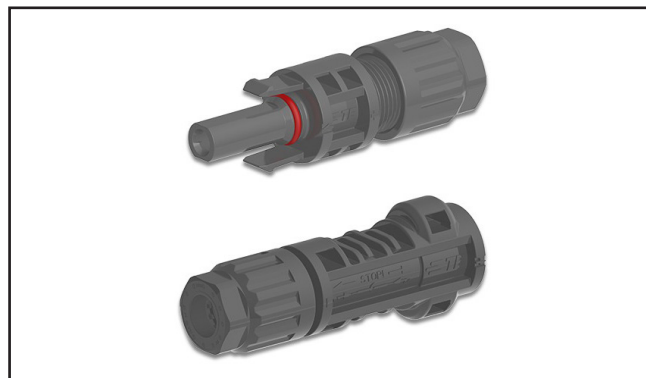




INSTALLATION INSTRUCTIONS

411-137077
EPP-3854-3/23 (Rev. C)
Solarlok PV4-S1 Connectors



TE's Connectors & Fittings

1. Introduction & Installation Notes

This instruction sheet covers the installation and termination of Solarlok PV4-S connectors. Supporting documentation and additional information can be found in the specification referred in page 2.

- For copper stranded wire only, see section 3 for suitable wire cross section & table 2 for strands count
- The connector is considered in compliance with UL 6703 only when assembled in the manner specified by these assembly instructions
- Product is certified according to UL 6703 and IEC 62852
- Installation shall be in accordance with CSA C22.1: Safety Standard for Electrical Installations, Canadian Electrical Code, Part 1

2. Applicable Documents

The following documents form part of this specification:

- 108-137077: Product Specification, PV4-S connectors
- 114-137077: Application Specification, PV4-S connectors
- 2270024: PV4-S connector kit, female, customer drawing
- 2270025: PV4-S connector kit, male, customer drawing

3. Maximum Operating Conditions

Maximum system voltage:	1500 V dc (IEC)
	1500 V dc (UL)
Maximum current (at 85°C ambient for TÜV and 55°C ambient for UL):	29 A (TÜV) for 2.5 mm ²
	35 A (TÜV) for 4 mm ²
	40 A (TÜV) for 6 mm ²
	35 A (UL) for 14 AWG
	40 A (UL) for 12 AWG
Ambient temperature:	50 A (UL) for 10 AWG
	-40°C to 85°C

For more information: te.com/energy

Please dispose of all waste according to environmental regulations.



Tyco Electronics Raychem GmbH
a TE Connectivity Ltd. Company
Finsinger Feld 1
85521 Ottobrunn/Munich, Germany
Tel: +49-89-6089-0
Fax: +49-89-6096-345

The Information contained in these installation instructions is for use only by installers trained to make electrical power installations and is intended to describe the correct method of installation for this product. However, TE Connectivity has no control over the field conditions which influence product installation.

It is the user's responsibility to determine the suitability of the installation method in the user's field conditions.




TE Connectivity's only obligations are those in TE Connectivity's standard Conditions of Sale for this product and in no case will TE Connectivity be liable for any other incidental, indirect or consequential damages arising from the use or misuse of the products.

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4. Tools

The following hand crimp tools are applicable to the product:

Table 1

S.No	TE Part Number	Wire Size	Order Text	Picture
1	4-1579002-2	2.5 / 4 / 6 mm ² 14 / 12 / 10 AWG	Solarlok insulation stripper	
2	6-1579014-8	4 / 6 mm ² 12 / 10 AWG	Hand-crimp tool (complete) for crimping contact	
3	4-1579016-7	4 / 6 mm ² 12 / 10 AWG	Crimp head for crimping contact	

There is 1 crimp per contact. For additional information refer to Application Specification 114-137077.

5. Assembly Procedure

⚠ CAUTION

Do not disconnect the product under load.

Current path shall only be disconnected using approved disconnecting devices. Symbol "Do not disconnect under load" is marked on the connector.

Connector should always be protected from silicon sealant (Oxime) during mounting.

5.1 General Instructions

Any kind of pollution (dust, humidity, foreign particles, etc.) during the assembly process can degrade contacts and connectors performances. This applied to the sealing area and the crimping operation of contacts. A clean assembly environment is therefore essential.

