

MISCELLANEOUS
 QUICK CONNECT CROSS-CONNECT BAY

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1. GENERAL

1.1 Description

1.11 The "QCX" Quick Connect Cross-Connect Bay is basically a decentralized Distributing frame which is being utilized in many systems for various applications. This bay features the 88 Type Wiring Shelf and Block Combination which eliminates soldering, wire stripping and wire wrapping.

1.2 Capacities

1.21 This bay is being furnished on unequal flange 19 inch duct type bays in heights of 7'-0", 9'-0", 10'-6" and 11'-6" and will accommodate 3,600, 5,400, 6,000 and 7,200 pairs respectively.

1.3 Cautions

1.31 The cable leads terminating at the "QCX" 88 Type Connecting Blocks may be 22, 24 or 26 gauge wire with either (PE) Polyethylene, (PP) Polypropylene, (IPVC) Irradiated Polyvinyl Chloride, or (PVC) Polyvinyl Chloride Insulation.

1.311 Do Not Use any cable such as the "M" Type, or "P" Piece Part Wire that contains cotton as part of the conductor lead insulation. The use of cotton insulated wire will have an adverse affect to the quick connection applied to the "88" Type Connecting Blocks.

1.32 When seating cable leads or jumper wires in the "88" Type Connecting Blocks, be sure to follow only the procedures described herein. The Blocks are so designed that improper seating and impacting will lead to either insulated or open connections.

1.33 The 88 Type Wiring Shelf (index strip) and the 88 Type Connecting Block (miniature clip terminal) are designed to accommodate only one lead per position (Do not attempt to put more than one lead in each position on the index strip or connecting block).

1.4 Tools

The following tools are required to properly terminate conductors on the "QCX" Bay. (See Fig. 1).

Tool	Description	Ordering Number
788A-1	Tool, Handle	13788011
788C-1	Tool Head, 5-Pair Cut-off	13788031
788D-4	Tool, 1-Pair Insertion & Cut-off	13788044 ←
788H-1	Tool, 5-Pair Impact Insertion	13788081
788J-1	Tool, 5-Pair Insertion/Cut-off Impact	13788101
788K-1	Tool, 88 Block Wire Holding	13788111
788M-1*	Tool, Head Replacement	13788131 ←

*This is a replacement for a defective 788J-1 Tool Head.

NOTICE - NOT FOR USE OR DISCLOSURE OUTSIDE THE BELL SYSTEM EXCEPT UNDER WRITTEN AGREEMENT

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2. CABLING

2.1 General

2.11 The cable running, sewing, clipping, protecting, etc. requirements of Handbook 8 shall apply to all cables run on the cable racks for the "QCX" Bay(s).

2.12 Cables serving the "QCX" Bay should waterfall off the cable rack in the proper sequence, i.e., the cables terminating the top wiring blocks (Shelf "A") should enter the frame first, then cables for shelf "B", etc. This sequence of cable entry into the bay will eliminate cables from crossing and twisting and provide a neat workmanship appearance. Refer to Fig. 2.

2.2 Butt Location

2.21 Cables terminating at each "QCX" Wiring Shelf shall be butted at approximately the lower edge of the top mounting plate for each individual shelf that they serve. Refer to Fig. 2.

3. FORMING AND FANNING

3.1 Forming

3.11 After the cables have been butted, stripped and secured in place, guide the cable leads through to the front side of the wiring blocks. As indicated in PARS.

3.21 and 3.211, these leads can be formed over and/or under the wiring blocks depending upon the gauge of wire used and the amount of congestion within the confines of the cable entry slots.

3.111 Prior to fanning the cable leads into the wiring block index strips, place a temporary band of twine or nylon tie around the cable leads and the cables, as shown in Fig. 2. These bands around the cables will provide additional cable lead slack that might be required in case of wiring errors. At the completion of the wiring operation, these bands should be removed. However, they should not be considered as a requirement.

3.112 It is not necessary to band the loose wire forms from the butt location to a point just behind the wiring shelf, however be sure the protection strip is applied to the bottom edge of the mounting plate at the butt location as shown in Fig. 2.

3.2 Fanning

3.21 Where the wiring shelf being served consists of 22 gauge cable leads, or predominately 22 gauge wires, the cable leads for vertical rows 1, 3, 5, etc. should enter from the top side of the shelf and the cable leads for vertical rows 2, 4, 6, etc. should enter from the bottom side of the wiring shelf (refer to Fig. 2).

3.211 Where the wiring shelf being served consists predominately of 24 or 26 gauge wire, the cable leads may enter from either the top or bottom sides of the wiring shelf. The reason for splitting 22 gauge cable leads over the top and bottom sides of the wiring shelf is to avoid congestion at the entry end of the cable slot area which will impair mounting the "snap in" designation strips.

3.22 Cable leads shall enter the wiring shelf cable slots from either the top or bottom side and then dress into the proper index strip slots in the following manner:

A. Allow enough slack to dress the cable leads back into the slot area, (see Fig. 3) then using the high tooth of the index strip to split the cable pair, seat the tip and ring leads in the index strip with light finger and thumb pressure.

PRECAUTION: DO NOT ATTEMPT TO TERMINATE ANY TYPE OF TEXTILE INSULATED WIRE IN THE 88 TYPE CONNECTING BLOCKS.

B. Dress all 25 pairs of a vertical row in their proper index strip position and then proceed to seat 5 pair at a time, starting at the bottom or top, using the 788H-1 or 788J-1 (spring loaded) insertion head tools. (See Fig. 4). Where cable leads multiple horizontally across two or more rows, refer to PAR. 3.23.

NOTE: Prior to seating the cable leads with either the 788H-1 or 788J-1 Tool, a quick check of the cable pair assignments should be made to pick up crosses or reversals.

C. To properly seat and/or cut-off the cable leads in the index strip, use one of the following methods:

Method - 1: Where multiple leads are not involved, use the 788H-1 Spring Loaded Insertion Head to seat the Five Pair in the index strip. Then using the 788C-1 Cut-off Tool (see Fig. 5) proceed to cut-off the Five Pair of cable leads at one time. Where multiple leads are involved within the confines of the Five Pair, it will be necessary to use the 788D-4 Single Pair Cut-off Tool (see Fig. 1).

