

**Impact 100-Ohm Standard Connector System**

**NOTE**

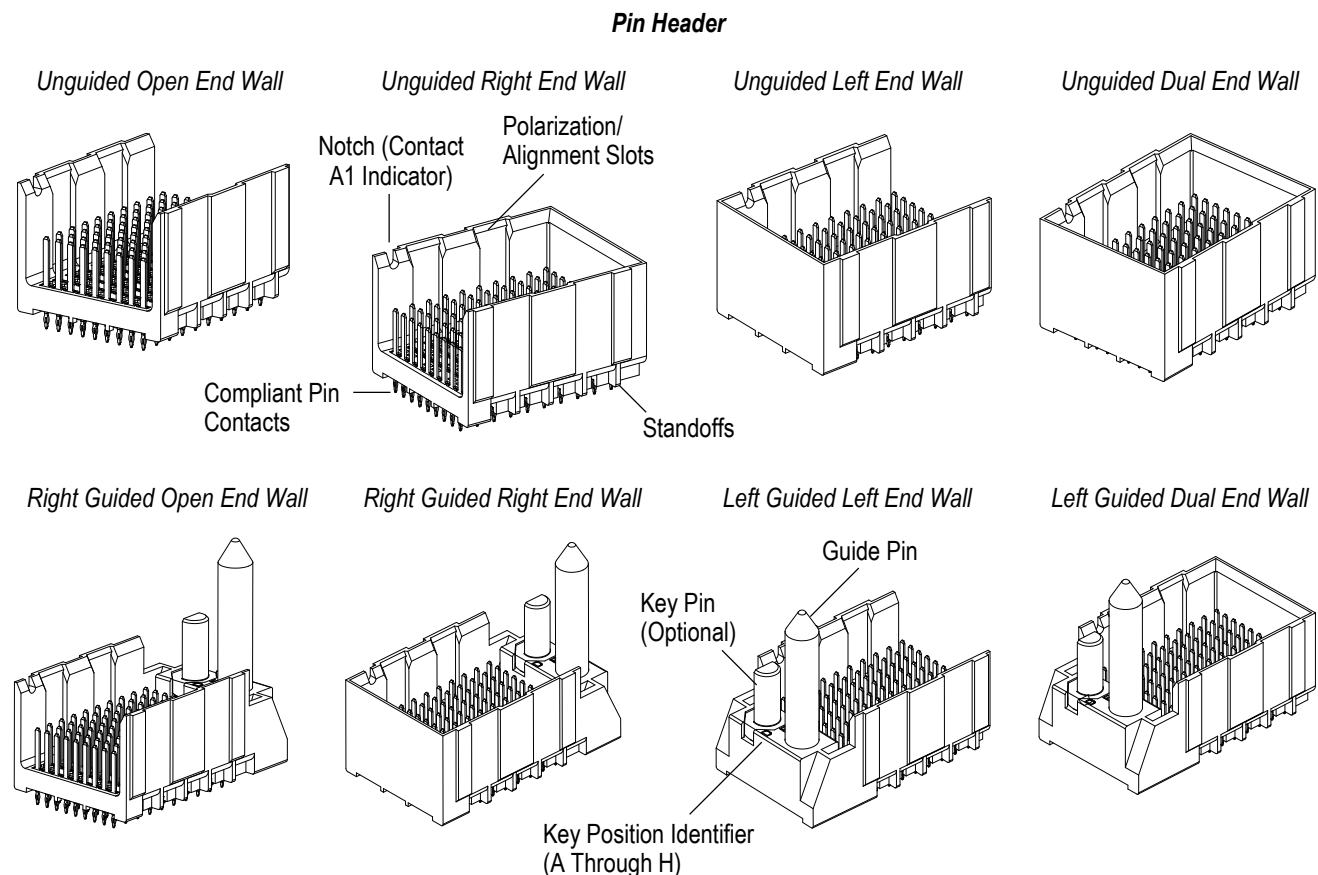
All numerical values are in metric units [with U.S. customary units in brackets]. Dimensions are in millimeters. Unless otherwise specified, dimensions have a tolerance of  $\pm 0.13$  and angles have a tolerance of  $\pm 2^\circ$ . Figures and illustrations are for identification only and are not drawn to scale.

