

NOTE



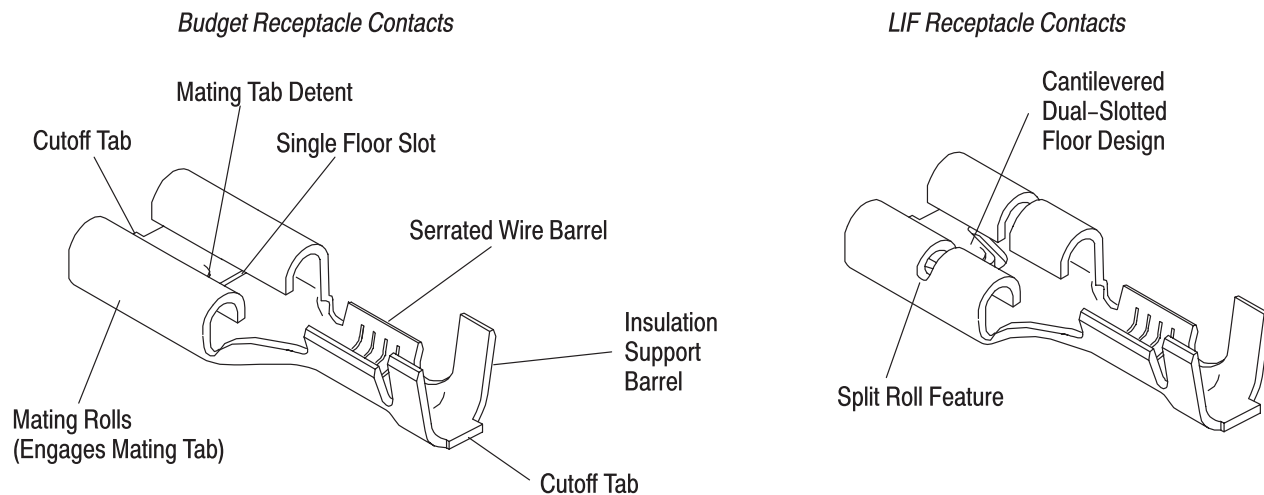
All numerical values are in metric units [with U.S. customary units in brackets]. Dimensions are in millimeters [and inches]. Unless otherwise specified, dimensions have a tolerance of ± 0.13 [$\pm .005$] and angles have a tolerance of $\pm 2^\circ$. Figures and illustrations are for identification only and are not drawn to scale.

1. INTRODUCTION

This specification covers the requirements for application of AMPLIVAR FASTON .187 and .250 Series Straight Receptacle Contacts. The series designator is the width dimension of the mating contact tab; contacts accept a tab thickness range of 0.05–0.81 mm [.020–.032 in.]. The contacts will accept solid magnet wire with a wire size range of 24–14 AWG, and can be used with stranded wire with a wire size range of 20–14 AWG and an insulation diameter range of 1.27–4.32 mm [.050–.170 in.].

The .250 series contacts are available in two mating configurations: budget and low insertion force (LIF). Both feature a wire barrel designed with burrs at the top of serrations. During the crimping procedure, the burrs pierce the coating of the magnet wire and force the conductors into the serrations resulting in a direct metal-to-metal connection. The mating rolls and slotted floor design allow maximum compliance toward mating tabs. Retention force is maintained by the mating tab detent. In addition, the cantilevered, dual-slotted floor design and split roll feature of LIF contacts provide greatly reduced insertion forces. The contacts are precision-formed and strip fed for machine application.

When corresponding with Tyco Electronics 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.



NOTE: .250 Series Shown

Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

- Updated document to corporate requirements
- Deleted text from title, Paragraph 3.3.B.2, and Section 4, QUALIFICATION
- Added text to Section 1, INTRODUCTION and Paragraph 3.1
- Deleted Figure 2 and table in Figure 3 and renumbered
- Added new table in Figure 2

2.2. Customer Assistance

Reference Part Number 63622 and Product Code 1103 are representative numbers of AMPLIVAR FASTON Series .250 Straight Receptacle 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 Tyco Electronics Representative or, after purchase, by calling the Tooling Assistance Center or the Product Information number at the bottom of page 1.

2.3. Drawings

Customer Drawings for product part numbers 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 other technical documentation supplied by Tyco Electronics.

2.4. Instructional Material

Customer Manuals 409–5128 and 409–5842, and Instruction Sheet 408–8039 are available to provide machine and tooling setup, application, and repair information for the equipment designed to terminate these contacts.

