Intel Pentium® II OverDrive® Processor

Installation Manual

intel.

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The Pentium® II OverDrive® processor may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Current characterized errata are available on request.

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Part number: 696766-001

Contents

English

Explanation of symbols used in this guide:

⚠️ This symbol indicates a NOTE. It identifies items of special interest that pertain to the section or procedure you are reading. Notes typically clarify or expand the material in the text.

⚡ This symbol indicates a CAUTION or WARNING. It identifies operations or situations that may be harmful or dangerous to you or your equipment. For your safety and to protect your equipment, read and observe all cautions and warnings.

Check your computer's owner's manual

First check your computer's owner's manual to see if it has a section on installing computer upgrade hardware such as the Pentium® II OverDrive® processor. If it does, follow the owner's manual procedure, using this manual for addtional information.

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Step 1 — Run Diagnostics Program

Prior to installing the Pentium® II OverDrive® processor, run the diagnostic program on the included diskette to verify proper operation of your PC. The diagnostic program will also update Windows* 95 to improve multimedia performance when running software written for Intel's MMX™ technology.

To run the diagnostic program (requires Windows 95 or Windows NT* 3.51 or greater):

1. Insert the Pentium II OverDrive processor Diagnostic diskette into drive A.
2. Choose *File* (for Windows NT 3.51) or *Start* (for Windows 95 or Windows NT 4.0 or greater).
3. Choose *Run.*
4. Type *a:\diag* and click *OK,* wait for the menu to appear on screen, then choose *Run Diagnostics* from the menu.

Once the diagnostics are completed, continue the installation process with Step 2. Be sure to run the diagnostics program again after installing the Pentium II OverDrive processor to verify proper operation of the new processor.

If you experience problems after installing the Pentium II OverDrive processor, contact Intel customer support for more information.

Step 2 — Ground yourself

Warning: Danger to equipment! The Pentium II OverDrive processor can be damaged by static discharge. Before handling the Pentium II OverDrive processor, be sure to ground yourself by touching the metal on your computer. Limiting your movements during installation reduces static electricity.

To prevent damaging the Pentium II OverDrive processor and your computer from a static discharge, ground yourself by touching the metal back or side panel of your computer's system unit.
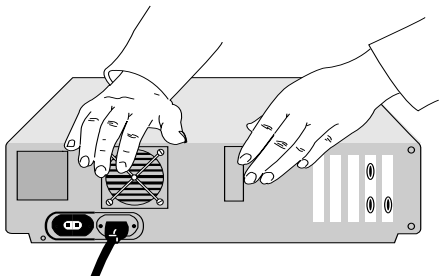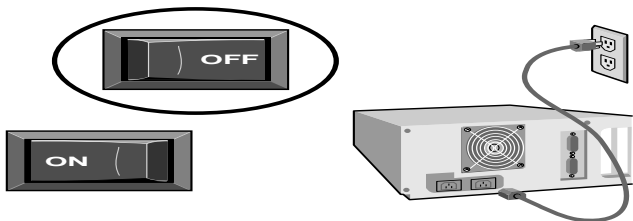
Step 3 — Unplug computer and remove cover

Turn off the computer and any attached equipment (such as a monitor or printer), unplug the power cord, and remove the cover.
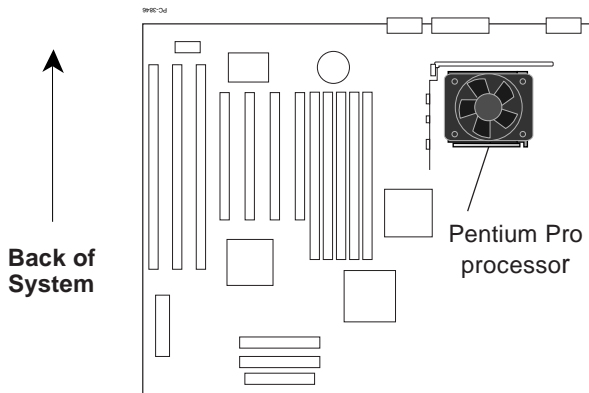
Warning: Don't burn yourself! Many components can become hot enough to cause mild skin burns. Wait at least 15 minutes after turning off the power before handling any parts.

