

**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  $\pm 0.13$  [ $\pm 0.005$ ] 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 AMPMODU Mod I and Mod II pc board receptacle contacts. The Mod I receptacle contacts accept  $0.79 \times 1.57$  [ $0.031 \times 0.062$ ] posts and the Mod II receptacle contacts accept  $0.64 \times 0.64$  [ $0.025 \times 0.025$ ] posts. These strip-fed machine applied contacts are designed for both vertical and horizontal application and are designed to be soldered to pc boards

When corresponding with 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.

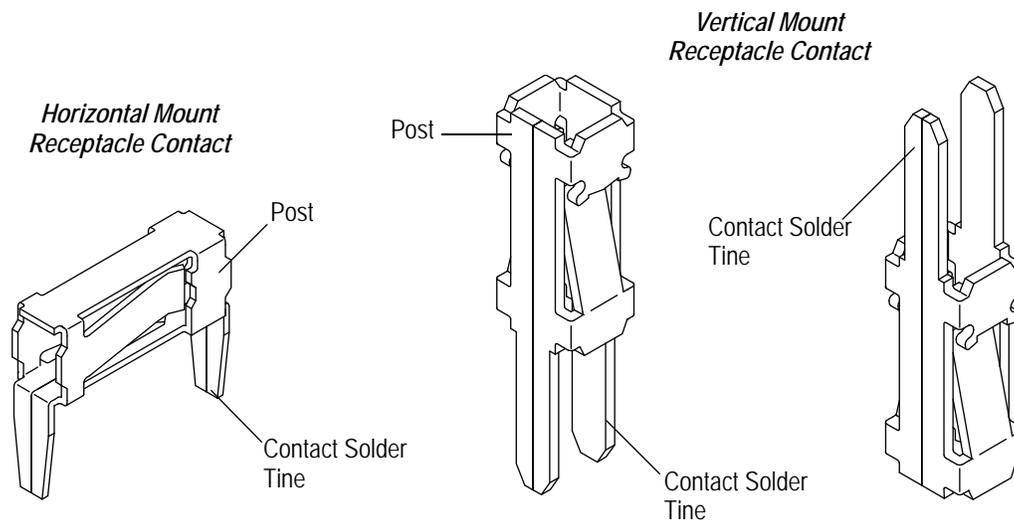


Figure 1

## 2. REFERENCE MATERIAL

### 2.1. Revision Summary

- Changed company name and logo
- Removed obsolete Tool 354030-1 and replaced all obsolete insertion machines and head with insertion tooling can be manufactured by request

### 2.2. Customer Assistance

Reference Product Base Part Number 87772 and Product Code 5440 are representative of AMPMODU Mod I and Mod II pc board receptacle 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 Representative or, after purchase, by calling PRODUCT INFORMATION at the number at the bottom of this page.

### 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, the information contained in the Customer Drawings takes priority.

## 2.4. Specifications

Product Specifications 108-25016, 108-25025, and 108-25025-1 provide test and performance results.

## 2.5. Manuals

Manual 402-40 is available upon request and can be used as a guide in soldering. 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 a guide for information on soldering problems.

## 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:

- 408-3295 Preparing Reel of Contacts for Application Tooling
- 408-7411 AMPMODU Mod I and Mod II Receptacle Wave Soldering Technique
- 408-9816 Handling of Reeled Products

## 3. REQUIREMENTS

### 3.1. Storage

#### A. Reeled Contacts

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

#### B. Shelf Life

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

#### C. Chemical Exposure

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

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

### 3.2. Ultraviolet Light

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

### 3.3. Material

All contacts are made of phosphor bronze with tin plating or with gold over nickel.

### 3.4. PC Board

#### A. Material and Thickness

The pc board material shall be glass epoxy (FR-4, G-10).

The pc board thickness shall be a maximum of 2.38 [.094] for Mod I contacts with a solder tine length of 3.68 [.145]. Mod I contacts that have a solder tine length of 2.84 [.112] or 3.05 [.120] shall be used with pc boards having a maximum thickness of 1.59 [.063]. Mod II contacts shall be used with pc boards having a maximum thickness of 1.59 [.063].