When using the 788C-1 Five Pair Cut-off Tool, be careful to align the tool squarely with the wiring shelf, index strip, (cutting blades on scrap side of conductors) then with a straight forward motion, apply the tool. Tilt the tool to its top position and then with pressure applied, roll the tool into the extreme bottom position. This operation will cut-off five pair of cable leads at one time. (Blades of the cutting head are individually seated and will not short out cable pairs).

PRECAUTION: DO NOT TILT THIS TOOL TO THE LEFT OR RIGHT SIDE WHEN PERFORMING THE CUT-OFF OPERATION, TILTING THE TOOL MAY DAMAGE THE PLASTIC KNOBS OF THE WIRING SHELF AND ADVERSELY AFFECT THE SEATING OF THE 88 TYPE CONNECTING BLOCKS.

Method - 2: Where multiple leads are not involved use the 788J-1 Five Pair Insertion/Cut-off Impact Tool. This tool has a three piece reversible head which can first be used to insert the cable leads into the index strip. Then, after rotating the head into the cutting blade position, can be used to cut-off the Five Pair of leads with one single impact.

The 788J-1 Tool is normally received from stockkeeping with the head set in the insertion position. This can be changed to the cut-off position by using the following procedure:

- 1 - The head is made up of three separate parts - the metal housing and a two piece plastic insert.
- 2 - Pull the "snap on" head off the impact shaft.
- 3 - Hold the metal housing in one hand and then using the thumb, push against the end of the plastic insert. The plastic parts will easily slide out of the housing.
- 4 - Take the smaller of the two plastic parts (the one with the ten cutting blades) and rotate it so the blades are set adjacent to the ten metal insertion blades and so the cutting blades protrude outward (be careful these blades are very sharp). The parts will be guided back together by two "V" slots cut in the base.
- 5 - Hold the two pieces together with the thumb and forefinger and slide them back into the metal housing so the cutting blades fit into the high side. The opposite side fits into a grooved slot.
- 6 - Fit the head back onto the impact shaft and rotate it until it "snaps" into place on the shaft.

NOTE: Should the cutting blades or other parts of the 788J-1 Tool Head become defective, replace the tool head with a 788M-1 replacement part.

D. After the cut-off operation, remove any scrap pieces of wire or insulation that might impair seating the 88 Connecting Blocks.

3.23 When cable leads are multiplied either vertically down a row or horizontally across several rows, be sure to allow sufficient slack in the leads to dress them back and down into the cable slot area. If these leads are not dressed properly back into the slot area, leads crossing over them will create a pileup and hinder the mounting of the "snap in" designation strips. (Refer to Fig. 6).

4. CONNECTING BLOCKS

4.1 Description

4.1.1 The 88 Block is a two color block used to assist in the identification of 5 pair groups of wire along the 25 pair row. When looking at the front side of the wiring block, row 1 should have the white side facing in toward the cable slot area, and then blue in the next position. Row two should be the opposite starting with blue and then alternate colors downward. (Refer to Fig. 7).

4.2 Alignment and Insertion

4.2.1 After the cable leads have been properly seated and cut-off in the wiring block, apply the 88 Type Connecting Blocks in the following manner. (Refer to Fig. 8).

A. Starting at the extreme top or bottom of row 1, set the connecting block firmly into its proper position by hand, then place the 788H-1 (5 pair insertion impact tool) or 788J-1 (set in the insertion position) squarely onto the connecting block. Be sure to align the clips of the block with the slots in the index strip.

B. With the butt end of the tool pressing against the palm of the hand, apply a firm steady pressure forward until the spring loaded tool releases. View the side of the connecting block to be sure the plastic knobs of the index strip have seated into the holes on the edge of the connecting block.

PRECAUTION: DO NOT ROCK THE TOOL TO INSERT THE CONNECTING BLOCK. THIS TYPE OF SAWING ACTION WILL CUT WIRES.

C. Continue seating all connecting blocks in position until all leads have been terminated in the wiring shelf.

5. CONTINUITY TEST

5.1 After all connecting blocks have been seated into their proper positions within a bay or line-up of bays, run a continuity test on all terminated cable leads. The AT-8662 "C" Test Cord (operating company furnished) may be used to assist in the lead testing operations. (See Fig. 1).

6. DEFECTIVE CONNECTIONS

6.1 Repair Procedure

6.1.1 While running the continuity test operation, a lead, or several leads are found to be open within the confines of a connecting block, or a connecting block is found to be damaged, the following repair procedures should be followed.

A. Properly tag and identify the jumber wires with respect to their positions in the connecting block and then remove them. Place the 788K-1 (Holding Tool) against the five cable pair at the base of the connecting block about to be removed, this tool will fit in between rows of connecting blocks and hold the cable leads in place.

B. While holding the cable leads in place with one hand on the 788K-1 Tool, use a pair of long nose pliers or side cutting pliers and grasp the connecting block to be removed firmly in the middle with the other hand. Then give a short quick pull to remove the block. A left to right pulling motion also works well. (See Fig. 9).

PRECAUTION: DO NOT REUSE ANY PREVIOUSLY APPLIED CONNECTING BLOCKS. DISCARD THEM IMMEDIATELY.

C. Using a pair of long nose pliers, reach into the index slots and remove all leads one at a time.

D. Again reusing the long nose pliers, reseal each individual conductor into its proper index strip position, however move these leads over approximately 1/4" to provide a new point of incision for the slotted beam terminal. Reterminate all cable leads under the previously removed block.

E. Reseat and cut-off all 5-pair of cable leads as previously described in PARS. 3.22c) and 3.22d). It may be necessary to cut-off the ends of the lead with a pair of diagonals when the reterminated leads were reseated too short to be cutoff with the 788J-1 (5-pair) or 788D-4 (1-pair) Tools.

PRECAUTION: DO NOT LEAVE THE LEAD ENDS LONGER THAN 1/32". LONG LEAD ENDS MAY SHORT-OUT TO ONE ANOTHER.

F. After a 88 Connecting Block has been reseated and all leads have been tested and proven to be 100% clear of troubles and opens, preparations should be made to run the "F" type (PVC-Insulated) X-Connect Wires. Providing the X-Connections are not to be run by the operating company.

