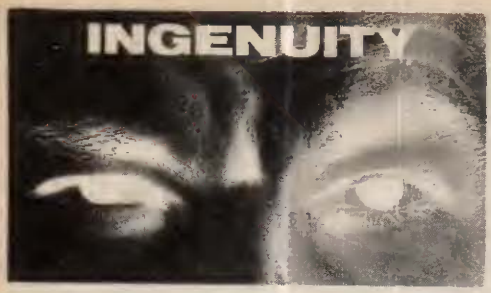
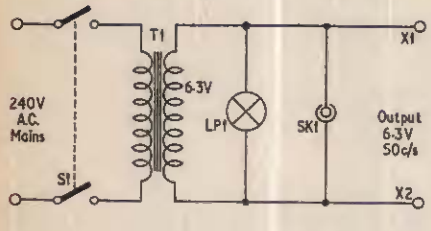


UNLIMITED!

IN THIS feature we hope, from time to time, to be able to publish suggestions submitted by some of our readers on the possible improvement of projects previously described in PRACTICAL ELECTRONICS; short contributions on other subjects may be included. The aim is not to find fault or undermine the abilities or knowledge of our contributors. It may well be that the original article is *par exellence* but it could be improved or adapted to suit individule requirements. The views expressed by readers are not necessarily those of the Editor.

6·3 VOLT PROBE



WHERE the experimenter or television service technician requires a torch, 6·3V heater tester, or a low voltage 50c/s supply for feeding the external timebase terminals of an oscilloscope, this unit will provide these facilities at low cost. The torch consists of a jack socket, a 6·3V bulb in a suitable holder, coupled to a 6·3V heater transformer. The unit was designed as a 50c/s supply for connection to the external timebase terminals of an oscilloscope to enable it to display Lissajous figures. This a.c. supply, of 6·3 volt amplitude, is available at the terminals. An on/off switch and a pilot light are also included.

A. R. Brown,
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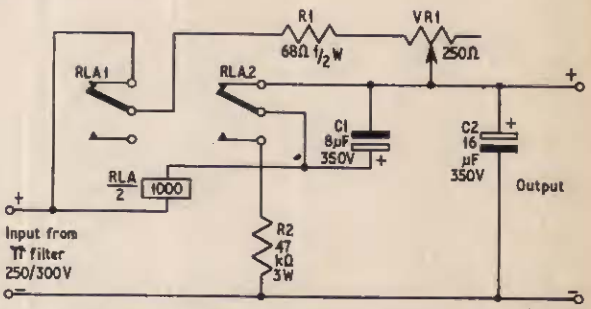
Scotland.

VARIABLE HIGH TENSION CUT-OUT

MOST power supply units built for experimental purposes are protected only by a mains fuse although a high tension fuse is sometimes incorporated. Often these power units are used to test partly assembled equipment and in other circumstances where overloads and even short circuits may occur. Any of these conditions put an excessive strain on the power supply components which will shorten their lives. This can be overcome by the use of a simple cut-out relay system which may be easily fitted to an existing power supply. The device may be reset by switching the high tension off and then on again, the current at which it operates being variable.

The circuit employed operates in the following manner. Whilst insufficient current flows to close the relay the contacts are set to supply current to the output connections through the relay coil and the shunt resistance R1 and VR1. If enough current flows to close the relay then the shunt resistance is taken out of circuit and the high tension current flows to negative via R2, thus keeping the relay closed. Providing that the overload has been removed, switching the high tension off and then on again will return the contacts to their original positions and will restore the supply to the output. The 8μF capacitor C1 is included to maintain the current through the relay coil during the transition period whilst the contacts are changing. By adding C2 a π filter is formed, thus improving the smoothing. The actual overload which causes the cut-out to operate is set by VR1. In the



prototype a 1,000Ω G.P.O. type relay with two sets of change-over contacts was used which closed at 5mA and with the given resistance values gave a range of cut-out currents from 20mA to 75mA. Other relays, however, of the same resistance and design may not close at exactly the same current and the values of the resistors in this case may need to be changed. The values of R1, VR1, and R2 may be calculated as shown below.

In the case of R2 this is only an approximate value and the exact value should be found by trial and error to give a resistance which effectively holds the relay closed.

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Lancashire.

Relay coil voltage = current to close relay × resistance of relay

$$R1 = \frac{\text{Relay coil voltage}}{(\text{Max. setting, i.e. 75mA}) - (\text{current to close relay})}$$

$$R2 = \frac{\text{Supply voltage}}{\text{Current to close relay}}$$

$$VR1 = \left[\frac{\text{Relay Coil voltage}}{(\text{Min. setting, i.e. 20mA}) - (\text{current to close relay})}\right] - R1$$