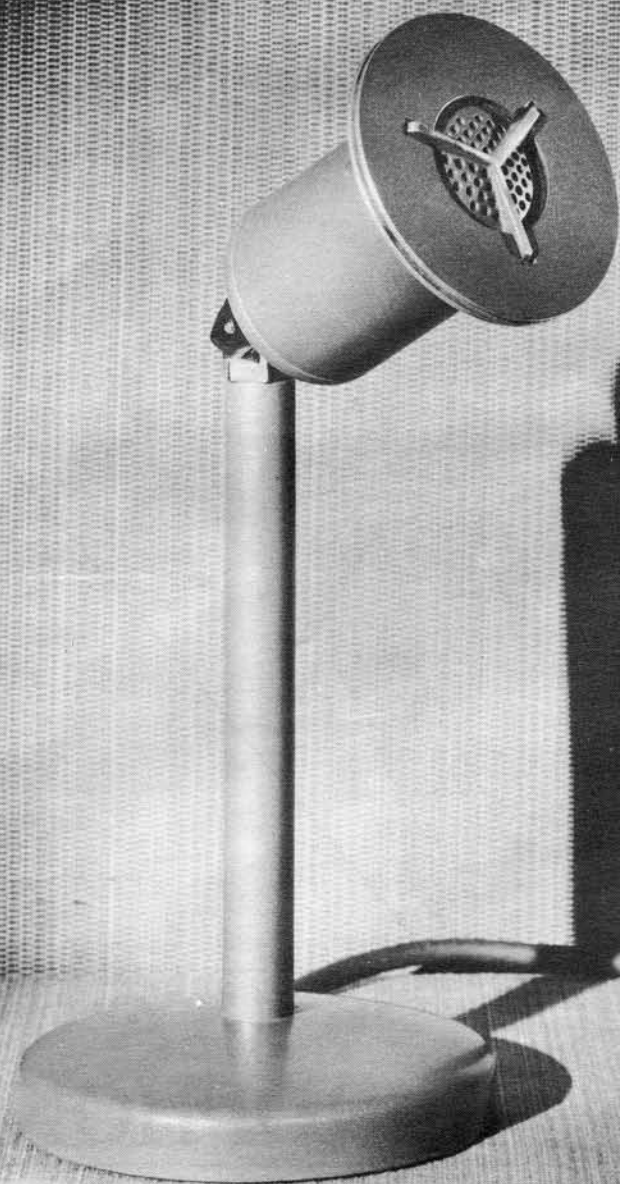


*Western Electric*



**633A**  
**MICROPHONE**



WESTERN ELECTRIC  
633-A MICROPHONE  
IN DIRECTIONAL POSITION  
WITH BAFFLE

A NEW POPULAR-PRICED  
HIGH QUALITY MICROPHONE

For many years the radio broadcasting and sound picture industries have been the largest users of high quality microphones. For that reason, most of the better microphones were designed specifically for them.

However, a new demand for high quality pick-up has gradually been gathering momentum as schools, restaurants, hotels and hospitals have begun to realize the importance of fidelity in their sound systems.

