66-TYPE CONNECTING BLOCKS

TOOLS, TERMINATION, ADAPTERS, MAINTENANCE, AND TESTING

1. GENERAL

1.01 This section provides information on the operation, maintenance, and testing of tools and adapters used with 66-type connecting blocks.

1.02 This section is reissued to add:

(a) Information on the C-key equipment test block

(b) Photograph of C-key equipment test block

(c) Table B showing operation of C-key equipment test block.

Revision arrows are used to emphasize the more significant changes. The Equipment Test List (ETL) is not affected.

2. TOOLS

2.01 The D impact tool (Fig. 1), the B impact tool (manufacture discontinued [MD]) (Fig. 2), and the 714B tool (Fig. 3) are used to make terminations on 66-type connecting blocks. The D impact tool is recommended for use in installations where numerous cutdowns are required. The 714B is intended for occasional or intermittent use.

Note: The blades for the D impact tool, the B impact tool, and the 714B tool are not interchangeable.

A. D Impact Tool

2.02 The D impact tool (Fig. 1) consists of a handle with a switchable dual force impact mechanism, a blade release switch, and a cavity for storing a spare blade. The handle is designed to accept three different type blades, one of which is the 8762D-66 blade designed for use with the 66-type connecting block.

2.03 The impact adjustment switch on the handle is labeled HI and LO. In the HI position, the impact tool is set for 22-gauge or larger conductors. When set in the LO position, the impact tool is set for 24- or 26-gauge conductors.

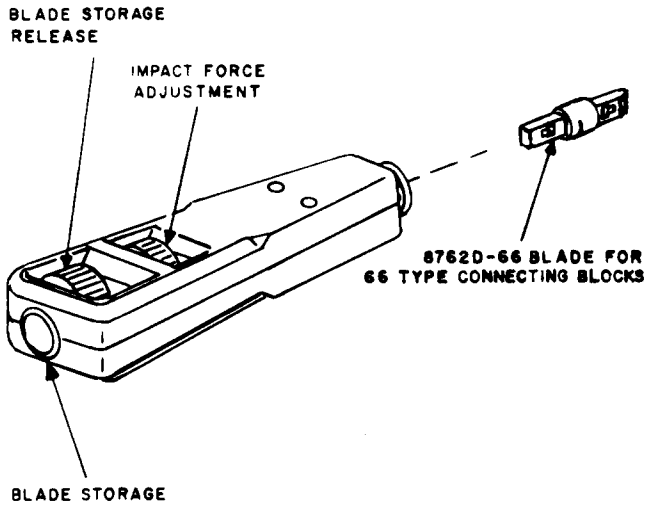


Fig. 1—D Impact Tool

2.04 One side of the plastic handle is labeled CUT; this identifies the cutting side of the tool.

2.05 To access spare blade storage:

(1) Hold tool with blade end up.

(2) Rotate release wheel. Blade will drop out.

(3) Release wheel.

2.06 To store blade:

(1) Hold tool with blade end down.

(2) Insert blade in hole.

(3) Rotate release wheel until blade drops in. Release wheel to lock.

2.07 To reverse or replace blade:

(1) Rotate blade 1/4 turn and withdraw from tool.

(2) Insert new or reversed blade fully into tool. Rotate 1/4 turn to lock.

B. B Impact Tool (MD)

2.08 The B impact tool (MD) (Fig. 2) consists of a reversible steel blade attached by a single screw to a plastic handle. One end of the blade is used for seating and cutting conductors while the other end is used for seating only. A spring mechanism inside the handle controls the amount of force the installer must exert to terminate and cut wires.

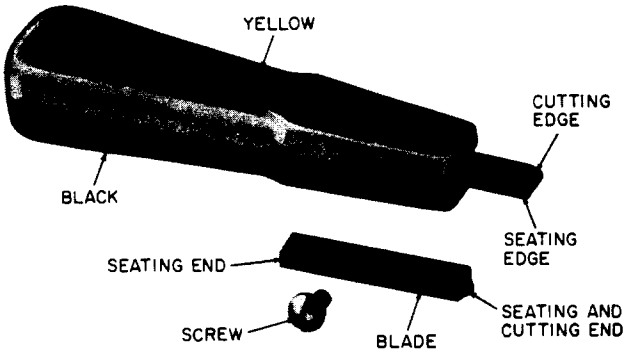


Fig. 2—B Impact Tool (MD)

2.09 An adjustment screw (not shown) for varying the spring tension, combined with an indicator pointer at the large end of the handle, provides the means of controlling the impact. This is necessary to compensate for variations in wire size and insulation thickness.

2.10 One half of the plastic handle is yellow to aid in identifying the cutting side of the tool.

Note: While the B impact tool is now rated MD, the blade is not MD and can be ordered separately. Order as Blade, 8762B-66.

C. 714B Tool

2.11 The 714B (Fig. 3) is similar to the B impact tool (MD) except that it does not have an adjustable impact mechanism and is yellow and green instead of yellow and black.

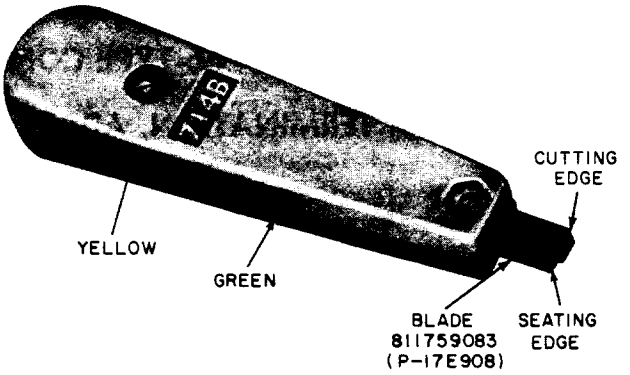


Fig. 3—714B Tool

2.12 To reverse blade of the B impact tool (MD) or the 714B tool, perform the following steps:

(1) Loosen single screw.

(2) Slide blade out of handle approximately 1/4 to 1/2 inch.

(3) Reverse blade.

(4) Slide blade back into handle.

(5) Tighten screw.

2.13 To replace blade of the B impact tool or the 714B tool, perform the following steps:

(1) Remove single screw.

(2) Replace old blade with new. Place blade so cutting edge will be on yellow side of handle. This is done for ease in identification of cutting side of tool.

(3) Replace and tighten screw.

Always carry the B (MD) and D impact tools or the 714B tool with the cutting edge protected or turned into handle.

D. Spring Tension Adjustment (B Impact Tool [MD])

2.14 To adjust tension of the operating spring on the B impact tool (MD), use the screw in the rear of the handle. Turning the screw clockwise

reduces tension (indicator moves toward screw). Turning the screw counterclockwise increases tension (indicator moves toward blade).

E. 724A Tool

2.15 The 724A tool (Fig. 4) is used to remove conductors from the terminals of 66-type connecting blocks. The tool consists of a 2-pronged fork with an insulated handle. The fork is sized to fit around the beams of the terminal and underneath the seated conductor. Use of the 724A tool reduces the possibility of disturbing or degrading adjacent wire connections during removal of wire.

