

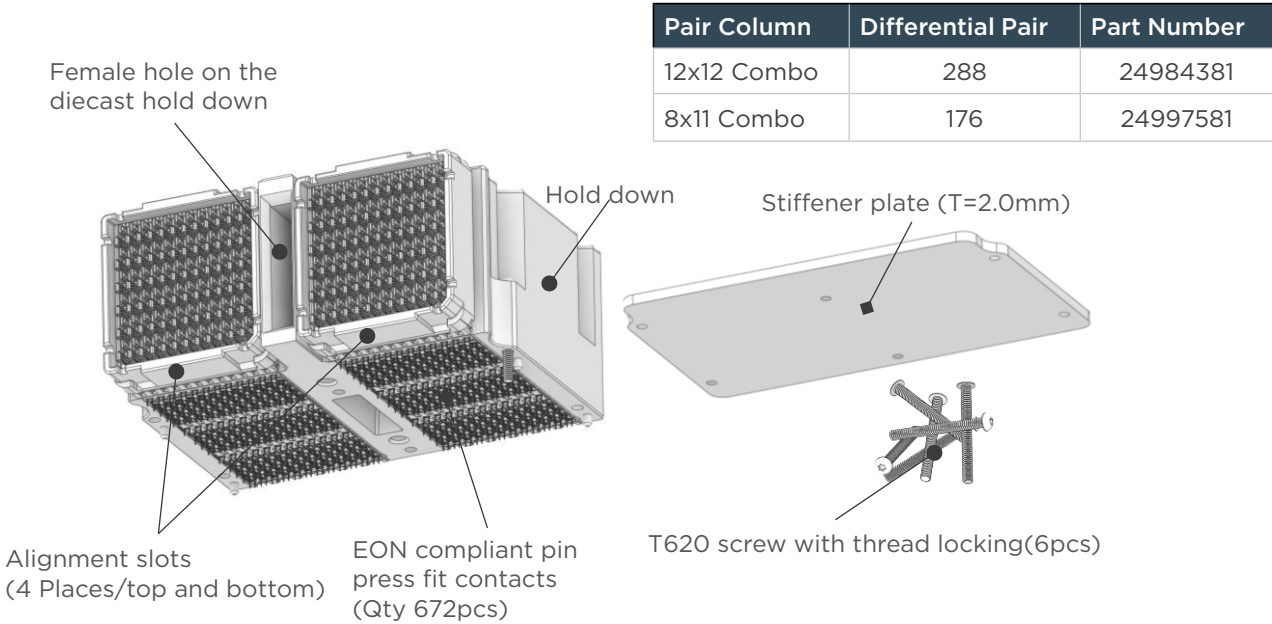
# AdrenaLINE Slingshot High Density Connector User Guide

General Application Specification

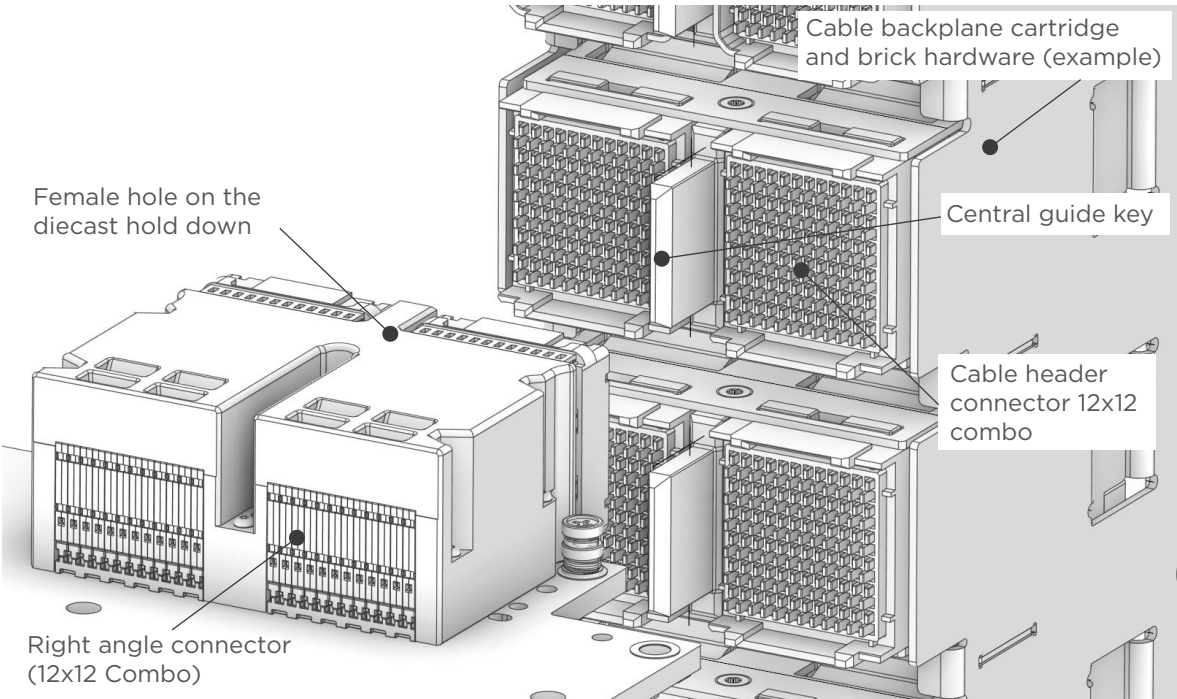
1. INSTRUCTION

The AdrenaLINE Slingshot High Density Connectors are available in right angle (R/A) connector assemblies. The RightAngle receptacle connector assemblies connect to PC boards via compression beams, eyeofneedle (EON) compliant pin pressfit contacts, and 6pcs fixing screws to the supplied stiffener plate. When mating, connector alignment features help prealign the connector housings prior to engagement of the contacts. For RightAngle connectors, the cable backplane cartridge central guide key fits into female guide hole.

In addition, brick hardware is required separately and should be used with the connector to provide errorfree mating in its role of assisting connector mating and preventing damage to the connector housing and contacts. The female guide hole to be installed onto the diecast hold down and the male central guide key that installed to the cartridge are designed to be installed on brick hardware. Basic terms and features of this product are provided in Figure 1.



