

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 $\pm 2^\circ$.

1. INTRODUCTION

This specification covers the application requirements for AMP® AMPLIMITE Stack II Standard HD-20 Connector Assemblies for right-angle, printed circuit (pc) board applications. Each assembly consists of two 9-, 15-, 25-, or 37-position connectors and is available as both plugs, both receptacles, or a combination of one of each. The connectors have contact tails for soldering to the pc board and are available with a rear cover. The mounting flanges are equipped with threaded screwlocks or 4-40 threaded inserts for additional support with use of commercially available hardware. The connectors are also available with boardlocks or mounting holes. They are designed for hand placement on a pc board.

Terms that are used throughout this specification should be used when corresponding with AMP personnel to facilitate assistance. Basic types and features of these assemblies are provided in Figure 1.

2. REFERENCE MATERIAL

2.1. Revision Summary

This paragraph is reserved for a revision summary of changes and additions made to this specification. No summary is required on this initial release (Rev O).

2.2. Customer Assistance

Reference Part Number 750585 and Product Code 7380 are representative numbers of AMP AMPLIMITE Stack II Standard HD-20 Connector Assemblies. 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 Technical Assistance Center or AMP FAX/Product Information number at the bottom of this page.

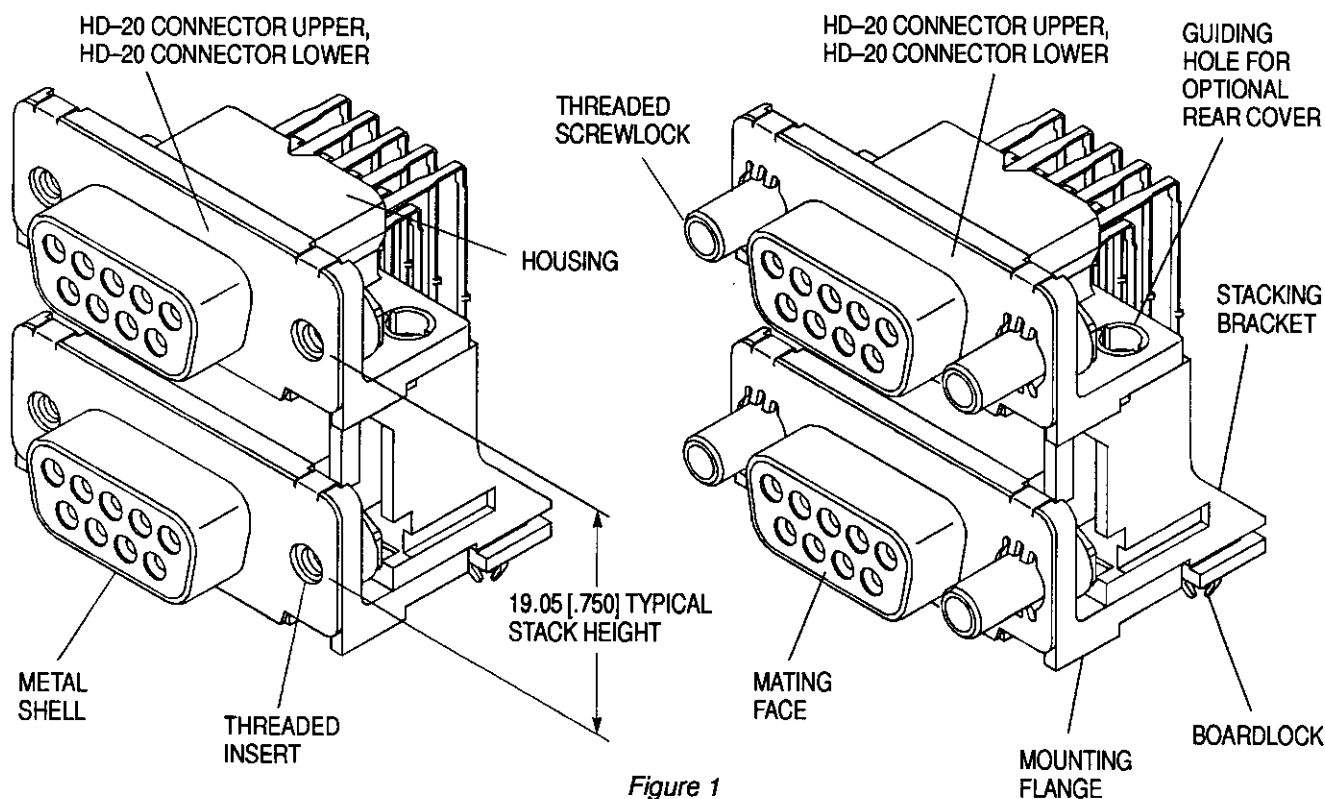


Figure 1

2.3. Drawings

AMP Customer Drawings for product part numbers 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 other technical documentation supplied by AMP Incorporated.

2.4. Bulletins

AMP Corporate Bulletin 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 required for information on soldering problems.

