

NUMBER GS-20-0764	CATEGORY CUSTOMER SPECIFIC APPLICATION SPECIFICATION	Amphenol FCI	
TITLE EV Connector Application Specification		PAGE 1 of 15	REVISION D
		GUARDIAN (VERIFIED BY) Nebu P Mathew	DATE 10/14/23
		APPROVED BY Sanoj P Kuriakose	
		CLASSIFICATION : UNRESTRICTED	

1.0 OBJECTIVE

This specification provides information and requirements regarding customer application of EV Connector. This specification intends to provide general guidance for application process development. It is recognized that no single application process will work under all customer scenarios and that customers will develop their own application processes to meet their needs. However, if these application processes differ greatly from the one recommended, AICC cannot guarantee results.

2.0 SCOPE

This specification provides information and requirements regarding customer application of EV Connectors

3.0 GENERAL

This document means to be an application guide. If there is a conflict between the product drawings and specifications, the drawings take precedence.



Figure 1 - Mated Condition

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Figure 2 – Unmated Condition

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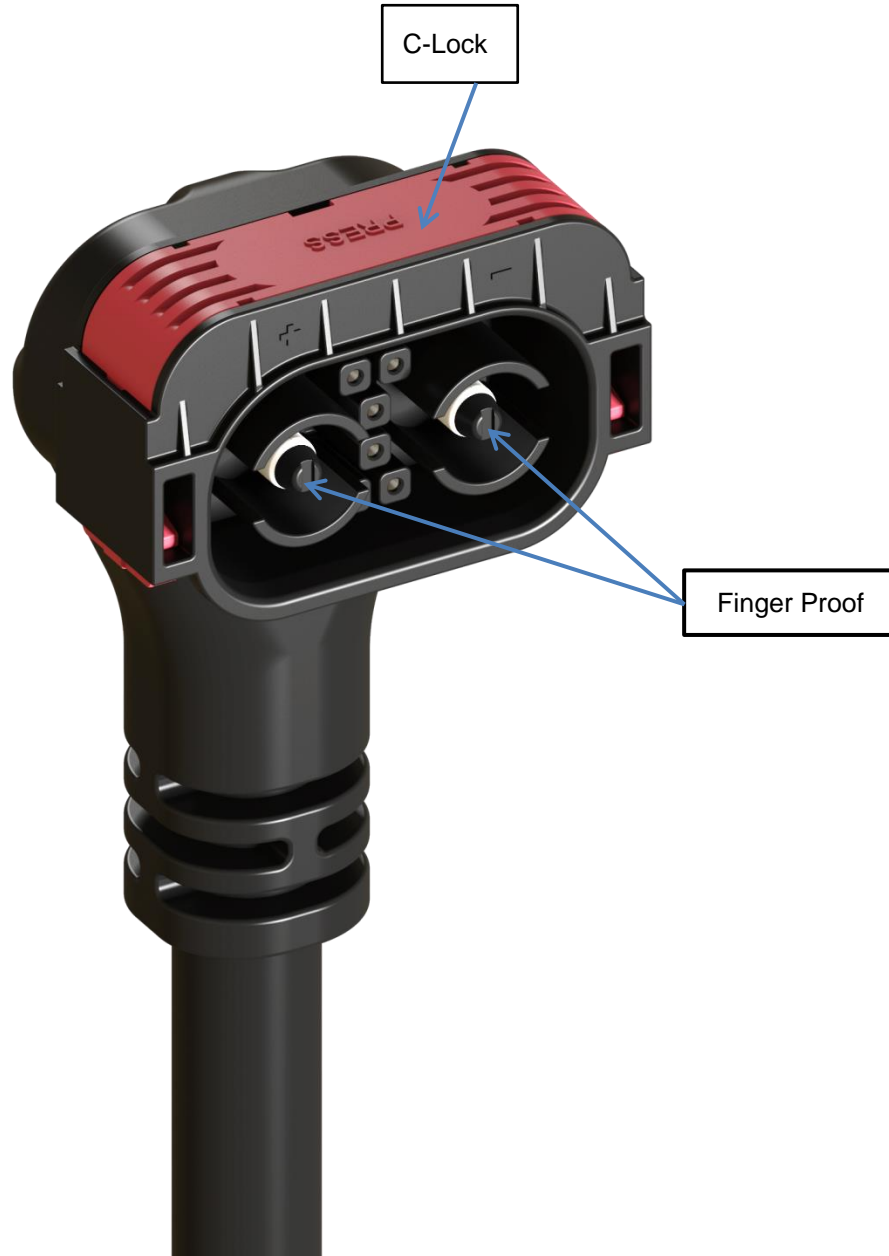


