INSTRUCTIONS

Type BK-5A
Uniaxial Microphone

MI-11010

RADIO CORPORATION OF AMERICA
INDUSTRIAL ELECTRONIC PRODUCTS, CAMDEN, NEW JERSEY

PRINTED IN U.S.A.
WA-6100

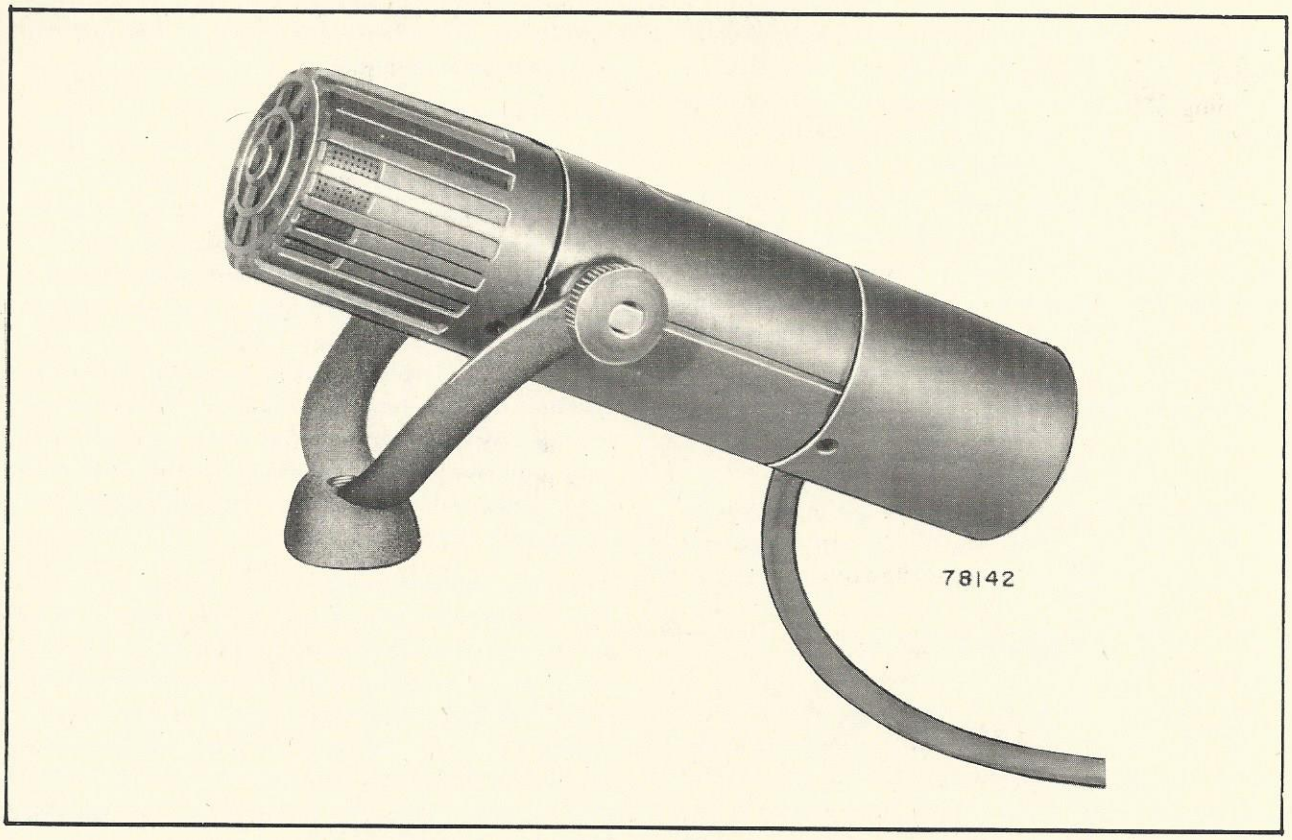

Figure 1. BK-5A Microphone

TECHNICAL DATA

Output Impedance
250 ohms — may be changed to 30 or 150 ohms

Load Impedance
Unloaded input transformer

Effective Output Level
−56 dbm*
Gm = −150 db
(Gm = R.E.T.M.A. sensitivity rating)

