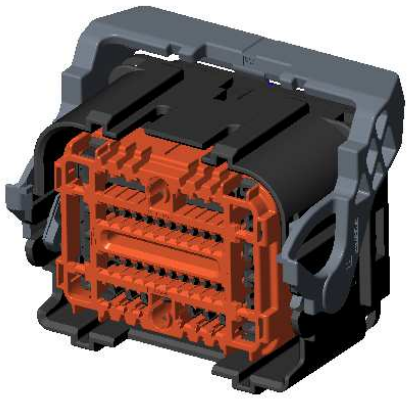
68P Inline Hybrid Sealed Connector System Mating/Unmating/Component Service

68P Female Connector



68P Male Connector

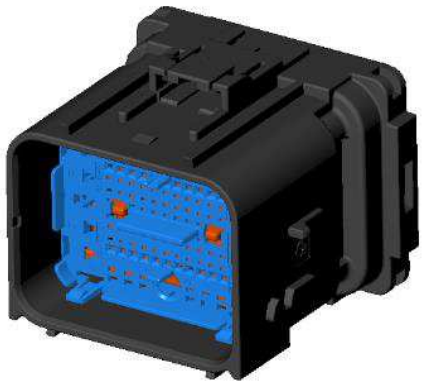


Figure 1

1. INTRODUCTION

This instruction sheet provides assembly and disassembly procedures for the connector system shown in Figure 1. The female and male assemblies are for wire-to-wire and wire-to-device applications.

2. DESCRIPTION

A connector assembly consists of a Female assembly loaded with 44x Generation Y receptacles, 12x MX150 receptacles, 10x Apex 2.8mm receptacles, and 2x Mate-AX female sockets, and a Male assembly loaded with 44x Generation Y blades, 12x MX150 blades, 10x Apex 2.8mm blades, and 2x Mate-AX male contacts. Circuit identification is marked on each housing. Four different keying configurations are available (color and mechanical coded). Both female and male assemblies include a terminal position assurance (TPA) component to ensure that the contacts are locked into the respective housings. The male assembly has a Pin Protection Plate (PPP) to align blades in position and provide protection to the blades once harness is completed. Unused circuits are sealed by a pre-punched mat seal cover with sealing posts, or by use of cavity plugs that can be installed during harness assembly. Moisture resistance is provided using mat seals and a peripheral seal in the interface area. Both assemblies are mated together using a lever. An optional CPA component is available on the Male Assembly to provide assurance that the Lever is locked properly during mating sequence. An optional wire cover component is available in either 90° or 180° orientations. The same wire cover works on both Male and Female assemblies.

3. SEATING FEMALE TPA

To seat the female TPA, push squarely on the surfaces shown below in Figure 2.

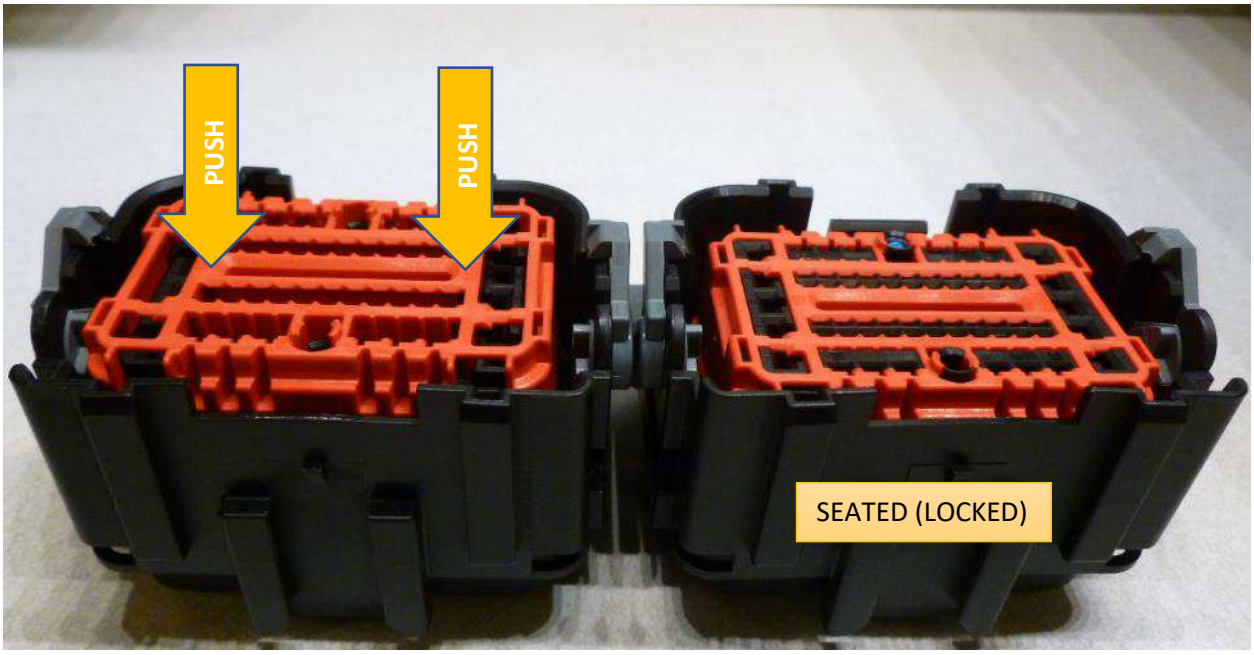
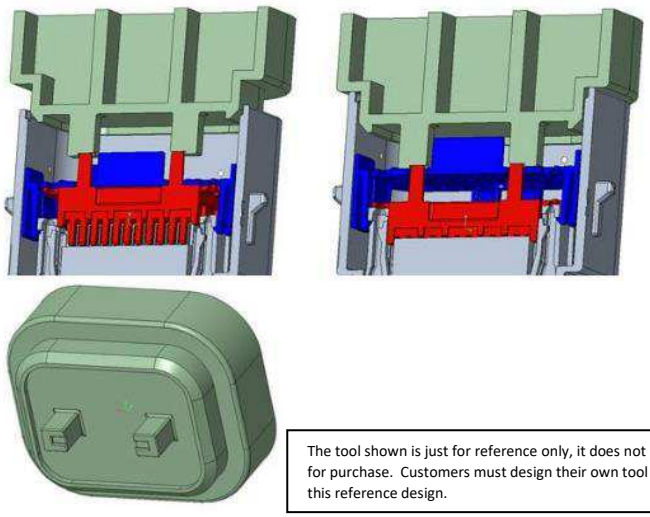


Figure 2

4. SEATING MALE TPA

To seat the male TPA, push evenly on the RED protruding TPA ribs. A tool is preferred for this process step, due to the small area of the exposed ribs the pressure is too high for finger or thumb pressing. A reference tool design is available, see below for example. Contact TE Sales/Engineering for information. During TPA seating it is important to ensure the blue PPP is not seated. Refer to Figures 3 and 4 below for reference. There will be a tactile feel when the TPA is fully seated.

Reference Tool Design for seating the Male TPA



The tool shown is just for reference only, it does not have a TE p/n and is not available for purchase. Customers must design their own tool based on their process based on this reference design.

Figure 3

Figure 4

TPA is in Locked Position PPP is in Pre-stage Position	TPA and PPP, both are in Locked Position

Note: If the PPP is accidentally moved to the locked (Final) position, please refer to the below instructions to return it back to the pre-stage (Shipping) position.

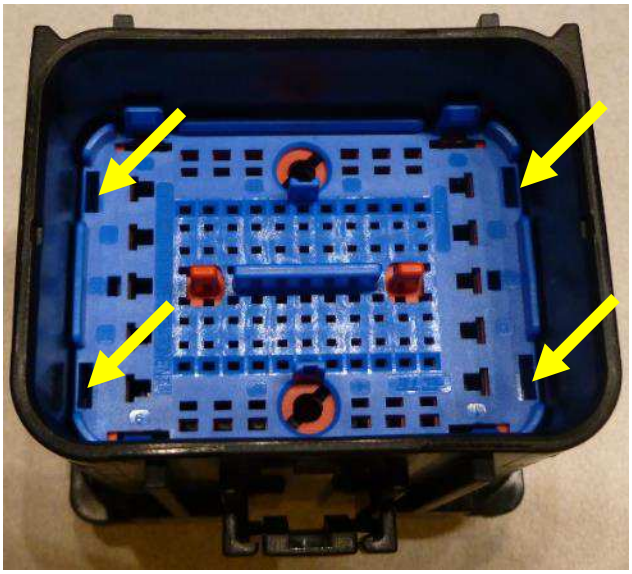
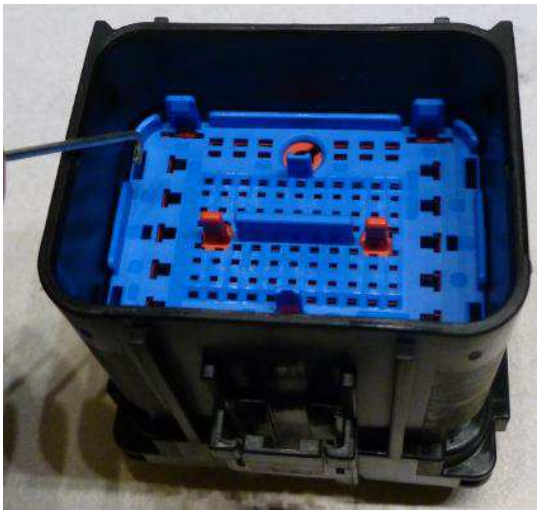


Figure 5

To reset the PPP back to the pre-stage position, use TE tool number 1579028-8 or J-38125-216 tool, insert the tool into the four slots provided in PPP, and pull PPP to the pre-stage (shipping) position. There will be a tactile feel when the PPP is reset to the pre-stage position, and visually the red TPA tabs will be flush with the top surface of the blue PPP.



Insert service tool into four slots and pull PPP to Pre-stage

Figure 6

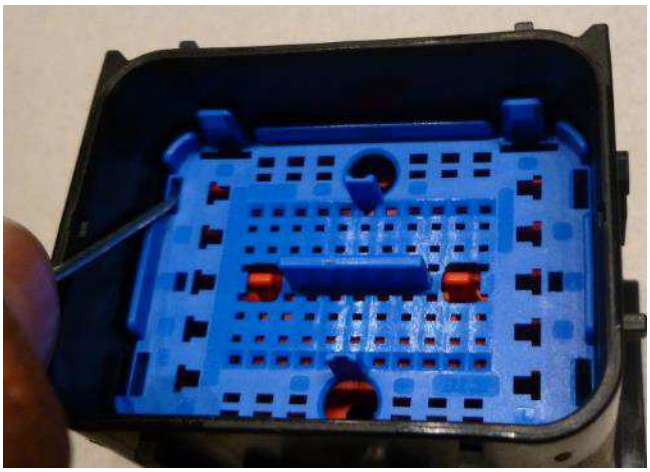


Figure 7

PPP is back in Pre-stage Position

5. MATING CONNECTORS

If the lever is not in the position shown in Figure 8, the lever needs to be reset to the proper position before attempting to mate. To reset the lever, rotate it toward the wire exit end of the connector until it stops.

Align connectors, as shown in Figure 8, and push connector halves together. As the connectors are being pushed together, the lever should remain unconstrained and free to move. If significant resistance is encountered, please confirm the TPAs are fully and properly seated.

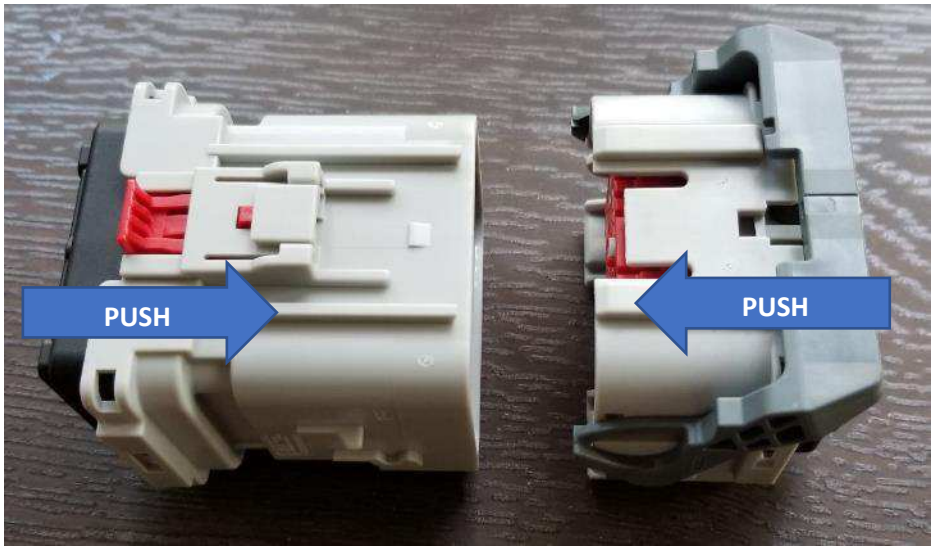


Figure 8

When the pre-stage latch is over the ramp on the male connector (Figure 9), the lever can be rotated. Ensure that the pre-lock tab on the female connector fully engages with the detent on the male connector. A small movement (or pop) of the lever should accompany this stage.

