

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 [$\pm .005$] 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 Category 5 Shielded Offset Stacked Modular Jack Assemblies with ACTION PIN contacts for printed circuit (pc) board and panel mount applications. These modular jacks are available with 2 rows of 4, 6, or 8 side entry ports. The modular jack contains ACTION PIN (compliant pin) contacts with centerline spacing on 2.54×2.03 [$.100 \times .080$] in a 1.02 [$.040$] staggered pattern. When the modular jack is mounted onto the pc board, a portion of the bottom row extends below the pc board, thereby reducing the overall profile height of the modular jack. The modular jack accepts 8-position Category 5 modular plug assemblies.

The modular jack consists of a housing and a shield. The housing features standoffs to ensure proper seating on the pc board. The housing is available with or without light emitting diodes (LED). The shield features pc board ground pins and panel ground tabs. The shield is also available with or without ground clips and pc board side ground pins which both provide additional grounding to the pc board. The modular jacks may be placed on the pc board by manual or automatic application tooling.

When corresponding with Tyco Electronics 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.

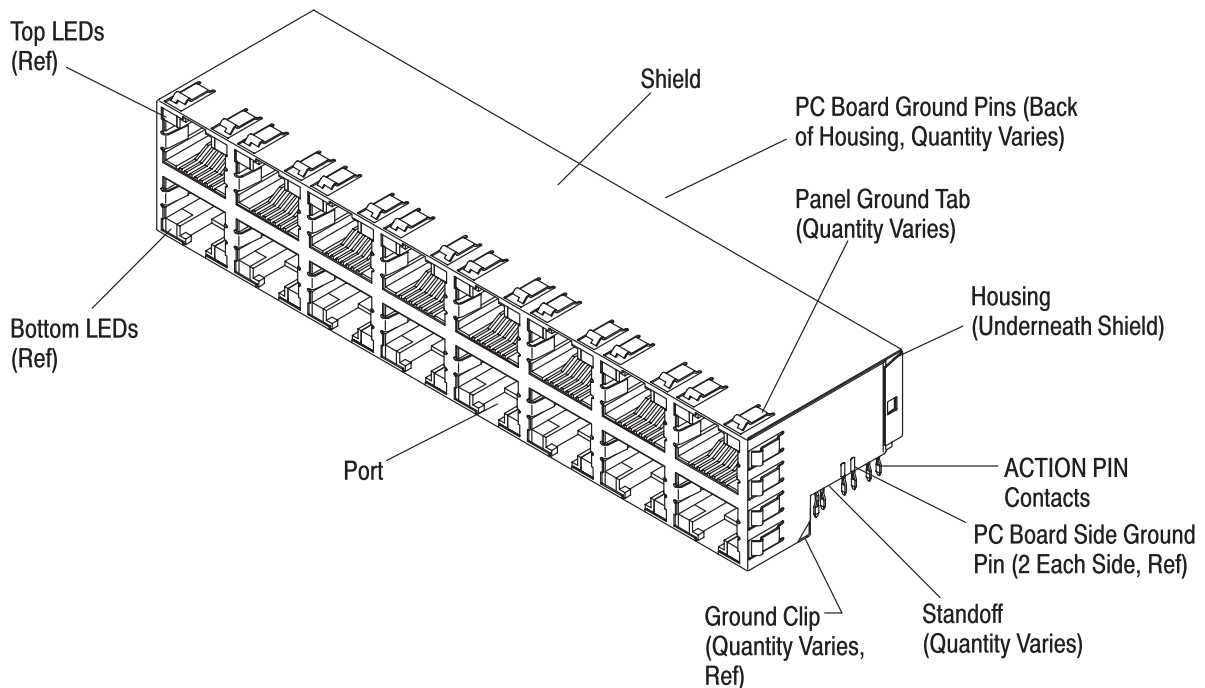


Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

- Updated document to corporate requirements
- Added RoHS information to Figure 2

2.2. Customer Assistance

Reference Product Base Part Number 1116317 and Product Code 2287 are representative of Category 5 Shielded Offset Stacked Modular Jack Assemblies with ACTION PIN 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 Tyco Electronics Representative or, after purchase, by calling PRODUCT INFORMATION at the number at the bottom of page 1.