2.5. Specifications

AMP Product Specification 108-40028 covers test and performance requirements.

3. REQUIREMENTS

3.1. Material

The component materials are: stacking brackets and inserts of zinc, eyelets of brass, housing and cover of thermoplastic, metal shields of carbon steel, and contacts of copper alloy, nickel underplating with tin plated solder tails and gold plated mating ends.

3.2. Storage

Connector assemblies should be kept in the shipping container until ready for use. They should be used on a first in, first out basis to avoid storage contamination adversely affecting signal transmission and solderability.

3.3. Circuit Identification

Each contact cavity is numbered on the mating face of each connector. The number one location for plug connectors is exactly opposite of the number one position for receptacle connectors. Each number one location is identified on the pc board layout provided in this specification.

3.4. Printed Circuit Board

A. Material

Glass epoxy (FR-4, G-10) is the recommended material for pc boards. Contact AMP through the service network for other materials that may be used under controlled conditions.

B. Thickness

These connectors are designed to accommodate a range of applications. Connectors with boardlocks are designed for 1.57 [.062]-thick pc boards. Connectors with mounting holes only are designed for up to 3.18 [.125]-thick pc boards (maximum).

C. Layout

The contact holes and mounting holes must be precisely located to assure proper contact tail placement and optimum performance of the connector. The "X" and "Y" symbols on the pc board layouts represent customer established datums. They are the origin of the basic dimensions (XXX and YYY), the point from which all hole positions must be located. See Figure 2.

NOTE

All of the following pc board layouts depict the top (component) side of the pc board.