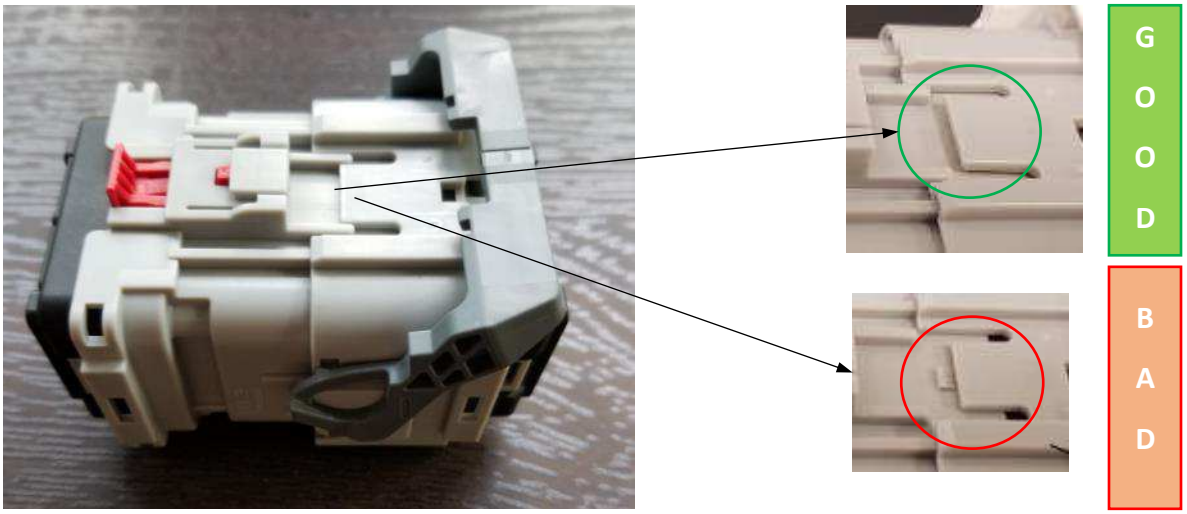


Figure 9

Alternatively, connector halves can continue to be pushed together manually until the lever rotates further, as shown in Figure 10.

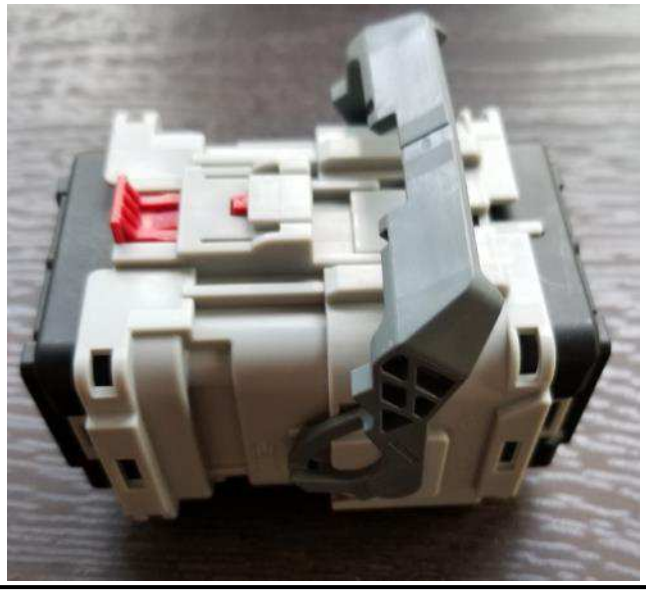
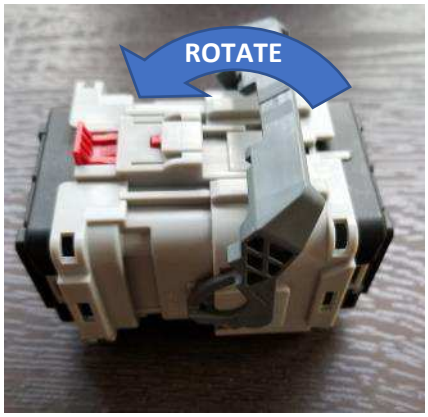


Figure 10

The lever can now be rotated toward the male connector (See Figure 11) until it latches into the thumb latch (connector lock).



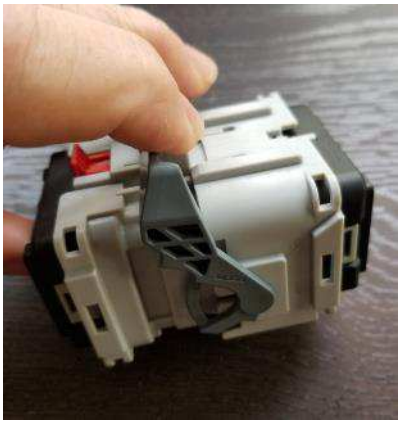
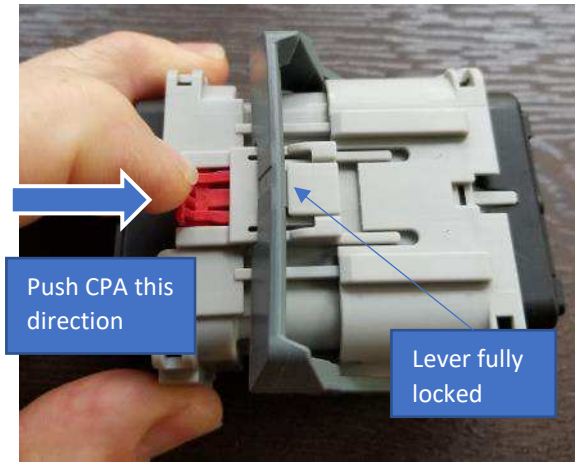


Figure 11

An audible and tactile click will accompany a lever that is correctly latched to the male connector, as shown in Figure 12. To ensure that the lever is properly locked, gently pull on the center portion of the lever in the opposite direction. To provide assurance the lever is fully locked, an optional CPA component is available pre-assembled to the Male Connector. The CPA will only move to the locked position if the lever is correctly latched. The red colored CPA in a locked position is shown in Figure 12a.



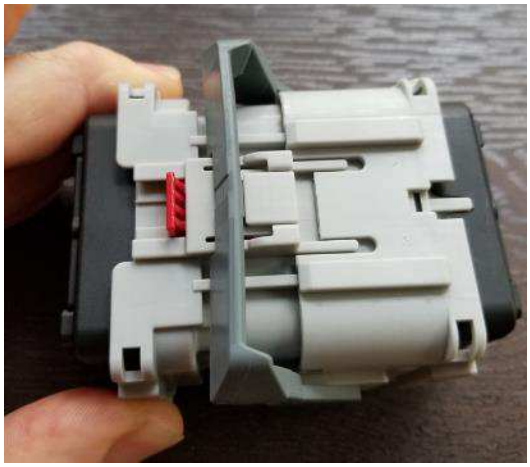


Figure 12

Figure 12a

6. UNMATING CONNECTORS

For Male Connectors equipped with CPA component, first the CPA must be moved to the unlocked position. Pulling the red CPA back away from the lever like shown in Figure 13a, will move it to the unlocked position. Following CPA unlocking, next depress the connector latch, as shown in Figure 13b. Once the connector latch is fully depressed, the lever should "pop" from the locked position and will be free to rotate.

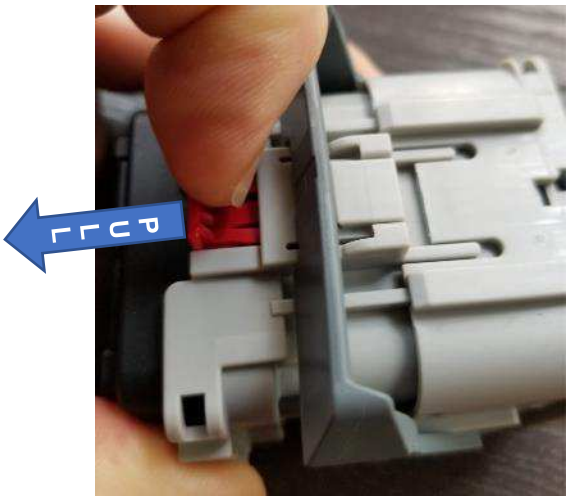


Figure 13a

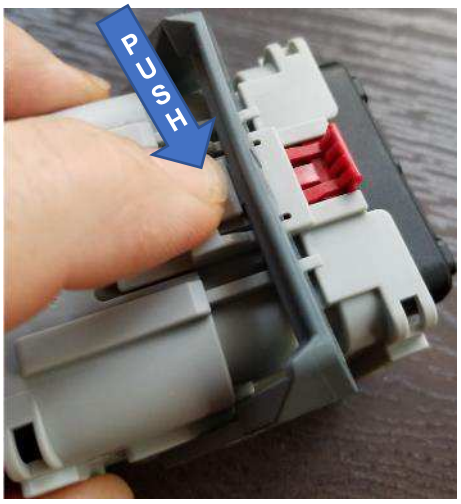


Figure 13b

Rotate the lever away from the male connector, as shown in Figure 14, until the lever is flat against the female connector, as shown in Figure 15.

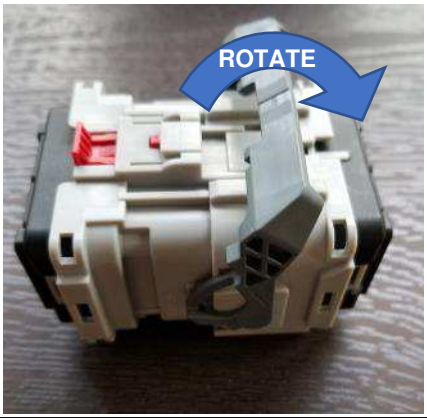


Figure 14

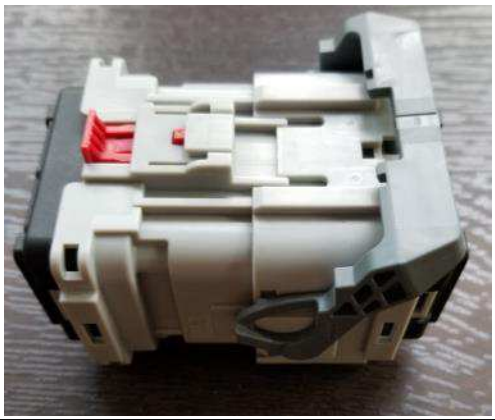


Figure 15

After the lever is flat against the female connector body, pull connector halves apart as shown in Figure 16.

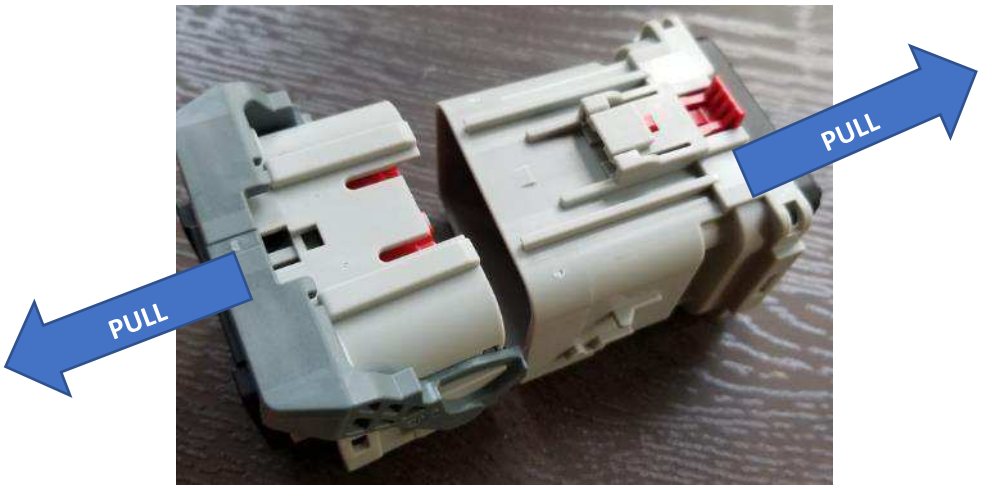


Figure 16

7. MALE CONNECTOR SERVICING

NOTE: DO NOT REMOVE MALE CONNECTOR PPP AND TPA COMPONENTS DURING CONNECTOR OR TERMINAL SERVICE.

PPP and Male TPA needs to be in pre-stage position prior to terminal service.

Service tools:

1. For servicing male blade terminals use
    a. TE part number 8-1579007-9 or J-38125-215A for servicing Generation Y terminals
    b. TE part number 0-1452426-1 for servicing MX150 and Aptiv 2.8 terminals
    c. A special tool is needed for servicing Mate-AX contacts
        i. TE part number 1-1579007-6 is recommended or combo tool 2394300-1.

7.1 Male Connector TPA Service:

1. Use TE part number 1579028-8 or J-38125-216 to insert into the four slots provided in PPP, pull Male TPA back to pre-set position prior to terminal service. Figure 17 below shows Male PPP and TPA positions.

