



### 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  $\pm 0.13$  [ $\pm 0.005$ ] and angles have a tolerance of  $\pm 2^\circ$ . Figures and illustrations are for identification only and are not drawn to scale.

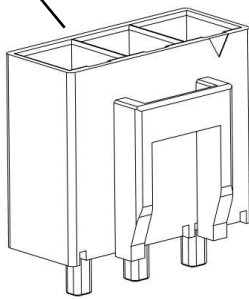
## 1. INTRODUCTION

This specification covers the requirements for application of LP6.2 connector system includes header assembly and plug assembly use in the wire-to-board interconnections. It is available in 3 positions and designed to be terminated to 14 AWG to 18 AWG wire.

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.

### Header Assembly

Mating Face

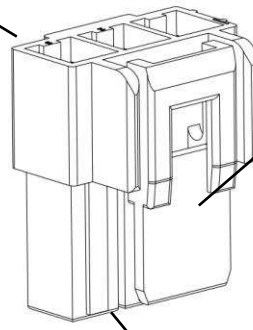


### Plug Housing

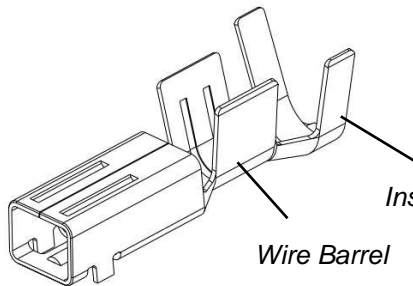
Wire Cavity

Locking Latch

Mating Face



### Receptacle Terminal



Insulation Barrel

Wire Barrel

Figure 1

## 2. REFERENCE MATERIAL

### 2.1. Revision Summary

- Add gap requirement after crimp, insulation crimp OV shape and applicator information.

### 2.2. Customer Assistance

Reference Product Base Part Number are stated in Figure 2. Use of these numbers will identify the product line and help you to obtain product and tooling information when visiting [www.te.com](http://www.te.com) or calling the number at the bottom of page 1.

LP6.2 connector	
Product Type	Base PN
Header Assembly	2487504
	2491947
Plug Housing	2487511
Receptacle Terminal	2487512

Figure 2

### 2.3. Drawings

Customer drawings for product part numbers are available from [www.te.com](http://www.te.com). Information contained in the customer drawing takes priority.

### 2.4. Manuals

Manual 402-40 can be used as a guide to soldering. This manual provides information on various flux types and characteristics with the commercial designation, flux removal procedures, and a checklist for information on soldering problems.

### 2.5. Specifications

Product Specification 108-161340 and Qualification Report 501-161444 provides product performance and test results.

## 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. Reels

When using reeled contacts, store coil wound reels horizontally. When storing partial reeled contacts, the end of the strip should be secured to the flange using a wire tie or similar method.

### D. 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.

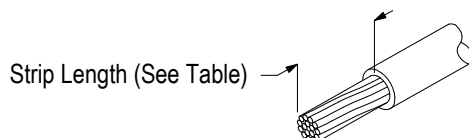
### 3.3. Wire Selection and Preparation

The contacts accept stranded wire sizes 14-18 AWG [2.0 – 0.8 mm<sup>2</sup>] with an insulation diameter range given in Figure 3. The wire must be stripped to the dimension given in Figure 3.



#### CAUTION

Care shall be taken during the stripping operation to ensure the conductor is not nicked, scraped, or cut.



CONTACT			WIRE	
TYPE	PART NUMBER	WIRE SIZE (AWG) [mm <sup>2</sup> ]	INSULATION DIAMETER [mm]	STRIP LENGTH (±0.2) [mm]
Receptacle Terminal	2487512-1	14-18	2.7 – 3.4	5.0
	2487512-2	[2.0 – 0.8]		

Figure 3

### 3.4. Crimp Requirements

Contacts must be terminated according to the instructions packaged with the tooling.

#### A. Bellmouth

The front and rear bellmouth shall be evident and be within the dimensions given in Figure 4.

#### B. Cutoff Tab and Burr

The cutoff tab is the remaining portion of the carrier strip after the contact is cut from the strip. The cutoff tab and burr shall not exceed the dimension given in Figure 4.

#### C. Wire Barrel Flash

Wire barrel flash is the formation that may appear on both sides of the wire barrel as the result of the crimping process. The wire barrel flash shall not exceed the dimension given in Figure 4.

