

MATRIX BLOCK—1A1

IDENTIFICATION, INSTALLATION, WIRING, AND MAINTENANCE

1. IDENTIFICATION

1.01 The 1A1 Matrix Block consists of a molded plastic block equipped with horizontally and vertically aligned rows of terminal connectors (commonly referred to as clip terminals) arranged to receive pigtailed 446F diodes. It is intended for use in key telephone systems to provide for diode control of station audible signals (Fig. 1).

Note: The diodes are not supplied with matrix block and must be ordered separately.

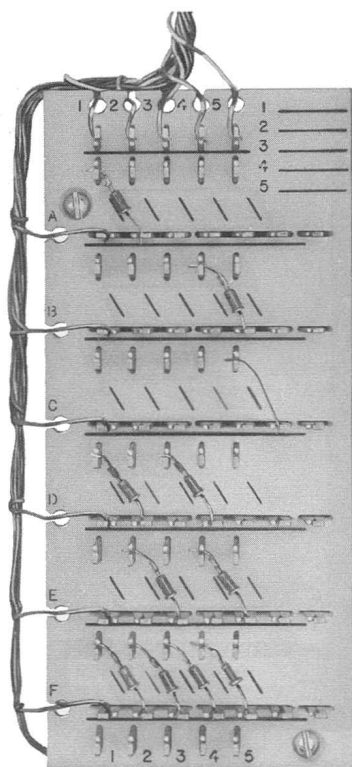


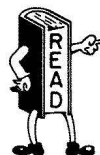
Fig. 1 — 1A1 Matrix Block — Typical Diode Installation

1.02 Overall dimensions of the block are approximately 6-3/8 inches long, 2-13/16 inches wide, and 1-1/4 inches thick including the projection of the clip terminals.

1.03 The various components used in the assembly of a complete 1A1 Matrix Block are shown in Fig. 2. It will be noted that the cross-grid or "matrix" array consists of five vertically positioned rows of a 8-clip terminal (8-terminal connector). The uppermost clip is for the termination of connecting circuit leads. The bottom (end) clip serves as a multiplying point for extending the capacity of the matrix unit. Six rows of a 7-clip terminal (7-terminal connector) are positioned at right angles to these. The left hand clip on each serves to terminate external circuit leads. The right side (clip) serves as a multiplying point for extending the horizontal capacity (Fig. 3, 4, and 5).

1.04 Vertical rows of terminals are **numbered** 1 through 5 at the top of the block. Space is provided in the upper right hand corner of each block for designating each of these five rows as desired. Horizontal rows of terminals are labelled **alphabetically** A through F with ample area available to the left of each row for circuit identification.

1.05 Depending on the diode placement (polarity direction), one matrix block can be used to control six ringers **less capacitors** from five separate key system line circuit units or vice versa. This, then, can be called a "6 by 5" or "5 by 6" matrix unit, capacity-wise.



For proper circuit operation, diode controlled ringers must be connected without capacitors.

