

PowerLok™ 10.0 二/三芯弯头插头组装规范

PowerLok™ 10.0 2/3POS 90D Plug Assembly Manual



| 产品类型 Product Type | | 插头类型 Plug Type | | 键位&颜色 Key & Color | | 系列 Series | | 线束尺寸 Cable Size | |
|----------------------|-----------|-------------------|--|----------------------|------------------------------------|--------------|--|--------------------|-------------------|
| PL | PowerLok™ | 28 | 插头连接器， 弯头，非屏蔽 Plug connector, right angle, shielding | 2X | 2芯，X 键位 橙色 2POS, Key "X" Orange | 300 | 300系列 300 Series | 35 | 35mm ² |
| | | | | 2Y | 2芯，Y 键位 黑色 2POS, Key "Y" Black | | | 50 | 50mm ² |
| | | | | 3X | 3芯，X 键位 橙色 3POS, Key "X" Orange | 301 | 带高压互锁 的300系列 300 Series With HVIL | 70 | 70mm ² |
| | | | | 3Y | 3芯，Y 键位 黑色 3POS, Key "Y" Black | | | | |

安装步骤 Assembly Instruction

- 步骤1：取出连接器，如图示拆开零件**
Step1: Take out the connector and take it apart as the picture shown below



- ① 尾端扣盖 Tail Cap ×3
- ② 橡胶密封圈 Rubber Seal ×3
- ③ 壳体部件 Housing Shell ×1
- ④ O型圈 O-ring ×3
- ⑤ 一套绝缘套 A set of Insulators ×3
- ⑥ 端子组件 Terminal Component ×3
- ⑦ 塑料挡板 Baffle ×3

注意：图示为三芯配件，二芯的配件数量为：二芯壳体部件×1，①尾端扣盖×2，②橡胶密封圈×2，④O型圈×2，⑤一套绝缘套×2，⑥端子组件×2，⑦塑料挡板×2，二芯安装方式与三芯安装方法相同

Note: Picture above shows all parts of 3pos connector. Parts of 2pos connector are: 2pos housing shell ×1 ①tail cap×2, ②rubber seal×2, ④O-ring×2, ⑤Insulators×2, ⑥terminal component ×2, ⑦baffle×2, 2pos connector has the same assembly method as 2pos connector

- 步骤2：选取合适线缆（参考手册最后的附录），按照表1尺寸剥离绝缘皮和外皮**
Step2: Select the right cable(refer to the appendix), then prepare the cable according to the sketch and Table 1 below

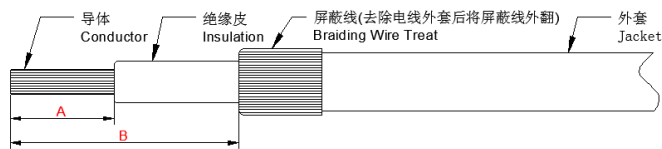


表1：剥皮尺寸
Table 1: Strip length

| 线材尺寸 Cable Size | A (mm) | B (mm) |
|--------------------|--------|--------|
| 35mm ² | 18±1 | 25 ±1 |
| 50mm ² | 18±1 | 25 ±1 |
| 70mm ² | 18±1 | 25 ±1 |

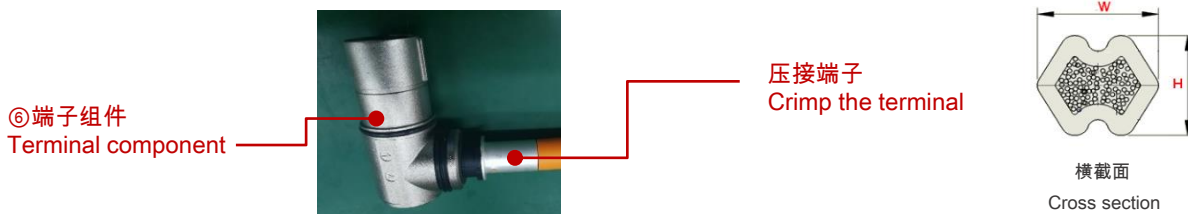
步骤3：按图示将线缆依次穿过尾端①扣盖、②橡胶密封圈、③壳体部件、④O型圈

Step3 : Take 1pcs of ① end cap, ②rubber seal, ③ housing shell and ④O- Ring and make them through the cable in the right order as the picture shown below



