

NOTE



All numerical values are in metric units [with U.S. customary units in brackets]. Dimensions are in millimeters [and inches]. Unless otherwise specified, dimensions have a tolerance of ± 0.13 [± 0.005] and angles have a tolerance of $\pm 2^\circ$. Figures and illustrations are for identification only and are not drawn to scale.

1. INTRODUCTION

This specification covers the requirements for application of MATE-N-LOK II Connectors with High Current Contacts. The housings are available in 2- through 15-circuit versions and are intended for use in free hanging or panel mount wire-to-wire applications.

The High Current pin and socket contacts will accept a wire size range of 14 to 10 AWG, depending on your production requirements. These hand or pneumatic applied contacts will fit into existing cavities of standard MATE-N-LOK II free-hanging or panel-mounted connectors.

CAUTION



These High Current contacts should NOT be mated with any other type of contact.

When corresponding with TE Connectivity Personnel, use the terminology provided on this specification to help facilitate your inquiry for information. Basic terms and features of components are provided in Figure 1.

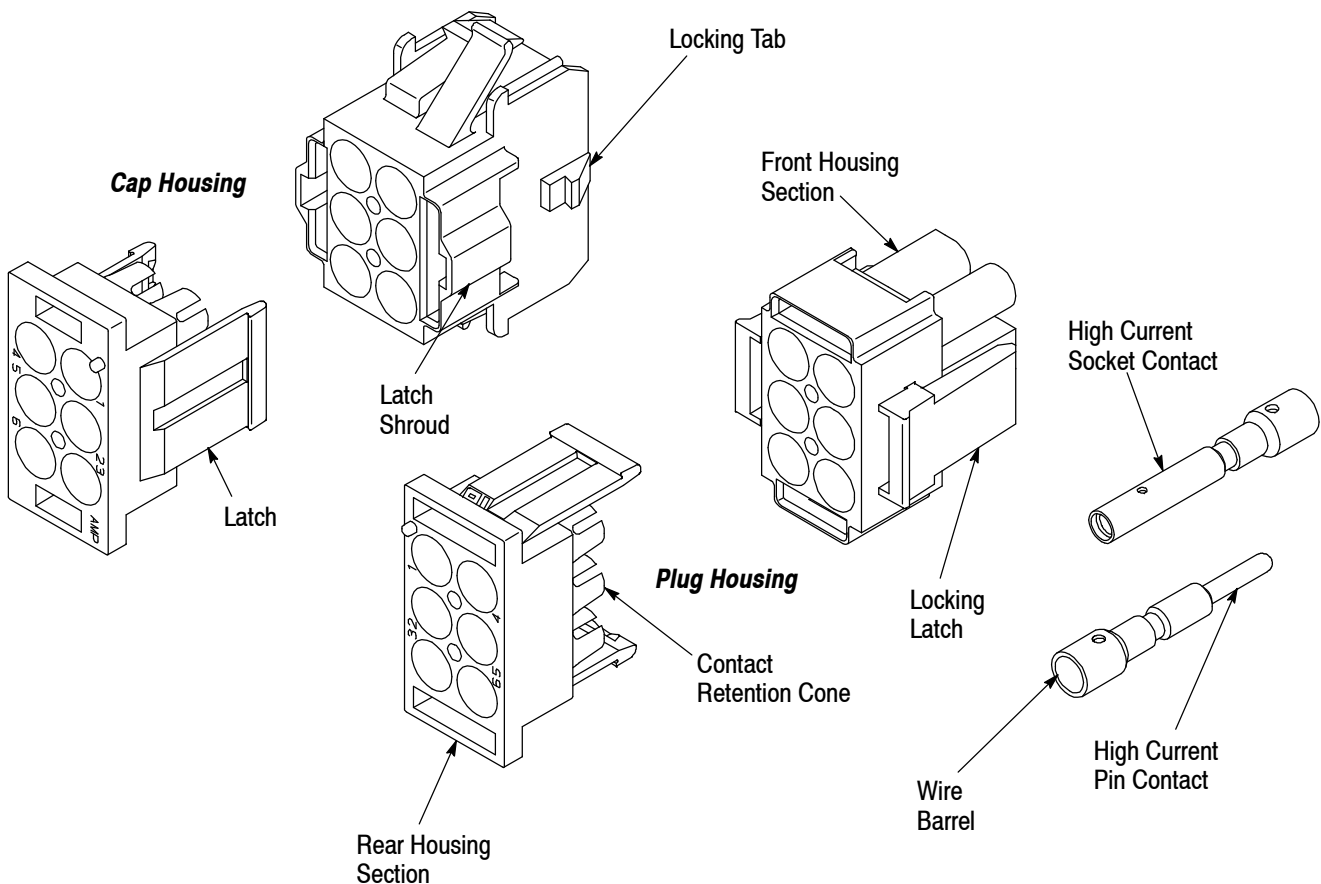


Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

- Updated document to corporate requirements
- New logo

2.2. Customer Assistance

Reference Part Number 193797 and Product Code 0790 are representative numbers of MATE-N-LOK II Connectors with High Current Contacts. Use of these numbers will identify the product line and expedite your inquiries through a service network established to help you obtain product and tooling information. Such information can be obtained through a local TE Representative or, after purchase, by calling the Tooling Assistance Center or the Product Information Center number at the bottom of page 1.

2.3. Drawings

Customer Drawings for specific products are available from the service network. The information contained in Customer Drawings takes priority if there is a conflict with this specification or with any technical documentation supplied by TE.

2.4. Specifications

Product Specification 108-1583 provides product performance requirements and test information.