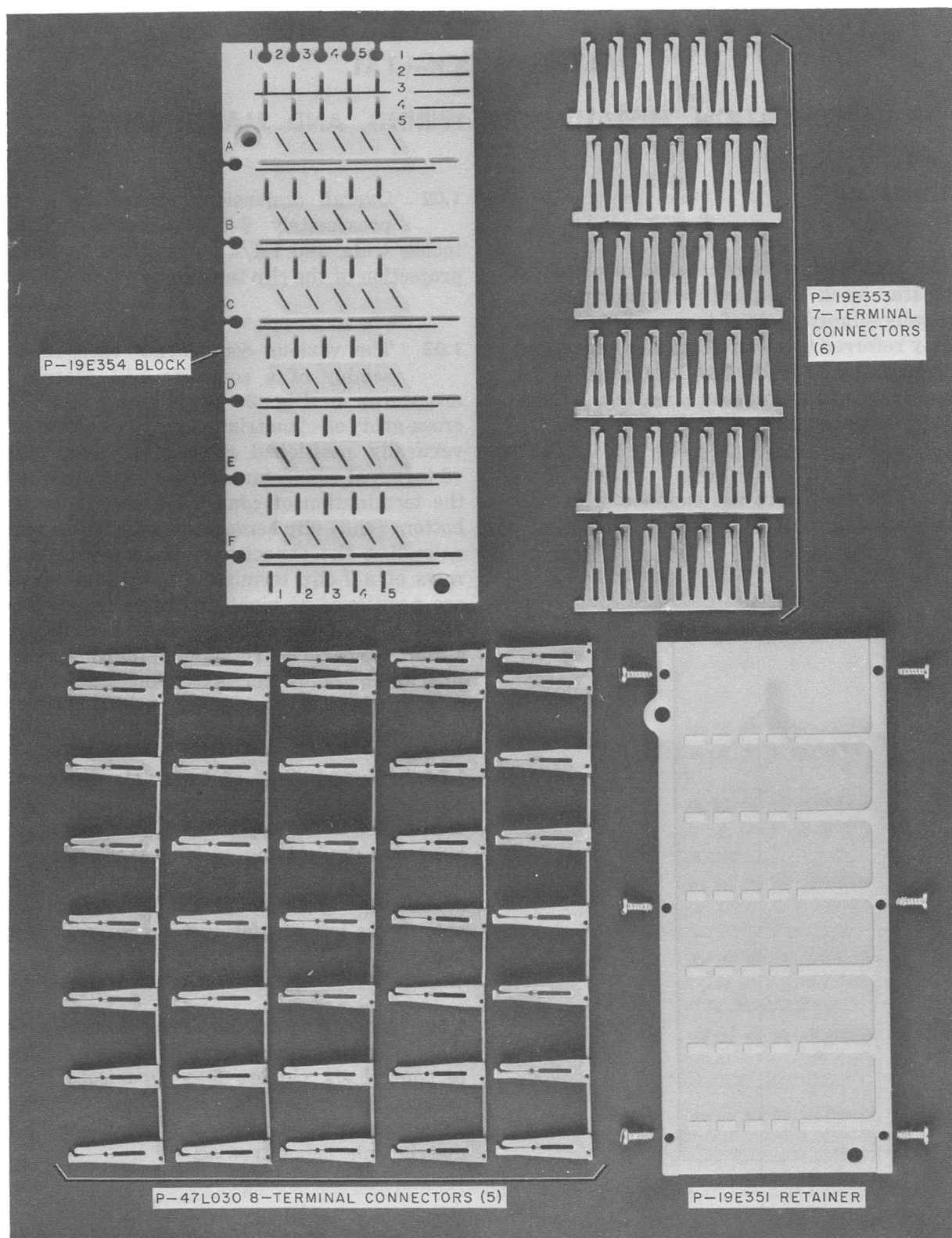


Fig. 2 — 1A1 Matrix Block — Components

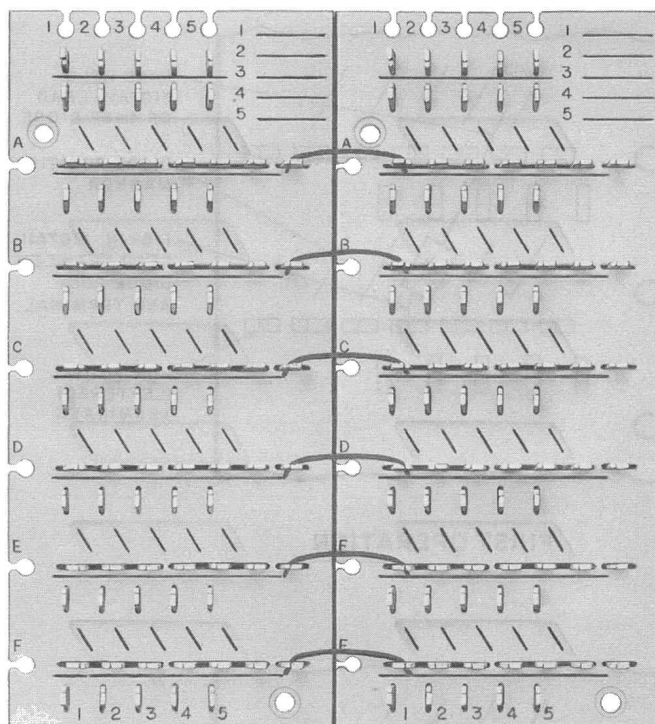


Fig. 3 — Modular Array (Multiplied Horizontally)

