

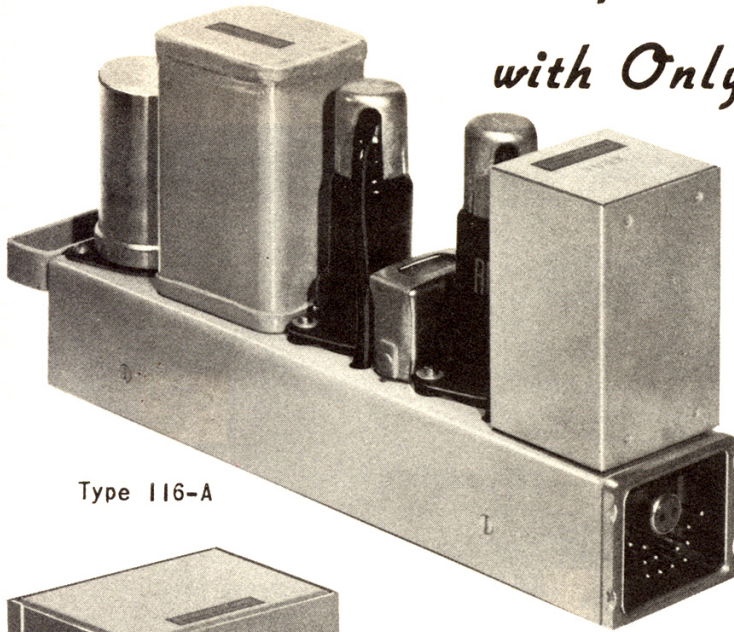
PLUG-IN AMPLIFIERS

BY

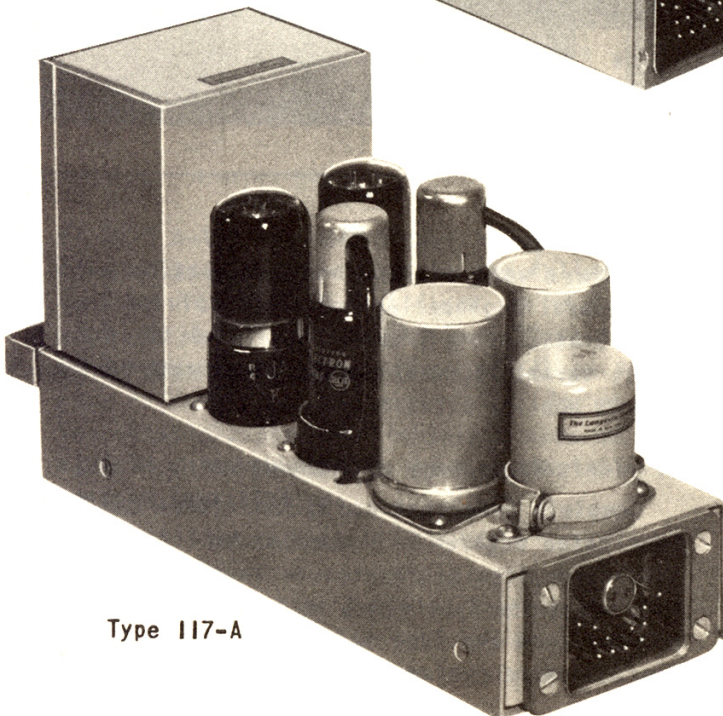
Langevin

TYPE 116-A . . . TYPE 117-A

*Complete Plug-In Audio Facilities
with Only 2 Types of Amplifiers
2 Types of Vacuum Tubes*



