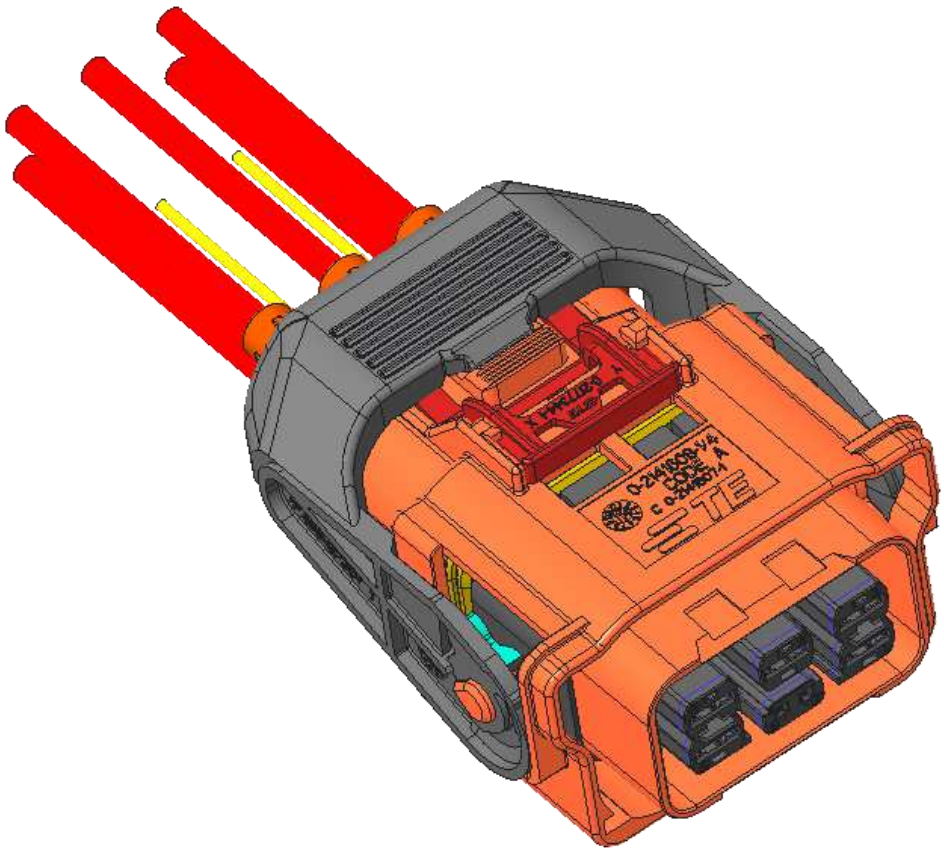
Document Class 1

HVA 630 - 5 phi connector
Plug Housing for in-line and Header Connection



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1. SCOPE

This specification describes the assembly of the HVA 630 – 5phi connector. This specification applies to hand-assembly of the coupling.

2. PROCESSING NOTE

The following technical documents, if referred to, are part of this specification. In case of a contradiction between this specification and the product drawing or this specification and the specified documentation then the product specification has priority.
The processor is responsible for ensuring the quality of the manufacturing process and the proper function of the system. The warranty and liability is excluded if quality deficiency or damages occurs by failing compliance to this specification or using not specified, not released tools and connector components.
The assembly should only be performed by trained personnel.

2.1 TE Connectivity Documentation

a) Customer drawings

2349364	**HVA 630 5 phi PLUG HSG, UNSHIELD CONNECTOR (AMP MCP 6.3/4.8 + MCON/MQS)**
2141608	**OUTER HOUSING ASSY, HV CONNECTOR, 5 phi**
2349371	**RECEPTACLE HSG, HV CONNECTOR, 5 phi**
2349813	**SECONDARY LOCK HVIL, HV PLUG HOUSING, 5 phi (MQS)**
2141618	**SECONDARY LOCK HVIL, HV PLUG HOUSING, 5 phi (MCON)**
2349369	**COVER ASSY, HV CONNECTOR, 5 phi**
967056	**CAVITY PLUG MQS/MCON**
828922	**CAVITY PLUG AMP MCP 6.3/4.8**

b) Specifications

108-94235	**Product Specification HVA 630 - 5 phm connector**
114-18388	**Application Specification AMP MCP 6.3/4.8K Contact**
114-18464	**Application Specification MCON 1.2 Contact System**
114-18021	**Application Specification MQS Contact System**
114-20232	**Application Specification HVA 630 - 5 phi connector - Tab housing for in-line connection.**

2.2 General Documentation

Cable specifications of prescribed cables

Cross-section 6,0mm²

Supplier: Huber+Suhner, Lower Frequency Division – CH 8330 Pfaffikon

Outer Diameter:	**4,15±0.15 mm**
Cable Description:	***Automotive cable, flexible* / T=150°C**
Dimension according to:	**ISO 6722-1 / ISO19642, structure B**
Huber+Suhner Part No.:	**STD 548776 M / 12-02-2018**
TE Part No.:	-

Cross-section 0,5mm²

Supplier: according to FCA spec. MS.90034

Outer Diameter:	**1.5±0.10 mm**
Cable Description:	***Automotive cable, flexible* / T=150°C**
Dimension according to:	**ISO 6722-1 / MS.90034**
TE Part No.:	-

3. APPLICATION TOOLS

Required application tools

Application device	Tool Nr.:
AMP MCP 6.3/4.8K Contact	See Application Specification 114-18388
MCON 1.2 Contact System	See Application Specification 114-18464
MQS Contact System	See Application Specification 114-18021

