

TERMINATING SENDER 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 frame and the associated B position finder unit in No. 1 crossbar offices.

1.02 This specification is reissued to incorporate previous addendums and to change restrictions on mounting multifrequency sender units on sender frames.

Capacity

1.03 The terminating sender frame has a capacity of five senders. This may be made up of a combination of full selector, central B, B, dial pulsing, or multifrequency pulsing senders. Not more than three central B, B, or dial pulsing senders shall be mounted on any one sender frame, and it is preferable that not more than three MF pulsing senders be mounted on one sender frame. However, if office facilities are limited, up to five MF pulsing senders may be mounted on the same frame.

1.04 The B position finder unit has a capacity of five B senders and permits access to 20 B positions.

1.05 The terminating sender timing control units have a capacity which permits their association with one common group of full selector terminating senders arranged for load control or with 72 senders arranged for interdigital timing control.

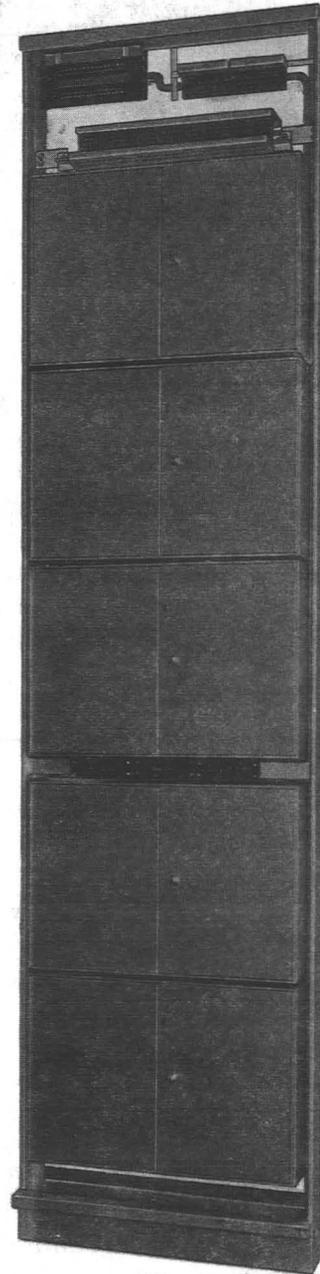


Fig. 1 — Terminating Sender Frame

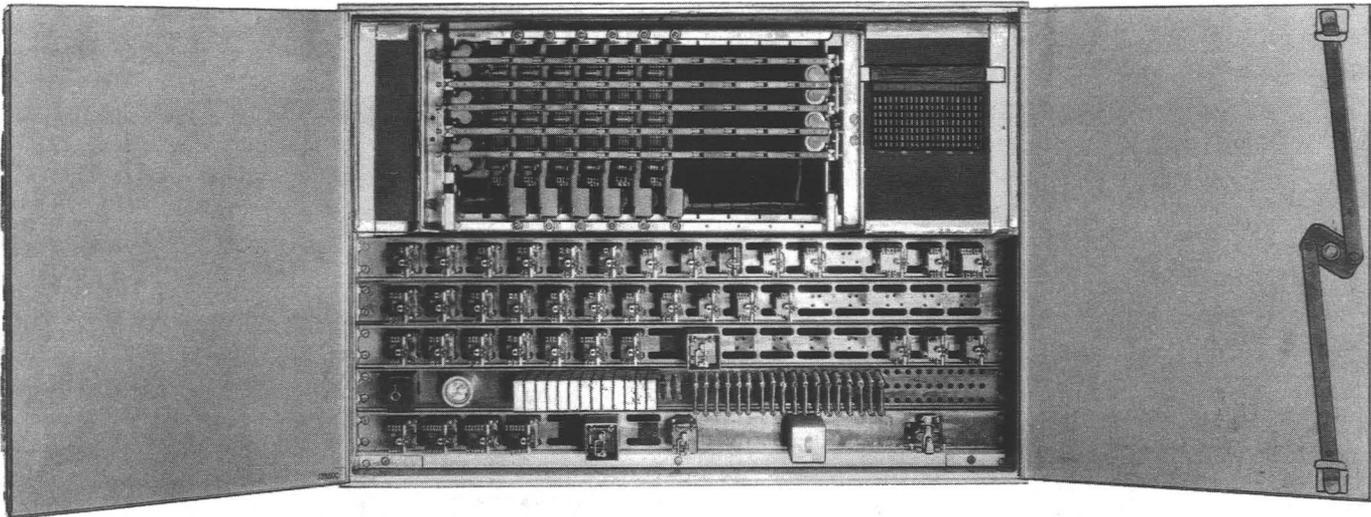


Fig. 2 — Full Selector Sender Unit

Description

1.06 The full selector, dial pulsing, MF pulsing, central B, and B senders on the sender frame are used in conjunction with the incoming trunk, incoming link, and terminating sender link frames for completing calls to a No. 1 crossbar office. These senders are also used for toll number checking over a number checking incoming trunk from the toll switchboard.

1.07 The full selector sender is used in connection with full mechanical traffic to provide a means of completing a call from an originating sender to a crossbar office on a revertive pulsing basis.

