

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 requirements for application of FASTON Reversible Flag Receptacles. These receptacles are designed for applications where tab terminals or headers may need to enter from either side. Receptacles that are crimped with a 180° bend are phosphor bronze for use in hermetic applications to mate with air conditioner headers. For information on selection of available product, see Paragraph 3.2.

When corresponding with Tyco Electronics 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.

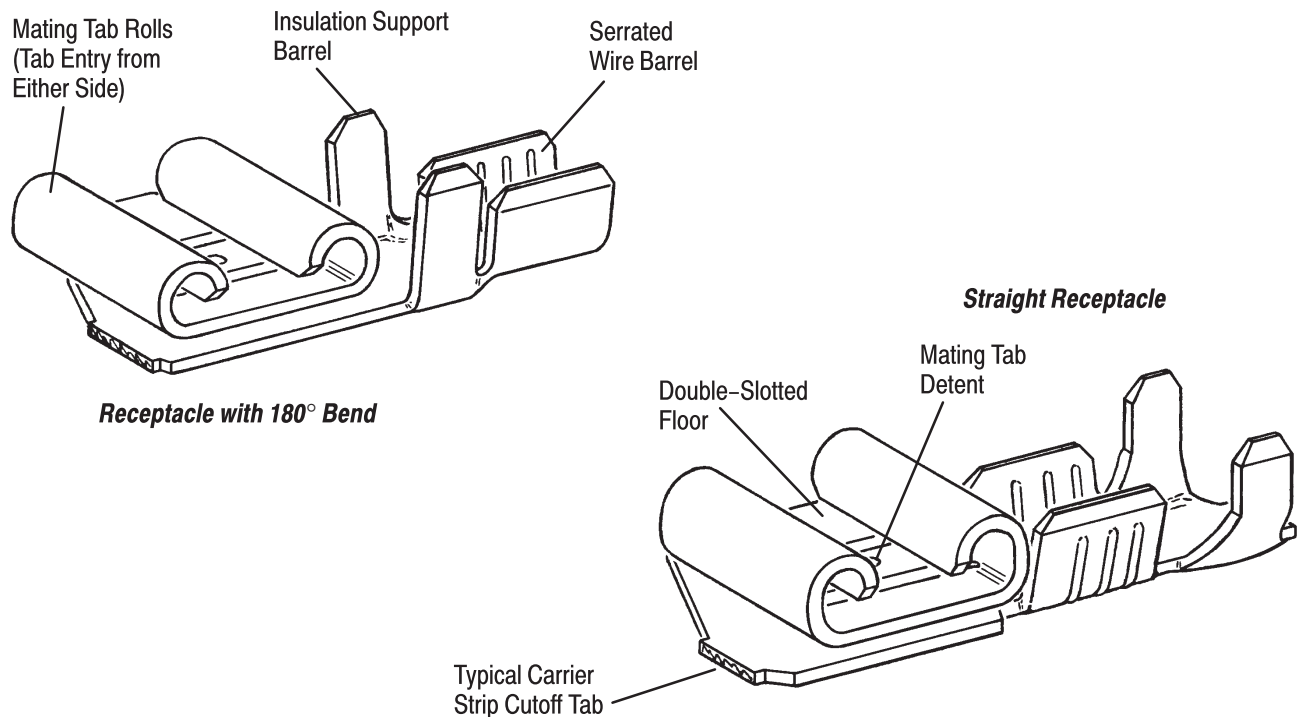


Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

- Updated document to corporate requirements
- Added new, and deleted obsolete information in Paragraph 2.5
- Changed tooling information in Section 5, TOOLING
- New format

2.2. Customer Assistance

Reference Product Base Part Number 62048 and Product Code 7091 are representative of FASTON Reversible Flag Receptacles. 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 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 the Product Information number at the bottom of this page.

2.4. Specifications

The following Application Specifications cover related FASTON Receptacles as listed.

