H3A HQ-4/4/6 Hybrid Insert

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1. INTRODUCTION

This specification contains the regulations for assembly of H3A HQ-4/4/6 Hybrid Insert and the handling of these inserts.

2. SUPPORTING DOCUMENTS

2.1. Customer drawings

Please refer to the customer drawings of HQ-4/4/6 Hybrid Insert.

2.2. Product specification

The product specifications of the used articles are to be taken into account. The product specification describes the technical data as e.g. regulations, approvals, temperature range and rated voltage.
For further reference refer Product spec. 108-137683.

2.3. Application Specification

Connectors shall be assembled as below mentioned application specifications to ensure correct connector assembly.

2.4. Standards

- EN 61984: Connectors - Safety requirements and tests
- IEC 60664-1: Insulation coordination for equipment within low-voltage systems (Part 1)
- IEC 60999-1: Electrical copper conductors- Safety requirements for the clamping units for conductors

3. DESCRPTION

This application specification describes the male insert and the female insert of the “HQ-4/4/6 Hybrid” series.
The listed terms are used in the specification as shown HQ 4/4/6 Hybrid Insert as example in figure 1.

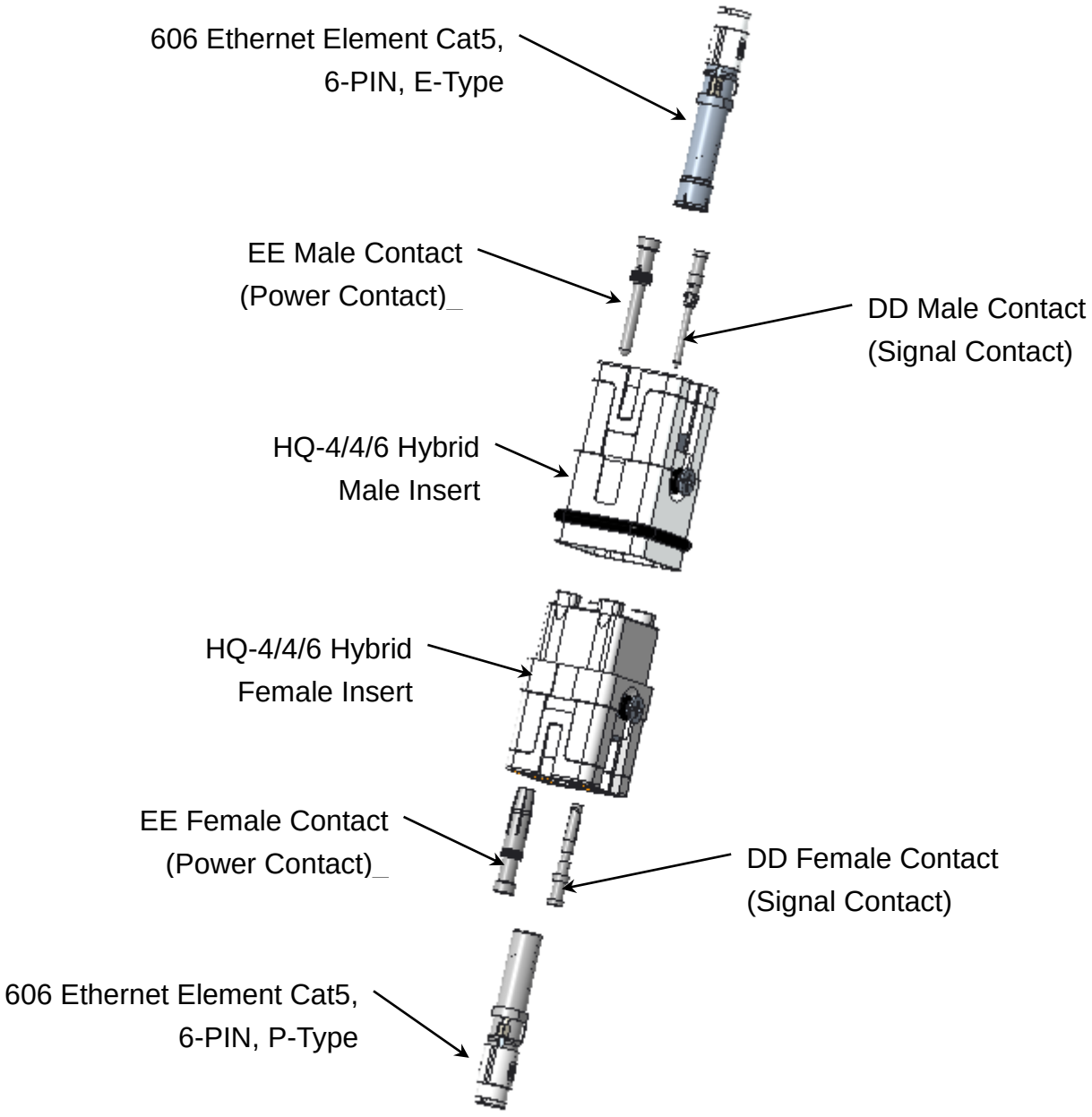


Figure: 1

4. REQUIREMENTS

4.1. Wire & cable selection and preparation

4.1.1. Stripping length L for wire

Use proper tooling to strip the wire.

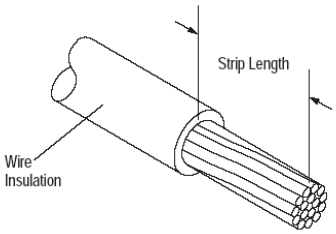


Figure: 2

NOTE When stripping the wire, care must be taken to avoid scraping, nicking, or cutting the conductor. Care must also be used when handling the wire during stripping to prevent cracking or breaking the conductor and insulation.

