

BELL SYSTEM PRACTICES
Outside Plant Construction
and Maintenance

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107-A AND 108-A AMPLIFIERS
DESCRIPTION AND MAINTENANCE

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1. GENERAL

1.01 This section describes the 107-A and 108-A amplifiers.

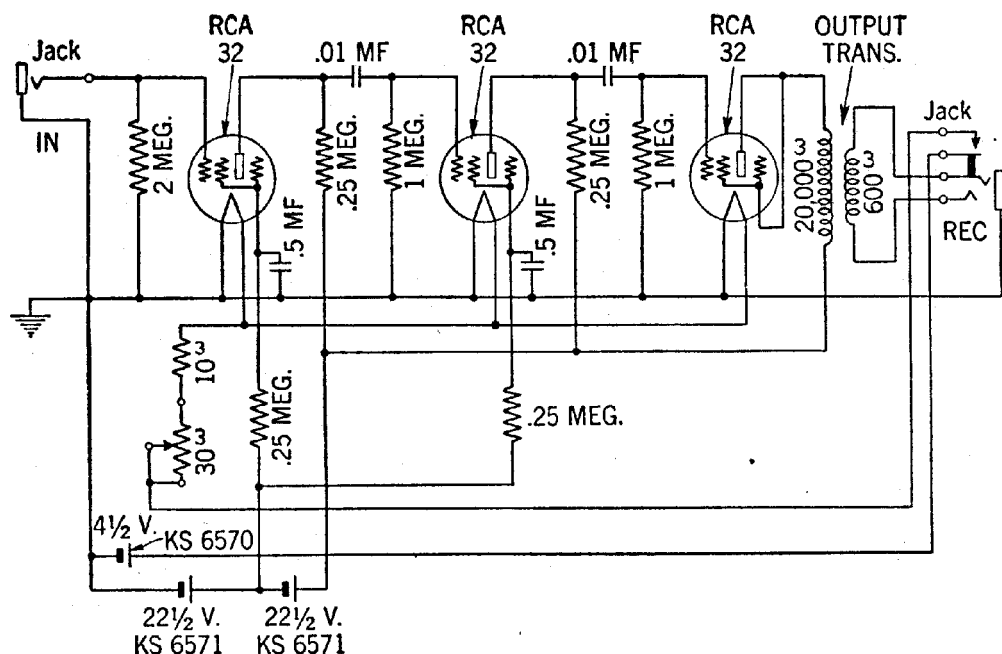
1.02 The 107-A amplifier is intended to facilitate cable testing and fault locating with exploring coils and other portable testing apparatus that may require the use of an amplifier.

1.03 The 108-A amplifier, which consists of a 107-A amplifier equipped with a probe, receiver and cords, is intended primarily for use in identifying wires in toll, toll entrance and exchange cables without making metallic contact with the conductors at the splice.

2. DESCRIPTION

2.01 The 107-A amplifier is a three stage resistance coupled amplifier with an output transformer in the last stage. The amplifier is equipped with input and output jacks. A filament rheostat is provided to control the amplification. The shaft of the rheostat has a screwdriver slot which can be reached for adjustment through a circular hole in the side of the case. The plate and screen potentials are supplied by two KS-6571 batteries. The filament current is supplied by a KS-6570 battery. Three

32-type RCA vacuum tubes are employed in the amplifier. The circuit diagram of the amplifier is shown below.



2.02 The amplifier is mounted in an aluminum case approximately 8 inches long, 8 inches wide, and 7-1/2 inches high. A protective aluminum plate, held in place by two thumb-screws, is mounted above the unit. This plate can readily be removed when access is desired for battery or tube renewal. Two compartments are provided above the plate. The front compartment is for the accessories included in the 108-A amplifier, and the rear compartment provides space for carrying a 19-C or 75-A Test Set (exploring coil). The case has a hinged cover and a leather carrying strap.

