**Class 1**

# EV Charge Inlet Type 2 AC


| Indicates Change

## Content

# 1. SCOPE

## 1.1. Content

This specification describes the assembly and handling of the vehicle charge inlets Type 2 AC acc. IEC62196-2 for conductive charging of electric vehicles. This specification applies to manual assembly of the components in series production configuration.

## 1.2. Processing Note

The processor is responsible for the quality of the manufacturing process to ensure the correct function of the system. The warranty and liability is excluded if quality deficiency or damages occur due to non-compliance to this specification or use of not specified or not released tools, cables and components.

# 2. APPLICABLE DOCUMENTS

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, the product specification has priority.

## 2.1. TE Connectivity Documents

a) Customer drawings for inlet type 2 AC

| | |
|---|---|
| INLET HSG, TYPE 2, ASSY | 2368472 |
| CABLE EXIT, RECT, 90 DEG | 2296063 |
| PERIPHERAL SEAL, 63, 63, AC | 2320214 |
| FAMILY SEAL, AC, 1PH | 2316422 |
| FAMILY SEAL, AC, 3PH | 2296040 |
| STRAIN RELIEF, AC, 1PH | 2316423 |
| STRAIN RELIEF, AC, 3PH | 2344703 |
| COVER, CABLE SEAL, AC, 1PH | 2316424 |
| COVER, CABLE SEAL, AC, 3PH | 2296057 |
| MQS CAVITY PLUG | 963143 |
| PIN DIA 6mm, RIGID, PE | 2293270 |
| PIN DIA 6mm, RIGID, POWER AC, ASSY | 2293269 |
| PROTECTION CAP, TE, WATER DRAIN | 2292534 |

b) Specifications / Spezifikationen

| | |
|---|---|
| 108-94780 | Product Spec. Vehicle Charge Inlets Type 2 AC |
| 114-13000 | Application Specification Micro Mate-N-Lock Connectors |
| 108-94519 | Product Spec. TE actuator for charge inlets |

## 2.2. General Documentation

Cable Specifications of Prescribed Cables

1-PHASE: 2x AC-cable (L1 and N): cross-section 6,0mm²

| | |
|---|---|
| Supplier | COFICAB |
| Outer Diameter | 5.0 $^{-0,4}$ mm |
| Cable description | *High Voltage Automotive Cables*<br>*1)* LV 216-1 Class D (150ºC)<br>*2)* ISO 6722-1 Class D (150ºC) |
| Supplier Part No.: | FHL2X T4 6 mm² - ref.: FHL2X4B06XXYY |

3-PHASE: AC-cable: cross-section 4x 6,0mm²

| | |
|---|---|
| Supplier | COFICAB |
| Outer Diameter | 15.1 $^{-0,6}$ mm |
| Min. bending radius | 3xD(static) |
| Cable description | *FHLR2G2GCB2G 4x6.0mm²*<br>*similar LV216-2 class F (T200)*<br>*TPJLR.18.007, Issue 3* |
| Supplier Part No.: | FLHR2G2GCB2G 4x6mm² |

PE-cable: cross-section 6,0mm²

| | |
|---|---|
| Supplier | COFICAB |
| Outer Diameter | 5.0 $^{-0,4}$ mm |
| Cable description | *High Voltage Automotive Cables*<br>*1)* LV 216-1 Class D (150ºC)<br>*2)* ISO 6722-1 Class D (150ºC) |
| Supplier Part No.: | FHL2X T4 6 mm² - ref.: FHL2X4B06XXYY |

Signal-cable: cross-section 0,5mm²

| | |
|---|---|
| Supplier | |
| Outer Diameter | 1.6 $^{-0,2}$ mm |
| Cable description | *FLRY 0,5mm² acc. ISO6722-1* |

## 3. APPLICATION TOOLS

To produce a correct wire crimp, as validated by TE with the wires listed in this specification, following application tools are required.
The press machine for crimping is required to provide minimum 20 tons press force.

| Wire Size [mm²] | Stripping Length single wire for crimp [mm] | Crimp height $CH_1$ [mm] | Cable Specification | Supplier | Contact P/N | Geo-metry | Applicator | Crimping press used by TE for Crimp Validation |
|---|---|---|---|---|---|---|---|---|
| 6 | 13,0 ± 1 | 3.7 ± 0,1 | FHL2X T4 6.0mm² | Coficab | 2293269-3 | W | 2234179-1 | HV-20 2348822-1[1] |
| | | | FHLR2G2GCB2G 4x6.0mm² | Coficab | 2293269-3 | | 2234179-1 | |
| | | | FHL2X T4 6 mm² | Coficab | 2293270-3 | | 2358638-1 | |
| 0.5 | Acc. to application specification 114-13000 (Crimped contact) | | | | | | | |

*Table 1*

1) Crimping press “HV Crimping Machine 528008-4 with adapter” & related applicators acc 114-94440 REV. B2 were used for product validation. They are still released for production, but no longer available in the TE Portfolio.

Crimp Die Sets are subject to wear and their condition and quality have to be monitored. Suspect and/or worn Die Sets have not to be used for the production of these crimps. Die Sets are available as spare parts

# 4. WIRES

## 4.1. Assessment of the wires

To ensure the required electrical crimp contactability with stable crimp resistance a permissible maximum storage period of 8 months for unprocessed cable (referring to cable manufacturer production date) has to be respected.

## 4.2. Wire selection

The contact system is released for the application with wires specified in chapter 2.2
The released contact-wire-combinations and crimp parameters are given in table 1.

Other wires require the validation and approval of the TE engineering department.
The wires are applied as single wire terminations. Double terminations are not intended.

## 4.3. Wire preparation

The cable insulation must be stripped before crimping. The stripping length of the outer insulation and shield is defined in the following Assembly Steps.

The insulation must be cut accurately and pulled off from the conductor. Offcut of insulation must not remain on the conductor. Single strands may not be damaged, fanned out, cut or pulled out. Furthermore, the operator should avoid touching the bare single strands and the strands shall not be twisted. All single strands need to be caught in the crimp and not a single stand must remain outside the crimp.

## 5. REQUIREMENTS ON THE CRIMPED CONTACT

The following terms shown below are used in this specification, see figure 1.

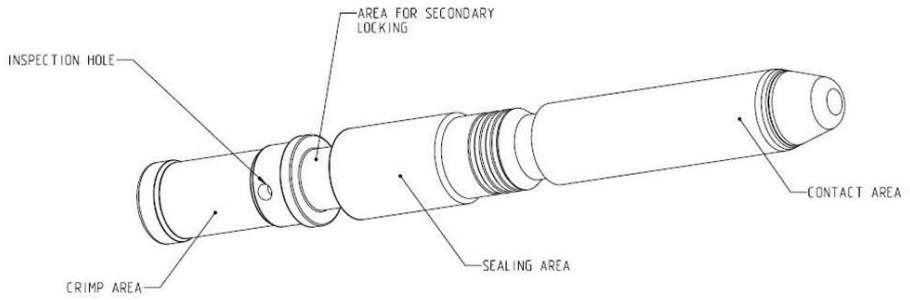



*Figure 1*

### 5.1. Conductor position

The single strands of the conductor are clamped inside the crimp area.
All single strands need to be caught in the crimp and not a single stand must remain outside the crimp.
The wire end must be fully inserted into the crimp area and has to be checked via the inspection hole after crimping. Insulation must not be inside of the crimping area, see figure 2

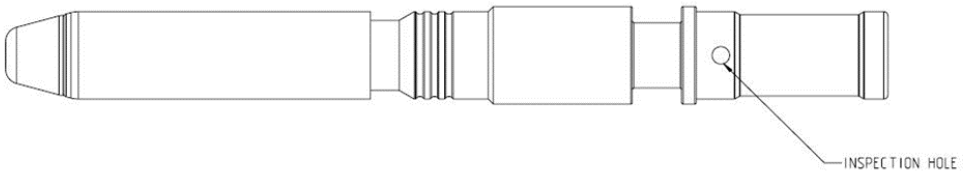



*Figure 2*

### 5.2. Crimp Geometry

The crimp geometry, crimp heights including their corresponding tolerances as well as wire sizes are given in table 1.

The crimp height is the key quality feature of a crimp connection. The measurement allows a non-destroying examination and a continuous process inspection. It is provided for every wire size and contact.
The crimp height is given in table 2.

Crimp height and width may also be measured in a cross-section image. The mechanical operated measurement though is preferred.

During the application process the crimp height must be checked. This is valid for each batch and after every change or switchover of contact reel or wire bundle or applicator respective it's setup or components.

The crimp height has to be measured over both extensions in middle of the crimp, figure 3:


Figure 3 (pic exemplarily)

## 5.3. Cross Sections

When creating cross sections, the correct grinding layer must be selected. The
Grinding layer had to be at middle of crimp area and may not be inside of serration, see figure 4.

