

Chapter 4 Installing Optional Components

4.1 Installation Precautions

Before you install any system component, we recommend that you read the following sections. These sections contain important ESD precautions, pre- and post-installation instructions.

4.1.1 ESD Precautions

Electrostatic discharge (ESD) can damage your processor, disk drives, expansion boards, and other components. Always observe the following precautions before you install a system component

1. Do not remove a component from its protective packaging until you are ready to install it.
2. Wear a wrist grounding strap and attach it to a metal part of the system unit before handling components. If a wrist strap is not available, maintain contact with the system unit throughout any procedure requiring ESD protection.

4.1.2 Preinstallation Instructions

Always observe the following before you install a system component:

1. Turn off the system power and all the peripherals connected to the unit before opening it. Read section 1.5 for information on how to properly turn off the system.



Make sure that the system is unplugged..

2. Open the system according to the instructions in section 4.2.1.
3. Follow the ESD precautions in section 4.1.1 before handling a system component.
4. Remove any expansion boards or peripherals that block access to the DIMM sockets or CPU socket.
5. See the following sections for specific instructions on the component you wish to install.



Do not attempt the procedures described in the following sections unless you are a qualified service technician.

4.1.3 Post-installation Instructions

Observe the following after installing a system component:

1. See to it that the components are installed according to the step-by-step instructions in their respective sections.
2. Unplug the system unit.
3. Make sure you have set all the required jumpers. See section 2.3.2 for the correct jumper settings or refer to the jumper settings label pasted inside the system cover.

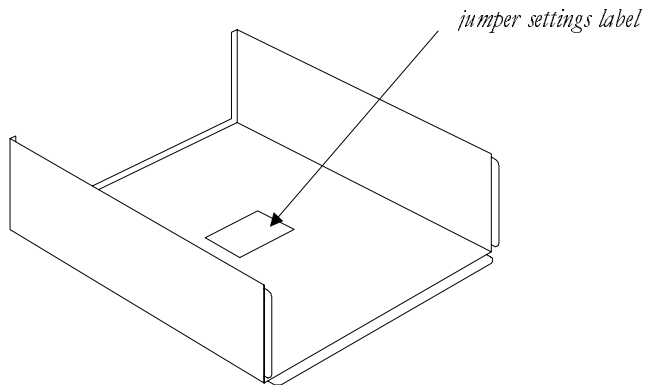


Figure 4-1 Jumper Settings Label Location

4. Replace any expansion boards or peripherals that you removed earlier.
5. Replace the system cover.
6. Connect the necessary cables and turn on the system.

4.2 Removing and Replacing the Housing Cover



Before you proceed, make sure that you have turned off the system and all peripherals connected to it. Read section 4.1.2 for preinstallation instructions.

This section tells you how to open the housing cover when you need to install additional components inside the system unit.

4.2.1 Removing the Housing Cover

1. Turn off power to the system unit and unplug all cables.
2. Place the system unit on a flat, steady surface.
3. Remove the four screws from the rear panel. Set the screws aside. You will need them when replacing the housing cover.

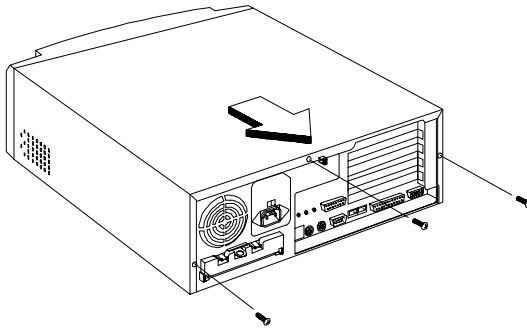


Figure 4-2 Removing the Screws

4. Push the housing cover slightly backward as indicated in Figure 4-3.
5. Pull the housing cover upward and remove it from the chassis.

