SERVICE BULLETIN

from: TRIO-KENWOOD COMMUNICATIONS, INC.

TS-930 & other models #863

SUBJECT: Incorrect AC line voltage setting

DATE 10-22-82

It has been found that a few TS-930S (and other) transceivers have been shipped in the 220V or 240V Line position. If you should encounter an initial transceiver failure, please check for correct line voltage selector setting. The voltage selector is located on the bottom case at the rear of the unit.

JEB/sh

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#867

SERVICE BULLETIN AMATEUR RADIO

SUBJECT	DATE
TS-930S SSB TX Tone Quality	3.29.83

The transmitted audio tonal quality of the TS-930S may be improved by the following:

PROCEDURE:

In the TS-930S Service Manual page 64, make the following change:

5. 100W FINAL BIAS	1) FREQ : 14,175.0kHz MODE : USB MIC CONTROL : MIN Desolder L7 lead and connect ammeter in its place, minus to L7 side. STBY : SEND (After adjustment, resolder L7 lead.)	DC ammeter	FINAL	L7	FINAL	VR2	~~60mA~~ 70ma Note: Stabilization requires approximately 20 seconds.	± 10mA
	2) FINAL unit VR1 : MIN Disconnect relay connector in FINAL unit, 28V line and connect ammeter in its place. STBY : SEND (Disconnect ammeter and reconnect this connector after adjustment.)					VR1	Read the meter when VR1 is at MIN, then adjust VR1 so that the current is increased by 150mA.	~~500mA +100mA -50mA~~ 1.3A (1.1-1.5)

*NOTE: THIS CHANGE IS APPLICABLE TO UNITS WITH SERIAL NUMBERS PRIOR TO S/N 3080001.
Installation time for the procedure is ½ hour or less

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#868

SERVICE BULLETIN AMATEUR RADIO

SUBJECT	DATE
TS-930S Low RX Sensitivity	3.29.83

A loss of receiver sensitivity (6-30db) may be caused by shorted switching diodes in the Signal Unit (X57-1000-XX). The following procedure will increase the capability of the unit to withstand high RF voltage levels.

PROCEDURE:

Signal Unit (X57-1000-XX)

1. Replace Signal unit jumper J27 with an XZ-070 zener diode. (PCB coordinate C-1, see figure 2.)

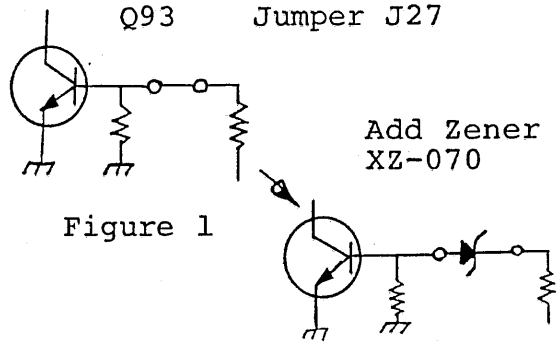

Figure 1

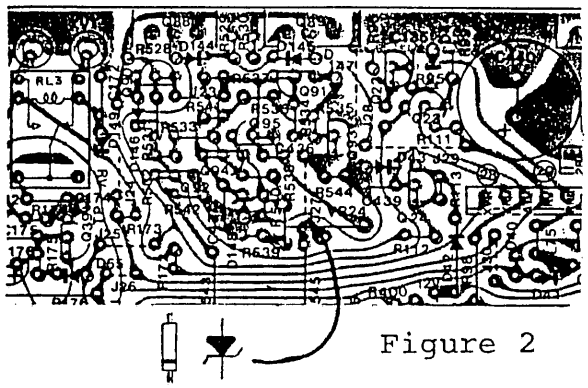

Figure 2

2. Change diodes D15 through D33 from BA282's to ls2588's. Change only the defective diodes when making the repair.

3. Figure 3 shows a circuit that is capable of withstanding antenna input levels of up to 50 Watts. Use this on units that may be subject to high levels of RF. (This is an optional change that may not be done in warranty.)

