

Sun™ 450 MHz UltraSPARC™-II Module Upgrade



THE NETWORK IS THE COMPUTER™

Sun Microsystems, Inc.
901 San Antonio Road
Palo Alto, CA 94303-4900 USA
650 960-1300
Fax 650 969-9131

Part No.: 806-1055-11
Revision A, October 1999

Send comments about this document to: docfeedback@sun.com

Copyright 1999 Sun Microsystems, Inc., 901 San Antonio Road, Palo Alto, California 94303-4900 U.S.A. All rights reserved

This product or document is protected by copyright and distributed under licenses restricting its use, copying, distribution, and decompilation. No part of this product or document may be reproduced in any form by any means without prior written authorization of Sun and its licensors, if any.

Portions of this product may be derived from the UNIX® system, licensed from Novell, Inc., and from the Berkeley 4.3 BSD system, licensed from the University of California. UNIX is a registered trademark in the United States and in other countries and is exclusively licensed by X/Open Company Ltd. Third-party software, including font technology in this product, is protected by copyright and licensed from Sun's suppliers. RESTRICTED RIGHTS: Use, duplication, or disclosure by the U.S. Government is subject to restrictions of FAR 52.227-14(g)(2)(6/87) and FAR 52.227-19(6/87), or DFAR 252.227-7015(b)(6/95) and DFAR 227.7202-3(a).

Sun, Sun Microsystems, the Sun logo, and Solaris are trademarks or registered trademarks of Sun Microsystems, Inc. in the United States and in other countries. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. in the United States and in other countries. Products bearing SPARC trademarks are based upon an architecture developed by Sun Microsystems, Inc.

The OPEN LOOK® and Sun™ Graphical User Interfaces were developed by Sun Microsystems, Inc. for its users and licensees. Sun acknowledges the pioneering efforts of Xerox Corporation in researching and developing the concept of visual or graphical user interfaces for the computer industry. Sun holds a nonexclusive license from Xerox to the Xerox Graphical User Interface, which license also covers Sun's licensees who implement OPEN LOOK GUIs and otherwise comply with Sun's written license agreements.

THIS PUBLICATION IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT.

Copyright 1999 Sun Microsystems, Inc., 901 San Antonio Road, Palo Alto, Californie 94303-4900 U.S.A. Tous droits réservés.

Ce produit ou document est protégé par un copyright et distribué avec des licences qui en restreignent l'utilisation, la copie et la décompilation. Aucune partie de ce produit ou de sa documentation associée ne peut être reproduite sous aucune forme, par quelque moyen que ce soit, sans l'autorisation préalable et écrite de Sun et de ses bailleurs de licence, s'il y en a.

Des parties de ce produit pourront être dérivées du système UNIX® licencié par Novell, Inc. et du système Berkeley 4.3 BSD licencié par l'Université de Californie. UNIX est une marque enregistrée aux Etats-Unis et dans d'autres pays, et licenciée exclusivement par X/Open Company Ltd. Le logiciel détenu par des tiers, et qui comprend la technologie relative aux polices de caractères, est protégé par un copyright et licencié par des fournisseurs de Sun.

Sun, Sun Microsystems, le logo Sun, et Solaris sont des marques déposées ou enregistrées de Sun Microsystems, Inc. aux Etats-Unis et dans d'autres pays. Toutes les marques SPARC, utilisées sous licence, sont des marques déposées ou enregistrées de SPARC International, Inc. aux Etats-Unis et dans d'autres pays. Les produits portant les marques SPARC sont basés sur une architecture développée par Sun Microsystems, Inc.

Les utilisateurs d'interfaces graphiques OPEN LOOK® et Sun™ ont été développés de Sun Microsystems, Inc. pour ses utilisateurs et licenciés. Sun reconnaît les efforts de pionniers de Xerox Corporation pour la recherche et le développement du concept des interfaces d'utilisation visuelle ou graphique pour l'industrie de l'informatique. Sun détient une licence non exclusive de Xerox sur l'interface d'utilisation graphique, cette licence couvrant aussi les licenciés de Sun qui mettent en place les utilisateurs d'interfaces graphiques OPEN LOOK et qui en outre se conforment aux licences écrites de Sun.

CETTE PUBLICATION EST FOURNIE "EN L'ETAT" SANS GARANTIE D'AUCUNE SORTE, NI EXPRESSE NI IMPLICITE, Y COMPRIS, ET SANS QUE CETTE LISTE NE SOIT LIMITATIVE, DES GARANTIES CONCERNANT LA VALEUR MARCHANDE, L'APTITUDE DES PRODUITS A REpondre A UNE UTILISATION PARTICULIERE OU LE FAIT QU'ILS NE SOIENT PAS CONTREFAISANTS DE PRODUITS DE TIERS.