UPPER: SHELL SIZE 4 WITH 37 CONTACT POSITIONS
 LOWER: SHELL SIZE 4 WITH 37 CONTACT POSITIONS

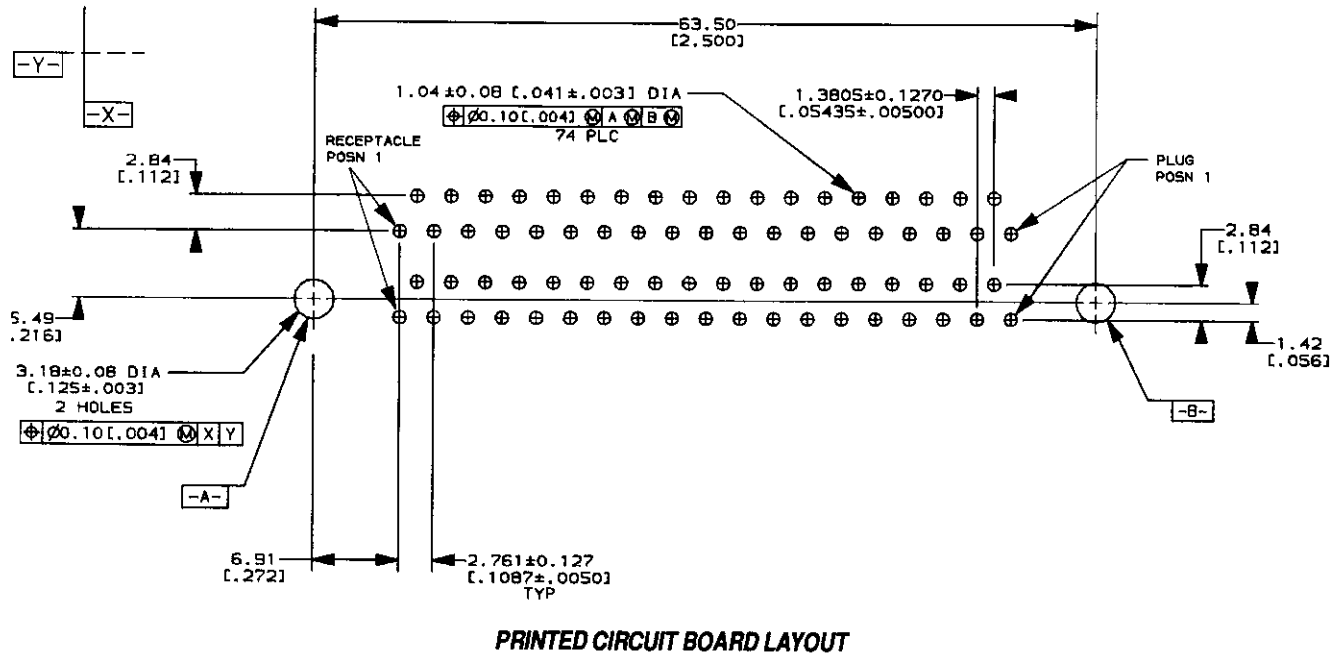


Figure 2 (End)

3.5. Mating Dimensions

The distance between the mounting flanges of the mating connectors and the thickness of the panel must be within dimensional limits to assure full mating of the connectors. See Figure 3.

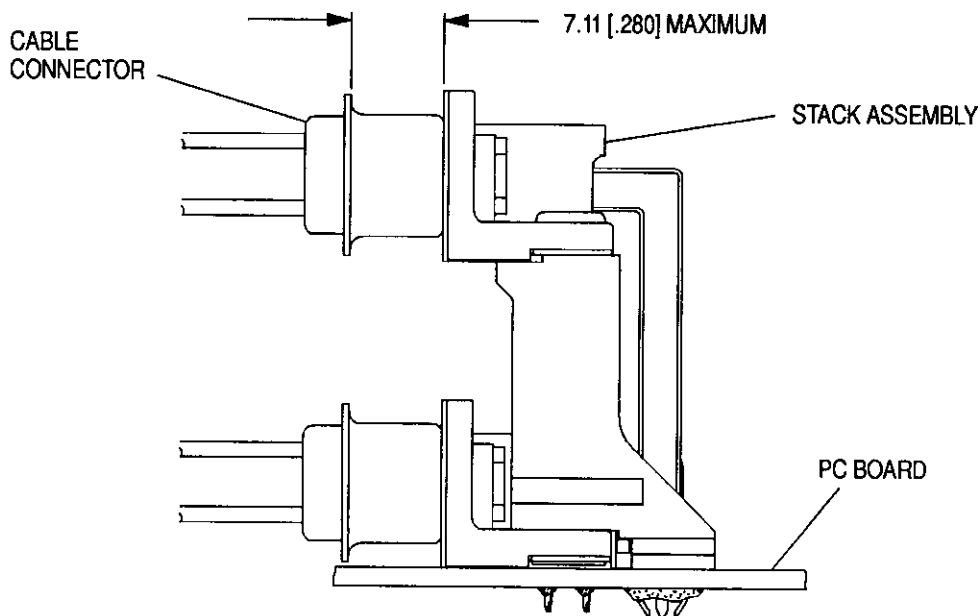


Figure 3

3.8. Polarizing and Keying

The keystone mating face of the connectors prevents accidental inversion of mating connectors. To prevent mismating of identical connectors used in close proximity of each other, keying plugs may be placed in the upper connector. See Figure 6.

NOTE

If keying plug is used, the corresponding pin cavity in the mating plug MUST BE EMPTY.

