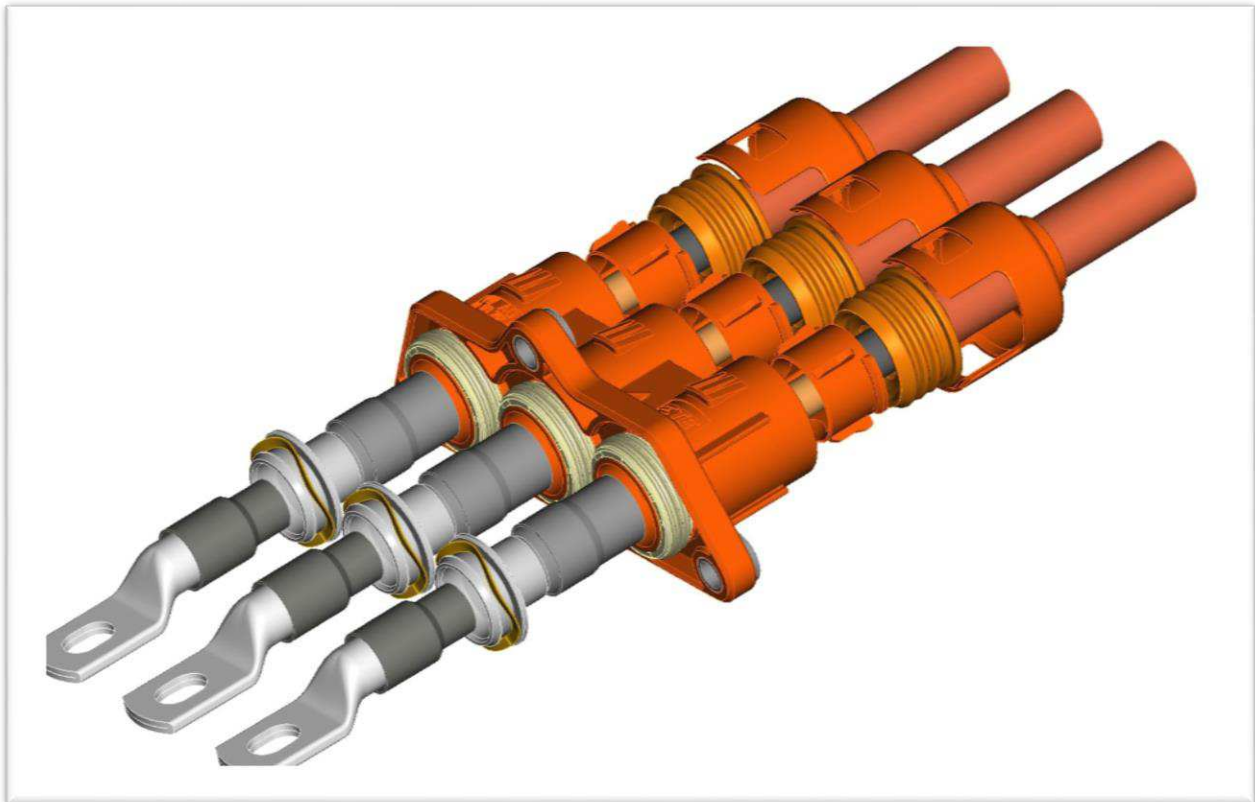


---

**1, 2 and 3 pos. 180, 16/25/35/50 mm<sup>2</sup>,  
High Current IPT Sealed Connector,  
sealed and screwed**

---



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## **1 RANGE OF APPLICATION**

### **1.1 CONTENT**

This specification describes the handling of the 1, 2 and 3 pos. high voltage screwed terminal, especially the crimp application of the cable lug and the crimp connection between the shielding of the cable and the shielding connection components. This specification can be used for the hand and mechanical cable cutter and the hand assembly of the screwed terminal. If parts (e.g. cable, ring tongue) are not announced in the application specification, the shown application process cannot be used without specific changes. Please speak with the responsible TE Connectivity employees. In correspondence with TE Connectivity employees, please use the terms, mentioned in this specification. Hereby it will be easier to answer queries that may arise. The terms for the basic assembly are shown in the following figures.

## **2 RANGE OF TECHNICAL DOCUMENTATION**

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.

## 2.1 TE CONNECTIVITY DOCUMENTATION

### 2.1.1 CUSTOMER DRAWINGS

114-94131-1-C	1 Pos. Terminal screwed, Assy Overview IPT 16-50mm <sup>2</sup>
114-94131-2-C	2 Pos. Terminal screwed, Assy Overview IPT 16-50mm <sup>2</sup>
114-94131-3-C	3 Pos. Terminal screwed, Assy Overview IPT 16-50mm <sup>2</sup>
1991226-C	1 Pos. Ring Tongue, Housing, Assy IPT 16-50mm <sup>2</sup>
2141784-C	2 Pos. Ring Tongue, Housing, Assy IPT 16-50mm <sup>2</sup>
2141783-C	3 Pos. Ring Tongue, Housing, Assy IPT 16-50mm <sup>2</sup>
2358669-C	Shielding Sleeve IPT 16-50mm <sup>2</sup>
1991225-C	Protective Cover IPT 16-50mm <sup>2</sup>
2141809-C	Contact Kit, Body and Spring, Assy IPT 16-50mm <sup>2</sup>
1719826-C	Single Wire Seal
2177526-C	Anti Rotation Safeguard
2177380-C	Ring Tongue
2337598-C	Ring Tongue CEMBRE

### 2.1.2 SPECIFICATIONS

108-94293	Product Specification 1, 2 and 3 pos. Terminal for 16/25/35/50 mm <sup>2</sup> wire
114-94132(-1/-2/-3)	Frame Specification 1, 2 and 3 pos Terminal for 16/25/35/50mm <sup>2</sup> wire
18-AUT-CZ-0282	Test report and Customer approval for CEMBRE ring Tongue

## 2.2 GENERAL DOCUMENTATION

### 2.2.1 CABLE SPECIFICATIONS OF TESTED HIGH VOLTAGE (HV) CABLES, SHIELDED

Supplier:	Number:	Cross-section:	Jacket diameter:	TE PN
COROPLAST	FHLR2GCB2G / A10	16 mm <sup>2</sup>	10,2 (-0,6) mm	0-2208250-1
COROPLAST	FHLR2GCB2G / A10	25 mm <sup>2</sup>	12,2 (-0,6) mm	0-2177361-1
COROPLAST	FHLR2GCB2G / A14	35 mm <sup>2</sup>	14,4 (-0,6) mm	0-2177223-1
COROPLAST	FHLR2GCB2G / A12	50 mm <sup>2</sup>	15,8 (-0,6) mm	0-2141580-1
Kromberg & Schubert	FHLALR2GCB2G / A 5	50 mm <sup>2</sup> Aluminium	15,8 (-0,6) mm	n/a
Cablana Condumex	FLR2GCB2G 25/0,21 T180	25 mm <sup>2</sup>	12,2 (-0,6) mm	n/a
Cablana Condumex	FLR2GCB2G 35/0,21 T180	35 mm <sup>2</sup>	14,4 (-0,6) mm	n/a
Gebauer &Griller	FHLALR2GCB2G 50/0.50 AT180	50 mm <sup>2</sup> Aluminium	15,8 (-0,6) mm	n/a
Leoni	FHLR2GCB2G 25/0,21 T180	25mm <sup>2</sup>	11,8 (+/-0,3) mm	n/a
Leoni	FHLR2GCB2G 35/0,21 T180	35mm <sup>2</sup>	14,1 (+/-0,3) mm	n/a
Coficab	FHLR2GCB2G 35/0,21 T180	35mm <sup>2</sup>	14,4 (-0,6) mm	n/a

**Table 1**

If the listed wires do not meet your requirements, please contact the responsible TE Connectivity staff.

### 3 REQUIREMENTS

#### 3.1 DEGREES OF PROTECTION (IP-CODE)

The degrees of protection to DIN 40050-9 are related to in situ position of the connector. Protection classes that are specified in the product specification will be achieved if the connection has been correctly assembled.

#### 3.2 EMV-REQUIREMENTS

To achieve an optimal shielding, please pay attention to the following instructions. The assembly should only be performed by TE Connectivity trained personnel. –IMPORTANT

**Important! The correct function can only be achieved and guaranteed by using the tools and devices specified by TE Connectivity.**

**3.3 APPLICATION TOOLS**

The shield Sleeve 2141810-X is superseded by 2141669-X. The 2141810-X will not be available anymore Do not use it for new projects.

**3.3.1 RING TONGUE PN 2177380-C**

	<b>Conductor CSA</b>	<b>Wire Supplier (see chapter 2.2.1)</b>	<b>Ring Tongue</b>	<b>Contact Kit Body, Assy / Shielding Sleeve (Product No.: TE Connect.)</b>	<b>Locator Number and Die Set Number</b>
Tools for cable lug	16mm <sup>2</sup>	COROPLAST	0-2177380-1	<del> </del>	2-528041-2
	25 mm <sup>2</sup>	COROPLAST	1-2177380-1	<del> </del>	0-528041-3
		CABLENA COROPLAST		<del> </del>	
	35 mm <sup>2</sup>	COFICAB	2-2177380-1 2-2177380-2	<del> </del>	0-528041-1
CABLENA COROPLAST		<del> </del>			
50 mm <sup>2</sup>	KOMBERG & SCHUBERT	3-2177380-1 3-2177380-2	<del> </del>	0-528041-7	
			COROPLAST		<del> </del>
Tools for shielding contact and insulation crimp	16mm <sup>2</sup>	COROPLAST	<del> </del>	0-2141809-3	2-528041-1
			<del> </del>	0-2141810-1	
			<del> </del>	2358669-1	
	25 mm <sup>2</sup>	COROPLAST CABLENA	<del> </del>	0-2141809-3	0-528041-4
			<del> </del>	0-2141810-2 0-2358669-2	
	35 mm <sup>2</sup>	COROPLAST COFICAB CABLENA	<del> </del>	0-2141809-3	0-528041-2
			<del> </del>	0-2141810-3 0-2358669-3	
	50 mm <sup>2</sup>	COROPLAST	<del> </del>	0-2141809-3	1-528041-1
<del> </del>			0-2141810-4 0-2358669-4		

**Table 2a**

**3.3.2 RING TONGUE CEMBRE PN 2337598-C**

	<b>Conductor CSA</b>	<b>Wire Supplier (see page 5)</b>	<b>Ring Tongue</b>	<b>Contact Kit Body, Assy / Shielding Sleeve (Product No.: TE Connect.)</b>	<b>Locator no. + Die Set no.:</b>
Tools for cable lug	35mm <sup>2</sup>	COROPLAST	2337598-1	<del> </del>	7-528041-2
Tools for shielding contact and insulation crimp	35mm <sup>2</sup>	COROPLAST	<del> </del>	0-2141809-3	7-528041-3
				0-2141810-3 0-2358669-3	

**Table 2b**

**3.3.3 RING TONGUE 2112844 AND 1991233**

	Conductor CSA	Wire Supplier (see page 5)	Ring Tongue	Contact Kit Body, Assy / Shielding Sleeve (Product No.: TE Connect.)	Locator no. + Die Set no.:
Tools for cable lug	16 mm <sup>2</sup>	COROPLAST	1-2112844-3	<del>X</del>	9-528041-1
	50mm <sup>2</sup>	COROPLAST	5-1991233-3	<del>X</del>	9-528041-3
Tools for shielding contact and insulation crimp	16 mm <sup>2</sup>	COROPLAST	<del>X</del>	0-2141809-3	9-528041-2
				0-2141810-1	
	50mm <sup>2</sup>	COROPLAST	<del>X</del>	0-2141809-3	9-528041-4
				0-2141810-4	
				0-2358669-4	

**Table 2c**



<p><b>Table frame for hydraulic pliers</b></p>	<p><b>Hand hydraulic pliers</b></p>	<p><b>Die set for ring tongue</b></p>
		
<p><b>0-528040-9</b></p>	<p><b>9-1579009-1</b></p>	<p><b>For PN - see Table 2a-c</b></p>
<p><b>Die-set for locator shielding insulation crimp</b></p>		<p><b>Table frame and hand hydraulic, locator pliers (assembled)</b></p>
		
