

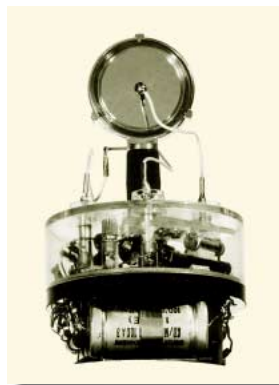


M 49 – The First Remote Controllable

An important step forward in microphone technology was made with the model U 47. Its dual diaphragm capsule M 7, active on both sides, made possible the first condenser microphone with switchable polar patterns. The question arose, whether it could be possible to change the characteristic during recording.

The relevant patent of Dr. Grosskopf reads: "Thus... the influence of exaggerated reverberation can be diminished ... the recording distance ... can be increased without getting a vague timbre ... It is therefore an urgent need for the recording technique to easily exchange microphones with different polar patterns ..." The objective was to avoid an exchange of microphones or capsules and to remotely control the microphone's directional pickup pattern. For this purpose it is important that the output of the microphone remain fairly constant and independent of the selected pattern. The only switchable pattern microphone existing at that time, the Neumann U 47, exhibits an increase in the output by 5 dB when switched from omni to cardioid. In the cardioid position the rear half of the capsule in the U 47 was simply electrically disconnected. As a consequence, the output of the rear capsule and the attenuation of the front via the fixed parallel capacitance of the rear were avoided.

"Comfortable" pattern control for the new M 49 microphone was achieved by keeping both capsule halves connected to the impedance converter with regard to the signal, however, insulated from each other with regard to the DC bias. The front diaphragm is polarized with a constant voltage of 60 Vdc, while the bias for the rear diaphragm is adjustable from 0 Vdc to 120 Vdc. This allows the polar pattern to become variable between omni through cardioid to figure-8 maintaining a practically constant sensitivity. The power supplies for the model M 49 microphones included a potentiometer with a pointer knob and a corresponding scale.



Available were portable and rack mounted versions of the power supplies. Due to the many supply voltages the M 49 microphone was equipped with an 8-pole connector. As tube, in the early versions, a directly heated triode MSC 2 made by Hiller was employed, which later was succeeded by the Telefunken AC 701 (k). The mechanical construction provided means for the suppression of structure born noise. The amplifier was mounted on a solid rubber disk, mechanically isolating the amplifier from the housing. In addition, the microphone capsule was mechanically decoupled by means of a swing-metal shock mount. This method was incorporated later in most of the succeeding Neumann microphones.

The M 49 was introduced to the German Radio Broadcasters in 1952. Because of its unprecedented versatility it conquered the international recording studios rather quickly. Due to the innovative feature "remote pattern control" it found widespread application as the important main microphone above large orchestras. Other applications were as a spot microphone for wind and string instruments, for piano and as the favorite announcer's microphone.

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