



NOTE

All numerical values are in metric units [with U.S. customary units in brackets]. Dimensions are in millimeters [and inches]. Unless otherwise specified, dimensions have a tolerance of ± 0.13 mm [$\pm .005$ in.] and angles have a tolerance of $\pm 2^\circ$. Figures and illustrations are for identification only and are not drawn to scale.

1. SPECIMEN PART NUMBERS AND DESCRIPTION

These specimens are representative of normal production lots. Specimen part numbers are listed in Figure 1.

PART NUMBER	DESCRIPTION	Production Status
2355843-1	Plug Assy, 1P, W2W Sealed Coaxial, Key A	Available
2355843-2	Plug Assy, 1P, W2W Sealed Coaxial, Key B	Not Released for Production
2355843-3	Plug Assy, 1P, W2W Sealed Coaxial, Key C	Not Released for Production
2355843-4	Plug Assy, 1P, W2W Sealed Coaxial, Key D	Not Released for Production
2355844-1	1P Pin Dia 2.5, HDR Assy, 180DEG AS16 Coaxial, Key A	Available
2355844-2	1P Pin Dia 2.5, HDR Assy, 180DEG AS16 Coaxial, Key B	Not Released for Production
2355844-3	1P Pin Dia 2.5, HDR Assy, 180DEG AS16 Coaxial, Key C	Not Released for Production
2355844-4	1P Pin Dia 2.5, HDR Assy, 180DEG AS16 Coaxial, Key D	Not Released for Production
2374559-1	Cap Pin Assy, 1P, W2W Sealed Coaxial, Key A	Available
2374559-2	Cap Pin Assy, 1P, W2W Sealed Coaxial, Key B	Not Released for Production
2374559-3	Cap Pin Assy, 1P, W2W Sealed Coaxial, Key C	Not Released for Production
2374559-4	Cap Pin Assy, 1P, W2W Sealed Coaxial, Key D	Not Released for Production
2338212-1	Plug Socket Assy, 4P, W2W, Sealed Coaxial, Key A	Available
2338212-2	Plug Socket Assy, 4P, W2W, Sealed Coaxial, Key B	Not Released for Production
2338212-3	Plug Socket Assy, 4P, W2W, Sealed Coaxial, Key C	Not Released for Production
2338212-4	Plug Socket Assy, 4P, W2W, Sealed Coaxial, Key D	Not Released for Production
2338211-1	Cap Pin Assy, 4P, W2W, Sealed Coaxial, Key A	Available
2338211-2	Cap Pin Assy, 4P, W2W, Sealed Coaxial, Key B	Not Released for Production
2338211-3	Cap Pin Assy, 4P, W2W, Sealed Coaxial, Key C	Not Released for Production
2338211-4	Cap Pin Assy, 4P, W2W, Sealed Coaxial, Key D	Not Released for Production
2356408-1	4P Vertical Coaxial Header Assy, Key A	Available
2356408-2	4P Vertical Coaxial Header Assy, Key B	Not Released for Production
2356408-3	4P Vertical Coaxial Header Assy, Key C	Not Released for Production
2356408-4	4P Vertical Coaxial Header Assy, Key D	Not Released for Production
2339729-1	Cap Pin Assy, 4P, flange, Sealed COAX AS16 COAXIAL, Key A	Available
2339729-2	Cap Pin Assy, 4P, flange, Sealed COAX AS16 COAXIAL, Key B	Not Released for Production
2339729-3	Cap Pin Assy, 4P, flange, Sealed COAX AS16 COAXIAL, Key C	Not Released for Production
2339729-4	Cap Pin Assy, 4P, flange, Sealed COAX AS16 COAXIAL, Key D	Not Released for Production
2292862-1	AS16 Backshell, 4P Cap, Smooth Exit, MC	Available
2292799-1	AS16 Backshell, 4P Plug, Smooth Exit, MC	Available

776363-1	Sealing Plug, SZ 16 Cavity	Available
776441-1	Extraction tool	Available
208-160010	4P interface drawing	Available – Contact Product Management/Engineering
208-160011	1P interface drawing	Available – Contact Product Management/Engineering
2381263	AMPSEAL16 COAXIAL Product Family Group Drawing	Available

Figure 1. Part Numbers and Description

2. COAXIAL terminals Part Numbers and Description

PART NUMBER	DESCRIPTION
2298488	MATE-AX 180DEG Socket Contact. Assy Cable RTK031
2298490	MATE-AX 180DEG Pin Contact. Assy Cable RTK031
2298510	MATE-AX 180DEG Socket Contact, Assy Cable RG174
2298511	MATE-AX 180DEG Pin Contact, Assy Cable RG174
2356413	Coaxial Pin Assembly, Short AS16 Coaxial MATE-AX / AMPSEAL 16 Pin Assy PCB mount

Table 2. COAXIAL MATE-AX terminals Part Numbers and Description

3. Mounting clips Part Numbers and Description

PART NUMBERS	MATERIAL	DESCRIPTION
1924487-1	Plastic	AS16 mounting clip, straight, 20.5mm, fir tree stud mount
1924487-2	Plastic	AS16 mounting clip, straight, 20.5mm, fir tree stud mount, anti-rotation
1924487-3	Plastic	AS16 mounting clip, straight, 11mm, fir tree stud mount

Table 2. Mounting clips Part Numbers and Description

4. APPLICABLE DOCUMENTS

- a. 114-94413 - Application Specification for MATE-AX contact kit 180°.

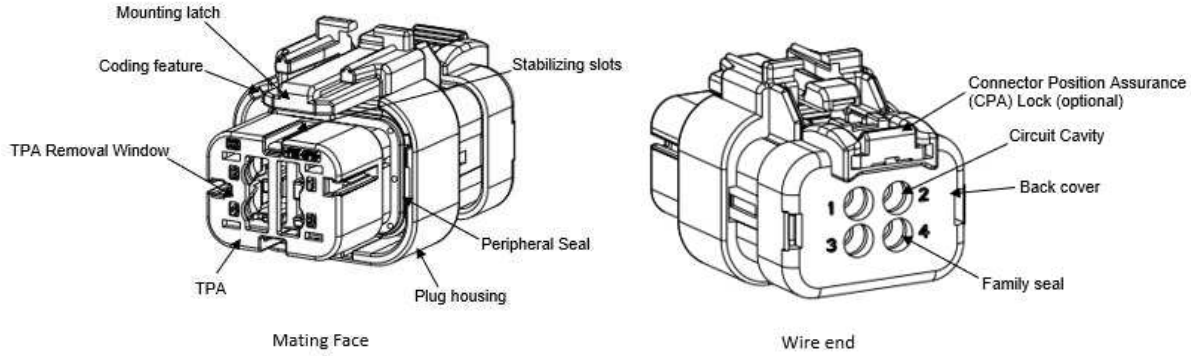
5. INTRODUCTION

This specification covers the requirements for application of the Coaxial Connector System. The connector system include a plug assemblies, cap assemblies, backshells, headers, and mounting clips. The connectors have been designed to accept coaxial wires. The connector system offers environmental protection by providing sealing to the wires and between the connector halves.

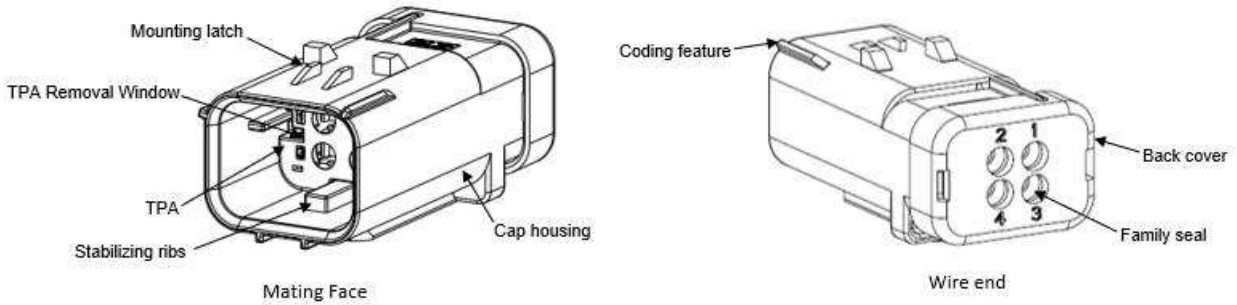
When corresponding with TE Connectivity Personnel, use the terminology provided in this specification to facilitate inquiries for information. Basic terms and features of this product are provided in Figure 2.

i **NOTE** 4P COAXIAL connector system is used for representation in the application specification. Same is applicable for all the AMPSEAL 16 COAXIAL connector system.

Plug socket assembly, 4P W2W sealed COAXIAL



Cap pin assembly, 4P W2W sealed COAXIAL



4P Backshell, AMPSEAL 16, 180 Degree Smooth Exit Plug Backshell Shown

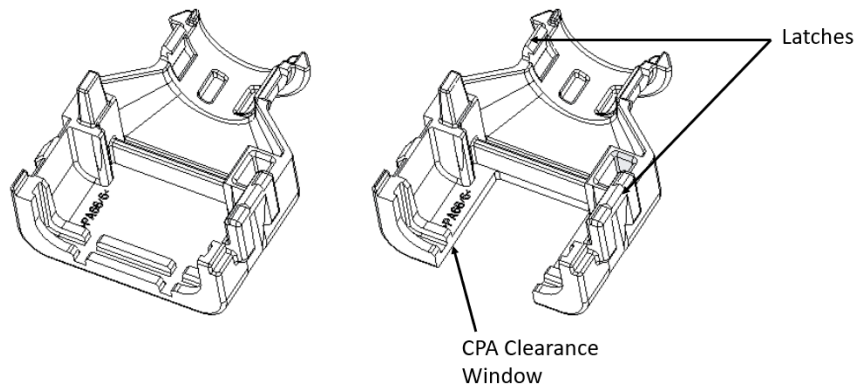
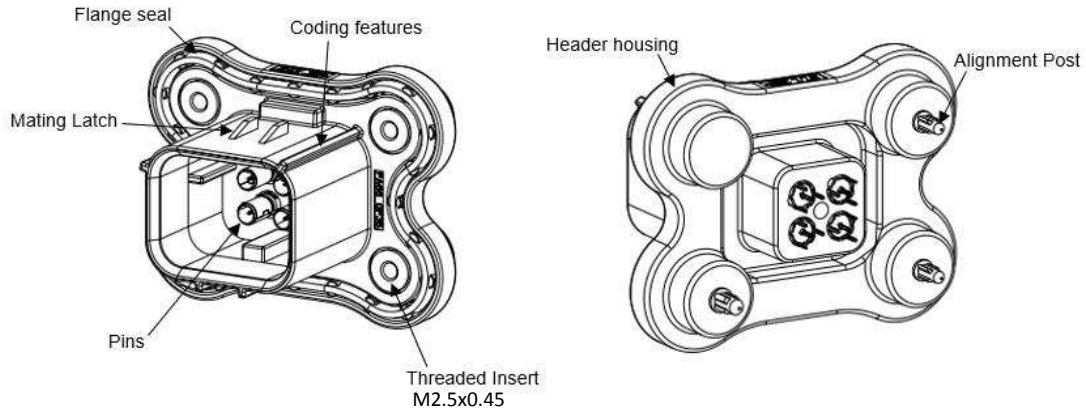
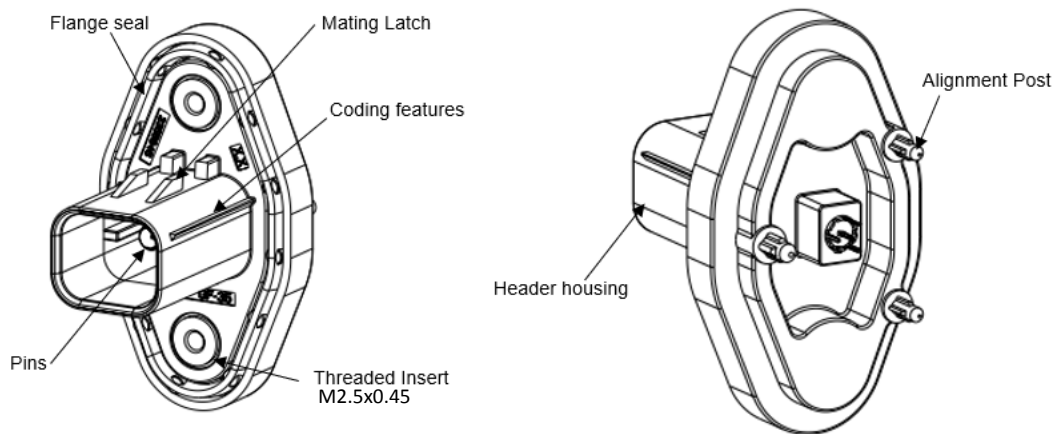