7. CROSS CONNECTING

7.1 Jumper Running

7.11 When running the "F" Type X-Connect Jumpers, consideration should be given to fully utilize the maximum amount of jumper wire space available and eliminate any congestion areas, therefore the following basic information should be applied:

A. Allow approximately 4 inches of slack at each end of the jumper wire. This slack should be dressed back and down into the jumper ring area.

B. Visualize each wiring shelf being divided into (4) equal sections and where (3) or more adjacent bays are involved, visualize each bay (11'-6 or 9'-0) also being divided into (4) equal sections (see Fig. 10). This is necessary to fully utilize the upper and lower express troughs of the "QCX" Bays.

C. When A X-Conn. Wire originates at the lower left section of a wiring shelf, dress the wire down and to the left providing the wire does not terminate on the right side of the same shelf or on the shelves of the right adjacent bay. (Refer to Fig. 10, Leads A, D and J).

D. When a X-Connect wire originates at the lower right section of a wiring shelf, dress the wire down and to the right providing the wire does not terminate on the left side of the same shelf or on the shelves of the left adjacent bay. (Refer to Fig. 10, Leads C, D and H).

E. When a X-Connect wire originates at the upper left section of a wiring shelf, dress the wire up and to the left providing the wire does not terminate on the right side of the same shelf or on the shelves of the right adjacent bay. (Refer to Fig.10, Leads B, C, F, H and K).

F. When a X-Connect wire originates at the upper right section of a wiring shelf, dress the wire up and to the right. Providing the wire does not terminate on the left side of the same shelf or on the shelves of the left adjacent bay (refer to Fig. 10, Leads A, E, F, G, J, and K).

G. When running X-Connect wires to non-adjacent bays always use the upper or lower express troughs depending upon whether the wire originates at the upper or lower section of the bay. (Refer to Fig. 10, Leads A, B, F, and H).

7.2 Terminating

7.21 The "F" Type X-Conn. Wires should be terminated in the following manner.

A. Dress the jumper wire into the proper slots of the 88 Type Connecting Block using the high tooth of the block to split the tip and ring leads.

B. Using the single pair 788D-3 Tool, fully seat and trim off the jumper wire (Refer to Fig. 11).

NOTE: The 788D-4 Tool is a double ended tool for seating only or for seat and cut-off operations.

7.22 The AT-8762-D Impact Tool (COMCODE No. 402024723) is a standard operating company universal tool that may be used for insertion/cut-off or insertion only of single wire leads. This tool can be furnished with several different type blades. Therefore, when used on 88 Type Connecting Blocks, the 88/108 Type Blade (COMCODE No. 402024699) must be used.

7.3 Removing

7.31 To remove the jumper wires from the 88 Block, use a pair of long nose pliers to grip one conductor at a time and gently pull straight out.

7.32 Jumper wires may be reused, however be sure to cut-off the old contact portion of the wire and reterminate at a new point as described in Paragraphs 7.21a and 7.21b.

NOTE: When a jumper wire has been removed, remove any small pieces of insulation from the connecting block with an orange stick of spudger.

→ Indicates new or changed information.

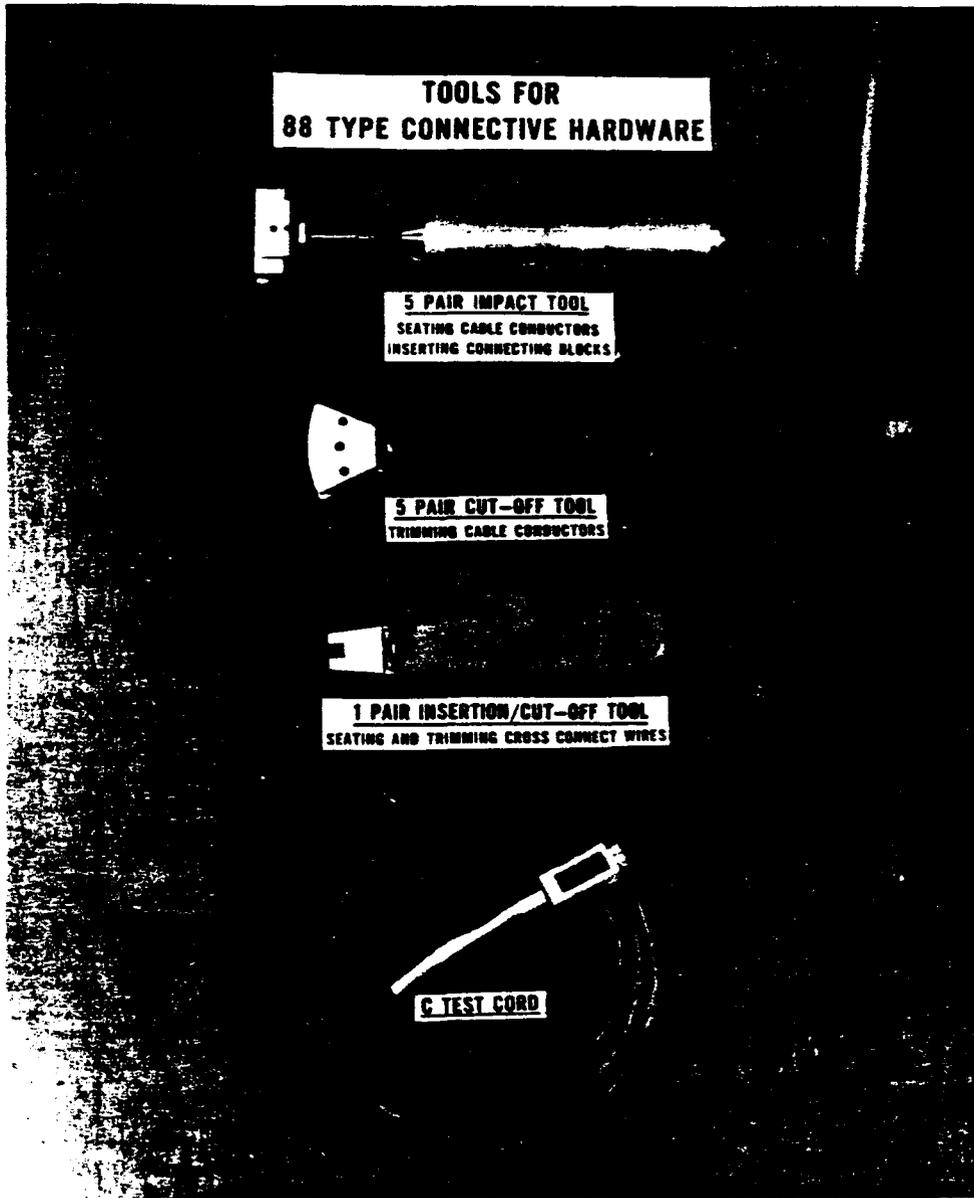
ATTACHMENT:

Figures 1 thru 11 on pages 7 to 16.

