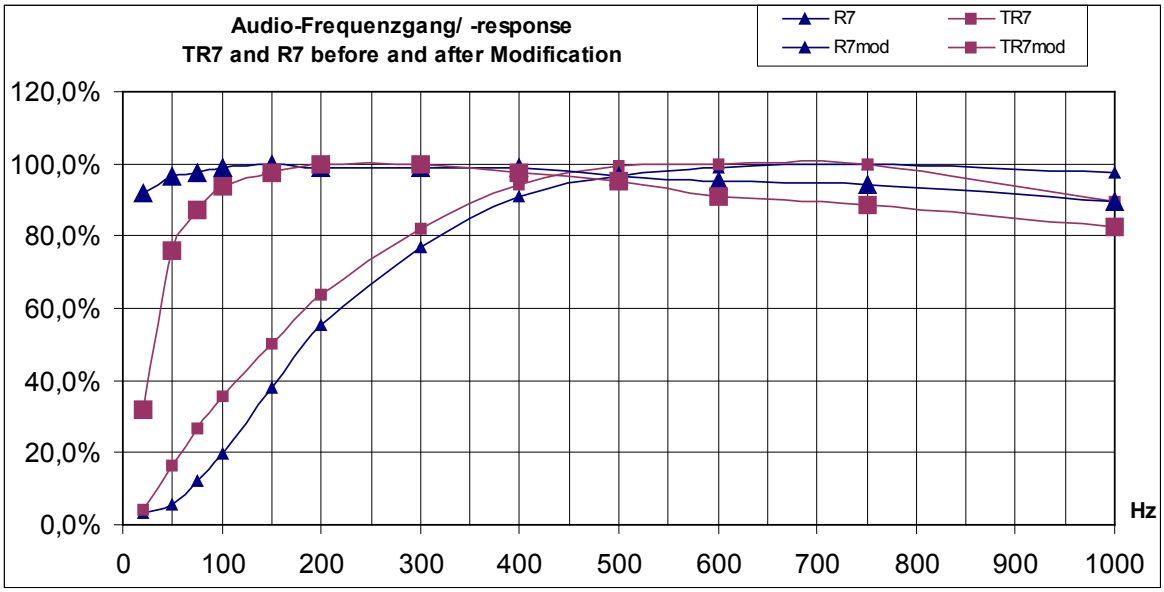
Modification of RX-Audio-Response for 7-Line (TR7 and R7)

Introduction

My 7-Line had a rather weak audio at low frequencies, even with „big“ speakers.
I´m sure, that the developing engineers have designed the audiocircuits to increase higher frequencies for a better readability, but it is a question of individual feeling.
First, i made some measurements.



Picture 1 AF-Response of TR7 and R7 before and after Modification

These AF-measurements were made in mode AM; my TR7/R7 have AM-filters with 6kHz/4kHz. A 14MHz-signal was taken from a signal generator type HP8640B in Mode AM with m=80% and it was levelled over the receivers AGC´s thresholds. The modulating AF was varied from 20Hz to 1kHz - holding m konstant at 80%. The AF-output was measured at the speakers-jack with an AF-voltmeter type HP400E – parallel with 4 Ohms simulating the external speaker.
Result: A strong damping of frequencies below 400Hz can be seen in picture 1 (curves with small dots). The y-axis is calibrated in mV_{rms} , and related in percentage to the maximum voltage within the range of frequencies.
Reason: Examining the AF-circuits, it can be seen, that there are coupling capacitors, which are too small. Increasing these capacitors solve this problem.
<u>Modifications:</u>
The modifications described in this article lead to the curves with the big dots in picture 1. All capacitors with 0,47uF are non polarised/monolithic; capacitors with 4u7 or bigger are electrolytic (observe polarity!).

Note 1: Don´t use a speaker as load, because it´s mechanical resonance (between 20 and 100Hz) will have a strong influence on the result at these frequencies!
Note 2: Don´t use the R7-phonejack at the front, because there is an internal series resistor of 220 Ohms. Use the jack for the external speaker at the rear.

