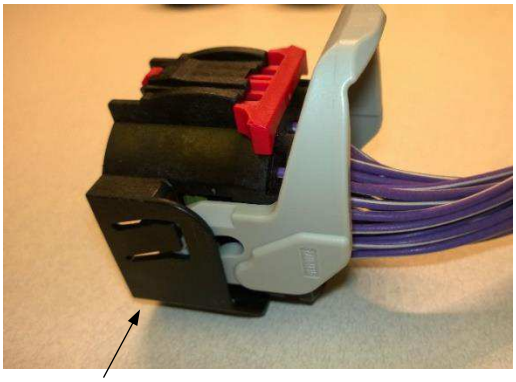
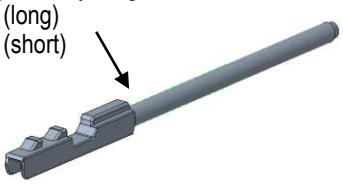
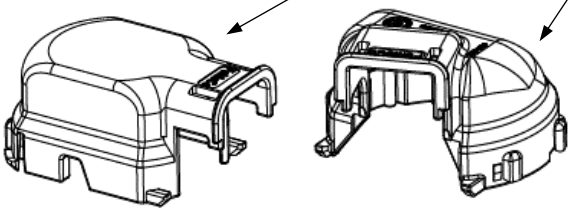


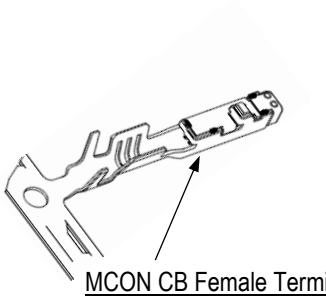
Female Body Assembly
2203973- [ ]
2349476- [ ]
2327375- [ ]

Locking Type Cavity Plugs
2304518-1 (long)
2286476-1 (short)



Wire Dress Covers
2203980-2 – Left exit, Angled
2354810-1 – Right exit, angled
2359051-1 – 90* exit





MCON CB Female Terminals
1534594-[ ] 0.35mm² Wire
1670144-[ ] (0.5-0.75 mm² Wire)
1452503-[ ] (1.0-1.5 mm² Wire)

Figure 1

1. INTRODUCTION

This instruction sheet provides assembly, disassembly, mating, and un-mating procedures for the sealed female harness connectors shown in Figure 1. The connector is designed to use 1.2 MCON receptacle terminals (Clean Body design) that pass through a grommet (mat seal). Connector assemblies can be configured with specific patterns of blocked circuits, or in “all open” configuration and blocking of unused circuits accomplished by using “cavity plug” component also shown in Figure 1. The CPA feature (Connector Position Assurance) for the lever mechanical assist is contained in the body of the Female Connector Outer Housing, so a separate Wire Dress Cover is not required but options are available separately.

2. DESCRIPTION

Each female connector assembly consists of an inner housing with circuit cavities, outer housing, lever mechanical assist, terminal secondary lock (ISL), peripheral seal, grommet (mat seal), and CPA. A Wire Dress component to tie or route the wires exiting the back of the connector is optional.

Each circuit cavity is polarized to prevent the terminal from being inserted upside-down. The circuit cavities at the rear of the housing, prior to entry into the grommet seal, will orient the terminals ***except for circuit #’s 10 and 17***. Circuits #10 and 17 are sized for 1.5 sq.mm. ISO wire and offer no orientation of the terminal prior to passing thru the grommet seal. If these circuits are inserted with terminal incorrectly oriented, the terminal will pass thru the seal but will not fully reach the primary latched position. After all terminals are inserted, the ISL is used to detect and ensure that all are fully seated as well as provide secondary terminal retention. If a terminal is not fully seated or improperly oriented in the cavity, the ISL will not close properly.

