# COIN SUPERVISORY LINK CIRCUITS
# NONWIRE-SPRING-RELAY TYPE
# TESTS
# NO. 5 CROSSBAR OFFICES

## 1. GENERAL

1.01 This section describes a method of testing nonwire-spring-relay type coin supervisory link circuits in No. 5 crossbar offices.

1.02 This section is reissued:

(a) To add the words Circuits and Nonwire-spring-relay Type to the title.

(b) To revise Test C to cover the testing of coin supervisory circuit preference relay chains when both wire-spring-type and nonwire-spring-type relays are included in the same chain.

(c) To eliminate Test D, Coin Supervisory Link Alarm Feature, as this test is covered in the section on Coin Supervisory and Coin Supervisory Concentrating Circuits.

Since this is a general revision, the arrows ordinarily used to indicate changes are omitted.

1.03 The tests covered are:

A. TP Relay Chain: The following features are tested. (1) Trunk preference and lockout. (2) Access to coin supervisory circuit from all trunks.

B. RB Relay Chain: The following features are tested. (1) Coin supervisory circuit preference and lockout. (2) Access to all coin supervisory circuits from each horizontal group of trunks.

C. Coin Supervisory Circuit Preference Relay Chain: This test checks coin supervisory circuit preference relay chains containing only nonwire-spring-type (RP) relays and coin supervisory circuit preference relay chains containing both nonwire-spring-type (RP) relays and wire-spring-type (SP) relays. The following features are tested. (1) Horizontal group preference and lockout. (2) Access to each coin supervisory circuit from all horizontal groups of trunks.

1.04 All tests should preferably be made during periods of light traffic.

1.05 Local instructions should be followed with reference to any register operations caused by making these tests.

## 2. APPARATUS

2.01 The apparatus required for each test is shown in the following list. The details for each are covered in the indicated paragraphs.

| Apparatus | No. Required for Test A | B | C |
|---|---|---|---|
| No. 651A Tool (2.02) | - | - | 1 |
| Test Receiver (2.03) | - | - | 1 |
| Test Receiver (2.04) | 1 | 1 | - |
| Test Cord (2.05) | 1 | - | 2 |
| Test Cord (2.06) | 3 | - | 1 |
| No. 322A Plug (2.07) | ✓ | ✓ | - |

Note: ✓ indicates apparatus as required.

2.02 No. 651A tool (to facilitate connection to wire-spring-relay contacts).

2.03 No. 509 test receiver, or equivalent, attached to a W2AB cord equipped with two No. 360A tools (2W21A cords), one No. 411A tool, and one KS-6278 tool (for checking the presence of battery or ground on relay contacts).

2.04 No. 716C test receiver, or equivalent, attached to a W2AB cord equipped with two No. 360A tools (2W21A cord), one No. 411A tool, and one KS-6278 tool (for checking the presence of battery or ground on relay contacts).

2.05 Test cord - No. 893 cord, 6 feet long, equipped with two No. 360A tools (1W13B cord), one KS-6278 tool, and one No. 607A tool (for nonwire-spring-type relays), or one No. 624A tool (for wire-spring-type relays). This test cord is used for making test connections to relay winding terminals.

2.06 Test cord - No. 893 cord, 6 feet long, equipped with two No. 360A tools (1W13B cord), one KS-6278 tool, and one No. 419A tool (for nonwire-spring-type relays), or one 639A tool (for wire-spring-type relays). This test cord is used for making test connections to relay contacts.

