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TERMINATING SENDER LINK FRAME EQUIPMENT DESIGN REQUIREMENTS NO. 1 CROSSBAR SYSTEM

1. GENERAL

SCOPE

1.01 This specification, together with the supplementary information listed herein, covers the equipment design requirements for the framework, equipment, and circuits to be used in the engineering, manufacture, and installation of the terminating sender link frame in No. 1 crossbar offices. This specification also covers requirements for the terminating sender link emergency controller unit and the terminating sender selector unit. Equipment included in this specification may be ordered by specifying the codes and list numbers covered in Part 4.

1.02 This specification is reissued to provide information for operation with bridged or combined (full selector and multifrequency) terminating senders in accordance with SD-25459-01, Issue 35B.

CAPACITY

1.04 The terminating sender link frame has a capacity of 30 primary-secondary links which have access on the primary switches to 100 incoming trunks and on the secondary switches to 30 or 60 terminating senders.

DESCRIPTION

1.05 The function of the terminating sender link frame in a single or multioffice terminating unit is to connect various types of incoming trunks to their associated kinds of senders.

1.06 The frame may be arranged to serve 30 senders all of the same kind such as full selector or of two kinds such as full selector and B or full selector and dial pulsing. The frame may, on the other hand, be arranged by splitting the secondary switch horizontals and making other changes to serve 60 senders with a possibility of four kinds.

1.07 The frame as shown in Fig. 1 is a single sided single bay 11 feet 6 inches high and 2 feet 2-5/8 inches long. It is located adjacent to an incoming trunk frame or auxiliary incoming trunk frame.

1.08 The equipment consists of three 100-point 6-wire primary switches, three 100-point 6-wire secondary switches, two strips of multicontact relays, controller equipment in a casing, a jack, key, and lamp panel, and terminal strips.

1.09 The terminating sender link frame requires a fuse panel unit to provide the fusing required by one terminating sender link frame.

1.10 The primary switch verticals are strapped together in ten groups of three. Since the ten verticals of a switch are not a multiple of three, two of the ten groups are made up of verticals on two separate switches connected by a local cable. Each of the ten levels of a group of three verticals is connected to an incoming trunk through local cable arms extending into the adjacent trunk frame. The three verticals of each of these groups provide three links to secondary switch verticals distributed over the three secondary switches. For the prupose of link tracing the number of the primary switch vertical and secondary switch to which a link connects are the same. The trunk group number which a link serves is the same as the secondary switch vertical to which it is connected.

1.11 Sender multiple is connected to the horizontals of the secondary switches as covered on the sender multiple drawing in subgroups of a maximum of 10 senders each. On a frame arranged for one or two kinds of senders there are three subgroups of senders, one per secondary switch. Each switch subgroup may contain one or two kinds of senders. On a frame arranged for three or four kinds of senders there are six subgroups of senders, two per secondary switch. See Fig. 2.

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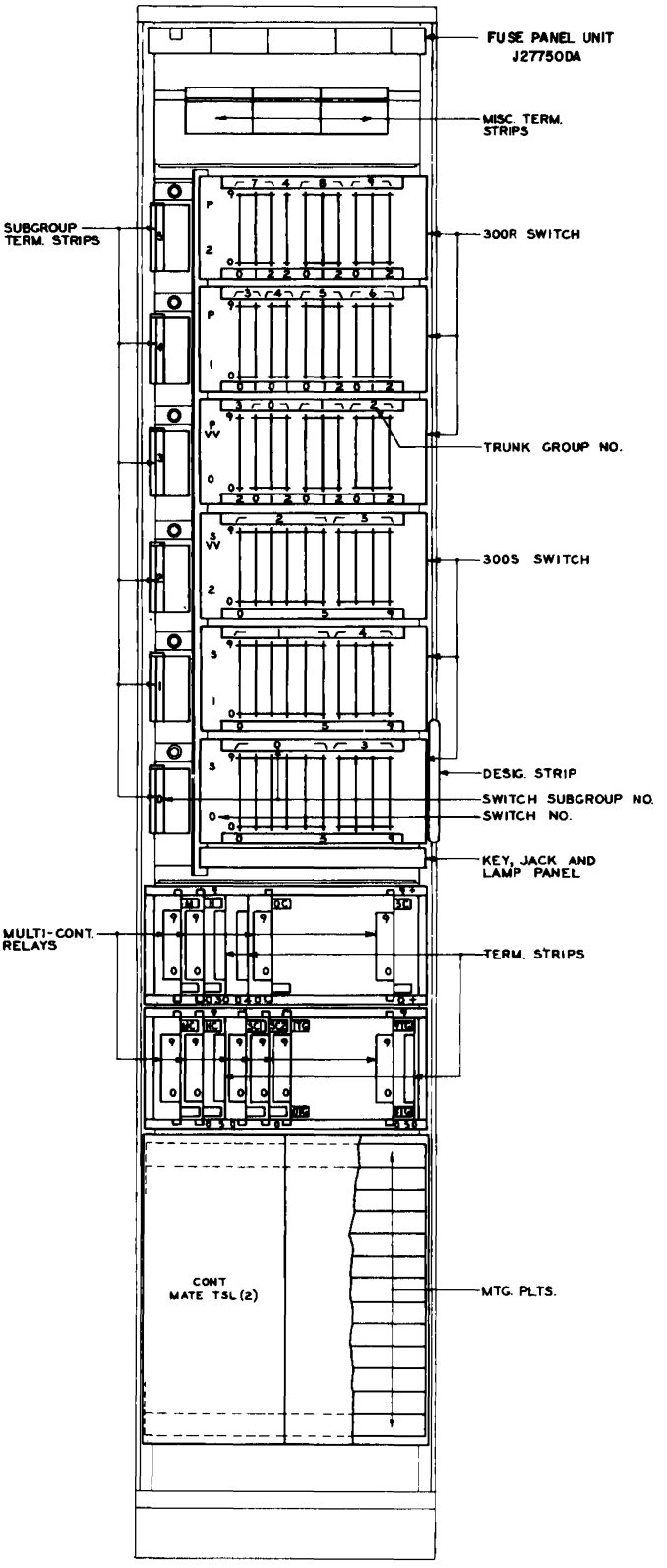

Fig. 1 — Terminating Sender Link Frame

1.12 The multicontact relays perform a connector function, some in connection with the incoming trunk groups, some in connection with the sender subgroups and some in connection with the home and mate controller circuits.

