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JOHN F. STEPHENS

# Sound Products



CATALOG - 218



# LEADERS IN SOUND RESEARCH



## "THE QUIETEST ROOM IN THE WORLD"

Looking to the layman's eye more like a fantastic stage setting for a psychological drama, this is, nevertheless, a scientific workshop — the free field sound room of the RCA Laboratories at Princeton, N. J. Dr. Harry F. Olson, research engineer, is shown using a robot head to test sound-reflection effects of a speaker's face and head when close to the microphone. Musical tones of various frequencies, produced by an audio-oscillator, are made to issue from a diaphragm which is the robot's "mouth." Strips of Ozite, one inch

thick and alternately seven feet and four feet deep, extending into the room at right angles to the walls, ceiling, and floor, and spaced one foot apart, trap all reflected and extraneous sounds. The grilled platform, in which open space makes up 87 per cent of the total area, is 11 feet above the floor and stands on vibration-isolated feet. The room is used to obtain accurate measurements of sound for use in the development of radio and sound equipment.

# SOUND PRODUCTS

CATALOG NO. 218

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AND DISTRIBUTION

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SOUND PRODUCTS

Price Fifty cents

ENGINEERING PRODUCTS DEPARTMENT

**RADIO CORPORATION OF AMERICA**

CAMDEN,

NEW JERSEY

# • FOREWORD •

To meet the ever increasing requirements for sound equipment, RCA has available a comprehensive list of outstanding sound products, many of which are described in this catalog. Sound Systems of every type from Portable Systems to giant sound installations . . . such as the RCA System permanently installed in the Philadelphia Convention Hall prior to the 1948 Political Conventions . . . can be developed through the use of standard items of RCA equipment.

## **DISTRIBUTION**

Every market area in the United States is served by an *RCA Sound Products Distributor* who maintains sales, engineering and service personnel to meet the demands in his territory. Adequate inventories are maintained by distributors to permit prompt delivery of equipment best suited to the particular requirements of any installation.

## **BACKED BY RCA**

RCA maintains a corps of highly trained *Sales Engineers* working out of regional offices throughout the country. Backed by RCA research, engineering and manufacturing facilities, these sales engineers offer distributors, architects, and users, expert engineering advice and assistance on applications of sound equipment.

## **NATION WIDE SERVICE**

Supplementing and supporting distributor service, RCA maintains a nationwide service organization, the *RCA Service Company, Inc.*, operating through eleven district offices, thoroughly equipped to handle on request or contract basis the service needs of users of sound systems. These facilities are available upon request to all users of RCA Sound Systems and electronic products.

## **TECHNICAL AIDS**

The RCA Architects Manual of Engineered Sound Systems is considered to be one of the most comprehensive and authoritative publications on the application of sound systems. It is available, not only to architects, but is being extensively used by distributors, engineers, servicemen, and others interested in all applications of Sound. Other technical data and specification sheets are available on individual items and both large and small systems.



# MICROPHONES



MICROPHONES

HANDSETS

MICROPHONE STANDS

MICROPHONE PLUGS  
AND RECEPTACLES

MICROPHONE CABLES  
AND CONNECTORS

# Junior Velocity Microphone Type 74-B

**MI-4036-AB**

**Features**

- Ball and socket joint allows tilting in any direction.
- Bi-directional "figure eight" type pattern which allows placing of artists on both sides of the microphone and greatly reduces reflection pickup from side walls.
- Light weight, small size.
- Short cable complete with plug—permits disconnecting cable readily from microphone, also use of various length cables.
- Choice of three output taps.

**Uses**

The Type 74-B Junior Velocity Microphone due to its bi-directional polar pattern is excellent for either single speaker or groups; solo or orchestra and individual or chorus applications. It can be used to advantage for indoor public address, broadcast and recording.

**Description**

The MI-4036-AB Microphone has the high fidelity, bi-directional characteristics of the larger ribbon velocity microphone yet it is smaller and more portable.

Since all four sides of the perforated cover are open, and there is no diaphragm, this microphone is free from internal reflection, diaphragm resonance and pressure doubling, which are the factors causing imposed peaks and dips.

A ball and socket joint allows tilting of the microphone in any direction to reduce feedback and random noises; emphasize or suppress portions of a program; and permit increased volume levels.

The perforated cover or housing is finished in satin chrome while the base is finished in dark umber gray metalustre. A six inch cable complete with plug is furnished. MI-12097-B, 15 foot cable or MI-12097-C, 30 foot cable complete with plug to match the plug of the microphone are designed for use with this unit, but are not supplied.

The output of the microphone is connected to the 250 ohm transformer tap when shipped. Taps are available for 50 or 15,000 ohms.

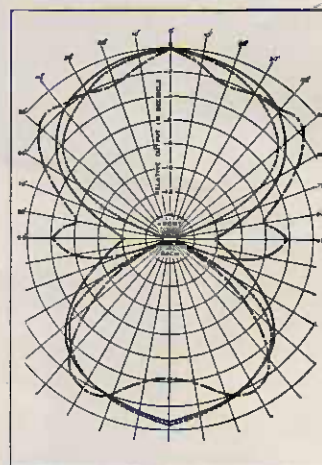
**Specifications**

Directional Characteristics	Bi-directional
Output Impedance (tapped transformer)	50/250/15,000 ohms
Effective Output Level	-56 db*
Frequency Response (see curve)	50-9000 cycles
Finish	Satin chrome and dark umber gray metalustre
<b>Dimensions (overall):</b>	
Length	7 <sup>3</sup> / <sub>4</sub> "
Width	2 <sup>3</sup> / <sub>4</sub> "
Depth	2 <sup>1</sup> / <sub>2</sub> "
Weight (unpacked)	2 <sup>1</sup> / <sub>2</sub> lbs.
Mounting	1/2" pipe thread
Cable (short 2 conductor, shielded)	With plug
Stock Identification	MI-4036-AB
With 15 ft. Cable to Match	MI-12076-B
With 30 ft. Cable to Match	MI-12076-C

\* Referred to one milliwatt and a sound pressure of 10 dynes/cm<sup>2</sup>.

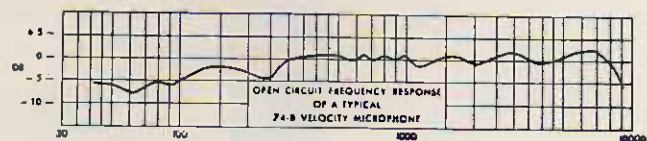
**Architects' and Engineers' Specifications**

The microphone shall be a velocity type microphone, with a frequency range of 50 to 9,000 cycles. Impedance shall be connected for 250 ohm operation, with taps available for 50 or 15,000 ohms. This unit shall be furnished with a ball and socket joint and mount on a standard microphone stand having 1/2" pipe threads. Average operating output level shall be -56 db referred to one milliwatt and a sound pressure of 10 dynes/cm<sup>2</sup>. It shall be equipped with a short cable and plug which can be used with either MI-12097-B 15 foot, 2 conductor shielded cable or MI-12097-C 30 foot, 2 conductor shielded cable with plug. The finish shall be satin chrome case with dark umber gray metalustre enamel base.



Directional characteristic of a typical 74-B Junior Velocity Microphone.

— 1000 cps  
 - - - 300 cps  
 - · - 3000 cps



# Pressure Microphone MI-12010

## Features

- Light weight—small size—fits palm of hand.
- Modern streamlined appearance.
- Excellent for close talking application.
- May be operated as far as 1000 feet from amplifier.
- May be used outdoors—minimum response from wind.
- Unaffected by temperature, humidity, or changes in air pressure.
- New Alnico 5 magnet—assures longer life.

## Uses

This microphone has excellent response for close talking announce purposes. Because of its light weight and small size, it is ideal for remote pickup and mobile use. It performs exceptionally well for paging operations into areas of high noise level because of its rising high frequency characteristic. Another application for which this unit is especially suited, is for use of an individual soloist, where a second microphone, usually a velocity type, is used to pick up the musical accompaniment. Either a floor stand or a desk stand may be used as a mounting or it may be fitted with a handle for hand use in sports announce work.

## Description

The MI-12010 Pressure microphone is ruggedly constructed for hard usage. It is relatively insensitive to mechanical shock and wind disturbances and will withstand moisture or rain for short periods. The attractively styled case is composed of two sections, the front cap with screen and the rear section, assembled by two retaining screws (top and bottom). A  $\frac{1}{8}$ " female pipe thread is provided for mounting. The MI-6229 adaptor is available for mounting microphone on stands having  $\frac{5}{8}$ "—27 fixture thread. Adaptor MI-12051 is recommended for stands having  $\frac{1}{2}$ " pipe thread. This microphone may be used with any amplifier designed to operate from a 250 ohm unbalanced source and having a gain of 100 db or over.



## Specifications

Type	Pressure operated
Directional Characteristics	Non-directional
Output Impedance	250 ohms
Effective Output Level	-58 dbm* @ 1000 cycles/sec.
Hum Pickup Level	-96 db**
Frequency Range	200-7500 cycles/sec.
Mounting	$\frac{1}{8}$ " female pipe thread
Dimensions, overall	3" high, 2 $\frac{5}{8}$ " wide, 3 $\frac{3}{8}$ " deep
Finish	Two-tone umber gray
Weight (unpacked)	2 $\frac{1}{4}$ lbs.
Weight (packed)	4 lbs.
Cable	7'-2 conductor shielded (one wire grounds to shield)
Stock Identification	MI-12010

## Architects' and Engineers' Specifications

Microphone shall be of the pressure operated, moving conductor type with Alnico metal magnet. Impedance shall be 250 ohm and the average output level shall be -58 dbm with a sound pressure of 10 dynes/cm<sup>2</sup>. Frequency range shall extend from 200 to 7500 cycles per second. Dimensions shall not exceed 3" in height, 2 $\frac{5}{8}$ " in width or 3 $\frac{3}{8}$ " in depth. Net weight shall not be over 2 $\frac{1}{4}$  lbs.

\* Sound pressure 10 dynes/cm<sup>2</sup>.

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

# Announce Microphone MI-12004, 12005<sup>\*</sup>

## Features

- Rugged, light weight, small in size.
- Attractive appearance.
- Shock absorbing mounting.
- Pressure type.
- Excellent for announce work.
- Built in cable connector.
- Detachable cable.

## Uses

The MI-12004 Announce Microphone is excellent for paging and public address work indoors or outdoors where a rugged, light weight microphone with good response to voice and music is required. It is admirably adapted to commercial and industrial sound installations.

## Description

This microphone is a pressure operated microphone employing the dynamic principle. The moving element is a thin moulded diaphragm in which a single straight wire is embedded. This wire which is held in the airgap of a strong permanent magnet generates a small voltage of the same wave form as the sound acting on the diaphragm. The wire is connected to the primary of a small, but efficient transformer, in order to provide an output impedance sufficiently high to allow the use of standard cable. The transformer secondary is connected to a male plug insert in the shank of the microphone. No cable is connected permanently, to the microphone. Cable connection is made by inserting a cable and plug assembly into the shank of the microphone. A hinged cover provides protection to the cable and connector, the cable being brought out through a slot in the bottom of the cover.

The microphone is shock mounted by means of a rubber shock cushion between the head and the shank. A swivel arrangement allows tilting of the head forward or back through an arc of approximately 45 degrees each side of the Vertical Position. New streamlined design, rugged construction and attractive baked amber gray metalustre enamel finish with satin chrome trim combine to make this microphone a welcome addition to any installation.

## Specifications

Type	Pressure operated
Directional Characteristics:	
(Below 3000 cycles/sec.)	Non-directional
(Above 3000 cycles/sec.)	Semi-directional
Output Impedance	250 ohms
Effective Output Level at 1000 Cycles/sec.	-57 dbm <sup>1</sup>
Hum Pickup Level	-109 db <sup>2</sup>
Frequency Range	75 to 9000 cycles/sec. ±4 db 100 to 8000 cycles/sec.
Mounting	5/8"-27 fixture thread
Dimensions:	
Height (including shank)	10"
Width	1 5/8"
Depth	2"
Finish	Amber gray metalustre and satin chrome trim
Weight, Less Cable (unpacked)	1 1/4 lbs.
Weight, Less Cable (packed)	2 lbs.
Stock Identification:	
Microphone (less cable)	MI-12004
Microphone (with 15' cable and plug)	MI-12081-B
Microphone (with 30' cable and plug)	MI-12081-C

<sup>1</sup> Sound pressure 10 dynes/cm<sup>2</sup>.

<sup>2</sup> Hum field 1 x 10<sup>-3</sup> gauss.



## Accessories

Two-Conductor Shielded Cable with Plug (15' long)	MI-12097-B
Two-Conductor Shielded Cable with Plug (30' long)	MI-12097-C
Stand (complete with stud to match shank)	MI-12066
Female Cable Connector	MI-12058

## Architects' and Engineers' Specifications

The announce microphone shall be a pressure operated type employing the dynamic principle. Its directional characteristics shall be non-directional below 3000 cycles and semi-directional above 3000 cycles. Overall dimensions shall be 10" long, 1 5/8" wide and 2" deep. A male plug insert shall be mounted in the shank of the microphone. A hinged cover shall be provided on the shank so that when the cable is plugged in the cover may be snapped closed to conceal the connector. A slot shall be provided in the bottom of the cover for bringing a cable out. A shock mounting shall be provided between the microphone head and shank. The head shall be capable of being tilted through an arc of 45 degrees forward or back from the Vertical Position.

The following general characteristics shall apply:

1. Output Impedance 250 ohms
  2. Effective Output Level at 1000 Cycles -57 dbm<sup>1</sup>
  3. Frequency Range 75 to 9000 cycles/sec.  
±4 db 100 to 8000 cycles/sec.
  4. Mounting 5/8"-27 fixture thread
  5. Weight 1 1/4 lbs.
  6. Finish Amber gray metalustre and satin chrome
- A shielded cable x feet long, complete with female connector to match the male insert shall be available as a separate item.

x—Specify whether 15' or 30'.

<sup>\*</sup> For high impedance, 30,000 ohms order MI-12005.



# Velocity Microphone MI-12002, MI-12003\*

MI-1209-0 49 ID

## Features

- An all-around microphone for voice or music.
- Screw adjustment of frequency response for voice or music.
- Light weight, small size.
- Detachable cable.
- Bi-directional—speakers may stand on both sides.

## Uses

The small size of the MI-12002 Velocity microphone makes it particularly useful in applications where it is desired not to obscure the speaker or performer from the audience, such as in churches, auditoriums, banquet rooms, or on stages. It is also useful on remote locations where its light weight makes it convenient to handle. When the frequency response is adjusted for voice, it is well suited for paging or announcing.

## Description

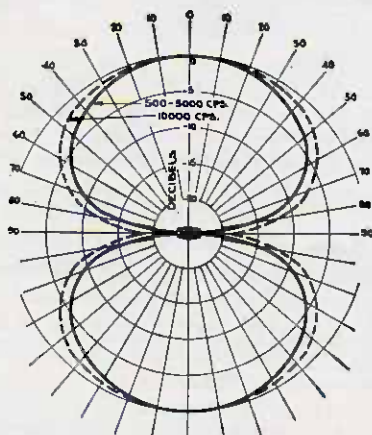
The MI-12002 is a very small and light weight velocity microphone with a matching shank. The upper half of the microphone head may be tilted back, if desired, to present the most favorable angle to the speaker. The microphone and shank are finished in umber gray. A soft rubber washer which fits between the microphone head and shank absorbs vibrations and shocks to which the stand may be subjected. This microphone may be quickly and easily connected to its associated cable by means of a male plug insert located in the shank. When connected, the plugs are concealed behind a hinged cover forming the back of the shank. This feature makes it possible to transport the microphone and cable separately and yet connect them together instantly for use.

The microphone may be adapted for either voice or music by means of an adjusting screw located on the right hand side of the microphone head.

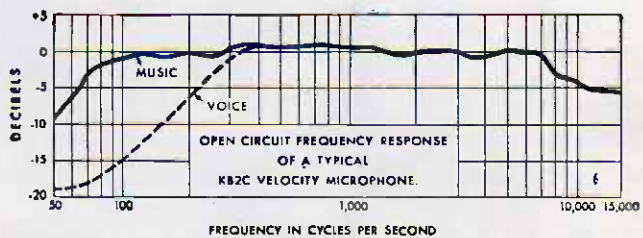
## Specifications

Directional Characteristics	Bi-directional
Output Impedance (tapped transformer)	30, 150 and 250 ohms
Effective Output Level at 1000 Cycles	-56 db*
Hum Level Below Signal	-52 db
Screw Adjustment of Frequency Response	
Frequency Response (see curve)	60 to 10,000 cycles
Finish	Umber gray
Dimensions (overall)	
Length	8 $\frac{3}{8}$ "
Width	1 $\frac{7}{8}$ "
Depth	1"

\* For High Impedance 30,000 ohms specify MI-12003.



Directional Characteristics of a Typical MI-12002 Velocity Microphone



Frequency Response of a Typical MI-12002 Velocity Microphone

Weight	12 oz.
Mounting	$\frac{5}{8}$ "—27 fixture thread
Stock Identification:	
Microphone Only	MI-12002
With 15 ft. Cable	MI-12079-B
With 30 ft. Cable	MI-12079-C

\* Zero level = .001 watts.

## Accessories

15 ft. Cable, 2 Conductor with Plug	MI-12097-B
30 ft. Cable, 2 Conductor with Plug	MI-12097-C

## ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The MI-12002 microphone shall be free from objectional peaks or dips from 80 to 8,000 cycles. It shall have a bi-directional pattern. Overall dimensions shall be 8 $\frac{3}{8}$ " long, 1 $\frac{7}{8}$ " wide and 1" deep. Finish shall be umber gray. The transformer output impedances shall be 30, 150 and 250 ohms. A male plug insert shall be mounted in the shank of the microphone. A hinged cover shall be provided on the shank of the microphone so that, when a cable is plugged into it, the cover may be snapped closed hiding the cable connections. The cable shall come through a hole provided in the hinged cover at the base of the microphone shank. Weight of microphone shall be 12 ounces. 15 or 30 foot cables with an MI-12058 female plug shall be available on order. Effective output level at 1000 cycles (0.001 watt reference) shall be -56 db. Hum level below signal shall be -52 db. It shall have an adjustable frequency response (see curve). Mounting shall be  $\frac{5}{8}$ "—27 fixture thread.

## **Aeropressure Microphone MI-6206-G, MI-6207-G\***



### **Features**

- Styrol diaphragm—protects against temperature or weather changes.
- Alnico magnets—greater sensitivity.
- Attractive appearance.
- Adjustable mounting—permits tilting microphone.
- Non-directional at low frequencies—directional at high frequencies.
- Cable connector plug—cables easily changed.
- Choice of 15 or 30 foot cable.
- Removable paracoustic reflector for adjusting pattern.
- Excellent frequency response.
- Easily carried—no roll of cable.

### **Uses**

This pressure operated microphone is recommended for indoor and outdoor public address systems, announcing, remote pick-up, talk-back, as well as use with police and amateur radio-telephone transmitters. Its relatively high output, excellent frequency response, light weight, and ruggedness make this microphone especially good for interviews and mobile pickups. It is especially suited for outdoor use since mechanical shock and wind disturbances have little effect upon it.

### **Description**

The aeropressure microphone is a general purpose pressure microphone suitable for picking up speech or music. Its frequency response is unusually smooth and, although primarily designed for public address and outdoor use, it is suitable for all applications that require a light weight, rugged microphone with good frequency response.

The moving element in this microphone consists of a thin moulded diaphragm to which is fastened an annular coil assembly. The coil is placed in the air gap of a magnetic structure and its ends connected to a microphone transformer which matches the impedance of the coil to the impedance of the amplifier input. Associated with the diaphragm are acoustic elements which produce a substantially uniform frequency response over the operating range.

This microphone is essentially non-directional at frequencies below 2,000 cycles. At higher frequencies the directional characteristics may be varied by means of the removable baffle which is supplied. The directional characteristics chart shows the relative strength of directional sound pick-up for the different positions of the baffle. When placed with its concave surface forward, the microphone is most directional; with the convex surface forward, it becomes less directional; and with the baffle removed, the directional characteristics are at a minimum. At 4,500 cycles the angle of coverage is about 180 degrees, at 7,000 cycles, about 90 degrees, and above 7,000 cycles it is somewhat less than 90 degrees.

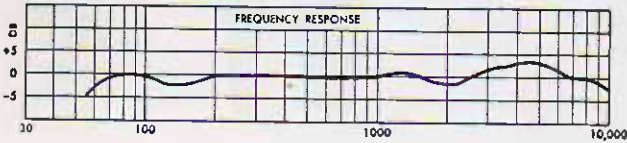
This microphone is supplied with a clevis mounting bracket having  $\frac{1}{8}$ " pipe threads. It is also supplied with an adaptor (MI-6229) for using this microphone on a  $\frac{3}{8}$ "-27 fixture

thread stand. Should it be desired to use this microphone on a stand having only 1/2" pipe threads, adaptor MI-12051 should be used.

A 6-inch cable with plug is connected to the MI-6206-G Microphone. MI-12077-B is the MI-6206-G Microphone with MI-12097-B 15 foot two conductor microphone cable complete with matching plug. MI-12077-C is the MI-6206-G Microphone with MI-12097-C 30 foot two conductor microphone cable complete with matching plug.

This microphone is attractively finished with a dark amber gray metalustre finish.

MI-12064 Dust Cover is available for this microphone as a separate item. This cover is made of a plastic material with a thin diaphragm. The cover can be applied by unscrewing the cap and fitting it over the transmitter, then replacing the cap. The response of the microphone is only slightly affected. This cover should be used where the microphone is subjected to excess dust such as in steel mills, lumber mills, etc. It will save many times its cost by cutting down on repair costs.



Frequency response of a typical MI-6206-G microphone

**Specifications**

- Output Impedance \_\_\_\_\_ 250 ohms
- Effective Output\* \_\_\_\_\_ -57 db (0 db = .001 watt)  $1.43 \times 10^{-3}$  volts
- Physical Characteristics:

  - Maximum Depth \_\_\_\_\_ 2 1/2"
  - Body Diameter \_\_\_\_\_ 2"
  - Overall Length \_\_\_\_\_ 6"
  - Weight \_\_\_\_\_ 2 1/2 lbs.
  - Baffle Diameter \_\_\_\_\_ 4"
  - Cable Length \_\_\_\_\_ 30'

- Frequency Range \_\_\_\_\_ 60 to 10,000 cycles (see curve)
- Mounting \_\_\_\_\_ 1/8" pipe thread adaptor for 5/8"-27 fixture thread

**Stock Identification:**

- Microphone with 6" cable and plug \_\_\_\_\_ MI-6206-G
- Above Microphone with 15' cable to match \_\_\_\_\_ MI-12077-B
- Above Microphone with 30' cable to match \_\_\_\_\_ MI-12077-C

\* For high impedance, 10,000 ohms, order MI-6207-G.

**Accessories (not furnished)**

- MI-12058 \_\_\_\_\_ Cannon XL-3-11 female cable connector
- MI-12059 \_\_\_\_\_ Cannon XL-3-12 male cable connector
- MI-11087 \_\_\_\_\_ Cannon XL-3-14N male wall receptacle (screw-ring mounting)
- MI-11088 \_\_\_\_\_ Cannon XL-3-13N female wall receptacle (screw-ring mounting)
- MI-12064 \_\_\_\_\_ Dust cover

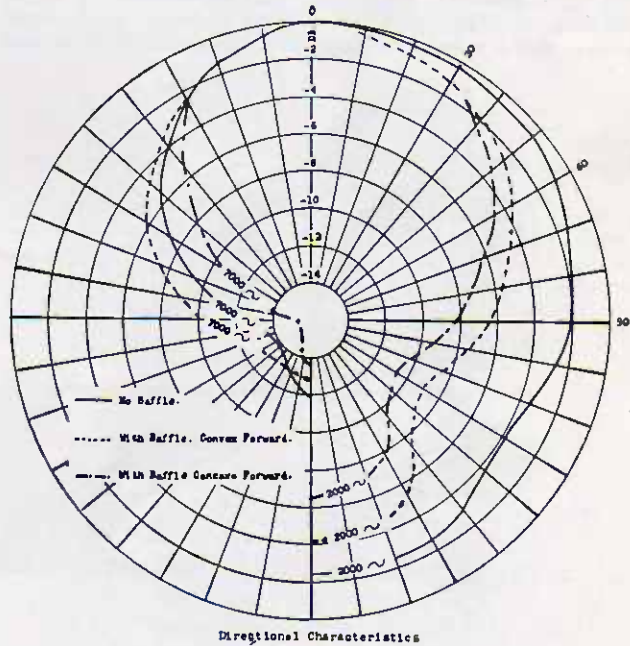
**Cables for MI-6206-G**

- MI-12097-B \_\_\_\_\_ Two-conductor-shielded, with plug 15'
- MI-12097-C \_\_\_\_\_ Two-conductor-shielded, with plug 30'

**Architects' and Engineers' Specification**

The microphone shall be a pressure type microphone, with a frequency range of from 60 to 10,000 cycles. Impedance shall be 250 ohms. An adjustable mounting bracket shall be supplied. This unit shall mount on a standard microphone stand having 1/8" standard pipe thread. An adaptor shall be provided for mounting unit on stand having 5/8"-27 threads. This microphone shall be supplied with a paraconic baffle. The finish shall be baked dark amber gray metalustre. Average output operating level shall be -57 db (0 db = .001 watt)  $18 \times 10^{-3}$  volts with a sound pressure of 10 dynes per square centimeter. It shall have a 6" cable complete with male 3 contact plug. A (15' or 30')\*\* two conductor shielded cable complete with female connector to match the plug on the microphone shall be furnished.

\* With a sound pressure of 10 dynes per square centimeter.  
\*\* Specify one.



Directional Characteristics



MI-12064 Dust Cover

# MICROPHONES

## Varacoustic Microphone MI-6203-C, MI-6204-C\* 43.50

(Ribbon)

### Features

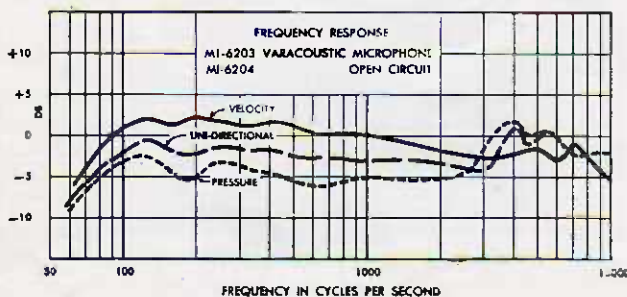
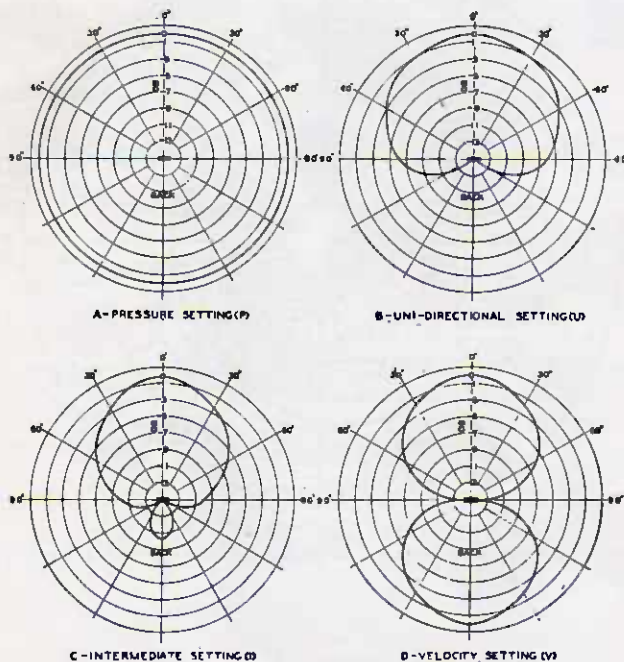
- Polydirectional.
- Impedance 50-250-600 ohms.
- Streamlined, modernistic styling.
- Adjustable mount—highly flexible.
- Fits standard 1/2" pipe thread with adaptor for 5/8"—27 thread.
- Equipped with 30' 2-conductor shielded cable less plug.
- Not affected by temperature or pressure changes.
- Uni-directional average response from back, minus 20 db.

### Uses

This microphone supplies the characteristics of three different microphones making it extremely useful for public address and sound reinforcing installations. This unit has been designed for indoor work but it can be used outdoors when there is no wind or rain.

### Description

The types MI-6203-C are sturdily built to withstand frequent handling. A slide adjustment permits a choice of characteristics so that it may be employed as a directional, bi-directional



or non-directional microphone. In addition to the three main directional characteristics, modifications may be secured by intermediate adjustments of the slide. MI-6203 being low impedance (250 ohms) can be used a great distance from the amplifier.

### Specifications

Frequency Range		
Non-Directional	_____	50 to 10,000 cycles
Bi-Directional	_____	50 to 8,000 cycles
Uni-Directional	_____	50 to 10,000 cycles
Output Impedance	_____	250 ohms
Output Level (10 dynes/cm <sup>2</sup> ) Uni-Directional		
	_____	-58 db (.001 watts)
	_____	-66 db (.006 watts)
	_____	-69 db (.0125 watts)
Bi-Directional (Velocity)		
	_____	-55 db (.001 watts)
	_____	-63 db (.006 watts)
	_____	-66 db (.0125 watts)
	_____	-61 db (.001 watts)
	_____	-69 db (.006 watts)
	_____	-72 db (.0125 watts)
Weight	3 1/2 lbs.	Shipping Weight 6 lbs.
Type of Finish	Umber gray	
Cable furnished	30' 2-cond. shielded less plug. Stand fittings size 1/2" pipe thread with adaptor for 5/8"—27 thread. Adjustable mounting.	
Dimensions	Height 6 7/8", width 2 3/4", depth 2 5/8"	
* For high impedance, 40,000 ohms, order MI-6204-C.		

### Architects' and Engineers' Specifications

The microphone shall be a three-way velocity type microphone with a minimum frequency range of from 70 to 8,000 cycles. The impedance shall be 250 ohms, and adjustable mounting bracket shall be supplied. This unit shall be capable of being used as a bi-directional, non-directional or uni-directional type microphone by means of a sliding switch. The mounting bracket shall have facilities for mounting the microphone on a stand having 5/8"—27 fixture thread. The finish shall be umber gray. Average operating level, uni-directional shall be -66db at .006 watts reference level at 10 dynes/cm<sup>2</sup>. A 30-foot cable less plug shall be supplied.

# Pressure Microphone Type 88-A

## Features

- Good frequency response.
- Light weight.
- Small size.
- Rugged construction.
- Low cost.
- Minimum effects from wind and moisture.
- High output providing unusually good signal-to-noise ratio.
- Adaptable for use with any stand or may be carried in the hand for street interview programs.
- Output cord protected by spring.

## Uses

The Type 88-A is the ideal microphone for general remote pickup use. It has been specially designed to provide small size, light weight, good frequency response and relative freedom from the effects of wind and moisture. In spite of its light weight and small size, it is extremely rugged and well-suited to stand the hard usage to which a remote microphone is put. The characteristics of the 88-A also make it adaptable for many types of studio use where a non-directional microphone is desired.

## Description

The Type 88-A Microphone is of the pressure-actuated type. The moving system consists of a thin molded diaphragm to which an annular coil assembly is attached. Coupled to the diaphragm is an acoustic circuit so proportioned that the diaphragm velocity will remain essentially constant for a constant sound pressure over the frequency range of 60-10,000 cycles. The coil is placed in the air gap of a magnetic structure and the ends connected to a transformer which provides output impedances of 50 or 250 ohms.

This microphone is styled and finished in umber gray and satin chrome to present a very pleasing appearance. A ball and socket joint with a thumbscrew clamp permits operation in either a vertical or horizontal position.

