

Notes on an “early” version of the TMC GSB-1 SSB Adapter

Introduction

I have occasionally seen reports of an unusual version of the GSB-1 which differs from the version found in the commonly available TMC manuals, e.g., the manual at http://www.virhistory.com/tmc/tmc_pages/tmc_manuals/manuals_db/gsb/ib_gsb-1_57_am.pdf, BAMA, and other websites. These manuals also match a hard-copy manual I purchased for a GSB-1 I owned in the past.

I recently acquired another GSB-1, serial #131, which differs from these documents electrically and in physical layout. This GSB-1 also contains a mistake or two which appeared to have made it past TMC's quality control for reasons I can only guess at – perhaps because they had manufactured a number of them before someone bothered to do a bit of proofreading and cash was tight.

From a performance perspective there is likely little difference between the early and later versions. They are functionally the same, and look the same externally. The differences are in:

- Physical layout and subassembly part numbers
- Some cap values and the electrolytic can configuration
- Low pass audio filter design
- AGC speed selection method
- First converter plate circuit

These differences appeared clearly original. There was what appeared to have been an actual error in the way the components were installed/wired that left me scratching my head. Even this, from all appearances, was original.

Physical Layout

A top of chassis view of the GSB-1, followed by a drawing clarifying the major component locations is included at the end of this document. The power transformer, choke and audio transformer are in the common locations, although they have different nomenclature.

T1 (using the common nomenclature for the 438/472 KHz oscillator inductor) is tuned from the underside of the chassis rather than the top; C24 is mounted on the side of a new assembly also containing T2 (using the common nomenclature for the 17 KHz oscillator inductor). In this version of the GSB-1, the audio transformer and power transformer are labeled T1 and T2 respectively ... a minor bit of confusion.

Tube locations differ somewhat, driven by the locations of the T2/C24 assembly and the dual electrolytic cap cans.

The module numbers of the common and this early version are:

Module Function	Early Version	Common version
17 KHz Selective Filter	FX-150	FX-151
T1 (438/472 KHz Oscillator)	A-1300	A-1431
T2 (17 KHz Oscillator)	A-1301	A-1382

Capacitor Values/Locations

The common version has a single 4-section electrolytic. This version has two dual-section cans, with all four sections of 40 uF.

Several bypass and coupling capacitor values differ. The changes can best be seen by comparing the attached schematic with the common schematic.

Low Pass Audio Filter

The low pass audio filter following the second mixer is a simple RC design in the common GSB-1. This GSB-1 has a Pi-section filter with a toroidal inductor. My guess here is that the design change was done to reduce cost.

AGC Speed Selection

In the common GSB-1, and in the other TMC sideband demodulators such as the CV-591A, AGC speed selection is accomplished by switching resistor values to select the AGC time constant. This GSB-1 switches a 2 uF capacitor across the AGC line to change from Fast to Slow AGC.

It took a while to figure out what was going on here. At first, I thought that some previous owner had made a mod to the AGC circuitry. It became clear after a bit of experimentation that capacitor switching was correct. Figuring this out was complicated by the fact that the AGC speed selector switch had either been incorrectly wired at the factory or someone had reinstalled the switch incorrectly after removing the front panel. I eventually concluded that the greater likelihood is that the GSB-1 left the factory with the switch incorrectly installed, given what it took to reconfigure ground connections so that the switch could be rotated 180 deg and installed properly.

I eventually decided on using a 0.47 uF cap in place of the 2 uF cap in the Slow setting. Like all GSB-1s, the AGC attack time of the circuit is too slow, and there is a bit of pumping on strong signals. I was able to mostly minimize the effect by carefully padding down the IF level going into the GSB-1.

First Converter Plate Circuit

Compare the included schematic with the common version. I'm not sure why it was done this way, but it is definitely factory.

An Interesting Goof on the Dial

Finally, it appears that someone made an “editorial” error (that would be a typo) on the dial scale, and that a run of dial scales was made before the error was discovered. I’m guessing, perhaps for cost reasons, TMC went ahead and shipped units with the defective scales rather than have another run made to fix the problem. It would be interesting to know if any of the later common GSB-1s have this same error.

Here's the scale:



On the LSB scale, that +1 KC marker to the left of the centerline should be -1 KC. The scale reads, clockwise, -3 -2 +1 0 +1 +2 +3. Someone got the sign wrong in that one place. Have to wonder if anyone's head rolled over that mistake. Nonetheless, it didn't prevent TMC from shipping them out.

