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 [±.005] and angles have a tolerance of ±2°. Figures and illustrations are for identification only and are not drawn to scale.

1. INTRODUCTION

This specification covers the requirements for application of FASTON Flag Receptacles with the "F"-Crimp wire barrel feature, which are used for center-stripped wire (as opposed to the normal practice of stripping the wire end). The most common application of these receptacles is in the major appliance field, where multiple in-line splices would normally be required.

The center-strip receptacles are offered in designs fitting 187 Series and 250 Series tab widths. The 187 Series are available in 0.51 mm [.020 in.] and 0.81 mm [.032 in.] mating tab thicknesses, while the 250 Series receptacles fit 0.81 mm [.032 in.] thick tabs only. Receptacles are also configured either with or without an insulation support barrel in most available sizes.

When corresponding with TE Connectivity 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.

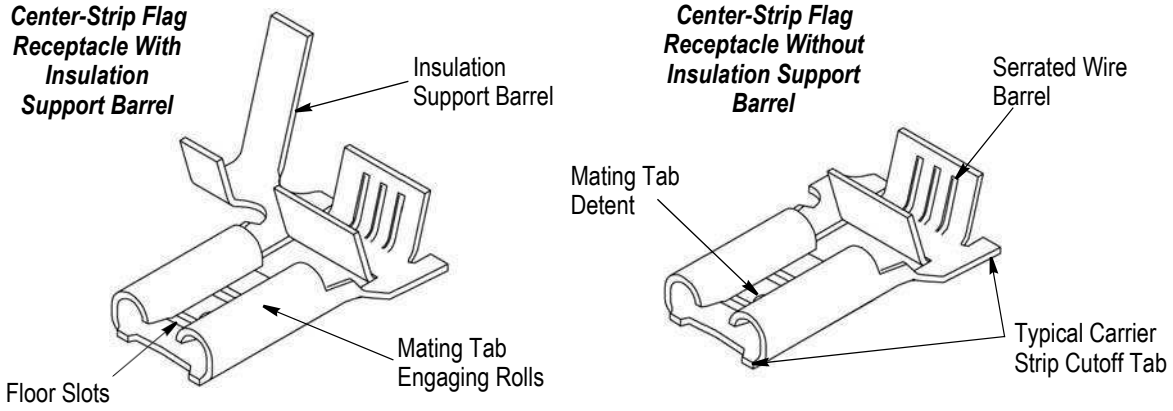


Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

Revisions to this application specification include:

- Updated tooling information in Section 5

2.2. Customer Assistance

To ensure consistent and high-quality terminations, TE Connectivity (TE) product engineering has analyzed and tested the design factors of numerous terminal crimp connections with varying wire ranges defined by the terminals. As a result, TE product engineering has defined five criteria necessary to achieve a reliable crimp: be sure to 1) use the TE product only for an application it was designed for, 2) always use the TE recommended application tooling, 3) use an appropriately selected and prepared wire, 4) adhere to the application specification described in the associated TE product print and application documentation (such as the TE 114- Application Specification, and TE Applicator "Log Sheet" print), and 5) have the product handled by trained operators only. TE product performance according to TE product specification can be achieved using the methods described in this application specification with the use of the recommended, properly maintained tooling and applicator.

If tooling or termination equipment is used other than what is recommended by TE, where such tooling or equipment was not used for agency validation and/or the product qualification process, TE does not make any representation or warranty, expressed or implied, and disclaims liability for non-performance per TE product specification. Customer accepts the sole responsibility for the evaluation, application, and use of the terminals in such circumstances

Reference Product Base Part Number 63315 and Product Code 1089 are representative of the FASTON Flag Receptacles. Use of these numbers will identify the product line and help you to obtain product and tooling information. Such information can be obtained through a local Representative, by visiting our website at www.te.com, or by calling PRODUCT INFORMATION or the TOOLING ASSISTANCE CENTER at the numbers at the bottom of page 1.

2.3. Drawings

Customer drawings for each product part number are available from a 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

The following Application Specifications provide information for the application of related products.

