

## 20-Position High-Density Sealed Connector series Applications

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## 1. General

### 1. 综述

#### 1.1 Purpose

##### 1.1 目的

This specification includes the guidelines for application and mounting of subject connectors and their accessories.

本规范包括主体连接器及其配件的应用和安装。

#### 1.2 Customer Drawing

##### 1.2 客户图纸

For dimensions, materials and surface finishes etc. see the current customer drawings.

有关尺寸，材料和表面光洁度等，请参见当前的客户图纸。

#### 1.3 Product Specification

##### 1.3 产品规范

This application specification is valid for products specified in product specification 108-101662, which provides a description of the electrical and mechanical properties of multi-pos. connectors. Also see the current relevant contact systems product and application specifications.

该应用规范对产品规范 108-101662 中指定的产品有效，该规范提供了多位连接器的电气和机械性能的描述。另请参阅当前相关的端子系统产品和应用规范。



## 2. Product Description (This application specification takes 20Pos. connector as an example)

### 2. 产品描述(本说明以 20 位连接器为例)

#### 2.1 Plug connector

##### 2.1 母端连接器

As figure 2.1.1&2.1.2 shows, High-Density sealed plug connector contains 6 parts(1.TPA, 2.Radial seal, 3. Housing, 4.Family seal, 5. Rear cap and 6.CPA(optional)).

如图 2.1.1 和 2.1.2 所示, High-Density sealed connector 的母端连接器包含 6 部分 (1.TPA, 2.密封圈, 3. 塑壳, 4.密封垫, 5.后盖, 6.CPA(可选项))

TPA is to provide position assurance after the terminal is inserted into the plastic, and lock the circumferential seal ring.

TPA 用来提供端子插入塑胶后的位置保证, 及锁紧周向密封圈。

The radial seal is to provide seal protection after the assembly of Plug and Rec.

密封圈可以提供 Plug 与 Rec.装配后的密封保护。

The housing is to protect the terminal, fix the terminal position, provide the fixed way and provide Coding error proof and plug.

塑壳可以保护端子, 固定端子位置, 提供固定方式及用不同 Coding 防错。

The family seal is to provide seal protection for connector and wire.

密封垫可提供连接器和导线的密封保护。

The rear cap is to fix and protect the family seal.

后盖用来固定和保护密封垫。

CPA is to withstand the lock on the housing to prevent the housing from moving.

CPA 是用来卡住塑壳上的卡扣, 防止塑壳脱扣。

Just as figure 2.1.3 shows, there are 4 kinds of CODING in A, B, C and D. There are differences in the colour and structure of housing and rear cap parts between various CODING. In case of mis-insertion, please assemble according to different coding. (The male CODING A must be assembled with female CODING A).

正如图 2.1.3 所示, 此类产品有 A,B,C,D 4 种 CODING,各种 CODING 间的 housing 和后盖零件的颜色及结构存在差异, 以防误插, 请根据不同的 coding 对应装配 (即公端 CODING A 装配母端 CODING A), 详见产品图。

**Note: if the insertion force is very big, please confirm whether the wrong product is installed. Please avoid excessive force in the case of mis-insertion to cause damage to the product. If excessive force causes damage to the product, replace the damaged product for assembly.**

