4 WAY SEALED CONNECTOR (MCON 9.5 / MCON 1.2)

Contents

1 General

This application specification shows the following connector information:
- 4 WAY SEALED CONNECTOR (Cooling Fan)
- 4 WAY SEALED CONNECTOR (Waterpump)
- 4 WAY TAB HOUSING ASSEMBLY (Cooling Fan inline application)

1.1 Purpose

This application specification includes the guidelines to be followed during assembly, installation and disassembly of the 4 WAY SEALED CONNECTOR. All explanations are for the base version parts with code A and all cavities open. Please check latest drawing for all available versions.

1.2 Customer Drawing

The latest valid customer drawings shown below are for this guideline.

TYPE	***NAME***	***Drawing No.***
CONNECTOR ASSEMBLY (COOLING FAN)	*SOCKET HOUSING 4POS ASSEMBLY, sealed*	*2286732*
CONNECTOR ASSEMBLY (ePUMP)	*SOCKET HOUSING 4POS ASSEMBLY, sealed*	*2301631*
TAB HOUSING ASSEMBLY *(INLINE APPLICATION)*	*TAB HOUSING 4POS ASSEMBLY, sealed*	*2286733*
CONNECTOR INTERFACE	*4 WAY HYBRID SEALED INTERFACE*	*114-94340*

Terminal overview		
Name & Type	*Spec's*	*Tool*
MCON 1.2	*108-18782* *114-18464*	*J-38125-11A* *J-38125-12A*
MCON 9.5	*108-94540* *114-94423*	*J-38125-11A* *J-38125-12A*

Tools for Service	
Name	*Application*
J-38125-11A	*Terminal Release tool for MCON 1.2*
J-38125-12A	*Terminal Release tool for MCON 9.5*
J-38125-558	*Locking Tool for Spacer (TPA)*
726531-1	*Release tool for TPA & Spacer*

For additional / optional use	
Name	*Application*
Rheotemp 768G (NYE Lubricants)	*Lubricant*

Table 1 For correct part number please check drawing.

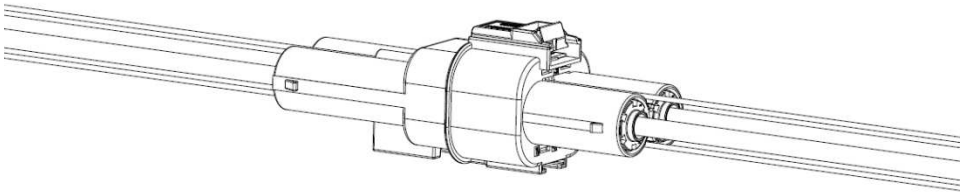
1.3 Product specification

This application specification is valid for products specified according to the product specification 108-94471.

2 Product description

2.1 Description of components

Assembled Cooling Fan Inline-Connector



Components Cooling Fan Connector

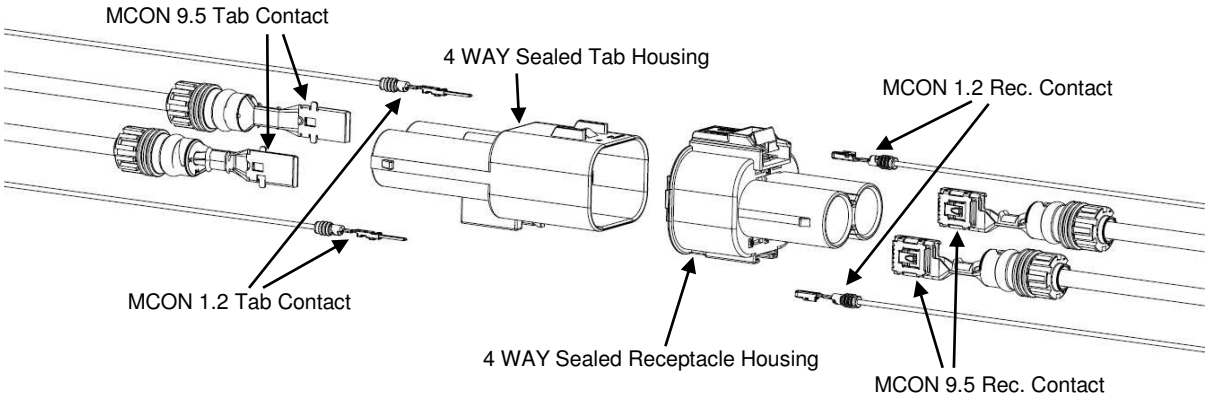
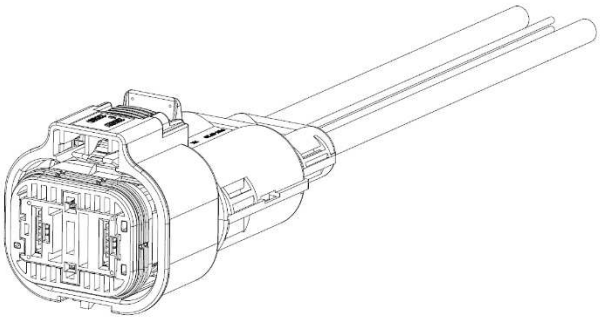


Fig.1

Assembled ePump Connector



Components e-Pump Connector

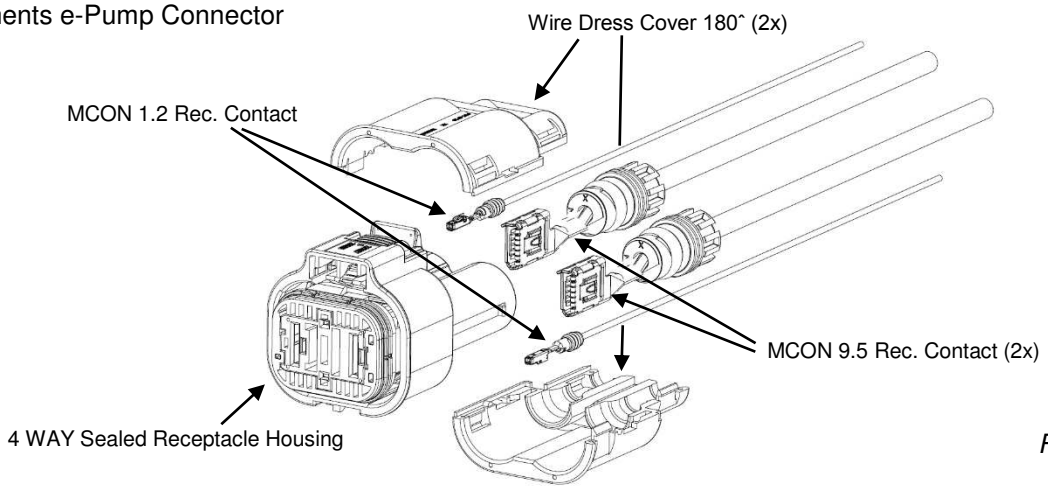


Fig.2

2.1.1 WAY TAB HOUSING ASSEMBLY (Cooling Fan Inline Application)

The connector (*PN 2286733)* features a spacer (TPA), and a socket housing with cavities for 1.2 & 9.5 male terminals. Counterpart to female (socket) housing PN 2286732.

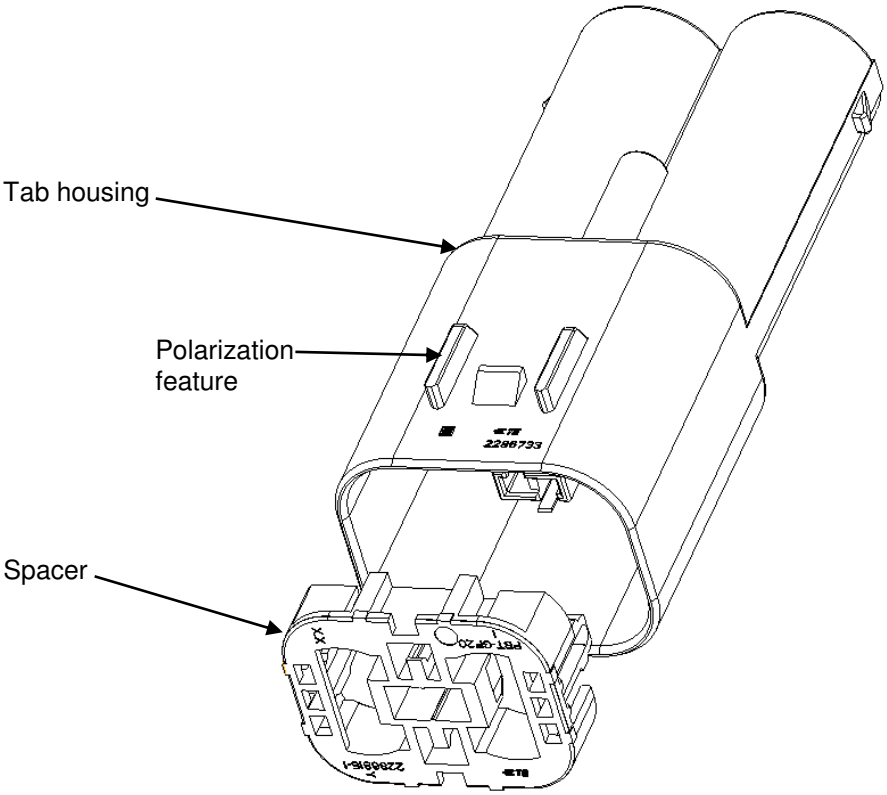


Fig.3

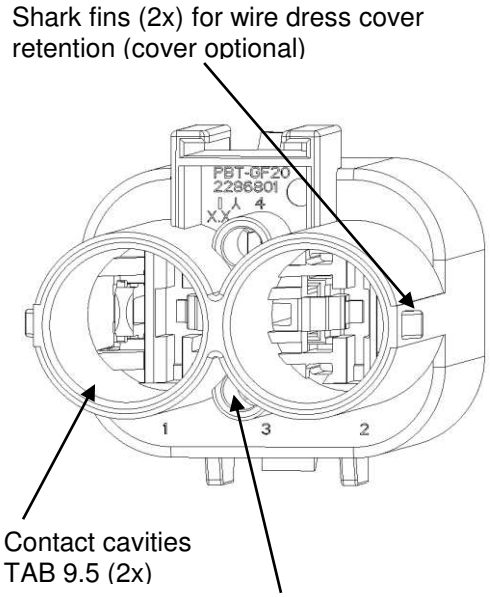


Fig.4

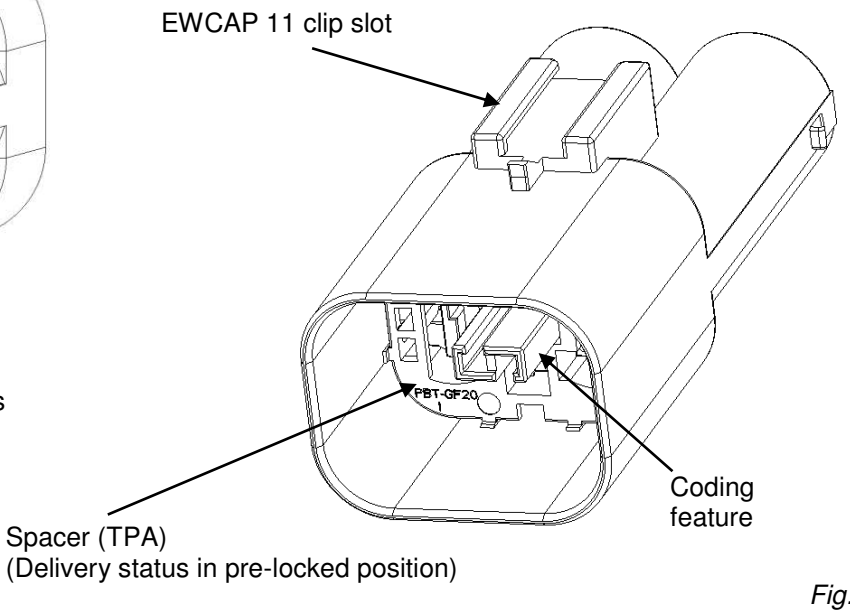


Fig.5

Fig.3; 4; 5 TAB HOUSING 4POS ASSEMBLY (PN 2286733)

2.1.2 WAY SEALED CONNECTOR (Cooling Fan)

The following is an overview of the functional elements. The information shown on the valid TE customer drawing has priority and should be referenced.

4 WAY SEALED INLINE CONNECTOR (PN 2286732):
The connector features include: seal, TPA, CPA, and a socket housing with cavities for MCON terminals.