Step 4 — Find the computer's Pentium® Pro processor

Find the Pentium Pro processor in your computer. The Pentium Pro processor in most computers looks like one of the following:

Back of System

ATX Motherboard

In some systems, the Pentium Pro processor may be partially obscured from sight by the system power supply, add-in cards, or floppy/hard drive mounting brackets. It may be necessary to remove add-in cards or drives to gain access to the processor socket. Refer to your system documentation for information on removing those items.
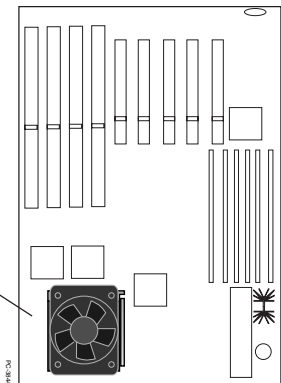
Back of system

Baby AT Motherboard

On top of your Pentium Pro processor there should be a passive heatsink (which may be attached with a clip) or a fan heat sink with an attached power cable.
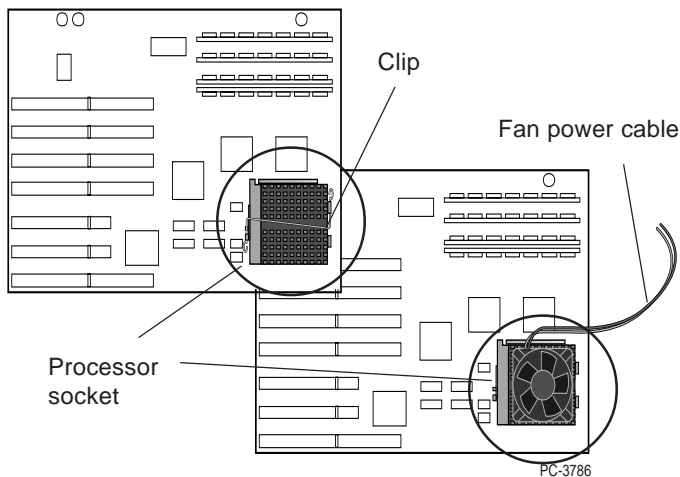
Pentium Pro processor

Clip

Fan power cable

Processor socket

PC-3786

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The Owner's Manual for your computer may show the location of the processor. If you can't locate your computer's original processor, contact your dealer or your computer manufacturer for assistance.

Step 5 — Determine the socket type

⚠️ *Some computers have an empty second socket next to the processor. For more information on the installation process for these computers, see the dual processor section on page 19.*

After locating the processor, examine the socket to determine the socket type. There are two socket types:

1) A socket with a handle that locks or unlocks called a *zero insertion force* (ZIF) socket.

Do not raise socket handle unless fan heat sink clip has been undone first!

Typical ZIF socket (with handle)
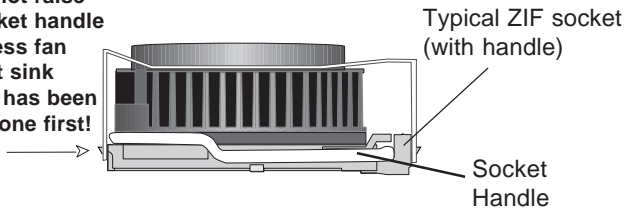
Socket Handle

2) A socket without a handle is called a *low insertion force* (LIF) socket.

> ⚠ ***Warning: Damage to equipment! The Pentium II OverDrive processor is incompatible with a LIF socket. Attempting to install the Pentium II OverDrive processor into a LIF socket will result in processor damage!***

Typical LIF socket (no handle)

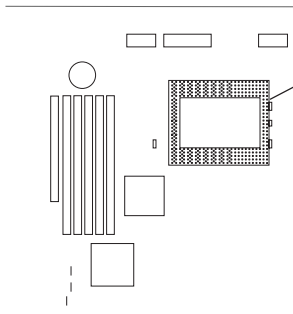- If your computer has a power cable attached to the Pentium Pro processor's fan heat sink proceed with Step 6. If the fan heat sink is attached with a clip go to Step 7. Otherwise, go directly to Step 8.

Step 6 — Unplug the fan power cable

The fan power cable may be attached to your computer's power supply or to a connector on the motherboard. If other cables are in the way, carefully fold them out of the way so they don't touch computer components. Then carefully unplug the heatsink's power cable from the computer's power supply or slide the power cable off the motherboard connector.

> ⚠ Your new OverDrive processor does not need the older processor's fan, cable, or clip; after removing these parts, store them with your Pentium Pro processor.

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If your system uses a software program, such as Intel's *LANDesk® Client Manager*, to monitor the processor fan operation, the Pentium II OverDrive processor may be compatible with that feature. Refer to the *Getting Help* section on page 28 for more information.