Figure 2(continued)

4P Vertical Coaxial Header Assy



1P Pin Dia 2.5, HDR Assy, 180DEG AS16 Coaxial



Cap Pin Assy, 4P, flange, sealed COAX AS16 COAXIAL

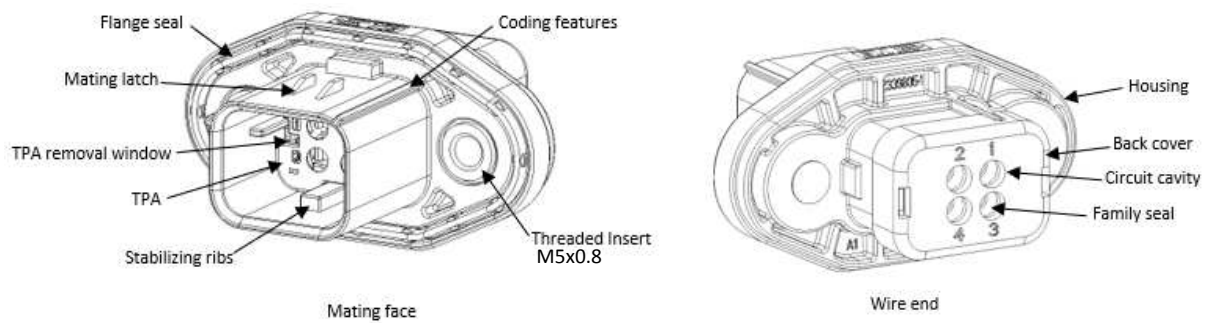


Figure 2(end)

6. REFERENCE MATERIAL

6.1 Revision Summary

Rev	Description	Date	Drawn	Approved
A	New release	20NOV2020	ARD	DFS
A1	Header variant information added	21APR2021	DFS	DFS
A2	4P, flange, sealed COAX AS16 variant added	19AUG2021	ARD	AS
A3	Cap Pin Assy, 1P, W2W Sealed Coax information added	30AUG2021	HPS	JB

Table 3. Revision Summary

6.2 Customer Assistance

Figure 1 and Product Code Y346 are representative of the AMPSEAL 16 COAXIAL 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 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.

6.3 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.

7. REQUIREMENTS

7.1 Safety

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

7.2 Storage

A. Connector Storage

Store connector assemblies in the shipping containers until ready for use.

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.

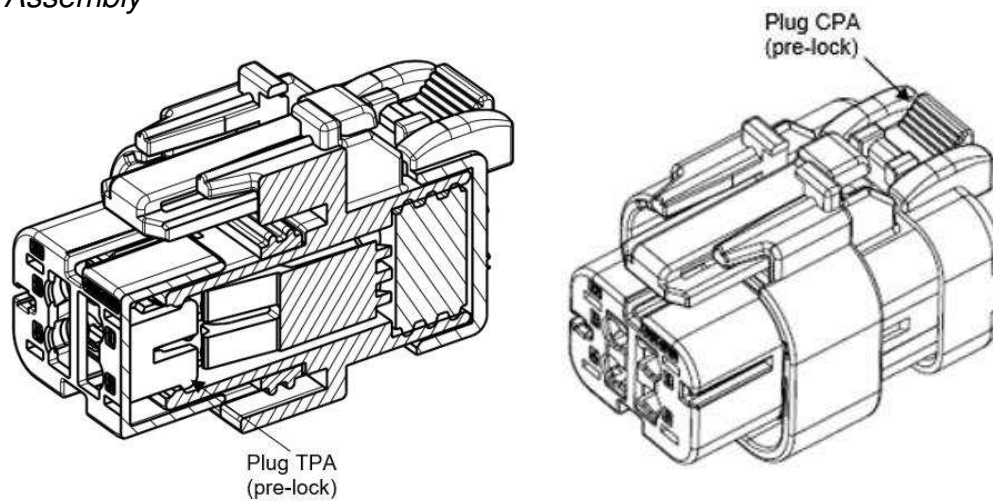
Alkalies	Ammonia	Citrates	Phosphates	Citrates	Sulfur Compounds
Amines	Carbonates	Nitrites	Sulfur	Nitrites	Tartrates

7.3 Shipping Features

Shipped Condition

The “As Shipped” state of the connectors is as shown in Figure 3. The Plug TPA and CPA are in the “Pre-Staged” position. In the Cap assembly, the Cap TPA is also in the “Pre-Staged” position. The “Pre-Staged” TPA prevents the customer from having to assemble the TPA prior to inserting crimped leads into the connectors. See Figure 3. Header flange seals may be shipped as a part of the header or separately. Further detail regarding flange seal assembly can be found in section 7.9.A of this document.

Plug Assembly



Cap Assembly

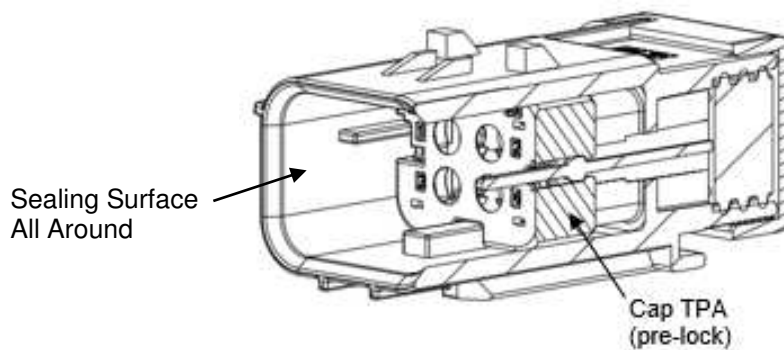


Figure 3 (continued)

Cap Pin Assy, 4P, flange, sealed COAX AS16 COAXIAL

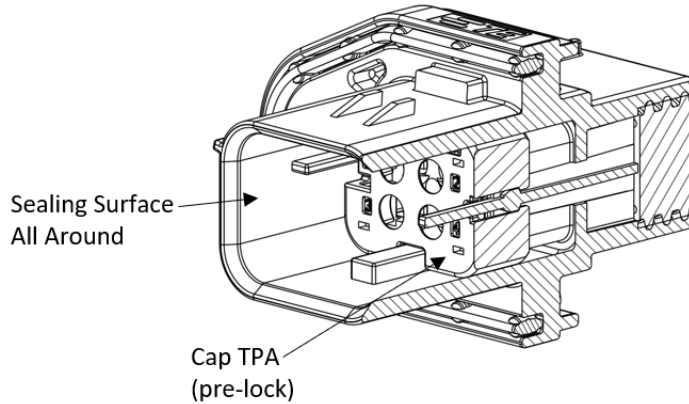


Figure 3 (end)



NOTE: If the TPA becomes seated prior to the time of use, simply move the component back to the pre-staged position by inserting the extraction tool into the TPA removal window and pull towards the mating face of the connector.



Caution: Care must be taken to ensure sealing surfaces are not scratched while servicing the TPAs.

7.4 Mechanical Keying

The connector system has ribs in the Cap assembly and corresponding slots in the Plug assembly. These features act as mechanical keys and prevent mis-mating of the connector. For easy identification the assemblies have Part Number of Variants (-1/-2/-3/-4). Refer to Figure 4 for information on mechanical keying.

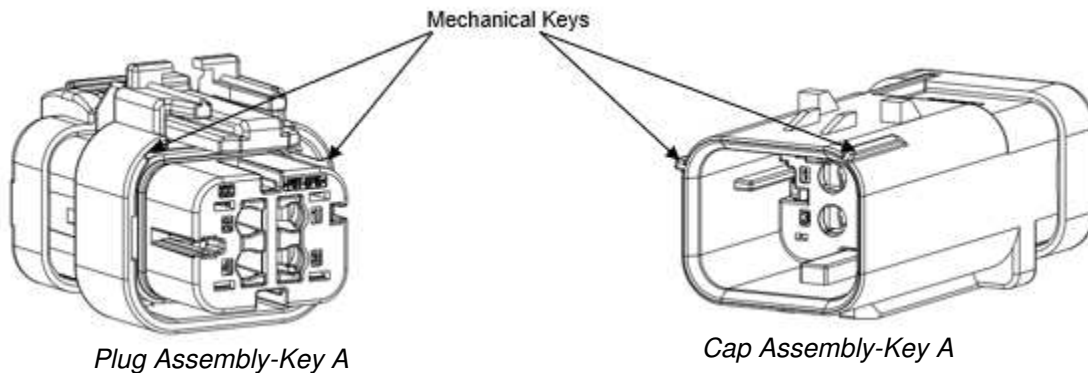


Figure 4 (cotinued)