<p><b>For PN - see Table 2a-c</b></p>		

**Table 3**

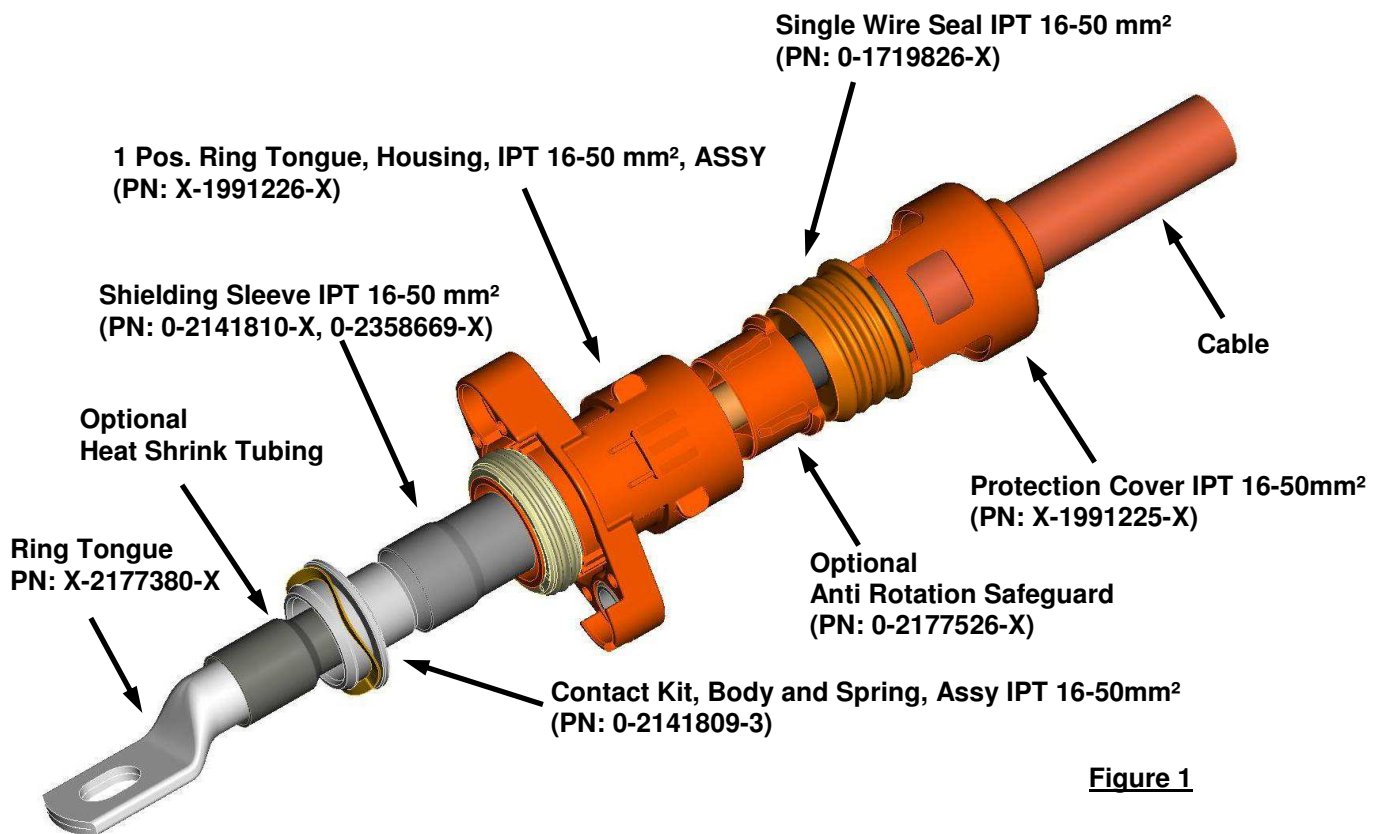
## 4 ASSEMBLY INSTRUCTIONS

**ATTENTION!**  
**- HIGH VOLTAGE APPLICATION -**  
**SHIELDING MESH AND CABLE ISOLATION MUSTN'T BE DAMAGED!**

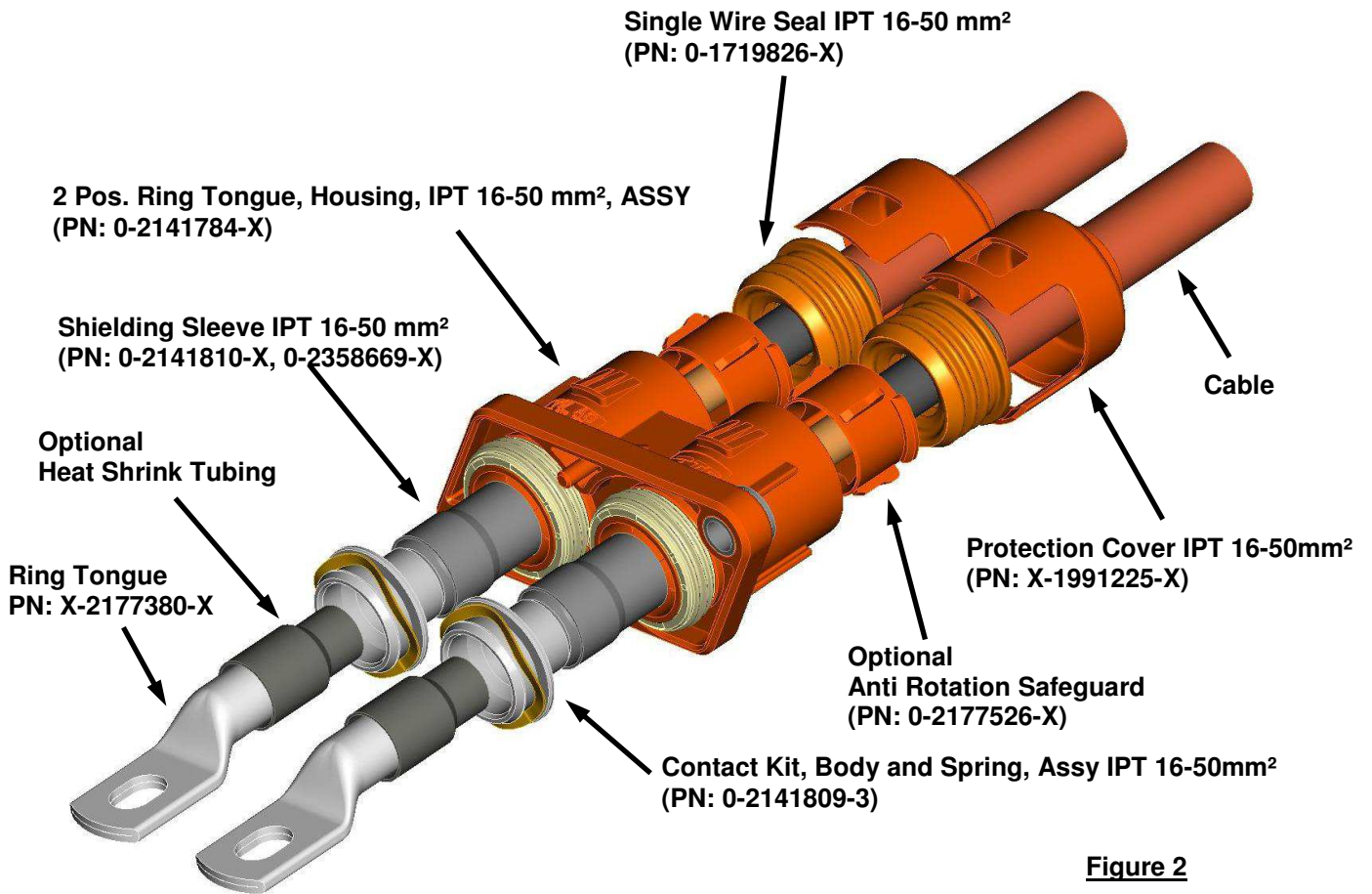
***Achtung!***  
***Hochvoltanwendung***  
***Das Schirmgeflecht und die Leitung darf nicht beschädigt werden!***



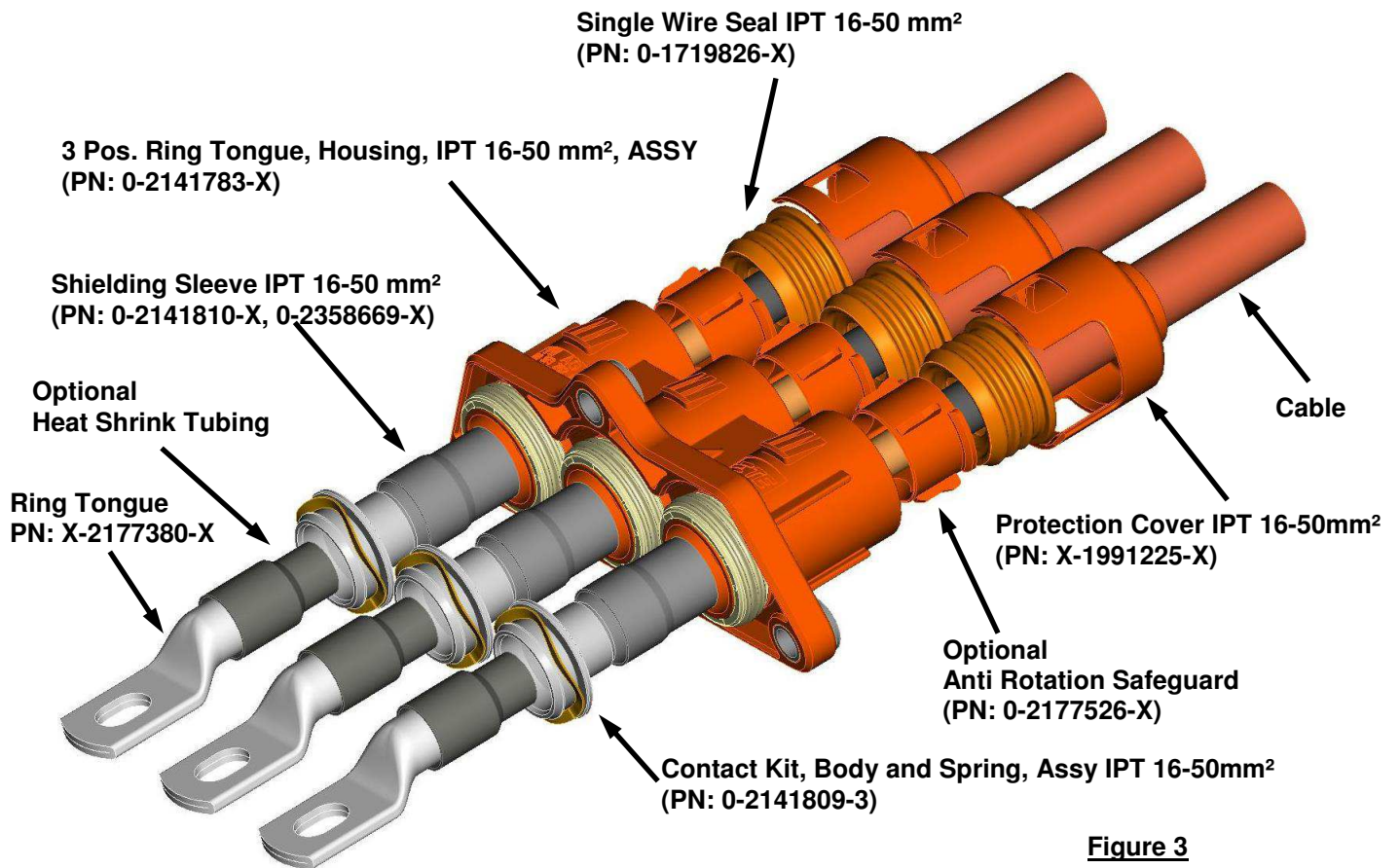
### Component overview for 1 pos. IPT:



**Component Overview for 2 pos. IPT:**



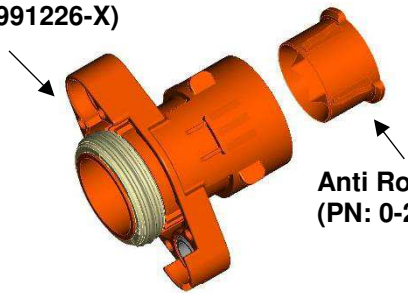
**Component Overview for 3 pos. IPT:**



**Step 1**

If an anti rotation safeguard will be needed the component has to be centered and pressed into the IPT housing. The orientation of the safeguard is shown in the following figures.

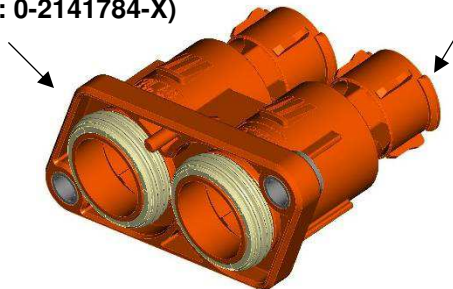
**1 Pos. Ring Tongue, Housing, IPT 16-50 mm<sup>2</sup>, ASSY  
(PN: X-1991226-X)**



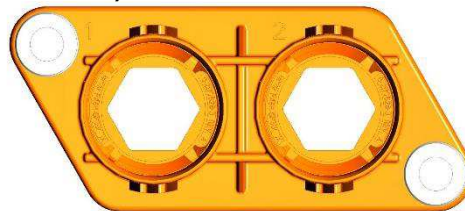
**Anti Rotation Safeguard  
(PN: 0-2177526-X)**



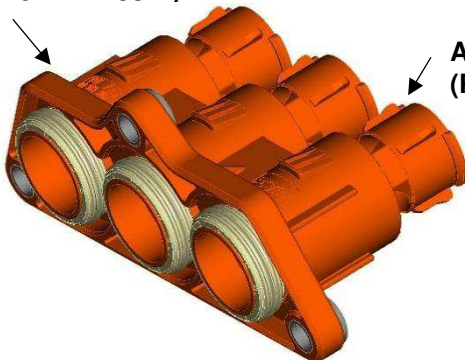
**2 Pos. Ring Tongue, Housing, IPT 16-50 mm<sup>2</sup>, ASSY  
(PN: 0-2141784-X)**



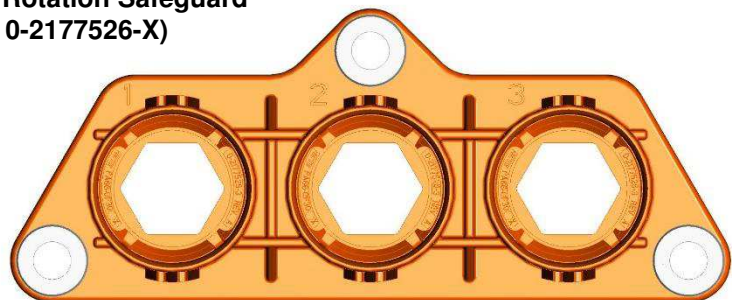
**Anti Rotation Safeguard  
(PN: 0-2177526-X)**