Figure 3 - Plug Assembly

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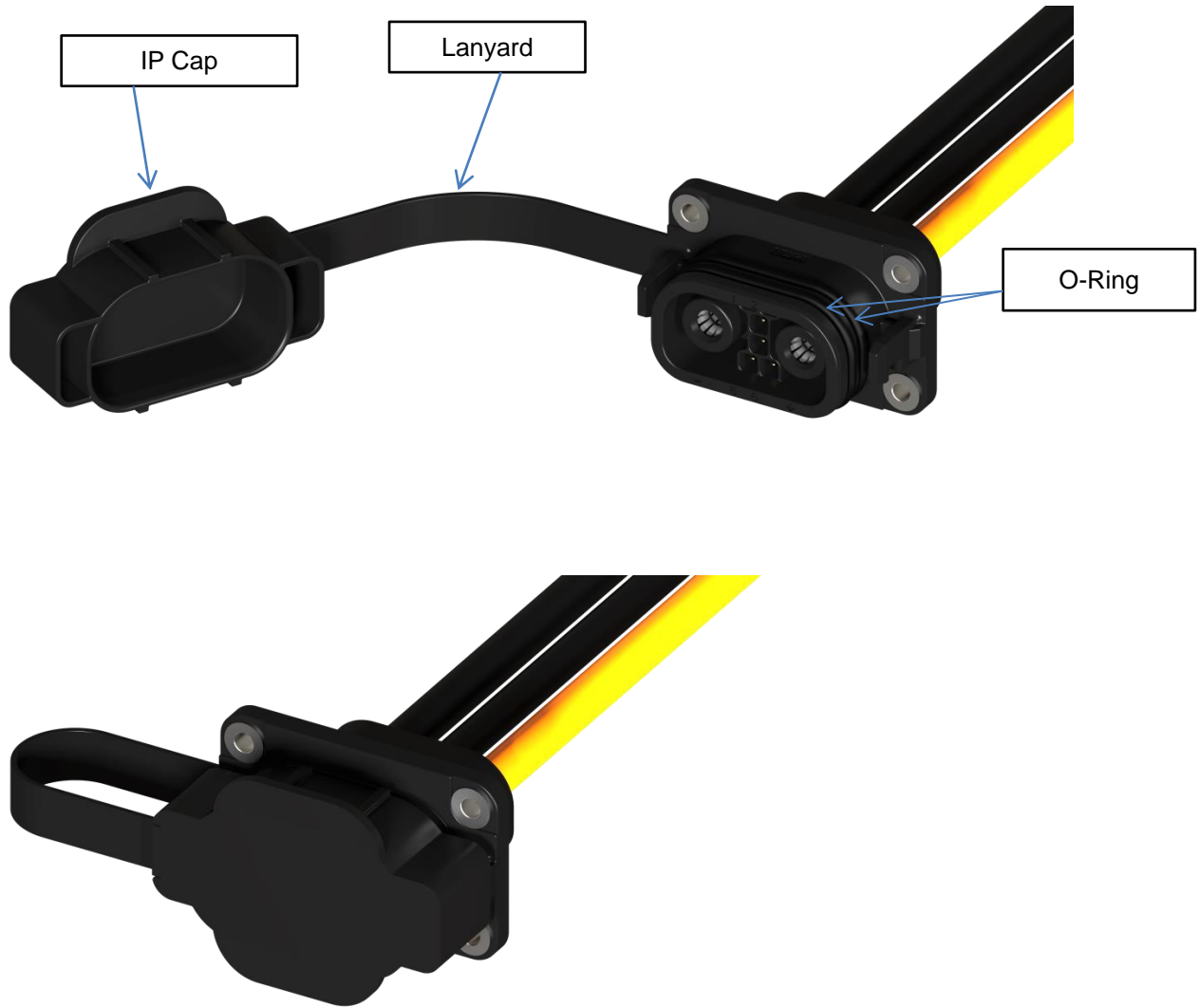


