

NOTE



All numerical values are in metric units [with U.S. customary units in brackets]. Dimensions are in millimeters. Unless otherwise specified, dimensions have a tolerance of ± 0.13 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 the Vertical Card Edge Connector for Micro TCA applications. The connector has two rows of contacts spaced on 0.75 mm centerlines. There are 170 contacts (2x85) on the mating face. The contacts are available in a signal-signal, ground-signal-signal, and ground-signal configurations. The connector is designed to mate to a 1.6 ± 0.16 mm thick printed circuit (pc) board with contact pads on 0.75 mm centerlines. The interface to the back plane is through compliant contact tails.

NOTE



Additional sizes and alternate loading patterns of signal and ground contacts can be made available. Contact Tyco Electronics at the numbers listed at the bottom of this page for more information.

When corresponding with Tyco Electronics 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.

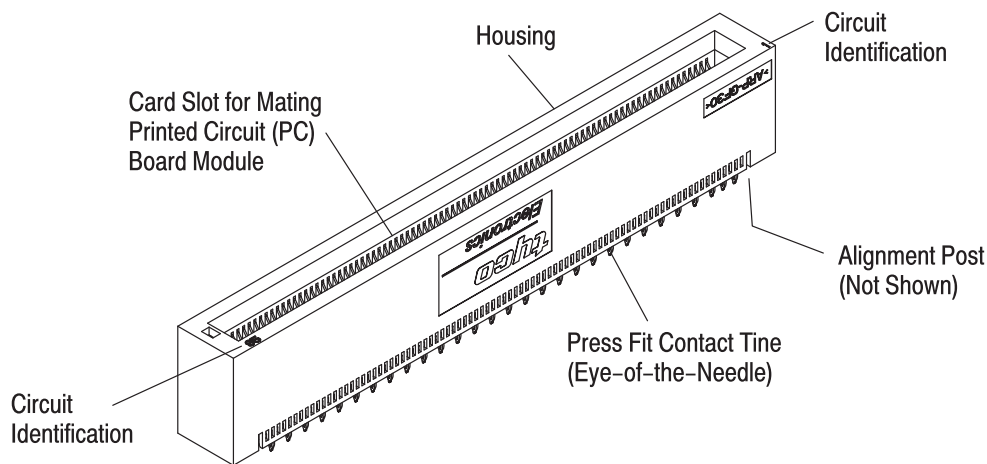


Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

- Updated document to corporate requirements
- Deleted hole tolerance in Figure 2
- Changed and added information to Figure 4
- Added new Paragraph 3.8 and Figure 8 and renumbered

2.2. Customer Service

Reference Base Product Part Number 1469820 and Product Code K717 are representative numbers of the Vertical Card Edge Connector for Micro TCA applications. Use of these numbers will identify the product line and expedite your inquiries through a service network established to help you obtain product information. Such information can be obtained through a local Tyco Electronics Representative or, after purchase, by calling the Tooling Assistance Center or the Product Information number at the bottom of this page.

2.3. Drawings

Customer Drawings for each connector 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 Tyco Electronics.

2.4. Specifications

Design Objective 108-2254 provides expected product performance and test information.

3. REQUIREMENTS

3.1. Storage

A. Ultraviolet Light

Prolonged exposure to ultraviolet light may deteriorate the chemical composition used in the connector housing material.

B. Shelf Life

The connectors should remain in the shipping containers until ready for use to prevent deformation of the contact solder tines or other damage to the connectors. The connectors should be used on a first in, first out basis to avoid storage contamination.

C. Chemical Exposure

Do not store connectors near any chemical listed below as they may cause stress corrosion cracks in the contacts.

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

3.2. Special Characteristics

Vertical Card Edge Connectors have an operating temperature range of -55° to 85°C [-67° to 185°F]. All connectors consist of a high temperature thermoplastic housing and copper alloy contacts. The contact plating is nickel all over with gold, or gold equivalent on the mating surface and bright tin or bright tin-lead on the press fit tails.

3.3. PC Board Requirements

NOTE

PC boards should conform with the standard industry requirements specified in IPC-J-001.



A. Mother Board Material and Thickness

The pc board material shall be glass epoxy (FR-4 or G-10). The connectors are designed to accommodate a pc board thickness range of 1.4 to 5.0 mm. Call the Product Information number listed at the bottom of page 1 for suitability of other board materials or other board thickness applications not specified on this specification.

