

TREMOLO UNIT

By A. RUSSELL

MANY electric guitar players will have noted the high cost of commercially available sound effects units. The Tremolo Unit described here was designed around cheap, easily available components. It is simple to build and economical with battery power and it will provide a potent tremulant effect for a guitar input with controls available for both tremolo rate and depth of sound produced.

HOW IT WORKS

In the circuit diagram of Fig. 1, the multivibrator circuit comprising TR1, TR2, switches at a rate made variable by VR1, between 1Hz and 10Hz.

As the collector of TR2 rises and falls between 0V and 8V the capacitor C3 will charge at a rate determined by the CR product of R5 and C3. As the voltage of C3 rises exponentially there comes a point when TR3 switches on. If a guitar is connected to JK1 the output to JK2 which is normally developed across VR2 and TR3 is suddenly very much reduced when TR3 does conduct. With the transistor switched off the guitar signal passes through the unit unchanged. As TR3 is being switched at a regular rate the output level will vary in depth to produce a tremolo effect.

With VR2 a variable resistor the depth of effect can be altered but there is a point when multivibrator breakthrough is slightly apparent as a ticking noise. While this is not objectionable the unit can be switched off when the guitar is not being played, although if used in a group the ticking would not normally be noticeable above the other instruments.

Increasing the value of C3 may damp this a little, but there will be a maximum above which the tremolo effect will not be satisfactory.

CONSTRUCTION

The majority of components are assembled on a 2in x 2½in piece of Veroboard as in Fig. 2. Also shown are the connections of this to the control panel.

A piece of ½in plastics angle was Araldited to the board and drilled for screw mounting to the case. For ease of operation S1 can be replaced by a footswitch connected by way of a socket at the front panel.

TESTING

When the unit is completed the wiring should be checked ensuring that the electrolytic capacitors in the multivibrator are the right way round. Should the polarity of these be reversed the multivibrator will probably operate but at the wrong frequency.

Connect the unit to the amplifier and guitar and switch on. Check the operation of the rate and depth controls. If all is satisfactory the case panels can be assembled so completing the construction.

Some loss of signal should be expected when the tremolo unit is connected and if the gain of the amplifier is not sufficient to compensate for this a preamplifier may be necessary. If so, it should be connected between the unit and the amplifier. ★

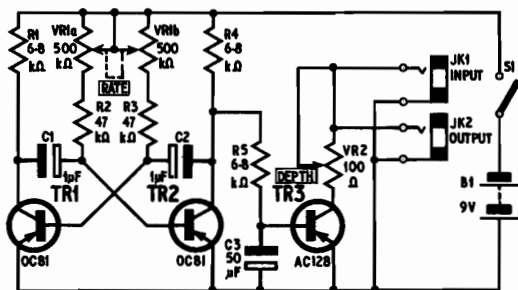
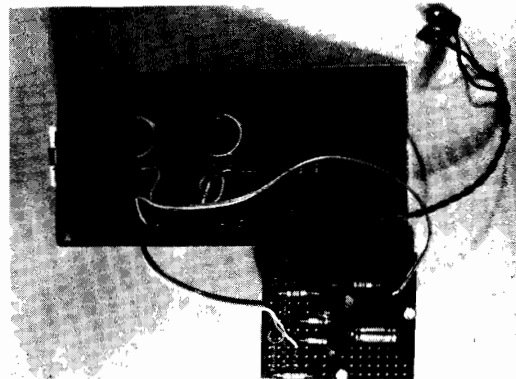


Fig. 1. Circuit diagram of Tremolo Unit



COMPONENTS . . .

Resistors

- R1 6-8 Ω
- R2, R3 47k Ω (2 off)
- R4, R5 6-8k Ω (2 off)
- All $\frac{1}{2}$ watt, 10% carbon

Capacitors

- C1, C2 1 μ F elect. 12V (2 off)
- C3 50 μ F elect. 12V

Transistors

- TR1, TR2 OC81 (2 off)
- TR3 AC128

Potentiometers

- VR1 500k Ω dual gang carbon linear
- VR2 100 Ω carbon linear

Switch

- S1 on/off toggle

Miscellaneous

- SK1, SK2 Standard jack sockets (2 off)
- BY1—PP3 9V
- Battery connectors
- Veroboard 0-15 matrix 2in \times 2 $\frac{1}{2}$ in
- Plastic angle (see text)
- Instrument case 6 $\frac{1}{2}$ in \times 4in \times 4in
- Control knobs (2 off)

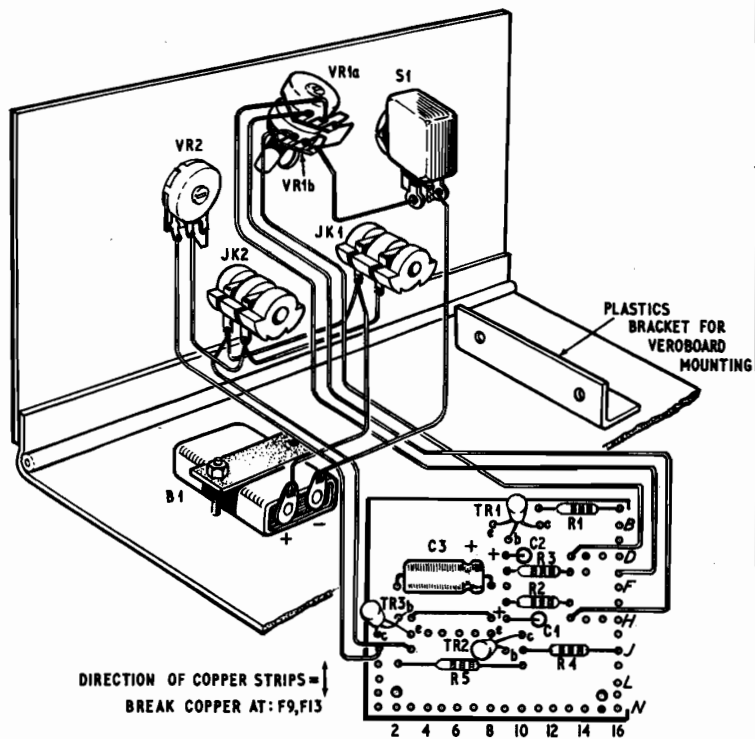


Fig. 2. Component board layout and interwiring details