

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 AMPLIMITE Connectors for Coaxial and Signal HD-20 Contacts. These coax mix plug and receptacle connectors are available with all large contact cavities or with a mixture of large and small contact cavities. The large contact cavities accept Precision Formed Commercial Coaxial Contacts and the small contact cavities accept HD-20 Signal Contacts. Refer to Application Specification 114-10000 for information on HD-20 Signal Contacts. The cavities are marked with a number to provide circuit identification.

The right-angle pc board receptacle connectors contain pre-installed contacts, boardlocks, and threaded inserts or nonremovable screwlocks. They can be placed on the board by hand or robotic equipment, and will mate with compatible in-line plug cable connectors. They are also available as in-line plug and receptacle cable connectors that can be used for free-hanging or panel-mounted applications. Also available are vertical pc board receptacle connectors that contain pre-installed contacts, boardlocks, and threaded inserts. All AMPLIMITE Connectors featured are designed in accordance with industry standard sizes.

When corresponding with TE Connectivity personnel, use the terminology provided on this specification to help facilitate your inquiry for information. Basic terms and features of components are provided in Figure 1.

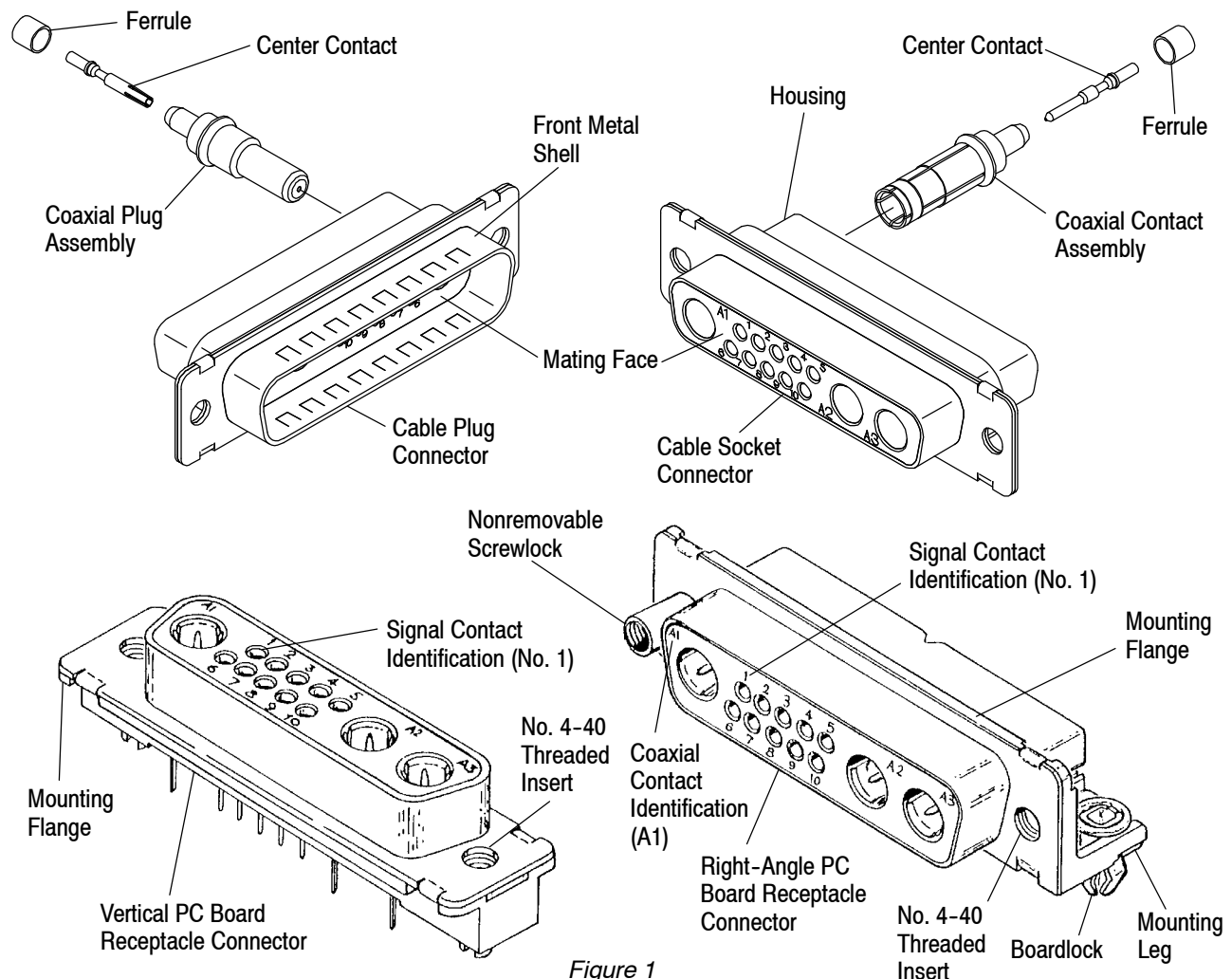


Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

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

- Updated document to corporate requirements
- New logo and format

2.2. Customer Assistance

Reference Part Number 749958 and Product Code 5724 are representative numbers of AMPLIMITE Connectors for Coaxial and Signal HD-20 Contacts. Use of these numbers will identify the product line and expedite your inquiries through a service network established to help you obtain product and tooling information. Such information can be obtained through a local TE Representative or, after purchase, by calling the Tooling Assistance Center or Product Information number at the bottom of page 1.

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. 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 included in the manual as required for information on soldering problems.

2.5. Specifications

A. Product Specifications

Product Specifications 108-1305 and 108-40005 provide product performance requirements and test information.

B. Application Specifications

Application Specification 114-10000 provides contact features, application tooling, and finished requirements for 20-DF Crimp-Type Contacts.

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, as well as setup and operation procedures of applicators; and customer manuals (409-series) that provides setup, operation, and maintenance of machines.

<u>Document Number</u>	<u>Document Title</u>
408-4294	Extraction Tool 543605-1
408-7514	AMPLIMITE High Density (HDP-20) Connectors with Crimp-Type Contacts
408-7516	Screw-Machine Contacts and Application Tooling
408-8083	Ferrule Applicator Assembly No. 812407-1
408-8053	Conversion Guide for Miniature Quick Change Applicators
408-9172	Shielding Hardware Enclosure Kits for AMPLIMITE Connectors
408-9199	Shielding Enclosure Expansion Tool Kits 58241-1, -2, and -4
408-9238	Universal Cable Clamp Kits for AMPLIMITE Connectors
408-9242	Die Assemblies 58237-1 and 58237-2
408-9243	Crimping Die Assembly 58238-1 for AMPLIMITE Connectors
408-9315	Hand Crimping Tool 543344-1
408-9318	Crimping Die Assemblies 543013-[]
408-9404	Insertion/Extraction Tool 91285-1 and Replacement Tips Kits 543382
408-9634	Extraction Tool 58454-1
409-5128	Basic AMP-O-LECTRIC* Model "K" Terminating Machines
409-5842	AMP-O-LECTRIC Model "G" Terminating Machine 354500-[]

3. REQUIREMENTS

3.1. Storage

A. Ultraviolet Light

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

B. Shelf Life

The connectors should remain in the shipping containers until ready for use to prevent damage to the housings. The products should be used on a first in, first out basis to avoid storage contamination that could adversely affect signal transmissions. These connectors have a shelf life of two years from date of manufacture.

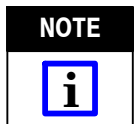
C. Reeled Contacts

When using reeled contacts, store coil wound reels horizontally and traverse wound reels vertically.

D. Chemical Exposure

Do not store housings or contacts 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



Where the above environmental conditions exist, phosphor-bronze contacts are recommended instead of brass if available.

3.2. Shell Size

The AMPLIMITE Coax Mix Connector shell sizes are designed in accordance with industry standards. This specification covers connectors with shell sizes of 2 and 3. See Figure 2.

