

## SS1 SELECTIVE SIGNALING SYSTEM

### OVERALL TESTS

### PRIVATE LINE TELEPHONE SERVICE

#### 1. GENERAL

**1.01** This section replaces Section 310-425-500 and describes a method of testing the SS1 selective signaling system after installation. These tests are performed by operation of the equipment, by visual or audible observations, and by use of commonly available test equipment. More detailed tests of the decoder and test jack unit, J99252K, and the keyer unit, J99252L, are covered in Section 480-621-502.

**1.02** Transmission tests on the facilities between the serving test center and waystations, as well as transmission tests at waystations, should be made in accordance with Section 310-405-500.

**1.03** The applicable portions of these tests should be performed prior to placing the waystation into service. Some of the tests (overall line-up of the keyer, for example) may also be scheduled on a routine basis to maintain the dependable operation of the SS1 system.

**1.04** The tests covered are:

**A. Dialing Operation:** This test checks the SS1 dialing circuit from one telephone set through to the keyer by observing relay operation and checking for busy tone at other stations of the waystation. Other telephone sets are then successively checked by observing just the operation of the sending relay circuit as a test digit is dialed from each station.

**B. Decoder Operation:** This test checks the response of the decoder when pulsed by use of a 52B test set or equivalent. The 6-second, time-out circuit is checked first, and the decoder relay operation is observed. Then, individual stations of the waystation are signaled to determine that the decoder properly recognizes the dialed station codes.

**C. Automatic Common Control Operation:**

When common control with automatic privacy is installed (not equipped with Fig. 28 of SD-98093-01), this test checks the operation of the common control circuit and associated station control circuits, as provided. Verification of proper operation consists of relay observation, station signaling, busy tone application, and the ability to converse between stations.

**D. Manual Common Control Operation:**

This test is similar to the test of automatic common control operation, except that it should be performed only at waystations designed for manual operation of the privacy feature (equipped with Fig. 28 of SD-98093-01). Privacy is then obtained only by operation of an exclusion key.

**E. Loop Signaling Current Adjustment:**

This test is to be performed when signaling between the waystation and the central office is conducted by dc loop signaling. Loop current is measured to obtain a reference value and to check the loop for excessive resistance. The bias current of a polar relay is then adjusted to permit reliable signaling.

**F. DX Signaling Circuit Adjustment:**

This test is to be performed when signaling between the waystation and the central office is conducted by DX (duplex) signaling. The resistance of the pair over which signaling is conducted is first measured; then the resistance at each end of the loop is built out to a specified value to provide satisfactory signaling between locations.

**G. Keyer Line-up:**

This procedure is used to adjust the output of the keyer to the required level for tone signaling. Perform lettered steps *a* if the keyer is located in the waystation. Perform lettered steps *b* if the keyer is located in the central office.

**H. SF Unit Sensitivity Adjustment:** This procedure sets the sensitivity of the SF unit for proper operation on a 4-wire private line system. The input signal is generated by a transmission measuring set and therefore is independent of loop loss and the effect of amplifiers and pads of the SS1 system.

**I. Overall Signaling Test:** This test is performed between the waystation and the serving test center to ensure that station codes are correctly transmitted between facilities.

**J. Interarea Switching (Fig. 15):** This test should be performed after the interarea switching circuit (Fig. 15 of SD-98093-01) has been installed. To avoid interference with traffic, waystation loops should not be connected to the backbone at the central office when performing this test. Pulsing of the decoders to obtain switch operation is accomplished by use of a 52B test set or equivalent.

**K. 3-Digit Interarea Switching (Fig. 32):** This test should be performed after the 3-digit interarea switching circuit (Fig. 32 of SD-98093-01) has been installed. The designations of Area A and Area B, which were used to define the two adjacent SS1 systems for installation purposes, are somewhat arbitrary. These designations are maintained in this test, since the operation of specific relays is sometimes dependent upon the direction from which a call is placed. The test is conducted through actual circuit operation, because the decoders of both area waystations must be simultaneously pulsed in order to cause the 3-digit interarea switching circuit to function. Therefore the test should be scheduled at a time that will cause as little interference as possible to normal traffic.

**L through O. Dial Access to CO or PBX Unit**

**Tests:** This series of tests is provided to check the operation of the dial access to CO or PBX unit, J99252BW, after installation. Perform one or more of the following operational tests, as applicable, to check the feature(s) provided by installation of the J99252BW unit.

Test L — J99252BW Unit Provides Access to CO or Dial PBX.

Test M — J99252BW Unit Provides Access to Manual PBX.

Test N — J99252BW Unit Provides Access from Dial PBX.

Test O — J99252BW Unit Provides Access from Manual PBX.

**1.05** The settings of the keyer potentiometer adjustments, with the exception of the LEV ADJ control which may be adjusted by the procedure of test G, should not be changed during these tests. These potentiometers are factory adjusted and should only be readjusted, when required, by the procedure of Section 480-621-502.

**1.06** After installation and prior to energizing the SS1 system, a careful visual inspection of the equipment should be made. Check for poorly soldered or wire-wrapped connections. Look for stray pieces of wire, solder, or insulation in the equipment. Check relays for damage, and see that the wire springs of the relays are properly seated in the relay cards. Check that amplifiers, pads, the TB time-delay relay, and the SF unit are installed as required.

