



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 FASTON* standard straight receptacle terminals with 2D crimp feature for wire-to-wire and wire-to-board applications. This receptacle terminal features a wire barrel which, when crimped, wraps around and crimps the wire. The wire barrel forms the 2D crimp which provides reliable electrical and mechanical performance. The 2D wire barrel also features serrations to help grip and retain the wire within the barrel after crimping.

The terminal accepts a mating tab with a width of 6.3 [.250] or 4.8 [.187] following the UL310 standard. More details can be found in Paragraph 0. This receptacle terminal includes a dimple feature which, when mated, engages the mating tab to provide the required retention force. The terminal is available on reels for terminating with automatic and semi-automatic machines. Requirements for inspecting the crimp height measurement are in Paragraph 3.6; a measurement tool anvil assembly part (P/N 2844999-1) is available for order.

For correspondence with TE Connectivity personnel, use the terminology provided in this specification to facilitate inquiries for information. Basic terms and features of this product are provided in Figure 1.

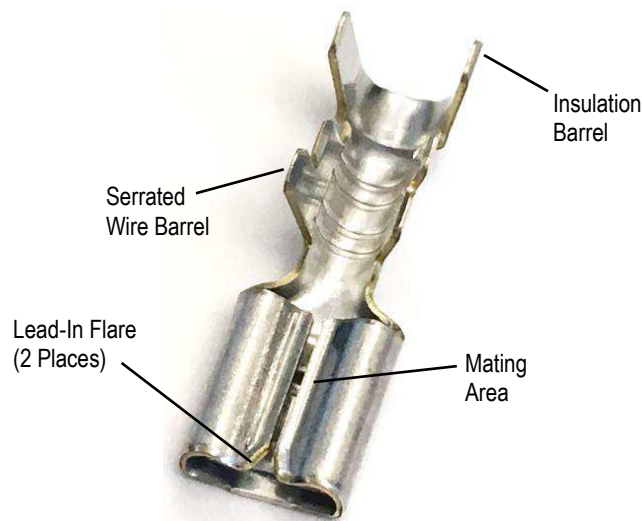


Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

Revisions to this application specification include:

- Updated Figure 3 and Figure 6.
- Updated Paragraph 3.4.C, 3.4.G, 3.4.I, 3.6, 5, and 5.2.
- Removed Paragraph 5.3 and Figure 10.

2.2. Customer Assistance

Reference Product Base Part Number 2238173, 2238174 and Product Code X523 are representative of FASTON* standard straight receptacle terminals with 2D crimp feature. Use of these numbers will identify the

product line and help you to obtain product and tooling information when visiting www.te.com or calling the number at the bottom of page 1.

2.3. Drawings

Customer drawings for product part numbers are available from www.te.com. Information contained in the customer drawing takes priority.

- [2238173](#) Customer Drawing – FASTON* Standard .250 Series Straight Receptacle Terminal with 2D Crimp Feature
- [2238174](#) Customer Drawing – FASTON* Standard .187 Series Straight Receptacle Terminal with 2D Crimp Feature

2.4. Specifications

Product Specification [108-143087](#) provides product performance and test results.

2.5. 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. Instructional material that pertain to this product are:

- [408-10390](#) Instruction Sheet – Ocean End-Feed Applicators

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 used in the product material.

B. Shelf Life

The product should remain in the shipping containers until ready for use to prevent deformation to components. The product should be used on a first in, first out basis to avoid storage contamination that could adversely affect performance.

C. Chemical Exposure

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

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.

3.3. Wire Selection and Preparation

Part number 2238173 (6.3 [.250] Series) accepts 1 stranded copper wire sizes 12 AWG to 22 AWG with an insulation diameter range of 1.56-4.0 [.061-.157]. Part number 2238174 (4.8 [.187] Series) accepts 1 stranded copper wire sizes 14 AWG to 24 AWG with an insulation diameter range of 1.41-3.46 [.055-.136].

Each wire must be stripped to the dimension given in Figure 2.

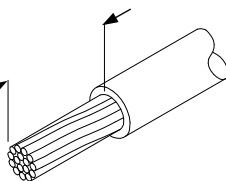


CAUTION

Care must be taken not to nick, scrape, or cut any part of the wire during the stripping operation.

Note: Not to Scale

6.3 [.250] Series:
 6.53 ± 0.5 [.257 \pm .02]
 Strip Length



4.8 [.187] Series:
 5.13 ± 0.38 [.202 \pm .015]
 Strip Length

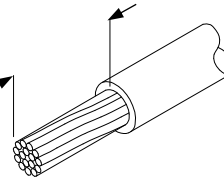


Figure 2

3.4. Contact Crimp

A. Cutoff Tab

The cutoff tab is the remaining portion of the carrier strip after the contact is cut from the strip. The cutoff tab must not exceed the dimensions given in Figure 3.