**NOTE**

Contact *PRODUCT INFORMATION* at the number listed at the bottom of page 1 for suitability of other board materials and thicknesses.



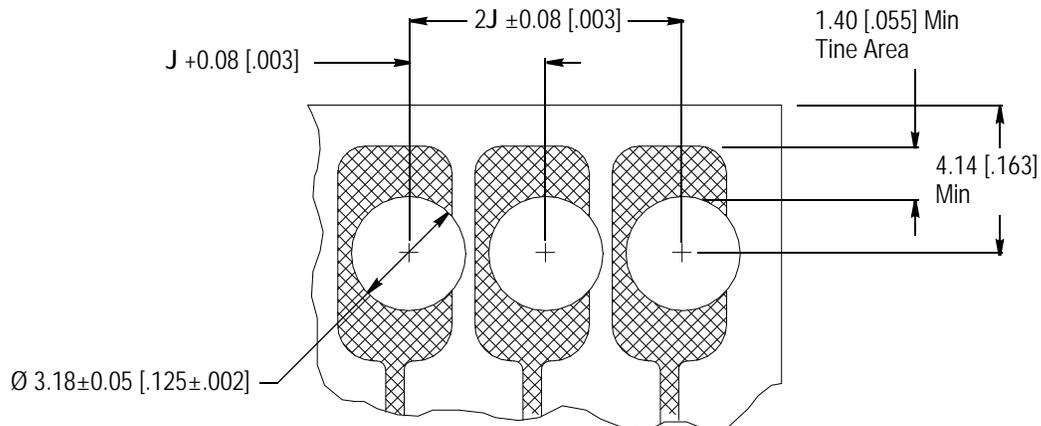
## B. Layout

The contact holes in the pc board must be precisely located to ensure proper placement and optimum performance of the contacts. The pc board must be prepared according to the dimensions provided in Figure 2.

### PC Board Layouts

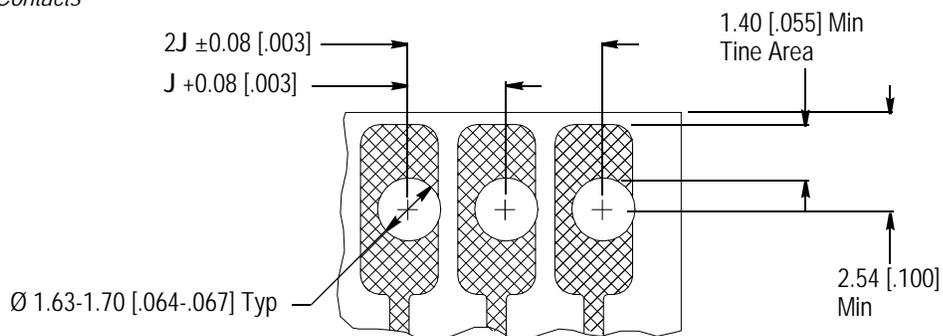
#### Vertical Mounting

##### AMPMODU Mod I Contacts



J = Receptacle centerline spacing, which may vary depending on requirements. For individual receptacles, minimum nominal centerline spacing between adjacent receptacles is 3.81 [.150]; for receptacle assemblies, nominal centerline spacing between adjacent receptacles is 3.96 [.156]. Tolerances do not accumulate over the length of the pc board.