Miscellaneous Restoration Notes

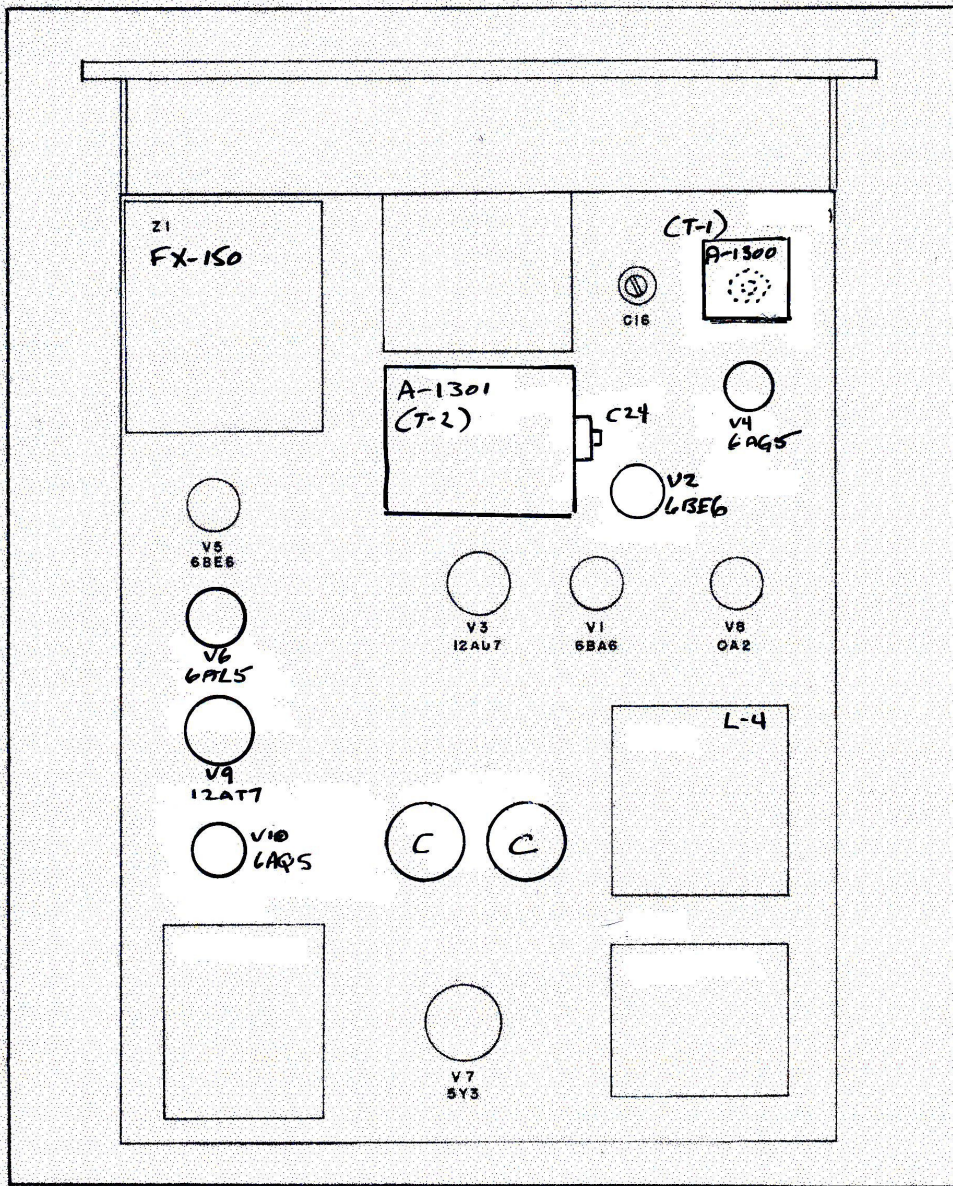
This was an interesting project. The unit had spent some time as the domicile of small rodents, so de-mousification was required. Fortunately it cleaned up very well, and most importantly, there was no damage to the underside of the chassis. It had small feet on the rear of the cabinet so that it would tilt on the desk – I don't know if it was shipped that way or not. I took a good foot from my GPR-90, made a silicone rubber mold, and cast two new standard feet in black urethane. You can't tell the difference from the originals, and the cabinet now sits square and matches the GPR-90 and GSP-1 it sits with. I also had to have the power transformer rewound (by Gary – WZ1M) because it had a shorted turn on the HV secondary, and while I was at it, had it wound for today's 120+ primary voltage.