**注意: 如当插入力量过大时, 请确认是否装错产品, 请避免错插情形下过度用力导致产品损坏.若过度用力导致产品损坏需更换破损产品进行装配。**

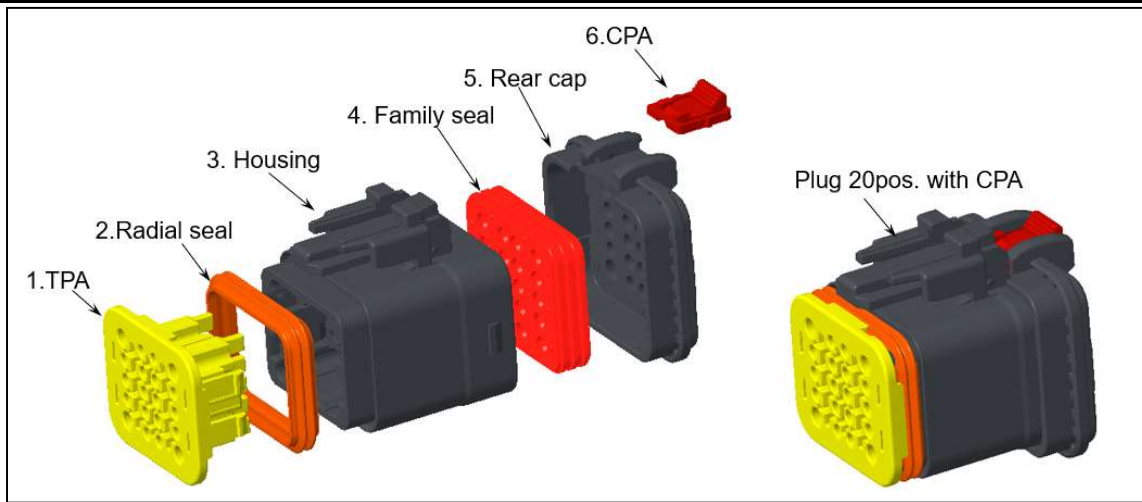


Figure 2.1.1 20pos. Plug Connector with CPA  
图 2.1.1 带 CPA 的 20 位母端连接器

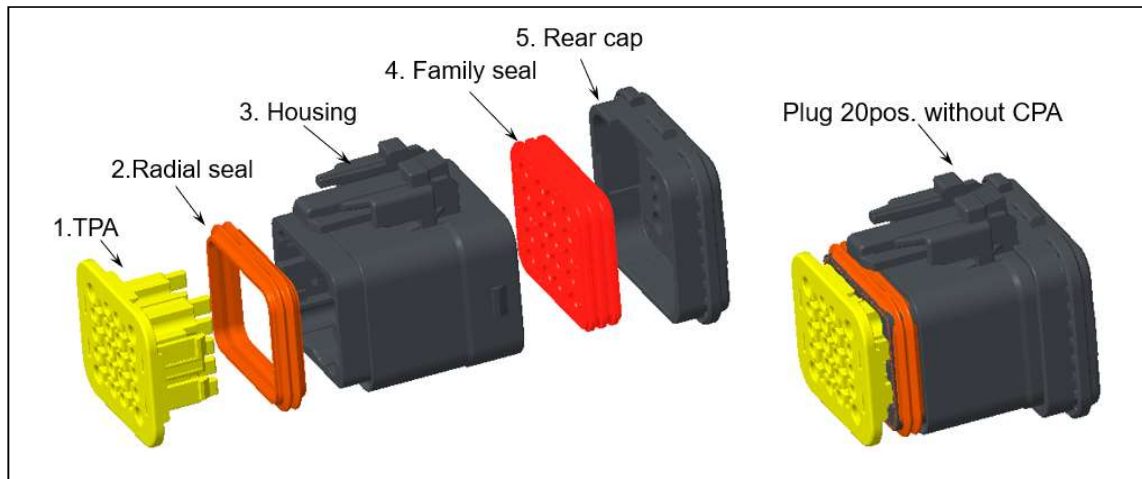


Figure 2.1.2 20pos. Plug Connector without CPA  
图 2.1.2 无 CPA 的 20 位母端连接器

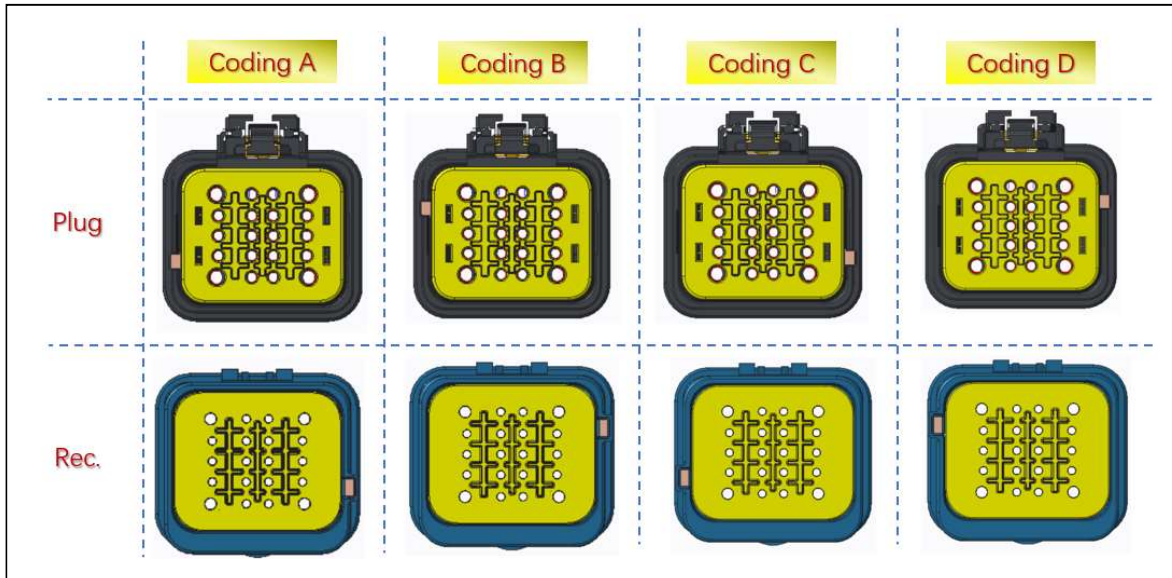


Figure 2.1.3  
图 2.1.3

## 2.2 Receptacle connector

### 2.2 公端连接器

As figure 2.2.1&2.2.2&2.2.3 shows, High-Density sealed connector contains 5 parts(1.TPA, 2.Facial seal and cushion(optional), 3. Housing, 4.Family seal, 5. Rear cap).

如图 2.2.1/2.2.2 和 2.2.3 所示，High-Density sealed connector 的公端连接器包含 5 部分（1.TPA，2.面板密封圈和圆形平垫圈(可选项)，3.塑壳，4.密封垫，5.后盖）。

TPA is to provide position assurance after the terminal is inserted into the plastic, and lock the circumferential seal ring, and provide Coding error proof and plug.

TPA 用来提供端子插入塑胶后的位置保证，及在互配时提供导向作用。

Facial seal and cushion(optional), fix the connector on the panel, and seal protection with panel.

Facial seal is a bump red washer, it can pass the vibration and seal test.

Cushion is a flat black washer, it can't pass the vibration and seal test.

面板密封圈和圆形平垫圈(可选)，用来将连接器固定在面板上，及和面板密封保护。

面板密封圈红色，可满足震动密封测试。

圆形平垫圈黑色，不能满足震动密封测试。

The housing is to protect the terminal, fix the terminal position, provide the fixed way and provide Coding error proof and plug.

塑壳可以保护端子，固定端子位置，提供固定方式及用不同 Coding 防错。

The family seal is to provide seal protection for connector and wire.

密封垫可提供连接器和导线的密封保护。

The rear cap is to fix and protect the family seal.

后盖用来固定和保护密封垫。

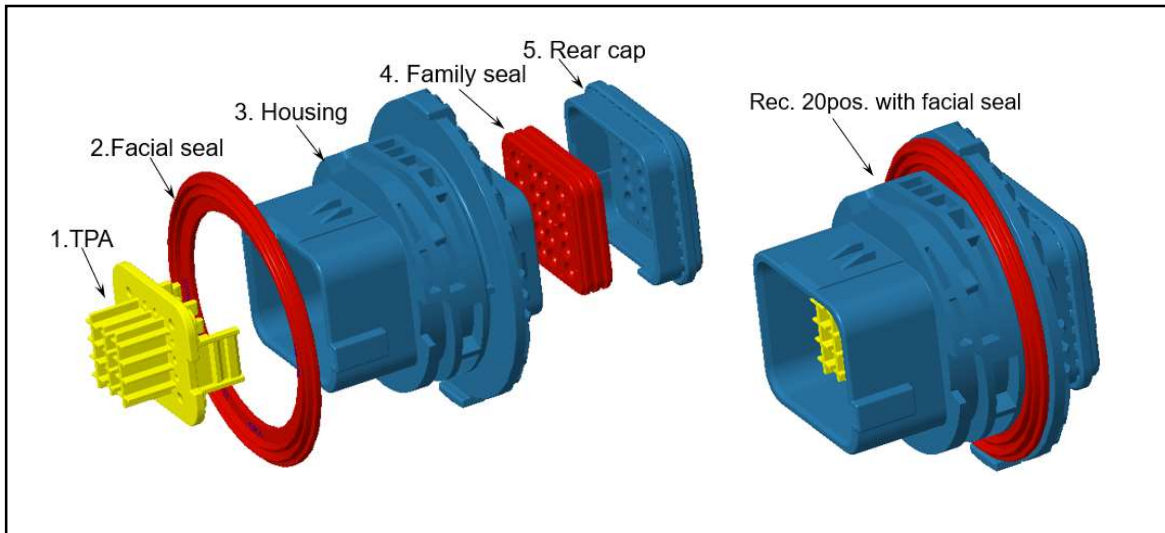


Figure 2.2.1 20pos. Receptacle Connector with facial seal  
图 2.2.1 带红色密封圈的 20 位公端连接器

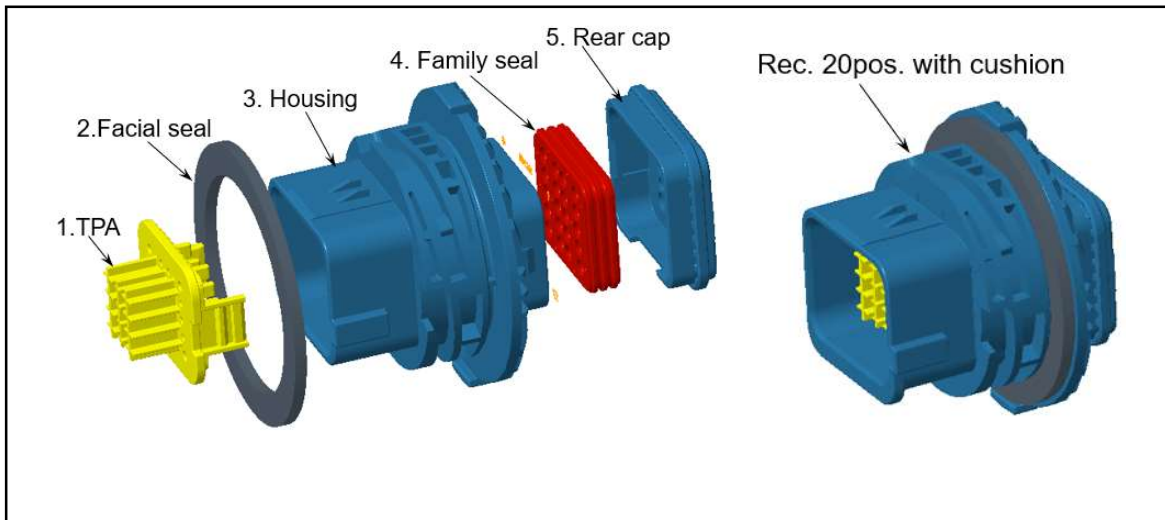


Figure 2.2.2 20pos. Receptacle Connector with facial seal  
图 2.2.2 带黑色平垫圈的 20 位公端连接器



