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

METHOD OF OPERATION
TEST LINE

From District Or Office Frames - Relays At Miscellaneous Relay Racks - Local Test Desk - Full Mechanical Power Driven System.

GENERAL DESCRIPTION

1. This circuit provides a means for the outside trouble man to call the test man at the local test desk by a special code and furnish a direct means for the test man to test the subscriber's line over the same circuit as the call is made.

2. At the outgoing end this circuit is used with district selectors or their associated office selectors and at the incoming end with testing cords whose sleeves are connected to battery through a maximum resistance of 158 ohms.

3. It is so arranged that the call is not charged against the subscriber from whose telephone the call is made.

4. When a hunting district or office selector seizes this circuit, the red line lamps flash and the auxiliary alarm circuit operates. When the testing operator inserts the plug of a testing cord in the answering jack, the auxiliary alarm is silenced and the red lamps burn steadily as a busy signal.

5. After the plug of the testing cord has been removed from the answering jack and the trouble man has disconnected, should the troubleman remove the receiver from the switchhook a second time or come in on the circuit, the white lamps will flash as a recall signal and the auxiliary alarm circuit reoperate. When the plug of the testing cord is reinserted in the answering jack, the white lamps are extinguished and the auxiliary alarm silenced.

6. After the troubleman has replaced the receiver on the switchhook or disconnected from the line, as the case may be, and the testing operator has removed the plug of the testing cord from the answering jack and operated the disconnect key, the associated district or office selector is released and the circuit is restored to normal.

DETAILED DESCRIPTION

OPERATION

7. When the terminals of this line are seized by a district or office selector, ground on the S lead from the district or office selector operates the SL relay which locks to ground on its armature. The SL relay operated, connects ground on its armature and make contact to the S terminal making the circuit test busy to other hunting district or office selectors until the disconnect key is operated. A circuit is also closed from battery through the inner winding of the L relay, break

contacts of the R and CO relays over the tip side of the line, through the polarized relay in the district, back over the ring side of the line, break contacts of the CO and R relays, to ground through the outer winding of the L relay, which operates. The operation of the L relay supplies 24 volt interrupted battery through the break contact of the H relay to flash the 2-U red lamps at the local test desk as a calling signal and also closes through the auxiliary signal circuit. Due to the polarity of the battery and ground supplied by the L relay to the polarized relay in the district, the polarized relay does not operate. This prevents the message register associated with the line under test from operating.

8. When the plug of the test cord is inserted in the jack associated with the flashing lamp at the local test desk, the CO relay operates from battery on the sleeve of the test cord. The operation of the CO relay disconnects battery and ground from the tip and ring of the circuit releasing the L relay and closes the circuit through the H and R relays which operate. The H relay operated, locks through its make contact to ground on the armature of the SL relay and causes the red lamp to change from a flashing to a steady light. The operation of the R relay reverses the paths of the battery and ground circuits from the windings of the L relay. This reversal has no effect on the circuit at this time due to the circuit being open at the CO relay.

9. To disconnect the test line the disconnect key is operated, thereby operating the D relay. The disconnection may take place in either of two ways, as follows: First if the plug of the test cord is withdrawn from the jack the CO relay releases connecting reversed battery and ground to the tip and ring. When the disconnect key is operated, the D relay operates, releasing the SL relay. When the key is released, the D relay releases and the ground which is placed on the sleeve by the operation of the D relay is removed causing the selector to disconnect and the H and R relays to release, restoring the circuit to normal. Second; if the disconnect key is operated while the plug of the test cord is in the jack, the D relay operates and locks to ground through the make contact of the H relay, to the make contact of the CO relay but the SL relay releases. When the plug of the cord is withdrawn from the jack, all operated relays release, removing ground from the sleeve, permitting the district to return to normal and restoring the circuit to normal. The D relay is made slow in releasing to prevent the re-operation of the SL relay by ground in the district on the S lead, after the release of the disconnect key.

CIRCUIT REQUIREMENTS

	OPERATE	NON-OPERATE	RELEASE
E277 (CO)	Test .064 amp. Readj. .034 amp.	Test .021 amp. Readj. .023 amp.	
E419 (L) Wdgs. in series aiding	Test .0117 amp. Readj. .011 amp.		Test .0023 amp. Readj. .0025 amp.
E429 (R)	Through relay winding: Readj. .013 amp. Through parallel combination with E572 relay: Test .036 amp. Readj. .027 amp.	Through relay winding: Readj. .009 amp. Through parallel combination with E572 relay: Test .018 amp. Readj. .019 amp.	
E572 (H)	Readj. .016 amp. Through parallel combination with E429 relay: Test .040 amp. Readj. .034 amp.	Readj. .010 amp. Through parallel combination with E429 relay: Test .020 amp. Readj. .021 amp.	
E652 (SL)	Test .015 amp. Readj. .010 amp.		Test .0007 amp. Readj. .0014 amp.
E1141 (D)	Test .036 amp. Readj. .021 amp.	Test .013 amp. Readj. .014 amp.	

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