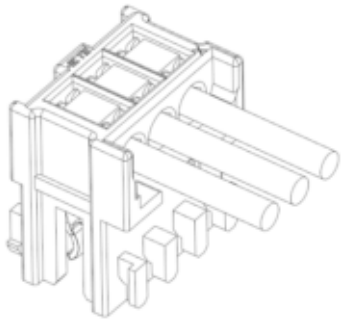
NOTE

1. *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 [±.005] and angles have a tolerance of ±2°. Figures and illustrations are for identification only and are not drawn to scale.*
2. *Connectors can only be used with approved combination of TE machines and TE approved wires. Contact sales representative for approved combination list or to initiate an approval for a new combination IDC TE Connector – TE Termination machine – wire.*
3. *According to RAST guidelines and for a proper machine functioning at least one keying rib has to be kept on the finished configuration.*

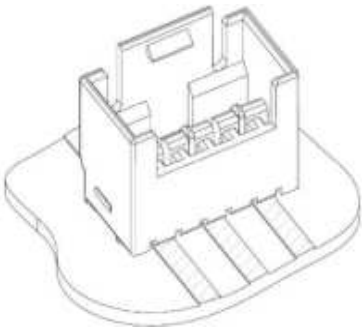
1. INTRODUCTION

This specification covers the requirements for application of the Monoplug 2.5 connector system. The Monoplug 2.5 connector system is used as a direct or indirect connector, as a card edge connector or on a printed circuit board. Electrical contact on indirect connectors occurs through a pair of flat springs pressed against the sides of the blade terminal. These blade terminals are soldered on the printed circuit board and assembled by a tab header. Electrical contact on direct connectors occurs through a pair of flat springs pressed onto conductor pads, provided on single or doubled sided printed circuit boards.

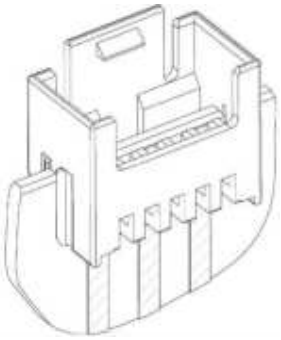
Basic terms and features of this product are provided in Figure 1.



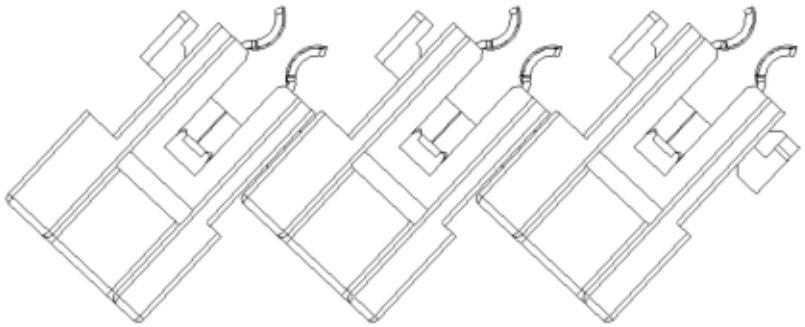
Female Connector



Tab Header



PCB Frame



Chained Connectors

Figure 1

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*Trademark

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2. REFERENCE MATERIAL

2.1. Revision Summary

Updates to this specification include:

- Added 26AWG information

2.2. Customer Assistance

Reference Product Base Part Number 2232884 and Product Code DA60 are representative of the Monoplug 2.5 Connector System. 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.

2.4. Specifications

Product Specification 108-106198 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. 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

3.3. Wire Selection

A. Wire Size

0.14 mm^2 – 0.35 mm^2 (22 AWG – 26 AWG) wire sizes with an insulation diameter of 0.8 – 1.6 mm are suitable for Monoplug 2.5 connector products to meet product performance requirements.