Table 1

4. ASSEMBLY INSTRUCTIONS

4.1 Assembly overview

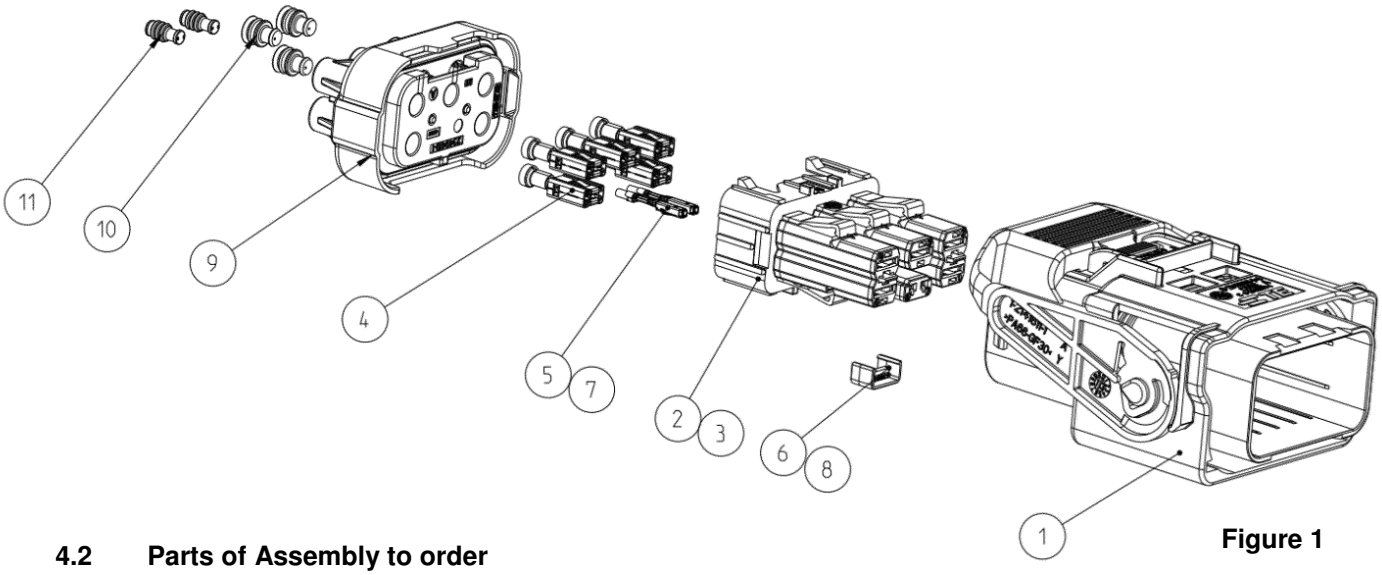


Figure 1

4.2 Parts of Assembly to order

(For detailed versions combination see customer drawing PN 2349364)

Part / Wire			6 mm²
Pos	Qty	Name	P/N
1	1	OUTER HOUSING WITH CPA (CODE A)	2141608-4
2	1	5 POSITIONS RECEPTACLE HOUSING (MCON)	2349371-1
3	1	5 POSITIONS RECEPTACLE HOUSING (MQS)	2349371-2
4	2/3/4/5	AMP MCP 6.3/4.8 CONTACT	2-1241408-3
5	2	MCON-1.2 LL INTERLOCK CONTACT	7-1452656-3
6	1	SECONDARY LOCK (MCON)	2141618-1
7	2	MQS CONTACT	5-963715-6
8	1	SECONDARY LOCK (MQS)	2349813-1
9	1	COVER CABLE SEAL ASSY	2349369-1
10	1/2/3	CAVITY PLUG (AMP MCP)	828922-1
11	2	CAVITY PLUG (MQS/MCON)	967056-1

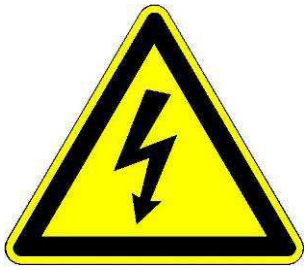
Table 2

4.3 **Security Advice**

ATTENTION!
- HIGH VOLTAGE APPLICATION –

HAZARD OF SEVERE ELECTRICAL SHOCK OR BURN

DISCONNECT POWER BEFORE HANDLING



The assembly should only be performed by trained personnel.

4.4 **Assembly Steps**

Step 1 – Cover assembly

Take the cover assembly which is already sold as P/N 2349369-1
(For detailed instructions see production drawing PN 2349369)

1. SEAL RETAINER
2. SEAL
3. COVER

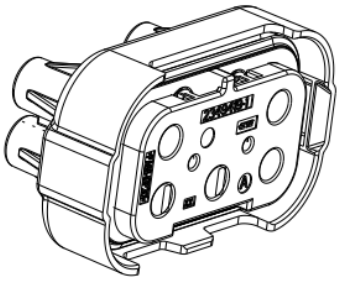


Figure 2.a

Step 2

Alignment and insertion of wires before insulation stripping, through the holes of cover assy.
The number of wires must be evaluated specific to each application.

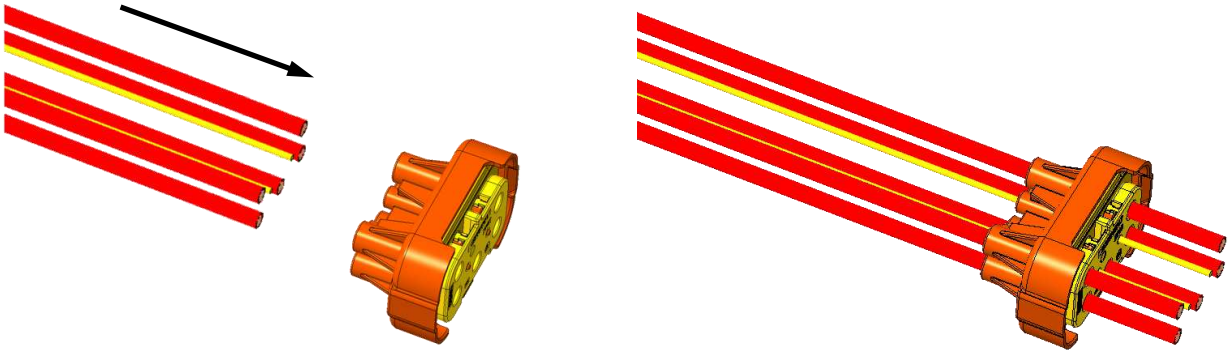


Figure 2.b

Step 3

a) Perform the suitable crimping operation pay attention to coupling the AMP MCP contacts with 6 mm² insulation diameter wires.

Remove wire insulation (stripped length) according to spec. 114-18388

Crimp on all conductors AMP MCP 6.3/4.8K contact with the specified tool according to TE SPEC. 114-18388. Avoid twisting of the conductors. For easy insertion into RECEPTACLE HOUSING all should have the same orientation (Figure 3).

