



# **AUDIO EQUIPMENT FOR BROADCASTING**

**AMPLIFIERS  
ACCESSORIES  
SPEAKERS**

**GENERAL  ELECTRIC**



# **AUDIO EQUIPMENT FOR BROADCASTING**

**AMPLIFIERS  
ACCESSORIES  
SPEAKERS**

ELECTRONICS DEPARTMENT

**GENERAL  ELECTRIC**

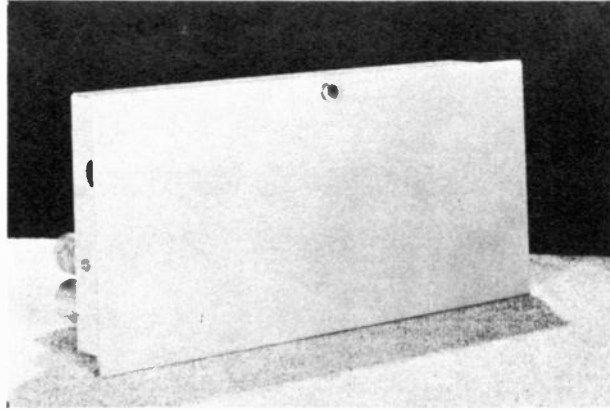
SYRACUSE 1, N. Y.



## TABLE OF CONTENTS

Construction Features . . . . .	4
Audio Equipment for a Typical Broadcast Installation . . . . .	6
 Section 1	
Two Stage Preamplifier Type BA-1-B . . . . .	10
Preamplifier Power Supply, Type BP-1-A . . . . .	13
Utility Input Amplifier, Type BA-10-A . . . . .	15
Program Amplifier, Type BA-2-A . . . . .	16
Monitoring Amplifier, Types BA-4-C & BA-4-D . . . . .	18
 Section 2	
Program Level Indicator Panel, Type FA-1-A . . . . .	24
Jack Strips and Jack Panels, Types FA-2-A, FA-3-A, FA-3-B, FA-3-C . . . . .	26
Switch and Fuse Panel, Type FA-4-A . . . . .	27
Panel and Mounting, Type FA-5-A . . . . .	28
Blank Panels, Types FA-6-A to FA-6-G, inclusive . . . . .	28
Patch Cords, Types FA-7-A, FA-7-B, FA-7-C . . . . .	30
Cabinet Rack, Type FA-8-A . . . . .	30
Cabinet Rack Accessory Kit, Type FA-9-A . . . . .	32
D-c Metering Panel, Type FA-11-A . . . . .	33
Filament Transformer Kit, Type FA-13-B . . . . .	34
Equalizer Panel, Type FA-14-A . . . . .	34
Microphone Cable, Type FA-15-A . . . . .	35
Microphone Plugs and Receptacles, Types FA-16-A, FA-16-B, FA-16-C . . . . .	35
Interconnecting Cables, Types FA-19-A, FA-19-B, FA-19-C, FA-19-D . . . . .	35
 Section 3	
Monitoring Speaker, Type FS-1-A . . . . .	40
Studio Wall Speaker, Type FS-2-A . . . . .	41
Small Station Floor Plan . . . . .	42
Index . . . . .	43

# DISTINCTIVE G-E PANEL CONSTRUCTION



Front view of the rack-mounted unit with hinged panel closed.

## FEATURES.....

1. Vertical chassis construction - excellent air circulation around tubes and transformers to provide adequate cooling.
2. Tubes and plug-in electrolytic capacitors in direct view from rear of cabinet rack for checking and servicing.
3. Small components and wiring quickly accessible from front of cabinet rack by simply opening front panel.
4. Complete unit services without removal from cabinet.
5. Chassis mounting screw concealed by closed front panel - no cabinet trim strips required.
6. Front panel permanently attached to chassis.
7. Instant and complete accessibility without removal of any parts.

## CONSTRUCTION

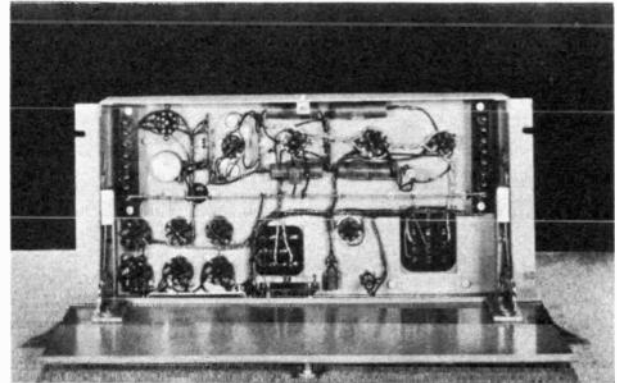
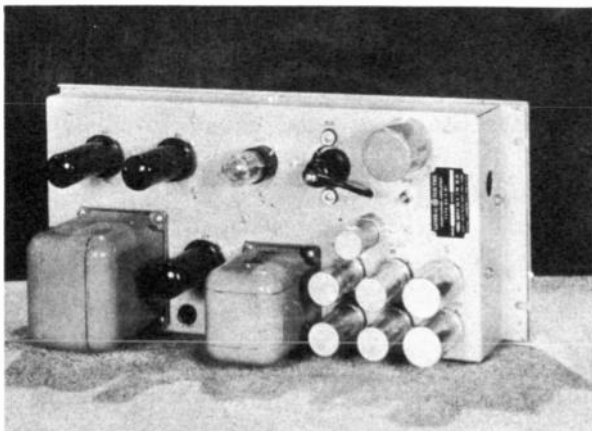
Each unit employs a recessed-type chassis with mounting flanges for bolting the chassis vertically in an RMA standard 19-in. cabinet rack. The panel is attached to the chassis by means of concealed hinges. This panel covers the recessed portion of the chassis and mounting screws.

Tubes, transformers, and large capacitors, mounted on the rear of the chassis, project out horizontally. Small components, wiring, and terminal boards, contained within the recessed portion of the chassis, are readily accessible for servicing when the front panel is opened.

Potentiometers, attenuators, switches, and instruments, requiring control from the front of the panel, are mounted directly on the hinged panel. A conduit hole in each end of the chassis is provided for entrance of external audio, power, and metering leads. Both chassis and panel are constructed of aluminum alloy. The upper and lower edges of the panel are turned in 90 degrees for a depth of 5/16 inch to provide clearance for chassis mounting screws and to increase the rigidity of the panel.

Specially constructed hinges raise the panel and prevent interference between the panel, the rack, and the adjacent panels. The hinges are equipped with a stop so that the panel, when opened, forms a convenient shelf.

Rear View. Note accessibility of tubes and plug-in capacitors.



Front View. The panel has been opened to give complete access to the wired circuit components.

## G-E RACK UNITS ARE FOR:

### AMPLIFIERS

Two-stage Preamplifiers* (also used as isolation amplifier)	Type BA-1-B
Utility Input Amplifier* (preamplifier with built-in power supply)	Type BA-10-A
Program Amplifier (also used as line, isolation, or emergency monitoring amplifier)	Type BA-2-A
Monitoring Amplifier (also used as recording or emergency program amplifier)	Type BA-4-C

### ACCESSORIES

Program Level Indicator Panel	Type FA-1-A
Preamplifier Power Supply	Type BP-1-A
D-C Metering Panel	Type FA-11-A
Equalizer Panel	Type FA-14-A
Switch and Fuse Panel	Type FA-4-A
Jack Strips and Panels	(several types)
Blank Panels	(several types)

\* Use Type FA-5-A Panel and Mounting with BA-1-B and BA-10-A Amplifiers.

NOTE: Type FA-4-A Switch and Fuse Panel and Type BP-1-A Preamplifier Power Supply use hinged panel. Other accessory panels do not.

# **AUDIO EQUIPMENT for a TYPICAL BROADCAST INSTALLATION . . . . .**

The equipment listed on page 7 may be used as a guide for equipping a typical broadcast studio consisting of control room, announce booth, and two studios. There will be many special factors to consider in each installation, and, in these cases, General Electric is prepared to offer suggestions concerning the required equipment.



**I STUDIO EQUIPMENT** (Two studios, control room, announce booth.)

ITEM	QUAN.	DESCRIPTION
<u>A. Control Unit</u>		
1	1	Studio consolette, Type BC-1-A
2	1	Set of tubes for Type BC-1-A
3	4	Relay assembly, Type FA-20-A (for signal light)
<u>B. Equipment Rack</u>		
1	1	Cabinet rack, Type FA-8-A
2	1	Cabinet rack accessory kit, Type FA-9-A
3	2	Double-row jack strip, Type FA-2-A
4	1	Double jack panel, Type FA-3-B
5	1	Equalizer panel, Type FA-14-A
6	2	Utility input amplifiers, Type BA-10-A
7	2	Sets of tubes for BA-10-A
8	1	Panel and mounting, Type FA-5-A (for item 6)
9	1	Switch and fuse panel, Type FA-4-A
10	4	Blank panels, Type FA-6-D
11	3	Blank panels, Type FA-6-E
12	4	Patch cords, Type FA-7-A
<u>C. Transcription Machines</u>		
1	2	Transcription turntables
<u>D. Microphones and Accessories</u>		
1	2	Velocity microphones
2	2	Directional microphones
3	2	Pressure microphones
4	2	Boom stands
5	2	Floor stands
6	2	Desk stands
7	6	Microphone plugs, Type FA-16-A
8	6	Microphone receptacles, Type FA-16-C
<u>E. Loudspeakers and Headphones</u>		
1	1	Monitoring loudspeaker, Type FS-1-A
2	1	Monitoring loudspeaker base, Type FA-17-A
3	3	Studio wall speakers, Type FS-2-A
4	1	High-fidelity headphones
<u>F. Cable</u>		
1	1000 ft	Interconnecting cable, Type FA-19-A
2	1000 ft	Interconnecting cable, Type FA-19-B
3	1000 ft	Interconnecting cable, Type FA-19-D

**II AUDIO FACILITIES AT TRANSMITTER LOCATION**  
 (Transmitter and studios at different locations.)

ITEM	QUAN.	DESCRIPTION
<u>A. Console</u>		
1	1	Transmitter console, Type BC-3-A with extension meters from station monitor
<u>B. Equipment Rack</u>		
1	1	Cabinet rack, Type FA-8-A
2	1	Cabinet rack accessory kit, Type FA-9-A
3	2	Double-row jack strip, Type FA-2-A
4	1	Double jack panel, Type FA-3-B
5	2	Utility input amplifier, Type BA-10-A
6	2	Sets of tubes for BA-10-A
7	1	Panel and mounting, Type FA-5-A (for item 5)
8	1	Program amplifier, Type BA-2-A
9	1	Set of tubes for BA-2-A
10	1	Monitoring amplifier, Type BA-4-C
11	1	Set of tubes for BA-4-C
12	1	Equalizer panel, Type FA-14-A
13	1	Switch and fuse panel, Type FA-4-A
14	3	Blank panels, Type FA-6-D
15	2	Blank panels, Type FA-6-E
16	4	Patch cords, Type FA-7-A

C. Transcription Machine

1 1 Transcription turntable

D. Microphones and Accessories

 1 1 Microphone  
 2 1 Desk stand

E. Loudspeakers and Headphones

 1 1 Monitoring loudspeaker, Type FS-1-A  
 2 1 Monitoring loudspeaker base, Type FA-17-A  
 3 1 High-fidelity headphones

F. Cable

 1 1000 ft Interconnecting cable, Type FA-19-A  
 2 1000 ft Interconnecting cable, Type FA-19-B

Note 1. The station monitor, and some items of test equipment, can be mounted in the cabinet rack listed above.

Note 2. A limiting amplifier may be substituted for the program amplifier listed in section "B" above.

# 5EC. 1

# **BROADCAST AUDIO AMPLIFIERS**

## TWO-STAGE PRE-AMPLIFIER TYPE BA-1-B

### GENERAL

The G-E Type BA-1-B Two-stage Preamplifier is a high-fidelity, fixed-gain, low-level amplifier for use in modern AM, FM, and Television audio facilities systems. It is powered from an external supply.