1.13 The controller circuits work on a mate frame basis, that is, the controller circuit for frame 100 acts as an emergency controller circuit for frame 101 and vice versa. An emergency controller is provided on the miscellaneous frame to function in connection with a frame having no mate.

1.14 The terminating sender link frame constitutes a fully wired shipping unit. The equipment of the frame is variable only in so far as is required by sender subgroups.

1.15 One sender selector unit is required for each subgroup of 10 or less senders. These units are located on the miscellaneous frames in a minimum of 3 groups in order to lessen the hazard due to a bay of equipment being rendered inoperative.

FORMER STANDARD

1.16 The terminating sender link frame per J27750A, now used only for additions and replacements, differs from the frame described in 1.04 through 1.11 in that it serves a maximum of 30 senders of two kinds in three subgroups and its length is 1 foot 10-1/8 inches. It cannot be economically converted to handle four kinds of senders.

2. SUPPLEMENTARY INFORMATION

816-000-000—Numerical Index—Crossbar System
800-600-000—Checking List General Equipment Index
BSP—Gen Equip. Req—Wiring and Cabling
BSP—Gen Equip. Req—Numbering and Lettering Crossbar Equipment
BSP—Gen Equip. Req—Auxiliary Framing
J20150—816-015-150—Switchboard Power Cabling
J25551—817-060-150 — 816-040-150 — 818-080-150 — End Guard, Aisle Pilot Lamp and DPTS Supports, and Fuse Record Book and Holder
J25552—Frame Lighting and Appliance Outlets
Floor Plan Data—Section 9.1, Sheet 25
Section 9.2, Sheet 6

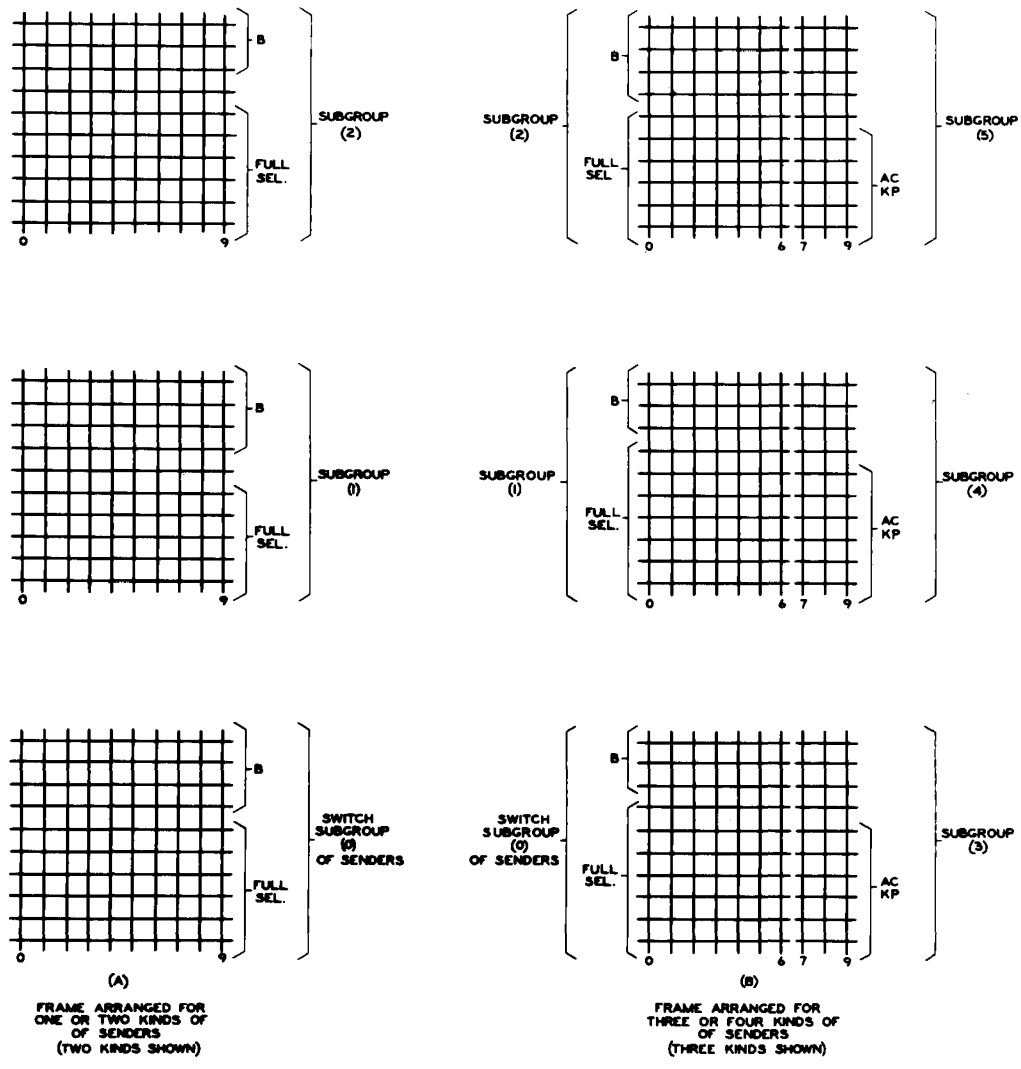

Fig. 2—Typical Assignments of Senders on Terminating Sender Link Frame Secondary Switches

