



# I N S T R U C T I O N S

## **BK-6B Miniature Dynamic Microphone**

MI-11017-A



120838

**Figure 1—BK-6B Miniature Microphone with Lanyard**

**IMPORTANT:** Read these instructions carefully  
before installing and operating this microphone.

## TECHNICAL DATA

<p><b>Effective Output Level at 1000 cycles</b></p> <p>—67 dbm            Sound Pressure, 10 dynes/cm<sup>2</sup>            G<sub>M</sub> —158 db, EIA, rating (250 ohms connection)</p> <p><b>Frequency Response</b></p> <p>80 to 12,000 cps (see figure 3)</p> <p><b>Mounting</b></p> <p>Lanyard (supplied)</p> <p><b>Output Impedance</b></p> <p>30, 150 or 250 ohms (Connected for 250 ohms when shipped)</p> <p><b>Hum Pickup</b></p> <p>—112 dbm, hum field 10<sup>-3</sup> gauss</p>	<p><b>Dimensions and Weight</b></p> <p>Length: 2<sup>9</sup>/<sub>16</sub> inches            Diameter: 1<sup>5</sup>/<sub>16</sub> inch            Weight: 2<sup>1</sup>/<sub>3</sub> ounces, less cable</p> <p><b>Finish</b></p> <p>TV Gray</p> <p><b>Cable</b></p> <p>30 feet, special flexible two conductor shielded</p> <p><b>Directional Characteristics</b></p> <p>See figure 4</p> <p><b>Accessories</b></p> <p>MI-12086 Stand Holder            MI-11073 Stand Adaptor Kit            MI-11745 Flexible Microphone Stand (13")            MI-11746 Flexible Microphone Stand (19")</p>
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## DESCRIPTION

The BK-6B dynamic pressure microphone (figure 1) is a high quality instrument of the pressure actuated type. It is especially designed for correct speech balance when used informally in television broadcasting, and public address applications.

The human voice has pronounced directional characteristics. The high pitched nasal, and sibilant sounds which give crispness and definition to speech are emitted in a comparatively narrow angle from the front of the face. The low pitched sounds from the throat and chest are emitted approximately equally in all directions.

In normal studio or announce use, the microphone is placed so that the performer speaks directly into it. In television, the microphone is frequently placed on one side, either mounted on a boom, held in the hand, or concealed on the set. Each of these positions may result in a loss of the high frequency sounds which are important in pleasing and natural speech reproduction.

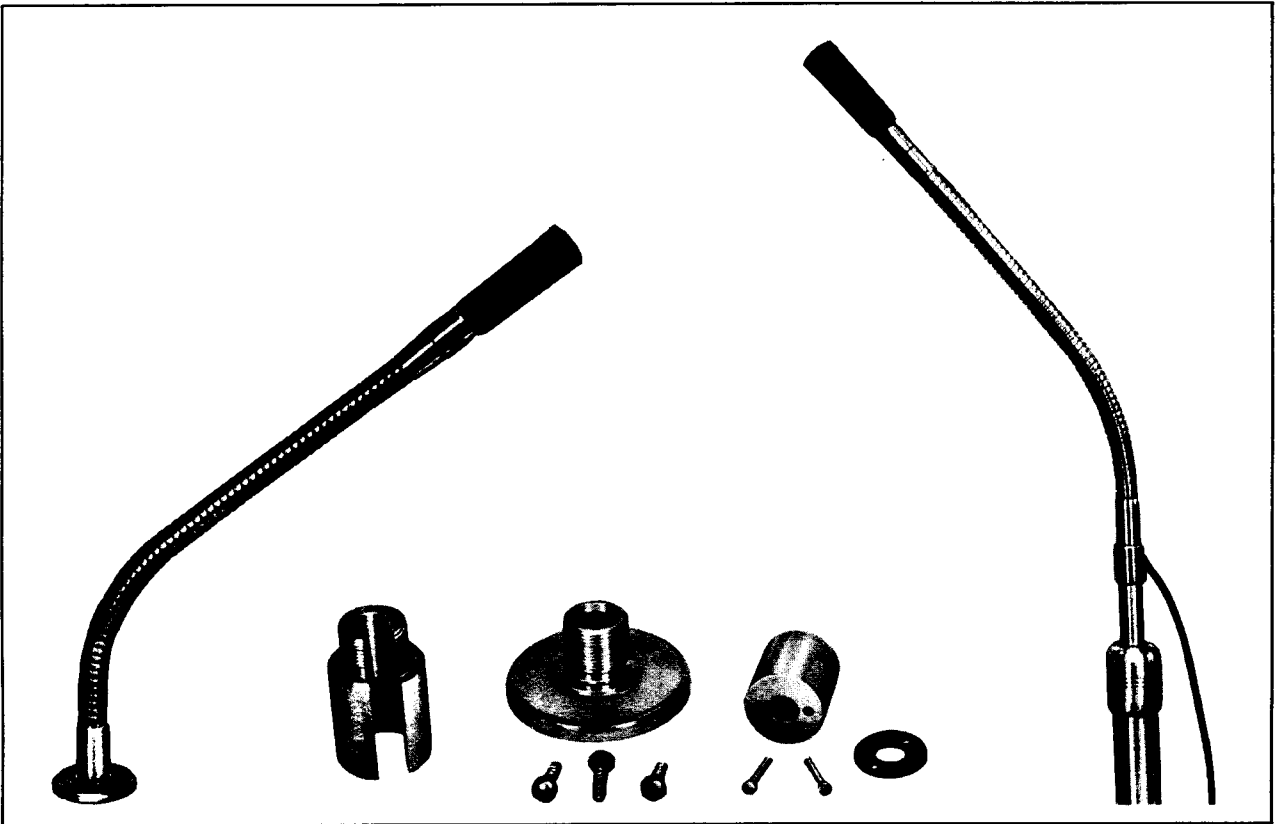
The frequency response (figure 3) and directional characteristics (figure 4) of the BK-6B are designed to complement the characteristics of human speech. The result is a microphone which has excellent balance when the performer is talking "off mike."

