

# A low-cost EPROM eraser

Erasing an EPROM is basically quite simple, but some problems can occur. In this article we present details of a simple, economical eraser, as well as some hints on how to use it.

by **DAVID EDWARDS**

2708 EPROMs are the most commonly available user-programmable and erasable "read-only" memory devices used by hobbyists and small industrial users. Erasure is achieved by irradiating the chip itself, through the window provided, with intense ultra-violet radiation.

The radiation must have a wavelength of 2537 Angstroms, and the required dosage is 15 watt-seconds per square cm. Commercial erasing devices

are available which include suitable light sources and exposure timers, but these are rather expensive, and beyond the financial reach of most enthusiasts.

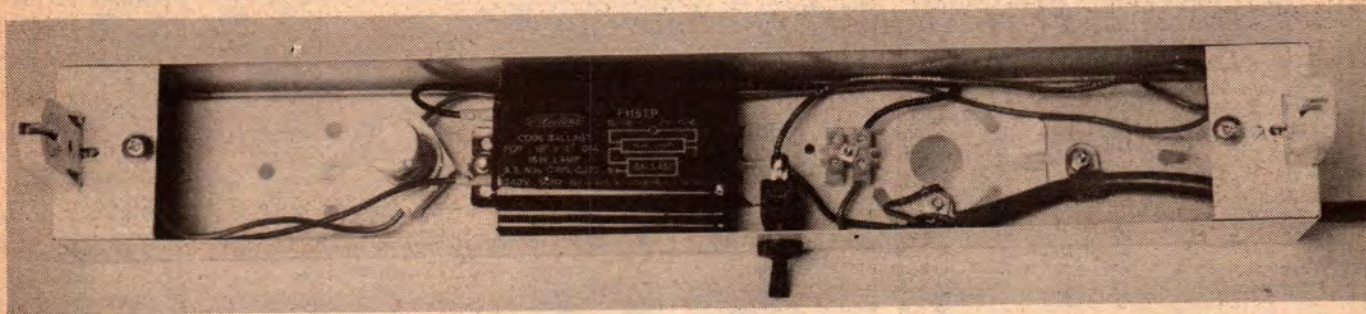
Fortunately, suitable UV lamps can be purchased locally, and allow a quite practical eraser to be constructed for about \$30.00.

The lamp in question is a Philips type, from their range of germicidal tubular lamps. The model number is TUV 15W (catalogue number 57415 P/40). This is a

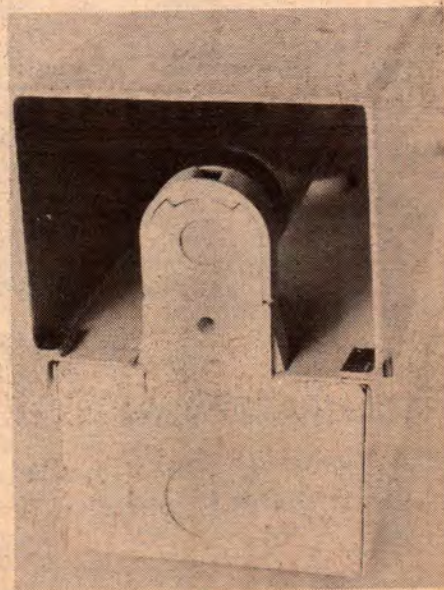
low pressure mercury vapour lamp, similar to a standard fluorescent lamp, but without a phosphor coating, and using a special glass which transmits the ultra-violet light with low attenuation.

Almost all of the energy from this lamp is concentrated about the required 2537 Angstrom line. Incidentally extreme caution must be used with this type of lamp, as the light can cause eye and skin diseases.

Order the tubes, along with a



*TOP & BELOW: These three views show the UV light source at various stages of assembly. Devices to be erased are placed under the tube for 30 minutes.*



*The ends of the top cover are bent so that it sits naturally on the batten.*

## Low cost EPROM eraser

suitable 460mm batten and 15W ballast and starter, from your local electrical retailer. At the time of writing, Circuit Components (A/Asia) Pty Ltd, of 383 Forest Road, Bexley, NSW 2207, have stocks of lamps and suitable battens.

As you can see in the photographs, we were able to use the batten direct, with only minor modifications. We

fitted rubber feet to the bottom, and a three-pin mains plug and suitable flex.

In order to minimise the radiation hazard, we fashioned a U-shaped aluminium lid. If desired, this could be hinged to the batten, and a microswitch fitted so that the tube is only energised when the lid is in place.

We made up a suitable warning label, which we fixed to both the batten and the lid. A copy of this label is reproduced with this article, and should be used with any eraser. It can be either copied, or cut out and used directly.

In use, the EPROMs are simply placed on the top of the batten, underneath the tube, and the cover placed over both the tube and the chips. At least 15 devices can be erased at once.

The energy output of the TUV 15W tube is specified as 3.5W and, assuming that the chips are placed 25mm from the centre of the tube, we have calculated the energy intensity at the chip surface as between 1.6 and 5 mW/cm<sup>2</sup>, depending on the efficiency of the reflector.

This translates to an exposure time of between 15 and 50 minutes, so a good compromise would be to expose for half an hour. Under-erasing should be avoided, as this may cause problems in programming. Over-erasing is not advisable, but should not cause any problems.

Timing of the exposure is not very critical. You can use either a wristwatch or clock, or a mechanical kitchen timer can be pressed into service.

Finally, we would like to point out that although the TUV 15W tube cannot be used to expose Scotchal light-sensitive aluminium and similar products (the wavelength is too short), suitable 15W actinic tubes to fit the batten can be obtained. This may permit expansion of the uses to which the eraser can be put, and hence offset some of the cost.

2537 °A ULTRA-VIOLET LIGHT SOURCE



CAUTION: UV LIGHT IS HARMFUL TO EYES AND SKIN

KEEP COVER ON WHILE IN USE

**PROTECT YOUR EYES:** Make two copies of this warning panel and attach them to the batten and to the top cover.

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