

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 ± 0.13 [± 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 Commercial 50- and 75-Ohm BNC Press-Fit PC Board Coaxial RF Receptacle Connectors. These connectors are press-fit into pc boards manually by an arbor press or by automatic equipment such as the SM-3 Machine or H-frame power unit assembly.

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.

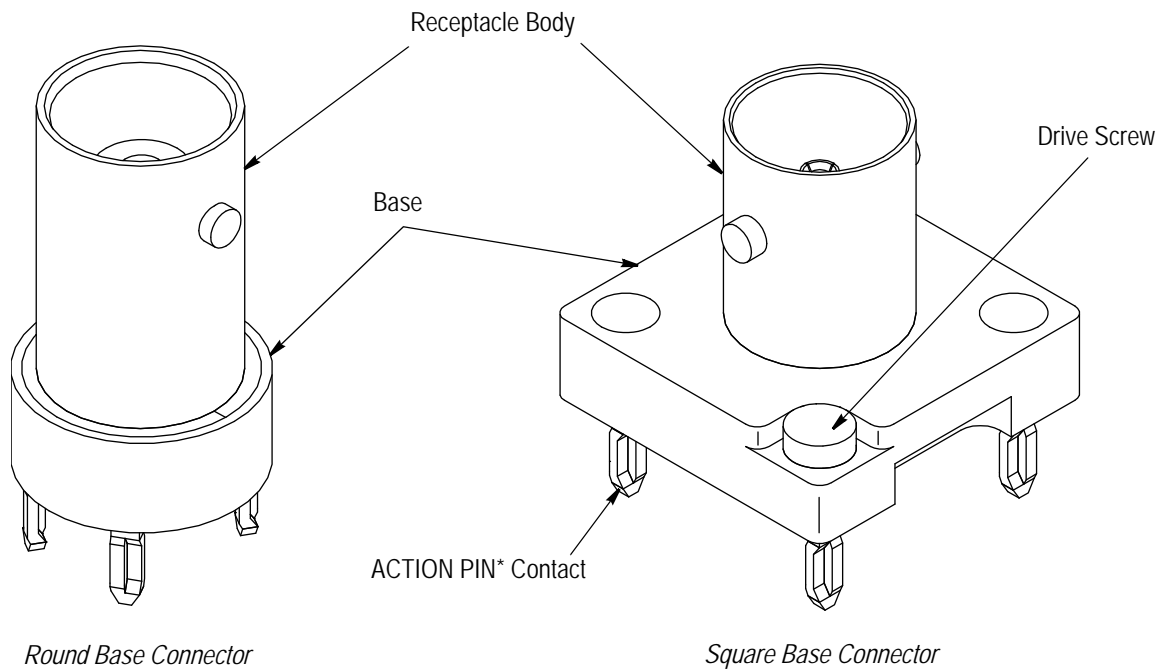


Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

Revisions to this application specification include:

- Updated document to corporate requirements
- New logo

2.2. Customer Assistance

Reference Product Base Part Number 222006 and Product Code 3133 are representative of Commercial 50- and 75-Ohm BNC Press-Fit PC Board Coaxial RF Receptacle 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 Representative, by visiting our website at www.te.com, or by calling PRODUCT INFORMATION or the TOOLING ASSISTANCE CENTER at the numbers at the bottom of this page.

2.3. Drawings

Customer Drawings for each product part number are available from the service network. The information contained in Customer Drawings takes priority if there is a conflict with this specification or with any technical documentation supplied by TE.

2.4. Specifications

Product Specification 108-12103 covers test and performance requirements.

2.5. Manuals

Manual 402-40 is available from the service network. This manual provides information on various flux types and characteristics along with the commercial designation and flux removal procedures. A checklist is attached to the bulletin as a guide for information on soldering problems.

2.6. Instructional Material

The following list includes available instruction sheets (408-series) that provide assembly procedures for product, operation, maintenance and repair of tooling.

408-6923	Manual Arbor Frame Assembly 58024-1
408-9194	Commercial BNC 75-Ohm PC Board Connector with ACTION PIN Contacts

3. REQUIREMENTS

3.1. Storage

A. Ultraviolet Light

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

B. Shelf Life

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

C. Chemical Exposure

Do not store connectors near any chemicals listed below, as they may cause stress corrosion cracking in the components.