2.5. Instructional Material

The following list includes available instruction sheets (408-series) that provide assembly procedures for product, operation, maintenance and repair of tooling.

| <u>Document Number</u> | <u>Document Title</u> |
|------------------------|---|
| 408-3200 | Universal MATE-N-LOK Connectors |
| 408-3320 | Universal MATE-N-LOK Strain Relief Assembly and Keying Plug |
| 408-7982 | Extraction Tool 458994-2 |
| 408-9436 | Latch Disengagement Tool 58382-1 For MATE-N-LOK II Connector Housings |

3. REQUIREMENTS

3.1. Storage

A. Ultraviolet Light

Prolonged exposure to ultraviolet light may deteriorate the chemical composition used in the connector housings.

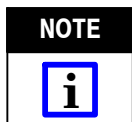
B. Shelf Life

The housings and contacts should remain in the shipping containers until ready for use to prevent deformation to the housings or contacts. The housings or contacts should be used on a first in, first out basis to avoid storage contamination that could adversely affect signal transmissions.

C. Chemical Exposure

Do not store the contacts near any chemical listed below as they may cause stress corrosion cracking in the contacts.

| | | | | | |
|----------|------------|----------|------------|----------|------------------|
| Alkalies | Ammonia | Citrates | Phosphates | Citrates | Sulfur Compounds |
| Amines | Carbonates | Nitrites | Sulfur | Nitrites | Tartrates |



Where the above environmental conditions exist, phosphor-bronze contacts are recommended instead of brass if available.

3.2. Special Characteristics

These contacts feature the Louvertac bands that provide very low resistance and low voltage drop required for High-Current applications. The band is a formed louver-type ring inserted into the socket contact. The cap and plug housings feature locking latches for ensured mateability. The housings can be panel mounted for greater versatility or left free-hanging. See Figure 2.

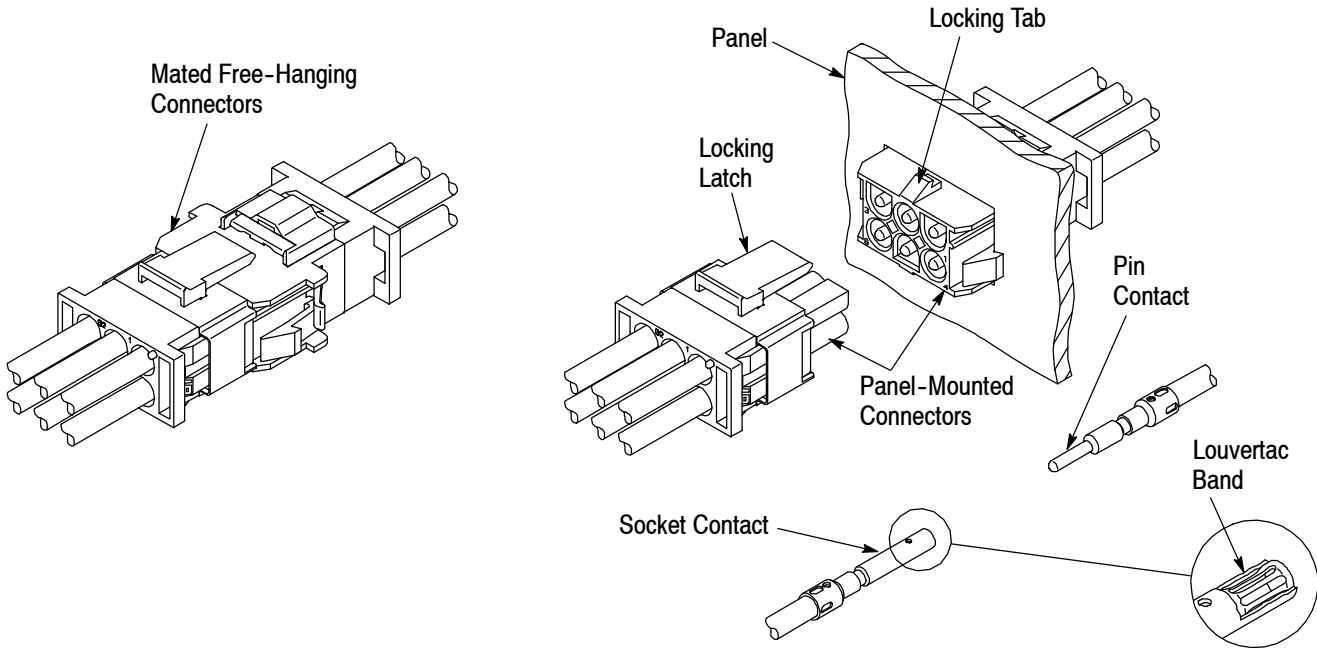
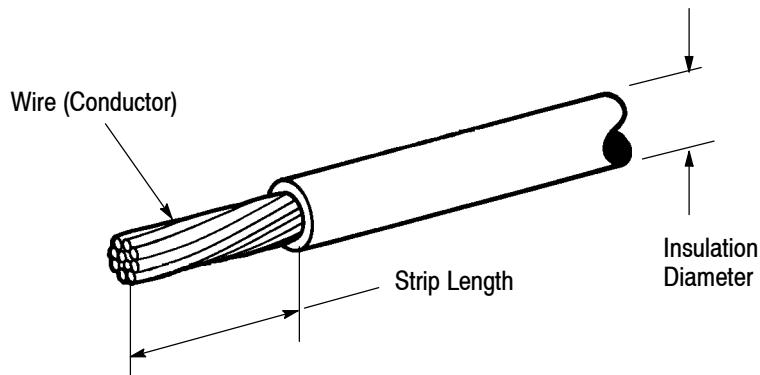


Figure 2

3.3. Wire Selection and Preparation

The contacts will accept a stranded wire with a range of 14 through 10 AWG. Wire insulation diameter range and strip length information is provided in Figure 3.