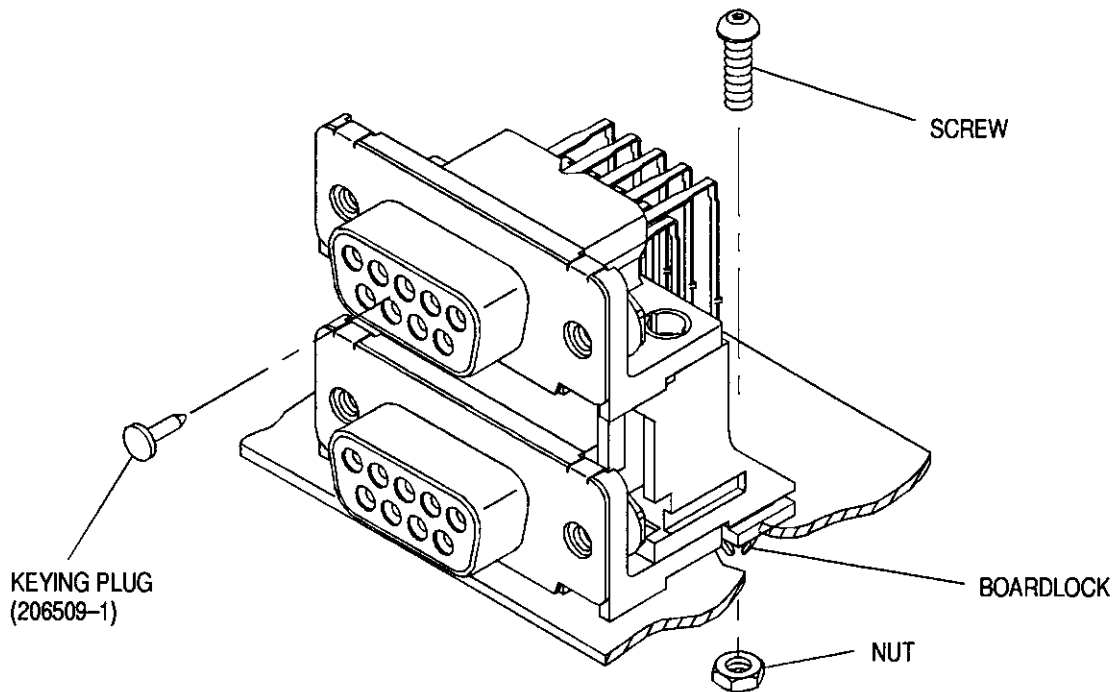


Figure 6

3.9. PC Board Mounting Hardware (Figure 6)

The stacked connector assembly must be seated and securely attached to the pc board prior to soldering it to the pc board. Assemblies with mounting holes only are designed to be attached with commercially available screws and nuts. Those with pre-installed boardlocks are designed to hold the assembly in place during soldering. All components must be completely covered with solder after the soldering process has been finished.

A. Screws and Nuts

This type of hardware is recommended for assemblies attached to pc boards exceeding 1.58 [.062] thick. The screw head should seat on the stacking bracket and the nut tightened against the underside of the pc board.

B. Boardlocks

Boardlocks are designed for 1.58 [.062] thick pc boards. They are designed to hold the connector in place during soldering and to provide additional support for the assembly after soldering. The force for insertion and extraction of assemblies with two boardlocks is:

Maximum insertion force 62.27N [14 lb.] per assembly.

Minimum extraction force 13.34N [3 lb.] per assembly.

3.10. Rear Cover (Figure 7)

Some stacked connector assemblies are available with a preinstalled rear cover. The rear cover provides protection to the exposed contacts of the stacked assembly. The cover slides over the exposed contacts on the back of the assembly while the guide posts enter the guiding holes and the tabs then must snap onto the slot in the assembly's stacking bracket.