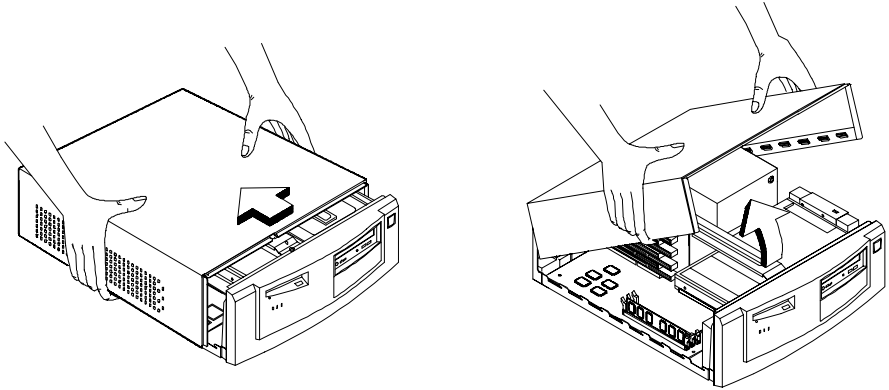


Figure 4-3 Removing the Housing Cover

4.2.2 Replacing the Housing Cover

1. Replace the housing cover as shown in Figure 4-4.

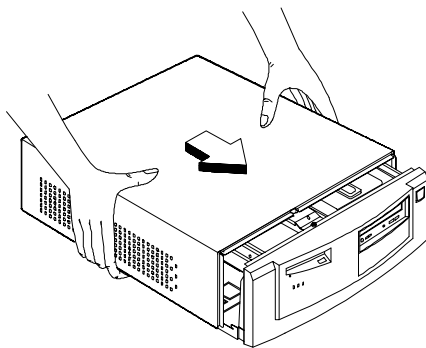


Figure 4-4 Replacing the Housing Cover

2. Secure the housing cover with the necessary screws.

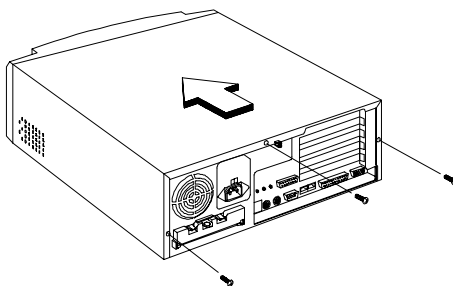


Figure 4-5 Securing the Screws

4.3 Disassembling and Reassembling the System

When upgrading, you may need to disassemble your system in order to access the system board and other components inside the system.

To disassemble the system:

1. Push the link bar backward.
2. Then pull it upward to detach it from the system.

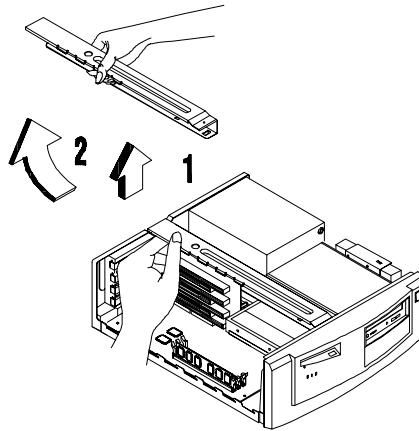


Figure 4-6 Detaching the Link Bar

3. Locate the hard disk on the right side of the system. Disconnect the cable and then lift it up to remove from the system.

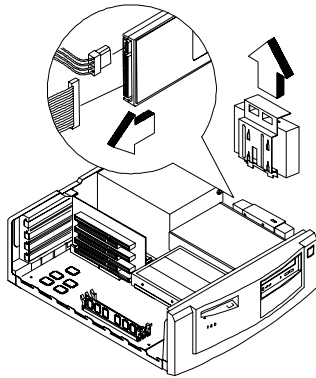


Figure 4-7 Removing the Hard Disk

4. Disconnect the drive cables then pull the disk frame holding the CD-ROM drive and the 3.5-inch diskette drive.

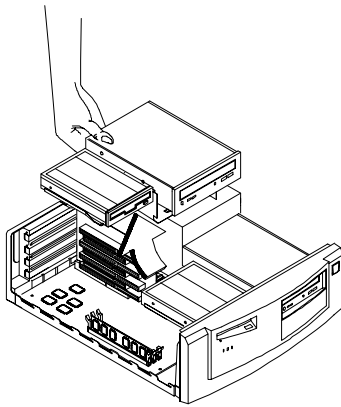


Figure 4-8 Removing the Drive Frame with CD-ROM and 3.5-inch Diskette Drives

5. When the drives have been removed, you can now access the system board and the riser card.

To reassemble the system:

To reassemble the system, simply reverse the procedure. However, before you reassemble your system, make sure that you have installed all necessary components and connected the cables.

