DIAGRAM NOTES (ISSUE 1)

concerning

DIAGRAM GBW.13730

titled

U.A.X. N.Z. 13

RACK ALARM CIRCUITS, RACKS A, B AND C

1. GENERAL.

The diagram shows the connections and circuit arrangement of the miscellaneous circuits associated with a U.A.X. N.Z. 13.

The diagram should be considered in conjunction with those listed on sheet 4 of GBW.13730.

2. FACILITY SCHEDULE.

Provision is made for:-

(1) Initiation of an alarm should a battery fuse blow.

(2) An alarm press-button to control the display of lamps associated with the following alarm conditions:-

Fuse alarm, P.G. alarm, charge fail alarm, release alarm, linefinder control alarm, and N.U. tone alarm.

(3) Battery Jacks on front and rear of units.

(4) Connection of a portable tester for routine testing.

(5) Connection of N.U. tone to ceased, unallotted or temporarily out-of-service (T.O.S.) lines.

(6) Extension of ringing start, ringing current, tones and pulses, etc., to the various circuits requiring the services.

(7) Connection to the meter routine test circuit.

(8) Connection to P.B.X. resistors for final selectors.

(9) Connection to a test number circuit.

3. CIRCUIT DESCRIPTION.

Since the unit may be unattended for a long time it is arranged that the alarm lamps do not glow continuously. A push button is fitted, and such alarms as may be set up are indicated by the lamps only when the button is pressed.

3.1 Fuse Alarm (Figs. 1 and 1A).

When a fuse blows, the alarm spring makes contact with the alarm bar and extends battery via the control fuse to operate relay FA on its a-b winding.

Relay FA operating.

FA1 prepares the circuit for the fuse alarm lamp, the circuit for which is completed by depression of the press-button SWA.

FA2 extends earth to relay FA in the Ringing, Tones and Alarm circuit.

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Depression of the press-button SWA lights the alarm lamp associated with the unit on which the fuse has blown.

Should the fuse alarm control fuse blow relay FA operates on both windings connected in series by the alarm bar and spring.

3.2 Release Alarm (Fig. 2)

When a release signal (earth) is received at U13 or U17, relay RB operates.

Relay RB operating,

RB1 connects earth via the low-resistance winding a-b of relay RA to the Release Alarm Eth wire (U15) to effect the release of the selector concerned. Relay RA operates.

Relay RA operating,

RA1 prepares the circuit for the release alarm lamp.

RA2 connects earth to the Release wire (U13, tone and time pulse circuit).

Relays RA and RB are disconnected and release when the selector releases. Should the selector fail to release, relay RB only is disconnected, and when RB1 restores, relay RA holds on winding d-e to maintain the alarm. The reduction in current via U15, due to the disconnection of the low-resistance winding of relay RA prevents the continued operation of the selector's rotary stepping magnet.

3.3 P.G. Alarm (Fig. 3)

Earth from the subscriber's line circuit prepares the P.G. alarm lamp circuit.

Depression of the press-button switch SWA lights the alarm lamp associated with the unit on which the P.G. condition exists.

3.4 Battery Jacks (Fig. 4)

Each unit is provided with battery jacks on the front and rear of the unit.

3.5 Meter Routine Test (Fig. 5)

Shows the test connections, test keys and lamp used in conjunction with the meter routine test circuit (see ringing and meter pulse diagram) and the meter routine test relay MD (Fig. 21) for routine testing of subscribers' meters.

The P and meter wires of the line circuit under test are extended via the test cord to the meter pulse circuit. When the line circuit is free, resistance battery on the P wire causes the meter pulse circuit to return earth via U56 to light the Meter Test lamp. At the same time the line circuit is busied. The glowing lamp indicates that testing may commence.

The meter reading should first be noted. The operation of the appropriate key, "Operate" or "Non-operate" causes the meter pulse circuit to connect ten pulses of operate or non-operate current (via U58, or U60 and KOP3) to the subscriber's meter. KOP2 or KNP4 provides earth via U54 to operate the M.R.T. relay (and in turn ST) in the meter pulse circuit. The lamp flashes during the connection of the meter pulses and resumes a continuous glow when the ten pulses are completed. The test key should now be restored to normal and the meter reading again noted.

When tests on a meter are complete the cord connection may be transferred to another line circuit. The disconnection of the test cord from the line circuit test pins frees the line circuit and causes the meter pulse circuit to extinguish the lamp. The lamp continues to glow, however, if the key has not been restored, the disconnection of the P wire causing the meter pulse circuit to transfer the lamp earth from U56 to U68. The lamp circuit is now dependent on key contract KOP4 or KNP2.

3.6 P.B.X. Resistor (Fig. 6)

Shows the arrangements for connecting the required resistance battery and earth potentials to the first and last P4 contacts respectively in a P.B.X. group of final selector outlets.