Hum Pickup Level
−128 dbm**

Cable
MI-43-C, 3-conductor, shielded — 30 feet long, no plug

Dimensions and Weight
Overall Microphone Length — 7 inches
Diameter — 1¾ inches
Overall Length — 7 inches
Width — 2¾ inches
Depth — 2⅞ inches
Weight — 1 lb. 11 ounces, less cable
3 lbs. 3 ounces, with cable

Stand Fitting
⅛-inch pipe thread

Finish
TV grey

*Sound pressure — 10 dynes/cm²

**Referred to a hum field of 1 x 10^{-3} gauss

DESCRIPTION

The RCA Type BK-5A Uniaxial Microphone, Figure 1, is a dependable, high-quality ribbon instrument possessing an improved unidirectional characteristic. Incorporated in the unit is a blast filter which effectively reduces the possibility of damage to the microphone from gun blasts. The frequency response is essentially uniform from 50 to 15,000 cps. Since maximum sensitivity lies on the major mechanical axis, it is one axis or uniaxial microphone. A screwdriver adjustment permits a choice of three low-frequency responses.

These characteristics simplify microphone and cam-

era placement problems. The small size, light weight, attractive TV Grey finish and appearance, and its outstanding performance render it especially suitable for television and other applications where quality pickup under adverse conditions is required.

The acoustic circuit consists of a blast filter, an acoustic phase-shift network and an especially designed connector to couple the ribbon to an acoustic labyrinth. The integration of these parts is responsible for the unidirectional characteristic of the microphone.

A boom mount and a wind screen are available.

APPLICATION

Although primarily intended for use in television, the BK-5A is admirably suited for use in general broadcasting and in high fidelity sound systems.

OPERATION

Mounting

The microphone will mount on a 1/8-inch pipe thread. For stand use, where shock mounting is desirable, the cushion mounting assembly as supplied with the RCA 77-D and 77-DX microphones is recommended. The RCA stock number of this mounting is 97973.

Figure 2 shows the microphone on an MI-11012 Boom Mounting, the use of which is recommended for ease of handling.

A wind screen, RCA MI-11011, is suggested for outdoor use and other locations where difficulty with wind noise is encountered.

Connections (See *Figure 3*)

As shipped, the microphone is connected for an output impedance of 250 ohms. It should be noted that when the microphone is connected to a 150-ohm input, the 250-ohm output connection on the microphone may be used. This will not materially affect the operation of the microphone and will result in approximately a 2-db greater output.

The output impedance may be changed to either 30 ohms or 150 ohms. To make this change, remove the three screws securing the rear cover and carefully pull the cover to the extent of the slack in the wires. Then make the proper connections as indicated in Figure 3. Replace the cover.

Directional Characteristic

As can be seen from Figure 4, the microphone has an improved unidirectional characteristic. This feature attenuates unwanted sound from directions other than those from within the angle of pickup.

Due to design parameters chosen in this microphone, the directional characteristic is more uniform over a wider range of frequencies than has been heretofore possible.

Frequency Response Compensation (See *Figure 5*)

At the rear of the microphone is a screwdriver-operated selector switch marked M (music), V_1, and V_2 (voice). The music position will give a flat response to sounds originating three feet or more from