步骤4：取1pcs的⑥ 端子组件自左端穿上线缆，并压接在其上(规格参照手册最后的附录,附录数据仅供参考)

Step4 : Take 1pcs of ⑥terminal component and crimp it with the cable conductor, as the picture shown below.
(please refer to the appendix at the end of this manual for more crimping information)



端子压接高宽度尺寸，“W”为压接宽度，“H”为压接高度（相应线径的压接高宽度尺寸及拉力标准参考手册后的附录）
Terminal crimping quality depends on 2 parameters: "W" crimping width and "H" crimping height.(Please refer to the appendix at the end of this manual for details)

(1) 建议使用附录中的线材，如果要使用客户定制线材，请联系当地销售，让他们提供延伸的产品

Cables written in the appendix are highly recommended for crimping, please contact our local sales for help if you want to use other cables out of this table

(2) 客户需要重新确认压接区域横截面和拉力测试，这两项达到压接的质量标准

A good crimping process is determined by 3 factors: W、H and tensile test result, please confirm these 3 targets specified are met after crimping

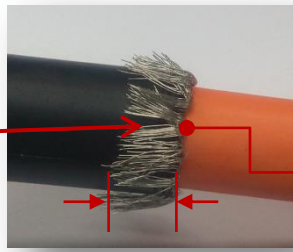
(3) 横截面仅供参考（其他举例：等边六变形的横截形状），客户负责采购压接工具或刀模

Cross section shape is only for reference(other possibilities: hexagonal section), all crimping tools needed are supposed to be prepared by customers

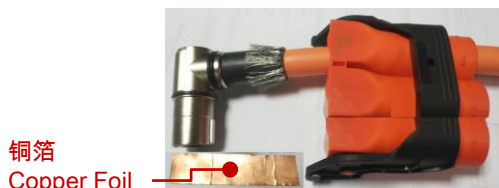
步骤5：将绝缘筒安装在端子压紧区，安装时注意绝缘套凸台方向，然后将线缆上的O型圈套在绝缘套上的凹槽处

Step5 : Take 1 pair of ⑤insulators and buckle up together on ⑥terminal component then bring ④O-ring into the groove of ⑤insulators



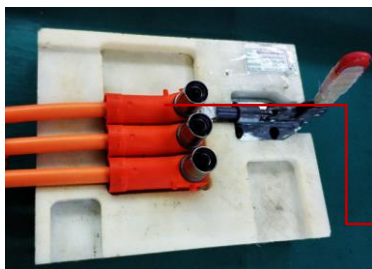
步骤6：屏蔽处理**Step6：Shielding braid processing****6-1** 将屏蔽线捋顺翻回至O型圈外，并修剪保留长度约20mm**6-1** Take all braid outside of ⑤insulators and cut it into a length about 20mm屏蔽线
Braiding wire

20 mm (ref)

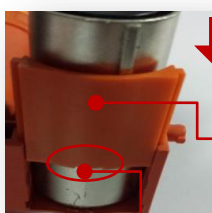
6-2 取尺寸约120mm*25mm的铜箔**6-2** Prepare a piece of copper foil of 120mm*25mm**6-3** 将铜箔紧紧包裹住屏蔽线，捏紧尾部**6-3** Wrap the braid tightly with the copper foil as the shown below铜箔
Copper Foil

备注：根据线材类型变化，选择使用铜箔的用量。厚屏蔽结构的线不要求包铜箔

Note：Copper foil can vary depending on different cables, copper foil wrapping may not be necessary for thick Shielding layers

