METHOD OF TAKING EQUIPMENT OUT OF SERVICE STEP-BY-STEP AND COMMUNITY DIAL OFFICES

1. GENERAL

1.01 This section covers the methods to be followed in taking equipment out of service when it is necessary to do so on account of trouble or for adjustment or replacement purposes.

1.02 This section is reissued to incorporate material from the addendum in its proper location. In this process marginal arrows have been omitted.

1.03 It is essential that the maximum amount of equipment be kept available for traffic at all times. All equipment should be restored to service as soon as practicable.

Note: In line switch offices at least one of each type master switch should be held in reserve and in operating condition ready for immediate use as a replacement.

1.04 When switches are removed from their mounting jacks, observe that the jack springs make contact with each other, as specified.

1.05 It is important to observe before and after placing make-busy tools, that the equipment involved is not being held by, or is not holding a subscriber's line. In any instance where the busied equipment has been seized, the make-busy tool shall be removed momentarily and reinserted after the connection has released.

1.06 Equipment covered in this section:

(A) Line Finders

(B) Line Finder Control Circuits (Community Dial Offices)

(C) Line Switches

(D) Master Switches

(E) First Selectors

(F) Selectors (Other than First and Incoming)

(G) Incoming Selectors

(H) Connectors

(I) Repeaters (Outgoing)

(J) Repeaters (Incoming)

(K) Out-Trunk Switches

(L) Trunk Circuits

(M) Test Distributors

(N) Reverting Call Switches

(O) Transfer Equipment

(P) "B" Switchboard

(Q) Repeaters (2-Way)

1.07 A transparent, red-tinted designation card cover installed, over the regular designation card of a switch or relay equipment, serves to identify incoming selectors, code selectors, or repeaters. This is used as a reminder that the associated trunk must be made busy at the distant originating office, or at the local office as in the case of code selectors.

2. APPARATUS

2.01 No. 258C or 258D Plugs, as required.

2.02 No. 324 or 475A Tools, as required.

2.03 No. 338 Tools, as required.

2.04 No. 375A or 477A Tools, as required.

2.05 No. 600A Tools, as required.

2.06 Testing cords, 893 cord, 3 feet long, equipped with two 360A tools (1W13A cord), and used with two KS-6278 connecting clips as required (for use on line finder bank terminal strips arranged for soldered connections).

2.07 Testing cords, 1 foot 8 inches long, equipped with one No. 2 test clip per specification AT6928 and one KS-6780 connecting clip

with one 108 cord tip (W1U cord) as required (for use at connector multiple terminal strips, distributing frame terminal strips, or distributing terminal assemblies).

2.08 Testing cords, 2 feet, or 3 feet 6 inches long, equipped with two P-15A864 chucks (W1AL cord) as required (for use on line finder bank terminal strips arranged for wrapped connections).

3. METHOD

(A) Line Finders

3.01 To take a line finder (equipped with 49-type make-busy jacks) out of service, insert a No. 258C or 258D plug into the test and make-busy jack associated with that finder.

Note: If the line finder is off normal, the insertion of the make-busy plug will not interfere with the release of the line finder.

3.02 To take a line finder (equipped with make-busy keys) out of service, operate the make-busy key associated with that line finder. The operation of the MB (make-busy) key will not interfere with the release of the finder except as noted below.

Note: In certain of the Automatic Electric Company community dial offices, the operation of the line finder make-busy key will open the release magnet circuit of the line finder. Therefore, the associated first selector make-busy key should be operated first, until the line finder has released, then the line finder make-busy key should be operated and the first selector make-busy key restored to normal.

(B) Line Finder Control Circuits (Community Dial Offices)

3.03 To take a line finder control circuit out of service, operate the make-busy key associated with the control circuit. Avoid the operation of the control circuit key except during periods of light traffic, if possible, since it will transfer all service into the other sub-group. In any event, the control circuit should be restored to service as soon as possible.

(C) Line Switches

Primary Line Switches

3.04 To take a primary line switch out of service, insert a No. 475A tool in the Nos. 1 and 2 springs of the switch shelf jacks.

3.05 Where it is necessary to replace a line switch due to a mechanical or circuit defect, cross-connect the subscriber's line involved to a spare line switch. The defective switch should be removed, replaced and reconnected during a period of light traffic.