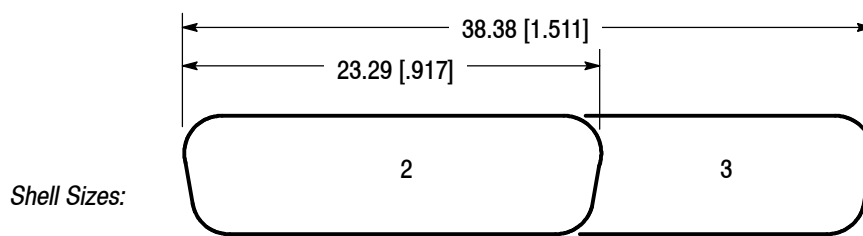


Figure 2

3.3. AMPLIMITE Connector Contacts

AMPLIMITE Coax Mix Connectors accept two types of contacts and two types of wire. HD-20 signal contacts accept standard solid or stranded wire. Precision formed contacts accept coaxial cable.

A. HD-20 Signal Contacts

These signal contacts are available to accept a wire size range of 28 to 18 AWG and an insulation diameter range of 1.73 to 1.02 mm [.068 to .040 in.]. See Figure 3. Instructions for crimping these contacts are packaged with the respective related crimp tooling. A listing of all available tooling, detailed contact features, and requirements to check for proper termination are provided in Application Specification 114-10000.

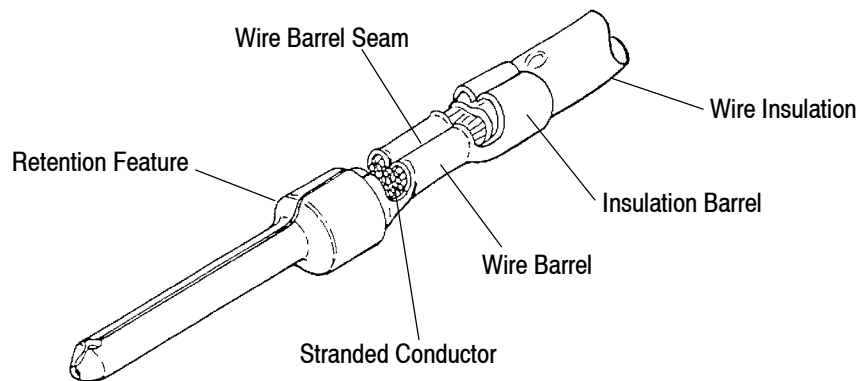


Figure 3

B. Coaxial Contacts

The contacts used in these connectors are unassembled, precision formed contacts terminated onto coaxial cable. See Figure 1.

3.4. Wire Selection and Preparation

The following procedures and special considerations must be followed in the cable stripping operation and connector assembly.

A. Wire Type

The coaxial cable used with precision formed coaxial contacts in AMPLIMITE Coax Mix Connectors is RG/U 179B.

B. Wire Stripping

1. Position the cable ferrule and shield enclosure onto the cable before the cable stripping operation.
2. Strip the cables to the dimensions shown in Figure 4.



CAUTION DO NOT nick, cut, or scrape the center conductor or the braided cable shield during the stripping operation.

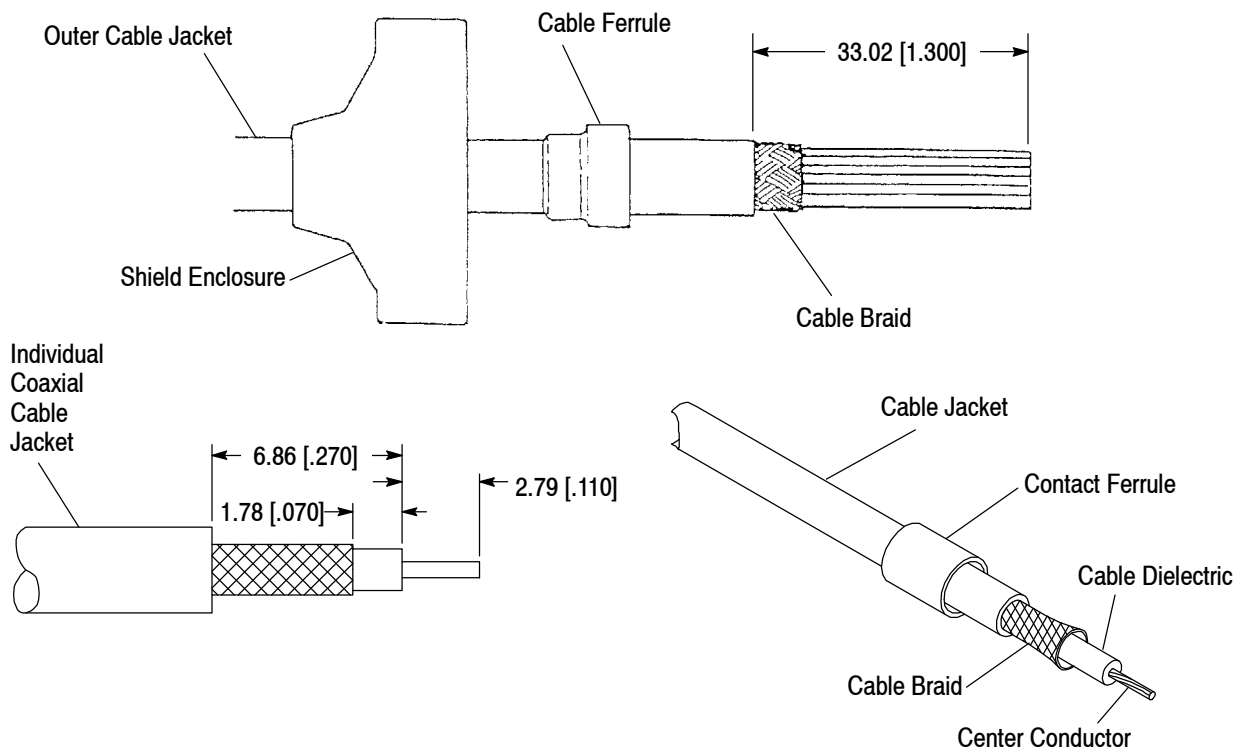


Figure 4

C. Terminated Strip Length

Terminated strip length for the outer cable jacket shall be as indicated in Figure 5.

TERMINATED STRIP LENGTH	
CONTACT POSN	"B" LENGTH
10	33.02 [1.300]

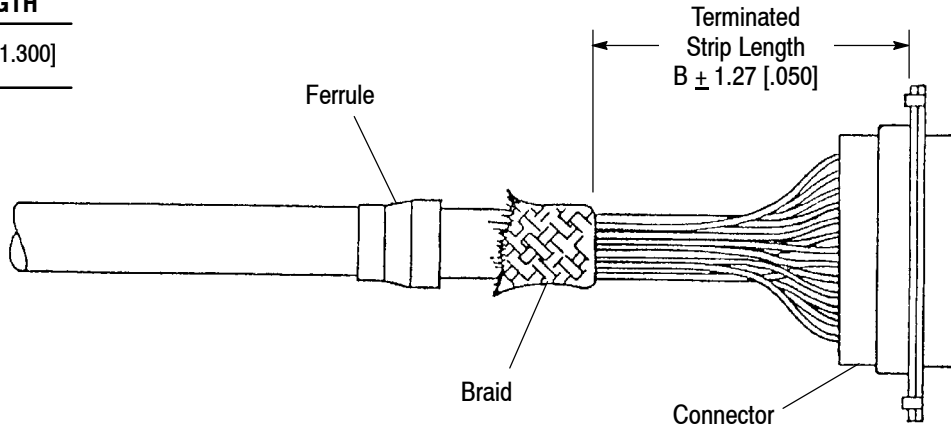


Figure 5

D. Center Conductor Preparation

1. Place the center contact into the positioner of the crimp tool. Insert the center conductor into the contact. Make sure the dielectric is bottomed against the center contact. See Figure 6. Crimp the center contact using the Daniels tool and positioner referenced in Section 5, TOOLING.

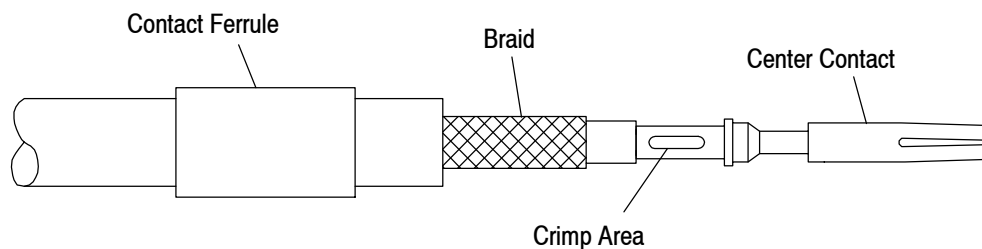


Figure 6

2. Check the crimp height of the center contact with the dimensions given in Figure 9.
3. Flair the braid enough to accept the contact barrel of the coaxial contact plug assembly. Insert the center contact into the contact assembly until the center contact snaps into the clutch mechanism. The flared braid must be over the barrel portion of the assembly. See Figure 7.

