

# P2P 1POS 180DEG HV Plug



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- ◆ This connector is intended for use in high-voltage applications. Special care must be applied to ensure that the connector functions as intended.
- ◆ If you suspect that the connector has been modified, damaged, contaminated or other wise compromised, please discontinue it use immediately.
- ◆ This connector should only be serviced by a trained and qualified technician.

**1. SCOPE**

**1.1 Content**

This specification covers the requirements for application of the sealed P2P 1position 180DEG high voltage connector. The P2P connector system is designed to meet AK 4.3.3, LV215-1 specifications and for a metric wire size range of 25mm<sup>2</sup> up to 50mm<sup>2</sup> (acc. to LV216-2). The connector incorporates conductive EMI shields to reduce radiated emissions in the application.

The P2P connector is available for 6 different keying or polarizing configurations with a lever for low mating / unmating forces. The connector system incorporates the 8mm power contacts and an integrated High Voltage Interlock (HVIL) System. The housings are molded in orange to denote a high voltage system.

**1.2 Processing notes**

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 not released connector components.

**2. APPLICABLE DOCUMENTS**

The following mentioned documents are part of this specification. If there is a conflict between the information contained in the documents and this specification or with any other technical documentation supplied, the last valid customer drawings takes preference.

**2.1 TE Connectivity Documents**

This Application Specification based on the latest valid customer drawings.

**2.1.1 Customer drawings**

**Table 1: Customer drawings**

<b>Plug Assy:</b>	
<b>2324086</b>	<b>P2P 1P PLUG 180DEG ASSY</b>
<b>2299123</b>	<b>P2P 1P PLUG HSG 180DEG ASSY</b>

<b>Header Assy</b>	
2324108	P2P 1P HEADER ASSY
<b>Single Components</b>	
2303018	Protection Cover
2141156	Single Wire Seal
2177090	Shield Crimp Ferrule
2307013	Shield Crimp Ferrule, Inner
2177060	Shielding sleeve
2302636	Insulation insert
2302639	Finger protection cap
2177473	turned contact, 25 mm <sup>2</sup> , 180 deg, Assy
2177590	turned contact, 35 mm <sup>2</sup> , 180 deg, Assy
2177592	turned contact, 50 mm <sup>2</sup> , 180 deg, Assy
1418760	HVIL-Contacts, Tab contact 1.2mm
<b>Application tools</b>	
528008-4	HV-Crimping machine

2.1.2 Specifications

Table 2: TE-Specifications

Specification	Description
108-94255	Product Specification HV 8MM 180DEG CONTACT
108-18782	Product Specification MCON-1.2 Contact System
114-94125	Application Specification HV 8MM 180DEG CONTACT
114-18464	Application Specifications MCON-1.2 Contact System
108-101481	Product Specification P2P 1POS 180DEG HV PLUG AND HEADER

2.2 General Documentation





2.2.1 Cable Specification

The connector is designed to meet LV216-2 specification for metric wire range 25 up to 50mm<sup>2</sup>. Cable Specification acc. To the appendix.

3. CONDITION OF DELIVERY AND PACKAGING

3.1 Components

Table 3 shows the required components for assembly of P2P 1P plug.

TE-P/N	Description	Qty.	Picture of V0 verion
2299123	P2P 1P PLUG HSG 180DEG ASSY	1	
2303018	Protection Cover	1	
2141156	Single wire seal	1	
2177090	Shield crimp sleeve	1	

2307013	Shielding crimp, Ferrule,inner	1	
2302636	Insulation insert 180°	1	
2302639	Finger protective cap	1	
2319655	Shielding sleeve	1	
2177592	8mm Contact	1	

**3.2 Packaging and Storage**

The products should be used on a “first in, first out” basis to avoid storage contamination, see latest valid customer drawings too.

**4. APPLICATION TOOLS**

The Application tools are only valid for the specified cables at appendix. More tooling information can be obtained through a local TE Representative or, after purchase, by calling the product information Center at the number at the bottom of cover page. HV-Crimping machine: TE528008-4.

**4.1 HV 8mm Contact**

See latest valid TE-Application specification 114-94125.