**1. INTRODUCTION**

This specification covers the requirements for application of Impact 100-ohm standard connector system. The connector system uses a modular concept and interconnects two printed circuit (pc) boards. The system consist of vertical press-fit pin header connectors and right-angle press-fit receptacle connectors. The connectors are available with 2, 3, 4, 5, and 6 pairs and 6, 8, 10, 12, 14, 16, 18, and 20 columns. The connectors are designed to be seated on the pc board via eye-of-needle compliant pin contacts, which are available in two sizes: 0.39 and 0.46, and three lengths: 4.5, 4.9, and 5.5. The pin header and receptacle have the same pc board footprint. The pin header features a notch that indicates contact A1. The chamfer of each contact face in the direction of the notch. The connectors have standoffs to aid in full seating on the pc board.

The connectors are offered in a left-guided, right-guided, or unguided form. The guided forms feature a guide pin (pin header) or guide module (receptacle) that aid in proper alignment during mating. These forms are available with or without a keying feature. In addition, the pin header is available with an open, right, left, or dual end wall—with or without a guide pin. The connectors also have polarization/alignment features that help position the contacts prior to engagement of the circuits during mating.

When corresponding with 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.



Impact is a trademark of Molex Incorporated.

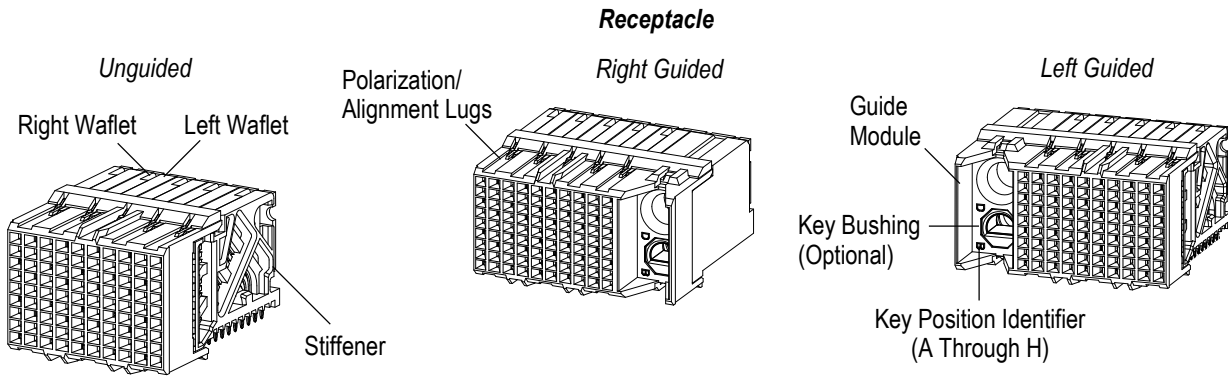


Figure 1 (End)

## 2. REFERENCE MATERIAL

### 2.1. Revision Summary

Revisions to this application specification include:

- Added 100-ohm to title of application specification
- Removed “expected” from Paragraph 2.4, added Paragraphs 3.1 and 3.2,A, and added plating to Figure 2
- Moved previous Paragraph 3.3,B to Section 1, previous 3.3,C to Paragraph 3.5, previous 3.4 to Paragraph 3.6,A, previous 3.5 to Paragraph 3.6,B

### 2.2. Customer Assistance

Reference Product Base Part Numbers 2007788 (pin header) and 2007705 (receptacle) and Product Code L346 are representative of Impact 100-ohm standard connector system. Use of these numbers will identify the product line and help you to obtain product and tooling information. Such information can be obtained by visiting our website at [www.te.com](http://www.te.com) or by calling the number at the bottom of page 1.

### 2.3. Drawings

Customer drawings for product part numbers are available at [www.te.com](http://www.te.com). The information contained in the customer drawings takes priority.

### 2.4. Specifications

Product Specification [108-2351](#) provides product performance and test results.

## 3. REQUIREMENTS

### 3.1. Safety

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

### 3.2. 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.

### 3.3. PC Board

#### A. Material and Thickness

The pc board shall be made of FR-4. The pc board shall have a minimum thickness of 1.0. For circuit routing concerns, call the number at the bottom of page 1.