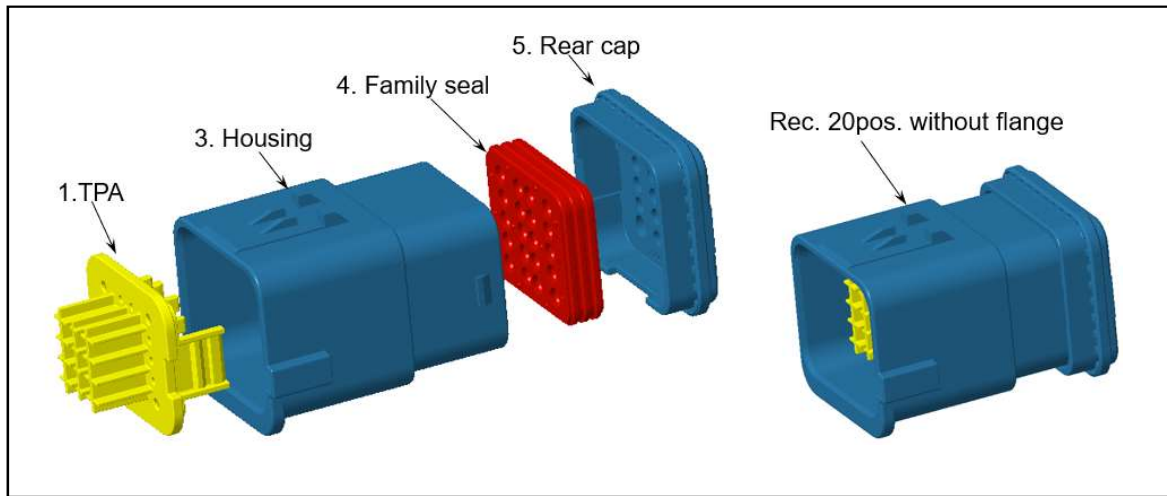


Figure 2.2.3 20pos. Receptacle Connector without flange  
图 2.2.3 无法兰的 20 位公端连接器

## 2.3 Accessories

### 2.3 附件

Required accessories are shown in figure 2.3.1.  
附件见下图 2.3.1

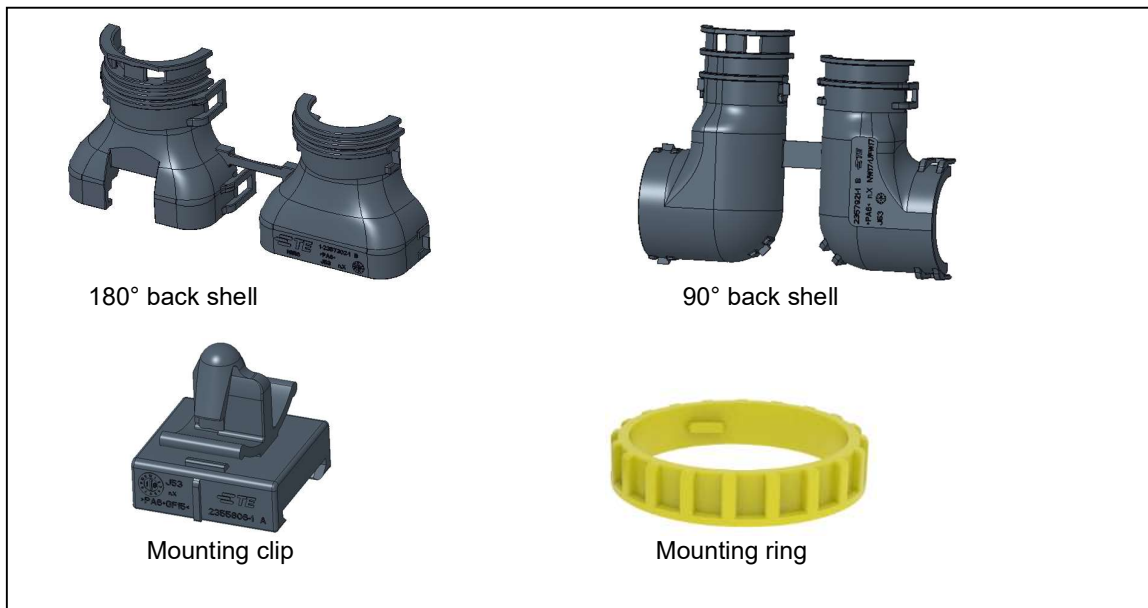


Figure 2.3.1  
图 2.3.1



## 2.3.1 Back shells

### 2.3.1 尾夹

Figure 2.3.1.1 shows male and female Backshells which can provide protection against the rear of the connector to achieve IPX9K.

图 2.3.1.1 是公端尾夹和母端尾夹，提供接插件尾部的防护带后防护可达到 IPX9K 等级



Figure 2.3.1.1  
图 2.3.1.1

As figure 2.3.1.2, the part numbers and types are available for selection.

如图 2.3.1.2 所示，以下料号和类型可供选择。

CONNECTOR	TYPE	CORRUGATED TUBE SIZE	BACKSHELL P/N
PLUG	180°	NW17&UFW17	2357302-1
PLUG	180°	NW16	1-2357302-1
RECEP.	180°	NW17&UFW17	2357302-2
RECEP.	180°	NW16	1-2357302-2
PLUG&RECEP.	90°	NW17&UFW17	2357921-1
PLUG&RECEP.	90°	NW16	1-2357921-1

Figure 2.3.1.2  
图 2.3.1.2

The installation picture as below figure 2.3.1.3, the 90° back shell assembled with 180° back shell.  
安装效果示意图见图 2.3.1.3，90°的尾夹安装在 180°的后面。

