PANEL SYSTEM
TRouble Desk
HOLDING LINE FOR PERMANENT SIGNALS

CHANGES

A. CHANGED AND ADDED FUNCTIONS
A.1 To provide for the release of hold relays in 1A Key equipments.

B. CHANGES IN APPARATUS
B.1 Superseded

Old

New
178 CK Relay (Ll) 178BW
0.025UF Capacitor (T) 0.05UF
"Z" Option "T" Option

B.2 Added

Added block (Ll) NO when adjusting (L) relay
Added block (NC) NO when adjusting (Ll) relay

C. CHANGES IN CIRCUIT REQUIREMENTS OTHER THAN THOSE APPLYING TO ADDED OR REMOVED APPARATUS
C.1 Added block (Ll) NO when adjusting (L) relay
C.2 Added block (NC) NO when adjusting (Ll) relay

C.3 "Remarks" for (NB) relay was formerly insulated IB (NB) when Fig. B or D is used.

D. DESCRIPTION OF CIRCUIT CHANGES
D.1 Figure 2 is added

D.2 "T" Option is added and "Z" Option formerly a part of Fig. 1 is designated.

D.3 Circuit Notes 111 and 112 are added.

D.4 Options Used table is added.

All other headings under Changes, no change.

L. PURPOSE OF CIRCUIT
L.1 To provide access at the trouble desk to subscribers' lines on which there are permanent signals and to provide means of testing, testing and applying a howler tone to these lines.
L.2 To provide lamp indications of the condition of the line.

1.3 To apply tone to subscribers' lines for quickly identifying cable pairs affected by cable failures.

2. WORKING LIMITS

2.1 This circuit functions with howler cords having sleeves with a rated resistance at 220 ohms to 21-25 volt battery, and the sender monitor's voltmeter cords, and test lines of local test desk having sleeves with rated resistance of 286 ohms to 45-50 volt battery.

2.2 The maximum external circuit loop is 1025 ohms. The minimum insulation resistance is 10,000 ohms.

3. FUNCTIONS

3.1 Flashes lamp slowly when selector is caused to noise this circuit.

3.2 Gives steady lamp when trouble desk operator answers.

3.3 Closes ground to auxiliary signal circuit.

3.4 Figure A: district selector is automatically released when the subscribers line is cleared.

3.5 Figure A: connection with district selector can be held by inserting a make busy plug in the (HOLD) jack.

3.6 Figure B; connection with district selector is held until trouble desk operator depresses the (DISC) key.

3.7 For operating the (PST) key tone is applied for identifying cable pairs.

3.8 To provide for the release of hold relays in 1A Key equipments.

4. CONNECTING CIRCUITS

4.1 District or office selector.

4.2 Sender monitor talking or voltmeter cord.

4.3 Test line from local test desk.

4.4 Sender monitor howler cord with sleeve connected to 21-25 volt battery thru a rated resistance of 286 ohms.

4.5 Trouble desk auxiliary signal circuit.

4.6 Miscellaneous tone interrupter circuit.
5. SELECTION OF PERMANENT SIGNAL LINE

When the district selector is caused to seize the permanent signal line, the direction of battery and ground in the holding line causes the district selector to be started toward the overflow position. As the selector positions are passed, the (L) relay operates in series with a relay in the district selector ground to the sleeve when Figure D is used and in turn operates the (LL) relay which places ground on the sleeve. A ground on the sleeve causes the district to stop in the "talking to operator" position. The (L) relay is made slow release to insure holding the ground on the sleeve while the district is advancing to the "talking to operator" position. The (L) relay is connected through to the subscriber's line. The (LL) relay closes the circuit from ground through the lamp, its make contact, break contact, and also (Ll) relay when Figure D or E is used. When Figure E is used and of (Ll) relay relay operated, and disconnects ground from the auxiliary signal circuit. When Figure D is used ground is held connected to an sleeve through the hold jack when there is a make busy plug in it.

7. TROUBLE DESK OPERATOR ANSWERS (FIGURES B)

The operation is the same as given in paragraph 6 for Figure C or D except that the (MB) relay looks to ground through its own make contacts under control of the (DIDC) key.

8. DISCONNECTION - PLUG IN HOLD JACK

FIGURES A

When the receiver is replaced on the switchboard at the subscriber's station or when the trouble on the line is cleared and the trouble desk operator has withdrawn the plug from the subscriber's line. The (L) relay (CO) relays release. The (L) relay released causes the lamp to flash rapidly from ground through the interrupter and the make contact of the (MB) relay. The auxiliary signal circuit also is closed at this time. The trouble desk operator will withdraw the plug from the (HOLD) jack which disconnects ground from the auxiliary signal circuit. The (MB) relay releases extinguishes the lamp and when Figure C or D is used disconnects ground from the sleeve.

13. TROUBLE ON THE LINE

When the district selector is caused to seize the permanent signal line, the direction of battery and ground in the holding line causes the district selector to be started toward the overflow position. As the selector positions are passed, the (L) relay operates in series with a relay in the district selector ground to the sleeve when Figure D is used and in turn operates the (LL) relay which places ground on the sleeve. A ground on the sleeve causes the district to stop in the "talking to operator" position. The (L) relay is made slow release to insure holding the ground on the sleeve while the district is advancing to the "talking to operator" position. The (L) relay is connected through to the subscriber's line. The (LL) relay closes the circuit from ground through the lamp, its make contact, break contact, and also (Ll) relay when Figure D or E is used. When Figure E is used and of (Ll) relay relay operated, and disconnects ground from the auxiliary signal circuit. When Figure D is used ground is held connected to an sleeve through the hold jack when there is a make busy plug in it.

16. TROUBLE DESK OPERATOR ANSWERS (FIGURES B)

The operation is the same as given in paragraph 6 for Figure C or D except that the (MB) relay looks to ground through its own make contacts under control of the (DIDC) key.

12. RELEASE OF HOLD RELAYS IN 1A KEY EQUIPMENTS - FIGURE 2 and 111 OPTION

Improper operation of the 1A key equipment may cause their hold relays to lock across the line. When this occurs it will seize this trunk as described in paragraph 5.

With 111 Option and Fig. 2 the (L) relay in operating will connect ground to the contacts of the (MC) relay associated with this trunk. One side of the (MC) relay winding is connected to the A interrupter. The (L) relay operates the (LL) relay which connects ground to the other side of the (MC) relay to pulse at 60 IPM. The (MB) relay will then apply interrupter ground to the ring at this rate shunting down the hold relay in the 1A key equipment. The trunk will then be released and restored to normal. The (A) variator will prevent the operation of the (11) relay when the plug is in the (HOLD) jack and will permit (MB) relay contacts used to operate the (11) relay.

Due to the interrupted ground on the ring the tone described in paragraph 11 will become interrupted tone.

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