B. Daughter Board Material and Thickness

The pc board material shall be glass epoxy (FR-4 or G-10) with a thickness range of 1.6 ± 0.16 mm.

C. PC Board Warpage

Maximum allowable bow of the pc board shall be 0.05 mm per 25.4 mm length over the length of the connector assembly.

D. Mother 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 assembly. The pc board layout dimensions and tolerances shown in Figure 2 *must* be observed when preparing pc boards for the various connector styles. The layout shows the top (component) side of the board.

E. Daughter PC Board Layout

Figure 3 shows a pc board layout for the module connector interface.

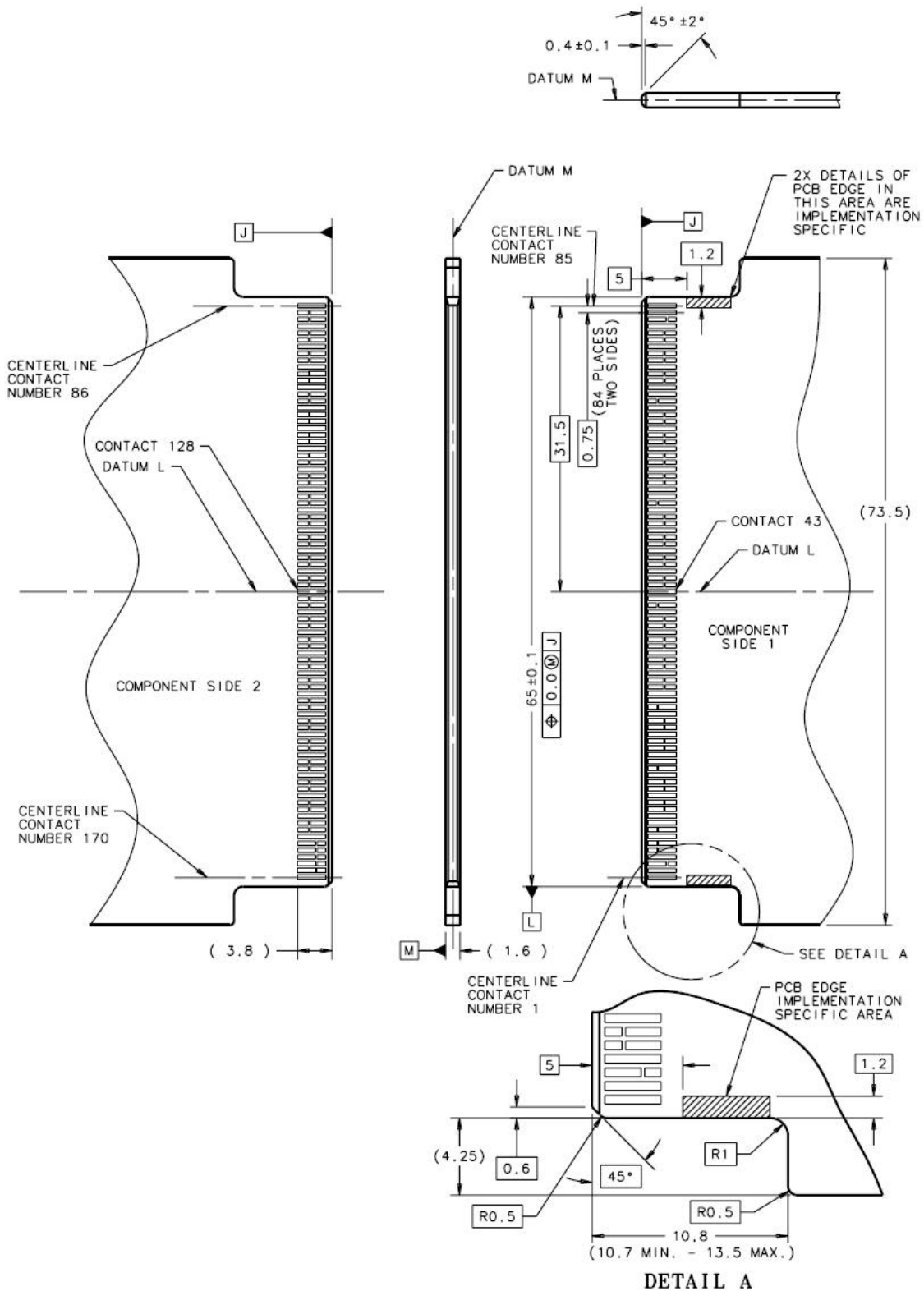
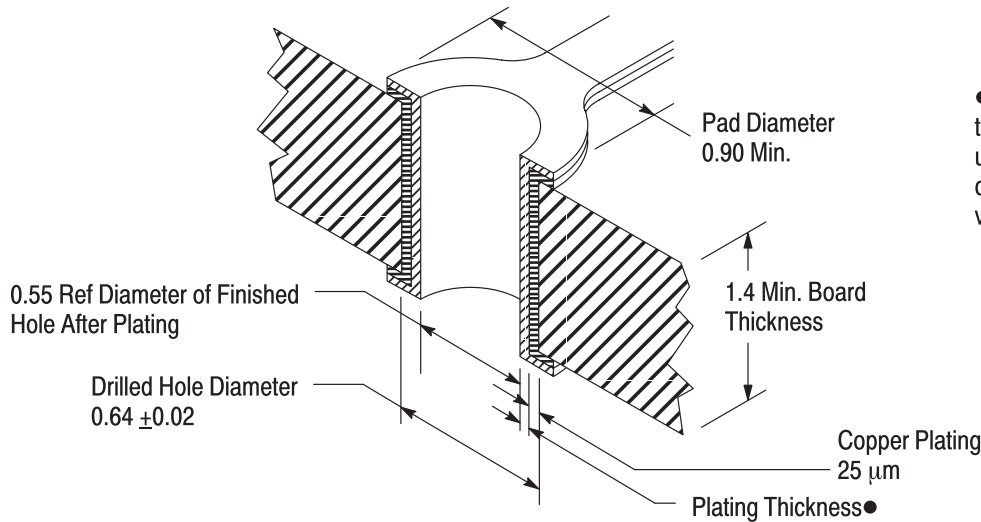


