AMP CORPORATION
INPUT-OUTPUT (I.O.) CONNECTORS

CONTENTS

1. GENERAL

1.1 Description - The AMP Corporation Input Output I.O. connector is a 50 contact, insulation displacement type contact connector. The connector uses two caps, each with a maximum capacity of 25 wire ends to secure the wires to the connector contacts.

1.2 Identification coding - The I.O. Connector is identified by AMP Corporation code number 645058-1. The CAPS are identified by AMP Corporation code number 645056-1.

1.3 The wiring on the G-Signaling or Mini REG backplanes will run from the I.O. Connectors to the CEC Connectors (AMP CORP NO. 645042-1). The installer will not normally terminate any wiring to these connectors. This work is done in the shop. However, if the installer should have to correct a shop wiring error or replace a broken contact, a repair tool is available. This tool is coded R-4858.

1.4 The contacts of the I.O. Connector are designed to take two wire ends. The shop made connection will normally be the deeper of the two connections with the installer connection on top.

2. TOOLS

2.1 The following tools are required for doing work operations on AMP Corporation I.O. Connectors.

QTY	CODE	DESCRIPTION
1	R-4857	Cap Setting Tool (See Fig. 1)
1	R-4858	Repair Tool (See Fig. 2)
1	R-4108	Cutter, Midget, Diagonal

2.2 Tool R-4857 is necessary to terminate installer wiring to the CAPS of the I.O. Connectors.

2.21 The outside supplier number code on this tool must be 266186-1-D or -E. Do not use tools stamped A,B or C. This number is located below R-4857 stamping on tool head. Return tools with A,B or C stamping to AMP Corporation for repair.

2.22 Tools Cap Setting R-4857 that become defective in the field can be returned to AMP Corporation for repairs on a billable basis. AMP will not repair any tool where the repair exceeds 75% of the tool cost, they will make this determination. Mail tools to:

AMP INC.
Customer Repair
1523 North 4th Street
Harrisburg, PA. 17102

Be sure to include your correct return mailing address.

2.3 Tool R-4858 is only required when repairs are necessary to C.E.C and I.O. Connectors.

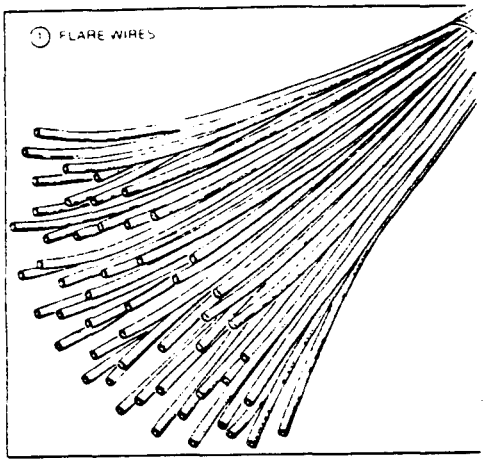
2.4 The following AMP Corporation identification is given for the various parts that make up this connector system:

AMP PART NO.	DESCRIPTION
645058-1	I.O. Connector
645056-1	CAP
*645072-1	I.O. Connector Contacts (Note 1)
645042-1	CEC Connector, G-SIG
*645073-1	CEC Connector Contacts, G-SIG (Note 1)

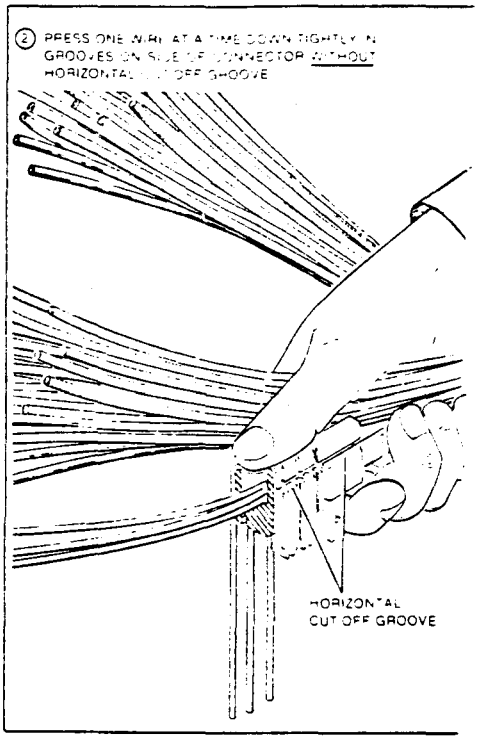
NOTE 1: Replacement or spare contacts, *Set of 25 contacts

3. CABLING

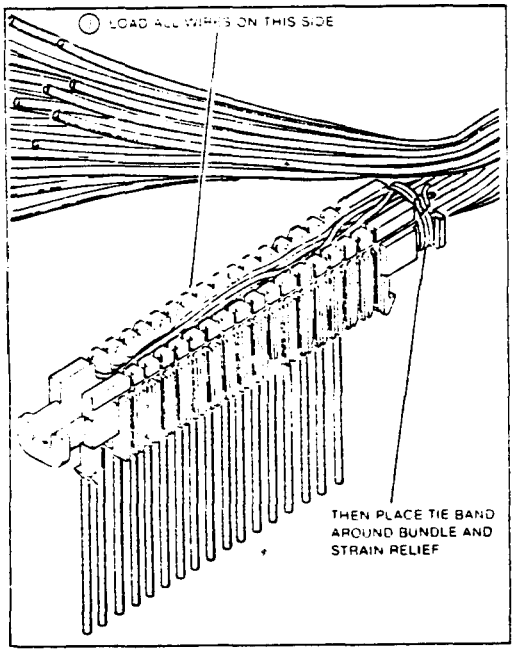
3.1 For cabling to the equipment bays using AMP Corporation I.O. Connectors refer to the following standard drawings:



