



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 mm 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 MINIPAK HDE power dual-row right-angle header onto a printed circuit (pc) board (or backplane). These right-angle headers have press-fit compliant pin contacts which allow solderless pc board installation. The right-angle headers have two rows of power blades and are available in 3 through 12 positions with a blade-to-blade centerline spacing of 3.0 mm. Position A2 is marked on the housing for contact identification. The housing features a standoff to ensure proper insertion depth of the contacts after seating on the pc board. These right-angle headers have three levels of contact sequencing for mate-first-break-last operation.

The right-angle header mates with two universal power modules (UPM) receptacles. Application Specification [114-1103](#) provides product description and application requirements for the mating receptacles.

When corresponding with TE Connectivity Personnel, use the terminology provided in this specification to facilitate inquiries for information. Basic terms and features of this product are provided in Figure 1.

Restriction of Hazardous Substances (RoHS) Compliant

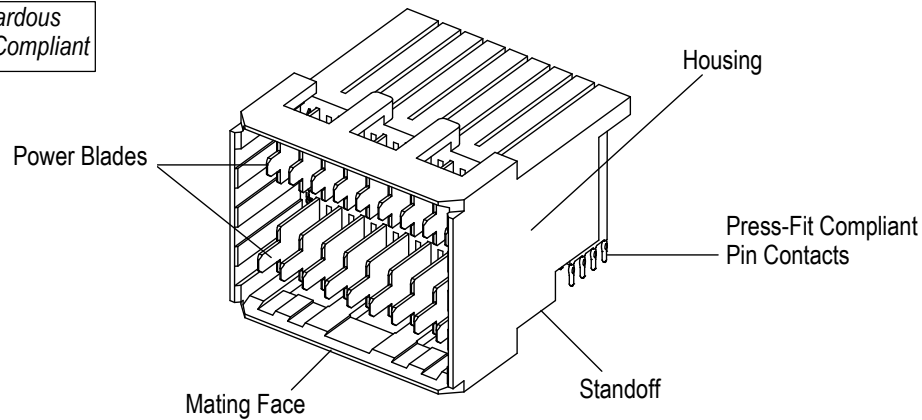


Figure 1

2. REFERENCE MATERIAL

2.1. Revision Summary

- Updated document to corporate requirements
- Corrected force in Paragraph 3.8

2.2. Customer Assistance

Reference Product Base Part Number 1892717 and Product Code L025 are representative of MINIPAK HDE power dual-row right-angle headers. Use of these numbers will identify the product line and help you to obtain product and tooling information. Such information can be obtained through a local TE Representative, by visiting our website at www.te.com, or by calling PRODUCT INFORMATION or the TOOLING ASSISTANCE CENTER at the numbers 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, the information contained in the Customer Drawings takes priority.

2.4. Specifications

Design Objective [108-2289](#) provides expected product performance and test information.

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 operating procedures. Documents available which pertain to this product are:

[408-7777](#) Manual Arbor Frame Assembly 91085-2

2.6. Standards and Publications

EIA-364 "Electrical Connector/Socket Test Procedures Including Environmental Classifications"

3. REQUIREMENTS

3.1. Safety

Do not stack product shipping containers so high that the containers buckle or deform.

3.2. Material

The housing is made of high-temperature thermoplastic, UL94-V-0. The contacts are made of copper alloy with nickel underplate; the interface is plated with gold or gold flash over palladium-nickel, and the tines are made of tin or tin-lead.

3.3. Storage

A. Ultraviolet Light

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

B. Shelf Life

The product should remain in the shipping containers until ready for use to prevent deformation to components. The product 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 product near any chemical listed below as they may cause stress corrosion cracking in the material.

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

3.4. PC Board

A. Material and Thickness

The pc board material shall be glass epoxy (FR-4).and the thickness shall be a minimum of 1.44 mm.

B. Tolerance

Maximum allowable bow of the pc board shall be 0.03 mm over the length of the header.

C. Holes

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

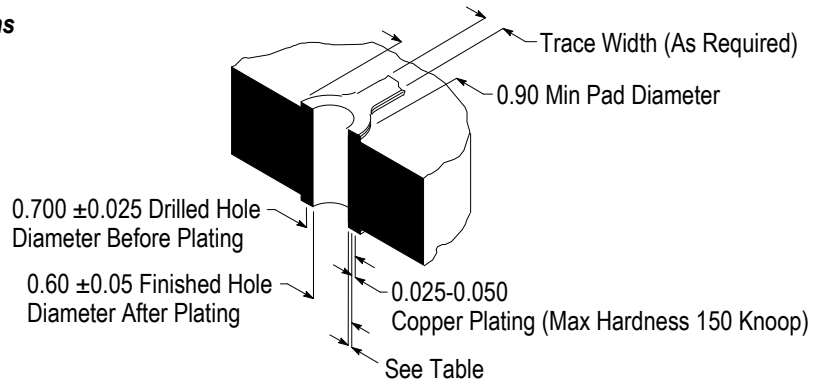


NOTE

For other plating material and thickness, contact *PRODUCT INFORMATION* at the number at the bottom of page 1.

