

# NEWCOMERS FORUM

By Tony Bailey, G3WPO

Since the inception of this magazine, one of the main features has been constructional projects, in an attempt to show that you can build it yourself, and don't have to go out and buy something to get on the air. You may not necessarily save money doing this, depending on the project, but the *will* get a very great sense of satisfaction from this approach when it is all finished and (hopefully) working. You will have also learnt something about the circuit that you have built.

sure what they all are. Perhaps you are contemplating buying some capacitors for a project or two but do not know which type to choose.

Most articles do attempt to point out how to identify any out-of-the-ordinary components, but this still leaves a large number of 'ordinary' items, particularly resistors and capacitors, that an experienced constructor would probably identify in 1 second flat but which will probably flummox the newcomer totally.

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*In this NF special, Tony Bailey, G3WPO, gives a handy, up-to-the-minute guide to identifying components.*

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As I am sure many of you are aware, the writer is more than a little involved in such projects, and has always been an avid home constructor. The first major project I ever attempted was a single sideband transmitter for 160m, shortly after I became licenced. It worked very well (using those large seven legged transistors with heaters), but had a peculiar sounding transmit quality — a home made lattice filter for the SSB filter had been made, and the pass-band had a rather large dip in the middle. Consequently, the audio sounded "as though you are talking down a drain pipe".

However, it did work, and I reckon I got far more satisfaction out of using that little rig in my first few years on the air, than the KW Vespa which I subsequently acquired to replace it (then sold to build a VHF Transceiver!). If nothing else, the audio did start a few conversations off!

Home construction brings its own problems, and, for the relative newcomer, one of the biggest is that of identifying components, especially, say, when you are confronted with a large bagful of components to build a kit with, and this is your first attempt! You may have acquired a number of surplus bags of mixed "things" at a Rally, and are not really

So, this month's piece is a special edition, aimed at giving you a reference for as many components as we can cover. Particular attention is being paid to capacitors, special types of resistor, and some of the other components used within these pages. We suggest you keep it handy for future use — possibly more similiary aimed pieces of constructional information may follow if there is a demand. Also, some information on what type of component to use for what purpose has been included.

## Resistors

Probably the most notable thing about the humble resistor is that it is now a lot smaller than it once was — but at least they nearly all carry similar colour coded bands these days — you don't have to fathom out one colour on the body and coloured circles etc anymore. The resistor may be small and cheap but it plays an essential part in almost *every* radio design.

There is a great number and variety of resistor types, but the great majority of solid state designs that the average constructor meets these days use the 0.25 watt, 5% tolerance **carbon film** variety, with PCB layouts standardised at 10mm lead spacing for horizontal mounting. You can probably get away with these for **most normal applications** unless you want

closer tolerance, better noise performance in certain applications, or a higher wattage rating.

Do you know how these carbon film resistors are made? The resistance is comprised of a thin carbon film deposited on to a ceramic or other tube. The final resistance is adjusted by cutting a spiral around the tube while monitoring the resistance, so that the effective resistance path is increased to the required value. All this is done automatically — and can be controlled to .01% accuracy. This process can increase the resistance of the uncut body by factors of several thousand times. All this is hidden under a protective outer covering, with the colour coding marked on top.

Resistors of ratings up to 2 watts are not difficult to obtain. They all have similar colour codings — just in case anyone is in doubt the standard table is given for reference. If you have difficulty in remembering this, you can get hold of little 'decoder cards' from some dealers — where you dial up the colour codes of an unknown resistor and read off the value.

## High Power

If you need a higher wattage resistor for RF use (carbon film types have appreciable capacitive reactance after spiralling), then **carbon composition** resistors are easily obtainable, slightly smaller for the same power rating, but not quite so stable in value over long periods. Colour coding is the same, (the fourth end band will generally be silver as 10% tolerance is normal with carbon composition). You may even find no fourth band — in which case the tolerance of the resistor is  $\pm 20\%$  (20% tolerance resistors are fairly uncommon these days).

Of course, **wirewound resistors** are another possibility for high power applications (not RF — see further on) and come in many different packages, including some metal sheathed variants of very high wattage rating which can be bolted directly to a