

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 [.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 the application of AMP* 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.

Figure 1 provides connector features and terms used throughout this specification. Use these terms when corresponding with AMP representatives to facilitate assistance.

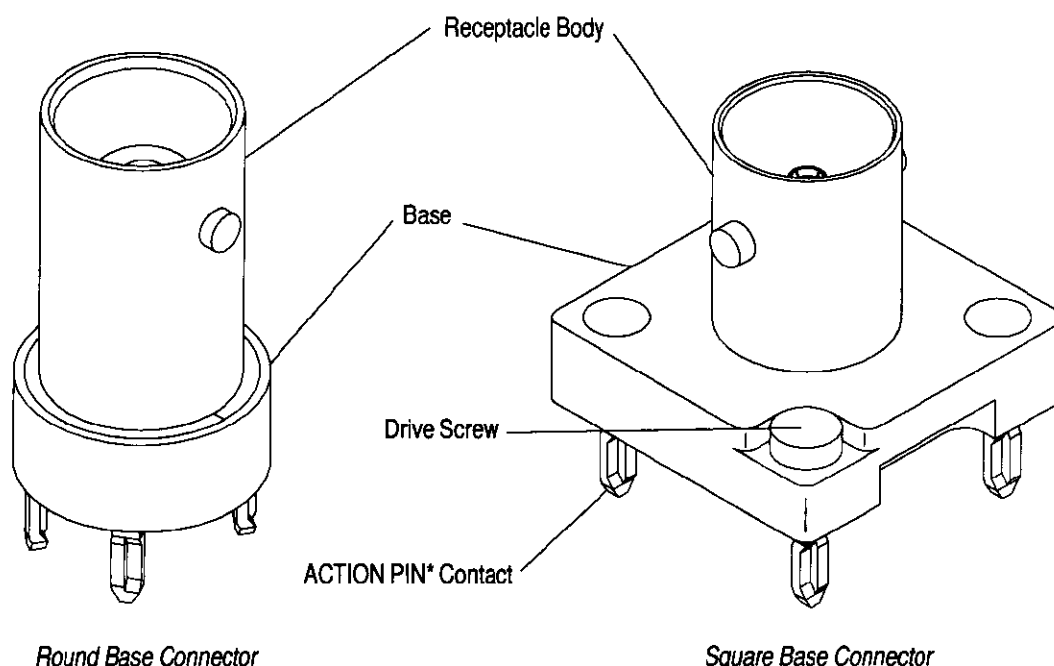


Figure 1

2. REFERENCE MATERIAL**2.1. Revision Summary**

This paragraph is reserved for a revision summary covering the most recent additions and changes made to this specification which include the following:

Per EC: 0990-0083-97

- Update application specification to corporate requirements
- Add new information to Sections 2 and 3
- Change product code from 3347 to 3133
- Change information in the chart in Figure 2
- Add new Section 4, QUALIFICATIONS
- Add new tooling information in Section 5, TOOLING
- Change drawings and information in Figure 9

2.2. Customer Assistance

Reference Part Number 222006 and Product Code 3133 are representative numbers 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 expedite your inquiries through an AMP service network established to help you obtain product and tooling information. Such information can be obtained through a local AMP Representative (Field Sales Engineer, Field Applications Engineer, etc.) or, after purchase, by calling the Tooling Assistance Center or the AMP FAX/Product Information Center number at the bottom of page 1.

2.3. Drawings

AMP 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 AMP Incorporated.

2.4. Specifications

AMP Product Specification 108-12103 covers test and performance requirements.

2.5. Bulletins

AMP Corporate Bulletin 401-52 is available from the service network. This bulletin 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 AMP instruction sheets (408-series) that provide assembly procedures for product, operation, maintenance and repair of tooling; and customer manuals (409-series) that provide setup, operation, and maintenance of AMP machines.

<u>Document Number</u>	<u>Document Title</u>
408-6923	AMP Manual Arbor Frame Assembly 58024-1
408-6927	Design Recommendations for PC Board Support Fixture
408-9194	AMP Commercial BNC 75-Ohm PC Board Connector with ACTION PIN Contacts
409-5567	AMP 10/20 Ton "H" Frame Power Unit Machine No. 803880-6
409-5626	AMP SM-3 Machine No. 814700-[]

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. Printed Circuit 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 [.093-.125]. Contact the AMP FAX/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