<u>Document Number</u>	<u>Document Title</u>
114-2028	FASTON 110 Series Flag Receptacles with "F" Crimp Feature
114-2036	FASTON Straight Receptacles with "F"-Crimp Feature
114-2070	AMPLIVAR* FASTON Tab Contact
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. Instructional Material

The following list includes available instruction sheets (408-series) that may provide assembly procedures for product, operation, maintenance and repair of tooling and customer manuals (409-series) that contain information on operation of machines.

<u>Document Number</u>	<u>Document Title</u>
408-3295	Preparing Reel of Contacts for Application Tooling
408-7424	Checking Terminal Crimp Height Gaging Die Closure
408-8025	Miniature Quick-Change Applicator (Side-Feed Type)
408-8039	Heavy Duty Miniature Quick-Change Applicators (End-Feed Type)
408-9816	Handling of Reeled Products
409-5128-3	Supplement f/One Valve AMP-O-ELECTRIC* Machine
409-5842	AMP-O-ELECTRIC Model "G" Terminating Machine 354500-[]
409-5852	AMPOMATOR* CLS III-G Lead-Making Machine
409-5878	AMPOMATOR CLS IV+ Lead-Making Machine
409-10047	AMP* 3K Terminating Machines 1725950 and AMP 5K Terminating Machines 1725900
409-10078	DT-3000 and DT-5000 Machines with SLE Crimp Quality Monitors

3. REQUIREMENTS

3.1. Safety

Do not stack product shipping containers so high that the containers buckle or deform.

3.2. Storage

A. Ultraviolet Light

Prolonged exposure to ultraviolet light may deteriorate the chemical composition of components used in the contacts or connectors.

B. Shelf Life

The contacts and connector kits should remain in the shipping containers until ready for use to prevent damage. These products should be used on a first in, first out basis to avoid storage contamination.

C. Chemical Exposure

Do not store contacts or connector kits near any chemicals listed below, as they may cause stress corrosion cracking in the components.

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.

3.3. Product Selection

Receptacles are available in a version that is bent 180° by the crimping applicator, and in a version that remains straight through the crimping process. All of the receptacles mate with 250 series x.032-in.-thick tabs or headers. Bent receptacles were designed for headers used in air conditioning units, and are made of phosphor bronze to resist the gases used internally in these applications. Straight receptacles are brass or brass with tin plating for use in non-degrading atmospheres (See Paragraph 3.2). The table in Figure 2 shows currently available receptacle types and their wire acceptance ranges. Crimp dimensions shown in Figure 3.

RECEPTACLE	WIRE RANGE SIZE (AWG)	INSULATION DIA RANGE	STOCK MATERIAL
Bent 180°	20-12	3.30-4.32 [.130-.170]	Phosphor Bronze
Straight	18-14	2.29-3.30 [.090-.130]	Brass or Tin-Plated
		4.32-5.59 [.170-.220]	Brass or Tin-Plated Brass

Figure 2

3.4. Wire Selection and Preparation

A. Wire Selection

This product line will accept wire sizes 20-12 AWG with an insulation outside diameter range of 2.29-5.59 mm [.090-.220 in.].

B. Wire Preparation

Strip individual wire insulation to 5.59 ±0.38 mm [.220 ±.015 in.] for all applications.



