

D. ALIGNMENT AND TROUBLESHOOTING

The following procedures are given in the order performed during the factory alignment for the transceiver. For home servicing, only partial alignment may be necessary. Read all procedures carefully before commencing either partial or complete alignment. See figures and for component placement. The following equipment will be required for complete alignment:

1. Audio Signal Generator
2. 500 watt dummy load with output meter
3. Vacuum tube voltmeter
4. Field strength meter

RECEIVER ALIGNMENT

Receiver alignment involves only the adjustment of the Second IF coil and the 10 meter receiver coil. The 15, 20, 40 and 80 meter coils which affect receiver performance are also used in transmit mode. Their adjustment is covered under "Transmitter Alignment."

1. After allowing one minute for warm-up tune the receiver to the middle of either 15, 20, 40 or 80 meters and at a clear frequency.
2. Adjust the P.A. PLATE, P.A. GRID and P.A. LOAD front panel controls for maximum background noise.
3. Adjust IF coil L901 for maximum background noise.
4. Switch to the center of 10 meters and adjust L105 for maximum background noise.

TRANSMITTER ALIGNMENT

The alignment of transmitter circuits involves the adjustment of tuned circuits in the VFO amplifier, V1, the Transmit Mixer, V2 and Driver stage, V3. A dummy load should be connected to the antenna jack during this series of adjustments.

VFO Amplifier Plate Circuit

With VTVM from pin 1 of V7, Receiver Mixer, to ground, on -15 volt scale, adjust VFO Amplifier Plate coils for peak VTVM reading as follows:

Band	VFO Frequency (kc)	Dial Frequency (kc)	Coil
80	9,300	3,800	L104
40	12,625	7,125	L103
15	15,725	21,225	L102
10	23,000	28,500	L101

Transmitter Mixer and Driver Plate Circuit

1. Adjust P.A. BIAS control fully counterclockwise (maximum bias).

2. Loosely couple field strength meter to C308 (off pin 2 of V4) with alligator clip on ceramic capacitor body.
3. Remove screen voltage from V4 and V5 by disconnecting the wire from terminal strip immediately adjacent to V5 base. (Point A, Fig. 1).
4. Connect VTVM across R401, 1K resistor between pins 1 and 2 of terminal strip, using 25 volt scale. (Points B and C, Fig. 5).

PROCEDURE

Adjust bandswitch and P.A. Grid as shown below, and adjust coils for peak VTVM reading, with function switch in TUNE position:

Band	P.A. Grid	Dial Freq.	Adjust	
80	12 O'clock	3800	L 206	L 305
40	11 O'clock	7150	L 204	L 304
20	11 O'clock	14150	L 205	L 303
15	2 O'clock	21450	L 202	L 302
10	2 O'clock	29.0	L 203	L301

Note: If VTVM and field strength meter exceed full scale reading, switch to REC position, actuate push-to-talk circuit, and insert carrier with carrier balance control to keep reading on scale. Field strength meter and VTVM must both peak at same time since it is possible to tune the coils to the VFO frequency on 10 meters. Care must be taken that the coils be tuned properly. Following the above procedures, replace screen wire to pin 1 of terminal strip adjacent to V5.

Carrier Frequency Adjustment

1. Tune up on the 20 meter band into a dummy load. Balance out the carrier and adjust the P.A. Bias for 50 ma.
2. Feed 1500 cycles of audio from the Audio Generator into the MIC input receptacle. Adjust the gain of the audio generator and the MIC GAIN control until the wattmeter reads about 10 or 15 watts.
3. Adjust both slugs of the Balanced Modulator transformer (T1301) for maximum output.
4. Adjust the First IF coil (L801) for maximum output.
5. Increase the gain of the audio generator until the wattmeter reads 40 watts. Sweep the audio generator down to 300 cycles. Adjust the Normal Sideband Carrier Oscillator trimmer (C1502) for a reading of 10 watts.
6. Switch to Opposite Sideband and adjust carrier oscillator trimmer (C1503) for 10 watts.
7. Re-check with audio generator set at 1500 cycles and 40 watts. Sweep down to 300 cycles and re-adjust Carrier Oscillator Trimmer capacitors, if necessary, for 10 watts input.