4.4 Replacing the Hard Disk Drive

1. After you have removed the hard disk drive from the system, remove the screws that hold the bracket to the hard disk.

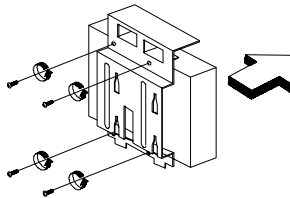


Figure 4-9 Removing the Hard Disk Drive

2. Attach the new hard disk to the bracket and secure it with the screws which you have just removed earlier.

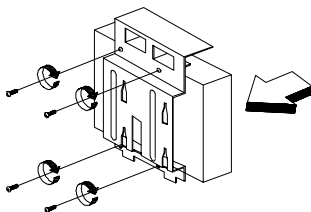


Figure 4-10 Attaching a Hard Disk Drive to the Bracket

3. Replace the hard disk to its original position in the system.
4. Connect the disk drive cables.

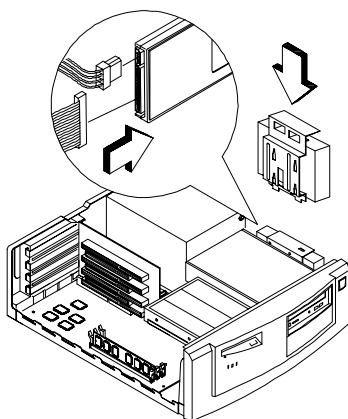


Figure 4-11 Installing the Hard Disk Drive

5. Cover the system.

4.5 Installing and Removing Expansion Boards

4.5.1 Installing a PCI Card

To install a PCI card:

1. Turn off and unplug the system
2. Locate the riser card.
3. Locate an empty PCI slot on the slot board.
4. Remove the bracket on the housing opposite to the empty PCI slot.
5. Insert a PCI card into the slot. Make sure that the card is properly seated.
6. Secure the card to the housing with a screw.

When you turn on the system, BIOS automatically detects and assigns resources to the PCI devices.

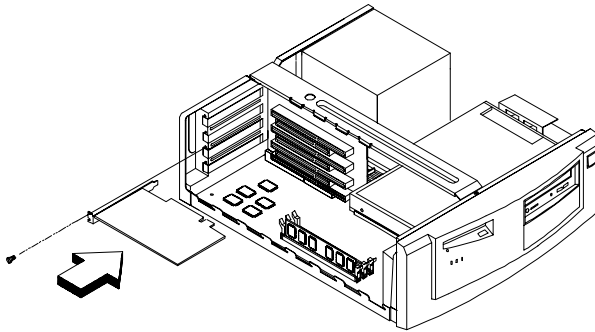


Figure 4-12 Installing a PCI Card

4.5.2 Installing ISA Cards

Both PnP and non-PnP ISA cards require specific IRQs. When installing ISA cards, make sure that the IRQs required by these cards are not previously assigned to PCI devices to avoid resource conflicts.

Follow these steps when installing ISA cards:

1. Turn off and unplug the system.
2. Remove all PnP cards installed in the system, if any.
3. Enter BIOS Utility and set the Reset Resource Assignment parameter to **Yes** to clear the resource data assigned to the PnP devices. Refer to section 3.10.2.
4. Install non-PnP ISA cards.
5. Turn on the system.
6. Use Windows 95 or ICU to manually assign the appropriate IRQs to the cards. This ensures that BIOS will not use the resources assigned to the non-PnP ISA cards.



BIOS detects and configures only PnP cards.

7. Turn off and unplug the system again.
8. Locate the expansion slots and install the PnP ISA and PCI cards.
9. Turn on the system. This time PnP BIOS automatically configures the PnP ISA and PCI cards with the available resources.

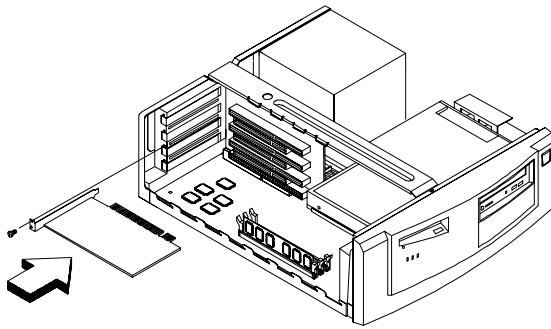


Figure 4-13 Installing an ISA Card

4.6 Installing Additional Memory

The system memory is upgradable to a maximum of 384 MB via three 168-pin DIMM sockets on board. These DIMM sockets accept PC-66/PC-100 compliant DIMMs with 16-, 32-, 64-, and 128-MB capacities, with or without ECC feature. See Figure 2-1 for the location of the DIMM sockets. Section 4.6.1 tells how to install DIMMs.

