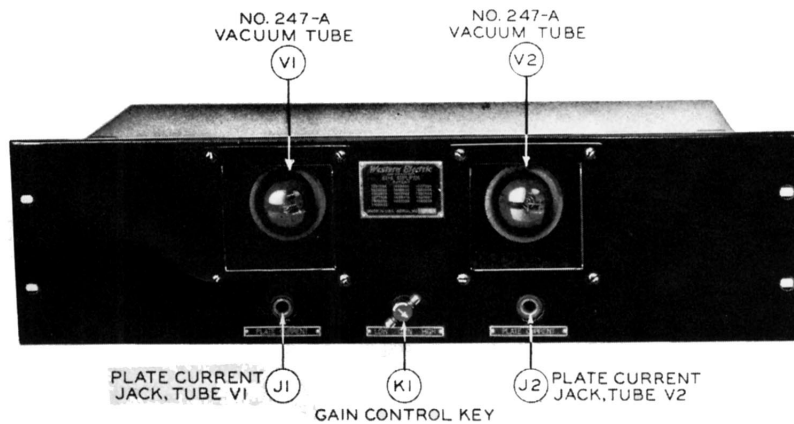


## No. 61-A AMPLIFIER



## AMPLIFIER

### No. 61-A

#### *Instructions for Use*

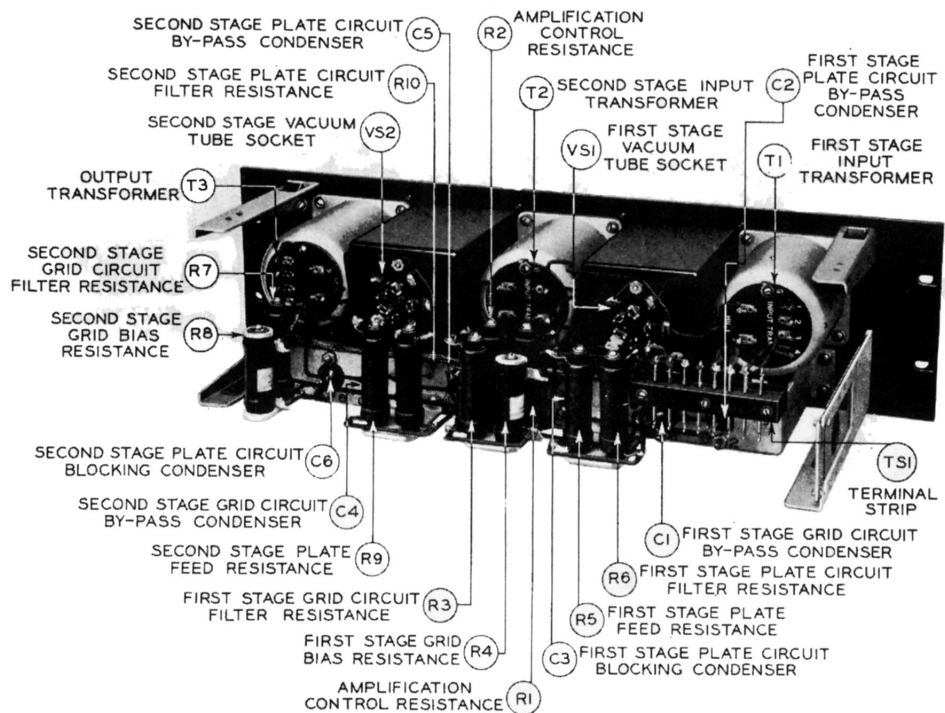
The No. 61-A Amplifier is primarily designed for use in Western Electric Speech Input Equipments for radio telephone broadcasting or similar service. It may be used in tandem with, and ahead of, a No. 60-A Amplifier where more gain is required than can be obtained from the No. 60-A Amplifier alone. It may also be used as a booster amplifier at points where amplification with low output levels is desired.

The No. 61-A Amplifier shown above and in Figure 1 is a two stage transformer coupled vacuum tube amplifier and has a maximum gain of approximately 58 db. The gain can be reduced 25 db by means of a two position, key operated, potentiometer. A No. 247-A Vacuum Tube is used in each stage. The No. 61-A Amplifier is designed to operate between impedances of 200 ohms.

The No. 61-A Amplifier requires a filament supply of 3.2 amperes at 2 volts and a plate supply of approximately 5 milliamperes at 350 volts. The grid bias for the vacuum tubes is obtained from the potential drop across resistances located in the cathode circuits.

The component parts of the No. 61-A Amplifier are mounted on a panel 19 inches wide and  $5\frac{1}{4}$  inches high designed for relay rack mounting. The vacuum tubes are mounted in recesses in the panel and together with the jacks and gain control key are accessible from the front. The other apparatus is mounted on the rear of the panel and is protected by a removable dust cover.