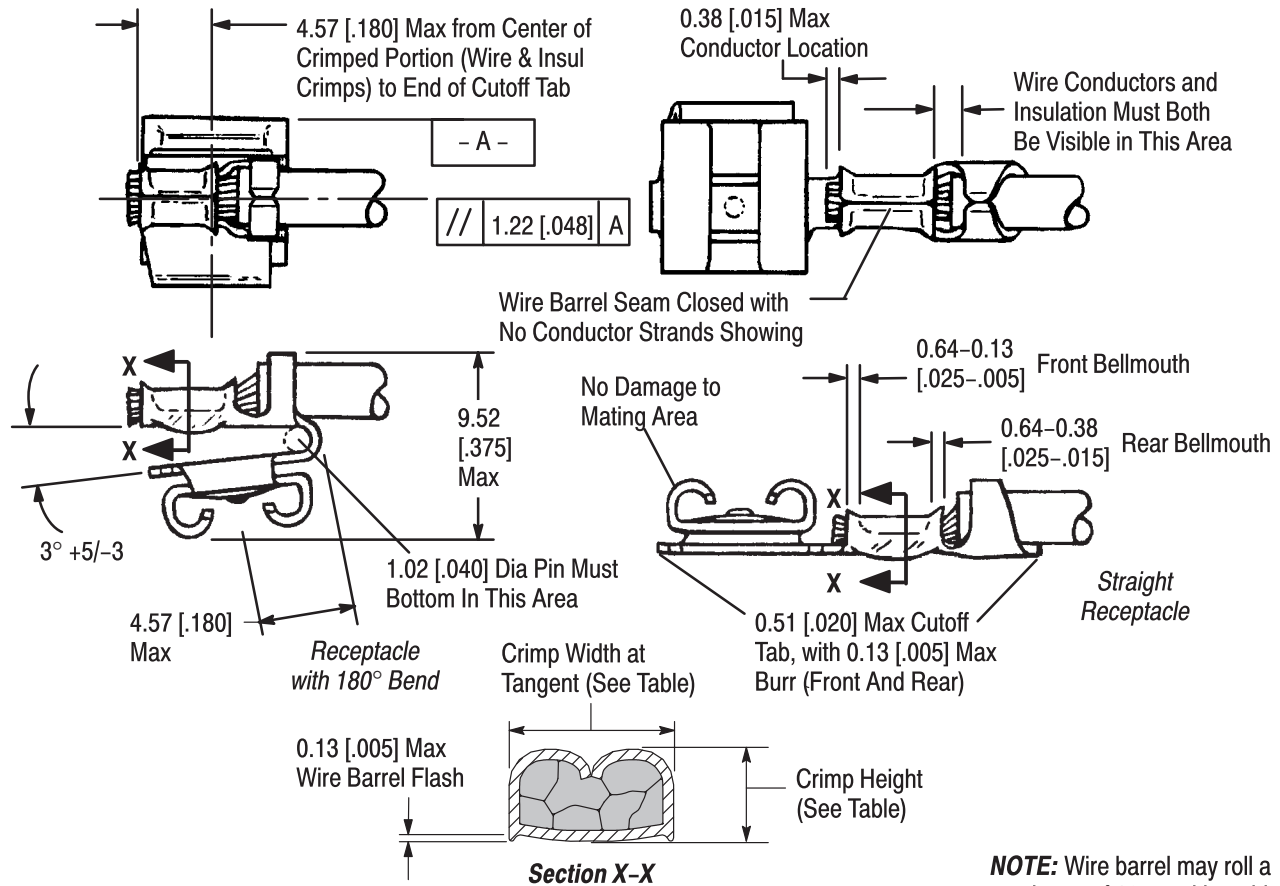
Do NOT nick, scrape, or cut the wire conductor during the stripping operation.

3.5. Crimped Receptacle Requirements

Locate the receptacle to be crimped in the appropriate tooling according to the instructions packaged with that tooling. Perform the crimping operation. Figure 3 shows a typical receptacle as it should appear after crimping.



Wire insulation shall NOT be cut or broken during the crimping operation. Exercise of reasonable care by tooling operators should be sufficient to provide undamaged terminations.




RECEPTACLE TYPE	WIRE RANGE (AWG)	WIRE INSULATION RANGE	WIRE APPLIED		WIRE BARREL CRIMP		INSULATION SUPPORT CRIMP		
			QTY	SIZE	WIDTH (REF)	HEIGHT ±0.05 [.002]	WIDTH (REF)	TYPE	
Bent 180° Phosphor Bronze	16-12	3.30-4.32 [.130-.170]	1	16	3.56 [.140]	1.60 [.063]	4.83 [.190]	F	
			1	14		1.80 [.071]			
			1	12		2.01 [.079]			
	20-16	3.30-4.32 [.130-.170]	1	20	2.54 [.100]	1.32 [.052]	3.94 [.155]		
			1	18		1.42 [.056]			
			1	16		1.60 [.063]			
Straight Brass	18-14	2.29-3.30 [.090-.130]	1	18	3.30 [.130]	1.27 [.050]	3.56 [.140]	O	
			1	16		1.40 [.055]			
			1	14		1.60 [.063]			
Straight Tin-Plated Brass	18-14	2.29-3.30 [.090-.130]	1	18		1.27 [.050]			6.35 [.250]
			1	16		1.40 [.055]			
			1	14		1.60 [.063]			
	18-14	4.32-5.59 [.170-.220]	1	18	1.27 [.050]				
			1	14	1.60 [.063]				

Figure 3

3.6. 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 4.