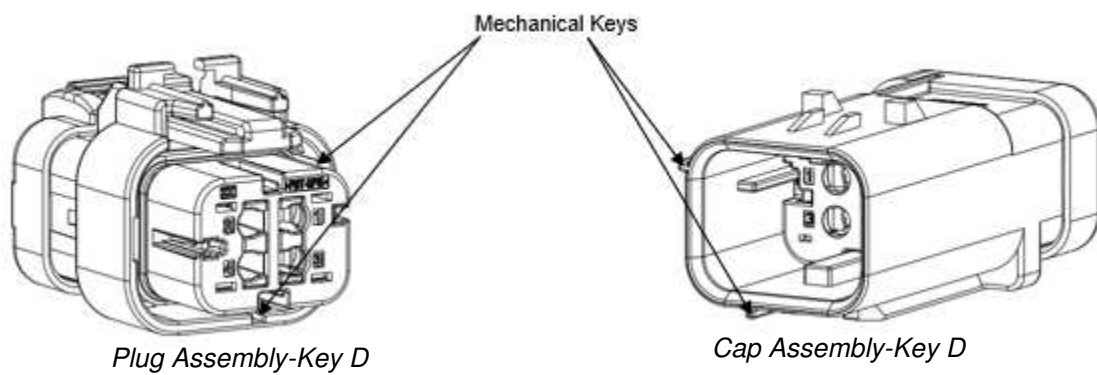
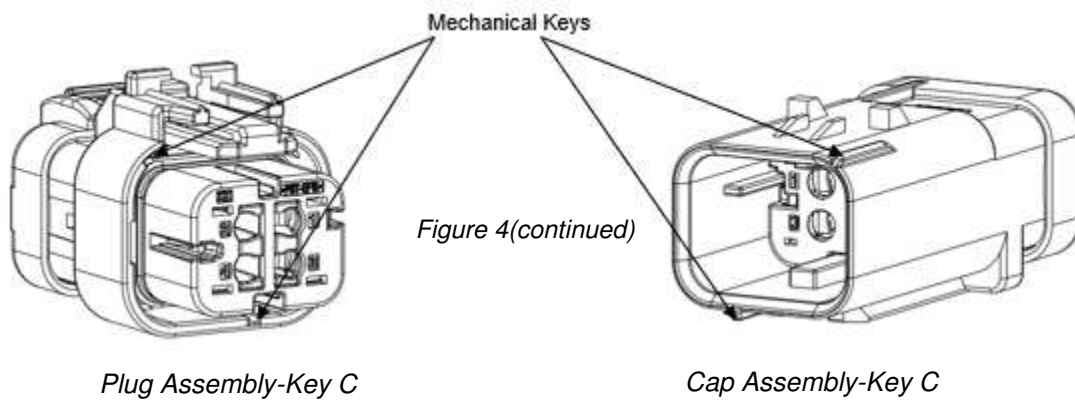
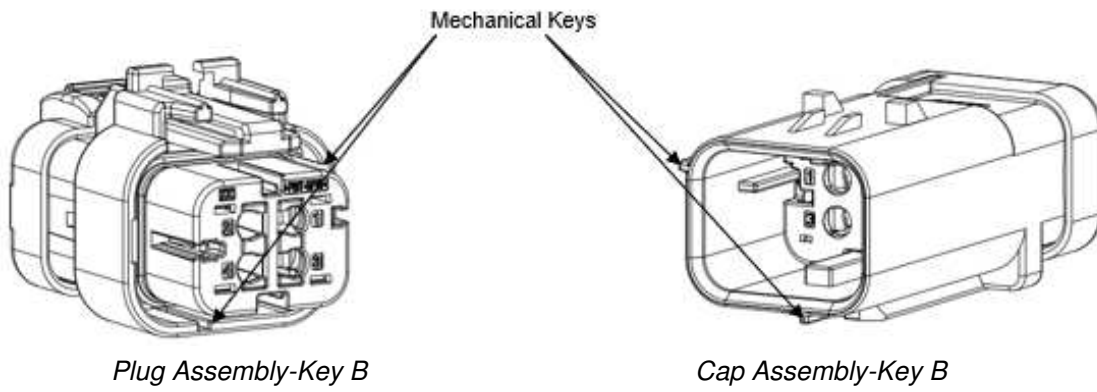
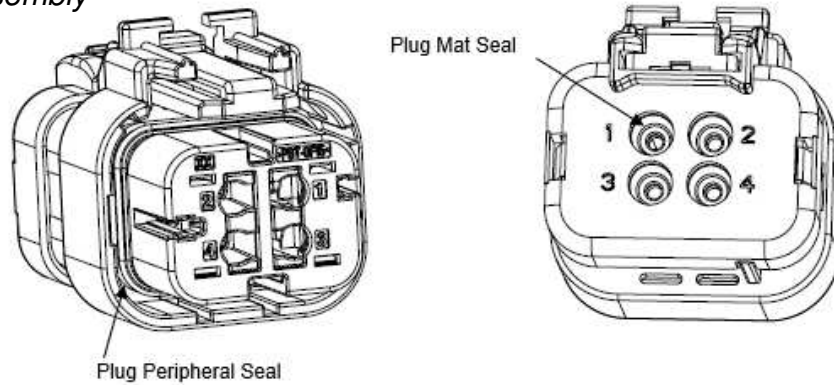


Figure 4 (end)

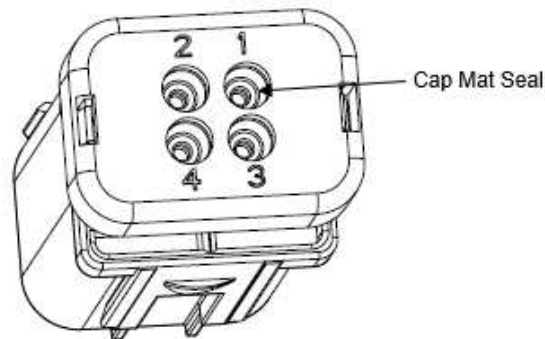
7.5 Sealing

The connector system provides sealing to the wires using a mat seal and sealing between connector halves using a Peripheral seal. Header flange seals provide sealing to PCB enclosure. See Figure 5. The wire range that can be accommodated in the mat seal is listed on the customer drawing of each connector.

Plug Assembly



Cap Assembly



Vertical Header Assemblies

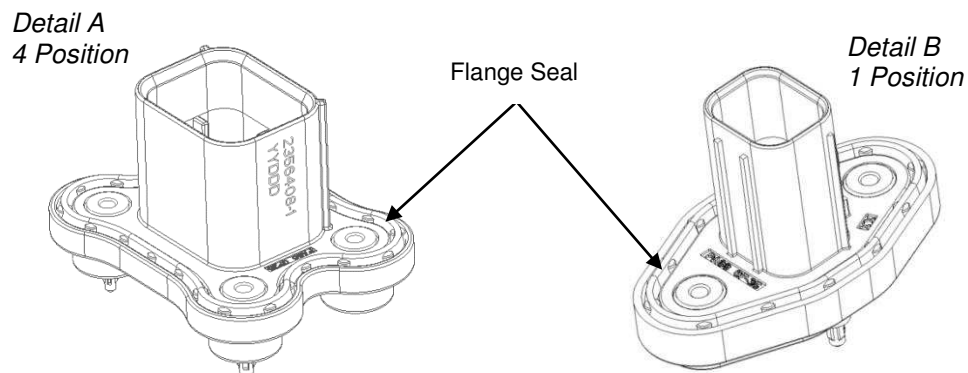


Figure 5 (continued)

Cap Pin Assy, 4P, flange, sealed COAX AS16

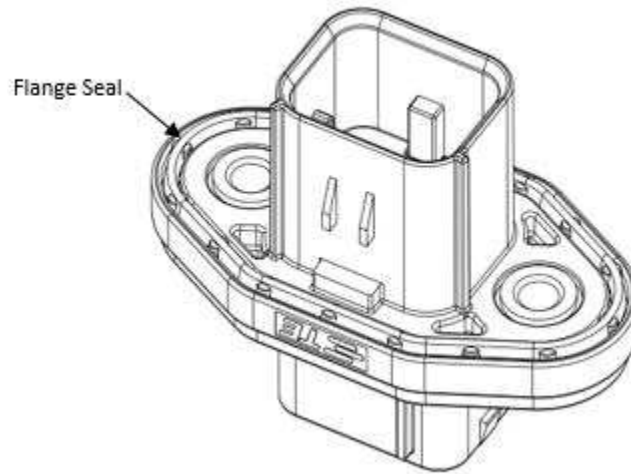


Figure 5 (end)

7.6 Assembly Procedure for Plug

A. Terminal Insertion for Plug

- i. Ensure that the terminals are properly crimped. Refer to Application Specification 114-94413 for crimping requirements.
- ii. Make sure that the TPA is in Pre-lock condition as shown Figure 6, Detail A.
- iii. Insert the terminal into the circuit cavity until it bottoms. There should be an audible or tactile “click” when the terminal is fully seated. Gently pull the wire to ensure that the terminal is locked in place. See Figure 6, Detail B.
- iv. After the terminals are assembled, push the TPA into final lock position until hear the “click” sound as shown in Detail C. Terminals should all be clearly visible in the windows of the TPA

Detail A

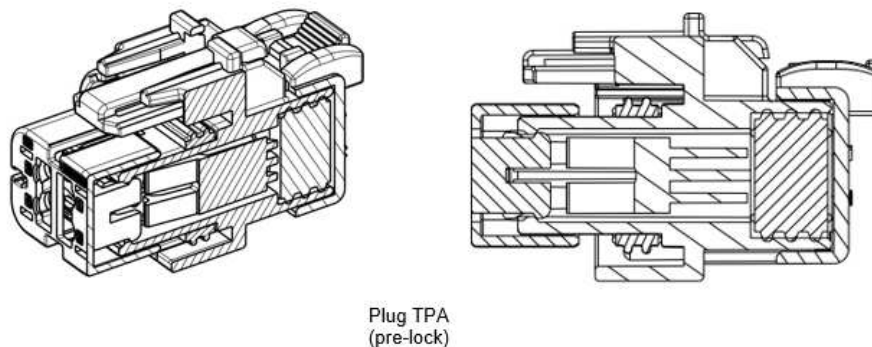


Figure 6 (Continued)

