FIX-N-FAX #152

CALIFORNIA DEPARTMENT OF FORESTRY
AND FIRE PROTECTION

Number 152 Date: July, 1998

Electro Static Dischargers (ESD)

Electro Static Discharge or “ESD” is a subject of increasing concern in today’s high-tech world.

According to Federal Signal’s service bulletin, “Hot Times - Volume Six, Summer 1998”, static electricity is most commonly created by friction and separation. Friction between materials excites molecular particles and separation transfers electrons from one material to the other. The resulting shortage and corresponding surplus of electrons between the materials creates a field of static electricity. Materials that transfer electrons easily are known as conductors and include metals, carbon, and human perspiration. Materials resistant to electron transfer are known as insulators and include plastic, glass, and air.

When a conductor becomes “charged,” the electrons within discharge rapidly when brought into contact with another conductor. When a person walks across a carpeted floor and touches a metal doorknob, the resulting shock is an example of ESD. This discharge of electricity is in the range of 3000 volts.

While a shock of 3000 volts is not likely to harm you, it can be deadly to electronics. The component may fail immediately, or worse, it may fail when you need it while in the field.

How can you protect against ESD?

- Store electronic components and individual PCBs in anti-static bags.
- Use only **non-conductive** plastic storage bins.
- Do not set **conductive** materials next to electronic components.
- Define and label specific anti-static work areas and furnish with grounded anti-static mats.
- Require that technicians wear properly grounded anti-static wrist straps.
- Only properly trained technicians should touch any of the circuitry.

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