Depending upon the cross section of the wire, the stripping length has to be selected from the table below. See Table 1.

Table: 1

Contact Insert	Max. Wire cross section		Strip Length for Reference	Current /Voltage Rating
	[mm²]	AWG	L [mm]	
HQ-4/4/6 Hybrid Insert (Power contact)	≤4mm²	12	7.5	20A / 600V
HQ-4/4/6 Hybrid Insert (Signal contact)	≤2.5mm²	14	7.5	10A / 250V
HQ-4/4/6 Hybrid Insert (Data contact)	≤0.34mm²	22	4	1.2A / 30V
HQ-4/4/6 Hybrid Insert (PE contact)	≤4mm²	12	7	/

4.1.2. Stripping length L for cable

Use proper tooling to strip the wire.

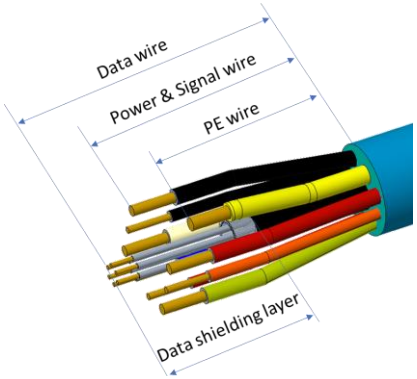


Figure: 3

Recommend stripping length L

- Power & Signal wire: 43±1mm
- Data wire: 46±1mm
- PE wire: 36±1mm
- Data shielding layer: 27±1mm

4.1.3. Insulation diameter

Any wire that is used for the Electrical purpose is covered with insulating polymer. This insulation on the wires depends upon the wire size and type of application where it is being used. The insulation diameter for various wire sizes is as shown in table 2 only for reference.

Table: 2

Contact Insert	Max. Wire cross section		Insulation Diameter in (mm)
	[mm²]	AWG	
HQ-4/4/6 Hybrid Insert (Power contact)	≤4mm²	12	4.6 Max.
HQ-4/4/6 Hybrid Insert (Signal contact)	≤2.5mm²	14	3.6 Max.
HQ-4/4/6 Hybrid Insert (Data contact)	≤0.34mm²	22	Wire 1.45 Max. Cable 5.5 Max.
HQ-4/4/6 Hybrid Insert (PE contact)	≤4mm²	12	4.6 Max.

NOTE The Insulation diameter over the wire specified in the table 2 is for the insulation concentric, with equal thickness layer over the conducting wire.