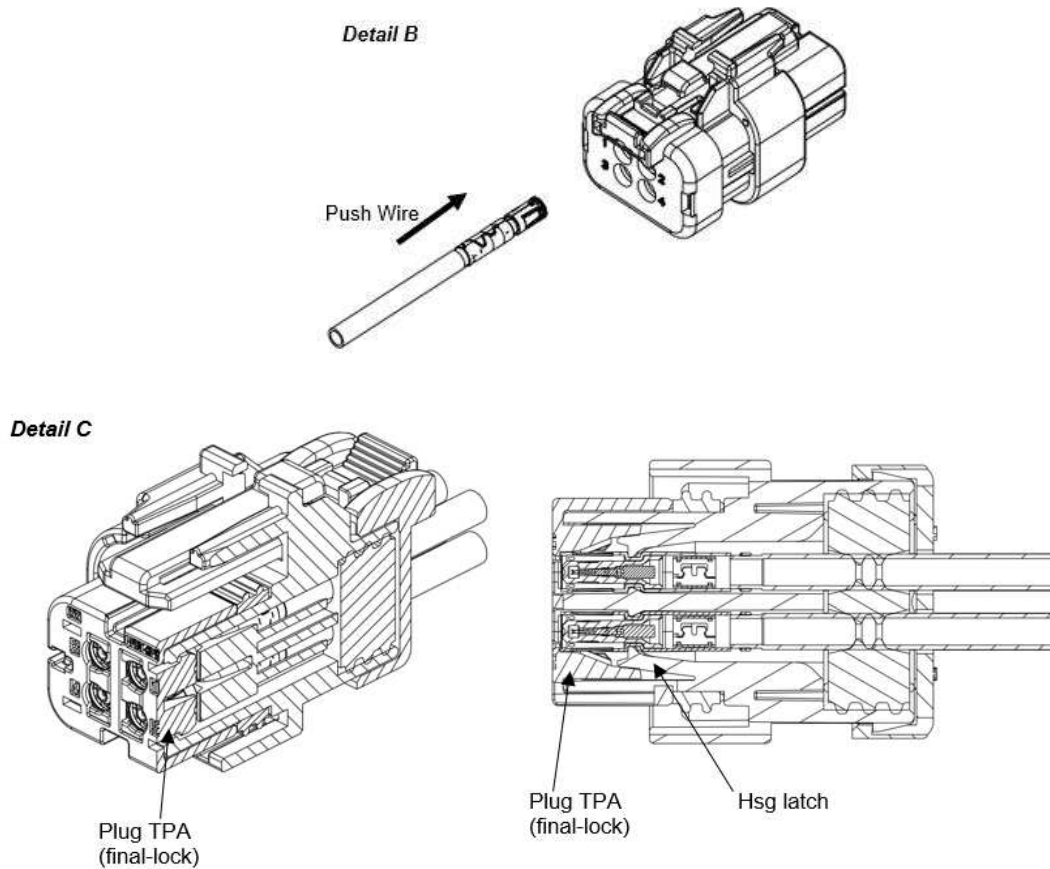


Figure 6 (End)

B. Servicing the Plug TPA

If for some reason the TPA has been removed from the connector, the TPA must be reassembled as described below.

- i. Insert TPA from front end as shown in figure and push the TPA inside the housing until hear the “Click” sound. Keep the TPA in pre-lock position as shown in Figure 7.



Caution: If the TPA is broken or damaged, the TPA must be replaced. Refer to the AS16 COAXIAL Product Group Drawing 2381263 for information regarding replacement components.

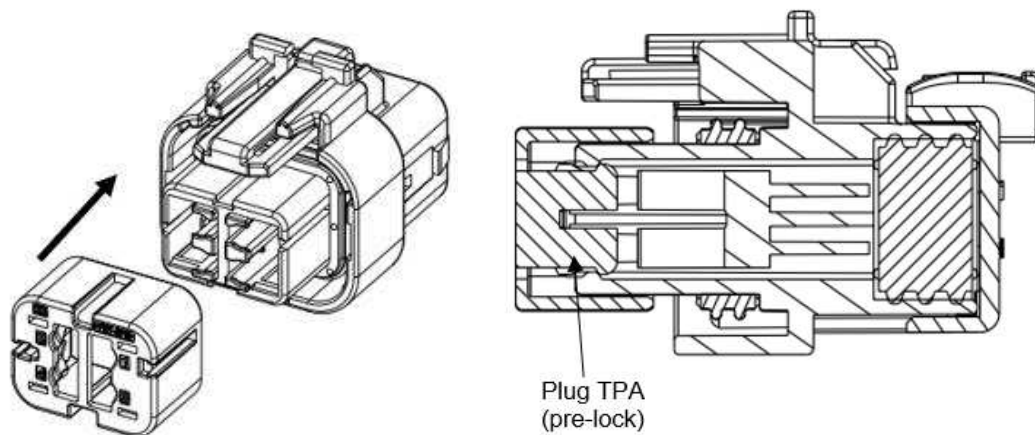


Figure 7

7.7 Assembly Procedure for Cap

A. Terminal Insertion for Cap

- i. Ensure that the terminals are properly crimped. Refer to Application Specification 114-94413 for crimping requirements.
- ii. Make sure that the TPA is in Pre-lock condition as shown in Figure 8, Detail A.
- iii. Insert the terminal into the circuit cavity until it bottoms. There should be an audible or tactile “click” when the terminal is fully seated. Gently pull the wire to ensure that the terminal is locked in place.
- iv. After the terminals are assembled, push the TPA on the 2/4 side of the TPA with a small screwdriver or TE extraction tool into final lock position until hear the “click” sound as shown in Figure 8 Detail C.



Caution: Care must be taken to ensure the sealing surface is not scratched while mating the TPA.



Caution: Care must be taken to ensure terminals are not damaged when mating the TPA.

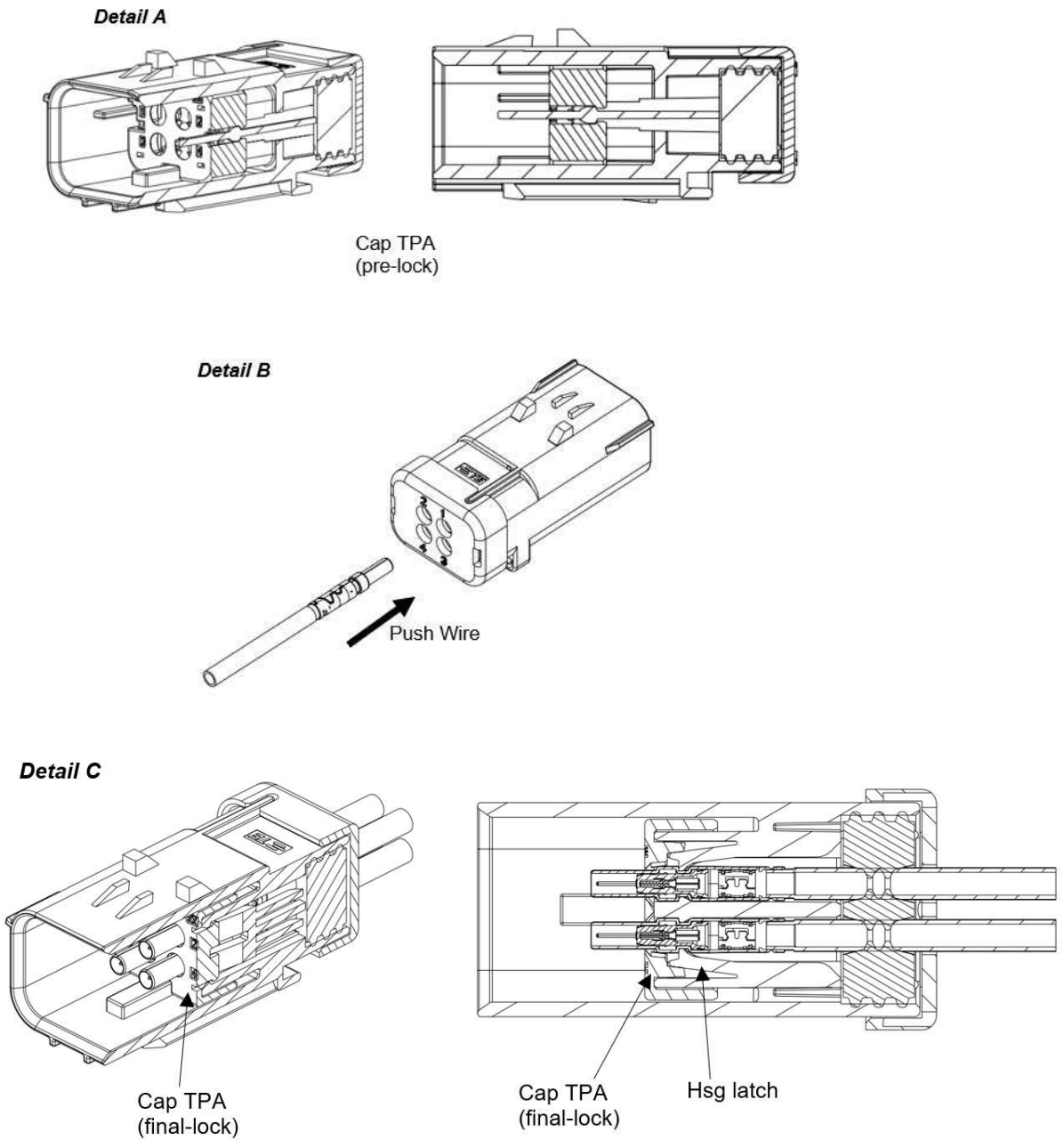


Figure 8

B. Servicing the Cap TPA

a. Removing the TPA

If the TPA must be removed, Refer to Sections 7.13.A or 7.14.B for removal instructions.

b. Installing TPA

Insert TPA from front end as shown in Figure 9 and push the TPA inside the Housing until hear the “Click” sound. Keep the TPA in pre-lock position as shown in Figure 9.

Caution: If the TPA is broken or damaged, the TPA must be replaced. Refer to the AS16 COAXIAL Product Group Drawing 2381263 for information regarding replacement components.

Caution: Care must be taken to ensure the sealing surface is not scratched while servicing the TPA.

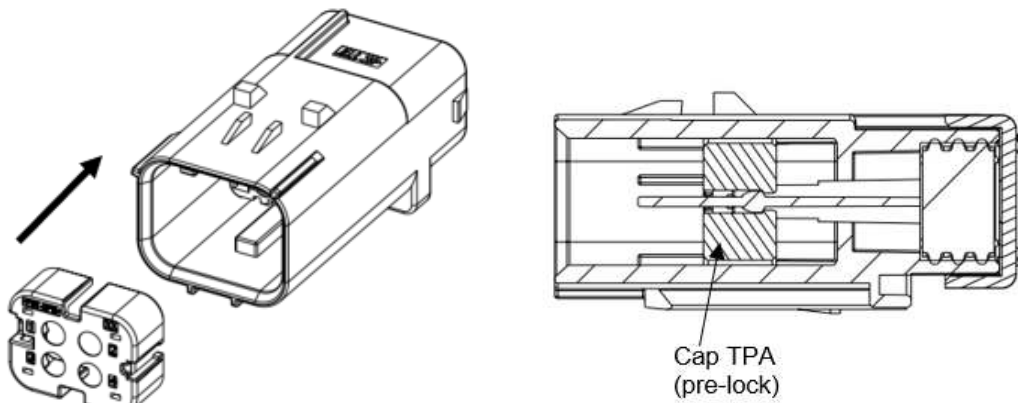


Figure 9

7.8 Assembly of Mounting clip for Cap assembly (Optional)

- i. Align the mounting clip with the ribs on the cap housing as shown in Figure 10, Detail A.
- ii. Slide the mounting clip into the mounting clip holder until the latches engage and there is an audible “click”. See Figure 10, Detail B. The connector is now ready to mount onto the panel.

i **NOTE**
For mounting clip details refer **Table 2**.