System power supply cable

System Power Supply

Fan power cable

PC-3843N

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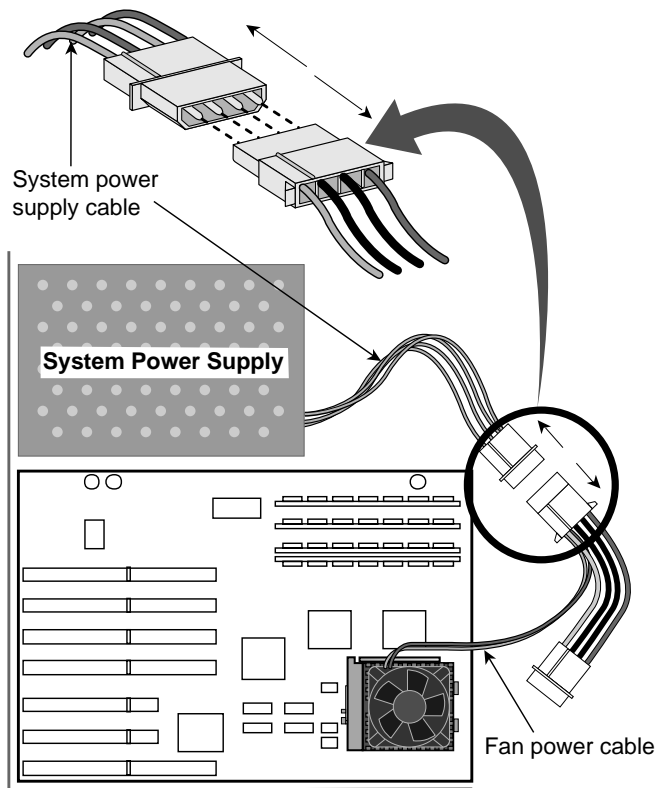
Step 7 — Remove fan heat sink clip assembly

If there is no clip on your processor, go to step 8. If the heat sink is clipped to the socket, remove the clip by pressing down and unfastening it from the tab on the socket, as shown in the following illustrations. Be sure to hold your hand over the clip while unfastening it to prevent it from flying loose.

> *Warning!: You must be very careful on removing the clip from the processor. It may be under considerable tension and may cause injury or system damage if not removed carefully.*

Heat sink clip surrounds fan and hooks to socket tabs. Remove heat sink fan and fins as one piece. Be careful not to break the socket tabs.

Typical fan heat sink clip

Typical passive heat sink clip

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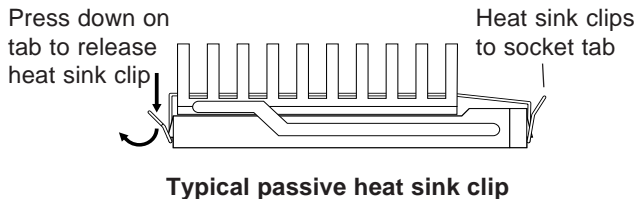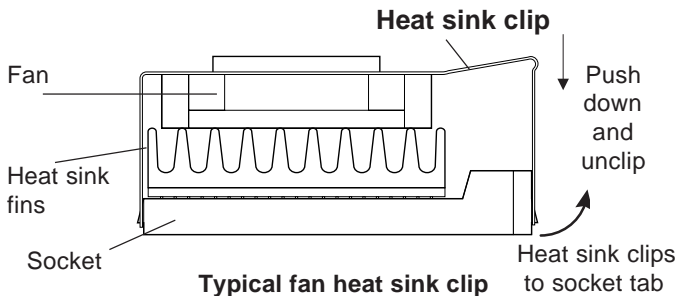
Some heat sinks clamp tightly over the socket tab and require a tool such as a screwdriver to loosen the clip enough to slide over the tab. See the illustration below.

> ⚠ *Warning!: Damage to equipment! Some manufacturers use thermal grease to attach the heat sink to the processor. Thermal grease is a conductive material and can damage your computer if it gets on socket pin holes, processor pins, or other components. Avoid getting thermal grease residue on your hands or the computer when you remove the heat sink from the processor.*
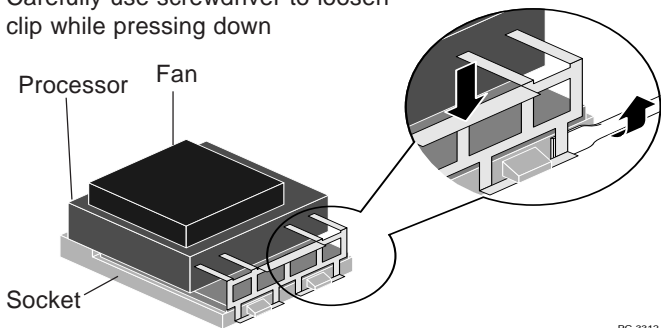
Carefully insert the tool between the heat sink and the socket, just above the socket tab. Gently pry outward to allow the heat sink to slip over the tab. You should then be able to completely release the heat sink from all the other socket tabs.