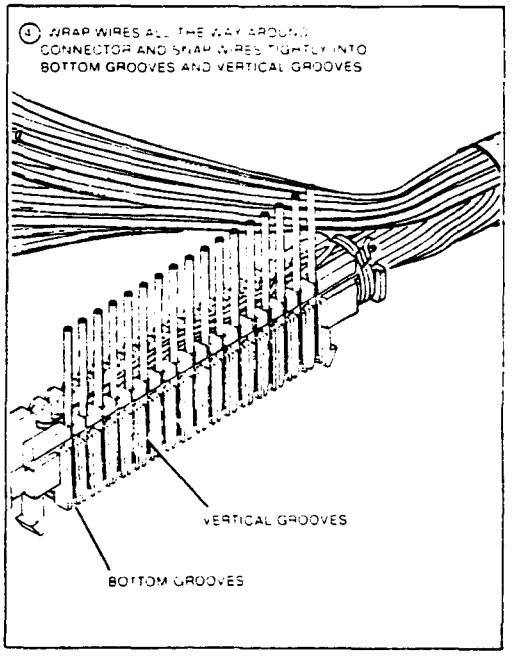
STEP 1



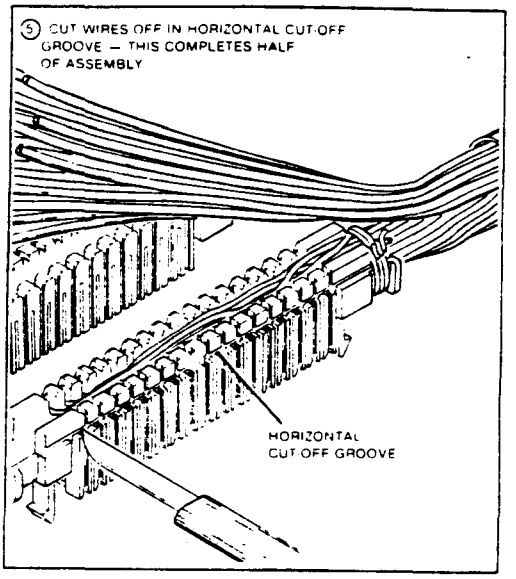
STEP 2



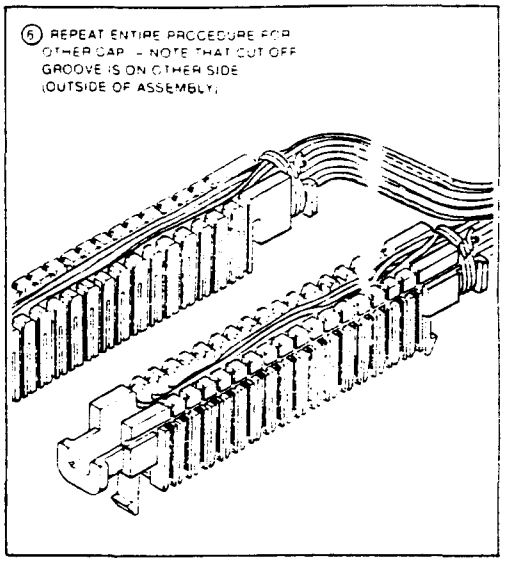
STEP3



STEP 4

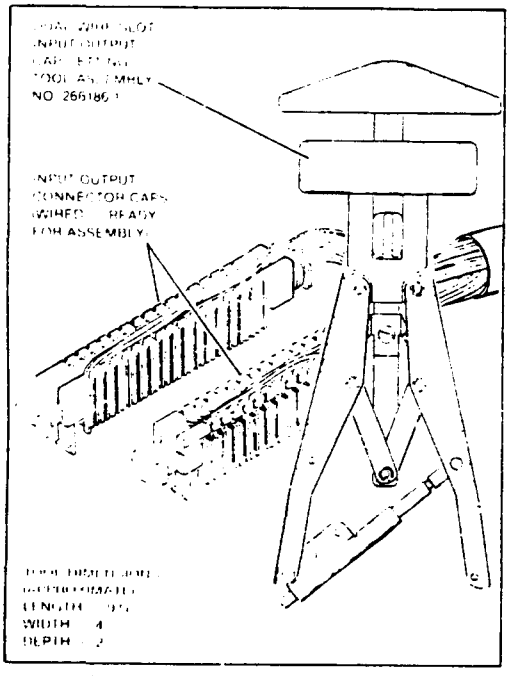


STEP 5

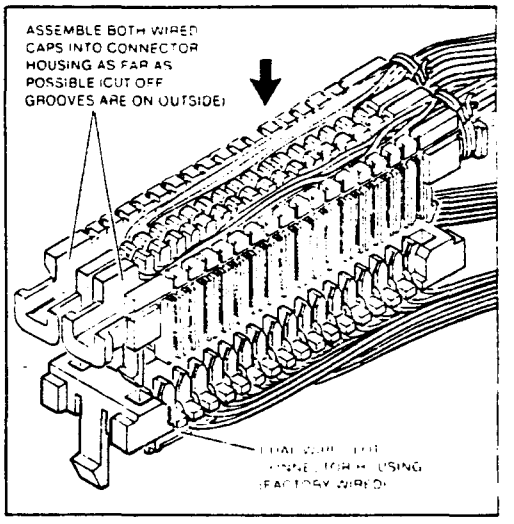


STEP 6

Visually inspect that wires are straight across gap combs prior to crimping



STEP 7



STEP 8

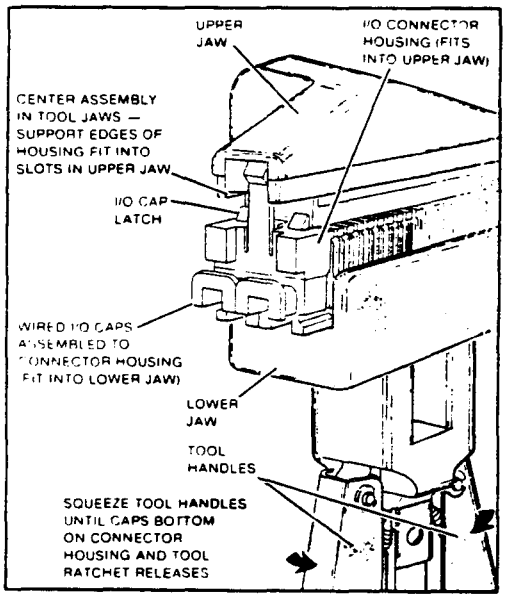
Ascertain that no backplane wiring is between the caps and connector base before crimping

Code	Equipment	Drawing
J99395A	G-Signaling Stand-alone	ED-7C197-10
J99396A	G-Signaling Con-solidated	ED-7C202-10
J99397A	G-Signaling N4 Unitized	ED-7C205-10
J99398A	G-Signaling A6B Unitized	ED- (NA)
J98631A	Mini Reg Bay	ED-97762-10

4. WIRING

4.1 For wiring of cables to the I.O. Connectors refer to the following Standard Drawings before following the instructions of paragraph 5.

Code	Equipment	Drawing
J99395A	G-Signaling Stand-alone	T-7C052-40
J99396A	G-Signaling Con-solidated	T-7C087-40
J99397A	G-Signaling N4 Unitized	T-7C088-40
J99398A	G-Signaling A6B Unitized	T- (NA)
J98631A	Mini Reg Bay	T-97762-31



STEP 9

5. WIRE INSERTION METHOD FOR I.O. CONNECTOR CAP

5.1 For location of I.O. connectors to be terminated refer to drawings specified in paragraph 3.

5.2 All incoming cables destined for I.O. connectors must be prepared with an 8 inch skinner length.

5.3 Figure 3 is a view of the I.O. CAP. Position 1 is always to the left with the "Orientation Slot" facing the outside.

NOTE: The I.O. CAP is not symmetrical, therefore, when being assembled to the I.O. BASE, can only be assembled with the "Orientation Slot" facing the outside of connector base.

5.4 All cables coming into the Mini REG or G-Signaling Backplanes from the left duct shall be dressed as follows:

a) Dress cable (one binder) into I.O. CAP and tie per Fig. 4. Leave a few inches of slack in a small loop in the duct for each binder. This slack will be needed if wiring errors are discovered later on.