**3 Pos. Ring Tongue, Housing, IPT 16-50 mm<sup>2</sup>, ASSY  
(PN: 0-2141783-X)**



**Anti Rotation Safeguard  
(PN: 0-2177526-X)**

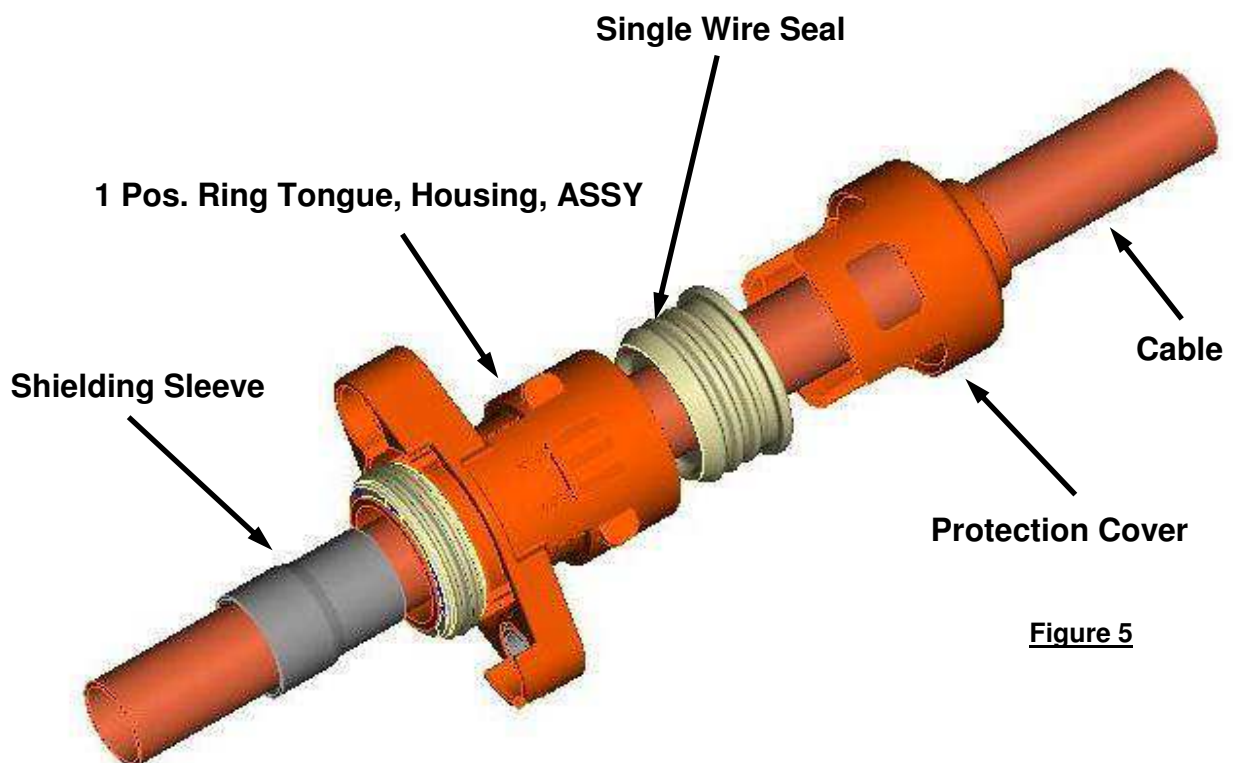


**Figure 4**

## Step 2

For 1 pos. IPT the following parts should be assembled in the following order on the cable:

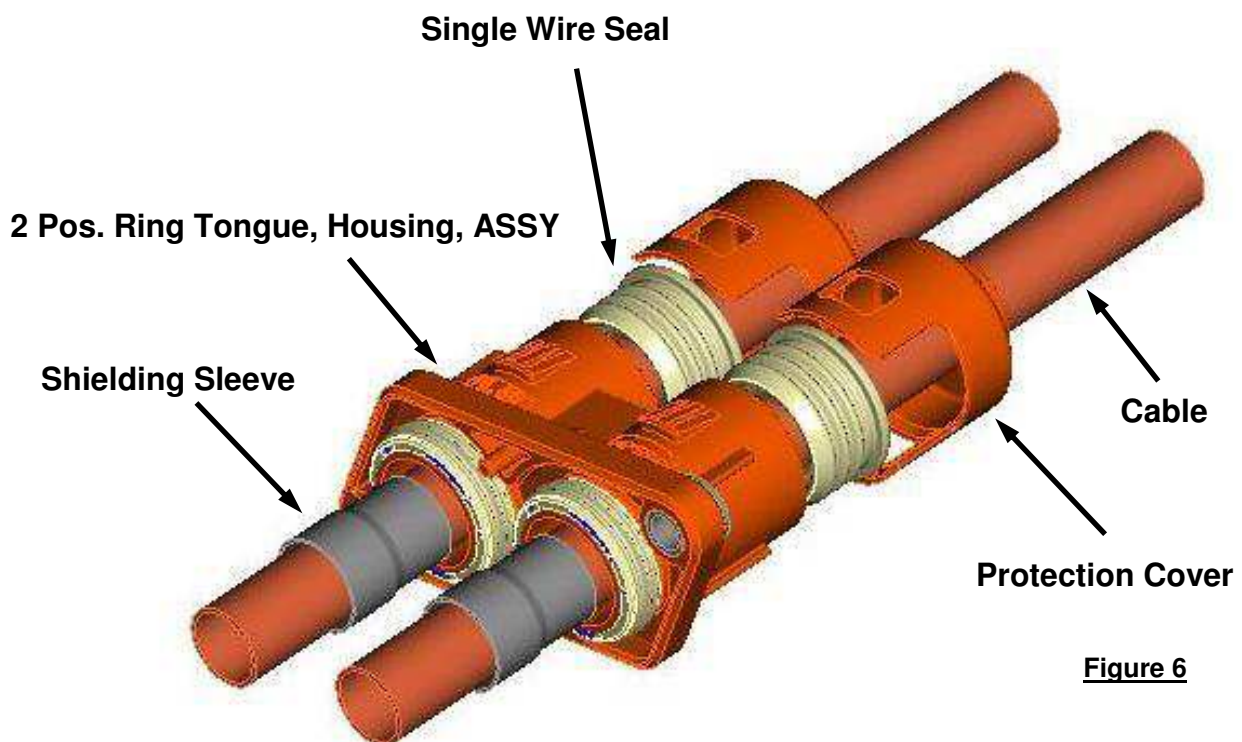
- |    |  |                                    |
|----|--|------------------------------------|
| 1. | Protection Cover, IPT 16-50mm <sup>2</sup>                   | PN: X-1991225-X                    |
| 2. | Single Wire Seal, IPT 16-50mm <sup>2</sup>                   | PN: 0-1719826-X                    |
| 3. | 1 Pos. Ring Tongue, Housing, IPT 16-50mm <sup>2</sup> , ASSY | PN: X-1991226-X                    |
| 4. | Shielding Sleeve IPT 16-50 mm <sup>2</sup>                   | PN: 0-2141810-X<br>PN: 0-2358669-X |



**Figure 5**

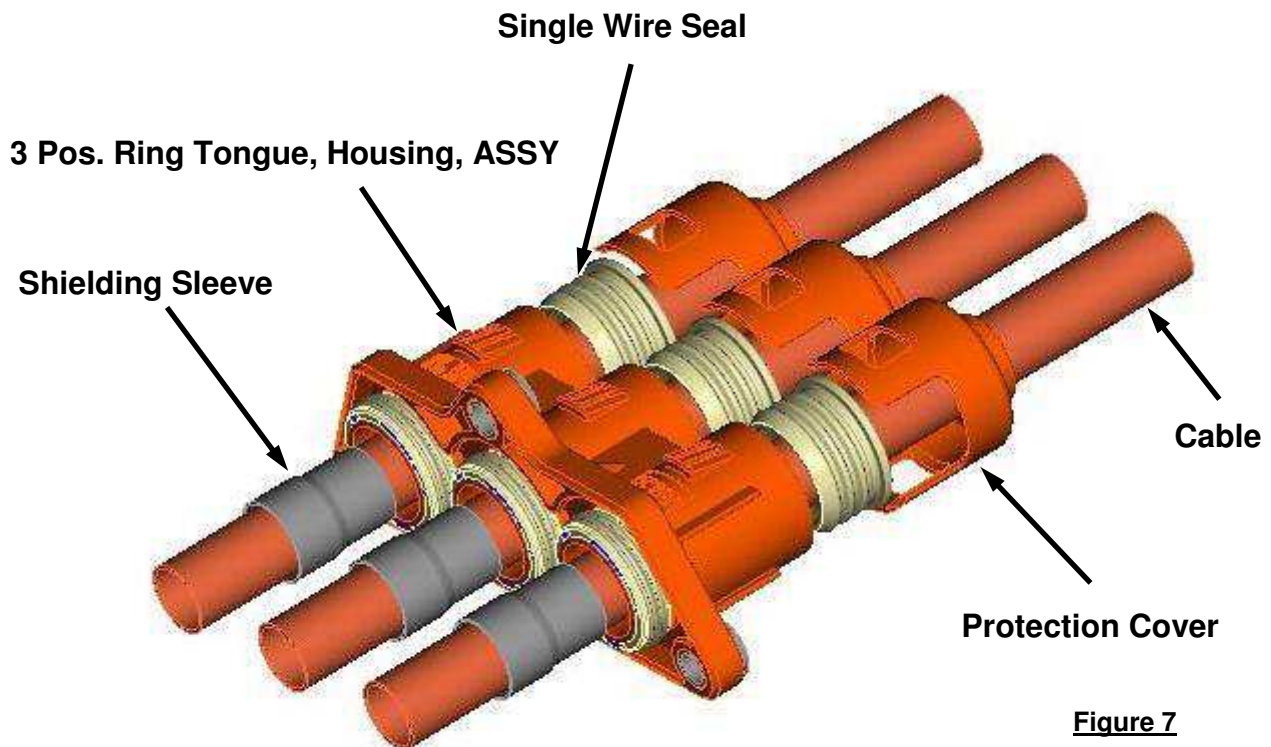
For 2 pos. IPT the following parts should be assembled in the following order on the cable:

- |    |  |                                    |
|----|--|------------------------------------|
| 1. | Protection Cover, IPT 16-50mm <sup>2</sup>                   | PN: X-1991225-X                    |
| 2. | Single Wire Seal, IPT 16-50mm <sup>2</sup>                   | PN: 0-1719826-X                    |
| 3. | 2 Pos. Ring Tongue, Housing, IPT 16-50mm <sup>2</sup> , ASSY | PN: 0-2141784-X                    |
| 4. | Shielding Sleeve IPT 16-50 mm <sup>2</sup>                   | PN: 0-2141810-X<br>PN: 0-2358669-X |



For 3 pos. IPT the following parts should be assembled in the following order on the cable:

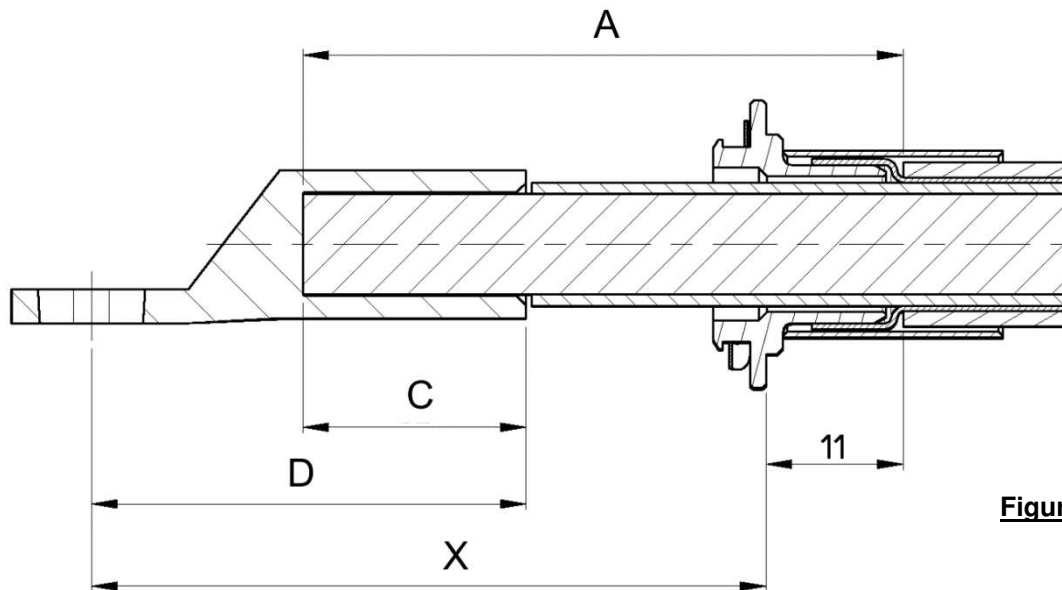
- |    |  |                                    |
|----|--|------------------------------------|
| 1. | Protection Cover, IPT 16-50mm <sup>2</sup>                   | PN: X-1991225-X                    |
| 2. | Single Wire Seal, IPT 16-50mm <sup>2</sup>                   | PN: 0-1719826-X                    |
| 3. | 3 Pos. Ring Tongue, Housing, IPT 16-50mm <sup>2</sup> , ASSY | PN: 0-2141783-X                    |
| 4. | Shielding Sleeve IPT 16-50 mm <sup>2</sup>                   | PN: 0-2141810-X<br>PN: 0-2358669-X |





**Step 3**

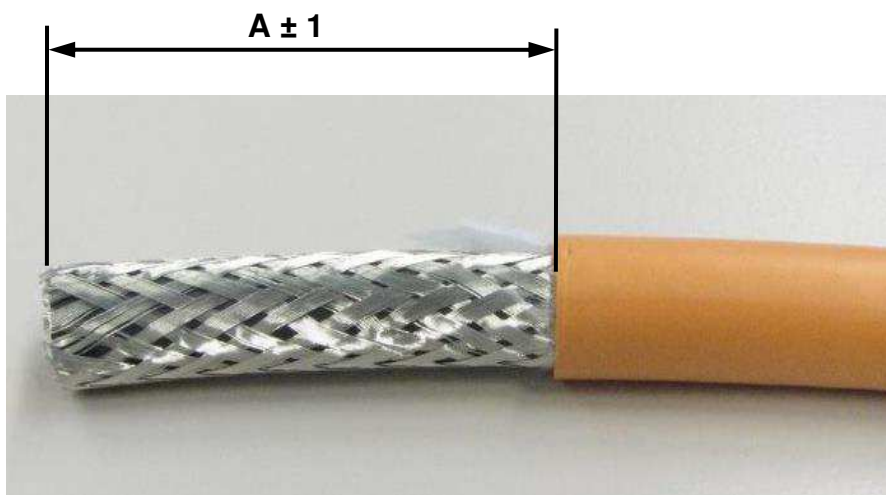
Dimension 'A' to be calculated, recommendation for calculation as follows:

**Figure 8**

C & D – Taken from ring tongue specification  
X – Taken from cable assembly specification / drawing  
 $A = X - (D - C) + 11$ , (Einheit = mm)



**The cable insulation to be cut and removed up to dimension  $A \pm 1$  (Figure 9).**  
**Attention: The shielding braid must not be damaged!**



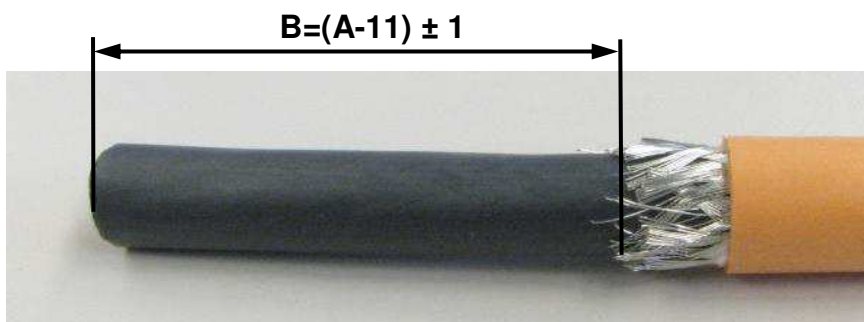
**Figure 9**

**Step 4**



**Shielding braid to be cut to  $B \pm 1$  mm (Figure 10).**

**The shielding braid must not be combed!**  
**Attention: Insulation mustn't be damaged!**



**Figure 10**

On cable with additional shielding foil this is to be removed (Figure 11).



