

PBX SYSTEM
#550C, 551A OR 551B
CENTRAL OFFICE TRUNK CIRCUIT

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

- D.1 Working limits for Fig. C changed. The working limits formerly were as follows:

Fig.	72V Min.	75V Min.	80V Min.	84V Min.	90V Min.
A	550 ω	600 ω	700 ω	800 ω	1200 ω
B			*550 ω	*650 ω	1200 ω
C	1200 ω	1200 ω	1200 ω	1200 ω	1200 ω

*Min. 1.1 mf. measured capacity of 1 mf. condenser.

All other headings under "Changes", no change.

1. PURPOSE OF CIRCUIT

- 1.1 This circuit is used to provide a means for connecting the 550C, 551A or 551B switchboard to a dial central office, or to a manual central office.

2. WORKING LIMITS

2.1	Fig.	72V Min.	80V Min.	84V Min.	90V Min.
Max. Conductor Loop	A	550 ω	700 ω	800 ω	1200 ω
	B		*550 ω	*650 ω	1200 ω
	C	1200 ω	1800 ω	2400 ω	4000 ω

*Min. 1.1 mf. measured capacity of 1 mf. condenser.

Minimum Insulation Res. Manual Panel and Crossbar 20,000 ω
Step-by-Step 30,000 ω

3. FUNCTIONS

- 3.1 To give a visual signal when ringing current is applied to the trunk at the central office on incoming calls.
- 3.2 To prevent the trunk lamp from lighting on outgoing calls.

- 3.3 To prevent a false pulse when plug is inserted in the jack.
- 3.4 To disconnect the line winding of relay (L) from across the line to improve transmission.
- 3.5 To prevent a false line lamp upon disconnection.

4. CONNECTING CIRCUITS

- 4.1 No. 550C, 551A or 551B PBX auxiliary signal and battery cut-off key circuit.
- 4.2 Subscriber's line circuit in manual, panel, crossbar or step-by-step central office.
- 4.3 No. 550C, 551A or 551B P.B.X. cord circuit.

DESCRIPTION OF OPERATION

5. INCOMING CALLS

When ringing current is applied to this circuit at the associated central office, relay (L) operates on its secondary winding and locks on its primary winding under control of the jack. Relay (L) operated causes the trunk lamp to light and the buzzer in the associated auxiliary signal circuit to function as an indication of an incoming call.

ANSWERING

When the plug of the cord circuit is inserted in the trunk jack associated with the lighted lamp, the holding path of relay (L) is opened and the relay releases extinguishing the trunk lamp. The jack is so arranged that the ring side of the line is not connected through until the tip springs are operated. This prevents a false pulse should the plug of the cord be inserted only part way in the jack. The operation of the jack springs also disconnects the line winding of relay (L) from the tip of the trunk to improve transmission and with Fig. A to connect it to the ring conductor to remove any charge remaining on the condenser after ringing so as to prevent the relay operating on the removal of the plug from the jack.

7. OUTGOING CALLS

When the plug of the attendant's cord circuit is inserted in the trunk jack to make an outgoing call the springs of the jack operate and function as described above.

8. THERMISTORS

The thermistor is a thermal device which ordinarily has a very high resistance in the order of 100,000 ohms. On a

short surge of current such as occurs on disconnection the thermistor does not have time to heat and presents a high resistance to the circuit preventing the operation of the (L) relay. On ringing current which continues for approximately two seconds the thermistor will heat up in about one second and lower its resistance to about 1000 ohms. This will allow sufficient ringing current to flow through the condenser and the relay to cause it to operate in the usual manner. This resistance has the effect of decreasing the range of the P.B.X. trunk circuit. It is not directly detectable from the trunk loop because of the resonance between the relay winding and the series condenser. However, the decrease is appreciable as is indicated in the working limits. When it is necessary to obtain a longer loop than can be obtained with the existing condenser in the circuit it should be replaced with a condenser of 1.3 mf. as indicated in the drawing.