Type 116-A



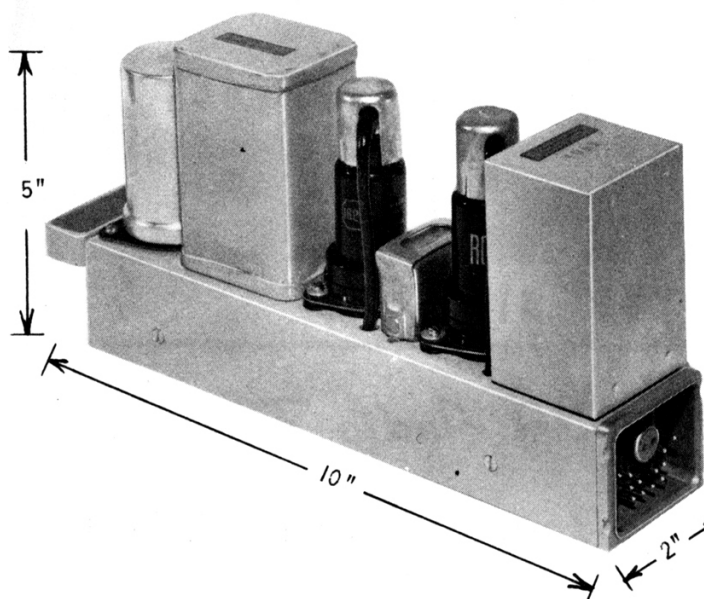
Type 117-A

- STUDIOS STAY IN SERVICE
- LOWER OPERATING COST
- LOWER MAINTENANCE COST
- LOWER INVENTORIES
- RACK SPACE-SAVERS
- AMPLIFIERS EXCEED FCC
QUALITY REQUIREMENTS FOR FM
- AMPLIFIERS PROVIDE HIGH
OVERLOAD SAFETY FACTOR

The equipment herein described is licensed under U. S. patents of the A.T. & T. Co. and the Western Electric Company.

The Langevin Company
INCORPORATED

NEW YORK: 37 W. 65 St., 23 - SAN FRANCISCO: 1050 Howard St., 3
LOS ANGELES: 1000 N. Seward St., 38



TYPE 116-A

Pre-Amplifier or Booster Amplifier

Electrical Characteristics

GAIN: 40 db with provision for adjusting to 34 db.

TUBE COMPLEMENT: Two 1620.

OUTPUT POWER: +18 DBM (.063 watts) with less than .5% RMS total harmonic distortion over the range 50 to 15,000 cycles, and less than 1% total distortion over the range 30 to 15,000 cycles.

OUTPUT NOISE: Unweighted, equivalent to an input signal of -120 to -124 DBM, depending upon input tube, over the band 50 to 15,000 cycles.

FREQUENCY CHARACTERISTICS: ± 1 db over the range 30 to 15,000 cycles.

INPUT SOURCE IMPEDANCE: 30/150/250/600 Ohms. Center taps are available when strapped for 150 or 600 Ohms.

OUTPUT LOAD IMPEDANCE: 150 or 600 Ohms. Center tap is available when strapped for 600 Ohms.

EXTERNAL POWER REQUIREMENTS: Filament: 6.3 volts AC at 0.6 amperes. Plate: 275 volts DC, 8 Milliamperes.

METERING: Metering connections are available at the plug for external reading of cathode currents of the individual tubes. If it is desired to mount metering switches on the amplifier, knockouts for two Grayhill #4001 push button switches are provided on the rear apron (handle end) of the chassis.

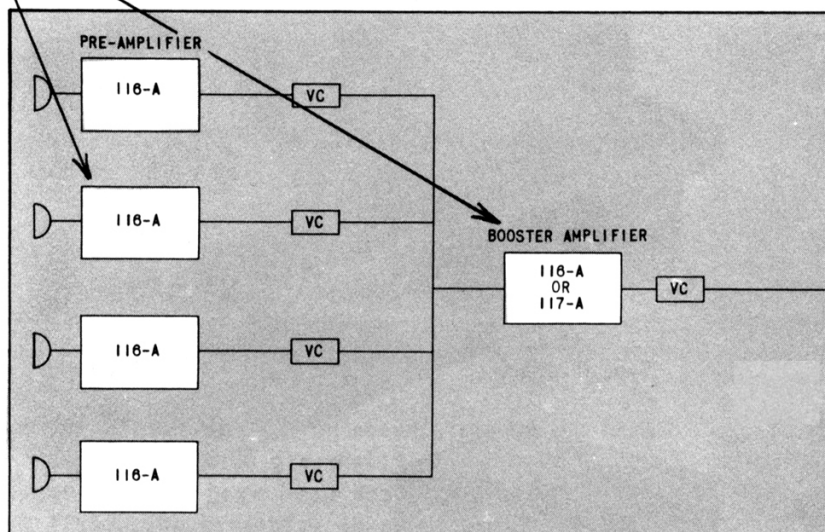
Mechanical Characteristics

SIZE: Length - 10 in., Width - 2 in., Height - 5 in.

WEIGHT: 4 lbs.

SHIPPING WEIGHT: 5-1/2 lbs.

