

2.1.5 ESD Facts

Static electricity is the accumulation of a friction-caused electric charge on a non-grounded object. The static charge on the surface of a non-grounded object can jump when it contacts the surface of any grounded object. This electric discharge is known as *electrostatic discharge* (ESD). ESD can be very destructive to a computer.

The threat of ESD begins when the fragile components (including the processor, hard drives, memory, motherboard, and expansion cards) inside the computer are exposed. You can cause damage simply by placing a fingertip too close to a component inside an open computer case. ESD charges can travel through wires and into components, where the wires can explode or fuse together, causing the components to fail. ESD can cause immediate failure of components or could gradually degrade components, causing only intermittent problems. It takes very little ESD to damage a component. A discharge of as little as 10 volts can damage a component, but 3,000 volts or more of ESD must occur before you can even feel it.

Implement the following measures to defend components from ESD:

- Keep the relative humidity in the room at an ideal range of 35-70%, and temperature between 72-77 degrees. The key is to avoid dry air in the computer repair location to prevent ESD.
- Use antistatic mats under the PC and on the floor.
- Discharge yourself before touching any computer component.
- When touching anything inside the computer, wear an antistatic wrist strap that is attached to the metal PC chassis with an alligator clip .
- Ground both yourself and the computer to the same ground. This provides a single path for the flow of electrical potential.
- Use static-resistant materials to handle computer components.
- Never touch the metal connectors on a circuit board.
- Keep the computer repair location free of materials that accumulate electric charges, such as plastic and Styrofoam.
- Store sensitive components in static shielding bags, which are usually grey. Static-resistant bags are not nearly as effective. They are usually tinted pink or blue.
- If a wrist strap is unavailable, keep your body in constant contact with the metal frame when working inside the computer.

Unplug the system before working on internal components. Do not rely on the power cord for an electrical ground.

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