#### B. Layout

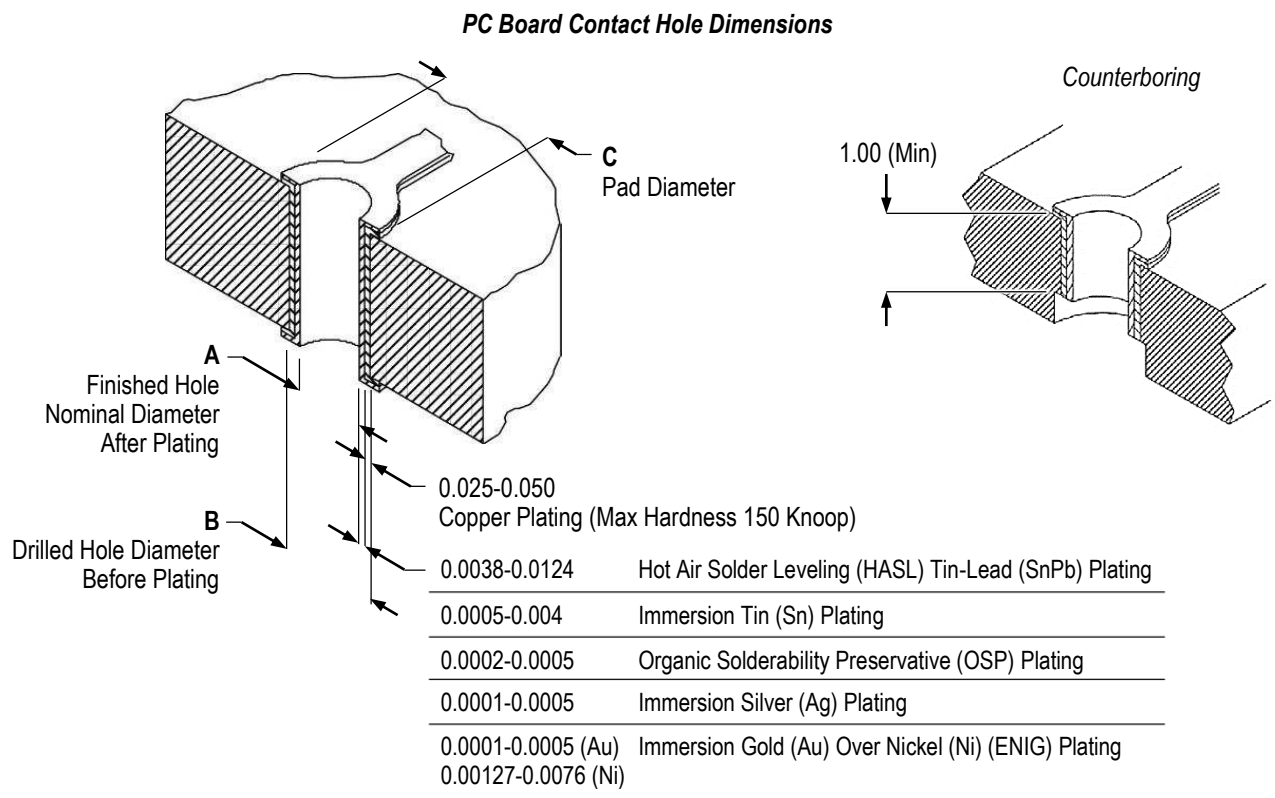
All holes in the pc board must be precisely located to ensure proper placement and optimum performance. The pc board layout must be designed using the dimensions provided on the customer drawing for the connector.

#### C. Hole Configuration

The holes in the pc board must be drilled and plated through the dimensions given in Figure 2.

The pc board must be counterbored (back-drilled) for signal integrity performance. Minimum depth of the hole is given in Figure 2.

**i** **NOTE**  
For consideration of other plating options, call the number at the bottom of page 1.



| DIMENSION |            |           |              |
|-----------|------------|-----------|--------------|
| A         | B          | C         |              |
|           |            | Top Layer | Bottom Layer |
| 0.39±0.05 | 0.48±0.013 | 0.80      | 0.80         |
| 0.46±0.05 | 0.55±0.013 | 0.71      | 0.80         |

Figure 2

### D. End-to-End Placement

Connector can be placed on the pc board end to end within the dimensions given in Figure 3.