1.08 The B sender is used in connection with manual traffic to record a called customer number as transmitted over a trunk incoming to a B attendant in the crossbar office.

1.09 The central B sender is used in connection with manual traffic in a similar manner to the B sender except it functions with a central B switchboard and associate sender in a distant office. The central B senders may be converted to full selector terminating senders when no longer required for manual traffic.

1.10 The dial pulsing sender is used in offices not having a B switchboard for terminating traffic from manual switchboards equipped with dials. In an office of this character, the sender completes calls from incoming trunks through the terminating sender link, incoming link, etc.

1.11 The multifrequency pulsing sender is used in connection with traffic from a toll switchboard arranged for MF keypulsing to a No. 1 crossbar office or in connection with traffic from a No. 4 toll switching center to a No. 1 crossbar office. The multifrequency sender is selected by the incoming sender link in the regular manner. In order for the sender to register multifrequency pulses, it requires the aid of a multifrequency pulsing receiving unit located on another frame or relay rack but permanently connected to the sender. The ac receiving leads from the incoming trunk are connected through the sender to the receiving unit. The receiving unit separates the ac signaling frequencies, which range from 700 to 1700 cycles in steps of 200 cycles, into channels and the channel equipment sets the sender register relays on a dc pulsing basis. The sender then completes the call in the terminating office, similarly to other terminating senders.

1.12 The terminating sender timing control unit is used in offices arranged for routing calls to overflow during overload terminating traffic periods and also to provide interdigital timing control for full selector terminating senders.

1.13 *Multioffice Terminating Unit:* A group of terminating markers, terminating marker connectors, and terminating senders may serve a single central office having 10,000 directory numbers, or a multioffice terminating unit of two offices each having 10,000 numbers. Each 10,000 number series may be divided into a physical and theoretical office when desired. Information relating to the provision of facilities in switchboards, senders, incoming trunks, incoming link frames, connectors, and markers for single-office or multioffice operation with or without discrimination between physical and theoretical numbers is shown on the circuit.

1.14 *Common Group of Incoming and Line Link Frames:* In a multioffice terminating unit having common incoming frames, the line junctions are cabled through one line junctor grouping frame to one group of line link frames. With this arrangement the incoming trunk groups may be common to both offices, individual to each office, or some groups may be common and some individual. To insure satisfactory operation with respect to line junctions, the incoming trunks should be assigned so that each incoming link frame divides its traffic properly to both offices, and the lines served by each line choice should be proportioned so that each half-choice will carry its share of the traffic to each of the two offices. Terminating senders arranged for this type of multioffice operation shall be equipped with the necessary relay equipment for registering the office A and office B indication and for transmitting this indication to the terminating marker over the OAB lead to select translator equipment in the marker associated with the office (A or B) to which the call is being completed. For individual trunk groups, the terminating sender receives the office indication from the TSL frame wherein the indication is able to be cross-connected by trunk groups of ten. For common trunk groups, the office indication for the full-selector sender is received from the originating sender arranged for use

with common trunk groups. In this case the incoming trunk cross-connection passes the A office indication to the sender for each call, and, if a particular call is for office B, the originating sender requires the terminating sender to add five pulses to the IG selections to set itself for a B office indication. For calls to the B switchboard incoming on a manual basis over a common incoming trunk group, it is necessary that the originating attendant pass the office name to the B attendant and that the B attendant operate a key to set the B sender for office A or office B as well as set up the four digits on the B position keyset. For calls to the B switchboard, incoming on a manual basis over individual trunk groups, the procedure is the same, except it is not necessary for the originating attendant to pass the office name to the B attendant. For calls incoming on a dialing basis over common trunk groups to the dial pulsing sender, it is necessary that the originating dialing attendant dial an office code digit (5-digit operation) to set the dial pulsing sender for office A or office B as well as dial the four numerical digits. In some cases, for calls incoming on a dialing basis, a common trunk is given two appearances on the terminating sender link, one appearance giving the office A and the other the office B indication. In this case, the attendant dials four numerical digits. By means of a cross-connecting arrangement, full flexibility is provided in the dial pulse and multi-frequency senders so that any office code number may be assigned as office A or office B, and if an unused code is dialed or keyed, a reorder signal is given.

1.15 *Individual Groups of Incoming and Line Link Frames:* In a multioffice terminating unit, the incoming link frames, line junctor grouping frame, and line link frames for each office may be in a separate group providing no incoming trunk groups are common to both offices. This permits the use of a total of 20 incoming link frames without extension frames, I0 to I9 for office A, and I0 to I9 for office B. The number of incoming frames and line choices preferably should be about the same in each group because the line junctor distribution must be arranged for the size represented by the larger group. If the two groups are not the same in size, the traffic carried by the smaller group must not exceed the capacity of the jun-

tor groups provided by the junctor distribution. The office indication for the senders in this case is obtained over the incoming frame indication leads F00 and F10 from the TSL frame. The I0 to I9 frames of office A are identified by the F00 indication and the I0 to I9 frames of office B are identified by the F10 indication. This office differentiation in the sender selects the translator equipment in the marker associated with office A or B to which the call is being completed.

