

DT Highspeed Sealed Connector Assemblies

1. Introduction

This specification covers the requirements for application of the DT Highspeed socket assembly, Pin assembly, 2 port Bulkhead Pin assembly, 180-degree Header assembly, blind plug assembly and seal cover assembly of the DT Highspeed sealed connector system. The connector has been designed to accept a shielded twisted pair jacketed cable (STP). The connector system offers environmental protection by providing sealing to the shielded twisted pair jacketed cable and between the connector halves.

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 the following figures 1.a to 1.h.

Please note CAD images of subcomponents and cable assemblies are used for demonstration purposes in this application specification. The actual color of the components may differ from the specification.

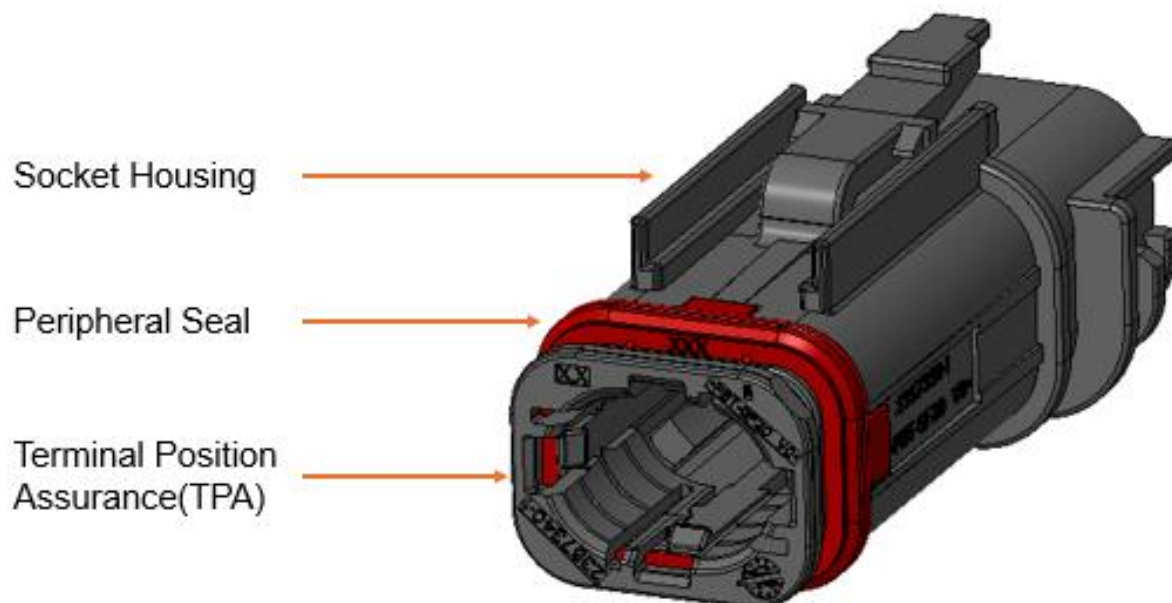


Figure 1.a: DT Highspeed Socket Assembly

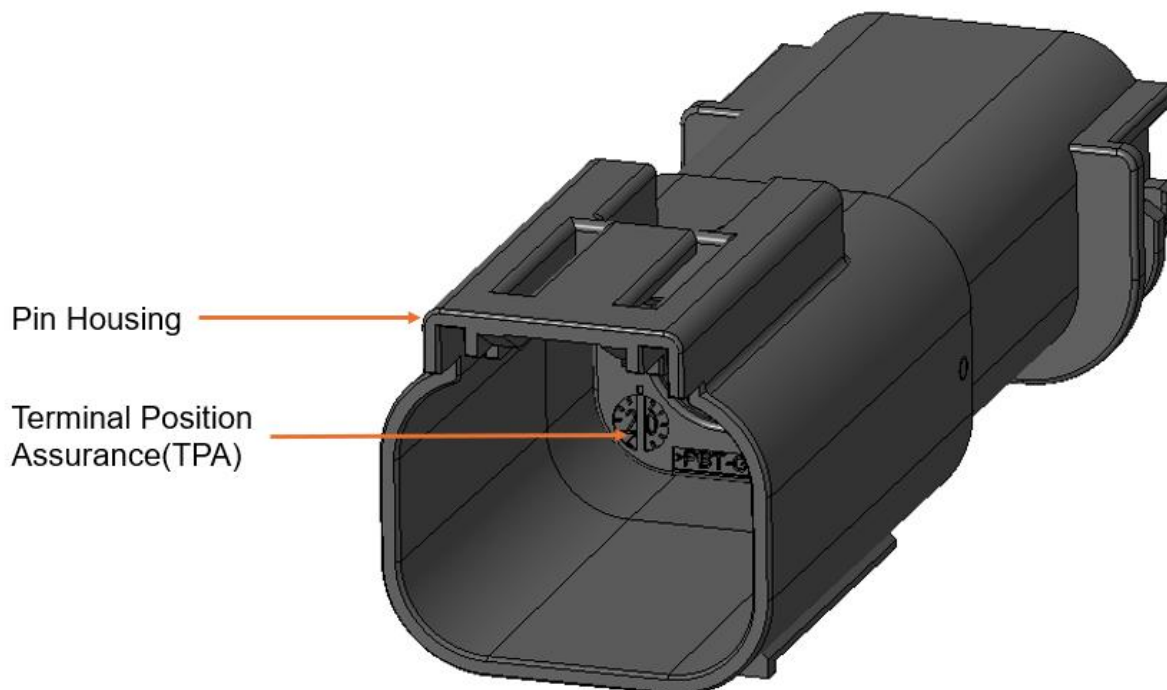


Figure 1.b: DT Highspeed Pin Assembly

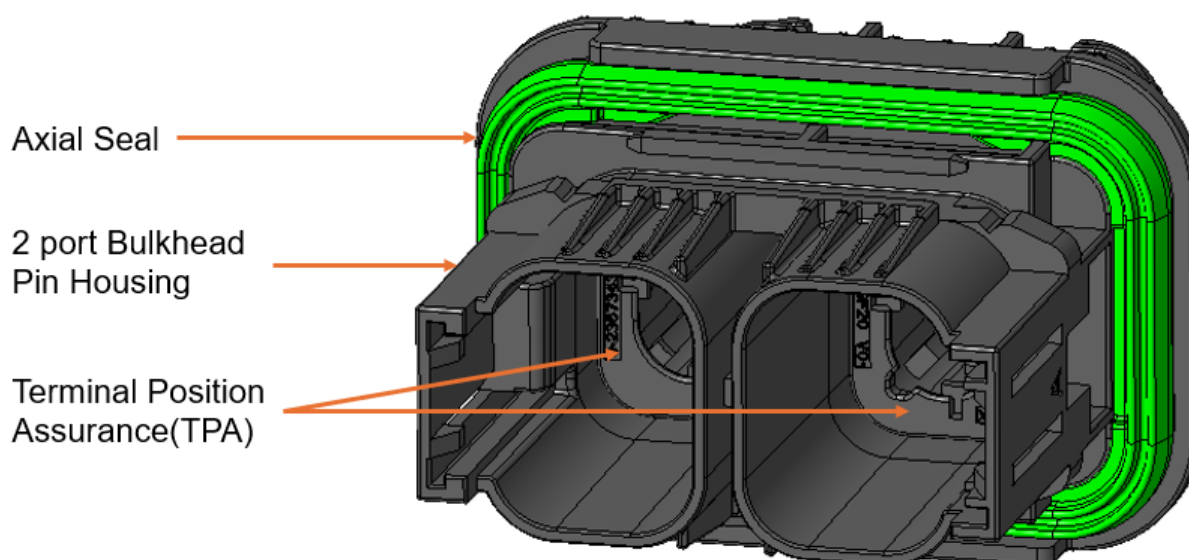


Figure 1.c: DT Highspeed 2 port Bulkhead Pin Assembly

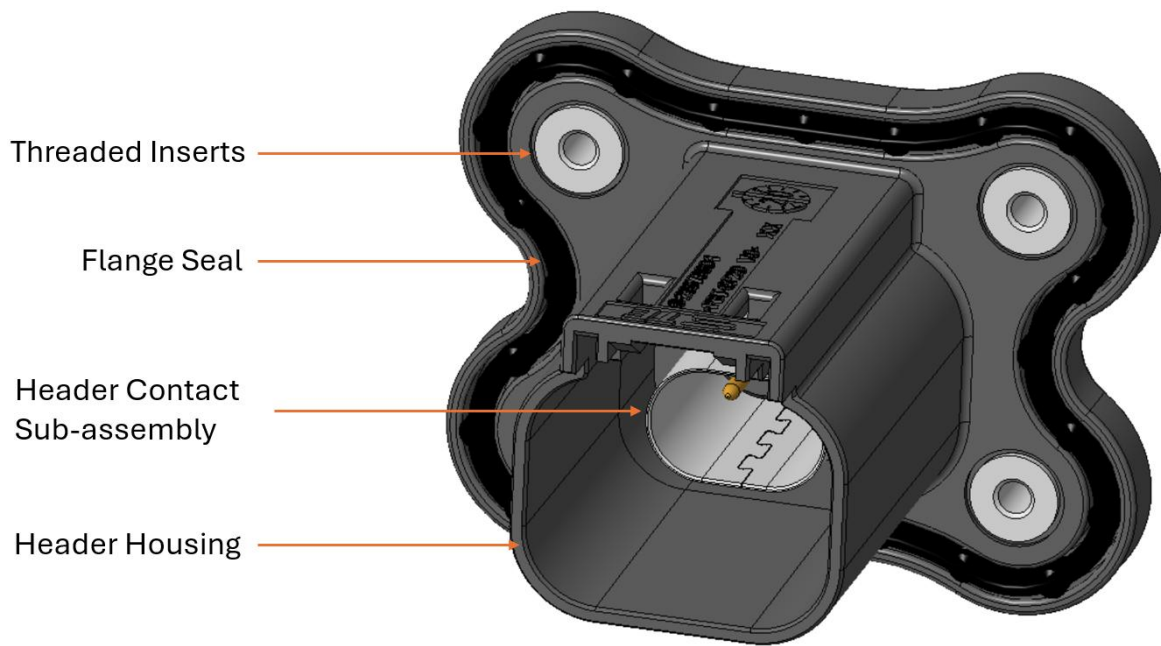


Figure 1.d: DT Highspeed Header Assembly

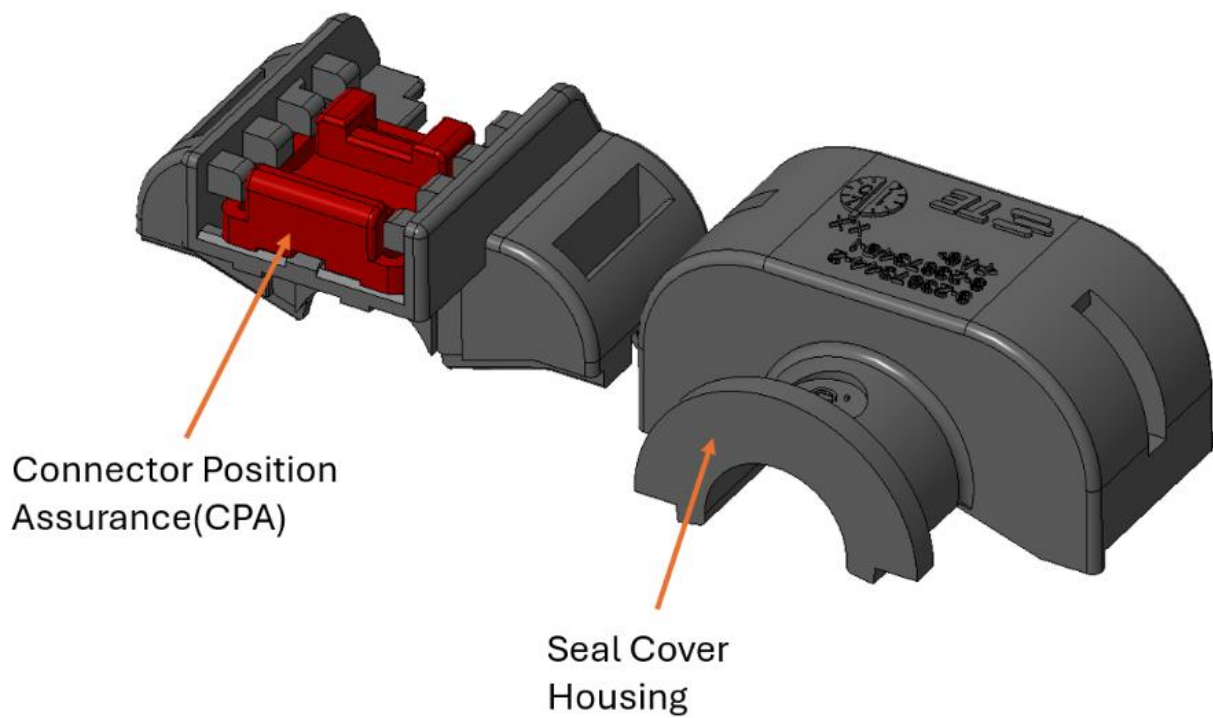


Figure 1.e: DT Highspeed Socket Seal Cover Assembly

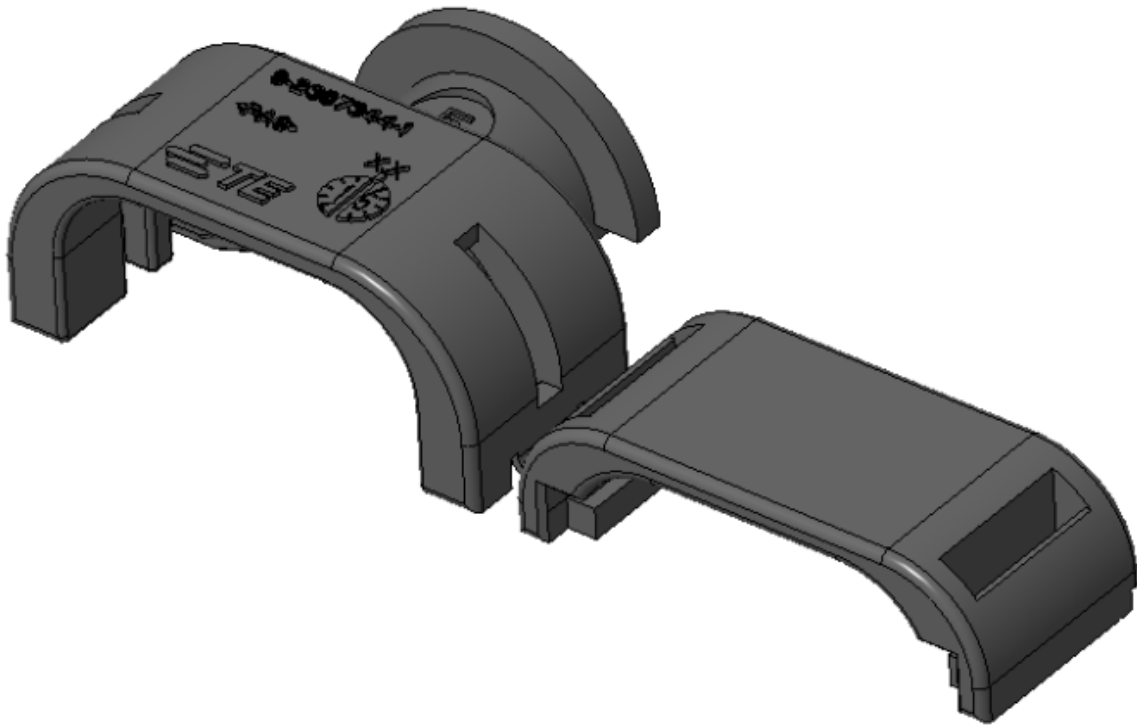


Figure 1.f: DT Highspeed Pin and 2 port Bulkhead Pin Assembly Seal Cover

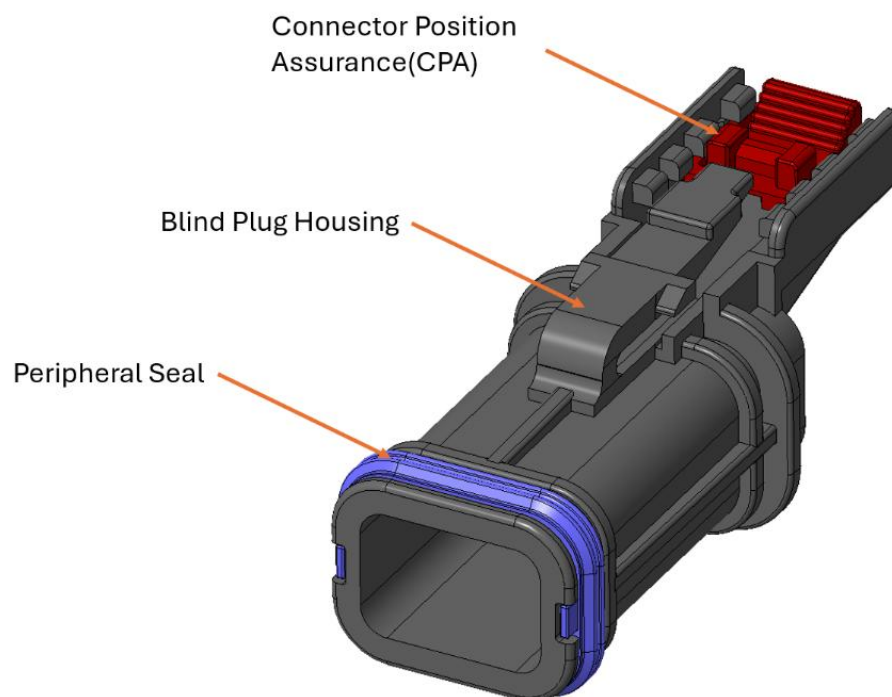


Figure 1.g: DT Highspeed Blind Plug Assembly

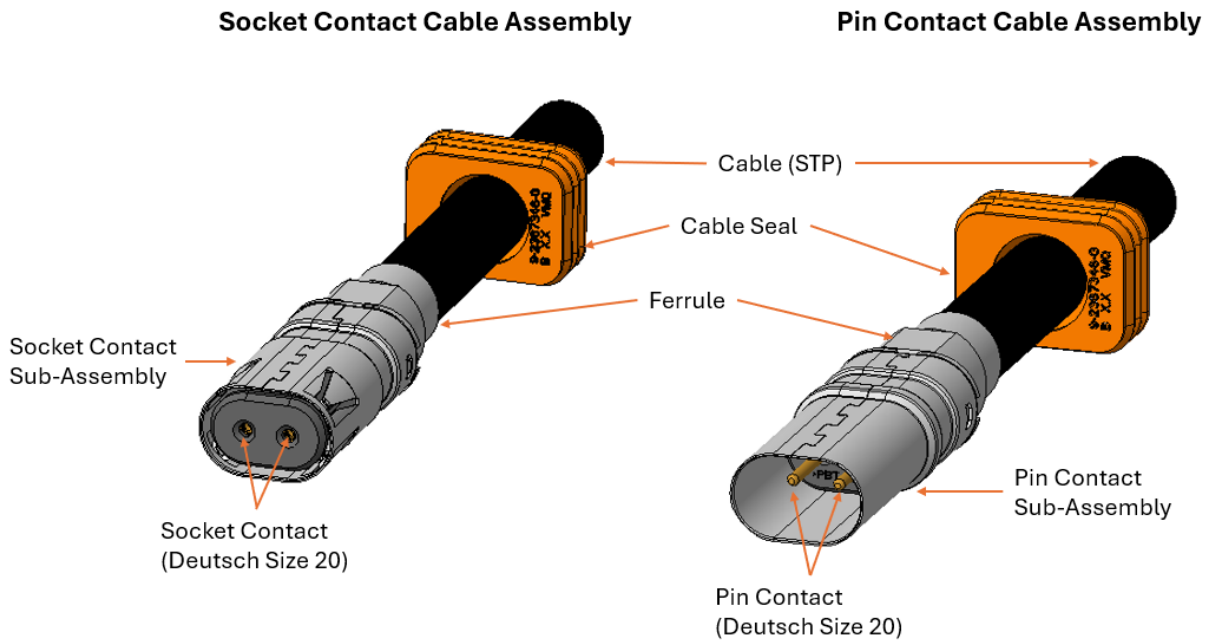


Figure 1.h: Cable Assembly