## Specifications

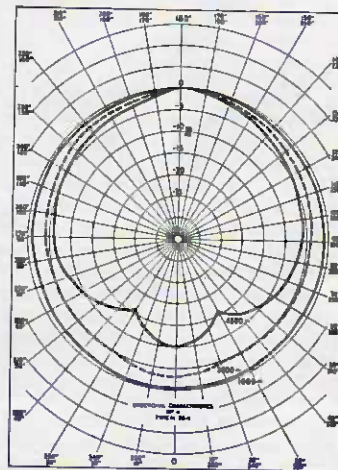
Directional Characteristics	Non-directional
Output Impedances (tapped transformer)	50/250 ohms
Effective Output Level	-56 dbm*
Hum Pickup Level	-109 dbm**
Frequency Response (see curves)	60-10,000 cycles
Finish	Umbler gray and satin chrome
Mounting	1/2" pipe thread

## Dimensions, overall

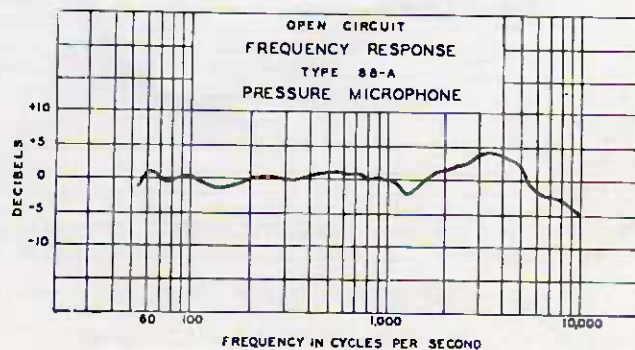
Height (including mounting)	4 1/2"
Diameter	2 1/8"
Length	3 3/8"
Weight (unpacked)	1 lb.
Cable (MI-43 three conductor shielded)	30' less plug
Stock Identification	MI-4048-D

\* Referred to one milliwatt and a sound pressure of 10 dynes/cm<sup>2</sup>.

\*\* Level referred to a hum field of  $1 \times 10^{-3}$  gauss.



Directional characteristic of a typical 88-A Pressure Microphone



8-0060390

# Velocity Microphone Type 44-BX

## MI-4027-D

### Features

- Sensitive ribbon element for faithful reproduction.  
Free from cavity or diaphragm resonance and pressure doubling.
- Uniform and smooth reproduction over the entire audio range.
- Response adjustment to provide the best possible frequency characteristics for either vocal or musical pickup.
- Bi-directional "figure eight" type pattern which allows placing of artists on both sides of the microphone and greatly reduces reflection pickup from side walls.
- Unaffected by temperature, humidity or changes in air pressure.
- Ruggedly built for hard usage.
- Shock mounted.
- Attractive in appearance.

### Uses

The 44-BX is primarily intended for studio use where a microphone of the highest quality of reproduction is desired. It can be used with practically any audio facilities system and lends itself readily to unusual or difficult studio problems. The 44-BX is also well suited for high quality remote work. The 44-BX is found in almost all of the leading studios in the country and has become a recognized symbol of broadcasting.

### Description

The bi-directional pattern of the Type 44-BX Microphone is of the familiar "figure eight" type. Unlike other types of microphones, it has no diaphragm—the moving element being, instead, a thin metallic ribbon so suspended as to be able to vibrate freely between the poles of a permanent magnet. Because of its lightness, the motion of this ribbon corresponds exactly to the velocity of the air particles and the voltage generated in it is, therefore, an exact reproduction of the sound waves which traverse it. Moreover, since it has no diaphragm and is open in construction so that air flows freely through it, the Type 44-BX Velocity Microphone is free from the effects of cavity resonance, diaphragm resonance and pressure doubling, which cause undesirable peaks in the response of all pressure type microphones.

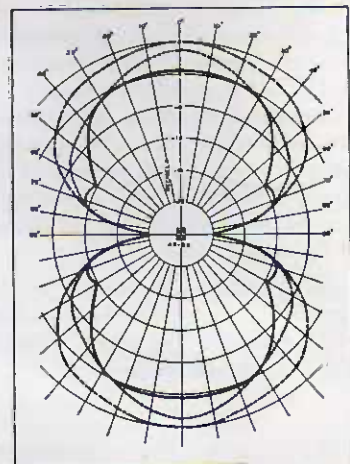
The 44-BX is attractively designed in satin chromium and umber gray to harmonize with practically any modern studio interior. The yoke mounting permits a wide range of tilting angles. The shock mounting reduces undesirable pick-up from floor vibrations, etc.

### Specifications

Directional Characteristic	Bi-directional
Output Impedances (tapped transformer)	50/250 ohms
Effective Output Level	-55 dbm*
Hum Pickup Level	-112 dbm**
Frequency Response (see curves)	30-15,000 cycles
Finish	Umber gray and satin chromium
Mounting	1/2" pipe thread
Dimensions, overall	
Height (including cushion mounting)	12"
Width	4 3/4"
Depth	3 3/8"
Weight (unpacked, including mountings)	8 1/2 lbs.
Cable (MI-62 2 conductor, shielded)	30' less plug
Stock Identification	MI-4027-D

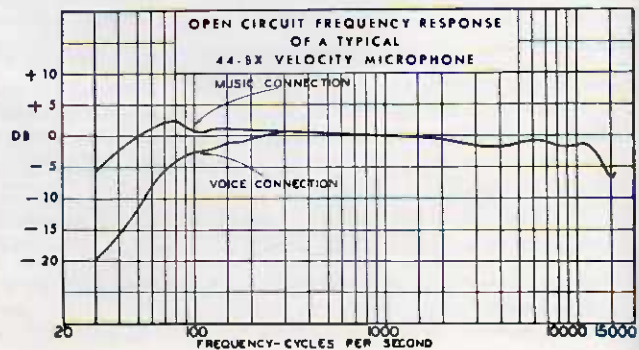
\* Referred to one milliwatt and a sound pressure of 10 dynes/cm<sup>2</sup>.

\*\* Level referred to a hum field of  $1 \times 10^{-3}$  gauss.



Directional characteristic of a typical 44-BX Velocity Microphone

— 10,000 cps  
 - - - 6,000 cps  
 - · - 1,000 cps



# Polydirectional Microphone Type 77-D

## MI-4045-A

-6203-C - 4450



### Features

- High fidelity.
- Adjustable directional characteristic, continuously variable, provides non-directional, bi-directional or uni-directional operation.
- Three position "voice-music" switch allows selection of best operating characteristic for voice or music.
- Well shielded output transformer assures low hum pick-up.
- Reduced reverberation pick-up through selection of proper directional characteristic.
- Efficient shock mounting reduces building vibrations.
- Small size—light weight.
- Attractive appearance.

### Uses

The RCA 77-D is a high-fidelity microphone for use in broadcast studios. With this one microphone a variety of directional patterns may be obtained by operating a screw-driver adjustment which is conveniently located on the back of the microphone. The 77-D combines the best features of the velocity and pressure microphones. The polydirectional characteristics of this microphone aid materially in obtaining a better balance, clarity, naturalness and selectivity in studio pickups. It is also of considerable value where difficulties are encountered in reverberant locations since the undesired sound reflections may be reduced by a choice of the proper directional pattern.

### Description

The 77-D is similar in appearance to the previous Type 77-C1 Microphone but differs in operating principle. The 77-D consists of a single ribbon placed in the air gap formed by the pole pieces of a permanent magnet, a variable acoustic network, a well-shielded matching transformer with low hum pickup and a perforated metal case housing. Effective shock-mounting is used between the microphone and stand to reduce building rumble.

One side of the microphone ribbon is completely closed by a connector tube which in turn is coupled to a damped pipe or labyrinth. An aperture, placed in the connector tube directly behind the ribbon, is made variable in size by a rotating shutter. The directional characteristics of the microphone are controlled by varying the area of the aperture in the labyrinth connector. When the aperture is so large that the back of the ribbon is effectively open to the atmosphere, as in a velocity microphone, the acoustic impedance is zero and a bi-directional characteristic pattern is obtained. When the aperture is completely closed, the acoustic impedance is infinite and the characteristic pattern is non-directional which is typical of a pressure operated microphone. As the area of the aperture is varied, a critical value introduces a phase shift which results in a uni-directional characteristic. Other positions of the shutter result in patterns varying between bi-directional and non-directional.

On the back side of the 77-D wind screen (upper shell) is a slotted shaft control adjustment which is brought out flush with a designation plate mounted on the screen. The plate is marked "U", "N", and "B", as designations for the uni-directional, non-directional and bi-directional response curves. A special uni-directional plate, marked with a large "U", is provided with the microphone. When fastened over the designation plate, it fixes the directional pattern control shaft in the uni-directional position; thereby identifying the microphone as a uni-directional microphone, when this plate is attached.

The lower half of the case contains the acoustical labyrinth, output transformer and a selector switch for voice or music. This switch will attenuate the low frequencies below 300 cycles for voice pickup and has three positions designated as "M", "V<sub>1</sub>" and "V<sub>2</sub>". The switch is operated by a screw driver and is accessible from the bottom of the lower cylindrical shell. A protective cloth bag is shipped with each Type 77-D Microphone. The bag can also be used with Type 77-D and 77-C Microphones and ordered separately as MI-4087.

### Specifications

Directional Characteristic (adjustable)	
Bi-directional, uni-directional and non-directional	
Output Impedances (tapped transformer)	50/250/600 ohms
Effective Output Level	—57 dbm*
Hum Pickup Level	—118 dbm**
Frequency Response	See curves
Finish	Satin chrome and umber gray
Mounting	1/2" pipe thread
Dimensions, overall	
Height	11 1/2"
Width	3 3/4"
Depth	2 1/2"
Weight (unpacked including mountings)	3 lbs.
Cable (MI-43 3 conductor shielded)	30' less plug
Stock Identification	MI-4045-A

### Accessories

Microphone Plug	MI-4630-B
Protective Cloth Bag	MI-4087

\* Referred to one milliwatt and a sound pressure of 10 dynes/cm<sup>2</sup>.

\*\* Level referred to a hum field of  $1 \times 10^{-3}$  gauss.

Jeringens

# Handset MI-12001

## Features

- Speech-range microphone for close-talking.
- Moving-coil pressure type.
- Screen assembly to reduce breath noises.
- Replaceable screen and film assembly provides protection against dirt and magnetic particles.
- Operation where high noise levels are encountered.
- Signal to noise ratio superior to conventional type of pressure microphone.
- No external frequency compensation required for close-talking.
- Satisfactory operation over a wide temperature range (-40°F to 150°F).
- Rugged, well suited for power plants, steel mills, etc.

## Uses

The MI-12001 Handset is intended for use in installation where high-noise levels are encountered. Under these conditions it provides a signal-to-noise ratio which is superior to that of a conventional type of pressure microphone, and as a result there is a considerable improvement in intelligibility. In addition the frequency response is correct for close-talking, and thus very little if any external compensation will be required. The frequency-response curve applies when the sound source is in the close-talking position (1/4 inch from microphone).

This microphone will operate satisfactorily over a wide temperature range (-40°F to 150°F) and is rugged and well protected. It is therefore, well suited for use in power plants, steel mills, and similar installations.

## Description

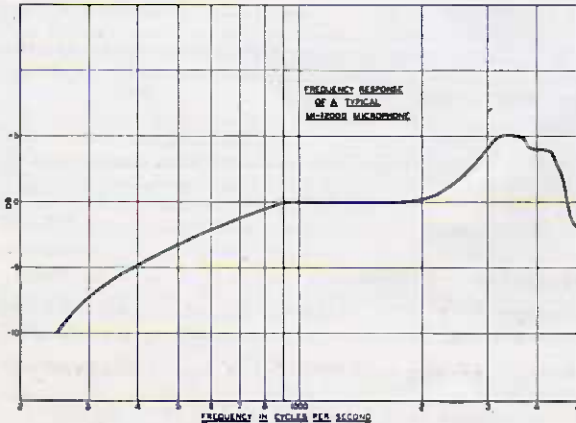
The MI-12001 Handset Microphone is a speech-range microphone for "close-talking" applications.

This microphone is a conventional moving-coil operated type using a molded polystyrene diaphragm clamped around its circumference to suspend the coil in the air gap. The magnetic circuit is comprised of an alnico magnet and iron pole pieces.

Acoustic elements are associated with the moving system to obtain the desired frequency response. A transformer is connected to the coil to give the proper output impedance.

On the microphone mouthpiece is mounted a screen assembly on which a thin vinylite film is cemented, so as to reduce breath noises and give protection against dirt and magnetic particles. This assembly is easily removable and replaceable with a new unit when it becomes dirty. This feature makes this microphone especially valuable in applications where the air has an unusually high dust content.

The cable supplied with the MI-12001 Handset is a four conductor tinsel cable with two-pair twisted and one-pair tinsel shielded.



## Specifications

### MICROPHONE MI-12000

Output Impedance	250 ohms
Effective Output Level	-55 db when 0 db = 0.001 watt
	-63 db when 0 db = 0.006 watt
	Sound pressure = 10 dynes/cm <sup>2</sup>
Output Level for Speech at 1/4 inch	
(a) Normal	-44 to 34 db when 0 db = 0.001 watt
	-52 to 42 db when 0 db = 0.006 watt
(b) Loud	-25 to 20 db when 0 db = 0.001 watt
	-33 to 28 db when 0 db = 0.006 watt

### RECEIVER

Impedance	275 ohms at 1,000 cycles
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### HANDSET MI-12001

#### Dimensions (overall)

Length	9"
Width	2 5/8"
Depth	3 1/4"

#### Weight

(a) Total	1 1/2 lbs.
(b) Less Cable	1 1/4 lbs.
Cable Length	48"

## ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The handset shall work satisfactorily where high-noise levels are encountered. The microphone shall be for close talking with speech-range and be of the moving coil pressure type. It shall have a replaceable screen assembly mounted to reduce breath noises and protect it from dirt and magnetic particles. It shall have a signal-to-noise ratio superior to the conventional type of pressure microphone. It shall have satisfactory operation over a wide temperature range (-40°F to 150°F). It shall be rugged, but neatly designed and easily handled. It shall have the following characteristics: Low output impedance (250 ohms) with effective output level of -55db when 0 db = 0.001 watt and -63 db when 0 db = 0.006 watt and sound pressure equals 10 dynes/cm<sup>2</sup>. Overall dimensions and weight, length 9 inches, width 2 5/8 inches, depth 3 1/4 inches and weight 1 1/2 pounds.



# Handset Hanger MI-13146



## Features

- Rugged, dependable and neat.
- Long service, low maintenance.
- When handset is in use removes speaker from circuit.
- Controls microphone, receiver, plate power relay and speaker by simply removing handset from hook or hanging it on hook.
- Mounting provided for wall, desk, pillar or cabinet.
- Has bracket to permit adjustment when mounting.
- Identification card protected from dirt by plastic window for an indicating station number.

## Uses

This Handset Hanger is specifically designed for use with the MI-12001 handset, which is a telephone type handset. It is neatly and ruggedly made and will meet the requirements wherever this handset is used. It is suitable for wall mounting or mounting on the side of a desk or table. It is designed to disconnect a loudspeaker and connect the microphone and receiver into the line while the handset is in use and reconnect the speaker when the handset is hanging on the hook. There is an additional set of contacts on switch inside of hanger box to operate a plate power relay. It is excellent for paging systems in offices, mills, power plants, airlines, factories, schools, hotels, etc.

## Specifications

Rugged metal construction. .1 mfd. 150 volt condenser to remove noise from relay control line. 10,000 ohm one watt resistor to reduce signal in receiver to proper level. Spring on hanger lever to switch contacts. Terminals inside of hanger cover to make circuit connections. Color coded cable to bring connections to speaker, line, and input and output of amplifier to the terminals inside of hanger enclosure.

Cable Length \_\_\_\_\_ 21"  
 Weight \_\_\_\_\_ 1 $\frac{5}{8}$  lbs.  
 Shipping Weight \_\_\_\_\_ 3 $\frac{3}{8}$  lbs.

## ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The handset hanger shall be of heavy metal construction and finished in black. It shall contain a switching mechanism to control a speaker, microphone, receiver and a plate power relay. A color coded cable shall be provided to connect the external equipment to the terminals inside of the hanger. A bracket shall be furnished with the hanger, the combination being adjustable for wall or desk mounting. A 0.1 mfd. 150 volt condenser shall be provided in the hanger to drain control line noises to ground. A 10,000 ohm one watt resistor shall be connected in series with the receiver terminals to reduce the signal to the proper level in the receiver.

# Sound Powered Telephone Handset MI-2040-AS

## Features

- Self powered.
- Weather proof.
- Extremely rugged.
- No amplifier needed.
- Aluminum alloy diaphragm.
- Alnico permanent magnets.
- Fungus proof treated.

## Uses

The MI-2040-AS Sound Powered Telephone Handset can be used for station conversation where amplification to drive a loudspeaker is not required. Due to its weatherproof construction it will be found especially good in locations having high humidity.

## Description

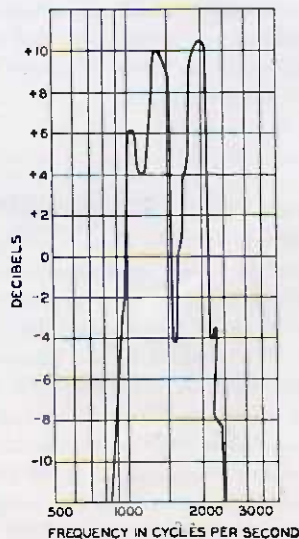
The Sound Powered Telephone Handset consists of a receiver motor, a transmitter motor, and a line switch housed in a ruggedly constructed moulded composition case. A two conductor, unshielded, rubber covered cable six feet long, less plug, enters the case below the transmitter unit and is secured to a screw post by means of a stay cord. A switch which closes the circuit on being pressed is inserted in one side of the line. This switch is located in the handle so that it is easily pressed when holding the handset in the usual manner. A capacitor is connected across the transmitter coil and across the receiver coil. The diaphragm of both the transmitter unit and the receiver unit is made of an aluminum alloy.

This type of handset is not dependent on an external power supply. Current for telephone use is generated by movement of the armature between the poles of the Alnico permanent magnet whose lines of force cut across a stationary coil. The armature of the transmitter is driven by sound waves acting on the diaphragm and the output of the transmitter drives the receiver diaphragm.

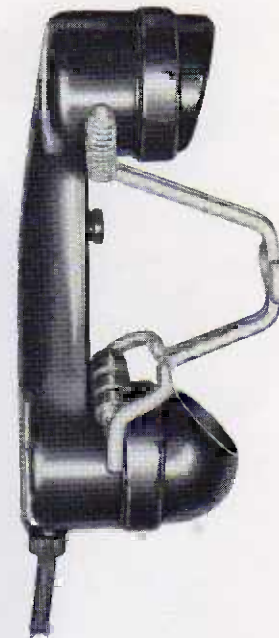
This equipment was designed for maritime applications and will perform satisfactorily over a wide range of temperatures.

Although the sound powered telephone handset is normally used without an amplifier it can be used as a microphone

Frequency response of a typical MI-2040-AS handset—one handset to one handset



MI-2040-AS



MI-2062-BS

and connected to the high impedance input of an amplifier where frequency response is not a prime requisite. This unit is for voice purposes only.

A handset cradle sturdily constructed of cadmium plated steel with rubber cushions is available but not supplied with the handset.

## Characteristics

Maximum Operating Distance (1 pair)	Approx. 32 miles
Magnet Material	Alnico metal
Case Material	Moulded composition
Diaphragm Material	Aluminum alloy
Cable (less plug)	6', 2 conductor, rubber covered, unshielded
Finish	Polished black
Impedance	1000 ohms @ 2000 cycles
Frequency Response	See curve
Dimensions	9¼" x 2½" x 3⅝"
Net Weight	1¾ lbs.
Shipping Weight	2¾ lbs.
Stock Identification	MI-2040-AS

## Accessories

Handset Cradle	MI-2062-B
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## ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The telephone handset shall be of the sound powered type with a receiver motor, transmitter motor and line switch housed in moulded composition case having a polished black finish. The magnet shall be of Alnico metal and the diaphragm of an aluminum alloy. The parts shall be treated against fungus. A two conductor, rubber covered, unshielded cable 6' long, less plug, shall be connected to the handset. The operating distance shall be approximately 32 miles. Dimensions shall be 9¼" x 2½" x 3⅝". Net weight shall be 1¾ pounds. Impedance shall be 1000 ohms at 2000 cycles.

A handset cradle for the above shall be available as a separate item.

# Microphone Stands

## Program Stand Type 90-A

### Uses

The 90-A Program Stand is the standard unit at leading Station and Network Studios. With its attractive finish and sturdy construction this stand will improve the appearance and operation of any studio set-up. It may be used with all RCA Broadcast Type microphones or with any other microphone which may be adapted to a  $\frac{1}{2}$ " pipe thread mounting. The  $\frac{1}{2}$ " fitting may be removed to expose a  $\frac{5}{8}$ "—27 thread.



### Description

The 90-A floor stand is equipped with a simple clamping device which permits height adjustments to be made easily and quietly *without operating any release mechanism*. The up and down operation is smooth and the locking operation positive. The patented clamp is mechanically simple and is ruggedly constructed to give years of service. The weighted base of the 90-A is equipped with equalizing projections to assure a firm position on an uneven floor. The stand is finished in satin chrome to harmonize with any studio decoration. Cable guides are included to hold the microphone cord in proper position.

### Features

- Hundreds giving excellent performance in leading broadcast studios.
- Suitable for use with all RCA Microphones.
- Large heavy base with equalizing projections assure sturdy support of microphone.
- Simple non-slide, trouble free clamping device.
- Attractively finished in satin chrome.

### Specifications

Height of Stand \_\_\_\_\_ Adjustable from 3'8" to 6'2"  
 Microphone Mounting \_\_\_\_\_ Standard  $\frac{1}{2}$ " or  $\frac{5}{8}$ "—27 pipe thread  
 Diameter of Base \_\_\_\_\_ 12 $\frac{1}{4}$ "  
 Weight (unpacked) \_\_\_\_\_ 33 lbs.  
 Finish \_\_\_\_\_ Satin Chrome  
 Stock Identification \_\_\_\_\_ MI-11050  
 Accessory Item—Cable Hook \_\_\_\_\_ MI-11099

## Floor Stand Type KS-1A

### Uses

The KS-1A is an attractive light-weight floor stand specially designed to provide the superior qualities of the Type 90-A Program Stand in a light-weight model. This stand may be used with all RCA microphones and is particularly recommended for applications where the heavier construction of the 90-A Stand is not required.



### Description

The KS-1A, like all RCA Floor Stands, features the patented clamping device that permits smooth height adjustment without the operation of any release mechanism. The clamping arrangement is positive in operation and is ruggedly constructed to give years of trouble-free service. The telescoping tube sections are stainless steel and the weighted base is finished in dark umber gray wrinkle. A cable clamp is provided in the base to hold the cable in position.

### Features

- Suitable for use with all RCA Microphones.
- Low price.
- Smooth operation with automatic clamping and release device.
- Light weight.
- Heavy ten inch base.
- Sturdy construction.
- Attractively finished.

### Specifications

Height of Stand \_\_\_\_\_ Adjustable from 3' 2" to 5' 5 $\frac{1}{2}$ "  
 Microphone Mounting \_\_\_\_\_  $\frac{1}{2}$ " pipe thread  
 Diameter of Lower Tube \_\_\_\_\_ 1"  
 Diameter of Base \_\_\_\_\_ 10"  
 Weight (unpacked) \_\_\_\_\_ 14 lbs.  
 Finish \_\_\_\_\_  
 Base \_\_\_\_\_ Dark umber gray  
 Stand \_\_\_\_\_ Satin chrome  
 Stock Identification \_\_\_\_\_ MI-12065

## Cable Hook MI-11099

### Uses

Attached to the 90-A or any other  $\frac{1}{4}$ " round tube stand the MI-11099 provides a convenient method of holding the cable when it is not in use.

### Description

The Cable Hook is simple to install, and may be easily adjusted to the proper height. Merely tightening a smooth locking nut holds it in position.



### Features

- Can be attached or removed in a few seconds.
- Saves wear on the cable.
- Keeps cable out of the way when not in use.

### Specifications

Weight \_\_\_\_\_ 15 oz.  
 Finish \_\_\_\_\_ Satin chromium  
 Hole Diameter \_\_\_\_\_  $\frac{1}{4}$ "

# Microphone Stands

## Three-section Microphone Stand MI-6208

### Description

The MI-6208 is a convenient and attractive stand for floor or banquet use. It is especially suitable for portable use since it may be taken apart into three sections for easy packing or carrying. The stand has a heavy ten-inch gray crackle base which is trimmed with satin-silver stripes. The stand finish is chromium.

### Features

- Utility stand for floor or banquet use.
- Three sections for easy packaging or carrying.
- Heavy ten-inch base.
- Attractive appearance.

### Specifications

Height (for floor use—3 sections)  
Adjustable from 3' 11" to 5'

Height (for banquet use—2 sections)  
Adjustable from 1' 6" to 2' 7"

Microphone Mounting  $\frac{1}{2}$ " pipe thread

Finish  
Stand \_\_\_\_\_ Polished chromium  
Base \_\_\_\_\_ Gun metal crackle with satin-silver stripes

Weight (unpacked) \_\_\_\_\_ 11 lbs.

Stock Identification \_\_\_\_\_ MI-6208



## Boom Stand Type KS-3A

### Description

The KS-3A is a studio type stand which is especially suited for piano pickups and arrangements where it is desirable to locate a microphone close to the source of sound. It is also ideal for picking up large orchestra groups where the microphone must be elevated above the height attained with a Type 90-A Stand.

Adjustments are easily made with large knurled and polished handwheels. The boom is adjustable and counterbalanced. Smooth-rolling, rubber-tired casters eliminate noise and facilitate movement. Foot operated locks are located on all casters. The boom stand is finished in satin aluminum and umber gray wrinkle. Cable supports are provided for the microphone cord.

### Features

- Sturdy construction, strong tubing and casting.
- Large base with rubber tired casters.
- Easily adjusted over wide range of heights and boom length.
- Positive locking adjustments.
- Air cushion lowering brake.



### Specifications

Height of Stand  
Adjustable from 4½' to 8'

Horizontal Arm Adjustment  
4' 11" to 7' 6"

Microphone Mounting  
Standard  $\frac{1}{2}$ " pipe thread

Weight (unpacked) \_\_\_\_\_ 62 lbs.

Finish \_\_\_\_\_ Satin aluminum and black

Stock Identification \_\_\_\_\_ MI-4094-B

## Floor Stand MI-4068-E

### Description

The MI-4068-E is a lightweight microphone floor stand with a twelve-inch base. It may be used with any RCA Microphone where a stand of heavier structure is not required.

### Features

- Heavy twelve-inch base.
- Modern appearance.
- Finish harmonizes with all colors.

### Specifications

Height \_\_\_\_\_ Adjustable from 2' 11" to 5' 7"

Microphone Mounting  $\frac{5}{8}$ "—27 pipe thread fitted with  $\frac{1}{2}$ " pipe thread adaptor. (For microphones with  $\frac{1}{8}$ " pipe thread use MI-6229 Adaptor.)

Finish \_\_\_\_\_ Chromium and black

Weight (unpacked) \_\_\_\_\_ 14½ lbs.

Stock Identification \_\_\_\_\_ MI-4068-E



## Portable Stand Type 59-B

### Description

The 59-B is a collapsible, lightweight and rugged stand which is unexcelled for field use. It features a tripod base and a patented clutch arrangement which permits height adjustments to be quickly made without the operation of a mechanical release.

### Specifications

Height \_\_\_\_\_ Adjustable from 3' to 5'

Weight (unpacked) \_\_\_\_\_ 3½ lbs.

Finish \_\_\_\_\_ Satin chrome

Microphone Mounting  $\frac{1}{2}$ " pipe thread

Stock Identification \_\_\_\_\_ MI-4093-B



# Microphone Stands

## Banquet Stand MI-4095-A

### Features

- Compact and convenient for portable use.
- Rugged construction.
- Easy to assemble or take apart.
- Attractive finish.

### Uses

This newly designed stand is the ideal for banquets or other occasions where a sturdy, attractive and truly portable stand is required.



### Description

The MI-4095-A is of novel construction in that its base forms a compact carrying case for the entire stand. The hollow under side of the base casting accommodates the stand's three telescoping tubular sections and two fin type legs fold into the base sides. When unfolded the legs extend  $5\frac{1}{4}$ " from center of the vertical rod. The bottom of the base is covered with felt.

### Specifications

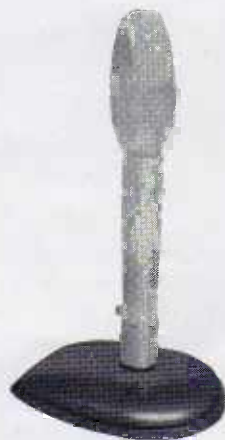
Height—Adjustable  $10\frac{3}{4}$ " to  $24\frac{3}{4}$ "  
 Base Dimensions  $3\frac{5}{8}$ " x  $10\frac{1}{2}$ " x  $1\frac{5}{8}$ "  
 Microphone Mounting  
 $\frac{1}{2}$ " pipe thread  
 Weight \_\_\_\_\_ 5 lbs.  
 Finish—Umber gray and chromium  
 Stock Identification —MI-4095-A

## Desk Stand Type KS-5A

The desk stand, Type KS-5A, is a neatly designed stand primarily for use with the KB-2C and KN-1A microphones. It is of cast metal and attractively finished in two glossy finishes, gray metalustre or black. The microphone is held rigidly in position by  $\frac{5}{8}$ "—27 thread bolt. The bottom is cushioned by a strip of rubber, giving adequate protection to any finely finished surface.

### Specifications

Dimensions:  
 Length \_\_\_\_\_  $4\frac{1}{8}$ "  
 Width \_\_\_\_\_  $5\frac{3}{8}$ "  
 Height \_\_\_\_\_  $\frac{3}{4}$ "  
 Weight \_\_\_\_\_  $1\frac{1}{4}$  lbs.  
 Fitting Size (of mike extension) \_\_\_\_\_  $\frac{5}{8}$ "—27 thread  
 Stock Identification:  
 Gray Metalustre \_\_\_\_\_ MI-12066  
 Glossy Black \_\_\_\_\_ MI-12066-A



## Desk Stand Type 91-B

### Features

- Small size.
- Heavy base with felt covered bottom.
- Adjustable height.
- Attractive appearance.

### Uses

The 91-B is a heavy-based desk stand designed especially for studio or announce use. It is attractive in appearance and easily mounts the heaviest of studio microphones.



### Description

The 91-B is finished in the new RCA umber gray metalustre with polished chromium trim. The base is felt covered to prevent marring the table or desk on which it may be placed.

The stand has a base size of  $4\frac{1}{2}$ " and is provided with a choice of two mounting fittings. The shorter one with a  $\frac{3}{4}$ " extension is intended for use with the 77-D, 44-BX, and 74-B microphones. The longer extension with a  $1\frac{3}{4}$ " extension is intended for use with the 88-A microphone.

### Specifications

Microphone Mounting \_\_\_\_\_  $\frac{1}{2}$ " pipe thread  
 Base Dimensions \_\_\_\_\_  $4\frac{1}{2}$ " x  $6\frac{5}{8}$ " x  $\frac{3}{4}$ "  
 Finish \_\_\_\_\_ Umber gray with polished chromium trim  
 Weight \_\_\_\_\_ 4 lbs.  
 Stock Identification \_\_\_\_\_ MI-4092-C

## Announce Stand Type 91-A For 44-BX Only

The 91-A is a simple but attractive desk stand for 44-BX Microphones. It is finished in dark umber gray metalustre and its base rests on three felt buttons. Height of the 44-BX Center above desk is  $8\frac{3}{8}$ ". Base diameter, 7". Use only with Type 44-BX Microphone.



### Specifications

Weight (unpacked) \_\_\_\_\_  $3\frac{1}{2}$  lbs.  
 Stock Identification \_\_\_\_\_ MI-4058-C

# Microphone Stands

## Desk Stand MI-13240

This light weight, sturdily constructed desk stand is ideal for use with the RCA MI-6228-M Aerodynamic microphone or the RCA MI-12010 Pressure microphone. It is composed of three pieces; the base, stem and an MI-6229 adaptor which screws to the stem. Assembled, the stand is 6 $\frac{3}{4}$ " high. The base is equipped with 4 rubber feet and is 4 $\frac{3}{4}$ " in diameter. The stand is attractively finished in dark umber gray with polished chrome trim.

Weight (unpacked) \_\_\_\_\_ 14 ozs.  
Weight (packed) \_\_\_\_\_ 1 $\frac{1}{2}$  lbs.



