

PRETRANSLATOR

OPERATION AND MISCELLANEOUS TESTS

STEP-BY-STEP INTERTOLL DIALING OFFICES ARRANGED FOR CAMA

1. GENERAL

1.01 This section describes a method of testing the pretranslator circuit SD-32513-01, using the pretranslator trouble indicator, which is part of the pretranslator circuit. It also provides a method for performing various miscellaneous tests.

1.02 This issue affects the Equipment Test List.

1.03 The tests covered are:

A. All Codes Test: This test checks the code point cross-connections at the pretranslator frame and verifies that the pretranslator is capable of transmitting an AC, OC, or IC signal to the incoming register.

B. Pretranslator Trouble Release Test: This test checks the ability of the pretranslator circuit to transmit, simultaneously, AC, IC, and OC signals and to disengage from the incoming register. It also verifies that office alarms will be activated when such a condition exists.

C. TO Timer Test: This test checks the timing requirements of the TO timer circuit package.

D. Preference Chain Tests: This test checks the CH, CH1, and CH2 preference chains in the pretranslator connector from each end (high-to-low or low-to-high) of the chain.

E. CH Chain Alarm: This test checks the ability of the pretranslator connector to activate office alarms when the CH preference chain is in a trouble condition.

F. Miscellaneous Tests: This test checks various lamps, leads, relay operations, and alarm conditions which are pertinent to the normal operating features of the pretranslator circuit.

1.04 If the DL lamp should light while performing Tests A through E, it indicates that the pretranslators trouble indicator is in use. The AR key should be momentarily operated to release the trouble indicator for service.

1.05 All diodes should be tested in accordance with Section 032-173-301.

1.06 Lettered Steps: A letter a, b, c, etc, added to a step number in Part 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 The apparatus required for each test is shown in Table A. The details of each item are covered in the paragraph indicated by the number in parentheses.

2.02 The pretranslator trouble indicator is part of the pretranslator circuit (SD-32513-01).

2.03 Step-by-step CAMA test circuit (SD-32270-01).

2.04 Step-by-step CAMA test set, J38913A (SD-32277-01).

2.05 Timing test set J24753A (SD-25707-01).

2.06 Three testing cords, 20 conductor cords, 10 feet long, each equipped with one KS-13875 plug and one KS-13895 plug (W20D cord), for connecting A, B, C jacks of CAMA test set to A, B, C jacks of CAMA test circuit.

TABLE A

| APPARATUS | TESTS | | | | | |
|--|-------|---|---|---|---|---|
| | A | B | C | D | E | F |
| Pretranslator Trouble Indicator (2.02) | 1 | | | | | 1 |
| CAMA Test Circuit (2.03) | | 1 | | | | |
| CAMA Test Set (2.04) | | 1 | | | | |
| Timing Test Set (2.05) | | | 1 | | | |
| Cords (2.06) | | 1 | | | | |
| Cord (2.07) | | | 1 | | | |
| Cord (2.08) | | | 1 | | | |
| Cord (2.09) | | | | 4 | 2 | 1 |
| KS-6278 Clip (2.10) | | | 1 | 2 | | 1 |
| 651D Tool (2.10) | | | 1 | 1 | 1 | |
| 419A Tool (2.10) | | | 1 | 4 | 2 | 1 |
| 639A Tool (2.10) | | | 1 | 2 | 2 | |
| 716C Test Receiver (2.11) | | | | | | 1 |
| 322A Plug (2.12) | 1 | 1 | 1 | 1 | 1 | 1 |
| 320B Plug (2.13) | | | | | | 1 |
| Blocking and Insulating Tools (2.14) | | ✓ | ✓ | ✓ | ✓ | ✓ |

✓As required

2.07 One P3K cord, 6 feet long, equipped with 310 plugs (3P15A cord), for connecting battery and ground to timing test set.

2.08 One W3M cord, 6 feet long, equipped with a 310 plug on one end and 360A, B, and C tools on other end (3W4B cord). Equip 360A, B, and C tools as follows:

360A tool (red lead)—419A tool

360B tool (black lead)—KS6278 connecting clip

360C tool (white lead)—639A tool

2.09 Testing cord, 893 cord, 6 feet long, equipped with two 360A tools (1W13B cord).

2.10 Connecting tools. Use and apply tools as covered in Section 069-131-811.

2.11 Test receiver 716C, attached to a W2AB cord, equipped with two 360A tools (2W21A cord).

2.12 322A (make-busy) plug.

2.13 320B (alarm restoral) plug.

