

78-POSITION SEALED SDM CONNECTOR SYSTEM

PART NUMBER	DESCRIPTION
1456563-[]	Header Assembly
2035023-[]	54-Position Plug Assembly (Right Hand Lever)
776773-[]	24-Position Plug Assembly (Left Hand Lever)
776775-[]	24-Position Plug Assembly (Right Hand Lever)
2035024-2	54-Position Wire Dress Assembly
776793-2	24-Position Wire Dress Assembly
7116-5231-08 (Yazaki Kaizen) SAIT-A03GF-M064 (JST)	Female Contact (Gold Plated)
1456538-1	Seal Plug

Figure 1

1. INTRODUCTION

This instruction sheet provides 0.64mm automotive electrical contact assembly and disassembly procedures for the 54- and 24-Position SDM Connector System (Figure 1). This instruction sheet also provides mating and unmating procedures for the assembly and individual components.

The sealed 54-position and 24-position connector assemblies are designed to operate under Class I temperature and body and IP vibration profiles as described in the SAE/USCAR-2 Revision 4 and GMW3191, January 2005 specifications. Both connection systems have shunt contacts in the first and third contact rows that will short adjacent contacts when the product is not in the fully mated position.

NOTE



All shunt circuits must have female contacts or Tyco Electronics Seal Plugs loaded.

It is required that a wire dress cover assembly (2035024-2 and 776793-2) be used with each connection system to ensure proper connector latching onto header assembly and Connector Position Assurance (CPA) functionality.

If you have special packaging requirements, please contact your Tyco Electronics Representative or the Product Information Center for assistance.

NOTE



Dimensions in this instruction sheet are in millimeters and [inches]. Figures and illustrations are for reference only and are not drawn to scale.

2. DESCRIPTION

Each plug assembly consists of a plug housing, a terminal position assurance (TPA) device, peripheral seal, mat seal, mat seal cover, lever, and various metal shunts depending on customer requirements (the design is protected for a 18 max shunt load for the 54-position and a 8 max load for the 24-position). The plug assemblies are shipped as one piece with the TPA in the open or pre-set position. The wire dress assemblies (Figure 1) are likewise shipped separately as one piece with the connector position assurance (CPA) device locked in the pre-set position.

Each TPA will fully seat to its locked position when the electrical contact(s) are properly installed. In the event that a contact is not fully seated or orientated improperly in the contact cavity, the TPA will not fully seat or it will be difficult to seat without permanently damaging the TPA. Once the TPA device is closed (seated), the plastic terminal latch within the plug housing cannot be deflected.

The mat seal covers, attached to the rear of the plug housings, properly orient the crimped contacts during installation of the contacts through the mat seal and into the plug housing cavities.

The wire dress cover assembly can be installed onto the plug housing after the crimped terminals are loaded into their proper circuit locations.

The lever components of the plug assemblies are locked into the pre-installed position as received, and cannot be moved from the pre-install position until the plug assemblies are properly placed onto the header and pushed to the pre-staged position. Once in the pre-staged position, the lever can be rotated, drawing the plug assembly down to the fully mated position on the header assembly.

After the lever of each plug assembly is properly rotated and the plug housings are fully drawn on the header pockets (fully-mated position), the lever will latch into the wire dress cover assemblies (with an audible “click”). At this stage, the CPA components can be moved from the pre-set position to the locked position. Once a CPA is moved to its locked position, the corresponding lever mechanism cannot be released from the wire dress assembly without damage to the lever or wire dress components.

3. ASSEMBLY PROCEDURES

3.1. Contact Insertion

NOTE



For information on contact crimping, refer to the instructions packaged with the tooling. For inspection information on crimped contacts, refer to the Yazaki Kaizen Application Specification (YPES-15-711) or JST Application Specification (DSP-06956-HK). This connection system is designed to operate with a wire size range of 20 to 22 AWG.

Check to be sure that the TPA device is in the open (pre-set) position (See Figure 2). If the TPA is closed (fully seated position), refer to Paragraph 4.3, Contact Removal, Steps 1 and 2. Proceed as follows:

1. Insert a terminated contact by grasping the wire approximately 33 mm [1.3 in.] behind the insulation crimp and pushing it straight into the appropriate circuit cavity until it stops. Refer to Figure 2.

