Installing Options in Your Personal Computer

PC 330 (Type 6577) and PC 350 (Type 6587)

IBM

Installing Options in Your Personal Computer

PC 330 (Type 6577) and PC 350 (Type 6587)

Note

Before using this information and the product it supports, be sure to read the general information under Appendix D, “Notices” on page 91.

Second Edition (June 1996)

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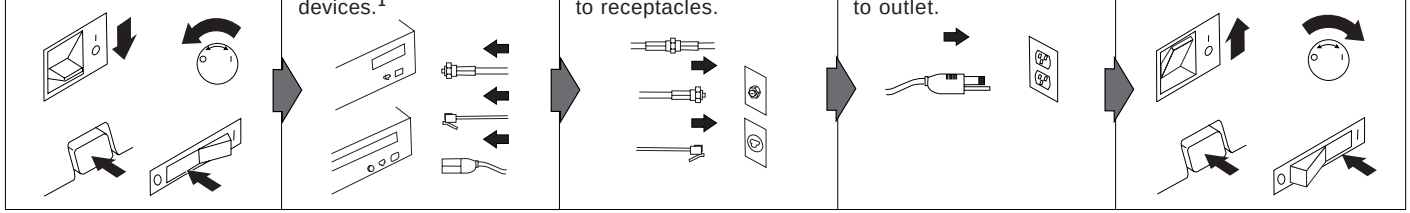
DANGER:

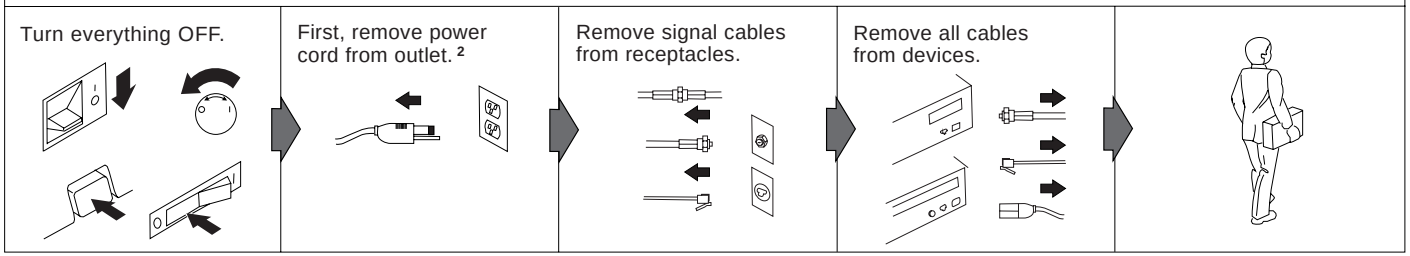
Electrical current from power, telephone, and communication cables is hazardous. To avoid shock hazard, connect and disconnect cables as shown below when installing, moving or opening the covers of this product or attached devices. The power cord must be used with a properly grounded outlet.

To Connect



[1] In the U.K., by law, the telephone cable must be connected after the power cord.

To Disconnect



[2] In the U.K., by law, the power cord must be disconnected after the telephone line cable.

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Lithium Battery Notice

CAUTION:
Danger of explosion if battery is incorrectly replaced.

When replacing the battery, use only IBM Part Number 33F8354 or an equivalent type battery recommended by the manufacturer. The battery contains lithium and can explode if not properly used, handled, or disposed of.

Do not:

- **Throw or immerse into water**
- **Heat to more than 100°C (212°F)**
- **Repair or disassemble**

Dispose of the battery as required by local ordinances or regulations.

ATTENTION
Danger d'explosion en cas de remplacement incorrect de la batterie.

Remplacer uniquement par une batterie IBM de type 33F8354 ou d'un type équivalent recommandé par le fabricant. La batterie contient du lithium et peut exploser en cas de mauvaise utilisation, de mauvaise manipulation ou de mise au rebut inappropriée.

Ne pas :

- **Lancer ou plonger dans l'eau**
- **Chauffer à plus de 100° C (212° F)**
- **Réparer ou désassembler**

Mettre au rebut les batteries usagées conformément aux règlements locaux.

About This Book

This book contains information to help you decide which internal options to add to your computer. It also provides instructions for adding and removing most options.

How This Book Is Organized

This book contains the following chapters and appendixes:

- Chapter 1, "Option Installation Overview" summarizes the internal options covered in this book and shows where the options are located. Safety precautions and handling techniques are provided to guide you as you install or remove options.
- Chapter 2, "Adding Options" provides step-by-step instructions that explain how to add most internal options to your computer. This chapter also explains how to remove internal options that you might need to remove before you install other options.

  In addition, Chapter 2 has a section on the Configuration/Setup Utility program and enabling options such as LAN Wake-Up and Wake Up on Ring.
- Chapter 3, "Security Options" describes how to do the following:
  - Install a U-bolt to help prevent theft of your computer
  - Remove an unknown power-on password
  - Set the diskette write-protect jumper
  - Set an administrator password
- Appendix A, "Interrupt and DMA Assignments" contains the interrupt request assignments and direct memory access (DMA) channel assignments for your computer.
- Appendix B, "Changing the Battery" explains how to change your computer backup battery and the precautions you should take when handling and disposing of the battery.
- Appendix C, "Optional Floor Stand" explains how to install and how to remove the optional floor stand.
- Appendix D, "Notices" contains IBM notices and trademark information.

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Related Publications

The following publications, together with this book, contain information related to the operation of your computer:

- *Setting Up Your Personal Computer*

  This publication contains instructions to help you set up your computer.

- *Using Your Personal Computer*

  This book contains information on the following subjects:

  - Use, operation, and maintenance of your computer
  - Help for solving computer problems and getting repair service or other technical assistance
  - Warranty information

- *Understanding Your Personal Computer* (included only with a preinstalled software package)

  This online publication contains general information about using personal computers and more detailed information about the features of your personal computer.

- *S3 Trio64V+ SVGA Device Driver Installation Instructions*

  This online publication contains instructions for installing Trio64V+ SVGA device drivers.

The following publication contains more information about your computer:

- *Hardware Maintenance Manual*

  This manual is a separately purchased publication for trained service technicians.

Chapter 1. Option Installation Overview

This overview provides a summary of the internal hardware options available for your IBM personal computer. It refers you to sections of the book that contain installation and removal instructions for those options that are available.

Throughout this manual, the two different models are distinguished by their number of drive bays and expansion slots. A PC 330 has three drive bays and three expansion slots. A PC 350 has five drive bays and five expansion slots. Major model differences are explained where appropriate.

Introduction

Adding hardware options to your computer is an easy way to increase its capabilities. Many options are available (see "Available Options" on page 4).

This book can help you decide which options to add to your computer and show you how to install the options you choose. Instructions for removing options also are included. When adding an option, use these instructions along with the instructions that come with the option.

If you have installed options before, you might be able to perform some activities without detailed instructions. Go to the instructions for the option you want to install, perform the activities listed in the "Before you begin" box, and then continue with the instructions.

Before you install or remove an option, read the safety procedures and component-handling guidelines in this chapter. These precautions and guidelines will help you work safely when you work with your computer or options.

Refer to *Using Your Personal Computer* for general information on the use, operation, and maintenance of your computer. *Using Your Personal Computer* also contains information to help you solve problems and get repair service or other technical assistance.

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Electrical Safety

CAUTION:
Electrical current from power, telephone, and communication cables can be hazardous. To avoid any shock hazard, disconnect all power cords and cables as described in the following information.

For your safety, always do the following *before* removing the cover:

1. Shut down all programs as described in your operating-system documentation.
2. Turn off the computer and any attached devices, such as printers, monitors, and external drives.

   Note: personal computer users in the United Kingdom who have a modem or fax machine attached to their computer must disconnect the telephone line from the computer *before* unplugging any power cords (also known as power cables). When the computer is reassembled, users must reconnect the telephone line *after* plugging in the power cords.
3. Unplug all power cords from electrical outlets.
4. Disconnect all communication cables from external receptacles.
5. Disconnect all cables and power cords from the back of the computer.

   Note: Do not reconnect any cables or power cords until you reassemble the computer and put the cover back on.

CAUTION:
Never remove the cover on the power supply. If you have a problem with the power supply, have your computer serviced.

Handling Static-Sensitive Devices

Have you ever walked across a carpeted floor, then touched an object and received a small electrical shock? That's static electricity, and although harmless to you, it can seriously damage computer components and options.

Important

When you add an option, *do not* open the static-protective package containing the option until you are instructed to do so.

When you handle options and other computer components, take these precautions to avoid static electricity damage:

- Limit your movement. Movement can cause static electricity to build up around you.
- Always handle components carefully. Handle adapters and memory-modules by the edges. Never touch any exposed circuitry.
- Prevent others from touching components.
- When you are installing a new option, touch the static-protective package containing the option to a metal expansion-slot cover or other unpainted metal surface on the computer for at least two seconds. This reduces static electricity in the package and your body.
- When possible, remove the option and install it directly in the computer without setting the option down. When this is not possible, place the static-protective package that the option came in on a smooth, level surface and place the option on it.
- Do not place the option on the computer cover or other metal surface.

Available Options

The following are some of the hardware options available for your computer:

- Adapters. See “Adapters” on page 9.
  - Industry standard architecture (ISA) adapters
  - Peripheral component interconnect (PCI) adapters
- System memory. See “System Memory” on page 13.
  - Single in-line memory modules (SIMMs)
  - Dual in-line memory modules (DIMMs)
- Cache memory. See “Installing a Cache Memory Module” on page 23.
- Internal drives. See “Internal Drives” on page 26.
- Personal Computer Memory Card International Association (PCMCIA) adapters

  Note: PCMCIA support requires an optional adapter card and additional hardware.
- Microprocessor upgrades. See “Installing a Microprocessor Upgrade” on page 55
- Infrared. The system is enabled for infrared data/file transfer. With the optional infrared transceiver, the system supports wireless data/file transfer with other infrared devices such as notebook computers or infrared printers.
- LAN Wake-Up. The system can be remotely started by a signal sent on the LAN if the PC is equipped with an optional LAN adapter.
- Wake Up on Ring. The system can be remotely started by a ring detected on an optional modem if the system is equipped with an optional modem. You can use an internal modem or an external modem connected to a serial port.
- A U-bolt for securing your computer (see “Installing a U-Bolt and Security Cable” on page 75)

For the latest information about available options:

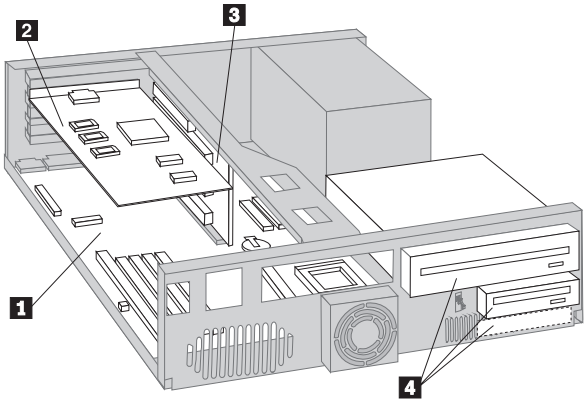
- Within the United States, call 1-800-IBM-2YOU (1-800-426-2968), your place of purchase, or your IBM reseller.
- Within Canada, call 1-800-565-3344 or 1-800-465-7999.
- Outside the United States and Canada, contact your IBM HelpWare number, place of purchase, or IBM reseller.

Locating Components

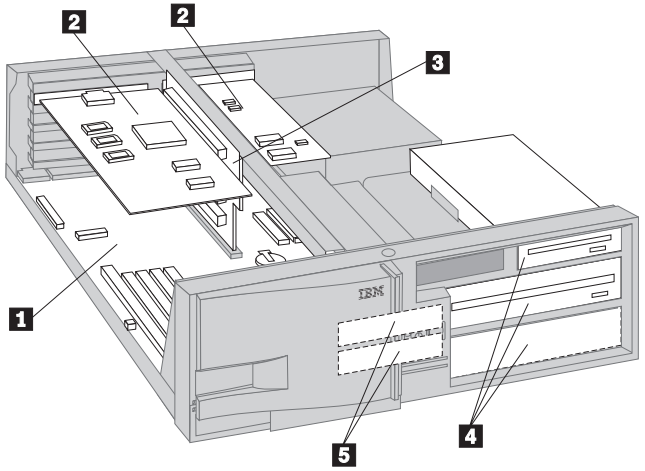
The following illustrations help you locate components and serve as a reference when you need to install options in your computer.

Internal Views

1. System board
2. Adapter
3. Riser card
4. Bays 1, 2, and 3
5. Bays 4 and 5

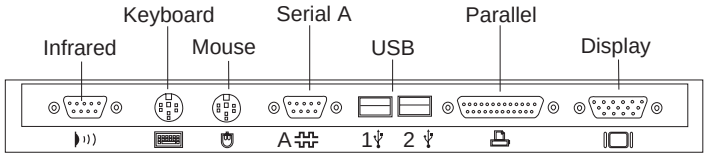


PC 330



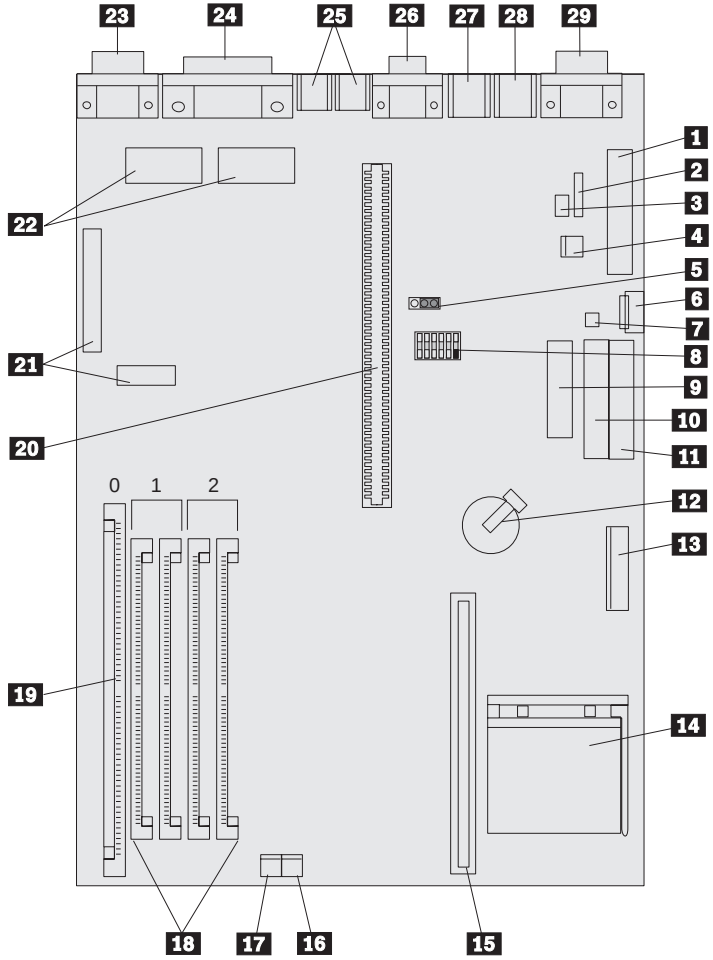
PC 350

Input/Output Connectors



System Board

1. Power connector (5 V)
2. Modem ring
3. LAN Wake-Up
4. Modem ring
5. Password jumper (CMOS clear)
6. Auxiliary power
7. On/Off switch
8. Configuration switch set
9. Diskette connector
10. Primary IDE connector
11. Secondary IDE connector
12. Battery
13. Power connector (3.3 V)
14. Processor upgrade socket
15. Cache memory module connector
16. Power LED connector
17. Hard disk access LED connector
18. SIMM connectors (Bank 1/2)
19. DIMM connector (Bank 0)
20. Riser connector
21. VESA passthrough connectors
22. Video upgrade sockets
23. Video port
24. ECP/EPP parallel port
25. USB ports (1, 2)
26. Serial (A) port
27. Mouse port
28. Keyboard port
29. Infrared port



Chapter 2. Adding Options

This chapter provides information about available hardware options and the instructions to help you add options to your computer. Where needed, option-removal instructions also are provided.

Note: Be sure your current computer configuration is working properly before you add or remove any options.

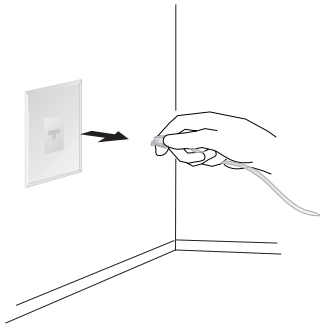
Removing the Cover

Before you begin

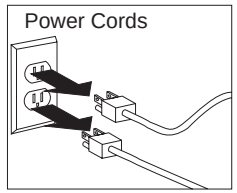
- Locate the key to the cover lock.
- Obtain a small, flat-blade screwdriver.
- Read “Electrical Safety” on page 2 and “Handling Static-Sensitive Devices” on page 3.

1 Remove any media (diskettes, CD-ROM discs, or tapes) from the drives, and then turn off all attached devices and the computer.

2 If you have a modem or fax machine attached to the computer, disconnect the telephone line from the wall outlet and the computer.



3 Unplug all power cords (cables) from electrical outlets.



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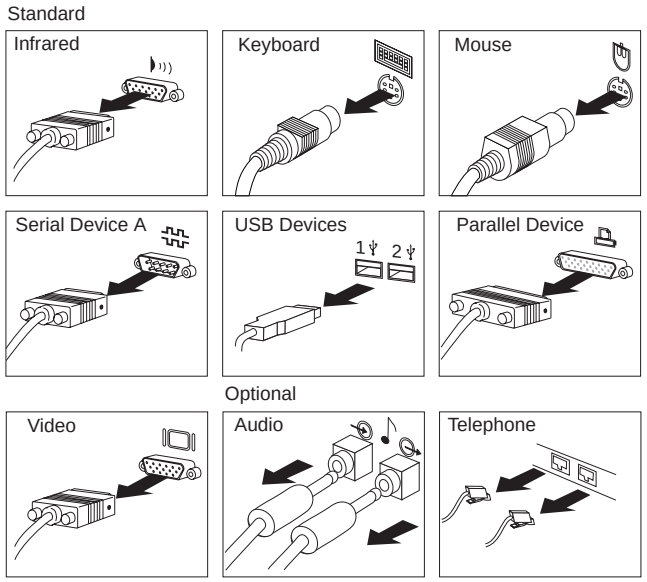
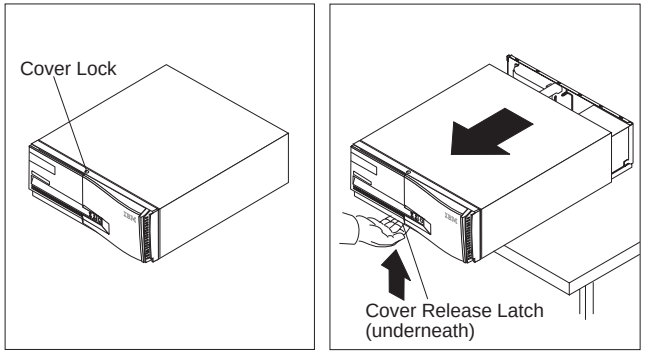
Removing the Cover

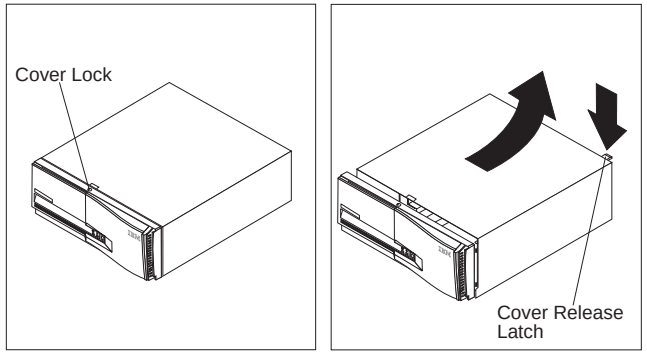
4 Disconnect all cables from the back of the computer. This includes standard and optional features.



5 Unlock the computer cover lock. Then press and hold the cover release latch, and remove the cover as indicated in the following illustrations.



PC 330



PC 350

Adapters

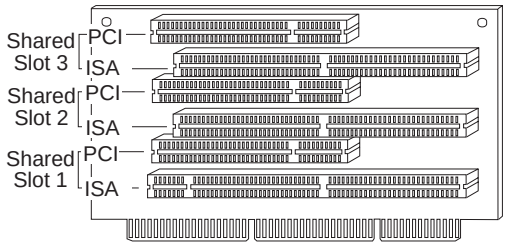
Adding an adapter, such as a communication or audio adapter, extends the capabilities and power of your computer. Your computer has adapter connectors called *expansion slots*, which are located on a *riser card*.

Riser Configurations

The following information describes the expansion slots that are available on each type of ISA/PCI riser card.