1.16 Physical and Theoretical Office Discrimination—Single-office Terminating Unit: For a single 10,000 number series having common as well as individual trunk groups to the physical and theoretical office, discrimination is obtained by the marker from the senders over the OAB lead requiring optional equipment in the terminating senders similar to that necessary for differentiating between office A and B of a multioffice terminating unit per 1.13. In this case, the terminating sender indication passed to the marker over the OAB lead indicates to the marker whether the call is being completed to a physical or theoretical office instead of selecting translator equipment for office A or B as in a multioffice terminating unit. Where discrimination is required for individual trunk groups but not for common trunk groups to the

physical and theoretical office, discrimination is obtained by the marker direct from the incoming link frame over the IP, IT, and IPT leads. In this case, the terminating senders are arranged in the same way as a single-office terminating unit without a physical and a theoretical office.

1.17 Physical and Theoretical Office Discrimination—Multioffice Terminating Unit: For a multioffice unit with a physical and theoretical office in either or both 10,000 number series using individual trunk groups to each 10,000 number series, discrimination between the physical and theoretical in either 10,000 number series is obtained by the marker directly from the incoming link frame over the IP, IT, and IPT leads. The senders in this case shall be equipped for differentiating between the two 10,000 number series in accordance with 1.13. For trunk groups common to two 10,000 number series, provision has not been made for discriminating between each physical and theoretical office of each 10,000 number series.

1.18 The terminating sender frame is a single-sided single-bay steel structure 11 feet 6 inches high and 2 feet 10 inches long. The frame is arranged for full selector, dial pulsing, MF pulsing or B senders in positions 0, 1, and 2 and for full selector or MF pulsing senders in positions 3 and 4.

SUBDIVISIONS OF EQUIPMENT AND DETAILED INDEX

WECo J drawings should be ordered by referring to prefix and base number and requesting the current dash (–) number.

EQUIPMENT CODE	RATING OF UNIT	TITLE	EQUIPMENT DRAWING	CIRCUIT DRAWING
J28050A	AT&TCo Std	Terminating Sender Frame	J28050A-()	(SD-25013-01 SD-25014-01 SD-25053-01 SD-25382-01 SD-25434-01 SD-25455-01
J28050B	AT&TCo Std	B Sender Unit	J28050B-()	SD-25014-01
J28050C	AT&TCo Std	Full Selector Sender Unit	J28050C-()	SD-25013-01

EQUIPMENT CODE	RATING OF UNIT	TITLE	EQUIPMENT DRAWING	CIRCUIT DRAWING
J28050E	AT&TCo Std	B Position Finder Unit	J28050E-()	SD-25014-01
J28050F	A&M Only	Dial Pulsing Number Checking Sender Unit	J28050F-()	SD-25326-01
J28050G	AT&TCo Std	Dial Pulsing Sender Unit	J28050G-()	SD-25434-01
J28050H	AT&TCo Std	Central B Sender Unit	J28050H-()	SD-25382-01
J28050K	AT&TCo Std	Multifrequency Pulsing Sender Unit	J28050K-()	SD-25455-01
J28050L	AT&TCo Std	Terminating Sender Timing Control Unit	J28050L-()	SD-25471-01
J28050M	AT&TCo Std	Terminating Sender Timing Control Unit – Arranged for Full Selector Terminating Load Control	J28050M-()	SD-25471-01

2. SUPPLEMENTARY INFORMATION

816-000-000 – No. 1 Crossbar System Index
 J20150 (816-015-150) – Switchboard Power Cabling
 J25551 (816-040-150) – End Guards, Aisle Pilot Lamp and DPTS Supports, Fuse Record Book and Holder, and Spare Fuse Mountings
 J28003 – Central B Sender and Position Finder (Panel System)
 J28052 (816-504-150) – Central B Sender and Position Finder (Crossbar System)
 J95102 – Multifrequency Pulsing Receiving Equipment
 Floor Plan Data – Section 9.1, Sheet 12

3. DRAWINGS

For additional drawings forming a part of this specification, see listings under Subdivisions of Equipment and Detailed Index.

KEY SHEETS

SD-25000-01 – No. 1 Crossbar System

CIRCUITS

SD-25013-01 – Full Selector Terminating Sender Circuit
 SD-25014-01 – “B” Switchboard Sender and Position Finder Circuit

SD-25053-01 – Miscellaneous Circuit
 SD-25326-01 – Dial Pulse Terminating Sender Circuit or Number Checking Sender Circuit
 SD-25382-01 – Central “B” Switchboard Terminating Sender Circuit
 SD-25434-01 – Dial Pulsing Terminating Sender Circuit
 SD-25455-01 – Multifrequency Pulsing Terminating Sender Circuit
 SD-25471-01 – Timing Control Circuit

EQUIPMENT

ED-25212-01 – Designation Cards
 J28850B-() – Terminating Marker Connector Frame (Arranged for a Maximum of Six Markers)
 J28850C-() – Terminating Marker Connector Frame (Arranged for a Maximum of Ten Markers)

WIRING AND/OR CABLING

ED-25211-01 – Grading of Multiple – B Position Finder Unit
 ED-25318-10 – B Position Finder Unit Local Cable
 ED-25346-14 } Method of Running Power
 -15 } Feeders

ED-25436-01—Sender Multiple
 ED-25588-01—General Cabling Plan—Senders
 ED-25591-10—Terminating Sender Frame and
 Unit Local Cable
 ED-25595-10—Switchboard Cabling Details
 ED-91601-01—Terminating Sender Timing Con-
 trol Unit Local Cable

4. EQUIPMENT

J28050A (AT&TCo Std)—Terminating Sender Frame

Equipment—J28050A-()
 Local Cable—ED-25591-10

List 1—Framework, assembly, wiring, and common equipment for one terminating sender frame, less sender units.

