FOLLOW UP

by Ken Buck

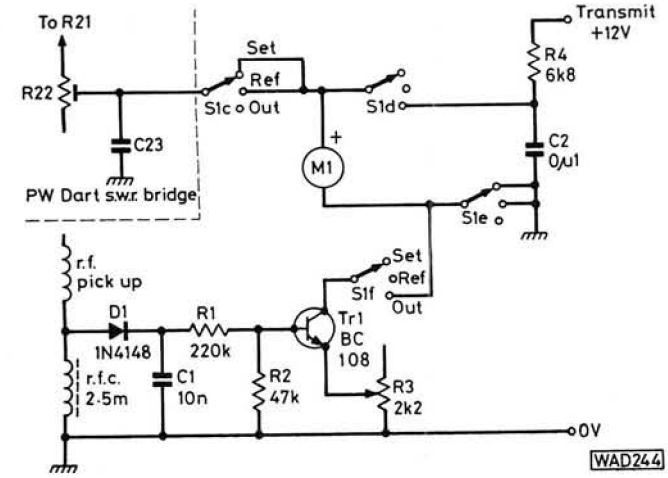
The author found the v.f.o. coverage on the PW "Dart" to be inadequate with L1, C1 and C3 in the original circuit diagram and could only be moved up and down the band with C2. An attempt was made to expand the frequency coverage using the 100pF tuning capacitor with disappointing results.

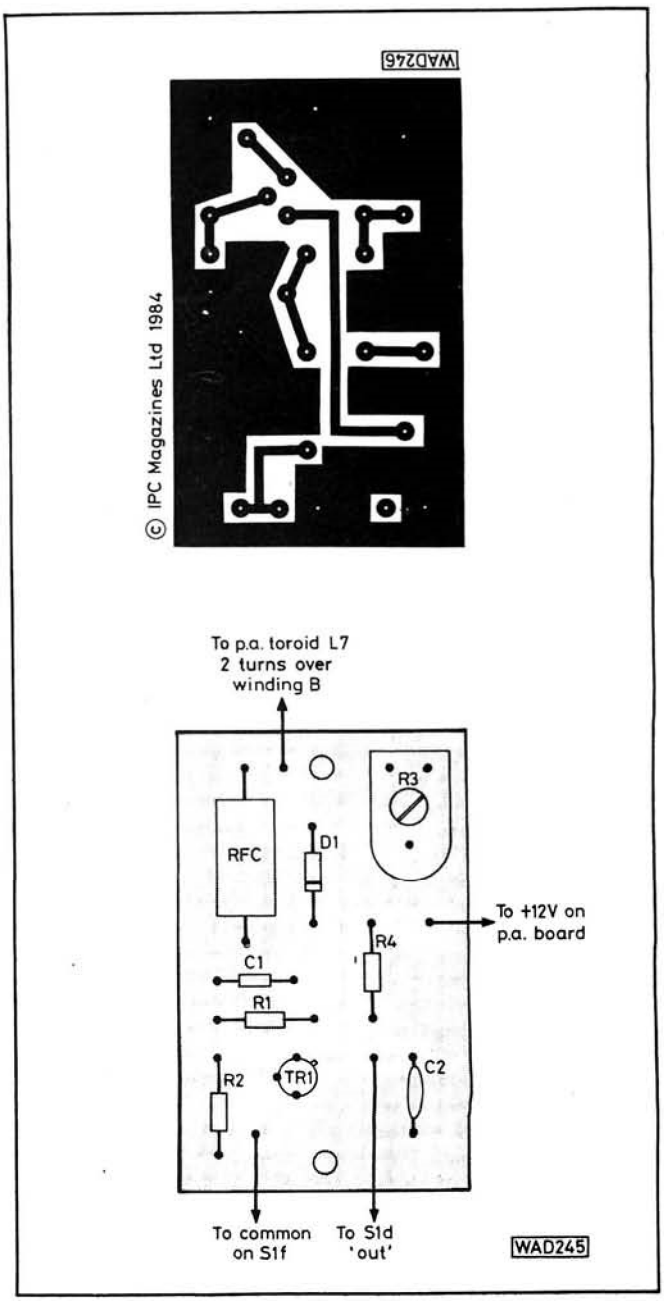
Many amateurs frown upon toroids in v.f.o.s but it was quite stable, however the author decided to discard the toroidal inductor and the 100pF tuning capacitor. A conventional inductor together with a 150pF tuning capacitor gave full coverage of the 1·8MHz (160m) band with a generous overlap at each end. Further tests with the toroid were still unsatisfactory. Inductor L1 is now 75 close-wound turns of 28 s.w.g. enamelled copper wire on a $\frac{1}{4}$in. Aladdin type former, the winding length is 26mm. The windings were sprayed with aerosol lacquer on completion. Formers available in the electronics mail order catalogues are too short and a suitable one was salvaged from a scrap dual-standard television chassis. A tuning core is not required and this will aid the general stability of the v.f.o., C3 was still required in series with C1 and C2.

