NUMBER GROUP CONNECTOR FRAME, BLOCK RELAY FRAME AND RELAY RACK MOUNTED DIRECT ACCESS PRETRANSLATOR CONNECTOR EQUIPMENT 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 number group connector frame, block relay frame, direct access pretranslator (DAP) connector unit, and preference control unit for the DAP connector in No. 1 crossbar offices.

1.02 This specification is reissued:

(a) To incorporate previous addendum changes.

(b) To add new units, J27852E, and J27852F, used by terminating markers to obtain access to DAPs in accordance with SD-27821-01, Issue 1 and SD-27822-01, Issue 1.

(c) To make change in specification title.

Capacity

1.03 The number group connector frame accommodates four number group circuits. It is available in two sizes arranged for six and ten terminating markers, respectively.

1.04 The block relay frame has a capacity of forty 20-block relays representing 800 subscriber numbers. It is arranged for four subscriber groups maximum.

1.05 Each DAP connector unit and preference control unit connects a maximum of ten terminating markers to one DAP unit.

Description

1.06 These two frames are covered in the same specification because they are closely associated functionally and are covered by the same circuit.

1.07 The number group connector frame is furnished in two sizes, one with a connector capacity of ten markers, the other with six. Both are 11-feet 6-inch bulb-angle double-bay frames, the 10-marker frame being 5 feet, 4-1/4 inches wide and the 6-marker size, 3 feet 8-1/4 inches wide. The frame equipment includes four multicontact relays per marker per number group connector together with marker lockout and control relays and related apparatus.

1.08 The block relay frame is a bulb-angle framework structure 11 feet 6 inches high and 3 feet 6-5/16 inches wide. In the top half are four multicontact relay mountings accommodating ten 20-block relays each. Each 20-block relay cuts through leads for testing 20 subscriber numbers, thereby providing a frame capacity of 800 numbers. The lower half of the bay mounts cross-connecting terminal strips whereby two leads associated with each subscriber number are cross-connected to supply the marker with certain information needed in completing terminating calls. The frame

design provides for a maximum of four number groups per frame and for 100, 200, etc, to 800 numbers per group.

1.09 A ***number group*** is defined as a block of subscriber numbers, usually consecutive, which is treated as a unit by the marker in setting up a terminating call. In the usual 2-office terminating marker group, the number groups are limited to 800 numbers and a single block relay frame, except the last number group which includes 1200 numbers. The size, however, may vary from 100 numbers minimum to 2400 maximum in increments of 100.

1.10 The operation of number group connector and block relay frames is as follows:

(a) Following the transfer of the digits of the called number from the originating sender to the terminating sender, a terminating marker is seized and the called number registered therein. A translation of this number directs the marker via a number group connector to the proper number group, where it proceeds to operate a particular 20-block relay and make effective one set of three contacts identified with the called number. One of these contacts cables to the line distributing frame, where it connects to the sleeve of the assigned line for busy test purposes.

(b) The other two contacts connect via leads in the frame local cable to the cross-connecting field in the lower half of the block relay frame. One lead is cross-connected to return to the marker the location of the desired line, by line choice, and to indicate whether the line is individual, party, or part of a terminal-hunting group. The other lead identifies the horizontal group within the line choice. With this information, the marker proceeds to complete a connection from the incoming trunk to the line, except when the line tests busy, when it disregards line choice information and sets the incoming for busy indication.

1.11 The preference control circuit and associated make-busy circuit is used by terminating marker applique circuits in obtaining access to direct access pretranslator connectors. This control circuit has the function of permitting only one terminating marker applique circuit to have access to a particular direct access pretranslator connector at a time. The make-busy relay is used to indicate a connector plugged busy by turning the terminating marker applique start leads back to the terminating marker applique circuit.

1.12 The preference circuit consists essentially of two chains of relays, one relay in each chain for each terminating marker applique circuit, and a transfer circuit to make operative one chain or the other. The transfer is brought into play either automatically in case of certain troubles, or manually when this is desired for maintenance reasons. The preference relays operate the multicontact relays in the associated direct access pretranslator connector circuit.

1.13 The direct access pretranslator connector is a circuit which connects each terminating marker applique circuit on demand to one of two No. 101 ESS direct access pretranslators, designated A and B. A transfer, which is initiated by the No. 101 ESS, will occur every 6 hours or during failure periods; this transfer determines which No. 101 ESS pretranslator will be available for use during this period of time. The connector consists of a set of six wire spring multicontact relays for each marker circuit; three of these are designated MCA-A to MCC-A for access to pretranslator A and three are designated MCA-B to MCC-B for access to pretranslator B.

1.14 Only three of the six relays associated with one terminating marker applique circuit are operated at one time, under control of the preference control circuit, to connect the terminating marker applique circuit to the associated No. 101 ESS A or B pretranslator. The direct access pretranslator circuits are each associated in the No. 101 ESS control unit with one-of-two program controls, only one of which is "on-line" at a time. Each program control has a 3200-directory number capacity, and the directory number information contained in the program controls is identical.