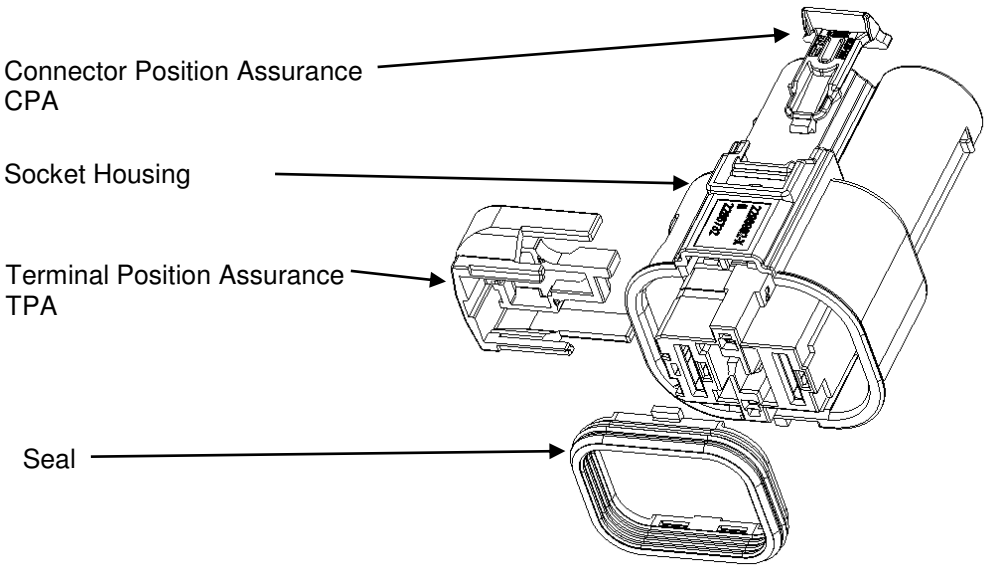


Fig.6

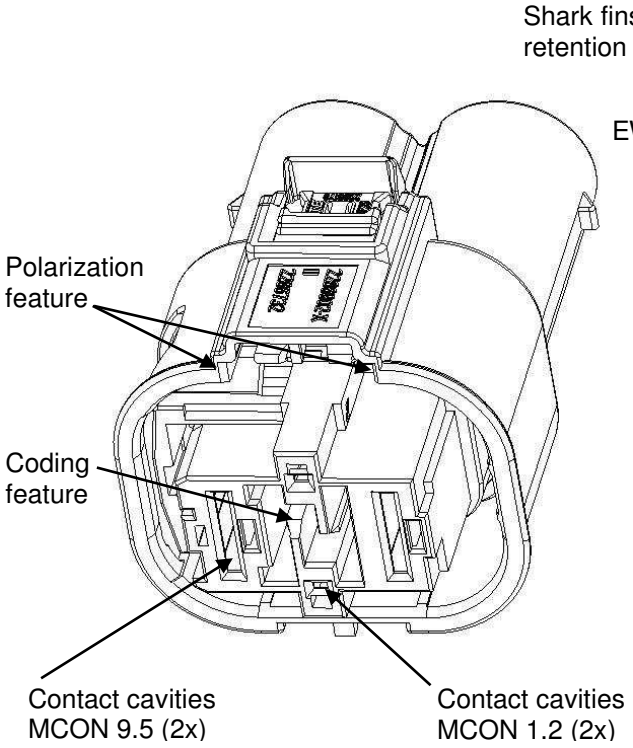


Fig.7

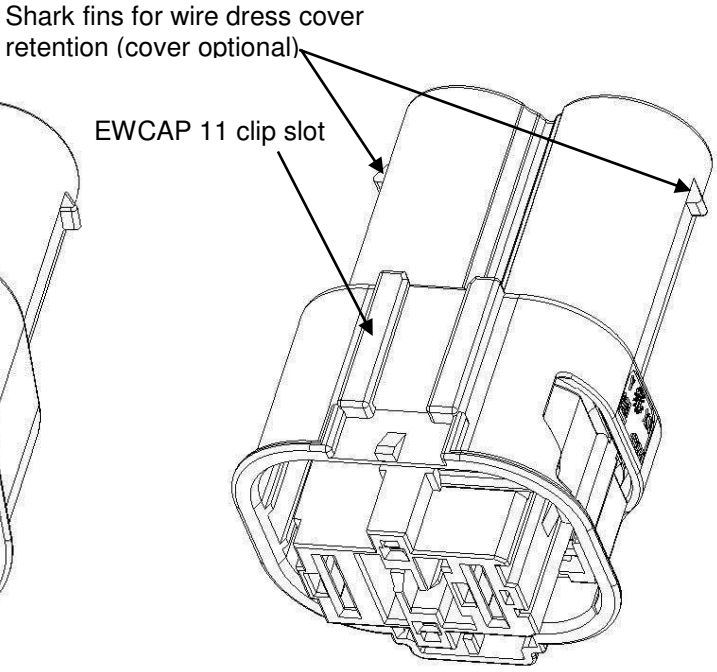


Fig.8

Fig.6; 7; 8 4 WAY SEALED FEMALE CONNECTOR (PN 2286732)

2.1.3 WAY SEALED CONNECTOR (ePump)

This connector is similar to PN 2286732 with some additional features to meet a higher vibration class.
(PN 2301631)

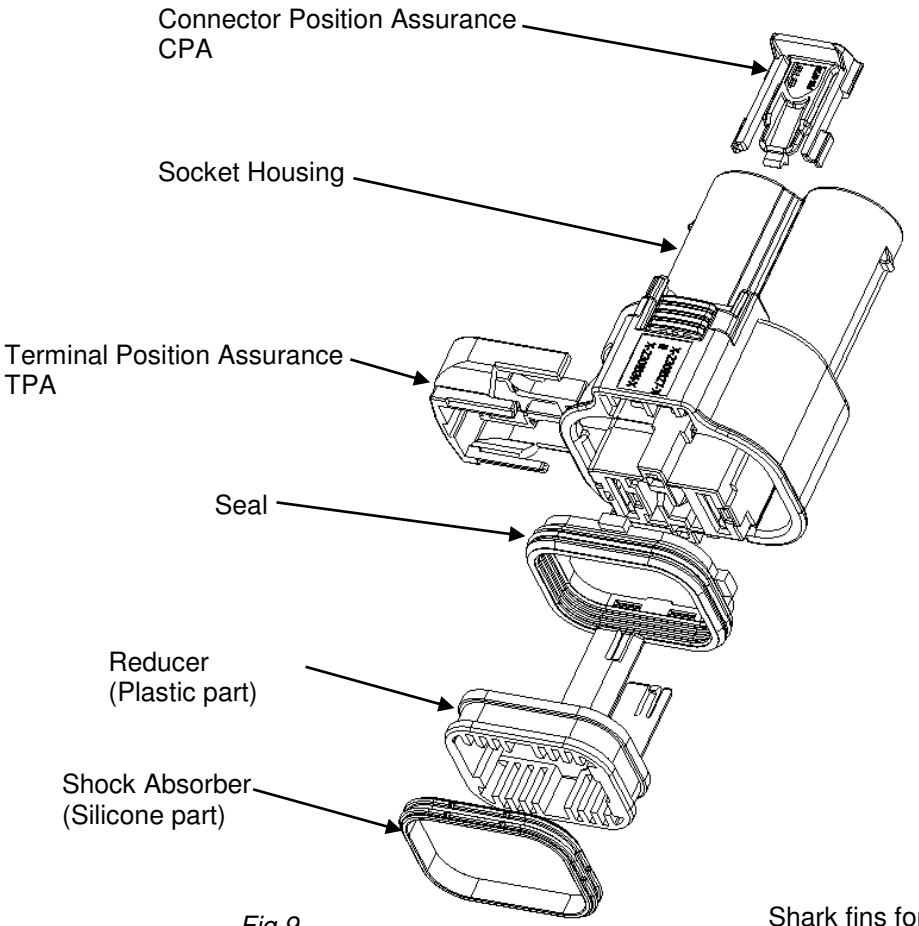


Fig.9

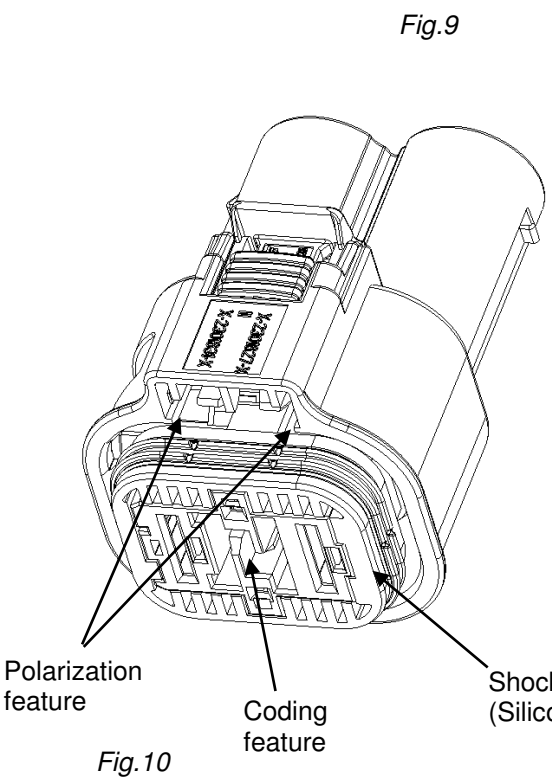


Fig.10

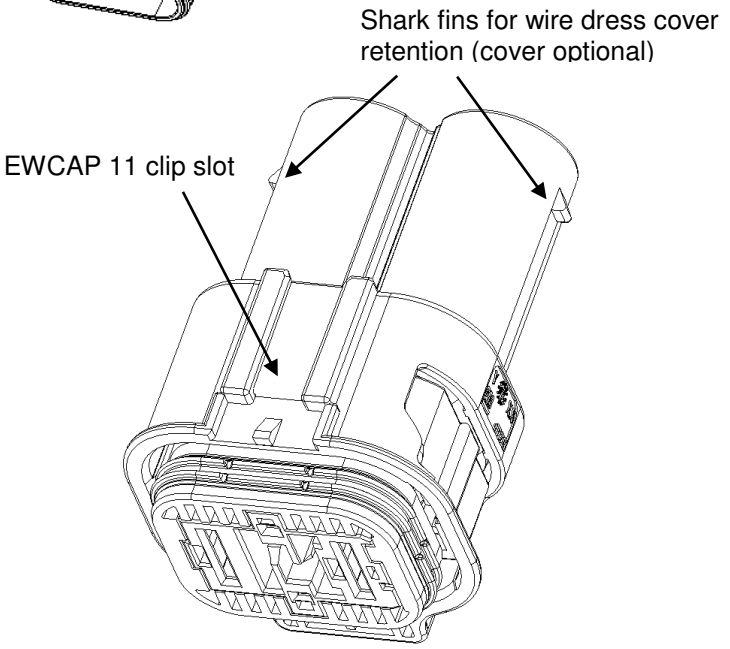


Fig.11

Fig.9; 10; 11 4 WAY SEALED FEMALE CONNECTOR (PN 2301631)

2.1.4 SEALED CONTACT SYSTEMS MCON9.5 / MCON1.2

MCON 9.5 sealing class S2 *(Fig.6)*
Wire Range 4mm²-16mm²

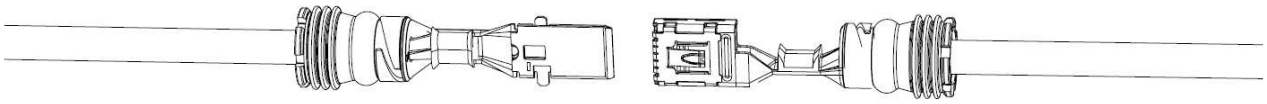


Fig.12

MCON 1.2 sealing class S3 *(Fig.7)*
Wire Range 0.35mm²-1.0mm²

Fig.13

MCON 9.5 sealing class S3 *(Fig.8)*
Wire Range 4mm²-16mm²

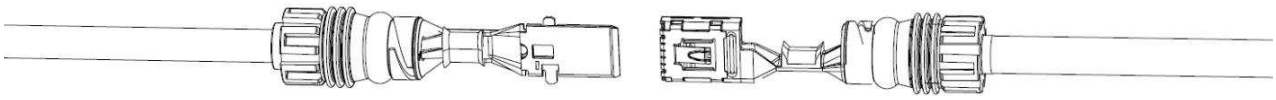


Fig.14

Fig.12; 13; 14 MCON CONTACT SYSTEMS

2.1.5 WIRE DRESS COVER FOR ePUMP

Wire-Dress Cover 180°- Version *(Fig.15)*

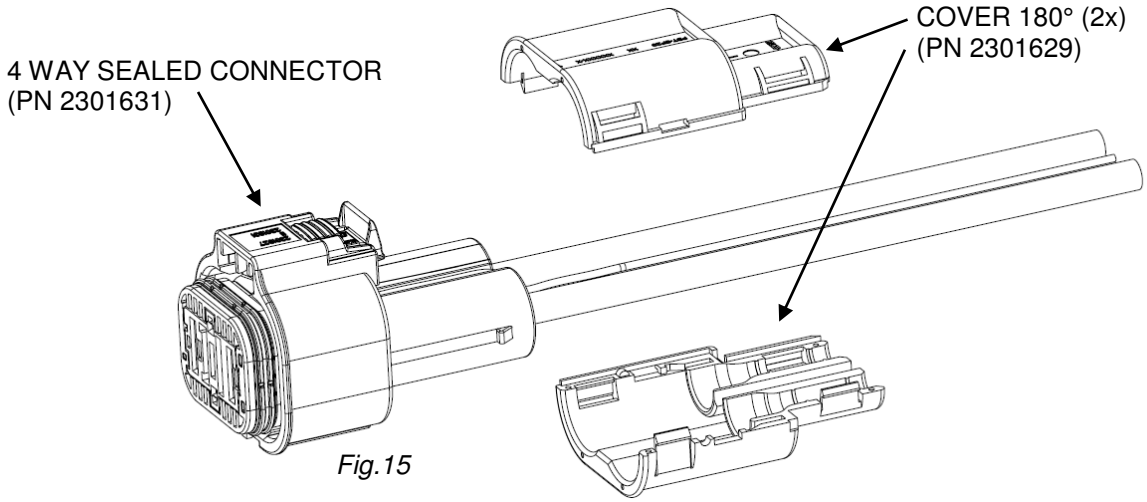


Fig.15

Wire-Dress Cover 60°- Version *(Fig.16)*

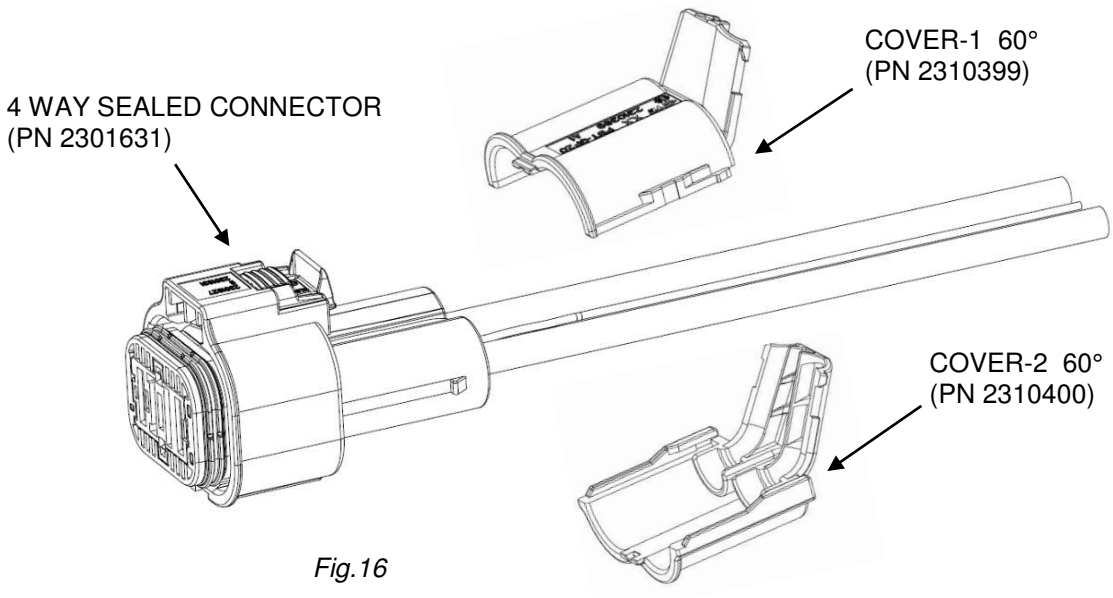


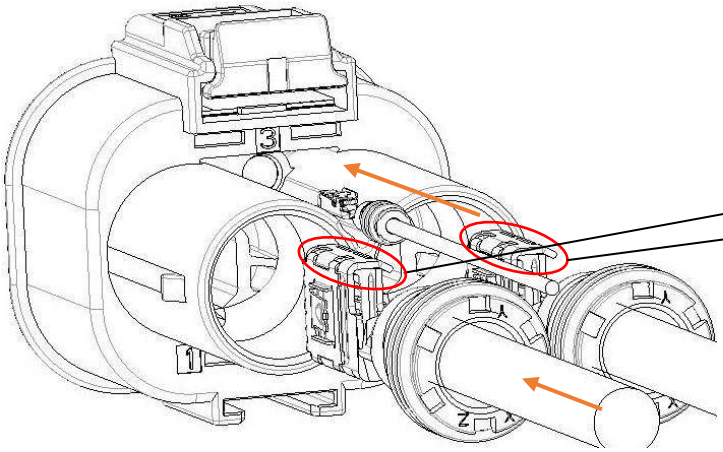
Fig.16

3 Application of the 4 WAY SEALED CONNECTOR

The following procedure assumes that the contacts, in accordance with TE customer drawing, have been properly crimped. For the MCON contacts, please refer to the Specifications listed in Table 1.

