

TAKING EQUIPMENT OUT OF SERVICE SUBSCRIBER SENDER LINK AND CONTROLLER CIRCUITS NO. 1 CROSSBAR OFFICES

1. GENERAL

1.01 This section covers the method to be followed in taking subscriber sender link and controller circuits out of service in No. 1 crossbar offices. Part 3 of this section covers the method of taking the subscriber sender link and controller circuits and the individual pieces of apparatus associated with these circuits out of service. Part 4 covers the precautions to be followed when working on the apparatus associated with these circuits.

1.02 This section is reissued to include subscriber sender link and controller circuits arranged for AMA and to omit reference to subscriber senders. Since this reissue covers a general revision, the arrows ordinarily used to indicate changes have been omitted.

1.03 Whenever it is necessary to make busy district junctor groups or sender groups, make certain that other juncctors or senders of the type made busy are available to traffic.

1.04 Local instructions should be followed with reference to recording any register operations caused by working on the apparatus.

2. APPARATUS

2.01 No. 322A (or the replaced No. 275A) (make busy) plug, as required.

2.02 No. 349A (or the replaced No. 298A) (make busy) plug, as required.

2.03 No. 325C (or the replaced No. D99544) (make busy) plug, as required.

2.04 No. 258A (dummy plug).

3. METHOD OF TAKING EQUIPMENT OUT OF SERVICE

Subscriber Sender Link Frame

3.01 Insert No. 349A plugs into all MB-jacks to make busy all groups of district juncctors associated with the frame.

Primary Switch

3.02 Insert a No. 349A plug into the associated MB- jack on the sender

link frame. This removes two primary switches from service by making busy the twenty district juncctors connected to them.

Primary Selecting Magnet

3.03 Determine the secondary hold magnet associated with the primary selecting magnet to be removed from service.

3.04 Observe whether the secondary hold magnet is operated. If operated, ascertain whether the hold magnet under observation (switch C and D) or its corresponding hold magnet on a like numbered switch (C or D) is falsely grounded or is in service.

3.05 If it is determined that the hold magnet is operated in service, wait until it releases.

3.06 With the secondary hold magnet released or operated by a false ground, and when no selecting finger is operated on the secondary switch, insert a No. 325C plug into the associated vertical unit jack on the C switch.

3.07 Check that no selecting finger on the secondary switch is engaged by the hold magnets that are operated.

Primary Hold Magnet

3.08 Make busy as in 3.02, the primary switch containing the hold magnet to be removed from service.

3.09 At the district junctor frame, insert a No. 349A plug into the MB- jack of the junctor associated with the primary switch hold magnet to be removed from service.

3.10 Observe that the primary hold magnet is non-operated. Insert a No. 325C plug into the primary switch vertical unit of the primary hold magnet.

3.11 Restore the primary switch to service by removing the 349A plug from the MB- jack on the sender link frame.

Secondary Switch

3.12 Block operated the pair of associated GB- relays (0 and 5, 1 and 6, etc.).

SECTION 216-417-301

Secondary Selecting Magnet

3.13 Make busy as in 3.12, the secondary switch containing the secondary selecting magnet to be removed from service.

Secondary Hold Magnet

3.14 Proceed as in 3.04 to 3.07 inclusive.

Link Between Primary and Secondary Switches

3.15 Determine the secondary hold magnet associated with the link and proceed as in 3.04 to 3.07 inclusive.

3.16 When the hold magnets of the sender link to be removed from service are non-operated, insert a No. 325C plug into the associated vertical unit jack on the C switch. Observe that the corresponding hold magnets on switches C and D operate. If the C or D hold magnet is open, insulate the 1 offnormal contact of the open C or D hold magnet.

Controller Circuit and Transfer Switches A and B

3.17 Make busy the sender link frame as in 3.01.

3.18 Check that the emergency controller circuit is not in use, as indicated by the EM lamps on the sender link frames not being lighted.

3.19 If the emergency controller circuit is in use, check from office records whether the regular controller circuit on the frame using the emergency controller can be returned to service. If it can be returned to service, do it in the following manner:

(a) Make busy the sender link frame using the emergency controller by inserting No. 349A plugs into all MB- jacks.

(b) Operate the A-EM and the B-EM switches to the OFF position and then operate the A and the B switches to the ON position.

(c) Remove the plugs from the MB- jacks to place the sender link frame back in service.

3.20 At the sender link frame of the controller circuit to be removed from service, proceed as follows:

(a) Operate the A and B switches to the OFF position then operate the A-EM and the B-EM switches to the ON position.

(b) Remove the plugs from the MB- jacks to place the sender link frame back in service.

