LOCAL AND TOLL SELECTORS

OPERATION TESTS

USING DIAL HAND TEST SET OR 40C TEST SET

STEP-BY-STEP SYSTEMS

1. GENERAL

1.01 This section describes a method of testing local and toll selectors in No. 1 and 350A step-by-step offices or 355A and 35-E-97 community dial offices. Reverting call selectors are not covered by this section.

1.02 This section is reissued to incorporate Addendum 1 to Issue 8 of the section and to move test lamp verification from Step 8 to Step 7 in Test B.

1.03 The tests covered are:

A. Local Selectors: This test checks the following selector features: vertical stepping to proper level and rotating to idle terminal; blocking; digit absorbing; cut-through; release; interrupted tone on blocked levels; and dial tone on first selector not associated with common control or TOUCH-TONE®.

B. Toll Selectors: This test checks the vertical stepping to proper level and rotating to idle terminal feature. It also checks blocking, interrupted tone on blocked levels, digit absorbing, cut-through, and release features of selector.

C. Restricted Service and Class-of-Service Indication Features: This test checks that a selector will rotate past any idle terminal on levels arranged for restricted service and return interrupted tone. It also checks that a selector can receive restricted service or class-of-service condition from preceding circuit or extend same to succeeding circuit.

1.04 The term "blocking" is applied to switches that either do not cut in when the level dialed is reached and return interrupted tone, or, if arranged to cut in, will rotate to the eleventh rotary position and return interrupted tone.

1.05 When testing local selectors associated with line finder circuits in which the AB lead is normally extended through contacts of the VON assembly to the RLS lead, make the associated line finder busy by operating the MB (make-busy) key. When operating MB keys to make line finders busy, care should be exercised in determining the number made busy at one time so as not to adversely affect service in this group.

1.06 When testing an incoming selector, the trunk should be made busy at the originating end in the approved manner for the duration of the test. It will also be necessary to insert a make-busy plug into the test jack of the associated trunk circuit.

1.07 When testing a first selector in a line switch office, rotate the master switch having direct access to it to pick up any disengaged plungers.

1.08 On alternate tests, the first trunk should be made busy on the level under test in Tests A and B. On the other tests, the first trunk should be left idle to test that the switch does not overstep during rotary hunting.

1.09 A different level (except levels with trunks to switchboard positions) should be used each time the tests are performed so that eventually every selector will have been tested on each working level.

1.10 The test equipment specified in this section is designed to apply proper marginal tests (simulated critical circuit conditions)

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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 performed.

1.11 In offices arranged for common control or TOUCH-TONE, the associated first selectors will not supply dial tone. This function will be performed by the originating register or converter circuits.

1.12 ***Lettered Steps:*** A letter a, b, c, etc, added to a step number in Part 3 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.

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

2. APPARATUS

All Tests

2.01 377A dialing tool.

2.02 477A or 375A make-busy tools, as required.

Tests A and C

2.03 1011G handset (dial hand test set) or equivalent, equipped with 2W39A cord assembly consisting of a W2CL cord, a 471A jack, and a 240A plug. Modify cord assembly as follows:

(1) Replace 240A plug with a 240F plug.

(2) Bridge lamp jack between tip and ground terminals.

(3) Equip lamp jack with a 2T lamp.

2.04 40C test set equipped with a W7B cord, 11 feet long, having a 240H plug modified as shown in Fig. 1.

Note 1: Using one set of lamp springs from a 240F plug, modify 240H plug as follows:

(1) Insert lamp springs into 240H plug spring assembly in same position as in 240F plug.

(2) Connect top lamp spring to the tip terminal of 240H plug.

(3) Connect bottom lamp spring to the ground terminal of 240H plug.

(4) Equip lamp jack with a 2T lamp.

(5) Disconnect 360B tool of test set cord (black) from W terminal of 240H plug.

Note 2: The 366A plug furnished with the 40C test set is not used in performing these tests.

