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COMMON SYSTEMS  
TELEPHONE CIRCUIT  
MDF LOUDSPEAKER  
CENTRAL OFFICE END  
FOR USE WITH LOCAL TEST DESK NO. 14 OR NO. 16  
OR CABLE TEST DESK NO. 3

SECTION I - GENERAL DESCRIPTION1. PURPOSE OF CIRCUIT

1.01 This circuit provides the central office end of a loudspeaker communication system between the Local Test Desk No. 14 or No. 16 or Cable Test Desk No. 3 and distributing frames in the central office.

2. GENERAL DESCRIPTION OF OPERATION

2.01 The operation of a key at the test desk causes the frame station lamps to flash at 120 IPM indicating to the frameman that he is being paged. The frameman in turn operates a key or switch at the talk station, which (1) completes the talk path to the desk; (2) flashes the station lamp at 60 IPM and (3) transfers the lamps at the other talk stations to a steady (busy) indication.

2.02 As the frameman moves from one talk station to another, transfer of the talking path to the desk is accomplished by the operation of the switch or key at the talking station.

2.03 When a deskman releases the loudspeaker key at the desk, the talking path to a talking station is disconnected and all station lamps are returned to normal (off).

2.04 When a frameman operates the switch or key at a talk station, with no prior talk path established to or from the desk, the desk is signalled and all talking station lamps are lit steady (busy indication), except for calling talk station lamp. The deskman then operates a key and the talking path is completed.

SECTION II - DETAILED DESCRIPTION1. INCOMING CALL

## CALL ORIGINATED

1.01 Operation of the loudspeaker key at the test desk connects a bridge across the tip and ring leads, which causes relay L to operate.

Relay L operated:

(a) Bridges resistor "A" across the T1 and R1 leads which closes the talking path at the test desk to the loudspeaker amplifier and speakers.

(b) Partially closes a holding path for relay CT.

(c) Operates relay L1.

Relay L1 operated:

(a) Provides ground on lead STO or ST to start the interrupter where required.

(b) Opens a holding path for relay CT.

(c) Connects 120 IPM to lead F, which flashes the station lamps, under the control of Relay C.

## CALL ANSWERED

1.02 Operation of the switch or key at any talk station, operates the associated CT relay.

Relay CT operated:

(a) Closes its holding path under the control of relay L.

(b) Closes the talking path to the amplifier to the test desk.

(c) Transfers the associated lamps to the control of relay F.

(d) Opens the holding battery path to the preceding CT relays.

(e) Opens the holding ground path to the succeeding CT relays.

(f) Disconnects ground from lead STO or ST which release the 120 IPM interrupter.

(g) Operates Relay C.

Relay C operated:

- (a) Provides an additional closure for the bridge to the test desk.
- (b) Lights all talk station lamps steady, except at the connected talk station.
- (c) Connects ground to lead ST to start the interrupter, which connects 60 IPM to relay F, which flashes the connected talk station lamp.

TRANSFER TO ANOTHER TALK STATION

1.03 Operation of the switch or key at another talk station, operates the associated CT relay.

Relay CT Operated:

- (a) Opens the holding battery path to preceding CT relays.
- (b) Opens the holding ground path to succeeding CT relays.

1.04 The preceding or succeeding station is released and permits the associated CT relay to perform its function - as described in paragraph 1.02.

DISCONNECT

1.05 When the deskman releases the loud speaker key at the desk, Relay L releases.

Relay L Released:

- (a) Opens its bridge to the desk.
- (b) Releases the associated CT relay.
- (c) Opens the operate path for Relay Ll. With Relay Ll being a slow release relay, it holds operated long enough to insure the release of the associated CT relay before the original CT holding ground is restored. When relay Ll releases, it disconnects the 120 IPM supply.

Relay CT Released:

- (a) Opens the talking path to the desk.
- (b) Transfers the talk station lamps back under the control of Relay C.
- (c) Releases Relay C.

Relay C Released:

- (a) Opens the bridge to the desk.
- (b) Disconnects the 60 IPM to the talk station lamps.
- (c) Restores the lamp circuit back to normal (off).

2. OUTGOING CALL

CALL ORIGINATED

2.01 Operation of the switch or key at any of the talk stations, operates the associated CT relay.

Relay CT Operated:

- (a) Closes its own holding path under the control of Relay Ll.
- (b) Closes the talking path to the desk.
- (c) Transfers the associated talk station lamps to the control of Relay F.
- (d) Opens the holding battery path to the preceding CT relays.
- (e) Opens the holding ground path to the succeeding CT relays.
- (f) Operates relay C.