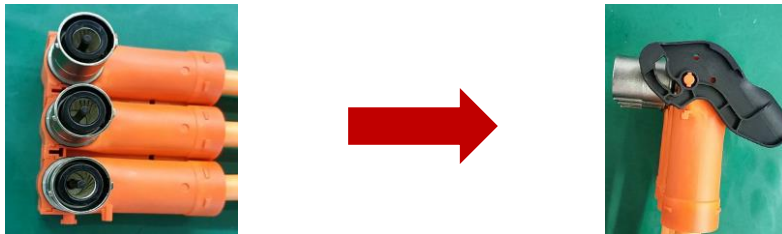
步骤7：组装塑料挡板**Step7：Baffle assembling****7-1** 拆下摇杆，将产品放入治具（T0162）中，缓慢推动快速夹顶住端子组件⑥，使端子组件⑥与壳体③无缝隙
Remove the Press Latch，put the product into the fixture（T0162），Slowly push the fast clamp against the terminal component ⑥，so that the terminal component ⑥ and the shell ③ have no gaps无缝隙
No gap**7-2** 将塑料挡板缺口朝下，预插入壳体③中，然后松开快速夹，用手将塑料挡板完全按到位

Pre-Insert the baffle into the shell ③，then release the fast clip and put it completely in place by hand

安装方向
Install direction⑦ 塑料挡板
Baffle缺口
Gap

步骤8 按照以上步骤将其余塑料挡板安装完，然后重新安装摇杆

Step8 : Follow the steps above to assemble other baffles , then reassemble the press latch



步骤9：按照图示将线缆上的橡胶密封圈及尾端扣盖装配到位

Step9 : Push ②rubber seal and ①tail cap to buckle them up together as shown below



步骤10：建议客户参考下面的测试参数,对线束进行绝缘电阻测试和耐压测试

Step10 : Insulation resistance and dielectric withstand voltage tests are obligated to be done according to below test parameters to guarantee the good electric performance of the whole harness

10-1 绝缘电阻测试

10-1 Insulation Resistance Test

| 位置 Positions | 测试电压/时间 Test Voltage/Time | 绝缘电阻 Insulation Resistance |
|---------------------------------|------------------------------|-------------------------------|
| 电缆到壳体 Cable(power) to shell | 1000 VDC / 5S | > 500 MΩ |
| 电缆到高压互锁 Cable(power) to HVIL | 1000 VDC / 5S | > 500 MΩ |
| 高压互锁到壳体 HVIL to shell | 1000 VDC / 1S | > 100 MΩ |

10-2 耐压测试

10-2 Dielectric Withstand Voltage Test

| 位置 Positions | 测试电压/时间 Test Voltage/Time | 漏电流 Leakage Current |
|-----------------------------------|------------------------------|------------------------|
| 电缆芯线到壳体 Cable(power) to shell | 5000 VDC / 10S | <5mA |
| 电缆芯线到高压互锁 Cable(power) to HVIL | 5000 VDC / 10S | <5mA |
| 高压互锁到壳体 HVIL to shell | 500 VDC / 1S | <5mA |

10-3 测试说明:

警告:建议的电气测试及其参数应根据终端应用要求进行审查，以确保安全性并防止损坏其他部件。提供的参数是基于PowerLok连接器和其峰值1000VDC额定。提供的测试参数可能超出电缆组件或设备上使用的其他部件/材料的限制。

10-3 Test note:

caution: Recommended electrical tests and their parameters should be reviewed against end application requirements to ensure safety and to prevent damage to other components. Parameters provided are based on the PowerLok connectors and their peak 1000VDC rating. Test parameters provided may exceed the limit of other components/materials used on the cable assembly or device.

