

Unit 14

ESD (Electrostatic Discharge)

Installing & Maintaining Computer Hardware



What is Static electricity?

Static electricity is an electrical charge

- Trapped onto a material surface -unable to move- hence being static (lightening is the biggest example of static build up and discharge).
- Static is generated by the particles or material rubbing together and is worse in the non-conductive materials such as plastic sheet, nylon and other man-made materials.



The main cause of damage to computer components...



Static electricity and humans..



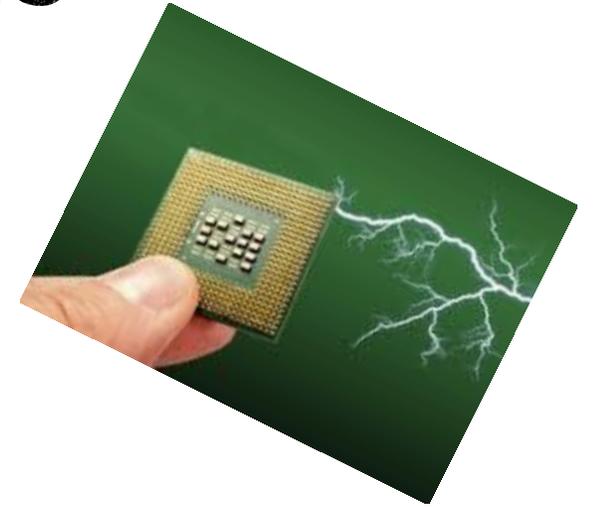
- We all have static electricity on our bodies.
- Static electricity is passed when there is a difference in electrical charge between two objects.- E.g. Human and RAM.
- This is to standardize the electrostatic charge between the two objects.
- This charge can and will damage electronic components.



How do we generate static electricity?

Any thoughts?

- Shuffle feet across the floor
- Rub a balloon across a T-shirt
- Dragging smooth soled shoes across a thick matted carpet (20,000)
- Walking around wearing synthetic materials (1000v)
- Sitting in a chair (100v)
- Rubbing hands together (two materials are the same so little static will be generated)



How many static volts (DC) can damage a computer component?

- Our hair standing on end will be over 1000V
- Static that you can feel is 3000 Volts
- A static transfer that you can see is 10,000 Volts, we can endure over 10,000 V
- Computer components can be damaged from as little as 100 Volts.
- The same voltage that can be gained by sitting in a chair.



How do we prevent damage caused by ESD?

Always use appropriate ESD precautions when working within the T104 workshop.

- ESD Antistatic Bag
- ESD Antistatic mats
- ESD wrist strap
 - Connected to mains earth
 - Connected to earthed component.



ESD precautions and procedures.

Danger - when dealing with high voltage equipment!

Examples of High voltage equipment include

- Power supply
- Monitors
- Printers
- Wall Sockets/Power Leads



ESD precautions and procedures.

- ESD-Prevention



Task

Design a booklet on ESD.

Your booklet must include,

- What is ESD.
- How it can be generated.
- What effects it may have on computers.
- What measures are in place to prevent it.
- How are those measures put into practice.

You can use diagrams/pictures to help.