### USES

The BA-1-B is recommended for use as a microphone preamplifier and as a "booster" amplifier between mixers and master gain control. It also can be used as an isolation amplifier when equipped with suitable bridging resistors.

### CIRCUITS

The BA-1-B consists of two resistance coupled stages using Type 1620 tubes. A feedback loop is used around both stages. Specially designed input and output transformers with hum-bucking coil construction and alloy shields are used. Internal output impedance approximately matches the load impedance over the entire frequency range. Special precautions are observed in the input tube circuit to minimize cathode hum. Cross-talk between preamplifiers is held at a low value by careful shielding and circuit isolation.

Tube check voltages of 1.6 volts from tapped cathode resistors can be fed through a selector switch furnished with the Type FA-5-A Panel and Mounting, to a Type FA-11-A D-c Metering Panel.

Filament and plate power for the amplifier can be obtained from a G-E Type BP-1-A Preamplifier Power Supply.

### CONSTRUCTION

The amplifier is built on a flat plate chassis, four of which can be shock mounted on a Type FA-5-A Panel and Mounting for installation in a standard 19-in. RMA relay rack. Mounted in this manner, four preamplifiers plus mounting occupy 8 3/4 inches of rack space, and a maximum of 6 1/2 inches behind the rack mounting surface, including components.

All electrolytic capacitors are of plug-in type. Solder-lug terminals located in convenient positions are provided for input and output connections.

### FEATURES

First stage tube and chassis are shock mounted. Input tube cathode adequately bypassed; stage not critical to filament circuit unbalances. Output impedance approximately matches load impedance.

Hum-bucking, alloy-shielded input and output transformers.

Low cross-talk level.

Wiring and components easily accessible when mounted on FA-5-A Mounting.

Provisions for quick tube check.

Will not overload on high microphone outputs.

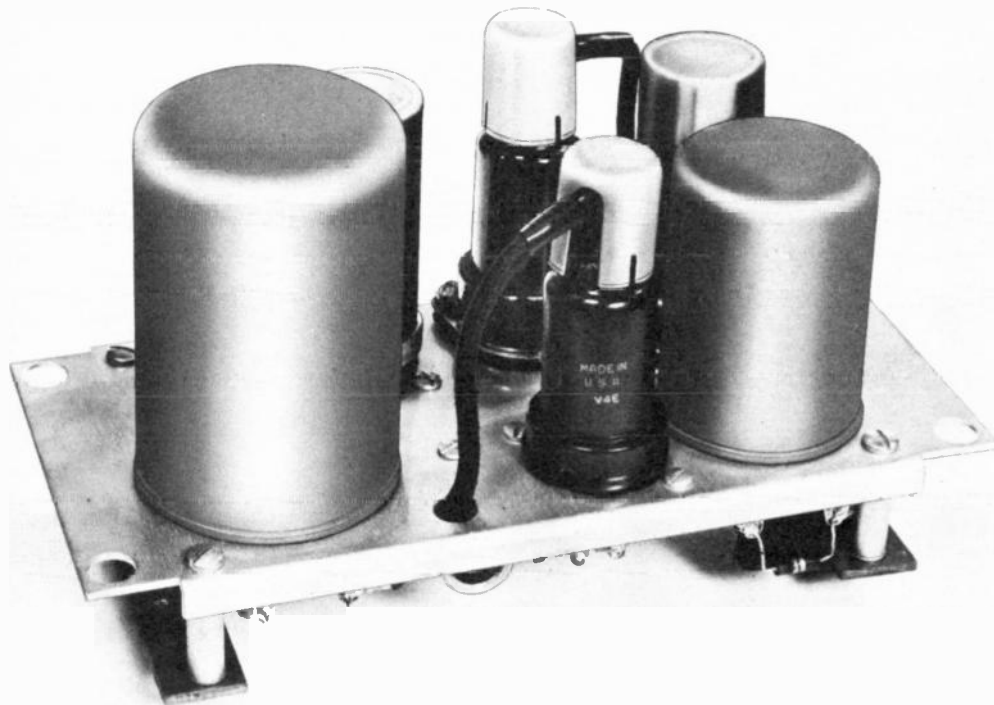
Plug-in electrolytic capacitors for easy servicing.

Up-to-date circuit features insure highest fidelity operation.

All inputs and output may be balanced or unbalanced.

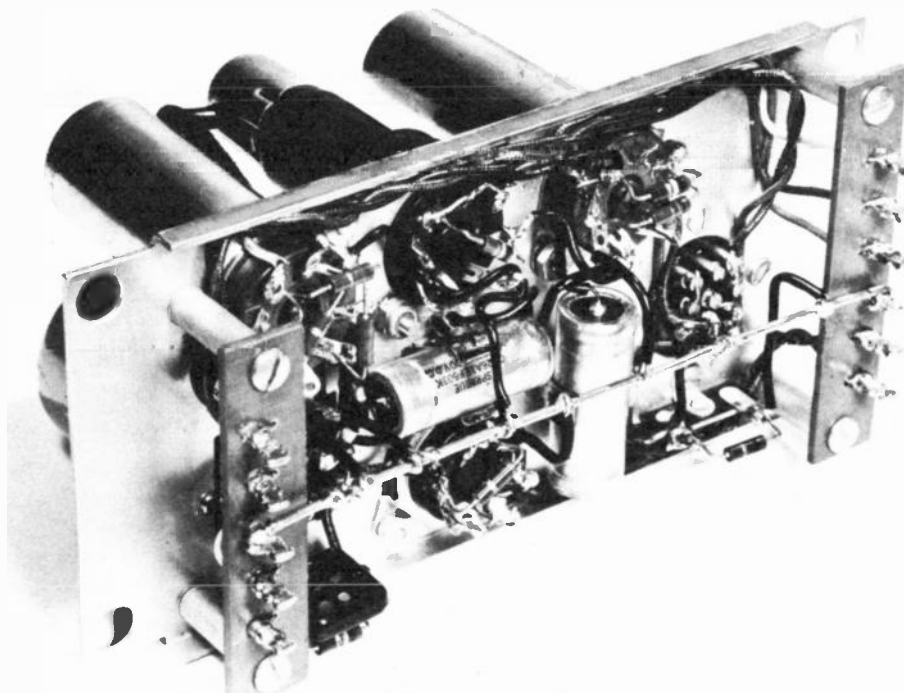
Can be used as isolation amplifier.

(Continued on Page 12)



THE BA-1-B PREAMPLIFIER

CAREFUL DESIGN - TESTED COMPONENTS - STURDY CONSTRUCTION



(Continued from Page 10)

## SPECIFICATIONS

Power Supply:

Plate: 250 v, d-c @ 5 ma  
 Filament: 6.3 v, a-c or d-c @ 0.6A

Tube Complement:

2 G-E Type 1620

Input Circuits:

Source Impedance: 600/250/150/30 ohms  
 Input Impedance: Unloaded transformer  
 Input Connections: CT or either side may  
 be grounded for 600/150 ohms. Either side  
 only may be grounded for 250/30 ohms.

Output Circuits:

Load Impedance: 600/150 ohms  
 Output Impedance: 600/150 ohms approx  
 Output Connections: CT or either side  
 may be grounded for 600/150 ohms.  
 Maximum Output Levels: Plus 8 dbm with  
 less than 1/2 per cent distortion,  
 50-15,000 cycles. Plus 14 dbm with less  
 than 1 per cent distortion, 50-15,000  
 cycles.

Frequency Response:

Plus or minus 1 db, 30-15,000 cycles.

Gain:

40 db (based on unterminated input).

Noise Level:

80 db below output level of 0 dbm.

Metering:

Cathode resistors tapped at 1.6 v for  
 connections to external high-resistance  
 d-c Voltmeters.

Dimensions:

Flat plate chassis approx 5 1/8 in. by  
 8 3/16 in.  
 Components extend approx 3 inches from  
 flat-plate chassis.

Weight:

Approx 3 lbs.

## PRE-AMPLIFIER POWER SUPPLY

### G-E TYPE BP-1-A

#### GENERAL

General Electric Preamplifier Power Supply Type BP-1-A is designed particularly for use in supplying filament and plate power for Preamplifier, Type BA-1-B. This power supply has capacity for the filaments and plates of five such preamplifiers, plus the plates of an additional five units of the same type where their filament supply is obtained from another source. For the latter purpose, extra cutouts are provided on the chassis for an additional filament transformer together with its associated hum-balancing potentiometer and fuse mounting. (These additional parts are available in kit form; namely, Filament Transformer Kit Type FA-13-B). The power supply then is capable of supplying the filaments and plates of ten (10) Preamplifiers Type BA-1-B.

This power supply may also be used to supply other apparatus requiring a well filtered 250-volt d-c plate supply and/or a 6.3 volt a-c filament supply at current ratings specified below.

#### CIRCUITS

A conventional full-wave rectifier circuit employing a 5Y3GT/G is used with a capacitor input filter having two L-C sections. The circuit also incorporates a 20,000 ohm bleeder and a variable resistance for screw-driver adjustment of the output voltage to compensate for the various loads which may be applied. The a-c filament supply is grounded through a screw-driver-controlled hum-balancing potentiometer.

#### FEATURES

Plug-in electrolytic capacitors used for ease in servicing and periodic quality checking.

Hinged panel makes components, wiring, and controls readily accessible from front of rack.

Flush mounted plug-in power receptacle.

Well filtered d-c output assists in maintaining low-hum level in preamplifier circuits.

Attractively finished to blend with modern surroundings.

Conservatively designed for long, trouble-free operation.

#### PHYSICAL CONSTRUCTION

The Type BP-1-A occupies a standard 19-in. rack space of 7 inches, and extends a maximum of 7 3/4 inches behind the rack mounting surface, including components. The hinged front panel (when closed) protrudes 5/16 inches ahead of the rack mounting surface, exclusive of the small locking knob. In addition, the hinged front panel is removable, making it possible to use the power supply as a base mounted unit. Removal of a plug button at either or both ends of the chassis exposes 7/8-in. diameter holes which may be used as convenient entries to the power supply for external wire or cable connections.

#### SPECIFICATIONS

##### A-c Input:

105/115/125 volts, 50/60 cycles.

##### A-c Filament Supply:

6.4 volts @ 3.0 amp

##### D-c High-voltage Supply:

Adjustable to 250 volts with loads between 5 and 50 ma.

##### Hum Level:

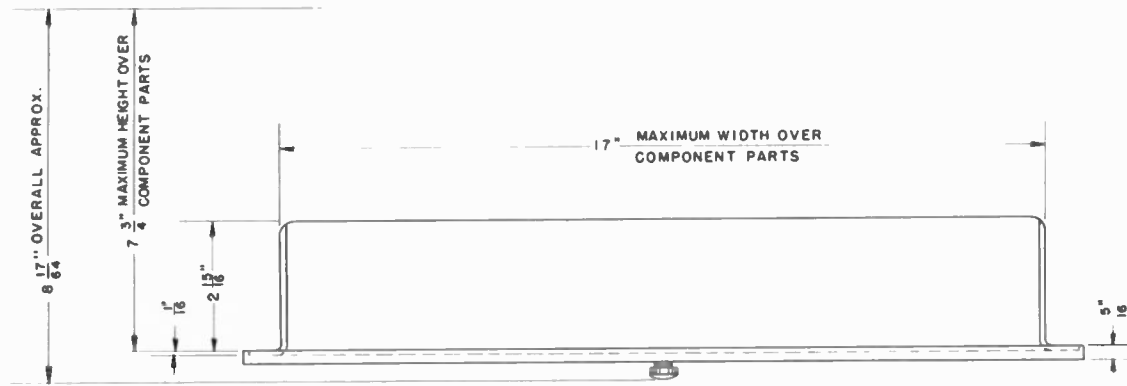
-134 db maximum (compared to the 250-volt d-c output at 50 ma).