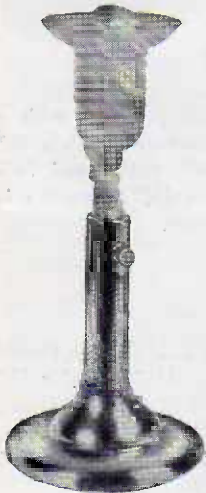
## Announce Stand MI-4096

This attractively-designed announce stand is adjustable from 8 to 10 $\frac{1}{2}$ ", making it ideal for use on a desk or table. It is finished in chromium and black and features a 7 $\frac{1}{2}$ " base. The microphone mounting is for a standard  $\frac{1}{2}$ " pipe thread.

Weight (unpacked) \_\_\_\_\_ 4 lbs.



## Pushmike Stand MI-6427



This smartly designed table stand features a built-in microphone switch and is suitable for use with all RCA pressure type microphones. The switch is of the D.P.D.T. long leaf anti-capacity type and permits turning the microphone on and off right at the microphone stand. It may also be used for "push-to-talk" operation or lock-in "Talk" position.

The stand is 4 $\frac{3}{4}$ " high with 5 $\frac{3}{4}$ " base and is attractively finished in chromium. The microphone mounting is for a  $\frac{5}{8}$ "-27 male or female thread. Stock #33543 Adaptor is available on separate order for microphone with  $\frac{1}{2}$ " pipe thread.

Weight (unpacked) \_\_\_\_\_ 1 $\frac{1}{8}$ " lbs.  
Stock Identification \_\_\_\_\_ MI-6427  
(Includes MI-6425 Stand and MI-6426 Base)

## Pushmike Adaptor MI-6425

An adaptor with a built-in microphone switch of the D.P.D.T. long leaf anti-capacity type. The switch permits "push-to-talk" operation or locked-in "talk" position and may be used with any floor or table stand having  $\frac{5}{8}$ "-27 fixture threads. The adaptor is an extremely light compact unit finished in chromium. It is 4 $\frac{3}{4}$ " long, 1 $\frac{3}{8}$ " in diameter and weight is  $\frac{3}{4}$  lbs. unpacked.



Fitting \_\_\_\_\_ Bottom  $\frac{5}{8}$ "-27 fixture thread (female)  
Top \_\_\_\_\_  $\frac{5}{8}$ "-27 fixture thread (female) with added  
 $\frac{5}{8}$ "-27 thread, male nipple  
Weight (unpacked) \_\_\_\_\_  $\frac{3}{4}$  lb.  
Stock Identification \_\_\_\_\_ MI-6425

## Microphone Adaptors

RCA offers a comprehensive stock of microphone adaptors suitable for microphones and stands, etc., used in the broadcast field. A recent questionnaire confirmed that for its simplicity in procurement and availability, the  $\frac{1}{2}$ " standard pipe

Stand Thread	Microphone Thread	Stock Identification
$\frac{1}{8}$ " pipe thread	$\frac{1}{2}$ " pipe thread	Stock No. 32212
$\frac{1}{2}$ " pipe thread	$\frac{1}{8}$ " pipe thread	MI-12051
$\frac{1}{2}$ " pipe thread	$\frac{5}{8}$ "-27	MI-12053
$\frac{1}{2}$ " pipe thread	$\frac{5}{8}$ "-24 (W.E.)	MI-12057
$\frac{5}{8}$ "-24 (W.E.)	$\frac{1}{2}$ " pipe thread	MI-12057-A
$\frac{5}{8}$ "-27	$\frac{1}{8}$ " pipe thread	MI-6229
$\frac{5}{8}$ "-27	$\frac{1}{2}$ " pipe thread	Stock No. 33543

thread was infinitely more popular than any other pipe size. For this reason, RCA has standardized on the  $\frac{1}{2}$ " standard pipe thread, and avails broadcasters of adaptors to suit any application.



Stock #33543



MI-12051



MI-6229

# Microphone Plugs and Receptacles

RCA Microphones are sold without plugs in order that the purchaser may use any type desired. The Cannon Type "P" Series are recommended for their reliability and ruggedness. This series of Cannon Plugs is used in all RCA remote amplifiers. The Cannon Type "P" Plugs and Receptacles stocked by RCA have steel jackets, which are preferred to the die cast type, for their increased ruggedness. All fittings are finished in satin chrome.

A miniature size plug was developed to obtain a cable connection that could be housed in the stem of the KB-2C Microphone. This size of microphone plug is identified in the Cannon XL-3 Series. The versions stocked by RCA for broadcast use have satin chrome finish and use steel jackets to reduce possible mechanical damage. A split gland type of cable clamp will accommodate cable diameters up to 1/4 inch. Although features preferred by broadcasters have been incorporated into this plug, its smaller size and restricted space for making connections to the contact pins may make it less acceptable than the larger Cannon "P" Series for general use. The XL-3 Series of Plugs and Receptacles has been accepted by RMS as standard for public address use.

## CANNON "P" SERIES OF PLUGS

Description	Cannon Stock No.	RCA Stock Identification
Male Plug for Microphone Cords	P3-CG-12S	MI-4630-B
Wall Receptacle for Above Plug	P3-35	MI-4624-A
Note: The MI-4624-A Receptacle will fit in a standard a-e outlet box.		
Extension Cord—Female Connector	P3-CG-11S	MI-4620-B

## CANNON "XL" SERIES OF PLUGS

Description	Cannon Stock No.	RCA Stock Identification
Male Plug for Microphone Cords	XL-3-12SC	MI-11089
Female Connectors—Extension Cord	XL-3-11SC	MI-11090
Wall Receptacle for Microphone Plug	None	MI-11096
Female Receptacle—for Amplifiers	XL-3-13N	MI-11088



MI-4624-A Wall Receptacle



MI-11090 Cord Connector

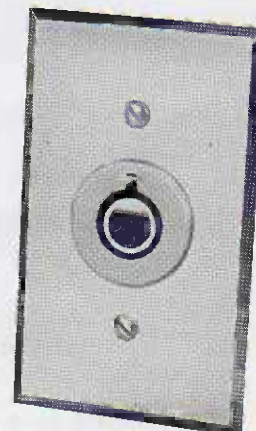


MI-4630-B Microphone Plug

MI-11089 Microphone Plug



MI-4620-B Cord Connector



MI-11096 Wall Receptacle

# Microphone Cables and Connectors

## Description

RCA offers a complete line of microphone cables and plugs for sound use. The cables are available either in fixed, standard lengths with microphone connectors attached, or by the foot in continuous lengths up to 1000 feet. The fixed length cables may be obtained either fifteen or thirty feet long, and terminate in the three conductor, female connector, MI-12058. These cables were designed for use with the new RCA microphones having a short length of cable terminating in a three contact, male connector.

The MI-12058 and its male companion MI-12059 connectors have a zinc, die-cast shell, with a positive latch lock which prevents accidental disconnecting. The connectors may be easily disengaged by pressing the release button and pulling the connectors apart. A rubber bushing in the neck of the connectors prevents wear on the cable covering and provides a grip on the cable. A cable relief spring extends from the rear of the connectors and prevents sharp bends in the cable. These connectors, in conjunction with the desired length of cable, MI-41, MI-42, or MI-43, may be used to make up microphone extension cables or replacement cables, should they become necessary.

## Specifications

### CABLE MI-12097-B

Material \_\_\_\_\_ 2 conductor—rubber covered, shielded cable  
 Length \_\_\_\_\_ 15 feet  
 Fitting \_\_\_\_\_ One female connector (3 contact)

### CABLE MI-12097-C

Material \_\_\_\_\_ 2 conductor—rubber covered, shielded cable  
 Length \_\_\_\_\_ 30 feet  
 Fitting \_\_\_\_\_ One female connector (3 contact)

### CABLE MI-12098-B

Material \_\_\_\_\_ Single Conductor—rubber covered, shielded cable  
 Length \_\_\_\_\_ 15 feet  
 Fitting \_\_\_\_\_ One female connector (3 contact)

### CABLE MI-12098-C

Material \_\_\_\_\_ Single Conductor—rubber covered, shielded cable  
 Length \_\_\_\_\_ 30 feet  
 Fitting \_\_\_\_\_ One female connector (3 contact)

### CABLE MI-41

Use \_\_\_\_\_ High impedance microphone cable  
 Type \_\_\_\_\_ Single conductor stranded equiv. #25 AWG  
 Insulation \_\_\_\_\_ Special rubber compound  
 Shield \_\_\_\_\_ Tinned copper  
 Outer Covering \_\_\_\_\_ Special durable black rubber compound  
 Overall Diameter \_\_\_\_\_ Approximately 0.245"

### CABLE MI-42

Use \_\_\_\_\_ Low impedance microphone cable  
 Type \_\_\_\_\_ Stranded two-conductor shielded equiv. #20 AWG  
 Insulation \_\_\_\_\_ Special rubber compound  
 Shield \_\_\_\_\_ Tinned copper  
 Outer Covering \_\_\_\_\_ Special durable black rubber compound  
 Overall Diameter \_\_\_\_\_ Approximately 0.280"

### CABLE MI-43

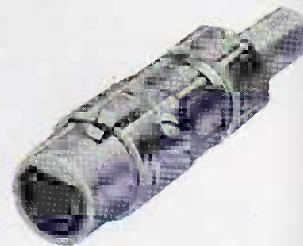
Use \_\_\_\_\_ Low impedance microphone cable  
 Type \_\_\_\_\_ Stranded three-conductor shielded equiv. #20 AWG  
 Insulation \_\_\_\_\_ Special rubber compound  
 Shield \_\_\_\_\_ Tinned copper  
 Outer Covering \_\_\_\_\_ Special durable black rubber compound  
 Overall Diameter \_\_\_\_\_ Approximately 0.280"



MI-12097 Cable



MI-12059



MI-12058

### FEMALE CONNECTOR MI-12058

Material—Contacts \_\_\_\_\_ Brass—silver plated  
 Insulation \_\_\_\_\_ Moulded Phenolic  
 Case \_\_\_\_\_ Cast zinc  
 Clearance—Contacts to Shell \_\_\_\_\_ 1/32 inch  
 Clearance—Contact to Contact \_\_\_\_\_ 3/32 inch  
 Minimum Flashover Voltage \_\_\_\_\_ 1500 volts (250 v. working)  
 Overall Dimensions \_\_\_\_\_ 2 7/8 inches long x 3/4 inch diameter

### MALE CONNECTOR MI-12059

Material, Clearance and Flashover Voltage \_\_\_\_\_ Same as MI-12058  
 Overall Dimensions \_\_\_\_\_ 2 7/8 inches long x 3/4 inch diameter

## Architects' and Engineers' Specifications

- (1)\* The cable shall be a two conductor shielded cable with rubber cover, 15 feet\* or 30 feet\* long, complete with three contact female connector as described below
- (2)\* The cable shall be a single conductor shielded cable with rubber cover, 15 feet\* or 30 feet\* long, complete with three contact female connector as described below

The female connector shall be approximately 2 7/8 inches long with a diameter of 3/4 inch. There shall be three silver plated brass contacts moulded in phenolic material. The case shall be a zinc casting and have a latch lock. The connector shall be provided with a rubber cable gripping device and a strain relief spring.

The male connector shall be approximately 2 7/8 inches long with a diameter of 3/4 inch. There shall be three silver plated brass contacts moulded in a phenolic material. The case shall be a zinc casting. The connector shall be provided with a rubber cable gripping device and a strain relief spring.

\* Use either specification—not both.





# AMPLIFIERS



ALL-PURPOSE AMPLIFIERS

VOLTAGE AMPLIFIERS

POWER AMPLIFIERS

REMOTE AMPLIFIERS

# 15 Watt Public Address Amplifier MI-12299, 12295\*



### Features

- Modern styling.
- Two locking type microphone plugs and receptacles furnished.
- Two standard shorting type phonograph jacks provided.
- Inverse feedback circuit—low distortion, high output.
- Excellent frequency response.
- Individual volume control for each input.

### Uses

Modern styling at its best is presented in the RCA 15 Watt Public Address Amplifier—an unparalleled value for use in small auditoriums, dance halls, restaurants and taverns, amusement parks, small churches, schools, and outdoor applications for small gatherings. Here is an ideal medium power, high gain amplifier.

### Description

The MI-12299 is an a-c operated, public address amplifier with an output of 15 watts. This amplifier is housed in the new, RCA streamlined cabinet. The turret-like top piece is perforated in order to permit a free circulation of air through the interior of the cabinet. In order to provide the greatest operating convenience the front panel is slightly inclined, and the controls are fitted with large, easily manipulated knobs. The bell-like end pieces have cleverly designed recesses at the lower edges, which serve as hand grips when moving the unit about. Thus, the feature of convenient movability is preserved without the necessity of objectionable, protruding handles, and without spoiling the smooth streamlined appearance.

This amplifier provides for the mixing of three input channels: one microphone, one phonograph, and an additional microphone or phonograph, as desired. There is a separate pre-amplifier for each of two of the inputs. The third input, for a phonograph, must necessarily be of a higher level. There is a separate gain control for each input. In two cases it is inserted across the output of each of the pre-amplifier stages. In the case of the third input, which has no pre-amplifier, the gain control is located directly across the input jack. Interaction between gain controls is less than 2 db. The signal, after passing through the input circuits, is fed through a voltage amplifier, a phase inverter, and a push-pull, parallel power

amplifier using 6V6-GT/G tubes. A rather unique tone control is provided with this amplifier. In the scale center, zero position, the amplifier has the best overall response. The extreme right position gives the maximum high frequency response and the extreme left position gives the maximum low frequency response. It is thus possible to adjust the amplifier for the maximum clarity under a wide variety of acoustical conditions or noise backgrounds. The amplifier is provided with a "high-low" power arrangement which changes the value of the plate voltage on all tubes. In the "high" position the maximum power output is 15 watts. In the "low" position, it is 10 watts.

The power cord, input connectors, output terminal board, and a cartridge-type, replaceable fuse, are conveniently located at the rear of the cabinet.

The MI-12299 operates from a power source of 105/125 volts, a-c, 50 to 60 cycles. The MI-12288 operates from a power source of 105/250 volts, a-c, 25 to 60 cycles.

\* For high impedance input order MI-12295 for 105/125 volts a-c, 50 to 60 cycles; MI-12287 for 105/250 volts a-c, 25 to 60 cycles.

### Specifications

#### Inputs

Low Impedance (Mic. #1; Mic. #2)	_____	250 ohms
Phonograph #1 (High Impedance)	_____	
(High Gain)	_____	600,000 ohms
Phonograph #2 (High Impedance)	_____	
(Moderate Gain)	_____	500,000 ohms

Input Levels: At 1000 cycles, tone control in maximum high position, 117 v. line on low power tap.

#### Maximum Allowance

Low Impedance Microphone	_____	0.05 volt rms
Phonograph #1	_____	0.8 volt rms
Phonograph #2	_____	10 volt rms

#### Minimum for Rated Output

Low Impedance Microphone	_____	0.20 millivolt rms
Phonograph #1	_____	6.0 millivolt rms
Phonograph #2	_____	0.1 millivolt rms

Output Load Impedances \_\_\_\_\_ 4, 8, 15, 60, 250 ohms

Rated Power Output: at 5% total harmonic distortion with 117 v. a-c, switch in high power position \_\_\_\_\_ 15 watts



Rear view showing input and output connections and fuse holder

Power Supply  
 MI-12299, MI-12295 \_\_\_\_\_ 105-125 v., 50/60 cycles  
 MI-12288, MI-12287 \_\_\_\_\_ 105-250 v., 25/60 cycles  
 Tubes:

3 \_\_\_\_\_ RCA-6J7                      2 \_\_\_\_\_ RCA-6V6GT  
 1 \_\_\_\_\_ RCA-6SN7                  1 \_\_\_\_\_ RCA-5Y3GT

Power Consumption at rated output, 117 volt line, switch in low power position \_\_\_\_\_ 90 watts  
 Net Weight \_\_\_\_\_ 22 lbs.  
 Shipping Weight \_\_\_\_\_ 30 lbs.  
 Dimensions \_\_\_\_\_ 16" long, 11" deep, 8" high  
 Finish \_\_\_\_\_ Satin chrome and black

**Architect and Engineering Specifications**

Amplifier shall have 15 watts normal output at 5% distortion (21 watts maximum). Overall gain at 1000 cycles shall be 114 db for microphone input or 100 db for phonograph input. Two separate low impedance microphone inputs shall be provided, with two standard shorting type phonograph jacks supplied for phonograph input. The microphone input shall be 250 ohms and the phonograph inputs shall be 500,000 ohms and 600,000 ohms. The dimensions shall not exceed 16" long x 11" deep x 8" high. The output impedances as designated on the terminal board shall be 4, 8, 15, 60, and 250 ohms. The amplifier shall operate from 105 to 125 volts, 50/60 cycles.

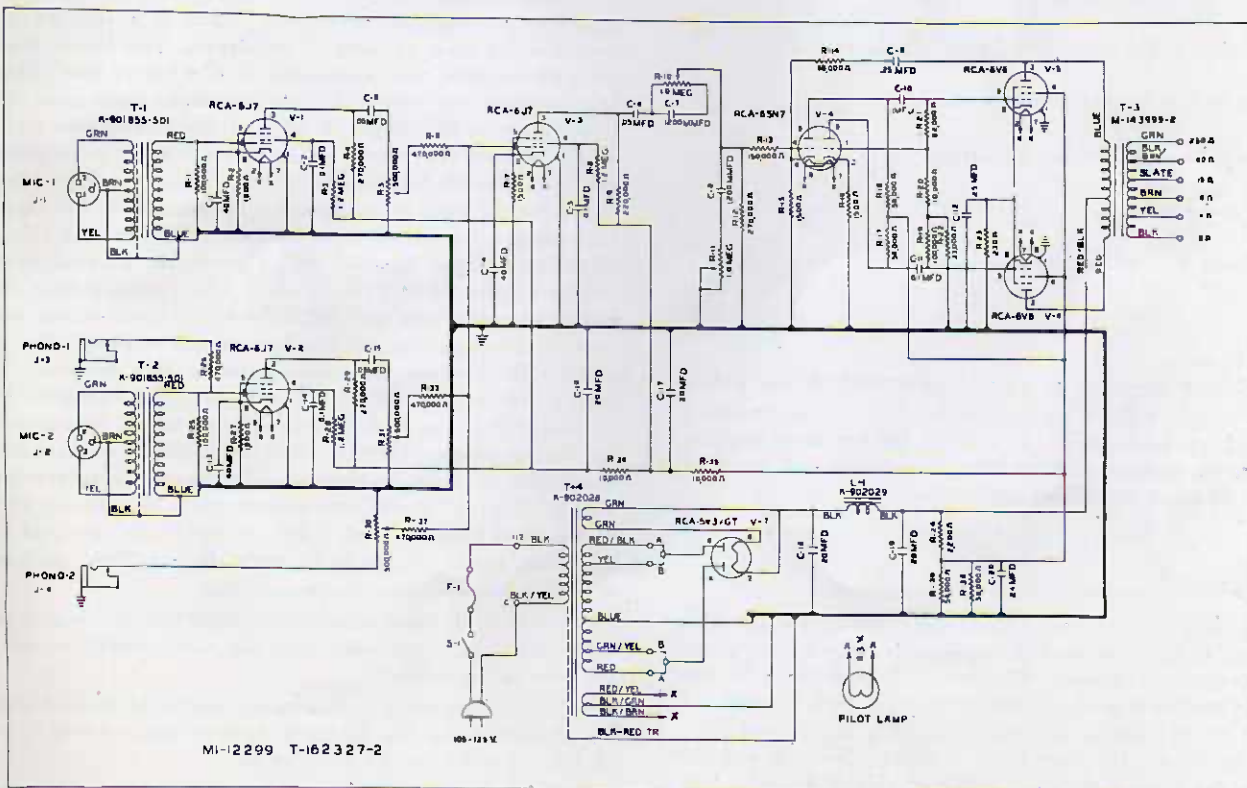
Individual gain control for each microphone channel consists of a 500,000 ohms potentiometer between first stage output and second stage input.

Individual gain control for phonograph #2 between input jack and second stage.

Frequency response controlled by a dual 1 megohm potentiometer; center position flat response, left end maximum lows, right end maximum highs.

A-c line controlled by toggle switch on front panel.

Maximum Output at 1000 cycles  
 117 v. a-c, switch in high power position \_\_\_\_\_ 25.4 watts  
 Gain: At 1000 cycles, tone control in maximum high position, 117 v. in low power position.  
 Low Impedance Microphone Inputs \_\_\_\_\_ 114 db  
 Phonograph #1 (Bridging Gain) \_\_\_\_\_ 100 db  
 Phonograph #2 (Bridging Gain) \_\_\_\_\_ 75 db  
 Feedback (at 1000 cycles) \_\_\_\_\_ 11 db  
 Frequency Response \_\_\_\_\_ 50 to 10,000 cycles  
 Noise Levels: Tone control in mid-position, 117 v. line, low power position, 6 mw. reference.  
 Low Impedance Microphone \_\_\_\_\_ 13.5 db  
 Phonograph #1 \_\_\_\_\_ 13.5 db  
 Phonograph #2 \_\_\_\_\_ 21 db



Schematic diagram of MI-12299

## 30 Watt Public Address Amplifier MI-12298, MI-12296\*



### Features

- Attractive streamlined cabinet.
- Excellent frequency response.
- Individual gain control for each input.
- Less than 2 db interaction between gain controls.
- High or low frequency tone control.
- Inverse feedback for low distortion.
- Low noise level.
- High-low power terminals.

### Uses

The MI-12298 amplifier is a highly perfected, deluxe public address amplifier featuring modern appearance, simple operation, and top performance. It is ideal for use in nightclubs, retail stores, garages, parking lots, playgrounds and any of a number of other diversified applications.

### Description

The MI-12298 is an a-c operated, public address amplifier with an output of thirty watts. This amplifier is housed in the new, RCA streamlined cabinet. The turret-like top piece is perforated in order to permit a free circulation of air through the interior of the cabinet. In order to provide the greatest operating convenience the front panel is slightly inclined, and the controls are fitted with large, easily manipulated knobs. The shell-like end pieces have cleverly designed recesses at the lower edges, which serve as hand grips when moving the unit

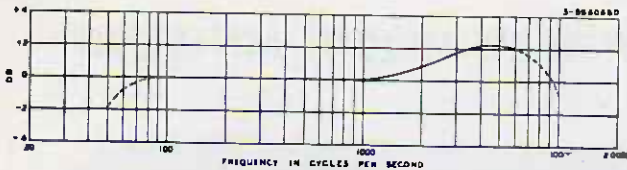
about. Thus, the feature of convenient movability is preserved without the necessity of objectionable, protruding handles, and without spoiling the smooth streamlined appearance.

This amplifier provides for the mixing of four input channels: two microphones, one phonograph and an additional microphone or phonograph, as desired. There is a separate pre-amplifier for each of three of the inputs. The fourth input, for a phonograph, must necessarily be of a higher level. There is a separate gain control for each input. In three cases it is inserted across the output of each of the preamplifier stages. In the case of the fourth input, which has no preamplifier, the gain control is located directly across the input jack. Interaction between gain controls is less than 2 db. The signal, after passing through the input circuits, is fed through a voltage amplifier, a phase inverter, and a push-pull, parallel power amplifier using 6V6-GT/G tubes. A rather unique tone control is provided with this amplifier. In the scale center, zero position, the amplifier has the best overall response. The extreme right position gives the maximum high frequency response and the extreme left position gives the maximum low frequency response. It is thus possible to adjust the amplifier for the maximum clarity under a wide variety of acoustical conditions or noise backgrounds. The amplifier is provided with a "high-low" power arrangement which changes the value of the plate voltage on all tubes. In the "high" position the maximum power output is 30 watts. In the "low" position, it is 25 watts.

The power cord, input connectors, output terminal board, and a cartridge-type, replaceable fuse, are conveniently located at the rear of the cabinet.

The MI-12298 operates from a power source of 105/125 volts, a-c, 50 to 60 cycles. The MI-12290 operates from a power source of 105/250 volts, a-c, 25 to 60 cycles.

\* For high impedance input order MI-12296 for 105/125 volts, a-c, 50 to 60 cycles; MI-12289 for 105/250 volts a-c, 25 to 60 cycles.



*Frequency response of MI-12298 Amplifier*

### Specifications

- Inputs:**
- Three Low Impedance Microphones \_\_\_\_\_ 250 ohms
  - Phonographs \_\_\_\_\_ 500,000 ohms
- Input Levels:** Tone control in zero position, 117 volt line, low power tap:
- Low Impedance Microphone Inputs**
- (Maximum Allowable) \_\_\_\_\_ 0.0215 v. rms
  - Minimum for Rated Output \_\_\_\_\_ 0.000159 v. rms
  - Phonograph #1 (Maximum) \_\_\_\_\_ 0.93 v. rms
  - (Minimum) \_\_\_\_\_ 0.0215 v. rms
  - Phonograph #2 (Maximum) \_\_\_\_\_ 9.0 v. rms
  - (Minimum) \_\_\_\_\_ 0.215 v. rms
- Output:**
- Load Impedances \_\_\_\_\_ 4, 8, 15, 60, 250 ohms
  - Power Output: (7% total harmonic distortion with 117 volt line) \_\_\_\_\_
  - "High-low" power switch in "high" position \_\_\_\_\_ 30 watts
  - "High-low" power switch in "low" position \_\_\_\_\_ 25 watts
- Gain:** At 1000 cycles, tone control in zero position, 117 volt line, "High-low" power switch in "low" position.
- Low Impedance Microphone Inputs: \_\_\_\_\_ 114 db
  - Phonograph #1 \_\_\_\_\_ 77 db
  - Phonograph #2 \_\_\_\_\_ 49 db
- Inverse Feedback** \_\_\_\_\_ -11 db at 1000 cycles
- Frequency Response:**
- Low Impedance Microphone Inputs \_\_\_\_\_  $\pm 1$  db 100 to 6500 cycles
  - Phonograph #1 and #2 \_\_\_\_\_  $\pm 1.5$  db 100 to 6500 cycles
- Noise Level** \_\_\_\_\_ -4 dbm (0.001 W. Ref.)

### Power Source:

MI-12298, MI-12296 \_\_\_\_\_ 105/125 volts, a-c, 50 to 60 cycles

MI-12290, MI-12289 \_\_\_\_\_ 105/250 volts, a-c, 25 to 60 cycles

Power Consumption \_\_\_\_\_ 145 watts (zero signal)

### Tube Complement:

4—RCA-6J7 \_\_\_\_\_ 4—RCA-6V6GT/G

1—RCA-6SN7GT \_\_\_\_\_ 1—RCA-5U4G

Dimensions \_\_\_\_\_ 19½" long, 10¾" deep, 8" high

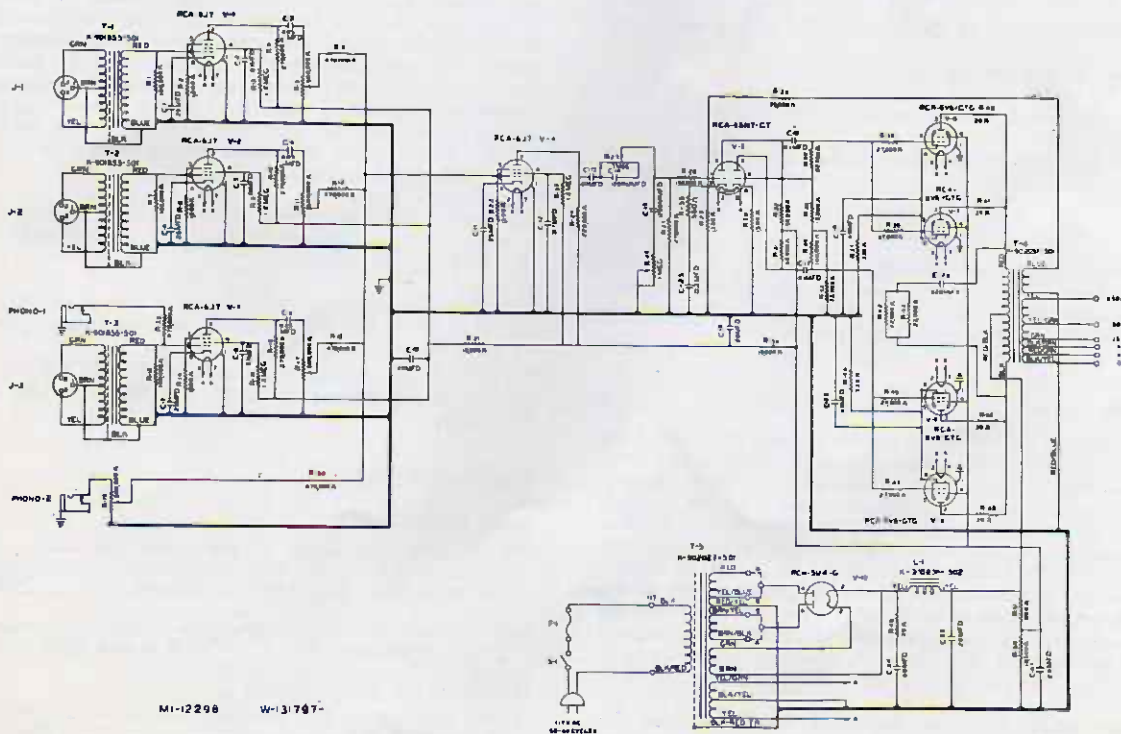
Finish \_\_\_\_\_ Satin chrome and black

### ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The amplifier shall be an a-c operated voltage and power amplifier on a single chassis. The voltage amplifier section shall have three balanced 250 ohm high gain inputs; one high impedance (500,000 ohms), high gain input; and one high impedance (500,000 ohms), moderate gain input. Each of the three low impedance microphone inputs shall be transformer coupled to the grid of an RCA 6J7 tube. The high impedance phonograph No. 1 or microphone input shall feed into the grid of an RCA 6J7 tube through a resistor on the secondary side of the low impedance microphone transformer.

The amplifier shall have an output of 30 watts at 7% total harmonic distortion with 117 volt line and plate taps in high power position, and 25 watts at 7% total harmonic distortion with 117 volt line, plate taps in low power position.

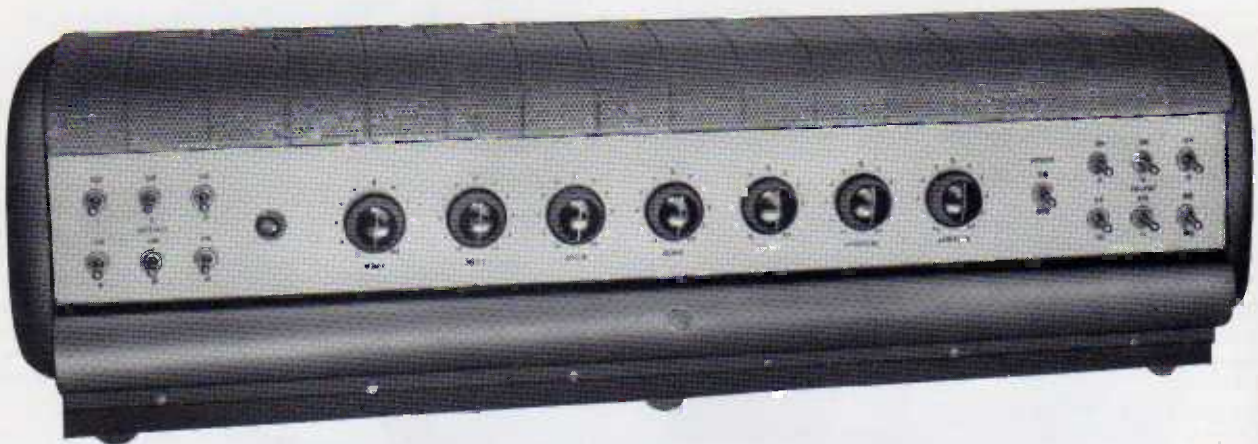
An individual gain control shall be provided between first stage output and second stage input for each microphone channel. An individual gain control for phonograph #2 shall be provided between input jack and second stage. Interaction between volume controls shall be less than 2 db. A tone control shall be provided which in the center position does not change the normal frequency response of the amplifier, in the left end position gives the maximum lows, and in the right end position gives the maximum highs. The amplifier shall operate from a 105/125 volts, 50 to 60 cycles source. The amplifier shall weigh 27 lbs. and have overall dimensions of 19½" long, 10¾" deep and 8" high.