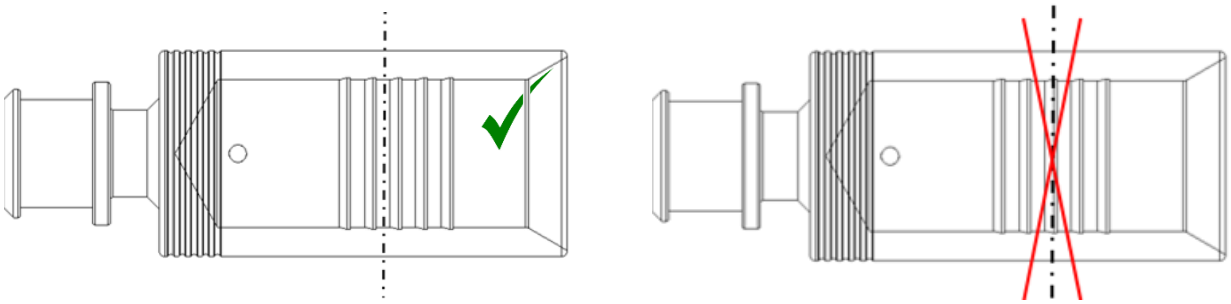


*Figure 4* (pic exemplarily)

## 5.4. Wire pull-out forces

Measurement of wire pull-out forces from the wire crimp is a supporting manufacturing control.

The pull-out forces must fulfil the requirements according product specification
108-94780

## 5.5. Crimp Position

The TE applicator positions the contacts in the crimping tool at middle position as shown, figure 5 and 6.
Correct position and condition of applicator has to be checked for every production lot.

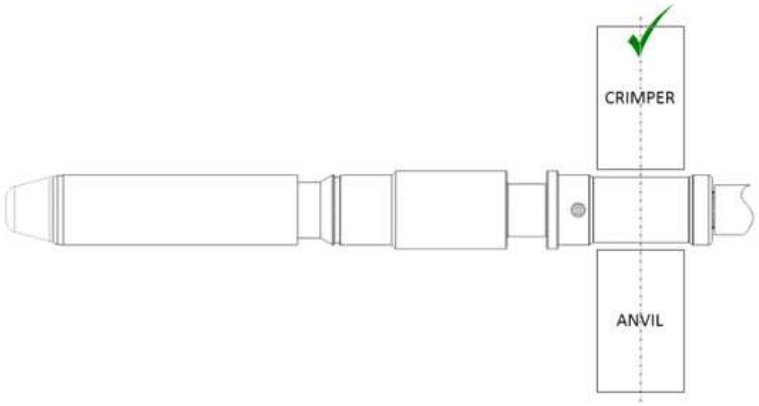



*Figure 5* (pic exemplarily)

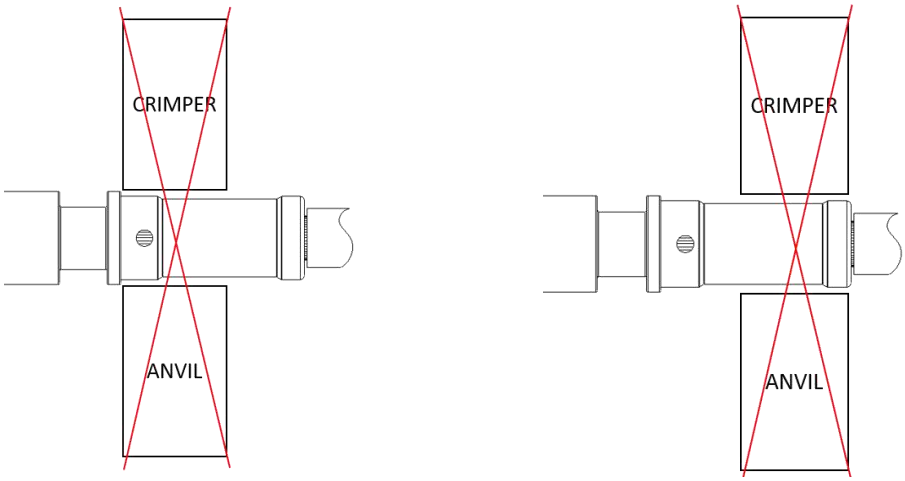



*Figure 6* (pic exemplarily)

## 5.6. Contact area

During processing and following processing the contact area may not be damaged or bended.

## 5.7. Sealing area

During processing and following processing the sealing area may not be damaged or bended

## 5.8. Shape and position tolerances

Measuring the shape and position deviation is not always necessary, if the contact is obviously straight by eye. In case a measurement is required, the measurement equipment required at least a 10-time better measuring precision compared with the requirement tolerances, see figure 7 and 8.
Meeting the specific shape and position tolerances must be ensured before the contact is inserted into the housing.
If contacts are bent during the application process and exceed the specified tolerances these must not be bent back or reworked but have to be scrapped.

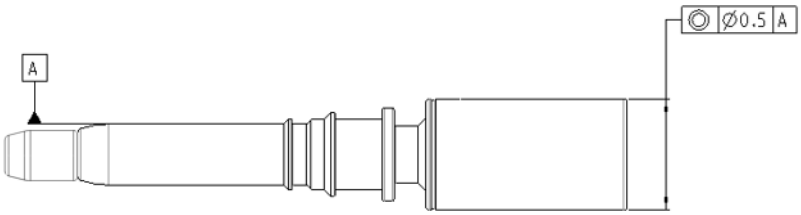



*Figure 7* (pic exemplarily)

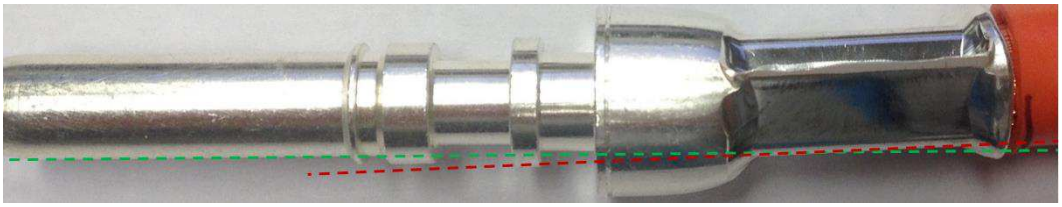


*Figure 8* (pic exemplarily)

## 5.9. Measuring equipment and measuring position

As measuring equipment for measuring crimp height, a digital caliper with accuracy of measuring 0.01mm is the minimum requirement. Measuring of crimp height had to be done according as following always in middle of crimp area across whole crimp, see figure 9 and figure 3.

*Figure 9* (pic exemplarily)

# 6. ASSEMBLY INSTRUCTIONS

## 6.1. Assembly overview Charge Inlet Type 2 AC

In below exploded views Figure 10a shows 1-Phase Variant and Figure 10b shows 3-phase variant.