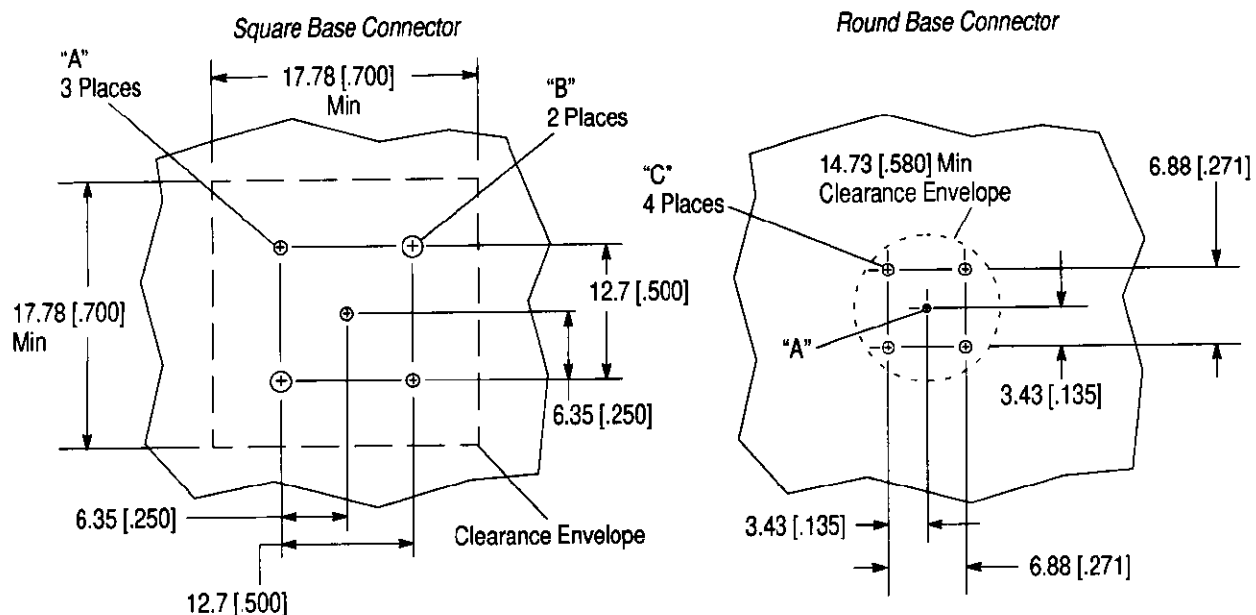
The maximum bow of the pc board shall be 0.03 [.001] over the length of the connector.

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.



HOLE DIA	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 [.065] 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.

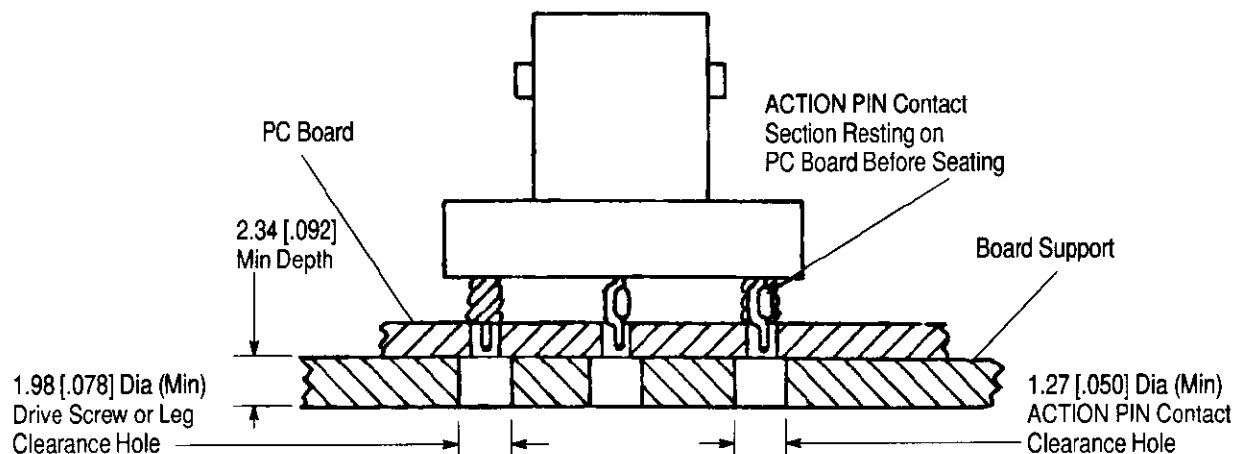


Figure 3

3.5. Retention Strength

The seated connector-to-board retention strength of the round base connector is a maximum 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.

