



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 NG 1.5-mm contact system. Each contact features an insulation barrel, wire barrel, and blade that mates with the receptacle. The wire barrel features serrations that help to retain the wire after crimping. These contacts can be crimped using hand tools or automatic machines.

When corresponding with personnel, use the terminology provided in this specification to facilitate your inquiries for information. Basic terms and features of this product are provided in Figure 1.

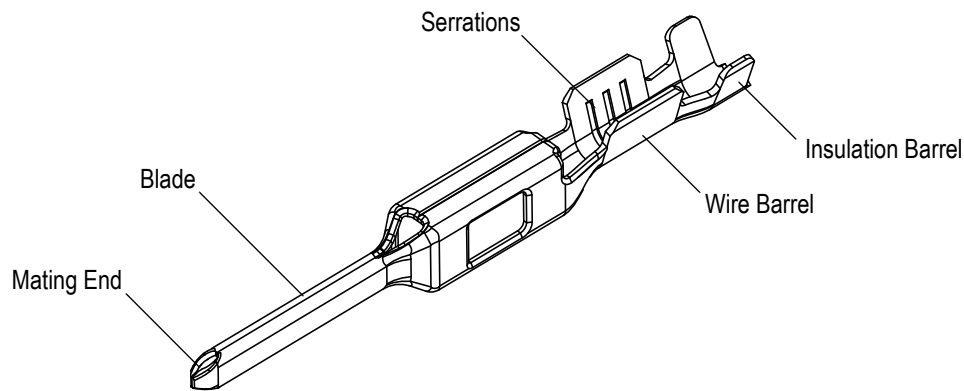


Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

- Changed company name and logo
- Added information to Section 1, added Paragraph 3.3,J, and modified Paragraph 3.4
- Removed reference to F-crimp and "O" crimp from Figure 3
- Added datum line to Figure 4
- Removed NOTE from Paragraph 3.2
- Changed name of tool related to 408-8851, and added applicators, hand tool assemblies, and a die assembly to Figure 6

2.2. Customer Assistance

Reference Product Base Part Number 1488657 and Product Code 2958 are representative of NG 1.5-mm contact system. 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 Representative or, after purchase, by calling PRODUCT INFORMATION at the number at the bottom of this page.

2.3. Drawings

Customer Drawings for product part numbers are available from the service network. If there is a conflict between the information contained in the Customer Drawings and this specification or with any other technical documentation supplied, call PRODUCT INFORMATION at the number at the bottom of this page.

2.4. Instructional Material

Instruction Sheets (408-series) provide product assembly instructions or tooling setup and operation procedures and Customer Manuals (409-series) provide machine setup and operating procedures. Documents available that pertain to this product are:

- 408-3295 Preparing Reel of Contacts for Application Tooling
- 408-7424 Checking Terminal Crimp Height or Gaging Die Closure
- 408-8040 Heavy Duty Miniature Quick-Change Applicators (Side-Feed Type)
- 408-8059 General Preventive Maintenance for Applicators
- 408-8789 PRO-CRIMPER* III Hand Crimping Tool Assembly 91380-1 with Die Assembly 91380-2
- 408-8790 PRO-CRIMPER III Hand Crimping Tool Assembly 91381-1 with Die Assembly 91381-2
- 408-8851 SDE-SA Hand Crimping Tool Frame Assembly 9-1478240-0
- 408-9816 Handling of Reeled Products
- 408-9930 PRO-CRIMPER III Hand Crimping Tool Frame 354940-1
- 409-5128 Basic AMP-O-ELECTRIC* Model "K" Terminating Machine 565435-5
- 409-5842 AMP-O-ELECTRIC Model "G" Terminating Machines 354500-[]
- 409-5852 AMPOMATOR* CLS III-G Lead Making Machine 122500-[]
- 409-5866 AMPOMATOR CLS IV Lead-Making Machine 217500-[]
- 409-5878 AMPOMATOR CLS IV+ Lead-making Machine 356500-[]
- 409-10027 Stripping Modules 1490500 and 1490502
- 409-10029 Stripping Modules 1490501 and 1490503
- 409-10047 AMP-3K Terminating Machine 1725950-[]

3. REQUIREMENTS

3.1. Storage

A. Reeled Contacts

When using reeled contacts, store coil wound reels horizontally and traverse wound reels vertically.