Right angle connector assemblies (12x12 Combo)



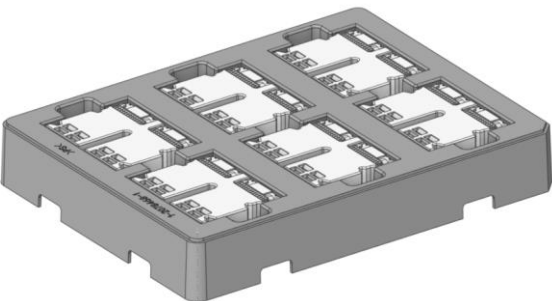
Before mating condition of right angle and cable header

Figure 1

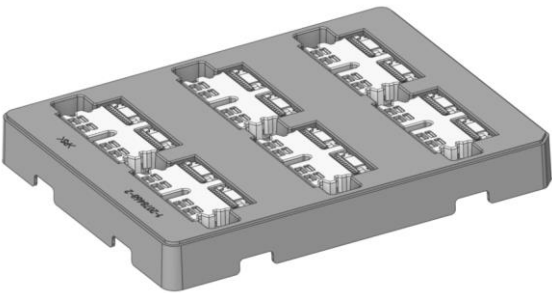
2. PACKING CONDITION AND PICKUP

R/A connectors on hard tray packing

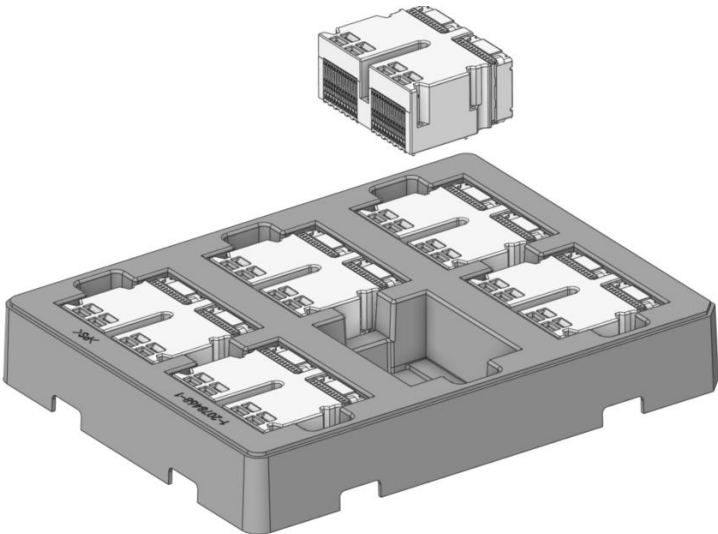
6pcs/tray(12x12 COMBO)



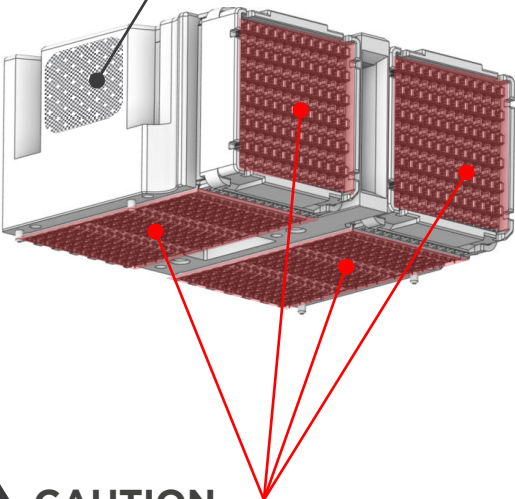
6pcs/tray (8x11 COMBO)