DO NOT push the contact into the contact cavity with forces if a hard stop is detected. If there is resistance, pull the contact out, ensure proper orientation, and re-insert the contact. If the TPA is locked, perform procedure 5.4.1 before inserting the terminal.

3.1 Loading socket housing with contacts (PN 2286732 & 2301631)



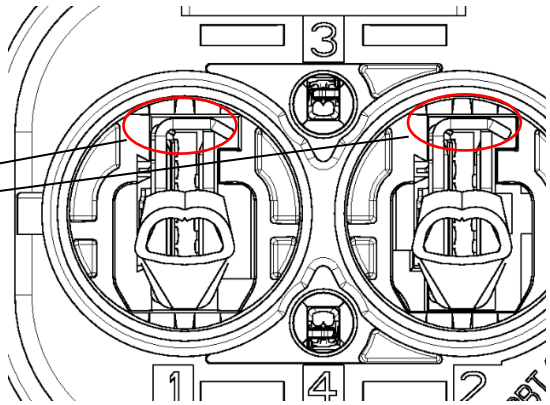
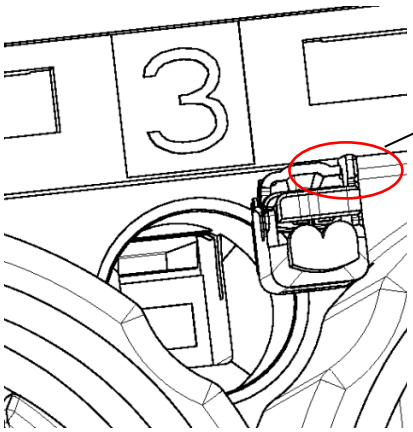
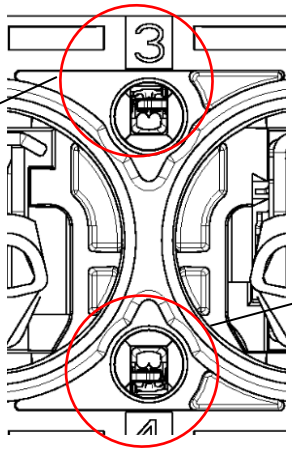


Fig.17 *Fig.18*

Fig.17; 18 ORIENTATION FEATURE ON MCON 9.5 SOCKET TERMINAL





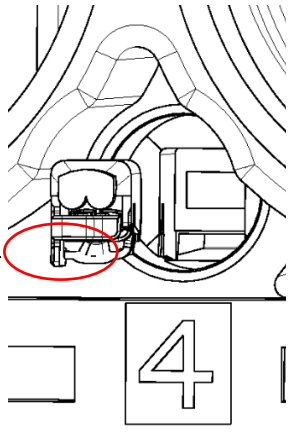


Fig.19 *Fig.20* *Fig.21*

Terminal No.3 and No.4 are oriented 180° from each other

Fig.19; 20; 21 ORIENTATION FEATURE ON MCON 1.2 SOCKET TERMINAL

The contact cavities are designed with a polarization feature to prevent the contacts being inserted upside-down. According to the TE customer drawing, the MCON 1.2 and 9.5 socket contacts must be oriented and inserted into the cavity, until the steel spring engages. That ensures the contact is locked properly.

The contacts produce an audible click (see *Fig.22; 23*). Complete locking of the terminals can be verified by gently pulling back on the contact.

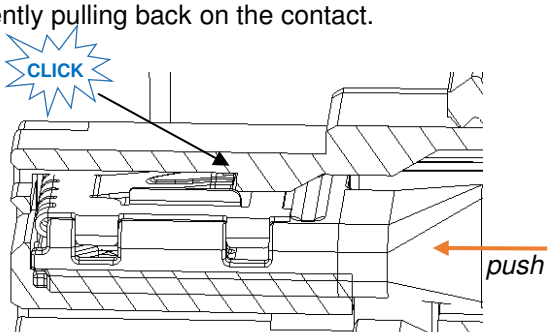


Fig.22

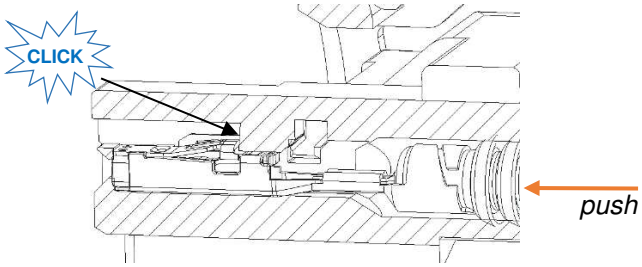


Fig.23

Fig.22; 23 LOCKING FEATURE ON MCON 9.5 & MCON 1.2 SOCKET CONTACT

3.1.1 Optimize assembly process socket housing with contacts (PN 2286732 & 2301631)

The Single Wire Seal for the MCON 9.5 contact system is made of a non-self-lubricating silicone resin. To optimize the terminal insertion process, an application of a Lubricant (Table 1) can be considered.

Note: Recommendation only – with specific Lubricant acc. Table 1

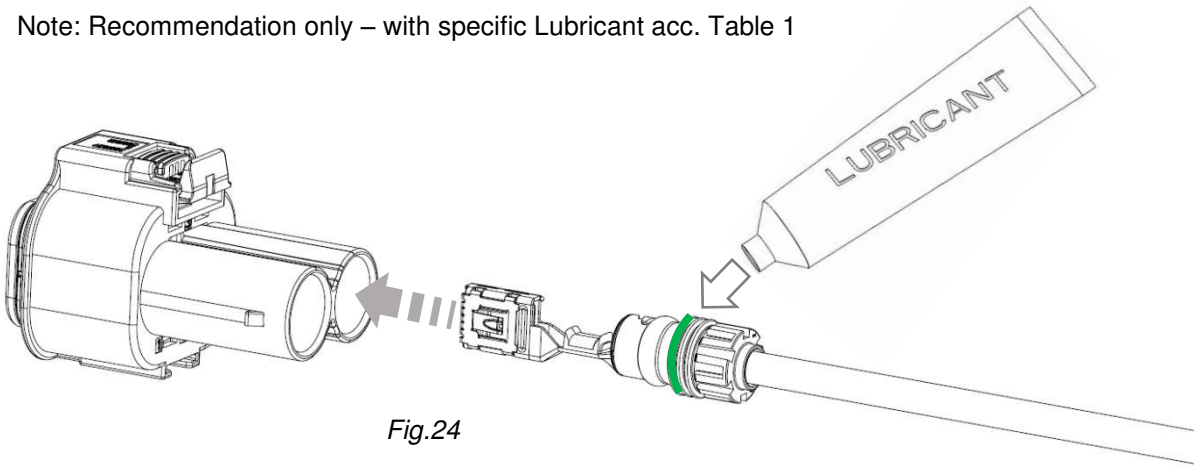


Fig.24

Permitted area to apply lubrication, to reduce friction between wire sealing and housing cavity

Green Box:
Zone to potentially apply Lubricant
to minimize friction *(Fig.25)*

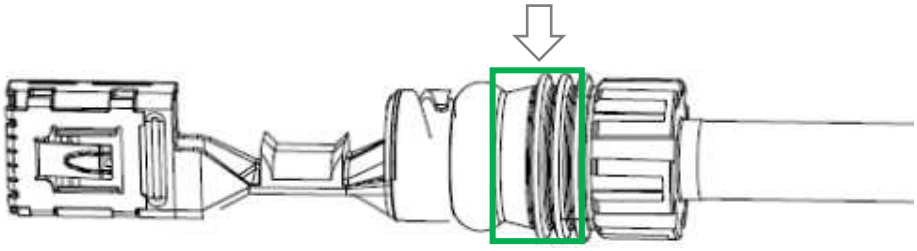


Fig.25

3.1.2 Tolerance for sealing out of housing cavity (for Cooling Fan 2286732, MCON 9.5 terminal sealing class S3 only)

After loading the terminal into the connector, if the seal is as shown below, a maximum of 1.0 mm of sealing exposure is allowed acc to Fig.26.

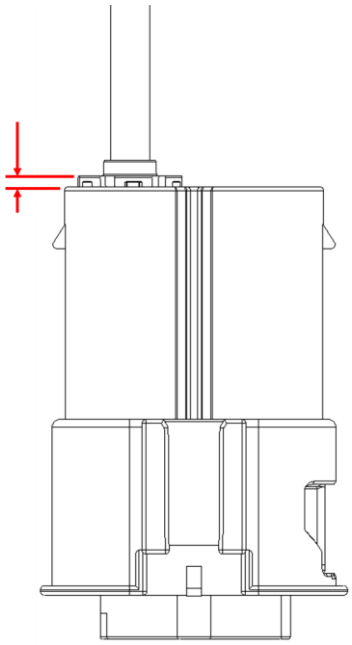


Fig.26

3.2 Locking Terminal Position Assurance (TPA) from socket housing (PN 2286732 & 2301631)

After loading of the socket housing with contacts, the TPA must be closed via the opening from the pre-staged position (*Fig. 27; 29*) to the end-locked position (*Fig.28; 90*).

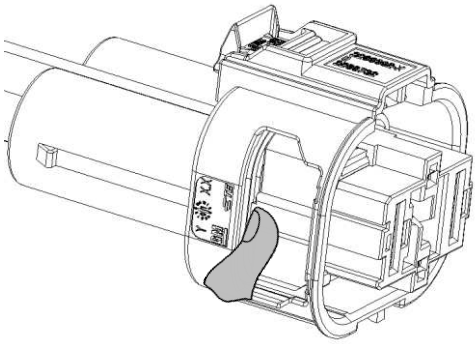


Fig. 27

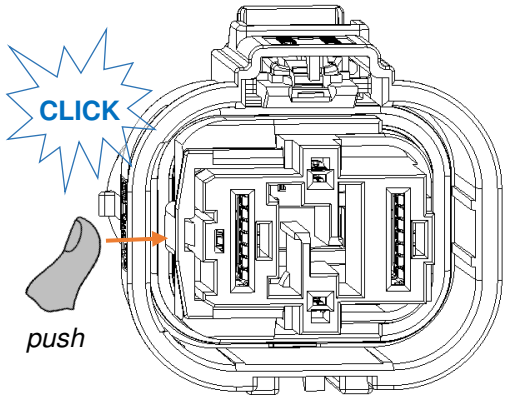


Fig. 28

Fig.27; 28 LOCKING OF THE TPA (PN 2286732)

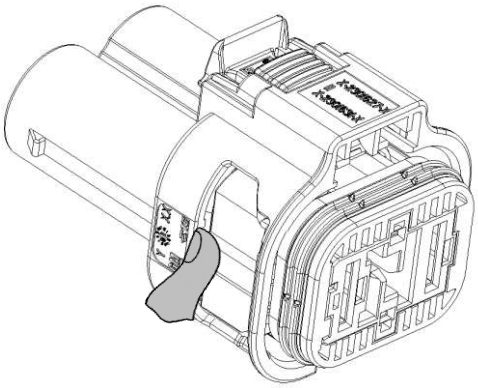


Fig. 29

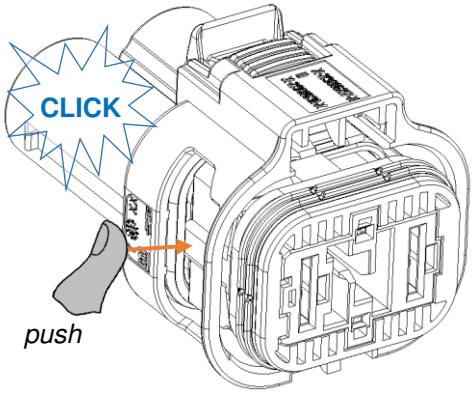


Fig. 30

Fig.29; 30 LOCKING OF THE TPA (PN 2301631)

3.3 Loading tab housing with contacts

The MCON 9.5 male terminal is not designed with an extra polarization feature, which allows the terminal to be inserted in two directions, 180° apart. The blade has two forward stops (*Fig.32*) which helps provide the initial orientation. The terminals must be oriented and inserted into the contact cavity until they hit these forward stops. The terminals will be locked by an audible click.

The MCON 1.2 male contact cavities are polarized to prevent the contacts from being inserted in the wrong direction (*Fig.33*). The terminals must be oriented properly and inserted into the cavity and pushed until they are locked. When the terminals lock into place, there is an audible click.

