LOOP DIALING TOLL LEVEL HUNTING CONNECTORS
OPERATION TESTS
USING CONNECTOR TEST SET SD-31637-01 OR SD-31637-02 (J34719A)
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 box-type connector test set SD-31637-01 or SD-31637-02. 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 - Leak: This test checks the level hunting features of a connector under a leak condition. It also checks the ability of the connector to return busy tone and to release.

(B) Idle Line Test - Loop: This test checks the trunk hunting features of a connector under a loop condition. 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 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. 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 single group of 100 trunks, terminal 11 is used as the test line number.

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

1.07 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 BSY-L, IDLE-L, DEL-R, PRE-TRIP, RING, T-TRIP, and T-CO indicate the particular test which is applied at the time the lamp is lighted.

1.08 From all positions, except the BSY-L and IDLE-L 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 the BSY-L or IDLE-L position, it is necessary to advance the test circuit beyond these positions by means of the STP key, where the RLS key may be used.

1.09 The parentheses in Test (B), Steps 18, 20, etc, provide spaces for writing in the interval during which the pretrip and trip tests are to be made, as indicated in Table 1 or 2.

1.10 When testing connectors arranged for 1400-ohm or 1500-ohm maximum external subscriber loop, any ring-trip relays which fail on the pretrip or trip test (test set 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 test, and, if the relay continues to fail, operate the test set keys as indicated for READJ in Table 2 to apply the test set readjust resistance values and change the tension in the No. 1 spring, as required.

1.11 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, any ring-trip relays which fail on the pretrip or trip test (test set test resistance values) shall be readjusted mechanically to meet the requirements specified in Sections 040-803-701 and 040-236-701, and the readjust ringing current values provided by the test set. These values are obtained by operating the test set keys as indicated for READJ in Table 1 or 2.

1.12 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 Connector Test Set J34719A (SD-31637-01 or SD-31637-02).

2.02 No. 40B (or No. 40A) Test Set (remote control) (optional).

2.03 No. 723A Receiver attached to an R2DB Cord equipped with No. 347A Plug (or equivalent).

2.04 Patching Cord - P4K Cord equipped with No. 240B Plug and No. 289A Plug (4P4A).

2.05 Patching Cord - P3E Cord, 6 feet long, equipped with two No. 310 Plugs (3P7A).

2.06 Testing Cords - W2W Cord equipped with No. 310 Plug, No. 360B Tool, and No. 360C Tool (2W17A); W2CF Cord equipped with No. 310 Plug (replace red shell with black shell), No. 360B Tool, and No. 360C Tool (2W17D); two W1C Cords, each 12 feet long; two No. 360C Tools; No. 240A Plug; and three No. 141 Cord Tips. Connect to form Special Cord as shown in Fig. 1.

TEST (A)

2.07 No. 240A Plug.

TEST (B)

2.08 Special Insulator 1/2 inch by 2-1/2 inches (the KS-7187 Bell Seal Bond No. 20 Relay Cleaning Paper may be used).

When Connector Test Line Terminal Is 11

2.09 Testing Cord - No. 893 Cord equipped with two No. 360A Tools (1W13B) and two KS-6278 Clips.

3. PREPARATION

TESTS (A) AND (B)

STEP	ACTION	VERIFICATION
1a	If remote control set is used - Insert remote control set plugs, red, gray, and black, into test set jacks R, G, and B, respectively.	
2	Connect receiver to test set jack TEL.	
3	Connect test set jack 3 to test line jack 3 (level hunting) on connector frame, using 6-foot P3E cord.	
4	Connect test set jack 4 to test line jack 4 (level hunting) on connector frame, using special test cord, Fig. 1.	
5	Operate TOLL key.	
6	Operate LH (level hunting) key.	
7	Operate and hold RLS key long enough to extinguish any progress lamps that may be lit, or if necessary operate and release STP key required number of times.	All lamps extinguished.

STEP	ACTION	VERIFICATION
8	Using P4K cord, connect TT jacks of test set to test jack of normal connector under test.	GD (guard) lamp does not light.
9b	Where test set is arranged for monitoring - If it is desired to monitor on an off-normal connector, insert plug of P4K cord into test jack of off-normal connector and listen in receiver.	GD lamp lights. Conversation is heard.
TEST (B)		
10	Operate test set keys as indicated for TEST in Table 1 or 2 to provide the proper pretrip and trip conditions in the test set. Note: For tests during silent interval, the silent interval tripping battery shall be within the voltage limits shown in the table.	

TABLE 1
TEST SET PER SD-31637-01

KIND OF RING	MAX. EXT. SUB. LOOP (OHMS)	TRIP BAT. VOLTS	FOR		KEYS OPERATED					PRETRIP	TRIP
					NOT USING FIG. C		USING FIG. C				
			TEST	READJ.	SUP TST	SUP ADJ	SS	TST	ADJ.		
AC-DC	1000-1115	46-50	X				X	X		Ringing period	Silent period
SUPER-IMPOSED	1000-1115	46-50	X		X			X		Ringing period	Silent period
		60-75	X		X					Ringing period	Ringing period
				X		X			X	Ringing period	Ringing period

TABLE 2
TEST SET PER SD-31637-02

KIND OF RING	MAX. EXT. SUB. LOOP (OHMS)	TRIP BAT. VOLTS	FOR		KEYS OPERATED					PRETRIP	TRIP
			TEST	READJ.	1000A	1000B	1400A	1400B	ADJ.		
AC-DC and/or SUPER-IMPOSED	1000-1115	48.5-50	X		X					Silent period	Silent period
		60-75	X			X				Ringing period	Ringing period
				X		X			X	Ringing period	Ringing period
	1400-1500	48.5-50	X				X			Silent period	Silent period
				X			X		X	Silent period	Silent period
		66-75	X					X		Silent period	Silent period
				X				X	X	Silent period	Silent period