The BK-6B is especially designed to be suspended from the neck, resting on the chest. The low pitched chest sounds are attenuated. The microphone points straight up toward the lips, the position in which it is most sensitive to the sibilant sounds that would normally be lost. If it is desired to talk directly at the microphone, it may be held either so that the speaker talks across it, or into it, depending upon the response desired for the particular speaker's voice.

The general rule is to talk across the BK-6B, either in an interview, a panel discussion, or with the microphone suspended around the neck. In this manner, a balance, similar to the RCA-77DX in the Unidirectional V1 position, is obtained.

The BK-6B is designed as a speech microphone; it is not recommended for music pickup.

The BK-6B is especially recommended for television broadcasting. It may be worn by the performer; its small bulk and neutral color make it inconspicuous. The light weight, flexible cable permits free, unhampered movement of the performer. It may be wholly concealed in a man's hand during an interview. It is easily concealed on a set. The styling blends easily with any props, and is pleasing where it is exposed to direct view.



**Figure 2—MI-11073 Microphone Stand Adapter Kit and MI-11745 (13") Flexible Microphone Stand Used with the BK-6B Microphone**

## OPERATION

### Connections (See figures 6 and 7)

The microphone, as shipped from the factory, is connected for an output impedance of 250 ohms. To change this impedance to 30 to 150 ohms, unscrew the front cap and loosen the two fillister head screws at the rear of the case. Push the cable forward, gently, until the magnet structure is exposed. Grasp the magnet structure and work the entire motor assembly out of the case, exposing the terminal board. Change the cable connections according to figure 5.

*CAUTION: Although the Mylar plastic diaphragm is very tough, care should be taken not to touch it or the voice coil leads, at any time. Keep magnetic tools well away from the diaphragm, lest they be drawn to the strong magnetic poles just behind the diaphragm. This work should be done in a clean area.*