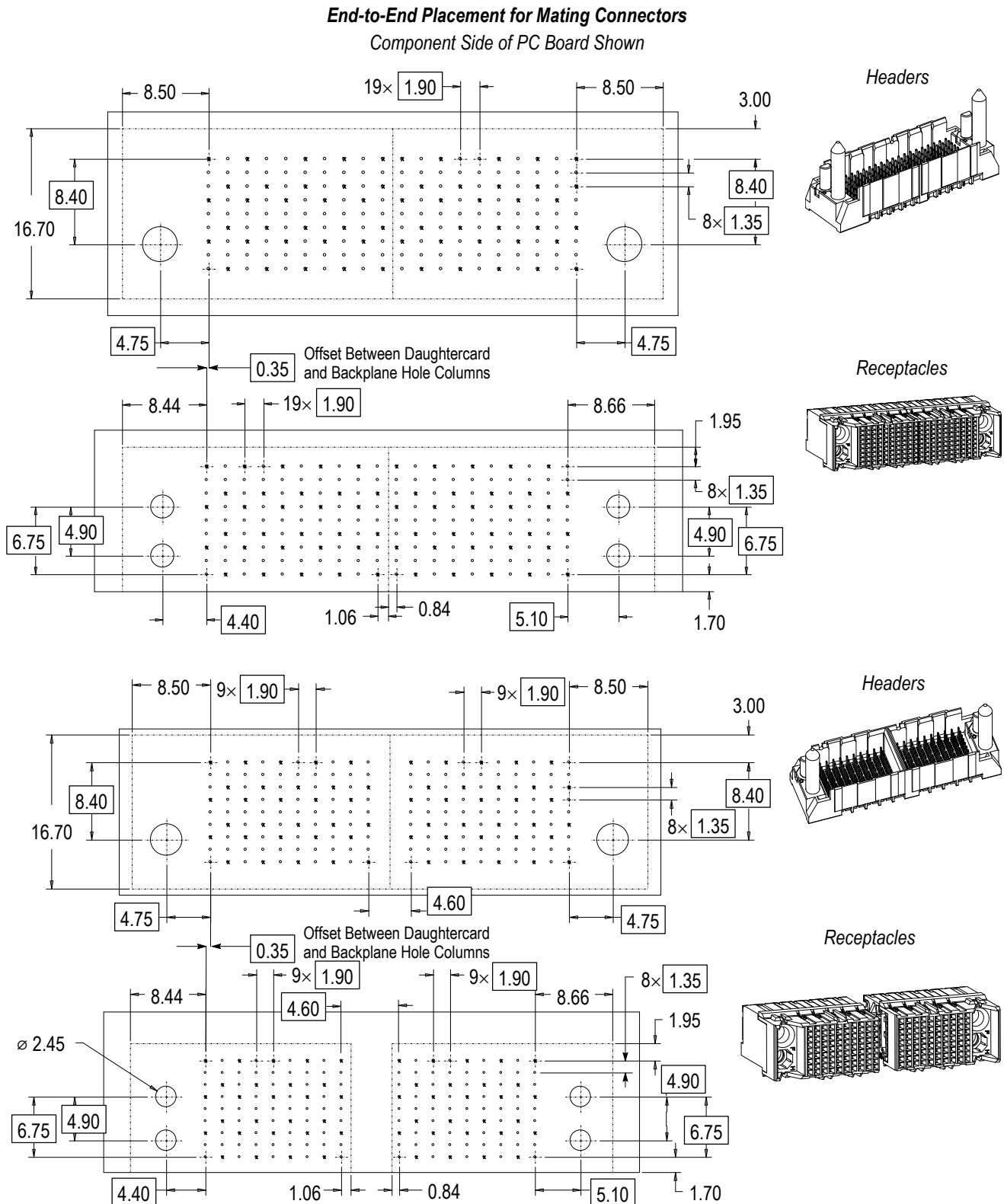


Figure 3

### 3.4. Seating

#### A. Initial Positioning

The connector should be positioned on the pc board before seating it. The connector must be gripped by the housing and/or waflets, not the contacts, to prevent contact damage or contamination. All contact leads should be aligned and inserted into the pc board simultaneously to prevent twisting or bending of the contacts.

When placing a pin header onto the pc board, the contact 1 to contact 1 orientation must be maintained.

When placing a receptacle onto the pc board, the row of contact leads closest to the pc board edge should be aligned first, then the remainder should be aligned by rolling the receptacle from front to back.

#### B. Force

Seating force will vary according to the pc board variations and signal pin count. More detailed information please refer to compliant pin insertion force specification on product specification 108-2351.

The connector must be seated on the pc board so that the standoffs are flush with or slightly raised from the pc board not exceeding the dimension given in Figure 4.



**CAUTION**

Over-seating a connector will deform parts critical for performance of the connector. Maximum seating force occurs prior to the connector standoffs bottoming on the pc board.