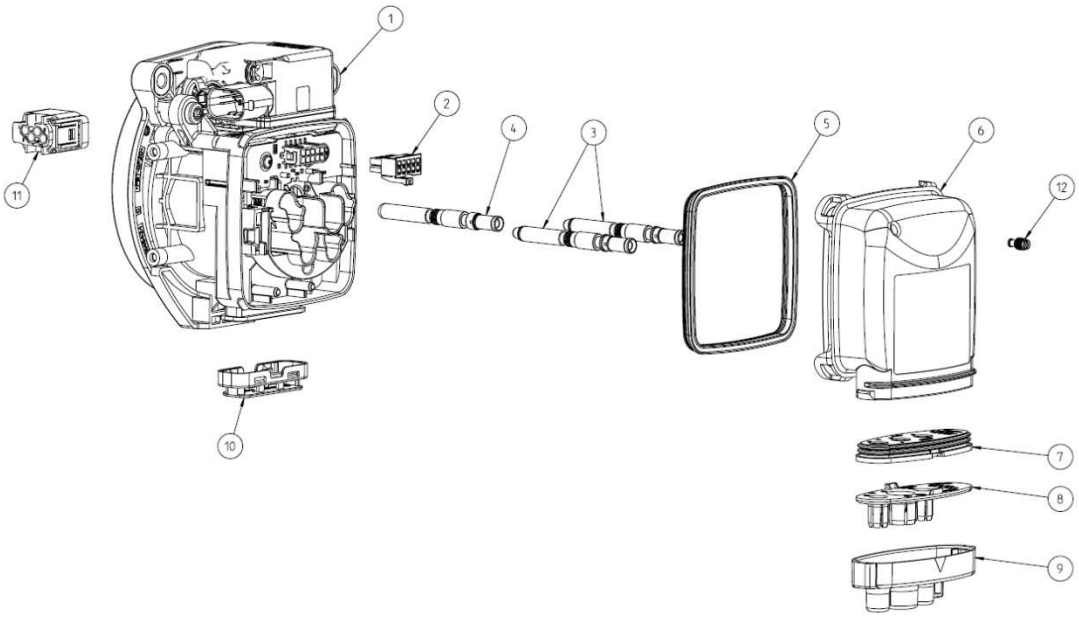



*Figure 10a*

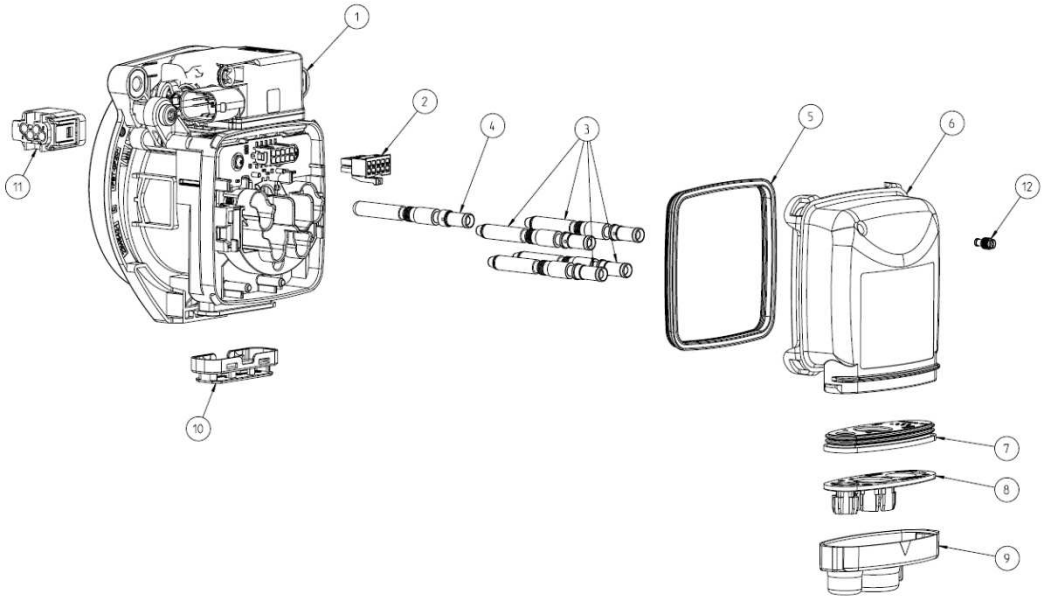



*Figure 10b*

6.2. Parts to order

| Charge inlet Type 2 AC<br>Variant / Part | | | | AC 6mm² |
|---|---|---|---|---|
| Pos. | Qty. | | Name / Bezeichnung | P/N |
| | 3-PHASE | 1-PHASE | | |
| 1 | - | 1 | INLET HSG, TYP 2, ASSY | 9-2368472-2 |
| | 1 | - | INLET HSG, TYP 2, ASSY | 9-2368472-3 |
| 2 | 1 | 1 | 10P MICRO MNL ASSY, VRT, SMT, LF | Additional part for charge inlet cabling:<br>1-794617-0 |
| | 9 | 9 | CONTACT MICRO MATE'N'LOCK | Additional part for charge inlet cabling:<br>0-794606-1 |
| 3 | 4 | 2 | PIN DIA 6, RIGID, POWER AC, ASSY | 2293269-3 |
| 4 | 1 | 1 | PIN DIA 6, RIDIG, PE | 2293270-3 |
| 5 | 1 | 1 | PERIPHERAL SEAL,63,63, AC | 0-2320214-1 |
| 6 | 1 | 1 | CABLE EXIT, RECT, 90DEG | 5-2296063-2 |
| 7 | - | 1 | FAMILY SEAL, AC | 2316422-1 |
| | 1 | - | | 2-2296040-7 |
| 8 | - | 1 | STRAIN RELIEF, AC | 2316423-1 |
| | 1 | - | | 1-2344703-5 |
| 9 | - | 1 | COVER, CABLE SEAL, AC | 5-2316424-1 |
| | 1 | - | | 5-2296057-3 |
| 10 | 1 | 1 | PROTECTION CAP, TE, WATER DRAIN | 2292534-1 |
| 11 | - | - | 4POS MQS Connector HSG, Seals and Contacts | Additional part for Actuator cabling:<br>p/n acc. Prod. Spec. 108-94519 |
| 12 | 1 | 1 | MQS Cavity Plug | 963143-1 |

*Table 2*

## 6.3. Assembly Configurations Cable Exit

The inlet can be assembled with different cable exit directions. The required configuration can be chosen to customer request. The configurations shown in figure 11 can be realized.

In this specification the version with cable exit downwards is shown exemplarily

**Configurations for cable exit downwards:**

Ground cable left

Ground cable right

**Configurations for cable exit sidewards:**

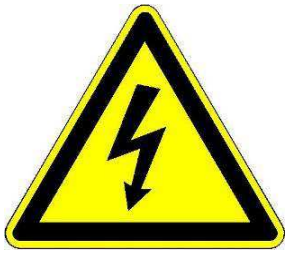
To left side with ground cable on bottom

To right side with ground cable on bottom

*Figure 11*

6.4. Security Advice

**ATTENTION!**
**- HIGH VOLTAGE APPLICATION -**
**CABLE INSULATION MUST NOT BE DAMAGED!**



**The assembly has only be performed by trained personnel.**

**Avoid prolonged or repeated skin contact with silver plated contacts (wear protective gloves)!**

## 6.5. Assembly Steps

Note: The assembly steps for 3-phase and 1-phase are shown in parallel, and pictures “Figure XXa” show 1-phase while “Figure XXb” shows 3-phase

**Step 1**
The COVER CABLE SEAL AC 5-2316424-1, STRAIN RELIEF AC 2316423-1, FAMILY SEAL AC 2316422-1 must be pushed over the signal wires, the ground wire and the AC wires for 1-phase variant.
The COVER CABLE SEAL AC 5-2296057-3, STRAIN RELIEF AC 1-2344703-5 FAMILY SEAL AC 2-2296040-7 must be pushed over the signal wires, the ground wire and the AC Multicore wires for 3-phase variant.
Pay attention to place all wires at correct positions, figure 12a and 12b. Especially ensure the correct position of the flange of the L-shaped FAMILY SEAL AC towards the STRAIN RELIEF, figure 12c

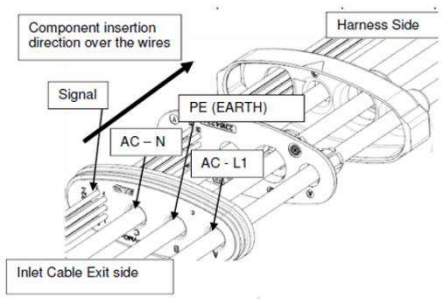



*Figure 12a*

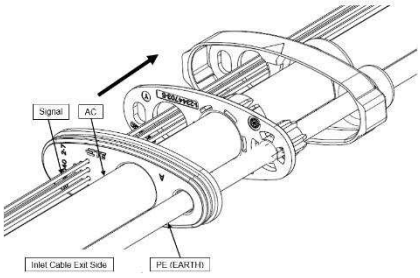



*Figure 12b*

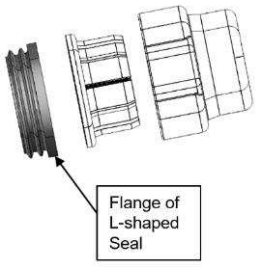



*Figure 12c*

**Step 2**

Wire preparation:

**AC 6mm² Cable (1-phase)**

Remove outer insolation, shield and filler of AC cable acc. figure 13a and table 3a.
The given length of the single wires ensures that the outer sheath of the single core cable seals off to the FAMILY SEAL AC 2316422-1. Alternatively, a marking on the outer sheath in a certain distance to the cut off position can be used to ensure the proper position of the outer sheath in the FAMILY SEAL AC.

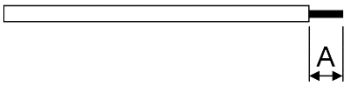



*Figure 13a*

| Wire Size | Removal of insolation dim. "A" |
|---|---|
| 6 mm² | 13 mm +/- 1mm |

*Table 3a*

**AC 4x6 mm² Multicore Cable (3-phase)**

Remove outer insolation, shield and filler of AC-multicore-cable acc. figure 13b and table 3b.
The given length of the single wires ensures that the outer sheath of the multicore cable seals to the FAMILY SEAL AC 2-2296040-7. Alternatively, a marking on the outer sheath in a certain distance to the cut off position can be used to ensure the proper position of the outer sheath in the FAMILY SEAL AC.

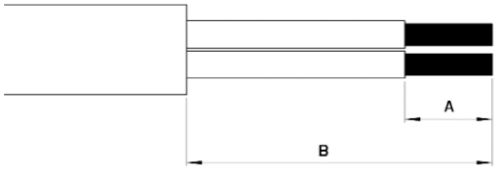



Figure 13b

| Wire Size | Removal of insolation dim. "A" | Length of single wires "B" |
|---|---|---|
| 6 mm² | 13 mm +/- 1mm | 68+/-2mm |

*Table 3b*

**PE (ground) single wire**

Remove outer insolation acc. Figure 14 and table 4.

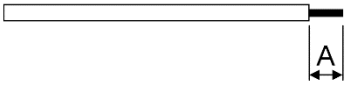



Figure 14

| Wire Size | Removal of insolation dim. "A" |
|---|---|
| 6 mm² | 13 mm +/- 1mm |

*Table 4*

**Crimp the conductors to the PIN DIA6.0 RIGID CONTACTS 2293269 and 2293270 with the specified tools listed in table 1. The crimp has to fulfil the requirements acc. Chapter 5.**

**Signal-Wires 0,5mm²**

Dismantle single wires acc. spec. 114-13000 and crimp the contacts 0-794606-1 acc. spec. 114-13000, see figure 15.