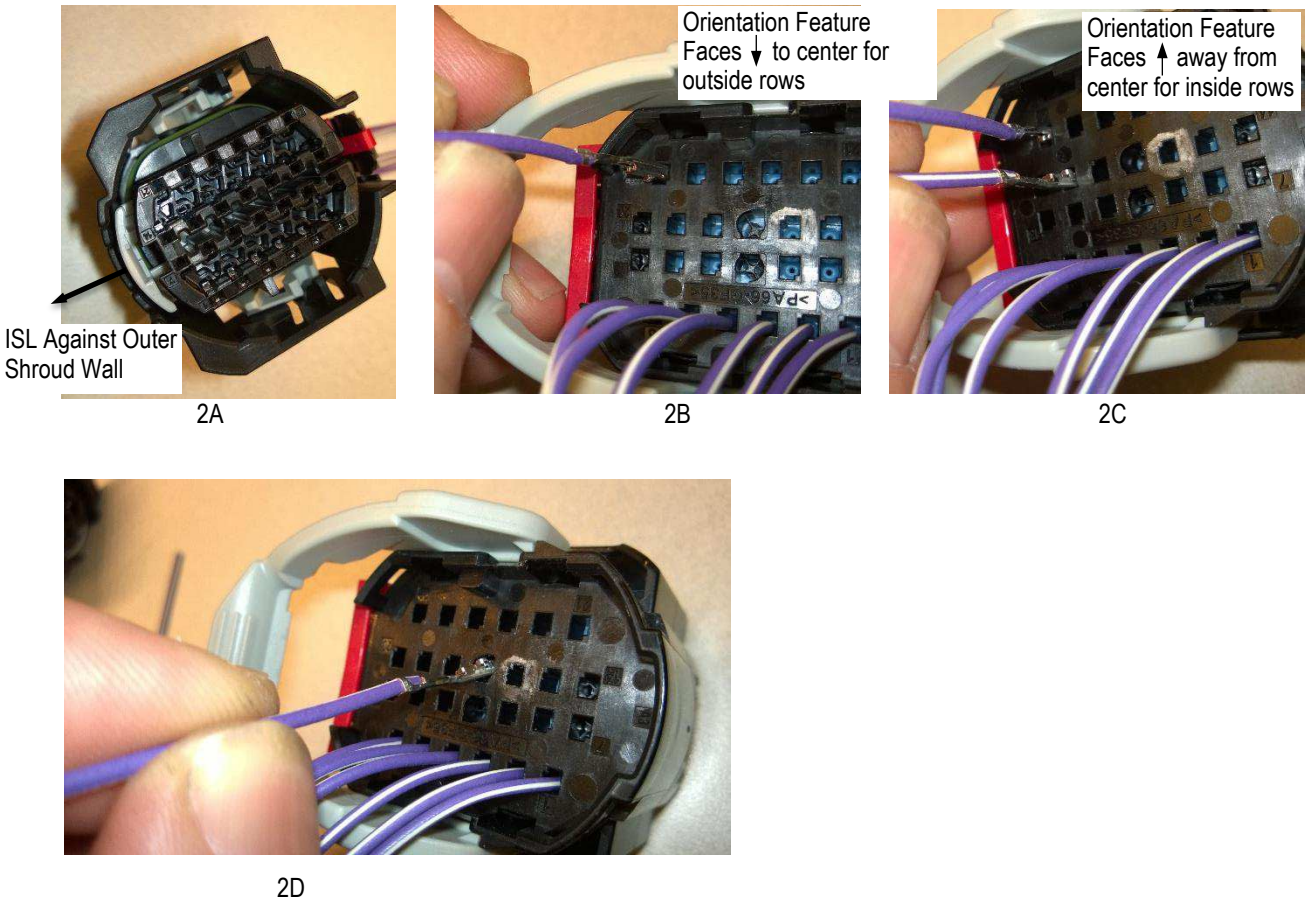
The peripheral seal prevents dirt and moisture from entering the connector to header interface. The grommet seal prevents dirt and moisture from entering the connector body around the wires. The connector outer housing contains latch features on each side that retain the lever in the pre-stage position for shipping and handling, and keep the lever in that position until properly mated to the header where the latches release the lever and allow it to “kick” a number of degrees of rotation signifying it is ready to be mated fully.

Once the lever is fully rotated completing the mating sequence, it will latch into the thumb latch of the outer housing. The CPA component is released at this point and able to be seated. The CPA is used to provide a visual indication that the connector is fully mated to the header, and also prevents the thumb latch from being deflected once the CPA is locked. The thumb latch & CPA combination on this connector is fairly stiff (~45N to depress) which provides a loud audible click during assembly and provides robust connector locking during high shock / vibration loads, road debris impact, or during vehicle maintenance procedures on surrounding areas.

