

STEP-BY-STEP OUTGOING TRUNKS

Replaces: Section 112
 Dated: 05-18-79

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- | <p>1. <u>GENERAL INFORMATION</u></p> <p>1.1 This section described the supplementary and operation tests to be performed on the following ANI Outgoing Trunks associated with No. 1, 350A and 355A Step-By-Step systems.</p> <p>SD-32244-01 E and M Lead Pulsing
 SD-32245-01 Loop Pulsing
 SD-32342-01 SP Toll or Oper Assist Noncoin
 SD-32344-01 SP Toll or Oper Assist Coin
 SD-32367-01 SP Toll or STA. - STA.
 SD-32542-01 Loop & E&M Pulsing
 SD-32543-01 E&M Pulsing</p> <p>1.2 This section also describes the tests to be made on the Miscellaneous Circuit per SD-32248-01 associated with the ANI trunk frame.</p> <p>1.3 Operate the tests of the trunks are to be performed using the Automatic Trunk Test Circuit per SD-32315-01. Verify test circuit option where trunks are provided for 110V and -48V party test.</p> <p>1.4 If the test circuit has not been modified for Multi-Wink feature apply the tests of Paragraph #12.</p> <p>2. <u>TEST EQUIPMENT</u></p> <table border="0"> <thead> <tr> <th style="text-align: left;">Amt</th> <th style="text-align: left;">Code</th> <th style="text-align: left;">Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>R-3314</td> <td>Stop Watch</td> </tr> <tr> <td>1</td> <td>R-9572</td> <td>Test Receiver</td> </tr> <tr> <td>1</td> <td>ITE-4442A</td> <td>Volt-Ohmmeter</td> </tr> <tr> <td>*1</td> <td>J-34731A
(SD-35038-01)</td> <td>ANI-D Trunk Test Circuit</td> </tr> <tr> <td>1</td> <td>ITE-4040 or equivalent</td> <td>D.C. Adjusting Set</td> </tr> </tbody> </table> | Amt | Code | Description | 1 | R-3314 | Stop Watch | 1 | R-9572 | Test Receiver | 1 | ITE-4442A | Volt-Ohmmeter | *1 | J-34731A
(SD-35038-01) | ANI-D Trunk Test Circuit | 1 | ITE-4040 or equivalent | D.C. Adjusting Set | <p>3. <u>RECORDS AND REQUIREMENTS</u></p> <p>3.1 <u>Records</u></p> <p>3.11 Forms SD-4-1313 and SD-4-1315 are required for recording the results of these tests. For further information on preparing records, refer to Handbook 50, Section 6b.</p> <p>3.2 <u>Requirements</u></p> <p>3.21 Tests of this section agree with performance requirements contained in BSP's 815-015-180, 814-200-180 and 816-200-180.</p> <p>4. <u>FREQUENCY VERIFICATION</u></p> <p>NOTE: Tests of the oscillator circuits per Section 113 shall be completed prior to tests of this paragraph.</p> <p>4.1 Connect one end of a test receiver to high resistance ground.</p> <p>4.2 Block operated the OSC relay of the oscillator circuits that serve the frame.</p> <p>4.3 Touch the test probe of the test receiver to terminal designated in Table B Item 1.</p> <p>4.4 Verify that high tone (5800 cycles) is present on this terminal.</p> <p>4.5 Repeat this test on each trunk of the frame.</p> |
|---|---------------------------|--------------------------|-------------|---|--------|------------|---|--------|---------------|---|-----------|---------------|----|---------------------------|--------------------------|---|------------------------|--------------------|--|
| Amt | Code | Description | | | | | | | | | | | | | | | | | |
| 1 | R-3314 | Stop Watch | | | | | | | | | | | | | | | | | |
| 1 | R-9572 | Test Receiver | | | | | | | | | | | | | | | | | |
| 1 | ITE-4442A | Volt-Ohmmeter | | | | | | | | | | | | | | | | | |
| *1 | J-34731A
(SD-35038-01) | ANI-D Trunk Test Circuit | | | | | | | | | | | | | | | | | |
| 1 | ITE-4040 or equivalent | D.C. Adjusting Set | | | | | | | | | | | | | | | | | |

*Required for testing paragraph #12.

