-18   Removing Expansion Card

4. If no other card will be installed in the empty slot, a filler plate needs to be installed in the expansion slot opening. Follow these instructions to install a filler plate in an expansion slot opening:

   • Place the filler plate on the slot opening

   • Tighten the retaining screw shown in Figure 2-19.

The following instructions describe how to install expansion cards:

1. Remove the side panel as described in "Pre-installation Instructions" on page 16, if not already done.

2. If a filler plate covers the slot opening selected for installation, follow these instructions to remove it:

   • Remove the retaining screw shown in Figure 2-19.

   • Remove the filler plate from the chassis.
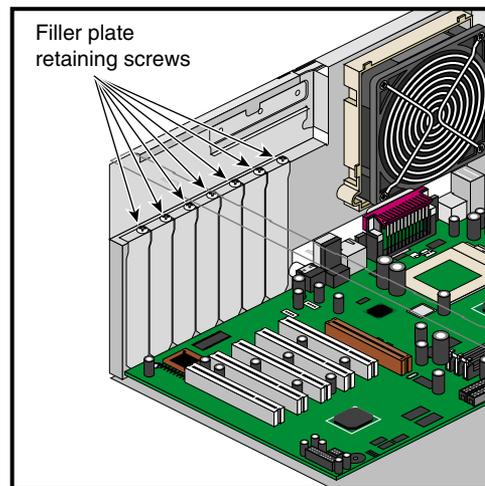
Figure 2-19   Location of the Retaining Screw for the Expansion Slot Filler Plate

3. Insert the expansion card into its slot by pushing the card into the connector until it is properly seated. Figure 2-20 illustrates the procedure.

4. Tighten the retaining screw, as shown in Figure 2-20.

Retaining screw
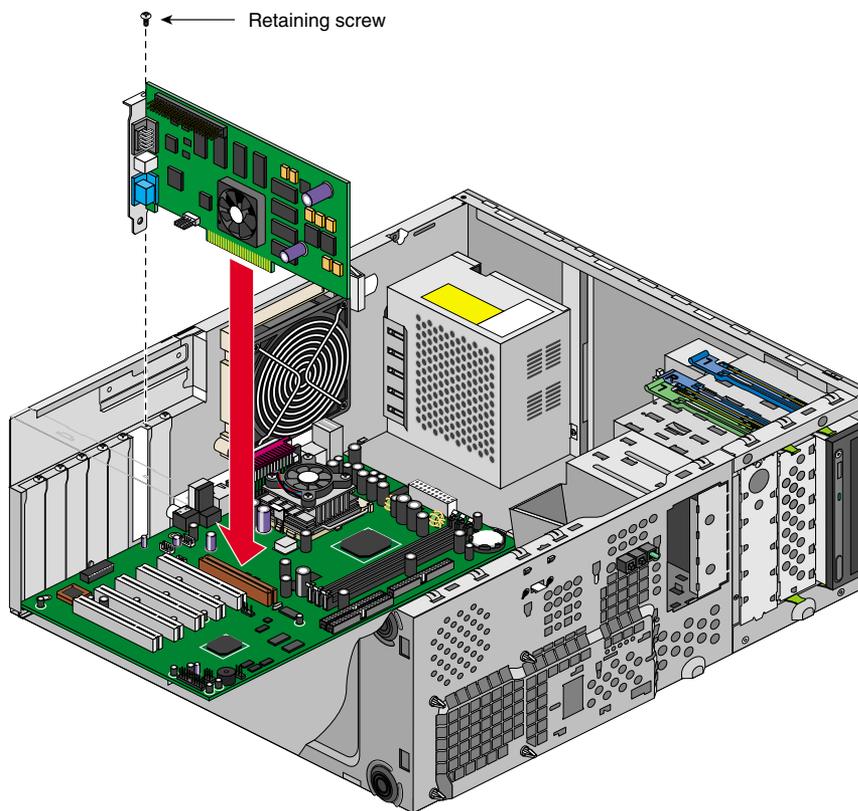
Figure 2-20   Installing Expansion Card

5. Replace the side panel as shown in "Post-installation Instructions" on page 54.

6. When the system is turned on, the BIOS automatically detects and assigns resources to the new device.

Note: The BIOS detects and configures only Plug and Play expansion cards.

Replacing System Board

This section describes how to remove and replace the Silicon Graphics 230 Visual Workstation system board.

Follow electrostatic discharge (ESD) precautions. Electronic equipment can be irreparably damaged by ESD. Always follow these preventative measures when handling a system component:

- Remove a component from its antistatic bag only when you are ready to install it.

- If you have to handle a component before installation, do not place it on surfaces that produce ESD (carpeting, for example), or near devices that create static electricity.

- Attach a static wrist strap to a grounded connection on your system when installing or removing a component.

The following instructions describe how to remove the Silicon Graphics 230 Visual Workstation system board:

1. Remove the side panel as shown in "Pre-installation Instructions" on page 16.

2. To facilitate the removal of system components, rest the chassis on its right side on a padded surface so as not to scratch the system.

3. Remove all expansion boards. Refer to "Replacing Expansion Cards" on page 39 for the removal of expansion boards.

4. Disconnect all cables from the system board.

5.   Loosen the system board screw. Figure 2-21 shows the location of the screw.
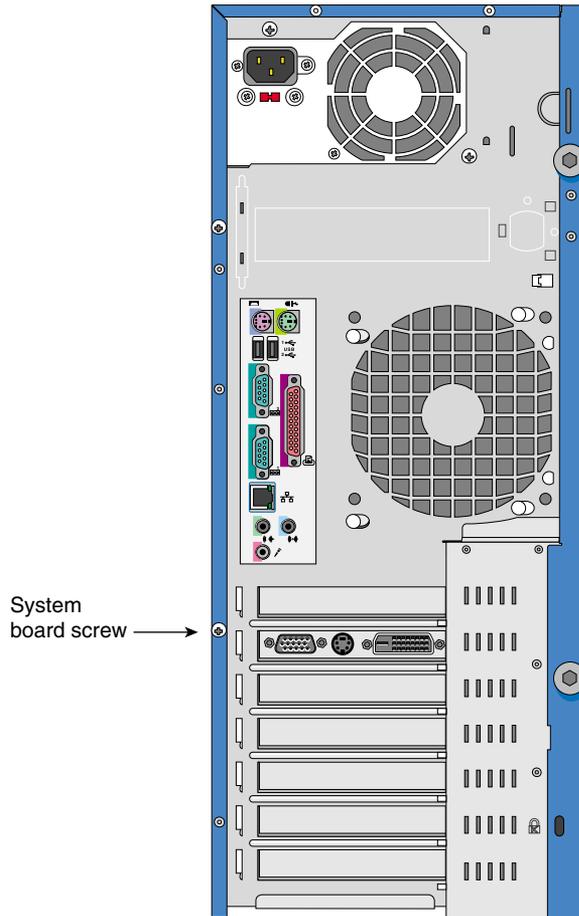
System
board screw ⟶

Figure 2-21   Location of System Board Screw

6.   Pull the system board away from the I/O gasket and lift the board away from the chassis.

7. To detach the retaining bracket from the system board, unsnap the release clip and remove the bracket retaining hooks from the system board. Figure 2-22 shows the procedure.
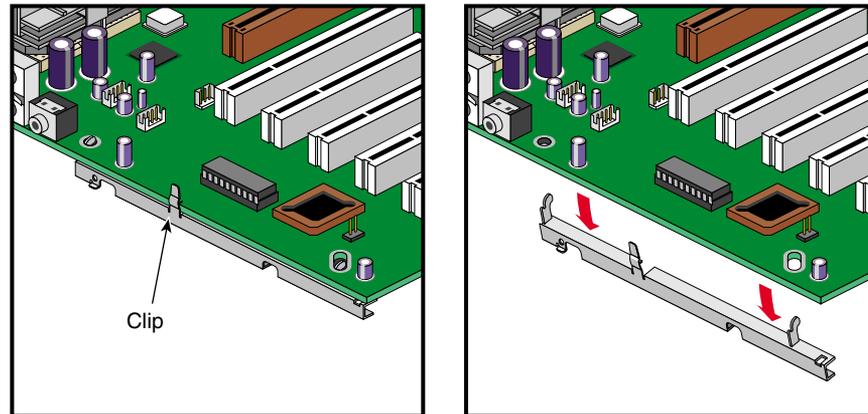
Figure 2-22   Removing Retaining Bracket from System Board

The following instructions describe how to install the Silicon Graphics 230 Visual Workstation system board:

1. To mount the retaining bracket onto the system board, place the retaining hooks into their system board holes and snap the release clip onto the board. Figure 2-23 illustrates the procedure.
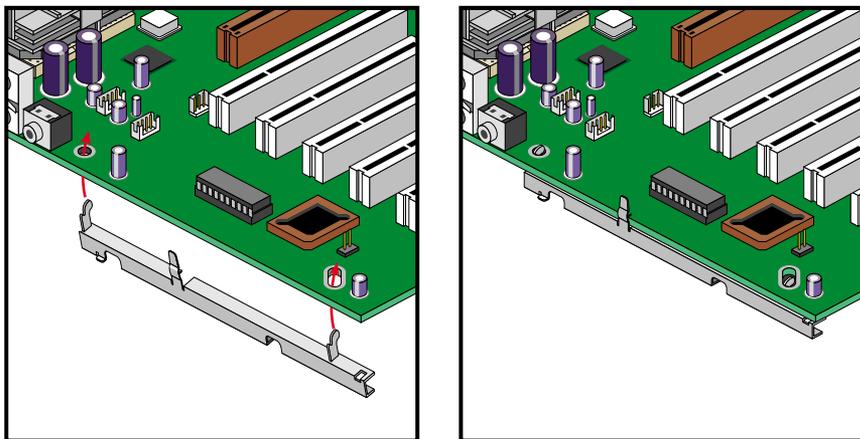
Figure 2-23   Snapping Retaining Bracket onto System Board

2. The system should still be resting on its right side to facilitate the installation.

3. Place the system board into the chassis so as to align the I/O ports with their respective holes in the I/O gasket.

4. Position the system board so as to have the standoff hooks inserted into their corresponding holes in the system board. See Figure 2-24 for an illustration of the procedure.

Standoff hook

Standoff hook
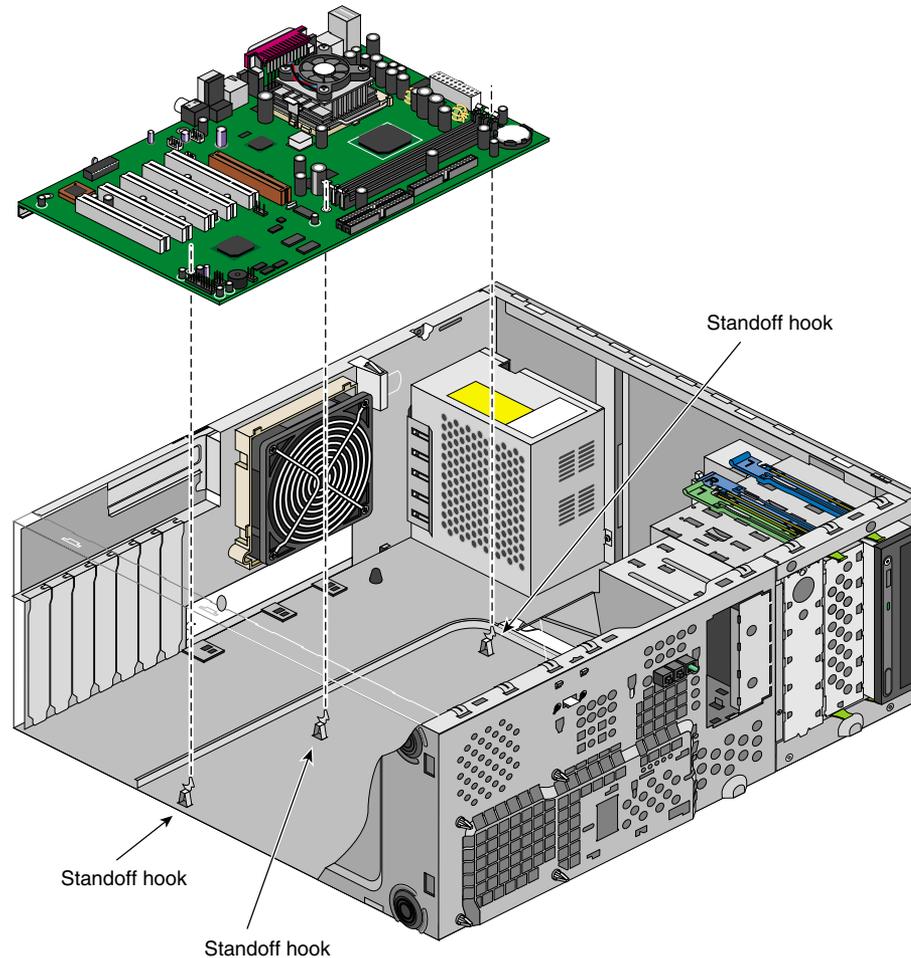
Standoff hook

Figure 2-24   Positioning the System Board on its Standoff Hooks

5. Secure the system board screw onto the retaining bracket. See Figure 2-21 on page 44 for the location of the system board screw.

6. Connect all system board cables to their connectors. Refer to Figure 2-25 and Figure 3-1 on page 61 for the location of the system board connectors.

CD-ROM
signal cable

CD-ROM
sound cable

Floppy disk
drive cable

System disk
cable
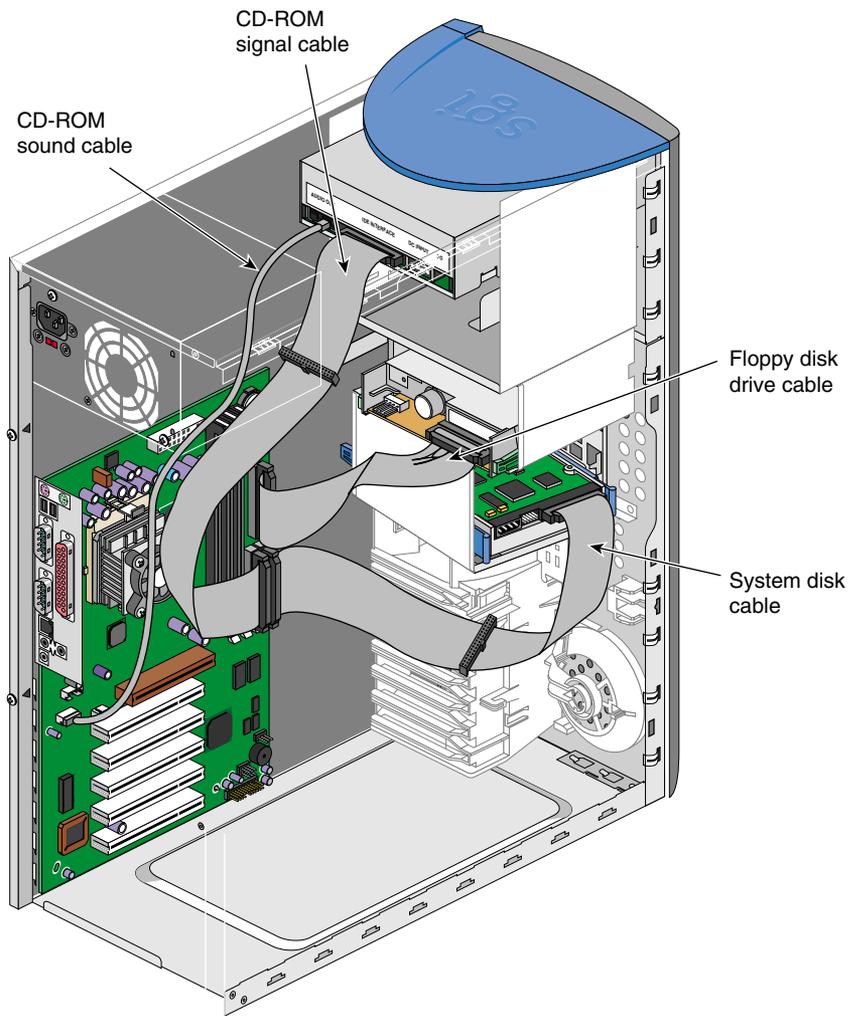
Figure 2-25   Location of System Board Connectors

7. Replace the expansion boards. Refer to "Replacing Expansion Cards" on page 39 for the installation of expansion boards.