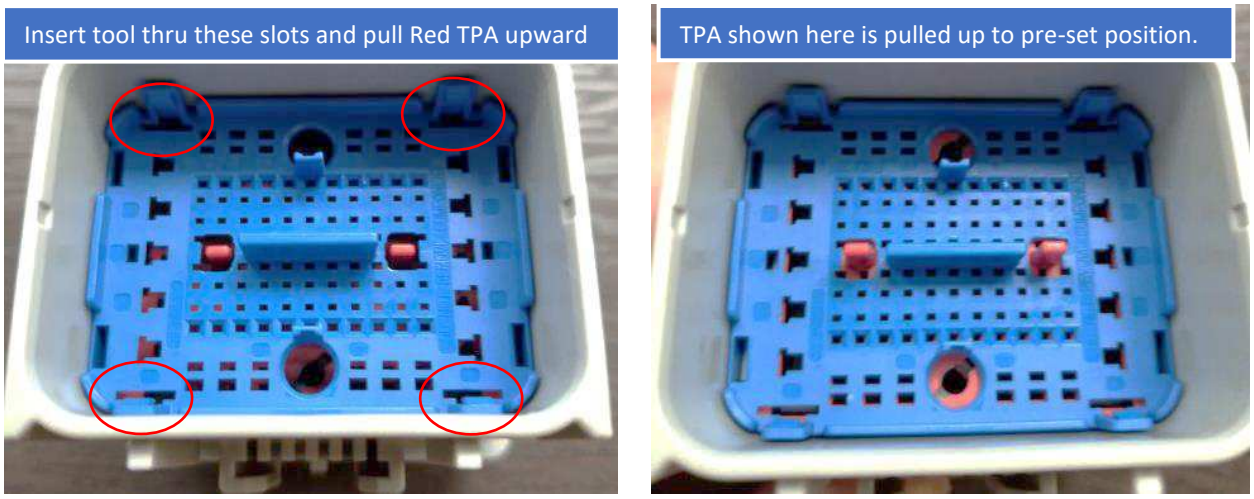
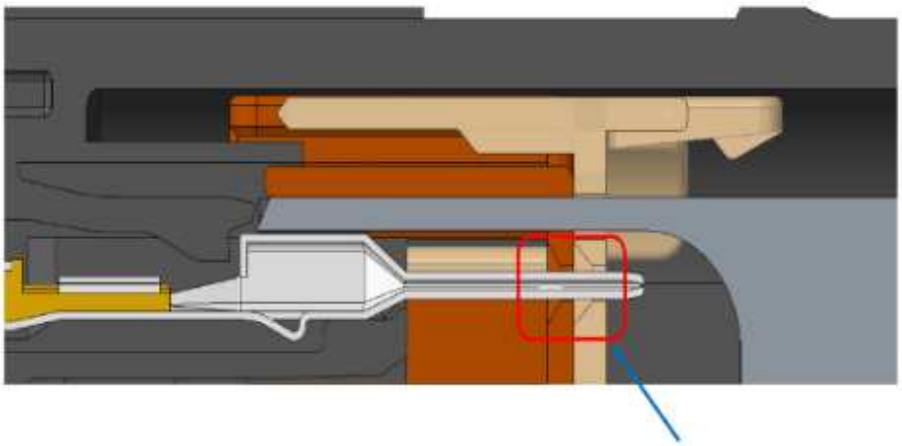


Figure 17

Service: Male Connector (Cont.)



NOTE: TPA & PPP Holds terminal blade in position during servicing.
Service tool inserts thru the PPP to reach primary latch fingers.

Figure 18

Cross sections of the Male Connector assembly show more detail below. Prior to terminal removal, the Pin Protection plate (PPP) should be retracted to the pre-stage position as shown in Figure 19. The TPA must also be moved to the pre-stage position, as shown in Figure 20.

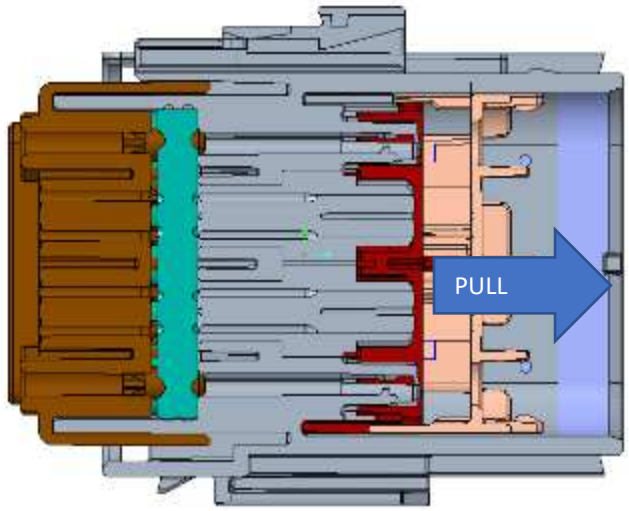


Figure 19

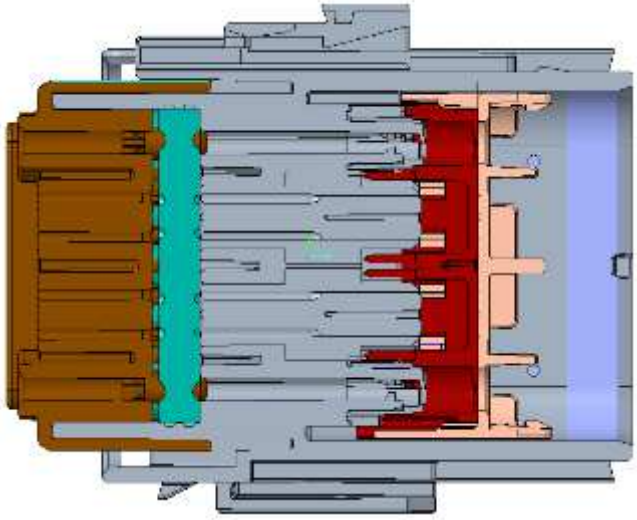


Figure 20

PPP and TPA are pulled back to Pre-stage Position

7.2 MALE CONNECTOR - TERMINAL REMOVAL

Select the terminal to be serviced. Using the cable for that circuit, push the terminal forward until the terminal stops. Use standard servicing tools to lift the locking latch until the primary lock of the terminal is not engaged and then pull out the terminals, as shown in figures 21, 22 & 23.

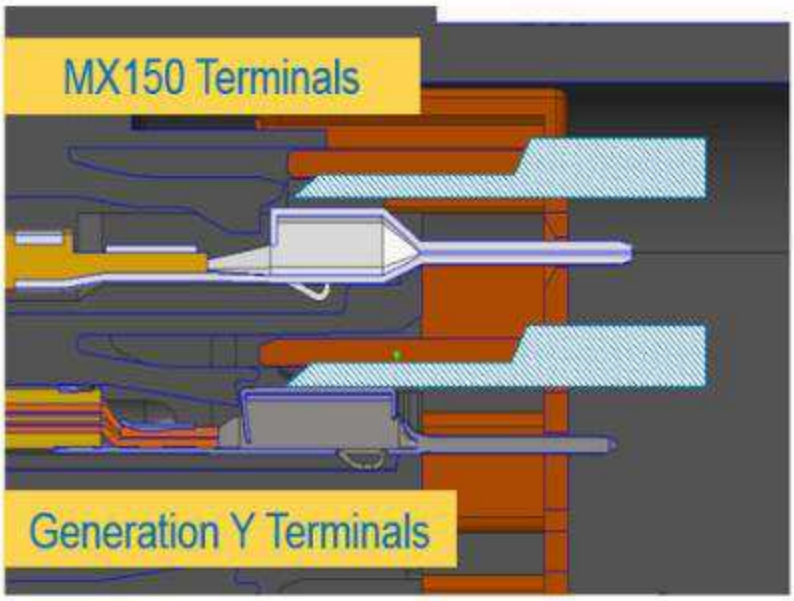


Figure 21

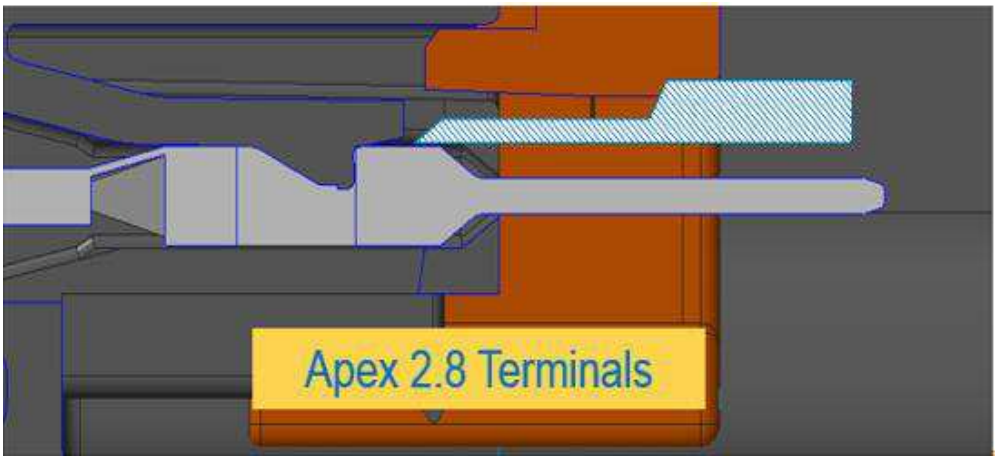


Figure 22

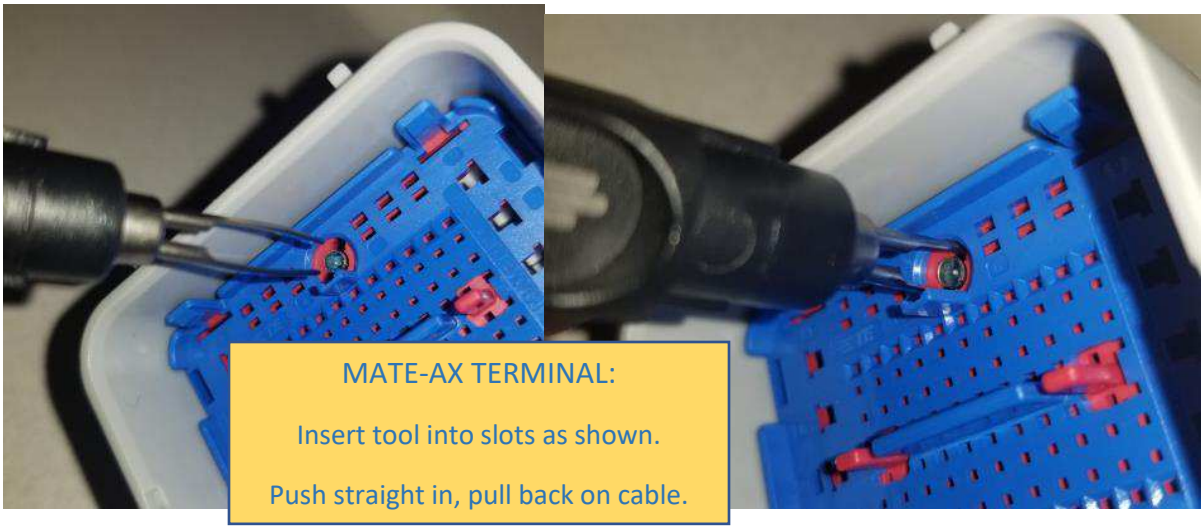


Figure 23

8. FEMALE CONNECTOR SERVICE:

Service tools:

For servicing female terminals, use

a. TE part number 0-1452426-1 for servicing Generation Y, MX150, and Aptiv 2.8 terminals
b. A special tool is needed for servicing Mate-AX contacts
    i. TE part number 1-1579007-3 is recommended or combo tool 2394300-1.

8.1 Female TPA Service: Use suitable flat blade screwdriver to pry the TPA in the center notch as shown in Figure 24. Each side of the TPA in the center has a notch for this action.

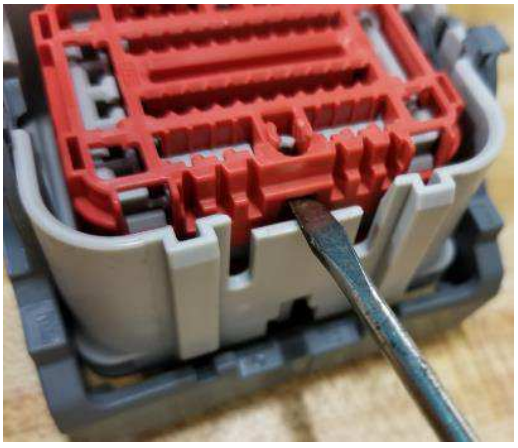


Figure 24

In the final assembled state, the TPA is in the Locked position (Figure 25a); it must be moved to a pre-lock position (Figure 25b), and then fully removed (as shown in Figure 26) to service the terminals. During connector service, it is very important not to disturb the integrity of the peripheral seal; if it is suspected that the peripheral seal has been damaged or moved the wrong position, a new connector is recommended.

