

TREMOLO UNIT

The first of three guitar effects units which will add new dimensions to the sounds produced.

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

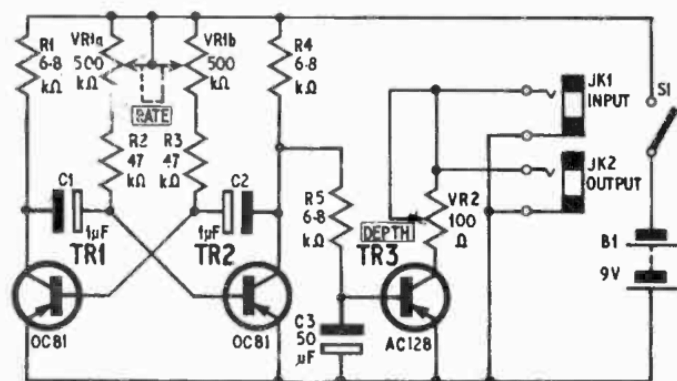


Fig. 1. Circuit diagram of Tremolo Unit

COMPONENTS . . .

Resistors

R1 6.8kΩ
R2, R3 47kΩ (2 off)
R4, R5 6.8kΩ (2 off)
All ½ watt, 10% carbon

Capacitors

C1, C2 1μF elect. 12V (2 off)
C3 50μF elect. 12V

Transistors

TR1, TR2 OC81 (2 off)
TR3 AC128

Potentiometers

VR1 500kΩ dual gang carbon linear
VR2 100Ω 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 × 2½in
Plastic angle (see text)
Instrument case 6½in × 4in × 4in (G. W. Smith)
Control knobs (2 off)

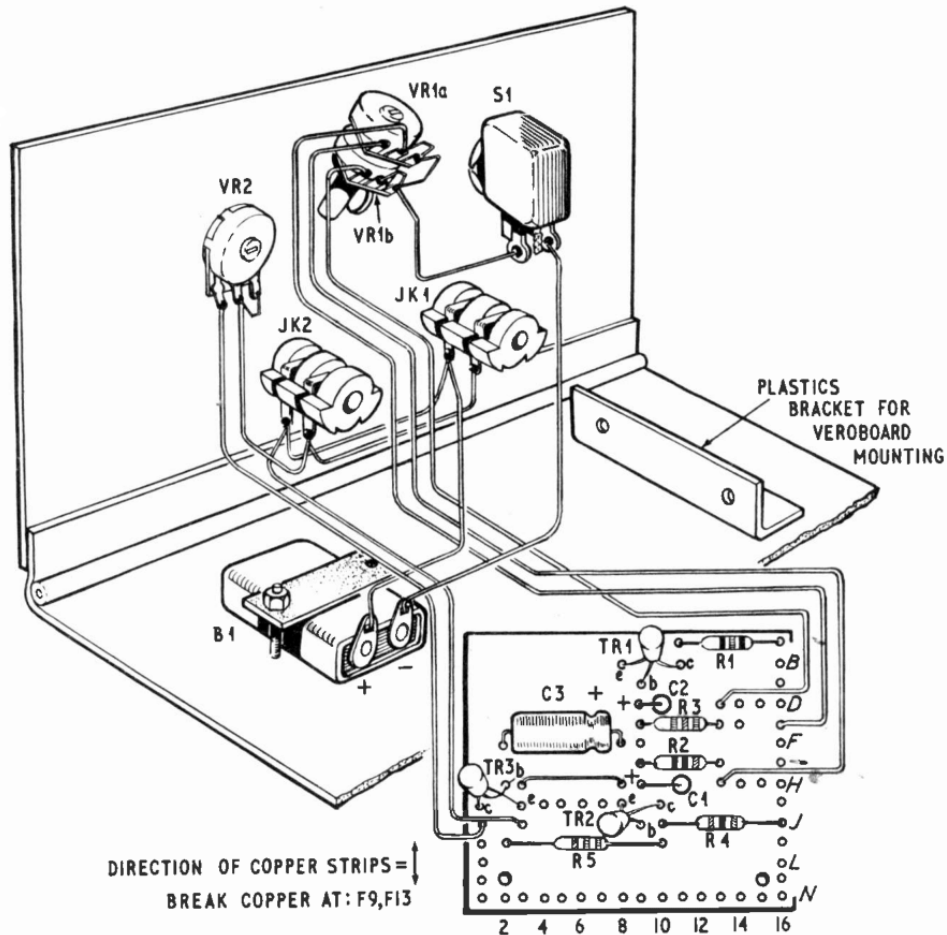


Fig. 2. Component board layout and interwiring details

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 foot-switch 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. ★