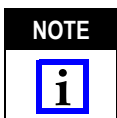
B. Shelf Life

The contacts should remain in the shipping containers until ready for use to prevent deformation to the contacts and/or damage to the housings. The 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 contacts near any chemicals listed below, as they may cause stress corrosion cracking in the contacts.

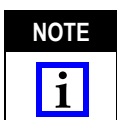
Alkalies	Ammonia	Citrates	Phosphates	Citrates	Sulfur Compounds
Amines	Carbonates	Nitrites	Sulfur Nitrites		Tartrates



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

3.2. Wire Size and Preparation

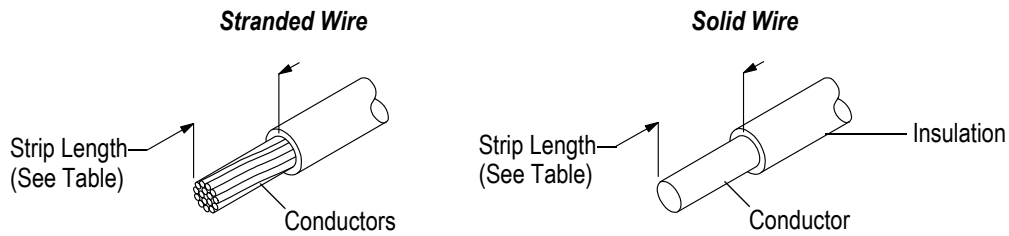
The contacts will accept solid or stranded wire sizes 20 to 14 AWG and metric sizes 0.50 mm² to 2.0 mm². Refer to Figure 2.



The wire conductor must not be nicked, scrapped, or cut during the stripping operation.

3.3. Crimped Contact Requirements

The contact must be crimped onto the wire according to instructions packaged with applicable tooling. After crimping, the contact should appear as shown in Figure 3.



STRANDED OR SOLID WIRE			WIRE STRIP LENGTH RANGE
SIZE AWG and mm ² Are Not Equivalent		INSULATION DIAMETER RANGE	
AWG	mm ²		
20	0.50	1.40-1.95	5.05-6.60
18	0.75	1.60-2.13	
16	1.3	1.90-2.40	
14	2.0	2.25-2.75	

Figure 2



The wire insulation must not be damaged during the crimping process.

A. Wire Barrel Crimp

The crimp applied to the wire portion of the contact is the most compressed area and is most critical in ensuring optimum electrical and mechanical performance of the crimped contact. The contact wire barrel crimp height and width must be within the dimensions provided in Figure 3.

B. Insulation Barrel Crimp

The insulation barrel shall grip the insulation firmly. A slight cut in the insulation by the insulation barrel is permissible. The insulation barrel crimp shall comply to the width and height provided in Figure 3.

C. Effective Crimp Length

Effective crimp length shall be defined as that portion of the wire barrel, excluding bellmouth(s), fully formed by the crimping tool. For optimum crimp effectiveness, the crimp must be within the area shown in Figure 3.

D. Wire Barrel Seam

The wire barrel seam must be closed with no evidence of loose wire strands visible in the seam as shown in Figure 3.

E. Cutoff Tab and Burr

The cutoff tab and burr shall not exceed the dimensions given in Figure 3.

F. Bellmouths

Front and rear bellmouths shall be evident and conform to the dimensions given in Figure 3.

G. Wire Barrel Flash

The wire barrel flash shall not exceed the dimensions shown in Figure 3.