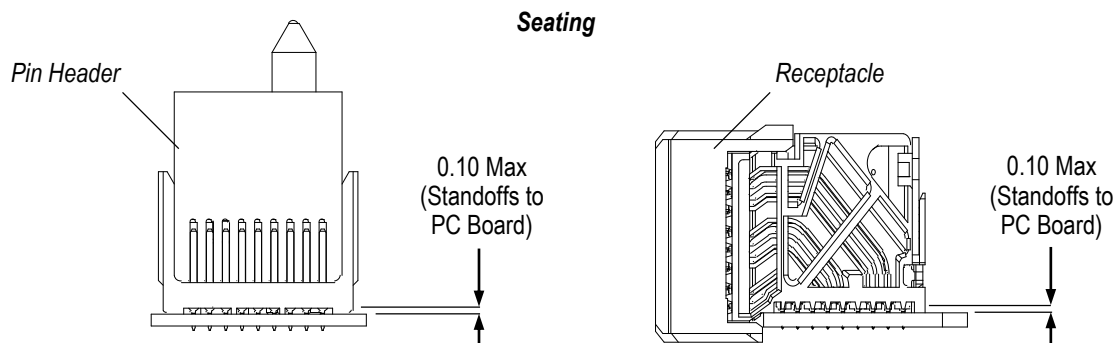


Figure 4

### 3.5. Mounting

Guide pins and guide modules must be secured to the pc board using customer-supplied mounting screws. The screw type depends on the type of pc board and its thickness to avoid interference when mating the connectors. Screw type and recommended torque are given in Figure 5.

| CONNECTOR  |             | PC BOARD     |           | SCREW             |                                  |
|------------|-------------|--------------|-----------|-------------------|----------------------------------|
| TYPE       | PAIR        | TYPE         | THICKNESS | TYPE              | RECOMMENDED TORQUE (Nm [in.-lb]) |
| Pin Header | 2 through 6 | Backplane    | 6.5 Max   | 2-56 Machine      | 0.23 [2.0]                       |
|            | 2           | Ram          | 4.0 Max   | 2-32 Self-Tapping | 0.11 [1.0]                       |
|            | 3           |              | 4.4 Max   |                   | 0.17 [1.5]                       |
|            | 4 through 6 | Ram          | 4.4 Max   |                   | 0.23 [2.0]                       |
| Receptacle | 2           | Daughtercard | 1.8-2.4   | 2-32 Self-Tapping | 0.11 [1.0]                       |
|            | 3           |              | 1.9-2.5   |                   | 0.17 [1.5]                       |
|            | 3 through 6 | Mezzanine    | 4.4 Max   |                   | 0.23 [2.0]                       |

Figure 5

### 3.6. Mating

#### A. Alignment

Mating connectors must be properly aligned to ensure full engagement and to prevent bent or otherwise damaged contacts during mating. Tolerance limitations are given in Figure 6.