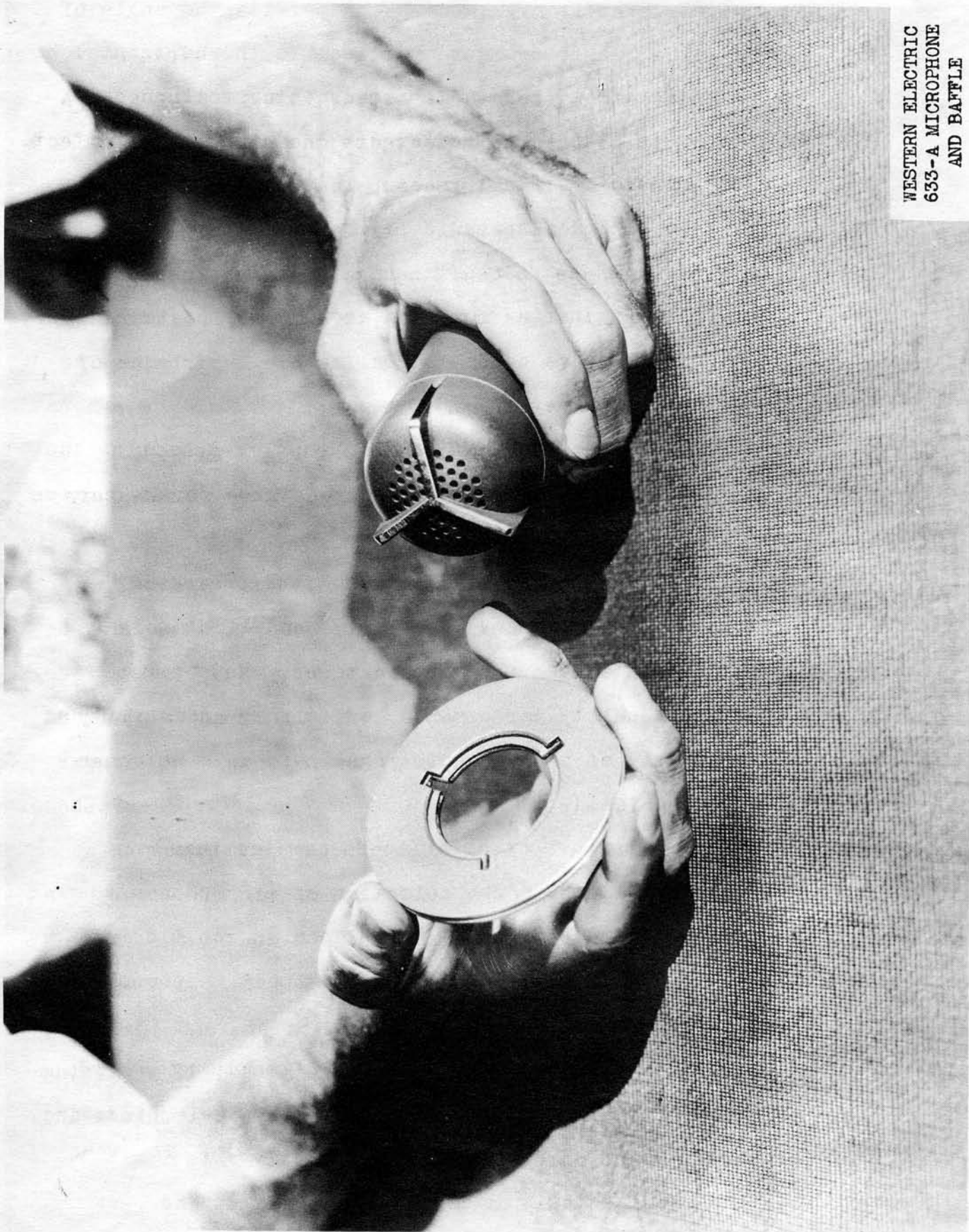
To meet this situation, a new, popular-priced, high quality dynamic microphone has been designed for Western Electric by Bell Telephone Laboratories.

This microphone with its attractive appearance, convenient mountings, low cost, small size and light weight will prove ideal in a number of applications. But, first of all, its high quality performance, efficiency and ability to handle a variety of pick-ups distinguish it as a newcomer in the low priced field.

As a number of potential users have neither controlled studio conditions nor a selection of microphones to meet varying conditions, the 633-A is placed in the middle of the range from non-directional to directional response characteristics.

The microphone may be suspended directly by a cord, or it may be screwed into its stand or into a swivel joint. When suspended by the cord or inserted directly into its mounting, the microphone is in a vertical position and performs well as a non-directional.

WESTERN ELECTRIC  
633-A MICROPHONE  
AND BAFFLE



A swivel joint is available which permits the angle of the microphone to be varied from the vertical to the horizontal, which brings the directional characteristics into prominence. A baffle attachment may be used to accentuate the directional effect. This is a disc, 3-1/4" in diameter, which fits snugly over the face of the microphone and is held in place by friction.

In the development of this new microphone, low cost has been the goal. It has been achieved by careful design of every component, while retaining a wide range frequency response. The diaphragm represents an outstanding achievement of Bell Telephone Laboratories, and the special process invented for assembling the diaphragm and magnet structure has resulted in a radical reduction in the number of parts ordinarily required for this type of instrument.