Adobe PostScript

Contents

Electromagnetic Compatibility v

- 1. UltraSPARC-II Module Prerequisites 1-1**
 - 1.1 System Software Requirements 1-1
 - 1.1.1 Minimum Solaris Operating Environment 1-1
 - 1.1.2 OpenBoot PROM 1-1
 - 1.2 System Hardware Requirements 1-2
 - 1.3 SCD Compliance 1-2
 - 1.4 UltraSPARC-II Module Upgrade Kit 1-3

- 2. Preparing Software and Hardware for the 450 MHz CPU Module Upgrade 2-1**
 - 2.1 Installing the 450 MHz CPU Module in a System Running the Solaris 2.5.1 or 2.6 Operating Environment 2-2
 - 2.1.1 Solaris 2.5.1 Operating Environment 2-2
 - 2.1.2 Solaris 2.6 Operating Environment 2-3
 - 2.2 Updating the Flash PROM 2-4
 - 2.3 Power Off and Open the System 2-4
 - 2.3.1 Removing Power from the System 2-4
 - 2.3.2 Removing the Side Access Cover 2-6
 - 2.3.3 Attaching the Wrist Strap 2-8

- 3. Installing the UltraSPARC-II Module 3-1**

- 3.1 Removing the UltraSPARC Module 3-1
- 3.2 Installing the UltraSPARC-II Module 3-3
- 3.3 Completing the Installation 3-4
 - 3.3.1 Changing the Clocking Select Jumper 3-4
 - 3.3.2 Closing the System 3-6
 - 3.3.3 Turning On the Power 3-8
 - 3.3.4 Power-On Self-Test (POST) 3-9
 - 3.3.5 Returning the Removed Module(s) 3-9

Electromagnetic Compatibility

FCC Class B Notice — United States

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause operation.

Note – This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

Shielded Cables

Connections between the workstation and peripherals must be made using shielded cables in order to maintain compliance with FCC radio frequency emission limits.

Modifications

Modifications to this device that are not approved by the party responsible for compliance may void the authority granted to the user by the FCC to operate this equipment.

DOC Class B Notice — Canada

This digital apparatus does not exceed the Class B limits for radio noise emission for a digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

Avis concernant les systèmes appartenant à la classe B du DOC — Canada

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe B prescrites dans le Règlement sur le brouillage radioélectriques édicté par le Ministère des Communications du Canada.

Nippon — Japan


VCCI 基準について

クラス A VCCI 基準について

クラス A VCCI の表示があるワークステーションおよびオプション製品は、クラス A 情報技術装置です。これらの製品には、下記の項目が該当します。

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

クラス B VCCI 基準について

クラス B VCCI の表示  があるワークステーションおよびオプション製品は、クラス B 情報技術装置です。これらの製品には、下記の項目が該当します。

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラス B 情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。取扱説明書に従って正しい取り扱いをしてください。

UltraSPARC-II Module Prerequisites

This book contains procedures for installing a 450 MHz UltraSPARC™-II module into specific Sun™ Ultra™ systems.

1.1 System Software Requirements

1.1.1 Minimum Solaris Operating Environment

The 450 MHz module requires a minimum Solaris™ operating environment of Solaris 2.5.1 Hardware 11/97, Solaris 2.6 Hardware 5/98, or Solaris 7 3/99.

1.1.2 OpenBoot PROM

UltraSPARC-II systems require OpenBoot PROM version 3.17.0 (or later).

1.2 System Hardware Requirements

A system operating in the multiprocessor mode must use CPU modules of the same clock frequency.

Determine the clock frequency of the CPU module(s) already installed in your system.

Query your system by typing:

```
% prtconf -vp | grep banner-name  
banner-name: `Sun Ultra xx UPA/SBus (1x UltraSPARC 450Hz)'
```

The system responds with the quantity (for example, 1 x) and speed (450 MHz) of the UltraSPARC modules installed.

1.3 SCD Compliance

Sun Ultra systems have been independently tested and verified to comply with revision 2.1 of the SPARC Compliance Definition (SCD) developed by SPARC International, Inc. These systems are binary compatible with all other systems and software that conform to SCD version 2.1.



FIGURE 1-1 SCD Compliance

1.4 UltraSPARC-II Module Upgrade Kit

Each UltraSPARC-II module upgrade kit contains:

- This book
- UltraSPARC-II module(s)
- Antistatic wrist strap
- Solaris 2.5.1 and 2.6 software upgrades CD for systems faster than 400 MHz
- Flash PROM update CD-ROM and programming guide

Note – Retain the packing box and shipping material for use in returning the removed module(s).

