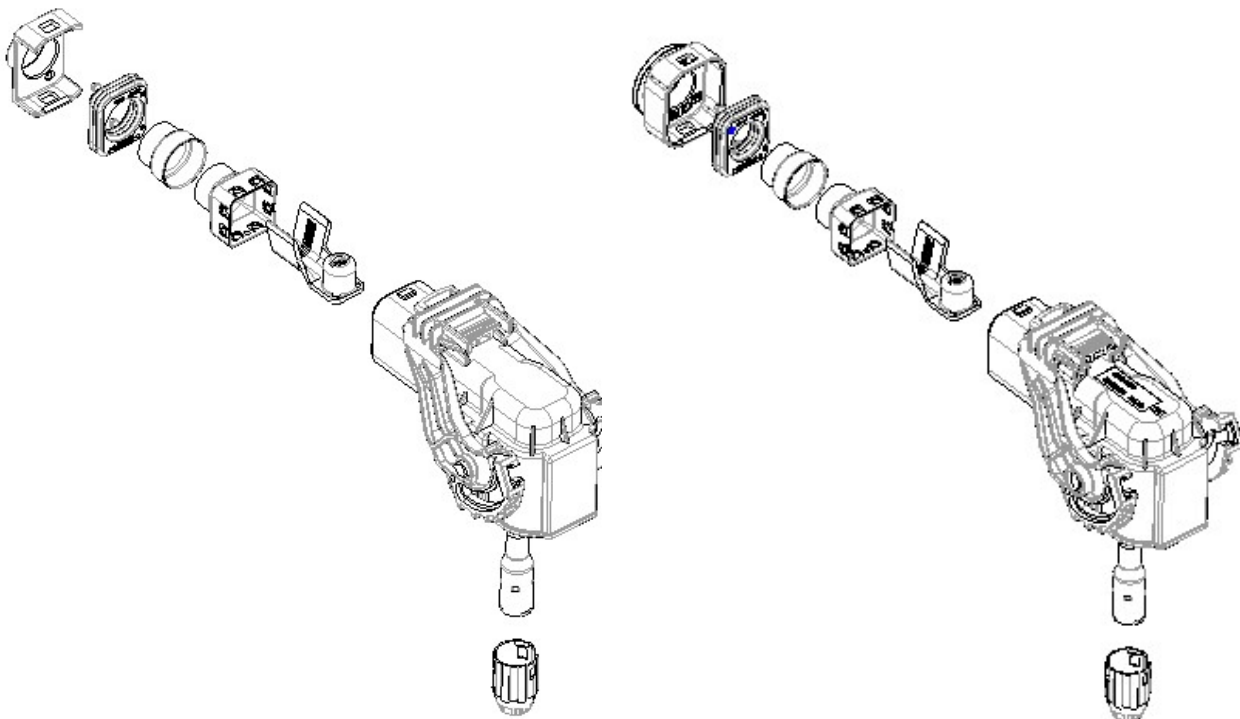


P2P 1POS 90DEG HV Plug



| | SIGNATURE | DATE |
|-----|-----------|-----------|
| PR | F. SUN | 15JUN2019 |
| CHK | E. JIANG | 16JUN2019 |
| APP | I. YIN | 16JUN2019 |

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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 90DEG 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 25mm² up to 50mm² (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

| Plug Assy: | |
|------------|------------------------|
| 2324136 | P2P 1P PLUG 90DEG ASSY |

| | |
|--|--|
| 2324138 | P2P 1P PLUG HSG 90DEG ASSY |
| Header Assy | |
| 2324108 | P2P 1P HEADER ASSY |
| Single Components | |
| 2303018 | Protection Cover |
| 2141156 | Single Wire Seal |
| 2307011 | Shield Crimp Ferrule |
| 2141158 | Shielding Sleeve |
| 2303272 | Finger protection cap |
| 2141211 | Deep drawn socket, 90 deg, Assy |
| 2141212 | Deep drawn socket, Pin 90 deg, Assy |
| 1418760 | HVIL-Contacts, Tab contact 1.2mm |
| Application tools | |
| 528008-4 | HV-Crimping machine |
| 541868-1 | Die-Set holder for HV-Crimping machine |
| 528040-2 | Table frame for hand tool |
| 9-1579009-1 | Hydraulic hand tool |
| 1-528041-5 1-528041-3 1-528041-2 | Die-Set with locator |

2.1.2 Specifications

Table 2: TE-Specifications

| Specification | Description |
|---------------|---|
| 108-94256 | Product Specification HV 8MM 90DEG CONTACT |
| 108-18782 | Product Specification MCON-1.2 Contact System |
| 114-94083 | Application Specification HV 8MM 90DEG CONTACT |
| 114-18464 | Application Specifications MCON-1.2 Contact System |
| 108-101439 | Product Specification P2P 1POS 90DEG 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 50mm². 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 |
|---------|----------------------------|------|---|
| 2324138 | P2P 1P PLUG HSG 90DEG ASSY | 1 |  |
| 2303018 | Protection Cover | 1 |  |

| | | | |
|---------|------------------------------------|---|---|
| 2141156 | Single wire seal | 1 |  |
| 2307011 | Shield crimp ferrule, 90deg | 1 |  |
| 2141158 | Shielding sleeve, 90deg | 1 |  |
| 2303272 | Finger protection cap | 1 |  |
| 2141211 | Deep drawn socket, 90deg, Assy | 1 |  |
| 2141212 | Deep drawn socket, Pin 90Deg, Assy | 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.