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

3.2. PC Boards

A. Material and Thickness

The pc board material shall be glass epoxy (FR-4, G-10). Commercial 50- and 75-Ohm BNC Press-Fit PC Board Coaxial RF Receptacle Connectors are designed for pc boards with a thickness range of 2.36-3.18 mm [.093-.125 in.]. Contact the Product Information or the Tooling Assistance Center number listed at the bottom of page 1 for suitability of other board materials and thicknesses.

B. Tolerance

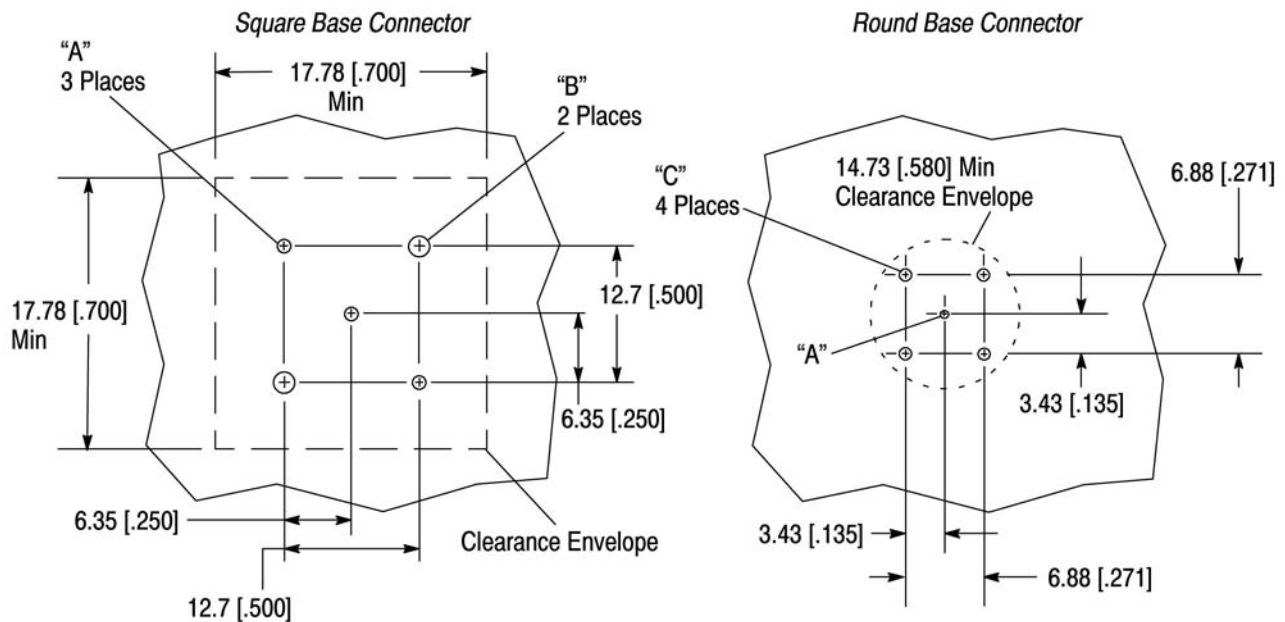
The maximum bow of the pc board shall be 0.03 mm [.001 in.] over the length of the connector.

C. Layout

The mounting and contact holes in the pc board must be precisely located to ensure proper placement and optimum performance of the connector. Design the pc board using the dimensions provided in Figure 2.

NOTE

The layout dimensions apply to the connector side of the pc board. The footprints shown are typical. Other pc board footprints may be available. Contact the Product Information number at the bottom of page 1 for specific layouts.



HOLE DIAMETER	DRILL SIZE	PLATING THICKNESS		HOLE DIAMETER		COPPER HARDNESS (KNOOP)	PAD DIAMETER (MIN)
		COPPER	TIN/LEAD	AFTER PLATING	AFTER REFLOW		
(A) 1.173-1.123 [.0462-.0442]	1.15 [.045] Dia	0.03-0.08 [.001-.003]	0.008 [.0003] Min	0.94-1.09 [.037-.043]	0.91-1.09 [.036-.043]	150 Max	1.57 [.062]†
(B) 1.8-1.75 [.071-.069]	50	0.03-0.08 [.001-.003]	0.008 [.0003] Min	1.65-1.75 [.065-.069]	1.63-1.7 [.064-.067]	150 Max	2.36 [.093]
(C) 1.638-1.588 [.0645-.0625]	52	0.03-0.08 [.001-.003]	0.008 [.0003] Min	1.4-1.57 [.055-.062]	1.37-1.57 [.054-.062]	150 Max	3.18 [.125]

†Pad diameter 1.65 mm [.065 in.] min when hole is non-plated-through.