FINISH: Light grey baked enamel over 16 gauge bonderized (rustproofed) steel.



The Langevin Type 116-A and 117-A PLUG-IN amplifiers were designed in conjunction with the General Engineering Department of the Columbia Broadcasting System. These amplifiers are small, versatile, easy-to-use units with better than FM quality performance.

Microphone to Transmitter

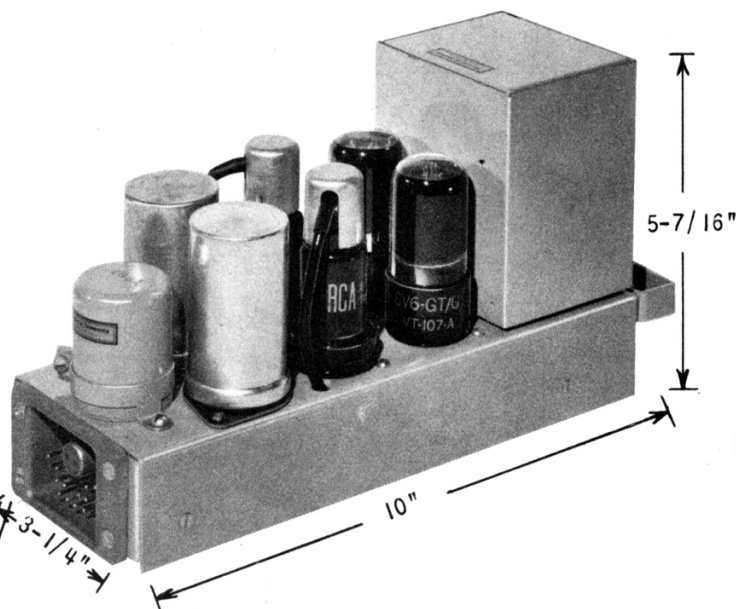
Complete broadcast audio facilities can be fabricated with *only* these two amplifiers in the system from microphone to transmitter input, using the Type 116-A as pre-amplifier and booster, and the Type 117-A as program amplifier, booster, and monitor.

Gold Plated Plugs

The amplifiers utilize Cannon Plugs, built to Langevin specifications, with gold-plated, non-oxidizing terminals, and a shielded TWIN-AX input connection. The mating plug receptacle is supplied with each amplifier.

TYPE 117-A

Program, Booster or Monitor Amplifier



Electrical Characteristics

GAIN: 50 db.

TUBE COMPLEMENT: Two 1620, two 6V6GT.

OUTPUT POWER: +30 DBM (1 watt) with less than .5% RMS total harmonic distortion over the range 50-15,000 cycles and less than 1% total distortion over the range 30-15,000 cycles. As a monitor amplifier, +39 DBM (8 watts) with less than 1% total RMS harmonic distortion over the range 50-10,000 cycles.

OUTPUT NOISE: Unweighted, equivalent to an input signal of -110 to -114 DBM, depending upon tubes, over the band 50 to 15,000 cycles.

FREQUENCY CHARACTERISTIC: ± 1 db over the range 30 to 15,000 cycles.

INPUT SOURCE IMPEDANCE: 30/150/250/600 Ohms.

Center taps are available when strapped for 150 or 600 Ohms.

OUTPUT LOAD IMPEDANCE: 150 or 600 Ohms. Center tap is available when strapped for 600 Ohms.

EXTERNAL POWER REQUIREMENTS: Filament 6.3 Volts AC at 1.5 amperes. Plate: 300 Volts DC at 70 Milliamperes.

METERING: Metering connections are available at the plug for external reading of cathode currents of the individual tubes. If it is desired to mount metering switches on the amplifier, knockouts for four Grayhill #4001 push button switches are provided on the rear apron (handle end) of the chassis.

