AMPSEAL 16* High Temperature Connector System

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 [±.005] and angles have a tolerance of ±2°. Figures and illustrations are for identification only and are not drawn to scale.

1. INTRODUCTION

This specification covers the requirements for application of the AMPSEAL 16 High Temperature Connector System which includes plug assemblies, cap assemblies, and heavy duty stamped and formed (HDSF) size 16 contacts used with the housing assemblies. The housing assemblies are available in 2 through 12 circuit versions and are intended for wire-to-wire and wire-to-device applications. This sealed connector system is mechanically mated and is designed with lance-less contact system.

NOTE
Refer to Application Specification 114-13045 for all termination and application information for the pin and socket contacts which are used in the AMPSEAL 16 Connector System.

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

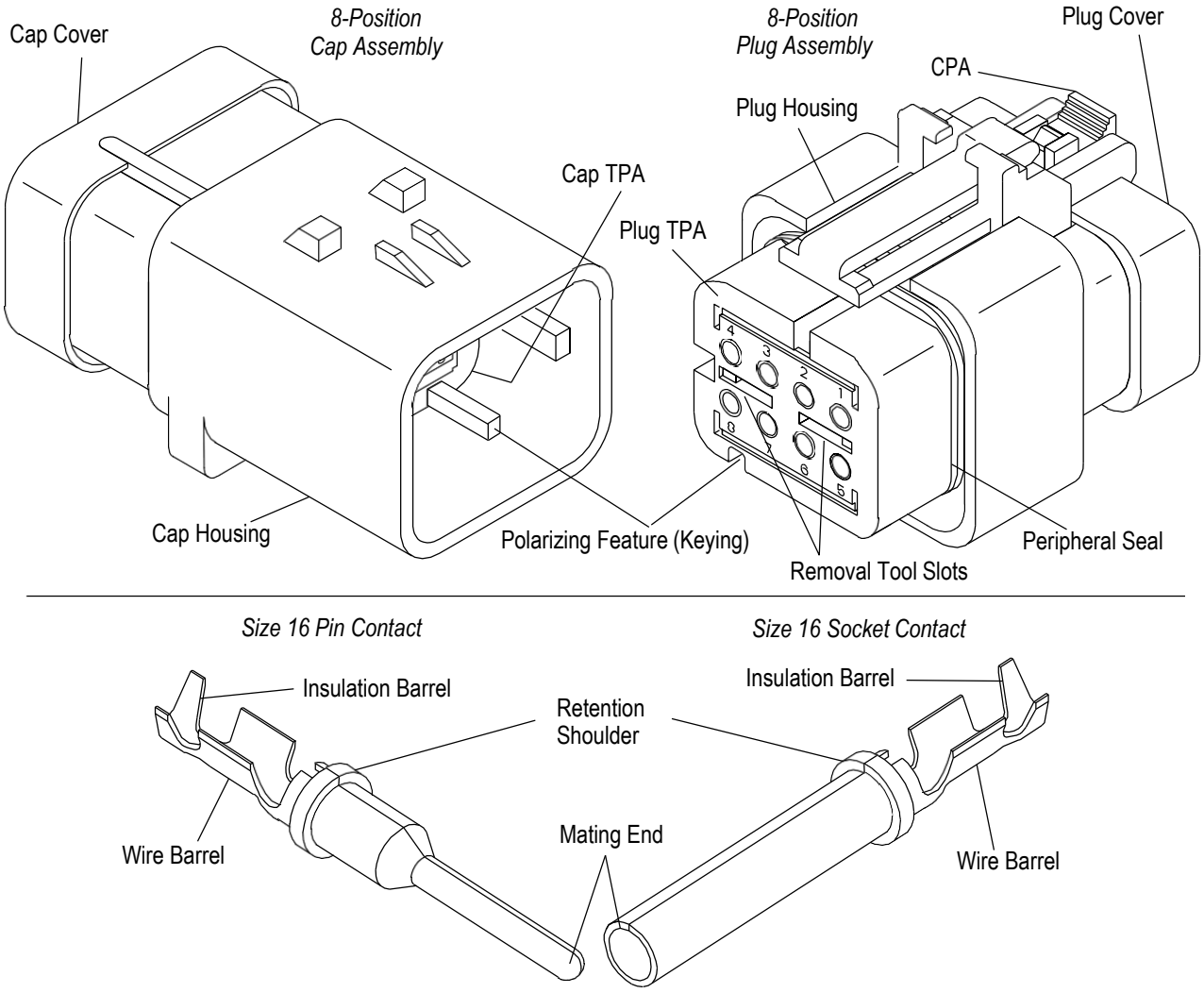


Figure 1

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TOOLING ASSISTANCE CENTER 1-800-722-1111
PRODUCT INFORMATION 1-800-522-6752

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2. REFERENCE MATERIAL

2.1. Revision Summary

Revisions to this application specification include:

- Initial Release

2.2. Customer Assistance

Reference Product Base Part Number 2320920 and Product Code M097 are representative numbers that identify the AMPSEAL 16 High Temperature Connector product line. 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 Representative, by visiting our website at www.te.com, or by calling PRODUCT INFORMATION or the TOOLING ASSISTANCE CENTER at the numbers at the bottom of page 1.

2.3. Drawings

Customer Drawings for specific products are available from the service network. The information contained in Customer Drawings takes priority if there is a conflict with this specification or with any other technical documentation supplied by TE.

2.4. Specifications

Refer to Application Specification 114-13045 for information on application requirements on pin and socket contacts that fit into the AMPSEAL 16 High Temperature Connector System.