R/A connectors pickup direction



**i** **NOTE**  
Connector hold area by finger  
(both side)



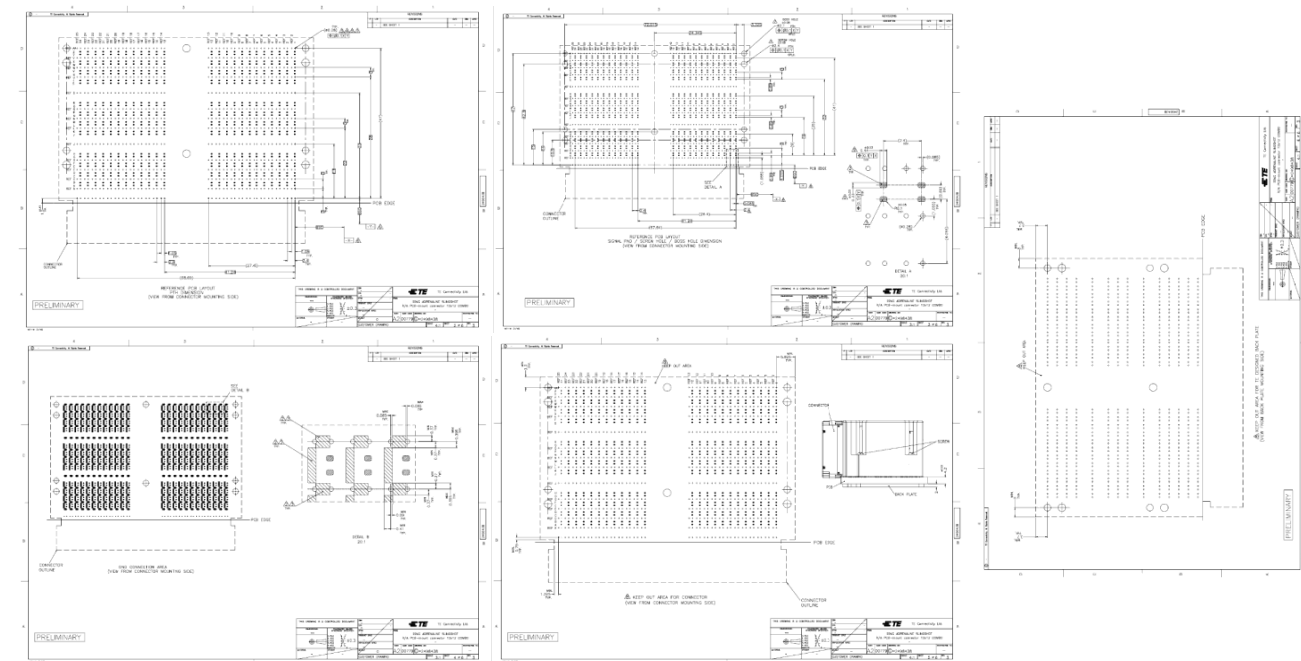
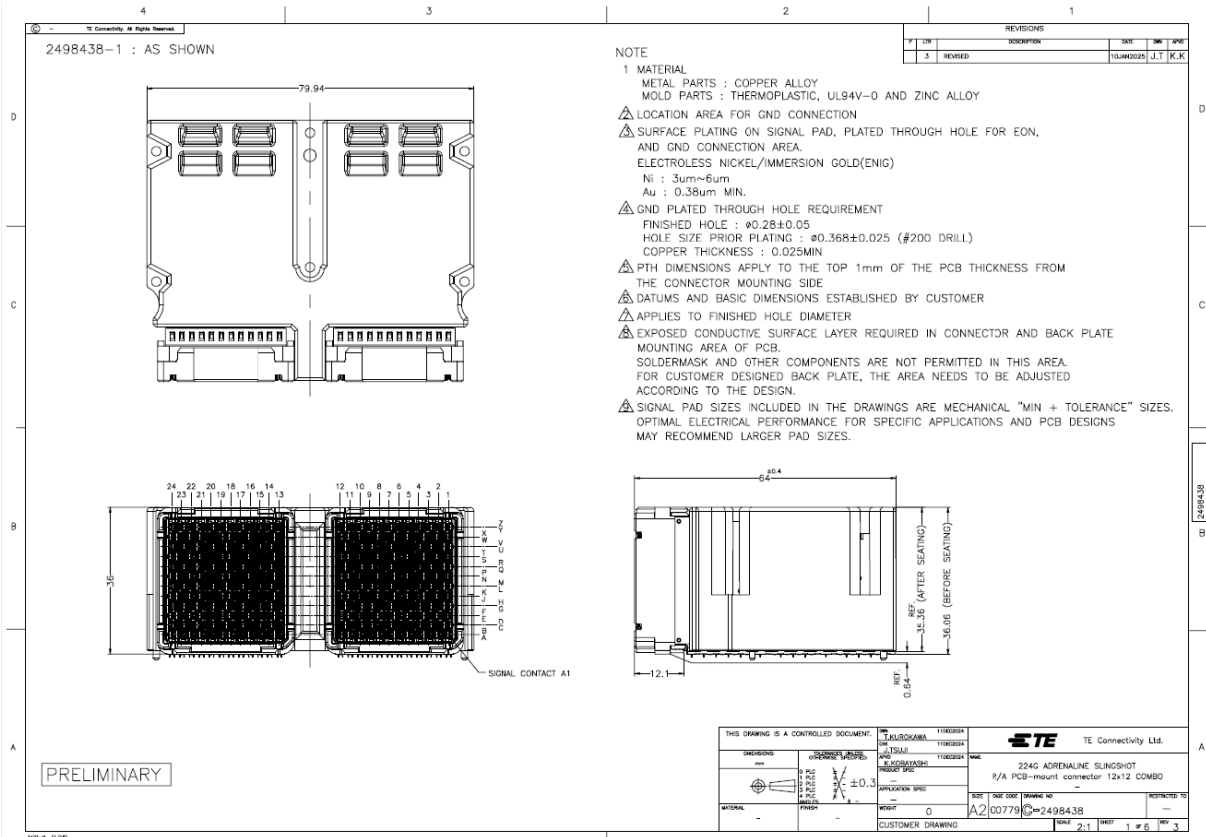
**!** **CAUTION**

Do NOT touch the connector mating area and EON contacts  
(bottom area).  
There is a risk of the contact deformation.