Carefully use screwdriver to loosen clip while pressing down

Processor Fan

Socket

PC-3312

### Step 8 — Open the socket handle and remove the existing processor from the socket

Push the handle slightly sideways to slide it over the lever lock tab, then move the handle to a 90-degree, upright position. Be sure the socket is completely open. Don't use excessive force. Your computer's motherboard should not bend or flex while you are opening the socket. See the illustration on the next page.

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> ⚠ *Caution: The fan heat sink and processor may come out as two separate pieces.*

> ⚠ *Before opening the ZIF socket lever, make sure to first remove the fan heat sink clip assembly from the processor.*

Fan Heat Sink

Pentium Pro Processor

Be sure the socket is completely open.

90 deg.

PC-3885
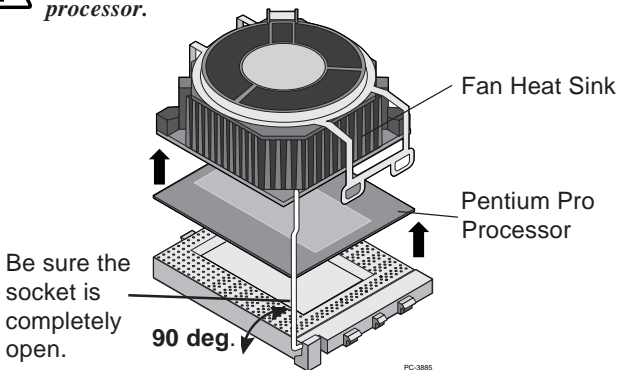
Save the original processor in case you need it later. Store it in a safe place, such as the box in which the Pentium II OverDrive processor shipped.

Step 9 — Insert the Pentium II OverDrive processor into the socket

Correctly orienting your Pentium II OverDrive processor in the socket is crucial to the success of your installation. The Pentium II OverDrive processor fits in the socket only one way.

> ⚠ *Note: If your system's processor socket is not easily accessible, you may want to skip ahead to Step 13 and connect the Pentium II OverDrive processor's fan cable before inserting the processor in the socket. After the fan cable is connected, return to this step to complete installation of the processor.*

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⚠️ *Align the overhang area of the processor with the side of the socket where the cam lever attaches.*

Place the Pentium II OverDrive processor over the socket and align the pins with the pin holes. Notice that the pin arrangement of the socket matches the pin arrangement of the processor.

Processor
Ledge
Socket
Socket Handle
90 deg.
PC-3848
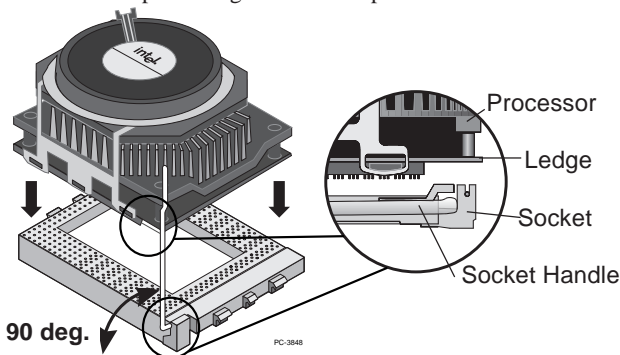
⚠️ *Once the pins and pin holes are properly aligned, gently insert the processor into the socket. Don't use force to insert the processor in the socket.*
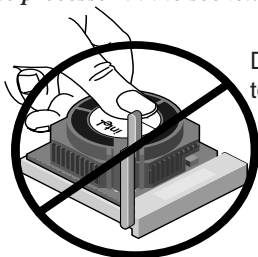
Don't apply pressure to the center of the fan.

⚠️ *Warning!: Damage to equipment: Never attempt to remove the fan from the Pentium II OverDrive processor. Serious damage to the processor could result and this action will void the processor warranty.*

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Step 11 — Close the socket handle

Close the socket handle to lock the Pentium II OverDrive processor in place.

PC-3849
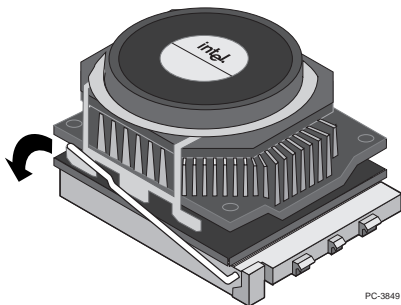
Once it is locked in place, the Pentium II OverDrive processor should fit snugly in the socket.

Step 12 — Connect the fan power cable

This is essentially the reverse of step 6. You should use the fan power cable provided with the Pentium II OverDrive processor. Carefully attach the small connector on the fan cable to the small connector on the top of the Pentium II OverDrive processor fan. The connector should snap into place. The cable's small connector is notched so it will only connect one way.