2.5. Instructional Material

Instruction Sheet 408-8623 provides assembly and disassembly procedures for the AMPSEAL 16 Connector System.

3. REQUIREMENTS

3.1. Storage

A. Contact Storage

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

B. Connector Storage

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

C. Shelf Life

The contacts should remain in the shipping containers until ready for use to prevent deformation to the contact. The contacts should be used on a first in, first out basis to avoid storage contamination that could adversely affect signal transmissions.

D. Chemical Exposure

Do not store contacts and/or connectors near any chemicals listed below as they may cause stress corrosion cracking in the contacts.

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

3.2. Characteristics

A. Materials

The cap and plug assemblies are made from glass filled thermoplastic while the peripheral and wire seals are made from silicone rubber. The pin contacts are made of brass and the socket contacts are made of a copper alloy. Both contacts are available in gold or nickel plating and are available with or without an insulation barrel.

B. Colors

The (Terminal Position Assurance) TPA's on the plug and cap connector assemblies come in colors to indicate mechanical polarization (keying).

C. Sealing

AMPSEAL 16 Connectors have two wire seal options for sealing to wires: Standard Diameter Wire Seal (SDWS) and Reduced Diameter Wire Seal (RDWS). Wires having an insulation diameter of 2.18-3.67 mm [.086-.144 in.] would use the SDWS. These wires would typically be in the 14-18 AWG range. Wires having an insulation diameter of 1.30-2.54 mm [.051-.100 in.] would use the RDWS. These wires would typically be in the 18-20 AWG range. Although the HDSF Size 16 contacts will accept a wire range size of 14-20 AWG and having an insulation diameter range from 1.27-3.94 mm [.050-.155 in.], only wires with insulation diameters within the recommended wire seal range for this product should be used.

D. Cap and Plug Assemblies

Single and dual row cap and plug versions are available on 4.5 mm [.177 in.] centerline spacing between circuits. A completely functional connector assembly consists of a plug assembly loaded with HDSF Size 16 socket contacts, mated to a cap assembly loaded with HDSF Size 16 pin contacts or a printed circuit (pc) board mounted “cap” assembly. Circuit identification is marked on each TPA and seal cover. Typically, four different keying configurations are available for each connector size (colors and mechanical).

An integral Connector Position Assurance (CPA) is designed on each plug assembly. Both plug and cap assemblies have a terminal position assurance (TPA) feature to lock the contacts in the housings. A special Contact/TPA Removal Tool (P/N 776441-1) is required to remove the TPA and contacts. See Section 5, TOOLING. Sealing plugs are available for unused circuits. The plug and cap assemblies also provide moisture resistance through the use of wire seals and a peripheral seal in the interface area.

3.3. Assembly Procedure

CAUTION
The seal cover must not be removed or altered in any way.

CAUTION
The rear of the connector must be completely sealed. Cavities that are not loaded with wires must be blocked using seal plug (part number 776363-1) for SDWS and RDWS.

NOTE
Contact retention features in the plug and cap assemblies will not engage if the contacts are inserted into those assemblies while the TPA is in the “locked” position.

A. Assembly

Crimped contacts (Refer to Application Specification 114-13045) shall be manually loaded into the housing assemblies. Socket contacts shall be loaded into plug assemblies, while the pin contacts shall be loaded into the cap assemblies. Refer to Figure 2 and insert the contacts into the housings assemblies with the information as follows:

1. Verify that the TPA is in the pre-staged position (un-locked). To verify the plug assembly TPA is in the correct position, check the distance from the cover to the mating face of the TPA as shown in Figure 2 (there will be clearance between the seal and the TPA as illustrated. The location of the TPA for the cap assembly should be as shown in Figure 2 when in the pre-staged position.