Document Number	Document Title
114-2028	FASTON 110 Series Flag Receptacles
114-2032	FASTON Reversible Flag Receptacles
114-2036	FASTON Straight Receptacles with “F-” Crimp Feature
114-2070	FASTON AMPLIVAR* Contact Tab
114-2078	FASTON Flag Receptacles with Tab Lok Feature
114-2079	FASTON Flag Receptacles with “F-” Crimp Feature
114-2082	FASTON Piggyback Receptacles

2.5. Terminal Voltage Rating

Voltage rating is based upon dielectric strength between the terminal and other voltage potential conductors. For these un-insulated terminals, this dielectric strength is determined by 1) the wire insulation used, 2) the housing used (if any), and 3) the application spacings. These appliance business unit terminals with an insulation barrel crimp are designed for UL 1015 wire with insulation rated for 600 volts; so, this is the voltage rating assigned to these terminals. Clearly, if higher dielectric strength wire insulation, larger spacings, and possibly an optional housing are used, larger voltages can be used.

2.6. Instructional Material

The following list includes available instruction sheets (408-series) that provide assembly procedures for operation, maintenance and repair of tooling; and customer manuals (409-series) that provide setup, operation, and maintenance of machines. A variety of Instruction Sheets for FASTON products are available from TE. Contact the Product Information Center number at the bottom of page 1.

Document Number	Document Title
408-3295	Preparing Reel of Contacts for Applicator Tooling
408-7424	Checking Contact Crimp Height
408-7432	Force Gage 92-100505
408-8053	Miniature (Mini) and Quick-Change Applicators
408-8059	General Preventative Maintenance for Applicators
408-8091	Center-Strip Applicator Assembly 819528-1 (End-Feed Type)
408-9816	Handling of Reeled Products
409-5289	Model “T” Terminating Unit No. 458000-4 Basic Machine Manual
409-5842	AMP-O-LECTRIC* Model “G” Terminating Machine 354500-[ ]
409-5852	AMPOMATOR* CLS III-G Lead-Making Machine 122500-[ ]
409-5878	AMPOMATOR CLS IV+ Lead-Making Machine 356500-[ ]
409-10047	AMP-3K Terminating Machines 1725950-3, -4

3. REQUIREMENTS

3.1. Storage

A. Ultraviolet Light

Prolonged exposure to ultraviolet light may deteriorate the chemical composition used in the contact materials.

B. Reeled Contacts

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

C. Shelf Life

The contacts should remain in the shipping containers until ready for use to prevent deformation to the

contacts. The contacts should be used on a first in, first out basis to avoid storage contamination that could adversely affect signal transmissions.

D. 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

NOTE

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

3.2. Product Selection

Receptacles that accept 0.81 mm [.032 in.] thick tabs are each available with or without an insulation support barrel for strain relief purposes. And they are available in 187 Series and 250 Series. The only receptacle that accepts 0.51 mm [.020 in.] thick tabs is a 187 Series without insulation support.

3.3. Wire Selection and Preparation

The center-strip receptacles will accept wire sizes 18-14 AWG with an insulation outside diameter of 1.52-3.81 mm [.060-.150 in.]. No insulation stripping or other wire preparation is necessary. The applicator described in Section 5, TOOLING, cuts the insulation and pulls it away from the wire barrel during termination.

NOTE

The applied crimp dimension (within the functional range of the product) is dependent on the termination tooling being used. Refer to the documentation (applicator logs and instruction sheets) supplied with the termination tooling for the applied crimp height. See Section 5, TOOLING.