## No. 61-A AMPLIFIER



*Fig. 1—No. 61-A Amplifier—Rear View*

### DESCRIPTION

The schematic circuit diagram of the No. 61-A Amplifier is shown in Figure 2 and the wiring diagram in Figure 3. The signal is applied to the grid of the first stage vacuum tube V1 through the input transformer T1, which is designed to work from a 200-ohm circuit directly into the grid of a vacuum tube. The first stage is coupled to the second through the interstage transformer T2. The plate current is supplied to the vacuum tube V1 through the resistance R5. The condenser C3 located in the circuit between the primary of the transformer and the cathode of the vacuum tube prevents direct current from flowing through the transformer winding.

The secondary of the transformer T2 is connected to the grid of the second stage vacuum tube V2. The key operated gain control potentiometer is connected across the secondary of this transformer and allows the gain of the amplifier to be reduced by 25 db. This potentiometer consists of the resistances R1 and R2 and is operated by the key K1. When the key is in the "HIGH" position, terminal 4 of the transformer is connected through the contacts of the key to the grid of the vacuum tube and the potentiometer is removed from the circuit. When the key is in the "LOW" position, terminal 4 of the transformer is connected through the contacts of the key to the free end of the potentiometer

## No. 61 - A AMPLIFIER

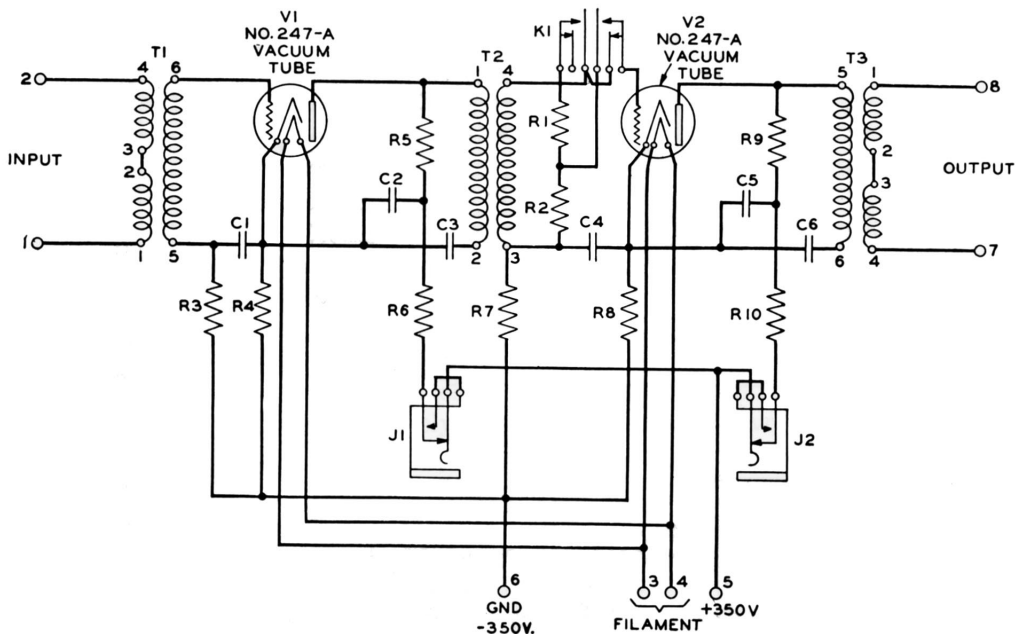
resistance R1 and the grid of the vacuum tube is connected to the common point of resistances R1 and R2. The other end of resistance R2 is connected permanently to terminal 3 of the transformer. The key K1 is so constructed and wired that when it is operated one set of contacts is always made before the other is broken.

The second stage vacuum tube V2 works into the output transformer T3, which steps the impedance down to 200 ohms for working into a No. 60-A Amplifier or other 200-ohm circuit. The plate current is supplied to the vacuum tube through the resistance R9. The condenser C6 located in the circuit between the primary of the transformer and the cathode of the vacuum tube prevents direct current from flowing through the transformer winding.

The plate feed resistances R5 and R9 serve the double purpose of offering a high impedance to the passage of voice currents from the plate circuits of the vacuum tubes and reducing the plate voltage from 350 to the proper value for the No. 247-A Vacuum Tubes.

The filaments of the vacuum tubes are connected in parallel. No means of controlling or measuring the filament current is provided in this amplifier since the current required is the same as that for the No. 60-A Amplifier and the filament circuit is intended to be operated in series with the filament circuit of a No. 60-A Amplifier.

The plate supply circuit for the first stage goes through the jack J1, the resistance R6 and the plate feed resistance R5. The plate supply circuit for the second stage goes through the jack J2, the resistance R10 and the plate feed resistance R9. The resistance R6 with the condenser C2 in the plate circuit of the first stage and the resistance R10 with the condenser C5 in the plate circuit



### SCHEMATIC CIRCUIT DIAGRAM OF 61-A AMPLIFIER

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