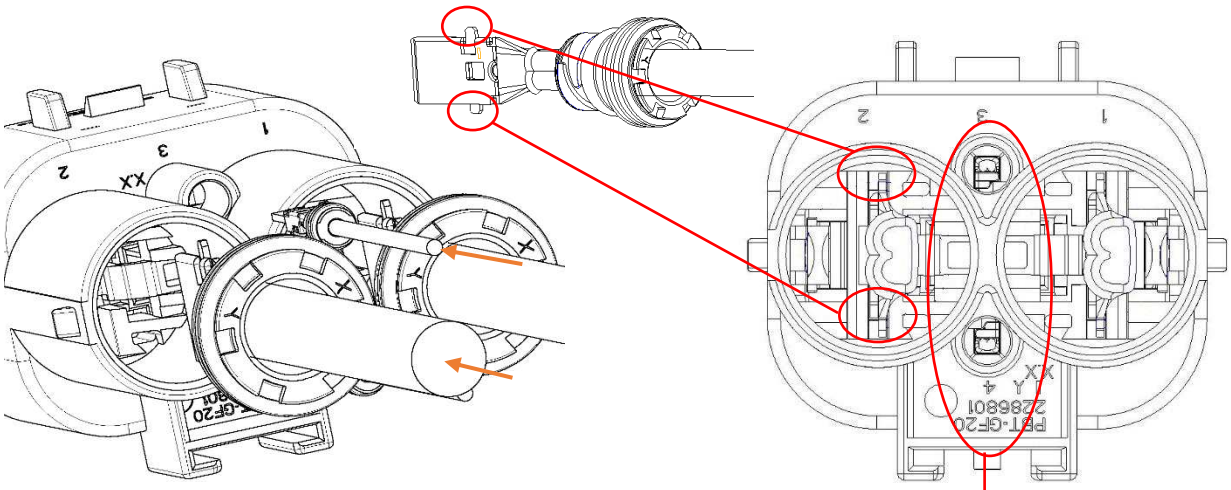


Fig.31 *Fig.32*

Fig.31; 32 ORIENTATION FEATURE ON MCON 9.5 TAB TERMINAL

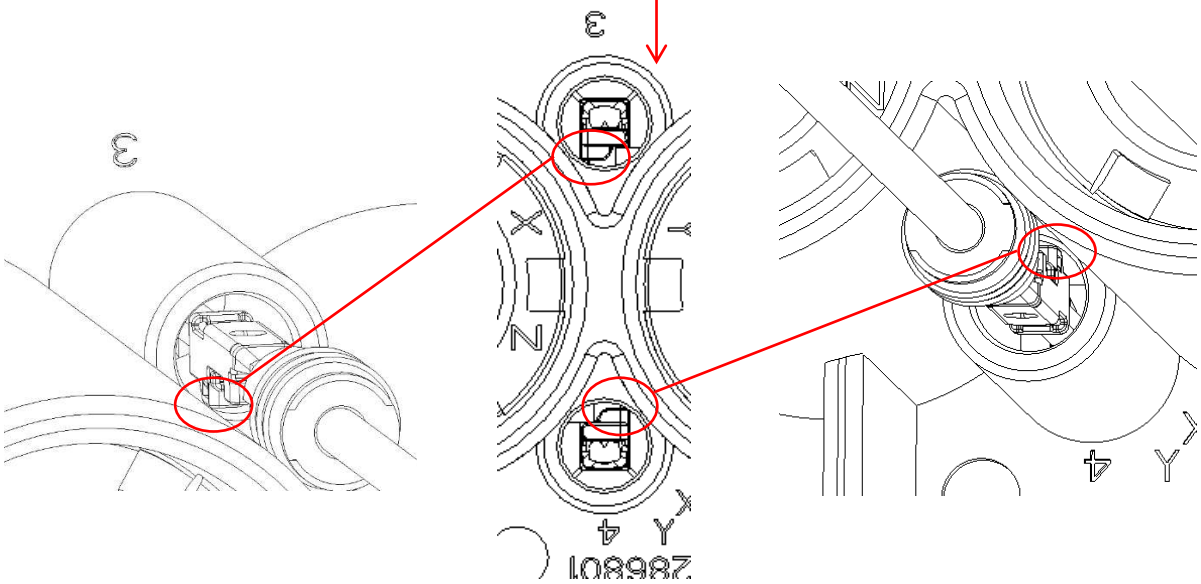


Fig.33

Terminal No. 3 and No.4 are oriented 180° from each other

Fig.33 ORIENTATION FEATURE ON MCON 1.2 TAB TERMINAL

3.3.1 Optimize assembly process tab housing with contacts (PN 2286733)

⇨ *Please see point 3.1.1*

3.3.2 Tolerance for sealing out of housing cavity (for Cooling Fan application, MCON 9.5 terminal sealing class S3 only)

⇨ *Please see point 3.1.2*

3.4 Locking spacer (TPA) from male housing

After loading of the male housing with contacts, the TPA must be closed from the pre- locked position (*Fig.34*) to the end- locked position (*Fig.35*). For this operation, a standard tool J-38125-558 can be used (or small flat blade screwdriver). Place the tool flat against the coding rib and then push the spacer to the final end-locked position. It is only necessary to push on one side to lock the entire TPA. The TPA is in the end position if both surfaces of the housing and TPA are even. As a final check of the position it is possible to push on different areas of the TPA to make sure it is closed.

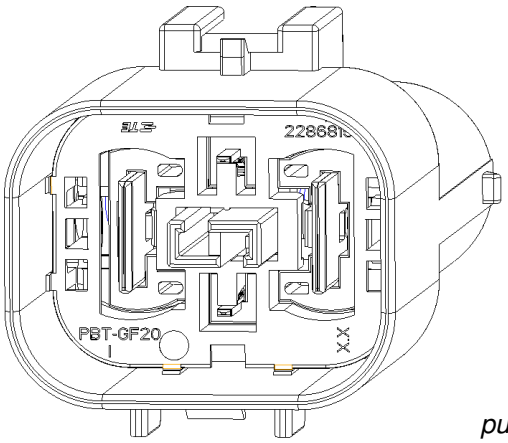


Fig.34

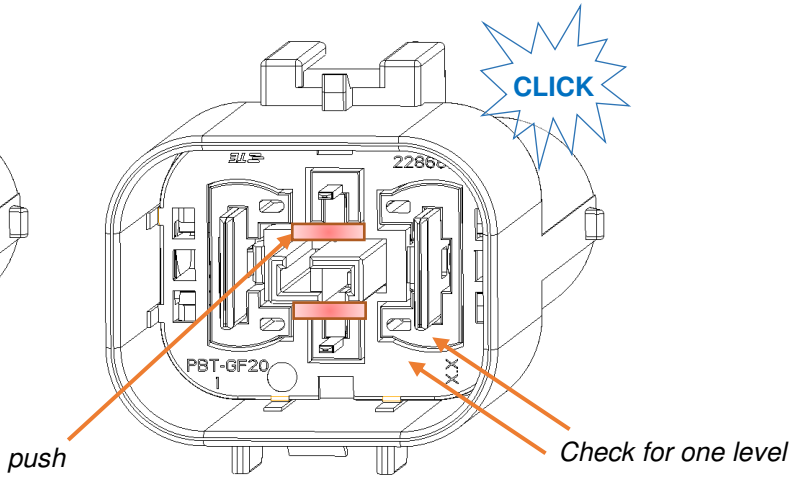


Fig.35

Fig.34; 35 LOCKING OF THE SPACER

3.5 EWCAP 11 clip slot

The housings within this specification support vehicle attachment with an EWCAP 11 mm clip slot (Fig.36). Below view shows an example of the inline connector with a clip slot on both the male and female housing. Either one can be used to mount the inline connection to the vehicle.

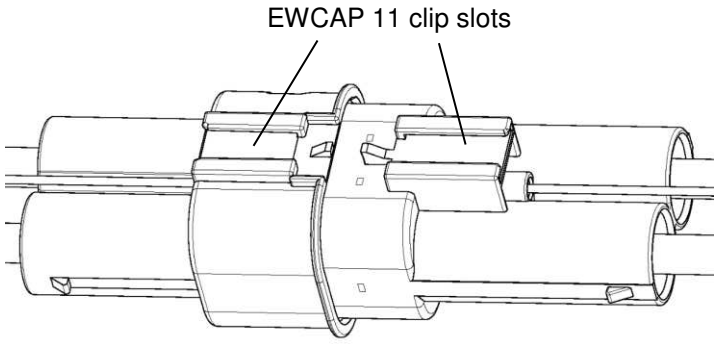


Fig.36

Fig.36 EWCAP 11 CLIP SLOT

3.6 Connecting socket- and tab housing (or application / interface)

To create a correct connection please ensure the following points:

1. The polarization ribs are orientated correctly before the housings are pushed together.
2. CPA is in the pre-lock position (delivery status).
3. The TPA in the socket housing is in the locked position (*Fig.28; 30*).
4. The spacer in the tab housing is in the locked position (*Fig.35*).

Tab and socket housing should be positioned and orientated before assembling (*Fig.42*). Then they can be pressed together until fully locked. The correctly assembled connector set will result in an audible click (*Fig.43*).

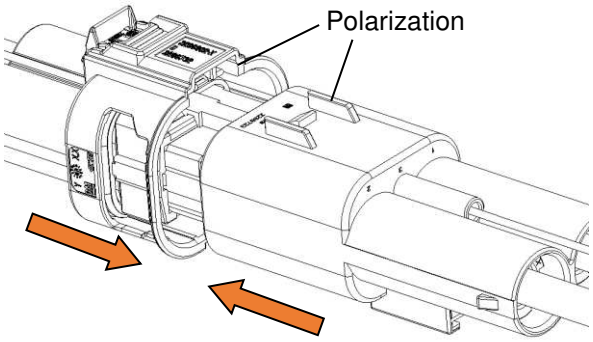


Fig.37

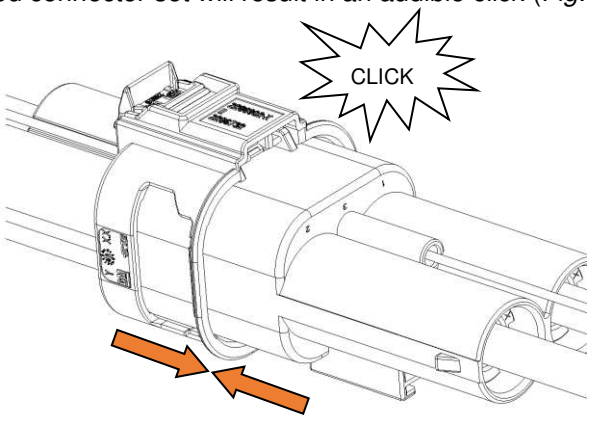


Fig.38

Fig.37 SOCKET HOUSING AND TAB HOUSING BEFORE ASSEMBLING
Fig.38 SOCKET HOUSING AND TAB HOUSING AFTER ASSEMBLING

If tab and socket housing are correctly assembled as described before (*Fig.37; 38*), the CPA can then be closed from pre-locked position to the locked position (*Fig.39; 40*).

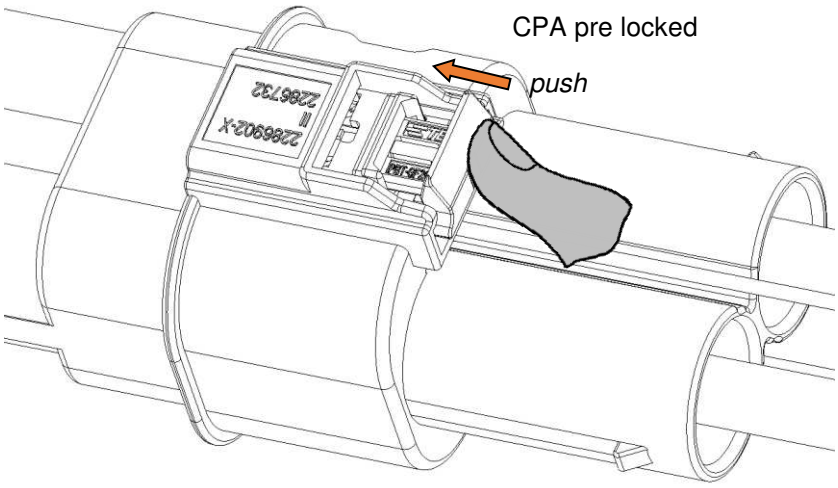


Fig.39

Fig.39 SOCKET HOUSING AND TAB HOUSING ASSEMBLED; CPA IN PRE-LOCKED POSITION

The CPA is in closed position (*Fig.45*) and connector latch feature is locked.

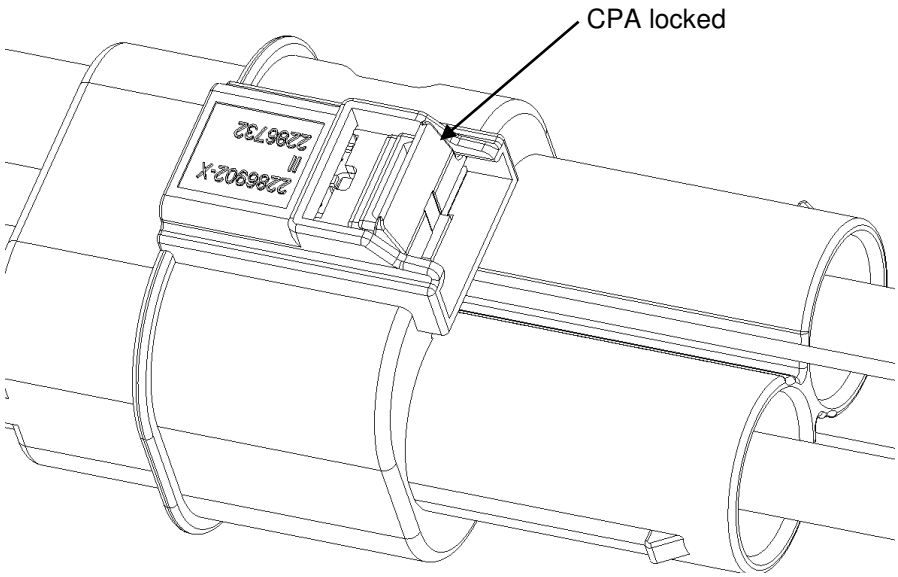


Fig.40

Fig.40 SOCKET HOUSING AND TAB HOUSING ASSEMBLED; CPA IN LOCKED POSITION

4 ePump- preparation

This chapter will explain the preparation for new ePump connectors and gives an overview about the versions and references.

4.1 ePump connector versions

GM- No.	13516322	13525242
TE- No.	9-2301631-2	0-2301631-2

Fig. 41 Shore 50 version with silicone parts in natural color

Fig. 42 Shore 30 version with silicone parts in orange color

4.2 Preparation with lubricant

Please apply Lubricant Rheotemp 768G as shown

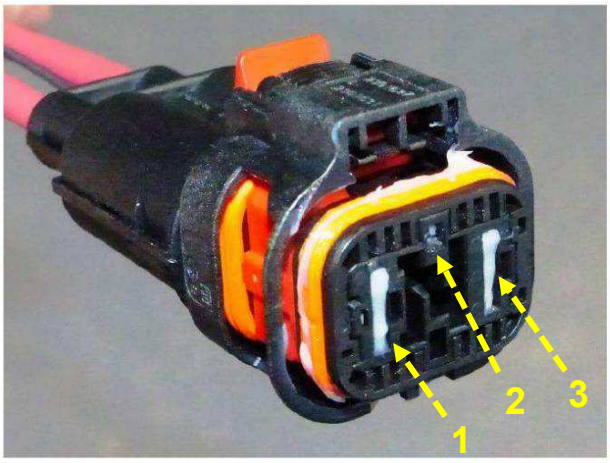


Fig.43a

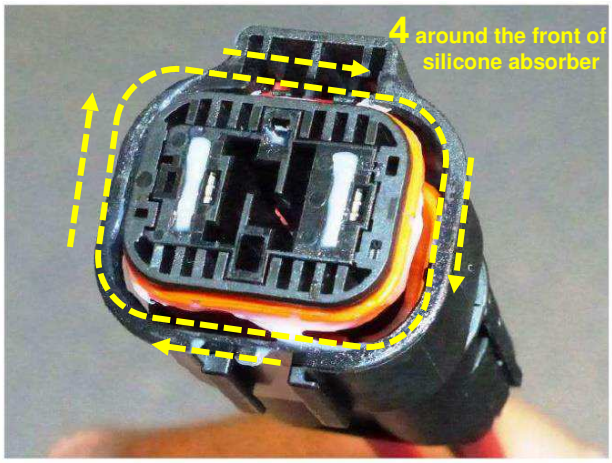


Fig.43b

View shows as an example shore 30 version with Nye 768G applied on cavities (1-3) and front silicone part (4)

For protection a plastic bag should be added over greased connector during handling and shipment.