B. Wire Barrel Crimp

The crimp applied to the wire barrel 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 crimp must be centered on the closed wire barrel. The crimp must result in a 2D crimp. Voids between the two halves of the wire barrel crimp are acceptable. See Figure 3. The crimp height and width must be within the dimensions given in Figure 4. Contact TE Connectivity product information center for double wire crimping requirements.

C. Insulation Barrel Crimp

The crimp applied to the insulation barrel of the contact must result in an overlap crimp where the tips of the insulation barrel wrap firmly around the wire insulation without cutting into the wire insulation. The crimp width dimensions are provided in Figure 3.

D. Twist and Roll

There should be no twist or roll of the wire barrel or mating portion of the crimped contact that would cause overstress or impair usage. See Figure 3 for allowable limits.

E. Wire End Extrusion Length (Brush)

The wire conductor ends must extend beyond the end of the wire barrel within the dimensions given in Figure 3.

F. Bellmouths

The front bellmouth and rear bellmouth shall conform to the dimensions given in Figure 3.

G. Wire Location

Conductors must be held firmly inside the wire barrel; no strands are permitted outside of the wire barrel. The wire insulation must be inside the insulation barrel, but must not enter the wire barrel. The wire conductors and insulation must be visible within the area between the wire barrel and insulation barrel as shown in Figure 3.

H. Bend Allowance

Then bend allowance between the wire barrel and the cable is acceptable within the limits given in Figure 3.

I. Wire Barrel Flash

Wire barrel flash is the formation that may appear on one or both sides of the wire barrel as the result of the crimping process. It must not exceed 0.13 [.005] (maximum).