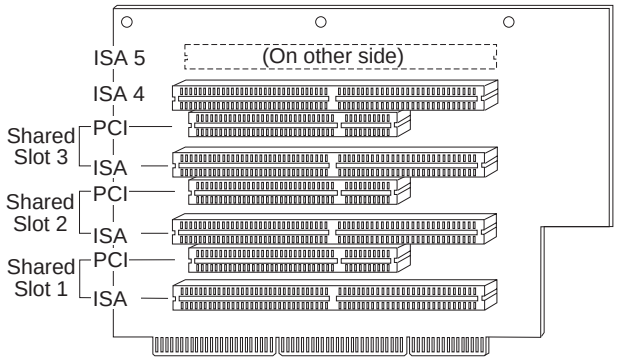
- PC 330 riser card

  The PC 330 riser card has three full-length, 16-bit, industry standard architecture (ISA) bus expansion slots and three 32-bit, peripheral component interconnect (PCI) bus expansion slots. All three of the ISA/PCI slots are shared. This means that you can use only one ISA or PCI adapter per shared slot.



- PC 350 riser card

  The PC 350 riser card has five 16-bit, industry standard architecture (ISA) bus expansion slots (one on the other side), and three 32-bit, peripheral component interconnect (PCI) bus expansion slots. Three of the ISA/PCI slots are shared, and two of the ISA slots are dedicated. You can use only one ISA or PCI adapter per shared slot.



Notes:

1. PCI adapters plug into the PCI riser slot with the components on the adapter facing down toward the system board.
2. ISA adapters plug into the ISA riser slot with the components on the adapter facing upward.

Plug and Play

Plug and Play is a technology designed to automate and simplify the setup and configuration of your computer when you install new options. Plug and Play adapter support is built into the system board in your computer.

Plug and Play Adapters

PCI adapters generally support Plug and Play. Some new ISA adapters also support Plug and Play.

A Plug and Play adapter comes with identification and configuration specifications set in memory on the adapter to provide installation information to the computer during startup. This information is sensed by the input/output (I/O) bus and interpreted by the computer *basic input/output system (BIOS)*. The BIOS routines then automatically configure the adapter around the resources already in use by other devices.

Legacy Adapters

If an adapter you install is not Plug and Play compatible, the Configuration/Setup Utility program can help you manually configure the adapter. Adapters that are not Plug and Play compatible are known as *legacy devices*.

Configuration/Setup Utility program

Within the Configuration/Setup Utility program, the ISA Legacy Resources screen, shows personal computer resources, that are typically required by adapters:

- I/O port address
- Memory address
- Interrupt request (IRQ) line
- Direct memory access (DMA) channel

From the Configuration/Setup Utility program screens you can select available resources for the adapter you are installing. Resources not currently being used by adapters that are already installed in your computer are listed as [**Available**]. The system resources that are in use by other devices are listed as a [**System Resource**].

Notes:

1. Refer to the documentation that comes with the adapter for information on required system resources. Then make the appropriate jumper or switch settings on the adapter.
2. If you have a resource conflict, set the resources used by the ISA legacy adapter to [**Not available]**. This will manually configure the ISA legacy adapter to that specific computer resource. Once Plug and Play detects that a resource is not available, it will skip it, and reconfigure to other available system resources.

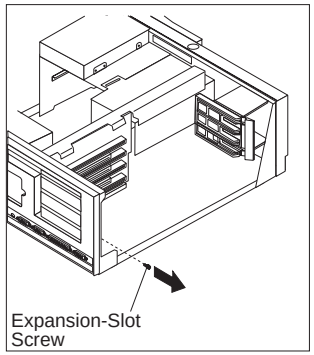
Installing Adapters

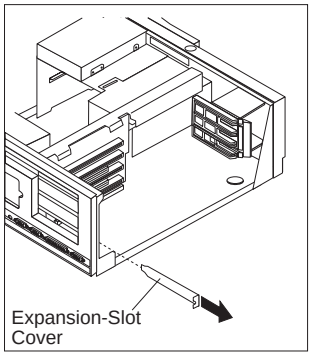
Before you begin

- Read "Electrical Safety" on page 2 and "Handling Static-Sensitive Devices" on page 3.
- Read the instructions that come with the adapter.
- Turn off the computer.
- Disconnect all external cables and power cords, and then remove the computer cover (see "Removing the Cover" on page 7).

1 Review the instructions that come with the adapter to determine if the adapter must be installed in a certain slot; otherwise, use any empty ISA or PCI bus-compatible slot.

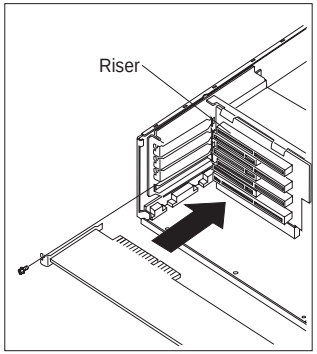
2 Remove the expansion-slot cover from the slot where you want to install the adapter.

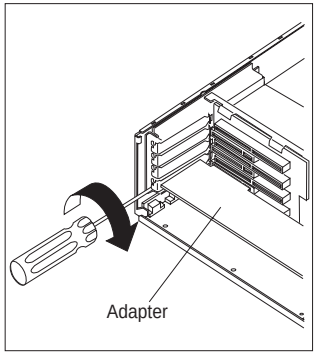




3 Touch the static-protective package, containing the adapter, to any *unpainted* metal surface on the computer; then remove the adapter from the package.

4 Install the adapter. If a component in the computer or on the adapter interferes with the installation, use another slot.





5 Go to the device-record form in *Using Your Personal Computer*, and write the adapter name next to the slot into which you installed it.

What to do next

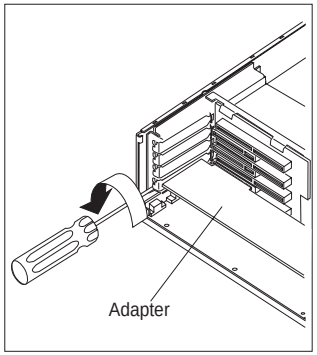
- To install or remove another option, go to the appropriate section.
- To complete the installation, go to page 67.

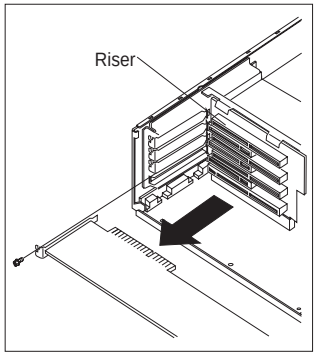
Removing Adapters

Before you begin

- Read “Electrical Safety” on page 2 and “Handling Static-Sensitive Devices” on page 3.
- Turn off the computer.
- Disconnect all external cables and power cords, and then remove the computer cover (see “Removing the Cover” on page 7).

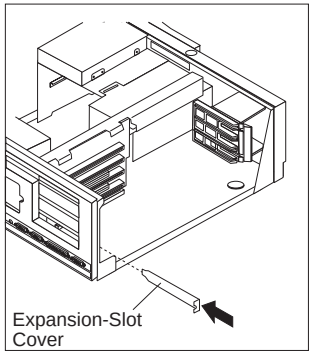
1 Locate the expansion-slot position of the adapter that you want to remove, and then remove the adapter.

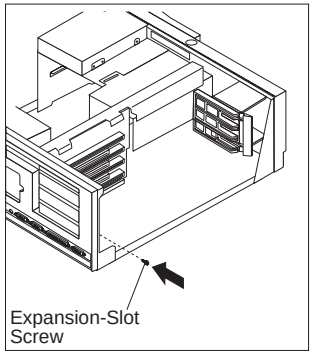




2 Insert the adapter you removed into a static-protective package.

3 Install an expansion-slot cover in the empty expansion slot.





4 Go to the device-record form in *Using Your Personal Computer*, and delete the name of the adapter you removed.

What to do next

- To install or remove another option, go to the appropriate section.
- To complete the installation, go to page 67.

System Memory

You can add system memory[4] to your computer and increase your system performance by providing more DRAM storage. Your computer has four SIMM connectors and one DIMM connector. Be sure to install SIMMs in matched (identical) pairs. After the memory modules are installed, the Plug and Play feature of the Configuration/Setup Utility program will automatically detect the additional memory modules.

You can increase system memory in one of four ways:

- You can install matched-pair, single in-line memory modules (SIMMs) into the vacant SIMM connectors on the system board.
- You can replace smaller matched-pair SIMMs with larger ones.
- You can install matched-pair, dual in-line memory modules (DIMMs) into the vacant DIMM connector on the system board.
- You can remove the dual in-line memory module (DIMM) from the DIMM connector on the system board and replace it with a larger one.

Notes:

1. Memory modules can have a maximum height of 1.2 inches.
2. Install only parity SIMMs/DIMMs to enable parity.
3. A mix of parity and non-parity SIMMs/DIMMs will configure as non-parity.
4. A mix of EDO[1] and FP[2] SIMMs/DIMMs will work, provided that matched pairs are installed in each bank.
5. Your PC supports industry standard 72-pin tin-lead SIMMs and 168-pin gold-lead DIMMs.

---

1 Extended data output (EDO)

2 Fast page (FP)

Memory-Module Configurations

The following table shows the 8 MB and 16 MB standard memory-module configurations[3].

Table 1. Standard Memory-Module Configuration

Type	Speed	EDO	Parity	Size	Memory
SIMMs	60 ns	EDO	N	4, 4 MB	8 MB
DIMM	60 ns	EDO	N	16 MB	16 MB

The following table shows the SIMMs and DIMMs that are supported[4].

Table 2. Optional Memory-Module Configuration

Type	Speed	EDO/FP	Parity	Sizes Supported
SIMM	60 ns	EDO	N	4, 8, 16, 32 MB
SIMM	60 ns	FP	Y	4, 8, 16, 32 MB
DIMM	60 ns	EDO	N	8, 16, 32 MB
DIMM	60 ns	FP	Y	8, 16, 32 MB

3 Standard memory-module configurations are subject to change.

4 The maximum (SIMMs/DIMMs) memory supported is 192 MB.

Installing System Memory

Before you begin

- Read “Electrical Safety” on page 2 and “Handling Static-Sensitive Devices” on page 3.
- Turn off the computer.
- Disconnect all external cables and power cords, and then remove the computer cover (see “Removing the Cover” on page 7).

What to do next

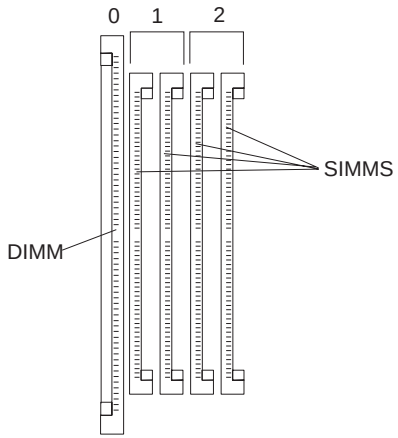
- To remove or install SIMMs, continue with the next step.
- To remove or install a DIMM, go to “ Removing and Installing a DIMM” on page 18.

Removing and Installing SIMMs

Locate the SIMM connectors at the left-front corner of your computer system board. (See the system board illustration on page 6.)

The following illustration shows the memory banks on your computer system board.

Bank 1 and bank 2 hold matched-pair SIMMs. When installing a SIMM, a matched-pair is first loaded into bank 1, and then into bank 2 as required.



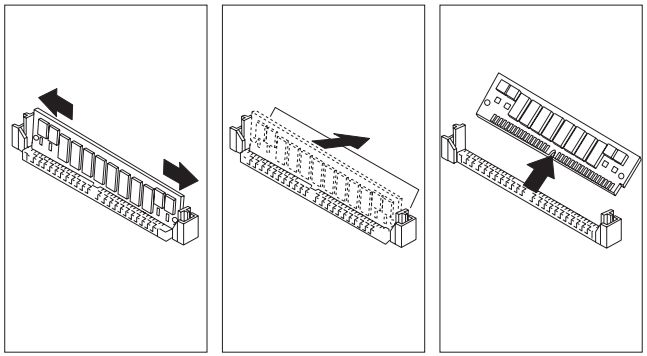
1 Note the slot positions of any adapters that block access to the SIMM connectors, and remove those adapters. (In most cases, it is not necessary to remove half-length adapters.) For information about removing an adapter, see page 12.

What to do next

- If there are empty SIMM connectors on the system board, use the procedure in step 3 on page 17 to install memory.
- If no empty SIMM connectors remain on the system board, continue with the following step.

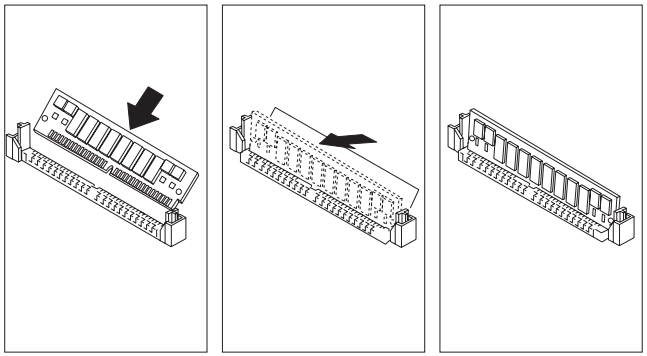
2 Use the following procedure to remove SIMMs:

a. Starting with the right-most populated SIMM connector, push outward against the retaining clips at both ends of the SIMM connector.
b. Pivot the SIMM away from the connector until it is released from the clips.
c. Lift the SIMM out of the connector.
d. Repeat this procedure for each SIMM you want to remove. (Remember to remove them in matched pairs.)



3 Use the following procedure to install SIMMs:

a. With the notch in the SIMM toward the front of the computer, align the center key slot and insert a SIMM into the left-most empty SIMM connector. The SIMM will seat at an angle.
b. Pivot the top of the SIMM toward the connector until it snaps into the retaining clips.
c. Repeat this procedure for each SIMM you want to install. (Remember to install them in matched pairs.)



What to do next

- To install a DIMM, go to " Removing and Installing a DIMM" on page 18.
- If you do not have more memory to install, continue with the following step.

4 Install any previously removed adapters into the same slots from which they were removed. For information about installing adapters, see "Installing Adapters" on page 11.

5 Go to the device-record form in *Using Your Personal Computer*, and update the current configuration of the memory modules.

What to do next

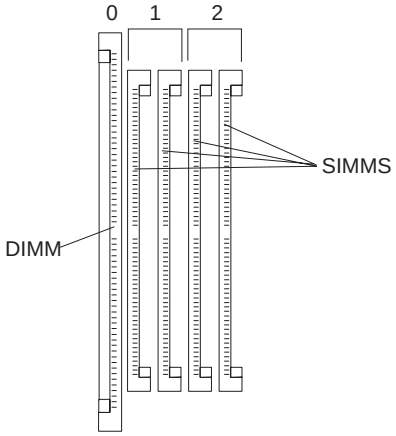
- To install or remove another option, go to the appropriate section.
- To complete the installation, go to page 67.

Removing and Installing a DIMM

Locate the DIMM connector at the left-front corner of your computer system board. (See the system board illustration on page 6.)

The following illustration shows the memory banks on your computer system board.

Bank 0 holds DIMM memory modules.



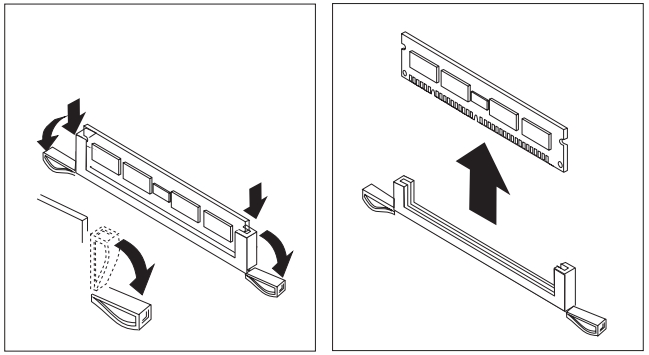
1 Note the slot position of any adapters that block access to the DIMM connector, and then remove these adapters. (In most cases, it is not necessary to remove half-length adapters.) For information about removing an adapter, see page 12.

What to do next

- To remove a DIMM, continue with the next step.
- To install a DIMM, go to step 3 on page 19.

2 Use the following procedure to remove a DIMM.

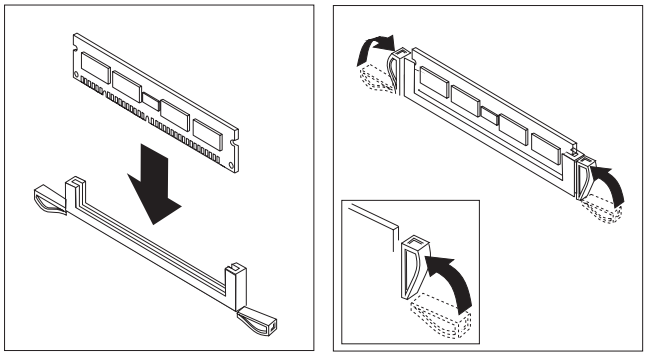
a. Firmly push downward on the retaining clips at both ends of the DIMM connector. This will eject the DIMM from the connector.
b. Lift the DIMM out of the connector.



3 Use the following procedure to install a DIMM.

a. Position the DIMM so that the two notches (key slots) on the bottom edge align with the two notches in the connector on the system board.

b. After aligning the DIMM, push the DIMM firmly straight down into the connector. (The retaining clips on both sides of the connector will pop up.)



4 Reinstall any previously removed adapters into the same slots from which they were removed. For information about installing adapters, see "Installing Adapters" on page 11.

5 Go to the device-record form in *Using Your Personal Computer*, and update the current configuration of the memory modules.

What to do next

- To install or remove another option, go to the appropriate section.
- To complete the installation, go to page 67.

Video Memory Module

You can add video memory to your personal computer to improve the performance of many graphics-intensive application programs and take advantage of the higher resolution provided by some displays.

Optional Video Memory Modules

Two optional .5 MB (256 KB x 16-bit) video memory modules can be installed. Maximum video memory supported is 2 MB.

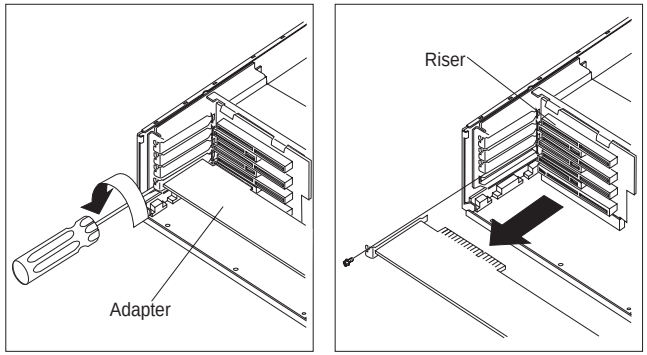
Installing or Removing a Video Memory Module

Before you begin

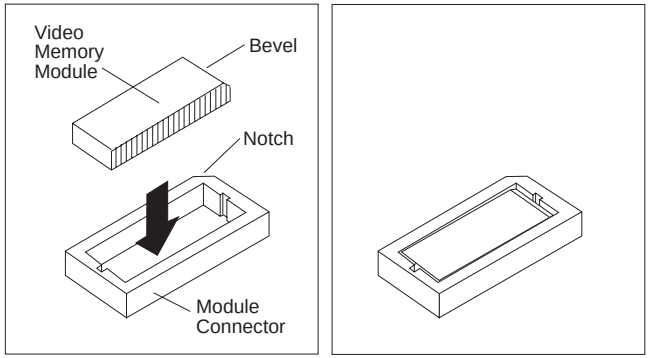
- Read "Electrical Safety" on page 2 and "Handling Static-Sensitive Devices" on page 3.
- Turn off the computer.
- Disconnect all external cables and power cords, and then remove the computer cover (see "Removing the Cover" on page 7).

Locate the video memory connectors on your computer system board. (See the system board illustration on page 6.)

1 Note the slot position of any installed adapters, and then remove any adapters that block access to the video memory module connectors. (For information about removing an adapter, see page 12.)



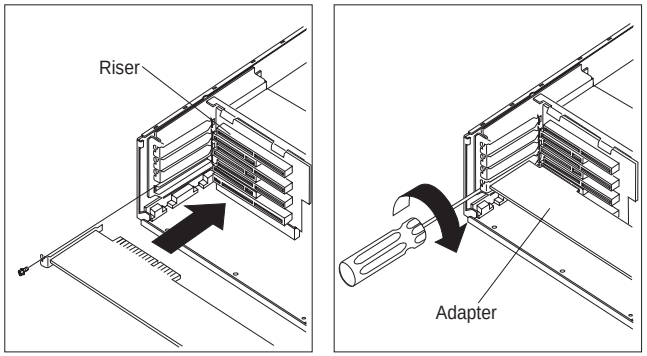
2 Install the video memory modules. Make sure the modules are fully inserted into the connector.



