

**AUTOMATIC TEST CIRCUIT
FOR KEYPULSING SENDERS SD-90424-01**

OPERATION TESTS

STEP-BY-STEP OFFICES

	PAGE
1. GENERAL	
1.01 This section describes a method for checking lamp indications, keys, and operating features of the automatic sender test circuit SD-90424-01.	
1.02 The operation tests consist of sending a series of calls to one of the senders in such a manner as to check all features of the test circuit.	
1.03 During these tests, trouble conditions are set up in the sender to determine if the test circuit will detect these troubles.	
1.04 All checks should be made in the sequence shown in this section.	
1.05 The tests covered are:	
PAGE	
A. Sender Selection — H Lead: This test checks the ability of the test circuit to select a sender.	2
B. Sender Seizure — SC Lead: This test checks the ability of the test circuit to seize the sender that was selected.	3
C. Sender Attached: This test checks the sender attached leads FR3, FT, and FR or FT3, FT, and FR or KR1, FT, and FR or KT1, FT, and FR used to connect sender to test circuit frame.	3
D. Trunk Class Information: This test checks the ability of the test circuit to select the different classes of trunks.	5
E. Sender Time-out — TO Key: This test checks the ability of the test circuit to produce a sender time-out.	6
F. Delayed Outpulsing: This test checks the keying and pulse checking digit delay.	7
G. Pulsing Speed Test — PT Key: This test checks that the test circuit can determine sender pulsing speed.	8
H. Synchronized Pulsing: This test checks the ability of the test circuit to test keying and pulsing of digits.	9
I. Stop-Go — SG Key: This test checks the ability of the test circuit to cause a sender with a stop-go class to stop outpulsing when battery and ground reversal is given over its FT and FR leads and to resume pulsing with another reversal.	11
J. Sender Ringing Test: This test checks the ability of the test circuit to test senders for response to different types of ringing.	12
K. Operator Ringing Test: This test checks the ability of the test circuit to make operator ringing tests.	16
L. Number Registration Test — RT Key: This test checks the ability of the test circuit to test sender registration of the number keyed.	18
M. Reorder — RO Key: This test checks that the test circuit can simulate a misplaced ST signal to cause the sender to route the call to reorder.	19

	PAGE
N. Preliminary Disconnect — PD Key: This test checks that the test circuit can test nonoperate, operate, and release requirements of the PD relay in the sender.	19
O. All Trunks Busy — TKB Key: This test checks the ability of the test circuit to make a trunks busy test.	21
1.06 Office records should be consulted to determine which class (A-D) has been assigned for the maximum number of digits for which the sender is equipped for Test H.	
1.07 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.

2. APPARATUS

All Tests

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

Test G

2.02 349A (make-busy) plug.

Test K

2.03 Two test cords, 893 cord, 6 feet long, equipped with two 360A tools (1W13B) and two KS-6278 connecting clips.

Test N

2.04 KS-6780 clip.

3. METHOD

STEP	ACTION	VERIFICATION
A. Sender Selection — H Lead		
1	At sender frame 1, Sender A — Block operated MB relay.	
2	Block nonoperated TA relay.	
3	At sender test frame — Block nonoperated DT1, TA relays.	
4	At test circuit — Operate TR3, TR1, or TR key, whichever is provided.	
5	Operate, release STP key until selector has stepped to position 1.	(3S)1, (1S)1, or (S)1 selector, whichever is provided, stepped to position 1.
6	Restore TR key.	
7	Operate ST, L keys.	Only SB lamp is lighted.
8	Remove blocking tool from MB relay.	At sender test frame — DT, SR, SR1 relays operated.

STEP	ACTION	VERIFICATION
9	Restore ST key.	
10	Momentarily operate CA key.	
11	Remove blocking tool from DT1 relay.	All relays, lamps restored to normal.
12	Remove all blocking tools and restore all keys.	

B. Sender Seizure — SC Lead

1	At sender 1A — Block nonoperated ON1 relay.	
2	At sender test frame — Block nonoperated TD, FC, SN1 relays.	
3	Operate ST, L keys.	ON, SC lamps lighted.
4	At sender 1A — Remove blocking tool from ON1 relay.	ON1 relay operated. ON lamp extinguished.
5	At sender test frame — Remove blocking tool from SN1 relay.	SN lamp extinguished.
6	Restore ST, L keys.	
7	Momentarily operate CA key.	
8	Remove blocking tool from TD, FC relays.	All relays, lamps restored to normal.

