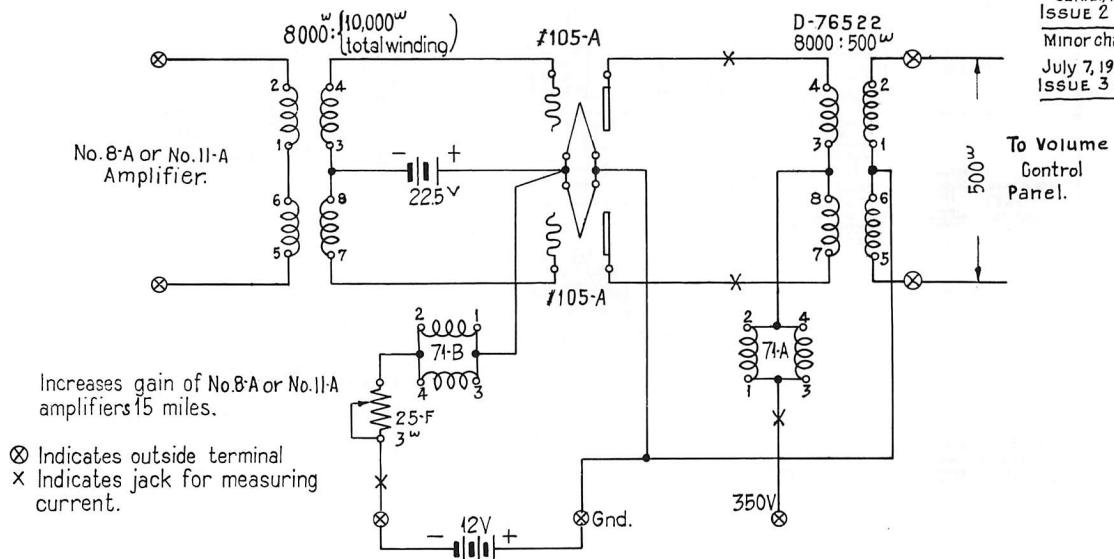
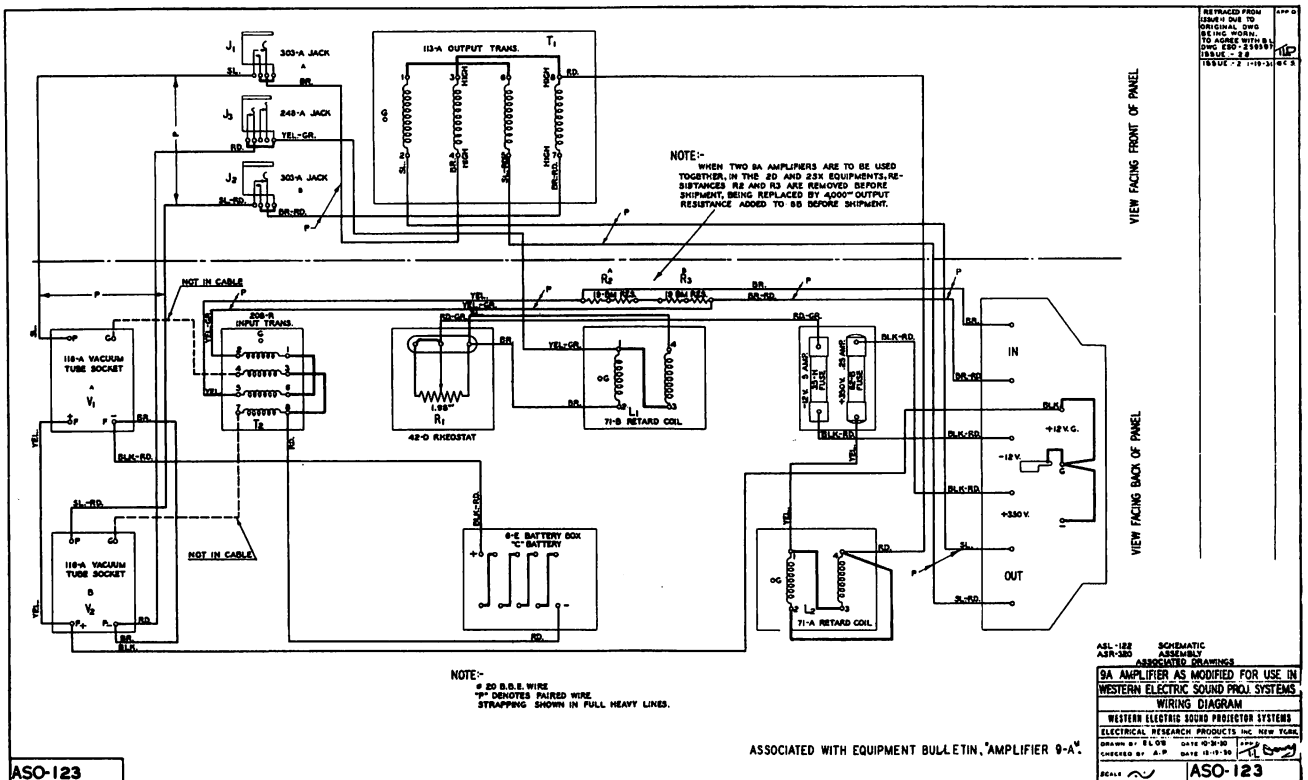