3. REQUIREMENTS

3.1. Material

The contacts are made of brass, phosphor bronze, and post-plated with tin.

3.2. Storage and Chemical Exposure Limitations

The contacts should remain in the shipping containers and on the reels until ready for use. The coiled reels should be stored horizontally to prevent deformation during storage that could prevent proper feeding through the applicator. They should be used on a first in, first out basis to prevent storage contamination.

The chemicals listed below can cause stress corrosion cracking in brass receptacles.

Alkalies	Ammonia	Citrates	Phosphates	Sulfur Compounds
Amines	Carbonates	Nitrites	Sulfides	Tartrates

NOTE

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



3.3. Wire Selection and Preparation

A. Selection

The contacts will accept copper and/or aluminum solid magnet wire and stranded copper wire in the sizes shown in Figure 2.

B. Preparation

1. Solid Magnet Wire

A visual check should be made to ensure that the wire is straight. No stripping nor other preparation is required.

2. Stranded Copper Wire

The wire must be stripped to the proper dimension to ensure correct insertion depth in the contact. Excessive conductors will be exposed if the strip length is too long and entrapment of the insulation or improper termination will result if the strip length is too short.

CAUTION

Care should be taken not to cut, nick, or scrape the wire during the stripping process.



C. Size

1. The ratio of magnet wire diameters crimped in any wire barrel must not exceed 2:1. This ratio is approximately a range from the largest to the smallest magnet wire of six sizes.

2. The sum of the diameters of the individual magnet wires plus twice the contact stock thickness must not exceed the wire barrel crimp width.

3.4. Crimped Contact Criteria

A. Crimp Height and Width

The crimp applied to the wire barrel portion of the contact is the most compressed area and is most critical in assuring optimum electrical and mechanical performance of the crimped contact. Tensile strength is provided in Figure 2.

B. Bellmouths

The front and rear bellmouths are caused by the extrusion of metal during crimping and must be within the range specified in Figure 2.

C. Cutoff Tab and Burr

The cutoff tab and burr resulting from the contact being cut from the carrier strip must be within limits shown to allow proper application of the contact. See Figure 2.

D. Wire Barrel Flash

The wire barrel flash at the bottom of the wire barrel results from applied crimp pressure and must not exceed the dimension provided in Figure 2.

E. Insulation Support Barrel Crimp

The insulation support barrel shall grip the insulation firmly without cutting into it. Care must be taken to prevent cutting, nicking, or scraping of the insulation.