Figure 3

3.4. Through Hole Preparation

The plated through holes in the pc board must be precisely located to ensure proper placement and optimum performance of the connector, and should be prepared and have the dimensions shown in Figure 4.



●NOTE: Other material and thickness of plating may be used based on both RoHS compliance and connector vendor's agreement

SURFACE FINISH

THICKNESS	PLATING
0.004-0.010	Hot Air Solder Leveling (HASL) Tin-Lead (Sn Pb)
0.0005 Min.	Immersion Tin (Sn)
0.0002-0.0005	Organic Solderability Preservative (OSP)
0.0005-0.0012 Au, 0.003-0.007 Ni	Immersion Gold (Au) Over Nickel (Ni) (ENIG)
0.0001 Min.	Immersion Silver (Ag)

Figure 4

3.5. Connector Placement

A. Initial Positioning (Figure 5)



When placing connectors onto the pc board, make sure that the circuit identification number one position is aligned with the number one position pc board hole. The alignment post(s) (if used) must be aligned and started into the matching pc board holes before the press fit contact tines are pre-inserted into their respective holes. Avoid applying in-line force which could cause irreparable damage to the contact tines. The connector must be kept parallel to the full length of the pc board.

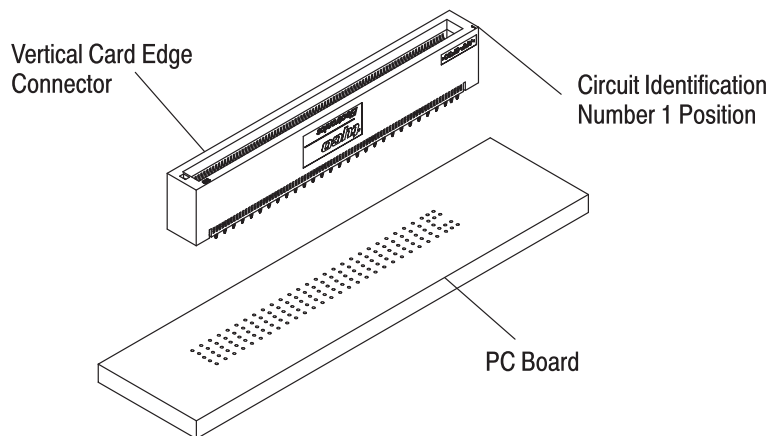


Figure 5

B. Final Seating

The connectors may be seated using Tyco Electronics or commercially available flat-rock press-in tooling. This press-in tooling may be used in application machines shown in Section 5, TOOLING.