3. ASSEMBLY PROCEDURE

3.1. Terminal Insertion

1. Crimp the terminals according to Application Specification 114-18464 for the 1.2-mm MCON terminals.
2. Ensure that the gray colored ISL of the female assembly is in the open (as shipped) position as shown in Figure 2A. If the ISL is closed or partially closed, refer to Step 1 of Paragraph 4.3.
3. Align a crimped terminal with the appropriate circuit cavity of the female assembly so that the orientation feature on the terminal is facing as shown in Figure 2B and 2C



2A 2B 2C

2D

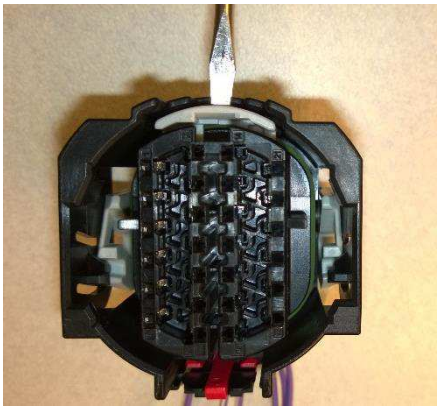
Figure 2

CAUTION
Circuits No. 10 and 17 have large openings for clearance using 1.5 mm² wire. Very little initial guidance of terminal is provided. Take care not to angle the terminals during insertion as shown in Figure 2D, or grommet seal damage can occur.

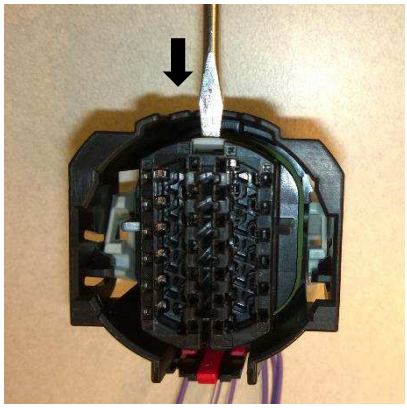
4. Grasp the wire of the crimped terminal, and insert the terminal straight into the circuit cavity until it is fully inserted. If there is significant resistance during insertion, remove the terminal and verify proper orientation. An audible and tactile click should be felt when terminals are fully latched into the circuit.

NOTE
If the terminal is difficult to insert into the circuit cavity, check for a de-populated arrangement. Refer to the blocked circuit diagram on the customer drawing for the specific female assembly. De-populated connectors will have the wire entry area leading into the grommet seal molded shut, and the terminal will be blocked when trying to insert through the seal.

5. Lightly pull the wire to ensure that the terminal is latched to the primary latch finger.
6. Follow step 3 through step 5 for the remaining terminals.
7. After all terminals have been inserted, using a small screwdriver, push the pad of the gray colored ISL (see Figure 3, Detail A) until the ISL moves to the closed position. The ISL is in the closed position when it is flush with the female inner housing. See Figure 3, Detail B.



3A



3B

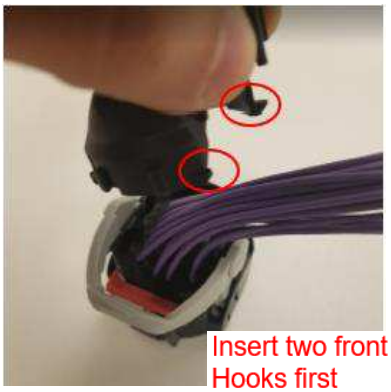
Figure 3

NOTE
If the ISL does not move easily into the closed position, one or more of the terminals is not fully inserted. Move the ISL to the open position (as described in Step 1 of Paragraph 4.3), then check that all terminals are fully inserted. If circuit no. 10 and/or 17 are inserted upside down, the same result will occur where ISL will not move to closed position. Check orientation of these two center circuits.

3.2. 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. Align the stationary locking hooks of the wire dress cover with the correct windows of the female outer housing. The stationary locking hooks are placed on the wire exit side of cover. See Figure 4, Detail A. Wire Dress cover components are poka-yoke to fit only in one orientation.
3. Ensure that the wire bundle is completely captured within the wire exit of the wire dress cover and no wires are pinched between the female housing and the wire dress cover, then push the wire dress cover into the rear housing until the 2 latching features click into place. The 2 latching features are placed on the opposite side of the wire exit. There will be an audible and tactile click when latched in. Detail B in Figure 4 shows the wire dress cover fully seated onto the female assembly.