**1.07** Before power is applied, check each fuse post for the absence of direct ground. Install the fuses, one at a time. As each fuse is installed, check for voltage of the proper potential and polarity at the appropriate terminals indicated in Table A.

**1.08** With the waystation fully energized, check that relay P of the decoder and test jack unit J99252K (when supplied) and relay T3 of the common control unit J99252N (when supplied) are operated. If manual common control is used, check that relays T4 and T6 are also operated. All these relays are normally operated when the equipment is idle.

**1.09 Lettered Steps:** The letters a, b, c, etc, are added to step numbers to indicate that the steps cover an action which may or may not be required, depending on local conditions. The conditions under which a lettered step or series of steps should be made are given in the ACTION column, and all steps governed by the same condition are designated by the same letter. Where a condition does not apply, the associated steps should be omitted.

TABLE A

FUSE DESIGNATION	CURRENT RATING (AMP)	VOLTAGE FUSED	FIGURES AFFECTED	UNIT DESIGNATION	TERMINAL
A	1-1/3	-48	1, 17, 18, 20	J99252K	TSB31
B	1-1/3	-48	1	J99252K	TSA31
*C	1-1/3	-24 or -48	4	J99252B	TSD31
*C	1-1/3	-24 or -48	4	J99252J	TSA31
D	1-1/3	-48	11, 12	J99252E	TSA31
E	1-1/3	-48	2	J99252B	TSA31
F	1-1/3	-48	6	SF unit	P2-T
*G	1-1/3	-48	3	J99252L	TSA41
*G	1-1/3	-48	34	J99252BV	TSA41
H	1-1/3	-48	13	J99252F	TSA31
*J	1-1/3	-48	15	J99252G	TSA31
*J	1-1/3	-48	32	J99252BU	TSA41
K	1-1/3	-48	8, 16	J99252H	TSA31
L	0.180	+130	15	J99252G	TSA22
P	0.180	+130	20	J99252K	TSB11
*R	1-1/3	-48	25 or 39, 33, 35	J99252N	TSA31
*R	1-1/3	-48	26 or 40, 27	J99252P	TSA31
*R	1-1/3	-48	29, 27	J99252R	TSA31
*S	1-1/3	-48	31	J99252BR	TSA31
*S	1-1/3	-48	36, 37	J99252BN	TSA41

\* Used with alternate J-coded units.

## 2. APPARATUS

2.01 The apparatus required for each test is shown in Table B. The description of each item is covered in the paragraph indicated by the number in parentheses.

2.02 52B Test Set, No. 6A dial in metal housing with S2M cord equipped with No. 310 plug, dial terminals connected to tip and sleeve of plug (used to pulse decoder).

TABLE B

APPARATUS	TEST										
	A	B	C-D	E	F	G	H	I	J	K	L-O
52B Test Set (2.02)	-	1	-	-	-	-	-	-	1	-	-
KS-14510 Meter (2.03)	-	-	-	1	1	-	-	-	-	-	-
TMS (2.04)	-	-	-	-	-	1	1	-	-	-	-
3W4A Cord (2.05)	-	-	-	2	-	-	-	-	-	-	-
3P17B Cord (2.06)	-	-	-	-	-	1	-	-	-	-	-
2W24A Cord (2.07)	-	-	-	-	-	-	1	-	-	-	-
258-Type Dummy Plug	-	-	-	1	-	-	1	-	-	-	-
Tools (2.08)	-	-	-	-	-	√	-	-	-	√	-

√ As required.

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- 2.03** KS-14510 Meter, portable 20,000 ohms/volt Volt-Ohm-Milliammeter (VOM) equipped with KS-14510, List 2 test leads.
- 2.04** 21A Transmission Measuring Set (TMS), J94021A (SD-95115-01), or equivalent.
- 2.05** Testing cord, No. W3M cord, 6 feet long, equipped with No. 310 plug on one end and with three No. 360-type tools on the other end (No. 3W4A cord).
- 2.06** Patching cord, No. P3N cord, 6 feet long, equipped with No. 310 plug on one end and No. 241A plug on the other end (No. 3P17B cord).
- 2.07** Testing cord, No. W2AY cord, 9-1/2 feet long, equipped with No. 289B plug on one end and two alligator clips on the other end (No. 2W24A cord).
- 2.08** Blocking and insulating tools, as required. Apply tools as covered in Section 069-020-801.

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**3. METHOD**

<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
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**A. DIALING OPERATION**

*Note:* Unless otherwise noted, relays referred to in this test are located on the J99252B or J99252J unit.