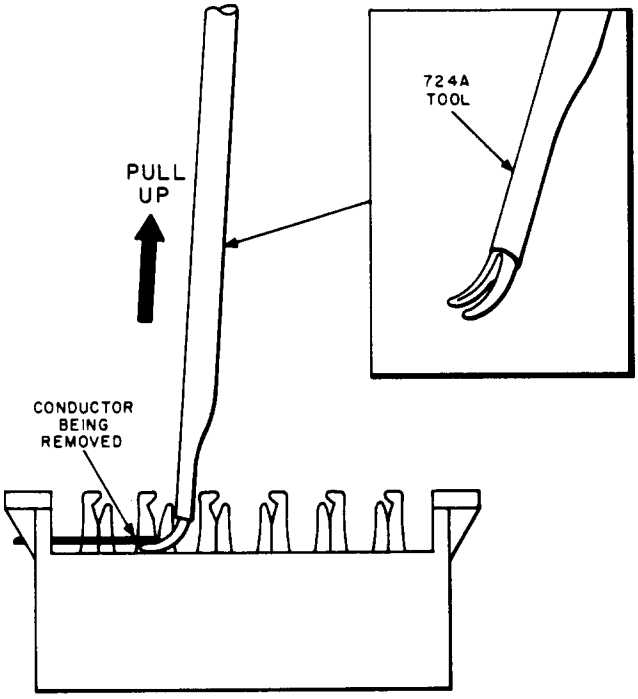


Fig. 4—Removing Conductor With 724A Tool

2.16 Place the 724A tool fingers astride the terminal and under the wire. Grasp the tool and pull the wire from the terminal in a direction perpendicular to the face of the block.

Note: Do not use adjacent terminals as leverage points.

2.17 Remove small pieces of insulation remaining around the terminals with an insulated tool.

2.18 To reterminate a wire which has been removed for testing or rearrangement (ended terminations only), perform the following steps:

(1) Cut off old contact portion.

(2) Place wire in hook of terminal, using long-nose pliers if necessary.

(3) Seat and cut with D impact tool or 714B tool.

3. TERMINATING

3.01 All terminations on 66-type connecting blocks should be made with a D impact tool or a 714B tool. The B impact tool (MD) can be used if available.

3.02 The 66-type connecting blocks will accept 20- to 24-gauge conductors: ***do not terminate 26-gauge wire on 66-type blocks except where wiring is permanently terminated on 66M1-50 connecting blocks mounted on 89B*** **brackets.** Other types of installation may result in the breakage of 26-gauge wire with minimum movement of conductors.

The following unskinned 20- to 24-gauge conductors may be terminated on 66-type blocks:

- B service wire*
- D, F, and G cross-connecting wire
- D inside wiring cable
- D, G, or H station wire
- E inside wiring cable
- SK station wire.*

Note: Terminate only one conductor per individual terminal.

3.03 Wire, other than that previously listed, including 18- and 19-gauge and JKT (obsolete) station wire, may be terminated on 66-type connector blocks, but must be skinned and cleaned (if enameled) before terminating.

*Do not use the 714B tool or the D impact tool to cut these conductors. See paragraph 3.06.

Smaller gauge wire cannot be terminated on a terminal that has been used previously with 18- or 19-gauge wire or JKT (obsolete) station wire.

3.04 The following two general types of terminations can be made on 66-type connecting blocks.

(a) ***Looping termination***—The wire or cable continues to another terminal or connecting block.

(b) ***Ended termination***—The wire or cable does not continue to another terminal or connecting block.

Note: The terminating sequence for station wire and cable should follow normal color code sequence.

3.05 To make a ***looping termination*** on a 66-type connecting block (Fig. 5 and 6), perform the following steps:

Note: The 714B tool is shown in Fig. 5, 6, 7, and 8; the D impact tool is used in the same way.

(1) Select wire to be terminated.

(2) Work wire into fanning strip.

(3) Place wire in hook of terminal, using fingers or long-nose pliers.

(4) Place seating end (cutting end of blade turned into handle) of 714B or D impact tool over terminal (Fig. 5).

(5) Press tool toward block until wire is fully seated (Fig. 6).

Warning: Do not use excessive force when seating wire in terminal; this could damage support members of some 66-type blocks. Push the tool straight over the terminal. (With D impact tool, spring will operate blade when enough pressure is applied.) Avoid bending or twisting the terminal.

3.06 To make an ***ended termination*** with SK station wire or B service wire, observe the following procedure:

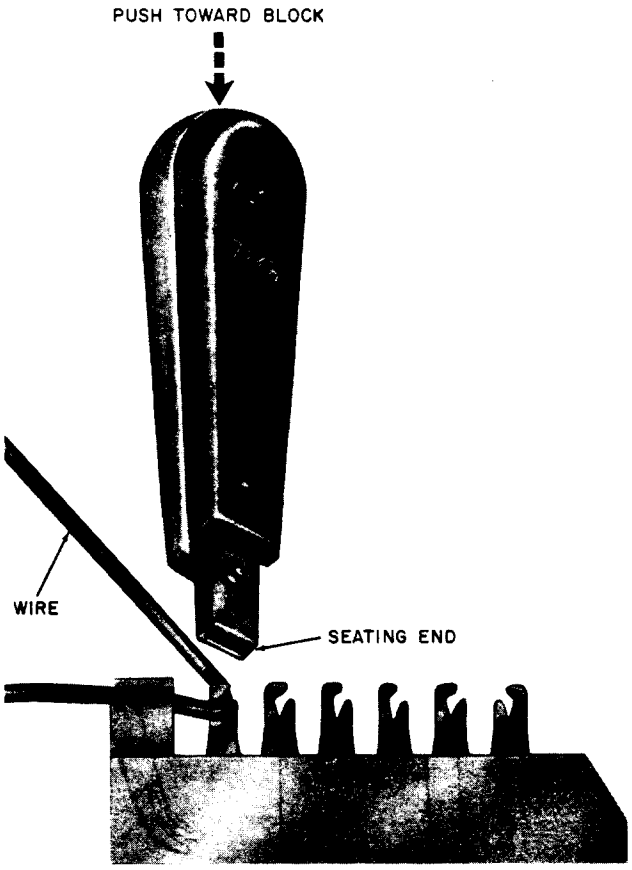


Fig. 5—Preparation for Looping Termination

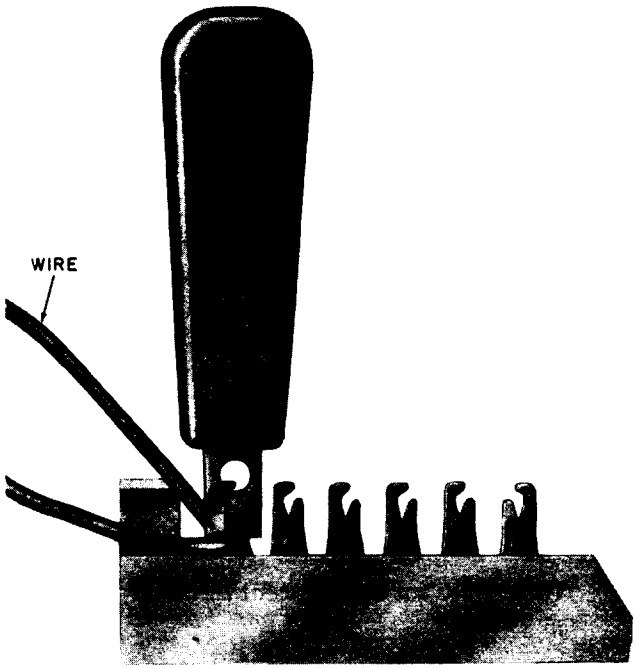


Fig. 6—Looping Termination Completed

(1) Perform Steps (1), (2), and (3) of paragraph 3.05.