Then connect the large fan cable connector into one of the available connectors from the system's power supply. See the illustration on the following page for details.

> *Note: If your system uses a software program, such as Intel's "LANDesk Client Manager", to monitor the processor operation, refer to the "Troubleshooting" section on page 23 for information on configuring the Pentium II OverDrive processor to support the fan monitoring feature. This feature can only be supported if fan power is supplied by the motherboard.*

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System power supply cable

System Power Supply

Fan power cable provided with the OverDrive processor

PC-3843N

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Step 14 — Replace the cover, plug in the computer, and turn it on

⚠ *If your computer requires setting jumpers or switches, refer to your computer's owner's manual or the "Troubleshooting" section.*

Re-install any add-in cards or any internal cables that you may have removed in Step 4. Put the cover back on the computer. Reconnect all the cables and cords, and plug the power cord into the wall outlet.

⚠ *Turn on your computer. If your computer requires it, run the computer's setup or configuration program. Refer to your computer's owner's manual.*

If you have problems with your computer after installing the Pentium II OverDrive processor or don't see improved performance, turn to the "Troubleshooting" section on page 23.

Step 15 — Test the installation of the Pentium II OverDrive processor

Run the diagnostics again to see how much faster your computer performs with your new Pentium II OverDrive processor. When you ran the diagnostics in step 1, the program stored information about your old processor. The disk also contains the diagnostics to test your installation.

Processor Instruction Test	Tests various processor functions to see whether they are working properly.
Floating Point Conformance Test	Tests the processor's floating-point unit by comparing the value the floating-point unit calculates to the value established by the IEEE standard.
MMX ™ Technology Instruction Test	Tests the various MMX™ technology instructions to see whether they are working properly.
MMX Technology Video Test	Demonstrates the MMX™ technology features of your Pentium II OverDrive processor.

In addition, you can test your installation by running software programs you use frequently to experience the increased performance.

If you don't see increased performance, or if you have difficulty getting the computer to run successfully, see the *Troubleshooting* section to determine possible problems. If you still need help, contact your dealer.

Installation of your Intel Pentium II OverDrive processor is complete.

Dual Processor installation overview of the Pentium II OverDrive processor

⚠️ *The Pentium II OverDrive processor is not designed to support more than two processors in a system.*

Some computers have two processor sockets that can be used for dual processing as well as for single processing. The Pentium II OverDrive supports dual processing. You must have two Pentium II OverDrive processors to configure a system for dual processing.

Back of System
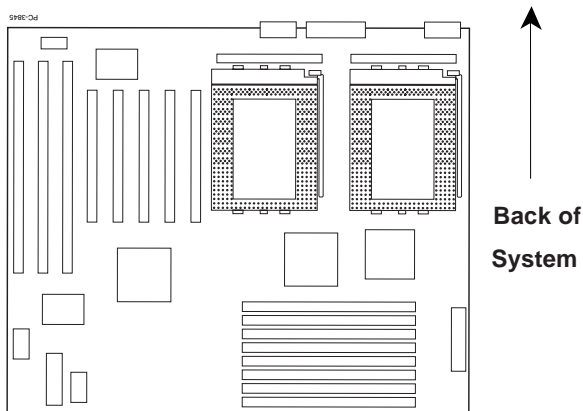
Motherboard with two processor sockets

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Upgrading a single Pentium Pro processor-based system with two Pentium II OverDrive processors

If you are installing two Pentium II OverDrive processors into a dual processor-capable system equipped with only one Pentium Pro processor, please consult your system manual and/or manufacturer for information on configuring the motherboard to support dual processors. Some motherboards may require jumper changes to recognize the second processor.

> ⚠️ *Note: Mixing of processor types is not supported. You cannot use the Pentium II OverDrive processor with the Pentium Pro processor.*

> ⚠️ *Note: Some dual processor motherboards may require a Voltage Regulator Module (VRM) for the second processor. Contact your system manufacturer for information on obtaining a second VRM if one was not included with your system/motherboard.*

> ⚠️ *Note: Some operating systems may need to be reconfigured or re-installed to recognize the second processor. Some operating systems, such as Windows* 95 and Windows 98, do not support dual processors.*

Follow Steps 1 through 13 on pages 4 to 17 to remove the Pentium Pro processor and install the Pentium II OverDrive processors. Install the second Pentium II OverDrive processor the same way as the first. Install a second VRM and change motherboard jumpers if necessary.

> ⚠️ *Note: Each Pentium II OverDrive processor will require a fan power cable, included with each processor.*

Re-install any add-in cards and internal cables that you may have removed in Step 4. Put the cover back on the computer. Reconnect all the cables and cords, and plug the power cord into the wall outlet. If required, run the computer's setup or configuration program to enable support for the second processor. Run the Pentium II OverDrive processor Diagnostic Program to verify both processors are functioning properly.