Figure 2

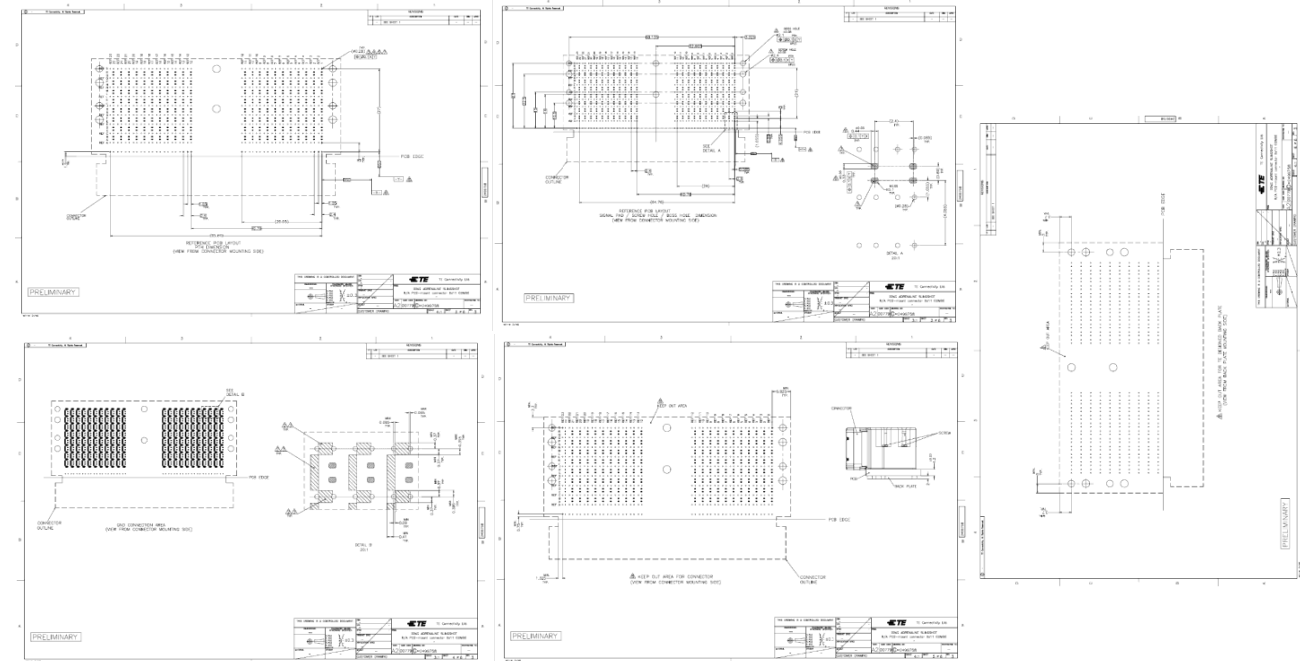
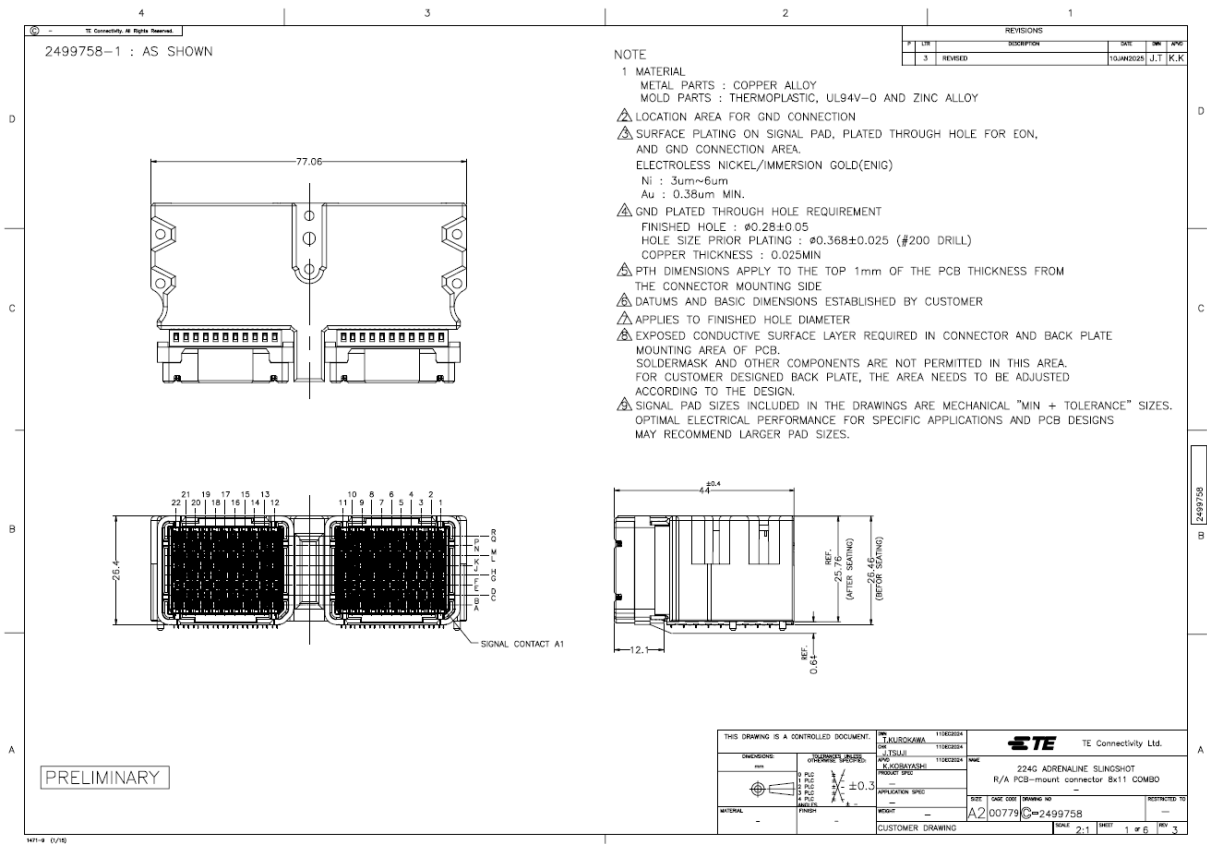
3. CUSTOMER DRAWING

TE P/N : 24984381 (12X12 COMBO) REV.3



3. CUSTOMER DRAWING

TE P/N : 24997581 (8X11 COMBO) REV.3





### 4. PCB REQUIREMENT

#### Material and Thickness

The PC board material shall be glass epoxy (for example, FR 4).

PC boards with a thickness of less than 3.97mm cannot be used because low PCB robustness may cause warpage and it may impact on connection between connector and PCB.

#### Layout

The PC board layouts are provided on the specific connector customer drawing.

#### Hole Configuration

The holes in the PC board for all contacts must be drilled and plated through to the dimensions given in Figure 3.

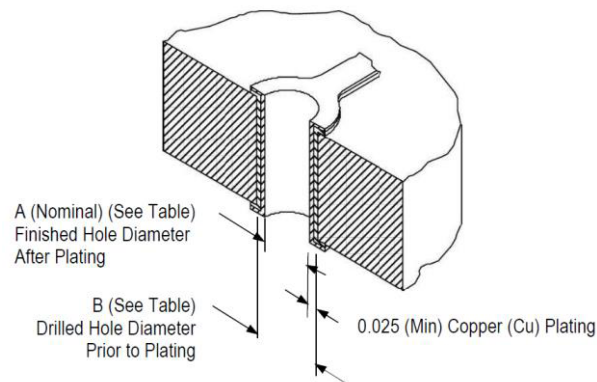


Figure 3

Plated Through Hole Surface Finish	Thickness Range
Electroless Nickel / Immersion Gold(ENIG)	Ni - 0.0030—0.0060 Au - 0.00038(MIN)

#### Note:

Compliant pin working zone depths -PTH tolerance for ground holes applies to the top 1.25 of the component side of the PC board. Excess copper knee on the top edge of the PTH must be minimized and may not exceed 0.01 over the average copper thickness in the compliant pin working zone depths (1.25 grounds).