For headers requiring the minimum insertion force, the pc board hole size should favor the high end of the allowable tolerance.

PC Board Hole Dimensions



SURFACE FINISH	THICKNESS
Hot Air Solder Leveling (HASL) Tin-Lead (SnPb)	0.004-0.010
Immersion Tin (Sn)	0.0005 Min
Organic Solderability Preservative (OSP)	0.0002-0.0005
Immersion Silver (Ag)	0.0001 Min
Immersion Gold (Au) Over Nickel (Ni) (ENIG)	0.0001-0.0005 Au; 0.004-0.005 Ni

Figure 2

D. Layout

The holes in the pc board must be precisely located to ensure proper placement and optimum performance of the header. The pc board layout must be designed using the dimensions provided on the customer drawing for the header. Reference sample of the recommended pc board layout is shown in Figure 3.

Sample Recommended PC Board Layout

Datum and Basic Dimensions Established by Customer

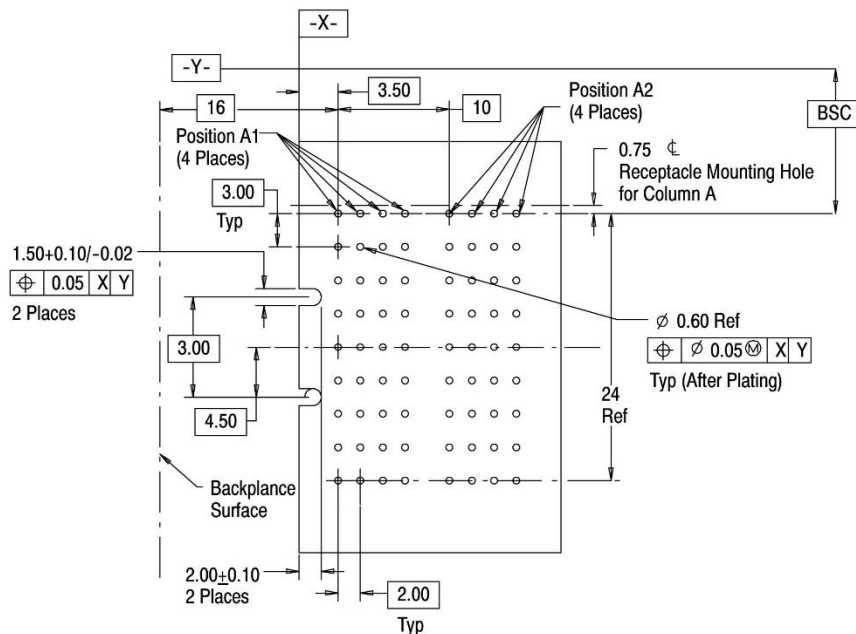


Figure 3

3.5. Right-Angle Header Placement

A. Registration

When placing a header onto the pc board, all contact tines must be aligned with their intended pc board holes and inserted simultaneously to prevent twisting or bending of the contacts.



CAUTION

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

B. Seating Force

Force must be applied evenly on the housing of the right-angle header to prevent deformation or damage to the housing or contacts. The force required to insert the contacts of the right-angle header into the holes of the pc board must be approximately 67 N [15 lb-force] per contact.

3.6. Inspecting Installed Right-Angle Header

The widest section of each compliant pin contact must be within its pc board hole. The housing standoffs must be seated on the pc board not exceeding the dimension shown in Figure 4.

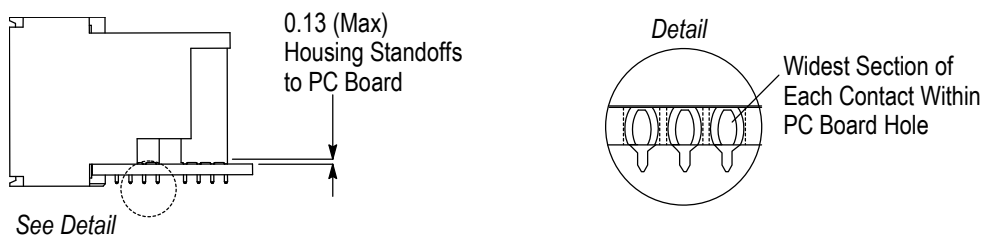


Figure 4

3.7. Mating Connectors

A. Alignment

Proper alignment is essential to ensure full engagement of mating connectors and ensure the contacts are not bent or otherwise damaged during mating and unmating. Alignment tolerances are given in Figure 5.

