



# INSTRUCTIONS FOR Pressure Microphone TYPE 88-A

MI-4048-E

## TECHNICAL DATA

### Effective Output Level\*

-55 dbm  
 $1800 \times 10^{-8}$  volts

### Frequency Response

Essentially uniform from 60 to 10,000 cycles  
See figure 3.

### Stand Fitting

1/2-inch pipe thread

### Recommended Load Impedance

Unloaded input transformer

### Output Impedance

250 ohms, may be changed to 30, or 150 ohms

### Hum Pickup Level

-109 dbm\*\*

### Dimensions and Weight

Length—4 3/8 inches  
Width—4 1/8 inches  
Depth—4 inches  
(including mounting)  
Weight—3 pounds (including cable)

### Finish

Umber gray and satin chrome

### Directional Characteristics

Semidirectional when mounted horizontally, non-directional when mounted vertically.  
See figure 2 for horizontal pickup pattern.

\* Sound pressure = 10 dynes per square centimeter.

\*\* Hum field of  $1 \times 10^{-3}$  gauss.

(60 to 10,000 cycles) make it suitable for reproducing both music and speech. It is effectively non-directional when mounted vertically and is semi-directional when mounted horizontally.

The moving element is a thin moulded diaphragm attached to an annular coil assembly. Coupled to the diaphragm is an acoustic circuit so proportioned that the diaphragm velocity remains essentially constant for a constant sound pressure from 60 to 10,000 cycles. The coil is in the air gap of a magnetic structure and is connected to a transformer which provides an output impedance of 30, 150 or 250 ohms.

## APPLICATIONS

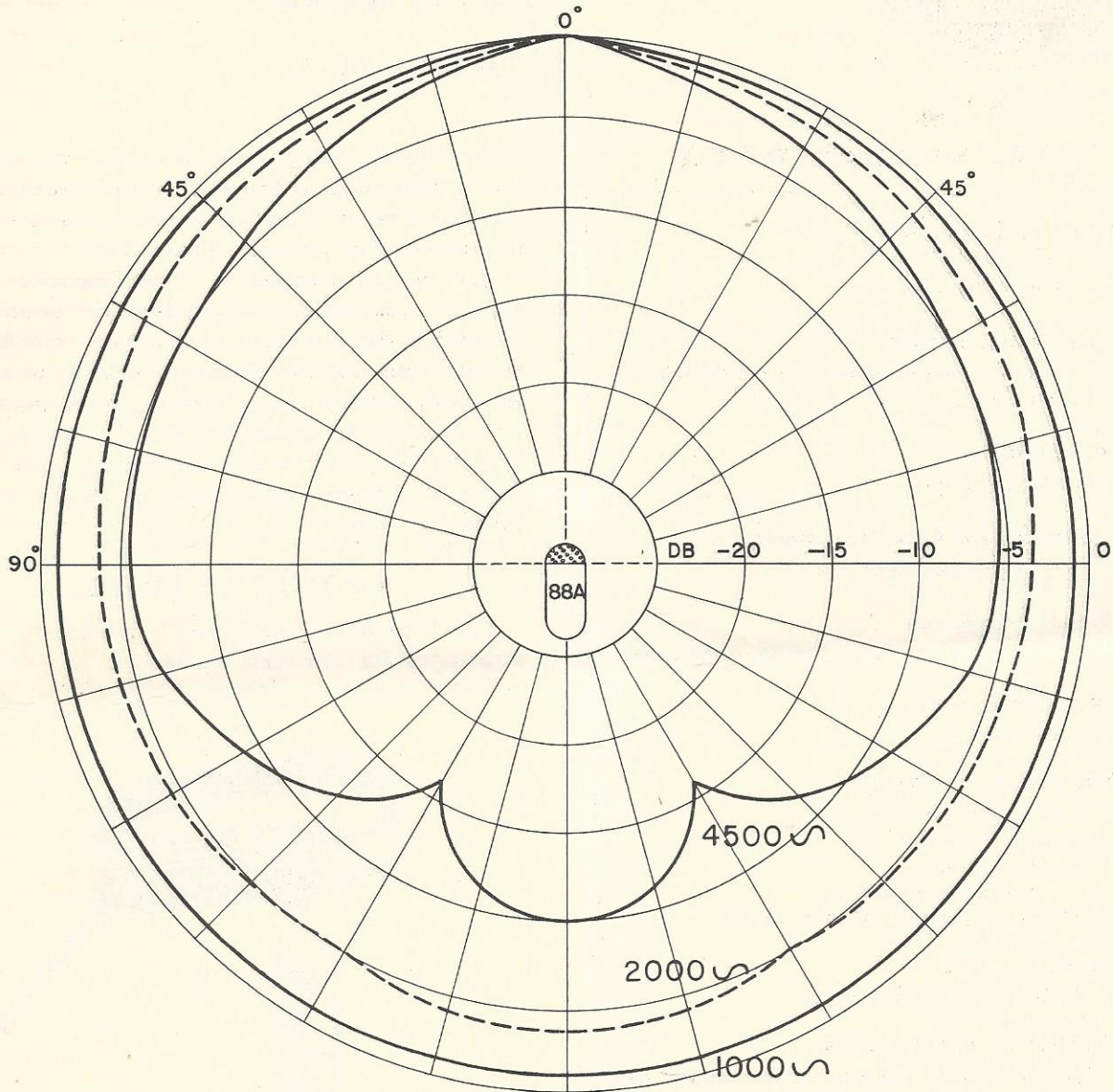
The Type 88-A Microphone is particularly recommended for broadcast announcing and remote