CAUTION Do not nick, scrape, or cut the wire conductor during the stripping operation.



| WIRE SIZE (AWG) | INSULATION DIA | STRIP LENGTH |
|-----------------|----------------------|-----------------------|
| 14-12 | 3.3-5.08 [.130-.200] | 4.83-5.59 [.190-.220] |
| 10 | 5.08 [.200] MAX. | |

Figure 3

3.4. Crimped Contact Requirements

The following requirements shall be followed when terminating the High Current contacts using Daniels hand tools and positioners. Detailed instructions covering the placement of the contacts in the positioner and the use of the tools are packaged with each tool.

Terminate the contacts according to the directions shipped with the appropriate tooling. See Figure 4.



Wire insulation shall NOT be cut or broken during the crimping operation. Reasonable care shall be taken by tooling operators to provide undamaged wire terminations.

A typical contact is shown as it should appear after crimping. See Figure 4.

A. Crimp Length

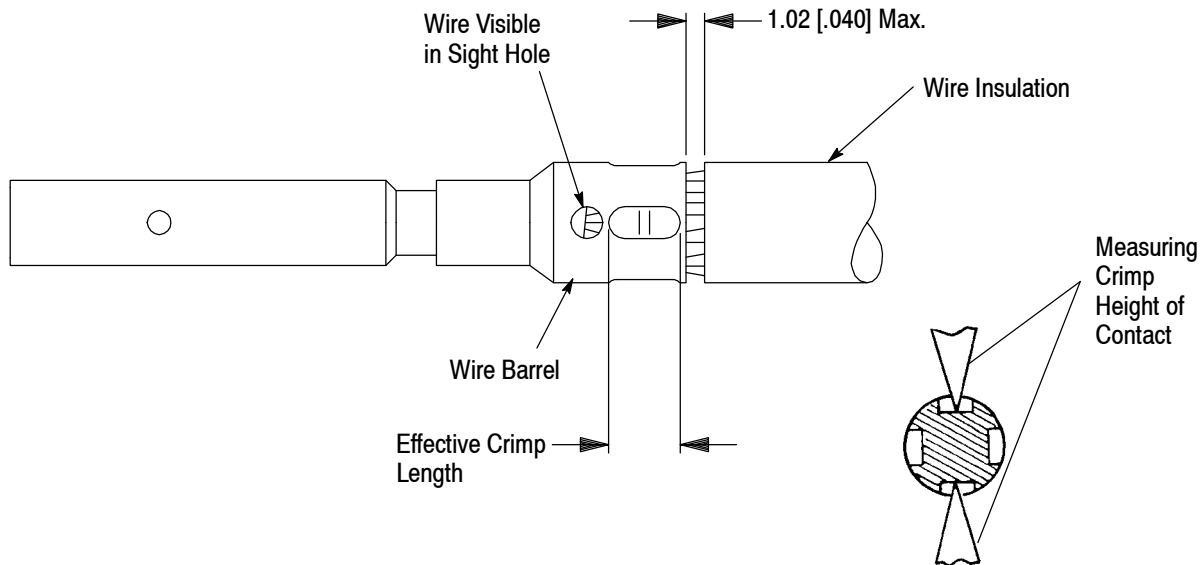
For optimum crimp effectiveness, the crimp must be within the area shown in Figure 4 and must meet the crimp dimensions provided. Effective crimp length shall be 2.79 [.110] nominal, and is defined as that portion of the wire barrel, fully formed by the crimping tool. Instructions for adjusting, repairing, and inspecting tools are packaged with the tools.

B. Conductor Location

The wire shall be visible through the wire barrel sight hole after crimping. Care shall be taken not to allow insulation to be crimped in the wire barrel. See Figure 4.

C. Crimp Height

See Figure 4 for correct crimp height according to wire size.



NOTE: Sight hole and crimp need not be aligned.

NOTE: When checking crimp height, always measure the most compressed area of the crimp.

| WIRE SIZE (AWG) | SELECTOR SETTING | DANIELS POSITIONER | CRIMP HEIGHT |
|-----------------|------------------|------------------------------------|--------------|
| 14 | 6 | TP1013 or (Pneumatic) TP1094 | 2.16 [.085] |
| 12 | 6 | | 2.16 [.085] |
| 10 | 7 | | 2.49 [.098] |

Figure 4

D. Tensile Strength

Crimped contacts should hold the wire firmly and have a pull-test tensile value meeting that specified in Figure 5.



Adjust tensile testing machine for head travel of 25.4mm [1 inch] per minute. Directly and gradually apply force for 1 minute.

CRIMP PULL-OUT TEST

| WIRE SIZE (AWG) | Minimum Force | |
|-----------------|---------------|--------|
| | Newtons | Pounds |
| 14 | 267 | 60 |
| 12 | 444 | 100 |
| 10 | 667 | 150 |

Figure 5

E. Straightness

After crimping the wire to the contact, the contacts shall be chucked in the area shown in Figure 6 and rotated 360° minimum. The point of Total Indicator Reading (TIR) measurement, shall be as shown in Figure 6.