2. Reference Material

2.1. Revision Summary

Refer to the revision table.

2.2. Customer Assistance

Use product base part numbers 2367337, 2367341, 2367359, 2367344, 2367345, 2367346, 2383999, 2384002, and 2384003 to 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 the product information or the tooling assistance center at the numbers at the bottom of page 1.

2.3. Drawings

TE Customer drawings for product part numbers 2367337, 2367341, 2367359, 2367344, 2367345, 2367346, 2383999, 2384002, and 2384003 are available in the service network. If there is a conflict between the information contained in the TE drawings and this specification or with any other technical documentation supplied, the information contained in the TE Customer drawings takes precedence.

2.4. Specifications

Refer to the application specification 114-124009 for information on DT Highspeed cable assemblies and components.

3. Requirements

3.1. Safety

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

3.2. Storage

3.2.1. Reel storage

When using reeled contacts, store coil wound reels horizontally and traverse reels vertically.

3.2.2. Ultraviolet light

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

3.2.3. Shelf Life

The product should remain in the shipping containers until ready for use to prevent deformation of components. The product should be used on a first in, first out basis to avoid storage contamination that could adversely affect performance.

3.2.4. Chemical Exposure

Do not store products near any chemical listed below as they may cause stress corrosion cracking in the material.

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

3.3. Shipping Condition

The connectors are shipped in the condition shown in Figures 1.a and 1.g. The TPAs in the DT High-Speed Socket, Pin, and 2-Port Bulkhead Pin assemblies are shipped in the 'Pre-Locked' position. The CPAs are also shipped in the 'pre-locked' position in the blind plug and seal cover assemblies. For additional details related to packaging and handling, please refer to TE Customer Drawings.

3.4. Mechanical Keying

The connector system has key ribs in the socket assembly and corresponding key slots in the mating pin and header assemblies. These features act as mechanical keys that prevent mis-mates between connectors that do not carry the same keying code. For easy identification, the 2 port Bulkhead Pin Assembly have key code markings and DT Highspeed Socket, Pin and Header Assemblies are color coded. see figure 3.4.a and refer to TE customer drawings for more details.

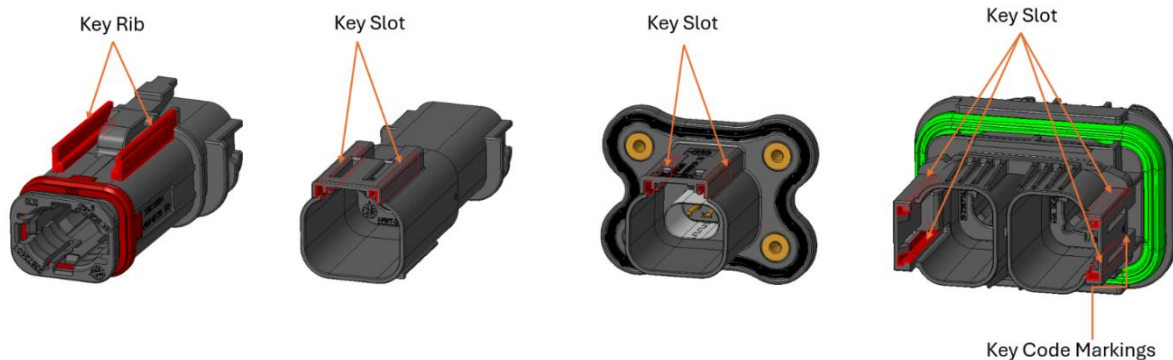


Figure 3.4.a: Mechanical Keying

3.5. Sealing

The connector system provides sealing to the cable using a single wire seal and sealing between connector halves using a peripheral seal. The DT Highspeed 2 port Bulkhead Pin Assembly and Header Assembly is sealed to the mating panel/customer interface using a flange seal. See figure 3.5.a to 3.5.d. Refer to application specification 114-124009 for proper selection of wire cable seals, and information on contacts and cable assembly components.