##### AMPMODU Mod II Contacts

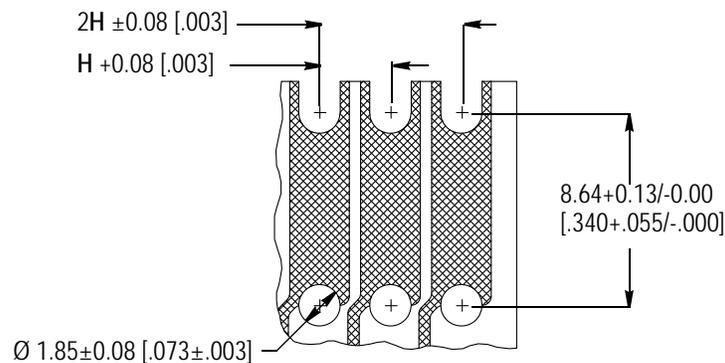
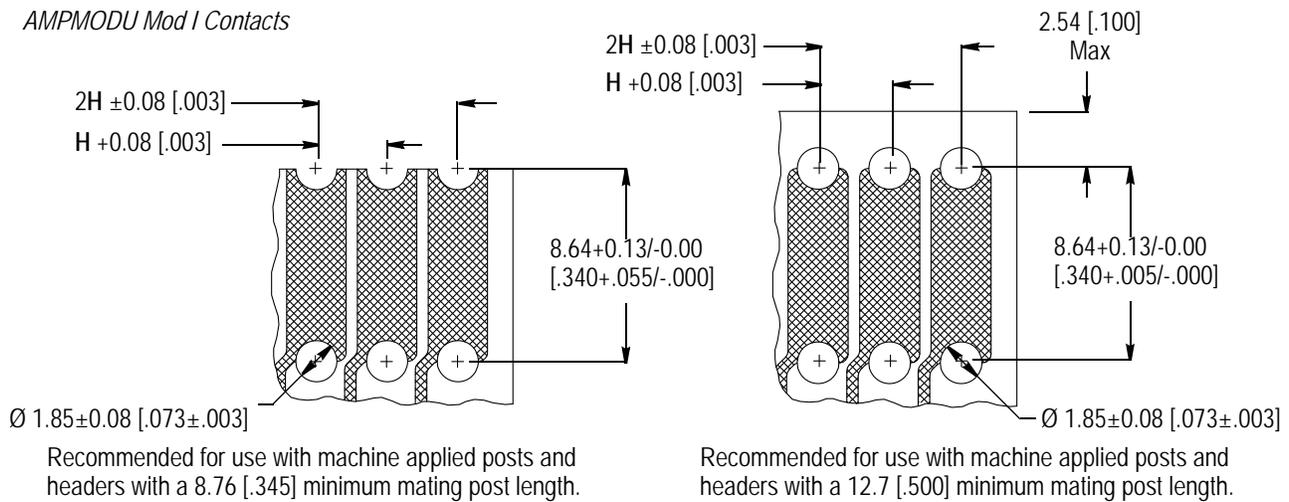


J = Receptacle centerline spacing, which may vary depending on requirements. For individual receptacles, minimum nominal centerline spacing between adjacent receptacles is 2.54 [.100]. Tolerances do not accumulate over the length of the pc board.

Figure 2 (Cont'd)

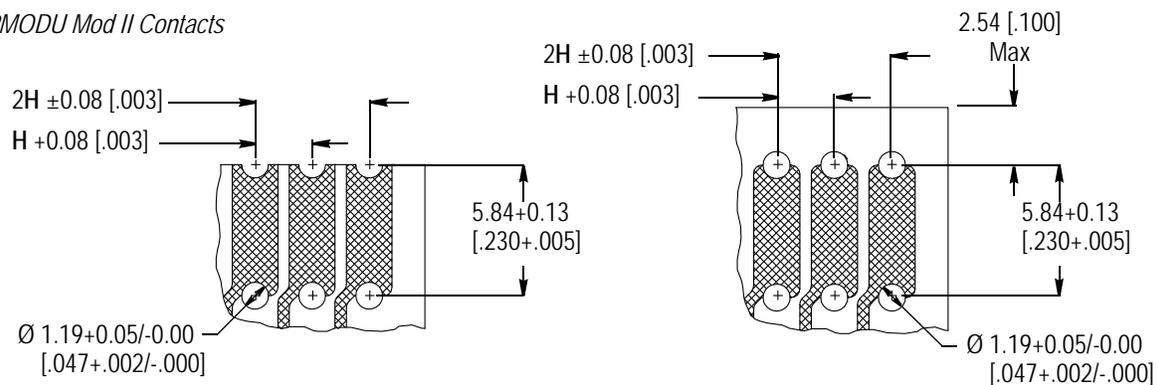
### Horizontal Mounting

#### AMPMODU Mod I Contacts



H = Receptacle centerline spacing, which may vary depending on requirements. For individual receptacles, minimum nominal centerline spacing between adjacent receptacles is 3.18 [.125]; for receptacle assemblies, nominal centerline spacing between adjacent receptacles is 3.96 [.156]. Tolerances do not accumulate over the length of the pc board.