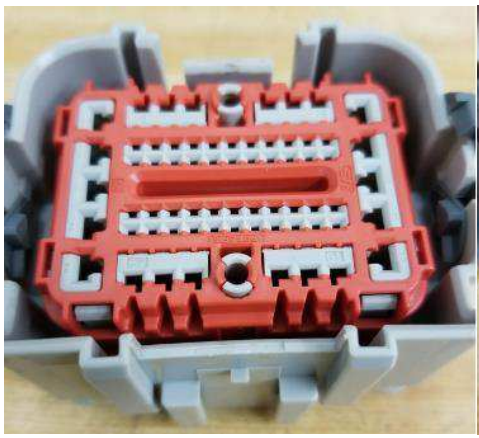


Figure 25a

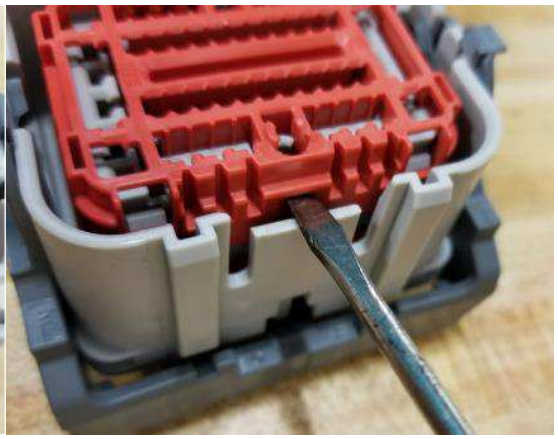


Figure 25b

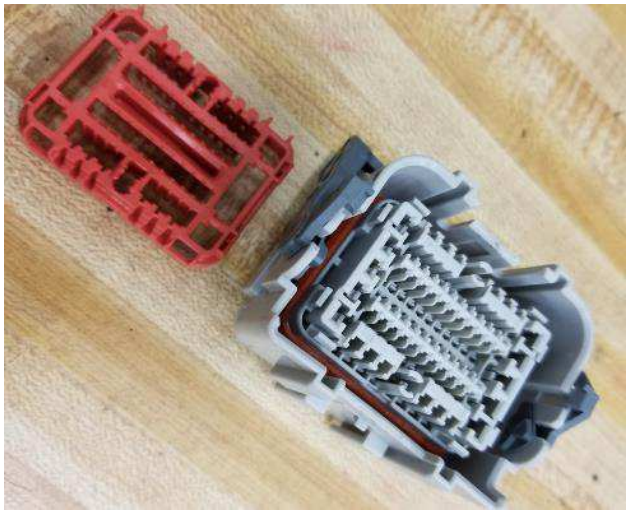


Figure 26

8.2 FEMALE CONNECTOR - TERMINAL REMOVAL

Select the terminal to be serviced. Using the cable for that circuit, push the terminal forward until the terminal stops. Use standard servicing tools to lift the locking latch until the primary lock of the terminal is not engaged and then pull out the terminals, as shown in figures 27, 28 & 29.

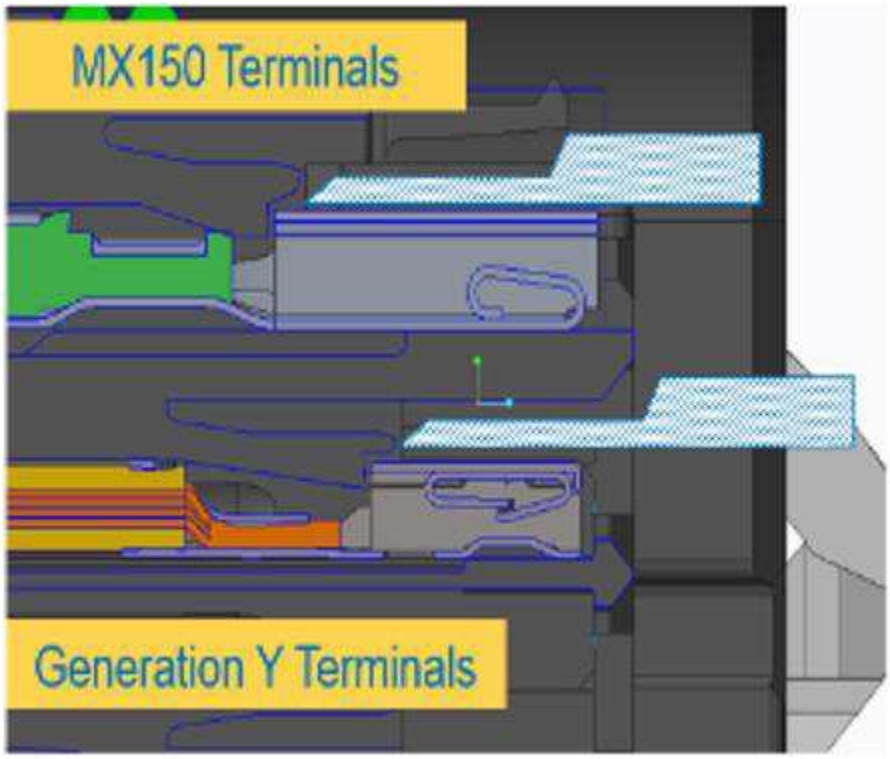
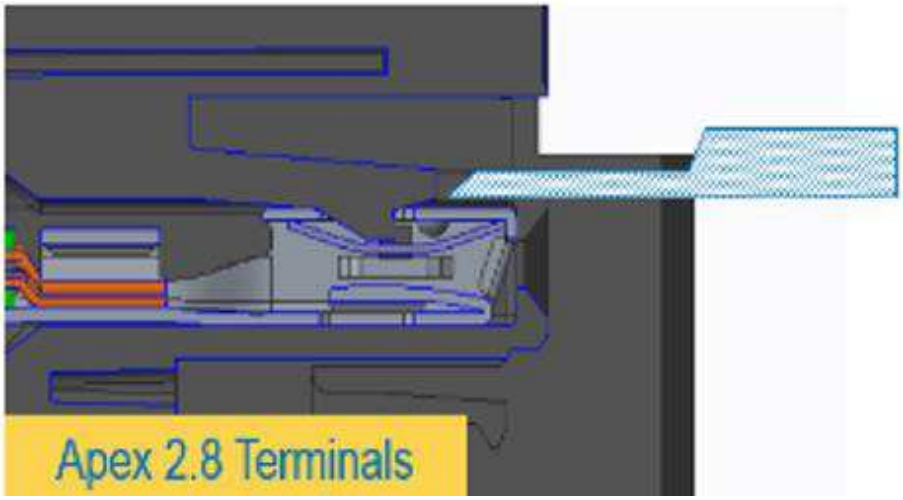


Figure 27



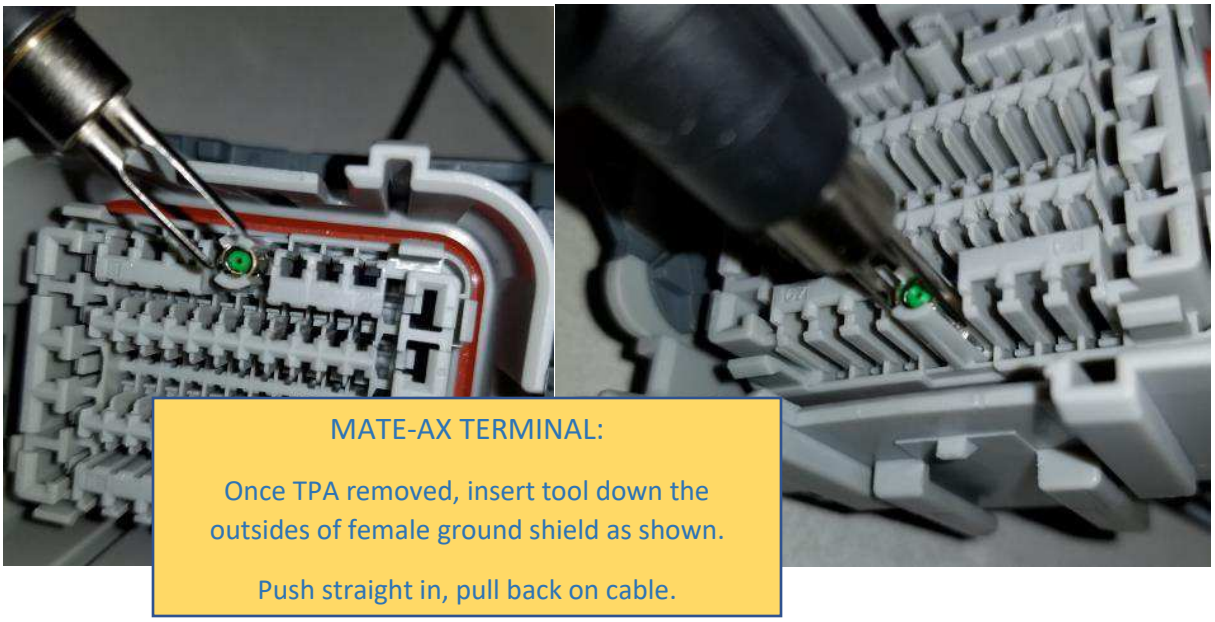


Figure 29

9. RE-ASSEMBLY OF CONNECTOR

To re-assemble the male or female assembly after servicing a contact, proceed as follows:

1. Align the keying features of the TPA with the appropriate features in the female and male housings. Place the TPA locking fingers inside the female or male housing.
2. Push the TPA into the pre-staged position by using the extraction tool or manually by hand.
3. Inspect connectors for possible damage prior to reinstating the connector into use.

10. WIRE DRESS ASSEMBLY INSTALLATION (OPTIONAL)

NOTE
The wire dress cover should be installed after all terminals have been fully inserted.

1. Bundle the wires and bend them in a shape that will fit into the wire exit of the cover.
2. 90°: Align and insert the locking tabs of the wire dress cover into the windows of the outer connector housing. See Figure 30.
3. 180°: ORIENT AS SHOWN WITH OPENING ON SAME SIDE AS CLIP SLOTS and align the wire cover locking tabs with connector and then push straight, on surfaces shown below, until locked. See Figures 30 & 33.

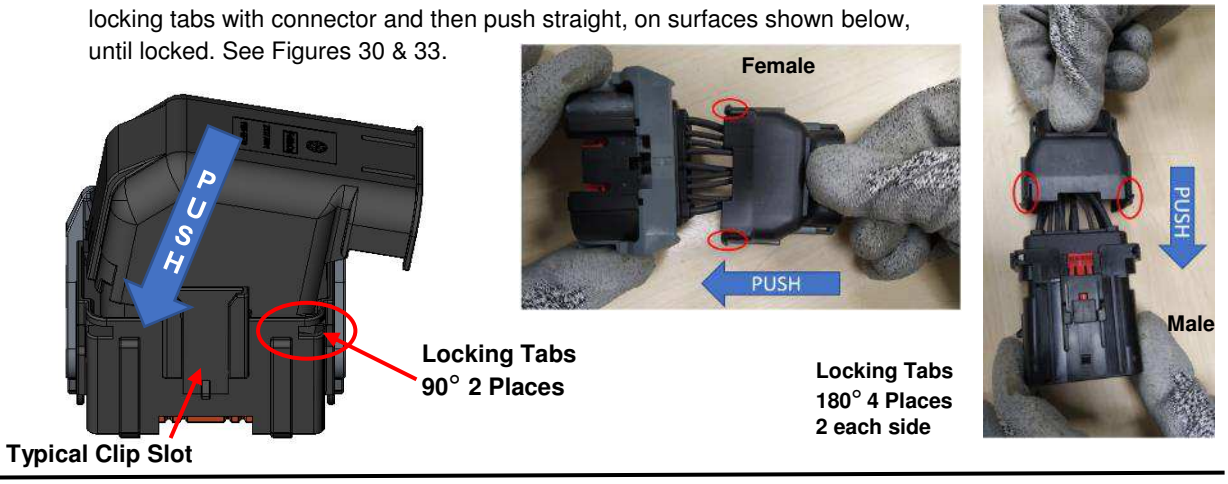


Figure 30

Ensure that the wire bundle is completely captured within the wire exit of the wire dress cover, and no wires are pinched between the connector housing and the wire dress cover, then rotate the wire dress cover toward the housing until the latch clicks into place. There will be an audible click. Figure 31 shows the wire dress cover fully seated onto the connector.

Using tape or wire ties, attach the wire bundle to the wire dress cover.

Figure 31

11. WIRE DRESS ASSEMBLY REMOVAL

1. Using the tip of a screwdriver inserted into the latch window of the outer housing, release the latch of the wire dress cover by pushing inward on the latch. See Figure 32.

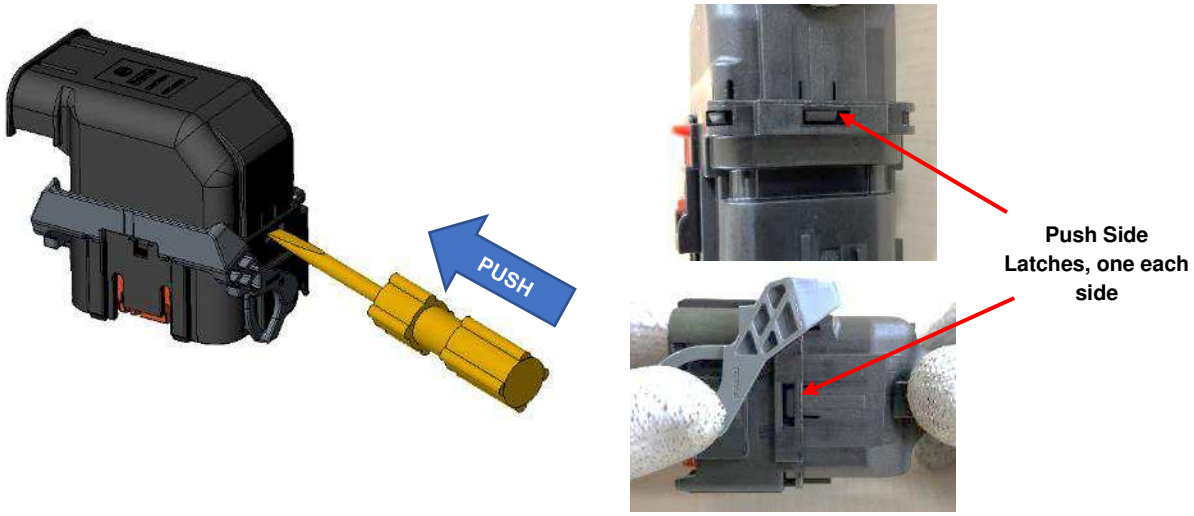


Figure 32

2. 90°: When the latch is released, the wire dress cover can be rotated upward and away from locking tab windows to free the wire dress from the connector assembly.
3. 180°: Push each side latch individually with small screwdriver to release. Rotate towards the edge with the corner latches to release and pull away to free the wire dress cover from the connector assembly. If necessary, use small screwdriver to release two corner latches as well.