*Figure 15*

**After Crimping the subassembly of cables with cable exit components is in the condition shown in figure 16a and figure 16b:**

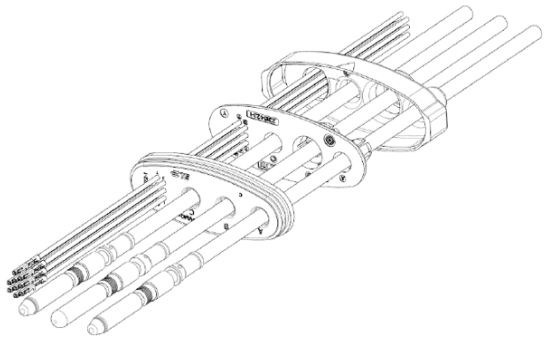


*Figure 16a*

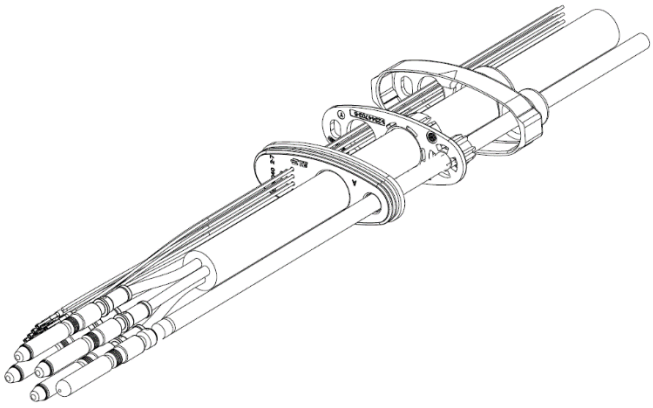


*Figure 16b*

**Step 3**

Push signal terminals 0-794606-1 (Micro Mate'n'Lock) into the Connector Housing 1-794617-0 acc. application spec 114-13000.
Pinning according figure 17:

| Signal Name | Description | 10 Ways connector Position |
|---|---|---|
| Green_Drv | Green LED current driving channel | 1 |
| Blue_Drv | Blue LED current driving channel | 2 |
| Red_Drv | Red LED current driving channel | 3 |
| GND | Main Ground | 4 |
| T_AC2 | Temperature sensor for AC Pin | 5 |
| T_AC1 | Temperature sensor for AC Pin | 6 |
| Optionnal | Not used | 7 |
| CP | Contact Pilote | 8 |
| T_GND | Temperature analog ground | 9 |
| Proxi | Proximity PIN Connection | 10 |

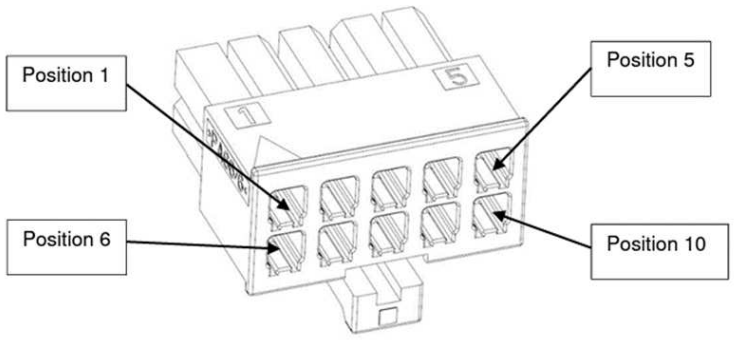



*Figure 17*

After Micro Mate'n'Lock connector housing assembly the subassembly of cables with cable exit components is complete, see figure 18a and figure 18b:

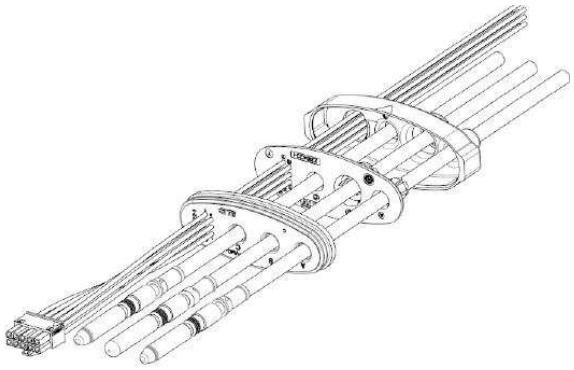


*Figure 18a*

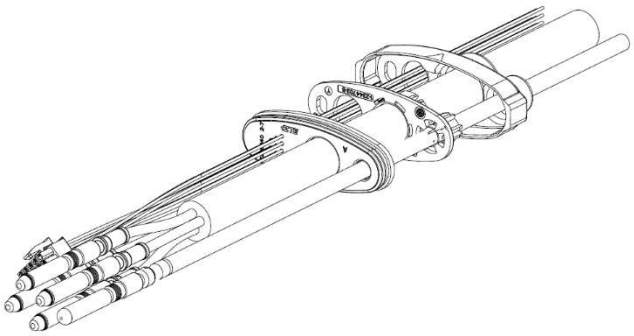


*Figure 18b*

**Step 4**

Assemble the Peripheral Seal 0-2320214-1 to the Cable Exit Cover 5-2296063-2. The Peripheral Seal has to be properly seated into the Collar of the Cable Exit Cover. The seal has a L-shaped design, pay attention to correct orientation of seal acc. Figure 19 Wrong assembled seal will jeopardize water tightness.

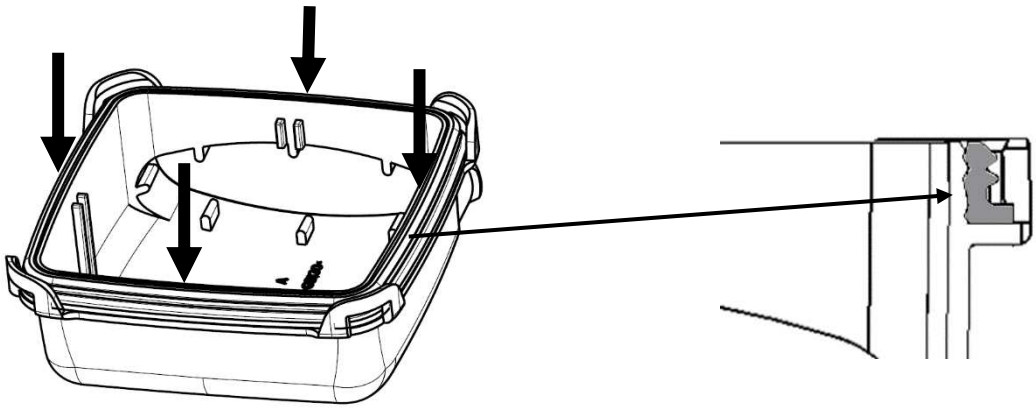


*Figure 19*

**Step 5**

Pass the cable subassembly (figure 18a / figure18b) through the AC slot in Cable Exit 5-2296063-2 (figure 20a / figure 20b).

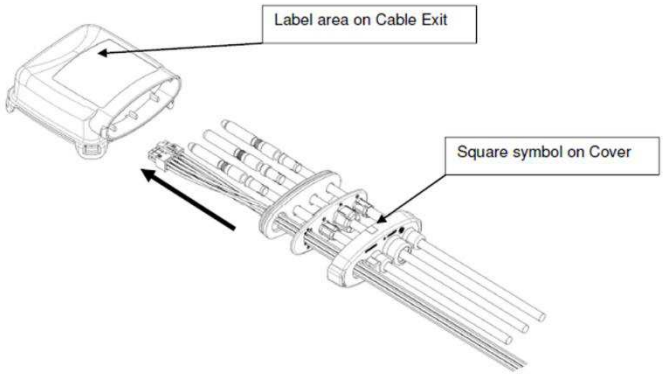



*Figure 20a*

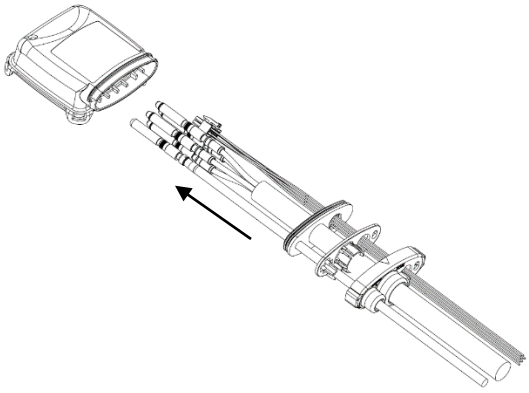


*Figure 20b*

**Step 6**

Insert the Contacts from the backside into the Inlet Housing according to the cavity description into their locking position as shown in figure 21a and 21b.
To ensure that the contacts are correctly inserted, pull the cables with a low force of (max. 10N).
Figure 22a and figure 22b shows how the contacts are located and pushed into end positions.