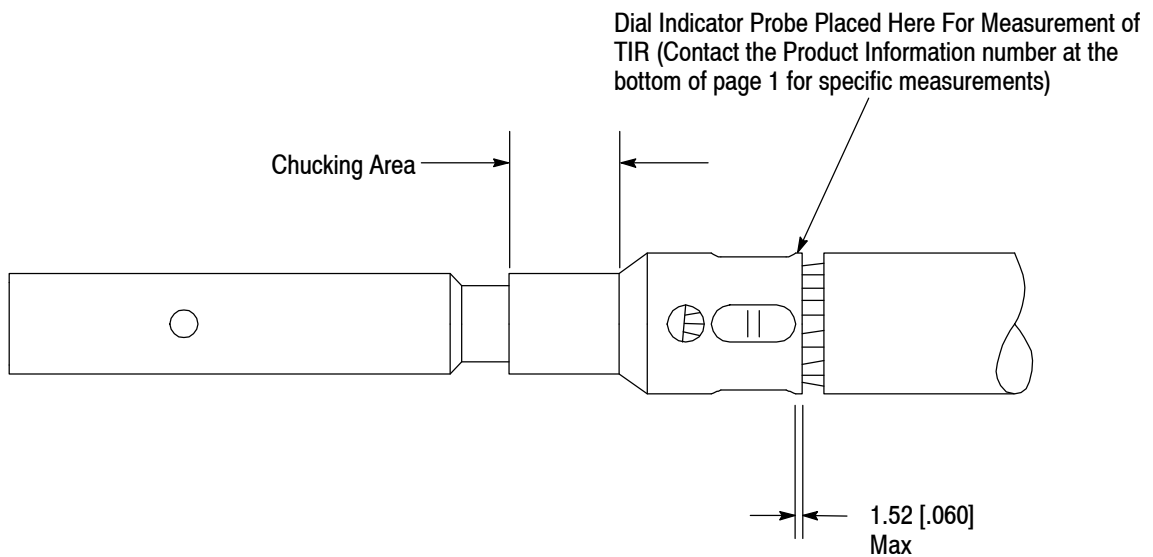


Figure 6

3.5. Housings

The connector assembly consists of a two-piece plug housing and a two-piece cap housing that accept lance-less High Current contacts. The two-piece housings provide three-point stabilization and shock protection for the enclosed contacts. Both the plug and cap housing assemblies have individually numbered circuit identification on the back surface, plus an identification rib or button indicating the number one circuit location.

A. Assembly

Crimped High Current pin and socket contacts shall be manually inserted in either the plug or cap rear housing section or they may be intermixed in each rear housing to provide multiple keying combinations. Insert contacts and join housing sections together as shown in Figure 7.

1. Align and insert rear housing section into front housing section and snap into first locking stage. Pull back to ensure proper engagement and to prevent any deformation to the locking mechanism.
2. Align contact with desired circuit cavity at BACK of rear housing section. Push contact straight into cavity, forcing the retention cones open. Continue to push until the cone closes behind the contact retention shoulder.
3. When all necessary contacts have been inserted, complete assembly of the connector by forcing the latches into the fully locked position. An additional squeeze across the latch shrouds will help the latches to engage fully behind the locking edges. Visually inspect that latches have fully engaged behind locking edges and all contact insulation barrels are within housing. There will be little or no gap between the front and rear housing sections when correctly assembled. See Figure 7.

NOTE


The front and rear housing sections cannot be fully locked together if any contact retention cone is open, indicating the contact is only partially inserted.