C. Sender Attached

KR3, FT, and FR Leads

1	At sender test frame — Operate 1 (TR3) key.	
2	Operate, restore STP key until selector (3S)1 has stepped to position 1.	Selector stepped to position 1.
3	At sender 1A — Block nonoperated KR3 relay.	
4	At sender test frame — Restore 1 (TR3) key.	
5	Operate CLA, L, REP, ST keys.	SB, ON, SC lamps lighted in turn. (Digit lamp) 1, FC lamps lighted.
6	Restore CLA key.	
7	Operate CLC key, then momentarily operate CA key.	(Digit lamp) 1, FC lamps lighted.

SECTION 226-847-501

STEP	ACTION	VERIFICATION
8	Restore ST, CLC, L, REP keys.	
9	Momentarily operate CA key.	
10	At sender test frame — Remove blocking tool from KR3 relay.	All relays, lamps restored to normal.
KT, FT, and FR Leads		
11	At sender 1A — Block nonoperated KT3 relay.	
12	At sender test frame — Operate CLB, L, REP, ST keys.	(Digit lamp) 1, FC lamps lighted.
13	Restore CLB key.	
14	Operate CLD key.	
15	Momentarily operate CA key.	(Digit lamp) 1 and FC lamps lighted.
16	Restore ST, CLD, L, REP keys.	
17	Momentarily operate CA key.	
18	At sender 1A — Remove blocking tool from KT3 relay.	All relays and lamps restored to normal.
KR1, FT, and FR Leads		
19	Manually advance all sender selectors to terminal 22.	
20	At sender test frame — Operate 1 (TR1) key or (TR) 1 key, whichever is provided.	
21	Operate and restore STP key until (1S) 1 or (S) 1 selector has stepped to position 1.	Selector stepped to position 1.
22	Restore 1 (TR1) or (TR) 1 key, whichever is provided.	
23	At sender 1A — Block nonoperated KR1 relay.	
24	Repeat Steps 5 through 9.	
25	Remove blocking tool from KR1 relay.	
KT1, FT, and FR Leads		
26	At sender 1A — Block nonoperated KT1 relay.	
27	Repeat Steps 12 through 17.	
28	Remove blocking tool from KT1 relay.	

STEP	ACTION	VERIFICATION
D. Trunk Class Information		
Operate Test of OF Relay (Class) A and B		
1	At sender test frame — Advance all sender selectors to terminal 22 by means of the TR, STP keys.	
2	Block nonoperated relay L1.	
3	At sender 1A — Block nonoperated OF1 (armature on right- hand contact).	
4	At sender test frame — Operate CLA, L, ST keys.	SB, ON, SC lamps lighted in turn. (Digit lamps) 1, K, FC lamps lighted.
5	Restore CLA key.	
6	Operate CLB, REP keys.	
7	Momentarily operate CA key.	(Digit lamps) 1, K, FC lamps lighted.
8	Restore ST, CLB, L, REP keys.	
9	Momentarily operate CA key.	
10	Remove blocking tool from L1 relay.	
11	At sender 1A — Remove blocking tool from OF1 relay.	All relays, lamps restored to normal.
Operate Test OF1 Relay Class C and D		
12	At sender test frame — Advance all sender selectors to terminal 22.	
13	At sender 1A — Block nonoperated OF (armature on right- hand contact).	
14	At sender test frame — Block nonoperated L1 relay.	
15	Operate CLC, L, ST keys.	(Digit lamps) 1, K, FC lamps lighted.
16	Restore CLC key.	
17	Operate CLD, REP keys.	
18	Momentarily operate CA key.	(Digit lamps) 1, K, FC lamps lighted.
19	Restore ST, CLD, REP keys.	
20	Momentarily operate CA key.	

SECTION 226-847-501

STEP	ACTION	VERIFICATION
21	Remove blocking tool from L1 relay.	
22	At sender 1A — Remove blocking tool from OF relay.	All relays, lamps restored to normal.
23	Restore L key.	