#### D. 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 an “F” crimp where the wire barrel forms a closed seam with no evidence of loose wire strands or wire strands visible in the seam. The crimp height and width must be within the dimensions given in Figure 4.

#### E. Insulation Barrel Crimp

The crimp applied to the insulation barrel of the contact must result in an “F” crimp. The crimp height and width must be within the dimensions provided in Figure 4. Slight scratch is acceptable on insulation crimp.

#### F. Effective Crimp Length

Effective crimp length shall be defined as that portion of the wire barrel, excluding the front and rear bellmouth, fully formed by the crimping tool. Refer to Figure 4.

#### G. Wire Location

All conductors must be held firmly inside the wire barrel. No strands can be folded back over the wire insulation. The wire insulation must be inside the insulation barrel but must not enter the wire barrel. The wire insulation and conductors must be visible in the transition area between the wire barrel and insulation barrel. See Figure 4.

#### H. Wire Brush

The conductors may extend beyond the wire barrel within the dimensions given in Figure 4.

#### I. Wire Barrel Seam

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

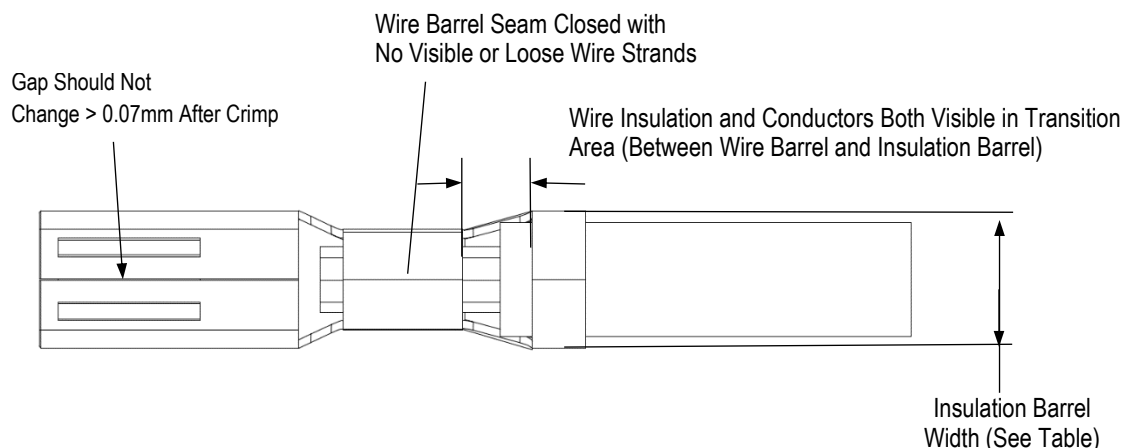
#### J. Twist and Roll

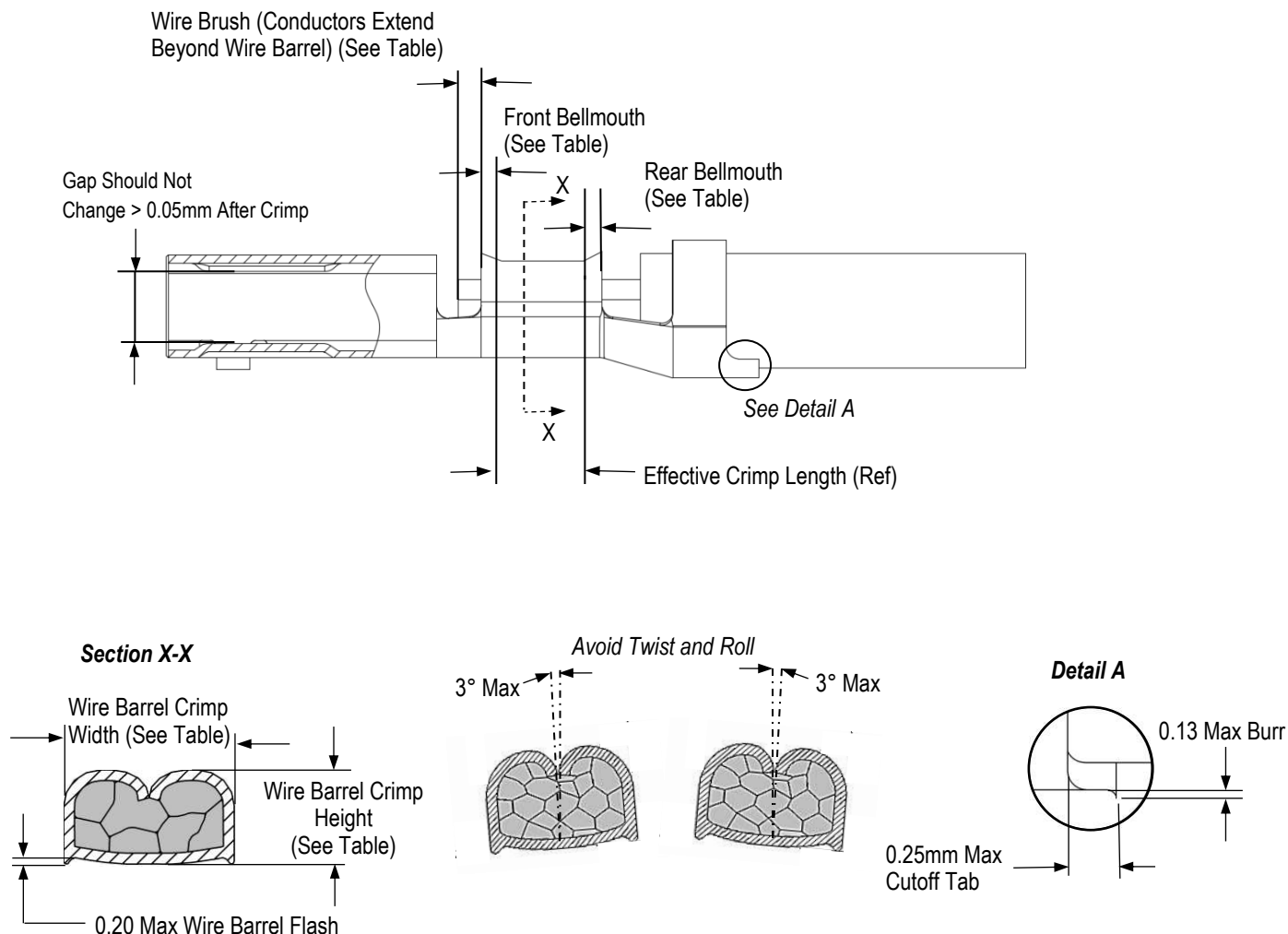
There should be no twist or roll of the wire barrel or mating portion of the crimped contact that would cause overstress or impair usage. See Figure 4 for allowable limits.



#### NOTE

The effective crimp length depends on the crimping dies used and should not be measured for inspection purposes.





WIRE SIZE		CONTACT 2487512-1, 2487512-2					
mm <sup>2</sup>	AWG	WIRE BARREL CRIMP		INSULATION BARREL CRIMP WIDTH [mm]	INSULATION BARREL CRIMP HEIGHT [mm]	WIRE BRUSH [mm]	FRONT AND REAR BELLMOUTH [mm]
		HEIGHT $\pm 0.05$ [mm]	WIDTH [mm]			APPLICATOR	APPLICATOR
2.00	14	1.56	2.03 crimper width F shape	3.56 crimper width OV shape	(1) As required	0.2 - 0.5	0.1-0.8
1.25	16	1.40					
0.80	18	1.25					

\* Note:

(1) Insulation crimp height will be variable depending on insulation diameter.