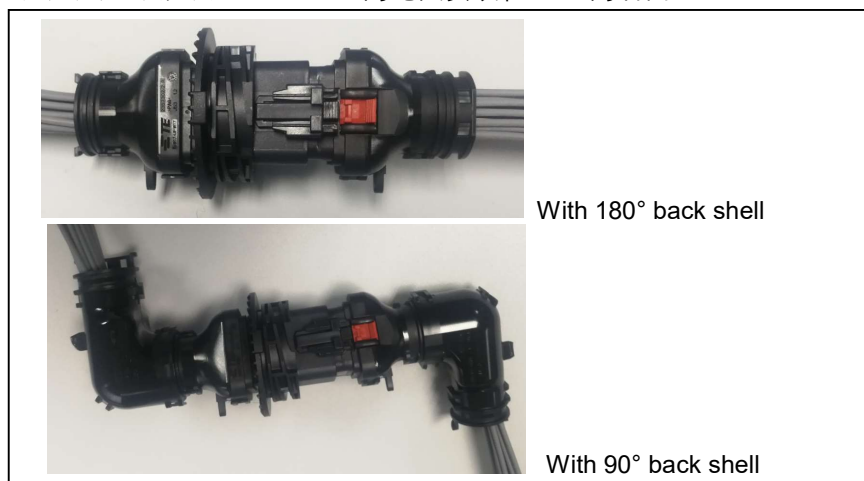


Figure 2.3.1.3 Installation figure  
图 2.3.1.3 安装效果示意图

### 2.3.2 Mounting clip

### 2.3.2 安装夹

Figure 2.3.2.1 show the installation of mounting clips

图 2.3.2.1 安装效果示意图。

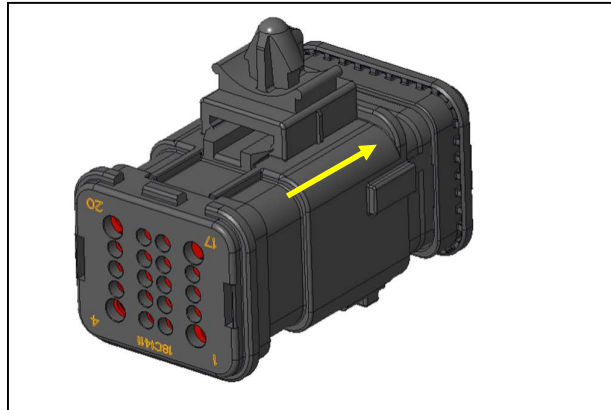


Figure 2.3.2.1  
Installation of the mounting clip

As figure 2.3.2.2 shows, the following item numbers and types are available for selection.

如图 2.3.2.2 所示，以下料号和类型可供选择

Mounting Clip	Part Number	Mounting Direction	Color/Material	Hole O.D. inches(mm)
	1027-003-1200	Straight	Stainless steel	.433 (11.0)
	1027-005-1200	Straight	Stainless steel	.512 (13.0)
	1027-004-1200	Straight	Steel w/ zinc plating	.512 (13.0)
	1027-008-1200	Side	Steel w/ zinc plating	.433 (11.0)
	1027-013-1200	Side	Steel w/ zinc plating	.323 (8.2)
	1011-026-0205	Straight	Gray plastic	.200 (5.08)
	1011-030-0205	Straight	Black plastic	---
	1011-310-0205* *Connector removeable with 50N of force	Straight	Black plastic	---
	2355806-1	Straight	Black plastic	---
	2355806-2	Straight	Black plastic	---

Figure 2.3.2.2  
图 2.3.2.2

### 2.3.3 Blind block

#### 2.3.3 盲堵

Figure 2.3.3.1 shows blind plug  
图 2.3.3.1 是盲堵。

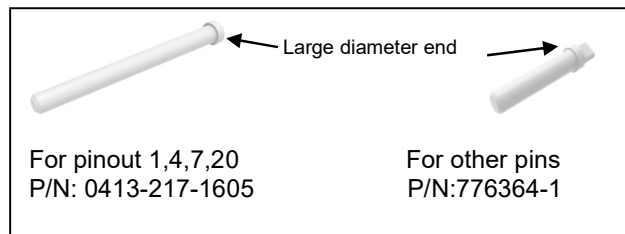


Figure 2.3.3.1 Blind block  
图 2.3.3.1 盲堵

As figure 2.3.3.2, 0413-217-1605 is for big holes, large diameter end insert into cavity 1,4,7,20 to end-lock with click sound.

如图 2.3.3.2, 用于大孔的盲堵 0413-217-1605, 将盲堵的大头端装入 1, 4, 17, 20#孔, 直至听到咔哒声, 表示安装到位。

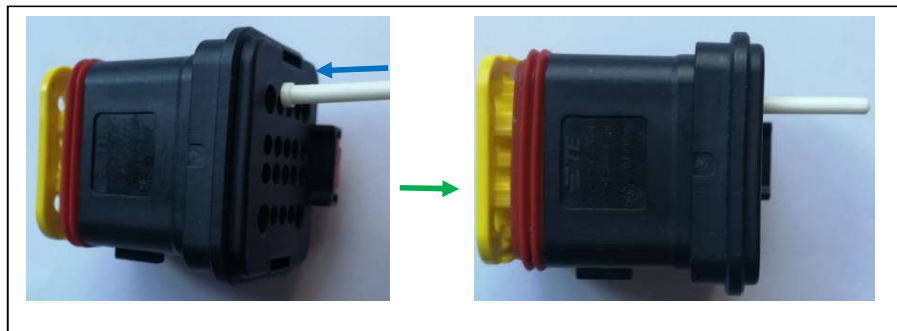


Figure 2.3.3.2  
图 2.3.3.2

As figure 2.3.3.3, 776364-1 is for small holes, small diameter end inserted into other cavity to end.

如图 2.3.3.3, 用于小孔的盲堵(776364-1), 将盲堵的小头端装入其余的小孔, 并插到底。

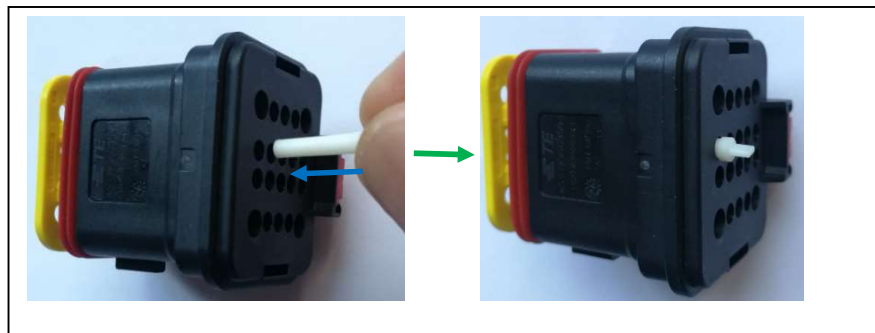


Figure 2.3.3.3  
图 2.3.3.3

### 2.3.4 Applicable terminal and crimping specifications

#### 2.3.4 适用端子及压接规范

Bellow table shows the PN and wire diameter that meet male and female adapter terminal.

下表是公母端适配端子料号及线径。

#### Stamped & Formed Contact

Contact Series	Socket P/N	Pin P/N	Wire Size	Insulation Diameter	Applicable Cavity	Note ** = Contact Plating Codes	
						PN Suffix	Plating Material
DEUTSCH Size 16 Contact	1060-16-01**	1062-16-01**	1.0~1.5mm <sup>2</sup>	1.9~2.4mm	1, 4, 17, 20	22	Nickel
	1060-16-06**	1062-16-06**	0.5~1.0mm <sup>2</sup>	1.4~2.4mm		44	Gold
DEUTSCH Size 20 Contact	1060-20-01**	1062-20-01**	0.5~1.5mm <sup>2</sup>	1.9~2.4mm	Other Cavities	66	Tin/Nickel
	1060-20-02**	1062-20-02**	0.5~1.5mm <sup>2</sup>	1.4~2.16mm		77	Tin
	1060-20-06**	1062-20-06**	1.0~1.5mm <sup>2</sup>	1.9~2.4mm		88	Selective Gold
	-	1062-20-03**	0.5~1.5mm <sup>2</sup>	1.9~2.4mm			



Table 1 male adapter terminal and wire diameter  
表 1 公端适配端子料号及线径

For further information, 114-18464 can be seen. In case of conflict, this document shall prevail.  
具体可参考 114-18464 压接规范。如有冲突以此份文件为准。

### 2.3.5 Flange fixation application for Rec. connector

#### 2.3.5 公端连接器法兰固定的应用

As figure 2.4.1, fix the flange rec. connector on the panel, twist the mounting-ring to end-lock with click sound.

