

N3 CARRIER TELEPHONE SYSTEM
LINE TERMINATING UNIT (J99300AT)
ADJUSTMENT OF REPEATER POWER SUPPLY
WITH OR WITHOUT 240-TYPE AMPLIFIERS
AND SEALING CURRENT OVER CABLE

When a local power source is not available at a repeater point, dc power can be supplied to a repeater over the two cable pairs used for carrier transmission by means of simplex arrangements. In this manner, one electron-tube repeater or up to four transistorized repeaters in series may be powered from a J99300AT line terminating unit. The transmitting pair carries +130 volts (or ground when only 48-volt battery is required) and the receiving pair carries -48 volts, -130 volts, or ground, as required. The List 1 or List 3 unit will provide a constant current source, irrespective of normal battery fluctuations and cable resistance changes, to any repeatered line section containing up to four remote repeaters. The List 2 unit provides for transmitting 240-type amplifier power and/or sealing current. It must be used when power is neither transmitted nor received and is also used for receiving sealing current. Adjustments are made by setting screw-type switches in the line terminating unit for the various line current conditions.

This section is reissued to include the J99300AT, List 3 line terminating unit. Since this revision is of a general nature, arrows ordinarily used to indicate changes have been omitted. This reissue does not affect Equipment Test Lists.

The purpose of this out-of-service test is to set the line terminating unit option screw switches to satisfy the line current conditions.

CHART	PAGE
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CHART 1

TRANSMITTING REPEATER POWER WITH OR WITHOUT
 240-TYPE AMPLIFIERS AND SEALING CURRENT—
 J99300AT, LIST 1 OR LIST 3 LINE TERMINATING UNIT

APPARATUS:

1—KS-14510 Volt-Ohm-Milliammeter (VOM) with List 8 Test Leads or Equivalent

STEP	PROCEDURE
	<p><i>Note:</i> Before performing the tests in this procedure, make sure that all line repeaters and 240-type amplifiers receiving power from the carrier terminal are installed and ready for turnup (Sections 362-400-300, 362-430-501, and 362-450-300).</p>
1	Refer to the carrier layout record (CLR) card for the repeatered line power feed voltage(s).
2	Remove the line terminating unit (LTU) from the carrier terminal mounting.
3	<p>At the LTU (Fig. 1) close (down) the appropriate screw switch (−48, −130, or GRD) for the line power feed option specified by the CLR card. Make sure that only one of the screw switches is in the closed position.</p> <p><i>Note:</i> When only +130 volts is specified, close just the GRD screw switch.</p>
4	On the LTU close screw switches S8 and S9.
5	Select from Table A, column 1, the line equipment arrangement specified by the CLR card.
6	Determine the line current as given in column 2.
7	Set screw switches as indicated in Table A for the equipment arrangement selected in Step 5.
8	Reinstall the LTU. Check to insure that the proper fuses are installed in the ALM PWR & MISC panel at the top of the bay (Fig. 2).
9	Set the VOM range selector switch to DC VOLTS 300.
10	Insert the red VOM probe into the REG VOLTS + (red) and the black probe into the − (brown) test jacks on the faceplate of the LTU (Fig. 3).
11	Measure the regulator voltage at the REG VOLTS test jacks. Reset the VOM range selector switch to maintain an indication as close as possible to full-scale deflection. From Table B, column 1, select the voltage range as determined by the VOM indication.

CHART 1 (Cont)	
STEP	PROCEDURE
12	From the voltage measured in Step 11 and the line current value determined in Step 6, derive from Table B, column 3, the required condition of screw switches S8 and S9.
13	Remove the LTU from the terminal mounting. Set screw switches S8 and S9 as determined in Step 12.
14	Reinsert the LTU into the terminal mounting. Measure the voltage at the REG VOLTS + and - jacks. Requirement: Within the voltage limits specified in Table C.
15	If the requirement of Step 14 is met, proceed to Step 17. If it is not met, make sure that all line repeaters and 240-type amplifiers receiving power from the carrier terminal are installed and connected to the repeated line. Repeat Steps 1 through 14, making sure that all screw switches in the down position are securely seated and that all switches in the up position are not making contact.
16	If the requirement of Step 14 still is not met, replace the LTU and repeat Steps 1 through 14.
17	List all screw switch options used in the space marked SCR _____ on the LTU faceplate (Fig. 3). Note: Use a felt-tipped pen or Bell System transfer stencil kit "A".
18	Disconnect the VOM from the REG VOLTS jacks.
19	Insert the VOM red test probe into the SX CUR + (brown) jack and the black test probe into the SX CUR - (black) jack (Fig. 4).
20	Set the VOM range selector switch to DC VOLTS 12.
21	Measure the voltage at the SX CUR jacks. Reset the VOM range selector switch to obtain an indication as close as possible to full-scale deflection. Requirement: Within the voltage limits of Table A, column 4.
22	If the requirement of Step 21 is met, proceed to Step 23. If it is not met, replace the LTU and repeat Steps 1 through 21.
23	When the requirement of Step 21 is met, disconnect the VOM from the SX CUR jacks.