- |    |   |  |
|----|---|--|
| 1  | Remove a station handset from switchhook.   | Relay P operates.  |
| 2  | Rotate station dial from digit 0 and hold.  | Relay ON operates.   |
| 3  | Release dial.   | Relay P pulses.<br>Relay ON releases after digit is dialed.  |
| 4  | Rotate station dial from digit 0 and hold.  |  |
| 5  | Release dial.   | Relays ON1 and AUX (J99252L) operate.<br>Relays M1, PA, and PB (J99252L) pulse.<br>Relays ON1 and AUX (J99252L) release after digit is dialed. |
| 6a | If more than one station set is provided and station control circuits on J99252P unit are also provided —<br>Allow 6 seconds to elapse; then dial two successive digits (excluding the digit 1) within 6 seconds. |  |
| 7a | At one or more stations, other than the one used for dialing tests —<br>Momentarily remove station handset and monitor line.  | Busy tone heard.   |
| 8b | If more than one station set is provided and station control circuits on J99252R unit are provided —<br>Remove handset of second station and monitor line.  | No tone heard.   |

STEP	ACTION	VERIFICATION
9b	At station used for dialing tests — Dial digit 0.	At station monitoring line — Busy tone heard while digit is dialed and for 6 seconds after dial returns to normal.
10b	Replace handset of second station.	
11	At station used for dialing tests — Replace handset.	Relay P releases.
12c	If more than one station set is provided — Successively check dialing circuit of each station set by removing handset, dialing digit 0, and replacing handset.	Relay P operates. Relay ON operates. Relay P pulses. Relay ON releases. Relay P releases.

### B. DECODER OPERATION

**Note:** Relays referred to in this test are located on the J99252K unit.

1	Connect 52B test set to PLS jack of decoder (J99252K) unit. Operate switch to ON position.	Relay P will be operated (relay ON may also be operated but all other relays should be released).
	<b>Note:</b> If dial test set other than 52B test set is used for test, it may be necessary to strap terminal 2 of PLS jack to terminal 1 of the jack or to other convenient ground. (Pulsing is conducted on tip and sleeve of PLS jack.)	
2	Dial digit 0 on 52B test set.	Relay P pulses. Relay ON releases, if operated. Relays P1 through P5 operate momentarily. Relays RA, RA1, B, TA, and TR operate for approximately 6 seconds, then release as relay ON operates.
		<b>Note:</b> Six-second period depends on proper operation of TA and TB relays in the timing circuit.
3	Dial digit 0 on 52B test set, followed immedi- ately by digit 1.	Relay P pulses. Relay ON releases. Relays P1 through P5 operate momentarily. Relays RA, RA1, B, TA, and TR operate until digit 1 is dialed, then release as relay ON operates. (Relays RA and RA1 also release momentarily between digits.)
4	Successively dial station codes assigned to station sets.	Proper station signaled as each station code is dialed. (Restore station signaling circuit after each station is signaled by momentarily lifting handset from switchhook.)

STEP	ACTION	VERIFICATION
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### C. AUTOMATIC COMMON CONTROL OPERATION

*Note:* Relays referred to in this test are located on the J99252N or J99252P units.

- |   |  |   |
|---|--|---|
| 1 | Remove a station handset from switchhook.  |   |
| 2 | Rotate station dial from digit 0 and hold.   | Relay LO- associated with station used for test operates.<br><br><i>Note:</i> Only one relay LO- should operate.  |
| 3 | Release station dial.  | Relay PR pulses.<br>Relay RA2 operates.<br>All relays BT-, except the one associated with station used for test, operate.<br><br><i>Note:</i> Busy tone can be heard at all stations, except the station used for test, if monitored.   |
| 4 | Allow 6 seconds to elapse.   | Relays BT- and RA2 release when decoder times out.  |
| 5 | Dial station code of one other station of the local waystation. (Complete dialing within 6 seconds.) | Relay PR pulses each digit.<br>Relay RA2 operates at start of first digit and releases at end of second digit.<br>All relays BT-, except the one associated with the station used for test, operate.<br>Relays PS and AL operate at end of second digit.<br>Relay SC- associated with called station operates. (Called station will be signaled.)<br>Relay BT- associated with called station releases.<br><br><i>Note:</i> Busy tone will now be absent at called station, if monitored. |
| 6 | Remove handset of called station.  | Called and calling stations can converse.   |
| 7 | Replace handset of called station.   |   |
| 8 | Replace handset of calling station.  | Relays T1 and T2 operate, then release in sequence (T1 followed by T2).<br>Relays T3, PS, and AL release.<br>Operated relays SC-, BT-, and LO- release.<br>Relay T3 reoperates.   |

### D. MANUAL COMMON CONTROL OPERATION

*Note:* Relays referred to in this test are located on the J99252N or J99252P units.

- |   |   |  |
|---|---|--|
| 1 | Select station equipped with exclusion key from which to perform this test. Remove handset from switchhook. |  |
|---|---|--|

STEP	ACTION	VERIFICATION
2	Rotate station dial from digit 0 and hold.	Relay LO- associated with station used for test operates.  <i>Note:</i> Only one relay LO- shall operate.
3	Release station dial.	Relay PR pulses. Relay RA2 operates, then releases. All relays BT-, except the one associated with station used for test, operate.  <i>Note:</i> Busy tone can be heard at all stations, except the station used for test, if monitored.
4	Allow 6 seconds to elapse.	Relays BT- and RA2 release when decoder times out.
5	Dial station code of one other station of the local waystation. (Complete dialing within 6 seconds.)	Relay PR pulses each digit. Relay RA2 operates at start of first digit and releases at end of second digit. All relays BT-, except the one associated with the station used for test, operate then release at end of second digit. Relays PS and AL operate at end of second digit. Relay SC- associated with called station operates. (Called station will be signaled.)
6	Remove handset of called station.	Called and calling stations can converse.
7	Operate exclusion key at calling station.	Relays T1 and T2 operate then release in sequence (T1 followed by T2). Relay T6 releases.  <i>Note:</i> Relay T4 may release at this time, but should immediately reoperate. All relays BT-, except those associated with the called and calling stations, operate.
8	Momentarily remove handset of one station other than the called and calling stations.	Busy tone heard.  <i>Note:</i> Busy tone should not be heard at either the called or calling station and these stations should be able to continue to converse.
9	Replace handset of called station.	
10	Replace handset of calling station.	Relays T5, T1, and T2 operate, then release in sequence (T5 followed by T1 followed by T2). Relays T4 and T3 release in sequence (T4 followed by T3). Relays PS and AL release. Operated relays SC-, BT-, and LO- release. Relays T3, T4, and T6 reoperate.

