



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 the CEELOK FAS-T High-Speed Circular Connector System. The connectors are configured in a size 8, MIL-C-38999 Series III style metal shell with an 8-position insert that accepts size 26 contacts.

The plug connector accepts removable, crimp socket contacts that can be terminated to 24 or 26 AWG wire. The receptacle connectors accept removable, crimp pin contacts that can be terminated with 24 or 26 AWG wire, or are pre-loaded with non-removable printed circuit (pc) board solder tail contacts. The receptacle connectors are available in a jam nut or square flange panel mount configuration.

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.

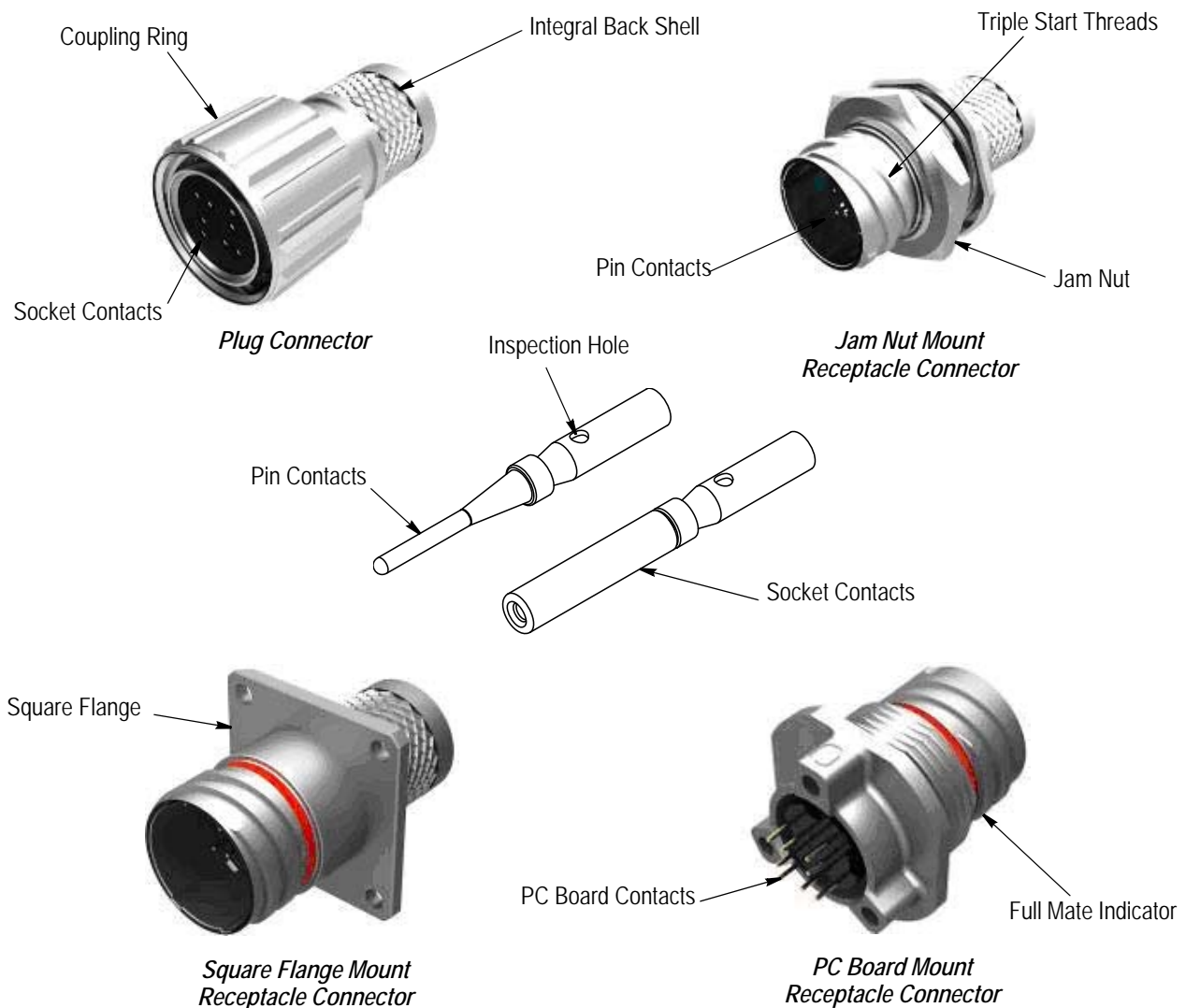


Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

Initial release of application specification

2.2. Customer Assistance

Reference Product Base Part Number 2102354 and Product Code X213 are representative of the CEELOK FAS-T connectors. Use of these numbers will identify the product line and help you to obtain product and tooling information. Such information can be obtained through a local TE Representative, by visiting our website at www.te.com, or by calling the PRODUCT INFORMATION 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. 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 guide for information on soldering problems.