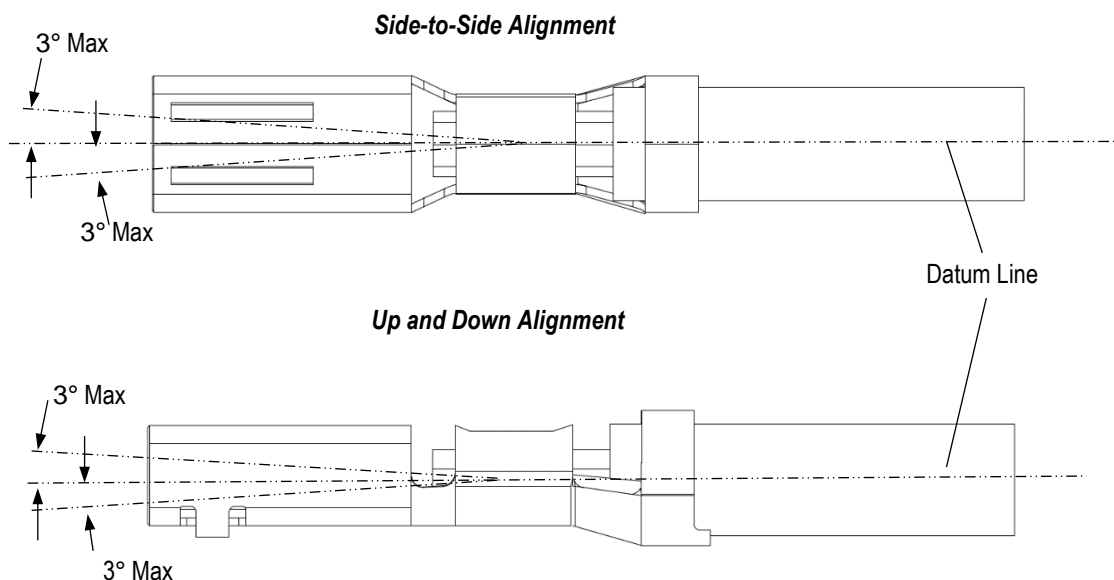
Figure 4

## K. Straightness

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

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

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

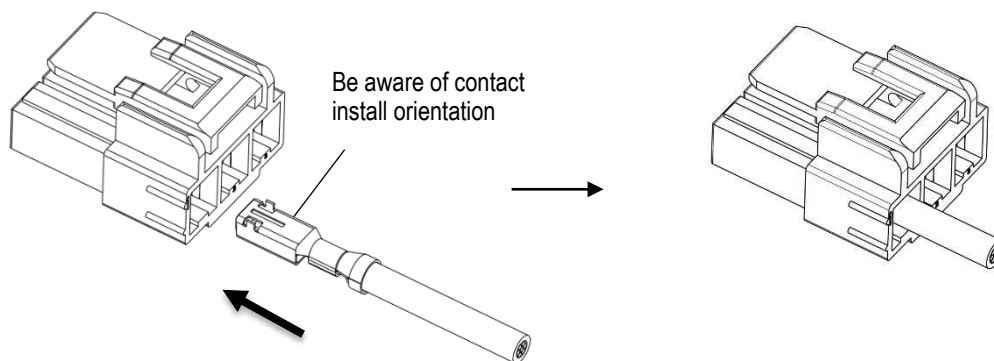


**NOTE:** Angles are drawn for clarification only and are not to scale.

**Figure 5**

## 3.5. Inserting Contact into Housing

Grasp the wire directly behind the contact insulation barre and push the contact straight into the cavity until it bottoms (there should be an audible click). Be aware that the contact must be installed in correct orientation as specified below. Pull back lightly on the wire to be sure the contact is locked in place. Refer to Figure 6



**Figure 6**

### 3.6. Mating Connectors

Ensure that the mating connectors have identical number of circuits and a pin contact mating with a socket contact. Align the mating faces of the connectors and push them together until the locking latch fully engages the locking tab. Pull back to ensure proper engagement and to prevent any deformation of the locking mechanism. See Figure 7.

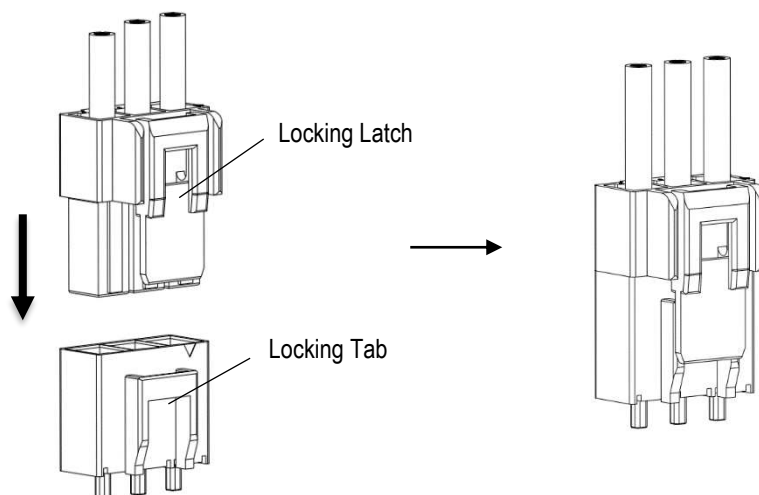


Figure 7

### 3.7. Unmating Connectors

To disengage mating connectors, depress latch of plug housing with thumbnail, and pull the connectors apart. Refer to Figure 8.