Figure 3

b) **Perform crimping operation according to application spec. 114-18021 for MQS / spec. 114-18464 for MCON contact with 0.5 mm² insulation diameter wires (see C-drawing 2349364 for the configuration)**

Remove wire insulation (stripped length) according to spec. 114-18021 / 114-18464.

Crimp on all conductors MCON/MQS contact with the specified tool according to TE spec. 114-18021 for MQS 114-18464 for MCON. Avoid twisting of the conductors. For easy insertion into RECEPTACLE HOUSING all should have the same orientation (Figure 4).

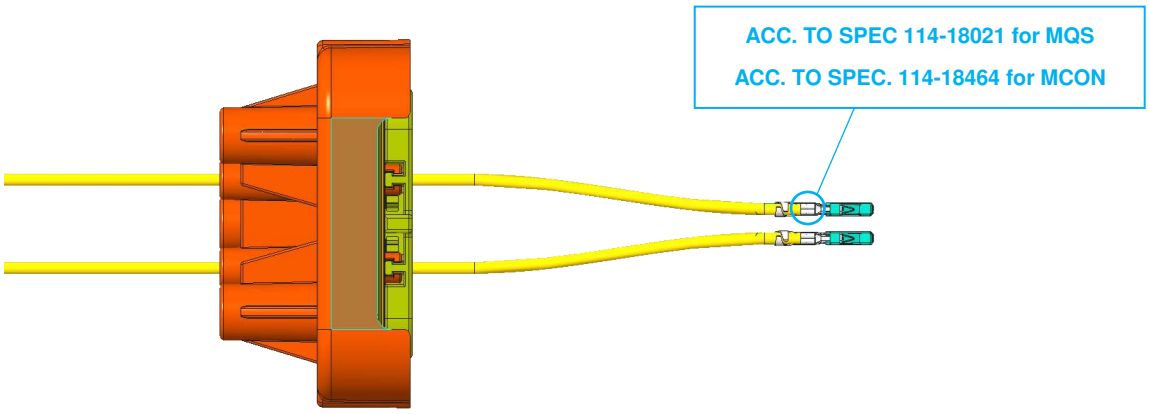


Figure 4

Step 4

Slide the COVER ASSEMBLY to assure a suitable overhang of the crimped wires, which guarantees its stable position before the contacts insertion in the RECEPTACLE HOUSING and cover fixing on OUTER HOUSING.

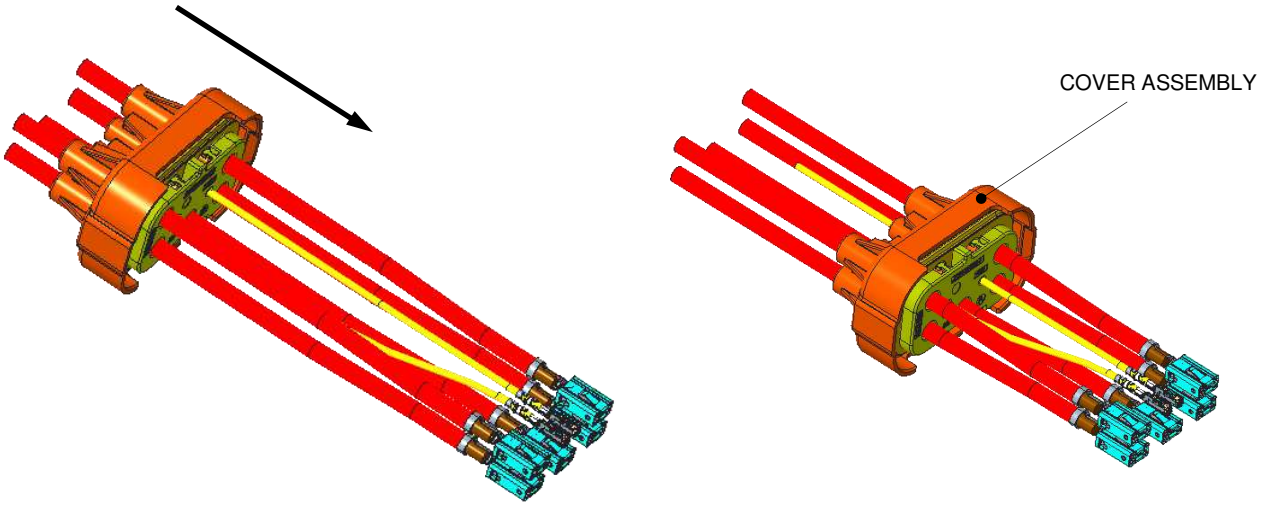


Figure 5

Step 5

Align the COVER ASSEMBLY with RECEPTACLE HOUSING and insert the contacts into the RECEPTACLE HOUSING (according to the cavity numbers shown in Figure 6a) into their locking position. The contacts are locked when a click is heard on insertion. To ensure that the contacts are correctly inserted, push/pull with a force on the cables (max. 10N). After the contacts have been controlled for correct positioning and locking, the secondary locks of the RECEPTACLE HOUSING must be locked (Figure 6b). The adequate locking is audible (snap in) but must be controlled by visual inspection.