| 产品类型 Product Type | | 插头类型 Plug Type | | 键位&颜色 Key & Color | | 系列 Series | | 线束尺寸 Cable Size | |
|----------------------|-----------|-------------------|--|----------------------|------------------------------------|--------------|--|--------------------|-------------------|
| PL | PowerLok™ | 58 | 插头连接器， 弯头，非屏蔽 Plug connector, right angle, Unshielding | 2X | 2芯，X 键位 橙色 2POS, Key "X" Orange | 300 | 300系列 300 Series | 35 | 35mm ² |
| | | | | 2Y | 2芯，Y 键位 黑色 2POS, Key "Y" Black | | | | |
| | | | | 3X | 3芯，X 键位 橙色 3POS, Key "X" Orange | 301 | 带高压互锁 的300系列 300 Series With HVIL | 50 | 50mm ² |
| | | | | 3Y | 3芯，Y 键位 黑色 3POS, Key "Y" Black | | | | |

安装步骤 Installation Steps

步骤1：取出连接器，如图示拆开零件

Step1: Take out the connector and take it apart as the picture shown below



- ① 尾端扣盖 Tail cap ×2
- ② 橡胶密封圈 Rubber seal ×2
- ③ 壳体部件 Housing shell ×1
- ④ O型圈 O-ring ×2
- ⑤ 一套绝缘套 A set of Insulators ×2
- ⑥ 端子组件 Terminal component ×2
- ⑦ 塑料挡板 Baffle ×2

注意：图示为二芯配件，三芯的配件数量为：三芯壳体部件×1 ①尾端扣盖 ×3，②橡胶密封圈 ×3，④O型圈 ×3，⑤一套绝缘套 ×3，⑥端子组件×3，⑦塑料挡板×3，三芯安装方式与二芯安装方法相同

Note: Picture above shows all parts of 2pos connector. Parts of 3 pos connector are: 3pos housing shell ×1, ①tail cap ×3, ②rubber seal ×3, ④O-ring ×3, ⑤A set of Insulators ×3, ⑥Terminal component ×3, ⑦Baffle×3, the installation method of three POS is the same as that of 2pos

步骤2：选取合适线缆(参考手册最后的附录)，按照表2尺寸剥离绝缘皮和外皮

Step2: Select the right cable(refer to the appendix), then prepare the cable according to the sketch and Table 2 below

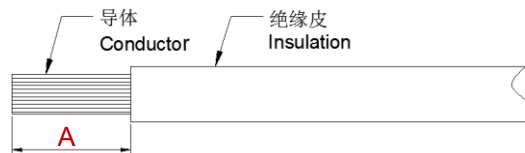
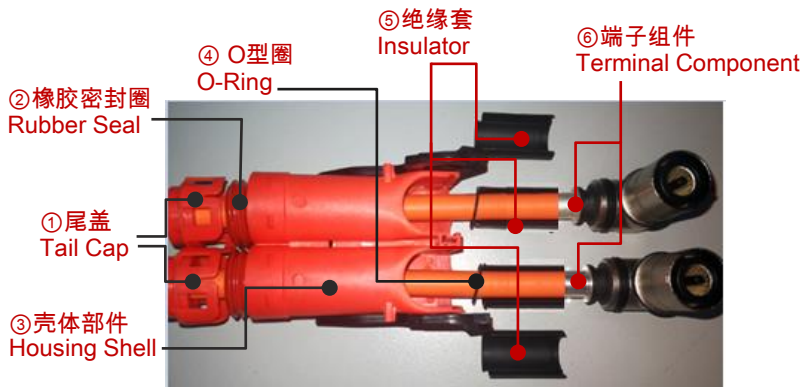


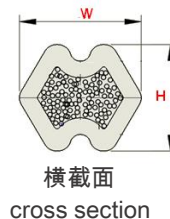
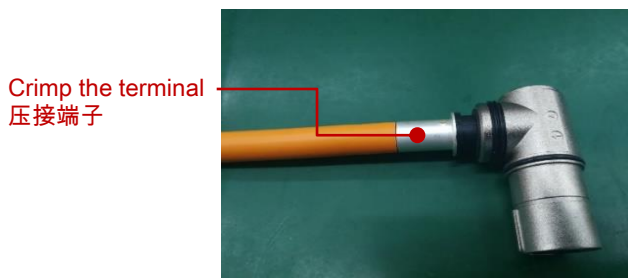
表2: 剥皮尺寸
Table 2: Strip length

| 线材尺寸 Cable Size | A (mm) |
|--------------------|--------|
| 35mm ² | 18±1 |
| 50mm ² | 18±1 |
| 70mm ² | 18±1 |

