

# Safety and Tools Requirements

This chapter describes standards, safety procedures, and precautions you should follow whenever you need to replace or remove assemblies or subassemblies from your system.

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## 5.1 Safety Requirements

For your protection, observe the following safety requirements:

- Follow all cautions, warnings, and instructions marked on the equipment.
- Ensure that the voltage and frequency rating of the power outlet matches the electrical rating labels on the system.
- Use properly grounded power outlets.

To protect both yourself and the equipment, observe the safety precautions listed in Table 5-1.

*Table 5-1 Safety Precautions*

<b>Item</b>	<b>Problem</b>	<b>Precaution</b>
AC power cord	Electric shock	Unplug the AC cord from the AC wall socket before working on the power supply.
	Grounding	Leave the AC power cord plugged into the AC wall outlet when replacing drives, DSIMMs, chips, or the system board. Leaving the AC power cord plugged into the wall outlet provides a grounding path for the wrist strap, which must be attached.
Wrist strap	Electrostatic Discharge (ESD)	Wear a wrist strap when handling printed circuit boards, drives, or other components such as DSIMMs.
ESD mat	ESD	An approved antistatic mat provides protection from static damage when used with a wrist strap. The mat also cushions and protects small parts that are attached to printed circuit boards. Chapter 12, "Illustrated Parts Breakdown," lists the part number of the mat.
Printed circuit boards	ESD	Handle a printed circuit board by the edges only. Store a board in an antistatic bag.
Cover	System damage and overheating	Replace the cover after performing service on the system.
SBus slot filler panels	System damage and overheating	Install filler panels in all unused SBus openings. Openings on the back of the system board reduce the cooling capability of the system.
microSPARC chip heat sink	Heat, burns	Do not touch the metal heat sink on the microSPARC chip. The heat sink can be hot enough to cause personal injury.

## 5.2 Symbols

The following symbols mean:



**WARNING**

This equipment contains lethal voltages. Accidental contact can result in serious injury or death.



**WARNING**

Physical danger due to a non-electrical hazard or danger of irreversible damage to data or to the operating system.



**CAUTION**

Improper handling by unqualified personnel can cause serious damage to this equipment. Unqualified personnel who tamper with this equipment may be held liable for any resulting damage to the equipment.



**CAUTION**

Hot surface. Avoid contact. Surfaces are hot and may cause personal injury if touched.



**AC**

A terminal (power outlet) to which alternating current or voltage may be applied.



**ON**

The power switch is in the ON position.



**STANDBY**

The power switch is in the STANDBY position.

## 5.3 System Precautions

Individuals who service this equipment must observe all safety precautions and ensure compliance with skill level requirements, certification, and all applicable local and national laws.

Procedures contained in this document must be performed by trained maintenance providers. Only people who have been trained at the Sun Microsystems® training facilities (or at Sun Microsystems affiliates) and have been certified as required by local and national laws are considered qualified.



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**Caution** – Before you begin, carefully read each of the procedures in this manual. If you have not performed similar operations on comparable equipment, **do not attempt** to perform these procedures.

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## 5.4 Tools Required

To remove and replace customer replaceable units (CRUs), you will need the following tools and materials:

- Small Phillips-head screwdriver
- Small flat-blade screwdriver
- Wrist strap
- Antistatic surface
- Volt-ohmmeter (VOM) for checking voltages and continuity
- Needlenose pliers
- Conductive foam to store chips
- Container for screws

## 5.5 Electrostatic Discharge (ESD) Precautions



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**Caution** – The system chassis power must be turned off, and the AC power cord must remain plugged in to ensure a proper ground.

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To minimize electrostatic discharge, observe the following precautions:

- Hold the system board, SBus cards, DSIMMs, or system components only by the edges.

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- When removing a board, card, or module from an antistatic bag, lay it on an antistatic surface such as a Sun ESD mat, an antistatic bag, or a disposable antistatic mat.
  - Do not place the boards, cards, or modules on an unprotected surface. Use a cushioned antistatic mat or antistatic bag. Connectors and components have very thin pins that bend easily.
  - Do not use an oscilloscope or VOM (volt-ohmmeter) probe on the components. The soldered pins are easily damaged or shorted by the probe point.
  - Transport boards, cards, or modules in an antistatic bag.
  - Always wear an antistatic wrist strap connected to a metal surface on the chassis when working on system components and parts.