Table 4 Required application tools contact crimp

Wire size *[mm <sup>2</sup> ]	25	35	50
Wire Crimp	541872-2	541871-2	541863-2

4.2 Shielding

Table 5: Required application tools shield crimp

Wire size *[mm <sup>2</sup> ]	25	35	50
HV Tooling shield	541875-2	541864-2	541865-2
Mounting instruction	411-18542	411-18540	411-18541



Figure 1: HV-Crimping applicator

Table 6: Spare parts for application tools shield crimp

Wire size *[mm <sup>2</sup> ]	25	35	50
Die set HV180 shield (Shield-crimp)	9-1579019-6(*)	9-1579019-6(*)	9-1579019-6(*)
Die set HV180 shield (ISO-crimp)	8-1579019-2	6-1579019-5	6-1579019-6

(\*) Note: only for small serial shield crimp ferrule(TE 9-2177090-1/2/3) the die set 6-1579019-4 can be used.  
 The new die set PN 9-1579019-6 is only used in combination with carrier plate PN 1-519720-6 and locater PN 7-597094-4

5. ASSEMBLY INSTRUCTIONS

The described application processing below shows the main application steps and is only valid for the specified cable

5.1 Overview of all parts should be assembled



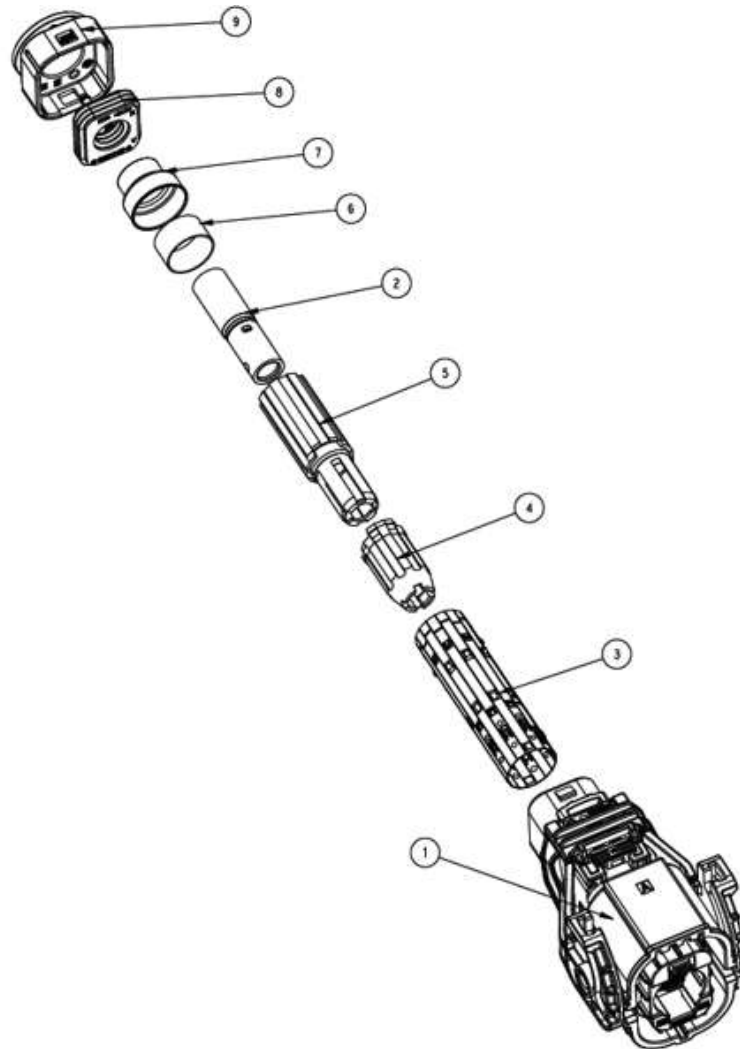



Figure 2: Exploded view plug assembly

Table 7: Components

(ID)	TE-P/N	Description
1	2299123	P2P 1P PLUG HSG 180DEG ASSY
2	2177592	8MM CONTACT
3	2319653	SHIELDING SLEEVE 180DEG
4	2302639	FINGER PROTECTIVE CAP, 8MM HV, 180DEG
5	2302636	INSULATION INSER 180DEG
6	2307013	SHIELDING CRIMP FERRULE, INNER
7	2177090	SHIELDING, CRIMP SLEEVE
8	2141156	SINGLE WIRE SEAL
9	2303018	PROTECTION COVER

5.2 Shielded cable and terminal assembly

 Avoid prolonged or repeated skin contact with shieldings!