4.2. Assemble wires to inserts

4.2.1. Inserts of crimp termination

a. Assemble stripped wires to contacts (Crimp)

➢ Crimping tool for power & signal contact as below Figure 4:

Figure: 4

- Wire range: 26AWG ~ 12AWG (0.14 mm² ~ 4.0 mm²)
- Type: RPC-M23-T-B
- Order number: T3100000022-000

➢ Crimping tool for PE contact as below Figure 5:

Figure: 5

- Wire range: 26AWG ~ 12AWG (0.14 mm² ~ 4.0 mm²)
- Type: CRIMPBOX-0.5/4

- Order number: T3100000001-000

➢ Crimping tool for data contact as below Figure 6:

Figure: 6

- Wire range: 32AWG ~ 22AWG (0.03 mm^2 ~ 0.34 mm^2)
- Digital Crimp Tool No.: C0.235.00
- Locator No.: C0.265.00

➢ Crimp

Insert the cable - stripped according to table 1 - into the wire barrel of the contact. The wire strands must be visible in the reference hole of the contact. Afterwards, crimp the contact in the crimp area, using the correct tool for this type of contact. During the termination process make sure that the contact in the contact zone is not damaged or deformed.

When using manual crimp tools the following points must be followed:

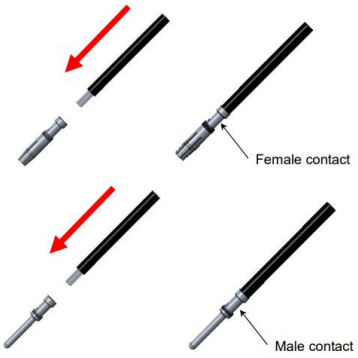
1). Equip manual crimp tool with the correct locator or positioning ferrule.

2). When using different manual crimping tools the pliers have to be adjusted by plug gauge to fit the crimp area.

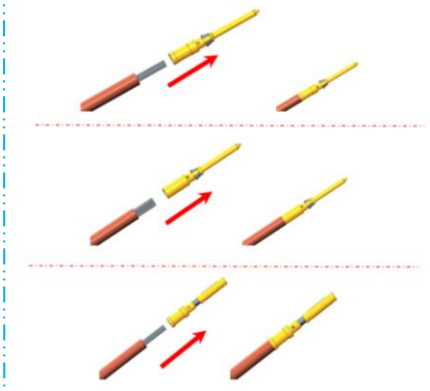
3). Fully insert contacts into the locator.

4). Clamp the wire with help of crimp tool. Note that to press the crimp tool till the stopper is reached a positive crimp.

Crimp EE contact as below:



Crimp DD contact as below:



Crimp PE contact as below:

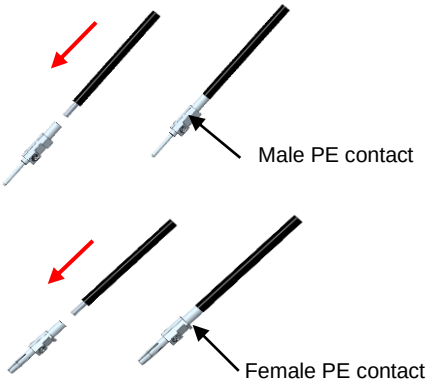


Figure: 7

NOTE

For more detailed information, please refer to related contacts application specifications.

b. Insert crimped terminals into inserts

The crimped terminals are plugged into the insert by gently pushing it into the required position until the contact is locked by the inserts, a click should be heard normally.

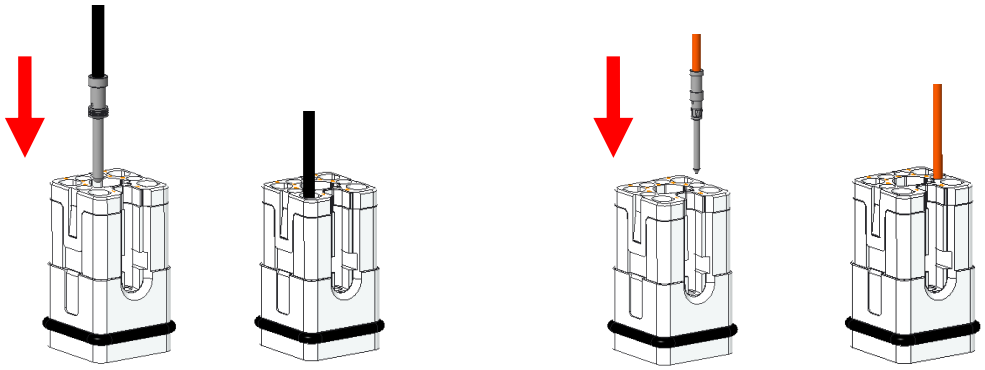


Figure: 8

c. Repeat till wires are fully assembled.