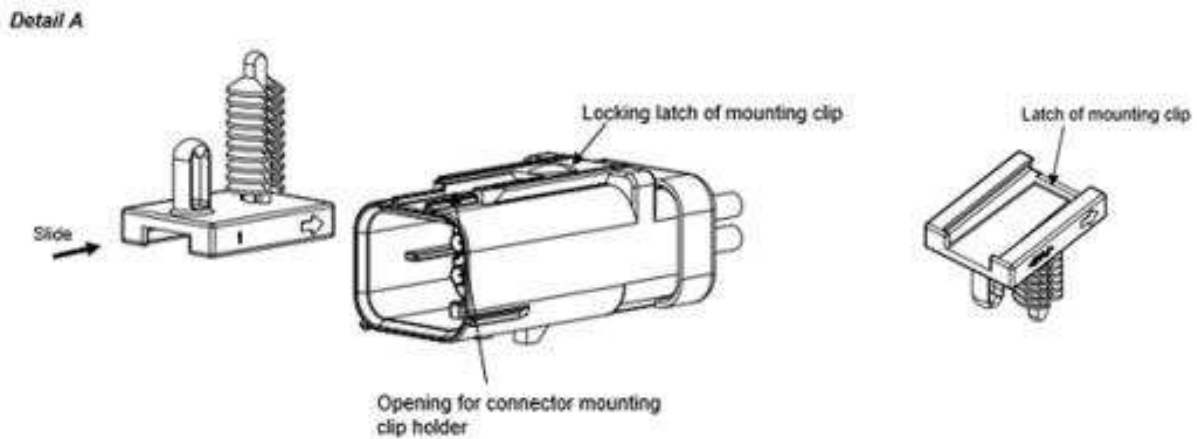


Figure 10 (Continued)

Detail B

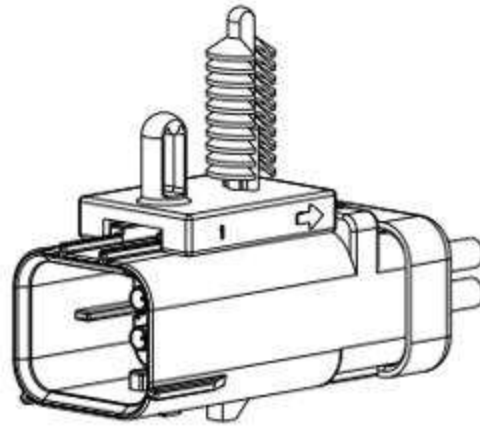


Figure 10 (end)

7.9 Recommended Assembly Procedure for PCB Headers

A. Header Flange Seal Assembly/Re-Assembly

- i. If the flange seal has shipped separately or been removed from its groove, simply align the seal with the seal groove of the header housing and push it into place with a clean finger until the seal completely bottoms in the groove along the entire seal track as seen in Figure 11.

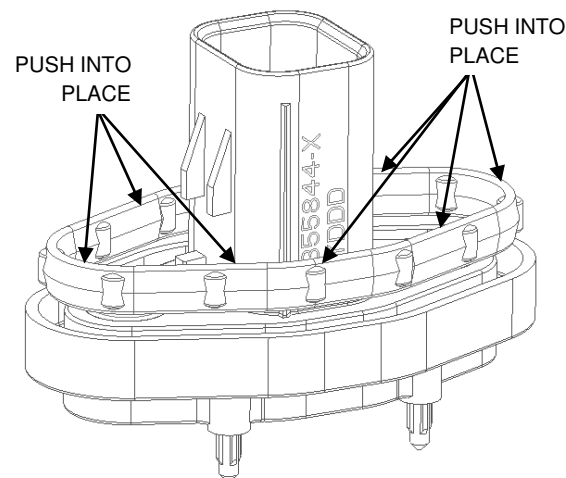


Figure 11



Caution: Seal groove and the seal must be free of imperfections and debris prior to seal assembly.

- ii. If the flange seal has become dislodged, simply push on the seal with a clean finger until the seal bottoms in the seal groove as shown in Figure 12.

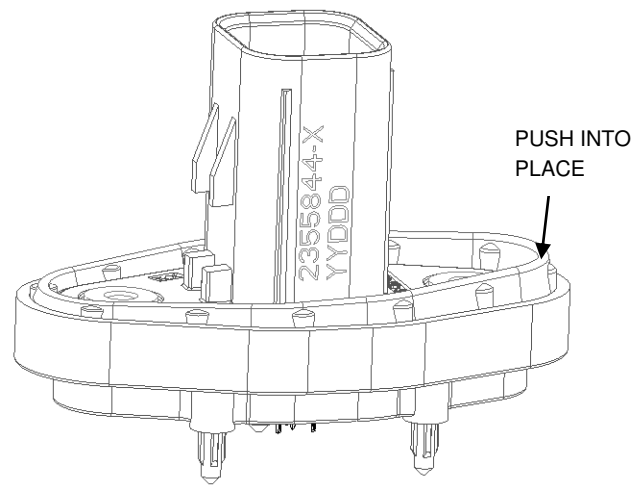


Figure 12

B. Final Assembly of Header to PCB and Enclosure

- i. Align the header assembly with a PCB which matches the recommended PCB layout found on the customer drawing.
- ii. Insert the header into the PCB. Alignment posts on the bottom of each header should guide the component into position.
- iii. Push the header towards the PCB until the header bottoms to the PCB.
- iv. Assemble the PCB and header assembly to the enclosure which matches the recommended enclosure geometry available on the customer drawing using appropriate fastener.
 - a. Fastening torque is dependent upon 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.
 - i. Fasteners used in validation testing can be described as follows:
 - M2.5, 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+/-0.1Nm.
- v. Once the header has been completely fastened to the PCB and enclosure, solder the header pins to the PCB using an appropriate soldering method. Reflow soldering is not recommended for header assemblies.



CAUTION

Failure to follow recommended assembly procedure could cause stress in the solder joints and lead to premature product failure.



CAUTION

If a header assembly is dropped, it is recommended to discard the dropped assembly and replace it with a new assembly.

7.10 Recommended assembly procedure for 4P, flange, sealed COAX AS16

A. Flange Seal Assembly/Re-Assembly

- i. If the flange seal has shipped separately or been removed from its groove, simply align the seal with the seal groove of the header housing and push it into place with a clean finger until the seal completely bottoms in the groove along the entire seal track as seen in Figure 13.

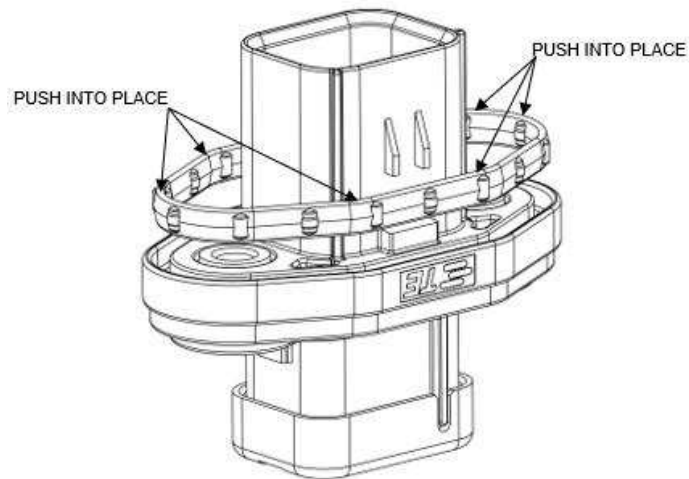


Figure 13.



Caution: Seal groove and the seal must be free of imperfections and debris prior to seal assembly.

- ii. If the flange seal has become dislodged, simply push on the seal with a clean finger until the seal bottoms in the seal groove as shown in Figure 14.

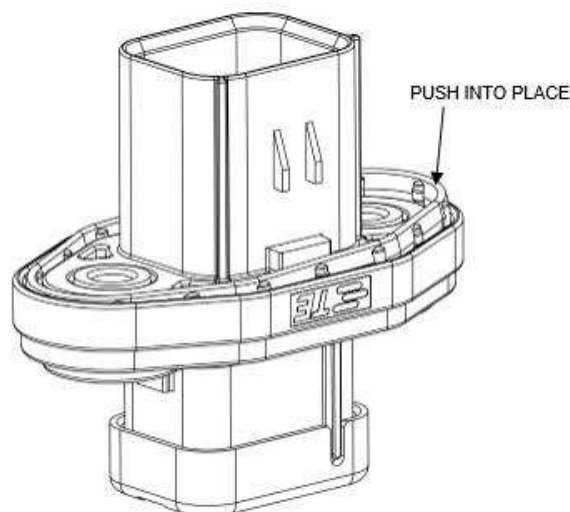


Figure 14.

C. Final Assembly to Enclosure

- a. Fastening torque is dependent upon 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.
 - i. Fasteners used in validation testing can be described as follows:
 - M5, 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 2.5+/-0.1Nm.

7.11 Recommended Panel/Enclosure and PCB Geometries

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

B. Recommended PCB construction

- a. The layer construction and the circuit design for serial printed circuit boards shown below in Figures 15-20 are exemplarily and is intended as a recommendation. Please note, that the given layout is not optimized to fit all possible board configurations regarding RF-performance and represents a general recommendation. To guarantee optimal high frequency properties, an RF-analysis of the connector to board transition is needed. For exact footprint details please refer to the specific TE data file which can be obtained by request. Figures 13-18 depict the PCB construction for the 4 position AMPSEAL 16 COAXIAL Vertical Header. Each layer is shown with nominal values. All measurement values are exemplarily and have to be adapted to the real PCB circumstances.