5.2.1 Processing of cable

Stripping and Cutting cable to length accordance table 8

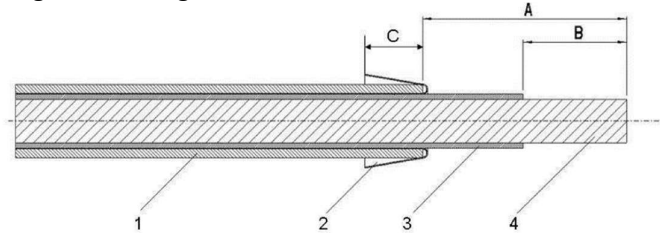


Figure 3: Cable design and cutting length

Table 8: Cutting dimensions

ID	Cable Design	A [mm]	B [mm]	C [mm]
1	Outer sheath	--	--	--
2	Screening braid	--	--	*
3	Inner sheath	40±1	--	--
4	Conductor	--	114-94125	--

\* is to fix from the production department, that the braid extension after the crimping process is acc.TO fig.7 and fig.9

 Attention: Insulation and shielding braid must not be damaged!

5.2.2 Crimping contact

See latest valid TE-Application specification 114-94125

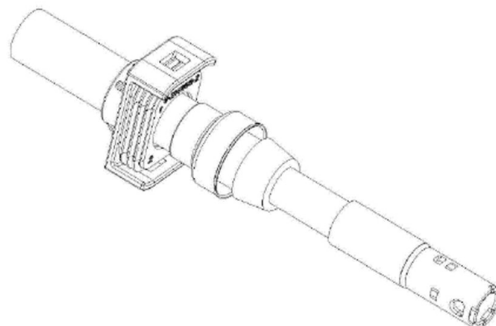



Figure 4: Contact crimp

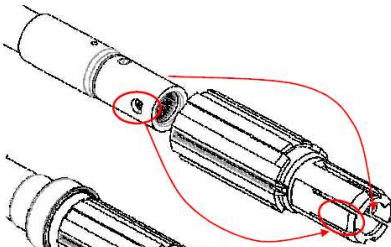
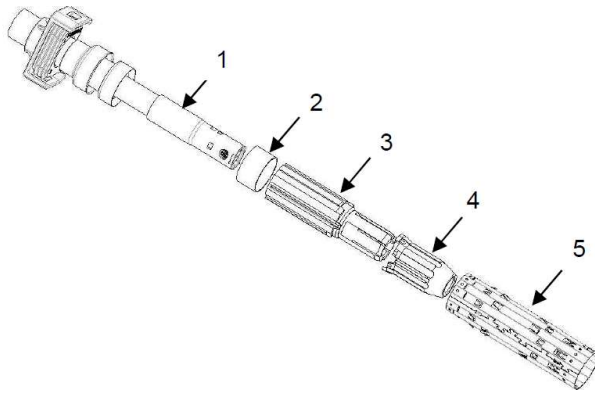
5.2.3 Crimping shielding

Screening bread open out and disentangle (dimision see table 8)

 Attention Shielding braid shall not be broken!

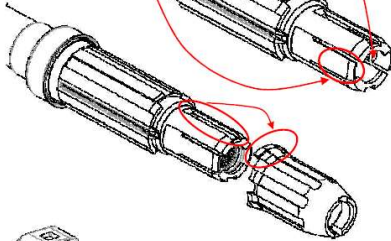
Assembly the components acc. Following sequence:

- 1- Contact, crimped assy
- 2- Inner crimp ferrule
- 3- Insulation insert,oriented and plugged in with the contact
- 4- Finger protection cap,oriented and plugged in with the contact
- 5- Shielding sleeve,oriented and plugged in with the Insulation insert and finger protection cap



