MESSAGE REGISTER DISTRIBUTING 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 a message register distributing frame for use in No. 1 Crossbar offices arranged for conversion to automatic message accounting.

1.02 This section is reissued to incorporate previous appendix changes.

Description

1.03 The message register distributing frame (MRDF) is used in No. 1 crossbar offices arranged for future conversion to automatic message accounting. In such offices, it is desirable to separate the 2-wire jumper normally furnished at the LDF and furnish instead two single-wire jumpers - one, the "S" cross connection which remains at the LDF; the other, the "M" cross connection which is located on a separate framework called the MRDF. In this way, the "M" jumpers can be removed from the office more readily at the time of conversion to AMA and the capacity of the LDF can be doubled.

1.04 The MRDF uses the same structure as the single-sided LDF viz. a framework 11'-6" high, having the verticals on 8" centers and a guard rail width of 10". It is described in detail in J97029.

1.05 Appearing on the horizontal portion of the frame are the "M1" and "M2" leads from the line circuits on the line link frames. These are terminated by columns of 100 lines across four terminal strips two, three, or four circuits deep. On the vertical portion of the frame, appear the operating leads from the message registers. These are terminated in sets of 100 across two terminal strips, two or three circuits deep. Also mounted on the frame are ground supply terminals for use with flat rate stations assigned to message rate line groups and certain test and talking line facilities.

Subdivision of Equipment

ED-91519-01 - Assembly

2. SUPPLEMENTARY INFORMATION

816-000-000 - No. 1 Crossbar System Index
J22457 (816-104-100) - Automatic Message Accounting - General - Crossbar System No. 1

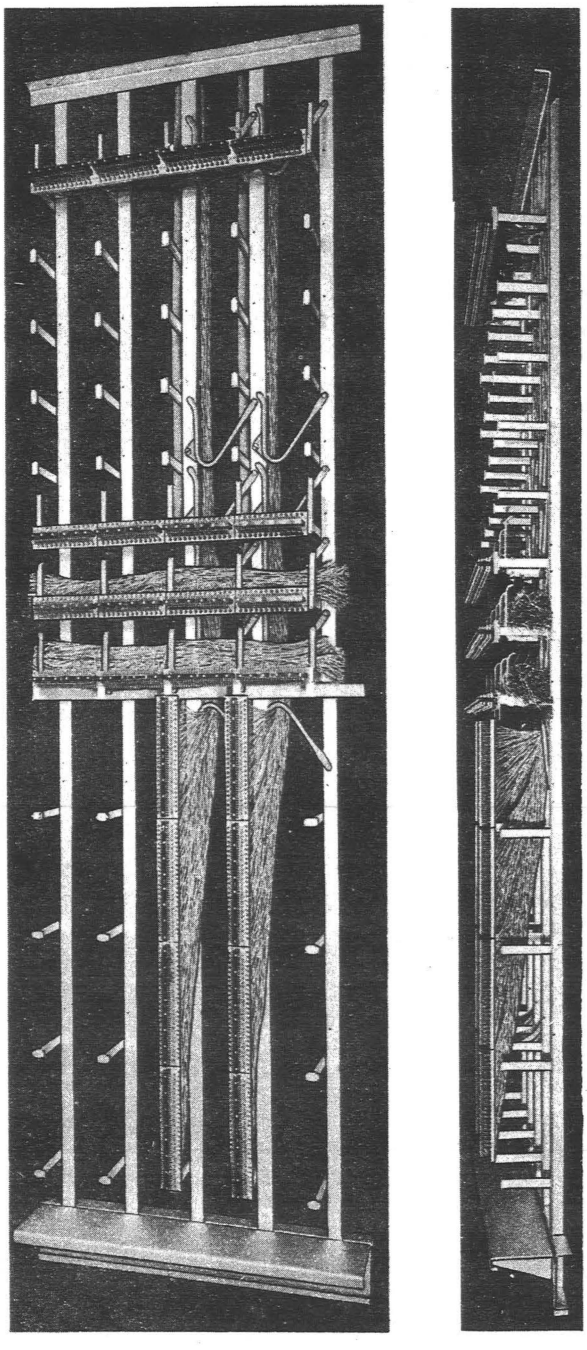

Fig. 1 - Single-sided Distributing Frame - Showing Maximum Jumper Pileup

J25551 (816-040-150) - End Guards, etc.
J27058 (816-020-150) - Line Distributing Frame
J97029 - Distributing Frame - Single Sided Floor Plan Data - section 9.4, sheet 6