E. Sender Time-Out — TO Key

Operator DC Ring Signal

1	At sender test frame — Advance all sender selectors to position 22.	
2	Block nonoperated RO, TA relays.	
3	Operate a (CL) key and depress keys in rows D1-D14 for the maximum digits required for the fixed or variable number.	
4	Operate TO, L, ST keys.	SB, ON, SC lamps light in turn. Test blocks with (Digit lamps) 1, K, FC lamps lighted.
5	Operate REP key.	
6	Remove blocking tool from RO relay.	RO relay operated. Test completed. (Digit lamps) 1, K, FC lamps light in turn as test is made repeatedly.
7	At sender 1A — Block nonoperated TA relay.	
8	At sender test frame — Remove blocking tool from TA relay.	
9	Momentarily operate CA key.	TA lamp lighted. TBL register scored. Minor audible alarm sounded.
10	Operate TA key.	TA lamp extinguished. Alarm silenced.
11	Restore ST, CL-, TO, L, REP keys.	
12	Restore TA key.	TA lamp lighted. Alarm sounded.
13	Momentarily operate CA key.	TA lamp extinguished. Alarm silenced.
14	At sender 1A — Remove blocking tool from TA relay.	

STEP	ACTION	VERIFICATION
Operator 20-Cycle Ring		
15	Advance sender selector (3S)1 to terminal 21 and selector (1S)7 to terminal 22.	
16	At sender test frame — Block nonoperated TA, FL2 relays.	
17	Operate a CL- key and depress keys in rows D1-D14 for the maximum digits required for the fixed or variable number.	
18	Operate TO, L, FL, ST keys.	SB, ON, SC lamps light in turn. (Digit lamps) 1, K, and FC lamps lighted. Test blocks with FL lamp flashing. K, FC lamps lighted.
19	Restore FL key.	FL lamp lighted.
20	Operate REP key.	
21	Remove blocking tool from FL2 relay.	FL2 relay operated. Test completes (Digit lamps) 1, K, and FL lamps light in turn as test is made repeatedly.
22	Restore ST, CL-, TO, L, REP keys.	
23	Momentarily operate CA key.	
24	Remove blocking tool from TA relay.	All relays, lamps restored to normal.

F. Delayed Outputting

Keying First Digit

1	Advance all sender selectors to terminal 22.	
2	At sender 1A — Block nonoperated TA relay.	
3	At sender test frame — Block nonoperated 1', 0', TA relays.	
4	Depress only the numerical key (D1)6.	
5	Operate keys CL-, L, ST.	SB, ON, SC lamps light in turn. (Digit lamps) 1, K, FC, DLC lamps lighted.
6	Remove blocking tool from 0' relay.	2-9 and 0 (Pulse lamps) lighted.
7	Remove blocking tool from 1' relay.	DLC lamp extinguished.
8	Operate REP key.	

SECTION 226-847-501

STEP	ACTION	VERIFICATION
9	Depress keys 1, 2, 3, 4, 5, 6, 7, 8, 9, 0 one at a time. While holding each key down, momentarily operate the CA key.	For each pair of keys operated, K, FC lamps lighted momentarily.
10	Restore ST, CL-, L, REP keys.	
11	Momentarily operate CA key.	
12	Remove blocking tool from TA relay.	
13	At sender 1A — Remove blocking tool from TA relay.	All relays, lamps restored to normal.

Pulse Checking — Digit Delay

14	At sender 1A — Block operated 1T relay.	
15	Advance all sender selectors to terminal 22.	
16	At sender 1A — Block nonoperated TA relay.	
17	At sender test frame — Block nonoperated 1', 0', TA relays.	
18	Depress only the numerical (D1) 6 key.	
19	Operate CL-, L, ST keys.	Sender outpulses without awaiting registration of second digit. Test blocks with OC lamp (Pulse lamp) 6 (Digit lamps), 1, K, FC, DLC lamps lighted.
20	Restore ST, CL-, L key.	
21	Momentarily operate CA key.	
22	Remove blocking tools from 1', 0', TA relays.	
23	At sender 1A — Remove blocking tools from 1T, TA relays.	All lamps, relays restored to normal.