##### Dimensions:

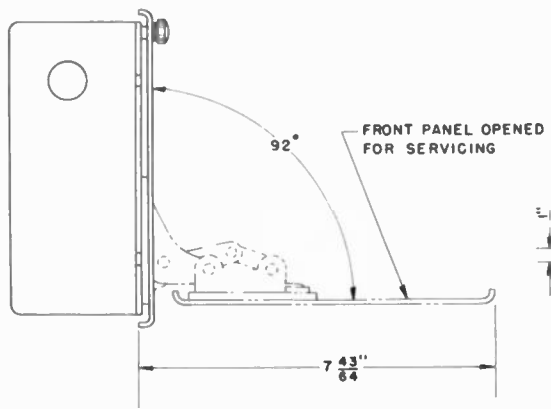
Width: 19 inches  
Height: 6 31/32 inches  
Depth: 8 17/64 inches

##### Weight:

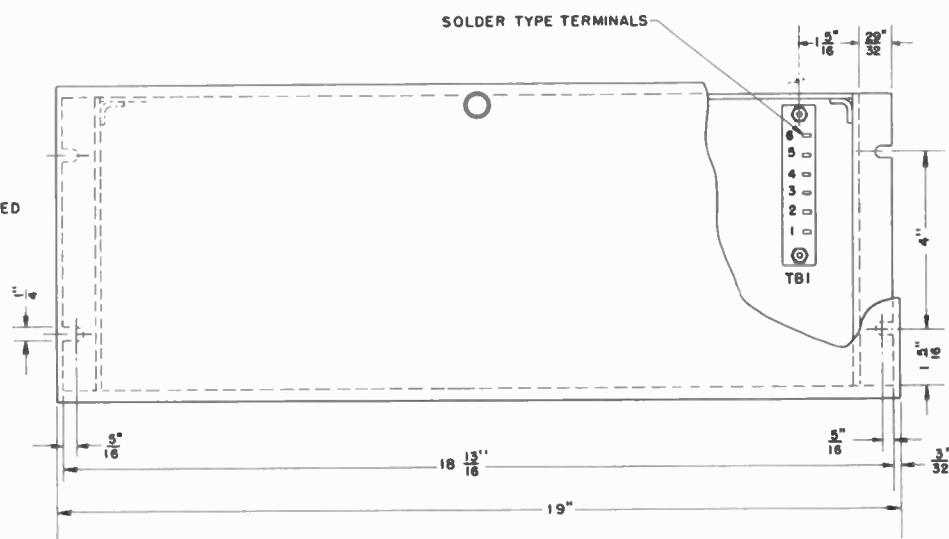
Unpacked: 20 lbs



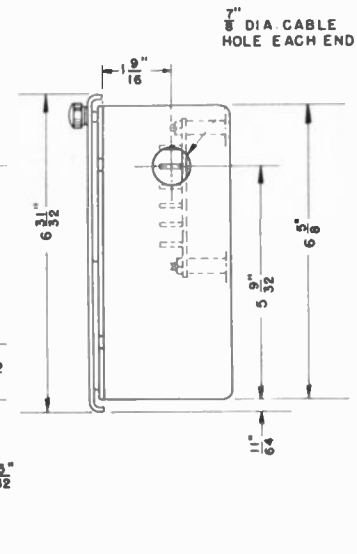
TOP VIEW



LEFT END VIEW



FRONT VIEW



RIGHT END VIEW

PRE-AMPLIFIER POWER SUPPLY  
TYPE BP-1-A



## UTILITY INPUT AMPLIFIER TYPE BA-10-A

### GENERAL

The G-E Type BA-10-A Utility Input amplifier is a high-fidelity, two-stage, low-level amplifier with interstage gain control and self-contained power supply. Provisions for external tube-current metering is provided.

### USES

The BA-10-A is recommended for use as a microphone preamplifier, a booster amplifier located between mixers and master-gain control, a transcription pickup amplifier located in the turntable cabinet, an emergency announce-microphone amplifier at transmitter locations, a cueing amplifier between control-room microphones and studio headphones, and as an isolation amplifier when equipped with suitable bridging resistors.

### MOUNTING

The BA-10-A is built on a chassis which may be directly attached to a flat surface (base mounted), or, in conjunction with the G-E Type FA-5-B Panel and Mounting, two of the BA-10-A's may be installed in an 8 3/4-in. high rack space.

When rack mounted, the units are mounted vertically with interiors made accessible for servicing by means of the hinged front cover of the FA-5-A Mounting.

### FEATURES

Completely self-contained.  
Interstage gain control.  
Plug-in electrolytic capacitors.  
High fidelity - excellent for FM.  
Can be base or rack mounted.  
Triple-shielded hum-bucking audio transformer.  
Shock mounted first stage tube.  
Provision for plate current check.  
High gain makes unit very versatile.  
Flush-mounted, plug-in power receptacle.  
Double magnetically shielded power transformer.

### SPECIFICATIONS

Power Supply:  
105/115/125 volts, 50/60 cycles

Power Input:  
20 watts

Tube Complement:  
2 - G-E Type 1620  
1 - G-E Type 5Y3GT/G

Input Circuits:  
Source Impedance: 600/250/150/30 ohms

Input Connections:  
CT or either side may be grounded for 600/150 ohms. Either side only may be grounded for 30/250 ohms.

Input Impedance:  
Unloaded transformer

Output Circuits:  
Load Impedance: 600/150 ohms

Output Connections:  
CT or either side may be grounded for 600/150 ohms.

Output Impedance:  
600/150 ohms approx

Distortion and Output Power:  
0 dbm; less than 1/2 per cent distortion, 50-15,000 cycles. 4 dbm: less than 1 per cent distortion, 50-15,000 cycles.

Gain Control:  
Continuously variable log taper potentiometer with approximate calibration.

Frequency Response:  
± db, 30-15,000 cycles

Gain:  
50 db (based on unterminated input)

Noise Level:  
70 db below output level of 0 dbm at full gain.

Metering:  
Cathode resistors tapped at 1.6 v for connection to external high resistance voltmeter.

Dimensions:  
7-in. high (over-all), 8 3/16-in. long by 7 15/16-in. wide chassis.

Weight:  
10 lbs (approx)

## PROGRAM AMPLIFIER TYPE BA-2-A

### GENERAL

General Electric Program Amplifier Type BA-2-A is a high-quality, self-contained, rack-mounted audio amplifier which has a variety of applications in high-fidelity broadcasting systems.

### USES

The BA-2-A is recommended for use as a program or main amplifier, an isolation (bridging) amplifier, a line amplifier, or as an emergency monitoring amplifier.

### CIRCUIT

The circuit consists of 1620's in the first and second stage; and pentode-connected 1622 third stage with appropriate input and output transformers. Two feedback loops are employed, one around the first stage, and the other around the second and third stages. A Daven master gain control is located between the first and second stages, and a vernier gain control is located in the grid circuit of the first stage.

Means are provided to lower the fixed gain of the amplifier from 60 to 40 db with attendant allowable increase in input level.

A tube check switch is provided to check cathode currents of the amplifier tubes. A well filtered power supply using a 5R4GY as a full wave rectifier is included on the amplifier chassis.

### CONSTRUCTION

Program Amplifier Type BA-2-A is of vertical chassis construction with a hinged front panel on which are mounted the master gain control, screw driver operated vernier gain control, and the tube check switch. The amplifier is designed for mounting in an RMA standard relay pack space of 7 inches, and extends a maximum of 7 3/4 inches behind the rack-mounting surface including components. The hinged front panel

(when closed) protrudes 5/16 inch ahead of the rack mounting surface, exclusive of the small locking knob and other controls.

Removal of a plug button at either or both ends of the chassis exposes 7/8 inch diameter holes which may be used as convenient entries to the amplifier for external connections which are made to solder-lug type terminals on terminal boards within the amplifier chassis. The power cord plugs into a flush-mounted, recessed, male receptacle at the rear of the chassis.

All electrolytic capacitors are of the plug-in type.

### FEATURES

Power transformer tapped for wide range of line voltages.

Correct internal input and output impedances.

Master gain control, high-quality Daven type.

Vernier control overlaps steps of master-gain control.

Vernier control screw driver adjusted from front of panel.

Self-contained low-hum power supply.

Shock-mounted input tube.

Plug-in electrolytic capacitors for ease in servicing and periodic quality checking.

Hinged front panel simplifies servicing.

Nonshorting, plug-in power receptacles; complete power easily removed.

Attractively styled to match up-to-date cabinet-rack installations.

All inputs and outputs may be used balanced or unbalanced.

## SPECIFICATIONS

Power Supply:

105/115/125 volts, 50/60 cycles

Power Input:

60 watts, approx

Tube Complement:

2 - Type 1620  
1 - Type 1622  
1 - Type 5R4GY

Input Circuits:Matching:

Source Impedance: 600/150 ohms  
Input Impedance: 600/150 ohms approx

Bridging:

Source Impedance: 0 to 1000 ohm terminated resistive circuits.  
Input Impedance: 40,000 ohms

Output Circuits:

Load Impedance: 600/150/8/2 ohms  
Output Impedances: 600/150/8/2 ohms approx  
Maximum Output Level: Less than 1/2 per cent distortion 50-15,000 cycles, +25 dbm. Less than 1 per cent distortion

50-15,000 cycles, +32 dbm. Less than 2 per cent distortion 50-15,000 cycles +34 dbm.

Gain Control:

Master: Calibrated Daven potentiometer, 20 steps - 2 db per step.  
Vernier: Continuously adjustable over range of 2 1/2 db - screw driver adjusted from front panel.

Frequency Response:

Plus or minus 1 db, 30-15,000 cycles.

Gain:

Matching: 60 db  
Bridging: 39 db

The above values can be reduced 20 db by means of simple circuit changes.

Noise Level:

At least minus 50 dbm unweighted with amplifier at 60 db gain. (At plus 30 dbm output, the signal to noise ratio is therefore 80 db unweighted.)

Dimensions (over-all):

Width: 19 inches  
Height: 6 31/32 inches  
Depth: 7 3/4 inches max

Weight (unpacked):

20 lbs (approx)

## MONITORING AMPLIFIER TYPES BA-4-C & BA-4-D

### GENERAL

The General Electric Monitoring Amplifier, Type BA-4-C or Type BA-4-D, is designed primarily for monitoring purposes, although it may be used during emergencies in the program channel of a speech input system. Due to the high inherent gain of the amplifier, it has other possible applications: viz., as a control-room-to-studio talk-back amplifier where the talk-back microphone feeds directly without preamplification or as an electrical transcription cueing amplifier, again without preamplification.

### CIRCUITS

The amplifier comprises four amplifying stages, a cathode-follower type phase inverter, and a self-contained rectifier. Resistance coupling is used between stages. The phase inverter follows the third stage and drives the push-pull output stage. Degenerative voltage feedback is applied around the third and succeeding stages, serving the three-fold purpose of reducing harmonic distortion, improving frequency response, and improving the output voltage regulation. The improvement in voltage regulation is a distinct advantage in some installations because the load may be changed with no appreciable change in output voltage. The amplifier provides a supply of plate power for preamplifiers or other equipments, for emergency uses only.

A remote volume control is provided to be used external to the amplifier. It can be installed on a studio control console or at any other convenient location.

A screw driver adjusted chassis mounted control, connected between the first and second stages, is also included. It may be used when it is not convenient to use the remote volume control, or when it is desired to limit the maximum output of the amplifier to prevent accidental "blasting" of the speakers.

### CONSTRUCTION

The Type BA-4-C Monitoring Amplifier is designed to mount in a standard relay rack. The chassis, which includes a hinged front panel, bolts vertically to the rack. The front panel, when closed, presents an attractively finished flat surface which covers all mounting screws and hinges. The panel swings open 90 degrees, exposing the interior of the chassis. This provides easy access when servicing or checking, if necessary.

The Type BA-4-D Monitoring Amplifier is similar to the Type BA-4-C except that no hinged front panel is furnished. The Type BA-4-D is thus suitable for mounting on shelves, or in cabinets (such as in the base of loud-speaker cabinets). It can also be rack mounted without a front cover panel.