b) Dress or bend wire leads 90 degrees at point of tie so that each individual wire in the binder will be free from congestion while wrapping wires around I.O. CAP.

c) Load all wires in I.O. CAP. This is done by pressing one wire at a time down tightly in each grove starting at position 1 up to position 24 - on the opposite side of Orientation Slot, see Fig. 5.

d) Wrap wires all the way around I.O. CAP and snap wires tightly into bottom grooves and vertical grooves, see Fig. 6.

e) Cut all excess wire leads at point where leads leave the I.O. CAP using R-4108 midget cutters, see Fig. 6. This completes half of assembly.

5.41 Rotate I.O CAP 180 degress - Position 1 is now on the right hand side, see Fig. 7.

5.42 Dress cable into I.O. CAP and tie per Fig. 8.

NOTE: The Orientation Slot again is facing the outside of I.O. base prior to assembly.

5.43 Repeat Steps 5.4b, c, d and e for second half of I.O. CAP.

5.5 Each Backplane for the G SIG only has two I.O. connectors J40 & J44 which are fed from the right side duct and should be dressed and terminated as follows:

a) Dress cable (one binder) into I.O. CAP and tie per Fig. 9.

b) Repeat Steps 5.4b, c, d and e also 5.41, 5.42 and 5.43 except that dress is from right side per Fig. 9.

6. ASSEMBLY - TERMINATION OF I.O. CAP TO BASE

6.1 To assemble I.O. CAP to I.O Base, the Base must be removed from the backplane. The Base is just a snap-on assembly which can be removed without difficultly.

6.2 Attach the (2) two I.O. CAPS required to terminate one I.O. connector by hand. Paragraph 5.3 specifies that on the I.O. CAP the Orientation Slot is always facing towards the outside.

6.3 Remove or lift the I.O. Base from the backplane and tilt the connector approximately 45 degrees either to the left or right depending which side of the backplane you are at. The I.O. Base can only be tilted in the same direction it is wired.