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

3. PREPARATION

| STEP | ACTION | VERIFICATION |
|------|---|--|
| 1 | At jack, key, and lamp panel— Insert 322A make-busy plug in PTMB- jack associated with pretranslator to be tested. | PT- lamp lighted corresponding to pretranslator made busy. |

4. METHOD

| STEP | ACTION | VERIFICATION |
|--------------------------|--|--------------|
| A. All Codes Test | | |
| 2 | At pretranslator— Set TST switch to normal. | |

| STEP | ACTION | VERIFICATION |
|------|---|--|
| | <i>Note:</i> Any position of the TST switch except positions 0 or 1 is considered to be normal. | |
| 3a | If DL lamp is lighted— Momentarily operate AR key. | All lamps extinguished. |
| 4 | Set A, B, and C selector switches to first working office code to be tested. | |
| 5b | If testing pretranslator 0— Set TST switch to position 0. | A-(2/5), B-(2/5), C-(2/5) lamps corresponding to office code under test and OC lamp flash at 60 ipm. |
| 6c | If testing pretranslator 1— Set TST switch to position 1. | A-(2/5), B-(2/5), C-(2/5) lamps corresponding to office code under test and OC lamps flash at 60 ipm. |
| 7 | Restore TST switch to normal. | All lamps extinguished. |
| 8 | Repeat Steps 4 through 7 for other office codes to be tested. | |
| 9 | Set A, B, and C selector switches to first working area code to be tested. | |
| 10b | If testing pretranslator 0— Set TST switch to position 0. | A-(2/5), B-(2/5), C-(2/5) lamps corresponding to area code under test and AC lamp flash at 60 ipm. |
| 11c | If testing pretranslator 1— Set TST switch to position 1. | A-(2/5), B-(2/5), C-(2/5) lamps corresponding to area code under test and AC lamp flash at 60 ipm. |
| 12 | Restore TST switch to normal. | All lamps extinguished. |
| 13 | Repeat Steps 9 through 12 for other area codes to be tested. | |
| 14 | Set A, B, and C selector switches to working interchangeable code. | |
| 15b | If testing pretranslator 0— Set TST switch to position 0. | A-(2/5), B-(2/5), C-(2/5) lamps corresponding to interchangeable code under test and IC lamps flash at 60 ipm. |
| 16c | If testing pretranslator 1— Set TST switch to position 1. | A-(2/5), B-(2/5), C-(2/5) lamps corresponding to interchangeable code under test and IC lamps flash at 60 ipm. |
| 17 | Restore TST switch to normal. | All lamps extinguished. |

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| STEP | ACTION | VERIFICATION |
|-------------|--|---|
| 18 | Repeat Steps 14 through 17 for other interchangeable codes to be tested. | |
| 19 | Set A, B, and C selector switches to vacant code. | |
| 20b | If testing pretranslator 0— Set TST switch to position 0. | A-(2/5), B-(2/5), C-(2/5) lamps corresponding to vacant code and IC lamp flash at 60 ipm. |
| 21c | If testing pretranslator 1— Set TST switch to position 1. | A-(2/5), B-(2/5), C-(2/5) lamps corresponding to vacant code and IC lamp flash at 60 ipm. |
| 22 | Restore TST switch to normal. | |
| 23 | Repeat Steps 19 through 22 for other vacant codes to be tested. | |
| 24 | Set A selector switch to 1. | |
| 25b | If testing pretranslator 0— Set TST switch to position 0. | A0, A1, IC lamps flash at 60 ipm. |
| 26c | If testing pretranslator 1— Set TST switch to position 1. | A0, A1, IC lamps flash at 60 ipm. |
| 27 | Restore TST switch to normal. | |
| 28 | Set A selector to 0. | |
| 29b | If testing pretranslator 0— Set TST selector switch to position 0. | A4, A7, IC lamps flash at 60 ipm. |
| 30c | If testing pretranslator 1— Set TST selector switch to position 1. | A4, A7, IC lamps flash at 60 ipm. |
| 31 | Restore TST key to normal. | All lamps extinguished. |
| 32d | If no further tests are to be made— At jack, key, and lamp panel— Remove make-busy plug from PTMB- jack. | PT- lamp extinguished. |

B. Pretranslator Trouble Release Test

- 2 At incoming register circuit associated with pretranslator under test—
Connect A, B, C cords of CAMA test set to A, B, C jacks of belt line circuit.
- 3 At CAMA test set—
Operate CT key.

