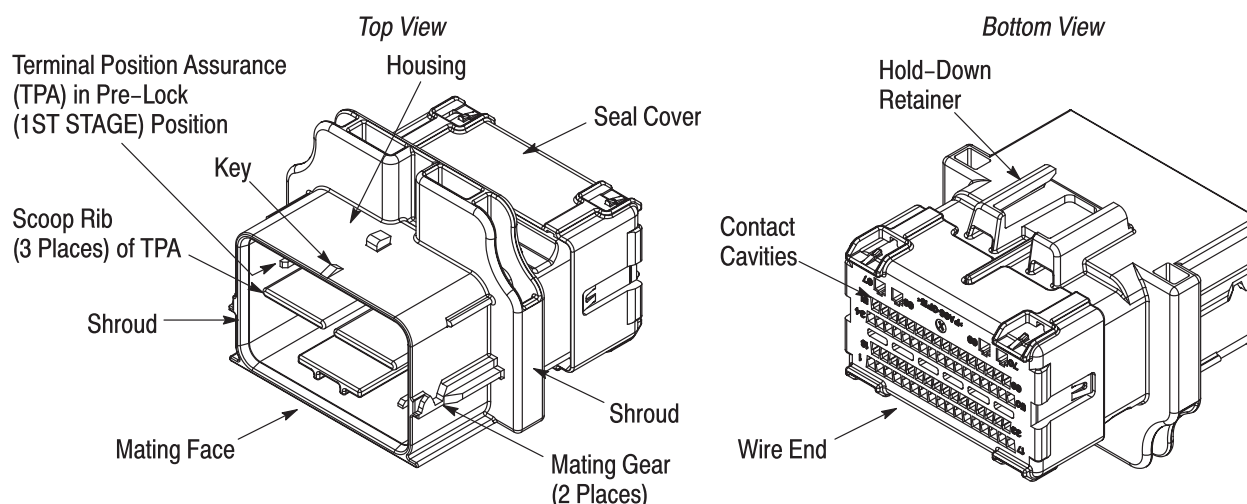




CONTACT			CONNECTOR POSITION
PART NUMBER	DESCRIPTION	QUANTITY	
330120002■	1.5mm Tin-Plated Receptacle Terminal Contact	4	67-70
1488220-[]	0.64mm Tin-Plated Male Pin Contact	66	1-66
1488208-[]	0.64mm Gold-Plated Male Pin Contact		

■ MOLEX product — not available from Tyco Electronics Corporation

Figure 1

1. INTRODUCTION

This instruction sheet covers assembly (inserting contacts into the cap connector, installing a body clip and strain relief, and mating the connectors) and disassembly (unmating the connectors and extracting the contacts from the cap connector) procedures for 70-Way Automotive Hybrid Sealed Inline Cap Connector Assemblies 1438726-[]. Recommendations for continuity testing are also covered.

NOTE



Dimensions in this instruction sheet are in millimeters [with inches in brackets]. Figures are not drawn to scale.

These cap connectors accept the contacts listed in Figure 1. The following products are available separately to assemble onto the cap connector:

Body Clip 13514575 (DELPHI Connection Systems product, not available from Tyco Electronics)
The body clip is used to mount the connector onto a panel.

Straight Strain Relief 1488374-1
The strain relief is used to support the wires and avoid an excessively sharp bend radius.

These cap connectors mate with 70-way harness assembly assemblies. Refer to instruction sheet 408-8893 for assembly of the mating connector.

Reasons for reissue of this instruction sheet are provided in Section 6, REVISION SUMMARY.

2. DESCRIPTION

Each cap connector features a housing (with contact cavities), a seal cover, TPA (with scoop ribs), and a matte seal (located in front of the contact cavities). The housing features a shroud, mating gears, keys, and a hold-down retainer. The hold-down retainer holds the optional body clip. Refer to Figure 1.