4A

4B

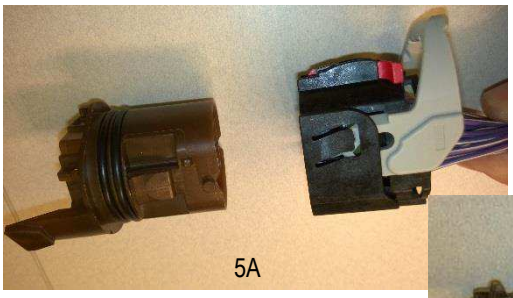
4C

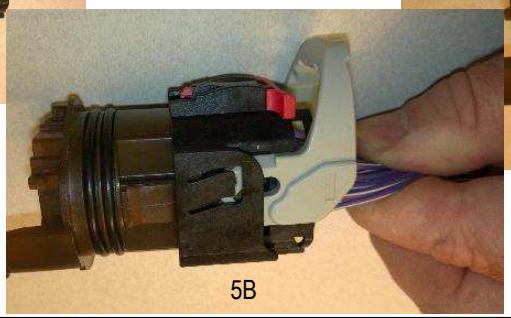
4. Using tape or wire ties, attach the wire bundle to the wire dress cover like shown in Figure 4, Detail C.

3.3. Connector Mating

1. Ensure that the mating lever of the female assembly is in the open (as shipped) position as shown in Figure 5A. If the mating lever is closed or partially closed, rotate it back to the pre-stage position until it stops. When it is in the open position, there will be an audible click.

2. Align the mating face of the female assembly with the mating face of the header assembly, and push them together until the female assembly pre-stage latches engage and the mating lever starts to rotate. See Figures 5B and 5C. ***It is critical that the hands or fingers do not apply force to the lever*** of the assembly as it is being pre-staged to the header. Pushing on the rear of the black housing and wire bundle, or the Wire Dress Cover (if equipped), will allow the lever to properly 'kick' and rotate approximately 10-20 degrees.





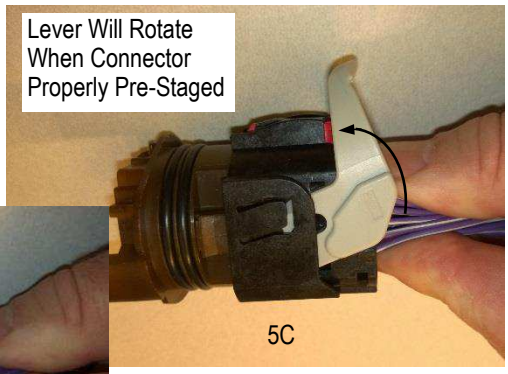


Figure 5

NOTE
If there is significant resistance during mating, ensure that the ISL is in the closed position (as described in Step 7 of Paragraph 3.1).

3. Manually rotate the mating lever (toward the body) until it stops. There should be a loud audible click. See Figure 6, Detail A. The mating lever is now in the locked position.
4. Push the CPA toward the lever. The CPA is now in the locked position. See Figure 6, Detail B.

