

COMMON SYSTEMS
TELEPHONE CIRCUIT
M.D.F. LOUDSPEAKER
WITH INDIVIDUAL TRANSMITTER CONTROL
LOCAL TEST DESK NO. 12A, 12B, OR 12C
ARRANGED FOR CONVERSION FOR
USE IN LOCAL TEST DESK NO. 14

CHANGES

B. CHANGES IN APPARATUS

B.1	Superseded	Superseded By
	Fig. F	Fig. 4
	(A) Repeat Coil 94E	(A) Repeat Coil 94E
	(A) 3A or 4A Varistor	(B) Repeat Coil 94E
	Fig. 3	(A) Capacitor 2UF
	(S) Relay R1052	(B) Capacitor 2UF
		(Bl) Capacitor 2UF
		(L) Resistor 18AJ
		(S) Relay UA103

C. CHANGES IN CIRCUIT REQUIREMENTS OTHER THAN THOSE APPLYING TO ADDED OR REMOVED APPARATUS

C.1 Reference is added at the (S) R1052 relay for Fig. 3.

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Fig. 3 is designated and Figs. F and 3 are rated Mfr. Disc. These are superseded by Fig. 4 which is added.

D.2 Working limits are added for new and existing relays affected.

D.3 Notes 104, 107 and the Options Used table are changed and Notes 116 and 117 are added with reference to Figs. 3 and 4.

D.4 The rating is changed from A&M Only to Mfr. Disc. and reference is added for "Replaced by SD-96471-01."

All other headings under Changes, no change.

1. PURPOSE OF CIRCUIT

1.1 This circuit is designed for communication between the positions of the No. 12A, B or C Local Test Desk and the main distributing frame or protector frame. It is arranged for conversion for use in Local Test Desk No. 14.

2. WORKING LIMITS

2.1 Maximum external circuit resistance for (S3) relay 500 ohms with $\pm 5V$ earth potential when Option "K" is furnished.

2.2 For 40 to 56 volts operation and maximum of 15 volts foreign earth potential the maximum external circuit resistance for the (S) relay is 1260 ohms. Fig. 3 and "J" option provided.

2.3 For 45 to 50 volts operation and maximum of 20 volts foreign earth potential the maximum external circuit resistance for the (S) relay is 1260 ohms. Fig. 3 and "J" option provided.

2.4 For metallic circuit operation the maximum external circuit resistance for the (S) relay is 1,100 for 40 to 56 volts and 1235 ohms for 45 to 50 volts. Fig. 3 and "J" option provided.

2.5 The minimum insulation resistance is 60,000 ohms for the (S) or (S3) relay.

2.6 The maximum external loop resistance for relay (S) Fig. 4 is 1300 Ω with 20 to 28V when the minimum insulation resistance is 30,000 Ω .

3. FUNCTIONS

3.1 Provides means for a loud speaker telephone circuit between the test desk and the main frame and protector frame of the associated office.

3.2 Provides an amplifier in the loud speaker circuit with a volume control for regulating the volume to the proper level (Figs. B & C).

3.3 Provides means for cutting in only one talk back transmitter on originating or terminating calls.

3.4 On a call from a test desk, a fast flash is given on all lamps until the frame man answers at which time all lamps become steady except the one associated with the transmitter cut in which then flashes slowly.

3.5 The transmitter circuit is arranged to cut through automatically after the test desk has answered. The pick-up transmitter may be changed manually at the discretion of the frame man.

3.6 When required a bridged resistance arrangement is provided to reduce the loudness of the talk back.

4. CONNECTING CIRCUITS

When this circuit is listed on a keysheet, the connecting information thereon is to be followed.

4.1 Loudspeaker Trunk Circuit - ES-358035-01.

4.2 Loudspeaker Trunk Circuit - SD-90051-01.

4.3 Interrupter and Interrupter Alarm Circuit, in Step-by-Step Offices - SD-31606-01.

4.4 Interrupter in Manual Offices.

4.5 Miscellaneous Circuits for Miscellaneous Interrupter Frame in Panel Offices - SD-21667-01.

4.6 Interrupter Frame Circuit in Crossbar Offices - SD-25062-01.

4.7 Amplifier Circuit - SD-96330-01.

4.8 Loudspeaker Trunk Circuit - SD-96472-01.

5. DESCRIPTION OF OPERATION

5.1 General

When an amplifier is used, it should be connected to 60 cycle power supply. The volume level of the receivers should be regulated with the potentiometer associated with the amplifier. (Figs. B & C)

If the volume level of the talk back is excessive "Z" apparatus should be provided and straps should be connected as required to obtain a satisfactory volume level.