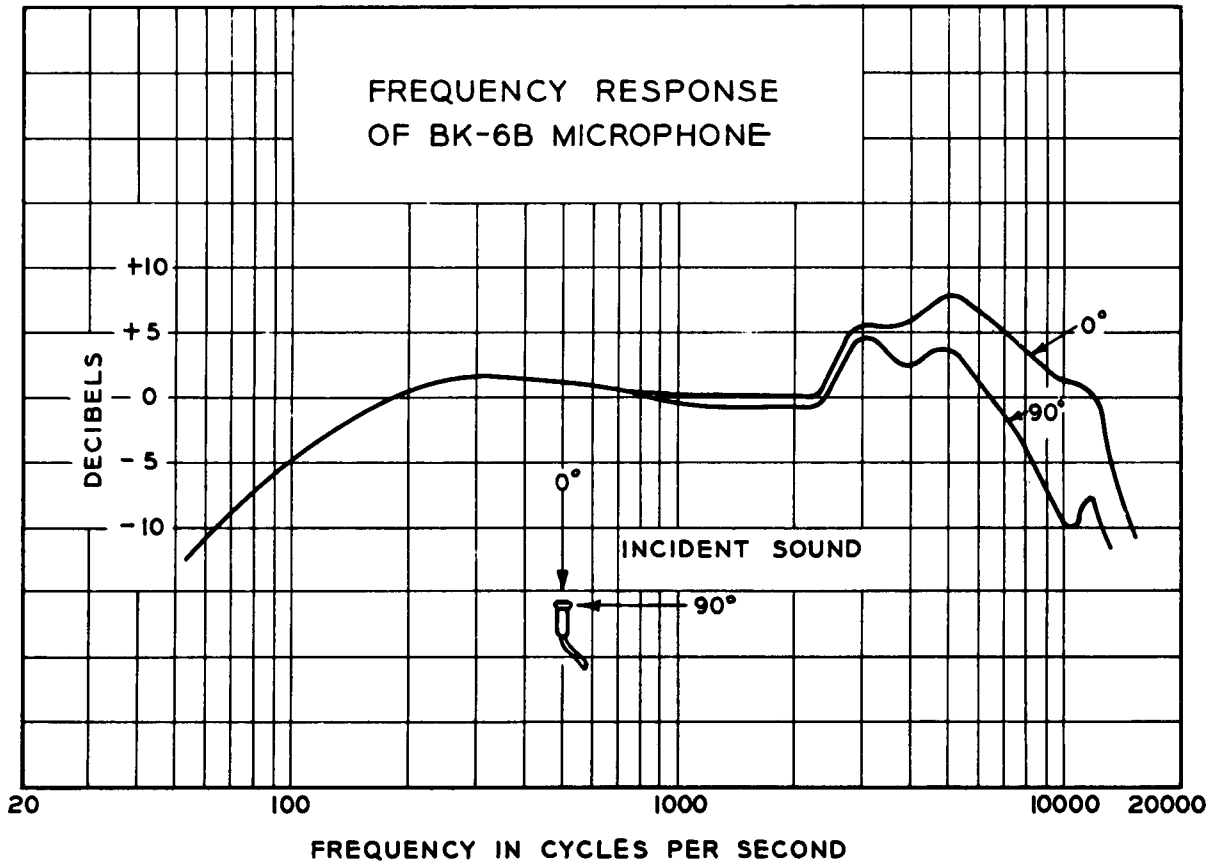
To reassemble the microphone, first make certain that the cork gasket is seated on the flange on the magnet assembly. Then slip the motor assembly back into the case, pulling the cable to help it along.

*Do not* push on the diaphragm. When the motor is nearly seated, replace the brass ring and resonator disk. Place the cover against the resonator disk, push the motor assembly home, and screw down the front cover. Next, take up any slack in the cable and retighten the screws. One of the fillister screw heads has been sealed, prior to the unit being shipped from the factory. Reseal this screw head with any household cement, such as Duco. It is important that the case be tightly sealed except for a pressure-equalizing leak (the unsealed screw head).

