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CROSSBAR SYSTEMS
NO. 3
OUTGOING TEST TRUNK CIRCUIT
TO LOCAL TEST DESK NO. 14 OR 16
OR TO LOCAL TEST CABINET NO. 3

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SECTION I - GENERAL DESCRIPTION

1. PURPOSE OF CIRCUIT

1.01 This trunk circuit is used to provide a testing path from the customers line, through the office network to a test desk or test cabinet.

2. GENERAL DESCRIPTION OF OPERATION

SEIZURE

2.01 When a customers line is to be tested, the technician pulses the proper digits which indicate to the marker that this is a test call. The marker then determines which test trunks are idle and selects one.

2.02 If the calling line requires coin return after disconnect, the auxiliary coin line will function as though answer supervision was not returned which will cause coins to be returned whether the test desk answers or not.

2.03 The calling line is then closed through the office network (line switch and trunk switch) crosspoints to connect to this trunk. Audible ringing is returned to the calling line.

CALL ANSWERED

2.04 A seizure signal is passed to the test desk by closing the sleeve lead. This causes lamp BY to flash at the test desk.

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2.05 The call is answered at the test desk or test cabinet by inserting the secondary test cord into the jack associated with this trunk or by operating the RCCI key. The tip and ring leads are then closed through to the test desk.

2.06 With the circuit closed through to test desk, tests requiring the reciever to be placed on the switchhook are made without this trunk releasing.

DISCONNECT

2.07 After the required tests are made on the calling line the plug of the test cord is removed or the disconnect key is operated. This causes relay D in the trunk sleeve circuit to operate. Relay D short circuits the winding of relay TR1 which releases the connection and causes the trunk to restore to normal.

ABANDONED CALL

2.08 If the call is abandoned before the test desk answers, relay S releases and causes the circuit to restore to normal.

SECTION II - DETAILED DESCRIPTION

1. SEIZURE - SC1

1.01 After the marker has determined that a trunk of this type is required, it finds and selects an idle trunk in the following manner:

(a) Ground supplied by the trunk over the FT lead indicates to the marker that at least one trunk in the required group on the associated trunk switch and connector circuit is idle.

(b) Ground supplied by the marker is looped through the idle trunk on leads TG and TT and is directed by the marker connector, trunk block, and trunk group relays to operate one of 12 TT- relays.

(c) Battery supplied by the marker and directed by the marker connector, trunk block, and TT- relay through lead TF, operates the F relay in the trunk.

1.02 The operation of relay F:

(a) Operates the S1 relay.

(b) Grounds the SW lead.

(c) Transfers the incoming T and R leads from this circuit to the T1 and R1 leads, respectively.

(d) Transfers the incoming S lead from this circuit to the SL lead.

(e) Locks its own winding to the TF lead.

(f) Grounds the JC lead.

1.03 The operation of relay S1:

(a) Supplies a holding ground for later use on lead S.

(b) Operates the BY relay.

(c) Opens the MB lead.

(d) Provides its own lock path through a contact on the S relay or the TR1 relay.

1.04 The operation of relay BY:

(a) Opens the loop through leads TT and TG.

(b) Opens the FT lead.

(c) Opens the F relay operating path.

1.05 When the marker has connected the line through the network to the trunk it:

(a) Tests the T and R leads for continuity.

(b) Tests the S lead for a false ground.

(c) If above tests are successful, it releases relay F.

(d) Releases itself.

1.06 The release of relay F operates the S relay over the customers loop through normal contacts of relay TR2. Release of relay F also opens the operate path for relay S1 but relay S1 is slow to release and remains operated until relay S operates to provide a hold path for relay S1. Relay S1 also holds over any extra dial pulses.

(a) The released F relay also closes a secondary operate path for relay BY so that it may be operated under control of the test desk (TR relay).

1.07 The operation of relay S:

(a) Provides a holding ground for relay S1.

(b) Closes lead RT and audible ringing is applied to calling line.

2. CALL ANSWERED - SC2

2.01 The released F relay closes the S lead to the test desk as a seizure signal. Lamp BY at the test desk flashes as an indication to answer the call. If the call is answered with the primary test circuit at the test desk, the RCCI key is operated which supplies battery and ground to operate relay TR in this trunk.

2.02 The call may also be answered by inserting the plug of the secondary test cord into the jack associated with this trunk. This also causes relay TR in the trunk to operate. The D relay does not operate because of the high resistance in the test trunk sleeve circuit at the test desk.

