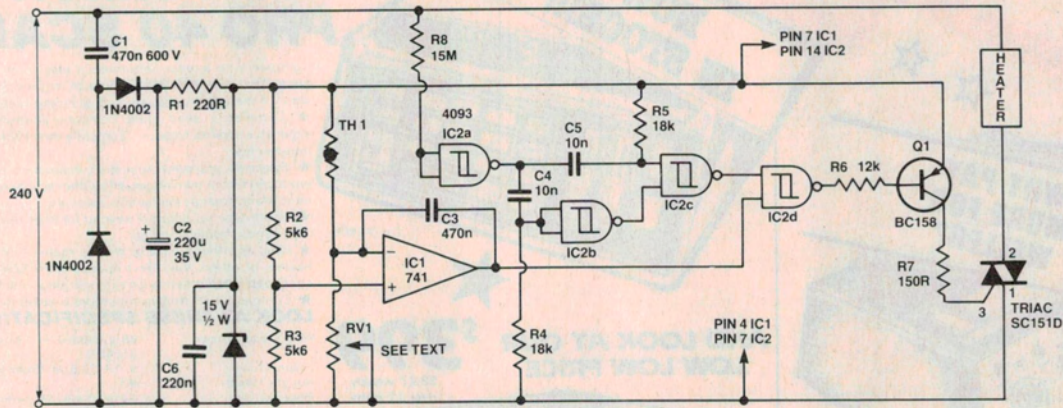


Ideas for Experimenters

These pages are intended primarily as a source of ideas. As far as reasonably possible all material has been checked for feasibility, component availability etc, but the circuits have not necessarily been built and tested in our laboratory. Because of the nature of the information in this section we cannot enter into any correspondence about any of the circuits, nor can we produce constructional details.



Electronic thermostat

This circuit, designed by **Steve Gagen of North Balwyn Victoria**, has been used for several months to control the temperature in an incubation room. According to Steve it has performed well, achieving drift-free temperature regulation with an accuracy of $\pm 0.5^\circ\text{C}$.

The low voltage supply to the ICs is taken directly from the mains, via capacitor C1. The thermistor (T) should be of the bead type and, if necessary, may

be sited at some distance from the rest of the circuit. RV1 should be chosen so that its mid-range resistance is approximately equal to the resistance of the thermistor at the desired temperature.

The difference signal between the thermistor in the RV1 network and the voltage divider R2-R3 is amplified by IC1 and used to gate the output of the pulse generating circuit formed by IC2. Capacitor C3 prevents the amplification of any extraneous ac.

When the output from IC1 is high, 90 mA pulses of about 200 μs length are applied to terminal 3 of the triac at the

beginning of each mains half cycle, turning it on.

The circuit tends to cycle on and off every minute or so and the triac avoids the problem of burnt contacts which a relay would experience in these circumstances. Since the heat control is non-proportionating, the circuit is suitable for use with fan heaters.

Care should be used as the entire circuit is at mains potential, and the triac should be mounted on its heatsink using a mica insulator. A heatsink is essential as when controlling a 2.4 kW heater the triac dissipates about 15 W.

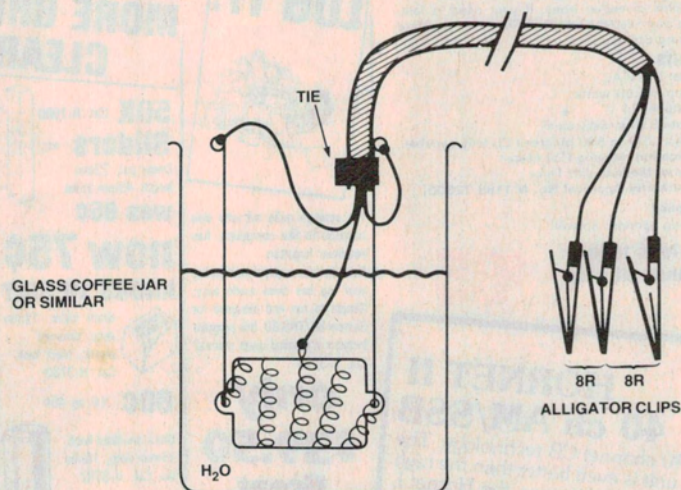
1 kW dummy load for testing audio power amplifiers

Philip Allison of Summer Hill NSW has worked out a cheap, simple method for testing audio power amplifiers.

You'll need a 1.6 kW electric jug replacement element, complete with its supporting arms, which you can buy from a hardware store.

The coil of Ni-Chrome wire on these elements has a resistance of about 36 ohms which needs to be reduced to 16 ohms for our purpose. To do this, first remove the coil and cut it at 16 ohms. Then stretch this length so that it equals the original length and carefully rewind it on the ceramic former.

Find the centre of this coil (8 ohms) and make a small twist. Using a length of three core mains flex attach the green wire to the twist and the blue and brown



wires to the ends of the brass rods as shown in the diagram. Fit alligator clips or plugs to the other ends of this lead.

When immersed in water this unit

will comfortably dissipate 500 watts per 8 ohm side or 1000 watts with a 4 ohm load (blue and brown linked) or with a 16 ohm load (using blue and brown only).