Preparing Software and Hardware for the 450 MHz CPU Module Upgrade

If you are upgrading a CPU module to the 450 MHz CPU module, operations must be performed in this order:

1. As needed, install Solaris 2.5.1 or Solaris 2.6 kernel patches.
2. Update the FlashPROM.
3. Power off and open the system.
4. Install the 450 MHz CPU module.
5. Update the clock select jumper.
6. Close and power on the system.
7. Perform POST.
8. Return the removed module.

If you are adding a 450 MHz CPU module to a multiprocessor system already running at 450 MHz, you can begin with Section 2.3, “Power Off and Open the System,” on page 2-4.

This chapter contains the following sections:

- Section 2.1, “Installing the 450 MHz CPU Module in a System Running the Solaris 2.5.1 or 2.6 Operating Environment,” on page 2-2
- Section 2.2, “Updating the Flash PROM,” on page 2-4
- Section 2.3, “Power Off and Open the System,” on page 2-4

2.1 Installing the 450 MHz CPU Module in a System Running the Solaris 2.5.1 or 2.6 Operating Environment

If either the Solaris 2.5.1 or Solaris 2.6 operating environment is already installed on your system, you must install operating environment patches before proceeding with the 450 MHz CPU module installation.

Install these patches from the Operating Environment Installation CD (CD-assembly part number 798-1793) included with your new module(s).

2.1.1 Solaris 2.5.1 Operating Environment

1. **Start the OpenWindows™ or the common desktop environment (CDE) windowing environment.**
2. **Place the Operating Environment Installation CD in the CD-ROM drive of your system.**

Note – If you are running Volume Manager, it automatically detects the CD and opens a File Manager window that displays the contents of the CD. If you are not running Volume Manager, either open File Manager and go to `/cdrom/cdrom0`, or type `cd /cdrom/cdrom0` from a shell window to view the contents of the CD.

3. **In a command tool, become root by typing the `su` command and your superuser password.**
4. **At the `#` prompt, enter the following commands:**

```
# cd /cdrom/cdrom0/s0/Patches/Solaris_2.5.1_1197/103640-24  
  
# ./installpatch `pwd`
```

5. When the patch installation has completed, you should see a message that the following patches have been installed:

Patch packages installed:

SUNWcar.u

SUNWcsr

SUNWcsu

SUNWhea

SUNWkvm.u

6. Exit superuser status, and continue with the installation procedure for the 450 MHz CPU module.

Note – If an Operating Environment Installation CD is not available, you may download patch 103640 (-24 or later) from the Sun public patch database at <http://access1.sun.com>.

2.1.2 Solaris 2.6 Operating Environment

1. Start the OpenWindows or the CDE windowing environment.
2. Place the Operating Environment Installation CD in the CD-ROM drive of your system.

Note – If you are running Volume Manager, it automatically detects the CD and opens a File Manager window that displays the contents of the CD. If you are not running Volume Manager, either open File Manager and go to `/cdrom/cdrom0`, or type `cd /cdrom/cdrom0` from a shell window to view the contents of the CD.

3. In a command tool, become root by typing the `su` command and your superuser password.
4. At the `#` prompt, enter the following commands:

```
# cd /cdrom/cdrom0/s0/Patches/Solaris_2.6_598/105181-10
# patchadd `pwd`
```

5. When the patch installation has completed, you should see a message that the following patches have been installed:

Patch packages installed:

SUNWcar . u

SUNWcsr

SUNWcsu

SUNWhea

SUNWkvm . u

6. Exit superuser status, and continue with the installation procedure for the 450 MHz CPU module.

Note – If an Operating Environment Installation CD is not available, you may download patch 105181 (-10 or later) from the Sun public patch database at <http://access1.sun.com>.

2.2 Updating the Flash PROM

Use Sun™ Flash PROM Guide for Workstations and Workgroup Servers - Standalone Version, part number 802-3233, for updating your system's flash PROM.

Note – Be sure to restore the flash PROM jumper setting after the flash update is completed.

2.3 Power Off and Open the System

2.3.1 Removing Power from the System

Before turning off system power, shut down the operating system to avoid loss of data.

1. If your system is not a standalone, notify users that the system is going down.
Refer to the Solaris Handbook for the procedure.

2. Back up the system files and data.

Refer to the Solaris Handbook for the procedure.

3. Halt the system.



Caution – Pressing the front panel power switch does not remove all power from the system unit; a trickle voltage remains in the power supply. To remove all power from the system unit, disconnect the AC power cord.