(2) Cut the wire with diagonal pliers, allowing for approximately 1/16-inch of wire to protrude through terminal (Fig. 7).

Caution: Be careful not to disturb or short out adjacent terminals when using diagonal pliers to cut off wire ends.

(3) Place seating end of 714B or D impact tool over terminal (Fig. 8).

(4) Press tool toward block until wire is fully seated.

Note: The JKT (obsolete) and SK station wire, and B service wires have steel cores which will damage cutting edge of the tool.

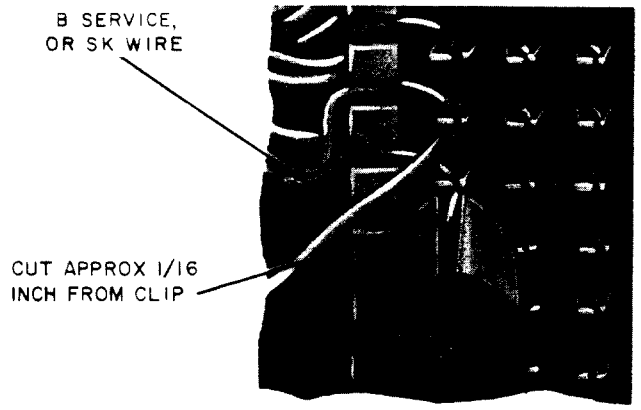


Fig. 7—Cutting B Service or SK Station Wire

3.07 To make an ***ended termination*** (Fig. 9 and 10) using the 714B or D impact tool, observe the following procedure:

(1) Perform Steps (1), (2), and (3) of paragraph 3.05.

(2) Place cutting end of tool over terminal. Be sure cutting edge of blade is positioned over scrap end of wire.

(3) Force tool toward block until wire has been severed against face of block.

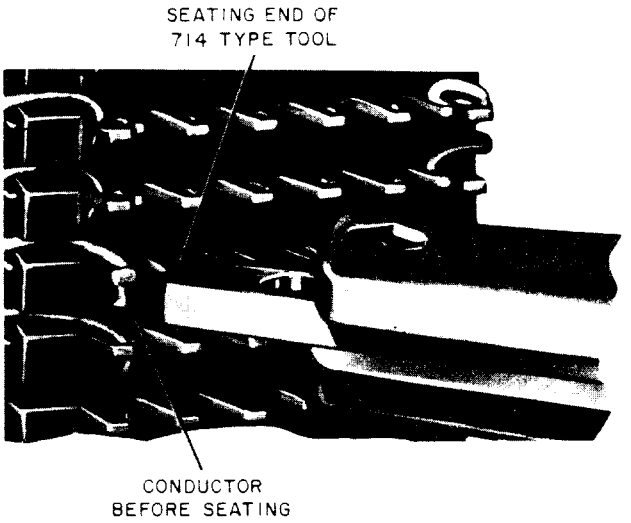
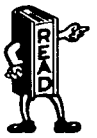


Fig. 8—Seating B Service or SK Station Wire

4. ADAPTERS

A. 161A Adapter

4.01 The 161A adapter (Fig. 11) permits terminating a spade-tipped lead to a terminal of the 66-type connecting blocks. The adapter consists of a formed tin-plated stainless steel detail which grips the terminal and the spade tip. No special tools are required to install or remove the adapter. It can be used on terminals with or without wires seated in them.



The larger opening of the adapter grips the terminal and the smaller opening grips the spade tip.

4.02 Position the adapter over the terminal and press it onto the terminal as far as possible. Insert the spade tip and seat it firmly in the adapter. The adapter and spade tip installed is shown in Fig. 12.

Due to limited space between terminals in 66-type connecting blocks, care must be exercised in placement of the adapters.