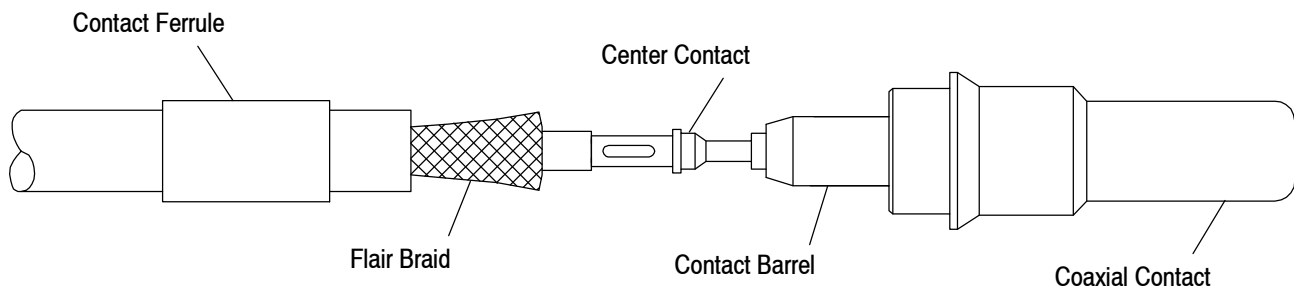


Figure 7

4. Slide the contact ferrule over the braid until it is flush with the back of the contact assembly. See Figure 8. Crimp the contact ferrule using the Daniels tool and die assembly referenced in Section 5, TOOLING. Check the crimp height of the contact ferrule with the dimensions given in Figure 9.

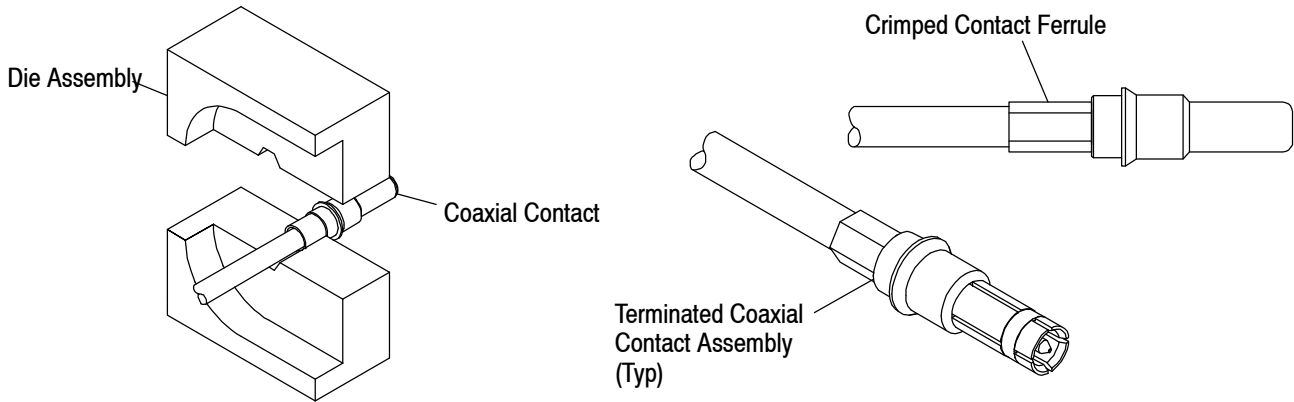
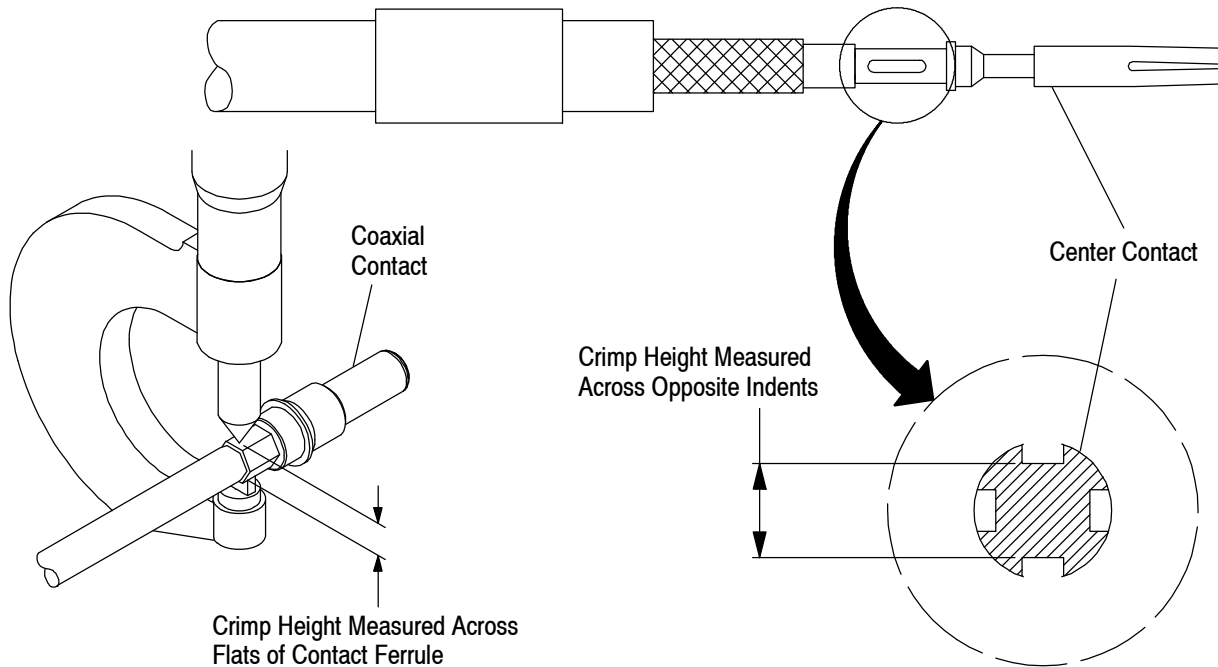


Figure 8

3.5. Center Contact and Ferrule Crimp Height

See Section 5, TOOLING, and Figure 23 for application tooling information. You may use another manufacturer's equivalent tooling; however, the crimp measurement across the hex flats must conform to the dimensions in Figure 9. The dies must be wide enough to crimp the entire length of the contact ferrule.



WIRE SIZE	CENTER CONTACT CRIMP TOOL DANIELS AFM8, PN M22520/2-01 TYCO ELECTRONICS PN 601966-1			CONTACT FERRULE CRIMP TOOL DANIELS HX4, PN 22520/5-01 TYCO ELECTRONICS PN 608650-1		
	POSITIONER	CRIMP SETTING	CRIMP HEIGHT	DIE SET	CLOSURE	CRIMP HEIGHT
RG/U 179B	DANIELS PN K920	4	0.71-0.61 [.028-.024]	DANIELS PN Y196	(A) 3.25 [.128]	3.33-3.18 [.131-.125]
	TYCO ELECTRONICS PN 543606-1			TYCO ELECTRONICS PN 543607-1	(B) 2.67 [.105]	2.74-2.59 [.108-.102]

Figure 9

3.6. Axial Concentricity

The axial concentricity of a crimped contact shall be within an area defined by the diameter of a circle that has the same center as the centerline of the contact. See Figure 10.

NOTE: The axial concentricity of crimped contacts shall not exceed 0.28 [.011] inch total indicator reading (TIR).