H. Wire Location

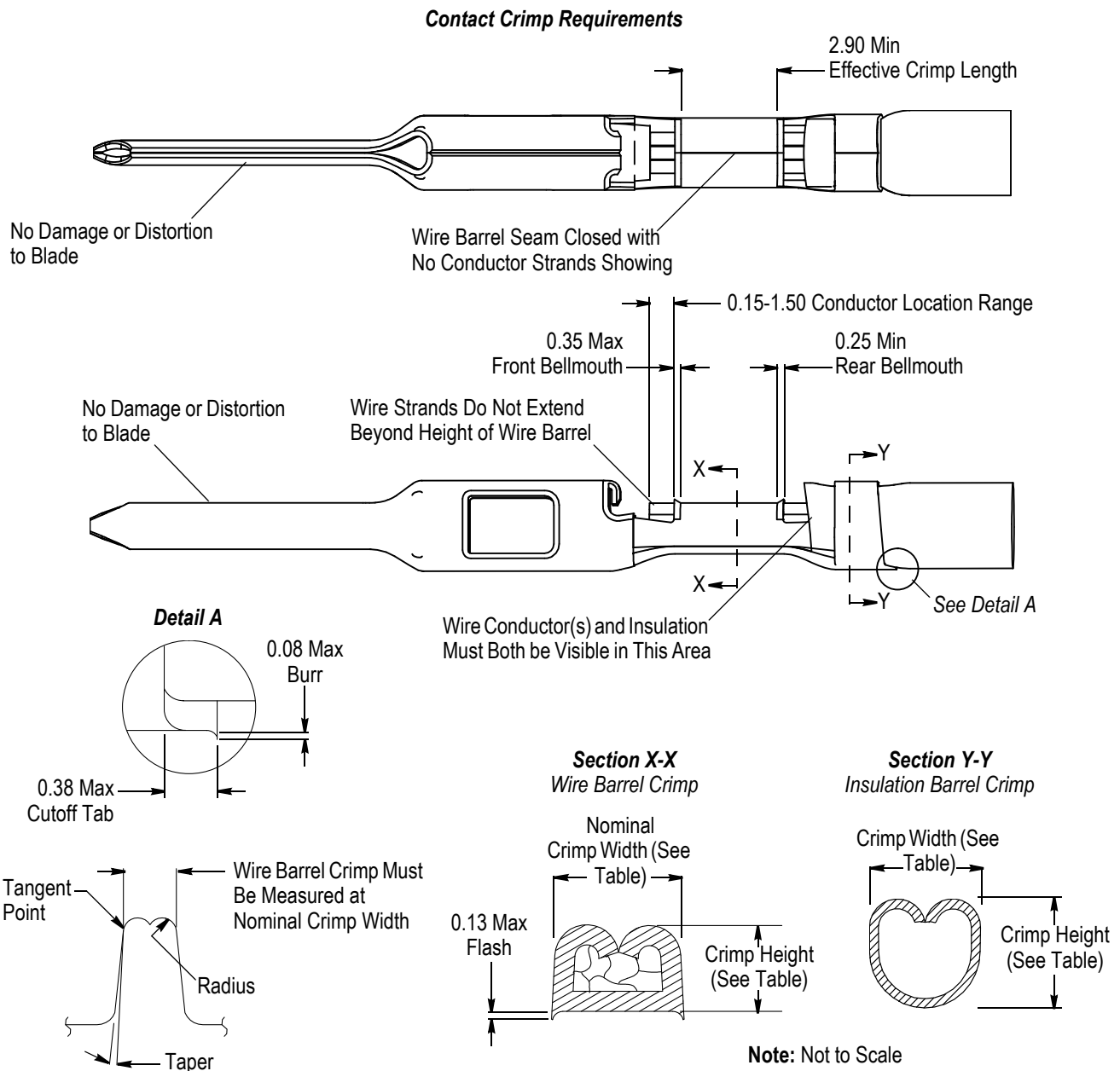
The wire conductor and insulation must be visible in the transition area between the wire and insulation barrels as shown in Figure 3.

I. Conductor Extension

The conductor may extend beyond the wire barrel to the maximum shown in Figure 3.