Each row of contact cavities is marked on the wire end of the cap connector for circuit identification. The contact cavities are polarized to prevent the contacts from being inserted upside-down. When inserted, the contact deflects a retention finger, locking the contact into place. After all contacts are inserted, the TPA is used to ensure that the contacts are fully seated and to provide additional contact retention.

The cap connector is shipped with the TPA in the pre-lock position (1ST STAGE). The TPA is actuated when moved to the lock position (2ND STAGE). When the connectors are mated, the TPA moves to the final-lock position (3RD STAGE).

When mating connectors, the keys are used to align the mating connectors. the mating gears of the cap connector engage the mating gears of the harness assembly to prevent separation.

3. ASSEMBLY

3.1. Insert the Contacts

The following procedure assumes that the contacts have been properly crimped. For detailed inspection requirements for the 0.64mm male pin contact, refer to Application Specification 114-13006. For this application, it is desirable for the up-and-down bend to be no more than 3° from the datum line of the wire exiting the insulation barrel crimp to the datum line of the insulation barrel crimp as shown in Figure 2.

NOTE



Kinks that occur in the wire close to the insulation barrel crimp are undesirable and can be reduced or eliminated by using a lubricant when crimping the contact.

Refer to Figure 3 (for 0.64mm contacts) and Figure 4 (for 1.5mm contacts), and proceed as follows:

1. Ensure that the TPA of the cap connector is in the 1ST STAGE. If it is not, grasp the scoop ribs, and pull the TPA to the 1ST STAGE. The TPA is in the 1ST STAGE when the scoop ribs protrude from the shroud (see Figure 1). DO NOT removed the TPA completely from the housing.
2. Grasp the wire of the contact approximately 20 [.75] behind the insulation barrel of the contact.
3. At the wire end of the cap connector, align the contact with the desired contact cavity, orienting the contact so that the retention window (0.64mm contact) or locking lance (1.5mm contact) is facing the top of the contact cavity. Push the contact straight into the contact cavity until it stops (there will be an audible “click”).

CAUTION



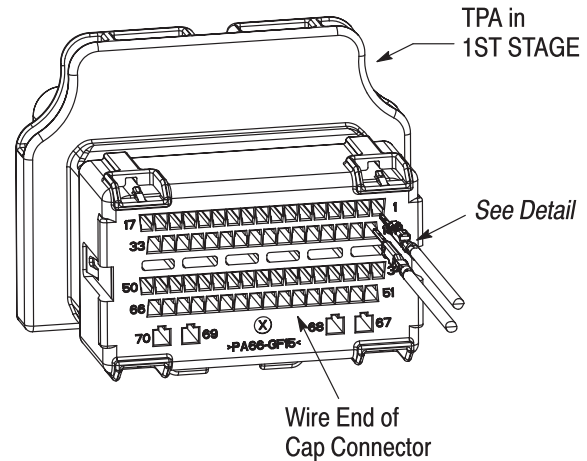
To avoid damage to the matte seal, ALWAYS push the contact STRAIGHT into the contact cavity.

CAUTION



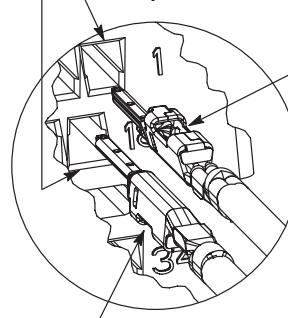
DO NOT force the contact into the contact cavity. If there is resistance or the wire “buckles,” pull the contact out, ensure proper orientation, and re-insert the contact.