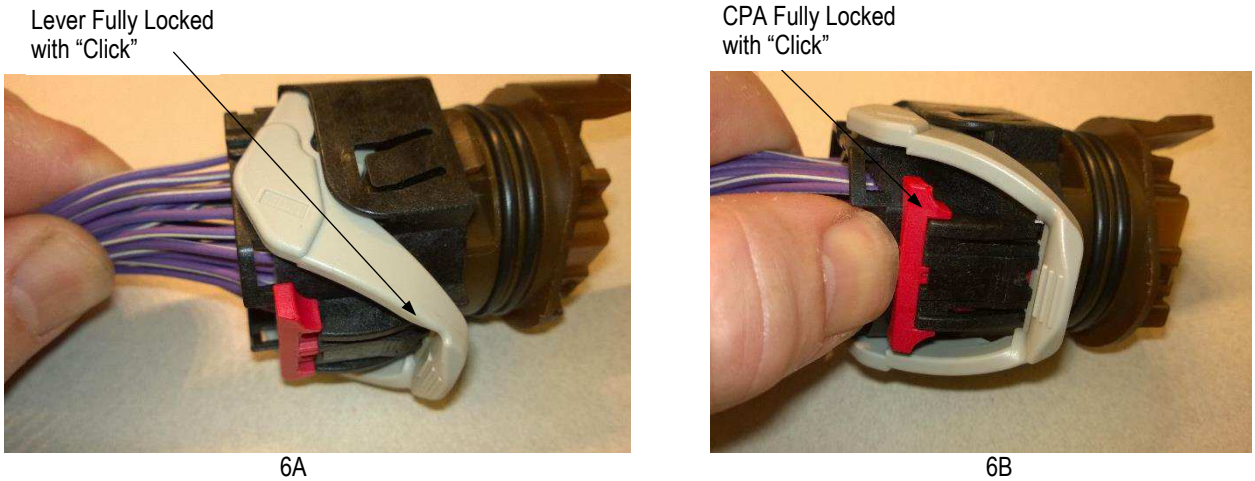


Figure 6

NOTE
If there is significant resistance when sliding the CPA, ensure that the mating lever is completely latched in the closed position.

4. DISASSEMBLY PROCEDURES

Disassembly must be performed in the following order.

4.1. Connector Un-Mating

1. Slide the CPA away from the lever latch until it stops. The CPA is now in the open position. See Figure 7.
2. Press the plug assembly mating latch until the mating lever is released; then, rotate the mating lever away from the connector body until it stops. The mating lever is now in the open position as shown in Figure 5B. Please note the thumb latch and CPA disengagement forces on this connector system are at the high limit of USCAR-25 specifications, in order to have a robust connection for high vibration and shock loads.

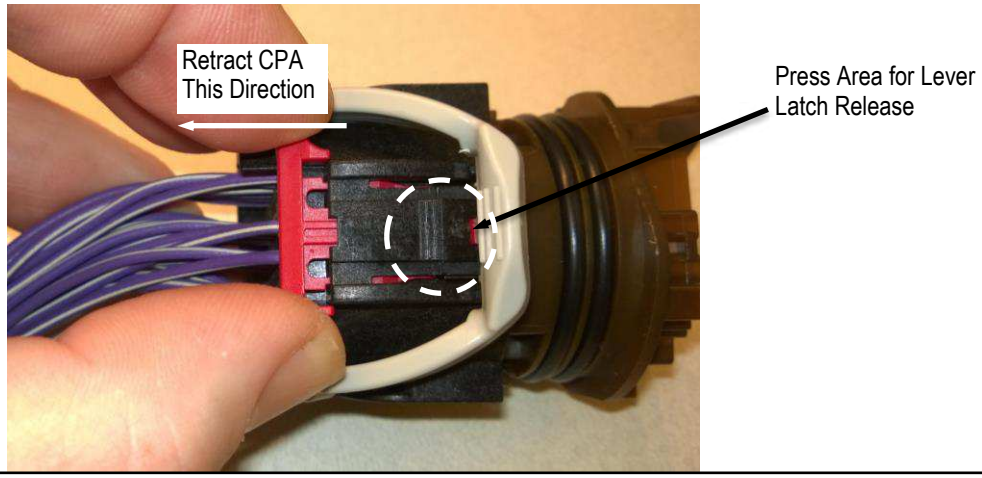


Figure 7

3. Pull the female assembly straight away from the header. There will be a slight resistance as the pre-stage mating latches are released.

4.2. Wire Dress Assembly Removal (if equipped)

Using the tip of a flathead screwdriver or similar, pry the two latching features by gently inserting into the windows of the female outer housing. Do not insert too deep or wire insulation may be compromised. Slowly twist screwdriver to release latches. See Figure 8. Once the latching features are disengaged, the Wire Dress can be rotated and the stationary hooks disengages from the housing.

Figure 8

4.3. Terminal Removal

1. Terminals can be removed only when the ISL is in the open position. Move the ISL to the open position as follows:
   a. Insert the tip of a screwdriver into the cutout/chamfered area of the ISL, see Figure 9A.
   b. Gently pry the end of the ISL away from the inner housing until the ISL is in the open position. There will be an audible click. See Figure 9B.