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

FORCE N [LB]							
WIRE SIZE		MINIMUM FORCE		WIRE SIZE		MINIMUM FORCE	
AWG	mm ²	NEWTONS (N)	POUNDS [LB]	AWG	mm ²	NEWTONS (N)	POUNDS [LB]
22	0.32	36	8	14	2.10	223	50
20	0.52	58	13	12	3.30	311	70
18	0.82	89	20	10	5.30	356	80
16	1.30	133	30	---	---	---	---

Figure 4

3.7. Mating Overcycle and Testing

The forces required to mate and unmate a test mating tab and receptacle shall be as specified in the table in Figure 5. 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.

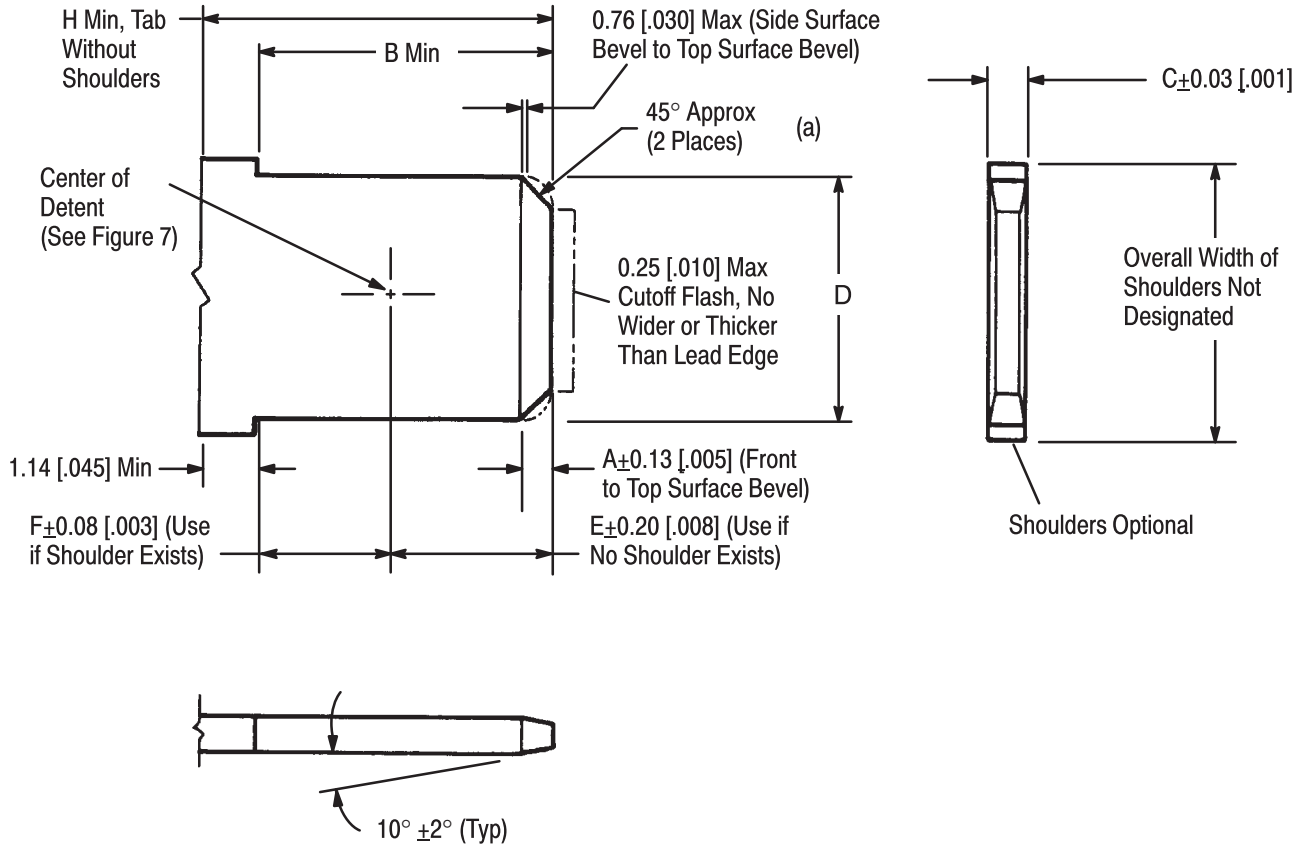
NOTE  Testing may be done using a gage as described in Residential Controls--Quick-Connect Terminals, ANSI/NEMA No. DC2--1982. Test tabs shall be dimensioned as shown in Figure 6 and Figure 7, of this specification, except that the "C" dimension shall have a tolerance of ±0.008 mm [±.0003 in.] for brass tabs; ±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.