Figure 4 – Socket Assembly

4.0 DRAWINGS AND APPLICABLE DOCUMENTS

- AICC PRODUCT SPECIFICATION GS-12-1782
- AICC PRODUCT DRAWINGS
 - 10169536
 - 10169537

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5.0 APPLICATION PROCEDURE

5.1 Socket Assembly

5.1.1 Assemble the IP cap and lanyard sub assembly to the socket sub assembly (Fig.5)

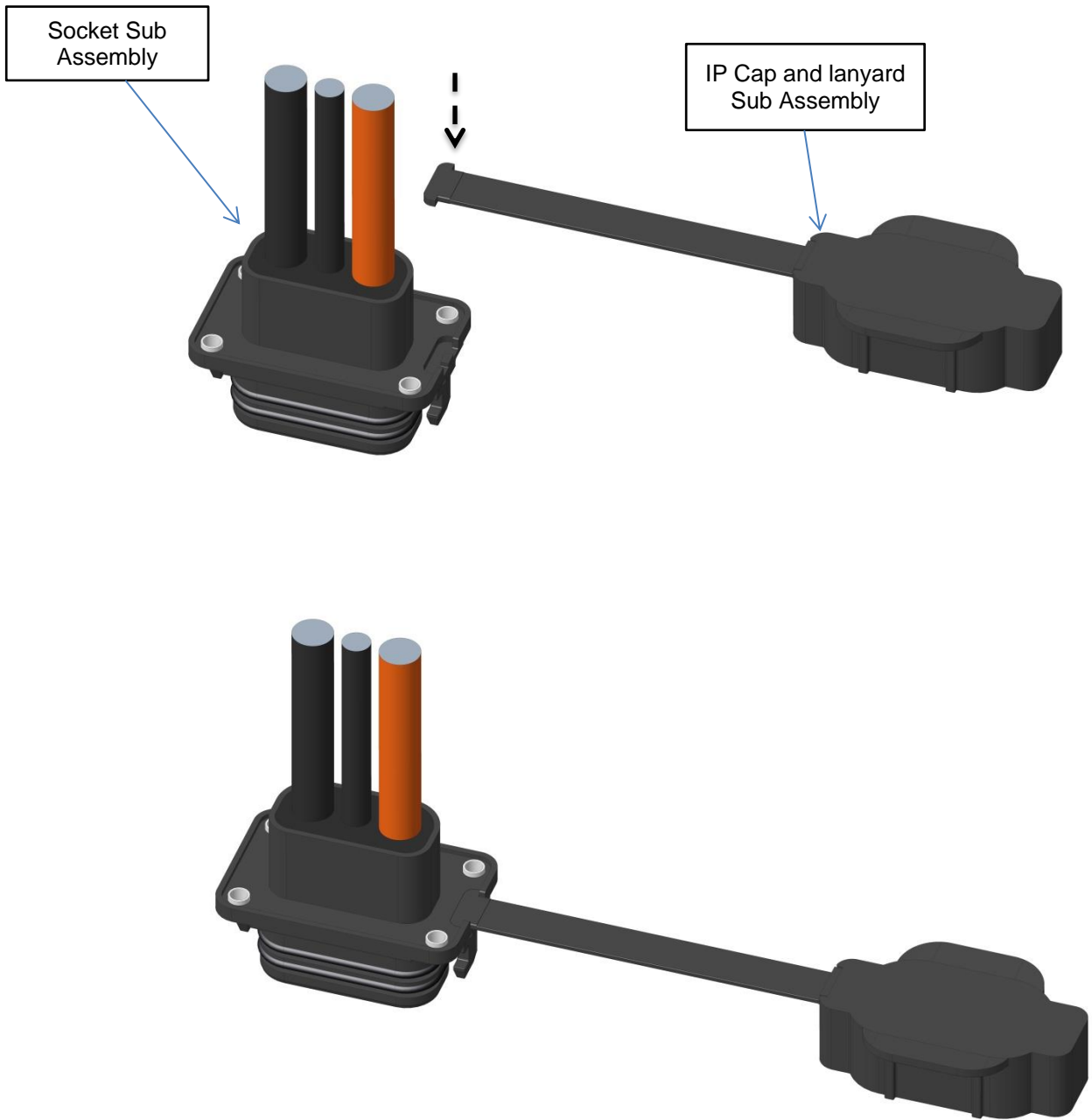


Figure 5

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5.1.2 Place the gasket by ensuring correct orientation from the rear side (Fig. 6)