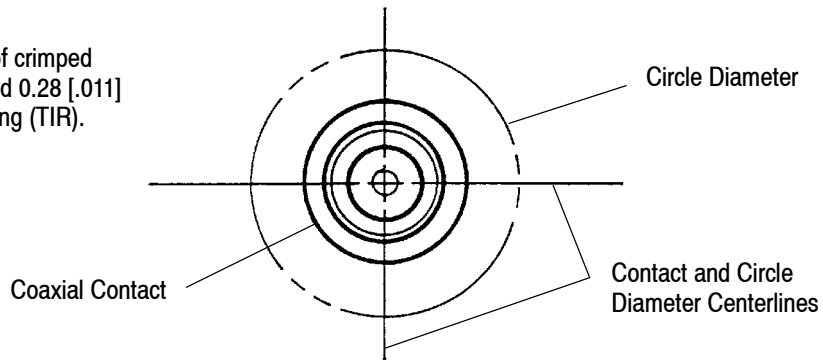


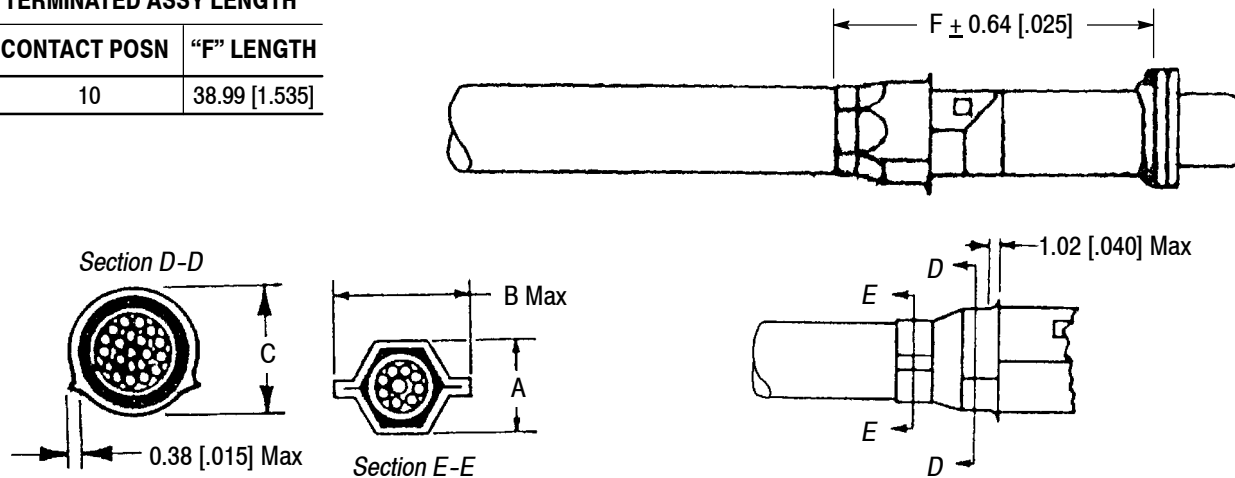
Figure 10

3.7. Ferrule Crimp Requirements

Slide the cable ferrule onto the cable prior to stripping the cable. Keep the larger diameter end of the ferrule if so configured toward the end to be terminated. After the wires and contacts have been terminated, slide the ferrule until it is over the braid. Crimp the ferrule according to the instructions packaged with the appropriate tooling. See Figure 11 for cable ferrule crimp requirements.

TERMINATED ASSY LENGTH

CONTACT POSN	"F" LENGTH
10	38.99 [1.535]



CABLE DIAMETER ACCEPTED	CABLE CRIMP "A"	CABLE CRIMP "B"	SHIELD CRIMP "C"
4.19-4.83 [.165-.190]	$4.5 \pm 0.13 [.177 \pm .005]$	10.21 [.402]	$10.9 \pm 0.13 [.429 \pm .005]$
4.83-5.51 [.190-.217]	$5.41 \pm 0.13 [.213 \pm .005]$	9.58 [.377]	
5.51-6.25 [.217-.246]	$6.07 \pm 0.13 [.239 \pm .005]$	---	
6.25-7.21 [.246-.284]	$6.68 \pm 0.13 [.263 \pm .005]$	10.85 [.427]	
7.21-8.23 [.284-.324]	$7.65 \pm 0.13 [.301 \pm .005]$	---	
8.23-9.52 [.324-.375]	$8.66 \pm 0.13 [.341 \pm .005]$	---	
9.52-11.10 [.375-.437]	$9.98 \pm 0.13 [.393 \pm .005]$	---	
10.16-11.56 [.400-.455]	$10.49 \pm 0.13 [.413 \pm .005]$	---	

Figure 11

3.8. Wire Bend Radii

It is important not to restrict contacts in any way that may adversely affect the wire dress of the cable. TE Engineering recommends that individual cables should be dressed to a bend radius of at least ten times the cable outside diameter. Likewise, cable bundles should be dressed to a bend radius of at least ten times the diameter of the bundle.

3.9. Mating Dimension

The dimension in Figure 12 is needed to ensure full mating of connectors. This dimension must be considered when determining location and panel considerations when mounting connectors.

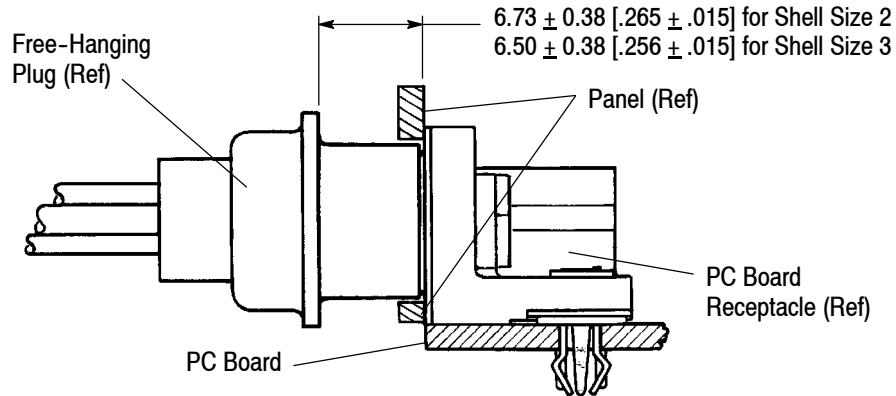


Figure 12

3.10. Connector Spacing

Care must be used to avoid interference between adjacent connectors and/or other components. The information provided in Figure 13 is to ensure proper mating.



The information provided is for manual placement of connectors. If robotic equipment is used, other space allowances will be required for the grippers.

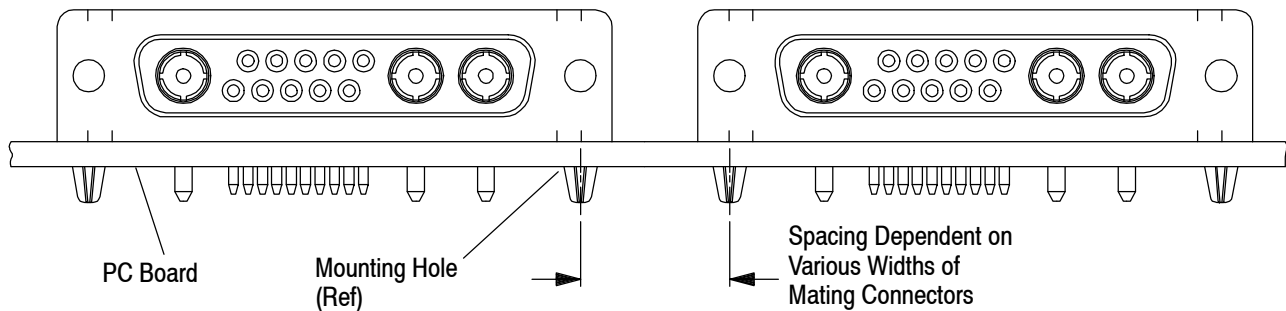
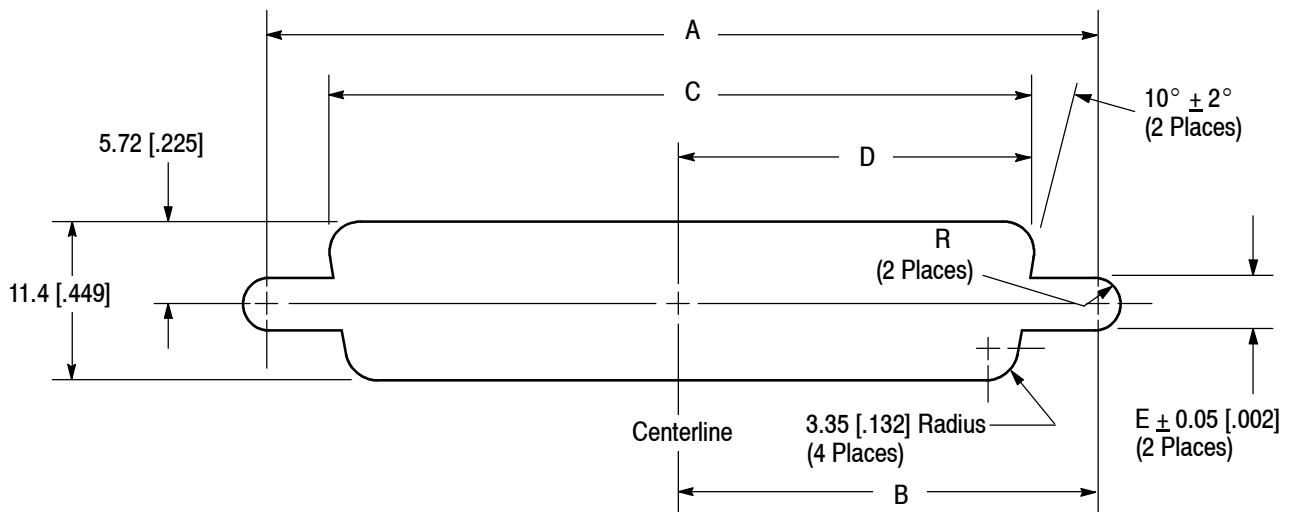