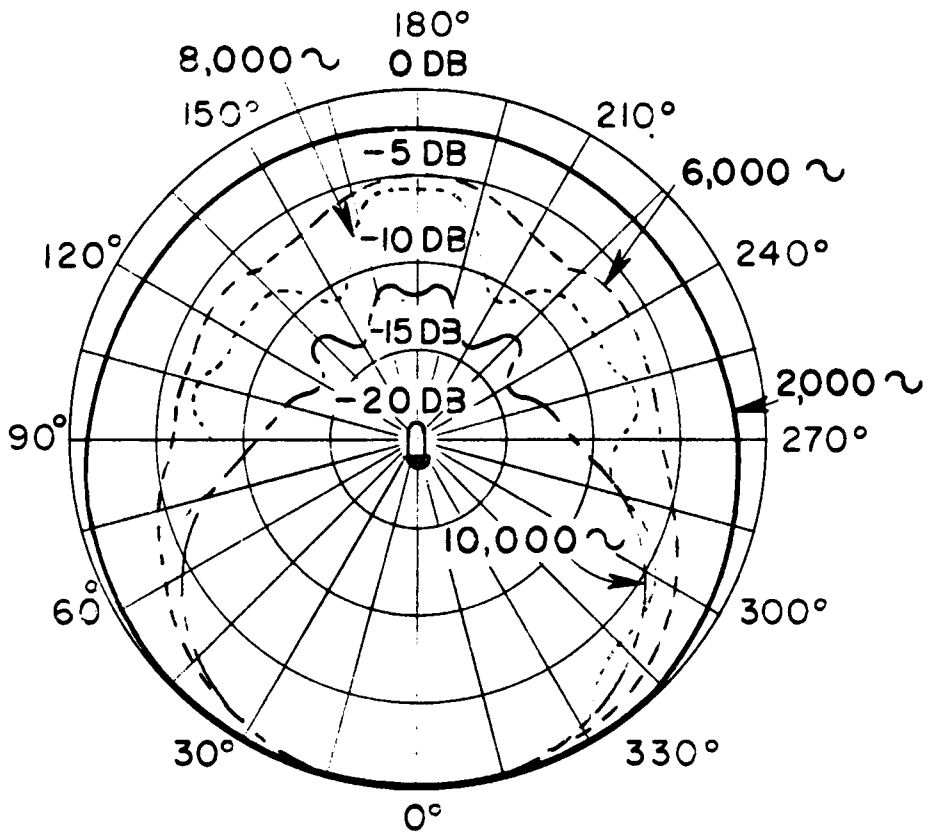
### Phasing

The Type BK-6B 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 fed into a common mixing circuit their individual outputs should be in phase with each other. If they are not, one will oppose the other, resulting in a reduction of output instead of a gain.



**Figure 3—Frequency Response**



**Figure 4—Directional Characteristics**

To compare the phasing of two or more microphones, connect one microphone to the amplifier input and set the volume control to obtain the desired output level while talking into the microphone. Then connect the second microphone in parallel with the first and, without changing the volume control setting, hold the two microphones side by side and talk into them. If a decrease in volume results, reverse the connections of one of the microphones at the amplifier input terminals. Each additional microphone should be checked in like manner and, if necessary, the cable connections should be reversed to make the phasing agree with the microphones already connected.

### Cable

The cable, especially designed for the BK-6B unit, has unusual flexibility combined with long life under conditions of severe abuse. The conductors are of cadmium bronze for high flexibility and long flex life. The shield is a carbon-impregnated, conducting cotton overlaid with a light, metallic braid. The conducting cotton ensures complete electrostatic shielding and the light, metallic braid keeps the series resistance of the shield low without making the cable excessively stiff. The brown external jacket provides a tough, neutral colored, protective covering to the cable.

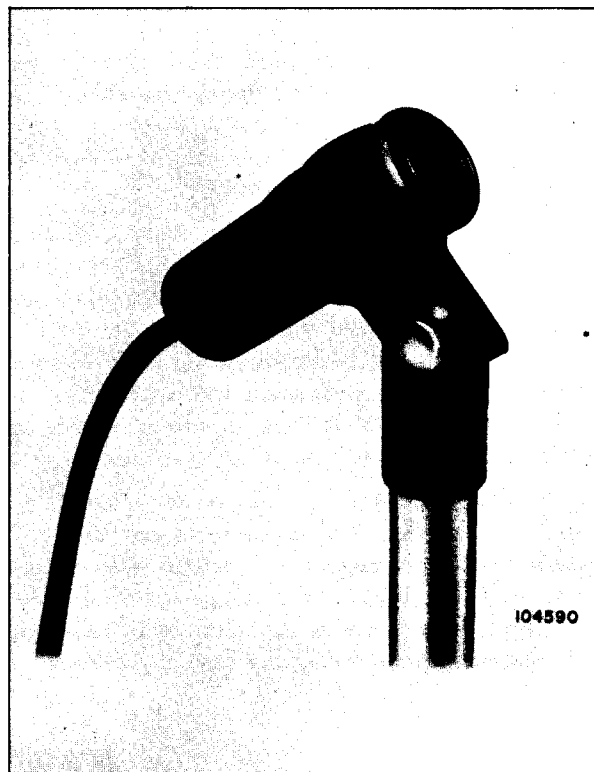


Figure 6—Holder MI-12086 Mounting BK-6B Microphone on Stand

### Lanyard

A lanyard is furnished so that the microphone may be conveniently hung around the neck. A fastener is provided so that the lanyard may be quickly detached. In cases where it is undesirable to use the lanyard cord, the fastener clip may be used to attach the microphone to the performer's clothing.

### MI-11073 Adaptor Kit

The MI-11073 Microphone Stand Adaptor Kit provides for mounting on gooseneck stands (MI-11745 or MI-11746) with the advantage that the cord is concealed within the stand (see figure 2). The base of the gooseneck may then be attached directly to the surface of a desk, or to a floor stand ( $\frac{5}{8}$ -27 thread) by use of the other parts supplied in the MI-11073 Kit.