8. Replace the side panel as shown in "Post-installation Instructions" on page 54.

Replacing I/O Panel Gasket

The following instructions describe how to remove the I/O panel gasket:

1. Remove the system board as described in the previous section, "Replacing System Board" on page 43.

2. The system should still be resting on its right side.

3. Locate the three notched fingers at the bottom of the I/O panel gasket, as shown in Figure 2-26.

4. To remove the I/O panel gasket, lift one notched finger at a time out of its slot.

5. Once all three notched fingers have been lifted out of their slots, the I/O panel gasket slides out of its housing and can be removed from the chassis.

Notched fingers
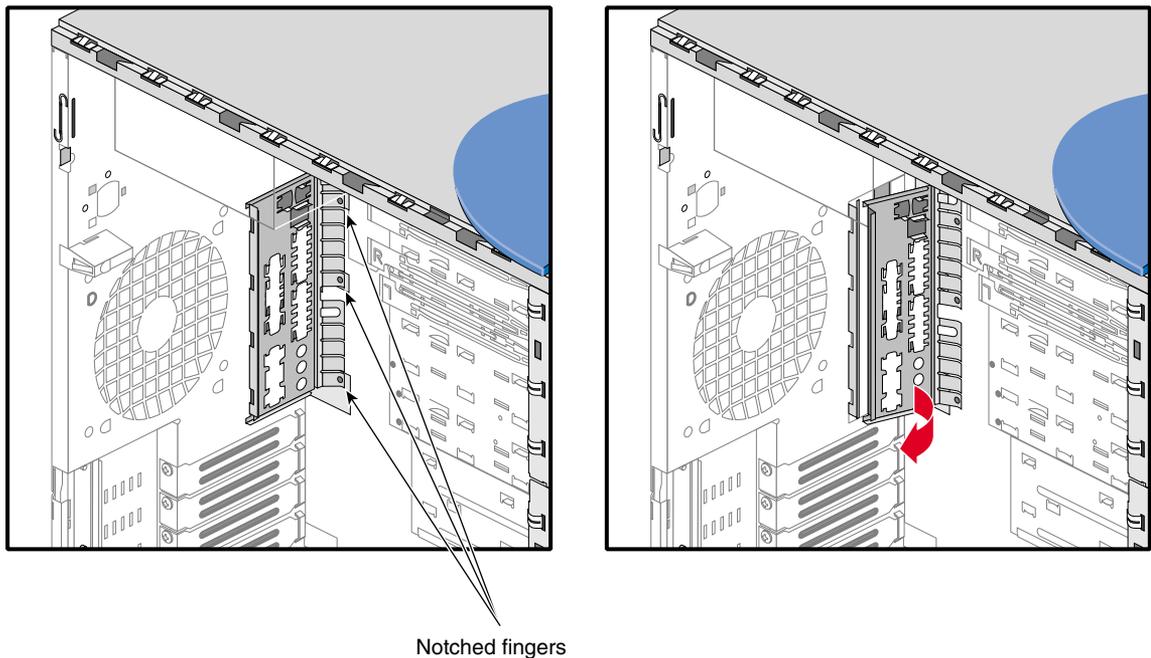
Figure 2-26   Removing I/O Panel Gasket

The following instructions describe how to install the I/O panel gasket:

1. The system should still be resting on its right side to facilitate the installation.

2. Locate the four retaining slots on the system's I/O panel opening. See Figure 2-27 for the location of the retaining slots.

3. Insert the I/O gasket's four indentations into their corresponding retaining slots on the I/O panel opening. See Figure 2-27 for an illustration of the procedure.

4. In order to secure the I/O gasket on the chassis, each notched finger needs to be inserted into its slot. To do so, push on the I/O gasket where each notched finger meets with the I/O gasket until the notched finger snaps into its slot. Repeat the procedure for the remaining notched fingers.

5. Install the system board as described in the previous section, "Replacing System Board" on page 43.

Retaining slots

Notched fingers
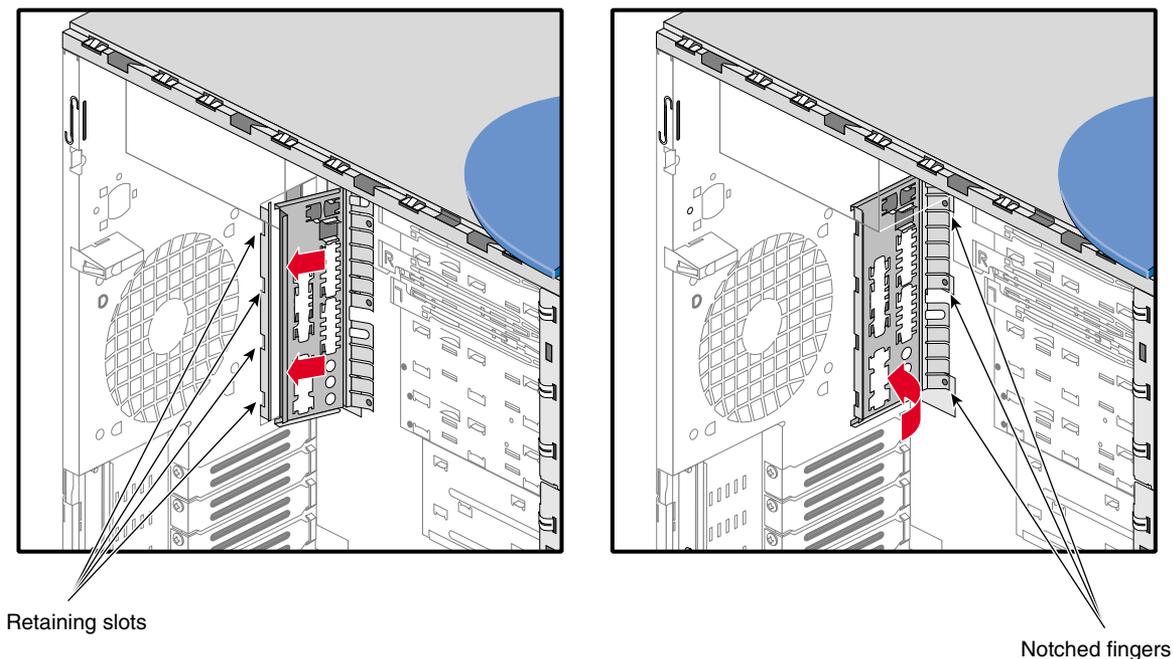
Figure 2-27   Installing I/O Panel Gasket

Securing the System

The Silicon Graphics 230 Visual Workstation's side panel can be locked into place on the system using a locking loop and a padlock, thus preventing access to the internal components of the system. The locking loop is stored in a slot on the chassis and needs to be moved to another slot to be used. Follow these steps to install the locking loop:

1. Remove the side panel if not already done. For removal of the side panel, refer to "Pre-installation Instructions" on page 16.

2. Locate the locking loop. See Figure 2-28 for the location of the locking loop.
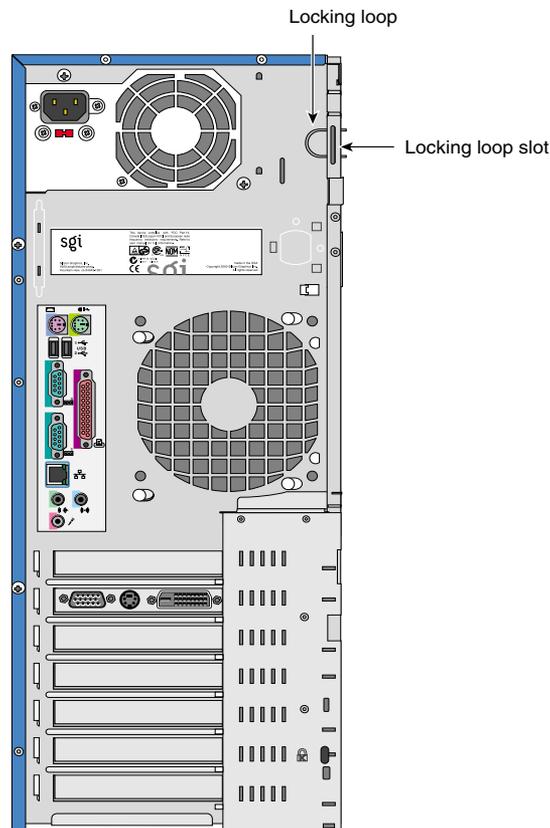
Figure 2-28   Location of Locking Loop

3. Remove the locking loop from its storage slot by pressing the two hooks towards each other and pushing the loop out of the chassis. Figure 2-29 illustrates the procedure.
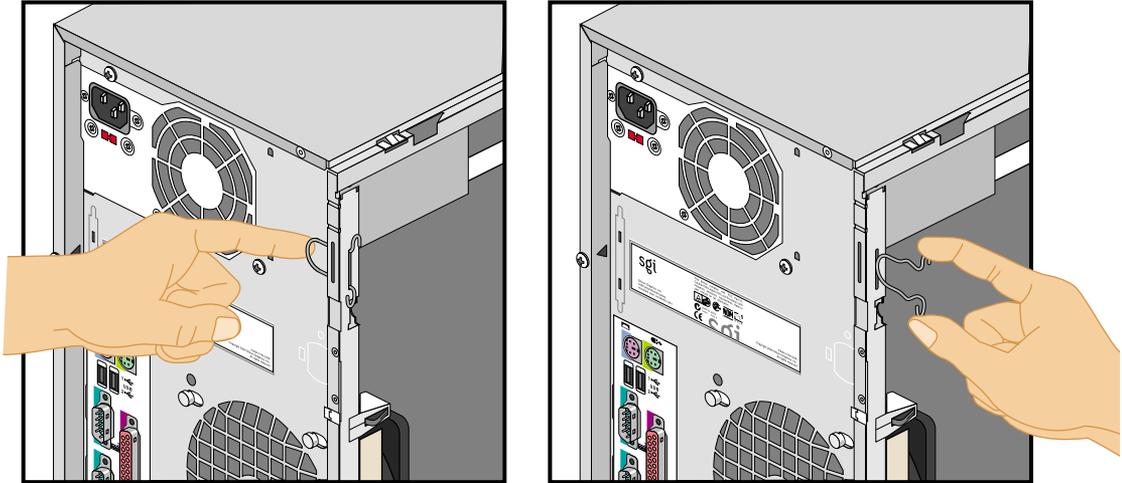
Figure 2-29   Removing Locking Hook from its Storage Slot

4. Locate the slot facing the rear of the chassis. See Figure 2-28 for the location of the slot.

5. Insert the loop part of the locking loop into the slot inside the chassis and push the locking loop until it snaps into place. Figure 2-30 illustrates the procedure.
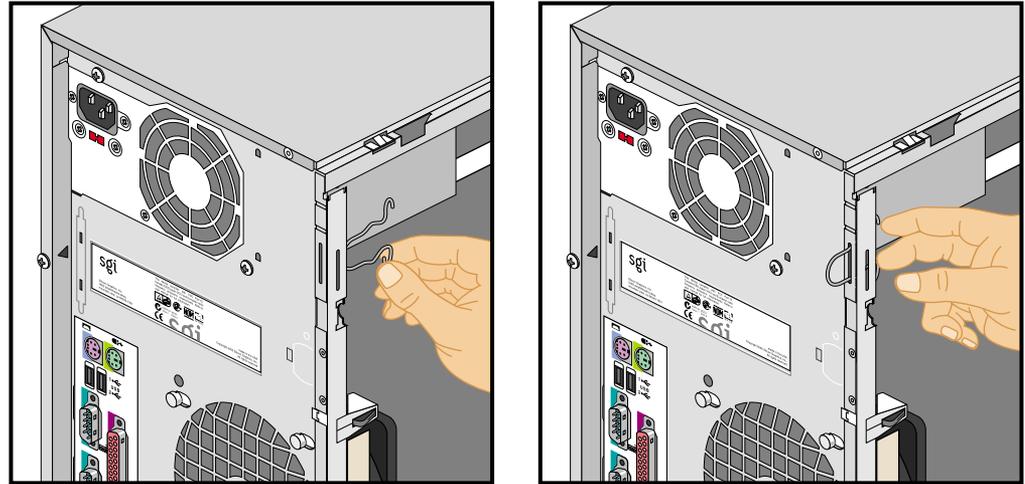
Figure 2-30   Installing Locking Loop in its Functional Slot

6. Replace the side panel as described in "Post-installation Instructions" on page 54.

7. To lock the side panel on the system (see "Post-installation Instructions" on page 54 for side panel installation), insert a padlock into the locking loop.

The system itself can be secured in a particular location by using a Kensington locking device. See Figure 1-2 on page 3 for the location of the Kensington lock slot.

Note: A Kensington locking device is not included with the Silicon Graphics 230 Visual Workstation.

Post-installation Instructions

After completing the installation of customer replaceable components, follow these instructions to ready the system for operation:

1. If your installation involved the removal of the bezel, follow these steps to replace the bezel:

    •   Locate the four tabs on the right side of the bezel, as shown in Figure 2-31.

    •   Place the right side of the bezel on the chassis so as to insert the four tabs in their respective slots, as shown in Figure 2-31.