Inserting 0.64mm Contacts



Detail

Top of Contact Cavity



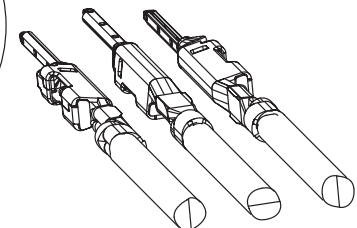
Contact Retention Window

Correct Orientation
Connector Positions
18-33 and 51-66

Correct Orientation
Connector Positions
1-17 and 34-50

Contact Retention Window

Incorrect Orientation



Incorrect Orientation

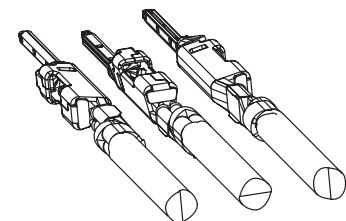


Figure 3

Note: Not to Scale

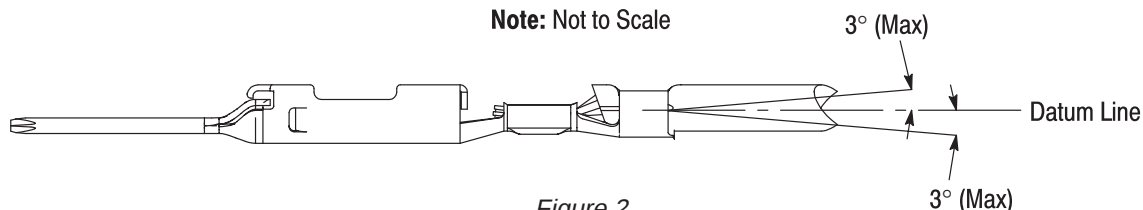


Figure 2

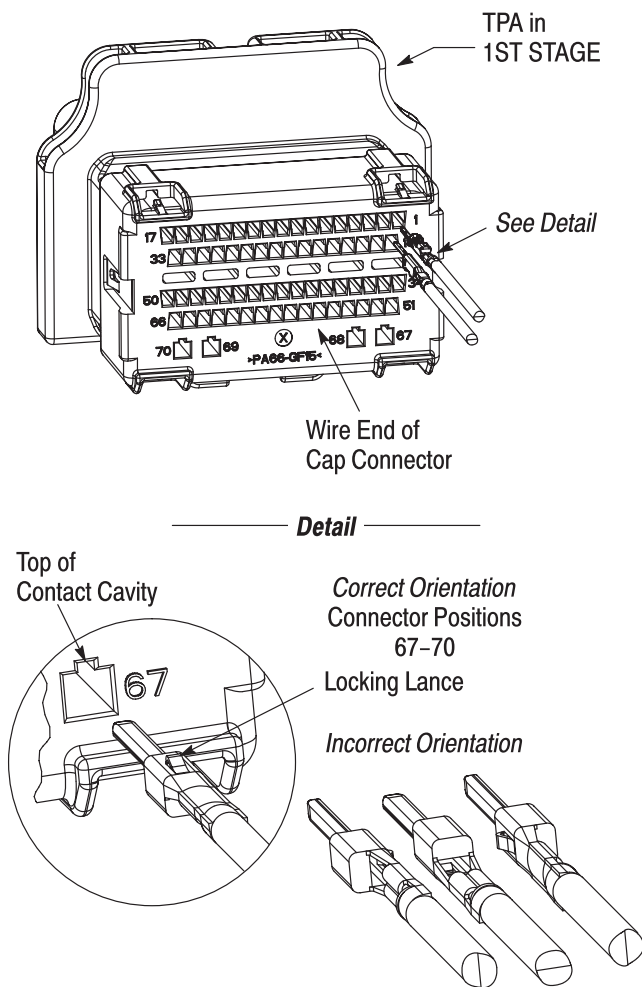
Inserting 1.5mm Contacts

Figure 4

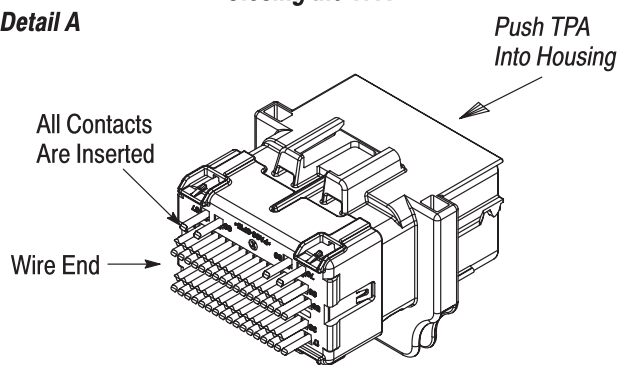
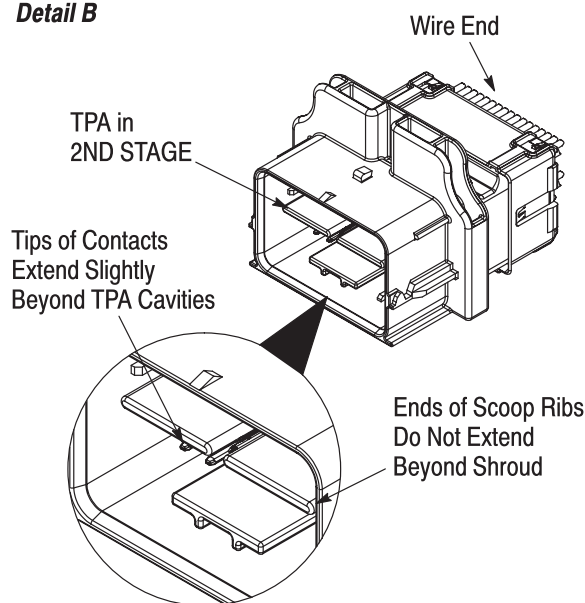
Closing the TPA**Detail A****Detail B**

Figure 5

4. After all contacts are inserted, push the TPA into the housing until it stops—the TPA is in the 2ND STAGE. Make sure to avoid pushing the tips of the contacts. See Figure 5, Detail A.

The TPA is in the 2ND STAGE when the ends of the scoop ribs do not extend beyond the shroud, and the tips of the contacts extend approximately 3.7 [.146] from the cavities of the TPA. See Figure 5, Detail B.

NOTE