STEP	ACTION	VERIFICATION
<b>E. LOOP SIGNALING CURRENT ADJUSTMENT</b>		
1	At central office — Using 3W4A cord, connect VOM to LINE jack of J99252E unit as shown in test setup, Fig. 1. Observe polarity when connecting VOM to cord. Set VOM function switch to read 120 ma or more.	
2	Connect second 3W4A cord (with tip lead strapped to sleeve lead as shown in Fig. 1) to BIAS jack of J99252E unit.	
3	Reduce VOM function switch setting, as required, to obtain a useful on-scale reading. Record this reading.	Reading on VOM of 10 ma or more.  <i>Note:</i> If reading is a significant value but less than 10 ma, the loop resistance is too high for satisfactory operation of the loop signaling receiving relay circuit. If the reading is extremely low or nonexistent, the loop may be open or diode A, shown in schematic Fig. 101, may be defective or improperly installed at the waystation.
4	Remove 3W4A cords from LINE and BIAS jacks of J99252E unit.	
5	Insert 258-type dummy plug in LINE jack of J99252E unit as shown in test setup, Fig. 2.	
6	Connect 3W4A cord (with tip lead strapped to sleeve lead and negative lead of VOM connected to ring lead as shown in Fig. 2) to TST jack of J99252E unit.	
7	Set VOM function switch to read 120 ma or more. Connect positive lead of VOM to ground.	
8	Determine required bias current from Fig. 3. Use the loop current reading obtained in Step 3 on the X coordinate of the graph.	
9	Adjust the BIAS potentiometer of J99252E unit.	Reading on VOM as determined in Step 8.
10	Remove 3W4A cord from TST jack and dummy plug from LINE jack of J99252E unit.	

