



All numerical values are in metric units [with U.S. customary units in brackets]. Dimensions are in millimeters. Unless otherwise specified, dimensions have a tolerance of ± 0.13 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 2.8 mm MCP terminal system for use in the automotive industry. The terminal system consists of a receptacle terminal and wire seal. Each terminal features an insulation barrel, wire barrel, and mating end. The serrations inside the wire barrel provide maximum contact and tensile strength after crimping. The terminal is held in the connector when the locking lance mechanism of the terminal engages the locking surface of the connector.

The sealed terminals are designed for severe environmental conditions and high temperature applications. Application is suited for class 4 temperatures (-40° to 155°C [-40° to 311°F]) and severe vibration (mounted on engine). Plating system must be silver. Sealing is achieved by means of an individual wire seal. The terminals are available in a carrier strip for terminating with semi-automatic machines.

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.

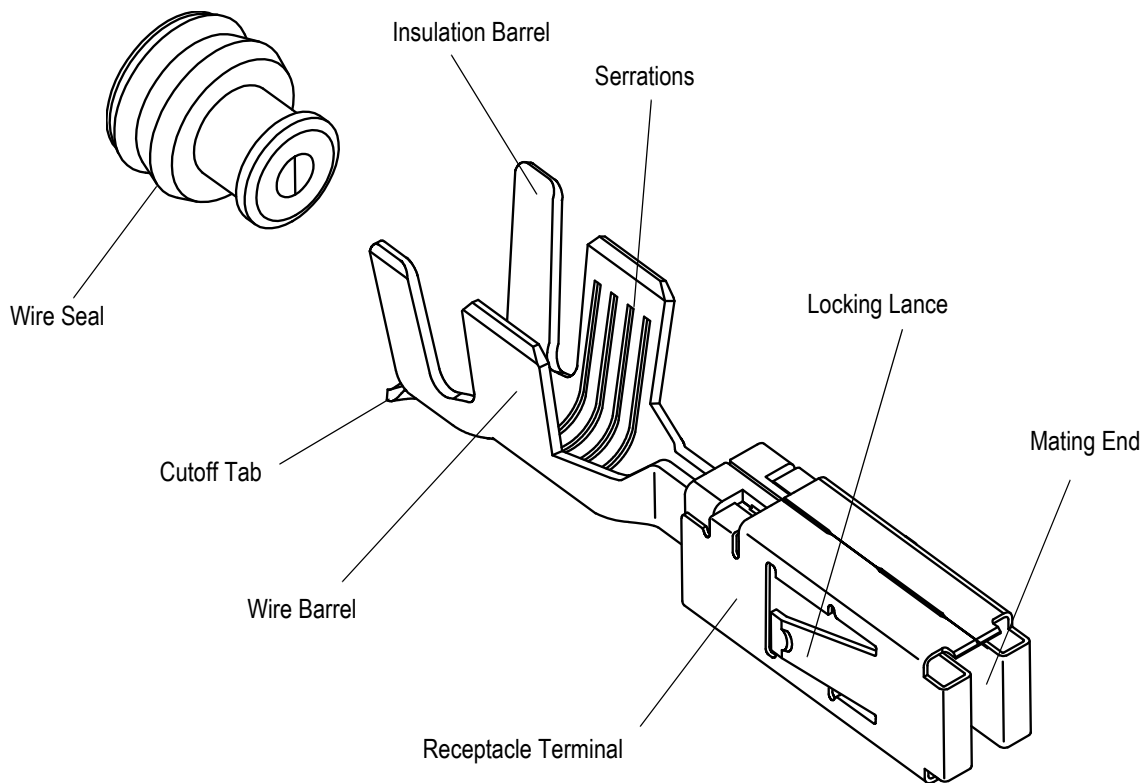


Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

- Initial release of document

2.2. Customer Assistance

Reference Part Number 968857 and Product Code 7715 are representative of 2.8 mm MCP terminal system. 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 TE Representative or, after purchase, by calling PRODUCT INFORMATION at the number at the bottom of page 1.

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 PRODUCT INFORMATION at the number at the bottom of page 1.