#### AMPMODU Mod II Contacts



H = Receptacle centerline spacing, which may vary depending on requirements. For individual receptacles, minimum nominal centerline spacing between adjacent receptacles is 2.54 [.100]. Tolerances do not accumulate over the length of the pc board.

Figure 2 (End)

### 3.5. Mounting

These contacts can be mounted either vertically or horizontally. Vertically mounted contacts are mounted as Type A or Type B. Horizontally mounted contacts are mounted as Type C. See Figure 3.

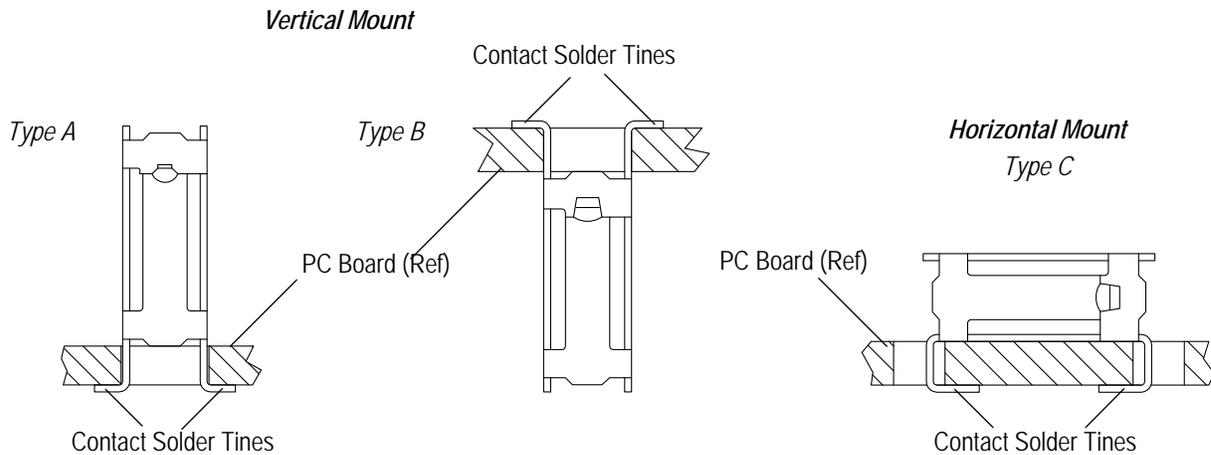


Figure 3

### 3.6. Crimping Requirements

#### A. Cutoff Tab and Burr

The cutoff tab and burr resulting from the contact being cut from the carrier strip must be within the limits provided in Figure 4.

#### B. Staking

A tight fit should be attained when the contact is staked to the pc board, but it is not mandatory. The allowable limits of looseness are indicated in Figure 4.

#### C. Springback

Springback of the holding contact tines shall not exceed the limits indicated in Figure 4.

#### D. Alignment

Maximum misalignment shall not exceed the limits indicated in Figure 4.

#### E. Seam Opening

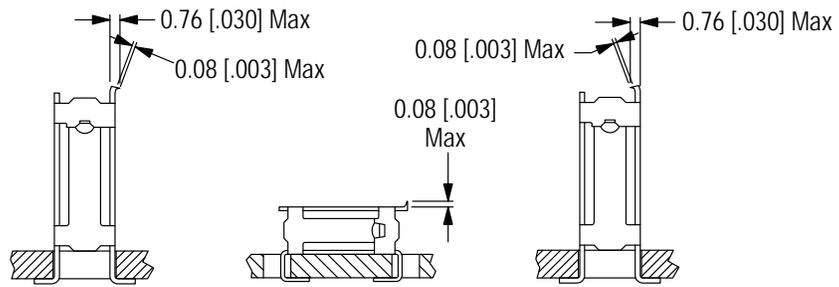
After application, the contact seam opening shall not exceed the limits indicated in Figure 4.