3. DRAWINGS

Keysheet

SD-25000-01—Keysheet—No. 1 Crossbar System

Framework

ED-25028-50—Unit Assembly
ED-25065-31—Frame Assembly
ED-25278-30—Jack, Key, and Lamp Panel
ED-25511-70—Frame Assembly
ED-90978-57—Unit Casing

Equipment

ED-25212-( )—Designation Cards
ED-26746-( )—Miscellaneous Frame Equipment

Wiring and Cabling

ED-25147-( )—Link Frame Local Cable
ED-25150-( )—Link Frame General Cabling Plan
ED-25156-( )—Link Frame Switchboard Cabling Details
ED-25265-( )—Miscellaneous Frame Switchboard Cabling Details
ED-25346-( )—Method of Running Power Feeders
ED-25436-10—Sender Multiple

ED-25512-10—Link Frame Local Cable
ED-25518-10—Link Frame Switchboard Cabling Details
ED-25519-10—Sender Multiple

4. EQUIPMENT

J27750A—A&M Only—Terminating Sender Link Frame

List 1—Framework, assembly, wiring, and common equipment for a terminating sender link frame.

	WIRE	EQUIP	NOTES
Framework ED-25065-31,G1	—	1	
Unit Casing (Front Only ED-90978-( ),G2014	—	1	
Jack, Key, & Lamp Panel ED-25278-30, Grp 3	—	1	
Ter Sdr Lk & Ckt, SD-25028-01:			
Pri Switch Ckt, Fig. 1	3	3	
Sec Switch Ckt, Fig. 2	3	3	
Trunk Group Ckt, Fig. 3	10	10	F
Start Ckt, Fig. 4	1	1	
Controller Conn Ckt, Fig. 5	1	1	A
Controller Ckt, Fig. 6 Including YZ Apparatus	1	1	B, E,H,J
Sender Group Conn Ckt, Fig. 7	3	3	D,F
Link Lockout Ckt, Fig. 7A, 7B, or 7C	3	3	
Misc Ckt, SD-25057-01:			
Fig. 2, 4,	1	1	
Fig. 6	1	0	
Inc Trk Frame Misc. Ckt, SD-25439-01: Fig. 16	1	1	C

Notes

A. Where a frame has no mate an emergency controller unit per J27750E shall be provided to act as an emergency controller. Switchboard cable shall be run between the emergency controller unit and its associated sender link frame. The terminal strip on the sender link frame shall be strapped as indicated on the cross connection diagram.

B. The GT and GB wiring shall be provided from the RS relay and A resistance and looped at the position of the TSG relay and terminated at the position of the BSG relay. This wiring shall be connected as required. The BSG relay shall be provided on the sender link frame when the controller circuit serves B switchboard or dialing trunks either on the home or mate frame. Similarly the TSG relay shall be provided where the controller circuit serves full selector trunks either on the home or mate frame. The BSG and TSG relays shall be provided on sender link frames which serve both B switchboard or dialing trunks and full selector trunks, on either home or mate frame.

C. The equipment for the incoming trunk frame miscellaneous circuit is furnished with and located on that frame. The wiring from the fuse alarm lamps shall consists of one lead included in the local cable arm of the terminating sender link frame to the bottom incoming trunk unit. This permits the use of a punching on the miscellaneous terminal strip at the top of the sender link frame for switchboard power cable connection for this lead, the incoming trunk frame having no corresponding terminal strip.

D. The TMB and BMB relays shall be equipped as required. The PA leads from the hold off normal springs of the 3 primary switches shall be run first to the position of the TMB relay, there looped and run to the position of the BMB relay. These leads shall be connected to the relays as required.

E. Sender subgroup preference is established for a frame by cross-connecting the RP lead, punching 329, to one of leads SG0, SG1, and SG2 punchings 326, 327, and 328, respectively. The successive frames in a given multiple shall have their preference cross-connections rotated in the order SG0, SG2, SG1, SG0, etc. If mated frames are in separate multiples, this rotation must be out of phase; if the first frame in one multiple prefers SG0, the first in the other would prefer SG2. In no case shall mated frames have the same preference cross-connection.

F. Facilities are provided for giving to the senders, indications as to the incoming link frame location of the incoming trunk being served and also, in a multioffice terminating unit, indications as to the office into which the call is to be completed. These indications may be given on an incoming

trunk frame basis or incoming trunk group of 10 basis. Frame indications on a group of 10 basis are used in conjunction with the 160 capacity incoming link frame on terminating sender link frames associated with auxiliary incoming trunk frames. Office indications on the frame basis are used only in combination with frame indications on the F00 and F10 leads. The application of these features involves terminal strip strapping and cross-connections as covered on the circuit drawing. Indications given on a frame basis involve cross-connections on the MISC terminal strip at the top of the frame. Indications given on a group of 10 basis involve cross-connections on the A and B cable well terminal strips mounted on the frame with the controller equipment. Frame indication cross-connections may be in the shop. Office indication cross-connections shall be made by the installation force in accordance with information furnished by the Telephone Company.

G. Terminating sender link frames shall be paired for mate operation in the order, frames 0 and 1, frames 2 and 3, etc.

H. The D contact protection, option XA, required in addition to list 1 is added to protect 7B-8 contacts of HM relay.

J. The YZ apparatus and wiring provides for detection of a falsely operated secondary select magnet.

J27750D—AT&TCo Std—Terminating Sender Link Frame

List 1—Framework, assembly, wiring, and common equipment for a terminating sender link frame.