2.5. Specifications

Design Objective 108-2482 provides expected product performance and test information.

2.6. 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. Documents available that pertain to this product are:

408-32046 CEELOK FAS-T Cable Harness Manufacturing Guide

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 connector material.

B. Shelf Life

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

C. Reeled Contacts

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

3.3. Chemical Exposure

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

| | | | | | |
|----------|------------|----------|-----------------|----------|------------------|
| Alkalies | Ammonia | Citrates | Phosphates | Citrates | Sulfur Compounds |
| Amines | Carbonates | Nitrates | Sulfur Nitrites | | Tartrates |

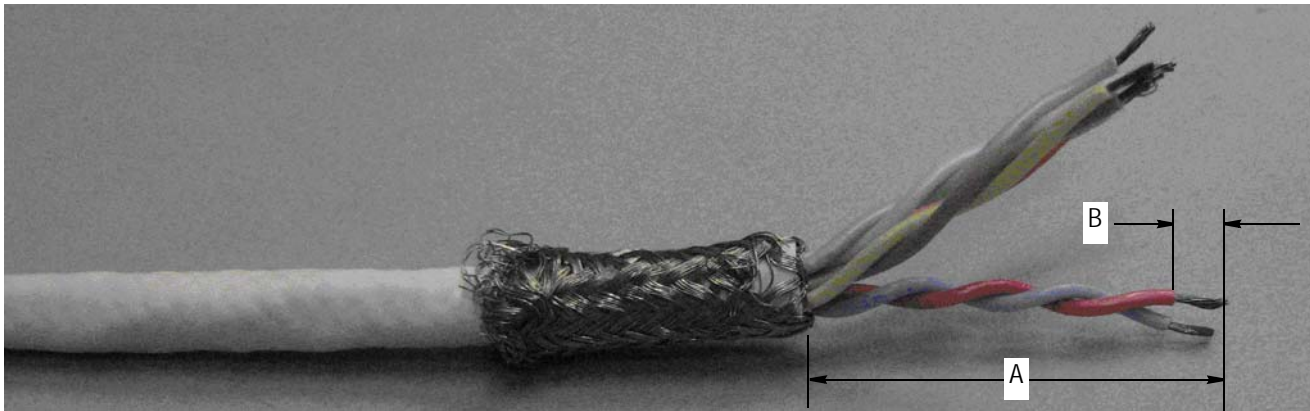
3.4. Wire Selection and Preparation

The contacts will accept a wire size range of 26-24 AWG and are to be terminated to solid or stranded wire. Figure 2 lists the insulation diameter, strip length, and crimp height or tensile strength as determined by wire size.

Jacketed or discrete wire may be used with this product. For 10GbE applications, Cat6A cable is recommended.