1.15 In response to the called number, the No. 101 ESS delivers the number group

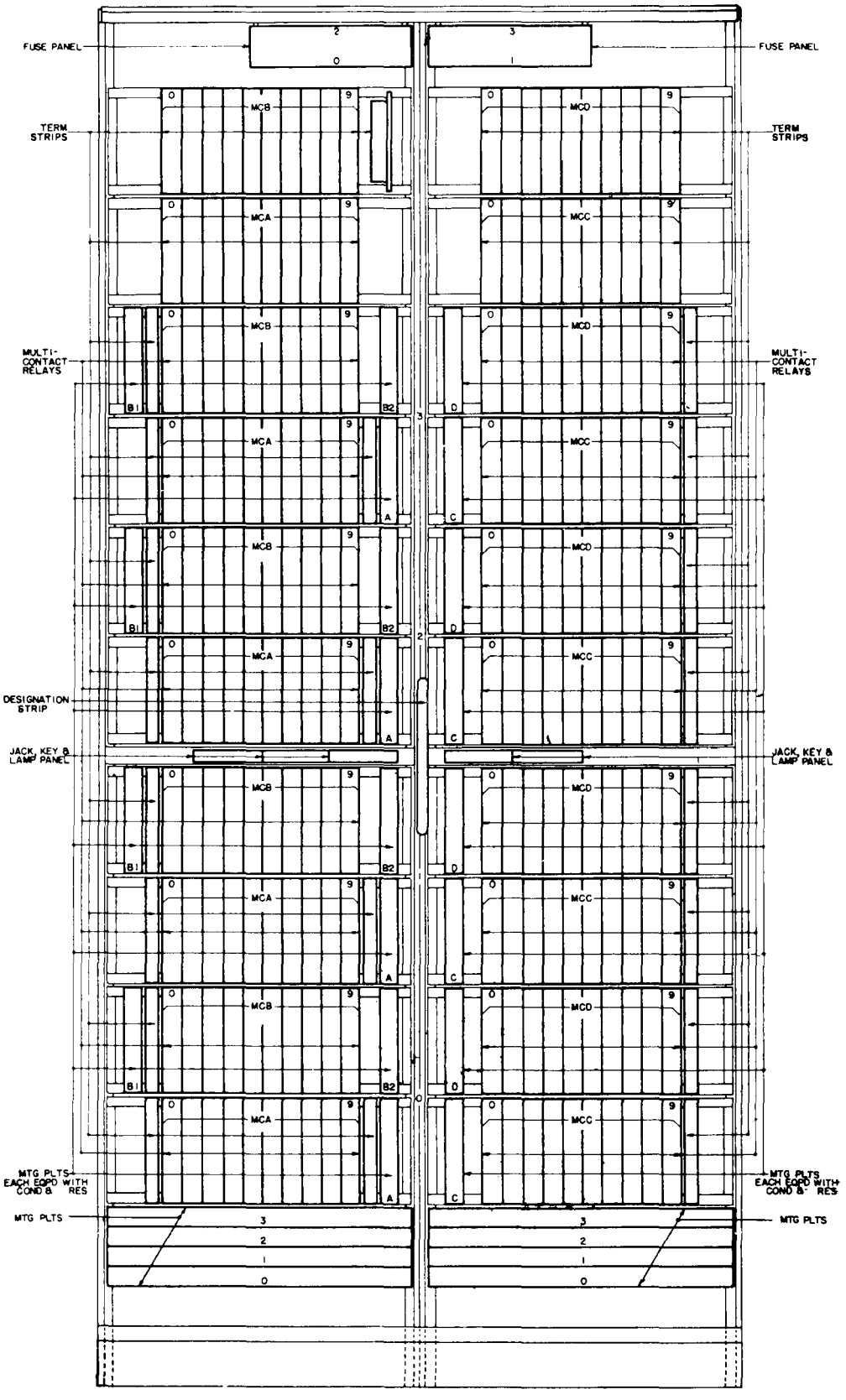

Fig. 1 — Number Group Connector Frame

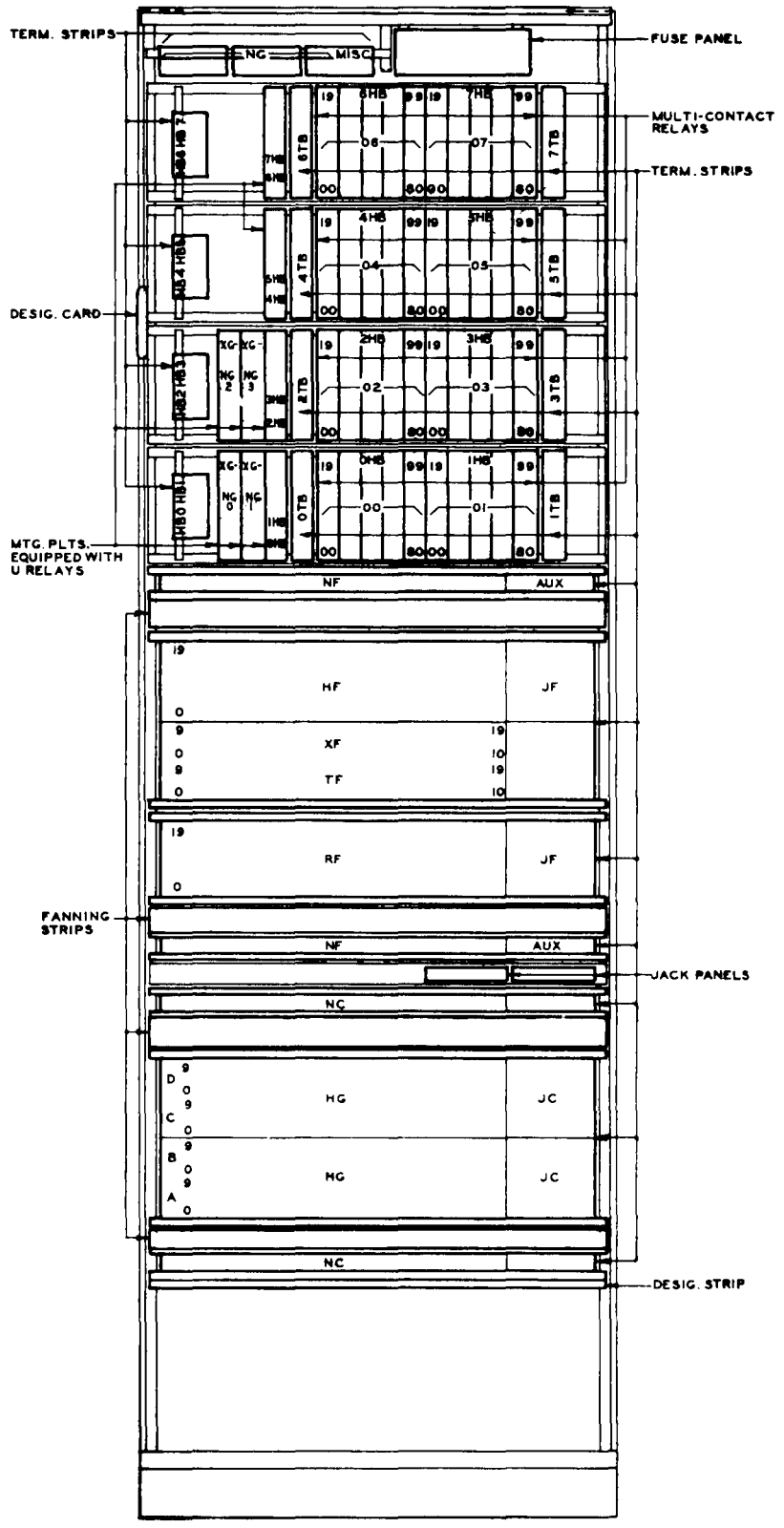

Fig. 2 — Block Relay Frame

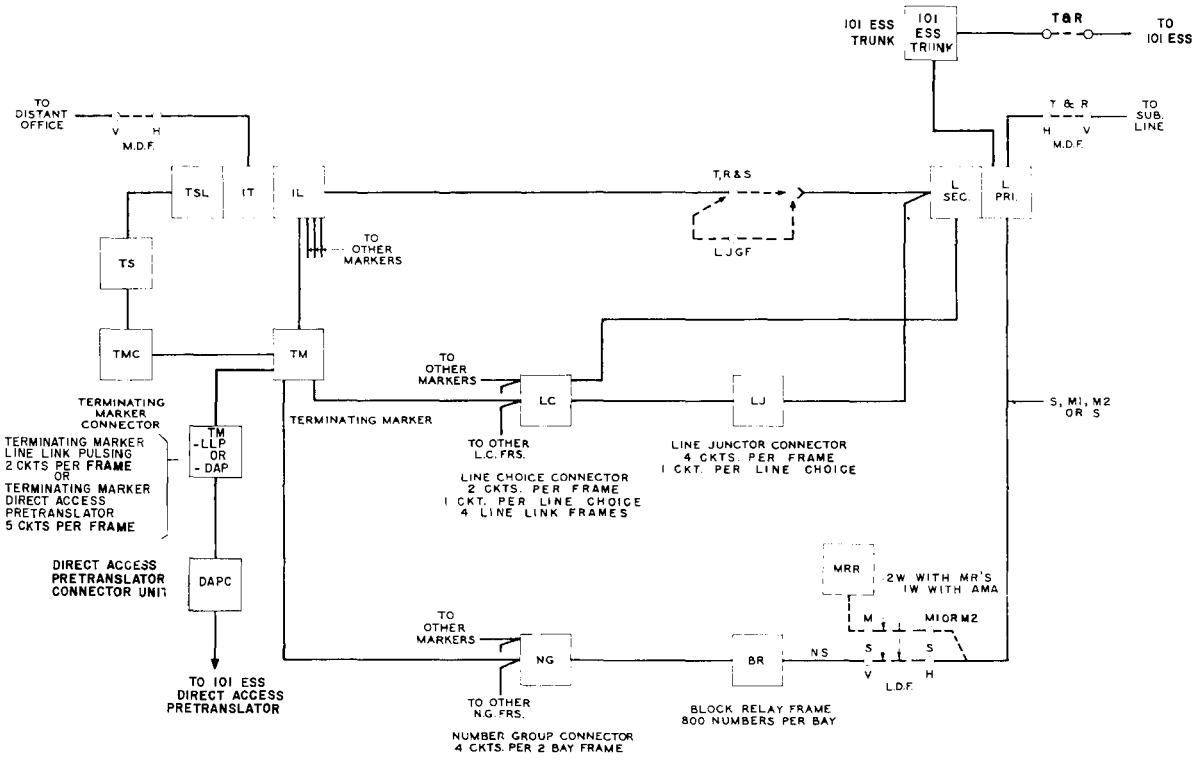

Fig. 3 - Schematic of Equipment

location for the trunk that it has selected to handle this particular call to the No. 1 terminating marker applique circuit.

1.16 Access to the connector is also provided for testing purposes and gives the direct-in-dialing test circuit the ability to select a specific direct access pretranslator connector path.

2. SUPPLEMENTARY INFORMATION

816-000-000 - No. 1 Crossbar System Index
J20150 - Switchboard Power Cabling
J25551 - End Guards, Aisle Pilot Lamp and DPTS Supports, Fuse Record Book and Holder, and Spare Fuse Mountings
Floor Plan Data - Section 9.1, Sheet 19 - Number Group Connector Frame
Section 9.1, Sheet 23 - Block Relay Frame

3. DRAWINGS

Key Sheet

SD-25000-01 - Crossbar System No. 1

Framework

ED-25020-01 - Miscellaneous Mounting Details and Cable Brackets
ED-25021-53 - Jack, Key, and Lamp Panels
ED-25022-01 - Multicontact Relay Mounting Unit Assembly
ED-25023-01 - Frame Details
ED-25025-59 - Fuse Panel Assembly
ED-25278-30 - Key, Jack, and Lamp Panel - Bay Width
ED-25290-71 - Number Group Connector Frame Assembly
ED-25364-70 - Block Relay Frame Assembly

Equipment

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

ED-25212-10 - Designation Cards
ED-25368-10 - X-Conn Term Strip on Block Relay Frame