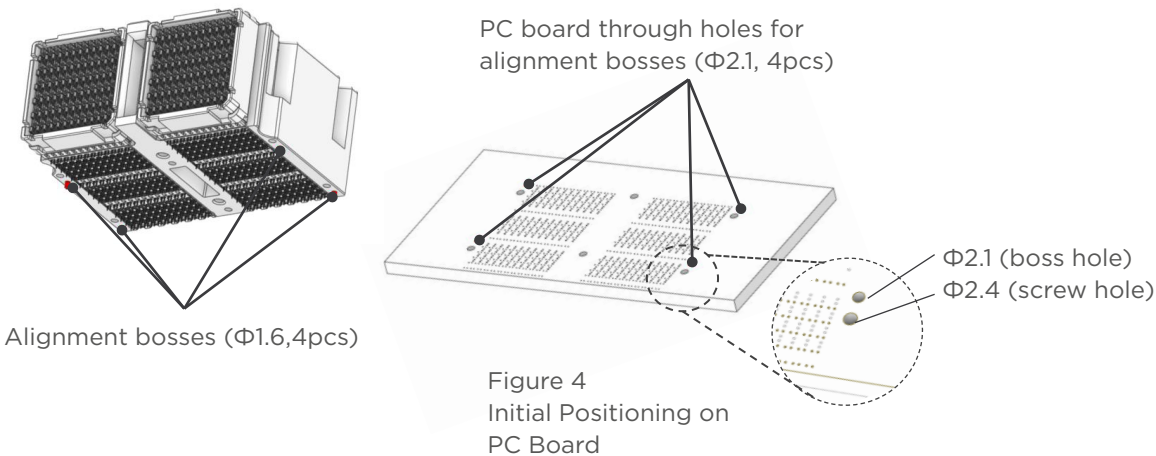
Minimum copper thickness and finished hole size must be maintained throughout the working zone depths

Connector		Dimension	
Type	PTH Use	A	B
Right angle PCB mount	Ground Pins	0.28±0.05	0.368±0.025

5. CONNECTOR INSTALLATION

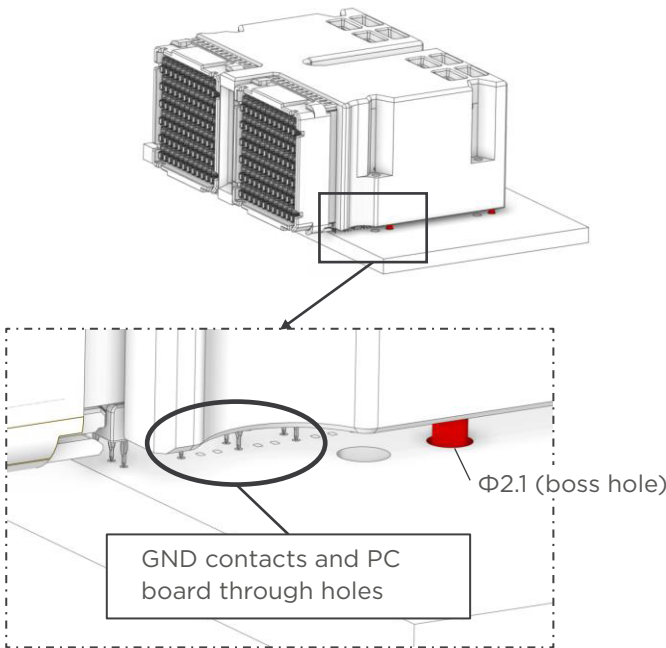
A. INITIAL POSITIONING

These connectors are typically applied to the PC board manually using nitrile gloves or using an automatic machine. Connector should be handled by gripping the hold down only and do NOT touch the connector mating area and EON contacts. There is a risk of the contact deformation. When placing the connector onto the PC board, all contact leads should be aligned and inserted into the PC board simultaneously to prevent twisting or bending of the contacts. When manually placing the right-angle receptacle connector on the PC board, align the 4 alignment bosses on the bottom of the R/A connector with the through holes in the PC board (These alignment bosses roughly locate connector). By moving the connector horizontally in this state, GND contacts can be inserted into PC board through holes more easily, in Figure 4. After the connector is placed on the PC board, all GND contact tips must be within the PC board through holes in Figure 5.



CAUTION

Do NOT insert Alignment bosses into the connector mounting screw holes(Φ2.4, 6pcs).



Contact Insertion Using  
Tactile Assurance

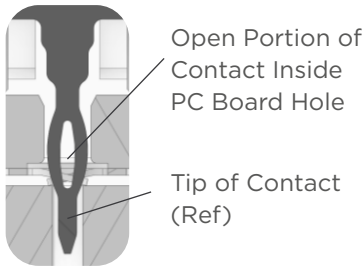


Figure 5  
GND contact tips and PC board  
through hole



CAUTION

Do NOT press the R/A connector from above until alignment is complete as this may deform the GND contacts.

### 5. CONNECTOR INSTALLATION

#### B. SEATING

Seating force must be applied evenly on the connectors to prevent deformation or other damage to the contacts and housings. When installing the right angle connectors, the insertion force must be evenly applied to the assembly as shown in Figure 6. To prevent damage to the rightangle connector during insertion, it is recommended that an appropriate seating tool (= Flat Block) be used. Also, when pressfit is performed, a support plate should be placed on the bottom of the PC board for support.

Tooling used to seat these connectors must be capable of supplying a controllable downward force needed to seat the connector. Seating force will vary according to PC board variations and signal pin count (Refer to next slide).



#### CAUTION

The seating force should be applied vertically downwards to the connector.

