

LOOP DIALING TOLL LEVEL HUNTING CONNECTORS  
OPERATION TESTS  
USING TEST SET SD-30387-01 (J34713A) OR ES-30007-01 (X61341)  
STEP-BY-STEP SYSTEMS

1. GENERAL

1.01 This section describes a method of testing the operating features of loop dialing toll level hunting connectors by means of the wagon-type toll train and coin box trunk test set SD-30387-01 or ES-30007-01. It also indicates the key operation required in order to apply the readjust values of resistance to the ring-trip relays.

1.02 This section is reissued to incorporate material from the addendum in its proper location. In this process marginal arrows have been omitted.

1.03 The tests and the features tested are:

(A) Busy Line and Level Hunting Test: This test checks the ability of the connector to hunt smoothly until the last terminal on the last level in a group has been reached, to return the proper busy signal, and to release.

(B) Idle Line Test: This test checks the ability of the connector to hunt smoothly and to stop on the test line terminal. It also checks the ringing, pretrip, trip, transmission, and release features.

1.04 Lettered Steps: The letters a, b, c, etc, are added to a step to indicate that the step covers an action which may or may not be required, depending upon 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 conditions are designated by the same letter. When a condition does not apply, the associated steps should be omitted.

1.05 The test line employed in making Test (B) is ordinarily connected to terminal 91. When the connectors are wired so as to hunt over a group of 100 trunks, terminal 11 is used as the test line number.

1.06 Wherever the procedure calls for dialing the test line number, and the test line is connected to terminal 91, dial the digit which will direct the connector to the ninth level, and an additional digit, if required by the particular circuit wiring, to start hunting. If the test line is connected to terminal 11, dial any one or two digits, as required by the particular circuit wiring, to start hunting.

1.07 Wherever the preparation or method calls for the operation of the STP, or the RLS key, or of the dial, it is understood that either the STP, or RLS key, or the dial, of the wagon-type test set, or the STP (No. 1) or RLS (No. 3) keys, or the dial, of the remote control test set is meant, depending upon whether or not the remote control test set is being used.

1.08 The testing methods require that the test circuit be advanced through the various positions in which the proper conditions for the tests are applied. This is accomplished by momentarily operating the STP key. The progress lamps designated BL or BUSY LINE, PTR, ST-R or ST-RING, WR or WAIT-RING, PT or PRE-TRIP, RING, TRIP, and T-CO or TONE-CO, indicate the particular test which is applied at the time the lamp is lighted.

1.09 From all positions except the BL (BUSY-LINE) through the PT (PRE-TRIP) positions, the test circuit can be returned to normal by operating and holding the RLS key until none of the progress lamps is lighted. If the test circuit is in any of the above positions, it will be necessary to advance the test circuit, by means of the STP key, to a position where the RLS key may be used.

1.10 The parentheses in Test (B), Steps 19 and 21, provide space for writing in the interval during which the pretrip and trip tests are to be made, as indicated in Table 1 or 2.

1.11 When testing connectors arranged for 1400-ohm or 1500-ohm maximum external subscriber loop, any ring-trip relay which fails on the pretrip or trip test (test set

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test resistance values) shall be readjusted mechanically and electrically to meet the requirements specified in Sections 040-803-701 and 040-236-701, and in the circuit requirement table. Repeat the tests. If the relay continues to fail, operate the test set keys as indicated for READJ in Table 2 to apply the test set re-adjust resistance values and again repeat the tests, changing the tension in No. 1 spring, as required.

1.12 When testing connectors arranged for 1000-ohm or 1115-ohm maximum external subscriber loop, which have a 60- to 75-volt silent interval tripping battery, and for which ac requirements are specified on the circuit requirement table, any ring-trip relay which fails on the pretrip or trip test (test set test resistance values) shall be readjusted to meet the requirements specified in Sections 040-803-701 and 040-236-701 and the readjust ringing current value provided by the test set. These values are obtained by operating the test set keys as indicated for READJ in Table 1 or 2.

1.13 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**

Tests (A) and (B)

2.01 Toll Train and Coin Box Trunk Test Set J34713A (SD-30387-01) or X-61341 (ES-30007-01).

- 2.02 No. 40B Test Set (Remote Control) (Optional).
- 2.03 Operator Telephone Set.
- 2.04 Two P3E Cords, 6 feet long, each equipped with two No. 310 Plugs (3P7A).
- 2.05 P4K Cord equipped with one No. 240B Plug and one No. 289B Plug (4P4A).
- 2.06 W2W Cord equipped with one No. 310 Plug, one No. 360B Tool and one No. 360C Tool (2W17A); one W2CF Cord equipped with one No. 310 Plug (replace RED shell with BLACK shell), one No. 360B Tool and one No. 360C Tool (2W17D); two W1C Cords, each 12 feet long; two No. 360C Tools; one No. 240A Plug; and three No. 141 Cord Tips. Assemble to form Special Cord as shown in Fig. 1.