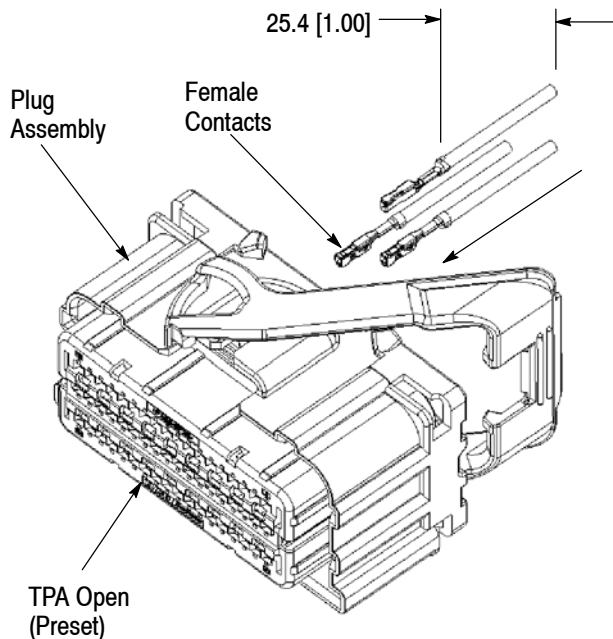


Figure 2

NOTE



Contact orientation for circuit rows 2 and 3 are in the opposite orientation to contact row 1. See Figure 3.

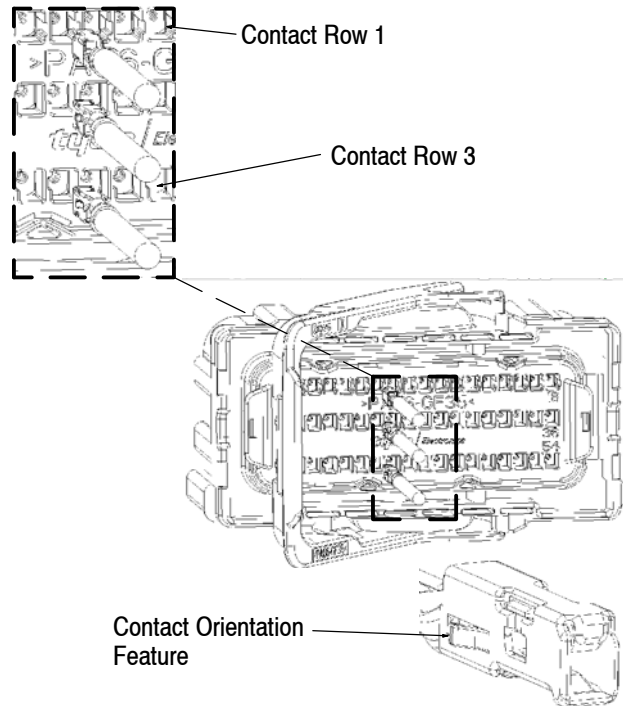


Figure 3

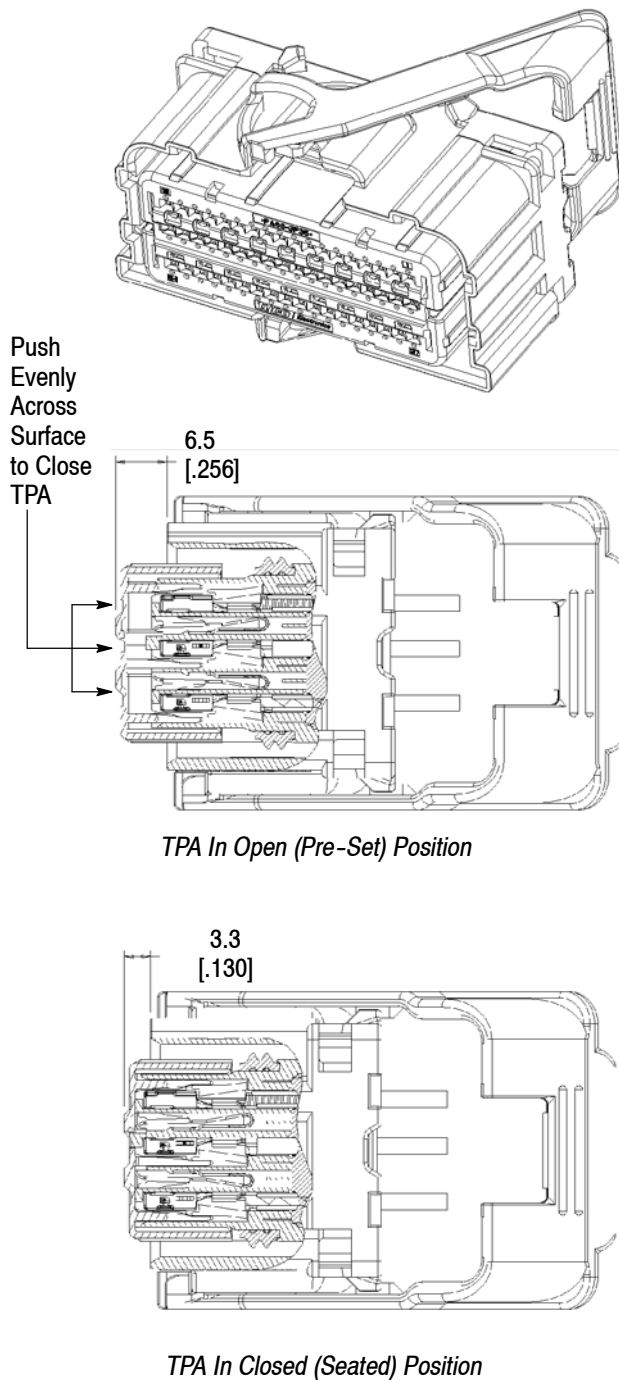
2. If the wire should “buckle” prior to full insertion, pull the contact back out of the plug housing. Verify that orientation complies with Figure 3 and reinsert contact.
3. Pull back gently on the wire and contact to ensure the plastic terminal latch within the plug housing is holding the female electrical contact.