Note: When a transfer to the emergency controller circuit is made during periods of light load, on a sender link frame whose EF lamp is equipped with a red lamp cap, the regular controller circuit should be restored to service as soon as the trouble is cleared. This precaution is needed because sender group preference strapping (G-SG) on the emergency controller circuit agrees only with regular controller circuits whose EF lamps are equipped with white lamp caps. It is therefore possible when using the emergency controller, that the change in the sender group preference chain will cause the subscriber to pick the same sender on successive calls, and if the sender is in trouble without testing busy, the call will not be completed.

3.21 Only one sender link frame may be connected to the emergency controller circuit at one time. If several controller circuits have to be removed from service, connect one sender link frame to the emergency controller circuit as in 3.20, and remove the other sender link frames from service as in 3.01.

Transfer Switches A-EM and B-EM

3.22 Check from office records whether the regular controller circuit can be returned to service. If it can be returned to service, proceed as in 3.19 (b) and (c). If it cannot be returned to service, make the sender link frame busy as in 3.01.

District Group Circuit

A, B, BA, BB, CA, CB, DA, DB, DP, G and GR Relays

3.23 Remove the district junctor group from service as in 3.02.

Sender Group Connector (C and CR Relays)

3.24 If the springs of the C or CR relays are not crossed or falsely grounded, block operated the associated GB- relay.

3.25 If the springs of the C or CR relays are crossed, make busy the associated sender group by inserting a No. 322A plug into its GB- jack at the sender make busy frame.

3.26 If the springs of the C or CR relays are falsely grounded, make busy the sender group as in 3.25 or make busy the sender link frame as in 3.01, depending upon the springs that are falsely grounded

Sender Group Busy (GB-Relay)

3.27 If the springs of the GB- relay are not crossed or falsely grounded, block operated the GB- relay.

3.28 If the 6B spring (GT- lead) of the GB- relay is crossed or falsely grounded, make busy the sender group as in 3.25.

3.29 If any of the other springs (PA- leads) of the GB- relay are crossed or falsely grounded, depending on which springs are affected, perform the following operations:

(a) If any operating springs of the GB- relay are crossed or falsely grounded, make busy as in 3.02, the group of district junctors associated with the PA- lead in trouble.

(b) If any contact springs of the GB- relay are crossed or falsely grounded, make busy as in 3.16, the sender link vertical associated with the PA- lead in trouble.

Reserve Test Circuit (R1 and R2 Relays)

3.30 Block non-operated the R1 and the R2 relays.

3.31 If the normally closed contacts of the R1 or R2 relays are open, short circuit the contact springs.

3.32 If any of the springs of the R1 or R2 relays are falsely grounded, remove from service as in 3.16, the sender link verticals associated with the grounded springs.

LL Relay

3.33 Block operated the associated GB- relay.

3.34 If the normally closed contacts of the LL relay are open, short circuit the contact springs.

3.35 If the springs of the normally open contacts on the LL relay are crossed, remove the associated sender group from service by inserting a No. 322A plug into its GB- jack at the sender make busy frame.

3.36 If the springs of the LL relay are falsely grounded, remove from service either the sender group as in 3.35, or the sender link frame as in 3.01, depending on which springs are falsely grounded.

Code Connector (DT and TST Relays)

3.37 Remove the sender link frame from service as in 3.01.

Trouble Indicator Register Circuit (CTI and TIR Relays)

3.38 Make the controller trouble indicator frame busy to that controller circuit by inserting a No. 322A plug into the associated TIB- (trouble indicator busy) jack on the controller trouble indicator frame.

Sender Selector Circuit

CH1, CH2, CH3, P, SGC and SGE Relays

3.39 Remove the associated sender group from service by inserting a No. 322A plug into its GB- jack at the sender make busy frame.

S and SB Relays

3.40 At the sender make busy frame, insert a No. 322A plug into the MB- jack of the associated sender circuit.

3.41 If the winding of the SB- relay is open, block operated the SB- relay.

3.42 If the springs of the normally closed or normally open contacts of the SB- relay are crossed, remove the sender group from service as in 3.39.

3.43 If the springs of the S- or SB- relay that affect all the senders in the group are falsely grounded, remove the sender group from service as in 3.39.

3.44 If any make contacts of the operated SB- relay are open, short circuit the contact springs.

3.45 If any normally made contacts of the S- relay are open, short circuit the contact springs.

3.46 If a spring of the S- relay is falsely grounded and it operates the fuse, block operated the associated GB- relays in all sender link frames.

SGB Relay

3.47 Remove the associated sender group from service as in 3.39.

3.48 If the SGB relay does not operate, block it operated. Check that the associated GB- relays in each sender link and controller are operated. If any associated GB- relays are non-operated, block them operated.

4. PRECAUTIONS TO BE FOLLOWED WHEN WORKING ON THE APPARATUSGeneral

4.01 Due to multiple wiring and common equipment, it is necessary when working on the individual pieces of apparatus, to make equipment busy and to take other precautions as listed below.