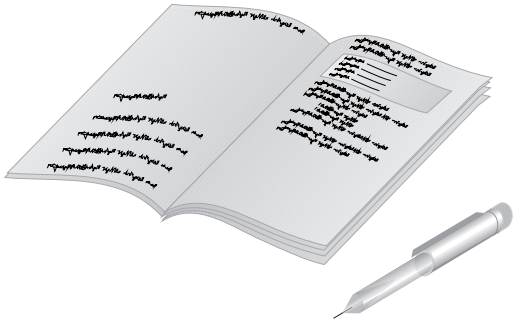
Installing a Video Memory Module

Note: When installing a video memory module, be sure to touch the static-protective package containing the video memory-module to any *unpainted* metal surface on the computer; then remove the video memory modules from the package.

3 Reinstall any previously removed adapters into the same slots from which they were removed. (For information about installing an adapter, see page 11.)



4 Go to the device-record form in *Using Your Personal Computer*, and update the current configuration of the video memory-module kit.



Where to go next

- To install or remove another option, go to the appropriate section.
- To complete the installation, go to page 67.

Installing a Cache Memory Module

Adding cache memory might increase the performance of your computer.

Two cache memory sizes, 256 KB and 512 KB, are available.

Before you begin

- Read "Electrical Safety" on page 2 and "Handling Static-Sensitive Devices" on page 3.
- Turn off the computer.
- Disconnect all external cables and power cords, and then remove the computer cover (see "Removing the Cover" on page 7).

Locate the cache memory connector on your computer system board. (See the system board illustration on page 6.)

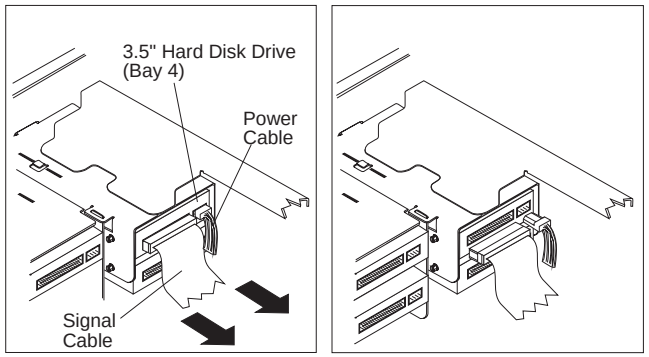
What to do next

- If your computer is a PC 330, go to step 3 on page 24.
- If your computer is a PC 350, go to step 1 on page 24.

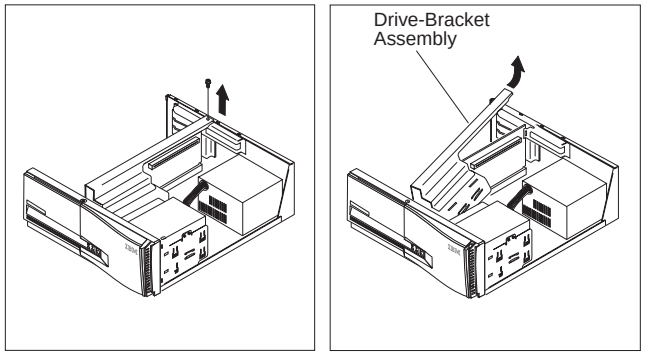
Installing a Cache Memory Module

1 Disconnect the signal and power cables from the drives in the drive-bracket assembly.

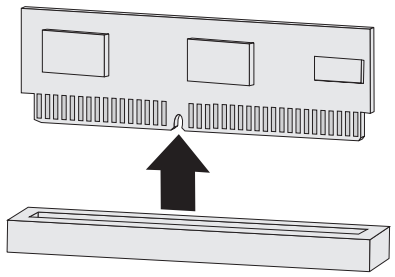
Note: Removing cables from a drive in bay 4 of the PC 350 is shown to illustrate this procedure.



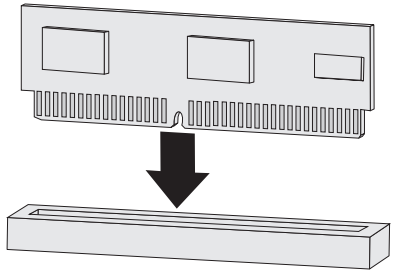
2 Remove the drive-bracket assembly from the computer.



3 Gently pull the top edge of the cache memory module up and out of the connector.



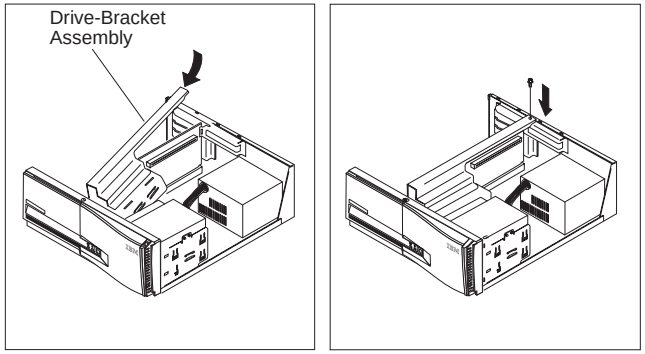
4 Position the module so that the notch on the bottom edge aligns with the notch in the connector. Insert the bottom edge of the memory module into the connector and push down evenly. Make sure the module is fully inserted into the connector.



What to do next

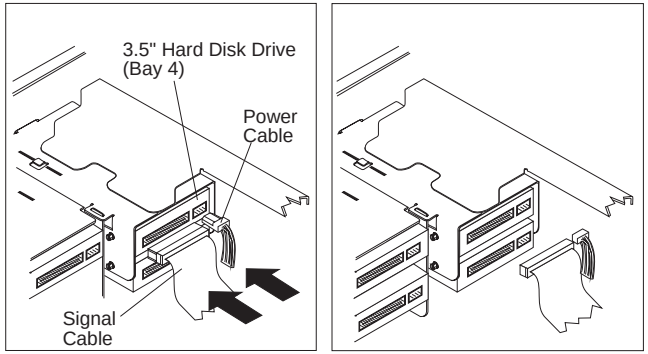
- If your computer is a PC 330, go to step 7 on page 25.
- If your computer is a PC 350, go to step 5 on page 25.

5 Reinstall the drive-bracket assembly.



6 Reconnect the signal and power cables to the drives.

Note: Connecting cables to a drive in bay 4 of the PC 350 is shown to illustrate this procedure.



7 Go to the device-record form in *Using Your Personal Computer*, and update the current configuration of the cache memory modules.

What to do next

- To install or remove another option, go to the appropriate section.
- To complete the installation, go to page 67.

Internal Drives

Drives are devices that your computer uses to read and store data. Different types of drives are available, such as:

- Diskette drives
- Hard disk drives
- Tape drives
- CD-ROM drives

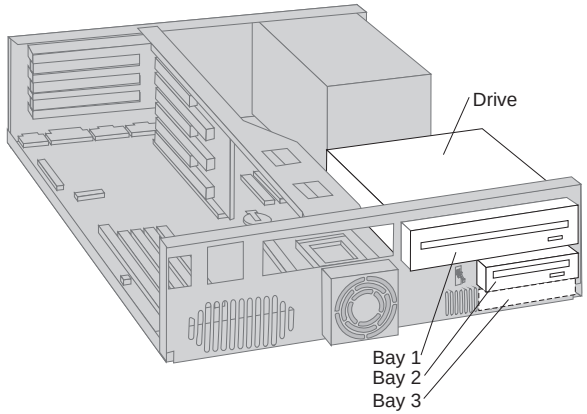
You can add drives to your computer to increase storage capacity and to enable your computer to read other types of media.

Internal drives are installed in *bays*. The bays are referred to as bay 1, bay 2, and so on. Your computer has one of the following drive arrangements:

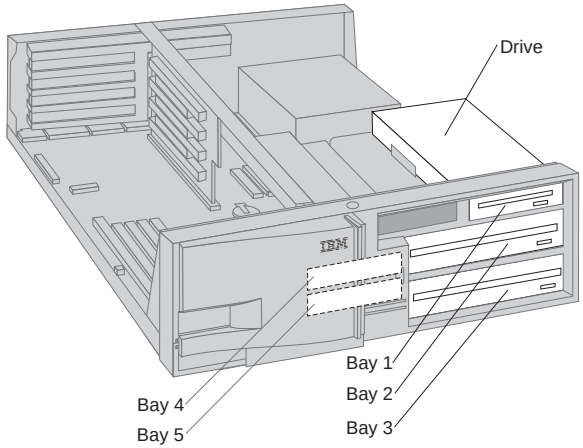
- The PC 330 has a diskette drive installed in bay 2 and two additional bays, one of which is used only for a hard disk drive (bay 3).
- The PC 350 has a diskette drive installed in bay 1 and four additional bays, two of which are used only for hard disk drives (bays 4 and 5).

  Depending on the number of available bays, your computer can accommodate up to four integrated drive electronics (IDE) hard disk drives.

The following illustrations show the locations of drives in your computer.



PC 330



PC 350

The following tables describe which drives you can install in each bay and their respective height requirements.

Table 3. PC 330 Drive Options

Bays	Drives
Bay 1	Hard disk drive 5.25-inch diskette drive 3.5-inch diskette drive Tape drive CD-ROM drive
Bay 2	3.5-inch diskette drive (installed)
Bay 3	Hard disk drive

Table 4. PC 350 Drive Options

Bays	Drives
Bay 1	3.5-inch diskette drive (installed)
Bay 2	5.25-inch diskette drive 3.5-inch diskette drive Tape backup drive CD-ROM drive Hard disk drive
Bay 3	5.25-inch diskette drive 3.5-inch diskette drive Tape backup drive CD-ROM drive Hard disk drive
Bay 4	Hard disk drive
Bay 5	Hard disk drive

Table 5. PC 330 Drive Heights

Bay	Maximum Height mm (in.)	Minimum Height mm (in.)
1	41.3 (1.6)	25.4 (1.0)
2	25.4 (1.0)	—
3	25.4 (1.0)	—

Note: Drives that are greater than 41.3 mm (1.6 in.) high cannot be used.

Table 6. PC 350 Drive Heights

Bay	Maximum Height mm (in.)	Minimum Height mm (in.)
1	25.4 (1.0)	—
2	41.3 (1.6)	25.4 (1.0)
3	41.3 (1.6)	25.4 (1.0)
4	25.4 (1.0)	—
5	25.4 (1.0)	—

Note: Drives that are greater than 41.3 mm (1.6 in.) high cannot be used.

Internal Drives

Drives connect to your computer with cables. Your computer has three types of internal drive cables:

- A four-wire power cable connects to most drives. Two types of power cables and connectors are provided, allowing you to add drives with different types of connectors. One of the drive power cables connects to the installed diskette drive. If a hard disk drive is installed, one of the drive power cables is attached to this drive.
- A flat-ribbon signal cable connects internal diskette drives and certain tape drives.
  - The cable for the PC 330 has two drive connectors. A third, unique connector attaches to the system board.
  - The cable for the PC 350 has three drive connectors. A fourth, unique connector attaches to the system board.

  The primary diskette drive installed in your computer (usually known as drive A) must be attached to the diskette drive connector that is at one end of the ribbon cable. The unique connector at the opposite end of this ribbon cable plugs into the system board. Use the middle connectors as required for additional diskette or tape drives.
- Another flat-ribbon signal cable (slightly wider than the other ribbon cable) connects internal IDE drives.
  - This cable has two drive connectors that connect to IDE drives. A third, unique connector attaches to the system board.
  - The connector on the end of the cable that attaches to the system board might be unique.

  If your computer comes with a hard disk drive installed, one IDE connector on one end of the flat-ribbon signal cable is attached to the hard disk drive, and the unique connector on the other end of the flat-ribbon signal cable is attached to the system board. You can attach one additional IDE drive to this cable.

Notes:

1. Ensure that the drive connector at the end of a flat-ribbon cable is always connected to a device. This reduces electronic noise emanating from the computer. Ensure that the other end connector is connected to the system board. Use the middle connectors as required for additional devices.
2. One IDE device must be designated as the primary (master) device and the other as the secondary (slave) device; otherwise, some of the IDE devices might not be recognized by the system. The primary/secondary designation is determined by switch or jumper settings on each IDE device.
3. To optimize performance when installing more than two hard disk drives, be sure to attach hard disk drives with faster data transfer speeds (Mode 1 or higher) to the primary hard disk drive signal cable (hard disk drives 0 and 1).

4. To install more than two IDE hard disk drives, you must purchase an additional drive signal cable. The cable must meet the following specifications:
   - Maximum length: 0.46 meters (18 inches)
   - Wire size: 28 AWG
   - Cable capacitive loading: 200 pF maximum
5. If you want to install more than one diskette drive, you will need to purchase a four-wire Y-cable that provides two power connectors.
6. To attach an external drive, you need to install an adapter in the computer.

For help in selecting drives, cables, and other options for your computer, do one of the following:

- Within the United States, call 1-800-IBM-2YOU (1-800-426-2968), your place of purchase, or your IBM reseller.
- Within Canada, call 1-800-565-3344 or 1-800-465-7999.
- Outside the United States and Canada, contact your IBM HelpWare number, place of purchase, or IBM reseller.

Installing Internal Drives

Before you begin

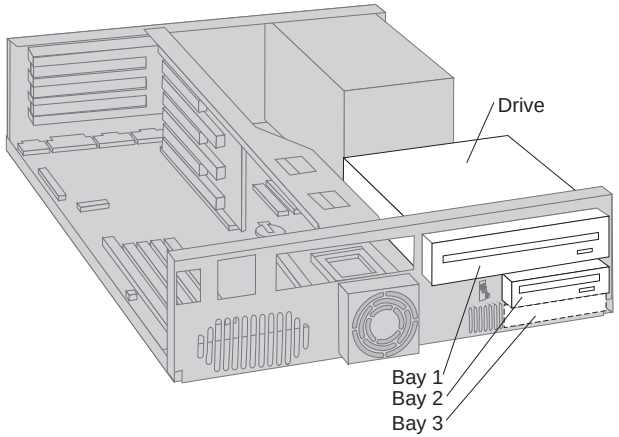
- Read “Electrical Safety” on page 2 and “Handling Static-Sensitive Devices” on page 3.
- Read the instructions that with the internal drive.
- Turn off the computer.
- Disconnect all external cables and power cords, and then remove the computer cover (see “Removing the Cover” on page 7).

What to do next

- To install a drive in the PC 330, go to “PC 330.”
- To install a drive in the PC 350, go to “PC 350” on page 35.

PC 330

1 Determine the location for the drive you want to install.



2 Touch the static-protective package to any *unpainted* metal surface on the computer; then remove the drive from the package.

3 Using the instructions that come with the drive, check that required switches or jumpers on the drive are set correctly. Change them if necessary.

Notes:

a. When adding IDE hard disk drives, set the first IDE drive on each cable as the primary drive (IDE drive 0). Set the second IDE drive on each cable as the secondary drive (IDE drive 1).

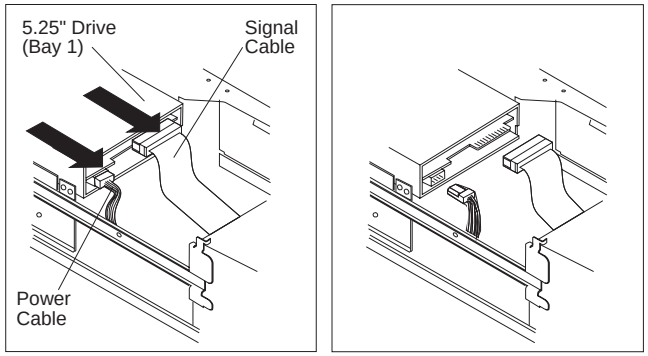
b. If you are adding a SCSI device, refer to the drive documentation that comes with the drive for information about interface termination.

   (Normally, a SCSI interface requires that only one of the drives on the cable be terminated.)

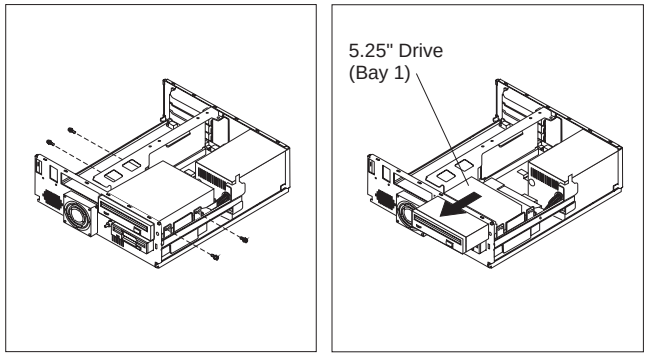
What to do next

- To install a drive in bay 3, continue with the following step.
- If you want to install a drive in bay 1 only, go to step 11 on page 33.

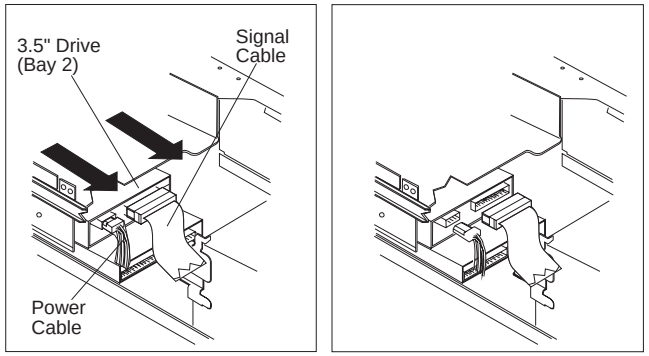
4 If a drive is installed in bay 1, disconnect the signal and power cables from the drive.



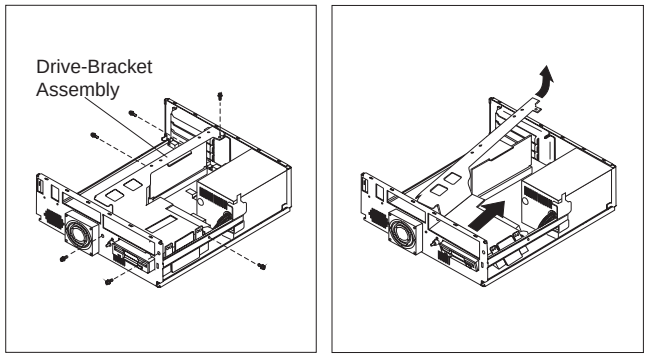
5 Remove the drive in bay 1 from the drive-bracket assembly.



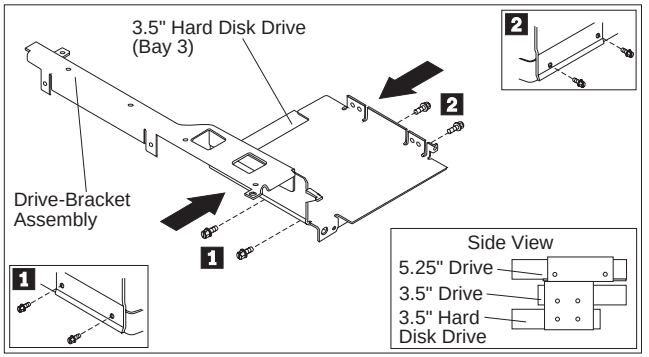
6 Disconnect the signal and power cables from the drive in bay 2.



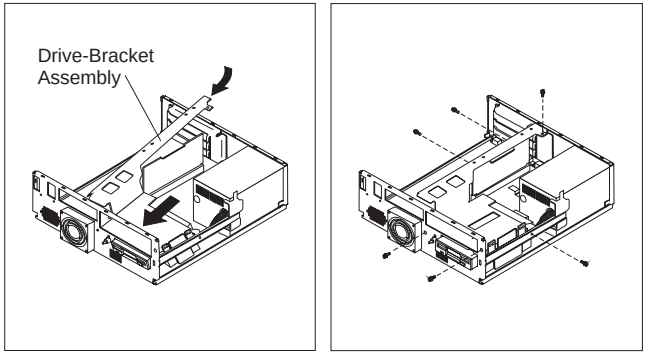
7 Remove the six screws from the drive-bracket assembly, then remove the assembly from the computer.



8 Install the drive into bay 3 of the drive-bracket assembly.

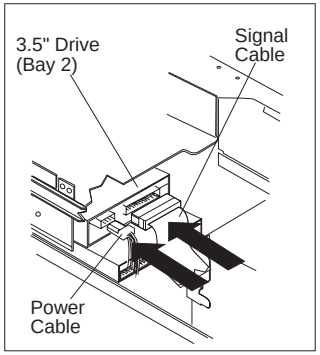


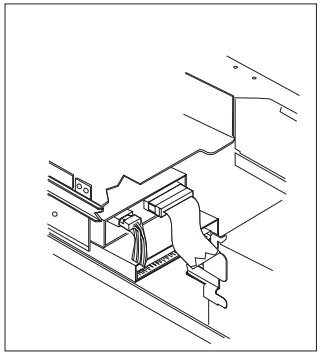
9 Reinstall the drive-bracket assembly in the computer.