### SPECIFICATIONS

#### Power Supply:

105/115/125 volts, 50 to 60 cycles, 85 watts

#### Fuse:

A-c line, 2 amperes

#### Tube Complement:

First Stage: One Type 1620 (or 6J7)  
 Second Stage: One Type 1620 (or 6J7)  
 Third Stage: One Type 1620 (or 6J7)  
 Phase inverter Stage: One Type 1620 (or 6J7)  
 Output Stage: Two Type 1622 (or 6L6 or 6L6G)  
 Rectifier: One Type 5U4G

#### Input Circuits

Source Impedance: 250 or 30 ohms  
 Input Connections: C.T. or either side may be grounded for 250 or 30 ohms  
 Input Impedance: Unloaded transformer

Input Circuits with Remote Volume Control

Source Impedance: 0 to 600 ohms balanced circuits.

Input Connection: Grounded center tap.

Input Impedance: 10,000 ohms.

Output Circuits:

Load Impedance: 600, 150, 8 or 2 ohms.

Output Connections: May be grounded for 600 or 8 ohms. Either side only may be grounded for 150 or 2 ohms.

Output Impedance:

Less than 600, 150, 8, or 2 ohms.

Emergency Power Supplied to External Devices:

Approximately 320 volts, at 20 ma.

NOTE: When this plate power is used to supply preamplifier or other equipment requiring a minimum of hum and noise, it is recommended that additional external filtering be used. This plate supply is for emergency use only.

Mounting:

Type BA-4-C: Rack mounting

Type BA-4-D: Shelf mounting

Dimensions:

Type BA-4-C: 19 in. wide by 8 23/32 in. high by 8 17/64 in. deep over-all (see outline drawing P-7764607)

Type BA-4-D: 19 in. long by 8 3/8 in. wide by 7 13/16 in. high over-all (see outline drawing P-7768600)

Weight:

Type BA-4-C: 23 pounds

Type BA-4-D: 21 pounds

Power Output and Harmonic Distortion:

(50 to 15,000 cycles)

2 watts at 1 per cent max total RMS distortion.

10 watts at 1 1/2 per cent max total RMS distortion.

Maximum Gain at 1000 cps:

105 db† with 250/30 ohm input connection and 250/30 ohm input source impedance.

67 db‡ with 10,000 ohm bridging remote volume control and 300 ohm (terminated 600 ohm circuit) input source impedance.

† This gain is the ratio of "power delivered to load" to the "power which would be delivered to the load" if the amplifier were replaced by an ideal transformer connected to match the load and source impedance.

‡ This gain is the ratio of the "power in the 600-ohm source terminating resistance" to the "output power of the amplifier."

NOTE: The gains listed above apply for any output tap with proper loading.

The above gains may be reduced approximately 38 db by removal of the second stage tube, and replacing the grip clip connection to the third stage tube with the grid clip normally connected to the second stage tube. The interstage gain control should then be used to adjust power output. Under these conditions, the frequency response, power output, and distortion are as stated herein.

Frequency Response:

30 to 15,000 cycles - within +1 db at a reference frequency of 1000 cycles with 1 watt of output (+30 dbm★).

The above limits apply for any of the input connections listed under INPUT CIRCUITS above, and for any of the output connections listed under OUTPUT CIRCUITS.

Output Noise Level:

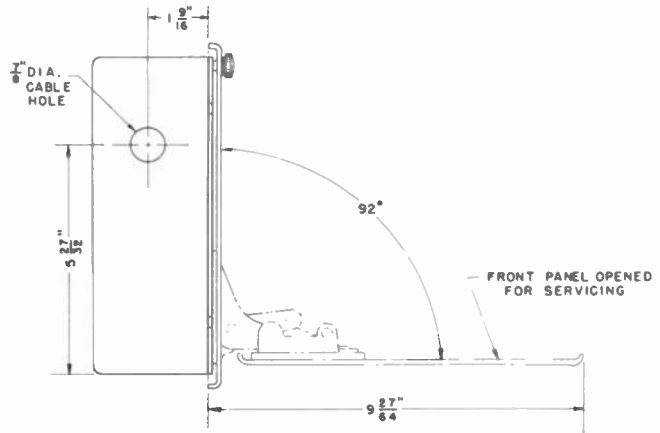
The output noise level is minus 18 dbm★, maximum, with properly terminated input and output, all stages in use with the interstage volume control set at maximum. At 10 watts output (+40 dbm★), this corresponds to 58 db signal to noise ratio (unweighted).

If a 20 db reduction in amplifier gain is effected by means of the interstage volume control, the minimum signal-to-noise ratio at 10 watts output (+40 dbm★) will be increased to 73 db.

The above values apply when a Type 1620 tube is used in the first stage. When a Type 6J7 tube is substituted for the 1620, it may be necessary to select among several Type 6J7 tubes in order to equal or better the values given above.

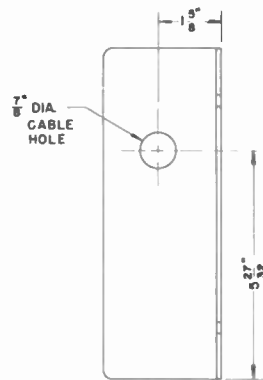
★ Dbm - single frequency power level in db referred to one milliwatt.

MONITORING AMPLIFIER  
TYPE BA-4-A OR TYPE BA-4-C  
(OUTLINE)

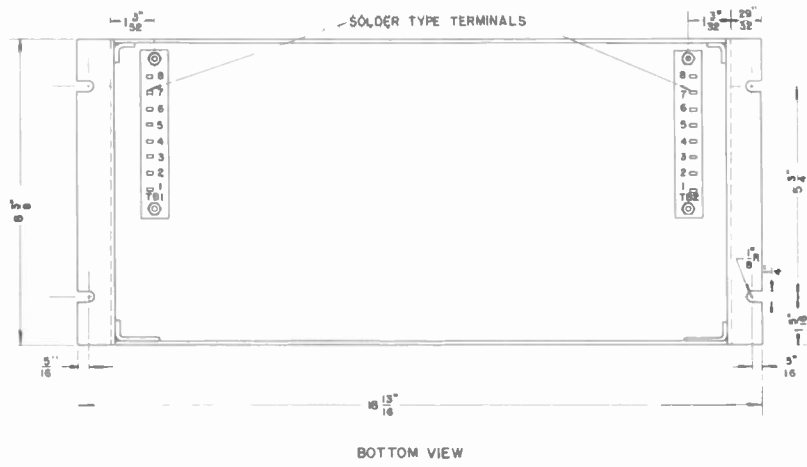
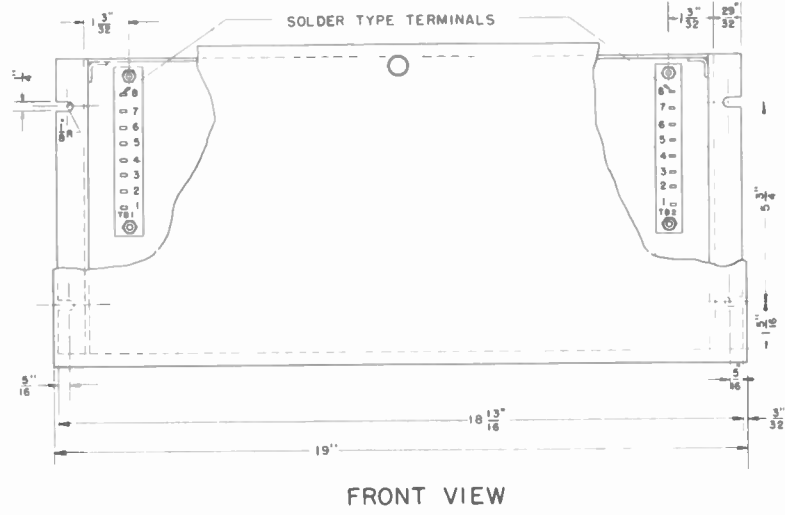


LEFT END VIEW

MONITORING AMPLIFIER  
TYPE BA-4-B OR TYPE BA-4-D  
(OUTLINE)



LEFT END VIEW



# SEC. 2



# **BROADCAST AUDIO ACCESSORIES**

## PROGRAM LEVEL INDICATOR PANEL TYPE FA-1-A

### GENERAL

Program Level Indicator Panel, Type FA-1-A, provides a means of accurately measuring the program level of up to ten terminated 600-ohm audio lines without appreciably loading the line.

Program level readings obtained with this device are in VU. When used to make steady-state, single-frequency measurements, the readings obtained are in db, based on a power level of one milliwatt (0.001 watt) in 600 ohms.

### CIRCUITS

Program Level Indicator Panel, Type FA-1-A, consists essentially of a line selector switch, calibrating potentiometer, adjustable attenuator network, VU meter, and terminal boards mounted on a panel suitably wired.

The line selector switch is a two-bank, 11-position rotary switch operated by a knob from the front of the panel. Its purpose is to switch the meter and the attenuator network across any one of ten audio lines connected to the terminal boards.

The attenuator network is step-type, "T" pad operated by a knob from the front of the panel. It has 21 positions of which one is an "off" position and 20 are attenuation positions ranging from +4 to +42 db in 2 db steps. A calibrating potentiometer is wired in series with the meter and attenuator network. It is continuously vari-

able through a range of approximately  $\pm 1/2$  db and is used to make the meter reading agree exactly with another VU meter connected to the same line. This adjustment can be made from the front of the panel with a screw driver.

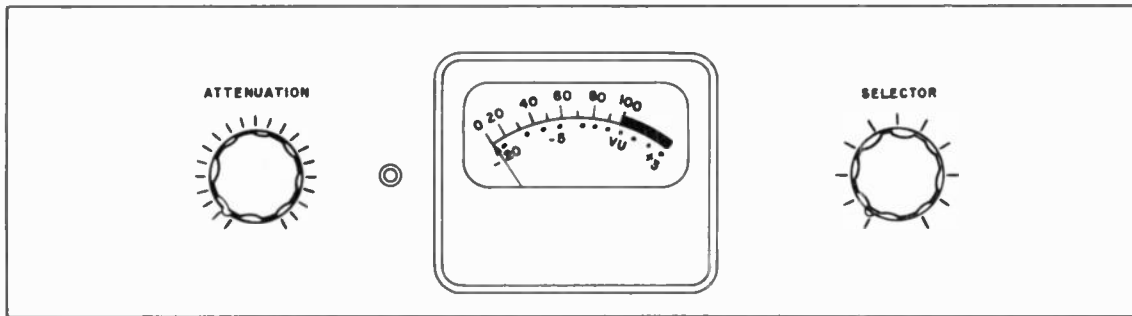
The instrument is a standard, illuminated VU meter with scales. Its upper scale is calibrated in "per cent" ranging from 0 to 100 and its lower scale in VU ranging from -20 to +3. A source of 6.3 volt at 0.300 ampere power is required for illumination.

### CONSTRUCTION

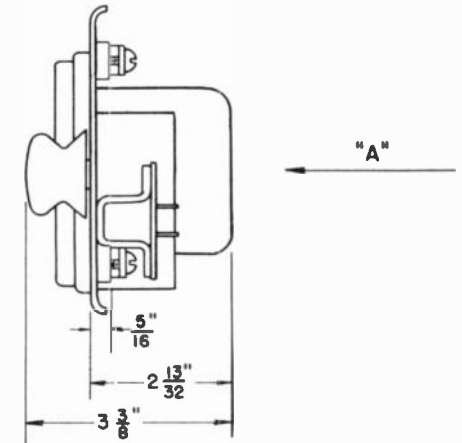
This unit mounts on a standard 19 inch RMA relay or cabinet rack. Physical dimensions are given on the outline drawing. Net weight (unpacked) is approx 4 1/4 pounds.

Separate solder-type terminals are provided on the rear of the panel for connection of the ten audio lines and the meter illumination supply. A clamp-type mounting, which is not visible from the front, is provided to mount the panel in any desired location on a rack. The rack is clamped between the rear of the panel and the clamping strap to hold the panel in position. The panel should preferably be located at eye-level for ease of reading the meter.