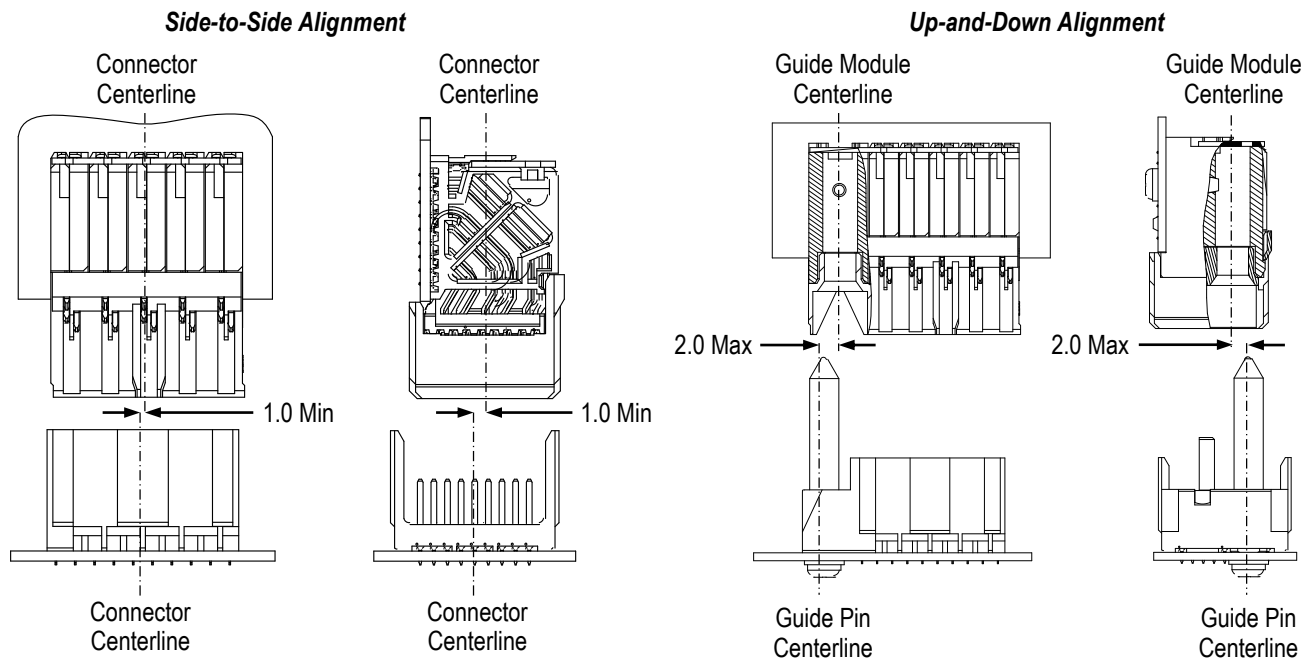


Figure 6

#### B. Sequence and Wipe Length

These connectors provide sequencing among mate first, break last (MFBL) contacts with 2 mating levels: long and short. The reliable mating point data, measured between the surface of the backplane and the centerline of contact row A at the point of electrical engagement, is given in Figure 7.

Full mating of connectors is necessary to ensure the maximum signal transmission performance. The dimension given for the fully mated condition is recommended. The wipe length, calculated by subtracting the fully mated condition from the reliable mating point data, is given in Figure 7.

#### C. Mating Dimension

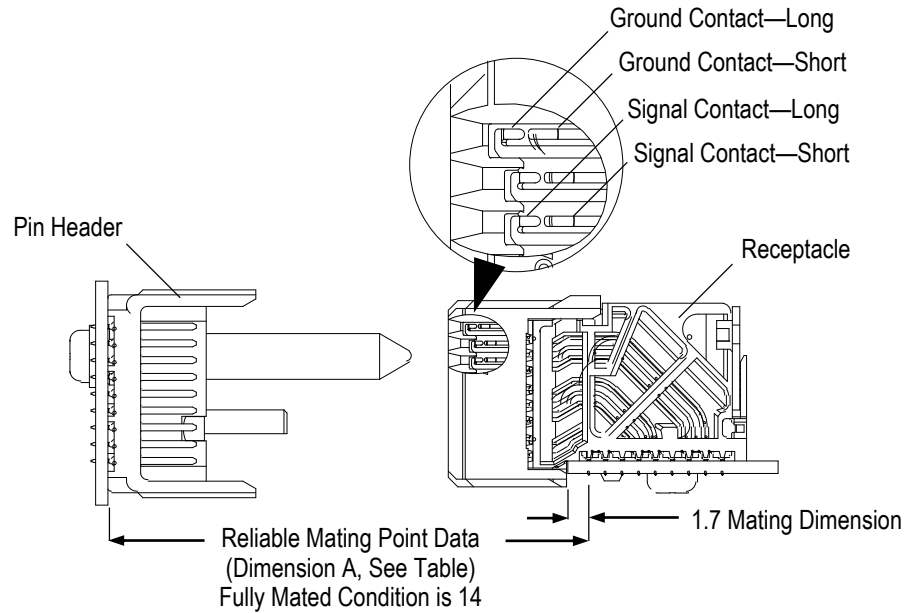
When fully engaged, the dimension between the surface of the backplane (pin header) and centerline of contact row A of the daughtercard (receptacle) must meet the dimension given in Figure 7.

#### D. Unmating

The connectors must be unmated by pulling them straight apart.