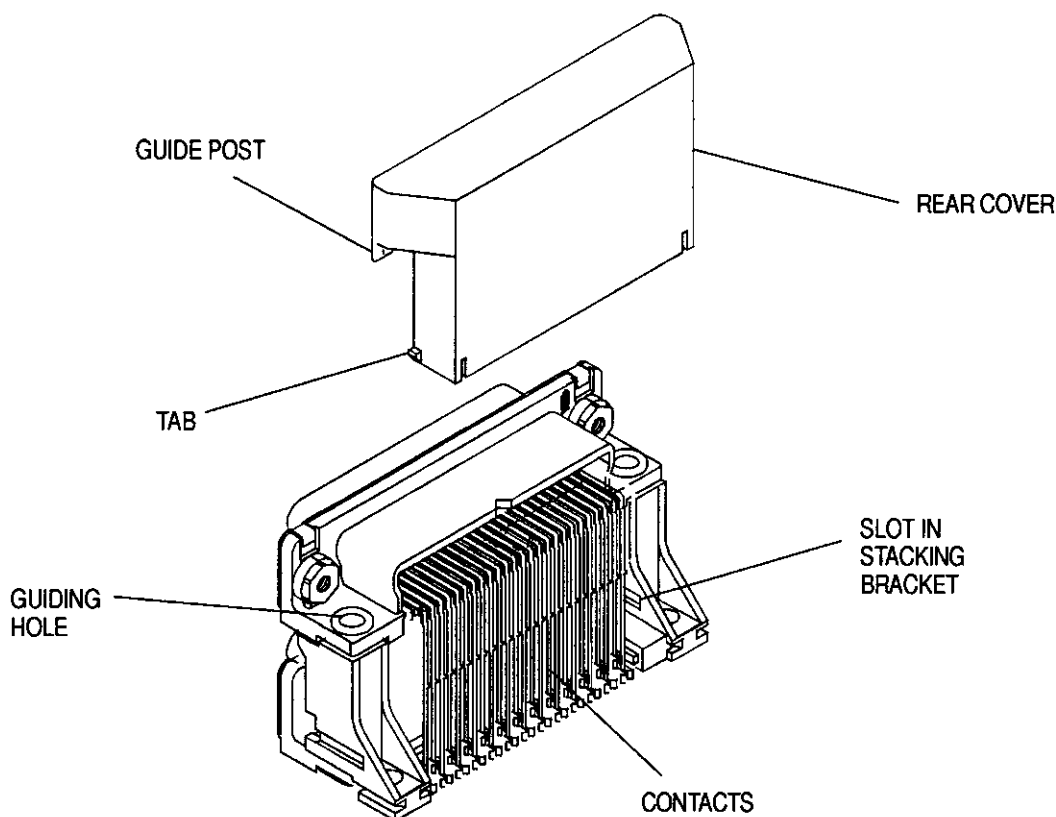


Figure 7

3.11. Mating Connector Hardware (Figure 8)

The connector mounting flanges have 4–40 internal threads that will accept screwlocks or panel mounting hardware.

A. Screwlocks

Screwlocks are designed to secure a connector to a panel 1.58 [.062] thick. They can be used with thinner panels; however, a washer is 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 .45 N•m [4 in.-lb] maximum. The 4–40 internal threads in the screwlocks will accept commercially available screws and jack-screws with compatible threads.

B. Panel Mount Hardware

Stacked assemblies can be secured to a panel with commercially available 4–40 threaded screws with a head that will not interfere with connector mating and threads compatible to those in the threaded insert. The screw should be tightened to a torque of .45 N•m [4 in.-lb] maximum.