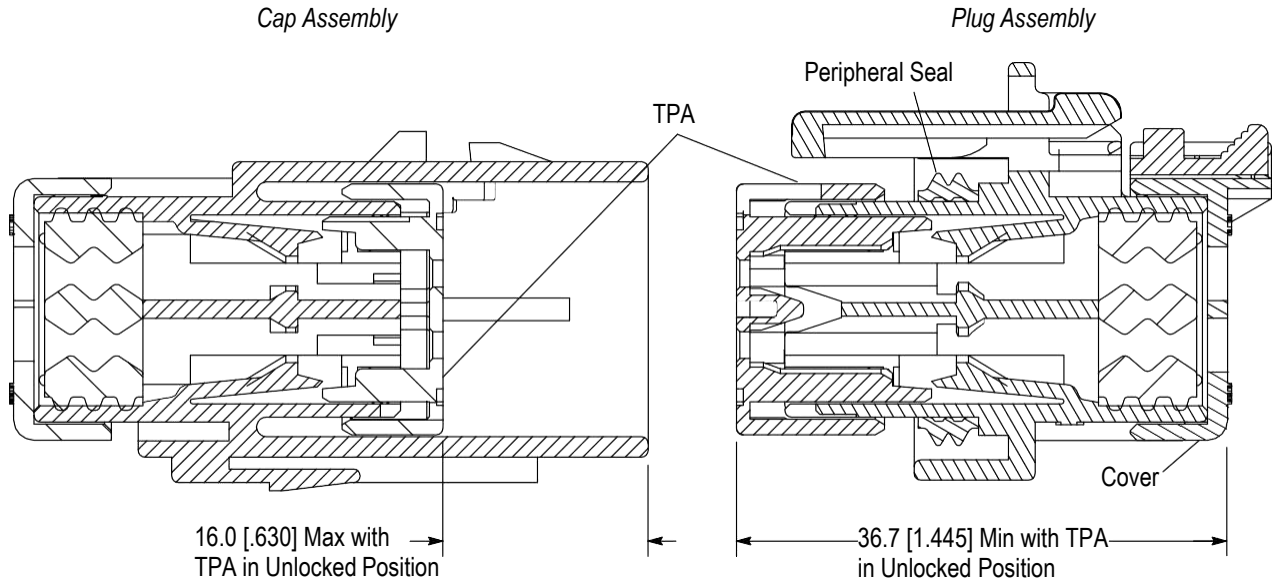


Figure 2

2. Align the appropriate contact with the desired circuit cavity at rear of the housing assembly. Push the contact straight into the cavity, forcing it through the wire seal. See Figure 3. Continue to push the contact straight into the cavity with the wire until the contact retention finger returns to its normal position behind the retention shoulder on the contact as indicated by an audible and tactile “click”. Refer also to Figure 11.

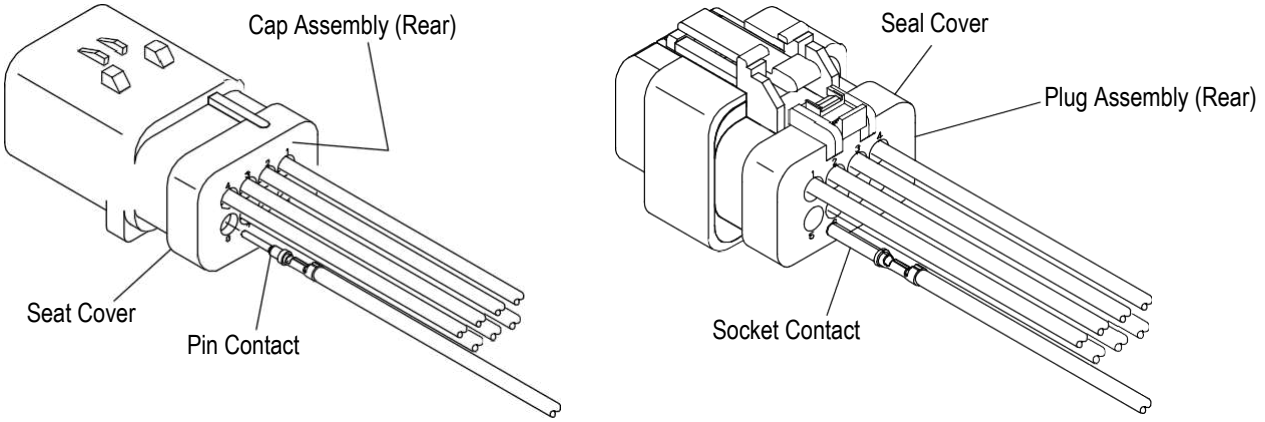


Figure 3

3. When all of the required contacts have been inserted, complete the assembly by pushing the TPA into the fully locked position. The plug housing TPA may be fully locked by holding the rear of the housing assembly and pushing the TPA toward the rear of the housing.

The cap housing TPA may be fully locked by placing the blade of a screwdriver in the center of the TPA and pushing the TPA into the cap housing until you feel it move into the locked position or closed. See Figure 4. To avoid possible damage to the TPA, use a screwdriver as described in Figure 12.b and make sure the tip is turned 90° to any grooves on the face of the TPA.

To verify the TPA is in the fully locked position, apply pressure to both ends of the TPA using the blade of the screwdriver. Optional method would be to use a mating plug and fully mate the two assemblies, making sure the outside latch is fully engaged.

