

CIRCUIT DESCRIPTION

CD-26409-01
ISSUE 1
APPENDIX 3B
DWG ISSUE 4B
DISTN CODE 1C05

CROSSBAR SYSTEMS
NO. 3
AUXILIARY COIN LINE
CIRCUIT

CHANGES

B. Changes in Apparatus

B.01 Added

ANS Resistor KS-19152 L1 10K ohm
Option W

B.02 Removed

ANS Diode 446K, Option X

D. Description of Changes

D.01 Option X is designated and option W
is added to change the holding
circuit for relay ANS to prevent contact
erosion in the trunk circuits.

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DEPT 55212-NAR

WE DEPT 62790-CAA-JTT-MHF

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CD-26409-01
ISSUE 1
APPENDIX 2D
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CROSSBAR SYSTEMS
NO. 3
AUXILIARY COIN LINE
CIRCUIT

CHANGES

B. Changes in Apparatus

<u>B.01</u>	<u>Removed</u>	<u>Replaced By</u>
	LD - Resistor - 144G, Fig. 1	LD - Resistor - KS-20289, LGA, 1K Ohms, Fig. 1
	ANS - Relay - AK50 Fig. 2, Option Z	ANS - Relay - AK70 Fig. 2 Option Y

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5242-DAJ

WE DEPT 45820-LHT-WEA-FW

CROSSBAR SYSTEMS
NO. 3
AUXILIARY COIN LINE
CIRCUIT

CHANGES

D. Description of Changes

- D.1 The CADs 4 and 5 are added for 200-1200 line application which required the rerating of CAD 3 to Mfr Disc.
- D.2 The CAD 3 is changed to conform to manufacturing drawings.
- D.3 On CADs 1 and 2 reference to CAD 4 and 5 is added.

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DEPT 5245-GFC

WE DEPT 582-CBH-GWC-PN

OPERATION

1.02 When the calling customer goes off-hook a station switch closes the line loop, operating the line relay L in the line, line switch, and connector circuit, hereinafter referred to as the "line circuit". The operate path of the L relay is from a ground in this circuit under the control of break-contacts of the LD relay, through break-contacts of the CO relay in the line circuit, to the tip lead, through the station set, to the ring lead, through a second set of break-contacts of the line circuit CO relay, through break-contacts of the LD relay in this circuit to the L relay.

1.03 Loop start will return dial tone without the deposit of a coin. If the call is an O+, I+, O-, or Xll call no coin deposit is required to complete the call. If a coin has been deposited it will be returned. If it is a local charge call, a coin must be deposited before completion of dialing. If it is not deposited the call is directed to a recorded message.

1.04 The operation of relay L causes an idle originating register to be seized and a channel to be set up between the customer line and the register. When the line switch crosspoints close in setting up the channel a ground on the sleeve lead S operates relay CO in the line circuit, which operates relay OH of this circuit over the LT lead.

1.05 Relay OH operated:

- (a) Operates relays T1 and T.
- (b) Opens the coin voltage lead at an additional point.

Relay T1 operated:

- (c) Closes a hold path for relay T.
- (d) Closes an operate path for relay LD.

1.06 Relay T operated:

- (a) Closes an operate and hold path for relay LD.
- (b) Prepares an operate path for relay ANS over lead LS.
- (c) Enables the coin voltage lead.

1.07 Relay LD operated:

- (a) Connects the line discharge network, resistors LD, LD1, and capacitor LD, to the line T lead.
- (b) Transfers the control of ground on the LTA lead from the CO relay in the line circuit to LD relay in this circuit.
- (c) Opens the operate path of the L line relay at an additional point so that when it is released it cannot be reoperated again until this circuit has returned to normal.
- (d) Closes an S lead holding ground to dial long line or range extender with gain circuits, if they are used in the line, to hold these circuits until this coin circuit completes its cycle.

1.08 Until the call is answered, this circuit is conditioned to apply the coin return voltage to the tip lead when the customer hangs up.

1.09 When the called party answers MRS-RP positive half-cycle pulses are applied by the trunk circuit to the LS lead which operates the ANS relay through diodes ANS1 and ANS2. Diode ANS2 is a zenner type and requires that a signal be greater than 30 volts positive to operate relay ANS. The ANS operated locks to -48 volt battery through its own contacts and diode ANS to ground.

1.10 The ANS relay operated, changes the coin voltage to be applied from coin return to coin collect.

COIN RETURN

1.11 If the calling customer hangs up before the call is answered any coin that has been deposited will be returned. Line relay L releases releasing relay CO in the line circuit. Relay CO released releases OH.