2.4. 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 operation procedures. Documents available which pertain to this product are:

408-3295	Preparing Reel of Contacts for Application Tooling
408-7424	Checking Terminal Crimp Height or Gaging Die Closure
408-8322	Heavy Duty Industrial (HD-I) Side-Feed Type Applicator
408-8040	Heavy Duty Miniature Quick-Change Applicators (Side-Feed Type)
408-8059	General Preventative Maintenance for Applicators
408-9816	Handling of Reeled Products
409-5842	AMP-O-ELECTRIC* Model "G" Terminating Machines 354500-[]
409-10027	Stripping Module 1490502-[], 1490500-[], and 1725910-[]
409-10029	Stripping Module 1490503-[] and 1490501
409-10047	AMP 3K Terminating Machines 1725950 and AMP 5K Terminating Machines 1725900
411-18087	ERGOCRIMP Basic Crimp Hand Tool 539635-1
411-18177	ERGOCRIMP Die 539727-2

3. REQUIREMENTS

3.1. Storage

A. Shelf Life

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

B. Ultraviolet Light

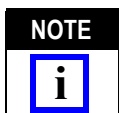
Prolonged exposure to ultraviolet light may deteriorate the chemical composition used in the terminals.

C. Reels

Care must be taken to prevent stretching, sagging, or other distortion that would prevent smooth feeding of the tape through automatic machine feed mechanisms. Store coil wound reels horizontally and traverse wound reels vertically.

D. Chemical Exposure

Do not store terminals near any chemicals that may cause stress corrosion cracking in the contacts.



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

3.2. Wire Selection and Preparation

The sealed terminals accept stranded copper wire sizes 2.5 mm² and 4.0 mm². Wire insulation diameter according to wire size is given in Figure 2.

Proper strip length is necessary to properly insert the wire into the terminal. Strip length is given in Figure 2.

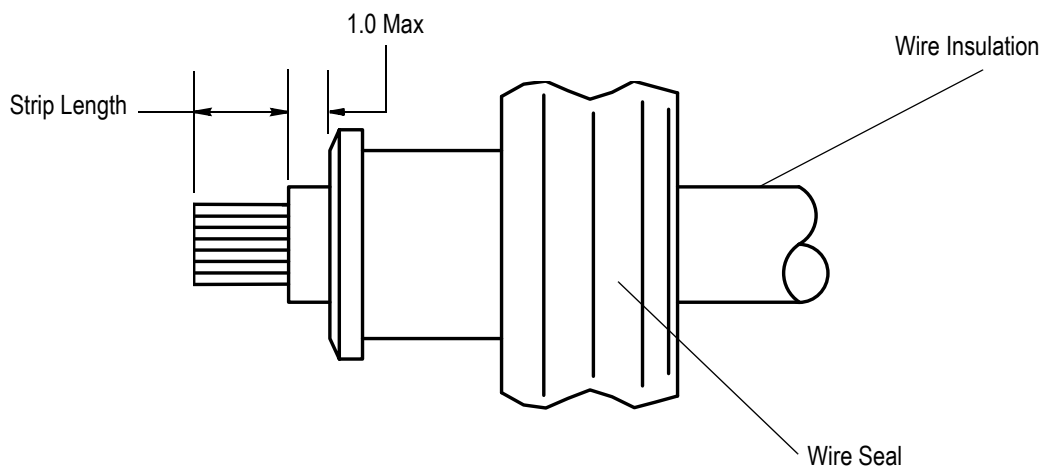


Reasonable care must be taken not to nick, scrape, or cut any strands during the stripping operation.

The wire seal must be inserted onto the wire (prior to termination) and crimped in the insulation barrel of the terminal simultaneously with the terminal. The appropriate wire seal must be selected which will accommodate the insulation diameter of the wire (contact PRODUCT INFORMATION at the number at the bottom of page 1 for appropriate wire seal part number). The wire seal must be installed onto the wire as shown in Figure 2.



The wire seal must not be damaged when placing it over the wire.



WIRE SIZE (mm ²)	WIRE INSULATION DIAMETER RANGE	STRIP LENGTH ±0.3 mm
2.5	2.70-3.00	5.0
4.0	3.40-3.70	5.6

Figure 2

3.3. Crimp Requirements

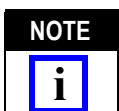
A sealed and unsealed terminal as it should appear after crimping is shown in Figure 3.



Periodic inspections must be made to ensure crimped contact formation is consistent as shown.

A. Crimp Height and Width

The crimp applied to the wire portion of the terminal is the most compressed area and is most critical in ensuring optimum electrical and mechanical performance of the crimped terminal. The crimp height and width must be within the dimensions provided in Figure 3.