After all required contacts have been inserted, the TPA must be closed.

4. To close, push evenly across the TPA lock. The front face of the TPA should be approximately 6.5mm from the opening of the plug housing shroud in the open or pre-set position. When the TPA is closed or in the seated position, the front face of the TPA will be approximately 3.3mm from the opening of the plug housing shroud. See Figure 4.

3.2. Wire Dress Assembly

Once the contacts have been inserted into the plug housing and the TPA closed, the wire dress assembly can be installed.

**NOTE**

54-position plug assembly shown for clarification purposes. The 24-position assembly is identical to the 54-position in relation to TPA location.

Figure 4

1. Insert the rear of the wire dress cover into the corresponding plug housing as shown in Figure 5.

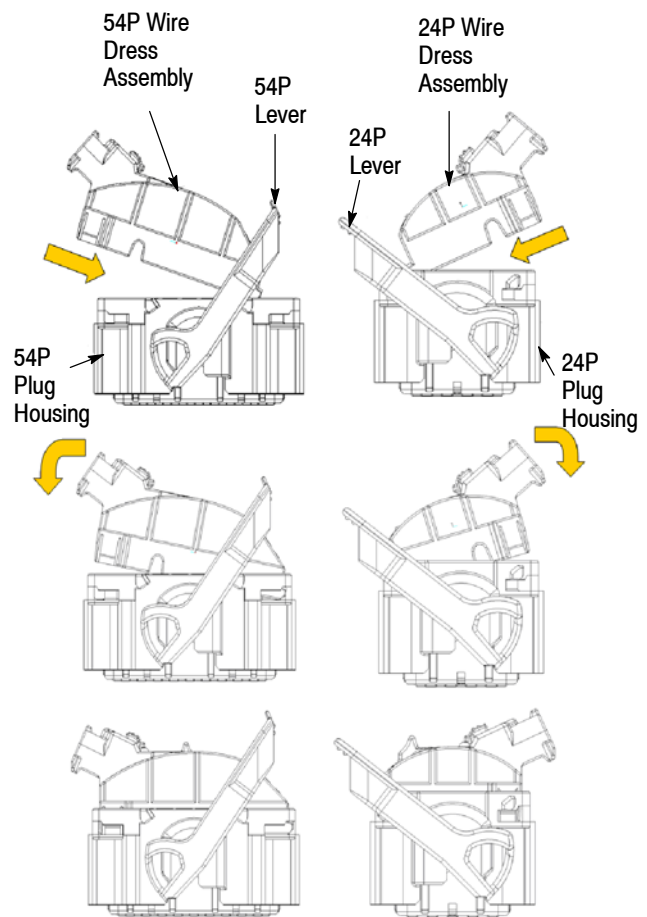


Figure 5

2. Using a downward and rotating motion, fully install the front of the wire dress cover (wire exit side) until the latches on the wire dress snap into the features on the plug housing. An audible “click” will be heard as two latch features lock into place.
3. Route the wire bundle through the wire dress cover -- opening as necessary.

3.3. Connector Mating

Orient the plug assemblies so that the plug housings can be started onto the appropriate header pocket. The header pockets and plug housings have keying features to ensure that the correct plug assemblies are mated to the appropriate header assembly. The size differential between the 54-position and 24-position plug assemblies prevents the wrong plug from being mated to the inappropriate header pocket.