### 3.7. Replacement and Repair

For pin headers, individual contacts can be replaced without removing the pin header from the pc board. For receptacles, construction of the housing does not allow replacement of individual contacts. Damaged or defective connectors must not be used.



| CONTACT    |            | MATING LEVEL | DIMENSION A<br>(Reliable Mating Point Data) | WIPE LENGTH |
|------------|------------|--------------|---|-------------|
| PIN HEADER | RECEPTACLE |              |   |             |
| 4.5        | Ground     | Long         | 16.60                                       | 2.52        |
|            |            | Short        | 15.60                                       | 1.52        |
|            | Signal     | Long         | 16.10                                       | 2.02        |
|            |            | Short        | 15.10                                       | 1.02        |
| 4.9        | Ground     | Long         | 17.00                                       | 2.92        |
|            |            | Short        | 16.00                                       | 1.92        |
|            | Signal     | Long         | 16.50                                       | 2.42        |
|            |            | Short        | 15.50                                       | 1.42        |
| 5.5        | Ground     | Long         | 17.60                                       | 3.52        |
|            |            | Short        | 16.60                                       | 2.52        |
|            | Signal     | Long         | 17.10                                       | 3.02        |
|            |            | Short        | 16.10                                       | 2.02        |

Figure 7

### 3.8. Removal

These connectors must be removed from the pc board using a push bar (or flat rock) and pc board support.

### 4. QUALIFICATION

Impact 100-ohm standard connector system is approved by Underwriters Laboratories Inc. (UL) in File E28476-20011206 (cURus, no electricals, V0 flammability, 130°C, not for interrupting current) to meet US and Canadian standards.

### 5. TOOLING

Tooling part numbers are given in Figure 8.

### 5.1. Seating Tool

A seating tool must be used with a power unit or manual arbor frame. These tools are designed to prevent the contacts from backing out of the connector during seating onto the pc board.

### 5.2. PC Board Support

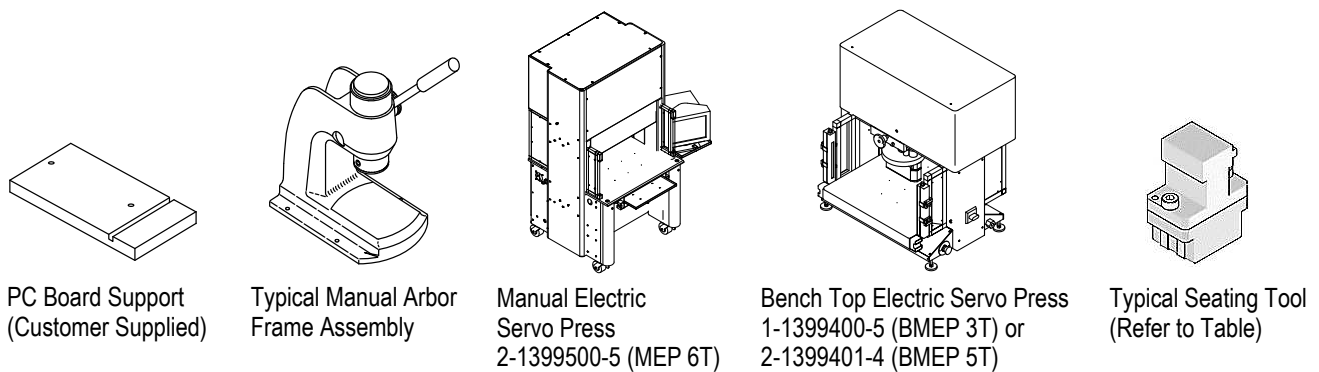
A pc board support must be used to prevent bowing of the pc board during connector seating. It should have a flat surface with holes or a channel large enough and deep enough to receive any components that may protrude below the pc board surface. The pc board must be secured to the pc board support to prevent movement of the board. The board support must also be used when removing connectors from the pc board. The pc board support should be secured to a flat and stable surface.

### 5.3. Power Unit

These power units provide the force required to drive the seating tool to insert the contacts into the pc board holes. For more information on the power units, visit TE press-fit equipment website at <http://tooling.te.com/pressfit.asp>.

### 5.4. Manual Arbor Frame

The manual arbor frame must provide sufficient amount of force to drive the seating tool to insert the contacts into the pc board holes.



