

Galloping Neons

Here is a line powered array of blinking neons designed for continuous duty. It would be quite dangerous to power a circuit directly from the power line so some form of isolation is needed. Since most experimenters will not have 120 volt isolation transformers in the junk pile, this circuit uses two ordinary low voltage transformers with the low voltage windings connected through a rheostat to give some control of the output voltage. One of the low voltage leads may be connected to the line cord ground (green wire) as shown to further isolate the line. This connection will greatly reduce the little tingle of a shock that is caused by the capacitive coupling across the transformer windings.

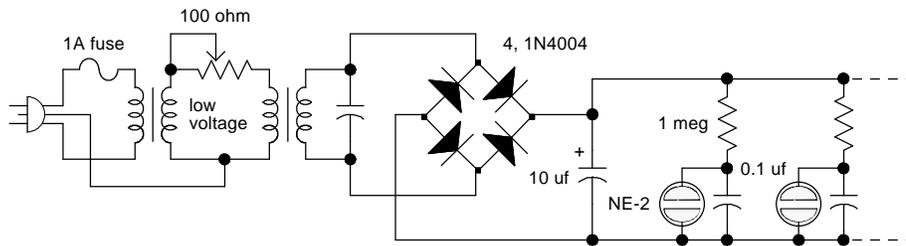


Figure 1: Galloping neons schematic featuring back-to-back transformers.

Warning! Projects involving line voltage are inherently dangerous. Only experienced experimenters should build such projects and power should be applied with another person present in case the unthinkable happens! Its generally a good idea to avoid working on any high voltage circuit when alone. Make sure to insulate all of the high voltage connections and use good construction techniques. Do not build this circuit without an isolation transformer! Sloppy projects powered by 120 VAC are unacceptable!

The capacitor connected across the high voltage winding of the second transformer is selected to resonate the winding which greatly reduces the current. The best value is found by connecting an AC current meter in place of the 100 ohm rheostat and selecting a value that gives the lowest reading (usually about 1 uf). Make sure that the capacitor is non-polar with a voltage rating of at least 120 VAC. This capacitor MUST be an AC type. The final current determines the power rating for the 100 ohm rheostat. Usually a 1 watt rheostat is more than sufficient.

The Galloping Neons name derives from the illusion produced by a simple array of twenty or thirty lamps spaced about an inch apart. After staring at the hypnotizing array for a few minutes in the dark, patterns of motion seem to develop, galloping across the display. The effect is quite soothing and makes an excellent sleep aid. A 24-lamp version is fairly inexpensive to build and makes the most unusual gift your friends will ever receive.