Relay C Operated:

- (a) Bridge resistor "A" across the T1 and R1 leads to signal the desk.
- (b) Lights all talk station lamps steady, except at the connected station.
- (c) Connects ground to lead ST to start the interrupter, which connects 60 IPM to relay F, which flashes the connected talk station lamp.

CALL ANSWERED

2.02 Operation of the loudspeaker key at the desk closes the talking path to the loudspeakers and places a bridge across the T and R leads to operate relay L.

Relay L Operated:

- (a) Provides an additional bridge across the T1 and R1 leads back to the desk.
- (b) Closes a holding path for the associated CT relay.

(c) Operates Relay Ll.

Relay Ll Operated:

(a) Releases its holding path for the associated CT relay.

3.06 The transmission path to the test desk may be transferred to another station by the operation of that station switch or key.

3.07 Provide for placement of loudspeakers in any desired location, except with the No. 1 ESS MDF where the location is restricted to the protector frames.

3.08 Provides loudspeakers and transmitter connecting leads for the COSMIC Frame System.

TRANSFER AND/OR DISCONNECT

2.03 Transfer and/or disconnect is accomplished as described in paragraphs 1.03 and/or 1.04 respectively.

SECTION III - REFERENCE DATA

1. WORKING LIMITS

1.01 Relay L  
 Max. Ext. Ckt. Res. 3,000 ohms  
 Min. Ins. Res. 30,000 ohms

2. FUNCTIONAL DESIGNATIONS

2.01 Relays

<u>DESIGNATION</u>	<u>MEANING</u>
C	Control
CT	Cut-Through
F	Flashing
L	Line
Ll	Line-Slave

3. FUNCTIONS

3.01 Provides two-way loop signalling tween this circuit and a loudspeaker trunk at a test desk.

3.02 Provides two-way amplified speech transmission.

3.03 Each talking station consists of a switch or key and one or two microphones, each having its own signal lamp. Operation of the switch or key causes (1) The associated lamp(s) to flash at 60 IPM; (2) lights the lamps at all the other talk stations steady and (3) connects the associated microphone(s).

3.04 A 120 IPM flash indicates an incoming call to all talk stations.

3.05 Side tone at the test desk is controlled by a voice operated relay (option M) or a vario-losser (option K) in the amplifier panel.

4. CONNNECTING CIRCUITS

4.01 When this circuit is listed on a key sheet, the connecting information thereon is to be followed.

(a) Loudspeaker trunk circuit - SD-96472-01.

(b) Signal Supplies

(1)	Panel - BCO	SD-21666-01
(2)	Panel - GCO	SD-21667-01
(3)	Crossbar No. 1	SD-25062-01
(4)	Toll	SD-95078-01
(5)	Power	SD-80771-01
(6)	Crossbar No. 5	SD-25814-01
(7)	Step-By-Step	SD-31606-01
(8)	No. 1 ESS	SD-81652-01

(c) Power Ringing Circuit

(d) Application schematic for KS-16617 list 1 amplifier - SD-95259-01.

(e) KS-19601, list 1 amplifier circuit SD-99431-01.

(f) Panel Circuit - SD-2P016-01.

5. MANUFACTURING TEST REQUIREMENTS

5.01 This circuit shall function as described in this CD.

SECTION IV - REASONS FOR REISSUE

B. Changes in Apparatus

B.1 Added

Loudspeaker - KS-21347 - Fig. 2.

B.2 REMOVED

REPLACED BY

"U" Shielded Wiring - Figs. 3, 4, 5, B and E.	"EU" Shielded Wiring - Figs. 3, 4, 5, B and E.
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D. DESCRIPTION OF CHANGES

D.1 In Fig. 2, loudspeaker KS-21347, Option J, is added for the COSMIC Frame System.

D.2 In Figs. 3, 4, 5, B and E, "U" shielded wiring is replaced by "EU" shielded wiring.

D.3 In Fig. B, lead "GRD" is added to bring this drawing into agreement with WECO drawings.

D.4 In the transmission test requirements table, the maximum allowable circuit loss (DB) from points C to D is changed from No. 5 DB to 13.2 DB.

D.5 Circuit notes 102 (feature or options table), 103 (record of Figures, wiring and apparatus changes) and 104 (typical sources of signal supply are changed to add new information for this SD Issue.

D.6 Fig. 3 is changed to add connecting information for the COSMIC Panel Circuit.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 4562 - PLS  
WECO DEPT 5155-RRR-WEA