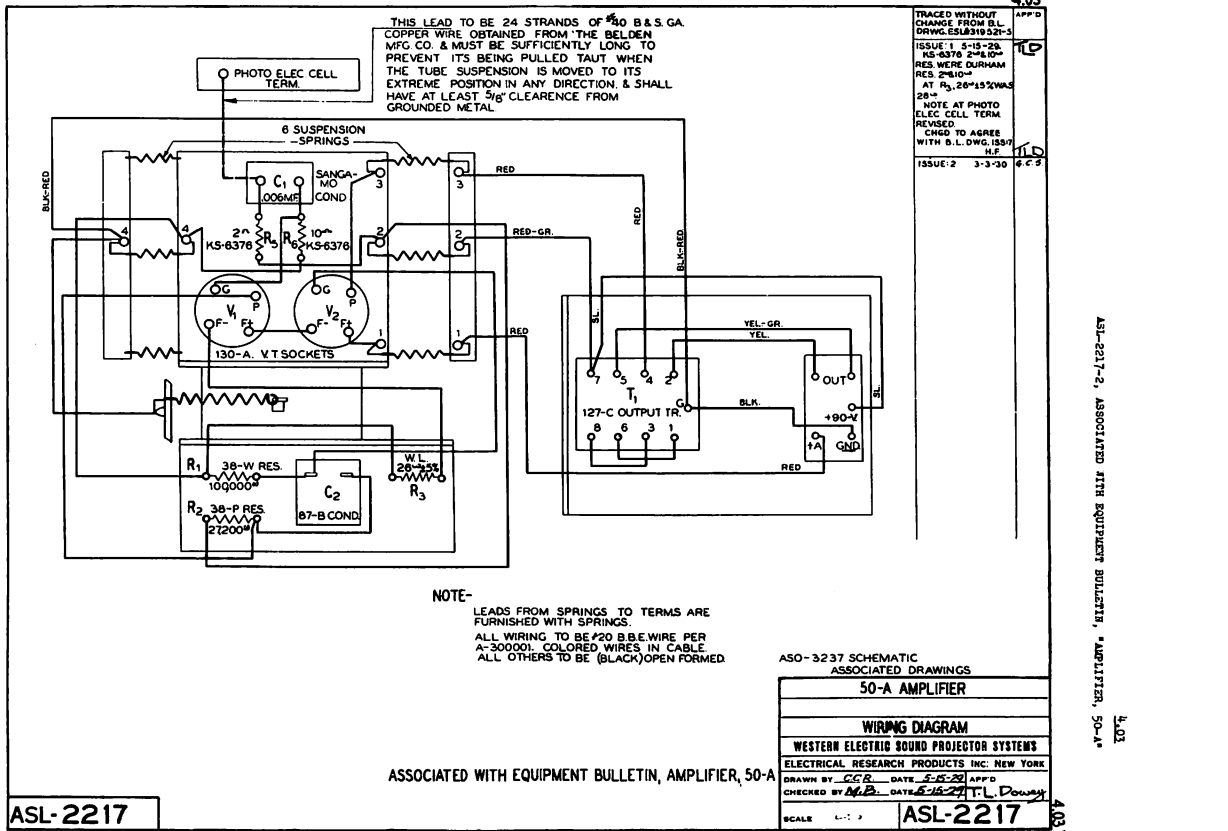


ASO-3246

ASSOCIATED WITH EQUIPMENT BULLETIN, REPRODUCER SETS, 202 TYPE

ASL-2223 202-B OR 202-C REPRODUCER SET WIRING DIAGRAM  
 ASL-2217 50-A AMPLIFIER - WIRING DIAGRAM  
 ASSOCIATED DRAWINGS:

202-B & 202-C REPRODUCER SETS & 50-A OR B-50-A AMPLIFIERS	
SCHEMATIC	
WESTERN ELECTRIC SOUND PROJECTOR SYSTEMS	
ELECTRICAL RESEARCH PRODUCTS INC. NEW YORK	
DRAWN BY	DATE
CHECKED BY	DATE
SCALE	ASO-3246



ASL-2217

ASSOCIATED WITH EQUIPMENT BULLETIN, AMPLIFIER, 50-A

ASO-3237 SCHEMATIC ASSOCIATED DRAWINGS

50-A AMPLIFIER	
WIRING DIAGRAM	
WESTERN ELECTRIC SOUND PROJECTOR SYSTEMS	
ELECTRICAL RESEARCH PRODUCTS INC. NEW YORK	
DRAWN BY	DATE
CHECKED BY	DATE
SCALE	ASL-2217

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EQUIPMENT BULLETIN AMPLIFIERS, 50 TYPE

1. Associated Drawings & Photographs

ASL-2217 Wiring Diagram, 50-A Amplifier and 50-A Amplifier modified per TA-4106.