步骤3： 自右端依次穿①尾盖,②橡胶密封圈,③壳体部件,④O-型圈,⑤绝缘套到线缆上, 最后线缆右端穿⑥端子组件
Step3： Make ①tail cap, ②rubber seal, ③housing shell, ④O-ring, ⑤insulators through the cables in the right order then insert cable conductor into ⑥ terminal component as shown below



步骤4： 压接端子(规格参照手册最后的附录,附录数据仅供参考)
Step4： Crimp ⑥terminal component with the cable conductor, as the picture shown below.(please refer to the appendix at the end of this manual for more crimping information)



端子压接高宽度尺寸,“W”:为压接宽度,“H”为压接高度(相应线径的压接高宽度尺寸及拉力标准参考手册后的附录)
 Terminal crimping quality depends on 2 parameters: "W" crimping width and "H" crimping height.(Please refer to the appendix at the end of this manual for details)

(1) 建议使用附录中的线材,如果要使用客户定制线材,请联系当地销售,让他们提供延伸的产品
 Cables written in the appendix are highly recommended for crimping, please contact our local sales for help if you want to use other cables out of this table

(2) 客户需要重新确认压接区域横截面和拉力测试,这两项达到压接的质量标准
 A good crimping process is determined by 3 factors: W、H and tensile test result, please confirm these 3 targets specified are met after crimping

(3) 横截面仅供参考(其他举例:等边六变形的横截形状),客户负责采购压接工具或刀模
 Cross section shape is only for reference(other possibilities: hexagonal section), all crimping tools needed are supposed to be prepared by customers

步骤5： 依次装回绝缘套和O型圈,用力推动插头插入到外壳底部
Step5： Buckle up ⑤insulators and bring ④O-ring into the groove of ⑤insulators as shown below. Push ③housing shell to the far end of ⑥terminal component.



步骤6：组装塑料挡板**Step6：Baffle assembling**

6-1 拆下摇杆，将产品放入治具（T0162）中，缓慢推动快速夹顶住端子组件⑥，使端子组件⑥与壳体③无缝隙。

6-1 Remove the Press Latch, put the product into the fixture(T0162). Slowly push the fast clamp against the terminal component ⑥, so that the terminal component ⑥ and the shell ③ have no gaps



6-2 将塑料挡板缺口朝下，预插入壳体③中，然后松开快速夹，用手将塑料挡板完全按到位

Pre-Insert the baffle into the shell ③, then release the fast clip and put it completely in place by hand



* The fixture is for reference only. It's also available for purchasing upon request. Please contact your local Amphenol authorized distributors, RSM or ATPI for purchasing.

步骤7 按照以上步骤将其余塑料挡板安装完，然后重新安装摇杆

Step7：Follow the steps above to assemble other baffles, then reassemble the press latch

**步骤8：安装橡胶密封圈和尾盖**

Step8：Push ②rubber seal into ③housing shell and buckle up ①tail cap on ③housing shell



步骤9：建议客户参考下面的测试参数,对线束进行绝缘电阻测试和耐压测试

Step9：Insulation resistance and dielectric withstand voltage tests are obligated to be done according to below test parameters to guarantee the good electric performance of the whole harness

9-1 绝缘电阻测试

9-1 Insulation Resistance Test

| 位置 Positions | 测试电压/时间 Test Voltage/Time | 绝缘电阻 Insulation Resistance |
|---------------------------------|------------------------------|-------------------------------|
| 电缆到壳体 Cable(power) to shell | 1000 VDC / 5S | > 500 MΩ |
| 电缆到高压互锁 Cable(power) to HVIL | 1000 VDC / 5S | > 500 MΩ |
| 高压互锁到壳体 HVIL to shell | 1000 VDC / 1S | > 100 MΩ |