Figure 2

3.3. Connector Spacing

Spacing between connectors shall meet customer requirements; however, no other components may fall within the clearance envelope specified in Figure 2. No portion of the clearance envelope shall fall outside the confines of the pc board.

3.4. PC Board Support

A customer-supplied pc board support shall be used in conjunction with the seating tool, see Section 5, TOOLING. The board support shall meet the requirements of Figure 3. Use the dimensions given in Figure 2 to determine hole locations for the support.

3.5. Retention Strength

The seated connector-to-board retention strength of the round base connector is a minimum of 444 N [100 lb] in a straight line at 90° to the pc board. A pulling force applied in any other direction diminishes retention strength.

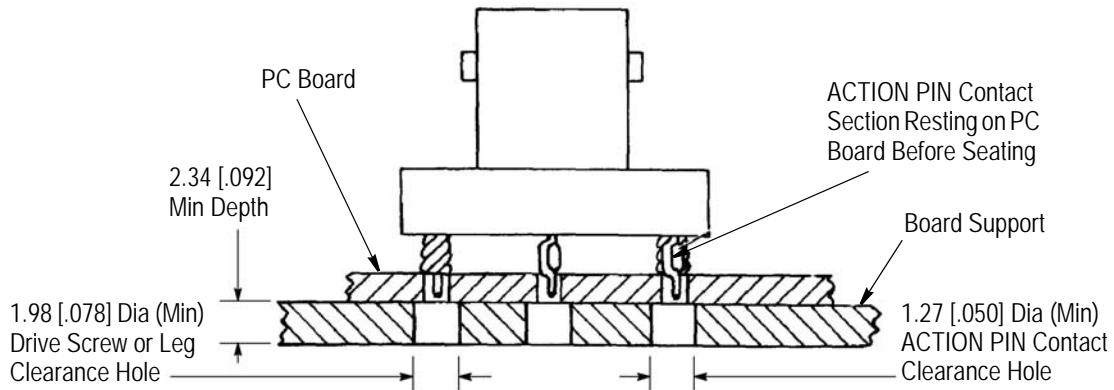


Figure 3

3.6. 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 phone number at the bottom of page 1 for consideration of other types of flux. Some fluxes that are compatible with these connectors are provided in Figure 4.

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

Figure 4

B. Soldering Guidelines

Commercial 50- and 75-Ohm BNC Press-Fit PC Board Coaxial RF Receptacle Connectors can be soldered using wave, double sided non-focused infrared reflow processes (IR) or equivalent soldering techniques. The temperatures and exposure time shall be within the ranges specified in Figure 5. We recommend using SN60 or SN62 solder for these connectors.

NOTE

Manual 402-40 provides some guidelines for establishing soldering practices. Refer to Paragraph 2.5, Manuals.



SOLDERING PROCESS	WAVE TEMPERATURE	TIME (At Max Temperature)
Wave Soldering	260°C [500°F]‡	5 Seconds
Infrared Reflow Soldering	230°C [446°F]	5 Minutes

‡Wave Temperature

Figure 5

C. Cleaning

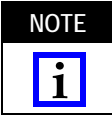
After soldering, removal of fluxes, residues, and activators is necessary. Consult with the supplier of the solder and flux for recommended cleaning solvents. The following is a listing of common cleaning solvents that will not affect the connectors for the time and temperature specified. See Figure 6.

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.

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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 (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 6

D. Drying

When drying cleaned assemblies and printed circuit boards, make certain that temperature limitations are not exceeded: -55° to 105°C [-67° to 221°F] for standard temperature products and -55° to 215°C [-67° to 419°F] for high temperature products. Excessive temperatures may cause housing degradation.

3.7. Connector Seating Requirements

Seated connectors shall meet the requirements of Figure 7.

