

**TYPE N AND ON CARRIER REPEATERS — REPEATERED HIGH-FREQUENCY LINE
PRELIMINARY TESTS — REPEATER POWER SUPPLY POINTS
ADJUSTMENT OF POWER SUPPLY AND SEALING CURRENT OVER CABLE
TO ADJACENT REPEATERS AND/OR 240-TYPE AMPLIFIERS AND
CHECK OF FUSE ALARM**

When a local source of power is not available at adjacent repeater or 240-type amplifier locations, dc power can be supplied over the two cable pairs used for carrier transmission by means of simplex arrangements. The transmitting pair carries the positive voltage and the receiving pair carries the negative voltage as required. When unsoldered cable splices are used, a small amount of dc may be applied to the cable pairs in a similar manner to seal the splices if power is not supplied to a repeater.

This section is reissued to provide a test procedure applicable to all repeater power supplies. Since this reissue covers a general revision, arrows ordinarily used to indicate changes have been omitted.

The repeater mounting bracket terminal strips must be properly strapped in accordance with the particular power circuit connections required. Circuit connections are shown on SD-97272-01 for the various power options.

The purpose of this section is to describe the test strapping and the adjustment of the power resistors to a specified value in order to provide the correct current to adjacent repeaters, 240-type amplifiers, or a combination of repeaters and 240-type amplifiers. It also describes the adjustment tests of the resistors used when sealing current is supplied to an adjacent section, and a method of testing the fuse alarm operation at the repeater power supply point.

The procedures in this section are divided into six parts, each of which is associated with a particular installation. Only the procedures in the part(s) applicable to a particular installation need be followed. The types of installations are as follows:

- (A) Power Transmitted to Electron Tube Repeaters, Transistorized Repeaters, and/or 240-Type Amplifiers — J98703E Panel.
- (B) Power Transmitted to Electron Tube Repeaters, Transistorized Repeaters, and/or 240-Type Amplifiers — J98703BN Panel
- (C) Sealing Current Transmitted at Power Supply Point — J98703E Panel
- (D) Sealing Current Transmitted at Power Supply Point — J98703BN Panel
- (E) Fuse Alarm Operation — Initial Installation and Out-of-Service Tests
- (F) Fuse Alarm Operation — In-Service Test.

APPARATUS:

- 1 — KS-13895 Plug, Unwired (connector for test connections)
- 1 — KS-14510 Volt-Ohm-Milliammeter (VOM), or equivalent (20,000 ohms per volt)
- 1 — 265C Tool (contact burnisher)
- 1 — 266C Tool (steel music wire) } Used to check alarms
- 1 — W1Y Cord, or equivalent

STEP	PROCEDURE
	<p>A. Power Transmitted to Electron Tube Repeaters, Transistorized Repeaters, and/or 240-Type Amplifiers – J98703E Panel</p> <p>1 Remove fuses (+130V, –130V, –48V) from LCL, E, and W line fuse holders for the repeater under test.</p> <p>2 Remove the repeater connectors from jacks J2 and J3.</p> <p>3 Place an unwired KS-13895 plug in jack J3.</p> <p>4 Ground pins 6, 7, 10, and 13 of the KS-13895 plug momentarily to discharge the surge capacitors.</p> <p>5 Connect a strap (W1Y cord) between terminals 6 and 7 of jack J3 (for power feed West) or terminals 10 and 13 of jack J3 (for power feed East). (See Fig. 1.)</p> <p>6 Set the VOM to the 300V scale.</p> <p>7 Connect the VOM, in accordance with the potential to be supplied, to the equipment side of the power feed fuse holders or to the equipment side of the appropriate power feed fuse holder and ground. (See Fig. 2 and 3.)</p> <p>8 Set the VOM to ohms.</p> <p>9 Adjust R12 (for power feed West) to obtain the total resistance value specified on the circuit layout card. Adjust R16, when transistorized repeater is used, or R22, when electron tube repeater is used (for power feed East) to obtain the total resistance value specified on the circuit layout card. Recheck the resistance after tightening the slider clamping screw. (See Fig. 4 and 5.)</p> <p>10 Set the VOM to the 300V scale; remove the VOM and the KS-13895 plug.</p> <p>11 Replace the repeater connectors in jacks J2 and J3.</p> <p>12 Replace fuses removed in Step 1.</p>
	<p>B. Power Transmitted to Electron Tube Repeaters, Transistorized Repeaters, and/or 240-Type Amplifiers – J98703BN Panel</p> <p>1 Remove fuses (+130V, –130V, –48V) from the LCL, E, and W line fuse holders for the repeater under test.</p> <p>2 Open screw-down connectors S1 to S13.</p> <p>3 Close appropriate screws (S1 to S7) to supply the required potentials to the simplexes of the cable pairs. Screws (S1 to S4) supply potential to the receiving cable and screws (S5 to S7) supply potential to the transmitting cable. [Do not close more than one of the screws (S1 to S4) at one time nor more than one of the screws (S5 to S7) at one time.]</p>