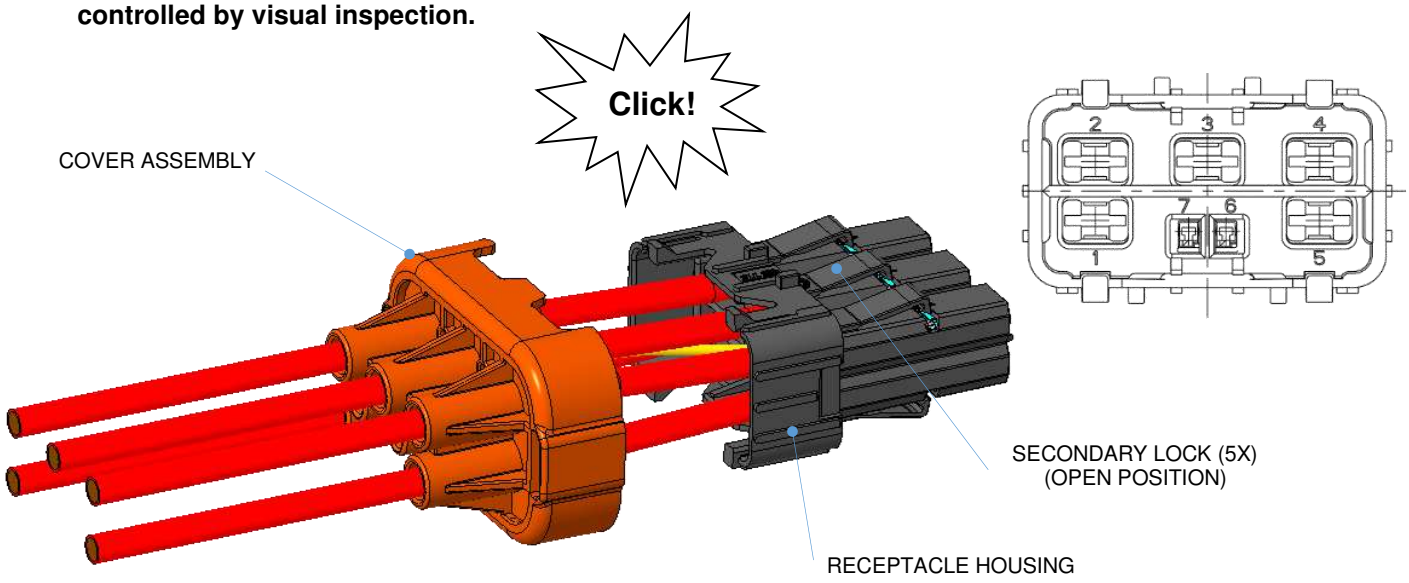


Figure 6a

Notes.

a) **Do not twist the wires.**
b) **Do not exchange/cross the wires one to each other's.**

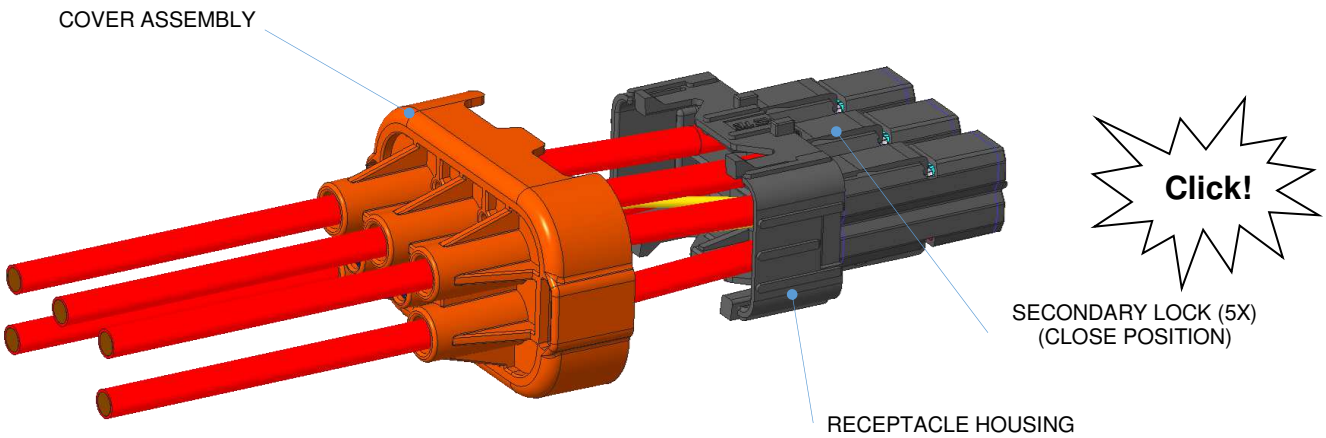


Figure 6b

Step 6

Align the INTERLOCK SECONDARY LOCK (MQS or MCON) with its seat on the RECEPTACLE HOUSING and assembly it (Figure 7). (see C-drawing 2349364 for the configuration)

Note: Pay attention to the MQS secondary lock polarization feature.

