



**GAINLAB AUDIO**

**GLA-TC1**  
CALIBRATION V2.0



# WARNING!

EACH ELEMENT OF THE PROCEDURE THAT WE DESCRIBED IN THIS DOCUMENT ASSUMES A USER WITH PROFESSIONAL QUALIFICATIONS OR EQUIVALENT KNOWLEDGE. IF YOU DON'T HAVE NECESSARY KNOWLEDGE TO CARRY OUT ALL OF THE OPERATIONS PROPERLY, PLEASE DO NOT ATTEMPT ANY MODIFICATIONS INSIDE THE DEVICE, AS YOU MAY BE EXPOSED TO THE RISK OF ELECTRIC SHOCK OR DAMAGE OF THE EQUIPMENT.

**GAINLAB AUDIO WILL NOT BE REIALBLE FOR ANY PERSONAL INJURY RESULTING FROM IMPROPER HANDLING!**

Version: GLATC1 calibration manual-REV2.1



## REQUIED TOOLS

- For disassembly:** 2mm Allen key (hex key) screwdriver and 2.5mm Allen key (hex key) screwdriver.  
**For trimming:** 2-3mm flat head screwdriver.
- Signal generator** or other signal source with a maximum output power of + 12dBu.
- DC voltage meter**, with expected accuracy: minimum 4 1/2 digit  $\pm (1\% + 2)$
- A device for measuring the root mean square (RMS) value of AC voltage.**
- Audio analyzer** recommended.