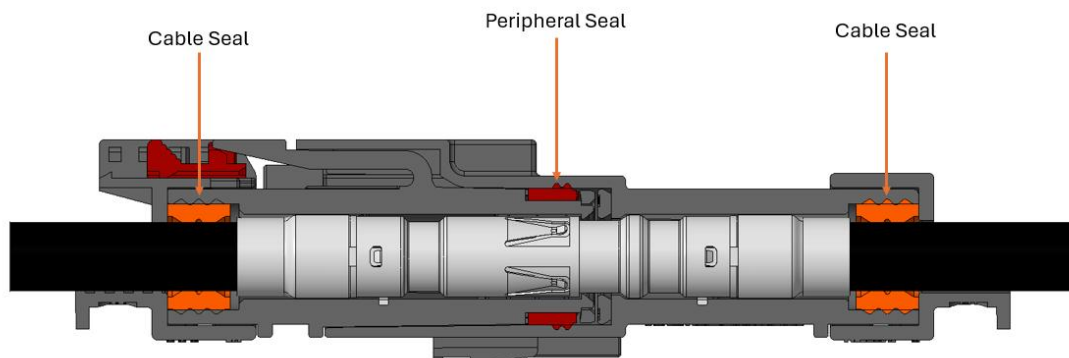


Figure 3.5.a: DT Highspeed Pin Assembly mated to Socket Assembly

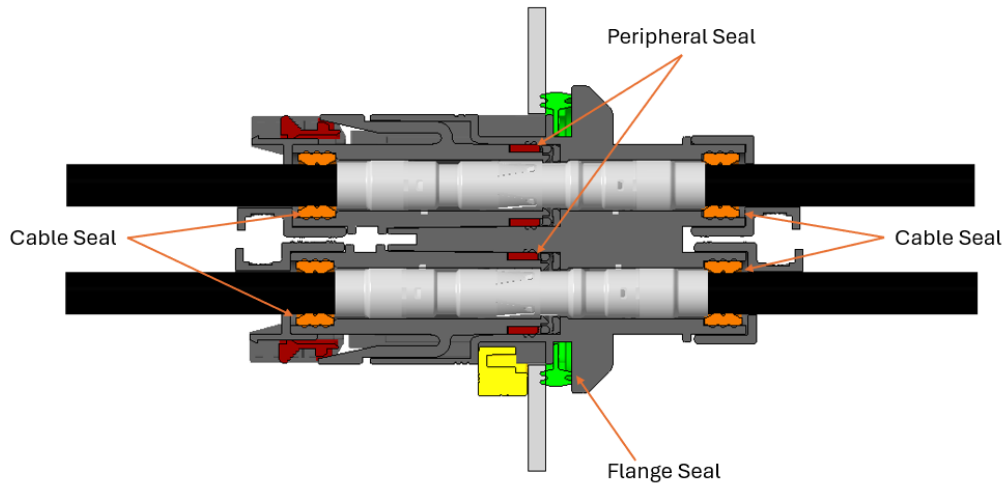


Figure 3.5.b: DT Highspeed 2 port Bulkhead Pin Assembly mated to Socket Assembly

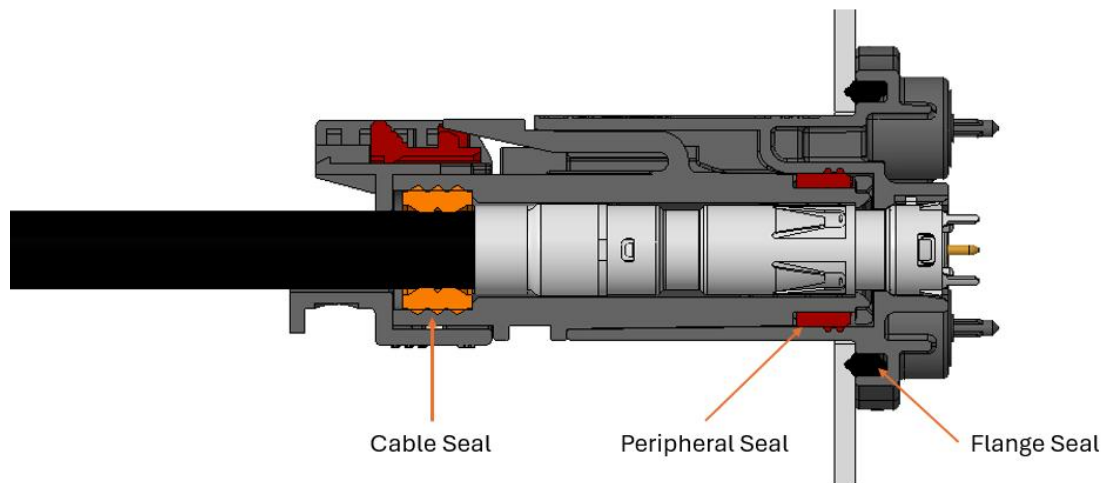


Figure 3.5.c: DT Highspeed Header Assembly mated to Socket Assembly

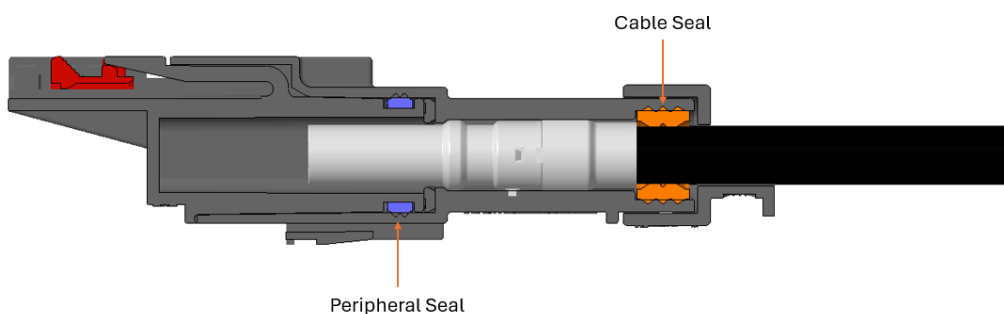


Figure 3.5.d: DT Highspeed Pin Assembly mated to Blind Plug Assembly (Universal Key)

Note: Same Blind Plug Assembly (universal key) can be used on DT Highspeed 2 port Bulkhead Pin Assembly and Header assembly.

4. Assembly Preparation

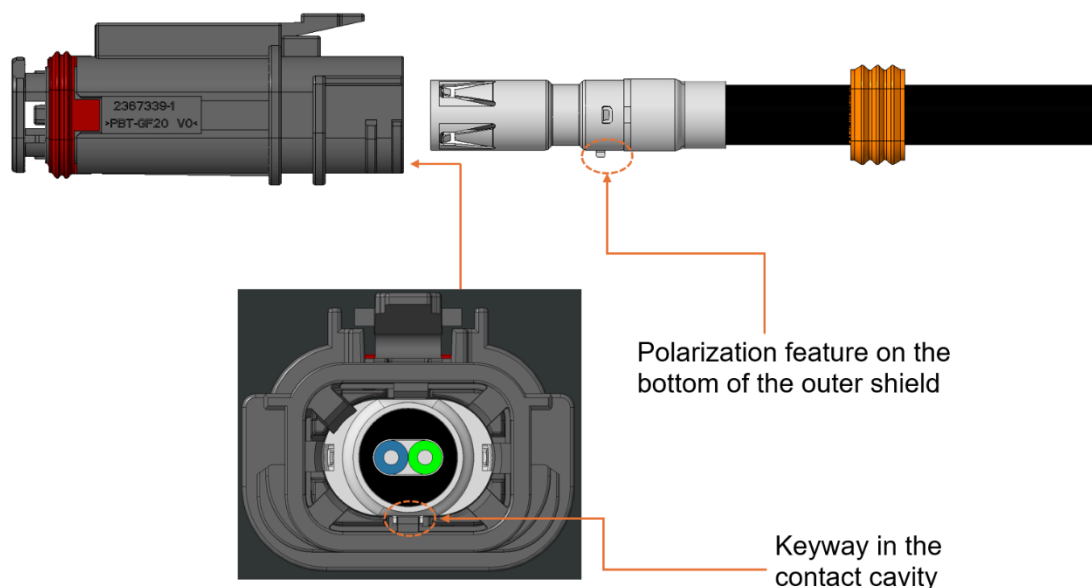
Refer to the application specification 114-124009 for information on DT highspeed cable assemblies and components. ensure socket contact assembly is used with Socket assembly and Pin contact assembly is used with DT highspeed Pin assembly and DT Highspeed 2 port Bulkhead Pin Assembly.

4.1. DT Highspeed Socket Cable Assembly

- Ensure that the cable assemblies are properly crimped. refer to application specification 114-124009 for information on DT highspeed cable assemblies and components.
- Determine the keying configuration by referring to the TE customer drawing of the specific connector, then select the corresponding mating connector.
- Make sure that the TPA is in the pre-locked position as shown in TE customer drawings.
- Make sure that the Peripheral Seal is in place as shown in TE customer drawings.
- Follow below mentioned steps to assemble cable assemblies and seal cover assembly to DT Highspeed Socket Assembly.