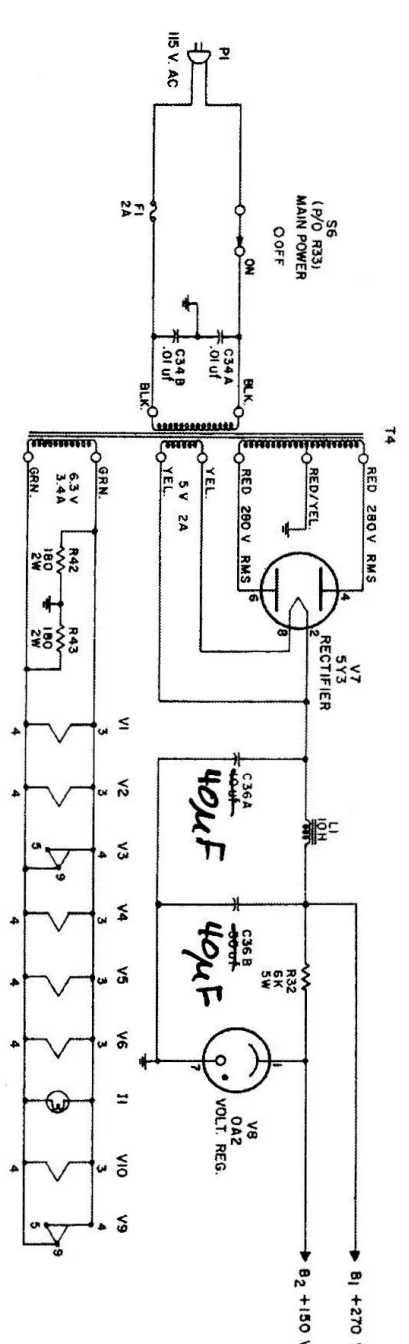
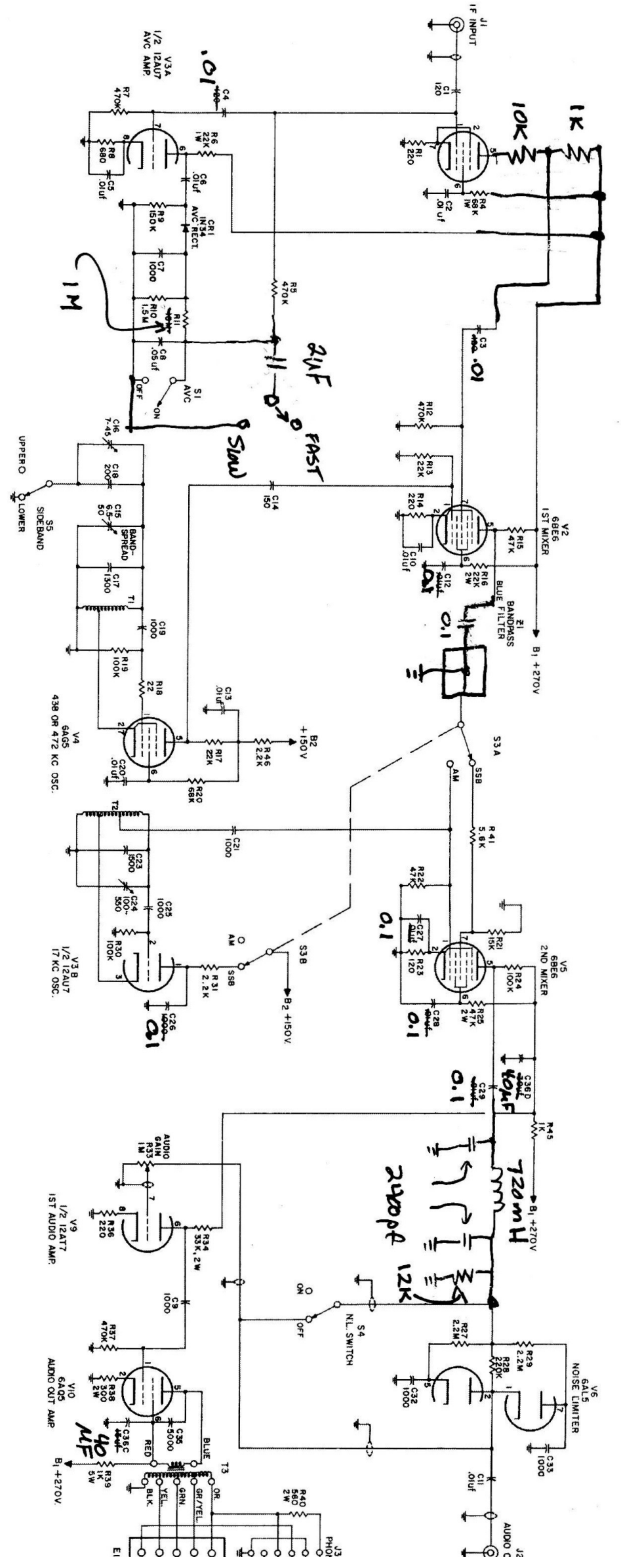
I wrestled with how to refinish the cabinet, and eventually had it stripped and powder coated in a color that very closely matches the original color. It is a semi-gloss and not the original textured finish, but if you are a normal distance away, it blends right in. It would be possible to have a powder coat company make up a custom textured paint, but I found it cost prohibitive. The best powder coat color match I found is RAL 7026 Granite Gray. It is VERY close.

Grant NQ5T



Figure 4-1. Top View, Outside of Chassis, Model GSB-1. (EARLY)





NOTE.
ALL CAPACITORS ARE IN μ F UNLESS OTHERWISE
ALL RESISTORS ARE 1/2 WATT UNLESS OTHERWISE

LAST SYMBOL NO'S.	
C	36
CR	1
E	1
F	1
G	1
H	1
I	1
J	1
K	1
L	1
M	1
N	1
O	1
P	1
Q	1
R	1
S	1
T	1
V	1
W	1
X	1
Y	1
Z	1