DIAGRAM NOTES. (issue 1)

concerning

DIAGRAM GBW. 11930

titled

PULSE GENERATOR RELAY SET FOR CODE RINGING

2000 TYPE

1. General

.1 The circuit is designed as the common source of a set of earth pulse codes, generated and supplied to rural final selectors as demanded.

.2 The rural final selector selects the required pulse code to provide for the transmission of the appropriate code ringing cycles to a called subscribers line.

.3 These diagram notes should be read in conjunction with diagrams GBW. 11790 and GBW. 11800 (Rural Final Selector).

2. Facility Schedule

Provision is made for:-

.1 The generation of a set of 10 pulse codes simultaneously on receipt of a start earth. The codes generated to be of a morse code type as follows:-

Code	Morse Code Equivalent
1	A . -
2	D - . .
3	J . - - -
4	K- . -
5	M- -
6	R. - .
7	S. . .
8	U. . -
9	W. - -
10	X- . . -

The short pulses to be of 300 m/s duration, the spacings to be of 300 m/s duration and the long pulses to be three times the length of a short pulse.

.2 Repeating the code pulse cycle approximately every 5.7 secs until the start earth is removed.

.3 Maintaining code generation until the end of a complete cycle if the start earth is removed during a cycle.

.4 Preventing any subsequent rural final selector, requiring a pulse code, from transmitting ringing until the commencement of a code cycle.

.5 Manual start and the maintenance of code ringing as desired.

.6 Preventing clipped impulses from being received by the magnet of the control uniselector.

.7 Recording an alarm after 30 secs delay if the PC uniselector fails to complete the cycle.

3. Circuit Description

Seizure. Before seizure, PC uniselector wipers are resting on the normal contact. When a final selector is prepared to send out code ringing, relay FF in the selector is switched to the "code operate" lead. Relay FF operates to battery on this lead and applies an earth to the common "start" lead. Relay ST operates.

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Relay ST operating. ST1 prepares a circuit for stepping the U/S magnet.
ST2) complete the connection of relay SG to the flicker
ST4) earth lead. SG operates when no earth is present.
ST3 operates relay AS.
ST5 disconnects the homing circuit of the U/S.
ST6 prepares a holding circuit for relay ST when wiper PC1 is off normal.
ST7 connects earth to wipers PC4, PC5, PC6 and PC7.

Relay AS operating. AS1 completes self locking circuit dependent on ST.
AS2 operates relay DA.
AS3 prepares a connection to the a-b winding of relay AS from arc PC7.

Relay DA operating. DA1 connects relay S to the "S" lead.
DA2 prepares a holding circuit for relay S.

Relay S operates to earth on the "S" lead.

Relay S operating. S1 locks relay S dependent upon DA operated and Z released.
S2 applies a starting earth to the alarm delay relay sets
S3 prepares an operate circuit for relay Z.

Relay SG operating. SG1 connects relay PR to the flicker earth pulse lead.

PR operates when earth is applied.

Relay PR operating. PR1 operates the uniselector magnet. PR releases when the earth is disconnected from the FE lead.

Relay PR releasing. PR1 disconnects the magnet which releases and the uniselector steps to the first outlet. Relay H operates via PC3.

Relay H operating. H1 applies battery to the "code hold" lead, holding the FF relay in the selector.

Earth on the FE pulse lead again operates and releases relay PR and the uniselector is stepped to the second outlet. Relays BP, AP, and N operate.

Relay BP operating. BP1 applies earth direct to the "D" code lead.
BP2 " " " " " "X" " "
BP4 " " " " " "K" " "
BP3 prepares an earth to the "S" code lead.
BP5 " " " " " "R" " "

Relay AP operating. AP1 applies earth direct to the "A" code lead.
AP2 " " " " " "W" " "
AP3 " " " " " "J" " "
AP5 " " " " " "R" " "
AP4 completes a circuit " " "S" " "
AP6) spare
AP7)

Earth is also applied direct to the "M" code lead from PC6 and to the "U" code lead from PC7.

Relay N operating. N1 disconnects battery from the "code operate" lead.
N2 disconnects the operate path for relay AS which holds over AS1.

The flicker earth continues stepping the PC uniselector wipers every 0.3 secs. When the wipers reach outlet 3, AP releases.

Relay AP releasing. AP1) Disconnect earth from the code pulse leads, so
to) terminating these pulses to the final selector.
AP5)

When the wipers reach outlet 4, relay AP re-operates and the earth is again applied to the code pulse leads. Relay AP remains operated until the wipers leave outlet 6.

When the wipers reach outlet 5, relay BP releases.

Relay BP releasing. BP1 to BP5) Disconnect earth from the code pulse leads, so terminating these pulses to the final selector.

Relay BP re-operates when the wipers reach outlet 6 and the earth is again applied to the code pulse leads. Relay BP releases when the wipers reach outlet 7.

When the wipers reach outlet 8, relay BP re-operates and earth is again applied to the code pulse leads.

When the wipers reach outlet 8, relay CP operates.

Relay CP operating. CP1 applies earth direct to the "V" code lead.
CP2 " " " " " "J" " "
CP3 " " " " " "K" " "
CP4 completes a circuit " " "R" " "

When outlet 9 is reached, relay BP releases and disconnects earth from the code pulse leads.

In positions 10, 11 and 12 earth is applied to the "X" code lead via PC7.

When the wipers reach position 11, relay CP releases and disconnects earth from the code pulse leads.

In positions 12, 13 and 14 earth is applied to the "J" code lead via PC4.

In positions 15, 17, 19, 21, 22 and 24 earth from PC5 is applied to the PC magnet via the interrupter, ensuring a fast home drive for the uniselector.

In position 19, relay H releases.

Relay H releasing. H1 Disconnects battery from the "code hold" lead which allows relay FF in the final selector to release.

When outlet 23 is reached, the a-b winding is connected to earth via PC7. As this winding is in opposition to the d-e winding, AS releases.

Relay AS releasing. AS1 disconnects its own lock circuit.
AS2 disconnects the DA relay locking circuit.
AS3 disconnects the releasing circuit for AS.

When the uniselector leaves the last outlet, relay DA releases.

Relay DA releasing. DA1 disconnects the S relay from the "S" lead.
DA2 " " S " holding circuit.

Relay S releasing. S1 disconnects its own holding circuit.
S2 removes earth from start lead which allows the alarm delay relay set to restore to normal.
S3 Disconnects operate circuit for Z relay.

Relay N releasing. N1 reconnects battery to "code operate" lead in order to operate the FF relay in the final selector if the called sub has not answered or to operate relays of other selectors requiring code ringing.

Relay ST releasing. ST1 Prevents the reoperation of the uniselector magnet.
ST2 Disconnects the SG relay.
ST3 Disconnects AS relay operating earth.
ST4 Disconnects SG relay from the Flicker Earth.
ST5)
ST6) Have no function at this stage
ST7)

If the code generator is required for further code pulses the reoperation of Relay ST causes the pulse code cycle to re-commence.