Table 4-1 lists possible memory configurations.



When installing DIMMs, make sure that you install only one type of DIMM. Do not combine PC-66 and PC-100 DIMMs.

Table 4-1 Memory Configurations

DIMM1	DIMM2	DIMM3	Total Memory
16 MB			16 MB
32 MB			32 MB
64 MB			64 MB
128 MB			128 MB
	16 MB		16 MB
	32 MB		32 MB
	64 MB		64 MB
	128 MB		128 MB
		16 MB	16 MB
		32 MB	32 MB
		64 MB	64 MB
		128 MB	128 MB
16 MB	16 MB		32 MB
32 MB	32 MB		64 MB
64 MB	64 MB		128 MB
128 MB	128 MB		256 MB

Table 4-1 Memory Configurations (continued)

DIMM1	DIMM2	DIMM3	Total Memory
	16 MB	16 MB	32 MB
	32 MB	32 MB	64 MB
	64 MB	64 MB	128 MB
	128 MB	128 MB	256 MB
16 MB	16 MB	16 MB	48 MB
16 MB	32 MB	32 MB	80 MB
16 MB	64 MB	64 MB	144 MB
16 MB	128 MB	128 MB	272 MB
32 MB	16 MB	16 MB	64 MB
32 MB	32 MB	32 MB	96 MB
32 MB	64 MB	64 MB	160 MB
32 MB	128 MB	128 MB	288 MB
64 MB	16 MB	16 MB	96 MB
64 MB	32 MB	32 MB	128 MB
64 MB	64 MB	64 MB	192 MB
64 MB	128 MB	128 MB	320 MB
128 MB	16 MB	16 MB	160 MB
128 MB	32 MB	32 MB	192 MB
128 MB	64 MB	64 MB	256 MB
128 MB	128 MB	128 MB	384 MB

4.6.1 Installing a DIMM

1. Open the clips on the socket.
2. Align the DIMM with the socket.
3. Press the DIMM into the socket until the clips lock into the DIMM.

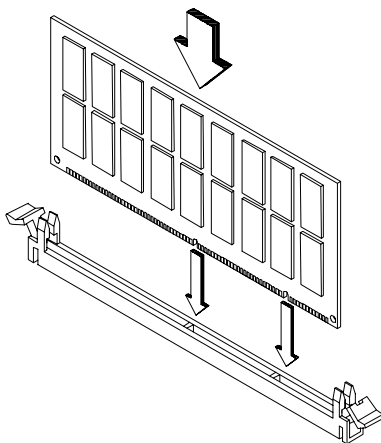


Figure 4-14 Installing a DIMM



The DIMM socket is slotted to ensure proper installation. If you insert a DIMM but it does not fit easily into the socket, you may have inserted it incorrectly. Turn the DIMM around and try to insert it again.

4.6.2 Removing a DIMM

1. Press the holding clips on both sides of the socket outward to release the DIMM.
2. Gently pull the DIMM out of the socket.

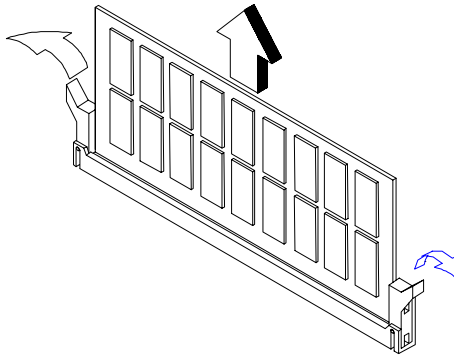


Figure 4-15 Removing a DIMM

4.6.3 Reconfiguring the System

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

4.7 Upgrading the CPU

4.7.1 Removing the CPU



Observe the ESD precautions when installing or removing a system component. See section 4.1.1.

Before you can replace or upgrade your processor, you need to remove the previously installed processor on the system board.

Follow these steps to remove the CPU:

1. Disconnect the 3-pin and 2-pin fan/heatsink cables from the system board.
2. While slightly pulling either side of the retention mechanism, pull out the CPU.