When seating the connectors, the load must be evenly applied to the assembly (top surface of the housing) to prevent deformation or damage to the contacts and/or housing.

The seating force required to fully seat the connector assembly will vary depending on hole diameter and PTH plating thickness. Approximate seating force will be 1570–3575 N [350–800 lbs].



Connectors should be handled only by the housing to avoid deformation, contamination, or damage to the contact solder tines.

3.6. Checking Installed Connector

The connector assemblies must be seated on the pc board not exceeding the dimension shown in Figure 6.

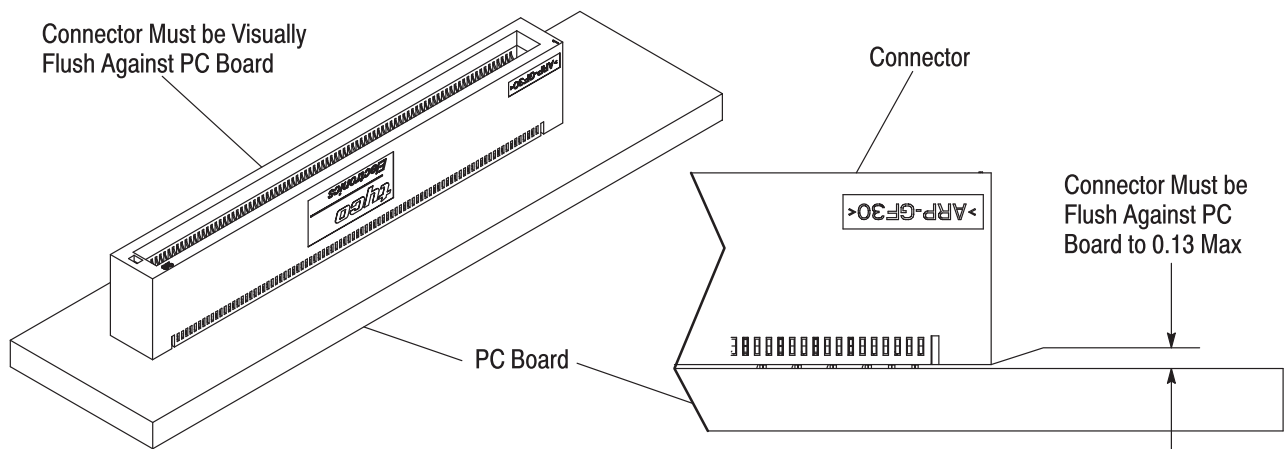


Figure 6

3.7. Daughter Board Usage Precautions

When mating or unmating daughter boards, caution should be taken to prevent the longitudinal rocking of the pc board in respect to the connector. See Figure 7. Angles greater than 5° can cause damage to the housing and misregistration of the contacts on the pc board lands.