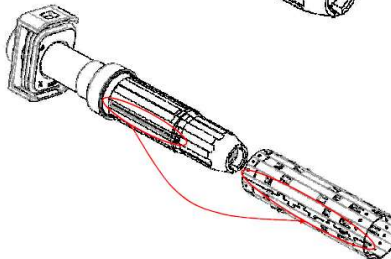
**Orientation Insulation insert-Contact:**

Both windows at contact body and detents of the insulation insert are oriented and snapped-in together



**Orientation Finger Protection cap-Insulation insert:**

The length slots at the insulation insert are oriented to the projection of the finger protection cap snaps-in to the contact



**Orientation Finger Protection cap-Insulation insert**

The length slot at the insulation insert is oriented to the connection the shielding and the shielding sleeve snaps-in to the insulation insert and finger protection cap

Figure 5: Assembly sequence

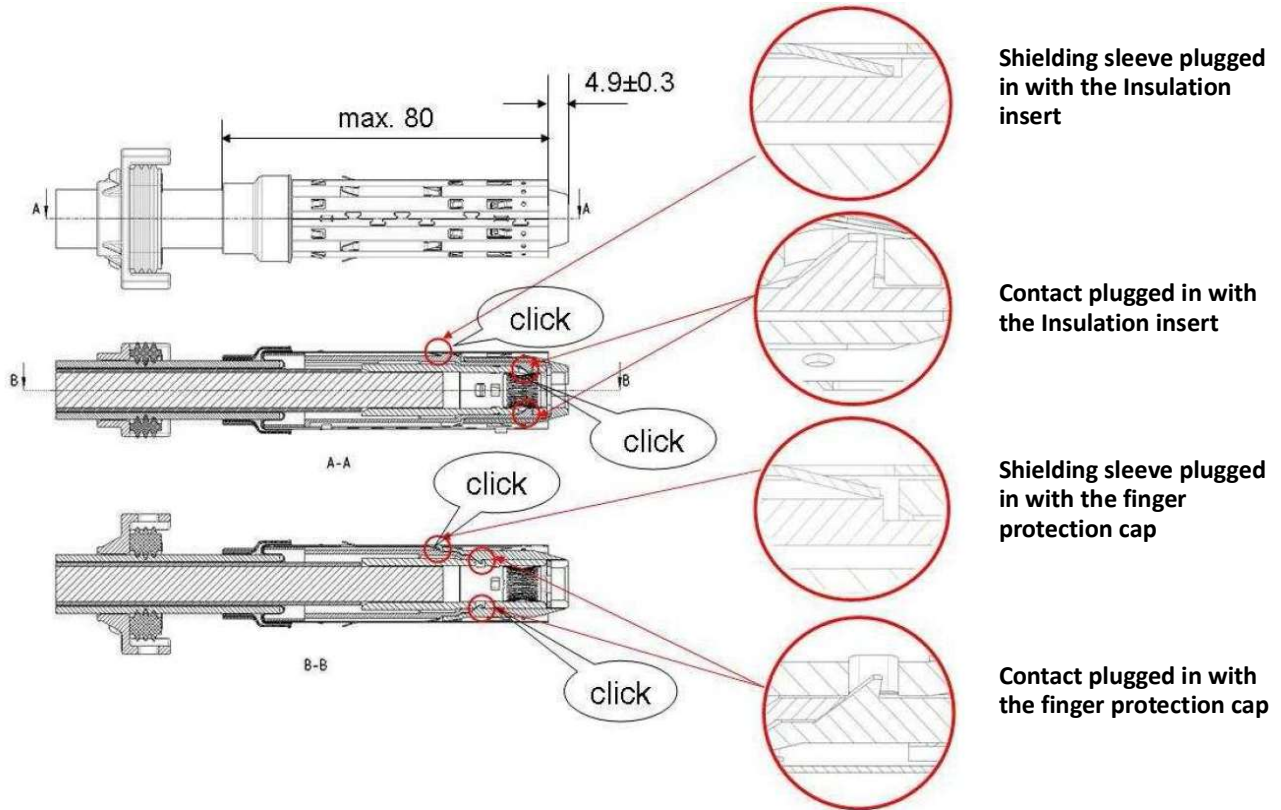


Figure 6: plugged positions

Insert cable assembly into locator and crimping shield. For correct handling and using of application tools see following guide line