Photo #9023, 50-A Amplifier, with cover removed.

Note: Drawing ASO-3246, Schematic, is associated with E.B. "Reproducer Sets, 202 Type", File 4.35.

2. General Information

2.1 Regular 50-A Amplifier

Systems Used in "Z" and "H" Type Film Amplifier  
 Power Supply 12V DC; 90V DC  
 Type 2 Stage Resistance Coupled  
 Vacuum Tubes 2-A  
 P.C. Worked From 500 Ohms  
 Fil. I 270 Mils  
 Output Capacity .006 Watts (0 db)  
 Voltage Amplification 1.0 db  
 Overall Dimension 10 1/2" long x 3-13/16" wide x 9-1/8" high

2.2 50-A Amplifier Modified per TA-4106, same as above except:

Vacuum Tubes Two 239-A or 264-A (See 6.2)  
 P.C. Worked From 3-A (See 6.2)  
 Fil. I 270 Mils (239-A V.T.) 300 Mils (264-A V.T.)  
 Voltage Amplification 6.5 db

3. Description

3.1 The 50-A Amplifier is used to amplify the output of the photoelectric cell to a value suitable for working into the main amplifier in "E" Type and "H" Type Systems. It forms an integral part of the 202 Type, TA-4050 and TA-4055 Reproducer Sets.

3.2 This Amplifier is "L" shaped and is enclosed in an aluminum cover. This cover has a small hinged door in the front, which allows for convenient access to the vacuum tubes. The unit includes a framework from which is suspended, by means of six springs, a mounting plate to which are attached the principal component parts of the amplifier, excepting the terminal strips and output transformer which are mounted directly on the framework. The filament supply rheostat and meter are parts of the reproducer set, rather than of the amplifier. On the upper side of the cover is a lever, for clamping the suspended member in a fixed position to avoid damage during shipment.

4. Installation

4.1 Separate installation of this amplifier is necessary only in case of field replacement, as this amplifier is shipped assembled to the reproducer set, of which it forms a part.

4.2 IN REPLACING A DEFECTIVE AMPLIFIER, remove the amplifier cover, the P.C. lead and the five leads to the terminal strip. Remove the six screws that attach the amplifier to the reproducer set and remove the amplifier. Attach the good amplifier by means of these screws. Resolder the five amplifier leads to the terminal strip in accordance

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EQUIPMENT BULLETIN AMPLIFIERS, 50 TYPE

with the following scheme:

TERMINAL	202-B & 202-C R.S.	LEAD	TA-4050 & TA-4053 R.S.
Gn'd	Black	White	White
+ A	Brown	Black	Black
Out	Yellow Green	Yellow Green	Yellow Green
Out	Red Green	Red Green	Red Green
Out	Red	Red	Red

Reconnect the P.C. lead and replace the amplifier cover.

5. Modification of 50-A Amplifier to Permit Use of 264-A Vacuum Tubes and 3-A Photoelectric Cell

5.1 264-A VACUUM TUBES AND THE 3-A PHOTOELECTRIC CELL cannot be used in the 50-A Amplifier until after certain modifications are made therein (modifications to be made in the field). These modifications are necessary because the 264-A vacuum tubes require a filament current of 300 mls as against 270 mls for the 239-A Vacuum Tubes; and because the 3-A Photoelectric Cell has an output level approximately 20 db greater than the 2-A Photoelectric Cell. These modifications are essentially

- (a) a reduction in the filament circuit resistance from 2 megohms to 0.5 megohm.
- (b) a change in the photoelectric cell coupling resistance necessary as the filament circuit is concerned this modification is approximately 9 volts to provide a safe working margin allowing for a low charge storage battery and for lead resistance, and (2) to adjust grid bias voltages to provide optimum operating conditions for the value of plate voltage supply used.

5.2 THE FOLLOWING MODIFICATION is to be made upon receipt of, and in accordance with supplementary instructions from the Division Operating Manager. It is fully covered on ASL-2217 and ASO-3246.

- (a) Replace the 264 #.L. Type "A" Resistor (R3) by an 18W #.L. Type "A" Resistor. To do this, remove the screw that holds the resistor in place. Then twist the resistor, so that its terminals point outward. The leads to the resistor may now be unsoldered and the resistor removed. Solder the leads to the replacing resistor and mount it in the same position.
- (b) Replace the 2 megohm Resistor (R5) by a 0.5 megohm Resistor.

5.3 With a pen (not pencil), change the existing circuit label as follows:

Component	Present Wording	Change to
R3	26W	18W
R5	2 meg.	.5 meg.