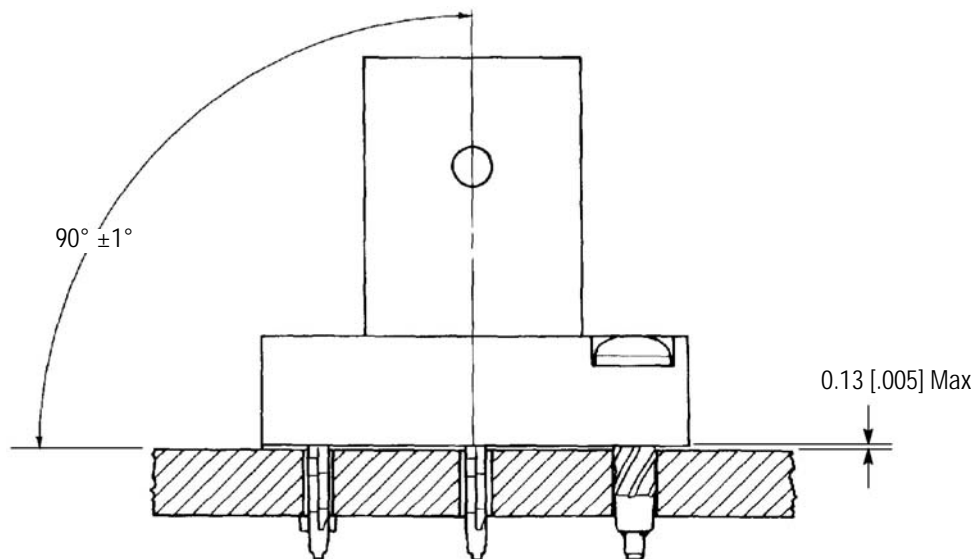


Figure 7

3.8. Ancillary Items

An optional plastic insulating bushing (222163-1), is available for use when round base connectors are likely to be pulled in non-straight directions. The bushing is used in conjunction with a customer-supplied plate, providing multi-directional strain relief. Figure 8 shows proper use of the bushing and cutout dimensions for the plate.

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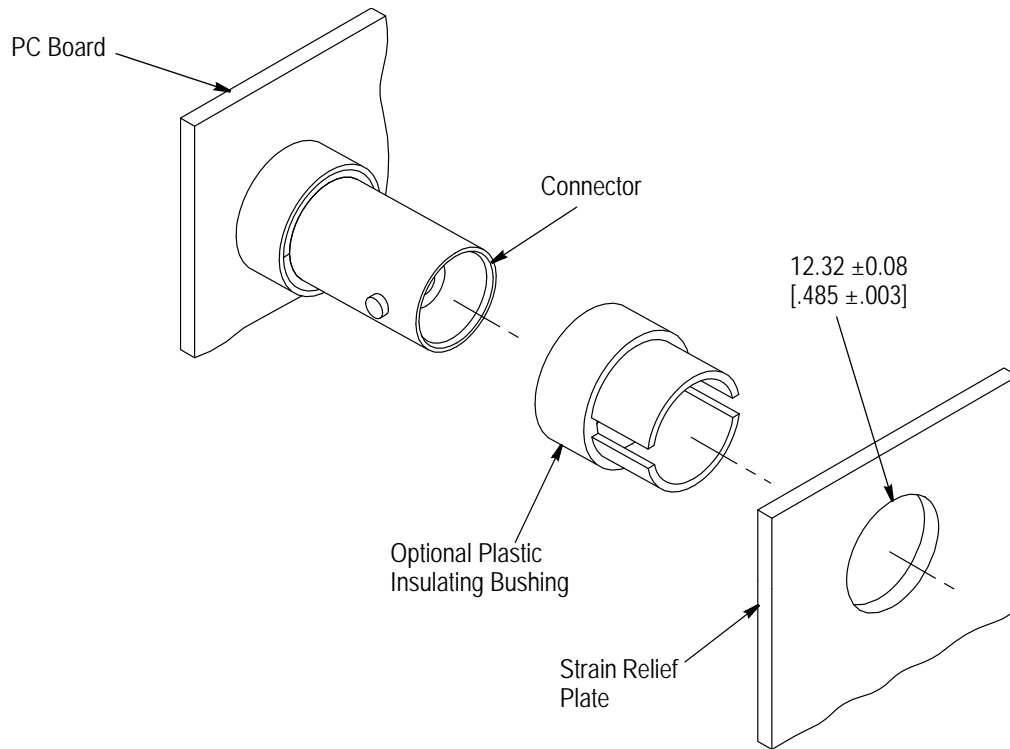


Figure 8

3.9. Repair/Replacement

Commercial 50- and 75-Ohm BNC Press-Fit PC Board Coaxial RF Receptacle Connectors are not repairable if damaged. A damaged connector must be removed, discarded, and replaced with a new connector. Standard desoldering methods must be used to remove these connectors from the pc board.