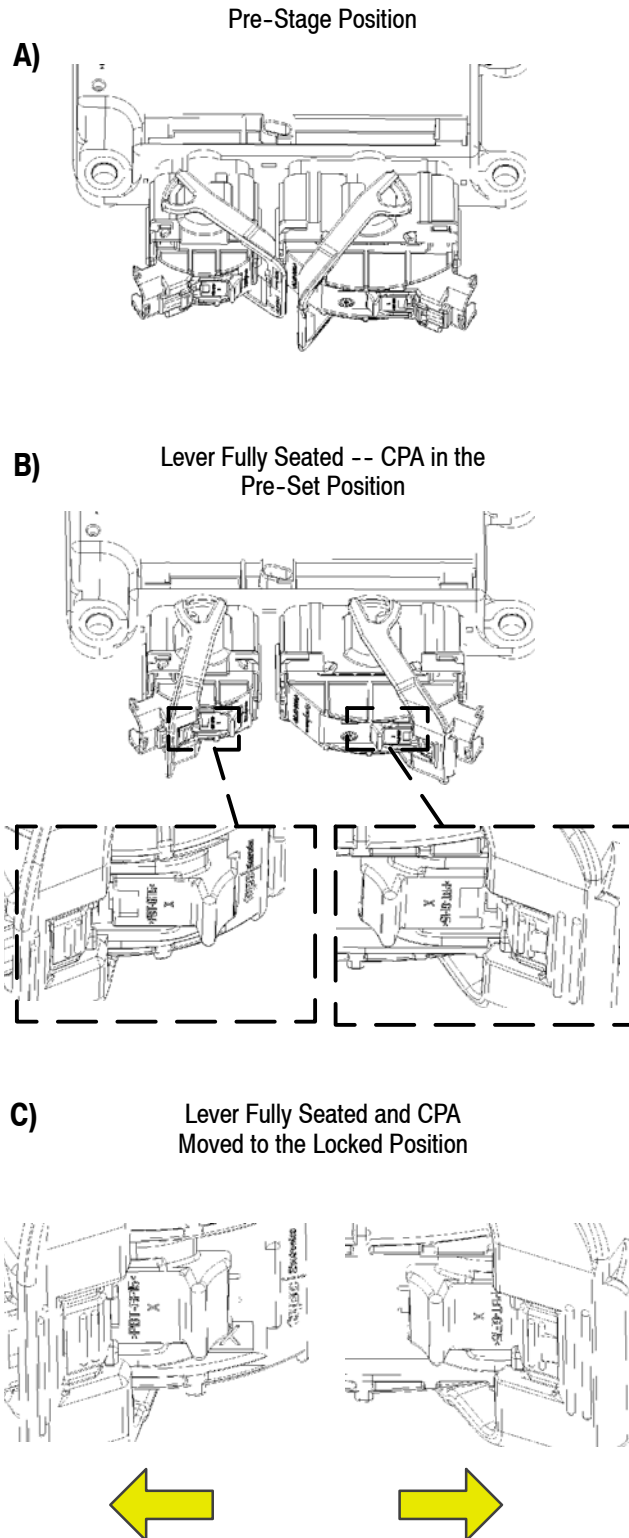


Figure 6

1. Push the plug assemblies onto the header shroud until an audible “click” is heard. This is the pre-staged position, which flexes the pivot end of the lever outwards so that it can be released from the open position. Refer to Image A in Figure 6.

2. Rotate the lever while maintaining a slight downward force on the plug/wire dress assembly. The lever gear features will engage the header shroud and draw the plug assembly down to the header as the lever is rotated.

3. Once the lever is rotated to the end of the travel, an audible “click” will be heard as the lever latches into position on the wire dress cover. See Image B in Figure 6.

4. Latching the lever onto the wire dress cover will engage the CPA and allow the device to be pressed forward into its locked and seated position. See Image C in Figure 6.

NOTE

The CPA will not close (seat) unless the lever is fully latched into position to the wire dress cover.

5. Pull back gently on the levers to ensure that they are fully latched.

CAUTION

Prior to pushing or rotating the lever, BE SURE the plugs are properly aligned and installed correctly to the pre-set position on the header assembly as shown in Figure 7 located on the next page.

4. DISASSEMBLY PROCEDURES**4.1. Connector Unmating**

1. Move the CPA lock back to the open (pre-set) position. Refer to Figure 8.

Prior to actuating the lever, the pre-staged position, must be reached by pushing the plug assembly onto the header until a "clicking" sound is heard -- or a detent is felt.

The pre-stage position for the 54-position plug assembly is shown to the right (identical for the 24-position). A visual indication of the pre-staged position is provided where the edge of plug shroud and the gear feature protrusion on the header will be aligned.

