

**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  $\pm 0.13$  [ $\pm .005$ ] 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 Open Barrel Pigtail POWERSPLICE Terminals. These terminals will accept up to two solid or stranded copper lead wires in the upper saddle with a wire size range of 14 through 10 American Wire Gage (AWG) with a combined total of 4,000 to 11,000 Circular Mill Area (CMA). The terminals will simultaneously accept combinations of multiple copper magnet wires in the lower saddle with a wire size range of 20 through 11 AWG. Applications in excess of eight magnet wires or wire sizes outside the specified range may be qualified independently by the customer to their own specifications. The total combined CMA of lead wire and magnet wire must fall in the range of 4,000 to 40,000.

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.

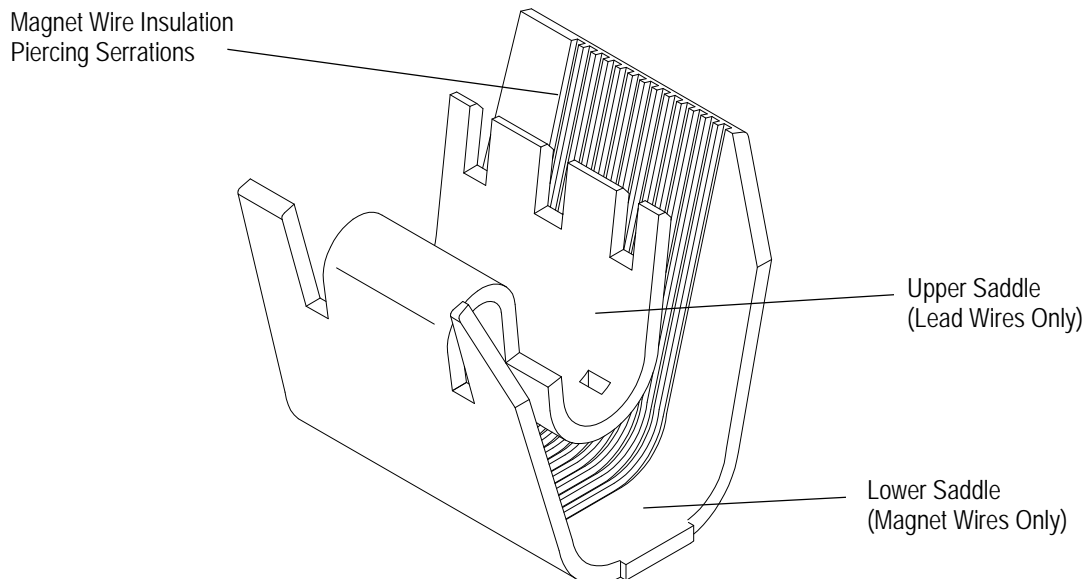


Figure 1

## 2. REFERENCE MATERIAL

### 2.1. Revision Summary

Since the previous version of this document, the following changes were made:

- Updated document to corporate requirements

### 2.2. Customer Assistance

Reference Base Part Number 1601953 and Product Code H359 are representative of Open Barrel Pigtail POWERSPLICE Terminals. These numbers are used in the network of customer service to access tooling and product application information. This service is provided by your local TE Connectivity Representative (Field Sales Engineer, Field Application Engineer, etc) 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 specific products are available from the responsible Engineering Department via the service network. The information contained in the Customer Drawing takes priority if there is a conflict with this specification or any other technical documentation supplied by TE.

## 2.4. Instructional Material

The following list includes available instruction sheets (408-series) that provide information on the application of product.

<u>Document Number</u>	<u>Document Title</u>
408-3295	Preparing Reel of Contacts for Application Tooling
408-7424	Checking Terminal Crimp Height or Gaging Die Closure
408-8059	General Preventative Maintenance for Applicators
408-8815	POWERSPLICE Applicator 1583800-[ ]
408-9816	Handling of Reeled Products

## 3. REQUIREMENTS

### 3.1. Storage

#### A. Shelf Life

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

#### B. Ultraviolet Light

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

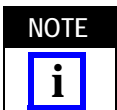
#### C. Reeled Terminals

When using tape-mounted reeled terminals, care must be taken to prevent stretching, sagging, or other distortion that would prevent smooth feeding of the reeled product through automatic machine feed mechanisms. Store coil wound reels horizontally and traverse wound reels vertically.