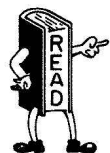
2. INSTALLATION

2.01 The 1A1 Matrix Block should be mounted on a flat surface, using mounting holes provided. Where extended capacity beyond one block is necessary, modular arrays (Fig. 3, 4, and 5) may be employed. Respectively, these offer the following additional capacities:

FIGURE	CAPACITY
3	10 by 6 or 6 by 10
4	5 by 12 or 12 by 5
5	10 by 12 or 12 by 10

2.02 Diodes are installed using the 714B tool.

For ease of installation, it is recommended that the first pigtail termination be made in the **lettered** (horizontal) terminal clip, with the remaining pigtailed end seated and cut in the **numbered** (vertical) clip associated with the given matrix crosspoint (indicated by the diagonal marking on the face of the block). These two operations are shown in Fig. 6.



When seating and cutting conductor, push the tool straight over the clip. Avoid bending or twisting the clip.

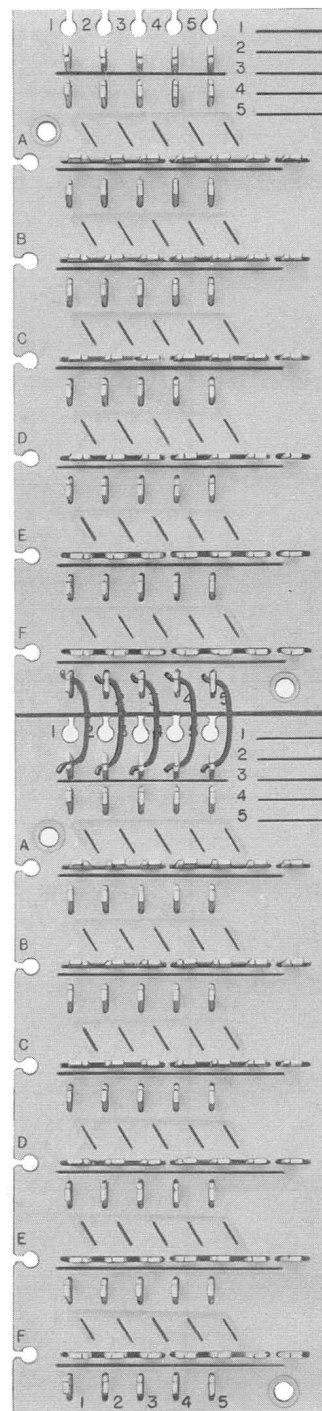


Fig. 4 — Modular Array (Multiplied Vertically)

2.03 To allow for proper seating of the diodes onto the undercut face of the block, a 1/8-inch length of pigtail lead should exist between the body of the diode and the clip terminal.