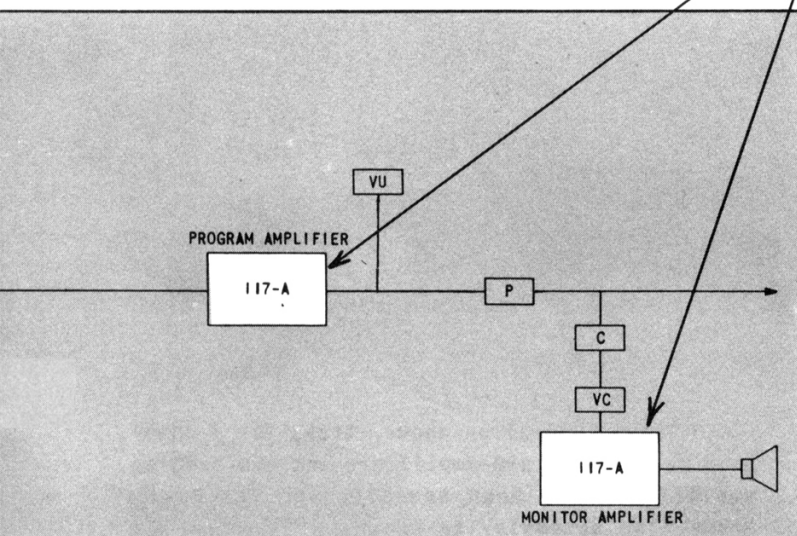
Mechanical Characteristics

SIZE: Length: 10 in., width: 3-1/4 in., height: 5-1/2 in.

WEIGHT: 6-1/2 lbs.

SHIPPING WEIGHT: 8 lbs.

FINISH: Light grey baked enamel over 16 gauge Bonderized (rustproofed) steel.



Small Size

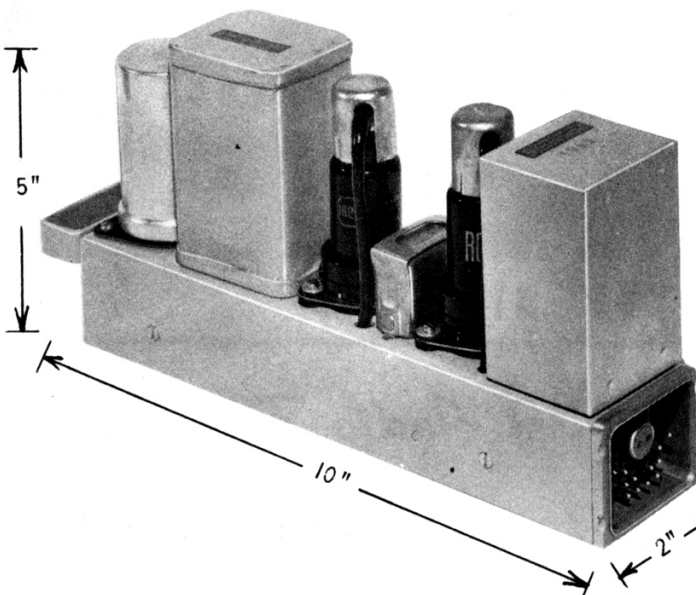
Rack space can be used to the fullest advantage with PLUG-IN amplifiers, as it is possible to mount 6 pre-amplifiers (Type 116-A) or 4 Program amplifiers (Type 117-A) in 7 inches of rack space. (See page four for mounting details). The small physical size of the PLUG-IN units makes them readily adaptable to console installation.

Maintenance Advantages

PLUG-IN amplifiers are easily removed from equipment racks or consoles for preventive maintenance checks at the service bench. Studio operation can be maintained with replacement amplifiers.

