

**TEST DISTRIBUTORS**  
**TIMING TESTS**  
**USING RELAY TIMING TEST SET SD-90418-01 (J94713A)**  
**STEP-BY-STEP SYSTEMS**

**1. GENERAL**

**1.01** This section describes a method of applying relay timing tests to B, C and E functional relays.

**1.02** This section is reissued to delete testing information for connectors and 8- and 10-party reverting call selectors. Since this reissue covers a general revision, arrows ordinarily used to indicate changes have been omitted.

**1.03** The tests covered are:

- A. B Relay Release*
- B. C Relay Release*
- C. E Relay Release*

**1.04** Tests in this section are titled using the relay designation most commonly associated with its function in the circuit. For example, any relay which performs the function of a relay most commonly known as a B relay will be covered under the B relay test, even though in some cases it may be designated as G, L or some other letter. It may be necessary to consult circuit descriptions or schematic diagrams to determine which relays perform the function to be tested.

**1.05** The timing requirements given on the circuit requirement table for the particular circuit under test shall be employed or, if not covered thereon, the timing requirements given in Section 040-013-711 shall be used.

**1.06** While tests are being conducted on test distributors, the preceding trunk shall be made busy in the approved manner.

**1.07** Operation of the keys, dials and potentiometers, within the test set, which control the variable make and break periods required when performing the tests outlined in this section is covered in CD-90418-01.

**1.08** Failure of a relay to meet the release test may be due to the presence of some sticky substance between the armature and core, or it may indicate that the relay is out of timing adjustment, in which case it should be readjusted in accordance with timing requirements given on the circuit requirement tables or in Section 040-013-711.

**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.

**1.10** *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.

**2. APPARATUS**

**2.01** Relay timing test set J94713A (SD-90418-01).

**2.02** P3H cord, 10 feet long, equipped with a 310 plug and a 240A plug (3P2A cord). Terminals 3 and 4 of 240A plug should be strapped.

*Note:* If the test set is equipped with BAT, S and G terminals, the S and G terminals may be strapped and the strap between terminals 3 and 4 of the 240A plug may be omitted.

**SECTION 226-828-501**

**2.03** Patching cord, P2J cord, 9 feet long, equipped with two 310 plugs (2P9A cord), used where battery supply for test set is obtained from battery and ground jack.

**2.04** Testing cord, W2M cord, 9 feet long, equipped with one 310 plug and two 59 cord tips (2W12A cord) and two 108 (rubber

insulator) cord tips installed locally on the 59 cord tips, used where battery supply for test set is obtained from 35-type fuse (not to exceed 5 amperes) and frame ground or battery and ground block.

**2.05** One 32A or 32C test set, for remote control operation when required.

**3. PREPARATION**

<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
-------------	---------------	---------------------

**All Tests**

1	Connect battery and ground to BAT-G jack of test set.	
---	---	--

*Note 1:* If using W2M cord, connect white (tip) conductor to battery and red (sleeve) conductor to ground.

*Note 2:* To avoid possible grounding of battery supply lead, connect cord to test set first and, when disconnecting, remove cord from test set last.

2	Operate B key (or B dial) to position corresponding to release requirement for relay under test.	
---	--	--

3	Operate A-B key to B position.	
---	--------------------------------	--

Timing circuit in test set operates.

*Note:* Allow timing test set to operate for at least 15 minutes (to reach a constant temperature) before making tests.

**Test A**

4	Insert 310 plug of P3H cord into V-BR jack of test set.	
---	---	--

**Tests B and C**

5	Restore A-B key to normal.	
---	----------------------------	--

Timing circuit in test set stops.

6	Insert 310 plug of P3H cord into V-M jack of test set.	
---	--	--

7a	If using 32A remote control set — Insert plug into BR jack of test set.	
----	--	--

8b	If using 32C remote control set — Insert red shell plug into BR jack and gray shell plug into AW jack of timing test set.	
----	--	--

**4. METHOD**

STEP	ACTION	VERIFICATION
<b>A. B Relay Release</b>		
5	Insert 240A plug of P3H cord into local test jack of switch under test.	Switch steps to first level and releases without cutting in, at least three times.
6	Remove 240A plug from test jack.	
7	Unless further tests are to be made— Remove all cords and restore all keys.	
<b>B. C Relay Release</b>		
9	Insert 240A plug into local test jack of switch under test.	
10	Operate test set A-B key to B position or depress red button of remote control set.	Switch steps to first level and cuts in.
11	Restore A-B key on test set or release red button of remote control set.	Switch releases.
12	Remove 240A plug from test jack.	
13	Unless further tests are to be made, remove all cords and restore all keys.	
<b>C. E Relay Release</b>		
9c	If testing test distributor designed for 1-digit operation on first level— Remove switch cover, block K relay non-operated.	
10	Insert 240A plug of P3H cord into local test jack of switch under test.	
11	Operate test set A-B key to B position or depress red button of remote control set.	Switch steps to first level, cuts in and stops.
12c	If testing test distributor for 1-digit operation on first level— Remove blocking tool from K relay and replace switch cover.	
13	Remove 240A plug from switch test jack.	Switch releases.
14	Restore A-B key on test set or release red button of remote control set.	
15	Unless further tests are to be made— Remove all cords and restore all keys.	