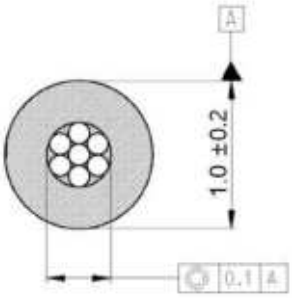
B. Wire Insulation Material

The wire insulation material must be PVC or silicon; shore hardness for insulation material must meet A92 ± 3 according to DIN 53 505. The insulation must be semi-rigid, such as YJ3 according to VDE 209.

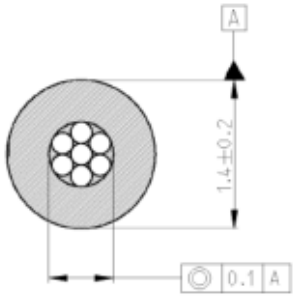
C. Wire Dimensions

Stranded conductors of the wire suitable for proper termination must be copper and meet the requirements in Figure 2.

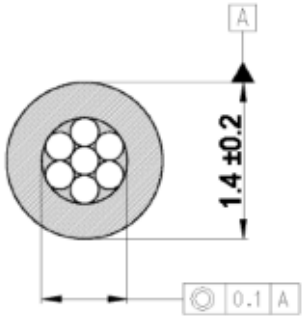
Wire Size [mm²]	Single Strand Diameter (min) [mm]	Number of Strands	Lay Length [mm]
0.14	0.16	7	12-26
0.22	0.2	7	12-26
0.35	0.25	7	12-26
0.35	0.2	12	12-26



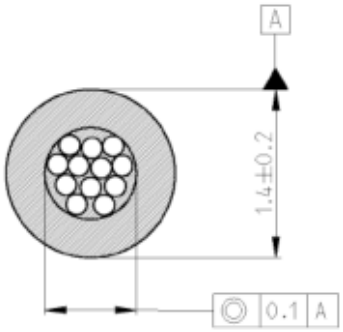
0.14 mm² (Similar to 26 AWG)



0.22 mm² (Similar to 24 AWG)



0.35 mm² (Similar to 22 AWG)



0.35 mm² (Similar to 22 AWG)

Figure 2

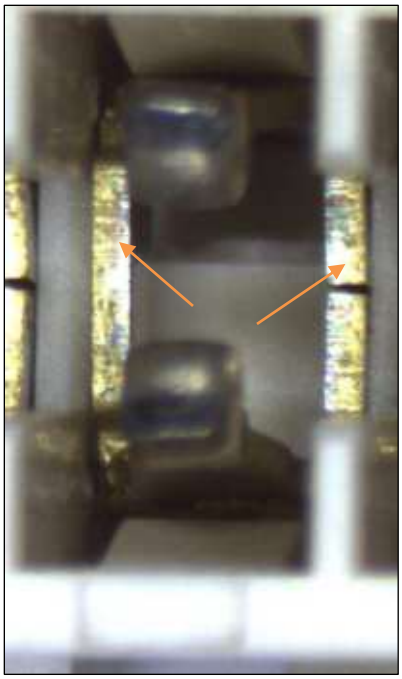
NOTE
Wires may not show damage or exposed copper layers. Minor marks on the wires are acceptable if the insulation is not damaged.