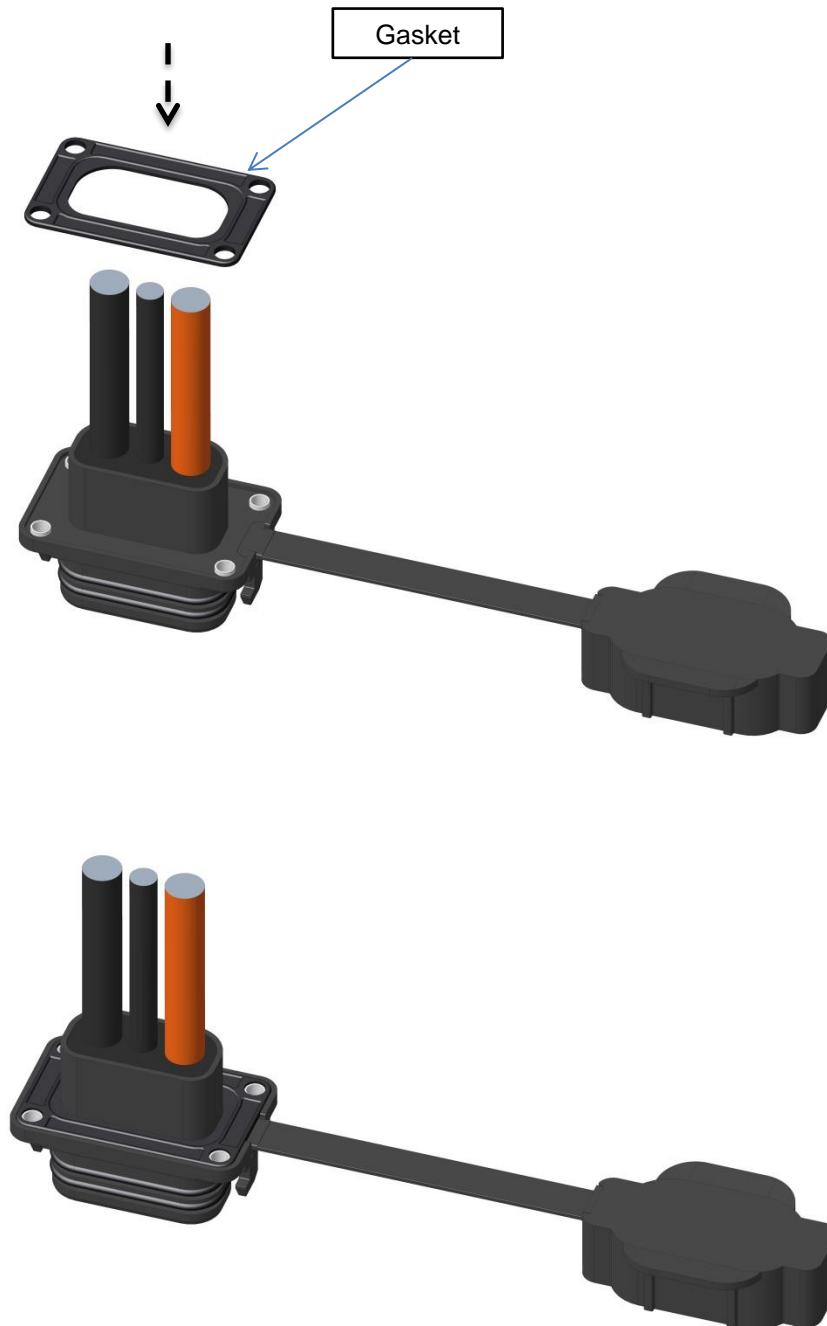


Figure 6

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5.1.3 Place the socket onto the battery's top cover/vehicle panel by handling the flange only (Fig.7)