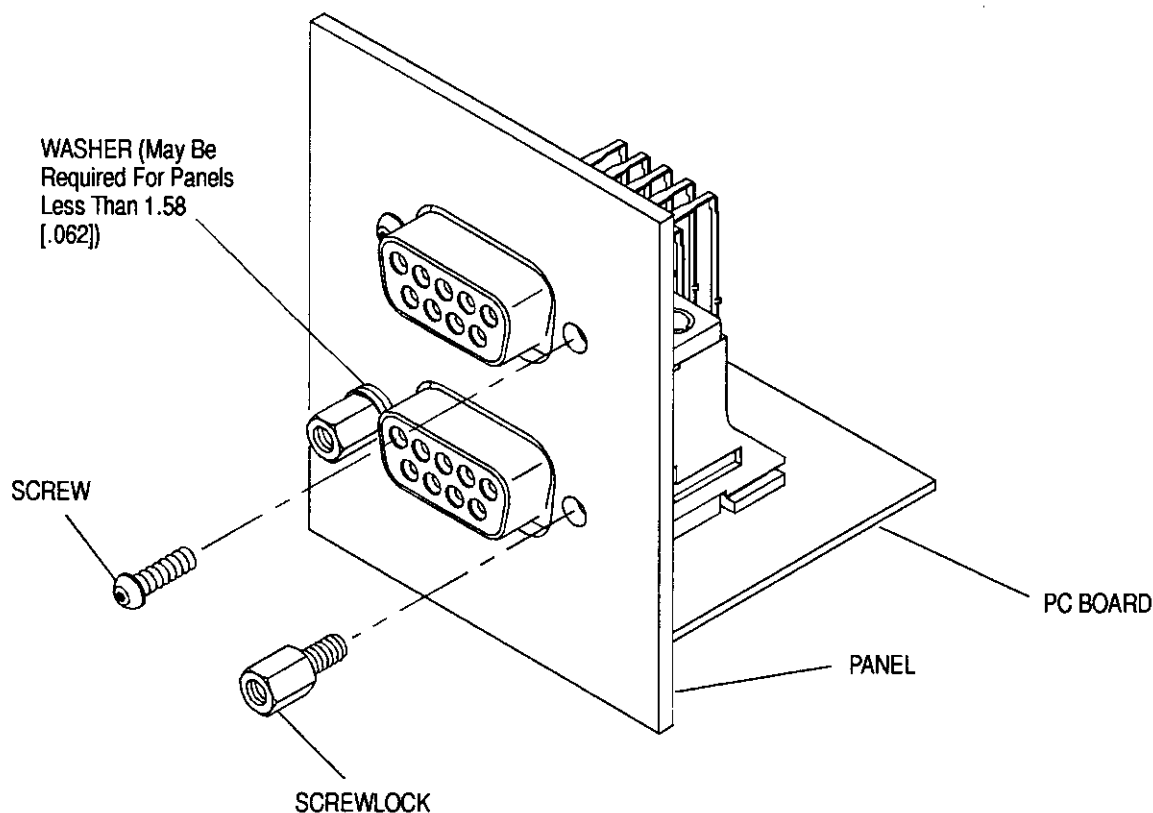


Figure 8

3.12. Soldering

A. Solder Recommendations

These connector assemblies can be soldered to the pc board using standard soldering methods such as machine wave soldering, or hand solder techniques. We recommend using SN60 or SN62 solder.

B. Soldering Guidelines

Refer to Paragraph 2.4 for instructional material that is available for establishing soldering guidelines.

C. Fluxing

Solder-type contact tails and attaching hardware 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 one of the AMP phone numbers 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 9.

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 9

D. Cleaning

After soldering, removal of fluxes, residues, and activators is necessary. Cleaning methods depend on the type of flux used. Consult the supplier of solder and flux for recommended cleaning solvents. The following are common cleaning solvents that can be used on these connectors for 10 minutes at room temperature without any adverse effects on contacts or housing. See Figure 10.

CLEANER		TIME (Minutes)	CONDITIONS (Temperatures are maximum)	
NAME	TYPE		CELSIUS	FAHRENHEIT
Alpha 2110†	Aqueous	1	132	270
Bioact 3C-7◆	Solvent	5	100	212
Carbitol●	Solvent	1	Room Ambience	
Isopropyl Alcohol	Solvent	5	100	212
Kester 5778■	Aqueous	5	100	212
Kester 5779■	Aqueous	5	100	212
Lonco 520●	Aqueous	5	100	212
Lonco 530●	Aqueous	5	100	212
Terpene Solvent	Solvent	5	100	212

† Trademark of Fry's Metals, Inc.

◆ Trademark of Petroform, Inc.

● Trademark of Union Carbide Corp.

■ Trademark of Litton Systems, Inc.

Figure 10

DANGER

Consider 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.

NOTE

If you have a solvent that is not listed, consult an AMP Representative before using it with these connectors.

E. Drying

When drying the cleaned, soldered connector assemblies, do not exceed the temperature limits of -55° to 105°C [-67° to 221°F].

CAUTION

Excessive temperatures may cause housing degradation.