4.1 HV 8mm Contact

See latest valid TE-Application specification 114-94083

4.2 Shielding

The following table contains the required order numbers for application devices and tools.

Table 4: Application devices and tools.

| Wire size *[mm ²] | 50 | 35 | 25 |
|-------------------------------|------------|------------|------------|
| Die-Set, locator | 1-528041-2 | 1-528041-3 | 1-528041-5 |

| | |
|--------------------|--|
| Hand processing | Table frame 528040-2 |
| | Hydraulic plier 9-1579009-1 |
| Machine processing | Die-Set holder for crimp machine 541868-1 |
| | Crimp machine 528008-4 |

* Wire design according to LV216-2

5. ASSEMBLY INSTRUCTIONS

The following procedures show the details of the cable assembly and insertion instructions of the cable assembly into the receptacle housing subassembly. The processing is only valid for the specified cable at appendix and only these combinations have been validated by TE. Alternative cables may be used after ensuring performance through validation testing.

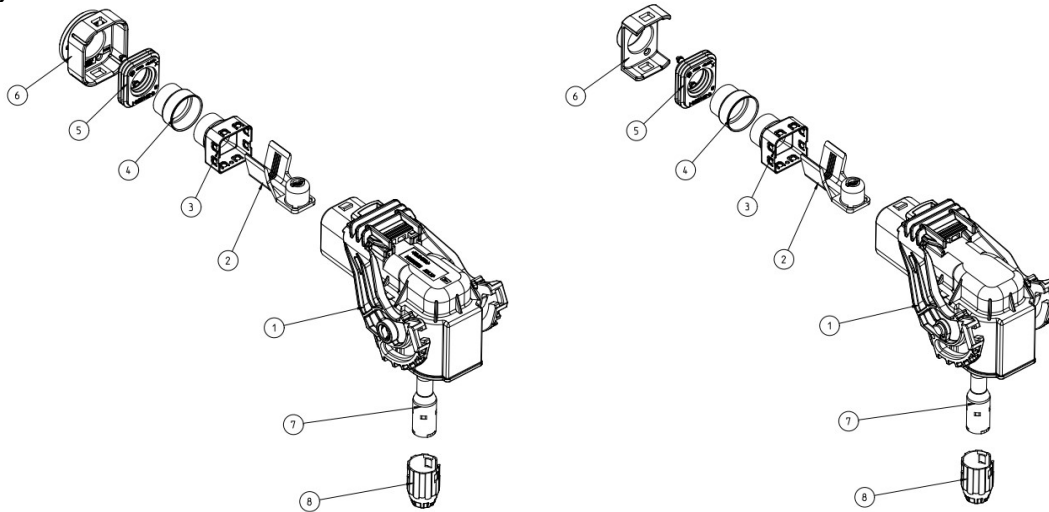


Figure 1: Exploded view plug assembly

Table 5: Components

| (ID) | TE-P/N | Description |
|------|---------|------------------------------------|
| 1 | 2324138 | P2P 1P PLUG HSG 90DEG ASSY |
| 2 | 2141211 | DEEP DRAWN SOCKET 90DEG |
| 3 | 2141158 | SHIELDING SLEEVE 90DEG |
| 4 | 2307011 | SHIELDING CRIMP FERRULE 90DEG |
| 5 | 2141156 | SINGLE WIRE SEAL |
| 6 | 2303018 | PROTECTION COVER |
| 7 | 2141212 | DEEP DRAWN SOCKET, PIN 90DEG, ASSY |
| 8 | 2303272 | FINGER PROTECTION CAP 8MM HV 90DEG |

5.1 Shielded cable and terminal assembly

Safety information, avoid prolonged or repeated skin with silver shieldings (wear protective gloves).

Please note, the procedure of assembly the shielded cable is provided in two documents, the following steps shows the assembly without contact processing.

In order shown in figure 2, slide protection cover, single wire seal, shield crimp ferrule 90deg and shielding sleeve 90deg onto cable sheath, so that they are not in crimp work area.

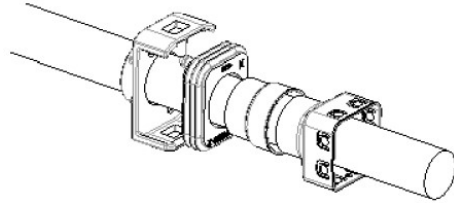


Figure 2: Before processing slide components onto cable sheath

Strip and remove outer sheath, screening braid (if present screening foil), inner sheath and conductor from the end as shown in figure 3.