	WIRE	EQUIP	SEE NOTES
Framework, ED-25589-70, G1		1	F
Fuse Panel Assembly, ED-25025-01, Item 3		1	
Jack, Key, & Lamp Panels, ED-25021, Items 2, 10, & 12		1	
Full Sel Sdr Ckt, SD-25013-01, Fig. 1, B, & D; B Sdr Ckt, SD-25014-01, Fig. 1, 3, 4, A, C, F, & P; Central B Sdr, SD-25382-01, Fig. 1; Dial Pulsing Sdr Ckt, SD-25434-01, Fig. 1; or MF Pulsing Sdr Ckt, SD-25455-01, Fig. 1	5	0	A
Misc Frame Ckt, SD-25053-01: Fig. 2, 4, 5, 7, 8, 9, & 10	1	1	B,D
Fig. 3A, 3B, & 12	1	0	C,E

Notes

A. The frame local cable for the terminating sender frame shall contain all multiple wiring between senders, frame miscellaneous circuit wiring, and battery and ground leads. The cable shall contain uni-

versal wiring for five full selector or MF pulsing senders in positions 0 through 4 and B, central B, or dial pulsing senders in positions 0 through 2. The frame local cable shall be run between the unit terminal strips and the various frame terminal strips and fuse panel at the top of the sender frame.

- B. The C jack per Fig. 3A shall be furnished when the full selector and B senders are tested with the automatic sender test circuit.
- C. The E and TEL-1 jacks and the OK lamp per Fig. 3B shall be furnished only when no automatic test circuit is available or where central B senders are mounted on the sender frame.
- D. One or more 354C3 customer sets equipped with 5HB3 dials shall be furnished and mounted on the walls or columns as specified by the telephone company.
- E. The MK-D and MN-D jacks per Fig. 12 shall be furnished only when dial pulsing senders are mounted on the sender frame. The associated resistance B shown in Fig. 13 shall be mounted on the relay rack.
- F. For partially equipped sender frames, cable brackets per ED-25559-01, Group 2 shall be furnished for each sender unit position not equipped with a sender.

J28050B (AT&TCo Std)—B Sender Unit

Equipment—J28050B-()
 Local Cable—ED-25591-10

List 1—Framework, assembly, wiring, and equipment for one B sender unit, less variable apparatus.

	WIRE	EQUIP	SEE NOTES
Framework, ED-25592-70, G1		1	
B Sdr Ckt, SD-25014-01: Fig. 1 & P (Less A, B, and E App)	1	1	A-E
Fig. 3, 4, A, C, E, & F	1	0	F

Notes

- A. The unit local cable shall contain all optional wiring per Fig. 1 and the equipment shall be furnished in accordance with job requirements.
- B. The MB and HLD jacks and the TL lamp shall be located on the terminating trouble indicator frame. The TM interrupter shall be located on the office interrupter frame.
- C. The K resistance and MB relay, E apparatus, shall be equipped only when the sender is required to function with a terminating sender test circuit.
- D. The F0 through F9 relays, B apparatus, are used to indicate a particular incoming frame involved on a call. These relays shall be furnished as required and designated F0 through F9 corresponding to the numbering of the cordless incoming frames with which they are associated. The F0 through F9 relays shall be associated with frames F0 through F9 and F10 through F19 where there are more than ten incoming frames or with F0 through F9 incoming frames of office A and F0 through F9 incoming frames of office B for a multioffice terminating unit. For testing purposes, all B senders which are to be tested by the same test frame shall be equipped uniformly with respect to at least one F relay. The F relay to be equipped shall be that one which results in the smallest amount of additional equipment over that normally required in equipping the B senders with the necessary F0 through F9 relays.
- E. The F10 relay, A apparatus, shall be furnished when the frame numbers on the incoming frames associated with B senders are higher than nine or when the sender group serves incoming frames in two groups, I0 through I9 for offices A and I0 through I9 for office B.
- F. Figure A shall be furnished when the senders serve a single-office terminating unit or a multioffice terminating unit of two incoming trunk frame groups, I0 through I9 for office A and I0 through I9 for office B with physical office number groups only.

Figure A and F shall also be furnished where discriminating between two physical offices or a physical and a theoretical office is obtained from the terminating sender link frame. Provide Fig. C and F when this discrimination is obtained from the B position (5-digit operation). Provide the OA and OB relays, Fig. 4, and OC relay, Fig. 3, for discriminating between two physical offices or a physical and a theoretical office in accordance with the circuit note.

J28050C (AT&TCo Std) - Full Selector Sender Unit

Equipment - J28050C-()
Local Cable - ED-25591-10

List 1 - Framework, assembly, wiring, and equipment for one full selector sender unit, less variable apparatus.