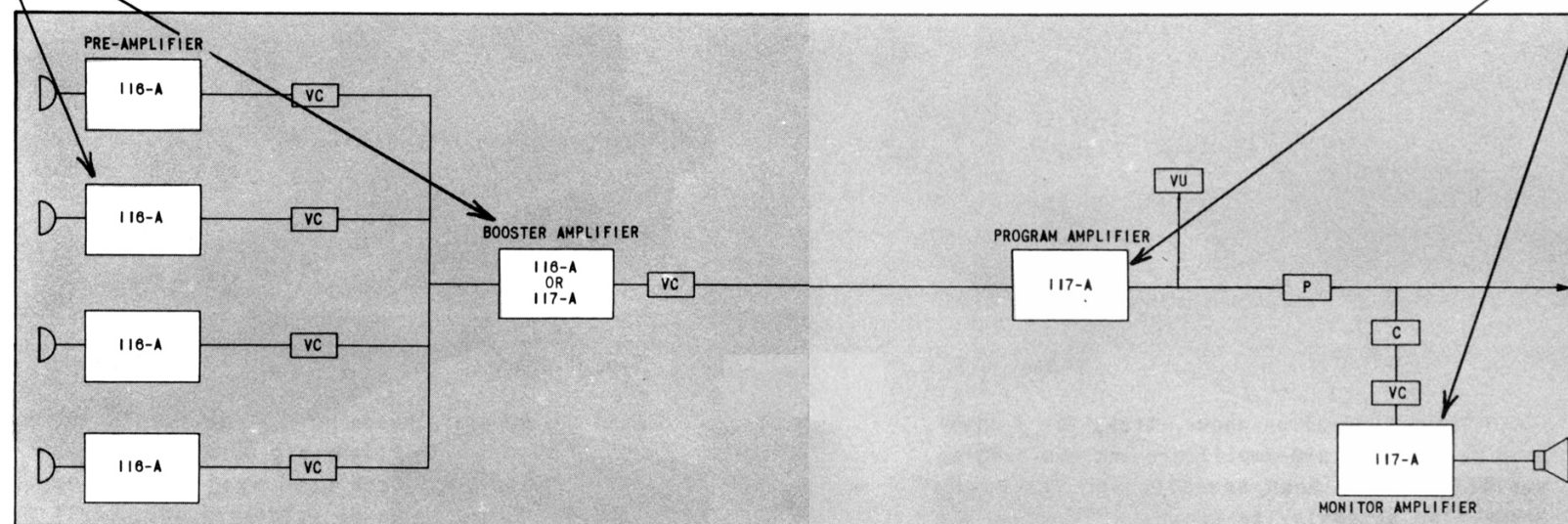
Overall Economy

Simplification of broadcast audio facilities to only two types of amplifiers, and only two types of tubes, 1620's and 6V6GT's makes possible station economies by decreasing tube and amplifier inventories.



TYPE 116-A

*Pre-Amplifier
or
Booster Amplifier*



Electrical Characteristics

GAIN: 40 db with provision for adjusting to 34 db.

TUBE COMPLEMENT: Two 1620.

OUTPUT POWER: +18 DBM (.063 watts) with less than .5% RMS total harmonic distortion over the range 50 to 15,000 cycles, and less than 1% total distortion over the range 30 to 15,000 cycles.

OUTPUT NOISE: Unweighted, equivalent to an input signal of -120 to -124 DBM, depending upon input tube, over the band 50 to 15,000 cycles.

FREQUENCY CHARACTERISTICS: ± 1 db over the range 30 to 15,000 cycles.

INPUT SOURCE IMPEDANCE: 30/150/250/600 Ohms. Center taps are available when strapped for 150 or 600 Ohms.

OUTPUT LOAD IMPEDANCE: 150 or 600 Ohms. Center tap is available when strapped for 600 Ohms.

EXTERNAL POWER REQUIREMENTS: Filament: 6.3 volts AC at 0.6 amperes. Plate: 275 volts DC, 8 Milliamperes.

METERING: Metering connections are available at the plug for external reading of cathode currents of the individual tubes. If it is desired to mount metering switches on the amplifier, knockouts for two Grayhill #4001 push button switches are provided on the rear apron (handle end) of the chassis.

Mechanical Characteristics

SIZE: Length - 10 in., Width - 2 in., Height - 5 in.

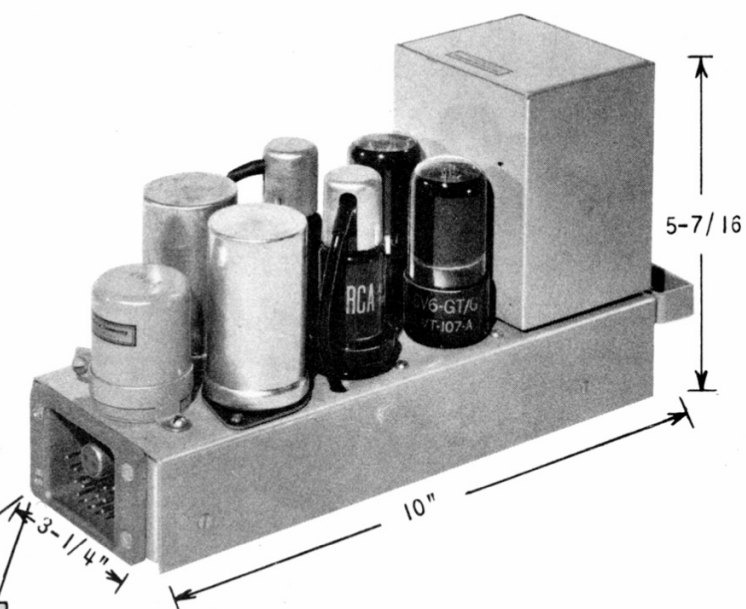
WEIGHT: 4 lbs.