CENTRAL OFFICE

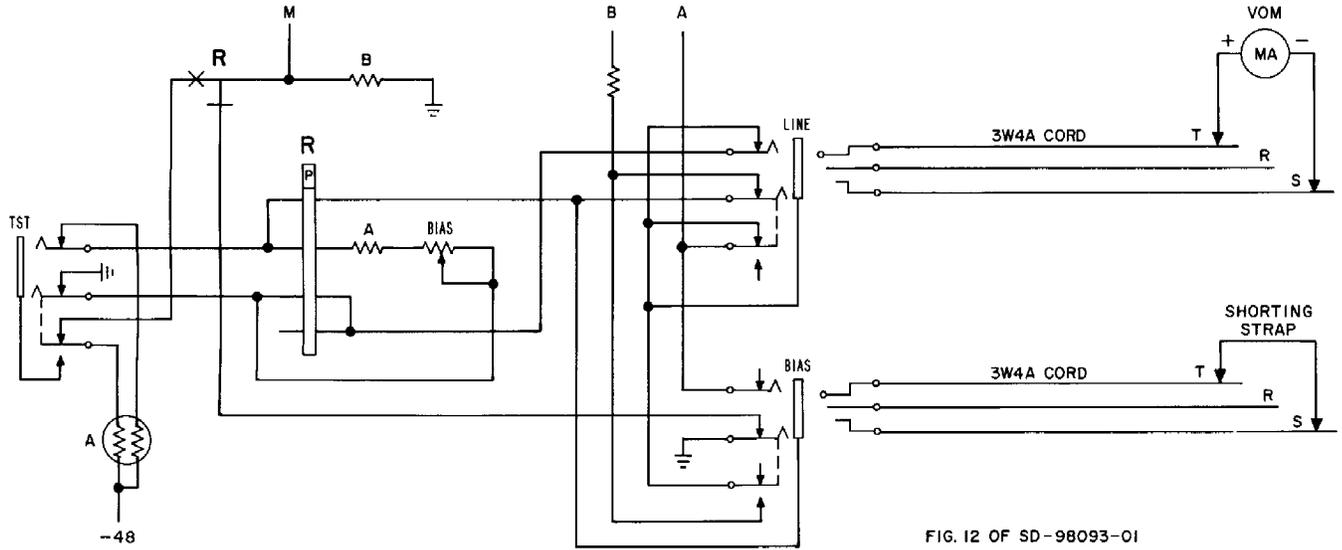


FIG. 12 OF SD-98093-01

Fig. 1 — Measuring Loop Current

CENTRAL OFFICE

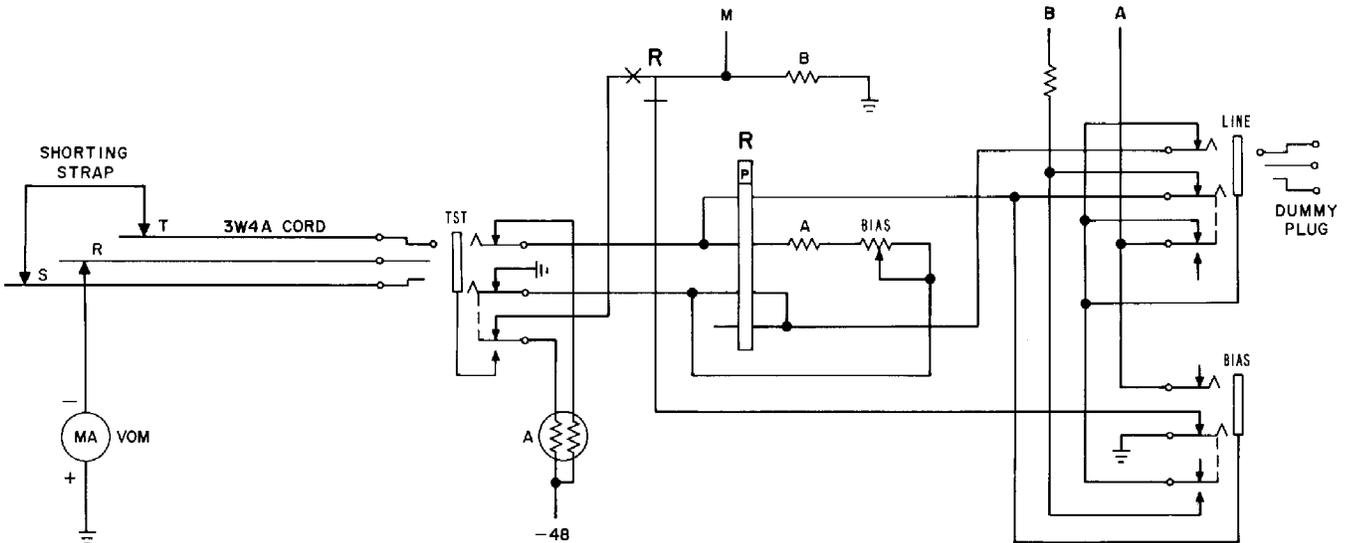


FIG. 12 OF SD-98093-01

Fig. 2 — Setting Bias Current

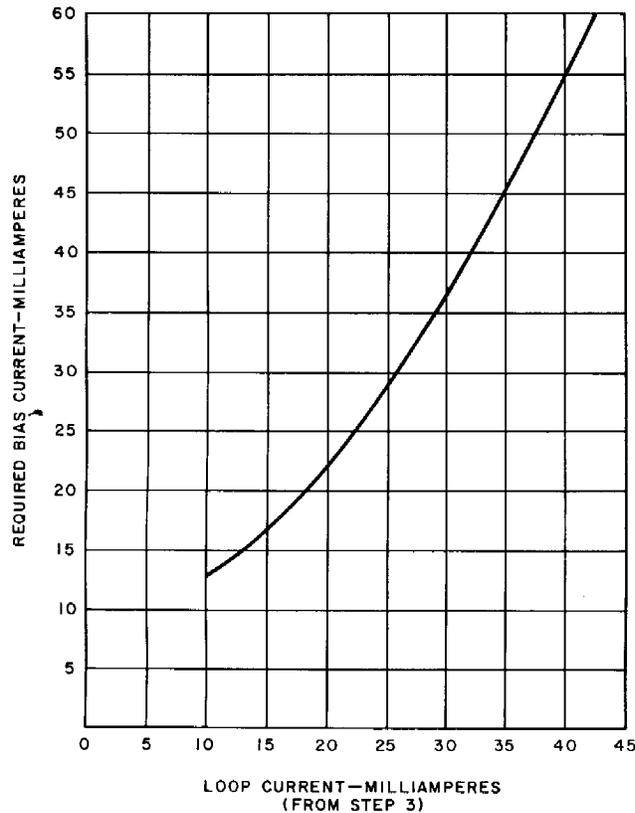


Fig. 3 — Determining Required Bias Current

STEP	ACTION	VERIFICATION
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**F. DX SIGNALING CIRCUIT ADJUSTMENT**

- |   |  |  |
|---|--|--|
| 1 | At waystation —<br>Disconnect tip and ring leads of receiving pair and short leads together.   |  |
| 2 | At central office —<br>Disconnect tip and ring leads of receiving pair and connect VOM across leads.   |  |
| 3 | Measure and record resistance of receiving pair.   | Reading on VOM of 5000 ohms or less.   |
| 4 | Strap C, D, and E resistors at both ends of the receiving pair (in the signal lead extension circuit, in the central office, and in the DX signaling circuit in the waystation). | Total resistance strapped into each circuit should equal the resistance measured in Step 2 plus $1500 \pm 250$ ohms. (For circuit details see Fig. 4.) |

STEP	ACTION	VERIFICATION
5	At central office — Disconnect VOM from receiving pair and reconnect leads to original terminals.	
6	At waystation — Remove short from receiving pair and reconnect leads to original terminals.	