**NOTE**

*DO NOT pull the connectors by the wires.*

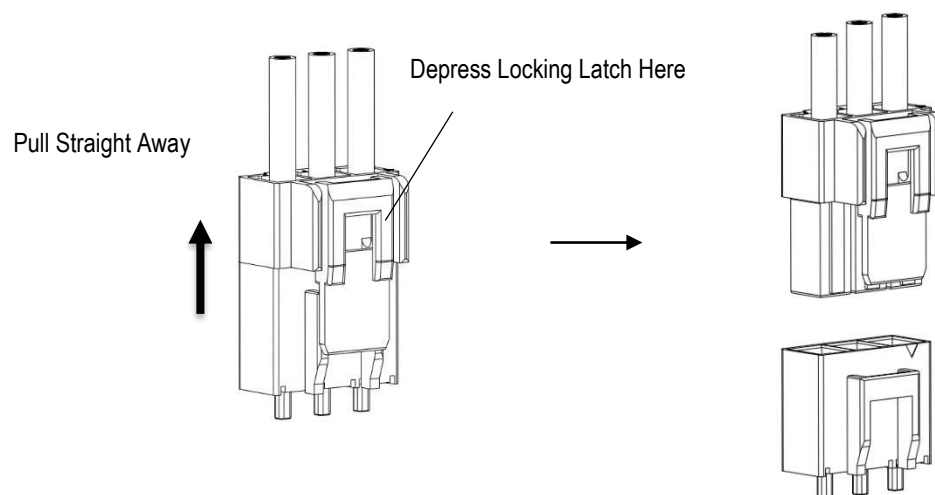


Figure 8

### 3.8. PC Board

#### A. Material and Thickness

1. Board material will be glass epoxy (FR-4, G-10).
2. Board thickness shall be 1.6 mm.

Contact the PRODUCT INFORMATION number at the bottom of Page 1 for suitability of other pc board materials or thicknesses.

#### B. Tolerance

Maximum allowable bow of the pc board shall be 0.03 mm over the length of the header assembly.

#### C. PC Board Layout

The mounting and contact holes in the pc board must be precisely located to ensure proper placement and optimum performance of the header assembly. Design the pc board using the dimensions provided in Figure 9. The layout shows the top (component) side of the board.

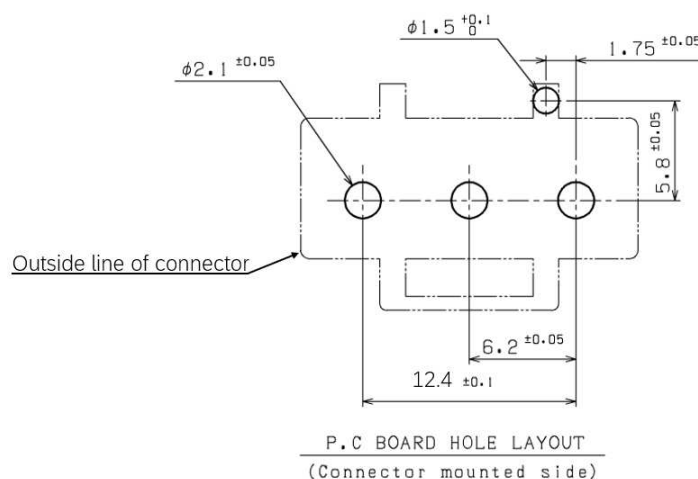


Figure 9

#### D. PC Board Solder Tine Holes

The holes in the pc board for the solder tines must be drilled and plated through to specific dimensions. See Figure 10.