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, call PRODUCT INFORMATION at the number at the bottom of page 1.

2.4. Specifications

Product Specification 108-1854 provides product performance and test information.

Application Specification 114-6053 provides application requirements for mating plug assemblies.

2.5. 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 operation procedures. Documents available which pertain to this product are:

409-5626 SM-3 Machine 814700-[]

3. REQUIREMENTS

3.1. Storage

A. Ultraviolet Light

Prolonged exposure to ultraviolet light may deteriorate the chemical composition used in the modular jack material.

B. Shelf Life

The modular jacks should remain in the shipping containers until ready for use to prevent deformation to the contacts. The modular jacks 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 modular jacks near any chemical 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. PC Board

A. Material and Thickness

The pc board material shall be glass epoxy (FR-4 or G-10). The pc board thickness shall be a minimum of 1.4 [.055].

NOTE

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



B. Tolerance

Maximum allowable bow of the pc board shall be 0.40 [.016] over the length of the modular jack.

C. Hole Dimensions and Durability

The pc board holes for the contacts must be drilled and plated through. The plating type and thickness and finished hole size must be as stated to provide unrestricted insertion. See Figure 2.

The pc board can withstand modular jack removal up to three times without damage to the plated through holes.

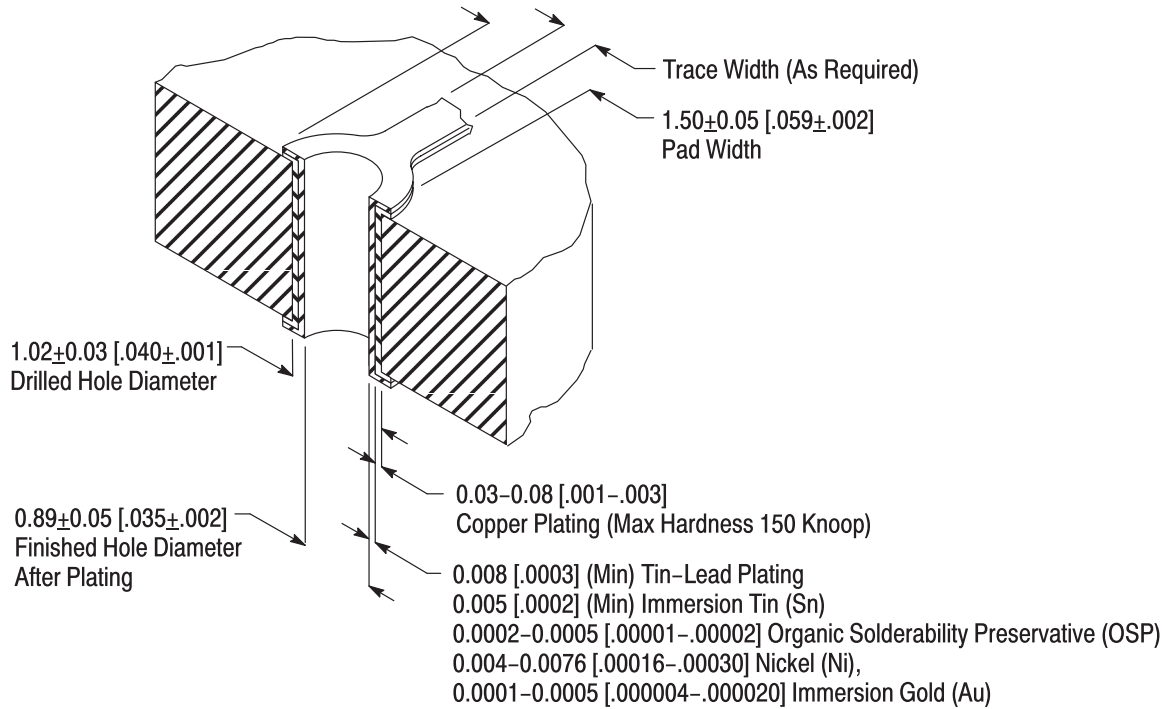


Figure 2

D. Pads

The pads for the ground clips (if applicable) must be plated. Plating type and thickness must be determined by the requirements of the specific application. The ground clips are designed to only touch the plated pads. The ground clips must not be soldered.

