

# Intel Pentium® OverDrive® Processor

*For Intel Pentium processor-based systems  
Installation Manual*



intel®

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### Explanation of symbols used in this guide:



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



This symbol indicates a **CAUTION** or **WARNING**. These are operations or situations that may be harmful or dangerous to you or your equipment. All cautions and warnings should be read and observed.

# Introduction

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Congratulations on your purchase of an Intel Pentium® OverDrive® processor!

OverDrive processors are a family of processor upgrades for upgradable Intel Pentium-based systems that make all software run faster on existing systems.

## Before You Begin...

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On most computers, installing the Pentium OverDrive processor is simple if you carefully follow the directions in your computer owner's manual and in this manual. Before starting the installation process, we recommend you take a few moments to:

- familiarize yourself with the appearance of your system's layout.
- read through the installation steps in this manual to fully understand the process.

## Installation Process

First check your computer owner's manual to see if there is a section on installing system upgrade hardware such as the Pentium OverDrive processor. Follow the owner's manual procedure if it is available. If your computer owner's manual does not have a special section covering Pentium OverDrive processor installation, use this manual. In general, you need to accomplish the following during installation:

1. Locate the existing processor and identify the processor's socket type and layout.
2. Remove the existing processor.
3. Correctly orient, align, and insert the Pentium OverDrive processor in the socket.
4. Test the Pentium OverDrive processor installation.

The steps on the next few pages take you through each phase of the installation process.

## Step 1 - Install the diskette software and view the animated demo.

Intel includes a Demonstration and Diagnostics Diskette with your OverDrive processor. The diskette contains two portions:

- a *demonstration* to guide you through the OverDrive processor installation procedure.
- *diagnostics* to test your OverDrive processor for proper installation and operation.

To view the demo, your computer must be equipped with a VGA video and monitor, and you need to install the diskette software on your system.

As the software installs, a program automatically determines your processor's performance and stores it on your hard disk. You can then use this information in the post-install diagnostics to determine the performance improvement for your system.



*Intel provides you with a utility to remove the diskette software from your hard disk once you have completed your OverDrive processor installation and diagnostics. For more information on this utility, see the section Demonstration and Diagnostics Diskette, p. 18.*

### Installing the Diskette Software

You can use DOS\* or Windows\* to install the software on the diskette. The full set of utilities takes 1.1 MB on your hard disk if you install it using DOS and 1.2 MB if you install it using Windows. If you install the software from DOS, you are asked if you wish to approve modification of the AUTOEXEC.BAT file. Intel recommends that you choose OK.

To install the software on your hard disk, insert the diskette in drive A and:

**For DOS users type:** `a:\install e`

**For OS/2\* or Windows NT\* users type from a DOS prompt::** `a:\install e`

**For Windows users:** In the Program Manager, select: **FILE** and then select: **RUN**  
On the Command Line, type: **a:setup** and click **OK**

**For Windows 95 users:** From the task bar, select **Start**  
From the Start menu, select **Run**  
and at the prompt type:  
**\SETUP**

To begin the demonstration after installing the software:

**For DOS users:** Go to the odp\_util directory and type:  
**overdriv e**

**For Windows NT users :** Go to the odp\_util directory and  
type from a full-screen DOS prompt:  
**overdriv e**

**For Windows users:** Double click the icon "**OverDrive®  
Processor Demo/Diagnostics**"

**For OS/2 users:** Ensure that the following line ap-  
pears in your config.sys file:  
VME=NO  
For more information,  
refer to *Troubleshooting*  
section, p. 22.

Ensure that the settings for your DOS  
full-screen command prompt in-  
cludes the following:  
**HW\_TIMER** set to **ON**

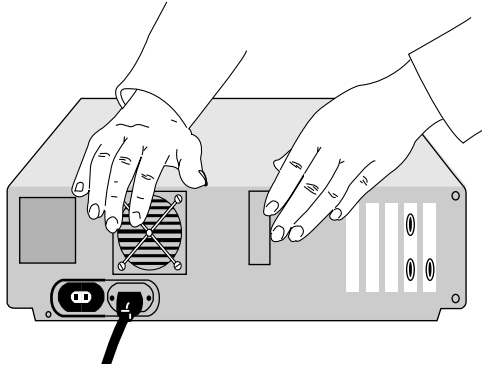
From a full-screen DOS prompt type:  
**overdriv e**

**For Windows 95 users:** Press **e** or click **OK**

When the Main Menu appears, select "Installation Demonstration." If instal-  
lation sounds complicated after viewing the installation demo and after reading  
through the installation sections of this manual, have a qualified technician  
install the OverDrive processor for you.

