digital™

Digital Personal Workstation

Pentium® II Processor Upgrade Instructions

Introduction

This upgrade process involves removing the original Processor and upgrading it with a faster Pentium ™ II Processor. This can be a Single to Dual Processor upgrade or just a Single to Single Processor upgrade.

Upgrade Kit Contents

Your Digital Personal Workstation Pentium™ II Processor Upgrade Kit consists of the following items. Please review the kit contents and ensure that all of the parts are present.

- Speed Button (1)
  (Your Processor's Speed should be printed on the Speed Button)
- Pentium II Processor Slot 1 Assembly (Single or Dual)
- Anti-Static Wrist strap (1)
- Universal Fan Mount and FAN (1)
  (for Single to Dual Processor Upgrades only)
- Wiring Holder (1)
  (for Single to Dual Processor Upgrades only)
- Pentium® II Processor Upgrade Kit Upgrade Instructions (ER-B30WW-CA)(1)
  (for Dual Processor Upgrades only)
- This Installation Guide (1)

Tools Required

No tools are needed.

ER-B30WW-DA. A01

Instruction Overview

The following sections of this manual cover:

Digital Personal Workstation Pentium® II Processor Upgrade Instructions
- Introduction
- Upgrade Kit Contents
- Tools Required
- Instruction Overview

Upgrading your Processor
- Upgrading a Single Processor to a Faster Single Processor based System

Upgrading a Single Processor to a Dual Processor based System
- Main Logic Board Jumper and Switch Settings (Intel based Pentium® II System Models)
- Processor Clock Speed Switch Settings (Intel based Pentium® II System Models)
- Removing and Replacing the Front Bezel
- Replacing the System Bezel's Product Medallion
- How to determine the Speed of a Pentium II Processor

Upgrading your Processor

Your workstation is equipped with either a single or dual Intel Pentium® II processor module installed in the appropriate Slot 1 socket on the main logic board. Total workstation performance is based upon your workstation main logic board design, speed and L2 cache of the processor module(s), amount of workstation memory, video controller type and amount of video memory, and performance characteristics of your hard disk drive.

If your workstation was purchased with a single Pentium® II processor and you wish to upgrade to a faster processor, or to a dual processor configuration, consider the following information prior to upgrading your workstation.

1. Your workstation main logic board contains:
   - An Intel 440FX (Natoma) memory and PCI controller
   - Switch selectable processor clock input frequencies up to 533 MHz. Refer to “Processor Clock Speed Switch Settings” for details.
2. Single Pentium® II processor modules must be installed in the primary Slot 1 socket (closest to the workstation battery) and have a termination card installed in the second Slot 1 socket.
3. Pentium® II processor modules are available with 512 KB L2 cache memory. Dual processor configurations must have matching L2 caches.
4. Dual processor configurations must have Pentium® II processors with matching stepping (manufacturing revision). Processors with different stepping might not function properly.
5. Higher performance Pentium® II processors might require loading the latest BIOS firmware revision.

6. Upgrading from a single Pentium® II processor to a dual Pentium® II processor configuration requires a reloading of the operating system.

NOTE: Current versions of Windows 95 do not support dual processors. If you wish to upgrade your workstation to a dual processor configuration, you will also need to change operating systems. Microsoft Windows NT 3.51 and 4.0 support dual processors.

Contact your Digital sales representative or reseller for future processor upgrades and BIOS revisions.

Please refer to your Digital Personal Workstation System Reference Manual for instructions on:

- Removing the System Cover
- Removing the Main Logic Board

Upgrading a Single Processor to a Faster Single Processor based System

Should you wish to upgrade a Single Processor based system, to a faster Single Processor , follow the instructions provided in this section. Be sure to save the processor terminator card and fasteners. These components will be re-installed in the same position and orientation as before. After installing the new processor, you will need to make the needed changes to the switch settings on the Main Logic Board that correspond to the processors' speed. See the "Processor Clock Speed Switch Settings" section for details.

1. Turn off your workstation and monitor.
2. Disconnect all external devices, ac power, and monitor power.
3. Remove the outside cover and Main Logic Board.

STATIC SENSITIVE: Static electricity collects on non-conductors such as paper, cloth, or plastic. A static discharge can be damaging even though you often cannot see or feel it. To prevent damage to the processor:

- Touch the metal frame of your workstation to discharge any static electricity.
- Keep the processor away from non-conductors
- Be sure to use the provided Wrist strap

4. Release the processor from its socket by pushing in on the two plastic tabs at each side of the processor (see Figure 1-1).