4. Set the front panel power switch to the Off position (FIGURE 2-1).

5. Verify the following:

a. The front panel LED is off.

b. The system fans are not spinning.



Caution – Disconnect the power cord prior to servicing system components.

6. Turn the power off to the monitor and all peripherals connected to the system.



Caution – When the Power On/Standby switch is pressed and the AC power cord remains connected to a power outlet, hazardous AC voltage is still present in the power supply primary.

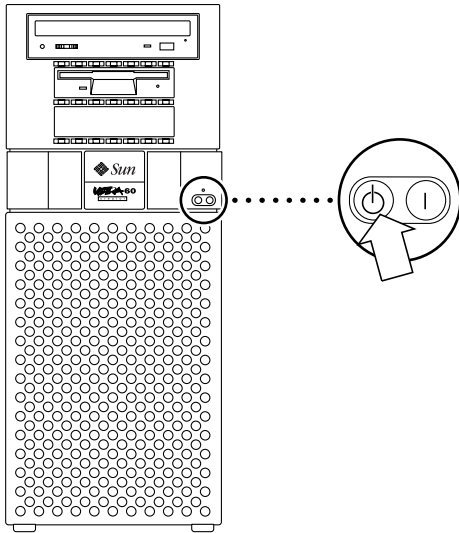


FIGURE 2-1 System Power-Off (Front Panel)

2.3.2 Removing the Side Access Cover

1. Power off the system.

See Section 2.3.1, "Removing Power from the System," on page 2-4.

2. Disconnect the lock block (FIGURE 2-2).

3. Remove the side access cover as follows (FIGURE 2-3):

a. Lay the system in the service position.

b. Grasp the side panel and pull it toward the back of the system.

c. Disengage the side access cover from the chassis hooks.

d. Grasping the access cover sides, lift the side access cover upward and remove.