FORCE N•M/M [LB IN./IN.]				
FIRST MATING (MAX) INDIVIDUAL	FIRST UNMATING (MIN)		SIXTH UNMATING (MIN)	
	AVERAGE	INDIVIDUAL	AVERAGE	INDIVIDUAL
TEST TAB AND UNPLATED RECEPTACLE				
80 [18]	27 [6]	18 [4]	22 [5]	18 [4]
TEST TAB AND TIN-PLATED RECEPTACLE				
76 [17]	22 [5]	[3]	18 [4]	13 [3]

Figure 5

3.8. Mating Tab Dimensions

Figure 6 shows features and dimensional requirements for tab terminals intended for mating with FASTON Receptacles.



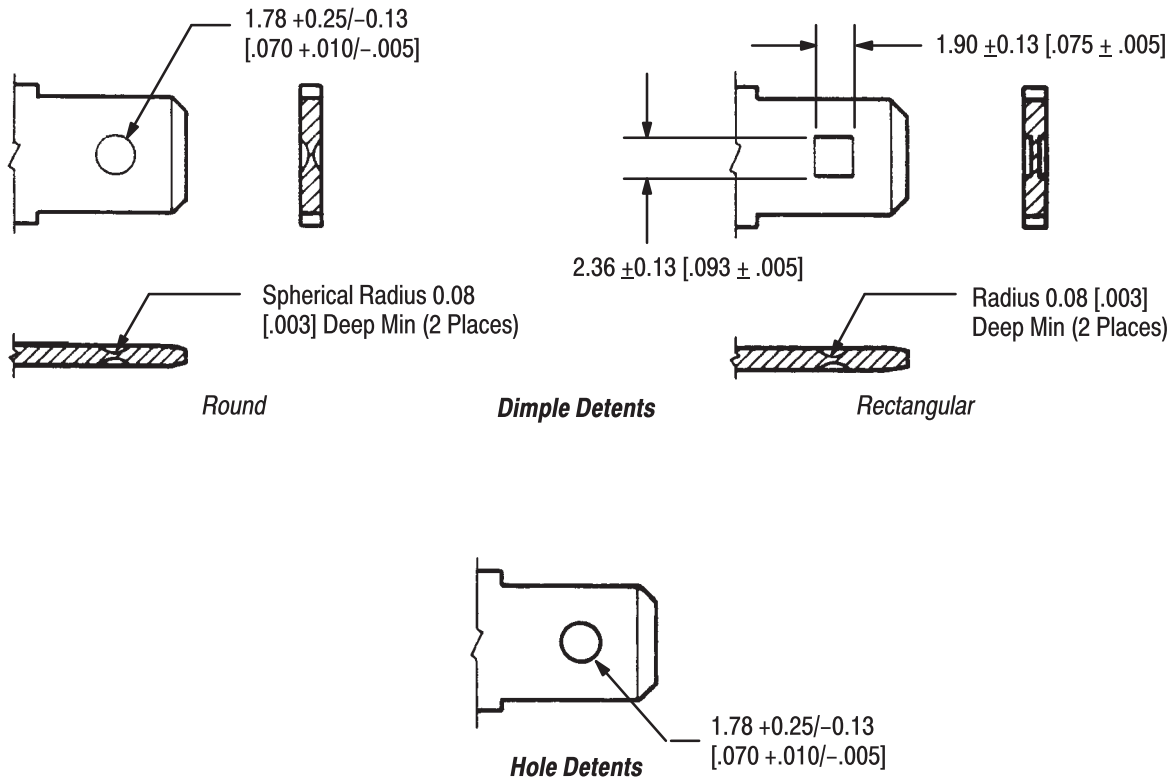
TAB SIZE (NOMINAL)	DIMENSIONS							
	A	B	C	D	E	F	G	H
6.35X0.81 [.250X.032] with Dimple	0.89 [.035]	7.80 [.307]	0.81 [.032]	6.35 [.250]	3.86 [.152]	4.06 [.160]	1.27 [.050]	8.94 [.352]
6.35X0.81 [.250X.032] with Hole	0.89 [.035]	7.80 [.307]	0.81 [.032]	6.35 [.250]	4.52 [.178]	3.40 [.134]	1.27 [.050]	8.94 [.352]

