Electrical – Tips & Help

A machine should be inspected prior to purchasing. Photos will not show the true condition of a machine or whether all electrical parts are in place and safe.

Note: The information below may not apply to all makes and eras of EM pinball machines.

A good percentage of machines will have been operated on an overseas voltage of 115 VAC and the plug will differ from those we use in Australia which house a 240 VAC power plug. A new 240VAC plug and cable can be fitted **in some cases**, however should be carried out by a licensed electrician or a person who is qualified and can inspect that all is safe and diagnose any dangers or problems. Some early machine had 115 volts wired to the metal front door, and 1970's machines (with targets) to the target bank reset coils, so take care !

It is best to refer to the machine schematics to ensure that all is wired correctly.

Before plugging in a machine check the machine is earthed and visually inspect all wiring which will carry and operate at high voltages. Electrical repairs by unqualified previous owners can be dangerous to work on by the unsuspecting new owner. Check that all fuses are of the correct values.

Electrical parts - Inspection and cleaning

EM machines contain numerous relays which hold banks of leaf switches. The score motor has numerous leaf switches positioned at various levels, these are operated by the cam disc and posts. As the motor rotates these switches are opened or closed to perform a certain task, as do all the relays. Care needs to be taken when handling or working around leaf contacts as they can be bent and put out of alignment. Visually inspect all contacts clean and make adjustments only where necessary. Ensure the screws which hold the switch stacks on the relays are tightened before any adjustments are made.

Tip: Never use oils or lubricant sprays on relays and contacts.

Electrical circuit testing and/or fault finding.

An EM wiring schematic will always be helpful when tracing a fault if a problem occurs. Reading and understanding a schematic diagram can be also be challenging. Wire

colours can be faded, making it difficult to determine where they terminate at a particular point and what they are connected to. A multi-meter is very handy tool, this will enable you to test voltages, coil resistance and circuit continuity.

***Tip**: Care must always be taken when working around mains voltage (240 VAC) on the transformer and cabinet switch located inside the front door of the cabinet to the right.*

When testing voltage ensure the multimeter is set to the correct scale and voltage (AC). To measure resistance of a coil, you will need to de-solder and disconnect one of the wires from the coil, otherwise you may be measuring resistance from other areas of the circuit. When working on and testing resistance or continuity (diode testing function on some multimeters) **it is wise to keep the machine turned off at the power outlet.**