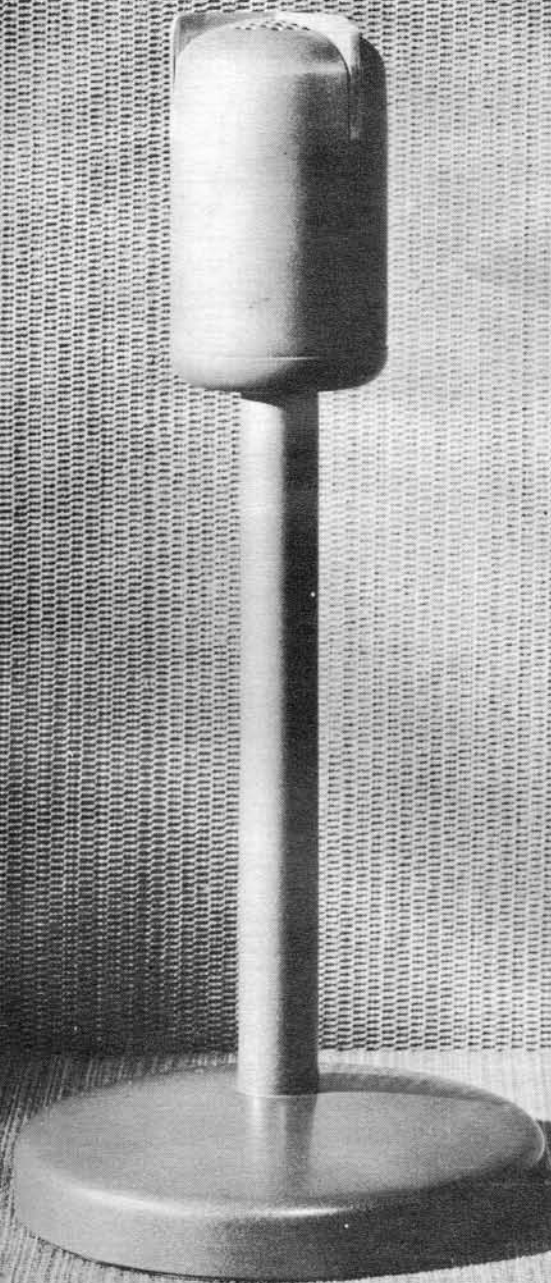
The microphone is styled in a small cylindrical housing 2" in diameter and 3" long with three projecting, protective fins. It is finished in aluminum gray, relieved by the bright, polished edges of the fins. The fins strengthen the protective grid over the diaphragm and act as protectors for the face of the microphone. The weight is 10 ounces, distinguishing it as the lightest high quality dynamic microphone yet produced. However, there has been no sacrifice of ruggedness or durability.

Screw terminals are used which are similar to those of an ordinary electric light plug. Contact is direct and positive, and the microphone may be suspended by its cord without straining the connections, thus eliminating the use of additional plugs and jacks.