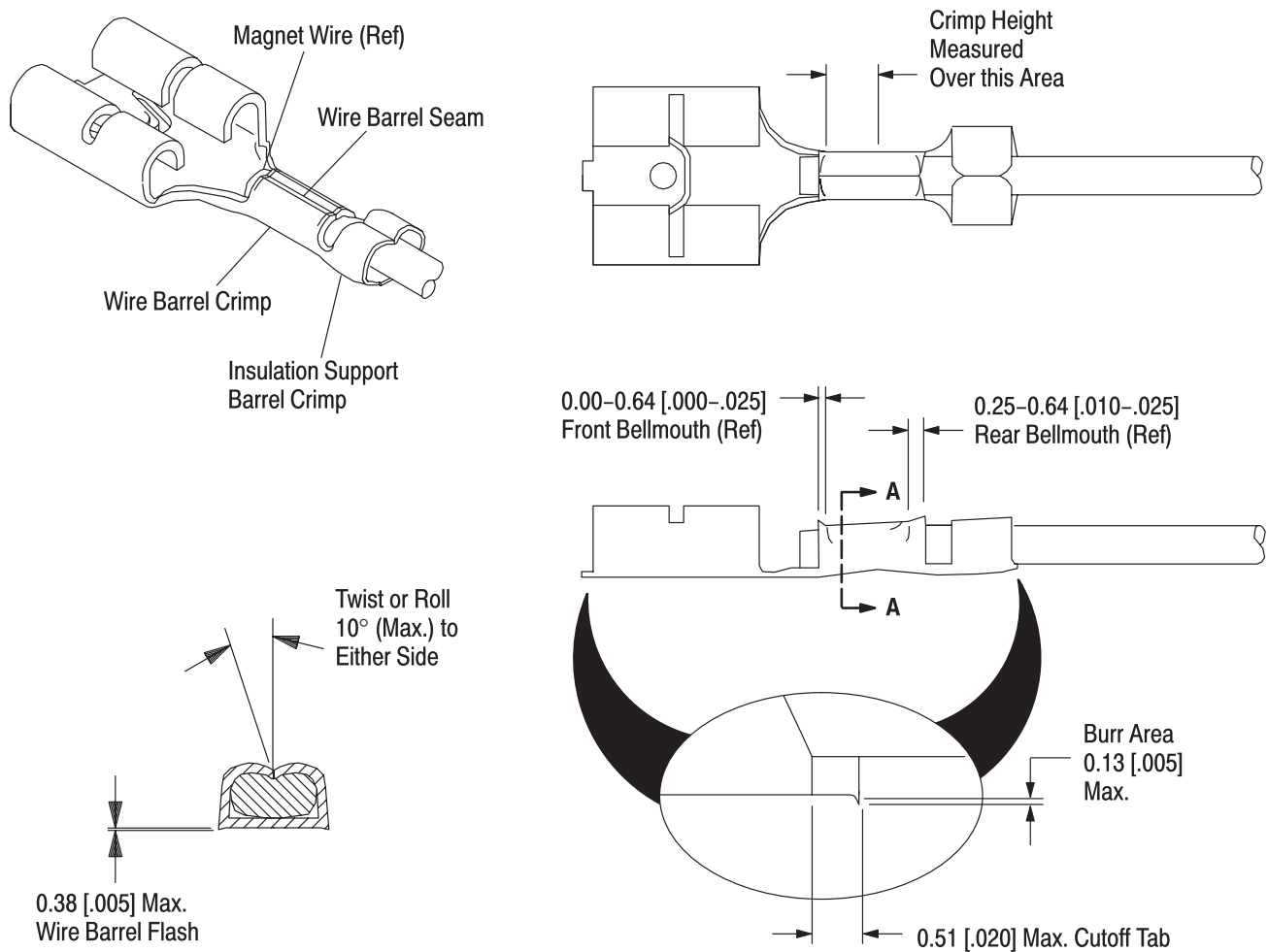


Figure 2 (cont'd)

**DIMENSIONS AND CRITERIA USED IN THIS TABLE ARE FOR .187-SERIES RECEPTACLE CONTACTS ONLY
(CONTACT TYCO ELECTRONICS FOR DIMENSIONS AND CRIMP CRITERIA FOR .250-SERIES CONTACTS)**

WIRE SIZE		CURRENT (AMPERES)		TENSILE STRENGTH (N [lbf])	
WIRE GAGE	CMA	COPPER	ALUMINUM	COPPER	ALUMINUM
24	455	2.3	1.5	22.24 [5]	6.67 [1.5]
23.5	511	2.5	1.6	25.58 [5.75]	7.78 [1.75]
23	566	2.6	1.7	28.91 [6.5]	8.90 [2]
22.5	635	2.8	1.8	32.25 [7.25]	10.01 [2.25]
22	708	3	1.9	35.59 [8]	11.12 [2.5]
21.5	795	3.2	2.1	41.15 [9.25]	13.34 [3]
21	888	3.4	2.2	46.71 [10.5]	15.57 [3.5]
20.5	992	3.6	2.3	52.27 [11.75]	16.68 [3.75]
20	1116	4	2.6	57.83 [13]	17.79 [4]
19.5	1246	4.6	3	66.72 [15]	21.13 [4.75]
19	1391	5.3	3.4	73.40 [16.5]	24.47 [5.5]
18.5	1560	6.1	3.9	83.40 [18.75]	27.85 [6.26]
18	1747	7	4.5	93.41 [21]	31.14 [7]
17.5	11962	7.7	5	104.10 [23.4]	34.47 [7.75]
17	2190	8.3	5.4	117.88 [26.5]	37.81 [8.5]
16.5	2460	9	5.8	133.45 [30]	43.37 [9.75]
16	2746	10	6.5	147.90 [33.25]	48.93 [11]
15.5	3136	11.3	7.3	169.03 [38]	56.05 [12.6]
15	3446	12.4	8	186.83 [42]	62.28 [14]
14.5	3869	13.6	8.8	211.29 [47.5]	69.39 [15.6]
14	4330	15	9.7	235.76 [53]	77.84 [17.5]

1. CMA values are based on standard magnet wire with single film coating.
2. Current values for standard copper wire gages are from Underwriters Laboratories Inc. (UL) 310, others are rated based on their respective CMA.
3. Current values for aluminum wires are 64.5% of the copper wire of equivalent gage.
4. Tensile strength values are calculated at 50% of the bare wire tensile.

