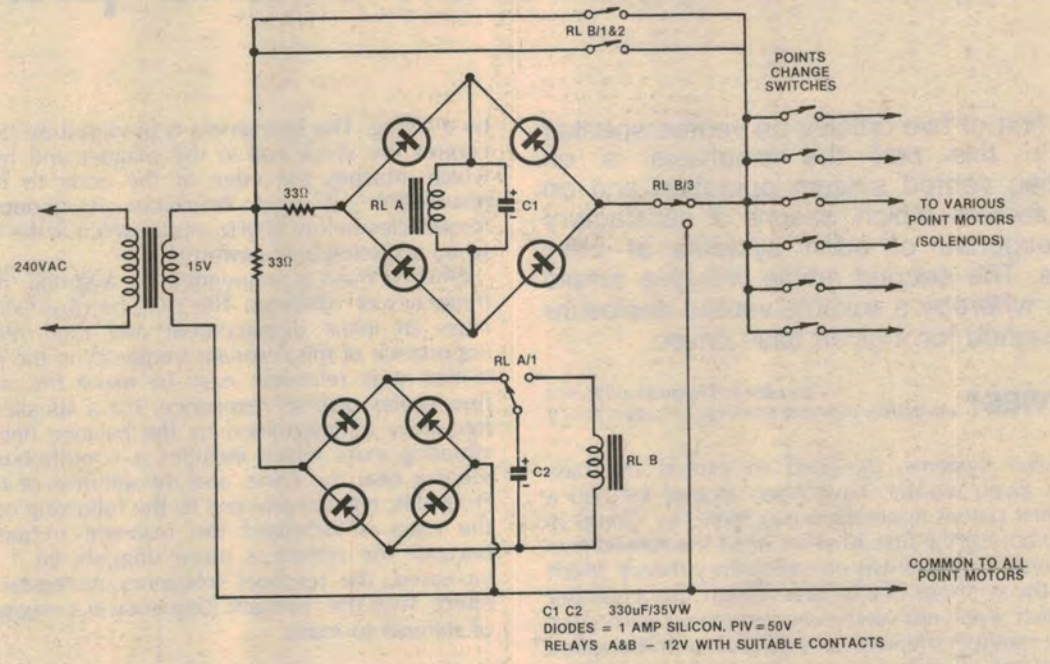
Circuit & Design Ideas

Interesting circuit ideas from readers and technical literature. While this material has been checked as far as possible for feasibility, the circuits have not been built and tested by us. As a consequence, we cannot accept responsibility, enter into correspondence or provide constructional details.

Model Train Points Changer



In all but the simplest model train layouts, points are inserted into the tracks so that trains can be "switched" from one track to another. These can be remote controlled by applying a pulse of approximately 15 volts AC to the points "motors" (solenoids incorporated in the points). For this purpose, proprietary momentary-contact switches are available; but young children sometimes hold the switches "on" for long periods, resulting in expensive burn-outs of points solenoids and/or switch contacts – since the solenoids often draw several amperes of current.

To overcome this problem a pulsed burst of AC is required. Whilst an active electronic circuit could be utilised, many enthusiasts may have components lying in their junk boxes which could be used to fabricate a simple relay-operated timing device. Two 12-volt relays, a couple of electrolytic capacitors and eight 7 cent rectifier diodes are about all that is required.

Referring to the circuit it will be seen that when any one of the points switches is activated, a circuit through the "upper" diode bridge is completed via the solenoid winding; and energises relay A. Meanwhile capacitor C2 is standing by in a "charged" state, such that when relay A contact connects C2 to relay B, it pulls-in and applies 15 volts AC to the appropriate solenoid.

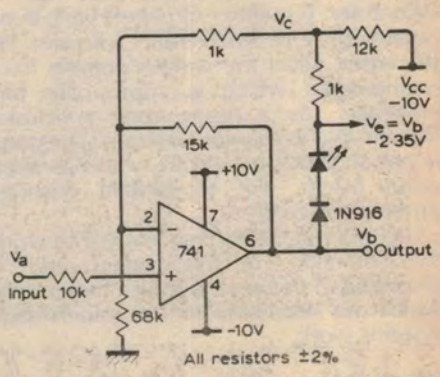
To hold relay A energised (and thus prevent relay B from dropping out during the timed period), contact 3 of relay B returns the "upper" bridge directly to the transformer secondary. The size of capacitor C2 determines the period that relay B remains energised, and was selected to provide approximately 0.5 seconds to ensure reliable points changeover.

The points solenoid cannot operate again until the switch is released, allowing relay A to drop out, and thus recharge capacitor C2 ready for another operation. Apart from C2 the values of the other components are not critical – the 33Ω resistors merely serving to limit current through the relays. Any spare contacts on relay B should be paralleled to assist load sharing of the large current drawn by the points solenoids. Alternatively one heavy-duty contact could suffice.

W. Pearce,
Croydon, NSW.

Linear Led Control

Using only one op amp, the accompanying circuit is claimed to provide linear control of LED intensity. Maximum light output is achieved with +5.6V input; at −6.2V the LED extinguishes.



from "Wireless World", January, 1981.

Lifetime Lettering

Place a dab of clear lacquer on the top of integrated circuits and transistors to protect the labelling from rubbing off.

A. Williams,
Pomonal, Vic.