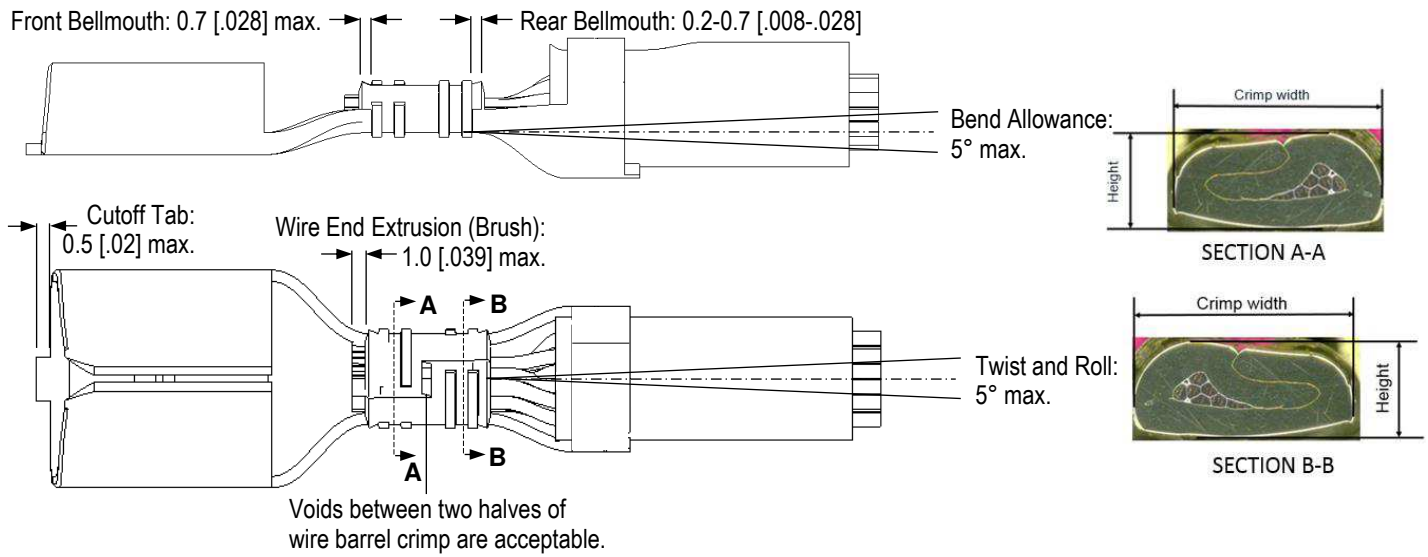


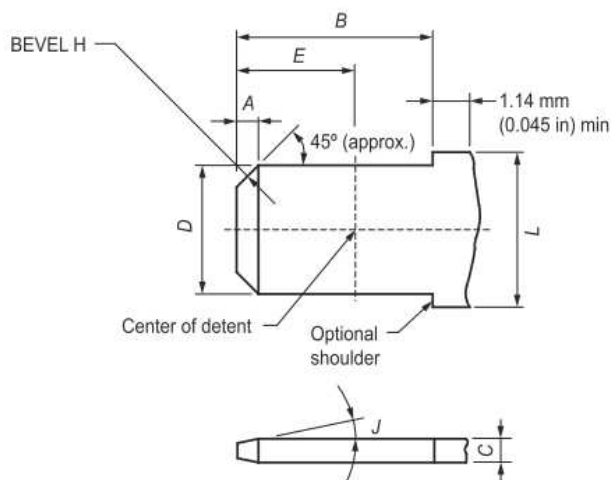
Figure 3

Series	Part Number	Applicator	Wire			Wire Barrel Crimp		Insulation Barrel Crimp
			No. of Wires	Wire Circular Mil Area (CMA)	Ref. Wire Size (mm ² [AWG])	Width (Ref.)	Height	Width (Ref.)
6.3 [.250]	2238173-3	2150831-2	1	700	0.32 [22]	3.3 [.130]	1.27±0.05 [.050±.002]	4.06 [.160]
			1	1000	0.52 [20]		1.35±0.05 [.053±.002]	
			1	1600	0.82 [18]		1.45±0.05 [.057±.002]	
			1	2600	1.3 [16]		1.60±0.05 [.063±.002]	
			1	4100	2.1 [14]		1.75±0.05 [.069±.002]	
			1	6500	3.3 [12]		2.08±0.05 [.082±.002]	
4.8 [.187]	2238174-3	2150832-2	1	400	0.2 [24]	2.79 [.110]	1.09±0.05 [.043±.002]	3.81 [.150]
			1	700	0.32 [22]		1.17±0.05 [.046±.002]	
			1	1000	0.52 [20]		1.24±0.05 [.049±.002]	
			1	1600	0.82 [18]		1.35±0.05 [.053±.002]	
			1	2600	1.3 [16]		1.50±0.05 [.059±.002]	
			1	4100	2.1 [14]		1.65±0.05 [.065±.002]	

Figure 4

3.5. Mating Tab

Mating tab dimensions must correspond with UL310 requirements and include a dimple or hole. Mating tab dimensions must be within dimensions given in Figure 5.



Nominal Size	Feature						
	A	B (min)	C	D	E	F	J
6.3 x 0.8 [.250 x .032] with dimple	0.7-1.0 [.027-.040]	7.8 [.307]	0.77-0.84 [.030-.033]	6.20-6.40 [.244-.253]	3.6-4.1 [.142-.161]	1.6-2.0 [.063-.080]	8°-12°
4.8 x 0.8 [.187 x .032] with dimple	0.7-1.0 [.027-.040]	6.2 [.244]	0.77-0.84 [.030-.033]	4.60-4.80 [.181-.190]	2.3-2.8 [.091-.110]	1.3-1.5 [.050-.060]	8°-12°

Figure 5

3.6. Inspecting

Due to the asymmetric shape of the 2D crimp, use of a micrometer with a measurement tool anvil assembly is highly recommended for accurate crimp height measurements. The measurement tool anvil assembly part (P/N 2844999-1) is available for order; this is a crimp micrometer adapter and does not include the digital crimp micrometer or mounting vise. It is highly recommended that the micrometer be placed in a fixturing vise for ease of use and accurate readings. See Figure 6.

Crimp height may be measured across Section A-A or Section B-B (see Figure 3). The wire barrel crimp geometry should produce the same crimp height across both Section A-A and Section B-B; unequal crimp height may indicate damage to the crimper tooling. This verification of both Section A-A and Section B-B (see Figure 3) should be conducted periodically to confirm that tooling is not damaged. Crimped terminals must meet the tensile strength requirements listed in Figure 7.