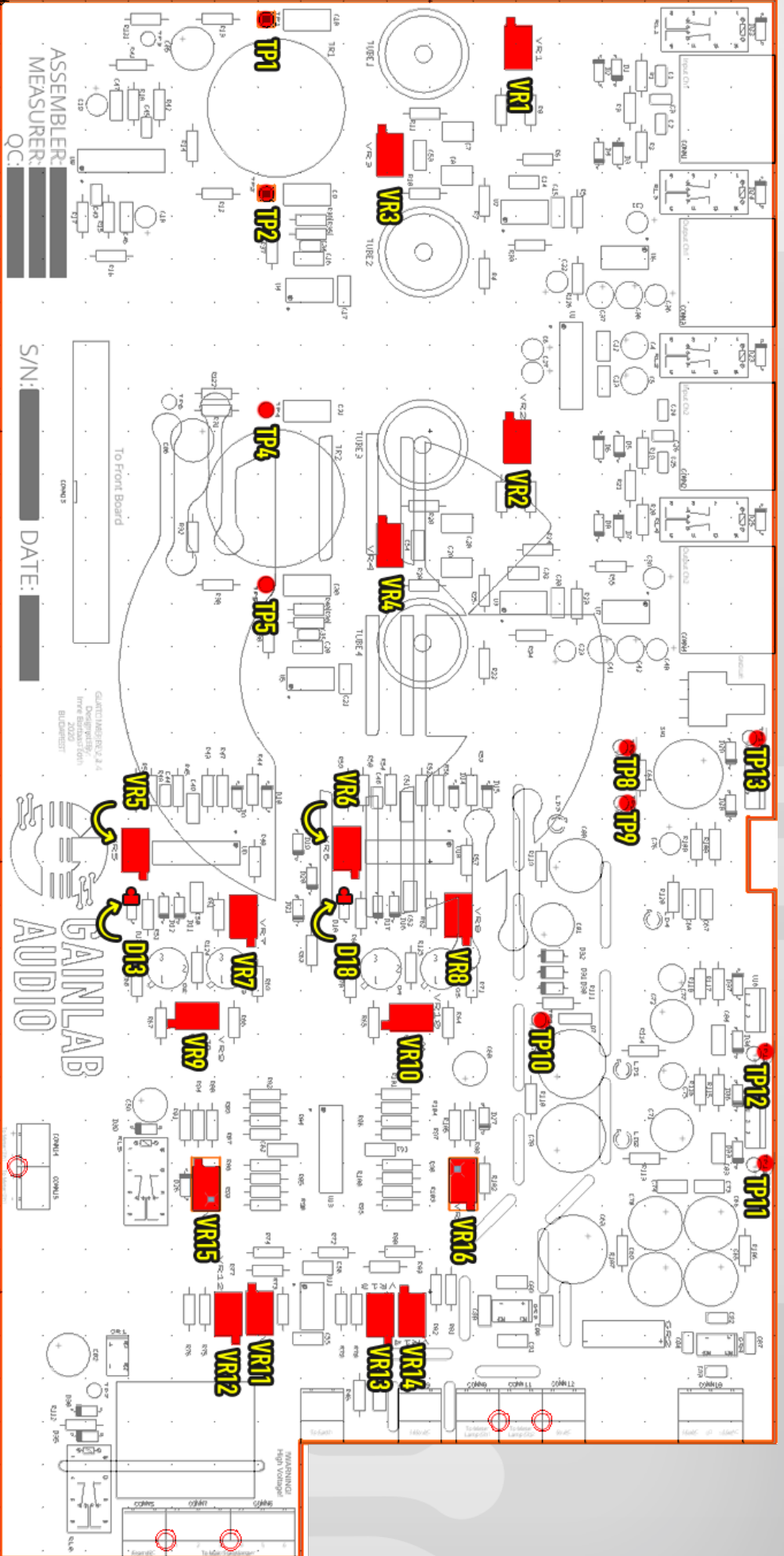
**Re**

**REMOVE THE UPPER COVER**



- 2mm ALLEN KEY (HEX KEY) SCREW
- 2.5mm ALLEN KEY (HEX KEY) SCREW

# DICTATOR MAINBOARD

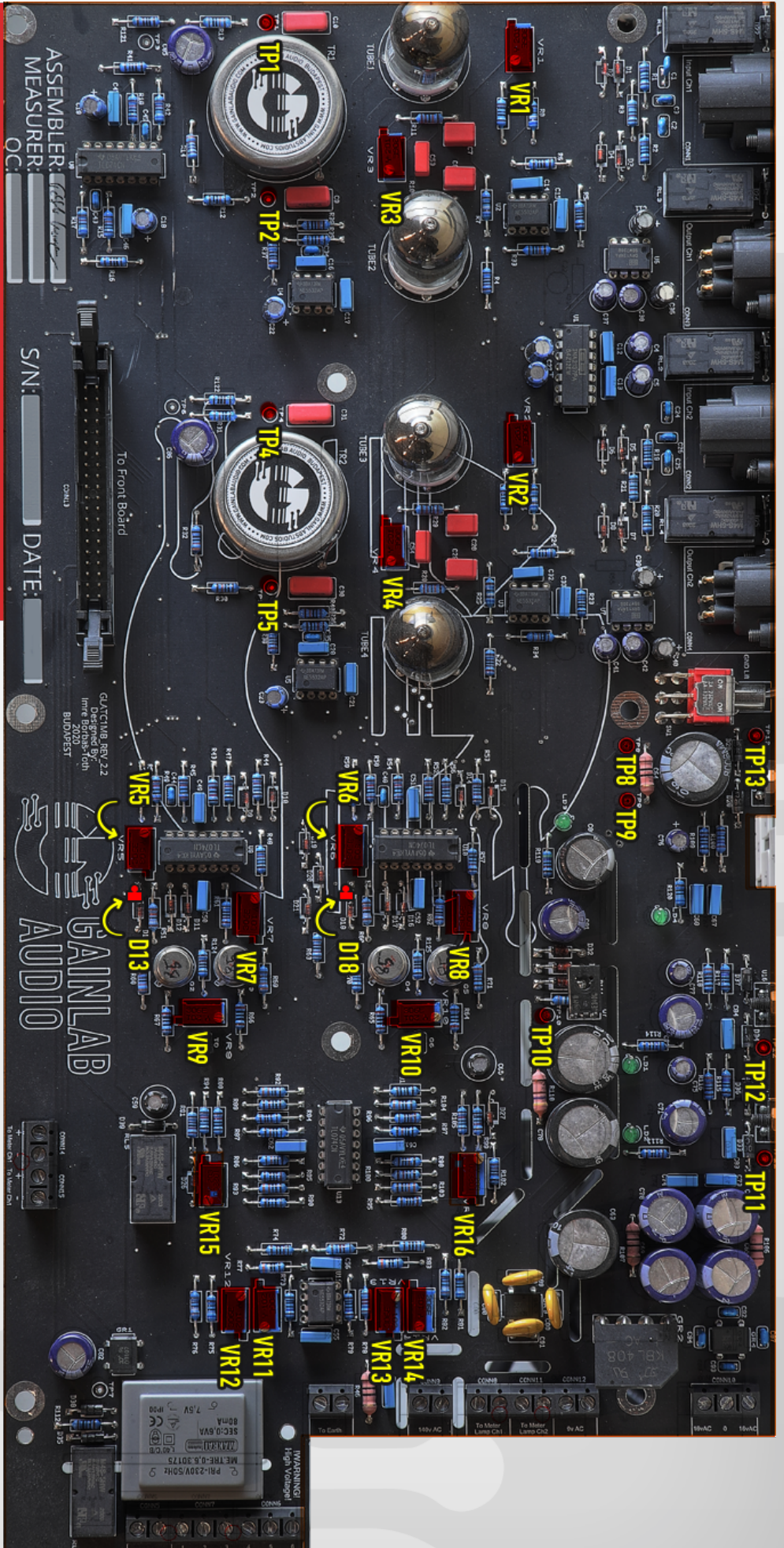


# MULTIMETER





# DICTATOR MAINBOARD



## dBu - V<sup>RMS</sup>

dBu	Volt RMS
0dBu	0.774V
+4dBu	1.227V
+6dBu	1.551V
+8.5dBu	2.061V
+12dBu	3.083V

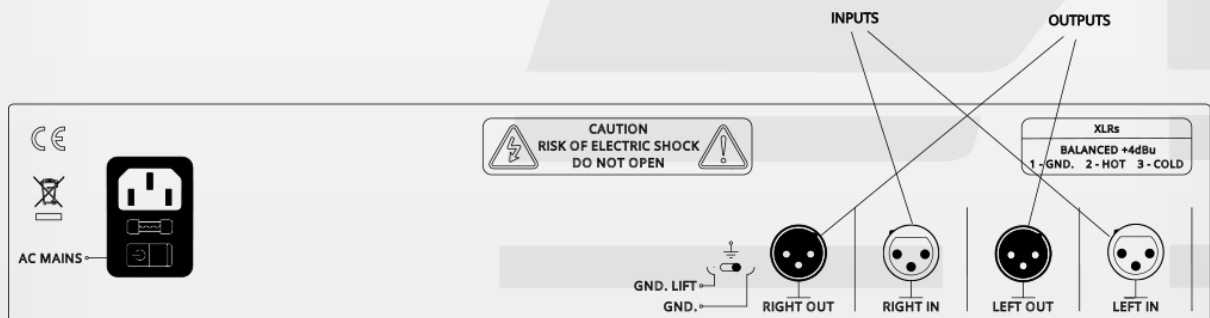
# 1. STEP - PREPARATION

1.1 The unit shall be disconnected from mains!

1.2 Check the VU meters on the front panel. Adjust the VU meter with the front panel screw to make it show the -20dB position as close as you can.



1.3 Now you can connect the unit to mains. Also connect your input and output signal cables.



1.4 Turn it on and wait 15 minutes to warm up the unit.

**Note:** The Attack, Release and Sidechain filter knobs are not used through the setup process.

**The following positions shall remain in the process:** Attack – Fastest, Release – Fastest, Sidechain Filter – Off

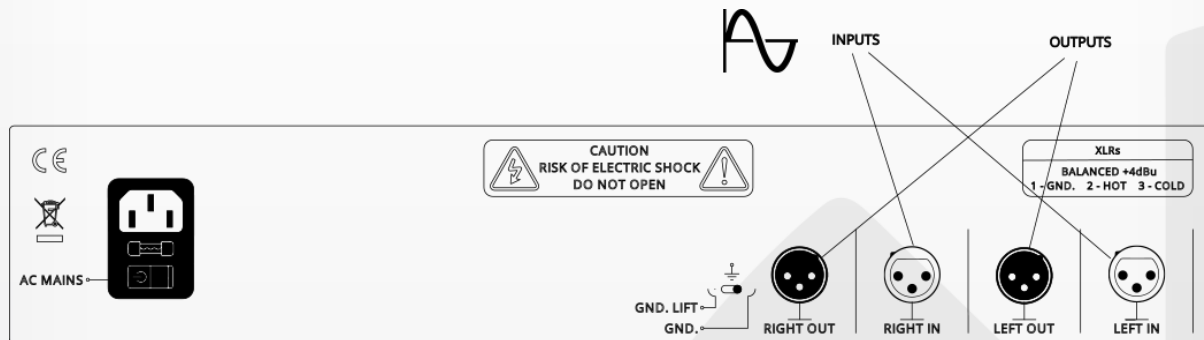




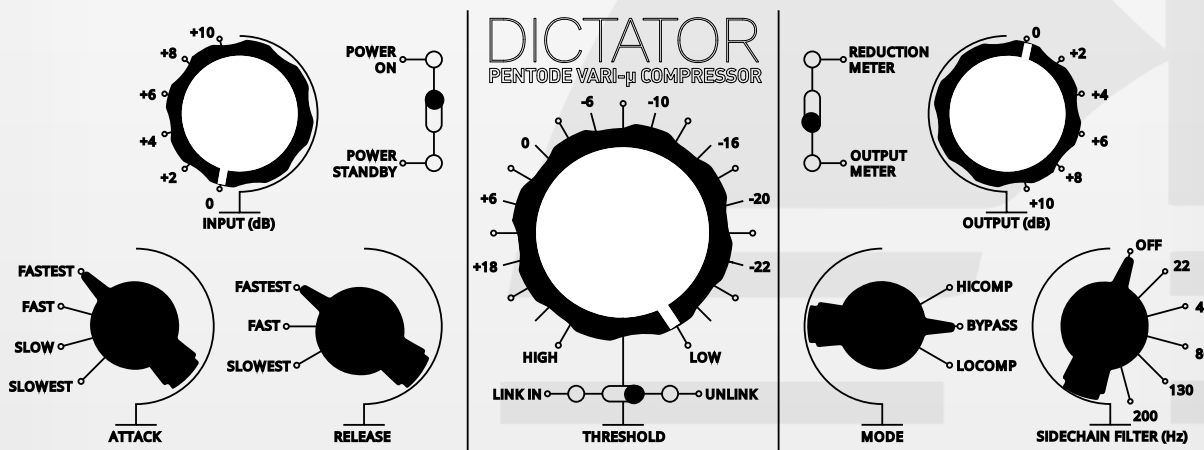
## 2. STEP - OUTPUT VU METER SETUP

Starting point:

Input signal : +4dBu 1kHz sinewave, on both channels



Switch positions: Mode-Bypass, Meter-Output meter

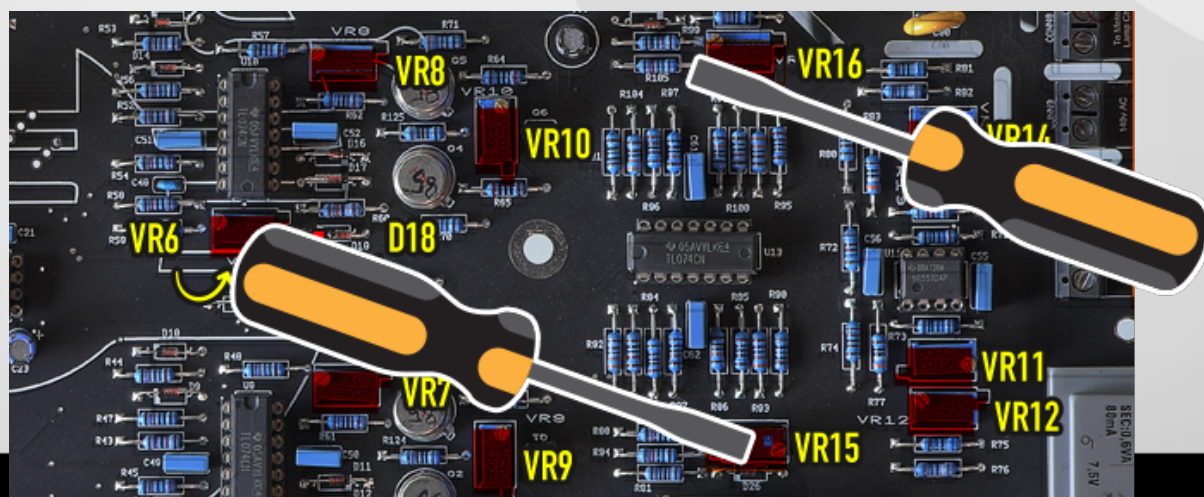


Measurement process:

To measure: the VU meter on front panel

Adjust: VR15 and VR16 trimmer

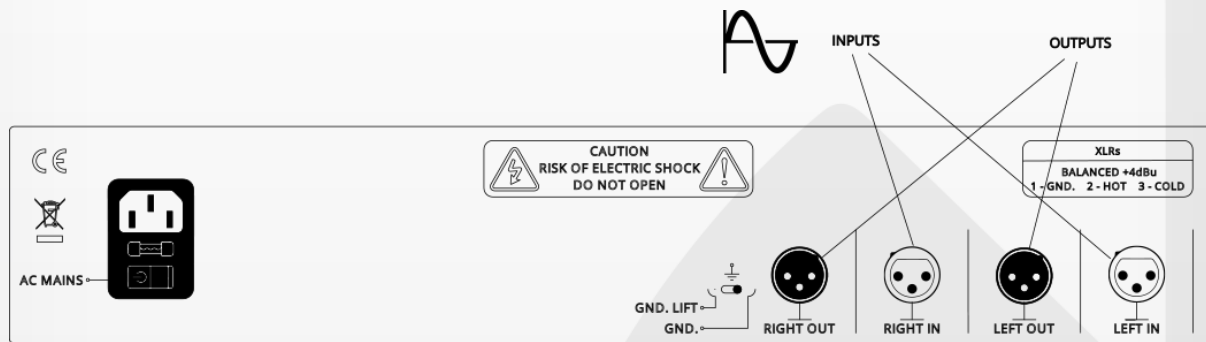
Target: On both VU meters there shall be 0dB on the output scale



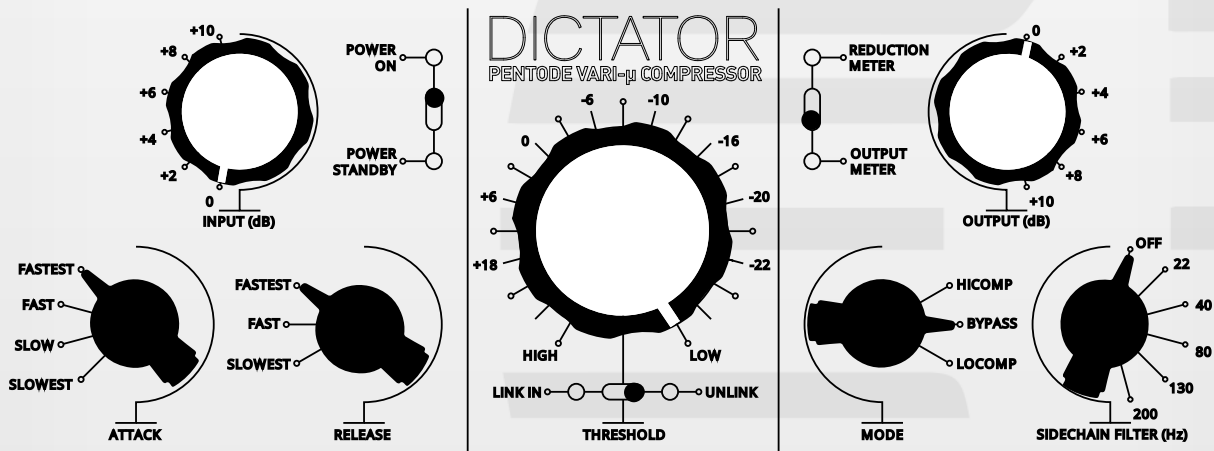
# 3. STEP - BALANCING

Starting point:

Input signal : +4dBu 1kHz sinewave, on both channels



Switch positions: Mode-Bypass, Meter- Output meter, Threshold LOW (right)



## 3.1 Bypass measurement (Left channel)

Switch Mode to Bypass.

**Measurement process:** Measure voltage between TP1 and TP2 points

**Adjust:** VR3

**Target:** to see 0V on volt meter

**Error margin:** 0.1V



### 3.2 Hicomp measurement (Left channel)

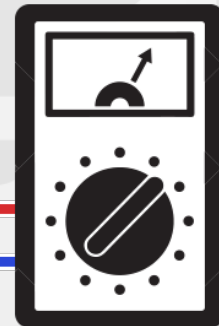
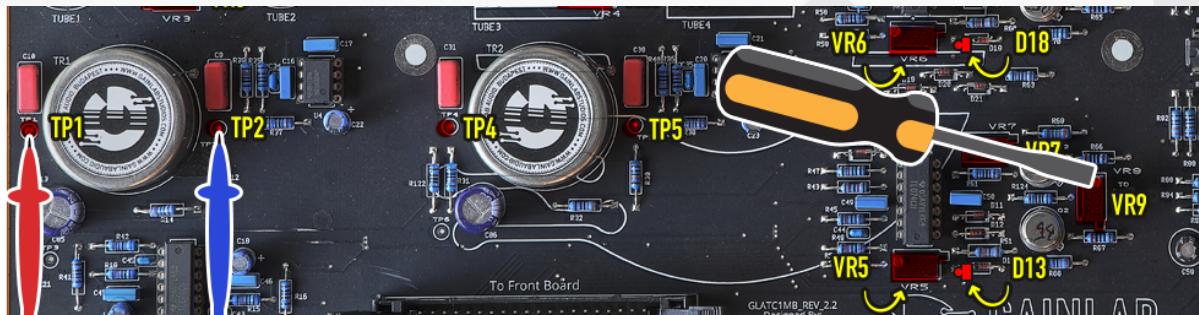
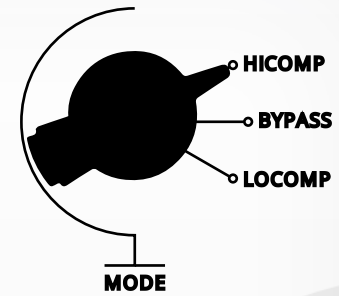
Switch Mode to HiComp.

**Measurement process:** Measure voltage between TP1 and TP2 points

**Adjust:** VR9

**Target:** to see 0V on volt meter

**Error margin:** 0.1V



Now go back to 3.1 and check if in Bypass mode you still measure 0V in between TP1 and TP2. Most likely it will stay as you set up earlier. Repeat 3.1 and 3.2 if needed.