    •   Push the left side of the bezel towards the chassis until all four tabs on the left side of the bezel are securely snapped onto the chassis.
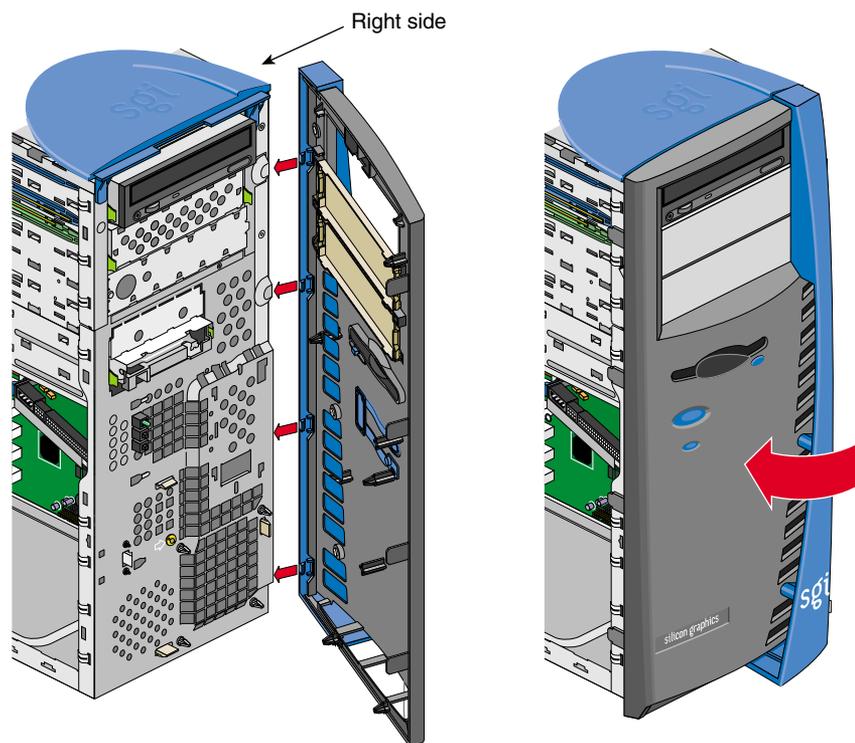
Figure 2-31   Replacing Bezel

2. Follow these steps to replace the side panel:

- Locate the two tabs on the lower side of the side panel.

- Place the two tabs onto the lower chassis rail.

- Slide the side panel toward the rear of the system, until the rear tab hits the rear of the chassis and the side panel cannot be moved any farther. Figure 2-32 illustrates the procedure.
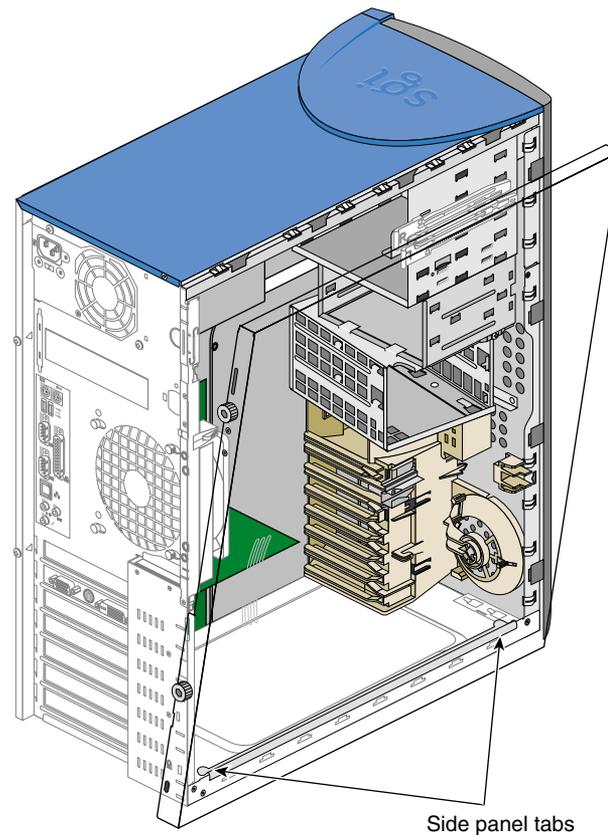
Side panel tabs

Figure 2-32   Placing Side Panel onto Lower Chassis Rail

- Push the upper side of the side panel toward the chassis.

- Gently lift the side panel and push it against the chassis.

- Slide the side panel towards the front of the chassis until it fits into place. The procedure is illustrated in Figure 2-33.

- Tighten the two thumbscrews on the back of the case.
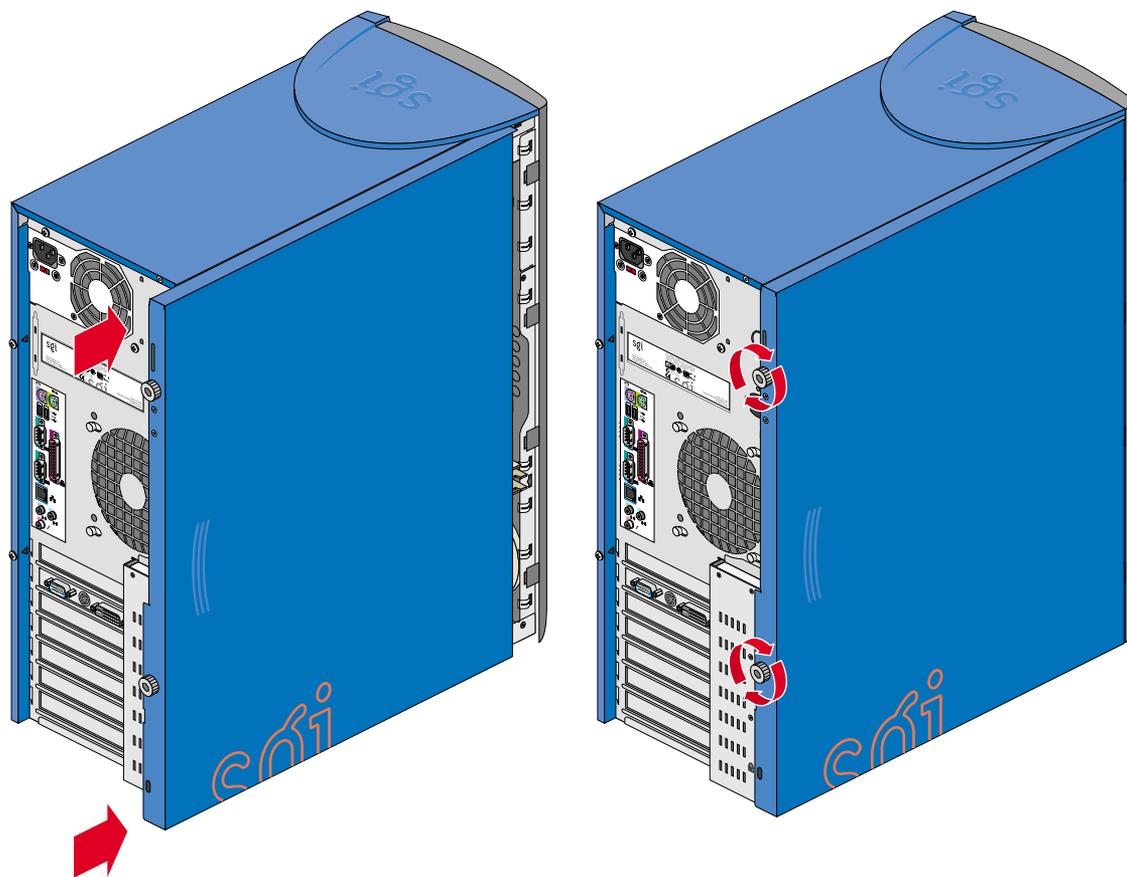
Figure 2-33   Sliding Side Panel into Place

3. To connect your system to external devices, refer to "Connecting External Devices" on page 9.

4. To turn on the system, press the power button on the front panel. See Figure 1-1 on page 2 for the location of the power button.

System Board

The Silicon Graphics 230 Visual Workstation contains an M23D system board. This chapter describes the M23D system board and all its major components. It contains the system board layout, jumper settings, cache and memory configurations, and information on other internal devices.

Overview

The M23D system board is a PCI bus-based, single processor system board built on an extended ATX baseboard. It comes with a single FC-PGA (Flip-Chip Pin Grid Array) processor socket using a Pentium® III processor integrated with the VIA Apollo Pro 133A chipset. The system board also integrates the Intel® 82559 10/100 Mbps PCI Ethernet chipset that supports WOL (Wake on LAN) and AOL (Alert on LAN) for better remote site management.

For expandability, the system board includes one AGP (Accelerated Graphics Port) slot, five PCI-bus slots, and three DIMM sockets.

For connectivity, the system board supports two USB (Universal Serial Bus) connectors, a speaker-out/audio-out, audio-in, and microphone-in port, and other standard features such as two UART NS16C550 serial ports, one enhanced parallel port with Enhanced Parallel Port (EPP)/Extended Capabilities Port (ECP) support, a diskette drive interface, and two embedded hard disk interfaces.

Processor

The Pentium III processor implements Dynamic Execution performance, a multi-transaction system bus, and Intel MMX media enhancement technology. Also, it offers Streaming SIMD (Single Instruction Multiple Data) Extensions — 70 new instructions enabling advanced imaging, 3D, streaming audio and video, and speech recognition applications. The Pentium III processor delivers higher performance than the

previous Pentium processor while maintaining binary compatibility with all previous Intel architecture processors.

Memory

The three DIMM sockets on the board allow a maximum of 1.5 GB of memory using three 512-MB SDRAM (Synchronous DRAM) DIMMs. For data integrity, the default setting of the ECC (Error-Correcting Code) function of the memory system in the BIOS is enabled.

Note: Only 3.3 volts SDRAM should be used; 5-volt memory devices are not supported.

System Chipsets

VIA Apollo Pro 133A Chipset

The VIA Apollo Pro 133A chipset was specifically designed to meet the needs of high performance systems. It consists of two components: VT82C694X (north bridge) and VT82C686A (south bridge).

- VT82C694X (north bridge) provides the host interface, memory system control interface, PCI interface, and AGP interface to boost graphics performance.

- VT82C686A (south bridge) integrates super I/O functions like keyboard and mouse interface, floppy disk controller, advance digital data separator, two compatible serial ports (UARTs), one parallel port, on-chip 12 mA AT bus drivers, one floppy direct drive support, and Intelligent Power Management support. It also supports the PC99 compliant PCI-to-ISA bridge, SoundBlaster/DirectSound AC97 audio, SMBus and others.

LAN Subsystem

Another cost-effective feature for network solution is the integration of Intel's 82559 10/100 Mbps Fast Ethernet controller which supports Advanced Configuration and Power Interface (ACPI) 1.20A based power management, Wired for Management (WfM) 2.0 compliance, IP checksum assist, PCI 2.2 compliance, and PC 99 compliance.

Expansion Slots

AGP Bus (2X/4X)

AGP is developed solely for the purpose of supporting 3D graphic applications. It has a 32-bit wide channel that runs at 66 MHz, which translates into a total bandwidth of 266 MBps. This is twice the bandwidth of PCI buses (133 MBps). AGP also accesses the main memory directly, allowing 3D textures to be stored in main memory rather than video memory.

PCI Bus

The system board has five PCI buses that support 32-bit/33 MHz PCI devices. The PCI bus is the key interface that communicates between the north and the south bridge.

Hardware Management Support

The system board supports the power-management function that conforms to the power-saving standards of the U.S. Environmental Protection Agency (EPA) Energy Star program. It also offers the Plug-and-Play feature. This feature saves the user from configuration troubles, thus making the system more user-friendly.

Major Components

The system board has the following major components:

- Utilizes a FC-PGA (Flip-Chip Pin Grid Array) processor socket that supports a Pentium III processor and future generations of Pentium CPUs

- VIA Apollo Pro 133A chipset which includes the north and the south bridge

- Onboard 10/100 Mb/s Intel 82559 LAN chip that supports WOL and AOL

- Three DIMM sockets that accept 64-, 128-, 256-, and 512-MB SDRAMs with a maximum memory capacity of 1.5 GB

- One AGP bus and five PCI bus slots

- System clock/calendar with battery backup

- IDE hard disk and diskette drive interfaces

- External ports:

  - USB connectors

  - PS/2-compatible keyboard port

  - PS/2-compatible mouse port

  - 10/100 MBps Ethernet port

  - Parallel port

  - Serial port 1 and 2

  - Speaker-out/Audio-out port

  - Audio-in port

  - Microphone-in port

System Board Layout

This section provides a description of the system board connectors. Figure 3-1 shows the location of connectors on the system board.
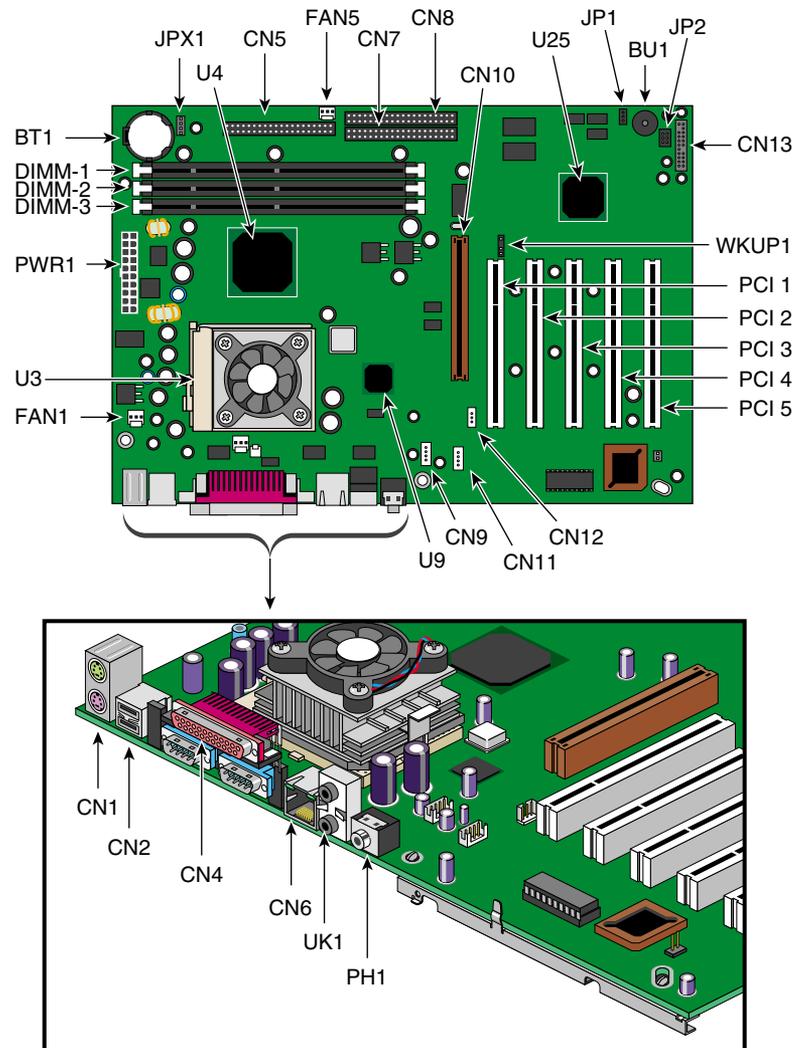
Figure 3-1   System Board Layout

Table 3-1 provides a description of the system board connectors.