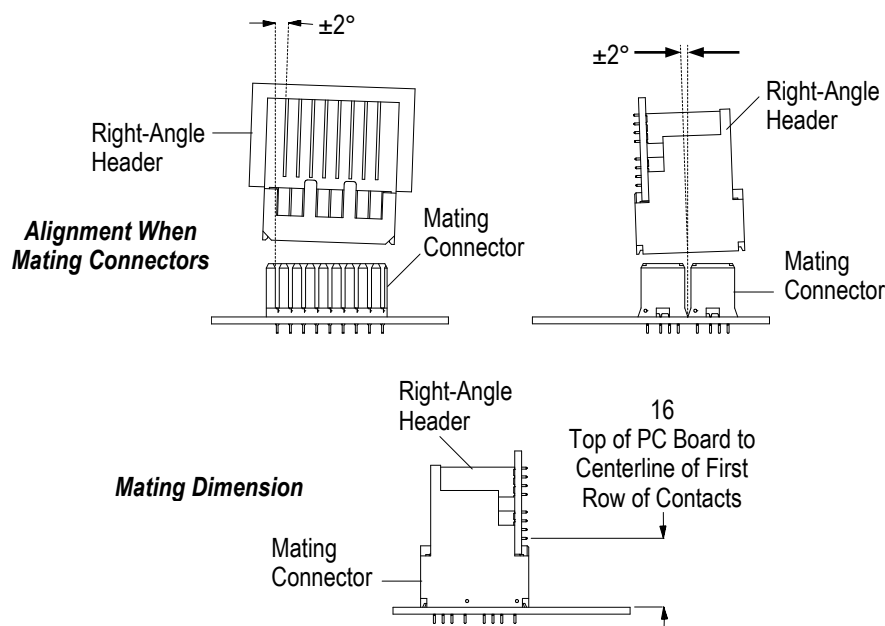


Figure 5

B. Mating Dimension

Full mating of the connectors is necessary to ensure a good connection. The dimension from the top of the pc board (the right-angle header is mounted on) to the centerline of the first row of contacts in the right-angle header should be as shown in Figure 5.

3.8. Removal

Force must be applied evenly on the housing of the right-angle header to prevent deformation or damage to the housing or contacts. The force required to remove the right-angle header from the pc board must be approximately 100 N [22.5 lb-force] per contact.

4. QUALIFICATION

No qualifying support for MINIPAK HDE power dual-row right-angle header was defined at the time of publication of this document.

5. TOOLING

Tooling part numbers and instructional material packaged with the tooling are shown in Figure 6.

5.1. Robotic Equipment

The robotic equipment must have a true position accuracy tolerance of 0.13 mm to properly locate the headers on the pc board. This includes gripper and fixture tolerances as well as equipment repeatability. It must use the header datum surfaces detailed on the customer drawing to ensure reliable placement.

5.2. Manual Arbor Frame Assembly

The manual arbor frame is capable of supplying the required force needed to seat and remove the right-angle header using a flat rock and pc board support or housing support.

5.3. PC Board Support

For automatic machine placement, a pc board support must be used to prevent bowing of the pc board during the placement of headers on the pc board.

5.4. Flat Rock

Commercially-available bar stock with a flat surface large enough to cover the top surface of a right-angle header can be used as a flat rock to seat it onto the pc board. The flat rock can also be used to remove the right-angle header from the pc board by pressing evenly on the end of the contact pins. When removing a right-angle receptacle from the pc board, a housing support with sides and ends as close as possible to the size of the housing is recommended.