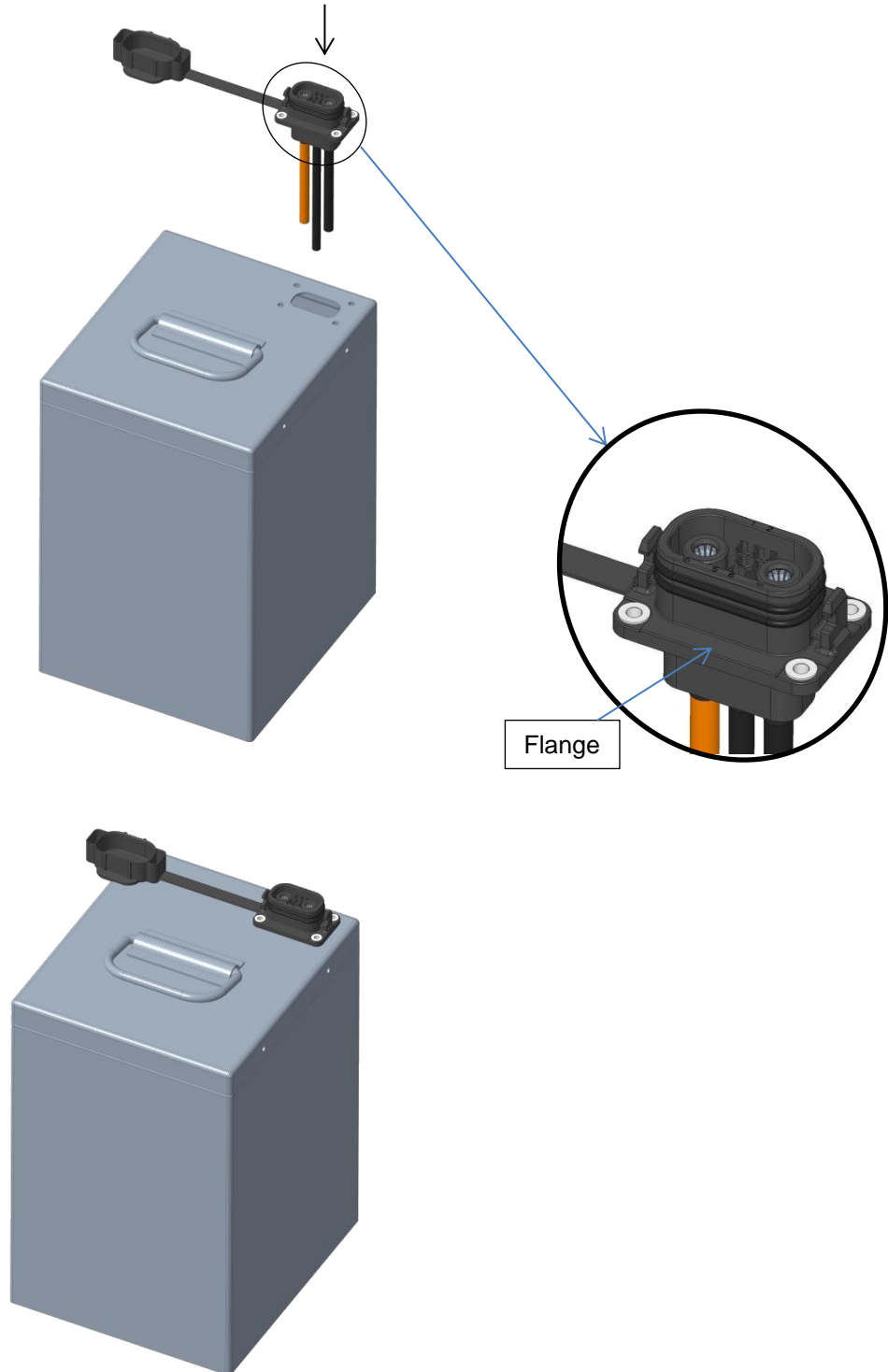


Figure 7

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5.1.4 Insert M3 fasteners in the mounting holes of socket assembly (Fig.8)

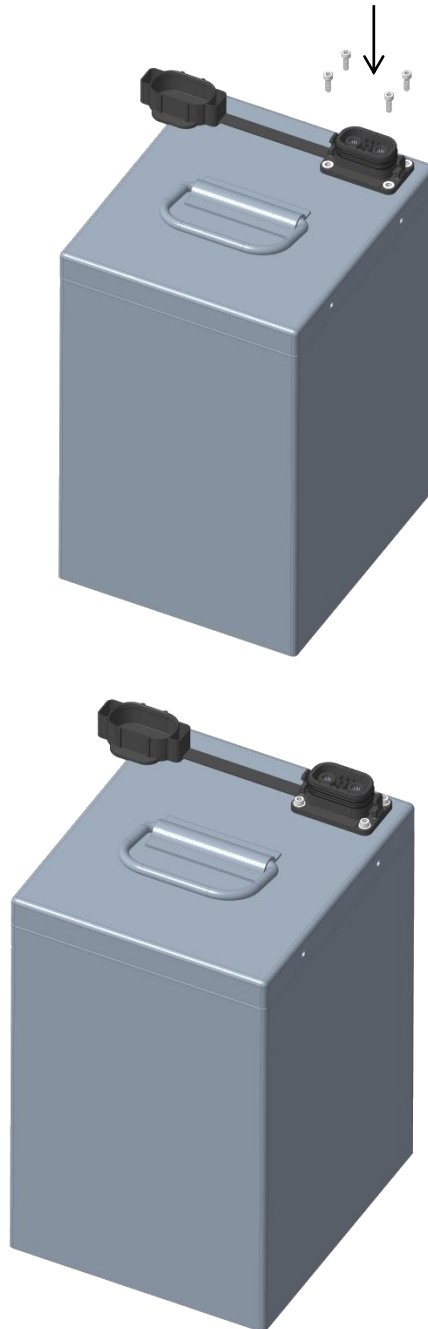


Figure 8

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5.1.5 Tighten the fasteners using a suitable tool providing 2.0 ± 0.25 Nm torque

5.1.6 Close the socket connector with the IP Cap (Fig. 9)



Figure 9

5.2 Plug Mating and Unmating Sequence

5.2.1 Mating

5.2.1.1 Ensure the CPA is in disengage position (Fig. 10)



Figure 10

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- 5.2.1.2 Ensure the IP Cap is removed from the socket connector
- 5.2.1.3 Mate the plug connector with the socket connector (Fig. 11)



Figure 11

- 5.2.1.4 Ensure the C-Lock retain its original position after mating
- 5.2.1.5 Engage the CPA by moving it towards the desired position (Fig. 12)

