

## KENWOOD TS-950S & TS-950SD RF GAIN MOD

This mod is courtesy of Kenwood

The Kenwood TS-950S and TS-950SD HF transceivers are fine radios. However, many, if not all, of them were produced with a design flaw which allows the RG GAIN control to cease function in the presence of a strong signal IF the AGC has been turned OFF.

One common scenario goes something like this:

- 1) Tuning around any band, in CW mode, with the AGC turned OFF, and using the RF GAIN to control received audio level.
- 2) RF Gain is set to allow moderately strong signals (c. S-9) to be received without excessive audio output (comfortable listening level).
- 3) Tune through a strong (S-9 +10dB or more) signal. The receiver loses all control of the RF GAIN. The control becomes virtually useless you either tune off the strong signal or the signal stops, at which point the RG GAIN control again becomes usable. Immediately switching the AGC back ON, will also allow you to regain control of the RF GAIN, but if you again return to AGC OFF, and the signal is still present, control is again lost.

Although I have not tried it, I am told this problem can also occur in other receive modes as well.

The following document is a re-typed version of the Kenwood Mod. Any typos have been allowed to remain in the narrative of the document. The schematic has been re-drawn in order to allow you to follow the mod more easily, not because the original drawing was in error, but because it was somewhat difficult to follow the black & white line drawing.

I have also included several photos of the Signal Unit PC board to assist you in locating the portion of the PC board which will require your attention.

Note that you will be dealing with SMT-type devices which will require a significantly higher degree of care when working with them than would be required if non-SMT devices were used. This is result of progress(???) in manufacturing. You WILL have to use a soldering iron with a very small tip, and you may have to use a magnifying lens to assist you in locating and removing the SMT devices, not to mention installing the two jumpers required by the mod. Fortunately, NO additional components are required... only a couple lengths of #24 to #30 insulated wire (for the jumpers).

Good luck - Tom Hammond NØSS

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28 Nov 2001

<b>MODEL</b>	<b>TS-950S &amp; TS-950SD</b>		
<b>SUBJECT</b>	No RF Gain at AGC OFF and large input.		
<b>CONTENTS</b>	<b>REFERENCE</b>		
Phenomena:	<ol style="list-style-type: none"> <li>1) AGC is turned OFF. The RF GAIN is set maximum in the counterclockwise direction.</li> <li>2) SSG is connected to the ANY pin. The SSG input is about 10dBμ. A signal is received on the SSB mode, and it is made sure that the S-meter's pointer swings (about S-3).</li> <li>3) The RF GAIN control is turned counterclockwise to set the S meter's swing to S-9.</li> <li>4) The SSG input is changed from 10dBμ to 40dBμ. Then, the S meter reading zero, and the RF GAIN becomes disabled.</li> </ol>		
Cause:	Insufficient study on switching transistors Q 30 and Q 40 (these transistors operate at AGC OFF) of AGC amplifier Q 10 in the signal unit.		
Countermeasure:	<p>The circuit of the AGC amplifier Q 10 is the signal unit (X57-3380-00) is modified.</p> <ol style="list-style-type: none"> <li>a) Chip resistor R 135, it removed.</li> <li>b) Chip resistor R 136, is removed.</li> <li>c) Digital transistor Q 40, DTC124EK, is removed.</li> <li>d) Chip diode D25, RKZJ3.6B, is changed to chip jumper W8, ( R92-0679-05 ).</li> <li>e) Short jumper W9, R92-1061-05, is added.</li> </ol>		