5. Carefully remove the old processor and termination card out and away from their sockets.

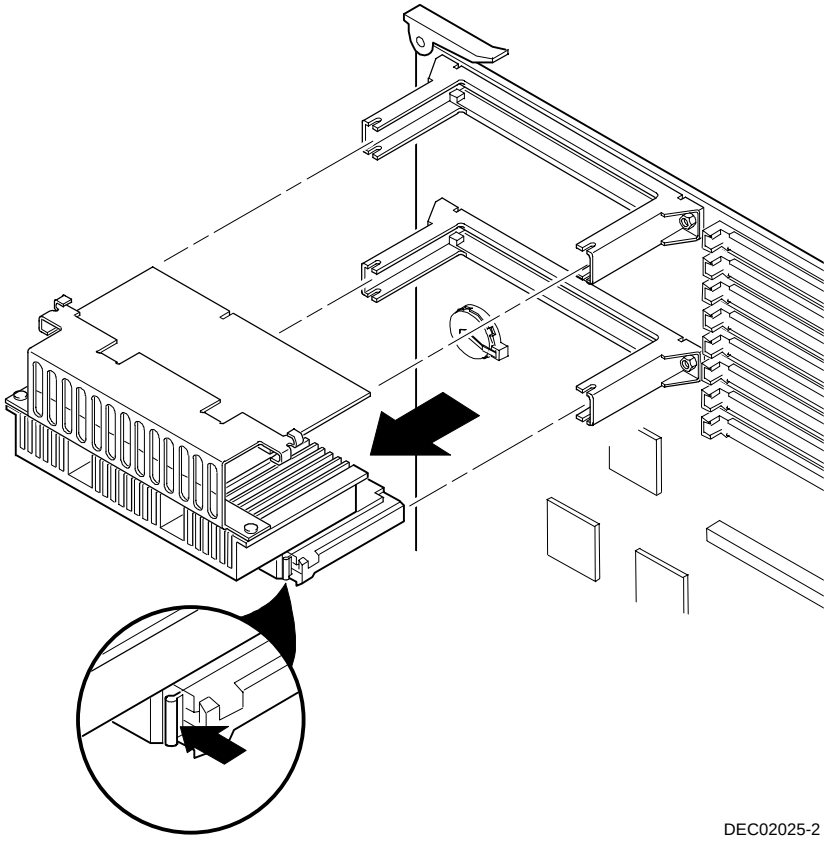


Figure 1-1. Releasing the Installed Processor

6. Remove the bracket, with the termination card attached, from the processor's heatsink (see Figure 1-2).

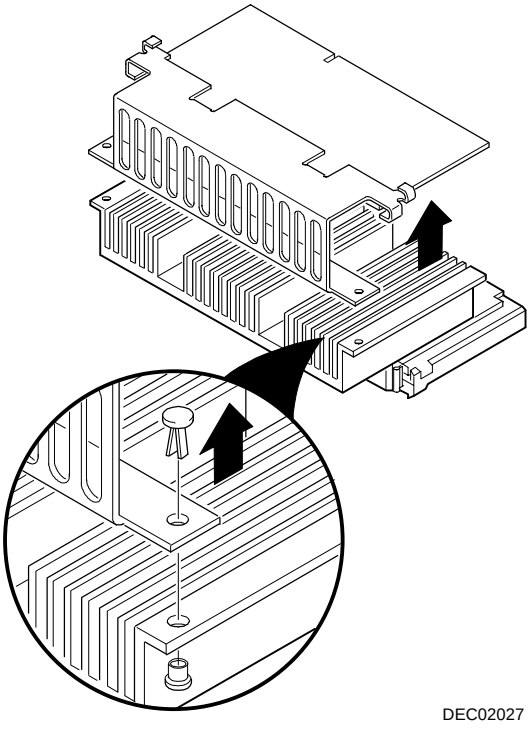


Figure 1-2. Removing the Bracket and Termination Card

7. Install the bracket, with the termination card attached, to the new processor's heatsink (see Figure 1-3).

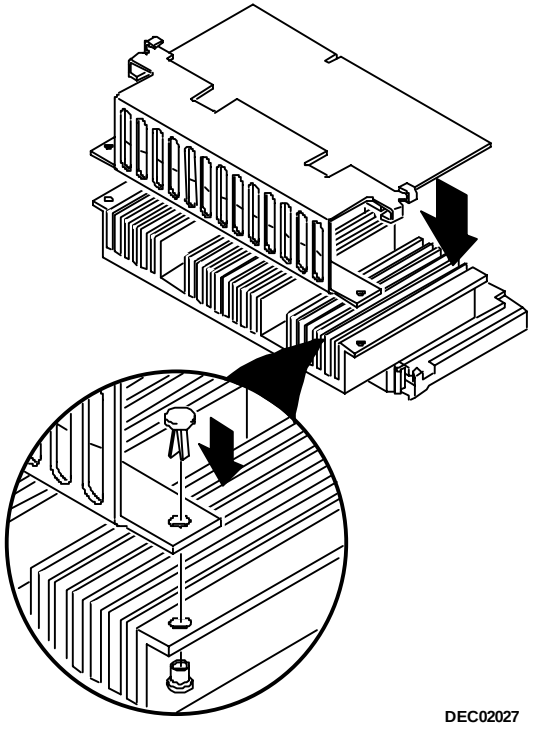


Figure 1-3. Installing the Bracket and Termination Card

8. Carefully re-install the new processor and termination card into their sockets.

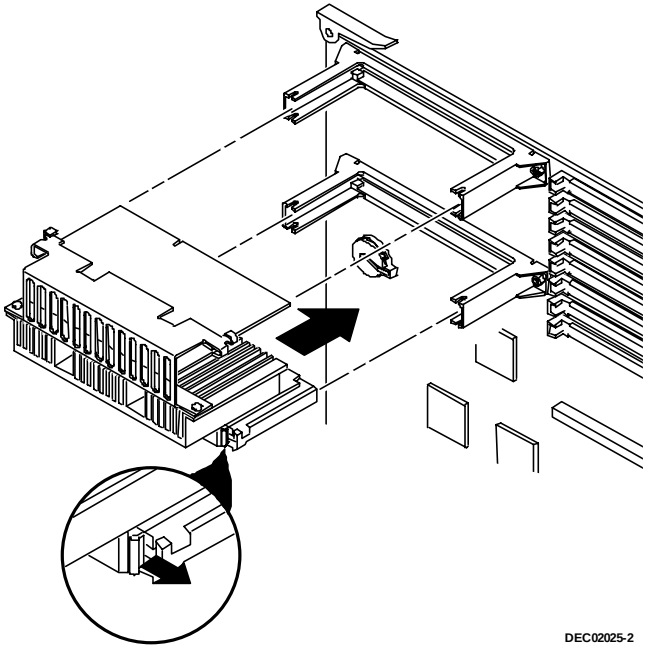


Figure 1-4. Reinstalling the Processor

9. Set all appropriate switch settings on the main logic board.
10. Re-install the Main Logic Board.
11. Replace the outside cover. Reconnect all external devices and restore power.

Upgrading a Single Processor to a Dual Processor based System

Should you wish to upgrade a Single Processor based system, to a Dual Processor, follow the instructions provided in this section. Be sure to save the fasteners. These components will be re-installed in the same position and orientation as before. After installing the new processors, you will need to make the needed changes to the switch settings on the Main Logic Board that correspond to the processors' speed. See the "Processor Clock Speed Switch Settings" section for details.

1. Turn off your workstation and monitor.
2. Disconnect all external devices, ac power, and monitor power.
3. Remove the outside cover and Main Logic Board.

STATIC SENSITIVE: Static electricity collects on non-conductors such as paper, cloth, or plastic. A static discharge can be damaging even though you often cannot see or feel it. To prevent damage to the processor:

- Touch the metal frame of your workstation to discharge any static electricity.
- Keep the processor away from non-conductors
- Be sure to use the provided Wrist strap

4. Release the processor from its socket by pushing in on the two plastic tabs at each side of the processor (see Figure 1-5).

5. Carefully remove the old processor and termination card out and away from their sockets.

NOTE: Because of dual processor stepping, some upgrade kits might come with a completely assembled dual processor assembly. If your upgrade kit has two processors, skip steps 6 and 7.