G. Pulsing Speed Test — PT Key

1	Advance all sender selectors to position 22.	
2	At sender 1A — Block nonoperated TA relay.	
3	At sender test frame — Block nonoperated 1', 0', TA relays.	
4	Operate a CL- key.	
5	Depress (D1) 9 key.	
6	Operate PT, L, ST keys.	(Digit lamps) 1, ON, FC lamps lighted.

STEP	ACTION	VERIFICATION
7	Insert a 349A plug into the (MB) 1A sender test frame jack.	(Digit lamp) D1, FC, (Pulse lamps) 2-9 lamps lighted.
8	Verify proper connection of contact protection networks B, B1.	Absence of sparking at contacts 4 and 5(L) relay.
9	Remove blocking tool from 1' relay.	Only (Pulse lamp) 1, (Digit lamp) 1, FC, R lamps lighted.
10	Block nonoperated 5' relay (sender test frame)	Only (Pulse lamp) 1, (Digit lamp) 1, FC, R lamps lighted.
11	Remove blocking tool from 0' relay.	(Pulse lamps) 6-9 and 0 lamps lighted.
12	Remove blocking tool from 5' relay.	(Pulse lamp) 1 flashes at the rate of 57-66 flashes per minute.
13	Operate ABP- FP key.	(Pulse lamp) 0-1 flashes at the rate of 96-120 flashes per minute.
14	Restore ST, PT, CL-, APB- FP, L keys.	
15	Momentarily operate CA key.	
16	At sender 1A — Remove plug from MB jack.	
17	Remove blocking tools from TA relays.	All lamps, relays restored to normal.
18	Remove blocking tool from TA relay.	

H. Synchronized Pulsing

Keying and Pulse Checking of Digits

- 1 Advance all sender selectors to terminal 22.
- 2 At sender test frame —
For (class) A-D selected —
Block nonoperated TA relay.
- 3a At sender 1A for class A or B —
Block nonoperated OF1, RC, TA, (CA) 1 and 2 and ICT relays.
- 3b At sender 1A for class C or D —
Block nonoperated OF, RC, TA, (CA) 1 and 2, ICT relays.
- 4 At sender test frame —
Operate CL- key assigned to the class.
- 5 Depress key 6 only in D1-D14 rows.

SECTION 226-847-501

STEP	ACTION	VERIFICATION
6	Operate SS, L, ST keys.	SB, ON, SC lamps light in turn. (Digit lamp) 1, K, FC lamps lighted.
7	Restore ST, SS, L relays.	
8	Momentarily operate CA key.	
9	Remove blocking tool from TA relay.	
10	At sender 1A — Remove blocking tool from OF, OF1, (CA) 1 and 2, RC, TA, ICT relays.	All lamps, relays restored to normal.
11	Restore CL key.	
Undercount		
12	Advance all sender selectors to terminal 22.	
13	At sender 1A — Block operated 1(R4) relay.	
14	At sender test frame — Depress (D1)0, (D2)0 keys.	
15	Operate CL-, L, ST keys.	SB, ON, SC, DLC, (Digit lamp) 1, (Pulse lamps) 0, 9-1 lamps light in turn. Test block with K, FC, (Pulse lamps) 7-9 and 0 lamps lighted.
16	Restore ST, CL-, L keys.	
17	Momentarily operate CA key.	
18	At sender 1A — Remove blocking tool from 1 (R4) relay.	All relays, lamps restored to normal.
Overcount		
19	At 1A sender — Block operated 1 (R4) relay.	
20	At sender test frame — Depress (D1) 6, (D2) 6 keys.	
21	Operate CL-, L, ST keys.	Test blocks with K, FC, (Pulse lamps) OC, 1-6 lamps lighted.
22	Restore ST, CL-, L keys.	
23	Momentarily operate CA key.	
24	At sender 1A — Remove blocking tool from 1 (R4) relay.	All lamps, relays restored to normal.