NOTE

To check insulation resistance or capacitance, we recommend that the part is allowed to stabilize for 24 hours after drying in order to obtain optimum values.

3.13. Mating and Unmating Connectors

When mating connectors, insert the cable connector straight into the pc board mounted connector. When disengaging connectors, pull the cable connector straight away from the pc board connector. If it is necessary to rock the connector to start disengagement, use a side-to-side motion and not an end-to-end motion which could bend pin contacts and/or stress socket contacts. See Figure 11.

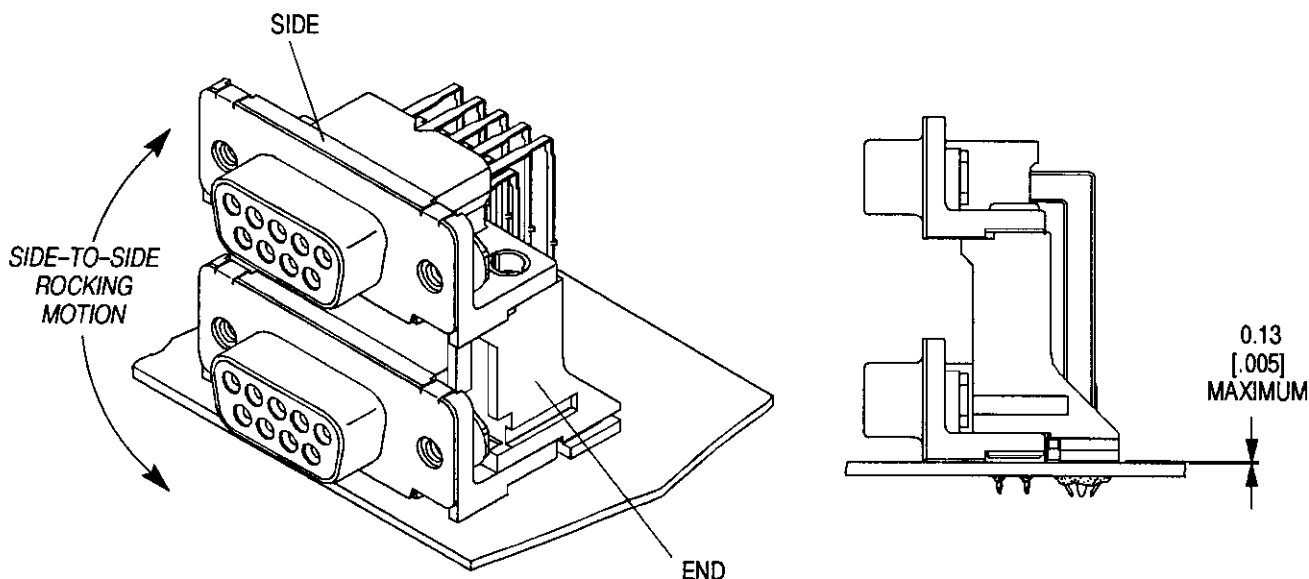


Figure 11

3.14. Shielding

These connectors have tin-plated shells which provide continuity for EMC (electromagnetic compatibility) applications.

When the front metal shell connectors are mated with corresponding metal shell connectors, grounding continuity is achieved. The use of the screws and nuts or boardlocks provides electrical continuity to any ground path on the pc board including hardware mounting holes.

3.15. Repair

Damaged stacked connector assemblies can not be repaired. If the housing should be cracked or broken, or if the contacts become bent or broken, the entire assembly must be desoldered, removed, and replaced with a new one.

4. QUALIFYING SUPPORT

4.1. Underwriters' Laboratories, Inc.

AMPLIMITE Stack II Standard HD-20 Connector Assemblies are component recognized under File E28476.

4.2. Canadian Standards Association

AMPLIMITE Stack II Standard HD-20 Connector Assemblies are certified under CSA File Number LR 7189.

5. TOOLING

No tooling or equipment is needed to place the connectors on the pc board. Soldering and, in the case of removing assemblies from a pc board, desoldering can be done with standard equipment.