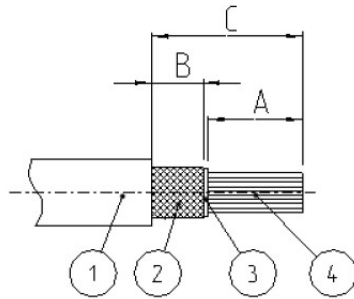


Figure 3: Cutting cable to length

Stripping dimensions for exposing cable.


 Attention: Cable sheath and shielding braid shall not be cut or broken during the cutting procedure.

Table 6: Cutting dimensions

| (ID) | Cable | A [mm] | B [mm] | C [mm] |
|------|-----------------|-----------------------|--------|--------|
| 1 | Outer sheath | -- | -- | 32±1 |
| 2 | Screening braid | -- | (11) | -- |
| 3 | Inner sheath | See TE spec 114-94083 | -- | -- |
| 4 | Conductor | -- | -- | -- |

Comb out screening braid, this step must not be done for cables shown in chapter appendix.

 Attention: Shielding braid shall not be broken.

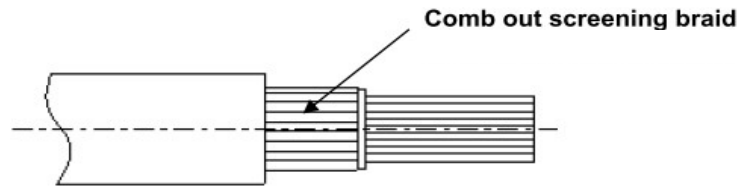


Figure 4: Comb out screening braid

5.1.1 Contact crimp

See latest valid TE-Application specification 114-94083

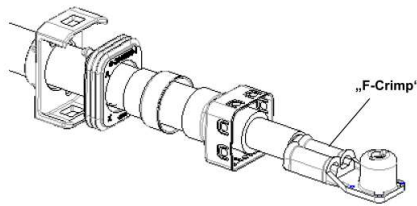


Figure 5: Contact crimp

5.1.2 Shielding crimp

Slide shielding sleeve 90deg over screening braid until it stops against the contact as shown in figure 6.

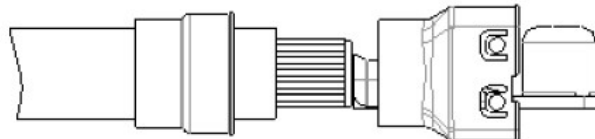


Figure 6: Prepare shielding parts for screening processing

Raising screening braid equally over perimeter.

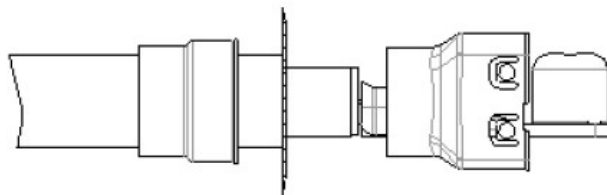


Figure 7: Processing screening braid

Insert shielding sleeve 90deg oriented to contact until it stops against shield crimp ferrule 90deg and turn over screening braid by lateral movement. Insert cable assembly into locator and crimp shielding parts.

Crimp shielding sleeve oriented to contact

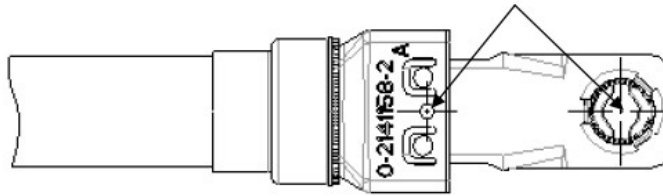


Figure 8: Shield crimp



It is essential that there are no mistakes in this step because there will be no chance to re-work the parts.

- The following items at minimum must be inspected and verified:
- All components are present and parts are crimped in correct orientation and location
- No visible cracking of the shielding parts and no loose cable shield strands
- Hex crimp dimensions per figure 10 and table 7
- Excess length of screening braid must be visible max. 5mm
- Allocation of screening braid should be equal over perimeter

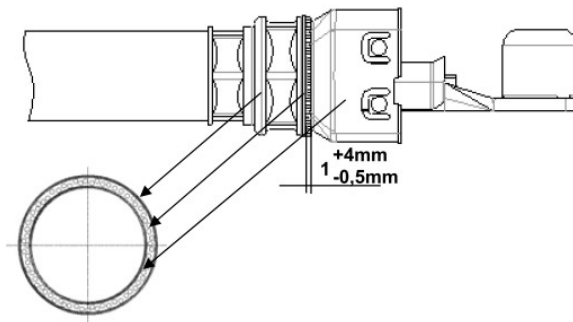


Figure 9: Visual Examination of shield crimp

The following Inspection dimensions at minimum must be verified:

Table 7: Inspection dimensions cable assembly

| Wire type | Corss section [mm ²] | D±1.5 [mm] | E [mm] | F±0.2 [mm] | G±0.2 [mm] | H [mm] |
|-----------|----------------------------------|------------|---------|------------|------------|--------|
| Coroplast | 25 | 28 | Max. 59 | 12.2 | 16.6 | Max.21 |
| | 35 | | | 14.3 | | |
| | 50 | | | 15.5 | | |