E. Layout

The holes and plated pads for the ground clips (if applicable) on the pc board must be precisely located to ensure proper placement and optimum performance of the modular jack. The pc board layout must be designed using the dimensions provided on the customer drawing for the specific modular jack. Reference *samples* of the recommended pc board layouts are shown in Figure 3.

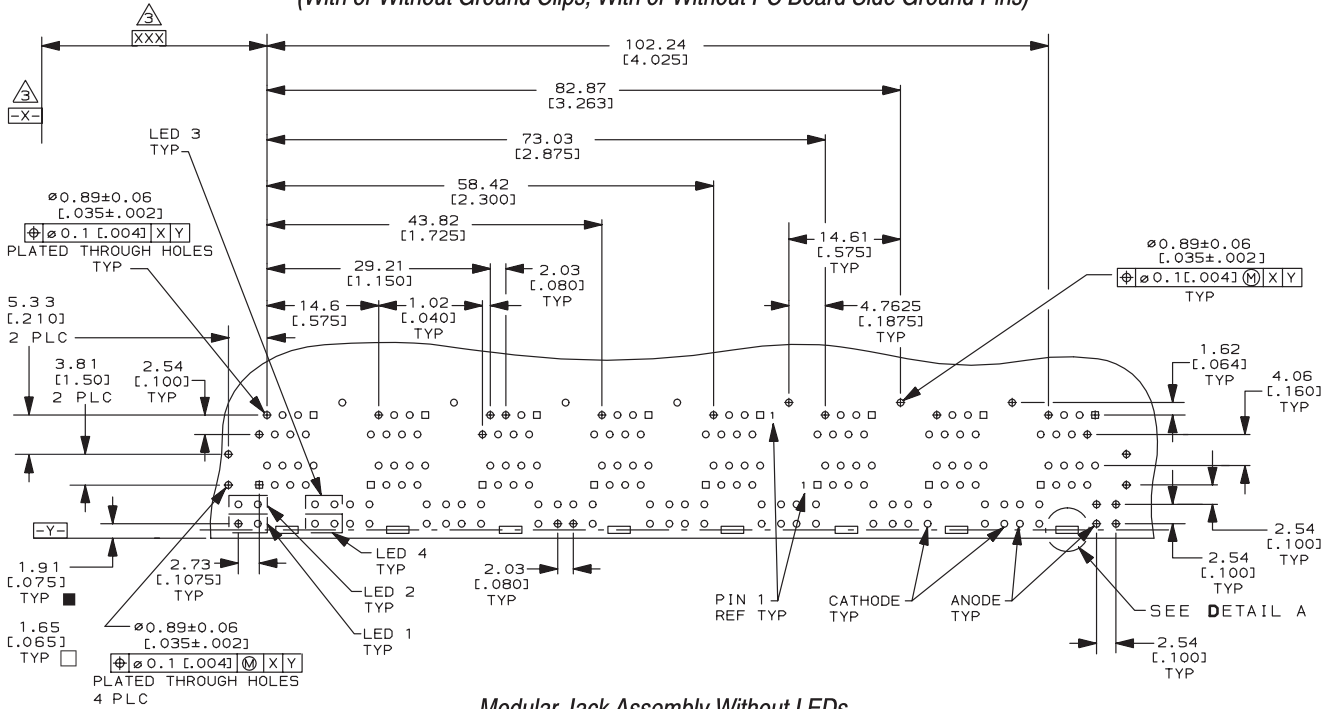
NOTE



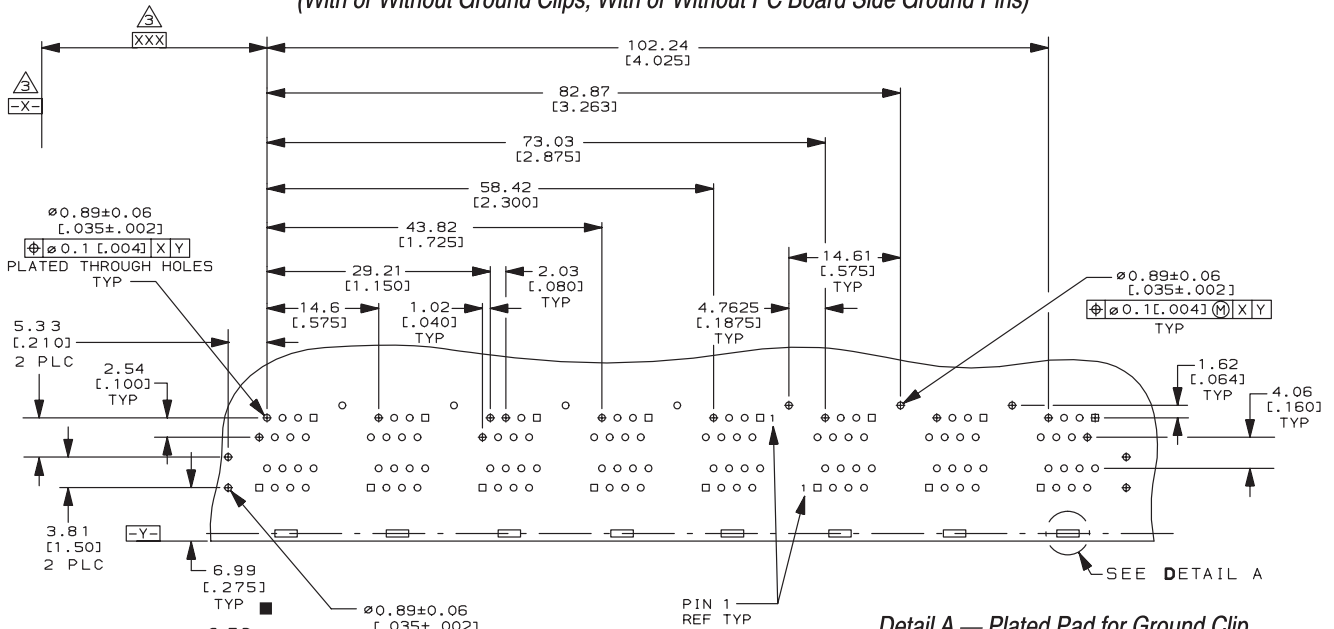
The "X" symbols on the pc board layout represent a customer established datum. This is the origin for the basic dimension (XXX datum), the point from which ALL hole positions must be located.

**Reference Samples of Recommended PC Board Layout
(Component Side Shown)**

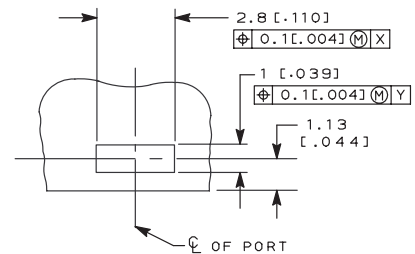
**Modular Jack Assembly With LEDs
(With or Without Ground Clips, With or Without PC Board Side Ground Pins)**



**Modular Jack Assembly Without LEDs
(With or Without Ground Clips, With or Without PC Board Side Ground Pins)**



Detail A — Plated Pad for Ground Clip



- Without Ground Clips
- With Ground Clips
- △ Datums and Dimensions Established by Customer

Figure 3

3.3. Insertion Force

To properly seat the modular jack and avoid damage to any components during seating, the appropriate insertion force must be used. The minimum insertion force necessary to seat modular jacks with LEDs onto a pc board with nominal size holes is stated in Figure 4. Insertion force for all other variations must be determined by using the data stated.