Test (A)

2.07 No. 240A Plug.

Test (B)

- 2.08 Special Insulator 1/2 in. by 2-1/2 in. (the KS-7187 Bell Seal Bond No. 20 Relay Cleaning Paper may be used).
- 2.09 No. 893 Cord equipped with two No. 360A Tools (1W13B) and two No. 365 Tools; to be used when the test line is connected to terminal 11.

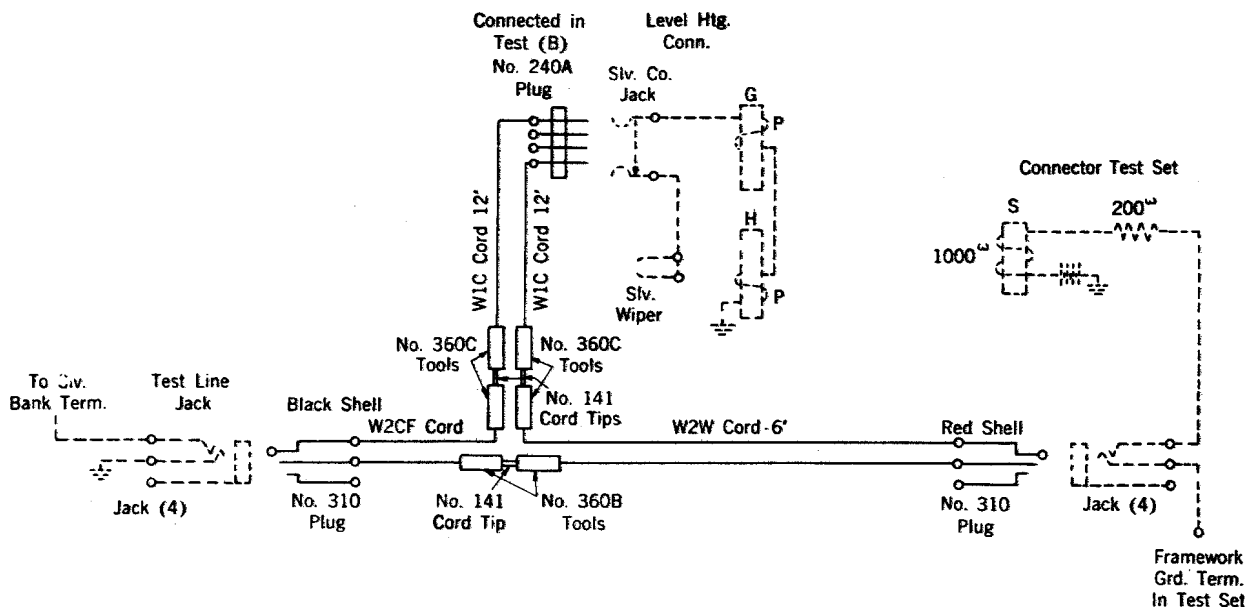


Fig. 1

3. PREPARATION

## TESTS (A) AND (B)

<u>STEP</u>	<u>ACTION</u>	<u>VERIFICATION</u>
1	Connect test set jacks 2 and 3 to correspondingly numbered test line jacks (level hunting) on the connector frame, using P3E cords.	
2	Insert black shelled No. 310 plug of special test cord (Fig. 1) into jack 4 of test line (level hunting) on connector frame, and insert red shelled No. 310 plug into jack 4 of test set.	
3a	If remote control set is used - Insert red, grey, and black plugs of remote control set into test set EXT jacks R, G, and B, respectively.	
4	Connect operator telephone set to test set jacks TEL.	
5	Insert No. 289B plug of PlK cord into TST jack of test set.	
6	Operate LHT key.	
7	Operate and hold RLS key long enough to extinguish any progress lamps that may be lighted or, if necessary, operate and release STP key required number of times.	All lamps extinguished.
8	Holding RLS key operated, insert No. 240B plug of PlK cord into test jack of normal connector under test.	GRD or GUARD lamp does not light.
9	Restore RLS key.	GRD or GUARD lamp lights.

## TEST (B)

- 10 Operate test set keys as indicated for TEST in Table 1 or 2 to provide proper pretrip and trip conditions in test set.

Note: For tests during silent interval, the silent interval tripping battery shall be within the voltage limits shown in the tables.

**TABLE 1**  
TEST SET NOT EQUIPPED TO TEST CONNECTORS  
ARRANGED FOR 1400-1500 OHM LOOP

KIND OF RING	MAX. EXT. SUB. LOOP (OHMS)	TRIP BATT. VOLTS	FOR		KEYS OPERATED			PRE TRIP	TRIP
			TEST	READJ.	SS	TST	ADJ.		
AC-DC	1000-1115	46-50	X		X	X		RINGING PERIOD	SILENT PERIOD
SUPER-IMPOSED	1000-1115	46-50	X			X		RINGING PERIOD	RINGING PERIOD
		60-75	X				X	RINGING PERIOD	RINGING PERIOD