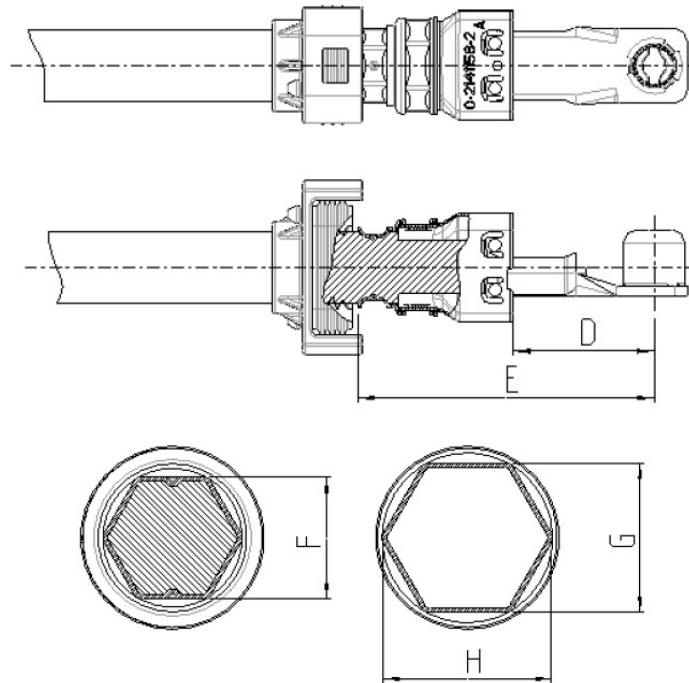


Figure 10: Inspection dimensions of shield crimp

5.2 Receptacle Housing

5.2.1 Insert cable assembly into the Receptacle Housing

Mounting single wire seal with cover seal as shown in figure 11.

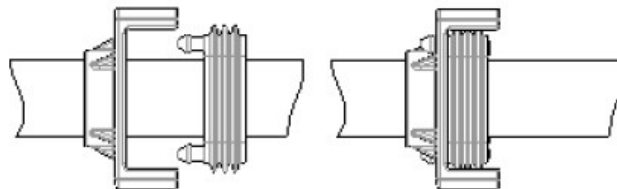


Figure 11: Mounting single wire seal on cover seal

Note the alignment of receptacle housing subassembly and cable assembly (figure 12).

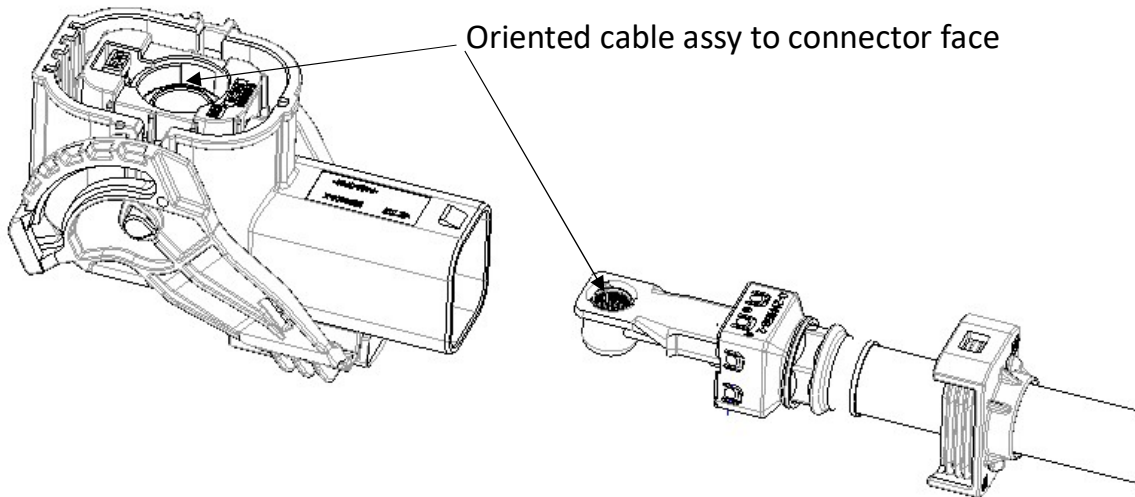


Figure 12: Oriented cable assembly to housing

Insert aligned the cable assembly into the receptacle subassembly until it stops against the inside of the housing.