## Step 2 - Ground yourself, then unplug computer and remove cover.

To prevent damage from static discharge to the Pentium OverDrive processor and to your computer, touch the metal back or side panel of your computer's system unit to ground yourself. Then, turn off the computer and any attached equipment (such as a printer), unplug the power cord, and remove the cover from the computer.



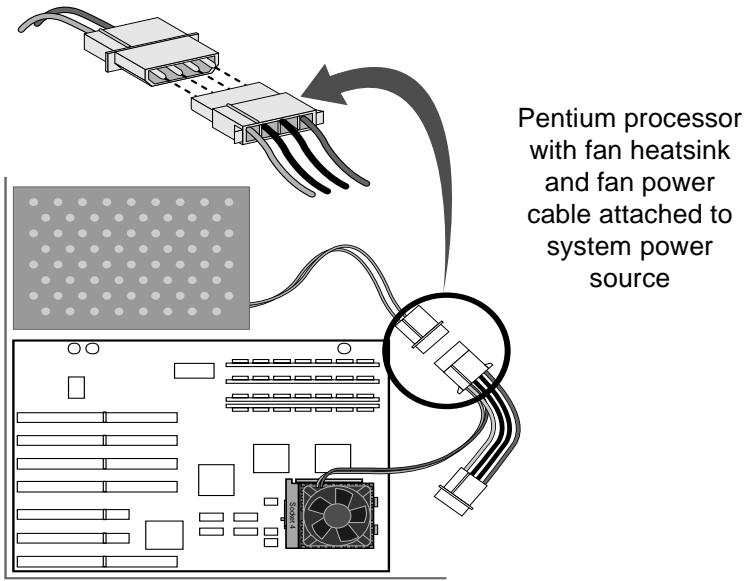
**Warning: Danger to Equipment!** The OverDrive processor can be damaged by static discharge. Be sure to ground yourself before handling the OverDrive processor by touching the metal on your computer. Limiting your movements during installation reduces static electricity.



**Warning:** Many components can become hot enough to cause mild skin burns. Wait at least 15 minutes after turning off power before attempting to handle any parts.

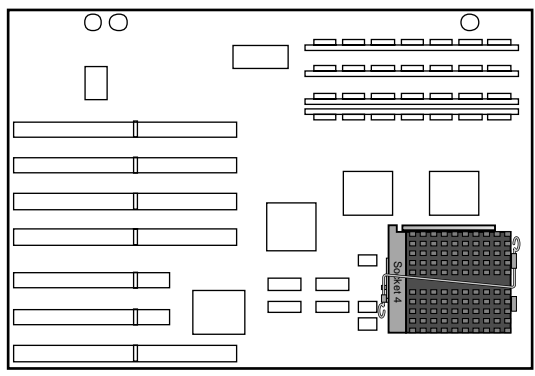
## Step 3 - Find your system's current Pentium processor.

You must remove the original Intel Pentium processor in your system and install the Pentium OverDrive processor in that socket.



The original Pentium processor in your system can appear in various forms. Your processor may have a fan heatsink with a fan power cable attached or may have a passive heatsink (a heatsink without a fan). The passive heatsink contains a number of small "fins" and may be slightly larger than the Pentium processor on which it sits. The passive heatsink may be bonded to the top of the Pentium processor, or may be attached by a large clip as shown.

Clip used to attached passive heatsink



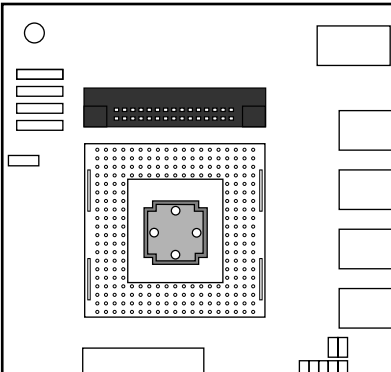


However, the dimensions of the original processor are similar to those of the OverDrive processor. Your computer owner's manual may contain location information for the processor. If you cannot locate your system's original processor, contact your dealer or your computer manufacturer for assistance.

