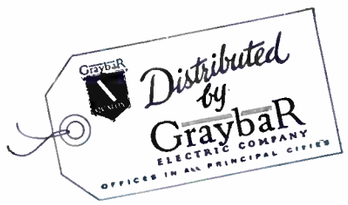
Moving Coil Microphone

Western Electric



Western Electric

Moving Coil Microphone

A development of the Bell Telephone Laboratories, Incorporated, the research laboratories of the American Telephone and Telegraph Company, and the Western Electric Company

THE microphone—the initial step in sound reproduction— plays a vitally important role in transmitting a program from its source to the listener. Even though the apparatus in the subsequent stages of a system may be the most modern in design and capable of the most efficient performance, these qualities will be of little value unless the program has been picked up by a microphone that does its part in assuring faithful, clear and distortionless reproduction.

In view of the importance of the microphone Bell Telephone Laboratories is engaged in constantly creating improved apparatus for pick-up work. The Western Electric Company builds into the instruments so designed experience gained in manufacturing sound transmission apparatus for over half a century. In consequence, microphones bearing the Western Electric name possess a capacity for faithful pick-up and will supplement most satisfactorily other apparatus in Broadcasting and Public Address Systems.

NEW MOVING COIL MICROPHONE THE RESULT OF LONG DEVELOPMENT

The new moving coil microphone embodies the principle used by Alexander Graham Bell in the early telephone and represents a distinct advance over other pick-up equipment in use at the present time.

Microphone mounted on floor and on table type pedestals. The Moving Coil Microphone being inherently rugged and insensitive to ordinary local vibration, elaborate spring suspensions or other cushioning devices familiar in ordinary mountings, are unnecessary. Microphone and mounting are furnished in oxidized bronze finish.

The excellent performance characteristics of moving coil microphones were recognized for years before it was deemed practicable to apply this type to general use. With the removal of the barriers to its widespread commercial application, due principally to the lack of supplementary equipment capable of effectively bringing out some of its most desirable features, it has taken its place as the foremost contribution to the microphone field.

OPERATING PRINCIPLE

The new Western Electric Moving Coil Microphone possesses transmission characteristics of the highest order. Essentially it is composed of a diaphragm supporting a coil of fine aluminum ribbon, wound edgewise, in the field of a permanent magnet. The diaphragm vibrates in response to sound waves impinging on its surface and causes the coil to vibrate in a like manner, cutting lines of magnetic force. Coil and diaphragm are so shaped and constructed that they act as a unit and their mode of vibration in the range of audible frequencies is substantially that of a plunger. In actuality then, the microphone is a generator whose electrical output, while very small, is proportionate to the magnitude of the sound vibrations which cause the movement of the diaphragm. The design of the diaphragm, and the manner in which it is compensated against resonance peaks by the use of acoustic circuits coupled to it, has resulted in a microphone which gives a uniform response throughout the audible frequency range.

FEATURES OF CONSTRUCTION

Its rugged construction insures long and satisfactory life. Protection for the diaphragm is provided by a perforated metal grid covered with silk and held in the face of the instrument by a threaded ring. The grid and the metal shell which forms the housing of the instrument are insulated from the moving coil and constitute a shield which may be connected to ground.

On the back of the housing are three contact prongs; two form the moving coil terminals and the third may be used as a ground connection for the shielding if desired. To receive these prongs a jack of improved design is provided employing a cam which locks the prongs securely in the jack after insertion thus avoiding accidental uncoupling.

The microphone measures approximately 3¼ inches across the diameter of the face, is about 3 inches deep, and weighs about 2½ pounds. Its compactness permits it to be supported in simple mountings.

MOVING COIL MICROPHONE ANOTHER FORWARD STEP IN SOUND TRANSMISSION APPARATUS

The basic simplicity of the moving coil microphone is responsible for several of its distinct advantages. The fact that a permanent magnet of cobalt steel is used to provide the magnetic field in which the moving coil vibrates obviates the necessity for supplying polarizing energy to the microphone.

Since no delicate amplifying equipment need be directly associated with it, much of the extreme care formerly required in the handling and maintenance of microphones is unnecessary with the new instrument.

The moving coil microphone being a low impedance device and not subject to disturbance from other circuits in the vicinity, may be used with complete satisfaction at a considerable distance from its amplifier.

Changes in temperature, humidity and barometric pressure which have long constituted obstacles to the consistent operation of microphones, have no unfavorable effect on the performance of the new Western Electric instrument.

The presence of dust in the air does not have the adverse effect upon the performance of the moving coil microphone that is sometimes experienced with other types.

For suspending the microphone from the ceiling or other overhead support the mounting shown above is provided. Microphone and mounting in this design will be supplied finished either in oxidized bronze or black crinkled lacquer.

The effect of wind noises, a serious obstacle to outdoor pick-up work in the past, has been greatly reduced in the new microphone, making it especially valuable for this type of service.

RESUMÉ OF ADVANTAGES

Summarized, the Western Electric Moving Coil Microphone possesses the following outstanding advantages:

1. Simple in design.
2. Rugged construction.
3. Workmanship and materials of the finest.
4. Characteristics inherent in the moving coil principle.
5. Substantially uniform response over the complete range of audible frequencies.
6. Transmission characteristics not affected by variations in temperature, humidity and barometric pressure.
7. As well adapted to outdoor as to indoor locations since it is less subject to disturbances by wind noises than the condenser microphone.
8. Smaller size and the fact that its amplifier is not directly associated make it easy to mount, and, if necessary, to conceal.
9. Simple, light and inconspicuous mountings.
10. May be used at a considerable distance from its amplifier.

Western Electric
MOVING COIL MICROPHONE

Unmounted microphone showing jack in position.

11. Does not require polarizing energy, since it uses a permanent magnet to supply the field in which the moving coil vibrates.

12. Comparatively insensitive to ordinary vibration and not put out of adjustment even when subjected to moderately rough handling.

ADDITIONAL INFORMATION

Detailed information pertaining to price, delivery and terms may be obtained by communicating with the nearest Western Electric distributor.

1-H-31-5 Printed in U. S. A. WECO-T1002

Western Electric

Moving Coil Microphone

MADE BY THE MAKERS  OF BELL TELEPHONES