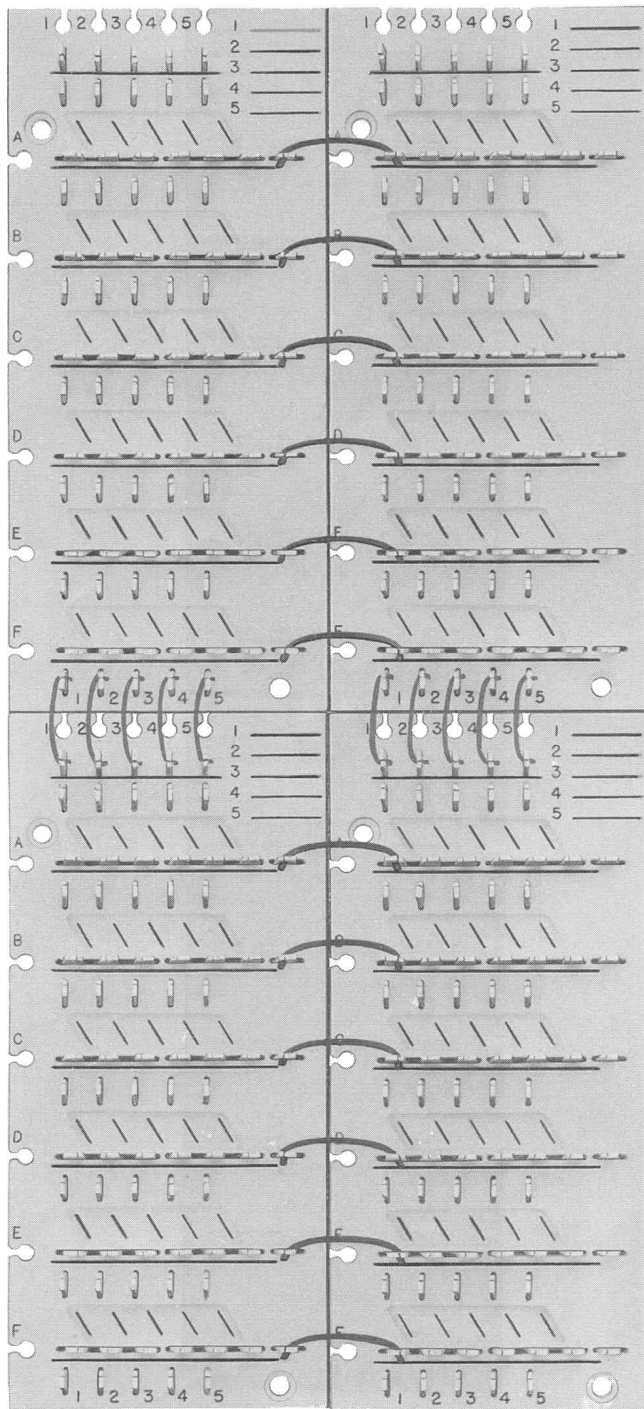
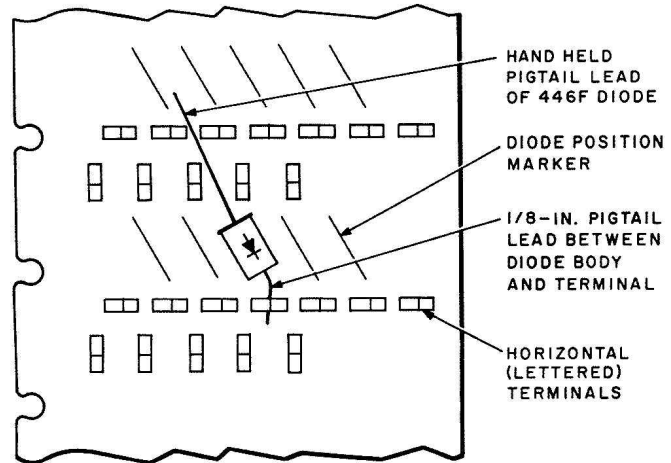
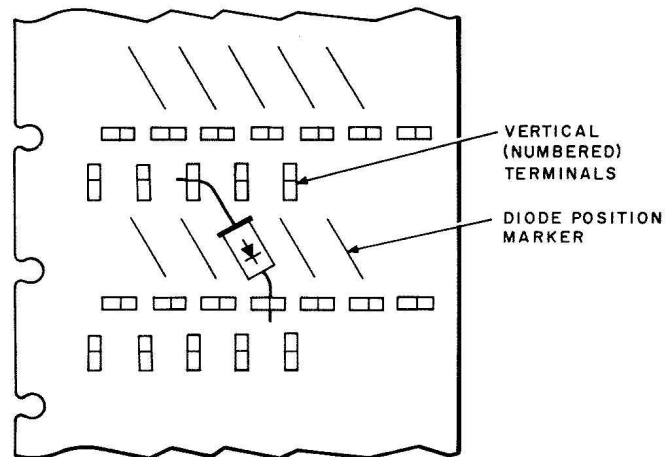


Fig. 5 — Modular Array (Multiple Horizontally and Vertically)



FIRST OPERATION



SECOND OPERATION

Fig. 6 — Diode Installation

3. WIRING

3.01 As previously noted, the 1A1 Matrix Block can be used to control station ringers, through the use of 446F diodes, from 5 (or 6) key system line circuit units. Using the 1A2 Systems 400D KTU as an example, its "ringing control" (RC) lead would be terminated on one of the top clips on the matrix block (vertical row 1, 2, 3, 4, or 5). Station ringers to be activated, when the line circuit is rung, are then "cross-connected" by means of diodes on the face of the block (to stations A, B, C, D, E, and F, as required). Fig. 7

illustrates a typical block schematic layout of this sort.



JKT, SK, and B service wires have steel cores which will damage the cutting edge of the 714B tool. It is necessary to cut these wires with diagonal pliers, leaving approximately 1/16 inch of wire protruding through clip, then terminate with seating end of 714B tool.