**TABLE 2**  
TEST SET EQUIPPED TO TEST CONNECTORS ARRANGED FOR 1400-1500 OHM LOOP

KIND OF RING	MAX. EXT. SUB. LOOP (OHMS)	TRIP BATT. VOLTS	FOR		KEYS OPERATED					PRE TRIP	TRIP	
			TEST	READJ.	1000A	1000B	1400A	1400B	ADJ			
AC - DC and/or	1000-1115	48.5-50	X		X						SILENT PERIOD	SILENT PERIOD
		60-75	X			X				X	RINGING PERIOD	RINGING PERIOD
SUPER-IMPOSED	1400-1500	48.5-50	X				X			X	SILENT PERIOD	SILENT PERIOD
		66-75	X					X	X	X		

4. METHOD

<u>STEP</u>	<u>ACTION</u>	<u>VERIFICATION</u>
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(A) Busy Line and Level Hunting Test

- |    |   |   |
|----|---|---|
| 10 | Insert No. 240A plug into sleeve cutoff jack of connector under test.           |   |
| 11 | Operate and release STP key to advance test circuit to BL (BUSY-LINE) position. | BL or BUSY-LINE lamp lights.  |
| 12 | Dial one or two digits as required by particular circuit wiring.                | SUPV lamp lights.<br>Connector hunts smoothly and stops on tenth terminal of last level in group of trunks selected.<br>SUPV lamp flashes at busyback rate.<br>Busy tone heard in receiver. |

Note: Select a digit (the first digit if two digits are to be dialed) which will cause connector to hunt over at least two levels.

Note: In some offices not arranged for intertoll dialing, busy tone may not be heard.

<u>STEP</u>	<u>ACTION</u>	<u>VERIFICATION</u>
13	Operate RLS key momentarily.	SUPV lamp extinguished. BL or BUSY-LINE lamp extinguished. Connector releases. GRD or GUARD lamp extinguished momentarily.
14	Remove No. 240A plug from sleeve cutoff jack of connector.	
15b	Remove plug from connector test jack, unless other tests are to be made on this switch.	GRD or GUARD lamp extinguished.

(B) Idle Line TestLine Seizure and Ringing Test

11	Insert No. 240A plug (stay cord to the right) of special test cord (Fig. 1) into sleeve cutoff jack of connector.  <u>Note:</u> If sleeve cutoff jack wiring is reversed, reverse No. 240A plug.	
12	Insert special insulator between sleeve cutoff jack guard plate and front end of No. 240A plug flanges.	
13c	If connector test line number is 11 - Using No. 893 cord, connect ground to commutator terminal for level No. 1.	
14d	When using test set per SD-30387-01 - Operate and release STP key to advance test circuit to ST-R (start-ring) position.	ST-R lamp lights.
15d	Dial test line number.	SUPV lamp lights. Connector hunts smoothly and stops on test line terminal. BSY lamp lights. Audible ring not heard in receiver.
16d	Operate and release STP key.	WR (wait-ring) lamp lights. ST-R lamp extinguished. Audible ring heard in receiver. Test set bell rings.
17e	When using test set per ES-30007-01 - Operate and release STP key to advance test circuit to PTR position.	PTR lamp lights.
18e	Dial test line number.	SUPV lamp lights. Connector hunts smoothly and stops on test line terminal. BUSY lamp lights. Test set bell rings. Audible ring heard in receiver.

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<u>STEP</u>	<u>ACTION</u>	<u>VERIFICATION</u>
<u>Pretrip Test</u>		
19	At the start of ( ) interval, operate and release STP key. This test shall be completed within the same interval by performing Step 20.	PT or PRE-TRIP lamp lights. WR or PTR lamp extinguished.
20	Operate and release STP key.	RING lamp lights. PT or PRE-TRIP lamp extinguished. Test set bell rings. Audible ring continues to be heard in receiver.
<u>Tripping Test</u>		
21	At the start of ( ) interval, operate and release STP key.	TRIP lamp lights. RING lamp extinguished. SUPV lamp extinguished. Test set bell silenced. If this test was applied in the silent interval, check that the audible ringing signal is not heard again in the receiver or, if applied in the ringing interval, check that the audible ringing signal is immediately stopped upon the application of the test. The test set bell is disconnected when the trip test is applied and can not be considered as an indication that ringing has tripped. Proper transmission tone heard in receiver.
22	Operate and release STP key.	T-CO or TONE-CO lamp lights. TRIP lamp extinguished. Transmission tone not heard in receiver.
23	Move wiper cords slightly while listening in receiver.	No noise heard in receiver. BSY or BUSY lamp does not flash.
24c	If connector test line number is 11 - Remove ground from commutator terminal for level No. 1.	
25	Operate RLS key momentarily.	GRD or GUARD lamp extinguished momentarily. T-CO or TONE-CO lamp extinguished. Connector releases.
26	Remove No. 240A plug and special insulator from sleeve cutoff jack of connector.	
27b	Remove plug from connector test jack, unless other tests are to be made on this switch.	GRD or GUARD lamp extinguished.