如图 2.4.1，带法兰的公端连接器安装到面板上后，再组装安装环，当听到咔哒声，表示安装到位。

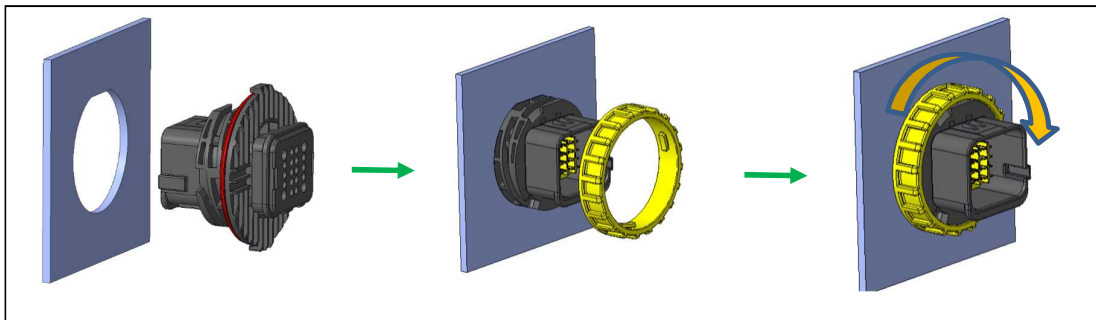


Figure 2.3.5.1  
图 2.3.5.1

The bellow table show the fix-rings apply for different pannel.

圆形垫圈料号/颜色与面板厚度的对应关系如下表。

Fix-ring P/N	Color	Panel thickness
2350943-1	Yellow	1.5±0.1mm
2350943-2	Grey	3.0±0.1mm

As figure 2.4.2, the recommended panel cutout dimensions and the actual space after product installation.

如图 2.4.2，建议的面板开孔尺寸和产品安装后实际空间。

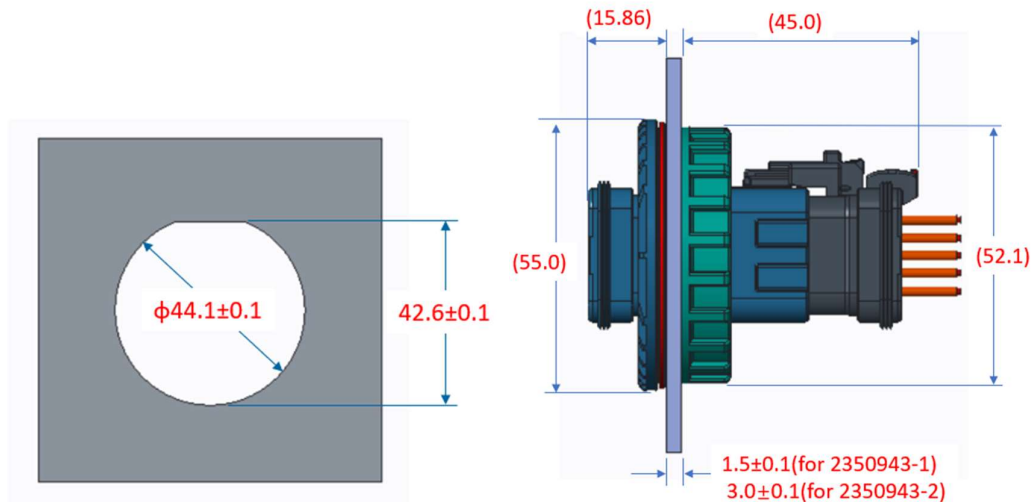


Figure 2.3.5.2

图 2.3.5.2

### 3. Application Description

#### 3. 应用规范

#### 3.1 Loading connector with Contacts

#### 3.1 组装端子和连接器

##### 3.1.1 Loading Plug connector with Contacts

##### 3.1.1 母端连接器组装端子

Contacts can only be inserted when the TPA is in the pre-locked position. If the TPA is in the final lock state, the TPA needs to be pulled to the pre-lock and then operates.

端子只有在 TPA 预锁状态下才能插入。若 TPA 在终锁状态需将 TPA 拉至预锁再进行操作

Step1, please make sure that the terminal is inserted horizontally and inserted into the right position as shown in figure3.1.1 (When hearing the click sound, pull the cable gently and it cannot be pulled).

第 1 步，请确保端子依图 3.1.1 朝向水平插入且插入到位（听到卡搭声且往后轻拉，线无法拉动）。

Correct orientation of the contacts must be ensured.

请确保插入方向正确。

Step2, after all the terminals inserted into the right position, press the TPA from the pre-lock to the final lock state as figure 3.1.1 shows. (When hearing the click sound, pull the TPA gently and it cannot be pulled).

第 2 步，所有端子都安装到位后，将 TPA 从预锁按到终锁状态，如图 3.1.1.1 所示（听到卡搭声，往后轻拉 TPA 无法拉动）。

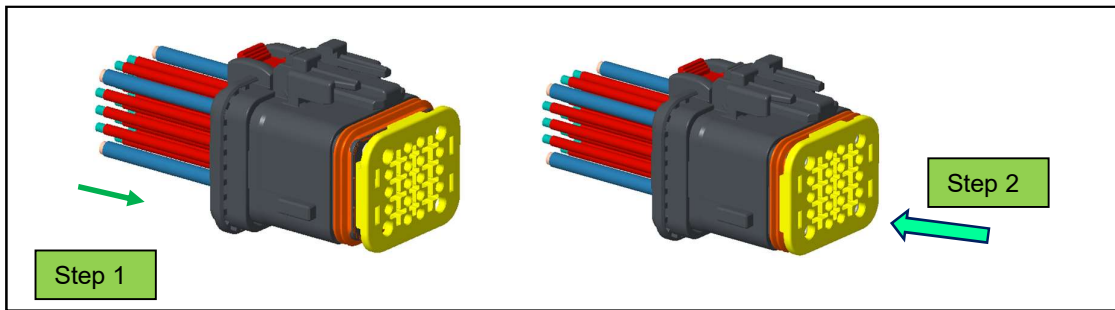


Figure 3.1.1.1 Contact loading into the socket housing.  
图 3.1.1.1 端子插入塑壳示意图

*Note: before step 2, please make sure that the radial seal is aligned with the upper surface of the housing (Fig a). If not (fig b), that shouldn't be regarded as defective product. User need to correct the radial seal to position as Fig a to avoid leakage risk. If there is broken or teared up appearance on the seal (Fig c), please contact TE and replace with new seal*

注意: 在第 2 步动作前, 须先确认密封圈四周与塑壳上表面贴平, 如图 3.1.1.2(图 a)。若出现密封圈不在正常安装位置, 部分或全部脱落(图 b), 不应视为产品缺陷, 需要客户协助自行校正并安装回如图 a 位置。否则, TPA 会有卡不到位或连接器配对后密封不良。如果发现密封圈破损(图 c), 请务必联系 TE 更换新的密封圈。