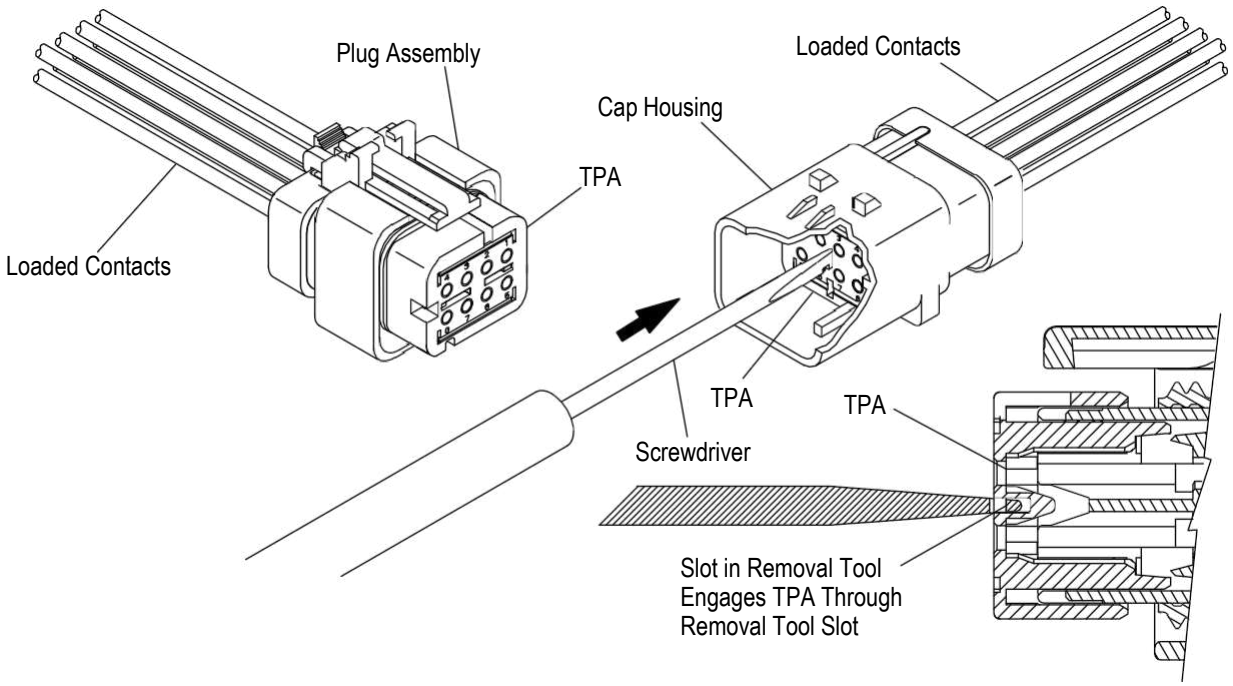


Figure 4

4. Verify that all contacts are locked in place by giving a slight tug on each wire with a force of 4.5 to 8.9 N [1 to 2 lbf].

5. Place a sealing plug, (part number 776363-1 for SDWS and RDWS), into any circuits not loaded with contacts. The sealing plug should be pushed into the wire entry end of the plug or cap cover until the flange on the sealing plug is firmly against the seal cover. See Figure 5.

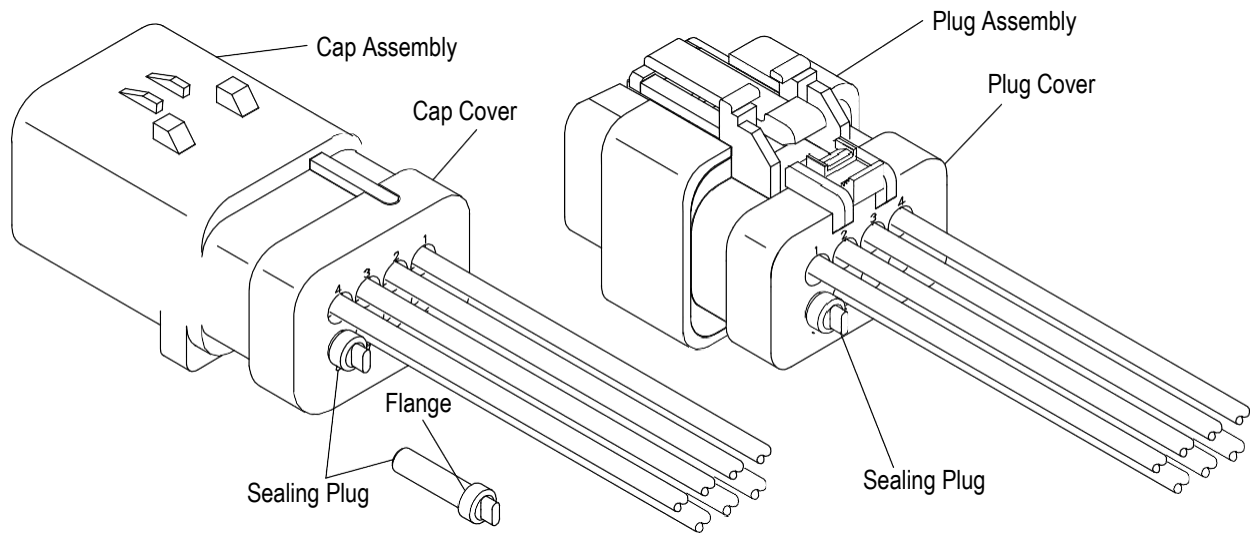


Figure 5

6. When all the contacts have been locked securely into the housing assemblies, complete the assembly of the connector system by mating the plug assembly with the cap housing assembly or pc board mounted header until the connector latch is in the fully locked position. An audible “click” will be heard. See Figure 6.

NOTE: Make sure that the plug connector latch tip is in a fully horizontal position to be completely latched and locked with the cap assembly.