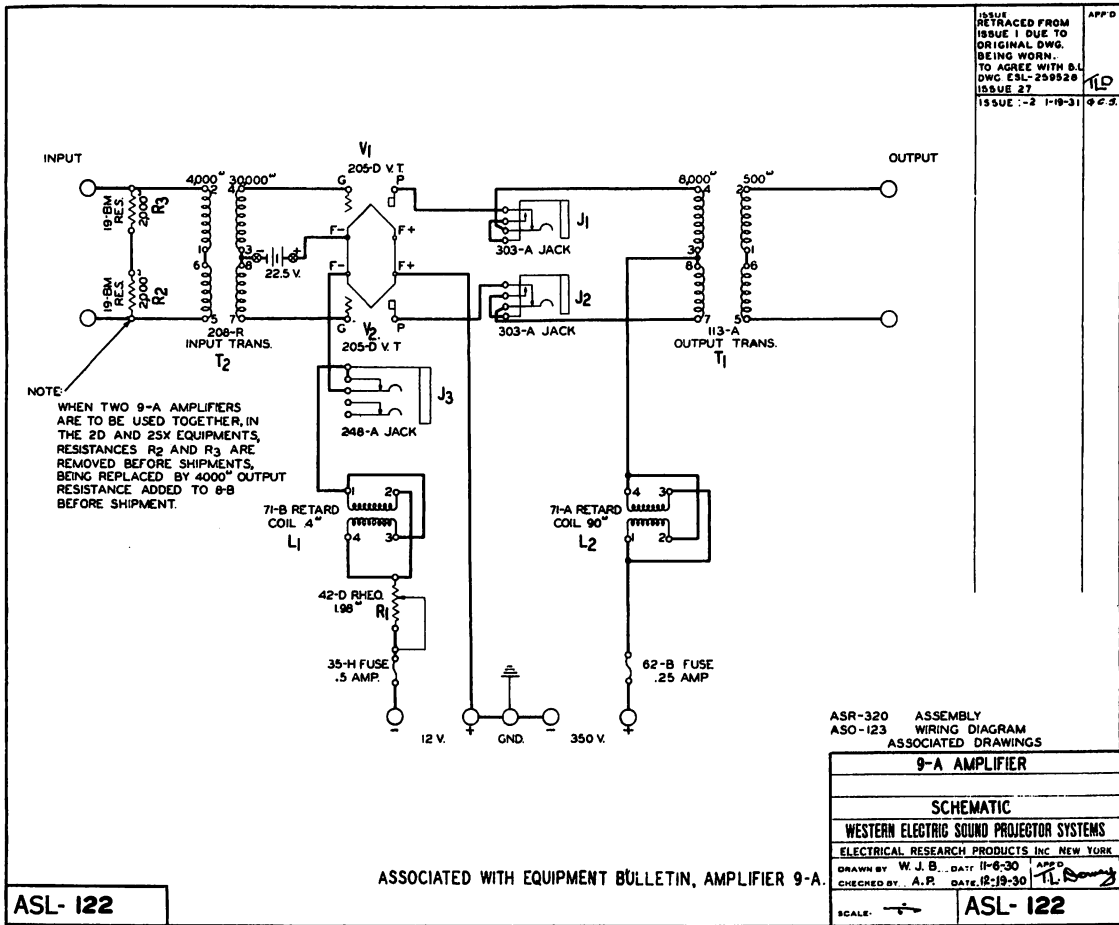