NOTICE - NOT FOR USE OR DISCLOSURE OUTSIDE THE
 BELL SYSTEM EXCEPT UNDER WRITTEN AGREEMENT

- 4.6 Remove block from OSC relay in the oscillator.
5. MISCELLANEOUS CIRCUIT TESTS
(SD-32248-01)
- 5.1 Test Battery Jack and Supply
- 5.11 Check the 48V test battery terminals and tip of the A jack for presence of 48 volts.
- 5.12 Check the G test terminals for direct ground.
- 5.13 Check the HRG test terminals for high resistance ground (12000 ohms).
- 5.14 Check for direct ground on the 48V jack sleeve.
- 5.2 Spare B Jacks
- 5.21 Make a continuity test of the B jack (T,R and S) to all associated outgoing trunk frames.
- 5.3 Remote Control RC Jack
- 5.31 Check for ground on the sleeve of the RC jack. Make a continuity test of the ring of the RC jack to all associated RC jacks on the other trunk frames and also to be Outputser-Identifier-Trunk Test Frame.
- 5.4 Frame Line Jacks
- 5.41 Make a continuity and cross test of the tip and ring leads of the SWMN jack between frames and also to the SWMN talking line circuit.
- 5.5 Outputser Seizure Failure
- 5.51 At the trunk under test, momentarily place ground through a test receiver on terminal designated in Table B Item 2.
- 5.52 Observe that when testing trunks per SD-32245-01 relay OSF of the miscellaneous circuit operates momentarily, and that either the associated traffic register or the miscellaneous alarm circuit register scores once.
- 5.53 When testing trunks per SD-32244-01, observe that the proper register at the miscellaneous alarm circuit register circuit scores once.
6. TRUNK MAKE BUSY
- 6.1 Verify that terminal designated in Table B Item 3 is free of ground.
- 6.2 Insert a make busy plug into the T jack of the trunk.
- 6.3 Verify that ground is present on terminal designated in Table B Item 3. Block relay C normal.
- 6.4 Remove the make busy plug and manually operate relay B.
- 6.5 Again observe that ground is present on terminal designated in Table B Item 3.
- 6.6 Release relay B. Terminal designated in Table B Item 3 should be free of ground.
- 6.7 Remove fuse associated with the trunk under test. Verify that the MB relay releases, and that ground is present on terminal designated in Table B Item 3.
- 6.8 Replace fuse, and verify that the MB relay operates and that ground is removed from terminal designated in Table B Item 3. Remove block from relay C.
- 6.9 Repeat test on each trunk.
7. TRUNK LOCK-UP LEAD (If Provided)
- 7.1 At OP block relay 2 TR operated and relay TTST nonoperated. At the Trouble Ticketer Miscellaneous Circuit, operate key TKL. Observe that TKL lamp lights. At the trunk circuit under test, observe that TR relay locks operated. Release key TKL at the Trouble Ticketer Miscellaneous Circuit and observe that relay TR in the Trunk is released and lamp TKL is extinguished.
- 7.2 If locking battery is not present for relay TR, check that relays LU0, LU1 and LU2 (if provided) are operated in the Tbl. Ticketer Misc. Ckt. terminal strip. Lead "LU" is connected to terminals designated in Table B Item 4, at each trunk unit.
- 7.3 Since the LU-lead is common to all trunks on the same frame, the test may be performed with one trunk at a time, as described above, or a number of trunks may be checked at one time by manually operating the TR relays of all the trunks on the frame, observing that they all lock operated. When the TKL key is released check that all TR relays release.

8. CIRCUIT TIMING8.1 2 to 4.7 Seconds

8.11 Block operated relay B1 of the trunk under test. Insulate contact 7 relay SP. Block normal relay PTC.

8.12 Manually operate relay E1 (SD-32244) or P1 (SD-32245). Using the stop watch, check that relay TM operates within a period of 2 to 4.7 seconds.

8.13 Release relays L1 or P1 and B1.

8.14 Verify timing requirements per GRT (SD-32367-01) sheet F1.

8.2 10 to 23-4 Seconds

8.21 Manually operate relay GRT.

8.22 Using the stop watch, observe that the TM relay operates within the period of from 10 to 23.4 seconds.

8.23 Release relay GRT when relay TM operates and remove insulation from the number 7 contact of relay SP.

9. LAST TRUNK BUSY REGISTRATION

9.1 Verify that ground is removed from terminal 57 of the B terminal strip of the last trunk (W option SD-32244) (S option SD-32245) when either relay E or E1 is operated in trunk SD-32244 or either relay B or CS is operated in trunk SD-32245.

9.2 Verify that with the operation and release of the relays designated in Paragraph 9.1, the associated register scores at the miscellaneous alarm circuit.

10. TIMED DISCONNECT ON PARTIAL DIAL CALLS SD-32244-01 AND SD-32245-01

10.1 Connect the combination talking set to the test jack of the first selector which has access to the trunks being tested for timed disconnect on partial dial calls.

NOTE: Make sure the strap between terminals 3 and 4 on the 240 plug are removed.