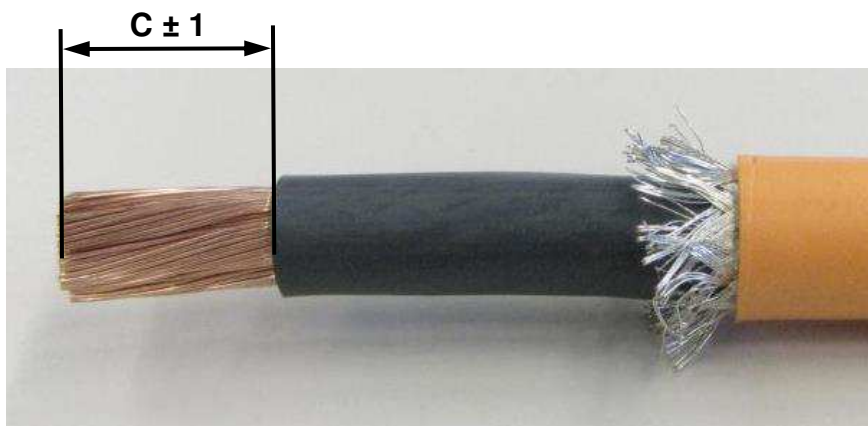
**Figure 11**

**Step 5**



**The inner cable insulation to be cut and removed up to dimension C ±1 mm (Figure 8, 12).**

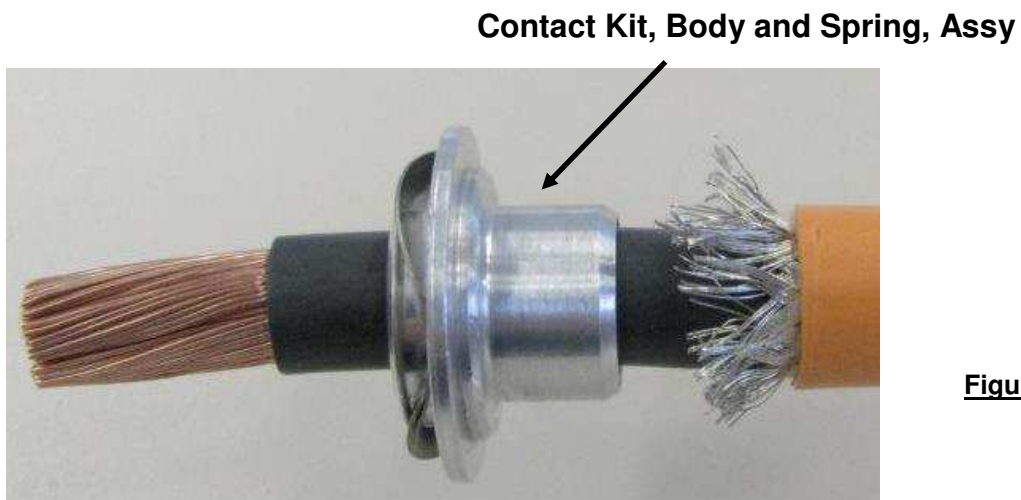
**Attention: The stranded wire mustn't be damaged!**



**Figure 12**

**Step 6**

Assemble the contact kit (body and spring assy) to cable (Figure 13)



**Figure 13**

**Step 7**

Assemble the ring tongue to cable (Figure 14).



**Figure 14**

## **Step 8**

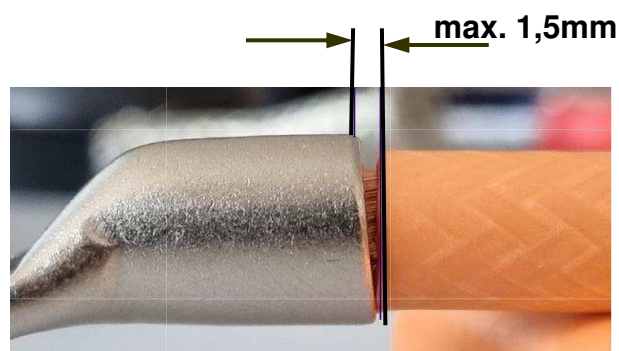
Complete the ring tongue crimp (Figure 15).

The crimp height and position have to be verified with the ring tongue supplier. The maximum distance after crimping between ring tongue and cable insulation has to be 1,5mm. (Figure 16 ).



**Figure 15**

### **Gap between ring tongue and cable insulation after crimp**

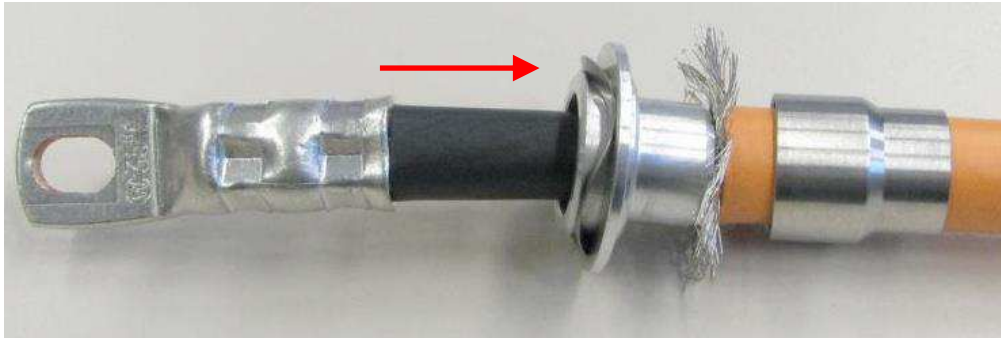


**Figure 16**

S

**Step 9**

Push the contact kit (body and spring assy) under the shielding braid until it abuts with the outer insulation (Figure 17).

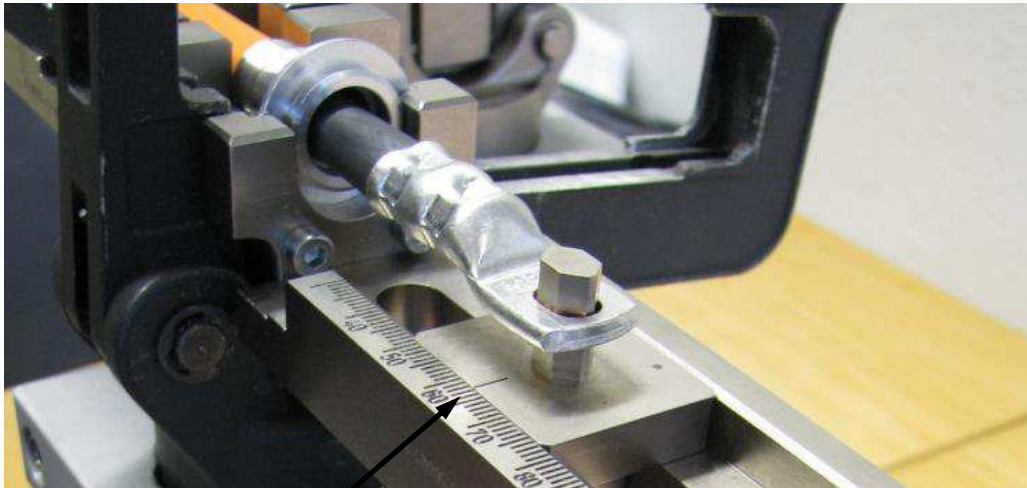
**Figure 17****Step 10**

Holding the contact kit (body and spring assy) in position push the shielding sleeve to entrap the shielding braid until it abuts with the shield body flange (Figure 18).

**Figure 18**

### **Step 11**

Adjust dimension X on shield and isolation crimping fixture to suit cable assembly specification then position and crimp the cable assembly (Figure 8, 19).



**Figure 19**

**Dimension X**



## Step 12

Check complete crimped cable assembly (Figure 20, 20a and Table 2).



**Max. 1mm gap between shielding sleeve and contact body flange. The braid has to be visible all around but not more than 2mm. The cutting processes of the cable (Figure 9, 10, 12) has to be adjusted that a max. length of the braid in the crimped area will be achieved.**

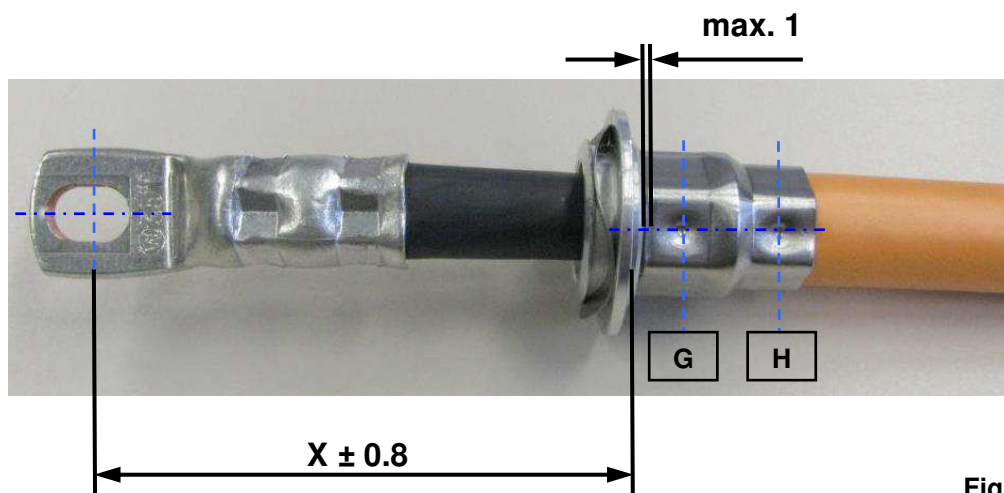


Figure 20



**The braid should not get over the contact body flange.**

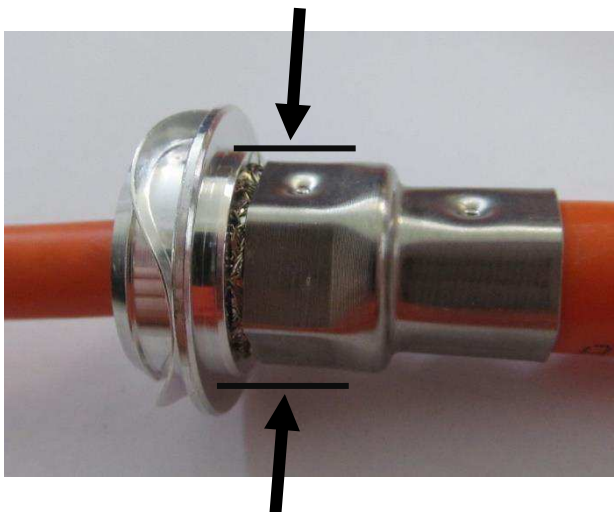
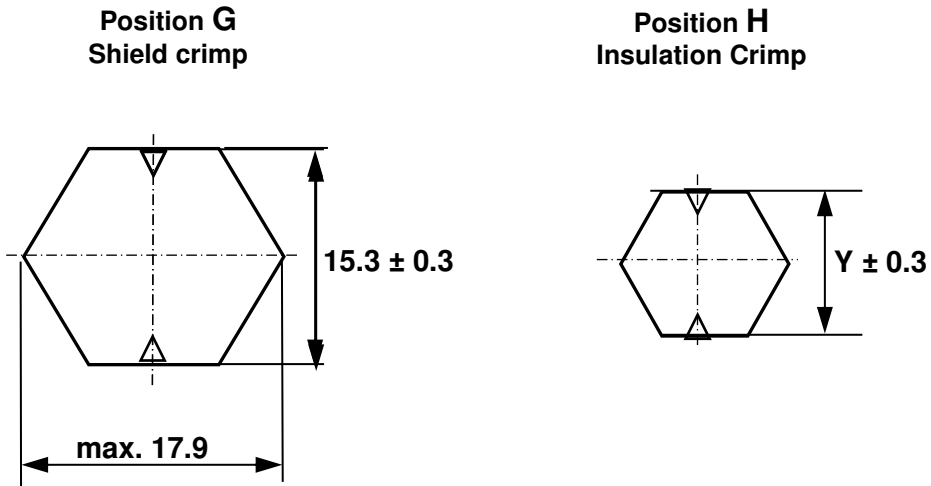