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CHART 2

**TRANSMITTING 240-TYPE AMPLIFIER POWER AND/OR
SEALING CURRENT—RECEIVING SEALING CURRENT—
REPEATER POWER NEITHER TRANSMITTED NOR
RECEIVED—(99300AT, LIST 2) LINE
TERMINATING UNIT**

APPARATUS:

1—KS-14510 Volt-Ohm-Milliammeter (VOM) with List 8 Test Leads or Equivalent

STEP	PROCEDURE
	<p><i>Note:</i> Before performing the tests in this procedure, make sure that all 240-type amplifiers receiving power from the carrier terminal are installed and ready for turnup (Section 362-430-501).</p> <p>1 Refer to the carrier layout record (CLR) card for the line power arrangement.</p> <p>2 Remove the line terminating unit (LTU) from the carrier terminal mounting.</p> <p>3 Select from Table D, column 1, the line power arrangement determined in Step 1.</p> <p>4 Set screw switches (Fig. 5) as indicated in Table D for the line power arrangement selected in Step 3.</p> <p>5 Reinstall the LTU in the carrier terminal mounting.</p> <p>6 Refer to Table D. For line power arrangements 1 through 3, proceed to Step 7. For line power arrangements 4 through 7, proceed to Step 12.</p> <p>7 Set the VOM range selector switch to DC VOLTS 12.</p> <p>8 Insert the red VOM test prod into the SX CUR + (brown) jack and the black test prod into the SX CUR - (black) jack (Fig. 4).</p> <p>9 Measure the voltage at the SX CUR test jacks. Reset the VOM range selector switch to obtain an indication as close as possible to full scale deflection.</p> <p><i>Requirement:</i> Within the voltage limits specified in Table D, column 5.</p> <p>10 If the requirement of Step 9 is met, proceed to Step 11. If it is not met, repeat Step 4, making sure that all screw switches in the down position are securely seated and that all switches in the up position are not making contact. If transmitting power to a 240-type amplifier, make sure that the amplifier is installed and ready for service (Section 362-430-501).</p>

CHART 2 (Cont)	
STEP	PROCEDURE
11	Disconnect the VOM from the SX CUR jacks.
12	List all screw switch options used in the space marked SCR _____ on the LTU faceplate (Fig. 4). Note: Use a felt-tipped pen or Bell System Transfer Stencil Kit "A".

TABLE A

LINE CURRENT ADJUSTMENTS – J99300AT, LIST 1 OR LIST 3 LINE TERMINATING UNIT

	① LINE EQUIPMENT ARRANGEMENT	② LINE CURRENT (NOTE 1)	③ SCREW SWITCH SETTINGS		④ VOLTAGE LIMITS AT SX CUR JACKS
			DOWN	UP	
1	①, 2, 3, or 4 N2 repeaters <i>COG & CLDG -48</i>	85 mA	None	S1, S2, S3, S4, & S10	1.9 to 2.2 _____
2	1, 2, or 3 N1A repeaters; 1 N2 and 1 or 2 N1A repeaters; 1 or 2 N2 and 1 N1A repeaters	95 mA	S1	S2, S3, S4, S10	2.2 to 2.4
3	1 or 2 N2 repeaters with one 240-type amplifier (Note 2)	110 mA	S2	S1, S3, S4, S10	2.5 to 2.7
4	1 or 2 N1A repeaters with one 240-type amplifier (Note 2)	120 mA	S1, S2	S3, S4, S10	2.8 to 3.0
5	1 or 2 N2 repeaters with two 240-type amplifiers (Note 2)	135 mA	S3	S1, S2, S4, S10	3.1 to 3.4
6	1 or 2 N1A repeaters with two 240-type amplifiers (Note 2)	145 mA	S1, S3, S10	S2, S4	3.4 to 3.6
7	1 N1 repeater without sealing current	155 mA	S4, S10	S1, S2, S3	3.6 to 3.9
8	1 N1 repeater with sealing current or one 240-type amplifier	180 mA	S2, S4, S10	S1, S3	4.2 to 4.6
9	1 N1 repeater with sealing current and one 240-type amplifier	205 mA	S3, S4 S10	S1, S2	4.6 to 5.1

Note 1: When N1A and N2 repeaters are powered on same power string, power requirements for N1A repeater should be used.