The developed crimp configurations result from using the specific tooling described in Section 5, TOOLING.

WIRE SIZE mm ²	WIRE BARREL		INSULATION BARREL WIDTH (REF)
	HEIGHT ± 0.05	WIDTH ± 0.1	
2.5	1.88	2.54	4.70
4.0	2.27	3.05	5.20

Figure 3

B. Wire Seal

The wire seal may not extend beyond the dimensions shown in Figure 4.



The developed crimp configurations result from using the specific tooling described in Section 5, TOOLING.

C. Crimp Length

Effective crimp length shall be defined as that portion of the wire barrel, excluding bellmouth(s), fully formed by the crimping tool. For optimum crimp effectiveness, the crimp must be within the area shown in Figure 4.

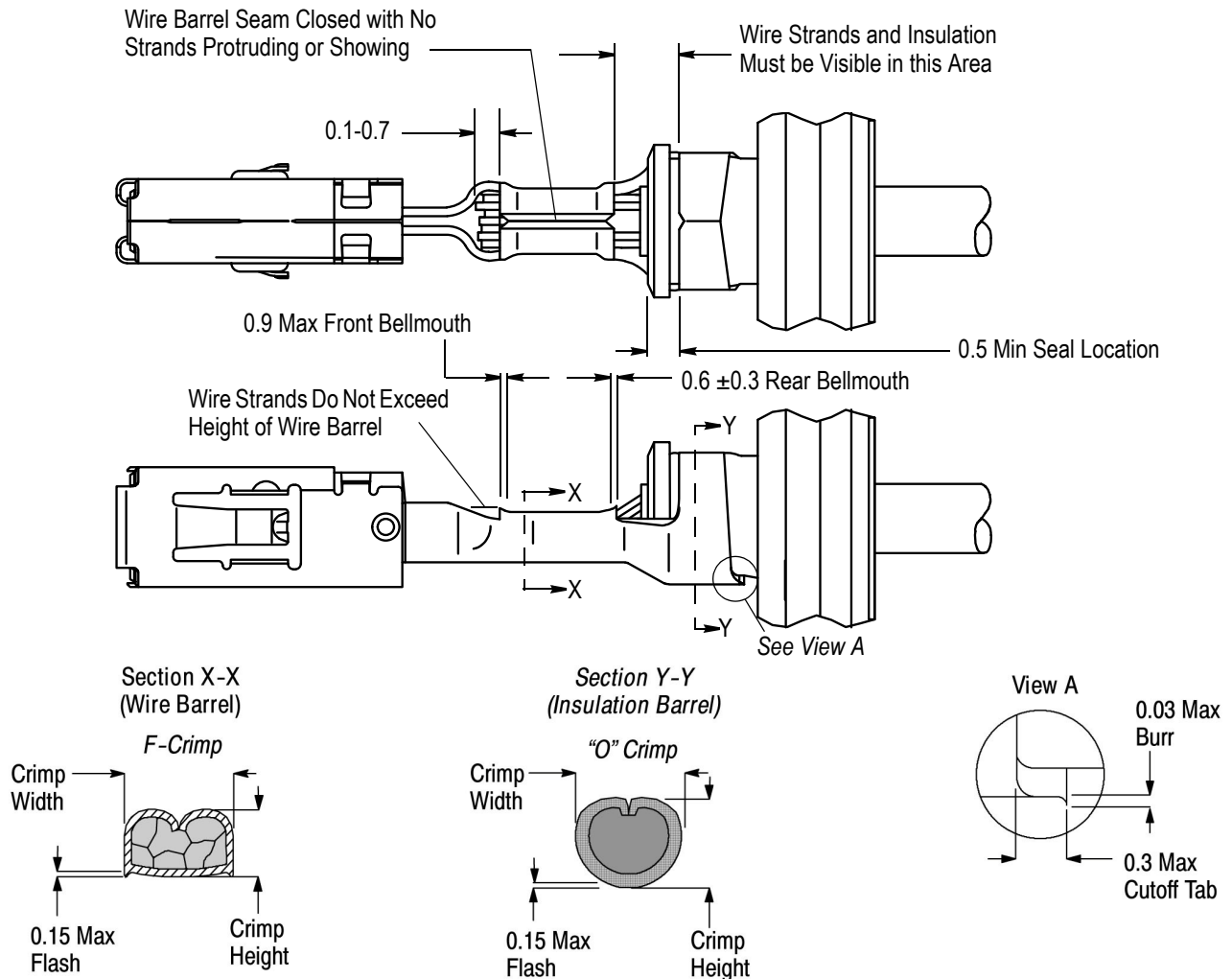


Figure 4

D. Wire Barrel Seam

The wire barrel seam must be closed with no evidence of loose wire strands visible in the seam as shown in Figure 4.