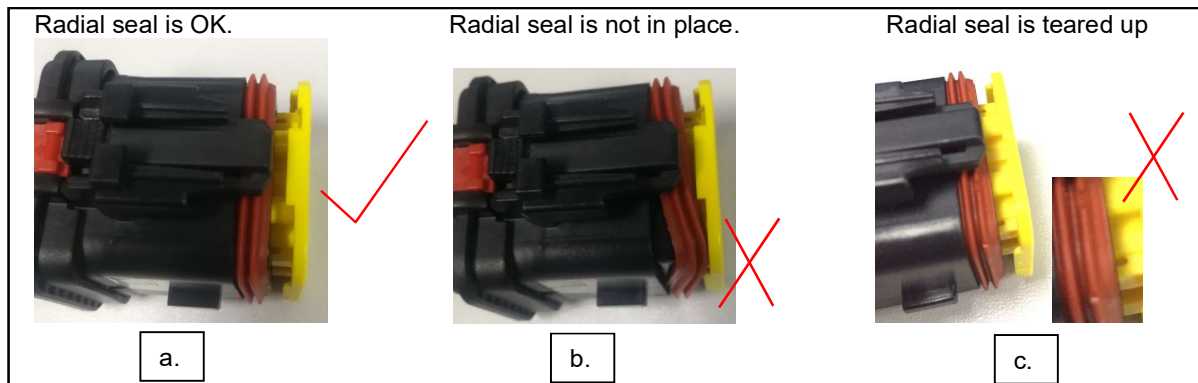


Figure 3.1.1.2  
图 3.1.1.2

### 3.1.2 Loading Receptacle connector with Contacts

#### 3.1.2 公端连接器组装端子

Contacts can only be inserted on condition the secondary lock is on the pre-lock position.  
端子只有在 TPA 预锁状态下才能插入。

The steps are the same as described in "Socket Housings" see chapter 3.1.1.  
步骤和 3.1.1 的描述一样。

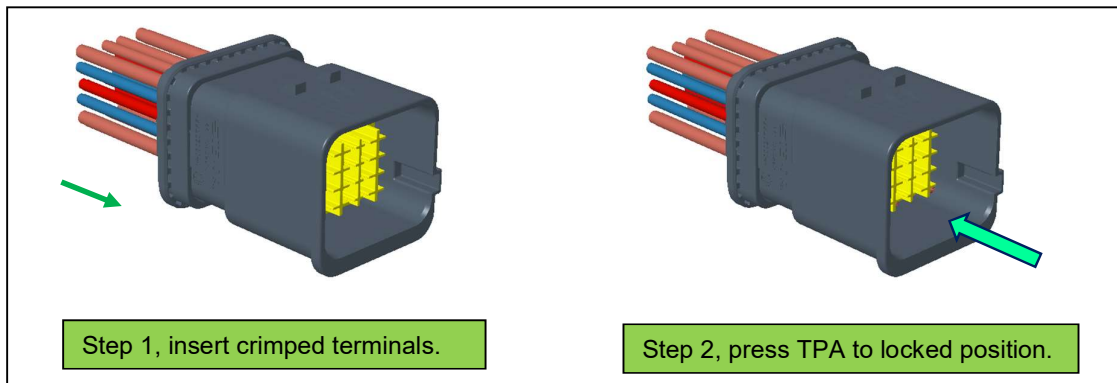


Figure 3.1.2 Contact loading into a tab housing  
图 3.1.2 端子插入塑壳

### 3.2 Extracting Crimped terminals from the connector

#### 3.2 从连接器中退端子

##### 3.2.1 Extracting Crimped terminals from plug connector

##### 3.2.1 从母端连接器中退端子

Before extracting the crimped terminals, TPA must be removed with a proper tool.  
使用工具(如图 3.2.1.1)将 TPA 取下(如图 3.2.1.2), 进行解锁/退针。

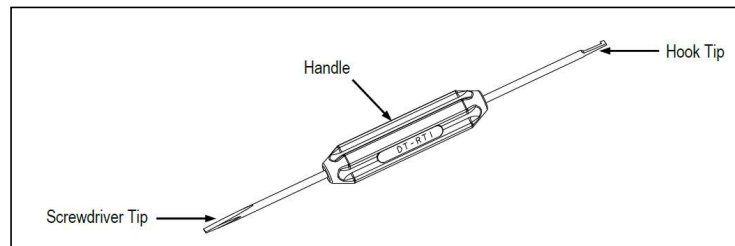


Figure 3.2.1.1 DT-RT1  
图 3.2.1.1 DT-RT1 退针工具

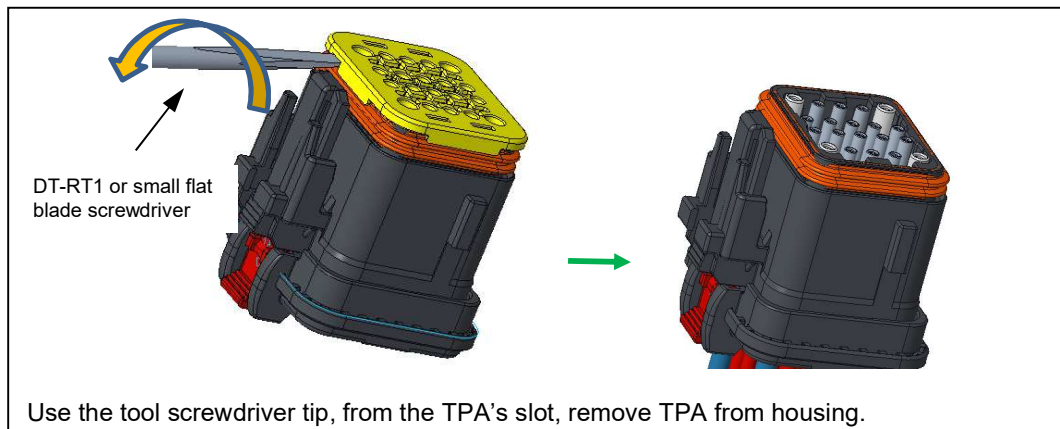


Figure 3.2.1.2  
图 3.2.1.2



Use the tool(figure 3.2.1.3) to lift the locking finger and gently pull the wire until the cable can be pulled out to stop lifting the latching tab.