A.T.&T.Co.
Dept of
Dev. and Res.

PUBLIC ADDRESS SYSTEM
Power Stage for Indoor Service Only
No. 9A Amplifier

906-584
Engineer H.S.H.
Dec. 12, 1921
ISSUE 1
6000^w input res.
removed, imped.
ratio of input
transformer
changed. H.S.
Jan. 27, 1922
ISSUE 2
Minor changes
July 7, 1922
ISSUE 3 H.S.H.





1. References

- 1.1 Equipment Bulletins
 - Systems, General
 - Systems, Modification, 12V Battery to 18V Generator
 - Systems, Modification A, H & F to Common Batteries
- 1.2 Drawings - ASI-122, Schematic
ASO-123, Wiring Diagram

2. Description

- 2.1 General Information
 - Systems used in B, C, CG, 2-S, 2-SX, 2-D
 - Panel Size 7" high x 19" wide
 - Power Supply (a) 12V DC, (b) 350V DC, (c) 22½V DC.
 - Amplifier Type Push-Pull - 1 stage
 - Input Impedance 4000 ohms
 - Output " 500 "
 - Tubes Two - 205-D
 - Fil. I (total) 3.2 Amps
 - Plate I (total) 60 ± 20 mls
 - Output Capacity 24.5 db
 - Gain 16 db

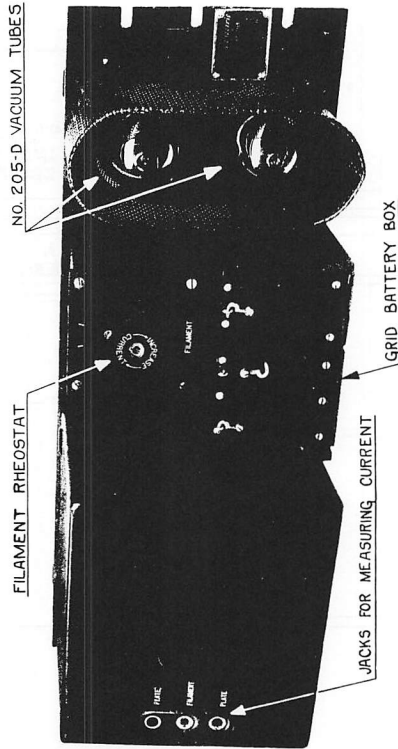


FIGURE 1

2.2 The filament current is controlled by a rheostat on the front of the panel and a switch on the 545-A Panel, and is measured by connecting the ammeter on the 514-A Meter Panel to the "filament" jack on the front of the 9-A Amplifier. The plate current is controlled by the switch on the 545-A Panel and is measured by connecting the milliammeter on the 514-A Panel to the "plate" jacks. The grid bias (22½V) is furnished by five #705 Eveready Batteries inserted in the

box container on the front of the amplifier panel.

2.3 Beginning November 1927 where two 9-A Amplifiers were to be used in parallel as in the 2-D and 2-SX systems, the 4000 ohm resistance shunted across each amplifier input was removed before shipment and one of them added across the output of the associated 8-B Amplifier. This was generally done in the Warehouse before shipment, and in all such cases a tag was attached to each 8-B and 9-A Amplifier indicating this change. In no case should this tag be removed, unless the amplifiers are restored to their original condition.

3. Installation

3.1 Mount the amplifier on the 101 type Rack in its proper position for the particular system, and connect in accordance with the system wiring diagram.

4. Operation

4.1 Follow the operating procedure as outlined in the Operating Instruction Book (yellow cover).

5. Maintenance

5.1 In replacing grid batteries, see that the brass contact springs are clean and if necessary scrape or sandpaper them. Carefully bend the springs over the top of the battery, making certain that there is a 1/4" clearance between the ends of the springs by cutting the longer spring if necessary. Insert the battery in the amplifier battery box - spring end first and short spring up. Close the cover and fasten catches. Check their voltage periodically by placing a voltmeter across the contacts on the box. Starting at the right hand side, facing the panel, the voltage between contact #1 and #2, and #2 and #3 should be 9 volts, and between #2 and #3, 4½ volts. When the voltage drops below 8 and 4 volts, respectively, the batteries should be replaced.