HV Tooling HV 180 Schirm 25 mm<sup>2</sup>: 411-18542

HV Tooling HV 180 Schirm 35 mm<sup>2</sup>: 411-18540

HV Tooling HV 180 Schirm 50 mm<sup>2</sup>: 411-18541

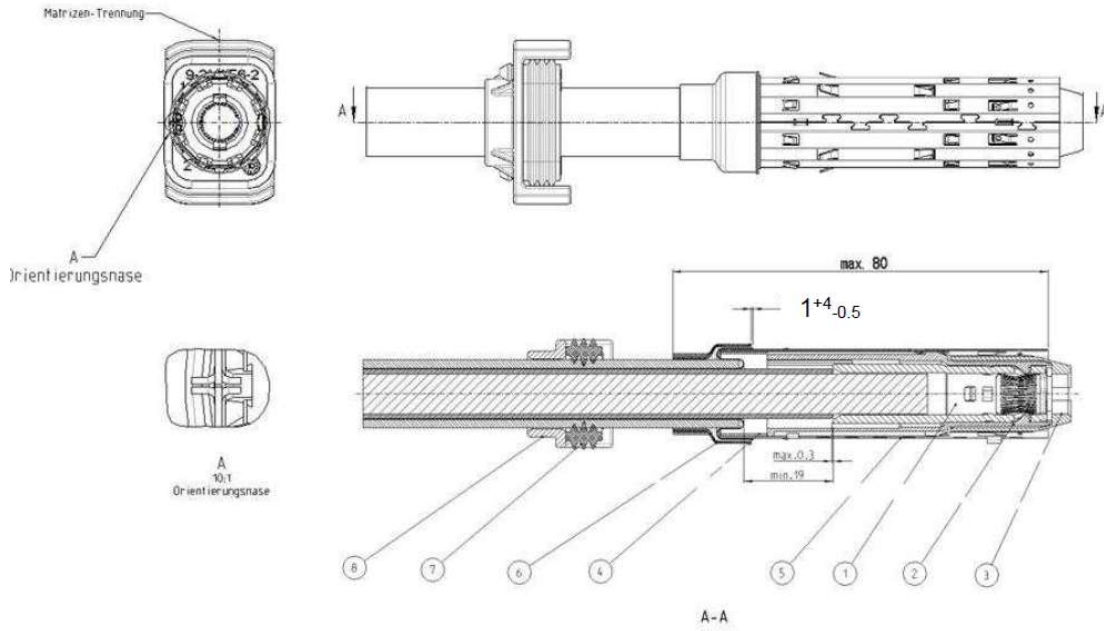


Figure 7: Cable assembly

Visual examination and inspection dimensions

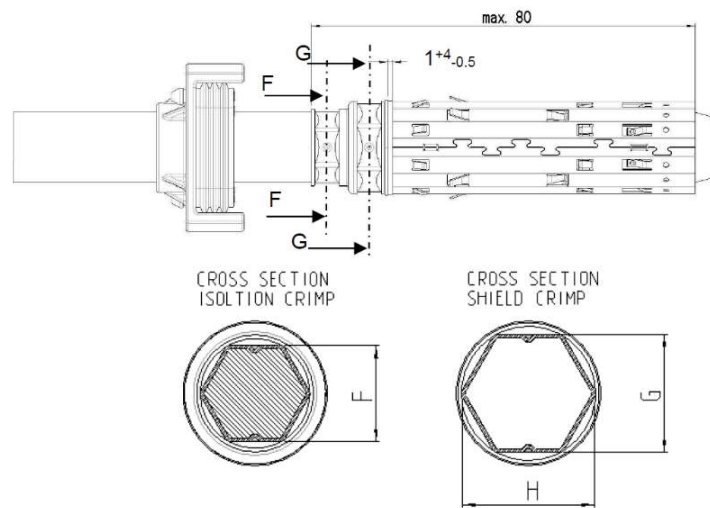


Figure 8: Inspection dimensions

Measured with the narrow outside jaws of caliper, directly on the crimping indentation(see cross lines F-F and G-G)