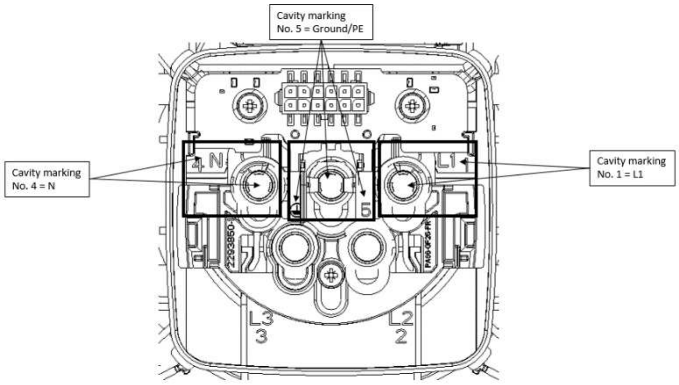



*Figure 21a*

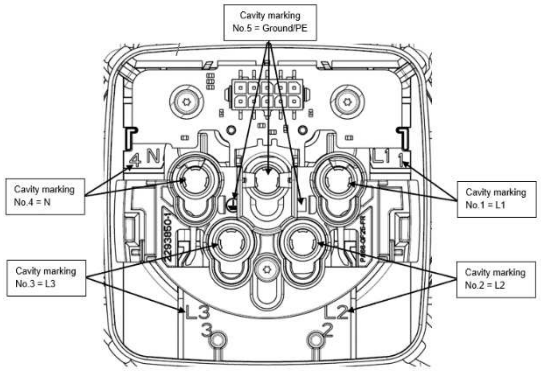



*Figure21b*

<u>ATTENTION</u>: The correct contact positions have to be ensured BEFORE pushing the contacts into locking their cavities in locking position.
In case of wrong positioning of the contacts the complete assembly has to be scrapped. There is no rework allowed (risk of damaging contacts and/or locking geometry in housing)

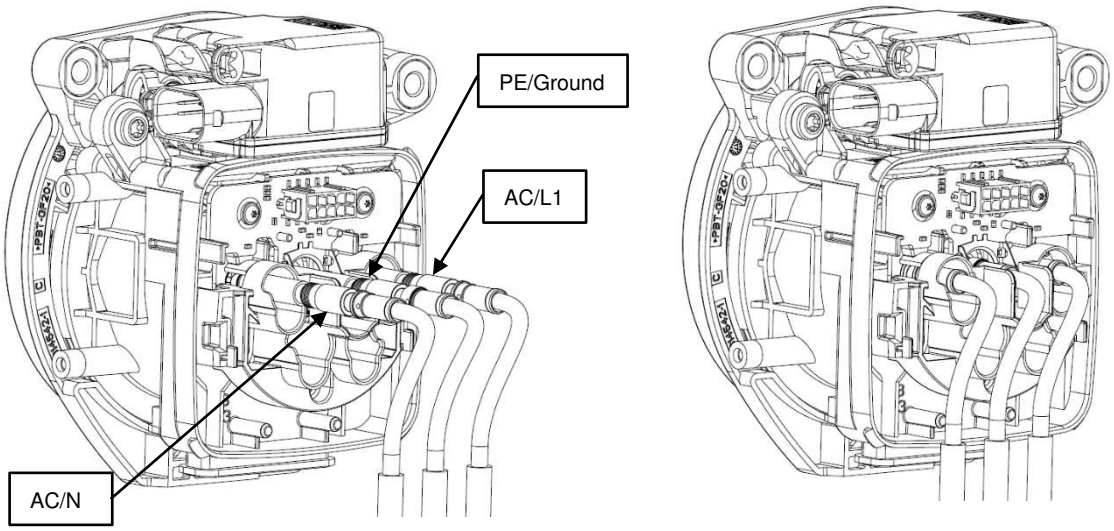



*Figure 22a*

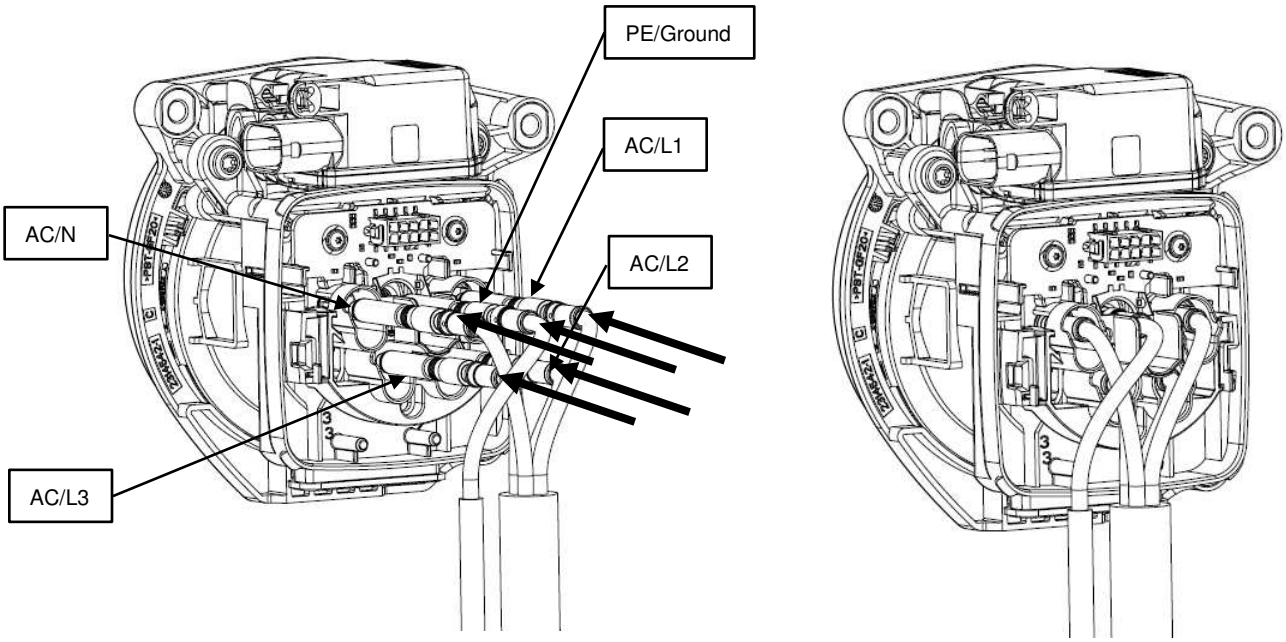



*Figure 22b*

**Step 7**

After the contacts have been controlled for correct positioning and locking, the SECONDARY LOCK has to be pushed upwards (Figure 23a and Figure 23b). Ensure that both latches are properly engaged with the inlet housing, which has to be controlled by the double audible click and by visible inspection. (Figure 24a Figure 24b and Figure 24c).

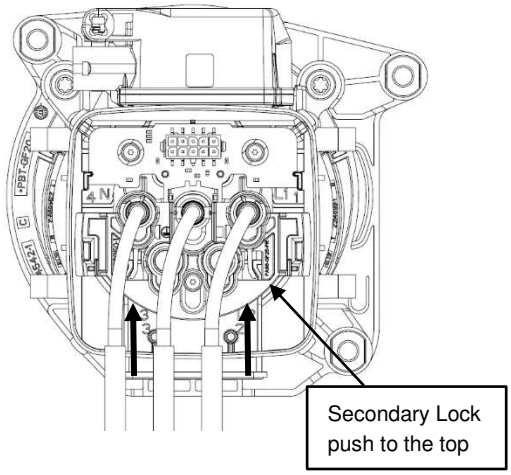



*Figure 23a*

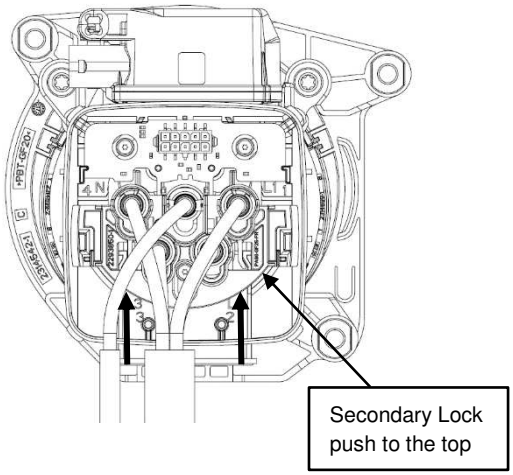



*Figure 23b*

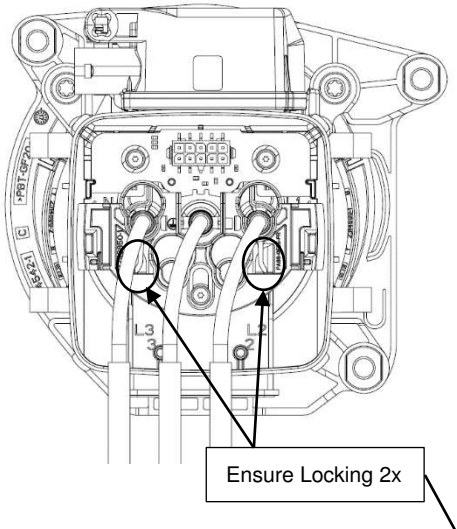



*Figure 24a*

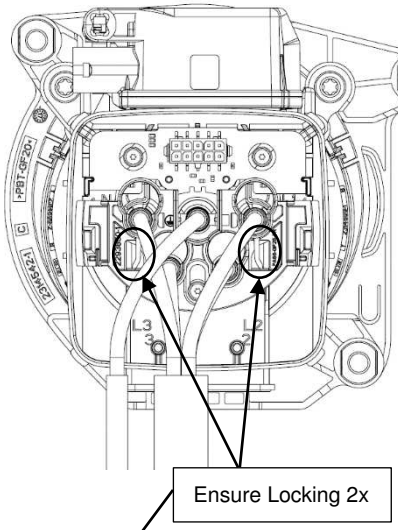



*Figure 24b*

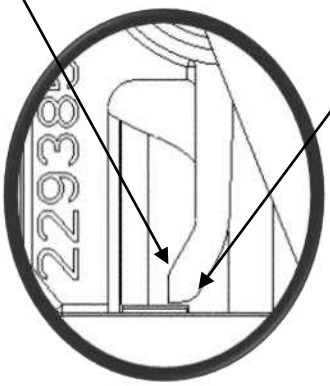


*Figure 24c*

**Step 8**

Connect Micro Mate'N'Lock Connector to PCB-Header. Ensure the hook is properly engaged with the header, see figure 25a / figure 25b.