3.4. Contact

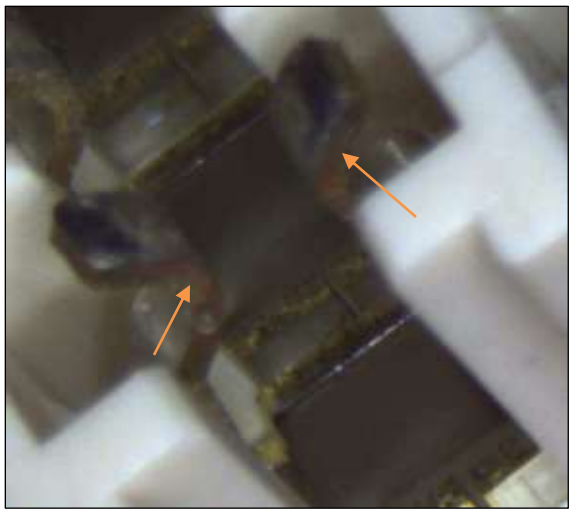
A. Visual Requirements

Contacts may not have damage which could impair normal usage. Small scratches on the surface of the contact that do not expose the base material do not impair the function of the part and are therefore permitted. Scratches on the side of the contact legs which do not result in removal of the material are acceptable and can result from the contact insertion or termination process. Scratches on the mating interface of the contact are not acceptable. No plastic particles are permitted on the contact surface. Any damage to the contact due to the termination process or inappropriate handling of connectors must be avoided. See Figure 3 for acceptable and unacceptable conditions for connector.

Acceptable Conditions

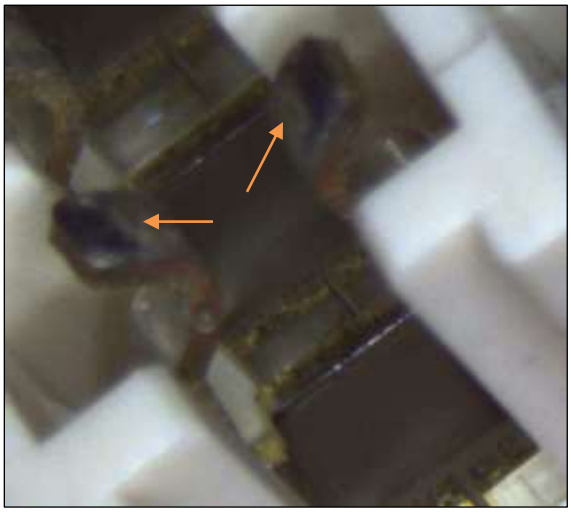


Bottom View, Scratches at the bottom of the metal walls



Bottom View, Scratches on sides of contact legs

Unacceptable Conditions



Bottom View, Scratches on mating interface of contact

Figure 3

B. Position of Contact Legs

The center position of the contact legs must meet the stated tolerances in Figure 4.

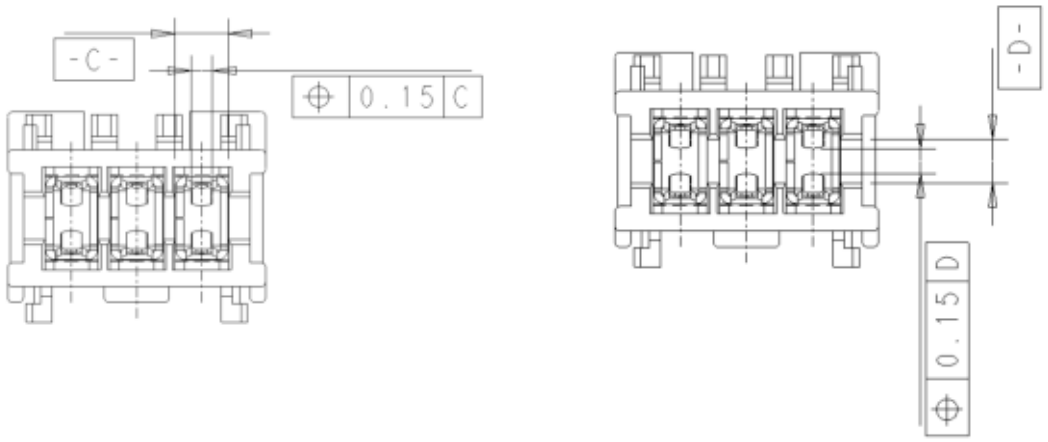


Figure 4

C. Position of Contact (Prior to Termination)

The position of the contact must meet the assembly depth requirements in Figure 5.

