No Print

Western Electric Co., Incorporated,
Engineering Dept.,
New York.

METHOD OF OPERATION
TELEPHONE CIRCUIT

With Repeating Coil Monitoring Feature - Arranged For Transfer Key - Local Test Desk - Full Mechanical Power Driven System.

GENERAL DESCRIPTION

1. This circuit is used at a local test desk for answering or originating calls over key ended or jack ended circuits. It is arranged for talking over the primary and secondary circuits, and over various trunks and tie lines entering the desk. It is arranged for monitoring on primary and secondary test circuits, and for monitoring on a test line for detecting intermittent troubles. A dial key is furnished for dialing over automatic trunks, and a flashing key is provided for flashing.

2. When the SEC-CO key is operated, the side tone is eliminated. A ringing key is provided for ringing on any ringdown trunks that may be connected to the desk. A flashing key (FL) is provided for flashing on incoming and outgoing calls. The transfer key when specified is used to connect the apparatus in this circuit with the telephone set at another position.

DETAILED DESCRIPTION

OPERATION

3. In answer to a call or in making a call over a key ended trunk, the trunk key (not shown) is operated to the talking position. In answering a call, the talking key (not shown) associated with the lighted line lamp is operated and functions as follows: (a) Closes the talking circuit over the leads T and R in all cases: (b) When used with trunks to local switchboard the supervisory bridge circuit is closed over leads T' and R' to the tip and ring of the line and ground is connected to the winding of a relay in the trunk circuit over lead S1, with the talking key operated, or over lead S2 with the holding key operated. (c) When used with trunks to mechanical selectors the bridged circuit is closed over leads T' and R' and ground is connected to the winding of a relay in the trunk circuit over lead S2.

4. When this circuit is used in connection with a trunk supplying common battery, the #54-D retardation coil and the B relay bridged across the T' and R' leads serve for supervisory purposes. The B relay in co-operation with other relays of the circuit functions to prevent the talking circuit from being connected to the trunk before tripping on machine ringing connections or before ringing from any source has ceased. The B relay is operated by battery and ground over the trunk circuit in turn operating the S relay. The S relay operated in turn operates the C relay. The C relay locks under the control of the FK and B relays and releases the S relay. The S relay is slow in releasing thus permitting the complete operation of the C relay. With the S relay released and the C relay operated, the C-1 relay operates and closes the telephone circuit over leads T and R and make contacts of the talking key to the trunk lines.

5. Each time the flashing key is operated, it functions as follows:- (a) The ring of the talking key is opened before any other leads thus preventing clicks in the telephone circuit, (b) The bridged circuit in series with leads T' and R' is opened as a flashing signal to the local switchboard on an outgoing call and releases the B relay. (c) The FK relay is operated. The FK relay is slow releasing

thus transfers battery from the winding of the S relay to the winding of the C relay during flashing. Under the above conditions, as the S, C and C-1 relays are released and re-operated each time the flashing key is operated, due to the release of the B relay. (d) Ground is removed from the lead S, thus releasing a relay in the trunk circuit which controls the supervisory relay in the local switchboard on incoming calls.

6. The dial is provided for dialing on trunks to mechanical selectors. It functions in the usual manner, that is; short circuiting the relay and retardation coil in the bridged supervisory circuit and then sending impulses by opening that circuit.

7. The M relay is used as the monitoring feature on the primary and secondary test set. It is also used with the test lines to the main distributing and intermediate distributing frames for detecting intermittent trouble. The M relay operates when ground is connected to leads S or F over the test circuit, or the intermittent trouble circuits respectively and connects the receiver through to the monitoring repeating coil. The ST relay is used for connecting to this circuit supplementary trunks which cannot be provided with enough springs on their keys for the purpose.

8. With the SEC-CO key operated, the test desk receiver is bridged across the talking circuit, one winding of the repeating coil is short circuited by the make contact of the key and the other winding is opened at the break contact of the key.

CIRCUIT REQUIREMENTS

	OPERATE	NON-OPERATE	RELEASE
B75 (B)	Through relay: Test .0053 Amp. Re-Adj. .005 Amp. When applied to leads T' & R'. Test .041 Amp. Re-Adj. .038 Amp.		Through relay: Test .0024 Amp. Re-Adj. .0025 Amp. When applied to leads T' and R'. Test .018 Amp. Re-Adj. .019 Amp.
E34 (M) (C-1)	Test .029 Amp. Re-Adj. .020 Amp.	Test .015 Amp. Re-Adj. .016 Amp.	
E214 (C)	Test .027 Amp. Re-Adj. .015 Amp.	Test .010 Amp. Re-Adj. .011 Amp.	
E610 (ST)	Test .028 Amp. Re-Adj. .018 Amp.		Test .0028 Amp. Re-Adj. .003 Amp.
#149-P (FK)	On .0095 Amp. middle spring shall touch top spring but it shall not break contact of bottom and top springs. On .010 Amp. relay shall completely operate.	On .009 middle spring shall not touch top spring.	Slowly in open circuit.
#162-M (S)	Test .0295 Amp. Re-Adj. .028 Amp.	Test .0205 Amp. Re-Adj. .022 Amp.	Slowly in open circuit.

ENG.--PTH-RV.
7/18/21.

CHK'D.--CHV.

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