

## ALARM SENDING AND TRANSFER CIRCUITS TAKING EQUIPMENT OUT OF SERVICE NO. 1 CROSSBAR OFFICES

### 1. GENERAL

**1.01** This section covers the method to be followed in taking alarm sending circuits and alarm transfer circuits out of service and is covered in Part 3. Part 4 covers the precautions to be followed when working on the apparatus of these circuits.

**1.02** This section is reissued to add information to paragraph 4.65 and add paragraph 4.66. The Equipment Test List is not affected.

**1.03** The alarm sending circuit and the alarm transfer circuit are referred to in this section as the sending circuit and the transfer circuit.

### 2. APPARATUS

**2.01** 893 cord, 3 feet long, equipped with two 360A tools (1W13A cord) and two 419A (test connector) tools (when required to establish test connections to relay springs, maximum four).

**2.02** 893 cord, 6 feet long, equipped with two 360A tools (1W13B cord) and two 624B (terminal connector) tools or two KS-6278 connecting

clips (for use in establishing test connections to terminal strip terminals).

### 3. METHOD OF TAKING EQUIPMENT OUT OF SERVICE

#### Sending Circuit

**3.01** While the sending circuit is out of service, the office from which alarms are transmitted should be attended. Arrange to have the alarms supervised at that office until the sending circuit is restored to service.

**3.02** When the sending circuit to be removed from service controls the transfer features of receiving circuits in the same building that receive incoming alarms from other sending circuits, the transfer features of these receiving circuits must be maintained in the proper position. Check the position of the transfer key of the sending circuit, and depending upon the key furnished and the position in which it is found, take action as indicated in Table A.

**3.03** Operate the transfer key to the NTR position and observe that the TR lamp remains unlighted.

TABLE A

KEY FURNISHED	POSITION	DB1 RELAY	CONNECT TOGETHER	INSULATE
TR/NTR	NTR	Not furnished	7B, 8B of A relay	—
TR/NTR	TR	Not furnished	—	7B of A relay
SB/NTR/DB	NTR	Not furnished	8T, 9T of A relay	—
SB/NTR/DB	SB or DB	Not furnished	—	8T of A relay
SB/NTR/DB	NTR	Furnished	8D, 9B of DB1 relay	—
SB/NTR/DB	SB or DB	Furnished	—	8B of DB1 relay

#### NOTICE

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**3.04** If the TR lamp is lighted, momentarily operate the RS key and proceed as in (a) or (b).

- (a) If the L0 lamp and L0 relay are equipped, observe that the TR lamp is extinguished.
- (b) If the L0 lamp and L0 relay are not equipped, observe that the TR lamp is extinguished and does not relight after a period of 10 seconds. If the TR lamp relights, proceed as in (c).
- (c) If the TR lamp does relight, it is an indication of an open line. Block the L relay operated, then momentarily operate the RS key and observe that the TR lamp is extinguished.

### Transfer Circuit

**3.05** While the transfer circuit is out of service, the office from which alarms are transmitted should be attended. Arrange to have the alarms supervised at that office until the transfer circuit is restored to service.

**3.06** At the sending circuit, operate the transfer key to the NTR position and momentarily operate the RS key.

**3.07** At the transfer circuit, block nonoperated those relays of the following group which are furnished:

AR, AT, ATA, ATB

## 4. PRECAUTIONS TO BE FOLLOWED WHEN WORKING ON THE APPARATUS

### A. Sending Circuit

**4.01** *Danger: Exercise caution when making test connections or mechanical adjustments on the L, FA, or A0 to A6 relays to prevent bodily contact with the 135-volt negative or positive potential of these relays.*

**4.02** To maintain local receiving circuit transfer conditions in the proper position, take action as indicated in paragraph 3.02 and Table A.

**4.03** At the sending circuit, operate the transfer key to the NTR position and momentarily

operate the RS key. This restores the alarms to the local office.