SHIPPING WEIGHT: 5-1/2 lbs.

FINISH: Light grey baked enamel over 16 gauge bonderized (rustproofed) steel.

TYPE 117-A

*Program, Booster
or
Monitor Amplifier*



Electrical Characteristics

GAIN: 50 db.

TUBE COMPLEMENT: Two 1620, two 6V6GT.

OUTPUT POWER: +30 DBM (1 watt) with less than .5% RMS total harmonic distortion over the range 50-15,000 cycles and less than 1% total distortion over the range 30-15,000 cycles. As a monitor amplifier, +39 DBM (8 watts) with less than 1% total RMS harmonic distortion over the range 50-10,000 cycles.

OUTPUT NOISE: Unweighted, equivalent to an input signal of -110 to -114 DBM, depending upon tubes, over the band 50 to 15,000 cycles.

FREQUENCY CHARACTERISTIC: ± 1 db over the range 30 to 15,000 cycles.

INPUT SOURCE IMPEDANCE: 30/150/250/600 Ohms. Center taps are available when strapped for 150 or 600 Ohms.

OUTPUT LOAD IMPEDANCE: 150 or 600 Ohms. Center tap is available when strapped for 600 Ohms.

EXTERNAL POWER REQUIREMENTS: Filament 6.3 Volts AC at 1.5 amperes. Plate: 300 Volts DC at 70 Milliamperes.

METERING: Metering connections are available at the plug for external reading of cathode currents of the individual tubes. If it is desired to mount metering switches on the amplifier, knockouts for four Grayhill #4001 push button switches are provided on the rear apron (handle end) of the chassis.

Mechanical Characteristics

SIZE: Length: 10 in., width: 3-1/4 in., height: 5-1/2 in.

WEIGHT: 6-1/2 lbs.

SHIPPING WEIGHT: 8 lbs.

FINISH: Light grey baked enamel over 16 gauge Bonderized (rustproofed) steel.

The Langevin Type 116-A and 117-A PLUG-IN amplifiers were designed in conjunction with the General Engineering Department of the Columbia Broadcasting System. These amplifiers are small, versatile, easy-to-use units with better than FM quality performance.

Microphone to Transmitter

Complete broadcast audio facilities can be fabricated with *only* these two amplifiers in the system from microphone to transmitter input, using the Type 116-A as pre-amplifier and booster, and the Type 117-A as program amplifier, booster, and monitor.

Gold Plated Plugs

The amplifiers utilize Cannon Plugs, built to Langevin specifications, with gold-plated, non-oxidizing terminals, and a shielded TWIN-AX input connection. The mating plug receptacle is supplied with each amplifier.

Small Size

Rack space can be used to the fullest advantage with PLUG-IN amplifiers, as it is possible to mount 6 pre-amplifiers (Type 116-A) or 4 Program amplifiers (Type 117-A) in 7 inches of rack space. (See page four for mounting details). The small physical size of the PLUG-IN units makes them readily adaptable to console installation.