When stripping the wire, care must be taken to avoid scraping, nicking, or cutting the conductor. Care must also be used when handling the wire during stripping and crimping to prevent cracking or breaking of the conductor and insulation.



| WIRE SIZE | CABLE JACKET STRIP LENGTH "A" | WIRE STRIP LENGTH "B" | CONDUCTOR INSULATION O.D. (MAX) | TENSILE STRENGTH |
|-----------|-------------------------------|-----------------------|---------------------------------|------------------|
| 26-24 | 28.58 | 3.18 | 0.050 | 7 lbs |

Figure 2

3.5. Crimp Requirements

Contacts must be positioned and crimped to a designated height. Positioner K1850 and crimp tool M22520/2-01 are required to properly crimp the contacts. For 26 AWG wire, the crimp tool selector should be set at number 2. for 24 AWG wire, the selector should be set at number 3. Crimp the pin and socket contacts according to the instructional material provided with the tooling shown in Section 5, TOOLING.

3.6. PC Board

A. Material and Thickness

PC board material will be glass epoxy (FR-4 or G-10). Thickness shall be 1.78 mm maximum. Contact the PRODUCT INFORMATION CENTER number listed 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 connector.

C. PC Board Contact Holes

These connectors are used with plated-through holes. The drilled hole size, plating types, and plating thickness are dependent on customer application requirements. The finished hole size must be as stated in Figure 3 to provide unrestricted insertion and ensure adequate application of the solder to the connector solder tines.

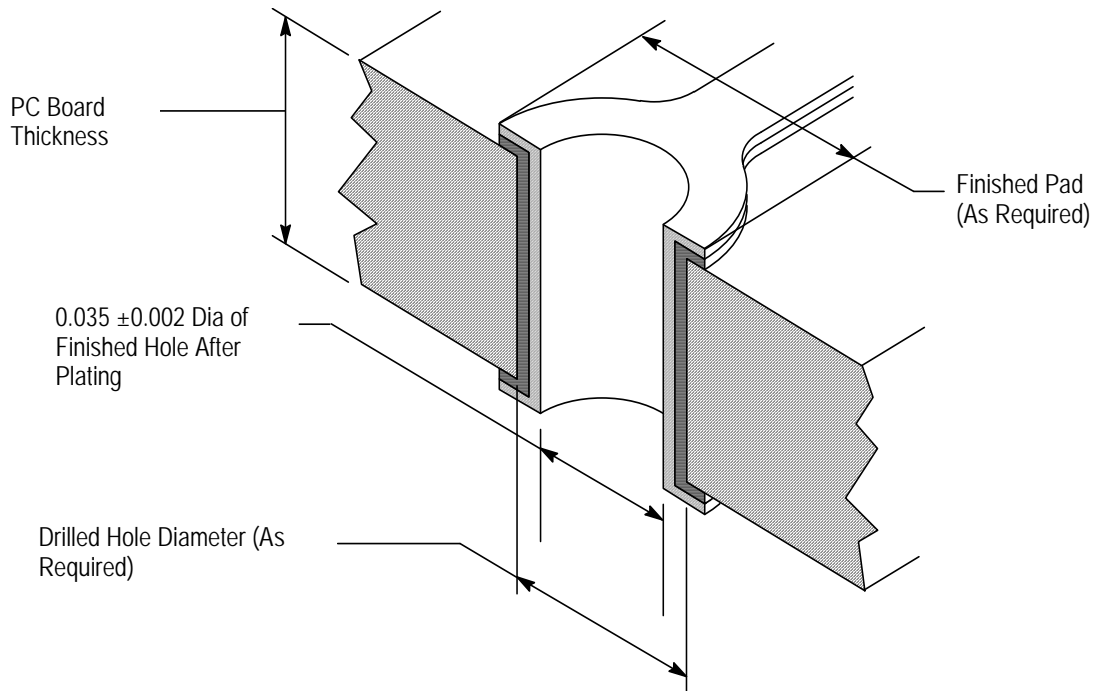


Figure 3

D. Layout

The mounting and contact holes in the pc board must be precisely located to ensure proper placement and optimum performance of the connector. The connectors must be placed on the pc board manually. See Figure 4.