| STEP | ACTION | VERIFICATION |
|------|--|---|
| 4 | At pretranslator— Block nonoperated OCK relay. | |
| 5 | At CAMA test set— Operate START key. | BSY lamp lights until incoming register is seized. |
| 6 | When BSY lamp is dark— Dial any three digits. | |
| 7 | At jack, key, and lamp panel— Remove 322A make-busy plug from PTMB-jack associated with pretranslator under test. | |
| 8 | At CAMA test set— Dial a fourth digit. | |
| 9 | At pretranslator— Remove blocking tool from OCK relay. | At incoming register— AC, IC, and OC relays operated. At pretranslator trouble indicator— A-(2/5), B-(2/5), C-(2/5), FN-(2/5), RN-(2/5) lamps lighted. MN and P lamps flash at 60 ipm. Minor alarm sounds. |
| 10 | At CAMA test set— Restore START key to normal. | |
| 11 | At pretranslator trouble indicator— Momentarily depress AR key. | All lamps extinguished. Minor alarm silenced. |
| 12 | Repeat Step 1 in PREPARATION and Steps 4 through 11 for other pretranslator circuits to be tested. | |
| 13a | If no further tests are to be made— At jack, key, and lamp panel— Remove make-busy plug from PTMB-jack. | PT- lamp extinguished. |

C. TO Timer Test

- 2 At timing test set—
Using P3K cord, connect 48V jack to -48 volt battery supply.
- 3 Calibrate and prepare timing test set for measuring 500 ms time interval as outlined in Section 100-130-101.
- 4 At pretranslator—
Remove relay cover from TRL relay and replace with 651D tool.

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| STEP | ACTION | VERIFICATION |
|------|---|--|
| 5 | At timing test set— Connect 310 plug of W3M cord to TST 1 jack. | |
| 6 | Connect black lead of W3M cord to frame ground. | |
| 7 | Connect white lead of W3M cord to contact 11M of TRL relay. | |
| 8 | Connect red lead of W3M cord to U (upper winding) of TA1 relay. | |
| 9 | Operate SEND key to BK. | |
| 10 | Operate REC switch to OC GRD. | |
| 11 | Operate MIL SEC switch to 0-500. | |
| 12 | Operate and hold TST key. | Meter on timing test set indicates between 390 and 432 ms. |
| 13 | Restore TST key to normal. | |
| 14 | Remove all cord connections. | |
| 15 | Replace 651D tool on TRL relay with relay cover. | |
| 16a | If no further tests are to be made— Remove 322A make-busy plug from PTMB-jack. | PT- lamp extinguished. |

D. Preference Chain Tests

CH Chain—High-to-Low

| | | |
|---|--|--|
| 2 | At pretranslator frame— Remove relay cover from operated MB relay and replace with 651D tool. | |
| 3 | Using 893 cord, short circuit contacts 7 and 7B of MB relay. | TA1 relay operates. |
| 4 | Using 893 cord, connect -48 volt battery to 2U of last P-9 relay in CH chain. | P-9 relay operates. TA1 relay releases. |
| 5 | Using 893 cord, connect -48 volt battery to 2L of last P-8 relay in CH chain. | P-8 relay <i>does not</i> operate. |
| 6 | Remove 893 cord connection from 2U of P-9 relay and connect to 2U of last P-7 relay in CH chain. | P-9 relay releases. P-8 relay operates. |

| STEP | ACTION | VERIFICATION |
|-----------------------------|---|--|
| 7 | Remove 893 cord connection from 2L of P-8 relay and connect to 2L of last P-6 relay in CH chain. | P-8 relay releases. P-7 relay operates. |
| 8 | Repeat Steps 6 and 7 for other P-- relays in CH chain. Move from the highest to the lowest P-- relay in the chain until 893 cord has been connected to 2L of P00 relay and 893 cord connection has been removed from P01 relay. <i>Note:</i> Use 2U for odd numbered P-- relays and 2L for even numbered P-- relays. | P-- relay associated with highest position in CH chain releases. P-- relay associated with lowest position in CH chain operates. <i>Note:</i> At end of CH preference chain test, P00 relay should be operated. All other P-- relays released. |
| CH Chain Low-to-High | | |
| 9 | Using 893 cord, short circuit 9 and 9B of MB relay. | CH relay operates. |
| 10 | Remove 893 cord connection from 7 and 7B of MB relay. | P00 relay remains operated. |
| 11 | Using 893 cord, connect -48 volt battery to 2U of P01 relay. | P01 relay operates. |
| 12 | Remove 893 cord connection from 2L of P00 relay and connect to 2L of P02 relay. | P00 relay releases. P02 relay operates. |
| 13 | Remove 893 cord connection from 2U of P01 relay and connect to 2U of P03 relay. | P01 relay releases. P03 relay operates. |
| 14 | Repeat Steps 12 and 13 for other P-- relays in CH1 chain moving from the lowest to the highest P-- relay in chain. <i>Note:</i> Use 2U for odd numbered P-- relays and 2L for even numbered P-- relays. | P-- relay associated with lowest position in CH1 chain releases. P-- relay associated with highest position in CH1 chain operates. |
| 15 | After last P-- relay in CH1 chain has been tested— Remove all 893 cord connections from P-- relays. | All P-- relays released. |
| 16 | Remove 893 cord connection from 9 and 9B of MB relay. | CH relay releases. |

