

**INDIVIDUAL LINE MESSAGE-RATE TRUNKS—LINE FINDER TYPE  
OPERATION TESTS  
USING INDIVIDUAL LINE MESSAGE-RATE TYPE TEST SET  
SD-31246-01 (J34703A) OR SD-31524-01 (J34718A)  
STEP-BY-STEP SYSTEMS**

**1. GENERAL**

**PAGE**

**1.01** This section describes methods of testing the operating features of the individual line message-rate trunks associated with line finders, using the individual line message-rate type test set SD-31246-01, or SD-31524-01.

the polarized relay for register operation. . . . . **6**

**C. Immediate Charge-Type Trunks—Using Connector Test Line (99 Terminal):** This test checks the operating features of the trunk through line finders to the connector test line for continuity and polarity, calling party hold, and release test of the polarized relay. . . . . **8**

**1.02** This section is reissued for the following reasons:

- (a) To revise Test D for overtime registration tests on message rate trunk circuits SD-31493-01, SD-31493-02, and SD-32082-01 or equivalent
- (b) To eliminate reference to older type test equipment
- (c) To make minor revisions in all tests for clarification.

**D. Delayed Charge-Type Trunks—Arranged for Overtime Registration:** This test checks overtime registration only. Operating features are checked in Tests A, B, or C. . . . . **10**

This reissue does not affect the Equipment Test List.

**1.03** The tests covered are:

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**A. Delayed Charge-Type Trunks:** This test checks the operating features of the trunk through line finders to the connector multiple test line for continuity and register operation. . . . . **5**

**1.04** The tests are intended for use as follows:

(a) Test A applies to delayed charge-type trunks only and is based upon the use of connector multiple test line SD-31636-01 or SD-31642-01.

(b) Test B applies to immediate charge-type trunks having access to the delayed charge-type connector multiple test line SD-31636-01 or SD-31642-01, located either in the same office as the trunks or in a connecting office. The test covers those trunks in which the armature of the polarized relay is either connected directly to ground or is connected to the sleeve circuit. A trunk wired in accordance with the former arrangement will hold the line finder operated in case the polarized relay fails to release.

**B. Immediate Charge-Type Trunks—Using Connector Multiple Test Line of Delayed Charge Type:** This test checks the operating features of the trunk through line finders to the connector multiple test line for continuity and polarity and a soak and release test of

(c) Test C applies to immediate charge-type trunks which do not have access to a connector multiple test line arranged to test delayed charge-type trunks. It is based upon the use

of the connector test line (99 terminal) in a nonlevel hunting connector group arranged for calling party control. If the office is arranged for automatic disconnect, this feature should be disabled in the connector group used for test while the test is being made. Test C, as in the case of Test B, applies not only to trunks in which the armature of the polarized relay is connected directly to ground but also to those in which the armature is connected to the sleeve circuit. In the 350A community dial offices where the older type connector test line SD-31261-01 is employed, Test C does not apply.

(d) Test D applies to delayed charge-type trunks, arranged for overtime registration only. Automatic disconnect feature, if provided, should be disabled in connector group used for test while the test is being made.

**1.05** When testing trunks that use the sleeve lead for operating the message register, using test sets provided with an MR lamp, the lighting of the MR lamp is controlled by the operation of the message register in the test set. Under Part 4, Method, both the MR lamp and the register indications are covered. However, when using a test set provided with an MR lamp, it will be sufficient to use the lamp indication only.

**1.06** When observing the test set register as called for under Part 4, Method, the action of the tens wheel can be disregarded. Due to the fact that the register is read from above instead of from the front, the observed readings as the register advances are 00, 01, 02, 03, 04, 05, 06, 07, 18, 19, 10, 11, 12, 13, 14, 15, 16, 17, 28, 29, 20, 21, etc.

**1.07** All of these tests are made from the test line jacks provided for each group of line finders associated with message-rate trunks. The test line jacks are located on the line finder frame.

**1.08** If the newer type line finders with the test jack on the switch are added to an existing shelf containing older line finders, where the test jacks are mounted in a jack panel, it is assumed that both old and new line finders will be tested from the jack panel.

**1.09** Message-rate trunk circuits, such as SD-31493-01, which introduce a delay of 2 to 5 seconds before operating the register are of

the delayed charge type. The immediate charge type trunks have a much shorter delay period introduced by two slow release relays, the delay being somewhat less than one second.