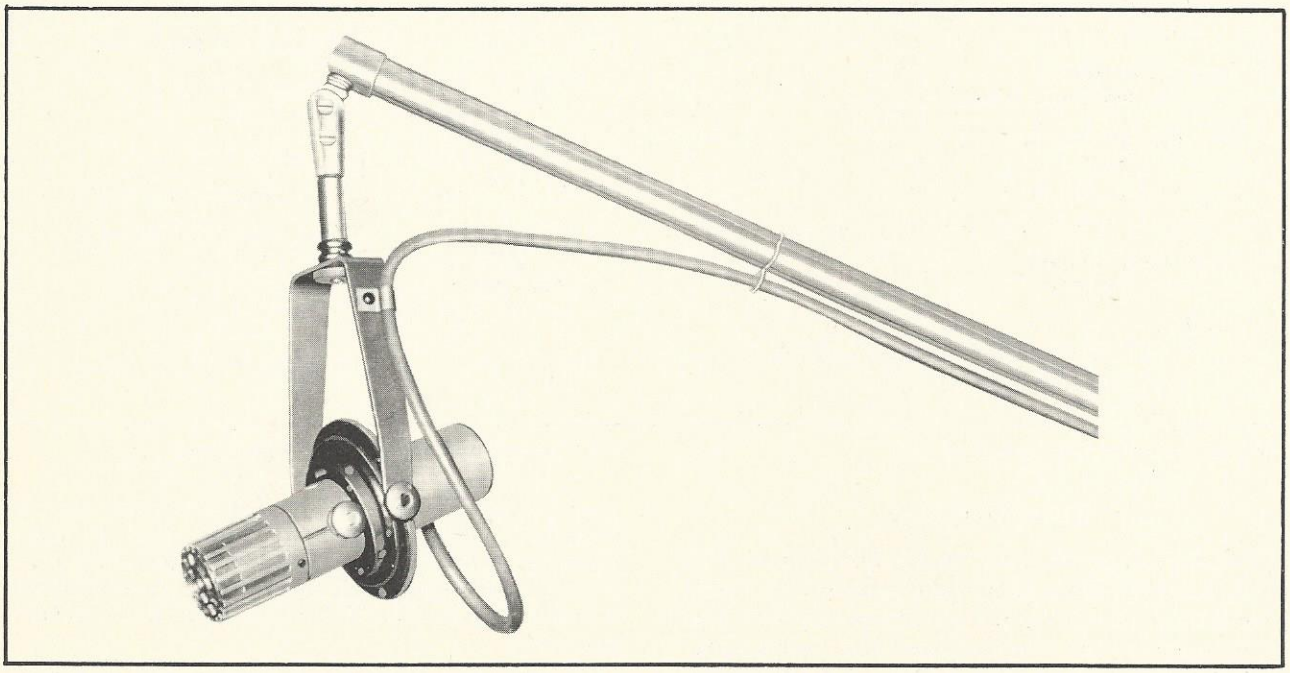

Figure 2. The BK-5A Microphone on an MI-11012 Boom Mounting.