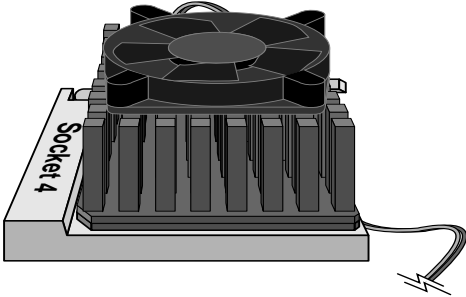
Once you locate the processor, examine the socket to determine the socket type. Most Pentium processor-based systems have a ZIF (Zero Insertion Force) socket which has a handle that locks/unlocks to allow placement of the OverDrive processor. However, some systems use a socket without a handle, a LIF (Low Insertion Force) socket.



*If the socket in your system does not have a handle, Intel strongly recommends you take your system to a qualified professional for OverDrive processor installation.*



Typical LIF (socket with no handle) installed on motherboard



Typical ZIF (socket with handle) installation with fan heatsink attached

## Step 4- Unfasten any heatsink socket clips and fan power cables.

Depending on your system manufacturer, the heatsink on your original processor is either clipped to the socket or is fastened directly to the top of the processor. If the heatsink is fastened directly to the processor without a clip and you have no fan, proceed to Step 5 now.



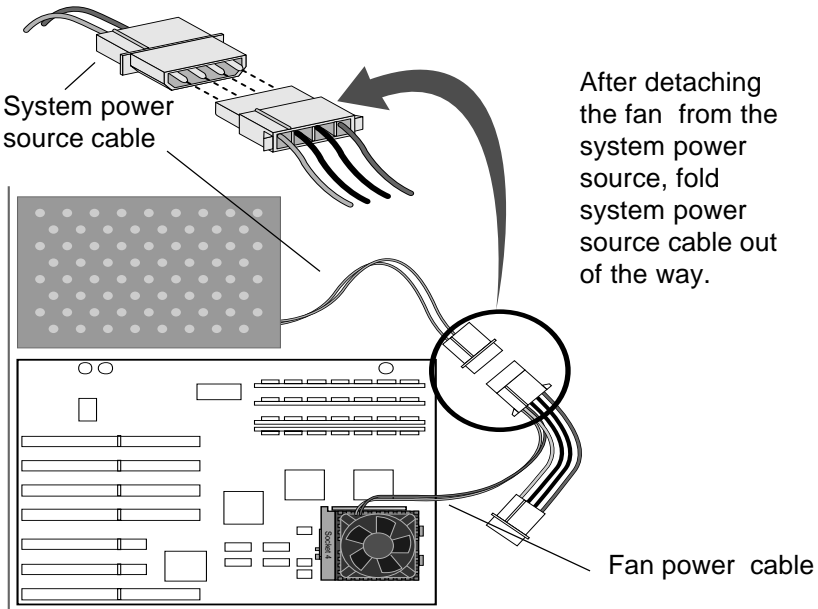
*You do not need the fan, fan cable or any clips to install the Pentium OverDrive processor. After removing, store these parts with your original processor.*

### Removing A Fan Heatsink

Some systems use a fan heatsink with a fan power cable attached. The power cable can either be attached to a power connection on the motherboard or attached to a cable from the system power source. Carefully unplug the fan power cable from the power source.



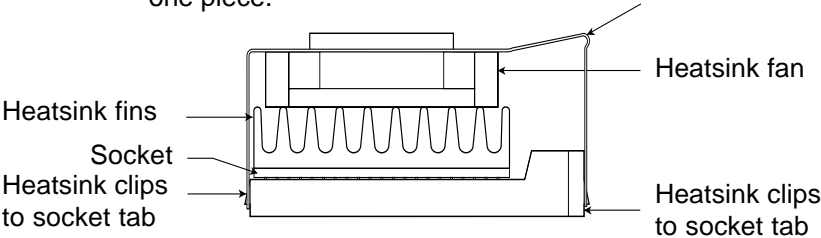
*If your system uses a fan power cable from the system power source, after detaching the fan power cable carefully fold the system power source out of the way to prevent the cable from touching any system components.*