#### F. Clinching

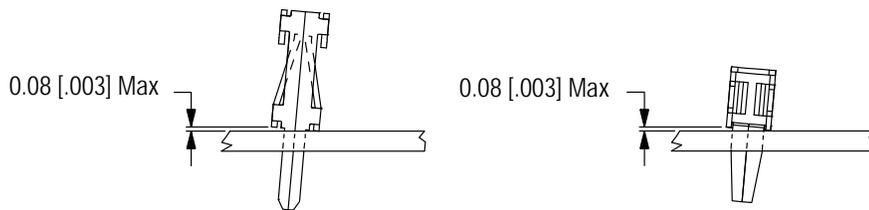
The clinching operation must not deform or mar the contact in any way. The solder tines must be clinched to within the dimension specified in Figure 4.

*Crimping Requirements*

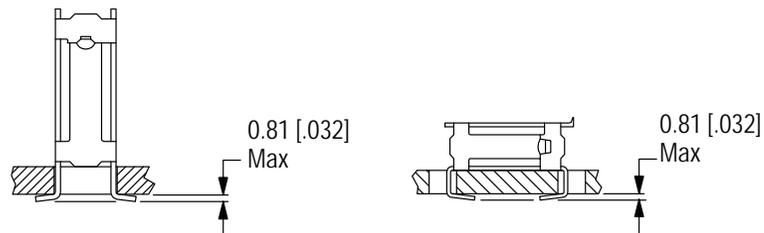
*Cutoff Tab and Burr*



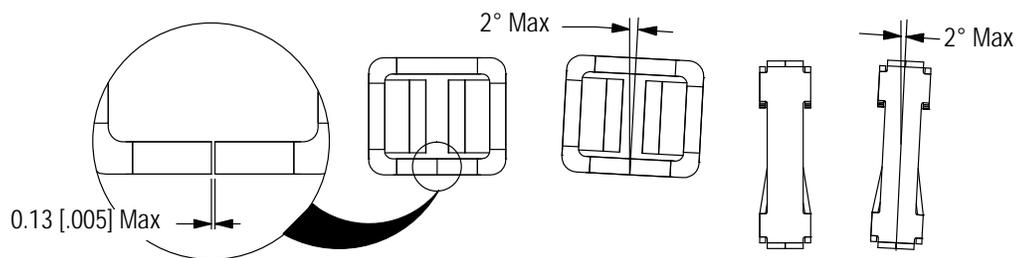
*Staking*



*Springback and Clinching*



*Alignment and Seam Opening*



*Workmanship*

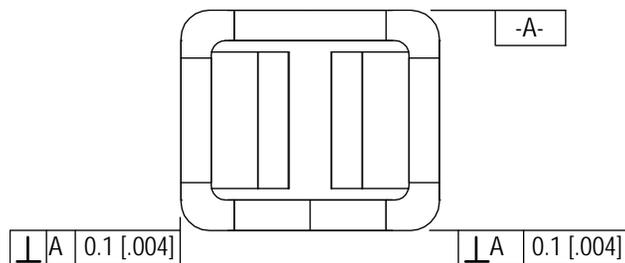


Figure 4

### 3.7. 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 5.

FLUX TYPE	ACTIVITY	RESIDUE	COMMERCIAL DESIGNATION	
			KESTER	ALPHA
RMA	Mild	Noncorrosive	186	611

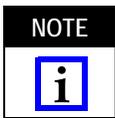
Figure 5

#### 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. Cleaners must be free of dissolved flux and other contaminants. It is recommended that cleaning takes place with the pc board on its edge. Common cleaning solvents with times and temperatures that will not affect these connectors is specified in Figure 6.