Figure 13

3.11. Panel Mounting

Panel mounting is optional for these connectors. For pc board receptacles, it will provide additional support for the solder joints during mating and unmating of connectors. PC board receptacles can ONLY be rear mounted. Either front or rear mounting is acceptable for the cable connector. The connector mounting flanges have 4–40 internal threads that will accept screwlocks or panel mounting hardware. See Figure 14 for panel cutout dimensions.

Accessory screwlocks are designed to secure a connector to a panel 1.58 mm [.062 in.] thick. They can be used with thinner panels; however, washers are recommended to make up the thickness difference and provide a bottoming surface for the mating connector flange. Screwlocks should be tightened to a torque of 0.45 N•m (4 in.-lb) maximum. The 4–40 internal threads in the screwlocks will accept commercially available screws and jackscrews.



SHELL SIZE	DIMENSION					
	A	B	C	D	E1†	E2‡
2	33.32 [1.312]	16.66 [.656]	28.80 [1.134]	14.40 [.567]	3.05 [.120]	4.83 [.190]
3	47.04 [1.852]	23.52 [.926]	42.52 [1.674]	21.26 [.837]	3.05 [.120]	4.83 [.190]

† E1 Use this dimension when hardware is used to secure the connector to a panel.

‡ E2 Use this dimension when screwlocks are pre-installed and not used to secure the connector to a panel.

Figure 14

3.12. Polarization

The AMPLIMITE Connectors are polarized by the keystone configuration of the mating faces. Keying plugs are NOT recommended for use in these connectors. If using identical connectors in close proximity to each other, we recommend the use of a visible marker or sticker to prevent mismatching.

3.13. Shielding

These connectors feature tin-plated steel shells which provide continuity for EMC (Electro Magnetic Compatibility) applications. When mated with corresponding metal shell connectors, shielding and grounding continuity are achieved. Use of attaching metal hardware or boardlocks provides an additional degree of electrical continuity to any ground path on the pc board inclusive of hardware mounting holes.

3.14. PC Board Receptacle Connectors

PC board connectors are supplied with pre-installed contacts that have right-angle solder tines, 4-40 threaded inserts or nonremovable screwlocks, and boardlocks. They are designed to mate with cable plug connectors that have a mirror-image mating face. Cable connectors are supplied with contact cavities that accept precision formed crimp-type coaxial and signal contacts.

A. Material and Thickness

1. Board material will be glass epoxy (FR-4, G-10).
2. Board thickness shall be 1.57 ± 0.18 mm [.062 ± .007 in.].

Contact the Product Information Center or the Tooling Assistance Center number listed at the bottom of page 1 for suitability of other board materials or thicknesses.

B. Tolerance

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

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 connector. The "X" and "Y" symbols on the pc board layout represent customer established datums. They are the origin for the basic dimension (XXX and YYY datum), the point from which ALL hole positions must be located. Design the pc board using the dimensions provided in Figure 15. The layout shows the top (connector) side of the board.

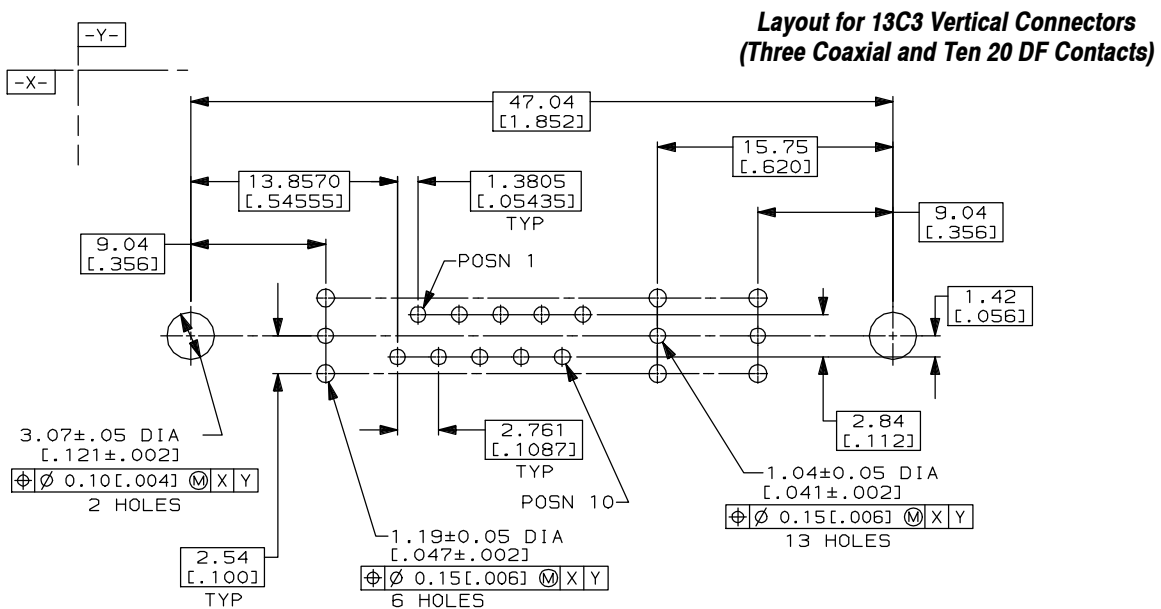
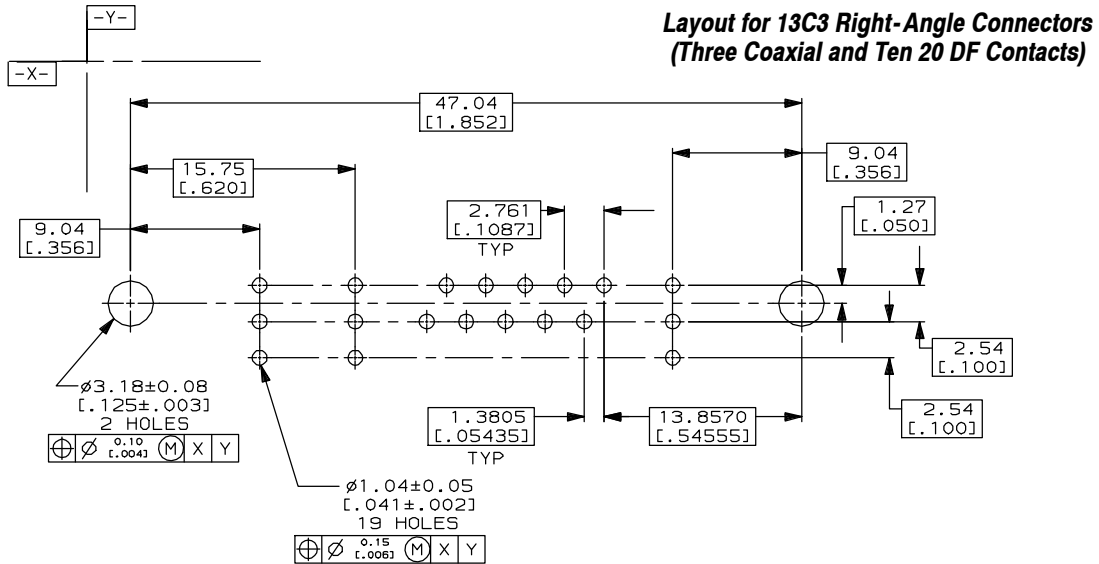
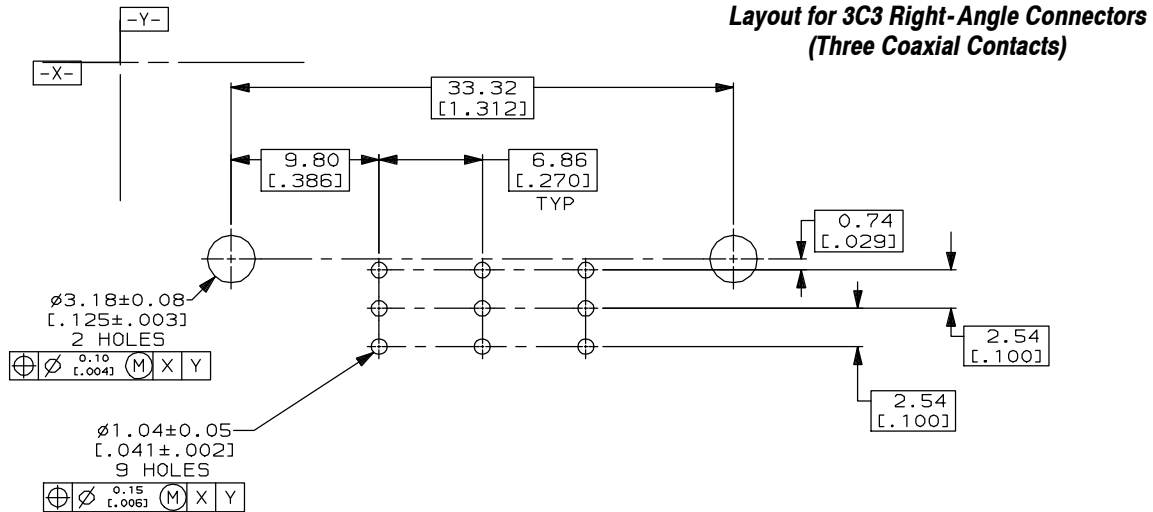