Table 3-1   Connector descriptions

No.	Description
BT1	Battery
BU1	Buzzer
CN1	Above: PS/2 mouse port Below: PS/2 keyboard port
CN2	USB ports
CN3	CPU thermal sensor (reserved)
CN4	Above: Parallel port Left: Serial port 1 Right: Serial port 2
CN5	Floppy disk drive connector
CN6	LAN port
CN7	IDE 1 connector
CN8	IDE 2 connector
CN9	Fax voice connector (reserved)
CN10	AGP slot
CN11	CD Audio-in connector
CN12	Wake on LAN connector
CN13	Multi connector (see Table 3-2 for multi connector description)
DIMM1-3	DIMM slots
Fan1	Rear housing fan connector
Fan2	CPU fan connector
Fan5	Front housing fan connector
JP1	BIOS setting
JP2	On board buzzer/external speaker select

Table 3-1 (continued)   Connector descriptions

No.	Description
JPX1	Frequency setting (see Table 3-3)
PWR1	ATX power supply connector
PCI 1-5	PCI slots
PH1	Mic-in port
U3	CPU socket
U4	VIA Apollo Pro 133A chipset (north bridge)
U9	Intel 82559 LAN chipset
U25	VIA Apollo Pro 133A chipset (south bridge)
UK1	Above: Audio-in port Below: Speaker-out port
WKUP1	Wake on Ring connector

Table 3-2 details the functions of the CN13 connector settings.

Table 3-2   Multi Connector details

Setting	Function
1-2	Power button connector
7-9-11	Power LED connector
8-10-12-14	HDD LED connector
17-18	Reset switch connector
19-20	Intrusion switch connector

Figure 3-2 illustrates the CN13 connector settings.
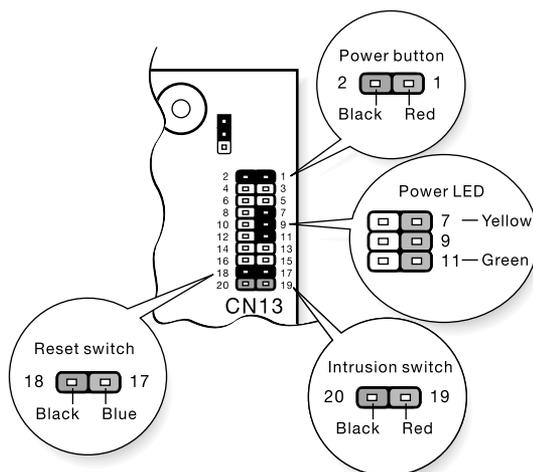
Figure 3-2   CN13 Connector Settings

Table 3-3 provides the frequency settings for the JPX1 jumper. JPX1 sets the ratio between the front side bus (FSB) frequency and the CPU internal clock frequency. This information is only required if installing a CPU other than the one supplied by SGI.

Table 3-3   Frequency setting

1	2	3	4	Frequency
On	On	On	On	2
On	On	Off	On	2.5
On	Off	On	On	3
On	Off	Off	On	3.5
Off	On	On	On	4
Off	On	Off	On	4.5
Off	Off	On	On	5
Off	Off	Off	On	5.5
On	On	On	Off	6

Note: This frequency setting table is for reference only and is reserved for use by customer service technicians. The CPU frequency is automatically set and should not be tampered with.

System Component Installation

The following sections show you how to install system components. This includes the CPU, memory modules, and expansion cards.

ESD Precautions

Follow electrostatic discharge (ESD) precautions. Electronic equipment can be irreparably damaged by ESD. Always follow these preventative measures when handling a system component:

- Remove a component from its antistatic bag only when you are ready to install it.

- If you have to handle a component before installation, do not place it on surfaces that produce ESD (carpeting, for example), or near devices that create static electricity.

- Attach a static wrist strap to a grounded connection on your system when installing or removing a component.

Installing and Removing the CPU

The Pentium III comes in a FC-PGA (Flip-Chip Pin Grid Array) 370 pin package.

Caution: Always observe the ESD precautions when installing or removing a system component. Refer to the preceding section.

Installing a CPU

Follow these steps to install a CPU:

1. Remove the processor from its protective packaging.

2. Insert the new CPU into the CPU socket. Make sure that pin 1 (indicated by a notched corner) of the CPU connects to hole 1 of the socket. Push down the socket lever to lock the new CPU into the socket, as shown in Figure 3-3.
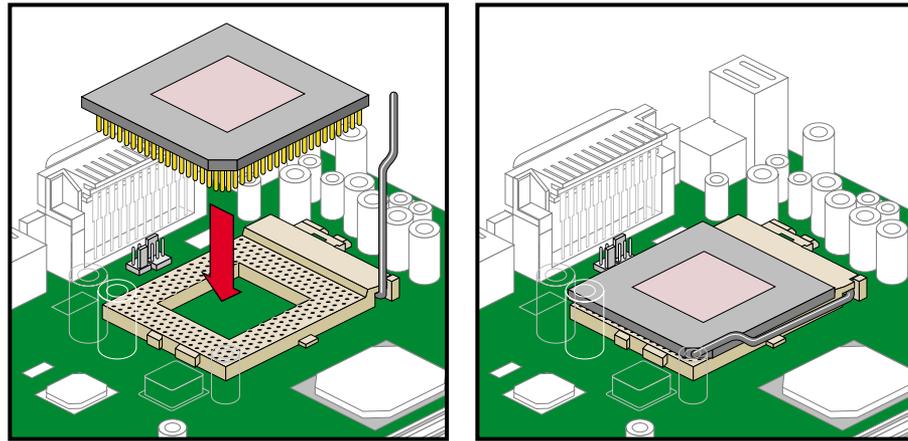
Figure 3-3   Installing a CPU

3. Connect the 3-pin and 2-pin fan/heatsink cables to the system board. Refer to "System Board Layout" on page 61 for the location of the fan/heatsink connectors.

4. Attach one side of the fan/heatsink metal bracket to the CPU socket and then gently push down the other side of the metal bracket until it locks in place. Figure 3-4 illustrates the procedure.
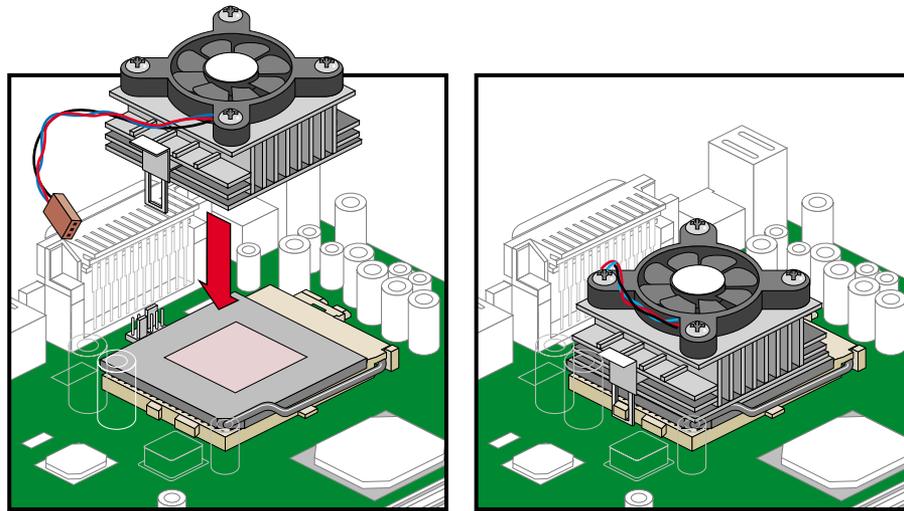
Figure 3-4   Attaching Fan/Heatsink to CPU

Caution: The heatsink becomes very hot when the system is on. NEVER touch the heatsink with any metal or with your hands.

Removing a CPU

Follow these steps to remove a CPU:

1. Disconnect the 3-pin and 2-pin fan/heatsink cables from the system board.

2. Unhook one side of the fan/heatsink metal bracket and gently lift it before removing the other side.

3. Gently push the socket lever down to release the lever and then pull it up.

4. Remove the CPU.

Installing and Removing Memory Modules

The three 168-pin sockets onboard support SDRAM-type DIMMs. You may install 64-MB, 128-MB, 256-MB, or 512-MB (single and double density) DIMMs for a maximum 1.5-GB system memory.

Note: Only 3.3 volts SDRAM should be used; 5-volt memory devices are not supported.

This system board supports 133 MHz ECC registered SDRAM only.

Warning: **Do not use both 100 MHz and 133 MHz SDRAM together. This might cause your system to malfunction. For a qualified DIMM vendor list, please call for support.**

Each of the DIMM sockets is independent from the others. This independence allows you to install DIMMs with different capacities to form different memory configurations.

Installing a Memory Module

To install a DIMM, align it to an empty slot and press it in until the holding clips secure the DIMM in place, as shown in Figure 3-5.
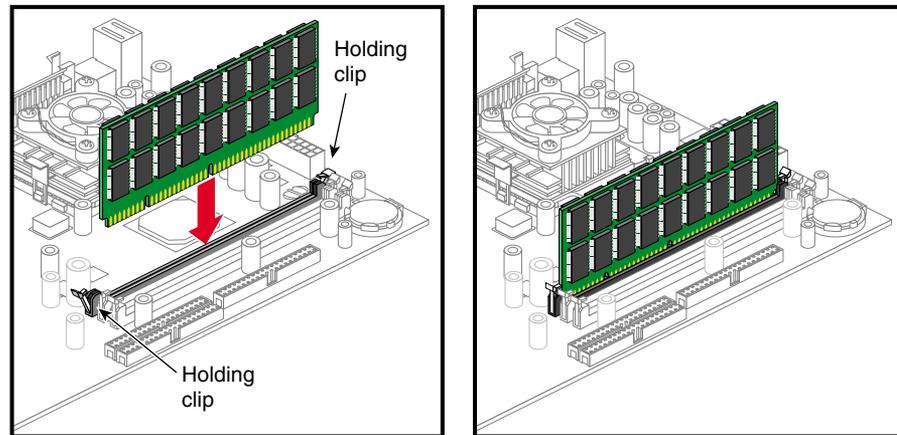
Figure 3-5   Installing a DIMM

Note: The DIMM socket is slotted to ensure proper installation. If you attempt to install a DIMM, but it does not completely fit, you may have inserted it the wrong way. Reverse the orientation of the DIMM.

Removing a Memory Module

To remove a DIMM, press the holding clips on both sides of the socket outward to release the DIMM, as shown in Figure 3-6.
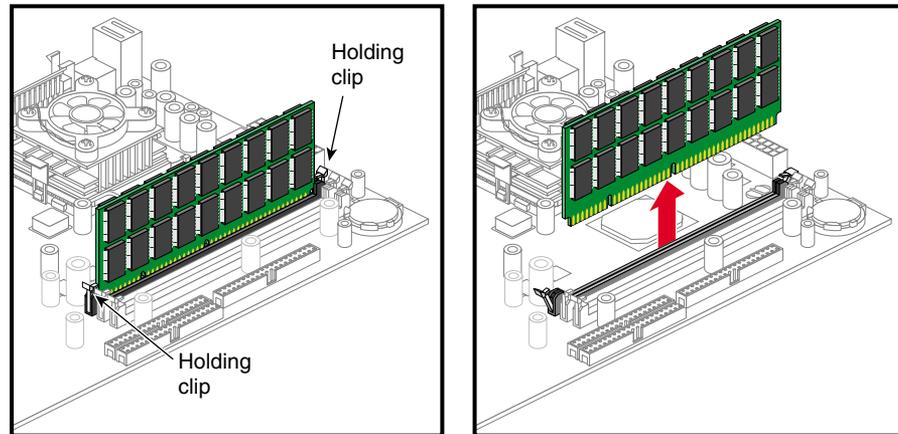
Figure 3-6   Removing a DIMM

Reconfiguring the System

The system automatically detects the amount of memory installed. Run Setup to view the new value for total system memory and make a note of it.

Error Messages

Do not continue using the computer if you receive an error message of any type. Note the message and take corrective action. This section explains the different types of error messages and corresponding corrective measures.

There are two general types of error messages:

- Software error messages
- System error messages

Software Error Messages

Software error messages are returned by your operating system or application. These messages typically occur after you boot the operating system or when you run your applications. If you receive this type of message, consult your application or operating system manual for help.

System Error Messages

A system error message indicates a problem with the computer itself. A message of this type normally appears during the power-on self-test, before the operating system prompt appears. Table 3-4 lists some of the system error messages and the corrective action to take.

Table 3-4   System Error Messages

Message	Action
CMOS Battery Bad	Replace the lithium battery or call for support.
CMOS Checksum Error	Run Setup[a].
CPU BIOS Update Code Mismatch	Call for support.
Diskette Drive Controller Error or Not Installed Floppy Disk Controller Error	Check and connect the floppy cable on both the floppy drive and system board end.

Table 3-4 (continued)   System Error Messages

Message	Action
Diskette Drive Error	Check the CMOS settings in Setup[a] and the floppy drive cable connections.
Diskette Drive A Type Mismatch Floppy Drive A Error	Run Setup[a] and select the proper floppy drive type.
Diskette Drive B Type Mismatch Floppy Drive B Error	Run Setup[a] and select the proper floppy drive type.
Equipment Configuration Error	Modify memory configuration. Call for support.
Expansion ROM Allocation Failed	Call for support.
Hard Disk Controller Error	Run Setup[a] or check the hard disk cable connection.
Hard Disk 0 Error IDE Primary Channel Master Drive Error	Check all cable connections. Replace hard disk.
IDE Primary Channel Slave Drive Error	Check all cable connections. Replace hard disk.
Hard Disk 1 Error IDE Secondary Channel Master Drive Error	Check all cable connections. Replace hard disk.
IDE Secondary Channel Slave Drive Error	Check all cable connections. Replace hard disk.
Hard Disk 0 Extended Type Error	Run Setup[a].
Hard Disk 1 Extended Type Error	Run Setup[a].
IRQ Setting Error	Run Setup[a] to make sure there is no IRQ device conflict.
I/O Parity Error	Call for support.
I/O Resource Conflict(s)	Check the serial port and parallel port to make sure there are no IRQ or I/O address conflict.
I^2C Interface or Device(s) Error, System Halt	Shut down and disconnect the power cable or call for support.

Table 3-4 (continued)   System Error Messages

Message	Action
PS/2 Keyboard Error or No Keyboard Connected	Check and connect the keyboard to the system unit.
PS/2 Keyboard Interface Error	Replace the keyboard or call for support.
PS/2 Pointing Device Error	Check and connect pointing device connection.
PS/2 Pointing Device Interface Error	Run Setup[a] and check pointing device.
Memory Error at: MMMM:SSSS:OOO (W:XXXX, R:YYYY)where:M: MB, S: Segment, O: Offset, X/Y: write/read pattern	Call for support.
Memory Resource Conflict(s)	Call for support.
Memory Size Mismatch CPU Clock Mismatch	Check the memory size based on the system specifications. Run Setup[a]. If the message reappears, ask for technical assistance.
NVRAM Checksum Error	Call for support.
Onboard Pointing Device Interface Error	Replace the pointing device or call for support.
Real Time Clock Error	Run Setup[a] and set the time and date.
RAM Parity Error	Call for support.
64K System Management Memory Bad	Call for support.
SMRAM Not Exist	Call for support.
Press Esc to turn off NMI, any key to reboot	Press **ESC** to disregard the NMI error. Press any other key to reboot the system. If this happens repeatedly call for support.

