CIRCUIT DESCRIPTION SYSTEMS DEVELOPMENT DEPARTMENT PRINTED IN U.S.A.

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PANEL SYSTEM POWER ALARM CIRCUIT FOR RINGING, COIN CONTROL, TONE AND ASSOCIATED LEADS AC-DC MACHINE RINGING

1. PURPOSE OF CIRCUIT

1.1 To provide alarms for ringing, coin control and tone, when ringing power plant is located outside of power room.

2. WORKING LIMITS

2.1 None,

3. FUNCTIONS

3.1 To provide alarms for ringing, coin control and tone power supply.

4. CONNECTING CIRCUITS

4.1 Audible alarm circuit for floor alarm board.

4.2 Power ringing circuit.

4.3 Miscellaneous and auxiliary alarm circuit.

4.4 Miscellaneous alarm circuit.

4.5 Ringing generator and control circuit.

4.6 Power howler circuit.

4.7 Power coin control circuit.

4.8 Miscellaneous circuit for miscellaneous interrupter frame. DESCRIPTION OF OPERATION

5. NO-VOLTAGE ALARM FOR MACHINE RINGING R1 (FIG. 1)

Failure of machine ringing current supply from an-Rl brush, or operation of the fuse in a BR1, BR2 or BR3 lead, releases the corresponding (B1), (B2) or (B3) relay, which releases relay (M1), releasing relay (AL) which lights lamp (MACH RING) and operates the power failure audible



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signals. After the restoration of ringing current from all three brushes has operated relay (M1), the alarms may be retired by momentarily operating key (MACH RING ALM), Fig. 3. If the no-voltage condition is due to stopping of the ringing generator, the continuous ringing no-voltage alarm, Fig. 4, will operate, connecting ground to lead E to hold relay (AL) operated, so that the alarm will not lock in.

6. NO-VOLTAGE ALARM FOR MACHINE RINGING R2 (FIG. 2)

Failure of machine ringing current supply from an R2 brush, or operation of the fuse in a BR1, BR2, or BR3 lead, releases the corresponding (B4), (B5) or (B6) relay, which releases the associated (M2), (M3) or (M4) relay. Release of any of these relays opens the holding circuit for relay (AL), Fig. 1, release of which lights lamp (MACH RING) and operates the power failure audible signals. When the supply of ringing current from all six brushes has been restored, the path from the winding of relay (AL) thru the contacts of relays (M1), (M2), (M3) and (M4) is closed, and relay (AL) may be operated to retire the alarms by momentarily operating key (MACH RING AIM), Fig. 3. If the no-voltage condition is due to stopping of the ringing generator, the continuous ringing no-voltage alarm, Fig. 4, will operate to hold the (AL) relay, Fig. 1, operated, so that the alarms will not lock in.

7. MACHINE RINGING ALARM RELEASE KEY (FIG. 3)

Failure of machine ringing current supply to Fig. 1 or 2 releases relay (AL) of Fig. 1, which operates the alarms. When the supply of current from all machine ringing brushes has been restored, relay (ML) and relays (M2), (M3) and (M4), when furnished, will be operated and the alarms may be retired by momentarily operating key (RING MACH ALM) to operate relay (AL), which locks up thru its own contacts.

8. NO-VOLTAGE ALARM FOR CONTINUOUS RINGING (FIG. 4)

Failure of continuous ringing current supply or operation of the fuse supplying current to relay (RG), releases relay (RG), operating relay (CA), which lights lamp (MANUAL RING), operates the power failure audible signals, and holds relay (AL) operated to prevent locking in of the machine ringing no-voltage alarms.

9. NO-VOLTAGE ALARM FOR COIN CONTROL SUPPLY (FIG. 5)

When positive coin control current fails, or the fuse in the CC+ lead operates, relay (CB) releases. When negative coin control current fails, or the fuse in the CC- lead operates, relay (CD) releases. Release of either relay operates relay (C), which lights lamp (COIN CONTROL NO VOLTAGE) and operates the power failure audible signals.



10. NO-VOLTAGE ALARM FOR PICK-UP SUPPLY (FIG. 6)

Relays (BR1), (BR2) and (BR3) are connected to pick-up brushes 1, 2 and 3, respectively, and operate in rotation as the grounded segment of the interrupter makes contact with each brush. If a brush becomes open, all three relays will be normal at the same time, causing relay (OB) to release and operate relay (PB), which lights lamp (PICK-UP BRUSH) and operates the power failure audible signals. Relay (OB) will operate and retire the alarms when two of the (BR1), (BR2) and (BR3) relays are operated.