⚠ CAUTION

Unmated connectors must always be protected from pollution (such as dust, humidity, foreign particles, etc.) prior to installation. Do not leave unmated (unprotected) connectors exposed to the environment.

5.2 Termination of cable wires and crimping of contacts

Connectors accept different crimping contacts for various wire sizes. It is necessary to use the proper tool for each wire size. Allowed connectable wire sizes are:

- 2.5 mm² / 14 AWG
- 4 mm² / 12 AWG
- 6 mm² / 10 AWG

The following table shows relevant Part Numbers of contacts with respect to each wire sizes:

Table 2

Wire size	# of Cu Strands	Pin contacts P/N	Socket contacts P/N
2.5 mm ² / 14 AWG	47	2270253 - x	2270252 - x
4 mm ² / 12 AWG	46 - 56	2270251 - x	2270226 - x
6 mm ² / 10 AWG	19, 78		

⚠ CAUTION

Shelf life: contacts should remain in the shipping containers until they are ready for use to prevent contamination from storage environment that could adversely affect the connection.

5.3 Assembly of the connectors

⚠ CAUTION

Do not use any oil or lubricant during the assembly and mounting operation.
The use of TE Connectivity dust cap is recommended. Refer to Application Specification 114-137077 for additional details.

5.3.1 Selection of cable connectors

The cable connectors are delivered as kits containing all the necessary parts, including the crimp contacts. There are different cable connector kits available. The correct kit selection needs to be done according to wire gauge and polarity. Refer to Table 3 for further details.

Table 3

Wire size	Pin Connector Kits Male		Socket Connector Kits Female		Model Name		Cable Outside Diameter	Tightening Torque	Contact Type
	Polarity	P/N	Polarity	P/N	TÜV	UL			
2.5 mm ² / 14 AWG	-	1-2270024-3	+	1-2270025-3	PV4-S1yx*	PV4-S1yx*	UL: From 6.18 ± 0.1 mm up to 6.97 ± 0.2 mm IEC: From 5.8 mm up to 7.5 mm	UL: 2.0 ± 0.1 Nm (1.48 ± 0.07 ft-lb) IEC: 2.0 ± 0.1 Nm for cable Ø5.8 mm to Ø7.0 mm 2.4 ± 0.1 Nm for cable Ø ≥ 7.0 mm	Strip
4 mm ² / 12 AWG		1-2270024-1		1-2270025-1					
6 mm ² / 10 AWG		1-2270024-1		1-2270025-1					
2.5 mm ² / 14 AWG		2270024-3		2270025-3					
4 mm ² / 12 AWG		2270024-1		2270025-1					
6 mm ² / 10 AWG		2270024-1		2270025-1					

*** REMARK:**

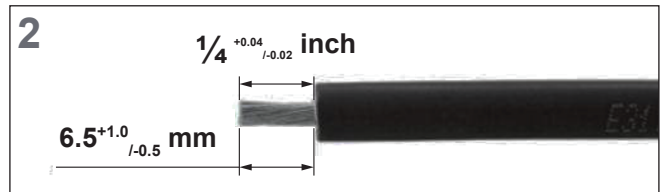
x= 2.5 ; 4.0 or 6.0 (cross section of PV-cable in mm²; y= F (Female) or M (Male))

NOTE

Use only cables as listed in product specification 108-137077 and application specification 114-137077. The wire sizes (mm² and AWG) and the cable outer diameters must be in accordance with the information provided in Table 2 and Table 3 above. This connector is suitable for use only with Class B and C stranded copper conductors (See NFPA NEC 70 Chapter 9, Table 10).

5.3.2 Stripping the wire

Refer to Application Specification 114-137077 for additional information.



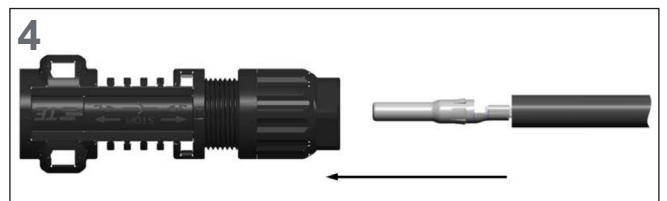
5.3.3 Crimping the contact

Insert the contact into the crimping locator until it stops. While holding the wire in place, squeeze the tool handles together until the ratchet releases.