[a.] Press **CTRL + ALT + ESC** during power-on self-test (POST) to enter the BIOS Set-up screen. See Chapter 4 for information on running Setup.

Correcting Error Conditions

As a general rule, if an error message says `Press F1 to continue`, it is caused by a configuration problem, which can be easily corrected. An equipment malfunction is more likely to cause a fatal error, i.e., an error that causes complete system failure.

Here are some corrective measures for error conditions:

1. Run Setup. You must know the correct configuration values for your system before you enter Setup, which is why you should write them down when the system is correctly configured. An incorrect configuration is a major cause of power-on error messages, especially for a new system.

2. Remove the system unit cover. Check that the jumpers on the system board and any expansion boards are set correctly.

3. If you cannot access a new disk, it may be because your disk is not properly formatted or partitioned. Please consult your operating system documentation for additional information.

4. Check that all connectors and boards are securely plugged in.

If you go through the corrective steps above and still receive an error message, the cause may be an equipment malfunction.

If you are sure that your configuration values are correct and your battery is in good condition, the problem may lie in a damaged or defective chip.

In either case, contact an authorized service center for assistance.

The BIOS Utility allows you to view your system's configuration settings.

When you receive the system, it will already have been configured by SGI. There is no need to run Setup when starting the computer unless you get a `Run Setup` message.

The Setup program loads configuration values into the battery-backed nonvolatile memory called CMOS RAM. This memory area is not part of the system RAM.

Note: If you repeatedly receive `Run Setup` messages, the battery may be bad. In this case, the system cannot retain configuration values in CMOS. Replace the battery or call for support.

Setup Utility

This chapter gives information about the system BIOS and tells how to configure the system by changing the settings of the BIOS parameters.

Introduction

When you receive the system, it will already have been configured by SGI. There is no need to run Setup when starting the computer unless you get a `Run Setup` message.

The Setup program loads configuration values into the battery-backed, nonvolatile memory called CMOS RAM. This memory area is not part of the system RAM.

Note: If you repeatedly receive `Run Setup` messages, the battery may be bad. In this case, the system cannot retain configuration values in CMOS. Replace the battery or call for support.

Before you run Setup, make sure that you have saved all open files. The system reboots immediately after you exit Setup.

Entering Setup

To enter Setup, simultaneously press the key combination `Ctrl+Alt+Esc`.

Note: You must press `Ctrl+Alt+Esc` while the system is booting. This key combination does not work at any other time.

The system supports two Setup utility levels: Basic and Advanced. See Figure 4-1 for the Basic Setup Utility screen and Figure 4-2 for the Advanced Setup Utility screen.

If you are an advanced user, you may want to check the detailed configuration of your system. Detailed system configurations are contained in the Advanced Level. To view the Advanced Level, press F8.

The Key Help Guide (press Alt+H to activate) shows you how to move around the BIOS setup screen:

- Use the Up and Down arrow keys to move around the Setup Utility screen.

- Use the left and right arrow keys to move to the next page or to return to the previous page if the setup screen has more than one page available.

- Use the Page Up, Page Down, +, or - keys to select the options if they are available.

- Press Esc to return to the Main menu.

Note: A parameter with an asterisk (*) mark indicates that the parameter appears only when you are in the Advanced Level. Also, grayed items on the screens have fixed settings and are not user-configurable.

```
┌──────── Setup Utility ─────────┐
│                                │
│   • System Information         │
│   • Product Information        │
│   • Disk Drives                │
│   • Onboard Peripherals        │
│   • Power Management           │
│   • Boot Options               │
│   • Date and Time              │
│   • System Security            │
│                                │
│                                │
│      Load Default Settings     │
│      Abort Settings Change     │
│                                │
│                                │
└────────────────────────────────┘
```
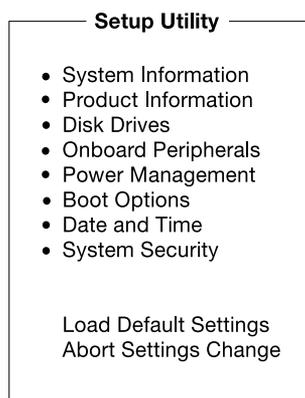
Figure 4-1   Basic Setup Utility Screen

```
┌──────── Setup Utility ────────┐
│                               │
│   • System Information        │
│   • Product Information       │
│   • Disk Drives               │
│   • Onboard Peripherals       │
│   • Power Management          │
│   • Boot Options              │
│   • Date and Time             │
│   • System Security           │
│   • Advanced Options          │
│                               │
│     Load Default Settings     │
│     Abort Settings Change     │
│                               │
└───────────────────────────────┘
```
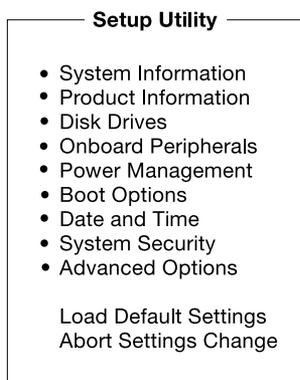
Figure 4-2   Advanced Setup Utility Screen

System Information

The following screen appears if you select `System Information` from the Main menu:

System Information

```
Processor..........................................................Pentium III
Processor Speed................................................500 MHz
Internal Cache Size............................................32 KB, Enabled
External Cache Size...........................................512KB, Enabled
FloppyDrive A......................................................1.44 MB, 3.5-inch
FloppyDrive B......................................................None

IDE Primary Channel Master................................Hard Disk,  xxxx MB
IDE Primary Channel Slave..................................None
IDE Secondary Channel Master...........................IDE CD-ROM
IDE Secondary Channel Slave..............................None

Total Memory......................................................64 MB
     1st Bank.......................................................SDRAM, 32 MB
     2nd Bank.......................................................SDRAM, 32 MB
     3rd Bank........................................................SDRAM, 32 MB

Serial Port 1 .......................................................3F8h, IRQ 4
Serial Port 2 .......................................................2F8h, IRQ 3
Parallel Port .......................................................2F8h, IRQ 3
PS/2 Mouse .......................................................Installed
```

Figure 4-3   System Information Screen

Table 4-1 describes the System Information parameters.

Table 4-1   System Information

Parameter	Description
Processor	Type of processor currently installed in your system.
Processor speed	Clock speed of the processor currently installed in your system.
Internal cache	Total amount of first-level memory or the internal fast-accessed memory size (i.e., the memory integrated into the CPU).

Table 4-1 (continued)   System Information

Parameter	Description
External cache	Total amount of second-level cache memory size that comes with the CPU.
Floppy Drive A	System's current diskette drive A settings.
Floppy Drive B	System's current diskette drive B settings.
IDE primary channel master	Current configuration of the master IDE device connected to the primary IDE channel.
IDE primary channel slave	Current configuration of the slave IDE device connected to the primary IDE channel.
IDE secondary channel master	Current configuration of the master IDE device connected to the secondary IDE channel.
IDE secondary channel slave	Current configuration of the slave IDE device connected to the secondary IDE channel.
Total memory	Total amount of onboard memory. The memory size is automatically detected by BIOS during the power-on self-test. If you install additional memory, the system automatically adjusts this parameter to display the new memory size.
1st/2nd/3rd bank	Type and size of DRAM installed in DIMM sockets 1, 2, and 3. The None setting indicates that there is no DRAM installed. For the location of the DIMM sockets, see Figure 3-1 on page 61.
Serial port 1	Serial port 1 address and IRQ setting.
Serial port 2	Serial port 2 address and IRQ setting.
Parallel port	Parallel port address and IRQ setting.
PS/2 mouse	Pointing device installation settings. Displays None if no pointing device is installed.

Product Information

The `Product Information` screen contains general data about the system, such as the product name, serial number, BIOS version, etc. This information is necessary for troubleshooting (and may be required when asking for technical support).

Figure 4-4 shows the Product Information screen.

```
                        ─── Product Information ───
  Product Name.............................................xxxxxxxxx
  System S/N...............................................xxxxxxxxx
  Main Board ID............................................xxxxxxxxx
  Main Board S/N...........................................xxxxxxxxx
  System BIOS Version...............................vx.xx
  DMI BIOS Version.........................................x.xx.x
```
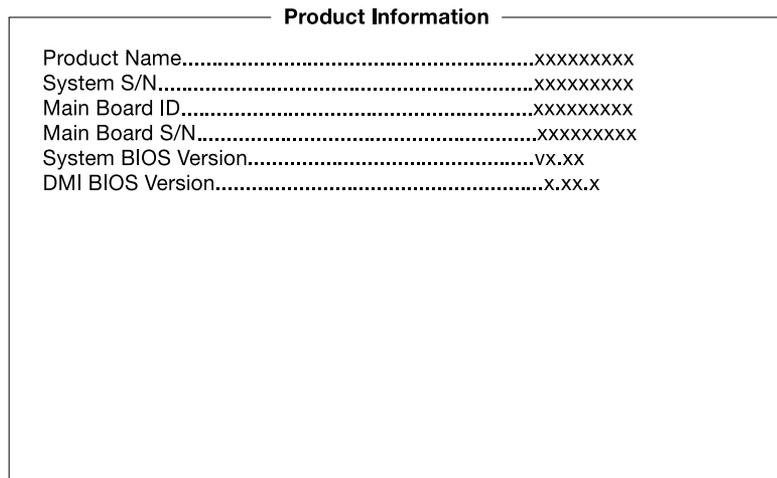
Figure 4-4　　　Product Information Screen

Table 4-2 describes the `Product Information` parameters.

Table 4-2　　　Product Information

Parameter	Description
Product name	Official name of the system
System S/N	System's serial number
Main board ID	Main board's identification number
Main board S/N	Main board's serial number
System BIOS version	Version of the BIOS utility
DMI BIOS version	Version of the DMI BIOS

Disk Drives

Select `Disk Drives` to input configuration values for disk drives.

The following screen shows the `Disk Drives` menu:

```
┌──────────────── Disk Drives ────────────────┐
│                                                          │
│  Floppy Drive A.........................................[xx-MB, xx-inch]  │
│  Floppy Drive B.........................................[    None    ]    │
│                                                          │
│                                                          │
│  • IDE Primary Channel Master*                           │
│  • IDE Primary Channel Slave*                            │
│  • IDE Secondary Channel Master*                         │
│  • IDE Secondary Channel Slave*                          │
│                                                          │
│                                                          │
│                                                          │
│                                                          │
│                                                          │
│                                                          │
│                                                          │
└──────────────────────────────────────────────┘
```

Figure 4-5   Disk Drives Screen

Note: A parameter with an asterisk (*) mark indicates that the parameter appears only when you are in the Advanced Level. See "Entering Setup" on page 77.

Table 4-3 describes the `Disk Drives` parameters. Settings in **boldface** are the default and suggested parameter settings.

Table 4-3　　　Disk Drives Parameters

Parameter	Description	Option
Floppy drive A and B	Selects the floppy disk drive type.	**1.44 MB, 3.5-inch**
		None
		360 KB, 5.25-inch
		1.2 MB, 5.25-inch
		720 KB, 3.5-inch
		2.88 MB, 3.5-inch
IDE primary channel master and slave IDE Secondary channel master and slave	This item lets you select the IDE hard disk parameters that your system supports. `Auto` enables BIOS to automatically detect the parameters of installed HDD during the POST (power-on self-test). If you prefer to enter HDD parameters manually, select `User`. Select `None` if no HDD is connected to the system. The IDE CD-ROM is always automatically detected.	**Auto** User None

IDE Channel Type

The following screen appears if you select any of the IDE Drive parameters:

```
                        IDE Primary/Secondary
                         Channel Master/Slave

Device  Type................................................... LS-120
     User  As.................................................... [Floppy A]


Device Detection Mode.................................... [Auto]
   Cylinder....................................................... [xxxx]
     Head........................................................... [xxxx]
     Sector......................................................... [xxxx]
     Size........................................................... [xxxx] MB


*Hard Disk Size > 528 MB............................... [Enabled]
*Hard  Disk  Block  Mode............................... [Enabled]
*Advanced  PIO  Mode.................................. [Auto]
*Hard  Disk  32  bit  Access............................. [Enabled]
*DMA  Transfer  Mode.................................. [Auto]


                                 .
```

Figure 4-6   IDE Channel Type Screen

Table 4-4 describes the parameters in this screen. Settings in **boldface** are the default and suggested parameter settings.

Table 4-4   IDE Drive Parameters

Parameter	Description	Option
Device Type	Indicates a hard disk type device.	
Used As	Specifies the designated drive name for the device type.	**Floppy A** Floppy B Hard disk
Device Detection Mode	Lets you specify the type of hard disk installed in your system. If you want the BIOS to automatically configure your hard disk, select Auto. If you know your hard disk type, you can select User, and enter the setting manually.	**Auto** User None

Table 4-4 (continued)   IDE Drive Parameters

Parameter	Description	Option
Cylinder	Specifies the number of cylinders of your hard disk, This can only be modified if Device Detection Mode is set to `Manual`. If Device Detection Mode is set to `Auto`, this parameter will be set by the system.	User Input
Head	Specifies the number of heads of your hard disk. This can only be modified if Device Detection Mode is set to `Manual`. If Device Detection Mode is set to `Auto`, this parameter will be set by the system	User Input
Sector	Specifies the number of sectors of your hard disk. This can only be modified if Device Detection Mode is set to `Manual`. If Device Detection Mode is set to `Auto`, this parameter will be set by the system	User Input
Size	Specifies the size of your hard disk, in MB. This can only be modified if Device Detection Mode is set to `Manual`. If Device Detection Mode is set to `Auto`, this parameter will be set by the system	User Input
Hard disk size > 528 MB	When set to `Auto`, the BIOS utility automatically detects if the installed hard disk supports the function. If supported, it allows you to use a hard disk with a capacity of more than 528 MB. This is made possible through the Logical Block Address (LBA) mode translation. However, this enhanced IDE feature works only under DOS, Windows 3.x, Windows 95, and Windows NT 3.5 and above. Other operating systems require this parameter to be set to `Disabled`.	**Enabled** Disabled

Table 4-4 (continued)   IDE Drive Parameters

Parameter	Description	Option
Hard disk block mode	Enhances disk performance depending on the hard disk in use. If you set this parameter to Auto, the BIOS utility automatically detects if the installed hard disk drive supports the Block Mode function. If supported, it allows data transfer in blocks (multiple sectors) at a rate of 256 bytes per cycle.	**Auto** Disabled
Advanced PIO mode	When set to Auto, the BIOS utility automatically detects if the installed hard disk supports the function. If supported, it allows for faster data recovery and read/write timing that reduces hard disk activity time. This results in better hard disk performance.	**Auto** Disabled
Hard disk 32 bit access	Improves system performance by allowing the use of the 32-bit hard disk access. This enhanced IDE feature works only under DOS, Windows 3.x, Windows 95, Windows NT, and Novell NetWare. If your software or hard disk does not support this function, set this parameter to Disabled.	**Enabled** Disabled
DMA transfer mode	The Ultra DMA and Multi-DMA modes enhance hard disk performance by increasing the transfer rate. However, besides enabling these features in the BIOS Setup, both the Ultra DMA and Multi-DMA modes require the DMA driver to be loaded. By setting this parameter to Auto, BIOS automatically sets the appropriate DMA mode for your hard disk.	**Auto** Disabled

Onboard Peripherals

The `Onboard Peripheral Configuration` option allows you to configure the onboard communication ports and the onboard devices. Selecting this option displays the following screen:

```
─────────────── Onboard Peripherals ───────────────

Serial Port 1........................................................  [Enabled]
    Base Address...................................................  [3F8h]
    IRQ................................................................  [ 4 ]

Serial Port 2........................................................  [Enabled]
    Base Address...................................................  [2F8h]
    IRQ................................................................  [ 3 ]

Parallel Port........................................................  [Enabled]
    Base Address...................................................  [378h]
    IRQ................................................................  [ 7 ]
    Operation Mode...............................................  [Bi-directional]
        ECP DMA Channel........................................  [ - ]

Floppy Disk Controller............................................  [Enabled]
IDE Controller.......................................................  [Both]
PS/2 Mouse Controller...........................................  [Enabled]
USB Host Controller...............................................  [Enabled]
    USB Legacy Mode...........................................  [Disabled]
```

Figure 4-7   Onboard Peripherals Screen

Table 4-5 describes the `Onboard Peripherals` parameters. Settings in **boldface** are the default and suggested parameter settings.