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 [■]
Type RMA (Mildly Activated)	Mild	Noncorrosive	186	611

▲ Product of Kester Solder Co.

■ Product of Alphametals Inc.

Figure 4

B. Soldering Guidelines

Commercial 50- and 75-Ohm BNC Press-Fit PC Board Coaxial RF Receptacle Connectors can be soldered using wave, vapor phase (VPR), 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

AMP Corporate Bulletin 401-52 provides some guidelines for establishing soldering practices. Refer to Paragraph 2.4, Bulletins.

SOLDERING PROCESS	TEMPERATURE		TIME (At Max Temp)
	CELSIUS	FAHRENHEIT	
WAVE SOLDERING	260 [⌘]	500 [⌘]	5 Seconds
VAPOR PHASE SOLDERING	215	419	5 Minutes
INFRARED REFLOW SOLDERING	230	446	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 AMP 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 Tooling Assistance Center or Product Information number at the bottom of page 1.

CLEANER		TIME (Minutes)	TEMPERATURES (Maximum)	
NAME	TYPE		CELSIUS	FAHRENHEIT
Alpha 2110■	Aqueous	1	132	270
Bioact EC-7◆	Solvent	5	100	212
Butyl Carbitol●	Solvent	1	Room Ambient	
Isopropyl Alcohol	Solvent	5	100	212
Kester 5778⚡	Aqueous	5	100	212
Kester 5779⚡	Aqueous	5	100	212
Loncoterge 520●	Aqueous	5	100	212
Loncoterge 530●	Aqueous	5	100	212
Terpene Solvent	Solvent	5	100	212

■ Product of Fry's Metals, Inc. ◆ Product of Petroform, Inc. ● Product of Union Carbide Corp. ⚡ Product of Litton Systems, Inc.

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.

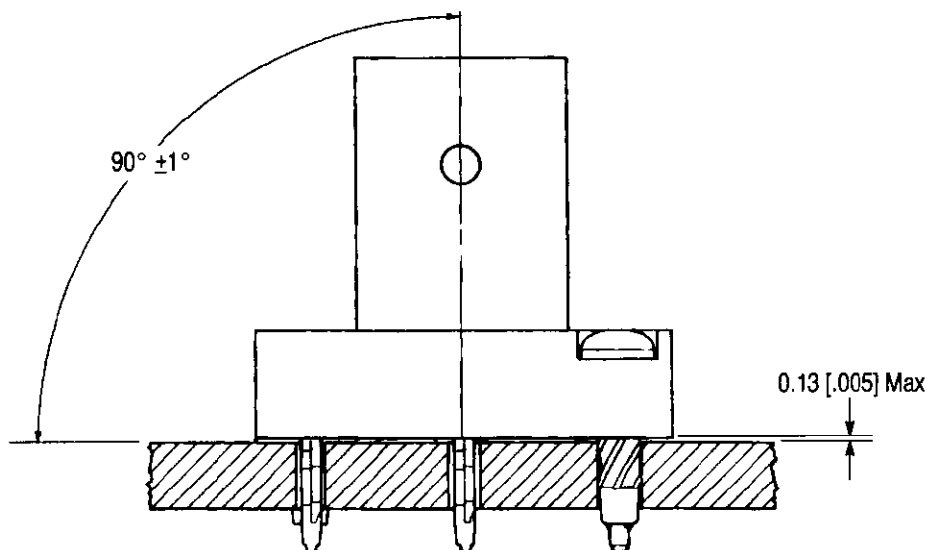


Figure 7

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.