STEP	PROCEDURE
4	Remove the repeater connectors from jacks J2 and J3.
5	Place an unwired KS-13895 plug in jack J3.
6	Ground pins 6, 7, 10, and 13 of the KS-13895 plug momentarily to discharge the surge capacitors.
7	Connect a strap (W1Y cord) between terminals 6 and 7 of jack J3 (for power feed West) or terminals 10 and 13 of jack J3 (for power feed East). (See Fig. 1.)
8	Set the VOM to the 300V scale.
9	Connect the VOM to the equipment side of the power feed fuse holders in accordance with the potential to be supplied. (See Fig. 3 and 6.)
10	Set VOM to ohms.
11	Close combination of resistor screws (S8 to S13) to obtain total resistance (± 10 ohms) specified on the circuit layout card.
12	Set the VOM to the 300V scale; remove the VOM and the KS-13895 plug.
13	Replace the repeater connectors in jacks J2 and J3.
14	Replace fuses removed in Step 1.
<p>C. Sealing Current Transmitted at Power Supply Point – J98703E Panel</p>	
1	Remove fuses (+130V, -130V, -48V) from LCL, E, and W line fuse holders for the repeater under test.
2	Remove the repeater connectors from jacks J2 and J3.
3	Place an unwired KS-13895 plug in jack J3.
4	Ground pins 6, 7, 10, and 13 at the KS-13895 plug momentarily to discharge the surge capacitors.
5	Connect a strap (W1Y cord) between terminals 6 and 7 of jack J3 (for sealing current West) or terminals 10 and 13 of jack J3 (for sealing current East). (See Fig. 1.)
6	Set the slider on resistor R12 (for negative sealing current West) for minimum resistance. Set the slider on resistor R16, when transistorized repeater is used or resistor R22, when electron tube repeater is used (for negative sealing current East) for minimum resistance. (See Fig. 4 and 5.)
7	Set the VOM to the 300V scale.

STEP	PROCEDURE
8	Connect the VOM to ground and to the equipment side of the fuse holder assigned to feed the sealing current.
9	Set the VOM to ohms. <i>Requirement:</i> For -48V sealing current — 1900 to 2700 ohms. For +130V sealing current — 5800 to 6500 ohms.
10	Set the VOM to the 300V scale; remove the VOM and the KS-13895 plug.
11	Replace the repeater connectors in jacks J2 and J3.
12	Replace fuses removed in Step 1.
D. Sealing Current Transmitted at Power Supply Point — J98703BN Panel	
1	Remove fuses (+130V, -130V, -48V) from LCL, E, and W line fuse holders for the repeater under test.
2	Open screw-down connectors S1 to S13.
3	Close screws S4 and S6 or S3 and S5 to supply the required potential to the simplex of the cable pair. [Do not close more than one of the screws (S1 to S4) at one time nor more than one of the screws (S5 to S7) at one time.]
4	Remove the repeater connectors from jacks J2 and J3.
5	Place an unwired KS-13895 plug in jack J3.
6	Ground pins 6, 7, 10, and 13 at the KS-13895 plug momentarily to discharge the surge capacitors.
7	Connect a strap (W1Y cord) between terminals 6 and 7 of jack J3 (for sealing current West) or terminals 10 and 13 of jack J3 (for sealing current East). (See Fig. 1.)
8	Set VOM to the 300V scale.
9	Connect the VOM to ground and to the equipment side of the fuse holder assigned to feed the sealing current.
10	Set the VOM to ohms.
11	Close necessary screws (S8 to S13) to meet the following requirement: For -48V sealing current 2100 ± 100 ohms. For +130V sealing current 6200 ± 100 ohms.
12	Set the VOM to the 300V scale; remove the VOM and the KS-13895 plug.