Table 4-5　　Onboard Peripherals Parameters

Parameter	Description	Option
Serial port 1 and 2	Enables or disables the serial port	**Enabled** Disabled
Base address	Sets the I/O base address of the serial port	**3F8h** 2F8h 3E8h 2E8h
IRQ	Sets the IRQ (interrupt request) channel of the serial port	**4** 11
Parallel port	Enables or disables the parallel port	**Enabled** Disabled
Base address	Sets the I/O base address of the parallel port.	**378h** 278h 3BCh
IRQ	Sets the interrupt request (IRQ) channel of the parallel port **Note**: If you install an add-on card that has a parallel port whose address conflicts with the onboard parallel port, a warning appears on the screen. Check the parallel port address of the add-on card and change the address to one that does not conflict.	**7** 5

Table 4-5 (continued)   Onboard Peripherals Parameters

Parameter	Description	Option
Operation mode	Selects the operation mode of the parallel port. Standard Parallel Port (Standard) – allows normal speed, one-way operation. Standard and Bidirectional (Bidirectional) – allows normal speed operation in a two-way mode. Enhanced Parallel Port (EPP) – allows bidirectional parallel port operation at maximum speed. Extended Capabilities Port (ECP) – allows parallel port to operate in bidirectional mode and at a speed higher than the maximum data transfer rate.	**Bi-directional** EPP ECP Standard
ECP DMA channel	Sets the DMA channel of the parallel port when the parallel operation mode is set to ECP.	1 3
Floppy disk controller	Sets the control level of the diskette drive.	**Normal** Disabled Write Protect All Sectors Write Protect Boot Sector
IDE controller	Sets the control level of the IDE drive.	**Normal** Disabled Write Protect All Sectors Write Protect Boot Sector
PS/2 mouse controller	Enables or disables the onboard PS/2 mouse controller.	**Enabled** Disabled

Table 4-5 (continued) Onboard Peripherals Parameters

Parameter	Description	Option
USB host controller	Enables or disable the on board USB controller.	**Enabled** Disabled
USB legacy mode	When enabled, allows you to use a USB keyboard in DOS. Set this to `Disabled` to deactivate the USB keyboard function in DOS.	**Disabled** Enabled

Power Management

The `Power Management` menu allows you to configure the system power-management feature.

The following screen shows the Power Management parameters and their default settings:

```
┌─────────────────── Power Management ───────────────────┐
│                                                        │
│  Power Mangement Mode.................................. [Enabled]       │
│     IDE Hard Disk Standby Timer....................... [Off] Minute(s)  │
│     System Sleep Timer................................ [Off] Minute(s)  │
│        Sleep Mode..................................... [-------]        │
│                                                        │
│  Power Switch <4 sec. ................................ [Suspend]        │
│                                                        │
│  System wake-up event                                  │
│     Modem Ring Indicator.............................. [Enabled]        │
│                                                        │
│                                                        │
│                                                        │
└────────────────────────────────────────────────────────┘
```

Figure 4-8   Power Management Screen

Table 4-6 describes the `Power Management` parameters. Settings in **boldface** are the default and suggested parameter settings.

Table 4-6   Power Management Parameters

Parameter	Description	Option
Power management mode	Allows you to reduce power consumption. When this parameter is set to `Enabled`, you can configure the IDE hard disk and system timers. Setting it to `Disabled` deactivates the power-management feature and its timers.	**Enabled** Disabled
IDE hard disk standby timer	Allows the hard disk to enter standby mode after inactivity of 1 to 15 minutes, depending on your setting. When you access the hard disk again, allow 3 to 5 seconds (depending on the hard disk) for the disk to return to normal speed. Set this parameter to Off if your hard disk does not support this function.	**Off** 1 minute 15 minutes
System sleep timer	This parameter sets the system to the lowest power-saving mode after a specified period of inactivity. Any keyboard or mouse action or any activity detected from the IRQ channels resumes system operation.	**Off** On
Sleep mode	Lets you specify the power-saving mode that the system will enter after a specified period of inactivity. This parameter becomes configurable only if the system sleep timer is on. Any keyboard or mouse action, or any enabled monitored activities occurring through the IRQ channels resume system operation.	**Standby** Suspend

Table 4-6 (continued)   Power Management Parameters

Parameter	Description	Option
Power switch < 4 sec.	When set to `Power off`, the system automatically turns off when the power switch is pressed for less than 4 seconds. When set to `Suspend`, the system enters the suspend mode when pressed for less than 4 seconds.	**Suspend** Power off
System wake-up event	The system wake-up event allows the system to resume operation when the modem ring indicator is enabled.	
Modem ring indicator	When `Enabled`, any fax/modem activity wakes up the system from suspend mode.	**Enabled** Disabled

Boot Options

The `Boot Options` selection allows you to specify your preferred setting for bootup.

The following screen appears if you select `Boot Options` from the Basic Configuration menu:

```
┌──────────────────── Boot Options ────────────────────┐
│                                                       │
│  Boot Sequence                                        │
│   1st  [Floppy Disk]                                  │
│   2nd [Hard Disk]                                     │
│   3rd  [IDE CD-ROM]                                   │
│                                                       │
│  Primary Display Adapter.....................[Disabled]│
│                                                       │
│   Fast Boot..................................[Disabled]│
│   Silent Boot................................[Enabled] │
│   Num Lock After Boot........................[Enabled] │
│   Memory Test................................[Enabled] │
│                                                       │
│                                                       │
│                                                       │
│                                                       │
└───────────────────────────────────────────────────────┘
```
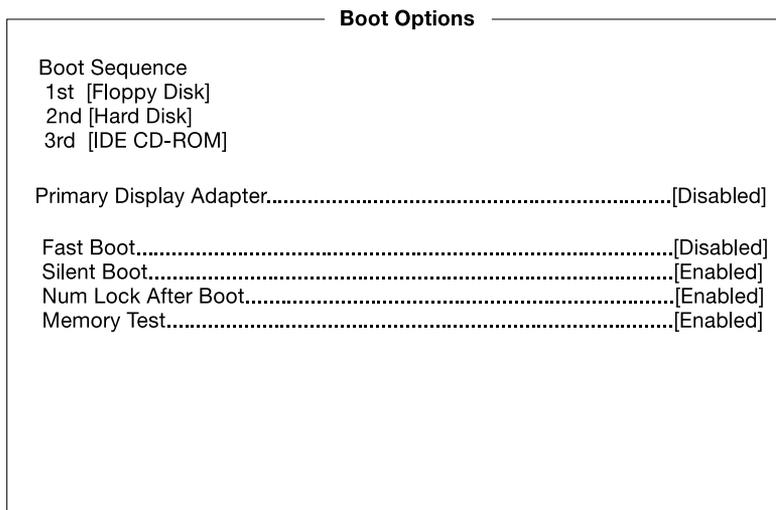
Figure 4-9   Boot Options Screen

Note: A parameter with an asterisk (*) mark indicates that the parameter appears only when you are in the Advanced Level. See "Entering Setup" on page 77.

Table 4-7 describes the `Boot Options` parameters. Settings in **boldface** are the default and suggested parameter settings.

Table 4-7   Boot Options Parameters

Parameter	Description	Option
Boot Sequence	This parameter allows you to specify the boot search sequence during POST. **- 1st**. The system checks this drive first. **- 2nd**. The system then checks this drive if it can not boot from the 1st specified drive. **- 3rd**. If the 1st and 2nd searches fail, it boots from this drive. BIOS will display an error message if the drive specified is not bootable.	
Primary display adapter	Setting this parameter to `Auto` enables the onboard video controller. Normally, the onboard video controller is considered as the primary display adapter. If you installed a video card into your system, you need to disable the onboard VGA; otherwise, the video card will not function. To do this, simply set this parameter to `Disabled`.	**Onboard** Disabled
Fast boot	Allows the system to boot faster by skipping some POST routines.	**Disabled** Enabled

Table 4-7 (continued)   Boot Options Parameters

Parameter	Description	Option
Silent boot	Enables or disables the Silent Boot function. When set to `Enabled`, BIOS is in graphical mode and displays only an identification logo during POST and while booting. After booting, the screen displays the operating system prompt (such as DOS) or logo (such as Windows 95). If any error occurs while booting, the system automatically switches to the text mode. Even if your setting is `Enabled`, you may also switch to the text mode while booting by pressing the `Delete` key when you see the "Press DELETE key to enter setup" message on the screen. When set to `Disabled`, BIOS is in the conventional text mode where you see the system initialization details on the screen.	**Enabled** Disabled
Num lock after boot	Allows you to activate the Num Lock function upon booting.	**Enabled** Disabled
Memory test	When set to `Enabled`, this parameter allows the system to perform a RAM test during the POST routine. When set to `Disabled`, the system detects only the memory size and bypasses the test routine.	**Enabled** Disabled

Date and Time

The real-time clock keeps the system date and time. After setting the date and time, you do not need to enter them every time you turn on the system. As long as the internal battery remains good (approximately 7 years) and connected, the clock continues to keep the date and time accurately even when the power is off.

```
┌──────────────── Date and Time ────────────────┐
│                                                 │
│ Date...............................[WWW MMM DD, YYYY]  │
│ Time................................[HH:MM:SS]         │
│                                                 │
│                                                 │
│                                                 │
│                                                 │
```

Figure 4-10   Date and Time Screen

Table 4-8 describes the Date and Time parameters.

Table 4-8   Date and Time Parameters

Parameter	Description
Date	Set the date following the weekday-month-day-year format. Valid values for weekday, month, day, and year are:
	Weekday: Sun, Mon, Tue, Wed, Thu, Fri, Sat
	Month: Jan, Feb, Mar, Apr, May, Jun, Jul, Aug, Sep, Oct, Nov, Dec
	Day: 1 to 31
	Year: 1980 to 2079
Time	Set the time following the hour-minute-second format. Valid values for hour, minute, and second are:
	Hour: 00 to 23
	Minute: 00 to 59
	Second: 00 to 59

System Security

The Setup program has a number of security features to prevent unauthorized access to the system and its data.

The following screen appears if you select `System Security` from the `Setup Utility` screen:

```
┌──────────────── System Security ────────────────┐
│                                                  │
│ Supervisor Password.........................[None] │
│ User Password...............................[None] │
│ Disk Drive Control                               │
│    Floppy Drive.............................[None] │
│    Hard Disk Drive..........................[None] │
│                                                  │
│                                                  │
│                                                  │
│                                                  │
│                                                  │
└──────────────────────────────────────────────────┘
```
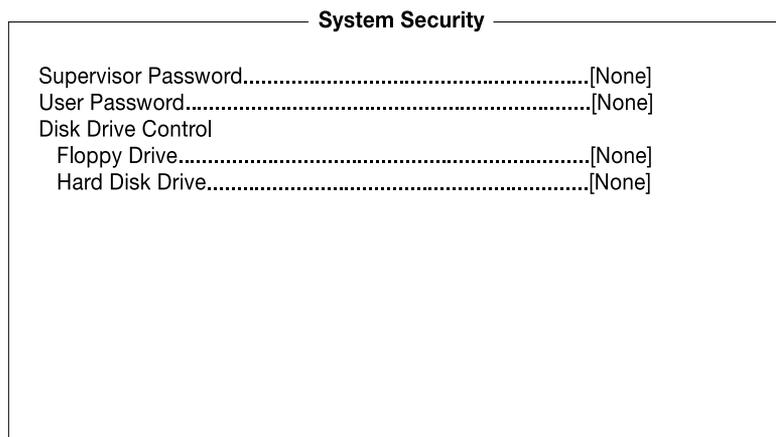
Figure 4-11   System Security Screen

Supervisor Password

The Supervisor Password prevents unauthorized access to the BIOS utility.

Setting and Changing a Password

To set or change a password:

1. Enable the `Supervisor Password` parameter in the `System Security` menu by pressing the left or right arrow keys. The `Supervisor Password` window appears:

```
┌──────────────── SupervisorPassword ────────────────┐
│                                                     │
│ Enter your new Supervisor Password twice.  Supervisor Password may │
│ be up to 7 characters long.                         │
│                                                     │
│ Enter Password.......................................[xxxxxxx]     │
│ Enter Password again.................................[xxxxxxx]     │
│                                                     │
│ Set or Change Password                              │
│                                                     │
│                                                     │
│                                                     │
│                                                     │
│                                                     │
└─────────────────────────────────────────────────────┘
```
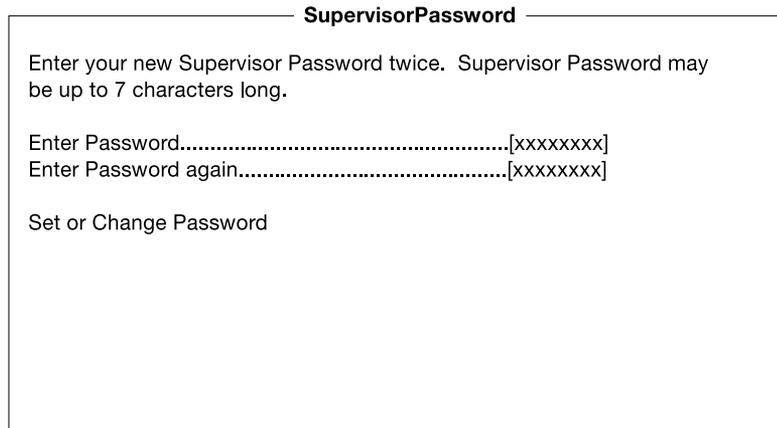
Figure 4-12　Supervisor Password Screen

2. Type a password in the Enter Password field. The password may consist of up to seven characters.

3. Press the Enter key. Retype your password in the Enter Password Again field to verify your first entry.

4. Highlight `Set or Change Password` and press the `Enter` key.

5. Press the `Esc` key to return to the System Security menu and then press the `Esc` key again to exit Setup. The Exit Setup screen appears:

```
Settings have been changed.
Do you want to save to CMOS settings?

        [Yes]          [No]
```

Figure 4-13   Exit Setup Screen

6. Choose Yes to save your settings and exit the Setup Utility. Your password will be saved to CMOS.

The next time you want to enter the BIOS utility, you must key in your Supervisor password.