Holes drilled in the pc board are enlarged during the seating process, and are further enlarged by connector removal. To compensate for this enlargement when replacing a connector, the legs and posts shall be re-soldered.

4. QUALIFICATIONS

Commercial 50- and 75-Ohm BNC Press-Fit PC Board Coaxial RF Receptacle Connectors are Listed in File E81956 by Underwriters Laboratories Inc. (UL), and Certified by CSA International in File LR7189.

5. TOOLING (Figure 9)

Low-volume manufacturing may be accomplished with an arbor frame manual applicator. Higher volume manufacturing may be accomplished with an automatic machine which can be used for simultaneous application of connectors when available seating force equals a minimum of 2224 N [500 lb] per connector. A customer supplied seating tool is required to install Commercial 50- and 75-Ohm BNC Press-Fit PC Board Coaxial RF Receptacle Connectors. Figure 9 provides information on the requirements for this seating tool.

NOTE: Recommended material is tool steel hardened to R_C 55 to 58. ☒ Determine overall length and upper features to suit applicator ram.

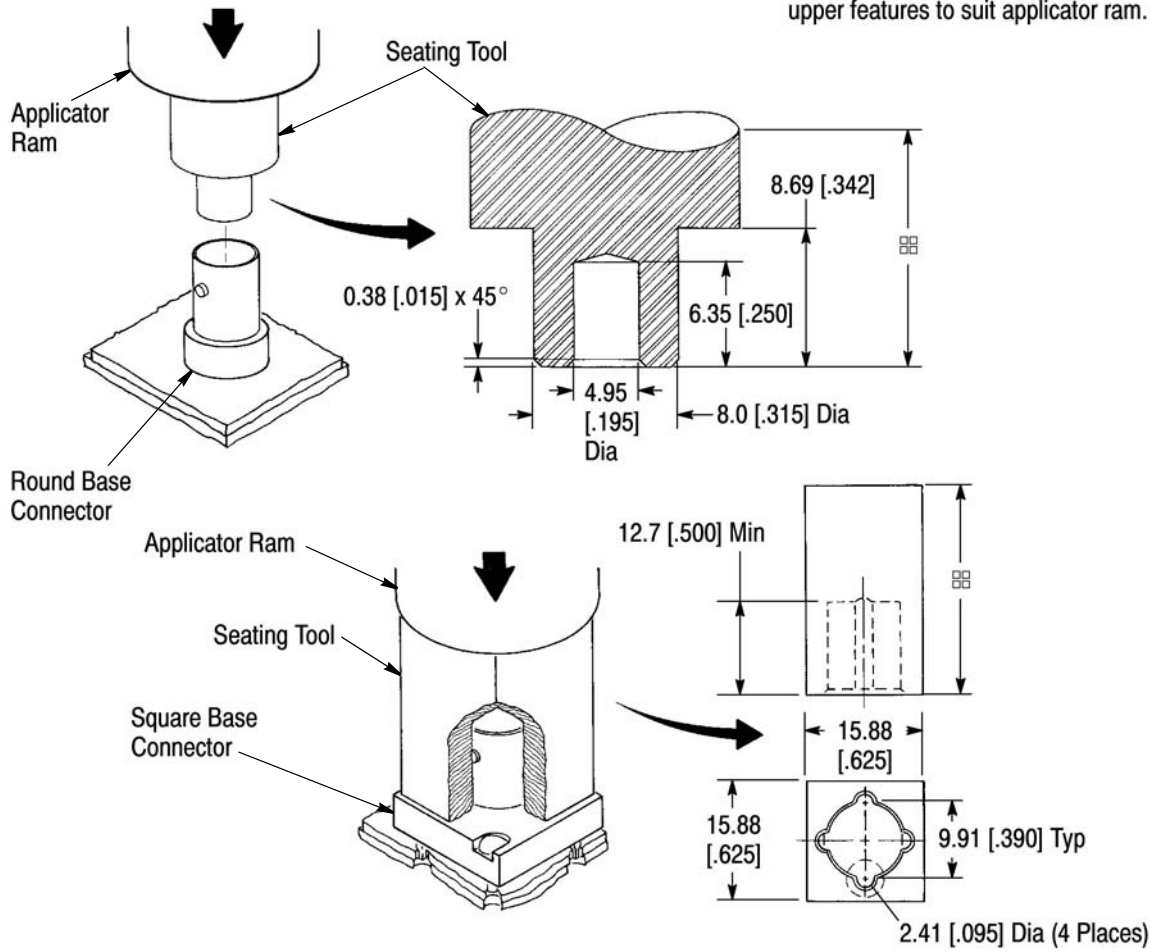


Figure 9

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.