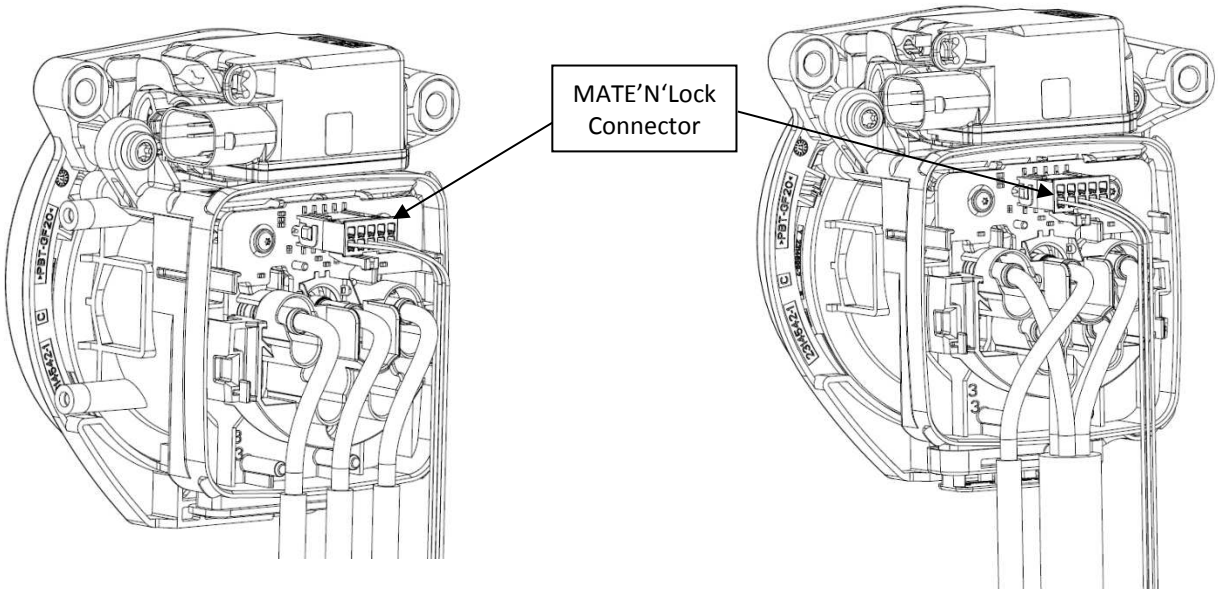



*Figure 25a*

*Figure 25b*

**Step 9**

Assemble the Cable Exit Cover 5-2296063-2 with preassembled Peripheral Seal 0-2320214-1 to the Inlet Housing Assy 9-2368472-2 for 1-phase and 9-2368472-3 for 3-phase. Ensure that all 4 hooks are correctly engaged. (Figure 26a and Figure 26b). The press force has to be applied on the marked locations on the surrounding cable exit collar close to the latches, not over the complete surface of the cover, see figure 27.

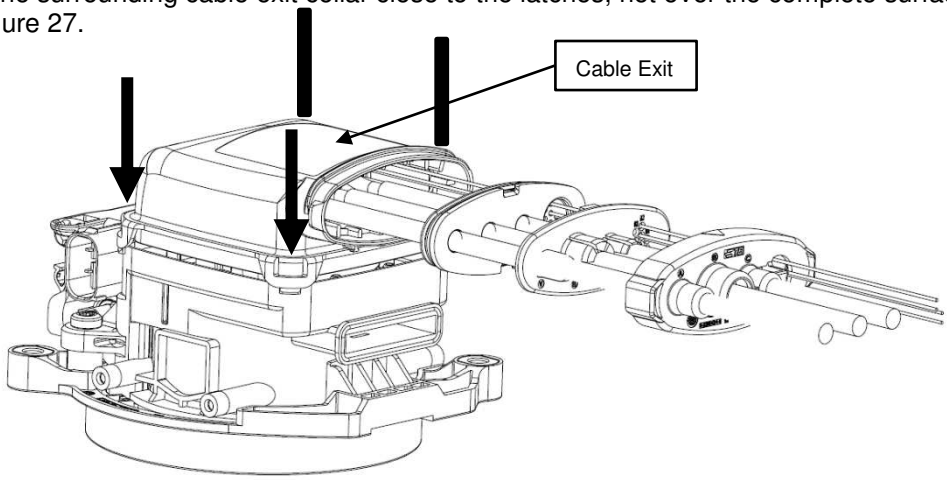



*Figure 26a*

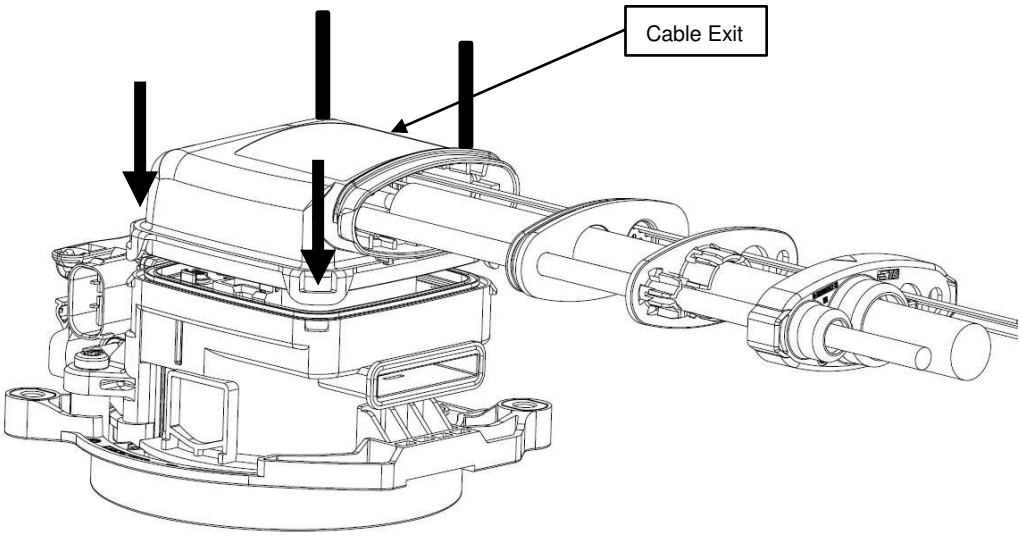



*Figure 26b*

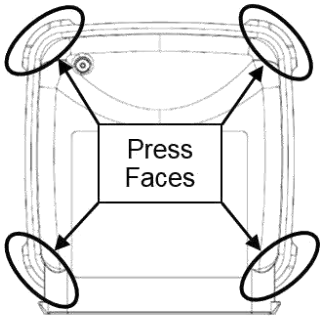



*Figure 27*

**Step 10**

Move the STRAIN RELIEF AC 2316423-1 together with FAMILY SEAL AC 2316422-1 into their position in the CABLE EXIT 5-2296063-2 for 1-phase, see figure 28a.

Move the STRAIN RELIEF AC 1-2344703-5 together with FAMILY SEAL AC 2-2296040-7 into their position in the CABLE EXIT 5-2296063-2 for 3-phase, see figure 28b.

ATTENTION: Ensure that the AC cable is well positioned in the FAMILY SEAL, that all seal lips are safely placed on the outer isolation of the cables. (Figure 29)

For 1-phase variant push the COVER CABLE SEAL AC 5-2316424-1 over it and snap it on the CABLE EXIT COVER 5-2296063-2. Ensure that both hooks are correctly engaged (double audible click).

For 3-phase variant push the COVER CABLE SEAL AC 5-2296057-3 over it and snap it on the CABLE EXIT COVER 5-2296063-2. Ensure that both hooks are correctly engaged (double audible click).