Removing a Password

To remove your Supervisor Password:

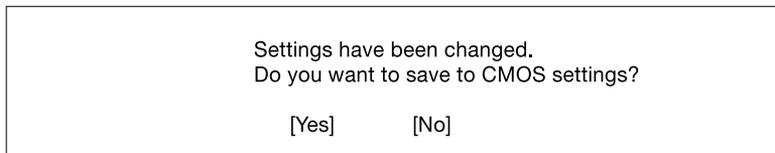1. Disable the `Supervisor Password` parameter in the `System Security` menu by pressing the left or right arrow key to select None.

2. Press the `Esc` key to return to the `System Security` menu and then press the `Esc` key again to exit Setup. The `Exit Setup` screen appears:

```
Settings have been changed.
Do you want to save to CMOS settings?

        [Yes]          [No]
```
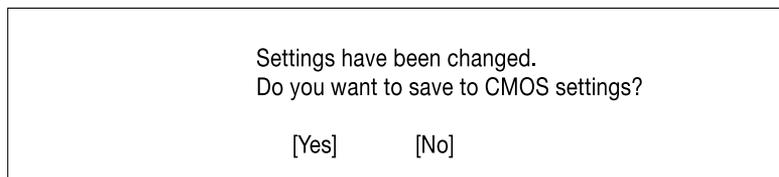
Figure 4-14   Exit Setup Screen

3. Choose Yes to save your settings and exit Setup Utility. Your previous password will be removed from CMOS.

User Password

The User Password secures your system against unauthorized use. Once you set this password, you have to type it whenever you boot the system. To set this password, enter the Setup Utility, select System Security, and then highlight the User Password parameter. Follow the procedure used in "Supervisor Password" on page 99.

```
┌─────────────────────────── User Password ──────────────────────────┐
│                                                                     │
│  Enter your new User Password twice.  User                          │
│  Password may be up to 7 characters long.                           │
│                                                                     │
│  Enter Password.........................................[xxxxxxxx]  │
│  Enter Password again...................................[xxxxxxxx]  │
│                                                                     │
│  Set or Change Password                                             │
│                                                                     │
│                                                                     │
│                                                                     │
│                                                                     │
│                                                                     │
│                                                                     │
└─────────────────────────────────────────────────────────────────────┘
```

Figure 4-15   User Password Screen

Disk Drive Control

The disk drive control features allow you to control the floppy drive or the hard disk drive boot function to prevent loading operating systems or other programs from a certain drive while the other drives are operational (under DOS mode only).

Table 4-9 describes the Disk Drive Control settings.

Table 4-9   Disk Drive Control

Setting	Description
Normal	Floppy drive or hard disk drive functions normally
Write Protect All Sectors	Disables the write function on all sectors
Write Protect Boot Sectors	Disables the write function only on the boot sector

Advanced Options

The `Advanced Options` configuration menu allows you to configure the system memory, PCI device settings, and CPU frequency. To view the `Advanced Options` screen, press **F8.**

Note: If you are not a qualified technician, to avoid damaging the system do not change any settings under Advanced Options.

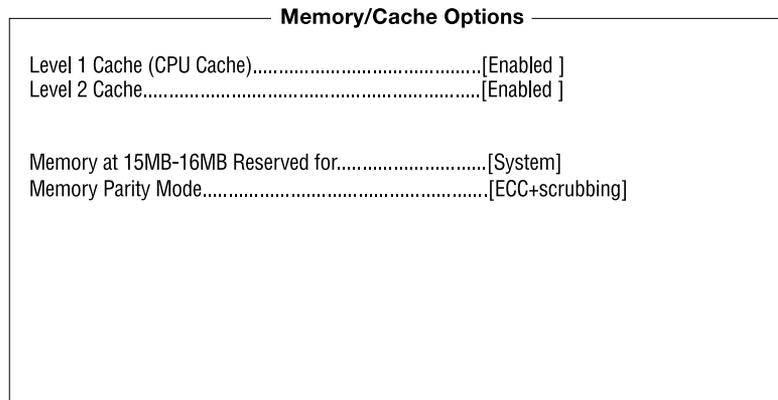The following screen shows the `Advanced Options` parameters:

```
┌──────────────── Memory/Cache Options ────────────────┐
│                                                      │
│ Level 1 Cache (CPU Cache)............................[Enabled ] │
│ Level 2 Cache.......................................[Enabled ] │
│                                                      │
│                                                      │
│ Memory at 15MB-16MB Reserved for....................[System]   │
│ Memory Parity Mode..................................[ECC+scrubbing] │
│                                                      │
│                                                      │
│                                                      │
│                                                      │
│                                                      │
│                                                      │
└──────────────────────────────────────────────────────┘
```

Figure 4-16   Advanced Options Screen

Memory/Cache Options

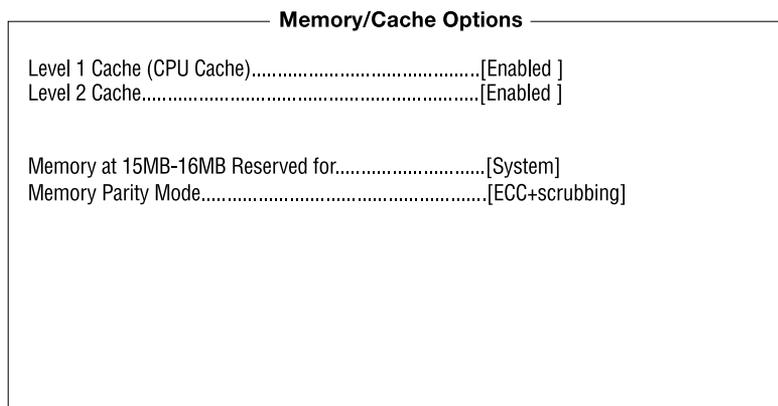The `Memory/Cache Options` allow you to configure the advanced system memory functions.

```
──────────────── Memory/Cache Options ────────────────

Level 1 Cache (CPU Cache)...........................................[Enabled ]
Level 2 Cache...................................................................[Enabled ]


Memory at 15MB-16MB Reserved for.............................[System]
Memory Parity Mode.......................................................[ECC+scrubbing]
```

Figure 4-17   Memory/Cache Options Screen

Table 4-10 describes the `Memory/Cache Options` parameters screen. Settings in **boldface** are the default and suggested parameter settings.

Table 4-10   Memory/Cache Options Parameters

Parameter	Description	Option
Level 1 cache	This parameter enables or disables the first-level or internal memory, that is, the memory integrated into the CPU.	**Enabled** Disabled
Level 2 cache	This parameter enables or disables the second-level cache memory. The second-level cache is incorporated into the CPU module.	**Enabled** Disabled

Table 4-10 (continued)   Memory/Cache Options Parameters

Parameter	Description	Option
Memory at 15MB-16MB Reserved for	To prevent memory address conflicts between the system and expansion boards, reserve this memory range for the use of either the system or an expansion board.	**System** Expansion board
Memory Parity Mode	Enables or disables the ECC (Error Checking and Correction) feature. The ECC feature enables BIOS to detect and correct data errors. Disable this parameter if you want to disregard the function.	**ECC+scrubbing** Disabled

PnP/PCI Options

The `PnP/PCI Options` allows you to specify the settings for your plug-and-play (PnP) PCI devices. Selecting this option displays the following screen:

```
┌──────────────── PnP/PCI Configuration ────────────────┐
│                                                        │
│  PCI IRQ Setting................................[ Auto ]  │
│                          INTA  INTB  INTC  INTD        │
│     PCI Slot 1...................................[--]    [--]    [--]     [--]  │
│     PCI Slot 2...................................[--]    [--]    [--]     [--]  │
│     PCI Slot 3...................................[--]    [--]    [--]     [--]  │
│                                                        │
│                                                        │
│  PCI IRQ Sharing................................................[Yes ]  │
│  VGA Palette Snoop............................................[Disabled]  │
│  Graphics Aperture Size.......................................[64] MB  │
│  Plug and Play OS.............................................[Yes]  │
│  Reset Resource Assignments...........................................[No ]  │
│                                                        │
│                                                        │
│                                                        │
│                                                        │
│                                                        │
└────────────────────────────────────────────────────────┘
```

Figure 4-18   PnP/PCI Configuration

Table 4-11 describes the `PnP/PCI Options` parameters. Settings in **boldface** are the default and suggested parameter settings.

Table 4-11   PnP/PCI Options Parameters

Parameter	Description	Option
PCI IRQ sharing	Select `Auto` to let the BIOS automatically configure the plug-and-play (PnP) devices installed on your system. Otherwise, select `Manual`. **Note:** Refer to your manual for technical information about the PCI card.	**Auto** Manual
PCI slot 1 to 3	When you set the PCI IRQ Setting parameter to `Auto`, these parameters specify the auto-assigned interrupt for each of the PCI devices. If you set the PCI IRQ Setting parameter to `Manual`, you need to specify the interrupt that you want to assign for each PCI device installed in your system.	User input
PCI IRQ sharing	Setting this parameter to `Yes` allows you to assign the same IRQ to two different devices. To disable the feature, select `No`. **Note:** If there are no IRQs available to assign for the remaining device function, we recommend that you enable this parameter.	**Yes** No

Table 4-11 (continued)   PnP/PCI Options Parameters

Parameter	Description	Option
VGA palette snoop	This parameter permits you to use the palette snooping feature if you installed more than one VGA card in the system.	**Disabled** Enabled
	The VGA palette snoop function allows the control palette register (CPR) to manage and update the VGA RAMDAC (Digital Analog Converter, a color data storage) of each VGA card installed in the system. The snooping process lets the CPR send a signal to all the VGA cards so that they can update their individual RAMDACs. The signal goes through the cards continuously until all RAMDAC data has been updated. This allows the display of multiple images on the screen.	
	Note: Some VGA cards have required settings for this feature. Check your VGA card manual before setting this parameter.	
Graphics aperture size	This parameter determines the effective size of the graphics aperture. The graphics aperture is the address range that the AGP video and the CPU use to manage graphical objects. The lowest setting is 8 MB and the highest is 256 MB.	User input
Plug and play OS	When this parameter is set to Yes, BIOS initializes only PnP boot devices such as SCSI cards. When set to No, BIOS initializes all PnP boot and non-boot devices such as sound cards.	**Yes** No
	Note: Set this parameter to Yes only if your operating system is Windows 95/98.	
Reset resource assignments	Set this parameter to Yes to avoid IRQ conflict when installing non-PnP cards. This clears all resource assignments and allows BIOS to reassign resources to all installed PnP devices the next time the system boots. After clearing the resource data, the parameter resets to No.	**No** Yes

Load Default Settings

Use the `Load Default Settings` option to load the default settings for the optimized system configuration. When you load the default settings, some of the parameters are grayed-out with their fixed settings. These grayed parameters are not user-configurable.

The following dialog box appears when you select `Load Default Settings` from the Main menu:

Do you want to load default settings?

[Yes]   [No]
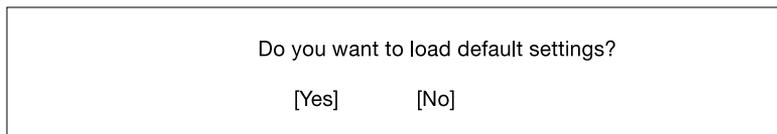
Figure 4-19   Load Default Settings Screen

Select `Yes` to load the default settings.

Select `No` to ignore the message and return to the BIOS utility.

Abort Settings Change

Use the `Abort Settings Change` option to disregard your changes to the BIOS and reload your previous settings.

The following dialog box appears when you select `Abort Settings Change` from the Main menu:

```
┌─────────────────────────────────────────────────────────────┐
│                                                             │
│              Do you want to abort settings change?          │
│                                                             │
│                    [Yes]          [No]                      │
│                                                             │
└─────────────────────────────────────────────────────────────┘
```
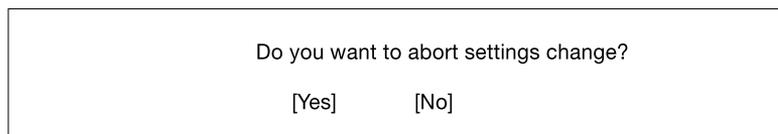
Figure 4-20   Abort Settings Change Screen

Select `Yes` to disregard your changes and reload your previous settings. After reloading, the Main menu appears on your screen.

Select `No` to ignore the message and return to the BIOS utility

Exit Setup

Examine the system configuration values. When you are satisfied that all the values are correct, write them down. Store the recorded values in a safe place. In the future, if the battery loses power or the CMOS chip is damaged, you will know what values to enter when you rerun Setup.

Press the Esc key to leave the Setup utility. The following dialog box appears:

Do you really want to exit SETUP?

[Yes]   [No]
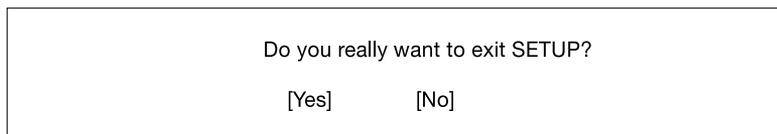
Figure 4-21   Exit Setup Screen

Use the arrow keys to select your response. Press the Enter key.

If you made any changes to the Setup utility, the following dialog box appears:

Settings have been changed.
Do you want to save to CMOS settings?

[Yes]   [No]
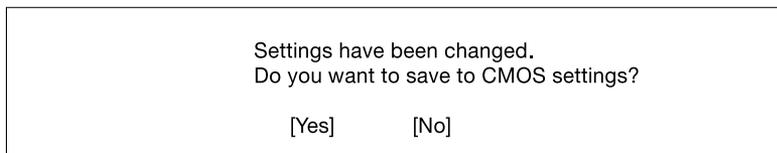
Figure 4-22   Save Settings Screen

Use the arrow keys to select your response. Select Yes to save the changes in CMOS. Select No to retain the old configuration values. Press the Enter key to exit.

Connector Pinouts

This Appendix contains port pinout information for the following Silicon Graphics 230 Visual Workstation ports:

- Keyboard Port
- Mouse Port
- Video-Out Ports
    - DB15 HD Port
- Serial Ports
- Parallel Port
- USB Ports
- Ethernet Port
- Audio Ports
    - Mic-In Port
    - Line-In and Line-Out Ports

Keyboard Port

The Silicon Graphics 230 Visual Workstation uses a standard PS/2 keyboard port, as shown in Figure A-1.
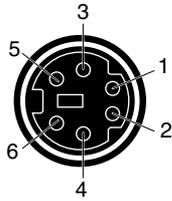
Figure A-1   Keyboard Port Pinout

Table A-1 shows the cable pinout assignments for the keyboard port.