If the TPA does not move to the 2ND STAGE, pull the TPA to the 1ST STAGE, ensure that all contacts are fully seated, then try again. DO NOT force the TPA into the 2ND STAGE.

3.2. Test for Continuity

It is recommended using a continuity test fixture that will not cause damage to the contacts and will not move the TPA to the 3RD STAGE.

The TPA can only move to the 3RD STAGE if the stop latch is released (as during connector mating).

CAUTION

To avoid damage to the contact, MAKE SURE that the probe does not apply excessive force to the tip of the contact.

3.3. Install the Strain Relief (Optional)

1. Align the top of the strain relief with the top of the cap connector so that the four tabs of the strain relief face the four slots on the wire end of the cap connector. See Figure 6, Detail A.
2. Slide the strain relief onto the cap connector so that the tabs fully engage the slots. Make sure to guide the wires through the strain relief. See Figure 6, Detail B.

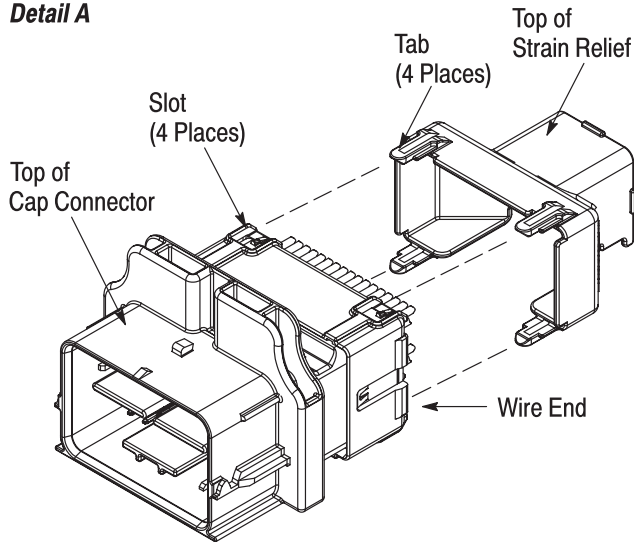
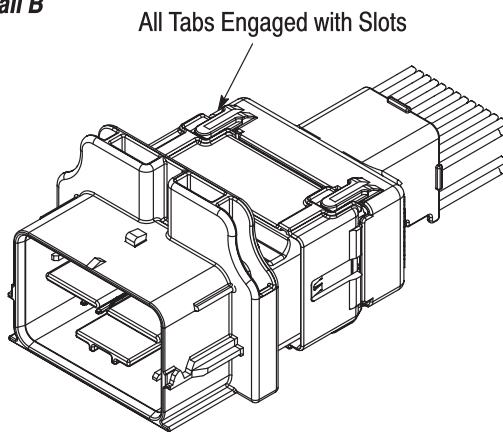
Installing the Strain Relief (Optional)**Detail A****Detail B**