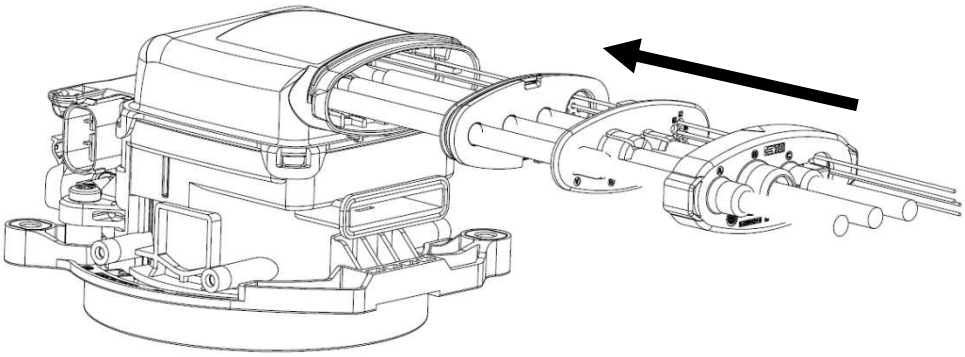


*Figure 28a*

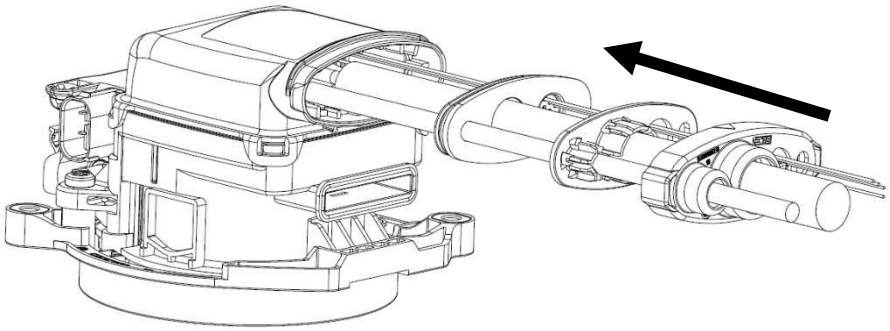


*Figure 28b*

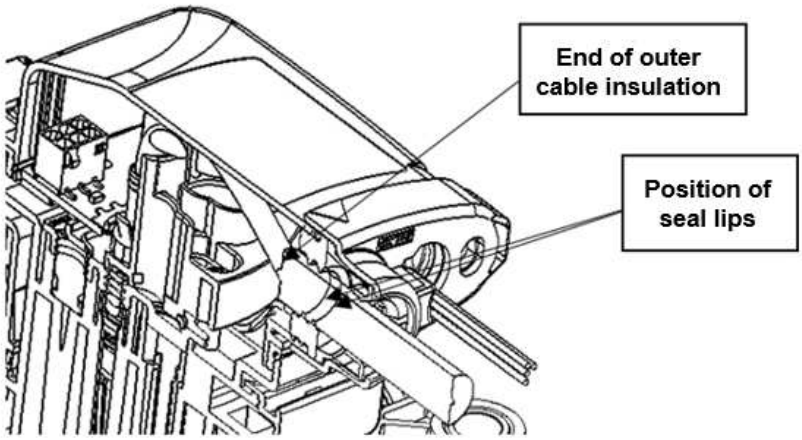



*Figure 29*

**Step 11**

Place a cable tie (proposed dimensions 2,5mm wide, material to be heat stabilized and suitable for automotive use) around the single wire signal cables and the bridge at the Cover Cable Seal 5-2316424-1 and pull tight for 1-phase, 5-2296057-3 and pull tight for 3-phase see figure 30.

**Step 12**

Assemble Protection Cap 2292534-1 at Inlet Housing, see figure 30.

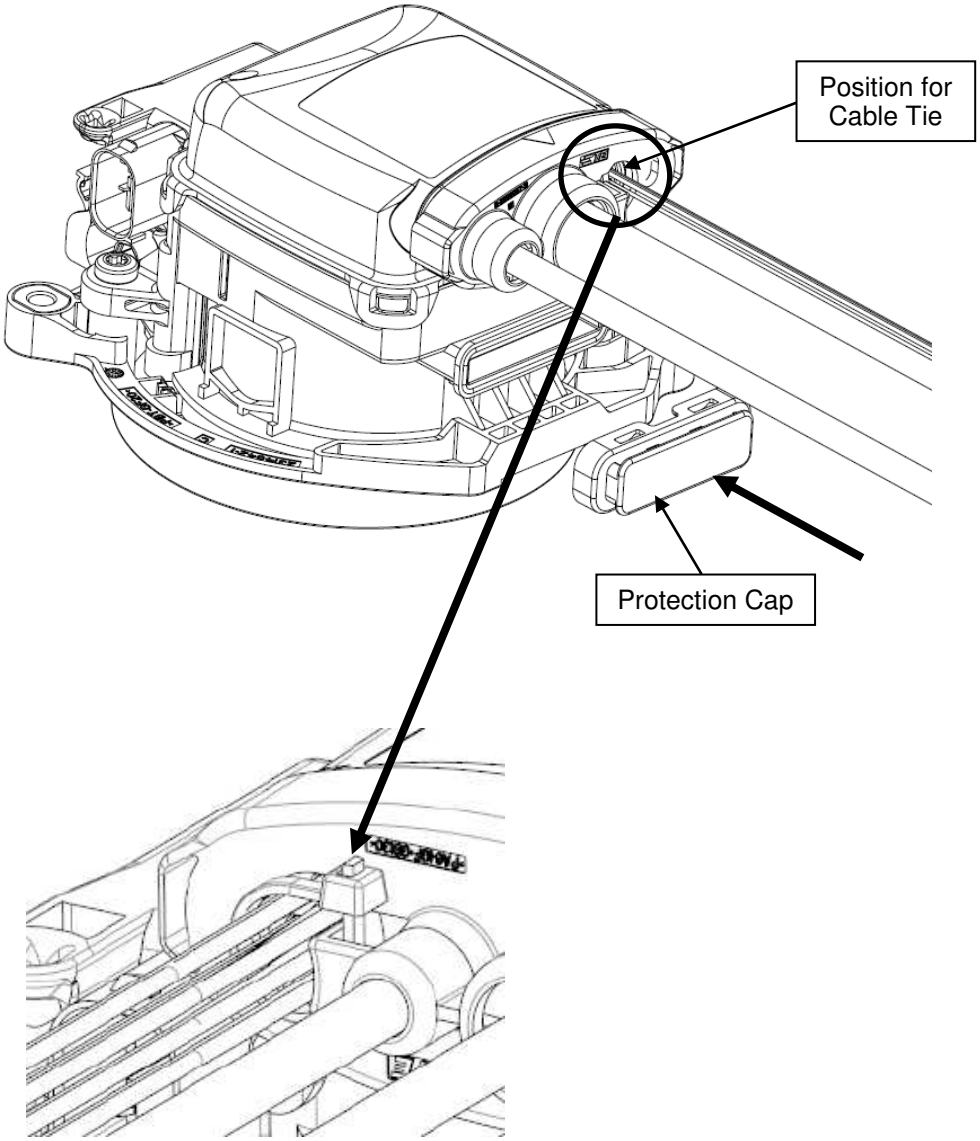



*Figure 30*

**Step 13**

As part of the End of Line Test as listed in Chapter 6.6, perform the tightness check of the fully assembled charge inlet. The pressure port on the rear of CABLE EXIT COVER 5-2296063-2(shown in figure 31) is designed to fit an elastic plastic tube (Polyurethan or similar) with an outer diameter of 4mm.

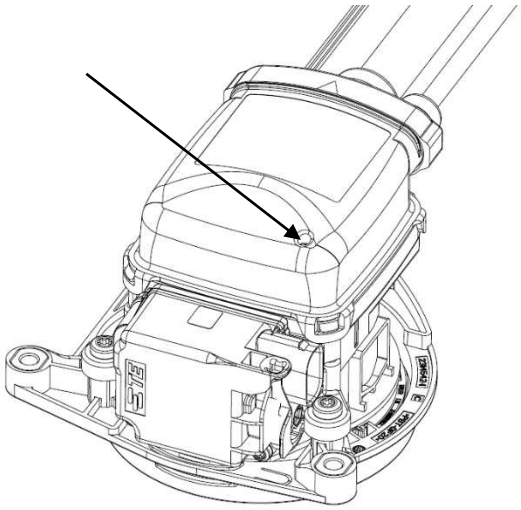


*Figure 31*

The tubular geometry of the pressure port has a reduced inner diameter towards the bottom to increase the pressure on the elastic tube when being inserted. The tube needs to be pushed that far into the pressure port that a sufficient air tightness can be achieved, see figure 32 for exemplarily inserted tube.

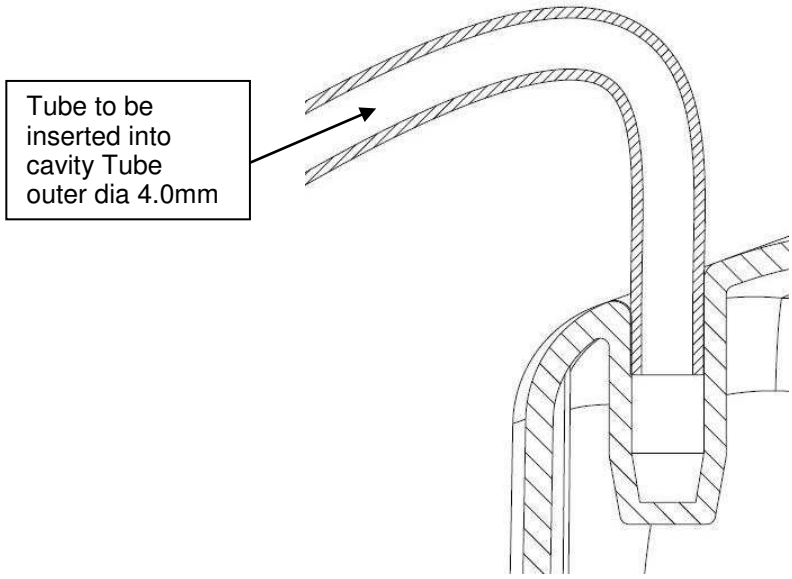



*Figure 32*

For the tightness check it is intended to perform an air differential pressure decay leak measurement test. Pressure profile is 0,1…0,15 bar, preferably under pressure. Acceptance criterion is pressure loss over time and has to be defined based on particularly prepared failure test samples

After successfully passed tightness check the pressure port needs to be closed with the MQS CAVITY PLUG 963143-1.
The MQS CAVITY PLUG needs to be FULLY inserted into the pressure port, see figure 33. The bottom of the pressure port is closed with a cross geometry to avoid that the MQS Cavity Plug could be pushed through.

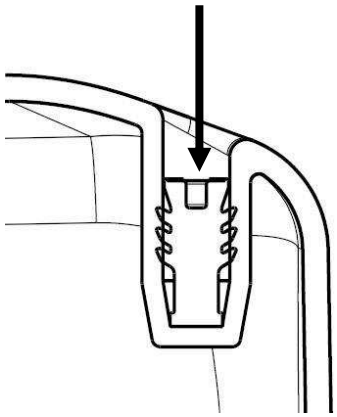


*Figure 33*

**Step 14**

For identification a label can be applied on this specified polished face on the CABLE EXIT, see figure 34. The label needs to include information acc. requirements of IEC62196-1/-2 and IEC61851. Also information acc. to customer requirements can be applied here.

