

COMMON SYSTEMS
PRIVATE LINE CONFERENCE CIRCUIT
ARRANGED FOR MAXIMUM
OF 10 CALLED STATIONS

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 In the controller telephone set, Fig. 4 per D-161197, the "BL" wire formerly connected to the "R" terminal of the induction coil. This change is made to provide transmitter current.

D.2 The local alarm ringer, and ringing fuse alarm relays, which were formerly part of Fig. 1, are shown as Figs. 9 and 10, to be provided on a "per aisle" basis.

D.3 Multiple straps are added on leads "1", "2", "3", and "AL" from the (ALM) relay, and also on leads "A", and "B" of Fig. 7.

D.4 Connecting Figure information for leads "RING G", "A", "B" and "ALM" in Fig. 7 are revised to provide for connection to Figs. 9 and 10.

D.5 Circuit Note 101 formerly specified ringing fuses "per Fig. 2".

D.6 Circuit Note 106 has been revised to include Figs. 9 and 10, and to revise the "quantity" column.

D.7 Fig. 6 formerly specified that leads "AF" and "BF" connected "To Fig. 1".

D.8 Connections of the "W" and "G-Y" leads in Fig. 4 are changed to agree with the D-161197 telephone set.

All other headings, no change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3330-ROR-WLF

COMMON SYSTEMS
PRIVATE LINE CONFERENCE CKT.
ARRANGED FOR MAXIMUM
OF 10 CALLED STATIONS

CHANGES

B. CHANGES IN APPARATUS

B.1 Added	Superseded	Superseded by
U- per D-161652 (S) relay as "U" Option	120E (A) Rep. Coil	120ES (A) Rep. Coil

C. CHANGES IN CIRCUIT REQUIREMENTS
OTHER THAN THOSE APPLYING TO ADDED
OR REMOVED APPARATUS

C.1 The "O" and "R" symbols are shown
in the "Test For" column for relay
(S), "V" option.

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 The UA12 (S) relay is shown as "V"
option and the D-161652 (S) relay

is added as "U" option to meet manufac-
turing conditions.

D.2 Circuit notes 107, 108 and 109 are
added to cover the above changes.

D.3 Cross connection Figs. 51 & 52 are
changed to agree with battery and
ground assignments made by W. E. Co.

All other headings, No change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3330-FCG-WLF

COMMON SYSTEMS
PRIVATE LINE CONFERENCE CRT.
ARRANGED FOR MAXIMUM
OF 10 CALLED STATIONS

CHANGES

A. CHANGED AND ADDED FUNCTIONS

- A.1 Function 3.4 is changed and 3.10 is added.

B. CHANGES IN APPARATUS

B.1 Removed	Replaced By	Added
584DF (ALM) Sub. Set Y111 (ON) Relay U54 (ON1) Relay	584DE (ALM) Sub. Set U613 (C) Relay Y113 (ON) Relay	T4282 (R) Trans- former per KS-5523

C. CHANGES IN CIRCUIT REQUIREMENTS OTHER THAN THOSE APPLYING TO ADDED OR REMOVED APPARATUS

- C.1 The "Block or Insulate" information for the (TP) relay is removed and reference to test note 5 is added in the "See Test Note No." column.
- C.2 The "Block or Insulate" information for the (S) relay is changed and reference to test note 5 is added in the "See Test Note No." column.
- C.3 The "Block or Insulate" information for the (CT) and (IR) relays is changed and the (IR) relay is shown as "Y" option.
- C.4 The "Test Clip Data" for the (SO) relay is changed.
- C.5 Test Note 5 is added to page 2.

D. DESCRIPTION OF CIRCUIT CHANGES

- D.1 In order to prevent the application of ringing current to stations that have not disconnected at the time the controller recalls the other stations, the following change is made:

D.11 Ground is connected to 3B of (S) relay and 4B of (S) relay is connected to the ONI-10 lead to provide a locking circuit for the associated (TP) relays.

- D.2 To provide a continuous ringing signal, with machine ringing on an optional basis, the following changes are made:

D.21 "Z" wiring is added, Fig. 1, to provide a continuous ringing signal.