1.12 Relay OH released:

- (a) Connects the coin return voltage to the tip lead through T make and ANS make-contacts operated, which operates the coin return magnet in the station coin box.

(b) Releases T1 relay which is a slow-release relay, 300 to 620 milliseconds.

1.13 Relay T1 released:

(a) Releases relay T which is also a slow-release relay, 225 to 475 milliseconds.

1.14 The total release time of T1 and T in tandem causes the coin potential to be applied to the tip lead for 525 to 1095 milliseconds. A minimum of 500 milliseconds is required to insure the operation of the coin magnet.

1.15 Relay T released:

(a) Removes the coin potential from the tip lead.

(b) Releases relay LD, also a slow-release relay, 120 to 235 milliseconds. While relay LD is releasing the line discharge network discharges the line.

1.16 Relay LD released:

(a) Enables the operate path of the line circuit relay L.

(b) Returns control of the line test lead LT to the line circuit relay CO to indicate to the marker when it is testing to set up for an incoming call that the line is now idle.

(c) Reconnects ground to the tip lead through normal break-contacts of the CO line circuit relay.

COIN COLLECT

1.17 If the called party answers before the calling party hangs up, the ANS relay is operated as described in 1.09 and changes the coin voltage to be applied from coin return to coin collect.

1.18 The release of the OH and timing relays T1, T, and LD when the calling customer hangs up is the same as in 1.12 through 1.16 except that T released now removes the collect voltage from the tip lead and releases relay ANS.

2. GROUND START (COIN FIRST)

CROSS CONNECTIONS

2.01		Connect
This Circuit		Line, Line Switch, and Connector Circuit
<u>Terminal</u>	to	<u>Terminal</u>
LA		L
L1		L1

OPERATION

2.02 To start a call, the customer removes the receiver and deposits a coin which closes the coin switch and operates the line auxiliary relay LA which starts the circuit action.

2.03 The operate path for the LA relay is from the earth ground at the coin station through the closed coin switch in the coin box, normal break-contacts of CO line circuit relay, OH break-contacts, and LD break-contacts.

2.04 A more sensitive line relay is required for ground start coin lines than the L relay provided in the line circuit. This requirement is met by providing the line auxiliary relay LA in this circuit to operate the L relay. The L relay operated is held by the ground on the sleeve lead S of the line circuit. The LA relay is then released since it has no other function.

2.05 Relay LA operated, operates relay L in the line circuit. The action of the circuit from here is the same as in 1.04 through 1.18.

SECTION III - REFERENCE DATA

1. WORKING LIMITS

1.01 See keysheet for coin line working limits.

2. FUNCTIONAL DESIGNATIONS

2.01 Relays

<u>Designation</u>	<u>Meaning</u>	<u>Main Function</u>
ANS	Answered	To set the coin voltage to collect the coin(s).
LA	Line Auxiliary	To provide a sensitive line relay required for ground starts.
LD	Line Discharge	Discharges the customer line before it is released to serve another call.
OH	Off-Hook	Starts action in this circuit when the customer goes off-hook.
T	Coin Voltage Timing	Provides, in conjunction with T1, minimum time of 525 milliseconds application of coin voltage to tip lead.
T1	Coin Voltage Timing	Provides, in conjunction with T1, minimum time of 525 milliseconds application of coin voltage to tip lead.

3. FUNCTIONS

3.01 Returns coin or coins when calling party goes on-hook if the called party has not answered.

3.02 Collects coin or coins when calling party goes on-hook if an MRS-RP signal has applied to the calling party sleeve lead when the called party answered.

3.03 Operates on loop start or ground start coin lines when the respective specified cross connections are made in this circuit and in the line, line switch, and connector circuit.

3.04 Applies a line discharge network to the line for a period of time after the coin voltage is removed and before the line is returned to normal to serve another call.

3.05 Holds the line busy to incoming calls to this line until the coin functions are completed and the line discharge network has been removed from the tip lead.

3.06 Provides a sleeve ground to extend to a coin "dial long line" circuit or to a "range extender with gain" circuit to hold that circuit until this circuit completes its coin disposal cycle.

4. CONNECTING CIRCUITS

4.01 When this circuit is listed on a key-sheet the information thereon should be followed. This circuit will function with the following Crossbar System circuits:

- (a) Line, Line Switch, and Connector Circuit - SD-26382-01.

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 Table.

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DEPT 5245-LCB

WE DEPT 355-HFB-KLF-BA