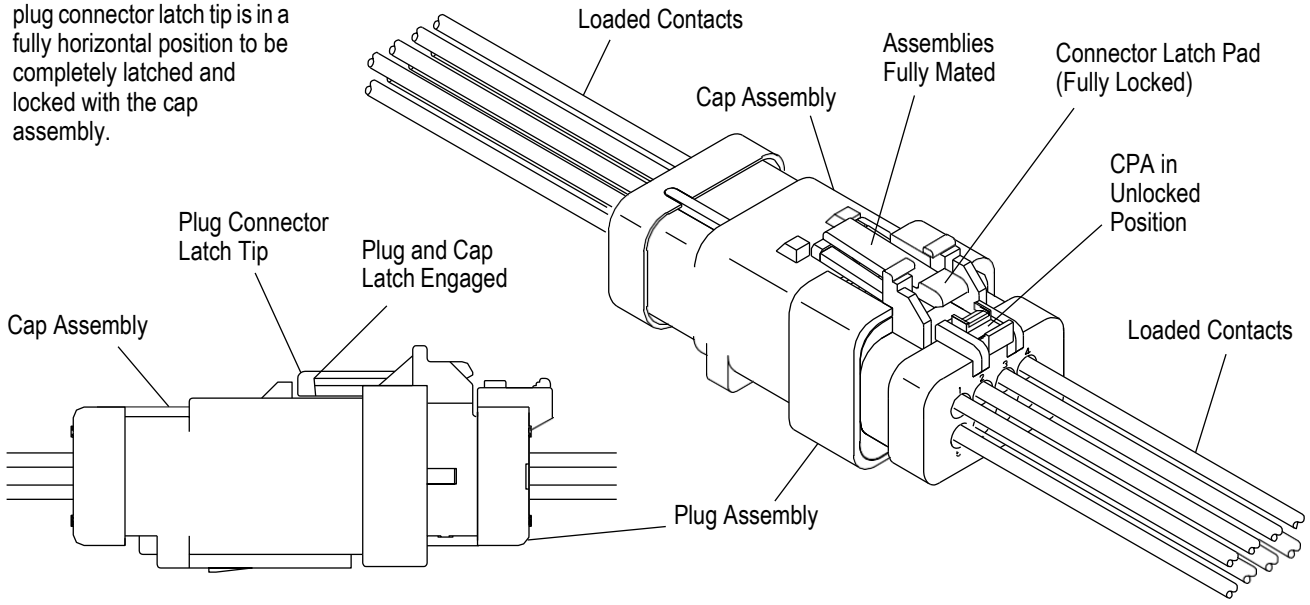


Figure 6

7. By pushing the CPA fully toward the plug housing, it can be slid into the locked position in which it slides under the connector latch pad and indicated by an audible and tactile “click”. See Figure 7.

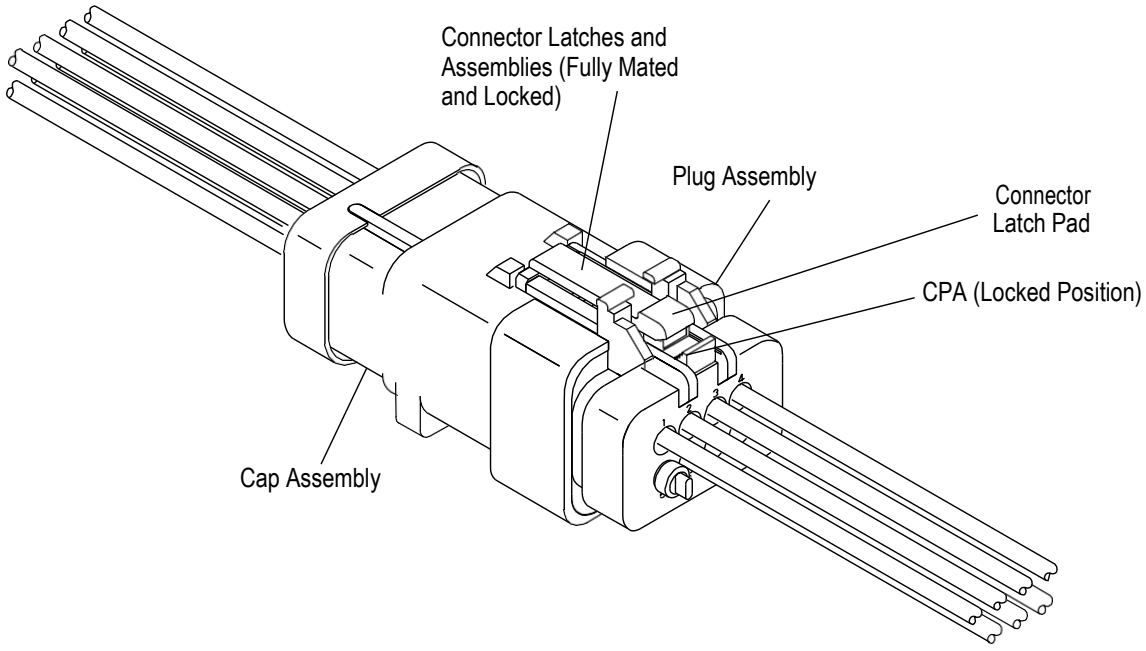


Figure 7

B. Disassembly

Damaged or misplaced contacts can be replaced on an individual basis. Refer to Figure 8 and separate the connector and remove the contact by the following procedures:

1. Slide the CPA completely toward the rear (wire end) of the cap housing assembly to reveal the connector latch tip. See Figure 8.

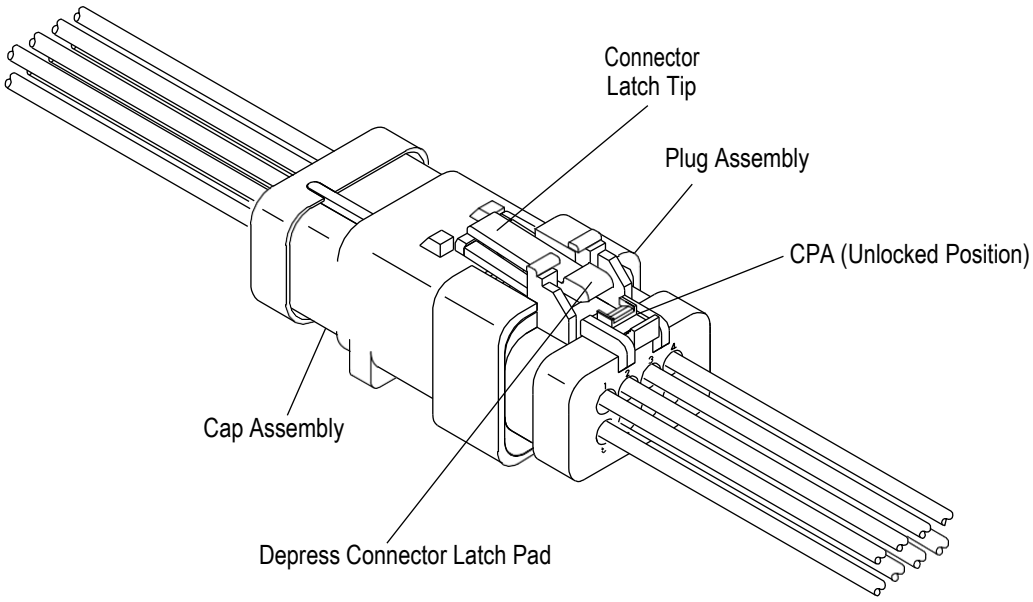


Figure 8

2. Depress the end of the connector latch pad near the rear (wire end) of the plug housing. Continue to squeeze the latch pad and pull on the rear housing section to separate the mated connector assembly. See Figure 9.