Note 2: Subtract 25 mA from Line Current value when 240-type amplifier is connected beyond last N1A or N2 repeater on same power string.

TABLE B

VOLTAGE MEASURED AT REG VOLTS ①	LINE CURRENT DETERMINED IN STEP 6, CHART 1 ②	SCREW SWITCHES ③	
		UP	DOWN
10 to 40	Any	—	S8 & S9
41 to 45	140 or less 145 to 160	S9 —	S8 S8 & S9
46 to 50	140 to 160 160 or more	S9 —	S8 S8 & S9
51 to 60	140 to 160 160 or more	S9 S8	S8 S9
61 up	140 or less 140 to 160 160 or more	S8 S9 S8	S9 S8 S9

TABLE C

LINE CURRENT (mA)	VOLTAGE LIMITS AFTER ADJUSTMENT
135 or less	10-40
145 and 155	10-45
180 or more	10-50

TABLE D

LINE CURRENT ADJUSTMENTS — 199300AT, LIST 2 LINE TERMINATING UNIT

① LINE POWER ARRANGEMENT	② LINE CURRENT (NOTE 1)	③ BATTERY SUPPLY (VOLTS)	④ SCREW SWITCH SETTINGS		⑤ VOLTAGE LIMITS AT SX CUR JACKS
			DOWN	UP	
1 Transmitting sealing current only	20 mA	-48	S11, S16	S12, S13, S14, S15	0.4 to 0.6
2 Transmitting power to one 240-type amplifier without sealing current	25 mA	+130	S12, S16	S11, S13, S14, S15	0.5 to 0.7
3 Transmitting power to one 240-type amplifier with sealing current	45 mA	+130	S12, S16	S11, S13, S14, S15	0.9 to 1.2
4 Receiving sealing current from N-type repeater	None	None	S13	S11, S12, S14, S15, S16	0.0
5 Receiving sealing current from 240-type amplifier preceded by N1A or N2 repeater	None	None	S14	S11, S12, S13, S15, S16	
6 Receiving sealing current from 240-type amplifier or 240-type amplifier preceded by N1 repeater	None	None	S15	S11, S12, S13, S14, S16	
7 No power transmitted or received	None	None	None	S11, S12, S13, S14, S15, S16	