Note: In offices where reconditioning work necessitates frequent removal of primary line switches it is suggested that patching cords be used at the vertical I.D.F. When this method is used, make the switch busy as outlined above before placing the patching cord at the frame.

3.06 When a primary line switch, which has been patched at the frame is removed from the shelf, insulate Nos. 1 and 2 springs, also Nos. 3 and 4 of the line switch mounting jacks by inserting No. 338 tools or their equivalent.

3.07 When a primary line switch trouble indicates a defective trunk, make that trunk busy at the secondary line switch by inserting a No. 375A tool between the lower contacts of the test jack, then insert a No. 338 tool between the Nos. 2 and 3 springs of the pull-down coil and withdraw the plunger. Operate the pickup feature to pick up any switches that may be standing in front of the trunk. Where the trunks connect directly to first selectors, inserting a No. 375A or 477A tool between the sleeve and ground springs of the selector test jack will busy the associated trunk.

Secondary Line Switch

3.08 When it is necessary to take a secondary line switch out of service, insert a No. 338 tool between the Nos. 2 and 3 springs of the pull-down coil and a No. 375A or 477A tool between the lower contacts of the test jack. Operate the pickup feature by momentarily inserting a No. 375A tool between test jack Nos. 1 and 2 springs of the associated group relay

equipment. This will pick up any primary line switch plungers that are standing in front of the trunks having access to these particular secondaries.

Note: When mechanical or circuit defects necessitate the removal of a secondary line switch, make the section busy by inserting No. 375A tools in the lower and upper test jack springs of the associated master switch relay group. As each switch restores to the guide shaft, operate the pickup feature until all line switches have released. After observing that all plunged switches have restored to the guide shaft, remove the line switch fuse serving the switches involved. This will prevent the operation of this fuse when the switch is removed. When the defective switch has been removed, insulate the battery jacks of the switch with a No. 338 tool, replace the fuse and remove the busy tool. This will give service to the other switches until the defective switch is replaced. When the local secondary line switch is removed from the shelf the jack springs will make contact which will make the trunk busy.

(D) Master Switches

Primary Master Switches

3.09 The primary master switch controls the selection of trunks for a subgroup of subscribers' lines, therefore, it can not be kept out of service and should a trouble occur which necessitates the replacement of the switch, this should be done immediately.

3.10 Before starting to replace a primary master switch, the contacts of the start and open main relays should be blocked open by means of No. 338 tools to prevent the plunging of line switches and the operation of the master switch while it is being replaced.

3.11 When a mechanical or circuit defect makes the primary master switch partially inoperative, an attempt should be made to manually distribute calls until the trouble is cleared. If trouble occurs which makes the master switch completely inoperative, it is imperative that as many lines as possible be immediately patched to spare equipment as the vertical I.D.F. This equipment may be patched by first blocking the BCO armatures of the primary line switches operated by inserting No. 324 tools between the BCO lever and the lever back-stop before placing the patching cords at the frame, or by placing No. 475A tools in the switch.

3.12 After a primary master switch has been replaced, clear out all double plunges.

Secondary Master Switches and Allotters

Secondary Master Switches

3.13 To remove a secondary master switch from service, busy out all of the secondary line switches under its control by inserting the No. 375A or 477A tools in the lower and upper jack springs of the associated relay groups. If the trouble cannot be corrected without removing the master switch, replacement should be made immediately.

Allotters

3.14 When it is necessary to remove from service an allotter that is equipped with the T and R keys, short-circuit all of the "A" resistances of the allotter by forcing 600A tools over the resistances from the front of the equipment bay. Four 600A tools will be required for each allotter circuit. After placing the short circuit on the resistances with the 600A tools, operate the "T" and "R" keys momentarily to restore the associated secondary line switches to service leaving the allotter out of service.

Caution: In those offices where the allotters are not equipped with the T and R keys the 600A tools should not be used, since the line switches could plunge at any time even when the master switch is sweeping. In these offices the allotters should not be removed from service except during periods of light traffic when the section can be made busy and service given through the other sub-groups.

Note: During periods of heavy traffic; the busying of four master switch sections will result in paths busy conditions at the primary line boards having access to these sections. Therefore, it is imperative that all troubles occurring in allotter equipment be cleared immediately.

Out-Trunk Master Switches

3.15 To remove an out-trunk master switch from service, busy out all of the out-trunk line switches under its control by inserting No. 375A or 477A tools in the lower and upper test jack springs of the associated relay group. If the trouble cannot be corrected without removing the master switch, replacement should be made immediately.