#### D. Chemical Exposure

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

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



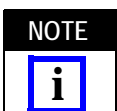
*Where the above environmental conditions exist, phosphor-bronze terminals are recommended instead of brass if available.*

### 3.2. Wire Size and Preparation

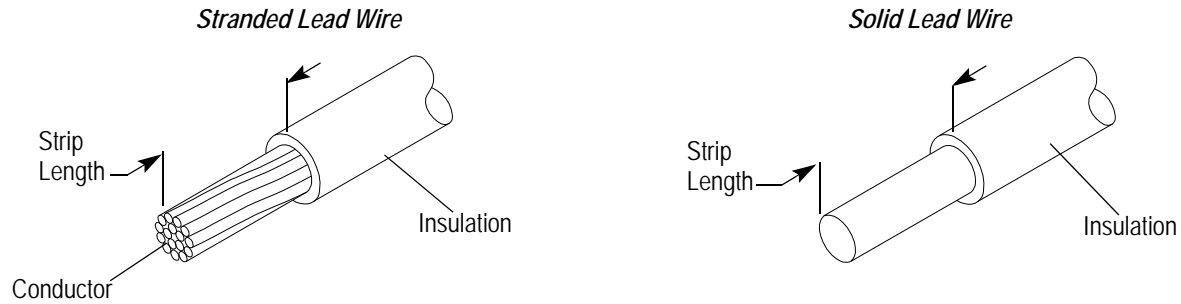
The terminals will accept up to two solid or stranded copper lead wires in the upper saddle; 2.0 mm<sup>2</sup> to 5.6 mm<sup>2</sup>, 14 to 10 AWG, or 4,000 to 11,000 CMA. The terminals will simultaneously accept combinations of multiple copper magnet wires in the lower saddle 0.8 mm to 2.3 mm, 20 to 11 AWG, or 1,000 to 9,000 CMA. Applications in excess of eight magnet wires or wire sizes outside the specified range may be qualified independently by the customer to their own specifications. The total combined CMA of lead wires and magnet wires must fall in the range of 4,000 to 40,000. Proper strip length for lead wires is necessary to properly insert the wire into the terminal. See Figure 2. Consult TE Engineering for applications that require terminations of more than six magnet wires.



*Reasonable care must be taken not to nick, scrape, or cut any strands during the stripping operation.*



*Due to the vast amount of different combinations of terminals and wire sizes, it would be impractical to list them all in the following table. Refer to the terminal crimp height formula shown in Figure 2 or contact TE Engineering through one of the phone numbers listed at the bottom of page 1.*



WIRE TYPE	WIRE SIZE RANGE			STRIP LENGTH	CEIMP HEIGHT ±0.26 [.010]	TENSILE STRENGTH
	METRIC	AWG	CMA			
Lead	2.0 - 5.6 mm <sup>2</sup>	14 - 10	4,000 - 11,000	12.19 - 13.21 [.480 - .520]	$\frac{\text{Total CMA} + 39,000}{516,000}$	70% of the wire tensile strength of the smallest wire in the terminal
Magnet	0.81 - 2.30 DIA	20 - 11	1,000 - 8,000	Magnet wire stripping not required		

Figure 2

### 3.3. Wire Location

To avoid excessive flash during termination, refer to Figure 3 for correct and incorrect wire location within the terminal.