For example, modular jacks without LEDs would require slightly less insertion force, and modular jacks seated onto pc boards with minimum size holes would require significantly more insertion force than stated in Figure 4.

| MODULAR JACK POSITION | MINIMUM INSERTION FORCE (N [lbs-Force]) (Modular Jacks with LEDs onto PC Board with Nominal Size Holes) [■] |
|-----------------------|---|
| 8 | 5000 [1124] |
| 6 | 3750 [843] |
| 4 | 2500 [562] |

■ Insertion force for all other variations must be determined by using this data.

Figure 4

3.4. Checking Installed Modular Jack

All contacts, pc board ground pins, and pc board side ground pins (if applicable) must be fully inserted into the pc board holes. All standoffs must be seated on the pc board not exceeding the dimension shown in Figure 5.

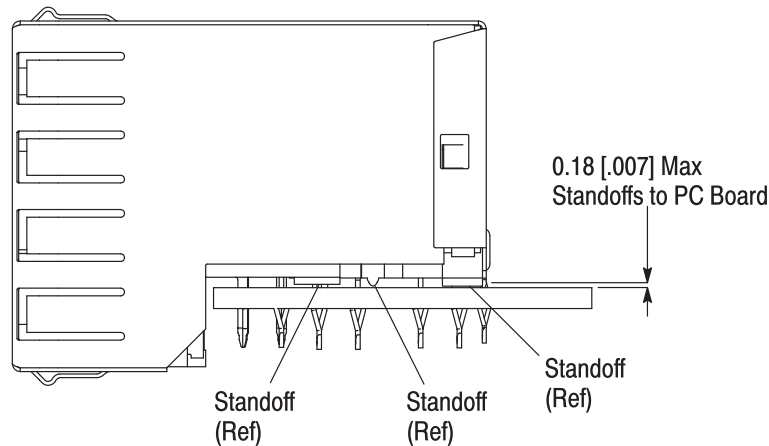


Figure 5

Each grounding clip (if applicable) must be touching its respective plated pad. Each grounding clip must be centered on its pad as shown in Figure 6.

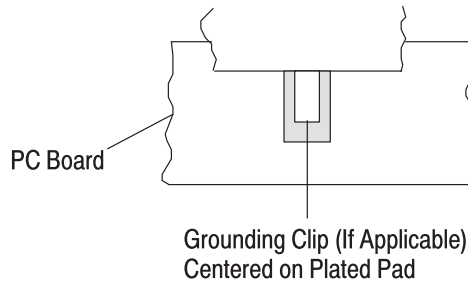



Figure 6

3.5. Panel Mounting

The panel must be cut using the dimensions provided on the customer drawing for the specific modular jack. The panel thickness shall be approximately 1.02 [.040]. A reference *sample* of a recommended panel cutout for the modular jack is shown in Figure 7.

NOTE Call *PRODUCT INFORMATION* at the number listed at the bottom of page 1 for suitability of other panel thicknesses.



The modular jack must be installed and removed from the back of the panel. After the modular jack is mounted, the raised portion of each panel ground tab must be against the panel.