	WIRE	EQUIP	SEE NOTES
Framework, ED-25592-70, G2		1	
Full Sel Sdr Ckt, SD-25013-01:			
Fig. 1, R Less E, G, and X App	1	1	A-E
Fig. J, K, and N	1	0	F,G

List 2 - Wiring and equipment per SD-25013-01, Fig. P required in addition to list 1 to provide for balanced revertive pulsing. (See Note G.)

Notes

- A. The unit local cable shall contain all optional wiring. The equipment shall be furnished in accordance with job requirements.
- B. The MB and HLD jacks and the TL lamp shall be located on the terminating trouble indicator frame. The TS interrupter shall be located on the office interrupter frame.
- C. The MB relay and E resistor, E apparatus, shall be equipped only when the sender is required to function with a terminating sender test frame.

- D. The F00 and F10 relays, G apparatus, shall be furnished only when the frame numbers on the incoming frames associated with full selector senders are higher than nine, or when the sender group serves incoming frames in two groups, I0 through I9 for office A, and I0 through I9 for office B.
- E. The OA and OB relays, X apparatus, in Fig. 1 shall be furnished to discriminate between two physical offices or a physical and a theoretical office of multioffice terminating unit with common incoming and line link frames in accordance with the circuit note.
- F. Apparatus per Fig. K shall be furnished in offices where the terminating senders are arranged to return reverse battery to the originating sender as an overload indication. Apparatus per Fig. J shall be furnished where the terminating senders are not so arranged.
- G. Apparatus per Fig. N shall not be equipped in all cases where list 2 is not provided and shall be omitted when list 2 is provided.
- H. The OBA relay, AU apparatus, in Fig. 1 shall be furnished for DID-type operation using OB and OG selections to select a DID number series.
- (1) Option AX must be provided when option AU is provided.
- (2) For implementing option AX see 5.05.
- I. The SC3, NS0, and NS1 relays and the NS0 diode, AV apparatus, in Fig. 1 shall be furnished for DID-type operation with panel trunk groups dedicated to an assigned DID number series, if OA and OB are used to activate the DID number series.
- J. The SC3, NS0, and NS1 relays and the NS0 diode, AW apparatus, in Fig. 1 shall be furnished for DID-type operation with panel trunk groups dedicated to an assigned DID number series, if F00 and F10 selections are used to activate the DID number series.

J28050E (AT&TCo Std) - B Position Finder Unit

Equipment - J28050E-()
Local Cable - ED-25318-10

List 1 - Framework, assembly, wiring, and equipment for one B position finder unit arranged for five B position finders and equipped with one.

	WIRE	EQUIP	SEE NOTES
Framework, ED-25313-50, G1		1	A
B Pos Finder Ckt, SD-25014-01, Fig. 2, Less TS Rel	5	1	B,C

List 2 - Equipment per SD-25014-01, Fig. 2, less TS relay, required to equip list 1 with one additional B position finder. (See Note C.)

Notes

- A. Two separate unit cables shall be furnished. One cable shall contain the bank multiple wiring for the selectors only and the other shall contain the wiring between the relays, resistors, capacitors, and the unit terminal strip. The unit local cables shall contain all optional wiring and the equipment shall be furnished in accordance with job requirements.
- B. The TS relay shall be equipped only when the sender is required to function with a terminating sender test circuit.
- C. Five 26-type banks shall be furnished initially to provide for terminating the bank multiple local cable leads of the position finder switches.

J28050F (A&M Only) - Dial Pulsing Number Checking Sender Unit

Equipment - J28050F-()
Local Cable - ED-25591-10

List 1 - Framework, assembly, wiring, and common equipment for one dial pulsing number checking sender unit.

	WIRE	EQUIP	SEE NOTES
Framework, ED-25592-70, G2 Dial Pulsing Sdr Ckt, SD-25326-01: Fig. 1, U or Z App and E Wiring		1	
Fig. E	1	1	A,B

Notes

- A. The MB and HLD jacks and the TL lamp shall be located on the terminating trouble indicator frame. The TS interrupter shall be located on the office interrupter frame.
- B. This sender, located on the terminating sender frame, is not arranged for number checking in a multioffice terminating unit.
- C. When it is available, the No. 324L switch shall be used in place of the No. 314L or 304T switch.

J28050G (AT&TCo Std)–Dial Pulsing Sender Unit

Equipment–J28050G-()
Local Cable–ED-25591-10

List 1–Framework, assembly, wiring, and equipment for one dial pulsing sender unit (less variable apparatus).

	WIRE	EQUIP	SEE NOTES
Framework, ED-25592-70, G2 Dial Pulsing Sdr Ckt, SD-25434-01, Fig. 1, Less App in Fig. E and F and A, B, C, P, R, S, U, and V App		1	
	1	1	A-F

Notes

- A. The unit local cable shall contain all optional wiring. Optional equipment shall be furnished in accordance with job requirements.

B. The MB and HLD jacks and the TL lamp shall be located on the terminating trouble indicator frame. The TS interrupter shall be located on the office interrupter frame.

C. The F00 and F10 relays, A apparatus, and associated networks, P apparatus, shall be furnished when the incoming frame numbers associated with dial pulsing senders are higher than nine, or when the sender group serves incoming frames in two groups, I0 through I9 for office A, and I0 through I9 for office B.