*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 is not recommended because of harmful occupational and environmental effects. Both are carcinogenic (cancer-causing).*



*If there is a particular cleaning solvent that is not listed, contact PRODUCT INFORMATION at the 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

#### C. Drying

Since housings or header assemblies are not used with these contacts, reasonable drying temperatures are not a major factor. However, reasonable temperatures must not be exceeded; otherwise, stress and cracking in the pc board may occur.

#### D. Process

These contacts can be soldered using wave, vapor phase (VPR), double sided non-focused infrared reflow processes (IR), or equivalent soldering techniques. It is recommended that SN60 or SN62 solder be used for these contacts. Temperatures and exposure time are specified in Figure 7.

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

SOLDERING PROCESS	TEMPERATURE	TIME (At Max Temperature)
Wave	260°C [500°F] (Wave Temperature)	5 Seconds
Vapor Phase	215°C [419°F]	5 Minutes
Infrared Reflow	230°C [446°F]	5 Minutes

Figure 7

### 3.8. Lubrication

For tin plated contacts, it is recommended that the contact lubricant manufactured by Nye Lubricants listed below be applied after soldering and cleaning.

PART NUMBER	DESCRIPTION	Small Volume Orders	Large Volume Orders and Technical Support
NYETACT 502C-20-UV	2 oz Brush Cap Bottle	TAI Lubricants (Nye Authorized Distributor) Phone: (302) 326-0200 Fax: (302) 326-0400 Website: www.lubekits.com E-mail: nyeoil@aol.com	Nye Lubricants, Inc. Phone: (508) 996-6721 Fax: (508) 997-5285 Website: www.nyelubricants.com E-mail: techhelp@nyelubricants.com
NYETACT 502C-20-UV	4 oz Aerosol Can		

### 3.9. Checking Installed Contacts

The contact should be soldered to the pc board as shown in Figure 8.

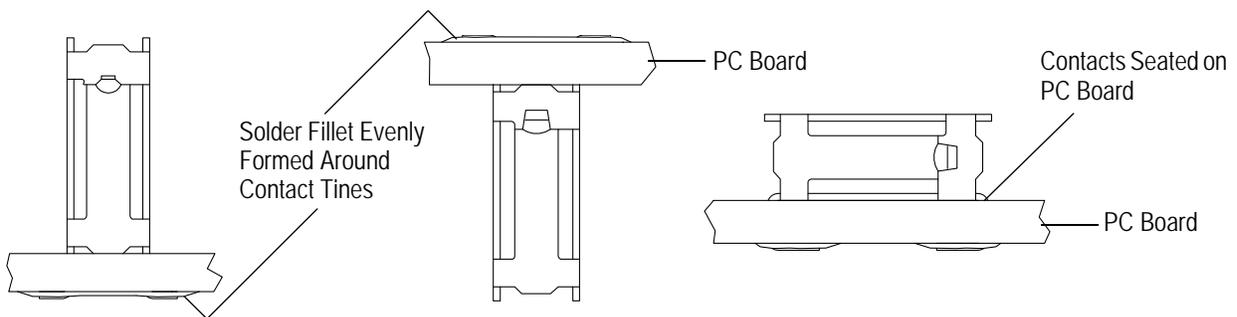


Figure 8

### 3.10. Replacement and Repair

A damaged contact must be removed and replaced with a new one. Solder must be removed from soldered tines, and clinched tines must be straightened before removal. Care must be used to prevent damage to the mounting surface and surrounding components.

## 4. QUALIFICATIONS

AMPMODU Mod I and Mod II pc board receptacle contacts are recognized by Underwriters Laboratories Inc. (UL) under File E28476 and certified to Canadian Standards Association (CSA) under File LR16455.

