

### Specifications

<b>General:</b>	Low level, 2 stage, adjustable gain, resistance coupled amplifier.
<b>Input:</b>	Operates from 200 ohms.
<b>Output:</b>	Operates into a 500 ohm load.
<b>Load Carrying Capacity:</b>	0 db. (0.006 watt) with less than 1% harmonics introduced by the amplifier.
<b>Gain:</b>	30, 40 or 50 db. at 1000 cycles per second.
<b>Vacuum Tubes:</b>	Two Western Electric No. 262A.
<b>Filament Supply:</b>	0.64 ampere at 10 = 0.3 volts AC or DC.
<b>Plate Supply:</b>	Approximately 5 mils at 375 = 25 volts DC.
<b>Dimensions:</b>	Overall—Height 5¼", Length 19", Depth 7½".
<b>Weight:</b>	Approximately 23 pounds.
<b>Finish:</b>	81A-15—Standard (Gray Mat Aluminum Cover) 81A-3—Black.

DISTRIBUTOR IN THE UNITED STATES  
**Graybar**  
ELECTRIC COMPANY  
General Office: 120 Lexington Avenue  
New York, N. Y.

DISTRIBUTOR FOR CANADA AND NEWFOUNDLAND  
**Northern Electric Company Limited**  
General Sales Office: 1261 Shearer Street, Montreal, P. Q.

FOREIGN DISTRIBUTORS  
**International Standard Electric Corporation**  
67 Broad Street, New York, U. S. A.

## Western Electric Low Level Amplifier

No. 81A



### For Radio Telephone Broadcasting Systems

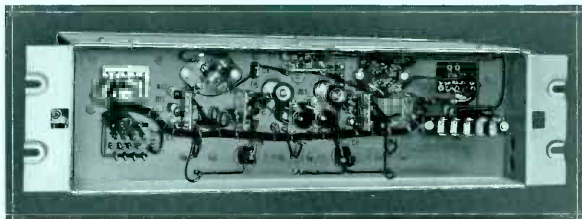
A development of Bell Telephone Laboratories, the Research Laboratories of the American Telephone and Telegraph Company and the Western Electric Company.

**T**HE Western Electric 81A Amplifier is a two-stage, adjustable gain, resistance amplifier, for use as a low level line amplifier in AC operated speech input equipments.

The amplifier is designed to operate between impedances of 200 ohms and 500 ohms with a gain of 30 db, 40 db or 50 db. The frequency response characteristic is uniform within approximately 1 db from 30 to 10,000 cycles per second.

The amplifier will deliver a zero energy level (0.006 watt) with less than 1% total harmonics introduced by the amplifier.





FRONT VIEW — MAT REMOVED

### Description

The component parts of the 81A Amplifier are assembled on a recessed metal panel which is designed to be mounted on a standard relay rack or in an equipment cabinet.

The larger apparatus such as vacuum tubes, coils and condensers, is assembled on the back of the panel and protected by a metal cover when the panel is mounted on a rack. The rear cover is not required when the amplifier is mounted in a cabinet. All wiring and the smaller apparatus are mounted in the recess in the front of the panel and are protected by a metal mat. Usually the mat is finished in dark gray and the cover in aluminum. However, either or both will be furnished in black, if specified. The complete amplifier weighs approximately 23 pounds.

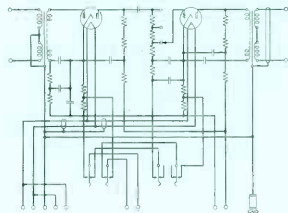
Two Western Electric 262A Vacuum Tubes are used. These tubes have a low noise level when the filaments are operated from alternating current. Keys on the front and a resistance in the plate circuit, serving as a meter

shunt, are provided, for measuring the plate currents of the vacuum tubes through a suitable external meter such as that provided in the Western Electric 262A Meter Panel.

### Power Requirements

An alternating current supply of approximately 0.64 ampere at  $10 \pm 0.3$  volts is required for the filaments of the vacuum tubes which are connected in parallel. The Western Electric 263A Voltage Regulator Panel, which supplies a constant 10-volt potential from 100-125 volt, 60 cycle power mains, is recommended for this purpose. When the power supply is 50 cycles, the 263B Voltage Regulator Panel should be used. These voltage regulator panels will supply one 81A Amplifier, two 82A Amplifiers and one 700A Volume Indicator.

A plate power supply of approximately 5 milliamperes at  $375 \pm 25$  volts DC is required for the plate circuits. The Western Electric 8A Rectifier and 716A Filter are recommended for this purpose. The 8A Rectifier also will supply two 82A Amplifiers and one 700A Volume Indicator.

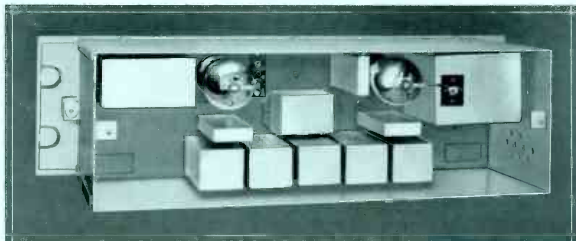


SCHEMATIC CIRCUIT

The grid bias potentials are obtained from voltage drops across resistances located in the cathode circuits of the vacuum tubes.

Power control switches are not included for the filament and plate circuit power supply voltages. However, the 8A Rectifier, which may be used with this amplifier, contains a manual

power control switch through which AC power is supplied to the filament voltage regulator (external to the 8A Rectifier) as well as to the rectifier circuits. A time delay relay in the rectifier circuits permits the cathodes of the amplifier vacuum tubes to reach their normal operating temperatures before the high voltage plate power is applied.



REAR VIEW — COVER REMOVED

20B<sup>20</sup> (for tubes)

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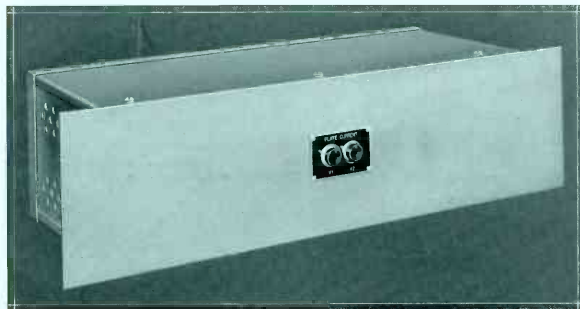
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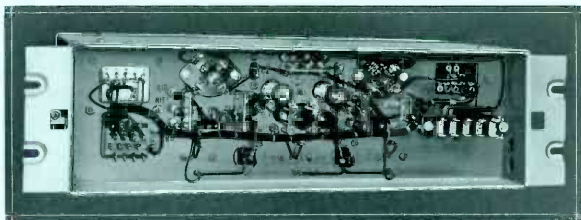
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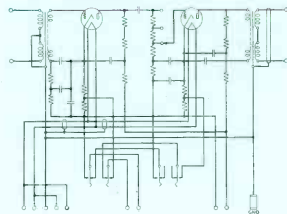
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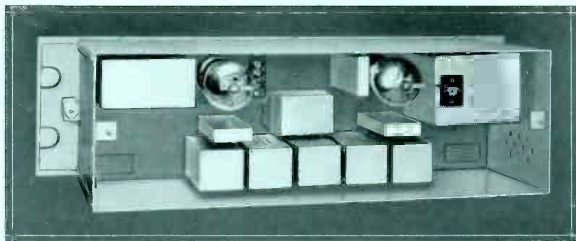


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REAR VIEW — COVER REMOVED

20020 (see tubes)