> ⚠ Note: The Pentium II OverDrive processor Diagnostic Program will not recognize both processors until the operating system has been configured to recognize both processors.

Upgrading a dual Pentium Pro processor-based system with two Pentium II OverDrive processors

> ⚠ *Note: Mixing of processor types is not supported. You cannot use the Pentium II OverDrive processor with the Pentium Pro processor.*

> ⚠ *Note: Each Pentium II OverDrive processor will require a fan power cable, included with each processor.*

Follow steps 1 through 13 on pages 4 to 17 to remove both Pentium Pro processors and install both Pentium II OverDrive processors.

Re-install any add-in cards and internal cables that you may have removed in Step 4. Put the cover back on the computer. Reconnect all the cables and cords, and plug the power cord into the wall outlet. If required, run the computer's setup or configuration program. Then run the Pentium II OverDrive processor Diagnostic Program to verify both processors are functioning properly.

Upgrading a dual Pentium Pro processor-based system with one Pentium II OverDrive processor

If your system is currently configured with two Pentium Pro processors and you want to upgrade your system with only one Pentium II OverDrive processor, consult your system manual for information on configuring the system for single processor operation. Some motherboards may require jumper changes.

> ⚠️ *Note: Mixing of processor types is not supported. You cannot use the Pentium II OverDrive processor with the Pentium Pro processor.*

Follow Steps 1 through 8 in the Single Processor Installation section to remove both Pentium Pro processors from the system. Follow steps **9 through 13** to install the Pentium II OverDrive processor into the **primary processor socket**, making any jumper changes if necessary. Consult the system manual for the location of the primary processor socket and required jumper changes.

Re-install any add-in cards and internal cables that you may have removed in Step 4. Put the cover back on the computer. Reconnect all the cables and cords, and plug the power cord into the wall outlet. If required, run the computer's setup or configuration program. Then run the Pentium II OverDrive processor Diagnostic Program to verify processor is functioning properly.

Installation of your Dual Intel Pentium II OverDrive Processors is complete.

Troubleshooting and Additional Information

Read through the symptoms below. If you find one that resembles the problem you're having, try the corresponding possible solutions. If your symptom is not listed or you would like additional information, refer to the WWW at *http://support.intel.com/ support/processors/overdrive*

How do I know if my system will support the fan monitoring feature?

If your not sure that your system supports the fan monitor feature, refer to your system documentation. Management software such as the *LANDesk Client Manager* is likely to support processor fan monitoring. Refer to the WWW at *http://support.intel.com/ support/processors/overdrive* for more information on this feature.

The computer doesn't power on when you turn on the switch, you receive an error message, or the operating system prompt doesn't appear on the screen.

- **Your computer may need an updated control program (BIOS). Contact the technical support department at your computer vendor or dealer for BIOS information.**

- Be sure:

   - The power cord is plugged into the wall outlet.
   - The cables and cords are attached correctly.
   - Any cards you removed are reinstalled properly.
   - The Pentium II OverDrive processor is fully inserted and the processor socket handle is fully locked.

- Did you set the jumpers or system switches correctly, as described in your computer owner's manual? For further information on jumpers and switches, see page 26 and 27.

- If you have access to another Pentium Pro processor-based computer, remove your Pentium II OverDrive processor and install it in the second computer.

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Your application programs don't run any faster with the Pentium II OverDrive processor installed.

- Did you set the jumpers or system switches correctly, as described in your computer's owner's manual? For further information on jumpers and switches, see page 26.

- Does your computer require you to run its setup program? Check your computer's owner's manual or contact your dealer to verify.

If your computer appears to be functioning normally and you have eliminated jumper settings and setup requirements as the problem, but you don't see a speed improvement, see the "Getting Help" section on page 28.

Some of the pins on the Pentium II OverDrive processor are bent.

- Carefully straighten any bent pins with needlenose pliers or tweezers before inserting the Pentium II OverDrive processor to the socket.

The Pentium II OverDrive processor feels hot.

- It is normal for the Pentium II OverDrive processor to generate heat while operating.

> ⚠ *Caution: After operating for several hours, many chips in your computer, including the Pentium II OverDrive processor, can become hot enough to cause mild skin burns if handled. Let the computer cool off before handling the Pentium II OverDrive processor.*

Your computer powers on and runs normally for a few minutes then hangs up or shuts down.

- Is the Pentium II OverDrive processor socket handle fully locked?

- Is the Pentium II OverDrive processor fully inserted?

- Did you set the jumpers or system switches correctly, as described in your computer's owner's manual?

