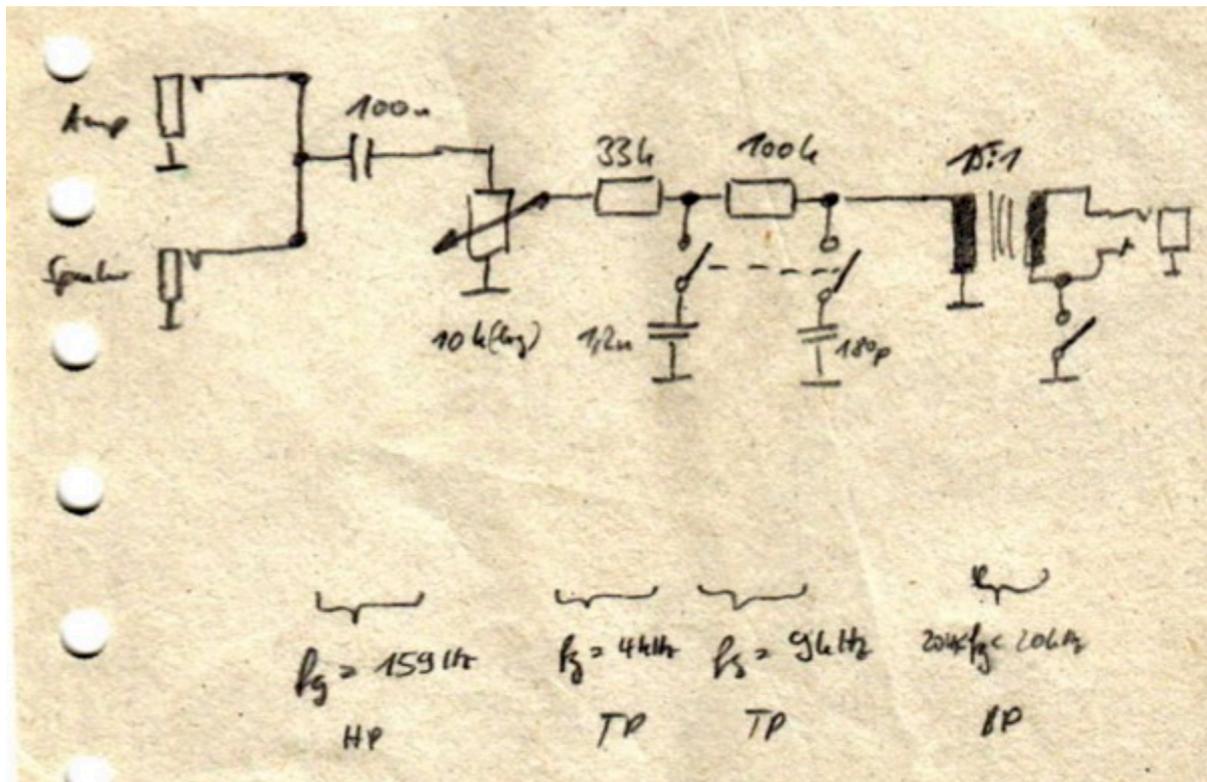


## A super simple but effective DI-Box with speaker simulation

Tilmann Zwicker, GITEC Member, Munich Germany

In 1988 I was doing a lot of home-recording, using among other amps "The Professor" described in the related article on the GITEC website, and I wanted to have a permanent setup without a microphone stand getting in the way. Going direct into the desk was desirable, but knowing that the speaker is a most important component shaping the guitar sound, I was aware I had to simulate that at least to some extent. What I came up with is this little circuit:



- The amp (with its low impedance characteristic) feeds a simple 6dB/Oct-RC-high-pass using a potentiometer as the effective resistor. The aim is to filter out very low frequencies (below 150 Hz) that are not desirable for recording an electric guitar in the framework of drums, bass and keyboards. This frequency range is often not reproduced evenly by combo amps anyway. A parallel speaker output makes connection of a speaker possible - for monitoring purposes or to get feedback.

- The high-pass is followed by two 6dB/Oct.-RC-low-pass filters connected in series. They attenuate the frequencies above about 4 kHz and 9 kHz, respectively. I sought to obtain a filter response not entirely unlike the frequency response of the JBLK110 speaker in "The Professor". These two filters can be switched off to obtain a very bright sound e.g. for undistorted rhythm guitar, or in order to use the direct box for other purposes than recording guitar.

- The impedance level of the circuit rises from filter to filter stage in order not to load each filter too much, and to still be able to use the very simple purely passive filter design. The filter stages still influence each other considerably ... not a very scientific approach but the overall effect achieved was what was intended.
- The small 15:1-transformer at the output matches the circuit to low impedance inputs and also provides galvanic separation to avoid ground loops.
- The ground connection of the transformer output jack can be switched off to avoid ground loops (there is a mistake in my old drawing shown above: the ground switch was never connected to the transformer output but to the ground pin of the XLR-recording-output of the DI-Box).

There are some audio samples posted on the GITEC website which present this direct box driven by the DIY "Professor" amp (discussed in my "other" member projects article). Check them out – the guitars are easily discerned: a Strat, a Tele, a ES-335, and an el-cheapo Guyatone lap-steel – all played through The Professor and recorded straight into the board via my direct box without any EQ from the board.

Thanks for your interest & take care,

Tilmann , in Oct. 2017