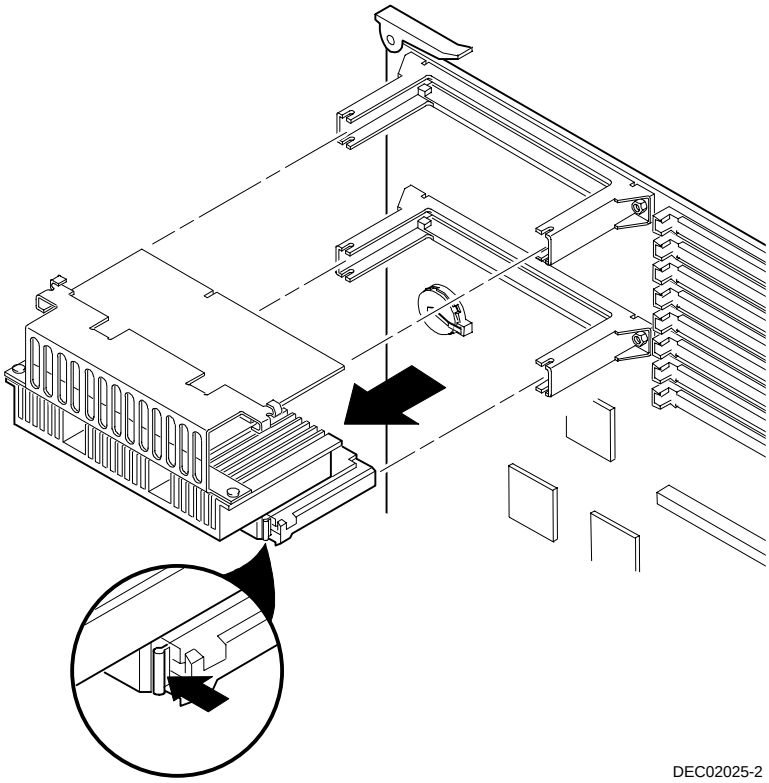


Figure 1-5. Releasing the Installed Processor

6. Remove the bracket, with the termination card attached, from the processor's heatsink (see Figure 1-6).

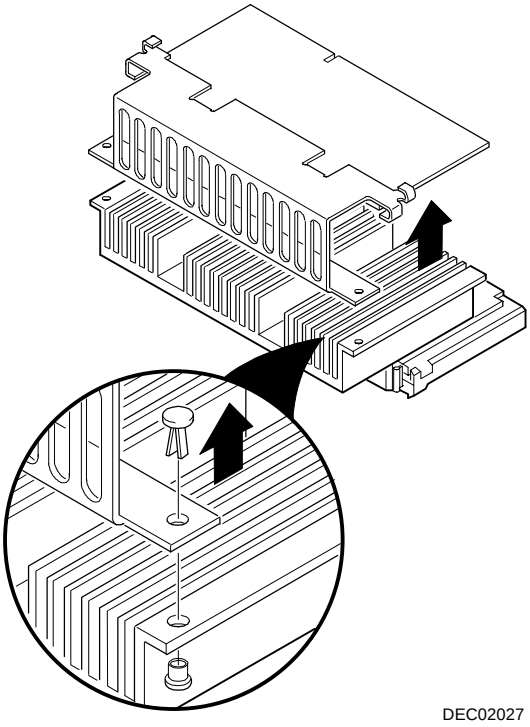


Figure 1-6. Removing the Bracket and Termination Card

7. Attach the new heat sink, with new processor attached, to the old heatsink (see Figure 1-7).

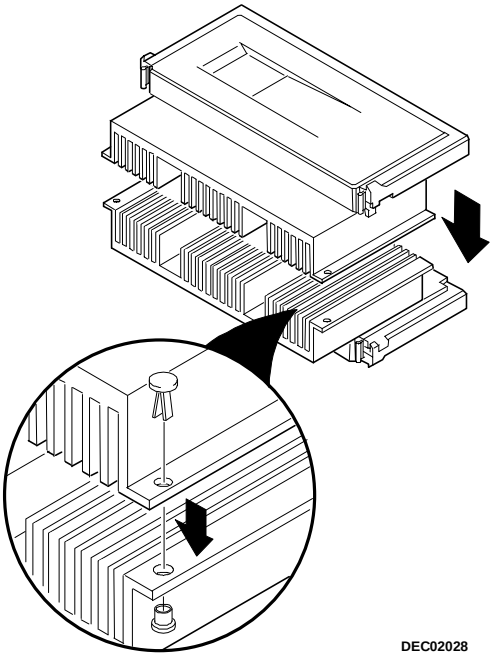


Figure 1-7. Attaching the New Processor

8. Carefully insert both processors into their respective sockets on the main logic board (see Figure 1-8).
9. Secure both processors to their sockets by pushing out on the two plastic tabs at each side of each processor.

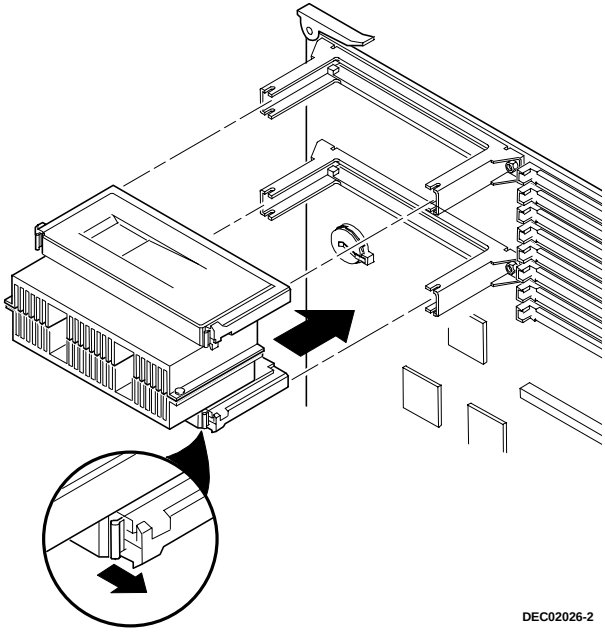


Figure 1-8. Installing Both Processors

10. Set all appropriate switch settings on the main logic board.
11. Re-install the Main Logic Board.
12. Locate the new fan assembly unit that is part of your dual processor upgrade kit. It is installed in the upper rear of the chassis. Refer to the graphic below to learn how to place and install the fan. Refer to the end of this document and plug the new fan power cable into the fan power connector (J24) located on the Main Logic Board. Refer to Figure 1-12, at the end of this document for added power connector location information.