	WIRE	EQUIP	NOTES
Framework ED-25511-70,G1	—	1	
Unit Casing (Front Only) ED-90978-57, G2513	—	1	
Jack, Key, Lamp Panel ED-25278-30, Grp 3	—	1	
Ter Sdr Lk & Cont Ckt: SD-25459-01:			
Pri Switch Ckt Fig. 1	3	3	
Sec Switch Ckt Fig. 2	3	3	
Trunk Group Ckt Fig. 3	10	10	
Start Ckt Fig. 4	1	1	
Controller Conn Ckt Fig. 5	1	1	
Controller Ckt, Fig. 6, Less K App, Including XJ App	1	1	A,L
Controller Ckt, Fig. 6, K and XJ App	1	0	C,L
Sender Subgroup Conn Ckt Fig. 7, Less ZU App	6	3	B,D,J
Sender Subgroup Conn Ckt Fig. 7, K App	6	0	C
Link Lockout Ckt Fig. A, B, or C	6	3	
Sender Choice Ckt Fig. 9	1	0	D,E
Ter & "B" Sender Test Sel Ckt Fig. 12	1	0	
Misc Ckt SD-25057-01, Fig. 2, 4	1	1	
Fig. 6	1	0	
Inc Trk Fr Misc Ckt: SD-25439-01, Fig. 16	1	1	H

List 2—Controller Circuit relay BSG per SD-25459-01, Fig. 6, K apparatus, required in addition to list 1 when any sender subgroup on the frame or mate frame contains two kinds of senders. (See Note C.)

List 3—Equipment required in addition to list when the frame is arranged for three or four kinds of senders. (See Note D.)

	WIRE	EQUIP	NOTES
Sender Subgroup Conn Ckt SD-25459-01, Fig. 7, Less ZU App		3	
Link Lockout Ckt, SD-25459-01: Fig. A, B, or C		3	
Sender Choice Ckt: SD-25459-01, Fig. 9		1	E

List 4—Sender subgroup connector relay BMB per SD-25459-01, Fig. 7, K apparatus, required in addition to list 1 or 3 for each sender subgroup containing two kinds of senders. (See Note C.)

List 5—Equipment per SD-25459-01, Fig. 12, required in addition to list 1 for one terminating and B sender test selection circuit, when the office does not have a terminating sender test frame.

List 6—Wiring and equipment required in addition to list 3 when number of verticals in right-hand portion of split secondary switch is less than 3. (See 5.17.)

	WIRE	EQUIP	NOTES
Sdr Mult, SD-25459-01, Fig. 2, Multiple Wiring & Term. Strip Only	3	3	

List 7—Wiring and equipment required in addition to list 3 when number of verticals in left-hand portion of split secondary switch is less than 3. (See 5.17.)

	WIRE	EQUIP	NOTES
Sdr Mult, SD-25459-01, Fig. 2, Multiple Wiring & Term. Strip Only	3	3	

List 8—Wiring and terminal strip per SD-25459-01, Fig. 14, required in addition to list 1 to provide an indication on a per trunk basis for sender selection. (See Note M.)

List 9—Wiring and equipment per SD-25459-01, option XR, required in addition to list 1 to provide a terminating sender link major alarm for use with the Telecommunications Alarm, Surveillance and Control (TASC) System.

List 10—Wiring and equipment per SD-25459-01, Fig. 14A, and option XT required in addition to list 8 to provide selection for two kinds of senders in sender subgroups which have no combined or bridged senders or to provide selection for revertive pulsing or multifrequency pulsing when office has full selector and combined or bridged senders in the same subgroup.

Notes

A. For a frame which has no mate, a controller unit per J27750E connected to the link frame terminal strips by switchboard cable shall be provided on the miscellaneous frame to act as an emergency controller. Necessary strapping (W wiring) of the home frame terminal strips is covered on the cross-connection diagrams on the circuit drawing.

B. The frame per list 1 is wired for all options and equipped for three switch subgroups of senders, each subgroup of ten or less occupying the horizontals of one secondary switch and each subgroup containing but one kind of sender. See Notes C and D.

C. Additional equipment per lists 2 and 4 is required when the frame serves subgroups containing two kinds of senders.

D. In order to arrange the frame for three or four kinds of senders, two subgroups each consisting of one or two kinds of senders are connected to each secondary switch making six switch subgroups per frame, by opening the horizontal strapping of all three secondary switches at the same point and furnishing additional equipment per list 3. See Note C. The multiple of the SC1-SC2 lead through the TG multicontact relays is also opened at a corresponding point.

E. When the frame is arranged for only one or two kinds of senders (list 3 not equipped) a 218D terminal strip shall be furnished in the location of multicontact relay SC1 and multipled to the controller connector relays for termination of local cable leads otherwise required to be switched by the SC1 relay. When the frame is arranged for three or four kinds of senders (list 3 equipped) this terminal strip shall be omitted, the SC1 and SC2 multicontact relays equipped, their contacts connected to the local cable leads referred to above and their armatures multipled to the controller connector relays.

F. The sender subgroup preference leads SG0, SG1, and SG2 are connected to punchings 117, 118, and 119, respectively, on the controller terminal strip at the top of the frame. The punching representing the preferred sender subgroup of the three subgroups available to each incoming trunk group shall be strapped to the RP lead on punching 116. On frames serving three sender subgroups the strapping of SG0 causes preference for subgroup 0. On frames serving six sender subgroups the strapping of SG0 causes preference for subgroup 0 or subgroup 3 depepending upon the destination of the links associated with the trunk group involved. The successive frames in a given multiple shall have their preference cross-connections rotated in the order SG0, SG2, SG1, SG0, etc. If mated frames are in separate multiples, this rotation must be out of phase; if the first frame in one

multiple prefers SG0, the first in the other would prefer SG2. In no case shall mated frames prefer the same sender subgroup.

