INCOMING TRUNK CIRCUIT FROM DISTANT STEP-BY-STEP OFFICES REVERSE BATTERY SUPERVISION (SD-2H111 AND SD-2H154)—TESTS NO. 2 AND ▸NO. 2B◂ ELECTRONIC SWITCHING SYSTEMS

1. GENERAL

1.01 This section describes the procedure for testing the incoming trunk circuit from distant step-by-step offices reverse battery supervision (SD-2H111 and SD-2H154) used in the No. 2 and No. 2B Electronic Switching Systems (ESS).

1.02 This section is reissued to cover the No. 2B ESS.

1.03 The following tests will be performed:

A. Circuit State and Scan Point Operation: This test verifies the operation of the circuit relays and the saturation of the ferrod sensors associated with the trunk circuit.

B. Transmission Loss Measurements: This test verifies the transmission loss of the incoming trunk circuit.

1.04 The incoming trunk circuit tests are performed on a periodic basis as prescribed by the equipment test list or when a malfunction of the circuit is suspected.

1.05 The tests will be performed from the trunk test panel (TTP) in conjunction with the maintenance display buffer and teletypewriter (TTY). For detailed information about the TTP and its operation, refer to Section 232-130-301, Trunk Test Panel—Method of Operation.

1.06 The keys on the TTP may be either a locking or a nonlocking type. In order to differentiate between the two types of keys, the use of a locking type key shall be identified by the words "operate" and "release" and the use of a nonlocking type key shall be identified by the word "depress" in the ACTION column.

Note: Nonlocking keys require a depression of at least one-half second to ensure system recognition.

1.07 *Lettered Steps:* A letter a, b, c, etc, added to a step number in Part 3 or 4 of this section indicates an action which may or may not be required depending on local conditions. The condition under which a lettered step or series of lettered steps should be made is given in the ACTION column, and all steps governed by the same condition are designated by the same letter within a test. Where a condition does not apply, all steps designated by the letter should be omitted.

1.08 Whenever the term TOUCH-TONE® telephone service is used, it refers to the equipment required to provide this service to the customer.

2. APPARATUS

Note: Equivalent apparatus may be substituted.

2.01 KS-14510 L1 volt-ohm-milliammeter (VOM).

2.02 KS-14510 L3 test leads (one red and one black).

2.03 One 262C type (900 ohm) plug.

2.04 Two 2P4A cord assemblies consisting of a P2B cord, 3 feet long, and two 310 plugs.

2.05 Two 2W6A cord assemblies consisting of a W2C cord, 10 feet long, with a 310 plug on one end and two 59-type cord tips on the other.

2.06 One 1025A headset consisting of a LB2 receiver, a W2FT cord, and a 310 plug.

2.07 Transmission measuring set (TMS), 23D. Equivalent apparatus must be capable of measuring power in 900-ohm circuits at 1 kHz. The accuracy must be $\pm$0.1 dB from $-$15 dBm to +10.0 dBm at 1 kHz.

Note: This item will not be required if the TTP is equippped with a TMS.

3. PREPARATION

3.01 Refer to the office records to obtain the following information about the circuit to be tested:

(a) Trunk group number (TGN)

(b) Member number (MEMN)

(c) Scan point number (SPN)

(d) Protector block assignment for the incoming trunk circuit at the protector frame.

Note: When the trunk enters the office through carrier equipment, it will not appear at the protector frame.

3.02 Verify the scan point numbers obtained from the office records as follows:

At maintenance TTY, type in:

A VY:TRK:aaa bbb!

aaa = TGN

bbb = MEMN.

The system response is as follows:

AR VY TRK aaa bbb

Note: Make sure no other connection is made to the SP jack in the office. If transmissions measurements cannot be made via SP jack, connect test equipment to the trunk side appearance of the tip and ring instead of using SP jack.

3.06 The following is a step-by-step procedure to make the incoming trunk circuit traffic busy and connect it to the TTP (Fig. 1 and Fig. 2.)

