



AS/NZS 3000 : 2018 EQUIPOTENTIAL BONDING mandatory requirements

Information to assist an understanding of earthing for Metal pool fences

and Frameless glass pool fences supported by stainless steel spigots

1. "Potential" means the same as voltage.
2. The only way that a person can be electrocuted is if a current flows through their body.
3. Current will flow when there is a difference in voltage between two points e.g. if the person touches an object with his hand which is at a higher voltage than the ground (earth) that he is standing on, or within the swimming pool that he is standing in. Then the current will flow through his body. If the current is high enough then he will get an electric shock. The greater the voltage difference the higher will be the current and therefore the greater the electric shock.
4. To overcome this and provide safety an arrangement called "equipotential bonding" is provided to a pool to ensure that there is no difference in the voltage between objects around the pool. This is achieved by connecting all metallic parts together by conductors, (which may be cable, or metallic strap - straps are often stainless steel or copper). When all metallic parts are connected together they are at the same voltage (i.e. potential) and which must be at the same voltage as the earth. To achieve this the electrical system has an earth stake (earthing rod) which is driven into the ground and connected to the main switchboard of the building. The earth connection in the main switchboard is the point to which all earth connections are made.
5. In summary, with all metal being joined together and connected to "earth" the whole earthing system is at the same voltage (i.e. potential) thereby ensuring safety. This is commonly referred to as "Equipotential Bonding".
6. The point is that AS3000 specifies that each pool fence metal support for the glass which is within 1.25 metres of the pool water will need to be connected to the equipotential system provided for the pool.

There are a number of situations that can cause an object to be at a higher voltage than the earth.

Such voltage differences can arise from a range of sources including the following :

- A fault to the installation, either on an incoming extraneous conductor (such as water or gas pipes) or on the supply neutral and protective earthing system.
- Distribution system load current in the soil passing through the swimming pool.
- Telecommunication and electrical system voltages on equipment adjacent to exposed conductive parts.
- Lightning discharges either directly within the installation or affecting the incoming extraneous conductor or the supply mains.