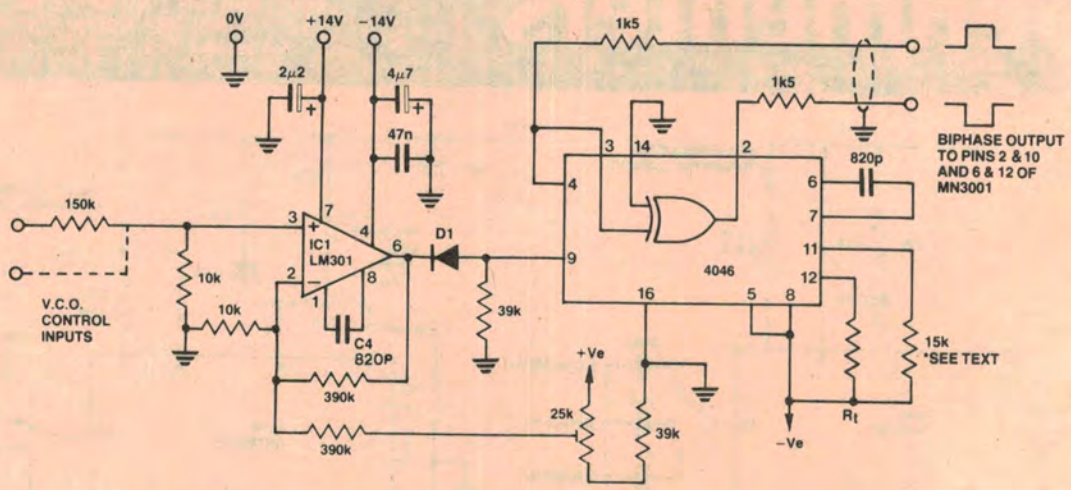
Ideas for Experimenters

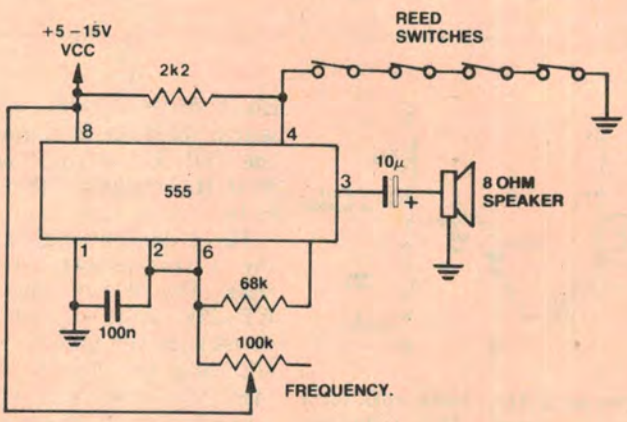


VCO for the ETI-450 bucket brigade delay line

The ETI-450 Bucket Brigade Delay Line (see December 1977 ETI, or Top Projects Vol.5. or 30 Audio Projects) has many uses. In some applications (i.e: phasing or flanging) it requires a variable clock. This circuit, submitted by **Hugo Bramall of Canterbury, Vic.** will interest those enthusiasts considering the use of the Bucket Brigade Delay Line project.

An op-amp, IC1 (LM301), sums control voltages and amplifies them to about 14 V to control a 4046 CMOS VCO chip. The 25k potentiometer sets the minimum range of control voltage and hence the minimum frequency. In this case it's set to about 20 kHz, just beyond the audible range.

The phase comparator in IC2 is an exclusive-OR gate; wired as shown, it becomes an inverter, providing one opposite-phase output to drive the MN3001 bucket brigade chip in the ETI-450. The components C5, R8 and R9 may need adjustment "to taste" as the oscillator tracks over a wide range. Decreasing the capacitor value or increasing either resistor will increase the frequency, whilst Rt also trims the oscillator range (though this component is optional). Several control voltages can be mixed if the inputs are sourced from an impedance around 150k.



Simple burglar alarm

A 555 timer IC is used both as alarm and sensor in this simple circuit from **Simon Moran of Wollongong, NSW.**

A normally closed loop system is employed, using reed switches, trip wires, window tape, photoelectric relays etc. These hold the 555's 'inhibit' pin low during normal operation. When the loop is broken, the 555 will commence to oscillate and the alarm will sound.

The circuit operates from any supply rail from 5 V to 15 V; standby current is less than 3 mA at 6 V, so the alarm is capable of being run from a small battery. Set the 100k potentiometer for the desired alarm tone. A horn loudspeaker is recommended.

Keeping coil slugs in place

Ferrite or powdered iron slugs are widely used to adjust the inductance of RF coils. There are many ways to secure the slug in the coil so that it does not move after initial adjustment (causing some measure of inductance value drift), yet to allow subsequent adjustment. Some manufacturers employ rubber 'string' or 'tape', others specify a sticky rubber solution, or something similar. As usual, Murphy's Law gets into the act and the stuff disappears when you most need it.

A neat idea from **Gary Brooker, of Newcastle NSW,** is to use Teflon thread-sealing tape that plumbers use. Wrap a small piece around the thread of the coil slug and then insert it in the coil former. The tape will hold the slug quite well following initial adjustment.