4.03 When 161A adapters are used on adjacent connectors, the adapters should be oriented so

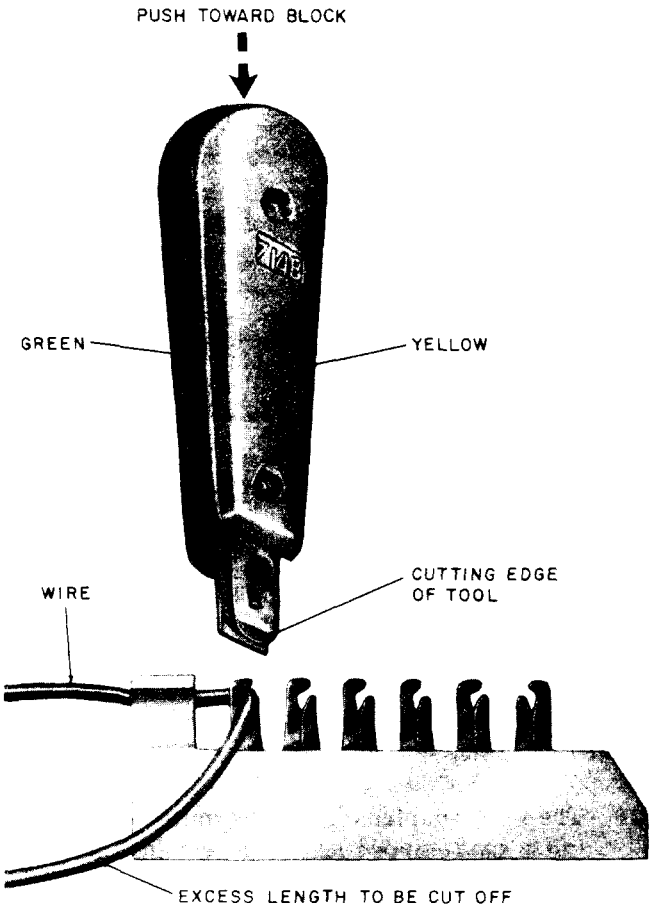


Fig. 9—Preparation for Making Ended Termination

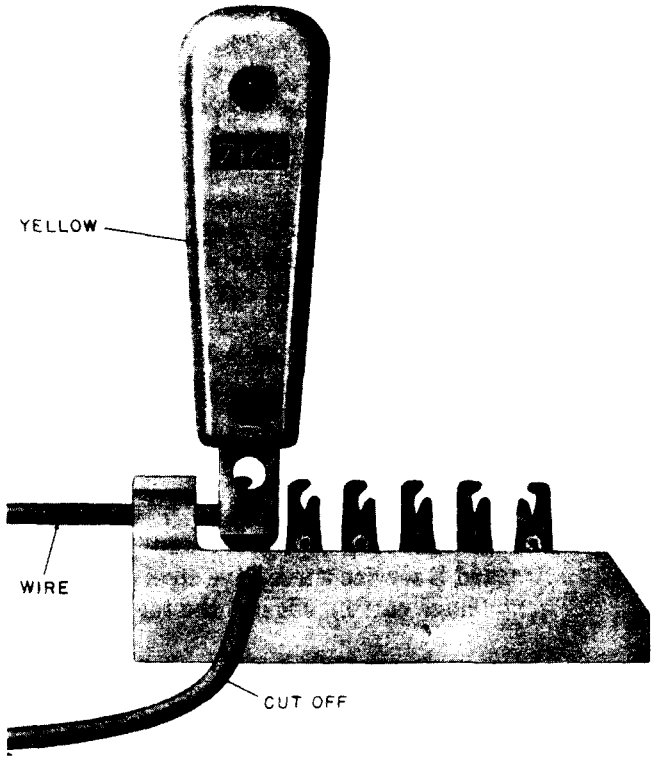


Fig. 10—Ended Termination Completed

that possible shorting between connectors is avoided. Proper and improper orientation of the adapters is shown in Fig. 12. On the 66B connecting blocks with 3-terminal connectors, adapters should not be installed adjacent to each other on the middle two terminals due to the possibility of shorting the two individual 3-terminal sections of the row.

Note: Spade-tipped mounting cords must be fastened in or near the block to prevent movement of spade-tipped leads. Use appropriate fastening device (ie, clamp, clasp, tape) or tie to existing cables with twine.

B. 183-Type Adapters

4.04 The 183A2 (Fig. 13) adapter provides additional multipling capacity for any two adjacent connectors in a horizontal row on 66-type connecting blocks. The 183B2 and 183C2 adapters provide additional multipling capacity for any two connectors in a vertical row. The 183B2 adapters can be used on 66B-type blocks and on 5A1-type terminal blocks. The 183C2 adapters can be used on 66M-type blocks. If a 183B2 or 183C2 adapter is used on one pair of vertical terminals, another 183B2 or 183C2 adapter cannot be used on the adjacent terminal pair, either directly above or below it. These adapters are not to be used as a substitute for additional connecting blocks. Do not use more than five adapters on any block.

4.05 The 183A2 adapter is a 2-terminal quick-clip connector with a spring clasp on one side which slips over two adjacent terminals of a 66-type connecting block. A plastic block is fitted around the middle to limit the distance a conductor can travel when connected.

The 183A2 adapter will act as a strapping connector if placed between two connectors.

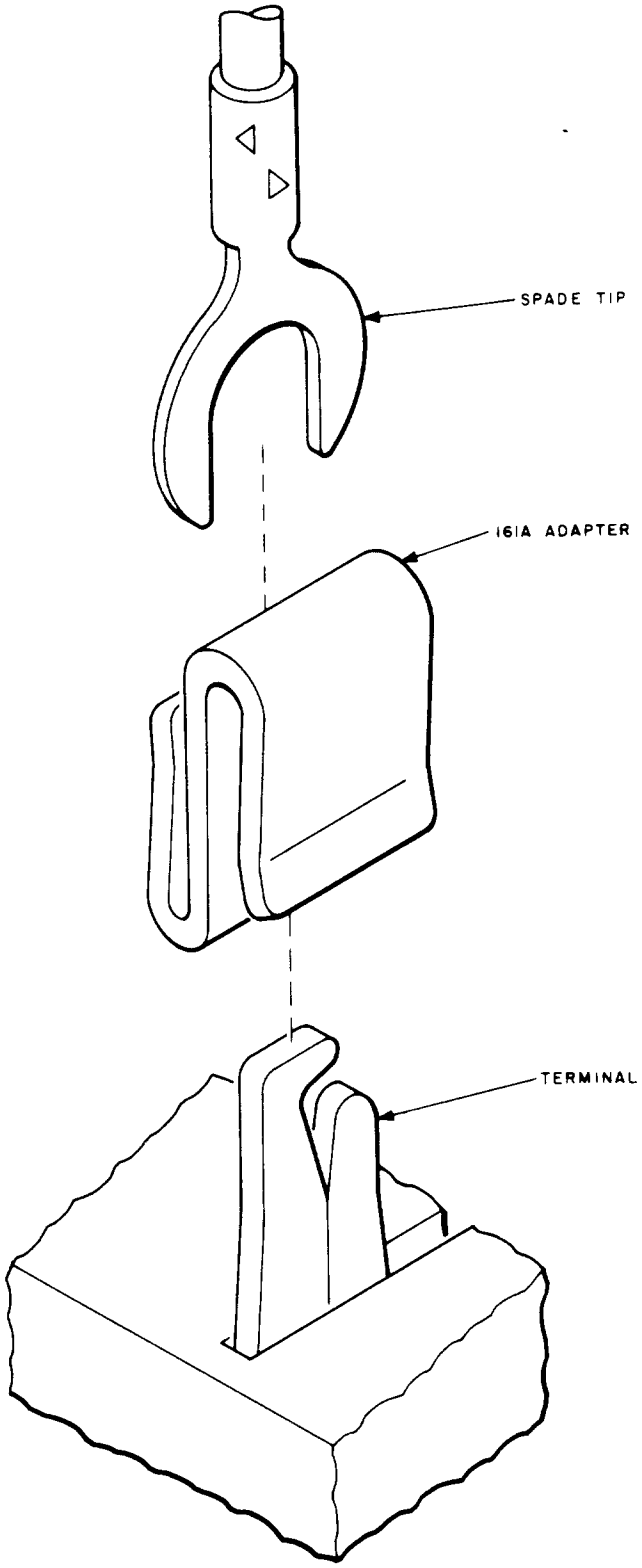
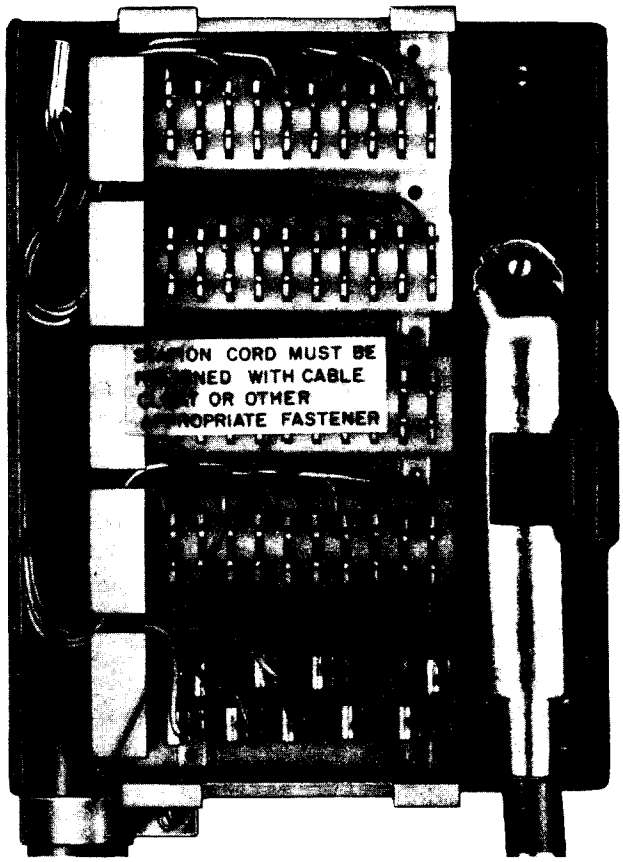