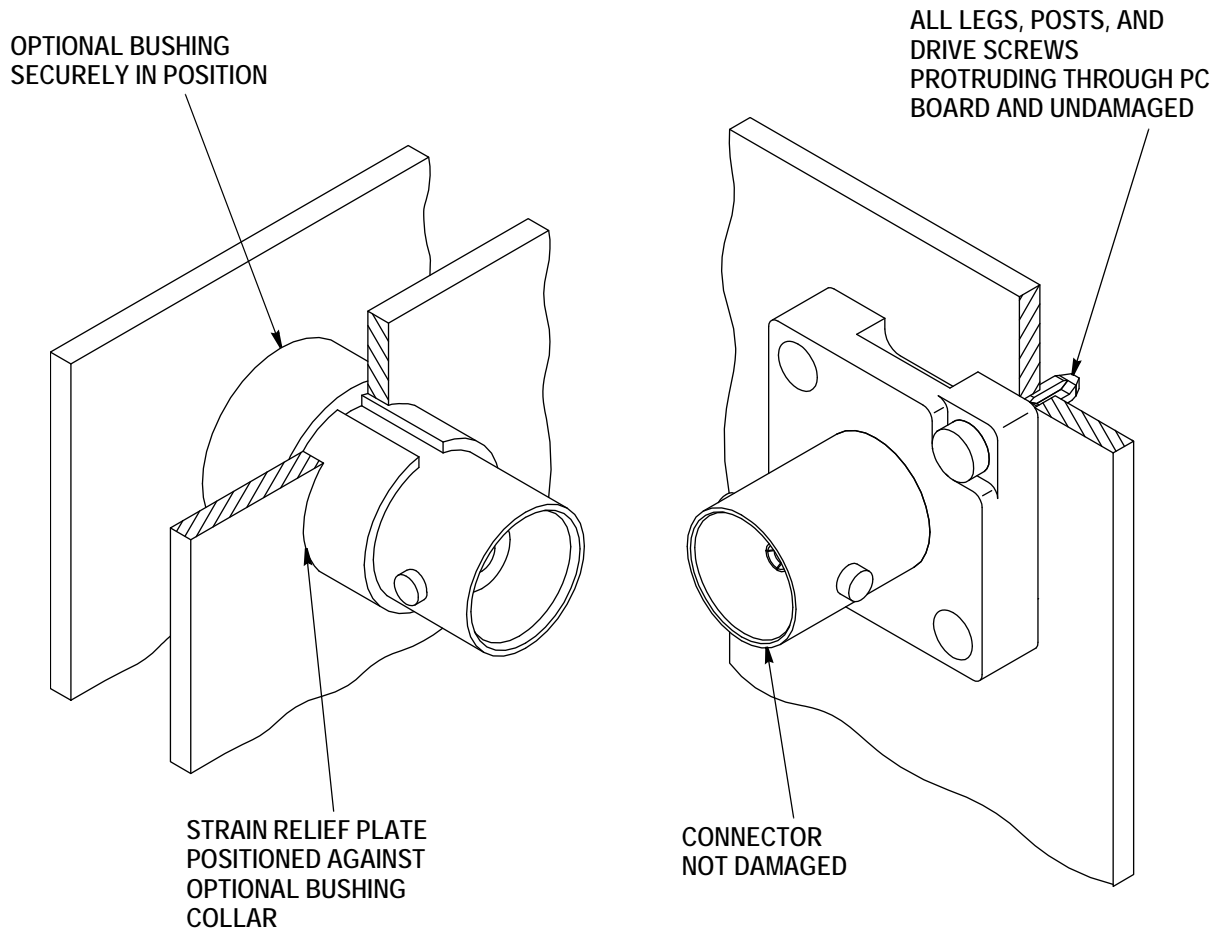


FIGURE 10. VISUAL AID