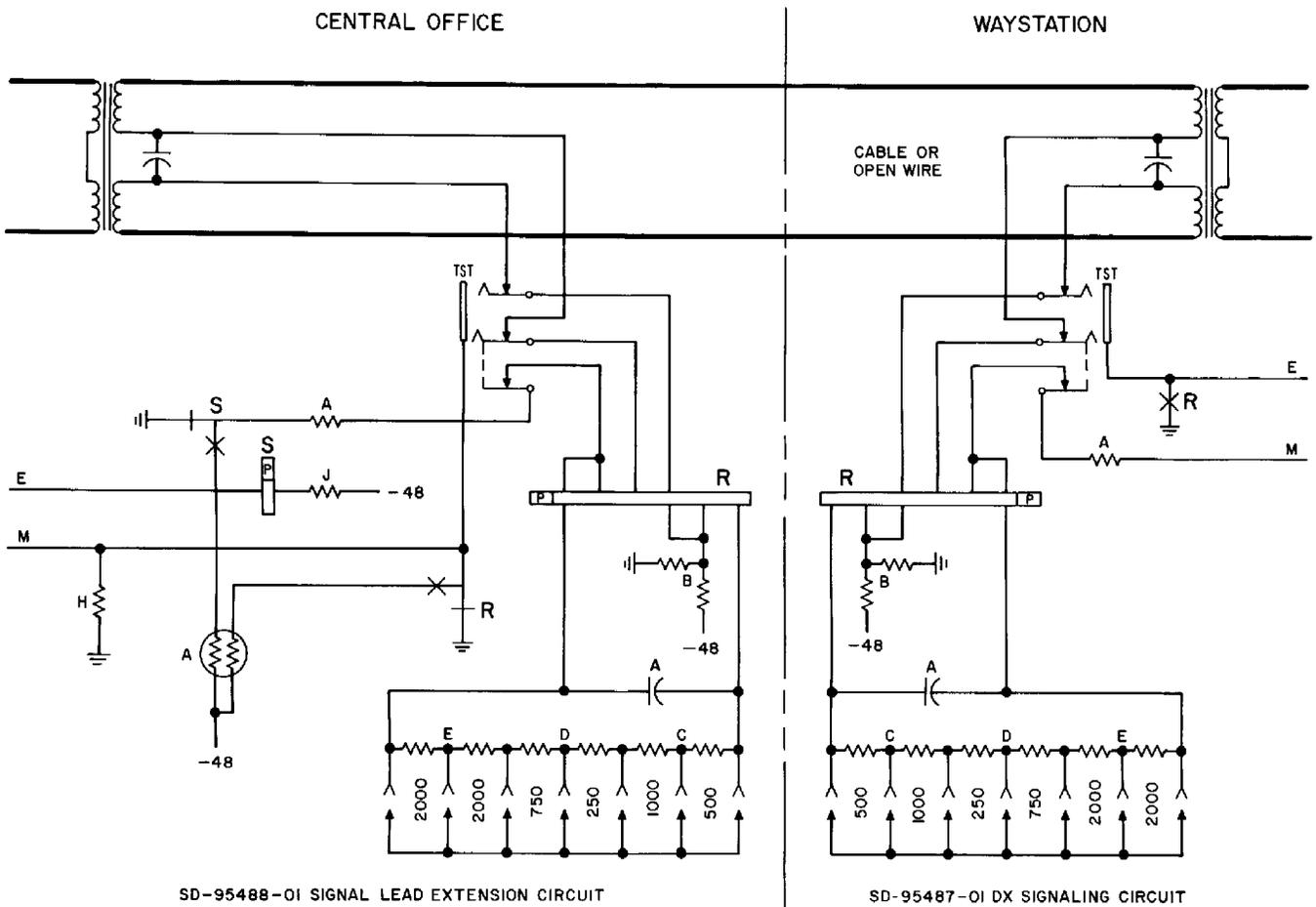


Fig. 4. — Strapping Resistors in DX Signaling Circuits

STEP	ACTION	VERIFICATION
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**G. KEYS LINE-UP**

- 1a If keyer (J99252L unit) is located at waystation —  
Request central office to measure incoming level of 2600-cps signal.
- 2a At central office —  
Using 3P17B cord, connect DET IN 600Ω jacks of TMS to A COIL IN jack of J99252E unit.

STEP	ACTION	VERIFICATION
3a	At waystation — Block PB relay of J99252L unit nonoperated.	
4a	Block ON1 relay of J99252L unit operated.	
5a	Adjust LEV ADJ control of J99252L unit, as required.	At central office — Read 2600-cps level on TMS specified by circuit layout card.
6a	Remove blocking tools from relays of J99252L unit.	
7a	At central office — Disconnect TMS from A COIL IN jack of J99252E unit.	
8b	If keyer (J99252L unit) is located at central office — Using 3P17B cord, connect DET IN 600 $\Omega$ jacks of TMS to OSC TST jack of J99252L unit.	
9b	Adjust LEV ADJ control of J99252L unit, as required.	Read 2600-cps level on TMS to coordinate with other SF tone signals.
10c	Disconnect TMC from OSC TST jack of J99252L unit.	