5.3.4 Insertion of crimped contact

Insert the crimped contact wire lead of cable into the connector housing until an audible “click” sound is heard. Then slightly pull the contact back to check whether the contact is properly locked.



NOTE

Figure 4 shows insertion of the pin contact. Insertion of the socket contact follows the same assembly process.

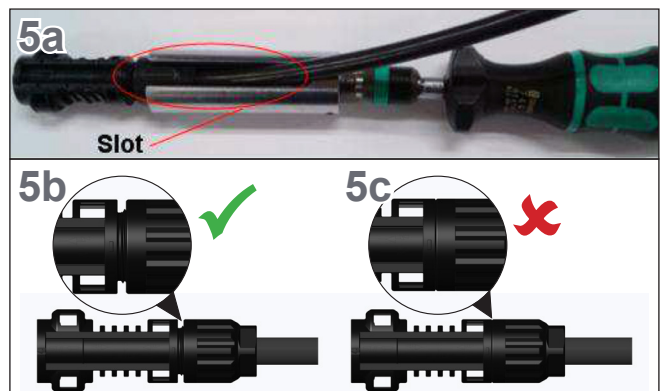
5.3.5 Tightening of the cable screw joint

Use the slotted 15 mm hexagonal head P/N 523229-4 (for use at a standard torque wrench adjustable version up to 3Nm) to tighten the cable screw joint, as shown in Figure 5a.

Cable screw joint tightening until thread end is forbidden (as shown in Figure 5c). Refer to Table 3 for hand tightening torque values.

After tightening, there is most of the time a typical gap (as shown in Figure 5b) between cable screw joint and connector housing.

Automatic assembly process should basically follow same rules (torque driven). The cable screw joint must not be tightened until thread end without torque consideration (Figure 5c). Please consult your TE sales representative if you need guidelines.



5.4 Connector mating

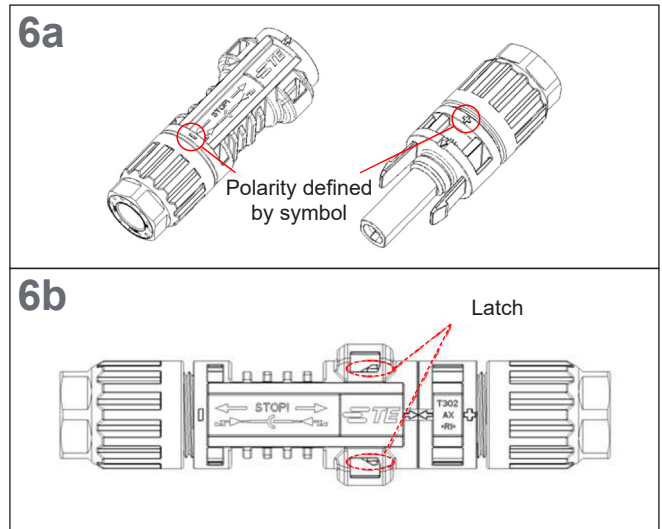
When mating with counterpart connectors, please ensure the following:

- It is only allowed to connect a plus (+) coded connector to a minus (-) coded connector. Connectors with identical polarity mark are not allowed to be coupled: it is forbidden the use of plus (+) to plus (+) or minus (-) to minus (-) connections.

NOTE

The polarity symbols Plus (+) or Minus (-) are marked on the connectors. Refer to Figure 6a.

- The mating of connectors is done by pushing connectors together until a clear audible click is heard. The clear audible clicking sound must be heard to ensure connectors have been correctly mated. When connectors are correctly connected, latches should be flushed against the edge of the connector. Refer to Figure 6b.



5.5 Un-mating the connectors

CAUTION

Do not disconnect under load: PV plug connections must not be disconnected while under load. They can be placed in a no load state by switching off the DC/AC converter or breaking the AC circuit.

Symbol "Do not disconnect under load" is marked on the connector.