CAUTION

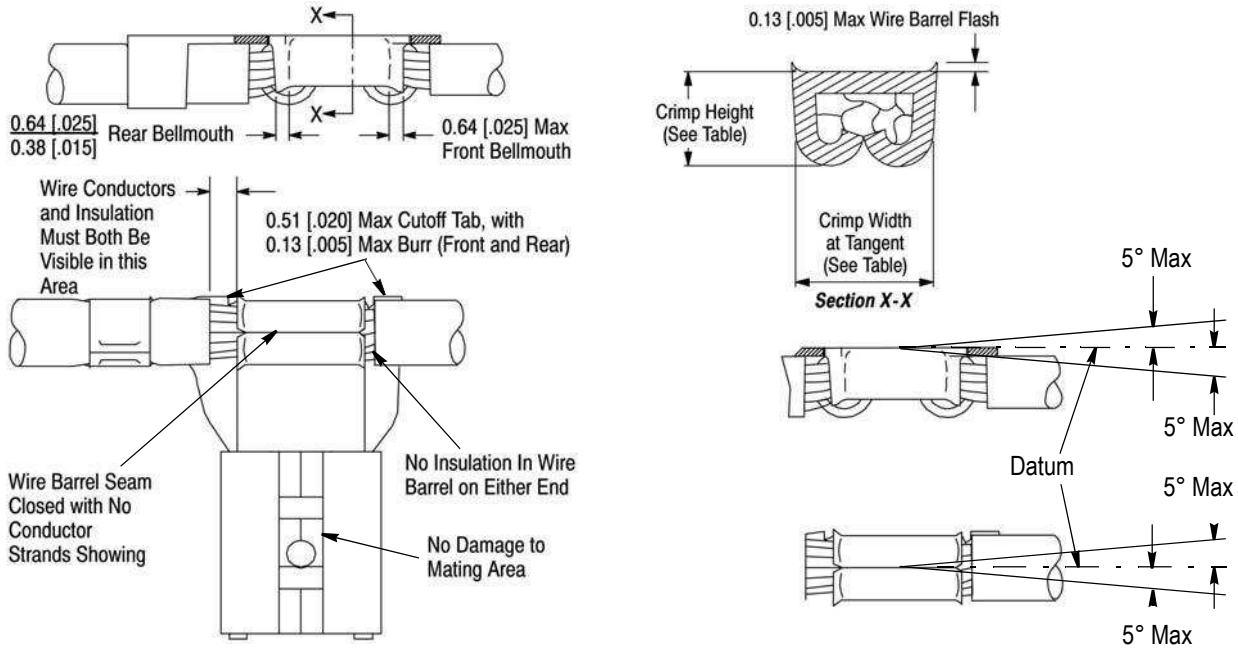
Do NOT nick, scrape, or cut the wire conductor during the stripping operation.

3.4. Crimped Receptacle Requirements

Locate the receptacle to be crimped in the applicator according to Instruction Sheet 408-8091. Perform the crimping operation. Figure 2 shows a typical receptacle as it should appear after crimping. The table in Figure 2 lists proper crimp dimensions and crimp tensile strengths arranged by wire size.

CAUTION

Wire insulation shall NOT be cut or broken during the crimping operation except according to normal applicator operation. See Paragraph 3.3. Exercise of reasonable care by tooling operators should be sufficient to provide undamaged terminations.



WIRE APPLIED			WIRE BARREL			INSULATION SUPPORT CRIMP WIDTH (REF)
QTY	REFERENCE SIZE (AWG)	CMA	CRIMP HEIGHT RANGE	CRIMP WIDTH (REF)	TENSILE STRENGTH N [lbs]	
1	18	1600	1.50-1.40 [.059-.055]	3.05 [.120]	89 [20]	4.57 [.180]
1	16	2600	1.65-1.55 [.065-.061]	3.05 [.120]	133 [30]	4.57 [.180]
1	14	4100	1.85-1.75 [.073-.069]	3.05 [.120]	223 [50]	4.57 [.180]

Figure 2

3.5. Crimp Pull-Out Test

Crimped receptacles shall not be separated from their associated wires when subjected to forces as specified in the table in Figure 3.

NOTE

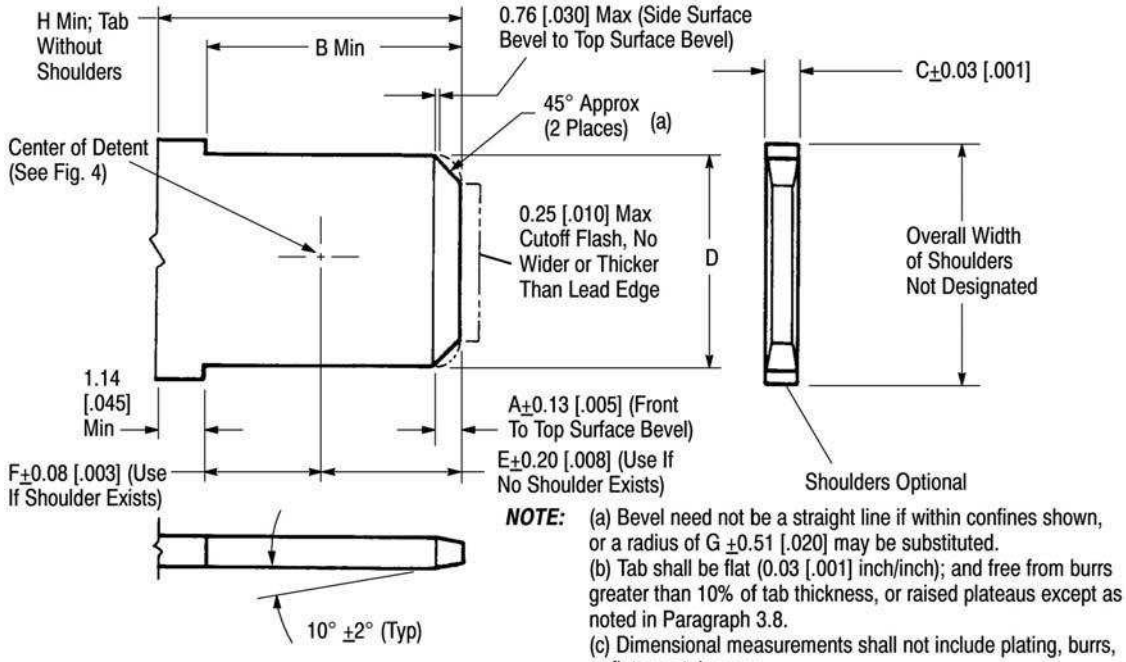
Adjust tensile testing machine for head travel of 25.4 mm [1 inch] per minute. Directly and gradually apply force for one minute.