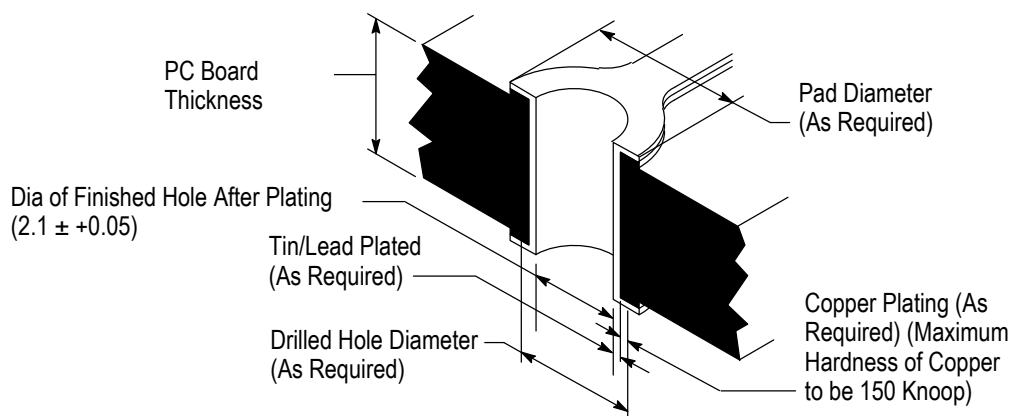


Figure 10

### 3.9. Soldering

#### A. Flux Selection

Contact solder tines must be fluxed prior to soldering with a mildly active, rosin base flux. Selection of the flux will depend on the type of pc board and other components mounted on the board. Additionally, the flux must be compatible with the wave solder line, manufacturing, health, and safety requirements. Call the PRODUCT INFORMATION number at the bottom of Page 1 for consideration of other types of flux. Some fluxes are compatible with these header assemblies are provided in Figure 11.

TYPE	ACTIVITY	RESIDUE	COMMERCIAL DESIGNATION	
			ALPHA	KESTER
RMA (Mildly Activated)	Mild	Noncorrosive	611	186

Figure 11

#### B. Soldering Guidelines

These header assemblies can be soldered using a variety of soldering techniques. The temperatures and exposure time shall be within the ranges specified in Figure 12. We recommend using SN60 or SN62 solder for these header assemblies.



#### NOTE

Manual 402-40 provides some guidelines for establishing soldering practices. Refer to Paragraph 2.4, Manuals.

SOLDERING PROCESS	TEMPERATURE	TIME (At Max Temperature)
Wave	260°C [500°F] Max. (Wave Temperature)	5 Seconds

Figure 12

#### C. Cleaning

After soldering, removal of fluxes, residues, and activators is necessary. Consult with the supplier of the solder and flux for recommended cleaning solvents. The following is a listing of common cleaning solvents that will not affect the header assemblies for the time and temperature specified. See Figure 13.


**DANGER**

Consideration must be given to toxicity and other safety requirements recommended by the solvent manufacturer. Refer to the manufacturer's Material Safety Data Sheet (MSDS) for characteristics and handling of cleaners. Trichloroethylene and Methylene Chloride can be used with no harmful effect to the header assemblies; however TE does not recommend them because of the harmful occupational and environmental effects. Both are carcinogenic (cancer-causing) and Trichloroethylene is harmful to the earth's ozone layer.

If you have a particular solvent that is not listed, contact the TOOLING ASSISTANCE CENTER or PRODUCT INFORMATION number at the bottom of Page 1.

CLEANER		TIME (Minutes)	TEMPERATURE (Max)
NAME	TYPE		
ALPHA 2110	Aqueous	1	132°C [270°F]
BIOACT EC-7	Solvent	5	100°C [212°F]
Butyl CARBITOL	Solvent	1	Ambient Room
Isopropyl Alcohol	Solvent	5	100°C [212°F]
KESTER 5778	Aqueous		
KESTER 5779	Aqueous		
LONCOTERGE 520	Aqueous		
LONCOTERGE 530	Aqueous		
Terpene	Solvent		

**Figure 13**
**D. Drying**

When drying cleaned assemblies and pc boards, make certain that temperature limitations are not exceeded: 105°C [221°F] max for a period of 5 minutes for standard temperature products. Excessive temperatures may cause header assembly degradation. Values may vary with different types of automatic cleaning equipment. See the equipment manufacturers' recommendations.

**3.10. Strain Relief and Wire Dress**

Wires can be bundled together and supported using cable ties or electrical tap. The wires must remain perpendicular to the housing and avoid an excessively sharp bend radius. The wire bundle must be at least 76 mm [3.0 inch] from the back of the housing before bending in any direction. Do not bend unsupported wires as this may cause strain on the contacts.

**3.11. Replacement and Repair**

Damaged or defective product must not be used. The housings, contacts are not repairable.