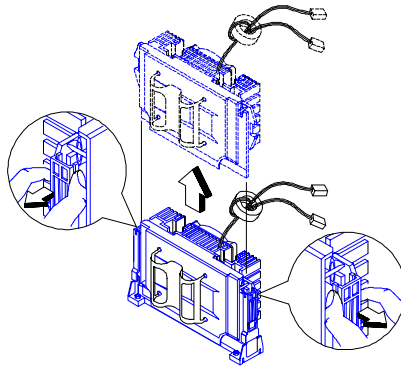
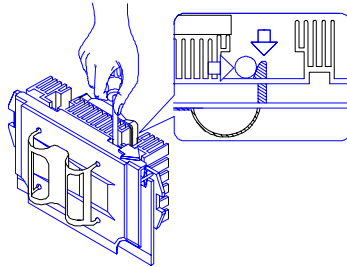
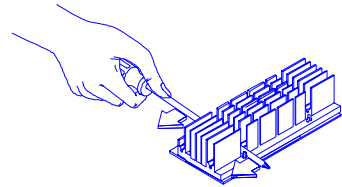


Figure 4-16 Removing a Processor Card

3. Detach the fan/heatsink from the CPU. Use a tool to push the four fastener tabs as shown in the following figures:



A. Pentium II CPU



B. Celeron CPU

Figure 4-17 Detaching the Fan/Heatsink from the CPU

4.7.2 Installing a Pentium II CPU

The Pentium II CPUs come in different packagings. The first generation Pentium II CPUs come in an almost fully-enclosed card package and use Slot-1 type connectors with 242 contact pins. This is called the SEC (Single-Edge Contact) type package.

The new Pentium II CPUs come in the SECC 2 (Single-Edge Cartridge Connector) type package in which the CPU is semi-exposed. Though it uses a Slot-2 type connector with 330 contact pins, this type is also compatible with Slot 1 connector.

The steps for installing the CPU differ for each packaging. So before you proceed, do the following:

- Make sure that no CPU is installed in the CPU connector.
- Check your CPU packaging.



Observe the ESD precautions when installing or removing a system component. See section 4.1.1.

Installing the Retention Mechanism

Follow these steps to install the retention mechanism:

1. Pull out the sides.

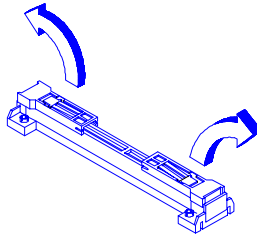


Figure 4-18 Pulling Out the Sides of the Retention Mechanism

2. Place the retention mechanism over the CPU connector on the system board and press it until it clicks into place.
3. Press down the four plastic rivets to secure the retention mechanism. Make sure all four rivets are properly inserted into the holes on the system board.

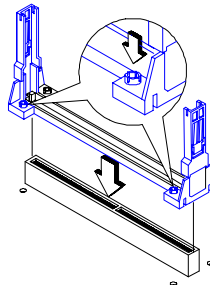


Figure 4-19 Installing the Retention Mechanism

Installing a Pentium II CPU with SEC-type Package

Follow these steps to install a Pentium II CPU with SEC-type package:

1. Install the retention mechanism. See the “Installing the Retention Mechanism” section.
2. Remove the processor card from its protective packaging. Make sure that the latches on the sides of the module are not pressed.
3. Remove the thermal tape protector at the back of the fan/heatsink.

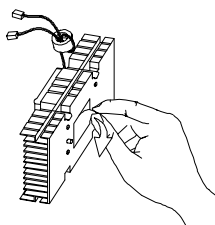


Figure 4-20 Removing the Thermal Tape Protector

4. Insert the wide clip ends into the wide holes on the processor and the narrow clip ends into the narrow holes.

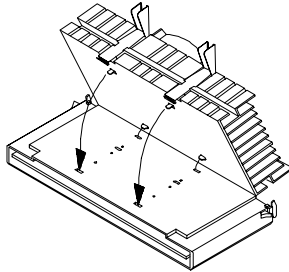


Figure 4-21 Inserting the Clip Ends into the Processor Holes

5. Using your fingers, push down the metal bracket until it clicks into the CPU cartridge and then push the metal bracket's handle to lock the metal bracket into place.

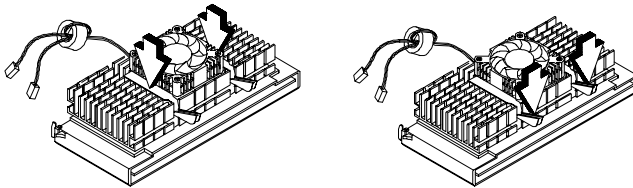


Figure 4-22 Locking the Metal Bracket

6. With the processor card golden fingers pointing downward, align the processor to the posts of the retention mechanism.
7. Lower the processor into to the CPU connector on the system board until the golden fingers touch the connector.