5.2 Fuse the 12 volt circuit with a 35-H (5 Ampere Cap.) fuse, and the 350 volt circuit with a 62-B (0.25 Ampere Cap.) fuse.

6. Replaceable Parts

6.1 All the component parts of the 9-A Amplifier are replaceable in the field. Order them as specified on ASI-122 and ASO-123.

6.2 Any part or sub-assembly replaced on a "Fire", "Repair", or "No Charge" basis should be returned to the Stores Division. If repaired on a "Full Price" basis, it should be junked in the field.

7. Availability

7.1 The 9-A Amplifier is available in the warehouse for replacement purposes only. Order it as:

"One 9-A Amplifier"

Note: All 9-A Amplifiers shipped for replacement purposes will have the 4000 ohm resistance mentioned in 2.3. It should be removed at the time of installation, if necessary.

L. W. CONROW
Installation Manager

ODM:SC

EQUIPMENT BULLETIN AMPLIFIERS, 9-A TYPE

Replacing E.B. "Amplifier, 9-A" & Addendum #1, Issue #1 of 10/5/31

1. Associated Drawings

- ASL-122, 9-A Amplifier, Schematic
- ASO-123, 9-A Amplifier, Wiring Diagram
- ASO-3499, 9-A Amplifier, Wiring Diagram & Schematic

2. GENERAL INFORMATION

2.1 Refer to E.B. "Amplifiers, General", F.R. 4.03, and to the above drawings.

3. Modification to A-9-A Amplifier - (per TA-118, for operation of Filaments on A.C. - Modify only when authorized)

3.1 Required Material:-

- One Set ASP-682 Conversion Parts, including:-
- 10' - #20 B. B. Wire
- 1 - ASO-3499 Circuit Label

For merchandising information on these parts see Section 9.

3.2 Procedure (see ASO-3499)

- (a) Disconnect and tape the lead connected to "4" terminal of 6-E Battery Box.
- (b) Disconnect the strap between "+12V." and "0" terminals.
- (c) Disconnect and tape the Rd. wire from "F-" terminal of vacuum tube socket V2.
- (d) Disconnect and tape the Rd-Gr. wire from the filament fuse block.
- (e) Connect the "+" terminal of the 6-E Battery Box to the ground terminal.
- (f) Connect the "F-" terminal of vacuum tube socket V2 to the terminal on the fuse block from which the Rd-Gr. wire was removed.
- (g) Shelve a copy (ASL-3492) over the existing circuit label. Change code marking as specified in E.B. "Equipment Modifications, General", F.R. 4.01.

3.3 Result:- Removal of a jack, retard coil and rheostat from the filament circuit, and certain circuit changes permit the operation of filament on A.C. and on the 7A-7114 Panel. The A-9-A Amplifier may be used in power unit systems and also in Motor Generator systems, if A.C. operation of its filaments is desired. (See Systems Drawings ASO-3491 and ASO-3593.)

4. Modification for Operation of Filaments from KS-5259 Motor Generator Set - (Modify only when authorized)

- 4.1 For one 9-A Amplifier with filaments operated from the output of Motor Generator Set, -
 - (a) Remove strap between "0" and "+12V." terminals, and add strap between "-12V." and "0" terminals.
- 4.2 For two 9-A Amplifiers in parallel, with their filament circuits in series operated from the output of Motor Generator Set, -
 - (a) On #1 Amplifier, remove strap between "+12V." and "0" terminals.
 - (b) On #2 Amplifier, remove strap between "+12V." and "0" terminals, and add strap between "-12V." and "0" terminals.
- 4.3 These modifications require no change in coding. Mark the changes in ink on the circuit label.

EQUIPMENT BULLETIN AMPLIFIERS, 9-A TYPE

Replacing E.B. "Amplifier, 9-A" & Addendum #1, Issue #1 of 10/5/31

4.4 Result:- Filament circuit wiring rearranged to permit operation of filaments from KS-5259 Motor Generator Set through TA-7115 (or TA-7252) Filter (see Systems Drawing ASO-3491).