D.22 Relays (IR) and (MR) and wiring which was formerly part of Figs. 1 and 7, and associated with machine ringing are shown as "Y" options to provide an immediate ringing signal followed by a machine ringing signal.

D.3 In order to insure proper ringing voltages for the (TP) relay the following changes are made:

D.31 Fig. 8 is added to show the (R) ringing transformer.

D.32 Fig. 7 is modified to show "W" and "X" options for the ringing supply.

D.4 Circuit notes 101 and 106 are expanded to cover the above changes.

D.5 The (ON) relay is replaced by the (C) relay and the (CT) relays are shown operating over a single lead from relay (C). The designation of the (ONI) is changed to (ON).

D.6 The controller's telephone set, Fig. 4, is shown wired in accordance with D-spec. 161197.

D.7 The 584DF (ALM) subset is replaced by the 584DE subset as the 584DF is rated "Mfr. Disc."

D.8 The (ALM) subset is shown permanently connected to Fig. 7.

D.9 Table of working limits is changed.

All other headings under "Changes", no change.

1. PURPOSE OF CIRCUIT

1.1 This circuit is a private line conference circuit which permits a conference connection for a max. of 10 called stations and one controller station, all of which are in the same central office area.

2. WORKING LIMITS

2.1 Figure 1

Maximum external circuit loop 2,700 ohms.
Minimum insulation resistance 30,000 ohms.

2.2 Figure 2

Maximum external circuit loop 1,000 ohms.
Minimum insulation resistance 10,000 ohms.

. FUNCTIONS

- 3.1 To provide a conference circuit for calling a maximum of 10 stations.
- 3.2 To provide talking battery to the controller station and also to 10 called stations.
- 3.3 To provide an immediate ring to the called stations when a call is originated at the controller station.
- 3.4 On an optional basis, to provide machine ringing after the immediate ring.
- 3.5 To trip ringing to a station when that station answers the call.
- 3.6 To provide for holding the conference call connection under control of the controller station.
- 3.7 To provide a delayed alarm when any of the called lines become bridged or are crossed from ring to ground when the controller station is not in use.
- 3.8 To prevent calling the 10 stations by an accidental removal of the hand set at the controller station.
- 3.9 To provide an alarm for the operation of any fuse associated with the circuit.
- 3.10 To prevent the application of ringing current to stations that have answered when the controller recalls.

4. CONNECTING CIRCUITS

- 4.1 Office Alarm Circuit
- 4.2 Power Ringing Circuit

DESCRIPTION OF OPERATION

5. CALLING THE CONFERENCE

- 5.1 Continuous Ringing Signal ("Z" Wiring)

Calls are originated at the controller station. The controller removes the hand set from the switchhook and operates the exclusion key which closes the loop to operate relay (TL) in Fig. 1. Relay (TL) operated closes a circuit to operate relay (ON), through a continuity contact on relay (C), which provides grounds to lock the tripping relays. Relay (ON) is a slow release relay to prevent the release of the

tripping relay when the (S) relay momentarily releases during the transfer time of the cut through relay, when the controller recalls.

Relay (ON) operated also closes a circuit from the (TL) relay to operate the (C) relay. Operation of relay (C) cuts through the first called station line to the associated (TP) relay and connects ground to the "CT" lead to operate the (CT) relays. The (CT) relays cut through the remaining called station lines to the associated (TP) relays. The (C) and (CT) relays operated provide a path for continuous ringing through the primary winding of the (TP) relays to ring the called stations. The (TP) relay does not operate with ringing current through its primary winding until the corresponding station answers.

- 5.2 Continuous Ringing Followed By Machine Ringing Signal ("Y" Wiring and Apparatus)

The (TL) relay is operated as before. Relay (TL) operated closes a circuit to operate relay (IR) through a back contact on the (C) relay. Operation of relay (IR) operates the (ON) relay which when operated, operates relay (C) and holds under control of relay (C). The (C) relay operated cuts through the first called station line to the associated (TP) relay, connects ground to the "CT" lead to operate the (CT) relays and opens the circuit to release the (IR) relay. The (CT) relays cut through the remaining called station lines to the associated (TP) relays.