2.07 No. 322A (make busy) plug.

3. PREPARATION

| STEP | ACTION | VERIFICATION |
|---|---|---|
| For Tests A and B | | |
| 1 | Make busy all trunks in horizontal group being tested<br><br>Note 1: Make busy outgoing trunks by inserting No. 322A make-busy plugs in associated make-busy jacks at master test frame.<br><br>Note 2: Make busy intraoffice trunks by operating make-busy switches at trunk equipment frames. | |

4. METHOD

| STEP | ACTION | VERIFICATION |
|---|---|---|
| | A. TP Relay Chain | |
| 2 | Select coin supervisory circuit that has first seizure preference by horizontal group | |
| 3 | At coin supervisory link frame -<br>In horizontal group -<br>Block nonoperated RB, RP relays associated with coin supervisory circuit selected in Step 2 | |
| 4 | At frame on which coin supervisory circuit is located -<br>Operate associated MB switch to ON position | |
| 5 | At coin supervisory link frame -<br>Connect ground to contacts 5B, 8B, 8T of last TP relay in horizontal group | |
| 6 | Manually operate first TP relay in horizontal group momentarily | First TP relay holds operated<br>Associated hold magnet operated<br>Blocked RP relay energized<br>Ground on contact 7T of operated TP relay<br>Battery on contact 10B of last TP relay |
| 7 | Connect ground to top winding terminal of second TP relay | Second TP relay not operated |
| 8 | Momentarily remove ground from contact 5B of last TP relay | First TP relay released<br>Second TP relay operated<br>No ground on contact 8T of first TP relay |
| 9 | Remove ground from top winding terminal of second TP relay | Second TP relay remains operated |
| 10 | Manually operate first TP relay momentarily | First TP relay does not hold operated<br>Second TP relay remains operated |
| 11 | Momentarily remove ground from contact 5B of last TP relay | Second TP relay released |

| STEP | ACTION | VERIFICATION |
|---|---|---|
| 12 | Repeat Steps 6 through 11 applying reference to first and second TP relays to the two consecutive TP relays (second to third, third to fourth, etc.) until the last TP relay has been referred to as the second TP relay | |
| 13 | Repeat Step 6 for last TP relay | |
| 14 | Remove test connections from last TP relay | Last TP relay released |
| 15 | Remove blocking tools from RB and RP relay | |
| 16 | At frame on which coin supervisory circuit is located -<br>Restore MB switch to OFF position | |
| 17 | Restore trunks to service | |
| 18 | Repeat Steps 1 through 17 until all horizontal groups of coin supervisory link group have been tested | |

B. RB Relay Chain

Note 1: If any coin supervisory circuits are called into service during this test, the RB relay associated with that coin supervisory circuit in the group being tested will lock operated. Wait until that coin supervisory circuit restores to normal and then manually restore the operated RB relay to normal before proceeding with the test.

Note 2: The RP relays referred to in this test are only those in the horizontal group being tested. The first to last RP relays referred to in this test are determined by the reverse order of preference in which the associated coin supervisory circuit may be seized by the horizontal group. The RB relays referred to in this test are those associated with the first to last RP relays.

| | | |
|---|---|---|
| 2 | At coin supervisory link frame -<br>Block nonoperated RB and RP relays in horizontal group | |
| 3 | Block operated last TP relay in horizontal group | First RP relay energized |
| 4 | Remove blocking tool from first RB relay | |
| 5 | Manually operate first RB relay | First RB relay holds operated<br>Second RP relay energized |
| 6 | Repeat Steps 4 and 5 applying reference to first RB and second RP relays to second RB and third RP relays, third RB and fourth RP relays, respectively, until last RB relay is about to be manually operated | |

| STEP | ACTION | VERIFICATION |
|---|---|---|
| 7 | Manually operate last RB relay momentarily | Last RB relay holds operated<br>All other RB relays (associated with idle coin supervisory circuits) released |
| 8 | Remove blocking tools from operated TP relay and then from RP relays | |
| 9 | Restore trunks to service | |
| 10 | Repeat Steps 1 through 9 until all horizontal groups of link group have been tested | |