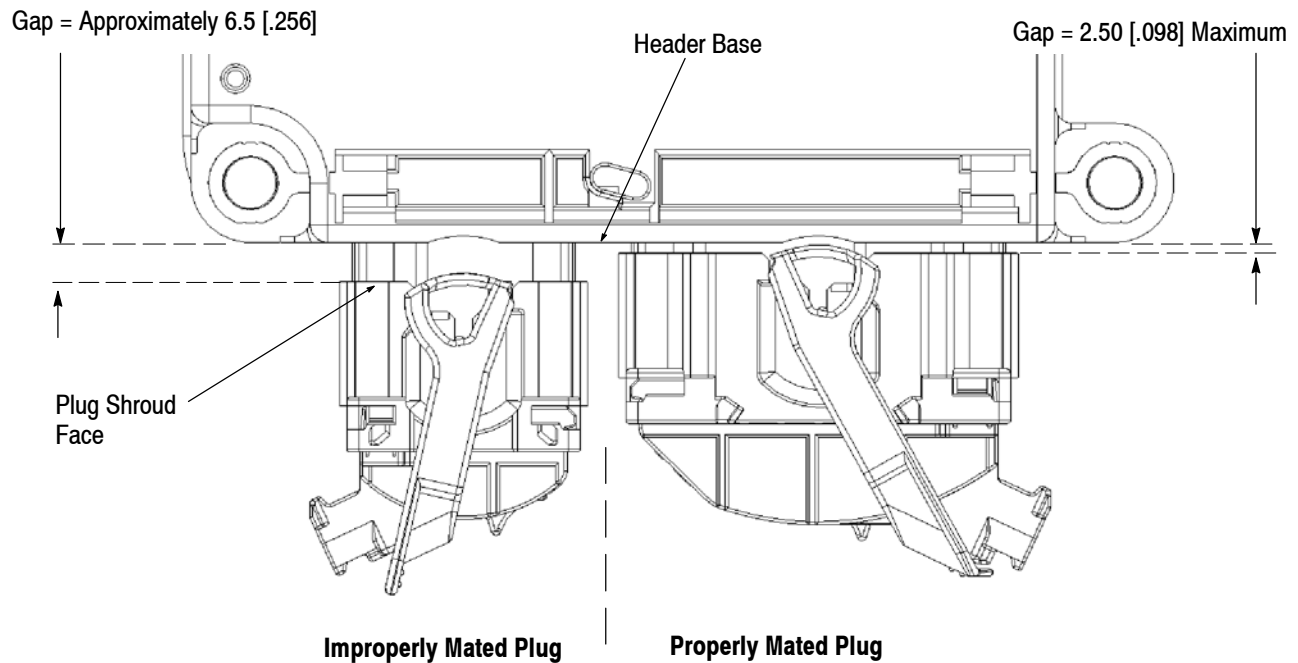
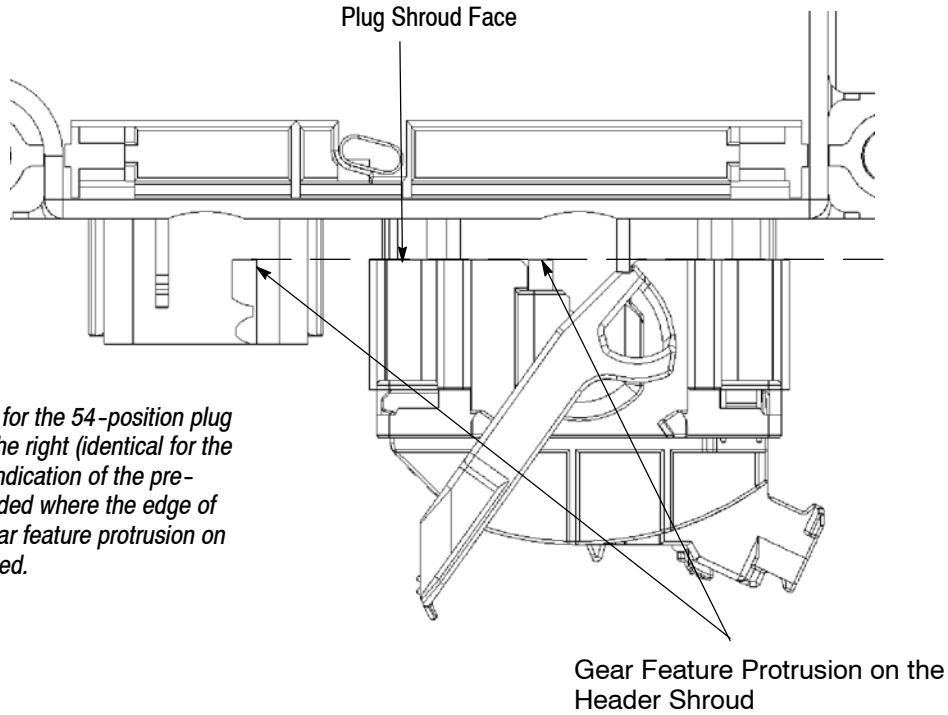


Figure 7



Moving the lever prior to pushing a plug assembly fully to the pre-staged position can cause an improperly mated condition (as shown in the left hand view above). The gear teeth on the lever must engage the gear teeth on the header shroud in order for the plug to mate properly. A large gap will exist between the plug shroud face and the base of the header if improperly mated.

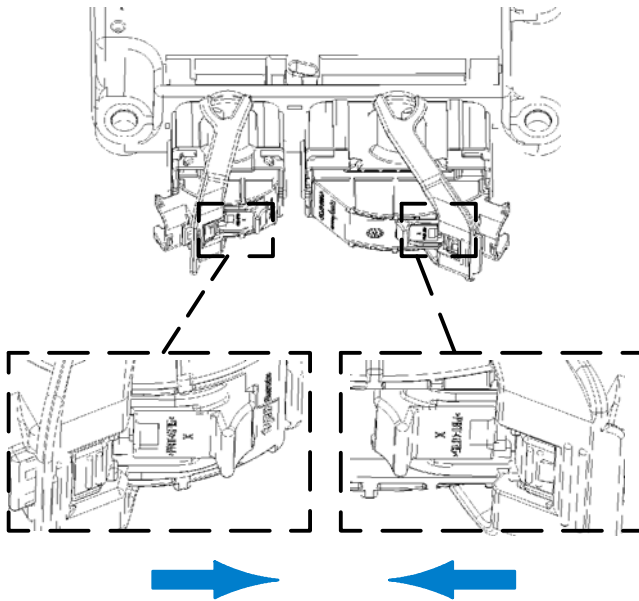


Figure 8

2. Depress the wire dress cover latch that retains the lever while at the same time rotating the lever back to the open position to disengage the plug assembly from the header. See Figure 9.