Engineering Planning Manager
(Installation)

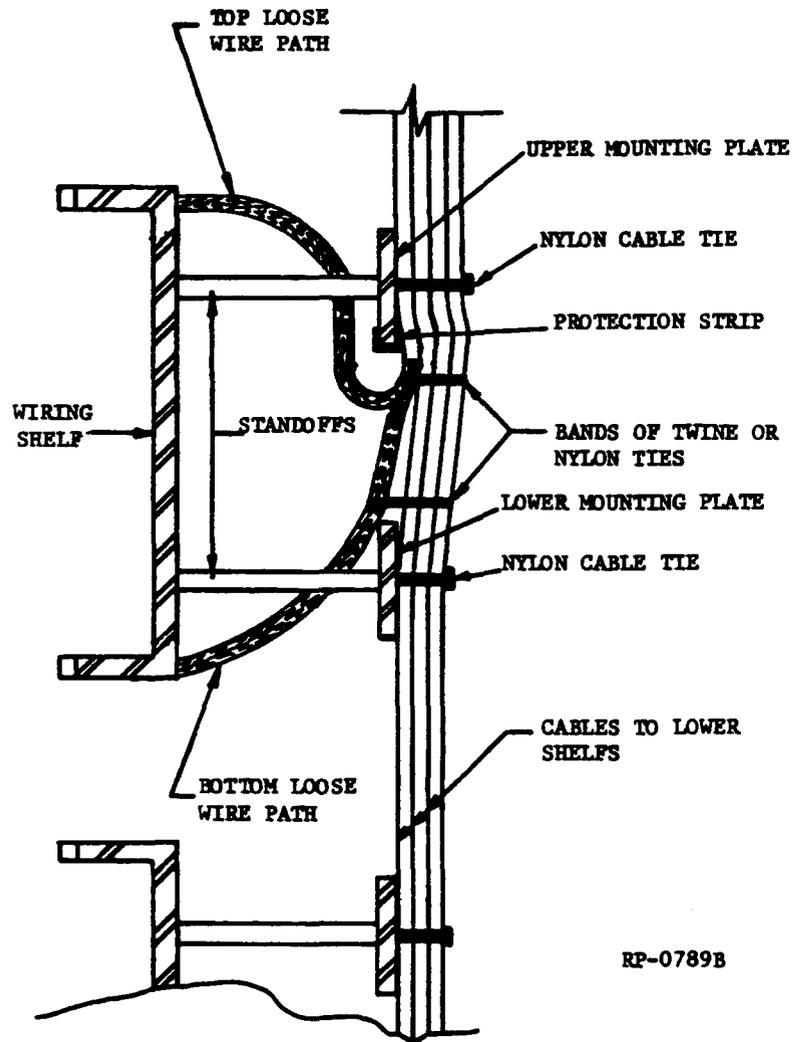
Reason for Reissue:

Add reference to 788M-1 Tool Head
Update 788D-3 to 788D-4
Add info on AT-8762D Tool



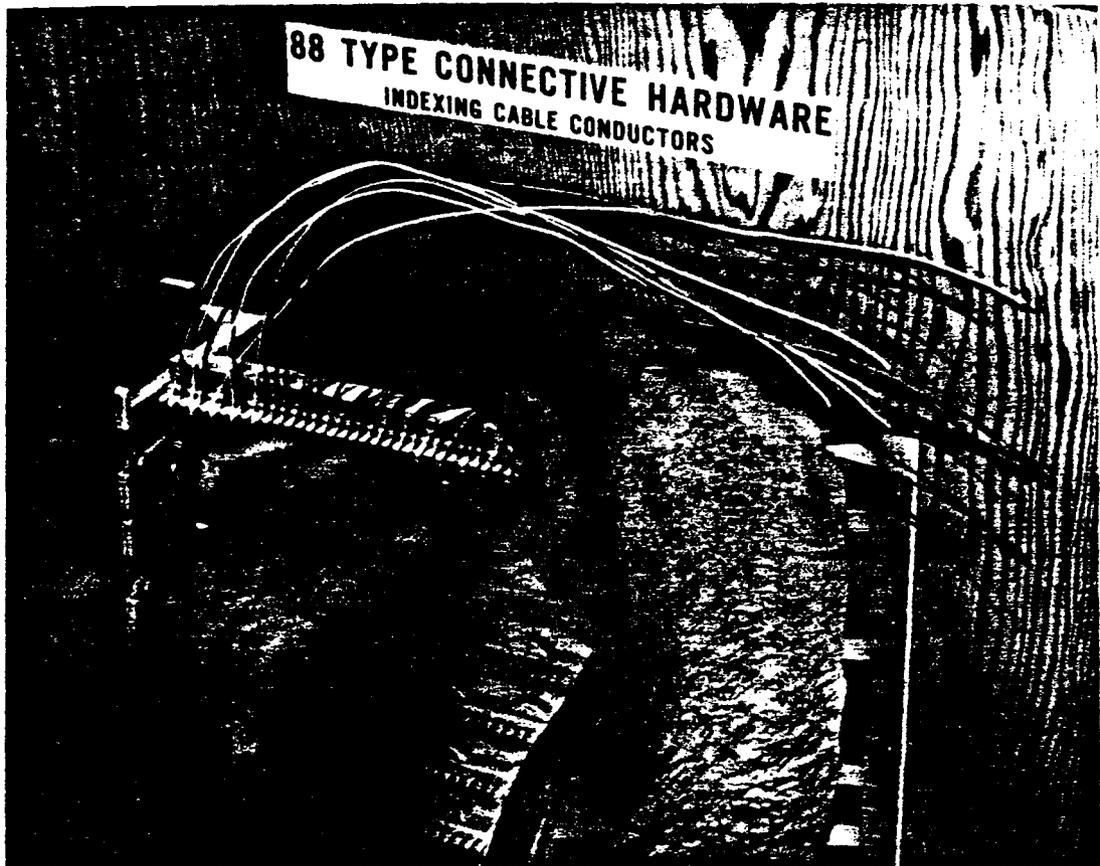
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FIG. 1 TOOLS REQUIRED FOR "QCX" BYA INSTALLATION
(PARS. 1.4, 3.22c, 5.1)