Figure 15

3.15. PC Board Contact Tine Holes

The holes in the pc board for the contact tines must be drilled and plated through to specific dimensions. See Figure 16.

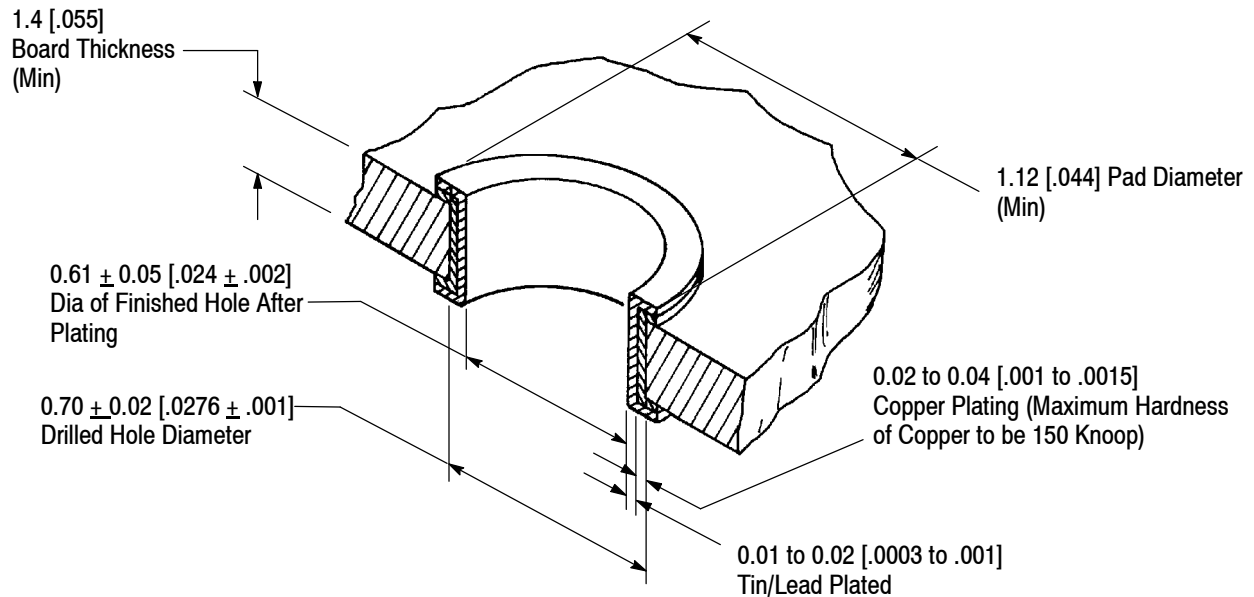


Figure 16

3.16. Hardware for PC Board Receptacle Connector

These connectors have been designed with the standard hardware shown in Figure 17. They will accommodate other types of commercially available mating hardware. If you are designing a connector for a system with some other type of hardware, contact the Tooling Assistance Center number on page 1 for design assistance.

A. Boardlocks

Boardlocks have gripping shoulders that pass through the pc board at the same time the contact tines are inserted through the board. They lock into position when the housing is seated on the board.

B. Screwlocks (Removable or Nonremovable)

Screwlocks provide a means of securing mating connectors with commercially available jackscrews or 4-40 threaded hardware. The torque limit is 0.23 N•m [2 in-lb] applied from the mating face side. The maximum pushout force is 89 N [20 lb-force] applied from the mating face side.

C. 4-40 Threads in Flange

4-40 threads inserts provide a means of mounting a pc board connector to a panel and/or to a mating connector. They will accept removable hex screwlocks and captivated or commercially available 4-40 threaded hardware. The torque limit is 0.45 N•m [4 in-lb] applied from the mating face side. The maximum pushout force is 89 N [20 lb-force] applied from the mating face side.

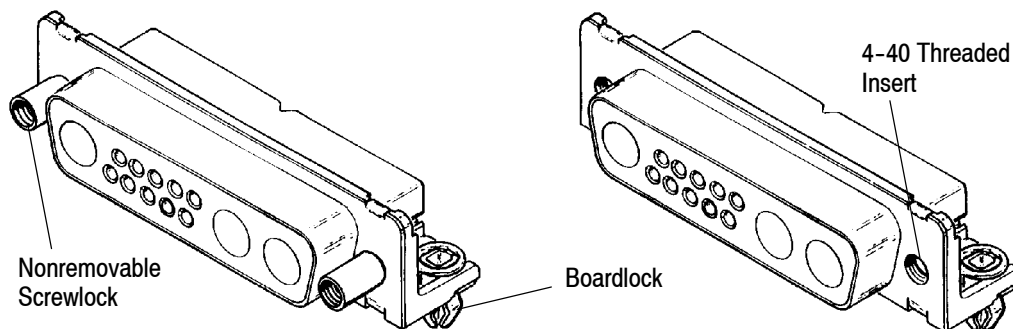


Figure 17

3.17. Hardware for Plug Connectors

A. Screw Retainers

Screw retainers provide a means of captivating retaining screws in mounting flanges of plug connectors that will engage threaded inserts or screwlocks of mating receptacle connectors. There is a closed retainer which is positioned on the connector flange and a captive screw is threaded through it. There is also an open end retainer for which the captive screw is inserted through the mounting flange and the retainer is then slid onto the flange to captivate the screw. These retainers can be used when mating with connectors that have threaded inserts and nonremovable screwlocks. See Figure 18.

B. Metal Shield

The shield braid of the cable must be folded back over the cable jacket. Then the hinge tabs of the metal shields must be inserted into the hinge tab slots in the connector at approximately 45° and rotated into alignment for mating with each other. See Figure 18. The cable ferrule is then positioned on the shield collar and crimped in place using the crimp tooling information provided in Section 5, TOOLING.



When crimping one-piece economy backshells with ferrules, remove the ferrule stop from the die assembly.

C. Enclosure

The enclosure is slid over the back of the shield until it encapsulates the mounting flanges of the connector. Jackscrews are inserted through the enclosure and into the mounting flange holes of the connector. See Figure 18.