NOTE
Installation and removal procedure is the same for Male/Female Connectors as well, and the wire exit is also the same for both.

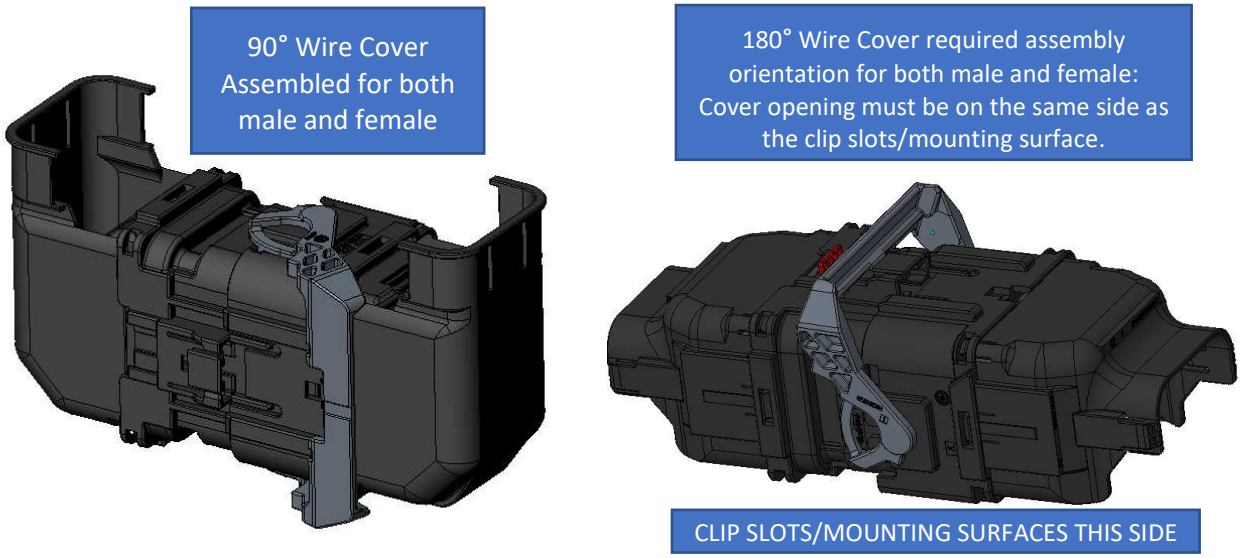


Figure 33

12. REPLACE AND REPAIR

CAUTION

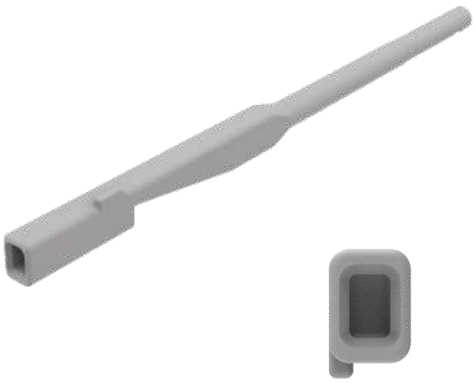
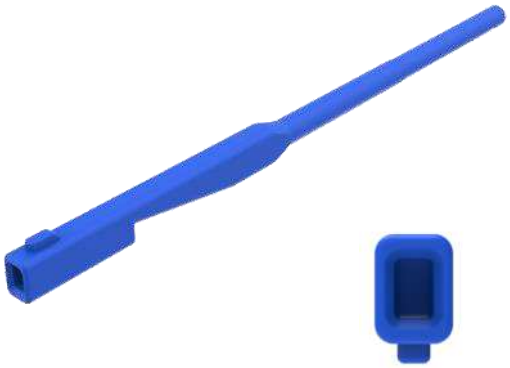
These connectors are non-repairable. Damaged or defective connectors MUST NOT be used. A contact MUST NOT be re-terminated but can be replaced following the instructions for terminal removal. The Wire Dress Cover, if equipped, can be replaced if damaged.

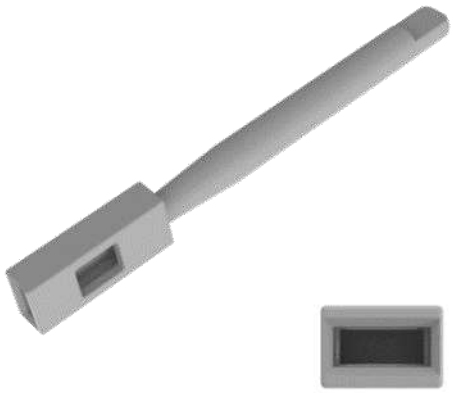
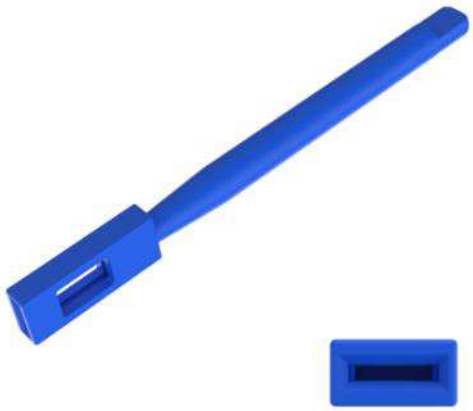
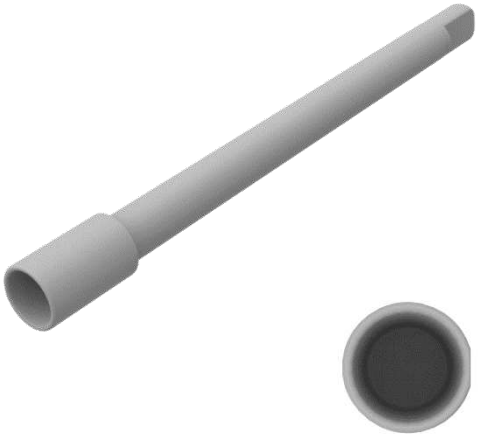
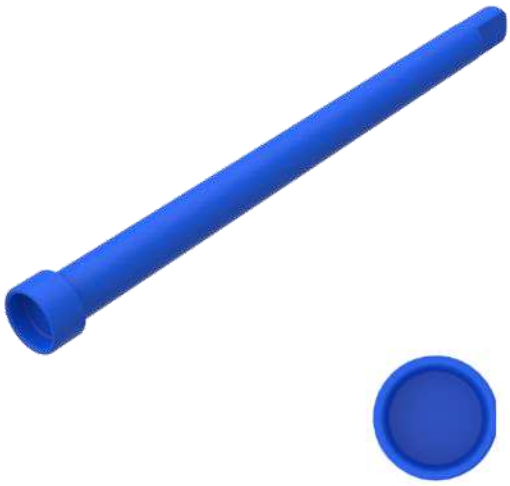
13. SEAL PLUGS FOR 68P

1. GENERAL

   The individual seal plugs are designed for production harness or field service repair situations. If a terminal is removed and not replaced with a terminated contact and/or a terminal is not required for a given open circuit, a seal plug is required to ensure proper connector sealing.

2. DELIVERY CONDITION (COLORS SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY)

TE CONNECTIVITY GENERATION Y 0.64 MM CAVITY SEAL PLUGS COLORS SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY	TE P/N 2373227-1 REPLACES FEMALE TERMINAL 	TE P/N 2377194-1 REPLACES MALE TERMINAL 
MOLEX 1.5 MM CAVITY SEAL PLUGS	MOLEX P/N 34345-4001 REPLACES FEMALE TERMINAL 	MOLEX P/N 34345-0003 REPLACES MALE TERMINAL 

TE CONNECTIVITY 2.8MM COLORS SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY	TE P/N 2378043-1 REPLACES FEMALE TERMINAL 	TE P/N 2373242-1 REPLACES MALE TERMINAL 
TE CONNECTIVITY MATE-AX CAVITY SEAL PLUGS COLORS SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY	TE P/N 2373243-1 REPLACES FEMALE TERMINAL 	TE P/N 2377195-1 REPLACES MALE TERMINAL 

3. TE CONNECTIVITY GENERATION Y CAVITY SEAL PLUGS INSERTION/EXTRACTION INSTRUCTIONS

   a. INSERTION

NOTE: Check to be sure that the TPA device is in the open (pre-set) position. If the TPA is closed (fully seated position), refer to previous sections to open the TPA to pre-set position.

1. Insert a seal plug by grasping the end of the seal plug at the finger grip. Alignment to the circuit cavity is provided by visual and mechanical means. Push the seal plug straight into the appropriate circuit cavity until it stops. Refer to Figure 33.
2. Pull back gently on the seal plug by utilizing the finger grip to ensure the seal plug is securely locked behind the connector plastic terminal latch. In fully seated position, the seal plugs stick out ~2mm above top surface of mat seal cover. See Figure 34 for visual of seal plug in fully seated position.
3. After all the required seal plugs and contacts have been inserted, the TPA must be closed. Refer to previous sections for directions on closing the TPA.

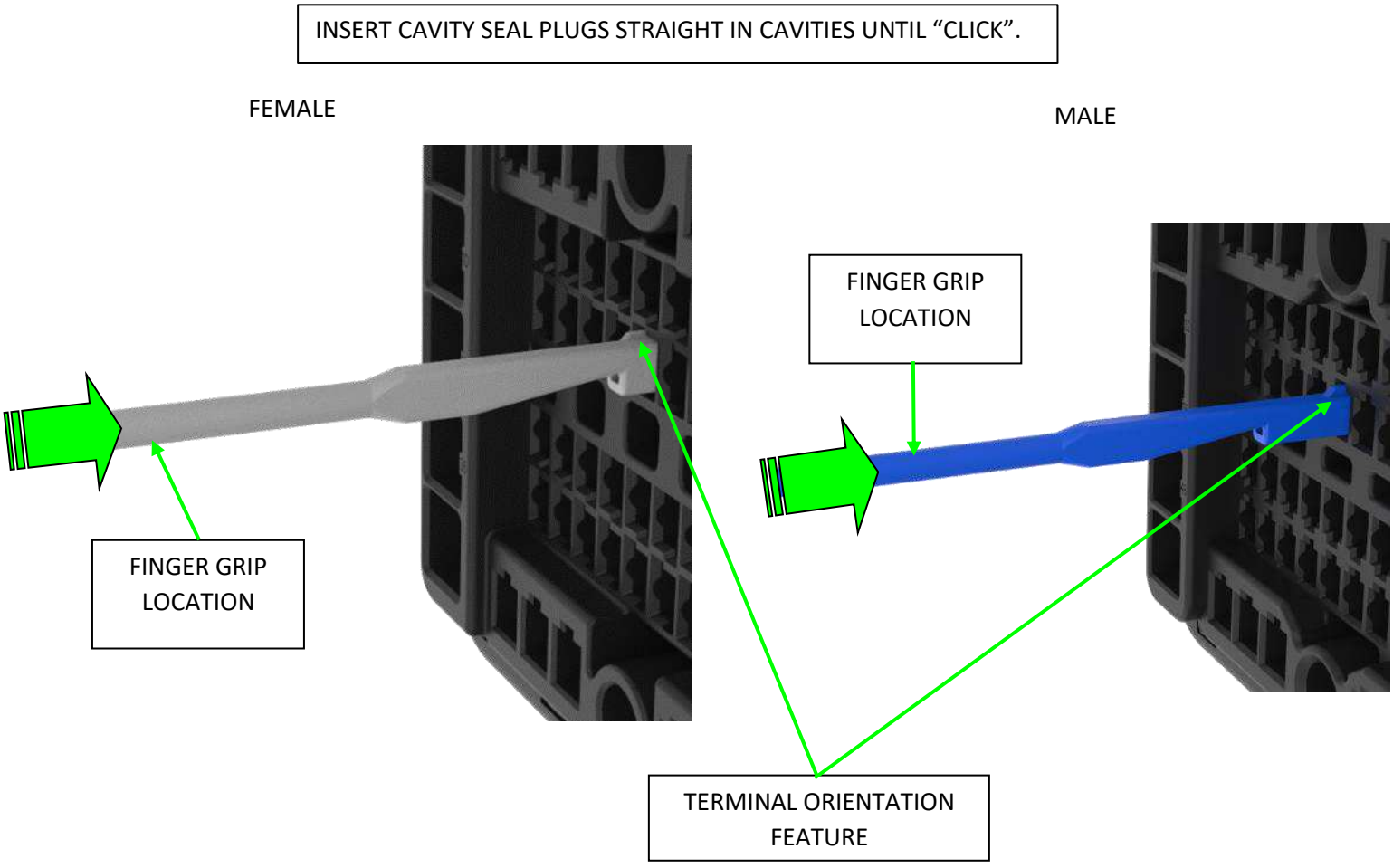


Figure 33

Figure 34

b. EXTRACTION

Check to be sure that the Male TPA device is in the open (pre-set) position, or the Female TPA is removed completely. If the TPA is closed (fully seated position), refer to previous sections to open the TPA to pre-set or removed position.

1. Push the seal plug forward until it stops. See Figure 35.
2. Insert the Generation Y service terminal extraction tool or a small screwdriver into the exposed cavity. See Figure 36.
3. Using the Generation Y service tool or small screwdriver, gently deflect the plastic terminal latch within the connector housing. See Figure 37.
4. Grasp the finger grip of the seal plug and pull the seal plug from the plug housing while the plastic terminal latch is being deflected by the extraction service tool.