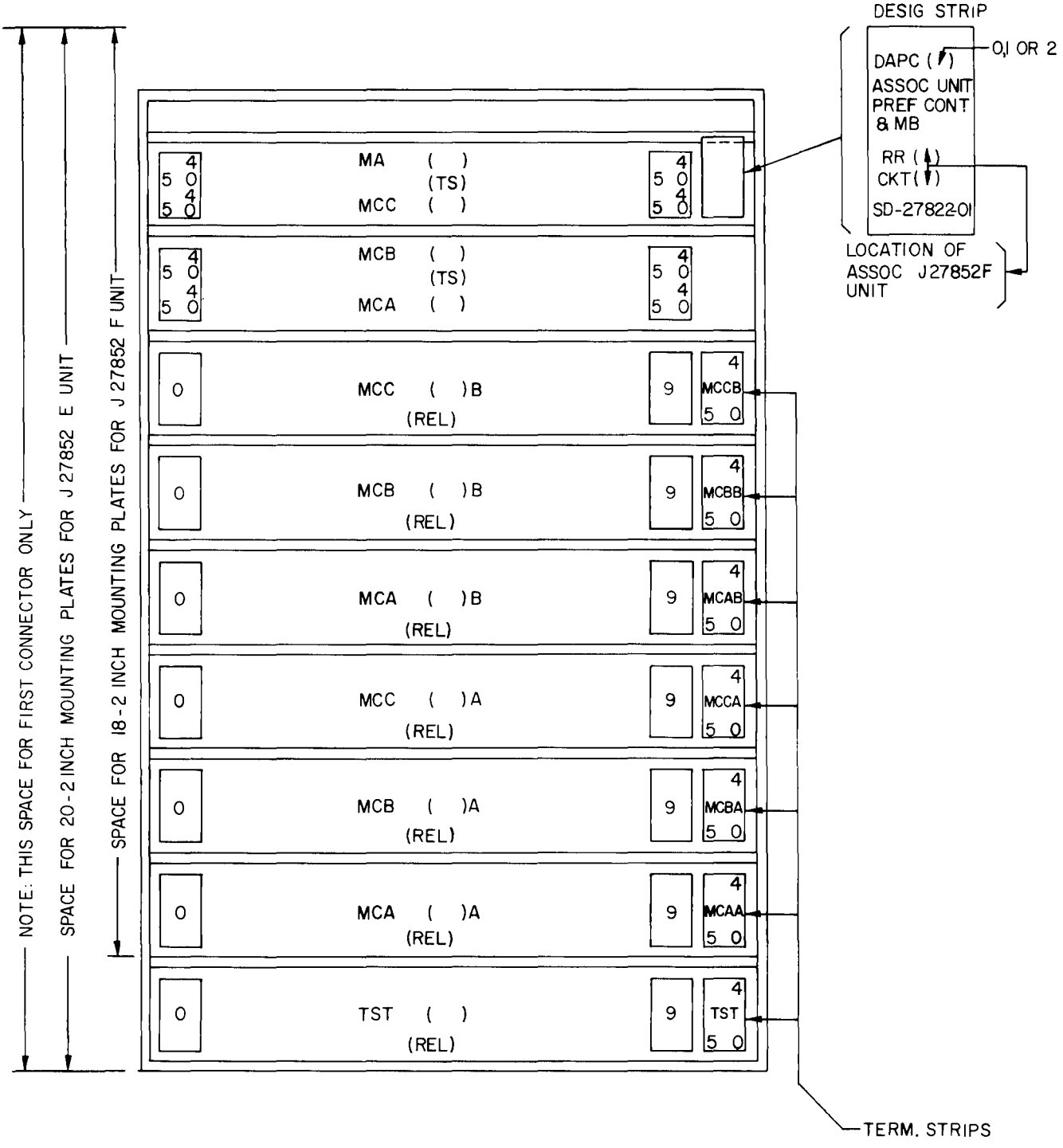

Fig. 4 — DAP Connector Unit

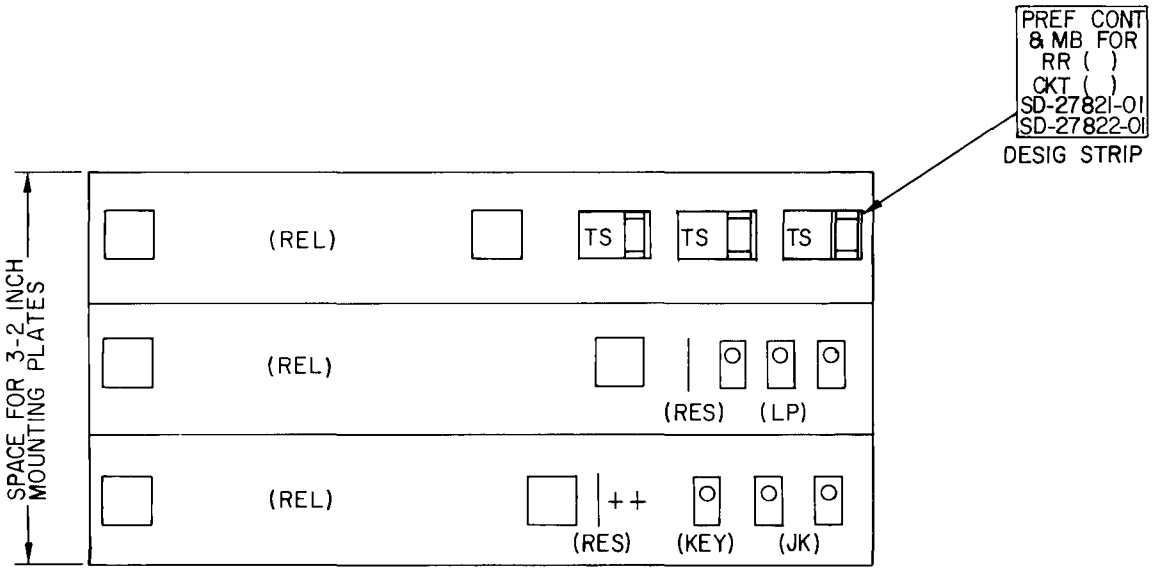

Fig. 5 — Preference Control Unit

J27852A-( ) - Number Group Connector Frame - Capacity Ten Markers
J27852B-( ) - Number Group Connector Frame - Capacity Six Markers
J27852D-( ) - Block Relay Frame
J27852E-( ) - Direct Access Pretranslator Connector Unit
J27852F-( ) - Preference Control Unit for Direct Access Pretranslator Connector.