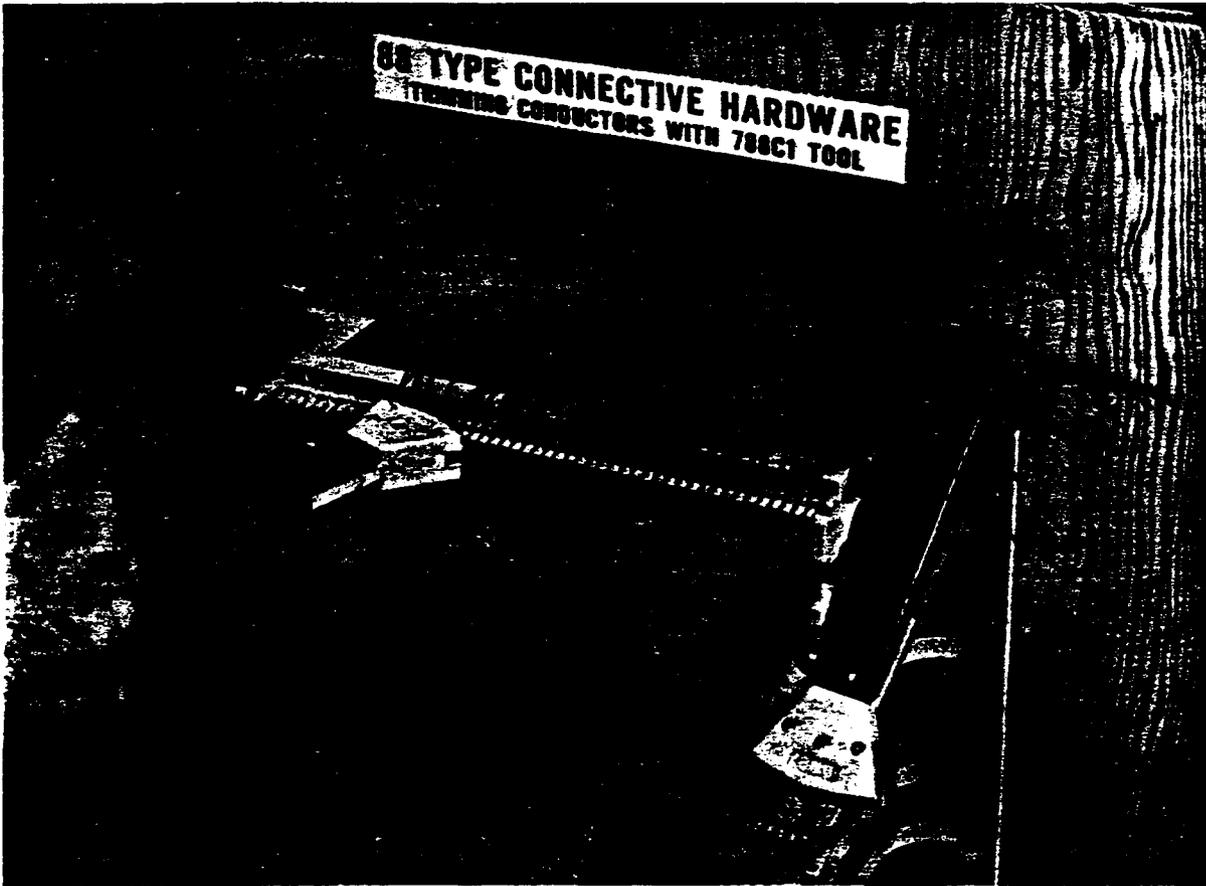
NOTE: DO NOT INSTALL THE 841098460 CABLE SUPPORTS UNTIL AFTER THE WIRING OPERATIONS HAVE BEEN COMPLETED.

FIG. 2 FORMING CABLE LEADS INTO THE 88 TYPE WRG. SHELF
(PARS. 2.12, 2.21, 3.111, 3.112, 3.21)