- NOTES:**
- (a) Bevel need not be a straight line if within confines shown, or a radius of $G \pm 0.51$ [.020] may be substituted.
 - (b) Tab shall be flat 0.03 mm/mm [.001 in./in.]; and free from burrs greater than 10% of tab thickness, or raised plateaus except as noted in Paragraph 3.7.
 - (c) Dimensional measurements shall not include plating, burrs, or flatness tolerance.

Figure 6

3.9. 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 7 should be used. Hole detents provide the greatest retention forces, while dimples provide acceptable medium-range forces.



NOTES: (d) Hole or dimple detents may be at the same location on the longitudinal centerline if no shoulder or obstruction is present at the base of the tab.

Figure 7

4. QUALIFICATIONS

FASTON Reversible Flag Receptacles meet Underwriters Laboratories (UL) Inc. UL-130 specification for quick-connect terminals and are Listed in UL component Listing program (Electrical File E66717). These products are also CSA International Certified in Files LR49710 and LR36371-4.

5. TOOLING

Hand tooling is not recommended for FASTON Reversible Flag Receptacles with the “F” crimp feature. Automatic machines are listed in the table in Figure 8 by receptacle size, type, and wire load capacity. Applicators used in the machines are the Miniature Quick-Change type. See Figure 8.

RECEPTACLES			TOOLING				
TYPE	WIRE RANGE (AWG)	WIRE INSUL RANGE	APPLICATOR	DOCUMENT	MACHINES	DOCUMENT	
Bent 180°	16-12	3.30-4.32 [.130-.170]	687412-2†	408-8025	354500-1	409-5842	
					1725950-3	409-10047	
					1725950-4	409-10047	
					1901700-3	409-10078	
					1901700-4	409-10078	
					1-1901700-3	409-10078	
					1-1901700-4	409-10078	
			687616-2■	---	694234-7	409-5128-3	
	20-16	3.30-4.32 [.130-.170]	---‡	---	---‡	---	
Straight	18-14	2.29-3.30 [.090-.130]	466154-5	408-8039	122500-2	409-5852	
					122500-3	409-5852	
					356500-1	409-5878	
					356500-2	409-5878	
			466154-6	408-8039	354500-1	409-5842	
					1725950-3	409-10047	
					1725950-4	409-10047	
					1901700-3	409-10078	
		1901700-4			409-10078		
		1-1901700-3			409-10078		
		1-1901700-4			409-10078		
						466083-4	408-8039
			122500-3	409-5852			
			356500-1	409-5878			
			356500-2	409-5878			
	4.32-5.59 [.170-.220]			466083-5	408-8039	354500-1	409-5842
						1725950-3	409-10047
						1725950-4	409-10047
						1901700-3	409-10078
						1901700-4	409-10078
						1-1901700-3	409-10078
						1-1901700-4	409-10078

‡Contact the Tooling Assistance Center number at the bottom of page 1 for applicator information.
 †Crimps receptacle and bends it 90°, bend to 180° is completed by hand.
 ■Crimps receptacle full 180°; fits one-valve AMP-O-LECTRIC Machine 694234-7.