MI-12298 W-131797-

*Schematic diagram of MI-12298 Amplifier*

## 50-Watt Public Address Amplifier MI-12294, MI-12293\*



### Features

- Streamlined design.
- Good frequency response.
- Inverse feedback—low distortion.
- Locking type microphone receptacles.
- Five inputs.
- Individual gain control for each input.
- High or low frequency tone control.
- Front panel switching to twelve individual outputs.
- “High-Low” power switch.
- Coverplate interlock switch removes plate voltage.
- Plate and filament transformers individually fused.

### Uses

The MI-12294 is a completely self-contained, 50 watt public address amplifier. It is ideal for use in voice and music distribution systems in schools, industrial plants, auditoriums, outdoor stadiums and other similar applications.

### Description

The MI-12294 is an a-c operated, public address amplifier with an output of 50 watts. This amplifier is housed in the new, RCA streamlined cabinet. The turret-like top piece is perforated in order to permit a free circulation of air through the interior of the cabinet. In order to provide the greatest operating convenience the front panel is slightly inclined, and the controls are fitted with large, easily manipulated knobs. The bell-like end pieces have cleverly designed recesses at the lower edges, which serve as hand grips when moving the unit about. Thus, the feature of convenient movability is preserved without the necessity of objectionable, protruding handles, and without spoiling the smooth streamlined appearance.

This amplifier provides for the mixing of five input channels: three microphones, one phonograph, and an additional microphone or phonograph, as desired. There is a separate pre-

amplifier for each of four of the inputs. The fifth input for a phonograph must necessarily be of a higher level. There is a separate gain control for each input. In four cases it is inserted across the output of each of the pre-amplifier stages. In the case of the fifth input, which has no pre-amplifier, the gain control is located directly across the input jack. Interaction between gain controls is less than 2 db. The signal, after passing through the input circuits, is fed through a voltage amplifier, a phase inverter, and a push-pull, parallel power amplifier using RCA-807 tubes. Front panel switching is provided for individual control of as many as twelve outputs. Two separate tone controls are provided. One tone control governs the “High” frequencies; the other tone control governs the “Low” frequencies. With this method of tone control, almost any desired frequency response can be obtained as shown in the set of response curves. It is thus possible to adjust the amplifier for the maximum clarity under a wide variety of acoustical conditions or noise backgrounds. The amplifier is provided with a “high-low” power switch which changes the value of the plate voltage on all tubes. In the “high” position the maximum power output is 55 watts. In the “low” position, it is 50 watts.

The power cord, input connectors, output terminal board, and a cartridge-type, replaceable fuse, are conveniently located at the rear of the cabinet.

The MI-12294 operates from a power source of 105/125 volts, a-c, 50 to 60 cycles. The MI-12292 operates from a power source of 105/250 volts, a-c, 25 to 60 cycles.

\* For high impedance input order MI-12293 for 105/125 volts a-c, 50 to 60 cycles; MI-12291 for 105/250 volts a-c, 25 to 60 cycles.

### Specifications

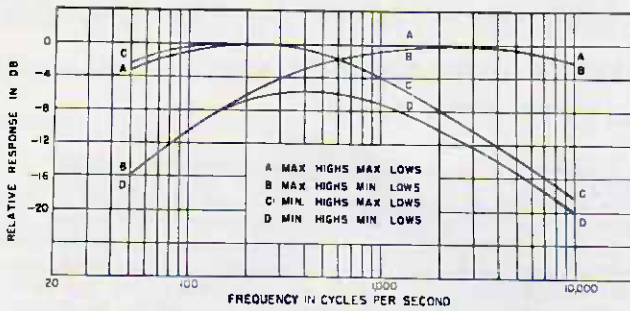
#### Input Impedance:

Four Low Impedance Microphones	_____	250 ohms
Phono 1: High gain, high impedance	_____	600,000 ohms
Phono 2: Low gain, high impedance	_____	500,000 ohms

Input Levels at 1000 cycles, tone controls in maximum response position, 125 v. on high power tap:

#### Minimum for Rated Output

Low Impedance Microphone	_____	.00027 volts rms
Phonograph #1	_____	.006 volts rms
Phonograph #2	_____	.1 volts rms



Frequency response of MI-12294/MI-12292

**Maximum**

Low Impedance Microphone Inputs \_\_\_\_\_ .05 volts rms  
 Phonograph #1 \_\_\_\_\_ .8 volts rms  
 Phonograph #2 \_\_\_\_\_ 10 volts rms  
 Output Load Impedance \_\_\_\_\_ 4, 8, 15, 60, 250 ohms  
 Power Output \_\_\_\_\_ 55 watts at 5% total harmonic distortion  
 with 117 volts on high power tap.

**Maximum Output at 1000 Cycles:**

117 volt line on high power tap \_\_\_\_\_ 82 watts  
 125 volt line on high power tap \_\_\_\_\_ 98 watts

**Gain: at 1000 cycles, tone control in maximum response position, 117 volts in high power tap (RMA):**

Low Impedance Microphone Input \_\_\_\_\_ 115 ±2 db  
 Phonograph #1 (bridging gain) \_\_\_\_\_ 106.5 ±2 db  
 Phonograph #2 (bridging gain) \_\_\_\_\_ 83 ±2 db

**Feedback \_\_\_\_\_ -11 ±1 db at 1000 cycles**

**Frequency Response: Referred to 1000 cycles**

250 Ohm Source to Low Impedance Microphone inputs  
 ±3 db 50 to 10,000 cycles  
 Bridging Input to Phonograph #1  
 ±3 db 50 to 10,000 cycles  
 Bridging Input to Phonograph #2  
 ±0.5 db 50 to 10,000 cycles

**Distortion: RMS distortion VS. power output**

100 Cycles 50 Watts Output \_\_\_\_\_ 2.3%  
 1000 Cycles 50 Watts Output \_\_\_\_\_ 1.2%  
 5000 Cycles 50 Watts Output \_\_\_\_\_ 1.4%

Noise Levels: Tone controls maximum; 117 volts on high power tap: 1 MW reference:

Low Impedance Microphone \_\_\_\_\_ +5 dbm  
 Phonograph #1 \_\_\_\_\_ +8 dbm  
 Phonograph #2 \_\_\_\_\_ -7 dbm

**Power Supply: 105-125 Volts, 50 to 60 Cycles**

Zero Output \_\_\_\_\_ 117 v. line, 244 watts    125 v. line, 282 watts  
 Rated Output \_\_\_\_\_ 262 watts                      300 watts

Weight (including tubes) \_\_\_\_\_ 58 lbs.

Dimensions \_\_\_\_\_ 33" long, 11" deep, 9½" high

Finish \_\_\_\_\_ Black and silver

Tubes \_\_\_\_\_ 5 RCA-6J7, 2 RCA-6J5, 4 RCA-807, 2 RCA-5U4G

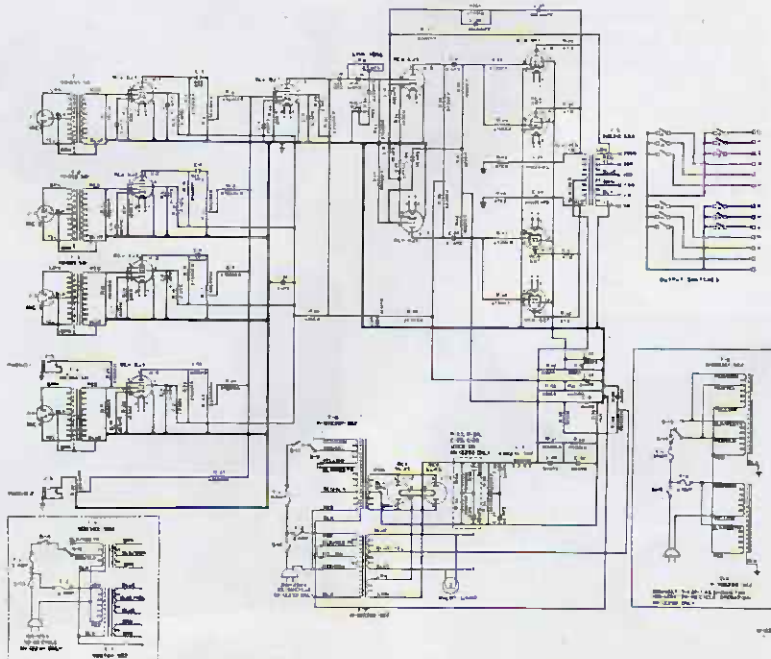
**Stock Identification:**

105/125 volts, 50/60 cycles \_\_\_\_\_ MI-12294, MI-12293  
 105/125/210/250 volts, 25/60 cycles \_\_\_\_\_ MI-12292, MI-12291

**Architects and Engineers Specifications**

The amplifier shall have a frequency response flat within ±3 db from 50 to 10,000 cycles and a power output of 50 watts with 5% distortion. Six inputs shall be provided, four low impedance inputs of 250 ohms each, and two for phonograph, one high gain high impedance and one high impedance moderate gain. Output impedances shall be 4, 8, 15, 60 and 250 ohms. Amplifier shall use metal tubes in voltage amplifiers and 807 type tubes in power amplifier stage. Amplifier shall have "High-Low" power switch to conserve life of power tubes. Amplifier shall be self contained not requiring any external power unit. Minimum input voltage for rated output shall be for microphone .00027 volts, phonograph #1—.006 volts, phonograph #2—.1 volt.

Five high level signal input circuits shall be provided, also one moderate level phonograph input. Twelve switches shall be provided in the front panel with wire circuits to a terminal board on rear of the amplifier so that twelve separate speakers or twelve combinations of speakers can be individually switched in or out of the amplifier output. Individual gain controls shall be provided for each microphone and for phonograph #2. Individual high and low tone controls shall be provided.



Schematic diagram of the MI-12294/MI-12292 Amplifier

# 6 Watt Amplifier

Low Impedance-MI-12238 (LESS COVER), MI-12239 (WITH COVER)

High Impedance-MI-12236(LESS COVER), MI-12237 (WITH COVER)

## Features

- High gain—can be used with any RCA low impedance microphone.
- Both high and low impedance phonograph inputs.
- Output tube 6L6.
- Excellent frequency response.
- Provision for mixing microphone and phonograph input.
- Inverse feedback circuit—gives excellent output regulation and low distortion. Power output remains practically constant when varying the load. On 4 ohm tap from 4 to 7.5 ohms; on 7½ ohm tap from 7½ to 15 ohms; on 15 ohm tap from 15 to 30 ohms.
- Available with or without cover.
- Microphone volume control, master control, and tone control.
- Accessible fuse.
- Approved by Underwriters' Laboratories, Inc.—File E-7834.

## Uses

This amplifier is for use as a driver amplifier or as a small Public Address amplifier. A low impedance (250 ohm, long line) microphone can be used with this amplifier or a low or high impedance pickup turntable can be used. This unit can be used for intercommunication installations.

## Description

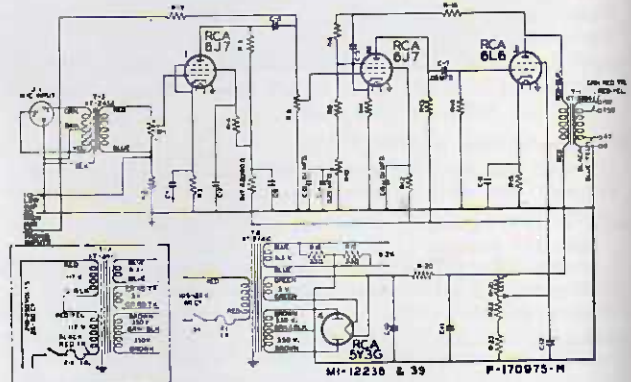
The RCA 6 watt amplifier has been built without a cover for installation on a shelf or in a cabinet. The unit is compact. The finish is a gray crackle. It has a beam-powered RCA-6L6 type tube in the output stage. The input is a transformer (MI-12301) working between the input receptacle and the grid of the input tube, making a 250 ohm impedance input. No voltage is supplied for use of a carbon microphone or for a loudspeaker field excitation. Should this unit be desired with a cover, it should be ordered as MI-12239.

## Specifications

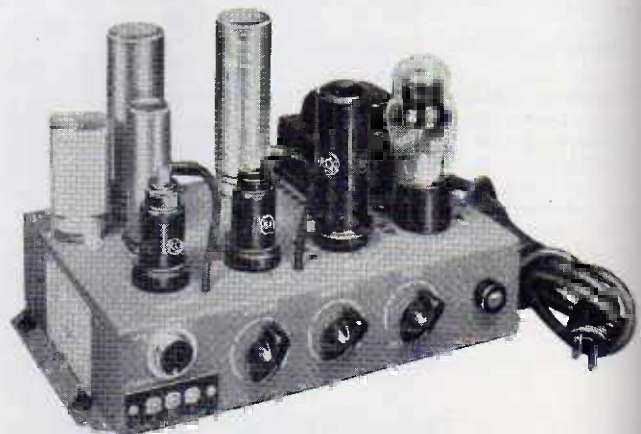
Frequency Response	0, -3 db, 40 to 10,000 cycles
Inputs	(1) Low Impedance Microphone (2) High Impedance Phonograph (3) Low Impedance Phonograph
Minimum Input Voltage	
Microphone	.0003 volts
Phonograph	
High Impedance	2.0 volts
Low Impedance	.0045 volts
Maximum Input Voltage	
Microphone	.15 volts
Phonograph	
High Impedance	20.0 volts
Low Impedance	0.135 volts
Gain—Low Impedance Microphone	250 ohm source to 15 ohm load 116 db
Low Impedance Phonograph	85 db
High Impedance Phonograph Input	
from 250 ohm source to 15 ohm load	32 db
from 1,000,000 ohm source	68 db
Output Hum Level	.00006 watts
Power Output—6 watts	7½% distortion
117 volts 60 cycle 1000 cycle input	
Maximum Output	12 watts
Output Impedances	4-7½-15 ohms
Feedback	14 db
Tubes	2 RCA-6J7, 1 RCA-6L6, 1 RCA-5Y3G
Finish	Gray
Weight	11½ lbs. net      Shipping Weight 15 lbs.
Dimensions	Length 11½", width 7", height 7½"
A-c Cord and Plug (attached)	
Power Supply	115 volts 50/60 cycles 75 watts
Available for 25/60 cycles	220-110 volts

## ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The amplifier shall have an over-all gain of 116 db, a frequency response flat within 3 db from 40 to 10,000 cycles, and a power output tube, Type 6L6. It shall have low impedance microphone input, also high impedance and low impedance phonograph input, and shall be satisfactory for use with Dynamic or Velocity type microphones. Microphone input shall be capable of being mixed with phonograph input. It shall use a beam power tube and have an output transformer with output impedance values of 4, 7½, and 15 ohms. Screw terminals shall be provided for output connections.



Schematic Diagram





# 25 Watt Amplifier MI-12224, MI-12224-A

## High Impedance (Grid Input)

### Features

- 4 inputs—2 microphone, 2 phonograph.
- Phonograph inputs—1 high impedance, 1 low impedance.
- Both microphone inputs high impedance.
- Designed for either metal or glass tubes.
- Excellent frequency response.
- Inverse feed back circuit—gives excellent output regulation and low distortion.
- Accessible fuse.
- Voice-music switch.

### Uses

For use with two high impedance microphones or with a low impedance and high impedance phonograph or a microphone and phonograph.

### Description

This new 25 watt dual high impedance input amplifier is designed for use with either two high impedance microphones or for use with a low impedance phonograph pickup and a high impedance phonograph pickup or a combination of a phonograph pickup and a high impedance microphone. Controls are available for individually controlling the volume of the two input circuits. A voice-music switch is provided for changing the low frequency compensation providing the optimum values for both speech and music pickup. To vary the adjustment of the high frequency compensation, a continuously variable tone control is used. Mounted on the front apron is a pilot light.

An accessible three ampere fuse is mounted above the power switch. Handles are supplied on each end. Enclosing the entire top is a decorative cover. An 8 foot power cable and plug are provided.

Terminals	Impedances	Voltage
4 to 7½	0.55*	3.7
7½ to 15	1.28*	5.6
4 to 15	3.3*	9.1
0 to 4	4.0	10.0
0 to 7½	7.5	13.6
0 to 15	15.0	19.3
7½ to 60	26.0	25.5
4 to 60	34.0	29.0
0 to 60	60.0	39.0
60 to 250	65.0*	40.0
15 to 250	142.0	60.0
7½ to 250	170.0	65.0
4 to 250	192.0	69.0
0 to 250	250.0	79.0

\* Use for light loads only, such as for monitoring purposes.

### Specifications

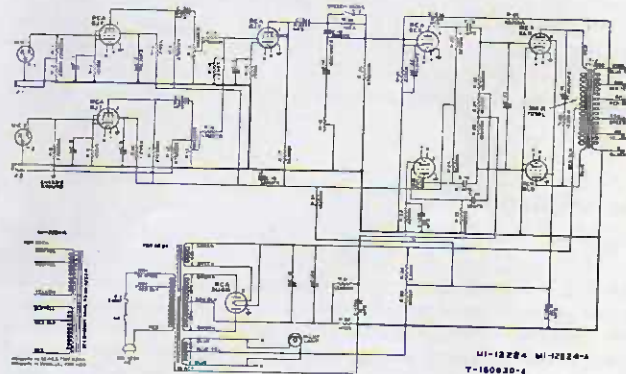
Frequency Response	4 db, 30 to 7,000 cycles
<b>Four Inputs</b>	
Microphone #1	220,000 ohms
Microphone #2	220,000 ohms
Phonograph #1	Low impedance
Phonograph #2	High impedance
<b>Minimum Input Voltage for Rated Output</b>	
Microphones	.005 volts
Phonograph #1	.012 volts
Phonograph #2	3.3 volts
<b>Maximum Input Voltage</b>	
Microphones	.062 volts
Phonograph #1	.086 volts
Phonograph #2	32.0 volts
<b>Gain—High Impedance Microphones</b>	
40,000 Ohm Source	112 db
Phonograph #1	89 db, 250 ohm source
Phonograph #2	69 db, 500,000 ohm source

Output Hum Level	8 db
Input terminated with 40,000 ohm resistor (.006 watts reference)	
Power Output	
25 watts	7% distortion
117 volts	H.P. tap
Maximum Power Output	37 watts
Output Load Impedances	4, 7½, 15, 60, 250 ohms
Feed Back	9.5 db
Tubes	3 RCA-6J7, 2 RCA-6L6, 2 RCA-6C5, 1 RCA-5U4-G
Finish	Two-tone Gray
Weight	31 lbs.
Shipping Weight	42 lbs.
Dimensions	Length 19", depth 9½", height 10"
A-c Line Cord and Plug	(attached)
Power Supply	115 volts 50/60 cycles 165 watts
Also available for 220/115 volts 25/60 cycles as MI-12224-A	
Code Word—MI-12224	SMOQX
Code Word—MI-12224A	SMORY

### ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

Amplifier shall have 25 watts normal output (maximum 37 watts). Overall gain shall be 112 db at 1,000 cycles, microphone input 89 db at low impedance phonograph input, 69 db at high impedance phonograph input. Two microphone and two phonograph inputs shall be supplied. Microphone input shall be 220,000 ohms; phonograph inputs shall be for high impedance and low impedance. The dimensions shall not exceed 19" long x 9½" deep x 10" high. The output impedances shall be 4, 7½, 15, 60 and 250 ohms. All tubes shall be metal, except rectifier. A voice-music switch shall be provided for compensation of the low frequency end and a continuously variable tone control for the high frequencies. This unit shall include dual mixing. A terminal board arrangement shall be supplied for obtaining the required output impedances.

Wiring Diagram



# Voltage Amplifier MI-4273

## Features

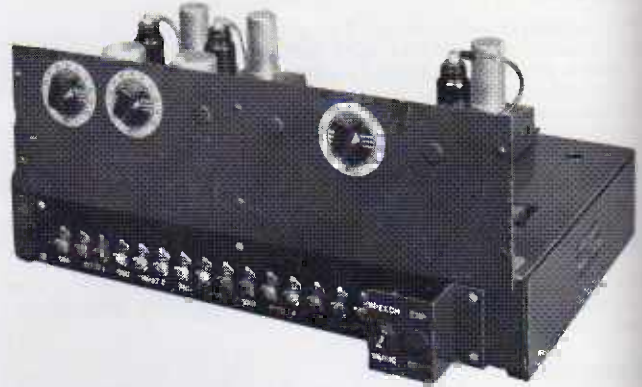
- Very versatile and flexible.
- High gain voltage amplifier.
- Two low impedance low level inputs.
- Two high impedance inputs.
- One high impedance output.
- Remote volume controls.
- No volume controls in signal circuits.
- Uses non-microphonic RCA-1612 tubes.
- Three additional units may be added.
- Good frequency response (30 to 11,000 cycles).
- Operates from an external power supply.

## Uses

The MI-4273 is useful as an audio voltage amplifier, where wide flexibility in the quantity and type of input channels is desired. With the use of this amplifier, equipment can be readily adapted for simple or elaborate installations. The two MI-4117-B Signal Mixing Units and the MI-4118-B Master Signal Mixing Unit incorporated in the MI-4273 will accommodate any two low level signal sources such as microphones or phonographs, whose outputs are mixed in a single channel output.

## Description

The type MI-4273 voltage amplifier consists of a base on which are mounted two MI-4117-B Signal Mixer units and one MI-4118-B Master Mixer unit. Controls, one for each unit, are mounted on a front panel. Space is provided on the amplifier for three additional units and their controls. Each unit is shock-proof mounted to the base with rubber cushions and connected to bus-bars that run under the chassis. Units may be added, changed, or rearranged quickly and easily. Any desired number of units up to a total of six may be mounted on the amplifier base. For example, by adding two additional input units, the amplifier will provide four mixing inputs, and one master mixer or single channel output. By adding two additional input units and one master mixer unit and modifying the wiring the amplifier will provide four Signal Mixer inputs and a dual channel output. Two Signal Mixer inputs and one Booster Amplifier MI-4263 can be added which will provide four Signal Mixer inputs, one Master Mixer and one Booster Amplifier. The MI-4273 Voltage amplifier will drive up to two MI-4288 power amplifiers. With the booster amplifier added it will drive from three to ten MI-4288 power amplifiers. The two MI-4117-B units provided on the base are connected to input terminals Nos. 1 and 2. When additional units are added, they should be connected at inputs Nos. 3 and 4. Units for this purpose, complete with controls, es-



cutchions, and knobs, are available as MI-4726 for input No. 3, and as MI-4727 for input No. 4. The input impedance of the two Signal Mixer units is 250 ohms each. Maximum allowable input signal is 0.04 volts and the minimum input signal depends upon output voltage required. The amplifier has a minimum output load impedance of 200,000 ohms, and an overall gain of 80 db. Its frequency response is from 30 to 11,000 cycles. The tube complement is three RCA-1612 tubes. An external power supply is required to supply 6.3 volts, 0.9 amperes, a-c or d-c and 275 volts, 3.3 ma., d-c. This is normally supplied by an MI-4288 power amplifier or an MI-4304 power supply. The unit is finished in a baked dark gray.

## Specifications

Input Impedance	250 ohms
Input Level (max.)	0.04 volts
Input Level (min.)	Depends upon output voltage required
Output Load Impedance (min.)	200,000 ohms
Gain (approx.)	Working into 200,000 ohms or more 80 db
Frequency Range	30 to 11,000 cycles
External Power Supply required	
	6.3 volts a-c or d-c, 0.9 amperes, 275 volts d-c, 3.3 ma.
Tube Complement	3 RCA-1612 tubes
Dimensions	Length 16", Height 8", Depth 11 1/4"
Weight	11 lbs.
Shipping Weight	14 lbs.
Finish	Baked dark gray

## ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The MI-4273 Voltage Amplifier shall consist of a base on which are mounted two MI-4117-B Signal Mixer Units and one MI-4118-B Master Mixer Unit. Controls, one for each unit, mounted on a front panel. Space provided for three additional units and their controls. Each unit shock-proof mounted to the base with rubber cushions and connected to convenient bus-bars that run under the chassis. The unit shall be capable of driving from one to three MI-4288 power amplifiers. The input impedance of each input shall be 250 ohms and the minimum output load impedance shall be 200,000 ohms. The amplifier shall have a gain of 80 db and a frequency response from 30 to 11,000 cycles. The maximum input signal level shall be 0.04 volt and the minimum shall depend upon output voltage required. It shall use three RCA-1612 tubes. An external power supply shall be required to supply 6.3 volts, 0.9 amperes, a-c or d-c and 275 volts, 3.3 ma., d-c. The finish shall be a baked dark gray. Dimensions of unit shall be 16" long, 8" high and 11 1/4" deep. It shall weigh 11 pounds.

# Voltage Amplifier MI-4297

## Features

- Voltage amplifier.
- Versatile and flexible.
- Volume compression and expansion.
- High gain.
- Two to four low level inputs.
- Low or high impedance inputs.
- High impedance output.
- Good frequency response.
- External power supply.
- Volume of each input individually controlled.
- No volume controls in signal circuits.
- Speech-music switch.

## Uses

The type MI-4297 Voltage Amplifier is versatile in its applications as an audio frequency amplifier. It will accommodate two to four low level low impedance inputs, such as microphones or phonographs, or a combination of the two. Inputs can also be any combination of four, low or high impedances. Volume compression or expansion through the MI-4737 Compressor-Expander which is a part of the MI-4297 makes this amplifier useful for microphone or phonograph operation. The compressor is desirable for microphone operation for three reasons:

1. Compression prevents overloading and blasting, thus permitting utilization of higher average power output without distortion.
2. Compression compensates for movement of the speaker at the microphone, making it unnecessary continually to "chase gain".
3. Compression assists considerably in solving microphone feedback problems.

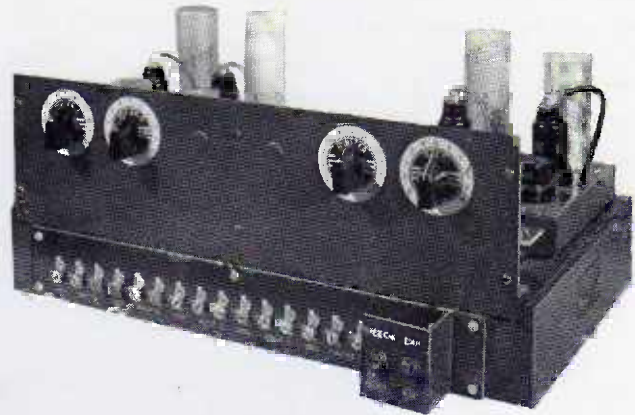
Volume expansion is desirable for phonograph reproduction, as at the time of recording, the dynamic range of sound is reduced by compression, and the original quality can be reproduced more life-like by means of correctly designed volume expansion, which restores the original difference between minimum and maximum volume.

## Description

The type MI-4297 Voltage Amplifier consists of a base on which are mounted four individual units: two MI-4117-B signal mixer units, one MI-4118 master mixer unit and one MI-4737 compressor-expander unit (compander). Controls, one for each unit, are mounted on a front panel. Space is provided on the amplifier for two additional units and their controls. Each unit is shock-proof mounted to the base with rubber cushions, and connected to convenient bus-bars that run under the chassis. Units may be added, changed, or rearranged quickly and easily. By adding two additional input units, the amplifier will provide four signal mixing inputs, one master mixer and one compressor-expander unit.

The two MI-4117-B units provided on the base are connected to input terminals Nos. 1 and 2. When additional units are added, they should be connected as inputs Nos. 3 and 4. Units for this purpose, complete with controls, escutcheons, and knobs, are available as MI-4726 for input No. 3, and as MI-4727 for input No. 4. Plate and filament supply for the amplifier is available from an MI-4288 power amplifier or an MI-4304 power supply.

The MI-4297 is a voltage amplifier only. It has two low level, 250 ohm balanced inputs, one 200,000 ohm (minimum) load impedance output and a compression-expander unit. The maximum allowable input signal is 0.04 volts and the minimum depends upon the output voltage required. It has a gain of 80 db and a frequency response from 30 to 11,000 CPS. when



used with an MI-4288 amplifier. A speech-music switch is provided to cut the low frequencies when in the speech position thus increasing the power efficiency. The tube complement consists of 4 RCA-1612 and 1 RCA-6H6 tubes. An external power source must supply, 6.3 volts, 1.5 ampere, AC or DC, 275 volts, 7.5 Ma., DC.

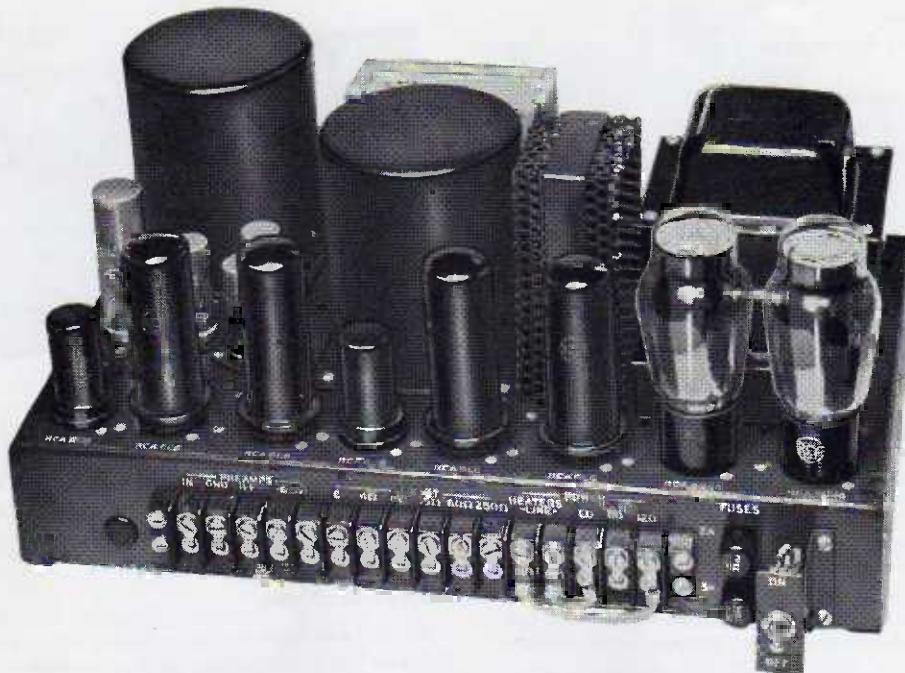
## Specifications

Input Impedance	250 ohms
Input Level (max.)	0.04 volt
Input Level (min.)	Depends upon output voltage required
Output Load Impedance	200,000 ohms min.
Gain	80 db
Frequency Range	30 to 11,000 cycles
External Power Supply Required	6.3 volts a-c or d-c, 1.5 amperes, 275 volts d-c, 7.5 ma.
Tube Complement	4 RCA-1612, 1 RCA-6H6 tubes
Dimensions	Length 16", Height 8", Depth 11 1/4"
Weight	11 lbs.
Finish	Baked dark gray

## ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The MI-4297 Voltage Amplifier shall consist of a base on which are mounted four individual units: two MI-4117-B signal mixer units, one MI-4118-B master mixer unit and one MI-4737 compressor-expander unit (compander). Controls, one for each unit, mounted on a front panel. Space provided on the amplifier for two additional units and their controls. Each unit shock-proof mounted to the base with rubber cushions, and connected to convenient bus-bars that run under the chassis. Provision shall be made for units to be added, changed or rearranged quickly and easily. The number of units provided for shall be six. The two MI-4117-B units provided on the base shall be connected to input terminals Nos. 1 and 2. No volume controls shall be in the signal circuits. External volume control shall be provided for. The amplifier shall have a speech-music switch. It shall have two low level, 250 ohm balanced inputs, one 200,000 ohm (minimum) load impedance output and a compression-expander unit. The maximum allowable input signal shall be 0.04 volt and the minimum depends upon the output voltage required. It shall have a gain of 80 db and a frequency response from 30 to 11,000 cycles per second, when used with an MI-4288 power amplifier. The tube complement shall be 4 RCA-1612 and 1 RCA-6H6 tubes. An external power supply shall supply 6.3 volts, 1.5 ampere, a-c or d-c, 275 volts, 7.5 ma., d-c. The unit shall be finished in a baked dark gray. Its dimensions shall be 16" long, 8" high, and 11 1/4" in depth. The weight shall be 11 pounds.