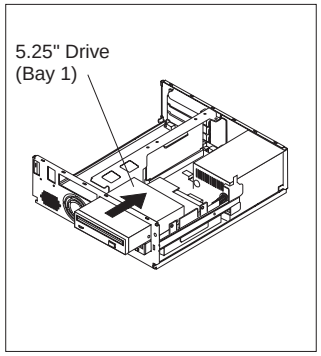
10 Connect the signal and power cables to the installed drives in bays 2 and 3. Connecting cables to the drive in bay 2 is shown to illustrate this procedure.

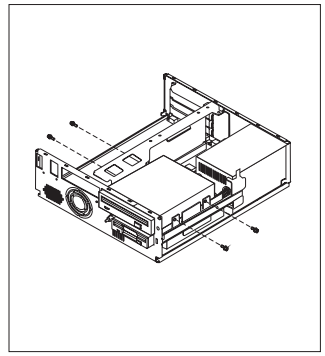
Note: If you have difficulty connecting a cable, turn the cable connector over and try again; cable connectors are keyed and connect only one way.



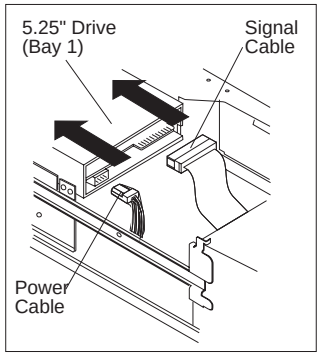


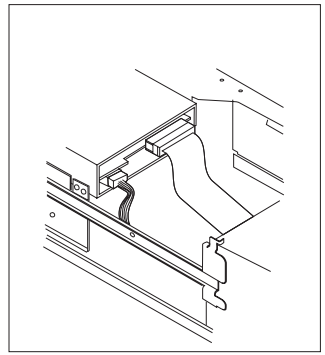
11 To install a drive into bay 1, align the screw holes in the side of the drive with the front set of screw holes in the drive-bracket assembly. Secure the drive in the assembly with the four screws.





12 Connect all signal and power cables to the drive in bay 1.



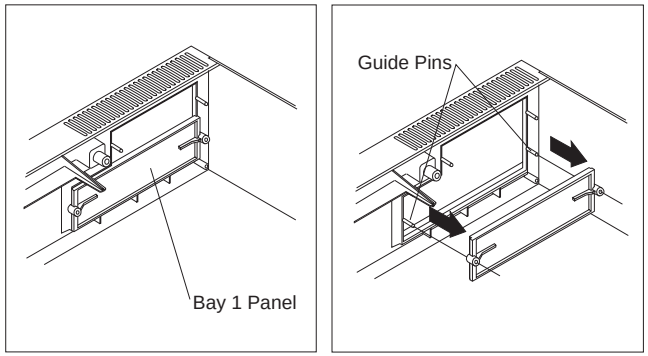


13 If you installed anything other than a hard disk drive in bay 1, remove the bay 1 panel.

Notes:

a. To remove the front panel, tap lightly against each end of the panel using a small tool.

b. You might want to save the panel in case you ever need to use it again.



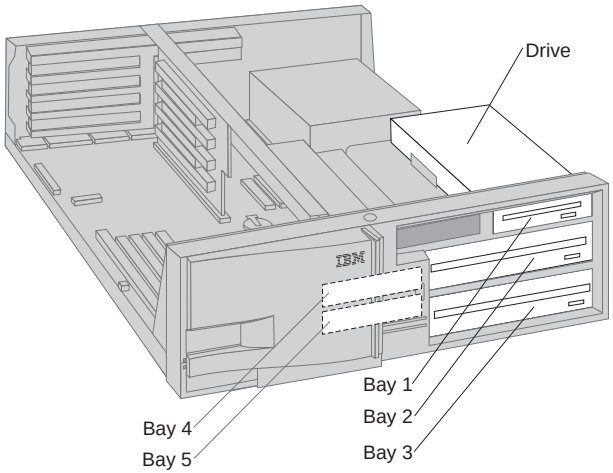
14 Go to the device-record form in *Using Your Personal Computer*, and update the drive information.

What to do next

- To install or remove another option, go to the appropriate section.
- To complete the installation, go to page 67.

PC 350

1 Determine the location for the drive you want to install.



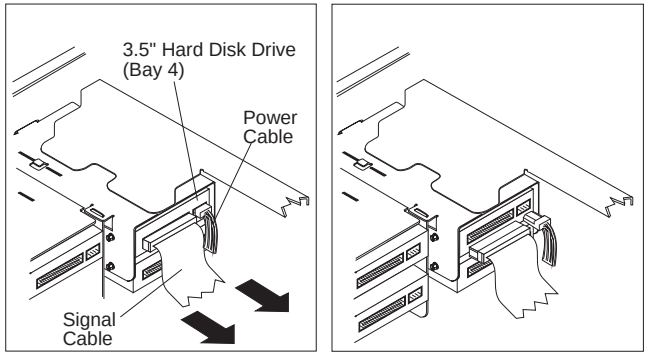
2 Touch the static-protective package to any *unpainted* metal surface on the computer; then remove the drive from the package.

3 Using the instructions that come with the drive, check that required switches or jumpers on the drive are set correctly. Change them if necessary.

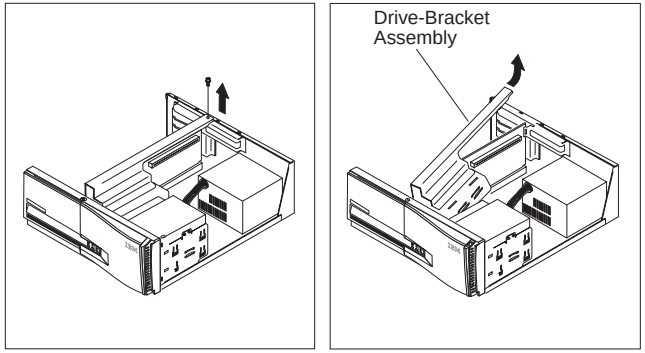
Note: When adding IDE drives, set the first IDE drive on each cable as the primary drive (IDE drive 0). Set the second IDE drive on each cable as the secondary drive (IDE drive 1).

4 Disconnect all cables from any drives in bays 4 and 5.

Note: Removing cables from a drive in bay 4 is shown.



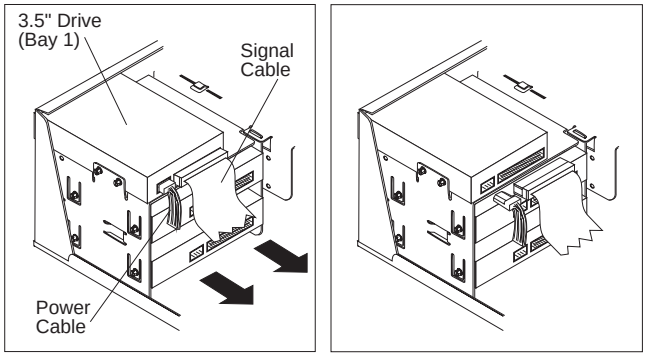
5 Remove the screw securing the drive-bracket assembly and then remove the assembly from the computer.



What to do next

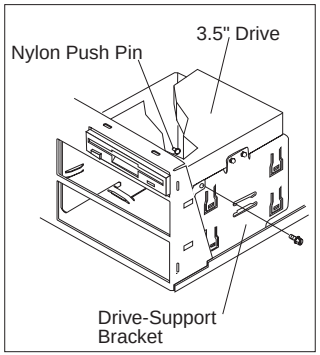
- To install a drive in bay 2 or bay 3, continue with the next step.
- To install a drive in bay 4 or bay 5, go to step 15 on page 41.

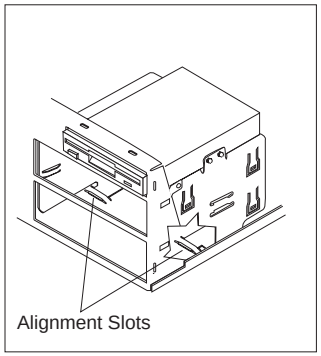
6 To install a drive in bay 2 or bay 3, disconnect the cables from the drives in bays 1, 2, and 3.



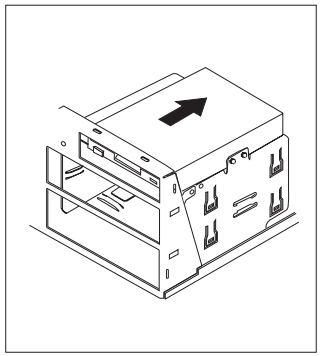
7 Remove the screws from the drive-support bracket.

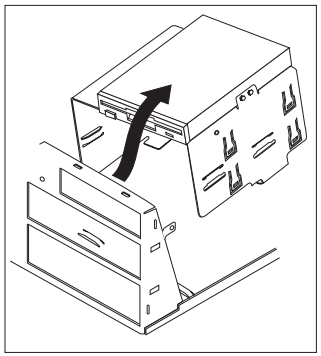
a. Remove the screw from the upper-right front corner of the drive-support bracket.
b. If present, remove the nylon push pin at the lower-left rear of the bracket. (This shipping pin can be discarded.)
c. Carefully note how the tabs at the base of the drive-support bracket fit into the alignment slots on the computer frame.





8 Slide the bracket slightly to the rear, then up and out of the computer.

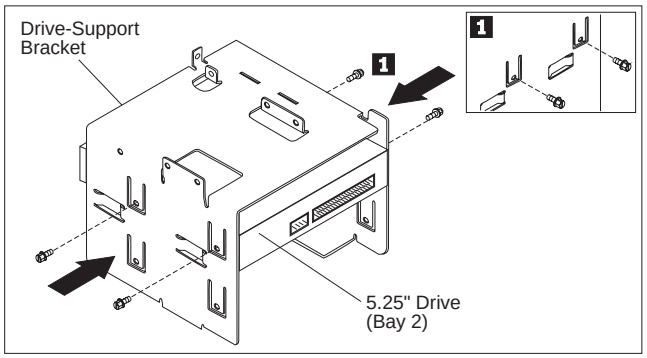




What to do next

- To install a drive in bay 2, continue with the next step.
- To install a drive in bay 3, go to step 11 on page 39.

9 Attach the drive in bay 2 of the drive-support bracket.

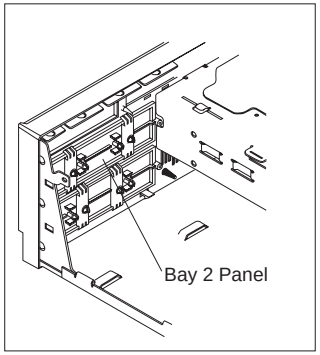


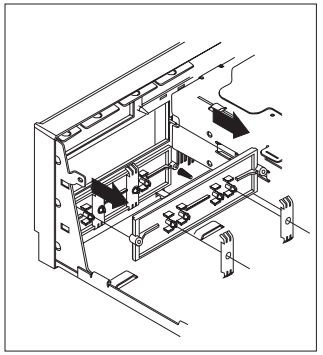
10 If you installed a drive other than a hard disk drive, remove the bay panel for bay 2.

Notes:

a. To remove the front panel, tap lightly against each end of the panel using a small tool.

b. You might want to save the panel in case you need to use it again.

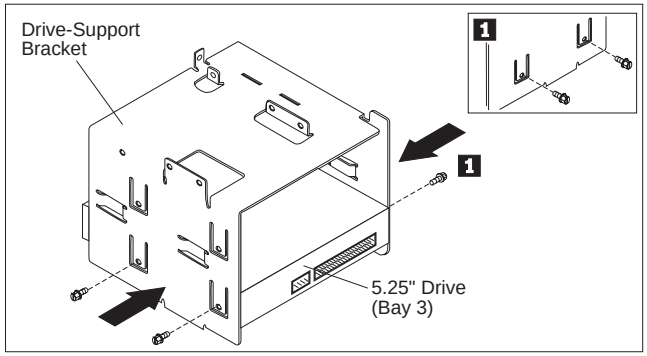




What to do next

- To install a drive in bay 3, continue with the next step.
- If you do not want to install any other drives, go to step 13 on page 40.

11 Attach the drive in bay 3 of the drive-support bracket.

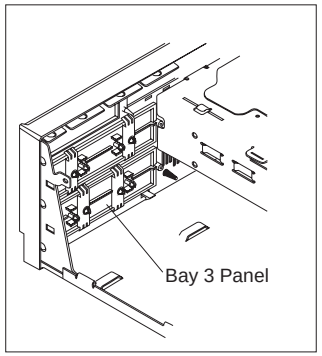


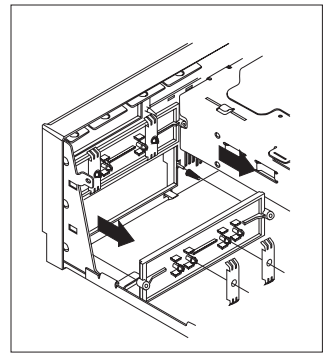
12 If you installed a drive other than a hard disk drive, remove the bay panel for bay 3.

Notes:

a. To remove the front panel, tap lightly against each end of the panel using a small tool.

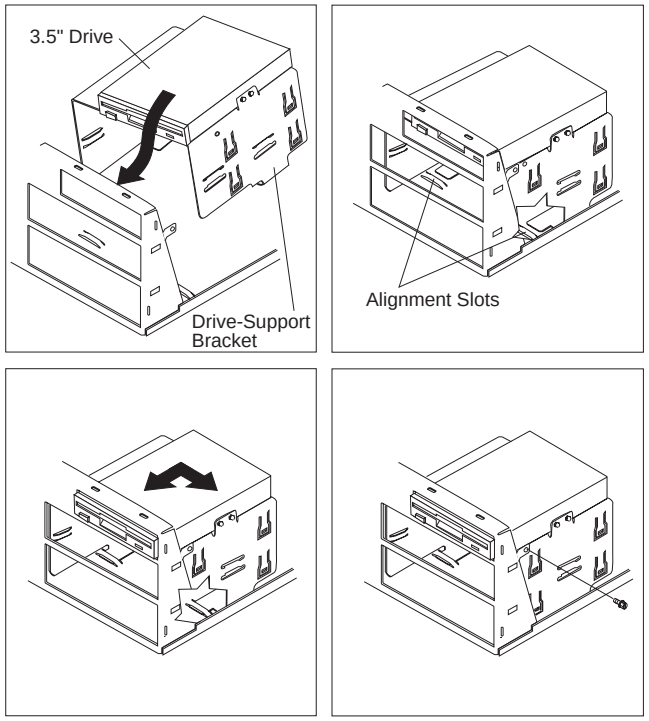
b. You might want to save the panel in case you need to use it again.





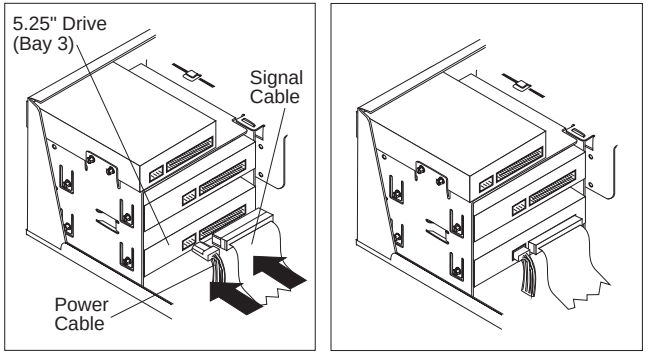
13 Reinstall the drive-support bracket.

Note: Be sure the bracket tabs are inserted properly into the alignment slots.



14 Connect the signal and power cables to each of the installed drives. Connecting cables to the drive in bay 3 is shown to illustrate this procedure.

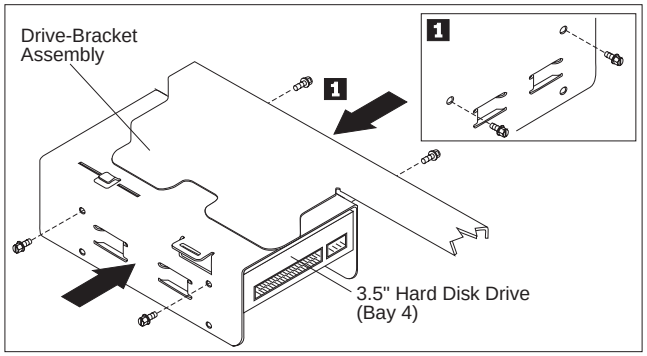
Note: If you have difficulty connecting a cable, turn the cable connector over and try again; cable connectors are keyed and connect only one way.



What to do next

- To install a drive in bay 4 or 5, continue with the next step.
- If you do not want to install any other drives, go to step 17 on page 41.

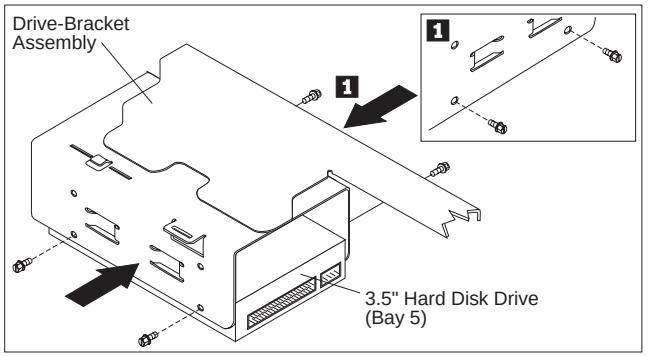
15 Attach the drive in bay 4 of the drive-bracket assembly.



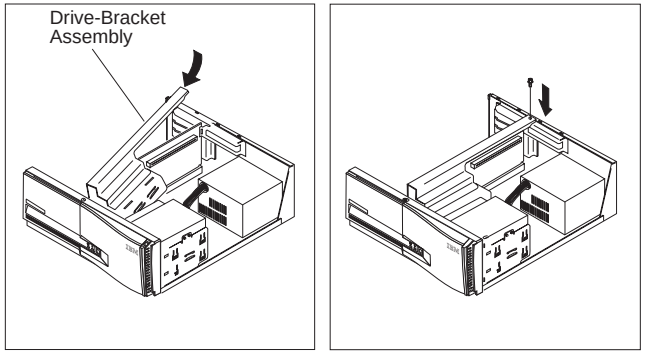
What to do next

- To install a drive in bay 5, continue with the next step.
- If you do not want to install any other drives, go to step 17.

16 Attach the drive in bay 5 of the drive-bracket assembly.

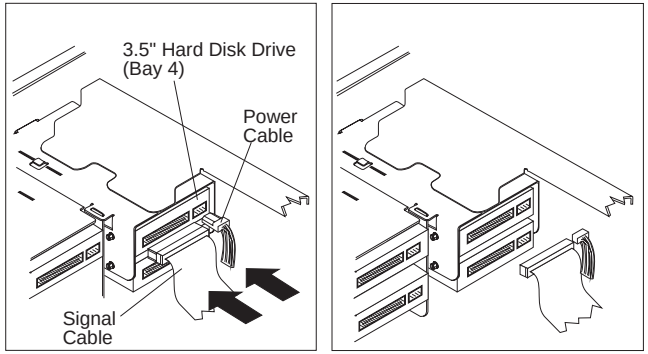


17 Reinstall the drive-bracket assembly and secure it with the screw.



18 Connect the signal and power cables to each of the installed drives. Connecting cables to the drive in bay 4 is shown to illustrate this procedure.

Note: If you have difficulty connecting a cable, turn the cable connector over and try again; cable connectors are keyed and connect only one way.



19 Go to the device-record form in *Using Your Personal Computer* and update the drive information.

What to do next

- To install or remove another option, go to the appropriate section.
- To complete the installation, go to page 67.

Removing Internal Drives

Before you begin

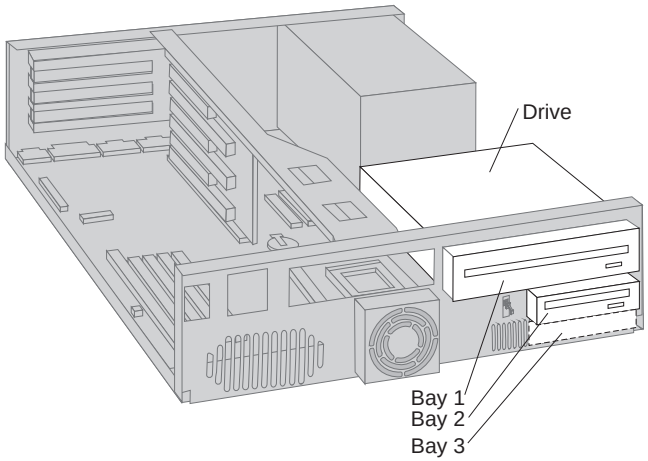
- Read “Electrical Safety” on page 2 and “Handling Static-Sensitive Devices” on page 3.
- Turn off the computer.
- Disconnect all external cables and power cords, and then remove the computer cover (see “Removing the Cover” on page 7).