Test A

2.05 Blocking and insulating tools, as required. Use tools and apply as covered in Section 069-020-801.

Test B

2.06 1011G handset (dial hand test set) or equivalent, equipped with a 2W39A cord assembly consisting of a W2CL cord, a 471A

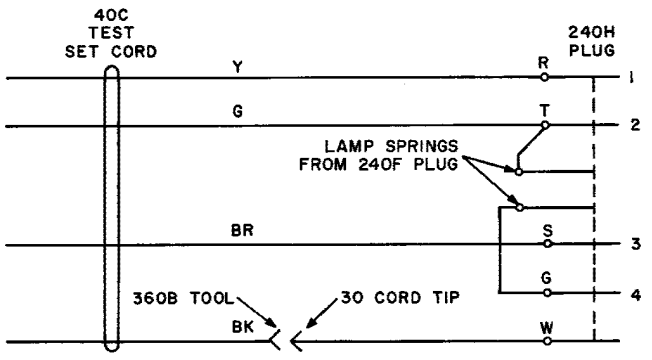

Fig. 1 — Modification of 240F Plug

jack, and a 240A plug. Modify cord assembly (Fig. 2) as follows:

(1) Replace 240A plug with a modified 240K plug.

(2) Strap tip lead lamp soldering terminal to the sleeve terminal of 240K plug.

(3) Strap sleeve terminal to ground terminal.

(4) Solder a 30 cord tip to C lead lamp soldering terminal.

2.07 Testing cord, W1AF cord, 8 feet 6 inches long, equipped with two 360A tools. Modify cord assembly by removing 360A tool from one end and connecting cord to tip of a 310 plug. ← Connect remaining 360A tool to 30 cord tip of modified 240K plug.

Note 1: Where the 8-foot 6-inch W1AF cord is not sufficiently long to permit all the switches to be tested, insert a 1W13B cord, 6 feet long, between the 30 cord tip of 240K plug and the 360A tool of W1AF cord using a 141 cord tip to connect the 360A tools together.

Note 2: A suitable testing cord may be made up locally by placing a 180- to 200-ohm resistor in series with a cord of the required length and terminated as described in Note 1.

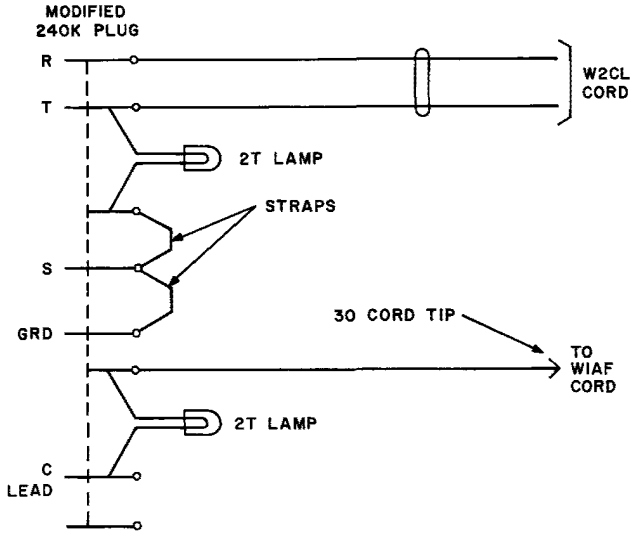

Fig. 2 — Modification of 240K Plug

2.08 KS-6320 orange stick.

Test C

2.09 Testing cord, 893 cord, 3 feet long, equipped with two 360A tools (1W13A cord), one 365 tool, and one 419A tool attached to the 360A tools.

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3. METHOD

STEP	ACTION	VERIFICATION
	A. Local Selectors	
1a	If test is one where first trunk is made busy on level under test — Invert 240-type plug of test set and insert into test jack of idle selector on same shelf as selector under test so that tip and ring of plug make contact with ring and tip of test jack.	
2b	If using handset — Operate handset cord switch to ON position.	