Fig. 11—161A Adapter, Installation Detail



(ABOVE) PROPER ORIENTATION OF ADAPTERS

(BELOW) IMPROPER ORIENTATION OF ADAPTERS

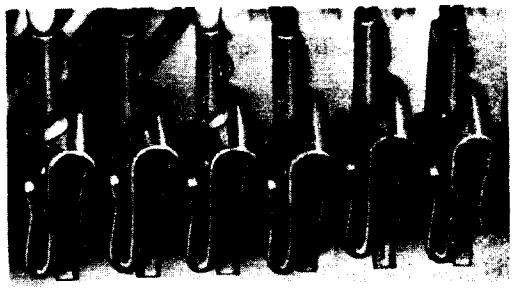


Fig. 12—Typical Installation of 161A Adapter on 66E-Type Connecting Block

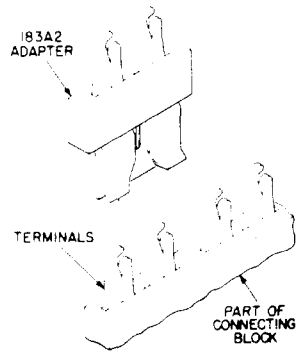


Fig. 13—183A2 Adapter, Installation Detail

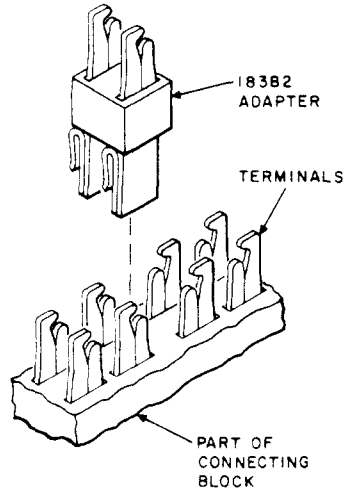


Fig. 14—183B2 Adapter, Installation Detail

4.06 No special tools are required to install or remove either adapter. The 183A2 adapter installed is shown in Fig. 15. Install as follows:

(1) Position adapter over connecting block terminals with spring clasp toward connecting block.

(2) Fit the spring clasp of the adapter over the connecting block terminals.

(3) Press adapter toward connecting block until firmly seated.

(4) Connect the inside wire or cable conductor to the adapter terminal, using a 714B tool or a D impact tool.

Note: The installation of these adapters adds height to the connecting block. Due to insufficient clearance between the connecting block and the housing cover, the adapter cannot be used on the following connecting blocks:

- 66B-type, when mounted in a 115-type apparatus box
- 66A2-25, 66A2-50, 66C2-16, and 66C2-32
- 100- or 101-type connecting units used with COM KEY® 2152 key telephone system.

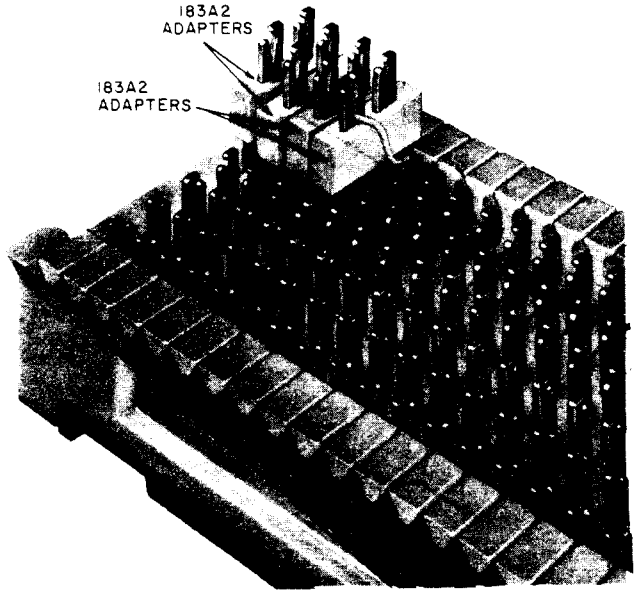


Fig. 15—Typical Installation of 183A2 Adapters on 66B-Type Connecting Block

C. 260A Adapter

4.07 The 260A adapter (Fig. 16) consists of 50 clips wired together in a vertical column and protected with a plastic cover. It is used to strap together up to 50 adjacent terminals in a vertical column on a 66-type block.

4.08 The adapter can be cut to any desired length with standard diagonal pliers. No special tools are required for installing the 260A adapter; press

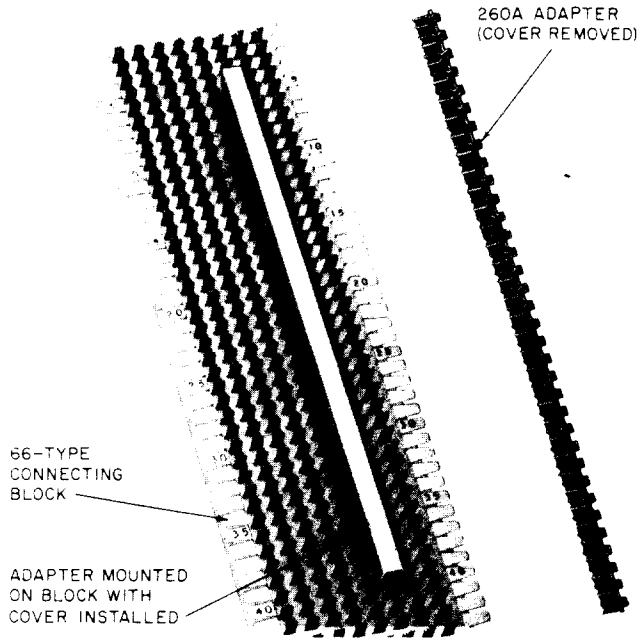


Fig. 16—260A Adapter Installed on 66-Type Connecting Block

the clips onto the connecting block column, being careful not to short any terminal to one beside it. Put the plastic cover on the adapter. The 260A adapter does not have to be removed to change strapping.