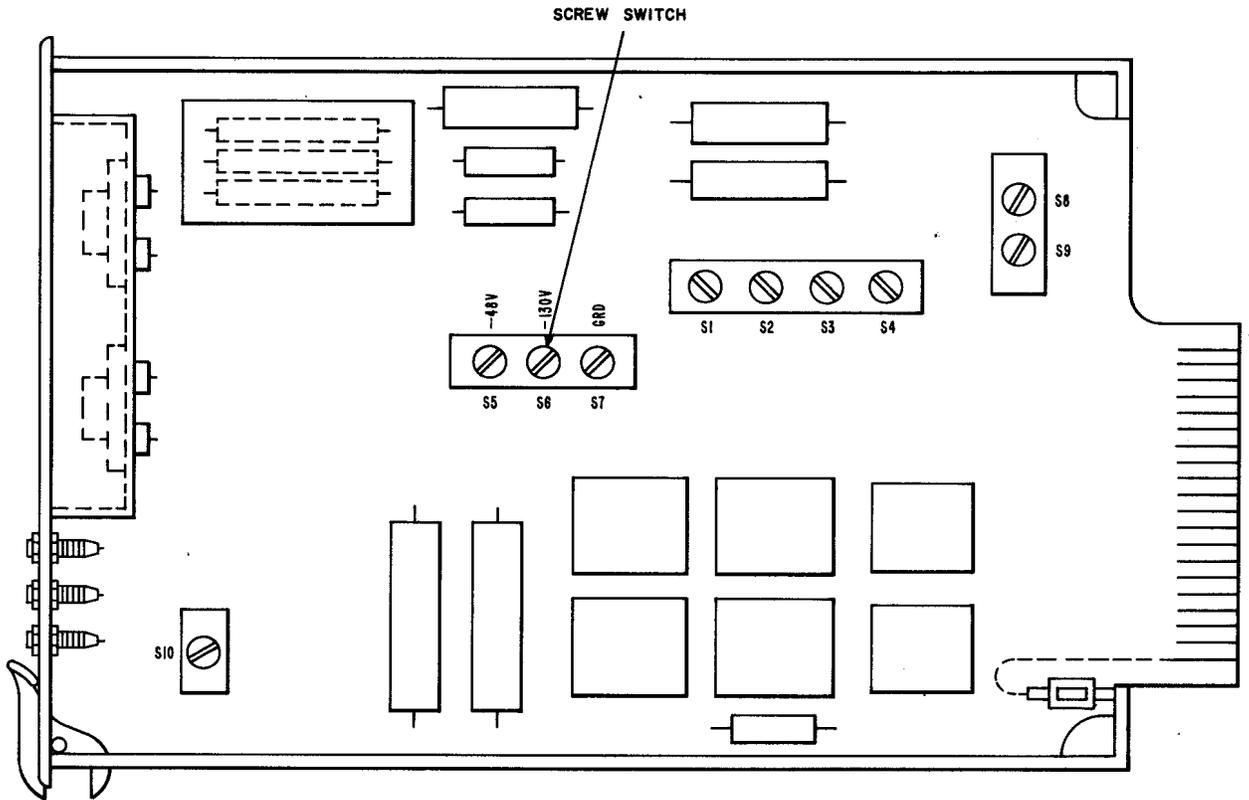
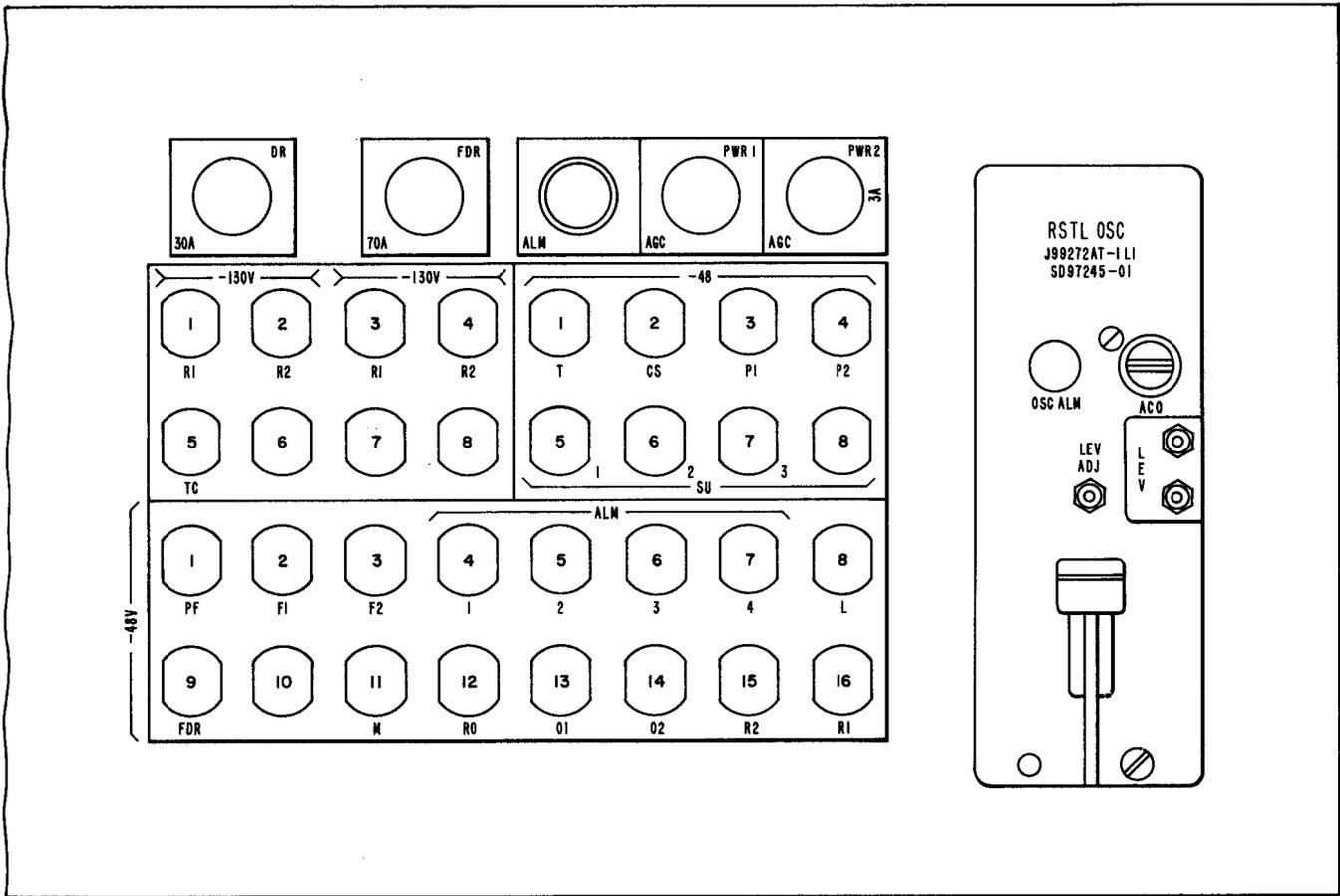


