

Microphone preamplifier with tone control

F6EXG Roland – Version 01 – Mars 2026

The idea originated from the Astatic D104 microphone, whose frequency response curve isn't very compatible with conventional tube transmitters. On a Collins KWM-2, it appears that a Shure 444 type microphone produces a less metallic modulation than an Astatic D104, even at a higher level.



The goal is to be able to correct the microphone response curve in a simple way, so that the PCB can fit in the microphone base, in place of the original preamp, and be powered by the 9 Volt battery.

It is based on a low noise operational amplifier (2732) and a single supply (+5V).

It is designed with a differential input signal from a microphone having symmetrical outputs (+ , - et / ground), however, for a 2 wire microphone (+ , et / ground), simply connect the unused second input pin to ground.

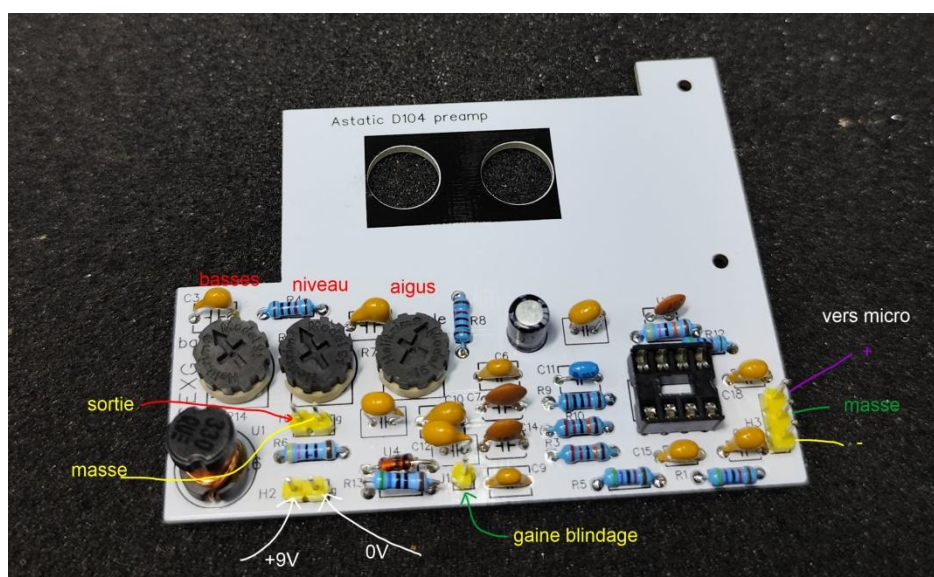
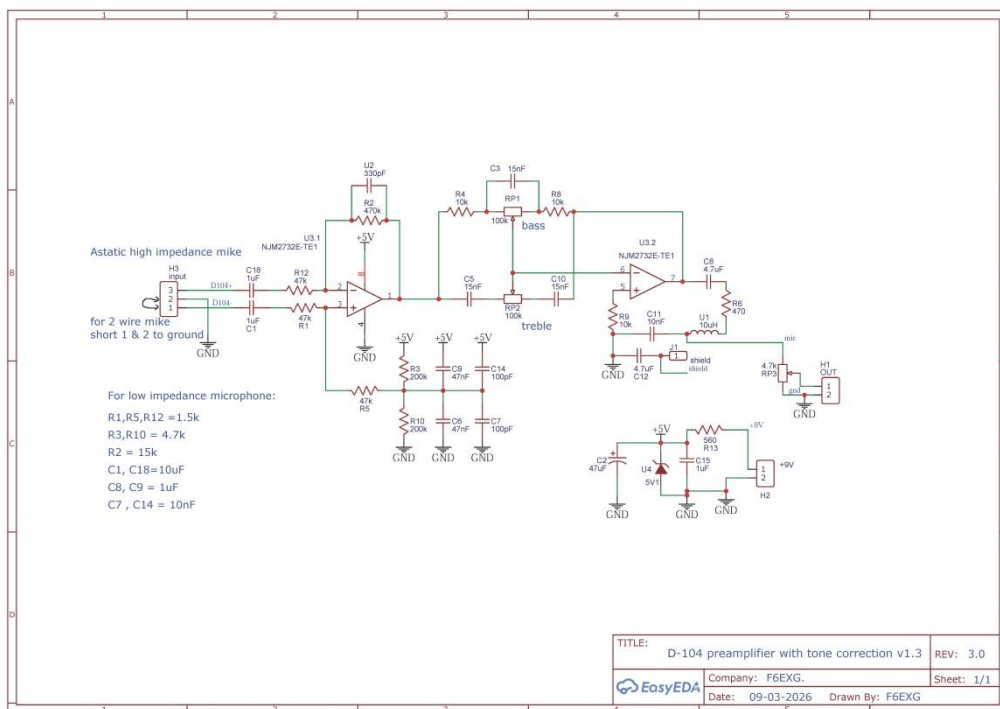
The components listed in the diagram are calculated for a high impedance input; for a 600 Ohm microphone, for example, the modification of a number of component values appears in the schematic figure.

The tone control is a simple "bass and treble" Baxandall system controlled by two trim pots. The output level is adjusted with the level potentiometer.