3.02 The arrangement of the wiring and positioning of the diodes on the block are further amplified in Fig. 8. Installations can be of either polarity; but no block can have a mixture of both. Fig. 8 A, for instance, shows the ringing control (RC) leads from the line circuits connected at the top, with the common audible (CA) leads associated with the station ringers connected at the side. The diode should always be pointed (diode symbol apex) toward the station ringer — in this case, all diode arrows pointed downward.

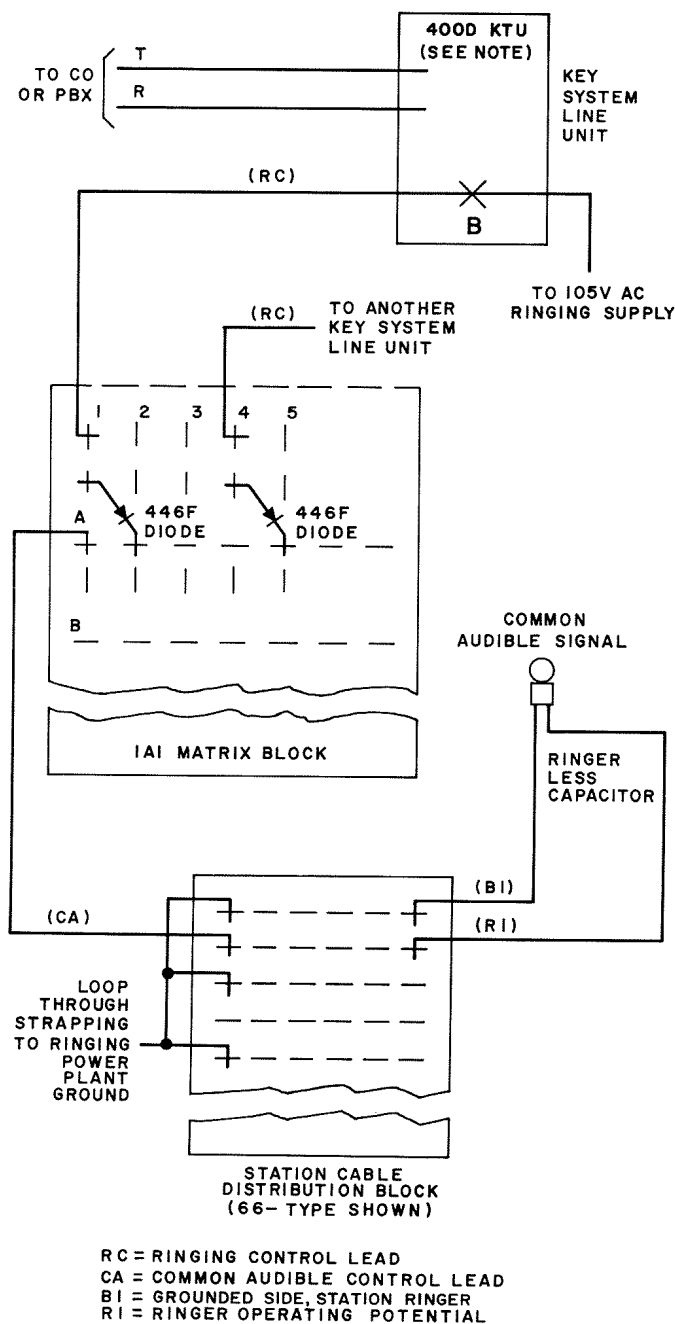
3.03 Proper audible signal control requires the use of a diode per line, per ringer. In cases where only one ringer is to be connected to one line a bare wire strap can be substituted for a diode at the proper crosspoint on the matrix block. However, when additional ringers are to be associated with that line, or where other lines are to ring that common audible signal, the wire strap must be removed and 446F diodes placed at the proper coordinate points. To illustrate using Fig. 1 as a given matrix block installation:

LINE CIRCUIT (RC LEAD)	OPERATES STATION RINGER
1	A, D, and F
2	E and F
3	D and F
4	B, E, and F
5	C

4. MAINTENANCE

4.01 Maintenance procedures for the 1A1 Matrix Block are the same as for the 66-type connecting blocks. For terminal alignment and adjustment see Section 461-616-101.

4.02 Field replacement of connectors in these blocks is not recommended. Replace matrix blocks having terminal damage which cannot be corrected.



