

Figure 4-7

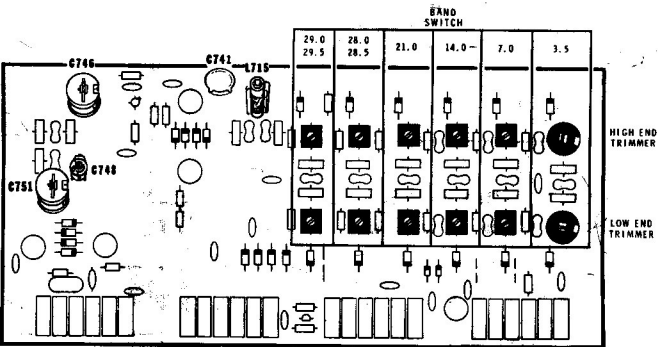


Figure 4-8

## RECEIVER FRONT END ALIGNMENT

**NOTE:** This circuit board was completely instrument aligned at the factory and should not require further adjustment unless a component is replaced.

The following alignment procedure should only be done if a component has been replaced and you feel adjustment is necessary. This procedure should give acceptable results in most cases. Some improvement may be noticed, especially on 10 meters, if the circuit board is instrument aligned.

1. Remove the phono plug from socket J101 on circuit board A. Then remove the circuit board from your Transceiver.

2. Locate your test cable (assembled on Page 2-30). Then refer to Figure 4-6 (Illustration Booklet, Page 12) and solder the free lead of the 18 pF capacitor to the foil designated TP on the circuit board A. Solder the cable shield wires to the ground foil in the area shown.

3. Carefully plug circuit board A back into its compartment. Look between the foil side of the circuit board and the shield to make sure the "hot" lead of the capacitor does not touch the shield.

4. Replace the phono plug in J101.

5. Remove circuit board G from the Transceiver.

Refer to Figure 4-7 (Illustration Booklet, Page 12) for the following steps.

1. Turn the slug in coil L715 until it is flush with the top of the coil form. Then turn the slug clockwise two complete turns.

2. Carefully remove and unsolder capacitor C741 from the circuit board. You will reinstall this capacitor later.

3. Push the end of the center conductor of the shielded cable coming from circuit board A into the hole at C741 that is closest to T701. Temporarily solder the wire to the foil. Bend the shield wires out of the way.

4. Install the extender board in position G.

5. Install circuit board G in the extender board.

6. Set the front panel controls as follows:

BAND Switch	7.0
RF GAIN	Fully clockwise
ALC button	Depressed
USB button	Depressed
AGC	Fast

**IMPORTANT: ALWAYS turn the Transceiver OFF before you insert or remove a circuit board.**

7. Depress the ON button.

8. Adjust the AF GAIN control for a comfortable listening level.

9. Tune the Transceiver to 7300 kHz. Then select the strongest signal within 5 kHz of this frequency.

When you perform any of the alignment steps in the remainder of this Manual, keep the S meter below a full scale indication by adjustment of the S-Meter Level Adjust control on circuit board F (see Figure 1-3, Illustration Booklet, Page 1). DO NOT use the RF GAIN control for this purpose.

10. Set the S-METER LEVEL ADJUST control (see Figure 1-3, Illustration Booklet, Page 1) for an S-meter reading of S9 +20.

11. Adjust trimmer capacitors C746, C748, and C751 for maximum S-meter indication. Repeat this adjustment several times until there is no further improvement.

12. Tune the Transceiver to 7000 kHz and select the strongest signal within one-half of a tuning knob revolution.

13. Pull circuit board D up just enough to clear the connectors on the board's bottom edge.

14. Write down the S-meter reading.

Push circuit board D back down onto its connectors.

Tune the Transceiver to 7500 kHz and select the strongest signal within one-half of a tuning knob revolution.

Pull circuit board D up just enough to clear the connectors on the board's lower edge.

Write down the S-meter reading.

Repeat the above procedures at 7000 kHz and 7500 kHz and simultaneously adjust the trimmer capacitors C746 and C751 until the two S-meter readings are as close together as you can conveniently get them. The readings will probably never coincide exactly. Two or three repetitions of the adjustment should be adequate.

Unsolder and remove the shielded cable from circuit board G.

C741: Install the .01  $\mu$ F disc capacitor, removed from circuit board G, at C741. Solder the leads to the foil and cut off the excess lead lengths.

**NOTE:** If you will perform the "Preselector Bandpass Filter Alignment" immediately, disregard the following two steps and leave the extender board and circuit board G in position G.

Remove circuit board G from the extender board and the extender board from position G.

Reinstall circuit board G in position G.

Reinstall circuit board D.