使用工具（图 3.2.1.3）抬起卡锁弹片,同时轻拉导线,至能将线拉出时停止上抬卡锁弹片。

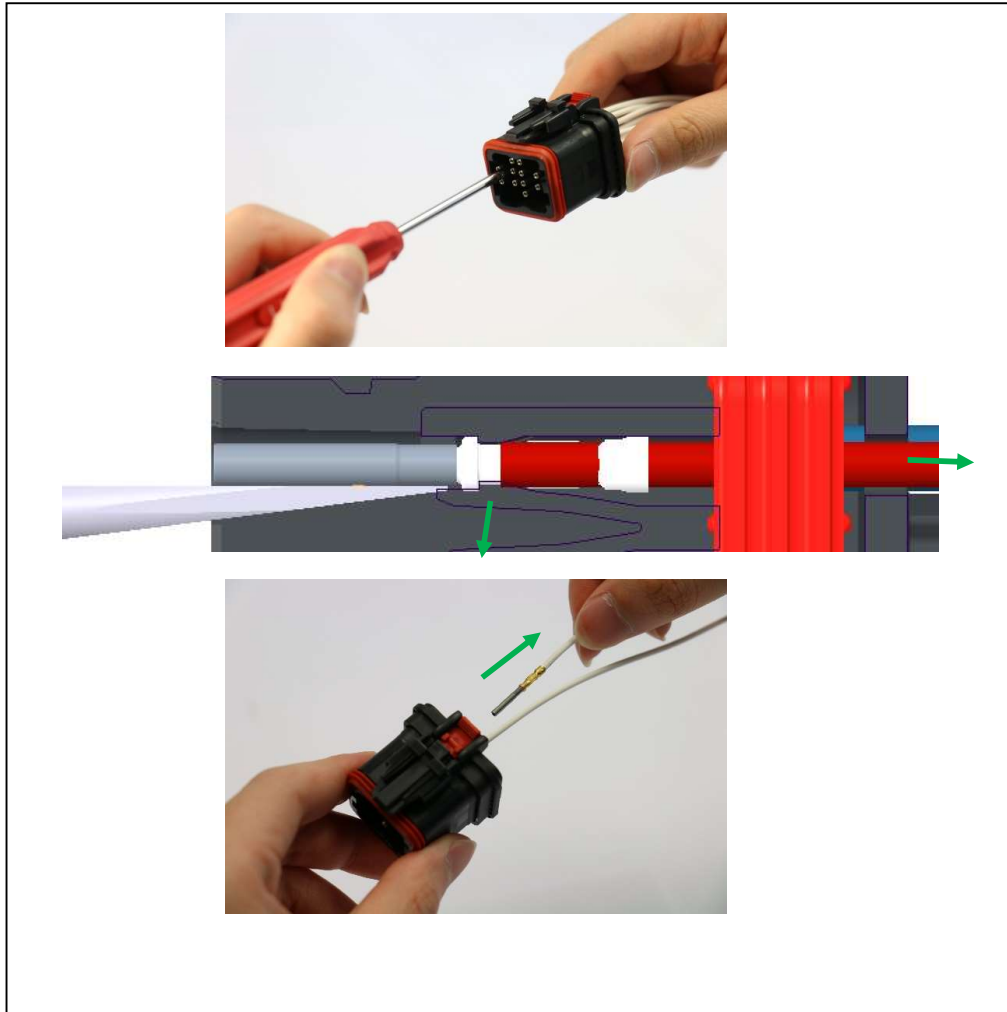


Figure 3.2.1.3  
图 3.2.1.3

*Note: the operation should be careful to avoid excessive lifting of the elastic piece, which causes the plastic locking finger to break. If the operation is not correct, the housing needs to be replaced.*

注意：操作上要避免过度上抬弹片，导致塑料锁片断裂。若操作不当至卡锁断裂需更换塑壳。

### 3.2.2 Extracting Crimped terminals from Rec. connector

#### 3.2.2 从公端连接器中退端子

For receptacle connector, it is the similar method to remove the crimped terminals as figure 3.2.2.1.  
对公端连接器，退端子的方法和母端类似，按如下图 3.2.2.1 步骤。

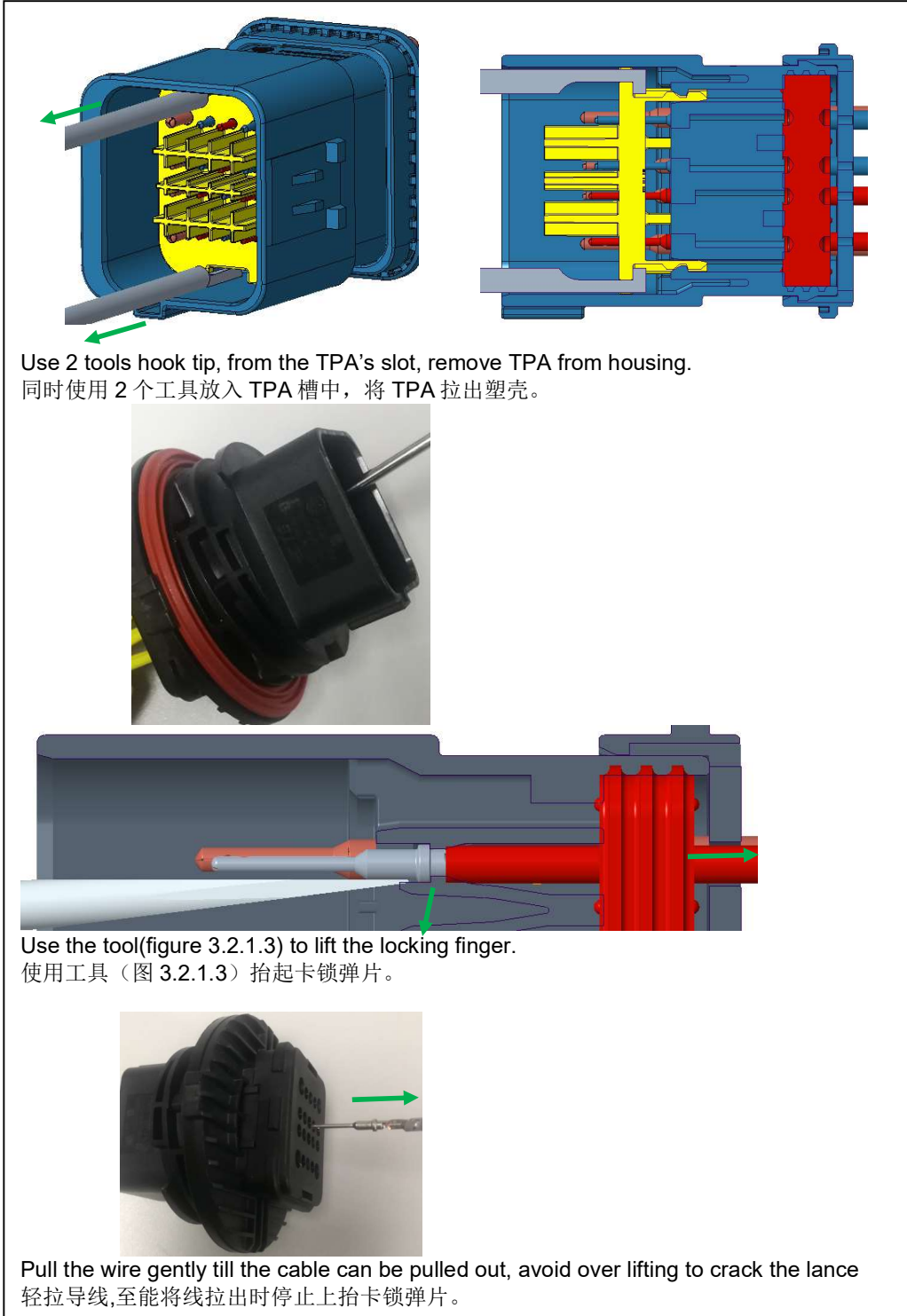


Figure 3.2.2  
图 3.2.2

**Note:** Don't use small long nose pliers to get out the TPA. It may broken TPA.  
**注意:** 不建议用小型长嘴钳夹公端 TPA 将其取出, 有可能会夹坏 TPA。

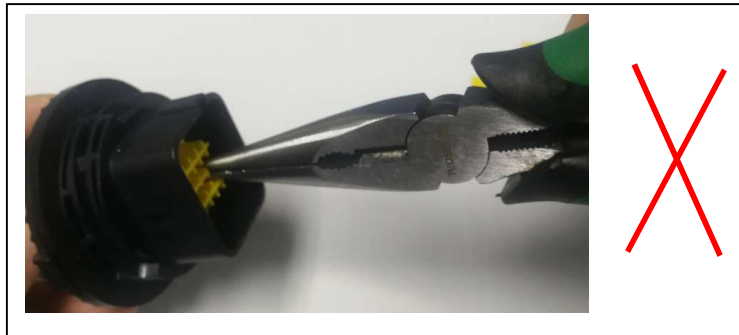


Figure 3.2.2.2  
图 3.2.2.2

### 3.3 Mating Plug& Receptacle connector

#### 3.3 公母端连接器装配

As shown in figure 3.3.2.1 , ensure that the female end is inserted horizontally and vertically until there is a click sound. Verify plug latch is in full latched position. After installed, push the CPA.

