TOLL AND A-B TOLL TRANSMISSION SELECTORS
OPERATION TESTS
USING TEST SET SD-90416-01 (J94704A)
STEP-BY-STEP SYSTEMS

1. GENERAL

1.01 This section describes a method of testing the operating features of toll and A-B toll transmission selectors, using test set SD-90416-01. The idle line test is based upon the use of connector multiple test line SD-31263-01, SD-31425-01 or SD-31642-01 and optional use of the timed ringing circuit SD-32196-01 if provided.

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 covered are:

A. **Idle Line Test — Loop:** This test checks the ability of toll and A-B toll transmission selectors to start the ringing in a connector, and to return proper supervision.

B. **Busy Line Test — Leak:** This test checks the ability of toll and A-B toll transmission selectors to return an indication of a busy line.

C. **All Paths Busy Test — Loop:** This test checks the ability of toll and A-B toll transmission selectors to return an indication of an all paths busy.

D. **Rering Test — Loop — Delayed Ringing Toll Transmission Selectors Only:** This test checks the ability of the selector to set up a rering condition in the connector after ringing has been tripped.

1.04 Resistances provided in the test set are used for compensating the various loop conditions of the toll and A-B toll transmission selectors. The following resistance values are inserted in the dialing circuit of the test set by operating the keys indicated.

Keys Operated	*Compensating Resistance*
TT key	0 ohms
TT and 300 keys	300 ohms
TT and 600 keys	600 ohms
TT, 300 and 600 keys	900 ohms
LP key	1200 ohms
LP and 300 keys	1500 ohms
LP and 600 keys	1800 ohms
LP, 300 and 600 keys	2100 ohms

The proper resistance value to be used is the one which most nearly represents the external pulsing loop over which the switch operates in service.

Note: When making busy line test (Test B), which requires the operation of the LK key, 900 ohms is the maximum resistance that can be employed due to the LK and LP keys being on the same key unit.

1.05 When testing A-B toll transmission selectors arranged to absorb all first digits, it will be necessary to dial an extra digit before each operation test.

1.06 While conducting these tests the associated trunk should be made busy at the originating end so that the trunk will not be selected by the operator.

1.07 Local instructions should be followed for recording and reporting any register operations caused by performing these tests.

1.08 *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.

1.09 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 Test Set SD-90416-01 (J94704A).

2.02 P2J Cord, 9 feet long, equipped with two No. 310 Plugs (2P9A Cord)—used where a battery supply jack is available.

2.03 W2M Cord equipped with one No. 310 Plug and two No. 59 Cord Tips (2W12A Cord) and two No. 108 Cord Tips—used where a battery supply jack is not available.

2.04 P3H Cord, 10 feet long, equipped with one No. 310 Plug on one end and a No. 240A Plug on the other end (3P2A Cord).

2.05 No. 1011G Dial Hand Test Set equipped with a No. 471A Jack, No. 240A Plug and a W4AY Cord (4W10A Cord) or Operator's Telephone Set.

Tests A and D

2.06 P3E Cord, 6 feet long, equipped with two No. 310 Plugs (3P7A Cord). Two P3E Cords are required in Test A when timed ringing circuit (SD-32196-01) is provided.

Test C

2.07 No. 893 Cord equipped with two No. 360A Tools (1W13A Cord) and two KS-6780 Connecting Clips.

3. PREPARATION

STEP	ACTION	VERIFICATION
All Tests		
1a	If battery supply jack is available — Patch BAT G jack of test set to battery and ground supply jack on selector bay using P2J cord *Note:* To avoid possible grounding of battery supply lead, connect cord to test set first and, when disconnecting, remove cord from test set last.	
2b	If battery supply jack is not available — Insert No. 310 plug of W2M cord into BAT G jack of pulsing test set	
3b	Connect No. 59 cord tip of white (tip) conductor to equipment side of a 48-volt battery fuse (not over 5 amperes) and red (sleeve) conductor to ground *Note:* When disconnecting, remove the cord from test set last.	

STEP	ACTION	VERIFICATION
4c	If operator telephone set is used — Connect plug to the TEL jacks of test set	
	Note: If necessary to talk over operator telephone set operate TRS key on test set.	
5d	If 1011G dial hand test set is used — Connect No. 240A plug of dial hand test set to HS jacks of the test set	
6d	Operate HS key on test set	
	Note: Operate TALK-MON key on handset to TALK position and use handset dial in making tests.	
Test A		
7e	If timed ringing circuit (SD-32196-01) is not provided — Patch GEN jack on test set to ± or GEN jack on selector bay using a P3C cord	
8e	Patch No. 310 plug of P3H cord to T jack of test set	
9f	If testing delayed ringing toll transmission selectors and timed ringing circuit (SD-32196-01) is provided — Patch T jack of test set to T jack of timed ringing circuit using a P3E cord	
10f	Patch TL jack of test set to TL jack of timed ringing circuit using a P3E cord	
11f	Patch No. 310 plug of the P3H cord to SEL jack of timed ringing circuit	
Tests B, C and D		
12	Patch No. 310 plug of P3H cord to T jack of test set	
Test D		
13	Patch GEN jack on test set to the ± or GEN jack on the selector bay using a P3C cord	