Table A-1   Keyboard Port Pinout

Pin	Assignment
1	Keyboard Data
2	(Reserved)
3	Ground
4	Keyboard Power (+5V)
5	Keyboard Clock
6	(Reserved)

Mouse Port

The Silicon Graphics 230 Visual Workstation uses a standard PS/2 mouse port, as shown in Figure A-2.
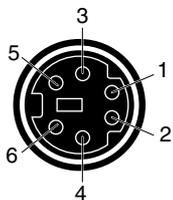

Figure A-2   Mouse Port Pinout

Table A-2 shows the cable pinout assignments for the mouse port.

Table A-2   Mouse Port Pinout

Pin	Assignment
1	Mouse Data
2	(Reserved)
3	Ground
4	Mouse Power (+5V)
5	Mouse Clock
6	(Reserved)

Video-Out Ports

The Silicon Graphics 230 Visual Workstation comes with an DB15 HD video port, an S-Video port and a DVI-D port.

DB15 HD Port

Figure A-3 shows the DB15 HD port.
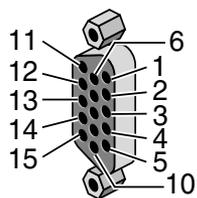
Figure A-3   DB15 HD Port Pinout

Table A-3 shows the port pinout assignments for the DB15 HD port.

Table A-3   DB15 HD Port Pinout

Pin	Assignment	Pin	Assignment
1	Red	9	No Connect
2	Green	10	Ground
3	Blue	11	Ground
4	Ground	12	IIC Data
5	Ground	13	Horizontal Sync
6	Red Return	14	Vertical Sync
7	Green Return	15	IIC Clock
8	Blue Return		

Serial Ports

The Silicon Graphics 230 Visual Workstation serial ports use a standard PC-compatible pinout. The serial port supports data rates from 300 bits per second (bps) to 115.2 Kbps. Figure A-4 shows the serial port.
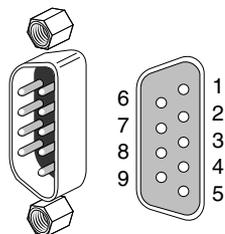
Figure A-4   Serial Port Pinout

Table A-4 shows cable pinout assignments for the serial ports.

Table A-4   Serial Port Pinout

Pin	Assignment	Description
1	DCD	Data Carrier Detect
2	RD	Receive Data
3	TD	Transmit Data
4	DTR	Data Terminal Ready
5	SG	Signal Ground
6	DSR	Data Set Ready
7	RTS	Request to Send
8	CTS	Clear to Send
9	RI	Ring Indicator

Parallel Port

The Silicon Graphics 230 Visual Workstation uses a standard DB25 1284 EPC parallel port, as shown in Figure A-5.
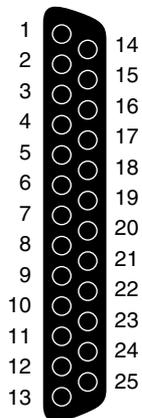
Figure A-5   Parallel Port Pinout

Table A-5 shows the cable pinout assignments for the parallel port.

Table A-5   Parallel Port Pinout

Pin	Assignment	Pin	Assignment	Pin	Assignment
1	Strobe	10	Ack	19	Ground
2	Data 0	11	Busy	20	Ground
3	Data 1	12	Error	21	Ground
4	Data 2	13	Select	22	Ground
5	Data 3	14	AutoFd	23	Ground
6	Data 4	15	Fault	24	Ground
7	Data 5	16	Init	25	Ground
8	Data 6	17	SelectIn		
9	Data 7	18	Ground		

USB Ports

The Silicon Graphics 230 Visual Workstation has two 4-pin USB connectors. Figure A-6 shows a USB port.
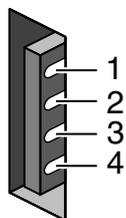
Figure A-6   USB Port Pinout

Table A-6 shows the cable pinout assignments for the USB ports.

Table A-6   USB Port Pinout

Pin	Assignment	Color	Comment
1	VCC	Red	Cable power
2	-Data	White	
3	+Data	Green	
4	Ground	Black	Cable ground

Ethernet Port

The Silicon Graphics 230 Visual Workstation has an RJ45 port for 10-Base-T or 100-Base-TX twisted-pair Ethernet. The port autoselects the speed (10 Mbps or 100 Mbps) and type (half duplex or full duplex) at bootup, based on what it is connected to. Figure A-7 shows the Ethernet port.
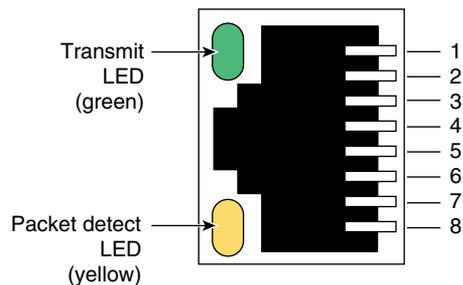
Figure A-7   Ethernet Port Pinouts

Table A-7 shows the cable pinout assignments for the Ethernet port.

Table A-7   Ethernet Port Pinout

Pin	Assignment
1	Transmit+
2	Transmit–
3	Receive+
4	(Reserved)
5	(Reserved)
6	Receive–
7	(Reserved)
8	(Reserved)

Audio Ports

The Silicon Graphics 230 Visual Workstation uses a 3.5 mm mini jack stereo microphone port, an analog line-level audio input port and an analog line-level audio output port.

Table A-8 shows the port pinout information for the mic-in, line-in, and line-Out ports.

Table A-8   Mic-in, Line-in, Line-Out Port Pinouts

Connector	Tip	Ring	Sleeve
Mic-in	L	R	Ground
Line-in	L	R	Ground
Line-out	L	R	Ground

Mic-In Port

Figure A-8 shows the mic-In port.
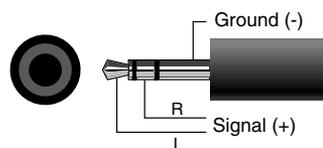
Figure A-8   Mic-In Port Pinout

Line-In and Line-Out Ports

Figure A-9 shows the line level port.
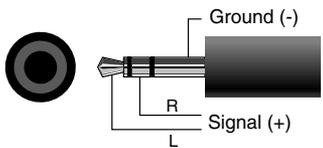
Figure A-9   Line Level Port

Physical Environment Specifications

Table B-1 shows the physical environment specifications for the Silicon Graphics 230 Visual Workstation.

Table B-1   Physical Environment Specifications

System dimensions	48.9 cm (19.25'') H x 20.95 cm (8.25'') W x 44.1 cm (17.375'') D-without bezel, 49.16 cm (19.375'') D-with bezel
Power Requirements	The power requirements are shown on the back of the system
Ambient Temperature	+10°C (+50°F) to +35°C (+95°F) (operating) -20°C (-4°F) to +60°C (+149°F) (non-operating)
Relative Humidity	10% to 90% non-operating (no condensation)
Vibration	0.38 mm (0.015''), 5-16.2 Hz; 0.2 G, 16.2-250 Hz (operating) 0.6 G, 5-27.1 Hz; 0.4 mm (0.016''), 27.1-50 Hz; 2 G, 50-500 Hz (non-operating)

Figure B-1 shows the system dimensions with bezel.
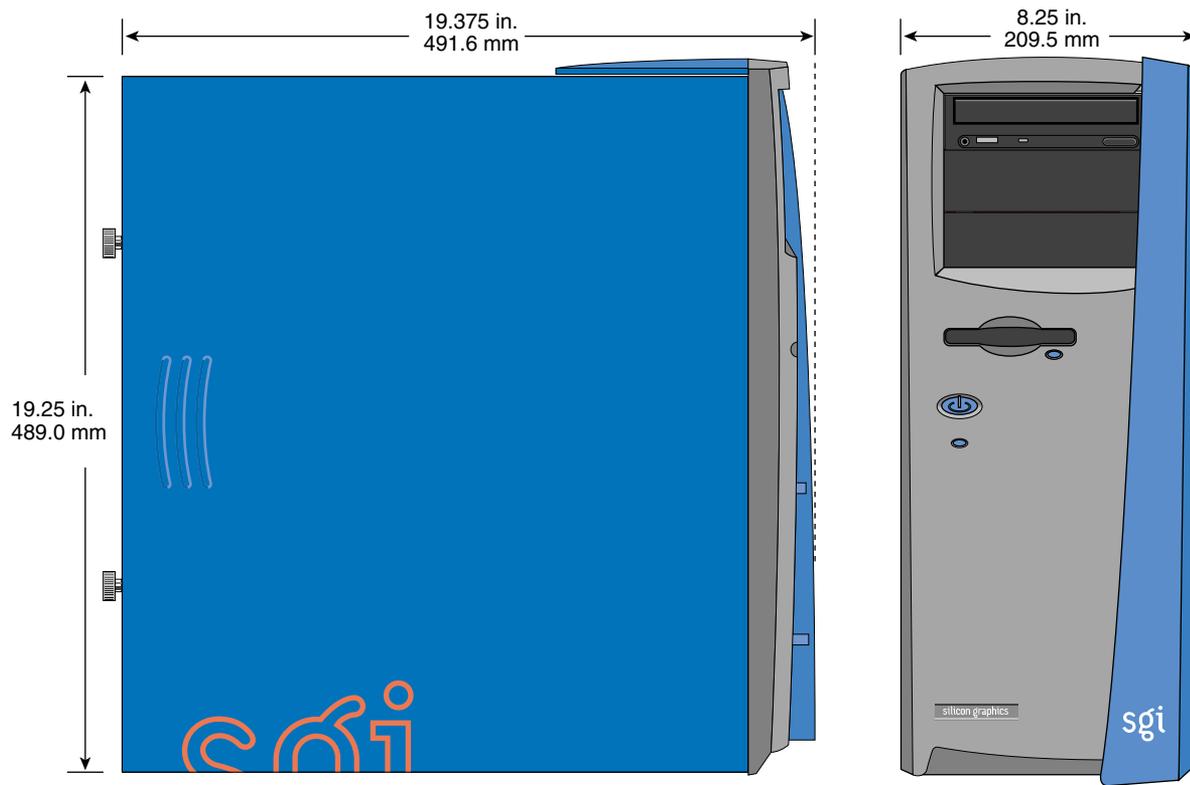
Figure B-1   System Dimensions

Regulatory Information

FCC notice

This device has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This device generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, which can be determined by turning the device off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna

- Increase the separation between the device and receiver

- Connect the device into an outlet on a circuit different from that to which the receiver is connected

- Consult the dealer or an experienced radio/television technician for help

Notice: Shield cables

All connections to other computing devices must be made using shielded cables to maintain compliance with FCC regulations.

Notice: Peripheral devices

Only peripherals (input/output devices, terminals, printers, etc.) certified to comply with the Class B limits may be attached to this equipment. Operation with non certified peripherals is likely to result in interference to radio and TV reception.

Caution: Changes or modifications not expressly approved by the manufacturer could void the user's authority, which is granted by the Federal Communications Commission, to operate this computer.

Use conditions

This part complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Notice: Canadian users

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Remarque à l'intention des utilisateurs canadiens

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Important safety instructions

Read these instructions carefully. Save these instructions for future reference.

1. Follow all warnings and instructions marked on the product.

2. Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

3. Do not use this product near water.

4. Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.

5. Slots and openings in the cabinet and the back or bottom are provided for ventilation; to ensure reliable operation of the product and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register, or in a built-in installation unless proper ventilation is provided.

6. This product should be operated from the type of power indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.

7. Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord.

8. If an extension cord is used with this product, make sure that the total ampere rating of the equipment plugged into the extension cord does not exceed the extension cord ampere rating. Also, make sure that the total rating of all products plugged into the wall outlet does not exceed the fuse rating.

9. Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

10. Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage points or other risks. Refer all servicing to qualified service personnel.

11. Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

    a. When the power cord or plug is damaged or frayed

    b. If liquid has been spilled into the product

    c. If the product has been exposed to rain or water

d. If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal condition.

e. If the product has been dropped or the cabinet has been damaged

f. If the product exhibits a distinct change in performance, indicating a need for service.

12. Replace the battery with the same type as the product's battery we recommend. Use of another battery may present a risk of fire or explosion. Refer battery replacement to a qualified serviceman.

13. Warning! Batteries may explode if not handled properly. Do not disassemble or dispose of them in fire. Keep them away from children and dispose of used batteries promptly.

14. Use only the proper type of power supply cord set (provided in your accessories box) for this unit. It should be a detachable type: UL listed/CSA certified, type SPT-2, rated 7A 125V minimum, VDE approved or its equivalent. Maximum length is 15 feet (4.6 meters).

Laser compliance statement

The CD-ROM drive in this computer is a laser product. The CD-ROM drive's classification label (shown below) is located on the drive.

CLASS 1 LASER PRODUCT

CAUTION: INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.

APPAREIL A LASER DE CLASSE 1

ATTENTION: RADIATION DU FAISCEAU LASER INVISIBLE EN CAS D'OUVERTURE. EVITTER TOUTE EXPOSITION AUX RAYONS.

LUOKAN 1 LASERLAITE LASER KLASSE 1

VORSICHT: UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET NICHT DEM STRAHLL AUSSETZEN

PRODUCTO LÁSER DE LA CLASE I

ADVERTENCIA: RADIACIÓN LÁSER INVISIBLE AL SER ABIERTO. EVITE EXPONERSE A LOS RAYOS.

ADVARSEL: LASERSTRÅLING VEDÅBNING SE IKKE IND I STRÅLEN

VARO! LAVATTAESSA OLET ALTTINA LASERSÅTEILYLLE.

VARNING: LASERSTRÅLNING NÅR DENNA DEL ÅR ÖPPNAD ÅLÅ TUIJOTA SÅTEESEENSTIRRA EJ IN I STRÅLEN

VARNING: LASERSTRÅLNING NAR DENNA DEL ÅR ÖPPNADSTIRRA EJ IN I STRÅLEN

ADVARSEL: LASERSTRÅLING NAR DEKSEL ÅPNESSTIRR IKKE INN I STRÅLEN

Lithium battery statement

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

ADVARSEL!: Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Léver det brugte batteri tilbage til leverandøren.

ADVARSEL: Eksplosjonsfare ved feilaktig skifte av batteri. Benytt samme batteritype eller en tilsvarende type anbefalt av apparatfabrikanten. Brukte batterier kasseres i henhold til fabrikantens instruksjoner.

VARNING: Explosionsfara vid felaktigt batteribyte. Anvãnd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera anvãnt batteri enligt fabrikantens instruktion.

VAROITUS: Päristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

VORSICHT!: Explosionsgefahr bei unsachgemäßen Austausch der Batterie Ersatz nur durch denselben oder einem vom Hersteller empfohlenem ähnlichen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.

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