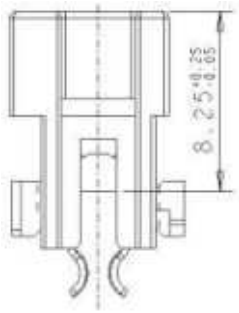


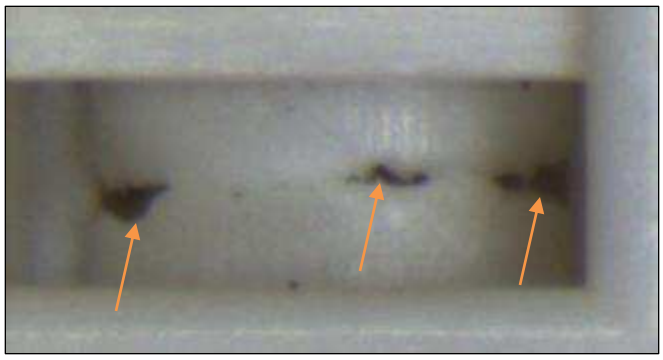
Figure 5

3.5. Housing

A. Visual Requirements

Housings may not show damages caused by incorrect machine set-up or broken tooling. The walls of the cavities where the wire is inserted are filled with a thin plastic layer to assist in the wire insertion process. These walls are broken by the contact during the termination process. Incomplete filling (resulting in small holes) does not affect the performance of the product and is acceptable. See Figure 6.

Acceptable Conditions

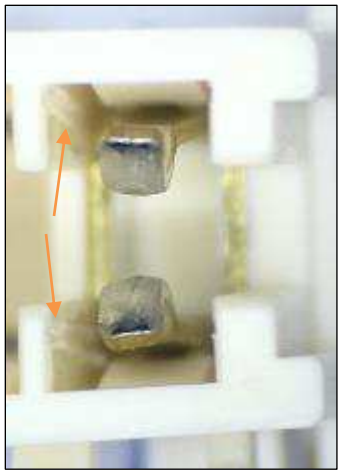


Top View, IDC slot. Incomplete filling of wire channel

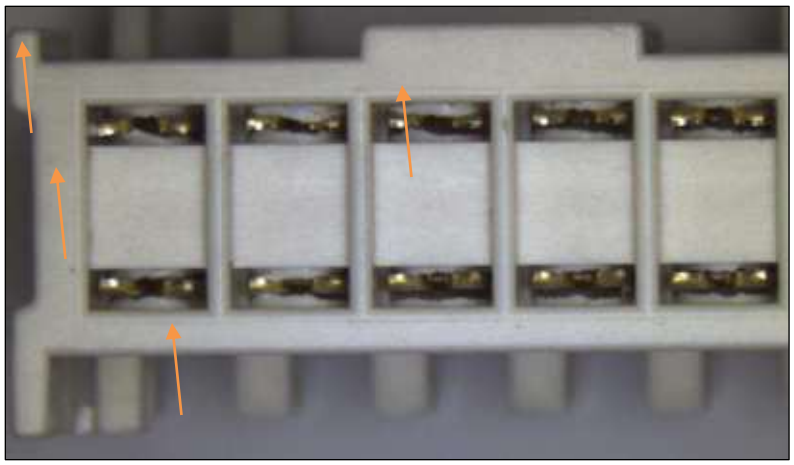
Figure 6

Scratches on the top of the housing that do not remove material are acceptable and can be caused when the connector is packaged and during the termination process. Scratches on the side of the contact cavity are also acceptable and caused by the contact retention feature. See Figure 7.

Acceptable Conditions



Bottom View, Scratch on side wall of housing



Top View, Scratches on housing

Figure 7

B. Keying Ribs

The housings must be free of burrs after cutting the keying ribs off and must meet the tolerances show in Figure 8. Some break-out of the housing wall caused by the cutting process does not affect the function of the connector and is therefore permitted.