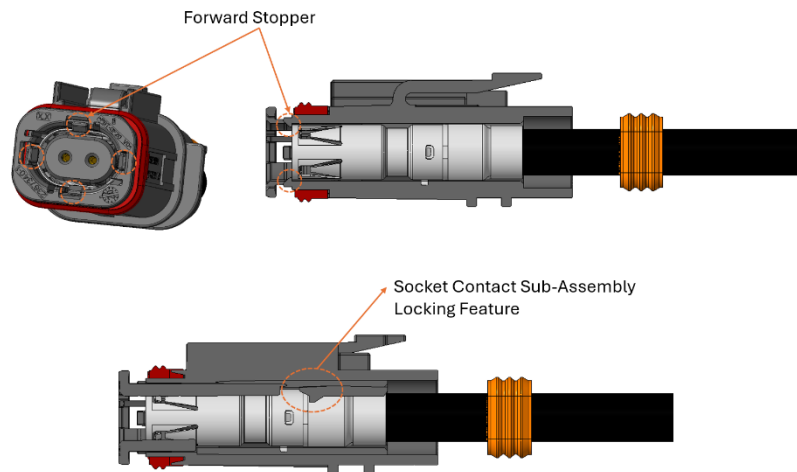
Step 1:

Align the cable assemblies with the contact cavities of the housing so that the polarization feature on the bottom of the outer shield faces in the same direction as the keyway in the contact cavity. see figure below.



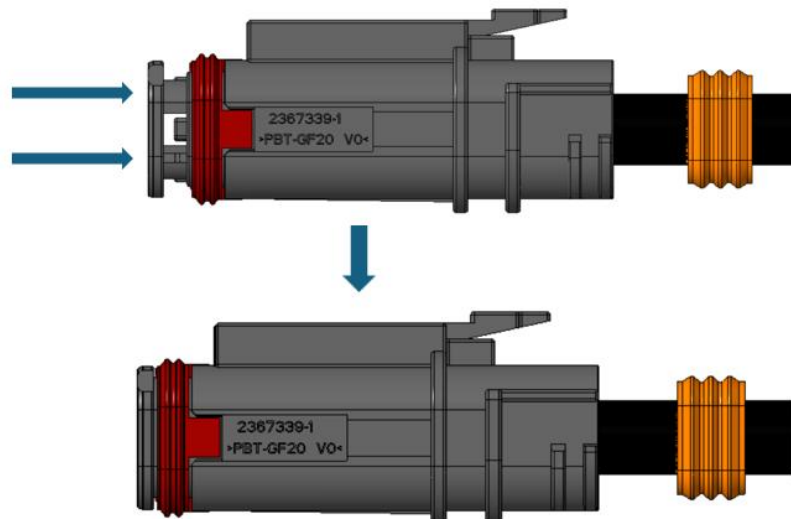
Step 2:

Insert the cable assemblies into the contact cavity until it bottoms at the forward stopper. There should be an audible or tactile “click” when the Socket Contact Sub-Assembly is fully seated. Gently pull the wire to ensure that the Socket Contact Sub-Assembly is locked in place. see figure below.



Step 3:

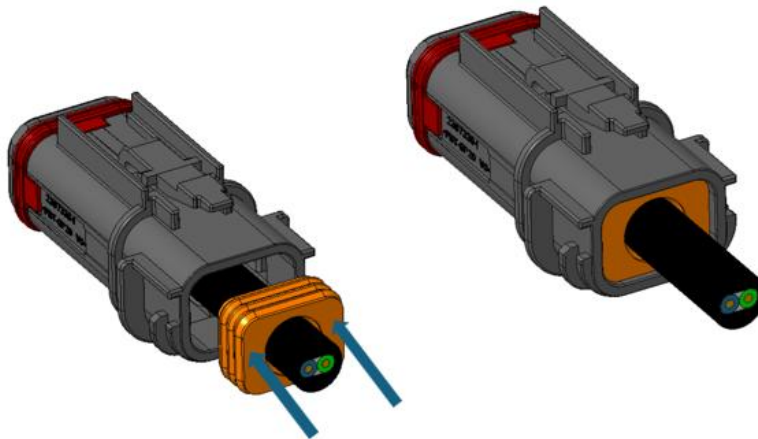
After all cable assemblies have been inserted, push the TPA until it is fully seated in the final stage position. TPA may be locked in place by hand. The TPA should be easy to close. Visually inspect that the TPA is closed and rests uniformly flush within the socket housing. see figure below.



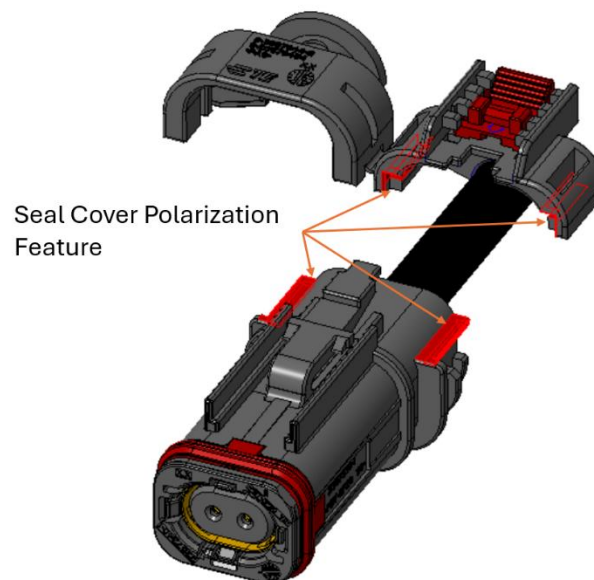
Note: Make sure that the Peripheral Seal is in place as shown in the above Image/TE customer drawings.

Step 4:

Align the cable seal with cavities in housing. push the cable seal into the cavities in the housing. The cable seal can be manually inserted into the housing cavities by hand. see figure below.

**Step 5:**

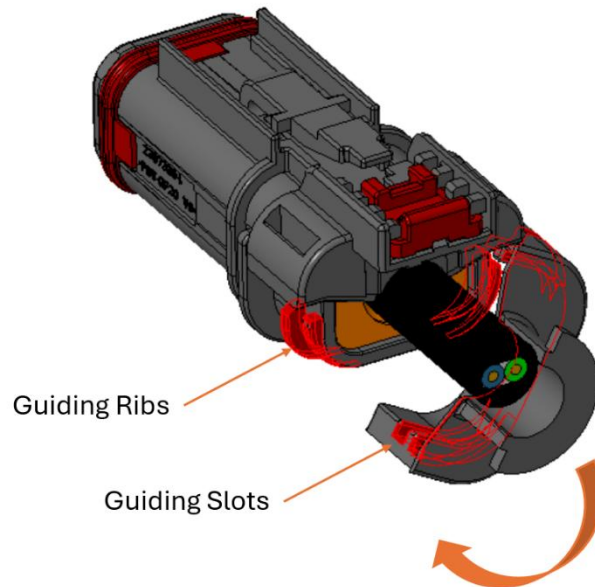
Align the seal cover with the polarization feature on the back of the connector housing and slide one half of the seal cover into place. see figure below.



Note: Use appropriate seal cover assembly corresponding to the shielded twisted pair jacketed cable size. refer to the TE customer drawing for seal cover assembly selection.

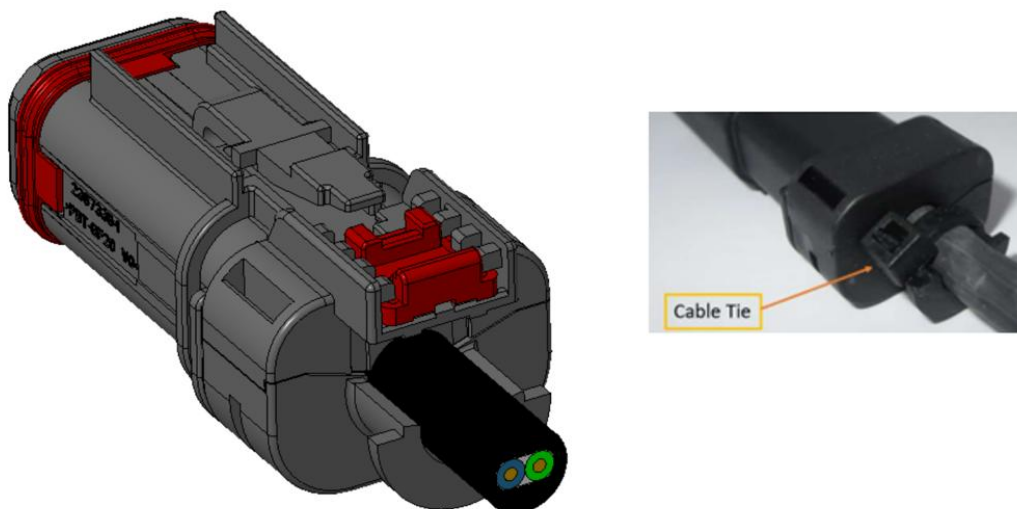
Step 6:

Then rotate the remaining half into position until the two halves bottom and all latches have been engaged. Make sure the guide ribs on the connector housing and slots on the seal cover properly aligned. see figure below.