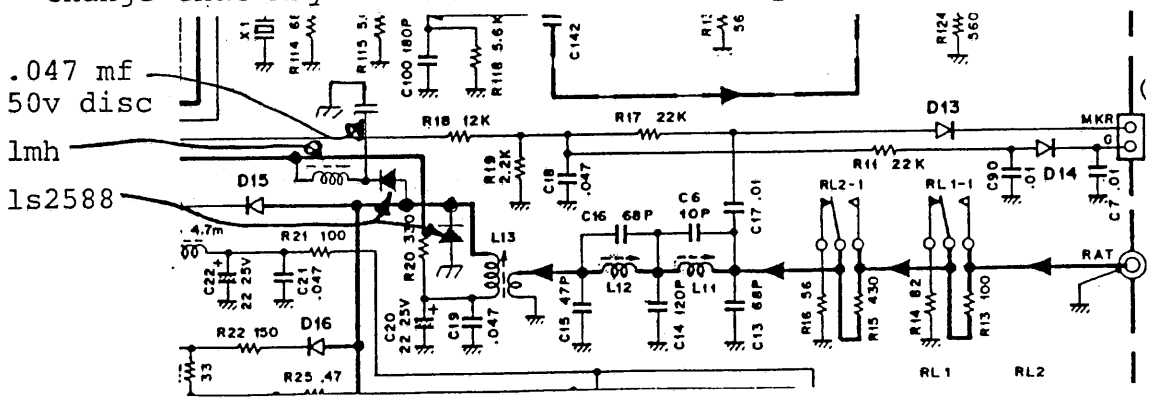

Figure 3

*Note: Installation time for this procedure is 30 minutes or less.

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SERVICE BULLETIN

AMATEUR RADIO

#869

SUBJECT TS-930S PLL Unlock

DATE 3.29.83

Some users of the TS-930S have reported a problem where the PLL will sometimes not lock (digital display does not come on) if the power switch is turned off and on while XX.499.9 MHZ is displayed, after the unit has warmed up. This may occur also in the FSK mode.

This may be caused by detuning of VCO-2 and VCO-3 in the PLL unit (X50-1880-00). This may be cured by a simple increase in the voltage obtained in the PLL alignment procedure. Make the following change in your service manuals.

Service Manual page 58

3. VCO-3	1)	f. counter	PLL	IC13–15	PLL	TC2	10,240,000Hz	± 10Hz
	2) FREQ : □□.□□1.9□kHz To obtain this frequency 1st set dial to 2.0.0. Then using mic pushbutton depress button (DWN) one step at a time until the display just changes to □1.9.9 by this method can step frequency in each 10Hz steps.	DC V.M		Q32-C		T14	~~9.70V~~ 4.2v	± 0.05V □ DENOTES STEP 9 (90Hz) or one step before the next 100Hz (.xxx.1) Transition
	3) FREQ : □□.□□0.0□kHz Use similar method in step 3. 2) PLL adjustment						Check	9.5V ± 0.5V
4. VCO-2	1) FREQ : □□.999.9□kHz Use similar method in step 3. 2) PLL adjustment.	DC V.M	PLL	Q24-C	PLL	T15	~~3.00V~~ 3.5v	± 0.05V
	2) FREQ : □□.000.0□kHz For 10Hz level, tune VFO one step before □□.999.□□						Check	~~8.0V ± 0.5V~~ 8.5v

*Notes: 1. Be sure to adjust T14 and T15 of VCO-2 and VCO-3 whenever a PLL related circuit is serviced.
2. This change applies to units before S/N 306XXXX.
3. Installation time for this procedure is 30 minutes.

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#872

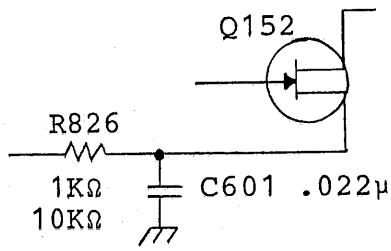
SERVICE BULLETIN AMATEUR RADIO

SUBJECT	DATE
TS-930S CW Pitch Tone Shift	7-06-83

Some users of the TS-930S have reported a slight change in the CW pitch tone when the MONI switch is turned ON and OFF.