4.3 Pre-cycling for ePump

The shown procedure is mandatory for version 9-2301631-2

4.3.1 Pre-cycling procedure

Perform one-time pre-cycling with interface for connector-version **9-2301631-2**.

1. Apply Lubricant as shown in 4.2 *(Fig.43a/b)*

Fig.44a

2. Choose interface 114-94537 for pre-cycling procedure *(Fig.44b)*

114-94537
Fig.44b

3. Perform one-time pre-cycling with the interface.
The connector needs to be fully mated before disengagement
(Fig.44c/d)

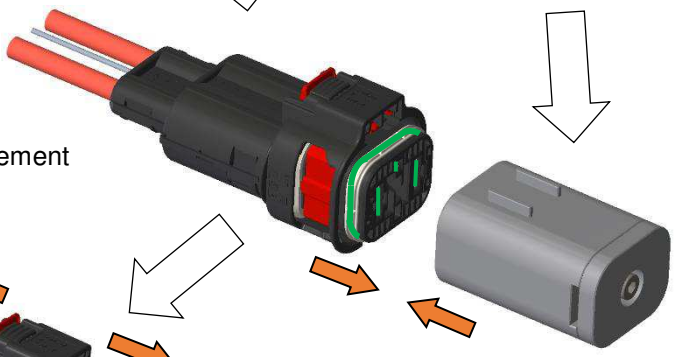


Fig.44c

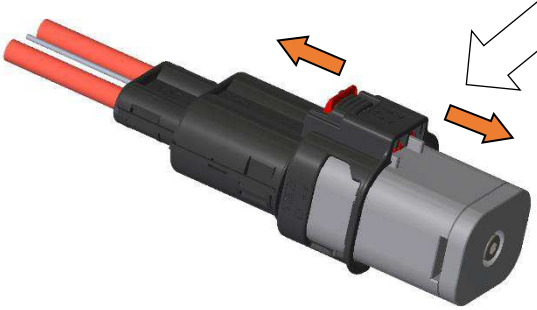


Fig.44d

4.3.2 Pre-cycling procedure (optional)

Perform one-time pre-cycling with interface for connector-version **9-2301631-2** with optional procedure.

1. Choose interface 114-94537 for pre-cycling procedure *(Fig.44e)*

114-94537
Fig.44e

2. Perform one-time pre-cycling with the interface.
The connector needs to be fully mated before disengagement
(Fig.44f)

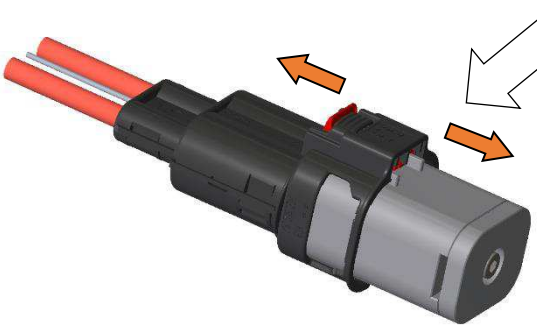


Fig.44f

3. Apply Lubricant as shown in 4.2 *(Fig.43a/b)*

4.3.3 References:

GM print	13516332
TE drawing	C-2301631
Interface	114-94340
Pre-cycling interface	114-94537*

* Pre-cycling interface is not a TE salable part. This drawing contains only information to build a pre-cycling interface

4.4 Assembly Wire Dress Cover for ePump

4.4.1 Assembly of 180° Wire Dress Cover

Implement the connector with used contacts. Push MCON 1.2- Wire to the middle of the housing. *(Fig.44)*

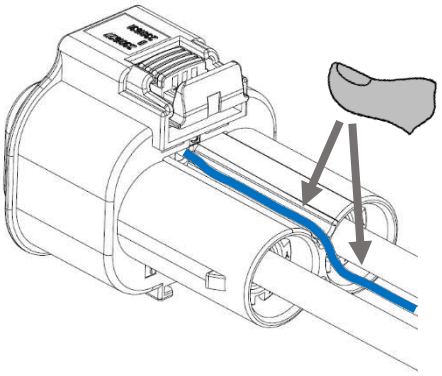


Fig.45

Cover-1
(PN 2301629)

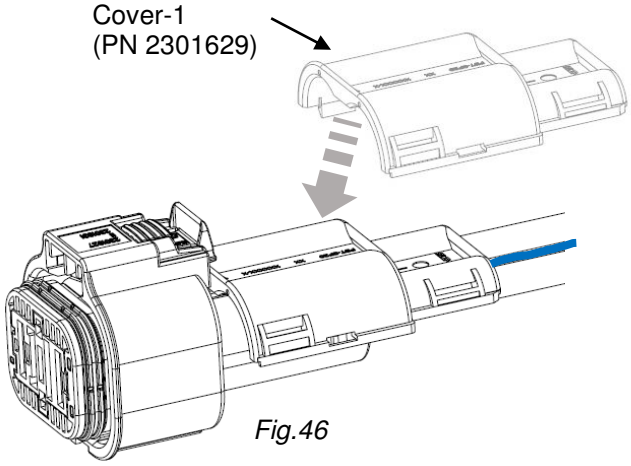


Fig.46

Bring Cover-1 in position as shown *(Fig.46)*

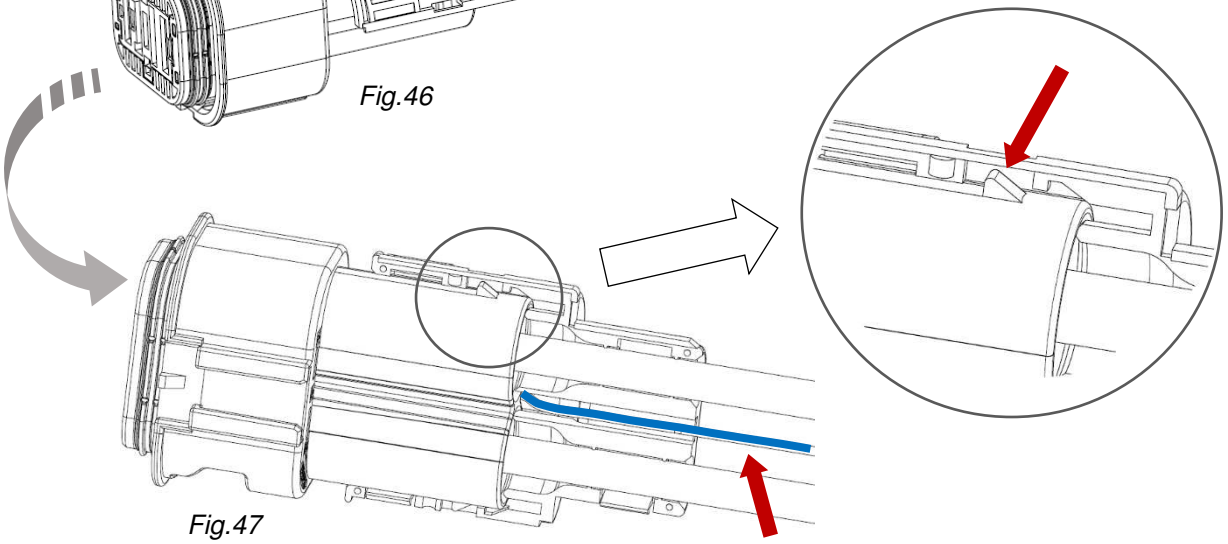


Fig.47

Please check correct position of:
MCON 1.2- Wire and Cover-1 (pre-assembly)
(*Fig.47)*

Bring Cover-2 (PN 2301629) in position as shown
(Fig.48)

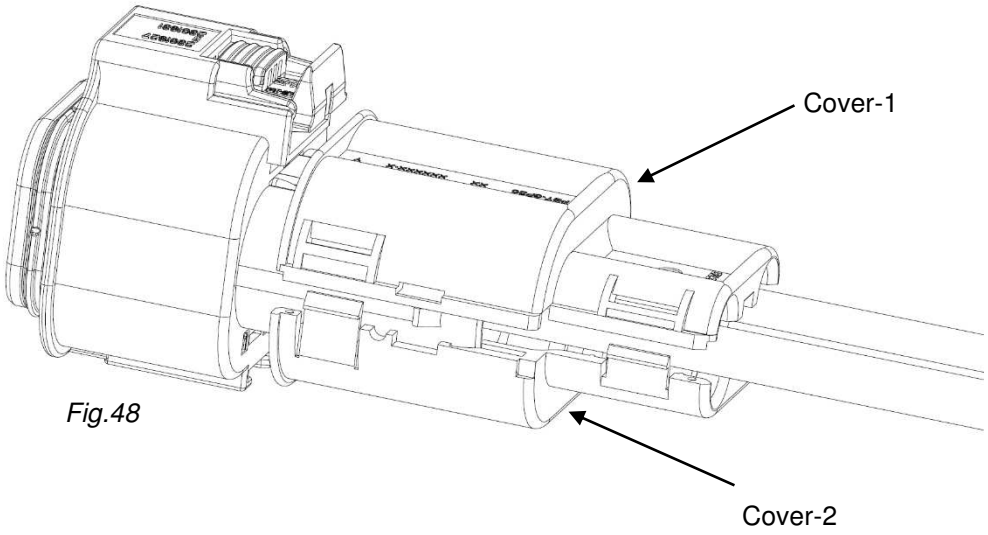


Fig.48

Locking Cover-1 with Cover-2
(Fig.49)

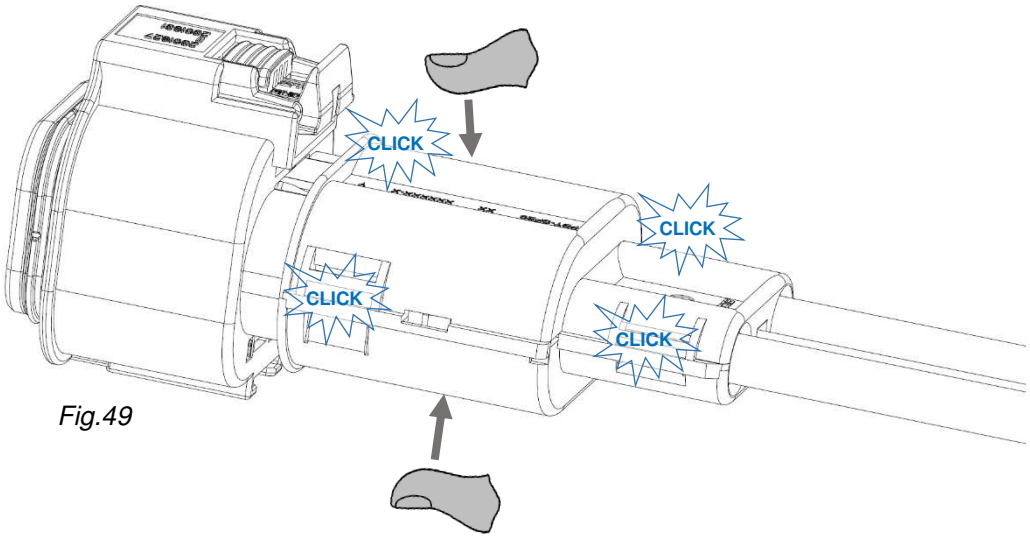


Fig.49

Please note: In this Condition, the two halfs of the Cover are still in pre-position (Fig.49)

Press both Covers in position as shown
(Fig. 50)

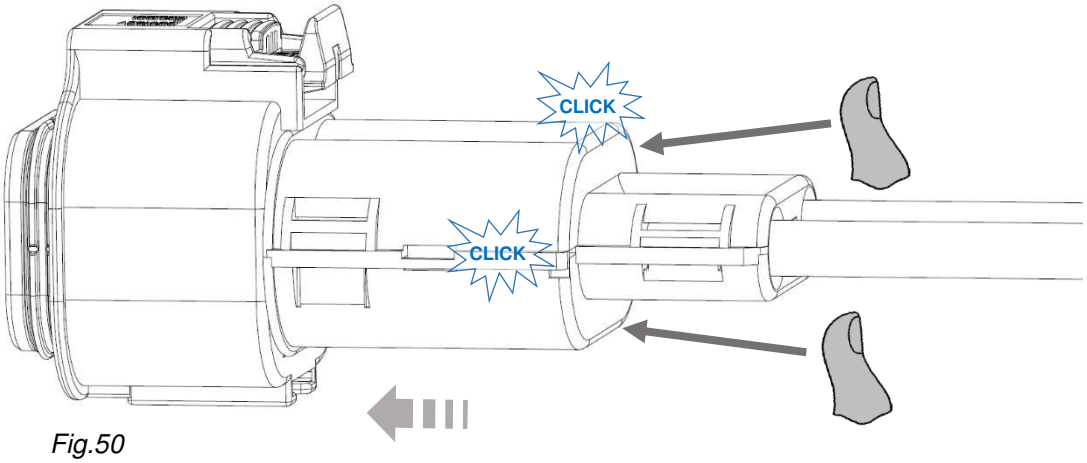


Fig.50

Check correct position of the Covers. The final position should look like shown in Fig.51