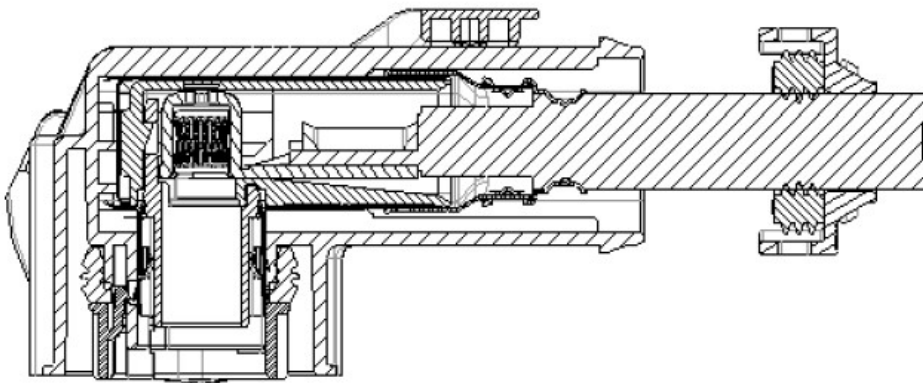
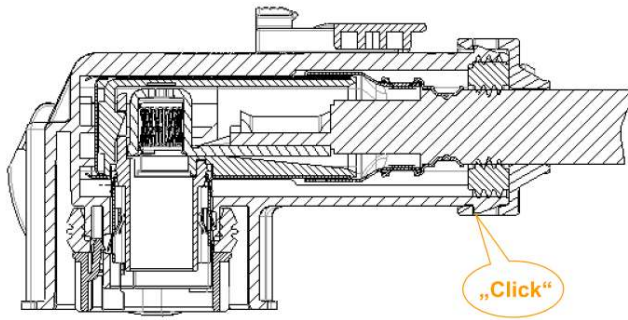
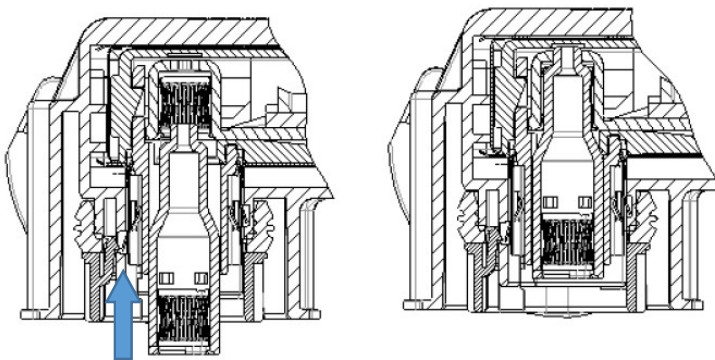


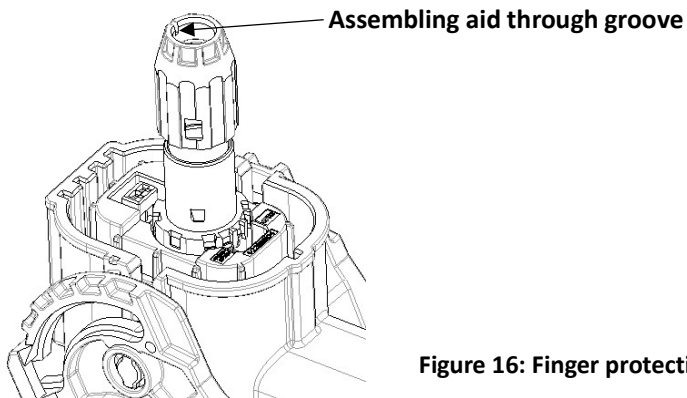
Figure 13: Insert cable assembly into the receptacle housing

5.2.2 Assembly single wire seal and protection cover

Slide single wire seal and protection cover onto receptacle housing until it is fully locked by audible latching. The following items at minimum must be inspected and verified:

Visual Examination of correct assembling single wire seal into housing**Figure 14: Assembly protection cover and single wire seal****5.2.3 Insert contact pin****Figure 15: Insert contact pin****5.2.4 Mounting finger protection cap**

Note the groove on the finger protection. For better understanding insulation part is shown in incorrect assembling position.

**Figure 16: Finger protection cap aligned to insulation part**

With the groove and rib aligned, insert finger protection cap into the receptacle housing subassembly until it is fully locked by audible latching. Note to show the latching mechanism isolation part is shown in incorrect assembling position.

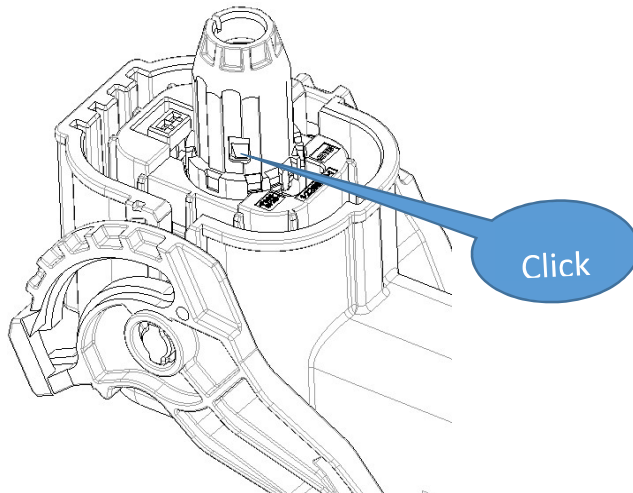


Figure 17: Mounting finger protection cap



Care should be taken to apply correct assembling of the finger protection

The following items at minimum must be inspected and verified:

All components are present

Finger protection cap fully locked in place and correct orientation (check groove figure 18)

Protection cover fully locked in place

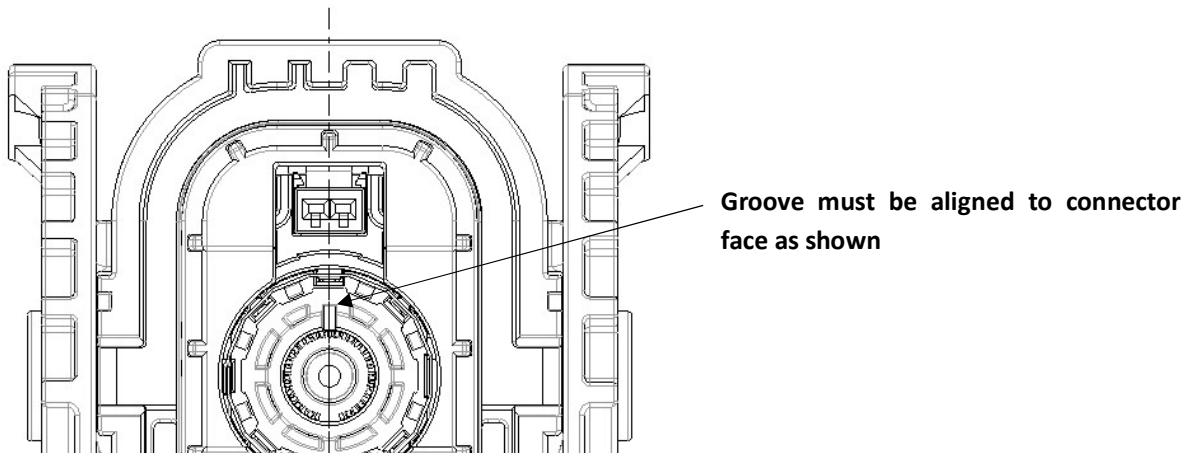


Figure 18: Visual Examination of assembled receptacle housing

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-108-101439 / chapter 3.3 are ensured by applicator. The test parameter should be not exceeding the values shown in point 3.3 TE-108-101439.

7. LOCKING MECHANISM WITH LEVER AND CPA

Delivery condition with lever and CPA in closed position. Release of the CPA by shifting CPA along the arrow-direction

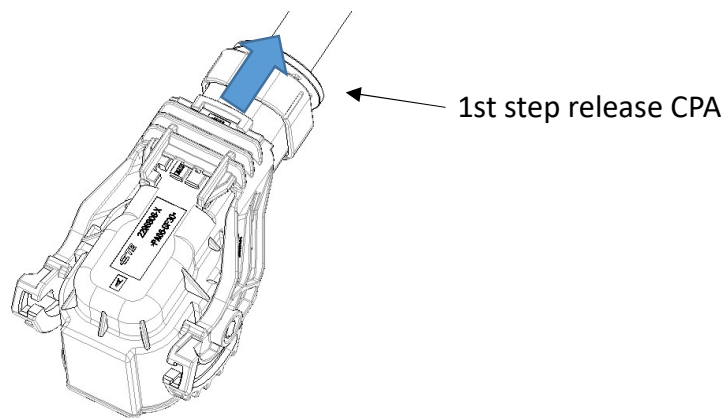


Figure 19: Delivery condition – CPA & lever closed

Release the lever by pressing down of the latch of CPA-Adapter.

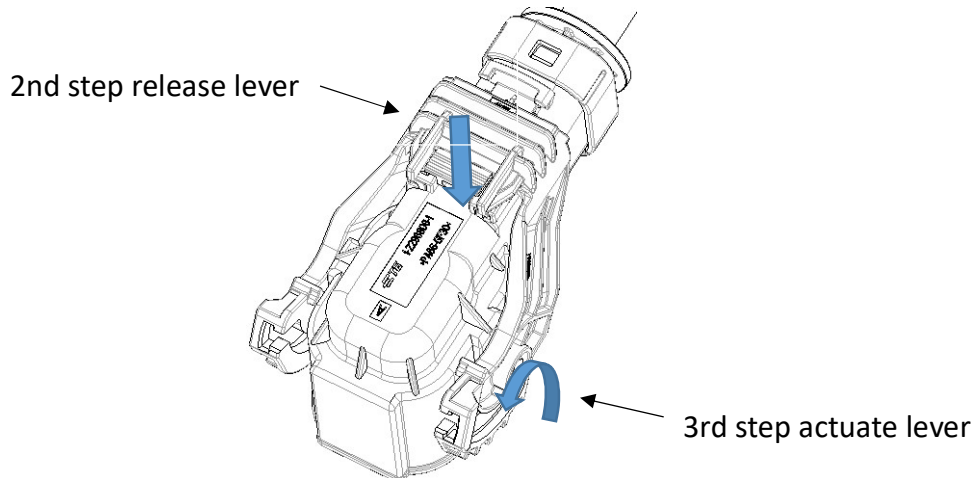
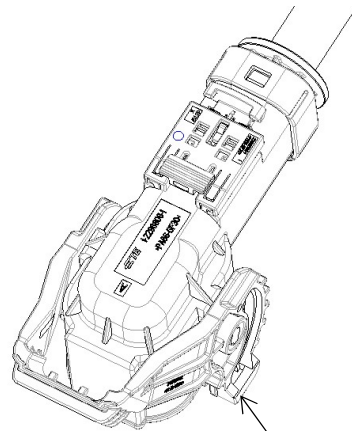