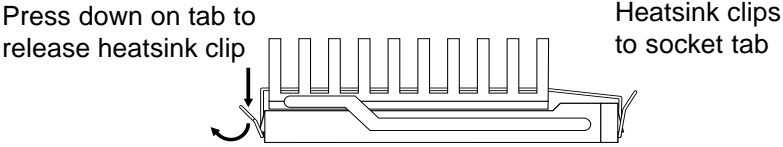
# Removing Heatsink Clips

If the heatsink is clipped to the socket, remove the clip by pressing down and unfastening it from the tab on the socket. Be sure to hold your hand over the clip while unfastening it to prevent it from flying loose.

Heatsink clip surrounds fan and hooks to socket tabs. Remove heatsink fan and fins as one piece.



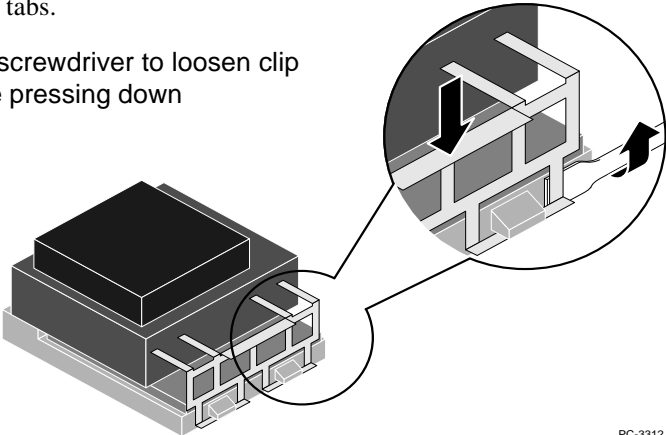
**Typical Fan Heatsink Clip**



**Typical Passive Heatsink Clip**

Some heatsinks clamp tightly over the socket tab and require the use of a tool such as a screwdriver to loosen the clip enough to slide over the tab. Carefully insert the tool between the heatsink and the socket just above the socket tab and gently pry outward to allow the heatsink to slip over the tab. You should then be able to completely release the heatsink from all the other socket tabs.

Use screwdriver to loosen clip while pressing down



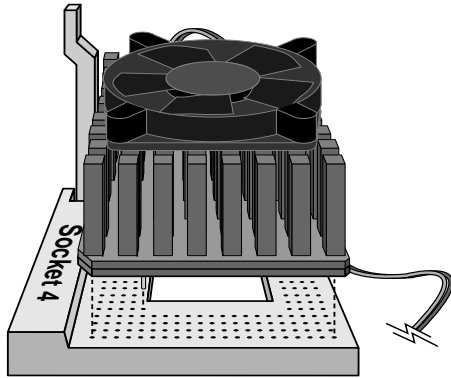


*Some manufacturers use a thermal compound, also called thermal grease, to adhere the heatsink to the processor. When you remove the heatsink from the processor, take care not to get any thermal grease residue on your hands or the system components. Thermal grease is a conductive material and can damage your system if it gets on socket pinholes, processor pins, or other components.*

## Step 5—Open the socket handle and remove the existing processor from the socket.

Open the socket by moving the handle completely to a 90 degree upright position. Be sure the socket is completely open. Very little force is required to open the socket handle. Do not use excessive force. Your computer's motherboard should not bend while opening the socket. Once the socket is open, remove the processor.

Be sure the socket handle is completely open.



## Step 6—Orient the Pentium OverDrive processor.

Correctly orienting your Pentium OverDrive processor in the socket is crucial to the success of your installation.