Fig. 1—J99300AT, List 1 or 3 Line Terminating Unit—Side Views



TERMINAL NUMBER	FUSE DESIGNATION							
	-48V		PWR 1 (SEE NOTE)	PWR 2 (SEE NOTE)	+130V		-130V	
	P1	P2			R1	R2	R1	R2
1	X		X		X		X	
2		X		X		X		X

NOTE:
 IN LATER EQUIPMENT THE PWR 1 AND PWR 2 FUSES ARE NOT USED AND THE -48V P1 AND P2 FUSE HOLDERS ARE UTILIZED WITH A LARGER FUSE.

Fig. 2—Alarm Power and Miscellaneous Panel—Front View

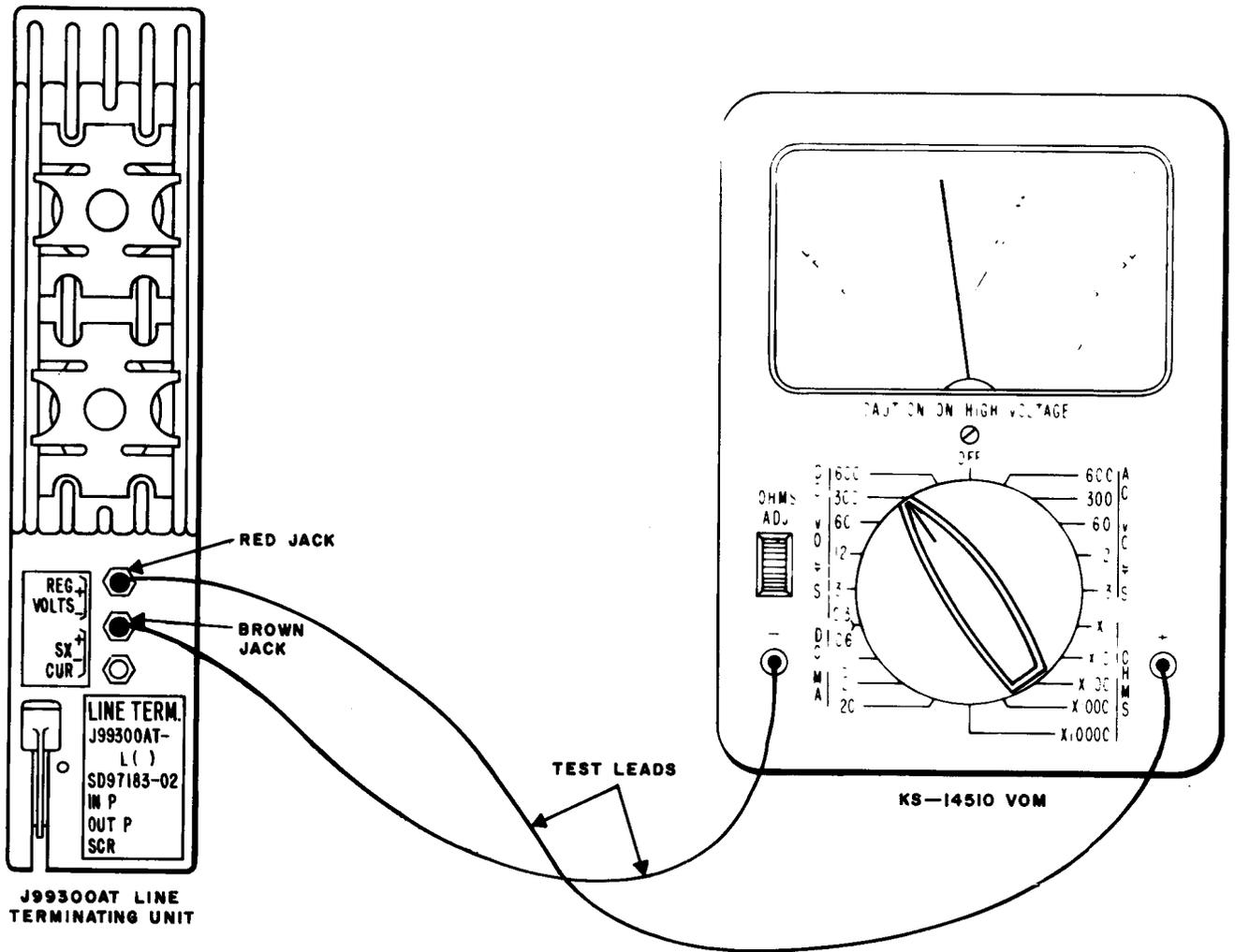


Fig. 3—J99300AT Line Terminating Unit—Measurement of Regular Voltage