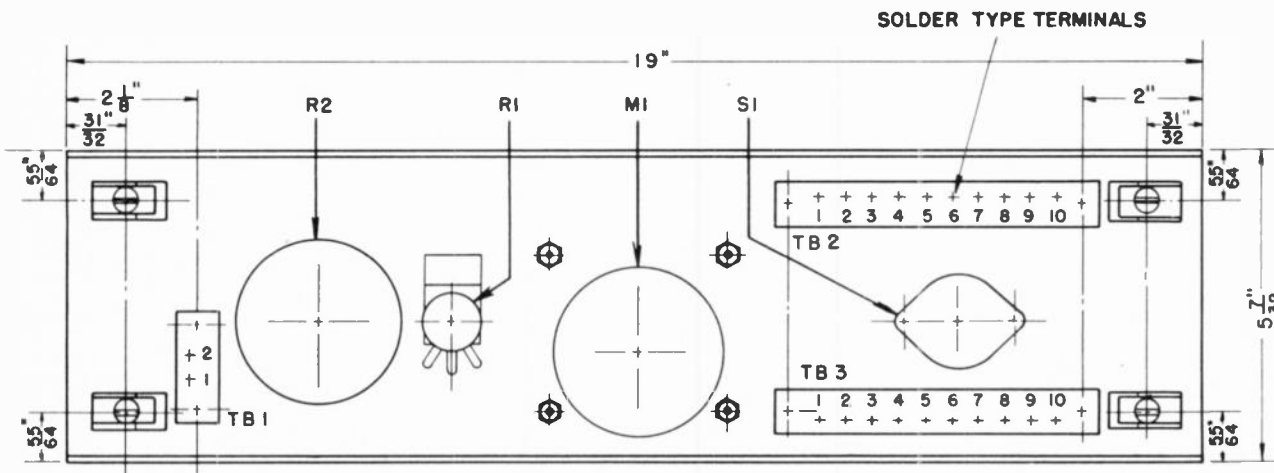
The audio lines which are to be measured and a power source capable of supplying 0.300 ampere at 5.5 to 6.3 volts are connected to the terminal boards.



FRONT VIEW



RIGHT SIDE VIEW



VIEW IN DIRECTION OF ARROW AT "A"

**PROGRAM LEVEL INDICATOR PANEL  
TYPE FA-1-A  
(OUTLINE)**

## JACK STRIPS AND JACK PANELS TYPES FA-2-A, FA-3-A, FA-3-B & FA-3-C

### GENERAL

Jack Strips and Panel Types FA-2-A, FA-3-A, FA-3-B, and FA-3-C are used in broadcast audio facilities systems to provide operating flexibility.

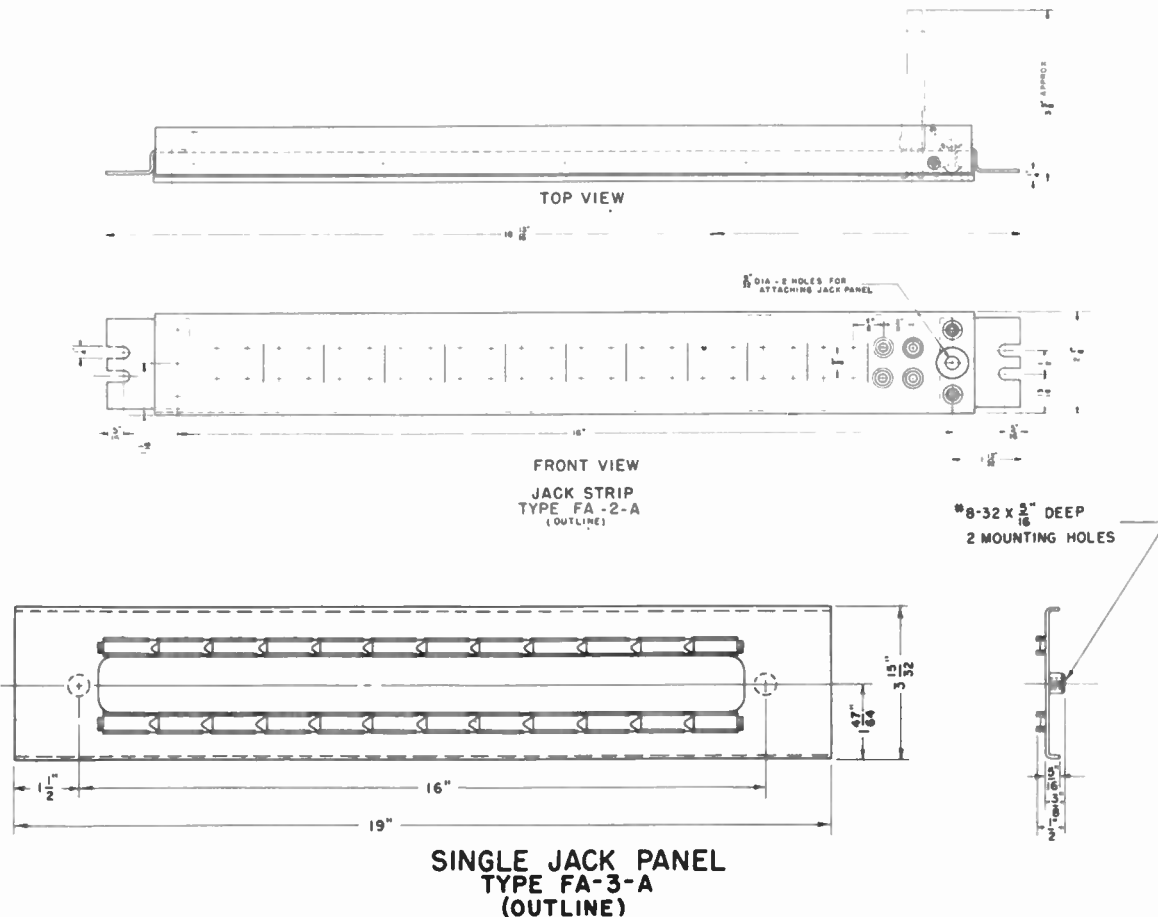
### DESCRIPTION

Double-row Jack Strip Type FA-2-A consists of two rows of twelve double jacks mounted on a 5/8-in. thick by 2 1/8-in. wide black bakelite board. The jack sleeves are flush with the front of the board and are mounted on 5/8-in. centers for use with double-plug patch cords Types FA-7-A, FA-7-B and FA-7-C. The mounting brackets at the ends of the strip are slotted to fit a standard RMA cabinet rack. The 48 jacks (24 pairs) furnished on each jack strip are of the standard closed circuit type. Two #12-24 screws are supplied to mount each jack strip.

Single Jack Panel Type FA-3-A is used to cover one Double-row Jack Strip, Type FA-2-A when mounted in a cabinet rack. It consists of a 19-in. wide by 3 15/32-in. high by 1/16-in. thick steel panel with a single long opening to expose the double row of jacks. The top and bottom edges of the panel are bent down to give a 5/16-in. panel depth to match amplifier and associated equipment panels. Two designation strips, each containing 12 removable white cards covered with clear plastic windows, are mounted directly over and under the jack opening. A set of mounting hardware is furnished with each panel for securing to the jack strip with no exposed screws on the front side.

Double Jack Panel Type FA-3-B is used to cover two Double-row Jack Strips, Type FA-2-A, when mounted in a cabinet rack. It is similar to Single Jack Panel Type FA-3-A described above except it is 5-7/32-in. high and has two long openings to expose the two double rows of jacks.

Triple Jack Panel Type FA-3-C is used to cover three Double-row Jack Strips Type FA-2-A when mounted in a cabinet rack. It is similar to Single Jack Type FA-3-A described above except it is 6 31/32-in. high and has three long openings to expose the three double rows of jacks.



### SWITCH AND FUSE PANEL TYPE FA-4-A

#### GENERAL

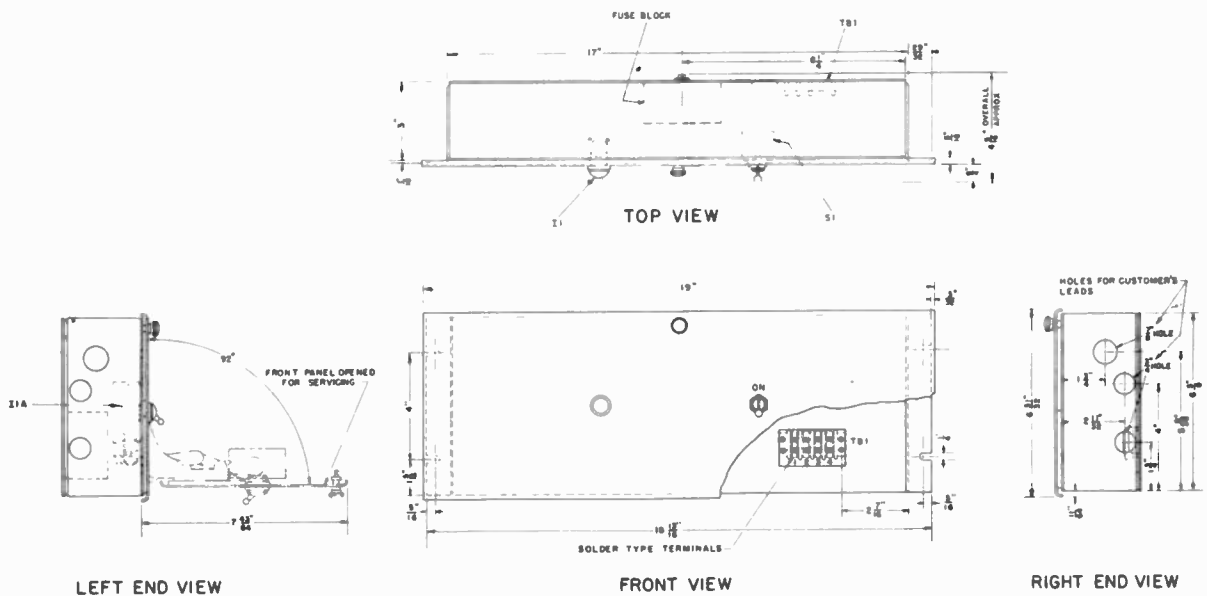
Switch and Fuse Panel Type FA-4-A is designed to provide a master power switch, indicator lamp, and fuse protection for an entire cabinet or relay-rack. A receptacle for two screw-base fuses is furnished so that the proper size (up to 20 amperes) can be selected for each installation.

A hinged front panel is provided. When this is opened, the interior of the chassis is accessible for replacement of fuses and inspection of wiring without removal from the rack, which can be a RMA standard relay or cabinet rack. When mounted in the cabinet, there will be no visible screws holding the panel in the cabinet.

#### CONSTRUCTION

Switch and Fuse Panel Type FA-4-A occupies a rack 19-in. wide by 6 31/32-in. high.

One 7/8-in. diameter hole is provided at each end of the chassis for connecting external wires.



SWITCH AND FUSE PANEL  
TYPE FA-4-A  
(OUTLINE)

## PANEL AND MOUNTING TYPE FA-5-A

### GENERAL

Panel and Mounting Type FA-5-A is designed to mount four Two-stage Preamplifiers Type BA-1-B or two Utility Input Amplifiers Type BA-10-A. A hinged front panel is provided. When this is opened, the interior of the chassis is accessible for servicing without removal from the rack. This rack can be an RMA standard relay or cabinet rack.

### CIRCUITS

The tube-check voltage from each tube of the amplifiers can be wired by the customer to the seven position (six active and one off) rotary-selector switch mounted on the front panel. The circuit selected by this switch can be measured by D-c Metering Panel, Type FA-11-A.

### CONSTRUCTION

Panel and Mounting Type FA-5-A occupies a rack space 19-in. wide by 8  $\frac{23}{32}$ -in. high.

One  $\frac{7}{8}$ -in. diameter hole is provided at each end of the chassis for connecting external wires.

