Hopefully you are reading this document before starting to build your Shagmatic machine. An attempt is made to keep the instruction documents current and to correct errors but some may slip by. Also, since there are many possible ways to build the machine with alternate parts choices, not everything can be covered in the manuals.

The entire Shagmatic board runs on 5 volts or less and the microcontroller used is tolerant of 5 volts at any input. So, it is difficult to destroy anything permanently. Most likely a mistake will result in a machine that does not work at all or has some strange behavior.

There are two exceptions to the above. **Voltage higher than 5 volts applied at any pin on the Teensy Microcontroller will damage it, if not immediately, it will suffer damage over time. Reverse power supply polarity will also destroy it.** Be sure to use a regulated power supply that will never exceed 5 volts and be sure to connect it with proper polarity. If there is any doubt, check the polarity of the power supply wires with a multimeter and check the drawings in the manual and the markings on the Shagmatic board before applying power.

The joystick encoder that is suggested in the parts list should have the pinout shown in the manual. **Reverse polarity of power supply voltage will destroy it almost immediately**. It is recommended that you wire the socket for the joystick controller and check the polarity of the power supply leads before connecting to the encoder. The Shagmatic ships with a jumper selecting 3.3 volts to be applied to the encoders and outputs. The suggested joystick encoder will not be damaged by 5 volts nor will the inputs of the Teensy 3.2 Microcontroller, so it dos not matter which position of the jumper is used with this configuration. If you use a 3.3 volt encoder or a newer version of the Teensy that is not 5 volt tolerant, be sure to choose the 3.3 volt position.

When choosing or building a motor power supply, be sure to check the maximum voltage of the stepper (or servo) driver you are using. The maximum voltage should also be matched to the requirements of the stepper (or servo) motor.