**1.10 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 a 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 that letter should be omitted.

**1.11** The test equipment specified in this section is designed to apply proper marginal tests (simulated critical circuit conditions) when the circuit under test and the test equipment have an applied voltage of 48.5 to 50. In those offices where power plants are normally operated at more than 50 volts, the battery voltage should be reduced and maintained within the required limits while the tests are being made.

## 2. APPARATUS

### All Tests

**2.01** Line finder test set J34718A (SD-31524-01) or J34703A (SD-31246-01).

**Note:** Test set SD-31524-01 is the only one arranged for testing trunks that use a fourth lead for operating the message register.

**2.02** Head telephone set (associated with test set).

**2.03** Two P3E cords, 10 feet long, equipped with 310 plugs (3P6F cords).

**Note:** Three required for testing trunks associated with 50- or 100-point 4-wire line finders.

**2.04** P3AA cord, 10 feet long, equipped with a 310 plug and a 240A plug (3P30A cord) modified by removing the red lead from terminal 3 and transferring the black lead from terminal 1 to terminal 3 (used where test jack is located on line finders).

**2.05** P6B cord, 11 feet long, equipped with one 310 red shell plug, one 310 black shell plug, and two 240B plugs (6P6A cord) (for making connections to test lines of 200-point line finders associated with trunks that use a fourth lead for operating message registers).

**2.06** P3K cord, 12 feet long, equipped with 310 plugs (3P15B cord).

**Tests B and C**

**2.07** 477A (or 375A) (make-busy) tool (for use where test jacks are not located on finders).

**2.08** Test pick (or similar tool) (for use where test jacks are located on finders).

**Test C and D**

**2.09** For No. 1 step-by-step offices, one special patching cord (to be made up locally) with two 310 plugs, with ring and sleeve elements of each plug short-circuited, and a 63R resistor connected as shown in Fig. 1.

**2.10** For 350A community dial offices, one W2C cord, 10 feet long, equipped with a 310 plug and two 59 cord tips (2W6A cord).

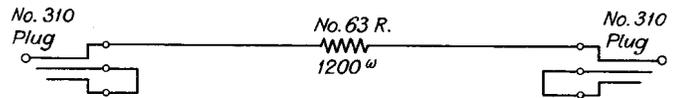


Fig. 1

Fig. 1

**3. PREPARATION**

STEP	ACTION	VERIFICATION
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**All Tests**

- 1 Restore test set keys to normal.
- 2 Using P3K cord, connect BAT G (or BAT) test jack to 48V frame battery supply jack.

**Note:** To avoid possible grounding of battery supply lead, connect cord to test set first and when disconnecting, remove cord from test set last.

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<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
3	Connect head telephone set to test set TEL jacks.  <i>Note:</i> Leave TRS key in normal position except when necessary to talk.	
4	Operate MR key.	

**Test A**

***For Trunks Associated With 50- or 100-Point 4-Wire Finders***

- 5 Using P3E cords, connect test set A and M jacks to test line A and B jacks, respectively.

***For Trunks Associated With 100- or 200-Point 3-Wire Finders***

- 6 Using P3E cord, connect test set A jack to test line A jack.

***For Trunks Associated With 200-Point 4-Wire Finders***

- 7 Connect red and black plugs of P6B cord to test set A and MA jacks, respectively; connect 240B plugs connected to red and black plugs to test line A and B jacks, respectively.

**Tests B, C, and D**

- 8 Using P3E cord, connect test set A jack to test line A jack.
- 9 Turn L-S key, where provided, to L position for 1400- or 1500-ohm range trunks or to S position for trunks with less range.

**Tests C and D**

- 10a If testing in No. 1 step-by-step office—  
Using special patching cord shown in Fig. 1, connect connector test line 3 and 4 jacks together in nonlevel hunting group at connector frame or at coin trunk relay jack by inserting one plug into 4 jack and the other plug into 3 jack.
- 11b If testing in 350A community dial offices—  
Insert 310 plug of W2C cord into connector