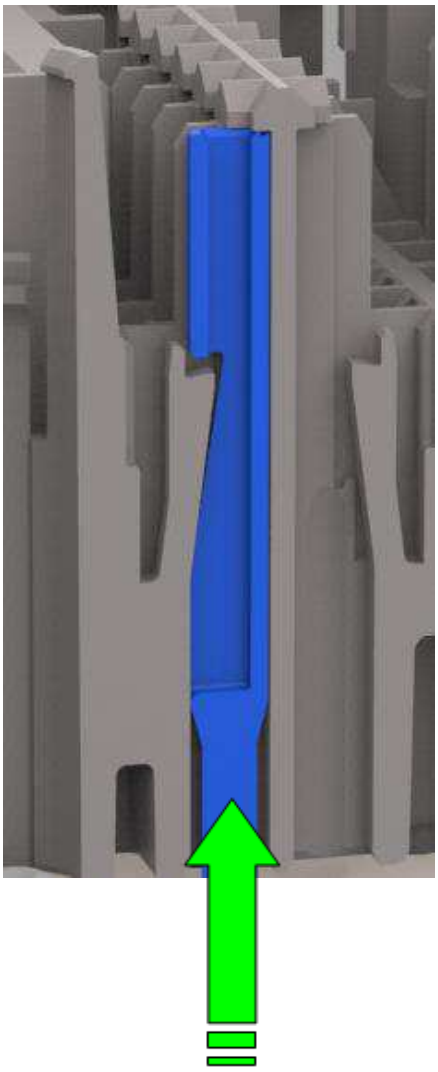


Figure 35

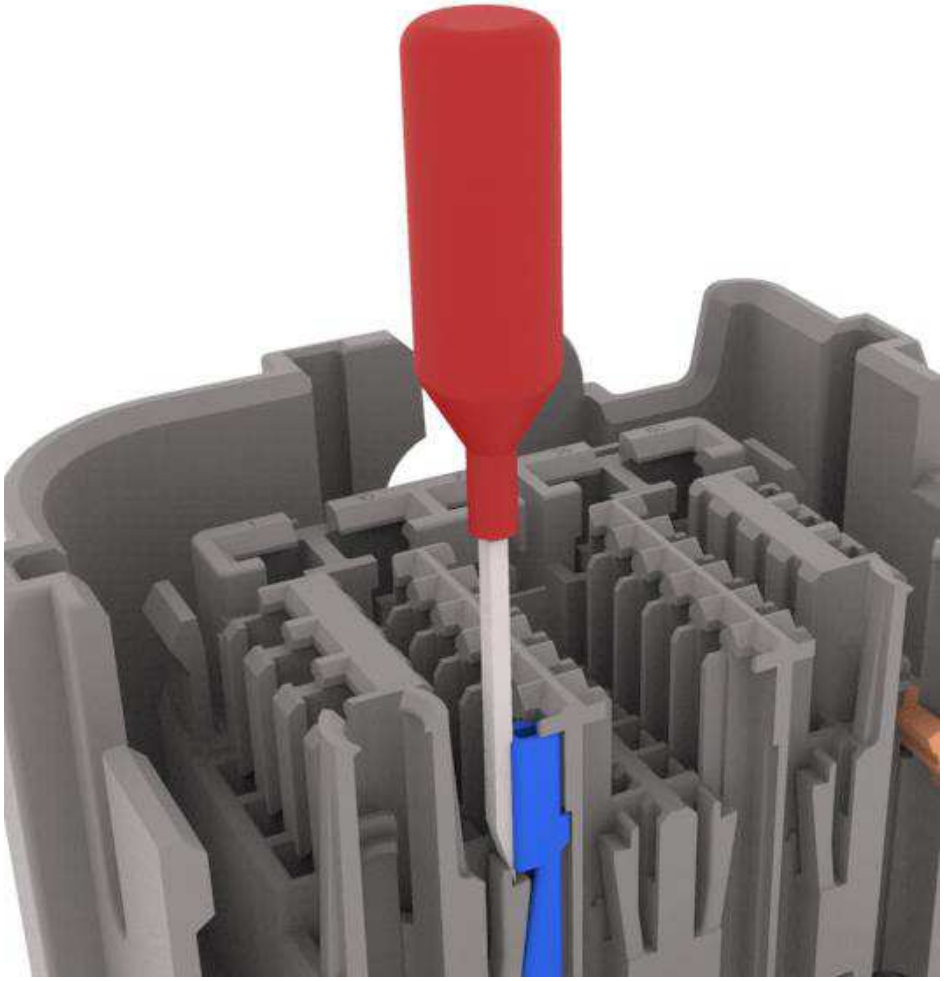


Figure 36

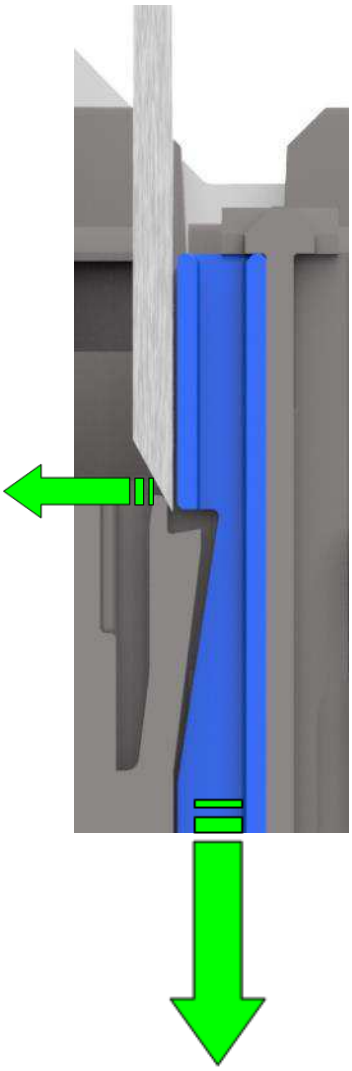


Figure 37

4. MOLEX 1.5 MM CAVITY SEAL PLUG INSERTION/EXTRACTION INSTRUCTIONS

a. INSERTION

NOTE: Check to be sure that the TPA device is in the open (pre-set) position. If the TPA is closed (fully seated position), refer to previous sections to open the TPA to pre-set position.

1. Insert a seal plug by grasping the end of the seal plug at the finger grip. Alignment to the circuit cavity is provided by visual and mechanical means. Push the seal plug straight into the appropriate circuit cavity until it stops. Refer to Figure 33 Generation Y seal plugs insertion.
2. Pull back gently on the seal plug by utilizing the finger grip to ensure the seal plug is securely locked behind the connector plastic terminal latch. In fully seated position, the seal plugs stick out ~1mm above top surface of mat seal cover. See figure 39 for visual of seal plug in fully seated position.
3. After all the required seal plugs and contacts have been inserted, the TPA must be closed. Refer to previous sections for directions on closing the TPA.

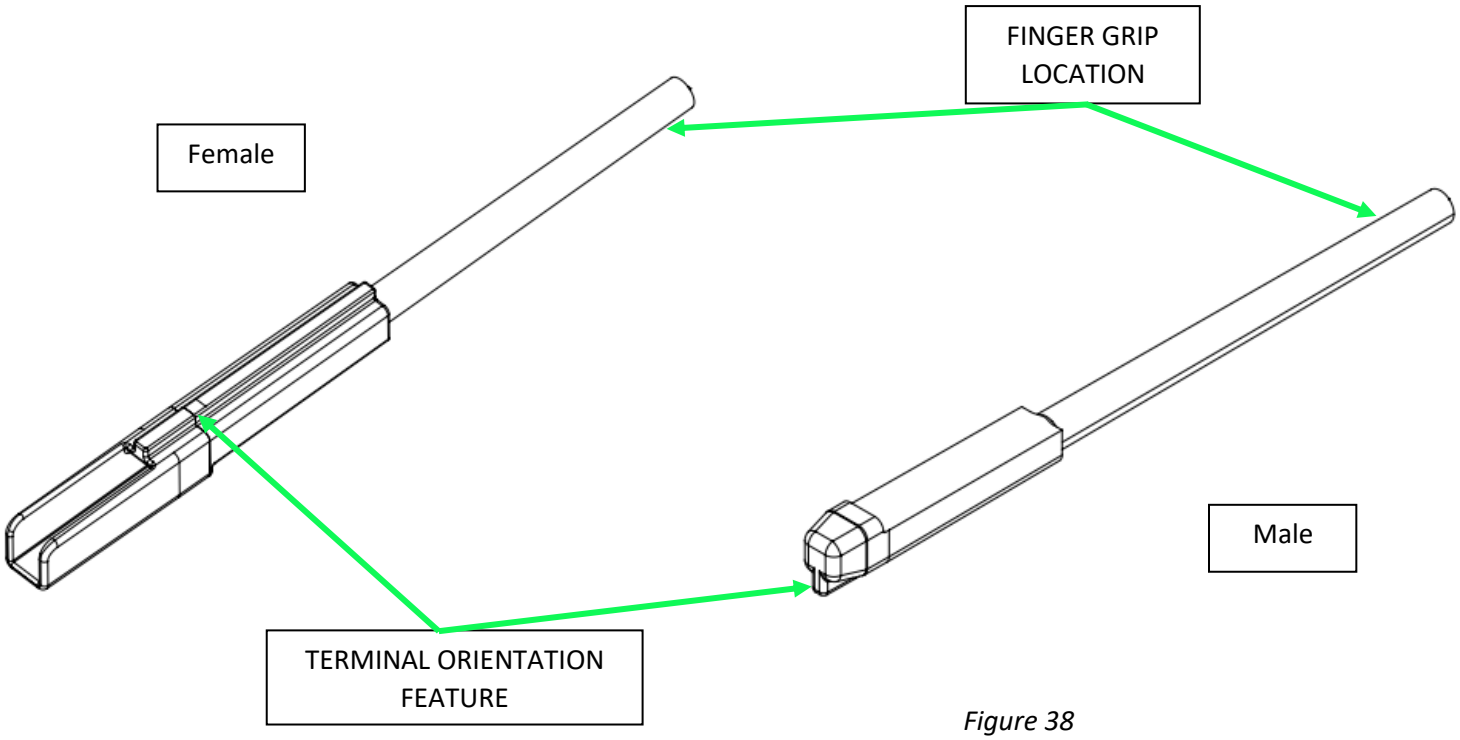


Figure 38

b. EXTRACTION

Check to be sure that the Male TPA device is in the open (pre-set) position, or the Female TPA is removed completely. If the TPA is closed (fully seated position), refer to previous sections to open the TPA to pre-set or removed position.

1. Push the seal plug forward until it stops. Refer to Figure 35 Generation Y seal plugs extraction.
2. Insert the Molex 150 service terminal extraction tool or a small screwdriver into the exposed cavity. Refer to Figure 36 Generation Y seal plugs extraction.
3. Using the Molex 150 service tool or small screwdriver, gently deflect the plastic terminal latch within the connector housing. Refer to Figure 37 Generation Y seal plugs extraction.
4. Grasp the finger grip of the seal plug and pull the seal plug from the plug housing while the plastic terminal latch is being deflected by the extraction service tool. Refer to Figure 37 Generation Y seal plugs extraction.

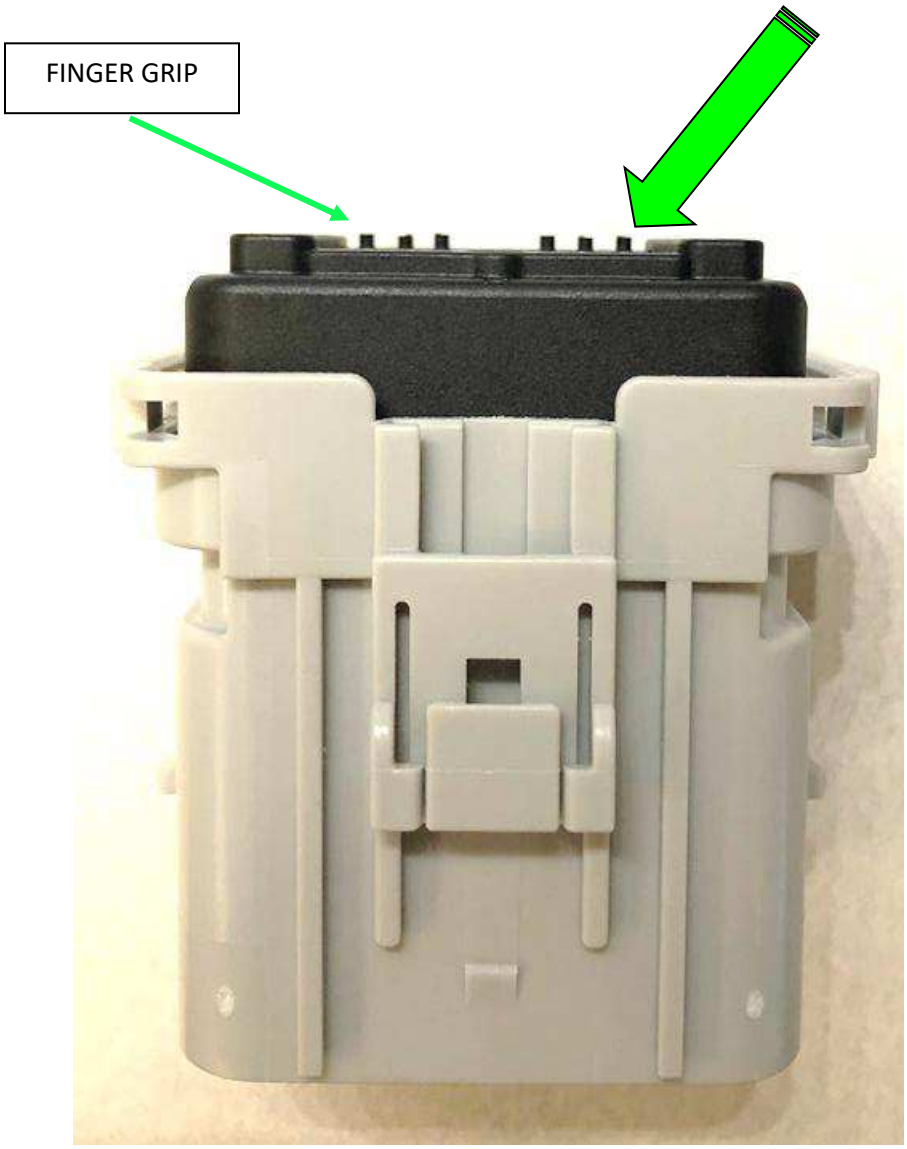


Figure 39

5. TE CONNECTIVITY 2.8MM CAVITY SEAL PLUG INSERTION/EXTRACTION INSTRUCTIONS.
   a. INSERTION

Check to be sure that the TPA device is in the open (pre-set) position. If the TPA is closed (fully seated position), refer to previous sections to open the TPA to pre-set position.