Marking acc. SAE J1772 / IEC62196-2:

| | |
|---|---|
| Manufacturer Company‘s identification | XXXXX |
| Product designation or catalog or product number | Art.: XXXXXXX |
| Rated Current, Voltage and Frequency | Max. 32A, 250V/480V~ 50-60Hz |
| Number of Phases | 1L / N / ⏚ |
| Degree of protection | IP67 |

There may apply additional national marking requirements, depending on the market/country the car will be configured for. Also information acc. to customer requirements can be applied here.
As a compatible label TE p/n 5-1768421-9 is recommended.

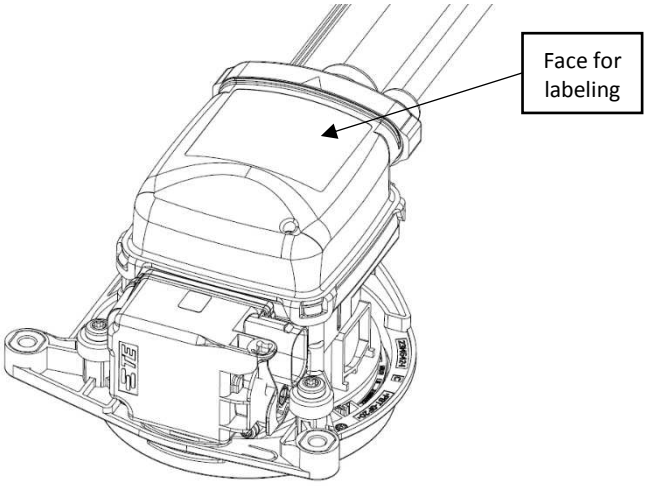



*Figure 34*

## 6.6. End of Line Test

The assembled Charge Inlet has to be tested electrically and mechanically to applicable requirements, including High Voltage test.
As a minimum, following tests have to be performed:

- Isolation Resistance:
  Test Voltage: 500VDC
  Inspection Duration: 1s
  min. $R_{iso}$: 200MOhm
  pin-to-pin, excluding CP-to-Proxy (PP) and CP-to-Ground and Proxy (PP)-to-Ground

a) L1 (+L2+L3 if present) versus N
b) if present, L2 + L3 versus L1
c) if present L2 versus L3
d) L1+N (+L2+L3 if present) versus Ground, CP, PP (These contacts shall be shortened during testing to avoid any failure current on the PCBA)
e) L1+N (+L2 +L3 if present) versus AC multicore shield

- Dielectric withstand voltage:
  Test Voltage: 2000VAC
  Inspection Duration: 1s
  max. Leakage current: 10mA
  pin-to-pin, excluding CP-to-Proxy (PP) and CP-to-Ground and Proxy (PP)-to-Ground

a) L1 (+L2+L3 if present) versus N
b) if present, L2 + L3 versus L1
c) if present L2 versus L3
d) L1+N (+L2+L3 if present) versus Ground, CP, PP (These contacts shall be shortened during testing to avoid any failure current on the PCBA)
e) L1+N (+L2 +L3 if present) versus AC multicore shield

- Correct Pinning of all Contacts

- Check seals for correct seating by Tightness Check of completed Charge Inlet Harness Assy (Air pressure test)

- Check correct assembled MQS Cavity Plug in the pressure port after Tightness Check.

- Gauge check of geometrical interface acc. IEC 62196-2.

- Functionality check of actuator. Drive (first) in lock and (second) in unlock position. During this operation, the actuator pull ring / pull cable becomes pulled back in end position.

## APPENDIX 1: LIGHT INDICATORS FUNCTIONAL TEST

# Light indicators Functional Check

## 1.Scope

This part describes Light indicators Functional Check (3 modes, see next page)

Light arcs are light indicators integrated in the front bracket of the AC Charge inlet (Figure 1).

Light source is made by LED powered via 10 ways connector located on the back side (Figure 2).

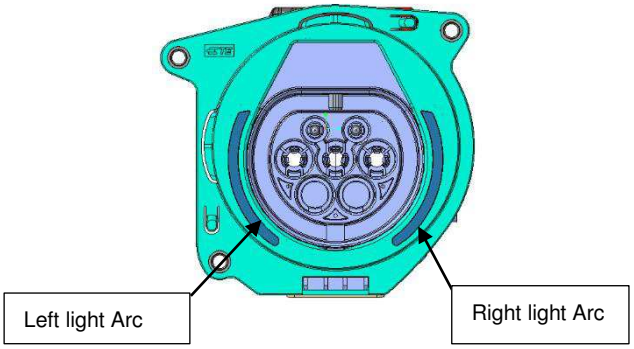



Figure 1: CAD data front view of the Bracket
With light arcs shown in blue

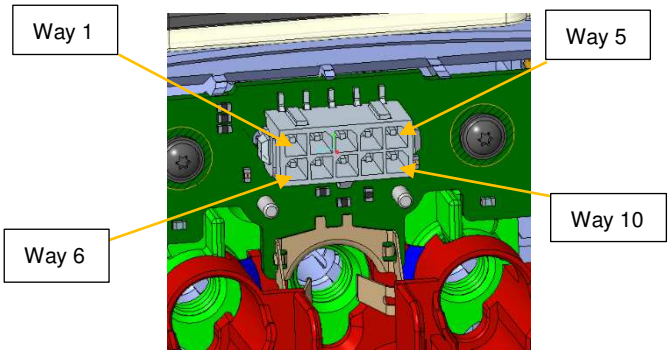



Figure 2: CAD data back side of the Bracket
With 10-way connector plugged

### 2.Light outputs modes

There are 3 modes to be checked

- indicator powered supply for red color: red light visible along the arcs.
- indicator powered supply for blue color: blue light visible along the arcs.
- indicator powered supply for green color: green light visible along the arcs.

Left and Right Light arcs are working together in the same mode.

Functional recheck : for each mode a visual check (color light on) must be done.

### 3.Power Source Definition

A triple output Current Power Supply is needed to provide regulated current. This Power Source must have the capability to drive independently all 3 LED power lines (see Annex 1) from the high side. This must be high side driver as LEDs are common cathode wired.

Power supply characteristics for each red, green, and blue channel.

The power supply shall provide a constant 30mA current.

## 4.Annex 1 – Light indicators: Power source connection

Each sample under test and must be connected to the power supply through the 10 ways connector With respect to the pinout as specified in the table1: only ways 1 to 4 should be connected to power Source of the light indicator functional test

| Signal Name | Description | 10 Ways connector Pin |
|---|---|---|
| Green_Drv | Green LED current driving channel | 1 |
| Blue_Drv | Blue LED current driving channel | 2 |
| Red_Drv | Red LED current driving channel | 3 |
| GND | Main Ground | 4 |

Table1: 10 ways connector pinout

## 5.Annex 2 – Light indicators: Power source setup

The LEDs shall be powered with a constant-current source with respect to table 2, max. Voltage 12V

| ACTIVATION TABLE | | | | |
|---|---|---|---|---|
| LINE | LED INTENSITY PER LINE | COLOR | | |
| | | RED | GREEN | BLUE |
| R | 30mA | ON | OFF | OFF |
| G | 30mA | OFF | ON | OFF |
| B | 30mA | OFF | OFF | ON |

Table2: Activation table

| LTR | REVISION RECORD | DWN | APP | DATE |
|---|---|---|---|---|
| A | FIRST RELEASE | R. CSISZOR | S. KUMAR | 20.05.2020 |
| A1 | LOCAL TYPE ADDED | R. CSISZOR | S. KUMAR | 25.06.2020 |
| B | 3-PHASE VARIANT ADDED, BOM TABLE UPDATED, IMAGES UPDATED FOR BOTH 1-PHASE AND 3-PHASE | HARSHITH K S | JINDRICH NECAS | 30.03.2022 |
| B1 | UPDATED CABLE SUPPLIER DETAILS | R. VIGNESH | JINDRICH NECAS | 22.08.2022 |
| B2 | PIN OUT POSITION UPDATED | R. VIGNESH | JINDRICH NECAS | 07.12.2022 |
| B3 | 1.LIGHT INDICATOR FUNCTIONAL TEST IS ADDED IN APPENDEX 1 IN PAGE 30 AND PAGE 31<br>2. IN GENERAL DOCUMENTATION, DESCRIPTION IS UPDATED FOR SIGNAL-CABLE: CROSS-SECTION 0,5MM² IN PAGE 4<br>3. APPLICATOR TOOL INFORMATION IS UPDATED IN PAGE 5<br>4. END OF LINE TEST IN UPDATED IN PAGE 29 | PRADEEP KUMAR K | SANDRA KRAFT | 05.01.2023 |

| | | | |
|---|---|---|---|
| DRW<br>R. CSISZOR | TE CONNECTIVITY GERMANY GMBH<br>AMPÈRESTRAßE 12-14<br>D-64625 BENSHEIM<br>GERMANY | | |
| CHK<br>S. KUMAR | | | |
| APP<br>S. KUMAR | NO<br>114-94653 | REV<br>B3 | LOC<br>AI |
| TITLE | Application Specification<br>Vehicle Charge Inlet Type 2 AC acc. IEC62196-2 | | |