NOTE:

FOR 1A1 KTS: B RELAY SYMBOL BECOMES (R); RC BECOMES (RI). COMPARABLE DESIGNATIONS APPLY WHEN ASSOCIATED WITH OTHER SIMILAR CIRCUITS.

Fig. 7 — Block Schematic Layout

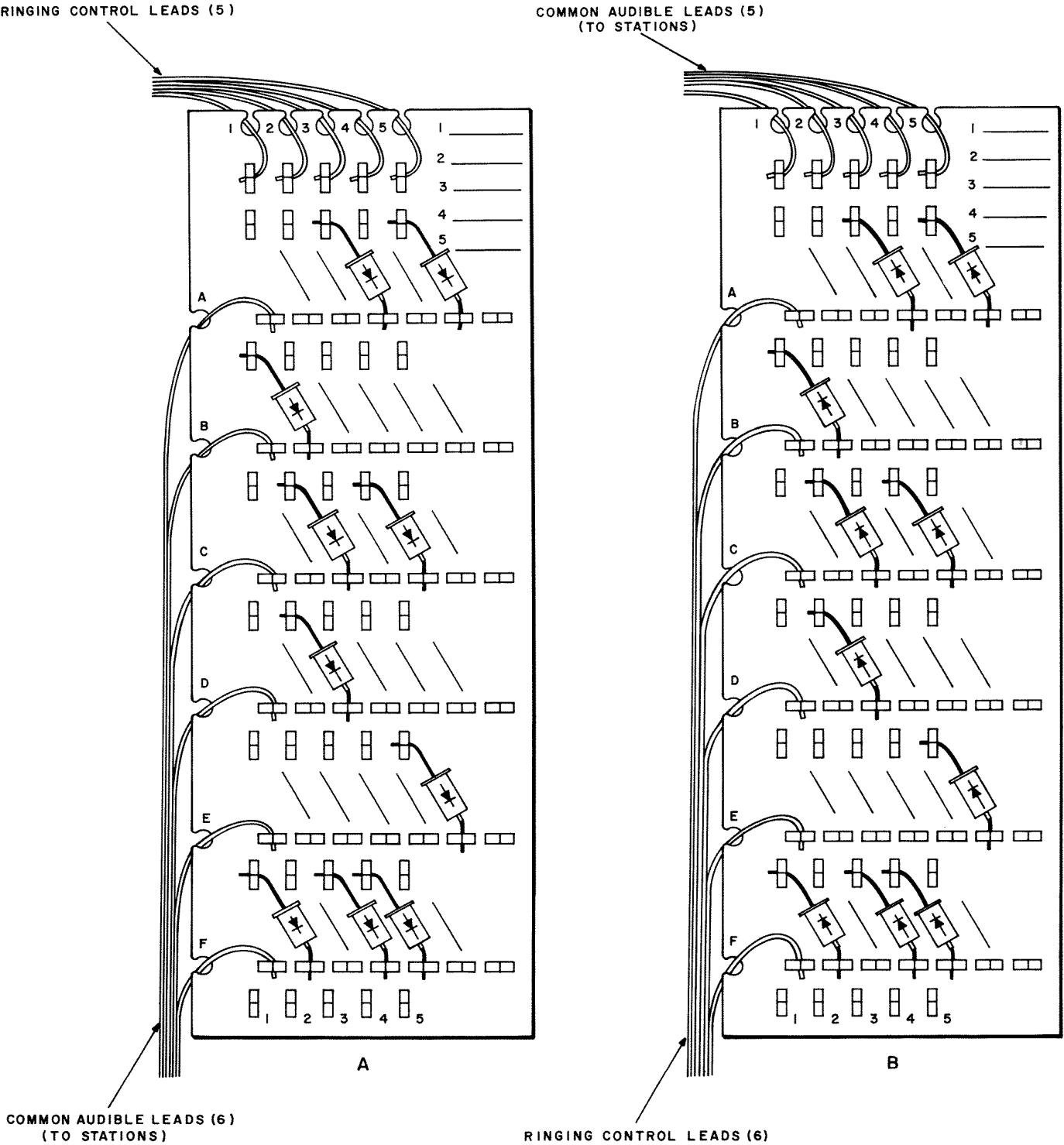


Fig. 8 — Wiring Arrangement and Diode Orientation

MATRIX BLOCK - 1A1
IDENTIFICATION, INSTALLATION, WIRING, AND MAINTENANCE

1. GENERAL

- 1.01 This appendix supplements Section 461-620-100.
- 1.02 This appendix is issued to add information about the 3 by 8 and 6 by 13 Selectro Matrices.
- 1.03 They are designed to be used with Pacific Company Standard prewired equipment to provide for the arrangement of common or group bells. Various bell combinations are obtained with the use of Plug Diodes and Shorting Pins. Bell rearrangements can be performed rapidly without disrupting the customer's service (see Fig. 1).

2. IDENTIFICATION

- 2.01 The 3 by 8 Matrix has 3 vertical rows of pin positions with 8 pin positions per vertical. One Matrix controls 3 ringers (less capacitors) from 8 separate Key System Line Circuit Units (see Fig. 2).