Wire type	Cross section	F±0.2 [mm]			G±0.2 [mm]		H [mm]
		Small serial part with Die set 6-1579019-4	Small serial part with Die set 9-1579019-6	Small serial part with Die set 9-1579019-6	Small serial part with Die set 9-1579019-6	Small serial part with Die set 9-1579019-6	All part
Coroplast LV216-2	25	12.0	12.0CC	12.1	19.3	18.7	23 max
	35	14.4	14.3	14.3			
	50	15.8	15.5	15.4			

**Note:**

Small serial shield crimp ferrule: TE 9-2177090-1/2/3

Big serial shield crimp ferrule: TE 0-2177090-1/2/3

Additional post cutting of the shielding braid not permitted

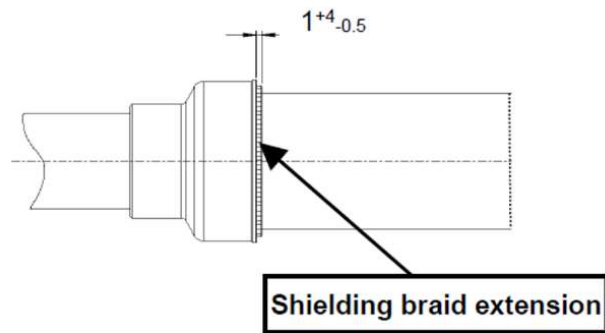


Figure 9: Braided extension



The end of the shielding braid must be visible and complete justified at the end of the crimp sleeve. The shielding braid must be consistently (homogeneous) spread on the circumference!

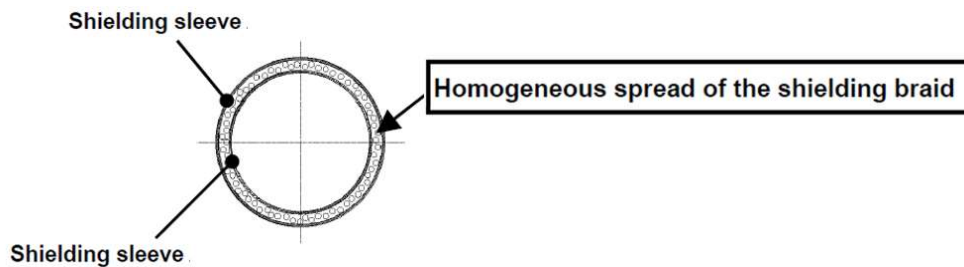


Figure 10: Braided spread

### 5.3 Cable assembly into Plug housing

#### 5.3.1 Cable assembly

Crimped cable assembly must be oriented plugged into the connector housing and locked with

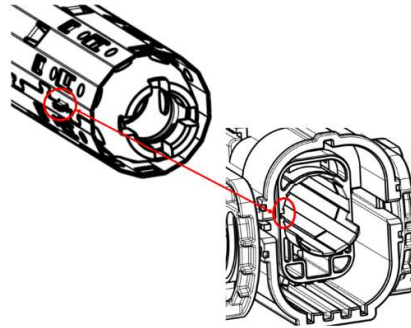


Figure 11: Assembly 1pos.connector

#### 5.3.2 Assembly of the cover

The cover must be mounted audio-visual to the housing

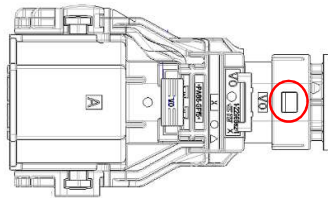


Figure 12: Cover assembly

#### 5.3.3 Endpositioning of the seal retainer(only required for small-serial pasrs)

Visual examination of correct assembling seal retainer into housng

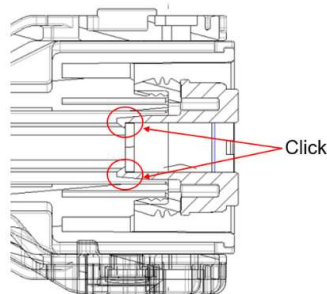


Figure 13: Seal retainer assembly

## 6 FINAL EXAMINATION

### 6.1 Visual Examination

After processing the connector assembly has to be checked of completeness, correctness acc.customer drawings and free of damage.