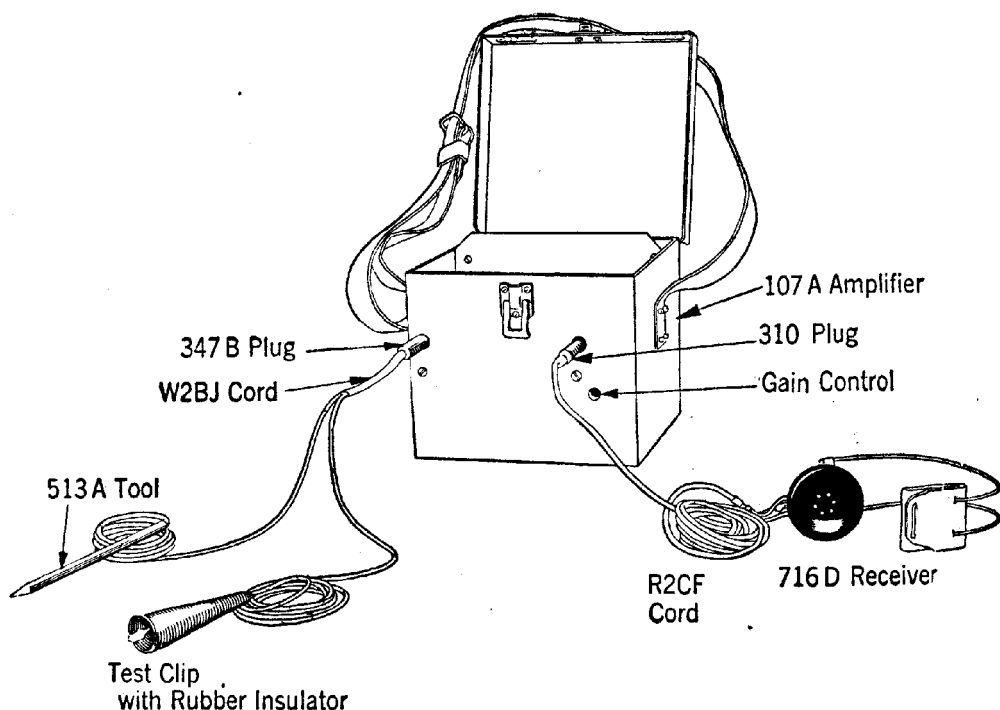
2.03 The gain of the amplifier is approximately 50 db and is practically flat between 100 and 4000 cycles.

2.04 The 108-A amplifier consists of a 107-A amplifier and the following accessories:

W2BJ Cord equipped with 513-A Tool (probe) and 347-B Plug.

R2CF Cord equipped with 716-D Receiver and 310 Plug.

The W2BJ cord includes a test clip and rubber insulator, and the 716-D receiver includes an 11-A headband. The 108-A amplifier is illustrated in the following sketch.



2.05 The 513-A Tool (probe) consists of a fibre handle 6 inches long and 5/16 inch in diameter, terminated in a blunt brass tip 11/16 inch long. The probe cord (W2BJ cord) has two conductors, the one connected to the probe being shielded. The other conductor is not shielded and is equipped with a test clip for connection to ground. The conductors are rubber insulated and are terminated in a 347-B plug for insertion in the amplifier input jack. The over-all length of the cord is 6 feet.

2.06 The receiver cord (R2CF cord) is rubber insulated. The over-all length is 6 feet. The cord is terminated in a 310 plug for insertion in the output jack. In placing this plug in the output jack, the filament switch is automatically operated. The receiver is connected to the tip and ring of the plug so that the output circuit is not grounded.

3. MAINTENANCE

3.01 The 107-A amplifier is of sturdy construction and should require little maintenance aside from battery and vacuum tube renewals.

3.02 The drain on the KS-6570 (filament) battery is approximately 180 milliamperes. The battery should have a useful life of about twelve hours of continuous service or about two weeks if used several hours each day. The drain on the KS-6571 (plate and screen) batteries is about 3 milliamperes. These bat-

teries should have a useful life of about three months. The KS-6571 battery should be discarded when the voltage, as measured by a voltmeter with the amplifier operating, is less than 17 volts. The KS-6570 battery should be discarded when its voltage measures less than 3 volts. Make sure that the batteries are properly connected in the set. The polarity of the battery leads is marked on the terminal strip.

3.03 A noticeable decrease in the volume of the amplifier with batteries of proper voltage is probably an indication of one or more defective vacuum tubes. A new tube should be placed in the sockets one after the other, until the defective tube is located. In testing for a defective tube, the probe should be placed close to a wire carrying current of audible frequency so that the volume and stability of the detected tone can be observed after each change in the position of the tubes.

3.04 **Cleaning and Oiling Strap:** The leather strap on the set requires cleaning and oiling about every 6 months to keep it in good condition.