MODIFICATION OF INCOMING SELECTORS FOR USE WITH NO. 4 TYPE TOLL SWITCHING OFFICES EQUIPMENT DESIGN REQUIREMENTS PANEL SYSTEMS

1. GENERAL

Scope

1.01 This specification, together with the supplementary information listed herein, covers general engineering information and the equipment design requirements for the engineering, manufacture, and installation of modifications of existing panel office incoming selectors for use with No. 4 Toll Switching Offices. The information covered in this specification provides for modifying BCO office incoming selectors arranged for individual and 2 party ringing with the automatic start of ringing features, and GCO office incoming selectors arranged for individual, 2 party, 4 party semi-selective and 4 party selective ringing with either the automatic or controlled start of ringing feature.

Capacity

1.02 The capacity of existing incoming selector frames is not affected by this modification. However, as covered on the equipment drawings listed herein, it might be necessary in a few isolated cases to mount certain of the additional equipment required for this modification on the miscellaneous relay rack.

Description

1.03 When calls from No. 4 toll switching offices are to be completed in panel offices they will be handled on a revertive pulse, full selector, basis in the usual manner. The toll incoming selectors in the connecting panel offices are similar to the present full selector type except that they are arranged for toll grade transmission, and for furnishing toll identification tone on an optional basis for use in offices where the D.S.A. board is arranged for completion of intercept. These toll incomings differ from the present key pulsing long distance incomings in that they are arranged for "reverse battery" instead of "wet dry" supervision.

1.04 In general where existing circuits are to be modified for use with toll switching trunks from a No. 4 toll switching office the change consists of the replacement, removal, and addition of certain relays, resistances, and condensers, and the modification of the incoming frame local cable. In some instances it will also be necessary to replace the existing mounting plates. When modifying any GCO office incomings or BCO office toll incomings practically all of the sequence switch cams will have to be replaced. When modifying certain circuits requiring controlled start of ringing or toll identification tone, it will be necessary to locate some of the associated equipment on the miscellaneous relay rack, as sufficient space will not always be available on the incoming frame. All modified circuits will have to be arranged for 48 volt toll grade transmission. This will necessitate the relocation of talking battery fuses and the provision of 11 type resistance lamps when modifying existing 24 volt circuits. On coil rack type jobs these lamps will be mounted on lamp panels on the fuse boards, while on the newer jobs they will be mounted on the incoming frame in the standard manner.

1.05 The automatic OGT test frame in the No. 4 toll switching office will be arranged for testing the incoming selectors in the associated panel offices. Existing test sets in the local offices will be satisfactory for testing the new toll incomings.

2. SUPPLEMENTARY INFORMATION

815-000-000 - Panel Systems Index
AA128.006 - List of General Equipment Requirement Sections
X-61200 - List of Engineering Requirement Specifications - Ground on CO Relay
X-61400 - List of Engineering Requirement Specifications - Battery on CO Relay
J20102 - Switchboard Power Cabling
J27701 - Incoming Frames
J99206 - Trunk Coin Control Unit
Floor Plan Data - Section 4.12, Sheet 4

3. DRAWINGS

Keysheets (Panel Systems)

SD-21300-01 - Battery on CO Relay
SD-21680-01 - Ground on CO Relay

Equipment

ES-299230 - Equipment of Frame - Coil Rack Type
ED-20178-01 - Equipment of Frame - Rept. Coils on Inc. Fr.
ED-20178-04 - Equipment Details - Bat. on CO Relay
ED-20278-01 - Equipment Details - Grd. on CO Relay
ED-20900-01 - Modification of Equipment Details - Bat. on CO Relay
ED-20901-01 - Modification of Equipment Details - Grd. on CO Relay

ED-91061-01 - Fuse Board - Resistance Lamp Panels
ED-91275-01 - Fuse Board - Fuse and 2 Row Resistance Lamp Panels
ED-91276-01 - Fuse Board - Fuse and 4 Row Resistance Lamp Panels

Wiring and Cabling

Repeating Coils and Condensers on Incoming Frame

ED-20781-01 - Inc. Frame Local Cable
ED-20192-01 - Switchboard Cabling Plan
ED-20192-04 - Switchboard Cabling Details
ED-20253-01 - Local Power Cabling
ED-20811-01 - Switchboard Power Cabling
ED-20623-01 - Method of Running and Supporting Fr. Battery and Grd. Leads

Repeating Coils and Condensers on Coil Rack

ES-225349 - Inc. Frame Local Cable
ES-225622 - Switchboard Cabling Plan
ES-299233 - Local Power Cable

4. GENERAL NOTES

4.01 Existing incoming selector equipment in BCO and GCO offices shall be modified in accordance with ED-20900-01 and ED-20901-01, respectively. These drawings furnish detailed information for modifying incomings that are arranged for individual and 2 party selective ringing. Four party equipment shall be modified on a job basis in a manner similar to that shown on these drawings. When additional frames of No. 4 toll incomings are required the equipment shall be furnished in accordance with specification J27701 and equipment drawings ED-20178-04 for BCO offices and ED-20278-01 for GCO offices.