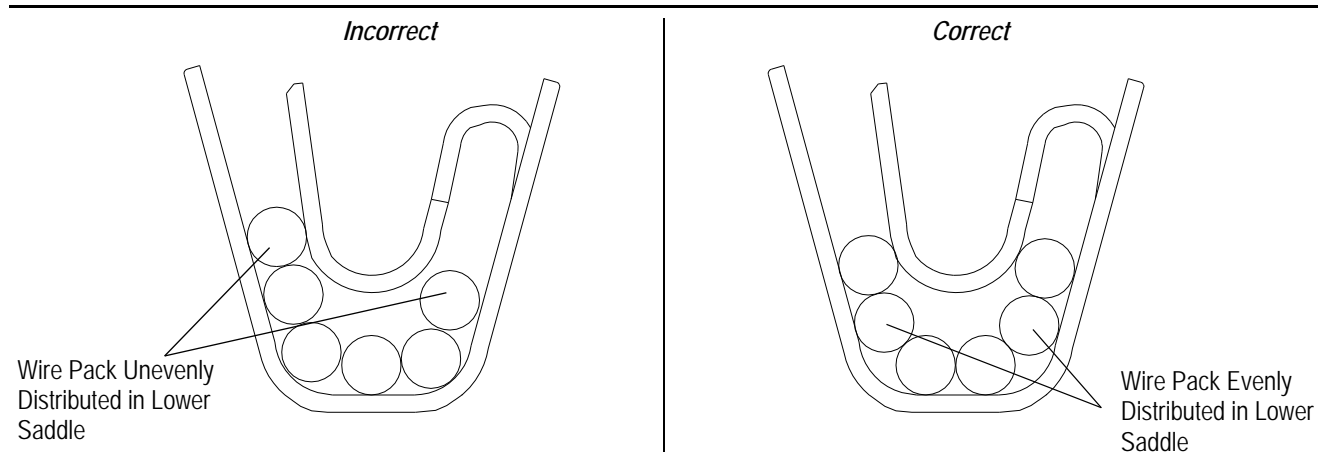


Figure 3

### 3.4. Crimped Terminal Requirements

Crimp the terminal to the wire according to instructions packaged with applicable tooling. Figure 4 shows a typical terminal as it should appear after crimping.

#### A. Crimp Height

The crimp applied to the wire is the most compressed area and is most critical in ensuring optimum electrical and mechanical performance of the crimped terminal. The crimp height must be within the area shown in Figure 4 and is calculated using the crimp height formula shown in the table in Figure 2.

#### B. Crimp Length

For optimum crimp effectiveness, the crimp must be within the area shown and must meet the crimp dimensions provided in Figure 4. Effective crimp length shall be defined as that portion of the splice, excluding bellmouth(s), fully formed by the crimping tool. Instructions for adjusting, repairing, and inspecting tools are packaged with the tools. See Section 5, TOOLING

### C. Bellmouths

Bellmouth shall conform to the dimensions given in Figure 4.

### D. Cutoff Tabs

The cutoff tab shall be cut to the dimensions shown in Figure 4.

### E. Burrs

The cutoff burr shall not exceed the dimensions shown in Figure 4.

### F. Wire Barrel Flash

The wire barrel flash shall not exceed the dimensions shown in Section X-X in Figure 4.

### G. Conductor Extension

The conductor may extend beyond the terminal to the maximum shown in Figure 4.

### H. Terminal Seam

The terminal seam must be closed with no evidence of loose wire strands visible in the seam.