### 6.2 Electrical Tests

Electrical characteristic values according product specification TE-108-101481 are ensured by applicator. The test parameter should be not exceeding the values shown in point 3.3/TE-108-101481

## 7 LOCKING MECHANISMS WITH LEVER AND CPA

The housing in delivery condition with lever and CPA in closed position

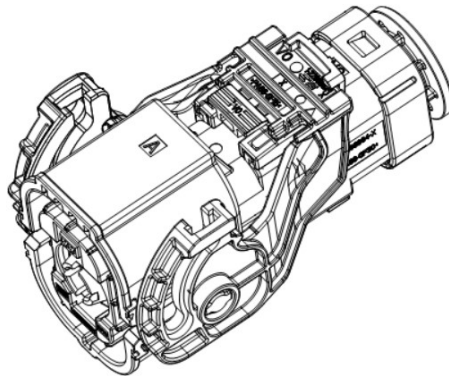


Figure 14: Locking CPA

Release of the CPA by shifting the CPA along the arrow-direction and release the lever by pressing down of the latch of CPA-Adapter

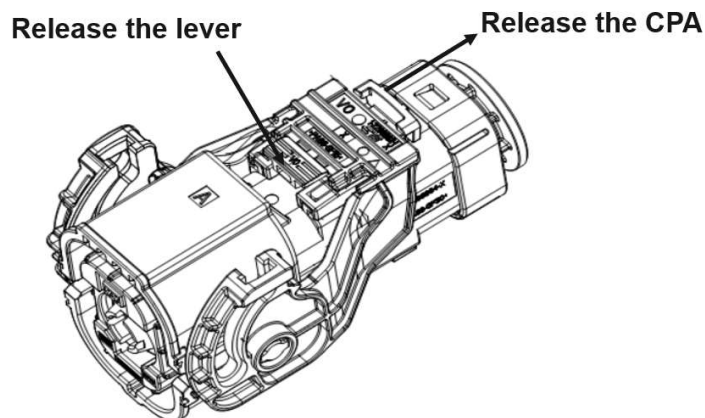


Figure 15: Release CPA



8. APPENDIX

8.1 Data sheets

8.1.1 Coroplast – No. 9-2611 for wire range 25 – 50mm<sup>2</sup>

**Technische Information**  
**Technical Information**

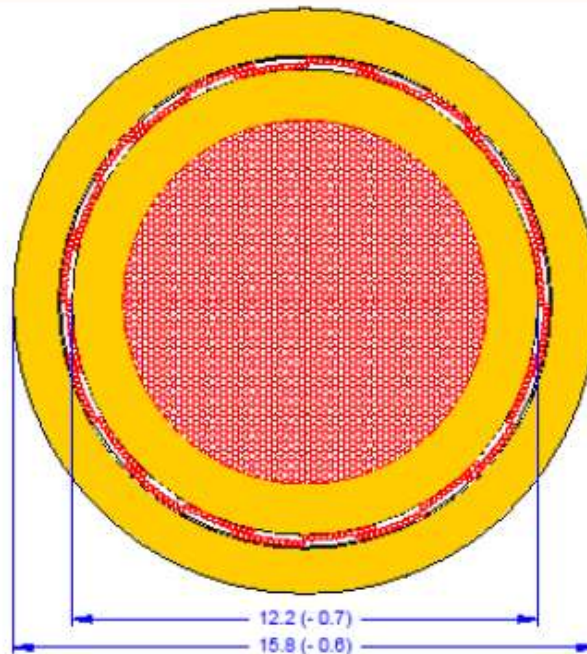
**Coroplast Part No.: 9-2611 / 50 mm<sup>2</sup>**  
**Seite / Page: 1**

**Automotive Leitung geschirmt  
für elektrische Fahrzeugantriebe**

FLR2GCB2G 50 mm<sup>2</sup> / 0,21

**Shielded cable for  
automotive electric powertrain**

FLR2GCB2G 50 mm<sup>2</sup> / 0.21



Änderungsindex Version	Erstellt Creator	Ausgabedatum Date of Issue	Beschreibung Description
A 1	Freyth	2010-10-06	Erstausgabe / first edition
A 2	Wichmann	2010-10-18	VW N 107 756 hinzu / added VW N 107 756
A 3	Wichmann	2010-11-16	Schirmwiderstand und Leitungsgewicht hinzu added resistance of shielding and weight of cable
A 4	Wichmann	2010-11-26	Bedruck war / Marking was „ ... MAX 600 V AC ... „