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| STEP | ACTION | VERIFICATION |
|------------------|--|---|
| CH2 Chain | | |
| 17 | Using 893 cord, short circuit contacts 8 and 8B of MB relay. | TA2 relay operates. |
| 18 | Block nonoperated ON and TST relays. | |
| 19 | Block operated P00 relay. | TA2 relay releases. C00 relay operates. |
| 20 | Block operated P01 relay. | C00 relay remains operated. |
| 21 | Block operated OCK relay. | |
| 22 | Remove blocking tool from P00 relay and block operated P02 relay. | C00 relay remains operated. |
| 23 | Block TRL relay operated. | |
| 24 | Remove blocking tool from OCK relay. | C00 relay remains operated. |
| 25 | Remove blocking tool from TRL relay. | C00 relay releases. C01 relay operates. |
| 26 | Block operated OCK relay. | |
| 27 | Remove blocking tool from P01 relay and block operated P03 relay. | C01 relay <i>does not</i> release. |
| 28 | Remove blocking tool from OCK relay. | C01 relay releases. C02 relay operates. |
| 29 | Repeat Steps 26 through 28 for other P-- relays in CH2 chain moving from the lowest to the highest P-- relay in chain. | C-- relay associated with lowest position in CH2 chain releases. C-- relay associated with highest position in CH2 chain operates. |
| 30 | After last P-8 relay and associated C-8 relay in CH2 chain have been tested— Remove all blocking tools except from ON and TST relays. | TA2 relay operates. |
| 31 | Block operated last P-9 relay in CH2 relay chain. | Associated C-9 relay operates. |
| 32 | Block operated OCK relay. | |
| 33 | Remove blocking tool from P-9 relay. | Associated C-9 relay <i>does not</i> release. |
| 34 | Remove blocking tool from OCK relay. | C-9 relay releases. |

| STEP | ACTION | VERIFICATION |
|------|--|---------------------------------|
| 35 | Block operated last P-9 relay in CH2 relay chain. | Associated C-9 relay operates. |
| 36 | Momentarily operate RL relay. | C-9 relay momentarily releases. |
| 37 | Remove all cords and blocking tools. | |
| 38a | If no further tests are to be made— At jack, key, and lamp circuit— Remove make-busy plug from PTMB- jack. | PT- lamp extinguished. |

E. CH Chain Alarm

| | | |
|-----|--|--|
| 2 | At pretranslator frame— Remove cover from MB relay and replace with 651D tool. | |
| 3 | Using 893 cord, short circuit contacts 10 and 10B of MB relay. | Minor alarm sounds. |
| 4 | Using 893 cord, short circuit contacts 9 and 9B of MB relay. | CH relay operates. Minor alarm retired. |
| 5 | Block operated TA1 relay. | CH relay releases. Minor alarm sounds. |
| 6 | Block operated TA2 relay. | CH relay operates. Minor alarm retired. |
| 7 | Remove blocking tool from TA1 relay. | CH relay releases. Minor alarm sounds. |
| 8 | Remove blocking tool from TA2 relay. | CH relay operates. Minor alarm retired. |
| 9 | Remove 893 cord from contacts 9 and 9B of MB relay. | |
| 10a | If no further tests are to be made— At jack, key, and lamp panel— Remove make-busy plug from PTMB- jack. | PT- lamp extinguished. |

F. Miscellaneous Tests

PT Lamp

| | | |
|---|---|--|
| 2 | At pretranslator— Insulate contact 4M of MB relay. | At jack, key, and lamp panel— PT- lamp corresponding to pretranslator made busy extinguished. |
| 3 | Momentarily operate ON1 relay. | PT- lamp momentarily lighted. |