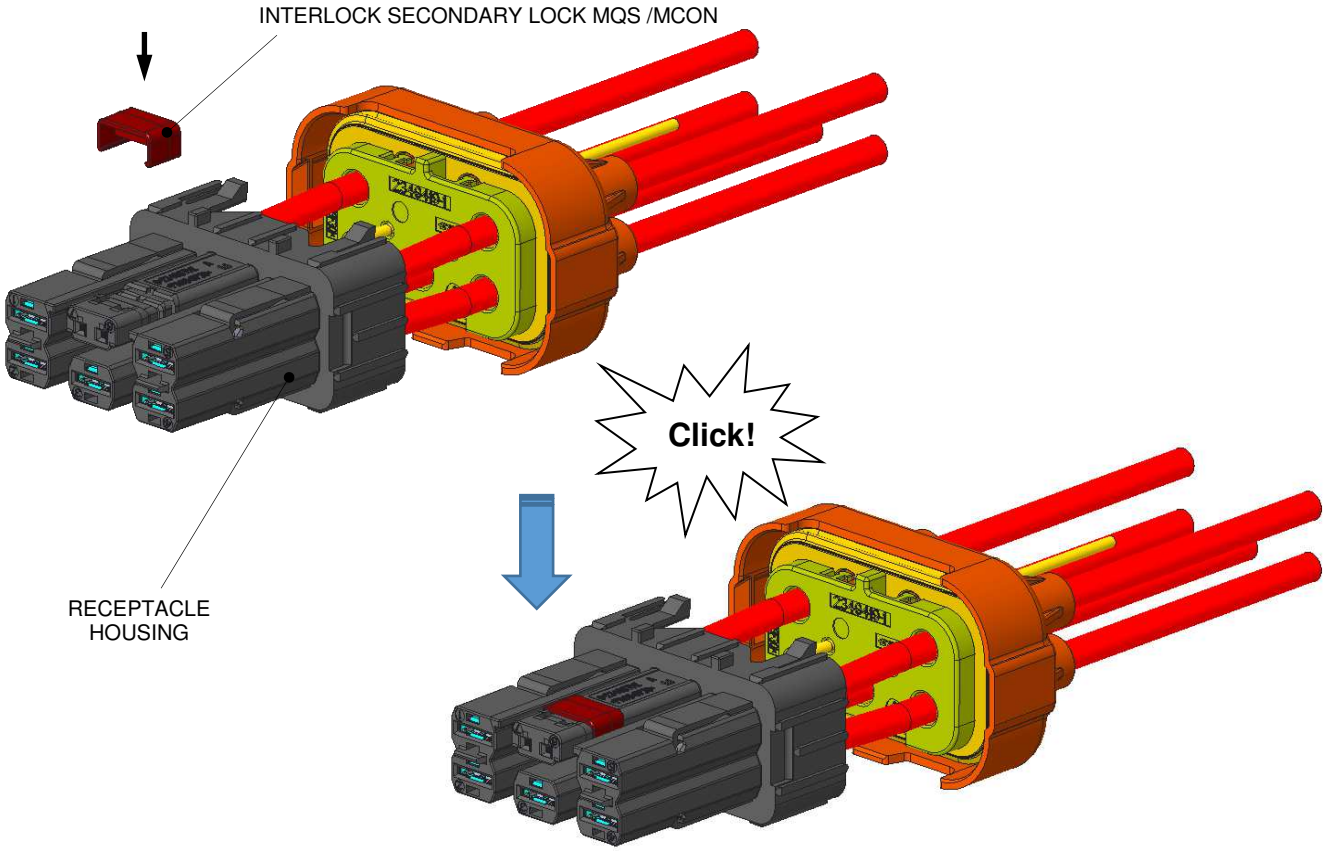


Figure 7

Notes.

If a dismounting of AMP MCP6.3/4.4.8K contact is necessary, use auxiliary tool according contact specification 114-18388. For opening the secondary locks use a flat screwdriver (e.g. 2.3x0.5) (Figure 8). If a secondary lock has been opened the RECEPTACLE HOUSING has to be exchanged.

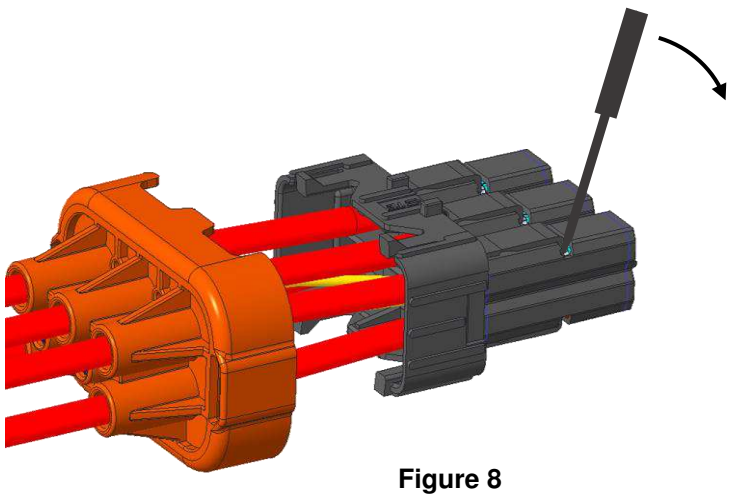


Figure 8

Step 7

Open the lever of the OUTER HOUSING ASSEMBLY.
Insert the cable assembly into the OUTER HOUSING ASSEMBLY.
The RECEPTACLE HOUSING ensures with its coding the correct polarization in the OUTER HOUSING ASSEMBLY (Figure 9a, 9b).
To ensure that the cable assembly is correctly snapped in, pull with a force on the cable (max. 10N).

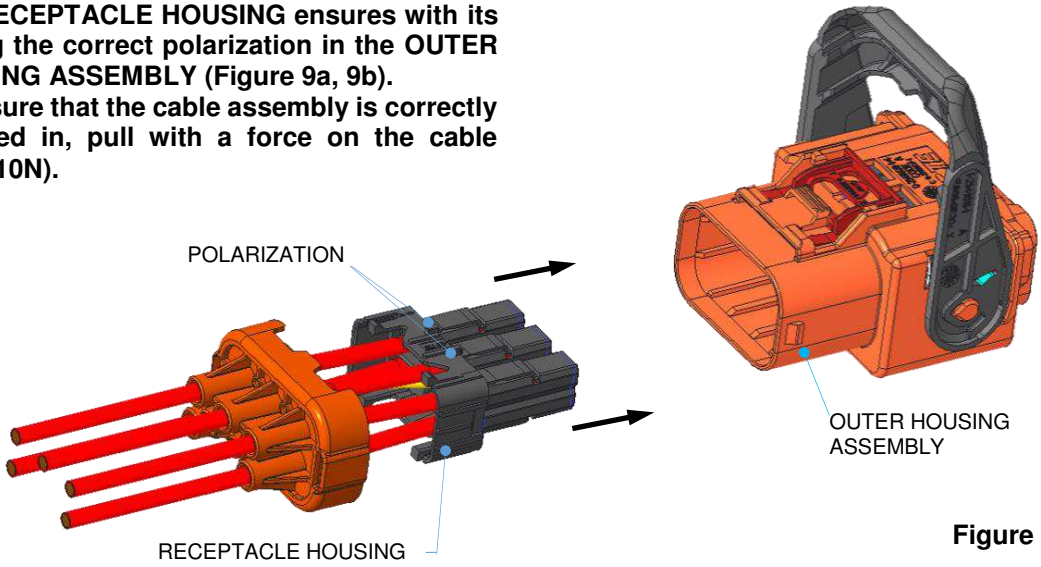


Figure 9a

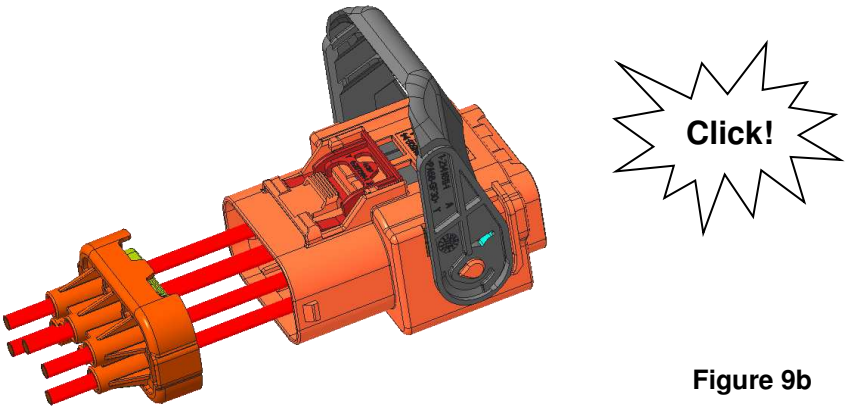


Figure 9b

Step 8

Push the SECONDARY LOCK, pre-locked Into the OUTER HOUSING ASSEMBLY, in its final position. (see reference dimension in Figure 10).

