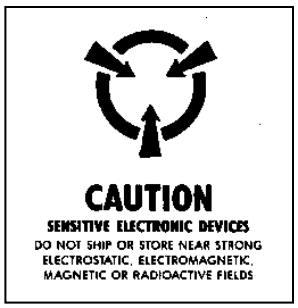
ESD… (Electro-Static Discharge)
A shocking story!

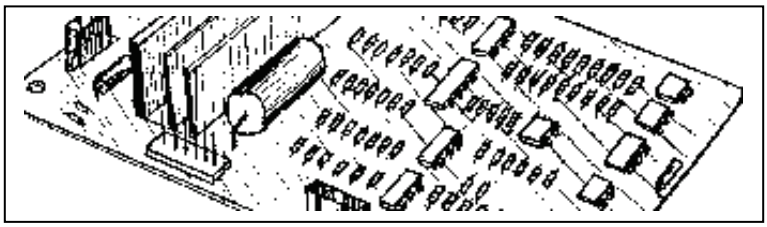


Most technicians have experienced the effects of static … many of us learned the hard way… Blowing a Main Board's mind or destroying a toner sensor with a static shock is something one's not likely to forget (assuming we even make the connection). An understanding of the effects of static on office equipment would be a great help to just about anyone but for a technician it is absolutely critical. There are of course special tools & supplies which can be used to help avoid trouble but a basic background knowledge is the most valuable thing available. It's easy to underestimate the destructive power of static… we survive a static shock no problem so it comes as a surprise to find out that a static discharge actually produces several thousand volts.. enough juice to fry many electrical components. In this article, we'll talk about what's vulnerable and how to avoid problems…

In our office, I've seen how a static discharge from touching a computer screen can simply shut down the computer causing it to reboot… We have a little sound-effect toy on one of the desks in our office which if you're charged up good, it'll discharge, making a bomb dropping sound just from touching the desk (you don't even have to shuffle your feet on a dry day…). We also had an older Sharp 8500 copier which whenever Elaine approached it, the display would dim almost like she had a magic aura (I don't know if it's the clothing she wears or what, but Elaine has been crowned the 'queen of electro-static' in our office).

First and most important… when you approach a machine, touch its metal frame… If the machine is plugged in to a 3 pronged grounded outlet, that will discharge you good and considerably reduce your chances of creating mayhem. It's also good practice for anyone approaching a computer terminal to first touch the metal casing of the computer before touching the keyboard.

Be aware that logic boards are by far the most vulnerable parts of any machine. A static discharge will destroy eproms and other components in quick order… this means be on red alert when handling a main board, or a board from an accessory device such as a Sorter or a Document Feeder. Good idea to handle any board with care. Ground yourself and avoid touching any of the contacts or components on the board whenever possible. Bad idea to place a board down on a desk without a protective layer under it… a contact could discharge.



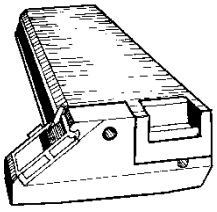
If you're packing up a board for shipping or transporting… use a static proof bag (that pink plastic stuff you usually see boards packed in). Regular bubbles are the worst thing you can wrap a board in… unless a plastic is anti-static pink, it's like submitting a board to the same static which keeps balloons on a wall if you rub them against your

shirt. The only packing which is worse would be to dump a board in packing peanuts. Next time you think about wrapping a board in that kind of packing… even just a core being returned for credit or repair… picture it screaming "noooooooo, not that!". Don't give a board to someone to pack up unless you instruct them about this… it's something that eventually feels like common sense but most folks are totally unaware of it.

Brushing off a board or using forced air or a vacuum to clean it can do untold damage too… the movement of air and dust particles (or bristles of a brush) across the board will guarantee the build up of an electrostatic potential, which when it discharges will send thousands of volts through whichever component is unlucky enough to get the zap. That is unless the tool you're using is static proof (grounded).

The safest way to handle ESD is with a grounding strap attached to ground (often a wrist band of conductive plastic with a wire ending in an alligator clip). Similar devices are available in vacuums… special vacuum hoses are available with wire running through the hose which is attached to ground. There are also air hoses with a similar discharge set up.

The Toner / Developer Cartridges common to many of the Xerox brand and Sharp brand copiers have an ultrasonic Toner Sensor in them which will on occasion get zapped by static if a vacuum is used to clean off the Mag Roller or to empty the toner compartment… the result is a cartridge which never knows it has successfully toned up.



Please don't Vacuum me!

Any ultrasonic toner sensor would be similarly subject to this risk…. This means most Developer Units shouldn't be vacuumed unless you first release the toner sensor from the body of the unit and let it hang out in space away from anything which might draw a discharge of static through the sensor.

I know… many of you kind of knew all this stuff already… but it's kind of fun to talk about all the same & some technicians just aren't aware yet.