d. Insert PE contact into inserts and lock the cover

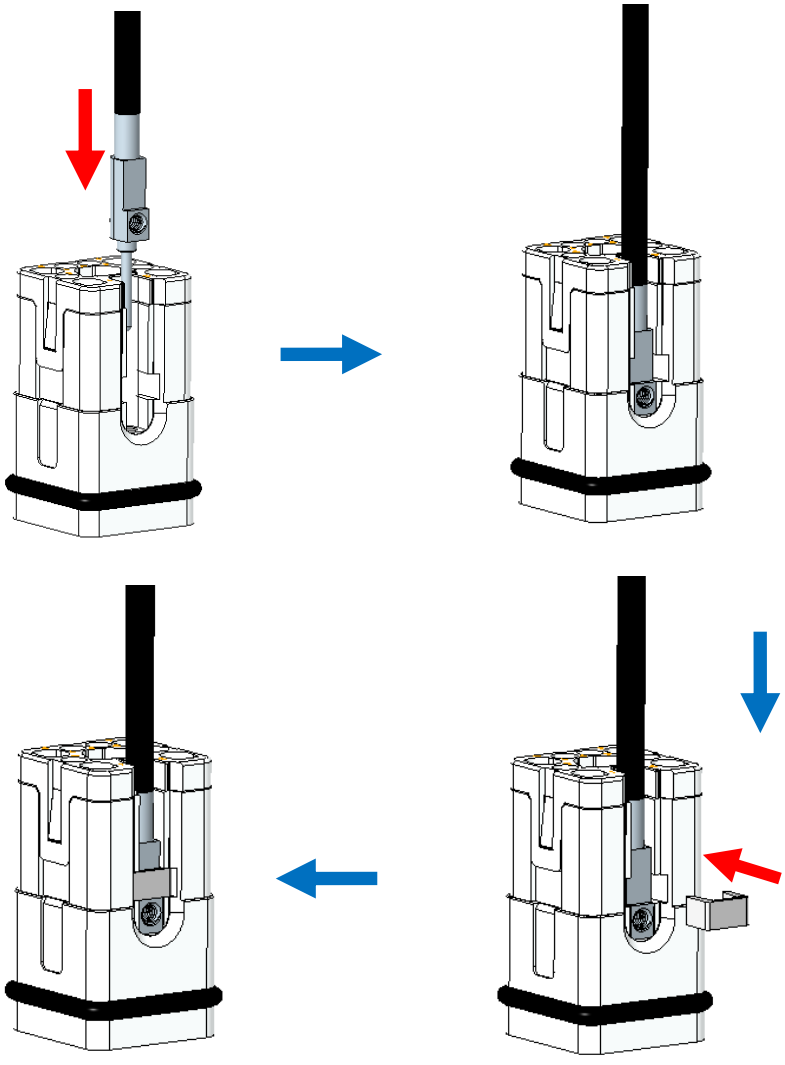


Figure: 9

4.3. Assemble Ethernet Element Cat 5

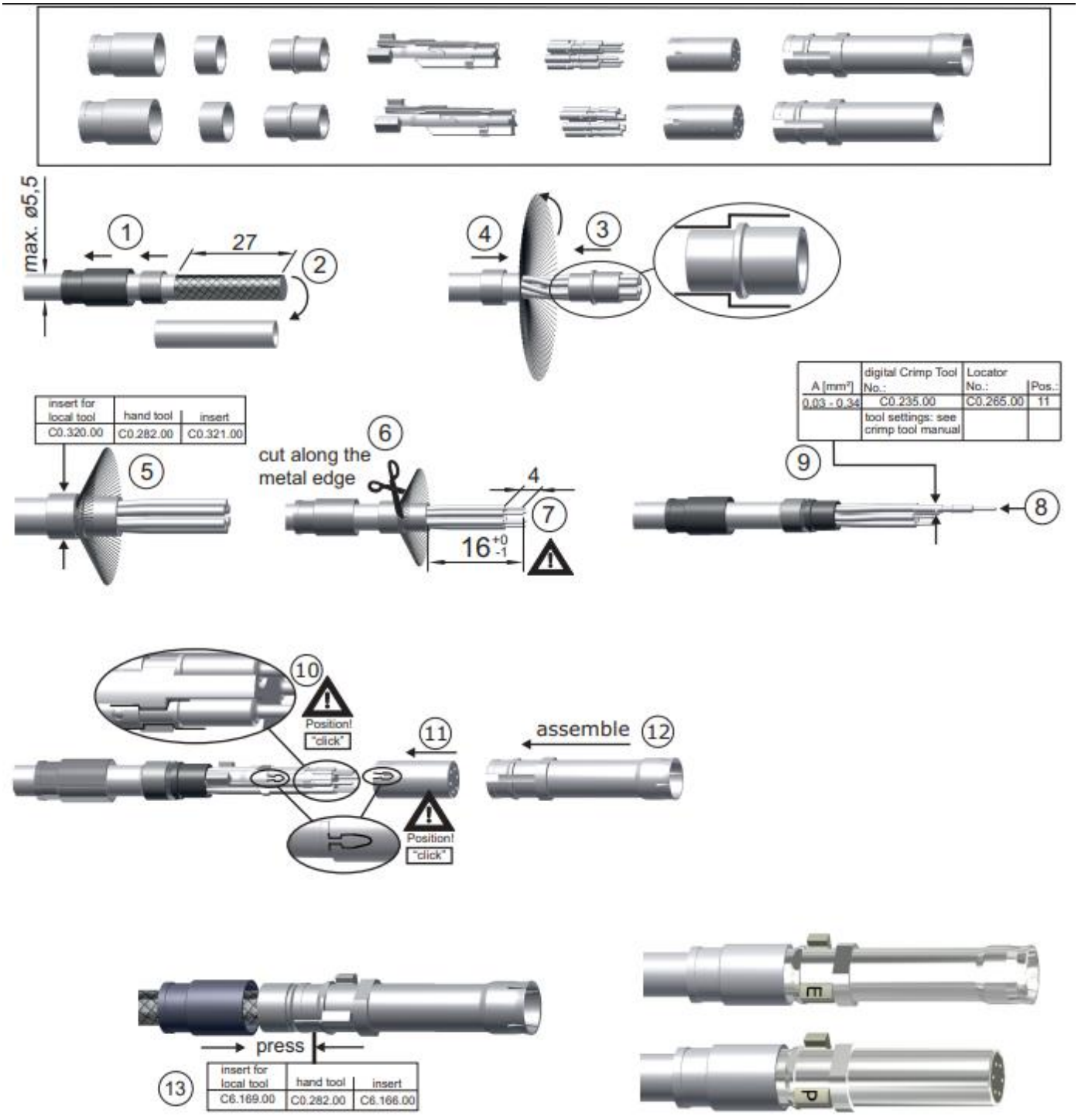


Figure: 10

4.4. Pass the cable gland and H3A hood on the cable

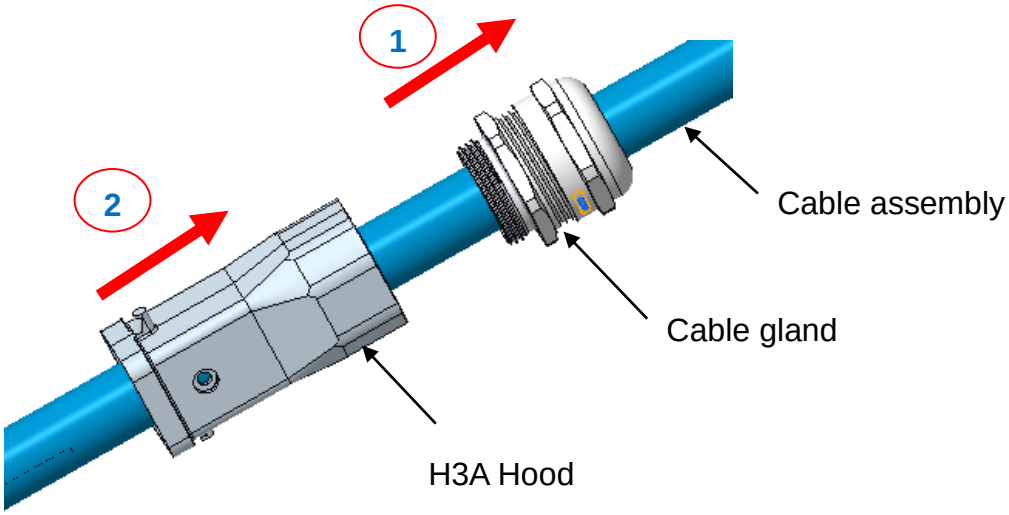


Figure: 11

4.5. Assemble cable to inserts

4.5.1. Crimping contacts and insert into inserts as Figure 12 (as 4.2 & 4.3)