**4.04** Observe the following precautions when working on the relays noted in paragraphs 4.05 through 4.55.

### A Relay (U1158)

**4.05** On terminal strip D of the sending circuit unit, connect ground to punching 6 to maintain the power audible alarms.

**4.06** Insulate the 1T contact of the A relay.

**4.07** When the sending circuit is connected to a No. 5 crossbar office, follow the procedure in paragraphs 4.08 and 4.09.

**4.08** On terminal strip C of the sending circuit unit, connect punching 11 to punching 13. Connect ground to punchings 14, 15, 17, and 25. Connect punching 27 on terminal strip C to punching 4 on terminal strip D. This maintains the alarms at the No. 5 crossbar office.

**4.09** Block the AA relay operated.

**4.10** Operate the transfer key to the TR position.

### A Relay (U1193)

**4.11** On terminal strip M1 of the sending circuit unit, connect ground to punching 3 to maintain the power audible alarms.

**4.12** Insulate the 8B contact of the A relay.

**4.13** When the sending circuit is connected to a No. 5 crossbar office, block the AA relay operated.

**4.14** Operate the transfer key to the DB position.

### A0 to A6 Relays (U108, U157, and U782)

**4.15** At the terminal side of the sending circuit unit, connect the 3T spring of the A6 relay to the 2T spring of the FA relay. Connect the 3B spring of the A6 relay to the 2B spring of the FA relay. This maintains the receiving circuit in a normal condition.

**4.16** Block nonoperated the FA relay.

4.17 At the terminal side of the sending circuit unit, connect the 8B spring to the 9B spring of the A relay.

#### A0 to A6 Relays (U194 and U941)

4.18 At the terminal side of the sending circuit unit, connect the 9T spring of the A6 relay to the 2T spring of the FA relay. Connect the 5B spring of the A6 relay to the 2B spring of the FA relay. This maintains the receiving circuit in a normal condition.

4.19 Block nonoperated the FA relay.

4.20 At the terminal side of the sending circuit unit, connect the 9T spring to the 10T spring of the A relay.

4.21 If the sending circuit is connected to a receiving circuit having a switchboard appearance, request the operator to keep a switchboard cord plugged into one of the A0 to A6 jacks until work on the A0 to A6 relays is completed.

#### AA Relay (U1312)

4.22 Block operated the A relay and block nonoperated the L1 relay.

4.23 When the sending circuit is connected to a No. 5 crossbar office, follow the procedure in paragraphs 4.24 and 4.25.

4.24 On terminal strip E of the sending circuit unit, connect punching 2 to punching 27.

4.25 Insulate the 6T contact of the AA relay to prevent the transfer of alarms in the extension alarm circuit.

4.26 Operate the transfer key to the TR position.

#### AA Relay (U58)

4.27 Block operated the A relay.

4.28 Block nonoperated the L1 relay.

4.29 When the DB1 relay is furnished at the terminal side of the sending circuit unit, connect the 8B spring to the 9B spring.

4.30 When the sending circuit is connected to a No. 5 crossbar unit, follow the procedure in paragraphs 4.31 through 4.34.

4.31 Insulate 3T contact of the AA relay.

4.32 At the M3 terminal strip of the sending circuit unit, connect ground to punchings 4, 6, 7, and 9. Connect punching 2 to punching 3. Connect punching 31 on terminal strip M3 to punching 18 on terminal strip M4.

4.33 On the terminal side of the sending circuit unit, connect 9B spring to 10B spring of the AA relay.

4.34 Operate the transfer key to the DB position.

#### FA Relay

4.35 On the terminal side of the sending circuit unit, connect the 1T spring to the 2T spring of the FA relay. Connect the 1B spring to the 2B spring.

4.36 When a U1158-type (A) relay is furnished, insulate the 11B contact. When a U1193-type (A) relay is furnished, insulate the 12T contact.