Figure 20: Release and actuate lever



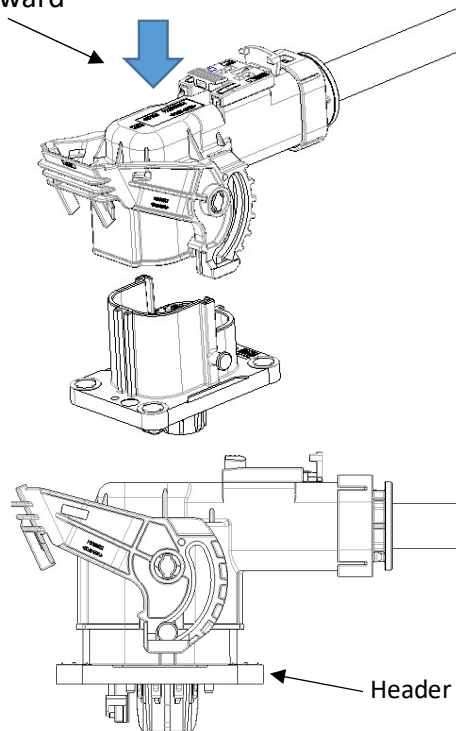
4th step open lever until audible “click”

Figure 21: Plug position of lever

Rotate lever into plug position until audible click.

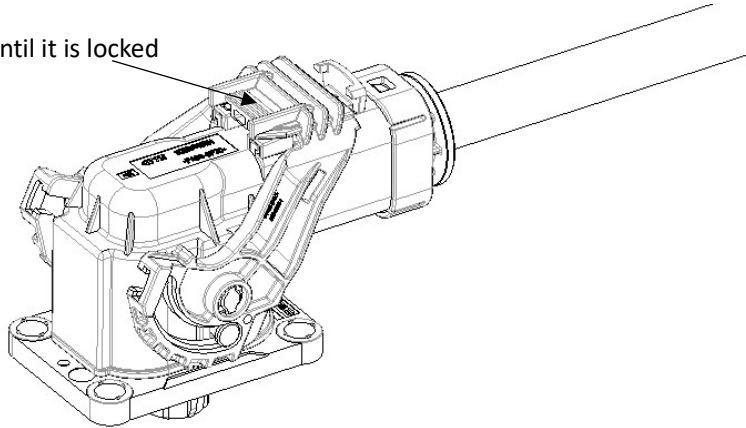
Mating of the connector:

Press straight downward



Header pivot seated in the lever slot as shown

Rotate the lever until it is locked



Push the CPA back to lock position

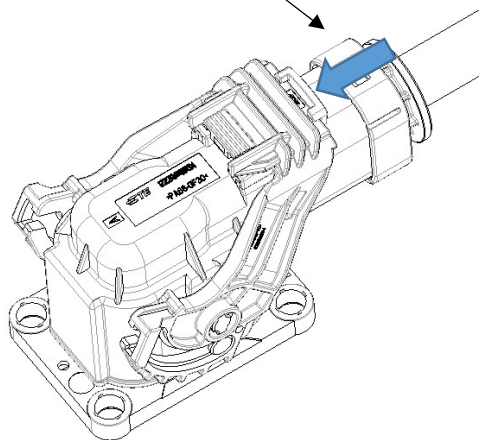


Figure 22: Mating of connector

Unmating of the connector:

Unmating of the connector is achieved by taking the reverse operation of mating process.

8. APPENDIX

8.1 Data sheets

8.1.1 Coroplast – No. 9-2611 for wire range 25 – 50mm²

Technische Information
Technical Information

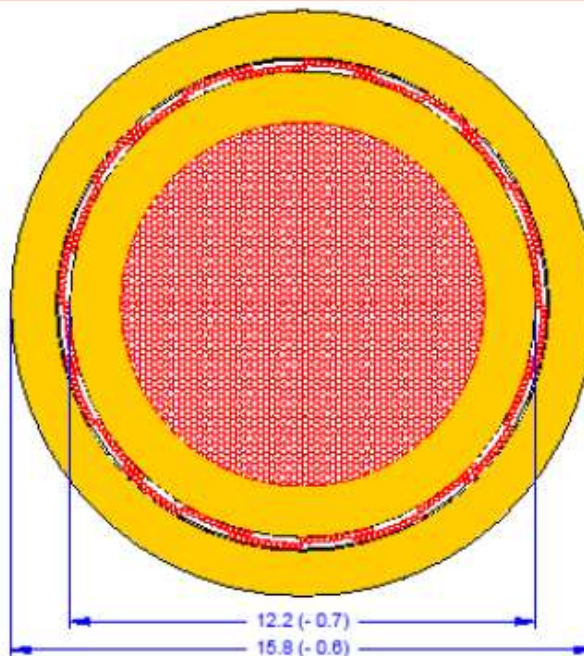
Coroplast Part No.: 9-2611 / 50 mm²
Seite / Page: 1