6. VISUAL AID

The illustration below provides areas that can be checked visually to ensure a good termination. Applications that do not appear visually correct should be inspected using the information in the main body of this specification and the customer drawing for the specific product part number.

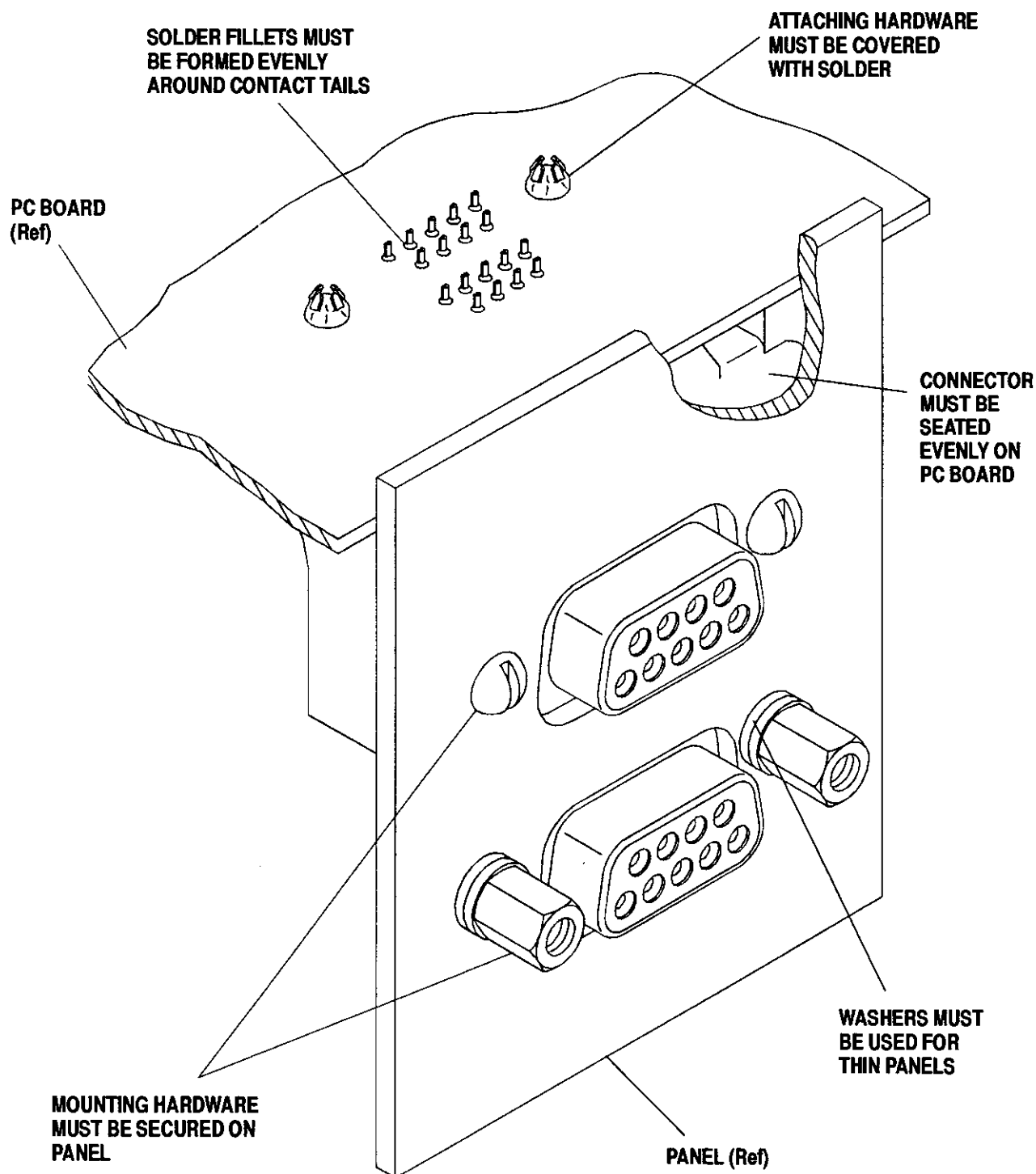


FIGURE 12. VISUAL AID