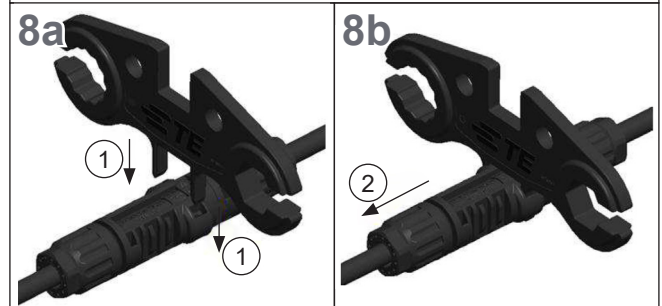
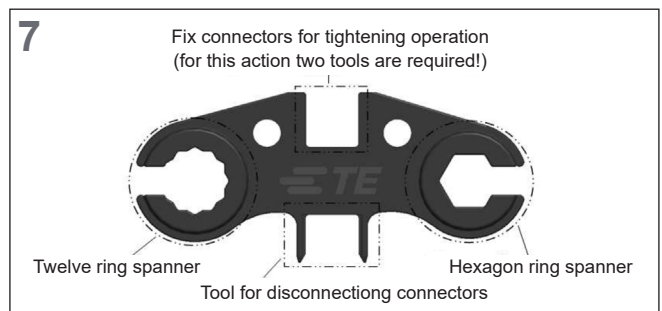
The hand application tool P/N 1971903-1 is available for disconnecting connectors.

The same tool is also used to tighten the cable screw joint nut for low-volume applications and repairs.

The tool is shown in Figure 7.

Please follow these steps for a correct disconnection:

- The locking mechanism can be opened by pressing latches with the hand application tool P/N 1971903-1. Refer to Figure 8a.
- Disconnect the connector by pulling the two halves apart while the hand application tool P/N 1971903-1 is inserted and kept into the locking mechanism and presses both latches. Refer to Figure 8b.



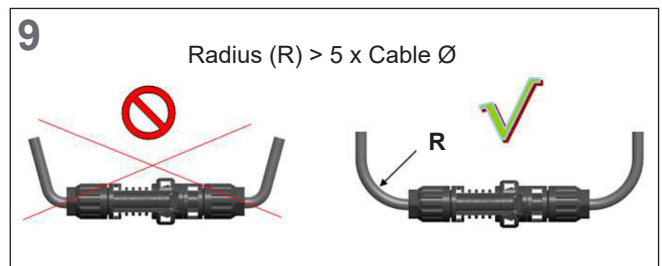
5.6 Handling of connectors and cables

CAUTION

The cable must not be bent or crushed on the direct exit of the cable screw joint.

A minimum bending radius $R \geq 5 \times$ Cable diameter must be maintained. Refer to Figure 9.

The cable must be routed in a way that the tensile stress on the conductor or connections is prevented.



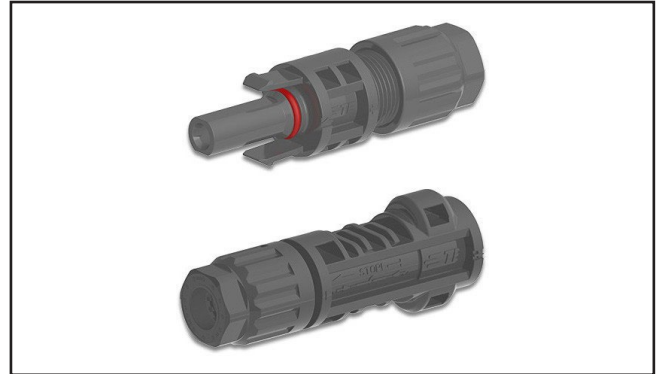
6. Revision table

Edition Date	Revision	comment
Feb 16 th 2022	A	First release of 411-137077; replace old template from Nov 2015
Feb 21 st 2023	B	Cable strands info added, notes update, remove hand tool for 14AWG/2.5mm ²
Apr 13 th 2023	C	Cable strands info and hand tightening torques updated

411-137077 – REV.C

EPP-3854-8/21

Solarlok PV4-S1 连接器



TE连接器及其配件

1. 产品介绍及安装注意事项

本说明书涵盖了Solarlok PV4-S1连接器的安装和拆卸。支持性文件和其他相关信息在本说明的第2页。

- 仅适用于铜绞线，请参阅第3部分和表2，了解适用导线截面和绞线股数
- 仅当严格按照该安装说明指定的方式安装时，连接器才能被视做符合UL 6703
- 产品通过UL 6703和IEC 62852认证
- 安装应符合CSA C22.1: 电气安装安全标准，加拿大电气规范，第一部分