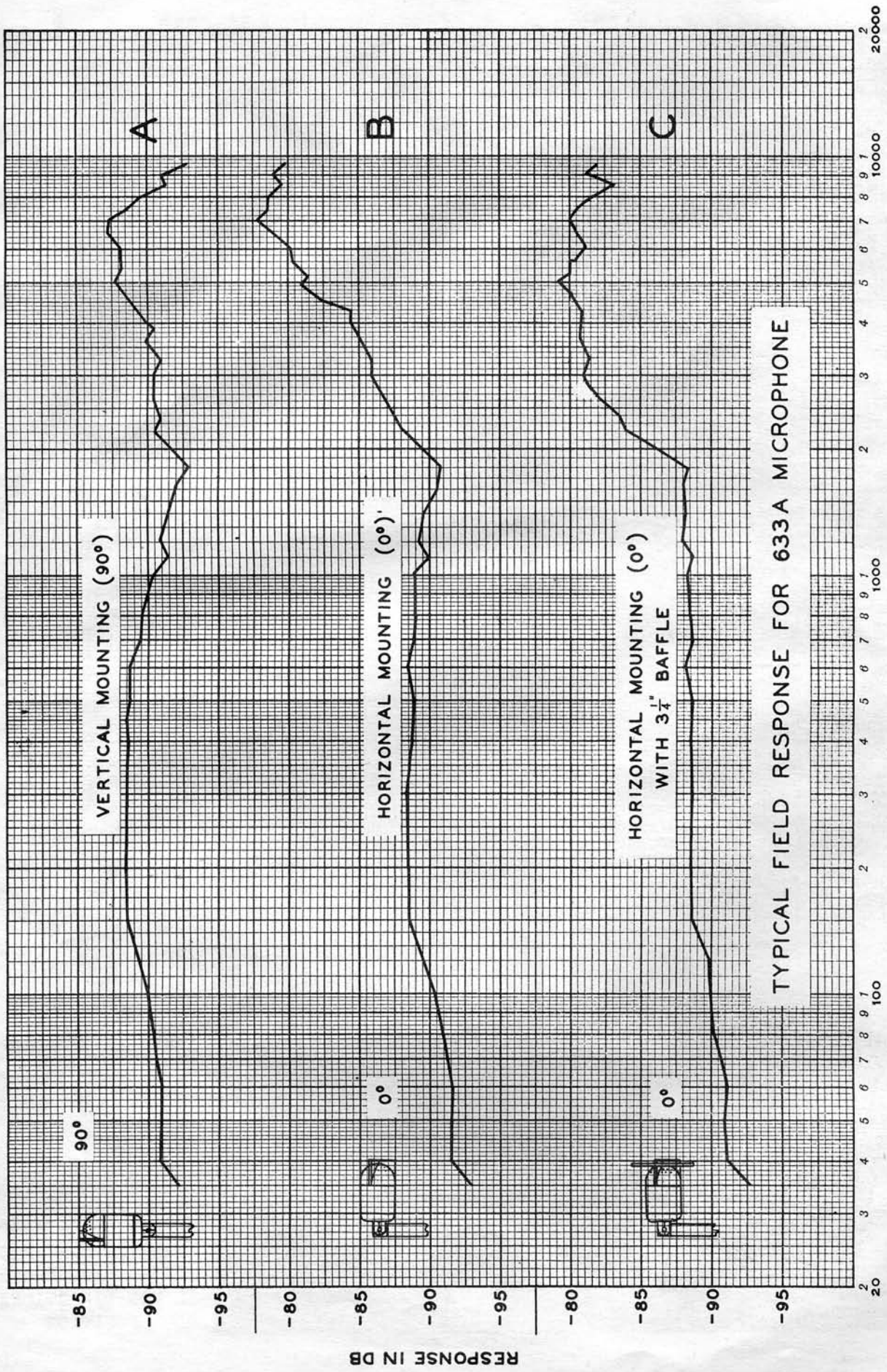
When the microphone is in a vertical position, that is, either suspended by its cord or inserted directly into the stand, the response will be the same for sound arriving from anywhere in a horizontal plane. For this non-directional position, the corresponding frequency response is shown in Fig. 1A. This response is fairly well balanced around an output level of -90 db throughout the entire range from 40 - 10,000 cycles. Therefore, for practical purposes, a group of people may be distributed around the microphone without the necessity of crowding directly in front, or an orchestra may be handled without discrimination against any particular part.

When in the directional position, the response for sound arriving normally to the diaphragm is shown in Fig. 1B. This response is substantially the same for lower frequencies as that in the non-directional position, but at higher frequencies is characterized by a gradual rise in level from -90 db at 2,000 cycles to -80 db at 9,000 cycles.

The normal incidence response of the microphone with the use of the baffle is shown in Fig. 1C and the effect of adding the baffle increases the sensitivity in the region 1,000 to 3,000 cycles. That this region is the most critical for intelligibility of speech has been brought out by an analysis of articulation tests. The corresponding increased directional properties are shown in Fig. 2 which compares the loss in the field response of the microphone, with and without the baffle, for sound of angular incidence. Relatively little increase is caused, by the use of the disc, in the angular effect for frequencies above 5,000 but in the critical region 1,000 to 3,000 the directivity has been doubled.



