

# Circuit & Design Ideas

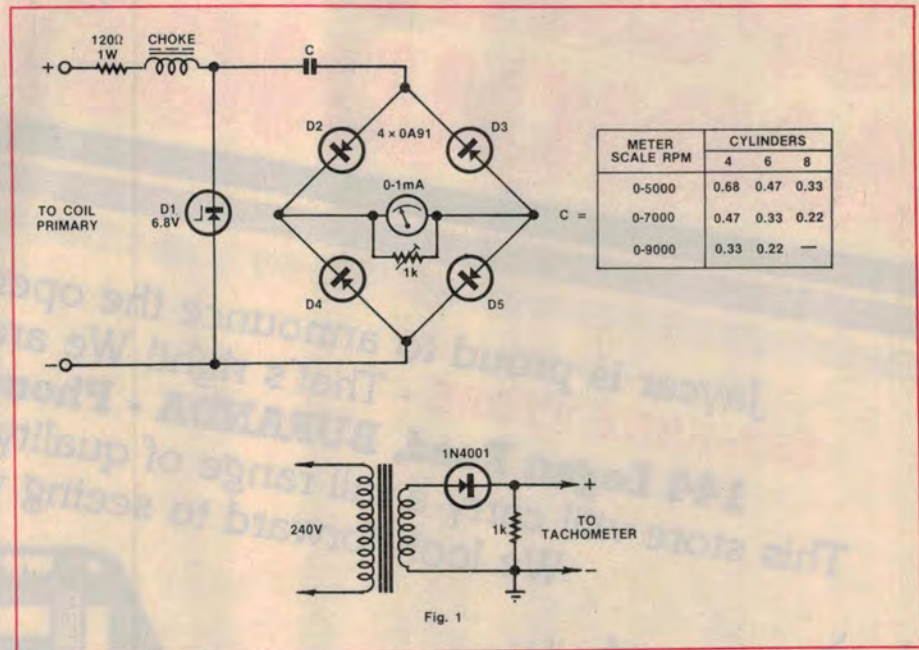
## Impulse tacho for Kettering & TAI systems

Here's an impulse tachometer circuit that will work with both normal Kettering and transistor-assisted ignition systems.

The circuit operation is straightforward, although the concept is hardly new. Basically, the voltage developed across the coil primary is clipped to produce a constant amplitude pulse train by the zener diode (D1) and differentiated by capacitor C. The resultant pulse train is then applied to bridge rectifier D2-D5 and thence to a 0-1mA meter movement.

The 120Ω resistor limits the current through the zener diode while the choke eliminates the high voltage peak generated by the coil when the points open (or the switching transistor turns off). The choke is made up by winding 480 turns of 0.2mm (36 SWG) gauge wire on a 25mm bobbin in a ferrite pot core.

To calibrate the unit, apply a half-wave rectified signal from a 12V AC

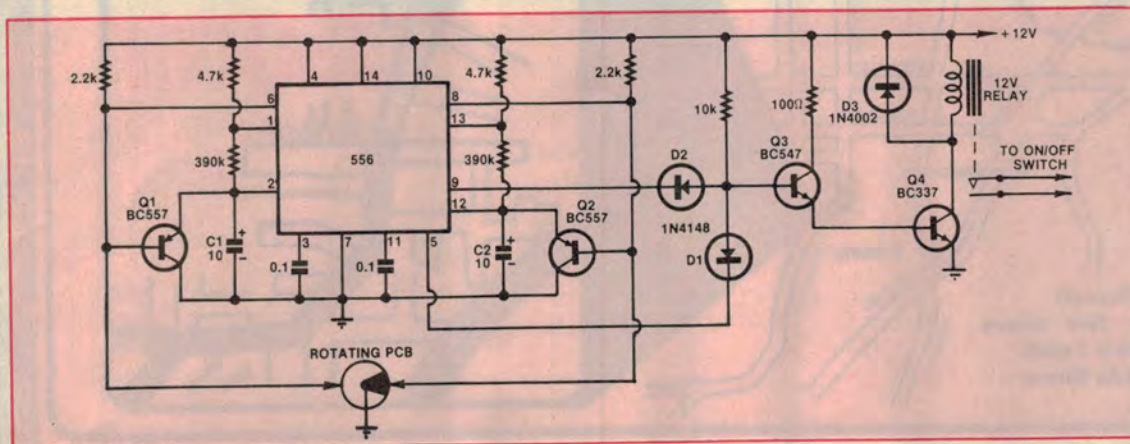


transformer (see Fig. 1) and adjust the 1kΩ trimpot to read 1500rpm for a 4-cylinder engine, 1000rpm for a 6-cylinder engine and 750rpm for an 8-cylinder engine.

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**\$5**

Editor's note: this circuit first appeared in *Electronics Australia* in July 1964.



## Automatic turn-off switch

People who like to drift off to sleep to the sound of their 3-in-1 stereo set have a problem. The unit will play on all night. This circuit solves that problem by monitoring the rotation of the turntable or cassette drive motor.

The circuit can be regarded as a missing pulse detector. It is based on a dual 555 timer, each section of which operates as a retriggerable monostable. A disc is attached to the spindle of the cassette or turntable motor. As the conductive brushes pass over the grounded segment of the disc, Q1 or Q2 is turned on to discharge C1 or C2. At the same time, each time the base of Q1

or Q2 is grounded, the associated timer is triggered and begins its four-second cycle.

While ever the tape or turntable is running, the two monostables will be repeatedly re-triggered, thus keeping the outputs at pins 5 and 9 high.

This keeps the two diodes reverse-biased and so Q3 and Q4 are continuously turned on, energising the relay.

When the tape stops running, the disc will also stop turning and this will prevent the timers being retriggered. After about four seconds the outputs of the timers will go low, forward biasing

diodes D1 and D2, this switches off transistors Q3 and Q4 which in turn switch off the relay supplying power to the stereo system.

Two timers are required in this circuit in order to protect against the situation of a sensor brush stopping on the disc segment.

(Editor's note: The circuit is based, in the first instance, on the missing pulse detector published in the Signetics Linear Data Book, Vol 1, 1972 and in earlier Signetics data books.)

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**\$20**