STEP	ACTION	VERIFICATION
	test line TL jack on connector frame; connect 59 cord tips to ground.	
<b>4. METHOD</b>		
STEP	ACTION	VERIFICATION
<b>A. Delayed Charge Type of Trunks</b>		
8c	If test jack is not located on finder— Using P3E cord, connect test set LF jack to line finder test jack.	
9d	If test jack is located on finder— Using P3AA cord, connect test set LF jack to line finder test jack.	
10	Note register reading in test set.	
11	With line finder normal— Operate LP key.	Line finder operates smoothly and stops on test line terminals. Dial tone heard.  <i>Note:</i> If line finder is busy, delay test or proceed to another switch.
12e	If testing trunks that use sleeve lead for operating message registers— Dial connector multiple test line in reverse battery connector group.	Test line seized. Ringing induction heard. Ringing tripped. R lamp lighted during test line loop closures. MR lamp lighted. Register units wheel advanced one step during relatively long (about 5 seconds) test line loop closure.  <i>Note:</i> If tripping does not occur during first or second interval, operate TRS key; remain on connection for a short time; and if a subscriber or operator answers, advise that a test is being made.
13f	If testing trunks that use fourth lead for operating message register and do not apply guarding ground to fourth lead— Dial connector multiple test line in reverse battery connector group.	Test line seized. Ringing induction heard. Ringing tripped. R lamp lighted during test line loop closures. MR lamp lighted during relatively long (about 5 seconds) test line loop closure. Register does not operate. (See note, Step 12e.)
14g	If testing trunks that use fourth lead for operating message register and apply guarding	Test line seized. Ringing induction heard.

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<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
	ground to fourth lead— Dial connector multiple test line in reverse battery connector group.	Ringing tripped. R lamp lighted during test line loop closures. MR lamp lighted when test line is seized, extinguished at first closure of test line loop, and lighted again at end of relatively long (about 5 seconds) line loop closure. Register does not operate. (See note, Step 12e.)
15	Restore LP key.	R and MR lamps extinguished. Line finder released.
16	Remove P3E or P3AA cord from line finder test jack.	
17h	If no other tests are to be made— Restore MR key; remove remaining cords.	
<b>B. Immediate Charge Type Trunks—Using Connector Multiple Test Line of Delayed Charge Type</b>		
10c	If test jack is not located on finder— Using P3E cord, connect test set LF jack to line finder test jack.	
11d	If test jack is located on finder— Using P3AA cord, connect test set LF jack to line finder test jack.	
12	Note register reading in test set.	
13	With line finder normal— Operate LP key.	Line finder operates smoothly and stops on test line terminals. Dial tone heard.
<i>Note:</i> If line finder is busy, delay test or proceed to another switch.		
14c	If test jack is not located on finder— Dial all but last digit of connector multiple test line in reverse battery connector group.	
15c	When dial has returned to normal— Insert 477A tool into line finder monitor jack for about 1 second (to soak polarized relay in trunk circuit).	
16c	Immediately dial last digit.	Test line seized. Ringing induction heard. Ringing tripped. R lamp lighted during test line loop closures.

STEP	ACTION	VERIFICATION
		MR lamp lighted. Register units wheel advanced one step.
		<i>Note:</i> If tripping does not occur during the first or second ringing interval, operate the TRS key; remain on the connection for a short time; and if a subscriber or operator answers, advise that a test is being made.
17d	If test jack is located on finder— Dial all but last digit of connector multiple test line in reverse battery connector group.	
18d	When dial has returned to normal— Using test pick, short tip and ring of 240A plug for about 1 second (to apply soak to polarized relay in trunk circuit).	
19	Immediately dial last digit.	Test line seized. Ringing induction heard. Ringing tripped. R lamp lighted during test line loop closures. MR lamp lighted. Register units wheel advanced one step. (See note, Step 16c.)
20	Shortly after the beginning of relatively long (approximately 5 seconds) test line loop closure— Restore LP key.	R and MR lamps extinguished. Line finder released.
21e	If testing trunks in which the armature of the polarized relay is connected to sleeve circuit— Operate LP key.	Line finder operates smoothly and stops on test line terminals. Dial tone heard. Register does not advance. MR lamp not lighted.
22e	Dial connector multiple test line.	Test line seized. Ringing induction heard. Ringing tripped. MR, R lamps lighted. Register units wheel advanced one step.
23	Restore LP key.	R and MR lamps extinguished. Line finder released.
24	Remove P3E or P3AA cord from line finder test jack.	
25f	If no further tests are to be made— Restore MR key; remove remaining cords.	