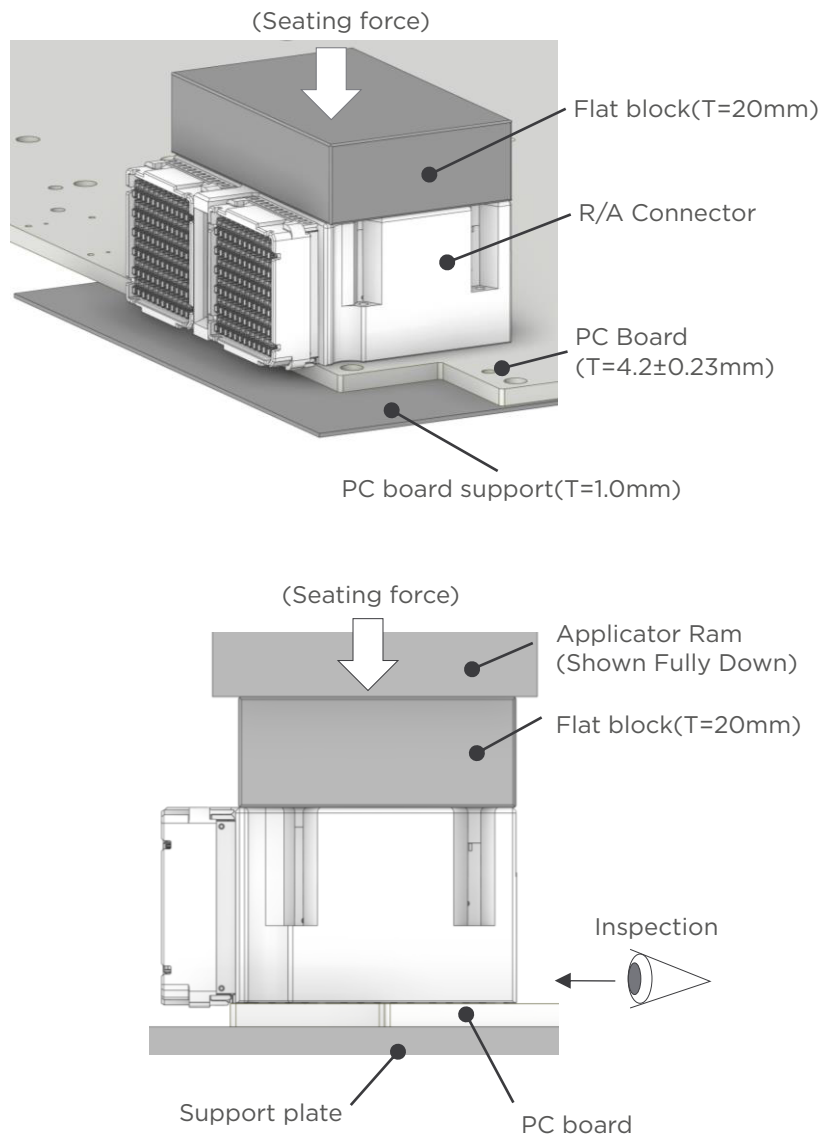


Figure 6



5. CONNECTOR INSTALLATION

C. SEATING FORCE AND SEATING HEIGHT

Seating force will vary according to PC board variations and signal pin count. The average insertion force is around 8.7 N [1.96 lbforce] per compliant pin pressfit contact. The maximum insertion force is 17.8 N [4.0 lbforce] per compliant pin press-fit contact.

In Slingshot conn, the connection between GND shield and organizer is also made during the seating process and affects the seating force.

Press until the gap between the PC board surface and the organizer is 0.03 mm or less and also over mold and organizer too as shown in Figure 7. Also, do NOT apply a load of more than maximum force in Table-1.

Press until following 2 conditions are met in Figure 5. Also, do NOT apply a load of more than maximum force in Table-1.

(1) Gap between the PC board surface and the Organizer is 0 mm Max.

(2) Gap between Organizer and Wafer is 0.03 mm Max.

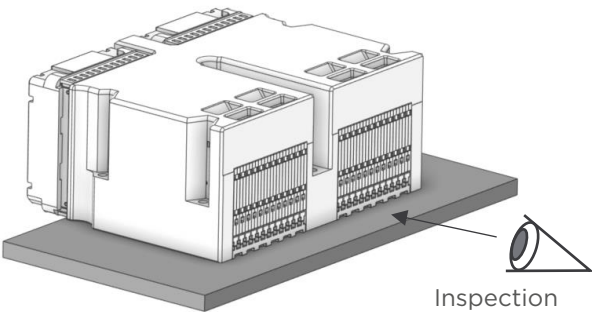


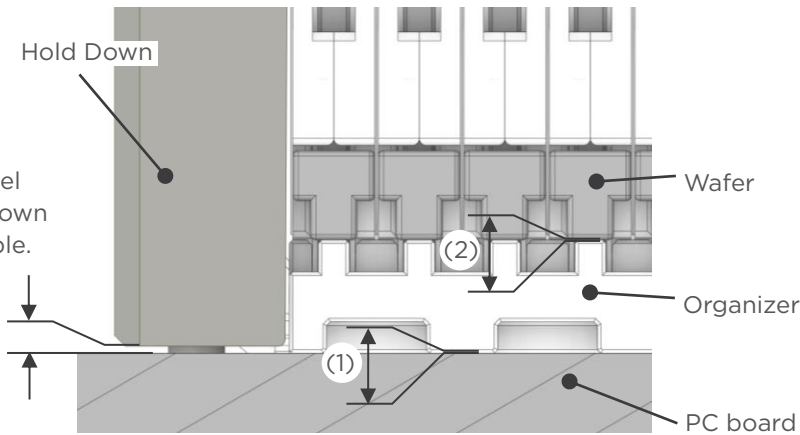
Table1 Maximum Force

Config.	EON		Seating Force (Include GND connection)
	QTY	Spec	Maximum
12x12 Combo	672	17.8 N/pin MAX	17,942.4 N Max
8x11 Combo	440	17.8 N/pin MAX	11,748.0 N Max

**i** NOTE

A gap of 0.2 mm level between the HD and PCB is acceptable.

A gap of 0.2 mm level between the Hold Down and PCB is acceptable.



(1) 0mm Max. Gap between PC board surface and Organizers(both side)

(2) 0.03mm Max. Gap between Organizers and Wafer (both side)



**CAUTION**

Over-seating of connectors will deform parts critical to the quality of the connector.  
(Maximum force occurs prior to the connector bottoming on the PC board)

Figure 7 Connector Seating Allowance

### 5. CONNECTOR INSTALLATION

#### D. FIXING TO PC BOARD

After mounting on the board, screw in the supplied backplate at the six positions shown in Figure 8. After temporarily fastening all six screws, retighten them in sequence in Figure 9. The tightening torque is 0.25N□m.