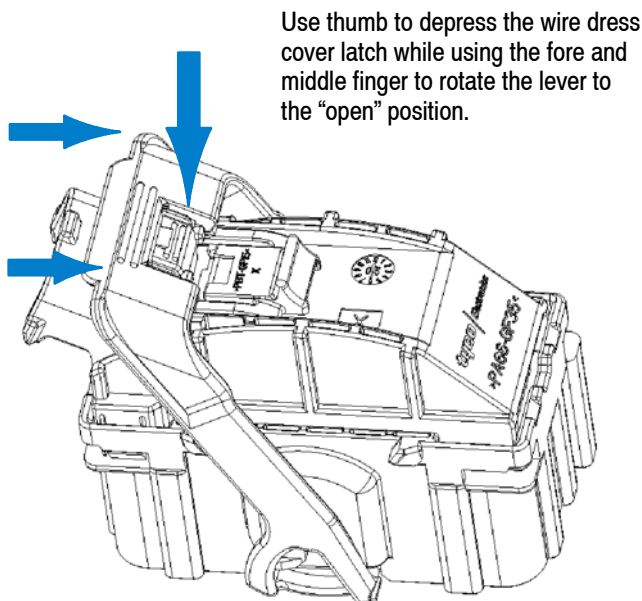


Figure 9

3. When the lever is fully returned to the "open" position, a tactile feel is generated as the lever flexes back to the pre-stage position.
4. Pull straight back on the plug assemblies in order to disengage them from the header.

4.2. Wire Dress Removal

1. Position a jewelers' screwdriver (flat-bladed 2.0 or 2.4 mm [.079 or .094 in.] screwdriver) into the slot in the plug housing. The tip should be placed between the slot and the latch finger. See Figure 10.
2. Depress and rotate the screwdriver over the latch finger and "pop" the latch.
3. Perform the same technique on the opposite latch.

NOTE



The 54-position plug assembly is shown (below) for illustration purposes. The 24-position wire dress cover removal procedure is identical to the 54-position plug procedure.

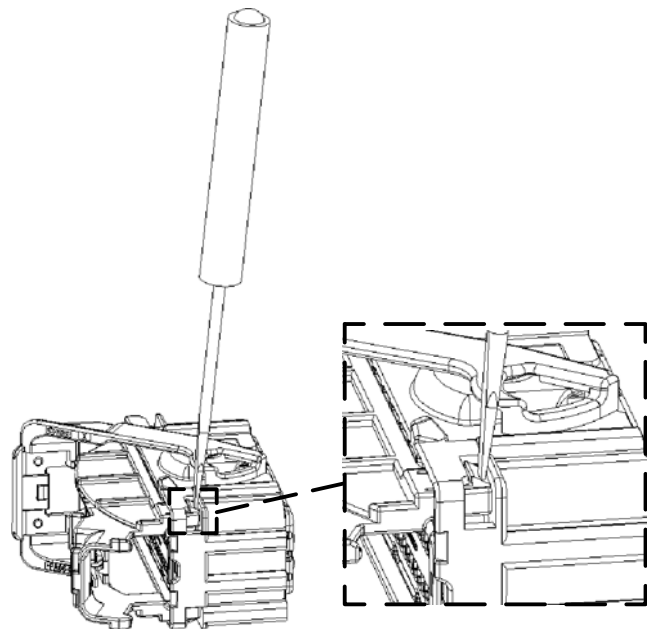


Figure 10

4.3. Contact Removal

The connector must be unmated (see Paragraph 4.1) and the wire dress cover (if present) must be removed (Paragraph 4.2). Before removing contacts from the plug housing, the TPA lock must be removed from the plug housing assembly. To disassemble the TPA lock and remove the contacts, proceed as follows:

1. Insert a jeweler's screwdriver (flat-bladed 2.0 to 2.4 mm [.079 to .094 in.] screwdriver) into the side slot in the TPA lock as shown in Figure 11.
2. Using the edge of the plug housing shroud as a fulcrum, rotate the screwdriver toward the wire bundle. Rotate the screwdriver until the TPA "clicks" and one side of the TPA is released from

the final stage latches. This process should be repeated on the other side of the TPA in order to release the TPA to its open (pre-stage) position. Both sides of the TPA should protrude evenly from the mating face of the plug housing.

