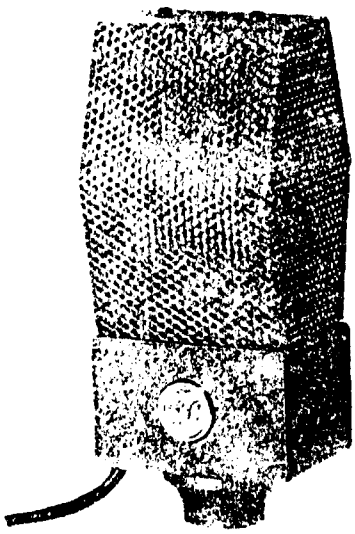
Classification: MICROPHONES AND ACCESSORIES
Bulletin No. SP-1055



RCA JUNIOR VELOCITY MICROPHONE

MI-4010-A

Frequency Range.....50 to 10,000 cycles
Impedance.....250 ohms and 16,000 ohms
Dimensions.....2-5/8" wide,
2-3/8" deep, 6-3/16" long
Net Weight.....2 lbs.
Shipping Weight.....4 lbs.
Finish.....Durable baked wrinkled gun metal
Shielded Cable..... 30 feet with plug
Average Operating Level..... - 68 db.
Code Word,..... CROGH

THE RCA JUNIOR VELOCITY MICROPHONE is an entirely new and improved high quality microphone, which, due to its remarkable performance, has been marked as one of the major improvements in the art of sound reproduction. The new type of construction and new principle of operation based on velocity actuation, employed in this microphone, result in highly favorable directional characteristics, high sensitivity and faithfulness of response. These favorable operating characteristics in turn impart a naturalness of tone and a distinctness of speech not heretofore possible with any previous type of microphone used for public address and sound reenforcing purposes.

THE USUAL STIFF DIAPHRAGM used in all previous types of microphones is displaced in the new Velocity Microphone by a thin, light-weight, aluminum ribbon. This ribbon is suspended between the poles of a permanent magnet, thus eliminating the necessity of any field supply. The unique, simplified, rugged construction together with high quality performance makes the Velocity Microphone ideally suited for public address and sound reenforcing applications of all sorts.

THE MICROPHONE is provided with standard half-inch threaded fitting for mounting on the various microphone stands. Suspension fitting can be obtained as MI-4070

AVERAGE OPERATING LEVEL - Minus 68 db. at 10 bar pressure across open circuit using 12.5 milliwatts as zero power level.

TRANSFORMER IMPEDANCE between S and F is 16,000 ohms and between T and F, 250 ohms.

Commercial Sound Section

RCA MANUFACTURING COMPANY · INC

CAMDEN · NEW JERSEY

A Service of Radio Corporation of America

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FORM 930

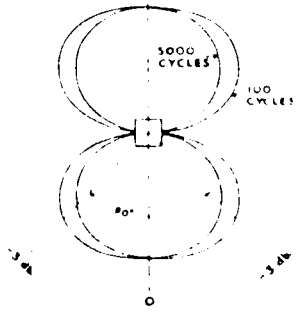
THE MOST IMPORTANT CHARACTERISTIC of the velocity microphone in comparison with the pressure-operated microphone, such as the condenser, electro-dynamic and carbon types, is its directional property, which is practically independent of frequency within the working range of the microphone. This directional characteristic is particularly valuable in the solution of some of the difficulties usually encountered in reverberant locations by the reduction of the apparent reverberation, and the increased possibilities of obtaining better balance and selectivity in sound pickup, and in the reduction of resonance and other disturbing acoustic phenomena.

THE APPARENT REVERBERATION as perceived in a sound pickup system depends upon the ratio of generally reflected to direct sound. The direct sound travels from the source to the microphone without being reflected from any surface. The generally reflected or reverberant sound may encounter one or more reflections by walls, ceilings and floor before it reaches the microphone. The direct sound picked up by a microphone varies inversely as the distance between the sound and microphone. The generally reflected sound is, in general, independent of the relative position of the source and the microphone. To reduce the apparent reverberation, it is necessary to reduce the ratio of generally reflected to direct sound, that is, the generally reflected sound must be decreased by increasing the absorption of the reflecting surfaces or the direct sound must be increased by decreasing the distance between the sound source and the microphone. This, of course, places a limitation upon the sound pickup system.

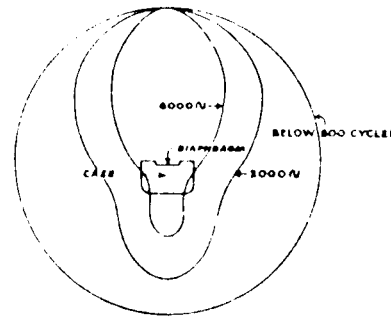
IT CAN BE SHOWN THAT, due to the directional characteristic of the velocity microphone, the energy response to generally reflected sound is one-third that of the non-directional diaphragm type of microphone such as the condenser, the electro-dynamic or the carbon microphone. Fundamentally, this is true because sound waves approaching the velocity microphone from a direction in the same plane as the ribbon have no effect upon it; whereas, sound waves approaching a non-directional microphone in a similar manner are picked up in the manner described below. This, of course, means that the velocity microphone can be used in more reverberant locations and still obtain better results than with a non-directional microphone. Or, for the same application, it can be used at 1.7 times the distance of a non-directional microphone and retain the same reverberation characteristics.

IN THIS CONNECTION, attention is called to the fact that the directional characteristics of the velocity microphone are independent of frequency. This means that the microphone will not discriminate against certain frequencies either in the case of direct or reflected sound. It is stated above that the condenser, electro-dynamic and other diaphragm microphones are non-directional. This is true for the lower frequencies only, up to about 2,000 cycles. This type of characteristic is more undesirable than a pure non-directional characteristic throughout the entire frequency range. In general, excess reverberation in auditoriums and other large audience rooms where reenforcing systems are required occurs at the lower frequencies due to the fact that the absorption characteristics of most materials used in reducing reverberation are less efficient at the lower frequencies. Using a microphone which is non-directional at the low frequencies and directional at the higher frequencies means that the excess low-frequency reverberation will be further accentuated. Furthermore, due to the sharp beam of the pressure-operated microphones at the higher frequencies, the microphone must be directed at the action, or the direct sound received by the microphone will be reduced for these frequencies.

IT MIGHT BE MENTIONED in passing that the use of a directional antenna in discriminating against static and other undesirable sounds is well known. The same reasoning can be applied to sound pickup systems.



HORIZONTAL DIRECTIVITY OF VELOCITY MICROPHONE



HORIZONTAL DIRECTIVITY OF DIAPHRAGM TYPE MICROPHONES