5. BRIDGING CLIPS

5.01 The B (MD) and C bridging clips are spring clips used to electrically interconnect two adjacent terminals in the same row of 66-type connecting blocks, thereby increasing the multipling capacity of the block (Fig. 17). The B bridging clip (MD) is made of stainless steel while the C clip is made of solder plated phosphor bronze. The clips are interchangeable and can be intermixed on the same block.

5.02 No special tools are required to install or remove the clip.

5.03 The 3-pair modular C bridging clip, AT-8596 (Fig. 18), is intended for use with 66M-type connecting blocks to electrically interconnect three pairs of adjacent terminals. It consists of six (6) solder plated, phosphor bronze spring clips in a plastic housing. A small finger grip for easy insertion and removal is provided.

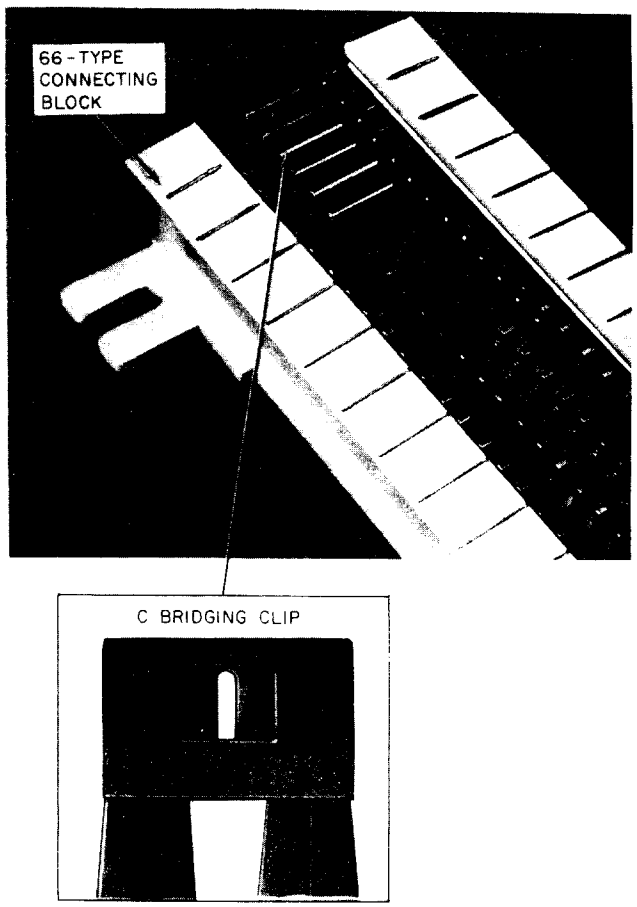


Fig. 17—C Bridging Clip, Installation Detail

6. DESIGNATION STRIPS

A. B Designation Strip

6.01 The B designation strip is designed to mark 66B3-50 and 66B4-25 connecting blocks (Fig. 19).

6.02 The strip is made of white plastic material, 2-3/16 inches by 3/4 inches, with cutouts for mounting screws. The matte finish permits marking with pen, pencil, or stencil.

6.03 The designation strip is held in place by the connecting block mounting screws and can be used at either end of a single block, or between end-to-end blocks.