J. Tensile Strength

Crimped contacts must hold the wire firmly and have a crimp pull-out test value meeting that specified in Figure 3.



WIRE SIZE AWG and mm ² Are Not Equivalent		CONTACT				CRIMPED CONTACT TENSILE STRENGTH N (Min)
AWG	mm ²	WIRE BARREL CRIMP RANGE		INSULATION BARREL CRIMP		
		WIDTH	HEIGHT	WIDTH ±0.05	HEIGHT ±0.10	
20	0.50	1.753-1.803	0.98-1.08	2.03	1.80	85
18	0.75	1.753-1.803	1.08-1.18	2.03	2.00	110
16	1.3	2.134-2.184	1.31-1.41	2.29	2.35	150
14	2.0	2.134-2.184	1.51-1.61	2.29	2.70	220

Figure 3

3.4. Twist and Roll

There shall be no twist, roll, deformation or other damage to the contact that will impair usage of the contact. See Figure 4.

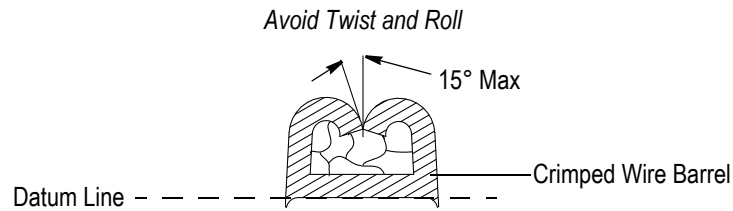


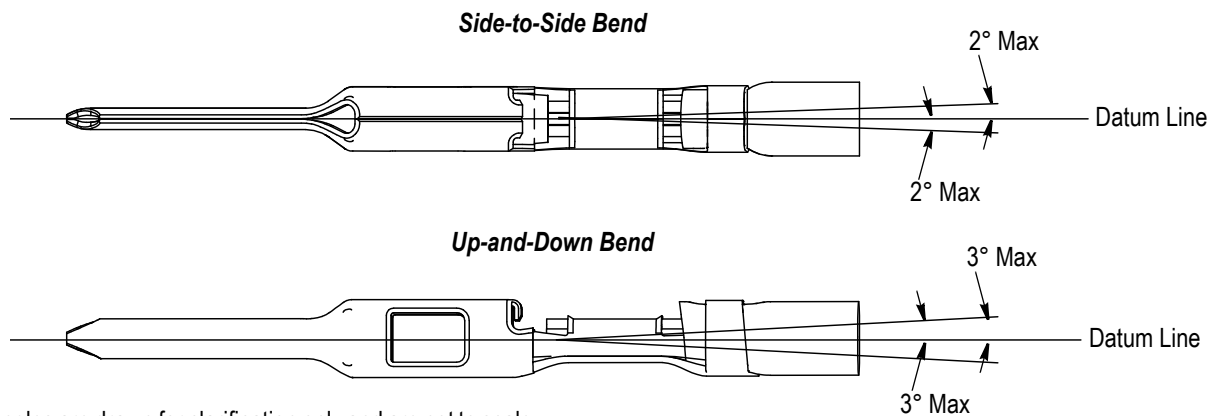
Figure 4

3.5. Straightness

The force applied during crimping may cause some bending between the crimped wire barrel and the mating portion of the contact. Such deformation is acceptable within the limits provided in Figure 5.

- The side-to-side bend of the contact may not exceed the limits provided.
- The up-and-down bend of the crimped contact, including cutoff tab and burr, shall not be bent above or below the datum line more than the amount shown.

NOTE Periodic inspections must be made to ensure crimped contact formation as shown is consistent.



Note: Angles are drawn for clarification only and are not to scale.

Figure 5

3.6. Contact Repair

Once a contact has been damaged, it can not be used. It must be cut from the wire and replaced with a new contact.

4. QUALIFICATIONS

NG 1.5-mm contact system is not required to be Listed or Recognized by Underwriters laboratories Inc. (UL), or Certified by CSA International.

