



ticlockwise. The reading should start to decrease (showing that the diode is only just conducting). You should set RV3 so that the reading on the probe just limits — at this point the diode is conducting healthily and the output RF voltage will be about 700mV, which is what we want with the frequency display module connected if used.

If the diode is not conducting in the first place, then the VCO output voltage is too low. The bias on TR26 can be increased a little to compensate from its original position, but a check should be made that the circuitry is correct in the first place.

It shouldn't be a lot lower, or vary wildly — if it is, suspect one of the transformers in the VCO output circuits or capacitor value error.

Casing up

The completed module can now be mounted in the diecast box. Other forms of casing can be used, but whatever is used should be RF tight, and of similar dimensions if our case design is to be used. Feedthrough capacitors are essential — if you have difficulty getting these, AJH Electronics keep the screw in type.

Drill out the various holes as per the drawings, then place the module in the box the correct way round and mark the mounting holes onto the base of the box before drilling them. Not shown in the drawings are a series of 3mm ventilation holes occupying about 2cm square in the lid above Q26, and in the side of the box, just above the bottom next to Q26. The board mounts on 6BA bolts, using a couple of half nuts as spacers between the board and the box.

The various connections can then be made with the coaxial

sockets and the feedthroughs. Although they were used for the model shown, and on the CIFPU unit, miniature Belling Lee connectors are not advised — they have a habit of breaking the centre conductor connection after a few insertions and are very fiddly to use. Standard Belling Lee, or even BNC if you like, are a better bet.

Not shown in the photograph for reasons of clarity is an additional tinfoil screen which covers the whole of the crystal oscillator and loop filter/phase comp/loop mixer section. This should be soldered on right at the end when everything is working correctly. Small holes will be needed near points B and A for the coax and wire to emerge — the other cables will go over the top of the screen.

The final act after casing is to once again check the VCO coils for coverage and make any small adjustments necessary — fix the remaining part of the winding into place using nail varnish borrowed from the XYL. The reason for not using epoxy is that you may find, although it should be unlikely, that once the VCO is cased and warms up, drift of the VCO may take the control voltage out of range at the high frequency end (this drift has no effect whatsoever on circuit operation normally). Epoxying the top of the coils would not allow further adjustment if needed.

No 'out-of-lock' indicator has been provided, although one could be made using pin 5 of IC6, as the frequency display clearly shows if this (unlikely) fault occurs (see later). The only condition under which the system may go out of lock and refuse to re-lock is if the VFO input is removed, or power is lost from the VFO and then reconnected. Under normal conditions this will not of course happen.

Connecting to the CIFPU

The moment has arrived to actually try out the VFO. Connect everything up and link up the unit to the CIFPU local oscillator input using a short length of coaxial cable. With the frequency display and preselector in use, you will have a complete receive system.