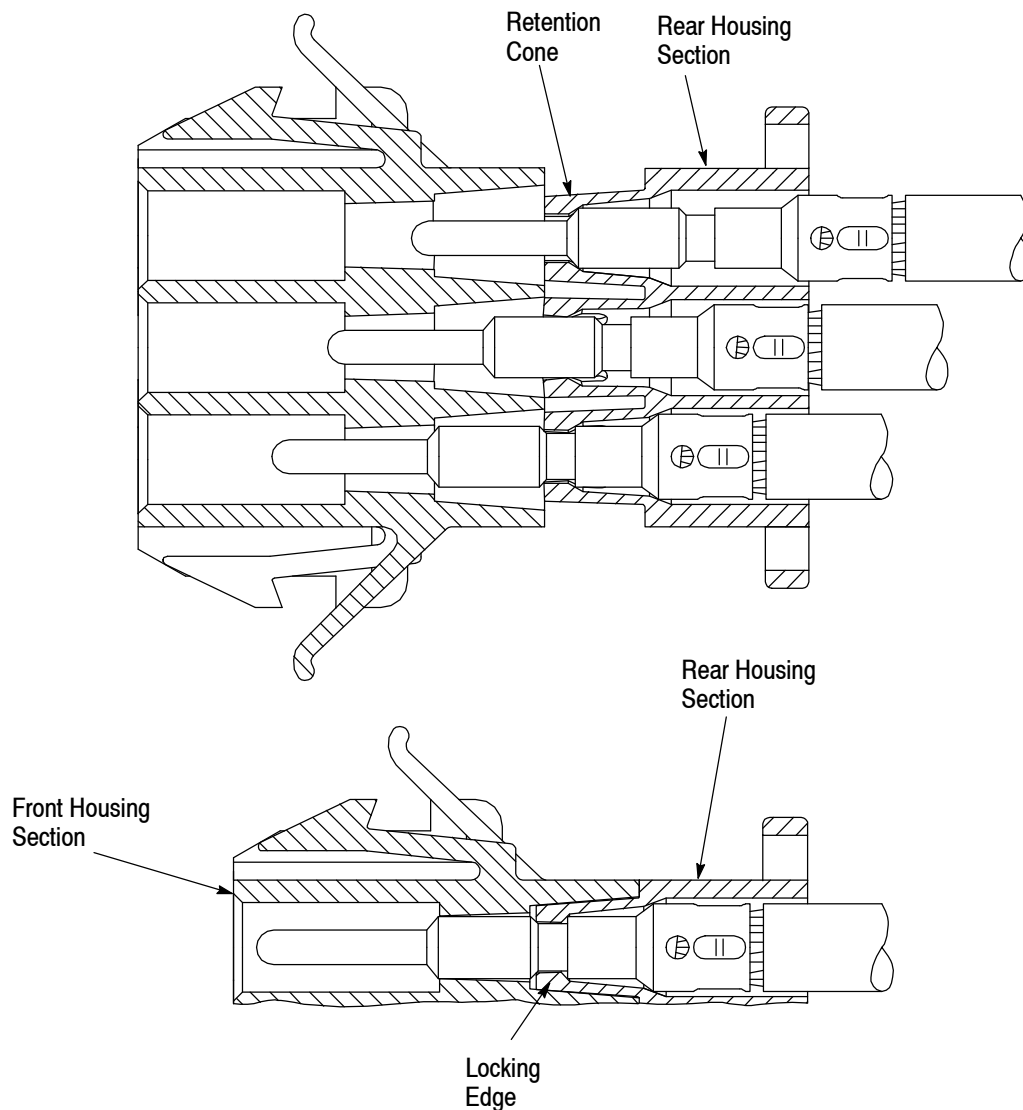


Figure 7

B. Disassembly

1. Depress both latch heads and pull on the rear housing section to separate the housings. Use the Latch Disengagement Tool 58382-1 if necessary.
2. Move the contact in a slight circular motion while pulling on the wire; this releases the retention shoulder from the housing cone. See Figure 8.

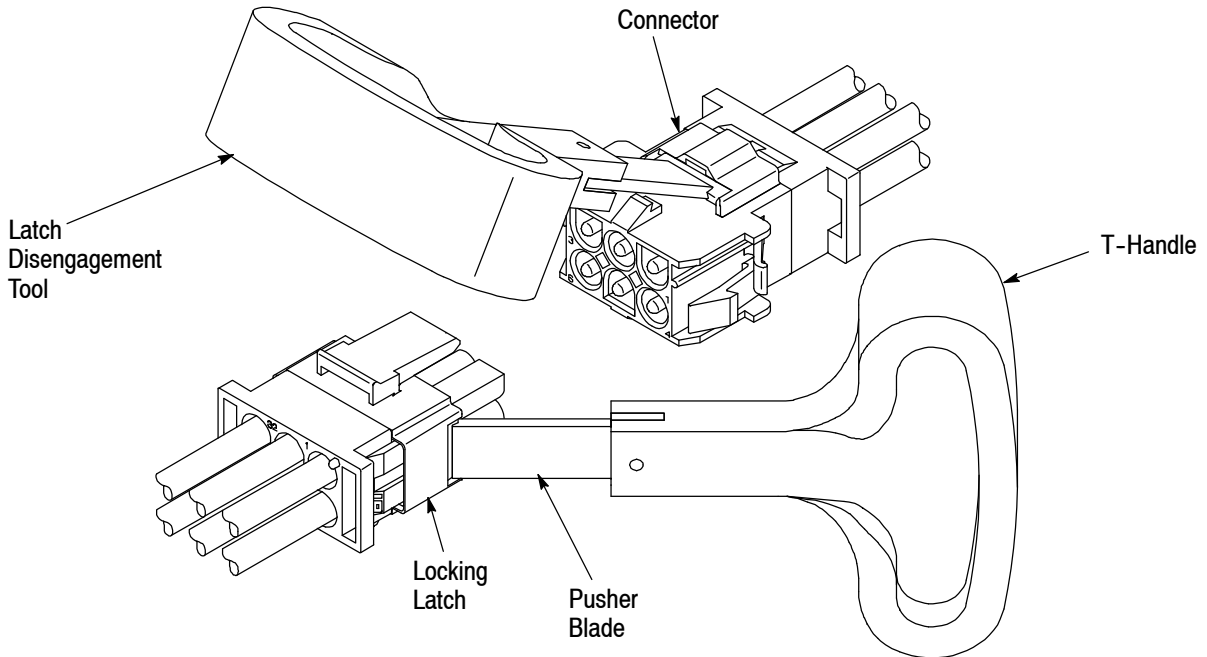


Figure 8

3.6. Strain Relief Clamps

Strain relief clamps are designed to relieve the stress of the wires on the contacts. An adjusting insert is used with smaller wire bundles. Two identical clamps are inserted into slots in the back of the plug and/or cap connector and are secured together with two No. 6 pan head self-tapping screws (customer supplied). Refer to Instruction Sheet 408-3320. See Figure 9.

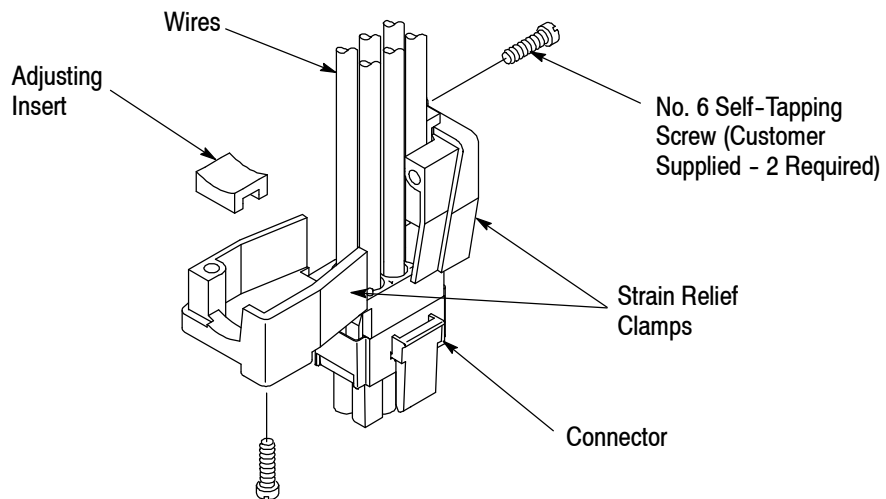


Figure 9

3.7. Keying Plugs

Keying plugs provide additional polarization for the connectors. The keying plug may be inserted into the front of the plug or cap connector. See Figure 10. Refer to Instruction Sheet 408-3320 for more detailed information.