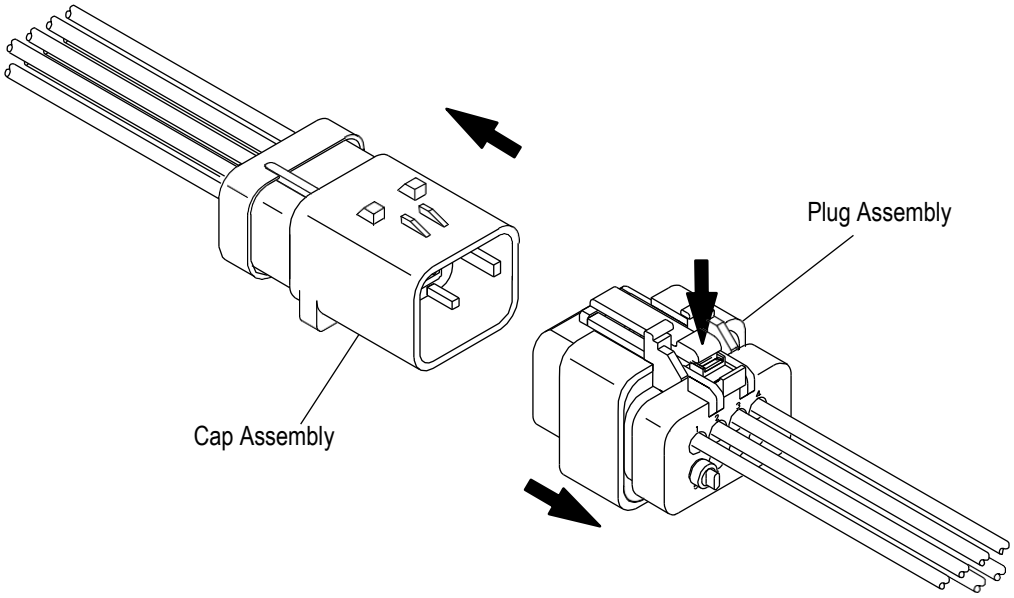


Figure 9

3. Insert contact/TPA Removal Tool or reasonable substitute, into the extraction tool slot in the plug or cap assembly TPA as shown in Figure 10. Orient the removal tool so the notch in the tool is facing the centerline of the TPA. Hook the removal tool firmly against the edge of the slot and pull on the TPA until it is completely removed from the housing assembly. Retain the TPA for use with the connector assembly after the contacts are replaced.

NOTE
An optional procedure to unlock the plug TPA is to place a coin edge under the edge of the TPA and pry it to an unlocked position. To continue removing the TPA, twist the coin under the edge of the TPA. See Figure 10.

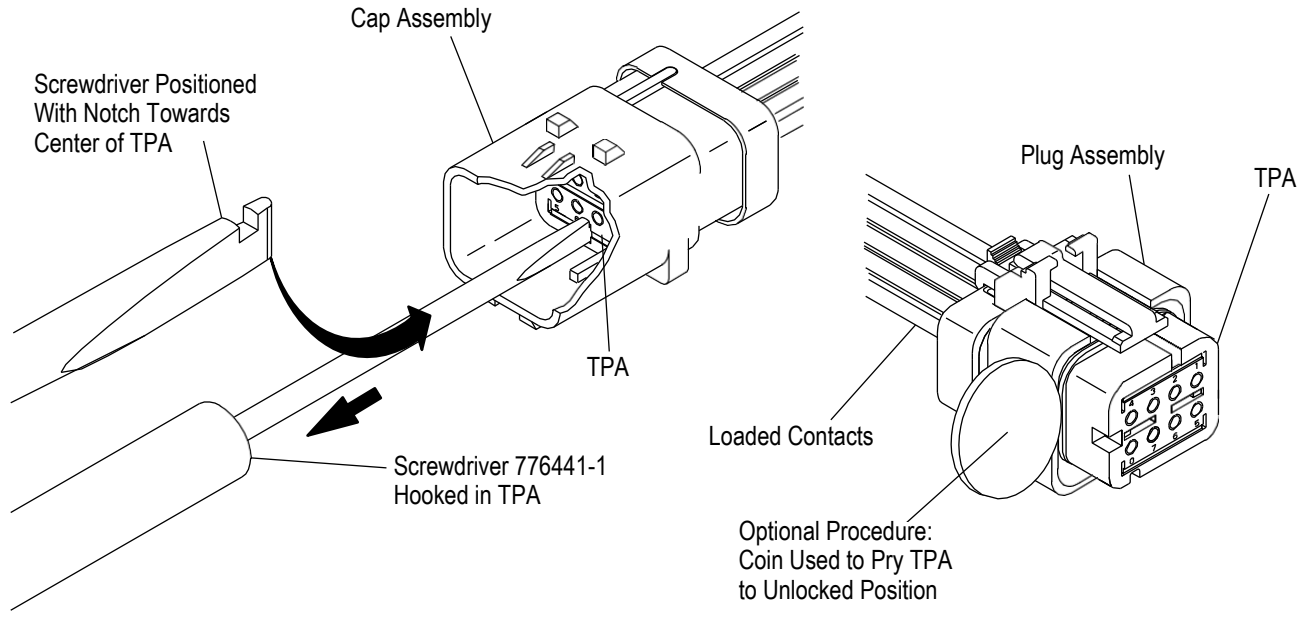


Figure 10

4. Insert the tip of the contact extraction tool into the contact cavity and deflect the contact retention finger. Gently pull the wire until the contact is free from the housing. Repeat this procedure for the remaining number of contacts to be removed as shown in Figure 11.

