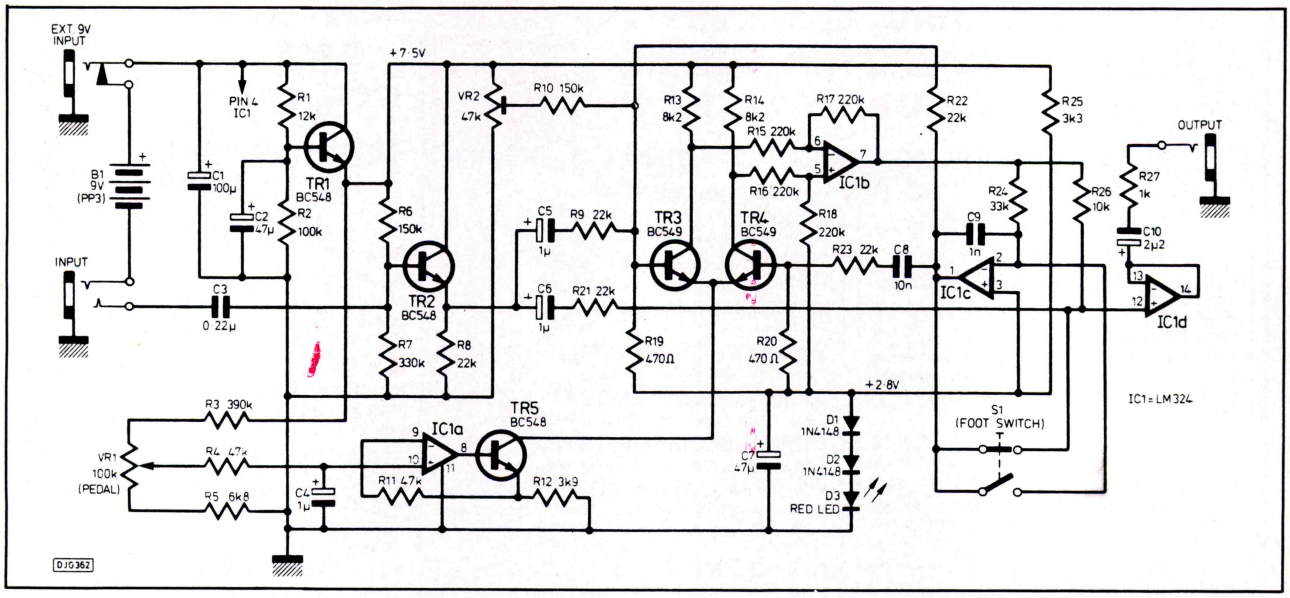

WAA-VOL EFFECT PEDAL

THIS circuit was designed to act as a waa-waa effect pedal and as a volume or 'swell' pedal. Switch S1 is operated by pressing the front of the pedal down hard, and normally switches the waa-waa effect on and off, but in this circuit it is used to switch between the two effects.

Power is applied when a jack is plugged into the (stereo) input socket. TR1 provides a stable 7.5 volt supply for the circuit (assuming a 9V battery level). The input signal is buffered by TR2 and fed to a current-controlled amplifier (cca) built around TR3, TR4 and IC1b. The gain of this amplifier is controlled by the pedal pot VR1, via a voltage to current convertor (IC1a,TR5).

With S1 in the waa-waa position (shown in the diagram) the circuit is configured as a low-pass filter. The output buffer IC1d takes it's signal from the integrator IC1c. R22 provides negative feedback in order to limit the gain of the circuit. There is also some positive feedback through C8 and R23 to give a peak in the filter response at higher frequencies. The speed of the integrator, and hence the cut-off frequency of the filter, depends on the gain of the cca.

When the unit is used as a volume control, IC1c is effectively switched out of the circuit by shorting C9, and as it's output is also disconnected from the input of IC1d, the signal from the Cca gets through instead, via R26. Some of the original signal is added at this point through R21, in order to reduce the variation in gain to about 3:1. This was found to give a useful change between 'accompaniment' and 'solo' playing levels when the unit was used with an electric guitar, but R21 could be increased or omitted if greater variation is required (up to 16:1).

D1 to D3 provide a stable mid-rail at about 2.8V. If a high-brightness led is used for D3 it can also be used as a power-on indicator. Transistors TR3 and TR4 should ideally be a matched pair, and R15 to 18 should be 1% tolerance resistors, to minimise variations in output voltage with movement of the pedal. VR2 should be adjusted for minimum change in dc voltage at IC1 pin 14 when the switch is pressed (with VR1 at max.), or until no click is heard at the output.

C. Dancer. Mersevside.