Step 7:

Strain relief is ensured by attaching a cable tie around the seal cover. ensure that the outer diameter of the shielded twisted pair jacketed cable is not deformed after applying the cable tie. see figure below.



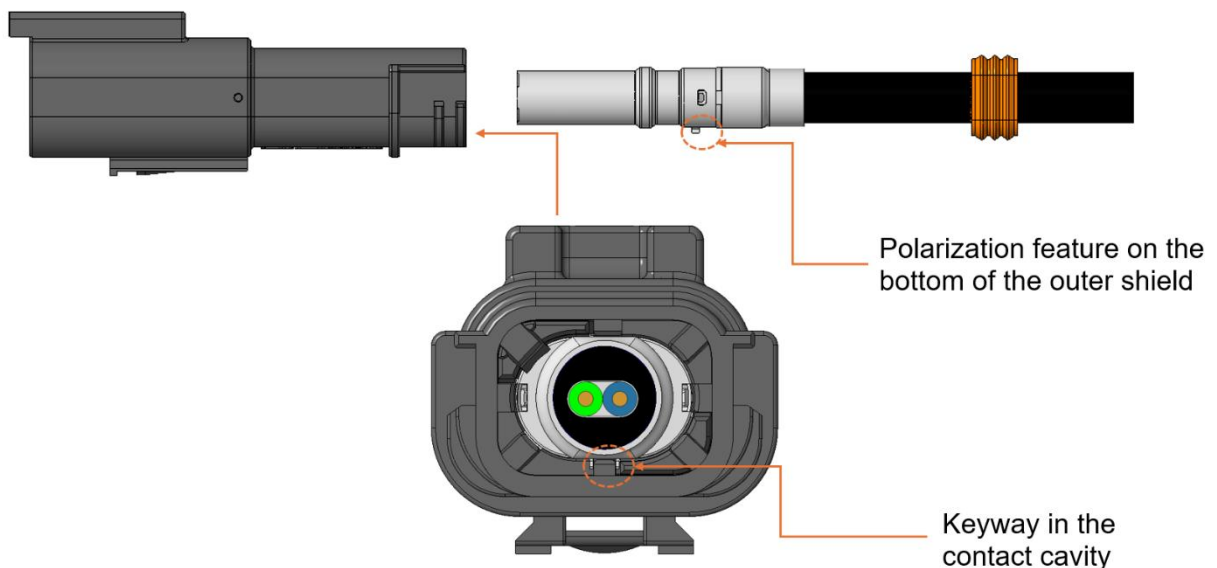
Note: Seal cover assembly can accommodate cable tie size 200mm x 4.6mm. TE recommended cable tie part number is 2396636-1.

4.2. DT Highspeed Pin and 2 port Bulkhead Pin Cable Assembly.

- A. Ensure that the cable assemblies are properly crimped. refer to application specification 114-124009 for information on DT highspeed cable assemblies and components.
- B. Determine the keying configuration by referring to the TE Customer drawing of the specific connector, then select the corresponding mating connector.
- C. Make sure that the TPA is in the pre-locked position as shown TE Customer drawings.
- D. Follow below mentioned steps to assemble cable assemblies and seal cover assemblies to DT Highspeed Pin Assembly and 2 port Bulkhead Pin Assembly

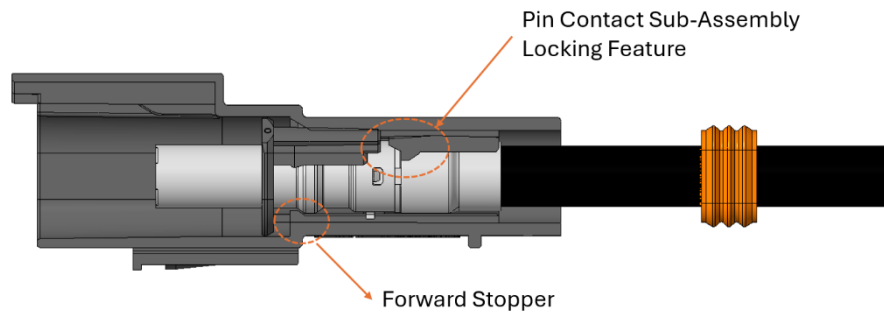
Step 1:

Align the cable assemblies with the contact cavities of the housing so that the polarization feature on the bottom of the outer shield faces in the same direction as the keyway in the contact cavity. see figure below.



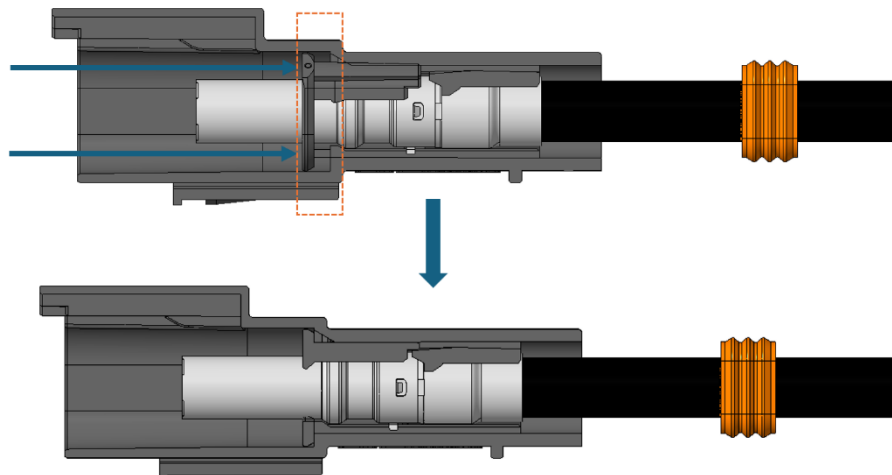
Step 2:

Insert the cable assemblies into the contact cavity until it bottoms. there should be an audible or tactile “click” when the contact is fully seated. Gently pull the wire to ensure that the contact is locked in place. see figure below.



Step 3:

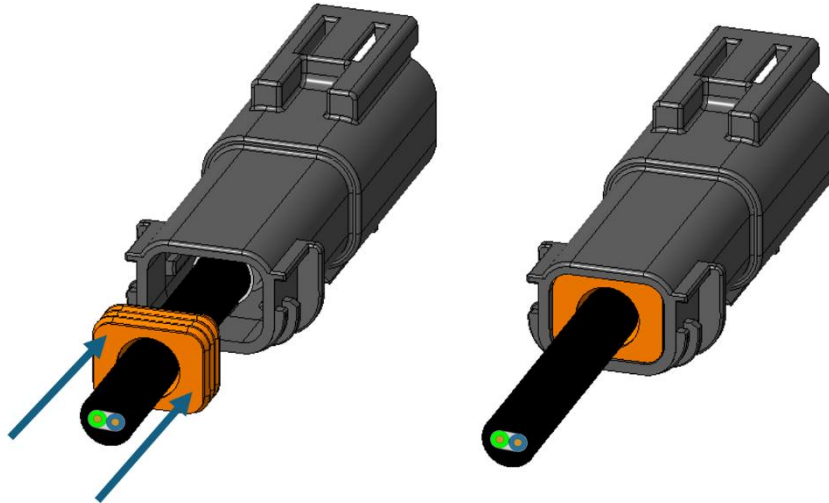
After all cable assemblies have been inserted, push the TPA until it is fully seated in the final stage position. The TPA should be easy to close. visually inspect that the TPA is closed and rests uniformly flush within the DT Highspeed Pin Assembly and 2 port Bulkhead. see figure below.



Note: Small long-nose pliers or a fixture that resembles the Blind Plug Assembly (without the seal and locking features) may be used to assist with proper locking of the DT High-Speed Pin Assembly and 2-Port Bulkhead. Avoid any scratches on the sealing surface. For any questions or support, please contact your local TE representative.