### MI-12086 Holder

The MI-12086 holder may be used to mount the microphone on desk, floor, or gooseneck stands having  $\frac{5}{8}$ -27 threads where it is not required to conceal the cord. (See figure 6.) It has the advantage of easy positioning by means of the swivel, and quick detachment for hand-held use.

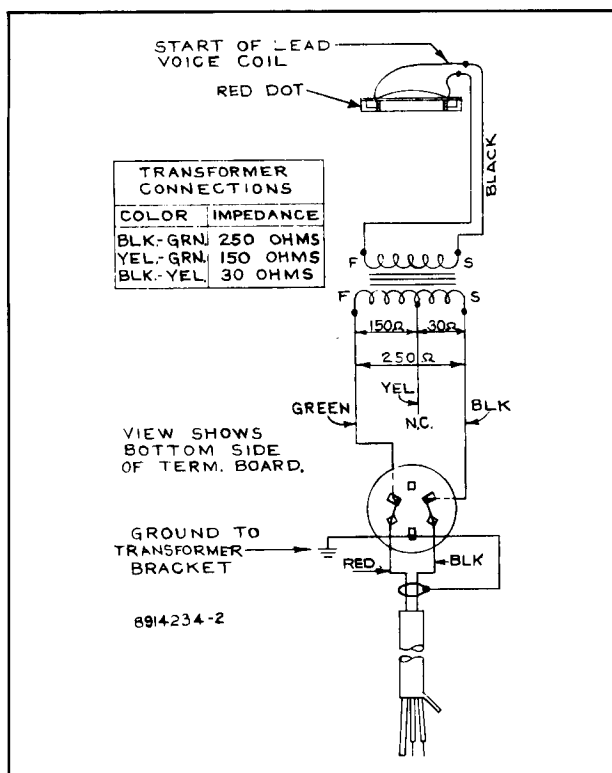


Figure 5—Schematic Diagram

## Placement

The microphone is designed to have a correct balance between high and low frequencies when hung around the neck. The balance is also correct when the user talks directly at the microphone, but slightly off axis as is common in informal use.

The microphone is small enough to be concealed within a man's hand. When so held, care should be taken not to obstruct the front of the microphone, or to form a cavity around the front with the fingers, lest the performance be impaired. The microphone can be worn by male performers and completely concealed behind the tie. If used in this way, the tie should be fairly narrow and of an open weave.

Care should be taken to protect the microphone from rough handling and exposure to rain and bad weather. Although rugged and practically weather-proof, it is a precision instrument and should be handled as such. Care in handling will result in additional service received from the microphone.

**CAUTION:** Keep the microphone away from iron filings or magnetic dust. The screen provides excellent protection; but minute iron particles commonly found on work benches and in maintenance shops may be drawn to it by the powerful magnet. If these particles accumulate, they may mar the quality of reproduction.

## Hum

Hum in the microphone circuit may result from ground loops or imbalance caused by improper cable connections to the preamplifier terminal board or microphone plug. It may also be induced into the microphone transformer, or voice coil by magnetic fields from nearby power transformers or electrical machinery. In the event that exceptionally strong fields are encountered, the induced hum may be minimized by turning or tilting the microphone, or changing its location.

## MAINTENANCE

It is not recommended that the customer attempt repairs other than to change the cable connections, as covered under *Connections*.

