

Notes for constructors of the ETI-1500 metal detector

THIS PROJECT, from the December 1980 issue, is apparently being tackled by a great many 'new chum' hobbyists and beginners. These notes are produced for constructors in these categories with a view to helping them get their project going and to keep it going.

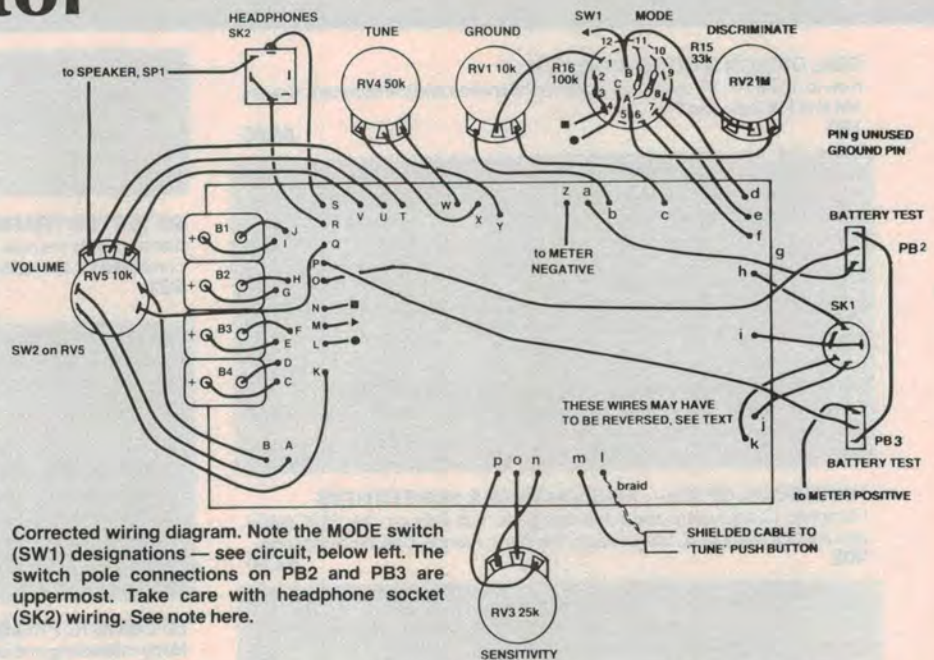
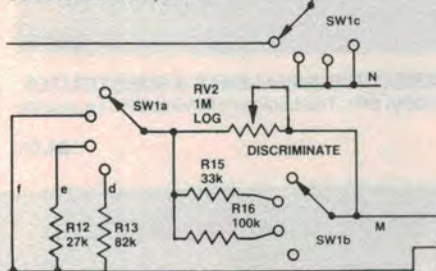
Firstly, a number of errors crept into the original article, but these were largely corrected in the February issue (page 15). Reproduction of the photographic overlay in the original was variable, to say the least, but clear dyeline copies are available by sending a large stamped, self-addressed envelope to the magazine requesting the "ETI-1500 overlay". For those struggling to reconcile the circuit and the wiring diagram, corrections for the erroneous portions of the circuit are reproduced here (involving SW1, the MODE switch, and IC2a). A corrected wiring diagram also appears here. Note that all the external components and controls are viewed from the rear.

- Take special care with the orientation of IC5 (CA3130) if an 8-pin TO-5 (circular metal case) type is supplied. Refer to the pinout diagram below.



- Take care with the wiring of the headphone socket as not all types have the same, or similar, connections. Check this by examination or with a multi-meter before wiring.
- Take care when wiring the DIN socket that connects the search head. The search head wiring is colour-coded, as shown on the circuit diagram. The red and black wires come from the receive coil. This coil has a dc resistance of around 50 ohms. The transmit coil is connected via the cable shield and the

Corrected circuit, SW1.



white wire. It has a dc resistance of around 12 ohms. There may be a yellow wire in the cable. Ignore it as it is not connected. The Faraday coil shields are internally connected to the cable shield.

- The wiring to the two pushbuttons PB2 and PB3 should first be sorted out with an ohmmeter before soldering it in place. Note that the switch pole contact is at one end — as shown here.
- The pushbutton in the handle needs to have good 'feel' and positive contact. One of the small C & K or Swann types should fill the bill.

- If you have used or are using a metal front panel, it should be earthed to reduce spurious capacitive effects. The body of the discriminate control should connect to 0 V (pin i) and a star washer should be inserted under its nut to provide a good contact to the panel. Otherwise, a plastic Scotchcal panel is recommended (one was used on the prototype).

- It is strongly recommended that a flux-removing solvent be used to clean the pc board following assembly. Whilst flux does not cause problems when 'new', many atmospherically borne chemicals can and do react with the flux in time. This causes a leakage path to be established between the tracks and is especially troublesome in high impedance circuits, such as around IC5. A de-fluxed pc board will obviate later (or early) problems with the auto-tune circuit; it also looks more professional and aids identification of defective solder joints. The effort is worth it.

- If you have trouble with hand capacitance effects, plastic knobs or collet knobs may be used to advantage on the controls, particularly the variable discriminate control.

- The wiring to the pushbutton in the handle should be done with shielded cable, passed through a hole drilled in the rear of the case to avoid fouling the telescopic shaft in the retracted position.

- A battery clamp, fashioned from a small strip of aluminium, is recommended.

- The case should be mounted as close to the curve in the handle as possible for optimum weight distribution.

- A screw or bolt should be placed through the rear case mounting clip to stop the case rotating on the shaft. The rear clip is recommended to allow the shaft to be telescoped to minimum length.

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