This may be corrected by changing the following components:

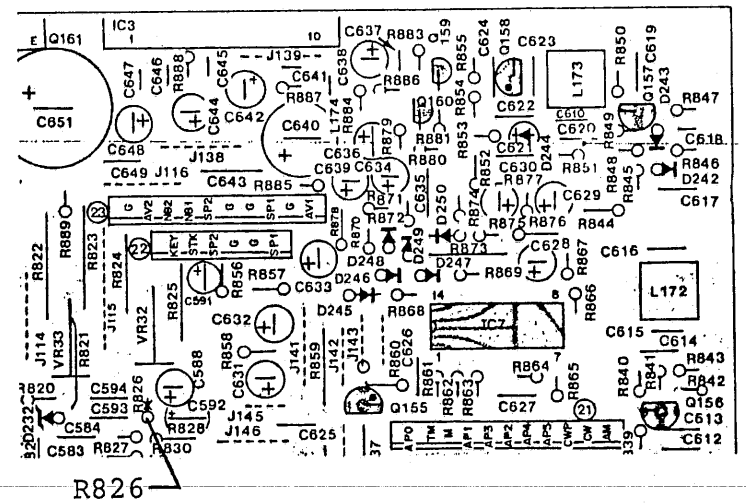
On the Signal Unit (X57-1000-XX) change R826 from a 1K ohm to a 10K ohm, part no. RD14CB2E103J and remove C601, a .022μF capacitor from the foil side of the circuit board.



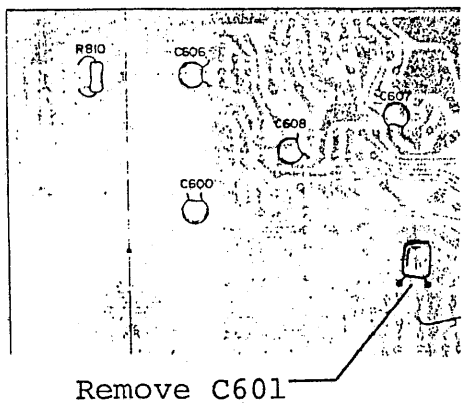
Schematic address: F,8

SIDETONE MIXER

Component side view



Foil side view



Notes: This change applies to units before S/N 3070221.
Installation time for this procedure is ½ hour or less.

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#873

SERVICE BULLETIN AMATEUR RADIO

SUBJECT	DATE
TS-930S CW VBT	7-15-83

This procedure will allow a simplified alignment method for the TS-930S CW VBT section, when a VBT-1 jig is not available.

TEST EQUIPMENT REQUIRED

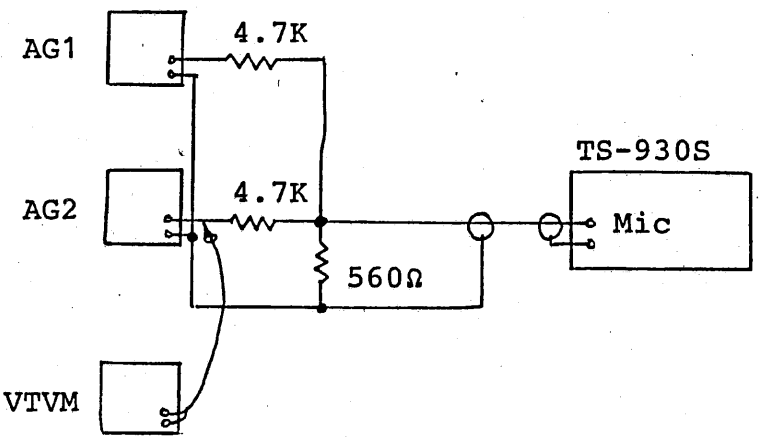
Oscilloscope
Audio signal generator (2)
AF VTVM

PROCEDURE

1. Preset the TS-930S controls as follows:

   1) MODE: .....LSB
   2) Disconnect the DRV connector from the Signal Unit.
   3) Confirm that CAR2 frequency is the same when switched from transmit to receive. If it does not stay constant adjust VR23.

2. Connect the oscilloscope probe to R176 in the Signal Unit.
3. Connect the two Audio Generators as shown in the figure below. Set AG1 to 300 Hz and AG2 to 2.9 KHz.