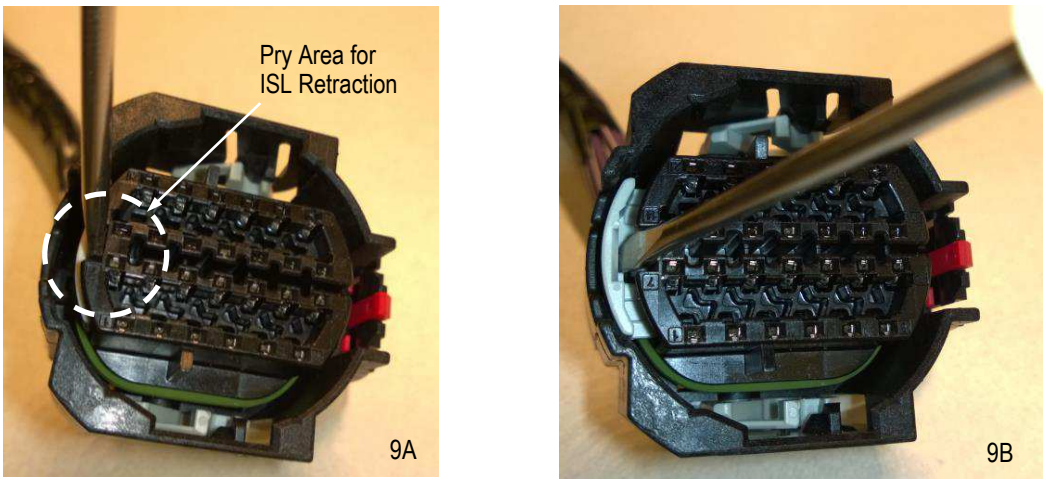


Figure 9

2. Push the wire of the terminal to be removed toward the circuit cavity so that the terminal moves toward the front of the housing.

3. Suggested removal tools are 8-1579008-4 (TE Connectivity); or J-38125-215A (Kent Moore). Remove each terminal as follows:

   a. From the mating face of the female assembly, insert the tip of removal tool into the recessed opening above the circuit cavity of the terminal to be removed. Gently rotate the tool towards the terminal body, lifting the latch finger.

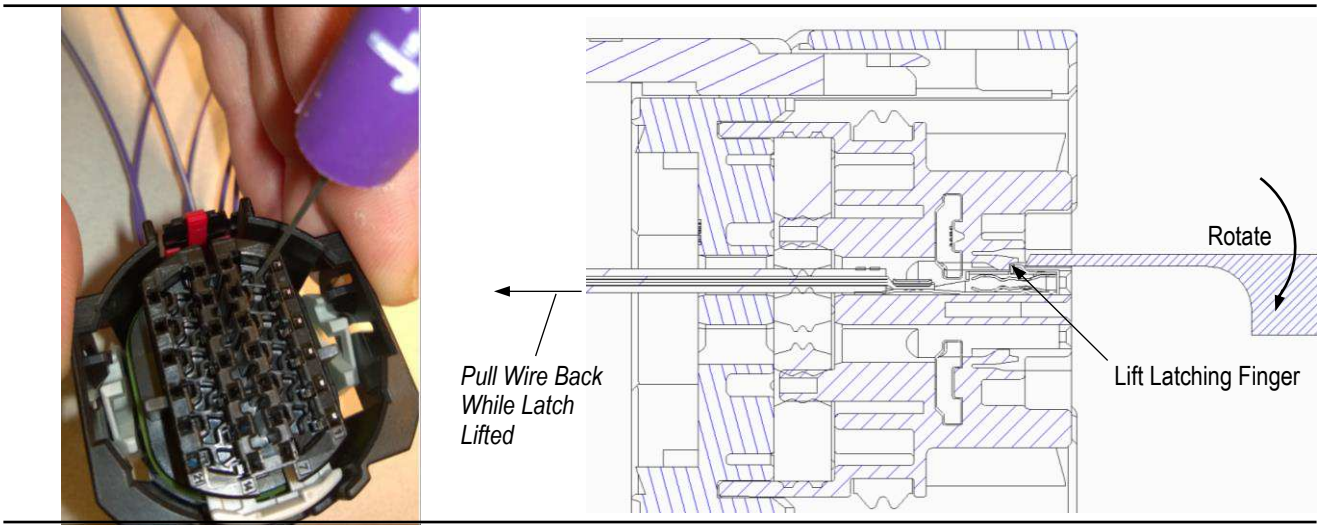


Figure 10

4. From the wire end of the female assembly, gently pull the wire of the terminal to be removed until the terminal is out of the housing.