STEP	ACTION	VERIFICATION
I. Stop-Go — SG Key		
1	Advance all sender selectors to terminal 22.	
2	At sender 1A — Block nonoperated TA, OF3, OF4, CT relays.	
3	At sender test frame — Block nonoperated GO, TA relays.	
4	Operate CL- key for class selected for Stop-Go feature.	
5	Depress key 6 only in D1-D14 rows.	
6	Operate L, SG, ST keys.	SB, ON, SC lamps light in turn. (Pulse lamps) 0 and 9, (Digit lamp) 2, K, FC, RB, SG, DCL lamps lighted.
7	At sender 1A — Remove blocking tool from OF3 relay.	Relay OF3 operated.
8	At sender test frame — Operate REP key.	
9	Momentarily operate CA key.	Test blocks with (Digit lamp) 2, K, FC, RB, SG, DCL lamps lighted.
10	At sender test frame — Remove blocking tool from GO relay.	GO relay operated momentarily. RB, SG, DCL lamps extinguished.
11	At sender test frame — Momentarily operate CA key.	(Pulse lamps) 1-0, 6-1, 1-0, and 1-0 light in turn. Test blocks with only (Digit lamp) 2, K, FC lamps lighted. Relay OF3 operated.
12	At sender 1A — Remove blocking tool from OF4 relay.	OF4 relay operated. (Pulse lamps) 6-1 light in turn. Test progresses through the keying and pulsing of all digits and then blocks with FC, R lamps lighted.
13	At sender test frame — Restore ST, CL-, L, REP, SG keys.	
14	Momentarily operate CA key.	
15	At sender 1A — Remove blocking tools from CT, TA relays.	All lamps, relays restored to normal.
16	At sender test frame — Remove blocking tool from TA relay.	

STEP	ACTION	VERIFICATION
J. Sender Ringing Test		
Wet-Dry Supervision, Line Seizure, and Sender 20-Cycle Ringing		
<i>Inward Toll Position Automatic AC Ringing</i>		
1	Advance all sender selectors to terminal 22.	
2	Operate CL- key and depress keys in rows D1-D14 for classes A-D determined for supervision and ringing features.	
3	At sender 1A — Block nonoperated R, SR, TA (CA) 1 and 2, CT, INT relays.	
4	At sender test frame — Block nonoperated R, R2, TA relays.	
<i>Line Seizure</i>		
5	Operate AR, L, ST keys.	SB, ON, SC lamps light in turn. K, FC, RB lamps and a (Digit lamp) — (one number higher than last digit keyed) lighted.
<i>Key Kick Off Ringing Signal</i>		
6	At sender 1A — Remove blocking tool from R relay.	R relay operated. RA relay (sender 1A), SA3 (sender test frame) relay operated.
<i>Cut-Thru</i>		
7	At sender 1A — Remove blocking tool from CT relay.	CT relay operated.
<i>Await Sender Ringing</i>		
8	At sender test frame — Remove blocking tool from R2 relay.	
9	Operate REP key.	
10	Momentarily operate CA key.	(Digit lamp) FC, RB, R lamps lighted.
<i>20-Cycle Sender Ringing</i>		
11	Remove blocking tools from R, TA relays.	
12	Momentarily operate CA key.	Test completed. SB, ON, SC (Digit lamp) 1-, K, FC, RB, R lamps light in turn.
13	Restore ST, AR, L, REP keys.	
14	Momentarily operate CA key.	

STEP	ACTION	VERIFICATION
15	At sender 1A — Remove blocking tools from SR, (CA) 1 and 2, TA, INT relays.	All lamps, relays restored to normal.
16	At sender test frame — Restore CL- key.	

Reversed Battery Supervision, No Line Seizure, and DC Sender Ringing

Inward Toll Position Automatic SX Ringing

17	At sender test frame — Advance all selectors to terminal 22.	
18	Operate CL- key and depress keys in rows D1-D14 of classes arranged for reversed battery.	
19	At sender 1A — Block nonoperated RC, R, SR, TA, (CA) 1 and 2, CT, INT relays.	
20	At sender test frame — Block nonoperated SX, SX1, R2, TA relays.	

Reversed Battery Class Indication — No Line Seizure Required

21	Operate AR, L, ST keys.	SB, ON, SC lamps light in turn. (Digit lamp)-, K, FC lamps lighted.
22	At sender 1A — Remove blocking tools from RC relay.	RC, RC1, OF2 relays operated.

Key Kick Off Ringing Signal

23	Remove blocking tool from R relay.	R relay operated.
----	------------------------------------	-------------------

Cut-Thru

24	Remove blocking tool from CT relay	CT relay operated.
----	------------------------------------	--------------------

Await Sender Ringing

25	At sender test frame — Remove blocking tool from R2 relay.	
26	Operate REP key.	
27	Momentarily operate CA key.	(Digit lamp)-, FC, R lamps lighted.