#### H. SF UNIT SENSITIVITY ADJUSTMENT

1a	Remove amplifier or dummy plug from socket A of decoder (J99252K unit), if installed.	
2	Using 2W24A cord, connect OSC OUT 600 $\Omega$ jacks of TMS to terminals TSA12 and TSA41 of J99252K unit.	
3	Insert 258-type dummy plug into jack M of J99252K unit.	Relay M of SF unit releases.
4	Turn SS control of the SF unit fully counter-clockwise.	
5	Adjust TMS for output of -28 dbm at 2600 cps.	
6	Slowly advance SS control of SF unit in clockwise direction, as required.	Relay RG of SF unit just operates.
7	Remove 2W24A cord from OSC OUT 600 $\Omega$ jacks of TMS.	Relay RG of SF unit releases.
8	Adjust TMS for output of -30 dbm at 2600 cps.	

STEP	ACTION	VERIFICATION
9	Reconnect 2W24A cord to OSC OUT 600 $\Omega$ jacks of TMS.	Relay RG of SF unit should not operate.  <i>Note:</i> If relay RG does operate, remove 2W24A cord from TMS, adjust SS control of SF unit slightly in a counterclockwise direction, then reconnect cord to TMS. Relay RG should not operate. Repeat the slight adjustment of the SS control, as necessary, until the requirement of this step is obtained.
10b	If SS control had to be readjusted per the note of Step 9 — Increase output of TMS to -28 dbm to recheck operation of relay RG with original input signal power.	Relay RG of SF unit operates.
11	Remove 2W24A cord from TMS and terminals of J99252K unit.	Relay RG of SF unit releases.
12	Remove dummy plug from jack M of J99252K unit.	Relay M of SF unit operates.
13a	Replace amplifier or dummy plug in socket A of J99252K unit, if removed in Step 1.	

#### I. OVERALL SIGNALING TEST

1	Notify the central office, which functions as the serving test center (STC), that it is desired to test signaling between waystation and central office.  <i>Note:</i> Central office should be equipped with a J99252BR monitor and lamp display test unit to facilitate this test.	
2	At waystation — Dial station codes as directed by STC.	At STC — Correct station codes displayed.
3	At STC — Dial several station codes of waystation under test.	At waystation — Correct stations signaled.

#### J. INTERAREA SWITCHING (FIG. 15)

*Note:* Relays referred to in this test are located on J99252G unit.

1	At regular waystation decoder (J99252K) unit — Connect 52B test set to PLS jack. Operate switch to ON position.  <i>Note:</i> If dial test set other than 52B test set is used for test, it may be necessary to strap terminal 2 of PLS jack to terminal 1 of the jack or to other convenient ground. (Pulsing is conducted on tip and sleeve of PLS jack.)	
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STEP	ACTION	VERIFICATION
2	Dial interarea connect code.	Relay SW operates.
3	Dial interarea disconnect code.	Relay D operates momentarily. Relay SW releases.
4	Transfer 52B test set from PLS jack of regular waystation decoder to PLS jack of auxiliary decoder used to monitor adjacent area. (Transfer ground strap as well, if installed in Step 1.)	
5	Dial interarea connect code.	Relay SW operates.
6	Dial interarea disconnect code.	Relay D operates momentarily. Relay SW releases.
7	Remove 52B test set from PLS jack of auxiliary decoder. (Remove ground strap, if installed in Step 4.)	

#### K. 3-DIGIT INTERAREA SWITCHING (FIG. 32)

*Note:* Relays referred to in this test are located on the J99252BU unit.

1	At station of area A — Dial digit 2.	Relay BTB operates for 6 seconds, then releases.
2a	If calling station is used in privacy mode — Dial code of another station in area A.	Relay BTB operates and remains operated.
3a	Replace handset momentarily.	Relay BTB releases.
4	Block relay BTA operated to simulate busy condition in area B.	
5	Dial interarea connect code.	Relay TNA operates for approximately 2 seconds. Relay EC pulses while relay TNA is operated. 2400-cps interrupted busy tone heard for 2 seconds at station used for test.
6	Remove blocking tool from relay BTA.	
7	Dial interarea connect code.	Relay BTB operates during dialing and remains operated if calling station is used in privacy mode. Relays D and SW operate.
<i>Note:</i> Steps 8 through 10, which follow, should be performed within 6 seconds.		
8	Dial first digit of station code in area B.	Relay DEL operates. Relay SW releases.
9	Dial digit 1.	Relay SW reoperates. Relay BTB releases, if operated.