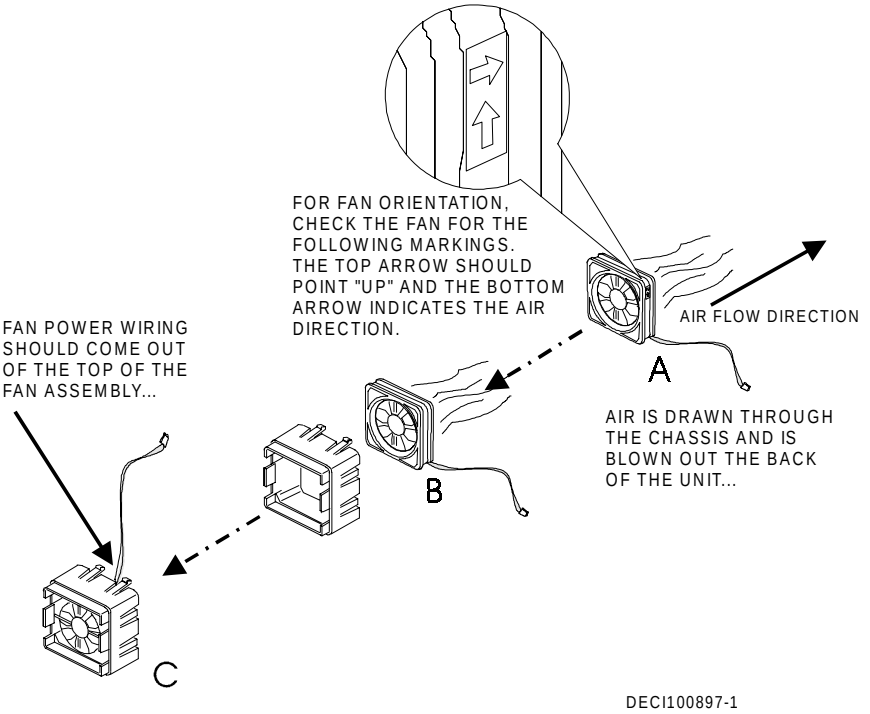


Figure 1-9. Installing the additional Fan Assembly

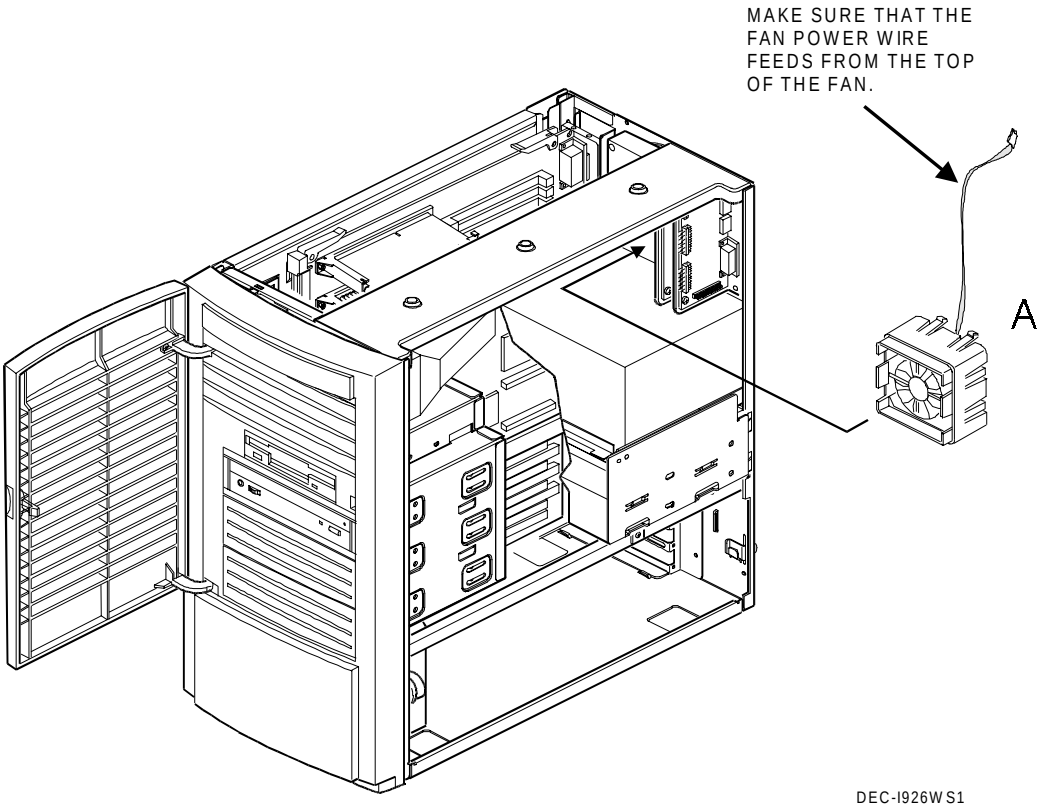


Figure 1-10. Installing the additional Fan Assembly

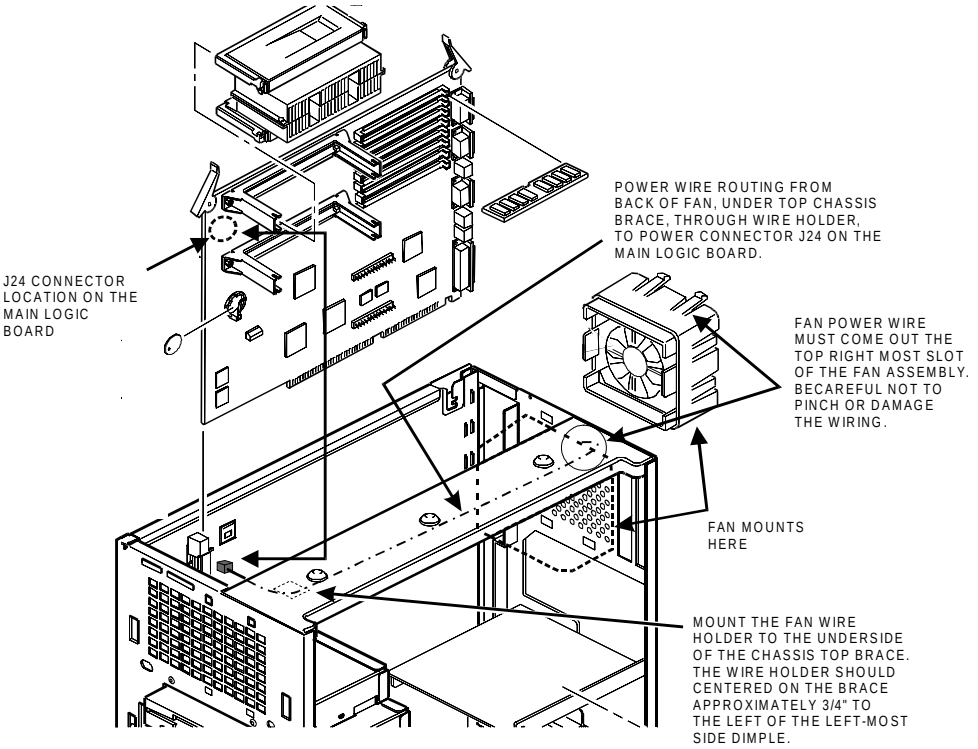


Figure 1-11. Wiring Path for additional Fan Assembly

13. Reinstall the outer cover and connect all external devices and restore power.

14. If you use Windows NT 4.0 as your operating system, and the processor upgrade that you made was for a Single to a Dual Processor configuration, refer to the document entitled “Digital Personal Workstation Pentium® II Dual Processor Upgrade Kit Upgrade Instructions”, Part # ER-B30WW-CA. This document will tell you what you need to get Windows NT to recognize both processors.

Main Logic Board Jumper and Switch Settings (Intel based Pentium® II System Models)

The jumper and switch settings located on the main logic board can be set to control many features in your workstation. Use the following tables and figure to locate the jumper and switch settings on the main logic board and then modify the settings for desired results.

Feature	Function	Setting	Description
Bus clock	66 MHz 60 MHz	SW1-1, ON(1) SW1-1, OFF	Determines the processor and PCI clock speed for the installed processor. This switch must be set along with the SW1-2, SW1-3, SW1-4, and SW1-8 CPU Core/Bus Ratio switches. Refer to the Processor Clock Speed Switch Settings table.
Bus/core frequency ratio		SW1-2, OFF SW1-3, OFF SW1-4, ON SW1-8, ON	Sets processor clock speed multiplier (in increments of .5) See "Processor Clock Speed Switch Settings" table for appropriate settings for your CPU