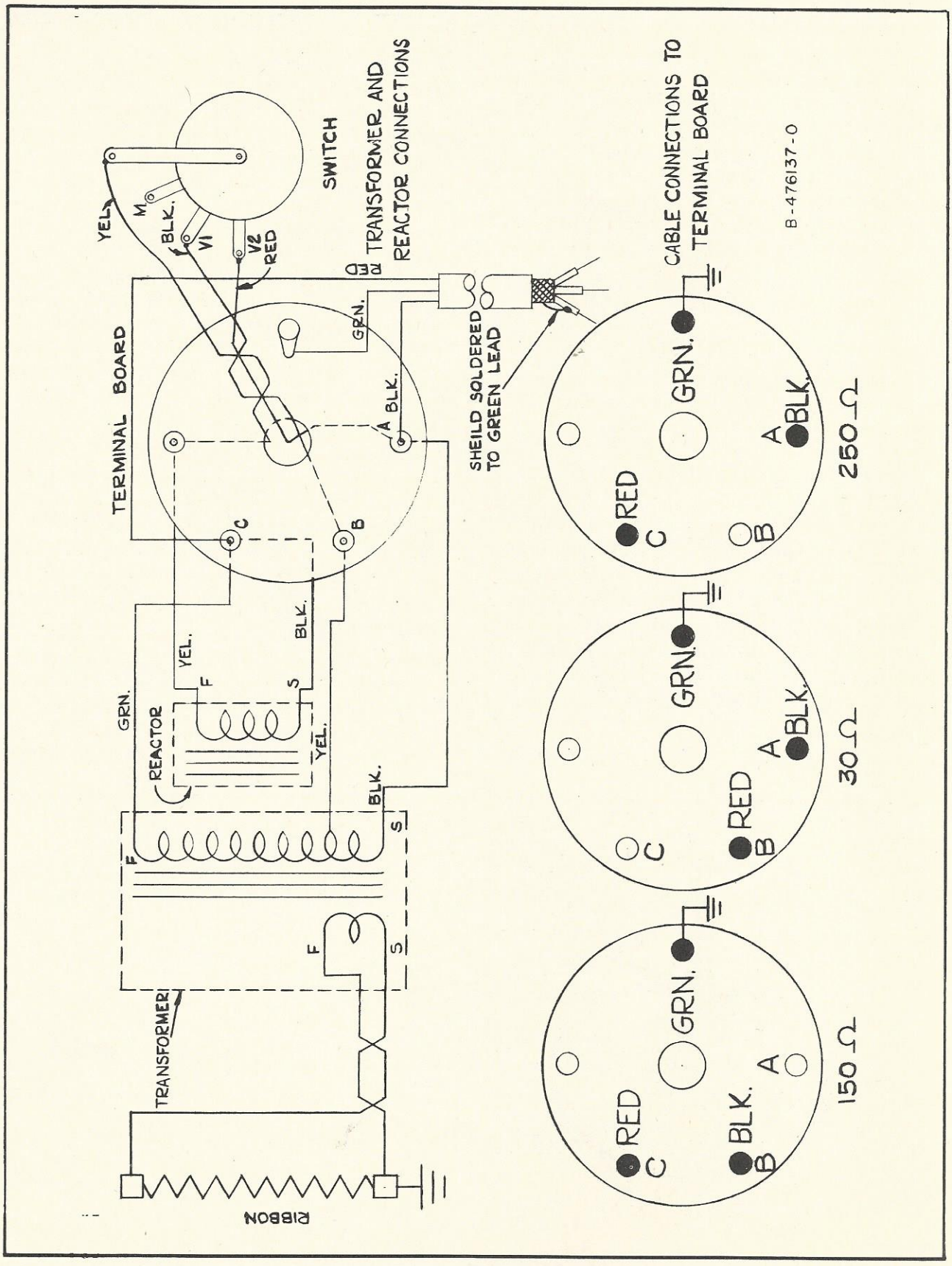

Figure 3. Schematic and Wiring Diagrams of the BK-5A.