NOTE
If the terminal is not removing easily, verify that the ISL is in the open position as shown in Figure 9B.

5. ELECTRICAL PROBING

See Figures 11A and 11B for the designated areas to electrically probe connector assemblies. A blade or round tip probe with a max width/diameter of 0.6 mm will fit the open areas of the connector inner housing for each circuit. Probing window location is such that the pin tip lands on the edge of terminal box.

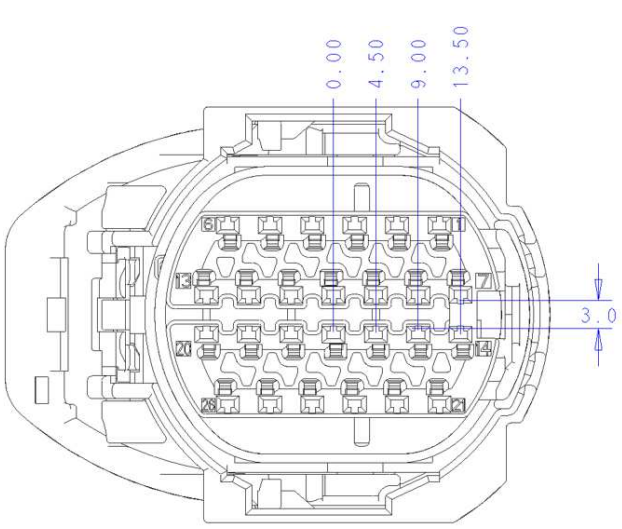
A recommended pin suitable for this application would be:

Manufacturer: Everett Charles Technologies

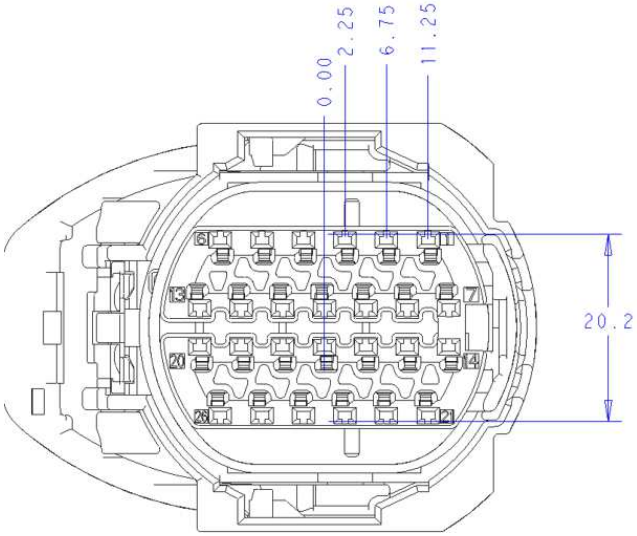
Probe Number: POGO-72J-STD

Tip Shape: Spherical

Tip Diameter: 0.50mm (.020in)