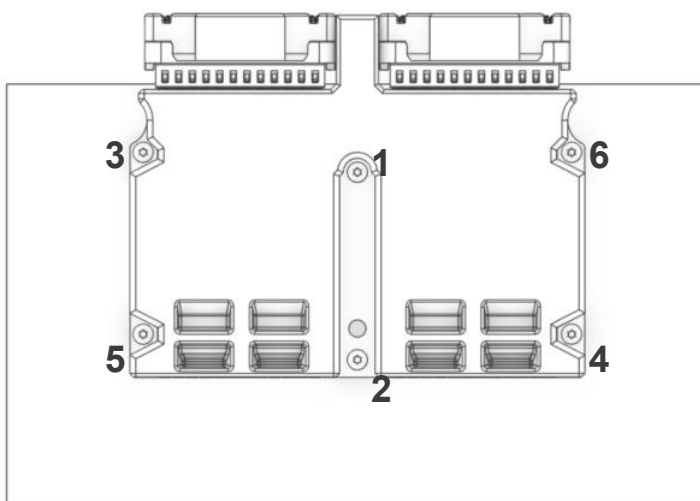
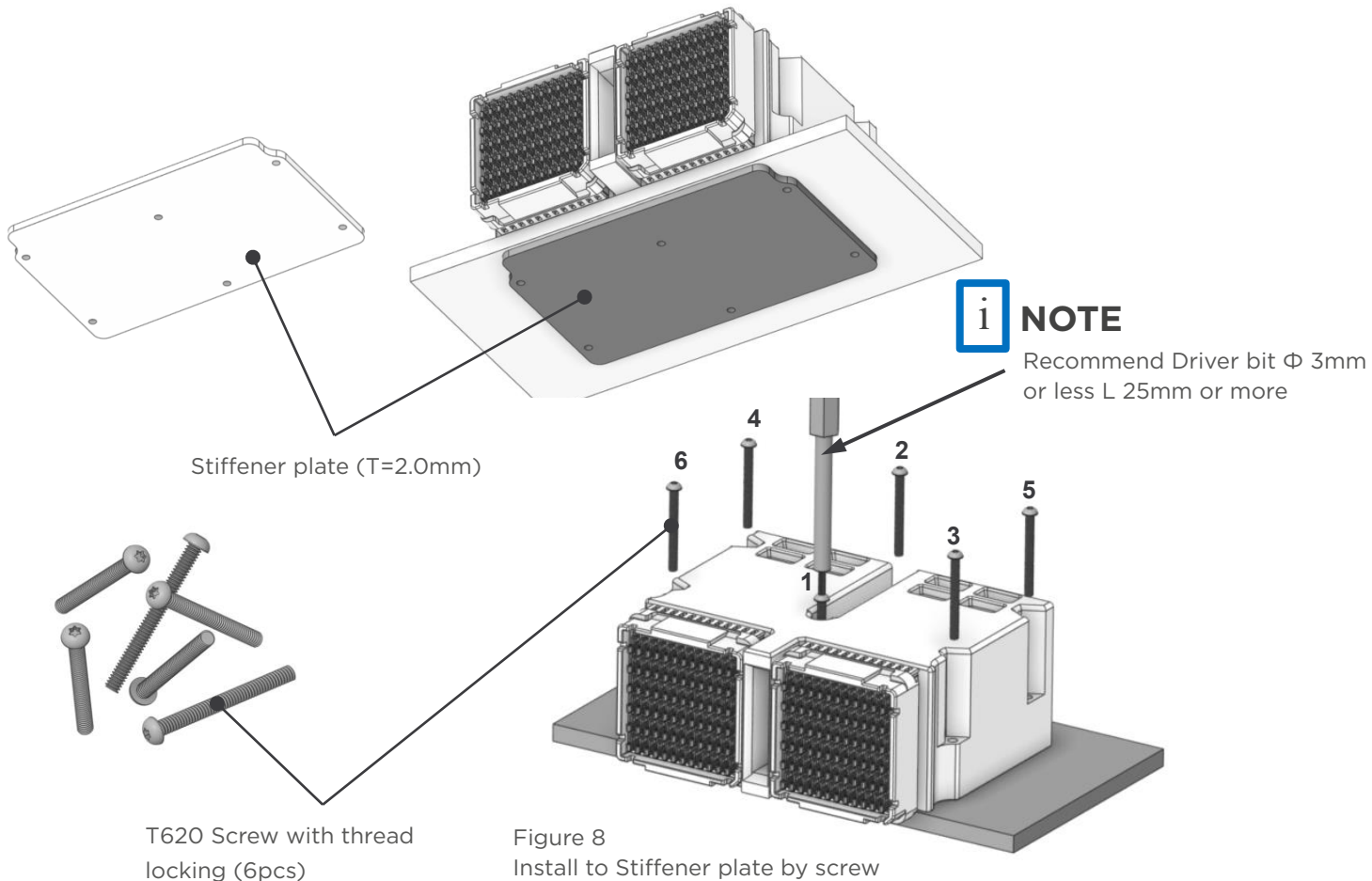


Figure 9 Final tighten sequence



#### CAUTION

Tighten the screws in the above sequence. If NOT, the connector may tilt relative to the PC board.

Do not reuse Stiffener-plate.

Stiffener-plate is used once, Loctite will remain on the threads, so when reused, the screw tightening strength will increase, and screw may be breakage.

### 6. REPAIR AND REPLACEMENT

Damaged or defective connectors must not be used; they must be removed from the PC board and replaced.



#### **NOTE**

To ensure plated through-hole integrity, connectors should only be replaced no more than two times or a max of three insertions per PC board.



#### **CAUTION**

To avoid damage to the connectors, ammonia should not be used in the removal process.

##### **A. Rework**

Even though this connector system uses press-in compliant pins and does not require solder

- Ammonia must NOT be used for cleaning the assemblies. Material in the connector signal contacts will have a reaction to ammonia.
- Air drying of cleaned connectors is recommended.
- If a cleaning agent is used, gold surfaces of contact tines must be re-lubricated with a Telcordia approved lubricant.



#### **CAUTION**

Even when using “no clean” solder paste, it is imperative that the contact interface be kept clean of flux and residue, since it acts as an insulator.



#### **DANGER**

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

##### **B. Replacement**

Individual connector components cannot be replaced. Any connectors showing any damage to the shroud, hold down, ground contacts, flat ground shields, signal contacts, or compliant pin tails should be replaced with a new one.