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<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
<b>C. Immediate Change Type Trunks—Using Connector Test Line (99 Terminal)</b>		
<b>Test Jack Not Located on Line Finder</b>		
12	Using P3E cord, patch test set LF jack to line finder test jack.	
13	Note register reading in test set.	
14	With line finder normal— Operate LP key.	Line finder operates smoothly and stops on test line terminals. Dial tone heard.  <i>Note:</i> If line finder is busy, delay test or proceed to another switch.
15	Dial all but last digit of connector test line (99 terminal).	
16	When dial has returned to normal— Insert 477A tool into line finder monitor jack for approximately 1 second (to apply soak to polarized relay in trunk circuit).	
17	Immediately dial last digit.	Test line seized. Ringing tripped. MR, R lamps lighted. Register units wheel advanced one step.  <i>Note:</i> If tripping does not occur during first or second ringing interval, operate TRS key; remain on connection for a short time; and if a subscriber or operator answers, advise that a test is being made.
18	Immediately after register operates or MR lamp is lighted— Reinsert 477A tool into line finder monitor jack.	
19	Restore LP key.	R lamp extinguished.
20	About one second after restoring LP key— Remove 477A tool from monitor jack.	MR lamp extinguished. Line finder released.
21	Proceed to Step 31c.	
<b>Test Jack Located on Finder</b>		
22	Using P3AA cord, patch test set LF jack to line finder test jack.	

STEP	ACTION	VERIFICATION
23	Note register reading in test set.	
24	With line finder normal— Operate LP key.	Line finder operates smoothly and stops on test line terminal. Dial tone heard.
		<b>Note:</b> If line finder is busy, delay test or proceed to another switch.
25	Dial all but last digit of connector test line (99 terminal).	
26	When dial has returned to normal— Using test pick, short tip and ring of 240A plug for about 1 second (to apply soak to polarized relay in trunk circuit).	
27	Immediately dial last digit.	Test line seized. Ringing tripped. MR, R lamps lighted. Register units wheel advanced one step. (See note, Step 17.)
28	Immediately after register operates or MR lamp is lighted— Using test pick, short tip and ring of 240A plug.	
29	Restore LP key.	R lamp extinguished.
30	About 1 second after restoring LP key— Remove short from tip and ring.	MR lamp extinguished. Line finder released.
31c	If testing trunks in which armature of polarized relay is connected to sleeve circuit— Operate LP key.	Line finder operates smoothly and stops on test line terminals. Dial tone heard. Register does not advance. MR lamp not lighted.
32c	Dial connector test line.	Test line seized. Ringing tripped. MR, R lamps lighted. Register units wheel advances one step.
33c	Restore LP key.	MR and R lamps extinguished. Line finder released.
34	Remove P3E or P3AA cord from line finder test jack.	
35d	If no further tests are to be made— Restore MR key; remove remaining cords.	

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<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
36	If testing in No. 1 step-by-step office— First remove plug from jack 3 of connector test line; then remove plug from jack 4.	
37	If testing in 350A community dial office— Remove 310 plug from TL jack of connector test line; disconnect 59 cord tips from ground.	
<b>D. Delayed Charge Type of Trunks—Arranged for Overtime Registration</b>		
12c	◆If test jack is not located on line finder— Using P3E cord, patch LF jack to test jack of finder associated with trunk to be tested.	
13d	If test jack is located on line finder— Using P3AA cord, patch LF jack to test jack of finder associated with trunk to be tested.	
14	Note register reading in test set.	
15	With line finder normal— Operate LP key.	Line finder operates smoothly and stops on test line terminals. Dial tone heard.
16	Dial connector test line (99 terminal) which has been selected for test.  <i>Note:</i> If tripping does not occur during first or second ringing interval, operate TRS key, remain on the connection a short time, and if a subscriber or operator answers, advise that a test is being made.	Test line seized. Ringing tripped. R lamp lighted after ringing is tripped. After a 2 to 5.5 second delay— MR lamp lighted for approximately 1/2 second. Register units wheel advanced one step.
17	Remain on connection while timer times 5 minute interval.	At completion of 5-minute interval— MR lamp lighted for approximately 1/2 second. Register units wheel advanced one step.
18	Restore LP key.	R lamp extinguished. Line finder releases.
19	Remove P3E or P3AA cord from line finder test jack.	
20	If no further tests are to be made on other trunks— Restore all test set keys and remove remaining cords.◆	