5. TOOLING

A list of tooling recommendations and instructional material packaged with the tooling covering the full wire size range is provided in Figure 6.

A. Applicators

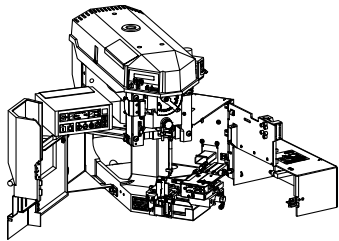
Applicators are designed for strip-fed, precision formed contacts, and provide high volume, heavy duty production requirements. The applicators can be used in bench or floor model power units.

B. Power Units

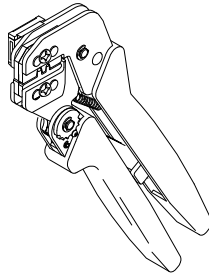
A power unit is an automatic or semi-automatic machine used to assist in the application of a product. Power units provide the force required to drive the applicator.

C. Hand Tools

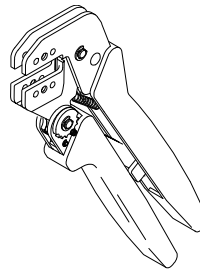
Hand crimping tools are designed for prototype and low-volume applications.



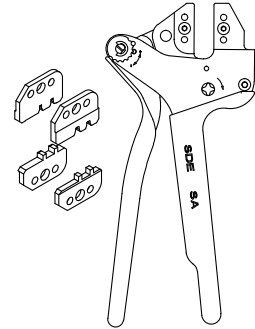
AMP-O-LECTRIC Model "G" Terminating Machines 354500-[] (409-5842) with Optional Stripping Module 1490500 or 1490502 (409-10027) or 1490501 or 1490503 (409-10029)



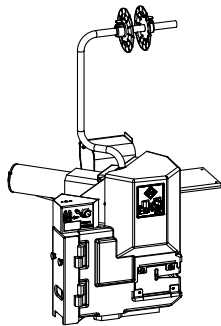
PRO-CRIMPER III Hand Crimping Tool Assembly 91380-1 with Die Assembly 91380-2 (408-8790) or PRO-CRIMPER III Hand Crimping Tool Assembly 91381-1 with Die Assembly 91381-2 (408-8789)



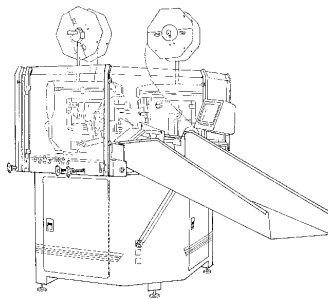
PRO-CRIMPER III Hand Crimping Tool Frame 354940-1 (408-9930) (See Table for Die Assembly)



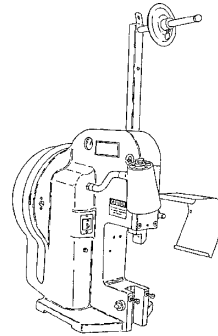
SDE-SA Hand Crimping Tool Frame Assembly 9-1478240-0 (408-8851) with Die Assembly 91380-2 (408-8789) or Die Assembly 91381-2 (408-8790)



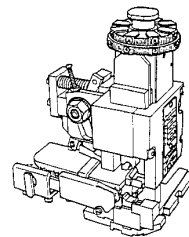
Basic AMP-O-LECTRIC Model "K" Terminating Machine 565435-5 (409-5128)



"AMP-3K" Terminating Machines 1725950-[] (409-10047)



AMPOMATOR CLS Lead-Making III-G Machines 122500-[] (409-5852) IV Machines 217500-[] (409-5866) IV + Machines 356500-[] (409-5878)



Heavy Duty Miniature Quick-Change Applicators (Side-Feed Type) (See Table) (408-8040)