STEP	ACTION	VERIFICATION
10	Dial second digit of station code in area B.	Relay BTB operates during dialing and remains operated if calling station is used in privacy mode. Relay DEL releases. Relays EC and PLS operate, then release in sequence (EC followed by PLS). Relays TNA and TNB operate when relay EC releases and release when relay PLS releases.
11a	If calling station is used in privacy mode — Replace handset on switchhook.	Relay RLS operates. Relays SW, BTB, and D release. Relay RLS releases.
12b	If calling station is not used in privacy mode — Dial interarea disconnect code.	Relay RLS operates. Relays SW and D release. Relay RLS releases.
13	At station of area B — Dial digit 2.	Relay BTA operates for 6 seconds, then releases.
14c	If calling station is used in privacy mode — Dial code of another station of area B.	Relay BTA operates and remains operated.
15c	Replace handset momentarily.	Relay BTA releases.
16	Block relay BTB operated to simulate busy condition in area A.	
17	Dial interarea connect code.	Relay TNB operates for approximately 2 seconds. Relay EC pulses while relay TNB is operated. 2400-cps interrupted busy tone heard for 2 seconds at station used for test.
18	Remove blocking tool from relay BTB.	
19	Dial interarea connect code.	Relay BTA operates during dialing and remains operated if calling station is used in privacy mode. Relays D, SW, and PV operate.
	<i>Note:</i> Steps 20 through 22, which follow, should be performed within 6 seconds.	
20	Dial first digit of station code in area A.	Relay DEL operates. Relay SW releases.
21	Dial digit 1.	Relay DEL releases and relay BTA releases, if operated. Relay SW reoperates.
22	Dial second digit of station code in area A.	Relay BTA operates during dialing and remains operated if calling station is used in privacy mode. Relays EC and PLS operate, then release in sequence (EC followed by PLS). Relays TNA and TNB operate when relay EC releases and release when relay PLS releases.

STEP	ACTION	VERIFICATION
23c	If calling station is used in privacy mode — Replace handset on switchhook.	Relay RLS operates. Relays SW, BTA, and D release. Relay RLS releases.
24d	If calling station is not used in privacy mode — Dial interarea disconnect code.	Relay RLS operates. Relays SW and D release. Relays RLS and PV release.

#### L. J99252BW UNIT PROVIDES ACCESS TO CO OR DIAL PBX

1	Dial access code for CO or PBX.	Relay C1 (J99252BW unit) operates. Relay WL (J99252N unit) operates. Dial tone heard at calling station.
2	Replace handset on switchhook.	Relay C1 (J99252BW unit) releases. Relay WL (J99252N unit) releases. Dial tone removed from station.

#### M. J99252BW UNIT PROVIDES ACCESS TO MANUAL PBX

**Note 1:** Unless otherwise noted, relays referred to in this test are located on the J99252BW unit.

**Note 2:** Steps 1 and 2, which follow should be performed within 6 seconds.

1	Dial first digit of PBX access code.	Relay BY operates. SS1 busy lamp lights at PBX operator position.
2	Dial second digit of PBX access code.	Relay DT operates. Relay WL (J99252N unit) operates. SS1 trunk lamp lights at PBX operator position.
3	PBX operator plugs up SS1 trunk jack.	Relays T, S, S1, BG, PR, and PR1 operate. SS1 trunk lamp is extinguished at PBX operator position.
4	Announce test call.	
5	Replace handset on switchhook.	Relay BY releases. Relay WL (J99252N unit) releases.
6	PBX operator removes cord from SS1 trunk jack.	Relays T, DT, S, S1, BG, PR, and PR1 release.

#### N. J99252BW UNIT PROVIDES ACCESS FROM DIAL PBX

**Note:** Relays referred to in this test are located on the J99252BW unit.

1	Arrange to have test call placed from PBX station to SS1 station.	
2	SS1 tie trunk dialed at PBX station.	Relays T, PR, and PR1 operate.

STEP	ACTION	VERIFICATION
3	First SS1 station code digit is dialed.	Relay PR pulses. Relays A, ON1, B, and DT operate while digit is pulsed; then all except relay DT release. Relay BY operates. SS1 busy lamp lights at PBX operator position.
4	Second SS1 station code digit is dialed.	Relay PR pulses. Relays A, ON1, and B operate while digit is pulsed, then all release. SS1 station is signaled.
5	Test call completed. PBX station goes on-hook.	Relay PR releases. Relays A and ON1 operate momentarily. Relay PR1 releases followed by release of relays BY, T, and DT. SS1 busy lamp extinguished at PBX operator position.

#### O. J99252BW UNIT PROVIDES ACCESS FROM MANUAL PBX

*Note:* Relays referred to in this test are located on the J99252BW unit.

1	Arrange to have PBX operator place test call to SS1 station.	
2	PBX operator plugs up SS1 trunk jack.	Relays S, S1, BG, T, PR, and PR1 operate.
3a	If PBX is 552-type, 556A, 605A, or 607B — PBX operator inserts spare calling cord into SS1 dial jack.	Relay DL operates. Relays S1 and BG release.
4	First SS1 station code digit is dialed.	Relay PR pulses. Relays A, ON1, B, and DT operate while digit is pulsed, then all except relay DT release. Relay BY operates. SS1 busy lamp lights at PBX operator position. If PBX is 606A, 606B, 607A, 608A, or 608D — Relays S1 and BG release at beginning of digit, then reoperate after digit is pulsed.
5	Second SS1 station code digit is dialed.	Relay PR pulses. Relays A, ON1, and B operate while digit is pulsed, then all release. SS1 station is signaled. If PBX is 606A, 606B, 607A, 608A, or 608D — Relays S1 and BG release at beginning of digit, then reoperate after digit is pulsed.

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<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
6a	If PBX is 552-type, 556A, 605A, or 607B — PBX operator removes dial cord.	Relay DL releases. Relays S1 and BG operate.
7	Test call completed. PBX operator removes cord from SS1 trunk jack.	Relays S, S1, BG, and PR release. Relays A and ON1 operate momentarily. Relay PR1 releases, followed by release of relays BY, T, and DT. SS1 busy lamp extinguished at PBX operator position.