1. Insert a seal plug by grasping the end of the seal plug at the finger grip. Alignment to the circuit cavity is provided by visual and mechanical means. Push the seal plug straight into the appropriate circuit cavity until it stops. Refer to Figure 40.
2. Pull back gently on the seal plug by utilizing the finger grip to ensure the seal plug is securely locked behind the connector plastic terminal latch. In fully seated position, the seal plugs stick out ~1mm above top surface of mat seal cover. See Figure 41 for visual of seal plug in fully seated position.
3. After all the required seal plugs and contacts have been inserted, the TPA must be closed. Refer to previous sections for directions on closing the TPA.

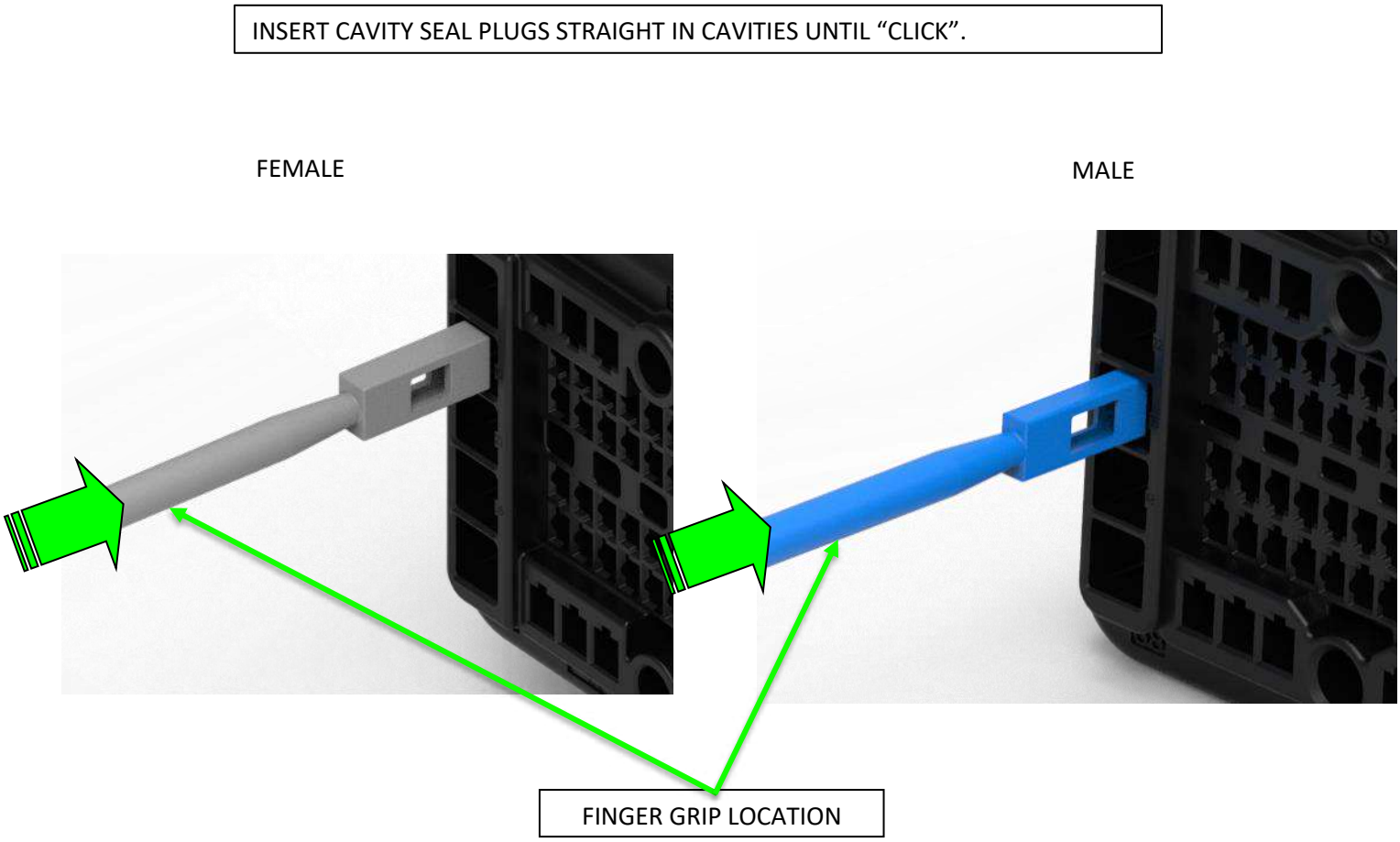


Figure 40

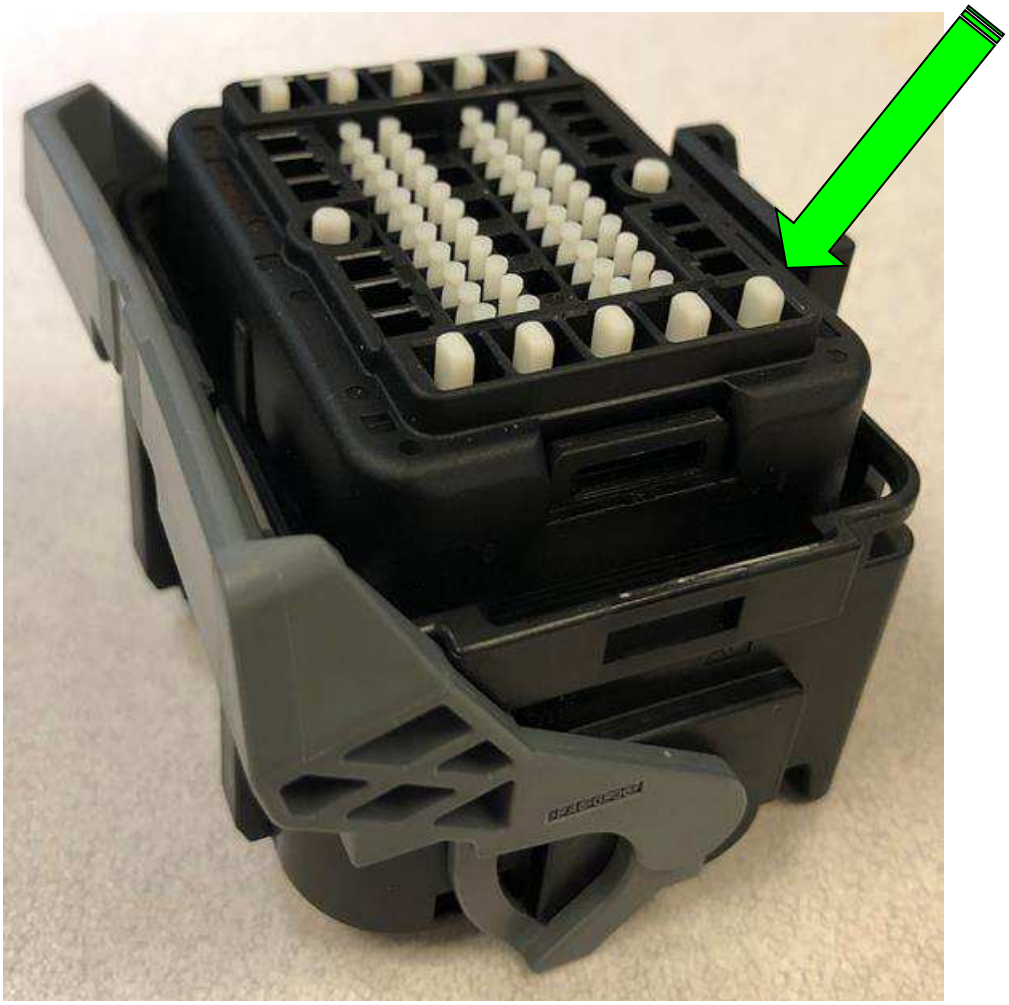


Figure 41

b. EXTRACTION

NOTE: Check to be sure that the Male TPA device is in the open (pre-set) position, or the Female TPA is removed completely. If the TPA is closed (fully seated position), refer to previous sections to open the TPA to pre-set or removed position.

1. Push the seal plug forward until it stops. See Figure 42.
2. Insert the 2.8mm service tool or a small screwdriver into the exposed cavity. See Figure 43.
3. Using the 2.8mm service tool or small screwdriver, gently deflect the plastic terminal latch within the connector housing. See Figure 44.
4. Grasp the finger grip of the seal plug and pull the seal plug from the plug housing while the plastic terminal latch is being deflected by the service tool.

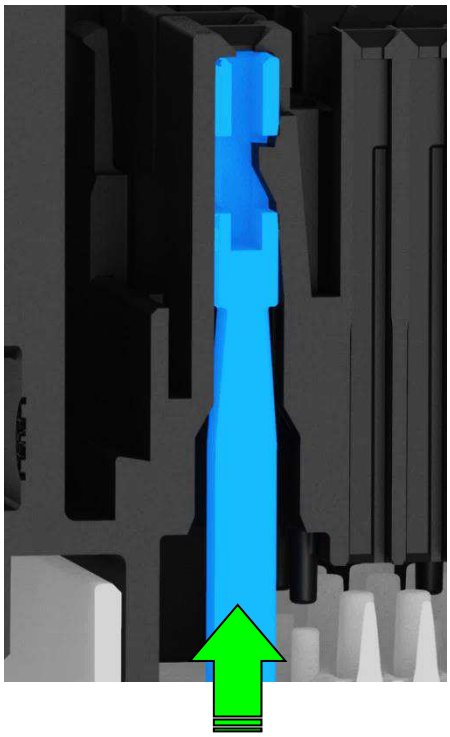


Figure 42

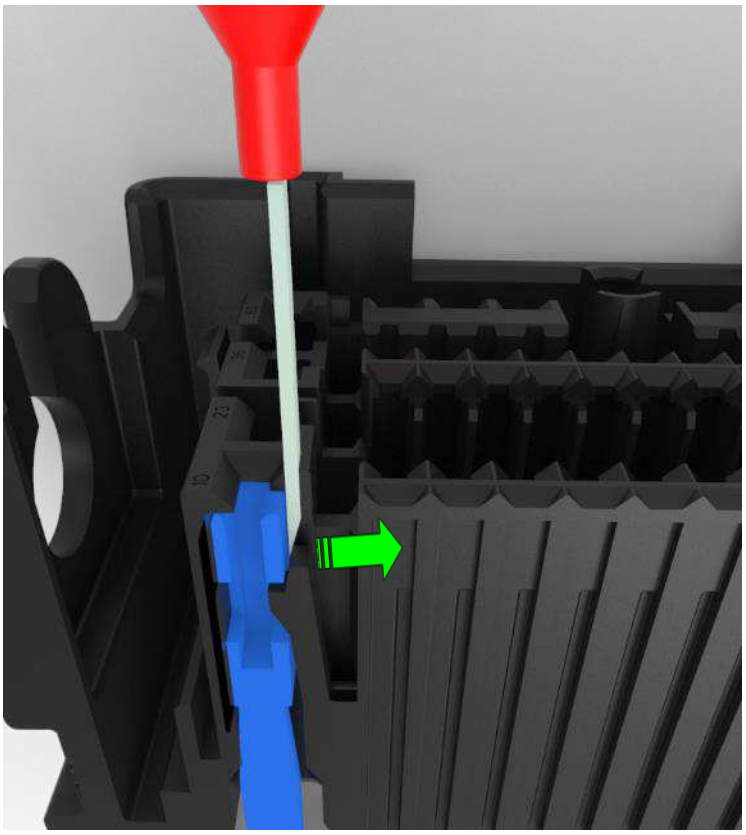


Figure 43

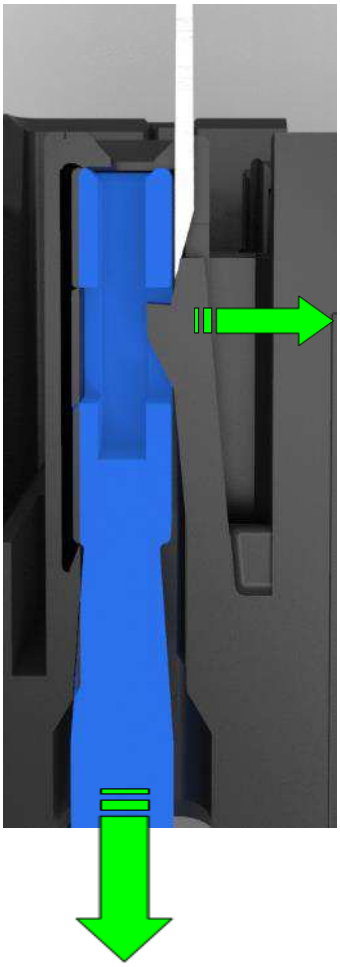


Figure 44

6. TE CONNECTIVITY MATE-AX INSERTION/EXTRACTION INSTRUCTIONS

   a. INSERTION

NOTE: Check to be sure that the TPA device is in the open (pre-set) position. If the TPA is closed (fully seated position), refer to previous sections to open the TPA to pre-set position.