Figure 1—Type 88-A Microphone Mounted on Type 91-B Stand

## DESCRIPTION

The Type 88-A Pressure Microphone is a high-fidelity instrument of the pressure-actuated type, especially designed for announcing and remote pickup. Its smooth response and frequency range



DIRECTIONAL CHARACTERISTICS OF A  
TYPICAL 88-A MICROPHONE

P-173838

Figure 2—Directional Characteristics

pickup. It is a small, light-weight microphone which may be carried in the hand for interview and mobile use or used with a stand. The relatively high output level, which provides a good signal-to-noise ratio, is advantageous for remote work. Since it is practically impervious to moisture and is not affected by temperature or pressure changes, it is especially adapted to outdoor use. When it is used in the open air, its construction makes the effect of air currents practically unnoticeable. This microphone is also excellent for many studio applications which require a nondirectional or semi-directional microphone.

## DIRECTIONAL CHARACTERISTICS

When mounted vertically the Type 88-A Microphone is nondirectional but the higher frequencies are uniformly attenuated. When mounted horizontally the microphone is essentially nondirectional for frequencies below 2,000 cycles, and the higher frequencies are attenuated more as the angle with the perpendicular line to the diaphragm increases. Figure 2 shows the relative strength of pickup from all angles when the microphone is horizontal.

## OPERATION

### Connections

The microphone is shipped connected for an output impedance of 250 ohms. To change the impedance to 30 or 150 ohms, remove the oval-head screw in the back of the case (part 9 in fig. 5) and remove the rear cover; then change the terminal connections as shown in figure 4.

### Phasing

When the outputs of two or more microphones are fed into a common mixing circuit their respective outputs must be in phase. Otherwise the output of one will oppose the output of the other resulting in a reduction in output instead of a gain.

To check 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 both microphones together 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 a like man-

ner and, if necessary, the cable connections should be reversed to make the phasing agree with the microphones already connected.

### Stand Fitting

The Type 88-A Microphone is supplied with a ball and socket mounting designed for use with stands having a 1/2-inch pipe thread such as the MI-4092-A, MI-4092-B, MI-4093-B, and MI-4090-A microphone stands.

### Placement

When the microphone is used in the studio, it should be kept in mind that correct placement in relation to artists and instruments is of extreme importance. The requirements for particular installations vary widely and results will be determined best by experience. Exact placement must be determined by the following factors:

- a. Wishes of the orchestra leader and program producer.
- b. Number and types of instruments.
- c. Size and construction of studio.
- d. Peak volume swings as indicated by the volume level indicator.
- e. Results determined by monitoring with a loudspeaker such as the RCA Type LC-1A. Experimental placement of performers and instruments is usually necessary to obtain the best results.