**Automotive Leitung geschirmt
für elektrische Fahrzeugantriebe**

FLR2GCB2G 50 mm² / 0,21

**Shielded cable for
automotive electric powertrain**

FLR2GCB2G 50 mm² / 0.21



| Änderungsindex Version | Erstellt Creator | Ausgabedatum Date of Issue | Beschreibung Description |
|---------------------------|---------------------|-------------------------------|---|
| A 1 | Freyth | 2010-10-08 | Erstausgabe / first edition |
| A 2 | Wichmann | 2010-10-18 | VW N 107 756 hinzu / added VW N 107 756 |
| A 3 | Wichmann | 2010-11-18 | 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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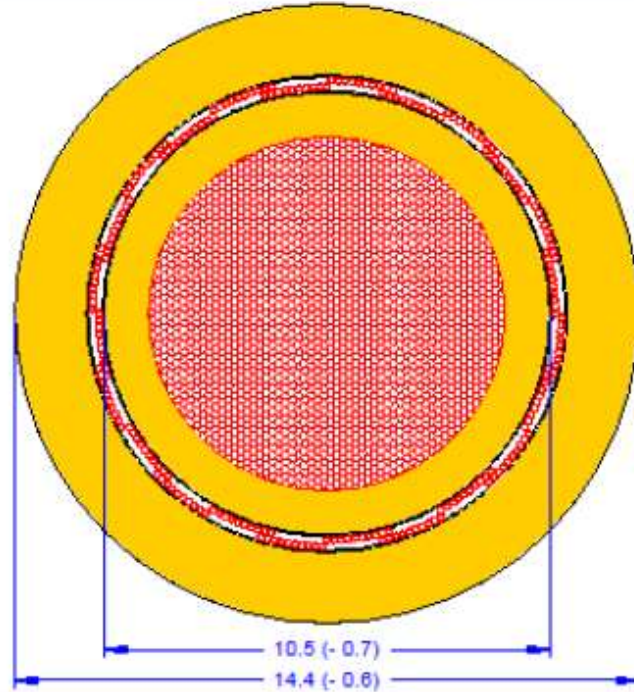
Coroplast Part No.: 9-2611 / 35 mm²
Seite / Page: 1

**Automotive Leitung geschirmt
für elektrische Fahrzeugantriebe**

FLR2GCB2G 35 mm² / 0,21

**Shielded cable for
automotive electric powertrain**

FLR2GCB2G 35 mm² / 0.21



| Änderungsindex Version | Erstellt Creator | Ausgabedatum Date of Issue | Beschreibung Description |
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| A 1 | Freyth | 2010-10-06 | Erstausgabe / first edition |
| A 2 | Wichmann | 2010-10-18 | VW N 107 777 hinzu / added VW N 107 777 |
| A 3 | Wichmann | 2010-11-17 | 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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Technische Information
Technical Information

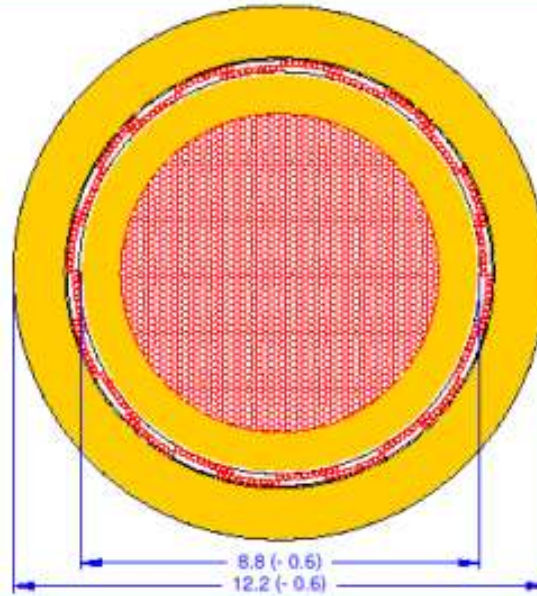
Coroplast Part No.: 9-2611 / 25 mm²
Seite / Page: 1

**Automotive Leitung geschirmt
für elektrische Fahrzeugantriebe**

FHLR2GCB2G
25 mm² / 0,21 T180 0,6/0,9 kV

**Shielded cable for
automotive electric powertrain**

FHLR2GCB2G
25 mm² / 0.21 T180 0.6/0.9 kV



| Anderungsindex 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 107 776 hinzu / added VW N 107 776 |
| A 3 | Wichmann | 2010-11-17 | 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 ...“ |
| 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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