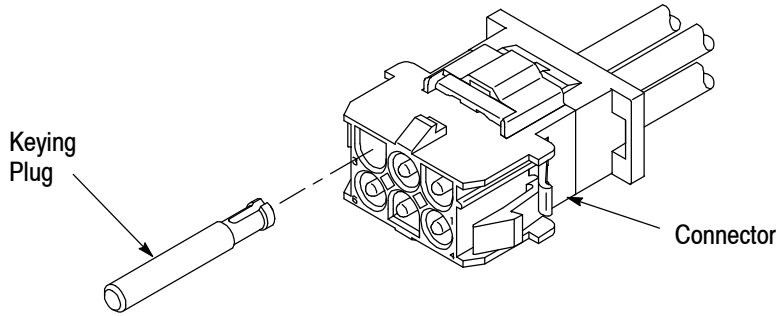
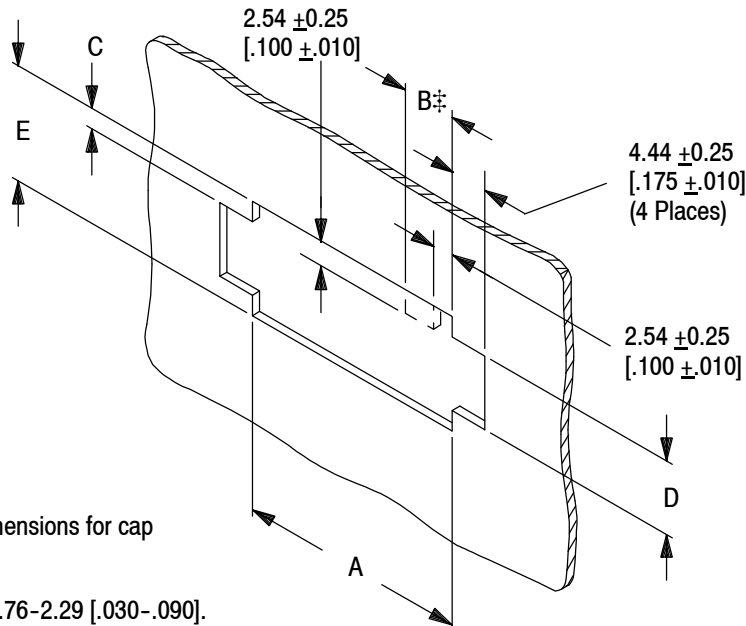


Figure 10

3.8. Panel Cutout

Cap connector panel mounting cutouts shall be as indicated in Figure 11. No mounting hardware is required. The cap housing features flexible mounting tabs for insertion into the panel. Push the cap connector through the panel - in the same direction as the cutout was made - until it snaps in place.

| NUMBER OF CIRCUIT POSITIONS | DIMENSIONS | | | | |
|-----------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | "A" ± 0.13 [.005] | "B" ± 0.25 [.010] | "C" ± 0.25 [.010] | "D" ± 0.25 [.010] | "E" ± 0.13 [.005] |
| 2 | 14.35 [.565] | 6.35 [.250] | 2.41 [.095] | 8.64 [.340] | 13.46 [.530] |
| 3 | 20.7 [.815] | | | | |
| 4 | 27.05 [1.065] | | | | |
| 6 | 14.35 [.565] | 8.89 [.350] | 6.98 [.275] | 12.19 [.480] | 26.16 [1.030] |
| 9 | 20.7 [.815] | | | | |
| 12 | 27.05 [1.065] | | | | |
| 15 | 33.4 [1.315] | | | | |



‡ Optional panel cutout dimensions for cap and panel polarization.

NOTE: Panel thickness 0.76-2.29 [.030-.090].

Figure 11


3.9. Connector Mating

MATE-N-LOK II Connectors have a positive lock feature which prevents accidental unmating. Align polarizing features as shown in Figure 2 and start the plug into the cap. Push connectors together until locking latches engage locking tabs.

To disengage plug and cap connectors, see Paragraph 3.5,B.

3.10. Repair/Replace (Figure 12)

Damaged contacts are not repairable once a termination has been made. Damaged crimped contacts or housings must be removed, discarded, and replaced with new components. TE provides a variety of extraction tools for your needs. Contact the Tooling Assistance Center or the Product Information number listed at the bottom of page 1 for your specific requirements.

| | |
|---|---|
| NOTE | <i>If a damaged contact is apparent before the contacts are inserted into the housing, cut the wire in back of the contact and re-terminate a new contact. If contacts or housing is damaged after insertion, the wire must be cut directly in back of the housing and re-terminated with new contacts and housing.</i> |
|  | |