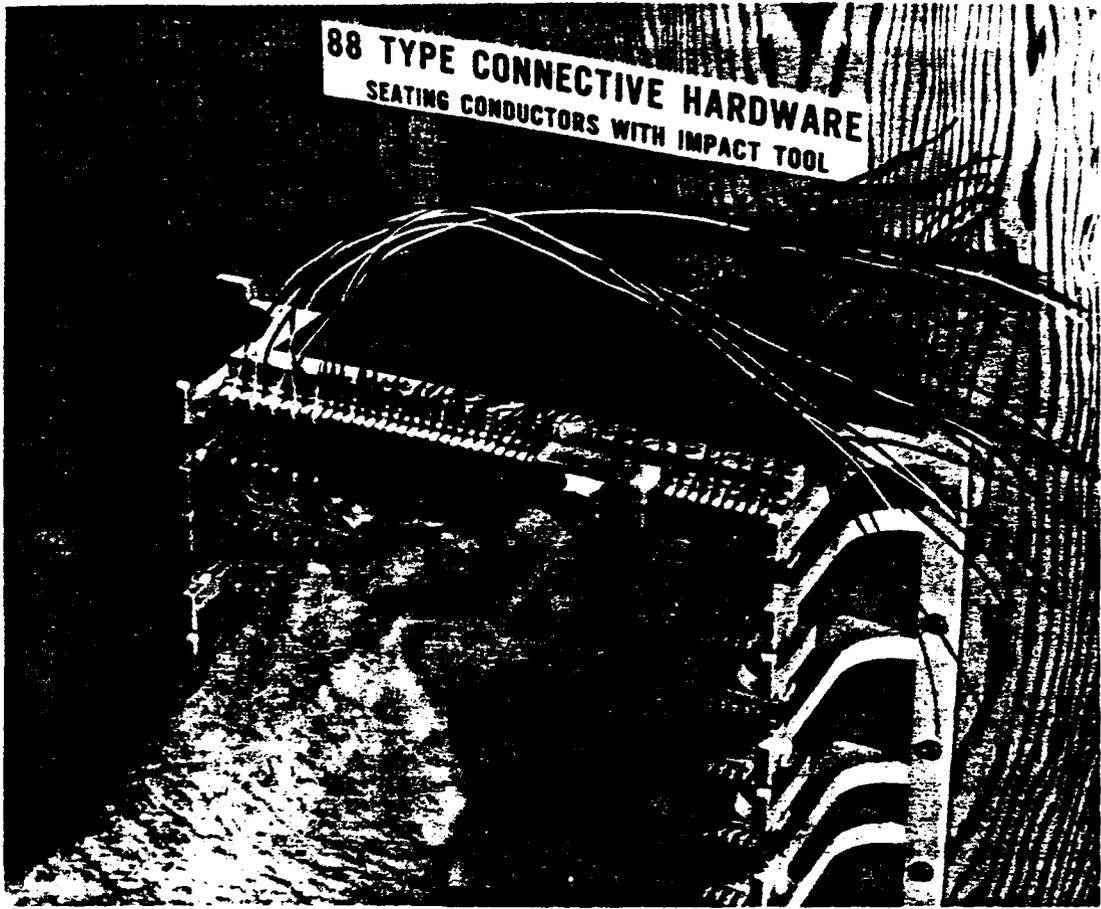
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FIG. 3 DRESSING LEADS INTO INDEX STRIP
(PAR. 3.22a)



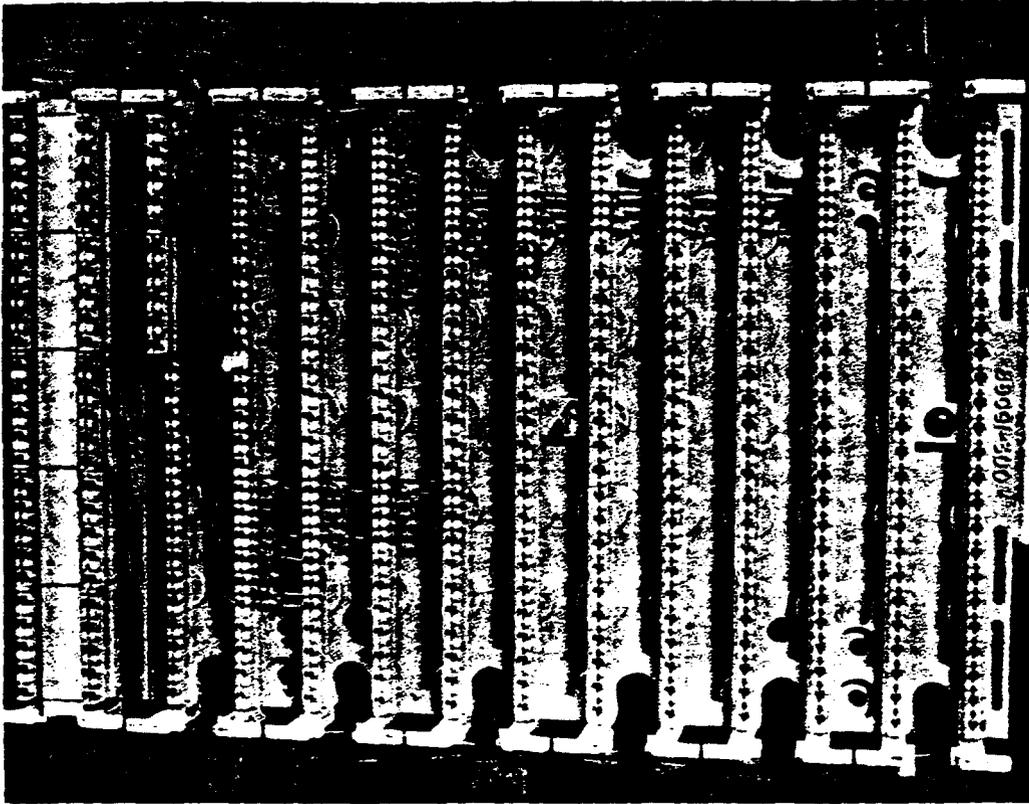
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FIGURE 4
(PAR. 3.22b)



RP-0789E

FIG. 5 CABLE LEAD CUT-OFF OPERATION
(PAR. 3.22c)



RP-0789-F

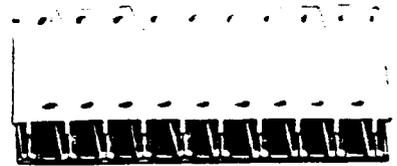
FIG. 6 DRESSING MULTIPLE LEADS BACK INTO CABLE SLOT
(PAR. 3.23)



