

COAX OFF-CUTS AND MOBILE ANTENNAS

PAT PAINTING, G3OEC, adds a further suggestion on the use of odd short lengths of coaxial cable. For many years he has been constructing mobile antennas for 1.8MHz or other bands using the outer braiding of scrap cable and the top section blanks of fibre glass fishing rod with its light weight, flexibility and good strength. He writes: "Obtain a 4ft long tapering hollow or solid fishing rod top section (bland): Fig 9(a). Remove the centre core from a length of 50 or 75Ω coaxial cable, preferably using the method described by G3GDU in the March 77.

"Push the point of the rod blank through the outer braid from which the plastic outer cover has been removed: Fig 9(b). Varnish with clear polyurethane varnish.

"Then a useful 1.8MHz mobile whip can be constructed with the braided fibre glass rod mounted above a 90cm length of plastic electrical conduit wound with sufficient turns of 18SWG enamel wire to resonate the whip antenna as in Fig 9(c)."

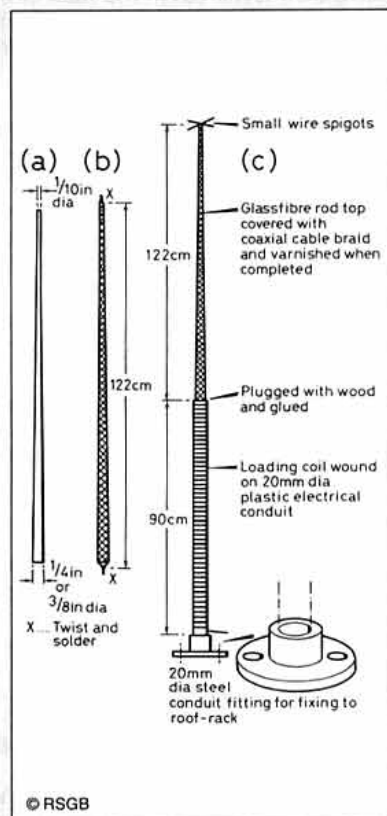


Fig 9: How G3OEC uses the copper braid from off-cuts of coaxial cable for 1.8MHz mobile antennas (the same principle could be used for other HF/VHF bands). (a) 4ft length of tapered, hollow or solid fishing rod (top section, blank). (b) The point of the rod is pushed through the copper braid and this is then varnished. (c) The finished 1.8MHz antenna with the rod section mounted above the loading coil. Wire spigots at the top form a small capacitance cap and can be used for small changes of frequency (wires bent down to raise frequency).

core flex to a six pin DIN plug. He was using a small vice and a 15W iron and experiencing the problem that most of the heat was being lost via the vice or melting the phenol-type plastic body. He sought my help.

"I asked him to give me a potato which I cut in half, placing the cut end on the work-bench the DIN plug was pressed into the top where it was firmly held. I then had no difficulty in soldering the six cores without any overheating or burnt fingers etc. The potato starch was removed from the pins using a switch-cleaning fluid. Sockets may be held similarly by inserting a few pieces of wire into the socket leaving enough length to press into the potato.

"I have used this method successfully for sixty years when soldering various components."

NON-EQUALISING POWER-SUPPLY RESISTORS

HARRY LEEMING, G3LLL, points out that a common fault in valve power amplifier rigs is the short-circuiting of the HT rectifiers resulting, if you are lucky, in the blowing of a fuse; if you are unlucky you find too late that a previous owner has fitted the wrong fuse resulting in the blowing of the mains transformer.

He warns against just replacing the rectifiers without finding out why they short-circuited in the first place after working satisfactorily for years. Most high voltage power supplies depend on the use of four, eight or twelve silicon diodes in various full wave or bridge arrangements. The peak inverse voltage rating is then increased by connecting two or more diodes in series across each arm with, typically, 470k resistors across each diode in order to equalize the voltages across each diode. Similarly there are often a number of series connected electrolytic smoothing capacitors, typically 500V working voltage, again with equalizing resistors.

The problem often lies in these resistors. Composition-type resistors tend gradually to increase in value in situations where they carry current, even when this is within their rated value (note also that most resistors are intended for use only when there is less than 300V across them). This ageing effect can cause a dramatic increase in resistance over the years but will vary from component to component. So a string of equalizing resistors may no longer equalize the voltage across the diodes or electrolytic capacitors; if they have differing inverse leakage currents then there is a real risk that one component may fail (short circuit) bringing about further failures. Before replacing any diodes or smoothing capacitors it is advisable to check the values of the equalizing resistors - ageing will virtually always causes the values to increase rather than decrease. One or more of the 470k resistors may prove to be well over a megohm!

SECURE ATU COIL TAPS

THE HIGH COST of variable 'roller-coaster' inductors suitable for flexible, multiband ATUs encourages the use instead of multiple coil taps. It is not a simple matter to solder such taps securely. J D Bolton, G4XPP, recently

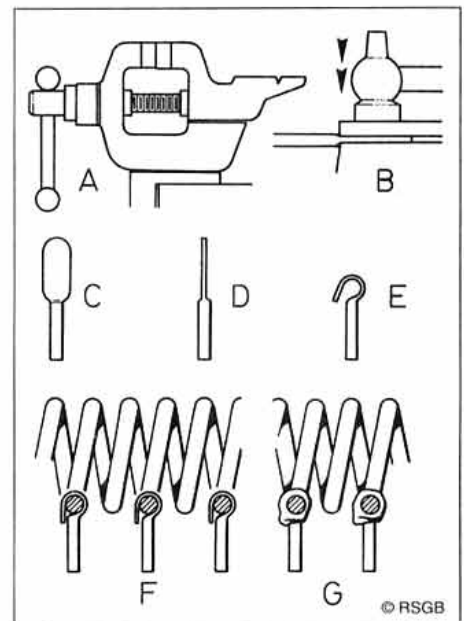


Fig 10: Making secure taps to an air-spaced coil as suggested by G4XPP.

decided to build an ATU suitable for end-fed antennas. In accordance with a published design, he obtained a suitable case, a substantial 12-way switch, 24 turn air spaced coil, 750pF high-voltage variable capacitor and the necessary sockets, wire, nuts and bolts etc.

All went well until the time came to attach securely the twelve taps from the switch to the coil. A few experiments showed that simply attempting to solder substantial wires of the same diameter as the plated copper-wire coil without affecting the adjacent turns etc would not be easy and unlikely to result in mechanically sound taps. The situation required a more thoughtful approach.

Fig 10 shows how G4XPP cracked the problem. His small hobby bench vice (A) has a small anvil on the back. With the vice screwed on the bench, the ends of the twelve wires were flattened (B,C,D) with a hammer. [Presumably any other suitable metal plate or 'anvil' could be used instead of a bench vice - G3VA].

Then, with a pair of snipe-nosed pliers he formed the flattened ends into open ended circles (E) and one by one these were slipped on to the coil (F) and clamped tight, at the tapping points, with the snipe nosed pliers. Finally, he snipped off the excess wire and securely soldered the wire circles to the coil (G). Result - no fear of the taps snapping loose the solder or short-circuiting to adjacent turns.

HERE AND THERE

CONTINUING THE SAGA of one bypass capacitor or two (77, October, December 1992), Brian Bower, G3COJ, sends along BBC Technical Memorandum R.1027 (90) *Supply rail by-passing in video circuitry* with which he was involved before his retirement. This is introduced with the statement:

"In video circuitry (frequencies up to about 6MHz) one sometimes sees supply rails with an electrolytic capacitor used for by-passing together with a smaller capacitor, typically a 22nF ceramic, across it to improve HF per-