SPN ss rrbb

ss = scanner number

rr = scanner row

bb = bit in row

The bb bit represents the first ferrod sensor (0) in the scanner row that is associated with the specific circuit. All other ferrod sensors assigned to the same circuit follow in consecutive order (0, 1, 2, etc). Refer to the output message manual (OM-2H200) for explanation of other data fields, if required.

3.03 Before proceeding with PREPARATION, instruct the distant office to make the trunk circuit under test maintenance busy at that location.

3.04 Use the protector block assignment obtained from 3.01 to locate and remove the protector block assigned to the incoming trunk circuit.

Note: In order to perform these tests, the tip and ring leads coming into the circuit must be open. If the trunk circuit does not appear at the protector frame, open the tip and ring leads into the trunk circuit in accordance with local procedures.

3.05 Connect the trunk side appearance of the tip and ring of the incoming trunk circuit to the SP jack nearest the protector frame with a 2W6A cord.

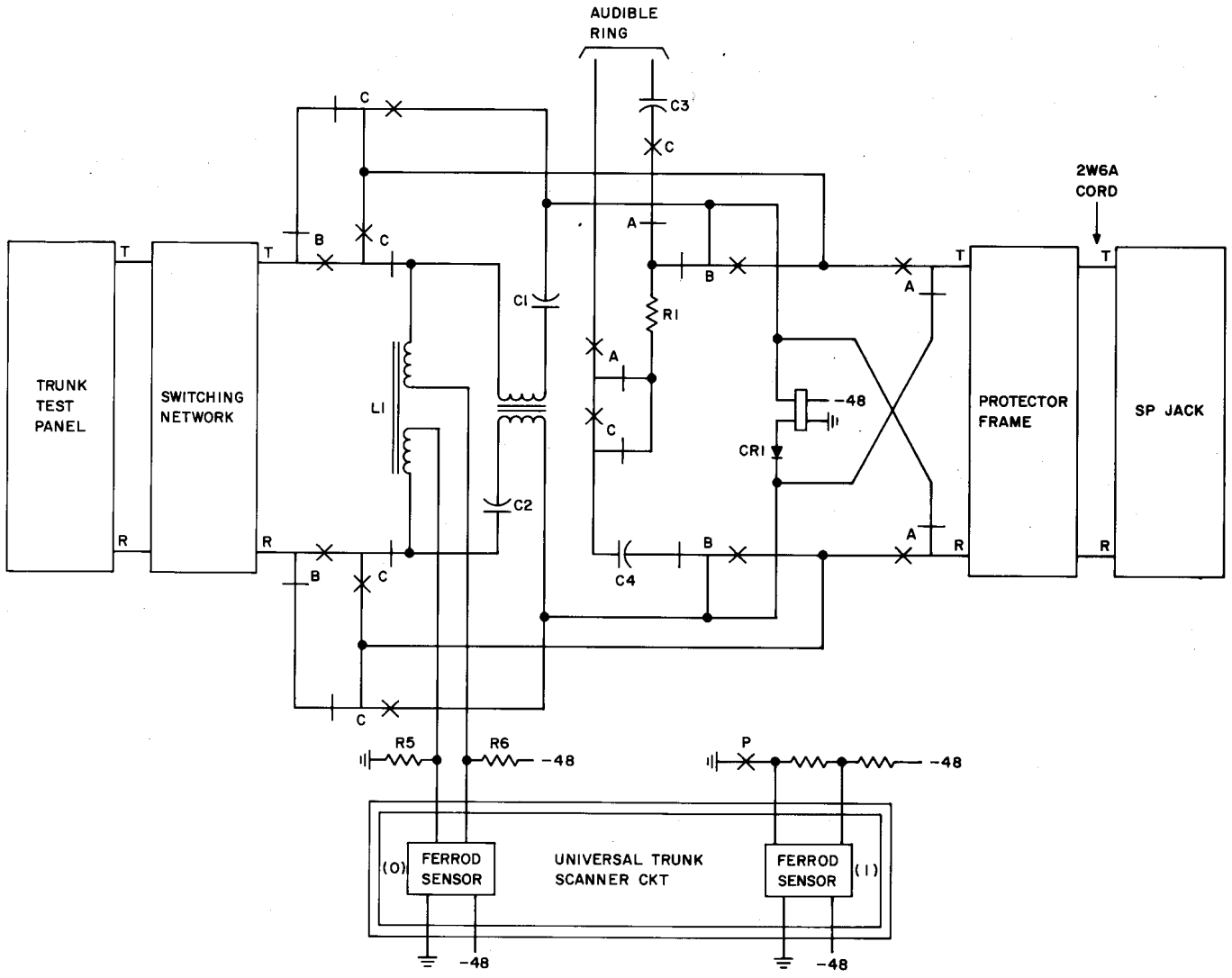

Fig. 1—Incoming Trunk Circuit (SD-2H154)

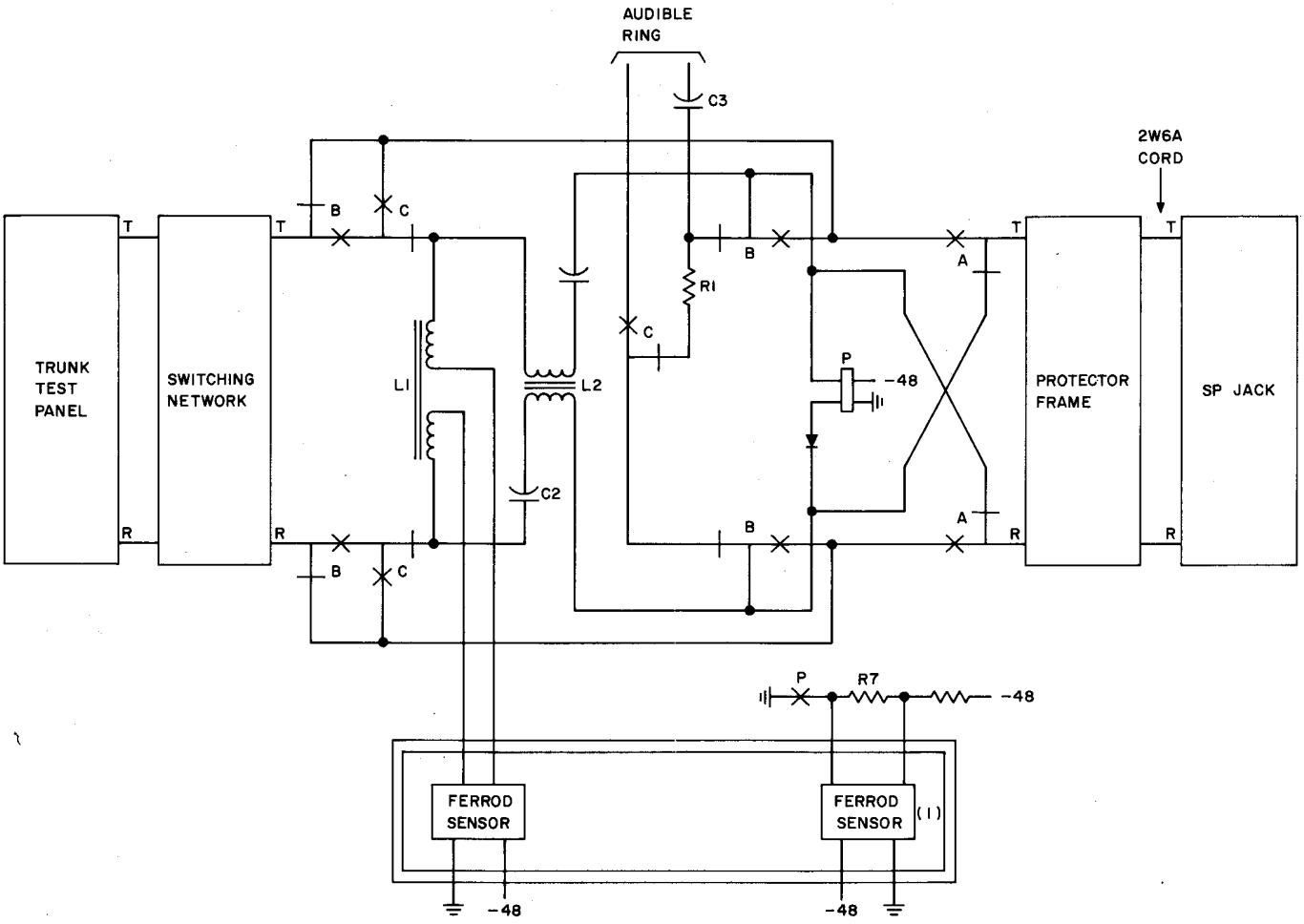

Fig. 2—Incoming Trunk Circuit (SD-2H111)