### 3.3 Bypass measurement (Right channel)

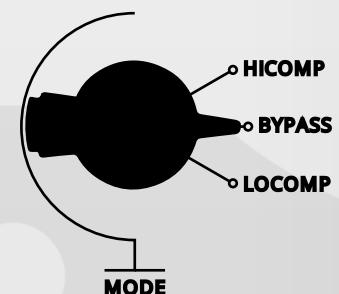
Switch Mode to Bypass.

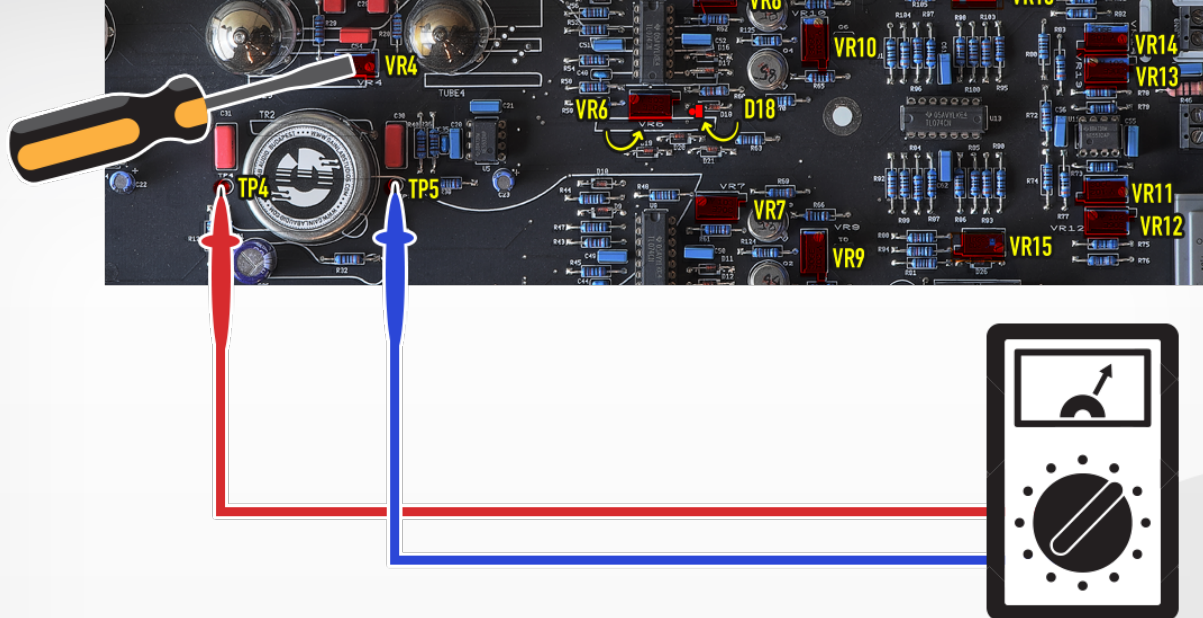
**Measurement process:** Measure voltage between TP4 and TP5 points

**Adjust:** VR4

**Target:** to see 0V on volt meter

**Error margin:** 0.1V





### 3.4 Hicomp measurement (Right channel)

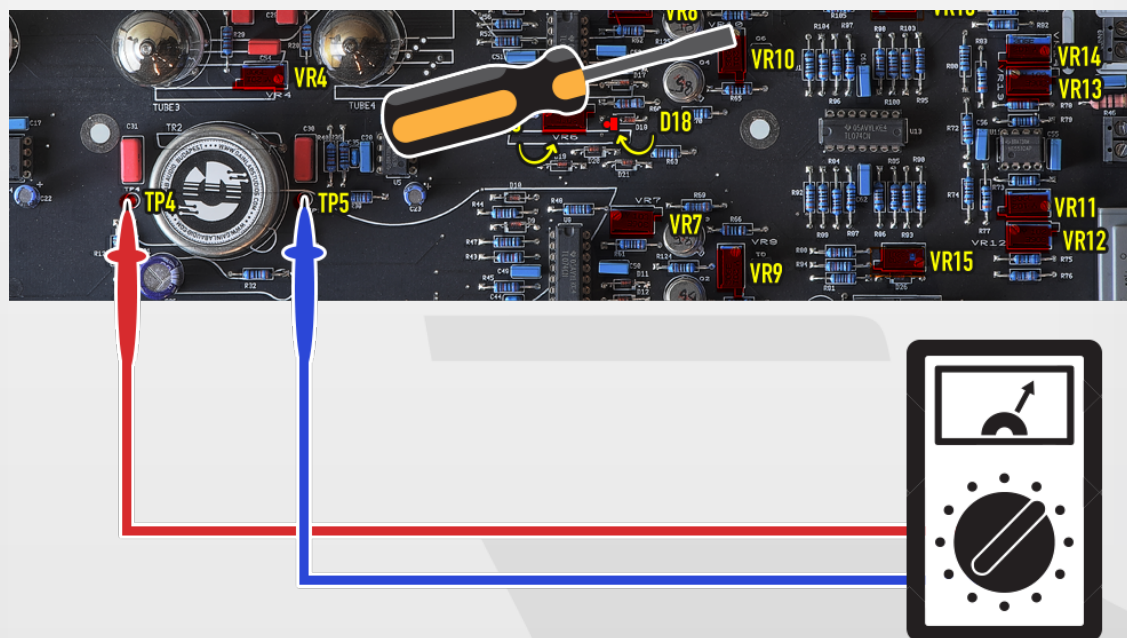
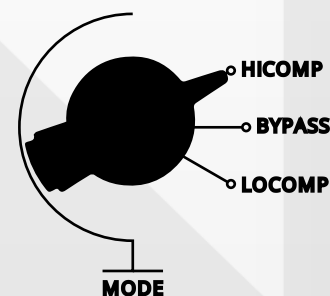
Switch Mode to HiComp.

**Measurement process:** Measure voltage between TP4 and TP5 points

**Adjust:** VR10

**Target:** to see 0V on volt meter

**Error margin:** 0.1V



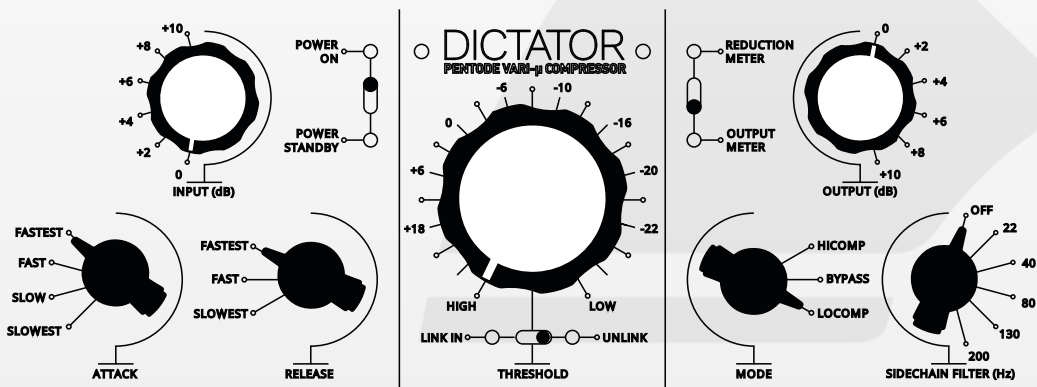
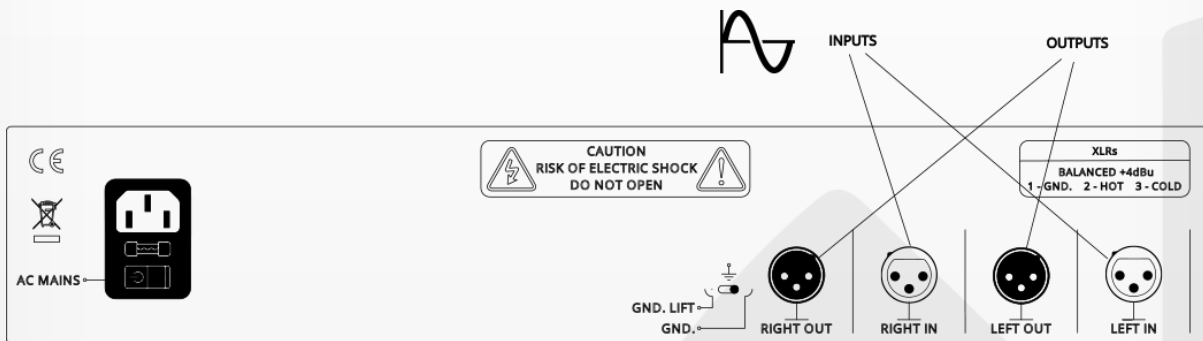
Now go back to 3.3 and check if in Bypass mode you still measure 0V in between TP4 and TP5. Most likely it will stay as you set up earlier. Repeat 3.3 and 3.4 if needed.



