

SUPPLEMENTARY TEST OF INCOMING TRUNKS  
 AND ASSOCIATED MISCELLANEOUS CIRCUITS

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1. GENERAL INFORMATION

1.1 Description

1.1.1 This section outlines supplementary tests of the following circuits:

<u>SD</u>	<u>Title</u>
25875-01	Incoming Trunk Ckt.
25295-01	Incoming Trunk Ckt.
25302-01	Incoming Trunk Ckt.
26204-01	Incoming Trunk Ckt.
25025-01	Aux. Trunk From Manual Local
25038-01	Timing Circuit For Incoming Trunks
25439-01	Misc. Circuit for Inc. Trunk & Supplementary Inc. Trunk Frames
25440-01	Misc. Circuit For Relay Rack Bays
25495-01	Signaling Circuit Supply Control

2. TESTING EQUIPMENT

2.1 Test Sets and Accessories

<u>Amt</u>	<u>Code</u>	<u>Description</u>	<u>With ITE</u>
1	ITE-4442	Volt-Ohmmeter	
1	KS-3008	Stop Watch	
1	ITE-4137A	Continuity Test Set	102
10	349A	Make Busy Plugs	4023
2	ITE-2260	Call Wire Telephone Jack	4023
1	R-9572	Test Receiver	4023

2.2 Cords

<u>Amt</u>	<u>ITE</u>	<u>Lgth</u>	<u>Cdrs</u>	<u>One End</u>	<u>Other End</u>	<u>With ITE</u>
3	9650	15'	4	396A Plug	Tel.Set	4023

3. FUSING

3.1 Talking Battery Filter (Figs. 18 and 20, SD-25439)

NOTE: Do not insert these fuses until power (48V) is maintained on a 24 hour basis.

3.11 Before inserting 20 ampere fuses of filter circuit or the associated 1-1/3 ampere alarm fuses check fuse posts for absence of crosses or ground.

3.12 Connect a 25 or 60 watt, 110 volt lamp across 20 AMP fuse post associated with FC1 lamp. When lamp dims appreciably disconnect the lamp and install the 20 ampere fuse. Install associated 1-1/3 ampere fuse. Check that fuses are not loose and that the wiring is not reverseu. Verify that grasshopper fuse is so mounted that if it were operated it would bring in the alarm.

3.13 Repeat 3.12 on circuit associated with FC2 lamp.

3.14 Using a test receiver, short fuse alarm bar of the FC1 lamp circuit with feeder bus. Lamp FC1 lights and floor alarm functions. Check that alarm will function with FC1 lamp removed.

3.15 Repeat 3.14 on circuit associated with the FC2 lamp.

3.2 Fuse Alarm (Fig. 16, SD-25439)

3.21 Using a test receiver check each trunk 1-1/3 ampere fuse post for absence of ground or crosses.

3.22 Install one of the 20 ampere fuses and its associated 1-1/3 ampere fuse. Check that fuses are not loose and that wiring is not reversed. Verify that the grasshopper fuse is so mounted that if it were operated it would bring in alarm. Using a test receiver, short fuse alarm bar of associated 20A lamp circuit with the feeder bus. Lamp 20A lights and the floor alarm functions. Check that the alarm will function with 20A lamp removed.