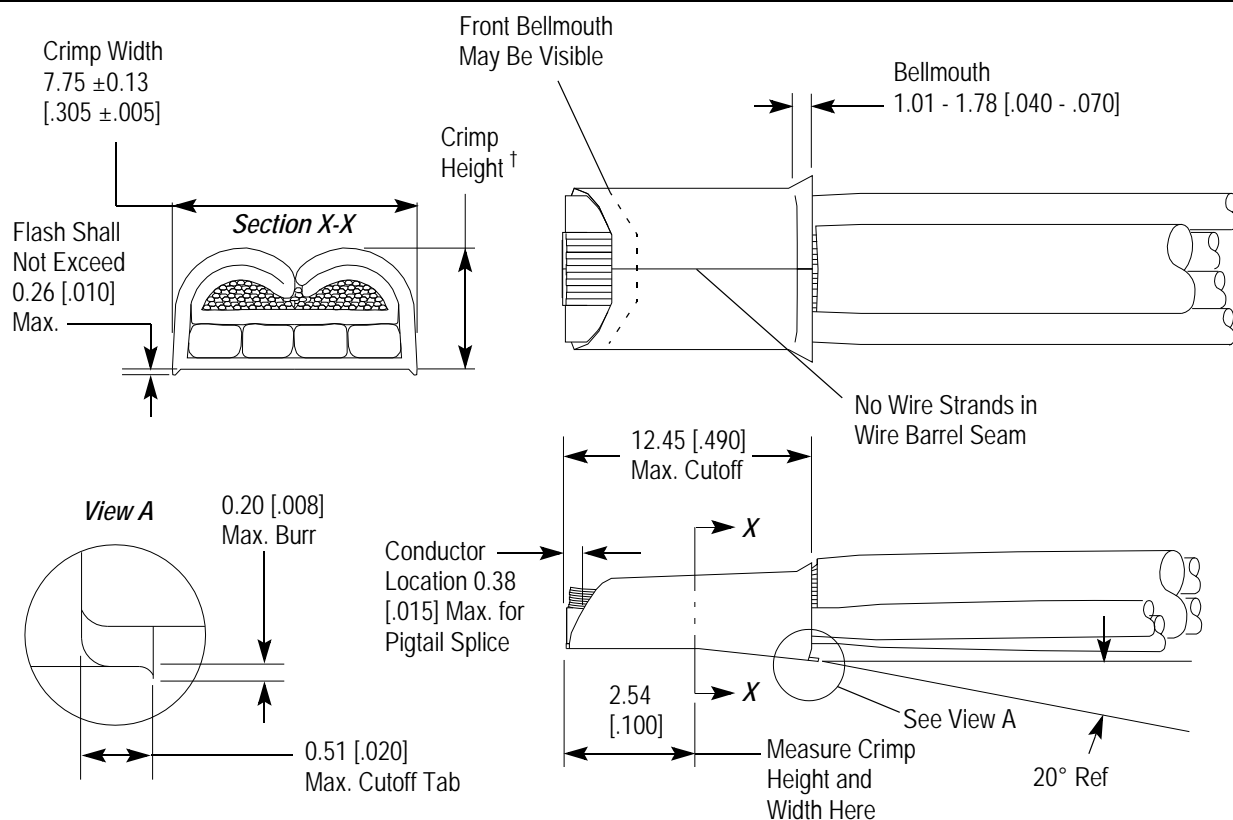


Figure 4

### 3.5. Terminal Repair

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

## 4. QUALIFICATIONS

Open Barrel Pigtail POWERSPLICE Terminals have been sent to Underwriters Laboratories Inc. (UL) and CSA International for testing and evaluation.

## 5. TOOLING

This section provides a selection of tools for various application requirements. See Figure 5.

- **Applicator**

Applicators are designed for the full wire size range of strip-fed, precision formed contacts, and provide for high volume, heavy duty, production requirements.



*Each applicator is shipped with a metal identification tag attached. DO NOT remove this tag or disregard the information on it. Also, a packet of associated paperwork is included in each applicator shipment. This information should be read before using the applicator; then it should be stored in a clean, dry area near the applicator for future reference. Some changes may have to be made to the applicators to run in all related power units. Contact the Tooling Assistance Center number at the bottom of page 1 for specific changes.*

- **Power Units**

A power unit is an automatic or semi-automatic device used to assist in the application of a product. Power unit includes the power source used to supply the force or power to an applicator.