3.7 N.U. Tone Distribution to Unallotted, Ceased and T.O.S. Lines (Fig. 7.)

Shows the arrangement for extending the line and P wires of unallotted, ceased or temporarily out-of-service (T.O.S.) lines to relay TS and an NUA retard in the Ringing, Tones and Alarm circuit.

The connection may be made either at the I.D.F. or, for a temporary connection, from the T.O.S. jacks.

3.8 Meter Pulses (Fig. 8)

Shows the arrangements for extending the S, Z, 1, 2, 3, 4, 5 and 6 metering pulses to the junction and "M" groups.

3.9 Busy Tone Earth (Fig. 9)

Shows the arrangement for extending busy tone to the final selectors, and junction and "M" groups.

3.10 N.U. Tone Earth (Fig. 10)

Shows the arrangement for extending N.U. tone to the group selectors and junction groups.

3.11 Dial Tone Earth (Fig. 11)

Shows the arrangement for extending dial tone to the group selectors.

3.12 Ring Tone Earth (Fig. 12)

Shows the arrangement for extending ring tone to the final selectors and junction and "M" groups.

3.13 Interrupted Ringing Earth (Fig. 13)

Shows the arrangements for extending the interrupted ringing supplies to the final selectors.

3.14 Continuous Ringing (Fig. 14)

Shows the arrangement for extending continuous ringing to the revertive relay sets, line test circuit and the balanced ringing transformer.

3.15 Overflow Busy Tone (Fig. 15.)

Shows the arrangement for extending overflow busy tone to the group selectors and junction groups.

3.16 Time Pulses (Fig. 16)

Shows the arrangement for extending the time pulse start, hold, and release pulses to the group and final selectors, junction and "M" groups, and revertive relay sets.

3.17 Ring M/C Start Battery (Fig. 17)

Shows the arrangement for extending the machine start wire to the line test circuit, final selectors, control relay sets, code ringer, and junction groups.

3.18 Test Number (Fig. 18)

Shows the arrangement for extending the test number circuit +, - and P wires to the final selector multiple.

3.19 Charge Fail (Fig. 19)

Shows the charge fail alarm lamp, the circuit of which is prepared by a contact of the Charge Fail relay in the Ringing, Tones and Pulses circuit.

Depression of the press-button SWA (Fig. 3) completes the circuit for the alarm lamp.

3.20 Routine Test Line Jack (Fig. 20)

Shows the connections of the test lines and associated circuits to the routine test jack, which accepts the multi-point plug of the portable tester, GBW.14000.

3.21 11th Step Meter Routine Test Relay (Fig. 21)

Shows the connections to the meter routine test relay used in conjunction with fig. 5 and the meter routine test circuit (ringing and meter pulse diagram).

The cam-operated contact MD2 is, in the normal circuit condition, held open by the cam as shown. The cam moves one step each time the relay is energised and is unaffected by the subsequent disconnection of the relay.

At the first operation of relay MD, contact MD2 closes to complete the U64-U66 circuit, causing the meter test circuit to connect the meter pulses to the meter under test. Relay MD is released at the beginning of each pulse and re-operated at the end of the pulse. At the end of the 10th pulse (that is, at the 11th operation of the relay), the relay cam opens contact MD2 to effect the disconnection of the meter pulses.

3.22 Group Selector Overflow Meter (Fig. 22)

Shows group selector level overflow meters tied to the group selector multiple.

3.23 Call Count Meters (Fig. 22A)

Shows the junction group call count meters associated with incoming and outgoing junction routes.

3.24 Control Alarm (Fig. 23)

If a fault condition develops in the linefinder control relay set, relay CA, which operates on winding a-b, holds, due to the fault condition, on winding d-e via CA3. Contact CA2 prepares control alarm lamp circuit; CA1 operates an alarm relay (FA, ringing and meter pulse diagram) via fig. 1B.

3.25 S and Z pulse (Control Relay Sets) (Fig. 24)

Shows the arrangements for extending S and Z pulses from the ringing and meter pulse circuit to the control relay sets.

3.26 Positive Battery (Fig. 25)

Shows the fusing and distribution of the positive battery supply.

3.27 6-second and Pip-Pip Pulse Supply (Fig. 26)

Shows the arrangements for extending the 6-second pulse supply to the pulse distribution relays and for connecting pip-pip tone.

When pip-pip tone is required relay ST operates to a start earth and ST2 starts the 900 c/s oscillator (ringing and meter pulse circuit). Contact ST1 extends earth pulses from terminal TC to relay PP and contact PP1 connects pulses of 900 c/s tone to the PP wire.

3.28 Ringing and Ringing Codes (Fig. 27)

This is an explanatory diagram showing the arrangements for distributing ringing and ringing codes for 5-party line groups.

3.29 Balanced Ringing (Fig. 28)

Shows the connections to the balanced ringing transformer.

3.30 Revertive Pulse (Fig. 29)

Shows the distribution of the revertive pulse supply to the revertive relay sets.

END