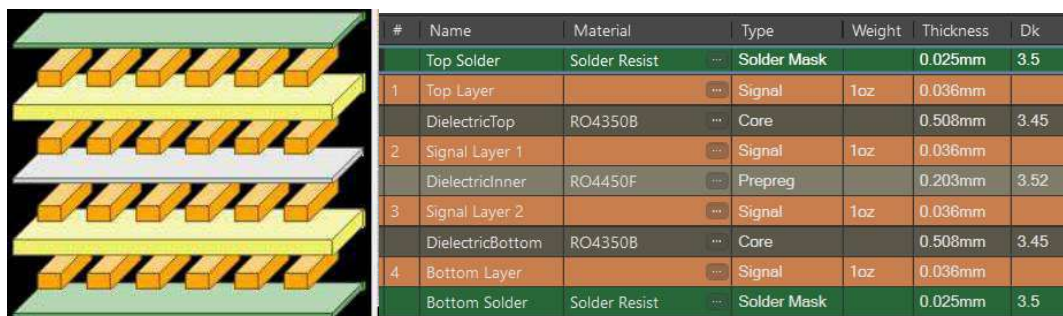


Figure 15: Detail of layer construction with nominal thickness and dielectric constant

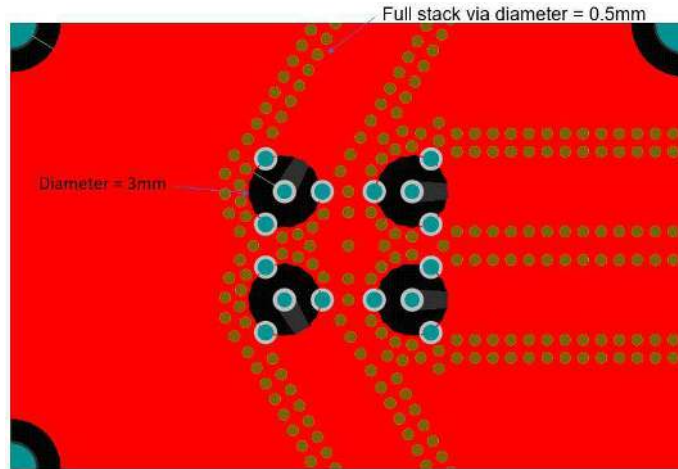


Figure 16. PCB TOP-LAYER

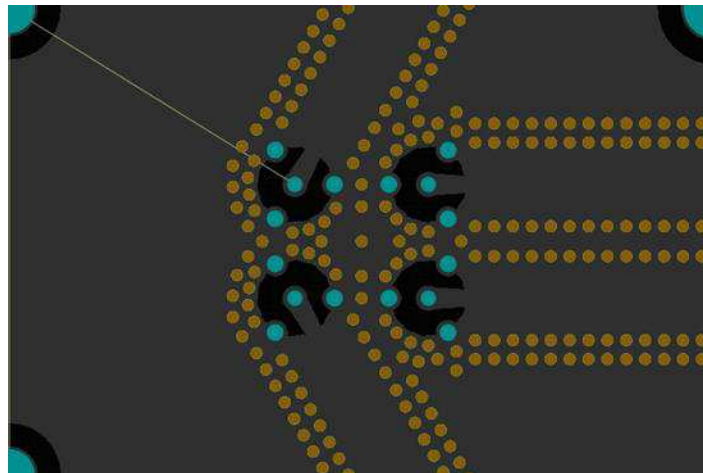


Figure 17: PCB SIGNAL LAYER 1

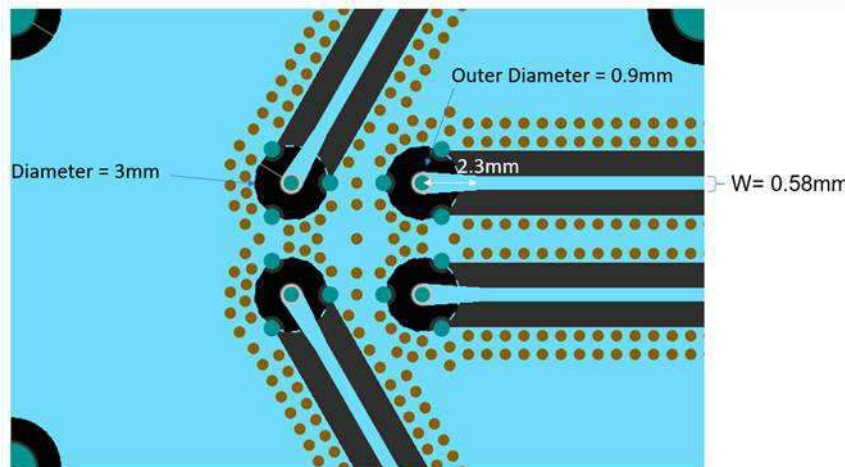


Figure 18: PCB SIGNAL LAYER 2

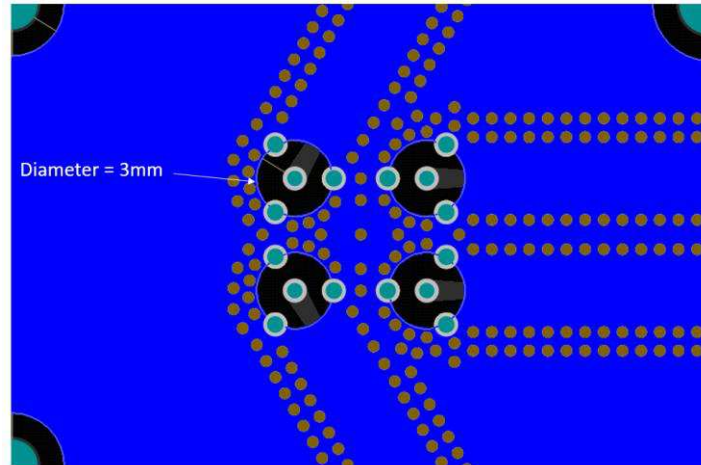


Figure 19: PCB BOTTOM LAYER

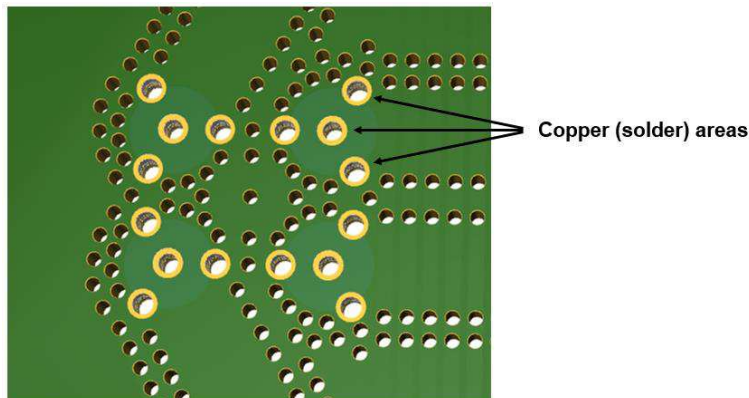


Figure 20: Solder Mask

C. Recommended Panel cutout/Enclosure geometry

ADDITIONAL NOTES REGARDING PANEL:

- 5 FLANGE CLEARANCE REGION ON SEALED SIDE OF ENCLOSURE, NECESSARY FOR PROPER ASSEMBLY AND SEALING.
- 6 SEALING SURFACE WITHIN CLEARANCE REGION, NO BURRS, SCRATCHES OR TOOL MARKS ALLOWED.
- 7 SURFACE ROUGHNESS APPLIES WITHIN CLEARANCE REGION.
- 8 X_BASIC AND Y_BASIC TO BE DEFINED BY CUSTOMER.
- 9 REMOVE SHARP EDGES. R0.3MM MAX

Figure 21: Notes regarding recommended panel/enclosure geometry for 2339729-X.

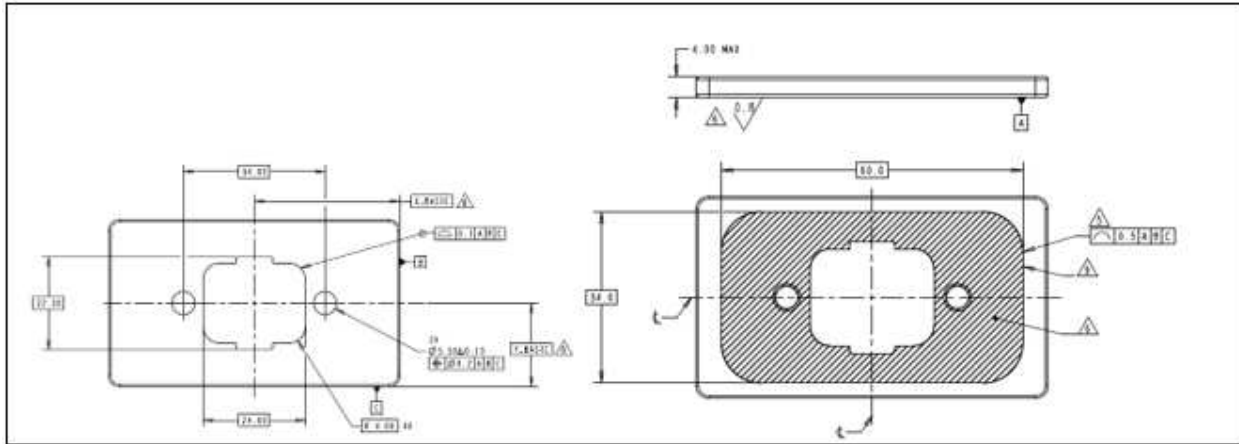


Figure 22: Notes regarding recommended panel/enclosure geometry for 2339729-X.

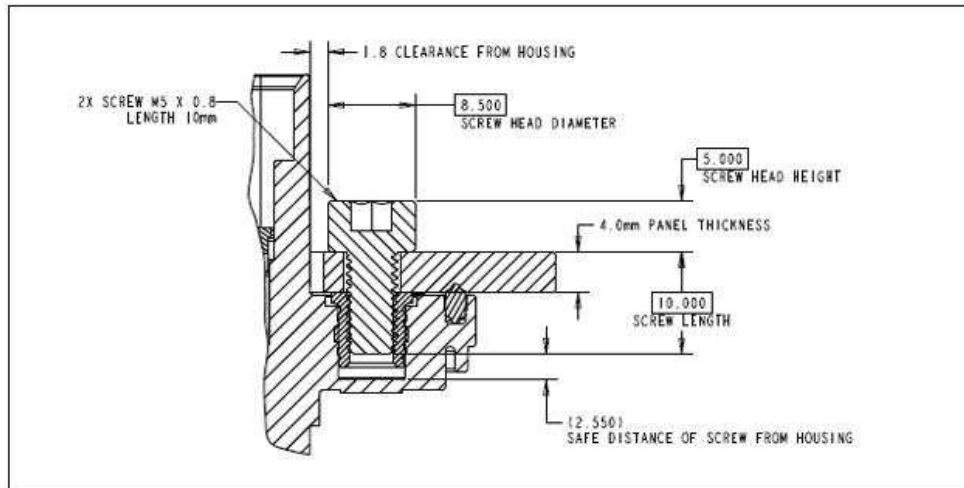


Figure 23: Recommended screw for installation for 2339729-X.

7.12 Mating of Plug and Corresponding Assembly



CAUTION

For wire to device application, the interface on the device must meet requirements shown on interface drawing. Interface drawings described in Figure 1.

- i. Align the assembled Plug and corresponding connectors face to face with the key slots and latch features aligned. Then, push the connectors together, until hearing a “click” sound. Refer to Figure 24.
- ii. Push the CPA forward until there is an audible and tactile “click”; which mates and locks the connectors together. See Figure 24.
- iii. The CPA lock should be easy to engage. It will be difficult to engage if the connector and mating connector are not fully mated.



CAUTION

To prevent damage to the CPA lock or connector, DO NOT force the CPA lock to engage.