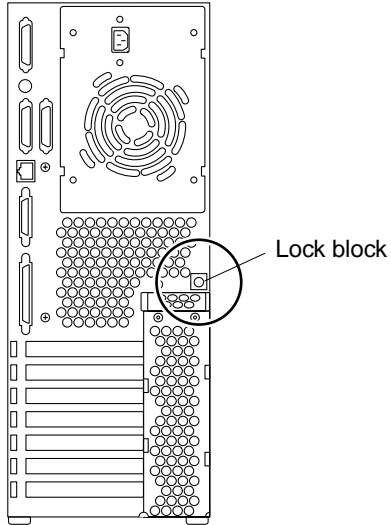


FIGURE 2-2 Opening the System

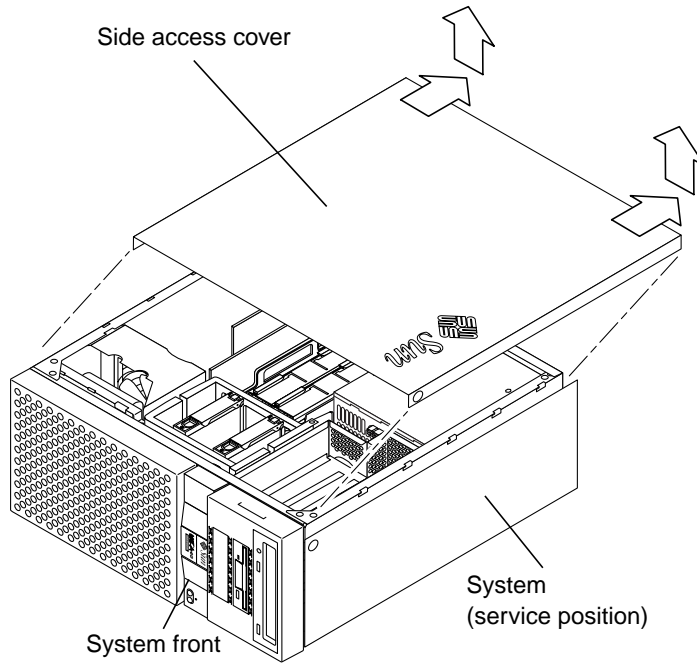


FIGURE 2-3 Lifting the Side Access Cover

2.3.3 Attaching the Wrist Strap

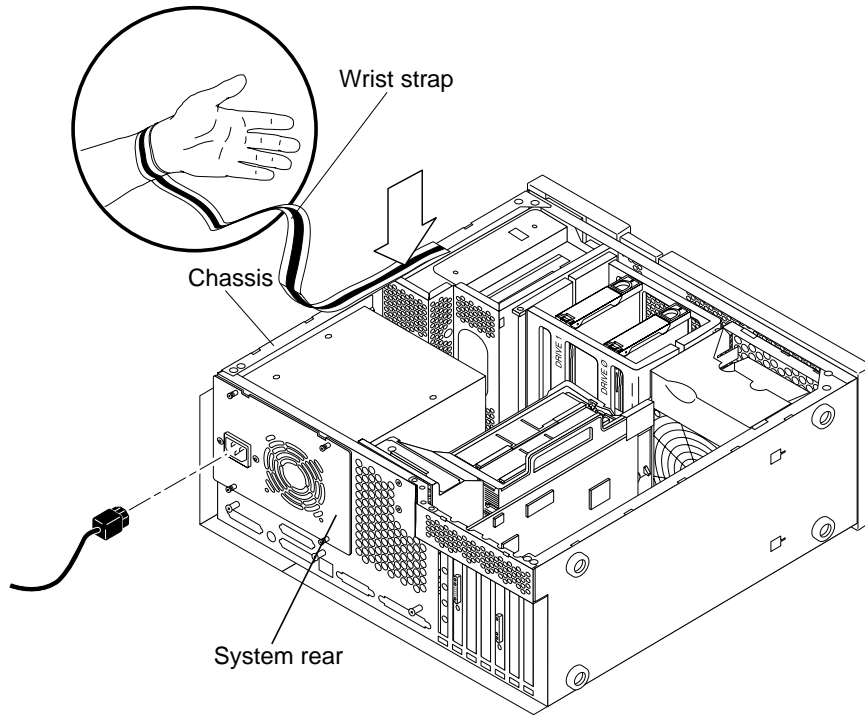


FIGURE 2-4 Attaching the Wrist Strap

Installing the UltraSPARC-II Module

This chapter contains the following sections:

- Section 3.1, “Removing the UltraSPARC Module,” on page 3-1
- Section 3.2, “Installing the UltraSPARC-II Module,” on page 3-3
- Section 3.3, “Completing the Installation,” on page 3-4

3.1 Removing the UltraSPARC Module

Skip this section and read Section 3.2, “Installing the UltraSPARC-II Module,” on page 3-3.” if your system is already equipped with one UltraSPARC-II module and you are adding a second module of the same clock frequency.

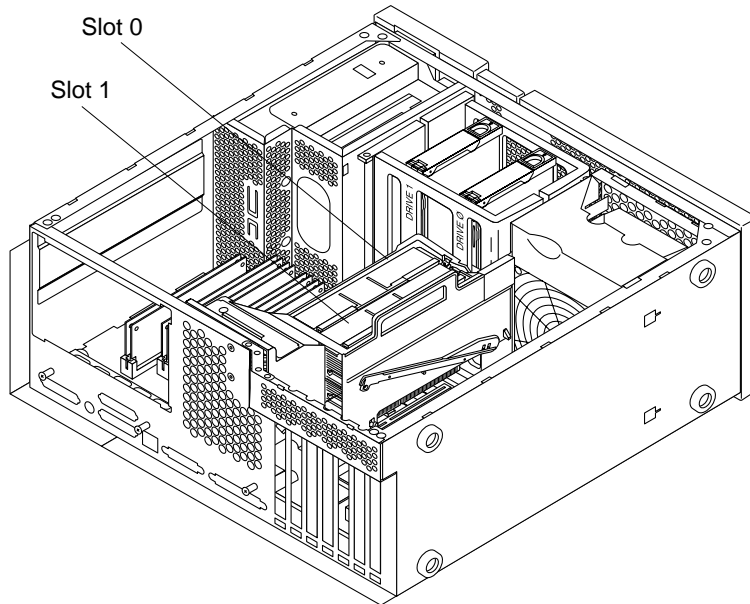


FIGURE 3-1 UltraSPARC Module Locations and Shroud Assembly Processor Area

1. Power off the system.

See Section 2.3.1, “Removing Power from the System,” on page 2-4.

2. Remove the side access cover.

See Section 2.3.2, “Removing the Side Access Cover,” on page 2-6.

3. Attach a wrist strap.

See Section 2.3.3, “Attaching the Wrist Strap,” on page 2-8.

4. Remove the CPU module as follows (FIGURE 3-2):

a. Using the thumbs of both hands, simultaneously lift the two levers on the CPU module upward and to the side to approximately 135 degrees.

b. Lift the CPU module upward until it clears the system unit chassis.



Caution – Disconnect the power cord prior to servicing system components.