NOTE

The 54-position plug assembly is shown (below) for illustration purposes. The 24-position TPA removal procedure is identical to the 54-position procedure.

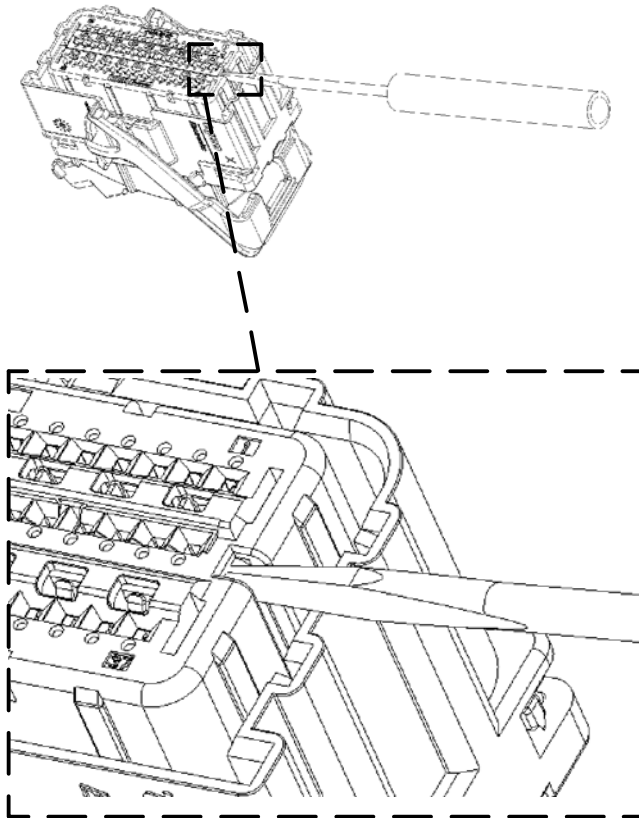


Figure 11

3. Contacts cannot be removed from the plug housing until the TPA is fully removed. With the TPA in the open (pre-set) position, repeat Step 2 above to disengage the pre-set latching system. With the latches disengaged, the TPA can be easily removed from the plug housing.

4. Insert the GM service terminal extraction tool (J-38125-215A), which can be obtained by a SPX service solutions representative, into the selected exposed cavity as shown in Figure 12.

5. Grasp the wire of the contact to be removed and push the contact forward until it stops.

6. Using the GM service extraction tool (J-38125-215A), gently deflect the plastic terminal latch within the plug housing. See Figure 12.

7. Simultaneously pull wire and contact from the plug housing.

8. Follow Step 4 through Step 7 for removing remaining contacts.

NOTE

To reassemble the plug assembly, the TPA lock must be in the open (pre-lock) position before insertion of terminated contacts.

5. INDIVIDUAL SEAL PLUGS

This connector system has an individual plastic seal plug design for field service repair situations. A universal plug assembly is available that will mate to each of the different keying options for field service repair and/or replace conditions. The universal plug assembly is shipped with all circuit cavities open and available for termination. If a terminal is removed and not replaced with a terminated contact and/or a terminal is not required for a given open circuit, then a seal plug is required to ensure proper connector sealing. The following procedures outline how to insert and extract the individual seal plug from the plug assembly. See Figure 13 for seal plug design.

5.1. Seal Plug Insertion

Check to be sure that the TPA device is in the open (pre-set) position (See Figure 14.) If the TPA is closed (fully seated position), refer to Paragraph 4.3, Contact Removal, Step 1 and Step 2. Proceed as follows:

1. Insert a seal plug by grasping the end of the device at the finger grip and sealing surface and push it straight into the appropriate circuit cavity until it stops. Refer to Figure 15.

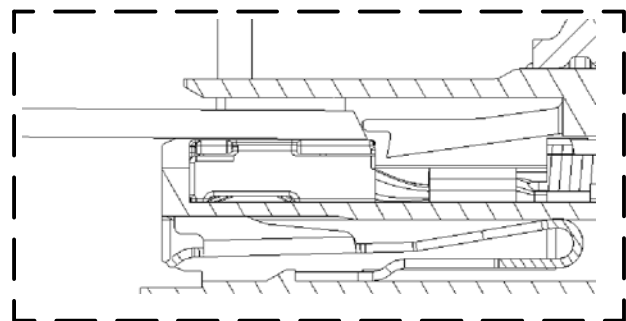
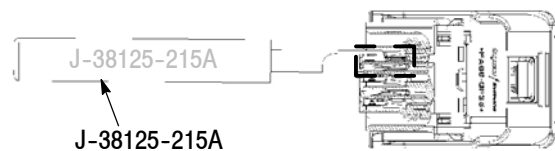