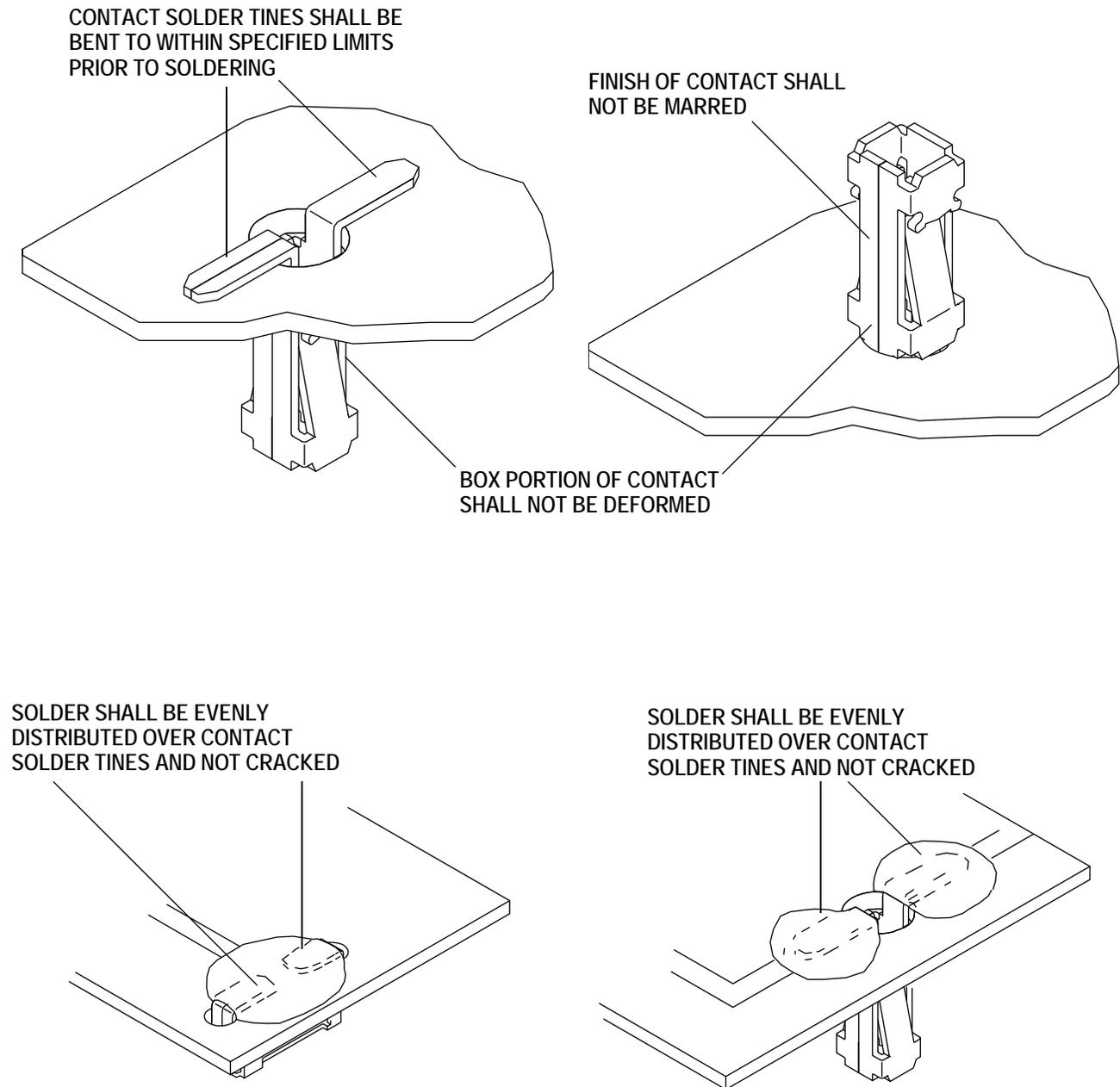
## 5. TOOLING

Insertion tooling used for these contacts can be manufactured by request.

Nye is a trademark.

## 6. VISUAL AID

The illustration below shows a typical application of this AMPMODU Mod I and Mod II pc board receptacle 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 9. VISUAL AID**