# 4. STEP - LEVELLING

Starting point:

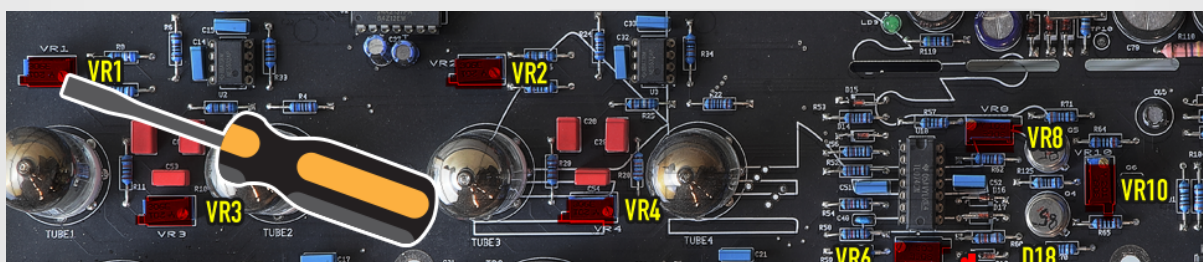
Input signal : +0dBu 1kHz sinewave, on both channels



**Switch positions:** Mode-LoComp, Meter- Output meter, Threshold minimum (full left), UNLINK

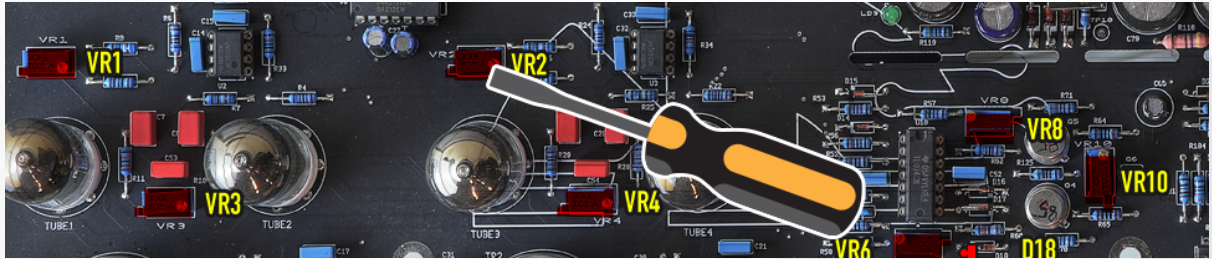
**Measurement process:** Adjust: VR1

**Target:** to measure +0.05dBu on the left output of the unit (not the VU meter!)



**Adjust:** VR2

**Target:** to measure +0.05dBu on the right output of the unit (not the VU meter!)

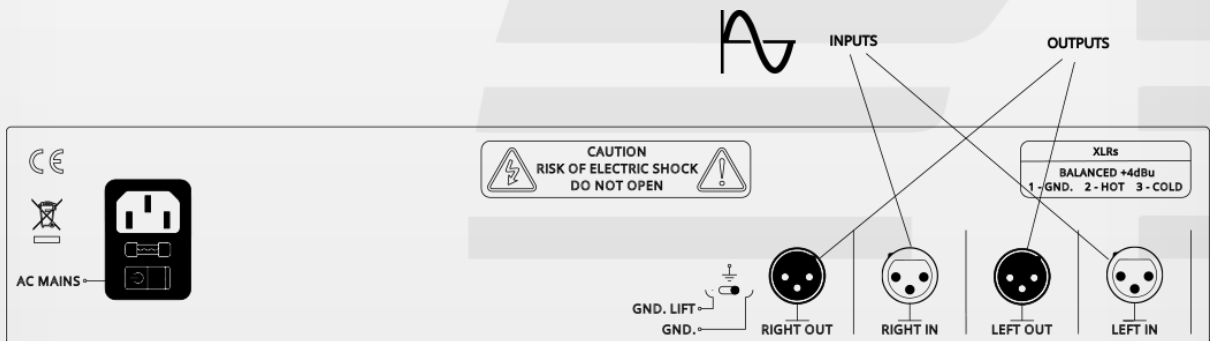


**Error margin:** 0.1dBu

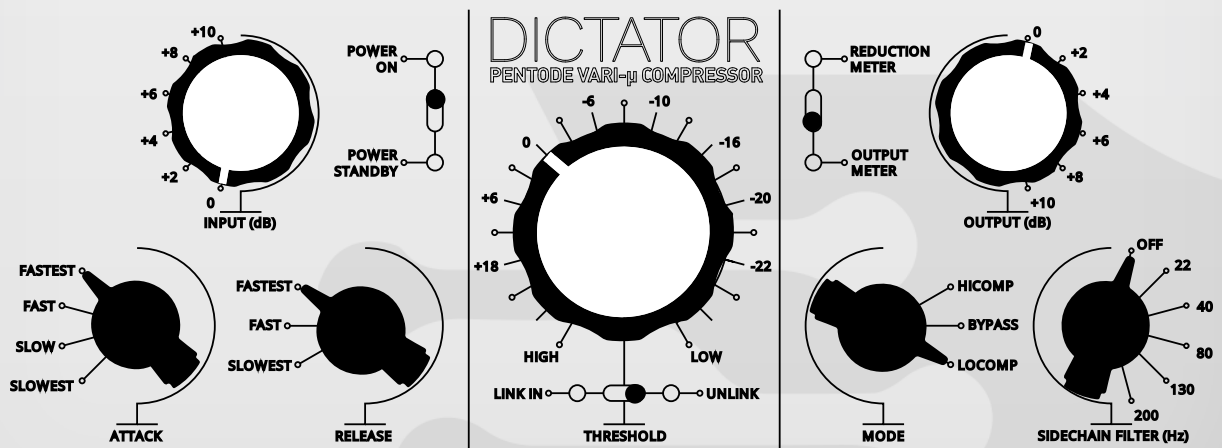
## 5. STEP - SC LEVELLING

Starting pont:

**Input signal :** +0dBu 1kHz sinewave, on both channels



Threshold 0dB, mode - LoComp, UNLINK



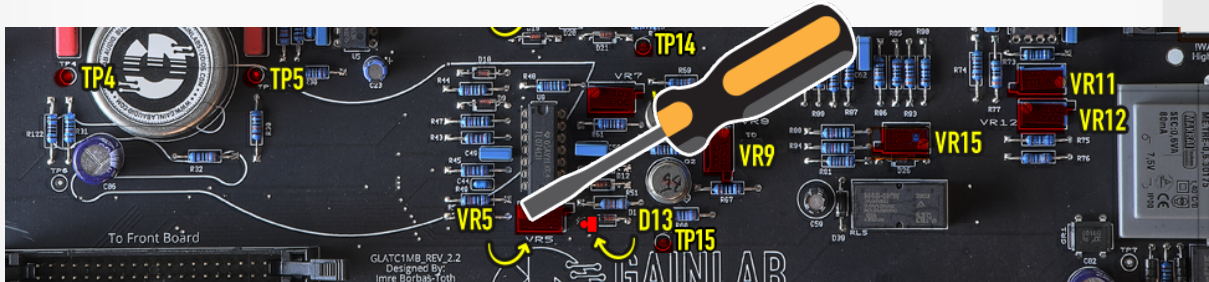
## 5.1 step – Stage One

Measurement process: Stage ONE left

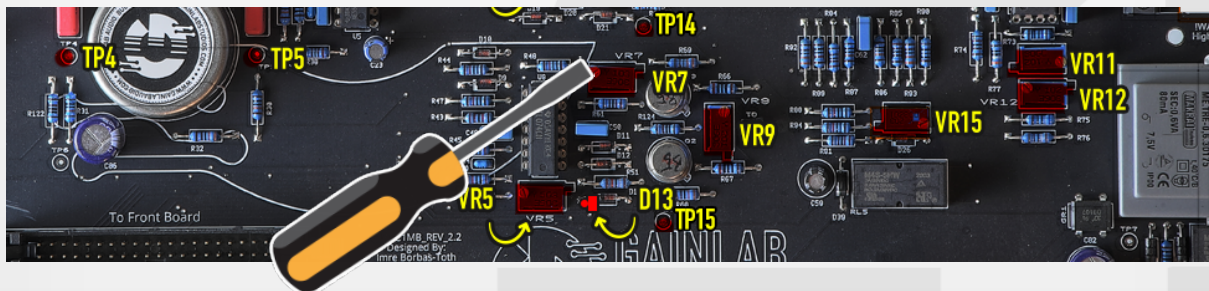
**Measure:** between TP8 and TP15

**Adjust:** VR5

**Target:** measure +1.1V on a volt meter



Now, turn the VR7 counterclockwise until the end point (appx. 6 turns)



**Measure:** between TP8 and TP15

**Adjust:** VR5

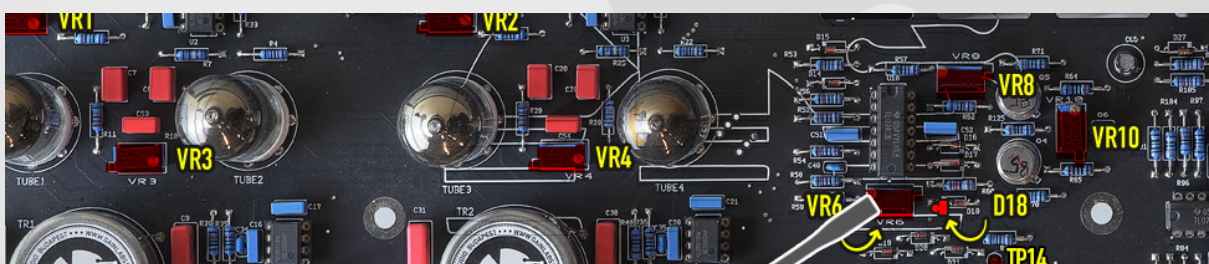
**Target:** measure +2V on a volt meter

Measurement process: Stage ONE right

**Measure:** between TP8 and TP14

**Adjust:** VR6

**Target:** measure +1.1V on a volt meter

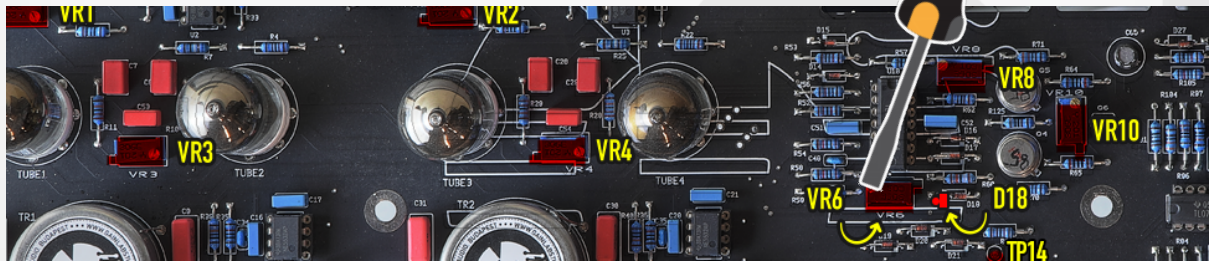




Now, turn the VR8 counterclockwise until the end point (appx. 6 turns)



**Measure:** between TP8 and TP14  
**Adjust:** VR6  
**Target:** measure +2V on a volt meter

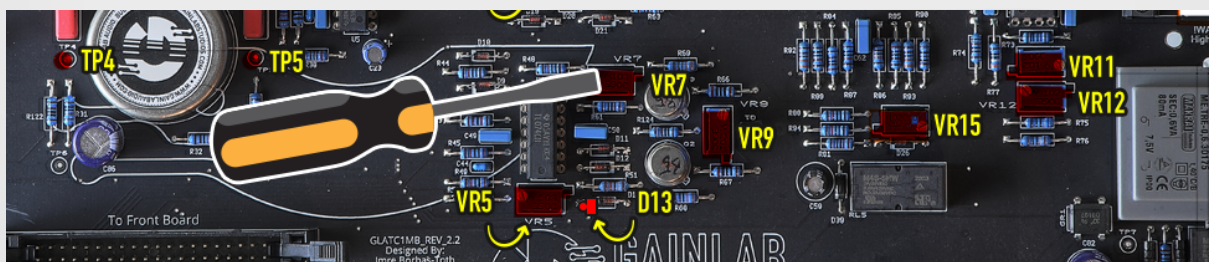


## 5.2 step – Raw tuning

Turn the input signal to +12dBu!  
Switch to UNLINK.

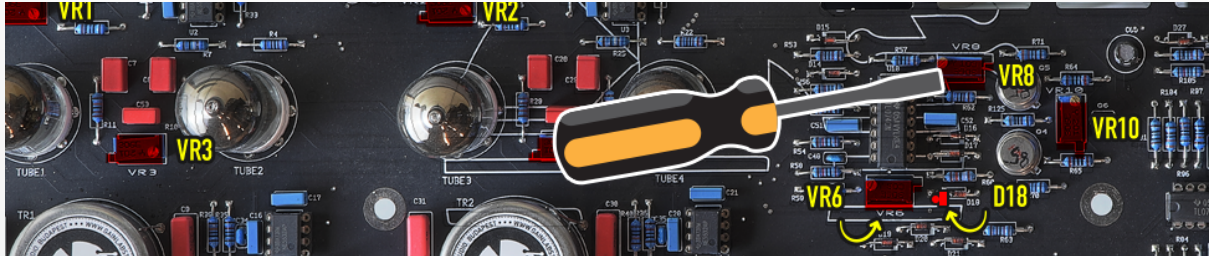


**Adjust:** VR7  
**Measure:** +8.5dBu on the left output  
**Error margin:** +/-0.1dBu  
**Adjust:** VR8  
**Measure:** +8.5dBu on the right output  
**Error margin:** +/-0.1dBu



### 5.3 step – Fine tuning

Turn the input signal to +12dBu!  
Switch to LINK IN.