STEP	ACTION	VERIFICATION
3b	Operate handset switch to TALK position.	Dial tone heard on local first selectors. *Note:* Dial tone is not heard if first selector is associated with common control or TOUCH-TONE equipment.
4c	If using 40C test set — Operate and hold key 1.	Same as Step 3b.
5a	If test is one where first trunk is made busy on level under test — Dial level under test.	Selector steps to level dialed, rotates to first terminal, and cuts through. Dial tone removed on first selectors.
6a	Insert make-busy tool between sleeve and ground springs 3, 4 of selector test jack.	
7a	Remove 240-type plug from selector test jack.	Selector held by make-busy tool.
8d	If testing SD-32183-01 selector — Using a toothpick, insulate auxiliary test jack springs 5, 6.	
9	Insert 240-type plug of test set into test jack of idle selector under test.	
10b	If using handset — Operate handset switch to TALK position.	Test lamp on plug lights dimly. Dial tone heard on local first selector. *Note:* Dial tone is not heard if first selector is associated with common control or TOUCH-TONE equipment.
11c	If using 40C test set — Operate and hold key 1.	Same as Step 10b.
12e	If selector is arranged to absorb digits repeatedly on certain levels — Dial level so arranged at least twice.	Selector steps to level dialed and releases after each series of pulses. Dial tone removed on first selectors after first series of pulses.
13f	If selector is arranged to absorb first digit on certain levels — Dial level so arranged.	Selector steps to level dialed and releases. Dial tone removed on first selectors.
14g	If selector is arranged to absorb first two digits on certain levels — Dial levels so arranged in their proper sequence.	Selector steps to each level dialed and releases after each series of pulses. Dial tone removed on first selectors after first series of pulses.
15h	If selector is arranged to block on certain levels — Dial level so arranged.	Selector steps to level dialed and blocks. Interrupted tone heard.

STEP	ACTION	VERIFICATION
16h	Momentarily operate handset switch to MON position or release key 1 of 40C test set.	Selector released.
17h	If selector is arranged to absorb first digit and block on second digit on certain levels — Dial level arranged to absorb.	Selector steps to level dialed and releases. Dial tone removed on first selector.
18h	Dial level arranged to block.	Selector steps to level dialed and blocks. Interrupted tone heard.
19h	Momentarily operate handset switch to MON position or release key 1 of 40C test set.	Selector released.
20	Dial level under test and listen in receiver for excessively loud clicks as selector cuts through.	Selector steps smoothly to level dialed. Rotates past first terminal if made busy, and stops on an idle terminal. No excessively loud clicks heard. Test lamp is of the same brilliancy after selector cuts through as it was before dialing.
21	Dial another digit and listen for relay chatter within switch. *Note:* On selectors immediately preceding level hunting connectors arranged for hunting after dialing the first digit, a connector level which is not assigned for subscriber service should be dialed if available; otherwise the dialing of this additional digit should be omitted unless it has been determined locally that the resultant ringing on the trunk is not objectionable at the time the test is being performed.	No vertical kick of shaft. No relay chatter.
22b	If using handset — Operate handset switch to MON position.	Selector released.
23c	If using 40C test set — Release key 1.	Selector released.
24	Remove 240-type plug from selector test jack.	
25d	If testing SD-32183-01 selector — Remove insulating tool from auxiliary test jack springs.	

STEP	ACTION	VERIFICATION
26	Repeat Steps 8d through 25d as required on other selectors to be tested. *Note:* If test is one where first trunk is made busy on level under test, substitute another selector previously tested for the one to hold first trunk busy and repeat Steps 1a through 25d on this selector.	
27a	If test is one where first trunk is made busy on level under test — Remove make-busy tool.	
	B. Toll Selectors	
1a	If test cycle is one where first trunk is made busy on level under test — Insert make-busy tool between springs 3, 4 of test jack of idle selector on same shelf as selector under test.	
2a	Insert make-busy tool between springs 1, 2.	
3a	Remove and reinsert make-busy tool between springs 1, 2 intermittently to step selector to level under test. ***Caution: To avoid personal contact with make-busy tool used to step selector, one end of tool should be insulated with tape or suitable material.***	Selector steps to level under test and rotates to first terminal.
4a	When selector reaches level under test — Leave both make-busy tools in test jacks.	Selector holds in this position.
5	Operate cord switch to ON position.	
6	Insert 310 plug of W1AF cord into test battery supply jack.	
→ 7	Insert modified 240K plug of handset into test jack of idle selector under test.	C lead test lamp lighted.
8	Operate handset switch to TALK position.	Tip conductor test lamp lighted.
9b	If selector is arranged to absorb digits repeatedly on certain levels — Dial level so arranged at least twice.	Selector steps to level dialed and releases after each series of pulses.
10c	If selector is arranged to block on certain levels — Dial level so arranged.	Selector steps to level dialed and blocks. Interrupted tone heard.
11c	Momentarily operate handset switch to MON position.	Selector released.