D. The OA and OB relays, B apparatus, and associated networks, R and S apparatus, shall be furnished where discrimination is required between two physical offices, or a physical and a theoretical office in accordance with the circuit note.

E. The OA, OC, and FD relays, C apparatus, and associated networks, S apparatus, shall be furnished when a fifth digit is to be registered in the sender for differentiation of two physical offices or the discrimination between a physical and a theoretical office in accordance with the circuit note.

F. The TN capacitor, U apparatus, shall be furnished for 4-digit senders, the TN1 capacitor, V apparatus, for 5-digit senders, and both shall be furnished for combined 4- and 5-digit operation.

G. The apparatus per Fig. E and F shall be furnished when the sender is to be arranged for sending both dial tone and start pulsing signals.

H. The DID and DA-DB terminal strips per SD-25434-01, ZM option shall be furnished when “number series” indications are required for DID to PBX stations.

J28050H (AT&TCo Std)–Central B Sender Unit

Equipment–J28050H-()
Local Cable–ED-25591-10

List 1—Framework, assembly, wiring, and equipment for one central B sender unit (less variable apparatus).

	WIRE	EQUIP	SEE NOTES
Framework, ED-25592-70 G2		1	
Central B Sdr Ckt, SD-25382-01, Fig. 1, Less Variable App	1	1	A-H

Notes

- A. The unit local cable shall contain all optional wiring. Optional equipment shall be ordered in accordance with job requirements.
- B. The MB and HLD jacks and the TL lamp shall be located on the terminating trouble indicator frame. The TS interrupter shall be located on the office interrupter frame.
- C. The F00 and F10 relays, and Z apparatus, shall be furnished when there are more than ten incoming trunk frames. Connect Y wiring when there are ten or less incoming trunk frames.
- D. For multioffice terminating units when all incoming trunk groups are individual, furnish the OA and OB relays, X apparatus.
- E. For multioffice terminating units when some of the incoming trunk groups are common and others are individual, furnish the OA, OB, and OC relays, X and W apparatus.
- F. For nonmultioffice terminating units, connect V wiring.
- G. For multioffice terminating units when all incoming trunk groups are common, connect T wiring.
- H. A supplementary local cable containing the additional wires required to convert a central B sender per SD-25382-01 to a full selector sender per SD-25013-01 shall be furnished at the time of conversion.

J28050K (AT&TCo Std)—Multifrequency Pulsing Sender Unit

Equipment—J28050K-()
Local Cable—ED-25591-10

List 1—Framework, assembly, wiring, and equipment for one multifrequency pulsing sender unit, less variable apparatus.

	WIRE	EQUIP	SEE NOTES
Framework, ED-25592-70, G1		1	
MF Pulsing Sdr Ckt, SD-25455-01, Fig. 1, Less Variable App	1	1	A-H

List 2—Wiring and equipment per SD-25455-01, Fig. 2 required in addition to list 1 when “number series” indications are required for DID to PBX stations.

Notes

- A. The unit local cable shall contain all optional wiring per Fig. 1. Optional equipment shall be furnished in accordance with job requirements.
- B. The MB and HLD jacks and the TL lamp shall be located on the terminating trouble indicator frame. The TM interrupter shall be located on the office interrupter frame.
- C. The F10 relay, Z apparatus, shall be furnished when the frame numbers on the incoming frames associated with multifrequency pulsing senders are higher than nine or when the sender group serves incoming frames in two groups, I0 through I9 for office A, and I0 through I9 for office B.
- D. The OA and OB relays, Y apparatus, shall be furnished where the sender receives a signal from the terminating sender link frame to discriminate between two physical offices or a physical and a theoretical office in accordance with the circuit note.

- E. The OI1 through OI5 relays, W apparatus, shall be furnished where a fifth digit is to be registered in the sender for differentiation of two physical offices or the discrimination between a physical and a theoretical office. The OC relay, X apparatus, shall be furnished in addition to W apparatus to arrange the sender to register either 4 or 5 digits.
- F. The F0 through F9 relays, K, M, N, P, Q, R, S, T, U, and V apparatus, are used to indicate a particular incoming frame involved on a call. These relays shall be furnished as required and designated F0 through F9 corresponding to the numbering of the incoming frames with which they are associated. The F0 through F9 relays shall be associated with frames F0 through F9 and F10 through F19 where there are more than 10 incoming frames, or with F0 through F9 incoming frames of office A, and F0 through F9 incoming frames of office B for a multioffice terminating unit. For testing purposes, all multifrequency pulsing and B senders, which are to be tested by the same test frame, shall be equipped uniformly with respect to at least one F relay. The F relay to be equipped shall be that one which results in the smallest amount of additional equipment over that normally required in equipping the senders with the necessary F0 through F9 relays.
- G. The OA, OB, and OC relays, ZX apparatus, shall be furnished when number series indication is sometimes to be determined from a sender link signal and at other times from an extra keyed digit.
- H. Sender units furnished for new offices shall be wired and equipped per Fig. B. Sender units furnished for new or existing frames in existing offices shall be wired and equipped per Fig. A unless the telephone company orders Fig. B, and all existing senders changed to agree with Fig. B. This arrangement is necessary because the terminating sender test circuit is not set up to test both Fig. A and B in the same office. In other words, all senders in the same office served by the same sender test frame must be either per Fig. A or per Fig. B.