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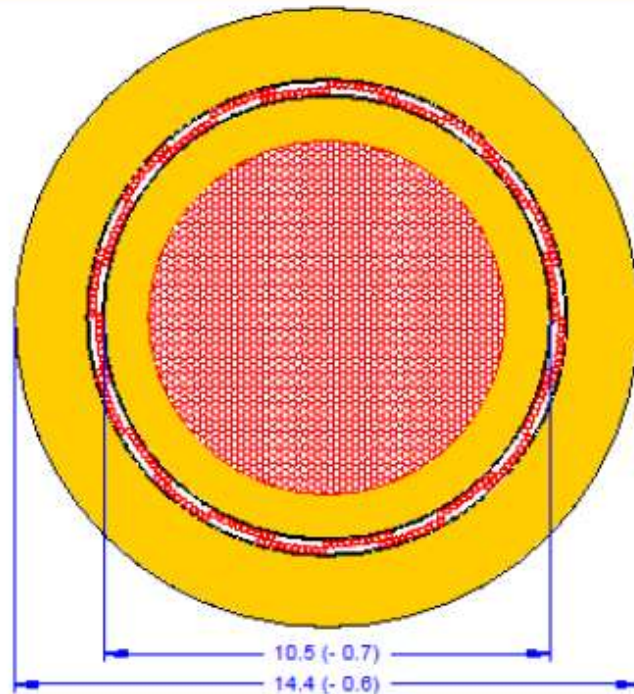
**Coroplast Part No.: 9-2611 / 35 mm<sup>2</sup>**  
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FLR2GCB2G 35 mm<sup>2</sup> / 0,21

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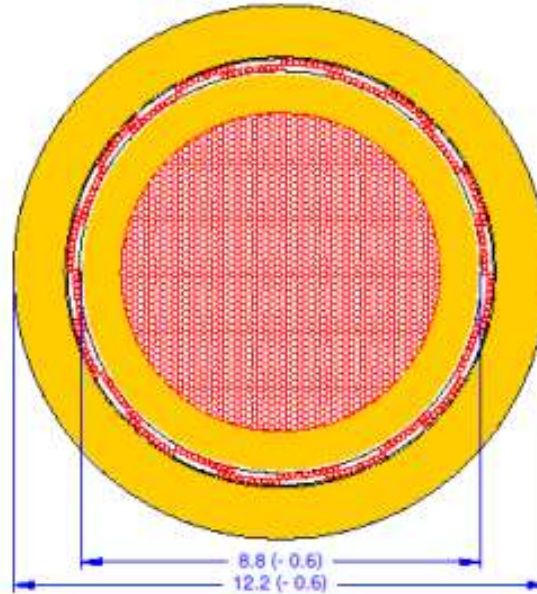
**Coroplast Part No.: 9-2611 / 25 mm<sup>2</sup>**  
**Seite / Page: 1**

**Automotive Leitung geschirmt  
für elektrische Fahrzeugantriebe**

**FHLR2GCB2G**  
**25 mm<sup>2</sup> / 0,21 T180 0,6/0,9 kV**

**Shielded cable for  
automotive electric powertrain**

**FHLR2GCB2G**  
**25 mm<sup>2</sup> / 0.21 T180 0.6/0.9 kV**



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A 4	Wichmann	2010-11-26	Bedruck war / Marking was „... MAX 600 V AC ...“
A 5	Leven	2011-06-07	Datenblatt aktualisiert / datasheet updated
A 6	Wichmann	2011-09-15	added characteristic capacitance, inductance, impedance conductor diameter was max. 7.2 mm
A 7	Leven	2011-11-07	Deratingkurven ergänzt / derating curves added
A 8	Gehle	2012-09-19	Fußzeile überarbeitet / modified footer
A 9	Wichmann	2012-12-04	Nomenklatur, Aufdruck und Nennspannung modifiziert cable nomenclature, marking and nominal voltage modified

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