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| STEP | ACTION | VERIFICATION |
|---|--|---|
| 4 | Momentarily operate RL relay. | PT- lamp momentarily lighted. |
| 5 | Remove insulator from 4M of MB relay. | PT- lamp lighted. |
| HDC Lead Continuity | | |
| 6 | Block nonoperated ON1 and TGS relays. | |
| 7 | Block operated ON relay. | |
| 8 | Using 716C test receiver, check for the presence of ground on contact 51M of all C- relays. | Click heard in 716C receiver for each C- relay tested. |
| 9 | Remove blocking tools from ON, ON1, and TGS relays. | |
| A-(2/5), B-(2/5), C-(2/5) Relay Checking Network | | |
| 10 | Block ON1 relay operated. | |
| 11 | Insulate contact 8M of RK relay. | |
| 12 | Momentarily and manually operate A0 relay. | RK relay <i>does not</i> operate. |
| 13 | Repeat Step 12 for the other A-, B-, and C-relays. | RK relay <i>does not</i> operate. |
| 14 | Block operated A0, A1, B0, B1, C0, and C1 relays. | RK relay operates after last relay blocked operated. |
| 15 | Momentarily operate other A-, B-, and C-relays. | RK relay releases each time a A-, B-, or C-relay is operated. |
| 16 | Remove blocking tools from A0, A1, B0, B1, C0, and C1 relays. | RK relay releases. |
| 17 | Repeat Steps 14 through 16 for all other A-(2/5), B-(2/5), and C-(2/5) combinations substituting the other A-, B- and C- relays in place of A0, A1, B0, B1, C0, and C1 relays. | RK relay operates only when A-(2/5), B-(2/5), and C-(2/5) relays operated. |
| 18 | Remove all blocking tools. | |
| XOP Relay Check | | |
| 19 | Insulate contact 9M of TIB relay. | |
| 20 | Block MN relay operated. | MN lamp flashes at 60 ipm. |
| 21 | Using 893 cord, momentarily connect ground to contact 30 of any C- relay. | XOP relay operates and locks. XOP and P- lamps flash at 60 ipm. Minor alarm sounds. |

| STEP | ACTION | VERIFICATION |
|--|---|--|
| 22 | Momentarily insulate contact 5M of MN relay. | XOP relay releases. XOP and P- lamps extinguished. Minor alarm retired. |
| 23 | Repeat Steps 21 and 22 substituting contacts 31 and 32 for contact 30 of C- relay. | |
| 24 | Remove all blocking and insulating tools. | |
| LPI Lead, DL Relay, and PTO- Register Check | | |
| | <i>Note:</i> This test should only be performed during periods of light traffic. | |
| 25 | At jack, key, and lamp panel— Remove make-busy plug from PTMB- jack. | |
| 26 | At pretranslator— Block nonoperated TIB relay. | |
| 27 | Manually operate MN relay and hold. | Minor alarm sounds. |
| 28 | Release MN relay. | Minor alarm retired. |
| 29 | Remove blocking tool from TIB relay. | |
| 30 | At jack, key, and lamp circuit— Insert 322A make-busy plug in PTMB- jack associated with pretranslator to be tested. | At jack, key, and lamp panel— PT- lamp associated with pretranslator made busy lighted. |
| 31 | At pretranslator— Block operated MN relay, | MN and P- lamps flash at 60 ipm. TIB, TIBA, and DL relays operated. |
| 32 | Block operated TRL relay. | DL lamp flashes at 60 ipm. At jack, key, and lamp circuit— PTO- register energized. |
| 33 | Block nonoperated TIB relay. | |
| 34 | Momentarily operate manually sufficient number of C- relays to cause FN0, 1, 2, 4, 7, and RN0, 1, 2, 4, and 7 punchings to be grounded. | FN0, 1, 2, 4, 7, and RN0, 1, 2, 4, and 7 lamps momentarily lighted. |
| 35 | Remove all blocking tools. | At jack, key, and lamp panel— PTO- register scores. |
| 36 | Momentarily depress AR key. | At pretranslator— All relays released. All lamps extinguished. |

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| STEP | ACTION | VERIFICATION |
|-----------------------------|---|---|
| Remote Alarm Release | | |
| 37 | At jack, key, and lamp panel— Remove make-busy plug from PTMB- jack. | PTMB- lamp associated with pretranslator extinguished. |
| 38 | At pretranslator— Momentarily operate manually MN relay. | MN relay locks operated. Minor alarm sounds. |
| 39 | At jack, key, and lamp panel— Momentarily insert 320B plug into AR jack. | Minor alarm retired. |