G. Facilities are provided for giving to the senders indications as to the incoming link frame location of the incoming trunk being served and also in a multioffice terminating unit indications as to the office in which the call is to be completed. These indications may be given on an incoming trunk frame basis or incoming trunk group of ten basis. Frame indications on a group of ten basis are used in conjunction with the 160 capacity incoming link frame on terminating sender link frames associated with auxiliary incoming trunk frames. Office indications on the frame basis are used only in combination with frame indications on the F00 and F10 leads. The application of these features involves strapping on the sender subgroup terminal strips at the left side of the frame as covered on the circuit drawing. Frame indication cross-connections shall be made in the shop. Office indication cross-connections shall be made by the installation force in accordance with information furnished by the Telephone Company.

H. The equipment for the incoming trunk frame miscellaneous circuit is furnished with and located on that frame, except for one lead in the terminating sender link frame local cable. This lead connects to a punching on the link frame miscellaneous terminal strip for connection to switchboard power cable, the incoming trunk frame having no corresponding terminal strip.

J. All leads associated with sender subgroup multiples other than those connected to horizontals of the secondary switches appear on sender subgroup terminal strips located at the left of the frame, one terminal strip per subgroup. The maximum of six of these terminal strips is furnished in list 1.

K. A frame equipped for four kinds of senders (list 3) may be used if desired for one or two kinds of senders when an early introduction of additional kinds of senders is contemplated.

L. The XJ apparatus and wiring provides for detection of a falsely operated secondary select magnet.

M. When a sender subgroup contains full selector senders and combined or bridged senders, or all combined or bridged senders. No other type sender may be assigned to the subgroup. All terminating sender link frames which have an appearance of a sender subgroup which contains full selector and combined or bridged senders do not require a modification for this feature. Modify only those frames which have appearances of both full selector and multifrequency trunks in the same trunk group.

J27750E—AT&TCo Std—Terminating Sender Link Emergency Controller Unit

List 1—Framework, assembly, wiring, and equipment for a terminating sender link emergency controller unit. (See Note B.)

	WIRE	EQUIP	NOTES
Framework ED-25028-50 Grp 1	—	1	
Casing (Front Only) ED-90978-( ), G2008	—	1	
Controller Ckt, SD-25459-01, Fig. 6, Including XJ Apparatus (less MB jack)	1	1	E,F,G

Notes

A. This unit shall be mounted on a miscellaneous bay following the arrangement shown on ED-26746-01.

B. One emergency controller unit shall be provided when an odd number of terminating sender link frames is provided. This unit is required as an emergency controller circuit for the odd frame.

C. A cable bracket shall be provided and mounted on the rear of the bay, after the unit is installed, for supporting the local cable.

D. Wiring from the RS relay and M resistance shall be looped at the position of the ASG relay and run to the position of the BSG relay. This wiring shall be connected as required. The ASG and BSG relays shall be equipped as required depending on the type of trunks served by the associated sender link frame.

E. Sender subgroup preference is established for the emergency controller by cross connecting the RP lead, punching 120, to one of leads SG0, SG1, and SG2, punchings 121, 122, and 123, resepectively.

The preferred subgroup shall be that one which follows the preferred subgroup of the associated terminating sender link frame in the order SG0, SG2, SG1, SG0, etc.

F. The MB jack associated with this unit is mounted on the jack panel on the miscellaneous frame.

G. The XJ apparatus and wiring provides for detection of a falsely operated secondary select magnet.

J27750F—AT&TCo Std—Terminating Sender Selector Unit

List 1—Framework, assembly, wiring, and common equipment for a terminating sender selector unit wired for use with 10 senders and equipped for use with one sender. (See Note B.)

	WIRE	EQUIP	NOTES
Framework ED-25028-50 Grp 10		1	
Sender Sel. Ckt. SD-25459-01, Fig. 8	1	1	D,E
Sender Relays Ckt. SD-25459-01, Fig. D, E, F, DA,EA. or EB	10	1	D,F,G
Contact Prot Ckt. SD-25459-01, Fig. 13	5	5	

List 2—Equipment per SD-25459-01, Fig. E, F, EA, or EB required in addition to list 1 for one sender relays circuit for each of sender relays circuits 1 to 9.

List 3—Wiring and equipment per SD-25459-01, Fig. EC, ED, or FA required in addition to list 1 for each combined or bridged (full selector and multifrequency) sender in the subgroup. (See Notes H, I, J, K, L, and M.)

List 4—Wiring and equipment per SD-25459-01, Fig. 8A required in addition to list 1 to provide selection for revertive pulsing or multifrequency pulsing when office has full selector senders and combined or bridged (full selector and multifrequency) senders in the same subgroup when providing an indication on a per trunk basis for sender selection.

List 5—Wiring and equipment per SD-25459-01, Fig. 8A and 8B required in addition to list 1 to provide selection for revertive pulsing and multifrequency pulsing when office has all combined or bridged (full selector and multifrequency) senders in the subgroup when providing an indication on a per trunk basis for sender selection.

Notes

A. This unit shall be mounted on a miscellaneous bay following the arrangement shown on ED-26746-01.

B. One sender selector unit shall be provided for each subgroup of 10 or less terminating senders.

C. A cable bracket per ED-25020-01, Item 12, shall be provided and mounted on the rear of the bay, after the unit is installed for supporting the local cable.