3.23 Repeat 3.22 on other 20A circuit on the frame.

3.24 Using a test receiver or voltmeter check each fuse post for absence of battery and ground.

TABLE A

SD-DRAWING	SD-FIG. AND OPT.	POTENTIAL	AMPERAGE	TEST LOCATION
25025-01	1	-48V Sig	1 1/3	3B Relay L1
25038-01	1	-48V Sig	1 1/3	11B Relay DK
25038-01	2	-48V Talk	1 1/3	11B Relay B
25038-01	3	-48V Talk	1 1/3	L Relay B
25295-01	1	-48V Talk	1 1/3	1M Relay S
25295-01	D	MR-SUP- or MR-R1	1/2 H.V.	7B Relay RC
25295-01	E	MR-SUP+	1/2 H.V.	1B Relay RP
25295-01	E	MR-SUP-	1/2 H.V.	4T Relay RP
25295-01	F	MR-R1	1/2 H.V.	1B Relay RP
25295-01	F	MR-R2	1/2 H.V.	ST Relay PU
25302-01	1, (YD)	-48V Talk	1 1/3	2M Relay RS
25302-01	1, (YE)	+48V Talk	1 1/3	2M Relay RS
25302-01	3	10SV†	1/2 H.V.	ST Relay MC
25302-01	A	MR-SUP- or MR-R1	1/2 H.V.	6B Relay R2
25302-01	E	MR-SUP+	1/2 H.V.	1B Relay RP
25302-01	E	MR-SUP-	1/2 H.V.	4T Relay RP
25302-01	F	MR-R1	1/2 H.V.	1B Relay RP
25302-01	F	MR-R2	1/2 H.V.	ST Relay PU
25875-01	1	-48V Talk	1 1/3	3BF Relay S
25875-01	A	MR-SUP+	1/2 H.V.	2B Relay RP
25875-01	A	MR-SUP-	1/2 H.V.	4T Relay RP
25875-01	B	MR-SUP- or MR-R1	1/2 H.V.	7B Relay RC
25875-01	C	MR-R1	1/2 H.V.	1B Relay RP
25875-01	C	MR-R2	1/2 H.V.	4T Relay PU
26204-01	FS1	-48V Talk	1 1/3	1L Relay S
26204-01	(J)	MR-R1	1/2 H.V.	6B Relay RP
26204-01	(J)	MR-R2	1/2 H.V.	8F Relay PU
26204-01	(P)	MR-SUP+	1/2 H.V.	2F Relay RP
26204-01	(P)	MR-SUP-	1/2 H.V.	8B Relay RP
26204-01	(Q)	MR-SUP- or MR-R1	1/2 H.V.	6M Relay RC

3.25 Using fuses of correct type, as indicated by circuit drawings and fuse panel designations, install trunk fuses as specified in Table A. Check at one point in the circuit that each fuse is associated with its proper equipment and is free from crosses with other unfused posts on the fuse panel.

3.26 Using a test receiver or voltmeter make a test similar to 3.22 on FA lamp and alarm circuits.

#### 4. TRAFFIC REGISTER TESTS

##### 4.1 Peg Count Register

4.11 Operate BAT key (Traffic Register Circuit) associated with incoming trunk peg count register.

4.12 Operate and release F relay of each trunk and observe that peg count register scores each time.

**NOTE:** When testing circuits SD-25295 or SD-25302 observe that F1 relay operates when relay F is operated. This also applies to SD-25292 circuits when they are arranged for peg count.

##### 4.2 Paths Busy Register

4.21 Block operated D relay (D1 relay when testing circuits arranged for controlled start) (L1 relay when testing SD-25025) of each trunk in a group associated with one PB register.

4.22 Release and reoperate each relay and observe that the PB register scores each time.

4.23 Release all relays.

#### 5. RESISTANCE CHECK

##### 5.1 Test of Non-Inductive Winding of T Relay

**NOTE:** This test does not apply to SD-25025 or SD-26204

5.11 Using the Volt-ohmmeter check for 700 or 900 ohms resistance between the CO punching (refer to drawing) and 2B spring of TC relay.

#### 6. MISCELLANEOUS FRAME CIRCUIT TESTS

##### 6.1 Frame Line Tel. Jacks

Fig. 2, SD-25439 I.T. FRM.  
Fig. 5, SD-25440 R. R.

6.11 This circuit is tested in accordance with Section 309 of Handbook 63.

##### 6.2 Test Battery Jack and Supply

Fig. 3, SD-25439 I.T. FRM.  
Figs. 1 & 2, SD-25440 R.R.

6.21 Check 48V test battery terminals and tip of the A jack for presence of -48 volts.

6.22 Check G test terminals for direct ground.

6.23 Check the HRG test terminals for high resistance ground (12000<sup>W</sup>).

6.24 Check for direct ground on A jack sleeve.

##### 6.3 Belt Line Circuit

Figs. 10 & 13, SD-25439 I.T. FRM.  
Figs. 3 & 4, SD-25440 R.R.

6.31 The RC, TST, TEL-1 jacks and the SUPV lamp circuits are tested in accordance with Paragraph 15, Section 143 of Handbook 61.

##### 6.4 Miscellaneous Jacks

##### 6.41 Spare B Jack (Fig. 5, SD-25439)

6.411 Make a continuity test of the B jack to all associated incoming and supplementary incoming trunk frames and HMDF.

##### 6.42 Remote Control C Jacks (Fig. 6, SD-25439)

6.421 Check for ground on sleeve of C jack. Make a continuity test of the tip and ring of C jack to all associated C jacks and to Automatic test circuit for incoming trunks.

##### 6.43 Frame Line D Jack (Fig. 7, SD-25439)

6.431 Make a continuity and cross test of the tip and ring leads of the D jack to all associated D jack appearances and to HMDF.

##### 6.44 Ringling Current E Jack (Figs. 8 & 9, SD-25439)

6.441 Check for 105V± current on ring of E jack. Check for ringling ground on tip of E jack. Verify code and continuity of the associated ringling lamp.