STEP	ACTION	VERIFICATION

STEP	ACTION	VERIFICATION
All Tests		
1	At telephone set on TTP— Operate access trunk 1 key.	
2	Lift handset off-hook, or operate TRFR key at TEL CKT on TTP if using headset.	At telephone set— Access trunk 1 lamp lighted. At ACCESS TRUNK 1 CONTROL— SUPV lamp lighted. At TEL CKT— TRFR lamp lighted if TRFR key is operated.
3	At TOUCH-TONE dial— Dial 1 + TGN + MEMN + ST.	AT ACCESS TRUNK 1 CONTROL— EQPT ST lamp lighted steadily or flashing at a rate of 120 interruptions per minute. At MISC TEST CONTROL— P & E lamp lighted if connection was successful. ***Note:*** If the EQPT ST lamp is flashing and the P & E lamp is not lighted steadily, the TTP is not connected to the circuit to be tested.
4a	If the P & E is not lighted steadily— At ACCESS TRUNK 1 CONTROL— Depress RLS key.	
5a	Repeat Steps 3 and 4a until connection is successful.	
6	Place handset on-hook, or release TRFR key.	At telephone set— Access trunk 1 lamp extinguished. At TEL CKT— TRFR lamp extinguished.

4. METHOD

4.01 If the verification procedure fails or if a malfunctioning circuit is indicated during any part of these tests, proceed as follows.

(1) Discontinue the test.

(2) Troubleshoot the circuit which failed.

(3) Replace faulty circuit components using standard repair procedures.

(4) Repeat the test that failed. If verification is successful, continue the test.

STEP	ACTION	VERIFICATION
A. Circuit State and Scan Point Operation		
7	Use the TTY printout obtained from 3.02 to determine the scanner number and scanner	

STEP	ACTION	VERIFICATION
	row associated with the scan points assigned to the incoming trunk circuit.	
8	At maintenance TTY— ▶For No. 2 ESS offices type in:◀ UBRL TS:RSN:ssrr! ss = Number of the trunk scanner in decimal (0-11) from Step 7. rr = Number of scanner row in decimal (0-63) from Step 7. ▶For No. 2B ESS offices type in: MON:TSSN ssrr;RDT LAMPS! ss = Number of trunk scanner in decimal (0-11) from Step 7. rr = Number of scanner row in decimal (0-63) from Step 7. RDT LAMPS = Direct the result to the DISPLAY BUFFER.◀	At DISPLAY BUFFER— Scanner row containing specific scan points displayed on DISPLAY BUFFER lamps. Lamps associated with ferrod sensors connected to circuit under test lighted.
9	At ACCESS TRUNK 1 CONTROL— Depress VM key.	At ACCESS TRUNK 1 CONTROL— VM lamp lighted. At VOLTMETER CONTROL— 100K lamp lighted. At VOLTMETER— Meter indicates 0.
10	At VOLTMETER CONTROL— Depress FEMF key.	At VOLTMETER CONTROL— FEMF lamp lighted. 100K lamp extinguished. At VOLTMETER— Meter indicates 0.
11	Operate TR REV key.	At VOLTMETER CONTROL— TR REV lamp lighted. At VOLTMETER— Meter indicates 0.
12	Depress MET VM key	At VOLTMETER CONTROL— FEMF lamp extinguished. MET VM lamp lighted. TR REV remains lighted. At VOLTMETER— Meter indicates 0.
13	At front of writing shelf— Connect VOM to SP jack using a 2W6A cord assembly. Use appropriate test leads to connect positive side of VOM to tip and negative side to ring wires of 2W6A cord assembly.	At VOM— Meter indicates between 42.75 and 52.5 volts on 60-volt scale.