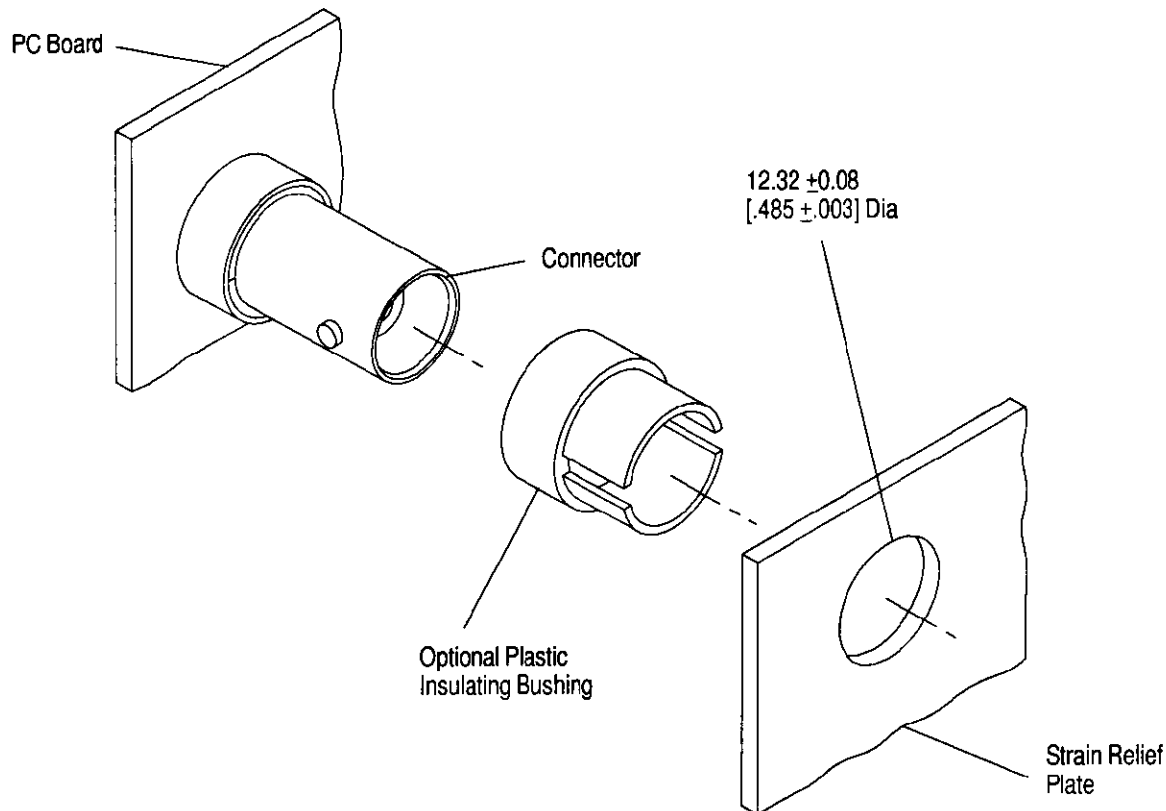


Figure 8

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 resoldered.

4. QUALIFICATIONS

Commercial 50- and 75-Ohm BNC Press-Fit PC Board Coaxial RF Receptacle Connectors are listed under File No. E81956 by Underwriters' Laboratories, Inc. (UL), and certified to the Canadian Standards Association (CSA) under File No. LR7189.

5. TOOLING

Low-volume manufacturing may be accomplished with an arbor frame manual applicator. Higher volume manufacturing may be accomplished with a SM-3 Machine or an H-Frame power unit. The SM-3 Machine or H-frame power unit 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.