CRIMP PULL-OUT TEST FORCES			
WIRE SIZE		MINIMUM FORCE	
AWG	mm^2	NEWTONS	POUNDS
18	0.82	89	20
16	1.30	133	30
14	2.10	223	50

Figure 3

3.6. Mating Tab Dimensions

Figures 4 and 5 shows features and dimensional requirements for tab terminals intended for mating with FASTON Receptacles.

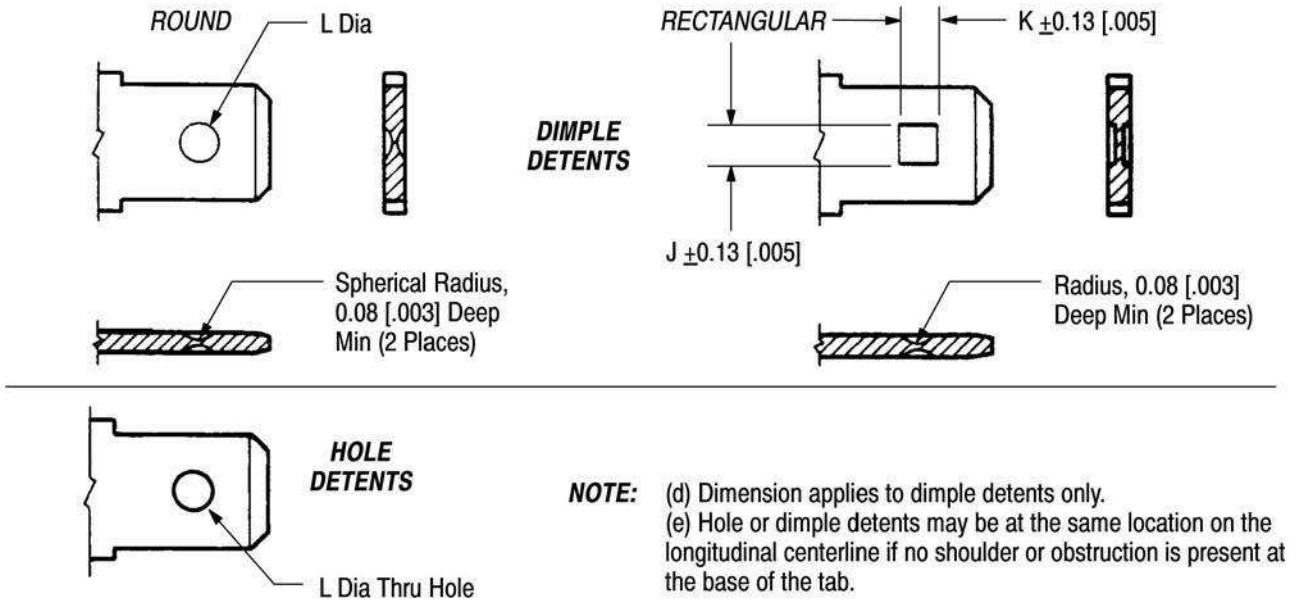


TAB SIZE (NOMINAL)	A	B	C	D	E	F	G	H
6.35 x 0.81 [.250 x .032] with Dimple	0.89 [.035]	7.80 [.307]	0.81 [.032]	6.35 [.250]		4.06 [.160]	1.27 [.050]	8.94 [.352]
6.35 x 0.81 [.250 x .032] with Hole	0.89 [.035]	7.80 [.307]	0.81 [.032]	6.35 [.250]	4.52 [.178]		1.27 [.050]	8.94 [.352]
4.75 x 0.81 [.187 x .032] with Dimple	0.89 [.035]	6.22 [.245]	0.81 [.032]	4.75 [.187]			1.27 [.050]	7.37 [.290]
4.75 x 0.81 [.187 x .032] with Hole	0.89 [.035]	6.22 [.245]	0.81 [.032]	4.75 [.187]			1.27 [.050]	7.37 [.290]
4.75 x 0.51 [.187 x .020] with Dimple	0.76 [.030]	6.22 [.245]	0.51 [.020]	4.75 [.187]			1.14 [.045]	7.37 [.290]
4.75 x 0.51 [.187 x .020] with Hole	0.76 [.030]	6.22 [.245]	0.51 [.020]	4.75 [.187]			1.14 [.045]	7.37 [.290]

Figure 4

3.7. Tab Retention and Detent Configurations

A tab configuration having no locking feature may be used for applications where low mating retention forces are desirable. Where higher forces are sought, a tab with a detent meeting the requirements of Figure 5 should be used. Hole detents provide the greatest retention forces, while dimples provide acceptable medium-range forces.



TAB WIDTH (NOMINAL)	J (d)	K (d)	L
6.35 [.250]	2.36 [.093]	1.90 [.075]	1.78 +0.25/-0.13 [.070 +.010/-.005]
4.75 [.187]	1.57 [.062]	1.37 [.054]	1.40 +0.13 [.055 +.005]

Figure 5

3.8. Mating Overcycle and Testing

The forces required to mate and unmate a test mating tab and receptacle shall be as specified in the following table in Figure 6. Measure the force using a testing device capable of holding the reading. It must also provide accurate alignment with slow and steady mating and unmating of the test tab and receptacle.