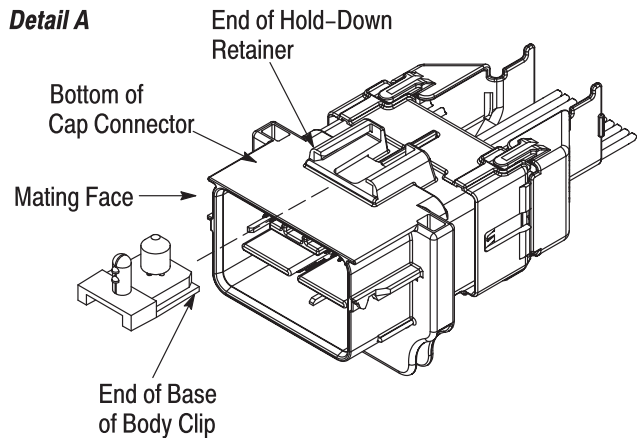
Figure 6

3.4. Install the Body Clip (Optional)

1. Align the body clip with the mating face of the cap connector so that the end of the base faces the end of the hold-down retainer of the cap connector. See Figure 7, Detail A.
2. Slide the body clip onto the hold-down retainer until it is fully seated (there will be an audible or haptic “click”). See Figure 7, Detail B.

3.5. Mate the Connectors

1. Make sure that the lever of the harness assembly is in the OPEN position (refer to Figure 8, Detail A). Align the mating faces of the connectors so that the key of the cap connector faces the keying slot of the harness assembly. See Figure 8, Detail A.
2. Push the connectors together, allowing the gears of the cap connector to enter behind the

Installing the Body Clip (Optional)**Detail A****Detail B**

Body Clip Fully Seated on Hold-Down Retainer

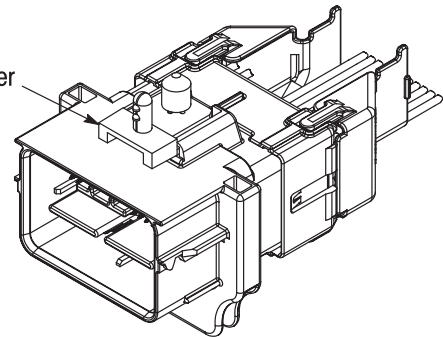


Figure 7

sides of the lever of the harness assembly, until the key enters the keying slot (there will be an audible “click”).

3. Rotate the lever of the harness assembly until it is against the housing of the cap connector. There should be an audible “click” when the lever is in position. See Figure 8, Detail B.



CAUTION DO NOT force the lever to close. If the lever is difficult to close, try to push the connectors together further.

4. DISASSEMBLY**4.1. Unmating Connectors**

1. Rotate the lever of the harness assembly to the OPEN position. The lever is in the OPEN position when the lever is against the stops of the harness assembly (refer to Figure 8, Detail A). The lever MUST be in the OPEN position before unmating the connectors.
2. Depress the key of the cap connector, and pull the cap connector straight away from the harness assembly.