# Power Amplifier MI-4288-L, MI-4288-M



## Features

- Excellent frequency response.
- High power.
- Low distortion.
- Degenerative feedback.
- Provision for "plate power" control.
- Five load impedance taps available.

## Uses

This amplifier is designed for reliable operation in high power industrial and commercial sound systems.

## Description

The MI-4288 is an a-c operated bridging type power amplifier using two stages and having inverse feedback. It can be either cabinet or rack mounted, and will supply 40 watts to any one of several load impedances when bridged across a line of 5 to 12 volts. Connections are made to a screw type barrier terminal board, and separate fuses are provided for the filament

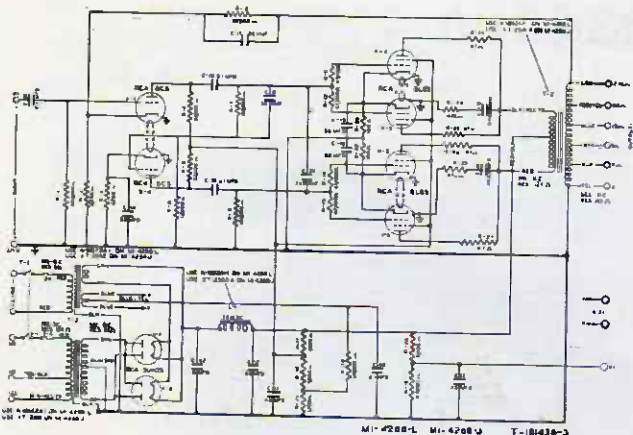
and plate supplies. The MI-4288-L operates from 105/125 volts, 50/60 cycles; the MI-4288-M operates from 105/250 volts, 25/60 cycles.

## Specifications

Input Impedance \_\_\_\_\_ 560,000 ohms unbalanced  
 Input Voltage Required \_\_\_\_\_ 5 volts rms for 40 watts output  
 Load Impedance Taps \_\_\_\_\_ 4-8-15-60-250 ohms  
 Load Impedances Available:

Terminals	One Amp.	Two Paralleled Amps.
4-15	3.3	—
0-4	4	—
0-8	8	4
0-15	15	7.5
8-60	26	13
4-60	34	17
0-60	60	30
15-250	142	71
8-250	170	85
4-250	192	96
0-250	250	125

For monitoring purposes only, and not for heavy loads, terminals 4-8 (0.5 ohms) and 8-15 (1.2 ohms) may be used. For "N" parallel-connected amplifiers, the load impedance of one amplifier (center column, above) should be divided by the factor "N". Only those terminals actually in use should be connected together.



**Power Supply:**  
 (MI-4288-L) \_\_\_\_\_ 105/125 volts, 50/60 cycles  
 (MI-4288-M) \_\_\_\_\_ 105/250 volts, 25/60 cycles

**Power Consumption** \_\_\_\_\_ 280 watts at approx. 0.90 power factor  
**Line Fuses** \_\_\_\_\_ Filament 2 amp., plate 3 amp.; both type 3AG  
**Length** \_\_\_\_\_ 16"  
**Width overall** \_\_\_\_\_ 12"  
**Height** \_\_\_\_\_ 7½"  
**Weight (net)** \_\_\_\_\_ 36 lbs.  
**Weight (shipping)** \_\_\_\_\_ 42 lbs.

**MI-12106 Volume Control Kit:** 500,000 ohms potentiometer and mounting parts.

**MI-12105 Tone Control Kit:** 1 megohm potentiometer, 0.025 mfd. capacitor, and mounting parts.

**Rated Power Output** \_\_\_\_\_ 40 watts  
**Gain at 1000 Cycles** \_\_\_\_\_ 31.5 db  
**Feedback** \_\_\_\_\_ -12 ±0.5 db at 1000 cycles  
**Distortion at Rated Output** \_\_\_\_\_ 2½%

**Noise and Hum Level**  
 -38 dbm (input terminated in 500,000 ohms)

**Note** \_\_\_\_\_ Zero dbm = 0.001 watt across 500 ohms

**Frequency Response** \_\_\_\_\_ ±1 db from 30 to 10,000 cycles

**Gain Control:** None normally provided, although the MI-12106 Volume Control Kit is available for purchase and insertion by the customer, if required.

**Tone Control:** None normally provided, although the MI-12105 Tone Control Kit is available for purchase and insertion by the customer, if required.

**Note:** When two or more amplifiers are paralleled across the same output line, individual volume and/or tone controls should not be attached to the amplifiers, as this defeats the purpose of parallel connection of amplifiers.

**Power Supplied to External Devices**  
 352 volts at 7 to 8 ma, d-c  
 6.5 volts at 1.5 amp., a-c

**Tube Complement** \_\_\_\_\_ 2 RCA-6C5 or 6J5, 4 RCA-6L6 or 6L6G, 2 RCA-5U4G

### ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The power amplifier shall be an a-c operated, two stage bridging amplifier incorporating inverse feedback, designed for reliable operation in commercial sound systems. It shall operate from a source or line of 5 to 12 rms volts and deliver 40 watts to any one of the following load impedances: 4-8-15-60-250 ohms. The frequency response shall be within ±1 db from 30 to 10,000 cycles; and the total rms harmonic distortion at 40 watts output shall be 2½%. The amplifier shall have a hum and noise level not in excess of -48 dbm with the input terminals closed through 500,000 ohms. The input impedance shall be 560,000 ohms unbalanced. The degenerative feedback shall be 12 ±0.5 db at 1000 cycles, and the gain at that frequency shall be 31.5 db. The amplifier shall be constructed without tone or volume controls, although provision shall be made for attaching these controls. The amplifier shall operate from 105/125 volts, 50/60 cycles, or 105/250 volts, 25/60 cycles, as specified by type number. With 125 volts applied to the 120 volt tap, the amplifier shall provide 352 volts at 7 to 8 milli-amperes, d-c; and 6.5 volts, 1.5 amperes a-c for external devices. Separate filament and plate transformers shall be a feature of the amplifier, with provision for "plate power" control. The primaries of these transformers shall be separately fused. All connections shall be made to a single screw-type barrier terminal board. The tube complement shall be two type 6C5 or 6J5 tubes, 4 type 6L6 or 6L6G tubes, and 2 type 5U4G tubes. The amplifier shall be 16" long, 12" wide, and 7½" high, overall, and shall weigh 36 lbs. complete with tubes.

# 70-Watt Amplifier MI-12245



## Features

- Operates from an input level of +14 dbm.\*
- Provides a plate relay for remote control.
- Good frequency response within 1 db from 40 to 10,000 cps.
- Low power consumption 190 watts (zero signal).
- Less than 5% total RMS harmonic distortion.
- Multi terminal input impedances ranging from 125 to 20,000 ohms.
- Jacks provided to measure cathode current of type 807 tubes.
- Fuses on front for filament and plate transformers.
- Top cover interlocked.

## Uses

This amplifier is excellent for cabinet rack mounting. It is ideal for public address, paging or combination of music and paging systems or any industrial application where an audio power amplifier or amplifiers are required. Its wide frequency response makes it well suited for the reproduction of music.

## Description

The MI-12245 amplifier is a class AB1, two stage, resistance-capacity coupled unit capable of furnishing 70 watts power output with an input of +14 dbm.\*

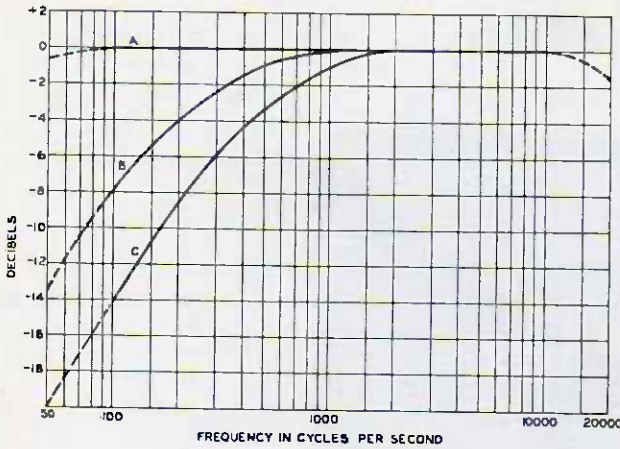
The input stage consists of two RCA-6J7 tubes in push-pull, which are resistance-capacity coupled to the final stage which has four RCA type 807 tubes in push-pull parallel.

The self contained power supply consists of a power transformer and an RCA 5R4GY high vacuum rectifier followed by an inductance-capacity filter.

This amplifier has both the chassis and the cover hinged at the front to provide free access to the tubes and components without going to the back of the cabinet rack. In addition to the "off-on" switch on the front of the chassis an interlock switch is provided to break the primary of the plate transformer when the protective cover is opened. Remote control of the plate is provided by means of a plate relay. Four jacks are provided to measure cathode current of the 807's. Two brackets welded to the side permit mounting the amplifier directly to the vertical channels of a standard cabinet rack.

The entire unit is attractively finished with deep umber gray metalustre enamel.

\*0 dbm = 1 milliwatt across 500 ohms.



*Frequency Response of a Typical MI-12245 Amplifier.*

Curve A—Response setting when used with baffle type speaker.  
Curves B and C—Response settings when used with horn type speakers.

### Specifications

Source Impedance	0 to 600 ohms	
Input Impedance	<i>Terminals</i>	<i>Impedance Ohms</i>
	1-3	20,000
	1-2	5,000
	11-2	125
	11-31	500

Input Voltage for Rated Output (20,000 ohm bridging input)  
4V rms (1000 cps) or  
+14 dbm (.001 watt reference, 600 ohm line)

Output Load Impedance 4, 7.5, 15, 60 and 250 ohms

Output Volts (at 70 watts) 16, 24, 33, 66, 132

Rated Power Output 70 W with less than 5% total rms harmonic distortion (100 to 7500 cycles)

Gain (from 600 ohm terminating source) 37.5 db

Feed-back -14 db at 1000 cps

Frequency Response Within 1 db from 40 to 10,000 cps

Noise Level -27 dbm (0.001 W. Ref.)

Power Supply 105/125 V. 50 to 60 cy

#### Power Consumption

117 Volts, 60 Cycles 190 W (zero signal)

117 Volts, 60 Cycles 210 W (full signal)

#### Tube Complement

2 RCA 6J7 or 1620

4 RCA 807

1 RCA 5R4-GY

2 RCA 0D-3/VR-150

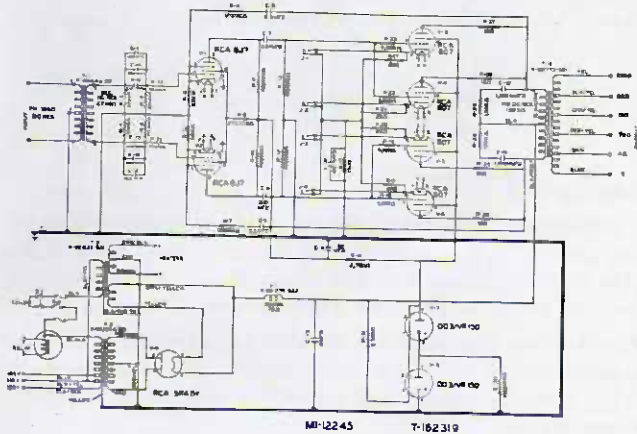
Mounting Fits standard 19" rack

### Dimensions:

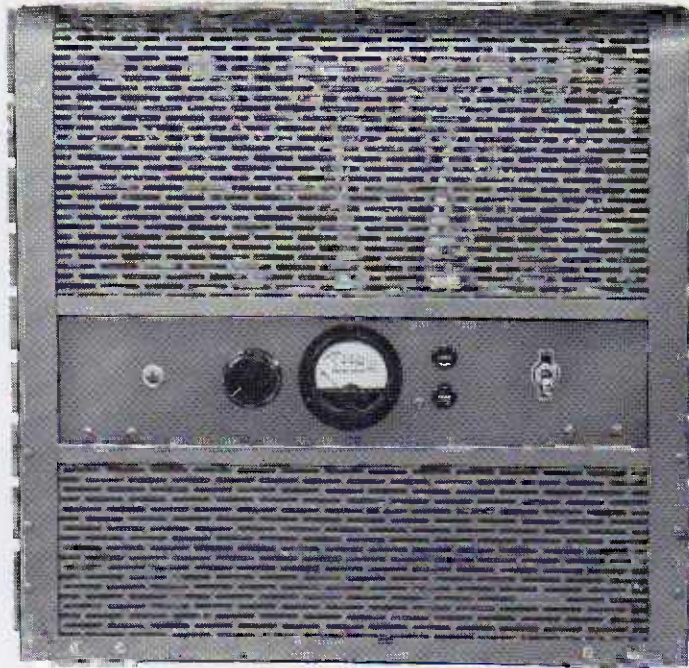
Length	19"
Depth	11½"
Height	10½"

### ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The amplifier shall be Class AB1, a-c operated, and shall have 70 watts output when the input source level is -3.5 dbm (0.001 Watt Reference). An interlock switch shall be provided which breaks the a-c line to the plate transformer when the top cover is opened. The amplifier shall have a plate relay for remote control. It shall use four type 807 tubes in parallel push-pull and have output load impedances of 4, 7.5, 15, 60 and 250 ohms. It shall have a rated power output of 70 watts with less than 5% total RMS harmonic distortion within the frequency range of 100 to 7500 cycles. The gain (from 600 ohm terminating source) shall be 37.5 db. The frequency range shall be within 1 db from 40 to 10,000 cycles with provision for low frequency cutoff at either 200 or 400 cycles (output level down 3 db from 1000 cycles reference at either 200 or 400 cycles) by changing jumper connections near the input terminal board. The feedback shall be -14 db at 1000 cycles. The noise level shall be -27 dbm. The power supply shall be 105/125 volts, 50/60 cycles and the zero-signal power consumption shall be 180 watts. It shall have a length of 19", depth 11½", height 10½" and shall be suitable for mounting to channels in a cabinet rack, no shelf being necessary.



# 250 Watt Amplifier MI-12246



## Uses

This amplifier is applicable for continuous 24 hour use in industrial applications where high power is required. Its frequency characteristics make it effective for speech reproduction where larger amounts of audio power are required to overcome machinery or rotating equipment. It is well suited for large power plants, factories, steel mills, etc.

## Description

The MI-12246 Amplifier is an a-c operated Class B bridging amplifier with degenerative feedback. It operates from a 600 ohm bridging source at +11.9 dbm and delivers 250 watts to the load at 7% or less total RMS harmonic distortion.

The amplifier incorporates a 100 ohm potentiometer in the filament circuit of one RCA 2A3 tube for hum adjustment. A delayed action switch is provided for controlling the plate power supply.

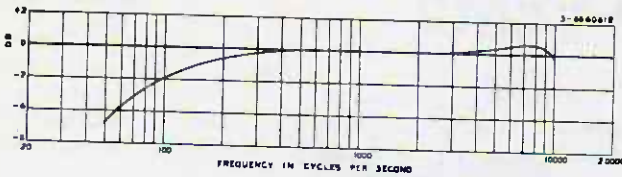
The amplifier input circuits provide for either flat frequency response or low frequency cutoff at either 200 or 400 cycles, for more effective speech reproduction. This adjustment is made by jumper connections on the terminal board.

The unit has a hinged panel on the inside which moves downward, permitting access to the interior wiring. This panel also provides mounting space for the tubes. A protective grille covers the front of the unit. A switch is provided to open the AC line to the plate transformer when the cover is opened. No shelf is necessary to mount this amplifier in a standard rack. Two metal brackets welded to the sides of the amplifier are designed to fit mounting channels in the new RCA standard racks and cabinets.

## Features

- Delivers 250 watts to load at 7% or less total RMS harmonic distortion.
- Class B bridging amplifier with degenerative feedback.
- Operates from a 600 ohm bridging source.
- +11.9 dbm input to deliver 250 watts to the load.
- A delayed action switch is provided for controlling the plate power supply.
- Input circuits provide for flat frequency response or low frequency cutoff at either 200 or 400 cycles, for more effective speech reproduction.
- Hinged panel provides easy access to the interior wiring.
- A hinged protective grille covers front of the unit.
- A switch opens the AC line to plate transformer when the cover is open.
- No shelf is necessary to mount this amplifier in a standard rack.
- Rack mounting is provided by two metal brackets welded to the sides of the amplifier to fit mounting channels in the new RCA standard racks or cabinets.
- Output impedances: 60 or 15 ohms.





**Specifications**

Input Impedance	Terminals	Impedance Ohms
	1-3	20,000
	1-2	5,000
	1-11	3,500
	1-31	6,790
	11-2	134
	11-31	539

Input for 250 Watts Output at 1000 cps \_\_\_\_\_ 2.7 volts RMS or +11.9 db (0.001 watts reference, 500 ohm line)

Output Impedance \_\_\_\_\_ 60 or 15 ohms

Rated Power Output with 866-A Rectifiers \_\_\_\_\_ 250 watts at 5%

Rated Power Output with 836 Rectifiers \_\_\_\_\_ 250 watts at 7%

Maximum Power Output (1000 cps) \_\_\_\_\_ 550 watts (122.5 volts on 115 volt tap, 866-A Rectifiers)

Frequency Response \_\_\_\_\_ ±2 db 100 to 6000 cycles

Gain \_\_\_\_\_ 43 db (1000 cycles with 20,000 ohms input bridging a 600 ohm line, set terminated in 60 ohms)

Tube Complement \_\_\_\_\_ One RCA 6SN7, Two RCA 866A or Two RCA 836, Two RCA 2A3, Four RCA 811

Power Supply \_\_\_\_\_ Self contained 105 to 125 volts, 50 to 60 cycles power transformer has primary taps for 105-115 and 125 v.

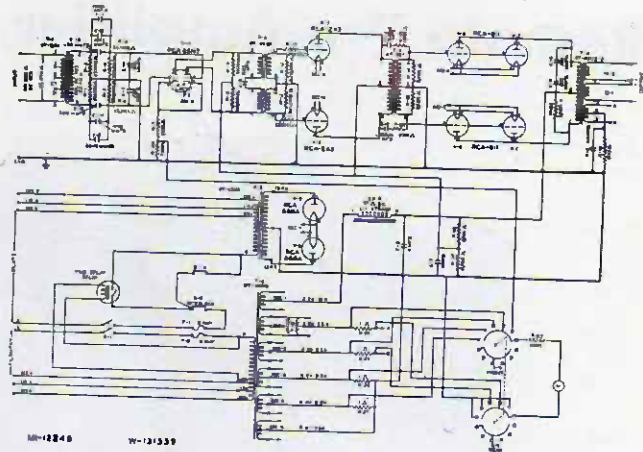
Power Consumption \_\_\_\_\_ 819 watts for 250 watt output  
535 watts for zero output

Height \_\_\_\_\_ 17½"

Width \_\_\_\_\_ 19"

Depth \_\_\_\_\_ 15"

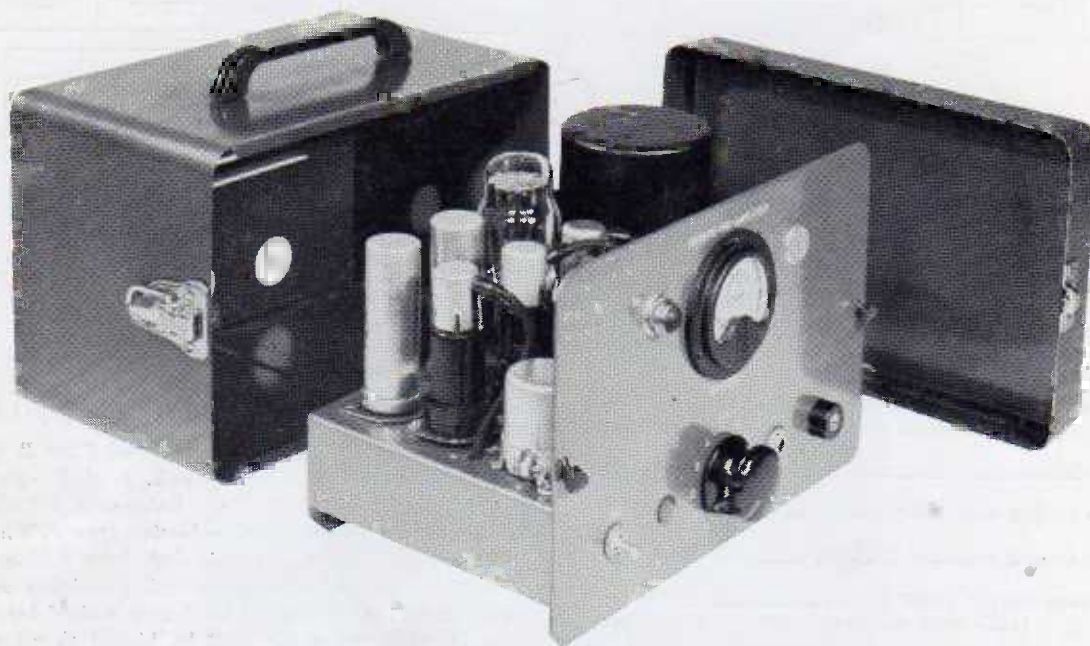
Weight \_\_\_\_\_ 168 lbs.



**ARCHITECTS' AND ENGINEERS' SPECIFICATIONS**

The amplifier shall be an a-c operated Class B bridging amplifier with degenerative feedback. It shall operate from a +11.9 dbm level (0.001 Watts Reference) 600 ohm bridging source. It shall have a delayed-action type switch for control of the plate supply. The unit shall have a hinged panel on the inside which moves downward, permitting access to the interior wiring. This panel shall have a shelf for tube mounting. A protective grille shall be hinged to move downward covering the front of the unit, and have a switch which opens the a-c line to the plate transformer when the cover is open. The unit shall be designed for rack mounting. The amplifier shall have the following characteristics: Input impedance 20,000 ohms, Output impedances 60 or 15 ohms, rated power output 250 watts at 5% distortion, maximum power output 550 watts, frequency response within 2 db from 100 to 6000 cps, gain 43 db (at 100 cps with 20,000 ohm input bridging a 600 ohm line), a power consumption of 819 watts at 250 watts output and 535 watts at zero output. It shall have provision for low frequency cutoff at either 200 or 400 cps (output level down 3 db from 1000 cycles reference at either 200 or 400 cps) by changing jumper connections near the input circuit on the terminal board. The dimensions of the unit shall be 17½" high, 19" wide, and 15" deep. The weight shall be 168 lbs.

## Remote Pre-Amplifier MI-12242



### Description

The MI-12242 pre-amplifier has been designed for portable use or for shelf mounting. The problem of remote pick-up has existed for a long time in sound work and this pre-amplifier fills the gap.

Microphones may be used at considerable distance from the equipment located in a fixed position. For instance, a large assembly of people may be in an auditorium, park, church, school, railroad or airline waiting room, mill, factory, etc., and a program or message of interest is taking place in another building or remote location. With the aid of the remote pre-amplifier the program may be fed back to any of the above places that have a sound system, by means of telephone lines or by running a line from the pre-amplifier to the fixed equipment. The remote pick-up can be fed at zero level over telephone lines into pre-amplifiers or at short distances from the power amplifiers, it will drive them directly.

Balance frequency control is a unique feature of this model. This control compensates for both high and low frequencies simultaneously. A screwdriver adjusted control in the front panel shifts the response about a pivotal frequency of 800 CPS, which permits a rising or falling characteristic with a maximum variation of 15 db between lows and highs without any apparent change of volume, thus eliminating the disadvantages of the conventional separate high and low tone controls previously used for frequency compensation. This gives a flat response curve.

Two of these pre-amplifiers can be connected in parallel to feed a 250 ohm line while four can be connected into a series parallel arrangement to feed a 500 ohm line, by so doing from one to four microphones can be used at the remote pick-up point.

The pre-amplifier is designed to fit an attractively styled compact cabinet with a handle for easy carrying. It is mounted into a metal case which provides new style connections for the input and output, a phone jack for aural monitoring, a VI meter for visual monitoring and an a-c male receptacle. A gain control for riding gain, a pilot light and a-c switch are

also mounted in the front panel. An accessible one ampere fuse is provided for protection of the equipment. A removable cover clips over the front panel to prevent damage when not in use.

The entire unit may be removed from the case by removing the two thumb screws on the front panel. This facilitates quick service or the replacing of a tube.

### Features

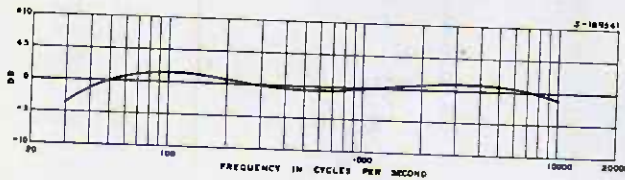
- Compact design.
- Light weight.
- Excellent frequency response  $\pm 2$  db 30 to 10,000 cycles.
- Balanced frequency response control.
- A portable shelf mounted.
- Light weight, easily handled.
- Built-in handle for easy carrying.
- Low impedance input and output.
- Good regulation between no load and full load.
- 77 db gain.
- Feedback for better frequency response.
- Low distortion and noise level.
- Two or more amplifiers can be used giving additional microphone locations.
- Low hum level.

**Specification**

Frequency Response	±2 db 30 to 10,000 cycles
Input	3-prong female plug
Source Impedance	250/500 ohms
Minimum Input Level	-67 dbm
Maximum Input Level	-35 dbm
Gain	77 db
Output Load Impedance	250/500 ohms
Rated Power Output	+18 dbm with 1.5% distortion at 1000 cycles
Feedback	-12 db
Tubes	3—RCA 6J7, 1—RCA 5Y3GT
Finish	Light umber gray hammeroid
Power Consumption	.109 amp. on 117 v. line (maximum) 12 watts
Fuse	1 ampere
Height	6¾"
Width	10"
Depth	6"
Weight	12 lbs.
Shipping Weight	16 lbs.
Stock Identification:	
105/125/210/250 volts, 50/60 cycles	MI-12242
105/125/210/250 volts, 25/60 cycles	MI-12247

**Architects and Engineers Specifications**

The pre-amplifier shall be designed for portable use or for shelf mounting. It shall be capable of operating with a microphone at a considerable distance from the pre-amplifiers. Its output shall be great enough to feed the power amplifiers



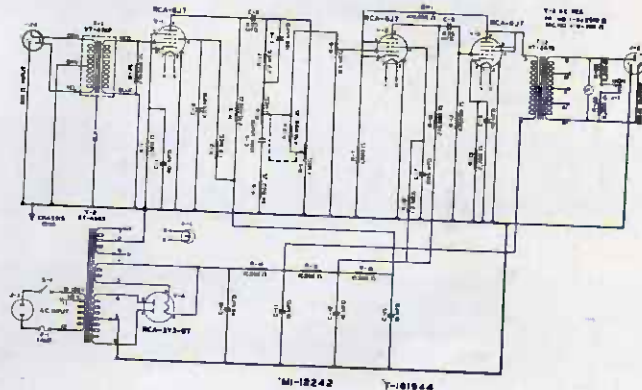
directly from a short distance. Balanced control shall be provided to control the response about a pivotal frequency of 800 CPS to permit a rising or falling characteristic with a maximum variation of 15 db between lows and highs without apparent change of volume, thus eliminating the disadvantages of the conventional separate high and low tone controls previously used for frequency compensation.

The pre-amplifier shall be compact and easy to handle. It shall be mounted in a metal case, which provides plugs for the input and output connections, one jack and an a-c male receptacle. The front panel of the equipment shall mount a db meter, a gain control and a monitor jack. A pilot light and a-c switch shall be provided in addition to an accessible one ampere fuse. A removable cover shall clip over the front panel to prevent damage when not in use. A handle shall be built into the side to allow easy carrying.

The unit shall be so constructed that it may be removed from the case by removing two thumb screws on the front of the panel.

The pre-amplifier shall be light in weight, have smart design and low hum level. It shall have a frequency response ±2 db 30 to 10,000 cycles. It shall have a source impedance of 250/500 ohms with a maximum input -35 dbm and a minimum input of -67 dbm and a gain of 77 db. The output load impedance shall be 250/500 ohms and the rated output power shall be 18 dbm with 1.5% distortion at 1000 cycles. It shall have a feedback of -12 db. The power supply shall be 105/125 v. a-c, 50/60 cycles with power consumption of 0.109 amp. on 117 v. (maximum 12 watts).

The finish shall be light umber gray hammeroid. The height shall be 6¾ inches, width 10 inches, and depth 6 inches. It shall weigh 12 pounds.



# Amplifier Data Sheet

## Voltage Amplifiers

Stock Identification	Line Power Source	Input Impedances	Gain	Output Impedances	Output Voltages	Freq. Range (Cycles/sec.)
MI-4117	a	1-250 ohms	50 db	200,000 ohms	—	30-11000
MI-4118	a	1-100,000 ohms	30 db	200,000 ohms	—	30-11000
MI-4263	a	1-100,000 ohms	22 db	50,000 ohms	—	30-11000
MI-4273	a	2-250 ohms	80 db	200,000 ohms	—	30-11000
MI-4297	a	2-250 ohms	80 db	200,000 ohms	—	30-11000
MI-12241	a	1-250 ohms	44.3 db	500 ohms	4.35	50-15000
MI-12242	b	1-(250-500 ohms)	77 db	250-500 ohms	5.48	50-15000
MI-12243	b	1-(250-500 ohms)	73.5 db	e	e	30-15000
MI-12248	c	1-(250-500 ohms)	73.5 db	e	e	30-15000

## Power Amplifiers

Stock Identification	Power Rating (In Watts)	Line Power Source	Input Impedances	Gain in db	Output Tap	Volts	Freq. Range (Cycle/sec.)
MI-4288-L	50	b	500,000	31.5	D5	—	30-10000
MI-4288-M	50	c	500,000	31.5	D5	—	30-10000
MI-12224	25	b	K1	—	D3	—	30- 7000
MI-12224-A	25	c	K1	—	D3	—	30- 7000
MI-12236	6	b	K2	—	D1	—	40-10000
MI-12236-A	6	c	K2	—	D1	—	40-10000
MI-12237		Same as MI-12236	except with cover				
MI-12237-A		Same as MI-12236-A	except with cover				
MI-12238	6	h	K2	—	D1	—	40-10000
MI-12238-A	6	c	K2	—	D1	—	40-10000
MI-12239		Same as MI-12238	except with cover				
MI-12239-A		Same as MI-12238-A	except with cover				
MI-12244	AVC Compressor	b	250	35	250	.0548	100-15000
MI-12245	70	b	0-600	34	D6	—	40-20000
MI-12234	70	c	0-600	34	D6	—	40-20000
MI-12246	250	b	See Spec.	—	D7	—	50-15000
MI-12287	15	c	K3	—	D2	—	50-15000
MI-12288	15	r	K4	—	D2	—	50-15000
MI-12295	15	h	K3	—	D2	—	50-15000
MI-12299	15	b	K4	—	D2	—	50-15000
MI-12289	30	c	K6	—	D4	—	50-15000
MI-12290	30	c	K5	—	D4	—	50-15000
MI-12296	30	b	K6	—	D4	—	50-15000
MI-12298	30	b	K5	—	D4	—	50-15000
MI-12291	50	c	K8	—	D5	—	50-15000
MI-12292	50	c	K7	—	D5	—	50-15000
MI-12293	50	b	K8	—	D5	—	50-15000
MI-12294	50	b	K7	—	D5	—	50-15000

### Code

a—Power Supplied from External Source.  
 b—105/125 v. 50-60 cycles.  
 c—105/250 v. 25-60 cycles.

e—Output Load Tap vs. Output Voltages:

Tap (in ohms)	Volts
15	6.7
125	19.3
500	38.7

d—Output Load Taps vs. Output Voltages:

Tap (in ohms)	1 6 watt	2 15 watt	3 25 watt	4 30 watt	5 50 watt	6 70 watt	7 250 watt
4	4.9	7.8	10	10.9	14.1	16.7	—
7½	6.7	10.6	13.6	15.0	19.3	22.9	—
15	9.5	15	19.3	21.2	27.4	32.4	61
60	—	30	39	42.4	55	64.8	122
250	—	61	79	86.6	112	132.3	—

K—Input Impedances vs. Gain:

Sub	Description	Gain	Sub	Description	Gain
1	Microphones Nos. 1, 2	220,000 ohms 112 db	5	Microphones Nos. 1, 2, 3	250 ohms 114 db
	Phonograph No. 1	250 ohms 89 db		Phonograph No. 1	500,000 ohms 77 db
	Phonograph No. 2	470,000 ohms 69 db		Phonograph No. 2	500,000 ohms 49 db
2	Microphone	500,000 ohms 120 db	6	Microphones Nos. 1, 2, 3	100,000 ohms 114 db
	Phonograph	2,200 ohms 85 db		Phonograph No. 1	500,000 ohms 103 db
	Phonograph	470,000 ohms 68 db		Phonograph No. 2	500,000 ohms 76 db
3	Microphones Nos. 1, 2	100,000 ohms 114 db	7	Microphones Nos. 1, 2, 3, 4	250 ohms 115 db
	Phonograph No. 1	600,000 ohms Bridge 100 db		Phonograph No. 1	600,000 ohms Bridge 106.5 db
	Phonograph No. 2	500,000 ohms Bridge 75 db		Phonograph No. 2	500,000 ohms Bridge 83 db
4	Microphones Nos. 1, 2	250 ohms 114 db	8	Microphones Nos. 1, 2, 3, 4	100,000 ohms 115.5 db
	Phonograph No. 1	600,000 ohms Bridge 100 db		Phonograph No. 1	600,000 ohms Bridge 106.5 db
	Phonograph No. 2	500,000 ohms Bridge 75 db		Phonograph No. 2	500,000 ohms Bridge 83 db

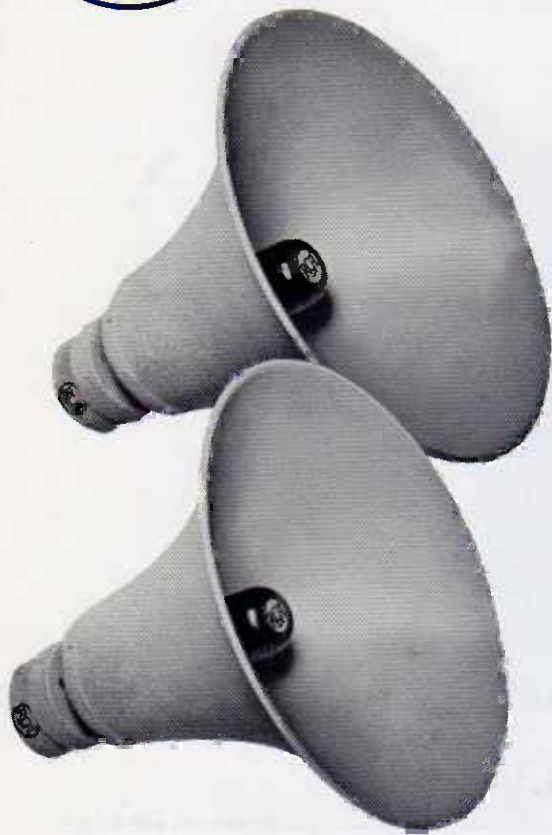


# **SPEAKERS**

# **BAFFLES**

**and**

# **HORNS**



**GENERAL PURPOSE SPEAKERS**

**SPECIAL SPEAKERS**

**SPEAKER DRIVER MECHANISMS**

**BAFFLES—HORNS**

**TWO-WAY SPEAKERS**

**ACCESSORIES**

# Speaker Mechanism MI-12433



### Features

- Alnico V magnet.
- High gap flux density.
- Excellent frequency response.
- Good sensitivity.
- Corrugated cone.
- Single piece cone construction.