If the PUA brush becomes open and a pick-up lead becomes grounded, there will be some part of the cycle when all three relays, (BR1), (BR2) and (BR3) are operated, releasing relay (AB) which brings in the pick-up ground alarms. Relay (AB) will operate and retire the alarms when two of the (BR1), (BR2) and (BR3) relays are released. Jack (PU) is provided for use in testing relays (BR1), (BR2) and (BR3).

11. PICK-UP GROUND ALARM (FIG. 7)

If the pick-up lead becomes grounded between the pick-up lead resistance lamp and the selector frames, relay (PU) intermittently operates, operating relay (PG) which lights lamp (PICK-UP GROUND), and operates the AC auxiliary signal and lights a pilot lamp at the adjacent floor alarm board.

12. POWER TRANSFER ALARM (FIG. 8)

When the ringing current supply leads or the coin control supply leads are transferred to the reserve source of power, battery is connected to lead MT, operating relay (MT) which operates relay (PT) to light lamp (PWR TRNS) and operate the AC auxiliary and light a pilot lamp at the adjacent floor alarm board. The alarms may be silenced by momentarily operating a key in the power circuit, operating relay (MG), which locks up, releases relay (PT) and lights lamp (TRANS GUARD). When the power leads have been transferred back to the normal source, release of relay (MT) releases relay (MG) which extinguishes lamp (TRANS GUARD).

13. MACHINE RINGING FUSE ALARMS (FIGS. 9 & 10)

Operation of a machine ringing current fuse in the power circuit connects machine ringing current to relay (F1), (F2), (F3), (F4), (F5) or (F6). Operation of any of these relays operates the (GA) relay, Fig. 15. Removal of the operated alarm type fuse retires the alarms.

14. RINGING CURRENT, BATTERY AND COIN FUSE ALARMS (FIGS. 11, 12& 13)

When a power board fuse carrying AC-DC, 105 volts AC or 85 volts AC operates, relay (GF) is operated. When a power board 48 volt, trip or LT2 fuse operates, relay (BS) is

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operated. When a power board fuse carrying positive coin control current operates, relay (CF) is operated. When a power board fuse carrying negative coin control current operates, relay (CE) is operated. Operation of any of these relays operates the (GA) relay, Fig. 15. Removal of the operated alarm type fuse retires the alarms.

15. HIGH TONE FUSE ALARM (FIG. 14)

Operation of a power board fuse carrying high tone connects interrupted battery to relay (HF), operation of which operates relay (H), which lights lamp (RINGING PANEL FUSE), Fig. 15, and operates the AC auxiliary signal and lights a pilot lamp at the adjacent floor alarm board. Removal of the operated alarm type fuse retires the alarms.

16. POWER FUSE ALARM (FIG. 15)

Operation of any associated fuse alarm operates relay (GA) which lights lamp (RINGING PANEL FUSE) and operates the power failure audible signals.

17. RINGING HIGH VOLTAGE ALARM (FIG. 16)

When the ringing generator has been transferred to the battery driven motor, and the ringing voltage exceeds a predetermined maximum, the (HVA) relay operates, operating relay (HV), which lights lamp (RHV) and operates the power failure audible signals.

18. NO-VOLTAGE ALARM FOR GRID CONTROLLED RECTIFIERS (FIG. 17)

Failure of a rectifier supplying current for charging the ringing battery or furnishing coin control current, causes ground to be connected to lead RCV. When the front contact of interrupter (RC) closes, relay (RC) operates and locks under control of lead RCV. When the back contact of interrupter (RC) closes, if ground is still connected to lead RCV, relay (VA) operates, lighting lamp (RECTIFIER NO-VOLTAGE) and operating the AC auxiliary signal and lighting a pilot lamp at the adjacent floor alarm board. The alarms may be retired by momentarily operating key (RECTIFIER ALM REL), operating relay (V) which releases relays (VA) and (RC) and lights lemp (RECTIFIER N V GUARD). When the rectifier is restored to service, relay (V) releases, extinguishing lemp (RECTIFIER N V GUARD).

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