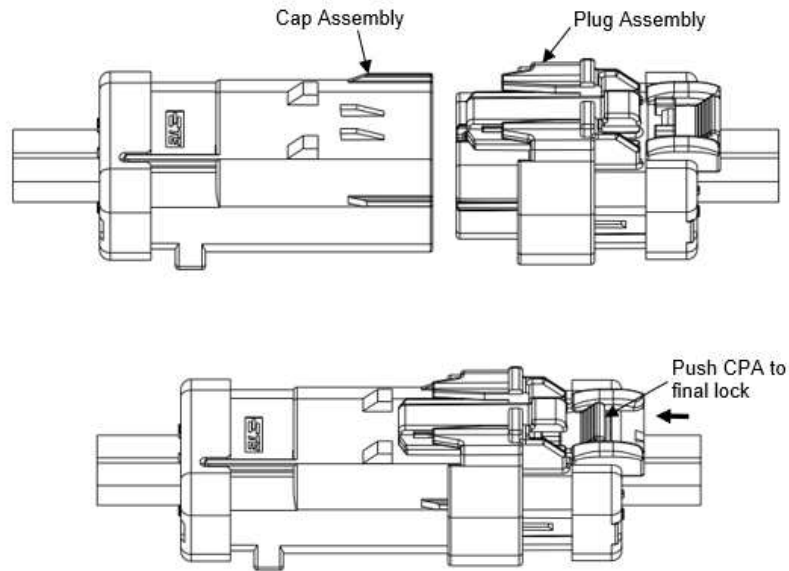


Figure 24

7.13 Un-mating of Plug and Corresponding Assembly

7.13.1 Pull back on CPA lock to unlock the connector and mating connector. Refer to Figure 25.

7.13.2 Depress the connector latch of the Plug connector and gently pull the Plug connector and mating connector apart.

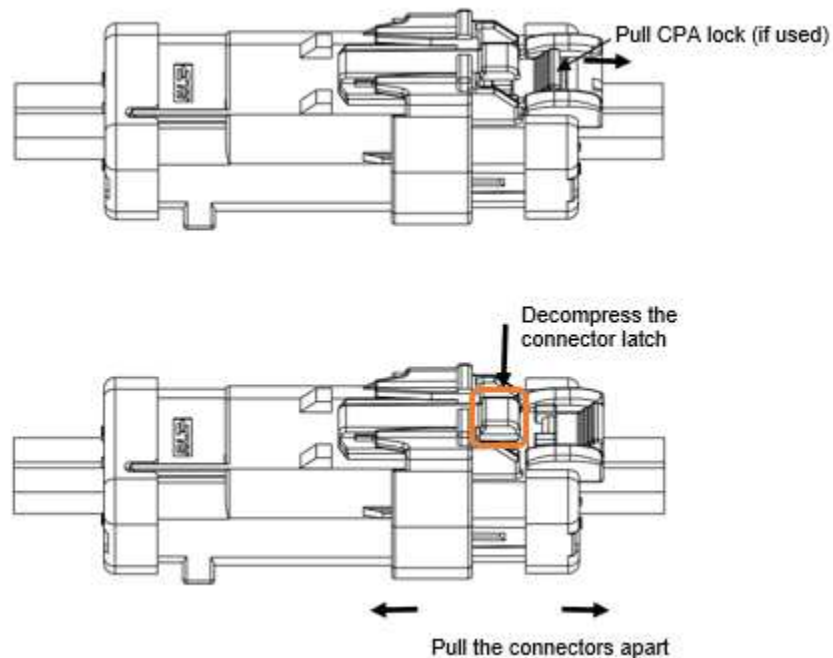


Figure 25

7.14 Disassembly procedure of Plug

A. Plug Terminal Removal

- a. The TPA must be completely removed out of the housing by using TPA extraction tool 776441-1 as shown in Figure 26, Detail A.
- b. With the TPA completely removed out of the housing, slightly pull the wires while pushing on the back of the housing.
- c. Insert the tip of TE Removal Tool 776441-1 into the release windows for the terminal(s) to be removed and direct the tip between the Terminal Locking Feature and the Terminal Retention Latch. The flat side of the removal tool faces the terminal as in Figure 26, Detail B.
- d. When the removal the tool is properly located, push the extraction tool in the direction shown to gently flex the housing locking latch away from the terminal locking features (this will release the terminal). See Figure 26, Detail B.
- e. With the latch flexed to the required limit, use the wire(s) to pull the terminal(s) from the connector. See Figure 26, Detail B.



CAUTION

To avoid damage to the terminal retention latch in the housing, do not flex the latch further than necessary.

Detail A

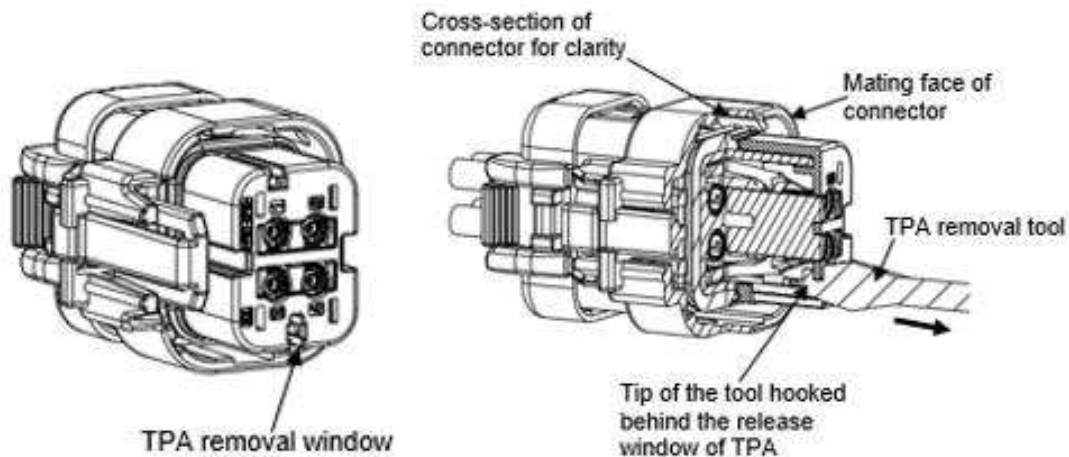


Figure 26 (continued)

Detail B

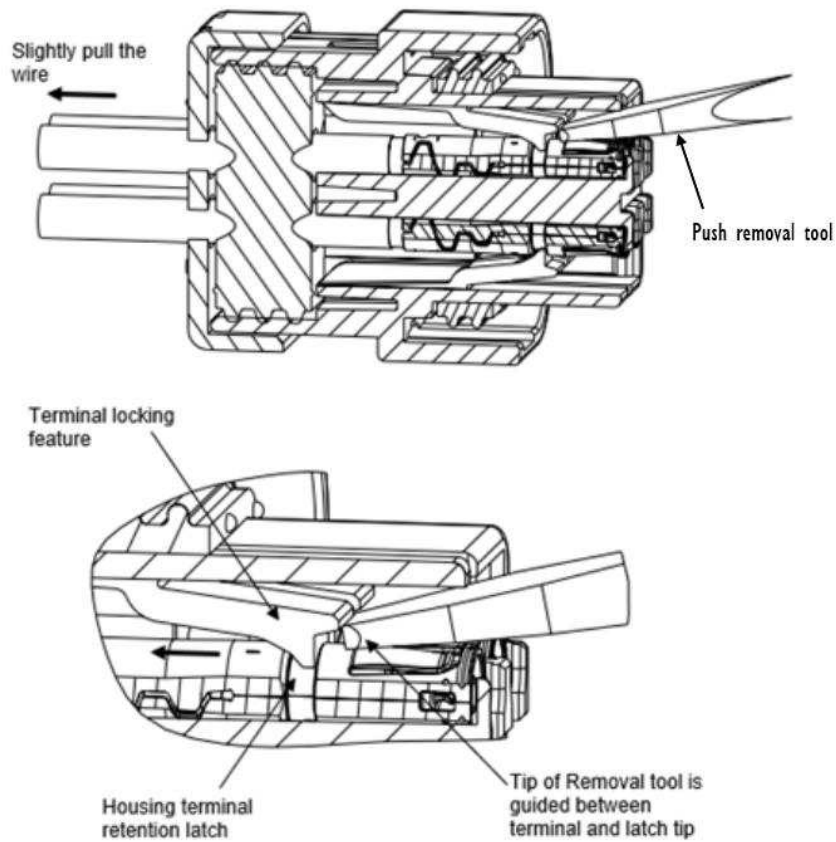


Figure 26 (end)

7.15 DISASSEMBLY PROCEDURE OF CAP ASSEMBLY

A. Dismounting of mounting clip

- i. Insert the tip of a small screwdriver between the latch of the mounting clip and the latch of the connector mounting clip holder. See Figure 27.
- ii. Rotate the screwdriver until the latches disengage, then slide the mounting clip toward the mating face of the connector until it is out of the connector mounting clip holder.

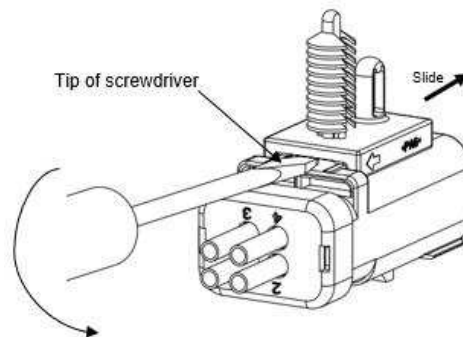
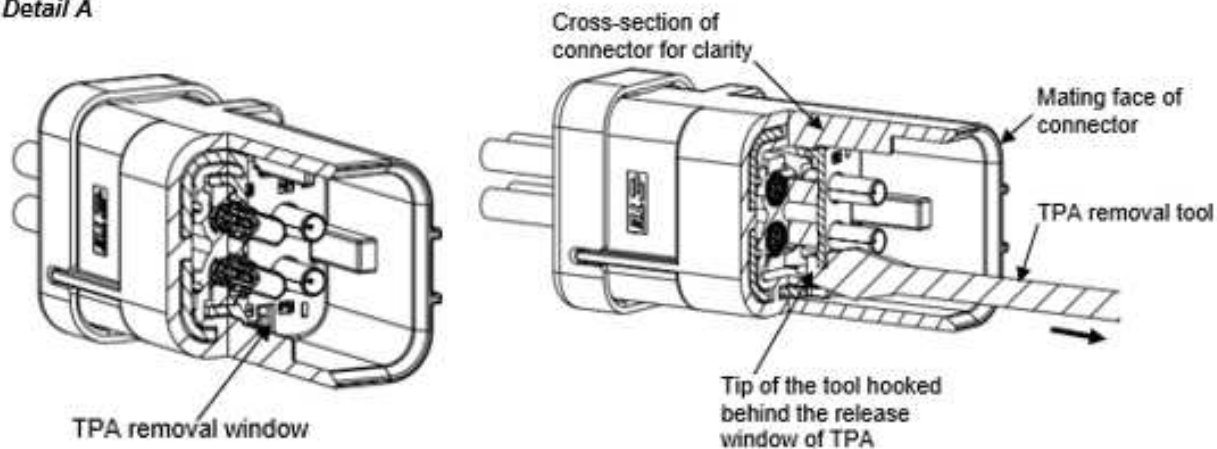