### Use

This high quality 6½" cone type permanent magnet speaker mechanism will find wide use in general purpose applications throughout the commercial and industrial sound field.

### Description

The MI-12433 is a 6½" straight edge cone type permanent magnet mechanism of excellent frequency response and sensitivity. The use of Alnico V, at present the best known magnet material, results in high gap flux density, lighter weight, and a permanence of the magnetic characteristics not approached by speakers using other materials. The pole pieces are of high grade steel. The cone is constructed as a single piece, which gives characteristics greatly improved over the old type lapped cone construction. In addition, the cone is corrugated, which further smooths and betters the frequency response. The exterior metal parts are first plated, and then finished in an attractive, durable baked umber gray metalustre.

### Specifications

Impedance	6 ohms at 400 cycles
Power Handling Capacity	5 watts
Frequency Response	80 to 6200 cycles
Axial Sensitivity	93 db at 4 ft. with 1 watt input
Magnet Material	Alnico V
Magnet Weight	3.16 oz.
Gap Flux Density	8000 lines/cm <sup>2</sup>
Transformer Primary Impedances	4000, 8000, and 16,000 ohms
Diameter	6½"
Depth	3¾"
Mounting Data	8 equally spaced 13/64" x ¼" slots on 6½" circle
Net Weight	30 oz.
Shipping Weight	3½ lbs.
Finish	Plated, then baked dark gray metalustre

### ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

This mechanism shall be a cone-type permanent magnet loud-speaker utilizing Alnico V as the magnet material. The cone shall be constructed in one piece. The voice coil impedance shall be 6 ohms at 400 cycles, and the speaker shall have an axial sensitivity of 93 db at 4 ft. with 1 watt input. The frequency response shall be 80 to 6200 cycles. A universal matching transformer shall be supplied as an integral part of the assembly; this transformer shall have primary impedances of 4000, 8000 and 16,000 ohms. The mechanism shall be capable of handling 5 watts input. The overall diameter shall be 6½", the depth shall be 3¾" and 8 equally spaced 13/64" x ¼" slots on a 6½" bolt circle shall be provided for mounting the mechanism. External metal parts of this speaker shall first be plated and then finished in a durable baked umber gray metalustre.

# Speaker Mechanism MI-12429



## Features

- Alnico V permanent magnet.
- Excellent frequency response.
- High sensitivity.
- High gap flux density.
- One piece cone construction.
- Universal matching transformer.
- Dual finish.

## Use

This mechanism is suitable for all general applications of eight inch cone type speakers in commercial and industrial sound systems.

## Description

The MI-12429 is an eight inch cone type speaker with a permanent magnet field. The magnet is of Alnico V metal which is the best available material for the purpose providing as it does high flux density, permanence and stability of the magnetic field in a magnet of compact size and light weight. The cone is of single-piece construction and thus provides a higher order of performance than does the older lapped-cone construction. The speaker has excellent frequency response and high sensitivity. A matching transformer is provided to couple the 6 ohm voice coil to lines of either 4000, 8000, or 16,000 ohms. The exterior metal parts are actually doubly finished for protection; they are first plated and then finished in a durable, attractive baked umber gray metalustre.

## Specifications

Impedance	6 ohms at 400 cycles
Transformer Primary Impedances	4000, 8000, 16,000 ohms
Magnet Material	Alnico V
Magnet Weight	3.16 oz.
Frequency Range	75-6000 cycles
Axial Sensitivity	94 db at 4 ft. with 1 watt input
Power Capacity	5 watts
Gap Flux Density	8000 lines/cm <sup>2</sup>
Diameter	8 $\frac{3}{8}$ "
Depth	3 $\frac{23}{32}$ "
Mounting Data	8 equally-spaced slots on 7 $\frac{1}{8}$ " bolt circle
Net Weight	33 oz.
Shipping Weight	3 $\frac{3}{4}$ lbs.

## ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The speaker mechanism shall be of the single piece cone type with a permanent magnet field using Alnico V metal. The gap flux density shall be 8000 lines/cm<sup>2</sup>. The speaker shall have a frequency response from 75-6000 cycles, and the axial sensitivity at 4 ft. with 1 watt input shall be 94 db. The voice coil impedance shall be 6 ohms and a universal matching transformer shall be provided, with primary impedances of 4000, 8000, and 16,000 ohms. The diameter shall be 8 $\frac{3}{8}$ ", the depth shall be 3 $\frac{23}{32}$ " and 8 equally spaced slots shall be provided on a 7 $\frac{1}{8}$ " circle for mounting the mechanism. The net weight shall be 33 oz. All exterior metal parts shall first be plated and then finished in a baked umber gray metalustre.

# Speaker Mechanism MI-12444



**Features**

- Alnico magnet.
- Excellent frequency response.
- High sensitivity.
- High gap flux density.
- One-piece cone construction.
- Cadmium plated finish.

**Uses**

The MI-12444 loudspeaker will meet satisfactorily many general applications in the commercial and industrial sound field where need of a good 7½" (or 8") straight edge, cone speaker exists.

**Description**

The MI-12444 is a well constructed, permanent magnet, cone type speaker mechanism. Although it is designated as a 7½" speaker due to the major part of the circumference having a diameter of 7½", the design is such that the four slotted mounting holes are placed in elliptical ears, and the dimension across these ears is 8", therefore the mounting dimensions are the same as for an 8" speaker.

The magnet is of Alnico metal which gives high flux density, permanence and stability of the magnetic field with a magnet of small size and light weight.

The speaker has good frequency response and sensitivity, with a range of 80 to 7000 cycles.

The metal frame is finished in cadmium plate. No transformer is furnished. Note: Also available with weather-proof cone as MI-12444-A.

**Specifications**

Voice Coil Impedance	_____	4 ohms @ 400 cycles
Magnet Material	_____	Alnico metal
Magnet Weight	_____	3.2 oz.
Frequency Range	_____	80 to 7000 cycles
Axial Sensitivity (at 4000 cycles)	_____	93 db at 4 ft. with 1 watt input
Power Capacity	_____	5 watts
Diameter	_____	7½"
Depth	_____	3¼"
Mounting Data	_____	4 slots .20" x ⅜" equally spaced on 7⅞" bolt circle
Net Weight	_____	1½ lbs.
Shipping Weight	_____	2½ lbs.
Stock Identification:		
With Regular Cone	_____	MI-12444
With Weatherproofed Cone	_____	MI-12444-A

**Architects' and Engineers' Specifications**

The speaker shall be a permanent magnet, cone type mechanism less transformer. The speaker shall have a frequency response from 80 to 7000 cycles, with an axial sensitivity of 93 db at 4 feet with 1 watt input at 400 cycles.

The voice coil shall have an impedance of approximately 4 ohms at 400 cycles and power handling capacity shall be 5 watts.

The mean diameter shall be 7½", depth 3¼" and 4 slots .20" x ⅜" equally spaced on a 7⅞" bolt circle shall be provided for mounting the mechanism. Net weight shall be approximately 1½ lbs.

The speaker frame shall be cadmium plated.



# Speaker Mechanism MI-12421



## Features

- Alnico V permanent magnet.
- Single piece cone construction.
- Corrugated cone.
- Voice coil centering device.
- Smooth frequency response.
- Good power handling ability.

## Use

The MI-12421 will suit a wide range of applications in the commercial and industrial sound field, or wherever a need exists for a good, high-quality 12" cone type permanent magnet loudspeaker.

## Description

This is a straight edge cone permanent magnet type speaker mechanism of good sensitivity. The permanent magnet uses the new Alnico V metal, which is the best available material for the purpose. It permits high flux density in a smaller and lighter magnet, which contributes to the high efficiency of the MI-12421 speaker. The cone of this speaker is constructed in one piece and gives much better performance than can be obtained from units using the old lapped cone type of construction. The MI-12421 also has the corrugated cone feature, which, by introducing just enough additional compliances, smooths and improves the frequency response characteristic. To facilitate servicing, the voice coil is supported by an adjustable centering device. External metal parts of the MI-12421 speaker are cadmium plated.

## Specifications

Voice Coil Impedance	2 ohms
Transformer Primary Impedances	1000-2000-4000-8000-16,000 ohms
Frequency Response	50 to 8500 cycles, rising between 1500-5000
Power Capability	10 watts
Axial Sensitivity	92 db at 4 ft. with 1 watt input
Gap Flux Density	7500 lines/cm <sup>2</sup>
Magnet Material	Alnico V
Magnet Weight	6.79 oz.
Diameter	12 19/64"
Depth	5 3/8"
Mounting Data	8 equally spaced holes on 1 1/8" circle
Net Weight	4 1/2 lbs.
Shipping Weight	6 1/4 lbs.

## ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The loudspeaker shall be a straight edge cone type permanent magnet mechanism. It shall have an impedance of 2 ohms at 400 cycles; and a universal matching transformer having primary impedances of 1000, 2000, 4000, 8000, and 16,000 ohms shall be supplied as an integral part of the assembly. It shall be capable of 10 watts. The frequency response shall be 50 to 8500 cycles, peaked from 1500 to 5000 cycles. The axial sensitivity shall be 92 db at 4 ft. with 1 watt input. The overall diameter shall be 12 19/64", and the depth shall be 5 3/8" with 8 equally spaced holes on an 1 1/8" bolt circle for mounting the unit. The net weight shall be 4 1/2 lbs.

# Speaker Mechanism MI-12422



**Features**

- Alnico V permanent magnet.
- Excellent frequency response.
- Medium sensitivity for wide range of applications.
- Moderate power capability.
- Adjustable voice coil centering device.

**Use**

This 12 inch permanent magnet cone type speaker has been designed for general purposes and applications in the commercial and industrial sound field.

**Description**

The MI-12422 is a straight edge cone type mechanism utilizing a permanent magnet of Alnico V and having medium sensitivity. The use of Alnico V results in a strong magnetic flux density and a permanence of characteristics that have as yet not been approached by any other magnetic material. The cone of this mechanism is constructed in a single piece which makes it superior to older type speakers using lapped cone construction. To facilitate servicing, the voice coil assembly is supported by an adjustable centering device. The external metal parts of this speaker are cadmium plated, and finished with dark umber gray metalustre enamel.

**Specifications**

Impedance	15 ohms at 400 cycles
Frequency Range	50 to 6500 cycles
Axial Sensitivity	92 db at 4 ft. with 1 watt input
Power Capability	10 watts
Diameter	12 19/64"
Depth	5 3/8"
Mounting Data	8 equally-spaced slots on 1 1/8" bolt circle
Magnet Material	Alnico V
Magnet Weight	6.79 oz.
Finish	Cadmium plate
Net Weight	3 3/8 lbs.
Shipping Weight	5 lbs.

**ARCHITECTS' AND ENGINEERS' SPECIFICATIONS**

This loudspeaker mechanism shall be of the straight edge cone type with a permanent magnet field supplied by a magnet which shall be of Alnico V metal and shall weigh 6.79 oz. The cone shall be constructed of a single piece for improved characteristics. The loudspeaker shall have a frequency response from 50 to 6500 cycles, and the axial sensitivity shall be 92 db at 4 feet with 1 watt input. The voice coil impedance shall be 15 ohms at 400 cycles, and the speaker shall be capable of handling 10 watts. The diameter of the speaker shall be 12 19/64", the depth shall be 5 3/8", and eight equally-spaced slots shall be provided around an 1 1/8" bolt circle for mounting the unit. The net weight shall be 3 3/8 lbs. External metal parts shall be cadmium plated, and finished with dark umber gray metalustre enamel.

# Speaker Mechanism MI-12435



## Features

- Folded edge cone.
- Alnico V magnet.
- Excellent frequency response.
- Good sensitivity.
- Compact, light construction.

## Uses

The MI-12435 Speaker Mechanism is designed for high quality reproduction of voice or music in offices, clubs, school rooms, and other areas where low or moderate noise levels prevail. It is admirably suited for multiple use in groups of two to four on the same flat baffle or in the same enclosure. A totally enclosed box baffle lined with hair felt or similar absorbent material, and having a volume of 900 to 1100 cubic inches per mechanism used, is suggested for the MI-12435.

## Description

The MI-12435 is a 7" folded-edge cone, permanent magnet type speaker mechanism. The magnet is the new Alnico V metal, the best commercially available material, which permits high flux density and permanence of the field characteristics in relatively small bulk and light weight. The folded-edge cone, by introducing additional carefully controlled cone compliance, allows a lower resonant frequency than can ordinarily be obtained with conventional design. The frequency response of the MI-12435 is thus comparable to that of much larger mechanisms. The speaker is furnished with a universal matching transformer with nominal primary impedances of 16000; 8000; 4000; 1369 and 686 ohms.

The speaker has excellent frequency response, handles a good amount of power, and is quite sensitive.

The exterior metal parts are doubly protected against rust or corrosion by first being plated and then finished with a durable baked light umber gray metalustre finish.

## Specifications

Voice Coil Impedances	6 ohms
Primary Impedances	686, 1369, 4000, 8000, or 16000 ohms
Frequency Response	70-7000 cycles
Axial Sensitivity	92 db at 4 ft. with 1 watt input
Power Handling Capacity	5 watts
Magnet Material	Alnico V
Magnet Weight	3.16 oz.
Overall Diameter	7"
Overall Depth	3½"
Mounting Data	4 equally-spaced 0.187" holes on 6½" circle
Net Weight	33 oz.
Shipping Weight	4½ lbs.

## Architects' and Engineers' Specifications

The 7" Speaker Mechanism shall be a folded-edge cone, permanent magnet type loudspeaker using a 3.16 oz. Alnico V magnet to supply the field. It shall respond from 70 to 7000 cycles and shall have an axial sensitivity of 92 db at 4 ft. with 1 watt input. The mechanism shall have a voice coil impedance of 6 ohms at 400 cycles and shall be equipped with a transformer giving primary impedances of 686, 1369, 4000, 8000, or 16000 ohms. The speaker shall handle 5 watts. The overall diameter shall be 7", the depth 3½", and 4 equally-spaced 0.187 holes shall be provided on a 6½" circle for mounting the mechanism. External metal parts of the speaker shall be doubly protected against rust and corrosion by first being plated and then finished in a durable baked light umber gray metalustre.

# Speaker Mechanism MI-6333-C



**Features**

- Wide frequency range.
- High power capacity.
- Alnico magnet.
- High efficiency.
- Moisture-resistant cone and voice coil.
- Corrugated cone.
- One-piece cone construction.

**Use**

The MI-6333-C loudspeaker was designed primarily for 16mm portable sound motion picture equipment, although it is applicable anywhere there is a need for a high quality 10-inch permanent magnet cone-type mechanism which will handle large amounts of power.

**Description**

The MI-6333-C speaker is a 10-inch permanent magnet cone type mechanism. The cone is of one piece and is corrugated, which results in smoother characteristics and improved performance. The permanent magnet is of Alnico metal ensuring permanence and stability of the field. To make the speaker more rugged, the cone is made moisture-resistant and a baking-type resin cement is used on the voice coil. The diaphragm is equipped with an adjustable centering device. This speaker has an unusually good frequency response characteristic and capably handles large amounts of power. The gap flux density is very high, contributing to the speaker's high efficiency and sensitivity.

**Specifications**

Impedance	6 ohms at 400 cycles
Frequency Range	60 to 7000 cycles
Power Capacity	25 watts
Axial Sensitivity	95 db at 4 ft. with 1 watt input
Gap Flux Density	9500 lines/cm <sup>2</sup>
Magnet	Alnico II
Magnet Weight	2½ lbs.
Diameter	10¼"
Depth	6 11/64"
Mounting Data	4 equally spaced 9/32" x 7/32" holes on 9½" circle
Net Weight	6¾ lbs.
Shipping Weight	9 lbs.

**ARCHITECTS' AND ENGINEERS' SPECIFICATIONS**

The speaker shall be a 10" permanent magnet straight edge cone type mechanism, whose cone shall be in one piece and shall be corrugated. There shall be an adjustable centering device on the voice coil assembly. The cone shall be treated for moisture resistance and the voice coil shall be covered with a baking type resin cement. The permanent magnet shall be of Alnico metal, and the gap flux density shall be 9500 lines/cm<sup>2</sup>. The frequency response of the speaker shall be 60 to 7000 cycles; and the axial sensitivity at 4 ft. with 1 watt input shall be 95 db. The voice coil impedance shall be 6 ohms at 400 cycles, and the speaker shall handle 25 watts. The exterior metal parts shall be finished in baked amber gray and cadmium plate. The diameter shall be 10¼", the depth shall be 6 11/64", and the unit shall be mounted by means of four equally-spaced 9/32" x 7/32" holes on a 9½" bolt circle. The net weight shall be 6¾ lbs.

# Cellular Horns MI-6437, 6438, 6439

## Features

- Durable metal construction (acoustically treated).
- Cast aluminum throat.
- Light in weight.
- Adjustable mounting bracket.
- Provisions for suspension mounting.

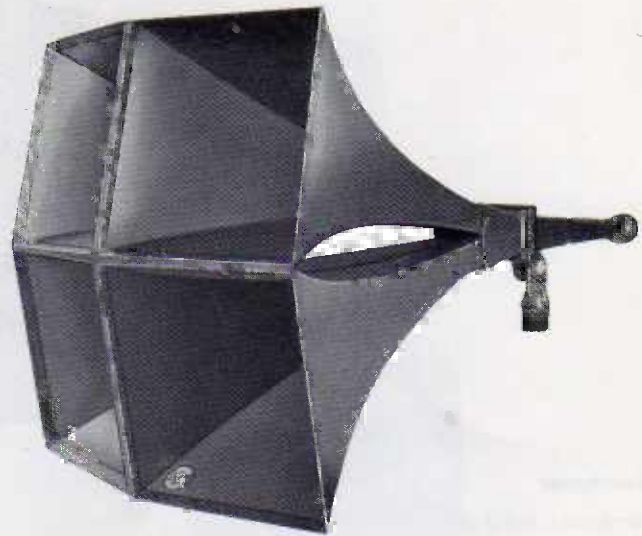
## Uses

The RCA 4-cell, 8-cell and 12-cell straight axis horns are designed for indoor public address and sound installation work where a wide angle sound dispersion of uniform volume is desired. These horns are excellent for general indoor sound installations requiring a cellular horn at low cost.

## Description

These horns consist of four, eight or twelve straight axis horn cells made of sheet metal covered with acoustic material to eliminate any objectionable metallic ring. The cells are bonded together and terminate in a single cast aluminum throat. The initial inside diameter of the throat is  $\frac{1}{4}$  of an inch with a  $1\frac{1}{8}$ —16 thread to take standard RCA horn driver mechanisms.

The horn includes an adjustable mounting bracket which terminates in a male  $1\frac{1}{4}$ " standard pipe thread. Each of the outside cells has a brass eyelet or fixture eye bolt near the front edge so that the horn can be suspended by cables or chains. When suspension mounting is used the rear section is suspended by the mounting bracket from which the pipe thread section has been removed. Heavy metal reinforcing strips are used on the 8-cell and 12-cell horns to assure rigidity when the horn is suspension mounted. The fixture eye bolts are mounted in this reinforcing strip. The entire assembly is finished in dark umber gray lacquer.



## Specifications

Distribution Angle..... See table  
 Frequency Cut Off Low End..... 175 cycles/sec.  
 Horn Material..... Acoustically treated metal  
 Throat Material..... Cast aluminum  
 Thread (mechanism).....  $1\frac{1}{8}$ "—16  
 Thread (mounting bracket).....  $1\frac{1}{4}$ "—11½ pipe thread  
 Dimensions..... See table  
 Finish..... Dark umber gray  
 Weights..... See table

## Stock Identification:

4-cell Horn..... MI-6437  
 8-cell Horn..... MI-6438  
 12-cell Horn..... MI-6439

MI No.	No. of Cells	Vert. Dist.	Hor. Dist.	Height	Width	Length	Weight Unpacked	Weight Packed
6437	4 (2"x2")	45°	45°	20½"	20½"	40½"	16½ lbs.	21 lbs.
6438	8 (2"x4")	45°	90°	19"	34"	42"	27½ lbs.	35 lbs.
6439	12 (2"x6")	45°	135°	16½"	44"	44"	40 lbs.	48 lbs.

Dimensions and Weight include throat—no speaker mechanism.

## Permanent Field Dynamic Diaphragm Speaker Mechanisms MI-6304-B, 6305-B, 6306-B, 6309-B



### Features

- Alnico metal permanent field.
- Completely dustproof.
- Simple, rugged construction.
- Permanent field excitation—requires no power supply.
- Easily installed—only two connections required.
- Greater sensitivity.
- Long life—retains magnetism indefinitely.
- New head assembly design.
- Increase power handling capacity.
- Rugged bakelite diaphragm.
- New wire cloth voice coil leads.
- Voice coil wound with aluminum wire.

### Uses

These permanent field, diaphragm type speaker mechanisms are designed for use with all RCA re-entrant horns, paging horns and straight axis trumpets.

### Description

The entire line of RCA diaphragm type speaker mechanisms has been re-designed to give greater power handling capacity, better response, and reduce voice coil lead breakage to a minimum.

The new self centering head assembly is constructed to allow greater travel of the diaphragm thereby increasing the power handling capacity. A more rugged voice coil lead of wire cloth minimizes lead breakage without sacrifice of response. The voice coil is wound with aluminum wire; this gives lighter weight and great sensitivity.

These permanent field dynamic diaphragm type speaker mechanisms are of simple, rugged construction and are completely dustproofed. The self centering head is fastened to the permanent magnet case by four screws, thus facilitating replacement of the head should servicing be necessary.

All of the units are equipped with standard threads to fit the RCA horns and trumpets. In the case of MI-6309-B this is accomplished by means of a cast-brass adaptor throat which is shipped as part of MI-6309-B.

### Specifications

#### SPECIFICATIONS, MODEL MI-6304-B

Operating Capacity	_____	25 watts
Peak Capacity	_____	50 watts
Impedance	_____	15 ohms
Flux Density	_____	10,000 gaussses
Finish	_____	Dark umber gray
Dimensions	_____	4½" diameter, 4¼" high
Weight	_____	8¾ lbs.
Shipping Weight	_____	9¼ lbs.
Sensitivity	_____	108.5 db

**ARCHITECTS' AND ENGINEERS' SPECIFICATIONS FOR MI-6304-B**

The mechanism shall have an operating capacity of 25 watts over the frequency range of the baffle to which it will be attached. The peak operating capacity shall be 50 watts. The voice coil shall have an impedance of 15 ohms. Sensitivity shall be 108.5 db. The unit shall be of the permanent field type. The diaphragm shall be bakelite. The flux density shall be 10,000 gaussess. The net weight shall not be less than 8¼ lbs. The mounting threads will be such as to mount unit on the baffle supplied with the mechanism.

**SPECIFICATIONS FOR MI-6305-B**

Operating Capacity	30 watts
Peak Capacity	60 watts
Impedance	15 ohms
Flux Density	12,000 gaussess
Finish	Dark umber gray
Dimensions	5½" diameter, 4½" high
Weight	10¾ lbs.
Shipping Weight	11¾ lbs.
Sensitivity	109.5 db

**ARCHITECTS' AND ENGINEERS' SPECIFICATIONS FOR MI-6305-B**

The mechanism shall have an operating capacity of 30 watts over the frequency range of the baffle to which it will be attached. The peak operating capacity shall be 60 watts. The voice coil shall have an impedance of 15 ohms. Sensitivity shall be 109.5 db. The unit shall be of the permanent field type. The diaphragm shall be bakelite. The flux density shall be 12,000 gaussess. The net weight shall not be less than 10¾ lbs. The mounting threads will be such as to mount unit on the baffle supplied with the mechanism.

**SPECIFICATIONS FOR MI-6306-B**

Operating Capacity	35 watts
Peak Capacity	60 watts
Impedance	15 ohms
Flux Density	14,000 gaussess
Finish	Dark umber gray
Dimensions	5½" diameter, 5" high
Weight	14¼ lbs.
Shipping Weight	15¼ lbs.
Sensitivity	111 dh

**ARCHITECTS' AND ENGINEERS' SPECIFICATIONS FOR MI-6306-B**

The mechanism shall have an operating capacity of 35 watts over the frequency range of the baffle to which it will be attached. The peak operating capacity shall be 60 watts. The voice coil shall have an impedance of 15 ohms. Sensitivity

shall be 111 db. The unit shall be of the permanent field type. The diaphragm shall be bakelite. The flux density shall be 14,000 gaussess. The net weight shall not be less than 14¼ lbs. The mounting threads will be such as to mount unit on the baffle supplied with the mechanism.



*MI-6309-B*

**SPECIFICATIONS FOR MI-6309-B**

Operating Capacity	20 watts
Peak Capacity	35 watts
Impedance	15 ohms
Flux Density	8,000 gaussess
Finish	Dark umber gray
Dimensions	3¼" diameter, 3¼" high
Adaptor	3¼" long
Weight	3 lbs.
Shipping Weight	4 lbs.
Sensitivity	108 db

**ARCHITECTS' AND ENGINEERS' SPECIFICATIONS FOR MI-6309-B**

The mechanism shall have an operating capacity of 20 watts over the frequency range of the baffle to which it will be attached. The peak operating capacity shall be 35 watts. The voice coil shall have an impedance of 15 ohms. Sensitivity shall be 108 db. The unit shall be of the permanent field type. The diaphragm shall be bakelite. The flux density shall be 8,000 gaussess. The net weight shall not be less than 3 lbs. The mounting threads will be such as to mount unit on the baffle supplied with the mechanism.

# Speaker Housing MI-13225



**Features**

- Easily mounted.
- Acoustically designed for proper response.
- Strong moulded material.
- Surface readily refinished.

**Uses**

This housing was designed for use with MI-12435 Accordion Edge Speaker Mechanism. It is an excellent housing for general application in sound installations, especially since any color can be applied to harmonize with the surroundings.

**Description**

The MI-13225 Speaker Housing is constructed of a special moulded masonite which is strong and has good acoustic properties. The external surface of this housing has the appearance of rich, brown Morocco grained leather. The surface lends itself readily to application of any color finish. A rear cover or back is supplied for sealing in the housing to obtain the best response from an MI-12435 speaker unit.

The masonite back has an internal padding of sound absorbing material which improves the sound characteristics. An

oblong hole is provided for mounting the terminal strip which is supplied but not mounted. The terminal strip is designed to mount with the binder screw heads facing toward the back, and the solder connections facing toward the inside of the housing.

Mounting brackets and hardware for the housing are provided.

**Specifications**

Material	Masonite and wood
Finish	Resembles Morocco leather
Dimensions (outside)	17" high, 13" wide, 6½" deep (max.)
Weight (unpacked)	6½ lbs.
Shipping Weight	8 lbs.
Accessories—Furnished:	
Mounting Brackets	
Terminal Board	
Mounting Hardware	
Designed for MI-12435 speaker, with or without transformer	(not supplied).
Distribution Angle	250 degrees (with MI-12435 speaker)
Cubic Content	900 cubic inches



# Moulded Bakelite Baffles MI-6102, 3, 4



## Features

- Constructed of moulded bakelite.
- Attractive walnut finish (moulded in).
- Heavy reinforcing ribs.
- Knockouts provided for volume control or switch.
- No drilling necessary.
- Attractive two tone grille cloth.
- Sloping front.
- Modern design.

## Uses

These moulded bakelite sloping front baffles with open back will find many and varied uses. Their rich, walnut finish makes them especially attractive for such uses as in hotel rooms, large offices, restaurants, dining rooms, hospitals, school class rooms, small auditoriums and many other places where a speaker in a sloping front baffle can be used.

## Description

The MI-6102, MI-6103, and MI-6104 baffles are moulded of walnut grained bakelite with heavy reinforcing ribs moulded on the inner surface to give additional strength and rigidity. Four of these ribs form the frame for the speaker mounting insert, the insert being held in place by four decorative head screws. Two "knockouts" are provided, one on either side of the speaker grille, for use in case a volume control, and/or switch is desired to be installed. This eliminates necessity of drilling holes in the case.

All three baffles are identical in external appearance and overall dimensions, the difference being in the speaker mounting insert. The insert for MI-6102 is for mounting a 5 inch speaker,

the insert for MI-6103 is for mounting a 6½ inch speaker and the insert for MI-6104 is for mounting an 8 inch speaker. The face of the inserts are covered with an attractive two tone grille cloth in colors that blend well with the baffle.

Two mounting brackets complete with hardware are furnished, but not mounted on the housing; however, holes for attaching the bracket are provided.