4.02 When it is necessary to remove a sender link frame from service to work on the apparatus of the frame, or when the operation of the apparatus (to be worked on) may interfere with traffic through the sender link frame, it should be done during periods of light traffic.

Subscriber Sender Link Frame

4.03 Remove the sender link frame from service by inserting No. 349A plugs into all MB- jacks to make busy all groups of district junctors associated with the frame.

Primary Switch

4.04 Remove the primary switch from service by inserting a No. 349A plug into the associated MB- jack on the sender link frame. This removes two primary switches from service by making busy the twenty district junctors connected to them. Wait for the release of all hold magnets in service on the switch.

Secondary Switch

4.05 Remove the secondary switch from service by blocking operated the pair of associated GB- relays (0 and 5, 1 and 6, etc.). Wait for the release of all hold magnets in service on the switch.

4.06 If the associated group of senders would be affected by the work performed on the secondary switch, remove that group from service by inserting a No. 322A plug into its GB- jack at the sender make busy frame.

Link Between Primary and Secondary Switches

4.07 If the work to be performed is on the primary end of the link, remove from service the primary switch as in 4.04. If the work to be performed is on the secondary end of the link, remove from service the secondary switch as in 4.05.

Controller Circuit

4.08 Make busy the sender link frame as in 4.03.

4.09 Remove the controller circuit from service as in 3.18 to 3.21 inclusive.

Observe that at least one call is completed in a satisfactory manner by the emergency controller circuit, before starting any work on the regular controller circuit.

4.10 Before working on any individual piece of apparatus of the controller circuit, insert a No. 322A plug into its TIB- jack at the controller trouble indicator frame. This makes the controller trouble indicator busy to that controller circuit. If the TIB relay winding is open, block operated the TIB relay.

AL Relay

4.11 Insulate the 7B contact of the AL relay.

AR Relay

4.12 Insulate the 4T contact of the HL relay to prevent sounding the minor alarm. On earlier installations, it may be necessary to insert a No. 258A (dummy) plug into the AR jack to prevent sounding the minor alarm.

HD Relay

4.13 Insert a No. 258A plug into the HD (hold) jack on the sender link frame.

TIB Relay

4.14 Remove the No. 322A plug from the TIB- jack at the controller trouble indicator frame. Insulate the 6T contact of the TIC relay, then block non-operated the TIC relay.

Transfer Switches A and B

4.15 Remove the sender link frame from service as in 4.03.

Transfer Switches A-EM and B-EM

4.16 Check as in 3.18, that the emergency controller circuit is not in use. If the emergency controller circuit is in use, proceed as in 3.19.

4.17 On the emergency controller unit, block operated the EC relay.

4.18 Remove from service as in 4.03, the sender link frame of the A-EM and B-EM switches to be worked on.

District Group CircuitRA and RB Relays

4.19 Remove the primary switch from service as in 4.04.

BA, BB, DA, DB, G and GR Relays

4.20 Remove the sender link frame from service as in 4.03.

Sender Group Connector (C and CR Relays)

4.21 Remove the associated sender group from service by inserting a No. 322A plug into its GB- jack at the sender make busy frame.

4.22 Remove the sender link from service as in 4.03.

Sender Group Busy (GB- Relays)

4.23 Remove the associated sender group from service as in 4.21.

4.24 Remove the sender link from service as in 4.03.

4.25 On all other sender link frames, block operated the GB- relays associated with the sender group made busy.

4.26 Remove the plug from the GB- jack at the sender make busy frame.

Reserve Test Circuit (R1 and R2 Relays)

4.27 Remove the sender link from service as in 4.03.

Caution: When working on these relays, care must be exercised as some of the leads are multiplied to other sender link frames in office.

LL Relay

4.28 Remove the associated sender group from service as in 4.21.

4.29 Remove the sender link frame from service as in 4.03.

Code Connector (DT and TST Relays)

4.30 Remove the sender link frame from service as in 4.03.

Trouble Indicator Register Circuit (CTI and TIR Relays)

4.31 Remove the sender link frame from service as in 4.03.

Caution: When working on the TIR relay, care must be exercised as some of the leads are multiplied to other sender link frames in the office.

Sender Selector Circuit

CH1, CH2, CH3, P, S, SB, SGC & SGE Relays

4.32 Remove the associated sender group from service as in 4.21.

SGB Relay

4.33 Block operated the associated GB-relays on all sender link frames.

4.34 When working on the SGB relay, insulate the 5B and the 9B contact springs of the relay.

5. REPORTS

5.01 Any required record of the equipment removed from service should be entered on the proper form.

5.02 Where required, the record of register operations caused by working on the apparatus should be forwarded according to local instructions.