#### L Relay

4.37 Block operated the L1 relay.

4.38 Block nonoperated the DL relay.

4.39 When a U157-type (A6) relay is furnished, follow the procedure in paragraph 4.40.

4.40 At the terminal side of the sending circuit unit, connect the 6T spring of the A6 relay to the 2T spring of the FA relay. Connect the 3B spring of the A6 relay to the 2B spring of the FA relay.

4.41 Insulate the 4T contact of the A0 relay.

4.42 When a U941-type (A6) relay is furnished, follow the procedure in paragraph 4.43.

4.43 At the terminal side of the sending circuit unit, connect the 9T spring of the A6 relay to the 2T spring of the FA relay. Connect the 5B spring of the A6 relay to the 2B spring of the FA relay.

4.44 Insulate the 5B contact of the A0 relay.

4.45 Block the FA relay nonoperated.

**L1 Relay**

4.46 Block operated the A and AA relays to prevent transfer of alarms. Block operated the ARA relay when furnished.

4.47 Block nonoperated the DL, AR, and L relays.

**TC Relay**

4.48 Block A, AA, and DB relays operated.

**DB Relay**

4.49 Block TC and DB1 relays operated.

4.50 At the terminal side of the sending circuit unit, connect together 1B and 2B, 3T and 4T of the DB relay.

**DB1 Relay**

4.51 At the terminal side of the sending circuit unit, connect together on the DB1 relay the springs listed below:

1B and 2B

8B and 9B

6B and 7B

9T and 10T.

**AR1- Relays**

4.52 Block nonoperated the AR2 and all AR1-relays, except the relay being worked on.

4.53 At the terminal side of the sending circuit unit, on the AR1- relay being worked on, connect ground to the 2B, 4B, 6B, 8B, 10B, 2T, 4T, 6T, 8T, 10T, and 12T springs. This maintains ground on the LK and LK1 leads to the No. 5 crossbar office.

**AR2 Relay**

4.54 Block nonoperated all AR1- relays.

4.55 At the sending circuit unit terminal strip, when M3 and M4 terminal strips are furnished, connect ground to punchings M3-19, M4-21, M4-22, and M4-23. When C and E terminal strips are provided, connect ground to punchings C5, E5, and E7.

**B. Transfer Circuit**

4.56 While the transfer circuit is out of service, the office from which alarms are transmitted should be attended. Arrange to have the alarms supervised at that office until the transfer circuit is restored to service.

4.57 At the sending circuit, operate the transfer key to the NTR position and momentarily operate the RS key.

4.58 At the sending circuit, block nonoperated the AR relay. When a U1158-type (A) relay is furnished, insulate the 1T contact. When a U1193-type (A) relay is furnished, insulate the 8B contact. This prevents false release of alarms at the local office or false transfer of these alarms.

4.59 Observe the following precautions when working on the relays noted in paragraphs 4.60 through 4.66.

**AR Relay**

4.60 Block nonoperated equipped AR1 to AR7 relays to maintain the locking feature of various alarms at the local office.

**ARA Relay**

4.61 Block nonoperated equipped AR8 and AR9 relays to maintain the locking feature of various alarms at the local office.

**AR- Relays**

4.62 While testing a numbered AR relay, avoid holding the relay in an operated position longer than necessary, as the locking feature of various alarms is canceled at the local office while an AR- relay is operated.

**AR8-, AR9-, AR12-, or AR13- Relay—**

4.63 If the wiring is to be removed from an AR8-, AR9-, AR12-, or AR13- relay, connect

ground to the leads removed from 2B, 4B, 6B, 8B, 10B, 2T, 4T, 6T, and 8T springs to maintain originating service on line link frames.

**AT, ATA, and ATB Relays**

**4.64** Block nonoperated all numbered AT relays to maintain the audible alarms at the local office.

**AT- Relays**

**4.65** While testing a numbered AT relay, avoid holding the relay in an operated position

longer than necessary, as the audible alarms are silenced at the local office while an AT- relay is operated. While testing the AT31 relay, block nonoperated its associated DBA relay.

**DBA Relay**

**4.66** While testing the DBA relay, insulate the 4T and 6T contacts.