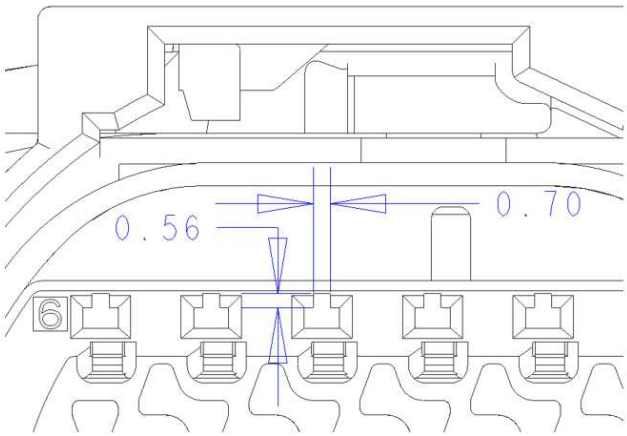


Inside Rows - Probing Window Spacing

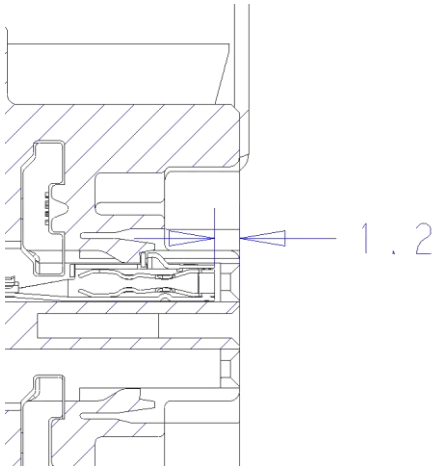


Outer Rows - Probing Window Spacing

Figure 11A



Detail - Probing Window Opening



Detail – Probe Pin Depth from front face of Inner Housing

Figure 11B

6. REPLACE AND REPAIR

DO NOT use defective or damaged product. The Lever can be replaced individually in the female assembly. Remaining parts of the female assembly are not repairable. The Wire Dress Cover if equipped can be replaced.

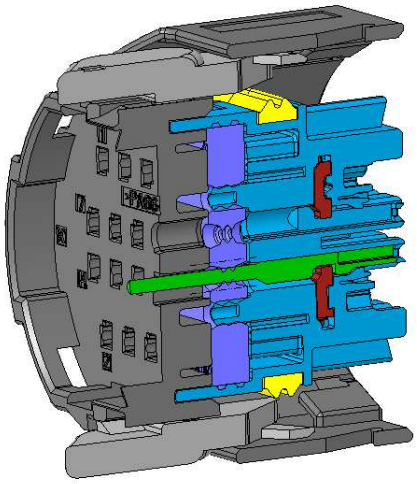
7. RETENTION TYPE CAVITY PLUGS FOR UNUSED CIRCUITS

For blocking unused circuits where a molded-closed circuit configuration is not available, the use of locking type cavity plug components is an option. There are 2 parts suitable for this system:

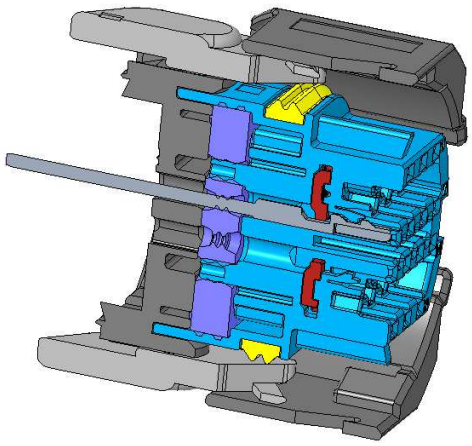
TE Part No. 2304518-1 Extra-long type with primary latching, can be used in all circuit locations (must be trimmed after insertion).

TE Part No. 2286476-1 Short type, secondary locking only, can be used in all circuit locations.

These cavity plugs contain orientation features to align them, just like the MCON terminal system. They are inserted thru the grommet/wire seal, until they reach the front of cavity. TE part 2304518-1 will click-in and provide a tactile feel when primary latched into the cavity. TE part 2286476-1 does not have a primary latching feature, so it simply pushes forward until hits the forward stop of the cavity. It is recommended all cavity plugs be installed before crimped terminals. If the 2304518-1 type plug is used, trimming of the excess length protruding from back of connector is recommended, and necessary if a Wire Dress Cover is intended to be used. Trimming of excess plastic posts must be done prior to loading crimped terminals. Once all crimped leads are inserted, locking of the Independent Secondary Lock will retain the cavity plugs in same manner as the MCON terminal system. See figure 12 below for detail of installed cavity plugs.



Detail view of 2286476-1 installed and secondary lock seated.



Detail view of 2304518-1 installed and secondary lock seated.
Extra length should be trimmed after installation.

Figure 12

8. REVISION SUMMARY

- Rev. A Initial release of document
- Rev. B Updated document with Wire Dress Cover (sections 3.2 and 4.2) and Locking Cavity Plug details (section 7).
- Rev. C Updated section 7, added Dress Covers to Figure 1.