In outdoor locations it may be found that, because of the higher ambient noise level, the distance between the performer and the microphone must be less than when working indoors. It is important to maintain a relatively high input level in outdoor or remote locations to keep the signal-to-noise ratio as high as possible.

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 with care. Care in handling will result in additional service received from the microphone.

### Hum

Hum in the microphone circuit may result from ground loops or unbalance caused by improper cable connections to the preamplifier terminal board or microphone plug. It may also be induced into the microphone transformer or coil by magnetic fields from nearby power transformers or electrical machinery. The design of the Type 88-A Microphone reduces hum pickup from these sources

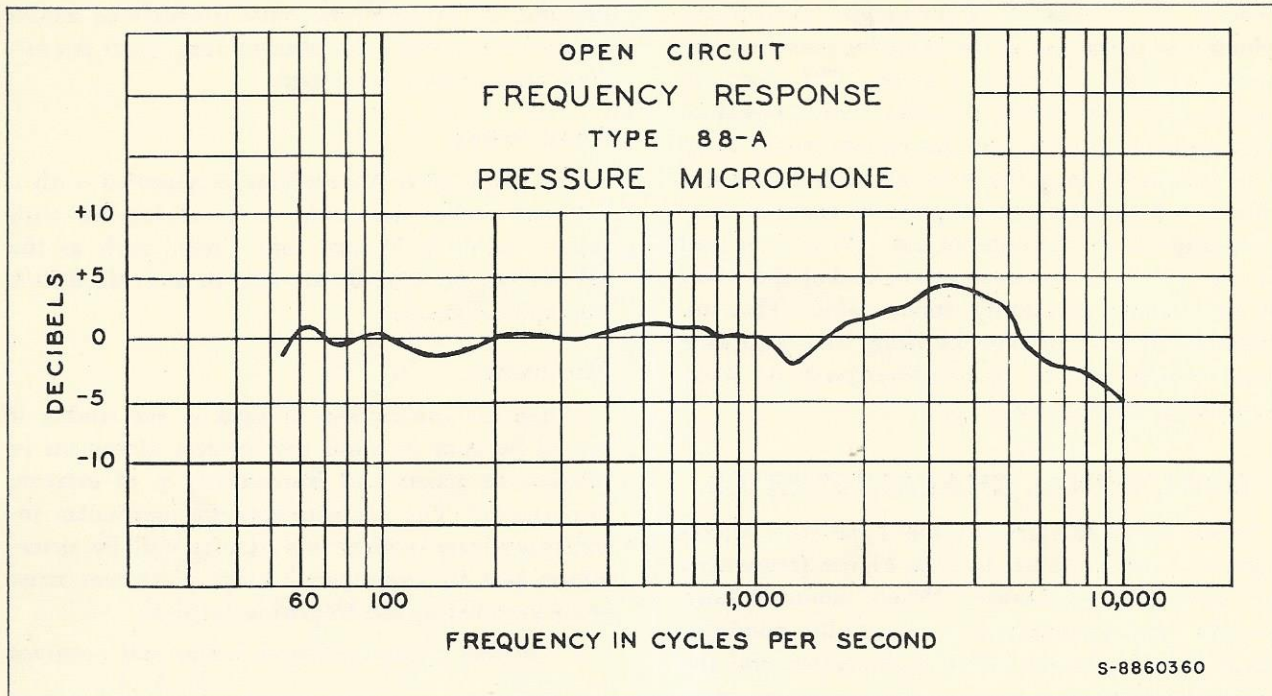


Figure 3—Frequency Response

to a minimum. 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.

**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 through the screen by the powerful magnet. If these particles are allowed to accumulate, they may mar the quality of reproduction.

## MAINTENANCE

It is not recommended that the customer attempt repairs other than replacement of the transformer, front-cover assembly (part 4 in fig. 5), middle case (part 2), or mounting parts. To replace the front-cover assembly, or the middle case, proceed as follows:

- a. Remove the oval-head screw (part 9) in the back of the microphone and pull off the end cover.
- b. Unscrew the locking ring (part 8) from the middle case, and remove the ring, the motor assembly, and the gaskets.
- c. Pull out the four drive screws (part 25) near the rim of the grille, pull off the cover, and place the new cover on the case (or the original cover on the new case).