6.4 Slip the R-4857 CAP Setting Tool over the I.O. connector ready for termination. The jaw closest to the handle is the jaw housing for the (2) two I.O. CAPS. Only R-4857 tools stamped with suppliers number 266186-1-D or -E should be used on these connectors. Number is on the head of the tool.

6.5 Approximately center, the I.O. connector in the Cap Setting Tool.

NOTE: Care should be exercised that all other backplane wire is clear of Cap Setting Tool.

6.6 Squeeze handle until tool releases. Connector is terminated if both cap locking tabs are locked into I.O. connector body.

NOTE: I.O. CAP may be assembled on connector one at a time or both together.

6.7 Remove connector from tool and verify that locking tabs of caps are secured to base of I.O. connector and reassemble to backplane.

IMPORTANT:

If for some reason, one or two I.O. CAPS must be removed from the I.O. Base the cap or caps can be reterminated in the same wire position.

7. REPAIR - CEC AND I.O CONNECTOR

7.1 The Card Edge Connector (CEC) located on the Backplane are completely wired and assembled at the manufacturing shop. This Backplane should not require the need for maintenance or repair in the field, however, if repair is required it would consist mainly of contact replacement and/or wire retermination of the CEC. Refer to paragraph 7.5.

7.2 The I.O. connector base also comes wired with the Backplane. If repair is required refer to paragraph 7.5.

7.3 If the CAP must be removed for repair it can be reterminated in the same wire position. The CAP MUST BE REWIRED if it is taken apart more than five times.

7.4 If revise is necessary, advance each wire so that the point of previous termination is beyond the CAP and rewire per paragraph 5. and 6.

7.5 When a damaged wire needs retermination or a contact needs replacement on either the CEC or I.O. connector the following should be applied:

a) On R-4858 Repair Tool, see Figure 10, remove cap - tool is stored in handle.

b) This tool is a double ended tool, see Fig. 10, one end is a hook-type that will remove a damaged contact while the other end holds the contact in place while removing a wire also to insert new contact.

c) To remove a damage wire from either the CEC or I.O. connector place the tool, Fig. 10 HOLD-DOWN end in respective position so that tool is resting on top of contact.

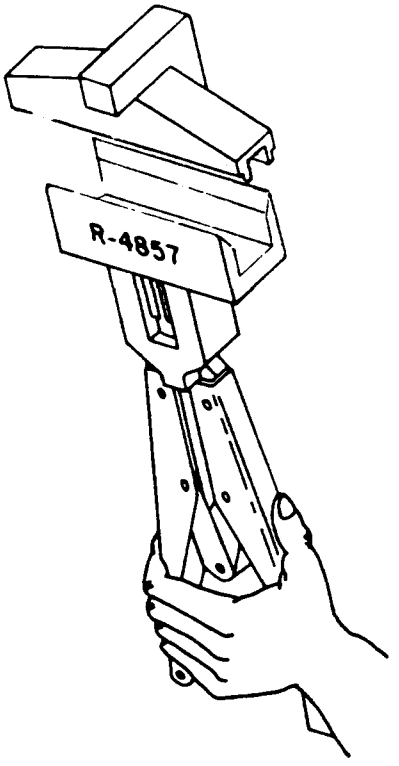
d) Apply pressure with tool on contact and grasp wire close to connector with LONG-NOSE PLIERS and pull wire free, contact will remain in connector. If for some reason the contact is also pulled free from connector DO NOT REUSE CONTACT - replace with NEW CONTACT. See Fig. 11.

e) To remove a damage contact from either the CEC or I.O. connector use tool, Fig. 10 Hook-End. Drop the hook down through center of contact and turn 90 degrees to hook under one leg of the slot formed section of the contact, see Fig. 12. Pull straight up and contact will be freed from connector. DO NOT REUSE CONTACT.

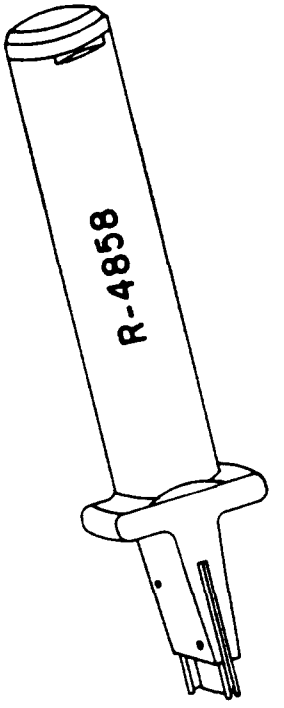
f) Replace Contact - put new contact in connector by hand and using tool Fig. 10 Hold-Down end and/or insertion end, push down on the top of contact until it is seated in connector, see Fig. 11 enlarged view.

g) Replace Wire - Advance wire approximately 1/4 inch so that clean area will be terminated in contact.

h) Use R-4858 to terminate and cutoff new wire. Note: The Repair Tool R-4858 is double sided. One side is for insertion only while the other side is for termination and cutoff, see Fig. 13.