(E) First Selectors

Line Finder Offices

3.16 To remove a first selector (including selector-repeaters) from service, in those offices where the line finders are equipped with No. 49-type test and make-busy jacks, insert a No. 258C or 258D plug into the test and make-busy jack of the associated line finder.

Note: If the line finder is off normal, the insertion of the make-busy plug will not interfere with the release of the line finder.

3.17 To remove a first selector from service in those community and step-by-step dial offices where the line finders are equipped with make-busy keys, operate the make-busy key of the associated line finder. The operation of the MB (make-busy) key will not interfere with the release of the finder except as noted below.

Note 1: In certain of the Automatic Electric Company community dial offices, the operation of the line finder make-busy key will open the release magnet circuit of the line finder. Therefore, the first selector make-busy key should be operated first, until the associated line finder has released, then the line finder make-busy key should be operated and the first selector key restored to normal.

Note 2: The operation of the first selector make-busy key will keep the associated line finder from being selected by the line finder control circuit. However, unless the associated line finder make-busy key is operated, the ground is not removed from the all finders busy lead and when all other line finders become busy the line finder control circuit selector will continue to hunt for an idle line finder when there is none.

Line Switch Offices

3.18 To remove a first selector from service, insert a No. 375A or 477A tool between the Nos. 3 and 4 springs of the selector test jack. Go at once to the secondary line switch division having access to the selector and observe that no plungers are engaging the trunk involved and that no plungers are directed toward the trunk.

(F) Selectors (Other than First and Incoming)

3.19 To take an intermediate selector (not equipped with make-busy key) out of service, insert a No. 375A or 477A tool between the Nos. 3 and 4 springs of the selector test jack.

3.20 To make an intermediate selector (with make-busy key) out of service, operate the make-busy key of the selector.

3.21 To make a code selector circuit out of service for test purposes, first make busy the associated auxiliary trunk circuit (see 3.37), then insert a 375A or 477A (make-busy) tool between springs 3 and 4 of the code selector.

(G) Incoming Selectors

3.22 To take an incoming selector (including interoffice, toll first, toll transmission, local tandem first, and coin control selectors) out of service, have the associated trunk made busy at the originating office.

3.23 To take an intertoll selector (including intertoll first and combination intertoll transmission selectors) out of service, have the trunk made busy at the toll testboard or originating office.

(H) Connectors

3.24 To take a connector (not equipped with make-busy keys) out of service, insert a No. 375A or 477A tool between the Nos. 3 and 4 springs of the connector test jack.

3.25 To take a connector (equipped with make-busy keys) out of service, operate the make-busy key.

(I) Repeaters (Outgoing)

3.26 To take an outgoing repeater out of service, insert a No. 375A or 477A tool between the Nos. 3 and 4 springs of the repeater test jack.

Note 1: In offices where the repeaters are preceded by plunger type line switches and the out-trunk master switch start relay test jack has a multiple appearance at the repeater frames, the particular out-trunk section master switch may be operated to pick up idle line plungers by using the special cord provided for this purpose. Then go at once to the outgoing secondary line switch division having access to the repeater and observe that no plungers are engaging the trunk involved.

Note 2: When make-busy circuits are provided for call indicator trunks, the associated repeaters are made busy and the associated master switches are given an oscillation by the operation of the make-busy key at the call indicator position.

Note 3: Where the equipment for trunks to manual offices is mounted on relay racks (no test jacks provided), make the circuit busy by grounding the sleeve conductor at the terminal strip on the I.D.F. with a W1U cord.

(J) Repeaters (Incoming)

3.27 To take an incoming repeater out of service have the associated trunk made busy at the originating office.

(K) Out-Trunk Switches

Out-Trunk Line Switches

3.28 The method of taking an out-trunk line switch out of service is the same as described in Paragraph 3.08, Secondary Line Switch.

Note: Proceed as per note in Paragraph 3.08, substituting out-trunk line switch for local secondary line switch; in addition, it will be necessary to make the trunk busy by grounding the sleeve conductor at the selector terminal assembly.

Rotarly Out-Trunk Switches

3.29 To take a rotary out-trunk switch out of service, remove the common relay cover and observe the "SL" relay which should be in its non-operated position, if the trunk is normal. If the relay is normal, quickly insert a No. 258C or 258D plug into the test or make-busy jack associated with the out-trunk switch. Again observe the "SL" relay, which should still be in its non-operated position.