Wiring and Cabling

ED-25229-01 - Method of Running Battery Feeders
ED-25292-10 - Local Cable - Number Group Connector Frame
ED-25300-10 - General Switchboard Cabling Plan
ED-25315-10 - Switchboard Cabling Details - Number Group Connector Frame
ED-25316-10 - Switchboard Cabling Details - Block Relay Frame
ED-25365-11 - Combined Switchboard and Local Cable - Block Relay Frame

4. EQUIPMENT

J27852A (AT&TCo Std) – Number Group Connector Frame - Capacity Ten Markers

Equipment – J27852A-( )
Local Cable – ED-25292-10

List 1 – Framework, assembly, local cable, and common equipment for one number group connector frame wired for four number group connectors and ten markers

	WIRE	EQUIP
Framework, ED-25290-71, G1, G3		1
Fuse Panel, ED-25025-59, G19		2
Jk, Key, & Lp Panel, ED-25021-53:		
G2		1
G8		1
Number Grp Conn Ckt, SD-25276-01:		
Mkr Conn, Fig. 2, Rel Winding & Cont		
Prot Wiring Only	40	0
Mkr Pref Rels,		
Fig. 2A	4	0
Fig. 2B	32	0
Fig. 2C	4	0
Mkr Pref Rel Transfer, Fig. 12	12	0
Trouble MB Rel, Fig. 13	8	0
Mkr Lockout & Cont, Fig. 15	4	0
Misc Ckt, SD-25277-01:		
Fr Line, Fig. 2	1	1
Fr Test Bat., Fig. 3	1	1
Spare Jk, Fig. 5	1	1
RC Jk, Fig. 6	1	1
Fuse Alm, Fig. 7	2	2

List 2 – Framework, assembly, and equipment required in addition to list 1 for one number group connector equipped for markers 0, 1, and 2

	EQUIP
Multicontact Rel Mtg Assem, ED-25022-01, Item 16	4
Number Grp Conn Ckt, SD-25276-01:	
Mkr Conn, Fig. 2	3
Mkr Pref Rels:	
Fig. 2A	1
Fig. 2B	2
Trouble MB Rel, Fig. 13	1
Mkr Lockout & Cont, Fig. 15 - less CH and TMB Lps, TMB Jk, TR and AR Keys	1

List 3 – Apparatus required in addition to lists 1 and 2 to equip one number group connector for one additional marker

	EQUIP
Number Grp Conn Ckt, SD-25276-01:	
Mkr Conn, Fig. 2	1
Mkr Pref Rels, Fig. 2B or 2C	1

List 4 – Vertical multiple local cable and terminal strips required in addition to lists 1, 2, and 3 for each marker equipped

List 6 – Apparatus per SD-25276-01, Fig. 15-

CH and TMB lamps, TMB jack, TR and AR keys - required in addition to list 2 for number group connector 0

List 7 – Apparatus per SD-25276-01, Fig. 15-CH and TMB lamps, TMB jack, TR and AR keys and jack, key and lamp panel ED-25021-01, Item 2 - required in addition to list 2 for number group connector 1, 2, or 3

List 8 – Apparatus per SD-25276-01, Fig. 12 required in addition to list 2 when marker 3, 6, or 9 is equipped

List 9 – Apparatus per SD-25276-01, Fig. 13 required in addition to lists 2 and 8 when marker 6 is equipped.

J27852B (AT&TCo Std) – Number Group Connector Frame – Capacity Six Markers

Equipment – J27852B-( )

Local Cable – ED-25292-10

List 1 – Framework, assembly, local cable, and common equipment for one number group connector frame wired for four number group connectors and six markers.

	WIRE	EQUIP
Framework, ED-25290-01, G2		1
Fuse Panel, ED-25025-59, G18		2
Jk, Key, & Lp Panel, ED-25278-30, G1 & G3		2
Number Grp Conn Ckt, SD-25276-01:		
Mkr Conn, Fig. 2 - Rel Winding & Cont Prot Wiring Only	24	0
Mkr Pref Rels,		
Fig. 2A	4	0
Fig. 2B	16	0
Fig. 2C	4	0
Mkr Pref Rel Transfer, Fig. 12	4	0
Trouble MB Rel, Fig. 13	4	0
Mkr Lockout & Cont, Fig. 15	4	0
Misc Ckt, SD-25277-01:		
Fr Line, Fig. 2	1	1
Fr Test Bat., Fig. 3	1	1
Spare Jk, Fig. 5	1	1
RC Jk, Fig. 6	1	1
Fuse Alm, Fig. 7	2	2

List 2 – Framework, assembly, and equipment required in addition to list 1 for one number group connector equipped for markers 0, 1, and 2

	EQUIP
Multicontact Rel Mtg Assem, ED-25022-01, Item 17	4
Number Grp Conn Ckt, SD-25276-01:	
Mkr Conn, Fig. 2	3
Mkr Pref Rels:	
Fig. 2A	1
Fig. 2B	2
Trouble MB Rel, Fig. 13	1
Mkr Lockout & Cont, Fig. 15	1

List 3 – Apparatus required in addition to list 1 and 2 to equip one number group connector for one additional marker

	EQUIP
Number Grp Conn Ckt, SD-25276-01:	
Mkr Conn, Fig. 2	1
Mkr Pref Rels, Fig. 2B or 2C	1

List 4 – Vertical multiple local cable and terminal strips required in addition to lists 1, 2, and 3 for each marker equipped

List 6 – Apparatus per SD-25276-01, Fig. 12 required in addition to list 2 when marker 3 is equipped

J27852D (AT&TCo Std) – Block Relay Frame

Equipment – J27852D-( )

Local Cable – ED-25365-11, 12

List 1 – Framework, assembly, wiring, and common equipment for frame wired for 800 subscriber numbers

	WIRE	EQUIP
Framework, ED-25364-01, G1		1
Fuse Panel, ED-25025-59, G1		1
Jk, Key, & Lp Panel ED-25021-53:		
G2		1
G8		1
Number Grp Conn Ckt,		

	WIRE	EQUIP
SD-25276-01:		
Aux Line, Fig. 4	20	
100-block Rels, Fig. 14	8	0
20-block Rels, Fig. 6	40	0
TF Relays, Fig. 16	4	0
Misc Ckt, SD-25286-01:		
Fr Line, Fig. 1	1	1
Fr Test Bat., Fig. 2	1	1
Spare Jk, Fig. 4	1	1
RC Jk, Fig. 5	1	1
Fuse Alm, Fig. 7	1	1

List 2—Framework, assembly, and equipment required in addition to list 1 for 200 subscriber numbers

	EQUIP
Multicontact Rel Mtg Assem, P-430150	1
100-block Rel, SD-25276-01, Fig. 14	2
20-block Rel, SD-25276-01, Fig. 6	10

List 3—Wiring and equipment required in addition to list 1 for number checking special groups to serve line choices 0 and 1 in one number group

	WIRE	EQUIP
Aux NC Special Grps, SD-25276-01, Fig. 9	1	1
NC Special Grps, SD-25276-01, Fig. 3	3	0

List 4—Equipment per SD-25276-01, Fig. 3 required in addition to lists 1 and 3 for number checking special groups to serve line choices 2-7, 8-13, or 14-19, in one number group

List 5—Equipment per SD-25276-01, Fig. 16 required in addition to list 1 for marking an intermediate PBX trunk as last.