4. Ensure that the output level of AG1 and AG2 are equal by using the AF VTVM.
5. Connect the cathode of D133 to that of D132 in the Signal Unit using a 0.01μF capacitor.
6. Clip the lead of D124 and place the STBY switch to SEND.
7. Adjust TC4 (CAR1 8.8315 MHz for USB) so that a complete tone waveform is observed, as shown in figure 2. Return to REC, and resolder D124.

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#873

SERVICE BULLETIN AMATEUR RADIO

SUBJECT	DATE
TS-930S CW VBT (cont.)	7-15-83

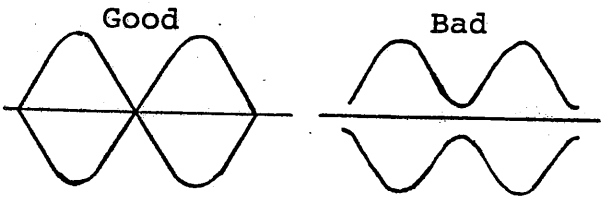

Figure 2

8. Remove the 0.01μF capacitor installed in step 5.
9. Set STBY to SEND and adjust TC3 (CAR2 8.375MHz) so that a complete two tone signal is displayed, as in Fig. 2.
10. Return to REC, and reconnect the DRV connector. This completes the simplified alignment procedure.

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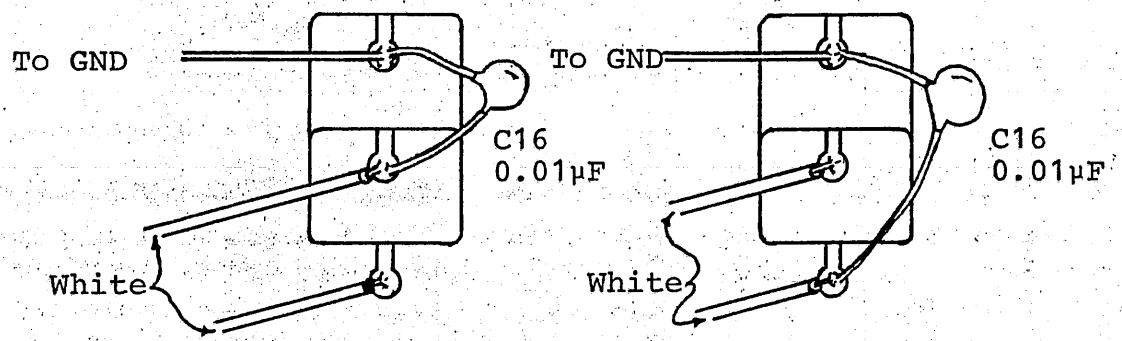
#874

SERVICE BULLETIN AMATEUR RADIO

SUBJECT	DATE
TS-930S RF FEEDBACK	7-15-83

For reports of RF Feedback from the external speaker, especially when using a vertical antenna, or a linear amplifier, check for correct installation of capacitor C16 on the EXT. SPKR jack.



INCORRECT CORRECT

Note: This bulletin is applicable to radios with serial numbers prior to # 3070420. Time required for this procedure is ½ hour or less.

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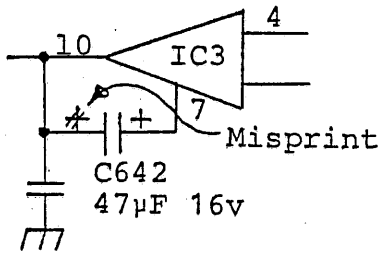
#875

SERVICE BULLETIN AMATEUR RADIO

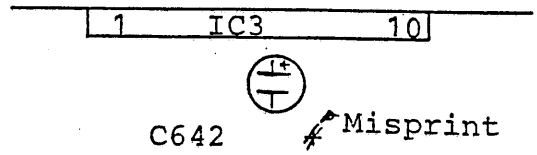
SUBJECT	DATE
TS-930S AUDIO OSCILLATION	8-16-83

Some users have reported an audio oscillation when the AF gain control is set between 10:00 and 12:00.

The cause may be that Signal Unit (X57-1000-XX) capacitor C642 is installed backwards. See figures below. Please change your service manual schematic to reflect the correct positioning when you check the board.



Schematic



PC Board View

Note: This change is applicable to units before S/N 307XXXX.