**Adjust:** VR7

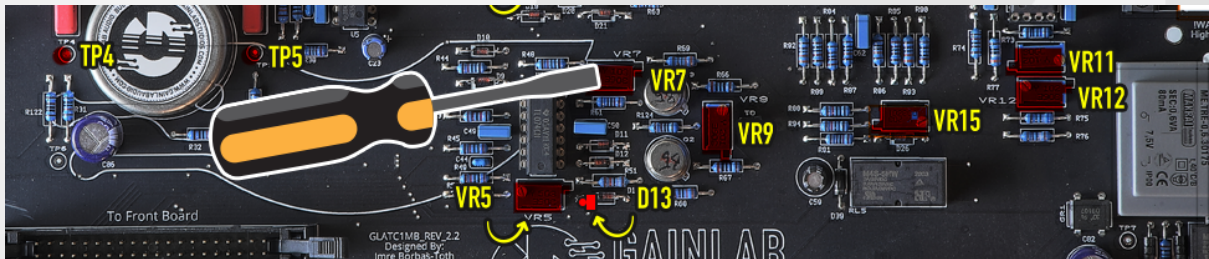
**Measure:** +8.5dBu on the left output

**Error margin:**  $\pm 0.1$ dBu

**Adjust:** VR8

**Measure:** +8.5dBu on the right output

**Error margin:**  $\pm 0.1$ dBu



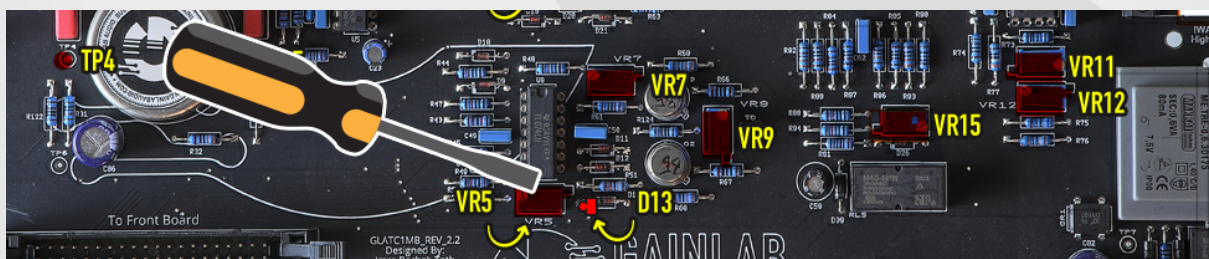
Switch to UNLINK.



**Adjust:** VR5

**Measure:** +8.5dBu on the left output

**Error margin:**  $\pm 0.1$ dBu

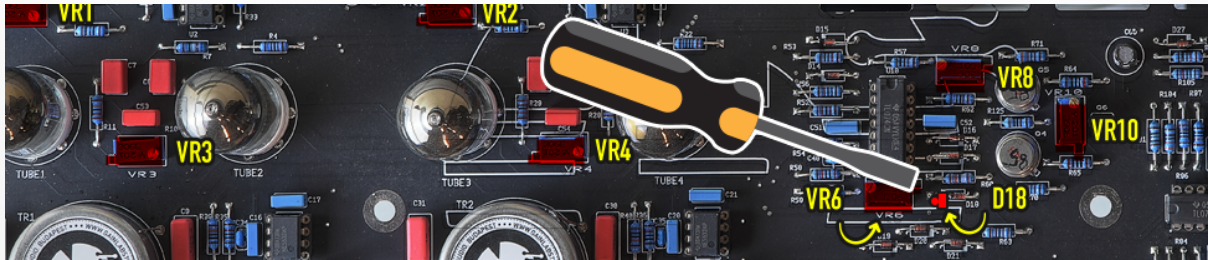




Adjust: VR6

Measure: +8.5dBu on the right output

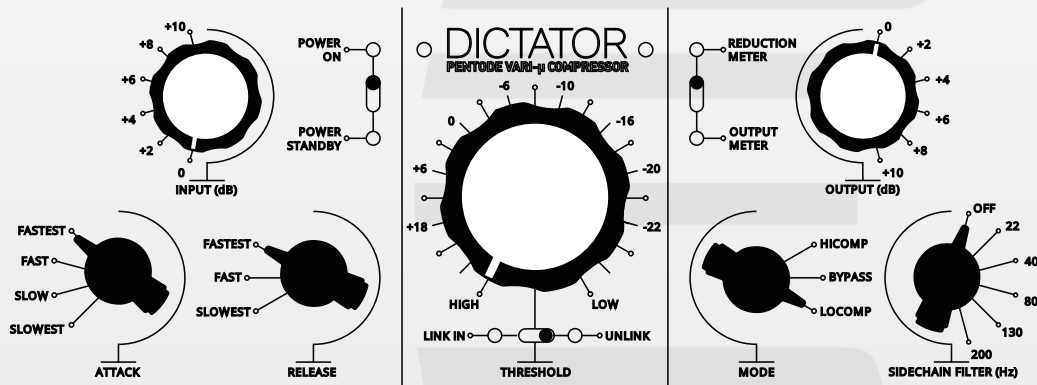
Error margin:  $\pm 0.1$ dBu



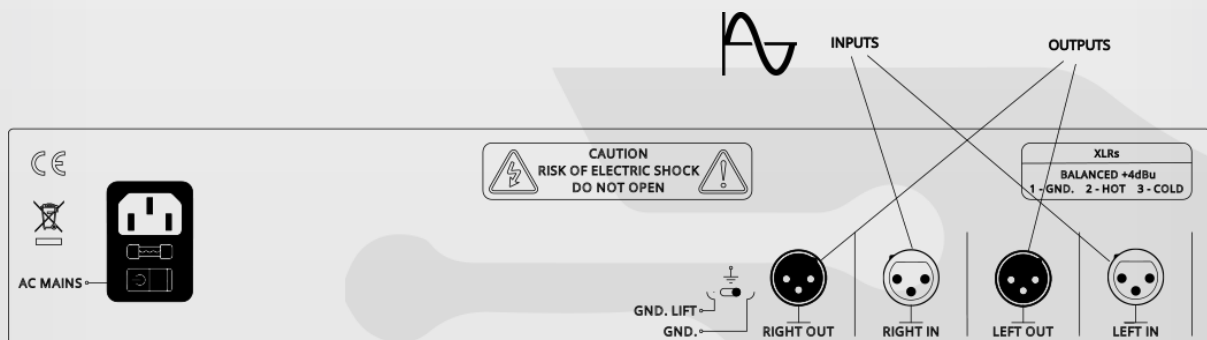
Now keep watching the outputs and switch back and forward between LINK and UNLINK mode. If there is a difference in the output signal which is greater than 0.1dBu then repeat the 5.3 step.

## 6. STEP – GR CALIBRATION

Starting point: Mode- LoComp, UNLINK, Threshold 0dB, meter - Reduction



Input signal: +12dBu 1kHz sine wave

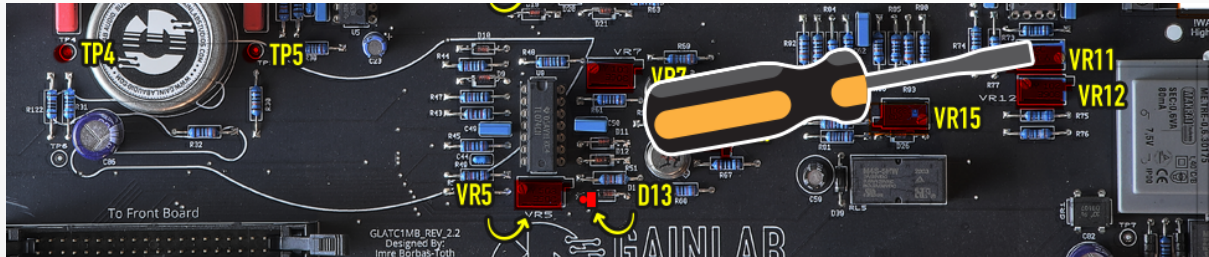
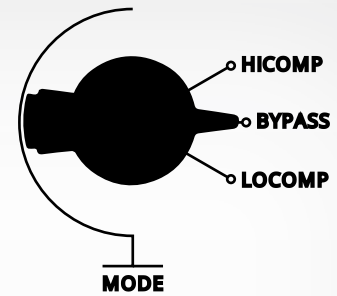


First – turn the Threshold clockwise until the output will be +6dBu.