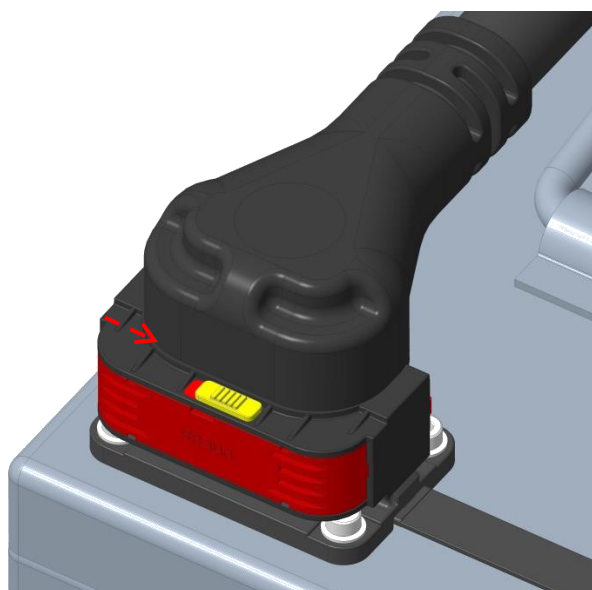


Figure 12

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5.2.2 Unmating

5.2.2.1 Ensure the CPA is in disengaged position (Fig. 10)

5.2.2.2 Press the C-Lock on the plug connector and disengage it (Fig. 13)

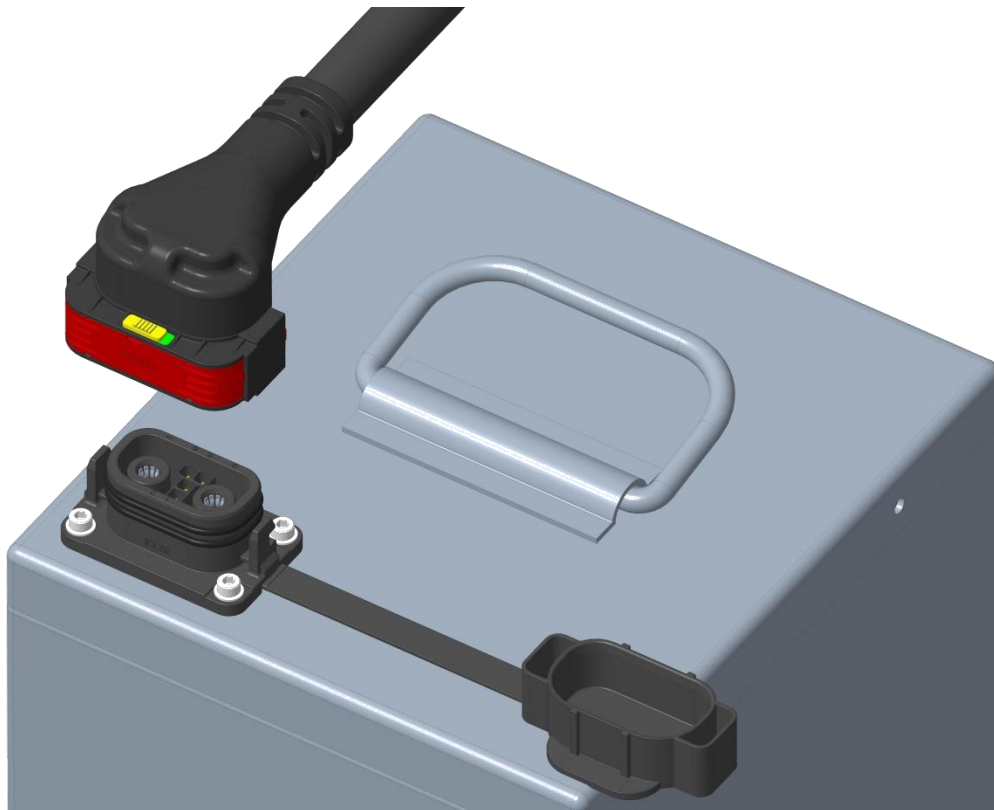
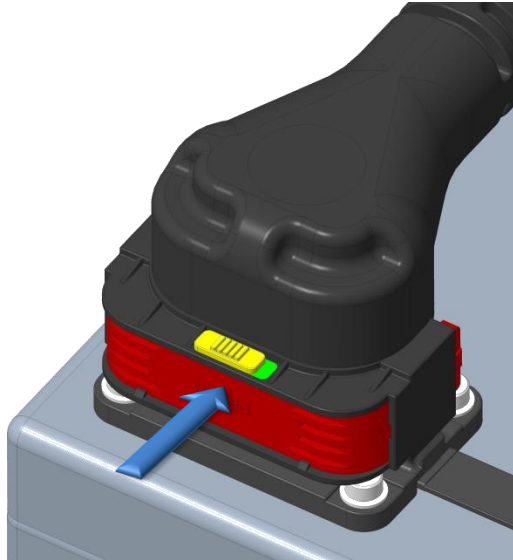


Figure 13

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5.2.2.3 Place the IP Cap in its position in the socket connector

5.3 Service Guidelines

- 5.3.1** Apply recommended lubricant (Refer 6.1) to the O-Rings after the vehicle comes in for service at an interval of 1250 mating cycles respectively (Fig.14)
- 5.3.2** CPA must be replaced along with lubricant (Refer 6.2) after 5000 mating cycles if it is found loose in the engaged or disengaged position
- 5.3.3** IP Cap Lanyard assembly should be replaced if it breaks off from the socket assembly