4.02 Incoming selector circuit SD-21115-01 is arranged for individual and 2 party selective ringing with the automatic start of ringing feature. This circuit shall be used for furnishing new incomings and for modifying the following circuits in offices having battery on the cut-off relays.

SD-21115-01 - Pan. Loc. or Tdm.
SD-21115-02 - Man. Loc.
SD-21115-03 - K.I. Man.
SD-21115-04 - Man. Tdm.
SD-21504-03 - K.P. Long Dist.
SD-21120-01 - K.P. Long Dist.

Information covering controlled start of ringing and 4 party selective and semi-selective ringing will be made available when an order is received for this type of equipment.

4.03 Incoming selector circuit SD-21917-01, is arranged for individual, 2 or 4 party selective and 4 party semi-selective ringing with the automatic start of ringing feature. This circuit shall be used for furnishing new incomings and for modifying the following circuits in offices having ground on the cut-off relay.

ES-20070-01 - Man. Loc. Cdls. I and 2P
ES-20070-02 - Man. Loc. Cdls. 4P Sel.
ES-20069-01 - Man. Loc. Cdls. 4P Semi-Sel.
ES-20070-03 - Man. Tdm. Cdls. I and 2P
ES-20070-04 - Man. Tdm. Cdls. 4P Sel.
ES-20069-02 - Man. Tdm. Cdls. 4P Semi-Sel.
ES-21036-01 - Pan. Loc. or Tdm. I and 2P
ES-21053-01 - Pan. Loc. or Tdm. 4P Sel.
ES-21043-01 - Pan. Loc. or Tdm. 4P Semi-Sel.
ES-21036-02 - K.I. Man. I and 2P
ES-21053-02 - K.I. Man. 4P Sel.
ES-21043-02 - K.I. Man. 4P Semi-Sel.
ES-20292-01 - Pan. Rep. Loc. or Tdm. I and 2P
ES-20139-01 - Pan. Rep. Loc. or Tdm. 4P Sel.
ES-20293-01 - Pan. Rep. Loc. or Tdm. 4P Semi-Sel.
ES-226524 - Pan. Loc. I, 2P and 4P Sel.
ES-226713 - K.I. Man. I, 2P and 4P Sel.
ES-226873 - Pan. Loc. or Tdm. I, 2P and 4P Sel.

4.04 Incoming selector circuit SD-21918-01 is arranged for individual, 2 or 4 party selective and 4 party semi-selective ringing and covers both the automatic and the controlled start of ringing features. This circuit shall be used in offices having ground on the cut-off relay for furnishing new incomings requiring controlled start of ringing and for modifying the following incomings when automatic or controlled start of ringing is required.

ES-20072-01 - Man. L.D. Cdls. I - 2P
ES-20072-02 - Man. L.D. Cdls. 4P Sel.
ES-20074-01 - Man. L.D. Cdls. 4P Semi-Sel.
SD-21791-01 - Man. No. 3 L.D. - P.D., I and 2P
SD-21791-02 - Man. No. 3 L.D. - P.D., 4P Semi-Sel.
SD-21791-03 - Man. No. 3 L.D. - P.D., 4P Sel.
SD-21798-01 - Man. No. 1 L.D. - P.D., I and 2P
SD-21798-02 - Man. No. 1 L.D. - P.D., 4P Semi-Sel.
SD-21798-03 - Man. No. 1 L.D. - P.D., 4P Sel.
SD-21828-01 - Man. No. 1 L.D. - C.D., I, 2P, 4P Semi-Sel. 4P Sel.

4.05 Tone control equipment per SD-21115-01, Fig. 2, SD-21917-01, Fig. 2, or SD-21918-01, Fig. 3, shall be furnished in all offices where the D.S.A. board is arranged for completion of intercept. With the exception of certain offices in the Philadelphia area, which utilize a special arrangement for toll identification, all BCO offices shall be wired for the ultimate use of "tone". Wiring for the future provision of this feature shall not be furnished in GCO offices unless requested by the customer. When this wiring is not required, SD-21115-01, Fig. 3, SD-21917-01, Fig. 3 or SD-21918-01, Fig. 2 shall be furnished.