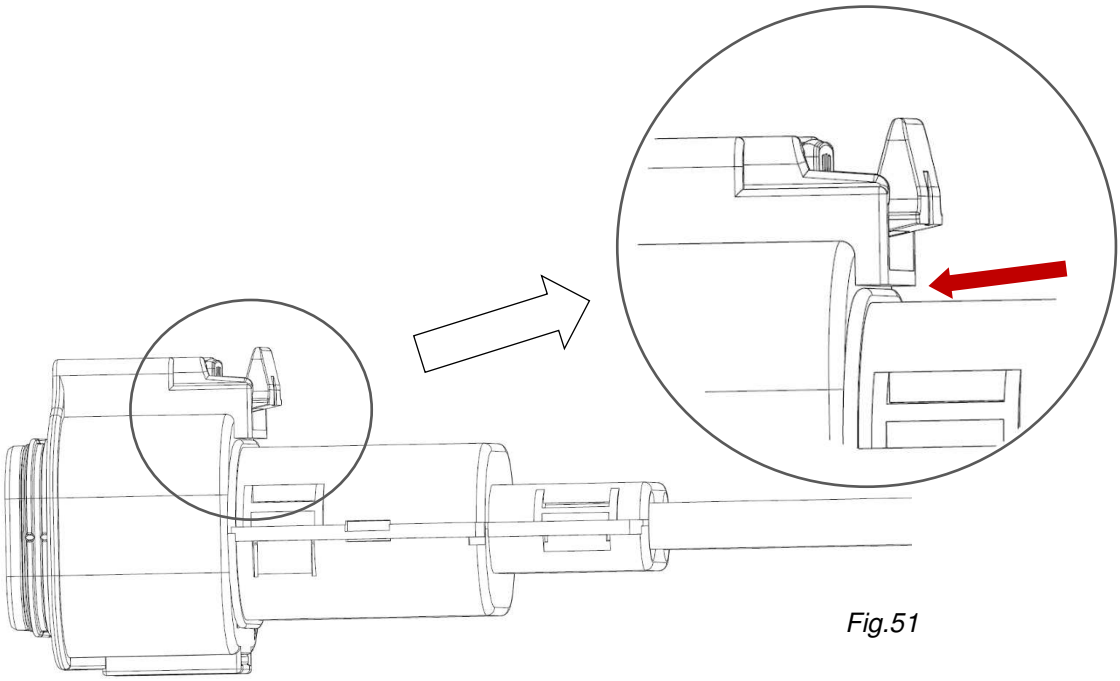


Fig.51

4.4.2 Assembly of 60° Wire Dress Cover

Bring Cover-1 (PN 2310399) in position as shown *(Fig.52)*

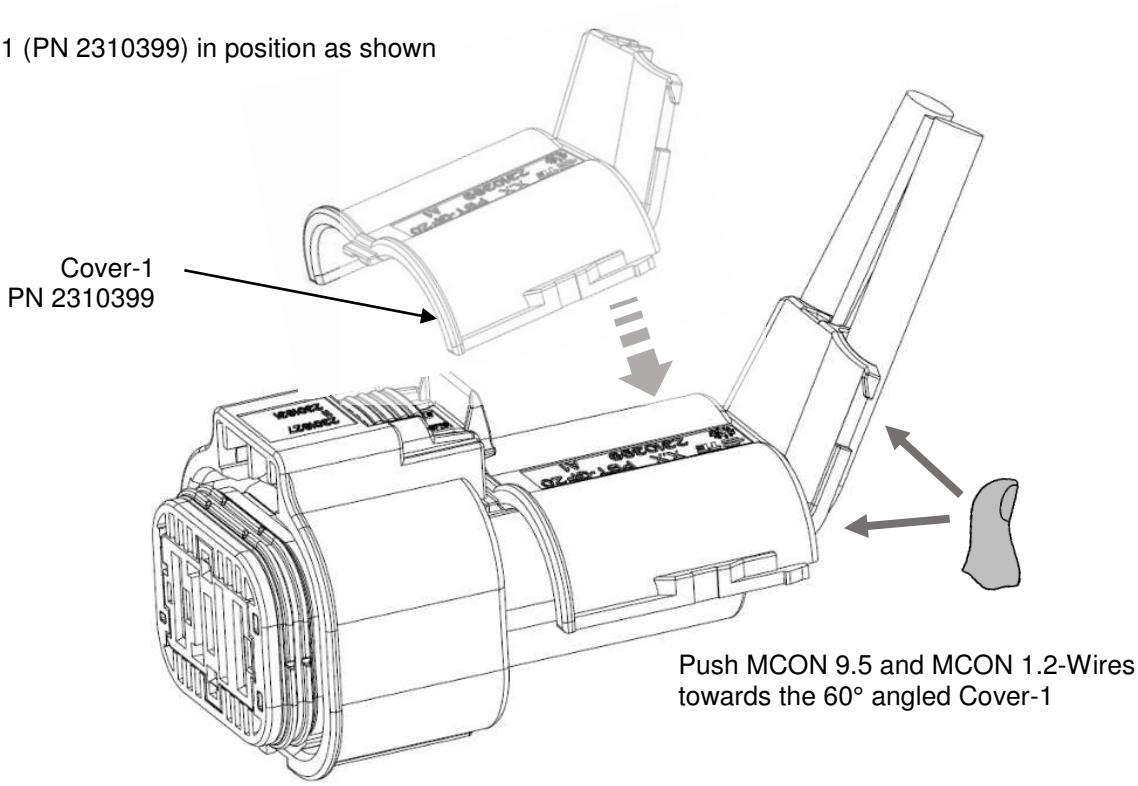


Fig.52

Please check correct position of Wire Dress Cover-1 (pre-assembly) and Wires (*Fig.53)*

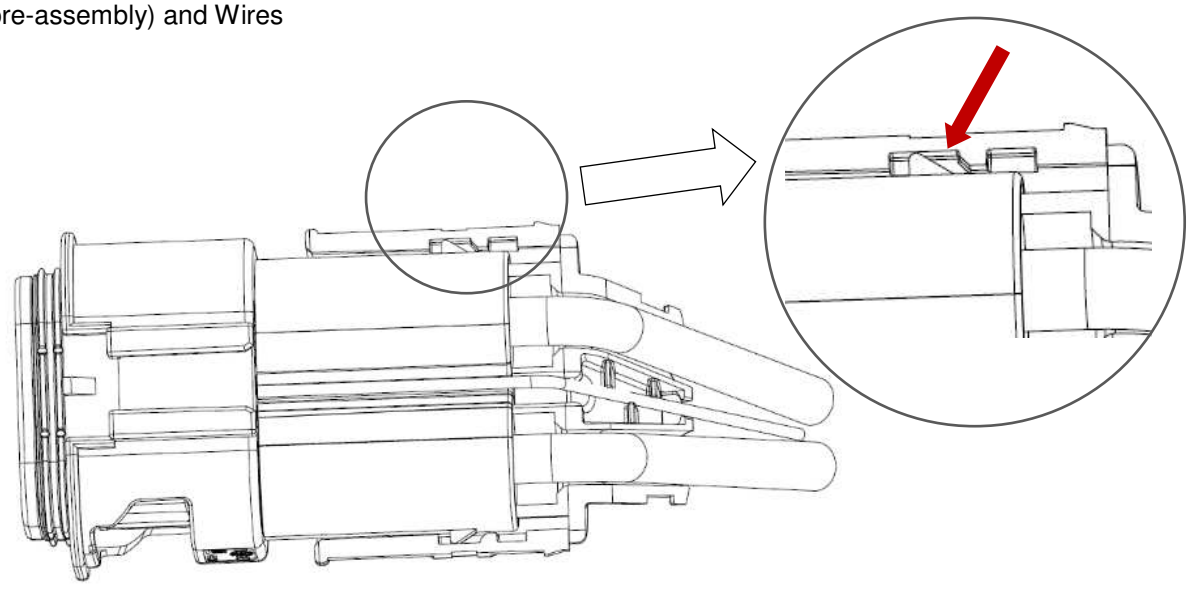


Fig.53

Push Cover-1 to end position as shown *(Fig.54)*

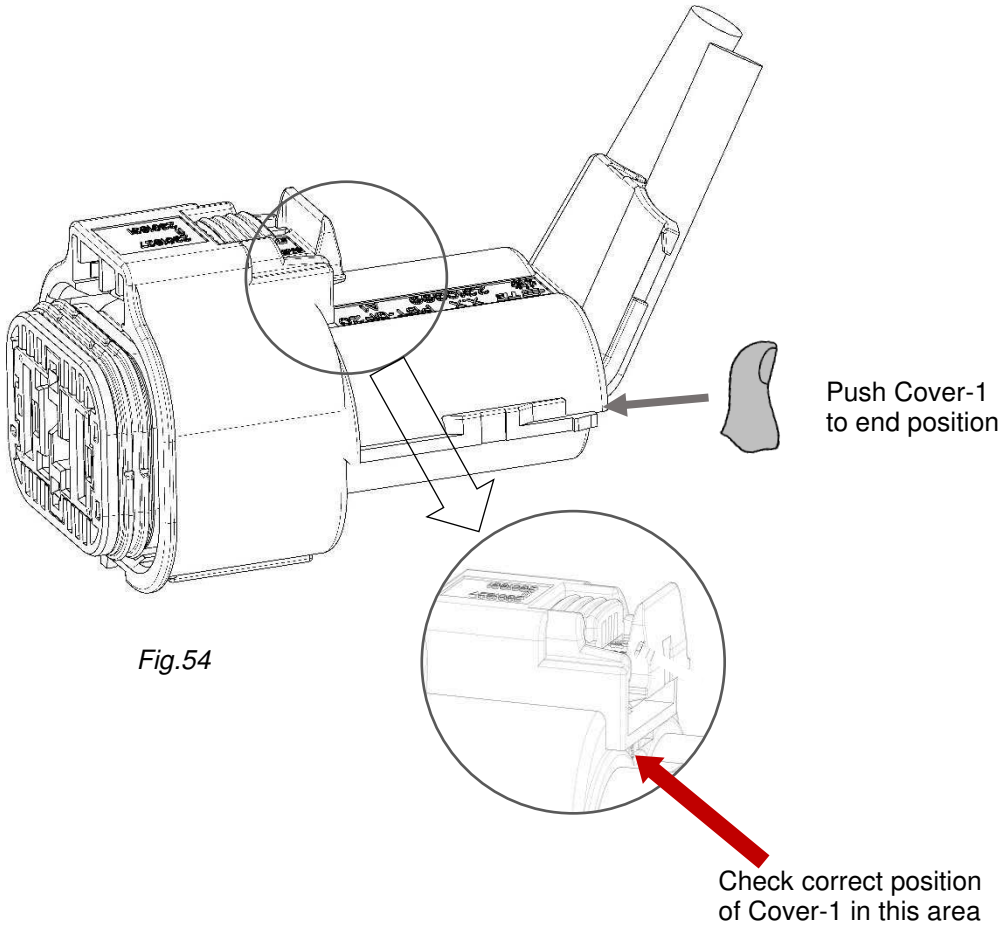


Fig.54

Please bring Cover-2 in correct position in
correct position as shown
(*Fig.55)*

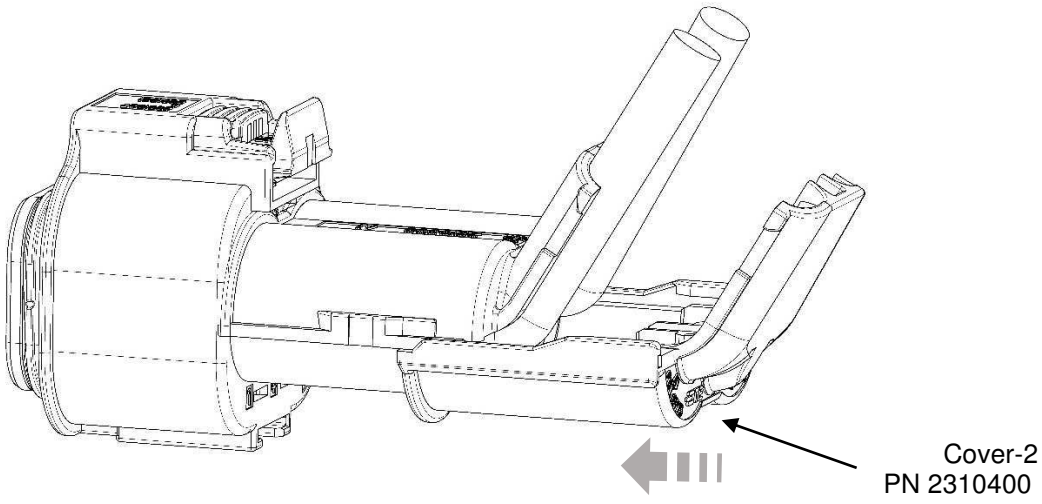


Fig.55

Locking Cover-2 with Cover-1
(*Fig.56)*

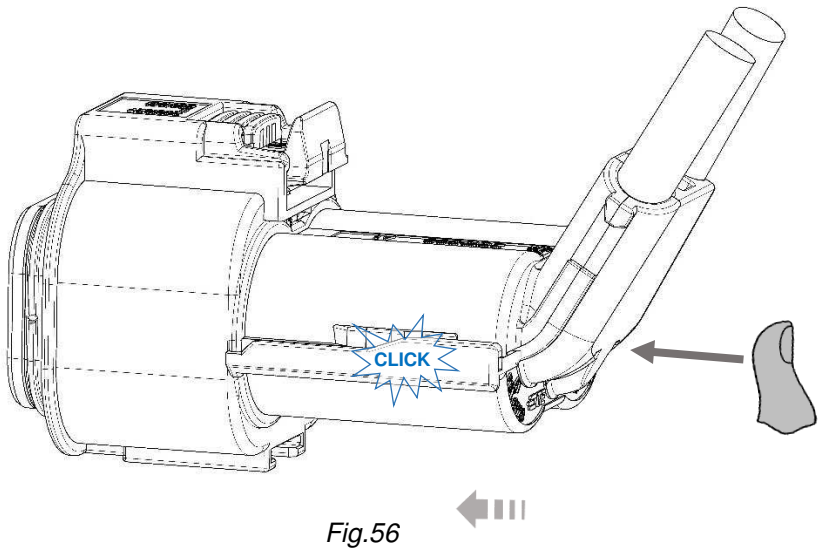


Fig.56

Check correct position of the Covers. The final position should look like shown in Fig.57