TK/cm

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~~#876R~~

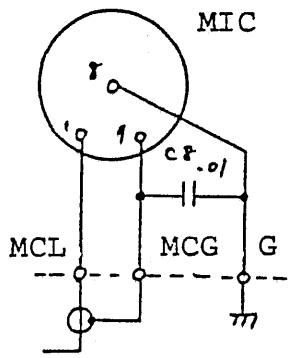
SERVICE BULLETIN AMATEUR RADIO

SUBJECT	DATE
TS-930S RF FEEDBACK INTO MIC CKT	8-16-83

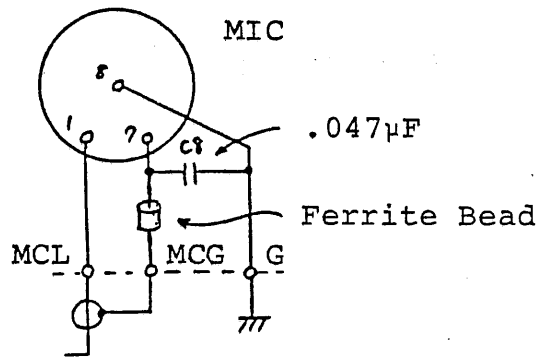
Some users may report RF feedback to the MIC at low frequencies, for example: 3.5 Mhz.

Make the following changes to SW unit (J) (X41-1410-00):

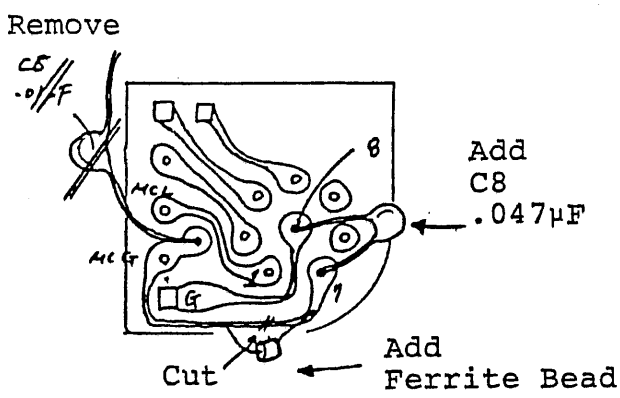
OLD



NEW



Foil side view



Note: This change is applicable to units before S/N 308XXXX.

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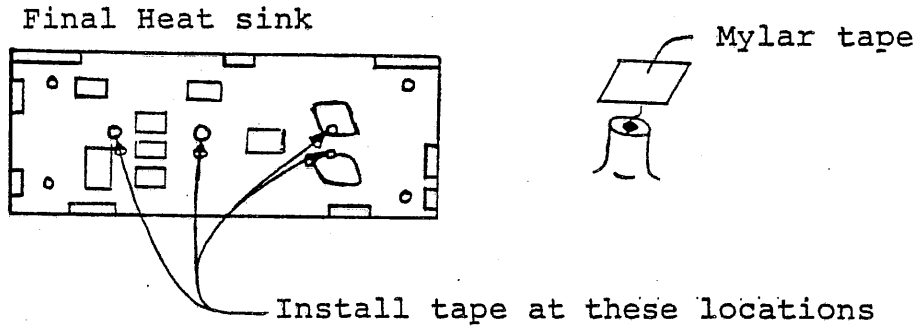
#879

SERVICE BULLETIN AMATEUR RADIO

SUBJECT	DATE
TS-930S ALC LEVEL DRIFT 28 MHZ CW	8-25-83

Some users have reported that the ALC meter indication occasionally jumps during long key down periods on the 28 Mhz portion of the bands. The symptom may be caused by the ground foil of the Final Unit (X56-1430-00) comming in contact with one or more of the projections on the final heat sink, due to expansion when the temperature rises.

Apply mylar insulating tape to the projections on the heat sink, to prevent reoccurance of this symptom. See figures below.



Notes: This bulletin is applicable to units prior to serial number 3080001.
Time required for this modification is 1/2 hour or less.