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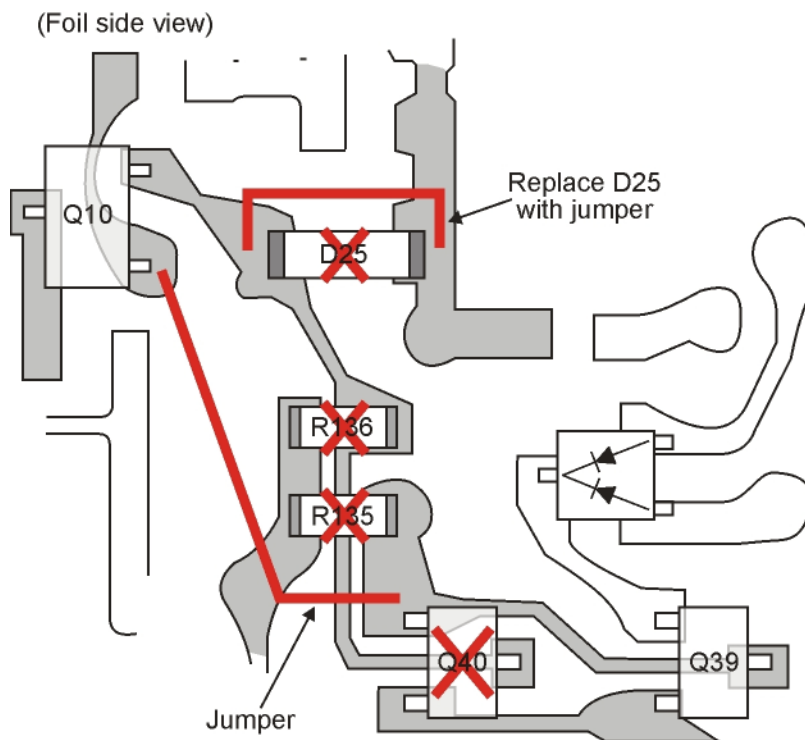
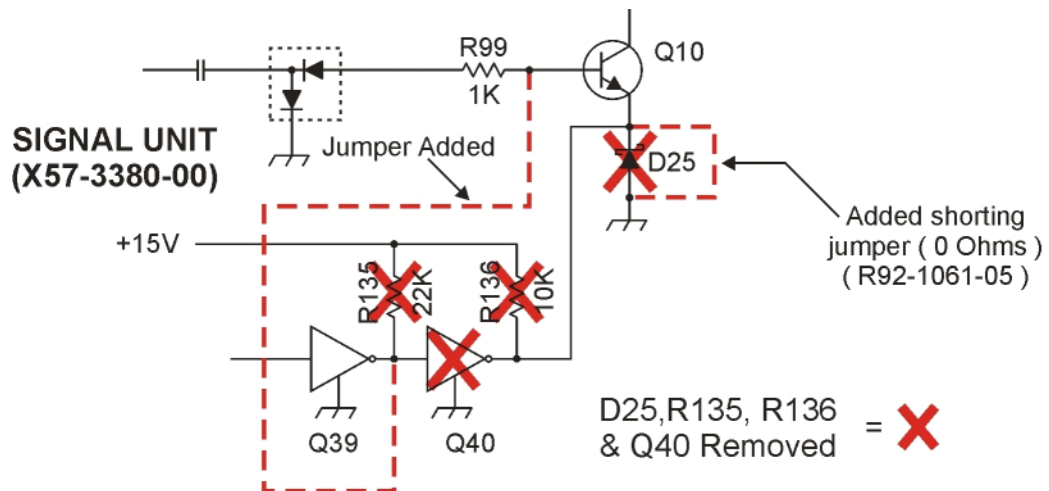
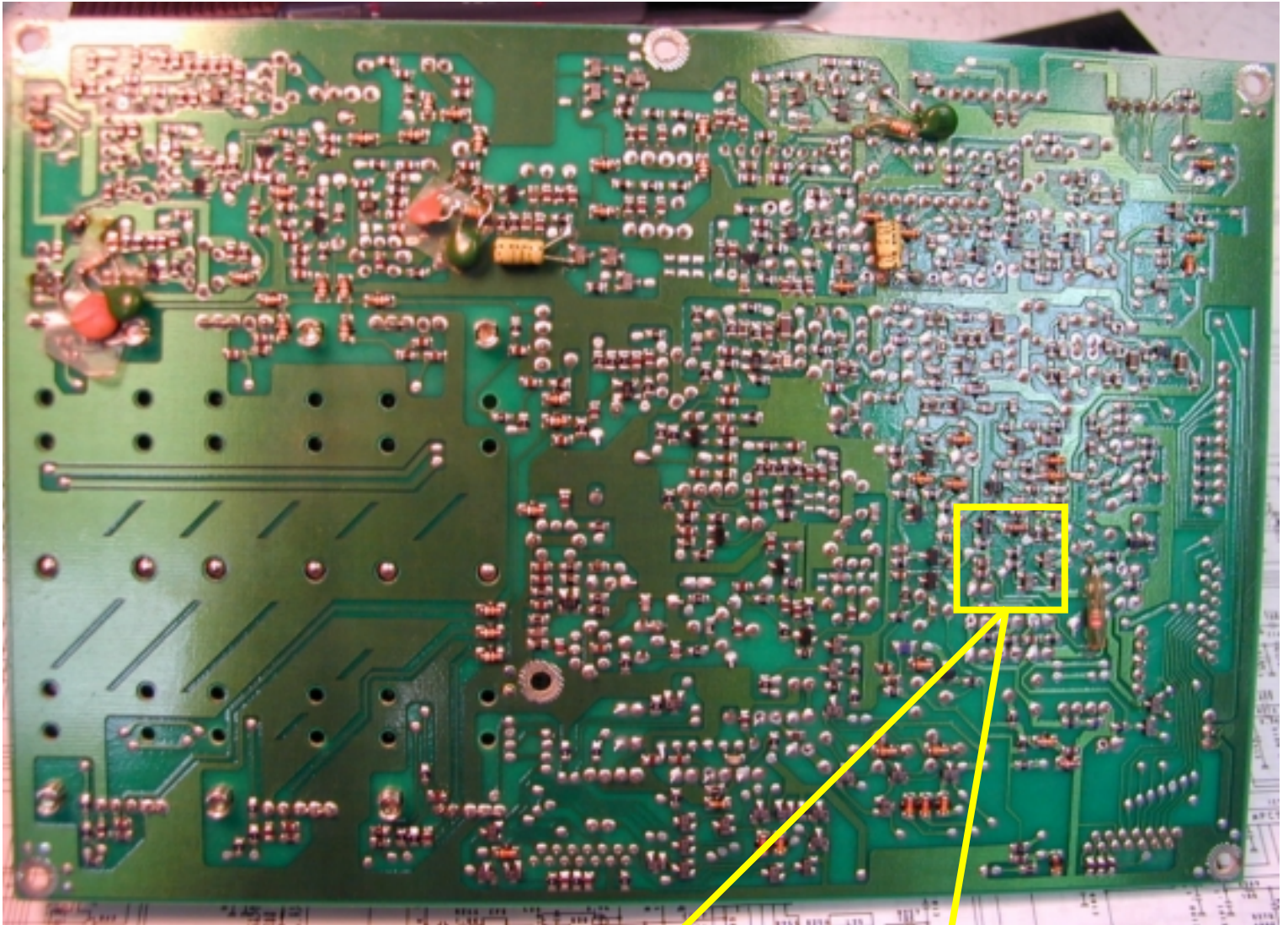
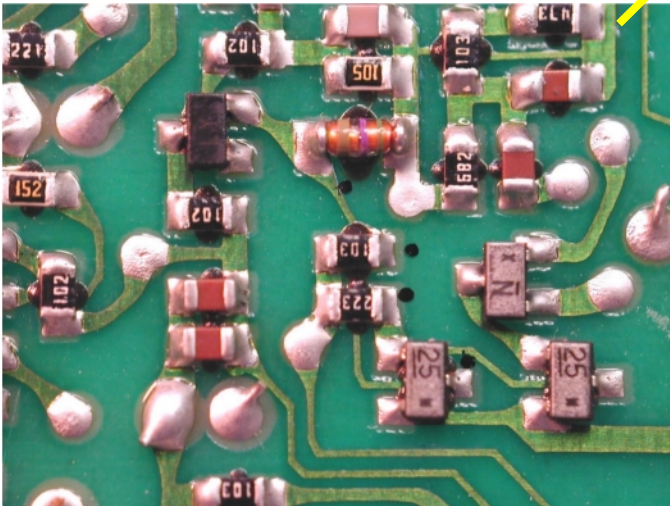