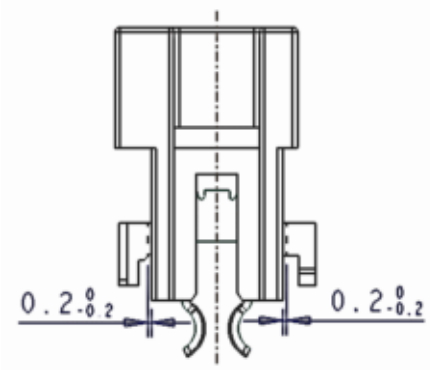


Figure 8

3.6. Termination Requirements

A. Interface between Wire and Contact

When specifications for the wire as listed in Figure 2 are followed, the wire will make contact with the width of the termination slot.

B. Contact Insert Depth

After termination, the contact insert must meet the depth requirements in Figure 9

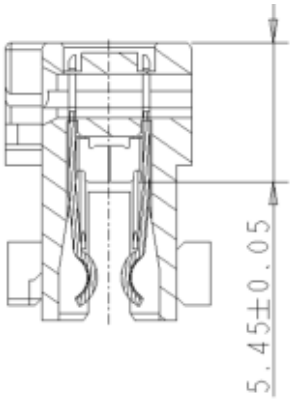


Figure 9

C. Position of the Contact in the Housing

After termination, the contact must be in the correct position in the housing as indicated in Figure 10.

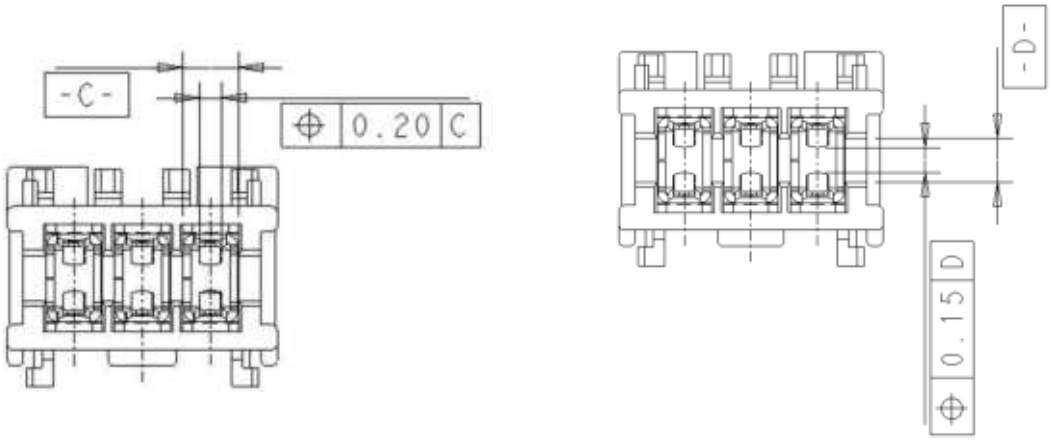


Figure 10

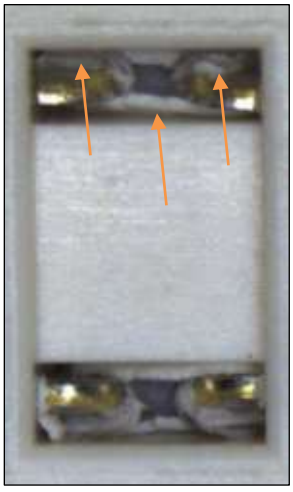
D. Position of the Wire in the Housing

The rear of the housing has a protrusion in the middle of the connector. After termination, the wire in the cavity with the protrusion must have the dimensions shown in Figure 12. All other positions must have the dimensions shown in Figure 13.

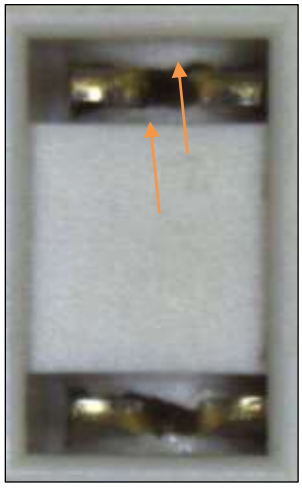
E. Housing after Termination

After termination, the thin plastic walls on the housing will be broken and bent into the top window with the removed insulation layer of the wire. See Figure 11.

