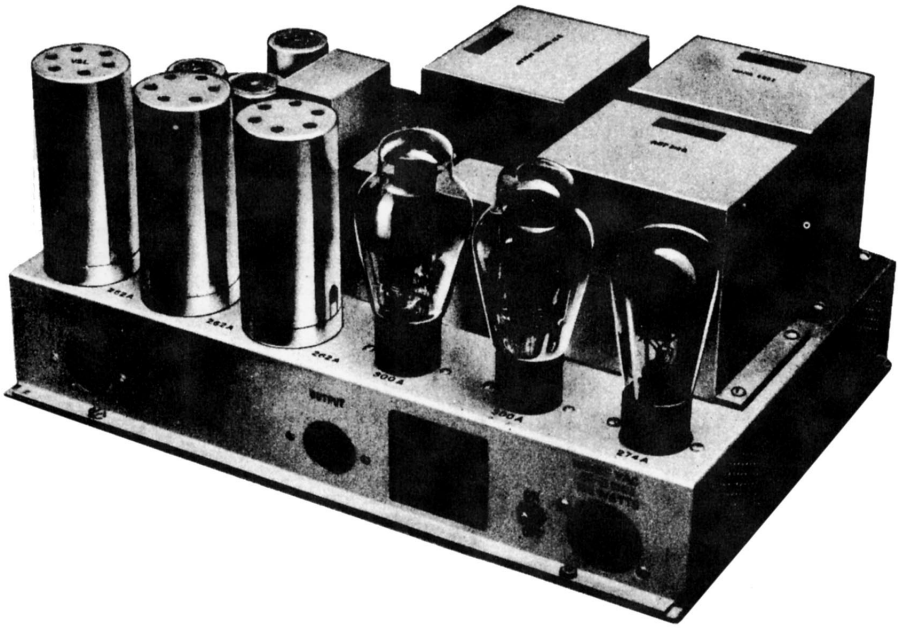
Western Electric Company

No. 92-B AMPLIFIER



Instructions for Use

The Western Electric 92B Amplifier provides high-quality amplification of speech or music from a microphone, electric phonograph, radio receiver, or other source. It may be used in the Western Electric 14A Cabinet as part of a public address system for schools and similar institutions. It is available for general use wherever amplification of a low-power input is required.

The amplifier is of the four-stage, high-gain, power type; it has a useful frequency range of 50 to 8000 cycles, provides a gain of 105 db, and a power output level of 20 watts. It is readily portable, although not provided with a carrying case or similar protection; may be mounted or placed on a shelf or table; and is equipped with cords and plugs for quick connection to power supply, input source, and loud speakers, amplifiers, or distribution system.