NOTE

Testing may be done using a gage as described in Residential Controls--Quick-Connect Terminals, ANSI/NEMA No. DC2--1982. Test tabs shall be dimensioned as shown in Figures 4 and 5 of this specification, except that the "C" dimension shall have a tolerance of +0.008 mm [.0003 in.] for brass tabs and +0.013 mm [.0005 in.] for steel, and raised plateaus around detents shall be limited to a total of 0.03 mm [.001 in.] for both sides.

TAB SIZE	FORCE N [lb]					
	FIRST MATING (MAXIMUM) INDIVIDUAL	FIRST UNMATING			SIXTH UNMATING	
		(MAXIMUM)	(MINIMUM)		(MINIMUM)	
			AVERAGE	INDIVIDUAL	AVERAGE	INDIVIDUAL
TEST TAB AND UNPLATED RECEPTACLE						
6.35 [.250]	80 [18]	80 [18]	27 [6]	18 [4]	22 [5]	18 [4]
4.75 [.187]	67 [15]	89 [20]	22 [5]	13 [3]	13 [3]	9 [2]
TEST TAB AND TIN-PLATED RECEPTACLE						
6.35 [.250]	76 [17]	76 [17]	22 [5]	13 [3]	18 [4]	13 [3]
4.75 [.187]	67 [15]	89 [20]	22 [5]	13 [3]	13 [3]	9 [2]

Figure 6

3.9. Repair/Replacement

CAUTION

Damaged product should not be used. If a damaged receptacle is evident, it should be cut from the wire and replaced with a new one. Do NOT reterminate receptacles.

4. QUALIFICATIONS

FASTON “F-” Crimp Center-Strip Flag Receptacles meet Underwriters Laboratories Inc. UL-310 specification for quick-connect terminals and are Listed in the UL Component Listing Program - Electrical File No. E-66717. These products are also CSA International Certified in Files LR-49710 and LR-36371-4.

NOTE

UL does not qualify this type of terminal when designed for application to 24 AWG or smaller wire.

5. TOOLING

Applicators contain the tooling for feeding and crimping strip-form terminals. Automatic machines provide the power to operate the applicator. See Figure 7 for representative images.

Tooling information for product part numbers is available from www.te.com or by calling the Product Information Center at the number at the bottom of page 1.