Acceptable Conditions



Top View, Tunnel plastic walls broken after termination



Top View, Tunnel plastic walls broken after termination with no wire inserted (For reference only)

Figure 11

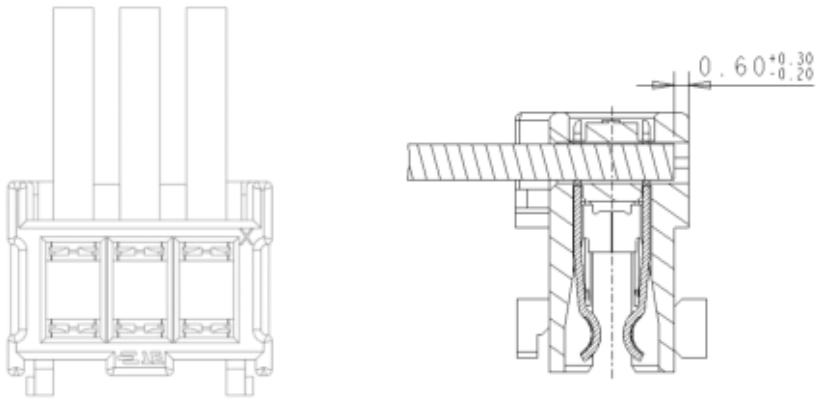


Figure 12

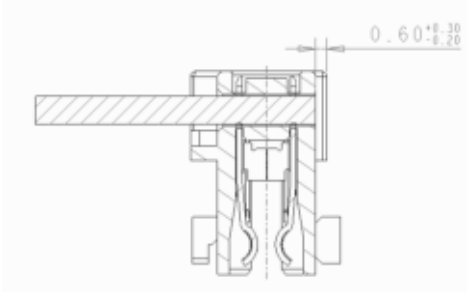


Figure 13

F. Termination Process

Termination can be done on a single wire or mass termination. Once terminated, an IDC connection cannot be reworked. During all termination steps, the contact must touch any part of the machine. The contact cannot be used for alignment, handling, or positioning by either the machine or the operator. The only area of the contact that is permitted to touch the machine are the two lateral areas in red highlighted in Figure 14. The mating interface area must not be touched by any tool. If possible, avoid passing tools through this area.



Figure 14

Suggested locations for the applicator are shown in Figure 15. Mark ‘A’ is suitable for single wire termination; mark ‘B’ is valid only for mass termination.

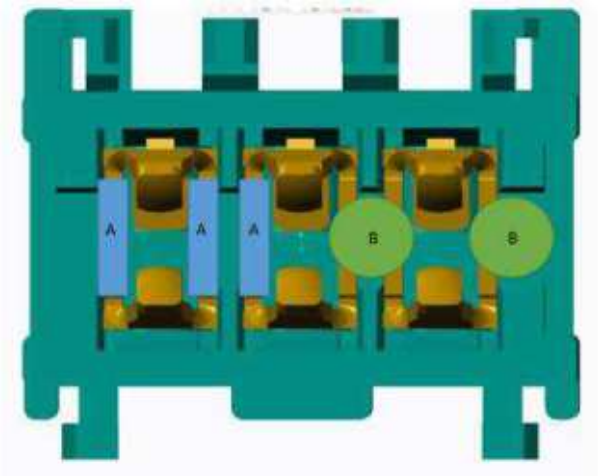


Figure 15

3.7. Handling and Assembly Procedures

Prior to termination, parts shall be handled with care and damage to the exposed contact must be avoided. The metal portion of the contact should not be handled. After termination, parts shall be packaged to avoid any tangling of the wires. Wire wrapping with a tape is recommended. Avoid pulling on the wires when moving the complete harness.