Instruction Bulletin No. 885

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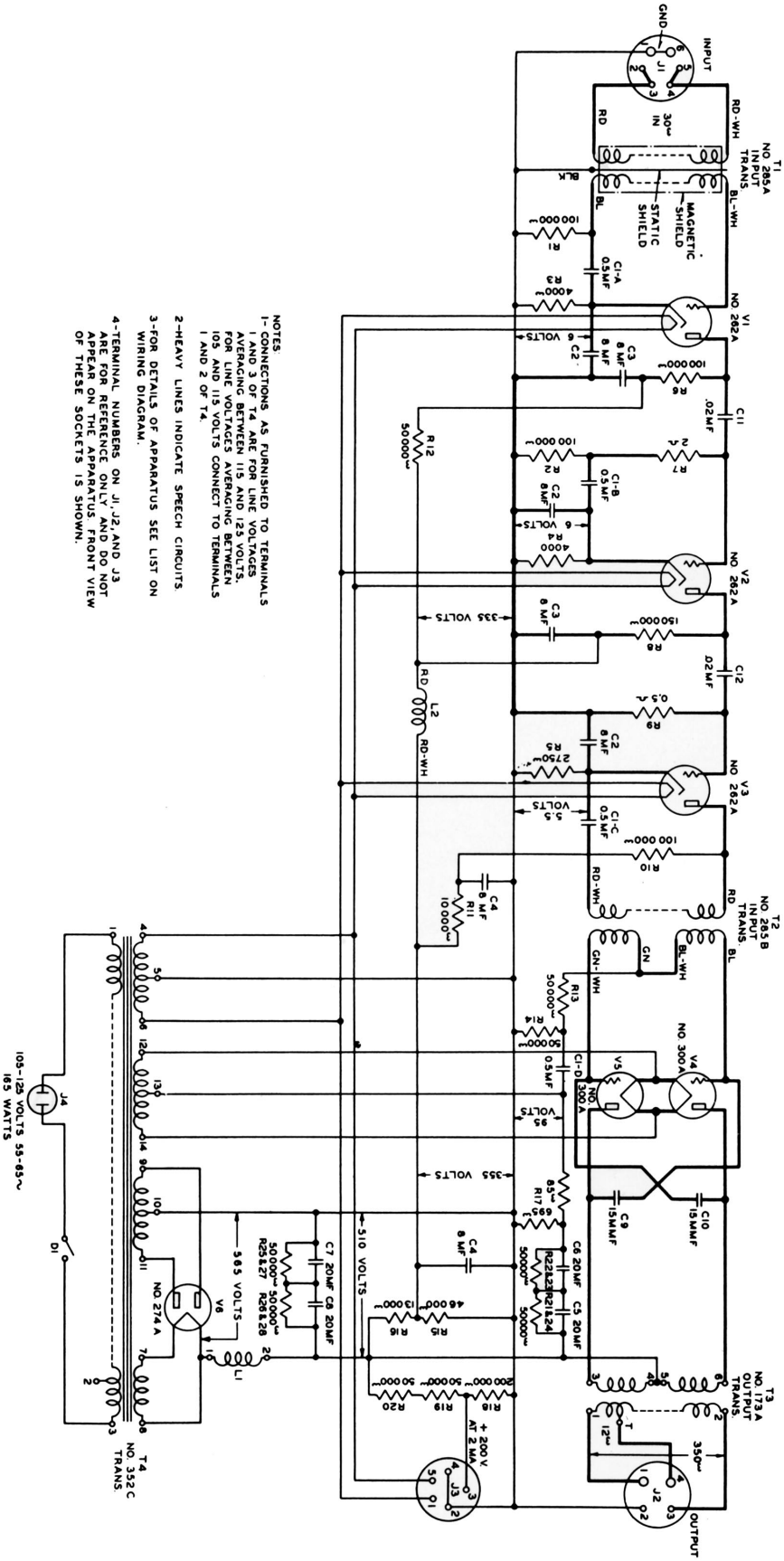

Figure 1—Schematic of 92B Amplifier.

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MECHANICAL CHARACTERISTICS

Appearance	—Aluminum finished, chassis type construction as shown on Page 1.
Width	—11-7/8 inches including flanges on chassis.
Length	—16-3/4 inches.
Height	—8-1/2 inches to top of 300A Vacuum Tubes.
Weight	—Approximately 43 pounds.
Mounting	—To be mounted on horizontal rails or on a shelf.
Vacuum Tubes	—3 262A Vacuum Tubes. —2 300A Vacuum Tubes. —1 274A Vacuum Tube.
Power Cord	—A 10-foot power cord is furnished with the amplifier.
Connecting Plugs	—The input and output connections are accomplished by means of Eby 7CL (6 prong) and Eby 7AL (4 prong) plugs respectively, which are furnished with the amplifier.

NOTE: The vacuum tubes are not furnished as part of the amplifier and must be ordered separately.

ELECTRICAL CHARACTERISTICS

Schematic Circuit	—See Figure 1.
Wiring Diagram	—See Figure 2.
Gain	—105 db ± 2 db.
Frequency Range	—50-8000 c.p.s. ± 1 db.
Operates From	—30 ohms.
Internal Impedance	—Open.
Operates Into	—12 ohms or 350 ohms.
Internal Output Impedance	—3.25 or 95 ohms
Output Power	—20 Watts or + 35.3 db level with respect to 0.006 watt.
Output Noise (—)	—22 db (unweighted) with respect to 0.006 watt.
Power Required	—165 Watts at 60 c.p.s. 105-125 volts. The supply should be fused for 3 amperes.

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INSTALLATION

The 92B Amplifier may be placed in any convenient location provided there is adequate ventilation to prevent over-heating.

The amplifier may be enclosed in a perforated metal box [(13 inches x 17 inches x 8-3/4 inches) or larger inside dimensions] in which approximately 20% of the metal is removed from the top and sides of the box by holes or perforations.