1. Insert a seal plug by grasping the end of the seal plug at the finger grip. Seal plug must be inserted with larger diameter first, otherwise, there is no orientation required. Push the seal plug straight into the appropriate circuit cavity until it stops. See Figure 45.
2. Pull back gently on the seal plug by utilizing the finger grip to ensure the seal plug is securely locked behind the connector plastic terminal latch. In fully seated position, the seal plugs stick out ~1mm above top surface of mat seal cover. See Figure 46 for visual of seal plug in fully seated position.
3. After all the required seal plugs and contacts have been inserted, the TPA must be closed. Refer to previous sections for directions on closing the TPA.

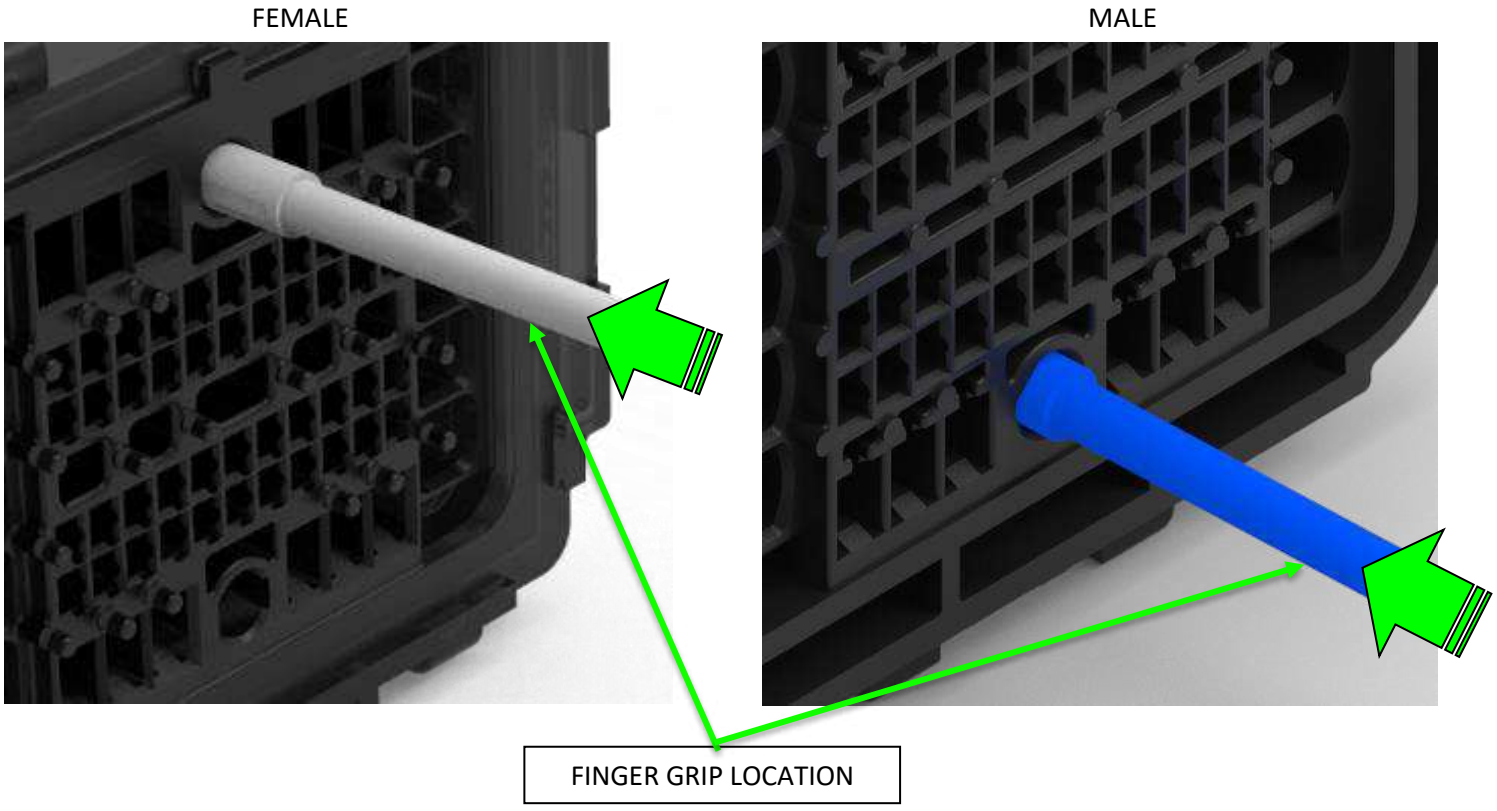


Figure 45

Figure 46

b. EXTRACTION

For female MATE-AX seal plug (2373243-1) removal, TPA must be removed from connector housing. If the TPA is closed (fully seated position) or in the open (pre-set) position, refer to previous sections to remove the TPA. For male MATE-AX seal plug (2377195-1) removal, check to be sure that the TPA is in the open (pre-set) position. If the TPA is closed (fully seated position), refer to previous sections to open the TPA to pre-set position.

1. Push the seal plug forward until it stops. See Figure 47.
2. Insert the appropriate MATE-AX service tool (TE P/N 1-1579007-6 for Male and TE P/N 1-1579007-3 for Female or combo tool 2394300-1) into the exposed cavity. See Figure 48.
3. Using the MATE-AX service tool, push straight in to deflect the plastic terminal latches within the connector housing. See Figure 49.
4. Grasp the finger grip of the seal plug and pull the seal plug from the plug housing while the plastic terminal latches are being deflected by the service tool.

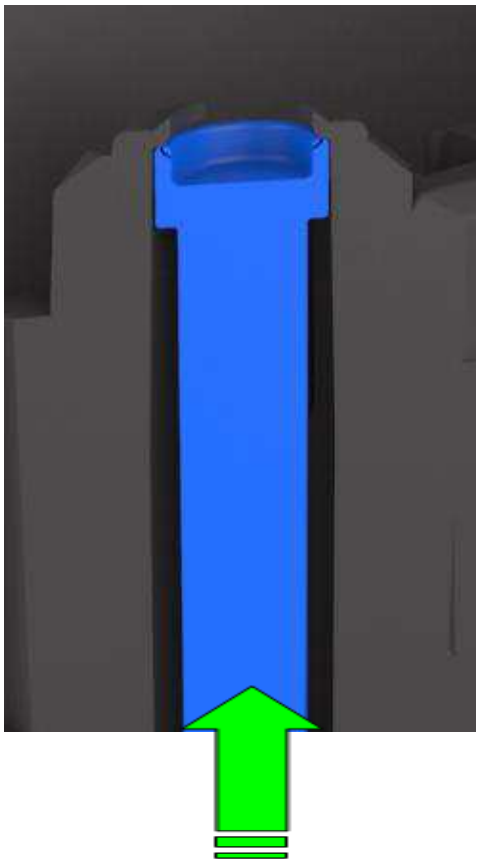


Figure 47

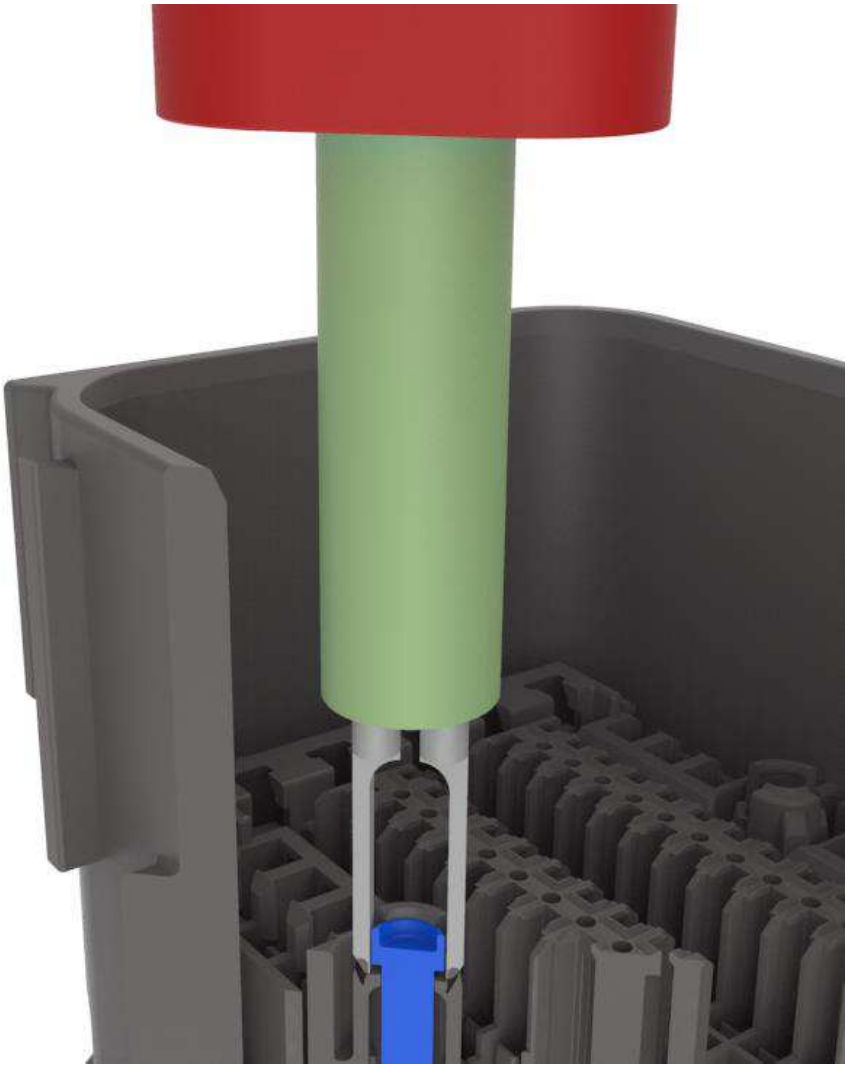


Figure 48

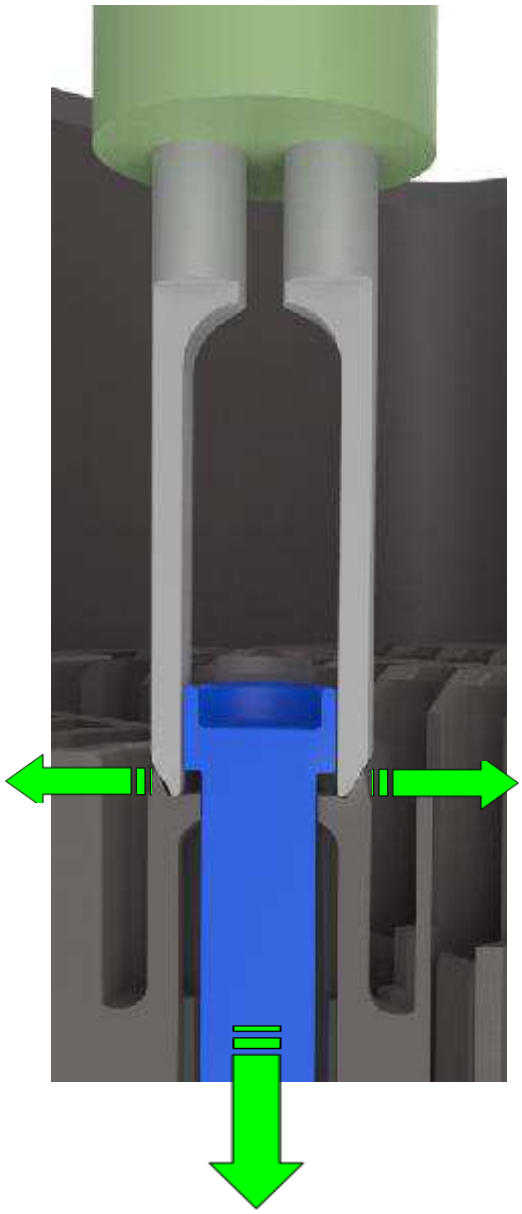


Figure 49

14. REVISION SUMMARY

- A - Initial release of the document.
- B - Cavity seal plugs section added.
- C - Added views of CPA function to section 6, replaced pictures in sections 7 and 8. General corrections and improvement.
- D – Added views and details for 180° wire cover installation and removal. Added Mate-AX combo tool 2394300-1.
- D1 – Updated views (Figure 30) and installation instructions (Section 10.3) for 180° wire cover installation.
- D2 – Updated views (Figures 30 & 33) for 180° wire cover and adding wording for proper cover orientation.