Figure 2 (end)

F. Wire Barrel Seam

The wire barrel seam shall be completely closed with no wire strands protruding from it. See Figure 2.

G. Twist or Roll

The crimped wire and insulation barrels must be aligned with the uncrimped portion of the contact to within the limit shown in Figure 2.

H. Wire Location

Magnet Wire

A single magnet wire must lie on the bottom of the wire barrel parallel to the wire barrel seam. In a two magnet wire application, the wires must be positioned side-by-side in the wire barrel, as shown in Figure 3.

After crimping, the magnet wire must be within the limits provided in Figure 3.

Solid Magnet Wire

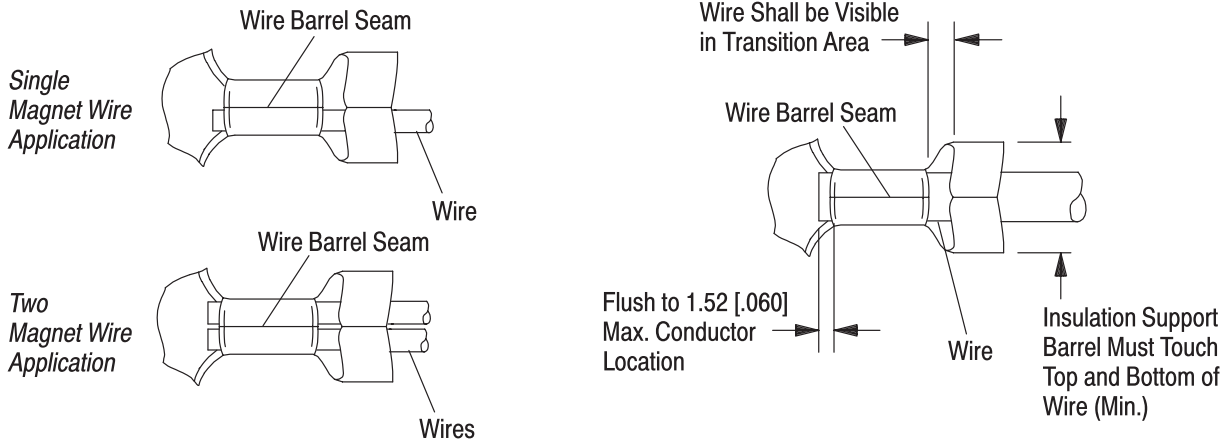


Figure 3

Stranded Wire

After crimping, stranded wire and insulation shall both be visible in the transition area between the wire and insulation support barrels. The wire conductors must be within the limits provided in Figure 4.



Solid magnet wires must be placed in the bottom of the wire barrel before crimping. If stranded wire is to be crimped in the same termination, it must be placed on top of the solid magnet wires.

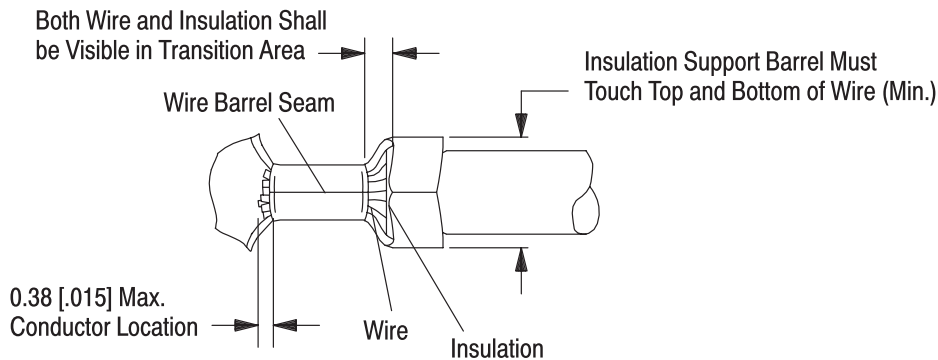


Figure 4

I. Straightness

The force applied during crimping may cause some bending between the crimped wire barrel and the uncrimped tab or receptacle portion of the contact. Such deformation is acceptable within the following limits.

1. Up and Down

The crimped contact, including cutoff tab and burr, shall not be bent above or below the datum line more than the amount shown in Figure 5.