**4. TOOLING**

Applicators contain the tooling for feeding and crimping strip-form terminals. Automatic machines provide the power to operate the applicator.

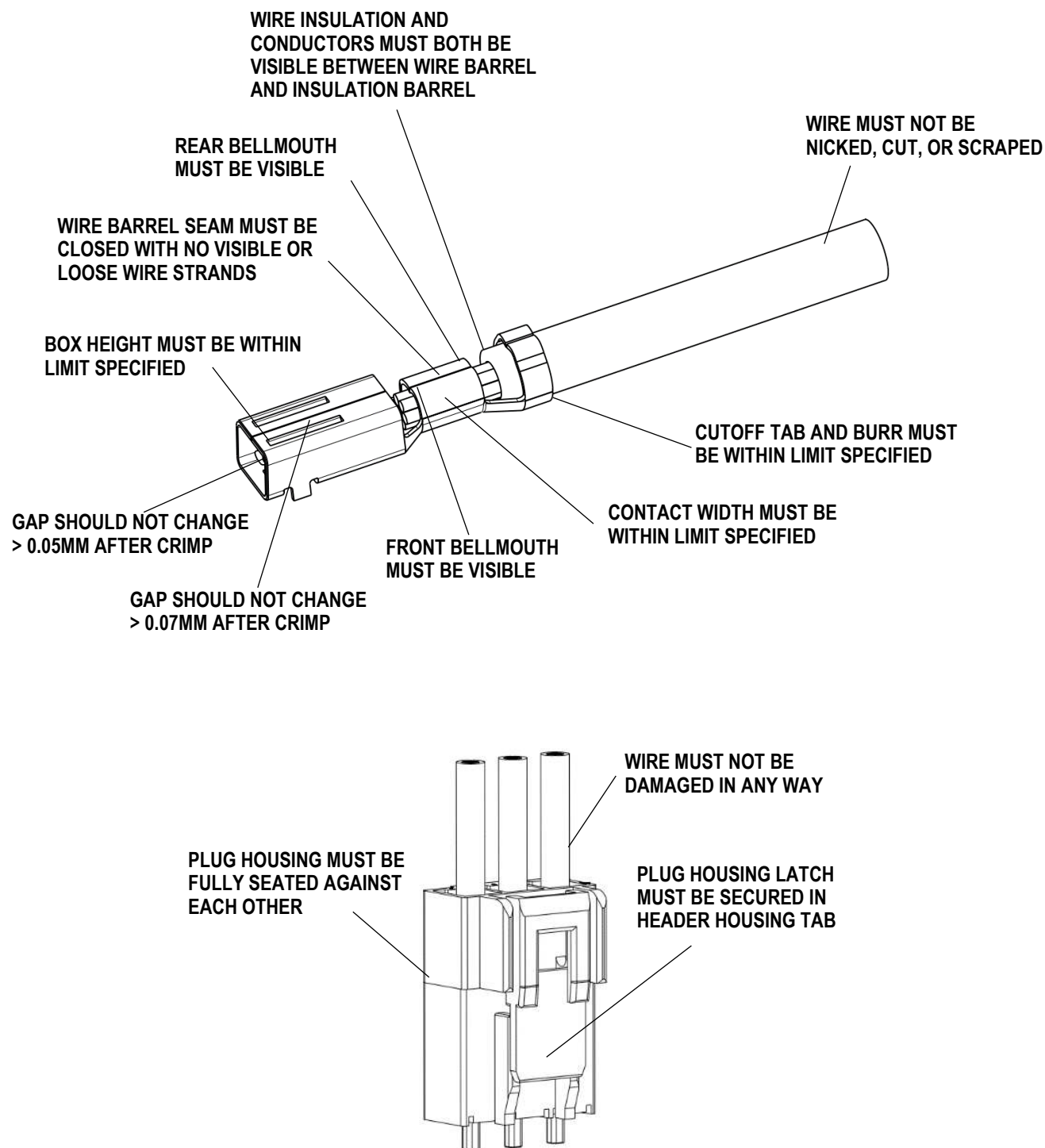
Applicator information for product part numbers is available in Figure 14 and from [www.te.com](http://www.te.com) or by calling the Product Information Center at the number at the bottom of page 1.

Contact Part Number	Applicator Part Number
2487512-1	4151460-1
2487512-2	

**Figure 14**

## 5. 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 15: Visual Aid**