## BLANK PANELS TYPES FA-6-A to FA-6-G, inclusive

### GENERAL

Blank Panels Types FA-6-A to FA-6-G, inclusive, are used to fill open spaces on Cabinet Racks Type FA-8-A not occupied by amplifier or associated equipment panels.

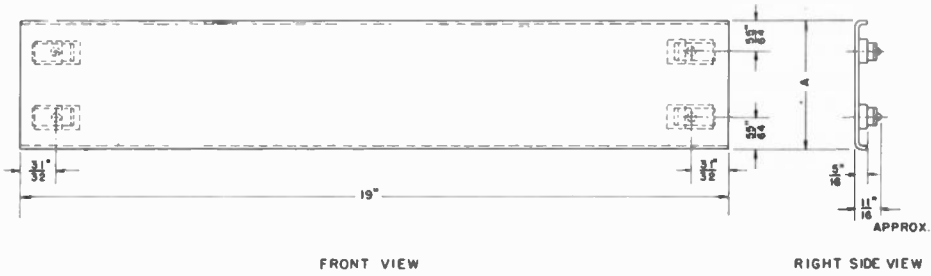
### DESCRIPTION

These blank panels are made of  $\frac{3}{32}$ -in. thick sheet aluminum alloy and are 19-in. wide. The upper and lower edges of the panel are turned in to give a  $\frac{5}{16}$ -in. depth of panel so that the front surface of the blank panel will be flush with that of amplifier panels when mounted on the same cabinet rack. The clamp-type mounting hardware included with each blank panel is located on the rear so that no mounting screws are visible from the front of the cabinet rack, eliminating the use of cabinet trim strips. The front surface and edges of the panel are finished with blue lacquer to match the finish on amplifier and associated equipment panels. Seven standard heights ranging from 1  $\frac{23}{32}$  in. to 12  $\frac{7}{32}$  in. are included as follows:

Panel Type No.	Panel Height
FA-6-A	1 $\frac{23}{32}$ in.
FA-6-B	3 $\frac{15}{32}$ in.
FA-6-C	5 $\frac{7}{32}$ in.
FA-6-D	6 $\frac{31}{32}$ in.
FA-6-E	8 $\frac{23}{32}$ in.
FA-6-F	10 $\frac{15}{32}$ in.
FA-6-G	12 $\frac{7}{32}$ in.

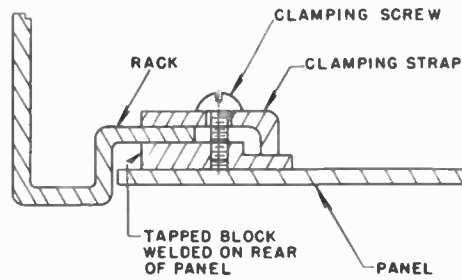


PT. NO.	TYPE	APPROX. WEIGHT
1	FA-6-A	0.5 LBS.



PT. NO.	TYPE	APPROX. WEIGHT	A
2	FA-6-B	0.85 LBS.	3 15/32"
3	FA-6-C	1.16 LBS.	5 7/32"
4	FA-6-D	1.5 LBS.	6 29/32"
5	FA-6-E	1.8 LBS.	8 23/32"
6	FA-6-F	2.1 LBS.	10 40/32"
7	FA-6-G	2.4 LBS.	12 7/32"

**BLANK PANELS  
TYPES FA-6-A TO FA-6-G  
(OUTLINE)**



TOP VIEW SHOWING METHOD OF CLAMPING  
PANEL TO RACK

**PATCH CORDS**  
**TYPES FA-7-A, FA-7-B, FA-7-C**

**GENERAL**

These patch cords are intended for use with Jack Strip Type FA-2-A.

**DESCRIPTION**

Patch cords Types FA-7-A, FA-7-B, and FA-7-C each consist of a two conductor shielded cord with a two-conductor double-plug securely mounted at each end. The cord contains two insulated flexible copper conductors which are shielded with a tinned

copper braid and is covered with a heavy over-all black cotton braid. The plug at each end is interchangeable with the W.E. Type 241-A double plug. The shield of the cord is connected to the sleeves of both plugs. The length of the cord between the two plugs are listed below:

<u>Type</u>	<u>Cord Length</u>
FA-7-A	2 feet
FA-7-B	4 feet
FA-7-C	6 feet

**CABINET RACK**  
**TYPE FA-8-A**

**GENERAL**

This cabinet rack is designed for mounting Audio Facilities equipment, measuring apparatus, and other associated panel-mounted equipment of standard 19-in. width in control room and transmitter installations.

**DESCRIPTION**

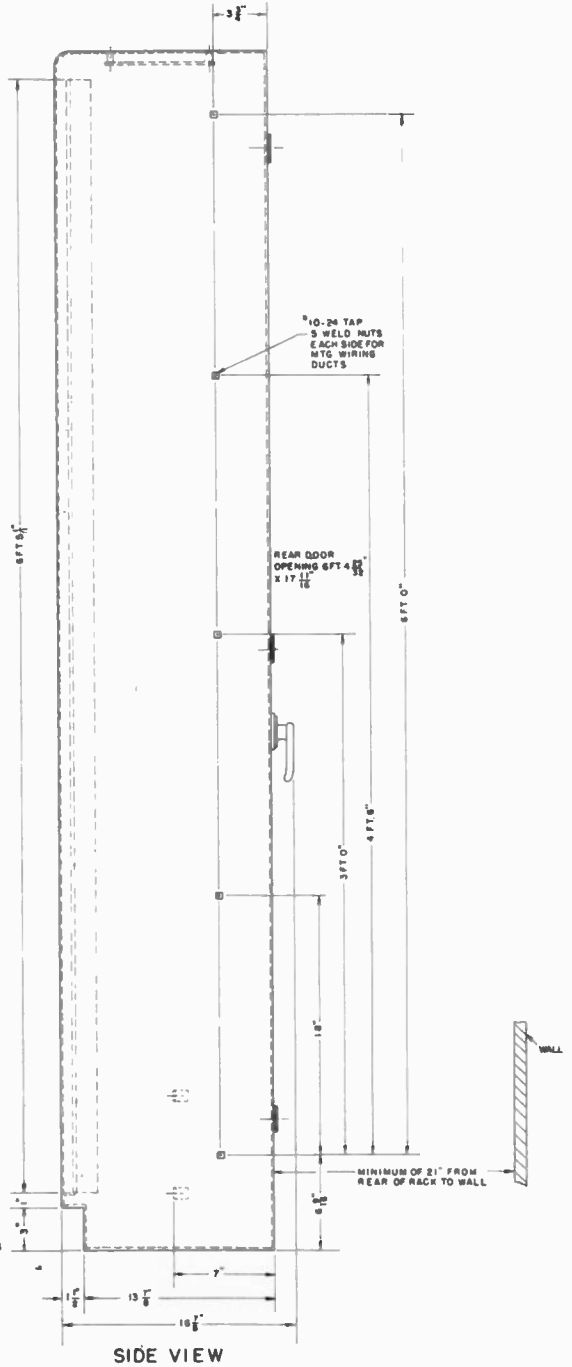
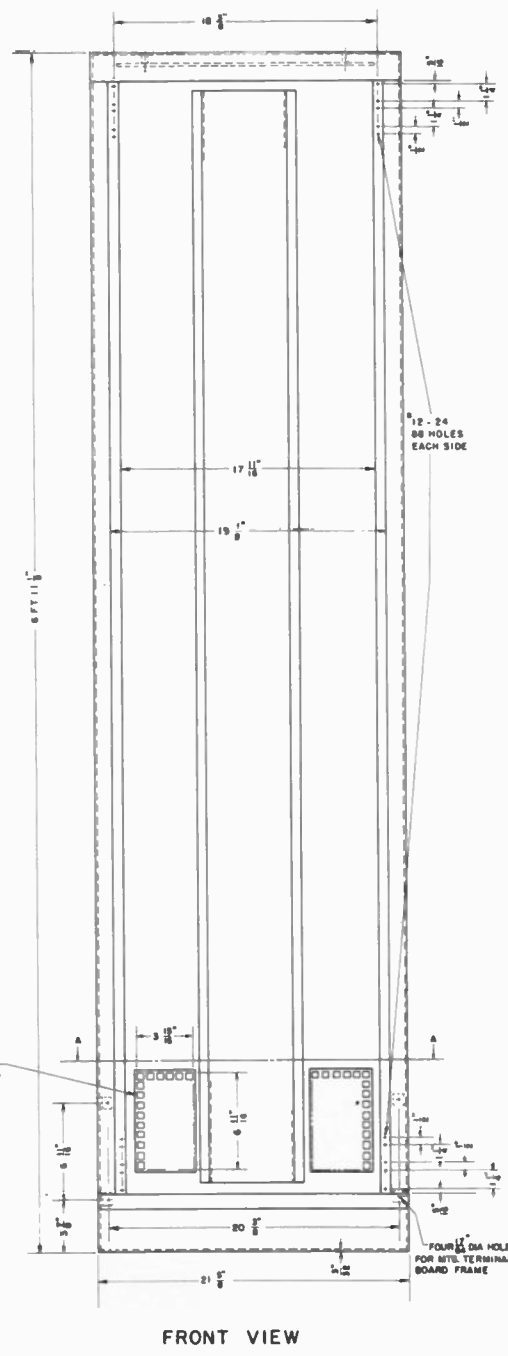
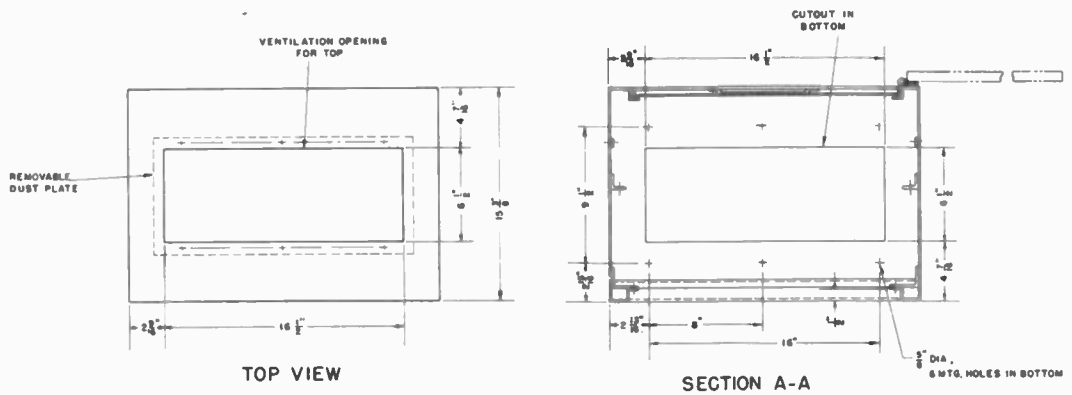
Cabinet Rack Type FA-8-A is sturdily constructed of sheet steel with an open front and a hinged door on the rear. The rack mounting surface is 19 1/8-in. wide by 77 1/8-in. high and is drilled and tapped in accordance with RMA standards with #12-24 holes. This mounting surface is recessed 1/2 inch behind the front of the cabinet so as to conceal the edges of the equipment panels mounted thereon. A rectangular opening is provided in the top

of the cabinet for ventilation. A metal plate, larger in area, is suspended about 3/4 inch below this opening to protect against dust and other foreign material falling on the equipment in the cabinet. Perforations in the lower part of the rear door admit the ventilating air into the cabinet. Two brackets are provided in the lower rear part of the cabinet to accommodate a terminal board mounting frame. A cutout of approximately 6 1/2 in. by 16 1/2 in. is provided in the base of the cabinet for entrance of customer's wires.

**DIMENSIONS**

Over-all dimensions of the cabinet rack are 83-in. high by 21 5/8-in. wide by 15 3/8-in. deep (exclusive of rear door handle which projects 1 1/2 inch at rear.) The minimum clearance behind the rack mounting surface is 14 inches.