(L) Trunk Circuits

3.30 To take outgoing trunk circuits out of service (including Recording-Completing, Special Service, Coin Box, Individual Message Rate, 2-Party Message Rate, Dial Test, Ringer Test, Intercepting from Trunk Finders, and Operator Office), insert a No. 258C or 258D plug in the test or make-busy jack.

3.31 To take selector level trunks out of service (including Information, Repair Service, Test Desk and Outgoing 2-Wire from Tandem), ground the sleeve terminal at the distributing terminal assembly using a W1U cord.

3.32 To take a PBX trunk from connector multiple out of service, ground the sleeve terminal at the connector multiple terminal strip, using a W1U cord, or at the line finder bank terminal strip, using a 1W13A, or W1AL cord as required.

3.33 To take a PBX trunk circuit, outgoing from the selector multiple (SD-31757-01) out of service, insert a No. 375A or 477A tool in Nos. 3 and 4 springs of test jack "A," to busy the selector multiple appearance and another No. 375A or 477A tool in Nos. 5 and 6 springs of test jack "A" to busy the connector multiple appearance and subscriber's line.

Note: If it is desired to busy the trunk circuit at the selector multiple only and leave the connector multiple and line circuit free for service, insert a No. 375A or 477A tool in Nos. 3 and 4 springs of test jack "A" and a No. 258C or 258D plug in test jack "B."

3.34 To take intercepting trunks out of service (including trunks from connector multiple, local and toll selector levels) ground the sleeve conductor at the terminal strip on the distributing frame, using a W1U cord.

Note: In the case of intercepting trunks from the connector multiple, the TS1 lead attached to the sleeve lead terminal on the unit terminal strip should be disconnected before grounding the sleeve lead. Reconnect the lead after the tests are completed.

3.35 To take a 2-wire outgoing intercepting trunk (not through a trunk finder) out of service, insert a No. 258C or 258D plug into the test and make-busy jack of the circuit.

3.36 To take an intertoll dial trunk circuit out of service, have the trunk made busy on the toll testboard or originating office.

3.37 To take auxiliary trunk circuits arranged for local service or CAMA, and service code calls to distant CAMA office out of service, insert a 477A (make-busy) tool between springs 3 and 4 of test jack and insulate contact 8 of LC relay.

Caution: Make certain that the trunk is idle, so as not to disrupt service to an existing CAMA service call.

(M) Test Distributors

3.38 To take a test distributor out of service (including coin control, test desk and verification), insert a No. 375A or 477A tool between Nos. 3 and 4 springs of the test jack springs, where the switch is selected by a test distributor selector. Where the test train is associated with a trunk circuit directly to the test desk, DSA board or toll switchboard, have the busy condition placed at the originating end of the trunk.

(N) Reverting Call Switches

3.39 To take a reverting call switch out of service (including 2 and 4-party, 8-party and 10-party) insert a No. 375A or 477A tool between Nos. 3 and 4 springs of the test jack.

Note: In those offices where the switches are equipped with make-busy keys, operate the key instead of the method above.

(O) Transfer Equipment

3.40 To take a circuit out of service that is equipped with a duplicate set of relays or interrupter equipment, operate the associated transfer key. The following equipments are usually provided with spare relays or interrupters:

Reverting call switch interrupter.
Common timing interrupter.
Coin trunk alarm.
Message rate dry batteries.
60 IPM and 120 IPM relays.
Repair and test desk flashing relays.
30 IPM interrupter. (Intertoll dialing)

(P) "B" Switchboard

3.41 To take a trunk circuit out of service (incoming to "B" switchboard), have the trunk made busy at the distant office.

3.42 To take a "B" switchboard link out of service, operate the associated CO (cut-off) key.

3.43 To take a "B" switchboard position out of service, remove the operator's telephone set from the position (telephone circuit) jack. This makes the position test busy to the position selector of the link.

3.44 To take an individual "B" switchboard sender out of service, operate the make-busy key associated with that sender.

3.45 To take a group of "B" switchboard senders out of service, operate the associated group busy key.

(Q) Repeaters (2-Way)

3.46 To take a 2-way repeater out of service, insert a 375A or 477A tool between springs 3 and 4 of the test jack and have the associated trunk circuit or 2-way repeater at the distant office made busy.