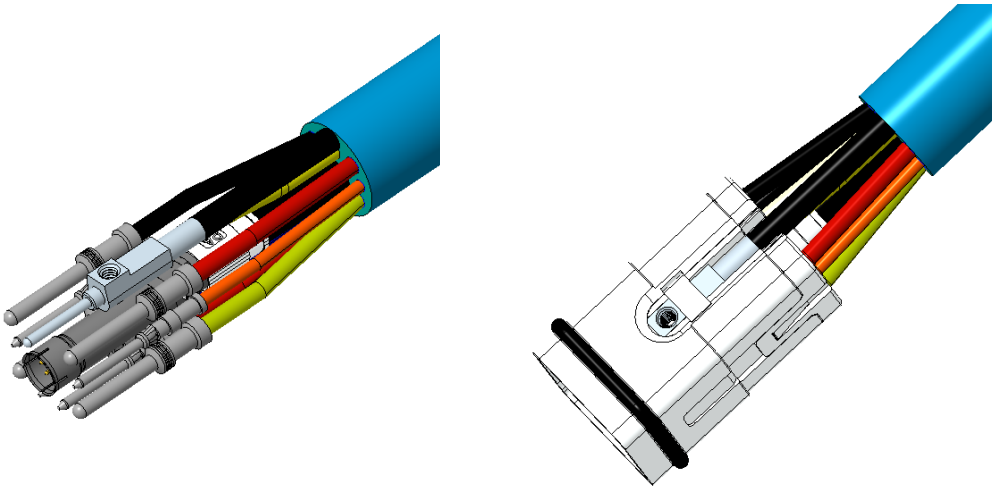


Figure: 12

5. ASSEMBLY

Assembling the contact inserts for both Male & Female connector must be carried out with proper tools.

5.1. Assemble insert to hood

Reverse slide the H3A hood on the cable until mate with insert and then fixed with M3 fixing screw and O-ring. And these M3 fixing screw and O-Ring are components on inserts, the