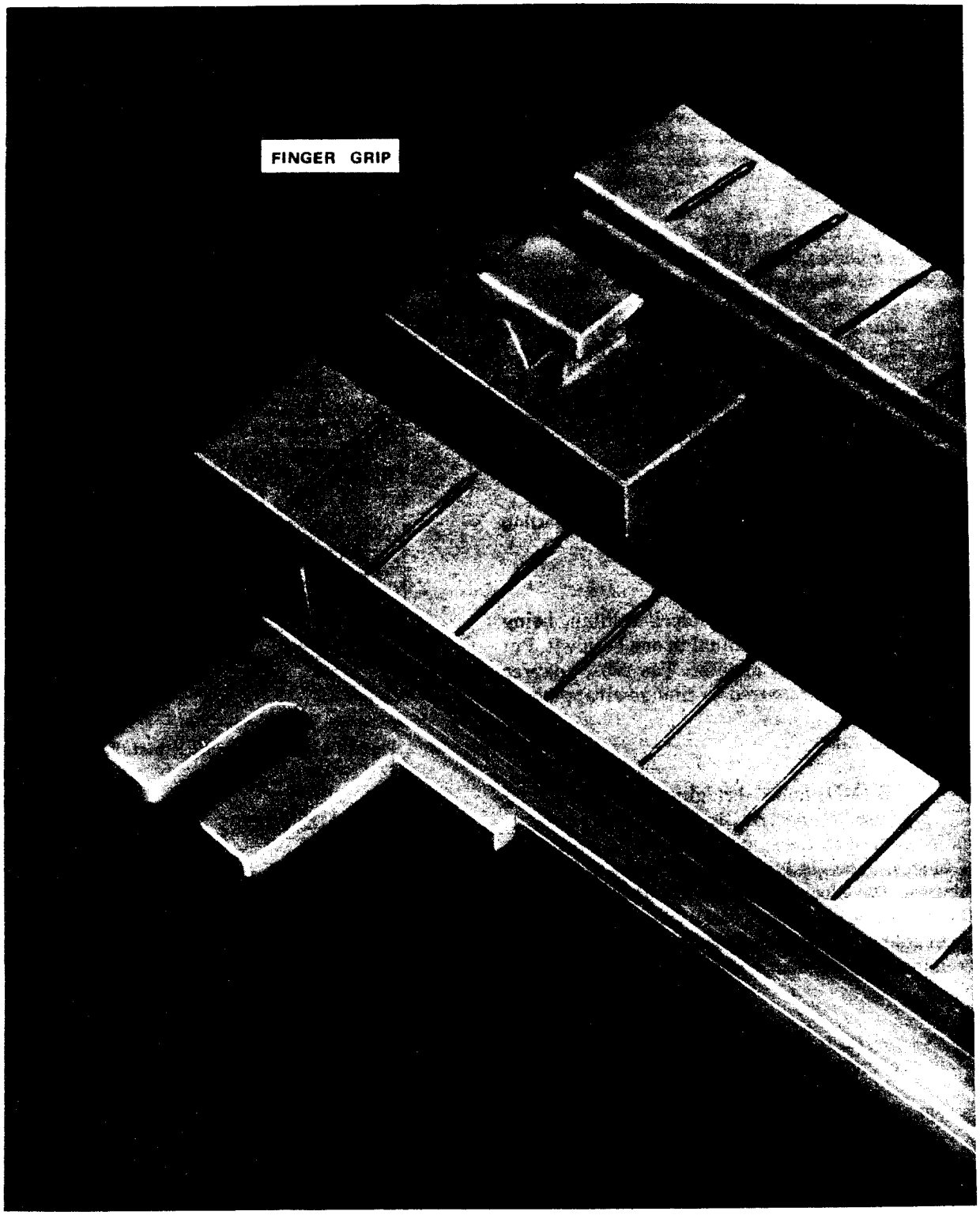


Fig. 18—3-Pair Modular C Bridging Clip on 66M-Type Connecting Block

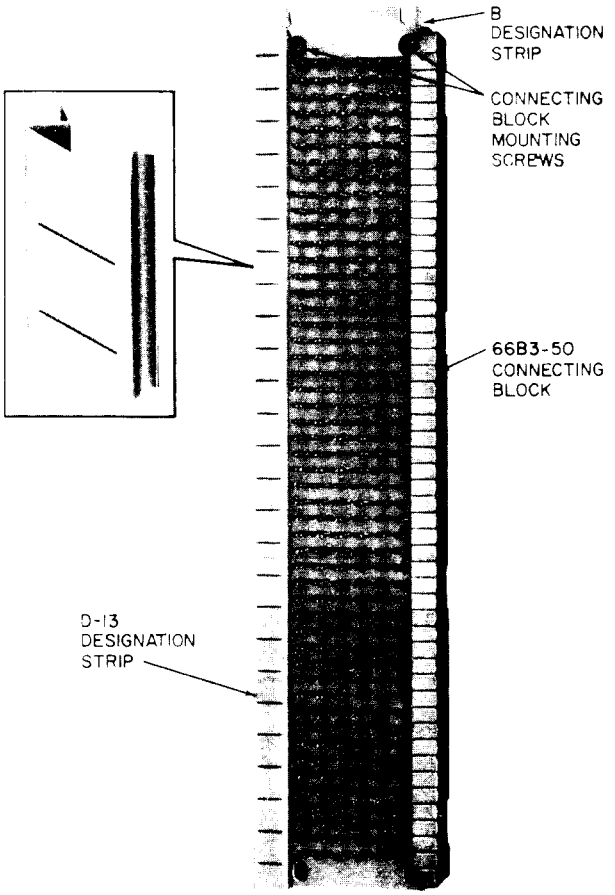


Fig. 19—Designation Strips

B. C Designation Strip

6.04 The C designation strips are available for identification of conductors on 66A-, 66B-, and 66M-type connecting blocks.

6.05 The strips are made of white plastic material in three lengths, and any one can be cut shorter with scissors or cutters. The strips are furnished without markings.

6.06 The strips are installed by snap-fitting to the fanning strip of the connecting block. The matte finish permits marking with pen, pencil, or stencil.

C. D Designation Strip

6.07 The D designation strips (Fig. 19) are the same as the C designation strips, except the D strips are furnished with imprinted lines. The lines occur every other row of terminals to indicate pairs (Table A).

7. ▶C-KEY EQUIPMENT TEST BLOCK

7.01 The C-key equipment test block is intended for use in testing key telephone circuits in apparatus or satellite closets. It is designed to test the key features on either the 66B-type connecting blocks of the 184-type backboards (red field) or the 66M-type connecting blocks of the 183-type backboards (blue field) after cables and cross-connect wires are in place.

7.02 The C-key test block (Fig. 20) consists of a molded fire retardant plastic housing enclosing the test circuitry and components. Contact is made to the 66-type connective element with or without conductors in place by six spring contacts. The test block must be positioned on either type connecting block to make electrical connection to the following contacts (from the top down); tip, ring, A, A1, lamp ground, and lamp for one key line. By appropriate positioning of the switches, proper operation of the key telephone unit line circuits and/or the associated cabling and cross-connect wiring can be verified. The test block also provides access to the tip and ring for monitoring or dialing out with a handset. See Table B for lamp and switch operations of the C-key equipment test block.◀

8. MAINTENANCE AND TESTING

8.01 Terminal beams should not be bent, misaligned, or obviously deformed.

8.02 Terminals which have been bent or misaligned, as shown in Fig. 21, may be corrected by using long-noise pliers (Fig. 22). The bent beam should be moved until it is aligned with its mate or with other terminals of the same row. Care should be taken not to move beams or terminals in a direction which would spring or open the contact surfaces between the two beams.

8.03 Terminals which have been damaged or sprung, resulting in an obvious gap between the two contact surfaces (Fig. 23), should not be used. There is no prescribed method for correcting this condition; therefore, the connecting block should be replaced.

8.04 Field replacement of connectors in 66-type connecting blocks is impractical. Replace

TABLE A

SELECTION AND IDENTIFICATION
ORDERING GUIDE

TYPE DESIGNATION	TYPE CONNECTING BLOCK	MARKING	DIMENSION (INCHES)
Strip, Designation, B	66B3-50 and 66B4-25	Blank	2-3/16 by 3/4
Strip, Designation, D, 16	66A	Blank	16-1/8 by 9/16
Strip, Designation, D, 16	66A	Lined	
Strip, Designation, C, 13	66B*	Blank	13-1/4 by 9/16
Strip, Designation, D, 13	66B*	Lined	
Strip, Designation, C, 10	66M	Blank	10 by 9/16
Strip, Designation, D, 10	66M	Lined	

* Can be used on 66C-type blocks but must be cut to proper length.

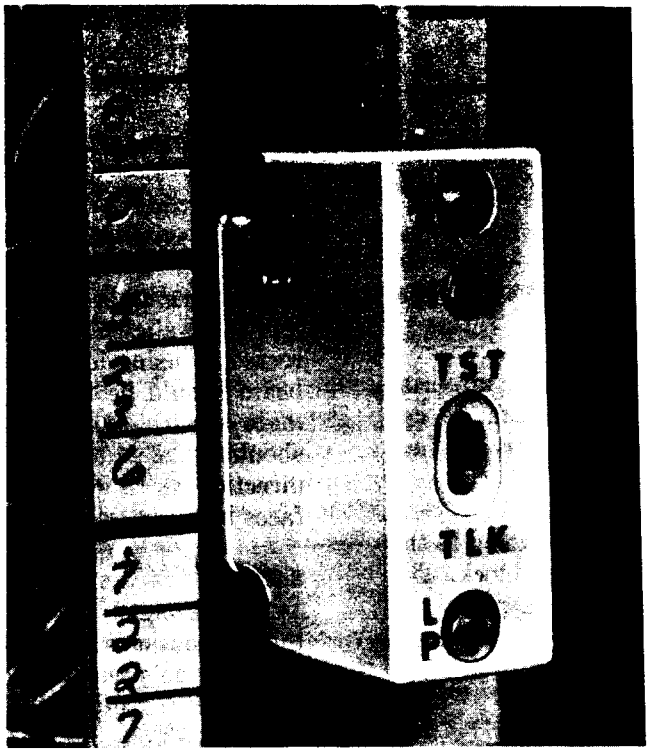


Fig. 20—▶C-Key Equipment Test Block◀

TABLE B

C-KEY EQUIPMENT TEST BLOCK OPERATION

SWITCH POSITIONS		LAMP INDICATIONS		TEST RESULTS
H	TST-TLK	T/R	LP	
Normal	Test	On	Steady On	Normal operation—CO (or PBX) line
		Off	On	Working KTU but no CO (or PBX) line or station off-hook
		On	Off	KTU inoperative but CO (or PBX) line working
		Off		No KTU, faulty, or miswired
Depressed			Wink	Normal operation with wink feature
			Steady	Station off-hook (or normal operation with no wink feature)
		On	Off	KTU inoperative or power supply faulty
		Off		No KTU, faulty, or miswired
Normal	Talk		On	Normal operation—possible to dial with handset if CO (or PBX) is a working line
			Off	No KTU or faulty
Depressed				Normal operation
			On	Station off-hook

connecting blocks having damaged terminals which cannot be repaired.