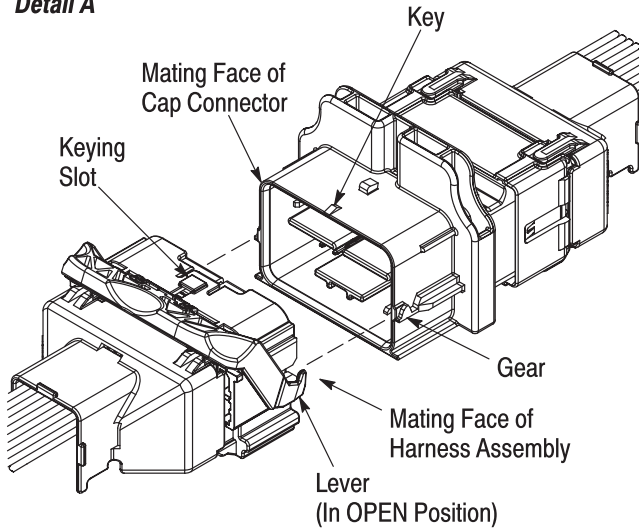
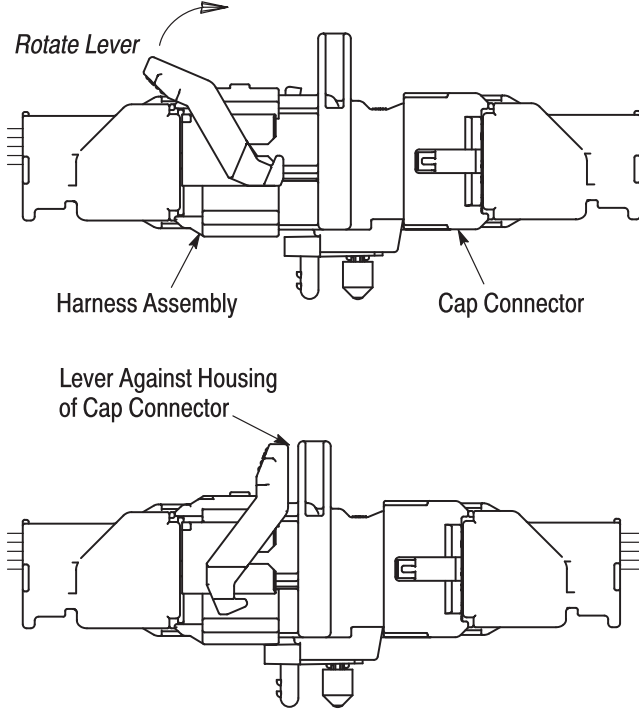
Mating the Connectors**Detail A****Detail B**

Figure 8

4.2. Removing the Strain Relief

1. Insert the tip of a flat blade screwdriver into the gap between each latch of the strain relief and the cap connector. Refer to Figure 9.
2. Rotate the screwdriver so that each latch is free from the cap connector.
3. Pull the strain relief straight off of the cap connector, being careful not to damage any wires.