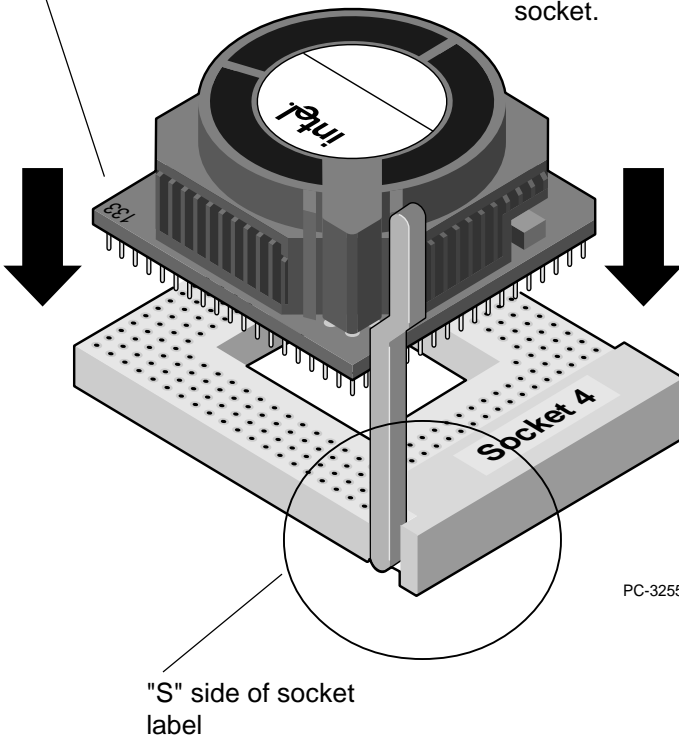


*Failure to correctly align your Pentium OverDrive processor may result in damage to the processor or your system.*

There is only one way the Pentium OverDrive processor fits in the socket. When the Pentium OverDrive is aligned correctly, the processor side with the processor speed mark corresponds to the socket side next to the "S" in the socket label. Place the Pentium OverDrive processor on the socket and align the pins with the pinholes.

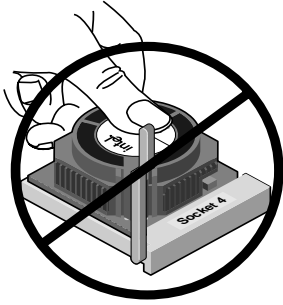
Processor speed mark

Use the processor's speed mark to orient the processor to the socket.



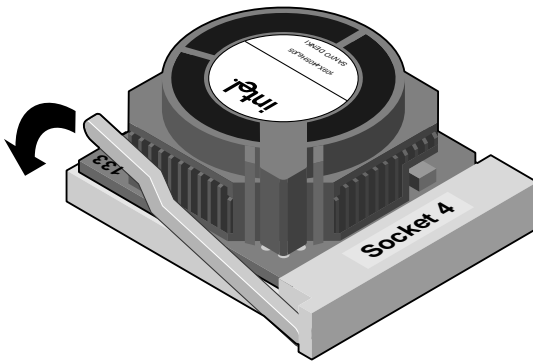
## Step 7—Insert the processor directly into the socket and close the socket handle.

Once the pins and pin holes are properly aligned, gently insert the processor into the socket. You should not need to apply force to insert the processor in the socket. Be especially sure not to apply pressure to the center of the fan.



Do not apply pressure to the center of the fan.

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



## **Step 8—Start your computer and run your computer's setup program.**

Put the cover back on the system unit. 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 owner's manual.

If you have problems with your computer after installing the Pentium OverDrive processor, turn to *Troubleshooting*.



## Step 9—Test the Pentium OverDrive processor installation.

You can test your installation by either running a software program you use frequently and experiencing the increased performance, or by using the diagnostics on the diskette included in your Pentium OverDrive processor package. If you installed the diskette software to view the animated demo prior to this step, you do not need to reinstall the software at this time.

To use the diagnostics:

### For DOS users

Go to the odp\_util directory and type:  
**overdriv e**

### For Windows NT users

Go to the odp\_util directory and type from a full-screen DOS prompt:  
**overdriv e**

### For Windows users:

Double click the icon “**OverDrive® Processor Demo/Diagnostics**”

### For OS/2, OS/2 WARP\* users:

Ensure that the following line appears in your config.sys file:  
**VME=NO**

For more information, refer to *Troubleshooting* section, p. 22.

Ensure that the following line appears in your config.sys file:  
**VME=NO**

Ensure that the settings for your DOS full-screen command prompt includes the following:  
**HW\_TIMER** set to **ON**

From a full-screen DOS prompt type:  
**overdriv e**

When the Main Menu appears, select “Intel OverDrive® Processor Diagnostics.” If the diagnostic utilities program tells you the Pentium OverDrive processor is not operating correctly or if you do not obtain any performance increase, see the *Troubleshooting* section to determine possible problems. If you cannot troubleshoot the problem, contact your dealer for assistance. If you require further assistance, see the *Getting Help* section.

