DIAGRAM NOTES

concerning

DIAGRAM GBW.14700

titled

20, 35 & 49 LINE P.A.B.X. - RINGING & TONES CIRCUIT

1. GENERAL

The diagram shows the circuit arrangements of the relay set used to provide the ringing and tone supplies on the 20, 35 and 49 Line P.A.B.X's. Closely associated with this circuit is the Pulse circuit GBW.14710 and the circuit description for this circuit should be read in conjunction with the circuit description for the Pulse Circuit.

2. FACILITY SCHEDULE

Provision is made for:-

1. Operation of the circuit when ringing start signal is received.
2. Extending a start signal to the Pulse circuit.
3. Continuous ringing supply.
4. Dial busy and ringing tone supplies.
5. Ringing failure alarm.
6. Testing the circuit for maintenance purposes.

3. OUTLINE

The circuit is brought into use by connecting an earth to the Ring Start lead.

When this occurs, a start condition is extended to the Pulse circuit which generates the interrupted earth supplies for operating the ringing and busy relays.

The ringing and ring tone supplies are generated by a heavy duty vibrating relay and interrupted in some cases by the ringing relay.

Dial and Busy tone are generated by a valve circuit oscillating at approximately 400 c.p.s. The tone thus generated is interrupted by contacts of the busy relay to provide busy tone.

If the circuit fails to generate the ringing supply, alarm conditions are set up lighting an alarm lamp on both the relay set and the attendants cabinet.

4. CIRCUIT OPERATION

4.1 Ringing Start

When ringing tones or pulses are required for use in any particular circuit of the P.A.B.X. an earth is connected to the common Ring Start lead to operate relay RS.

Relay RS operating

RS1 connects an earth to operate relay VB and allows current to flow via choke L1 through half the primary winding of transformer TR1.
RS2 operates relay FA. (See 4.3).
RS3 connects earth to pulse start lead.

4.2 Ringing Supply. Continuous ringing.

Relay VB operates when the RS1 earth is connected.

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Relay VB operating

VB1 transfers earth to other half of primary of TR1 and breaks operating circuit of VB which releases. Current flows in the reverse direction to that previously flowing in the first half.

Relay VB releasing

VB1 re-makes operating circuit of relay VB, and transfers earth to first half of TR1.

VB continues to vibrate at approximately 20 c.p.s. Current reversals in TR1 generate an alternating EMF at approximately 20 c.p.s. in the secondary of TR1 which is fed to the Continuous Ringing Common.

Ringing is also fed via C4 and MR1 to operate relay RR.

Relay RR operating

RR1 prevents the extension of the ring fail alarm. (See 4.3).

4.3 Ringing Failure

If, during operation of the circuit, ringing current is not generated, relay RR will not operate and a ring fail alarm is extended as follows:-

Relay FA operating (slow operate)

FA1 further disconnects relay set ring fail lamp.
FA2 operates relay FB to earth at RS2.
FA3 further disconnects ring fail rack lamp (if fitted).
FA4 further disconnects alarm lead.

Relay FB operating (slow operate)

FB1 prepares locking circuit for relay FB.
FB2 prepares to light relay set ring fail lamp.
FB3 prepares to light ring fail rack lamp.
FB4 prepares to connect earth to alarm lead.
FB5 provides a hold circuit for relay FB against the release of FA, and releases relay FA.

Relay FA releasing (slow release)

FA1 lights the relay set ring fail lamp.
FA2 holds relay FB operated until the fault is cleared, and when RR relay operates relay FB is released thereby disconnecting the alarms.
FA3 lights the ring fail rack lamp.
FA4 connects earth to the alarm lead.

END