2. 适用文件

下列文件构成本说明的一部分：

- 108-137077: 产品规格书，PV4-S/S1连接器
- 114-137077: 应用规格书，PV4-S/S1连接器
- 2270024: PV4-S1 连接器，母端，客户图纸
- 2270025: PV4-S1 连接器，公端，客户图纸

3. 最高运行条件

最高系统电压：	DC 1500V (IEC)
	DC 1500V (UL)
最大电流：	29 A (TÜV) for 2.5 mm ²
	35 A (TÜV) for 4 mm ²
	40 A (TÜV) for 6 mm ²
	35 A (UL) for 14 AWG
	40 A (UL) for 12 AWG
环境温度范围：	50 A (UL) for 10 AWG
	-40°C to 85°C

更多信息请查询：te.com/energy

请根据环境法规处理所有废物。



Tyco Electronics Raychem GmbH

TE Connectivity Ltd. Company Finsinger Feld 1

85521 Ottobrunn/Munich, Germany

Tel: +49-89-6089-0

Fax: +49-89-6096-345

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用户有责任确定安装方法在现场条件下的适用性。




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4. 工具

以下手动压接工具适用于该产品：

表 1

序号	TE 物料号	导线线径	工具描述	图片
1	4-1579002-2	2.5 / 4 / 6 mm ² 14 / 12 / 10 AWG	Solarlok剥线钳	
2	6-1579014-8	4 / 6 mm ² 12 / 10 AWG	手动压接工具套件	
3	4-1579016-7	4 / 6 mm ² 12 / 10 AWG	压模	

更多信息，请参阅应用规格书114-137077。

5. 安装程序

⚠ 警告

请勿在负载下断开产品。

使用经批准的断开设备是当前断开连接唯一的做法。连接器上标有“Do not disconnect under load(在负载下请勿断开)”。

在安装过程中，连接器应始终避免与硅密封剂（疝类物质）的接触。

5.1 一般注意事项

装配过程中的任何类型的污染（灰尘、潮湿、异物颗粒等）都会降低端子和连接器的性能。这会影响到连接器的密封和端子的压接效果。因此，清洁的装配环境至关重要。

⚠ 警告

安装之前，未对插的连接器必须始终受到保护，免受污染（如灰尘、潮湿、异物颗粒等）。不要让未对插（未受保护）的连接器暴露在环境中。

5.2 导线和端子的压接

连接器适配于不同线径导线的端子。每种线径的导线都应使用适配的工具。适用导线线径如下：

- 2.5 mm² / 14 AWG
- 4 mm² / 12 AWG
- 6 mm² / 10 AWG

每种线径导线适配的端子及其物料号参见下表2：

表2

导线线径	铜绞线股数	公端子料号	母端子料号
2.5 mm ² / 14 AWG	47	2270253 - x	2270252 - x
4 mm ² / 12 AWG	46 - 56	2270251 - x	2270226 - x
6 mm ² / 10 AWG	19, 78		

⚠ 警告

存放注意事项：在准备就绪之前，端子应一直保留在运输容器中，以防止存储环境污染可能对连接产生不利影响。

5.3 安装连接器

警告

在组装和安装操作期间，请勿使用任何油或润滑剂。
建议使用 TE Connectivity 防尘帽。更多相关详细信息，请参阅应用规格书 114-137077。

5.3.1 连接器选型

连接器作为套件提供，包含压接端子在内的所有必要部件。

在选用正确的套件时，需要根据导体线径和极性进行选择。详细选型表，请参阅表3。

表3

导线线径	连接器套件 公端		连接器套件 母端		型号名称		电缆外径OD	拧紧力矩	端子 包装类型
	极性	料号	极性	料号	TÜV	UL			
2.5 mm ² / 14 AWG	-	1-2270024-3	+	1-2270025-3	PV4-S1yx *	PV4-S1yx *	UL: 从6.18 ± 0.1 mm 至 6.97 ± 0.2) IEC: 从5.8 mm 至7.5 mm	UL: 2.0 ± 0.1 牛米 (1.48 ± 0.07 英尺 -磅) IEC: 2.0 ± 0.1 Nm , 适用于 Ø5.8 mm 至 Ø7.0 mm 的电缆 2.4 ± 0.1 Nm 电缆 Ø ≥7.0 mm	盘装
4 mm ² / 12 AWG		1-2270024-1		1-2270025-1					
6 mm ² / 10 AWG		1-2270024-1		1-2270025-1					
2.5 mm ² / 14 AWG		2270024-3		2270025-3					散装
4 mm ² / 12 AWG		2270024-1		2270025-1					
6 mm ² / 10 AWG		2270024-1		2270025-1					