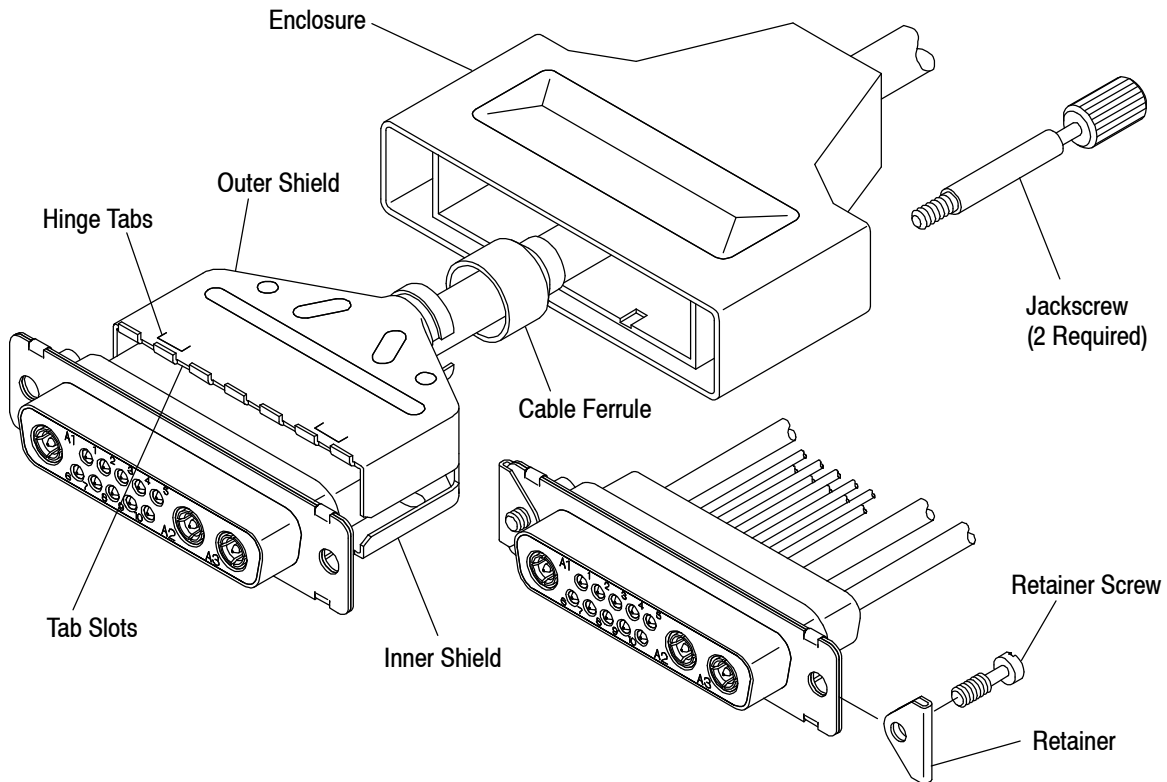


Figure 18

3.18. PC Board Connector Placement



The connectors should be handled only by the housing to prevent deformation or other damage to the contact tines.

A. Manual Placement

Align the connector contact tines with the appropriate holes in the pc board. Start all solder tines into the board; then, when the boardlock starts to engage the board, press on the connector until it seats on the pc board.

B. Robotic Placement

The robotic equipment must be adjusted to feed, pick up, and place connectors on the pc board with an accuracy of 0.25 mm [.010 in.]. The connector datum surfaces detailed on the customer drawing will ensure correct placement of the connector. For information on robotic equipment, see Section 5, TOOLING.

After the connector is snapped into the pc board, the boardlocks are soldered with the connector solder tines during the soldering process.

3.19. 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 19.

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

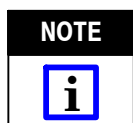
Figure 19

B. 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 20.



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.



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

Figure 20

C. 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.

D. Soldering Guidelines

Coax Mix 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 21. We recommend using SN60 or SN62 solder for these connectors.



*AMPLIMITE Board Mount Coax Mix Vertical and Right-Angle Connectors are compatible with typical surface mount soldering processes consisting of 215°C [419°F] max and one minute max exposure time. These temperatures **DO NOT** apply to 3C3 right-angle connectors.*



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

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 21

3.20. Checking Installed Connector

The AMPLIMITE Coax Mix Connector must be seated on the pc board to the dimensions shown in Figure 22.

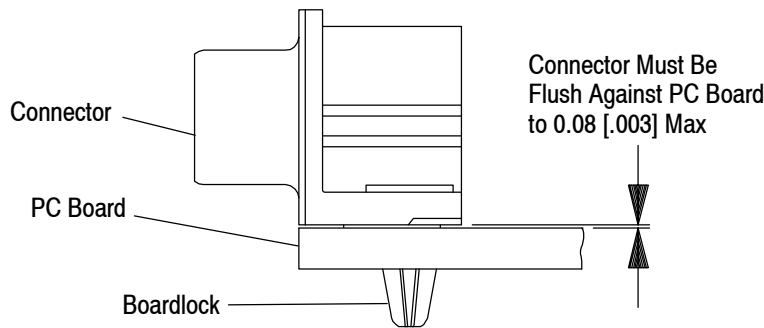


Figure 22

3.21. Repair/Removal

Use an extraction tool to remove individual contacts from connectors for replacement or for relocation to another housing cavity. Extraction Tool 543605-1 (Instruction Sheet 408-4294) is used to extract coaxial contacts from plug connectors and Extraction Tool 58454-1 (Instruction Sheet 408-9634) is used to extract coaxial contacts from receptacle connectors. Use Extraction Tool 91285-1 for removal of HD-20 contacts. Damaged or worn contacts may be replaced provided there is sufficient slack, after restripping the wire, to insert the new contact into the connector. Refer to Section 5, TOOLING. Damaged pc board connectors may be removed from the pc board by standard de-soldering methods.

4. QUALIFICATION

AMPLIMITE Coax Mix PC Board Receptacle and Free-Hanging or Panel Mounted Plug Connectors have been Component Recognized by Underwriters Laboratories Inc. (UL) in File E28476 and Listed in File E81956, and Certified to CSA International in File LR7189.

5. TOOLING

Figure 23 provides tool part numbers and instructional material related to AMPLIMITE Coax Mix Connectors and coaxial contacts. Application Specification 114-10000 provides tooling information for HD-20 contacts.

NOTE

TE Tool Engineers have designed machines for a variety of application requirements. For assistance in setting up prototype and production line equipment, contact TE Tool Engineering through your local TE Representative or call the Tooling Assistance Center number at the bottom of page 1.

- *Positioners*

Positioners have been designed specifically to the configuration of the screw machine pin and socket contacts. They are used with 4/8 indent hand crimping tools.

- *4/8 Indent Hand Crimping Tool*

The 4/8 Indent Hand Crimping Tool has been designed to form indents to the proper depth in the center contact wire barrel. They must be used in conjunction with the positioner designed for the contact.

- *Hand Crimping Tool*

Hand crimping tools provide the power source for crimping the contact ferrule using a specific die set. They may also be used for prototype and low-volume applications such as repair of damaged contacts.

- *Crimping Die Assemblies*

Crimping Die Assemblies for crimping the ferrules are available for the specific ferrule. They are designed for easy installation and removal in hand crimping tool frame assemblies or applicators.

- *Applicator*

Applicators are designed for high volume, heavy duty, production requirements. The applicators can be used in bench or floor model power units.

NOTE

Each applicator is shipped with a metal identification tag attached. DO NOT remove this tag or disregard the information on it. Also, a packet of associated paperwork is included in each applicator shipment. This information should be read before using the applicator; then it should be stored in a clean, dry area near the applicator for future reference. Some changes may have to be made to the applicators to run in all related power units. Contact the Tooling Assistance Center number located at the bottom of page 1 for specific changes.

- *Power Units*

A power unit is an automatic or semi-automatic device used to assist in the application of a product. Power unit includes the power source used to supply the force or power to an applicator.

NOTE

The Model "K" AMP-O-LECTRIC Terminating Machine PN 565435-5 has been superseded by the Model "G" Terminating Machine PN 354500-1 (Customer Manual 409-5842) for new applications. For existing applications, the Model "K" is still recommended because of the large number of installed machines.

- *Robotic Equipment*

Robotic equipment for placement of connectors on a pc board must have a true position accuracy of 0.25 mm [.010 in.] to ensure proper location and insertion of the contact tines. This includes gripper and fixture tolerances as well as equipment repeatability. It must use the connector datum surface to ensure reliable connector placement.