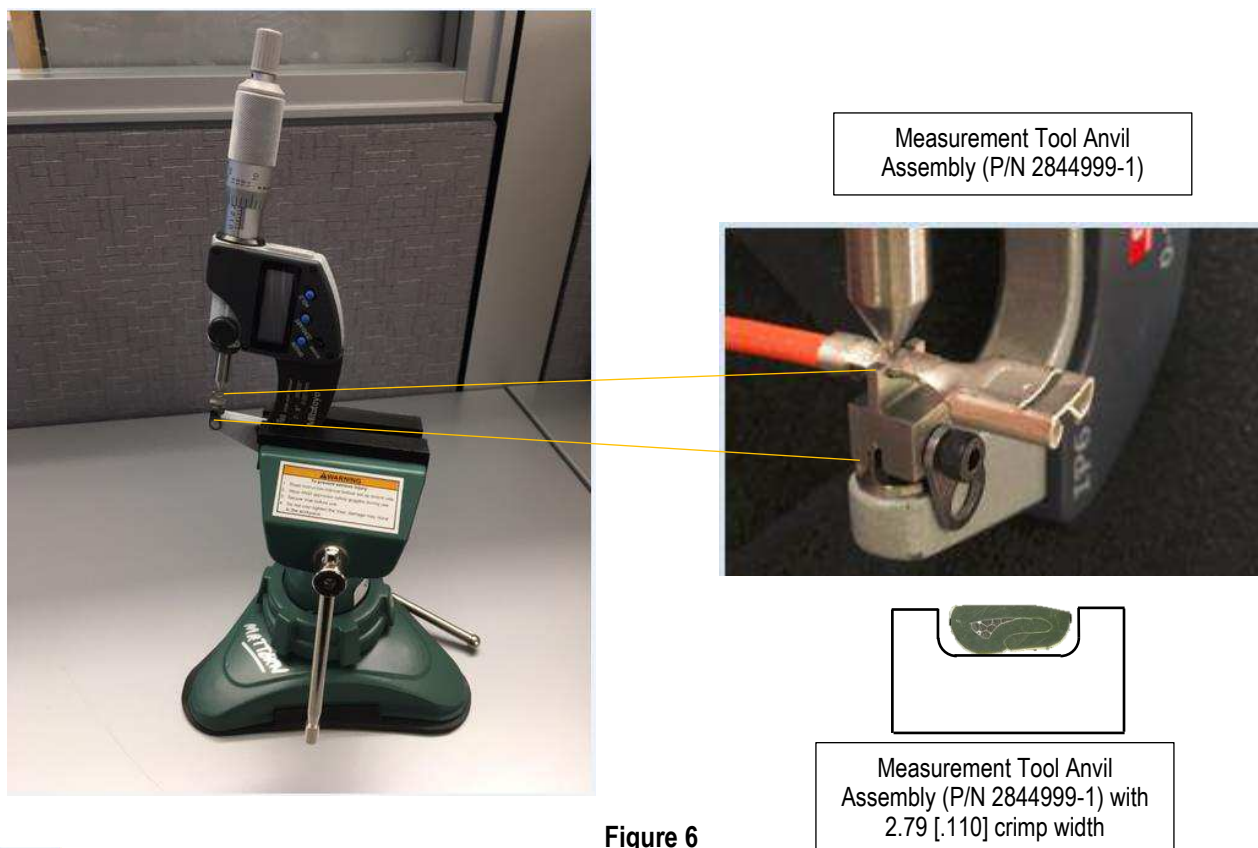


Figure 6



NOTE

The 2.2 [.130] crimp width will fill the measurement anvil form in its entirety. The 2.79 [.110] crimp width shall be located at the side of the form with the largest clearance.

Wire Range (AWG)	Min. Tensile Force [lbs (N)]
24	5 [22.3]
22	8 [36]
20	13 [58]
18	20 [89]
16	30 [133]
14	50 [223]
12	70 [311]

Figure 7

3.7. Replacement and Repair

Damaged or defective product must not be used. Any defective receptacles should be removed and replaced with an undamaged terminal. The receptacle contacts are not repairable once termination has been made.

4. QUALIFICATION

4.1. Internal TE Qualification

Qualified with testing according to TE Product Specification 108-143087.

4.2. Underwriters Laboratories Inc. (UL)

Listing by Underwriters Laboratories Inc. (UL) under UL 310 is pending.

5. TOOLING

Tooling part numbers and instructional material packaged with the tooling are given in Figure 8 and Figure 9.

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 be automatically measure, cut, strip, and terminate the wire. Benchtop presses or lead makers with appropriate ocean applicators are recommended for crimp termination. Applicator conversion kit part numbers are listed in Figure 8.

Series	Applicator Conversion Kit Part Number	Convert From
6.3 [.250]	7-2150831-8	2150016-X
	7-2150831-9	2150640-X
4.8 [.187]	7-2150832-8	2150007-X
	7-2150832-9	2150312-X

Figure 8

5.2. Applicator

The applicators are designed to crimp strip-mounted contacts onto pre-stripped wire. The applicators accept interchangeable die assemblies and must be installed onto a power unit. See Figure 9.

Series	Applicator Part Number
6.3 [.250]	2150831-2
4.8 [.187]	2150832-2

Figure 9