## Specifications

Material \_\_\_\_\_ Moulded bakelite  
Finish \_\_\_\_\_ Walnut grained

### Dimensions:

Width \_\_\_\_\_ 15¼"  
Height \_\_\_\_\_ 12¼"  
Depth (maximum) \_\_\_\_\_ 5⅞"  
Clearance (center of speaker) \_\_\_\_\_ 4"

Mounting \_\_\_\_\_ Two brackets and hardware (supplied)

### Stock Identification

Baffle for 5" Speaker \_\_\_\_\_ MI-6102  
Baffle for 6½" Speaker \_\_\_\_\_ MI-6103  
Baffle for 8" Speaker \_\_\_\_\_ MI-6104

## Architects' and Engineers' Specifications

The speaker housing or baffle shall be of moulded bakelite with open back, heavy internal reinforcing ribs and walnut finish. The speaker mounting insert shall be of masonite with mounting screws and a two-tone grille cloth. It shall be capable of mounting an \* inch speaker mechanism. A "knock-out" on either side of the face of the housing shall be provided for mounting a volume control and/or a switch. Dimensions shall be 15¼ inches wide, 12¼ inches high with a maximum depth of 5⅞ inches and a clearance at the center of the speaker of 4 inches. Mounting brackets and hardware shall be furnished.

\* Specify whether 5, 6½ or 8 inch speaker mechanism.

# Moulded Bakelite Baffles MI-6105, MI-6106

## Features

- Constructed of moulded bakelite.
- Attractive walnut finish (moulded in).
- Heavy reinforcing ribs.
- Attractive two-tone grille cloth.
- Sloping front.
- Modern design.

## Uses

These moulded bakelite sloping front baffles with open back will find many and varied uses. Their rich, walnut finish makes them especially attractive for such uses as in hotel rooms, large offices, restaurants, dining rooms, hospitals, school class rooms, small auditoriums and many other places where a speaker in a sloping front baffle can be used.

## Description

The MI-6105, and MI-6106 baffles are moulded of walnut grained bakelite with heavy reinforcing ribs moulded on the inner surface to give additional strength and rigidity. Four of these ribs form the frame for the speaker mounting insert, the insert being held in place by four decorative head screws.

These baffles are identical in external appearance and overall dimensions, the difference being in the speaker mounting insert. The insert for MI-6105 is for mounting a 10" speaker, and the insert for MI-6106 is for mounting a 12" speaker. The face of the insert is covered with an attractive two tone grille cloth in colors that blend well with the baffle.

Two mounting brackets complete with hardware are furnished, but not mounted on the housing; however, holes for attaching the bracket are provided.

## Specifications

Material \_\_\_\_\_ Moulded bakelite  
 Finish \_\_\_\_\_ Walnut grained



### Dimensions:

Width \_\_\_\_\_ 17 $\frac{3}{4}$ "  
 Height \_\_\_\_\_ 23"  
 Depth (maximum) \_\_\_\_\_ 8 $\frac{3}{8}$ "  
 Clearance (center of speaker) \_\_\_\_\_ (Approx.) 6 $\frac{3}{4}$ "

Mounting \_\_\_\_\_ Two brackets and hardware (supplied)

### Stock Identification:

MI-6105 \_\_\_\_\_ Baffle for 10" speaker  
 MI-6106 \_\_\_\_\_ Baffle for 12" speaker

## Architects' and Engineers' Specifications

The speaker housing or baffle shall be of moulded bakelite with open back, heavy internal reinforcing ribs and walnut finish. The speaker mounting insert shall be of masonite with mounting screws and a two-tone grille cloth. It shall be capable of mounting a \* inch speaker mechanism. Dimensions shall be 17 $\frac{3}{4}$  inches wide, 23 inches high with maximum depth of 8 $\frac{3}{8}$  inches and a clearance at the center of the speaker of 6 $\frac{3}{4}$  inches. Mounting brackets and hardware shall be furnished.

\* Specify whether 10 or 12 inch speaker mechanism.

# Industrial Baffle MI-6308

## For 12 $\frac{1}{4}$ -Inch Loudspeaker

### Uses

This wooden speaker housing has been designed for use in large areas where one or more loudspeakers are required for covering the area. It can be used in industrial plants, aircraft hangars, garages, department stores or any other large enclosed areas where the noise level is not greater than 90 db and it is desired to use a 12 $\frac{1}{4}$ " loudspeaker.

### Description

This baffle is made of 5-ply veneer wood on the front face and the four sides. The rear is a framework with a flocked screen, thus allowing sound to project both to the front and to the rear of the mechanism. The cabinet is finished in a neutral gray. It can therefore be easily refinished to blend with any color scheme if desired. The size has been made as small as possible, commensurate with the baffle area required by a 12 $\frac{1}{4}$ " loudspeaker.

### Features

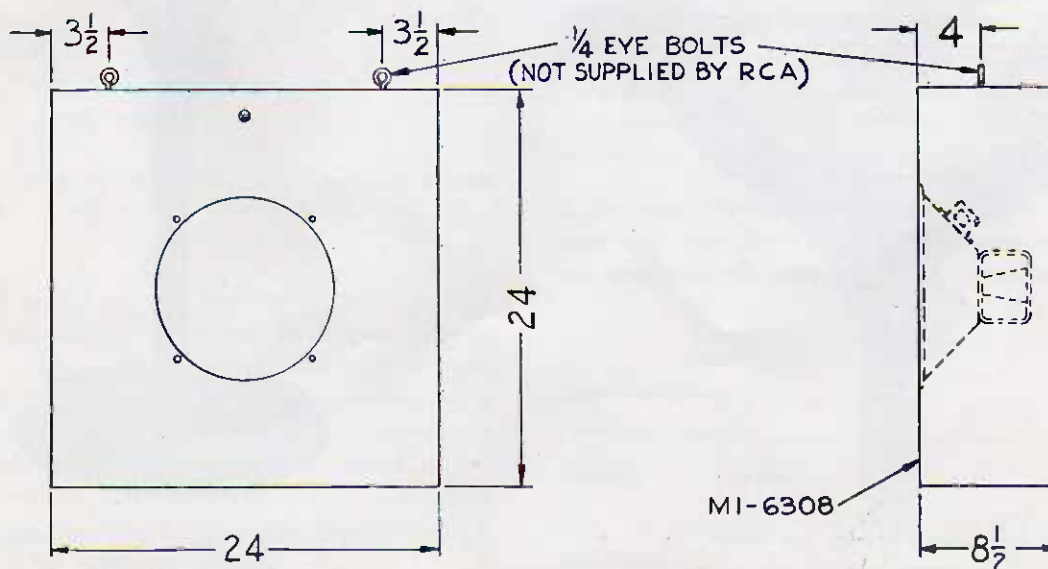
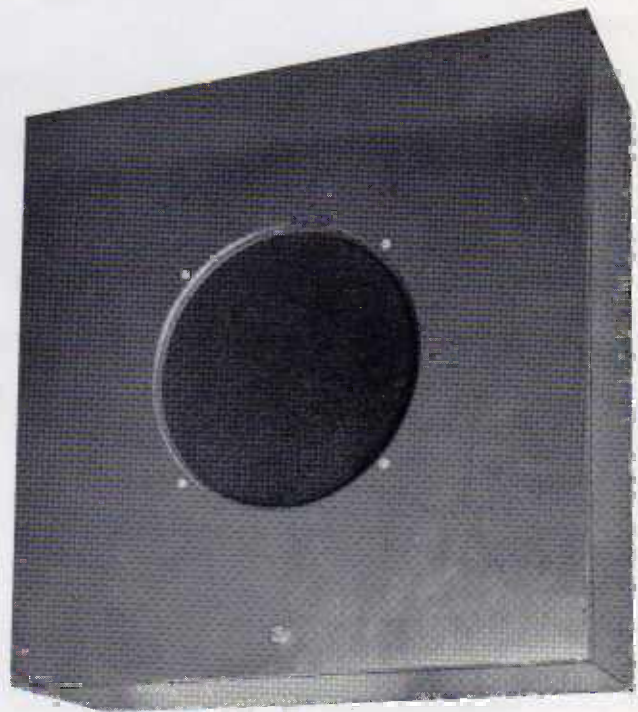
- Finished in neutral gray.
- Designed for ceiling suspension mounting.
- 12 $\frac{1}{4}$ " loudspeaker.
- Acoustically designed to give proper response
- For use in large industrial installations under average noise level conditions.

### Specifications

Distribution Angle \_\_\_\_\_ 140 degrees  
 Finish \_\_\_\_\_ Gray  
 Material \_\_\_\_\_ Wood  
 Dimensions  
 Width \_\_\_\_\_ 24"  
 Height \_\_\_\_\_ 24"  
 Depth \_\_\_\_\_ 8 $\frac{1}{2}$ "  
 Net Weight 8 lbs (ea.) Shipping Weight 14 $\frac{1}{2}$  lbs. (ea.)  
 Packed \_\_\_\_\_ 2 in a carton  
 Code Word \_\_\_\_\_ SMARL

### Architects' and Engineers' Specifications

This baffle shall be capable of mounting a 12 $\frac{1}{4}$ " permanent magnet loudspeaker. It shall have a distribution angle of 140 degrees. The width shall be 24", height 24" and depth 8 $\frac{1}{2}$ ". The net weight shall not exceed 8 pounds. The front grille shall be a flocked metal screen. The rear screen shall be of flocked metal. The cabinet shall be finished in neutral gray.



## SPEAKERS

# Directional Sound Projector MI-4420-A, MI-4422-A (Baffle Only)

### Description

This baffle is supplied primarily for sound trucks, industrial installations, and for outdoor use. It is made of heavy gauge aluminum. By means of an interlocking flange construction, the strength is increased and rain leakage at the seam is eliminated where the two sections of the baffle are joined. There is supplied with this baffle a double metal grille screen for protecting the cone of the loudspeaker. Two mounting loops are supplied for hanging. MI-4422-A Baffle is designed for use with 8 $\frac{1}{4}$ " weather proof cone speaker, MI-4420-A Baffle for use with a 12 $\frac{1}{4}$ " weather proof cone speaker.

### Specifications

	MI-4422-A	MI-4420-A
Overall Length	16"	20"
Diameter of Bell	15"	17"
Accommodates (loudspeaker)	8"	12"
Finish	Gray	Gray wrinkle
Net Weight	4 lbs.	9 lbs.
Shipping Weight	6 lbs.	12 lbs.
Code Word	SESUP	SEGIP



RCA Directional Sound Projector (Baffle Only)  
(MI-4420-A, MI-4422-A)

## Mounting Bracket and Swivel MI-4418

## Auto Top or Wall Mounting Bracket MI-4419

### Description

This bracket has been designed for mounting the MI-4420-A and MI-4422-A Baffle on the wall or on auto tops. It has been built for rugged use. A large wing nut is supplied for easily tightening the fixture into any position desired. The large cast base offers stability and strength. The bracket and swivel are available without the base as a MI-4418.

### SPECIFICATIONS FOR MI-4418

Height	6 $\frac{1}{2}$ "
Net Weight	2 $\frac{3}{4}$ lbs.
Shipping Weight	3 $\frac{1}{4}$ lbs.
Finish	Gray crackle
Code Word	SLARK



RCA Mounting Bracket and Swivel  
(MI-4418)

### SPECIFICATIONS FOR MI-4419

Height	12"
Net Weight	6 $\frac{3}{4}$ lbs.
Shipping Weight	7 $\frac{1}{4}$ lbs.
Finish	Gray crackle
Code Word	SLAPI



RCA Auto Top and Wall Mounting  
Bracket (MI-4419)

## Paging Horn MI-6311 (Baffle Only)



### Features

- Light weight.
- Designed for outdoor or indoor use.
- Small overall size. Easy to handle and install.
- An excellent speech trumpet.
- Modern appearance.
- Can be used with any of the five RCA diaphragm speaker mechanisms.

### Uses

The MI-6311 Paging Horn was designed for use with RCA Diaphragm Type Speaker Mechanisms for paging purposes where faithful high level speech reproduction over large areas, with exceptionally good directional characteristics is required. A choice of any one of five speaker mechanisms will meet almost any requirement for overcoming various noise level conditions. Some places where this horn can be used to advantage are: railroad train sheds, waiting rooms in railway stations, bus depots, and airports.

### Description.

This paging horn is ruggedly constructed entirely of metal. The bell is an aluminum spinning securely fastened to a cast metal throat which is threaded to take any one of five RCA diaphragm type speaker mechanisms. A metal clamping ring and bracket (MI-6324) is supplied with each horn.

A mounting base and 10" upright complete with bracket, screw and wing nut is available separately as MI-6325 for mounting the horn rigidly to a wall or ceiling.

### Specifications

Distribution Angle \_\_\_\_\_ 84°  
 Finish \_\_\_\_\_ Umber gray      Material \_\_\_\_\_ Aluminum  
 Dimension \_\_\_\_\_ Length 22"; bell diameter 12½"  
 Net Weight \_\_\_\_\_ 6½ lbs.      Shipping Weight \_\_\_\_\_ 8 lbs.

# Re-entrant 3 $\frac{1}{2}$ Ft. Trumpet MI-6302-A

(Baffle Only)



## Features

- Small overall size. Easy to handle.
- 1 $\frac{1}{4}$ " pipe fitting mounting allows both vertical and horizontal adjustment.
- Easy to mount unit.
- Highly efficient (increased throw with less power).
- Excellent speech frequency characteristics.
- Ruggedly built.
- Designed for outdoor use.
- Four different mechanisms are available.
- Non-resonant.

## Uses

This re-entrant trumpet is for both indoor and outdoor use. There are many applications, a few of which are: youth camps, athletic fields, recreational areas, shipboard, shipyards and sound trucks.

It is especially valuable in noisy factory locations where a high degree of intelligibility is required and a large amount of sound power is needed to overcome background machine noise. This trumpet is very good for railroad yards, train sheds, depots and bus depots for announce work and paging.

## Description

The MI-6302-A re-entrant trumpet is double re-entrant. This design allows overall compactness, yet gives sufficient acoustic air column length for excellent acoustic properties.

It is sturdily constructed with an aluminum casting, aluminum spinings and non-vibratory material between the metal parts to eliminate resonance or vibration of the various sections. As a result all sound energy is projected in the form of a useful sound beam.

The rugged aluminum casting on the rear of the trumpet serves (1) to hold the driver unit securely, (2) as a mounting for the mounting bracket, (3) to mount the aluminum bell and all other parts.

The directional characteristics of this trumpet allow the sound beam to be focused on the area requiring uniform coverage and minimizes feedback or "acoustic howl".

The frequency response is uniform over the useful audio spectrum and the brilliance of the upper frequencies gives a high degree of voice intelligibility even under adverse conditions of high background noise interference. The low frequency response is also good for reproduction of music as well as voice.

The entire assembly is attractively furnished in dark umber gray enamel.

# Re-entrant 3 1/2 Ft. Trumpet MI-6366

## Features

- Light in weight, but rugged.
- Small overall size. Easy to handle.
- "U" shaped bracket mounting.
- Unit easily mounted.
- High efficiency—(increased throw with less power).
- Modern appearance.
- Excellent speech frequency characteristics.
- Ideal for shipyards, recreational areas, sound trucks, indoor arenas, etc.
- Four sizes of mechanisms are available.
- Designed for outdoor and indoor use.



## Uses

This re-entrant horn has been designed to provide a speaker with faithful speech reproduction over large areas with exceptionally good directional characteristics, while at the same time providing good quality music reproduction. Its use is suggested for large outdoor coverage such as camps, stadiums, playgrounds or recreational areas; indoor uses are for industrial plants, arenas, skating rinks, basketball courts or wherever high noise level is encountered.

## Description

This baffle is made of spun aluminum with a casting of sufficient size to take the standard mechanisms securely fastened to the aluminum bell. A strong "U" shaped mounting bracket allows approximately 180 degree adjustment of the baffle without tools since standard wing nuts are used to hold the baffle in any position. The bell and bracket are attractively finished with deep umber gray enamel.

## Specifications

Distribution Angle	50 degrees
Finish	Dark umber gray enamel
Material	Non-vibratory and metal
<b>Dimensions</b>	
Length—including Bracket Mount	18"
Bell Diameter	18"
Mounting Bracket "U"	
Net Weight	8 lbs. Shipping Weight 13 1/2 lbs.

### SPECIFICATIONS FOR MI-6309-B—6366

Frequency Range	175-6000 cycles
Sensitivity	108.5 db at 4 ft. 1 watt input
Operating Capacity	20 watts
Peak Capacity	35 watts
Impedance	15 ohms
Total Length	23"
Total Weight	11 lbs. Total Shipping Weight 17 lbs.

### SPECIFICATIONS FOR MI-6305-B—6366

Frequency Range	175-6500 cycles
Sensitivity	110 db at 4 ft. 1 watt input
Operating Capacity	30 watts
Peak Capacity	60 watts
Impedance	15 ohms
Total Length	21 1/2"
Total Weight	18 3/4 lbs. Total Shipping Weight 24 3/4 lbs.

### SPECIFICATIONS FOR MI-6304-B—6366

Frequency Range	175-6500 cycles
Sensitivity	110 db at 4 ft. 1 watt input
Operating Capacity	25 watts
Peak Capacity	50 watts
Impedance	15 ohms
Total Length	21 1/4"
Total Weight	17 1/4 lbs. Total Shipping Weight 22 1/4 lbs.

### SPECIFICATIONS FOR MI-6306-B—6366

Frequency Range	175-6500 cycles
Sensitivity	112.5 db at 4 ft. 1 watt input
Operating Capacity	35 watts
Peak Capacity	60 watts
Impedance	15 ohms
Total Length	22"
Total Weight	22 1/4 lbs.
Total Shipping Weight	28 1/4 lbs.

### SPECIFICATIONS FOR MI-6337—6366

Frequency Range	200-8000 cycles
Sensitivity	98.5 db @ 4 ft. — 1 watt input
Operating Capacity	16 watts
Impedance	15 ohms @ 1000 cycles
Finish	Umbler gray
Total Length	24 3/4"
Total Net Weight	18 lbs.
Total Shipping Weight	28 lbs.

## Architects' and Engineers' Specifications

The re-entrant baffle shall have a distribution angle of 50 degrees. The dimensions shall be 18" long with a bell diameter of 18". The baffle shall have an effective length of 3 1/2 feet. The material shall be of non-vibratory composition and metal. The baffle shall have mounting threads matching threads on the diaphragm type mechanism supplied. The baffle shall weigh 8 lbs. A "U" shaped mounting shall be supplied.

# Re-entrant 5½ Ft. Trumpet MI-6303-A

(Baffle Only)



## Features

- Small overall size. Easy to handle.
- 1¼" pipe fitting mounting allows both vertical and horizontal adjustment.
- Easy to mount unit.
- Highly efficient (increased throw with less power).
- Excellent frequency characteristics.
- Ruggedly built.
- Designed for indoor or outdoor use.
- Four different mechanisms are available.
- Non-resonant.

## Uses

This re-entrant trumpet is for both indoor and outdoor use. There are many applications, a few of which are: youth camps, athletic fields, recreational areas, shipboard, shipyards and sound trucks. It is especially valuable in noisy factory locations where a high degree of intelligibility is required and a large amount of sound power is needed to overcome background machine noise. This trumpet is very good for railroad yards, train sheds, depots and bus depots for announce work and paging.

## Description

The MI-6303-A re-entrant trumpet is double re-entrant. This design allows overall compactness, yet gives sufficient acoustic air column length for excellent acoustic properties.

It is sturdily constructed with an aluminum casting, aluminum spinings and non-vibrating material between the metal parts to eliminate resonance or vibration of the various sections. As a result all sound energy is projected in the form of a useful sound beam.

The rugged aluminum casting on the rear of the trumpet serves (1) to hold the driver unit securely, (2) as a mounting for the mounting bracket, (3) to mount the aluminum bell and all other parts.

The directional characteristics of this trumpet allow the sound beam to be focused on the area requiring uniform coverage and minimizes feedback or "acoustic howl".

The frequency response is uniform over the useful audio spectrum and the brilliance of the upper frequencies gives a high degree of voice intelligibility even under adverse conditions of high background noise interference. The low frequency response is also good for reproduction of music as well as voice.

The entire assembly is attractively finished in dark amber gray enamel.



# Wide Angle Horn MI-6395

## Features

- 120 degree distribution angle.
- Crisp reproduction of voice. (400 cycle cut off.)
- Compactly designed, easy to handle.
- Can be used with any of five RCA mechanisms.
- Light weight, made of cast aluminum.

## Uses

The MI-6395 horn has been designed for applications requiring wide angle distribution of speech sounds to large groups of people scattered over a wide area and where overhead area of people scattered over a wide area, where acoustical conditions are had.

## Description

The MI-6395 horn is designed to cut off at 400 cycles to eliminate the boominess which interferes with the crisp quality that is necessary for successful voice reproduction.

The unit is made of cast aluminum with a  $1\frac{1}{4}$ " die-cast zinc bushing at the throat for attachment of the drive unit. It is so designed that it has no metallic resonance. The throat is drilled above the flare of the horn for the mounting bracket which allows both vertical and horizontal adjustments in order to obtain the proper throw.

The MI-6395 horn can be used with any of five available RCA mechanisms in order to achieve optimum reproduction in any noise level.

## Specifications

Frequency Cut-Off	400 cycles
*Distribution Angle (horizontal)	120 degrees
*Distribution Angle (vertical)	120 degrees
Finish	Deep umber gray enamel metal cast aluminum
Mounting Bracket	Supplied
Height	17 $\frac{5}{8}$ "
Width	22 $\frac{3}{8}$ "
Depth	13 $\frac{3}{8}$ "
Weight	12 lbs.

\* Measured at 1000 cycles.

## SPECIFICATIONS OF HORN WITH MECHANISMS

MI-6337/6395

Frequency Range	400-5000 cy.
Sensitivity	102.5 db at 4', 1 W input
Operating Capacity	16 watts above 200 cy.
Peak Capacity	25 watts
Impedance	15 ohms
Total Length	23 $\frac{3}{8}$ "
Total Depth	13 $\frac{3}{8}$ "
Total Weight	22 lbs.

## SPECIFICATIONS OF HORN WITH MECHANISMS

MI-6306-B/6395

Frequency Range	400-5000 cy.
Sensitivity	111 db at 4', 1 W input
Operating Capacity	35 watts
Peak Capacity	60 watts
Impedance	15 ohms
Total Length	22"
Total Depth	13 $\frac{3}{8}$ "
Total Weight	26 $\frac{1}{2}$ lbs.

## SPECIFICATIONS OF HORN WITH MECHANISMS

MI-6305-B/6395

Frequency Range	400-5000 cy.
Sensitivity	109.5 db at 4', 1 W input



Operating Capacity	30 watts
Peak Capacity	60 watts
Impedance	15 ohms
Total Length	21 $\frac{5}{8}$ "
Total Depth	13 $\frac{3}{8}$ "
Total Weight	22 $\frac{3}{4}$ lbs.

## SPECIFICATIONS OF HORN WITH MECHANISMS

MI-6304-B/6395

Frequency Range	400-5000 cy.
Sensitivity	108.5 db at 4', 1 W input
Operating Capacity	25 watts
Peak Capacity	35 watts
Impedance	15 ohms
Total Length	21 $\frac{1}{4}$ "
Total Depth	13 $\frac{3}{8}$ "
Total Weight	20 $\frac{3}{4}$ lbs.

## SPECIFICATIONS OF HORN WITH MECHANISMS

MI-6309-B/6395

Frequency Range	400-5000 cy.
Sensitivity	108 db at 4', 1 W input
Operating Capacity	20 watts
Peak Capacity	35 watts
Impedance	15 ohms
Total Length	20 $\frac{1}{4}$ "
Total Depth	13 $\frac{3}{8}$ "
Total Weight	15 lbs.

## Architects' and Engineers' Specifications

The horn shall have wide angle (120 degrees) distribution with 400 cycle cut off to eliminate boominess and give crisp clear speech. The unit shall be of cast aluminum with a  $1\frac{1}{4}$  inch die-cast zinc bushing at the throat for attachment of the drive unit and so designed that it shall have no metallic resonance. The horn shall be capable of using any of five available mechanisms in order to achieve optimum reproduction in any noise level. The finish shall be deep umber-gray and the dimensions shall be 17 $\frac{5}{8}$  inches high, 22 $\frac{3}{8}$  inches wide and 13 $\frac{3}{8}$  inches deep.

## Miniature Marine Re-entrant Speaker MI-6317-D



### Features

- Fits in small space.
- Delivers highly concentrated sound.
- Weatherproof.
- Rugged construction.
- Resonant effects eliminated.
- Clear speech reproduction.
- Can be used for "talk-back."

### Uses

This speaker is designed for use where space is limited and high acoustic output with good clarity of speech reproduction is required to overcome high noise level. There are many uses for a unit of this type, some of these are: announcements in railroad stations, bus terminals, docks, ships, locomotives, railroad yards, dressing rooms in stadia and many others. It can also be used for talk-back purposes.

### Description

The MI-6317-D miniature marine re-entrant speaker is shipped complete with a 20 watt diaphragm type speaker mechanism, ready to install. The horn is made of a heavy aluminum casting with a bell of spun aluminum. In addition to the aluminum casting and bell the assembly is made with a special material to overcome resonant effects and metallic ring usually en-

countered in speakers of this type. The unit and the connections are completely enclosed, making this speaker completely weatherproof, including use at sea during storms.

Ears for mounting the speaker against a wall, post, bulkhead or similar structure are an integral part of the rear casting. Special mounting brackets can be furnished.

This speaker delivers an intense concentrated sound beam, thereby overcoming high noise levels.

It is attractively finished with dark umber gray metalustre enamel.

### Specifications

Air Column	12"
Frequency Range	500 to 4500 cycles
Distribution Angle @ 2,000 cycles	45 degrees
Operating Capacity	20 watts
Peak Capacity	35 watts
Nominal Impedance	15 ohms
Flux Density	11,000 lines/cm <sup>2</sup>
Bell Diameter	6 <sup>1</sup> / <sub>4</sub> "
Overall Length	4 <sup>3</sup> / <sub>4</sub> "
Mounting Holes	3 equally spaced—3" radius
Weight (upacked)	5 <sup>1</sup> / <sub>4</sub> lbs.
Shipping Weight	6 <sup>1</sup> / <sub>2</sub> lbs.

### Architects' and Engineers' Specifications

The Miniature Re-entrant Speaker shall be "Marine" type with a 20 watt diaphragm type mechanism mounted in an aluminum horn, suitable for projecting a concentrated, intense sound beam. The voice coil impedance shall be 15 ohms. The frequency range shall be 500 to 4500 cycles.

# Sound Projector MI-6260-A1



## Features

- High power capability.
- Permanent magnet mechanism—no field excitation required.
- Narrow beam sound projection.
- Light weight.
- Weatherproof construction.

## Uses

The MI-6260-A1 is designed for those applications where high intensity sound must be projected over a distance outdoors, such as beach paging and announce systems, racetrack coverage, stadium announce systems and similar uses.

## Description

The Sound Projector, MI-6260-A1, consists of an exponential horn projector and an MI-6257 mechanism in an integral assembly. The power capability of the unit is high, and the sound is projected in a narrow beam for covering great distances. The mechanism is a permanent magnet cone type unit of good sensitivity and high power handling ability. The horn is of aluminum for light weight. Connections are made to a screw type terminal board inside the unit's cover. The finish is gray crackle with black trim.

## Specifications

Input Impedance	15 ohms
Power Capability	25 watts, complex wave, at 400 cycles
Baffle Type	Exponential horn
Baffle Material	Aluminum
Mechanism	Cone type permanent magnet field
Frequency Response	100—7000 cycles, ideal for speech
Axial Sensitivity 4 feet from horn, 1 watt input	98.8 db
Distribution Angle	50 degrees
Length Overall	30"
Diameter Overall	18½"
Weight	19½ lbs.
Mechanism attaches to baffle by 8 equally-spaced 7/32" holes on a 7 <sup>3</sup> / <sub>16</sub> " bolt circle.	

## ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The Sound Projector speaker assembly shall consist of a permanent magnet cone type mechanism mounted on an exponential horn, and shall be suitable for narrow-beam projection of high-intensity sound over great distances out-of-doors. The voice coil impedance shall be 15 watts and the unit shall be capable of 25 watts, complex wave, at 400 cycles. The frequency response shall be from 100 to 7000 cycles, and the axial sensitivity at 4 feet with 1 watt input shall be 98.8 db. The distribution angle shall be 50°. The overall dimensions shall be 30" length; 18½" width; the net weight shall be 19½ lbs. The mechanism shall be attached to the baffle by means of 8 equally spaced 7/32" holes on a 7<sup>3</sup>/<sub>16</sub>" bolt circle. The assembly shall be finished in black-trimmed gray crackle.

# High Fidelity Loudspeaker Type LC-1A

## Features

- Excellent frequency response, uniform 50-15,000 cps.
- Wide angle sound radiation of all frequencies.
- Tastefully styled cabinet.
- Low non-linear distortion.
- High grade Alnico V magnets.

## Uses

The LC-1A is a high quality loudspeaker designed for use wherever a speaker of unusually good response is required. The LC-1A is a very well constructed unit, and its attractive appearance makes it a welcome addition to any studio or listening room. This high quality speaker possesses an unusually wide frequency range, low distortion, and excellent directional characteristics. The advent of FM, with its accent on high fidelity, greatly increases the need for a speaker such as the LC-1A.

## Description

The LC-1A is a duo-cone speaker mechanism of the direct radiated type, consisting of high and low frequency units mounted co-axially together. The 2" high frequency cone and the aluminum wound voice coil has a low mass utilizing the wide angle of the shallow, low frequency cone, to effect its remarkable directional pattern (see curve). An equilibrium has been reached between the electrical and mechanical design to impart a high frequency radiation of 120° arc with a loss of approximately 6 db at 15,000 cps. This eliminates the conventional "beam effect" usually experienced at this frequency.

The low frequency cone employs a 15" diaphragm with a high mass voice coil and produces the most desirable directional pattern with a handling capacity of 10 watts. Low distortion has been accomplished by a carefully designed compromise of many contributing factors. Distortion usually experienced when handling large power in the 100-1,000 cycles range is eliminated by using a high mass coil and a massive rigid cone, coupled with a low fundamental frequency peak of 30 cycles. Above this frequency, the reluctance due to the suspension system of the cone does not appreciably affect the velocity and, therefore, minimizes distortion.

The cross-over network utilizes the physical disposition of the cones to mutually vibrate in unison over the cross-over frequency region and merely employs one capacitor in the high



frequency unit to limit the current flowing at the low frequency. When program material containing a large distortion factor is prevalent, such as worn records, etc., an MI-11707 high frequency compensator producing curves with a "roll-off" at 5, 10 and 15 kc, is available to restrict the high frequency range. The LC-1A is supplied with or without cabinet and is ideally suited for mounting in the wall or ceiling of the control room, giving a uniform response of 50 to 15,000 cycles.

The cabinet was specifically designed for this speaker and is attractively styled in two finishes—two-tone umber gray with a satin chrome trim to blend with all RCA sound equipment, and a rich walnut veneer for use in finely finished rooms. This cabinet is particularly designed for high fidelity loudspeakers and is constructed with a fixed port to give maximum response in the low frequencies. Accommodation for the BA-4 series of monitoring amplifiers is provided. A brushed-chrome panel on the side of the cabinet will accommodate a volume control, 5/10/15 kc high frequency compensator, 10 channel selector switch, an "off-on" amplifier switch with a visual indicator lamp.

With an MI-11708, 15 ohm attenuator, the speaker will operate from a speaker line or with an internal amplifier and selector switch, will function as an independent unit and will bridge any of ten speaker channels. The desired ordering arrangement is obtained by consulting the stock identification accessories.



*LC-1A Speaker Mechanism*

### Specifications

#### LC-1A SPEAKER MECHANISM

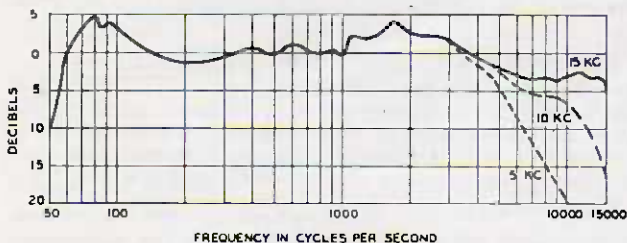
Impedance (nominal)	15 ohms
Frequency Response (see curve)	50-15,000 cps
Directional Characteristic	See curve
Power Handling Capacity	10 watts
Non-linear Distortion (for 10 watt output, 50-15,000 cycles)	Less than 4% at 60 cycles
Weight (unpacked)	21 lbs.
<b>Dimensions:</b>	
Diameter (cone)	15 $\frac{5}{8}$ "
Diameter (bolt mounting circle)	16 $\frac{1}{4}$ "
Diameter (overall frame)	17"

#### LC-1A CABINET

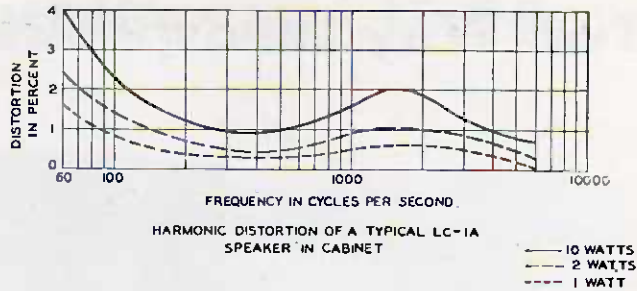
<b>Dimensions:</b>	
Height	40 $\frac{5}{8}$ "
Width	27 $\frac{1}{8}$ "
Depth	15"
Weight	Approx. 50 lbs.