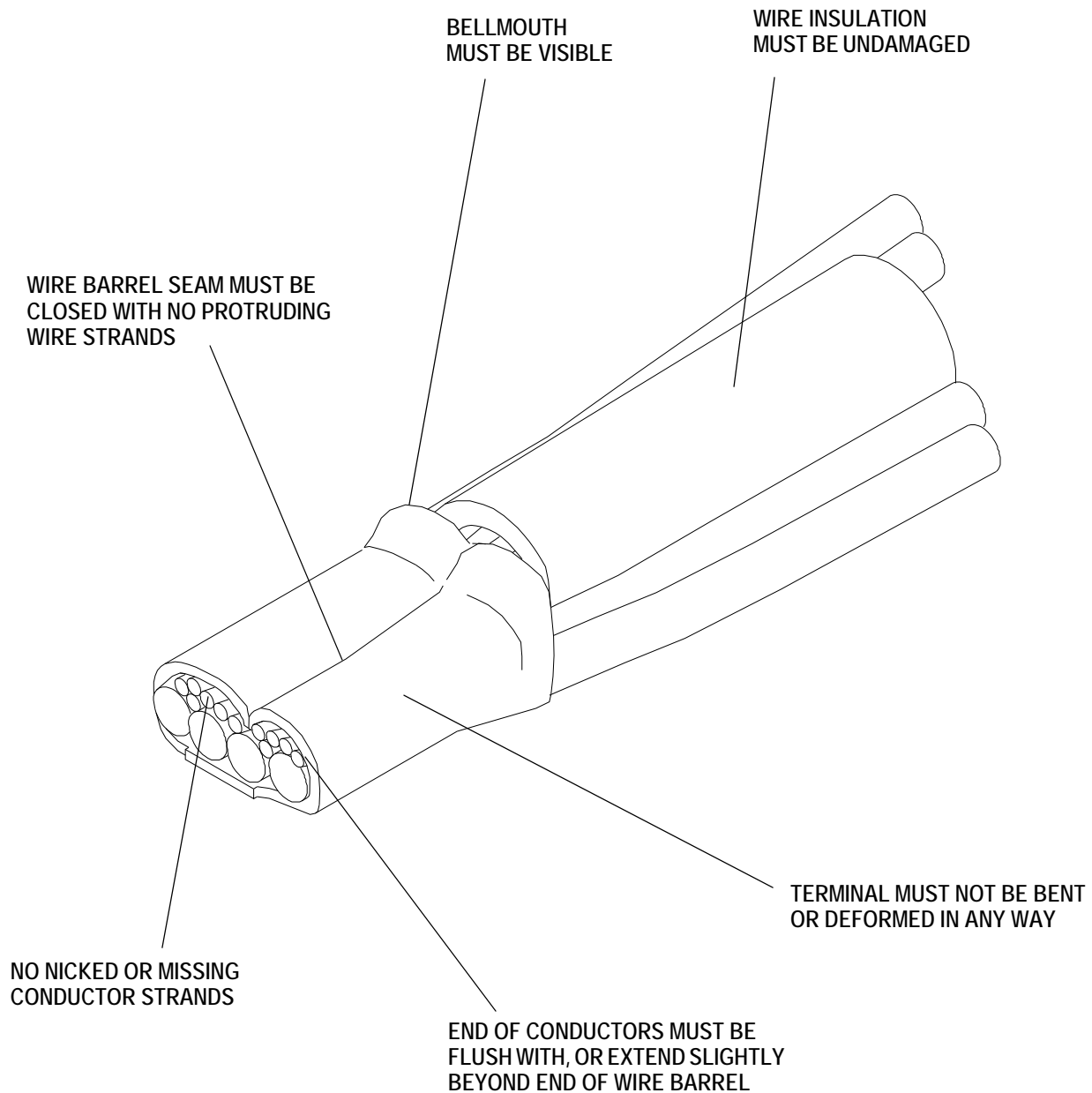
*TE does not manufacture any power units to accommodate the applicator to terminate the Open Barrel Pigtail POWERSPLICE Terminals. However, the ARTOS TU-10 Machine will provide the necessary force required to terminate these products. Contact the Tooling Assistance Center at the bottom of page 1 for assistance in this matter.*

WIRE TYPE	WIRE SIZE RANGE			APPLICATOR (DOCUMENT)	POWER UNIT
	METRIC	AWG	CMA		
Lead	2.0 - 5.6 mm <sup>2</sup>	14 - 10	4,000 - 11,000	1583800-1 (408-8815)	ARTOS TU-10
Magnet	0.81 - 2.30 mm DIA	20 - 11	1,000 - 9,000		

Figure 5

## 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 6. VISUAL AID**