CAP SETTING TOOL
R-4857
FIG 1



REPAIR TOOL
R-4858
FIG 2

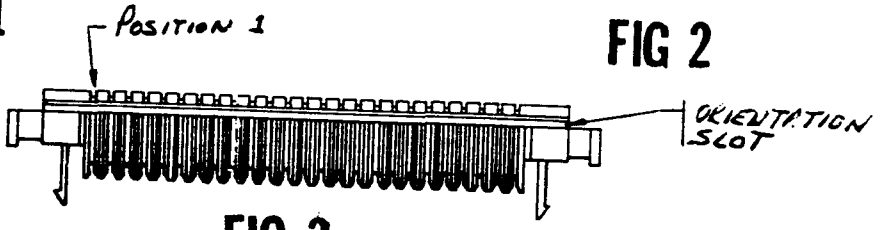


FIG 3

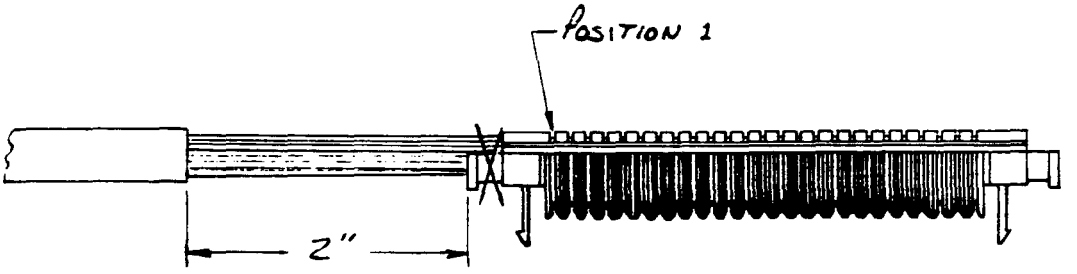


FIG 4

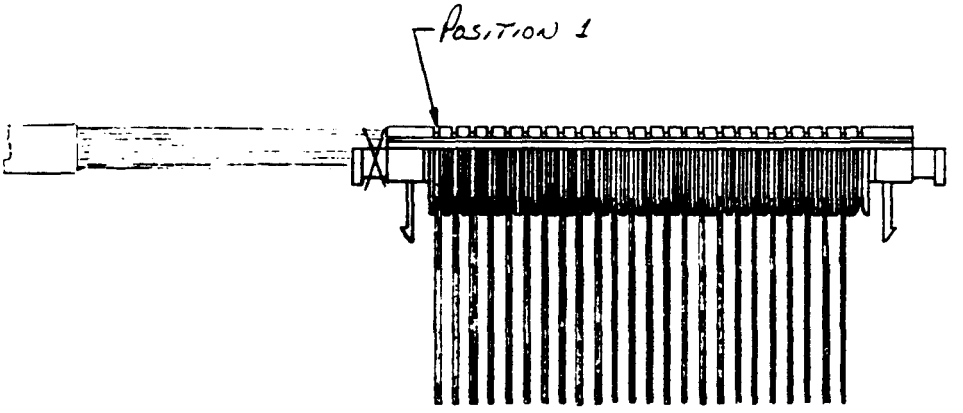


FIG 5

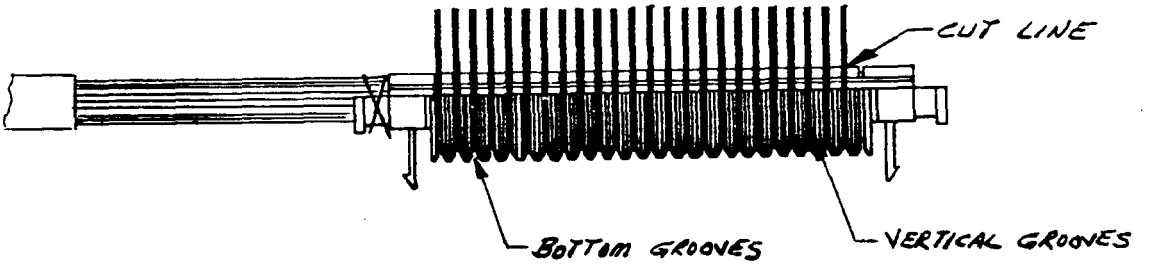


FIG 6

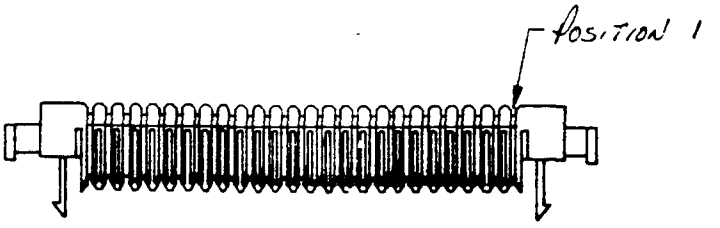


FIG 7

ORIENTATION SLOT IS ON
OPPOSITE SIDE (FACING OUTSIDE)