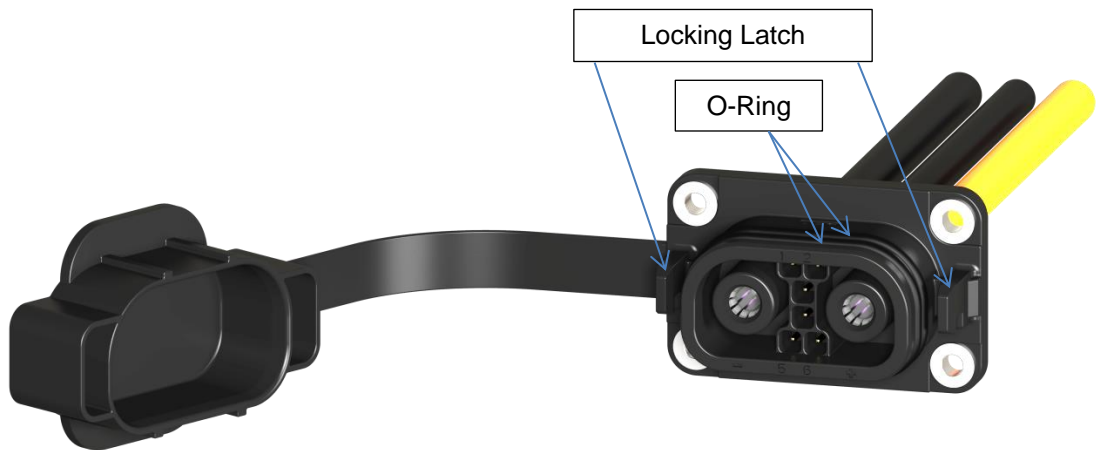


Figure 14

5.4 Air Leakage Testing (ALT) recommendation guidelines

- 5.4.1** Following is a guideline for customers who are willing to perform Air Leakage Test (ALT) on the connectors supplied or with connectors assembled onto battery packs vehicle panels etc.
- 5.4.2** For testing socket connector
 - Socket should be mounted on panel, with the provided gasket in place
 - Nature of pressure applied in chamber: Positive, ensure that pressure built up is onto the IP cap/mating side. Intent is to capture the sealing effectiveness of O-Rings and Gasket.
 - Gage Pressure: 20 kPa (Equivalent to IPX7 pressure with FOS=2)
 - Evaluation Duration: 10 s
 - Permissible pressure drop: 0.2 kPa
 - Connector condition: Need to ensure presence of IP cap or Plug connector while performing ALT
 - Schematic: Refer below

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A: DUT is Socket in unmated condition