2. Side to Side

The side-to-side bending of the contact may not exceed the limits provided in Figure 5.

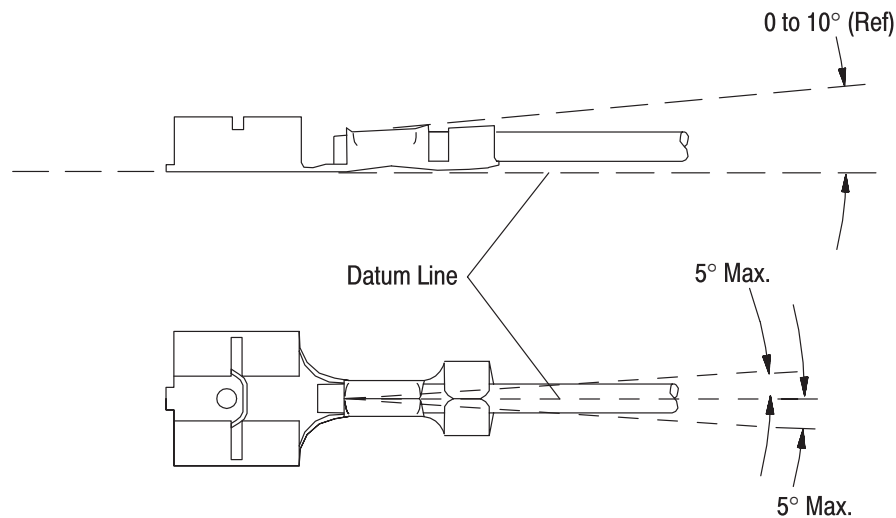


Figure 5

3.5. Mating Tab Detent

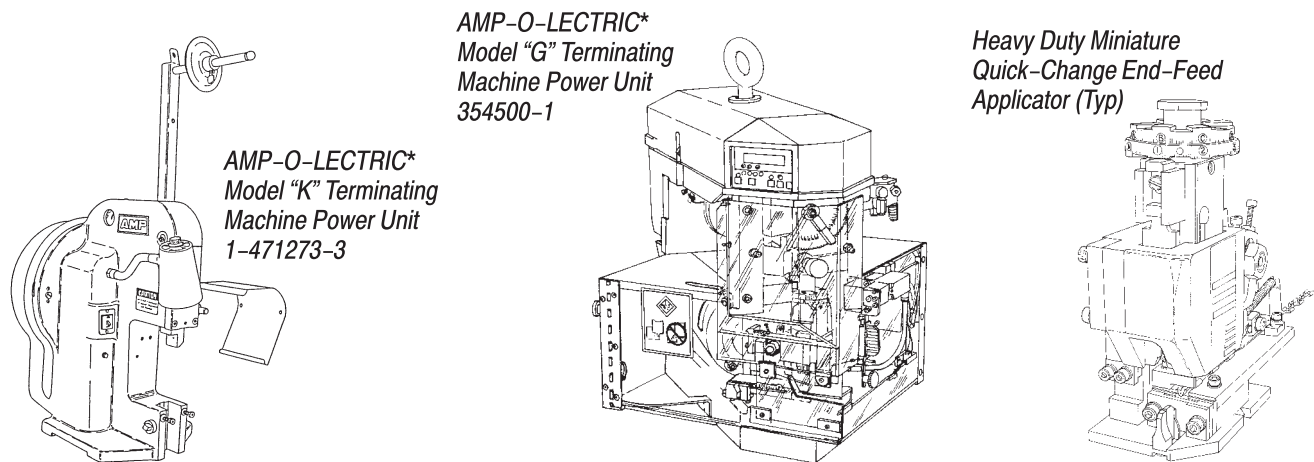
The mating tab detent on the contacts is a locking feature that engages the mating tab to provide an acceptable medium-range retention force.

4. QUALIFICATIONS

No qualification or approval is required for AMPLIVAR FASTON Straight Receptacle Contacts.

5. TOOLING

These contacts are designed to be crimped with a Semi-Automatic Bench Mounted Terminating Machine and appropriate Miniature Quick-Change Applicator. There are two power sources and two applicators that cover the full wire size range for these receptacle contacts. The recommended tooling and instructional material for each are provided in Figure 6.