3. DRAWINGS

Circuits

SD-25553-01 - Line Link Circuit
SD-25900-01 - Miscellaneous Circuits for MRDF

Equipment

ED-25341-01 - Switchboard Cabling Plan - LDF
ED-26337-01 - Switchboard Cabling Plan MRDF
ED-26338-01 - Equipment of MRDF
ED-90046-01 - Mounting of 33-type Connecting Blocks
ED-91315-01 - Support for 7F Buzzer
ED-91519-01 - Assembly of Distributing Frame

4. EQUIPMENT

ED-91519-01 - Assembly

Group 1 - Unit of five verticals - originating unit

Group 2 - Unit of four verticals - supplementary unit

Group 3 - Adapter details for mounting end guard at left end of frame

Group 4 - Adapter details for mounting end guard at right end of frame

Group 9 - Cast iron V-type distributing ring with mounting bolts and nuts

5. GENERAL NOTES

Location of Frame

5.01 The frame should be located near the line link frames and message register rack. Close association with the LDF and block relay frames also is desirable, consistant with utilization of the floor space following removal of the message registers at the time of conversion to AMA.

Equipment of Frame

5.02 The equipment of the frame will vary with job conditions, the determining factors being the quantities of MRI and MRP lines and their ratio to the number of message registers. In order to provide for the range of conditions likely to be encountered, the following terminal strip arrangements are made available.

Horizontal Portion of Frame
Line Link Frame Terminations

MRI 2 circuits deep - 200 lines per four terminal strips
MRI 3 circuits deep - 300 lines per four terminal strips
MRI 4 circuits deep - 400 lines per four terminal strips
MRP 2 circuits deep - 200 lines per four terminal strips
MRP 3 circuits deep - 300 lines per four terminal strips
MRI and MRP 2 circuits deep - 200 lines per four terminal strips
MRI and MRP 3 circuits deep - 300 lines per four terminal strips
MRI with ground terminals two circuits deep 200 lines
MRP with ground terminals two circuits deep 200 lines
MRI and MRP with ground terminals two circuits deep - 200 lines

Vertical Portion of Frame
Message Register Rack Terminations

2 circuits deep - 200 message registers per two terminal strips
3 circuits deep - 300 message registers per two terminal strips

5.03 The above terminal strips shall be specified as required so as to provide the best balance between the horizontal and vertical portions of the frame.

(a) Horizontal Terminal Strips: The 3-deep horizontal terminal strips, as a rule, are used in offices having MRP line link frames or MRP with a proportion of MRI frames. The 4-deep MRI terminal strips are for use in MRI offices or those predominantly so. The 2-deep horizontal terminal strips are for jobs having a small number of message registers where terminal strips of greater circuit capacity are not warranted. Because each set of four terminal strips accommodates more than one column of lines, both MRI and MRP lines will appear on the same set in offices having both 4- and 5-wire line link frames; and since the line link frames may have a variable number of columns, the break between the two classes of lines may come at any point in the column numbering. The equipment drawing covers the different combinations encountered in such offices for the two cases where the line circuits are arranged two and three deep. A row of unequipped terminals is left between MRI and MRP columns appearing on the same set of terminal strips as an aid in identifying the point of separation. In applying the horizontal terminal strips to job conditions, the "M" leads from the line link frames shall in all cases be assigned over all

eight shelves so as to secure the best distribution of jumpers over the shelves.

(b) Vertical Terminal Strips: Two arrangements are available for terminating the message register operating leads viz. 200 message registers per two terminal strips and 300 per two strips. Since each vertical on the distributing frame accommodates four terminal strips, it is possible with these two arrangements to terminate 200, 300, 400, 500, or 600 message registers per vertical. The plan used will depend on the number of registers in relation to the number of line circuit terminations. The registers are distributed horizontally along the frame to avoid jumper congestion and to reduce jumper length. Where the verticals are equipped with but 200 or 300 registers, the single pair of terminal strips are located in the upper half of the verticals. Where 500 registers are assigned to a vertical, the 3-deep terminal strips are located in the upper half.