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#881

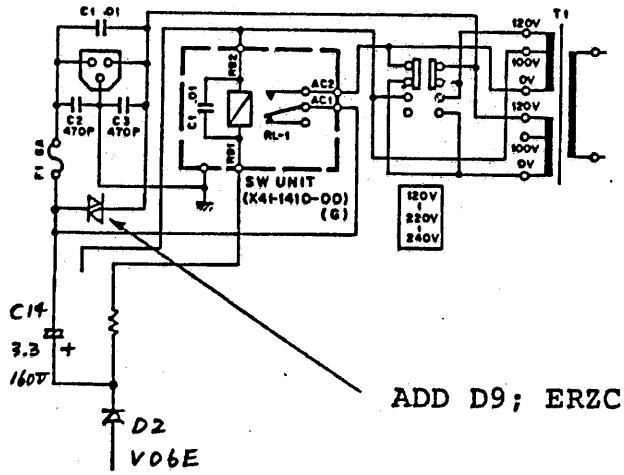
SERVICE BULLETIN AMATEUR RADIO

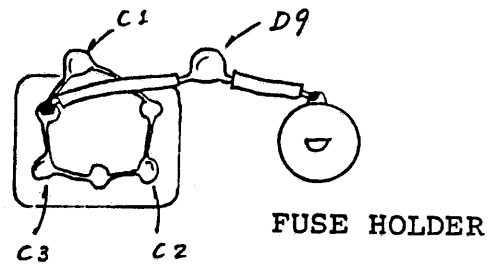
SUBJECT	DATE
TS-930S POWER SUPPLY SURGE PROTECTION	10-27-83

A line surge (exceeding approximately 4.5KV) due to static electricity or nearby lightning discharge may short power relay diode, D2 (V06E), and cause electrolytic capacitor C14 (3.3 uf) to break down. This results in relay chatter and the relay contacts may finally weld.

Addition of the surge absorber to the primary power supply input circuit, as shown below, should help avoid this type of failure.

NOTE: This symptom has occasionally occurred in those limited areas subject to frequent and violent lightning discharges. A good earth ground and antenna system lightning protection is still strongly recommended.





AC POWER 3P INPUT

Note: This change applies to units before S/N 3080301.

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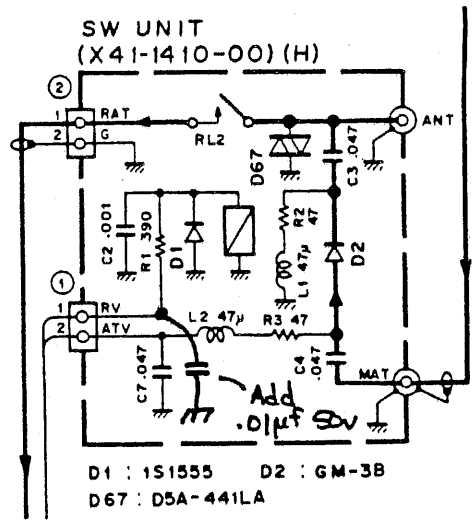
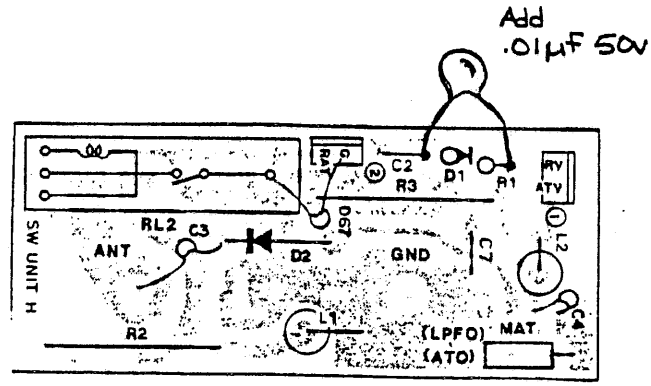
#884

SERVICE BULLETIN AMATEUR RADIO

SUBJECT	DATE
TS-930S 15 METER INTERNAL BEAT TONE	1-27-84

Some users have reported an internal beat tone that appears every 10 Khz, when operating in the range of 20-21.5 Mhz. Apparently the RV terminal of Switch Unit H is being affected by the 1st loop of the PLL unit. The cure is relatively simple. Add a .01 uf 50v disc ceramic capacitor on the RV line of Switch Unit H as shown below.





Time required for this modification is 1/2 hour or less.