Figure 20a

4.1 CONTROL OF DIMENSIONS OF “HEXAGONAL CRIMPS”

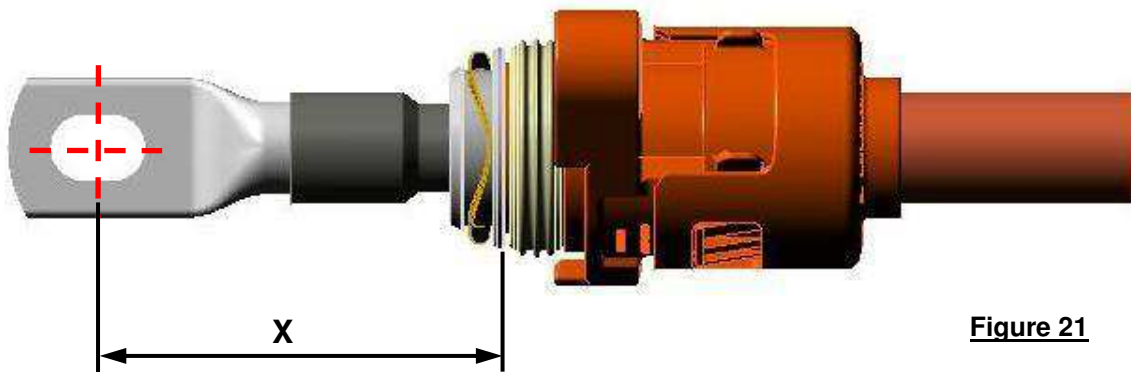


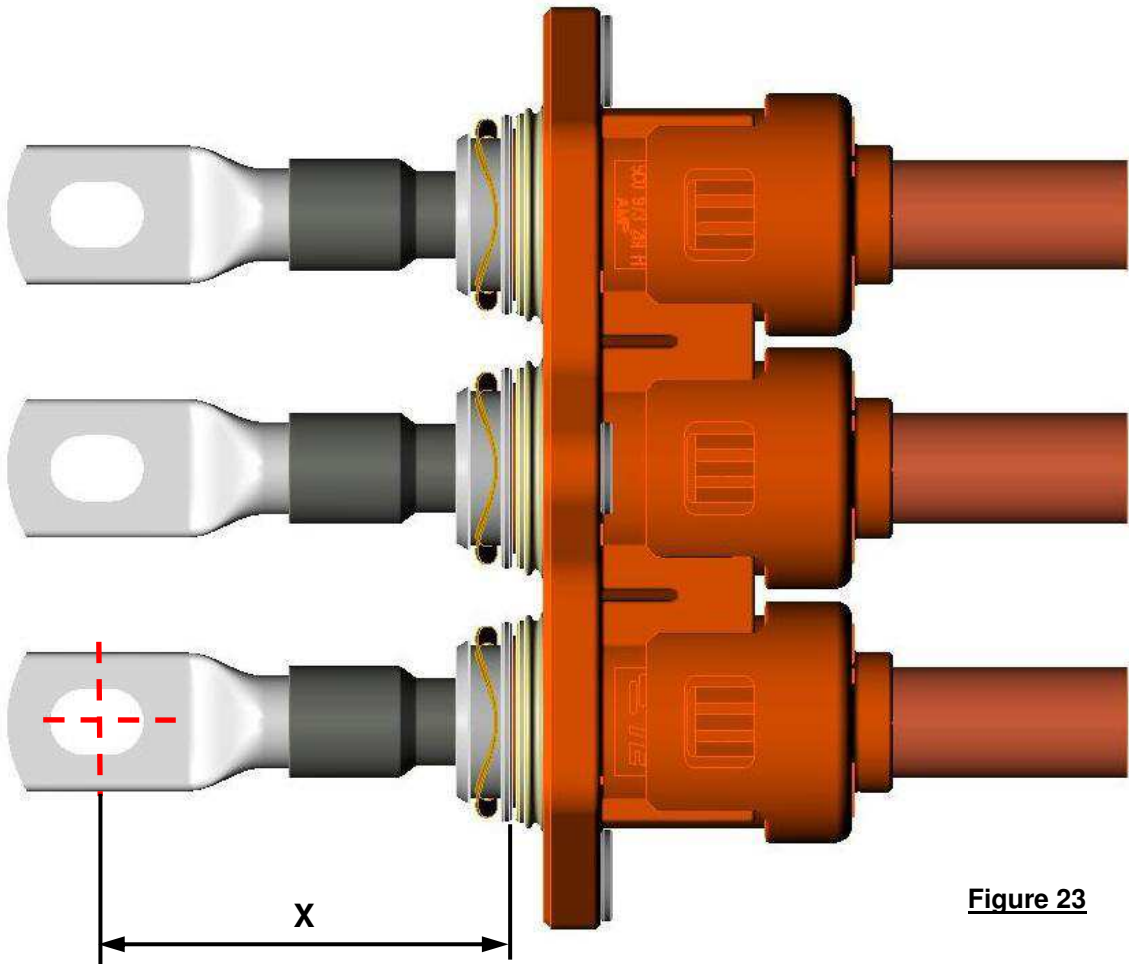
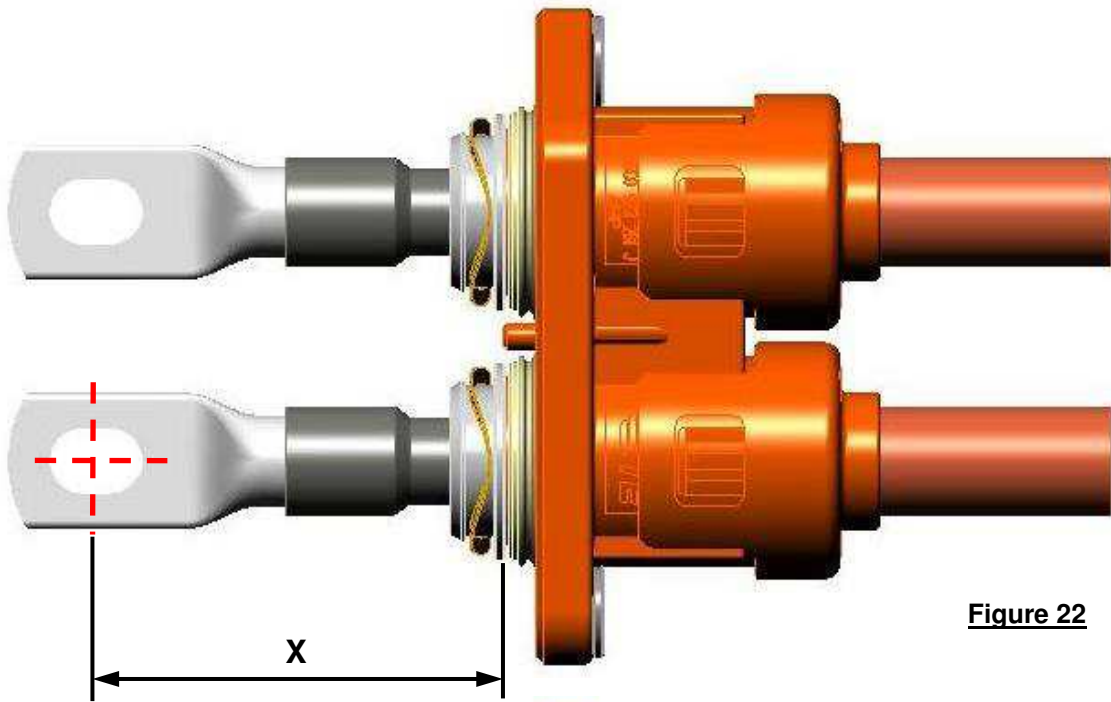
Position H - insulation crimp height		
Supplier	Size	Crimp Height 'Y'
COROPLAST	16mm <sup>2</sup>	10,40
COROPLAST LEONI	25mm <sup>2</sup>	12,40
COROPLAST COFICAB LEONI	35mm <sup>2</sup>	14,40
COROPLAST KROMBERG & SCHUBERT	50mm <sup>2</sup>	15,60
For Cable specification see chapter 2.2.1		

**Table 4**

**Step 13**

Slide the IPT housing assy and single wire seal along the cable until they abut with the contact body flange. Then slide the protective cover along the cable and snap fit to the IPT Hsg assy (Figure 21, 22, 23).

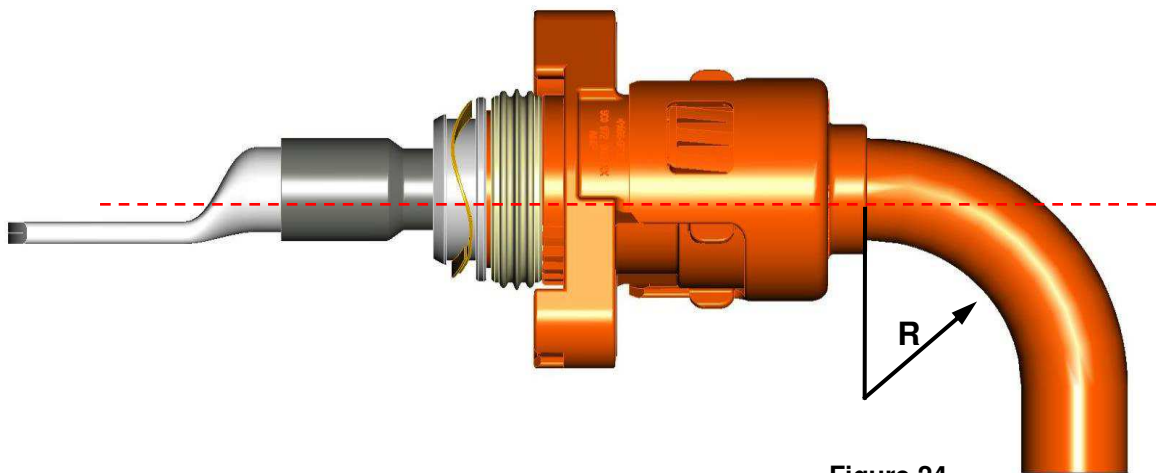
**Figure 21**



## 5 MOUNTING INSTRUCTIONS

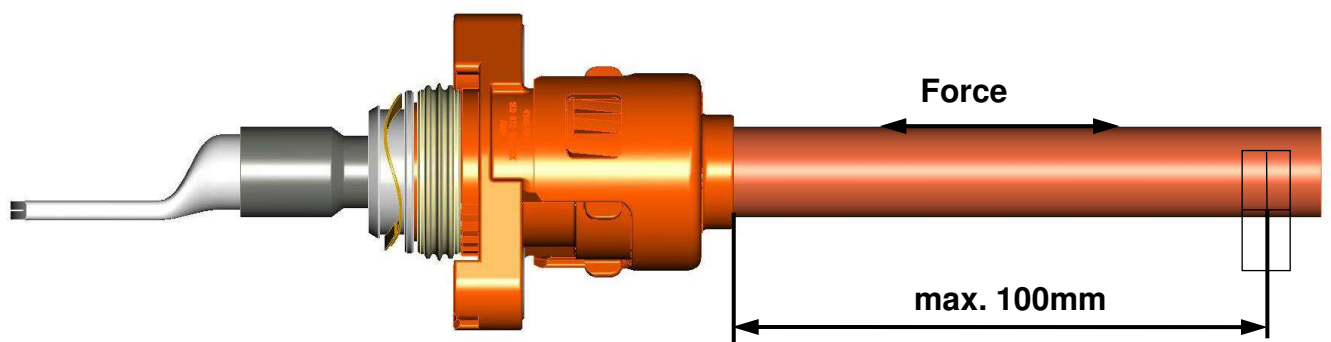
### 5.1 SPECIFICATION CABLE OUTLET

The cable outlet must be straight or at least tangential to the mating axis at the end of the protective cover (Figure 24). The wire must not be bended off the cap. The minimum bending radius  $R$  of the cable must be according to the specification of the cable supplier.



**Figure 24**

First cable fixation (first catch of the cable) from cable outlet protection cap on maximum 100mm (Figure 25). No torque, tensile or pressure force from the cable at the IPT permitted.



**Figure 25**

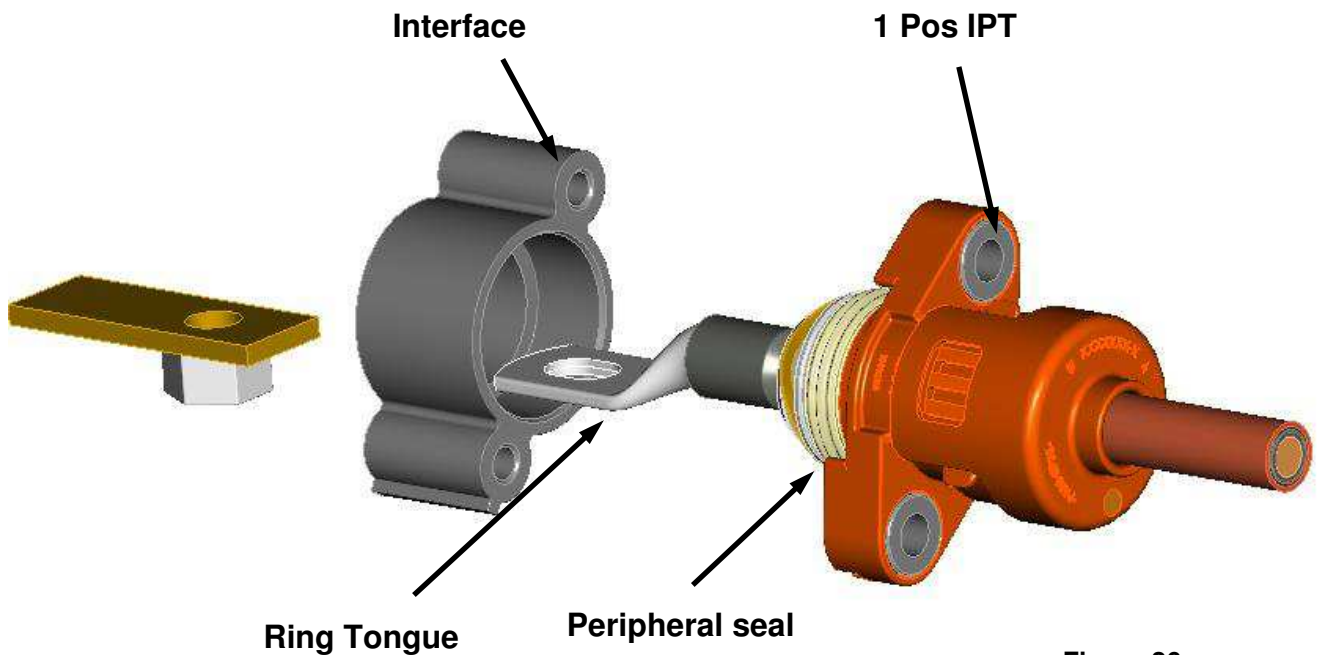
## 5.2 MOUNTING INSTRUCTIONS FOR THE 1 POS IPT

### Mounting Step 1

Feed in the ring tongue through the interface bore hole and centre the peripheral seal at the entry of the interface. Feed in the peripheral seal with the 1 pos. IPT housing assy into the interface



