

Audvance record amplifier board

WARNING: HOT INSERTION OF THIS BOARD INTO THE MACHINE CAN DESTROY THE BOARD!!

This board is designed for Telefunken M15A machines with speeds of 76/ 38cm/s or 38/19cm/s as a direct replacement of the Telefunken record amplifier board. On the rear of the board it is indicated for what combination of speeds it is designed. There are no transformers in the all discrete signal path any longer and no overall feedback is applied. Filtering is entirely passive. Optimization of sound quality was the main design goal.

The "NAB EQUAL" jumper position can be used to remotely switch the equalization of your machine between IEC/CCIR and NAB. A short will select NAB mode, open is IEC/CCIR mode. When your machine has an original factory implemented method to switch equalization via pin 22 this is of course supported as well. For optimum bias resonance the jumper "MULTI" should be removed for multitrack machines only.

On the right you see a detail of the board where you determine the time constants of the equalization and mode with jumpers. Below you read how to do this.

Azimuth

Before calibrating the board make sure the recording and playback heads are properly aligned with the tape. To align the recording head connect both inputs in parallel with the same phase to a signal source. Record a sinewave at both 1kHz and 10kHz with an oscilloscope in X-Y mode attached to the outputs of both channels. Adjust the screw next to the recording head to create a rising straight line at both frequencies.

Calibration

The calibration of the bias and recording levels should be done in a similar way as it should be done with the Telefunken boards. The calibration can be done in either NAB or IEC/CCIR mode. Calibration for both speeds is needed. Check with the manufacturer of the tape you will be using what the advised overbias level is for your machine. With Vacodur heads you have 18um record gap length (0,7mils) and with Ferrite heads it is 10um (0,4 mils). The overbias level is usually 2-5dB.

You need a tone generator, a blank tape and an AC voltmeter or an oscilloscope to do the calibration:

- If you have a multi-track machine remove the jumper MULTI. For two channel machines the jumper should be present.
- Without any input signal present put the machine in recording mode. Measure the bias level on the BIAS pins on the board. A 131kHz sine wave should be visible. Adjust the foil trimmer (BIASTRIM) for maximum bias level.
- Next the bias level is adjusted (VM pot) with an input signal from the tone generator. Set the recording level (PEGEL pot) at maximum (fully clockwise). Set the tone generator at 10kHz and adjust its output level to 800mV RMS differential, or 400mV RMS single ended. Turn the VM pot fully anti-clockwise. Now turn it clockwise until the playback output level is at its maximum. Now continue turning clockwise until the playback output level is the overbias level down. This will result in lowest harmonic distortion. The overbias level depends on the tape you are using. Try 2dB at all speeds with modern tapes.
- Set the tone generator at 1kHz with an output level of 800mV RMS differential, or 400mV RMS single ended. Adjust the recording level pot to create an identical playback output level on all channels.
- Now we will adjust for a linear frequency response, for each speed.

Set the tone generator at an output level of 400mV RMS differential, or 200mV RMS single ended when calibrating at 19cm/s. Use 800mV RMS differential, or 400mV RMS single ended at higher speeds

At 18kHz adjust first the H2 pot to create a playback output level identical to the 1kHz level. Next set the tone generator at 10kHz and adjust the H1 pot to create a playback output level close to the 1kHz level.