STEP	ACTION	VERIFICATION
	(White wire on 2W6A cord assembly is tip and blue wire is ring.)	
14	Disconnect 2W6A cord assembly from SP jack.	
15	Set PD GROUP switch to 0-5 position.	
16	At PERIPHERAL DECODER POINTS— Operate 0, 1, and 2 keys.	At PERIPHERAL DECODER POINTS— 0, 1, and 2 lamps lighted.
17	Depress AT 1 key.	At VOLTMETER— Meter indicates between 42.75 and 52.5 volts on 120-volt scale. At circuit under test— Relay A, B and C operated.
18	At front of writing shelf— Insert 262C-type (900 ohm) plug into ACCESS TRK-1 jack.	At DISPLAY BUFFER— Lamp associated with ferrod sensor 1 extinguished.
19	Remove 262C-type (900 ohm) plug from ACCESS TRK-1 jack.	Lamp associated with ferrod sensor 1 lighted.
20	At PERIPHERAL DECODER POINTS— Release 0 and 1 keys.	At PERIPHERAL DECODER POINTS— 0 and 1 lamps extinguished.
21	Depress AT 1 key.	At VOLTMETER— Meter indicates 0. At circuit under test— Relays A and B released. Relay C remains operated.
22	At VOLTMETER CONTROL— Release TR REV key.	At VOLTMETER CONTROL— TR REV lamp extinguished.
23	At front of writing shelf— Connect headset to SP jack.	At headset— Audible ring present.
24	At PERIPHERAL DECODER POINTS— Release 2 key. Operate 1 key.	At PERIPHERAL DECODER POINTS— 2 lamp extinguished. 1 lamp lighted.
25	Depress AT 1 key.	At VOLTMETER— Meter indicates between 42.75 and 52.5 volts on 120-volt scale. At headset— Audible ring not present. At circuit under test— Relay C released. Relay B operated.

STEP	ACTION	VERIFICATION
26	At front of writing shelf— Disconnect headset from SP jack. Insert 262C-type (900 ohm) plug into ACCESS TRK-1 jack.	At DISPLAY BUFFER— Lamp associated with ferrod sensor 0 extinguished.
27	Remove 262C-type (900 ohm) plug from ACCESS TRK-1 jack.	Lamp associated with ferrod sensor 0 lighted.
28	At PERIPHERAL DECODER POINTS— Operate 0 key.	At PERIPHERAL DECODER POINTS— 0 lamp lighted.
29	Depress AT 1 key.	At circuit under test Relay A operated. Relay B remains operated.
30	At front of writing shelf— Connect VOM to SP jack using a 2W6A cord assembly. Use appropriate cord to connect positive side of VOM to ring and negative side to tip wires of 2W6A cord assembly. (White wire on 2W6A cord assembly is tip and blue wire is ring.)	At VOM— Meter indicates between 42.75 and 52.5 volts on 60-volt scale.
31b	For SD-2H154 only— At PERIPHERAL DECODER POINTS— Release 1 key. Operate 2 key.	At PERIPHERAL DECODER POINTS— 1 lamp extinguished. 2 lamp lighted.
32b	Depress AT 1 key.	At circuit under test— Relay B released. Relay C operated. Relay A remains operated. At VOM— Meter indicates between 42.75 and 52.5 volts on 60-volt scale. At VOLTMETER— Meter indicates 0.
33	At front of writing shelf— Disconnect 2W6A cord assembly from VOM and SP jack.	
34	At PERIPHERAL DECODER POINTS— Release all keys.	At PERIPHERAL DECODER POINTS— All lamps extinguished.
35	Depress AT 1 key.	At circuit under test— All relays released.
36	At maintenance TTY— ◆For No. 2 ESS offices type in:◆ UB SY:CLB!	Scanner row display removed from DISPLAY BUFFER.