WIRE SIZE†		TOOLING					
AWG	mm ²	HAND TOOL AND DIE ASSEMBLY	HAND TOOL FRAME	DIE ASSEMBLY	APPLICATOR FOR POWER UNIT		
					AMPOMATOR CLS Lead-Making Machines	Model "K" Terminating Machine	Model "G" Machines or "AMP-3K" Machines
20	0.05	91381-1	354940-1 or 9-1478240-0	91381-2	1385159-1	1385159-2	1385159-3
18	0.75						
16	1.3	91380-1	354940-1 or 9-1478240-0	91380-2	1385814-1	1385814-2	1385814-3
14	2.0						

† AWG and mm² Are Not Equivalent

Figure 6

6. VISUAL AID

The illustration below shows a typical application of this product. 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.

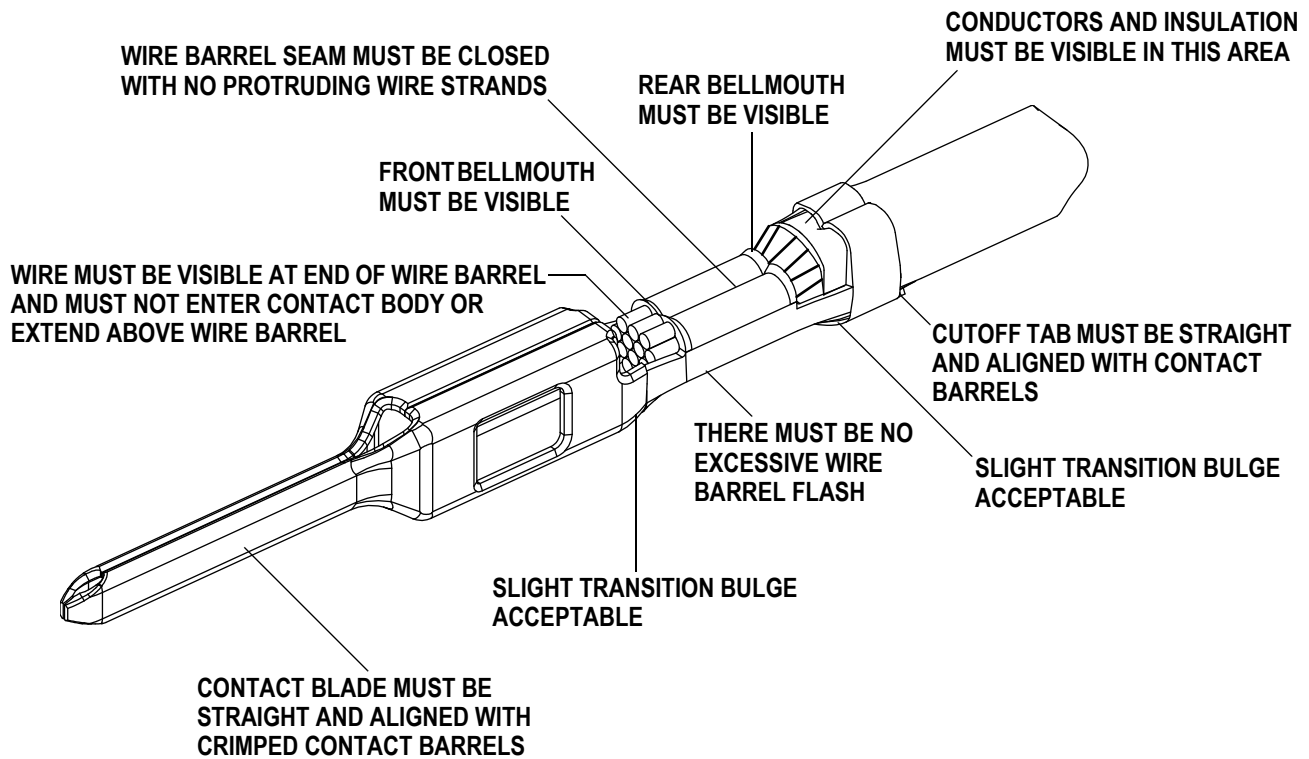


FIGURE 7. VISUAL AID