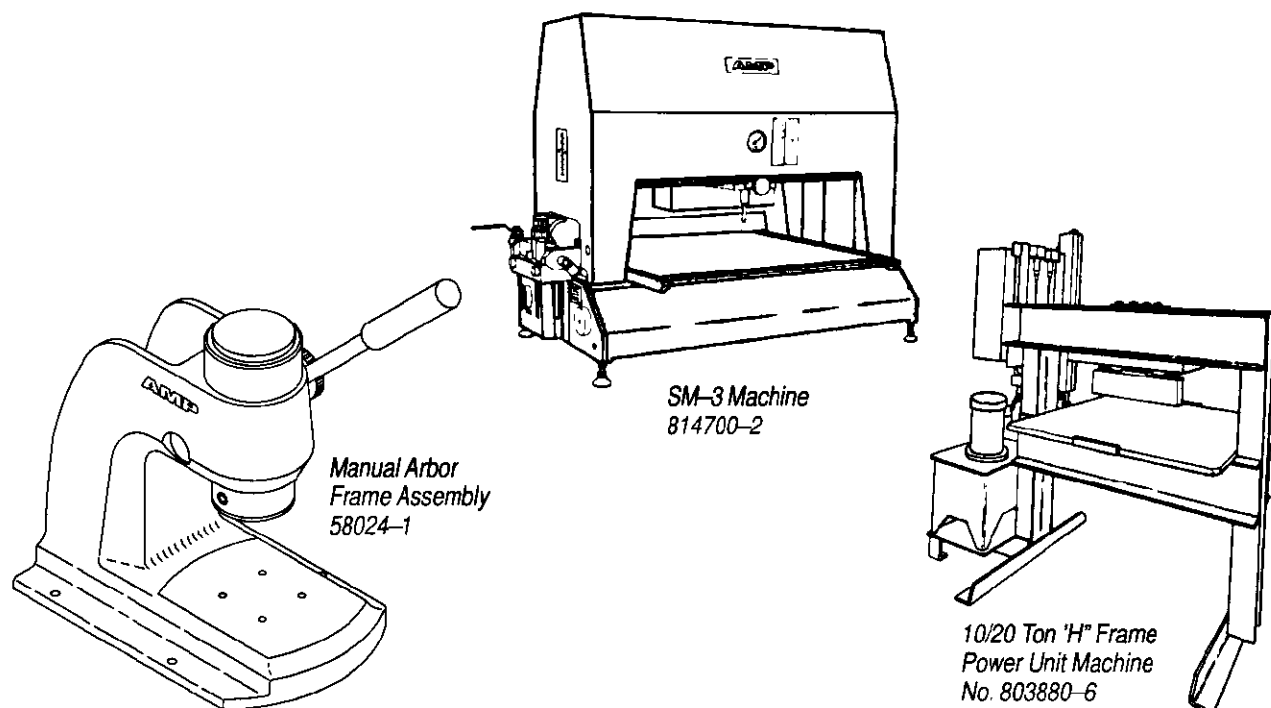
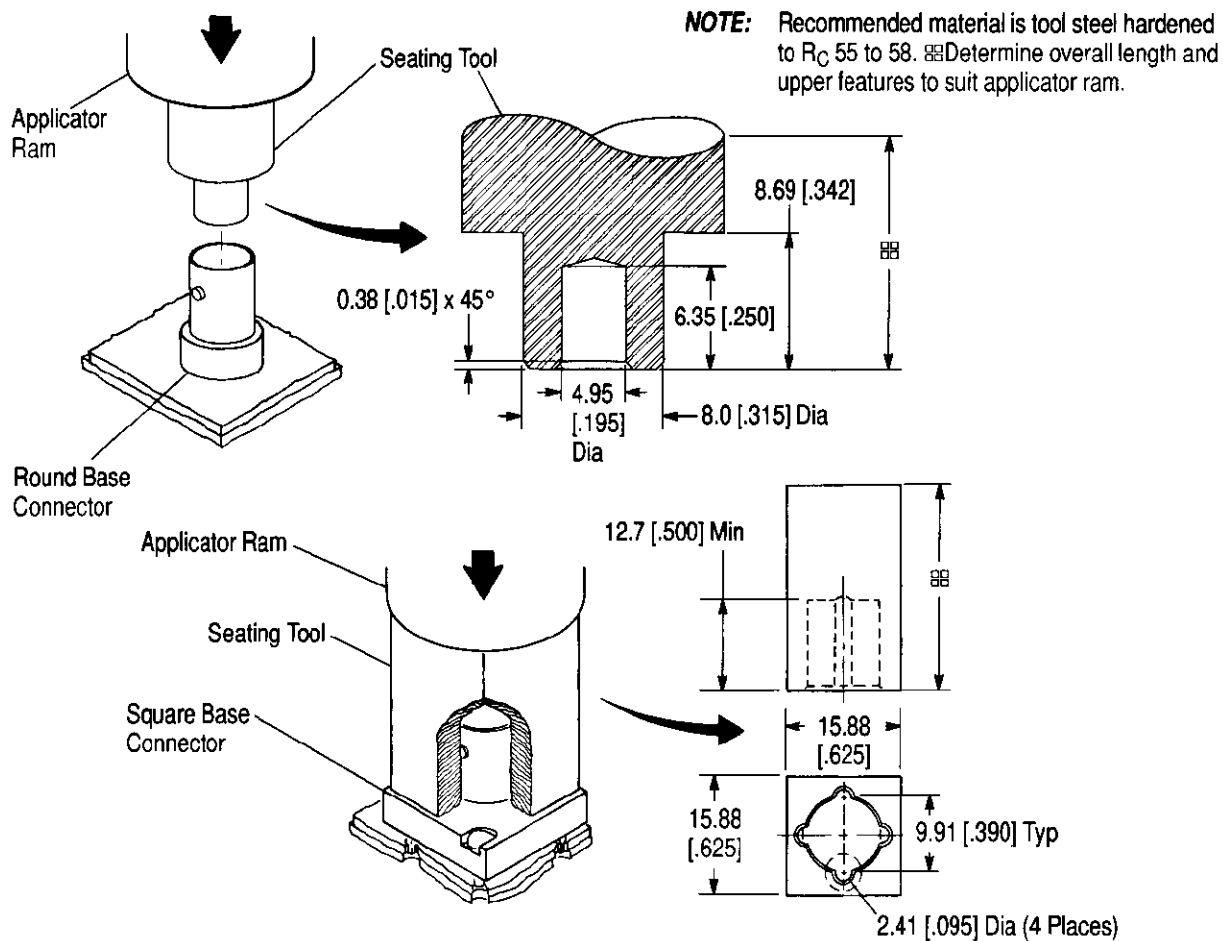