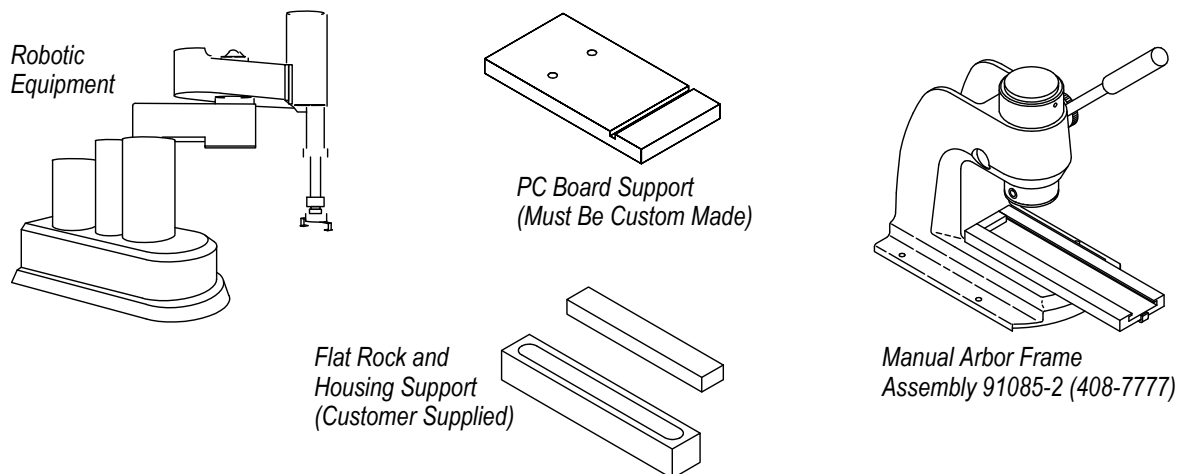


Figure 6

6. VISUAL AID

The illustration below shows a typical application of this product. 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.

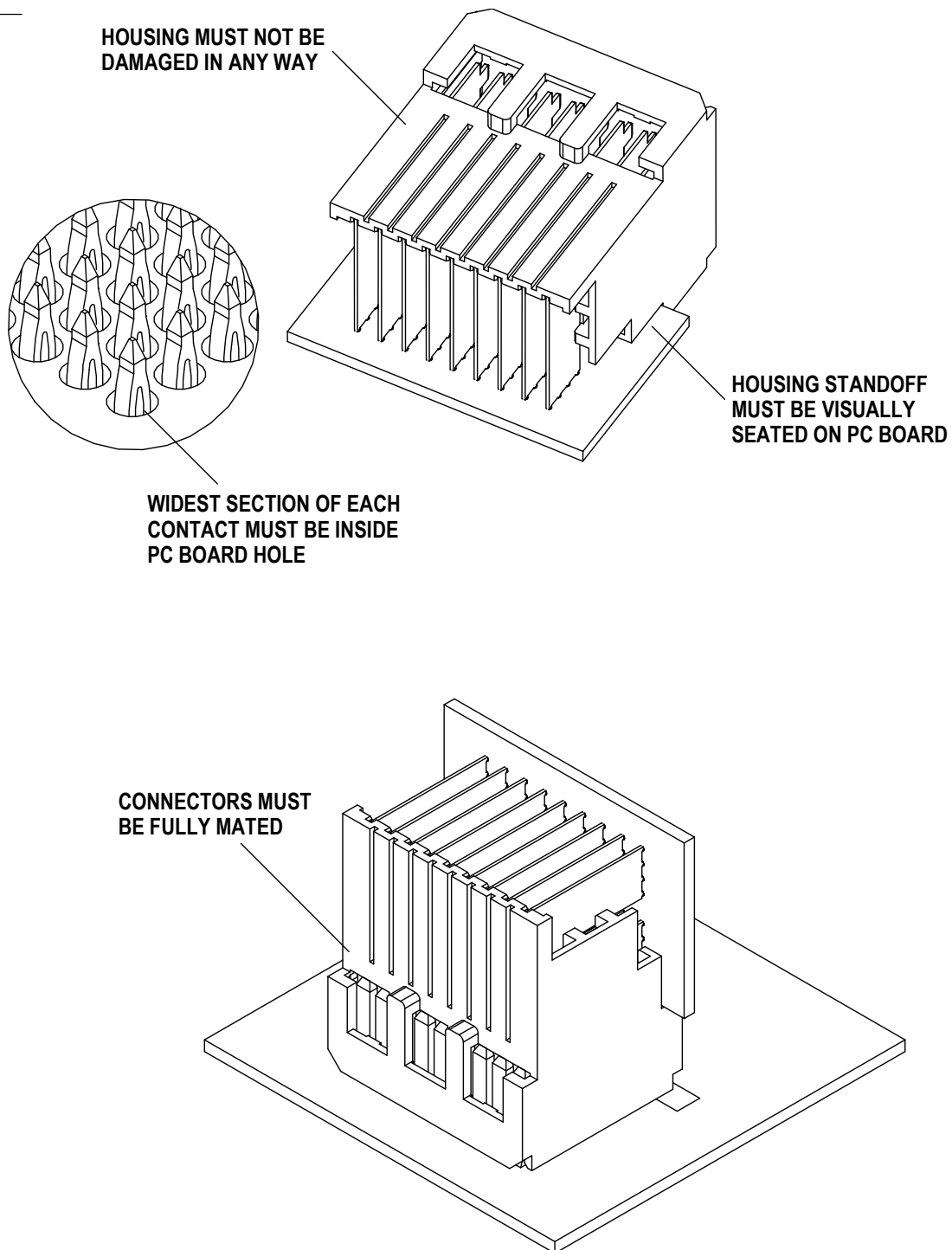


FIGURE 7. VISUAL AID