STEP	PROCEDURE
13	Replace the repeater connectors in jacks J2 and J3.
14	Replace fuses removed in Step 1.
1	<p>E. Fuse Alarm Operation – Initial Installation and Out-of-Service Tests</p> <p>Place a blown 70-type fuse in the fuse holder of the circuit under test.</p> <p><i>Requirement:</i> All alarms associated with the fuse should operate.</p>
1	<p>F. Fuse Alarm Operation – In-Service Test</p> <p>Place the 266C tool (steel music wire) in 265C tool (contact burnisher) and the cap in place over the end of the 265C tool. Insert the wire in the opening of the fuse holder cap, beside the alarm indicating plunger, in such a manner as to touch the side of the opening and the head of the fuse at the same time.</p> <p><i>Requirement:</i> All alarms associated with the particular fuse should operate.</p>

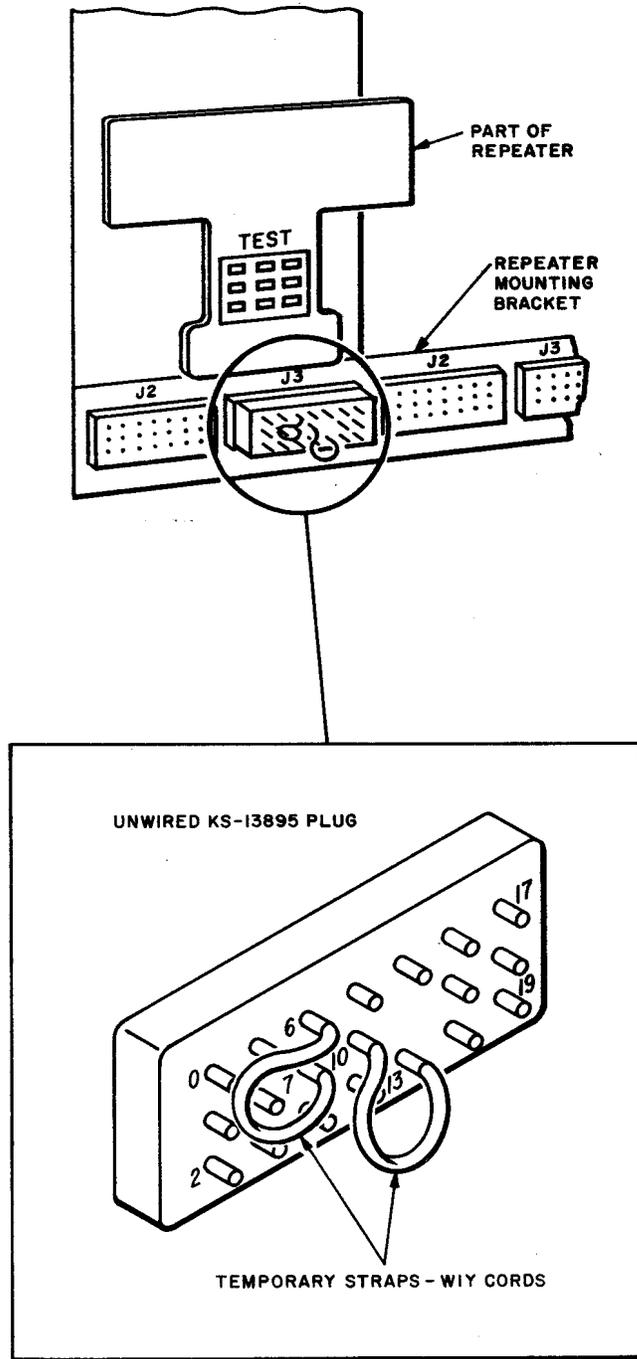


Fig. 1 — J3 Strapping

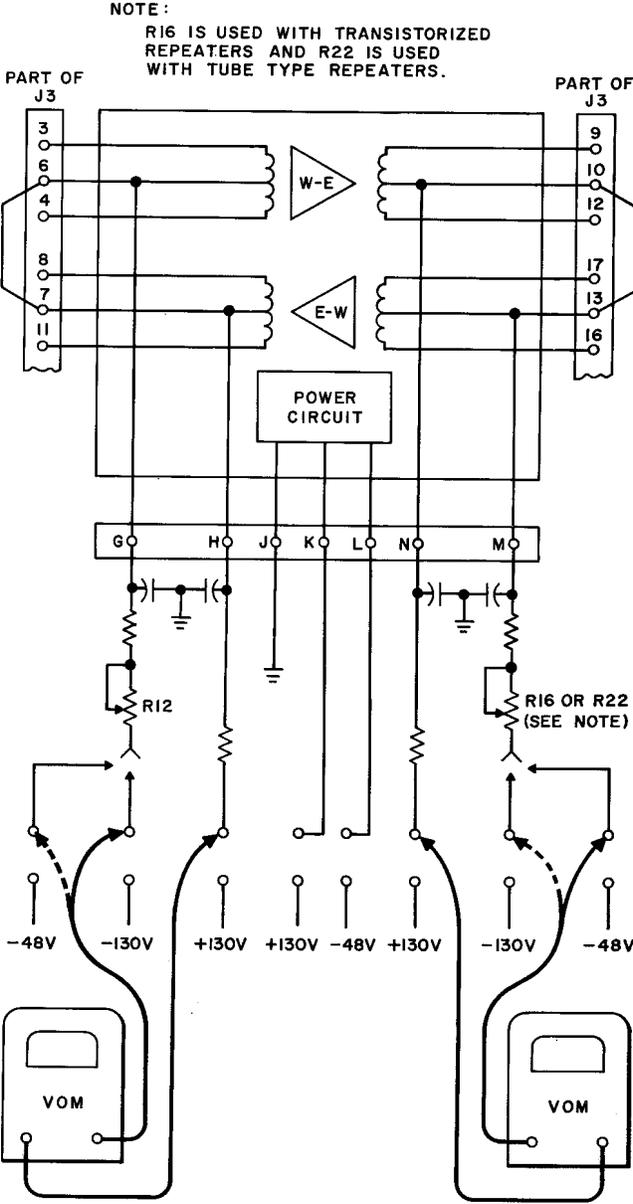