10.2 Using the combination talking set dial to level 1 of the selector. Verify the selector stops at the first idle trunk.

10.3 Between 3 to 8 minutes or the specified time, depending on the type of office, after seizing a trunk the selector should release (return to normal) and dial tone should be heard.

10.4 Repeat Paragraphs 10.2 and 10.3 for all remaining trunks to be tested.

NOTE: It may be necessary to operate the vertical off normal (VON) to step the switch to the next idle trunk if the selector stops on a trunk already tested.

11. OPERATION TESTS11.1 Test frame Operation

11.11 When testing trunk circuits per SD-32342-01 and SD-32344-01 connect the trunk tip lead to the A lead and the trunk ring lead to the B lead if trunk has not been crossconnected to the four wire terminating set.

11.12 Operation tests of the SXS Outgoing Trunks are made using the Automatic Trunk Test Circuit (SD-32315-01).

11.13 The very narrow current differential between the operate and nonoperate current requirement of the A relay in the trunks under test requires that the voltage at the Automatic Trunk Test Frame be maintained at a magnitude of no less than -48.5 volts, as shown in SD-32315-01-D1. If this voltage cannot be maintained irregular failures may be encountered during test. Before performing trunk tests, measure the DC supply at the ATT Frame using the ITE-4442A, Volt-Ohmmeter. If the voltage can be maintained only at low load conditions, it may be necessary to arrange a time schedule with the operating company for performing these tests.

11.14 To select the desired trunk to be tested, operate key MS of the test circuit, and then operate and release keys S-PCS, H-PCS and XC-PCS until the position of the desired trunk is reached. Operate key REP.

11.15 Operate key TT and ST on the Outpulsor-Identifier Test Circuit located on the same frame.

11.16 The Automatic trunk test circuit will test all functions of the trunk, and when test has been completed, will repeat test on the trunk until the ST key is returned to the normal position.

11.2 Test Frame Tests

11.21 Station-To-Station and Person-To-Person Noncoin Trunks and Noncoin Common Control Trunks

11.211 If ring party flat rate tests are being performed operate keys designed on line 1 of Table A.

11.212 If tip party flat rate tests are being performed operate keys designated on line 2 of Table A.

11.213 If 2-party message rate tests are being performed operate keys designated on line 3 of Table A.

11.214 If tip party flat rate ground removal failure tests are being performed operate keys designated on line 4 of Table A.

11.215 If 2-party message rate ground removal failure tests are being performed operate keys designated on line 5 of Table A.

11.216 Operate ST key on the test circuit. At completion of test of each trunk progress lamps extinguished, test advances to next trunk to be tested. At completion of cycle EC lamp lights.

11.217 Operate RN key to return the test circuit to normal.

11.218 Perform each test above at least twice on each trunk.

11.219 If trouble is encountered during test, perform test at least twice after trouble is cleared.

11.22 Special Toll and Operator Assistance Coin Trunk

11.221 Operate CD-RD key for coin collect or coin return test on disconnect.

11.221A If class of service 7, 8, 14 or 15 type coin trunks are arranged not to return the initial coin deposit, operate key NIR.

11.222 Operate CTAR key to test coin and ring back functions with the customer on hook.

11.223 Operate keys designated on line 1 of Table A.

11.224 Operate St key on the test circuit. At completion of test of each trunk progress lamps extinguished, test advances to next trunk to be tested. At completion of cycle EC lamp lights.

11.225 Operate RN key to return the test circuit to normal.

12. TEST OF THE MULTI-WINK FEATURE

12.1 Due to the critical pulsing requirements needed for the new Multi-Wink Feature on the trunk, the (S) relay should, at this time, be adjusted to meet the requirements shown on the Circuit Requirement Table.

12.11 If the trunks are not connected to the ANI equipment, connect a temporary lead from a test ANI sleeve to 6 fixed of the "ID" relay while testing each trunk to block the ANI Fail Alarm from functioning.

12.2 Test Using the J-34731A (SD-35038-01) Test Set

12.21 Set-up.

12.22 Plug one end of the 3P6F Battery Cord into the test set 48V jack. Plug the other end into the 48V Office Test Battery Supply Jack.

12.23 Operate the "MW" key. The "MW" (yellow) lamp lights.

12.24 If the trunk is "E & M" signaling, operate the "E & M" key. If the trunk is Loop Signaling, leave the key normal. Verify that the E & M or Loop lamp is on.

12.25 Plug one end of the P3E test cord into the test set "TOC" jack. The "CN" (yellow) lamp lights. Plug the other end into the trunk "T" jack (input).

12.26 If the trunk is loop signaling, plug one end of the P3E test cord into the test set "TT" jack. Verify that the "SL" lamp is not on (indicating a busy circuit), and plug the other end into the trunk "TT" jack (output).