What to do next

- To remove a drive from the PC 330, go to “PC 330.”
- To remove a drive from the PC 350, go to “PC 350” on page 48.

PC 330

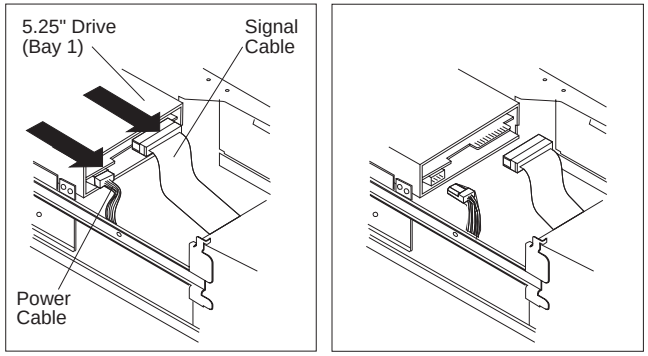
1 Determine the location of the drive you want to remove.



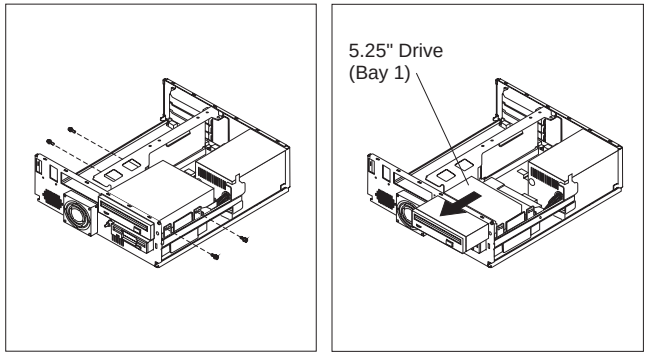
What to do next

- To remove a drive from bay 1, continue with the next step.
- To remove a drive from bay 2 or bay 3, go to step 4 on page 44.

2 Disconnect all cables from the drive in bay 1.



3 Remove the four screws securing the drive in bay 1, and then remove the drive.

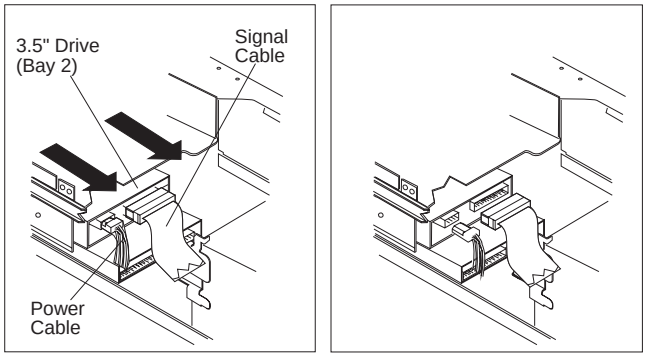


What to do next

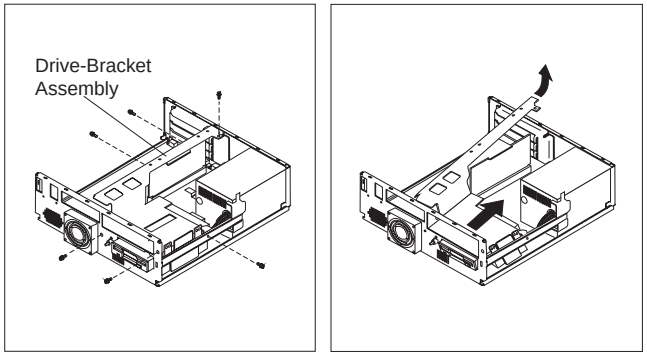
- To remove a drive from bay 2 or bay 3, continue with the next step.
- To install an internal drive, go to page 30.

4 Disconnect all cables from any drives installed in bays 2 and 3.

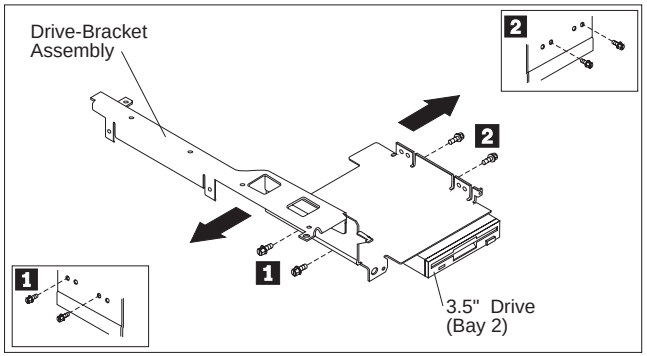
Note: Removing cables from a drive in bay 2 is shown to illustrate this procedure.



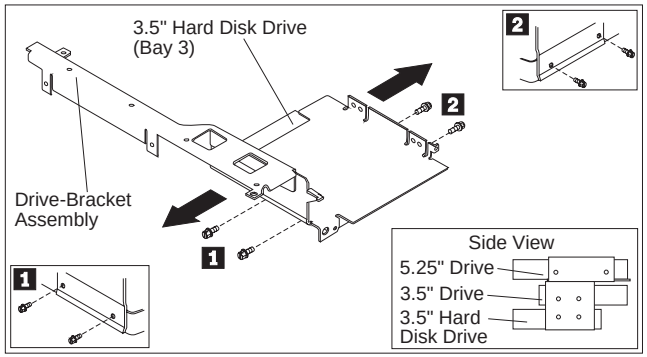
5 Remove the six screws that secure the drive-bracket assembly, and then remove the assembly from the computer.



6 If you want to remove the drive in bay 2, remove the four screws that secure the drive to the drive-bracket assembly.



7 If you want to remove the drive in bay 3, remove the four screws that secure the drive to the drive-bracket assembly.

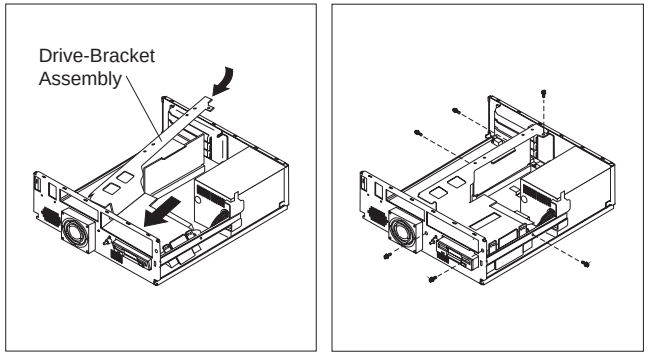


What to do next

- To install an internal drive, go to page 30.
- If you do not want to install a drive in bay 2 or bay 3, continue with the next step.

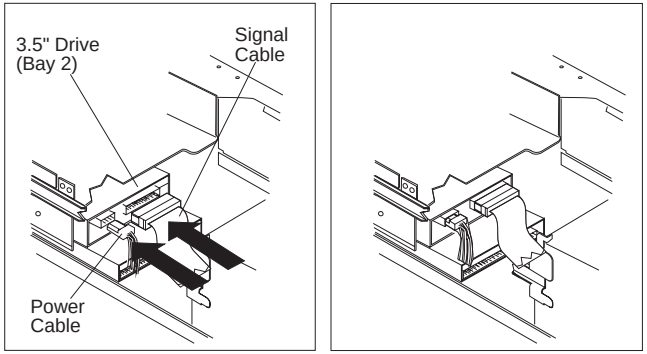
8 Reinstall the drive-bracket assembly, and secure it with the six screws.

Note: Be sure the bracket tabs are inserted properly into the alignment slots.

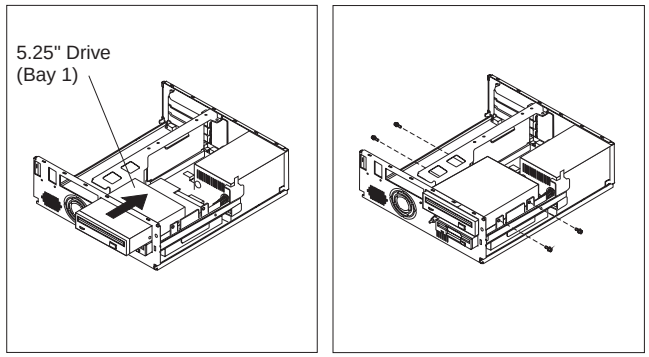


9 Reconnect all cables to the drives. Connecting cables to the drive in bay 2 is shown to illustrate this procedure.

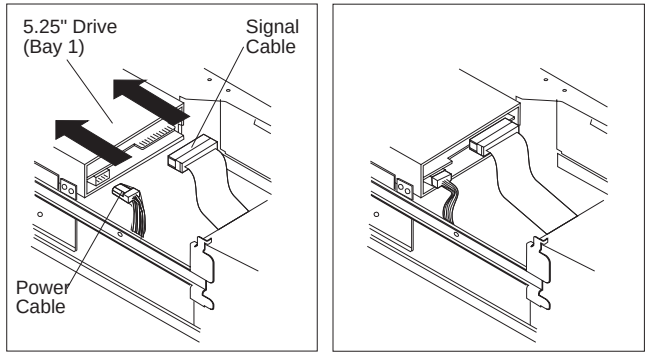
Note: If you have difficulty connecting a cable, turn the cable connector over and try again; cable connectors are keyed and connect only one way.



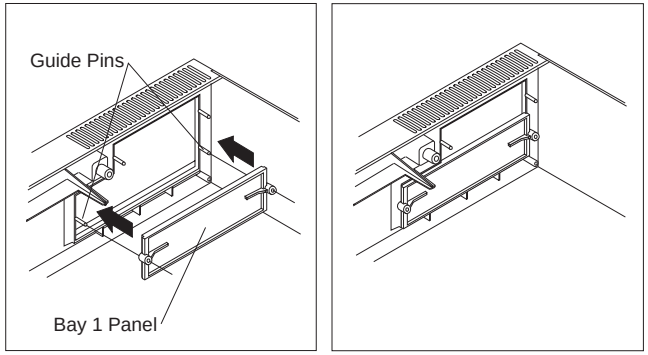
10 Reinstall the drive in bay 1 of the drive-bracket assembly. Align the screw holes in the side of the drive with the front set of screw holes in the drive-bracket assembly.



11 Connect the cables to the drive in bay 1.



12 If you removed a drive (other than a hard disk drive) from bay 1, reinstall the bay panel.



13 Go to the device-record form in *Using Your Personal Computer*, and update the drive information.

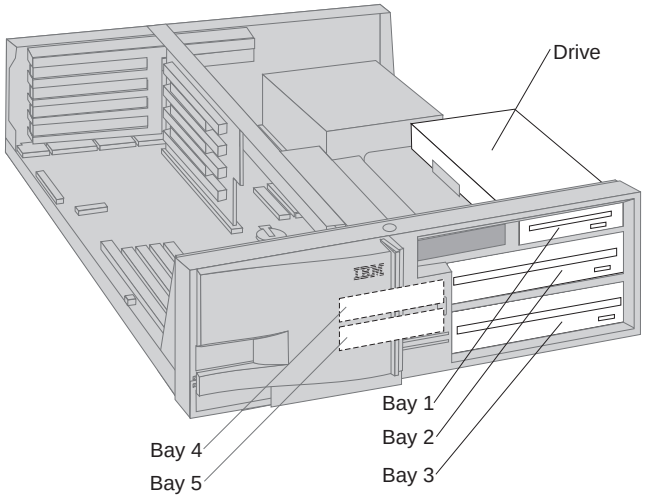
What to do next

- To install or remove another option, go to the appropriate section.
- To complete the installation, go to page 67.

Removing Internal Drives

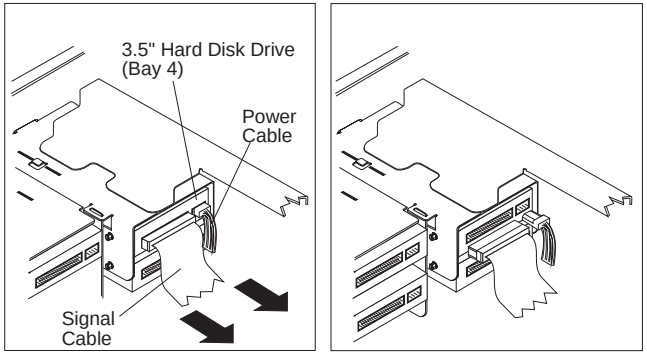
PC 350

1 Determine the location of the drive you want to remove.

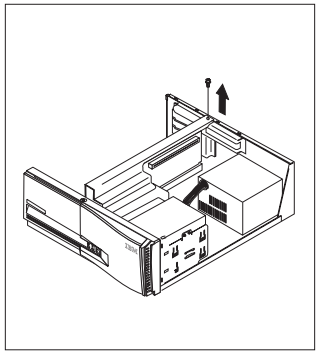


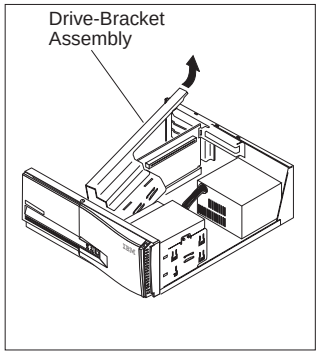
2 Disconnect all cables from any drives in bay 4 and bay 5.

Note: Removing cables from a drive in bay 4 is shown.



3 Remove the screw securing the drive-bracket assembly, then remove the assembly from the computer.





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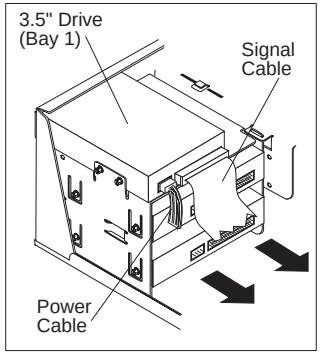
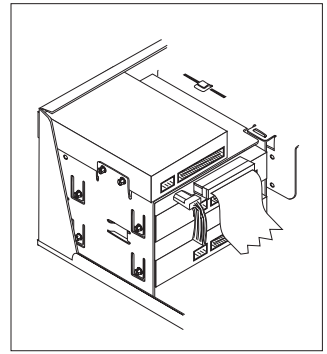
What to do next

- To remove a drive in bay 2 or bay 3, continue with the next step.
- To remove a drive in bay 4 or bay 5, go to step 12 on page 53.

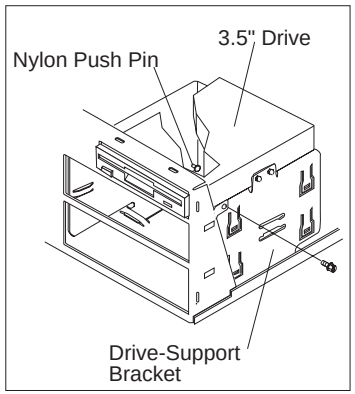
4 To remove a drive in bay 2 or bay 3, disconnect the cables from any drives in bays 1, 2, and 3.

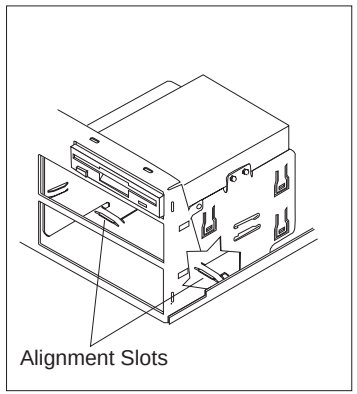




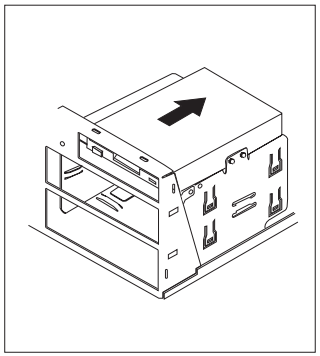
5 Remove the screws from the drive-support bracket.

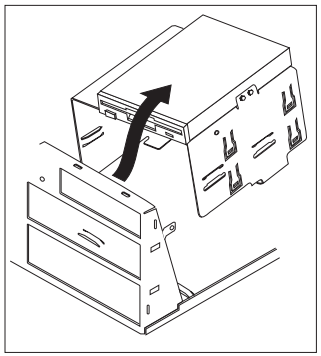
a. Remove the screw from the upper-right front corner of the drive-support bracket.
b. If present, remove the nylon pushpin at the lower-left rear of the bracket. (This shipping screw can be discarded.)
c. Carefully note how the tabs at the base of the drive-support bracket fit into the alignment slots on the computer frame.



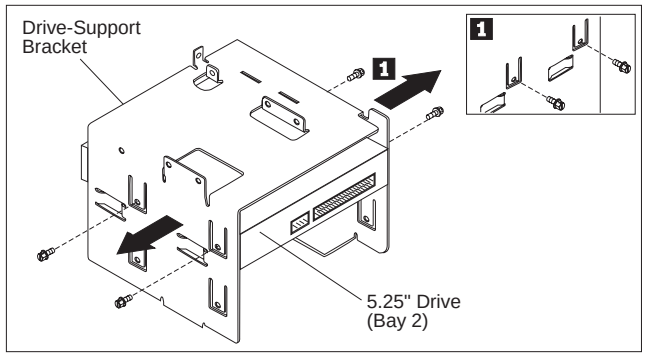


6 Slide the bracket slightly to the rear, then up and out of the computer.

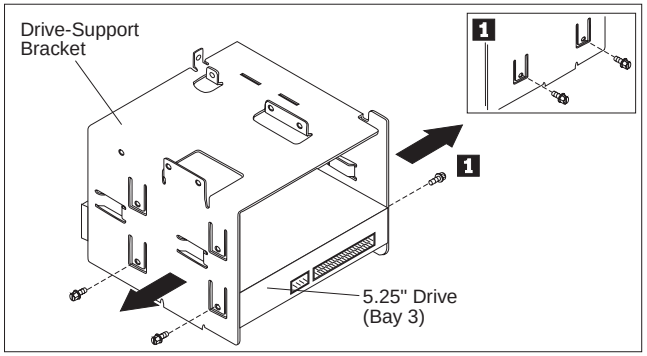




7 To remove the drive in bay 2, remove the four screws.



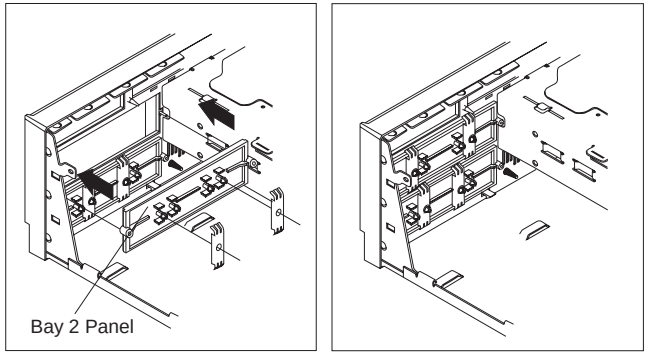
8 To remove the drive in bay 3, remove the four screws.

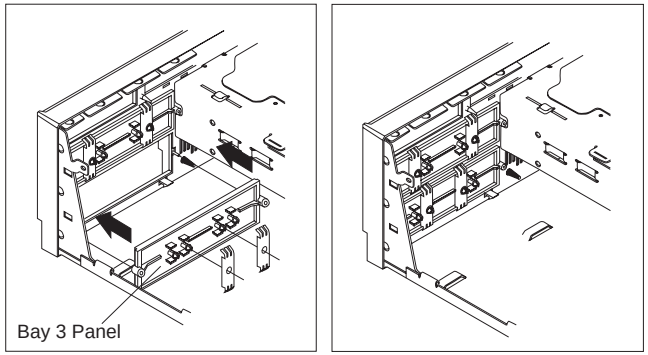


What to do next

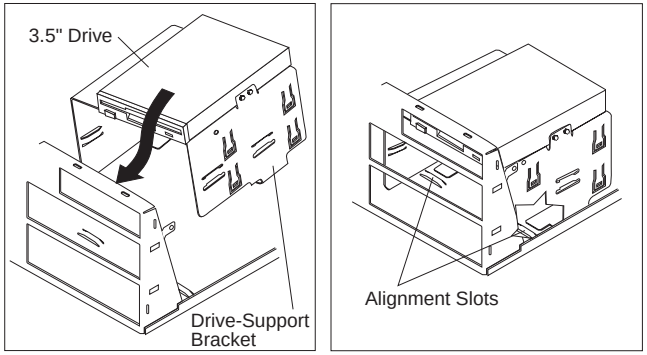
- To install an internal drive in bay 2 or bay 3, go to page 30.
- If you do *not* have a drive to install in bay 2 or bay 3, continue with the next step.