**Your Intel Pentium OverDrive processor installation is complete.**

# Demonstration and Diagnostics Diskette

Intel includes a Demonstration and Diagnostics diskette with your Pentium OverDrive processor. The diskette contains two portions:

- a *demonstration* to guide you through the Pentium OverDrive processor installation procedure. In order for you to view the installation demonstration, your computer must be equipped with a VGA video board and monitor.
- *diagnostics* to test your Pentium OverDrive processor for proper installation and operation.

## Testing the Installation

This list describes the diagnostics that you use to test your installation:

Processor Instruction	Tests various processor functions to see if they are working properly.
Floating Point Conformance	Tests processor's floating point unit by comparing the value of floating point calculations with an established standard.
Processor Information	Compares processor speed and features "before" and "after" OverDrive processor installation.

## Removing the Software Files From Your Hard Disk

Once you have installed and tested the Pentium OverDrive processor, you can delete the demonstration and post-install diagnostic software from your hard disk. To remove the software, follow these instructions:

**For DOS users:** Go to the ODP\_UTIL directory and type:  
**uninstal e**

**For Windows users:** In the Program Manager, select:  
**FILE**  
and then select:  
**RUN**  
On the Command Line type:  
**c:\odp\_util\uninstal**  
and click **OK**

# Troubleshooting

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Read through the symptoms below. If you find one that resembles the problem you're having, try the corresponding possible solutions.

***The computer doesn't power on when you turn on the switch, or the operating system prompt doesn't appear on the screen. Be sure:***

- The power cord is plugged into the wall outlet.
- The cables and cords are attached correctly.
- Any boards or cards you removed are reinstalled properly.
- The Pentium OverDrive processor aligned and installed in the socket correctly.

***Your computer boots and runs normally, however, the Pentium OverDrive processor fails the diagnostic test.***

- Your computer may need an updated control program (BIOS). Contact the technical support department at your computer vendor or dealer for BIOS information.
- If you have access to another Pentium processor-based computer, remove your Pentium OverDrive processor and install it in the second computer. Run the diagnostics. If the Pentium OverDrive processor still fails a diagnostic test, contact your dealer or Intel.

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

- Does your computer require you to run its setup program? Check your computer owner's manual or contact your dealer to verify.
- If your Pentium OverDrive processor passes all the diagnostic tests, but you still don't see a speed improvement, contact Intel Customer Support.

***Your computer owner's manual does not have a Pentium OverDrive processor installation section and you installed the Pentium OverDrive processor as described in this guide. Your computer still does not operate faster or does not operate at all.***

- If you experience problems after installing the Pentium OverDrive processor according to the instructions in this guide, your computer may have special configuration needs. For more information, refer to your computer manufacturer or dealer.

***Your computer boots up and runs normally for a few minutes, then hangs up or shuts down.***

- Is the Pentium OverDrive processor socket handle fully locked?
- Recheck your installation — is the Pentium OverDrive processor fully inserted?
- Did you set the jumpers or system switches correctly, as described in your computer owner's manual?
- Check to see if your fan is functioning properly.
  1. Remove your system cover.
  2. Check to ensure 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?
  3. Plug in your system and carefully turn on the power.
  4. Observe the fan on the replacement processor. The fan blades should be turning. If the fan works, turn off and unplug your system, then replace the cover.



***Warning:*** When your system is plugged in, the power is on and the cover is off, do not touch your system or the fan. ***EXERCISE EXTREME CARE AS INJURY OR DEATH MAY OCCUR FROM ELECTROCUTION OR MOVING PARTS.*** If uncertain, seek expert technical assistance.



***Note:*** There must be adequate clearance between the top of the fan and the nearest object to ensure proper airflow. After ***unplugging*** your system, you can measure the space above the fan. It should be at least .4 inch, or about the thickness of your finger.

- Your computer may not be providing enough airflow to adequately cool the Pentium OverDrive processor. Call Intel Customer Support for information about evaluating a possible thermal condition in your computer.