Reference Sample of Recommended Panel Cutout

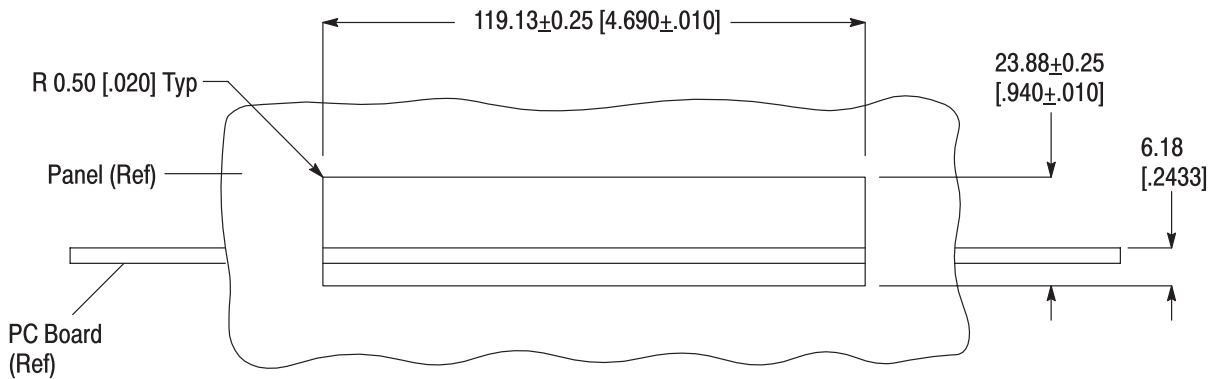



Figure 7

3.6. Removal

The modular jack must be removed from the pc board using tooling described in Section 5.

3.7. Repair

CAUTION *These modular jacks are not repairable. Damaged or defective modular jacks MUST NOT be used. The modular jacks MUST NOT be re-used after being removed from the pc board.*



4. QUALIFICATIONS

Category 5 Shielded Offset Stacked Modular Jack Assemblies with ACTION PIN contacts are Listed by Underwriters Laboratories Inc. (UL) in File E81956 and Certified by CSA International in File LR7189A.

5. TOOLING

Tooling part numbers and instructional material packaged with the tooling are shown in Figure 8.

5.1. Power Unit

This machine provides the force required to seat the modular jacks onto the pc board in one cycle of operation. The machine is designed to be bench mounted and provides for medium-volume applications. Flat rock tooling and pc board support must be used with the machine.

5.2. Manual Arbor Frame

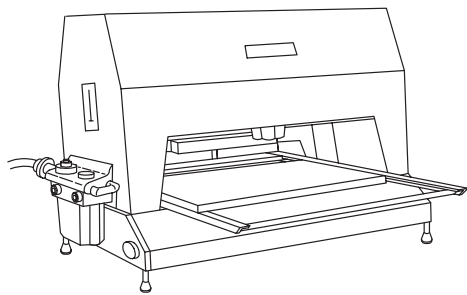
A commercially available manual arbor frame can be used to seat or remove the modular jacks. The arbor frame must provide sufficient amount of force to insert the contacts into or push the contacts out of the pc board holes. Flat rock tooling and pc board support must be used with an arbor frame.

5.3. Flat Rock Tooling

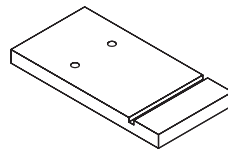
Commercially available bar stock (flat rock tooling) with a flat surface large enough to cover all contacts must be used with the tooling to seat and remove the modular jacks. For removing the modular jacks from the pc board, it is suggested that the pc board be supported from the modular jack side.

5.4. PC Board Support

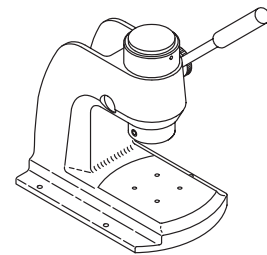
A pc board support must be used to prevent bowing of the pc board during the placement or removal of the modular jacks. The board support must have a flat surface with holes or a channel large enough and deep enough to receive any protruding components. The pc board must be secured to the board support to prevent movement of the board during seating.



SM3 Machine 814700-2
(409-5626)



PC Board Support
(Must Be Custom Made)



Typical Manual Arbor Frame
Assembly (Commercially
Available)

Figure 8

6. VISUAL AID

Figure 9 shows a typical application of Category 5 Shielded Offset Stacked Modular Jack Assemblies with ACTION PIN 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.