- 2.02 The 6 by 13 Matrix has 6 vertical rows of pin positions with 13 pin positions per vertical. One Matrix controls 6 ringers (less capacitors) from 13 separate Key System Line Circuit Units (see Fig. 3).

3. INSTALLATION

- 3.01 The ringing control (RC) leads are terminated on solder lugs on the left of the block. The common audible (CA) leads are terminated on solder lugs at the bottom of the block. Proper audible signal control requires the use of a plug diode per line, per ringer. Where only one ringer is to be connected to one line, a shorting pin can be substituted for a plug diode at the proper crosspoint. The matrices are compatible with 1A1 or 1A2 systems.
- 3.02 The principles of the 1A1 matrix outlined in this section can be applied for the Selectro Matrix.
- 3.03 Order material as follows:
- Block, Matrix Selectro 3 by 8 P150.
 - Block, Matrix Selectro 6 by 13 P151.
 - Plug Diode - DE 69110 List 4 (see Fig. 4).
 - Pin Shorting - DE 69110 List 5 (see Fig. 4).

SECTION 461-620-100PT
APPENDIX 1

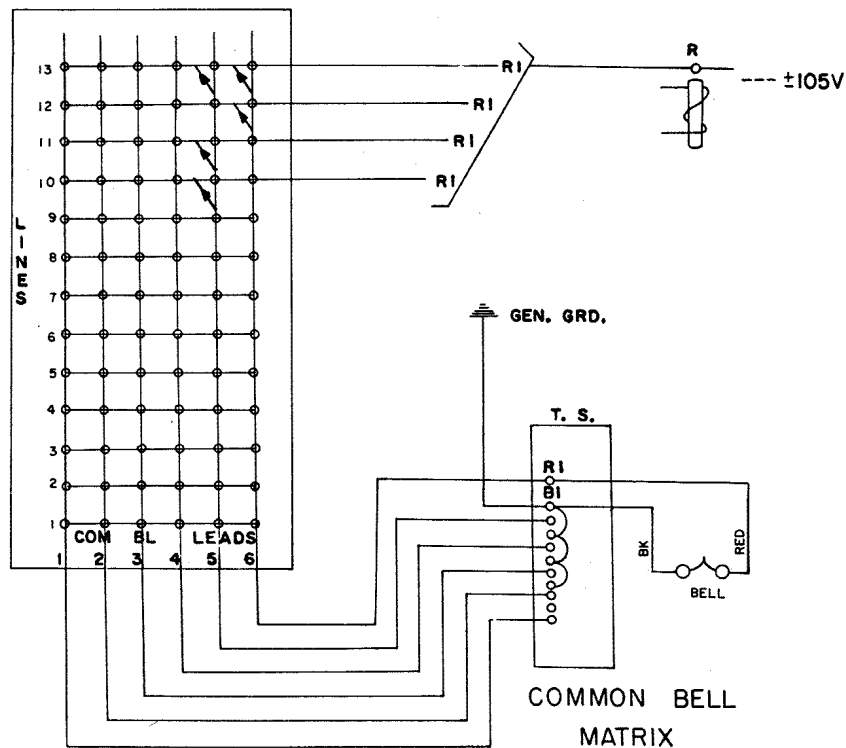
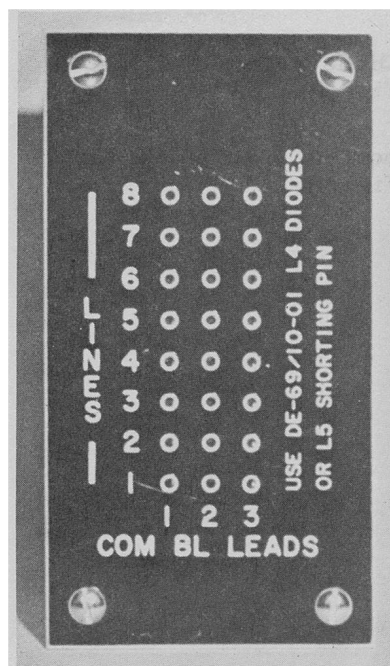
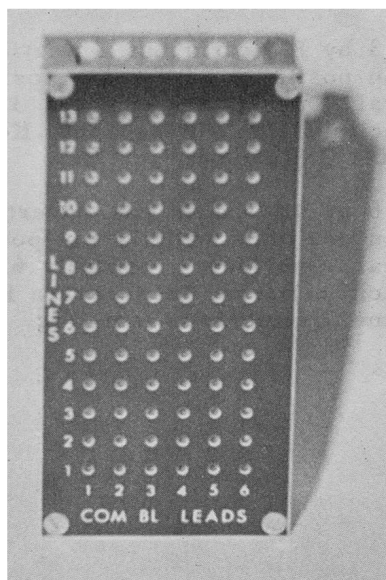