3.8. Inspection Procedures

A. Quality Assurance Characteristics

Figure 16 lists quality assurance characteristics that must be checked when introducing a new product, changing the wire, changing the tooling, or introducing new tooling equipment.

Characteristic	Section Reference
Interface Between Wire and Contact	3.6.A
Position of Contact Legs	3.4.B
Position of the Contact (Prior to Termination)	3.4.C
Wire Selection Requirements	3.3
Contact Insert Depth	3.6.B
Position of the Contact in the Housing	0
Keying Ribs	0

Figure 16

B. Tensile Strength

The terminated wires must withstand a 30 N pull out force in the axial direction. See Figure 17.

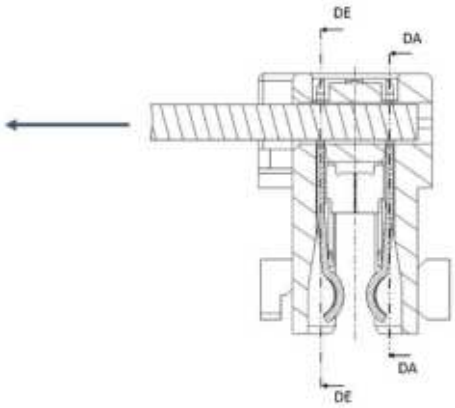


Figure 17

C. Polished Micrograph Section

Tested parts shall be embedded bubble-free in vacuum into water-clear epoxy resin to fill all cavities precisely. The grinding direction must be perpendicular to the contacting slot to avoid movements within the surrounding isolation to the greatest possible extent. The grinding must be performed to half of the material thickness of the contact. The recommended sequence of grinding includes: first DA (wire exist) followed by DE (wire input).

4. QUALIFICATION

4.1. Underwriters Laboratories Inc. (UL)

The Monoplug 2.5 connector system is recognized by Underwriters Laboratories Inc. (UL) in File E28476.

4.2. Verband der Elektrotechnik (VDE)

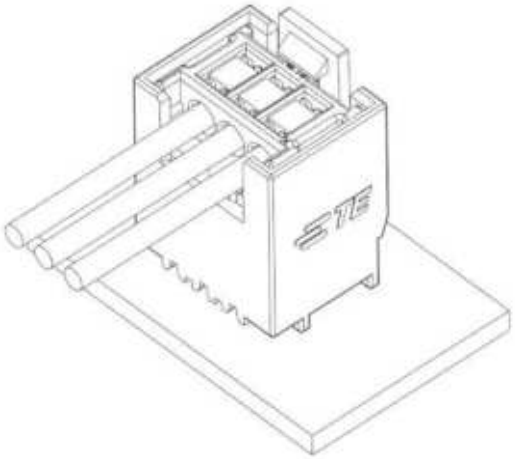
The Monoplug 2.5 connector system is certified by VDE per IEC 61984 in Certificate 40045860.

5. TOOLING

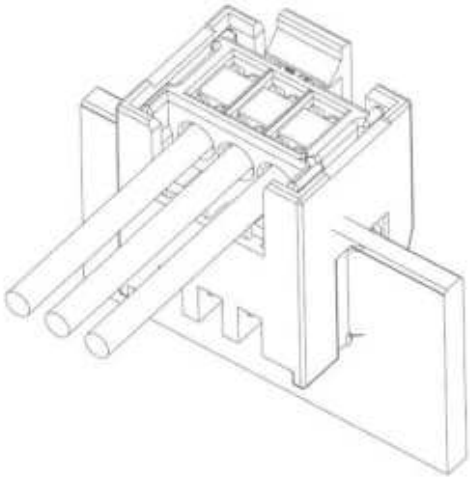
Bench machines and semi-automatic machines (SMP25) are available for wire termination.

6. VISUAL AID

Figure 18 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.



Mated with RAST 2.5 Tab Header



Mated with PCB directly with a frame

Figure 18: Visual Aid