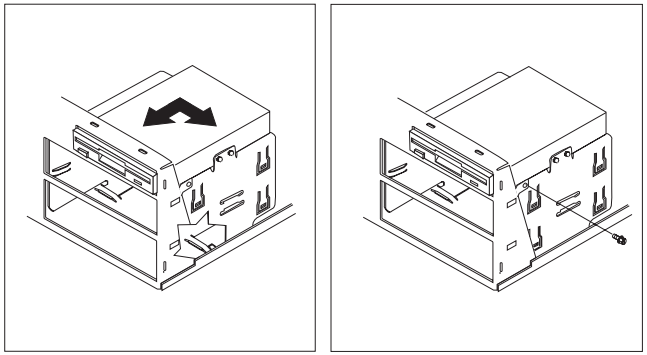
9 If you removed a drive (other than a hard disk drive) from bay 2 or bay 3, reinstall the bay panel.





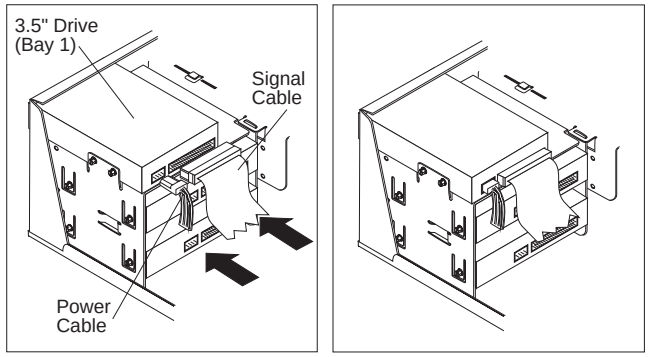
10 Reinstall the drive-support bracket. Be sure to insert the bracket tabs into the alignment slots.





11 Reconnect all signal and power cables to the remaining drives. If you have difficulty connecting a cable, turn the cable connector over and try again; cable connectors are keyed and connect only one way.

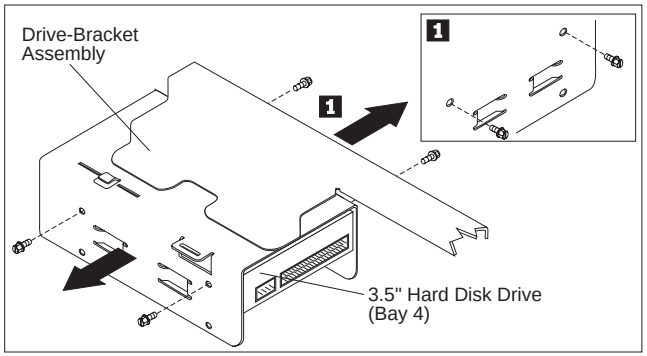
Note: Connecting cables to the drive in bay 1 is illustrated.

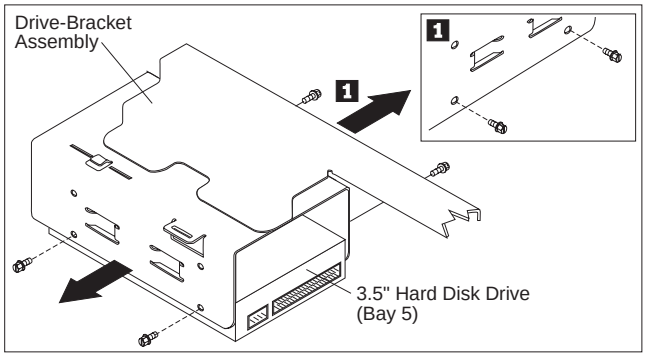


What to do next

- To remove a drive from bay 4 or bay 5, continue with the next step.
- If you do not want to remove any other internal drives, go to step 15 on page 54.

12 To remove a drive from bay 4 or bay 5, remove the four screws.

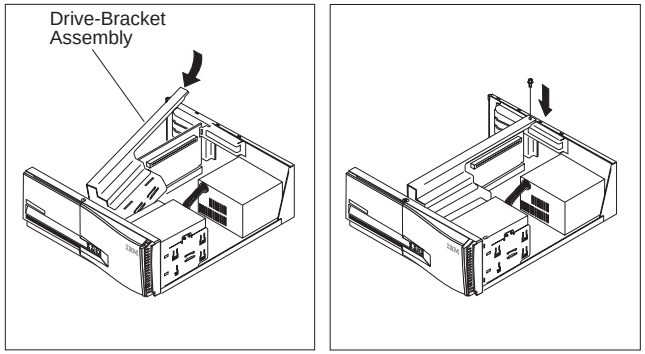




What to do next

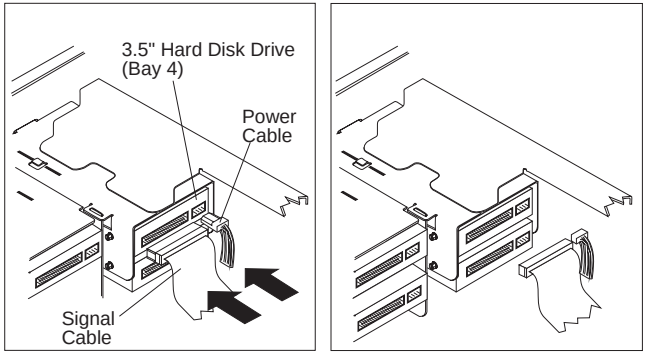
- If you do not want to install another drive, continue with the next step.
- To install an internal drive, go to page 30.

13 Reinstall the drive-bracket assembly.



14 Reconnect all signal and power cables to each drive. Connecting cables to the drive in bay 4 is shown to illustrate this procedure.

Note: If you have difficulty connecting a cable, turn the cable connector over and try again; cable connectors are keyed and connect only one way.



15 Go to the device-record form in *Using Your Personal Computer* and update the drive information.

What to do next

- To install or remove another option, go to the appropriate section.
- To complete the installation, go to page 67.

Installing a Microprocessor Upgrade

You can enhance the operation of your personal computer by upgrading its microprocessor. Upgrading is easily done by replacing your existing microprocessor with a new one.

For the latest information on microprocessor upgrades available for your computer, contact your place of purchase or your IBM reseller.

Before you begin

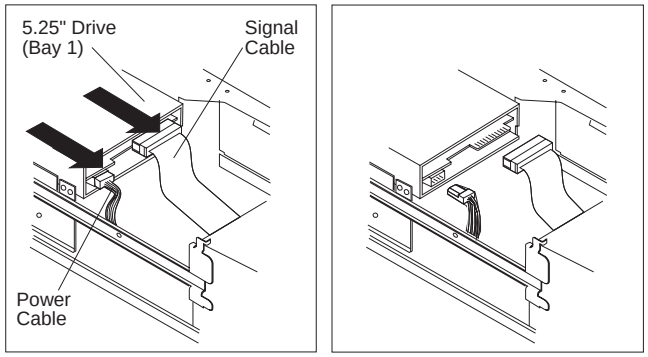
- Read "Electrical Safety" on page 2 and "Handling Static-Sensitive Devices" on page 3.
- Read the instructions that come with the microprocessor upgrade.
- Turn off the computer.
- Disconnect all external cables and power cords, and then remove the computer cover (see "Removing the Cover" on page 7).

What to do next

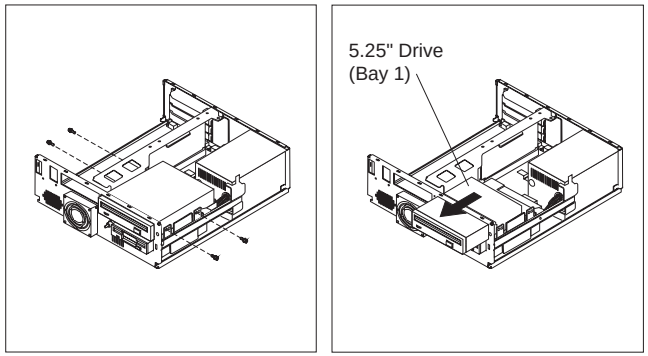
- If your computer is a PC 330, go to "PC 330" on page 56.
- If your computer is a PC 350, go to "PC 350" on page 62.

PC 330

1 If a drive is installed in bay 1, disconnect the signal and power cables from the drive.

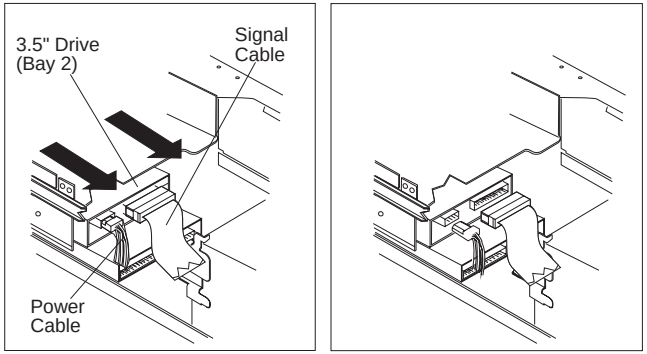


2 Remove the drive in bay 1 from the drive-bracket assembly.

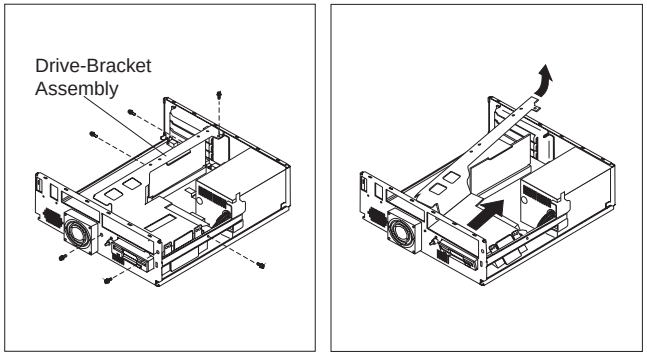


3 Disconnect the signal and power cables from the installed drives in bays 2 and 3.

Note: Removing cables from a drive in bay 2 is shown to illustrate this procedure.



4 Remove the six screws from the drive-bracket assembly, and then remove the assembly from the computer.

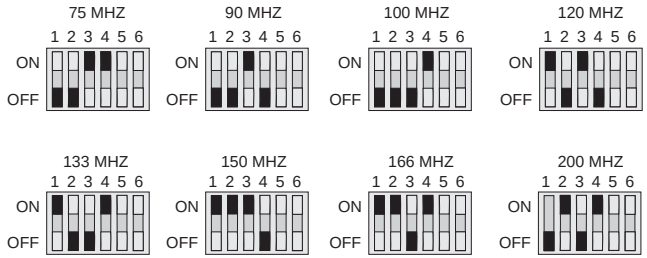


5 Locate the configuration switch set, and the processor-upgrade socket in the system board illustration on page 6.)

6 When installing a microprocessor upgrade, you must change the microprocessor/bus speed-ratio switch-set to the correct settings.

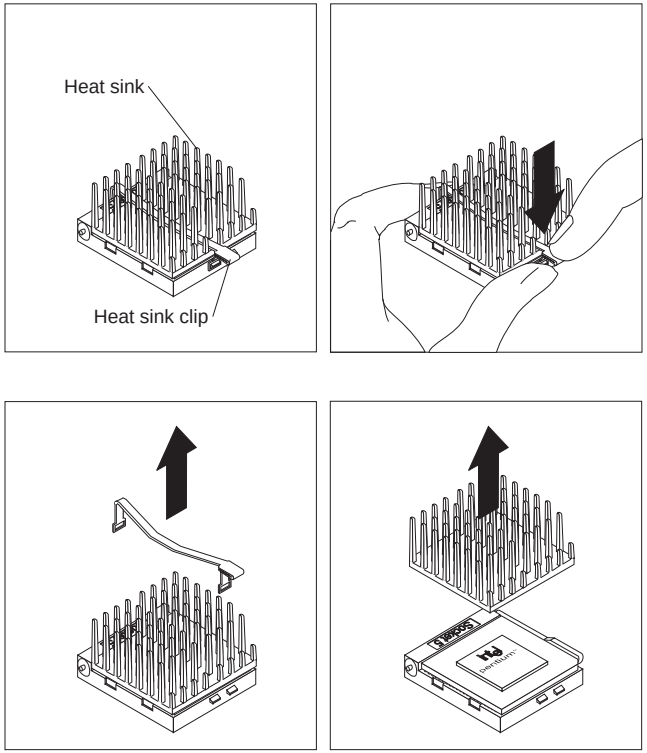
The wrong setting will result in an incorrect value displayed in the Configuration/Setup Utility program and unreliable system operation.

Use the following illustration to set switches (1 to 4) on the configuration switch set.



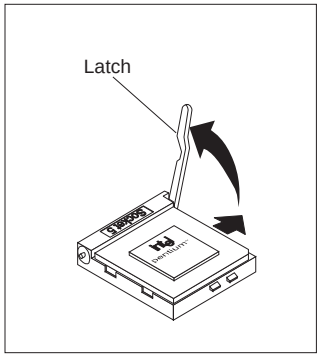
Note: Switch set as viewed from rear of system.

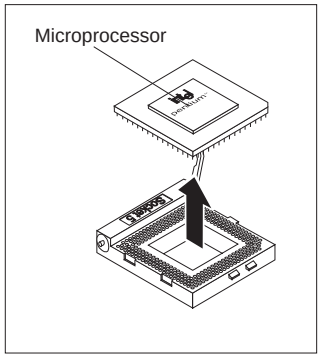
7 Remove the heat-sink clip and heat sink.



8 Remove the old microprocessor.

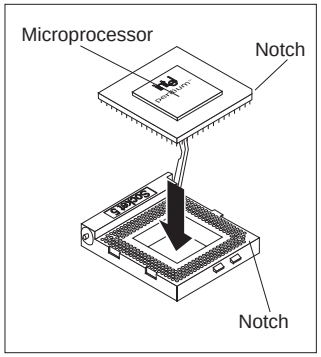
9 Store the old microprocessor in a static-protective package. Make a note of the microprocessor type for future reference.

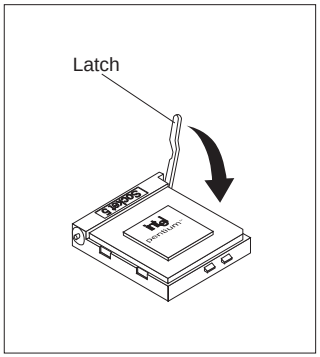




10 Touch the static-protective package to any *unpainted* metal surface on the computer; then remove the microprocessor from the static-protective package.

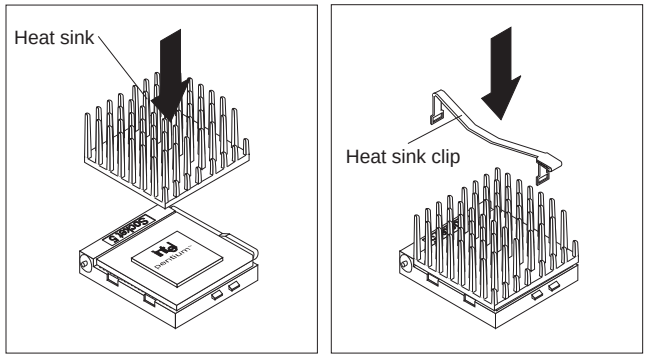
11 Install the new microprocessor.

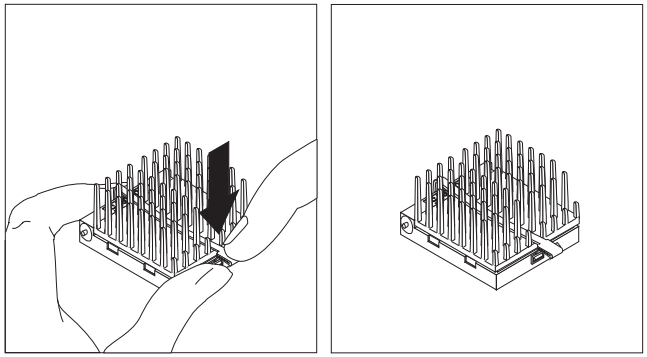




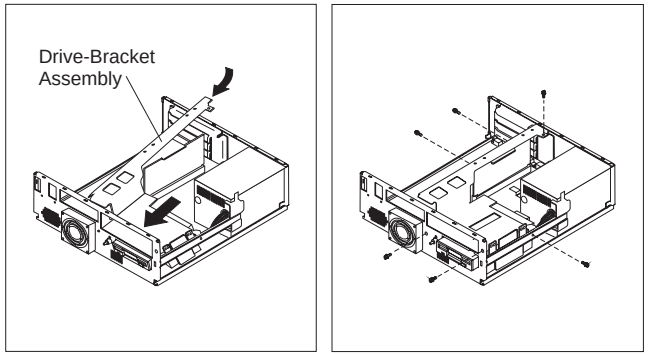
12 Reinstall the heat sink and heat-sink clip.

Note: Follow the instructions that come with the new microprocessor. You might have to seal the microprocessor with a conductive lubricant or change the heat sink.



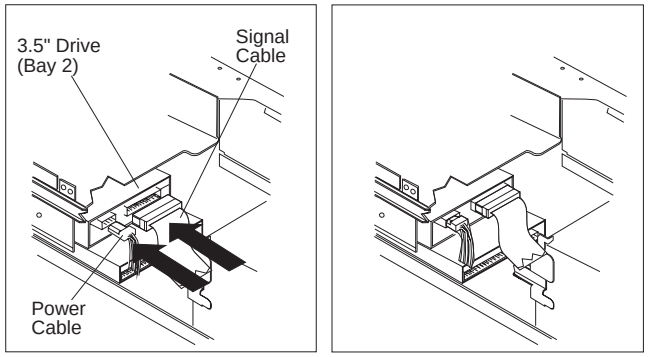


13 Reinstall the drive-bracket assembly.

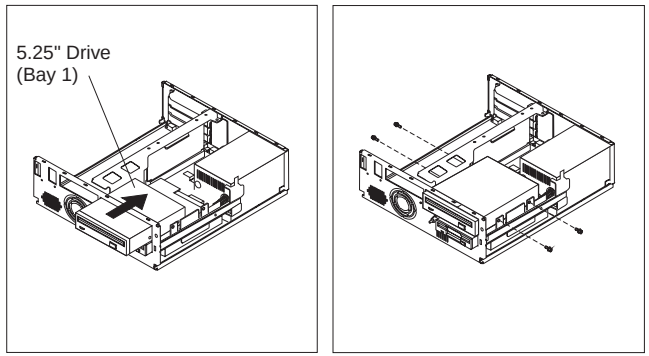


14 Connect the signal and power cables to the installed drives in bays 2 and 3. Connecting cables to the drive in bay 2 is shown to illustrate this procedure.

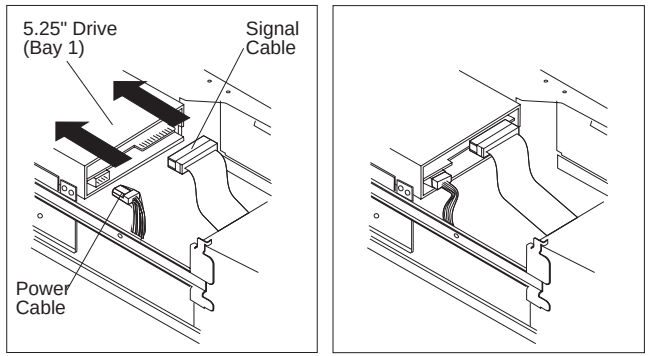
Note: If you have difficulty connecting a cable, turn the cable connector over and try again; cable connectors are keyed and connect only one way.



15 Reinstall the drive in bay 1 of the drive-bracket assembly. Align the screw holes in the side of the drive with the front set of screw holes in the drive-bracket assembly.



16 Reconnect the signal and power cables to the drive in bay 1.



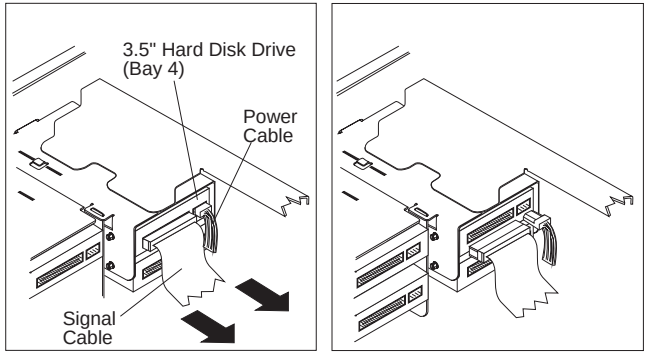
17 Go to the device-record form in *Using Your Personal Computer*, and update the microprocessor-upgrade socket information.