* 标注:

x = 2.5 ; 4.0 or 6.0 (光伏电缆截面, 单位: mm²; y = F (母端) 或者 M (公端))

注意

仅适用于产品规格书108-137077和应用规范书 114-137077中列出的电缆。

导体截面 (mm² 和 AWG) 和电缆外径必须符合上文表2和表3中提供的信息。此连接器仅适用于B类和C类标准铜绞线 (参见NFPA NEC 70 第9章, 表10)。

5.3.2 电缆开剥

更多信息请参阅应用规范书114-137077。

5.3.3 端子压接

将端子插入压接定位器，直到其无法继续插入。
在电缆固定到位的同时，按压工具手柄，直到棘齿松开。

5.3.4 插入压接端子

将压接好的端子引线插入连接器外壳，直到听到“咔哒”声。然后稍微向后拉动端子，以检查端子是否正确锁定。

注意

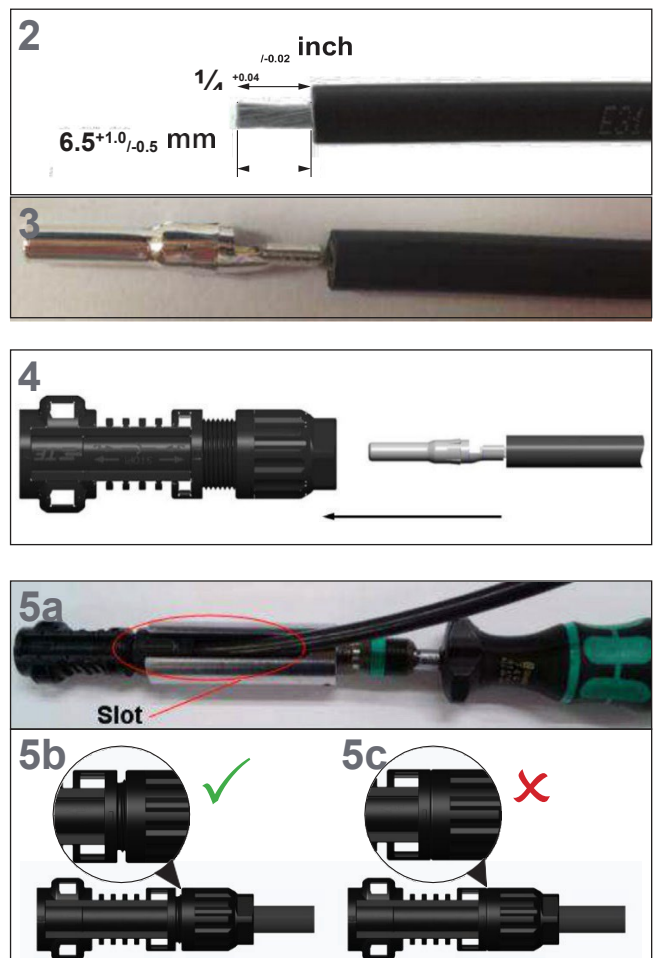
图4显示了公端子的插入情况。母端子的插入遵循相同的组装过程。

5.3.5 拧紧连接器螺母

使用15mm的开槽六角工具物料号 523229-4 (适用于标准扭矩扳手，最大可达3Nm可调节版本) 拧紧连接器螺母，如图5a所示。

严禁扭矩过大，出现螺母与连接器外壳之间无间隙的情况 (如图5c)。对于手动拧紧扭矩，请参阅表 3。拧紧后，螺母和连接器外壳之间应存在间隙 (如图5b所示)。

自动装配过程应基本遵循相同的规则 (扭矩驱动)。严禁出现不控制扭矩，而导致螺母和连接器外壳之间无间隙的情况 (如图5c)。如果您需要指南，请咨询您的 TE 销售人员。