WIRE SIZE RANGE	APPLICATOR* (DOCUMENT)	POWER UNIT (DOCUMENT)
18-14	466816-1 (408-8039)	354500-1 (409-5842)
20-24	566374-1	1-471273-3 (409-5128)

Figure 6

6. VISUAL AID

Figure 7 shows a typical application of an AMPLIVAR FASTON Straight Receptacle Contact. This illustration should be used by production personnel to visually ensure suitable applications. Installations which appear visually incorrect should be inspected using the dimensional information given in the preceding pages of this application specification.

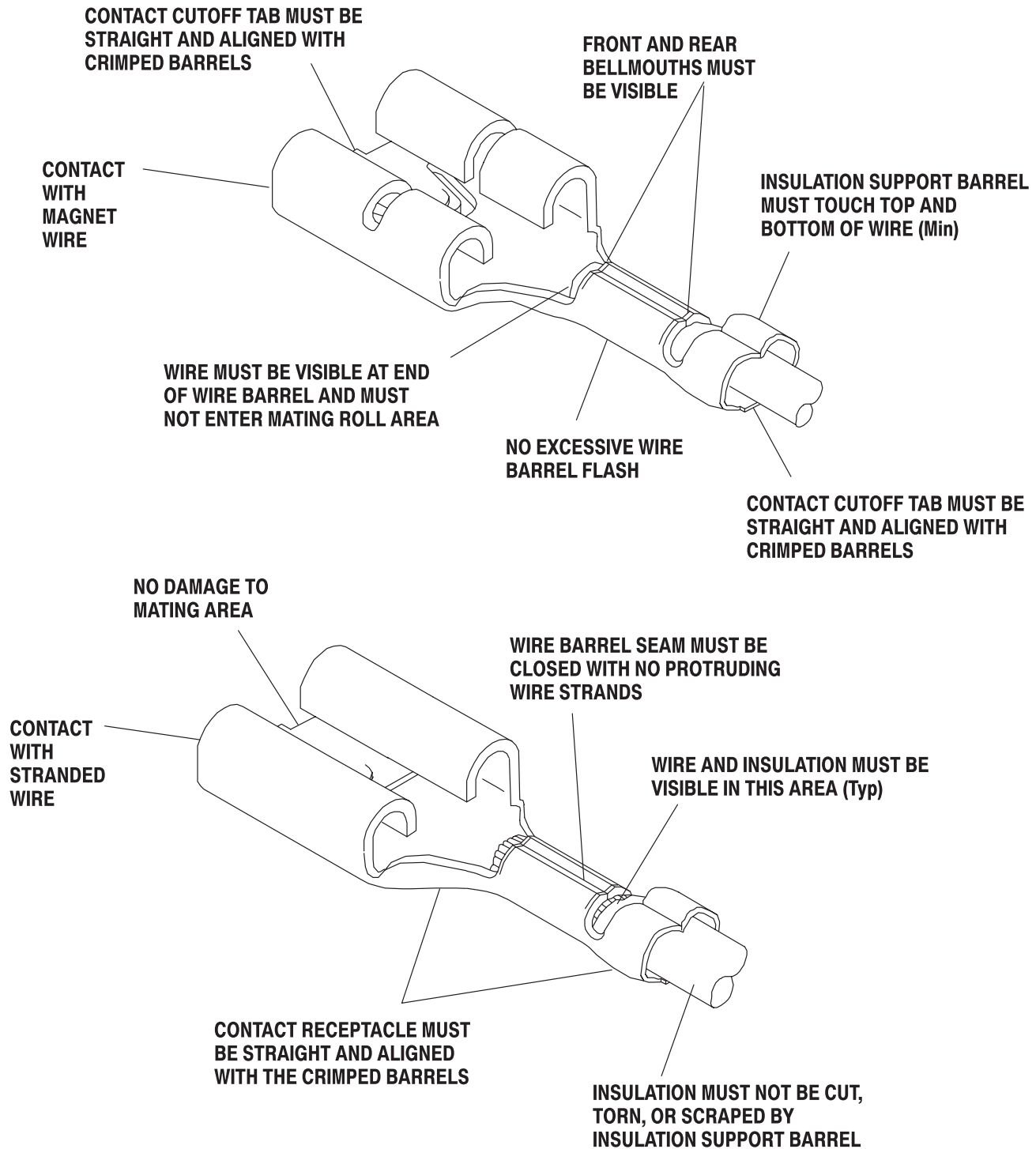


FIGURE 7. VISUAL AID