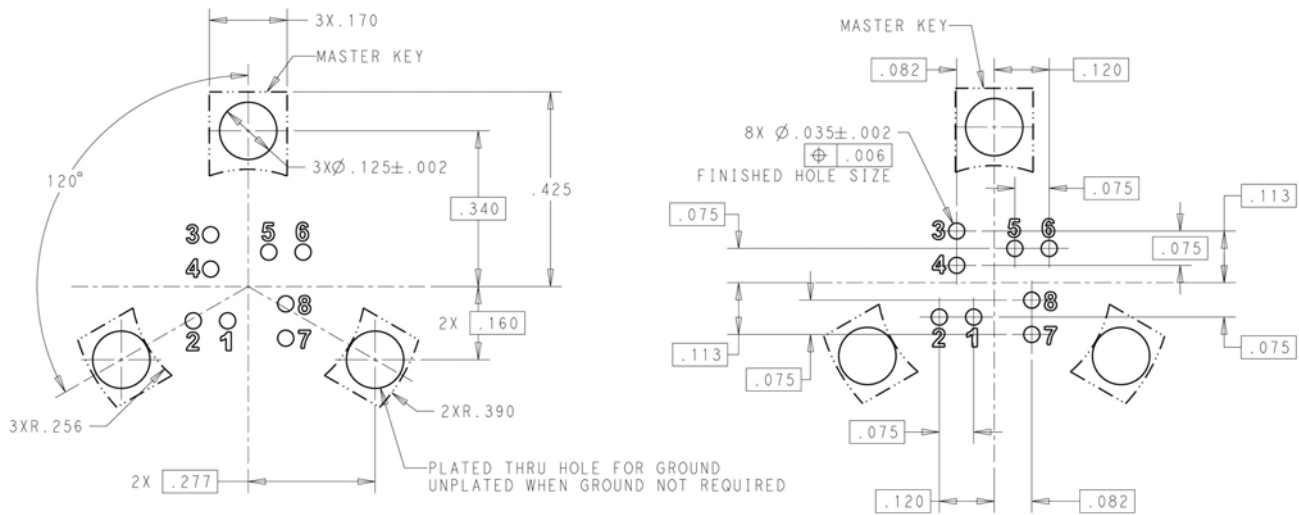


Figure 4

3.7. Panel Cutout and Mounting Holes

CEELOK FAS-T High Speed Circular Connectors panel cutouts and mounting holes shall be as indicated in Figure 5. Receptacle connectors are available with mounting flanges for rear-panel mount applications. The mounting option is square flange or jam nut. For jam nut applications, the nut should be torqued to [30 in-lb.]. The square flange is designed to be mounted with No. 2-56 screws and nuts.