### Stock Identification

LC-1A Speaker, cabinet complete with BA-4C monitor amplifier, volume control, high frequency filter unit 5 kc, 10 kc, and 15 kc, 10-position channel selector switch, and an on-off switch with a visual indicator lamp (less tubes for amplifier)	MI-11411/11401/ MI-11711/11223-B
LC-1A Speaker and Cabinet	MI-11411/11401
LC-1A Duo-cone Loudspeaker Mechanism only	MI-11411
LC-1A Speaker Console Cabinet only (Umber Gray)	MI-11401
LC-1A Speaker Console Cabinet only (Walnut)	MI-11401-A



FREQUENCY RESPONSE OF A TYPICAL LC-1A  
SPEAKER IN CABINET



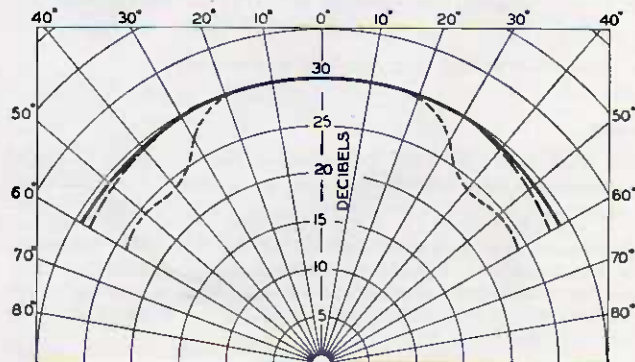
HARMONIC DISTORTION OF A TYPICAL LC-1A  
SPEAKER IN CABINET

### Accessories

- Speaker Filter Unit** \_\_\_\_\_ **MI-11707**  
 (This item is included in both cabinets, MI-11401 and MI-11401-A. It is necessary to order this separately if a high frequency filter is desired when the speaker only is ordered. This unit includes a filter switch and an escutcheon plate reading 5 kc, 10 kc, and 15 kc.)
- Speaker Power Attenuator, 15 ohms** \_\_\_\_\_ **MI-11708**  
 (This is necessary when the audio source is fed externally through a speaker line, etc. This is mounted on the speaker cabinet escutcheon.)
- Speaker Accessory Kit** \_\_\_\_\_ **MI-11711**  
 (This kit contains a 10 position channel selector switch, "on-off" switch with visual indicator and necessary hardware for mounting an amplifier.)



*Close-up of control panel of LC-1A showing controls for  
MI-11707, MI-11708, and MI-11711*



DIRECTIONAL CHARACTERISTICS  
OF A TYPICAL LC-1A  
SPEAKER IN CABINET

1000 CYCLES  
 7000 CYCLES  
 15000 CYCLES

# Two Way Loudspeaker MI-12499



**Features**

- Unusually fine frequency response.
- Low distortion.
- High efficiency.
- Large power handling capacity.
- Wide angle distribution.
- Alnico magnets in separate low frequency and high frequency units.
- Attractive styling and modern appearance.

**Uses**

The RCA MI-12499 Two Way Loudspeaker has been designed to meet the long felt need of the particularly discriminating listener for unusually faithful and distortionless reproduction. It is suitable for studio monitoring, transcription and phonograph playback, and reproduction of AM-FM radio programs in hotel lobbies, broadcast studios, finely-appointed offices, and other locations where a reproducing unit of unusual fidelity, low distortion, high power-handling capacity, and truly fine appearance is desired.

**Description**

The MI-12499 Two Way Loudspeaker is made up of the following units:  
 MI-12424 Cabinet, Cross-over Network, High Frequency Horn  
 MI-12431 High Frequency Horn Driver  
 MI-12432 Low Frequency Speaker

This assembly is a console type loudspeaker of unusually wide frequency range, low distortion and with great power handling ability. It has wide angle distribution. The input impedance characteristic is essentially flat throughout the operating range, rising somewhat at frequencies below 100 cycles. The cabinet is of wood, attractively styled, with a two-tone gray finish, giving it a distinctively modern appearance.

**Specifications**

Frequency Response	50 to 13,000 cycles
Power Capacity	20 watts
Impedance	15 ohms
Axial Sensitivity	95 db at 4 ft. with 1 watt input
Distribution	100° at 1000 cycles
Height	37 1/8"
Width	24 1/2"
Depth	20 19/32"
Cabinet	Wood
Finish	Two-tone gray
Cross-over Frequency	800 cycles

**ARCHITECTS' AND ENGINEERS' SPECIFICATIONS**

The Two Way Speaker shall be a console type assembly housing separate low frequency and high frequency units, together with a crossover network. The frequency response of the assembly shall be from 50 to 13,000 cycles. The input impedance shall be 15 ohms, and the axial sensitivity at 4 feet with 1 watt input shall be 95 db. The distribution angle shall be 100° at 1000 cycles. The power handling capacity shall be 20 watts. The crossover frequency shall be 800 cycles. The cabinet shall be 37 1/8" high, 24 1/2" wide, and 20 19/32" deep, made of wood; and shall be finished in two-tone gray. The cabinet styling shall be modern and attractive.

# Extended Range Loudspeaker Type LC-4A

## Features

- Natural life-like reproduction of music and speech—employs two high quality loudspeaker mechanisms. (Low frequency and high frequency.)
- High power handling capacity—20 watts peak. (Music and speech.)
- High efficiency (twice that of an average PM loudspeaker)—high grade Alnico permanent magnets.
- Conservatively styled cabinet in natural wood or walnut finish.
- Floor or wall mounting—base feet are removable.

## Uses

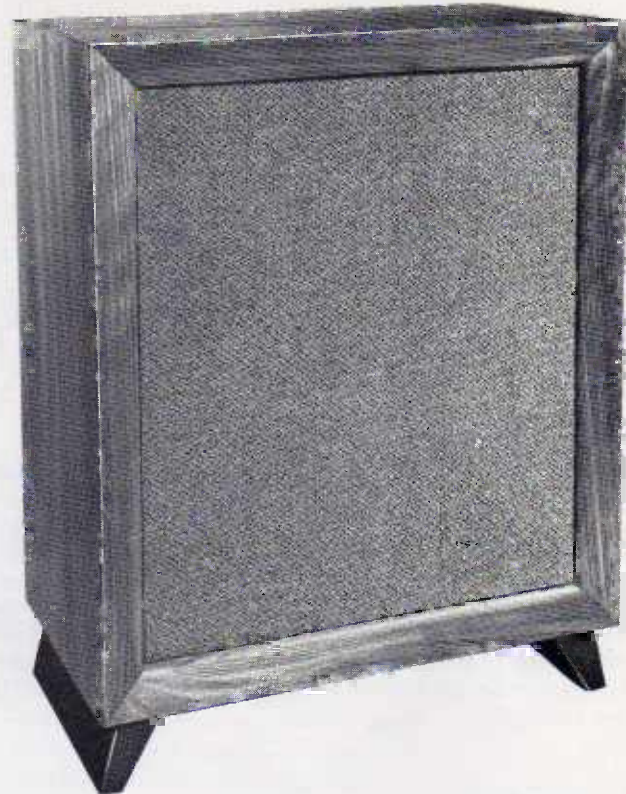
The LC-4A loudspeaker fulfills the need for an inexpensive, wide range loudspeaker of small compact size for Commercial Sound applications. It will be a welcomed addition to any club, bar, restaurant, hotel, school or other places where superior reproduction of live or transcribed music is demanded. Because of its well balanced overall response, obtained by extending the high frequency range in correct proportion to the low frequency cut off, reproduced music will take on a new color heretofore lost in the conventional single diaphragm loudspeaker.

## Description

This loudspeaker assembly consists of an MI-6333-C low frequency mechanism, an MI-12459 high frequency horn driver, an MI-12448 loudspeaker cabinet, MI-12449 cabinet feet and an MI-12451 high frequency kit. The kit is used in conjunction with the high frequency horn driver and includes a 2 microfarad capacitor and the necessary wiring and hardware for installing these components.

The cabinet which is 22" wide, 25" high (excluding mounting feet) and 12" deep has an inside volume of approximately 5000 cubic inches. The low frequency mechanism is mounted near the center of the front face with the high frequency unit mounted above it at the top of the cabinet. Bass boost reflex principle is used to enhance the low frequencies below 150 cycles/sec. Special acoustically tested grille cloth covers the openings and provides a pleasing front to this modernly styled cabinet.

The frequency range from 75 to 6500 cycles/sec. is handled superbly by the MI-6333-C loudspeaker mechanism. At the point where the high end of this mechanism begins to fall off, the MI-12459 high frequency driver takes over with the result that the entire range of 75 to 12,000 cycles/sec. is beautifully reproduced. The voice coils of the 2 units are isolated by a capacitor in order to keep the low frequencies out of the high frequency unit. The two voice coils are combined to provide a nominal impedance of 7½ ohms.



## Specifications

Frequency Range.....	75 to 12,000 cycles/sec.
Power Handling Capacity.....	20 watts peak (complex wave)
Voice Coil Impedance (nominal):	
Low Frequency Unit (MI-6333-C).....	6 ohms
High Frequency Unit (MI-12459).....	15 ohms
(Voice coils are combined for 7½ ohms impedance)	
Axial Sensitivity.....	95 db at 4 feet with 1 watt
Gap Flux Density:	
Low Frequency Unit (MI-6333-C).....	9500 gauss
High Frequency Unit (MI-12459).....	9500 gauss
Magnet Material.....	Alnico II
Magnet Weight:	
Low Frequency Unit (MI-6333-C).....	2½ lbs.
High Frequency Unit (MI-12459).....	1 lb. 9 oz.
Weight (fully assembled but unpacked).....	43¼ lbs.
LC-4A Loudspeaker complete with cabinet, base mounting feet, low frequency mechanism, high frequency horn driver and high frequency kit.....	MI-12448, MI-12449, MI-6333-C, MI-12459, MI-12451
LC-4A Cabinet (natural wood finish).....	MI-12448
LC-4A Cabinet (walnut finish).....	MI-12448-A
LC-4A Cabinet Mounting Feet.....	MI-12449
LC-4A Low Frequency Mechanism.....	MI-6333-C
LC-4A High Frequency Horn Driver.....	MI-12459
LC-4A High Frequency Kit.....	MI-12451

# Speaker Transformer MI-12371

## Features

- Good frequency response.
- Wide range of impedance taps.
- Handles high power.

## Uses

The MI-12371 may be used to couple loudspeaker voice coils or similar loads to a line carrying audio frequency power. Its most common use is to couple speakers to output lines in multiple-speaker commercial and industrial sound systems.

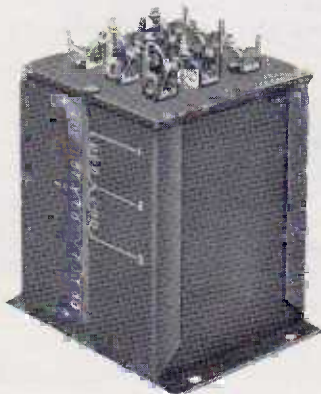
## Description

The MI-12371 Speaker Transformer is an unpotted unit having several taps on the primary winding, and a tap on the secondary winding, so that several commonly used values of speaker voice coil impedance can be coupled to any of several line impedances. It is designed for bracket mounting, and connections are made by 8 inch leads brought out of the windings. MI-12372 Speaker Transformer is identical to the MI-12371 except that it is potted for export. The secondary of the transformer may be used as an auto-transformer if the primary is not connected.

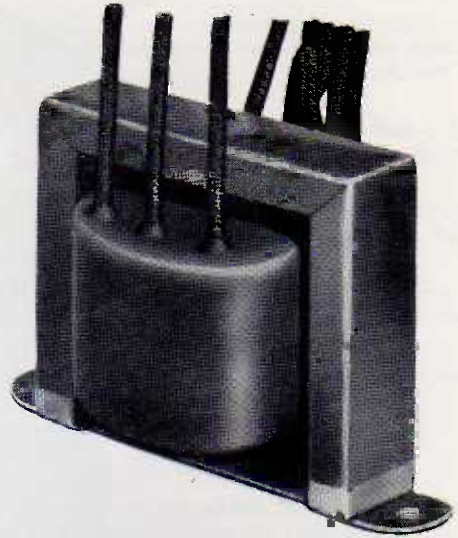
## Specifications

Impedances Available \_\_\_\_\_ See chart  
 Note 1: Black-Red/Black taps to be used only where low frequencies (below 200 cycles) are cut off by a high pass filter.

Note 2: When low frequencies (below 200 cycles) are cut off, the power handling capacity of the speaker transformer is increased to 16-20 watts.



MI-12372



Frequency Range	50 to 10,000 cycles
Distortion	Less than 1% at 125 volts, 100 cycles, on 2000 ohm tap
Power Handling Capacity	Normal 8-10 watts, 200-6500 cycles, 16-20 watts
Length	2 $\frac{3}{8}$ "
Width	2"
Height	2 $\frac{5}{8}$ "
Weight	1 $\frac{1}{4}$ lbs.
Shipping Weight	2 lbs.

## ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The 10 watt speaker transformer shall be a unit with separate primary and secondary windings, suitable for coupling 2, 3.2, 6, or 15 ohm voice coils to speaker lines of a wide range of impedance values. Primary and secondary windings shall be tapped and the leads shall be color-coded as follows:

Primary:	16000 ohms (Black-Black/Red Tracer)
	8000 ohms (Black-Brown/Black)
	4000 ohms (Black-Brown)
	2000 ohms (Black-Red)
	1000 ohms (Black-Red/Black)
Secondary:	2 ohms (Green-Green/Yellow)
	6 ohms (Green/Yellow-Yellow)
	15 ohms (Green-Yellow)

The maximum primary voltage shall be 125 volts rms on all taps except 1000 ohms from 100 to 6500 cycles; and shall be 125 volts rms on all taps from 200 to 6500 cycles. The frequency range shall be from 50 to 10,000 cycles. The distortion shall be less than 1% at 100 cycles with 125 volts rms on the 2000 ohm taps. The transformer shall be 2 $\frac{5}{8}$ " high, 2 $\frac{3}{8}$ " long, 2" wide; and shall weigh 1 $\frac{1}{4}$  lbs. It shall be unpotted, and connections shall be made by 8" leads.



# Loudspeaker Transformer MI-12373

## Features

- Wide range of impedances.
- Good power capability.
- Excellent frequency response.
- Low distortion.

## Uses

The MI-12373 transformer has been designed to couple voice coils of 2-4 or 6-8 ohms to a wide range of line impedances in multiple-speaker commercial or industrial sound applications.

## Description

This transformer has separate primary and secondary windings, both of which are tapped for matching different impedances. The transformer is designed for bracket mounting, and connections are made to 10" leads brought out from the windings. The secondary of the transformer can be used as an auto-transformer, if the primary is not connected.

The same transformer, potted for export, is known as the MI-12374.

## Specifications

Impedances Available \_\_\_\_\_ See chart

- 6-8 ohm load on 6 ohm (Green-Blue) tap-or-
- 2-4 ohm load on 2 ohm (Green-Green/Yellow) tap:
  - 16,000 ohms (Red-Black)
  - 8,000 ohms (Red-Red/Black)
  - 4,000 ohms (Red-Red/Yellow)

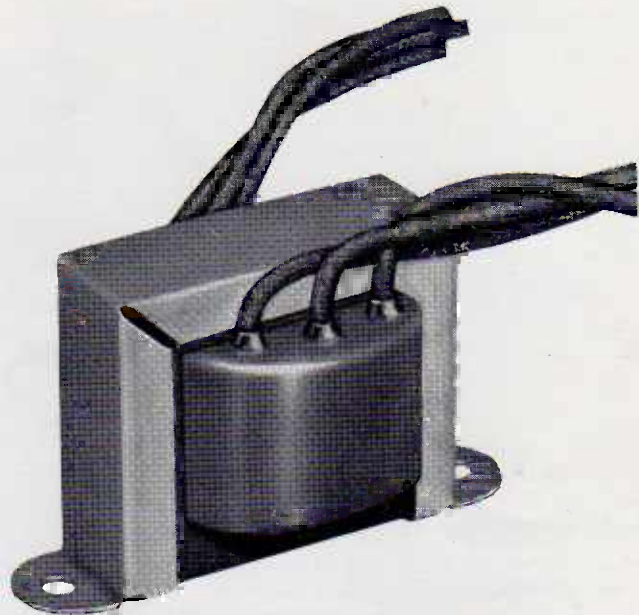
Power Handling Capacity \_\_\_\_\_ 5 watts

Maximum Primary Voltage \_\_\_\_\_ 125 volts, 100-12,000 cycles

Distortion \_\_\_\_\_ Less than 2% between 100 and 8000 cycles when loaded as shown under "Primary Impedances" and driven by any RCA amplifier.



MI-12374



Frequency Response \_\_\_\_\_ Within 1 db of 1000 cycles value from 100 to 12,000 cycles

Height	_____	2"
Length	_____	2 $\frac{7}{16}$ "
Width	_____	1 $\frac{1}{2}$ "
Mounting Centers	_____	1 $\frac{11}{16}$ "
Connections	_____	10" leads
Net Weight	_____	$\frac{3}{4}$ lbs.
Shipping Weight	_____	1 $\frac{1}{4}$ lbs.

## ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The loudspeaker transformer shall have separate tapped primary and secondary windings, from which 10" leads shall be brought out for connections. These leads shall be color-coded as follows:

- Secondary 2 ohm tap (Green-Green/Yellow)
- 6 ohm tap (Green-Blue)

Primary taps with secondary properly loaded:

- 16,000 ohms (Red-Black)
- 8,000 ohms (Red-Red/Black)
- 4,000 ohms (Red-Red/Yellow)
- 1,369 ohms (Black-Red/Black)
- 686 ohms (Red/Yellow-Red/Black)

The transformer shall handle 5 watts with 125 RMS volts on any primary tap, from 100-12,000 cycles, under which conditions the distortion shall be less than 2% and the frequency response within 1 db of the 1000 cycle value. The transformer shall be 2" high, 2 $\frac{7}{16}$ " long, 1 $\frac{1}{2}$ " wide, and shall be designed for bracket mounting on 1 $\frac{11}{16}$ " centers. The weight shall be  $\frac{3}{4}$  lbs.

# Distribution Transformer, MI-12370

## Features

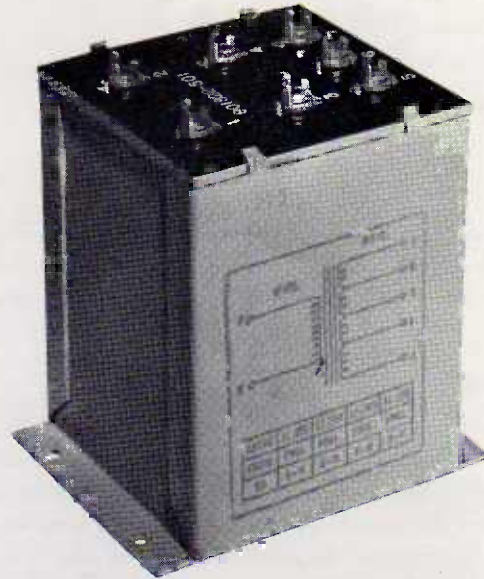
- High power capacity.
- Wide frequency response.
- Low distortion.
- Wide variety of output voltages available.

## Uses

This transformer is used to couple a loudspeaker line or a group of loudspeaker lines to an audio amplifier or other source of power, the terminal voltage of which is 125 volts rms or less. It will properly proportion the input power among the loudspeaker lines. The transformer provides an easy and convenient means of varying the load power to a loudspeaker line. It can be loaded with groups of lines, just as though the transformer itself were the source of power, until the total power to all the loudspeakers amounts to 40 watts—the power rating of the MI-12370.

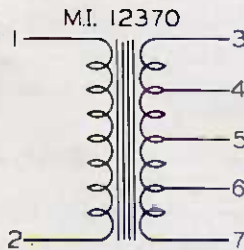
## Description

The MI-12370 distribution transformer has excellent frequency response and low distortion. It has separate primary and secondary windings. The secondary has three taps which, for a given primary voltage, provide ten different output voltages for delivery to a load. All the taps connect to lugs on a bakelite terminal cover, to which the load may be attached by either a screw or solder connection. The transformer is enclosed in a metal case which is finished in silver gray. The terminal arrangements, voltage ratios and a schematic diagram of the windings is stenciled on the side of the case. Four holes through the two bottom flanges provide for mounting the unit.



## Specifications

- Conservative Power Handling Capacity \_\_\_\_\_ 40 watts  
 Nominal Primary Voltage \_\_\_\_\_ 125 volts rms  
 Frequency Response \_\_\_\_\_  $\pm 2$  db, 30 to 20,000 cycles  
 Dimensions:  
 Base \_\_\_\_\_  $3\frac{1}{4}$ " x  $4\frac{3}{8}$ "  
 Height (to top of terminals) \_\_\_\_\_ 5"  
 Mounting \_\_\_\_\_ Four .180" dia. holes with center lines 2" x  $3\frac{1}{8}$ "  
 Finish \_\_\_\_\_ Silver gray  
 Weight (unpacked) \_\_\_\_\_ 7 lbs.



## Architects' and Engineers' Specifications

The distribution transformer shall have a power rating of 40 watts. It shall have separate primary and secondary windings. The nominal primary voltage rating shall be 125 volts rms. The secondary shall be tapped so that the following voltage ratios will be available between the start end of the secondary winding and each succeeding tap; namely, 1-0.257, 1-0.363, 1-0.513, 1-0.726. The frequency response shall be  $\pm 2$  db from 30 to 20,000 cycles. The leads shall be brought to seven screw and/or solder terminal lugs on a bakelite top terminal board. The transformer shall be enclosed in a metal case which shall be finished in silver gray. The unit shall have these dimensions: base,  $3\frac{1}{4}$ " x  $4\frac{3}{8}$ "; overall height, 5". It shall have four (.180" dia.) mounting holes with center lines 2" x  $3\frac{1}{8}$ ". The net weight shall be 7 lbs.

TERMINALS	TURNS RATIO	PRIMARY CONNECTED TO 250 OHMS		PRIMARY CONNECTED TO 370 OHMS		PRIMARY CONNECTED TO 390 OHMS		PRIMARY CONNECTED TO 500 OHMS	
		IMPEDANCE (OHMS)	VOLTS	IMPEDANCE (OHMS)	VOLTS	IMPEDANCE (OHMS)	VOLTS	IMPEDANCE (OHMS)	VOLTS
1-2	---	250	100	370	121.6	390	125	500	141
3-4	1-0.257	16.5	25.7	24.4	31.2	25.7	32.5	33	36.2
3-5	1-0.363	33	38.3	48.8	44.7	51.4	45.4	66	51.7
3-6	1-0.513	66	51.3	97.5	62.5	102.8	64.2	132	72.3
3-7	1-0.726	132	72.6	195	88.3	205.6	90.7	264	102.3
4-5	1-0.106	3	11	4.3	13.1	4.38	13.2	6	15.5
4-6	1-0.256	16	25.3	24.4	31.2	25.6	32	32	35.8
4-7	1-0.489	53	45.9	81	56.9	86.2	58.7	106	85.1
5-6	1-0.150	5.3	14.5	7.9	17.8	8.78	18.5	10.6	20.6
5-7	1-0.363	31	35.3	49	24.3	51.4	45.3	63	50.7
6-7	1-0.213	11	21	17.6	26.5	17.8	26.7	22	29.7

NOTE—ALL VALUES BASED ON 40 WATTS



# PROGRAM CONTROL & DISTRIBUTION EQUIPMENT



76-C - Console

PROGRAM CONSOLETES

CABINETS

RACKS

UNIT-BUILT CONSOLES

# Program Consolettes MI-12798 and 12799



### Features

- "Built-in" AM-FM tuner.
- "Long and Short" wave AM reception.
- 30 watts audio power.
- Audio and radio controls centrally located.
- Volume indicator meter.
- Switches for 20 speakers.
- Provisions for adding 20 more speaker switches.
- "Talk back" (MI-12799 only).
- Attractively finished light umber gray and dark umber gray.
- 3 low impedance inputs—two high impedance inputs.

### Uses

The Program Consolette as the name implies was designed for supplying a single program to any or all of 40 zones or areas. It can also be used for paging calls and announcements.

### Description

The MI-12798 and MI-12799 single channel Program Consolettes are of the same general construction with the exception that MI-12798 does not have the "talk back" or "talk"—"listen" feature. They are single channel systems for picking up, mixing, amplifying and distributing programs to as many as 40 separate points. In the MI-12799 only, "talk back" may be had from any of the points to which the program is distributed.

Included in the MI-12799 and MI-12798 are a 30 watt amplifier MI-12286, and AM-FM radio tuner MI-6784, a radio power supply MI-12502, two banks of zone switches (10 per bank) with space for adding 2 additional banks of 10 switches each. (These switch banks are MI-12796); a VI meter for measuring output, plus switches for controlling power, and cutting the VI meter into the output circuit. The MI-12799 contains in

addition a "talk back" amplifier, built-in loudspeaker and push button control assembly for "talk" or "listen."

Four mixer controls are located on the front panel, three of these control three microphone inputs (Mic. 1, 2, 3) or two microphone inputs and one high impedance high gain phonograph input. The fourth control (PGM) varies the level of the input selected by the program switch—radio, phono or line.

The cabinet is sturdily constructed of metal with the center portion finished with a light umber gray metalustre finish and the ends finished in dark umber gray. The top has rows of louvres to provide adequate ventilation.

### Specifications

Inputs:	<i>Source Impedance</i>
Microphone 1, 2, 3	250 ohms
Phonograph #1	470,000
Phonograph #2 (PGM)	500,000
(Radio, Phono, Line)	

Input Levels:	<i>Maximum Allowable</i>	<i>Minimum for Rated Output</i>
Microphone 1, 2, 3	0.0215 V rms	0.000159
Phonograph #1	0.93	0.0215
Phonograph #2 (PGM)	9.0	0.215
(Radio, Phono, Line)		

Output:	
Load Impedance	250-60-15-8-4
(Connected for 250 ohms—other impedances available)	

Gains:	<i>RMA</i>
117 V. Line, 1000 cycle input	
Microphone 1, 2, 3	114 db
Phonograph #1	103 db
Phonograph #2 (PGM)	76 db
(Radio, Phono, Line)	
Talk-back Amplifier (MI-12799 only)	108 db

**Frequency Response: (Tone Control 0)**

- Microphone 1, 2, 3 \_\_\_\_\_  $\pm 2.5$  db 50 to 10,000 cycles
- Phonograph #1 \_\_\_\_\_  $\pm 4.5$  db 50 to 10,000 cycles
- Phonograph #2 (PGM) \_\_\_\_\_  $\pm 2$  db 50 to 10,000 cycles  
(Radio, Phono, Line)

Distortion (117 volts on high power tap) \_\_\_\_\_ 4% at 30 watts

Noise Levels: Tone Control 0, 117 volt line 0.006 W. ref.

- Microphone 1, 2, 3 \_\_\_\_\_ -12 db
- Phonograph #1 \_\_\_\_\_ -13 db
- Phonograph #2 (PGM) \_\_\_\_\_ -28 db  
(Radio, Phono, Line)

**Gain Controls:**

1. Individual gain controls for microphone 1, 2 and 3 in main amplifier.
2. Individual gain control for PGM channel in main amplifier.

**Frequency Response Control:** Dual 1 megohm potentiometer in main amplifier. Center position flat response; maximum counter clockwise, maximum low; maximum clockwise maximum high.

**Switches, Power Controls:**

1. VI meter switch. Cuts VI meter in and out of circuit.
2. Monitor switch. Energizes line to external monitor speaker.
3. Communication power switch. Energizes communication amplifier in MI-12799 only.
4. Program amplifier switch. Energizes program amplifier.
5. Interlock. Cuts off all a-c power to consolette if cover is opened. Located on top, left, rear of frame.
6. Radio volume. Controls output voltage of radio.
7. Radio Off-On. Turns radio a-c power on if PGM switch is in on position.
8. Radio tuning.
9. Radio range. Selector AM, FM or shortwave band for radio.
10. Talk-Listen. In MI-12799 only. Push "talk" to use communication microphone. Push "listen" to hear talk back from zone selected.
11. Master. PGM position sends output of program amplifier to speaker selected.

Off position cuts off output of program amplifier.

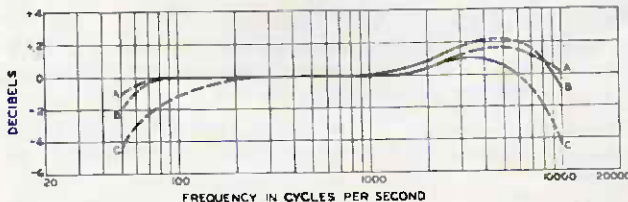
All position sends output of program amplifier to all speakers whose switches are not on COMM position.

Program. Selects one of three inputs, radio, phonograph or line, to be fed into #2 phono. (PGM) Input of MI-12286.

Select switches. Select program, off, or communication (MI-12799 only) for one speaker line.

Power Source \_\_\_\_\_ 105-125 volts, 50-60 cycles

Maximum Power Consumption MI-12799  
117 volts line 3.5 amp. 375 watts



CURVE A PHONO INPUT NO 2  
CURVE B LOW IMPEDANCE MICROPHONE INPUTS  
CURVE C PHONO INPUT NO 1

**Mechanical Data:**

- Net Weight \_\_\_\_\_ 105 lbs.
- Length \_\_\_\_\_ 44"
- Depth \_\_\_\_\_ 20 1/2"
- Height \_\_\_\_\_ 10 3/4"
- Finish \_\_\_\_\_ Light umber gray metalustre with dark umber ends

**Means for external connections:**

1. Male receptacle for a-c.
2. Microphones: Three Cannon locking type receptacles.
3. Phonograph #1: Standard shorting type jack.
4. Monitor Speaker: Jones type terminal board.
5. Communication Microphone: Cannon locking type receptacles (MI-12799 only).
6. Phonograph and Line: Jones type terminal board.
7. Room lines: Solder type terminals.

**Tube Complement:**

- Radio \_\_\_\_\_ 3 RCA Type 6BA6; 1 RCA Type 6BE6; 2 RCA Type 6AU6; 1 RCA Type 6AL5; and 1 RCA Type 6AT6
- Power Supply \_\_\_\_\_ 1 RCA Type 5Y3GT
- Main Amplifier \_\_\_\_\_ 4 RCA Type 6J7; 1 RCA Type 6SN7GT; 4 RCA Type 6V6GT/G; and 1 RCA Type 5U4G

**Frequency Range (Radio):**

- Standard Broadcast Band \_\_\_\_\_ 540-1600 kc
- Short Wave Band \_\_\_\_\_ 9.2-16.0 mc
- FM Band \_\_\_\_\_ 88-108 mc

**Intermediate Frequency:**

- Amplitude Modulation (AM) \_\_\_\_\_ 455 kc
- Frequency Modulation (FM) \_\_\_\_\_ 10.7 mc

**Architects' and Engineers' Specification**

The program consolette shall be housed in a metal cabinet having ventilation louvres in the top. The cabinet shall house the following equipment, an AM-FM receiver, radio power supply, and 25-30 watt amplifier, \*a "talk-back" amplifier shall be included in the equipment. The front panel shall have the radio and amplifier controls, two banks of zone switches with 10 switches per bank and provision for adding two more banks of 10 switches each, VI meter, switch for VI meter, monitor switch, for external monitor speaker, two power switches, two power indicator lamps, and a program selector switch. \*Two push button switches for "Talk"—"Listen" and a small speaker shall be provided on the front panel for "Talk Back" purposes. The general specifications shall be as follows: (copy foregoing specifications).

