

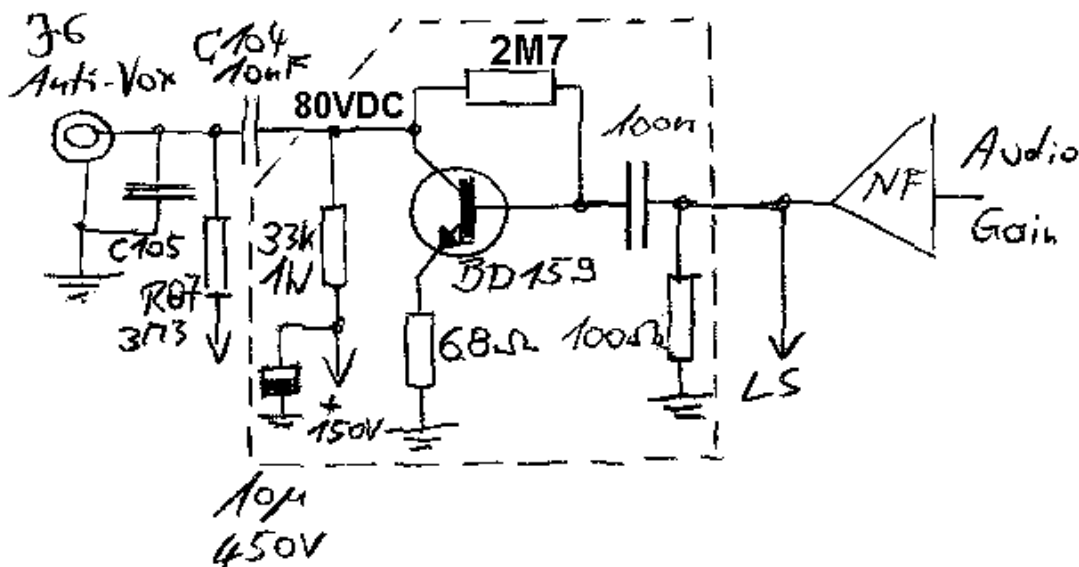
## New Anti-Vox Output for the R-4C

### Introduction

When replacing the original AF-Amplifier in the R-4C with a „new“ IC-based amplifier, the Anti-Vox output won't operate because the audiotransformer T13 can't be used. This transformer has a secondary winding especially for the anti-vox and supplies at normal audio-output (speaker or headset) app. 20Vpp for the anti-vox in the T-4X. This is app. 20 to 40 times the voltage supplied to the audio-output. The T-4X requires such a high voltage for the Anti-Vox-circuit.

### Solution

A small audio-amplifier solves this problem – see picture 1.

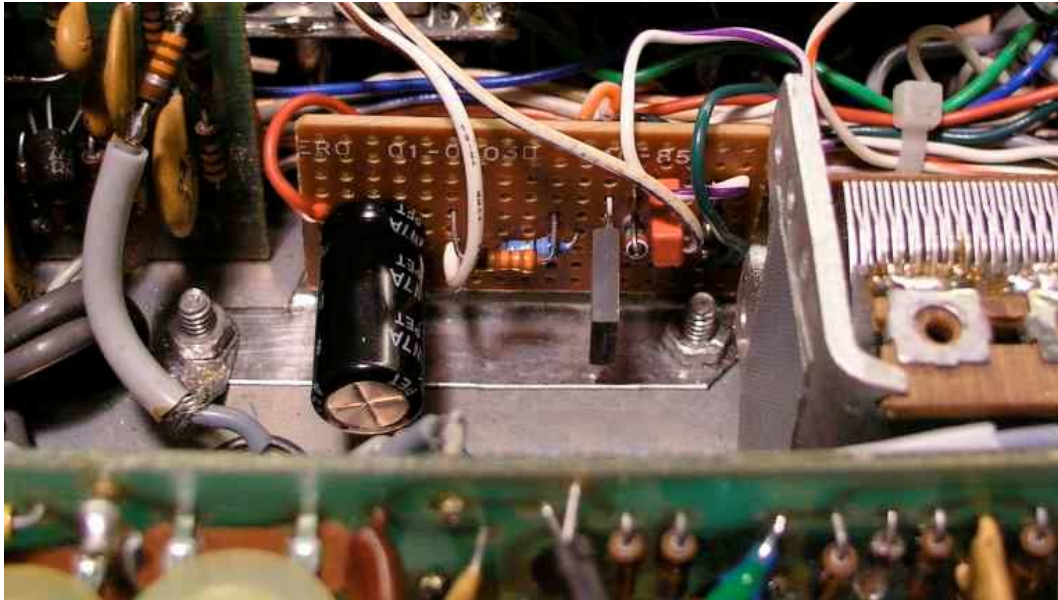


Picture 1 Anti-Vox Amplifier

This amplifier is supplied with 150VDC to get the required output-voltage, this voltage is taken from C164.

- Use a bipolar npn-transistor with  $U_{cbo} > 250V$ ; the BD159 has 375V.
- The collector-resistor (33 k  $\Omega$ ) has a thermal dissipation of app. 150mW .
- The emitter-resistor (68  $\Omega$ ) increases the input-impedance of the circuit and helps to avoid audible distortion in the speaker at high output voltages. Otherwise, the base-emitter-diode would become conductive.
- The input-resistor (100  $\Omega$ ) defines the DC-potential to ground, if there is no speaker or headset connected.
- The 2M7 sets the bias and should be selected for a collector-voltage of app. 80VDC.
- The input is connected parallel to the audio-amplifiers output and thus parallel to the speaker (LS) or headphones.
- C104, C105 and R87 are the original components and remain unchanged.

This circuit is soldered onto an experimental board and located at the place of the removed T13 – see picture 2. I used a small tinned metalstrip, bended it, drilled two holes into it and soldered the board onto it. The holes are the same as for T13.



**Picture 2 New Board, T13 removed**

**NOTE:  
150VDC MAY BE LETHAL !**

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