Figure 9

6. VISUAL AID

Figure 10 shows a typical application of Commercial 50- and 75-Ohm BNC Press-Fit PC Board Coaxial RF Receptacle Connectors. 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.

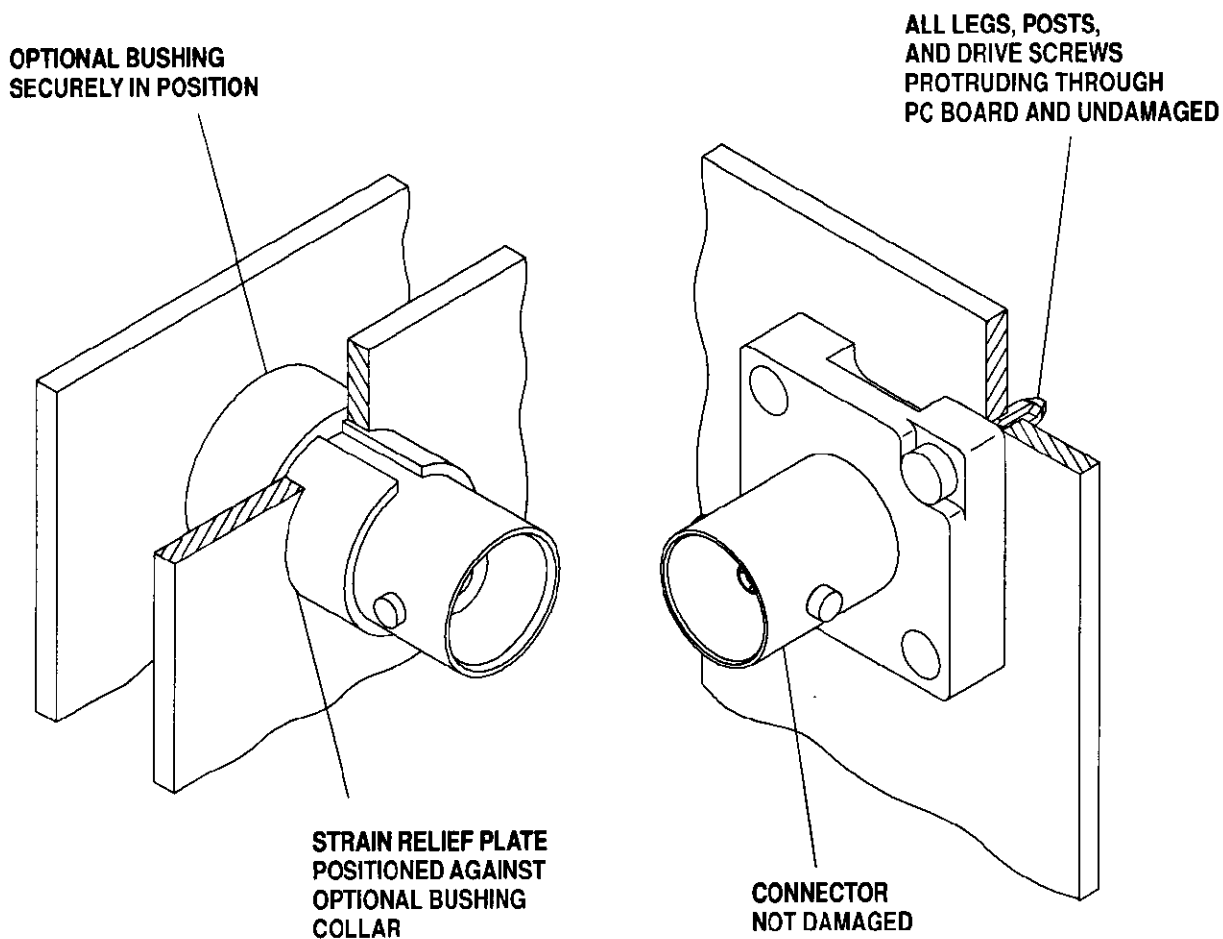


FIGURE 10. VISUAL AID