5.4 连接器互插

连接器对插时，请确保以下事项：

- 只允许将正极(+)连接器对插到负极(-)连接器。
不允许具有相同极性标记的连接器对插：禁止使用正极(+)到正极(+)或负极(-)到负极(-)对插。

注意

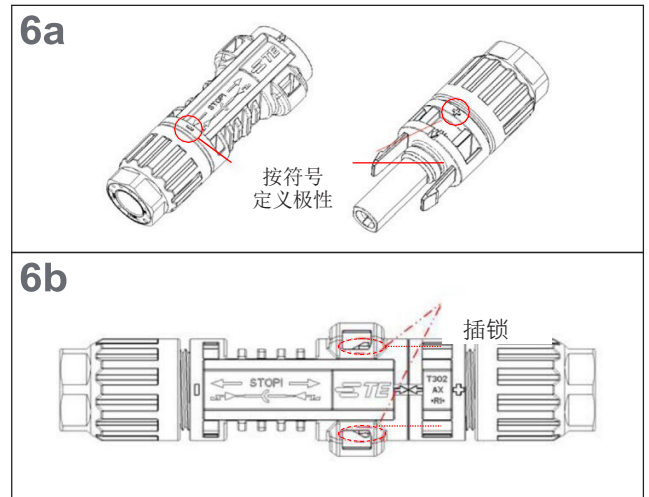
连接器上标有极性符号positive(+)或negative(-)。

请参阅图6a。

- 连接器的对插是通过将连接器推到一起直到听到清晰的“咔哒”声来完成的。必须听到清晰的“咔哒”声以确保连接器已正确连接。

正确对插连接器后，插锁应与连接器的边缘齐平。

请参阅图6b。



5.5 连接器的拆卸

警告

请勿在负载下断开连接

在拔下连接器之前，请切断电气负载。

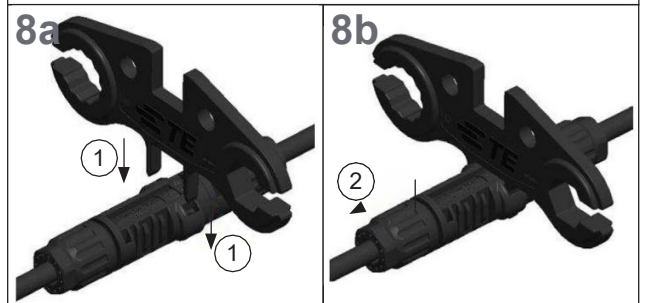
连接器上标有“Do not disconnect under load(请勿在负载下断开)”。

手动操作工具 P/N 1971903-1 可用于拆卸连接器。
该工具还可用于拧紧螺母，以进行小批量应用和维修。该工具如图7所示。

请按照以下步骤正确断开连接：

- 锁定的连接器可以通过用手动操作工具物料号 1971903-1 按压插锁来解锁。请参阅图8a。
- 当插入手动操作工具物料号 1971903-1按下两个插锁并将其固定在锁件中时，通过拉开公母连接器两边以断开连接。

相同的手动操作工具物料号 1971903-1可用于拧紧操作，如图9所示。



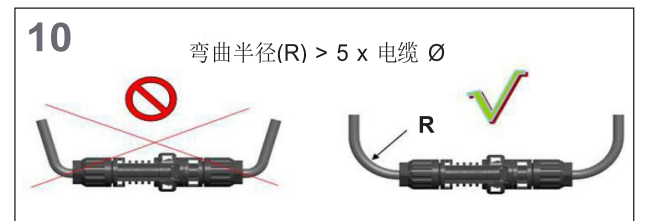
5.6 连接器和电缆的处理

警告

电缆不得在螺母的直接出口处弯曲或挤压。

必须保持最小弯曲半径 $R \geq 5x$ 电缆直径。请参阅图 10。

电缆的布线方式必须防止导体或连接器上的拉伸应力。



6. 修订表

版本日期	版本号	注释
2022-02-16	A	411-137077的首次发布，以替换2015年11月的旧版本
2023-02-21	B	添加了电缆绞线信息，更新注释，移除14AWG/2.5mm ² 的手动工具
2023-04-13	C	更新了电缆绞线信息和手动拧紧扭矩