2.03 The TR relay operated holds relay BY operated and operates relay TR1 from ground at relay S1. The operated TR1 relay locks to ground at relay S1 and closes a holding path for the channel hold magnets to the S lead. Relay TR1 operates relay TR2.

2.04 Relay TR2 operated removes ground from the T lead and releases relay TR. Relay TR2 also releases relay S and removes audible ringing from the R lead. The operated TR2 relay closes the T and R leads from the test desk to the calling line. Relays TR1, TR2, S1 are interlocked and will not release until relay D operates.

2.05 With the circuit in this condition, tests requiring the receiver to be placed on the switchhook may be made. The connection is held because the circuit is under control of the sleeve lead from the test desk.

3. DISCONNECT - SC3

3.01 With the plug of the test cord removed from the jack of the test trunk, the disconnect (DISC) key at the test desk is operated. This lowers the resistance of the test trunk sleeve circuit and relay D operates. Relay D short circuits the winding of relay TR1 causing it to release.

3.02 The release of relay TR1 opens the locking circuit for relay S1 and removes ground from the S lead releasing the hold magnets. Relay S1 is slow to release therefore holding relays TR2 and BY operated during this interval. Relay S1 released opens lead S from the test desk releasing relay D. With relays BY, D, and TR2 released the trunk is restored to normal.

4. ABANDONED CALL - SC4

4.01 If the call is abandoned before the test desk answers, relay S releases. Relay S removes the holding ground for relay S1 and it releases. Relay S1 releases relay BY and the channel hold magnets. The trunk circuit is then idle.

SECTION III - REFERENCE DATA

1. WORKING LIMITS

	TR Relay			D Relay	
	20-28V	40-56V	45-50V	Z Option	Y Option
Max Ext Ckt Res	900	2850	3330		
Max Ext Ckt Res Adj A				800	1290
Max Ext Ckt Res Adj B				1100	1880
Min Ins Res	60000	60000	60000	60000	60000
Max Earth Potential				±15V	

Note: See keysheet for subscriber line S relay (SD-26440-01).

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2. FUNCTIONAL DESIGNATION

2.01 See SECTION II.

3. FUNCTIONS OF RELAYS

3.01 Relay BY operates when the trunk is first seized and indicates that this trunk is busy.

3.02 Relay D is a marginal relay operated over lead S when the test desk releases.

3.03 Relay F operates when the marker selects this trunk. It causes the tip and ring leads to be transferred to the marker for continuity check and the sleeve lead for trouble ground test.

3.04 Relay S operates over the ring lead and supplies audible ringing to calling line.

3.05 Relay S1 supplies ground to the channel hold magnets. It is a slow-release relay that holds over any extra digits that may be dialed.

3.06 Relay TR operates across the tip and ring leads when the test desk answers.

3.07 Relay TR1 provides ground through an early make contact to hold the hold magnets in the network switch frames.

3.08 Relay TR2 closes the tip and ring leads from the calling line to the test desk. It also removes relay TR from across the tip and ring leads.

4. CONNECTING CIRCUITS

4.01 When this circuit is listed on a keysheet, the connecting information thereon shall be followed.

(a) Trunk Switch and Connector Circuit - SD-26383-01.

(b) Test Trunk Ringing Circuit - SD-96474-01.

(c) Local Test Desk Circuit - SD-95737-01 or SD-90018-01.

(d) Local Test Cabinet No. 3, Test Trunk Circuit - SD-96229-01.

(e) Power, Ringing, and Tone Distributing Circuit - SD-26414-01.

(f) Far-End Test Trunk for Incoming Remote Testing - SD-97558-01.

(g) Test Circuit - SD-26411-01.

5. MANUFACTURING TESTING REQUIREMENTS

5.01 This circuit shall be capable of performing all the functions listed in this Circuit Description and meeting the requirements listed in the Circuit Requirements Tables.

6. TAKING EQUIPMENT OUT OF SERVICE

6.01 If it is desired to remove this trunk from service for trouble or other reasons, the test circuit is arranged to ground the MB lead which operates the BY relay. This sets the trunk in the busy state.

6.02 The test circuit can ground the MB lead by either of the following methods:

(a) Insertion of a make-busy plug in the associated TRK-MB jack.

(b) Operation of the remote make-busy facilities if they are provided.

6.03 Removal of ground from the MB lead will restore this circuit to service.

6.04 This trunk may also be made busy from the test desk by connecting ground and battery to the tip and ring which operates the TR relay in turn operating the BY relay. The BY opens the FT, TG, and TT leads and the operate path of the F relay thus making the trunk appear busy to the marker.

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