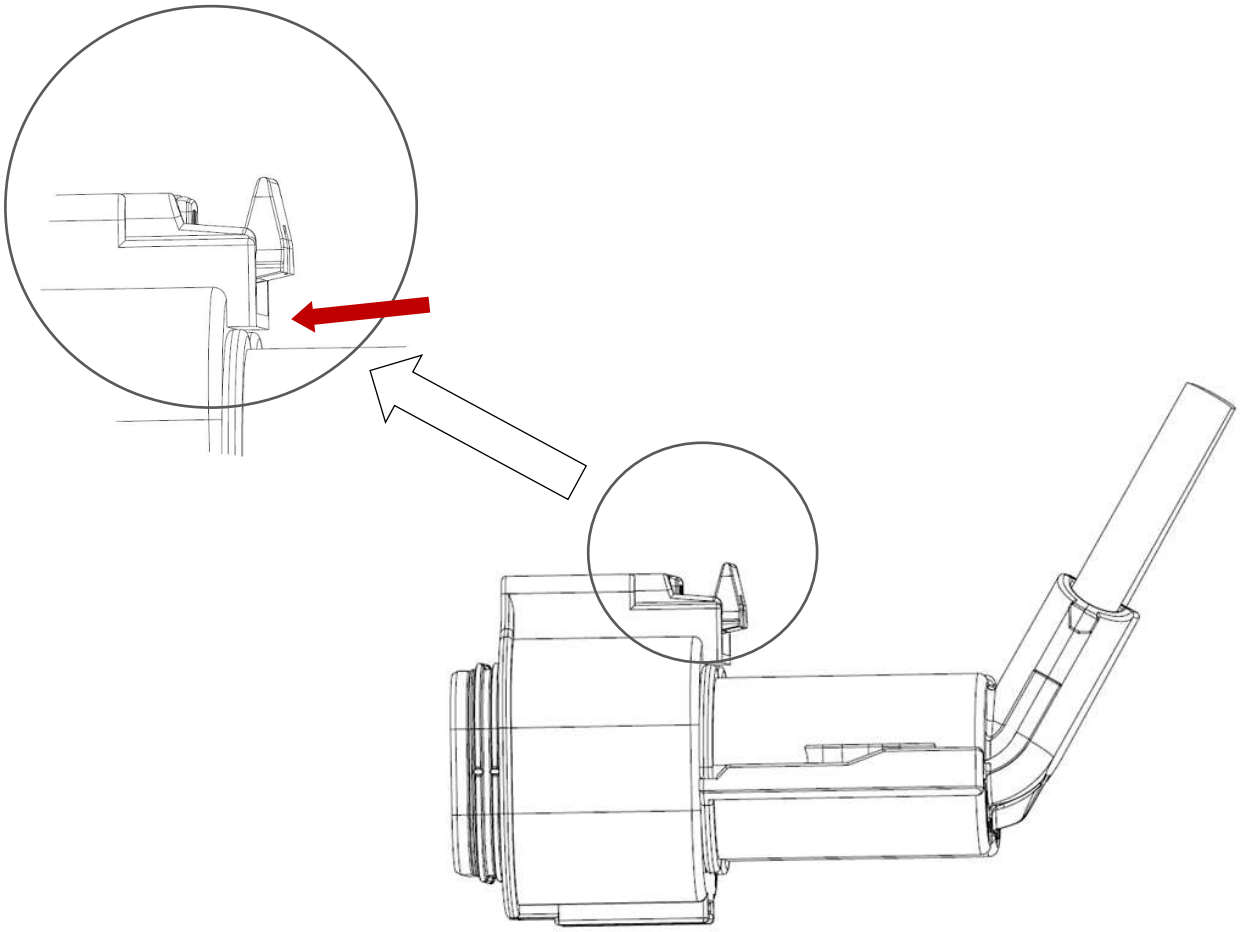


Fig.57

Finally use a standard cable tie zip to fix both Cover shells together
(Fig.58a-58d)

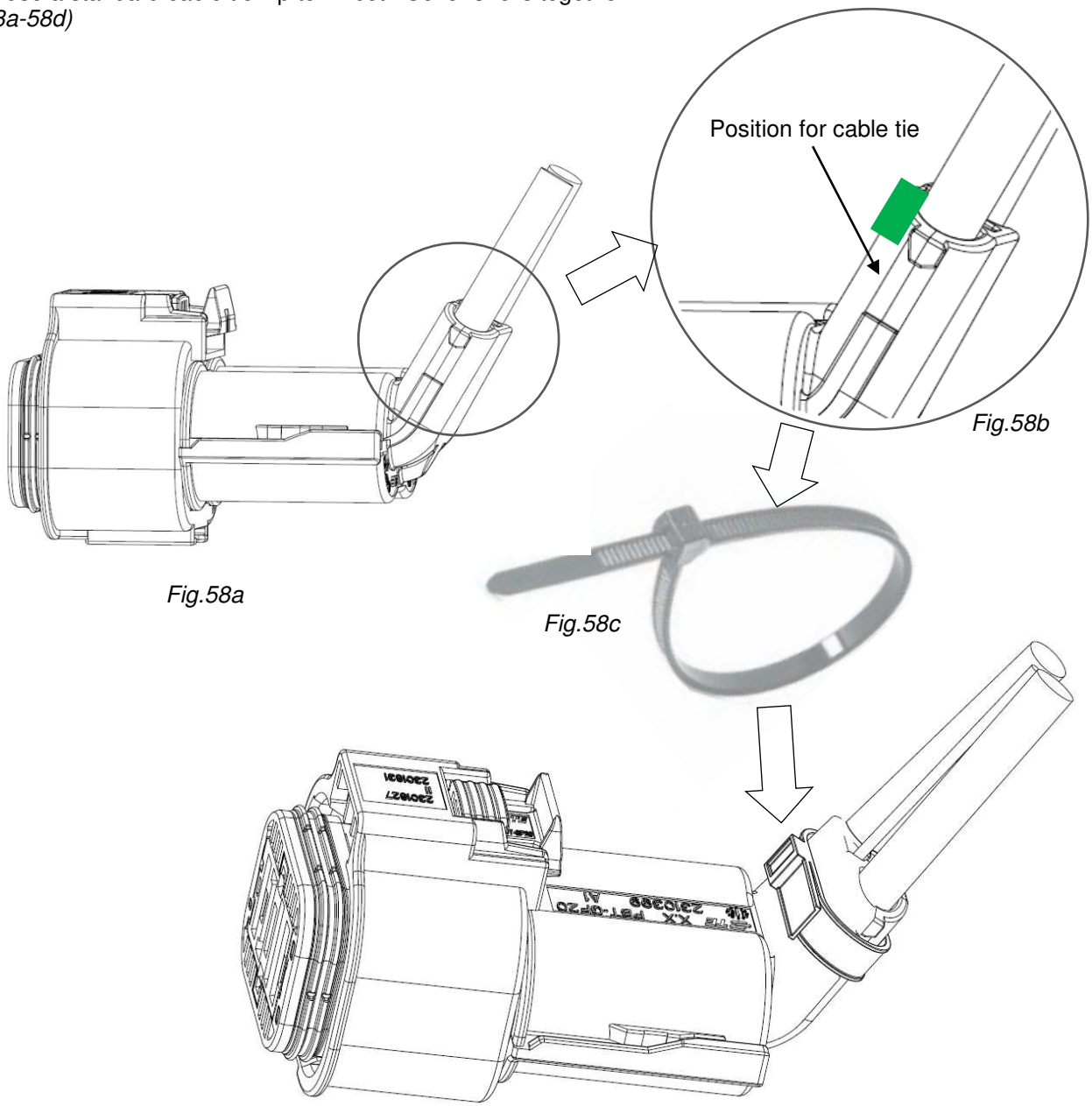


Fig.58a

Fig.58b

Fig.58c

Fig.58d

Fig.58a –58d FIX 60° WIRE DRESS COVER WITH CABLE TIE

5 Disassembly of the 4 WAY SEALED CONNECTOR

5.1 Unlock the CPA from Socket (Female) Housing

Before disassembling the connector, the CPA must be pushed to the pre-lock position (*Fig.60*).

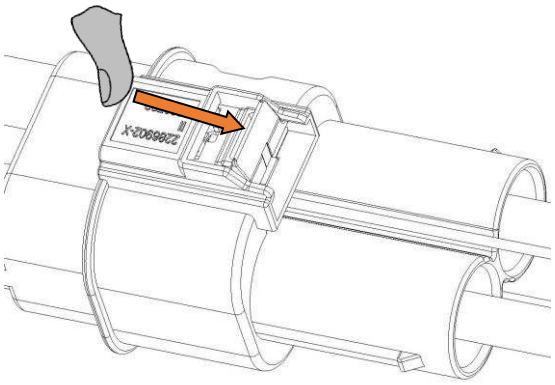


Fig.59

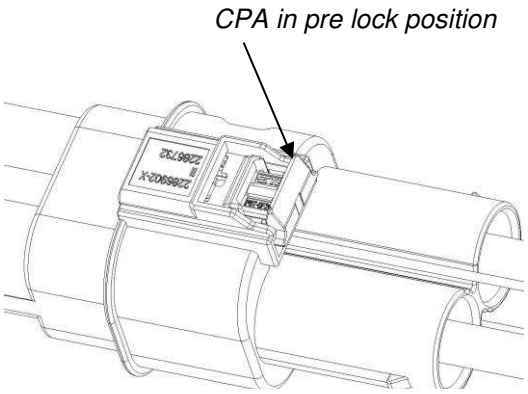


Fig.60

Fig.59 CPA IN LOCKED POSITION
Fig.60 CPA IN PRE-LOCKED POSITION

5.2 Unlock the locking latch and disassembly of the connectors

If the CPA is in pre-lock position, the locking latch with CPA can be pressed downwards. With the CPA pressed down, the connectors can now be separated (*Fig.61*) by pulling on both connector housings.

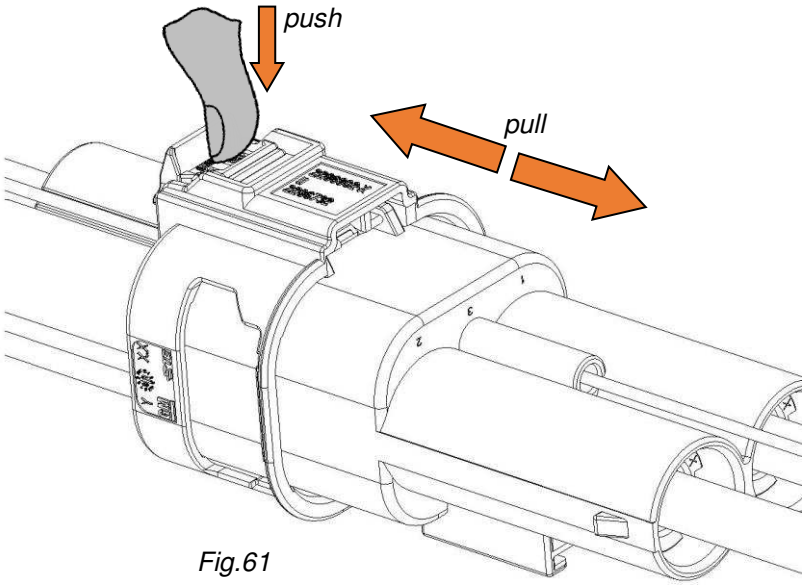


Fig.61

Fig.61 PRESS LOCKING LATCH AND SEPARATE THE CONNECTOR

5.3 Removing Wire Dress Covers from ePump Connector (PN 2301631)

Use a standard Screwdriver with a width of approximately 6mm and apply a leverage as shown (*Fig.62a-62b*)

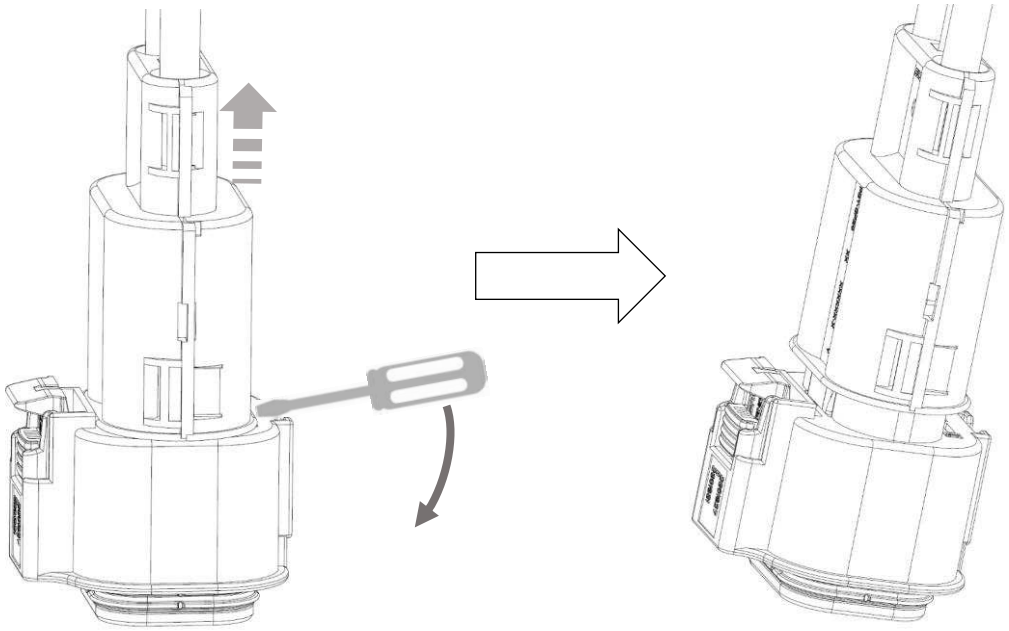


Fig.62a *Fig.62b*

Attention! Do not hurt yourself!

Use a standard Screwdriver and apply a movement as shown (*Fig.63a-63b*)

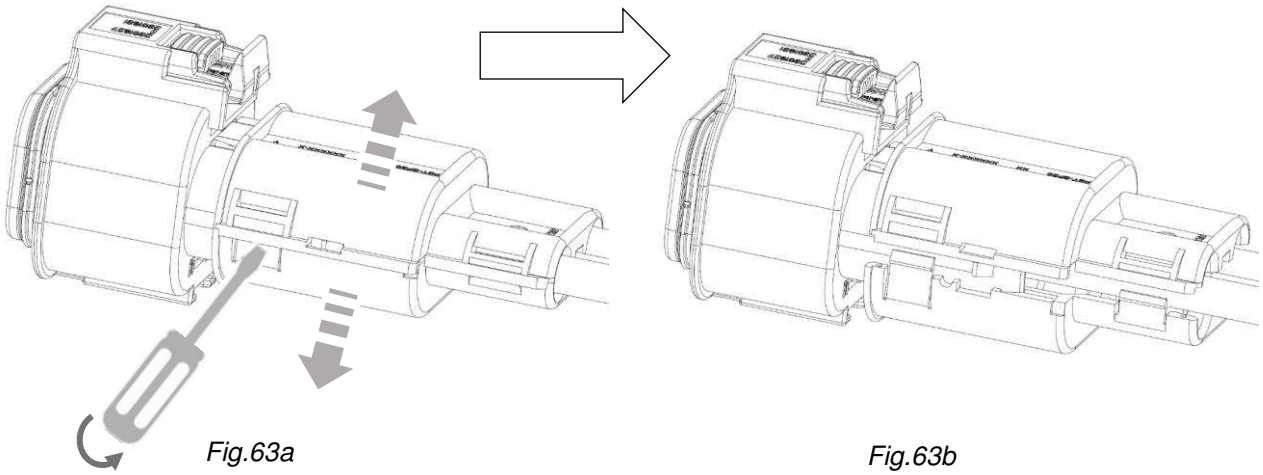


Fig.63a *Fig.63b*

Attention! Do not hurt yourself!

