

## PLUGGING-UP CIRCUITS OPERATION TESTS STEP-BY-STEP SYSTEMS

### 1. GENERAL

**1.01** This section describes a method of testing plugging-up circuits in step-by-step offices using a dial hand test set and a 35-type test set.

**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. Trouble Observation Test with Traffic Switchboard Supervision:** This test checks the ability of the circuit to signal the operator if a line in trouble and under observation comes clear. It also provides a marginal check of the operation and release of the line relay.

**B. Trouble Observation Test with Switch Room Supervision:** The following features are checked:

- (1) Signal to switch room forces if a line in trouble and under observation comes clear.
- (2) Transfer of alarms to office alarm frame if so arranged.
- (3) Automatic cut through where provided.
- (4) A marginal test of the operation and release of the line relay.

**C. Trouble Intercepting Test:** This test checks that a signal is received at the switchboard when a call is made to the line to which the plugging-up circuit is connected.

**1.04 Lettered Steps:** A letter a, b, c, etc, added to a step number in Parts 3 and 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.

**1.05** The first cycle of tests should be made from the plugging-up jack box at the last multiple appearance. Each subsequent test of the trunks should be made from a different jack box so that eventually each trunk will have been tested from all appearances.

**1.06** When the trouble intercept trunks are arranged for transfer to other positions, they should be transferred and tested to these positions on alternate assignments.

**1.07** The use of a 35-type test set to insert resistance into the loop for Tests A and B provides a marginal operate and release test of the L relay within its test requirements.

**1.08** Before connecting the 35-type test set to any trunk, check that all short-circuiting switches of the telegraph keys are open and that slides of all rheostats are in the extreme right position. Also, check that the BATT and GRD CO key is operated in order to provide a metallic connection as in Section 100-101-101.

**1.09** Action and verification will be required at MDF and the switchboard for Tests A and C. Test B will require ACTION and VERIFICATION at MDF and plugging-up panel.

**1.10** For Test C, a spare temporary two-party line will be required to receive calls for testing the trouble intercept trunks and a spare temporary line circuit will be required for dialing calls to the two-party line. (See Part 3, Step 9.) At the completion of the test all temporary wiring

**SECTION 226-826-500**

should be removed and distributing frame cross connections restored to normal.

**2. APPARATUS**

**Tests A, B, and C**

**2.01** No. 1011G Dial Hand Test Set equipped with a W2CJ Cord having a No. 471A Jack on one end and one No. 360A Tool and one No. 360B Tool on the other (2W41A Cord). Equip the No. 360 Tools with No. 141 Cord Tips. (Fig. 1B)

**2.02** P4N Cords, 6 feet long, equipped with two No. 289B Plugs (4P8B Cord) modified by removing a No. 289B Plug from each and connecting No. 360C (white) Tools to the tip conductors and No. 360A (red) Tools to the sleeve conductors. (See Figs. 1A and 1B.) Two of these cords will be needed for Tests A and B and one will be needed later for Test C.

**Tests A and B**

**2.03** 35-type Test Set.

**2.04** One W2W Cord, 6 feet long, equipped with one No. 310 Plug and one No. 360B Tool and one No. 360C Tool (2W17A Cord). Equip the No. 360 Tools with No. 141 Cord Tips. (Fig. 1A)

**Test B**

**2.05** One P3E Cord equipped with two No. 310 Plugs (3P7B Cord). To be used for patching purposes at plugging-up panel.

**Test C**

**2.06** One W2AY Cord, 9 feet 6 inches long, equipped with two No. 59 Cord Tips, and a No. 289B Plug (2W24A Cord), modified by removing the No. 289B Plug and replacing with No. 360A Tools and No. 141 Cord Tips. To be used with P4N Cord described in 2.02.