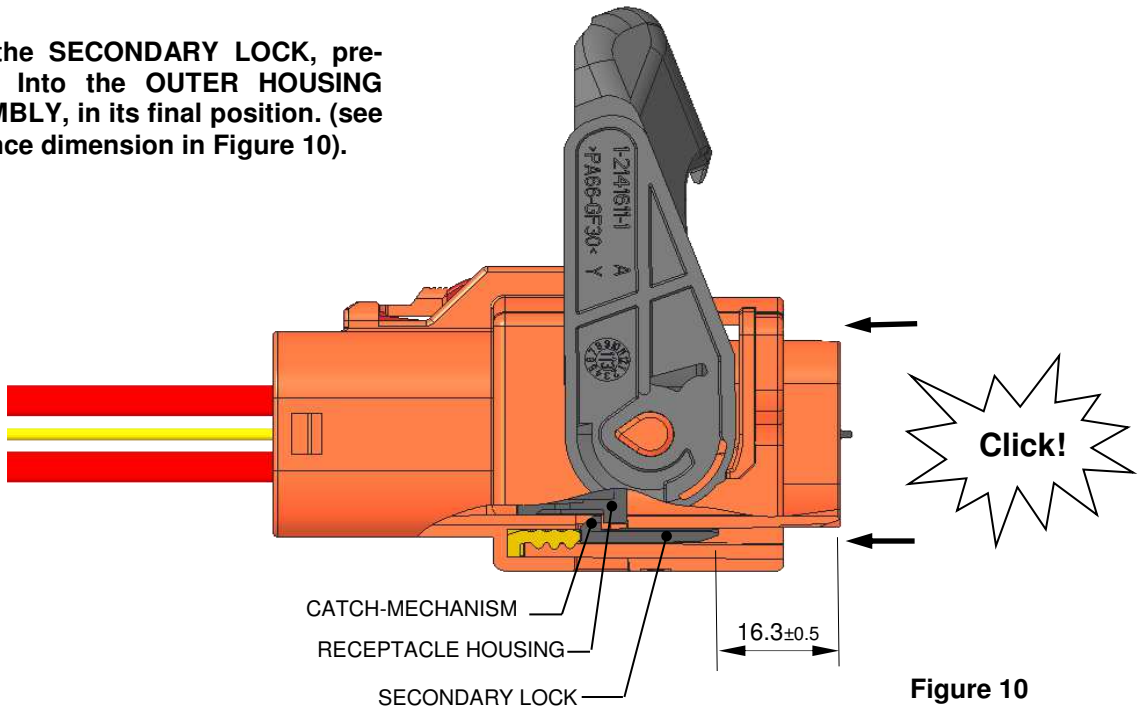


Figure 10

Step 9

Press then the COVER over the OUTER HOUSING ASSEMBLY. Ensure that both catch-mechanisms are snapped-in (Figure 11).

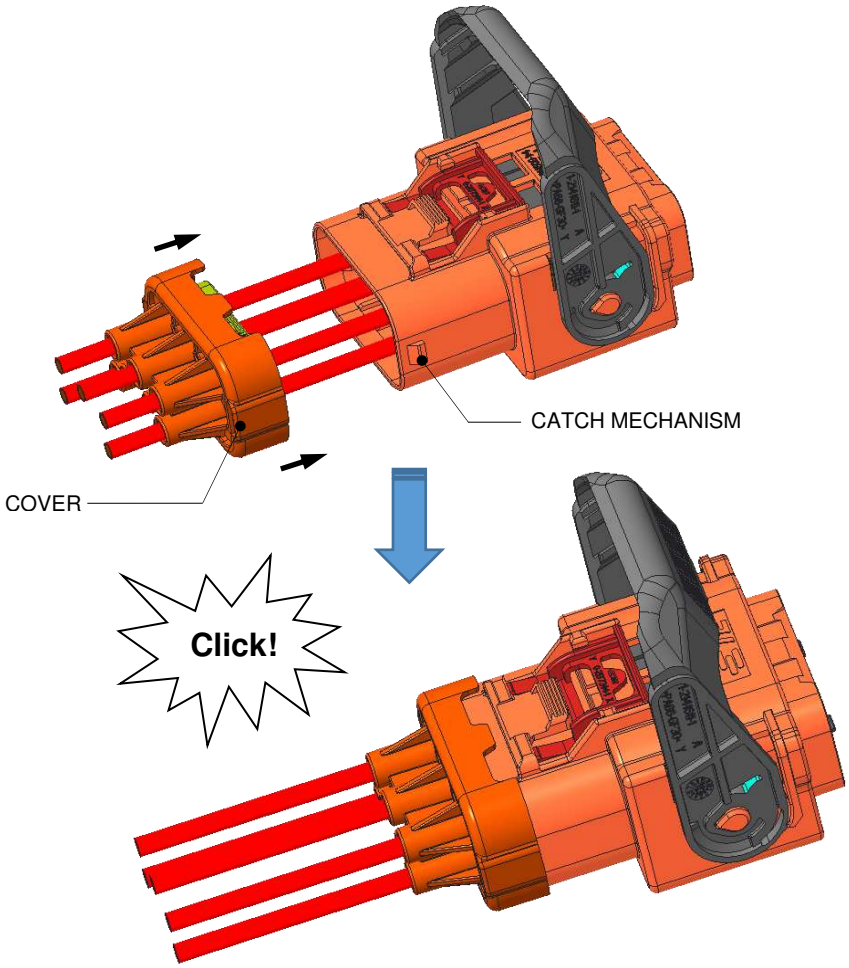


Figure 11

Step 10

For a save handling of the cable assembly the LEVER should be closed. Ensure that the lever is locked in the snap hook of the housing. The CPA has to be closed directly after closing the lever to avoid plastic deformation (Figure 12).