An entire connector can be removed from the PC board and replaced with a new one.

### 7. TOOLING

Recommended tooling for application of these connectors is given in Figure 10.

#### 7.1. PC Board Support

The PC board support must have minimum thickness of 1.0mm. The PC board support must be used during seating of a connector onto the PC board

#### 7.2. Seating Tools and Removal Tools

As shown in Figure 6, flat block seating tools are required for the right-angle connector.

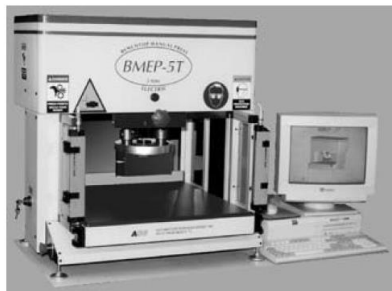
In general, simple hand tools can be carefully used to remove these connectors from the PCB's. Connectors should be pulled out vertically against the board.

#### 7.3. Power Units

A power unit is an automatic or semi-automatic machine used to supply the force to seat the connector onto the PC board using seating tools. The power unit must have a ram and be capable of supplying a downward force needed to seat the connector. Typical power units from TE include, but are not limited to, the power units given in Figure 10.

#### Manual Arbor Frame Assembly

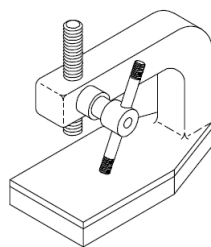
Manual arbor frame assemblies are used to exert a downward force used to apply connectors to a PC board using seating tools. Arbor frame assemblies are commercially available.



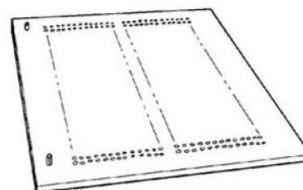
Model BMEP 5T Machine  
1585696-1



Model MEP 6T Machine  
1585699-1



Manual Arbor Frame Assembly  
(Commercially Available)



PC Board Support  
(Customer Supplied)

Figure 10

### 8. VISUAL AID

The illustrations below show typical applications of 2.4 x 2.4mm pitch hermaphroditic mating interface 90-ohm cable backplane AdrenaLINE Slingshot High Density Connectors. These illustrations 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.

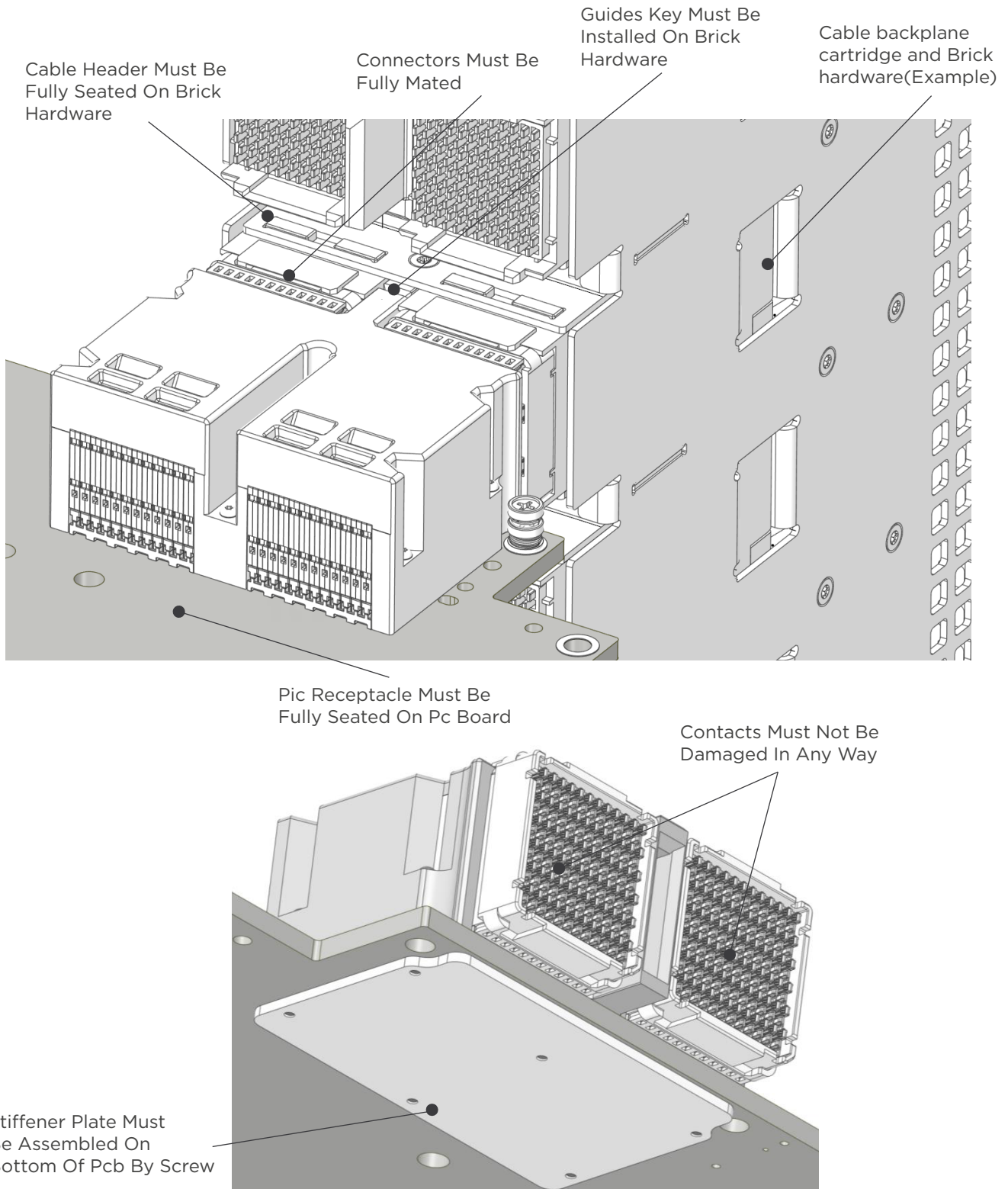


Figure 11

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