Maintenance Advantages

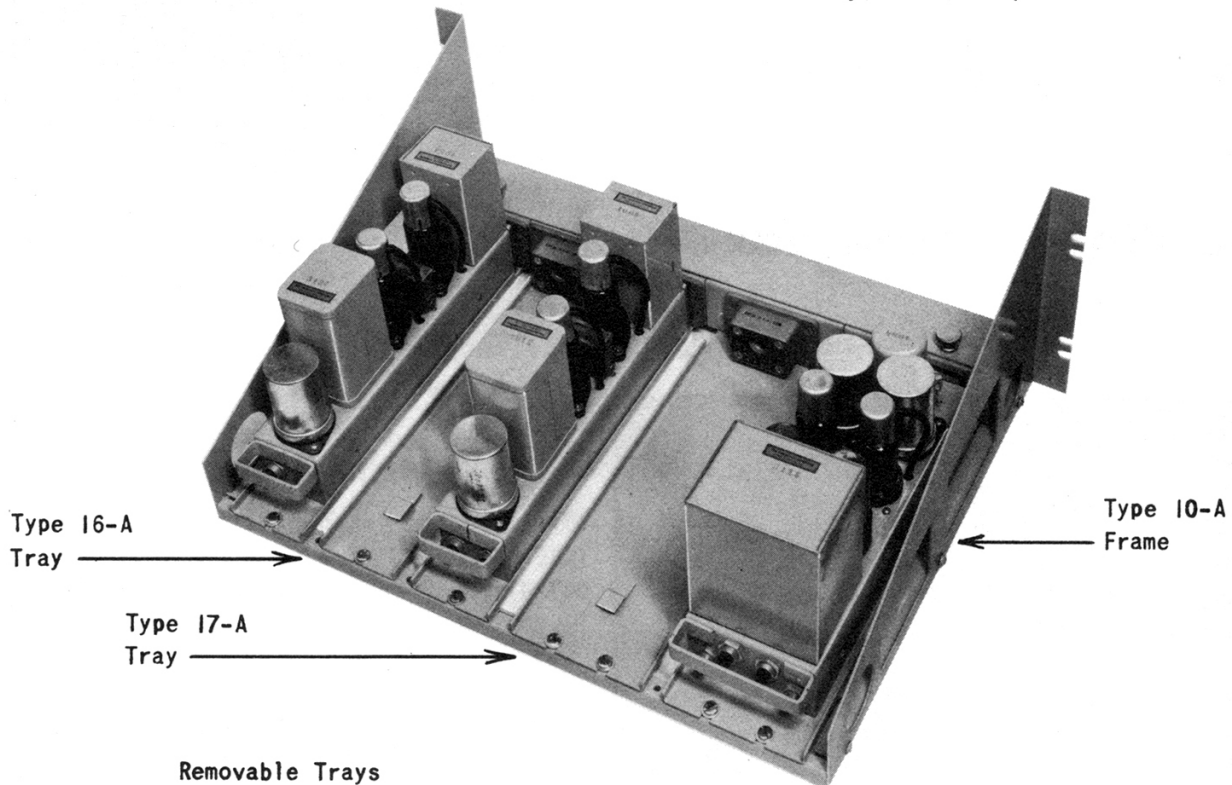
PLUG-IN amplifiers are easily removed from equipment racks or consoles for preventive maintenance checks at the service bench. Studio operation can be maintained with replacement amplifiers.

Overall Economy

Simplification of broadcast audio facilities to only two types of amplifiers, and only two types of tubes, 1620's and 6V6GT's makes possible station economies by decreasing tube and amplifier inventories.

RACK MOUNTING DETAILS

The Langevin Rack Mounting Assembly for PLUG-IN amplifiers is a unit which occupies only 7 inches of standard equipment rack space, and can accommodate various combinations of the two types of amplifiers.



Removable Trays

The assembly is constructed with two sizes of removable trays, Type 16-A and Type 17-A, each having a plug receptacle mounted on it. Trays may be arranged on the basic frame, Type 10-A, so that the following combinations of amplifiers can be achieved:

Six Type 116-A Pre-Amplifiers

or

Four Type 117-A Program Amplifiers.

or

Three Type 116-A Pre-Amplifiers and two Type 117-A Program Amplifiers.

or

Four Type 116-A Pre-Amplifiers and one Type 117-A Program Amplifier.

In the illustration above, trays for a combination of three pre-amplifiers and two program amplifiers have been assembled on the basic frame. The assembly, as shown, will allow removal of the amplifiers from the rear of an equipment rack. However, if it is desired to plug the amplifiers in from the front side of a rack, the mounting trays can be reversed on the basic frame.

Cabling

All cabling is run through the channel located directly behind the plug receptacles, and a removable cover over the cable channel allows easy access to the plugs for wiring purposes.

Overall Specifications

Height: 7 in. Width: 16-3/4 in. Depth: 13 in.
Weight: 10 lbs.

Power Supply

A Selenium Rectifier power supply by Langevin is available to provide plate and filament power for the 116-A and 117-A PLUG-IN amplifiers.

The 205-A power supply has a maximum rating of 425 Milliamperes. With the secondary tap set for "high" output voltage, the following is available:

275 Milliamperes at 300 Volts D.C.

150 Milliamperes at 275 Volts D.C. (Through an additional stage of filtering for the pre-amplifiers).

With the secondary tap set for "low" output voltage, 425 Milliamperes at 225V. D.C. are available for the operation of twelve of the Langevin Type 118-A Isolation-Bridging PLUG-IN amplifiers.