**NOTE:** The shielded cable connected to circuit board A will be used in the following bandpass filter alignment steps.

## PRESELECTOR BANDPASS FILTER ALIGNMENT

The object of this procedure is to adjust each bandpass filter for a uniform response across its frequency range. One filter is used for each of the 80, 40, 20, and 15 meter bands. Two filters are used for the 10 meter band, one for the 28.0 and 28.5 BAND switch positions, and one for the 29.0 and 29.5 positions. The alignment of a filter calls for a coarse adjustment to a center frequency, followed by equalizing adjustments at the band edges. Although the band edge responses will not be exactly equal, they will be reasonably close.

The following steps assume that the adjustment signal will be furnished by the counter (circuit board A) and that the S meter will be used as a signal level indicator. You may be able to improve the filter response to a small degree if you have a signal generator and an audio voltmeter available which you can substitute as a signal source and a level indicator. The signal generator can be connected directly to the ANT jack and the audio voltmeter across the SPKR terminals (to provide a load).

Figure 4-7 (illustration Booklet, Page 12) identifies the trimmer capacitors to be adjusted for each BAND switch position.

Install a phono plug on the free end of the 24" shielded cable connected to circuit board A.

Insert the phono plug in the ANT jack on the rear panel (below the heat sink).

Check that the rear panel antenna switch is in the COM position.

Set the front panel controls as follows:

RF GAIN	Fully clockwise
ALC	Depressed
AGC	Fast
BAND	29.0
LEVEL	Fully counterclockwise
USB	Depressed
ON	Depressed

Buttons not mentioned should be released.

- ( ) If it has not already been done, install the extender board and circuit board G in position G.
- ( ) Tune the Transceiver to the strongest signal in the vicinity of 29 400 kHz. NOTE: The counter provides many signals across the band, but the strongest signals will be heard at (or near) the 100 kHz points.
- ( ) Refer to Figure 4-7 and adjust the two trimmers for the 29.0 band to secure the greatest deflection of the S-meter needle. Repeat the adjustment two or three times until no greater deflection can be seen.
- ( ) Tune to the strongest signal near 29 100 kHz.
- ( ) Adjust the Low End trimmer for maximum S-meter deflection and write down the reading in the margin opposite this step.
- ( ) Turn the BAND switch to 29.5 and tune to 29 700 kHz.
- ( ) Adjust the High End trimmer for maximum S-meter deflection. Note the meter reading.
- ( ) Compare the two S-meter readings and adjust the trimmers according to the following examples:

**Examples:**

1. If the meter reading at 29 700 kHz is lower than the 29 100 kHz reading, adjust the Low End trimmer to increase the meter reading.
2. If the meter reading at 29 100 kHz is lower than the 29 700 kHz reading, turn the BAND switch to 29.0 and tune the Transceiver to 29 100 kHz. Then adjust the High End trimmer to increase the meter reading.

- ( ) Repeat the preceding adjustments two or three times to secure the most uniform response.
- ( ) Turn the BAND switch to 28.0 and tune the Transceiver for the strongest signal near 28 400 kHz.
- ( ) Tune both trimmers for this band for maximum S-meter deflection. Repeat the adjustments for the highest S-meter reading.
- ( ) Tune the Transceiver for the strongest signal near 28 100 kHz.
- ( ) Adjust the Low End trimmer for maximum S-meter deflection and note the meter reading.

- ( ) Turn the BAND switch to 28.5 and tune the Transceiver to the strongest signal near 28 900 kHz.
- ( ) Adjust the High End trimmer for the greatest S-meter deflection and note the meter reading.
- ( ) Tune the Transceiver to the frequency having the lower meter reading, if necessary. If the 28 900 kHz frequency has the lower meter reading, adjust the Low End trimmer to increase the reading. If the 28 100 kHz frequency had the lower reading, turn the BAND switch to 28.0, tune to 28 100 kHz, and adjust the High End trimmer to increase the meter reading.
- ( ) Repeat the adjustments two or three times for the most uniform response across the band.
- ( ) Follow the same procedure and adjust the bandpass filters for the 21.0, 14.0, 7.0, and 3.5 bands. The trimmers for each band are shown in Figure 4-7. Refer to Figure 4-8 for the three frequencies to use for the adjustments of each filter.

BAND	FREQUENCIES		
	MID-BAND (ADJ. BOTH TRIMMERS)	LOW END	HIGH END
29.0 29.5	29 400	29 100	29 700
28.0 28.5	28 600	28 100	28 900
21.0	21 100	21 100	21 400
14.0	14 200	14 100	14 400
7.0	7 100	—	—
3.5	3 800	3 600	3 900

**Figure 4-8**

- ( ) Tune the Transceiver to 3800 kHz. Then select the strongest signal within 5 kHz of this frequency.
- ( ) Set the S-METER LEVEL ADJUST control (see Figure 1-3, Illustration Booklet, Page 1) for an S-meter reading of S9 +50.
- ( ) Turn the Transceiver OFF.
- ( ) Remove the phono plug from the ANT socket on the rear panel and unsolder and remove the shielded cable and the 18 pF capacitor from the foil side of circuit board A.
- ( ) Remove the extender board and reinstall circuit board G in position G.