STEP	ACTION	VERIFICATION
12d	If selector is arranged to absorb first digit on certain levels — Dial level so arranged.	Selector steps to level dialed and releases.
13	Dial level under test and listen in receiver for excessively loud clicks as selector cuts through.	Selector steps smoothly to level dialed. Rotates past first terminal if made busy, and stops on an idle terminal. No excessively loud clicks heard. Test lamps are of the same brilliancy after selector cuts through as they were before dialing, except when testing on a level serving combination connectors, a decrease in the brilliancy of the tip lamp is normal.
14	Using KS-6320 orange stick, raise C wiper tip sufficiently to open contact but not permitting wiper to touch terminal above.	C lead test lamp extinguished.
15	Remove orange stick.	C lead test lamp relights.
16	Dial another digit and listen for relay chattering within switch.	No vertical kick of shaft. No relay chattering heard. Test lamps are of the same brilliancy as before dialing.
17	Remove 240K plug from test jack of selector.	Selector released. Test lamps extinguished.
18	Repeat Steps 7 through 17 as required on other selectors to be tested. *Note:* If test is one where first trunk is made busy on level under test, substitute another selector previously tested for the one to hold first trunk busy and repeat Steps 1a through 17 on this selector.	
19e	If no further tests are to be made — Remove connection to battery supply.	
20a	If test is one where first trunk is made busy on level under test — Remove make-busy tools.	

C. Restricted Service and Class-of-Service Indication Features

1	Insert 240-type plug of test set into test jack of idle selector under test.	
2a	If using handset — Operate cord switch to ON position.	

STEP	ACTION	VERIFICATION
3a	Operate handset switch to TALK position.	Test lamp on plug lighted. Dial tone heard on local first selectors. *Note:* Dial tone is not heard if first selector is associated with common control or TOUCH-TONE equipment.
4b	If using 40C test set — Operate and hold key 1.	Same as Step 3a.
5c	If selector is arranged to restrict service on specified levels on first digit — Dial level arranged for restriction.	Selector steps to level dialed and rotates to eleventh rotary position. Dial tone removed on first selectors. Interrupted tone heard.
6d	If selector is arranged to restrict service on levels until first digit is absorbed — Dial any level not arranged for absorption.	Selector steps to level dialed and rotates to eleventh rotary position. Interrupted tone heard.
7d	Momentarily operate handset switch to MON position or release key 1 of 40C test set.	Selector released.
8d	Dial level arranged for digit absorption.	Selector steps to level dialed and releases. Dial tone removed on first selectors.
9d	Dial level selected in Step 6d.	Selector steps to level dialed and rotates to first idle terminal.
10e	If selector is arranged to restrict service on levels until first digit is absorbed and then on specified levels under control of fourth lead (A lead) from preceding switch — Connect 365 tool of 893 cord to selector frame ground.	
11e	Connect 419A tool of 893 cord to jack spring as follows — For Western Electric Company shelves, jack spring 6 — For Automatic Electric Company shelves, jack spring 13.	
12e	Dial level arranged for restriction under control of fourth lead.	Selector steps to level dialed and rotates to eleventh rotary position. Interrupted tone heard.
13e	Momentarily operate handset switch to MON position or release key 1 of 40C test set.	Selector released.
14e	Dial level arranged for digit absorption.	Selector steps to level dialed and releases. Dial tone removed from first selectors.

STEP	ACTION	VERIFICATION
15e	Dial level selected in Step 12e.	Selector steps to level dialed and rotates to eleventh rotary position. Interrupted tone heard.
16f	If selector is arranged to extend restricted service or class-of-service condition over fourth lead (A lead) to succeeding switch — Connect 893 cord as in Steps 10e, 11e.	
17f	Dial code ( ) to direct selector to level so arranged and restricted level of succeeding switch.	Selector steps to level dialed and rotates to an idle terminal. When second digit dialed — Appropriate indication received. *Note:* In some cases it may be necessary to check with operator as the indication may not always be received by tester.
18	Remove 240-type plug from test jack of selector.	Selector released.
19	Disconnect 893 cord from jack spring of selector.	
20	Repeat Steps 1 through 19 as required on other selectors to be tested.	
21g	If no further tests are to be made — Remove all cords and restore all keys.	