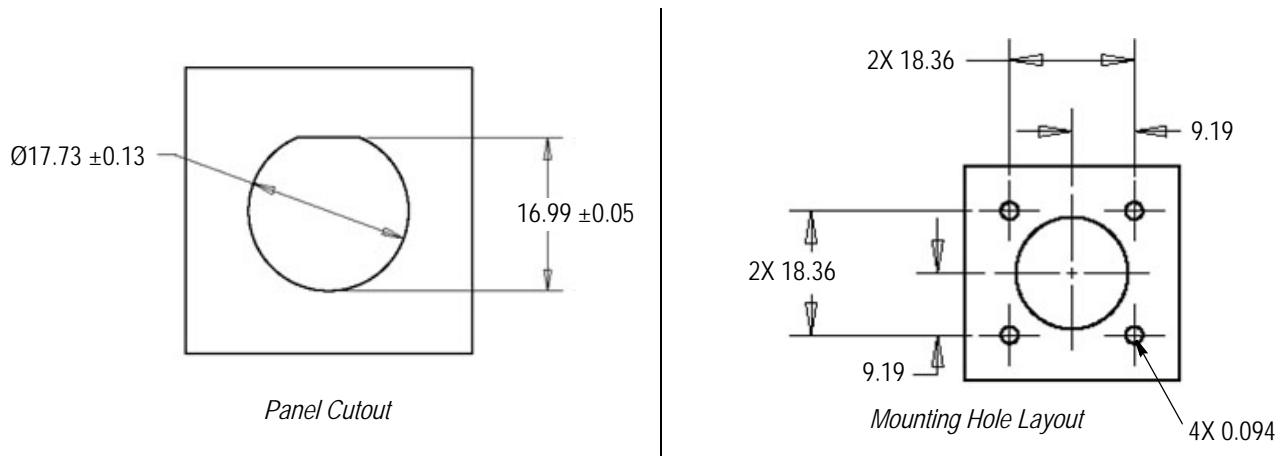


Figure 5

3.8. Soldering

A. Flux Selection

Contact solder-tails must be fluxed prior to soldering with a mildly active 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.

B. Soldering Guidelines

These connectors can be soldered using wave or equivalent soldering techniques. The temperatures and exposure time shall be within the ranges specified in Figure 6.

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



| SOLDERING PROCESS | TEMPERATURE | | TIME (At Max Temperature) |
|-------------------|-------------|------------|------------------------------|
| | CELSIUS | FAHRENHEIT | |
| Wave Soldering | 260 | 500 | 5 Seconds |

Figure 6

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 connectors for the time and temperature specified. See Figure 7.

Cleaners must be free of dissolved flux and other contaminants. We recommend cleaning with the pc board on its edge. If using an aqueous cleaner, we recommend standard equipment such as a soak-tank or an automatic in-line machine.

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 affect to the connectors; 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.

NOTE If you have a particular solvent that is not listed, contact the PRODUCT INFORMATION number at the bottom of page 1.



| CLEANER | | TIME (Minutes) | TEMPERATURE (Maximum) |
|-------------------|---------|-------------------|--------------------------|
| 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 | | |

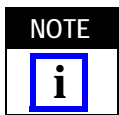
Figure 7

D. Drying

When drying clean assemblies and pc boards, make certain that temperature limitations are not exceeded: 100-125°C max for a period of 5 minutes for standard temperature products. Excessive temperatures may cause connector degradation. Values may vary with different types of automatic cleaning equipment. See the equipment manufacturers recommendations.

3.9. Placement of Crimped Contact in Housing

Normally, an insertion tool is not required to insert the contacts into the housing. If the individual conductors are fragile, an insertion tool is available. Refer to Section 5, TOOLING.



Isopropyl alcohol can be used to lubricate the contact during insertion to help pass through the wire entry seal during assembly.

3.10. Shield Termination

If a cable with a shield is to be used with the connector, the shield can be terminated to the connectors integrated back shell directly or with the application of a braid sock, depending on the required amount of EMI shielding effectiveness required. In either case, it is recommended that the shield termination to the integral be accomplished with a micro-band strap. Refer to Figure 8 and Instruction Sheet 408-32046 for further details.



Figure 8

ALPHA, BIOACT, CARBITOL, KESTER, and LONCOTERGE are trademarks of their respective owners.

3.11. Strain Relief

It is recommended that a strain relief be used to support the conductors after termination. The recommended method is to utilize a lipped, heat shrink boot in conjunction with retention rib feature provided on the connector integral back shell. There are various configurations of boots that can be utilized with the integral back shell which include straight, right-angle, dual wall, and single wall. Refer to Figure 9 and Instruction Sheet 408-32046 for further details.



Figure 9

3.12. Polarizing and Keying Features

To assist in the ease of mating, the CEELOK FAS-T connectors are designed with polarizing key and keyways as well as a triple start coupling tread. Alternate polarizing key locations are available to prevent accidental mis-mating to other CEELOK FAS-T connectors.

4. QUALIFICATION

CEELOK FAS-T Connectors have not yet been sent for agency evaluation and testing.

5. TOOLING

Hand crimping tooling is available for applying the contacts. Insertion and extraction tools are also available to assist in the assembly and repair. See Figure 10.



DHK696 Insertion/Extraction Tool

M22520/2-01
Crimp Tool

K1850 Positioner

Figure 10

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.