D. Thirty punchings are provided on the terminal strips as strapping points to establish a preference in which senders in a subgroup served by the unit are to be used in order to distribute sender wear. Punchings 15 of each of ten sets of punchings are associated with leads P0-P9 related to the ten senders of the sender subgroup served. Punchings 80-89 are related to trunks served by one kind of senders in the subgroup and punchings 90-99 are related to trunks served by another kind of senders. The location of the trunk within its group of ten determines the prferred sender. Punchings 15 of circuits 0-9 are connected to punchings 80-89, respectively, if all the senders are of any one kind. When the unit serves partially equipped sender subgroups having two kinds of senders, a reduced number of sender punchings 15 will be available to each set of 10 trunk punchings. The trunk punchings shall then be strapped to form as many approximately equal sized "groups" as there are sender punchings 15 of the appropriate kind available.

E. From a circuit standpoint the sender selector unit has capacity for connecting to a maximum of 24 link frames when the senders in the subgroup are all of the same kind. If the subgroup consists of two kinds of senders connection to only 12 link frames can be made. It is not expected that a combination subgroup of senders will be multipled to more than 12 sender link frames.

F. Sender relays circuits 1 to 8 shall be universally wired so that any may be equipped as the first intermediate or last circuit of a kind of sender in a subgroup. Circuit 0 shall be wired and equipped

as a first circuit. Circuit 9 shall be wired as a last circuit. For units serving sender subgroups having two kinds of senders the circuits associated with the kind of senders likely to increase in quantity shall be equipped from 0 up and those associated with the kind of senders likely to decrease in quantity shall occupy the highest numbered positions to agree with the assignment of senders to the horizontals of the associated secondary switches on the terminating sender link frames.

G. Provide XJ wiring for false ground detection of falsely operated secondary select magnets and earlier operation of the SGE relay to make the sender subgroup busy.

H. A bridged or combined sender may be defined as a terminating sender link secondary switch horizontal on which a full selector and a multifrequency sender has an appearance. A sender subgroup may be split with the lower numbered senders being full selector only and the higher numbered senders being combined or bridged.

I. One list 3 shall be specified for each combined or bridged sender in a subgroup and wired per SD-25459-01, Fig. EC, for the first sender, Fig. ED for the intermediate senders and Fig. FA for the last or only sender in the subgroup.

J. When this unit operates with combined or bridged senders punchings are provided as strapping points to establish a preference in which senders in the subgroup are used in order to distribute sender wear. Punching 15 (circuits 0-9) is associated with the full selector senders including those combined or bridged with multifrequency senders. Punchings 80-89 are associated with trunk groups requiring full selector or combined or bridged senders. Connect punching 15 (circuits 0-9) to punching 80-89 to associate all full selector senders, including those combined or bridged with multifrequency senders, with trunk groups requiring full selector or combined bridged senders. Punching 31 (circuits 1-9) is associated with the multifrequency sender portion of a combined or bridged sender. Punchings 90-99 are associated with trunk groups requiring multifrequency senders. Connect punching 31 (circuits 1-9) to 90-99 punchings to associate all multifrequency senders with all trunk groups requiring multifrequency senders.

K. Sender relay circuit 0 shall be wired per SD-25459-01, Fig. D or DA and circuit 9 shall be wired per SD-25459-01, Fig. F or FA. Intermediate circuits 1 through 8 shall be universally wired per SD-25459-01, Fig. E, F, EA, EB, EC, or ED. Full select senders shall be assigned to the lower numbered circuits and the combined or bridged senders shall be assigned to the higher numbered circuits.

L. When this unit serves a subgroup of senders with combined or bridged senders, it will operate with all combined or bridged senders or with a mixture of full selector and combined or bridged senders. No other type sender may be assigned to the subgroup.

M. Provide Fig. DA, EA, EB, EC, ED, and FA in accordance with SD-25459-01, Note 108.

2J27750G—A&M Only—Terminating Sender Selector Unit

List 1—Framework, assembly, wiring, and commong equipment for a terminating sender selector unit wired for use with 10 senders and equipped for use with one sender. (See Note B.)

	WIRE	EQUIP	NOTES
Framework ED-25028-50, Grp 10	—	1	
Sender Sel Ckt SD-25028-01, Fig. 8 Options G & ZA & ZE	1	1	D,E
Sender Relays Ckt, SD-25028-01: Fig. 8A, 8B, or 8C	10	1	D,F,G
Contact Prot Ckt, SD-25028-01: Fig. 13	5	5	

List 2—Equipment per SD-25028-01, Fig. 8B or 8C required in addition to list 1 for one sender relays circuit for each of sender relays circuits 1 to 9. (See Note D.)

Notes

A. This unit is for use in existing offices in connection with link frame J27750A for additions or for replacement or modification of units per J27750C where terminating sender load control is introduced.

B. One sender selector unit shall be provided for each subgroup of 10 or less terminating senders.

C. A cable bracket shall be provided and mounted on the rear of the bay, after the unit is installed for supporting the local cable.

D. Thirty punchings are provided on the terminal strips as strapping points to establish a preference in which senders in a subgroup served by the unit are to be used in order to distribute sender wear. Punchings 15 of each of ten sets of punchings are associated with leads P0-P9 related to the ten senders of the sender subgroup served. Punchings 80-89 are related to trunks served by one kind of senders in the subgroup and punchings 90-99 are related to trunks served by another kind of senders. The location of the trunk within its group of ten determines the preferred sender. Punchings 15 of circuits 0-9 are connected to punchings 80-89, respectively, if all the senders are full selector or to 90-99, respectively, if all the senders are B or dial pulsing. When the unit serves partially equipped sender subgroups or sender subgroups having two kinds of senders, a reduced number of sender punchings 15 will be available to each set of 10 trunk punchings. The trunk punchings shall then be strapped to form as many approximately equal sized "groups" as there are sender punchings 15 of the appropriate kind available.