CABINET RACK TYPE FA-8-A  
(OUTLINE)

## CABINET RACK ACCESSORY KIT TYPE FA-9-A

### GENERAL

The accessories comprising Kit Type FA-9-A are designed specifically for use in Cabinet Rack Type FA-8-A. A Cabinet Rack Accessory Kit Type FA-9-A consists of the following items:

- Two (2) - Wiring Ducts
- One (1) - Terminal Board Frame
- Two (2) - Audio Terminal Blocks
- Two (2) - Power Terminal Boards

### WIRING DUCT

The Wiring Duct is designed for mounting inside a Cabinet Rack to provide a convenient and accessible space for running inter-unit wiring. Wiring in the duct is both out of sight and protected, insuring a neat and trouble-free installation.

The Wiring Duct consists essentially of a U-shaped metal channel equipped with a readily removable cover. In one side of the channel are 42 slots each fitted with a rubber grommet. The slots are spaced 1 3/4 in. apart and the grommets have 5/8-in. diameter holes. The full-length metal cover is attached by means of spring clamps over the open side of the U-shaped channel. Over-all dimensions of the duct are 6 ft 5 5/16-in. long by 4-in. wide, by 1 7/8 in. deep.

Five screws and lock washers are furnished with each Wiring Duct for attaching it to the threaded bushings provided for this purpose on each side of Cabinet Rack Type FA-8-A. The Wiring Duct mounts in a vertical position in the cabinet rack with its lower edge 4 inches above the bottom of the cabinet, and with the slots facing the front of the cabinet.

It is recommended that two Wiring Ducts be mounted in each Cabinet Rack; one on the right-hand (facing rear of cabinet) side for audio inter-unit wiring and one on the left-hand side for power, metering, and speaker inter-unit wiring. The problem of wiring between individual units within a cabinet rack is greatly simplified when this wiring duct is employed. Wires to the

amplifiers and associated units mounted in the cabinet enter the duct through the rubber-bushed slots spaced 1 3/4 in. apart along the entire length of the duct. Wires from the terminal boards mounted near the bottom of the cabinet may also enter the duct through the open lower end of the channel. It is not necessary to cable or lace together the wiring in the duct since, with the duct cover in place, the wiring is both out of sight and protected.

An outstanding feature is the ease with which inter-unit wiring may be removed or added without disturbing other wiring in the duct. With the cover off, inter-unit wiring may be easily removed by lifting the unwanted wires and attached grommets from the channel; additional wiring may be installed by slipping the wires through a rubber grommet into the channel.

### TERMINAL BOARD FRAME

It is recommended that a Terminal Board Frame be installed near the bottom of each Cabinet Rack Type FA-8-A to provide mounting facilities for the required terminal boards. Each frame will accommodate up to three Audio Terminal Blocks and up to three Power Terminal Boards. These terminal boards are needed to terminate the external wiring entering the cabinet rack and connecting to the equipment mounted in the rack.

The Terminal Board Frame is of welded steel construction, with over-all dimensions of 21 1/4-in. wide, by 7 7/16-in. high, by 5/8-in. thick. Holes are provided for mounting terminal boards mentioned above on the frame.

Four screws and lock washers are supplied with each Terminal Board Frame for attaching it to the mounting brackets provided for this purpose in Cabinet Rack Type FA-8-A. When mounted in the Cabinet Rack the frame extends across the width of the cabinet about midway between front and rear with its bottom edge about 3 1/2 inches above the floor of the cabinet.

**AUDIO TERMINAL BLOCK**

This accessory is used to provide terminating points for audio wires entering the cabinet rack and going to amplifiers and associated equipment mounted in the cabinet. The Audio Terminal Block consists of an 80-terminal (4 rows of 20 each), solder-lug, telephone-type block. Two screws and lock washers are included with each block for mounting it on the Terminal Board Frame.

**POWER TERMINAL BOARD**

This item is used to provide terminating points for power, metering, and speaker wires entering the cabinet rack and going to units mounted in the cabinet. The Power Terminal Board consists of an eight-terminal, screw-type, terminal board. Each terminal has two #8-32 screws and is separated from the next terminal by an insulation barrier. Four screws and lock washers are supplied with each board for mounting it on the Terminal Board Frame.

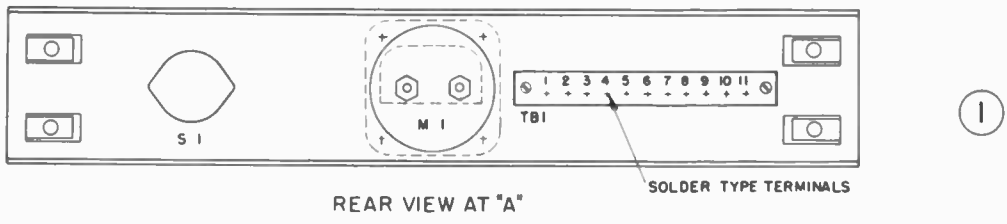
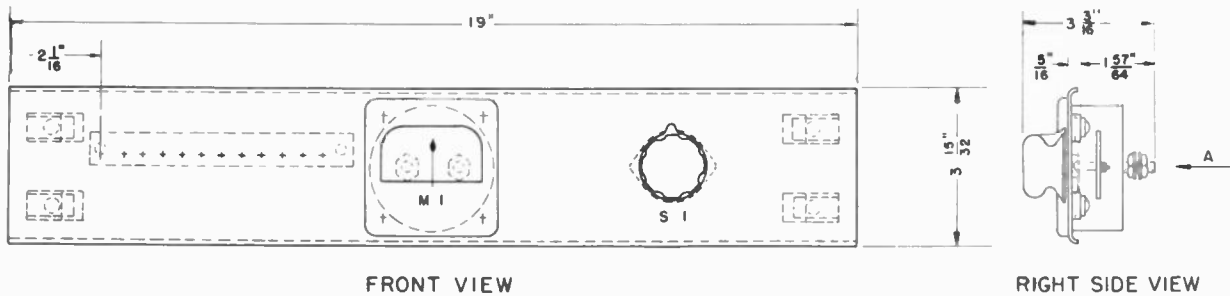
**D-C METERING PANEL  
TYPE FA-11-A**

**GENERAL**

D-c Metering Panel Type FA-11-A is used as a tube-check meter for the amplifier panels. It contains 5000 ohms per volt, 2-volt d-c voltmeter, with a rotary switch for selecting any one of ten external circuits, and an 11-point terminal board.

**CONSTRUCTION**

The panel will mount in a standard RMA relay or cabinet rack. Panel dimensions are 19 inches by 3 15/32 inches. When mounted in the cabinet there are no visible mounting devices.



## FILAMENT TRANSFORMER KIT TYPE FA-13-B

### GENERAL

General Electric Filament Transformer Kit Type FA-13-B consists of a 6.4-volt, 3-ampere center-tapped filament transformer, a 150-ohm hum-balancing potentiometer, and a fuse holder with 1/2 ampere Type 3AG fuse.

### SPECIFICATIONS

This kit, designed to mount on G-E Preamplifier Power Supply, Type BP-1-A, is used when the filament current exceeds 6.4 volts @ 3.0 amperes. The transformer is equipped with primary taps for line voltages of 105, 115, and 125 volts, either 50 or 60 cycles.

## EQUALIZER PANEL TYPE FA-14-A

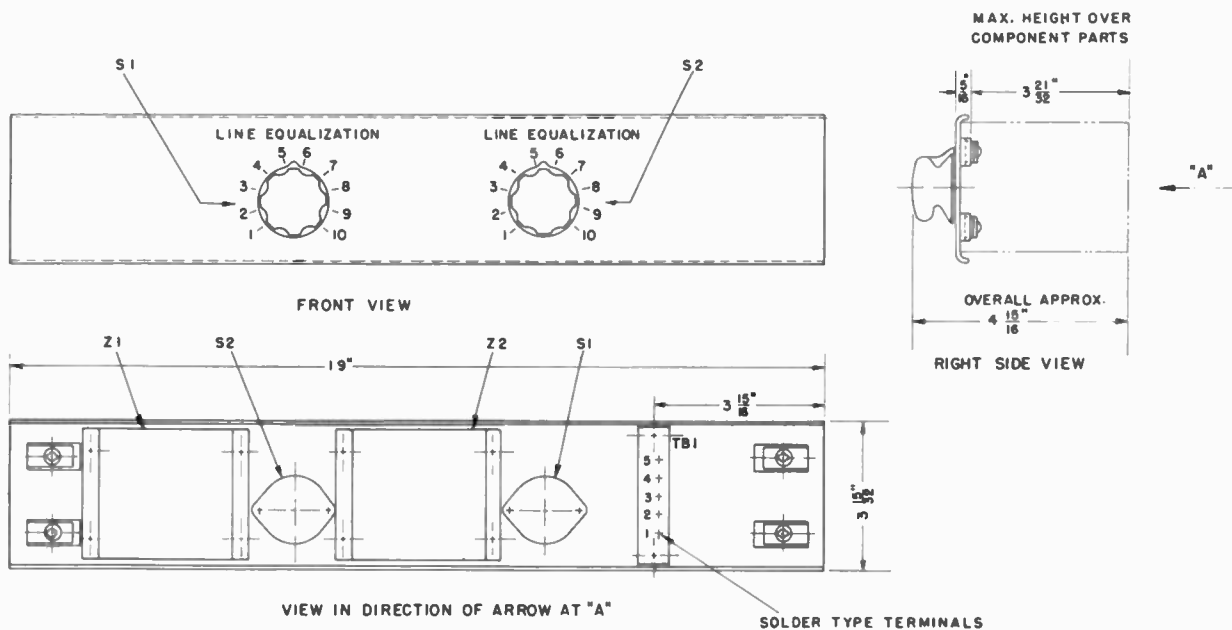
### GENERAL

Equalizer Panel Type FA-14-A is designed to equalize the transmission vs frequency characteristics of telephone line program circuits. It will permit two non-loaded lines to be adjusted for substantially flat frequency response from 30 to 10,000 or 15,000 cycles depending on line characteristics and termination.

Equalizer Panel Type FA-14-A is arranged for rack mounting in a 3 1/2-in. space. The mounting method is such that no screws are needed to attach the unit to the rack.

#### Equalization Ability:

30 to 10,000 or 15,000 cycles per second, depending on line length and termination.



**EQUALIZER PANEL  
TYPE FA-14-A**

## MICROPHONE CABLE TYPE FA-15-A

### GENERAL

Microphone Cable Type FA-15-A is a very flexible waterproof, shielded, two-conductor cable designed primarily for use with low impedance microphones in radio broadcasting stations. It may be used in making up extension cords, for replacing old microphone cables, etc. This cable is stocked in 250 foot rolls.

### SPECIFICATIONS

The cable consists of two, stranded, No. 20, rubber-covered conductors; cotton braid over the insulated conductors with cotton filler; tinned copper shield (braided); and a rubber jacket over-all.

## MICROPHONE PLUGS AND RECEPTACLES TYPES FA-16-A, FA-16-B, FA-16-C

### GENERAL

Most microphones are sold with a suitable length of shielded cable, but less plugs. This arrangement makes it possible for the purchaser to use any type of plug or receptacle desired, particularly where existing facilities are to be matched. General Electric can furnish the types of fittings described below. These are adequate for any installation, and are reliable and free from noise. In addition, these microphone plugs and receptacles are of the "quick disconnect" type for ease of coupling or decoupling, and all provide for three connections.

### SPECIFICATIONS

#### Microphone Plug (Male):

Type FA-16-A; 3 male contacts; integral cable clamp; locking type; satin-chrome finish; for microphone cables and extension cords.

#### Microphone Plug (Female):

Type FA-16-B; 3 female contacts; integral cable clamp; has latch locking device; satin-chrome finish; for extension cords.

#### Microphone Receptacle:

Type FA-16-C; 3 female contacts; single gang, flush, wall mounting type; has latch locking device; satin-chrome finish; includes flush plate 4 1/2-in. by 2 3/4-in. wide, but less cover; will fit into a G-E No. SP-5800 outlet box.