5.4 DEFACE THE CODE NUMBER of the existing nameplate, using a pen knife or other convenient means. Shallow a label bearing the legend "50-A Amplifier Mod. per TA-4106" directly below the old nameplate.

Note: After modification, this amplifier must be referred to as the "50-A Amplifier Mod. per TA-4106" and NOT by its former code number.

5.5 AFTER THIS MODIFICATION, if necessary the output level may be further reduced by means of the 700-A Potentiometer on the Reproducer Set, or the gain control in the main amplifier.

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5.6 For material required for this modification, see Section 8.

### 6. Operation

- 6.1 Insert 239-A or 264-A Vacuum Tubes in their sockets, and adjust the filament current to 270 ma (239-A V.T.) or 300 ma (264-A V.T.). Proceed in accordance with System Operating Instructions (see 6.2).
- 6.2 Either 264-A or 239-A Vacuum Tubes may be used in the 50-A Amplifier Mod. per TA-4106, providing the filament current is adjusted to suit. The two types of tubes may be used in the same amplifier, in cases of necessity, but in this event 300 ma current is required with resulting reduction in life of the 239-A Vacuum Tubes so used.
- 2-A PHOTOELECTRIC CELLS will operate satisfactorily in the modified amplifiers providing the 0.5 megohm resistor is replaced by a 2 megohm resistor.

### 7. Maintenance

- 7.1 In the event of operating trouble with the 50 Type Amplifiers, proceed as follows:
- Replace the photoelectric cell, vacuum tubes and photoelectric cell coupling resistors.
  - Check all supply voltages.
  - Inspect the 37-B Condenser "C-2" for grounded terminals.
  - Thoroughly inspect all connections regardless of appearance and resistor with a hot iron where necessary.
  - Check for defective filament rheostat.
  - Check for noisy "B" Battery. This may be done by listening to the battery through a test head set, shunted directly across the battery and a condenser (such as is carried in the emergency kit).
  - Inspect the suspended member for free movement.
  - Inspect the suspension springs, if distorted they should be repaired or replaced by the Engineer. They may sometimes be repaired by cutting off one or more turns and making a new loop. If a spring cannot be repaired satisfactorily, it should be replaced (see 8.2).

### 8. Merchandising

- 8.1 The 50-A Amplifier is available in the Stores Division. Order it as:-  
"One 50-A Amplifier"
- 8.2 Order replacements for defective suspension springs as:-  
"One P-231097 Suspension Spring" (vertical)  
"One P-23131 Suspension Spring" (horizontal)
- 8.3 The following are required for each 50-A Amplifier to be modified in accordance with Section 5:-  
"One 15W W.L. Type "A" Resistor"  
"One KS-6376, 0.5 megohm Resistor"  
"One Label bearing the Legend, "50-A AMPLIFIER MOD. PER TA-4106"
- The above will be supplied to branch offices during June 1931, for this modification.
- 8.4 REPORT THIS MODIFICATION on the weekly call report as an Equipment Change, in accordance with S.B. #53, File 4.01.

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### 0. Reason for Reissue

- 0.1 To describe an additional change in the 50-A Ampl. Mod. per TA-4106 to increase the clearance for the 264-A V.T.'s.
- 0.2 To describe the 50-A Ampl. Mod. per TA-137, for operation from a 90V filtered supply from the main ampl.

### 1. Associated Drawings & Photographs

ASL-2217, Wiring Diagram, 50-A Ampl. & 50-A Ampl. Mod. per TA-4106  
ASL-2485, Schematic, 50-A Ampl. Mod. per TA-137  
Photo #9023, 50-A Ampl. with cover removed

Note: Drawing ASO-3246, Schematic, 50-A Ampl. and 50-A Ampl. Mod. per TA-4106, is associated with E.B., "Reproducer Sets, 202 Type"

### 2. General Information

2.1 THE 50-A AMPL. forms part of the 202 type, TA-4050 and TA-4053 Reprod. Sets and is used in "F" and "H" type BB Systems to amplify the output of a 2-A PEG to a value suitable for working into the main ampl. The 50-A Ampl. Mod. per TA-4106 has been changed to permit the use of the 3-A PEG and 264-A V.T.'s. The 50-A Ampl. Mod. per TA-137, has been changed to permit the use of the 3-A PEG and 264-A V.T.'s, and also the use of rectified and filtered AC for its 90V plate and PEG supply as required for "All AC" Systems. For all other general characteristics refer to E.B. "Amplifiers, General".