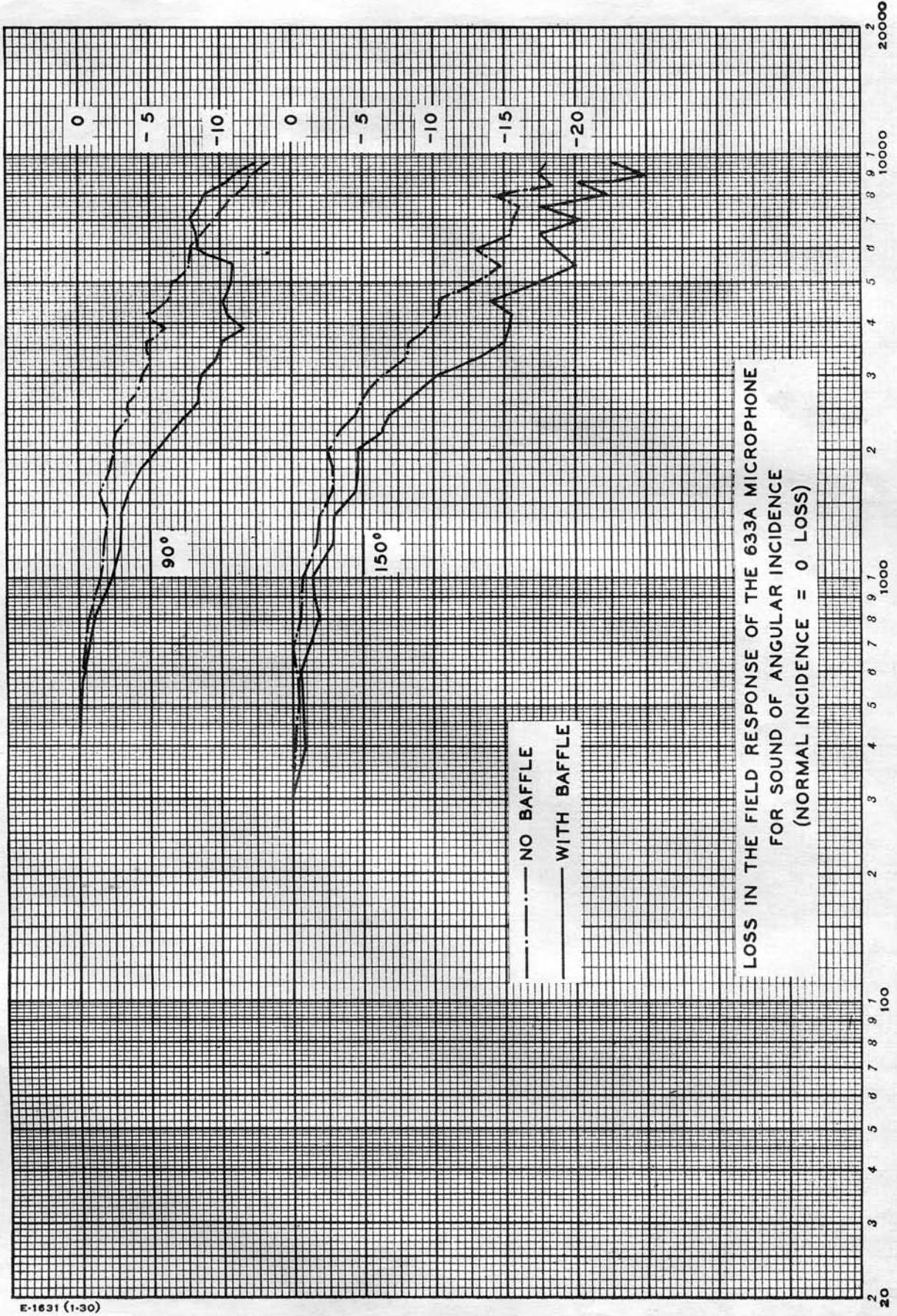
WESTERN ELECTRIC  
633-A MICROPHONE  
IN NON-DIRECTIONAL  
POSITION



TYPICAL FIELD RESPONSE FOR 633A MICROPHONE

FIG. 1

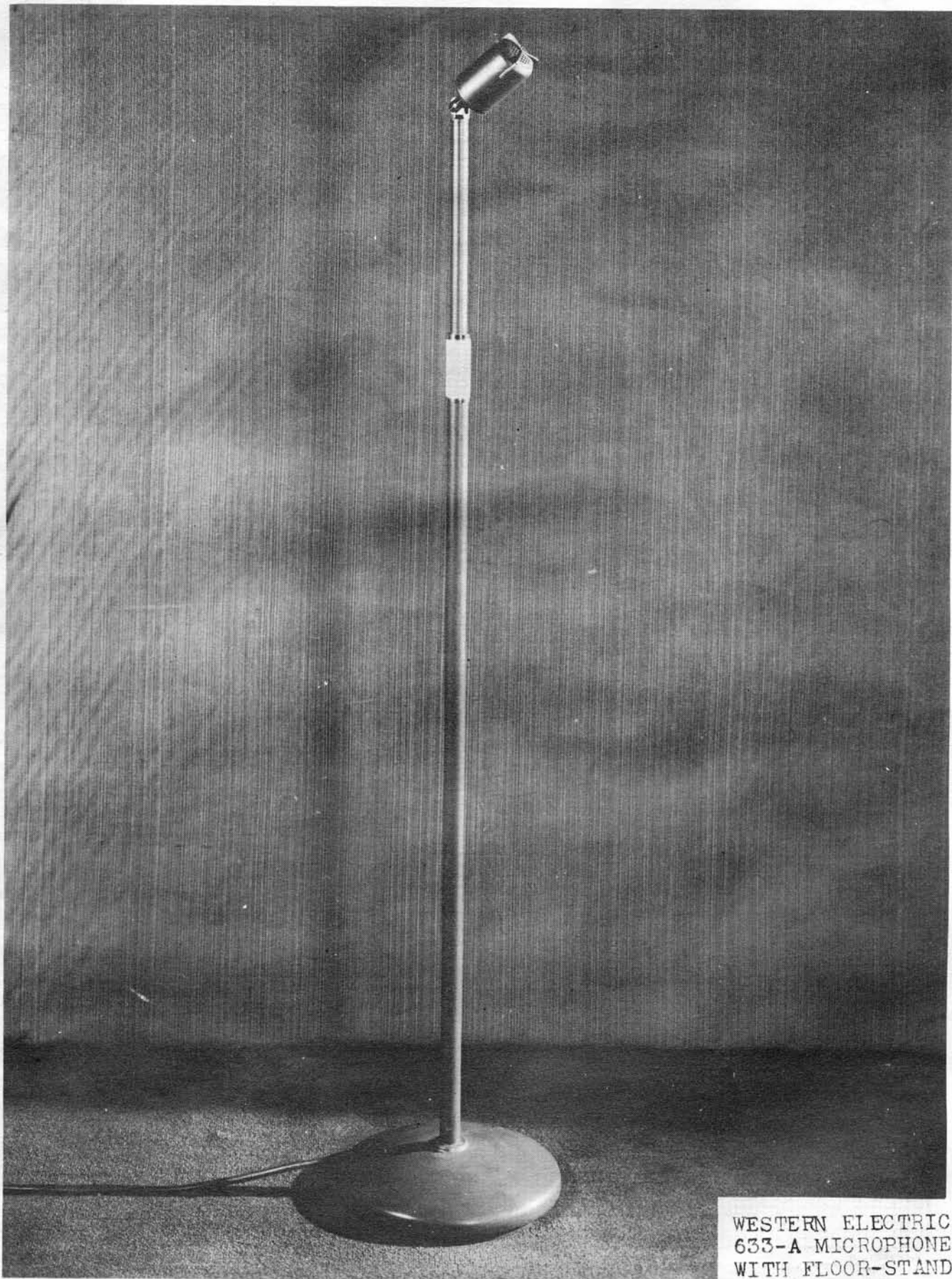




LOSS IN THE FIELD RESPONSE OF THE 633A MICROPHONE  
 FOR SOUND OF ANGULAR INCIDENCE  
 (NORMAL INCIDENCE = 0 LOSS)

FREQUENCY IN CYCLES PER SECOND  
 FIG. 2

E-1631 (1-30)



WESTERN ELECTRIC  
633-A MICROPHONE  
WITH FLOOR-STAND

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