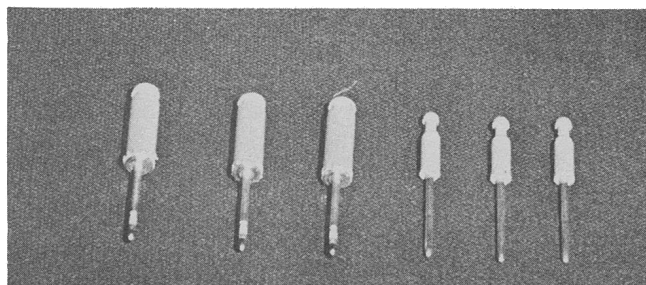
Fig. 1



3 x 8 Selectro Matrix
Fig. 2



6 x 13 Selectro Matrix
Fig. 3



Plug Diode (DE69110 L4)
Pin Shorting (DE69110 L5)
Fig. 4

MATRIX CONNECTING BLOCK - 1A1-1A2
IDENTIFICATION, INSTALLATION, AND WIRING

1. GENERAL

1.01 This appendix supplements Section 461-620-100.

1.02 It is issued to add information about a 6 by 13 Selectro Matrix mounted on and wired to a modified 66B3-50 connecting block.

1.03 This matrix connecting block (P-162) is used to provide various combinations of common or group bells for new and existing key telephone systems. This matrix controls 6 ringers (less capacitors) from 13 separate key system line circuit units.

2. INSTALLATION

2.01 Order material as follows:

- Block, Connecting, Matrix, P-162
- Plug, Diode - DE 69110 List 4
- Pin, Shorting - DE 69110 List 5

2.02 The Western Electric Co. will assemble as follows:

- (1) Cut the 66B3-50 Connecting block in half lengthwise.
- (2) Remove Terminals 14-16 from the 66B3-50 Connecting Block.

(3) Remove the four mounting posts from the Selectro Matrix.

(4) Solder Lines 13-1 of the Selectro Matrix to Terminals 1-13, Clips 3, of the 66B3-50 Connecting block.

(5) Using 24-gauge surface wire place straps as follows:

<u>RED</u>		<u>BLACK</u>
<u>MATRIX</u>	<u>CONN</u>	<u>CONN BLOCK</u>
<u>COM-BL-LEADS</u>	<u>BLOCK</u>	<u>ONLY</u>
1	18	17
2	20	19
3	22	21
4	24	23
5	26	25
6	28	27

2.03 The principles of the 1A1 Matrix outlined in this section can be applied for the Selectro Matrix.

2.04 The P-162 Matrix removes the need for soldering as all connections are punched on the 66B3-50 block. Proper audible signal control requires the use of a plug diode per line, per ringer. Where only one ringer is to be connected to one line, a shorting pin can be substituted for a plug diode at the proper crosspoint. This matrix is compatible with 1A1 or 1A2 systems.