- J. When modifying units manufactured prior to Issue 18D, a terminal strip per SD-25455-01, Fig. 54 (A&M Only) is required.

J28050L (AT&TCo Std)–Terminating Sender Timing Control Unit

Equipment—J28050L-()
Local Cable—ED-91601-01

- List 1**—Framework, assembly, wiring, and equipment for one timing control unit, less variable apparatus. (See Note A.)

	WIRE	EQUIP
Unit Mtg Bars, P-424403		2
Timing Control Ckt, SD-25471-01:		
Fig. 1, Less X, Y, S, and U App	1	1
Fig. 1, H Option Only	1	1
Fig. 2	5	0

- List 2**—Equipment per SD-25471-01, Fig. 1, Y apparatus only, required in addition to list 1 to arrange for counting 12 to 19-second interval from the time all full selector terminating senders are busy to the time when calls are routed to overflow.

- List 3**—Equipment per SD-25471-01, Fig. 1, X apparatus only, required in addition to list 1 to provide for terminating sender load control to a maximum of 12 originating markers.

- List 4**—Equipment per SD-25471-01, Fig. 2, required in addition to list 1 to provide interdigital timing control for 12 full selector terminating senders.

- List 5**—Equipment per SD-25471-01, Fig. 1, U apparatus only, required in addition to list 1 and 3 to provide for terminating sender load control to a maximum of 24 originating markers.

- List 6**—Equipment per SD-25471-01, Fig. 1, S apparatus only, required in addition to list 1 to provide for terminating sender load control from two groups of senders.

List 7—Wiring and equipment per SD-25471-01, Fig. 2, required in addition to list 1 to provide for 61 to 72 full selector terminating senders (IT6 REL).

Note

A. The unit local cable shall contain all optional wiring. Optional equipment shall be furnished in accordance with job requirements.

J28050M (AT&TCo Std)—Terminating Sender Timing Control Unit—Arranged for Full Selector Terminating Sender Load Control

Equipment—J28050M-()
Local Cable—ED-91601-01

List 1—Framework, assembly, wiring, and equipment for one timing control unit less variable apparatus. (See Note A.)

WIRE EQUIP

Unit Mtg Bars, P-424404		
Timing Control Ckt, SD-25471-01:		
Fig. 1, Less X, Y, S, and U App	1	1
Fig. 1, H Option Only	1	1
Fig. 2	5	0
Fig. 3, OFA Rel	1	1
Fig. 3, OF1 to OF5 Rels	5	0

List 2—Equipment per SD-25471-01, Fig. 1, Y apparatus only, required in addition to list 1 to arrange for counting 12 to 19 second interval from the time all full selector terminating senders are busy to the time when calls are routed to overflow.

List 3—Equipment per SD-25471-01, Fig. 1, X apparatus only, required in addition to list 1 to provide for terminating sender load control to a maximum of 12 originating markers.

List 4—Equipment per SD-25471-01, Fig. 2 required in addition to list 1 to provide interdigital timing control and/or sender load control for 12 full selector terminating senders.

List 5—Equipment per SD-25471-01, Fig. 1, U apparatus only, required in addition to list 1 and 3 to provide for terminating sender load control to a maximum of 24 originating markers.

List 6—Equipment per SD-25471-01, Fig. 1, S apparatus only, required in addition to list 1 to provide for terminating sender load control from two groups of senders.

List 7—Equipment per SD-25471-01, Fig. 3, OF- relay, required in addition to list 1 to provide distant office overload control for 12 full selector terminating senders.

List 8—Wiring and equipment per SD-25471-01, Fig. 2 and 3 required in addition to list 1 to provide for 61 to 72 full selector terminating senders (IT6 and OF6 relays).

Notes

- A. The unit local cable shall contain all optional wiring. Optional equipment shall be furnished in accordance with job requirements.
- B. When H option is added to the terminating sender timing control circuit that uses Fig. 3, it will be necessary to mount the TMB relay external to the unit and wire direct from the unit terminal strip to the relay.

5. GENERAL NOTES

Equipment

5.01 Full selector or MF pulsing senders may be equipped in positions 0 through 4 on the sender frame. Central B senders, B senders, or dial pulsing senders may be equipped in sender positions 0, 1, and 2 to facilitate their removal and replacement with full selector senders as they decrease. The universal wiring of the frame local cable and the design of the sender units makes this conversion possible. The B, central B, dial pulsing, and multifrequency pulsing senders shall be spread over the terminating sender frames as equally as possible.

5.02 The B position finder units shall be shipped separately and mounted by the installation force at the top of the terminating marker connector frame. Each frame will accommodate two units, each having a capacity of five B senders. On jobs requiring less than ten B senders, the senders shall be divided equally over two B position finder units. Where only two B position finder units are required, they shall be located on adjacent terminating marker connector frames. The units shall be numbered from 0 up on each frame. When the maximum number of B position finder units to be equipped is equal to or less than the number of marker connector frames, the B position finder units shall be equipped in position 0 only on each frame equipped. When the maximum number of B position finder units to be equipped is greater than the number of marker connector frames, the B position finder units shall be equipped beginning with units 0 and 1 on connector frame 0 and continuing in that order.