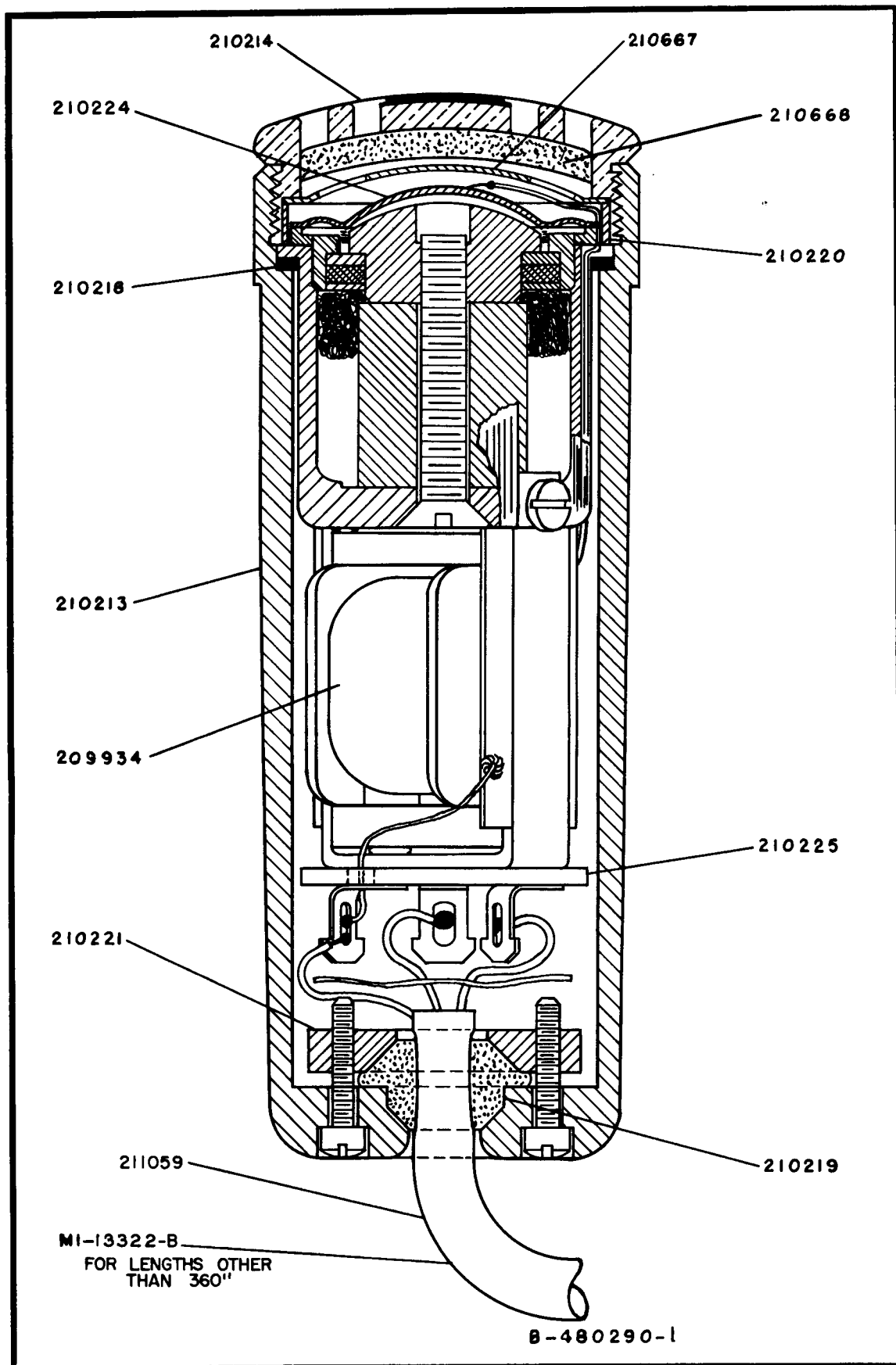
For replacement of the transformer, coil and diaphragm assembly, or the magnet assembly, it is recommended that the microphone be returned to

the manufacturer. Obtain a *Returned Apparatus Tag* and *Repair Order* from your *RCA Field Office* or write to *RCA Service Company, Returned Apparatus Control, Camden, N. J.* Attach the tag, properly filled out, to the damaged equipment and send the equipment and the repair order to the manufacturer.

## LIST OF PARTS

Symbol No.	Stock No.	Drawing No.	Description
<b>BK-6B MINIATURE DYNAMIC MICROPHONE, MI-11017-A</b>			
	210225	476146-501	Board: terminal and bracket assembly
	210219	8914220-1	Bushing: cable
	211059	480215-502	Cable*: microphone, 2 conductor 360 in. lg.
	210213	177015-1	Case: microphone, TV gray
	210221	8914219-1	Clamp: cable
	210214	480210-1	Cover: microphone, TV gray
	210224	476147-501	Diaphragm: coil and diaphragm assembly
	210667	8914294-1	Disc: resonator, brass
	210218	8877245-3	Gasket
	220329	177063-504	Holder Assembly: microphone, complete with neck strap
	210668	8915237-1	Pad: damping, felt
	210220A	8905573-1	Ring: clamping, for motor assembly
	209934	476141-1	Transformer: microphone

\* When ordering this cable in lengths other than 360 inches, do not use the stock number given above; specify MI-13322-B and the desired length in feet.



**Figure 7—Cross-section of BK-6B for Location of Replacement Parts**