Figure 12

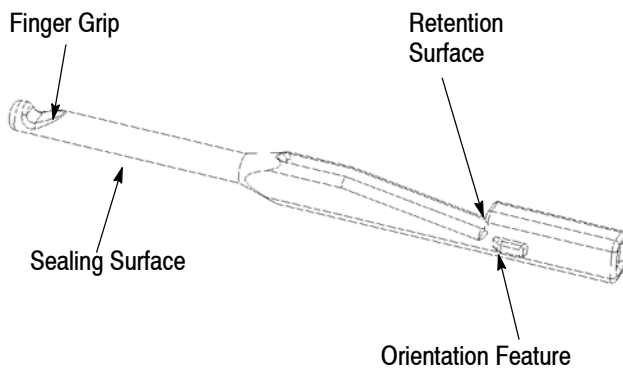


Figure 13

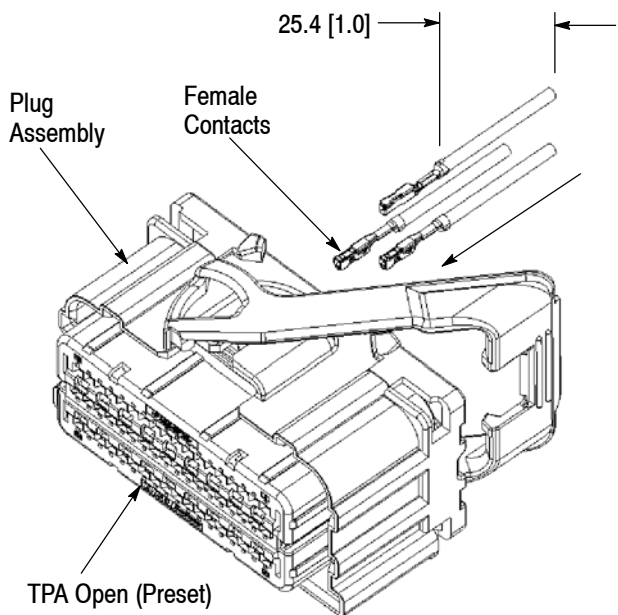


Figure 14



If the seal plug should stub or is difficult to insert, pull the seal plug back out and verify that the orientation complies with Figure 3, then reinsert seal plug.

2. Pull back gently on the seal plug by utilizing the finger grip to ensure the plastic terminal latch within the plug housing is holding the seal plug.
3. After all required seal plugs and contacts have been inserted, the TPA must be closed. To close, push evenly across the TPA lock. The front face of the TPA should be approximately 6.5 mm [.256 in.] from the opening of the plug housing shroud in the open or pre-set position. When the TPA is closed or in the seated position, the front face of the TPA will be approximately 3.3 mm [.130 in.] from the opening of the plug housing shroud. Refer to Figure 4.

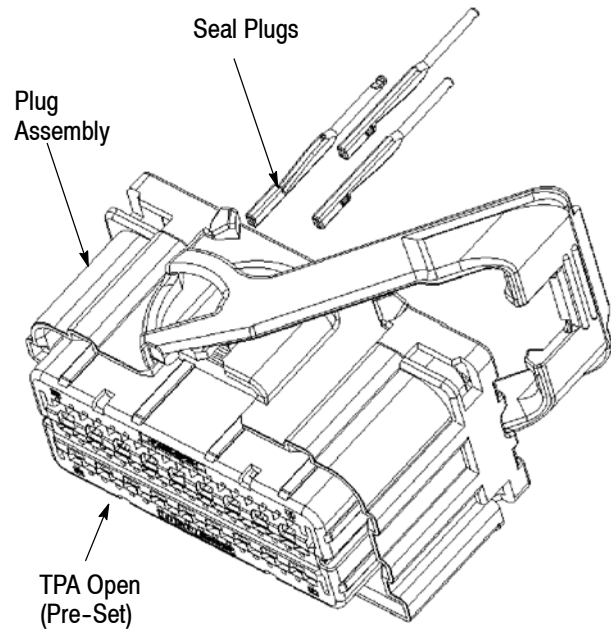


Figure 15

5.2. Seal Plug Removal

The connector must be unmated (Paragraph 4.1) and the wire dress cover (if present) must be removed (Paragraph 4.2). Before removing seal plugs from the plug housing, the TPA lock must be removed from the plug housing assembly. To disassemble the TPA lock and remove the seal plugs from the plug assemblies refer to Paragraph 4.3, Step 1 through Step 8.

The only differences between terminal removal and seal plug removal reside in Step 5 and Step 7 of Paragraph 4.3:

- **Step 5** -- Instead of grasping the wire to push the contact forward, the end of the seal plug should be pushed to ensure that it is fully forward in the contact cavity.
- **Step 7** -- Instead of simultaneously pulling on the wire, the finger grip of the seal plug should be used to pull the component from the plug housing while the plastic terminal latch is deflected by the extraction tool.

6. REVISION SUMMARY

- Updated document to corporate requirements
- Added NOTE in Section 1, INTRODUCTION
- Changed dimension in Figure 7