DC Sender Ringing — FT Lead

28	Remove blocking tool from SX relay.	
29	Momentarily operate CA key.	SX relay momentarily operated. (Digit lamp)-, FC, R lamps lighted.

SECTION 226-847-501

STEP	ACTION	VERIFICATION
<i>DC Sender Ringing — FR Lead</i>		
30	At sender test frame — Remove blocking tool from SX1 relay.	
31	Momentarily operate CA key.	SX1 relay operated. Test completed. SB, ON, SC, (Digit lamp) 1-, K, FC, R lamps light in turn.
32	Restore ST, AR, L, REP keys.	
33	Momentarily operate CA key.	
34	At sender 1A — Remove blocking tools from SR, TA, (CA) 1 and 2, INT relays.	
35	At sender test frame — Restore CL key.	

Immediate Cut-Thru

Cancel Automatic Ringing

36	At sender test frame — Advance all selectors to terminal 22.	
37	Operate CL- key and depress keys in rows D1-D14 of classes arranged for immediate cut-thru.	
38	At sender 1A — Block nonoperated OF2, SR, TA, (CA) 1 and 2, CT, ICT, INT relays.	
39	At sender test frame — Block nonoperated TA relay.	

Key Kick Off — No Ringing Signal

40	Operate CAR, L, ST keys.	SB, ON, SC lamps light in turn. (Digit lamp)-, FC, R lamps lighted.
41	Restore CL- key.	

Cut-Thru

42	Operate REP key.	
43	At sender 1A — Remove blocking tool from CT relay.	CT relay does not operate.

STEP	ACTION	VERIFICATION
44	Remove blocking tool from ICT relay.	CT relay operated. Test completed. SD, ON, SC, (Digit lamp) 1-, K, FC, R lamps light in turn.
45	At sender test frame — Restore ST, CAR, L, REP keys.	
46	Momentarily operate CA key.	
47	Remove blocking tool from TA relay.	
48	At sender 1A — Remove blocking tools from OF2, SR, TA, (CA) 1 and 2, INT relays.	

Line Busy — Repeated Dialing Toll Trains

Sender, Fig. 6, SD-95480-01

49	At sender test frame — Advance all senders to terminal 22.	
50	Operate CL- key and depress key in rows D1-D14 for classes selected for wet-dry supervision.	
51	At sender 1A — Block nonoperated (CA) 1 and 2, TA, Z1 relays.	
52	At sender test frame — Block nonoperated TA relay.	

Awaiting Line Seizure

53	Operate L, ST keys.	SB, ON, SC lamps light in turn (Digit lamp)-, FC lamps lighted.
----	---------------------	---

Line-Busy Timing

54	Operate REP key.	
55	At sender 1A — Remove blocking tool from Z1 relay.	Z1 relay operated. Test completed. SB, ON, SC, (Digit lamp)-, K, FC, R lamps light in turn.
56	At sender test frame — Restore ST, L, REP keys.	
57	Momentarily operate CA key.	
58	Remove blocking tool from TA relay.	

STEP	ACTION	VERIFICATION
59	At sender 1A — Remove blocking tools from TA and (CA) 1 and 2 relays.	All lamps, relays restored to normal.

K. Operator Ringing Test

Outward Toll Position Operator DC Ringing, Fig. K or G, No. 3 Switchboard SD-95480-01

- 1 At sender test frame —
Advance all selectors to terminal 22.
- 2 Operate CL- and depress keys in rows
D1-D14 for classes selected for no ringing
(wet-dry or reversed battery supervision).
- 3 At sender 1A —
Block nonoperated SR, (CA) 1 and 2, TA,
INT relays.
- 4 At sender test frame —
Block nonoperated TA relay.