E. Bellmouths

Front and rear bellmouths shall be evident and conform to the dimensions given in Figure 4.

F. Wire Location

The wire conductor and insulation must be visible in the transition area between the wire and insulation barrels. Refer to Figure 4.

G. Wire Barrel Flash

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

H. Conductor Location

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

I. Cutoff Tab and Burr

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

3.4. Twist and Roll

There shall be no deformation or other damage to the mating portion of the crimped contact that will prevent proper mating. The twist and roll shall not exceed the limit shown in Figure 5.

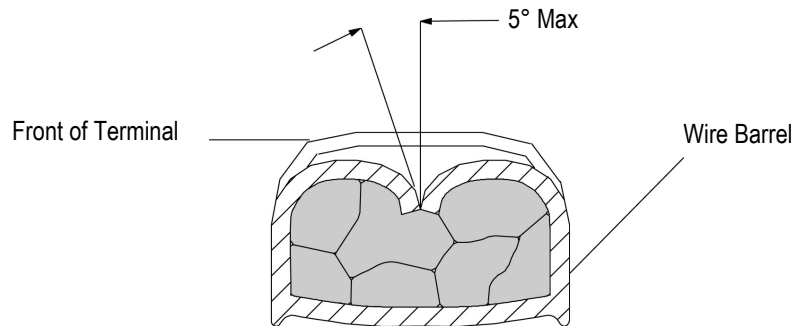


Figure 5

3.5. Tensile

Crimped terminals should hold the wire firmly and have a pull-test tensile value meeting the requirements of DIN IEC 352, Part 2.

3.6. Straightness

The force applied during crimping may cause some bending between the crimped wire barrel and the mating portion of the terminal. Such deformation is acceptable within the following limits.

1. Up and Down

The crimped terminal, including cutoff tab and burr, shall not be bent above or below the datum line more than the amount shown in Figure 6.

2. Side-to-Side

The side-to-side bending of the terminal may not exceed the limits provided in Figure 6.

3.7. Repair and Replacement



These terminals are not repairable. Damaged terminals must be removed from the connector and replaced with new ones. Terminals MUST NOT be re-used by removing the wire.

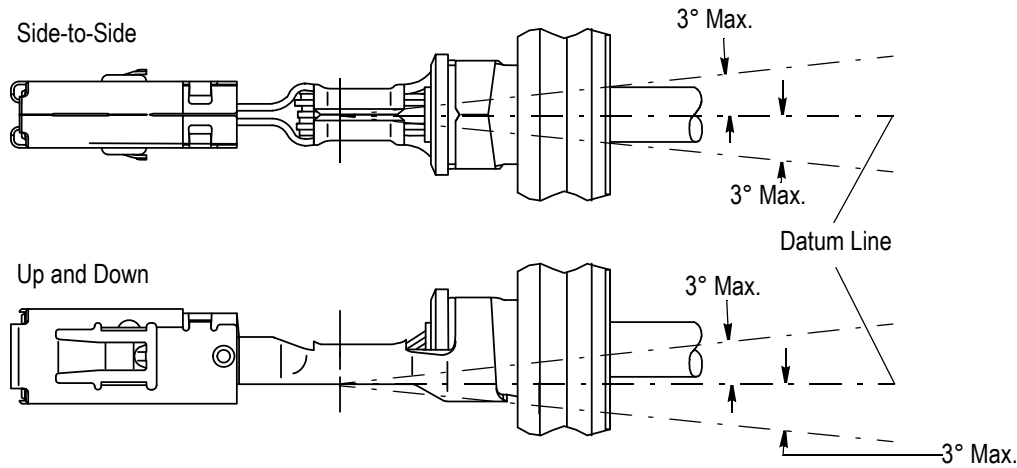


Figure 6

4. QUALIFICATIONS

Terminals in the 2.8 mm MCP terminal system are not required to be agency approved.

5. TOOLING

Semi-automatic machines for power assisted application of tape-mounted terminals are available to cover the full wire size range. Modified designs and additional tooling concepts may be available to meet application requirements. Tooling part numbers are shown in Figure 7.