8. Press down the processor until the golden fingers completely fit into the connector and the latches on the sides lock the processor into place.

Check the sides of the retention mechanism. The latches should be properly inserted into the appropriate slots on the retention mechanism.

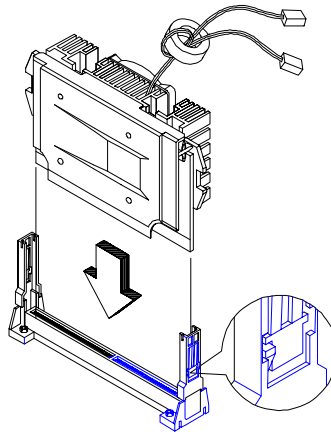


Figure 4-23 Locking the Processor

9. Connect the 3-pin and 2-pin fan/heatsink cables to JP2 and CN15 on the system board, respectively.

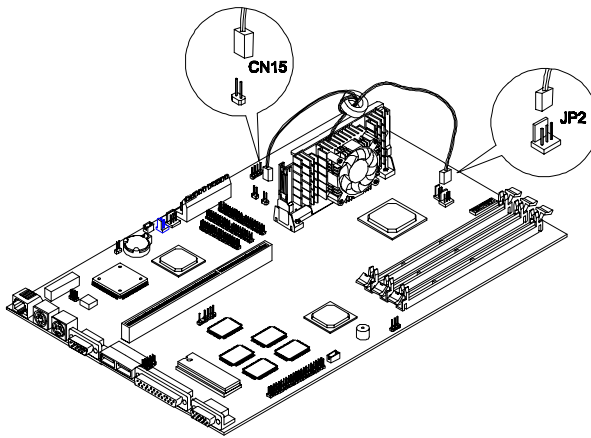


Figure 4-24 Connecting the Fan/Heatsink Cables



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

Installing a Pentium II CPU with SECC 2-type Package

Follow these steps to install a Pentium II CPU with SECC 2-type package:

1. Install the retention mechanism. See the “Installing the Retention Mechanism” section.
2. Remove the processor card from its protective packaging.
3. Position the fan/heatsink fastener underneath the processor card.
4. Align the four tabs of the fastener with the four holes on the processor card.
5. Remove the thermal tape protector at the back of the fan/heatsink.

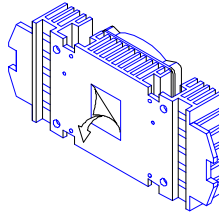


Figure 4-25 Removing the Thermal Tape Protector

6. Align the holes on the fan/heatsink with the fastener tabs. To make sure that the orientation of the fan/heatsink is correct, check if the black circular cable connector holder is positioned on top of the processor.
7. Press the fan/heatsink, processor card and fasteners together to lock the fan/heatsink.

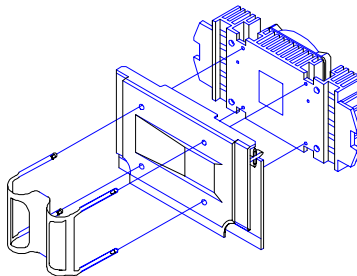


Figure 4-26 Attaching the Fan/Heatsink

8. With the processor card golden fingers pointing downward, align the processor to the posts of the retention mechanism.
9. Lower the processor into to the CPU connector on the system board until the golden fingers touch the connector.
10. Press down the processor until the golden fingers completely fit into the connector and the latches on the sides lock the processor into place.

Check the sides of the retention mechanism. The latches should be properly inserted into the appropriate slots on the retention mechanism.



If you find the processor card difficult to insert into the slot, do not force it. The orientation of the fan/heatsink may be incorrect.