Line Seizure — No Ringing Indication

- | | | |
|---|-----------------------------|--|
| 5 | Operate (OR) O, L, ST keys. | SB, ON, SC lamps light in turn.
(Digit lamp)-, FC, R, (RB on wet-dry super-
vision) lamps lighted. |
|---|-----------------------------|--|

Operate Test (Sender) SR Relay

- | | | |
|---|---|--|
| 6 | At sender 1A —
Remove blocking tool from SR relay. | |
| 7 | At sender test frame —
Operate REP key. | |
| 8 | Momentarily operate CA key. | SR, RA relays operated.
Test completed.
SB, ON, SC, (Digit lamps) 1-, K, FC, R
lamps light in turn. |

Nonoperated Test (Sender SR Relay)

- | | | |
|----|---|-------------------------------------|
| 9 | Operate CA, AR, (OR) NO or NOR keys. | |
| 10 | At sender test frame —
Using 893 cord, connect rear contacts of
relays Fig. K 4B (NO) to 1B (OR) 1, or
Fig. G 1T (OR) 2 to MID (AX) Resistor
Bottom Unit. | |
| 11 | Restore CA key. | (Digit lamp)-, FC, R lamps lighted. |
| 12 | Remove 893 cord. | |

STEP	ACTION	VERIFICATION
13	Momentarily operate CA key.	NRA relay (sender 1A) operated. Test completed. SB, ON, SC, (Digit lamp) 1-, K, FC, R lamps light in turn.
14	Restore ST, AR, L, REP, (OR) NO, (OR) O, NOR keys.	
15	Momentarily operate CA key.	
16	At sender 1A — Remove blocking tool from TA, (CA) 1 and 2, INT relays.	All lamps, relays restored to normal.

Outward Toll Position — Operator 20-Cycle AC Ringing, Fig. G — No. 1 Switchboard SD-95480-01

17	At sender test frame — Advance sender selector (3S) 1 to terminal 22 and selector (1S) 1 to terminal 22.
18	Operate CL-, D1-D14 keys for classes selected for no ringing.

Line Seizure — No Ringing

19	At sender 1A — Block nonoperated AC, TA, (CA) 1 and 2, INT relays.	
20	At sender test frame — Operate OR, L, and ST keys.	SB, ON, SC lamps light in turn. (Digit lamp), FC lamps lighted.

Operate Test (Sender) AC Relay

21	At sender 1A — Remove blocking tool from AC relay.	
22	At sender test frame — Operate REP key.	
23	Momentarily operate CA key.	SR, RA relays operated. SB, ON, SC, (Digit lamp) 1-, K, FC, R, (RB on wet-dry supervision) lamps light in turn.

Nonoperate Test (Sender) AC Relay

24	Operate CA, NOR, keys.	
25	At sender test frame — Using 893 cord — Connect to 1T (SB) 1 3B (OR) relay contacts.	
26	Restore OR, CA keys.	(Digit lamp)-, FC, R lamps lighted.

STEP	ACTION	VERIFICATION
27	Remove 893 cord.	
28	Momentarily operate CA key.	At sender 1A — NRA relay operated. Test completed. At sender test frame — SB, ON, SEC, (Digit lamp) 1-, K, FC, R lamps light in turn.
29	Restore ST, NOR, L, REP keys.	
30	Momentarily operate CA key.	
31	Remove blocking tool from TA relay.	
32	At sender 1A — Remove blocking tools from TA, INT, (CA) 1 and 2 relays.	All relays, lamps restored to normal.

L. Number Registration Test — RT Key

1	At sender test frame — Advance all sender selectors to terminal 22.	
2	At sender 1A — Block nonoperated TA relay.	
3	At sender test frame — Block nonoperated RC and TA relays.	
4	Operate CL- key assigned to (class)- requiring the maximum number of digits for which the sender is equipped.	
5	Depress keys in rows D1-D14 for the maximum digits required.	
6	Operate RT, L, (OR) O, ST keys.	SB, ON, SC, (Digit lamps) 1-14 (depending on D1-D14 keys depressed) lamps light in rapid succession while the digits are keyed. Sender outpulses all digits. Test block with K, FC lamps lighted.
7	Operate REP, CA keys.	
8	Remove blocking tool from RC relay.	
9	Operate AR (sender automatic ringing), or AR, (OR) NO or NOR NO(operator ringing) keys determined by class selected.	
10	Restore CA key.	SB, ON, SC, (Digit lamp) 1-, K, FC, (Pulse lamps)-, R lamps light in turn.
11	Remove blocking tool from TA relay.	