Note: In some cases, it may be desirable to use a 183-type adapter instead of replacing the connecting block.

8.05 The 15AA-25 and 15AB-25 (Fig. 24) terminal blocks are used to test system and station operations. These blocks are made up of cables which are terminated on one end with a 50-pin connector which will plug into a key telephone set cord. The other end is terminated on five 961A- or B-type connectors which can be plugged directly onto a 66-type block.

8.06 For test purposes, the 15AA-25 (for 66M blocks) or 15AB-25 (for 66B blocks) is plugged onto the row of terminals to be tested. The other end is connected to a key telephone set which allows the necessary tests to be performed.

8.07 The 31A indicator (Fig. 25) provides line status verification. This device consists of a 549L light emitting diode (LED) mounted in an encapsulated molded assembly. This assembly plugs onto the lamp (L) and lamp ground (LG) lugs displaying the visual status of the system. The indicator can be used on all codes of 66-type connecting blocks.

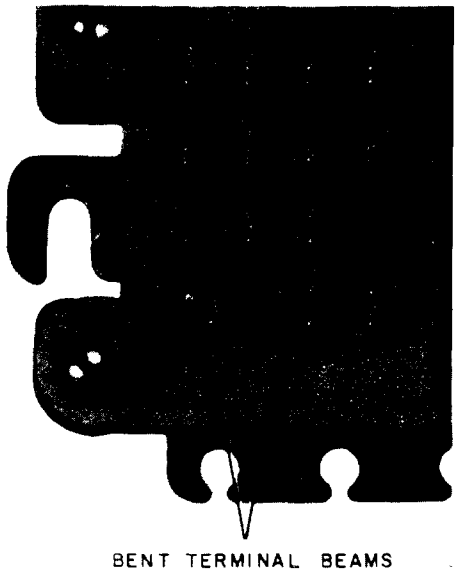


Fig. 21—Misaligned Terminal Beams

8.08 Current production of the 31A indicator has a label affixed to the front (designated T-R) which permits its additional use in determining line polarity. In use, the 31A indicator is inserted ***momentarily*** across the tip and ring terminals on 66-type blocks. If the CO/PBX battery is of proper polarity (battery on ring-ground on tip) the LED will light.

> ***Note:*** Do not leave the indicator connected to line battery any longer than is necessary to determine polarity or damage to the diode may occur.

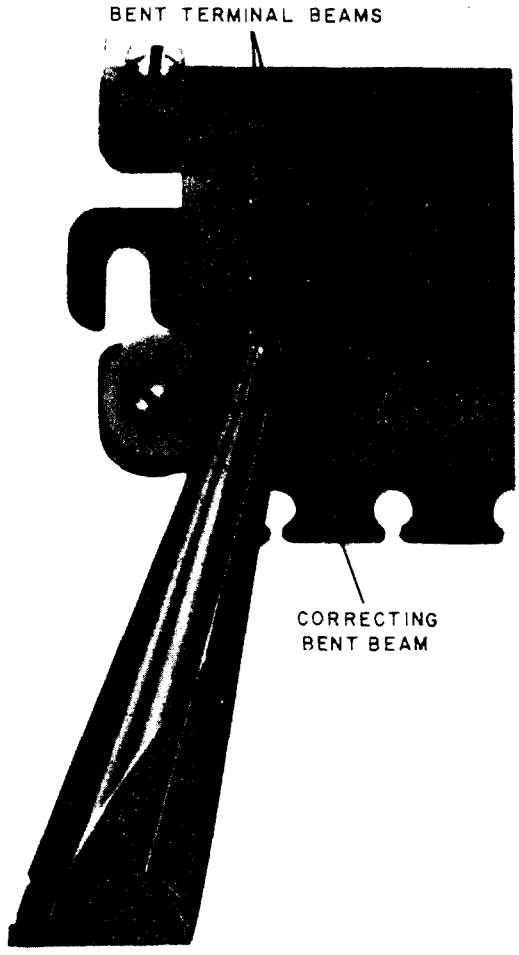


Fig. 22—Straightening Terminal Beam

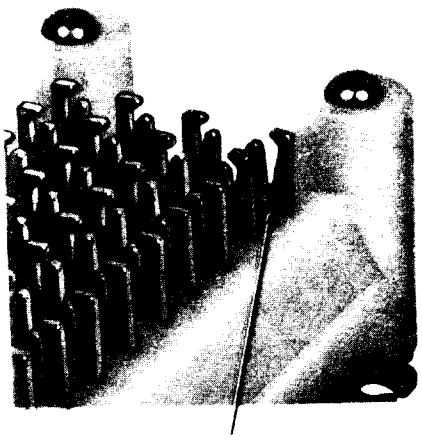


Fig. 23—Gap Spread Distorted

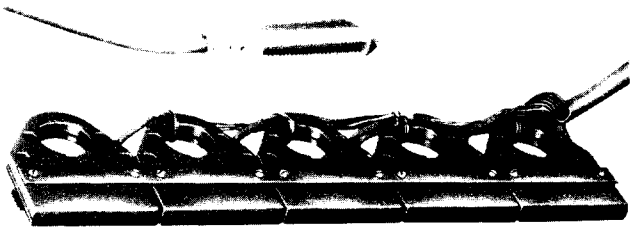


Fig. 24—15-Type Terminal Block

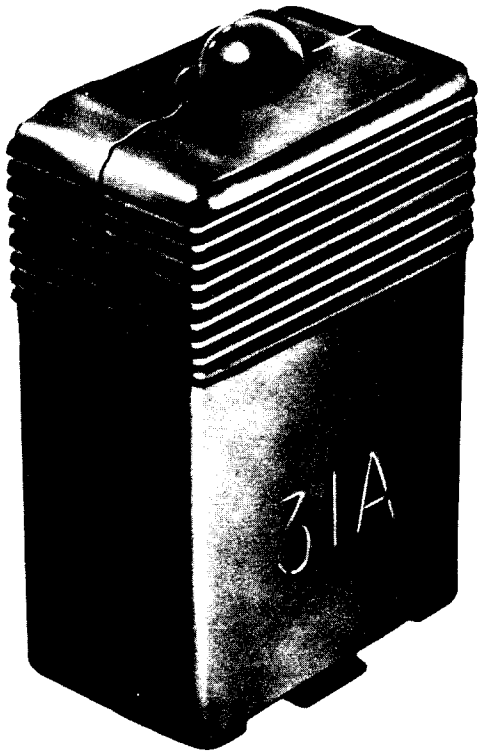


Fig. 25—31A Indicator