# TUBULAR DIRECTIONAL MICROPHONE

Western Electric's sensational new Tubular Directional Microphone is made possible by the introduction of the D-99098 Impedance Element, a Bell Telephone Laboratories development. This element when close coupled to a Western Electric 618A Microphone constitutes the Tubular Directional Microphone, popularly known as "The Machine Gun Mike."

The D-99098 Impedance Element consists of 55 aluminum alloy tubes whose lengths vary by equal amounts from 1-1/4" to 5'. The entire assembly consisting of the impedance element and the microphone weighs only seven pounds and it is so designed it may be easily manipulated from the top of any standard motion picture camera tripod. The Bell and Howell all metal Filmo tripod is recommended for this purpose.

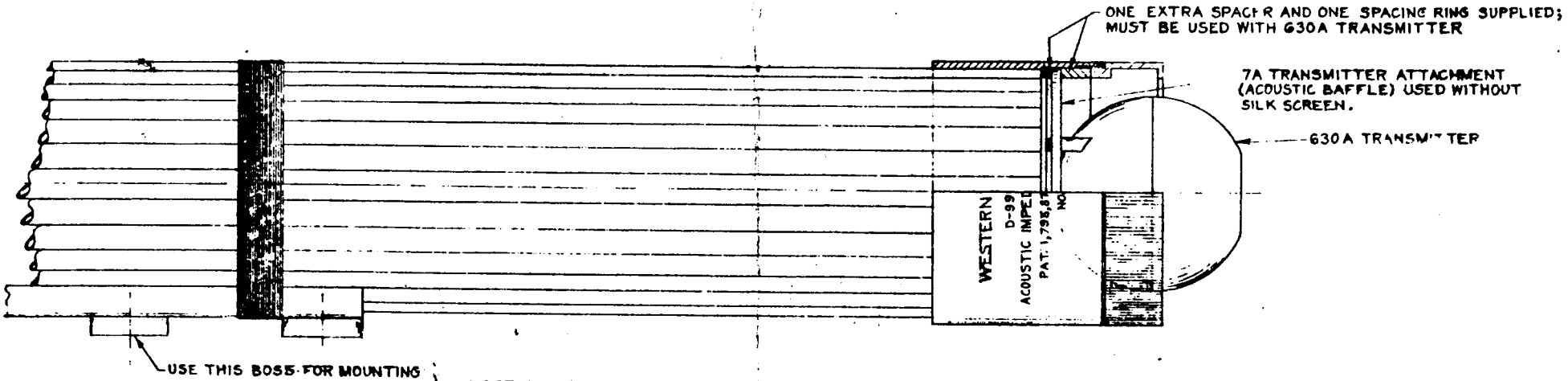
The multiple resonances of the various length tubes in the impedance element occur so closely together and cover such a wide frequency range that for practical purposes the device does not appear to be resonant at all; however, it has an acoustic resistance nearly equal to that of air. For sound from any other direction than normal or "head on" each tube introduces a different path length for the element of the sound wave entering the end of the tube. The elements of sound reach the composition chamber between the microphone and the ends of the tubes at different times and tend to cancel each other. However, the higher the tone of the picked up sound, the more effective are the different length tubes in introducing this out-of-step effect so that the directivity is not entirely independent of frequency or angle. For sound arriving at angles, the tubular attachment acts as a low-pass filter.

At 60° only frequencies below 350 cycles will be received near their full magnitude. For example, outdoors, six persons may be evenly spaced to form a circle 20' in diameter and when all are talking at once, the tubular directional microphone located at the center will pick up the voice of any one of the six at whom it is directed, eliminating the voices of the other five. When the microphone is pointed at the desired sound source, the normal incidence response is realized and no equalization is required.

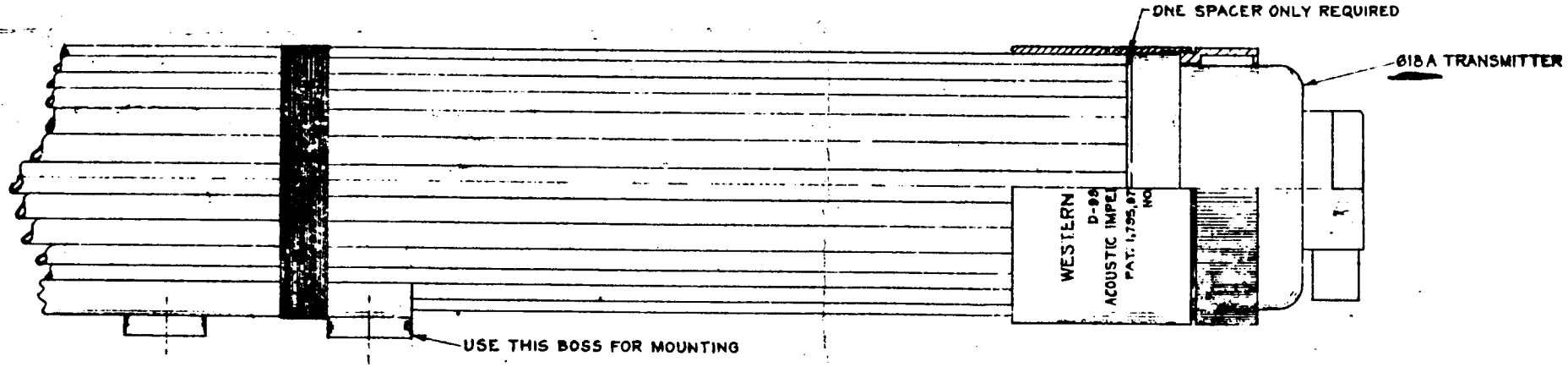
In indoor use, the tubular device reduces extraneous noises tremendously provided they arrive at an angle of 60° or more to the direction of the desired sound. In highly reverberant rooms, sound from the desired source is reflected into the microphone from several directions and the microphone filters out the high frequency sounds which arrive from angles other than normal. In addition to the reduction of extraneous noises a very marked reduction in reverberation effect is obtained with this device, permitting pick-up under conditions which could not be tolerated with the ordinary microphone.

## Outstanding Features

1. Highly directional
2. Tremendous reduction in reverberation effect when used indoors
3. Impedance element does not distort the normal incidence response of the microphone
4. Meets Western Electric standards of high quality construction and performance
5. Light and portable - weighs only seven pounds
6. Convenient - easily set up and manipulated.




ASSEMBLY OF D-99098 ACOUSTIC IMPEDANCE ELEMENT WITH 630A TRANSMITTER




ASSEMBLY OF D-99098 ACOUSTIC IMPEDANCE ELEMENT WITH 618A TRANSMITTER