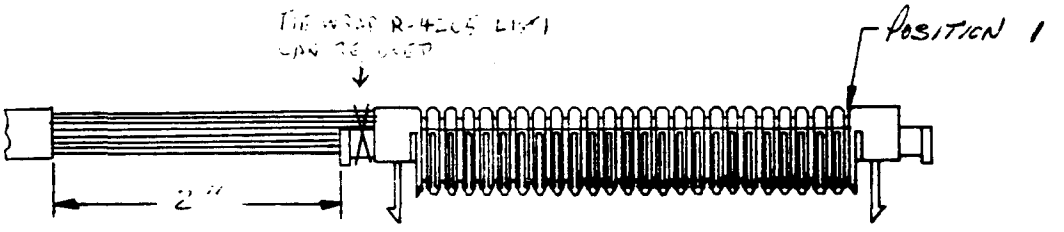


FIG 8

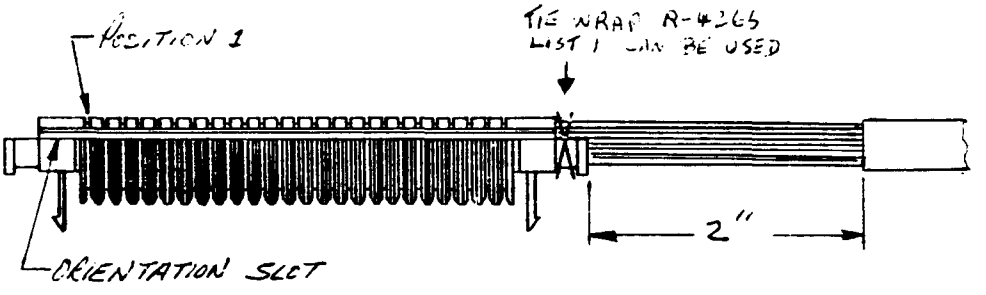


FIG 9

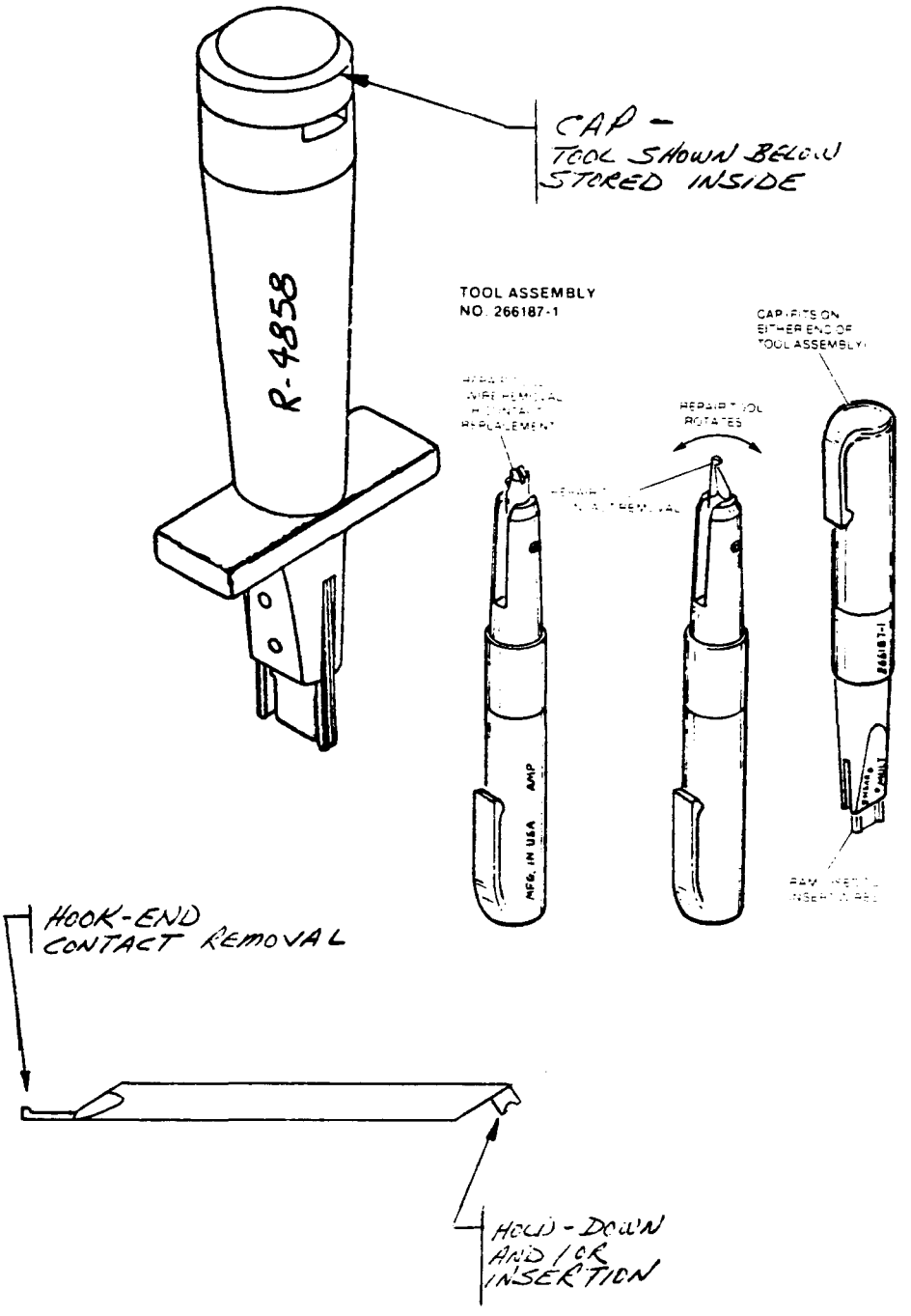
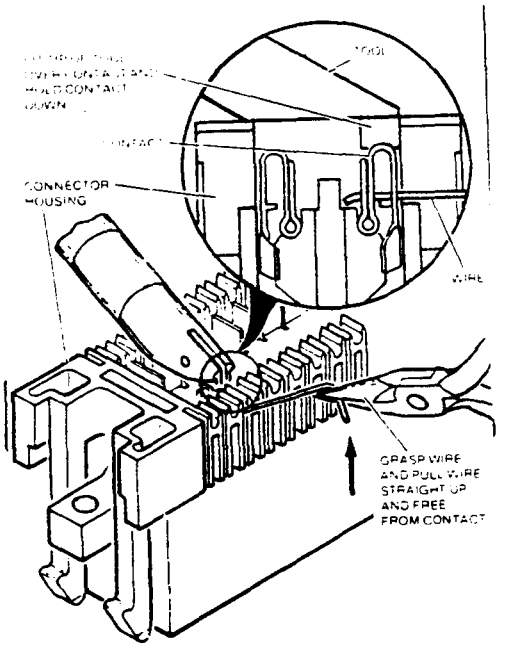
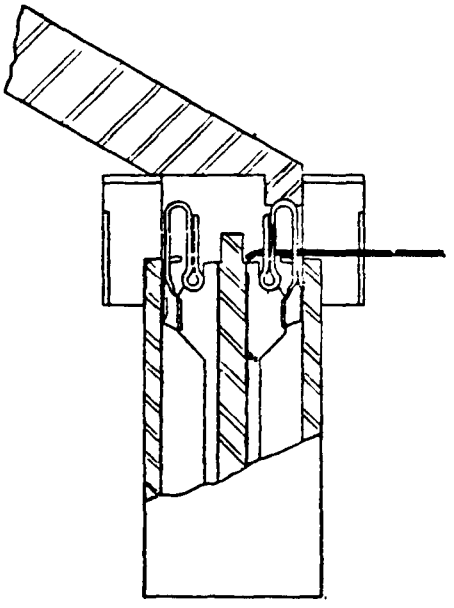