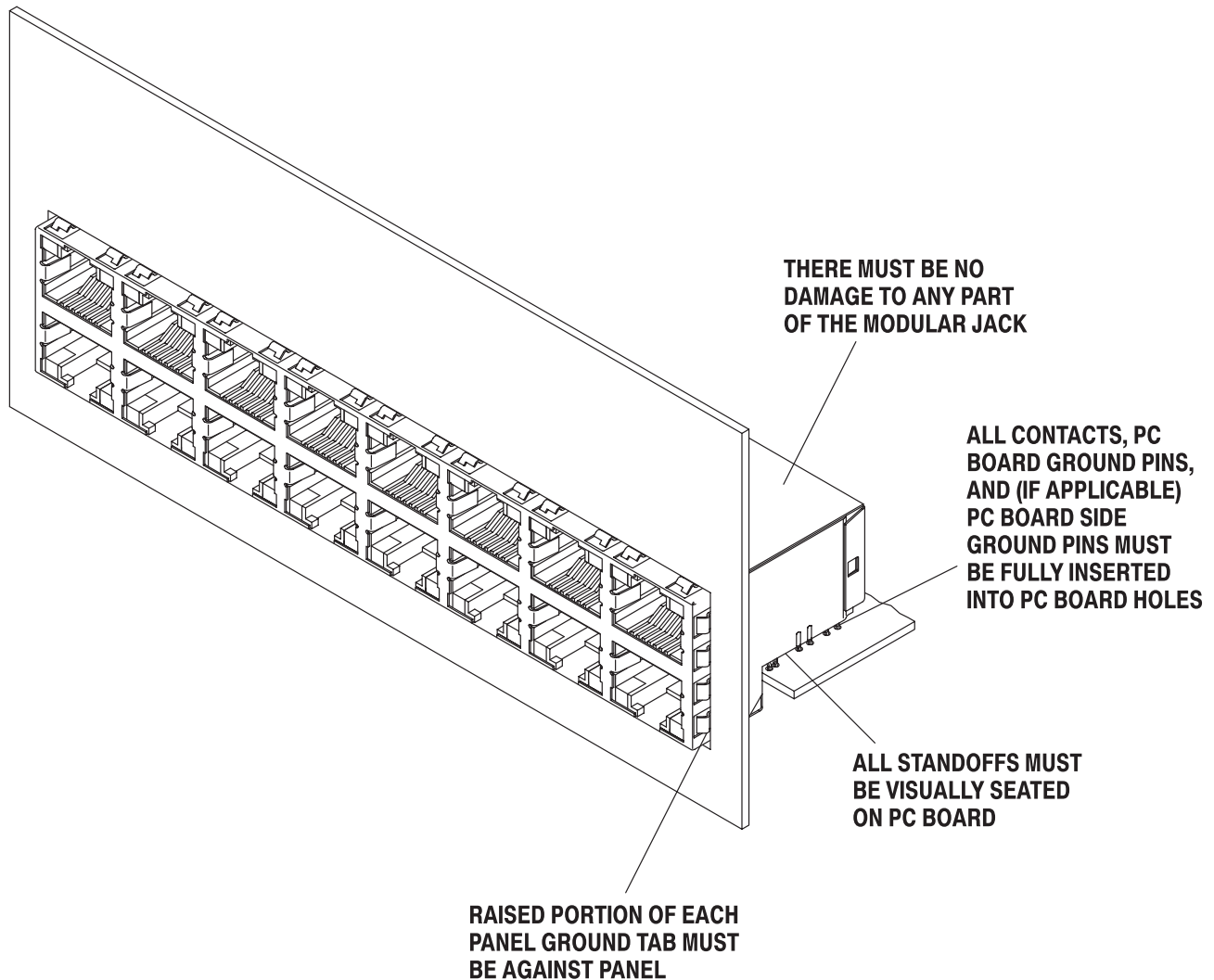


FIGURE 9. VISUAL AID