Fig. 2 — Typical Test Circuit — J98703E Panel

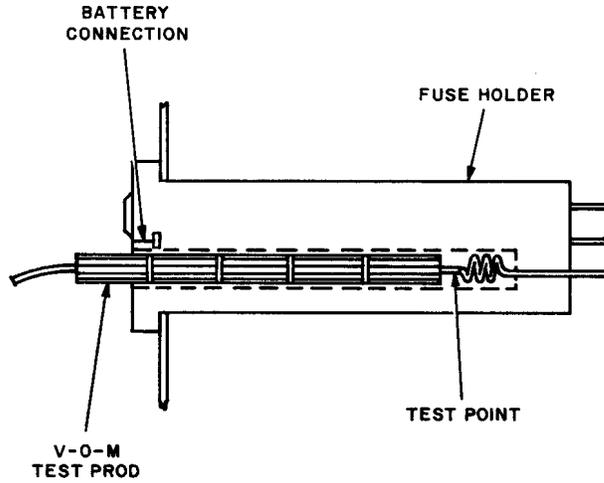


Fig. 3 — Fuse Holder Test Point

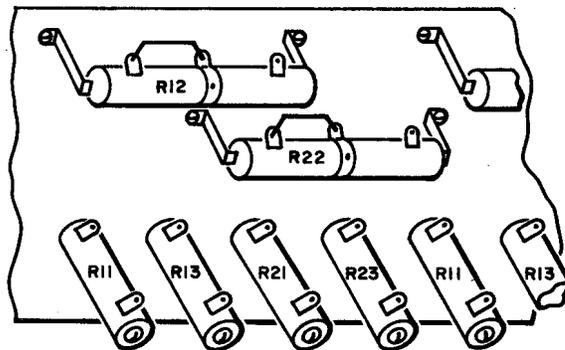


Fig. 4 — Power Resistors — Electron Tube-Type Repeater

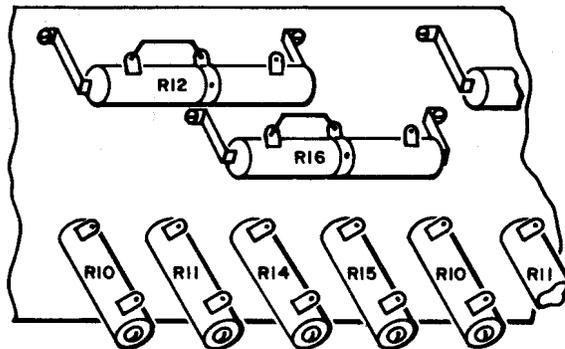
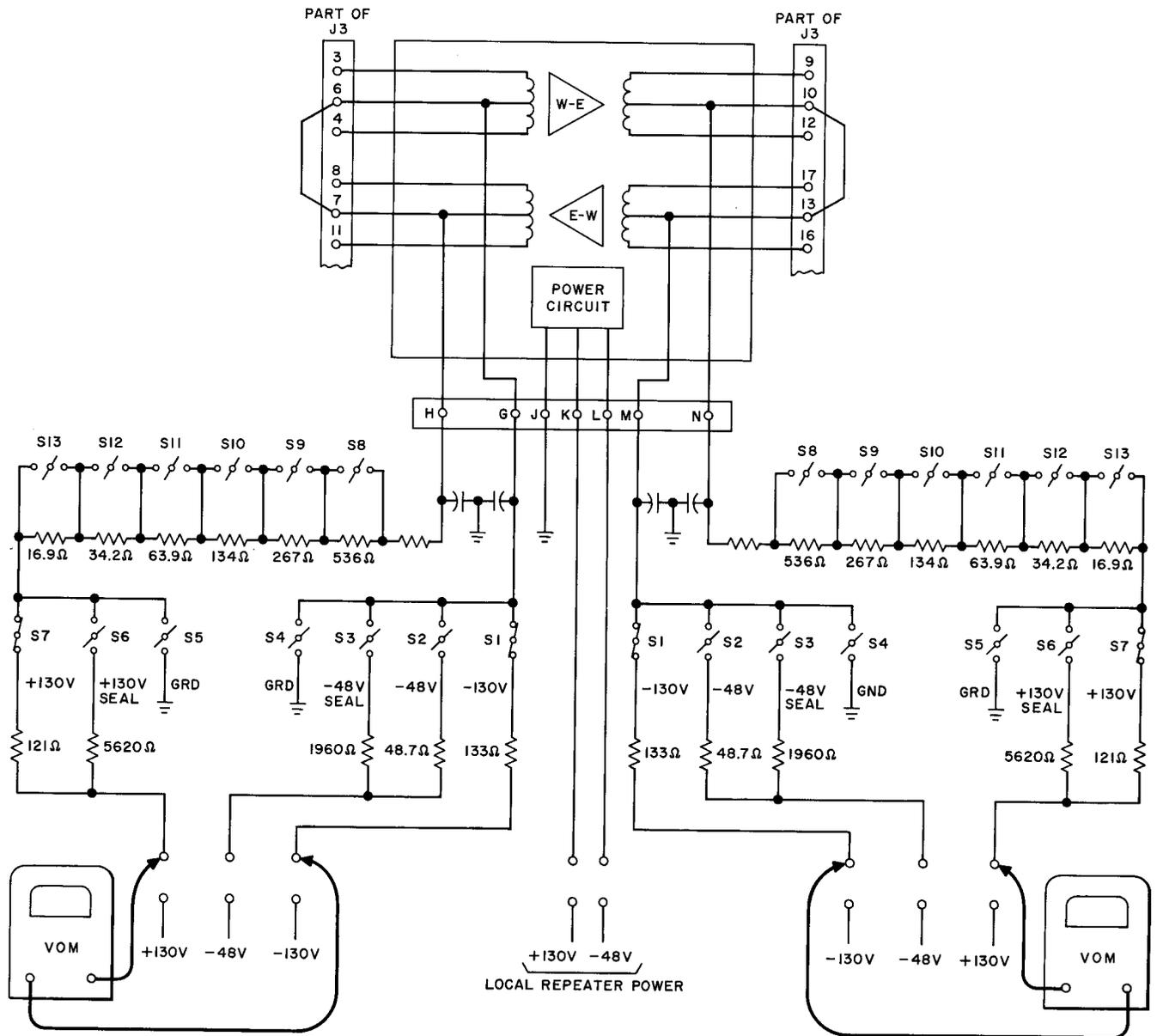


Fig. 5 — Power Resistors — Transistorized-Type Repeater



**Fig. 6 — Typical Test Circuit — J98703BN Panel ± 130V
Power Feed East and West**