List 6—Equipment and wiring in addition to lists 1 and 2 when LLP trunks are to be served per SD-25276-01, Fig. 17. (See Note 5.12)

List 7—Equipment and wiring in addition to list 1 and 2 when direct inward dialing (DID) is required to No. 101 ESS, in accordance with SD-25276-01, Fig. 19. (See Note 5.13.)

Notes

A. List 1 for the 20-block relays per SD-25276-01, Fig. 6 includes relay winding and contact wiring only. List 2 includes horizontal strapping to terminal strips at both ends.

B. The wiring of list 3 is a small local cable which when ordered is superimposed on the frame local cable. The wires are variably connected at the lower end, and are left long enough to reach any terminal in the HF, RF, and XF field from any of the four positions on the multicontact relay mounting. The relays are located on the frame where the cables from the number group connector are terminated.

J28852E (AT&TCo Std)—Direct Access Pretranslator Connector Unit

Equipment—J28852E

List 1—Assembly, common equipment, and strap wire multiple for one DAP connector unit arranged but not equipped for ten terminating markers. (See Notes B and C)

List 2—Equipment, local cable, and wiring per SD-27822-01, Fig. 1, required in addition to list 1 for each terminating marker equipped. (A maximum of ten list 2. Omit six 99A apparatus blanks per list.)

List 3—Assembly, common equipment, and strap wire multiple in addition to list 1, for the first connector in the marker group, arranged but not equipped for test connector relays and ten terminating markers. (See Notes B and C.)

List 4—Equipment, local cable, and wiring per SD-27822-01, Fig. 3, required in addition to list 3 for one test connector relay per each terminating marker equipped. (A

maximum of ten list 4. Omit one 99A apparatus blank per each list.)

Notes

A. Reserved.

B. This is a relay rack mounted unit and should be located adjacent to the associated J27852F unit.

C. A maximum of three DAP connector units may be furnished per marker group. The first connector is 40 inches in length, the second and third connectors are 36 inches in length.

J27852F (AT&TCo Std)—Preference Control and Make-Busy Unit for Direct Access Pretranslator Connector

Equipment—J27852F

List 1—Assembly, common equipment, and wiring per SD-27822-01, Fig. 2 and SD-27821-01, Fig. 1, 4, 5, and two Fig. 3 for one preference control and make-busy unit arranged but not equipped for ten terminating markers.

List 2—Equipment per SD-27821-01, Fig. 2 (MP and E relays) required in addition to list 1 for each terminating marker equipped.

Notes

A. Reserved

B. This unit is relay rack mounted and should be located adjacent to the associated J27852E unit.

C. Furnish one J27852F unit per each of DAP connectors 0-2.

5. GENERAL NOTES

Equipment

5.01 Since every lead from the armature contacts of the marker connector relays on the NGC frame are cross-connected or variably connected, principally on the block relay frame, a description of these leads and their connections is given in the following paragraphs.

MCA and MCB Relays

5.02 ***The HB0 to HB24 leads*** are used to operate the 100-block relays up to a capacity of 2400 regular numbers per number group. HB24 is used normally for jump hunting. They extend from the MCA multicontact relay terminal strip on the number group frame to the NG terminal strips at the top of the BR frame. Provision is made for terminating 25 leads each from a maximum of four number groups per BR bay. Out of these possible 100 punchings, only eight can be used on any one frame, but a full complement of punchings is furnished to avoid variable numbering and to allow for possible changes. Above the HB punchings of the first and second number groups of the frame are punchings for the windings of the eight HB relays on the bay. A multiple appearance of these eight punchings lies above the HB punchings of the third and fourth number groups of the bay, thus permitting direct straps to be used between the winding punchings and the assigned HB lead.

5.03 ***The TB0 to TB4 leads,*** including a loop-back multiple designated TBA0-TBA4, extend from the MCA terminal strip on the NGC frame to HB punchings on the BR frame where they multiple to the HB relays assigned to the respective number groups. Multiple leads are provided in the BR frame local cable between all corresponding punchings in a bay and are disconnected according to job requirements.

5.04 ***The JC0, JC2, etc, to JC18 leads*** are used in connection with jump hunting and are available for cross connection to the individual NC punchings. They are run direct to the JC terminal strip in the HG field on the BR frame. Two sections of the terminal strip are used for four number groups, or they may be multipled as shown on the cabling diagram to obtain a larger number of punchings for fewer number groups.

5.05 ***The JF0 to JF4 leads*** are also used for jump hunting and are disposed similarly to the JC leads, except that their position makes them available to the NF individual punchings.

5.06 ***The HF0 to HF19 leads*** cable to the HF terminal strip on the BR frame. They serve to identify the chcice in which the called line is located and to indicate that it is in a hunting group.

5.07 ***The NS0 to NS19 and NF0 to NF19 leads*** are part of the individual line test circuit and are multipled to the common side of all 20-block relays in the number group. They are run in switchboard cable from the number group connector frame directly to the terminal strip associated with the 20-block relays representing the lowest hundred of the number group in the bay.

MCC Relay

5.08 ***The TF0 to TF19 leads*** are run in the same manner as the HF leads. Cross connection of an NF to a TF punching identifies the line choice and indicates to the marker that ringing shall be applied to the tip side of the line.

5.09 ***The RF0 to RF19 leads*** are similar to the TF and HF leads except that they are used to indicate ringing on the ring side of the line. In general, coin hundreds will require the appearance of only the RF points of coin choices. If four or fewer choices contain coin lines, the RF points may be multipled five times in the upper or HF strip and five times in the lower or RF strip, leaving the center strip unstamped and unused. If there are more than four choices, the multiple is reduced accordingly.