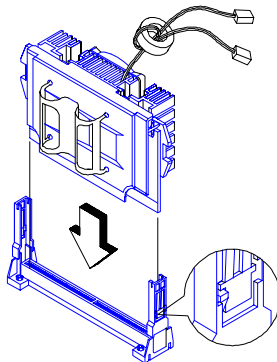


Figure 4-27 *Installing a Processor Card*

11. Connect the 3-pin and 2-pin fan/heatsink cables to JP2 and CN15 on the system board, respectively.

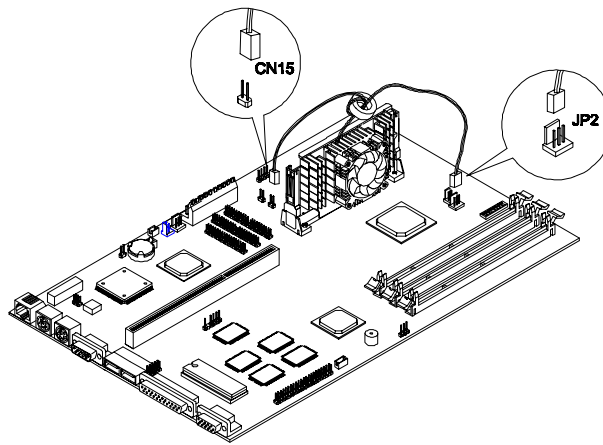


Figure 4-28 Connecting the Fan/Heatsink Cables



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

4.7.3 Installing a Celeron CPU



Observe the ESD precautions when installing or removing a system component. See section 4.1.1

The system board supports a Celeron processor that comes in the SEPP (Single-Edge Processor Package) type packaging. The SEPP is similar to SECC and is compatible with Slot 1 connectors.

Before you proceed, make sure that there is no processor installed in the CPU connector.

Follow these steps to install a Celeron processor:

1. Install the retention mechanism. See the “Installing the Retention Mechanism” section.
2. Remove the Celeron processor from its protective packaging.
3. Position the heatsink fastener underneath the processor card.
4. Remove the thermal tape protector at the back of the heatsink.

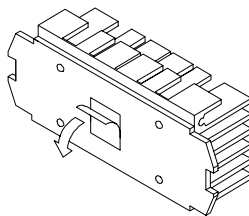


Figure 4-29 *Removing the Tape Protector*

5. Align the four tabs of the fastener with the four holes on the Celeron processor.

6. Align the holes on the heatsink with the fastener tabs. The heatsink side on which there is a space before the edge is positioned where the golden fingers of the processor card are.
7. Press the heatsink, processor card and fasteners together to lock the heatsink.

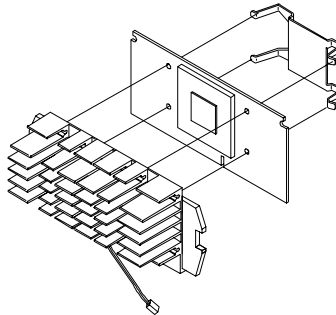


Figure 4-30 Attaching the Heatsink

8. With the processor card golden fingers pointing downward, align the processor to the posts of the retention mechanism.
9. Lower the processor into to the CPU connector on the system board until the golden fingers touch the connector.

10. Press down the processor until the golden fingers completely fit into the connector and the latches on the sides lock the processor into place.

Check the sides of the retention mechanism. The latches should be properly inserted into the appropriate slots on the retention mechanism.



If you find the processor card difficult to insert into the slot, do not force it. The orientation of the heatsink may be incorrect.

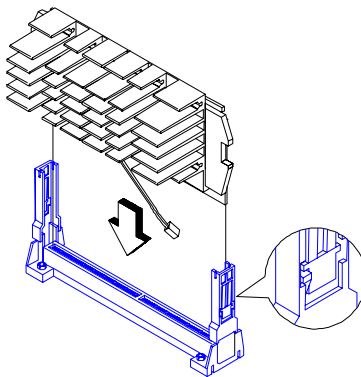


Figure 4-31 *Installing the Celeron Processor*

11. Connect the 2-pin heatsink cable to CN15 on the system board.

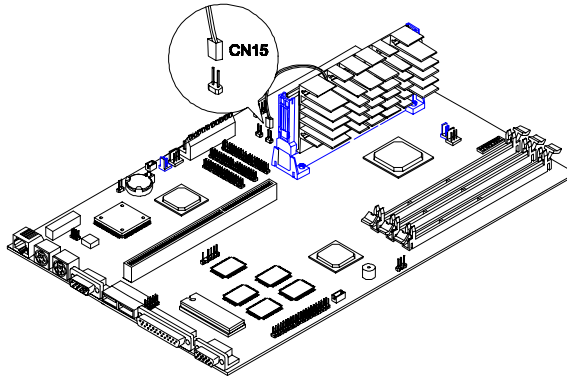


Figure 4-32 Connecting the Heatsink Cable



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