9-2 耐压测试

9-2 Dielectric Withstand Voltage Test

| 位置 Positions | 测试电压/时间 Test Voltage/Time | 漏电流 Leakage Current |
|-----------------------------------|------------------------------|------------------------|
| 电缆芯线到壳体 Cable(power) to shell | 5000 VDC / 10S | <5mA |
| 电缆芯线到高压互锁 Cable(power) to HVIL | 5000 VDC / 10S | <5mA |
| 高压互锁到壳体 HVIL to shell | 500 VDC / 1S | <5mA |

9-3 测试说明:

警告:建议的电气测试及其参数应根据终端应用要求进行审查，以确保安全性并防止损坏其他部件。提供的参数是基于PowerLok连接器和其峰值1000VDC额定。提供的测试参数可能超出电缆组件或设备上使用的其他部件/材料的限制。

9-3 Test note:

caution: Recommended electrical tests and their parameters should be reviewed against end application requirements to ensure safety and to prevent damage to other components. Parameters provided are based on the PowerLok connectors and their peak 1000VDC rating. Test parameters provided may exceed the limit of other components/materials used on the cable assembly or device.

附录APPENDIX

线缆压接的参考规范
Reference specification for cable crimping

| 线缆类型 Cable Type | 电线尺寸 Cable Size | 导体结构 (mm) Conductor | 导体外径 (mm) Conduct or OD | 电线外径(mm) Wire OD | 压接高度 H(mm) Crimping height | 压接宽度 W(mm) Crimping Width | 参考保持力 Retention Force | 刀模编号 Crimping Tool No. |
|----------------------------|--------------------|---------------------------|-------------------------------|---------------------|----------------------------------|---------------------------------|--------------------------|---------------------------|
| 屏蔽线 Shielding cable | 35mm ² | 3071*0.12 | 8.10 | 14.50±0.50 | 9.5±0.3 | 11.0±0.5 | 2300N | L095109150D35 |
| | 35mm ² | 273*0.41 | 7.9 | 12.7±0.3 | 9.5±0.3 | 11.0±0.5 | 2300N | L095109150D35 |
| | 50mm ² | 4403*0.12 | 9.50 | 17.00±0.50 | 11.5±0.3 | 13.3±0.5 | 2800N | L1145150150D50 |
| | 50mm ² | 385*0.41 | 9.4 | 14.9±0.3 | 12.2±0.3 | 13.3±0.5 | 2800N | L119135150D50 |
| | 70mm ² | 3876*0.15 | 11.80 | 19.50±0.50 | 13.0±0.3 | 15.0±0.5 | 3400N | L134152150D70 |
| | 70mm ² | 360*0.51 | 11.6 | 17.0±0.3 | 13.1±0.3 | 15.2±0.5 | 3400N | L132153150D70 |
| 非屏蔽线 Un-shielding cable | 35mm ² | 3071*0.12 | 8.1 | 11.50±0.3 | 9.5±0.3 | 11.0±0.5 | 2300N | L095109150D35 |
| | 50mm ² | 4403*0.12 | 9.5 | 13.60±0.3 | 11.5±0.3 | 13.3±0.5 | 2800N | L1145150150D50 |
| | 70mm ² | 3876*0.15 | 11.8 | 15.50±0.3 | 13.0±0.3 | 15.0±0.5 | 3400N | L134152150D70 |



Amphenol Technical Products International provides the above product specifications for the standard PowerLok™ series of connectors to assist users in identifying the correct product for the system to which the connectors may be applied. Specifications are subject to change without notice. Contact your nearest Amphenol Corporation Sales Office for the latest specifications. All statements, information and data given herein are believed to be accurate and reliable but are presented without guarantee, warranty, or responsibility of any kind, expressed or implied. Statements of suggestions concerning possible use of our products are made without representation or warranty that any such use is free of patent infringement and are not recommendations to infringe any patent. Specifications are typical and may not apply to all connectors. Note that these specifications are derived from relevant global standards used in the automotive and industrial transportation markets, but they are not a substitute for system level design validation testing, which is the sole responsibility of the system designer and/or end user.

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