4. METHOD

STEP	ACTION	VERIFICATION
	A. Idle Line Test — Loop	
	Toll Transmission Selectors Associated with Immediate Ringing Toll Trains	
12	Insert No. 240A plug of P3H cord into test jack of normal selector to be tested	BSY lamp remains extinguished
13	Operate proper resistance key or keys as indicated in 1.04	BSY lamp lights
14	Dial the connector multiple test line	Connection established to connector multiple test line REV lamp lights Audible ringing heard in receiver After short interval — Ringing tripped by test line REV lamp flashes from test line interrupter Tone heard in receiver during flashing interval while REV lamp is extinguished
15	Restore TT or LP key operated in Step 13	Switch releases BSY and REV lamp extinguished
16	Remove No. 240A plug from test jack	
17	Repeat Steps 12 through 16 on other similar selectors to be tested	
	A-B Toll Transmission Selectors	
18	Insert No. 240A plug of P3H cord into test jack of normal selector to be tested	BSY lamp remains extinguished
19	Operate proper resistance key or keys as indicated in 1.04	BSY lamp lights
20	Dial the connector multiple test line	Connections established to connector multiple test line REV lamp remains extinguished Audible ringing heard in receiver After short interval — Ringing tripped by test line REV lamp flashes from test line interruptions Tone heard in receiver during flashing interval while REV lamp is lit
21	Restore TT or LP key operated in Step 19	Switch releases BSY and REV lamp extinguished

STEP	ACTION	VERIFICATION
22	Remove No. 240A plug from test jack	
23	Repeat Steps 18 through 22 on other similar selectors to be tested	
	Toll Transmission Selectors Associated with Delayed Ringing Toll Train — Timed Ringing Test Circuit SD-32196-01 Not Provided	
24	Insert No. 240A plug of P3H cord into test jack of normal selector to be tested	BSY lamp remains extinguished
25	Operate proper resistance key or keys as indicated in 1.04	BSY lamp lights
26	Dial the connector multiple test line	Connection established to connector multiple test line REV lamp lights
27	Operate RING key for at least 2 seconds and release	Audible ringing heard in receiver After short interval — Ringing tripped by test line REV lamp flashes from test line interrupter Tone heard during flashing interval while REV lamp is extinguished
28	Restore TT or LP key operated in Step 25	Switch releases BSY and REV lamp extinguished
29	Remove No. 240A plug from test jack	
30	Repeat Steps 24 through 29 on other similar selectors to be tested	
	Toll Transmission Selectors Associated with Delayed Ringing Toll Train — Timed Ringing Test Circuit SD-32196-01 Provided	
31	Insert No. 240A plug of P3H cord into test jack of normal selector to be tested	BSY lamp remains extinguished
32	Operate the proper resistance key or keys as indicated in 1.04	BSY lamp lights
33	Dial the connector multiple test line	Connection established to connector multiple test line REV lamp lights
34	Operate ID key for at least 2 seconds and release	Audible ringing heard in receiver After short interval — Ringing tripped by test line REV lamp flashes from test line interrupter Tone heard in receiver during flashing interval while REV lamp is extinguished

STEP	ACTION	VERIFICATION
35	Restore TT or LP key operated in Step 32	Switch releases BSY and REV lamp extinguished
36	Remove No. 240A plug from test jack	
37	Repeat Steps 31 through 36 on other similar selectors to be tested	

All Types of Selectors

38	At completion of Idle Line Test — Loop— Remove all test cords and restore all test set keys to normal unless other tests are to be made	

B. Busy Line Test — Leak

13	Insert No. 240A plug of P3H cord into test jack of normal selector to be tested	BSY lamp remains extinguished
14	Operate 300 and 600 keys	
15	Operate LK key	BSY lamp lights
16	Dial a connector test line (99) terminal other than in a level hunt connector group	Connection established to connector test line terminal REV lamp flashes Busy tone heard in receiver *Note:* In some offices the busy tone may not be heard when testing toll transmission selectors.
17	Restore LK key	Switch releases BSY and REV lamp extinguished
18	Remove No. 240A plug from test jack	
19	Repeat Steps 13 through 18 on other similar selectors to be tested	
20	Remove all test cords and restore all test set keys to normal unless other tests are to be made	

C. All Paths Busy Test — Loop

13	Insert No. 240A plug of P3H cord into test jack of normal selector to be tested	BSY lamp remains extinguished
14	Operate proper resistance key or keys as indicated in 1.04	BSY lamp lights

STEP	ACTION	VERIFICATION
15	Apply ground to sleeve wiper cord terminal using No. 893 cord	
16	Dial any level that is not digit absorbing	Switch steps to level dialed and rotates to the 11th rotary step
17	Remove ground from sleeve wiper cord terminal *Note:* Remove ground as soon as the wipers reach the 11th rotary position to stop the vibration of the rotary magnet.	REV lamp flashes at the all paths busy rate
18	Restore keys operated in Step 14	Switch releases BSY and REV lamp extinguished
19	Remove No. 240A plug from test jack	
20	Repeat Steps 13 through 19 on other similar selectors to be tested	
21	Remove all test cords and restore all test set keys to normal unless other tests are to be made	

D. Rering Test — Loop — Delayed Ringing Toll Transmission Selectors Only

14	Insert No. 240A plug of P3H cord into test jack of normal selector to be tested	BSY lamp remains extinguished
15	Operate proper resistance key or keys as indicated in 1.04	BSY lamp lights
16	Dial the connector terminal number of an idle nearby station	Connection established to number dialed REV lamp lights
17	Operate RING key for 2 seconds and release	Station bell rings Audible ring heard in receiver
18	Remove receiver from station	REV lamp extinguished Ringing trips Audible ring no longer heard
19	Operate RING key	Continuous ringing heard in receiver of station
20	Release RING key	Ringing no longer heard
21	Restore receiver of station	REV lamp lights
22	Restore keys operated in Step 15	Switch releases BSY and REV lamp extinguished

STEP	ACTION	VERIFICATION
23	Remove No. 240A plug from test jack	
24	Repeat Steps 14 through 23 on other similar selectors to be tested	
25	Remove all test cords and restore all test set keys to normal unless other tests are to be made	