torque is 0.5Nm for reference. For example, as shown in Figure 13.

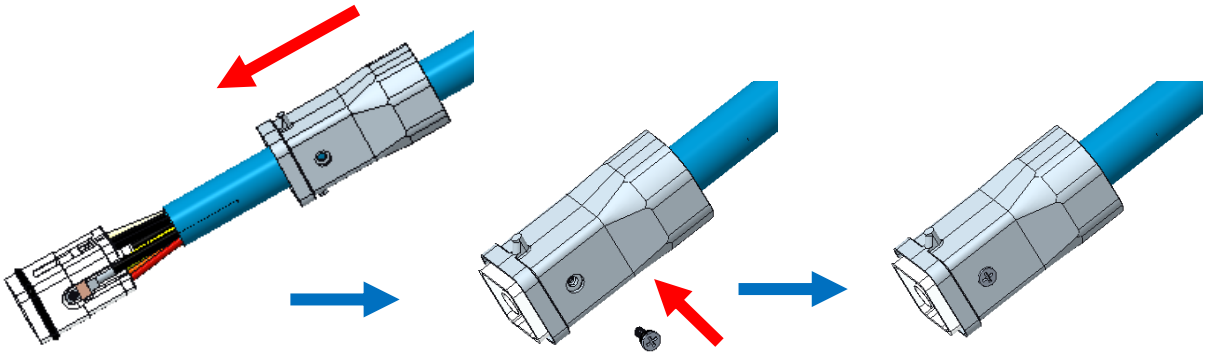


Figure: 13

5.2. Assemble cable gland

Reverse slides the cable gland and tight together with H3A hood in appropriate torque. Recommend torque as table 3.

Table: 3

Cable gland	Recommend install torque	Recommend cable tight torque
M20	4.5~7 N*m	7.5~10 N*m
M25	7~10 N*m	10~15 N*m