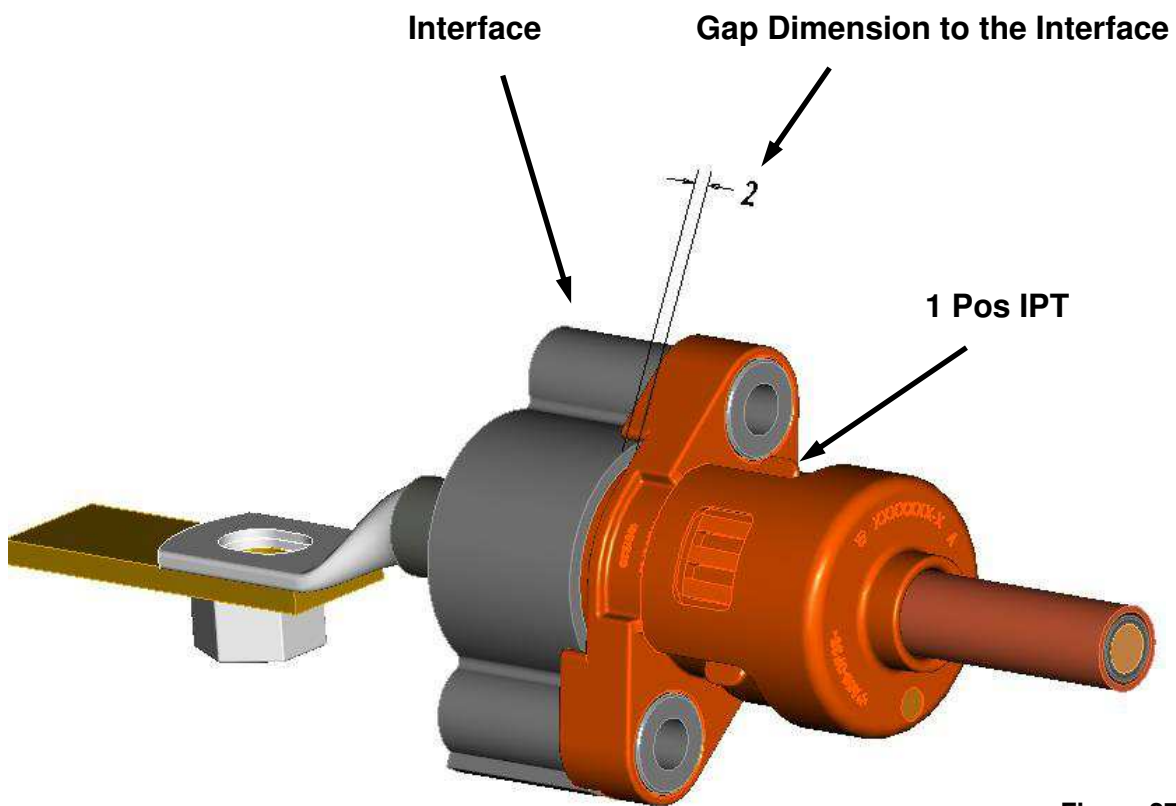
**It must be assured that the peripheral seal is not damaged during the plug operation. A minimum deviation of the interface and product axle during feed in of the housing has to be assured (Figure 26).**



**Figure 26**

**Mounting Step 2**

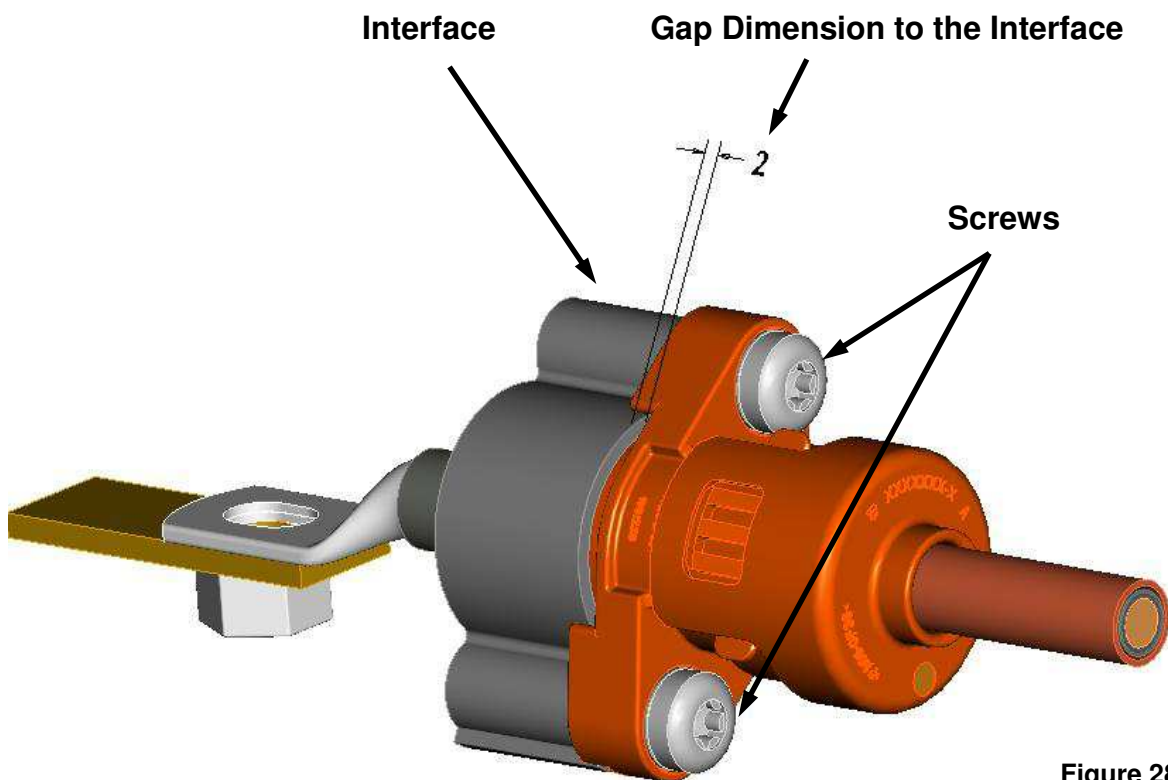
Press the 1 pos. IPT housing assy into the interface until the contact kit (body and spring assy) touches the interface ground. The gap between IPT housing assy and interface should amount nearly 2 mm (Figure 27).



**Figure 27**

**Mounting Step 3**

Plug the screws through the bushing holes of the IPT housing assy and pre-screw into the interface until the screws touch the surface of the bushings (Figure 28).

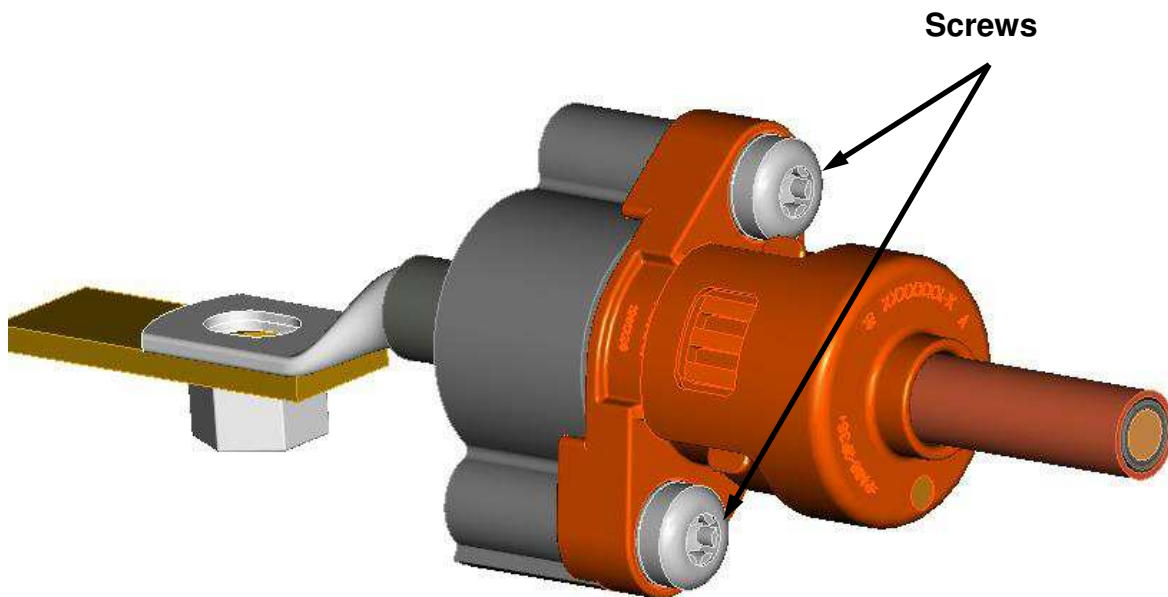


**Figure 28**



### **Mounting Step 4**

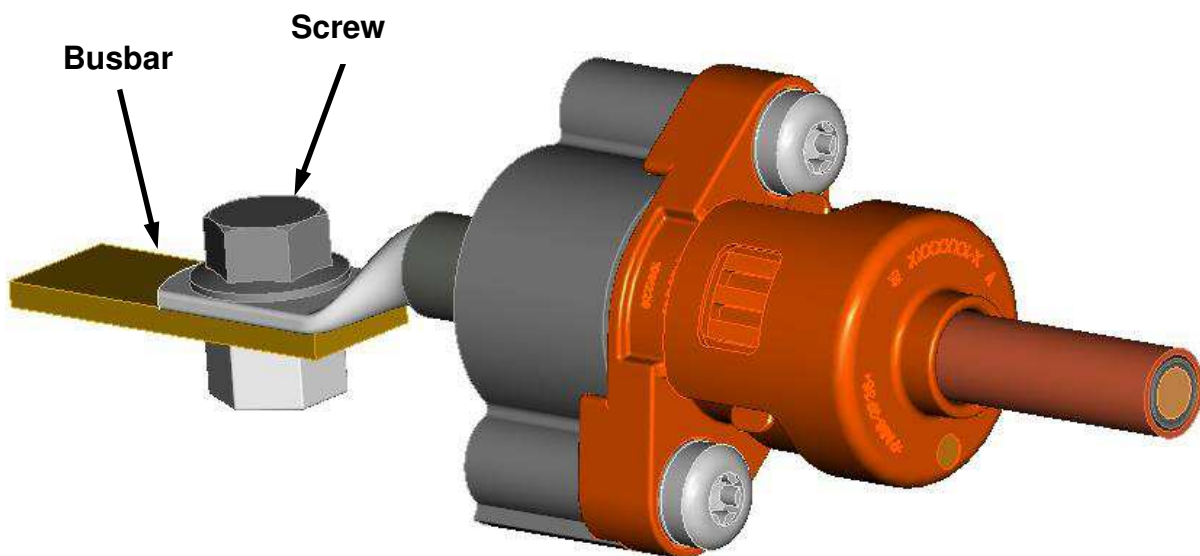
Retightening the screws to mount the IPT housing assy onto the interface; locking and tightening torque of the Screws is up to the user. A maximum tightening torque of 7Nm is allowed (Figure 29).



**Figure 29**

### **Mounting Step 5**

Screw the ring tongue to the busbar; locking and tightening torque of the screws is up to the customer (Figure 30).



**Figure 30**


### **ATTENTION!**

In case of remounting the IPT from the interface it has to be assured that the sealing is in the correct position of the IPT housing assy.

## 5.4 MOUNTING INSTRUCTIONS FOR THE 2 POS IPT

### Mounting Step 1

Feed in the ring tongue through the interface bore hole and centre the peripheral seal at the entry of the interface. Feed in the peripheral seals with the 2 pos. IPT housing assy into the interface

 **It must be assured that the peripheral seals are not damaged during the plug operation. A minimum deviation of the interface and product axle during feed in of the housing has to be assured (Figure 31).**

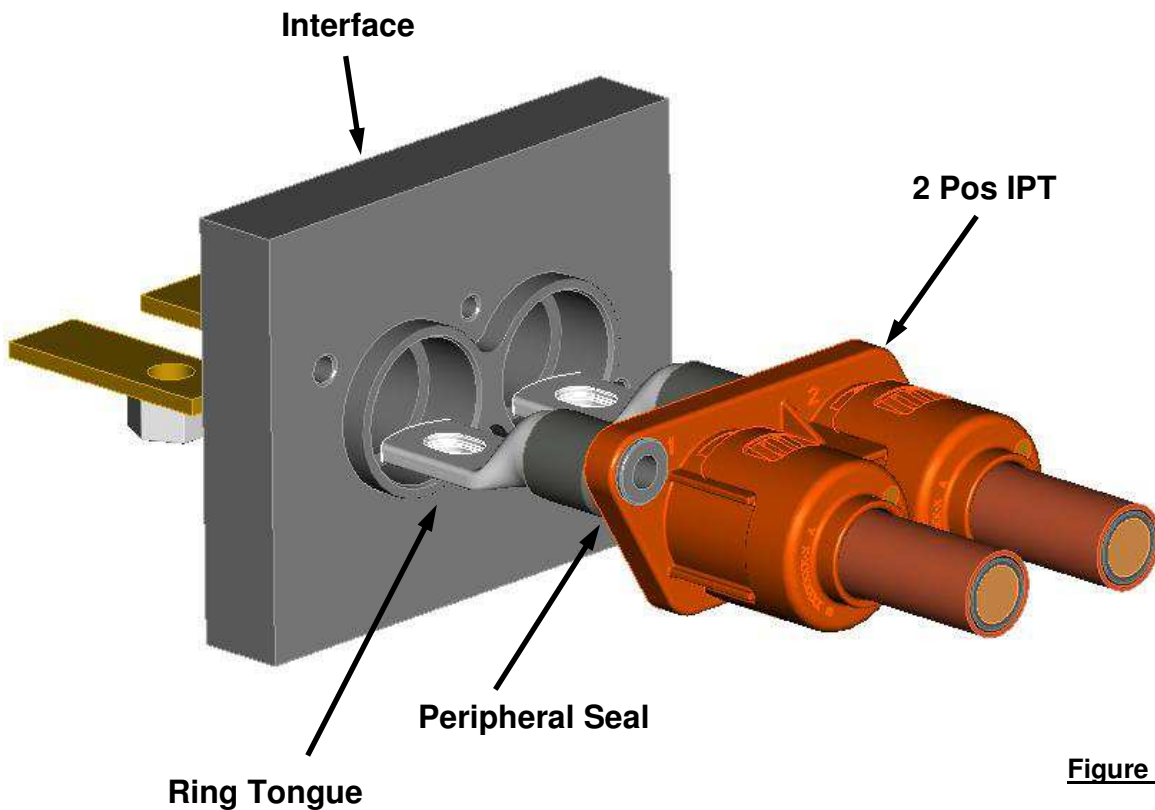
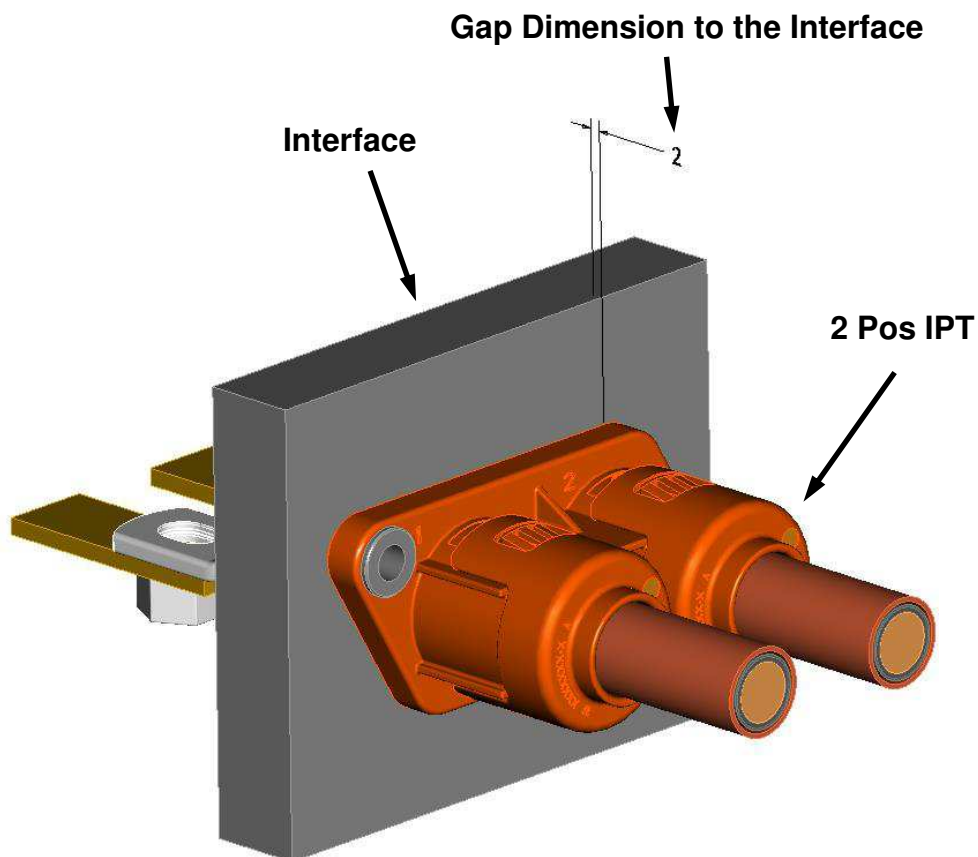