What to do next

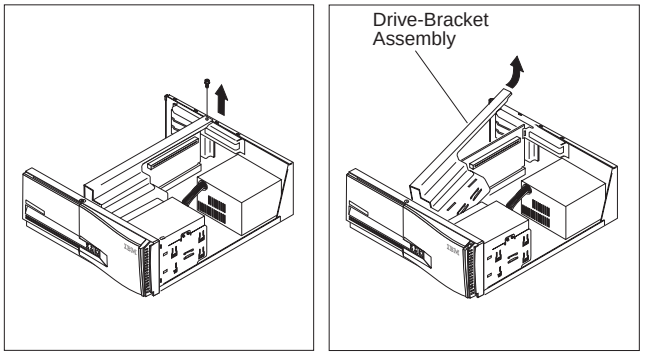
- To install or remove another option, go to the appropriate section.
- To complete the installation, go to page 67.

PC 350

1 Disconnect the signal and power cables from the drives in bay 4 and bay 5. (See page 26 to find the location of each drive bay.)



2 Remove the drive-bracket assembly from the computer.

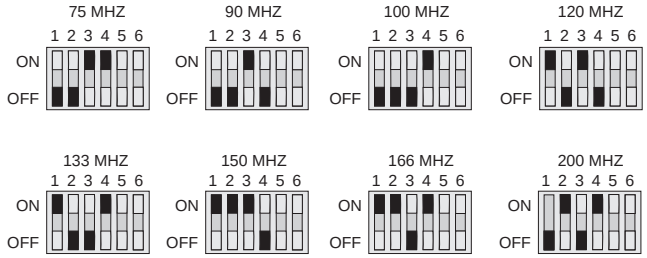


3 Locate the configuration switch set and the processor-upgrade socket in the system board illustration on page 6.)

4 When installing a microprocessor upgrade, you must change the microprocessor/bus speed-ratio switch-set to the correct settings.

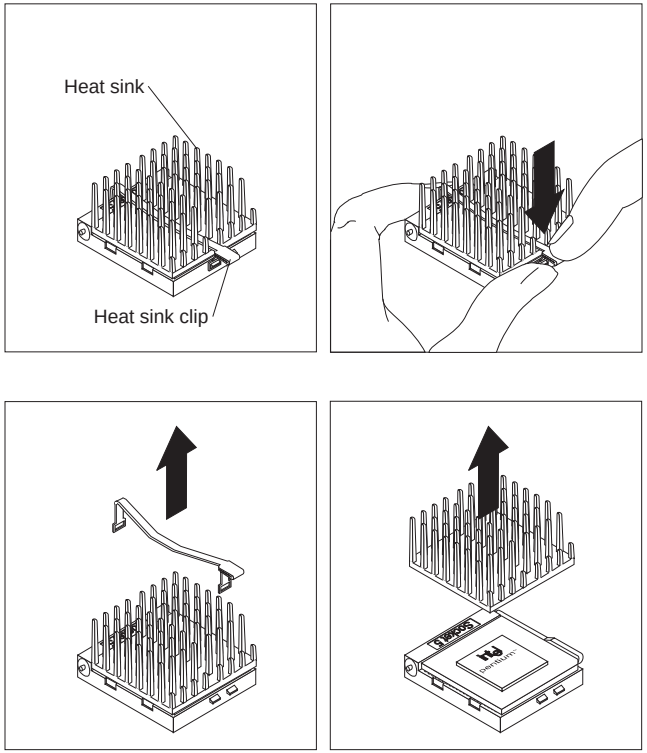
The wrong setting will result in an incorrect value being displayed in the Configuration/Setup Utility program and unreliable system operation.

Use the following illustration to set switches (1 to 4) on the configuration switch set.

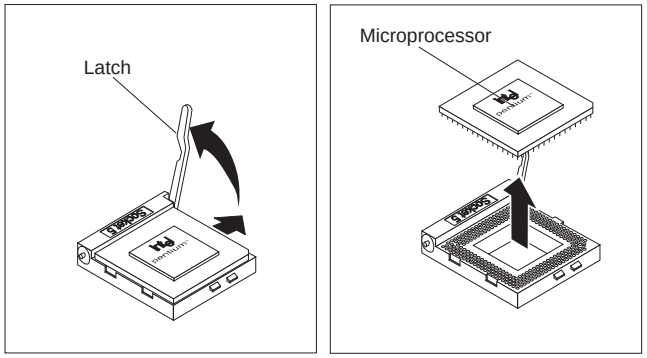


Note: Switch set as viewed from rear of system.

5 Remove the heat-sink clip and heat sink.



6 Remove the old microprocessor.

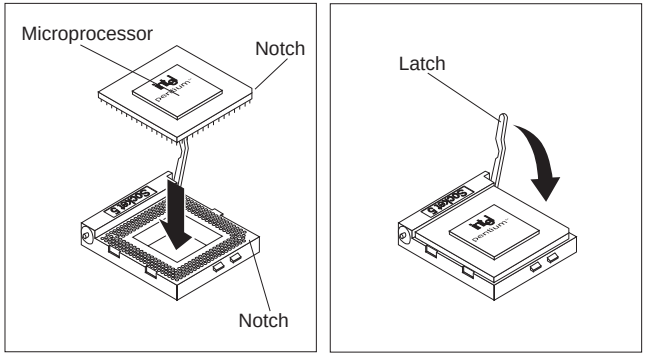


7 Store the old microprocessor in a static-protective package. Make a note of the microprocessor type for future reference.

8 Touch the static-protective package to any *unpainted* metal surface on the computer; then remove the microprocessor from the static-protective package.

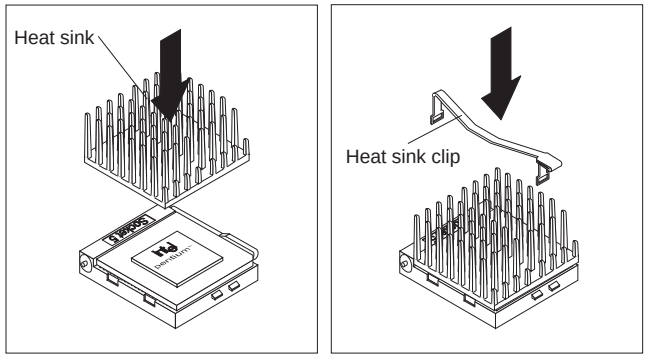
9 Install the new microprocessor.

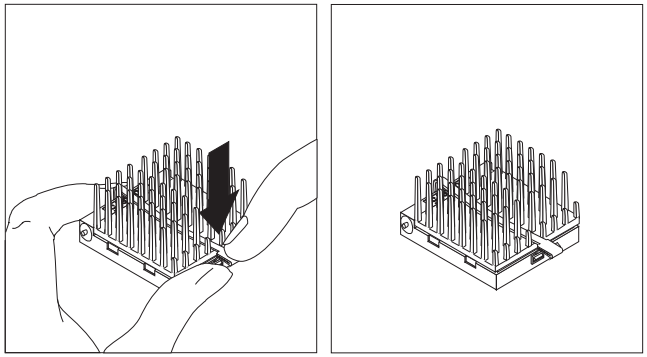
Note: Follow the instructions that come with the new microprocessor. You might have to seal the processor with a conductive lubricant or change the heat sink.



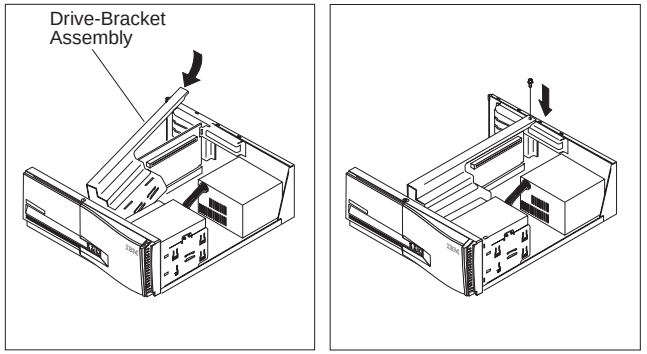
10 Reinstall the heat sink and heat-sink clip.

Note: Follow the instructions that come with the new microprocessor. You might have to seal the microprocessor with a conductive lubricant or change the heat sink.



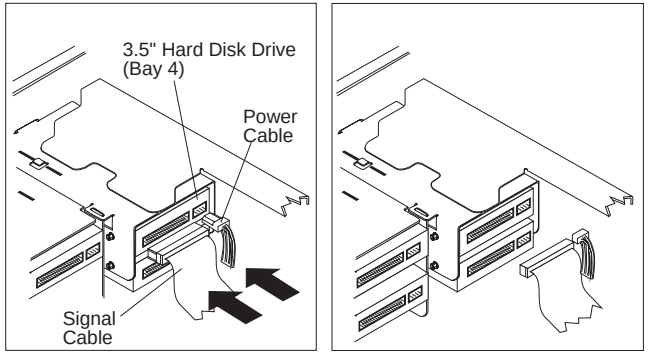


11 Reinstall the drive-bracket assembly.



12 Reconnect the signal and power cables to the drives. Connecting cables to the drive in bay 4 is shown to illustrate this procedure.

Note: If you have difficulty connecting a cable, turn the cable connector over and try again; cable connectors are keyed and connect only one way.



13 Go to the device-record form in *Using Your Personal Computer*, and update the processor-upgrade socket information.

What to do next

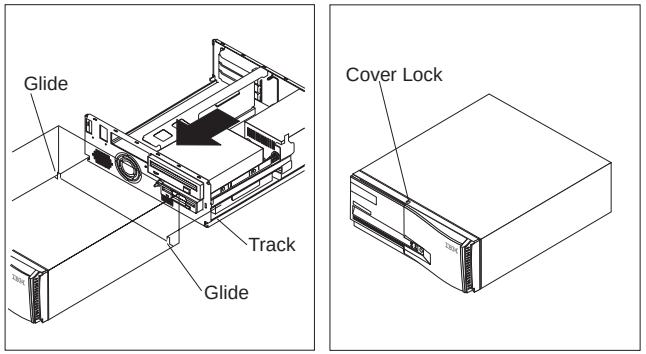
- To install or remove another option, go to the appropriate section.
- To complete the installation, go to page 67.

Completing the Installation

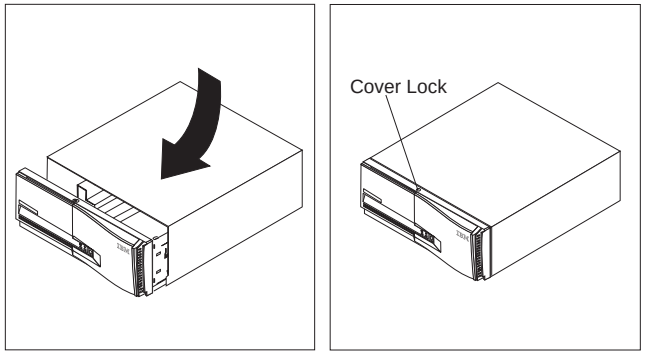
Before you begin

Complete all the installation procedures for the options you have chosen to install.

1 Install the cover on the computer.



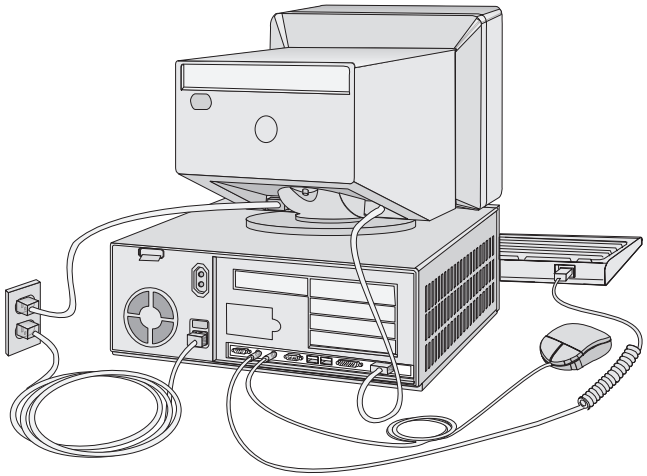
PC 330

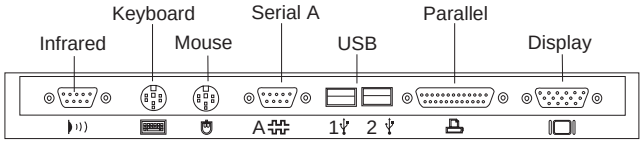


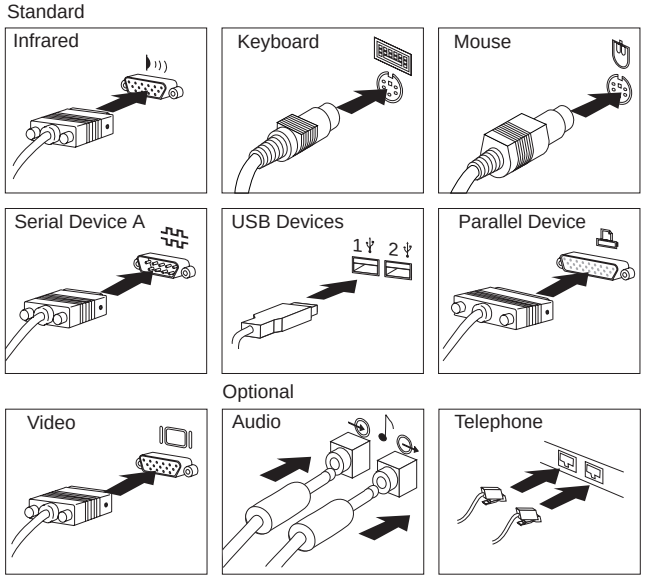
PC 350

Completing the Installation

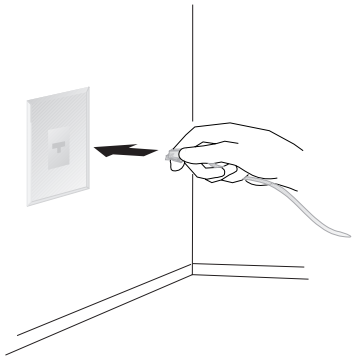
2 Reconnect all cables to the computer. This includes standard and optional features.



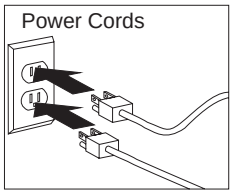




3 If you have a modem or fax machine attached to the computer, reconnect the telephone line to the wall outlet and the computer.



4 Plug the power cords into properly grounded electrical outlets.



What to do next

When you have completed installing the cover and cables, go to page 70.

Updating the Computer Configuration

When you start your computer for the first time after you add or remove a system memory module, an L2 cache memory module, a microprocessor upgrade, a video upgrade, or an internal hard disk drive, the Configuration/Setup Utility program automatically updates your computer configuration.

However, when a diskette drive[5] is installed or removed, or if a resource conflict arises, you need to use the Configuration/Setup Utility program to update this information.

Note: When a hard disk drive is added and you want to include it in your startup sequence, update the **Start Options** section in the Configuration/Setup Utility program.

If you added or removed a legacy adapter, use the Configuration/Setup Utility program to update the screens that contain legacy resource information (such as DMA and interrupt assignments, memory locations, and I/O port assignments). Make the appropriate selections that apply to the legacy adapter you installed or removed. If conflicts occur between port assignments, use the Configuration/Setup Utility program to make the necessary changes to eliminate the conflict.

Refer to *Using Your Personal Computer* for more information about resolving conflicts and using the Configuration/Setup Utility program.

Note: Make a record of your customized settings *before* you complete the following steps.

For more help in resolving or avoiding conflicts, see Appendix A, “Interrupt and DMA Assignments” on page 83 for listings of the interrupt request assignments and DMA channel assignments for your computer.

5 Type or capacity of diskette drive cannot be detected by POST

Using the Configuration/Setup Utility program

Use the following instructions to update the computer configuration.

1 If your computer is turned on, turn it off.

2 Turn on all attached devices; then turn the computer back on.

After a short delay, the IBM logo appears, the computer starts the power-on self-test (POST), and the memory-count message appears. Following the completion of the memory test, a configuration error message might appear. (This is normal because you changed your computer configuration when you added or removed options.)

3 Press **F1** to access the Configuration/Setup Utility program.

Note: If a password prompt appears instead of the Configuration/Setup Utility program screen, an administrator password has been set. You must type the administrator password before you can use the Configuration/Setup Utility program.

In a few moments, the first screen of the Configuration/Setup Utility program appears.

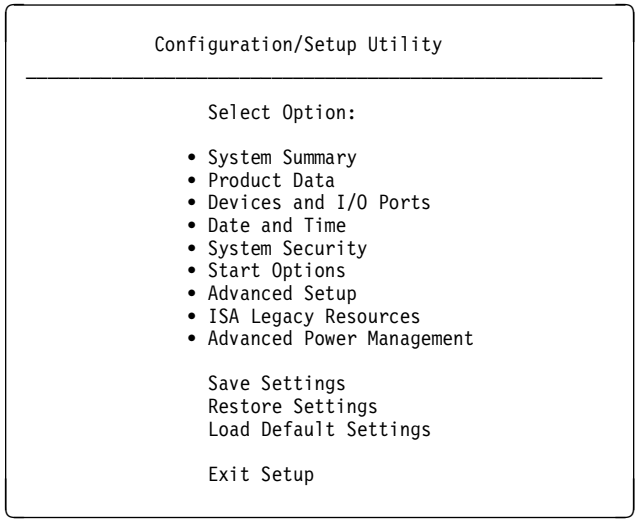
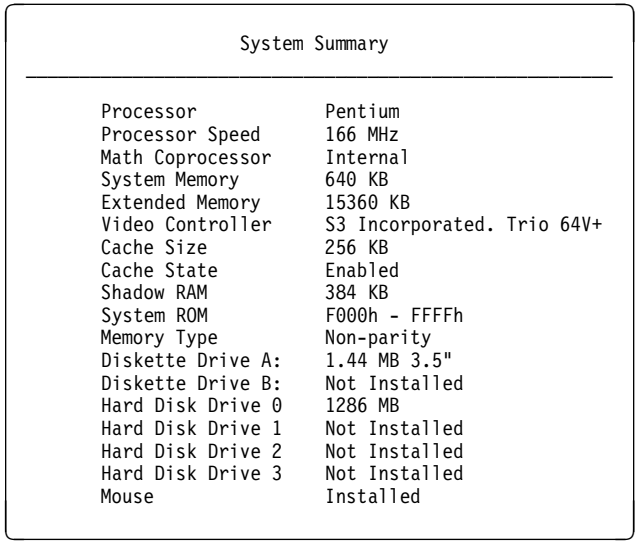


Figure 1. Configuration/Setup Utility menu

4 Select **System Summary** from this screen to verify which options have been installed or removed.

Note: Depending on the computer model and configuration, your screen might appear slightly different from the one shown here.



System Summary

Processor	Pentium
Processor Speed	166 MHz
Math Coprocessor	Internal
System Memory	640 KB
Extended Memory	15360 KB
Video Controller	S3 Incorporated. Trio 64V+
Cache Size	256 KB
Cache State	Enabled
Shadow RAM	384 KB
System ROM	F000h - FFFFh
Memory Type	Non-parity
Diskette Drive A:	1.44 MB 3.5"
Diskette Drive B:	Not Installed
Hard Disk Drive 0	1286 MB
Hard Disk Drive 1	Not Installed
Hard Disk Drive 2	Not Installed
Hard Disk Drive 3	Not Installed
Mouse	Installed

Figure 2. System Summary Screen

5 Press **Esc** to return to the first screen of the Configuration/Setup Utility program; then choose the option that you want to view from the Configuration/Setup Utility program menu.

6 Make any necessary changes; then press **Esc** to return to the first screen of the Configuration/Setup Utility program.

7 If you made changes, select **Save Settings**, and then press **Enter**.

8 Select **Exit Setup**, and then press **Enter** to exit from the Configuration/Setup Utility program.

The computer will restart.

Installing LAN Wake-Up

The LAN wake-up feature enables you to awaken your computer, using the LAN, from a remote location. The system will boot with the keyboard locked and prompt for a power-on password.

In order to use this feature you must enable Dual Mode, and set the power-on-password. Dual mode enables you to power-on your PC locally (keyboard enabled) or remotely (keyboard locked).

Note: If you are an administrator using the LAN wake-up feature, you might need to disable the ability of a user to change the power-on-password. This can be done when setting the administrator password.

Use the following procedure to enable the LAN wake-up feature on your computer:

1. When the Configuration/Setup Utility program prompt appears on the screen during startup, press **F1**.

   The Configuration/Setup Utility program menu appears.
2. Select **Advanced Power Management**.
3. Enable **APM BIOS Mode**.
4. Select **Automatic Power On**.
5. Select **LAN Wake-Up**.
6. Enable **LAN Wake-Up Detect**.
7. Select **Save Settings** as you exit the Configuration/Setup Utility program.

Updating the Computer Configuration

Use the following procedure to enable Dual Mode:

1. Start the Configuration/Setup Utility program by pressing the F1 key, when prompted, after power on.
2. Select **System Security**.
3. Select **Power-on Password**.
4. Select **DUAL** for the password prompt.
5. Select **Save Settings** as you exit the Configuration/Setup Utility program.