STEP	ACTION	VERIFICATION
	◗For No. 2B ESS offices type in: STOP:UTIL!◖	
	Note: If transmission loss measurements are to be performed, proceed to Test B.	
37	At ACCESS TRUNK 1 CONTROL— Depress RLS key.	At ACCESS TRUNK 1 CONTROL— VM lamp extinguished. SUPV lamp extinguished. EQPT ST lamp extinguished. At MISC TEST CONTROL— P & E lamp extinguished.
38	At telephone set on TTP— Operate green release key.	
39	Disconnect cord connecting trunk side appearance of the tip and ring of the incoming trunk circuit and the SP jack.	
40	Replace protector block or restore the tip and ring lead connector opened in preparation.	
41	Instruct the distant office to return the trunk to service.	

B. Transmission Loss Measurements

7	At front of the writing shelf— Connect TRANS MEAS—DBM-0 jack to SP jack. Use appropriate cord.	
8	At ACCESS TRUNK 1 CONTROL— Depress XMSN key.	At ACCESS TRUNK 1 CONTROL— XMSN lamp lighted.
9b	If TTP is equipped with TMS— At TRANSMISSION MEASURING CONTROL— Set TEST SET switch to TMS position. Set MEASURE switch to MEAS 1 position. Set SEND switch to OFF position.	
10c	If TTP is not equipped with TMS— At front of writing shelf— Connect external TMS to TRANS MEAS—TM1 jack. Use appropriate cord.	
11	At TMS— Set ADD DBM switch to 0 position.	

STEP	ACTION	VERIFICATION
12	At PERIPHERAL DECODER POINTS— Operate 0 key.	At PERIPHERAL DECODER POINTS— 0 lamp lighted.
13	Depress AT 1 key.	At TMS— Meter indicates between 0 and −0.5 dB. Note level for reference use. At circuit under test— Relay A operated.
14	At PERIPHERAL DECODER POINTS— Release 0 key. Operate 1 key.	At PERIPHERAL DECODER POINTS— 0 lamp extinguished. 1 lamp lighted.
15	Depress AT 1 key.	At TMS— Meter indicates between 0 and 0.5 dB less than reference level in Step 13. At circuit under test— Relay B operated. Relay A released.
16	At PERIPHERAL DECODER POINTS— Operate 0 key.	At PERIPHERAL DECODER POINTS— 0 lamp lighted.
17	Depress AT 1 key.	At TMS— Meter indicates between 0 and 0.5 dB less than reference level in Step 13. At circuit under test— Relay A operated. Relay B remains operated.
18	At PERIPHERAL DECODER POINTS— Release 0 key. Operate 2 key.	At PERIPHERAL DECODER POINTS— 0 lamp extinguished. 2 lamp lighted.
19	Depress AT 1 key.	At TMS— Meter indicates between 0 and 0.2 dB less than reference level in Step 13. At circuit under test— Relay A released. Relay C operated. Relay B remains operated.
20	At PERIPHERAL DECODER POINTS— Operate 0 key.	At PERIPHERAL DECODER POINTS— 0 lamp lighted.
21	Depress AT 1 key.	At TMS— Meter indicates between 0 and 0.2 dB less than reference level in Step 13. At circuit under test— Relay A operated. Relays B and C remain operated.

STEP	ACTION	VERIFICATION
22	At PERIPHERAL DECODER POINTS— Release 0, 1, and 2 keys.	At PERIPHERAL DECODER POINTS— 0, 1, and 2 lamps extinguished.
23	Depress AT 1 key.	At circuit under test— Relays A, B, and C released.
24	At ACCESS TRUNK 1 CONTROL— Depress RLS key.	At ACCESS TRUNK 1 CONTROL— EQPT ST lamp extinguished. XMSN lamp extinguished. SUPV lamp extinguished. At MISC TEST CONTROL— P & E lamp extinguished.
25	At telephone set on TTP— Operate green release key.	
26	At front of writing shelf— Disconnect cord from SP jack and TRANS MEAS-DBM-jack.	
27c	If TTP is not equipped with TMS— At front of writing shelf— Disconnect cord from external TMS and TM1 jack.	
28	Disconnect cord connecting trunk side appearance of the tip and ring of the incoming trunk circuit and the SP jack.	
29	Replace protector block or restore the tip and ring lead connection opened in preparation.	
30	Instruct the distant office to return the trunk to service.	