C. Coin Supervisory Circuit Preference Relay Chain

Note: Since the coin supervisory circuit preference relay chain passes through all frames in the link group, and since wire-spring-relay type frames may be added to existing nonwire-spring-relay type frames, the first, intermediate, or last preferred relay in the chain may be designated either RP (nonwire-spring type) or SP (wire-spring type). For this reason, these relays and their associated coin supervisory circuit busy relays, RB or SB relays, are arbitrarily designated first to last preference relays and first to last busy relays, respectively, for this test. The action and verification concerning these relays will be determined by the relay type as indicated. The preference and busy relays referred to in this test are those associated with the coin supervisory circuit made busy. For use in this test, the first to last preference relays in the chain are determined by the reverse order of preference in which their associated horizontal groups may seize the coin supervisory circuit. All contacts referred to on SP relays are fixed contacts.

| | | |
|---|---|---|
| 1 | At frame on which coin supervisory circuit is located -<br>Make busy the first (lowest numbered) coin supervisory circuit serving the link group by operating its MB switch to ON position | At coin supervisory link frame -<br>All busy relays operated |
| 2 | Block nonoperated ON, RLK relays in coin supervisory circuit made busy | |
| 3 | At coin supervisory link frame -<br>Block operated all operated busy relays | |
| 4 | Connect ground to contacts of last preference relay as follows:<br>RP relay - 5B, 8B<br>SP relay - 2, 4 | |

| STEP | ACTION | VERIFICATION |
|---|---|---|
| 5 | Connect ground to winding of first preference relay as follows:<br>RP relay - Top terminal<br>SP relay - Upper terminal | First preference relay operated<br>First busy relay not energized<br>Ground on contacts of last preference relay as follows:<br>RP relay - 5T<br>SP relay - 10 |
| 6 | Connect ground to winding of second preference relay as follows:<br>RP relay - Top terminal<br>SP relay - Upper terminal | Second preference relay not operated<br>Ground on contacts of first preference relay as follows:<br>RP relay - 4B, 7B, 10B<br>SP relay - 1, 2, 4 |
| 7 | Remove test connection from first preference relay | First preference relay released<br>Second preference relay operated<br>Second busy relay not energized<br>Ground on contacts of second preference relay as follows:<br>RP relay - 4B, 7B, 10B<br>SP relay - 1, 2, 4<br>No ground on contacts of first preference relay as follows:<br>RP relay - 5B, 8B, 5T<br>SP relay - 2, 4, 10<br>Ground on contacts of last preference relay as follows:<br>RP relay - 5T<br>SP relay - 10 |
| 8 | Connect ground to winding of first preference relay as follows:<br>RP relay - Top terminal<br>SP relay - Upper terminal | First preference relay operated<br>First busy relay energized<br>Second busy relay not energized |
| 9 | Remove test connection from first preference relay | First preference relay released |
| 10 | Connect ground to winding of third preference relay as follows:<br>RP relay - Top terminal<br>SP relay - Upper terminal | Third preference relay not operated |
| 11 | Remove test connection from second preference relay | Second preference relay released<br>Third preference relay operated<br>Third busy relay not energized<br>Ground on contacts of third preference relay as follows:<br>RP relay - 4B, 7B, 10B<br>SP relay - 1, 2, 4<br>No ground on contacts of second preference relay as follows:<br>RP relay - 5B, 8B, 5T<br>SP relay - 2, 4, 10<br>Ground on contacts of last preference relay as follows:<br>RP relay - 5T<br>SP relay - 10 |
| 12 | Connect ground to winding of second preference relay as follows:<br>RP relay - Top terminal<br>SP relay - Upper terminal | Second preference relay operated<br>Second busy relay energized<br>Third busy relay not energized |
| 13 | Remove test connection from second preference relay | Second preference relay released |

| STEP | ACTION | VERIFICATION |
|---|---|---|
| 14 | Repeat Steps 10 through 13 applying reference tc second and third preference relays to two consecutive preference relays, (third to fourth, fourth to fifth, etc.) for all other preference relays in chain | |
| 15 | Remove test connections from last preference relay | |
| 16 | Remove blocking tools from busy relays | |
| 17 | At frame on which coin supervisory circuit it located -<br>Remove blocking tools from RLK, ON relays | |
| 18 | Restore MB switch to OFF position | |
| 19 | Repeat Steps 1 through 18 for all other coin supervisory circuits | |