Please do not re-use the disassembled Cover Components again (PN 2301629, 2310399, 2310400)

5.4 Removing contacts

5.4.1 Removing contacts from cavity of the socket housing

If the terminals need to be removed from the connector, the first step is to unlock the TPA.

For the female housing (2286732), a tool similar to J-38125-11A should be inserted into the slot in the TPA (*Fig.64*). Once the tool is inserted, the TPA can be opened by either turning the tool slightly or tilting the tool towards the opposite side of the connector.

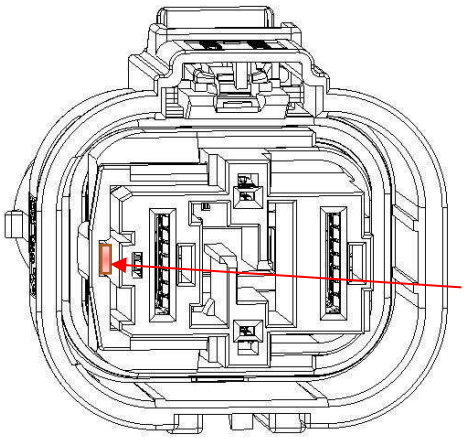


Fig.64

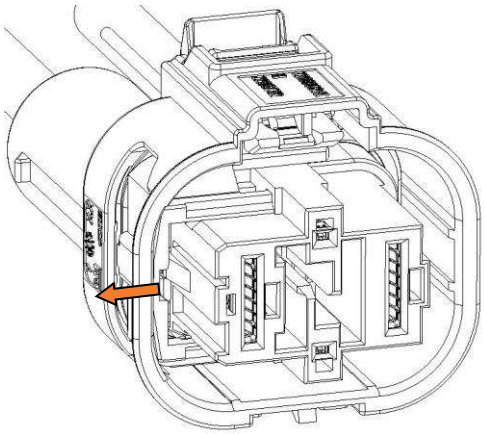


Fig.65

Fig.64 TPA IN LOCK POSITION (PN 2286732)
Fig.65 TPA IN PRE-LOCK POSITION (PN 2286732)

For the female housing (2301631) a tool with a hook similar to 726531-1 should be inserted into the gap between the TPA and housing (*Fig.66)*. The hook of the tool needs to be inserted flat and turned to grab the TPA. If the hook of the tool is behind the TPA it can then be pulled open.

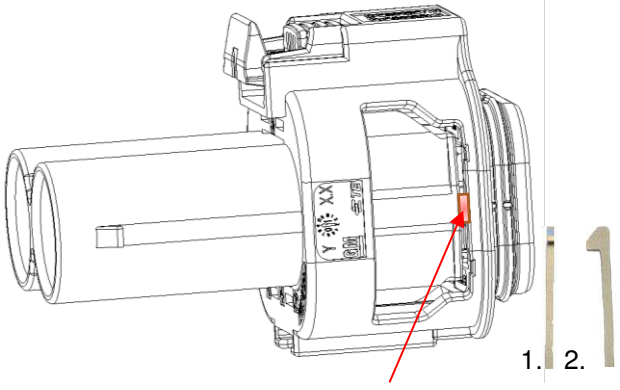


Fig.66

Insert 1. and turn 2. then pull

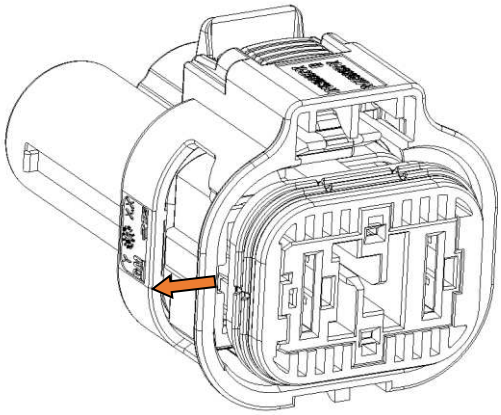


Fig.67

Fig.66 TPA IN LOCK POSITION (PN 2301631)
Fig.67 TPA IN PRE-LOCK POSITION (PN 2301631)

5.4.2 Removing contacts from cavity of the socket housing (PN 2286732 & 2301631)

To remove the terminals from either 2286732 or 2301631, a tool needs to be inserted into the slot of the selected cavity from the front side (*Fig.68*). Different tools maybe needed for MCON 9.5 and MCON 1.2 terminals (see table 1).

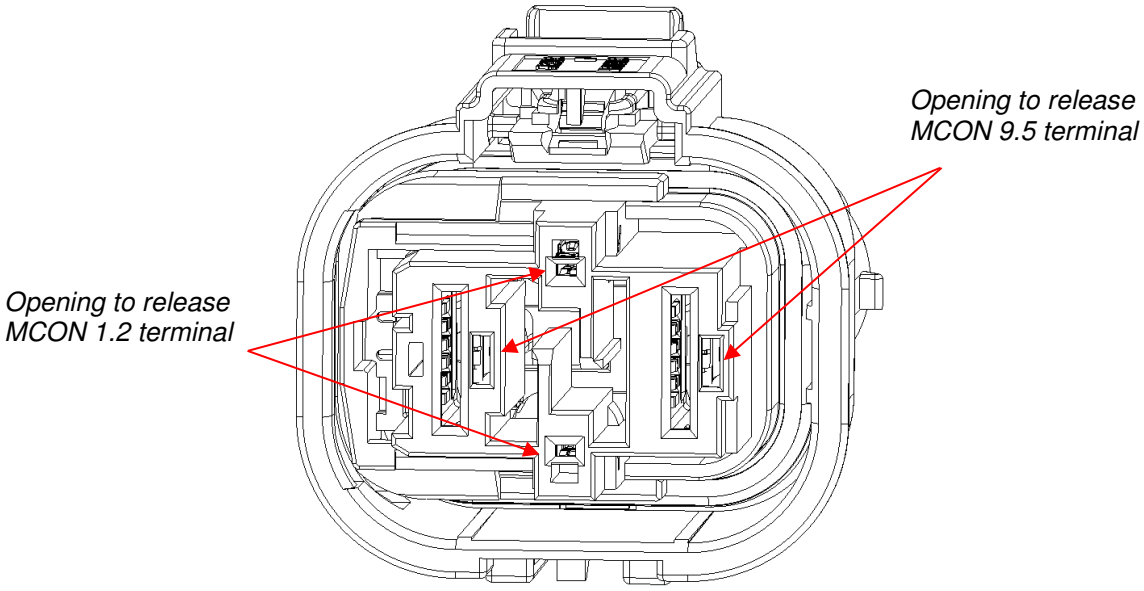


Fig.68

Please be careful when removing the terminals!

Insert tool straight into the opening until the locking feature is detected (*Fig.69a & 70a*). Push carefully until the tool comes to a full stop (*Fig.69b & 70b*). The terminal can now be disengaged (*Fig.69c & 70c*) by pulling it out from the connector. If the terminal locking feature isn't fully disengaged the tool can be tilted slightly to release the terminal. If the terminal still can't be disengaged, please check to make sure the TPA has been released and is now in the pre-lock position. *Fig.69 – 70* shows this operation done only with tool J-38125-11A for the 9.5 and terminals.

MCON 9.5

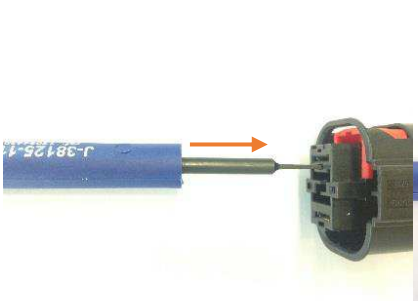


Fig.69a

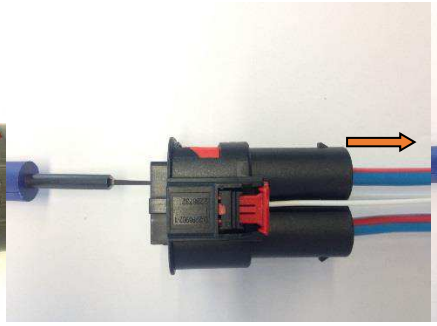


Fig.69b

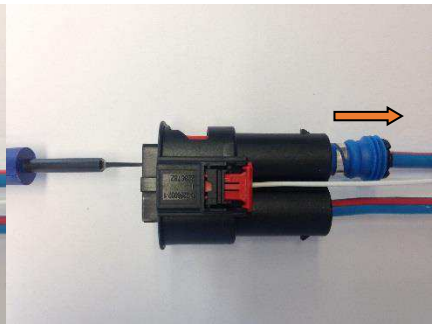


Fig.69c

MCON 1.2

Fig.70a

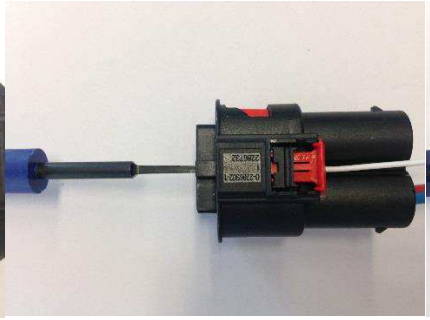


Fig.70b

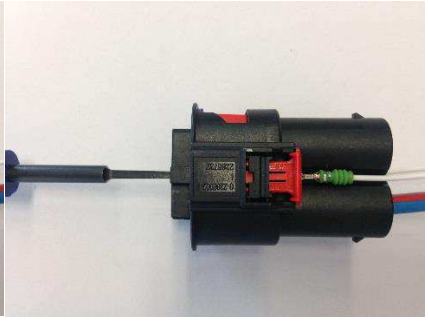


Fig.70c

5.4.3 Removing contacts from cavity of the tab housing (PN 2286733)

If terminals need to be removed from the tab housing, the first step is to open the spacer (TPA).

To service part number 2286733 a tool similar to 726531-1 with a hook needs to be inserted into the slot in the spacer (*Fig.71*). Once the tool is inserted it needs to be turned 90° degree and then pulled outward. Perform this operation again on the opposite side to fully un-lock the spacer. In some circumstances, it may be helpful to completely remove the spacer from the housing for better access to the terminal locking features.

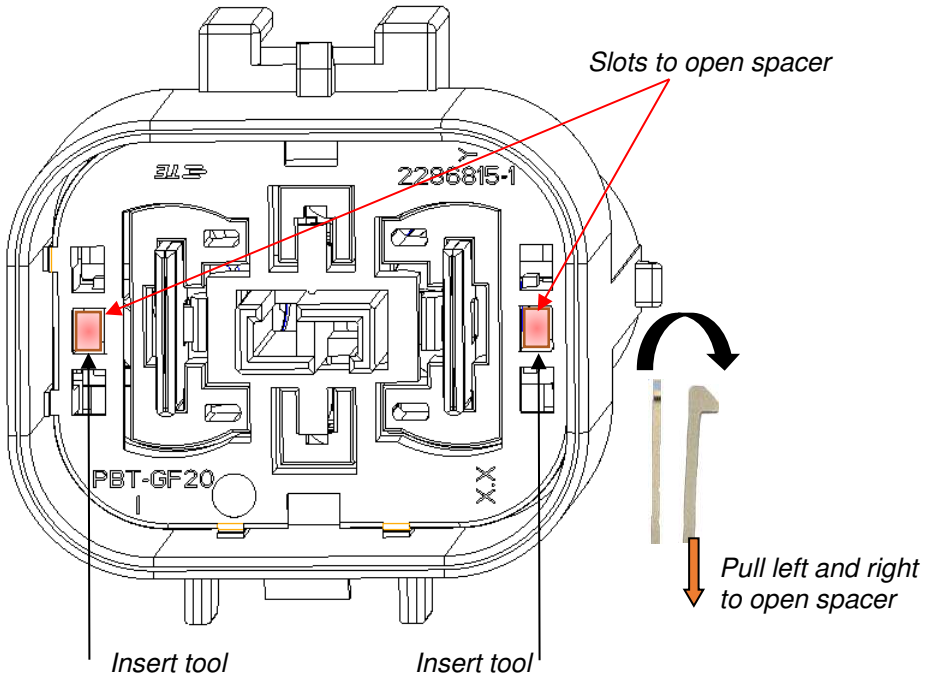


Fig.71

To remove the terminals from the male connector (2286733) a tool needs to be inserted into the slot between the spacer and the housing from the front side (*Fig.72a*). Different tools are needed for tab MCON 1.2cb J-38125-12A (*Fig.72b*) and tab 9.5 J-38125-11A (*Fig.72c*).

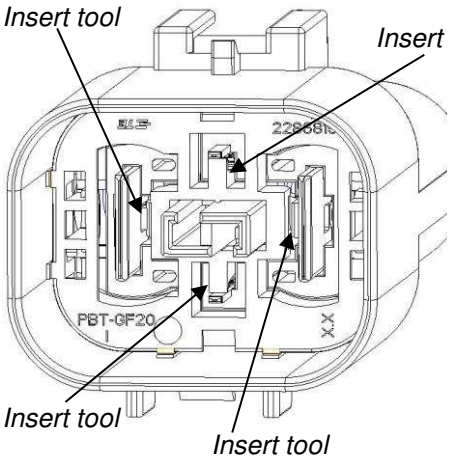


Fig.72a

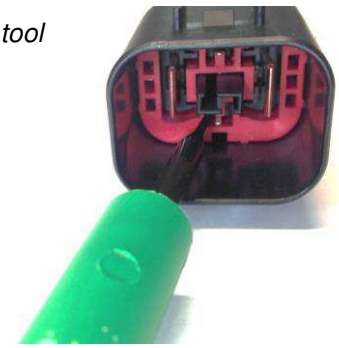


Fig.72b

Fig.72c

Please be careful when removing the terminals!

Insert the tool straight beneath the tab until the locking feature is detected (*Fig.72a-c*). Bend the tool to release the locking latch. The terminal can now be disengaged and removed from the connector.

5.5 Tools for service

The following tools are recommended for the service of these connectors and terminals and are referenced in each sequence. These are standard tools that should be readily available at all service locations and manufacturing locations for connector and terminal service.
See also overview at page 2.

Fig.73

Fig.73 TOOLS FOR SERVICE