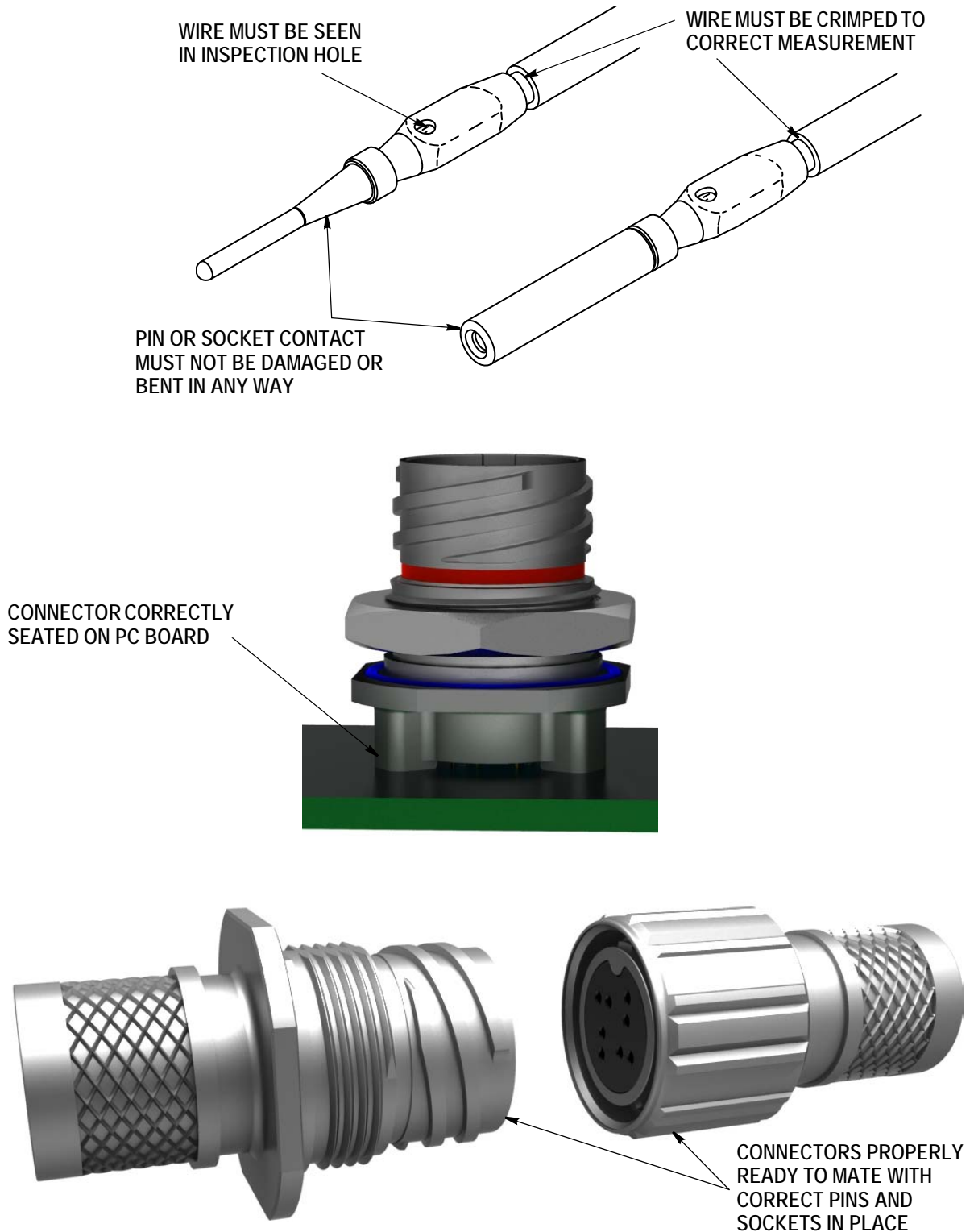


FIGURE 11. VISUAL AID