Figure 31

## Mounting Step 2

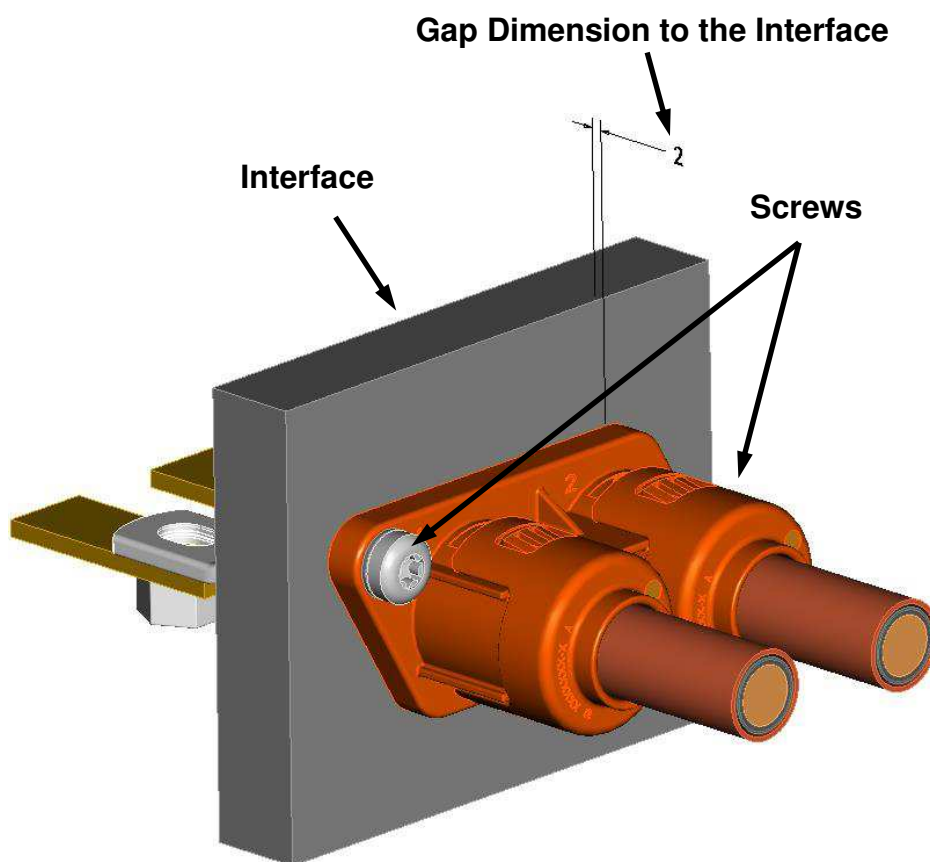
Press the 2 pos. IPT housing assy into the interface until the contact kit (body and spring assy) touches the interface ground. The gap between IPT housing assy and interface should amount nearly 2 mm (Figure 32).



**Figure 32**

### Mounting Step 3

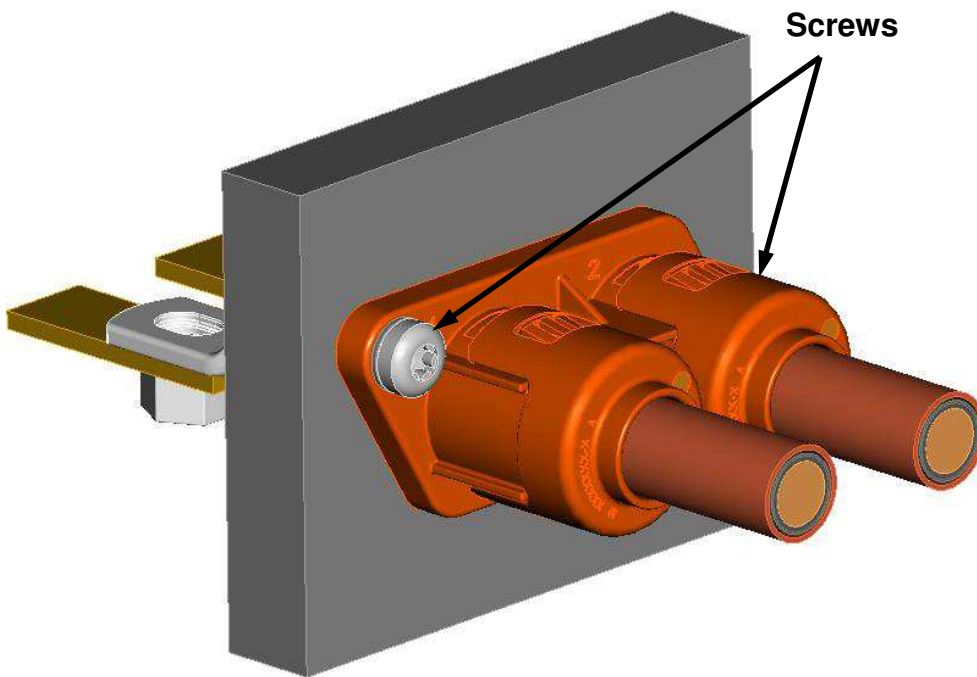
Plug the screws through the bushing holes of the IPT housing assy and pre screw into the interface until the screws touch the surface of the bushings (Figure 33).



**Figure 33**

## Mounting Step 4

Retightening the screws to mount the IPT housing assy onto the interface; locking and tightening torque of the Screws is up to the user. A maximum tightening torque of 7Nm is allowed (Figure 34).



**Figure 34**

## Mounting Step 5

Screw the ring tongue to the busbar; locking and tightening torque of the screws is up to the customer (Figure 35).

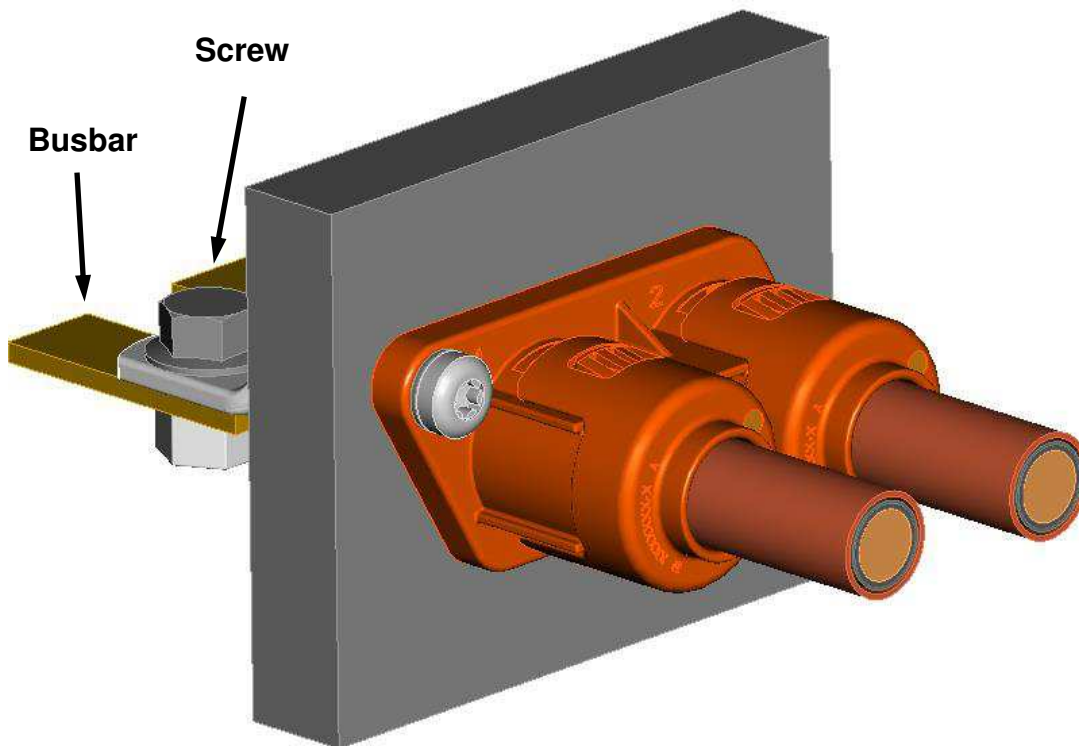


Figure 35

## **ATTENTION!**

In case of remounting the IPT from the interface it has to be assured that the sealing's are in the correct position of the IPT housing assy.

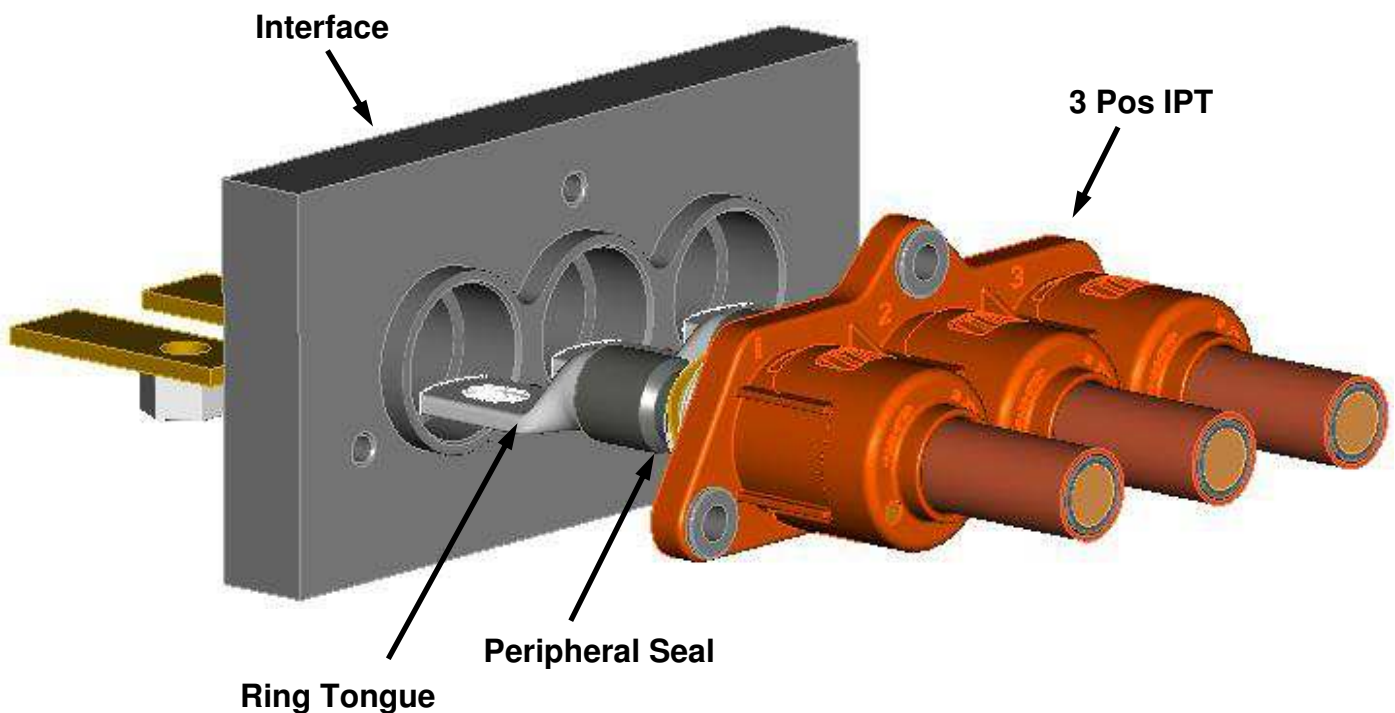
## 5.5 MOUNTING INSTRUCTIONS FOR THE 3 POS IPT

### Mounting Step 1

Feed in the ring tongue through the interface bore hole and centre the peripheral seal at the entry of the interface. Feed in the peripheral seals with the 3 pos. IPT housing assy into the interface.