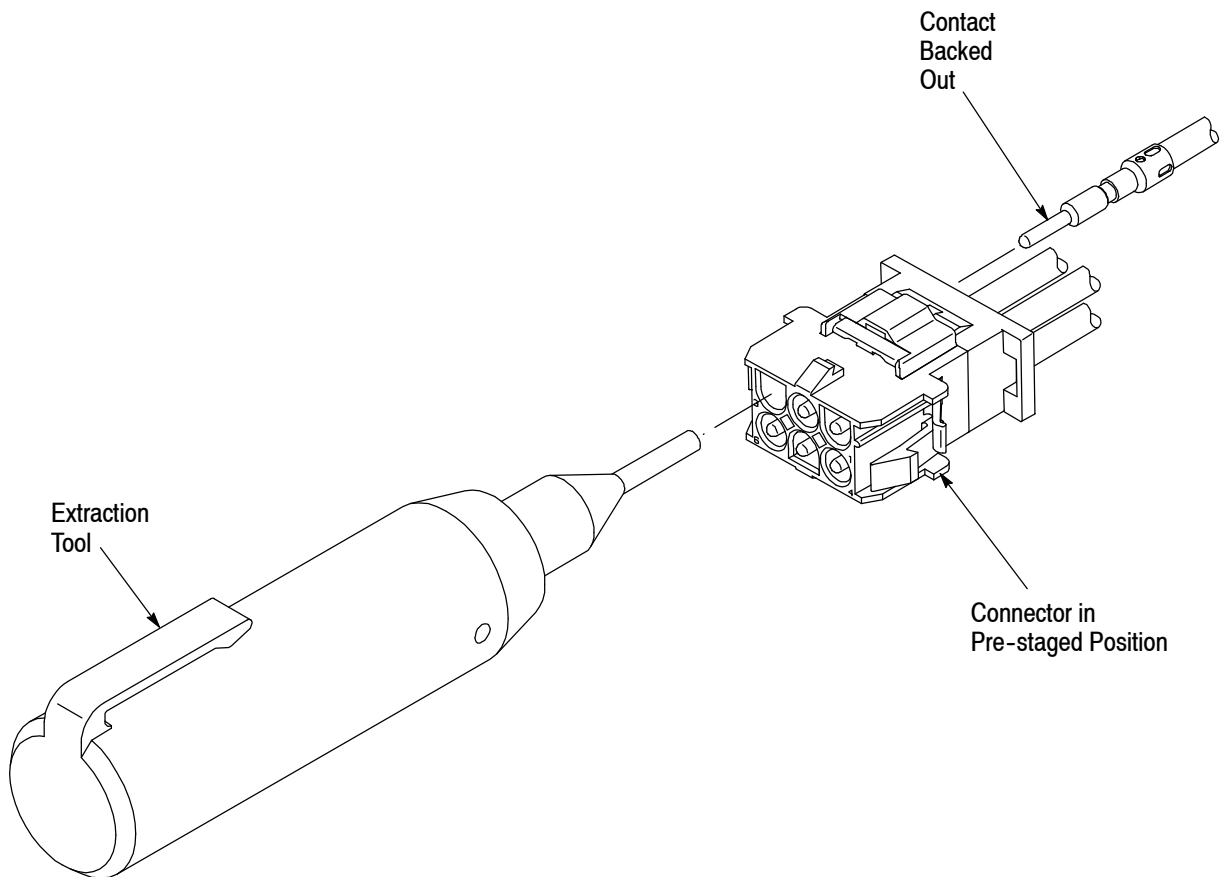


Figure 12

4. QUALIFICATION

MATE-N-LOK II Connectors are Recognized IN the Component program of Underwriters Laboratories Inc. (UL) in File Number E28476 and Certified by CSA International in File Number LR 16455-113.

These connectors have also passed the requirements in VDE Test Report Number 4751-1431-4016/A8E.

5. TOOLING (Figure 13)

These High Current contacts can be terminated to wire using hand crimping or pneumatic tooling provided by Daniels Manufacturing Corporation. Once a contact is crimped, it can be inserted into the plug or cap housing without the use of a tool. Tools are available to remove contacts and disengage connectors.

5.1. 4/8 Indent Hand Crimping Tools

The 4/8 Indent Hand Crimping tools have been designed to form indents to the proper depth in the contact wire barrel. They must be used in conjunction with the positioner or turret head designed for the contact. They are intended for prototype and low-volume applications.

5.2. Positioners and Turret Heads

Positioners and Turret Heads have been designed specifically to the configuration of the screw machine pin and socket contacts. They are used with 4/8 indent hand crimping tools.

5.3. Extraction Tools

Extraction Tools are designed to release locking lance inside the connector housing without damaging the housing or contacts.

| CONTACT TYPE | WIRE SIZE (AWG) | SELECTOR SETTING | DANIELS TOOLING | |
|--------------|-----------------|------------------|------------------------------------|---------------------------------------|
| | | | POSITIONER | CRIMPING TOOL |
| HIGH CURRENT | 14 | 6 | TP1013 or (Pneumatic) TP1094 | M310 or (Pneumatic) WA27-309-EP |
| | 12 | 6 | | |
| | 10 | 7 | | |