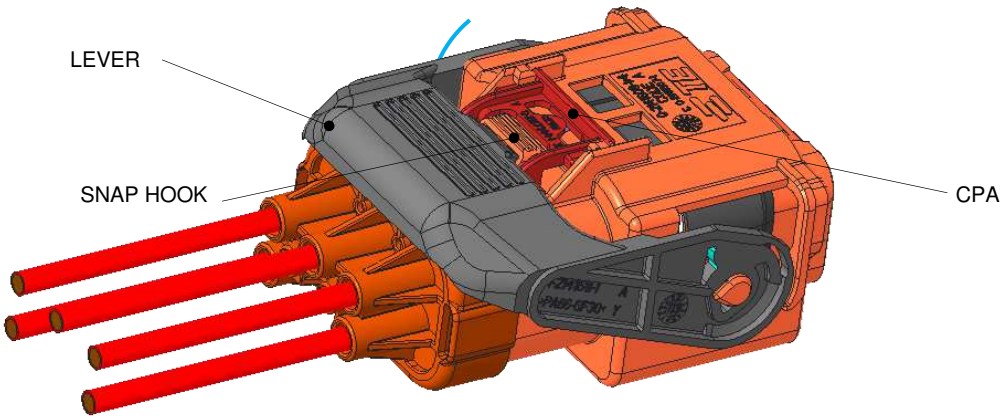


Figure 12

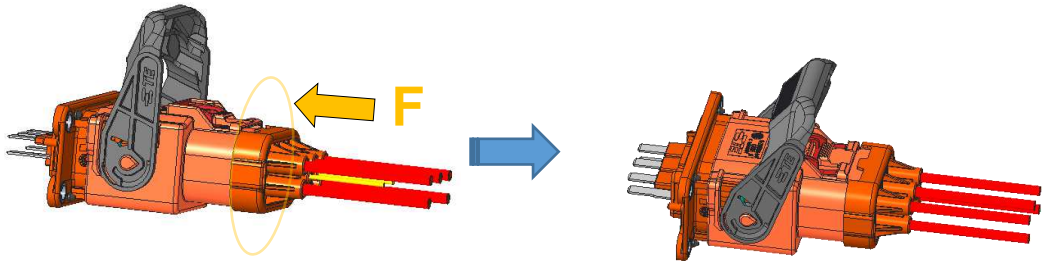
4.5 End of Line Test

Assembled HV Connectors have to be tested electrically and mechanically to applicable requirements.

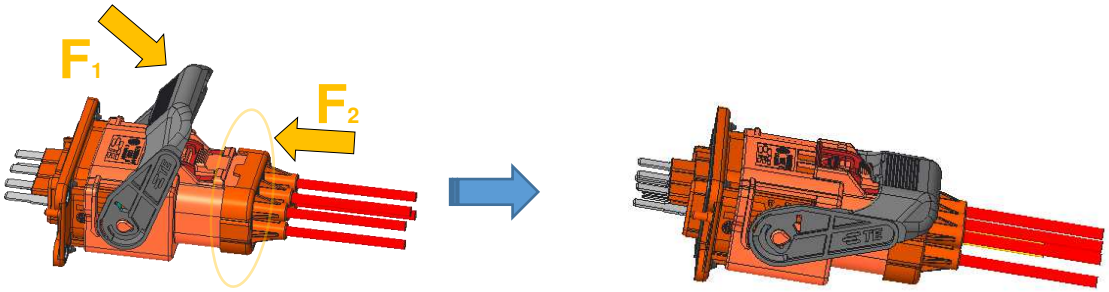
5. CONNECTOR HANDLING

5.1 Plugging Connector (Header couterpart)

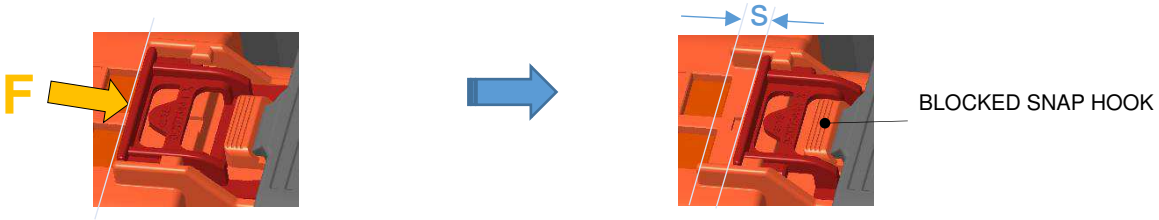
- **Push plug on housing with opened lever into header until lever snaps into engaged-position. Snapping point is haptical, visual and acoustical detectable. In case of oversight pull out, the lever moves automatically back into open position → bring it again into engaged-position.**



- **Close lever (*F_1*) during pushing plug against to header (*F_2*) until lever snaps hearable into plug housing**

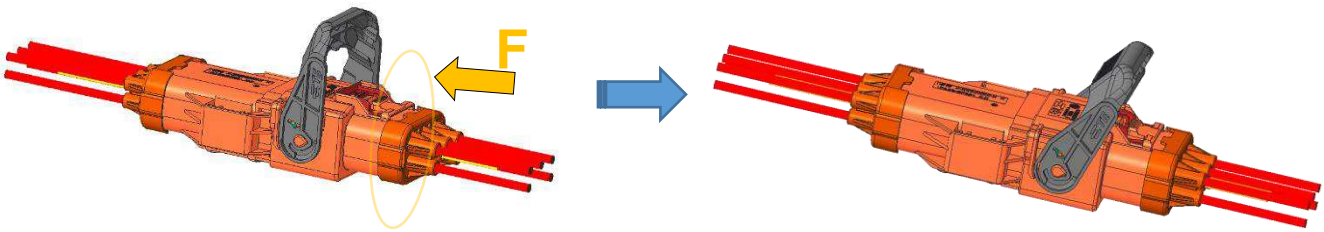


- **Slide CPA until stop into end position (distance "s"). The snap hook is in this position blocked and it will not be possible to push down the snap hook to open the connection**