E. From a circuit standpoint the sender selector unit has capacity for connecting to a maximum of 24 link frames when the senders in the subgroup are all of the same kind. If the subgroup consists of two kinds of senders connection to only 12 link frames can be made. It is not expected that a combination subgroup of senders will be multipled to more than 12 sender link frames.

F. Sender relays circuits 1 to 8 shall be universally wired so that any may be equipped as the first intermediate or last circuit of a kind of sender in a subgroup. Circuit 0 shall be wired and equipped as a first circuit. Circuit 9 shall be wired as a last circuit. For units serving sender subgroups having two kinds of senders the circuits associated with the kind of senders likely to increase in quantity shall be equipped from 0 up and those associated with the kind of senders likely to decrease in quantity shall occupy the highest numbered positions to agree with the assignment of senders to the horizontals of the associated secondary switches on the terminating sender link frames.

G. Provide YZ wiring for false ground detection of falsely operated secondary select magnets and earlier operation of the SGE relay to make the sender subgroup busy.

J27750AA—A&M Only—Terminating Sender Link Fuse Panel Unit

List 1—Assembly, equipment, and wiring for one terminating sender link fuse panel unit per SD-25057-01, Fig. 6, to provide the fusing required by one terminating sender link frame.

J27750DA—AT&TCo Std—Terminating Sender Link Fuse Panel Unit

List 1—Assembly, equipment, and wiring for one terminating sender link fuse panel unit per SD-25057-01, Fig. 6, to provide the fusing required by one terminating sender link frame.

J27750DB—AT&TCo Std—Individual Trunk Identification Unit

List 1—Assembly, wiring, and equipment per SD-25459-01, Fig. 14, for one individual trunk identification unit.

Notes

A. This surface wired unit is arranged to mount on the terminating sender link frame J27750D.

5. GENERAL NOTES AND INDEXES

5.01 The terminating sender link frame shall be arranged on the floor plan to line up with its associated incoming trunk frame or auxiliary incoming trunk frame.

5.02 The terminating sender link frame provides facilities for associating 100 incoming trunks such as those covered in specification J27751 with 30 or 60 terminating senders such as those covered in specification J28050. The 100 trunks are served in

ten groups of ten, each group having access through three links to three subgroups of ten senders.

5.03 In a multioffice terminating unit the terminating senders and markers may serve a maximum of 20,000 subscriber numbers. The incoming and line links and consequently the incoming trunks and terminating sender links will usually be treated similarly but may be arranged in groups individual to 10,000 numbers each. In the latter case, each office is limited to ten incoming link frames and ten line choices and the F00 indication is used for the 0 to 9 frames of one office and F10 for the 0 to 9 frames of the other. The usual office indication cross-connections are not required in this case unless it is desired to use these indications to discriminate between a physical and a theoretical office in the same 10,000 number series.

Sender Multiple

5.04 The sender multiple connected to the secondary switches of the terminating sender link frames on any job shall be arranged for the number of subgroups specified by the Telephone Company. A sender subgroup is that portion of the total number of terminating senders which comprises a switch subgroup on any terminating sender link frame. A typical sender multiple diagram is shown on ED-25519-10. In general, the multiple will be arranged in one or more divisions of three, four, or five subgroups each.

5.05 There will be cases where only several senders of a type are required. This will occur when revertive and multifrequency pulsing is used on all calls except those from the local test desk and message register rack. On a dial pulsing basis, such calls might require only two senders. The most economical arrangement in such cases will be to restrict such trunks to the minimum number of groups of ten, all to be served by one terminating sender link frame. Locating them as the highest or lowest numbered trunk groups on the frame, a secondary switch split can be located so as to permit the associated senders to be the only kind of senders in the group. This will eliminate all sender multiple cabling for this group. The two senders would be assigned one to each of two subgroups, the third subgroup being made to appear permanently busy as covered on the schematic.

5.06 When there are not more than two kinds of senders involved each terminating sender link frame has appearances of three sender subgroups. For typical quantities of senders and trunks all of the subgroups may be in one division. For large quantities, additional divisions of three, four, or five subgroups each are established.

5.07 When there are three or four kinds of senders involved each terminating sender link frame has appearances of six sender subgroups. In this case for typical quantities of senders and trunks two divisions necessarily exist, one consisting of sender subgroups appearing on the first three switch subgroups on each of the link frames and the second division consisting of sender subgroups appearing on the second three switch subgroups on these frames. These two divisions do not necessarily involve the same number of link frames.

5.08 Although it is possible for any subgroup to contain any kind or any two kinds of senders, considerations of sender efficiency and ease of providing for growth and for conversion dictate certain schemes of assigning senders to secondary switch horizontals. On frames arranged for three or four kinds of senders, one kind of sender should not ordinarily be assigned to two different subgroups appearing on the same switch. Senders of each kind should be divided as equally as possible among the subgroups in the division. In a subgroup of two kinds the kind likely to increase in quantity should be assigned to secondary switch horizontals from 0 up. The kind likely to decrease in quantity or be displaced by the first kind should be assigned to the highest numbered horizontals. See Fig.2. Unequipped horizontals are not multipled to equipped horizontals.

5.09 The location of the split in the horizontal strapping on the secondary switches on a link frame arranged for three or four kinds of senders is governed by the number of incoming trunk groups requiring access to the senders in each of the two switch subgroups. The kinds and quantities of trunk groups, the location of the split in the secondary switch horizontals and the assignment of kinds of senders in the subgroups should be such that future changes and conversions occur between the kinds of senders in a subgroup rather than between senders in different subgroups on the same switch. This is because of the relative ease of changing within a subgroup compared with the difficulty and expense of changing the location of the split in the secondary switch horizontal multiple.