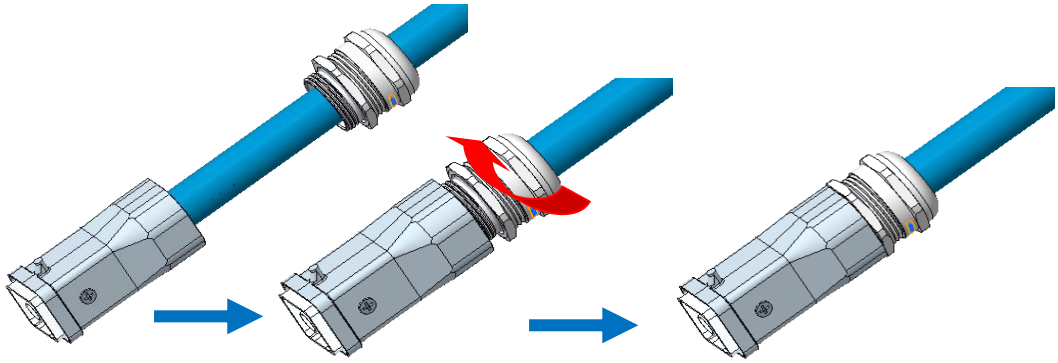


Figure: 14

5.3. Assemble insert to housing

Assemble the inert with wire to housing and then fixed with M3 fixing screw and O-ring. And these M3 fixing screw and O-Ring are components on inserts, the torque is 0.5Nm for reference. For example, as shown in Figure 15.

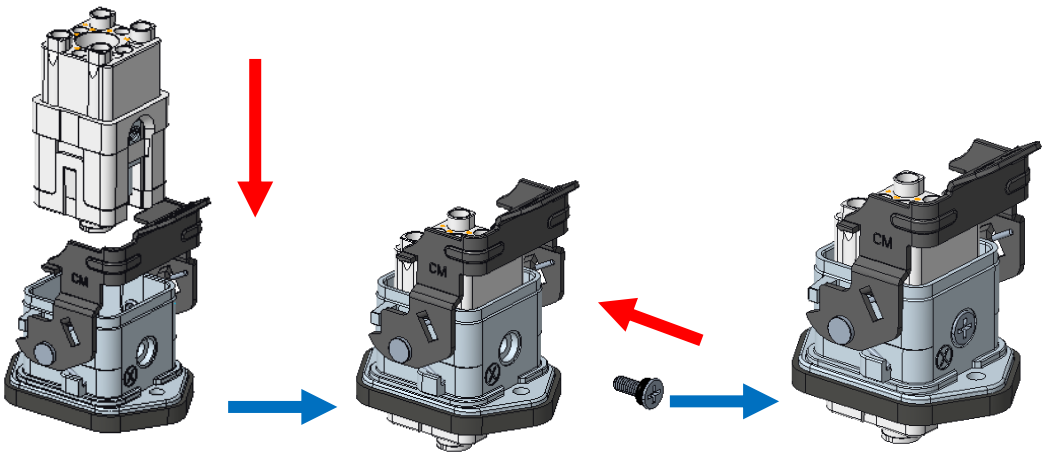


Figure: 15

5.4. Fixing the housing on panel

Choosing suitable type M3 screw to fix the housing on panel. Please note fixing screws for the assembly housings on panel are not part of the scope of delivery. Initial and test-torque values can be chosen from the following table 4.