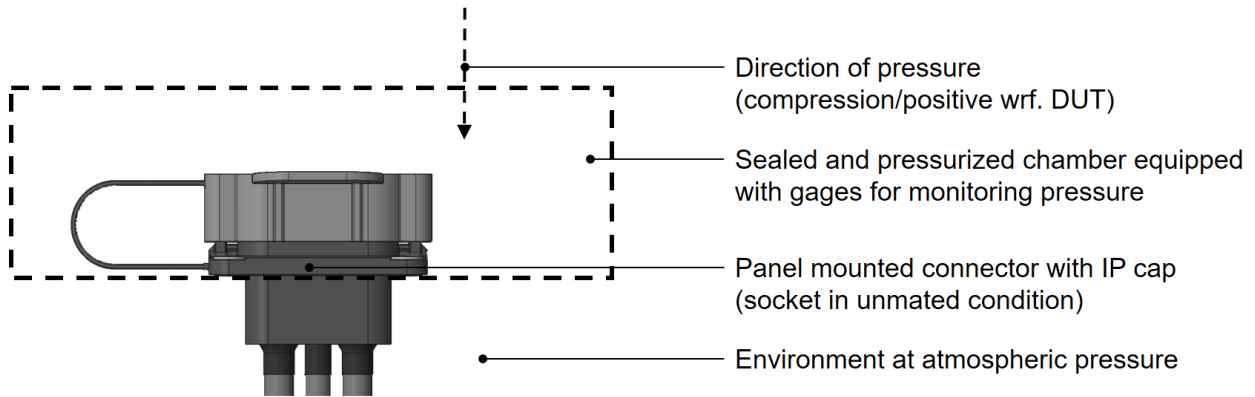


Figure 15

B: DUT is Socket in mated condition

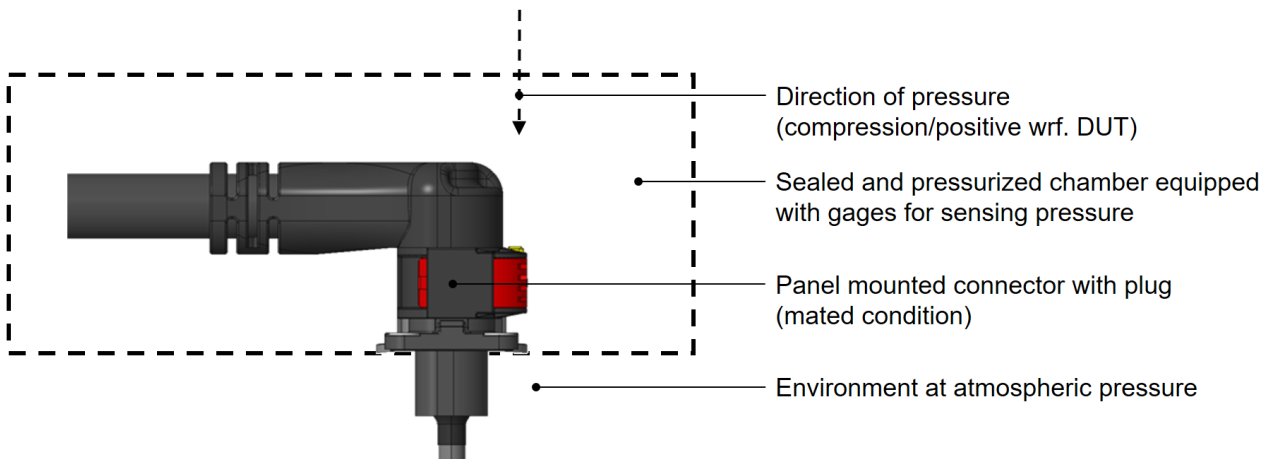


Figure 16

5.4.3 For testing plug connector

- Socket should be mounted on panel, with the provided gasket in place
- Nature of pressure applied in chamber: Vacuum, ensure that pressure built up is onto the mating side. Intent is to capture the sealing effectiveness of O-Rings.
- Gage Pressure: 20 kPa (Equivalent to IPX7 pressure with FOS=2)
- Evaluation Duration: 10 s
- Permissible pressure drop: 0.2 kPa
- Connector condition: Mated with socket connector
- Schematic: Refer below

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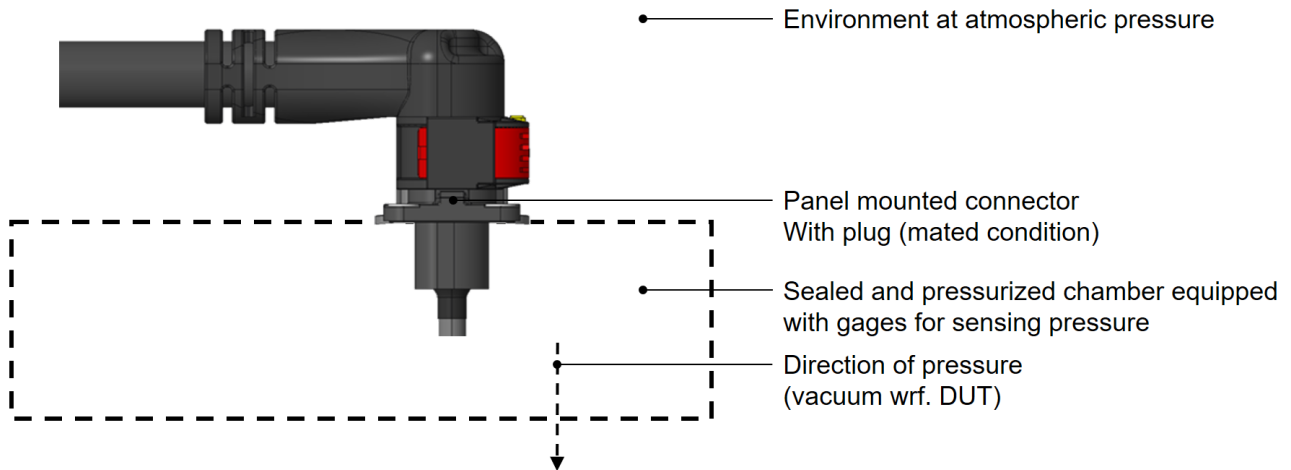


Figure 17

6.0 INSTRUCTIONS

- 6.1 Do not wipe off the lubricant applied to the seal during assembly, recommended lubricant for O-Ring is Molykote 111 Compound
- 6.2 Recommended Lubricant to be used for CPA replacement is Silicon-based grease
- 6.3 Prevent exertion of loads on the locking latches during assembly (Fig.14)
- 6.4 Recommended to put on the IP cap in socket sub assembly during handling in unmated condition
- 6.5 Take caution not to tamper with the finger proof of Plug assembly, touching the contact with bare hands without finger proof can cause electrocution to the user
- 6.6 Make sure to put on the IP cap in socket sub assembly in order to get IP67 in unmated condition
- 6.7 Product is not recommended for hot plugging applications
- 6.8 Avoid unwanted loads on the cable at socket side during system assembly

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REVISION HISTORY

REV	PAGES	DESCRIPTION	EC #	DATE
A	ALL	INITIAL RELEASE	-	06/30/22
B	12	ADDED USAGE GUIDELINES IN INSTRUCTIONS	ECR-ELX-I-48538	06/08/23
C	4 & 12	DRAWING NUMBERS UPDATED & ADDED USAGE GUIDELINES IN INSTRUCTIONS	ECR-ELX-I-48724	07/11/23
D	13 – 15	ALT RECOMMENDATION GUIDELINES ADDED	ECR-ELX-I-49488	14/10/23