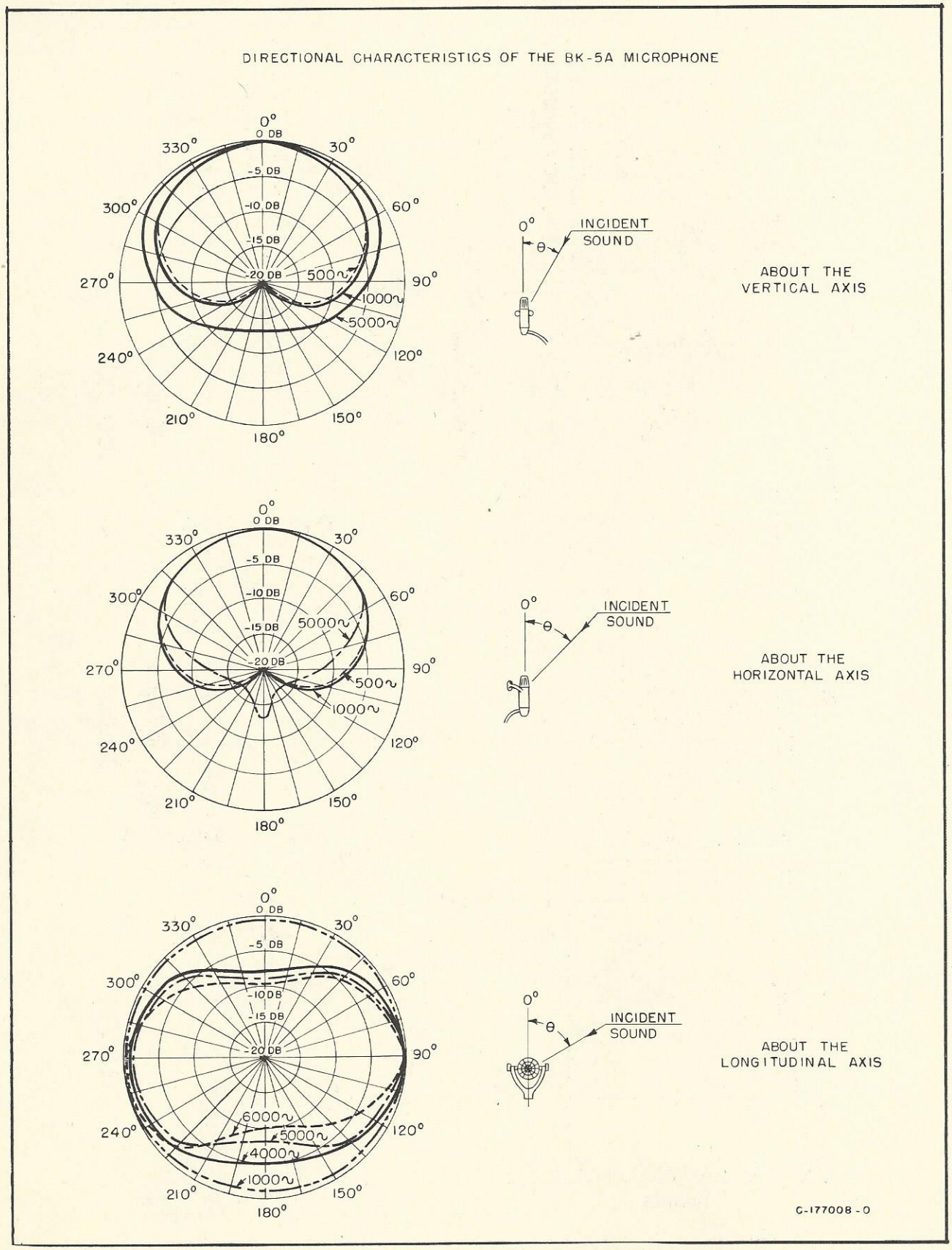

Figure 4. Directional Characteristics of the BK-5A.