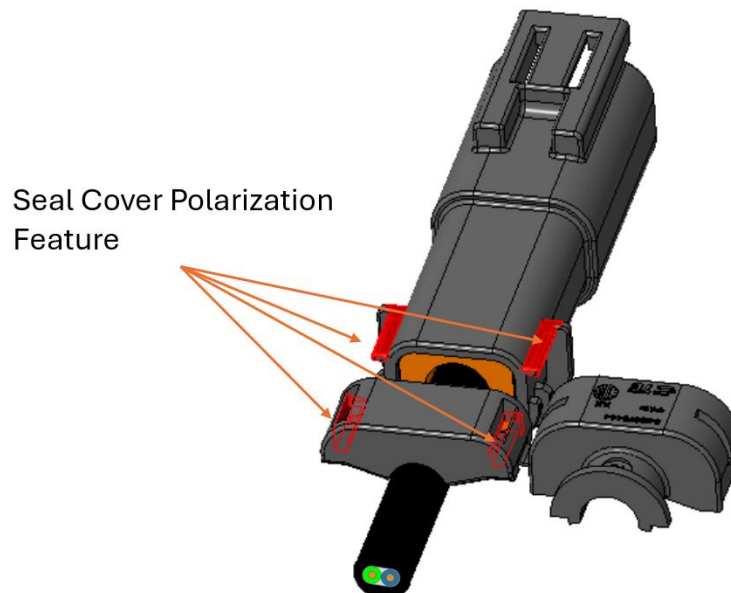
Step 4:

Align the cable seal with cavities in housing. push the cable seal into the cavities in the housing. The cable seal can be manually inserted into the housing cavities by hand. see figure below.



Step 5:

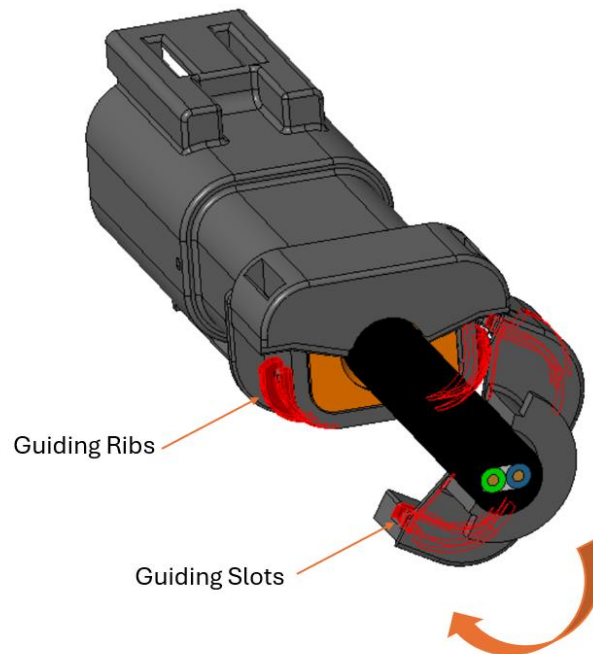
Align the seal cover with the polarization feature on the back of the connector housing and slide one half of the seal cover into place. see figure below.



Note: Use appropriate seal cover assembly corresponding to the shielded twisted pair jacketed cable size. refer to the TE Customer drawing for seal cover assembly selection.

Step 6:

Then rotate the remaining half into position until the two halves bottom and all latches have been engaged. see figure below.



Step 7:

The strain relief is ensured by attaching a cable tie around the seal cover. ensure that the outer diameter of the shielded twisted pair jacketed cable is not deformed after applying the cable tie. see figure below.



Note: seal cover assembly can accommodate cable tie size 200mm x 4.6mm. TE recommended cable tie part number is 2396636-1

4.3. Assembly of DT Highspeed 2 port Bulkhead Pin Assembly to Panel

To assemble the 2 port Bulkhead Pin Assembly, first, it must be ensured that the proper mating panel geometry is being utilized, and the appropriate mounting clip is being used. refer to the 2 port Bulkhead Pin Assembly TE drawing for recommended mounting panel cutout geometry and mounting clips. Please ensure that the flange seals are free from dust and debris before beginning the assembly process.

Note: High pressure spray must only be applied from the clip side of the panel. Align the 2 port Bulkhead Pin Assembly with the panel and push into place as shown below in figure 4.3.a.

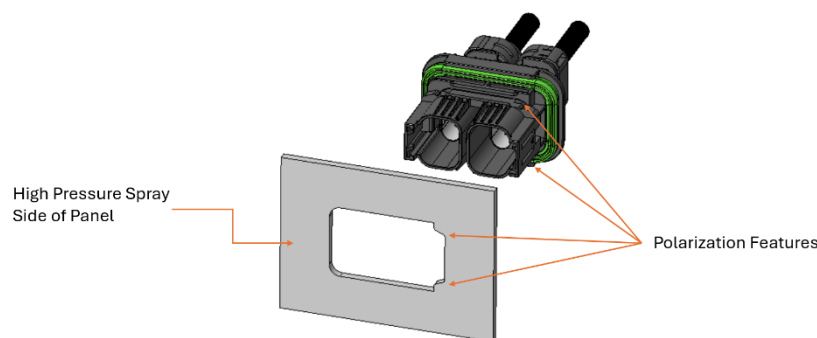


Figure 4.3.a.: Assembly of DT Highspeed 2 port Bulkhead Pin Assembly to panel

Then align the mounting clip to its corresponding keyways, and make sure the lead in ramps is engaged between the clip and bulkhead housing as shown in the figure 4.3.b. it is acceptable to tilt the clip 15 degrees max, to allow lead in ramps to engage. Once the clip has engaged approximately 5-10mm, the clip must maintain parallel to the panel to allow for insertion. then push the clip into position until it bottoms and latches into place.

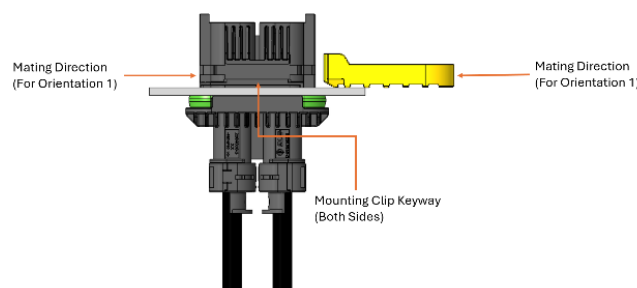


Figure 4.3.b.: Assembly of DT Highspeed 2 port Bulkhead Pin Assembly to Panel

Note: The clips can be mounted from either side of the connector as shown in figure 4.3.c.

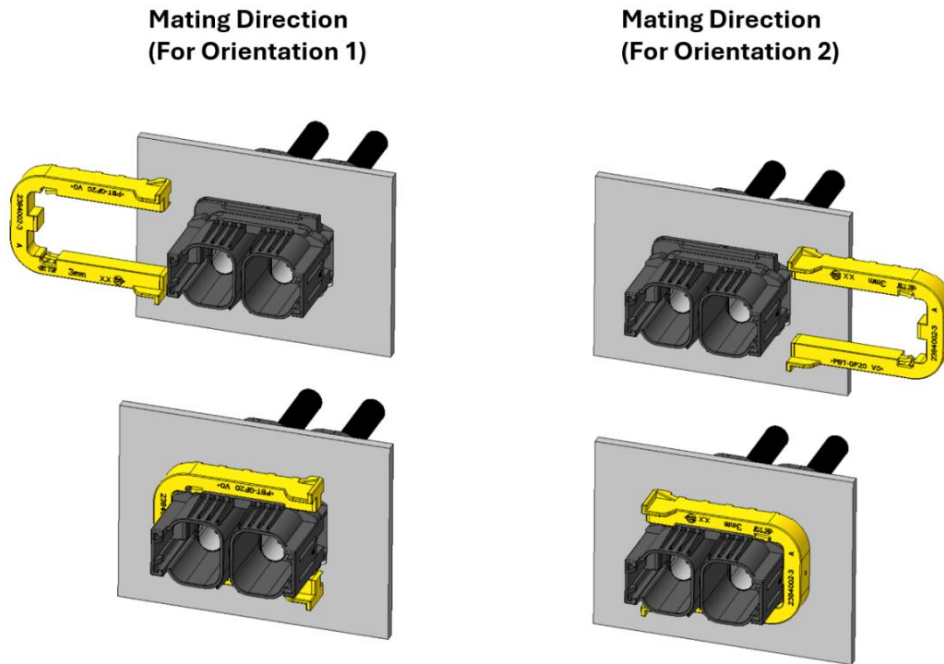


Figure 4.3.c.: Assembly of DT Highspeed 2 port Bulkhead Pin Assembly to Panel

4.4. Assembly of DT Highspeed 180 Degree Header to Panel and Soldering.

The DT Highspeed 180 Degree Header version is made for soldering on printed circuit boards and designed to be sealed to an enclosure by a Flange Seal and screwed to the Customer Interface

4.4.1 DT Highspeed 180 Degree Header orientation and positioning to the PCB

The Header does have polarization and positioning features to the PCB. Definition on interface to the customer enclosure and PCB can be found on the corresponding customer drawing.