CAP -
TOOL SHOWN BELOW
STORED INSIDE
R-4858
TOOL ASSEMBLY
NO. 266187-1
CAP FITS ON
EITHER END OF
TOOL ASSEMBLY
REPAIR TOOL
ROTATES
AMP
MFG. IN USA
HOOK-END
CONTACT REMOVAL
HOOD - DOWN
AND / OR
INSERTION

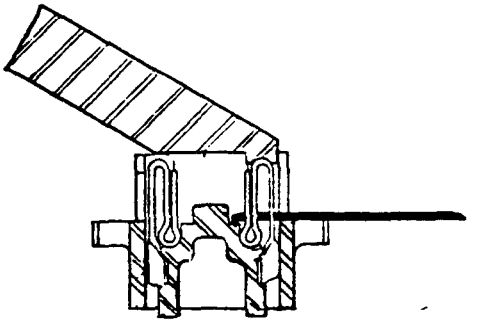
FIG 10



SHOWN
CARD EDGE CONNECTOR



ENLARGED VIEW - C.E.C.



ENLARGED VIEW - I.O.

FIG 11

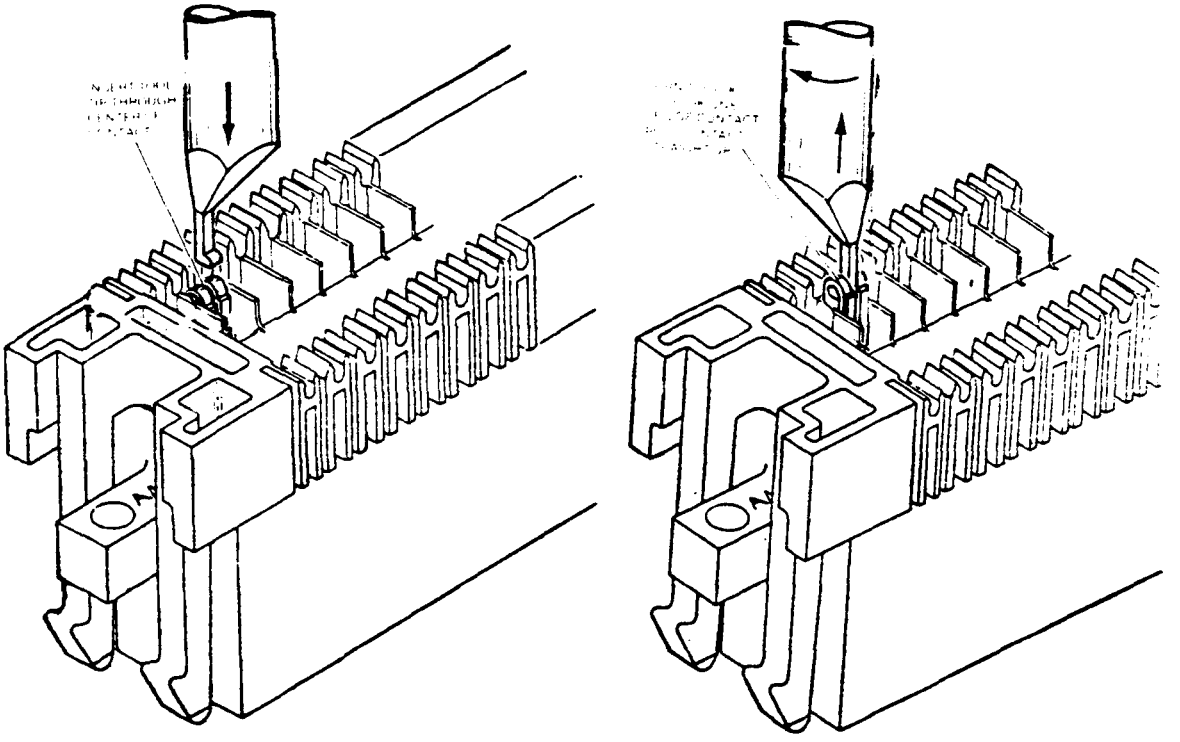


FIG 12

CONTACT REMOVAL

To remove a damaged contact from a dual wire slot connector housing, proceed as follows.