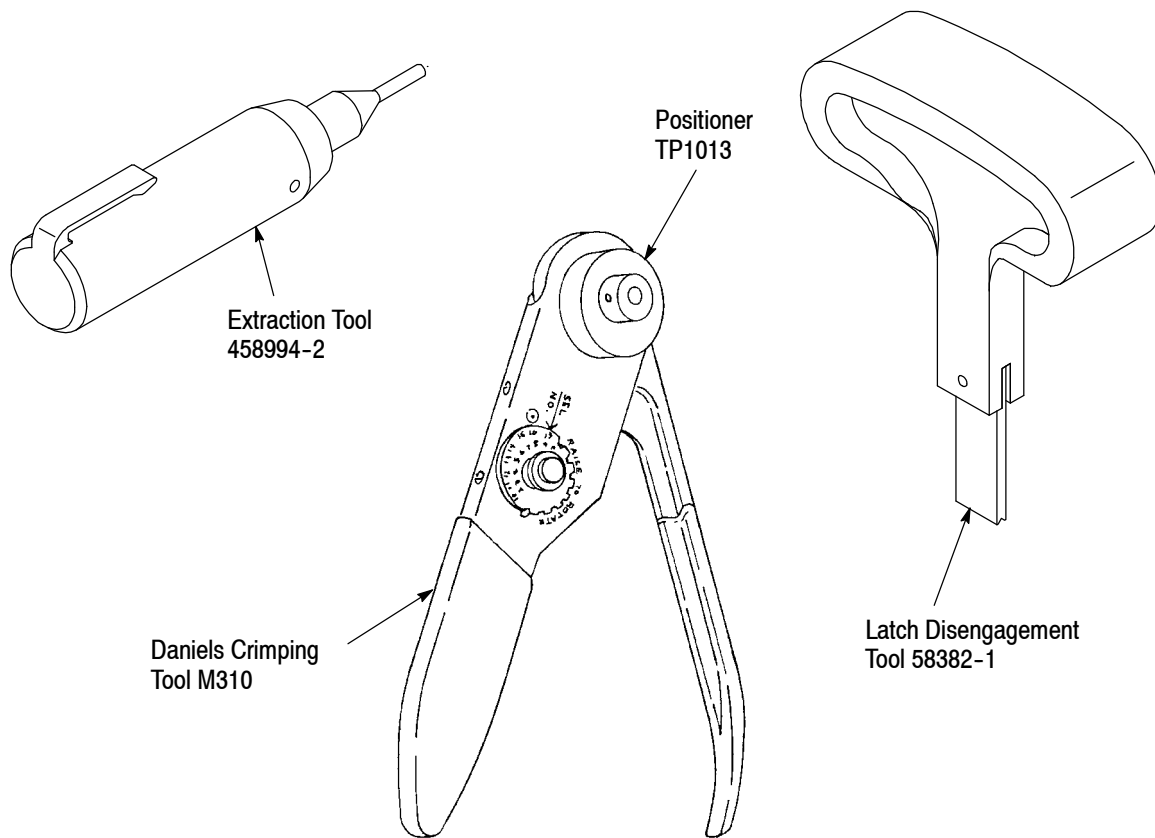


Figure 13

6. VISUAL AID

Figure 14 shows a typical application of a MATE-N-LOK II Connector with High Current Contacts. This illustration should be used by production personnel to ensure a correctly applied product. Applications which DO NOT appear correct should be inspected using the information in the preceding pages of this specification and in the instructional material shipped with the product or tooling.

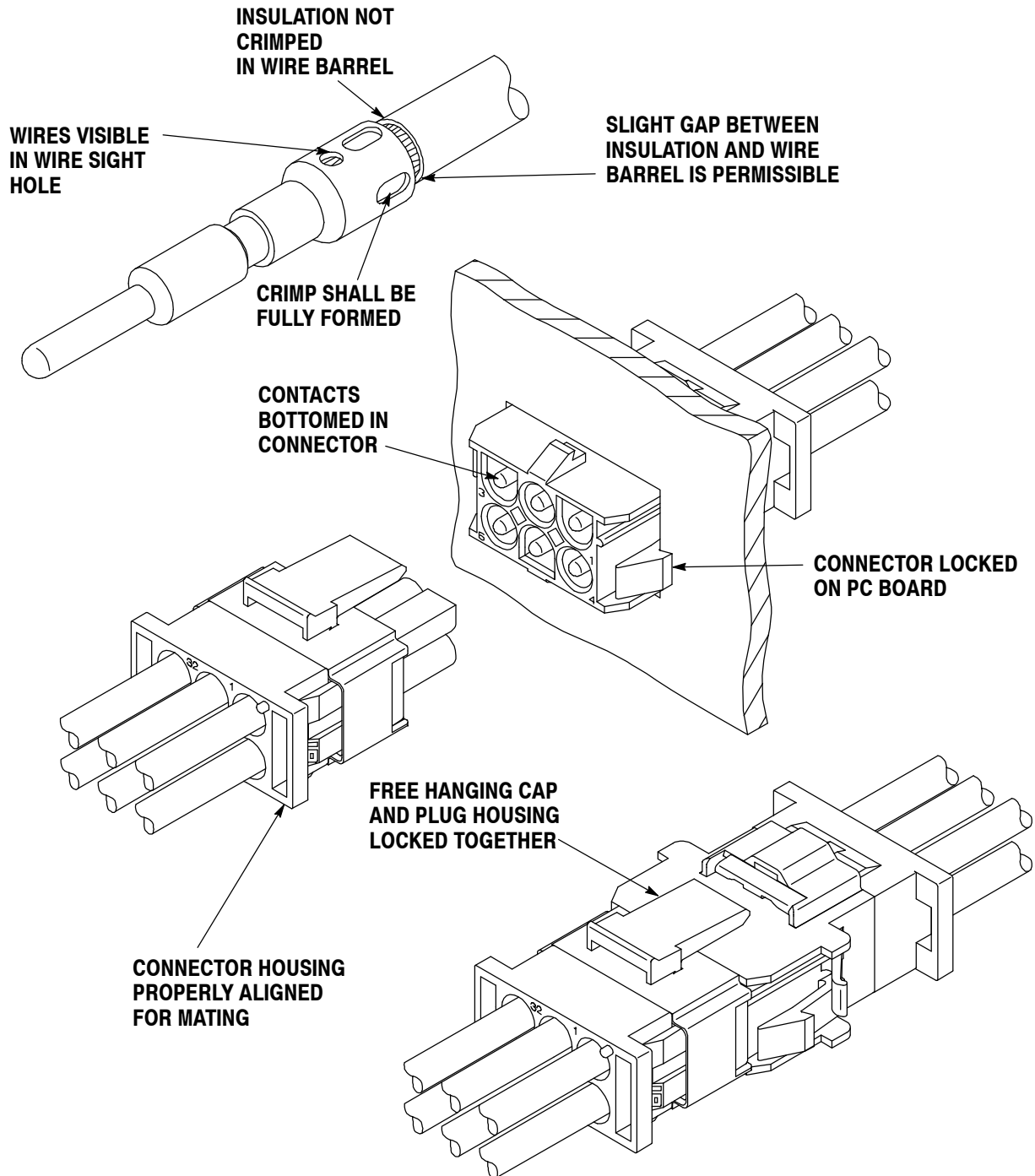


FIGURE 14. VISUAL AID