- Check to see if the Pentium II OverDrive processor's fan is functioning properly.

    1. Make sure the computer is turned off before removing the computer cover.

    2. Check that nothing is blocking the airflow from the fan. Are there cables, cards, or other components that prevent good airflow to the vents in the chassis?

    ⚠️ *Note: There must be adequate clearance between the top of the processor fan and the nearest object to ensure proper airflow. After **unplugging** your computer, you can measure the space above the fan. It should be at least 0.4 inch, or about the thickness of your finger.*

    3. Make sure the fan power cable is properly connected per page 16 and the cable connectors (both at the fan and power source) are fully seated and tight.

    ⚠️ *Warning: When your computer is plugged in, the power is on, and the cover is off, don't touch your computer or the fan. **Exercise extreme care, as injury may occur from moving parts or death may occur from electrocution.** If uncertain, seek expert technical assistance.*

    4. Turn your computer on with the cover off.

    5. Observe the fan on the Pentium II OverDrive processor. With the computer power on, the fan blades should be turning. If the fan works, turn off and unplug your computer, then replace the cover.

- If the fan is functioning and your system continues to lock-up or power down, then your computer may not be providing enough airflow to adequately cool the Pentium II OverDrive processor. Call your computer manufacturer for information about evaluating a possible thermal condition in your computer.

Your Pentium II OverDrive processor fan is not working.

- Verify that the fan power cable included with the Pentium II
  OverDrive processor is properly installed. If the fan still
  isn't working when the computer is powered on, contact Intel
  Customer Support using the phone numbers located in the
  back of this manual for additional information.

***Your computer appears to work correctly and it passes the Intel
diagnostic program, but the BIOS or CMOS setup program does
not correctly display the name of the Pentium II OverDrive
processor.***

- The BIOS in many older computers may not properly identify
  the Pentium II OverDrive processor; however, those systems
  might still operate correctly with the new processor. If the
  processor passes the Intel diagnostic program and the system
  seems to be operating correctly with satisfactory performance,
  then the fact that the BIOS screen does not correctly display
  the name, speed, or cache size of the Pentium II processor, will
  probably not affect the system's or the processor's operation. In
  this case, it is probably is not worth the effort to update the
  BIOS.

***You need to set jumpers or switches to configure your computer
for the Pentium II OverDrive processor.***

- In most computers, the jumper and switch settings for the
  original Pentium Pro processor and the Pentium II OverDrive
  processor are the same. In some cases, however, you may need
  to specifically configure your system for a Pentium II OverDrive
  processor. A good example would be to enable dual
  processing. Your computer's owner's manual or your computer
  manufacturer should have the correct settings for your com-
  puter.

You need to set jumpers or switches to configure your computer for the Pentium II OverDrive processor (Continued).

Jumpers are very small pins fastened to the motherboard. If you look closely, you can see that each jumper is labelled with a number or letter that typically is printed on the motherboard, as shown below.

The pins are connected (ON) when a tiny plastic connector covers two pins. The connector has a metal piece embedded in the plastic that allows current to pass between the pins.

To turn the connection OFF, remove the jumper connector from the pins. You can also place the connector over only one of the pins for safekeeping as shown. To turn the connection ON, place the connector over the two indicated pins. Note that while some jumpers appear in pairs, others may appear in sets of four or more, as shown.
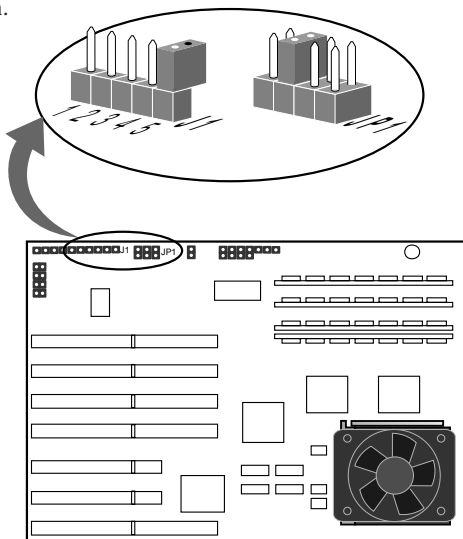
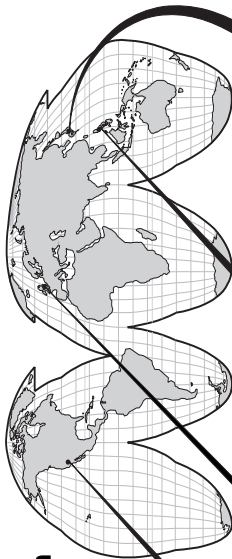PC-3847

Intel Customer Support on the World Wide Web
Support information for Intel Brand products is available on the
Internet for downloading by anonymous FTP and for viewing or
downloading on the World Wide Web. Try Intel's newsgroup forum
for answers to common questions or post your question to be
answered.

