ELECTRICAL STANDARDS

Electrical Installation is defined as 'the set of components between a power source and the consumers.' Electrical standards are the set standards for electrical installations or operations.

They are set primarily to

- ensure the protection and safety of property against hazards (overloads, short circuits, voltage drops)
- ensure the protection and safety of persons (risk of electric shocks).
- ensure the continued life of the installation and facilitate its use.

There are several standards around the world for electrical power distribution. In addition to the physical connector differences (plugs, and sockets),

AC electric power can be delivered at differing voltages and frequencies.

Canada, Mexico and the United States, all use a 100 – 127volt, 60 Hertz electrical system (as do some other central and south American countries), which shares the same physical connectors.

Most of Africa, Asia, and Europe use a 220 – 240volt, 50Hertz, electrical system, with a variety of differing physical connectors.

Working on Live Systems

Before making any tests on a live circuit, you must:

- Be aware of all the voltages that you can encounter whilst working on a system; typically 12V DC, 24V DC, 110V AC, 230V AC, 400V AC.

- Be aware of the voltages that may be generated within a circuit that may be higher than an incoming supply voltage.
- At all times, you must be fully alert to the parts that you are touching.
- Ensure that any tools and equipment that you use is in good working condition and of the correct type and standard for the task being undertaken.
- If it is appropriate, disconnect power; connect the test instrument in such a way that it can be operated hands free. Power can be reconnected and the instrument read without contact. Before removing the instrument disconnect the power.
- If a circuit is interrupted to make a test, ensure that it is reconnected correctly.
- Always ensure that earths are connected.

Electrical Isolation

The term 'isolation' is defined here as disconnecting the supply and ensuring that it stays disconnected for the duration of the work being carried out. This is clearly to prevent in advertent switching on of the supply at a time when the person working on the equipment is not aware. Precautions should be taken to avoid the reconnection of the supply during the work time.

Replacing Faulty Items

- Power should always be removed before any part is disconnected.
- Identify the method of isolating a machine from its supply.

- Adequate precautions should be taken to ensure the supply cannot inadvertently be reconnected.
- Be aware of any voltages that will remain in a circuit when the mains power is removed.
- Note connections before they are removed.
- Note any damages to cables or other components.
- When power is reconnected observe for any signs of a problem.