RX-Audiocircuit of TR7

Table 1, Picture 2 and 3 show the modified C´s on the TR7´s board „2ndIF/AGC“ and the locations.

Capacitor	Old value	New value
C 1140	1uF	4u7 or 10uF/15V
C 1146	1uF	4u7 or 10uF/15V
C 1147	22uF	100uF/25V
C 1150	0,05uF	0,47uF
C 1151	22uF	100uF/25V
C 1152	0,01uF	0,47uF
C 1159	250uF	1000uF/25V
C 1166	1uF	4u7 or 10uF/15V

Table 1 Modified values TR7 - 2ndIF/Audio

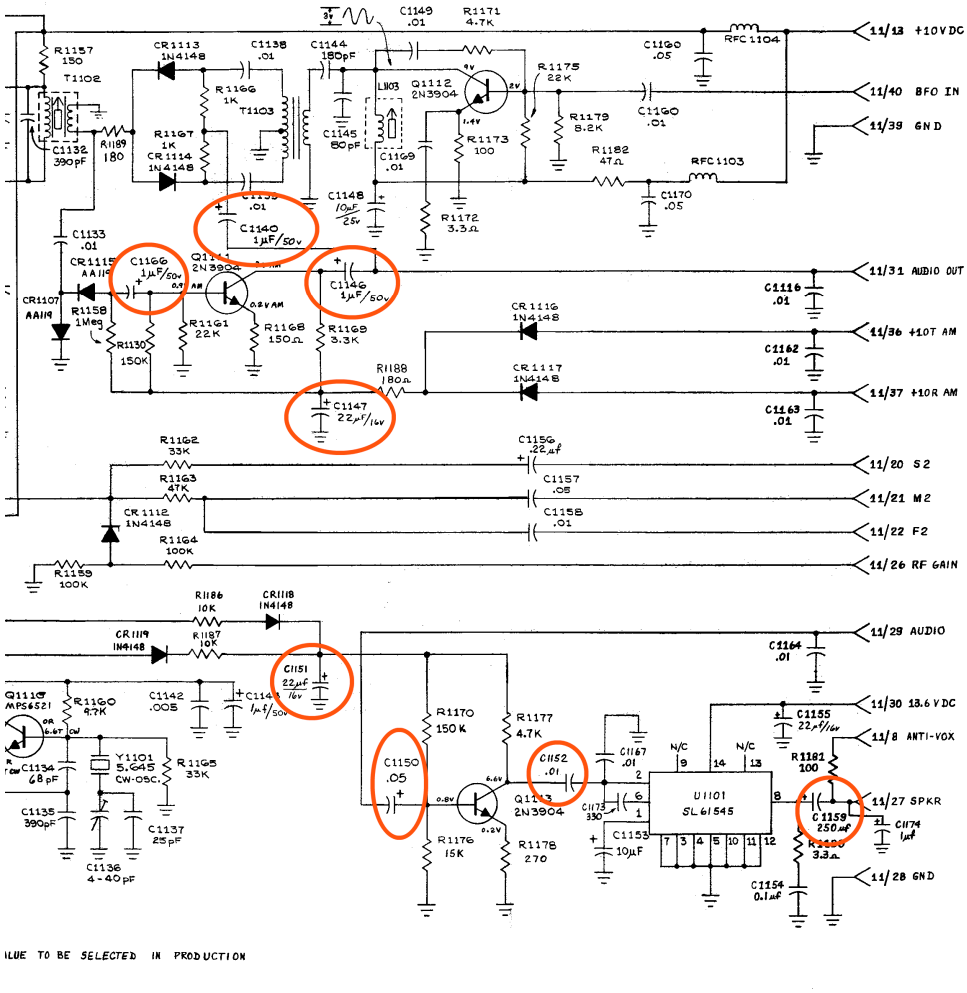


Fig. 2-22 2nd IF/Audio Board Schematic 2-63

Picture 2 Modified C´s on the TR7 – 2nd IF/Audio Board

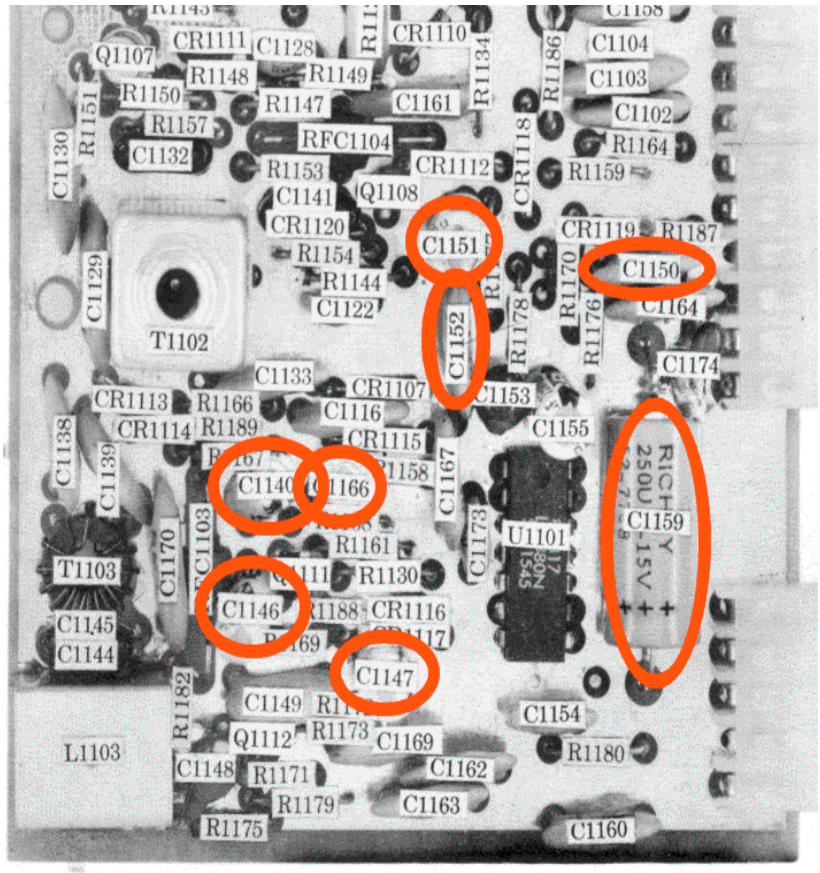


Fig. 2-21 2nd IF/Audio Board Pictorial 2-63

Picture 3 Location on the TR7 – 2nd IF/Audio Board

RX-Audiocircuit of R7

Table 2, Picture 4 and 5 show the modified C´s on the R7´s board „Audio/PTO Buffer“ and the locations.