Password clear	Clear Normal(1)	SW1-5, ON SW1-5, OFF(1)	If you forget your password, set this switch to ON and then restart the workstation.
Recovery mode	Recovery Normal(1)	SW1-6, ON SW1-6, OFF(1)	If your flash BIOS upgrade failed, set this switch to ON so you can boot your workstation from a Crisis Recovery diskette. Refer to the README.TXT provided with the flash BIOS upgrade.
Clear CMOS	Enable Disable(1)	SW1-7, ON SW1-7, OFF(1)	Clears CMOS of all BIOS setup information. Use the Enable setting when your workstation will not boot, and BIOS setup cannot be accessed due to configuration data corruption. This switch must be set back to Disable before rebooting your workstation.

(1) Factory default setting
OFF = Up; ON = down

Processor Clock Speed Switch Settings (Intel based Pentium® II System Models)

The following table provides the switch settings for a number of available Pentium® II processors. The switches should be set to match the speed stamped on the processor.

Processor Speed[1]	SW1-2	SW1-3	SW1-4	SW1-8
233 MHz	Off	Off	On	On
266 MHz	On	On	Off	On
300 MHz	Off	On	Off	On
333 MHz[2]	On	Off	Off	On
366 MHz[2]	Off	Off	Off	On
400 MHz[2]	On	On	On	Off
433 MHz[2]	Off	On	On	Off
466 MHz[2]	On	Off	On	Off
500 MHz[2]	Off	Off	On	Off
533 MHz[2]	On	On	Off	Off

(1)) The Speed settings in this table assume that SW1-1 is in the ON position (Factory default)

(2) The processor speeds indicated above are anticipated future processor products from Intel. This does not constitute a promise of the availability of such a processor, but should it be made available some time in the future, these are the needed switch settings to support such a processor.