Capacitor C2 was nearly at maximum capacitance after setting the band edges, so this component should be changed from 3-30pF to 3-90pF. The problem here being that the pin spacing may be different. Inductor L1 should be connected to C1 and the p.c.b. with a single length of 16 s.w.g. copper wire using as short a path as possible.

The two lugs of C1 fixed vanes need to be bridged and substantially soldered. A small hole was drilled at the top front of L1 former and the 16 s.w.g. wire end was stuck into this using an epoxy resin. Calibration of the v.f.o. tuning scale should be carried out last on completion of the transmitter with the p.a. running into a 50Ω dummy load.

The d.c. input to Tr5 and Tr6 is not measured in the usual manner because of the keyed d.c. supply from R32 unbalancing X1 on c.w. An add-on circuit was developed





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to simulate p.a. d.c. input which I have called an **r.f. Meter Monitor.** It is a variation of another G3RJV circuit [1] which consists of a diode detector and a single transistor d.c. amplifier. The meter did not give a full scale deflection without this extra amplification.

The meter switching arrangement is quite straight forward, but the original switch had insufficient contacts. A suitable one with two wafers was obtained very cheaply from a surplus stall at a rally and the s.w.r. bridge was rebuilt onto this switch. Two turns of 28 s.w.g. enamelled copper wire overwound at the start and finish of winding B gave sufficient link coupled r.f. input to the meter monitor. All four windings on the p.a. toroid should be secured with spots of glue. Components on the monitor p.c.b. should be mounted low as the board was fitted in the space behind the wafer switch with the r.f. choke close to the toroid. A small board was etched for this toroid and it was then mounted vertically by two solder pins at the edge of p.a. board in front of Tr6. Before testing the meter monitor, ensure the transmitter supply is 12 volts and plug in a 50Ω dummy load to the transmitter antenna socket. With S1 in the SET position and S2 in the CW position, short the key contacts. Adjust C21 for maximum meter reading, turn S1 to OUT and trim R3 for meter full scale deflection. Resistors R1 and R4 may require adjusting for meter movements greater than 200μA, all that is required is the meter to read full scale deflection on key down. The monitor can also be used to verify maximum output when transmitting without having to turn S1 back to SET. It will give the setting for R32 on control board as the variable voltage adjusts the carrier level output from port 3 of X1. A net switch on the cabinet front panel will be useful to c.w. only operators, as the plugging in of a microphone with p.t.t. will be inconvenient. The addition of tuning scale and meter illumination with T-1½-20mA bulbs, and l.e.d. indicators for transmit and receive make the PW "Dart" an ideal starter project for the newly licensed amateur. A visit to one of the rallies will yield many of the components at a considerable saving. ●

1) *A Perf Dipper.* G3RJV. *Shortwave Magazine* August 1982

★components

Resistors

¼W 5% Carbon film

6·8kΩ	1	R4
47kΩ	1	R2
220kΩ	1	R1

Horizontal skeleton preset

2·2kΩ	1	R3

Capacitors

Monolithic

10nF	1	C1
0·1μF	1	C2

Semiconductors

Diodes

1N4148	1	D1

Transistors

BC108	1	Tr1

Miscellaneous

Printed circuit board; 2·5mH r.f. choke; 6p 3w wafer switch

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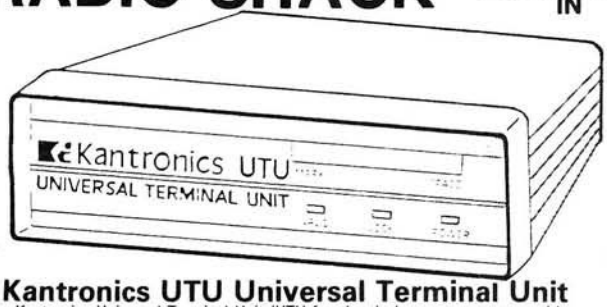

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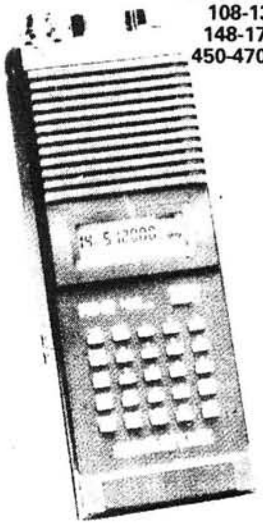

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