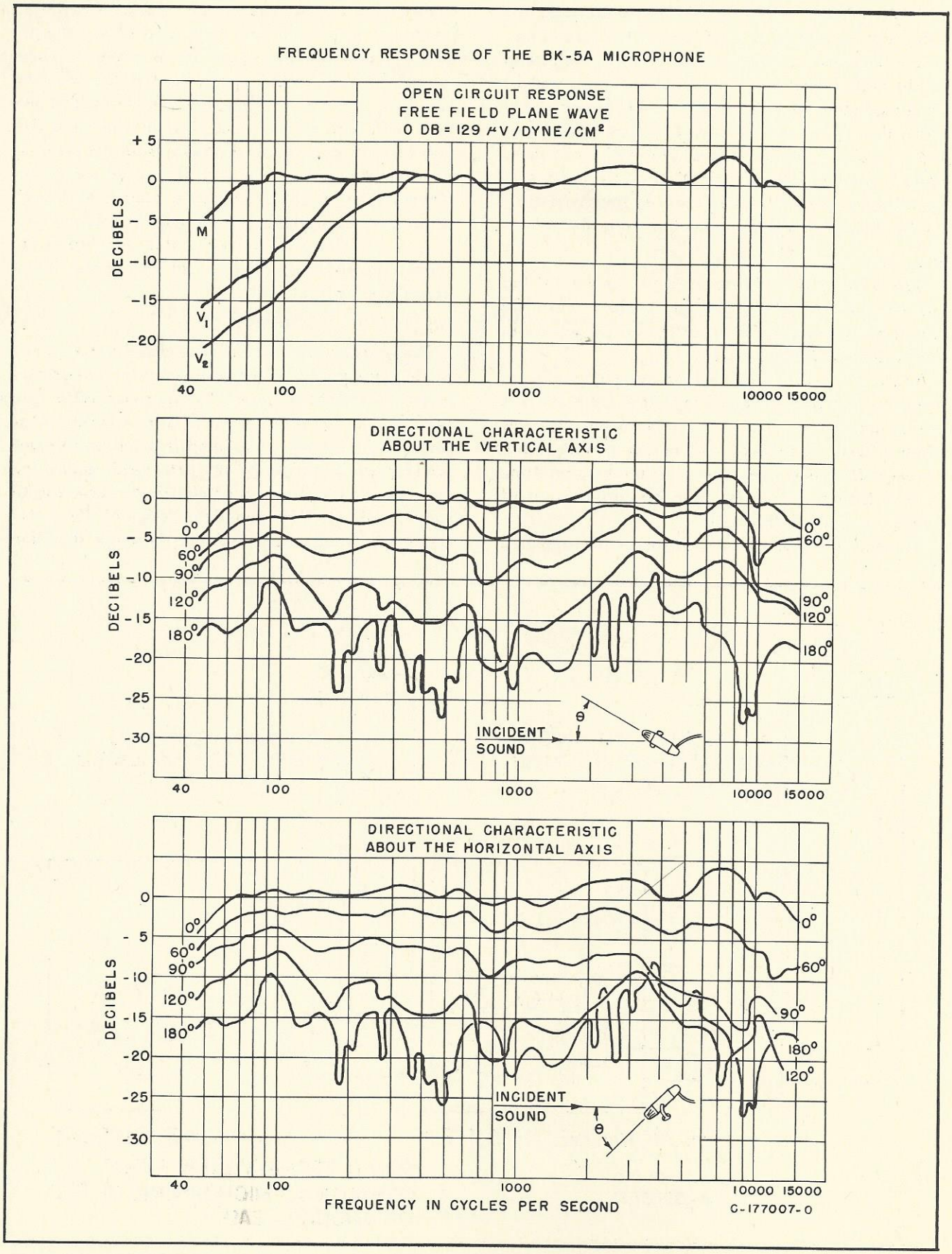

Figure 5. Frequency Response of the BK-5A.

the microphone. This position should be used for full range reproduction. As there is little voice energy in the range covered by the compensation, the pickup of the voice signal will be natural and there will be an attentuation of undesirable low-frequency noises when the V_1 position is used. For close-talking use, the V_2 position should be used. This will give a more natural reproduction of speech. A small amount of experimentation will usually result in improved quality by the use of the compensation control.

Phasing

The Type BK-5A Microphone is phased so that the red cable lead is electrically positive when the sound pressure on the front of the microphone is in the positive half of the cycle.

When the outputs of two or more microphones are connected to a mixing circuit, it is necessary that the outputs of all the microphones have the same phase relation. Otherwise, the output of one microphone will oppose the output of another, resulting in a reduction in output, and the introduction of varying degrees of distortion.

To check the phasing of two or more microphones, connect one microphone to the associated amplifier input and set the volume control to obtain the desired output while talking into the microphone. Then, connect the second microphone in parallel with the first and, without changing the volume control setting, hold both microphones close together and talk into them. If the volume decreases from the previous level, reverse the connections of one of the microphone cables at the microphone plug. Check each additional microphone for phasing in this manner, and, if necessary, reverse the cable connections to correct the phasing to agree with that of the microphone already connected.