Note: The installation of the LAN wake-up adapter requires two cables and two physical connections to both your system board and adapter.

1. The power supply connector cable attaches to the computer power supply.
2. The LAN wake-up connector cable attaches to the computer system board connector.

Chapter 3. Security Options

This chapter describes the security options that are available to help prevent theft or unauthorized use of your computer.

Installing a U-Bolt and Security Cable

You can deter unauthorized removal of your computer hardware by installing a U-bolt and security cable on the rear of your computer.

Before you begin

- Obtain the following:
  - A flat-blade screwdriver
  - An adjustable wrench
  - A 19-mm (3/4 in.) U-bolt or wire rope (similar to National Manufacturing No. 3230, Stock No. 176-735)
  - Threaded nuts that fit the U-bolt
  - A security cable
  - A lock, such as a combination lock or padlock
- Read "Electrical Safety" on page 2 and "Handling Static-Sensitive Devices" on page 3.
- Turn off the computer.
- Disconnect all external cables and power cords, and then remove the computer cover (see "Removing the Cover" on page 7).

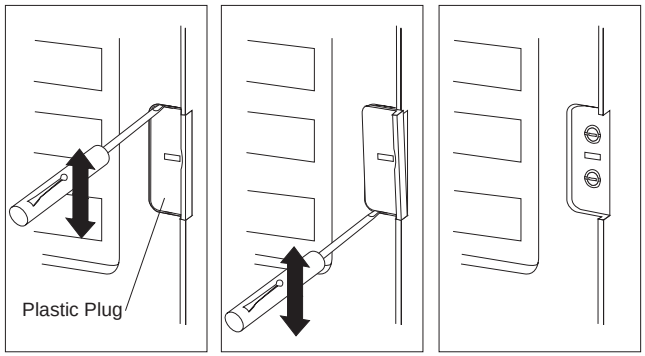
personal computer models have different methods for installing the U-bolt:

What to do next

- To install a U-bolt on the PC 330, go to "PC 330."
- To install a U-bolt on the PC 350, go to "PC 350" on page 77.

PC 330

1 After removing the computer cover, remove the plastic plug from the rear panel.



PC 330

2 Remove the two metal knockouts.

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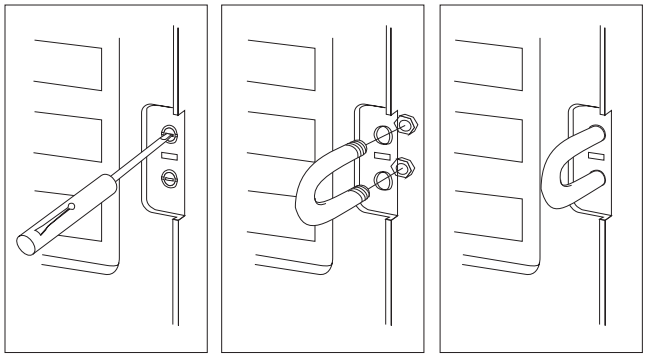
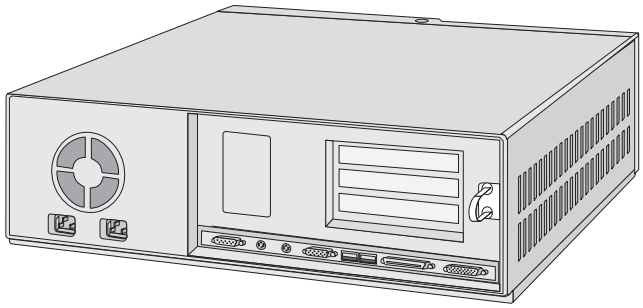
Installing a U-Bolt and Security Cable

3 Install the U-bolt.



PC 330



4 Thread the cable through the U-bolt and around an object from which it cannot be removed; then fasten the cable ends together with a lock.

What to do next

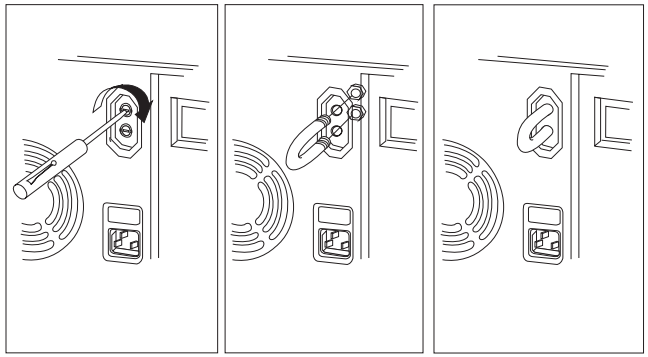
If you have finished installing the U-bolt and do not want to install any other internal options, replace the computer cover and reconnect all external cables and power cords (see "Completing the Installation" on page 67 if you need additional information).

PC 350

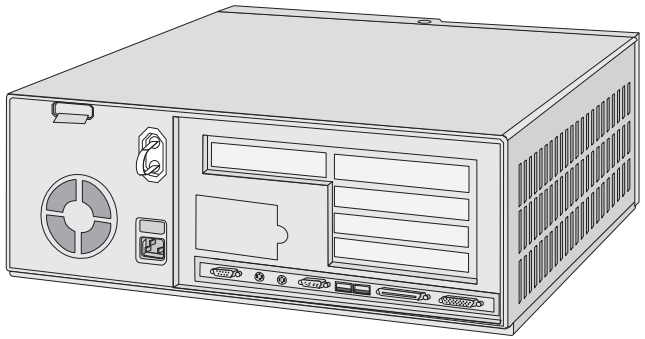
1 Remove the computer cover.

2 Remove the two metal knockouts.

3 Install the U-bolt through the rear panel and attach the nuts.



PC 350



4 Thread the cable through the U-bolt and around an object from which it cannot be removed; then fasten the cable ends together with a lock.

What to do next

If you have finished installing the U-bolt and do not want to install any other internal options, replace the computer cover and reconnect all external cables and power cords (see “Completing the Installation” on page 67 if you need additional information).

Removing an Unknown Power-On Password

The following procedure describes how to remove an unknown (or forgotten) power-on password.

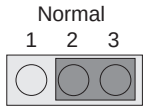
This procedure erases your current computer configuration. You will need to reconfigure your computer after you finish moving the power-on password jumper.

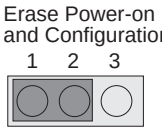
Before you begin

- Read "Electrical Safety" on page 2 and "Handling Static-Sensitive Devices" on page 3.
- Turn off the computer.
- Disconnect all external cables and power cords, and then remove the computer cover (see "Removing the Cover" on page 7 if you need additional information).

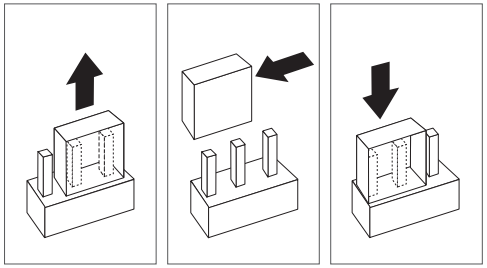
1 For the PC 350, remove any adapters from slot 5.

2 Locate the power-on password jumper in the system board illustration on page page 6.

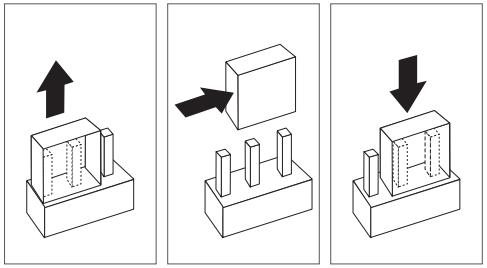




3 Move the jumper from its normal position pins (2 and 3) to pins 1 and 2. This removes the password.



4 Wait one minute and then move the jumper back to its normal position (pins 2 and 3). You are now able to set a new password.



5 For the PC 350, reinstall any adapters from slot 5 that you previously removed.

What to do next

1. Replace the computer cover and reconnect all external cables and power cords (see "Completing the Installation" on page 67 if you need additional information).
2. Turn on the monitor and computer.
3. Use the Configuration/Setup Utility program to set a new power-on password and reconfigure your computer. Refer to *Using Your Personal Computer* for more information.

Setting the Diskette Write-Protect Switch

The diskette write-protect switch controls whether you can write information to a diskette using a diskette drive. The ability to prevent writing to a diskette is particularly useful if you are concerned about the security of information that can be obtained through a network.

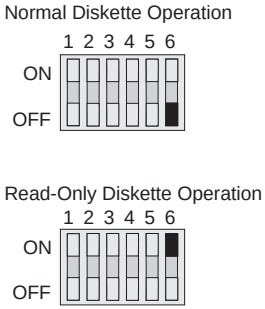
Note: This switch does not affect the ability to read information from a diskette.

Before you begin

- Read "Electrical Safety" on page 2 and "Handling Static-Sensitive Devices" on page 3.
- Turn off the computer.
- Disconnect all external cables and power cords, and then remove the computer cover (see "Removing the Cover" on page 7 if you need additional information).

1 Locate the configuration switch set in the system board illustration on page 6.

2 For normal diskette operation or for read-only diskette operation, set switch 6 as illustrated.



Note: Switch set as viewed from rear of system.

What to do next

Replace the computer cover and reconnect all external cables and power cords (see "Completing the Installation" on page 67 if you need additional information).

Administrator Password

The administrator password is used to restrict access to the Configuration/Setup Utility program. It allows only a system administrator to change the system configuration. If you do not enter the administrator password, you can only view the configuration.

The following procedure describes how to delete an administrator password.

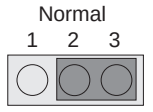
This procedure erases your current computer configuration. You will need to reconfigure your computer after you move the power-on password jumper.

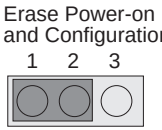
Before you begin

- Read "Electrical Safety" on page 2 and "Handling Static-Sensitive Devices" on page 3.
- Turn off the computer.
- Disconnect all external cables and power cords, and then remove the computer cover (see "Removing the Cover" on page 7 if you need additional information).

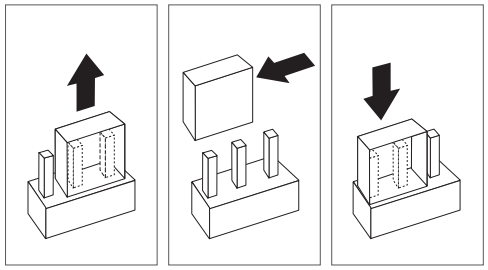
1 For the PC 350, remove any adapters from slot 5.

2 Locate the power-on password jumper in the system board illustration on page 6.

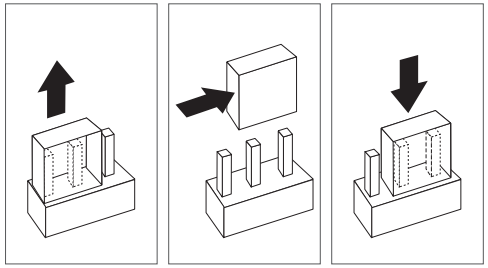




3 Move the jumper from its normal position pins (2 and 3) to pins 1 and 2. This removes the password.



4 Wait one minute and then move the jumper back to its normal position (pins 2 and 3). You are now able to set a new password.



5 For the PC 350, reinstall any adapters from slot 5 that you might have removed earlier.

What to do next

1. Replace the computer cover and reconnect all external cables and power cords (see "Completing the Installation" on page 67 if you need additional information).
2. Turn on the monitor and computer.
3. Use the Configuration/Setup Utility program to set a new power-on password and reconfigure your computer. Refer to *Using Your Personal Computer* for more information.

Setting the Administrator Password

The Configuration/Setup Utility program has procedures for setting an administrator password. To access the administrator password setting in the Configuration/Setup Utility program:

1 Turn on your computer.

2 When the Configuration/Setup Utility prompt appears on the screen during startup, press **F1**.

The Configuration/Setup Utility menu appears.

3 Select **System Security**.

4 Select **Administrator Password**.

5 Follow the instructions on the screen.

Appendix A. Interrupt and DMA Assignments

Interrupt Request Assignments

The following table lists interrupt request (IRQ) assignments for your computer.

Table 7. PC 330 and PC 350 Interrupt Request Assignments

Interrupt Request (IRQ)	System Resource
NMI	Critical system error
SMI	System/power management interrupt
0	Reserved (internal timer)
1	Reserved (keyboard buffer full)
2	Reserved (cascade interrupt from slave PIC)
3	Serial port 2[6]
4	Serial port 1[7]
5	Parallel port 2[6]
6	Diskette controller[7]
7	Parallel port 1 or business audio if installed[7]
8	Reserved (real-time clock)
9	Video adapter (if installed) or business audio[6]
10	ISA/PCI bus or business audio.
11	ISA/PCI bus or business audio.
12	Mouse port[6]
13	Reserved (math coprocessor)
14	IDE Channel 1[6]
15	IDE Channel 2[6]

DMA Channel Assignments

The following table lists direct memory access (DMA) channel assignments for your computer.

Table 8. PC 330 and PC 350 DMA Channel Assignments

DMA Channel	Data Width	System Resource
0	8 bits	Business audio[7]
1	8 bits	Business audio or LAN[7]
2	8 bits	Reserved (diskette drive)
3	8 bits	Business audio or ECP parallel port[7]
4		Reserved (cascade channel)
5	16 bits	ISA bus
6	16 bits	ISA bus
7	16 bits	ISA bus

6 If not assigned; this resource is available for ISA/PCI bus.

7 If not assigned; this resource is available for ISA bus.

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Interrupt and DMA Assignments

Appendix B. Changing the Battery

CAUTION:
Danger of explosion if battery is incorrectly replaced.

When replacing the battery, use only IBM Part Number 33F8354 or an equivalent type battery recommended by the manufacturer. This battery contains lithium and can explode if it is not properly used, handled, or disposed of.

Do not:

- **Throw or immerse into water**
- **Heat to more than 100°C (212°F)**
- **Repair or disassemble**

Dispose of batteries as required by local ordinances or regulations.

To order replacement batteries, call 1-800-772-2227 within the United States, and either 1-800-565-3344 or 1-800-465-7999 within Canada. Outside the U.S. and Canada, contact your IBM HelpWare number, place of purchase, or IBM reseller.

Before you begin

- Read "Electrical Safety" on page 2.
- Follow any special handling and installation instructions supplied with the replacement battery.
- Turn off the computer.
- Disconnect all external cables and power cords, and then remove the computer cover (see "Removing the Cover" on page 7 if you need additional information).

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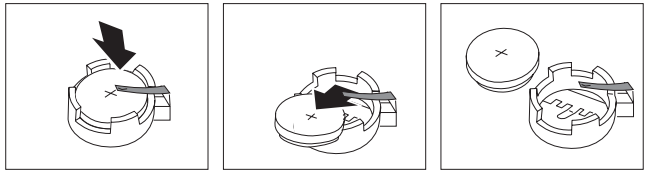
Changing the Battery

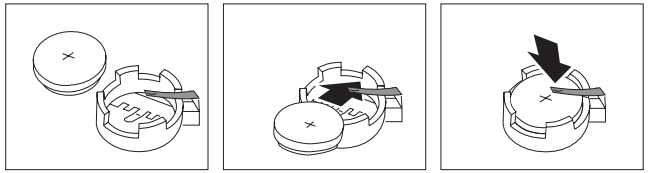
1 Check the following illustration for the location of your battery. You might have to remove other computer components (such as adapters) to gain access to it.

2 For the PC 350, remove any adapter that is installed in slot 5.

3 Remove the old battery.



4 Install the new battery.



5 For the PC 350, replace any adapter that you removed from slot 5.

What to do next

1. Replace the computer cover, and then reconnect all external cables and power cords (see "Completing the Installation" on page 67 if you need additional information).
2. Turn on the monitor and computer. When the computer is turned on the first time after the battery is replaced, a battery error message might be displayed. This is a normal result of changing the battery.
3. Use the Configuration/Setup Utility program to set the time and date and to set a power-on password. Refer to *Using Your Personal Computer* for more information.

Appendix C. Optional Floor Stand

This appendix provides instructions to help you install or remove the IBM personal computer optional floor stand.

CAUTION:

- **Be sure to turn off your computer, and then disconnect all external cables and power cords before installing the base cover or floor stand.**
- **To avoid possible injury while moving or lifting the computer, ask another person to help you.**

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Installing the Floor Stand

1 Position the computer right side up on a desk or table with the left side of the computer (the side with the air vents) facing you.

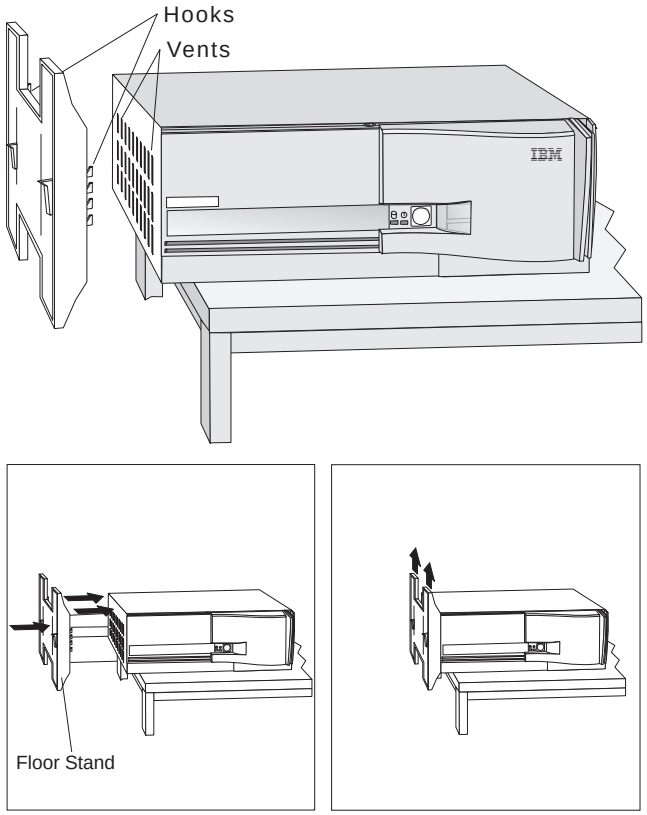
2 Extend the left side of the computer over the end of the table approximately 40 mm (1.5 in.).

3 Align the hooks on the floor stand with the outer vents in the left side of the computer cover.

4 Hold the floor stand firmly against the computer and slide the stand upward. You will feel the floor stand snap into place.

Check the stand installation to make sure it is securely attached.

5 Carefully turn the computer so that it sits vertically on the floor stand.



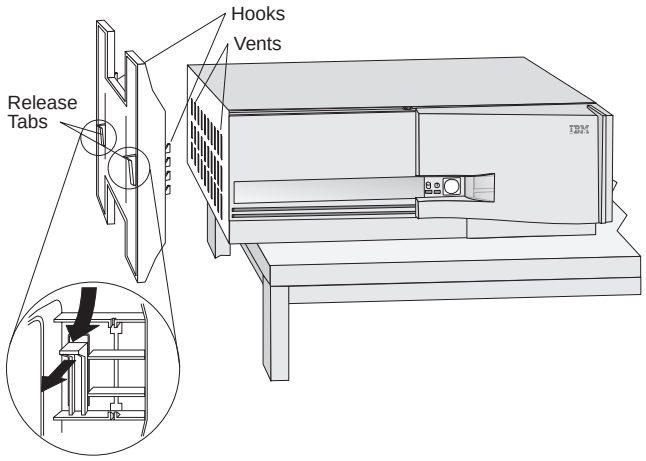
Removing the Floor Stand

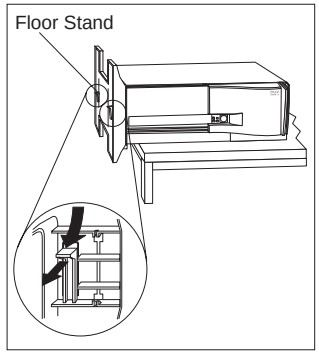
1 Position the computer right side up on a desk or table with the left side of the computer (the side with the floor stand) extending over the end of the table approximately 40 mm (1.5 in.).

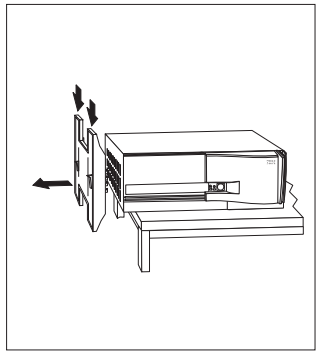
2 Locate the two release tabs on the bottom of the floor stand.

3 Hold the computer firmly against the desk or table, and press both release tabs downward.

4 Slide the stand downward and remove it from the computer cover. Be sure to hold onto the floor stand to prevent it from falling after it is released from the cover.







Installing and Removing the Optional Floor Stand

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