ponents such as capacitors or resistors have been changed in the RF stage or mixer. However, the complete alignment procedure will be given in the next article for anyone who wishes to carry it out.

If the receiver is working it is not normally very difficult to get the transmitter going, so if performance is poor on transmit it is worth checking the stages which are common to both receive and transmit paths, namely the VFO, HF oscillator and carrier oscillator. This is far easier to do on receive as you can hear what is happening.

Faults on transmitter

In the case of a transmitter fault the voltages in Table 2 should be checked as well as those in **Table 3** since a fault in the receiver can reduce the transmitter drive, parts of the signal path being common to both modes. There are, however, a few conditions in which it is inadvisable to leave the rig while checking the receiver performance:

1. No control of PA bias, ie. PA hard on.
2. Blown HT fuse to PA anode circuits as this can damage the screen grids of the PA valves.

These dangerous conditions can be discovered rapidly in the following manner:-

1. No control of bias: set the rig to INT MOX and note the standing current on the front panel meter. if this is high, adjust the bias control on the PSU. If it is found that the bias control does not affect the current SWITCH OFF IMMEDIATELY and check the grid bias components for the PA including the valves and C48 which, if short circuit, puts HT onto the control grids. The wiring to the multi-way plug on the back of the KW2000 should also be checked for broken wires under the clamp.

2. Blown HT fuse in anode circuit: this can be caused by faulty PA valves, no bias on control grids, incorrect tuning, or instability (incorrect neutralising can cause the PA to go unstable — see next article). If a fuse blows persistently the fault should be investigated at once. The fuse should NEVER simply be replaced by one of a higher value as this can cause expensive damage! A blown HT fuse is often indicated by a sudden drop in PA standing current to virtually zero (the meter reads PA cathode current so there will still be a slight reading, caused by screen current, even with no anode volts present in transmit mode).

There is one fault on the transmitter which is obvious without too much trouble, namely absence of CW sidetone and output power, and VOX inoperative with key down. The rig will also produce no output in the TUNE mode. This is due to the tone oscillator V15 failing to oscillate. A check should be made either in TUNE or with the key down and with the receiver AF gain control at about one third, when the tone should be heard in the loudspeaker. If not check V15, R87, R88, R89, R90, R91, C4, C119, C120, and C121. The tone oscillator can be very 'touchy' if these components have aged.

Do not proceed to check the transmitter without the tone oscillator as it is used to provide drive during tune up and on CW. Without it, it is very difficult to tune up correctly!

Assuming that the proceeding tests have been carried out and any faults found have been repaired, the transceiver should now show signs of life on both transmit and receive unless, of course, the alignment has been tampered with. There are a few simple tests which can help if there is still a problem such as no transmit output or low receive sensitivity. A general coverage receiver can be used to listen for signals from the various parts of the circuit, lightly coupling the receiver to the KW2000 as shown in **Fig. 4. Table 4** gives details of what should be observed in each case. Note that in steps 3 to 5 the transceiver should be set to TUNE with the MIC GAIN turned fully up. However, the PA current (if any) should be monitored and not allowed to rise above 100mA at any time. If the current is too high reduce the MIC GAIN. The information gained from Table 4 can be used to provide clues to the location of the fault. For example, if signal is present in steps 1 and 2 but not in step 3 it is possible that there is a fault in or around V3 (transmit IF amplifier). This means that no signal is arriving at the grid of the first transmit mixer V4, so there is no mixer output. Alternatively, V4 may not be mixing due to valve or component failure. If that is so, re-check those stages very carefully using the tests given in Tables 2 and 3. The tests of Table 4 will at least identify the area in which the fault is located.

Once all the tests in Tables 1 to 4 have been carried out the rig should be working well enough for the alignment to be checked. However, this will only be necessary if:-

1. The rig has been tampered with.
2. Max receive gain and max transmit drive do not coincide when adjusting the pre-selector tuning.
3. Components have been replaced in a particular stage, in which case it should only be necessary to re-align the stage concerned, or at worst the stages before and after.
4. If some of the modifications to be described later have been carried out.
5. It is desired to get the best results possible!

The complete alignment procedure will be given in the next article. ●

Table 5

Approximate power ± 10% output to be expected Key down in LSB or USB		Measured output power (Yours)	Band
KW2000 A/B	KW2000		
25 watts*	25 watts*		1.8MHz
100 watts	50 watts		3.5/3.7MHz
100 watts	50 watts		7.0MHz
100 watts	50 watts		14.0MHz
85 watts	46 watts		21.0MHz
80 watts	40 watts		28-28.6MHz
Measured on my KW2000A on bird thro' line watt—meter into 50	Measured on friends KW2000 on Bird thro' line watt meter into 50	Power output figures are included only to give a rough guide as to what to expect.	

*Reduced HT to P/A by switch on P.S.U.