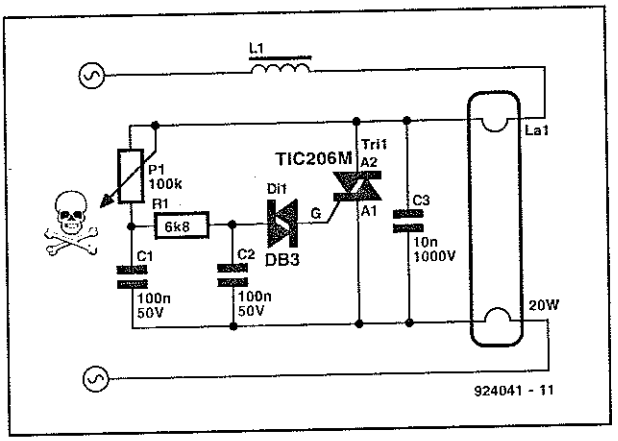
DIMMER FOR NEON TUBES

A NEON tube cannot be dimmed as easily as an incandescent lamp because the tube can start only at a voltage much higher than the mains, after which it will remain lit at the mains voltage. The level of both the starting voltage and the working voltage depends on the temperature of the tube.

Normally, the high starting voltage is obtained by interrupting the current through a choke. This is usually done by the starter, which also ensures that a fairly large current flows through the filaments of the tube. This heats the ends of the tube, which makes starting easier.

These tasks of the starter are taken over by the circuit show in the diagram, which also enables the tube to be dimmed.

During the zero voltage crossings of the applied mains voltage, the triac will instantaneously switch off. At those instants, capacitor C_3 will be charged rapidly, which results in the instantaneous voltage, whose phase has shifted relative to that of the current, being applied across the tube. Capacitor C_3 and the choke form a resonant circuit that raises the sudden voltage across the tube to a very high value, whereupon the tube starts.



The larger the angle of the mains voltage during which the triac conducts, the larger the current through the tube filaments, which results in a lower starting voltage. At the same time, since a larger part of the current flows through the triac, that through the tube will be reduced, so that the tube will light more faintly.

When the tube is first switched on, the dimmer control, P_1, should be set for maximum brightness of the tube to facilitate starting.

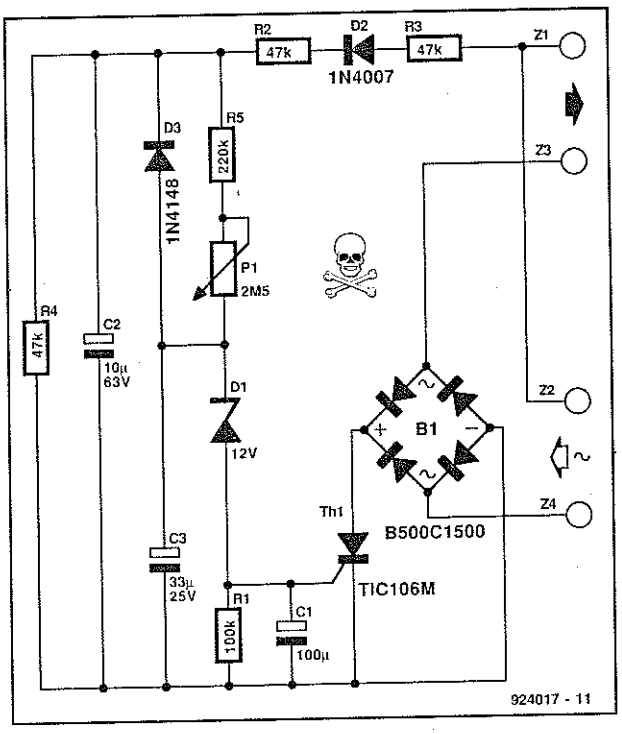
The triac used should have a high du/dt value, otherwise the steep voltage transitions occurring across the tube, and thus across the triac, during the zero voltage crossings would cause the triac to remain on.

[SGS Thomson – 924041]

POWER-ON DELAY FOR ATARI ST

WHEN the Atari ST is provided with an external hard-disk drive, it has to be reset after about 15 seconds, as otherwise the drive is not enabled. The delay circuit presented here obviates that inconvenience by ensuring that the computer is not switched on until a (presettable) period of time has elapsed. The circuit may also be used with the combination of MS-DOS computer and HP DeskJet printer, since the latter can be switched on only after the MS-DOS machine is powered. If that type of printer is used with an Atari ST, the printer must be switched on before the computer is. No doubt, there are other situations where this delay may prove useful.

Operation of the circuit is fairly simple. After the mains has been switched on, capacitor C_3 is charged via R_5 and P_1. When, after a period of time set with P_1, the potential across C_3 has reached 12 V, zener diode D_1 conducts and switches on thyristor Th_1. That device ensures that bridge B_1 provides an a.c. connection between the mains input and the mains output. At the instant the thyristor is switched on, owing to the anode-cathode current, its gate voltage rises slightly. This results in C_3 being charged a little more and thus serves as gate-current buffer to ensure that the thyristor remains on during the mains zero voltage crossings. Therefore, once the thyristor has been switched on, it stays on.



The delay is best built into a small man-made fibre box with integral mains connectors.

The circuit is best built on a small piece of veroboard or other prototyping board, bearing in mind that it will carry the full mains voltage. This means that tracks carrying the mains must be separated by at least 3 mm and preferably 5 mm. This probably entails the removal of tracks between the mains-carrying ones.

[R. Lucassen – 924017]