SIDE FOR
CROSS-CONNECTING WIRE



MINATURE
CLIP

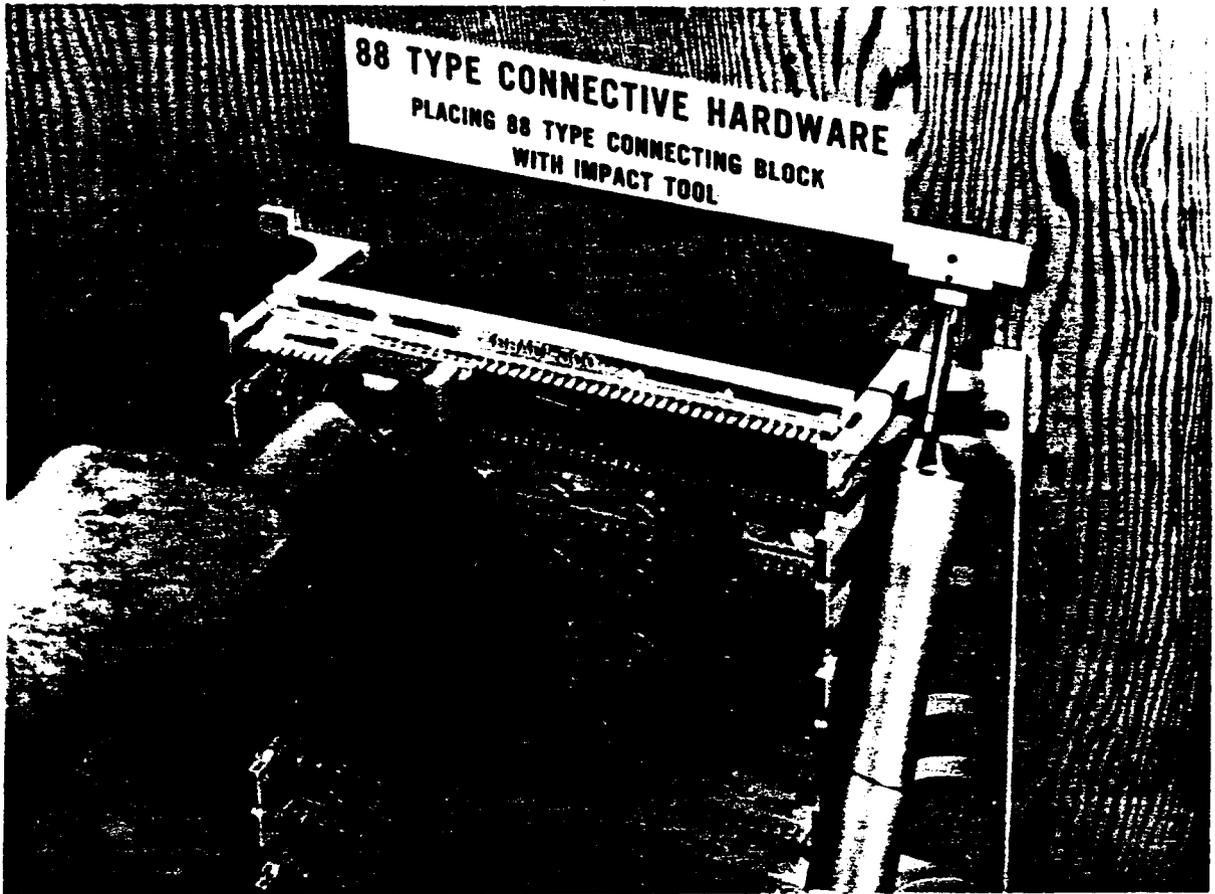


MINATURE CLIPS MOLDED
IN PLASTIC-SIDE FOR
TERMINATING CABLE PAIR

TPA 571689

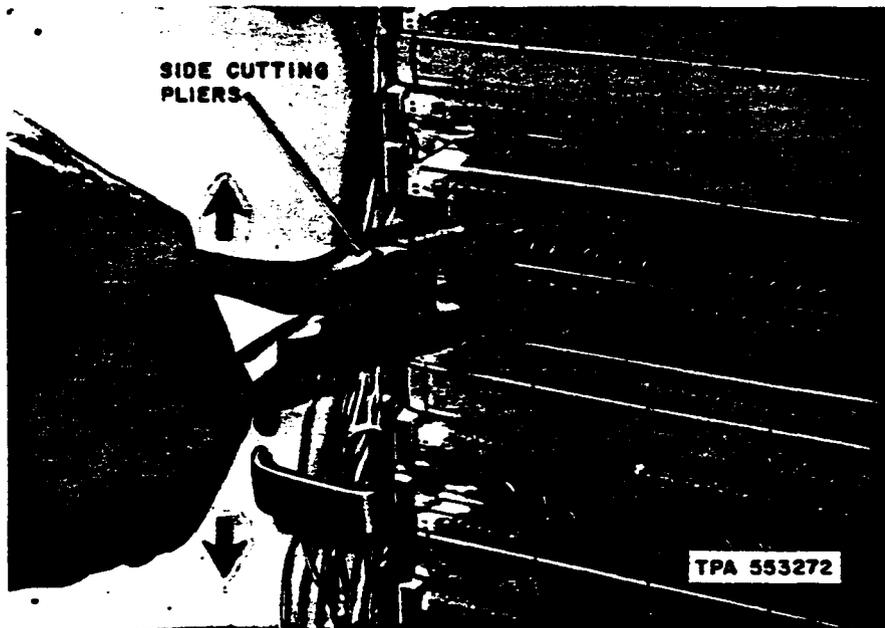
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FIG. 7 88 TYPE 5-PAIR CONNECTING BLOCK
(PAR. 4.11)