##### 6.45 Interrupter Supply Jack INT (Fig. 14, SD-25439)

6.451 Check tip and ring of INT jacks for absence of ground. Connect direct (uninterrupted) ground on the ring of each INT jack. Check for interrupted ground on tip of each INT jack. The make, on, period of the interrupted pulse should be longer than the break, off, period. The interruptions should be 120 IPM.

##### 6.46 Dialing Circuit F Jack (Fig. 15, SD-25439)

6.461 Make a continuity and cross test of tip and ring leads of F jack to all associated F jack appearances and to terminating sender frame.

6.47 MF Key Pulsing Supply Socket  
(Fig. 19, SD-25439, Fig. 1,  
SD-25495)

6.471 Set up a talking circuit between the first Incoming Trunk Frame and the Relay Rack location of the Signaling Current Supply Control circuit.

6.472 Make a continuity, cross and reverse test of KPT, KPR and CI leads (terminals 12, 13 and 14 respectively on Jones socket). (The CI lead terminates on a punching position of the 9 relay.) Connect resistance battery (about 300 ohms) in turn to the 1 to 11 terminals (leads 0 to 9 and KP) of Jones socket and observe that 0 to 9 and KP relays operate. Check that only proper relay operates each time. As each relay is operated check that KPT lead is closed through to the top 1 relay contact and KPR lead is closed through to bottom 1 relay contact. Check for absence of continuity when the contacts are open.

6.473 On remaining appearances of the Jones Socket (IT frames and supplementary IT frames) verify continuity of KPT and KPR leads to control relays. Check that proper relay operates when resistance battery is connected in turn to the 1 to 11 socket terminals.

6.474 The T0 to T9, R0 to R9, KPT, KPR and CI leads from signalling current supply control circuit to the terminating sender test frame are tested in accordance with Section 221 of Handbook 62. These leads terminate on test frame miscellaneous terminal strip (See SD-25159-0117).

6.48 Remote Control RTC Jacks  
(Fig. 13, SD-25440)

6.481 Check for ground on sleeve of jack RTC. Make a continuity test of the tip and ring of jack RTC to all associated jacks RTC and to DID Test Circuit. SD-27766-01.

6.5 Line Busy and Overflow Interrupter Control (Figs. 11 & 12, SD-25439)

6.51 Set up a talking circuit between the relay rack and incoming trunk frame.

6.52 At incoming trunk frame, connect battery to a test receiver and check for; "Busy" (60 IPM) ground pulses on terminals 17 or 29 on vertical unit TS of each unit; "Overflow" (120 IPM) ground pulses on terminals 18 or 30. At relay rack, insulate FB relay contacts associated with first trunk unit "Busy" interrupter. Check for absence of ground pulses on terminals 17 or 29. Remove insulation from first set of relay contacts and repeat test for each set of contacts "Busy" and "Overflow".

6.53 At relay rack insulate associated G relay contacts 4 and 5 top. At trunk frame, connect ground through a test receiver to terminals 17 or 29 of first trunk unit Vertical TS and allow sufficient

time for interrupter to operate the G relay. Lamp TG lights at trunk frame. The aisle and main aisle (Incoming Trunk) lamps light, relay FB operates. Remove test receiver from ground and connect it to battery. The G and FB relays remain operated. Check for interrupted ground at Vertical TS terminals 17 or 29 "Busy" and 18 or 30 "Overflow" of each unit TS. In this instance overflow pulses will have a shorter "ON" period as pulses are now produced through front (F) interrupter contact.

6.54 Remove insulation from G relay contacts. The Major floor alarm sounds. Restore lamps, alarms and relays by operating and releasing TG key located on incoming trunk frame.

6.55 Repeat above test on each Incoming trunk frame. Check operation of TG key and TG lamp on supplementary incoming trunk frames.

6.6 Interrupter Frame Motor Stop Alarm

CAUTION: NEW INSTALLATION ONLY.

6.61 Stop interrupter frame motor. All associated FB relays operate. Lamp MS in floor alarm Cabinet lights. The interrupter frame aisle and main aisle pilot lamps light and major audible alarm sounds.

6.62 Operate MS key in floor alarm cabinet. Lamp MG lights and MS lamp is extinguished. The pilot lamps are extinguished and alarm is silenced.

6.63 Restart interrupter frame motor. Aisle pilot lamps relight and alarm resounds. Lamp MS is also relighted. The FB relays are released.

6.64 Release key MS. Lamps MG, MS and aisle pilot lamps are extinguished and alarm silenced.

NOTE: The major audible alarm interrupter transfer circuit also functions during this test.