## INTERCONNECTING CABLE TYPES FA-19-A, FA-19-B, FA-19-C, and FA-19-D

### GENERAL

Cables Types FA-19-A, FA-19-B, FA-19-C, and FA-19-D are specially designed and recommended for use in making audio, power, or control circuit interconnections about a radio broadcasting station. Each type has characteristics, construction, and recommended specific uses as described below. All types listed below are stocked in 500 foot rolls.

### SPECIFICATIONS

#### Cable Type FA-19-A:

Solid No. 22, two-conductor, shielded.

#### Use:

Low or intermediate level audio connections inside cabinet racks.

**Construction:**

Two No. 22 tinned solid conductors, twisted; thermoplastic-synthetic-resin insulation, coded red and black; paper wrapped, tinned-copper-braid shield.

**Rating:**

600 volts.

**Cable Type FA-19-B:**

Solid No. 18, two-conductor, shielded.

**Use:**

General purpose audio interconnecting cable for circuits within conduit, cabinets, or racks.

**Construction:**

Two No. 18 tinned solid conductors, twisted; thermoplastic-synthetic-resin insulation, coded red and black; tinned-copper braid over-all.

**Rating:**

600 volts.

**Cable Type FA-19-C:**

Solid No. 18, two-conductor, shielded and jacketed.

**Use:**

Low level audio circuits within conduit or cabinet racks where control of the ground is desired (shield grounded at any desired point or points).

**Construction:**

Same as Type FA-19-B above, except tinned-copper-braid shield is covered with a jacket of black cotton braid.

**Rating:**

600 volts (conductor insulation).

**Cable Type FA-19-D:**

Stranded No. 16, two-conductor shielded.

**Use:**

Power circuits high-level audio circuits, etc., where shielding is desired.

**Construction:**

Two No. 16 tinned stranded conductors, twisted; thermoplastic-synthetic-resin insulation, coded red and black; tinned-copper braid over-all.



# SEC. 3



# **SPEAKERS**

## GENERAL

Type FS-1-A Monitoring Loudspeaker is a high-quality, distinctively styled unit for use in radio-broadcasting stations, or for any other application where highest fidelity of reproduction is desired.

**MONITORING SPEAKER  
TYPE FS-1-A**

The G-E Type FA-1-A consists of a high fidelity speaker unit, with permanent magnet field, mounted in a special cabinet, and includes line matching transformer.

## CONSTRUCTION

The loudspeaker unit is especially made for General Electric by Jensen Radio Mfg. Co. It is similar to the Jensen Type H. It combines, in one coaxial assembly, a horn-type, high-frequency speaker with a cone-type, low-frequency unit. The cone of the low frequency unit forms a part of the high-frequency horn, thereby dispensing with a separate horn. The distribution characteristics of this type of speaker are excellent. An integral two-channel network gives the desired crossover characteristics. The natural grain walnut cabinet is of base reflex design with its interior surfaces properly treated with sound-absorbing material. A matching base, Type FA-17-A, 15 5/8-in. high, is available. By mounting the Type FS-1-A Monitoring Loudspeaker on this base, the axis of the speaker unit is raised from 23 1/4 inches to 38 7/8 inches from the floor. A loudspeaker amplifier, such as the G-E Type BA-4-D, may be housed within this base.

A screw-type terminal board is provided at the rear of the cabinet for making connections to, and changing the impedance of, the loudspeaker.

## SPECIFICATIONS

Frequency Response:

50 to 15,000 cycles per second.

Power Rating:

25 watts max in speech and music systems.

Field:

Permanent magnet.

Input Impedance:

600, 1200, 1800, 2400 ohms.

Dimensions of Cabinet:

Height 36 inches, width 25 inches, depth 14 1/2 inches.

## GENERAL

The Type FA-2-A Studio Wall Speaker is a general purpose unit designed especially for wall mounting in studios, offices, reception rooms, etc.

## STUDIO WALL SPEAKER

## CONSTRUCTION

The high quality reproducer is housed in a sloping front cabinet made especially for wall mounting and designed to provide efficient sound distribution when placed at or above ear level.

A line-to-voice-coil matching transformer is included, and all necessary connections are available at the rear of the cabinet on a screw type terminal board.

## SPECIFICATIONS

Frequency Response:

60 to 8000 cycles.

Maximum Input:

10 watts.

Field:

Permanent magnet.

Input Impedance:

600/1200/1800/2400 ohms.

Dimensions:

Height 20 inches, width 16 inches, depth 10 inches, (approx).

Weight:

20 lbs.

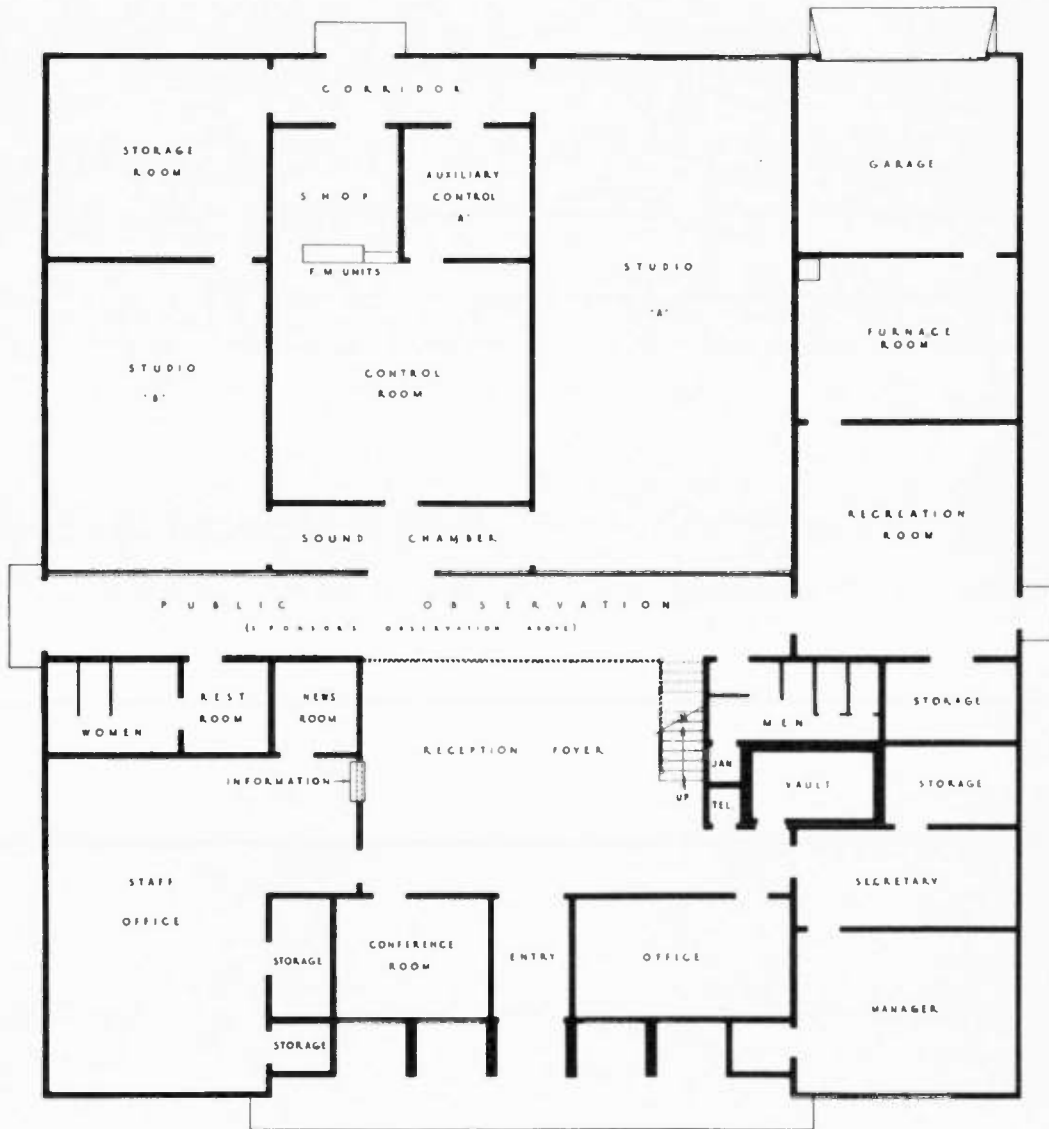
## INDEX

	Type	Page
Blank Panels . . . . .	FA-6-A . . . . . to FA-6-G	28
Cabinet Rack Accessory Kit . . . . .	FA-9-A . . . . .	32
Cabinet Rack . . . . .	FA-8-A . . . . .	30
D-c Metering Panel . . . . .	FA-11-A . . . . .	33
Equalizer Panel . . . . .	FA-14-A . . . . .	34
Filament Transformer Kit . . . . .	FA-13-B . . . . .	34
Interconnecting Cable . . . . .	FA-19-A . . . . . FA-19-B FA-19-C FA-19-D	35
Jack Strips and Jack Panels . . . . .	FA-2-A . . . . . FA-3-A FA-3-B FA-3-C	26
Microphone Cable . . . . .	FA-15-A . . . . .	35
Microphone Plugs and Receptacles . . . . .	FA-16-A . . . . . FA-16-B FA-16-C	35
Monitoring Amplifier . . . . .	BA-4-C . . . . . BA-4-D	18
Monitoring Speaker . . . . .	FS-1-A . . . . .	40
Panel and Mounting . . . . .	FA-5-A . . . . .	28
Patch Cords . . . . .	FA-7-A . . . . . FA-7-B FA-7-C	30
Preamplifier Power Supply . . . . .	BP-1-A . . . . .	13
Program Amplifier . . . . .	BA-2-A . . . . .	16
Program Level Indicator Panel . . . . .	FA-1-A . . . . .	24
Studio Wall Speaker . . . . .	FS-2-A . . . . .	41
Switch and Fuse Panel . . . . .	FA-4-A . . . . .	27
Two Stage Preamplifier . . . . .	BA-1-B . . . . .	10
Utility Input Amplifier . . . . .	BA-10-A . . . . .	15

## SCOPE OF THE SPECIFICATION

In the construction of the equipment described above, the full intent of the specification will be met. It is assumed, however, that any departures from this specification, desirable for reasons of improved design or operation, will be permissible.

# TYPICAL FLOOR-PLAN AND ARCHITECTURAL DESIGN FOR SMALL RADIO STATIONS (AUSTIN CO.)



**G-E** offices *everywhere* are at your service! For complete information on the best equipment for every type of broadcasting, special representatives are located at:

**ATLANTA 3, GEORGIA**  
187 Spring Street, N.W.

**BIRMINGHAM 2, ALABAMA**  
600 N. 18th Street

**BOSTON 1, MASSACHUSETTS**  
140 Federal Street

**CHICAGO 7, ILLINOIS**  
840 South Canal Street

**CINCINNATI 2, OHIO**  
215 West Third Street

**CLEVELAND 4, OHIO**  
4966 Woodland Avenue

**DALLAS 2, TEXAS**  
1801 North Lamar Street

**DENVER 2, COLORADO**  
650—17th Street

**KANSAS CITY 6, MISSOURI**  
106 West 14th Street

**LOS ANGELES 54, CALIFORNIA**  
212 North Vignes Street

**MINNEAPOLIS 2, MINNESOTA**  
12 South Sixth Street

**NEW YORK 22, NEW YORK**  
570 Lexington Avenue

**PHILADELPHIA 2, PENNSYLVANIA**  
1405 Locust Street

**SAN FRANCISCO 6, CALIFORNIA**  
235 Montgomery Street

**SEATTLE 11, WASHINGTON**  
710 Second Avenue

**WASHINGTON 5, D.C.**  
806—15th Street, N.W.

**ELECTRONICS DEPARTMENT**

**GENERAL  ELECTRIC**

**SYRACUSE 1, N. Y.**



ELECTRONICS DEPARTMENT

**GENERAL**  **ELECTRIC**

SYRACUSE 1, N. Y.