

10.3.3 Presence-Control

In studio-electronics, the term “presence” often characterizes the frequency-range between about 1 kHz and 4 kHz, and a “**presence filter**” designates an equalizer operating in this range. In guitar amplifiers, however, the presence-control represents an alternative to the treble-control. An early variant of the presence-control is found in Leo Fender’s Bassman: already the early versions (e.g. 5B6) include negative feedback in the power amplifier, and this becomes frequency-dependent in the model 5D6. Presumably an additional treble boost was desirable. There already was a treble-control so a different designation had to be found: presence-control.

Having picked the Bassman as a model for his JTM-45, Jim Marshall (or rather Jim’s tech Ken Bran) adopts this presence-filter, as well. Only VOX takes the opposite approach: since the AC-30 already boosts the treble almost too much, the power amp here receives a treble-attenuator designated with “Cut”. In the Fender- and Marshall-amps, the presence-filter operates on the basis of a simple **principle**: a low-pass integrated into the negative-feedback-loop diminishes the loop-gain for high frequencies, and boosts the treble that way. However, despite their simple function, the circuit includes two special aspects. First, the **loudspeaker** needs to be considered as part of the negative-feedback-loop: its impedance contributes to the effect of the presence-filter. Second, the power-amplifier of a guitar amp is often subject to **overdrive**. The presence filter becomes part of a non-linear system the tonal effects of which are different from those of the treble-control.

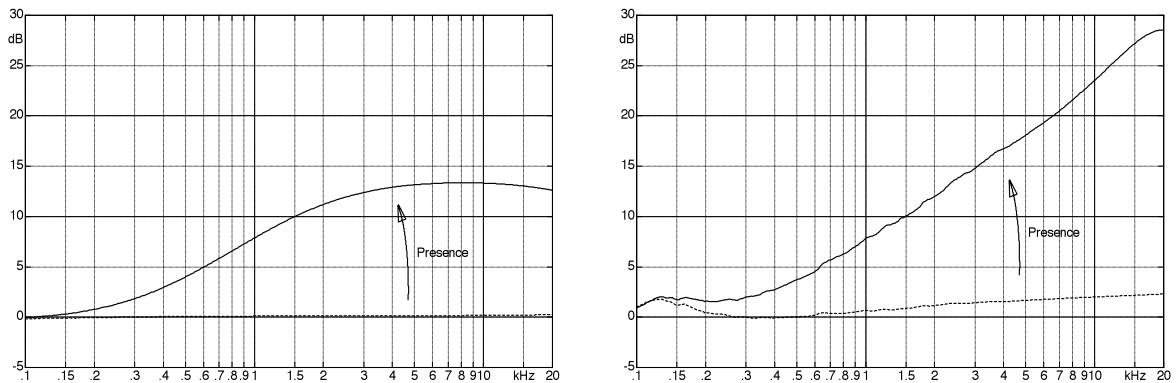


Fig. 10.3.23: Effect of the presence filter in the Marshall JTM-45. In the measurement on the left, the 16- Ω -output was loaded with a 16- Ω -resistor whereas on the right the load was a 4x12 speaker box (1960 AX).

In **Fig. 10.3.23** we see measurements on the JTM-45. The generator-signal was fed to the input of the differential amplifier; measurements were taken at the output of the power-stage. In one case the load was a 16- Ω -resistor; in the other case a loudspeaker-box was used. The latter is specified at 16 Ω , as well, but does not have constant impedance; rather, its impedance is frequency dependent.