CAUTION
Rotating the contacts to remove them from the housing without using the extraction tool may damage the housing resulting in reduced contact retention upon subsequent use of the housing.

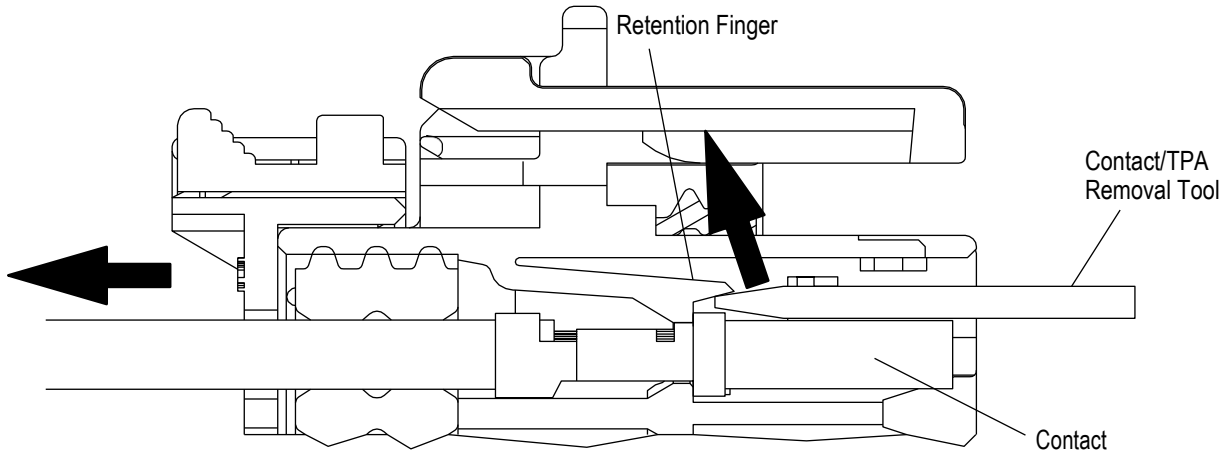


Figure 11

C. Re-Assembly of Connector

Re-assembly of the plug after servicing a contact should be performed as follows:

1. Align the keying features of the TPA with the appropriate features in the plug housing and place the TPA locking fingers inside the plug housing.

NOTE
Single row plug assemblies are keyed by the location of the plug latching fingers. TPA fingers go on top of the contacts. Dual row plug assemblies have a "V" shaped notch inside the housing keys with a matching "V" shaped rib on the bottom of the TPA.

2. Push the TPA into the pre-staged position by hand. Verify the correct position by using the procedure indicated in Paragraph 3.3. A.1.

3. Finish the assembly performing the remaining steps referring to in Paragraphs 3.3.A.2 through 3.3.A.7.

Re-assembly of the cap after servicing a contact should be performed as follows:

1. Align the keying features of the TPA with the appropriate features in the cap housings and place the TPA locking fingers inside the cap housing.

2. Push the TPA into the pre-staged position by using a screwdriver or equivalent with a blade as described in Figure 12. Verify the correct position by using the procedure indicated in Paragraph 3.3.A.1.

3. Finish the assembly performing the remaining steps referring to in Paragraphs 3.3.A.2 through 3.3.A.7.

D. Peripheral Seal Replacement

The peripheral seal can be replaced when the connector is separated for servicing. Replacement of the seal should be done as follows:

1. Separate the connector system and remove the TPA from the plug assembly using the procedure listed in Paragraphs 3.3.B.1 through 3.3. B.3.

2. The old seal may now be removed by sliding it off the end of the plug housing.

3. The sealing surface of the plug housing should be cleaned to remove any dirt, moisture, or debris that may be on the connector assembly.

4. The new seal may be assembled to the plug assembly by sliding it on the end of the plug housing.

CAUTION
Care should be taken to make sure the seal does not roll during this process.

5. Reassemble the TPA to the plug housing using the appropriate steps outlined in Paragraph 3.3.C.

CAUTION
Damaged product should not be used. If a damaged product is evident, it should be replaced with a new one.

4. QUALIFICATIONS

The AMPSEAL 16 High Temperature Connector System is not required to be agency approved.

5. TOOLING

Refer to Application Specification 114-13045 for references on all pin and socket contact termination tooling.

