

## Dangerous power points

In older premises, the insulation on wiring may have deteriorated to the extent that a live wire and the earth wire have touched together causing the earth contact on power points to be live. If a drain cleaning machine for example is plugged into such an outlet, the frame of the machine would be live.

The following fatal electrical accident was caused by this problem:

*"A plumber was killed using an electric drain cleaning machine under a house. A fault in a junction box, in which the earthing conductor was welded to an active terminal, livened the earth terminal of the socket outlet and the frame of the machine."*

It is strongly recommended that a 'power point safety tester' be purchased and used to check the customer's power point before connecting your equipment. These simple devices can be purchased from most electrical wholesalers.

## Safety recommendations

1. Look out for electrical arcs or tingles - contact Aurora Energy if a fault is apparent.
2. Use a bridging conductor when cutting out sections of pipe that might be carrying electricity.
3. Test power points and use a Safety Switch to reduce the risk of shock from your portable tools.
4. Testing of power tools and extension leads regularly in accordance with Standards Australia AS/NZS 3760 is a requirement of Workplace Standards Tasmania.

## Further information

If you would like further information about electrical safety for plumbers, please contact the Office of Electricity Standards *and* Safety.

### Remember

Report all electric shocks to Aurora Energy on 13 2004.  
If the electric shock occurs at a work site, also report it to Workplace Standards Tasmania on 1300 366 322.



Supported by the Master Plumber's Association of Tasmania in the interest of safe work practices for plumbers.



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Tasmania

DEPARTMENT of  
INFRASTRUCTURE,  
ENERGY and RESOURCES

# Electrical Safety *for* Plumbers

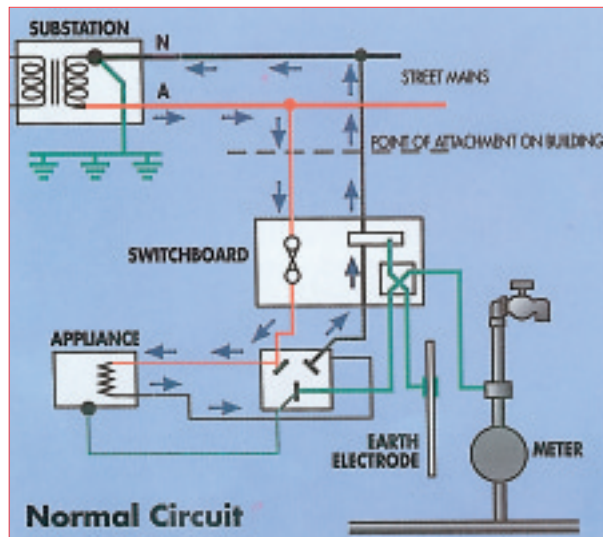


# The electricity distribution system

In most parts of Australia, the Multiple Earthed Neutral (MEN) system is used in relation to the distribution of electricity.

The major feature of this system is that the neutral wire is connected to earth at the supply company's substation and throughout the distribution system and at every building, house etc where there is an electrical installation.

Until 1976 the most frequent method used to earth the electrical installation was by connecting the main earth wire to the water pipe, usually where it first entered the building. Since 1976 a separate earth electrode has been required, and where a metallic water service exists, this is bonded to the earthing system.



# The danger

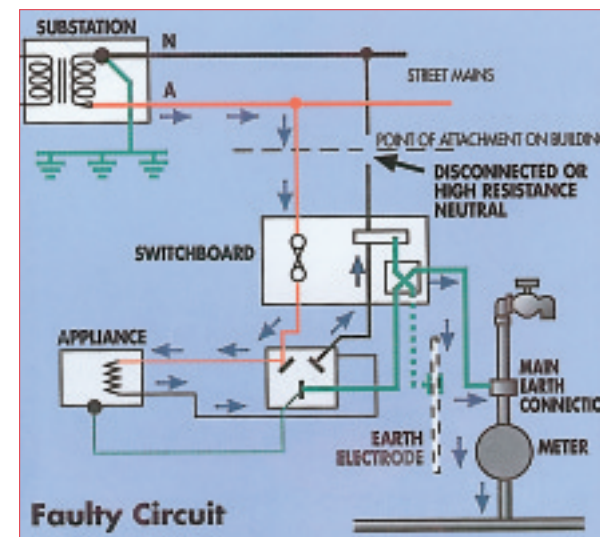
Electric current for appliances, lights etc normally flows in the active and neutral conductors. The neutral conductor provides the return path back to the substation transformer.

Under some fault conditions, current can flow in the water pipe.

Plumbers are at risk of serious or fatal electric shock if they cut through the water pipe between the earth connection and the street main or remove a water meter or disconnect the main earth wire from the water pipe.

The following details of an electrical fatality illustrate the danger:

*"The deceased and a friend cut a water pipe under the friend's house and the victim suffered a fatal electric shock. The main service neutral had become detached and all load current flowed through the MEN point and earthing system which included the water pipe."*



# Working on water pipes

If work is to be done on water pipes or earth wires as mentioned previously, the following procedure should be adopted:

1. Locate the main switch for the premises and turn it off if practicable. Attach a "Danger do not close" tag.
2. Use a bridging conductor to span the section of pipe to be cut and keep it in place until work is completed. A car battery jumper lead or similar would be suitable in most cases but make sure the surface of the pipe is clean.
3. If the main earth connection has to be disconnected, the "house" end of the bridging conductor should be connected to the earth wire before it is disconnected.
4. Where any existing metallic service pipe is to be replaced in part or in its entirety by plastic pipe or other non-metallic fittings or couplings, the work shall not commence until the earthing requirements have been checked by an electrical contractor and modified, if necessary.

## Safety switches

A portable Safety Switch, also known as a Residual Current Device (RCD), should be used for all your equipment including extension leads. This will give you added protection against accidents such as cords being damaged or faults in equipment, but it cannot protect against some faults in the customer's premises.