- d. In the part of the grille that overlaps the case, drill four holes with a number 55 drill, approximately 90 degrees apart on the circumference. Locate the holes in solid parts of the grille, and drill through the cover and case.

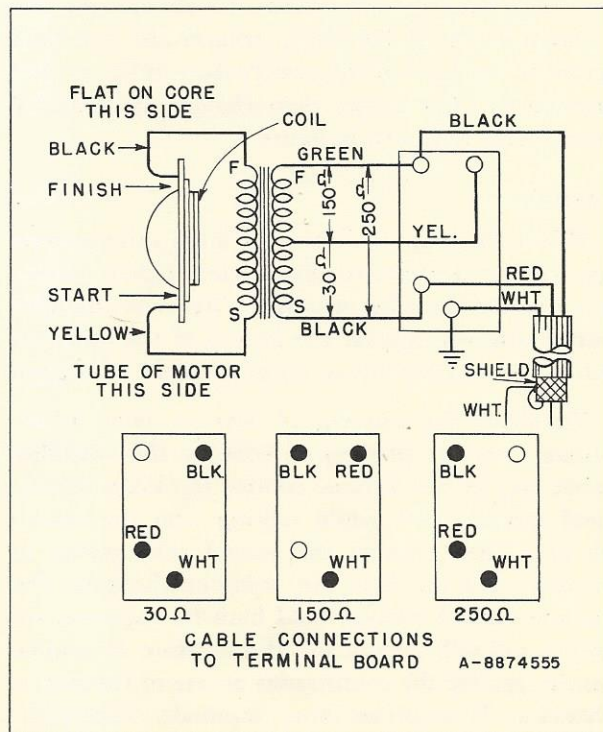


Figure 4—Schematic and Connection Diagram

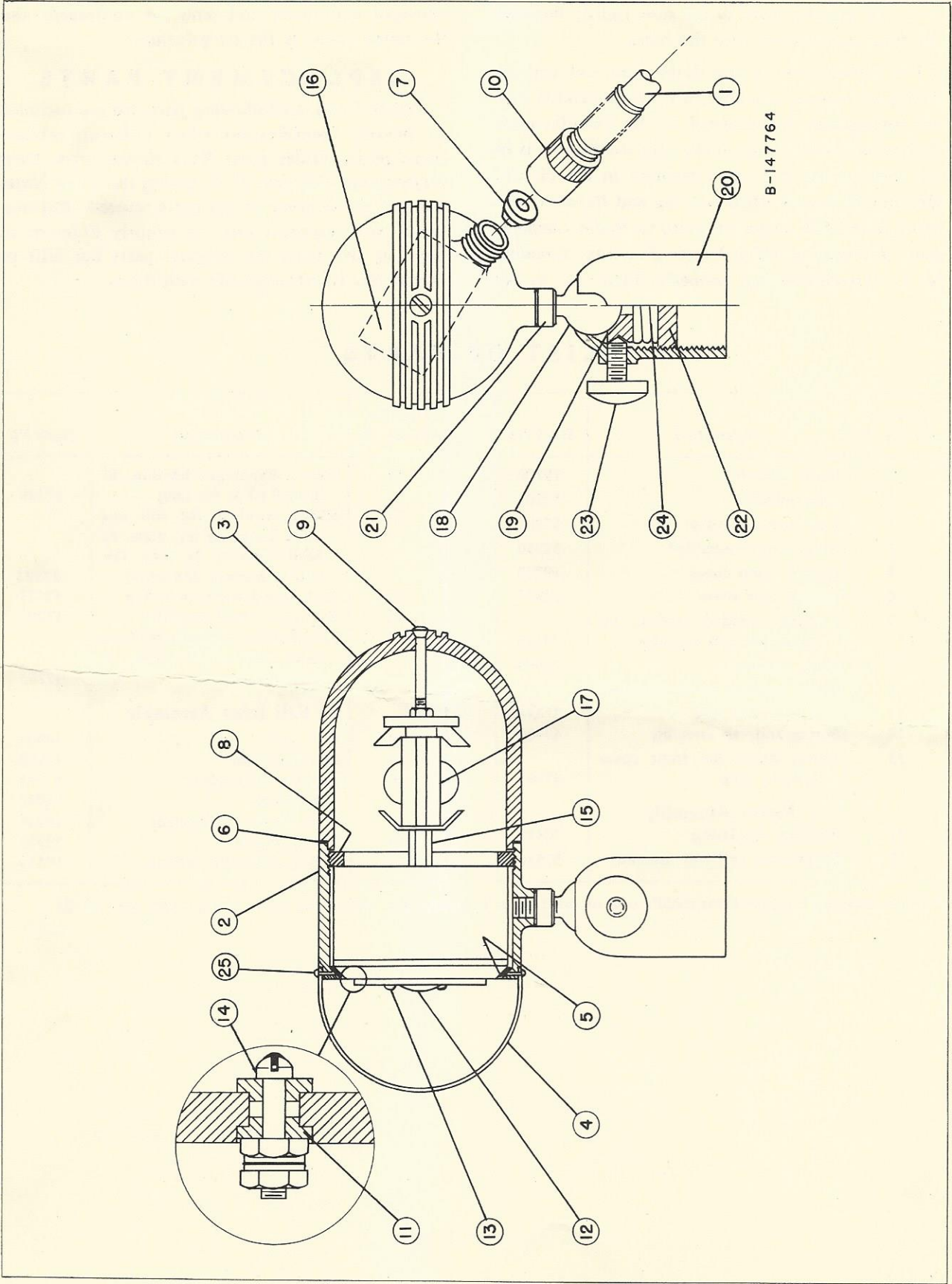


Figure 5—Parts Location Diagram

e. To pin the cover to the case, lightly hammer the four drive screws into the holes.

For replacement of the diaphragm and coil assembly or magnet assembly, it is recommended that the microphone be returned to the manufacturer. Before returning a unit, make sure the trouble is in the microphone and not elsewhere in the circuit. Obtain a *Returned Apparatus* tag and *Repair Order* from your RCA dealer or write to *Radio Corporation of America, RCA Victor Division, Camden, N. J.* Attach the tag, properly filled out, to the

damaged equipment and send the equipment and the repair order to the manufacturer.

## REPLACEMENT PARTS

Figure 5 and the following parts list are included to provide identification when ordering replacement parts. Order from *RCA Replacement Parts Department, Camden, N. J.*, giving the *Stock Number* and *Description* of the parts wanted. Replacement parts supplied may be slightly different in form or size from the original parts but will be completely interchangeable with them.

