



Figure 1-8A

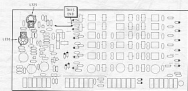


Figure 1-8B

TABLE 1

WATCHDOG		WIDE END	LOW END	LINE
TURNS		TURNS	TURNS	LENGTH
				24.0 24.5
				26.0 26.5
				28.0
				34.0
				2.0
				1.1

Figure 1-9

Refer to Figure 1-8A (fold-out from this page) and solder the free lead of the 18 pF capacitor to the foil designated TP on circuit board A. Solder the cable shield wires to the ground foil in the area shown.

Carefully plug 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.

Replace the phono plug in J101.

Remove circuit board G from the Transceiver.

Refer to Figure 1-8B and carefully unsolder from circuit board G the end of the jumper marked "this end." Pull the end of the jumper out of the circuit board hole.

Position the end of the center conductor of the shielded cable coming from circuit board A alongside the end of the jumper and solder the two together. Use a minimum amount of solder. Bend the shield wires out of the way.

Install the extender board in position G.

Install circuit board G in the extender board.

Set the front panel controls as follows:

Band Switch	3.5
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.

Depress the ON button.

Adjust the AF GAIN control for a comfortable listening level.

Tune the Transceiver to 3800 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, fold-out from Page 237). DO NOT use the RF GAIN control for this purpose.

Set the S-METER LEVEL ADJUST control, (see Figure 1-3, fold-out from Page 237) for an S-meter reading of 50+50.

Tune the Transceiver to 3500 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 bottom edge.

Write down the S-meter reading. $+45$

Push circuit board D back down onto its connectors.

Tune the Transceiver to 4000 kHz and select the strongest signal within one-half of a tuning knob revolution. $+25$

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

Write down the S-meter reading. 20

Repeat the above procedures at 3500 kHz and 4000 kHz and simultaneously adjust the trimmer capacitors on coils L725 and L728 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.

Remove the shielded cable from the jumper on circuit board G.

Reinstall the free end of the jumper on circuit board G in its former position (S-1).

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.

PRESELECTION 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 1-9 (fold-out from Page 240) identifies the trimmer capacitors to be adjusted for each band switch position.

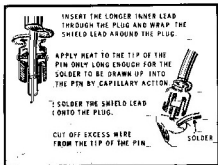


Figure 1-10

- () Refer to Figure 1-10 and 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 not already 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 1-9 and adjust the three 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 29 000 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 29 000 kHz reading, adjust the Low End trimmer to increase the meter reading.
 2. If the meter reading at 29 000 kHz is lower than the 29 700 kHz reading, turn the BAND switch to 29.0 and tune the Transceiver to 29 000 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 all three 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 28 000 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 29 000 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 29 000 kHz frequency has the lower meter reading, adjust the Low End trimmer to increase the reading. If the 28 000 kHz frequency had the lower reading, turn the BAND switch to 28.0, tune to 28 000 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 1-9. Refer to Figure 1-11 for the three frequencies to use for the adjustments of each filter.

BAND	FREQUENCIES		
	MID-BAND ADJ. 3 TRIMMERS 1	LOW END	HIGH END
29.0 29.5	29 400	29 000	29 700
28.0 28.5	28 400	28 000	29 000
21.0	21 100	21 000	21 400
14.0	14 200	14 000	14 400
7.0	7 100	7 000	7 300
3.5	3 900	3 500	4 000

Figure 1-11

- () 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, fold-out from Page 237) for an S-meter reading of S9+50.
- () Remove the phone 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.

COUNTER CLOCK SETTING

NOTE: The counter clock output will be calibrated against the signal of station WWV, Colorado, on 15,000 kHz or station CHU, Canada, on 7,335 kHz. One of the stations may be more easily received than the other in your location.

Connect an antenna (suitable for the frequency of the calibration station selected) to the COM antenna socket. Be sure the rear panel switch is still at COM.

- () Turn the BAND switch to WWV or 7.0, as appropriate.
- () Depress the ON button.
- () Tune to zero beat station WWV in the vicinity of 15,000 kHz or station CHU at 7335.0 kHz.
- () Adjust the tuning so the voice announcements sound natural.
- () Adjust the time base trimmer capacitor on the upper right-hand corner of circuit board A (next to the crystal) until the display reads 15,000.0 or 7335.0.

POSSIBLE CAUSE CHART

1. Display cannot be adjusted to agree with WWV or CHU frequencies.
 - A. Y101 not within tolerance.
 - B. C114 defective.

- () Release the ON button.

LOW POWER TRANSMITTER CHECK

- () Check coil L321 on circuit board C (#85-1420-3) to be sure the coil slug is still flush with the bottom of the coil form (see Pictorial 5-12 on Page 89).
- () Plug in circuit board C. Visually check to make sure the peaking coils do not touch the metal shield. If necessary, bend them over enough to clear the shield.
- () Refer to Pictorial 12-38 (fold-out from Page 243) and mount the driver circuit board (#85-1421) on the right side panel. Plug the circuit board into connector J and secure it to the three mounting holes at GG, GH, and GJ with 6-32 x 3/8" screws.
- () Plug the HI and LO shielded leads coming from chassis cutout BL into the corresponding sockets on the driver circuit board.
- () Connect a dummy load (capable of dissipating 100 watts) to the ANT (antenna) socket on the rear panel.
- () Set the BAND switch to 3.5.
- () Turn the LEVEL control fully counterclockwise.
- () Turn the SIDE TONE and ANTI-VOX controls fully counterclockwise (rear panel view).
- () Depress the ON, PWR and TUNE buttons. All other buttons should be released.