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#886

SERVICE BULLETIN AMATEUR RADIO

SUBJECT	DATE
TS-930S INTERMITTENT TX POWER OUTPUT	05-11-84

The following procedure should correct any tendency of the TS-930S to exhibit intermittent TX Power output. Most of the reported cases of this nature have been traced to poor contact of one or more of the plated-thru holes mentioned below. Careful adherence to this procedure should prevent reoccurance of this symptom.

PROCEDURE:

1. Remove the top and bottom covers.
2. Remove the 10 screws securing the final unit to the chassis.
3. Disconnect all cable assemblies from the final assembly, and remove it from the radio. The fan motor cable may have to be removed for easy access.
4. Remove all Final unit PC board screws and turn the circuit board foil side up.
5. Desolder Q6, D2, and the plated-thru hole connecting the foils from R20 and Q8 base together (between T2 and VR1). Do not remove these components!
6. Carefully remove the green solder resistant coating from the immediate areas of these six points, so that there is bare copper foil up to and surrounding the eyelets.
7. Carefully resolder these six points, and those listed below:
   - Q1 emitter and base
   - D4 anode and cathode
   - Q2 emitter and base
   - Q3 emitter and base
   - Q7 emitter and base
   - Q4 and Q5 base and both collectors
   - Plated-thru hole between C36 and C15
   - (2) Plated-thru holes by the molex connector
   - Check and resolder the input and output coax connectors
8. Double check your work to ensure that there are no solder bridges or splashes.
9. Check the value of R19. If it is not 6.8K ohms, change to this value.
10. Reinstall the final assembly, and readjust the idle bias currents of the the driver and final transistors in accordance with Service Bulletin #867.

CAUTION: ENSURE THAT NO CABLES ARE PINCHED BETWEEN THE FINAL ASSEMBLY AND CHASSIS WHEN REINSTALLING THE FINAL UNIT. THE FAN CABLE IS ESPECIALLY VULNERABLE, SO PAY CLOSE ATTENTION.

clm

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693

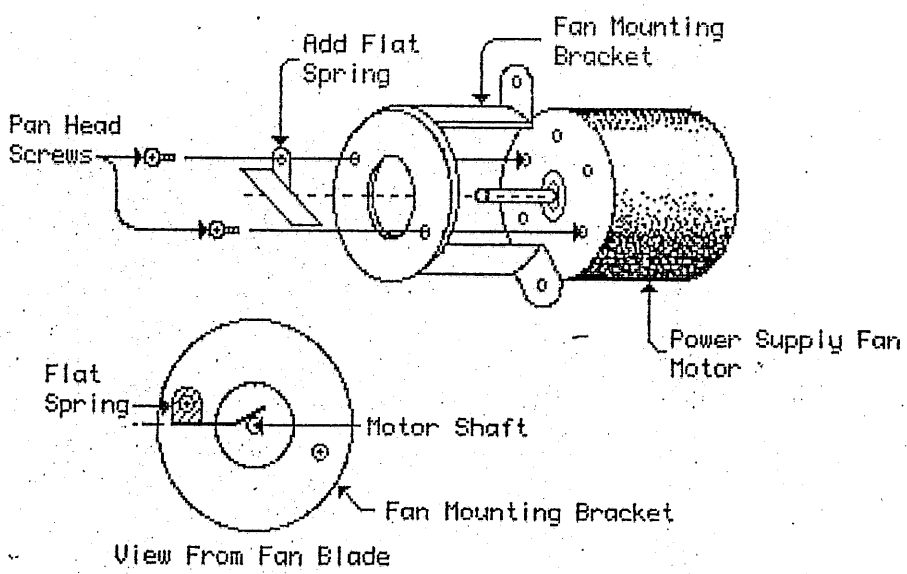
SERVICE BULLETIN AMATEUR RADIO

SUBJECT	DATE
TS-930S Noisy Power Supply Fan	3-1-85

Some users of the TS-930S have reported that the Power Supply Fan motor makes excessive noise. This fan motor was originally designed to drive a pully system. By adding a small amount of lateral tension to the motor shaft this noise is reduced or eliminated. The procedure listed below should correct any tendency of this motor to make noise.

Parts Required: Flat Spring Part Number.....G02-0549-04

Add the Flat Spring as shown in the figures below.



Time Required for this modification is 1/2 hour or less. CLM

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