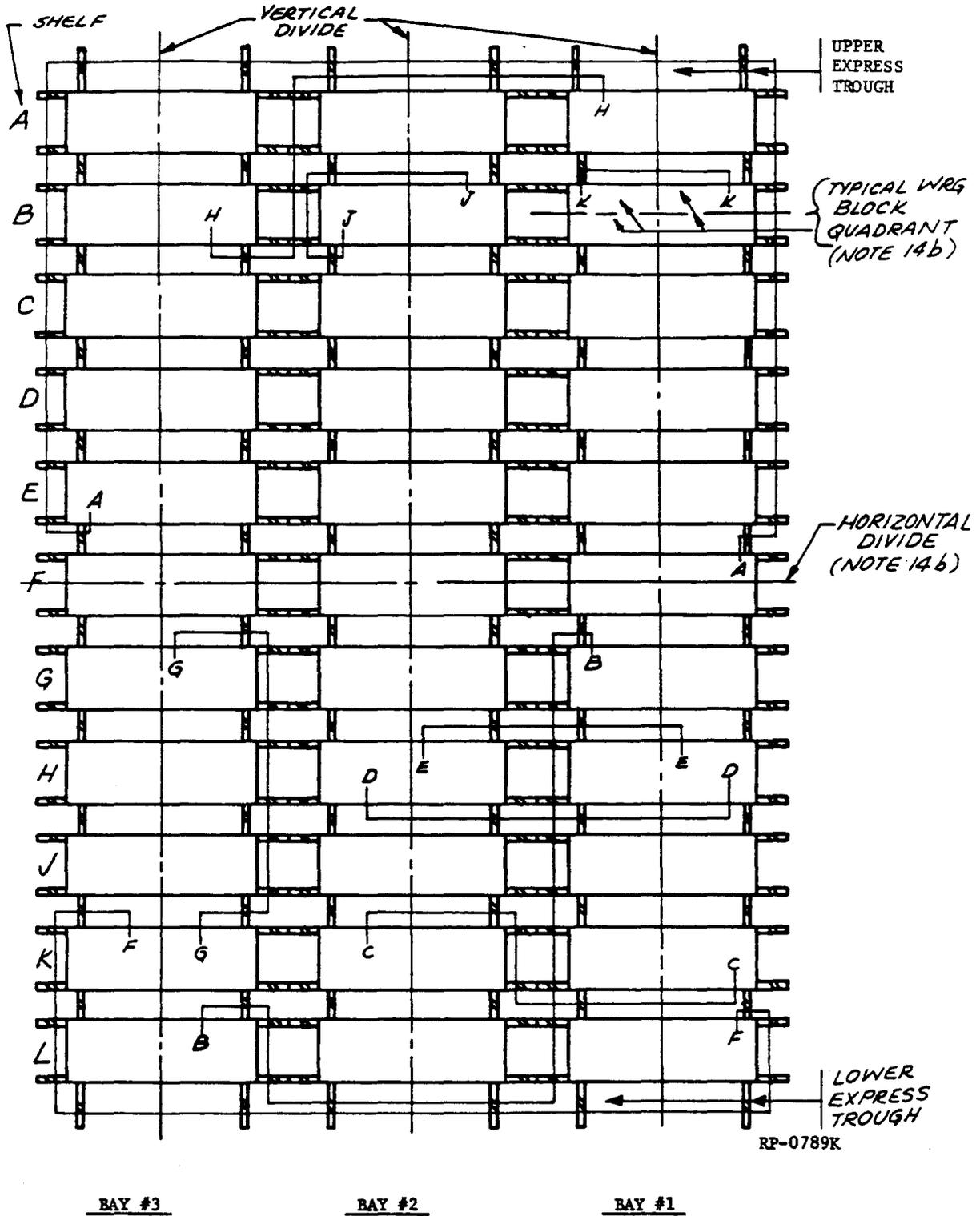
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FIG. 8 ALIGNMENT AND INSERTION OF CONNECTING BLOCK
(PAR. 4.21)



RP-0789J

FIG. 9 REMOVING CONNECTING BLOCK
(PAR. 6.11b)



RP-0789K

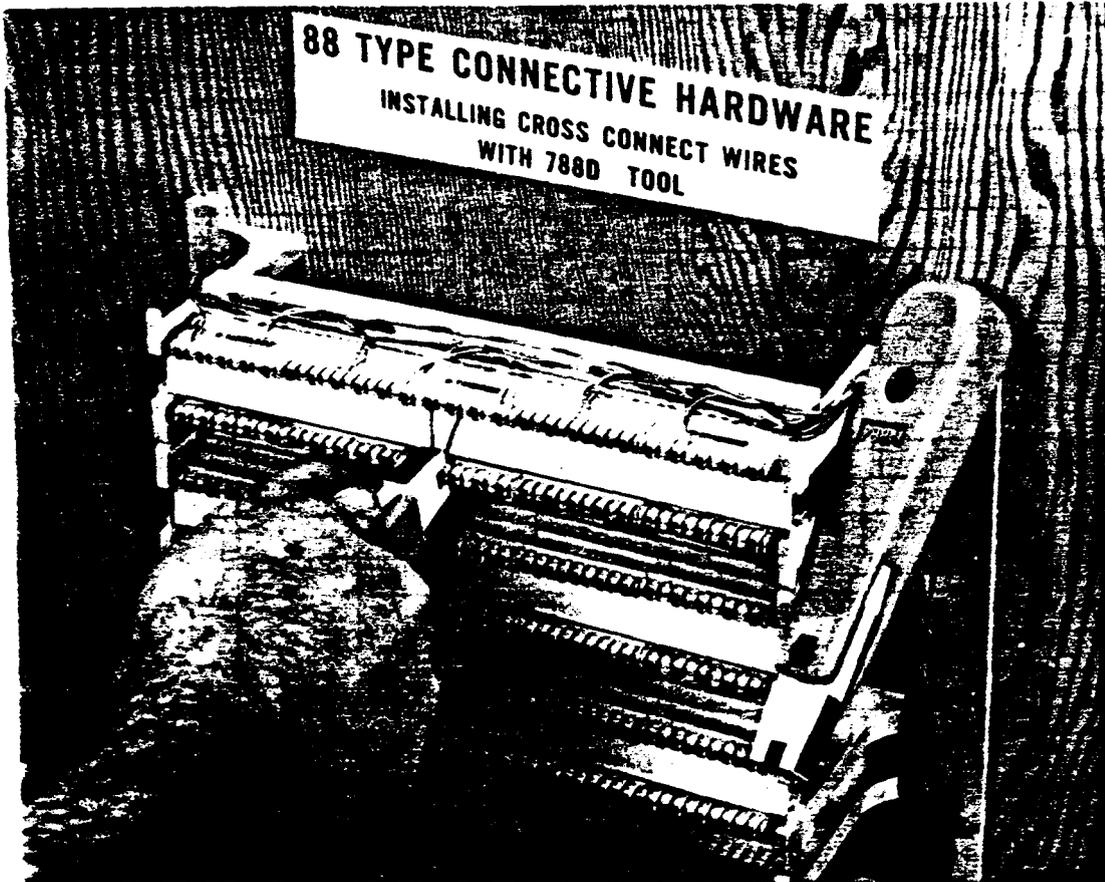
BAY #3

BAY #2

BAY #1

QUICK CONNECT - X-CONNECT "QCX"

FIG. 10 METHOD OF ROUTING X-CONN. WIRE
(PARS. 7.1b THRU f)



RP-0789L

FIG. 11 SEAT AND TRIM JUMPER WIRES
(PAR. 7.21b)