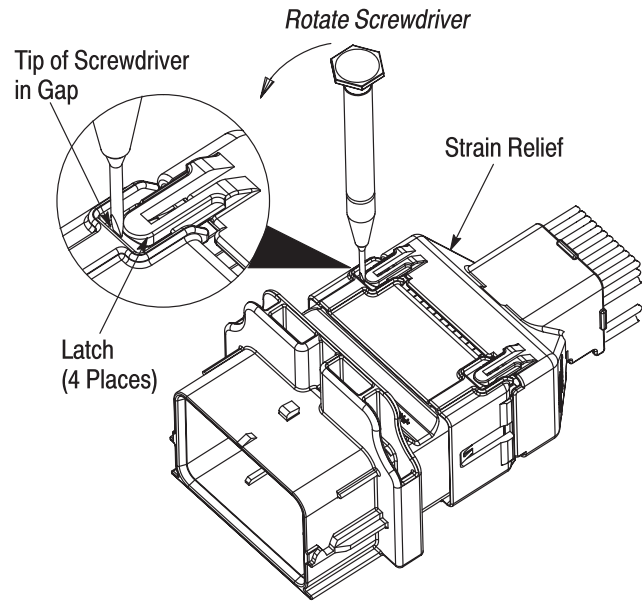
Removing the Strain Relief

Figure 9

4.3. Removing the Body Clip

1. From the wire end of the cap connector, slide the tip of a flat blade screwdriver into the hold-down retainer so that it is under the latch of the body clip. See Figure 10.
2. Rotate the screwdriver so that the latch of the body clip is free from the hold-down retainer.
3. From the mating face of the cap connector, slide the body clip out of the hold-down retainer.

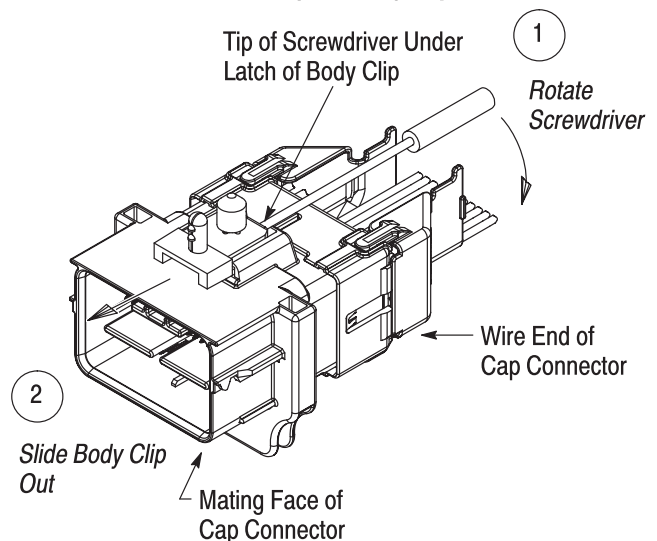
Removing the Body Clip

Figure 10

4.4. Removing Contacts

NOTE



The strain relief must be removed from the cap connector, and the connectors must be unmated before removing any contacts.

1. Grasp the scoop ribs, and pull the TPA out of the housing of the cap connector. See Figure 11.

Removing the TPA

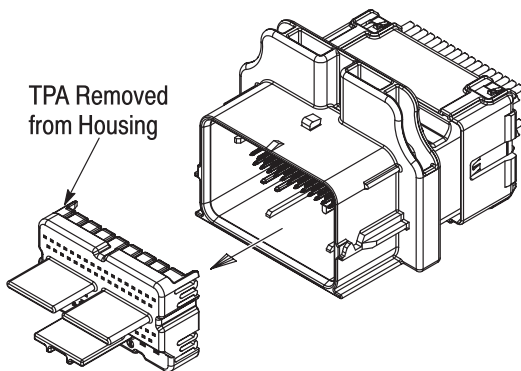


Figure 11

2. At the mating face of the cap connector, insert the tip of a flat blade screwdriver into the contact cavity of the contact to be removed until it stops. For 0.64mm contacts, refer to Figure 12, and for 1.5mm contacts, refer to Figure 13.

3. Holding the screwdriver in place, *gently* push the wire of the contact to be removed toward the housing until it stops (this will relieve the pressure on the contact retention window or locking lance).

4. Rotate the screwdriver toward the contact to lift the housing retention finger away from the contact. While holding the screwdriver in position, pull the wire until the contact is released, then pull the contact straight out of the contact cavity.

CAUTION



To avoid damage to the matte seal, **ALWAYS** pull the contact **STRAIGHT** out of the contact cavity.

5. Pull the screwdriver out of the cap connector.
6. Insert a new contact according to Paragraph 3.1, and test the contact following the recommendations given in Paragraph 3.2.