5.10 ***MISC Leads:*** The ***XG lead*** extends to the auxiliary number checking special groups relay XGA, which is provided once per number group. The ***OFT lead*** appears on the miscellaneous portion of the individual NF terminal strips on the BR frame and is used in arranging NF terminals for testing incoming overflow tone and for reorder signal. The ***PN, TN, and PTN leads*** likewise cable to the miscellaneous portion of the individual NF terminal strip and are used when a block of numbers is assigned to a theoretical office and where service is restricted between these numbers and the physical office. The PT terminal of each 100-block is cross-connected to PN (restricted to physical), TN (restricted to theoretical), or PTN (not restricted) punchings at the right of the AUX punchings. The ***NP, MR, SOF, and CT leads*** cable to the traffic register relay rack and distributing frame for cross connection to traffic registers. The ***OPR lead*** is used in offices arranged for machine intercept to route disconnected lines to an operator. In order that these cross connections may be run vertically, the OPR lead is multipled to two horizontal strips at the top of the HF and RF fields, respectively.

MCD Relay

5.11 ***HGA0 to HGA9, etc, to HGD9 leads*** are run direct to the HG cross-connecting field on the BR frame. These strips are physically identical with the RF, TF, and HF strips and are used to give horizontal group indication for the four line link frames of a choice. The strips are located between 400 NC punchings above and 400 below, and are divided horizontally into number groups in conformity with the F field. ***NC0 to NC19 leads*** are line test leads and are run in the same manner referred to in 5.07.

5.12 When serving LLP trunks list 6, J27852D provides a mounting plate with 80 diodes. This assembly is mounted on the rear of the HG cross-connection field of the block relay frame. The particular column of the connection field, OXOOA, B, C, D, is designated LLP connections and is insulated from other connections on the HG field. Wiring is per SD-25276-01, CAD 3.

5.13 List 7 for Direct In Dialing provides a mounting plate with 80 diodes. This assembly is mounted on the rear of the HG cross-connections field of the block relay frame. The particular column of the connection field, OXOOA, B, C, D, is designated ESS. Wiring is per SD-25276-01, CAD 4.

20-block Relays - Individual Contacts

5.14 The NF and NC contacts of the 20-block relays - 800 each per BR frame - are extended by leads in the frame local cable to the NF and NC terminal strips in the cross-connecting field. The NS contacts are extended to the vertical side of the line distributing frame by switchboard cable for cross connection to the line sleeves. The BR ends of these cables are combined with the frame local cable and are shop-connected (see 5.33).

Consecutive End of Block Hunting

5.15 Numbers in terminal-hunting groups are assigned in consecutive order insofar as possible. When the group appears on more than one 20-block relay, the operation of transferring hunting from one 20-block to another, assuming the last number of the group in a 20-block coincides with the last number of the 20-block, is known as "block end hunting" and requires no special treatment on the block relay frame.

Jump Hunting

5.16 Where the numbers of a terminal-hunting group are not consecutive, an operation known as "jump hunting" is necessary to jump the progress to the next relay. This feature is used when a hunting group is expanded and the next numbers are already assigned, or when a new group is established and not enough consecutive numbers are available in the number group. Only one 100-block relay in each number group may be used for lines selected by jump hunting, and this relay may be in the regular number series or may be associated with the extra numbers in the number group. In either case access to the 100-block relay jumped to is over the HB24 lead from the marker. In order to jump hunt, the NF punching of the last terminal in the original PBX group is cross-connected to a JF0-JF4 punching in the same number group to indicate which of the five 20-blocks in the 100-block jumped to contains the start of the added numbers. Likewise, the last NC punching is connected to a JC0-JC18 punching to indicate the starting point of terminal hunting within the new 20-block. Because only even-numbered JC punchings are provided, the starting point is limited to even terminals on the new 20-block.

Split Hundreds

5.17 The 20-block relays are usually assigned in regular sequence, but they may be assigned to the 100-block relays out of sequence under the conditions outlined in subsequent paragraphs. This is accomplished by cross connections at the HB terminal strips on the BR frame between the SH, SHA, and XSH punchings, whereby any 20-block may be associated with the TB0-TB4 leads of any 100-block within the number group. Full flexibility for this purpose is provided by a set of multiple leads which appear on XSH0-XSH9 punchings on the HB terminal strips for the respective number groups. In the marker, one SH relay is required for each 100 consecutive numbers, for example, 2300-2399, (a) which are split over more than one HB relay in the number group, (b) which include a PBX allotted on an alternate number group basis, and (c) which include free lines.

Nonconsecutive End of Block Hunting

5.18 Where a PBX group cannot be expanded by consecutive end of block hunting, the split hundreds feature may be used. To do this an idle nonadjacent 20-block relay is substituted by means of cross connections for the adjacent 20-block relay in the PBX 100-block. In this way block-end hunting may continue to be used for the enlarged PBX group, without resorting to jump hunting with accompanying increased marker holding time.

PBX Alternate Number Group Allotter

5.19 This feature distributes the calls to a large terminal-hunting group over two number groups. Each group of lines within a number group may be arranged for four consecutive or nonconsecutive end-of-block hunts, thereby providing for 100 numbers in each of two number groups. Under this plan an SH relay is required for the 100 numbers which include the PBX directory number.

Free Lines

5.20 Lines which may be called free-of-charge are grouped on particular 20-block relays, and an SH relay is furnished in the marker for the associated 100-block. Nonfree lines cannot be assigned to such 20-blocks. The feature involves no special cross connections on the BR frame if the 20-blocks are in consecutive order. Otherwise cross connections at the HB terminal strips are required.

Number Checking Special Groups

5.21 When a PBX group includes one-way trunks, such trunks are not available to terminating traffic, although they have line relays identified with regular numbers. These numbers should consecutively follow those used for terminating traffic. The NF punching of the last number of the terminating series, instead of being connected to an RF punching, is connected to an XF punching in the proper line choice. This connection, through wiring on XGA or XG1 to XG3 relays, makes the last line of the group appear as an RF terminal except on number checking calls when the XG- relays operate and change the indication to HF, and cause hunting to be continued over the remaining terminals of the group. The XG- relays are furnished per number group as required, the XF leads being multipled to other BR frames if necessary.

