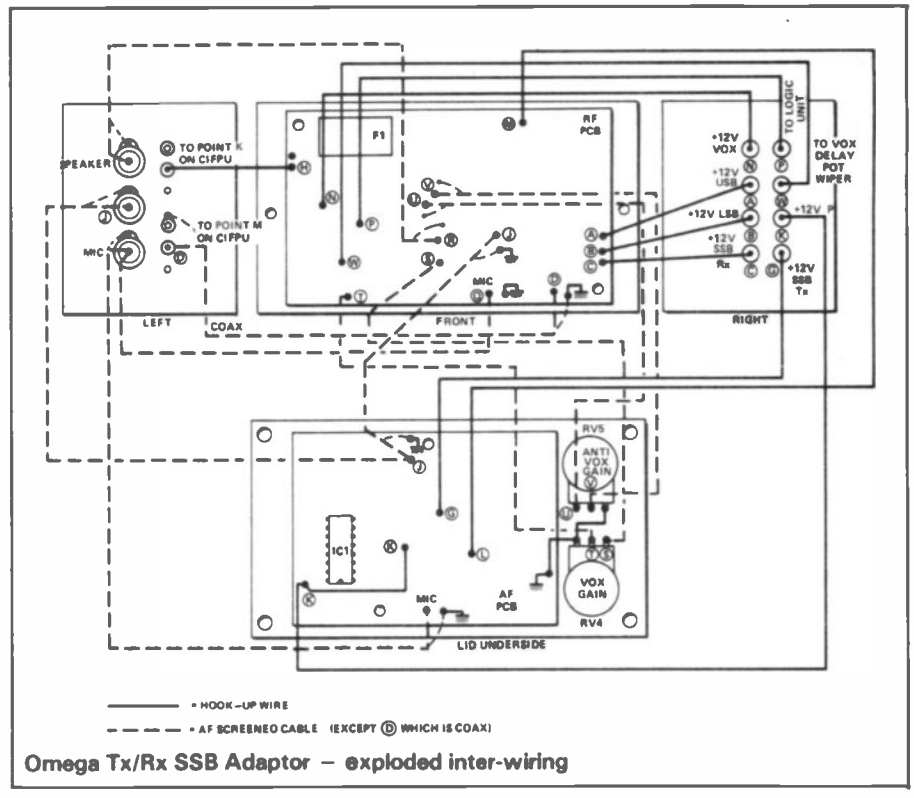
2. Remove all power and interconnect the AF and RF boards. Connections are needed between points K and 12V, either A or B and +12V, L and M, and point J on each board (the latter using screened AF cable).
3. Here is the point where a 10MHz+ scope is really needed – if one is not available go to step 4. Apply +12V and monitor the output of Q7 at point H. Adjust RV1 (carrier balance) for minimum output with the scope at maximum sensitivity – balance should occur fairly near mid-travel. To check RF output correctly needs a two-tone oscillator connected to the mic input when you should find 300 to 400 mV of RF available at point H (dependant on setting of RV2). Plus, of course, a nice two tone pattern (with a very small amount of limiting from IC1). Failing two-tone testing, a single tone should give some idea of output, or you can connect the mic (low impedance) and whistle/talk it up. RV2 is used to set the output level form the unit, best adjusted when connected to the PA. Now go to Step 5.
4. If you have a diode probe, connect this to point H, and apply +12V. Adjust the carrier balance control, RV1, for minimum reading. With a microphone connected, whistling into it should give an increased reading of several hundred millivolts at point H (dependant on the setting of RV2 and your probe). This will establish that RF output is present, and the rest of the setting up procedure will have to be done with the PA connected.
5. VOX – connect up the three variable pots as shown in the diagram using screened cable. Note that the +12V end of RV6 is connected directly to point N. Connect a voltmeter (+20V) to point P, and +12V (not switched on) to both points K and N (this leaves only the processor and VOX circuits working). Parallel up the VOX-mic input with the processor mic input using screened cable. Parallel the anti-VOX input to the CIFPU speaker connections (you will need the CIFPU working in any receive mode – CW will do) and then apply +12V to the circuit. Current should be about 55mA, with point P at about 12V. With no output from the speaker, talk into the microphone and adjust RV4 (VOX gain) until point P reliably switches low as soon as you speak. The current should rise by about 10mA.



Omega Tx/Rx SSB Adaptor – exploded inter-wiring

Now set the speaker audio to normal level on any received signal. Adjust RV5 until the VOX is no longer tripped by audio from the speaker. If you put this setting too high, you will find that you cannot actuate the VOX while there is audio present at the speaker – this is a question of judgement as it can prevent inadvertant transmission over another station, but can also prevent deliberate transmission! The VOX turn off delay is set by RV6 – this is adjusted later when actually transmitting.

If any of the above tests result in failure, logical checking of each circuit should trace the fault.

At this point, before casing up, you can check the operation of the unit by connecting up to the rest of the modules described so far, following the mode switch wiring diagram shown later, using just those connections needed to get into SSB mode. If the unit is connected to the CIFPU/preselector/logic switch only (without the PA) the output can be checked at low level on another receiver, and this would be a good opportunity to set up the carrier balance if this has not been done. Alternatively, this could be tested with the PA if you want to at this stage. If you are sure the unit is working OK, then it can be cased up immediately.

Housing

Both PCBs and the various pots (except VOX delay) are built into a diecast box for RF screening. Again, any similar enclosure can be used – it eventually mounts on top of the VCO box.

All DC connections are brought in via screw-in feedthrough capacitors (see parts list for source of these) on one side of the box, with the RF and AF input/outputs on the other. For this module, the RF connections are made via miniature Belling Lee sockets, due to space considerations, and the AF by single-hole fixing phono sockets. The two variable pots mount on the underside of the lid, together with the AF processor board, while the RF PCB sits in the bottom of the box.

Comprehensive drilling and wiring diagrams are provided for this unit to ensure you get it all to fit in. They are fairly self-explanatory but a few points need to be made.

The mounting holes for the RF board are made by dropping the PCB into the box, and then marking through before drilling; also, drill two holes midway between each side of the PCB and the walls of the box for