The input and output leads should be connected to the proper plugs with connections as shown on Figure 2. When soldering wires to the plug terminals, the lug should be soldered to the base of the prong to insure good electrical connections.

The input lead should be a shielded twisted pair such as KS-7133 Cordage.

Insert the vacuum tubes, the input plug and the output plug into their respective sockets and connect the amplifier to 115-volt 60-c.p.s. power supply by means of the power cord. The vacuum tube shield marked "VS1" should be placed over the correspondingly marked socket.

A 90 ohm Potentiometer suitable for low level operation, such as the I.R.C. type A21, in conjunction with an I.R.C. type BW 1/2, 15-ohm resistance may be used for gain control. The potentiometer and its associated resistance may be mounted either inside or outside of the chassis. The resistance is attached to the potentiometer by one of its wire leads. Precautions must be taken when mounting to reduce to a minimum the power line hum picked up by the windings of the potentiometer resistances. It may be necessary, after the potentiometer is mounted as described below, to rotate the potentiometer about its shaft to eliminate hum pick-up entirely in critical installations.

Location

1. When the potentiometer is mounted in the chassis the hole for the shaft should be located on the end wall of the chassis nearest the 262A Vacuum Tubes. The hole is 7-7/8 inches from the extreme rear and 1-1/8 inches up from the bottom, exclusive of the thickness of the bottom plate. The rear wall of the chassis is the one on which the sockets are mounted. An extension shaft will be required in most cases to extend the potentiometer shaft out through the side wall of the enclosing cabinet. When the amplifier is mounted in a box made by the Par Metal Products Company #SC-128, the amplifier should be located as far to the rear of the box as possible so that the knob of the potentiometer will clear the ventilating louvers in the side wall of the box.
2. When there is sufficient room in the cabinet as is the case with the Par metal box #SC-128, the potentiometer may be mounted external to the chassis between the end wall of the chassis, referred to above, and the inside wall of the cabinet. In this case the potentiometer is mounted on the front wall of the cabinet. The connections to the amplifier will be made through the rear of the cabinet.

3. When the potentiometer is mounted in any position outside of the amplifier cabinet, it must be at least 12 inches away from any part of the amplifier.

Wiring

1. When the potentiometer is located inside the chassis as in paragraph (1) under "Location" the wiring is as follows:

   Remove the red and red-white coil leads from the input socket. Splice a twisted pair to these twisted coil leads keeping the color code the same. Connect the extended red-white coil lead to terminal 1 of the potentiometer. Attach the 15-ohm resistance with as short a lead as possible to terminal 2 of the potentiometer. Connect the extended red coil lead to the free end of this resistor. By means of a twisted pair of wires connect terminal 1 of the potentiometer to the terminals on the input socket from which the red-white lead was removed and connect terminal 3 of the potentiometer to the terminals on the input socket from which the red lead was removed. The aluminum cover of the potentiometer should not be used.

2. When the potentiometer is located outside of the chassis as in paragraphs 2 and 3 under "Location" the wiring is as follows:

   All wiring to the potentiometer must be made with double conductor shielded and rubber jacketed KS-7133 wire or its equivalent. Connect one end of the 15-ohm resistance to terminal 2 of the potentiometer with as short a lead as possible. One piece of shielded pair should be used to connect terminals 1 and 3 of the potentiometer to the microphone or other 30-ohm input source. A second piece of shielded pair connects terminal 1, and the free end of the resistance attached to terminal 2, to a six prong Eby-7CL input plug. The plug is wired so that the lead from terminal 1 connects to terminals 4 and 5 of the input plug. The lead from the resistance is connected to terminals 2 and 3 of the input plug. The shield connects to the large prongs, terminals 1 and 6 of the input plug. The shields of both pairs are connected to the shield can of the potentiometer. As seen from the terminal side the plug, terminal numbers read counter-clockwise. The input plug is inserted in the input socket of the 92B Amplifier.

OPERATION

When first put into operation, the input signal should be adjusted to its minimum possible value before the a-c. power is connected to the amplifier. After the amplifier warms up, about one minute after the power is applied, the input should be adjusted to obtain the desired output.

When power is removed from amplifiers on which the input signal remains, at least one minute should elapse before re-applying the power. If no input signal is present, power may be re-applied at any time.