

1. This circuit provides stepping impulses for the selected tape reader and controls the time at which the output from the tape reader contacts is sampled and transferred to a digit storage relay set. Six conditions will be considered separately:

- (a) order intake from a tape reader;
- (b) reading in numerical information;
- (c) the search facility;
- (d) order intake from a storage location;
- (e) manual control;
- (f) intake of initial orders.

2. During order intake from a tape reader relays OPA and OPB are normal and on the Second Step of each cycle earth from OS 22.23 is extended by OY 25.26 to:

- (a) relay RS in one of the two R relay sets;
- (b) the "make" contacts of all tape readers and the C decoding circuit of CG is operated (via BRV 24.25, BSA 22.21 and BSA 7.8);
- (c) the decoding circuit of the selected digit storage (D) relay set via BRV 24.25, BSA 22.21 and DGA 28.29.

When relay RS operates it connects the 110 V. D.C. supply through a current limiting resistor to charge the 16 microfarad capacitor. RS 25.26 completes a circuit over which the slow-operate relay RD will operate. RS 2.3 operates the slow-release relay RA. RA 2.3 prepares a circuit over which the condenser can discharge in series with the selected tape reader drive magnet when RS releases.

The make contacts of the tape readers forward a five wire code to the selected storage relay set (C or D), see C 47579. Earth from BSA 22.21 and the appropriate decoding circuit checks that a suitable code has been stored and is then routed to the "step on" line (C 47593). Relay OY releases and disconnects the earth from RS relay, the tape reader contacts and the decoding circuit.

The capacitor discharges over the circuit RS 5.4, RD 22.23, RA 2.3, BF 25.24 to the selected tape reader magnet when RS releases. RS 2.3 opens the operating circuit of RA, but as this relay is slow to release it will, in general, hold up throughout the sequence of reading in an order. RS 25.26 breaks the operating circuit of RD. RD is slow to release and is timed so that RD 22.23 opens as the condenser is fully discharged.

Relay RA safeguards the tape reader magnet from an unwanted current pulse which might otherwise occur when the reader is selected if the condenser had been left in a charged condition.

3. When reading in information from the tape similar conditions apply, but the impulsing earth is derived from AS 2.3 and AY 25.26. Note that the circuit from AS 2.3 to the Order Completed line is broken by NA 25.24 operated.
4. During a search for a block number, relays BSA, CG, AX and AS are operated, in addition to the relays selecting a tape reader. Earth from AS 2.3, AZ 2.1, AX 25.26, BSA 5.6, BF 2.1, RP 29.28 and RD 5.4 is applied to the slow-operate relay BP.

BP 2.3 forwards earth from JAL22.21 over BSA 23.22 to the RS relay in the selected R relay set when BP operates and allows the capacitor to be charged. It also operates RA and RD. RD 5.4 breaks the operating circuit of BP, which starts to release slowly. Earth from RS 22.23 is extended over RD 2.3 and BSA 9.8 to the tape reader contacts and the C decoding circuit. The output from the C decoding circuit is monitored by B relay set, and relay BF will be operated when the required code is encountered.

BP 2.3 breaks the operating circuit of RS when BP releases. RS releases and discharges the capacitor through the tape reader magnet. RS 25.26 breaks the operating circuit of RD, which releases slowly. RS 22.23 disconnects earth from the tape reader contacts and decoding circuit, so that the reader contacts are not required to break current.

RD 22.23 disconnects the tape reader magnet at approximately the time when the capacitor is discharged and RD 4.5 re-establishes the operating circuit for BP, which operates slowly. It will be seen that RD and BP form the conventional capacitor timed impulsing circuit. When BP re-operates, the tape reader contacts are once again earthed, the period during the release of RD and the operating of BP being adequate to mask the majority of the tape reader contact bounce.

Impulsing continues until the required code is found. Then BF operates, BF 1.2.3 disconnects the impulsing circuit and connects earth to the Order Completed line.

5. When reading an order from a store no tape reader is involved but an earth is required for the decoding circuit at appropriate times. Relays OPA and OPB are operated and OS 22.23 forwards earth during the third step of each cycle via OZ 25.26, the order intake sequence circuit of C 47586, OPB 2.3, BRV 24.25, BSA 22.21 to the selected decoding circuit.

6. Tape reader O 1 is disconnected when keys KMC and KMD are operated, and the output from the manual control digit keys are connected to the five wire system. The earth from OS or AS operates RS in the normal manner but the usual function of RS, impulsing the tape reader, is prevented by KMD 2.1. Similarly the output from the contacts of reader O 1 is disconnected by KMC contacts (see C 47579). KMD 22.23 connects a lamp which glows to indicate that a digit key should be pressed. KMD 25.26 allows earth to be connected over all digit keys normal to operate CKT, which holds over CKT 2.3. Now, when a digit key is pressed, earth from CKT 3 is routed over the break contacts of earlier digit keys and the make contacts of the operated digit key to the five wire code system.

When this code is recognised and accepted the O or A secondary sequence circuit steps on. The indicator lamp is extinguished and CKT releases. CKT can now operate only after all digit keys have been released. Continuous operation of one digit key does not mark the same code into successive digit storage groups.

7. During the intake of initial orders the conditions are similar to those during manual control. No tape reader is selected; earth from BSA 21 is applied by JGA 22.23 to the marking-out contacts of the initial order generating circuit, and the output from this circuit is connected to the five wire system. (C 47579).