Removing 0.64mm Contacts

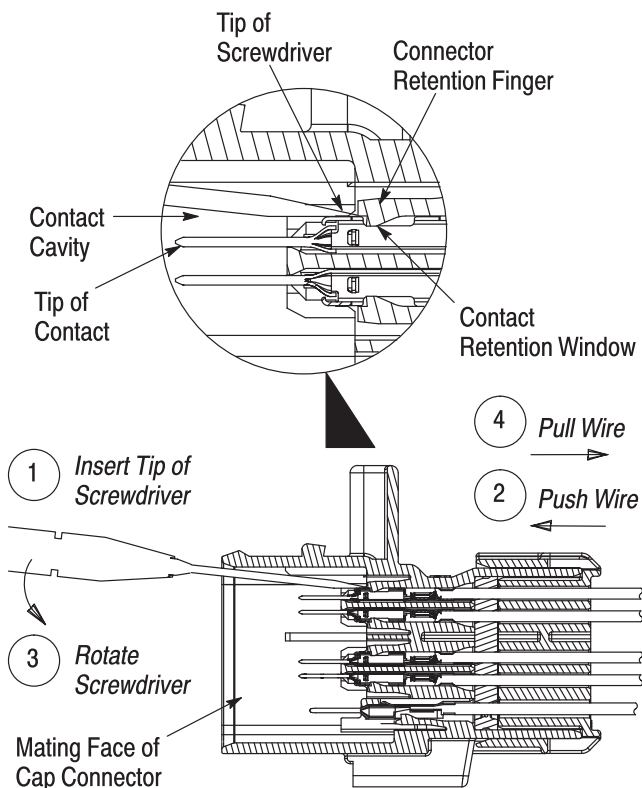


Figure 12

Removing 1.5mm Contacts

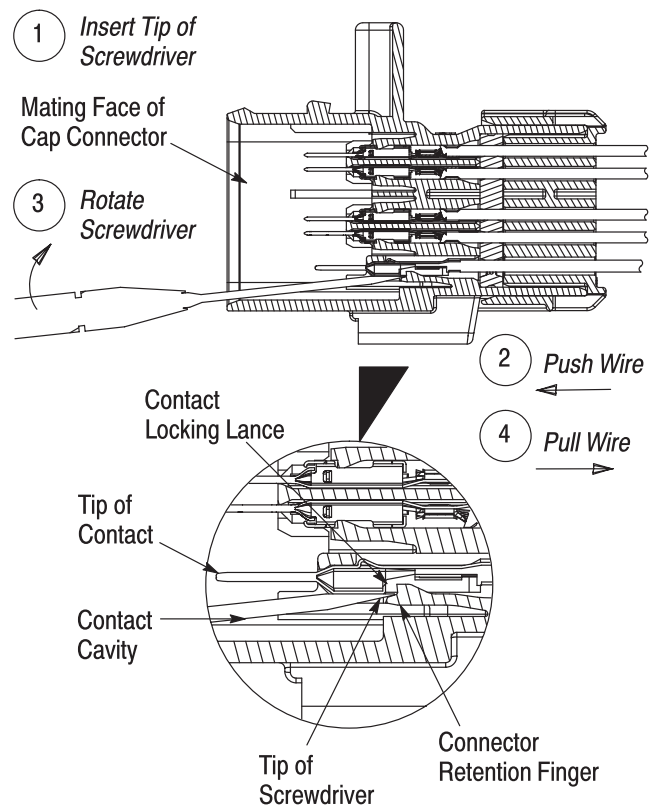


Figure 13

CAUTION

If the contact is not replaced, the connector will NOT be sealed.

7. Re-install the TPA into the housing so that it is in the 2ND STAGE as follows:

- a. From the mating face of the cap connector, align the cavities of the TPA with the tips of the contacts. Make sure that the TPA is oriented correctly (the 1.5mm cavities align with the 1.5mm contacts, etc.).
- b. *Carefully*, slide the TPA into the cap connector until it stops. Be careful not to bend any of the contacts. If a contact is bent, replace it.

5. REPLACEMENT AND REPAIR

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

6. REVISION SUMMARY

Revisions to this instruction sheet include:

- Updated document to corporate requirements
- Corrected part number for male pin contact