5. Place the CPU module on an antistatic mat.

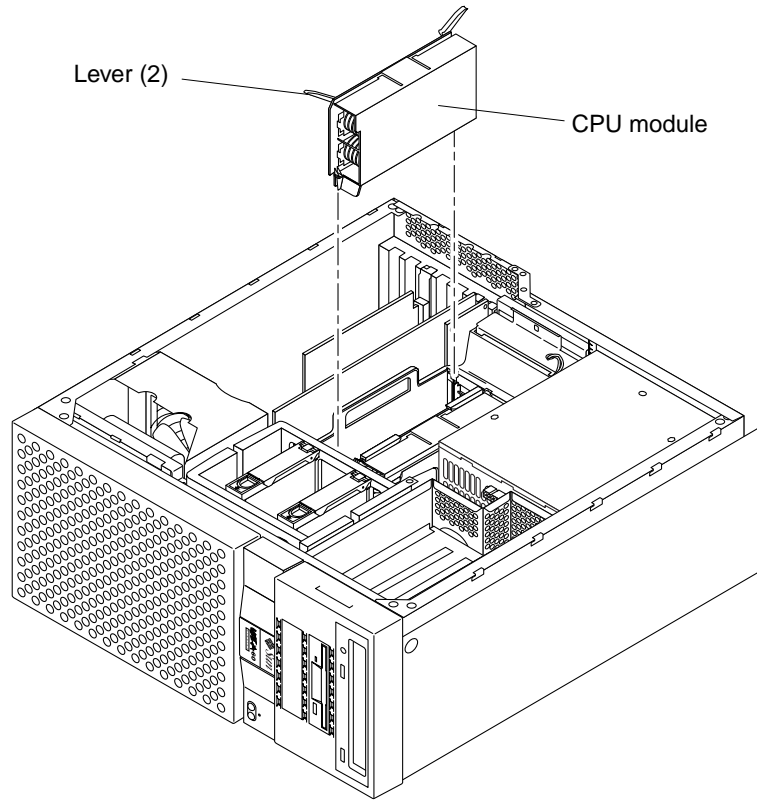


FIGURE 3-2 Removing and Replacing the UltraSPARC Module

3.2 Installing the UltraSPARC-II Module

1. Replace the CPU module as follows (FIGURE 3-2):
 - a. On the antistatic mat, hold the CPU module in an upright position with the plastic surface facing you.
 - b. Move the levers on the CPU module to the 135-degree position.
 - c. Lower the CPU module along the vertical plastic guides until the module touches the motherboard slot socket. Lock the CPU module in place as follows:
 - i. With both hands, simultaneously turn and press the levers down to the fully horizontal position.

- ii. Firmly press the module down into the socket until it is fully seated and the extraction levers are fully locked.
2. **Connect the AC power cord.**
 3. **Detach the wrist strap.**
 4. **Replace the side access cover.**
See Section 2.3.2, "Removing the Side Access Cover," on page 2-6.
 5. **Power on the system unit.**
See Section 2.3.2, "Removing the Side Access Cover," on page 2-6.