Capacitor	Old value	New value
C 306	0,05uF	0,47uF
C 316	0,05uF	0,47uF

Table 2 Modified values R7 - Audio/PTO Buffer

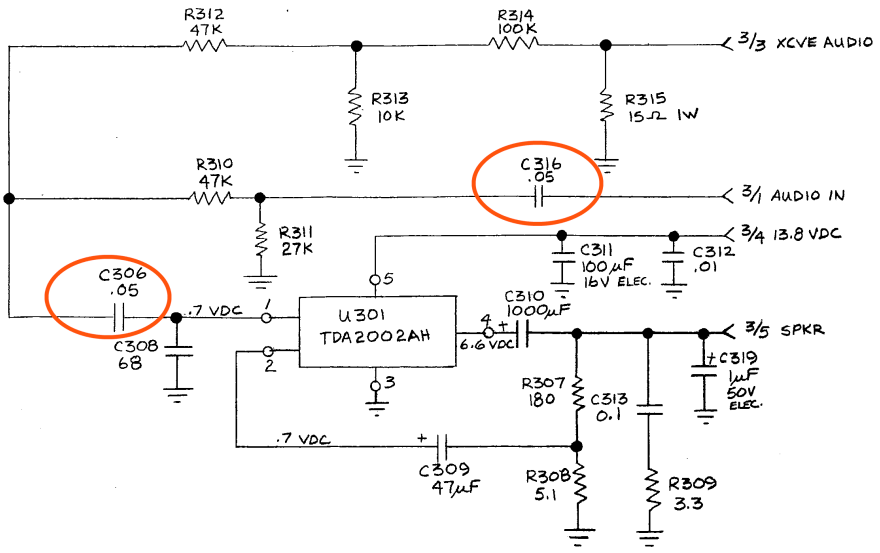
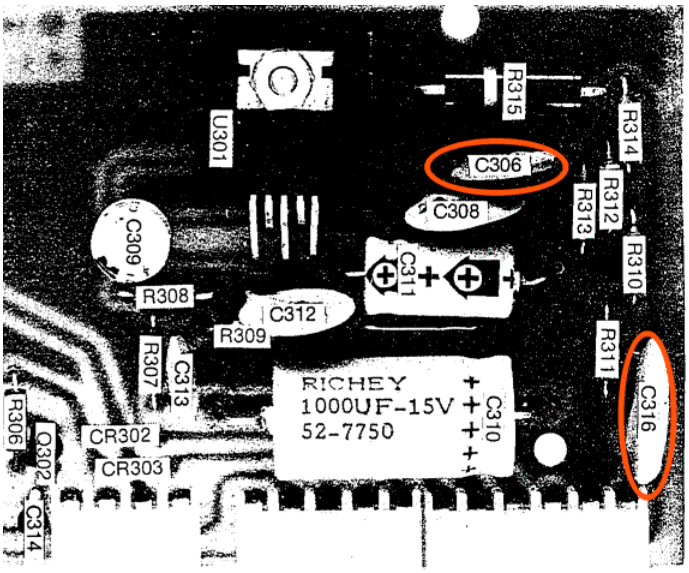


Fig. 2-6 Audio/PTO Buffer Board Schematic **2-16**

Picture 4 Modified C´s on the R7 - Audio/PTO Buffer



Picture 5 Locations on the R7 Audio/PTO Buffer

Table 3, Picture 6 and 7 show the modified C´s on the R7´s board „2nd/3rd IF/AGC“ and the locations.

