

Appendix 21 Notes for oversea Users

In Australia and New Zealand (NZ) our electricity supply is 240V AC and at 50Hz (cycle per second). Other countries the power is at 110V and 60Hz. The following will be different.

Voltage. Since power (Watts) is the voltage multiplied by the amperage ($P=VI$), 110V is about $\frac{1}{2}$ the 240V then the electrical currents in Amperes will be double that stated in my book. Also the electrical resistances (Ohms) will be lower for windings. The wire diameter will be larger for the larger electrical current.

Some motors are made dual voltage with the windings in series for 240V and in parallel for 110V. Also plug power packs for low voltage low power electronics will operate on either voltage with switch mode power supplies.

Frequency. Induction motors (**F6**) speed is determined by the mains frequency. Section **F2** table shows motor speed for these motors. The theoretical speed for 50Hz is 3000rpm, for 60Hz the speed is ($60 \times 60 =$) 3600rpm which is about 20% faster than 3000rpm. Motors on 60Hz will rotate a little faster.

Series motors with carbon brushes (**F5**) the speed is not relate the mains frequency.

Mains lead Plug. Australia and NZ (and some countries close to us) will have 3 pin plug as shown in **C2.2** for a standard 10A outlet and mains lead. The advantage of this is the plug will go into the socket only one way when a double insulated equipment (**C5**) is used and the earth pin is not present and the active and neutral are not swapped. Some appliances only switch the active but most power tools now have double pole switches switching both the active and the neutral.(Some double insulated equipment have an earth pin but it is not used.) Australia and NZ have 15A power points for heavy power usage appliances such as large electric dryers, caravans and motor-homes. Australia uses a bigger earth pin but NZ uses a 3 pin round plug, which prevent people filing the earth pin down to fit.

Other plug and sockets use around the world are EU (round pins) UK (flat pins) and USA (flat pins) Consult your local codes for correct wiring.

Local Brands. Australia had two white goods manufacturers, Hoover and Simpson which had the majority of the market share. Things changed with the free trade agreement. First the Hoover and Simpson joined and became the same company, later they they where taken over by Electrolux. Then they closed the manufacturing plants and are now made overseas.