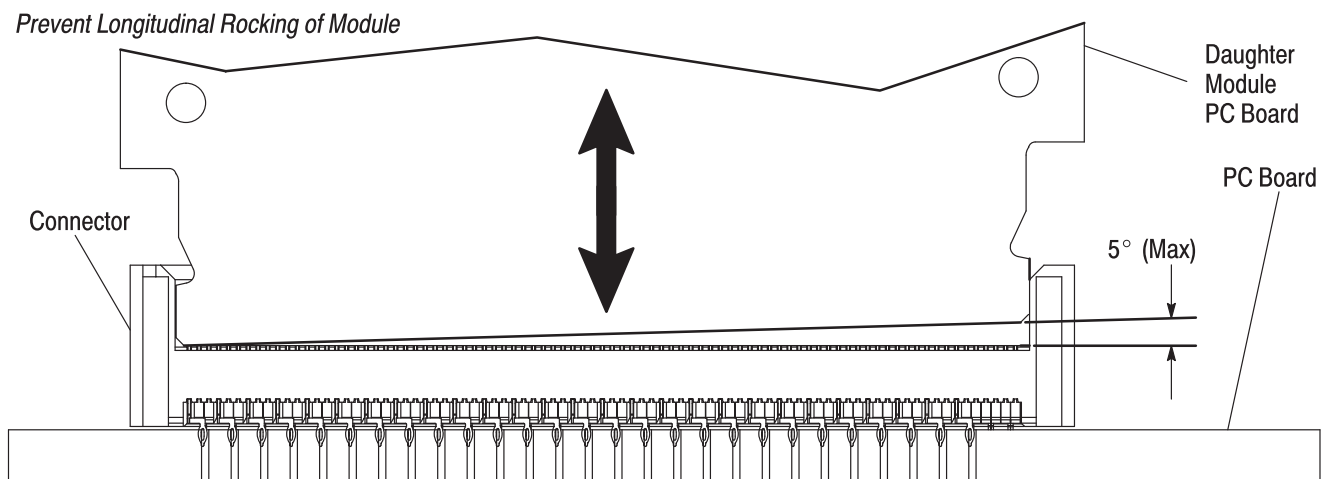


Figure 7

3.8. Alternate Application for Use in Parallel Stacking (Mezzanine) Application

This connector can be used as a stacking connector when used with an interposer card. See Figure 8. The board-to-board stacking height is determined by the interposer board height plus its tolerance plus 11.6 ±0.20 mm. When a single interposer board is used, the interposer card tongues can be equal in width. When multiple interposer cards are used, the width of card tongue “A” should be 0.05 mm smaller than card tongue “B”.