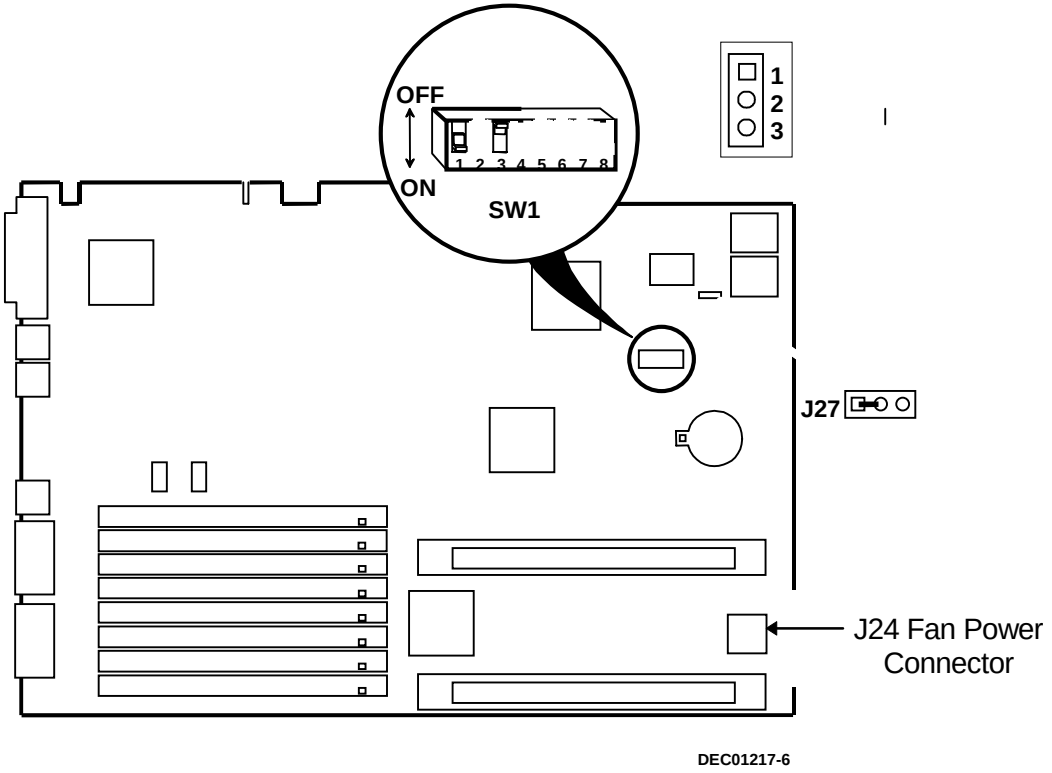


Figure 1-12. Typical Main Logic Board Switch Location

NOTE: Refer to your System Reference for the exact location should the above illustration appear incorrect. Some Main Logic Boards will have different layouts depending upon your System's Model.

Removing and Replacing the Front Bezel

To install the new product medallion, the front workstation bezel must be removed. The following procedures describe how to remove the front bezel..

1. Turn off your workstation and monitor.
2. Disconnect all external devices, ac power, and monitor power.
3. Remove the outside cover.
4. From the top of the workstation, looking down towards the bottom of the front of the chassis, you should see two tabs from the front bezel that hold the bezel in place and secure it to the chassis. Find both tabs (one on the left and one on the right).
5. By pushing on both of these tabs towards the center of the workstation, you can release the top of the bezel.
6. Gently pull the top of the bezel approximately an inch away from the top of the chassis.
7. Gently but firmly, pull up on the bezel to detach the bottom bezel mounts.
8. To replace or reinstall the front bezel, face the system. Tilt the front bezel out at the top, insert the lower feet into the chassis and then rotate the top aligning the locking tabs with the holes in the frame and chassis. If needed press the locking tabs inward as you did to unlatch the locking tabs, to make it easier to reinstall the system.