6.7 PU and MRR2 Lead Check (Trunks arranged for 4 Party Semi-Selective Ringing such as SD-25875-01. Figure C Provided)

6.71 Connect an R-1824 pencil lamp to 48 volt battery and to miscellaneous punching 34 (58) of vertical terminal strip on trunk unit. The lamp lights periodically; approximately 3 seconds lighted and 3 seconds extinguished.

6.72 With a grounded test receiver HELD WELL AWAY FROM THE EAR, check that 2 one second intervals of ringing, separated by an interval of one second, are received at miscellaneous punching 32 (56) of vertical terminal strip on trunk unit during time the pencil lamp is extinguished. Reception of ringing during interval in which pencil lamp is lighted indicates that PU lead is not associated with correct MRR2 lead from ringing machines.

NOTE: When the trunk unit is equipped with a 7 x 90 terminal strip perform the test at terminals shown in parenthesis above.

## 7. TEST OF TIMING CIRCUIT FOR INCOMING TRUNKS (SD-25038)

### 7.1 Setup for Test

7.11 Use two Operator's Telephone Sets, ITE-9650, a buzzer set ITE-4137 and a call wire extension jack ITE-2260 and set up a talking circuit between incoming trunk frames and relay rack mounting the DK and DX relays of incoming trunk timing circuit.

7.12 Insulate B and F contacts of T interrupters at interrupter frame.

### 7.2 Battery Cross Test

7.201 Verify that all A leads of trunk group are strapped together.

7.202 Connect battery through a test receiver to A lead. Verify proper operation of the following: DX relay at the R.R. operates. DX lamp at the incoming frame lights. Verify that proper floor alarm functions.

7.203 Remove battery. DX relay remains locked. Lamp remains lighted and floor alarm remains operated.

7.204 Operate key DX. DX relay releases, DX lamp is extinguished and floor alarm stops. Release DX key. DX relay remains normal.

7.205 Repeat Paragraph 7.202. Operate and hold key DX. Circuit does not restore. Manually operate relay DK. Relay A operates, DX relay releases, lamp DX is extinguished and alarm stops.

7.206 Hold relay A operated, release key DX and then allow relay DK to restore to normal. The DX relay does not reoperate.

7.207 Remove battery from lead A and allow relay A to release.

7.208 Connect ground through a test receiver to lead A. Operate relay A and note that it locks. Remove ground. A relay releases.

7.209 Repeat tests 7.201, 7.202, 7.205, 7.206, 7.207 and 7.208 on each trunk group unit on the incoming trunk frame.

7.210 Repeat tests 7.201 to 7.209 on each trunk frame.

### 7.3 Incoming Trunk Release Test

7.301 Test of 10 Ohm Sleeve

7.3011 Refer to trunk circuit drawing and connect one lead of volt-ohmmeter to S punching (Horizontal T.S.). Connect other lead to ground.

7.3012 Check that volt-ohmmeter reads 9 to 12.5 ohms when either relay D or relay S is operated.

7.302 Refer to trunk circuit drawing. Verify S and S1 leads for crosses and reverses through respective B and C relay contacts to associated trunks. The B relay is associated with odd numbered trunk groups and C relay with even groups.

7.303 Repeat tests 7.301 and 7.302 for each incoming trunk circuit.

7.304 Block operated DK relay associated with circuits under test on one trunk frame. All A relays on trunk frame operate.

7.305 Connect ground to terminal 30 on vertical terminal strip on an incoming trunk unit. All B and C relays on incoming trunk frame operate.

7.306 Verify absence of continuity between S and S1 leads of all timing units on trunk frame.

7.307 Remove block from relay DK allowing it to release. The A, B and C relays release. Remove ground from terminal 30.

7.308 Repeat tests 7.304 to 7.306 on each trunk frame.

7.309 Remove insulation from T interrupters.

7.310 Using a stop watch, check timing of each T interrupter and associated trunk circuits in following manner.

7.311 Connect ground to A lead of a convenient trunk unit.

7.312 Start timing following operation of all A relays. After approximately 4 seconds all A relays release except unit with grounded A lead.

7.313 Approximately 112 seconds after release of A relays, interrupter contact B closes operating associated B and C relays. Relays remain operated for approximately 3 seconds and then release. After about 1 second interval, cycle repeats with operation of all A relays.

7.314 Remove ground from A lead of trunk unit.

➔ Arrowed lines indicate new or changed information.

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Reason for Reissue:  
To add Paragraph 6.48 and to make minor corrections as indicated by arrows.