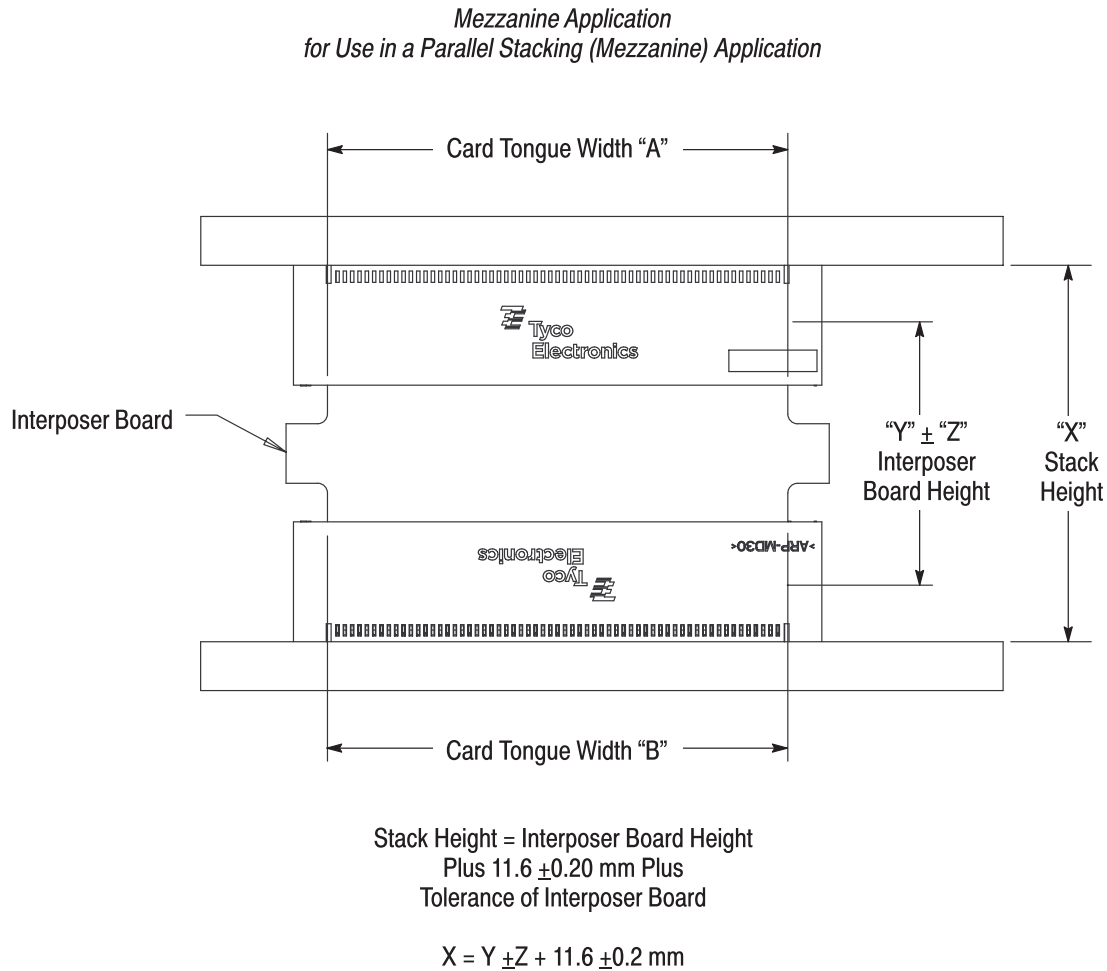


Figure 8

3.9. Repair /Removal



Connectors with damaged contacts cannot be repaired. The connector will need to be removed, and replaced with a new one.

4. QUALIFICATION

The Vertical Card Edge Connectors comply with all applicable requirements of CSA International Category Certification Services. Evaluation for “NRTL/C” compliance through CSA is pending.

5. TOOLING (Figure 9)**NOTE**

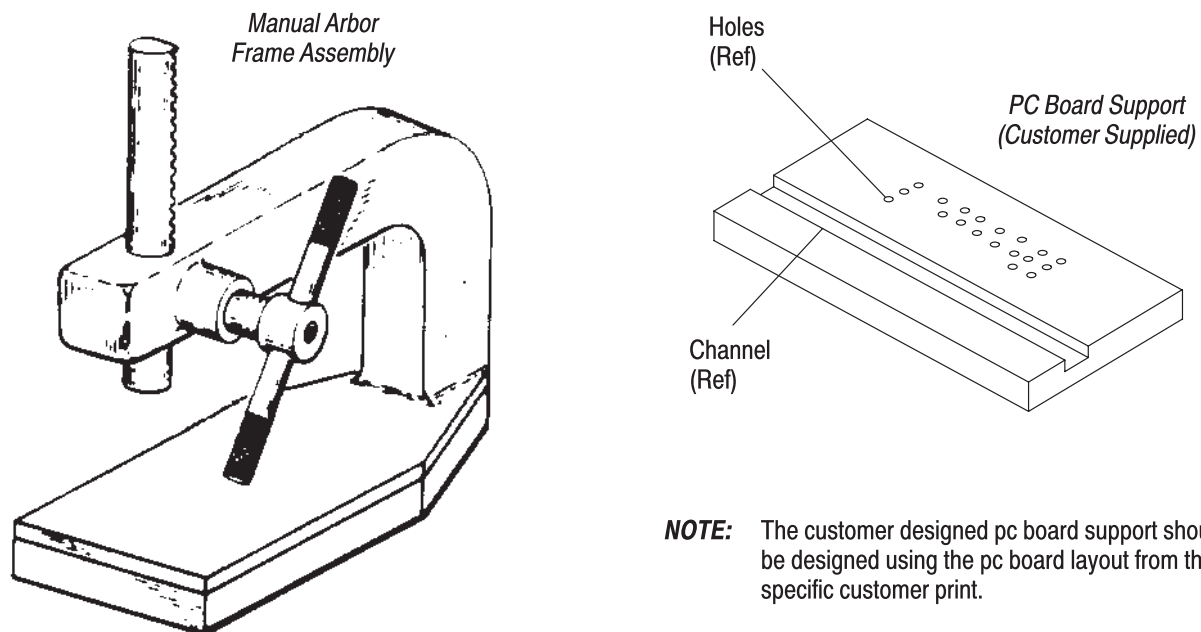
Tyco Electronics Tool Engineers have designed machines for a variety of application requirements. For assistance in setting up prototype and production line equipment, contact Tyco Electronics Tool Engineering through your local Tyco Electronics Representative or call the Tooling Assistance Center number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

- **Arbor Frame Assembly**

Manual arbor frame assemblies are used to exert a downward force used to apply connectors to a pc board using seating tools or flat-rock tooling.

- **PC Board Support**

A pc board support must be used to prevent bowing of the pc board during the insertion of a connector into the board. It should have flat surfaces with holes or a channel wide and deep enough to receive the contact compliant pins and other attaching hardware during installation of the connector on the pc board.