Diagram redrawn for clarity  
by: Tom Hammond NØSS  
28 November 2001

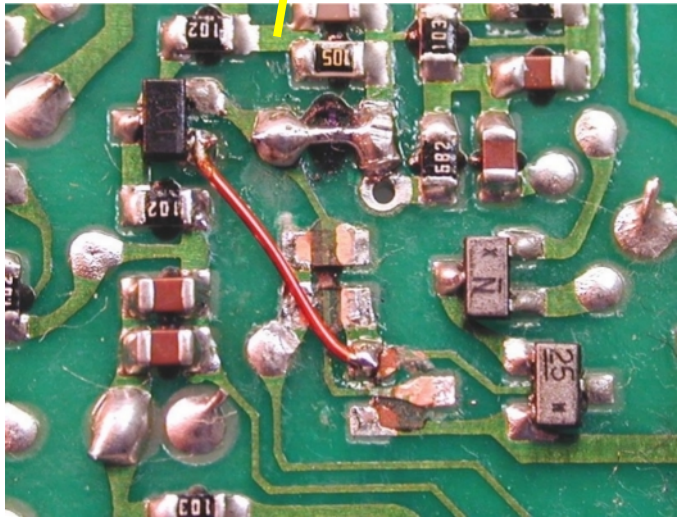




**SIGNAL UNIT PC BOARD (X57-3380-00), BOTTOM OF TS-950SD**



**BEFORE MOD**



**AFTER MOD**