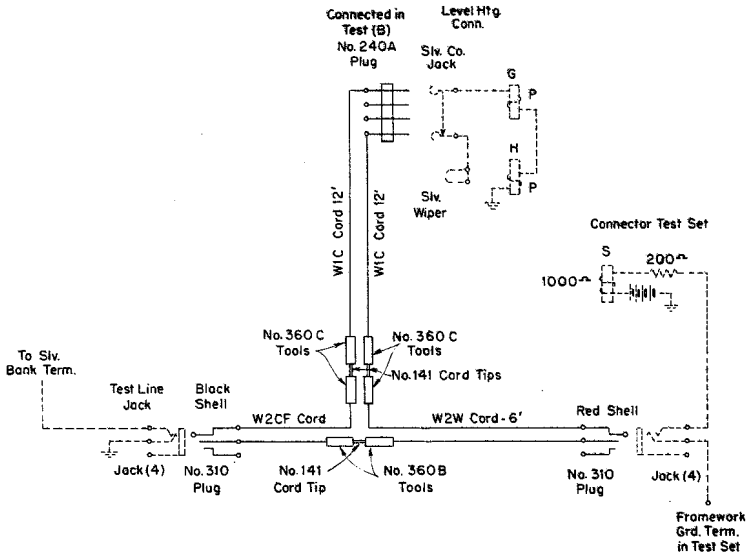

Fig. 1

4. METHOD

STEP	ACTION	VERIFICATION
	(A) Busy Line and Level Hunting Test - Leak	
10	Operate and release STP key to advance test circuit to BSY-L position.	BSY-L (busy line) lamp lights. GD lamp lights. C (control) lamp lights.
11	Insert No. 240A plug into sleeve cutoff jack of connector.	
12	Dial one or two digits, as required by particular circuit wiring, which will cause connector to hunt over at least two levels.	BSY (busy) lamp lights when dial is moved off normal. C lamp is extinguished. Connector hunts smoothly and stops on tenth terminal of last level in group of trunks selected. CT (cut through) lamp flashes at busy-back rate. Busy tone is heard in receiver. Note: In some offices not arranged for intertoll dialing, busy tone may not be heard.
13	Operate RLS key momentarily.	BSY lamp is extinguished. Connector releases. GD lamp is extinguished momentarily. Busy tone is removed. C lamp lights.
14	Remove plug from sleeve cutoff jack of connector.	

STEP	ACTION	VERIFICATION
15c	Remove plug from test jack of connector unless other tests are to be made on this switch.	
	(B) Idle Line Test - Loop	
11	Operate and release STP key to advance test circuit to IDLE-L position.	IDLE-L (idle line) lamp lights. GD lamp lights. C lamp lights.
12	Insert No. 240A plug (stay cord to the right) of special test cord, Fig. 1, into sleeve cutoff jack of connector. Note: If sleeve cutoff jack wiring is reversed, reverse No. 240A plug.	
13	Insert special insulator between sleeve cutoff jack guard plate and front end of No. 240A plug flanges.	
	Line Seizure and Ringing Test	
14d	If using test line No. 91 - Dial digit which will direct connector to ninth level (and an additional digit if required).	Connector hunts smoothly and stops on test line terminal. BSY lamp lights. C lamp is extinguished. Audible ring is not heard in receiver.
15e	If using test line No. 11 - Using No. 893 cord, connect ground to commutator terminal for level No. 1.	
16e	Dial any one or two digits as required by particular circuit wiring.	Connector hunts smoothly and stops on test line terminal. BSY lamp lights. C lamp is extinguished. Audible ring is not heard in receiver.
17	Operate and release STP key.	DEL-R (delayed ring) lamp lights. IDLE-L lamp is extinguished. RS (ringing signal) lamp lights during ringing intervals. Audible ring is heard in receiver.
	Pretrip Test	
18	Operate STP key momentarily at start of ( ) interval. This test shall be completed within the same interval by performing Step 19.	PRE-TRIP lamp lights. DEL-R lamp is extinguished.
19	Operate and release STP key.	RING lamp lights. PRE-TRIP lamp is extinguished. RS lamp lights during ringing intervals. Audible ring continues to be heard in receiver.

STEP	ACTION	VERIFICATION
	Tripping Test	
20	Operate and release STP key at start of ( ) interval.	T-TRIP (tone trip) lamp lights. RING lamp is extinguished. 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 RS lamp is disconnected when this test is applied and can not be considered as an indication that the ringing has tripped. Proper transmission tone is heard in receiver. CT lamp lights. REV-C lamp lights.
21f	If using test set SD-31637-01 arranged to open the loop of the called end of the connector, or SD-31637-02 - Operate and release STP key.	T-CO (tone cutoff) lamp lights. T-TRIP lamp is extinguished. Tone is removed. CT lamp is extinguished. REV-C lamp is extinguished.
22g	If using test set SD-31637-01 arranged to test wiper cords - Operate and release STP key.	T-CO lamp lights. T-TRIP lamp is extinguished. Tone is removed. CT lamp remains lighted. REV-C lamp remains lighted.
23g	Move wiper cords slightly while listening in receiver.	No noise heard in receiver. BSY lamp does not flash.
24e	If using test line No. 11 - Remove ground from commutator terminal for level No. 1.	
25	Operate RLS key momentarily.	T-CO lamp is extinguished. Connector releases. BSY lamp is extinguished. GD lamp is extinguished.
26	Immediately remove plug and special insulator from sleeve cutoff jack of connector.	
27c	Remove plug from test jack of connector unless other tests are to be made on this switch.	