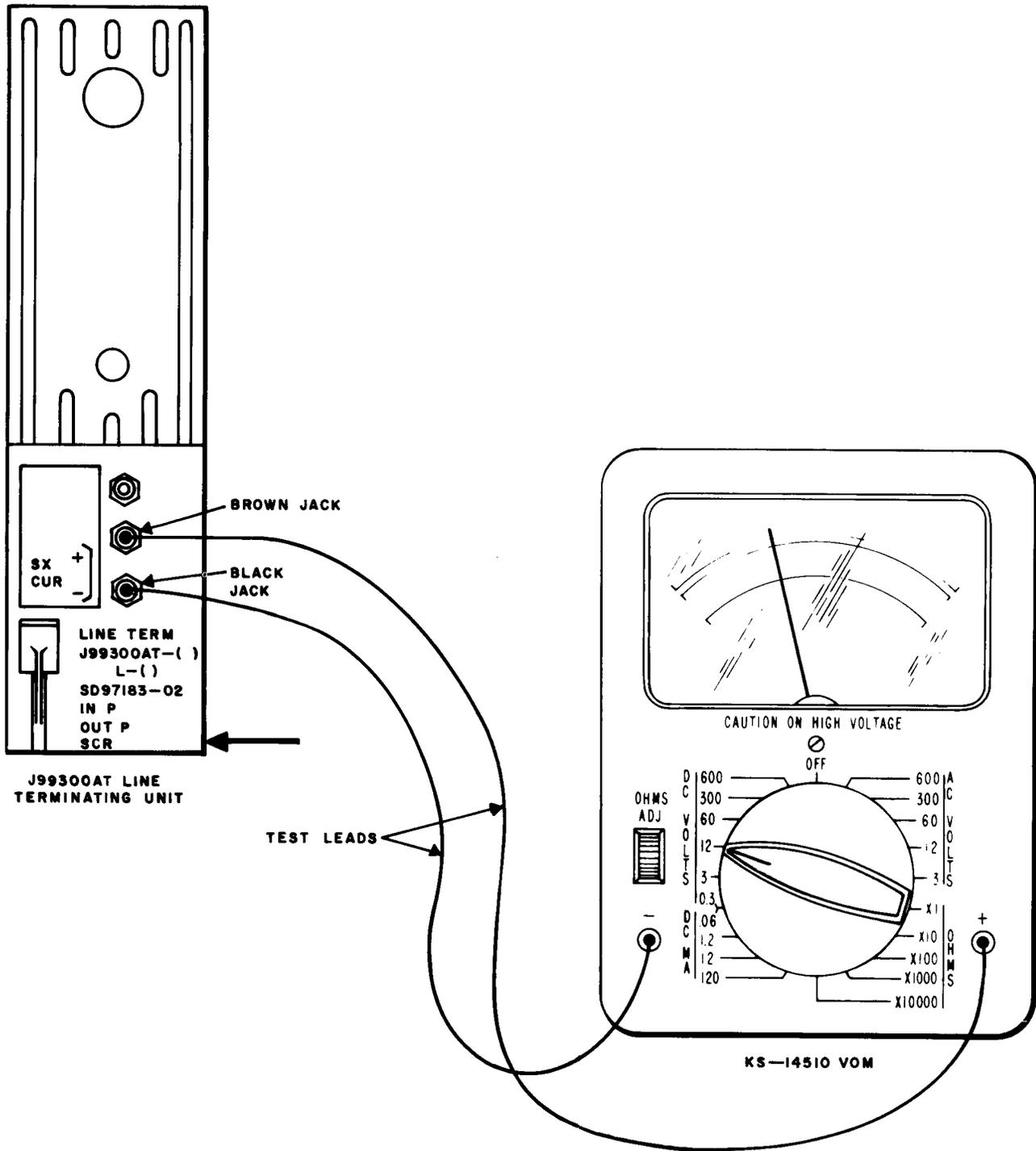


Fig. 4—J99300AT Line Terminating Unit—Measurement of Simplex Current

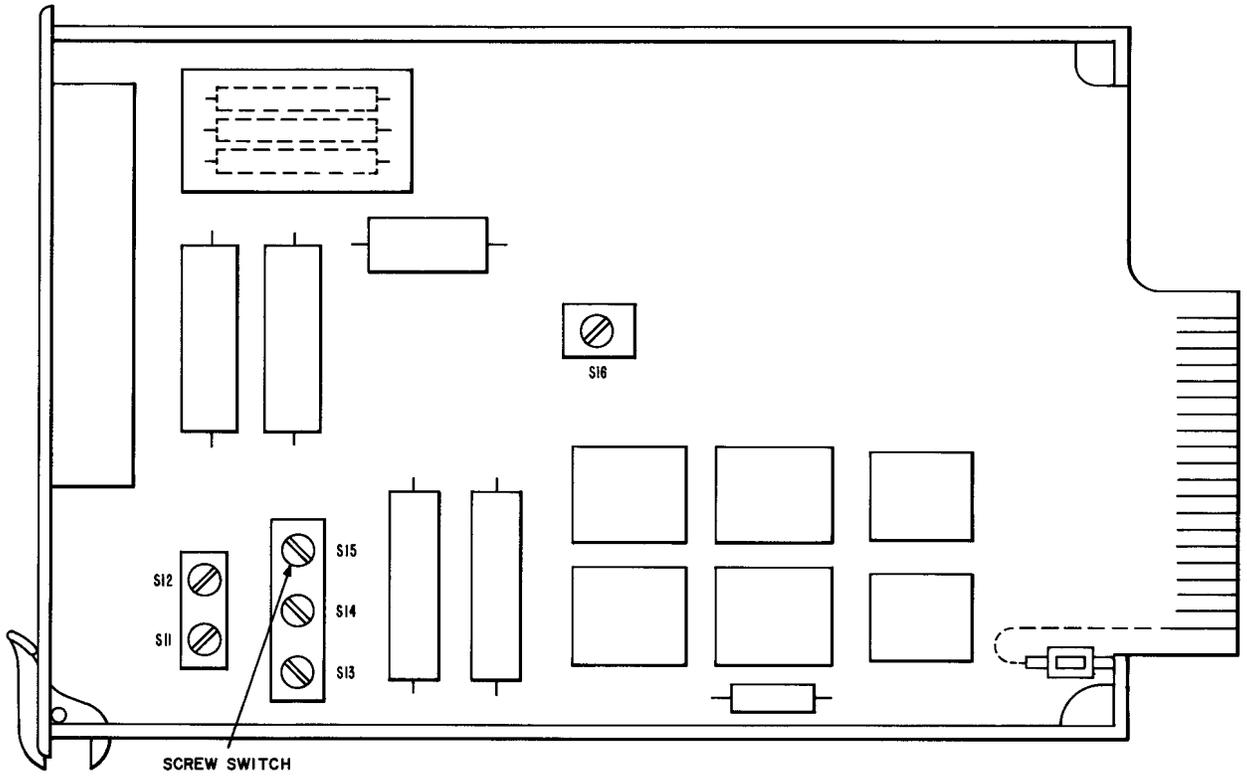


Fig. 5—J99300AT, List 2 Line Terminating Unit—Side View