Table: 4

Screw	Recommend Torque
M3	0.5 Nm

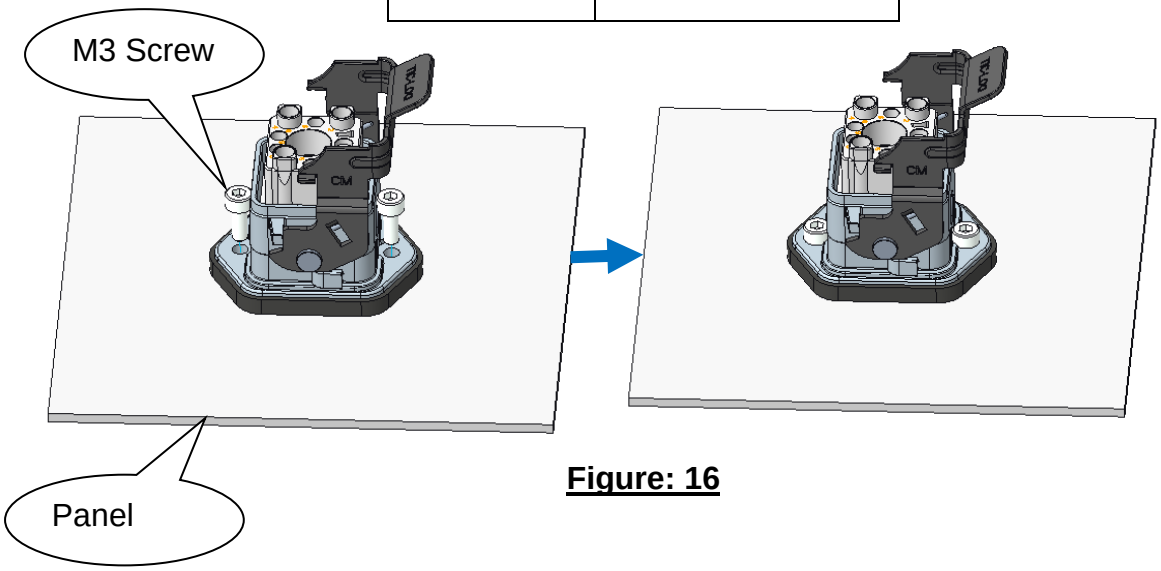


Figure: 16

5.5. Locking

Locking lever is fixed on the TIC-LOQ housing and be able to achieve locking function automatically. Push the plug unit towards the TIC-LOQ Housing till lock completion by hand or automation as shown in Figure 17.
Notice: Through check no gap to confirm locking completely as shown in Figure 18.

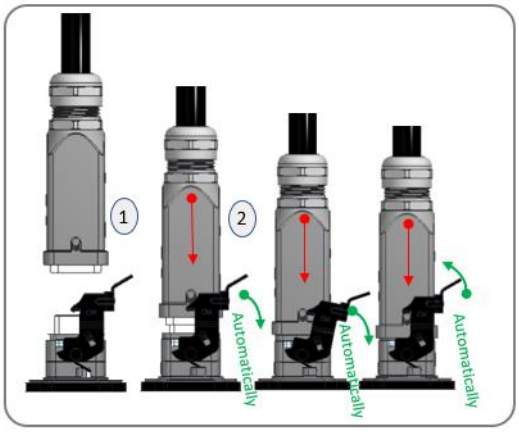


Figure: 17

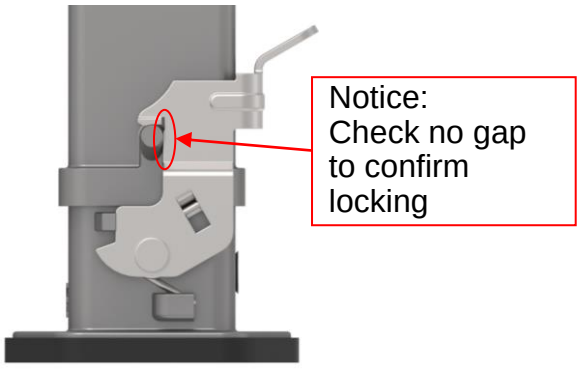


Figure: 18

5.6. Unlocking

Push the TIC-LOQ locking lever downward 18° to open locking lever and then pull out the plug as shown 19.

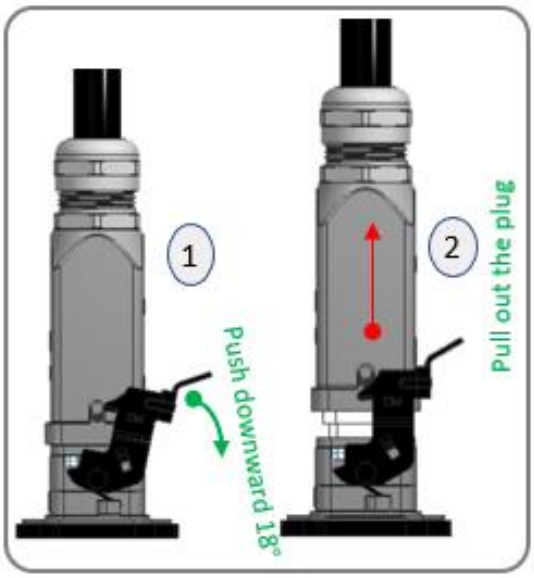


Figure: 19

6. STORAGE

6.1. Chemical exposure

Do not store the connectors near any chemical listed below as they may cause corrosion stress the connector contacts:
Alkalies, Ammonia, Citrates, Phosphates, Citrates, Sulfur, Amines, Carbonates, Nitrites, Sulfides, Nitrites, Tart rates.

6.2. Storage condition

The connectors should be stored in the air ventilation, no corrosive gas, no rain and no snow in the warehouse. Relative humidity: less than 85% RH. The connectors should remain in the shipping containers until ready for use to prevent deformation to the contacts. The connectors should be used on a first in, first out basis to avoid storage contamination that could adversely affect electrical functions.

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