4.06 When modifying selectors SD-21115-01, -02, -03 and -04 in BCO offices the frame local cables shall be modified as required with an aim towards reusing as much

of the existing wiring as possible. When modifying toll selectors SD-21504-03 and SD-21120-01 in BCO offices and any existing incoming selector in GCO offices the associated wiring in the frame local cables cannot be reused. This wiring shall be removed and new partial cables superimposed on the frame local cables.

4.07 When modifying long distance circuit SD-21504-03 or SD-21120-01 in BCO offices, the sequence switches shall be replaced or modified to conform with B651. The modification of these switches will involve the replacement of practically all of the cams. When modifying K.I. manual circuits SD-21115-03 the B483 or B577 sequence switches shall be modified to conform with B478 or B576, respectively, which consists of replacing the (N) cam. When modifying individual and 2 party selective ringing incoming circuits in GCO offices per SD-21917-01, "A" type sequence switches shall be modified to conform with D-159895 and "B" switches to conform with D-159896. When four party selective ringing is required in GCO offices the "A" type switches shall be modified to conform with D-159894 and the "B" type switches to conform with D-159893. When existing circuits are to be modified in accordance with SD-21918-01, sequence switches shall be modified to conform with D-159985 for individual and 2 party automatic start of ringing, D-159986 for individual and 2 party controlled start of ringing and D-159987 for 4 party selective or semi-selective automatic or controlled start of ringing. The above mentioned "D" specification modifications will necessitate replacing practically all of the cams.

4.08 In areas arranged for extended range, where the incoming frames are equipped with individual filter panels, these filters shall, of course, be used for supplying 48 volt talking battery to the No. 4 toll incomings. When offices are not equipped with these filter panels, the toll circuits shall obtain talking battery from the incoming fuse boards in the usual manner. When 24 volt circuits are being modified the source of supply shall be shifted to a 48 volt bus bar on the fuse board.

4.09 On coil rack type jobs, the 11 type resistance lamps shall be mounted on resistance lamp panels per ED-91061-01, and located on the fuse board when space is available or on the miscellaneous relay rack on a job basis. When an entire frame is to be modified for 48 volt toll transmission, the associated talking battery fuse panel on the fuse board may be replaced with a combined fuse and lamp panel per ED-91275-01 for single row fuse panels or ED-91276-01 for double row fuse panels.

4.10 When the repeating coils and condensers are mounted on the incoming frame on 7 inch 969A mounting plates, the 11 type resistance lamps shall be mounted with adapters per ED-20900-011, Det. 1 in the 90 type condenser drillings on these plates as shown in Fig. 21 on ED-20900-012.

4.11 When the 11 type resistance lamps are mounted in the incoming frame below the repeating coils, where these coils are mounted on the horizontal center line of the mounting plate, a shield shall be placed between the repeating coils and the resistance lamps to prevent overheating the coils and condensers. The shields and resistance lamp panels that are available for incoming frames are as follows.

Length	Shield	Lamp Mounting Plate
14"	D-156865	D-156860
16-1/2"	D-156215	154A
19"	D-156413	155A
21"	D-156868	D-156863
23"	D-156414	156A
24"	D-156869	D-156864

4.12 When circuits employing 25, 26, or 86 type repeating coils are to be modified per SD-21918-01, Fig. A with "Q" wiring, B435, B436 or B159 (S) relays may be reused. When any of these relays require replacement the B435 relay shall be furnished. When the above mentioned coils are used with "K" wiring, or when circuits employing 94 or 95 type repeating coils are to be modified per Fig. B, the B466 (S) relay shall always be used. When modifying circuits in accordance with SD-21918-01, Fig. C, SD-21917-01, or SD-21115-01, G88 (S) relays shall be provided or reused when available.

4.13 When modifying circuits for controlled start of ringing, the (D-E), 137C condensers and the (CN) coin control relays may be mounted on the miscellaneous relay rack when space is not available on the incoming frame. Direct cabling shall be provided between the incoming frame and relay rack without going thru the incoming frame terminal strip.

4.14 When modifying circuits for toll identification tone, the associated tone control equipment [(TC) and (TD) relays and (T) condenser] may be mounted on the miscellaneous relay rack when space is not available on the incoming frame. With this arrangement cabling may be provided between the apparatus on the incoming frame and the relays and condensers on the relay rack without going through the incoming frame terminal strip when punchings are not available.

4.15 When modifying circuits that are not already equipped with cut-off spring (T) jacks, the existing jacks shall be replaced by 239 type jacks.

4.16 When circuits are being modified they shall be wired for No. 4 toll switching only unless otherwise specified by the customer.

4.17 When existing 24 volt circuits are being modified for use as toll incomings, the 48 volt power supply shall be checked to ascertain whether it is of sufficient capacity to carry the additional load.

4.18 All additional switchboard cable leads shall be 22 gauge except tone, ringing and common leads which shall be 20 gauge.

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