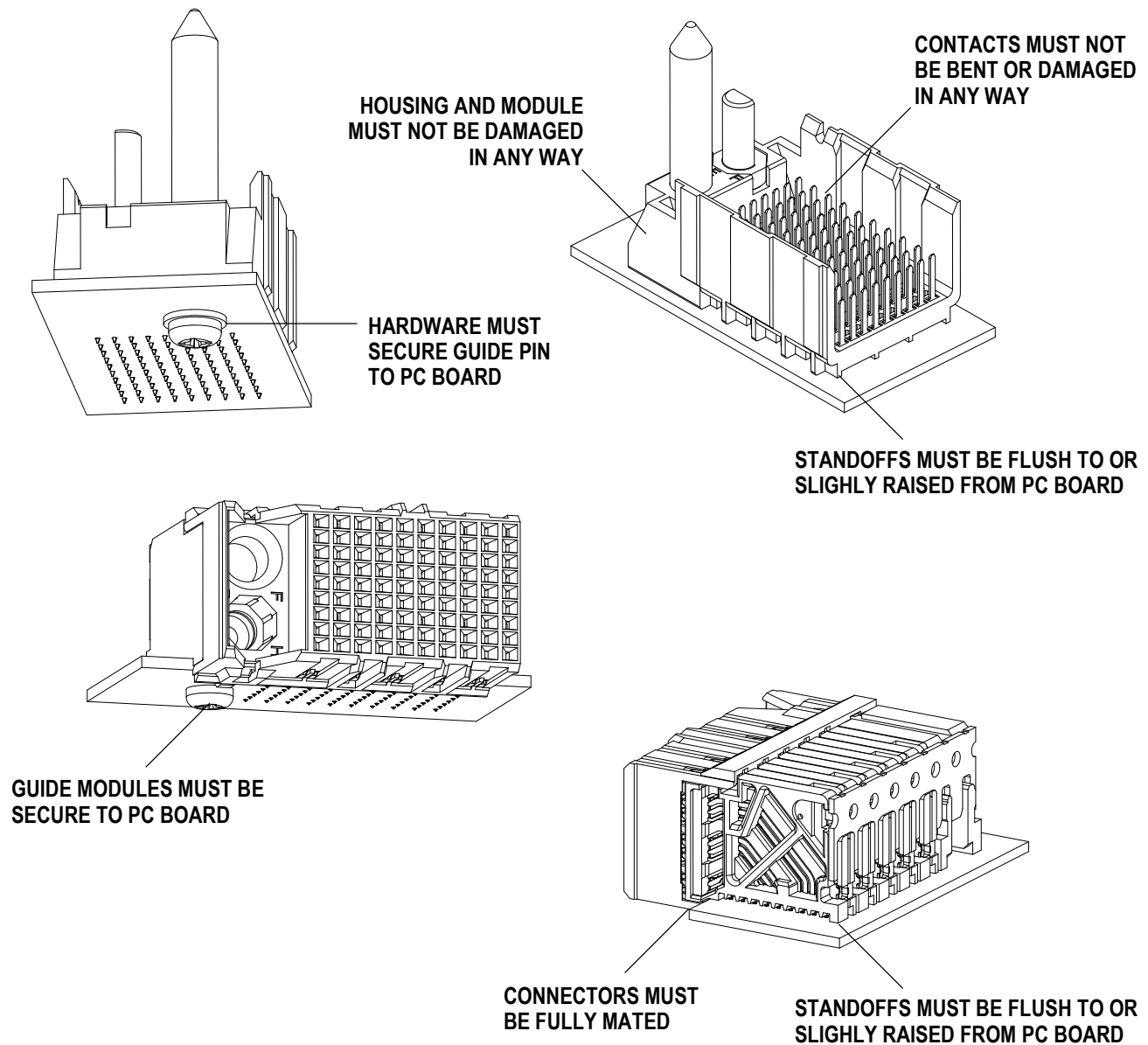
| CONNECTOR |         | SEATING TOOL           |                           |
|-----------|---------|------------------------|---------------------------|
| PAIR      | COLUMNS | PIN HEADER (Backplane) | RECEPTACLE (Daughtercard) |
| 2         | 10      | 2018536-1              | 2018538-1                 |
|           | 16      | 2018537-1              | 2018539-1                 |
| 3         | 8       | 2018376-1              | 2018379-1                 |
|           | 10      | 2018377-1              | 2018380-1                 |
|           | 16      | 2018378-1              | 2018381-1                 |
| 4         | 8       | 2018523-1              | 2018529-1                 |
|           | 10      | 2018524-1              | 2018530-1                 |
|           | 16      | 2018513-1              | 2018531-1                 |
| 5         | 10      | 2018446-1              | 2018448-1                 |
|           | 12      | 2018447-1              | 2018449-1                 |
|           | 16      | 2018525-1              | 2018532-1                 |
| 6         | 10      | 2018526-2              | 2018533-1                 |
|           | 14      | 2018527-2              | 2018534-1                 |
|           | 16      | 2018528-1              | 2018535-1                 |

Figure 8



## 6. VISUAL AID

The illustration below shows a typical application of Impact 100-ohm standard connector system. 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**