***No “Before Upgrade” information such as type, features and speed is available about your processor.***

- You may not have run the demonstration and diagnostic software before installing your OverDrive processor.

Intel does not recommend that you re-install your old processor to obtain this information.

While a useful diagnostic tool, “Before Upgrade” processor information is not necessary for proper operation of your OverDrive processor.

***The diagnostics report no iCOMP® value for either your original processor or your new OverDrive processor.***

- In the case where the program reports no iCOMP value for your original processor, the demonstration and diagnostics program only provides iCOMP values for processors that identify themselves as “Genuine Intel” processors. Some older versions of Intel processors do not incorporate the feature that allows them to provide CPU identification information.

***You open your Pentium OverDrive processor package and some of the pins are bent.***

- Carefully straighten any bent pins with needlenose pliers or tweezers before attempting to insert the Pentium OverDrive processor in the socket.



***Caution: Pins are thin and can be easily broken.***

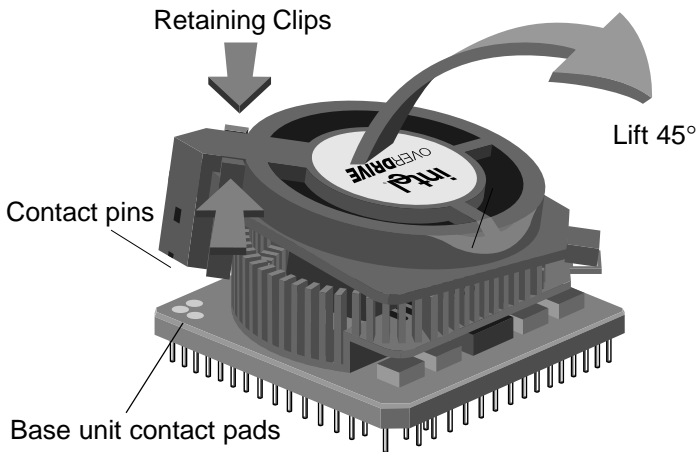
*Your system uses OS/2 WARP or OS/2 2.1 and you are having trouble loading or running the Diagnostics and Demonstration diskette.*

- To successfully load the Diagnostics and Demonstration diskette, complete the following steps:

1. Modify the C:\config.sys file:
  - a. Invoke the OS/2 system editor, as indicated in the OS/2 system manual.
  - b. Open the config.sys file for edit.
  - c. Insert the following line:  
VME=NO
  - d. Save the file, close the system editor and reboot your system.
2. Set the HW\_TIMER to ON:
  - a. Select the full-screen DOS prompt icon
  - b. Click your right (second) mouse button  
A pop-up menu appears.
  - c. For OS/2 WARP, select "Settings" from the menu.  
For OS/2 2.1, select "Open>Settings."  
A dialog box appears, with several tabbed windows.
  - d. Select the "Sessions" tab.  
The "Sessions" edit view appears.
  - e. Select the button "DOS Settings" and press **e**.  
A list of setting choices appears.
  - f. Set "HW\_TIMER" by clicking the ON check box.
  - g. Select "Save."
  - h. Close the Setting Window.
3. Run the demonstration or the diagnostics by going to the ODP\_UTIL directory and typing the following from a full-screen DOS prompt:  
**overdriv e**

***Your OverDrive processor fan is not working.***

- Is the fan fully seated? The OverDrive processor fan is powered from three power connections on the processor top. To ensure your fan is fully seated:
  1. Ground yourself by touching the metal on your computer. Limiting your movements during installation reduces static electricity, which can damage the part and your system.
  2. Release the corner of the fan assembly by gently squeezing together the two retaining clips.
  3. While keeping the clips squeezed together, slowly lift up the corner, pivoting it against the opposite corner.
  4. When the fan assembly is at an approximately 45° angle, gently lift straight up from the processor.



5. Hold the fan at an approximately 45° angle, and align the fan assembly over the base unit, starting with the corner opposite to the retaining clip.

Take special care to align the contact pins on the fan assembly to the three pads on the base unit.

6. Carefully lower the fan down onto the base.
7. Secure the fan assembly to the base unit by ensuring the retaining clips have snapped into place.

If the fan still does not work properly after reseating, call Customer Support. See *Getting Help*, p. 24.