NOTE: The customer designed pc board support should be designed using the pc board layout from the specific customer print.

Figure 9

6. VISUAL AID

Figure 10 shows a typical application of a Vertical Card Edge Connector. 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.

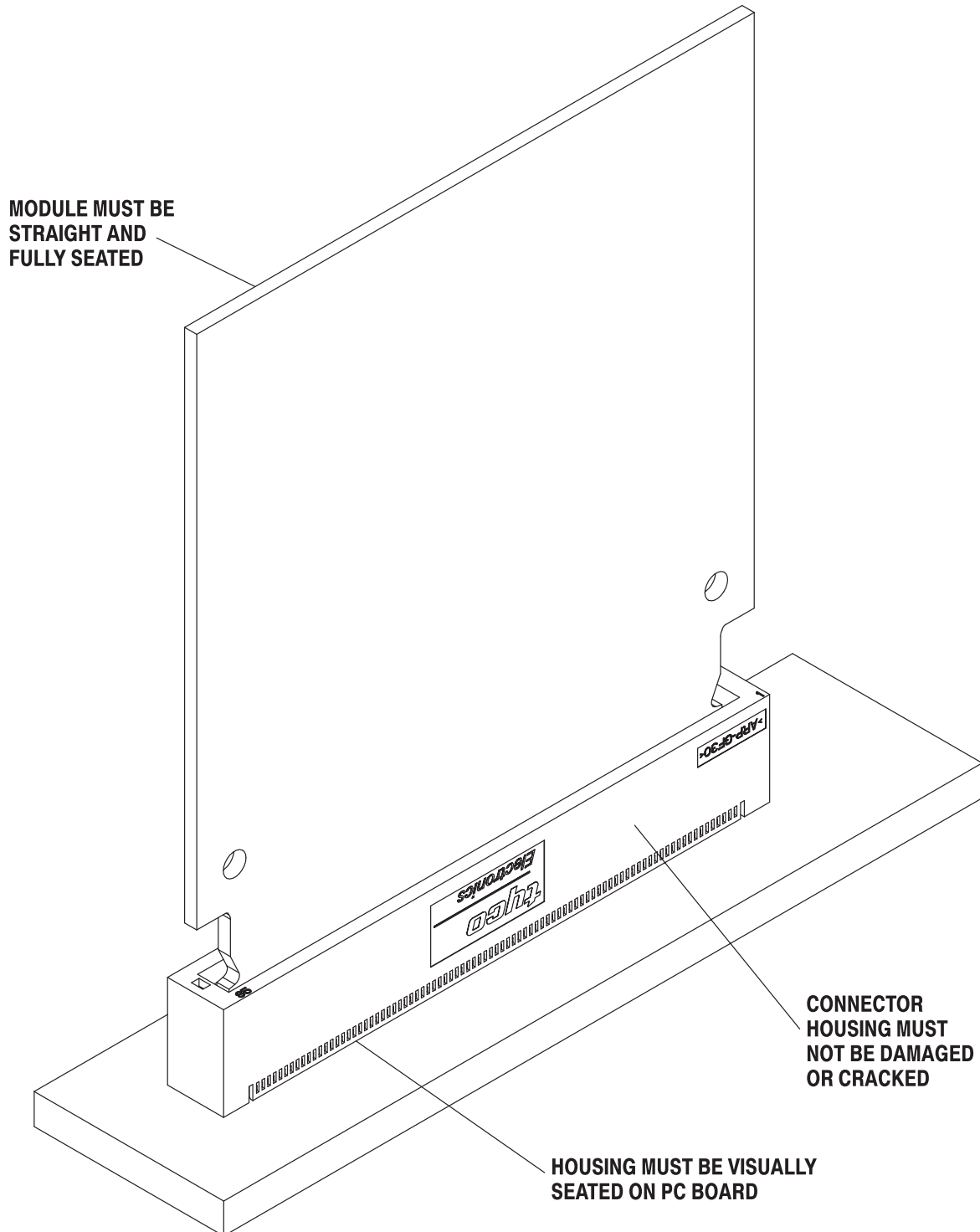


FIGURE 10. VISUAL AID