STEP	ACTION	VERIFICATION
12	At sender 1A — Remove blocking tool from TA relay.	RT scores for each repeated test.
13	At sender test frame — Restore ST key.	Test already started completed. All lamps extinguished.
14	Operate ST key.	
15	As each test completes — Change setting of the 1-9 and 0 keys in rows D1-D14 to test keying and pulsing of all numbers.	All tests completed satisfactorily.
16	Restore ST, CL-, RT, AR, (OR) O, L, REP keys.	
17	Momentarily operate CA key.	All lamps, relays restored to normal.

M. Reorder — RO Key

1	Advance all sender selectors to terminal 22.	
2	At sender 1A — Block nonoperated PD1, TA relays.	
3	At sender test frame — Block nonoperated RO, TA relays.	
4	Operate a CL- key.	
5	Depress and lock (D1) 1 and 4 keys.	
6	Operate RT, RO, L, ST keys.	SB, ON, SC, (Digit lamp) 1 lamps light in turn. Test block with (Digit lamp) 2, K, FC lamps lighted.
7	Operate REP key.	
8	At sender test frame — Remove blocking tool from RO, TA relays.	RO relay operated. Test completed. (Digit lamp) 2, K, FC lamps light in turn.
9	Restore ST, CL-, RT, RO, L, REP, (D1) 1 and 4 keys.	
10	Momentarily operate CA key.	
11	At sender 1A — Remove blocking tools from PD1, TA relays.	All relays, lamps restored to normal.

N. Preliminary Disconnect — PD Key

1	At sender test frame — Advance all sender selectors to position 22.	
---	--	--

SECTION 226-847-501

STEP	ACTION	VERIFICATION
2	At sender 1A — Block nonoperated PD, TA relays.	
3	At sender test frame — Block nonoperated PD3, TA relays.	
4	Operate CL-, and depress O keys in rows D1-D14 for the maximum number of digits required.	
5	Operate RT, PD, L, ST keys.	SB, ON, SC, (Digit lamps) 1-14 (depending on D1-D14 keys depressed) lamps light in turn. Test blocks with (Pulse lamps) 1-9 and 0, (Digit lamps) 2, K, FC lamps lighted.
6	At sender 1A — Insulate contacts 1 and 2B of (ON) relay.	
7	At sender test frame — Block operated PD relay.	
8	Momentarily cross connect contacts 2 and 3T on the PD relay.	At sender test frame — PD4 relay operated.
9	At sender 1A — Remove insulator from ON relay.	
10	At sender test frame — Remove blocking tool from PD relay.	
11	Remove blocking tool from PD3 relay.	PD3 relay does not operate.
12	Operate REP, CA keys.	
13	Momentarily release ST key.	PD, PD4 relays released.
14	Restore CA key.	Test blocks with (Digit lamp) 2, (Pulse lamp) 1-9 and 0, K, FC lamps lighted.
15	At sender 1A — Remove blocking tool from PD, TA relays.	PD relay operated. Test completed. (Digit lamp) 2, (Pulse lamps) 0-1, K, FC lamps light in turn.
16	At sender test frame — Restore ST, CL-, RT, PD, L, REP keys.	
17	Momentarily operate CA key.	
18	Remove blocking tool from TA relay.	All relays, lamps restored to normal.

STEP	ACTION	VERIFICATION
O. All Trunks Busy — TKB Key		
1	At sender test frame — Advance all sender selectors to position 22.	
2	At sender 1A — Block nonoperated TA, CT relays.	
3	At sender test frame — Block nonoperated TA, RB relays.	
4	Operate CL- key and depress keys in rows D1-D14 for maximum digits required.	
5	Operate RT, L, TKB, ST keys.	SB, ON, SC, (Digit lamps) 1-14 (depending on D1-D14 keys depressed) lamps light in turn and test blocks with (Digit lamp) 2, K, FC, TKB lamps lighted.
6	Remove blocking tool from RB relay.	RB lamp flashes.
7	Operate REP key.	
8	At sender 1A — Remove blocking tool from CT relay.	CT relay operated. Test completed. (Digit lamp) 2, FC, TKB, RB lamps light in turn.
9	At sender test frame — Restore ST, CL-, RT, L, REP, TKB key.	
10	Momentarily operate CA key.	
11	Remove blocking tool from TA relay.	
12	At sender 1A — Remove blocking tool from TA relay.	All lamps, relays restored to normal.