**2.07** Modify the handset cord in 2.01 by removing the two No. 141 Cord Tips and replacing with two No. 365 Tools.

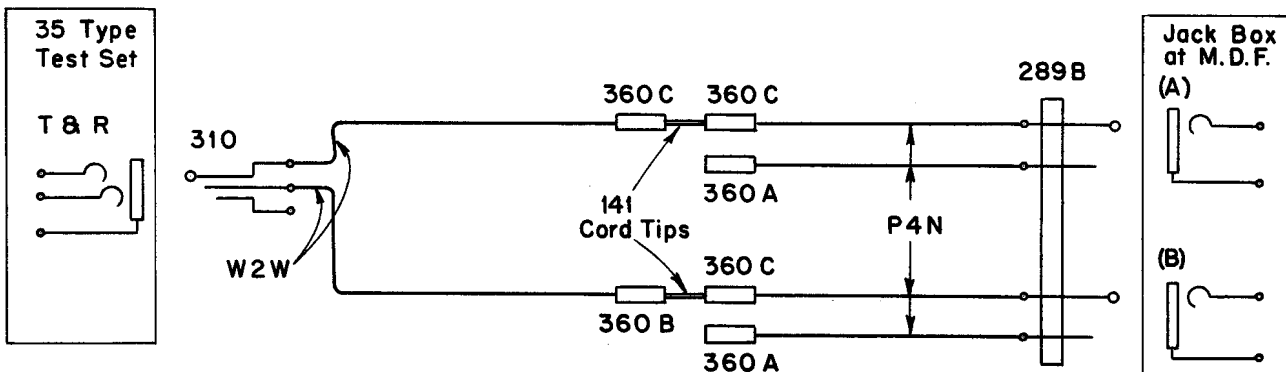


Fig. 1A

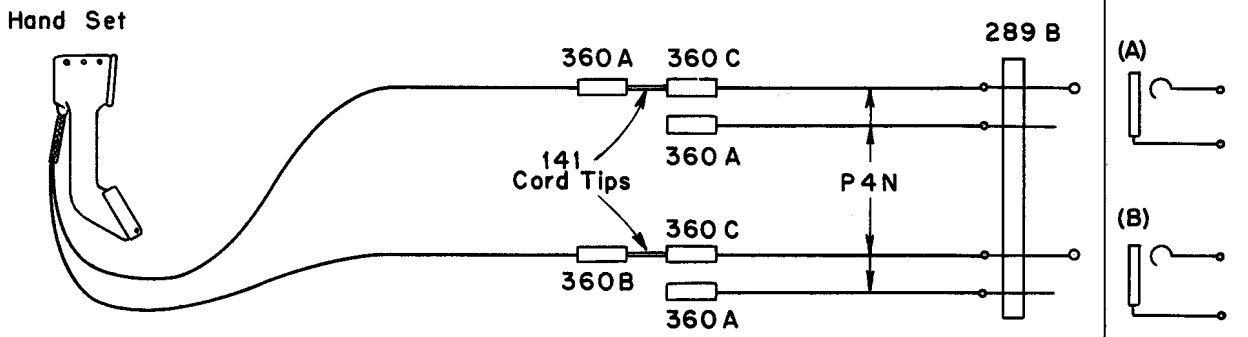


Fig. 1B

**3. PREPARATION**

STEP	ACTION	VERIFICATION
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**All Tests**

- 1 Record trunks in use at jack boxes, consult test center records and agree on time for test
- 2 Take down patching cords, replace heat coils and ground sleeves of permanent lines as in Section 226-135-300.

**Tests A and B**

- 3 To establish a talking circuit connect handset to No. 360C tools (white) associated with one of special cords, Fig. 1B, and insert No. 289B plug into test jack of a plugging-up circuit at MDF jack box. Operate TALK switch

*Note:* For Test B, at plugging-up panel, the telephone circuit is patched to the L jack of trunk using a P3E cord.

- 4 Using a W2W cord, connect T & R jack of 35-type test set to No. 360C tools (white) associated with special cord (Fig. 1A)
- 5 Request operator or switch room forces to disregard signals on trunk while 35-type test set is being adjusted
- 6a If marginal test of L relay is to be made — Refer to circuit requirement table for current flow values and set up 35-type test set in the following sequence: Key No. 2 (locked operated) for test release, key No. 1 for test operate and key No. 3 for soak
- 7b If marginal test of L relay is not to be made — Move slides to cut out all resistance associated with No. 3 key of 35-type test set

**Tests B and C**

- 8 Observe that TR and CT keys at plugging-up panel are normal

**Test C**

- 9 Connect No. 59 cord tips of W2AY cord to tip and ring terminals of temporary two-party line (see 1.10) at HMDF. Connect other end of this cord to No. 360A tools (red) associ