5.1. Machine (Power Unit)

The machine provides the force required to drive an applicator for crimping the contacts. These machines can be set up to automatically measure, cut, strip and terminate wire.

5.2. Applicator

Applicators for product part numbers are available from the Applicator Search Portal on www.te.com or by calling the Product Information Center at the bottom of page 1.

Ocean Applicator

Automatic Machine

Figure 7

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.

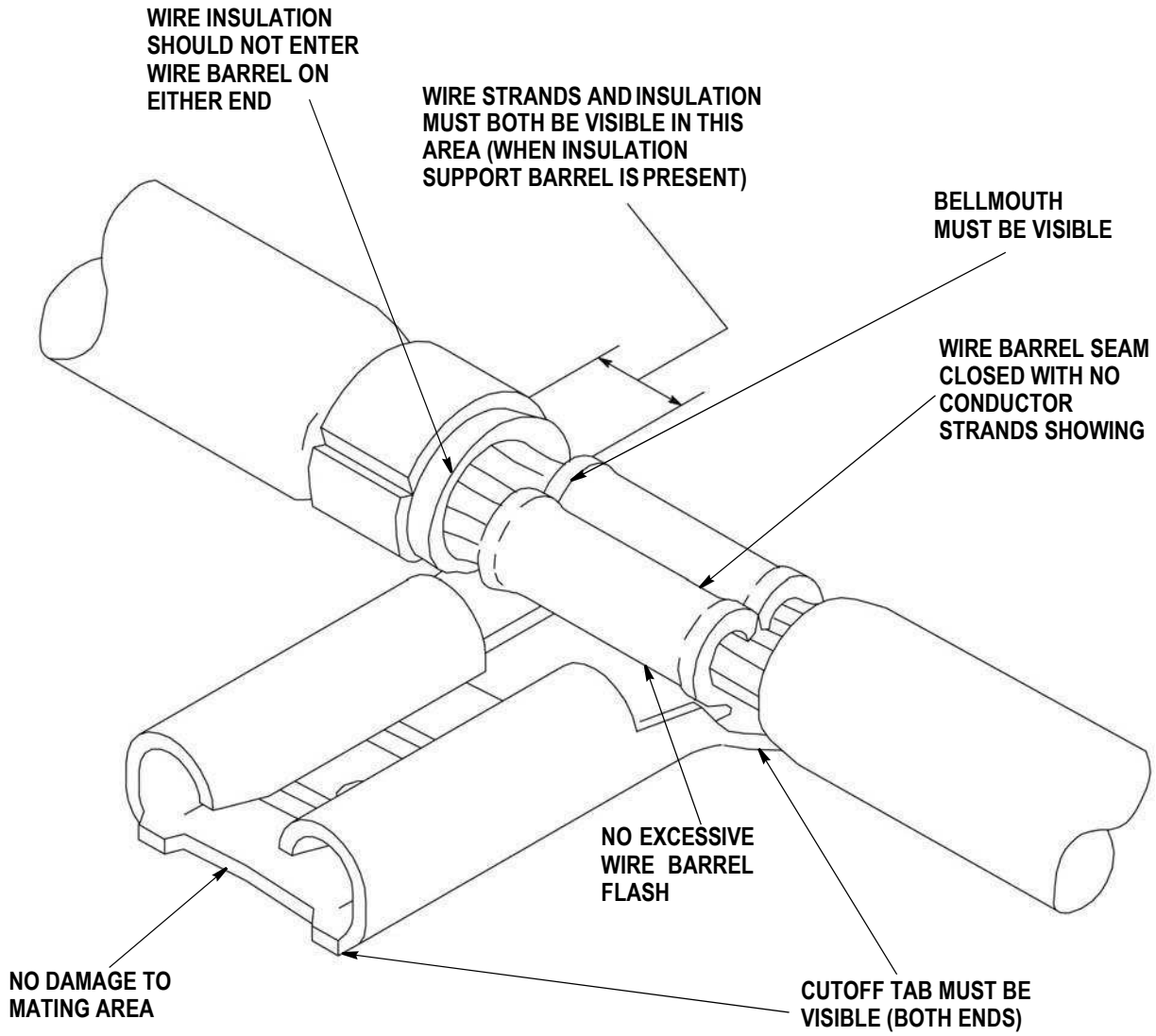


FIGURE 8. VISUAL AID