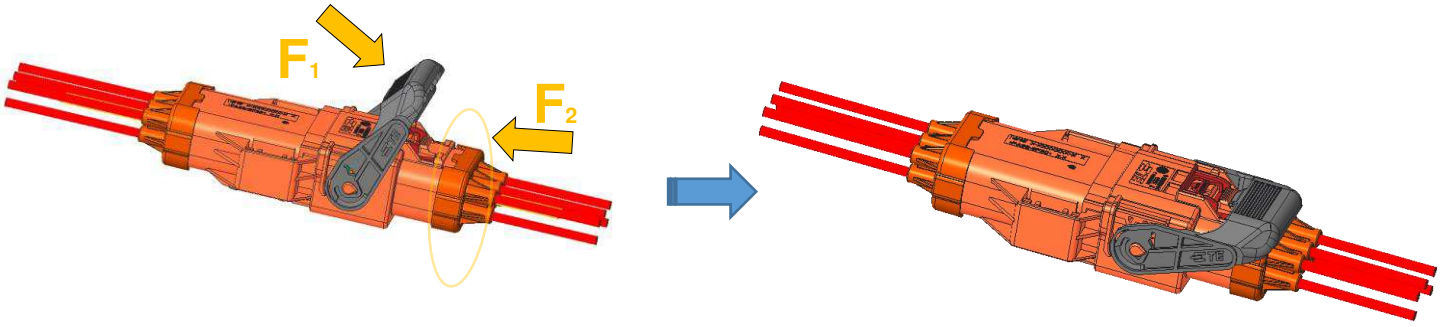


5.2 **Plugging Connector (Tab housing couterpart)**

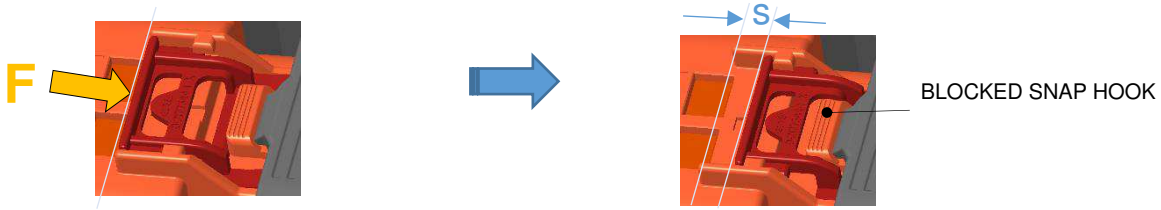
- **Push plug connector with opened lever into tab housing until lever snaps into engaged-position. Snapping point is haptical, visual and acoustical detectable. In case of oversight pull out, the lever moves automatically back into open position → bring it again into engaged-position.**

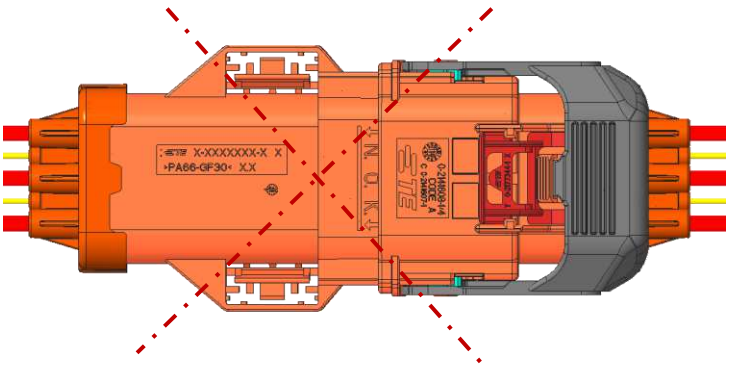


- **Close lever (*F_1*) during pushing plug against to the tab housing (*F_2*) until lever snaps hearable into plug housing**

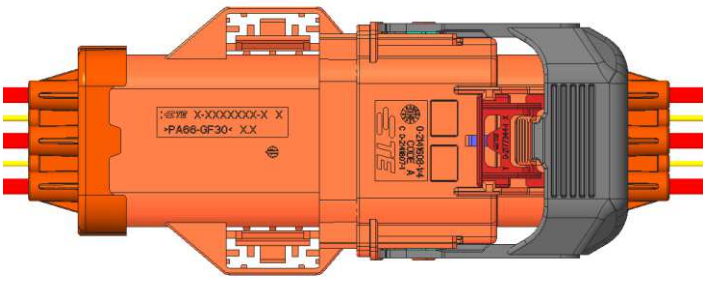


- **Slide CPA until stop into end position (distance "s"). The snap hook is in this position blocked and it will not be possible to push down the snap hook to open the connection**





ASSEMBLY POSITION
NOT CORRECT



ASSEMBLY POSITION
CORRECT

5.3 Unplugging Connector

- **To unplug connection, use inversed sequence**
    - **Open CPA**
    - **Press snap hook to unlock lever**
    - **Open lever**
    - **Pull out plug from header / tab housing counterpart**

LTR	REVISION RECORD	DWN	APP	DATE
01	NEW DOCUMENT	M. POLIZZI	A. GENTA	25MAY2019
02	UPDATED PAGE 6	SDM	A. GENTA	10OCT2019
03	UPDATED PAGE 6	SDM	A. GENTA	16OCT2019
04	ADDED PRODUCT SPECIFICATION	M. POLIZZI	A. GENTA	04MAY2020
A	FROM PRELIMINARY TO ACTIVE	M. POLIZZI	A. GENTA	27NOV2020

DR M. POLIZZI 25MAY2019			
CHK A. GENTA 25MAY2019	TYCO ELECTRONICS AMP ITALIA A TE CONNECTIVITY LTD. COMPANY CORSO FRATELLI CERVI, 15 COLLEGNO TORINO - ITALIA		
APP A. GENTA 25MAY2019	NO 114-20233	REV A	LOC I
TITLE	APPLICATION SPECIFICATION for HVA 630 – 5 phi CONNECTOR		