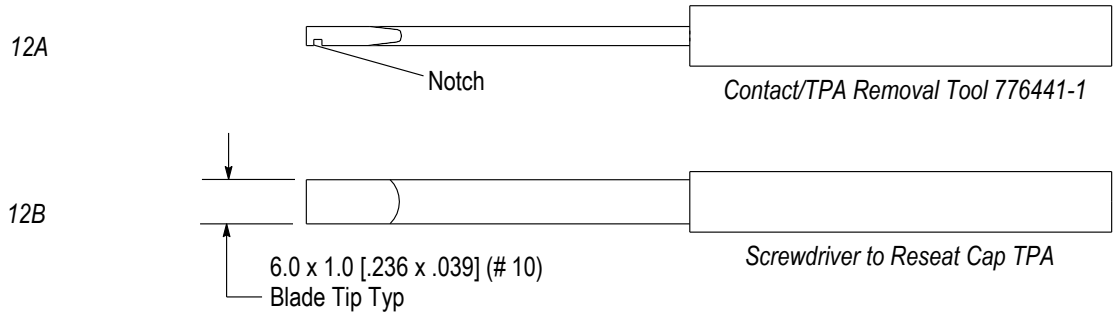


Figure 12

6. VISUAL AID

The illustration below shows a typical application of this product. This illustration should be used by production personnel to ensure a correctly applied product. Applications which DO NOT appear correct should be inspected using the information in the preceding pages of this specification and in the instructional material shipped with the product or tooling.

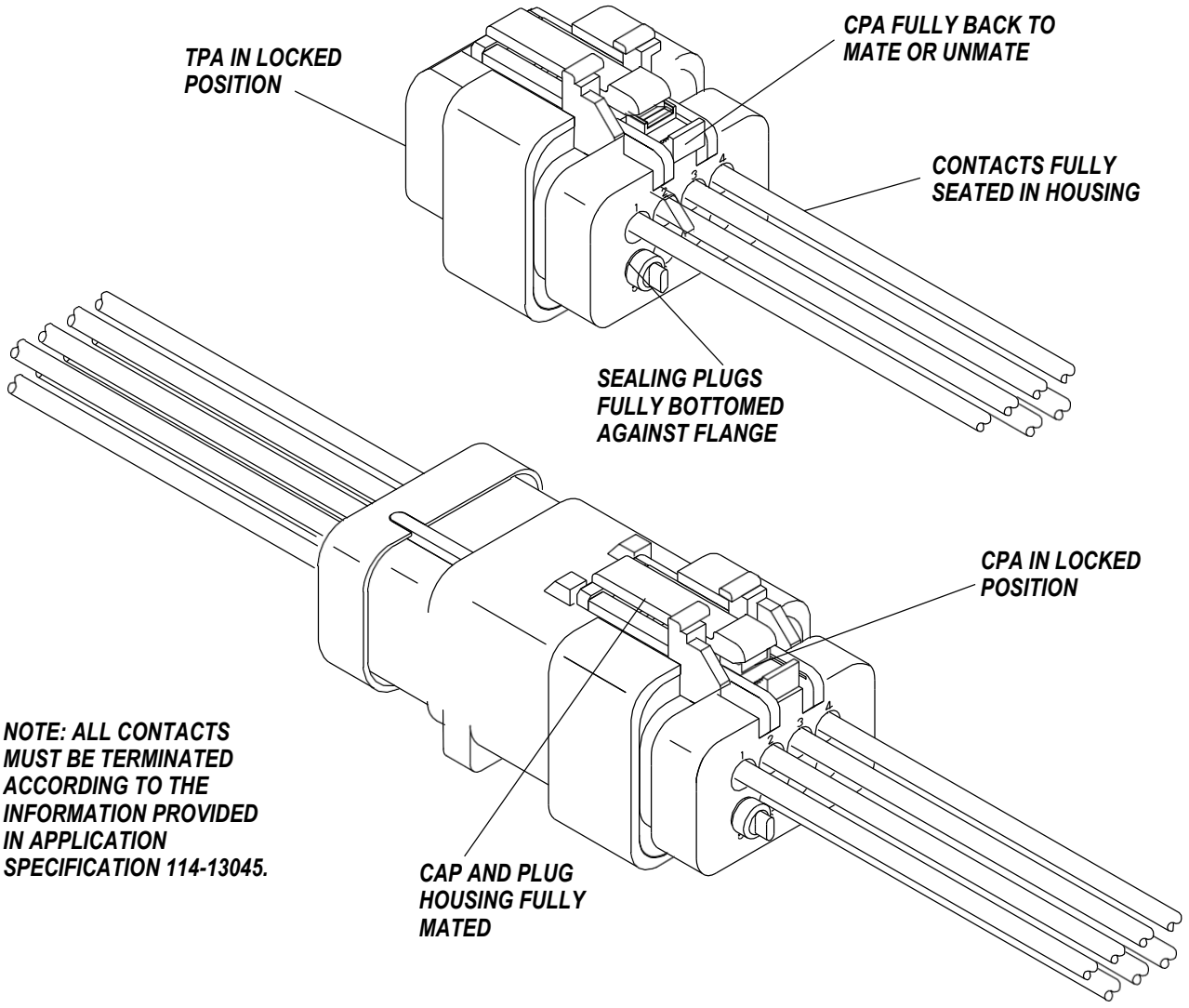


FIGURE 13. VISUAL AID

Unikeyic Electronics

Global Electronic Components Distributor

Click to view pricing, inventory, delivery, and lifecycle information:

TE Connectivity:

2834055-1 1-794222-0 1-962915-1 2-292161-3 RH73H2A40MKTN SBCHE154R7K 1393431-1 2310537-1 2377783-2 CPF0402B37K4E1 MPT100C18RF ROX05SJ18R U5254-000005-030PA 1969656-1 3631B101LL 650075-000 SBCHE64R7K TE50BR39J 1743455-2 2380312-2 917696-1 CRGCQ2010J3K3 1903112-2 936348-1 SMW73R0JT 141991-2 175977-2 2005330-1 3430B2F51RTDF 3-1393225-0