3.3 Completing the Installation

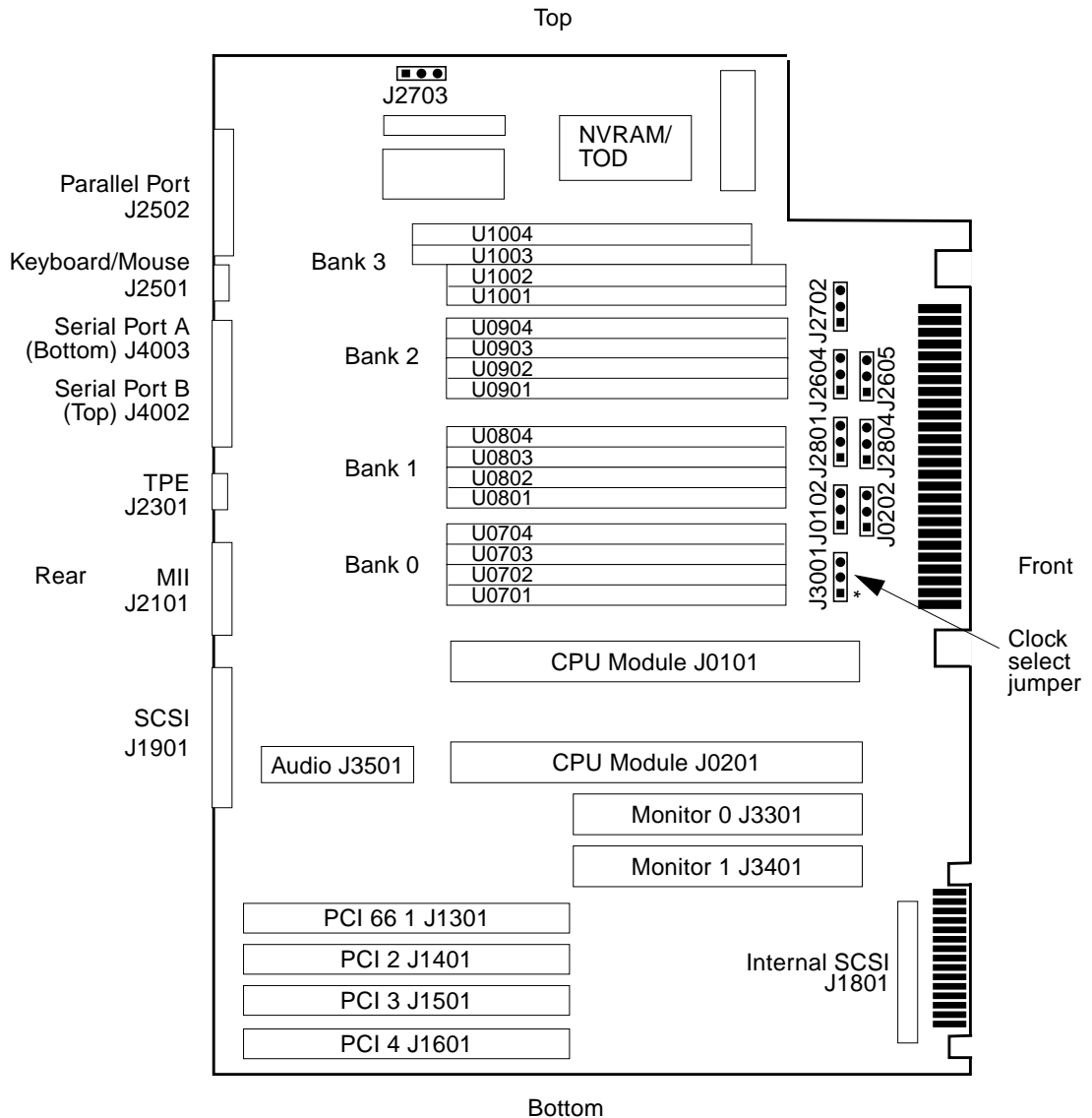
3.3.1 Changing the Clocking Select Jumper

The following table gives information about the clocking select jumper functionality. The following figures show the location of the clocking select jumper on the motherboard, and the two available jumper settings, respectively.

To change the jumper, use needlenose pliers to remove and install the jumper (see FIGURE 3-4).

TABLE 3-1 UltraSPARC Module Clocking Select Jumper Settings

Jumper	Pins 1 + 2 Select	Pins 2 + 3 Select
J3001	300-MHz or 360-MHz UltraSPARC-II modules.	450-MHz UltraSPARC-II module.



J2703=FPROM R/W, J2605 + J2604=RS423/232,
 J3001=UPA Clk /2+3, J2804=FPROM Boot Hi-Lo.

FIGURE 3-3 Clocking Select Jumper Location on the Ultra 60 Motherboard

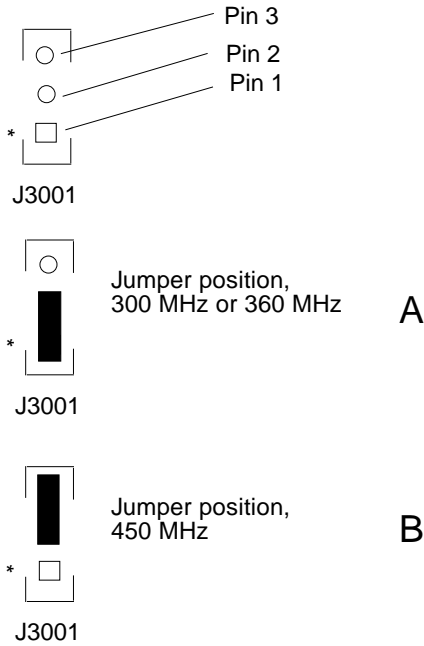


FIGURE 3-4 Clocking Select Jumper Positions

3.3.2 Closing the System

1. **Position the side access cover** (see FIGURE 3-5).
2. **Engage the side access cover and the chassis hooks. Push the access cover towards the system front.**
3. **Connect the lock block.**