- *PC Board Support*

A pc board support must be used to prevent bowing of the pc board during insertion of the connectors. It should have a flat surface with holes or a channel large enough to receive the contact tines during installation.

- *Expansion Tools*

Expansion tools are recommended for expanding the cable exit hole in the enclosure to ease insertion of the jacketed cable into the enclosure.

- *Extraction Tools*

Extraction Tools are designed to release the contacts inside the connector housing without damaging the housing or contacts.

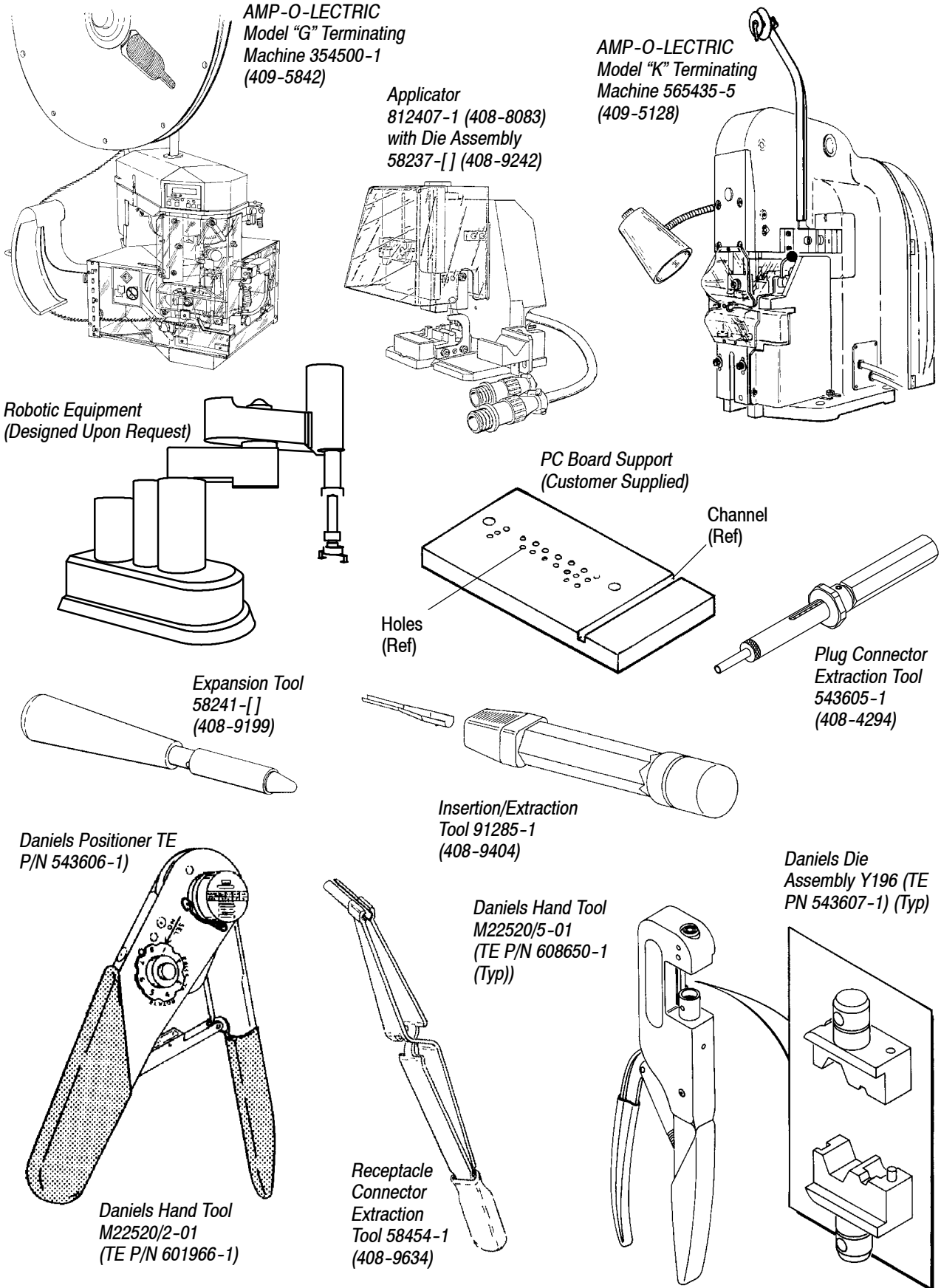


Figure 23

6. VISUAL AID

Figure 24 shows a typical application of an AMPLIMITE Connectors for Coaxial and Signal HD-20 Contacts. 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.

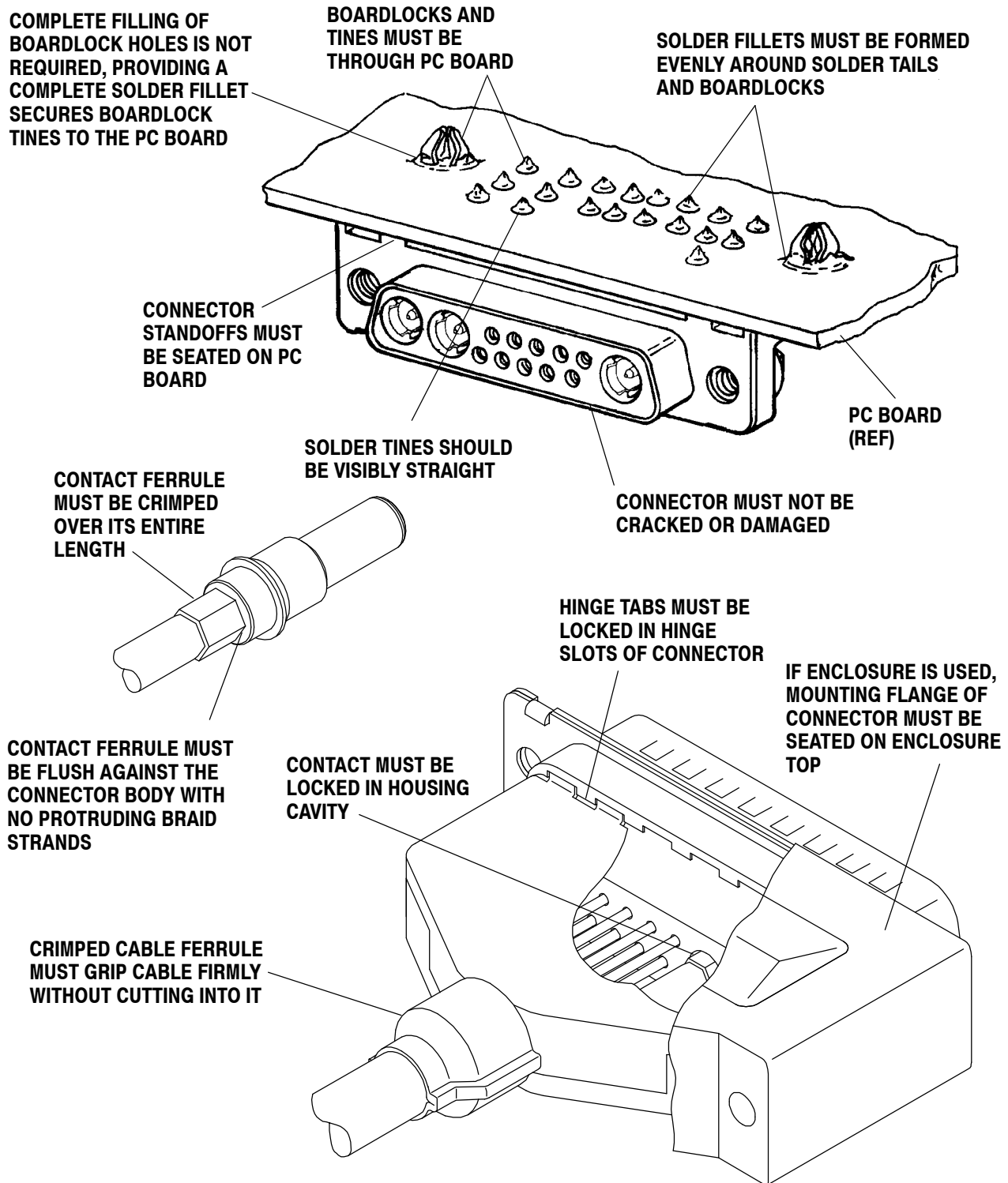


FIGURE 24. VISUAL AID