**It must be assured that the peripheral seals are not damaged during the plug operation. A minimum deviation of the interface and product axle during feed in of the housing has to be assured (Figure 36).**

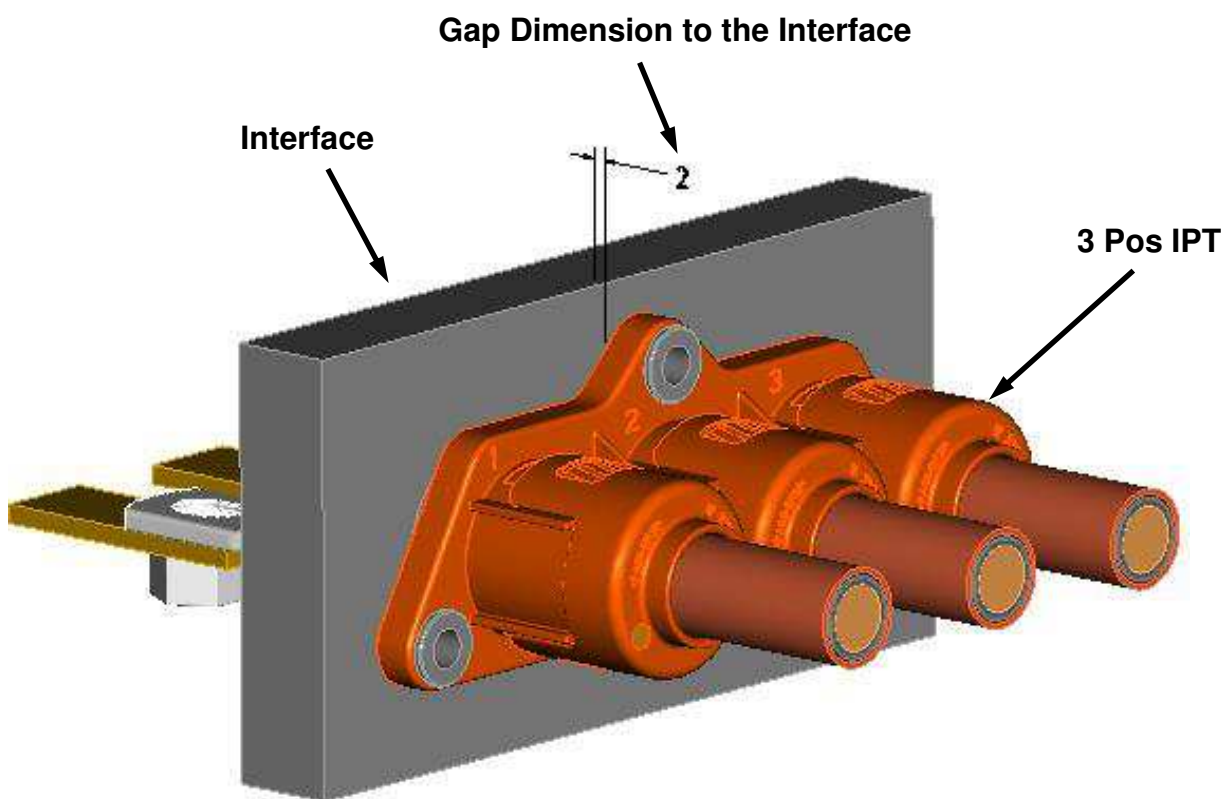


**Figure 36**



## Mounting Step 2

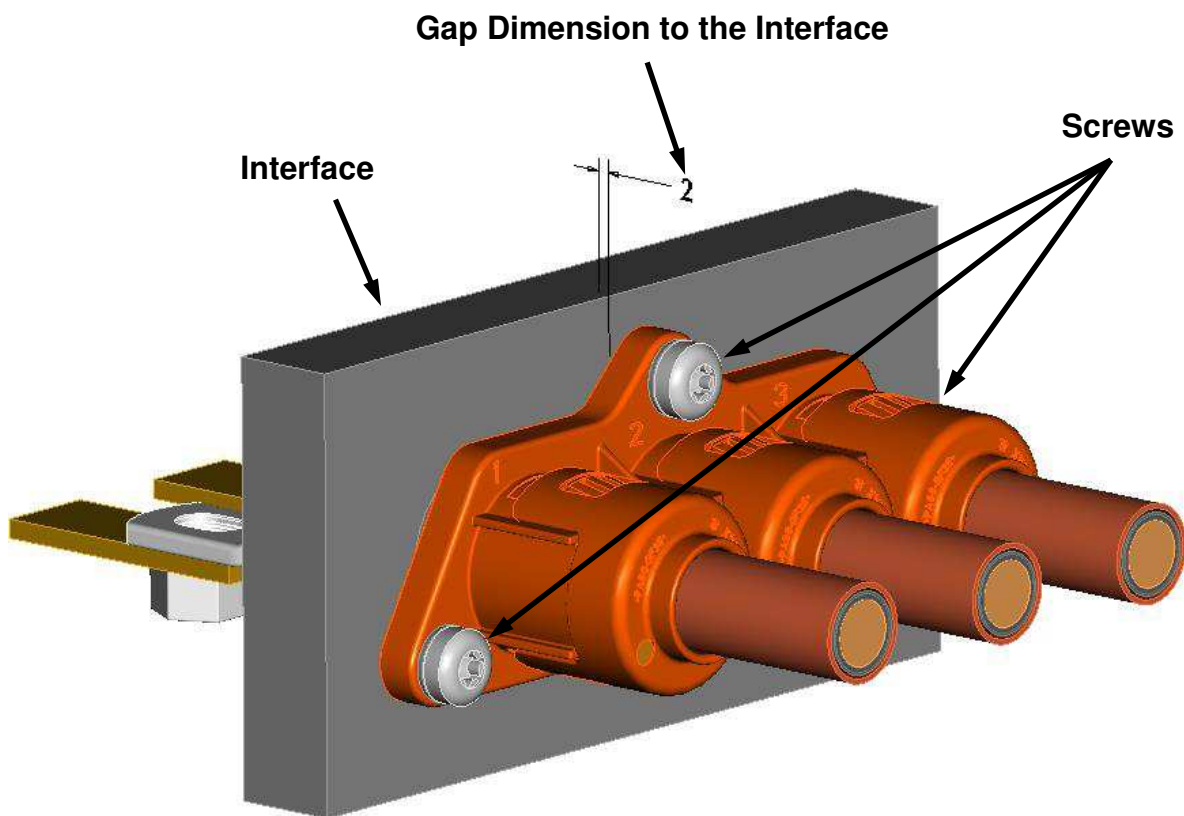
Press the 3 pos. IPT housing assy into the interface until the contact kit (body and spring assy) touches the interface ground. The gap between IPT housing assy and interface should amount nearly 2 mm (Figure 37).



**Figure 37**

**Mounting Step 3**

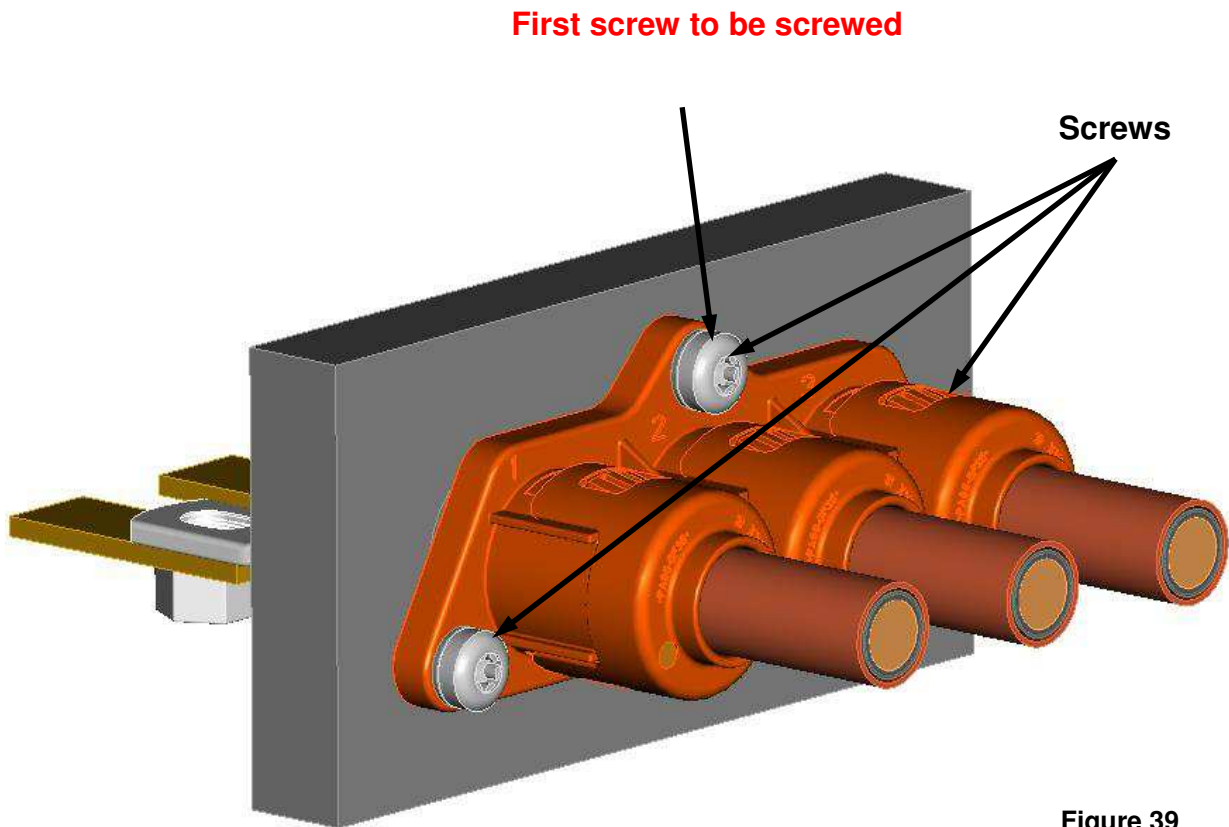
Plug the screws through the bushing holes of the IPT housing assy and pre screw into the interface until the screws touch the surface of the bushings (Figure 38).



**Figure 38**

**Mounting Step 4**

Retightening the screws to mount the IPT housing assy onto the interface; locking and tightening torque of the Screws is up to the user. First screw to be screwed is defined in Figure 39. A maximum tightening torque of 7Nm is allowed.



## Mounting Step 5

Screw the ring tongue to the busbar; locking and tightening torque of the screws is up to the customer (Figure 40).

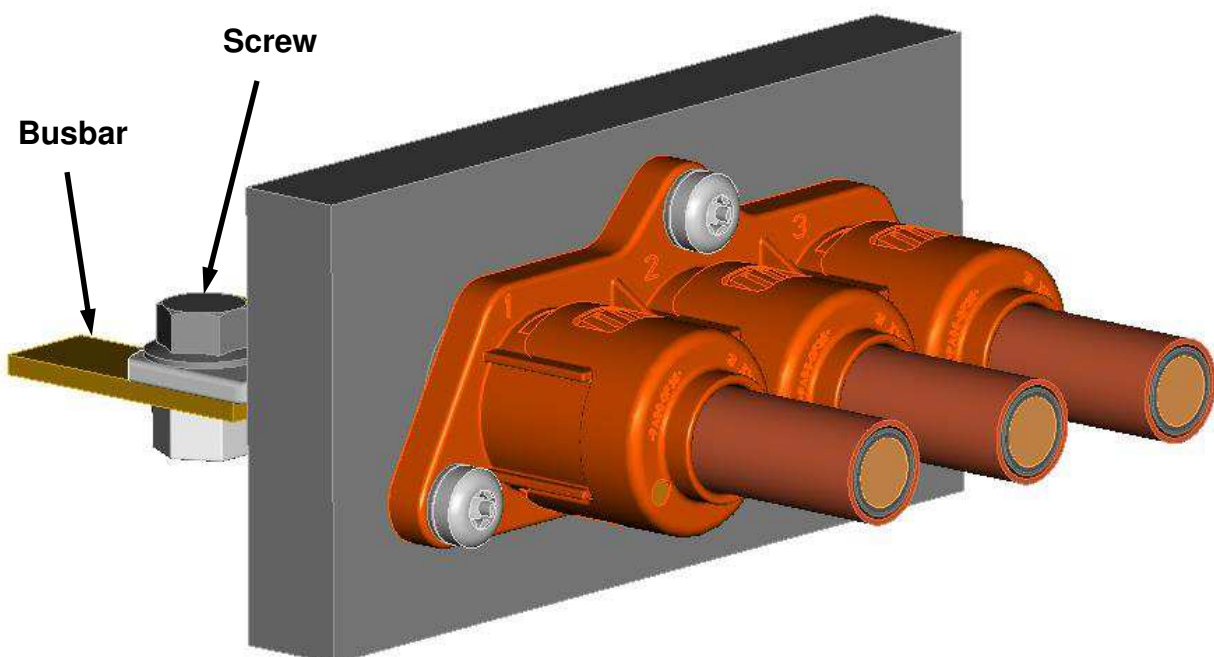


Figure 40

## **ATTENTION!**

In case of remounting the IPT from the interface, it has to be assured that the seals are in the correct position of the IPT housing assy.

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## 6 SECURITY ADVICE

**ATTENTION!  
- HIGH VOLTAGE APPLICATION -  
SHIELDING MESH AND CABLE ISOLATION  
MUSTN`T BE DAMAGED!**



### 6.1 ELECTRICAL VERIFICATION

Check the IPT-Cable assembly at transport and handling damages before mounting!  
Electrical verification after mounting up to manufacturer, for example:  
According to ISO/CD 23273 (2006), part 3, section 8.2.5.

LTR	REVISION RECORD	DWN	APP	DATE
J	New COFICAB cable details added in table 1, 2a & 4 Image 16 modified & 16a removed.	R. Pospech	T. Svatek	24/6/2024
H2	Gap between ring tongue and cable insulation added new Figure 16a added. Page 22.	R. Pospech	T. Svatek	29/6/2023
H1	There is no change against revision H. This revision is just fixing the TE distribution system.	R. Pospech	V.Cech	4/12/2020
H	Next ring tongues was added. Table 2c. New Leoni cables added. Table 1.New Pn for deepdrawn ferule added.	R. Pospech	V.Cech/	30/11/2020