

1. The secondary sequence diagram (C 47593) shows that, when reading in an order with OS operated, the counting circuit OX, OY, OZ is impelled by earth appearing on the common "step on" line. The order intake sequence diagram shows the various paths by which earths appearing in sequence on three outputs controlled by OX, OY and OZ prepare routes for and control the action of reading-in successive order digits and signal the completion of each step by earthing the "step on" line.
2. Two alternative conditions apply: the order source address may be a tape reader which generates five wire code in a form suitable for direct input to the digit storage relay sets; or the order source may be a store which generates trains of numerical pulses. The translator is used to convert these numerical trains into five wire code. The order intake control distinguishes the two conditions by the state of relays OPA and OPB which are operated when the order source is a store. The operation of OPA and OPB is shown on C 47590.
3. The two alternative sequences are:
 - (a) with OPA normal, OX operated. Select a digit storage relay set.
OY operated. Read the code from the tape reader.
OZ operated. Skip.
 - (b) with OPA operated, OX operated, select a digit storage relay set.
OY operated, select a shift position to present the required digit to the translator.
Recycle the translator to zero.
OZ operated, transfer digit into translator and mark out from translator into digit storage set.

These two sequences will be considered separately.

4. With OPA normal; reading an order from a tape reader. When OS operates, relay OA in the subsidiary counting train is operated. At the same time the order source address is marked out and checked and relay OX operated. Earth from OS 22.23 via OZ 2.1 normal and OX 25.26 is routed via NCY operated or released (as left by the last order), the break contacts of OF-OC and OB, over OA 25.26 operated and OPA 22.21 normal to operate CL. CL switches the five wire code input into C relay set and prepares this set to recognise a "space" or "block-number" code. CL 5.6 extends the earth over a chain of break contacts to the "step on" line at O 27.
5. The secondary sequence circuit now operates OY and releases OX and earth from OS 22.23 - OX 2.1 - OY 25.26 - OPA 5.4 is passed to the tape reader drive circuit¹⁵(see C 48302). This circuit is now primed so that the tape reader steps when the earth is removed and also the earth is applied to the tape reader contacts, which mark a code into C relay set, and to the "decode" circuit in C relay set which extends the earth to the "step on" line at C1 if an appropriate code is recognised.
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6. The secondary sequence circuit now operates OZ and releases OY. When the earth is disconnected from the tape reader drive circuit the tape reader steps and, after a period of contact bounce, presents a new code on its contacts. Earth from OS 22.23 via OY 2.1 - OZ 25.26 - OPA 8.7 earths the step on line, and (shown on C 47593) via OZ 5.6 advances the subsidiary counting train so that OB and OA are operated. OA releases during the next step.

7. The secondary sequence operates OX and releases OZ. This time when the cycle repeats itself, the first step selects digit storage set D_1 by operating DGA and DGB over OB 25.26. From the secondary sequence diagram (C 47593) we see that when the D_1 decoding circuit (shown as a triangle), is allowed to mark out during the second step it selects NCX and NCY if the stored digit is O or NA and BG if the digit is 1 - 9 before earthing the "step on" line.

During succeeding cycles this choice results in the selection of D_2 , D_3 , D_4 and D_5 if NCY 21.22.23 is normal or D_4 , D_5 , D_2 and D_3 if NCY is operated.

8. Finally, when the subsidiary counting train has OG operated, the earth from OAS 22.23 over OZ 2.1 normal and OX 25.26 is routed over the break contacts of OF-OA and operates OW. OW operates AS and the stored order is carried out.

STORED ORDER 9. With OPA operated the first step (OX operated) is different during the first cycle only; when OPA 21.22.23 bypasses CL and routes the earth directly to the "step on" line.

10. With OPA operated the second step (OY operated) results in the operation of VZA and VZB, which cause the translator to recycle to zero. During the first cycle, with OA operated, this earth is extended over OF 8.7 etc., to OB 22.21 - OA 22.23 to the "step on" line. On succeeding cycles OF-OB route the earth to operate a shift relay HE-HJ. The earth is then forwarded by the 8.9 contact of the operated shift relay, over the 7.8 contacts of other shift relays to V.B 26. VR has previously been operated in series with OPA and the path to the "step on" line is dependent on the translator recycling to zero and operating relays VCA and VCB.

11. With OPA operated the third step (OZ operated) results in the "step on" line being earthed directly over OA 28.29 during the first cycle. ONLY During the remaining cycles OA 28.27 routes the earth over GDN, GMN, GRO, GLA and GCA normal to operate GST. GST allows the pulse generator to produce a single train of numerical pulses which step the translator dekatron. At the end of the pulse train GF operates and GF 2.3 extends the earth over OPB 2.3 - BRV 24.25 - BSA 22.21 into the decoding circuit of the selected digit storage set. As previously described D_1 relay set selects NCX and NCY or NA and BG before earthing the "step on" line; the other D relay sets earth the "step on" line as soon as a digit code is recognised.

12. During the last cycle the operation of OZ during the last step operated OG in the subsidiary counting train and OF is held until OZ releases. When the secondary sequence counter steps on, OF releases and earth from OS 22.23 via OPA 25.26 - OF 28.27 - OG 25.26 advances the address stored in the L relay sets by one unit. At the same time when OF releases the circuit is completed to operate OW. OW releases OV, which in turn

12. During the last cycle the operation of OZ during the last step operated OG in the subsidiary counting train and OF is held until OZ releases. When the secondary sequence counter steps on, OF releases and earth from OS 22.23 via OPA 25.26 - OF 28.27 - OG 25.26 advances the address stored in the L relay sets by one unit. At the same time when OF releases the circuit is completed to operate OW. OW releases OV, which in turn releases OS and so terminates the pulse to the L relays.