Switch mode to Bypass!

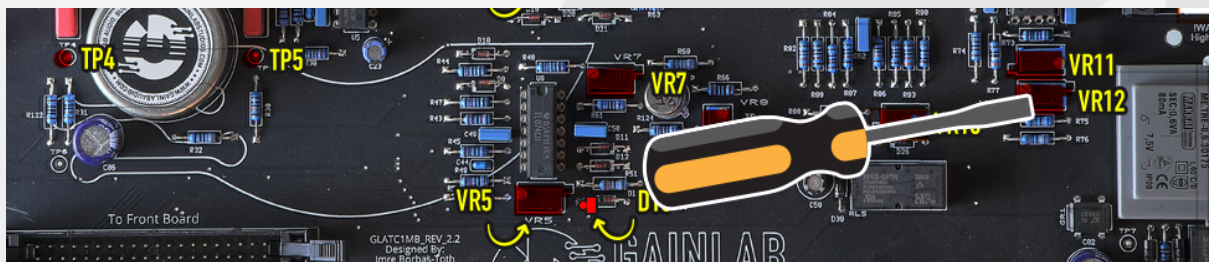
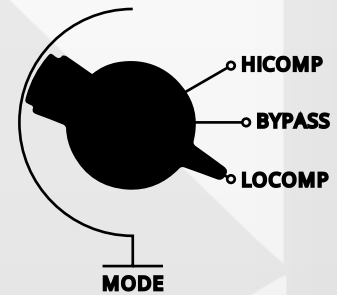
**Adjust:** VR11 (for left channel) and VR13 (for right channel)



**Measure:** 0dBu on a VU meters

Switch mode to LoComp!

**Adjust:** VR12 (for left channel) and VR14 (for right channel)






**Measure:** -6dBu on a VU meters reduction scale

**Go back to Bypass mode and check if it needs repeated adjustment until you see that the VU meter works correctly.**

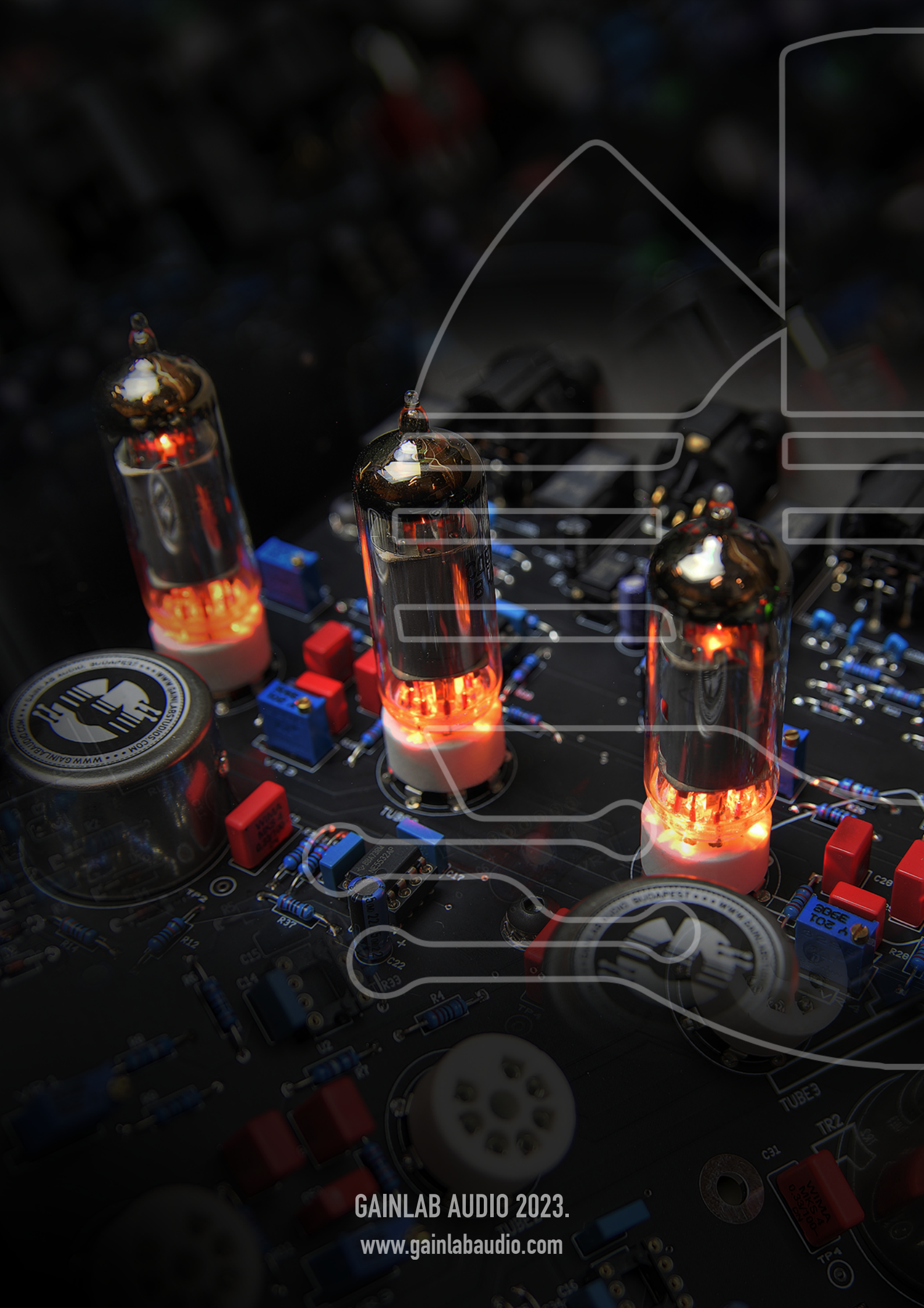
**THAT'S IT! YOU ARE DONE NOW.**

**YOU CAN LISTEN TO YOUR FAVORITE TRACK THROUGH THE UNIT FOR CHECKING SONICAL PERFORMANCE.**

If you have further questions or stuck somewhere in the procedure then please reach GAINLAB AUDIO through [support@gainlabaudio.com](mailto:support@gainlabaudio.com) .

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- **THE PROCEDURE WE DESCRIBED ABOVE PROVIDES THE EXPECTED VALUES FOR A DEVICE EQUIPPED WITH VACUUM TUBES PROVIDED BY GAINLAB AUDIO.**
  - **IF YOU STILL WANT TO USE YOUR EQUIPMENT WITH 3RD PARTY TUBES, MAKE SURE THAT THE TECHNICAL PARAMETERS OF THE VACUUM TUBES THAT YOU PLACED IN THE TUBE1, TUBE2 SOCKET AND THE TUBE3, TUBE4 SOCKET ARE APPROXIMATELY THE SAME. MATCHED PAIR TUBES ARE SUGGESTED TO USE.**
  - **IF YOU DO NOT USE VACUUM TUBES WITH THE SAME TECHNICAL PARAMETERS, THE CALIBRATION PROCESS WILL NOT BE PERFORMED CORRECTLY!**
  - **THE TECHNICAL PARAMETERS OF THE VACUUM TUBES CAN CHANGE SIGNIFICANTLY IN THE FIRST 24-48 HOURS. IT IS RECOMMENDED TO REPEAT THE CALIBRATION PROCESS AFTER THIS “BURN-IN” PERIOD.**
  - **THE VACUUM TUBES PROVIDED BY GAINLAB AUDIO HAVE ALREADY UNDERGONE THIS “BURN-IN” PROCESS.**
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GAINLAB AUDIO 2023.  
[www.gainlabaudio.com](http://www.gainlabaudio.com)