Capacitor	Old value	New value
C 1147	0,47uF	10uF/63V
C 1153	0,05uF	0,47uF

Table 3 Modified values R7 - 2nd/3rd IF/AGC

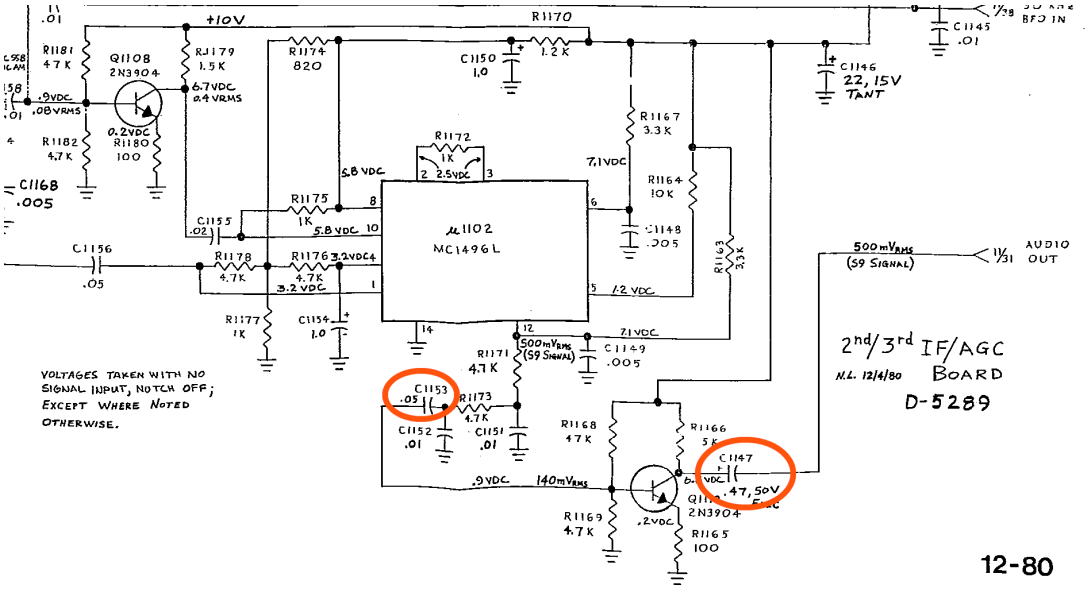
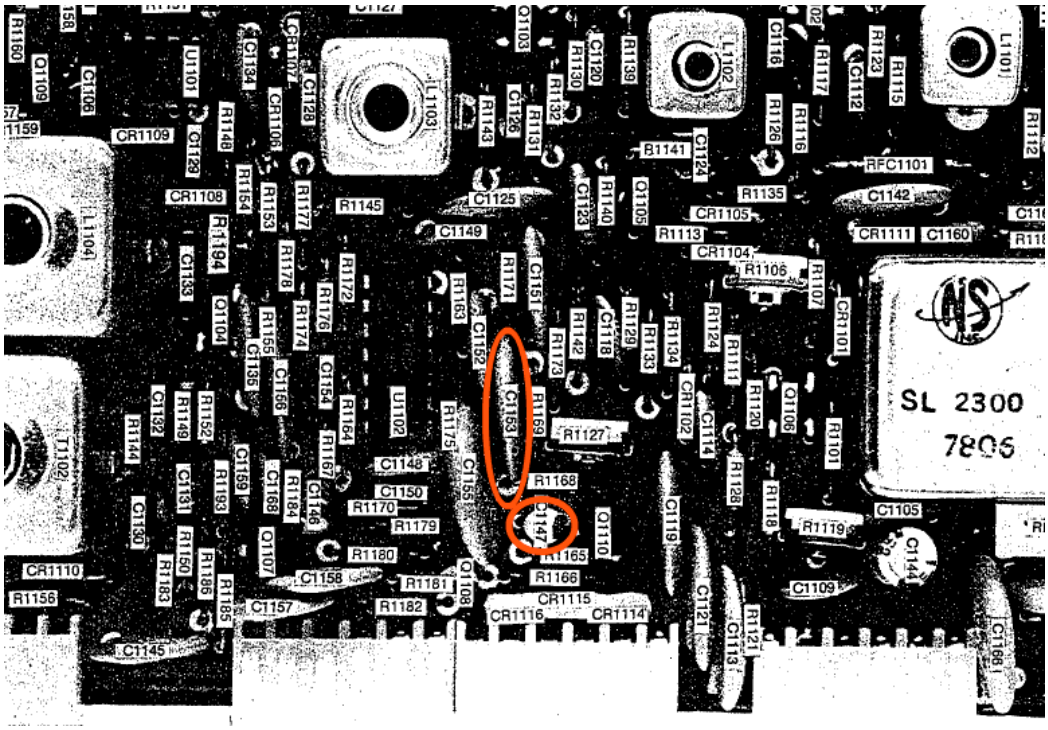


Fig. 2-22 2nd/3rd IF/AGC Board Schematic

Picture 6 Modified C´s on the R7 - 2nd/3rd IF/AGC Board



Picture 7 Locations on the R7 - 2nd/3rd IF/AGC Board

If you want to contact the author:
Stefan Steger, DL7MAJ, eMail: dl7maj@darc.de
Homepage: www.dl7maj.de