

them a press fit in two holes in the window frame, at the same spacing as the feeder wires. A tidy tip; tie a knot on the inside end of each feeder wire to take the strain, adjusting them so that the spacers outside are more or less horizontal.

Choice of feeders

Apart from open wire feeders the remaining choice will be either flat twin feeder or coaxial, the former being either 70 or 300 ohms impedance, the latter 50 or around 70 ohms. Coaxial cable can be quite heavy and will drag down the centre of an antenna unless it can be supported by a mast or other support. On the other hand flat twin feeder is quite light.

Since the input impedance of most receivers (and the output impedance of transceivers) is an unbalanced 50 ohms it seems reasonable to continue the link to the antenna with unbalanced coaxial cable. Ah, ha! say the experts, this is where a balun (balanced-to-unbalanced) transformer should be used, generally at the top of the unbalanced coaxial feeder where it joins the balanced antenna, otherwise the polar diagram of the radiation will be distorted. In practice, however, the chance that the halves of a dipole are balanced to earth is very remote when one takes into account nearby buildings or other obstructions, trees and the supports for the dipole, and the varying composition of the ground below the antenna especially if it is a long one. In such a case a balun is a waste of money.

Baluns tend to be justified in rotary beam antennas which are inherently balanced systems fed by unbalanced coaxial cable, with a fairly narrow forward beam which should be symmetrical but which can "squint" if a balun is not used. but that is another story.

The performance of coaxial cable on a receiver can also be called into question. With a balanced feeder any local interference picked up tends to be cancelled out but on unbalanced coaxial feeder this effect is less pronounced. In particular the radiation of timebase interference from TV receivers has been largely cleared up on many occasions by the use of flat twin feeder. In severe cases screened

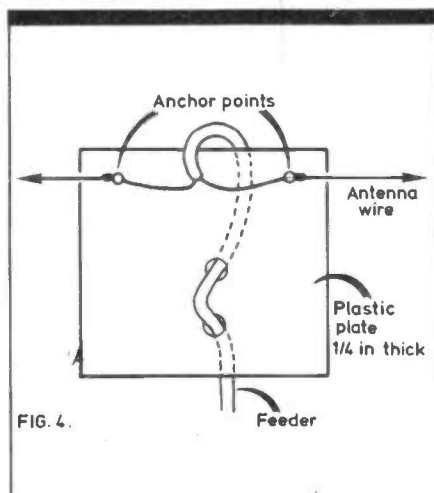


Fig. 4 A piece of plastic sheet, at least 1/4 in thick, forms base for antenna feed point. The feeder is passed through anchoring holes and over top of plate to anchor posts where the wires are soldered to the antenna wires. This method is absolutely essential with coaxial cable to prevent the ingress of rain and moisture

twin flat feeder has proved to be very effective, the screening being earthed at the receiver.

The copper wire for constructing wire antennas can be obtained from several sources, such as old mains transformers, the smaller diameter wire of some secondary windings being particularly useful. It will be necessary to remove any fittings on the transformer, including the laminations, leaving only the bobbin and windings. Thin plastic-covered bell wire can be bought from Woolworth stores, if necessary, in useful lengths. Any joint made in the antenna wire must

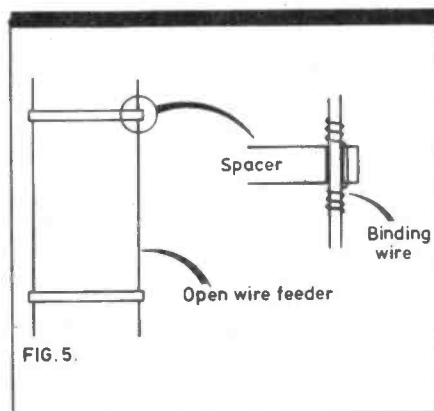


Fig. 5 Method of wiring plastic spacers to open wire feeder

be sound mechanically before soldering and covering with insulating tape or compound. The so-called self-adhesive tape is excellent as it will not come undone as ordinary insulating tape does after a while. The soldering of the joint is an absolute must with transmitting antennas.

If one already has a long mains lead for use with gardening appliances it is a good idea to make up an adaptor so that the shack soldering iron can be used outside for soldering joints in wire. The iron needs to be something a bit more substantial in terms of wattage than those used with PCBs! 60W or so is desirable, while the soldering gun is probably the ideal, as has been discovered over the years.

If fairly long lengths of multi-way multi-coloured flat cable, as used for the interconnection of modules, can be obtained these can be stripped down and joined together to form one long wire. Short lengths make the number of joints necessary rather burdensome. Other multi-way cables can be treated the same way. After a while quite a lot of copper wire will have accumulated (frequently half waves for 20m complete with insulators!) which makes experimentation with new antennas very easy. A versatile ATU for use with the tuned feeders is essential of course, when one has the comfort of knowing that whatever antenna is up at any moment that it is tuned "on the nose", as they say, and giving of its best. With coaxial cable feeders there is always that suspicion that the matching may not be quite right in spite of what the SWR indicator may show.

Antenna supports

Few of us are able to organise several tall masts at the appropriate locations in a very large garden to suit our antenna plans, so we have to make do with what is available. Obvious supports are chimneys, if you can reach them, trees, garages at the end of the garden to which poles can be fixed to increase the height of a wire, and so on. One end of a wire is generally fixed, as high as possible, to the house with the other end going off down to the end of the garden. It is very important that one end of any wire should be able to move about to take up any