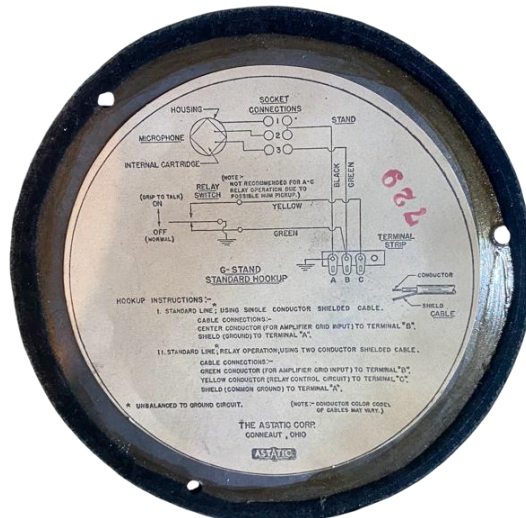
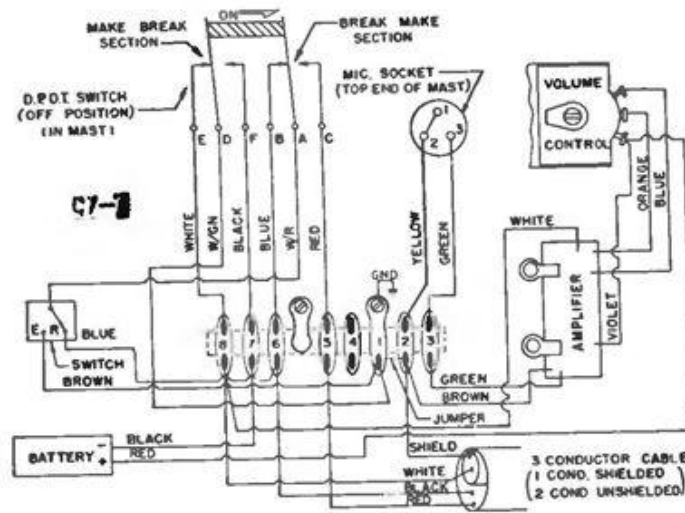
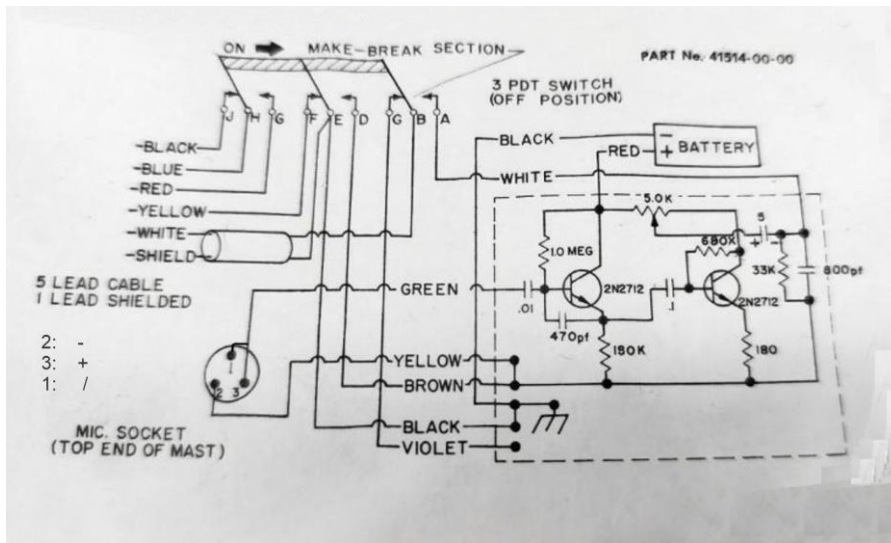
The double-sided PCB was made, wired and tested in the lab (AF generator and oscilloscope) by F6EXG, while F6HOY took charge of the long full-scale tests on his equipment. (see photos).

As shown in the schematic diagram, this preamplifier with bass-treble correction is not intended solely for the Astatic D104; it can be used with other microphones. However, for electret microphones, supplied by the transceiver's microphone jack, a few simple modifications will be necessary.

Schematic :

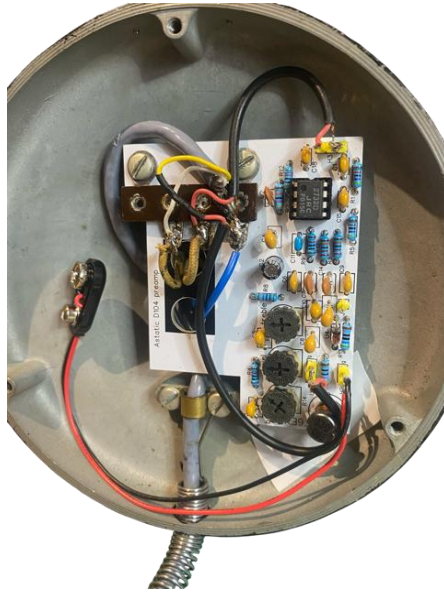


Documents d'origine :

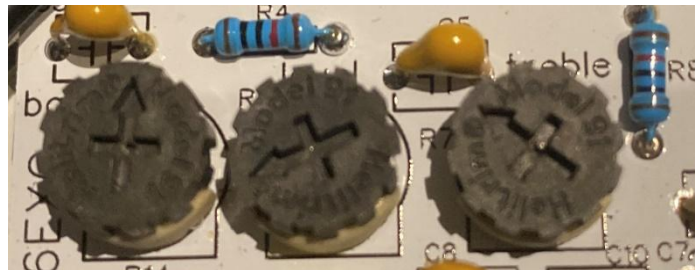


Setting to work by F6HOY :

The circuit board fits well in the base. The mounting screws are used with the original terminal lug strip installed on top. The two central holes allow the wires from the MD104 pad to pass through.



Tests performed on a Collins KWM-2 and a KWM-1, compared to a Shure 444, resulted in the following settings:



The check on a Heathkit SB610 is perfect, and the quality assessed by correspondents is similar to a Shure 444 with excellent depth.