9. MODIFICATION OF EXISTING P.B.X.'s

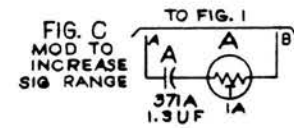
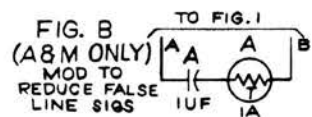
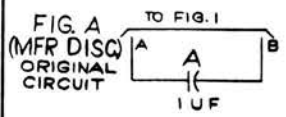
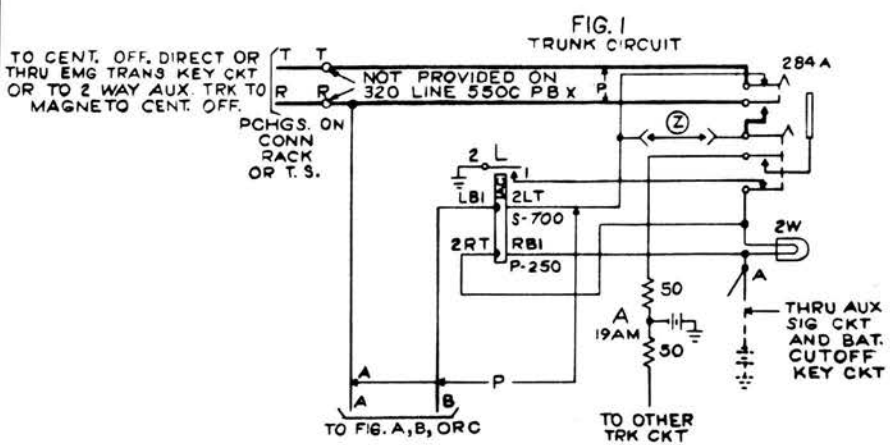
It has been the practice with Fig. A, in step-by-step exchanges to provide a reversal at the IDF in order to reduce the effect of the surges which cause a false line lamp on disconnection. When the thermistor is added to the circuit it is no longer necessary to make this reversal.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3330

LJB)
WLF) IF

REV	CD	REV	CD	REV	CD
4D	3D	5D	4D	6D	5D
7D	6D				
DATE	CD	DATE	CD	DATE	CD
3D	6D	7-17-63	VC	LEY	PD
	APP ID		CRA		



CIRCUIT NOTES:

101. PROVIDE ONE 19AM RESISTOR PER TWO TRUNKS.
102. CONNECT GROUND SIDE OF TRUNK TO TIP SIDE AND BAT. SIDE OF TRUNK TO RING SIDE OF THIS CIRCUIT WHEN THE TIP AND RING OF THE TRUNK ARE REVERSED AT THE I.D.F. IN STEP BY STEP CENTRAL OFFICES FOR MAINTENANCE PURPOSES. FOR USE WITH FIG. A.

103. RECORD OF FIGURES, WIRING AND APPARATUS CHANGES

CHANGED ON ISS	IF JOB RECORDS DO NOT SPECIFY	THIS OPTION WAS FURN	SEE NOTE	USE IN CIRCUIT		
				STD	A&M	MD
6D	FIG. A, B OR C	FIG. A		FIG. C	FIG. B	FIG. A
6D	Z	Z				Z

1k-26V

WORKING LIMITS

20V SIGNALING

72V MIN.	80V MIN.	84V MIN.	95V MIN.
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FIG. A	550Ω	700Ω	800Ω	1200Ω
FIG. B	5500*	5500*	6500*	1200Ω
FIG. C	1200Ω	1800Ω	2400Ω	4000Ω

*MIN. 1.1UF MEASURED CAPACITY OF 1UF CAPACITOR (A)

REPLACING 190-B-11 AND REPLACING ES-203306 FOR TRUNK CIRCUIT

SD-66109-01

PBX SYSTEMS

NO. 550C, 551A, OR 551B

CENTRAL OFFICE TRUNK CIRCUIT

A&M ONLY

"MFR DISC." FOR 550C PBX

SD-66109-01-1

2 SHEETS

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