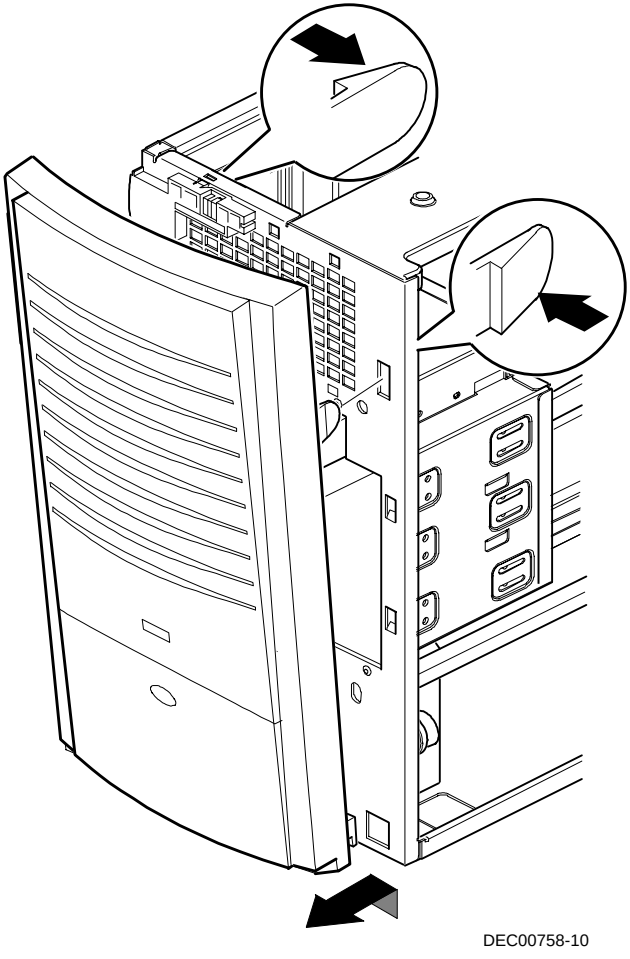


Figure 1-13. Removing the Front Bezel

Replacing the System Bezel's Product Medallion

The System Bezel's Product Medallion is the small elliptical button or medallion that is located on the lower front of your system. The color of the medallion and the numbers that are printed on the button, correspond to the model and/or processor's speed of your system. Your Processor Upgrade Kit includes a new medallion for your new processor speed.

To remove and replace the medallion, you must first remove the front bezel as defined in Figure 1-13. By turning the bezel over, you can see the friction stems that secure the Product Medallion in place. By pressing on the stems with your thumb, you can force the medallion from the socket and remove it from the front. To insert the new medallion, orient the printing on the button so that it is upright and so that the friction stems on the rear of the medallion correspond to the socket holes in the bezel. Insert the friction stems into the holes and with your thumb, press the button in as far as it can go. The medallion's surface should be flush with the front bezel.

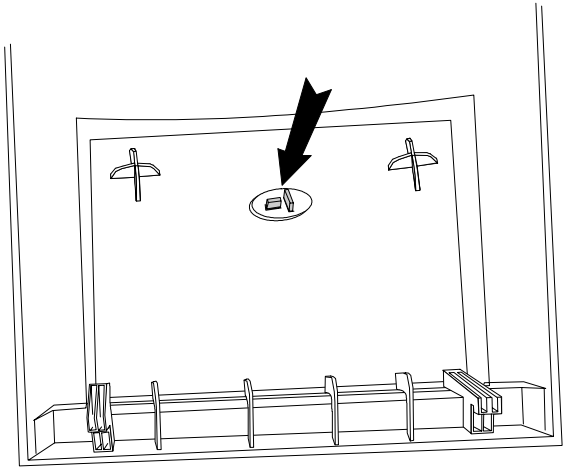
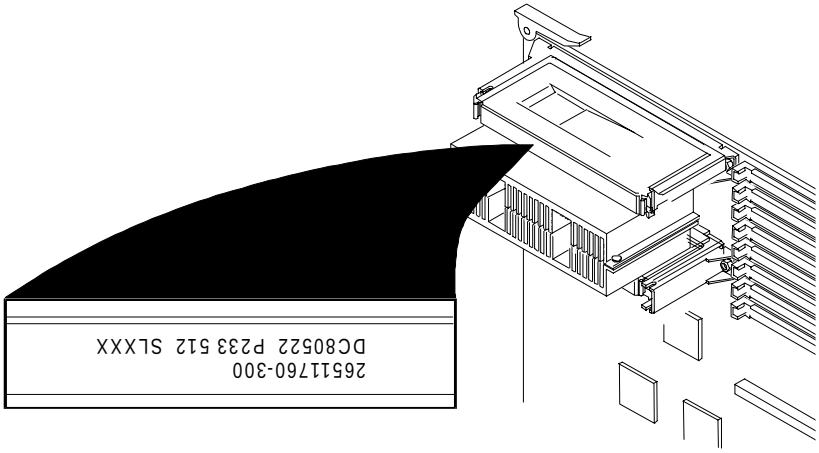


Figure 1-14. Rear of Front Bezel: Medallion Friction Stem Locations

How to determine the Speed of a Pentium II Processor

The processor's speed and other relevant information is stamped or marked on the Processor as identified in Figure 1-15. Information printed on your processor(s) may differ from the information that was used within the example shown below.



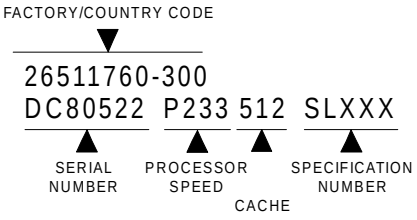


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Figure 1-15. Pentium II Processor Identification Markings