Intel web site	http://www.intel.com
Customer support web site	http://support.intel.com
Intel FTP hostname	ftp.intel.com
Customer support files	ftp.intel.com/pub/support
Intel Internet newsgroup	news://cs.intel.com **or**
	http://cs.intel.com

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electronic services, you may need to call a customer support
technician. Please see the phone numbers on the next page.

www.intel.com
support.intel.com
1-916-377-7000
(07:00–17:00
U.S. Pacific Time
Monday-Friday)

1-800-321-4044
07:00-17:00 M-F

For English and European customers not listed below
+44-1793-404-900
08:00-24:00 Monday-Friday

Francais.+44-1793-404-988
Deutsch.+44-1793-404-777
Italino...+44-1793-404-141

All languages other than English hours of operation are Monday, Tuesday, & Friday 0900-1800 CET Tuesday, Wednesday, 0900-1700 CET.

Asia-Pacific/English Support

Pakistan.......63-2-638-0860
Hours: 0900-1400

India.............63-2-638-0860
Hours: 0900-1500

Vietnam........63–2-638-0860
Indonesia.......800-65-7249
Thailand........63-2-638-0860
Hours: 0900-1600

Hong Kong....852-2-844-4456
Phillipines.....1-800-651-0117
Singapore.......65-831-1311
Malaysia........800-1390
Australia........1-800-649-931
Hours: 0900-1700

New Zealand..0-800-44-4365
Hours: 1100-1700

Japan
0298-47-0800
Hours: 0900-1700

Asia-Pacific/Korean Support

Korea.......822-7672-595
Hours: 0900-1700

Asia-Pacific/Mandarin Support

PRC.......852-2-844-4456
Taiwan.....2-718-9915
Hours: 0900-1700

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Three Year Limited Warranty

Intel warrants that the OverDrive® processor, if properly used and installed, will be free from defects in material and workmanship and will substantially conform to Intel's publicly available specifications for a period of three (3) years after the date the OverDrive processor was purchased.

If the OverDrive processor which is the subject of this Limited Warranty fails during the warranty period for reasons covered by this Limited Warranty, Intel, at its option, will:

REPAIR the OverDrive processor by means of hardware and/or software; OR

REPLACE the OverDrive processor with another OverDrive processor; OR, if Intel is unable to repair or replace the OverDrive processor,

REFUND the then-current value of the OverDrive processor.

THIS LIMITED WARRANTY, AND ANY IMPLIED WARRANTIES THAT MAY EXIST UNDER STATE LAW, APPLY ONLY TO THE ORIGINAL PURCHASER OF THE OVERDRIVE PROCESSOR AND LAST ONLY FOR AS LONG AS SUCH PURCHASER CONTINUES TO OWN THE PROCESSOR.

Extent of Limited Warranty

Intel does not warrant that your OverDrive processor will be free from design defects or errors known as "errata." Current characterized errata for Pentium OverDrive processors are available upon request.

This limited warranty does not cover any costs relating to removal or replacement of any OverDrive processor that is soldered or otherwise permanently affixed to your system's motherboard.

This limited warranty does not cover damages due to external causes, including accident, problems with electrical power, usage not in accordance with product instructions, misuse, neglect, alteration, repair, improper installation, or improper testing. If you do not wish to install the OverDrive processor yourself, you should have the vendor from whom you purchased the product install it.

How to Obtain Warranty Service

To obtain warranty service, you must return the OverDrive processor to the vendor from whom you purchased it, or, with proof of purchase, to Intel. Before returning the OverDrive processor to Intel, you must contact Intel Customer Support at 1-916-377-7000 or toll free in the U.S., 1-800-321-4044.

If you obtain warranty service from Intel, upon Intel's verification that the OverDrive processor is or may be defective, you will be issued a Return Material Authorization (RMA). When you return the OverDrive processor to Intel, you must include the RMA number on the outside of the package. Intel will not accept any returned OverDrive processor that has no RMA number on the package.If you return the OverDrive processor to Intel, you must assume the risk of damage or loss during shipping. You must use the original packaging or the equivalent, and you must pay the postage.

Intel may require you to verify that you are the original end user purchaser of the OverDrive processor. Intel may elect to replace or repair the OverDrive processor with either a new or reconditioned product. The returned product shall become Intel's property on receipt by Intel.

The replacement processor is warranted under this written warranty and is subject to the same limitations and exclusions for the remainder of the original warranty period or one (1) year, whichever is longer.

WARRANTY LIMITATIONS AND EXCLUSIONS
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