Operation of the (IR) relay also closes a path for continuous ringing through the primary winding of the (TP) relays to ring the called stations. The (TP) relay does not operate with ringing current through its primary winding until the corresponding station answers. Relay (IR) is a slow release relay to provide an immediate ringing signal before releasing and connecting machine ringing to the lines.

6. STATION ANSWERS

When a station answers, the associated (TP) relay partially operates on its primary winding either during the ringing or the silent period. When relay (TP) closes its 6-7 top contacts, ground from the (ON) relay will be connected through the secondary winding to battery operating relay (TP) completely. The complete operation of relay (TP) trips ringing and connects the line to relay (S). The (S) relay operates at this time and connects ground to the "ALM" lead but since relay (C) is

operated no alarm occurs. The (S) relay also connects ground to the "ON1-10" lead which locks up the corresponding (TP) relay under control of the (S) relay. The purpose of this is to lock up the tripping relays to prevent the application of ringing current to those stations which have not disconnected when the controller recalls. The control station can now converse with as many of the called stations as have answered, through the (T) and (R) condensers and the (A) repeat coil. Ringing continues to the stations that have not answered while the controller is talking to those that have answered. As these stations answer, it will be necessary, in some instances, for the controller to repeat the message.

7. CALLED STATION DISCONNECTS BEFORE END OF CONFERENCE

Under some operating conditions, it may not be necessary for all of the stations to wait until the end of the conference. Under this condition, the station desiring to disconnect will replace the hand set on the switchhook which releases the (S) relay. This station cannot be rerung until the controller originates another call.

Under the controller recalls the (ON) relay releases and releases the (TP) relays of the stations that have disconnected. The (TP) relays of the stations that have not disconnected remain operated under control of the associated (S) relays. When the controller reoperates the exclusion key ringing current will thus be connected to only those stations that have disconnected.

8. CONTROLLER STATION DISCONNECTS

When the conference is concluded the controller station may disconnect by replacing the hand set on the switchhook which releases the exclusion key, opening the circuit to the (TL) relay. Release of relay (TL) releases the (C) relay which opens the circuit to relay (ON) and the (CT) relays. As the called stations disconnect, the (S) relays release which releases the (TP) relays and the circuit becomes ready for the controller to originate another call.

9. ALARM CIRCUIT - FIG. 1

9.1 Line Trouble

If the controller disconnects and some of the called stations fail to

hang up within 30-60 seconds, or if a called station line becomes bridged or crossed from ring to ground for 30-60 seconds, an alarm is sounded. Under these conditions the associated (S) relay operates over the "TS" and "RS", or "RS" leads through normally made contacts on the (CT) relays. Relay (S) operated grounds the alarm lead which operates the (SO) relay through a back contact of relay (C). The (SO) relay is a slow operate relay with an operating time of 30-60 seconds. If the trouble condition exists for a longer period than this, relay (SO) will operate and operate the (ALM) relay. Operation of relay (ALM) closes the circuit to light the (LINE) lamp and to ring the (ALM) bell. Ground is also connected to leads to the office alarm circuit in the central office. Correction of the trouble will release the (S) relay which releases the (SO) relay. Relay (SO) released opens the circuit to retire the alarms. The office alarm gong control by this circuit may be retired by operation of the (DISC ALM) key.

9.2 Battery Fuse Operation

If any of the battery fuses operate, battery through the alarm bar operates the (ALM) relay on its primary winding and lights the (FUSE) lamp. The (ALM) relay extends the alarm to the office alarm circuit. The (BF) fuse protects the wiring associated with the alarm bar. If it operates because of a trouble ground, its operation will operate relay (ALM) on its secondary winding unless the "B" fuse is operated.

9.3 Ringing Fuse Operation

If either of the ringing fuses, Fig. 8, operate, the associated (CR) or (MR) relay operates, lighting the (FUSE) lamp and operating the (ALM) relay.

10. RESISTANCE LAMP PROTECTION - FIG. 5

If it is expected or found that line surges cause failure of the (TL) lamps, the (TR) varistor should be provided. This absorbs the surges and safeguards the lamp.

11. RINGING TRANSFORMER

A ringing transformer is provided to insure proper ringing voltages for the (TP) relay in accordance with Note 106.

HELL TELEPHONE LABORATORIES, INC.

DEPT. 3330-FCC-WLF