5.10 Periodic revisions in sender subgroup preference may be made to alter the point of maximum wear on each terminating sender link frame.

Such changes will affect a cross-connection on each of the frames and on the emergency controller unit. The requirements of Note F under J27750A and J27750D and Note E under J27750E shall be observed in making these revisions. Also, the striping on the sender multiple designation cards on the link frames, indicating the preferred sender subgroup, should be changed.

Miscellaneous Equipment

5.11 The sender selector units and emergency controller unit shall be mounted on the miscellaneous frames. In order to reduce service hazards, the sender selector unit shall be distributed over a minimum of 3 miscellaneous frames located preferably in separate lineups. These frames will normally accommodate other similar equipment associated with the subscriber and key pulsing sender link frames. In any case, the preferred location is central with respect to the associated frames. A typical arrangement of miscellaneous frame equipment is shown on ED-26746-01. The switchboard cabling details are covered on ED-25265-01.

Wiring

Local

5.12 Wiring and strapping shall be in accordance with the wiring and cabling specification. No 24 gauge DCL wire shall be used for all local cable wiring other than battery and ground feeder leads which shall be No. 22 gauge DCL wire.

5.13 Leads from the terminating sender link frame for connection to the incoming trunks are brought out in the form of extensions of the frame local cable, for direct connection to terminal strips on the incoming trunk units on the adjacent incoming trunk frame.

5.14 Ground leads shall be provided for SD-25028-01 (for TSL frame J27750A) and SD-25459-01 (for TSL frame J27750D) as follows:

A	Start Ckt Fig. 4
B	Cont Conn Ckt Fig. 5
C	Sdr Grp Conn Ckt Fig. 7 Trk Grp Ckt Fig. 3 (TG) Rel
D	Cont Ckt Fig. 6
E	Trk grp Ckt Fig. 3 (Less (TG) Rel)
F0-F2	Link Lockout Relay SD-25028-01, Fig. 7A, 7B, or 7C and Associated Switch Subgroup Terminal Strip
F0-F5	Link Lockout Relay SD-25459-01, Fig. A, B, or C and Associated Switch Subgroup Terminal Strip
HD	Primary Switch Fig. 1
SS	Secondary Switch Fig. 1
TBS	Misc Ckt SD-25057-01, Fig. 2

Cabling

5.15 The code numbers of the switchboard cabling ordinarily used in cabling the various circuits are shown on the switchboard cabling drawings. The circuits should, however, be checked to insure that the proper codes are specified to meet the latest circuit requirements. The cross connecting information on the circuit drawings shows what groups of leads are to be combined in the same cables.

5.16 In order to minimize possible service reaction in the event of cable failure the sender frame cables and associated sender selector unit control leads should be terminated at as many sender link frames as possible, as shown on the sender multiple drawing. The sender frame cables and the selector unit cables shall, of course enter at the same frame. The frame indication multiple associated with each sender subgroup is cabled in a closed loop including all of the sender frames and the terminating sender link frames on which the subgroup appears.

5.17 The cables from the sender frames to the sender link frame secondary switch horizontals for switch subgroups 0, 1, and 2 are connected at vertical 0. Multiple cable to the preceding frame in the division is connected at vertical 1 and to the succeeding frame at vertical 2. The cables from the sender frames to the sender link frame secondary switch horizontals for switch subgroups 3, 4, and 5 are connected at vertical 9. Multiple cable to the preceding frame in the division is connected at vertical 7 and to the succeeding frame at vertical 8. In cases where switch subgroups cover less than three verticals, that is, the split in the horizontals causes these subgroups to be accessible to less than three trunk groups, three 216A terminal strips shall be mounted at the bottom of each secondary switch and the 60 terminals connected by means of a supplementary local cable form to the switch horizontals at vertical 0 or 9. The sender frame cables and the two multiple cables shall in this case be connected to these terminal strips.

5.18 Leads from the sender selector units, etc, on the miscellaneous frames to points such as sender make busy frame, interrupter frame, etc, shall be grouped together in one cable from each bay to each separate destination.

5.19 One cable shall be used for all sender circuits in a subgroup located on the same sender frame.

5.20 The ST, IA, and IB interrupter contacts shall be assigned so that the contacts required for odd numbered sender link frames shall not appear on the same interrupter frame as those for even numbered sender link frames.

5.21 In order to facilitate maintenance, adjacent link frames shall have their controller circuits connected so as to act as emergency to each other. In the case of an odd number of frames in the lineups consecutively numbered frames shall be associated as mates. Where the total number of link frames is odd an emergency controller on the miscellaneous frame shall be associated with one frame.

Switchboard Power Cabling

5.22 Switchboard power cables containing the miscellaneous wiring to the centralized DPTS and SDPTS shall be run along the under side of the cable rack for each row of frames, and, when required, on top of the cable rack, from the end of the row of frames to the DPTS and SDPTS. At each frame the cables shall be looped at the miscellaneous terminal strips and connected as required.

5.23 The cabling between the distributing power terminal strips and the points of termination of the various circuits shall be run in the largest switchboard cable consistent with the grouping of leads and the point of termination.

List of A&M Only and Mfr Disc Equipment

EQUIPMENT	RATING	DETAILS LAST SHOWN IN ISSUE	REPLACING EQUIPMENT
J27750A	A&M Only	5	J27750D
J27750B	Mfr Disc.	5	J27750E
J27750C	Mfr Disc.	4	J27750F & J27750G
J27750G	A&M Only	5	J27750F
J27750AA	A&M Only	6	—

The above equipment has been replaced as indicated. Where A&M Only items appear, the issue numbers shown are those of the issue in which the rating was first applied.

Bell Telephone Laboratories, Incorporated

Dept 5245