5.03 The terminating sender timing control unit provides load control features for terminating traffic; it also provides interdigital timing. The unit functions only with full selector terminating senders and is furnished once per group of terminating markers. When arranged for interdigital timing or load control, the capacity of the unit is 72 full selector senders. J28050L is furnished for interdigital timing and where the load control feature is limited to traffic from originating marker groups in the same building. In this case the load control causes reroute to overflow in the originating marker of all traffic to the overloaded terminating unit under the control of keys at the originating trouble indicator. J28050M is furnished where, in addition to the above features, it is desired that the terminating senders return overflow to all originating senders including those in distant offices. The timing control unit is mounted on the miscellaneous frame.

5.04 A No. 63E designation strip with a card per ED-25212-01, Fig. 5A, shall be ordered for each B position finder unit and mounted on the terminating marker connector frame. The card shall be filled in with position numbers and their location on the selector banks in accordance with ED-25211-01.

5.05 When option AX is used in unit J28050C, crossbar switch code 324AR must be provided. Crossbar switch, AR option, code 324C on J28050C units in existence can be converted to code 324AR switch as follows:

- (a) Install two J485255 vertical units with four P246093 mounting screws

Change the select bars to provide eight select fingers per bar, to do this two P454288 select bars and three P454277 select bars must be supplied per switch. Appropriate paragraphs of Section 030-720-801 should be followed in making the conversion. Options D and U crossbar switches must be replaced, they cannot be converted.

Wiring

5.06 One set of frame indicating leads, F00, F10, F0 through F9, etc, is run in the frame cable from each sender unit terminal strip to the SDR terminal strip at the top of the frame. A maximum of 12 sets of these leads, one set per sender subgroup, are run in switchboard cable from the terminating sender link frame to the LK SUB GRP terminal strip at the top of the sender frame. Cabling shall be provided initially for the ultimate number of subgroups. The senders are assigned to the proper link subgroup by cross-connecting between the SDR and LK SUB GRP terminals. For all senders on one frame appearing in the same link subgroup, the leads shall be strapped at the SDR terminal strip and one set of cross-connections provided between the SDR and LK SUB GRP terminals.

5.07 In order to provide means whereby a complete cycle test may be made on all full selector senders using any frame indication lead, F0 through F9, the cross-connections between the SDR and LK SUB GRP terminals shall be completed for all frame indicating leads, F00, F10, F0 through F9, etc, for each full selector sender.

5.08 The wiring for the B position finder unit selectors shall be in straight horizontal multiple through all selectors on the unit. This multiple cable shall be terminated on two terminal strips on the unit. The left-hand terminal

strip facing the front of the frame shall be strapped on the switchboard cable side in accordance with ED-25211-01, Fig. 2. This strapping shall be done only on B position finder unit zero on terminating marker connector frame zero. The switchboard cable side of the other multiple terminal strip on unit 0 shall be utilized to terminate the incoming switchboard cable leads from the B position equipment and also the multiple cable between units of B position finder equipment. A modified latin square slip in accordance with ED-25211-01, Fig. 1, shall be introduced into the multiple cable between successive B position finder units.

5.09 When the crossbar B senders and panel B links are required to function with the same group of attendant positions and when different batteries are supplied for the panel and crossbar units, the A and C battery and A ground shall be obtained from the panel unit battery supply as covered in the cross-connecting information on the circuit.

5.10 No. 22 gauge, type K wire shall be used for cross-connections covered in 5.06 at the top of the terminating sender frame.

5.11 No. 24 gauge, type C wire shall be used for all frame and unit local cable wiring except battery and ground distributing leads which shall be a No. 20 gauge, type AM.

Cabling

5.12 Multiple leads between B position finder units on the terminating marker connector frame shall be run in switchboard cable as covered on ED-25100-01.

5.13 The code numbers of the various switchboard cables, generally used in cabling the sender frame, are shown on the switchboard cabling drawing. The circuits should be checked,

however, to insure that the latest circuit requirements are met by the codes specified. The cross-connecting information on the circuits shows what groups of leads are to be combined in the same cable.

5.14 The frame indication leads shall be cabled from the first and last terminating sender frame, with a multiple between sender frames, to the first and last terminating sender link frames which the senders serve. (See 5.06).

5.15 When adding terminating sender units with a 217-type terminal strip on an existing frame cabled per ED-25173-01, the sewed form to the sender unit terminal strip shall be opened and the leads fan formed to the 217-type unit terminal strip. Cabling required for this unit shall be added in accordance with the switchboard cabling detail drawing ED-25158-01. When sender units equipped with a 223-type terminal strip are mounted on a frame cabled per ED-25588-01, the leads to the sender unit terminal strip shall be formed and sewed in accordance with cabling plan per ED-25173-01.

List of A&M Only and Mfr Disc Equipment

The following 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.

EQUIPMENT	RATING	DETAILS LAST SHOWN IN ISSUE	REPLACING EQUIPMENT
J28050D	Mfr Disc	11	J28050E
J28050F	A&M Only	8	J28050G
L2 to L4	Mfr Disc	8	—
J28050J	Mfr Disc	8	J28050L

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