5.1. Applicators

The applicator is designed to crimp tape-mounted terminals onto pre-stripped wire, and provides for high volume, heavy duty production requirements. The applicator must be installed onto a power unit.



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 located at the bottom of page 1 for specific changes.

5.2. Power Units

The power unit provides the force required to drive the applicator for crimping tape-mounted terminals. These power units are designed to be bench mounted.

5.3. Hand Tools

Hand crimping tools that accommodate the full wire size range are designed for prototype and low-volume applications such as repair of damaged contacts.

5.4. Extraction Tools

Extraction Tools are designed to release the locking lance inside the connector housing without damaging the housing or contacts.

TERMINAL	SEAL	WIRE SIZE (mm ²)	TOOLING				
			HAND TOOL FRAME	DIE SET	APPLICATOR	POWER UNIT	EXTRACTION TOOL
1-968857-3	368941-1	2.5	539635-1	539727-2	1385432-3	354500-1	1-1579007-2 GM J38125-557
1-968859-3	368940-1	4.0			1426348-2	1490501-1 1725900-[] 1725910-[] 1725950-[]	

Figure 7

6. VISUAL AID

Figure 8 shows a typical application of 2.8 mm MCP terminal. 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.

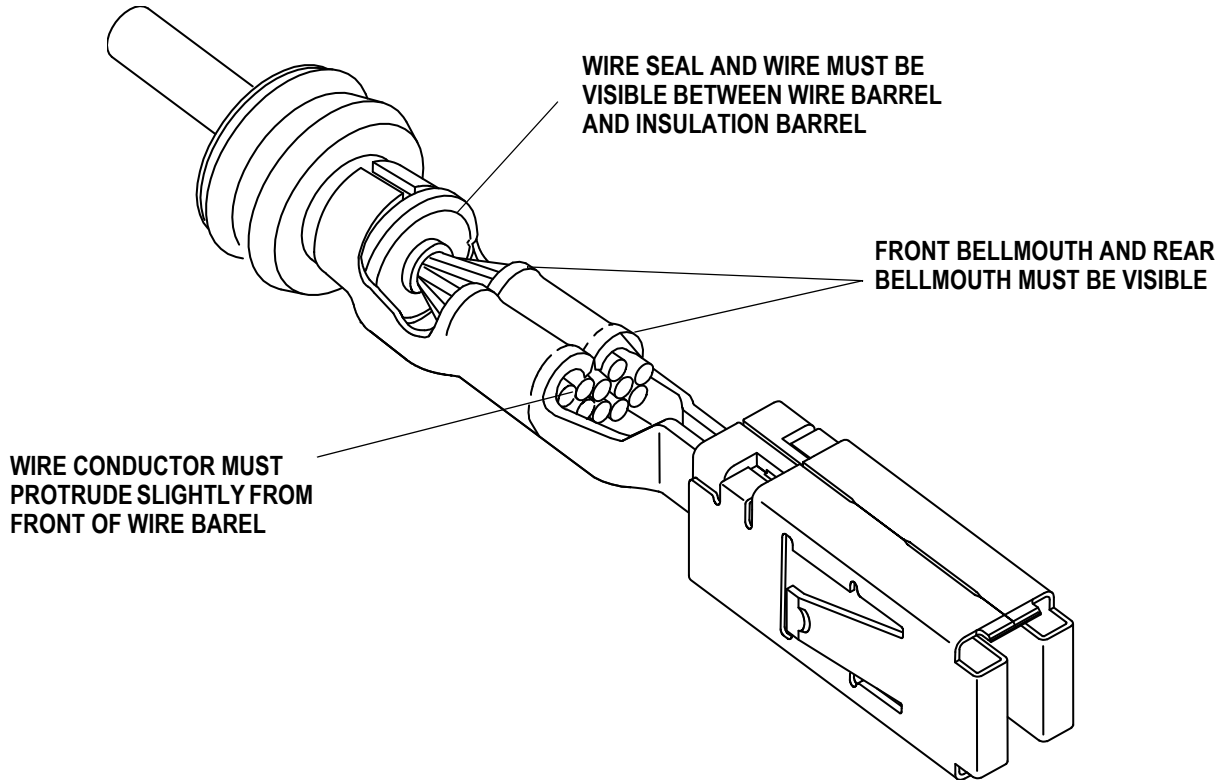


Figure 8 (VISUAL AID)