如图 3.3.2.1 所示, 确保母端水平且垂直插入, 直至听到卡搭声。再确认母端的卡扣已卡到位。安装后, 将 CPA 向下推。

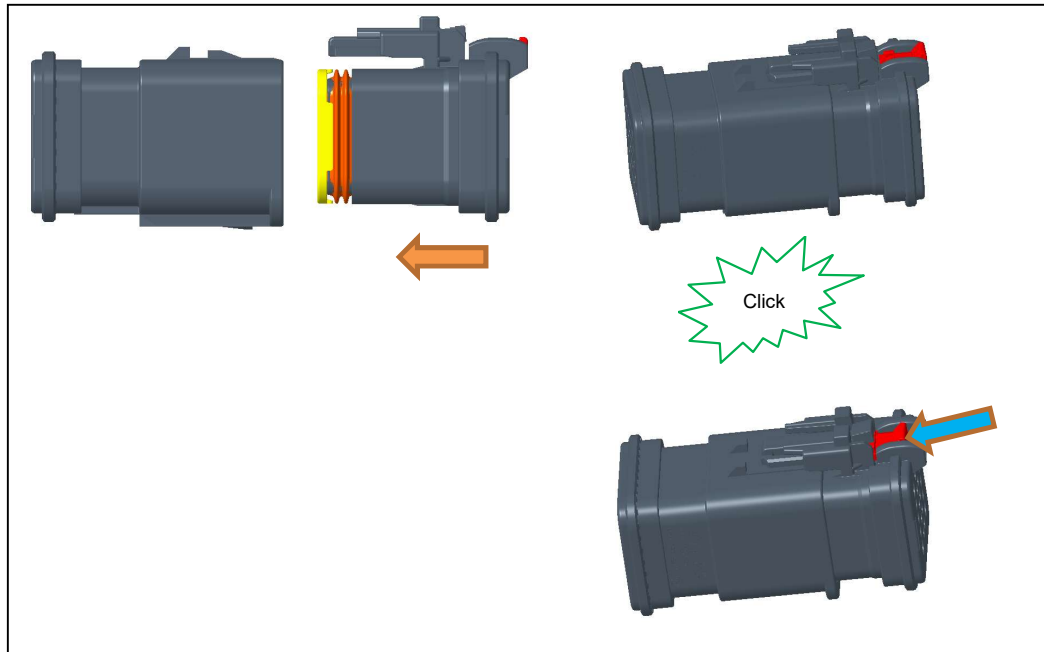


Figure 3.3.1  
图 3.3.1

**Note:** As figure 3.3.2.2 shows, when the plug is inserted into the receptacle with angular skewing, it is possible to bend the male terminal or top the secondary lock. At the same time, the male and female terminals also have the risk of withdrawing the needle.

**注意:** 如图 3.3.2.2 所示, 当斜插入装配后, 有可能将公端子折弯或顶坏母端二次锁扣。同时公母端子也存在退针的风险。

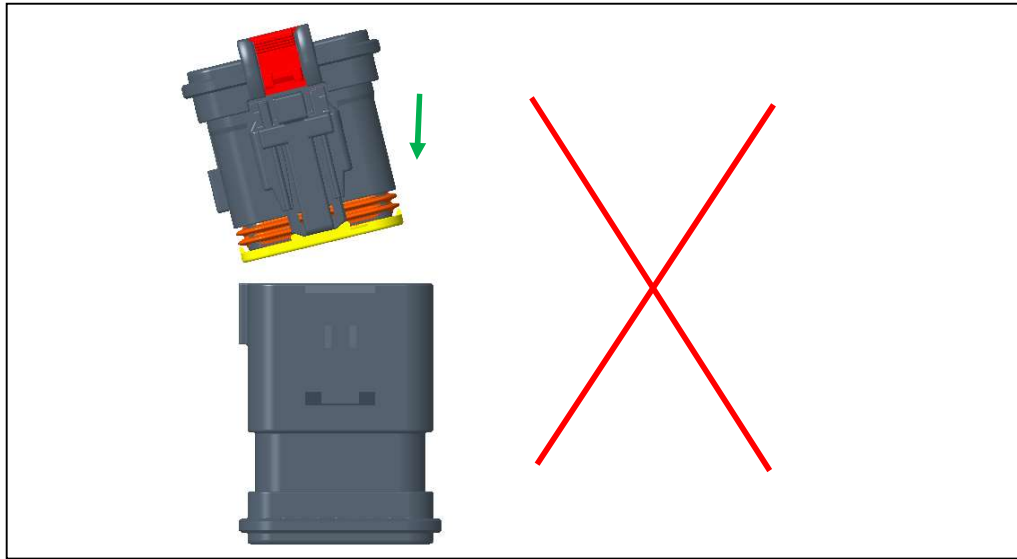


Figure 3.3.2

图 3.3.2

### 3.4 Unmating Plug& Receptacle connector

#### 3.4 公母端连接器分离

As figure 3.4.1, move CPA to back side. Push the plug latch until a hard stop is felt. Pull the plug from the receptacle until they are fully separated.

如图 3.4.1 将 CPA 移到后面。按下母端的卡扣，直到感觉到停止为止。将母端从公端拔出，至完全分开。

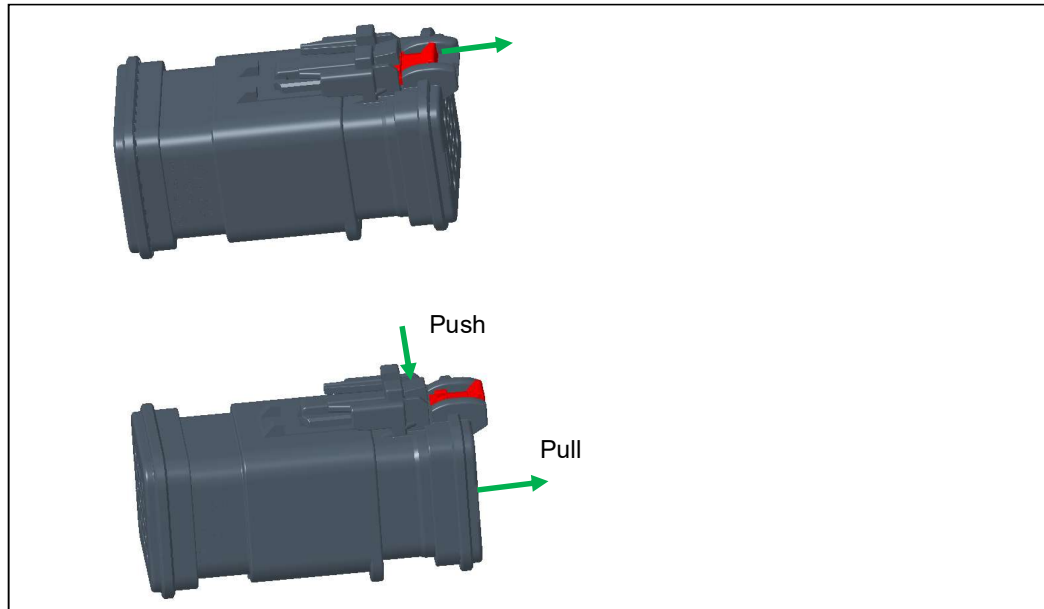


Figure 3.4.1

图 3.4.1