### 3. Modification Per TA-4106 (field mod. to permit use of 264-A V.T.'s & 3-A PEG)

- 3.1 THESE MODIFICATIONS are necessary because (1) the 264-A V.T.'s require a filament current of 300 ma as against 270 ma for the 239 V.T.'s, (2) more space is required in the ampl. as the 264-A V.T.'s are slightly larger than the 239-A V.T.'s, and (3) the 3-A PEG has an output level approximately 20 db greater than the 2-A PEG. The modifications are essentially:
- A reduction in the filament circuit resistance.
  - Transposition of the PEG Coupling Resistors' sub-panel from the front of its "L" supporting bracket to the rear of this bracket.
  - A change in the PEG coupling resistance from 2 to 0.5 meg.

### 3.2 Modification Procedure

- Remove the ampl. can cover and all external leads to the unit, and detach the ampl. from the reprod. set.
- Replace the 26W W.L. Type "A" Res. (R3) by an 15W W.L. Type "A" Res.
- Replace the 2 meg. Res. (R5) by a 0.5 meg. Res.
- Remove the sub-panel which mounts the PEG, Res. from the front of the "L" Bracket and reattach it to the rear of the "L" Bracket. This may be facilitated by loosening the two wood screws which attach the bottom leg of the bracket.
- Restore and reconnect the ampl. on the reprod. set.
- With a pen (not pencil), change the existing circuit label as follows:

Component	Present Wording	Change To
R3	26W	15W
R5	2 meg.	0.5 meg.

- (g) Apply a label bearing the legend "Mod. per TA-4106" in accordance with E.B., "Equipment Modifications, General".

3.3 The previous issue of this E.B. did not include Sec. 3.2 (d) above, with resulting lack of sufficient space for the 264-A V.T.'s in some cases. Sec. 3.2 (d) should be considered as retroactive in such ample.

3.4 For material required for this modification, see Sec. 7.

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Electrical Research Products Inc.

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EQUIPMENT BULLETINAMPLIFIERS, 50 TYPE

4. Modification Per TA-137 of a 50-A Ampl. Mod. Per TA-4106 (Stores Div. Mod. to permit use in "All AC Systems")

4.1 It is expected that this modification will be made before shipment in all cases; the following therefore is a general description of the change, rather than an instruction for making them:

- (a) A "trap" filter is added in the 90V circuit, to prevent any remaining AC in the 90V filtered supply (from the main ampl. plate rectifier circuit) from reaching the PEG. The "trap" filter comprises a 0.5 meg. Res. and a 1 MF (87-B) Cond. placed in the 90V circuit as shown in ASL-2463.

5. Operation

5.1 INSTALL 239-A OR 264-A V.T.'S and adjust the fil. current to 270-mils (239-A V.T.) or 300 mils (264-A V.T.). Proceed in accordance with System Operating Instructions (see 5.2).

5.2 EITHER 264-A OR 239-A V.T.'S may be used in the 50-A Ampl. Mod. per TA-4106 or the 50-A Ampl. Mod. per TA-137, providing the fil. current is adjusted to suit. The two types of tubes may be used in the same ampl.; in cases of necessity, but in this event 300 mils current is required; with resulting reduction in life of the 239-A V.T.'s so used. 2-A PEG'S will operate satisfactorily in the modified ampls. providing the 0.5 meg. Res. is replaced by a 2 meg. Res.

6. Maintenance

6.1 In the event of operating trouble with the 50 type Ampl. proceed as follows:

- (a) Replace the PEG, V.T.'s and PEG coupling resistors.
- (b) Check all supply voltages
- (c) Inspect the 87-B Cond. #C-2's for grounded terminals.
- (d) Thoroughly inspect all connections regardless of appearance and resolder with a hot iron where necessary.
- (e) Check for defective fil. rheostat.
- (f) Check for noisy B+ Battery. This may be done by listening to the battery through a test head set, shunted directly across the battery and a condenser (such as is carried in the emergency kit).
- (g) Inspect the suspended member for free movement.
- (h) Inspect the suspension springs; if distorted they should be repaired by cutting off one or more turns and making a new loop. If a spring cannot be repaired satisfactorily, it should be replaced, (see 7.3).

7. Merchandising

7.1 THE 50-A AMPL. is available in the Stores Division. Order it as - "One 50-A Amplifier".

7.2 THE 50-A AMPL. MOD. PER TA-137 is now available in the Stores Division. Order it as - "One 50-A Amplifier Mod. per TA-137".

7.3 Order replacements for defective suspension springs as - "One P-231097 Suspension Spring" (vertical), and "One P-22331 Suspension Spring" (horizontal).

7.4 FOR EACH 50-A AMPL. to be modified per TA-4106, the following is required - "One 18" W.L. Type "A" Resistor", "One KS-676, 0.5 meg. Resistor" and "One copy IS-155". The Branch Offices have been supplied with a sufficient quantity of the above. Report this modification on the weekly call report as an Equipment Change, in accordance with S.B. #53, File 4.01.

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