Line Overflow Register - Cross-connection Type

5.22 The NF punching is cross-connected to an ANF punching on the AUX terminal strip when the line is to be observed for overflow. The associated ALF punching is cross-connected to the regular RF line choice punching for that line. Further cross connections at the MDF, the LDF, and the traffic register relay rack associate this number with a register which counts the number of attempted calls to the line while busy. A plug and jack type of subscriber overflow register is available which avoids these cross connections.

Unequipped Number

5.23 Disconnecting the S jumper at the LDF causes the marker to route the call to intercept. In offices having machine intercept, it is necessary in addition to connect the NF punching to an OPR terminal strip where it is required that calls to the disconnected number be routed to an operator.

Extra Numbers

5.24 Provision for extra numbers may be made to the extent of 100 for each number group. The relay and frame equipment for these numbers is the same as for numbers in the regular series 0000-9999, except that the hundreds designation is replaced by a letter corresponding to the number group to which they are assigned. The letters of the alphabet beginning with A omitting I and O are used for number groups 0-23, respectively, the letters AA being assigned to a twenty-fifth number group if furnished. Extra numbers are identified, therefore, by a letter or letters corresponding to the number group and by a tens and unit digit corresponding to the terminals on the 20-block relays. For example, if office A or office B in a 2-office terminating group has 400 extra numbers in number groups 1, 2, 4, and 6, they would be designated B, C, E, and G 00-99, particular terminals being designated B19, C80, etc. Offices C and D in a second terminating group would be treated similarly, starting with the letter A for number group 0, etc. The appearance of the extra numbers at the block relay frame and LDF is immediately following the regular number series, in alphabetical order and without gaps corresponding to missing letters. Equipment for extra numbers includes provision in the special or no test markers for directing test calls to these numbers from the test desk.

5.25 ***Marker lockout and control*** circuit per Fig. 15 of SD-25276-01 includes provision for the release from a distant point of alarms that may come in while the emergency preference relays are in use. With the earlier arrangement per Fig. 11 of SD-25276-01, it is necessary that all number group connectors be operating on the regular marker preference relay chain at the time of transferring the

alarms, since an alarm caused by the emergency chain cannot be released from the distant point.

5.26 The initial assignment of numbers to number groups should be such that reassignment will not be required as the size of the office increases. J29254, Installation of Additions to Switching Equipment, may be referred to should changes become necessary.

5.27 The initial assignment of numbers to block relay frames should be such that the numbers appear in consecutive order, from frame to frame, with each block relay frame placed in its ultimate location regardless of the sequence of installation.

5.28 Where ten or fewer line choices are represented on the block relay frame the RF, TF, and XF leads are multipled on two or more sets of grouping terminal strips in the F field, as shown on ED-25368-01. The arrangement used, including provision for a theoretical office and any coin line groups, is dependent on the ultimate requirements of the office and shall be determined by the telephone company.

5.29 In a multioffice terminating unit, the number group connectors for a particular office are usually limited to two per frame, with the connectors for each office located alternately on the frame from the bottom up. With this arrangement, the connectors for each office appear on separate fuse panels at the top of the frame. The number group connectors for the first office of a multioffice terminating unit are numbered from 0 up and those for the second office from 100 up throughout the number group connector frames; for example, the connectors on the first frame for the first pair of offices are numbered 0, 100, 1, and 101 from the bottom up while those on the second frame are numbered 2, 102, 3, and 103. The number group connectors for the third and fourth offices are numbered, in a similar manner, from 200 up and 300 up, respectively.

5.30 No. 24 gauge type C wire shall be used for the frame local cables except battery and ground distributing leads which shall be No. 22 gauge type C wire.

5.31 The bare-wire strapping on the multicontact relays on the number group connector frames shall be furnished for the maximum of six or ten markers. On partially equipped frames, the strapping shall be insulated and supported as covered in the wiring specification.

5.32 No. 22 gauge type K wire in five colors as specified on the equipment drawing shall be used for the cross connections on the block relay frame.

5.33 At the block relay frame, the NS switchboard cable leads from the LDF are combined with the block relay frame local cable, the leads being shop-connected to the contacts of the 20-block relays. Certain restrictions on the length of these switchboard cables are given in the specification for the LDF.

5.34 The cables from the number group connector frame to the block relay frame should terminate on that block relay frame containing the largest number of hundreds in that group rather than the nearest. Cables to extra number bays and nonadjacent bays should terminate at the same point as cables to number group frames unless local cable multiple also appears there, in which case the extra number cables should go to the nearest available terminal strip of the number group frame.

5.35 When a number group appears on two or more adjacent block relay frames, a local cable multiple is run as shown on the local cable drawing. The leads involved are ten TB leads, one or more HB leads, the 60-wire multiple from the common side of the block relays, the RF, TF, HF, and XF leads, 40 HG leads and the OFT and OPR leads. When multipled into a nonadjacent bay, as for extra numbers, switchboard cable is used.

5.36 When two groups of 20-block relays on the same multicontact relay mounting have been assigned to different number groups necessitating a break in the bare-wire strap-

ping between hundred groups, and it is desired to reassign these groups to the same number group, the reconnection of the relay multiple shall be made by means of a separate local cable from the terminal strip of one group of relays to the terminal strip of another group of relays in the same number group. This cable, which shall be provided on a job basis, may be run as a vertical multiple local cable as shown on ED-25365-01 or as a U-shaped cable between terminal strips on the same relay mounting. The arrangement used will depend on the number group arrangement and the number of cables already appearing on the terminal strips involved.

Cabling

5.37 The code numbers of the switchboard cables ordinarily used on the BR and NG connector frames are shown on the switchboard cabling drawing. 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 shows what groups of leads are to be combined in the same cables.

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 COVERED IN ISSUE	REPLACING EQUIPMENT
J27852A,L5	Mfr Disc.	5	–
J27852B,L5	Mfr Disc.	5	–
J27852C	Mfr Disc.	5	J27852D

Note: J27852C covers a block relay frame using 213A and 214A terminal strips as shown on ED-25305-01.

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