5.04 The following examples illustrate the use of the various terminal strip figures shown on the MRDF equipment drawing.

(a) Large Message Rate Party Office: In this case, 6-point terminal strips with the circuits three deep are used for the "M1" and "M2" leads from the line link frames. Four bays of framework will thus accommodate 2400 line circuits, and 24 bays will have capacity for 14,400 line verticals serving a 2-office terminating unit. On the vertical portion of the frame, the message registers are terminated two circuits deep, if their total number is under 9600. Should the number of message registers be under 4800, 2-point terminal strips limited to the upper half of the verticals would be used. If the message register development exceeds 9600, 3-point terminal strips with the circuits three deep would be used to the extent necessary.

(b) Message Rate Individual Offices: Using the 4-point terminal strip for the "M1" leads will provide for 12,800 line circuits on 16 bays of frame. In the vertical portion, 9600 message registers can be accommodated by using 3-point terminal strips. This will care for a message register development of substantially 100 per cent. For a smaller development, 2-point or a combination of 2- and 3-point terminal strips are used for the message registers. The 3-deep MRI terminal strip will find application in offices having both 4- and 5-wire line link frame, permitting all line circuits to be terminated three deep.

Length of Frame

5.05 The length of the frame shall be limited to 49 verticals where the message registers are terminated 400 per vertical, 37 verticals with 500 message registers per vertical, and 33 verticals with 600 message registers per vertical. These maximums assume random assignment of the message registers to the line link frames and a uniform distribution of jumpers over the eight shelves. By exercising control over the assignment of the registers to the line verticals so as to limit the jumper pileup at the midpoint of the shelves, these maximums can be exceeded.

Ground Supply Terminal Strips

5.06 Where flat rate lines are assigned to message rate groups and it is necessary to ground the "MR" lead of such lines, ground supply terminal strips are required at the MRDF. Two conditions are provided for. One where there is a considerable number of these lines making it desirable to furnish a ground punching adjacent to each line termination, thereby permitting the connection to be made with a bare wire strap instead of with a jumper. The other condition is where the number of lines is small and does not warrant the above arrangement. In these cases, separate ground terminal strips are furnished and located on one or more verticals, preferably at the midpoint of the frame. The ground supply for these terminal strips is obtained from the ground bar on the message register rack.

Coin Lines

5.07 Three-wire coin line link frames and any 3-wire flat rate noncoin frames do not have an appearance at the MRDF.

Message Register Test Equipment

5.08 The following equipment is furnished for use in testing the message register leads and jumpers.

(a) Battery supply jack.

(b) Frame talking line jacks.

(c) MR test jacks.

(d) Test buzzer.

Directions for mounting this equipment are given on the frame equipment drawing. The frame miscellaneous circuit covers the codes and basis of furnishing the cord and plug assemblies needed for these tests.

Connecting Blocks

5.09 No. 33B connecting blocks clamped to the terminal strips are furnished at regular intervals along the frame as a

source of battery and ground for testing purposes. Signaling battery is obtained from a miscellaneous fuse panel, one fuse per frame. Ground is obtained at the fuse bay or relay rack, using 16 type "AM" wire.

Distributing Frame Wire

5.10 Distributing frame wire is furnished only when specified by the Telephone Company.

Cabling

5.11 The cabling drawing for the MRDF is limited to the requirements peculiar to this frame, viz., the order of dropping off the entering cables at the shelves and vertical terminal strips, and the location of the cable brackets. All other cabling information is covered on the LDF cabling drawing ED-25341-01.

5.12 Additional cable brackets and insulators may be required over those furnished with the framework under Groups 1 and 2 of ED-91519-01. These shall be ordered as follows in accordance with the equipment of the frame -

Insulator	P-449759
Cable Bracket	P-449643

For each cable bracket order:

1 FHM screw	P-160099
1 Hex. nut	P-125953
1 Lock washer	P-423636

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