STEP	ACTION	VERIFICATION
	ated with one of P4N cords shown in Figs. 1A and 1B. With switch in MON position, connect No. 365 tools of handset to a spare line circuit to be used for dialing out. Extend with jumper wire if necessary	
<b>4. METHOD</b>		
<b>A. Trouble Observation Test with Traffic Switchboard Supervision</b>		
8	At MDF jack box — Insert No. 289B plug of cord associated with 35-type test set into jack of trunk to be tested	
9	At switchboard — Restore all TR keys to normal	
10a	If marginal test of L relay is to be made — At MDF — After proper soak, operate and hold key 1 of 35-type test set	At switchboard — L lamp lights <i>Note: L lamp will also light in response to soak.</i>
11b	If marginal test of L relay is not to be made — Operate and hold key 3 of 35-type test set	L lamp lights
12	At switchboard — Operate TR key	L lamp extinguished
13	Restore TR key	L lamp lights
14a	If marginal test of L relay is to be made — At MDF — After proper soak, restore key 1 of 35-type test set	L lamp extinguished
15b	If marginal test of L relay is not to be made — Restore key 3 of 35-type test set	L lamp extinguished
16	Remove No. 289B plug from MDF jack box	
17	Repeat Steps 8 through 16 for other plugging-up lines to be tested	
18	If no further tests are to be made — Remove all test connections and re-establish permanent lines on plugging-up circuits removed in Step 2	
<b>B. Trouble Observation Test with Switch Room Supervision</b>		
9	At MDF jack box — Insert No. 289B plug of cord associated with 35-type test set into jack of trunk to be tested	At plugging-up panel — L lamp (red) lights B lamp (green) lights Audible alarm operates

STEP	ACTION	VERIFICATION
10c	If alarm transfer key is provided — At plugging-up panel — Operate key to test transfer of alarms to office alarm frame	Alarm transfers to office alarm frame
11c	Restore alarm transfer key	Alarm transfers back to plugging-up panel
12	At plugging-up panel — Operate TR key	L lamp extinguished Audible alarm retired
13a	If marginal test of L relay is to be made — At MDF — After proper soak, operate and hold key 1 of 35-type test set	L lamp lights Audible alarm operates <i>Note: L lamp will also light in response to soak.</i>
14a	After proper soak, restore key 1 of 35-type test set	L lamp extinguished Audible alarm retired
15b	If marginal test of L relay is not to be made — At MDF — Operate and hold key 3 of 35-type test set	L lamp lights Audible alarm operates
16b	Release key 3 of 35-type test set	L lamp extinguished Audible alarm retired
17d	If automatic cut through feature is provided — Operate key in common timing circuit to speed up alarms	
18d	At plugging-up panel — Operate CT key	
19e	If automatic cut through feature is provided on an immediate basis — At MDF — Operate and hold key 3 of 35-type test set	At plugging-up panel — L lamp lights Audible alarm operates
20e	Release key 3 of 35-type test set	L lamp remains lighted Audible alarm continues to sound
21f	If automatic cut through feature is provided on a delayed basis — Operate and hold key 3 of 35-type test set for at least 48 seconds	
22f	Release key 3 of 35-type test set	L lamp lights
23d	Transfer connections of handset from No. 360C tools of cord connected to talking circuit to No. 360A tools of cord connected to circuit under test. See Figs. 1A and 1B	

**SECTION 226-826-500**

<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
24d	At plugging-up panel — Transfer P3E cord from L jack of talking circuit to L jack of circuit under test	Verify by talking with assistant that cut through has been effected
25d	Restore CT key to normal	L lamp extinguished
26	At plugging-up panel — Restore TR key to normal	
27	At MDF — Remove 289B plug from jack of plugging-up line under test	B (green) lamp extinguished
28d	If automatic cut through feature is provided and further tests are to be made — Re-establish talking circuit as in Step 3	
29	Repeat Steps 9 through 28d for other plugging-up lines to be tested	
30	If no further tests are to be made — Remove all test connections and re-establish permanent lines on plugging-up circuits removed in Step 2	
<b>C. Trouble Intercepting Test</b>		
10	Notify switch room forces to disregard signals at plugging-up panel on circuits to be tested	
11	At MDF jack box — With the No. 59 cord tips connected to temporary line circuit, insert No. 289B plug of P4N cord into jack of trunk to be tested	
12	Operate TALK switch of dial hand test set and dial first party connector terminal to which trunk is patched	Ringing induction is heard Operator answers Verify that signal indicated trouble intercepting and that transmission is satisfactory
13	Operate MON switch of handset	Equipment restores to normal
14a	If the office serves party lines — Operate TALK switch of handset and dial second party connector terminal to which trunk is patched	Ringing induction is heard Operator answers Verify that signal indicated trouble intercepting and that transmission is satisfactory.
15a	Operate MON switch of handset	Equipment restores to normal
16	Disconnect No. 289B plug at MDF jack box	
17	Repeat Steps 11 through 16 for other trunks to be tested	
18	If no further tests are to be made, remove all test connections and re-establish permanent lines on plugging-up circuits removed in Step 2	
19	Notify switch room forces that tests are completed	