(a) Rotate repair tool in tool assembly to contact removal position, as shown in Figure 12. Contact removal end of tool assembly has a hook-shaped tip.

(b) Insert hook-shaped tip down through center of damaged contact, as shown, then turn tool 90 degrees to insert hook under one leg of slot-formed section of contact.

(c) Pull contact straight up out of connector housing and discard contact.

NOTE: *Do not reuse contacts that have been removed, they may have been damaged in the process of removal.*

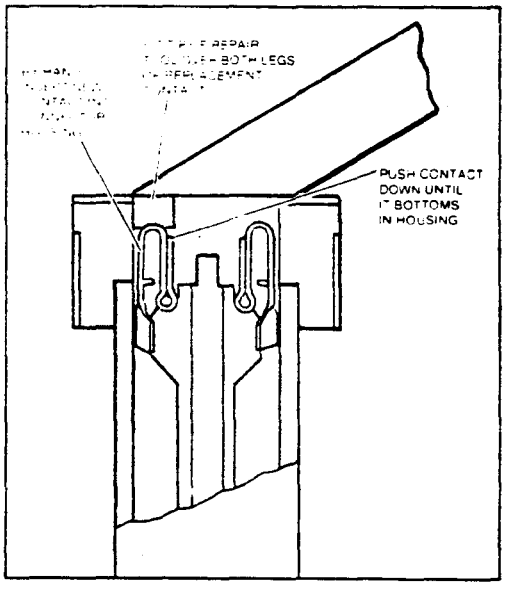
CONTACT REPLACEMENT

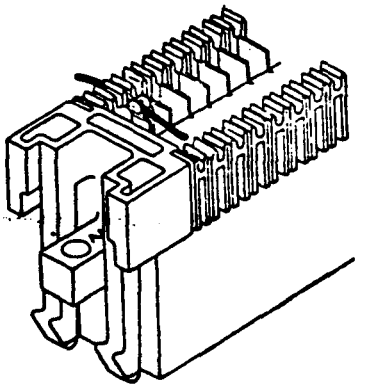
To replace contact removed from a dual wire slot connector housing, proceed as follows.

(a) Obtain new (replacement) contact and, by hand, place contact into proper position in connector housing.

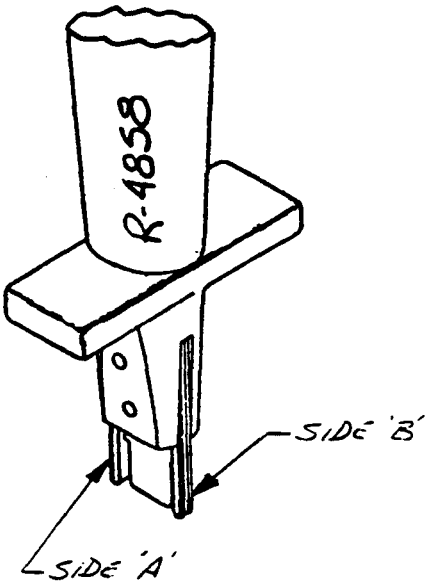
(b) Rotate repair tool to wire removal or contact replacement position. Tip of repair tool, in this position, fits over both legs of slot-formed section of contact, as shown.

(c) Position tip of tool over replacement contact, as shown, and push down on contact until contact seats into position in connector housing.



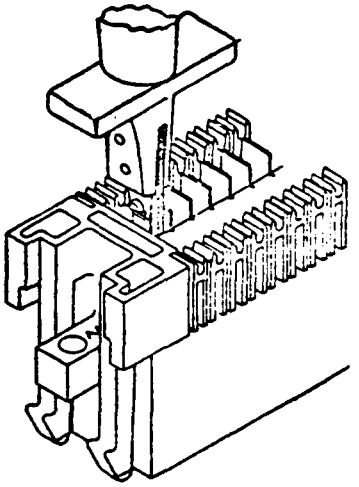


INSERT WIRE

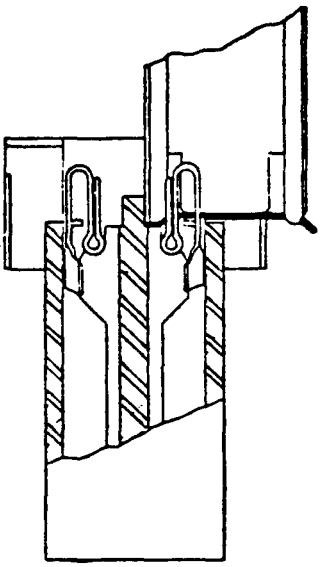


SIDE 'A' - SOLID BLADE - INSERTION WITH CUTOFF.

SIDE 'B' - CHANNEL TYPE BLADE INSERTION ONLY.



INSERTION WITH CUTOFF



SECTION VIEW
AFTER INSERTION AND CUTOFF

FIG 13