Hum

Hum may originate in any part of the audio system. In the microphone circuit, it may result from ground loops or imbalance caused by improper cable connections to the preamplifier board or microphone plug. Hum also may be induced into the microphone transformer or ribbon by magnetic fields emanating from power transformers or electrical machinery. In the type BK-5A Microphone the design of the ribbon circuit, the transformer and the thorough shielding

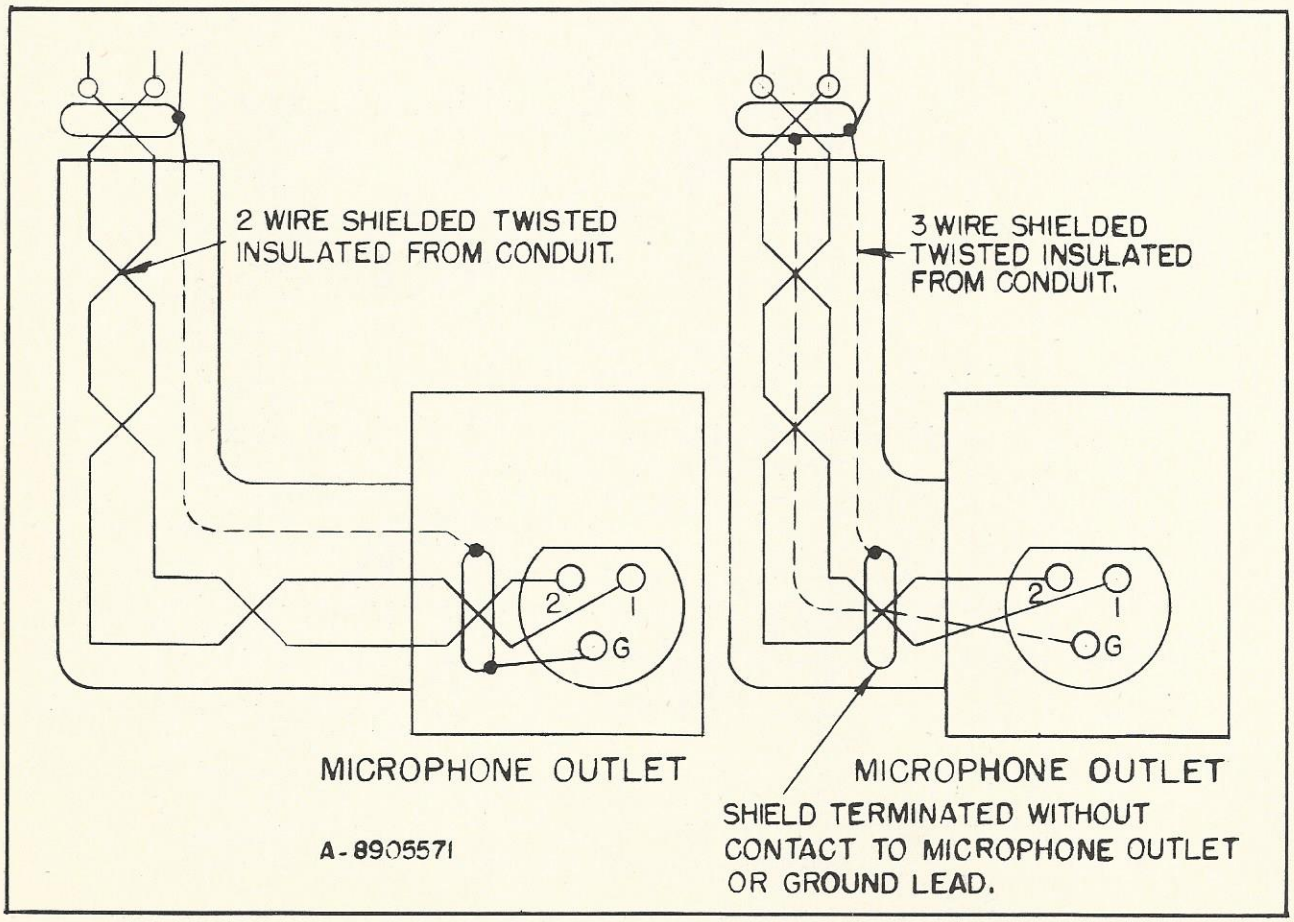

Figure 6. Ground and Shield Connections for the BK-5A Microphone.