# Getting Help

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Here are some easy ways to reach Intel Customer Support.

## 1. Call FaxBack, the Intel automated fax delivery service.

If you have a touch-tone phone and a fax machine or a faxmodem board, you can get a copy of anything in our customer support library — the same product and technical information we use ourselves!

In the U.S. and Canada:	<b>1-800-525-3019</b>
In Europe:	<b>+44-1793-432509</b>
In Singapore:	<b>+65-256-5350</b>
In Sydney, Australia:	<b>+61-2-9959-4866</b>
In Hong Kong:	<b>+852-2-844-4448</b>
In Korea:	<b>+822-767-2594</b>
In Taiwan:	<b>+886-2-514-0815</b>
From anywhere:	<b>503-264-6835</b>

This service is available 24 hours a day, every day. For a catalog of documents related to the Intel OverDrive processor, order document # 0103. You can then order any compatibility and configuration information necessary to finish your installation. The *Intel OverDrive Processor Upgrade Guide*, available from your dealer, also contains FaxBack numbers for information regarding your specific system.

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## 2. Use the Internet.

Information is available on the Internet for downloading by Anonymous FTP and for view or downloading on the World Wide Web:

Intel FTP Server hostname:	<b>ftp.intel.com</b>
File directory location:	<b>/pub/PCandNetworkSupport</b>
World Wide Web address (URL):	<b>http://www.intel.com</b>

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## 3. Use Your Modem.

You can use your modem to read these bulletin boards (settings are 8, N, 1, up to 14.4 Kbps):

Intel BBS:	
In Europe:	<b>+44-1793-432955</b>
In Singapore:	<b>+65-256-4776</b>
In Sydney, Australia:	<b>+61-2-9964-0211</b>
In Hong Kong:	<b>+852-2-530-4116</b>
In Korea:	<b>+822-784-3430</b>
In Taiwan:	<b>+886-2-718-6422</b>
From anywhere:	<b>503-264-7999</b>

CompuServe\*: **GO INTEL**  
(Requires CompuServe subscription. Settings are: 7,E,1 up to 28.8 Kbps.)



## 4. Call the Intel TalkBack Service.

If you have a touch-tone phone, you can automatically listen to solutions to the most common problems right on the phone.

In the U.S. and Canada: **1-800-368-3160**  
From anywhere: **503-264-7777**

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## 5. Talk to a Customer Support Technician.

In the U.S. and Canada:	<b>1-800-321-4044</b>	<b>M-F 7 a.m.-5 p.m., PST (Thursday 7 a.m.-3 p.m., PST)</b>
In Europe - English	<b>+44-1793-404900</b>	<b>M-F 8 a.m.-12 p.m., GMT</b>
In Europe - German	<b>+44-1793-404988</b>	<b>M-F 08:00-17:30, CET (Tuesday 08:00-15:45, CET)</b>
In Europe - French	<b>+44-1793-404777</b>	<b>M-F 08:00-17:30, CET (Tuesday 08:00-15:45, CET)</b>
In Japan, toll free:	<b>0120-1-868686</b>	<b>M-F 09:00-17:00</b>
In Australia:	<b>+1-800-649-931</b>	<b>M-F 0500-15:00 (Singapore Local Time)</b>
In Korea:	<b>+822-767-2595</b>	<b>M-F 0500-15:00 (Singapore Local Time)</b>
In Taiwan:	<b>+886-2-718-9915</b>	<b>M-F 0500-15:00 (Singapore Local Time)</b>
In Hong Kong	<b>+852-2-844-4456</b>	<b>M-F 0500-15:00 (Singapore Local Time)</b>
From anywhere:	<b>503-264-7354</b>	

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## 6. Send a letter. Mail Your Comments To:

**Worldwide:**  
Intel Customer Support (EUCD)  
Mailstop JF3-333  
5200 NE Elam Young Parkway  
Hillsboro, Oregon 97124-6497

**Europe:**  
Branded Products Support  
Intel Corporation, U.K.  
Pipers Way, Swindon  
Wiltshire, England SN3 1RJ

## Registration

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Please take a few moments to fill out your OverDrive processor warranty registration card. Returning this card allows us to send you important OverDrive processor announcements and new product information.

# 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's Customer Support Group at 503-264-7000 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.

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