12.27 If the trunk is "E & M" signaling, plug one end of the P3E test cord into the test set "TT" jack. Verify that the "SL" lamp is not on (indicating a busy circuit) and plug the other end into the trunk "TT" jack (output).

12.3 Test Procedure

(a) Operate the "AOP" key and verify that the AOP (yellow) lamp lights, the trunk is seized, and the "SL" lamp lights.

- (b) Operate the "CS" key. The CD (yellow) lamp lights, the trunk cuts through and the OA lamp lights, extinguishes and relights the "CR" lamp flashes, (indicates initial coin return).
- (c) Operate the "CCT" key. The "CCT" (yellow) lamp lights, the "CC" relay operates and releases, and the "CC" lamp flashes on and off. Release the "CCT" key. The CCT lamp is extinguished.
- (d) Operate the "CRT" key. The "CRT" (yellow) lamp lights, the "CR" relay operates and releases, and the "CR" lamp flashes on and off. Release the "CRT" key. The "CRT" lamp is extinguished.
- (e) Operate the "RBT" key. The "RBT" lamp lights, the "RB" relay operates and the "RB" lamp lights. In approximately two seconds the "RB" relay releases and the "RB" lamp is extinguished. Release the "RBT" key. The "RBT" lamp is extinguished.

12.4 Operate Answer and Operate Release Feature

- 12.41 Verify if the "OR" and "OA" relays are used in the circuit and if so perform the following tests:

- (a) Operate the "AOP" key. Verify that the "SL" lamp lights.
- (b) Operate the "CS" key. Verify that the trunk cuts through, the "CR" lamp flashes on and off, and the "OA" lamp lights.
- (c) Operate the "ORT" key. Verify that the "OA" lamp is extinguished. Release the "ORT" key.
- (d) Operate the "OAT" key. Manually release relay RV. Verify that the "OA" lamp lights.
- (e) Release the "OAT" key.
- (f) Operate the "ORT" key. Verify that the "OA" lamp is extinguished.
- (g) Release the "ORT", "CS", and "AOP" keys. Verify that the trunk releases.
- (h) Remove the temporary test ANI sleeve from 6 fixed of the "ID" relay.
- (i) This completes the tests for the Multi-Wink Feature of the trunks.

Arrowed Lines indicate new or changed information.

ATTACHMENT

Tables A & B on Page 6.

Manager, Product Engineering
Control Center

Reason for Reissue

To change Paragraphs 11.13, 2,
to paragraphs 1.4 and 11.221A
and update Table B.

TABLE A

TEST	OPERATE KEYS									
	TT	OFFOO	THOO	HOO	TOO	UOO	MR	TP	GRFMR	GRFFR
1. RING PARTY - FLAT RATE	X	X	X	X	X	X	-	-	-	-
2. TIP PARTY - FLAT RATE	X	X	X	X	X	X	-	X	-	-
3. TWO PARTY - MESSAGE RATE	X	X	X	X	X	X	X	-	-	-
4. TIP PARTY - FLAT RATE GROUND REMOVAL FAILURE	X	X	X	X	X	X	-	X	-	X
5. TWO PARTY - MESSAGE RATE GROUND REMOVAL FAILURE	X	X	X	X	X	X	X	-	X	-

NOTE: X means operate
- means nonoperate

TABLE B

ITEM	CIRCUIT	TERMINAL STRIP	TERMINAL
1	SD-32244-01	B	56
	SD-32245-01	B	56
	SD-32342-01	C	34
	SD-32344-01	C	54
	SD-32367-01	E	11
	SD-32542-01	C	38
	SD-32543-01	A	33
	SD-32551-01	B	54
SD-35029-01	A	52	
2	SD-32244-01	B	48
	SD-32245-01	B	48
	SD-32342-01	B	53
	SD-32344-01	B	52
	SD-32367-01	E	38
	SD-32542-01	B	14
	SD-32543-01	B	54
	SD-32551-01	A	16
SD-35029-01	A	45	
3	SD-32244-01	B	36
	SD-32245-01	B	36
	SD-32342-01	B	37 & 38
	SD-32344-01	B	37 & 38
	SD-32367-01	F	47
	SD-32542-01	A	35, 36, 37 & 38
	SD-32543-01	A	38 & 47
	SD-32551-01	A	38
SD-35029-01	-	-	
4	SD-32244-01	B	38
	SD-32245-01	B	38
	SD-32342-01	C	54
	SD-32367-01	F	18
	SD-32542-01	C	33
	SD-32543-01	B	13
	SD-32551-01	-	-
	SD-35029-01	-	-