Figure 8

6. VISUAL AID

Figure 9 shows a typical application of a FASTON Reversible Flag Receptacle. 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.

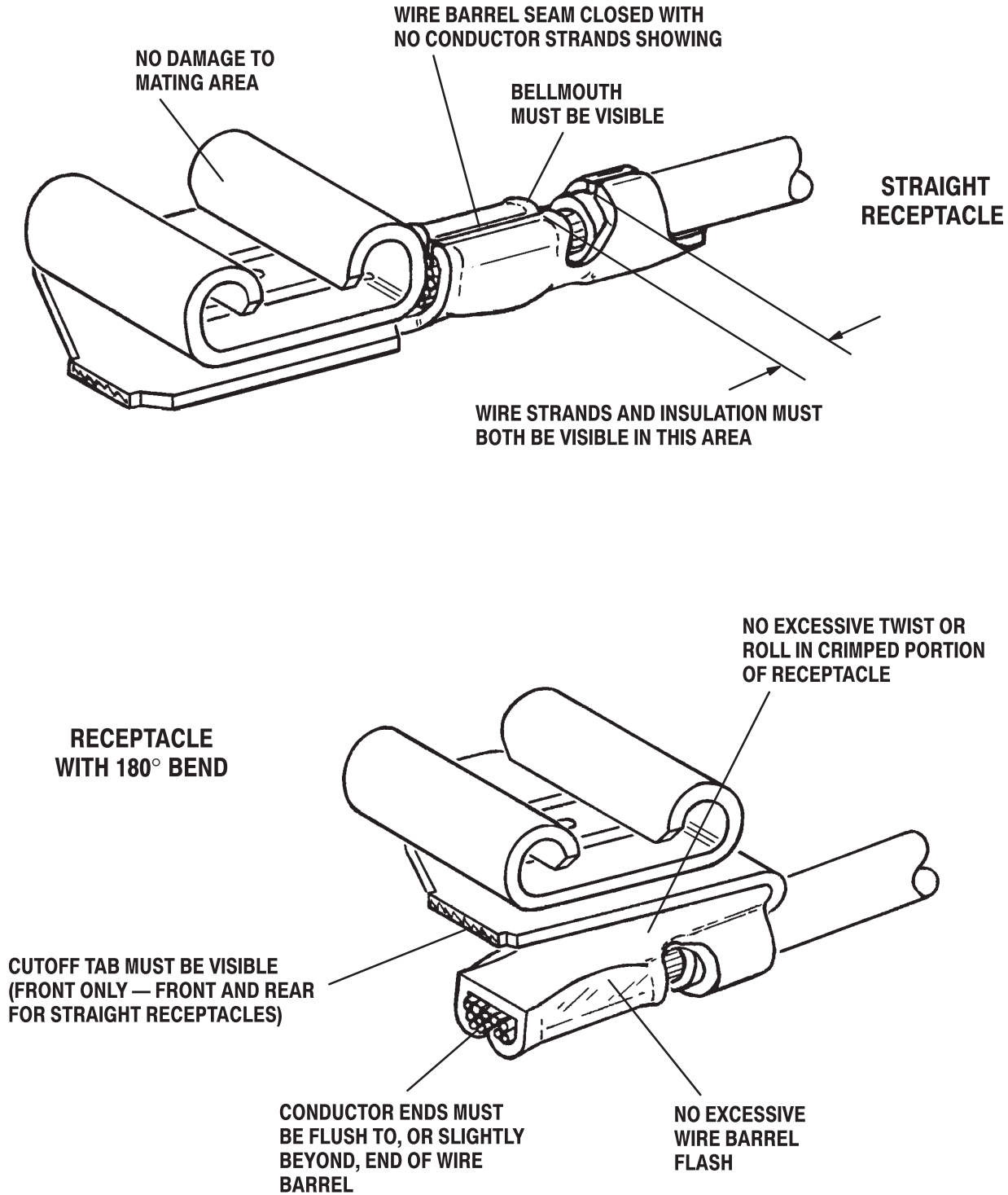


FIGURE 9. VISUAL AID