COMMON SYSTEMS
10 PPS DIAL LONG LINE CIRCUIT
BY PASS OR REPEATED RINGING
FOR DIAL STATION OR SUBSCRIBER LINES OR
FOR LONG TRUNKS TO DIAL OFFICE
FROM MANUAL OR DIAL PBX
OR FOR TRUNK BETWEEN LINE FINDER AND
FIRST SELECTOR IN STEP BY STEP OFFICE
APPARATUS LOCATED IN CENTRAL OFFICE

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 The title of this circuit is changed to remove reference to any P.B.X. by number.

All other headings under Changes, no change.

1. PURPOSE OF CIRCUIT

1.1 This circuit provides a means for a long P.B.X. station to dial into a dial P.B.X. or through a manual or dial P.B.X. into a dial central office.

1.2 This circuit provides a means for connecting a P.B.X. to dial central office over manually selected P.B.X. trunks the conductor resistance of which exceeds the office range.

1.3 This circuit provides a means for connecting a long line subscriber's line to a dial central office when the conductor resistance exceeds the office range.

1.4 This circuit provides for extending the range of a low voltage P.B.X. long line circuit by supplying the signaling battery from the 48 volt circuit instead of from the P.B.X. long line circuit.

2. WORKING LIMITS

2.1 The working limits of this circuit are shown on the long line range chart.

3. FUNCTIONS

3.1 Provides means for repeating dial pulses on station dial calls to a dial P.B.X. or through a dial or manual P.B.X. into a dial central office.

3.2 Provides means for repeating dial pulses on attendant dial calls to a central office.

3.3 Provides transmitter battery to the station.

3.4 Relays switchhook supervision.

3.5 Provides a new supply of ringing current to the P.B.X. station, P.B.X. trunk or subscriber's line.

3.6 Provides for ringing on party lines with ringing current by-passed around the repeating coil.

3.7 Provides for tripping during the ringing period with ringing current by-passed around the repeating coil.

3.8 Provides for tandem operation with similar long line circuits or with long line circuits located at P.B.X.'s.

4. CONNECTING CIRCUITS

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

4.1 Common Battery Subscriber Set with a Dial.

4.2 P.B.X. Station Line Circuit - SD-66276-01 (Typical).

4.3 Dial Central Office Subscriber's Line Circuit - SD-31531-01 (Typical).

4.4 Central Office Continuous Ringing Supply - SD-90230-01.

DESCRIPTION OF OPERATION

5. OUTGOING SIGNALING AND PULSING

This circuit is used to extend the range of P.B.X. station lines, P.B.X. central office trunks, and central office subscriber line circuits. The operation of the circuit on outgoing calls from the station (or P.B.X. attendant) is the same for relay (P) in all figures. Relay (P) operates when the loop is closed to relay supervision and pulses to the P.B.X. or central office or to another long line circuit.

With Figs. 1 and 2, relay (P) closes the loop toward the switch equipment direct to the P.B.X. equipment or to another long line circuit with signaling battery supplied from the distant point.

With Fig. 3 relay (P) closes the 48 volt battery from this circuit over the ring side of the line through the pulse repeating relay in the distant long line circuit which has been modified for this service, over the tip side of the line to ground in this circuit. This arrangement which provides 48 volt battery for signaling between the two long line circuit instead of the low voltage battery from the P.B.X. gives a considerable increase in loop and stability of pulsing over the arrangement shown in Fig. 1. When the P.B.X. has 48 volt battery there is no advantage in using Fig. 3.

6. INCOMING CALLS TO STATION

Ringing current from the central office, P.B.X. or preceding long line circuit operates relay (R) in Fig. 1, 2 or 3 which in turn operates the associated relay (R1).

With Figs. 1 and 3 relay (R1) disconnects the repeating coil and associated apparatus from the line and connects fresh ringing current toward the subscriber, the P.B.X. trunk circuit or succeeding long line circuit.

With Fig. 2 the incoming ringing current is connected by relay (R) toward the station. This permits by-passing the ringing current for a party line in which case ringing current may be either on the tip or ring of the line. It also permits tripping during the ringing period provided the loops are within the range of the central office or P.B.X. tripping relay.

With Figs. 1 and 3 ringing can only be tripped during the silent period by the operation of relay (P) when the call is answered. This closes the loop toward the ringing circuit to operate the tripping relay and provides supervision.

7. GENERAL

7.1 The (R1) relay is made slow to operate so that it will not be operated by the (R) relay during dialing.

7.2 Resistance "A" (with strap B) by-passed with a 2 mf. condenser is connected between terminals 1 and 6 of the repeating coil when the circuit is used as a long P.B.X. station line in connection with P.B.X.'s which have cord circuits the single retardation coil battery feed type and lines which have a minimum conductor loop resistance toward the P.B.X. station of less than 40 ohms. This resistance is inserted to prevent the long line circuit from depriving the station on the other and of the cord circuit of transmitter battery.

7.3 When this circuit is used as a long trunk, resistance "A" is provided to reduce the possibility of a click to the calling central office subscriber when the long trunk equipment is located in the terminating central office.

7.4 When the conductor loop between Fig. 1 and the central office is less than 250 ohms, resistance "A" is connected so as to make the loop toward the central office total not less than 250 ohms in order to prevent premature tripping on the false operation of relay (P) when the line discharges through this relay.

7.5 The varistors in Figs. 5 and 6 provide protection for the resistance lamps when the line is exposed to power line disturbances.

8. TANDEM OPERATION

When working with dial type central office it is possible to operate several pulse repeater circuits of this type in tandem under certain limiting conditions. These limitations are covered in the range charts showing the working limits of long line circuits.

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