5. Modification for Use in System Converted for Common Battery Operation (Modify only when authorized)

5.1 This modification consists of rearranging the wiring at the terminal strip, placing the ground on the negative side of the 12V. supply rather than the positive side and the 35-H Fuse in the positive side. Refer to Fig. 1 for procedure.

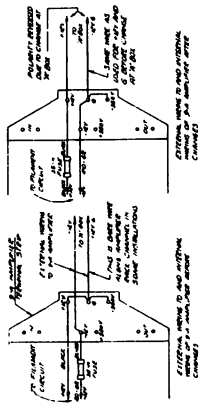


FIG. 1

5.2 These modifications require no change in coding. Mark the changes in ink on the circuit label.

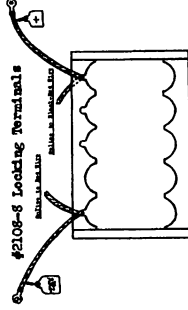
6. Modification for Use of 5 - #781 Eveready Batteries (Modify when first installed in #781 Batteries)

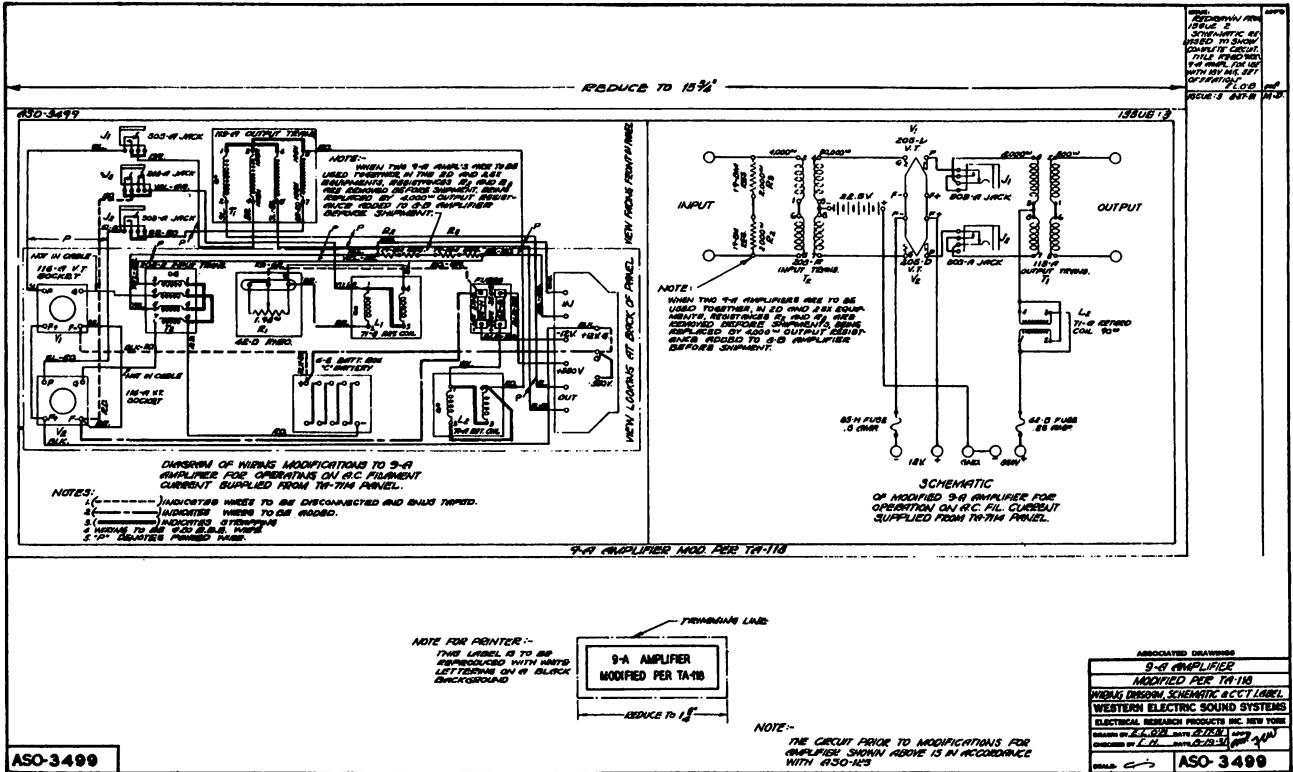
6.1 General:- The #781 Eveready Battery, which is a 4-1/2 volt unit equipped with binding post terminals, is the standard replacement "0" Battery for 9-A type Amplifiers. Modifications, as outlined below must be made in the amplifier at the time of changing from #703 to #781 Batteries.