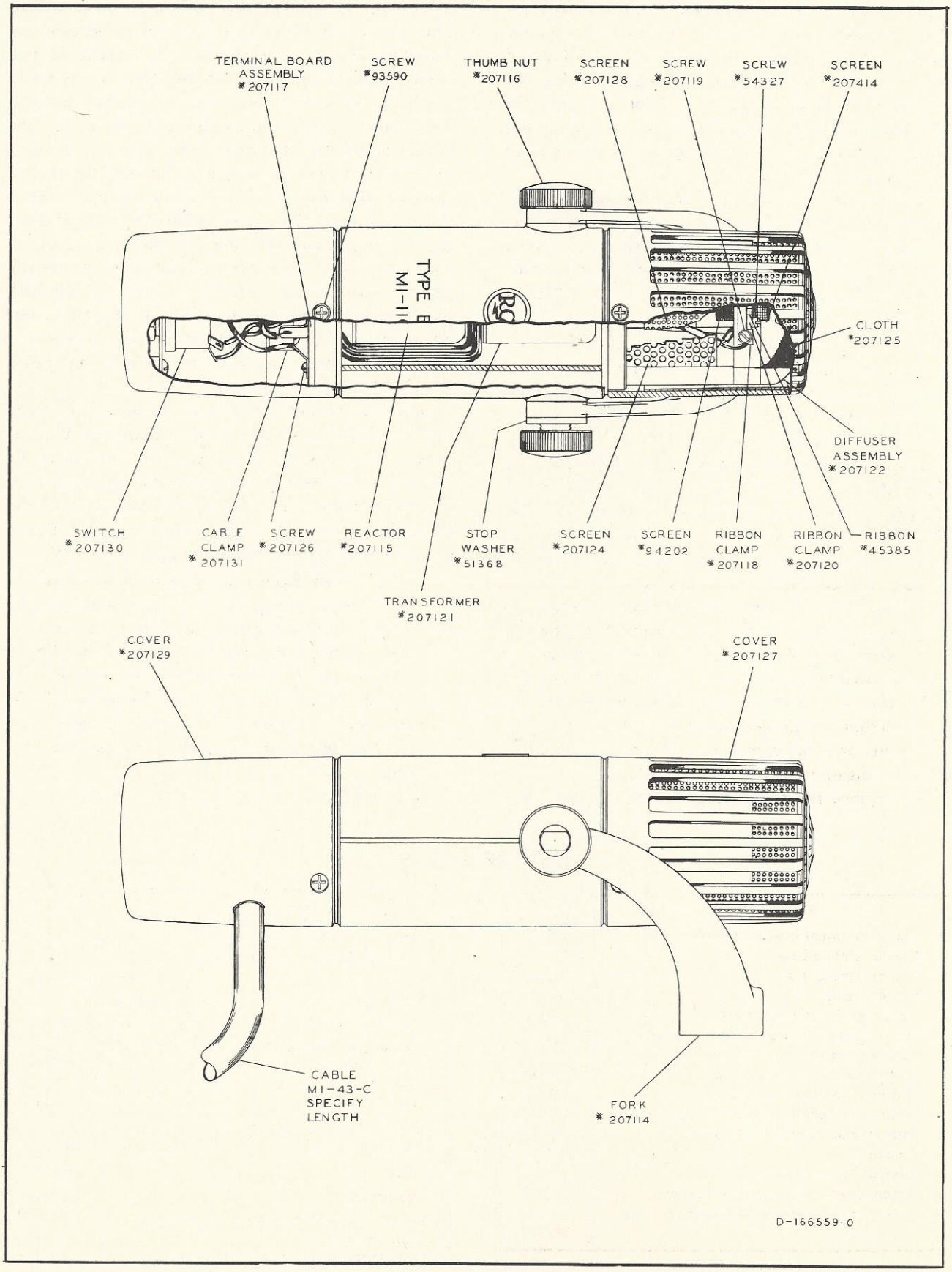

Figure 7. Location of parts of the BK-5A.

RADIO CORPORATION OF AMERICA

INDUSTRIAL ELECTRONIC PRODUCTS, CAMDEN, N. J.