## LIST OF PARTS

<i>Part No.</i> (in fig. 5)	<i>Description</i>	<i>Stock No.</i>
1	Cable assembly	19700
2	Case, middle*	57205
3	Case, rear end cover	57201
4	Front cover assembly*	52950
5	Gasket, front cover	19280
6	Gasket, rear cover	18927
7	Packing, molded rubber, for spring and cap assembly	57524
8	Ring, locking	70303
9	Screw, rear end cover, oval-head 4-40 × 3 <sup>1</sup> / <sub>32</sub> long	57521
10	Spring and cap assembly	49006
25	Screw, drive, for front cover 0-80, 1/8 long	57565
<b>Motor Assembly</b>		
11	Bushing, insulating	70310
12	Diaphragm and coil assembly	57520

<i>Part No.</i> (in fig. 5)	<i>Description</i>	<i>Stock No.</i>
13	Screw, diaphragm holding, fil. head 0-80 × 3/16 long	57529
14	Screw, terminal for coil and trans. leads, on top plate, fil. head, 0-80 × 3/8 long (includes washers and nuts)	57522
15	Stud, transformer mounting	57523
16	Terminal board assembly	57204
17	Transformer, microphone, from voice coil to 30-, 150-, or 250-ohm line	57203
<b>Ball Joint Assembly</b>		
18	Ball joint	18908
19	Ball joint seat	18909
20	Housing, ball joint	52951
21	Nut, thumb	52952
22	Plug, tension adjustment	18911
23	Screw, thumb	52953
24	Spring, ball-joint tension	18545

\* When ordering a replacement middle case or front cover assembly, also order four *Drive Screws* (see part no. 25).