The individual transmitters are arranged so that each talk back transmitter is associated with one or more switches which are operated by pull cords or associated with push button keys. Each talk back transmitter has an associated lamp. All of the lamps flashing fast indicate that the test desk is calling and that no talk back transmitter is energized. When a talk back transmitter is energized its lamp flashes slowly and the lamps of the other transmitters light steadily.

When a circuit is used in panel or crossbar offices, the lamps are flashed

by means of the interrupters in Fig. G or if it's used in manual or Step-by-Step offices, the lamps are flashed by means of relays of Fig. D.

5.2 Calls Originated at Test Desk (With "J" or "K" Options and Fig. 3)

5.21 If "K" Option is provided and a call is originated at the test desk, ground at the test desk is connected to the "S1" lead operating (S3) relay.

If "J" option is provided, battery at the test desk is connected to "S" lead operating (S) relay. (S) relay operated, connects ground to "S1" lead to the test desk and operates (S3) relay.

(S3) relay operated, operates (S1) and (C) relays. (C) relay operated, connects ground to the "S" lead with "K" option or holds ground to "S1" lead with "J" option to the test desk.

If Fig. D is provided, the operation of (C) relay connects the interrupter leads to the (FS) and (SL) relay and with all the (B) relays normal causes all the lamps to flash fast. The (S1) relay operated closes in part the talk back transmitter circuits.

When a frame man pulls a cord associated with one of the switches or operates one of the push button keys, (D) relay and the associated (B) relay will operate in series. The (B) relay will lock on its other winding under control of (C) relay.

If Fig. D is provided, the associated (B) relay operated will connect battery from the (SL) relay to the associated lamp and will cause the lamp to flash slowly and the other lamps to light steadily and will also complete the energizing circuit of its associated transmitter. The other transmitters will not be energized.

5.3 Call Originated at Distributing Frame (With "J" or "K" Options and Fig. 3)

5.31 To originate a call at the distributing frame, the frame man pulls a cord associated with one of the switches or operates a push button key. This will operate a particular (B) relay and the (D) relay in series. The operation of the (D) relay will operate relay (S2) which locks and operates relay (C). Relay (C) operated, connects ground to the "S" or "S1" lead if "K" or "J" option is used respectively to signal the desk man. Relay (C) also connects ground to lock the particular (B) relay operated. The subsequent operation is similar to that described above in paragraph 5.21 in that the (B) relay will lock and flash slowly the lamp associated with the particular transmitter cut in and will light a steady light signal at the other transmitters.

When the test desk answers the circuit functions as described in Paragraph 5.21 except that after (S3) relay operates, it holds (C) relay operated and operates (S1) relay which releases (S2) relay.

5.32 Change of Talk Back Transmitter

If the frame man moves to another place along the frame requiring a different transmitter to talk back, he should pull the cord associated with the switch or operate a push button key in this new location. This will operate another (B-) relay, causing the previously operated (B-) relay to release, this cuts off the previously operated transmitter and causes its associated lamp to cease flashing and light steadily. The transmitter associated with the newly operated (B-) relay will be energized and its lamp will flash slowly.

With certain arrangement of the frames a multiple of the switch is provided to facilitate cutting in the desired talk back transmitter.

5.33 Disconnection at Test Desk (With "J" or "K" Options and Fig. 3)

When the test desk attendant disconnects and "K" option is used, ground is

removed from the "S1" lead which releases (S3) relay.

If "J" option is used, battery is removed from the "S" lead, releasing (S) relay which in turn releases (S3) relay.

(S3) relay released, releases (S1) and (C) relays the (C) relay released, releases the previously operated (B) relay, opens the circuit to the (FS) and (SL) relays if Fig. D is provided and disconnects ground to "S" lead if "K" option is used and to "S" and "S1" leads if "J" option is used. This extinguishes the lamps and with (S1) relay released the talk back transmitters are deenergized and the circuit is normal.

5.4 Operation When Fig. 4 and "J" Option Are Provided For Use With a 4-wire Loudspeaker Trunk Circuit.

5.41 Operation with Fig. 4 and "J" option is similar to that previously described for Fig. 3 with "J" or "K" option except that calls originated at the distributing frame causes the T1 and R1 leads to be bridged thru resistor (L) as a signal to the test desk, when relay (C) operates. Calls originated at the test desk operates relay (S) over the T and R lead loop.

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