The header is positioned and secured on the PCB using three board locks. These board locks lock into pre-drilled holes on the PCB, which feature crush ribs that provide a clamping effect. This ensures the header remains in place during subsequent assembly steps prior to soldering.

The locking process may generate minor shavings. This can be reduced by increasing the hole diameter on the PCB; however, this will also result in lower PCB holding force.

The polarization to the PCB is done by the position of the 3 board locks see picture 4.4.1.a.

The soldering process is qualified according to the product specification. A selective wave soldering process is recommended. After soldering, the PCB and header are permanently connected.

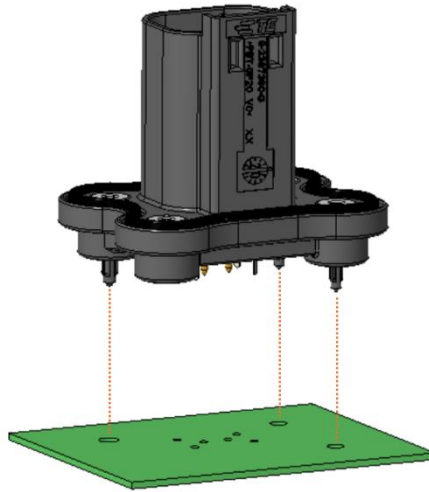


Figure 4.4.1.a: DT Highspeed 180 Degree Header orientation and positioning to the PCB

4.4.2 DT Highspeed 180 Degree Header Assembly to Panel

Sealing and mounting of the header to the customer housing is achieved with a seal and screws. Dimensions and tolerances of the customer interface are mentioned on the corresponding customer drawing. Please ensure that the flange seals are free from dust and debris before beginning the assembly process. We recommend first to lock the housing to the customer interface and use an adjustable mounting of the PCB. The Header is locked by 4 screws into the interface. Fastening torque is dependent upon the material of the fastener. Fastener must be capable of withstanding stresses necessary to fully compress the flange seal by bottoming the threaded insert to the enclosure. Fasteners used in validation testing can be described as follows:

- M2.5 x 5 , Grade8/Class12.9, Alloy Steel Socket head cap screws.
- Length was chosen to maximize thread engagement with the threaded inserts. The nominal thread length of the threaded inserts is 6.27mm.
- Fasteners were torqued to 0.9+/-0.1 Nm.

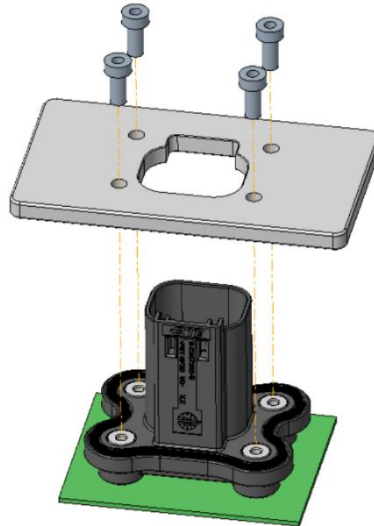


Figure 4.4.2.a: DT Highspeed 180 Degree Header assembly to Panel

5. Connector Mating

- A.** First, ensure the appropriate key of each connector has been selected for the mating process. Multiple key codes are available for these connectors to ensure proper mating alignment. Only connectors with matching key codes are designed to fully engage and establish the intended electrical connection. In cases of mismatched keying, only the shield component may make limited contact, while primary electrical terminals remain disengaged. Refer to TE customer drawings for further details related to appropriate keys.
- B.** Next, make sure CPA are in the pre-locked position. refer to TE Customer drawings for further detail.
- C.** Then align the connector as shown in figure 5.a the key rib on the socket assembly/blind plug assembly should align with the key slot on the mating counterpart.
- D.** Then continue to push as it draws to a close and latches into a final lock position. there should be an audible or tactile “click” when the connector is fully mated.
- E.** Once the connector is fully mated, push CPA to the final lock position. there should be an audible or tactile “click” when the CPA is fully locked. refer to figure 5.a for details.

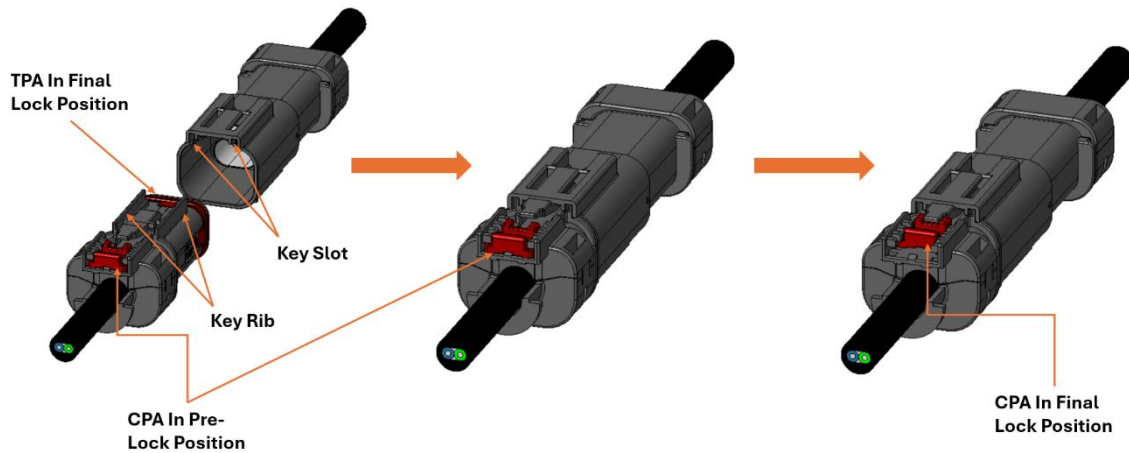


Figure 5.a: Assembly of socket connector to pin connector

- F. Follow the same steps for DT Highspeed 2 port Bulkhead Pin Assembly, DT Highspeed 180 Degree Header and blind plug assembly mating.
- G. Please contact TE for details about Disassembly procedures.

6. . APPENDIX

Section A: PCB Construction

Recommended panel/enclosure and PCB geometries are available on the TE customer drawing for each purchasable component where applicable.

The traces must be routed to achieve a differential controlled impedance of 100 Ohms +/- 5 Ohms.

Section B: Solder Recommendations.

Section B.1: Selective or Wave Solder

The materials used in this product do allow for selective or wave solder capability.

However, the solder tail protrusion from the PCB may not be adequate for certain board thicknesses. If a quality/repeatable joint can be achieved per IPC Class 2 standards, then either method is acceptable to produce the joint. Due to many variables involved with selective or wave soldering processes, it is recommended that the user conduct trial runs under actual manufacturing conditions to ensure product and process compatibility. It is recommended to place thermocouples at several locations on the PCB, including a position on the exposed plating of one of the required through holes and on the diecast shield to better understand the true temperature profile of the PCB/solder joint.

Additionally, it is recommended to let one or more thermocouples hang freely to monitor the chamber temperature. Keep in mind that the plastic components are sensitive to high temperatures. Below, you can find our general recommendation of a typical selective/wave solder process.

Section B.1.1: Flux application

The through-hole leads must be fluxed prior to soldering. Selection of the flux will depend on the type of PCB and other components mounted on the board. Additionally, the flux must be compatible with the wave solder line, manufacturing processes, health, and safety requirements.

Section B.1.2: Preheat

A preheat phase is needed to begin the evaporation of the flux solvent and to minimize the temperature differential between the PCB and the solder wave. The maximum preheat temperature measured from the top of the board should be between 100-130 deg C for lead free applications. Be careful not to excessively heat the PCB assemblies as it will break down the flux activation system and potentially cause quality concerns.

Section B.1.3: Soldering.

The soldering phase dwell time should last between 2-5 seconds for lead free applications with solder temperature of 260-270 deg C.

Section B.1.4: Cooling/Solidification.

Cool down rate should not exceed 4 deg/sec.

<u>LTR</u>	<u>REVISION RECORD</u>	<u>DWN</u>	<u>APP</u>	<u>DATE</u>
B4	Increased revision to resolve internal system release issue	Stack, Daniel	Stack, Daniel	4SEPT2025
B3	German text removed, additional details and images added, Information related to DT Highspeed cable assemblies and components are added to application spec 114-124009.	Vishnu Patagar	Stack, Daniel	21AUG2025
B2	Added new crimp tooling page 14	Ba. PHAM	W.J. Remaley	25APR23
B1	Crimp Height	T.Hyndman	D.Stack	30March 23



B	Crimp Height	T.Hyndman	D.Stack	07March 23
A	New Specification	S. Helm	J. Barth	09MAR21