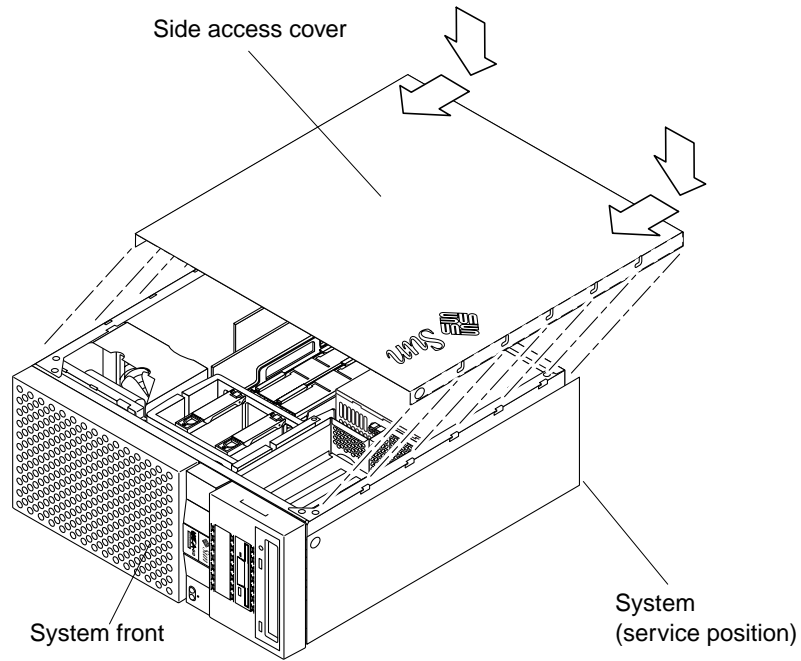


FIGURE 3-5 Replacing the Side Access Cover

- 4. Position the system unit in the operating position.**
- 5. Use a Phillips screwdriver to reinstall the lock block to the back panel.**

3.3.3 Turning On the Power

1. Turn on power to all connected peripherals.
2. Connect the AC power cord.
3. Set the front panel power switch to the On position (FIGURE 3-6) or press the Sun Type-5 keyboard power on key (FIGURE 3-7).

Note – Peripheral power is activated prior to system power so the system can recognize the peripherals when it is activated.

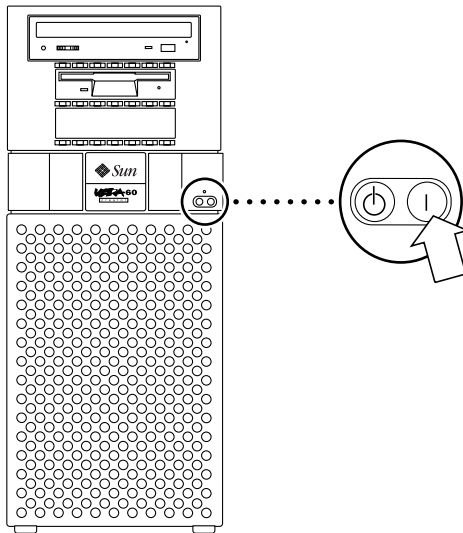


FIGURE 3-6 System Unit Power-On (Front Panel)

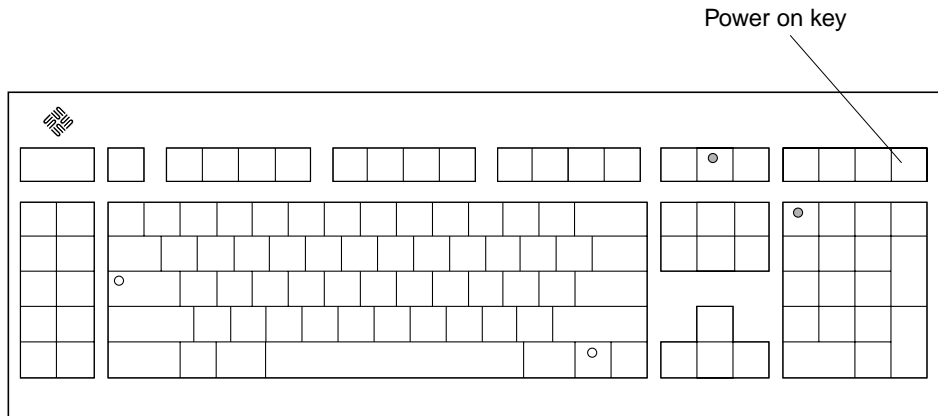


FIGURE 3-7 Sun Type -5 Keyboard

3.3.4 Power-On Self-Test (POST)

For a full description of the Power-On Self-Test (POST), refer to the Sun Ultra 60 Service Manual.

3.3.5 Returning the Removed Module(s)

To return the removed module(s) to Sun Microsystems, Inc., use the shipping box and packing materials for the UltraSPARC module(s) and:

1. Place the removed module(s) in the antistatic bag(s).
2. Fold and tape the end(s) of the bag(s).
3. Place the bag(s) and other shipping materials in the shipping box.
4. Affix the RMA (Return Material Authorization) label from the upgrade kit onto the shipping carton.
5. Return the shipping carton to Sun Microsystems, Inc.