6.2 Required Material:- 2 - #2108-8 Locking Terminals (for merchandising information see Section 9).

6.3 Procedure:-

- (a) Disconnect all rear panel wires from the spring contact assembly terminals of the #6 type Battery Box, and detach the box.
- (b) Remove spring contacts from battery box by first cutting off the hooked ends of the terminals and then unsoldering the washers on the bottom side of the box.
- (c) Remove the small solder contacts (used when taking voltage measurements) embedded in the top side of the box, by means of a hot iron. This operation removes all wiring from the "0" Battery Box.
- (d) Splice approximately 10" of #18 motor lead wire (engineer's kit) to the end of each wire disconnected in operation (a). Tape the soldered joints, and pass these wires through the small insulating bushings in the amplifier panel, and through the channels in the battery box from which the soldered contacts referred to in (c) were removed. (See Fig. 2).





ASO-3499-3 ASSOCIATED WITH E. B. AMPLIFIER, 9-A

4.03
EQUIPMENT BULLETIN
AMPLIFIERS, 9-A TYPE
Electrical Research Products Inc.

(e) Remount battery box on amplifier panel.
(f) Pull the motor lead wire extensions tight, and cut off leaving approximately 3/8" of slack for each connection to the #781 Battery terminals. Solder to the end of each wire (see Fig. 2), one of the special tinned locking terminal lugs supplied for this purpose (see Section 9.2).
(g) In the respective wires, attach tags marked as per Fig. 2.
(h) Install #781 Batteries into the box with their terminals outward and their #14 wires and negative posts of consecutive batteries adjacent, to facilitate strapping together in series. Strap with large solid copper wire of #18 or #19 gauge, using one wire one complete turn around each post and drawing it tight by means of a pair of long nose pliers. Connect the new battery leads to their proper terminals. Finally screw the binding post nuts down securely.

6.4 Result: - #781 Eveready Batteries, with more dependable terminal connections will be used.

7. Modification to Facilitate Servicing of Filament Rheostat R₁ (Modify when convenient)

7.1 Required Material: - Approximately 2' D-9397/4 or #18 Belden V.C. Motor Lead Wire (Engineer's Kit).

7.2 Procedure

- (a) Remove wires from filament rheostat R₁ and cut close to the cable form; leave wires approximately 1/2" of the shorter flexible wire to each wire removed
- (b) Splice approximately 1/2" of the shorter flexible wire to each wire removed from the rheostat and tape. Tape the splice to the cable form.
- (c) Reconnect to the rheostat as before.
- (d) No change in coding is required by this modification.

7.3 Result: - Filament rheostat R₁ may be removed for periodic servicing without undersanding connections and without danger of breaking the leads.

8. Maintenance

8.1 Grid voltages should not be allowed to fall more than 10% below normal. Any 4-1/2 volt #C Battery Unit which falls below 4 volts should be discarded. The "C" Battery routine (see E.B. Equipment Maintenance, General, F.R. 4.01) is unaffected by the adoption of the #781 Eveready Battery.

9. Merchandising

9.1 The 9-A Amplifier is available for replacement purposes only. Order it as "One 9-A Amplifier". To replace an A-4 Amplifier or for one A-4 Amplifier, and a 9-A Amplifier plus one set ASP-652 Conversion parts will be supplied.

NOTE: - All 9-A Amplifiers shipped for replacement purposes will have two 2000 ohm resistances shunting the input, as shown on ASL-122. They should be removed at the time of installation, if necessary, as specified on the drawing.

9.2 The ASP-652 Conversion Parts are included in the standard equipment lists for modifying systems from Storage Batteries to Power Unit or Motor Generator operation.

9.3 The #2108-5 Locking Terminals required in the modification for use of #781 Eveready Batteries (see Section 6.2) are available in the District Offices and are supplied free.

9.4 Order replacement "C" Batteries as: - "Five #781 Eveready Batteries".

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