Figure 27

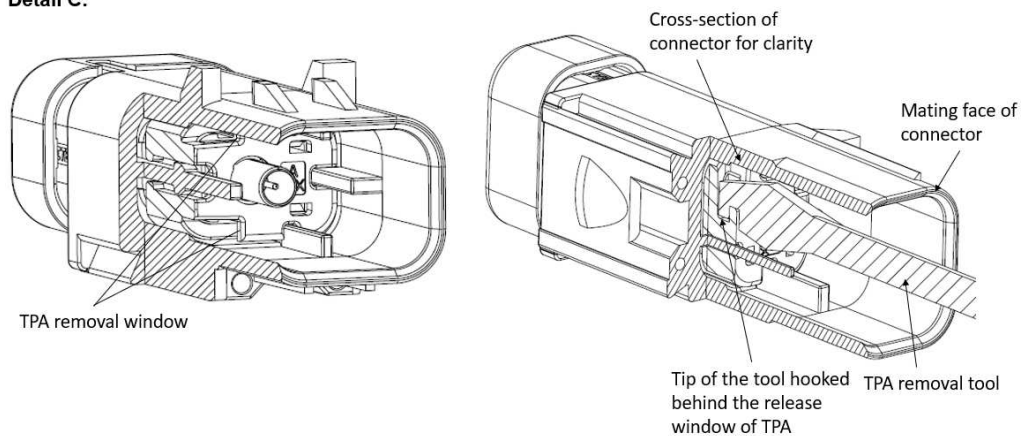
B. Cap Terminal Removal

- a. The TPA must be completely removed out of the housing by using TPA extraction tool 776441-1 as shown in Figure 28, Detail A. Be careful not to scratch sealing surface.
- b. With the TPA completely removed out of the housing, slightly pull the wires while pushing on the back of the housing.
- c. Insert the tip of TE Removal Tool 776441-1 into the release windows for the terminal(s) to be removed and direct the tip between the Terminal Locking Feature and the Terminal Retention Latch. The flat side of the removal tool faces the terminal as in Figure 28, Detail B.
- d. When the removal the tool is properly located, lift the tool in the direction shown to gently pry the housing locking latch away from the terminal locking features (this will release the terminal). See Figure 28, Detail B.
- f. With the terminal latches disengaged, use the wire(s) to pull the terminal(s) from the connector. See Figure 28. Detail B.

Detail A



Detail C:



NOTE

Detail C shows details about 1P Cap pin Assembly TPA removal window position and Removal tool insertion, remaining details remains same as 4P Coax

Figure 28 (continued)

Detail B

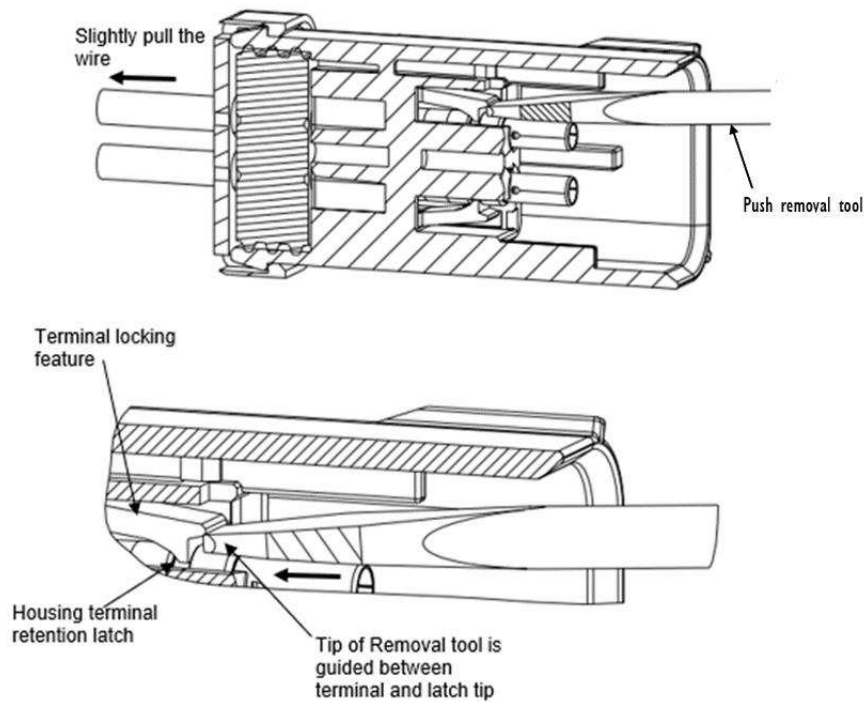


Figure 28 (end)



Caution: Care must be taken to ensure sealing surfaces are not scratched while servicing the terminals and TPA.

7.16 ASSEMBLY PROCEDURE FOR BACK SHELL

A. Assembly of Back shell onto Plug and Cap Assembly

- i. Place either pocket of the Back shell onto the wire exit side of the connector housing. Form and center the wire bundle in the wire exit. See Figure 29.

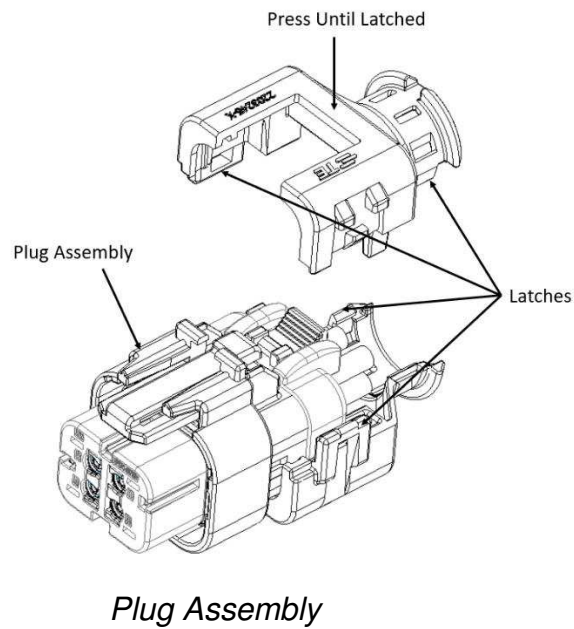
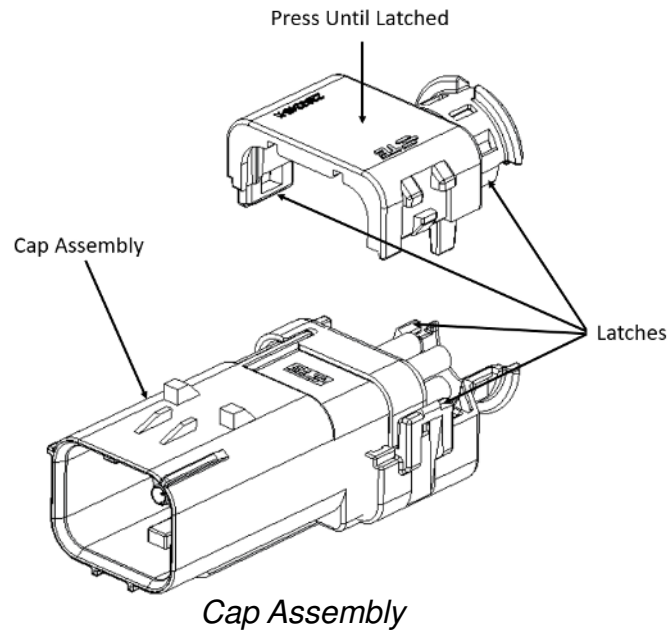


Figure 29

- ii. Push the two halves of the backshell together so that the halves mate around the connector housing; then ensuring that the wire bundle is within the seams of the wire exit, compress the halves together until all the latches are secure. See Figure 30.

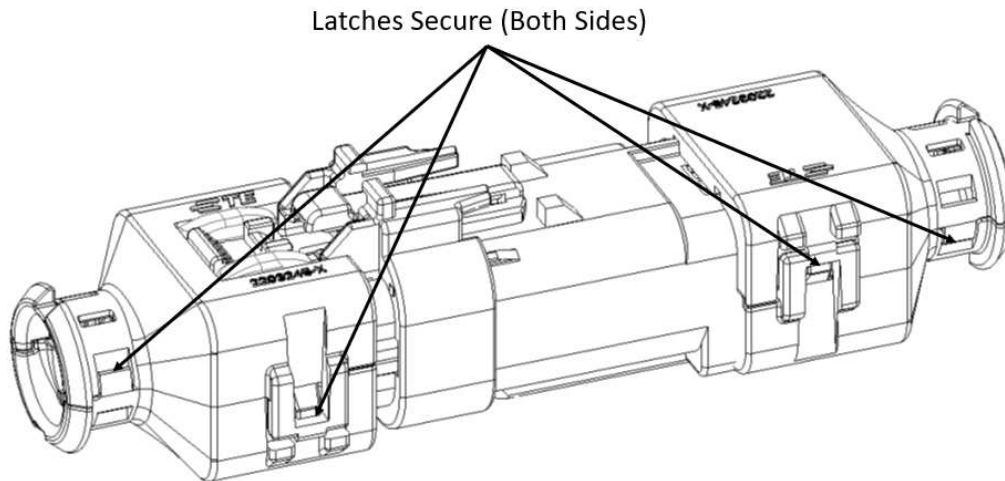


Figure 30

**CAUTION**

Back shell is recommended for applications involving High Pressure Spray

B. Removal of Back shell

Using the tip of a small screwdriver, flex the latches, then rotate the halves apart. Refer to Figure 31.

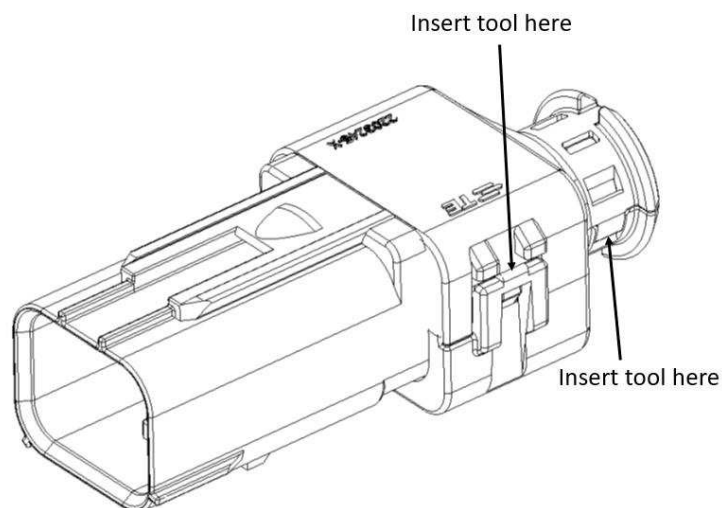


Figure 31

**NOTE**

Inspect latches for any damage. If damage is visible, replace Back shell.

F. REPLACEMENT AND REPAIR

The terminals and connectors are not repairable. DO NOT use any defective or damaged terminals or connectors. DO NOT re-use a terminated terminal by removing the wire.

G. TOOLING

Figure 32 shows TE Extraction Tool 776441-1 for Plug and Cap Assembly.



776441-1

Figure 32