



Schematic

Western Electric

AMPLIFIER No. 89A

Instructions for Use

The Western Electric No. 89A Amplifier is intended for use as a speech input amplifier for police radio systems, either at the radio transmitter location or at a remote dispatching point. It is a three-stage, adjustable gain, resistance-coupled amplifier, operating entirely from a commercial alternating-current supply of 103 to 126 volts, 50 or 60 cycles.

The No. 89A Amplifier is designed to operate from either a 500-ohm transmission line or a standard 200-ohm high quality double-button carbon microphone (Western Electric 600A Transmitter), into a 500-ohm line or the 500-ohm input of a local radio transmitter. Exciting current for the microphone is supplied by a vacuum-tube rectifier which is part of the amplifier and which also supplies plate current and grid bias voltages for the vacuum tubes of the amplifier proper.

This amplifier will deliver zero level (0.006 watt) to a 500-ohm load with a total harmonic distortion of less than 1 per cent, or +10 db (0.060 watt) with a total distortion of approximately 2 per cent, and its frequency characteristic is uniform within 1 db for frequencies between 100 and 7000 cycles per second. Its maximum gain when working from the local microphone is approximately 65 db; when working from a transmission line, approximately 35 db. In either case the amplifier gain control, having a range of approximately 40 db, provides any desired reduction from these figures.

An oscillator (approximately 400 cycles) for signaling, and a copper-oxide type volume indicating meter for indicating zero output level, are included as part of the amplifier. In addition to the gain control potentiometer the amplifier includes a power switch for turning the amplifier on and off and two lever-type keys for switching. One key connects the input circuit of the amplifier to the local microphone ("LOCAL")* or through a 30 db artificial line to the incoming line ("LINE"), and has auxiliary contacts which may be used to control, through relays, the operation of the local radio transmitter. The other key provides a choice of normal amplifier operation ("VOICE") or signaling by means of the self-contained oscillator ("SIGNAL"). By means of an auxiliary potentiometer arranged for screw-driver adjustment the power level of the signaling tone may be adjusted from -3 db to +10 db. This adjustment is independent of the position of the amplifier gain control potentiometer.

* This key position is designated "MICROPHONE" on No. 89A Amplifiers bearing serial numbers 101 to 110, inclusive.

