SIEMENS

SIVACON S4 / S8

Design-verified S4/S8 low-voltage switchboard — Electrical and mechanical cubicle joint, busbar on top

通过了型式试验的低压开关设备 S4/S8 — 机柜的电气和机械连接，上方母线

Operating Instructions / 操作说明 Order No. / 订货号 : 8PQ9800-8AA62

ENGLISH

Read and understand these instructions before installing, operating or maintaining the equipment.

⚠ DANGER

Hazardous voltage.
Will cause death or serious injury.
Turn off and lock all power supplying this device before working on this device.

CAUTION

Reliable functioning of the equipment is only ensured with components from original manufacturer!

中文版

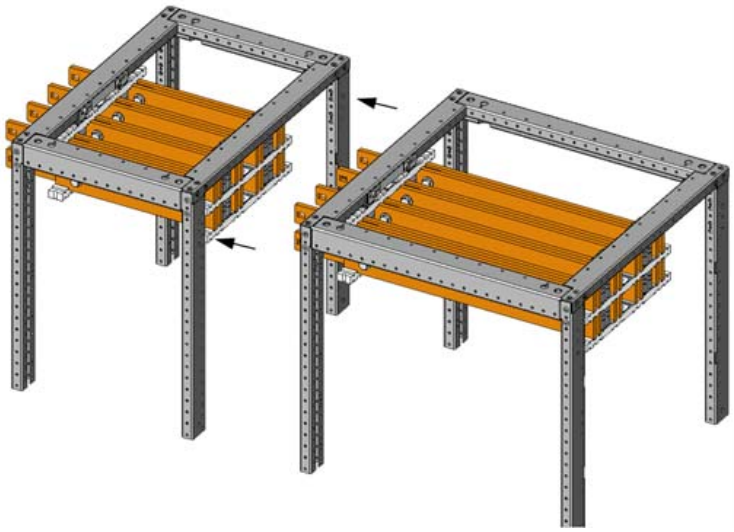
安装、操作或者维护设备之前必须阅读并且理解本说明书。

⚠ 危险

危险电压。
生命危险或者严重伤害危险。
作业开始之前应切断设备和器件的电源。

小心

只有原始制造商的部件才能保证设备可靠发挥作用！



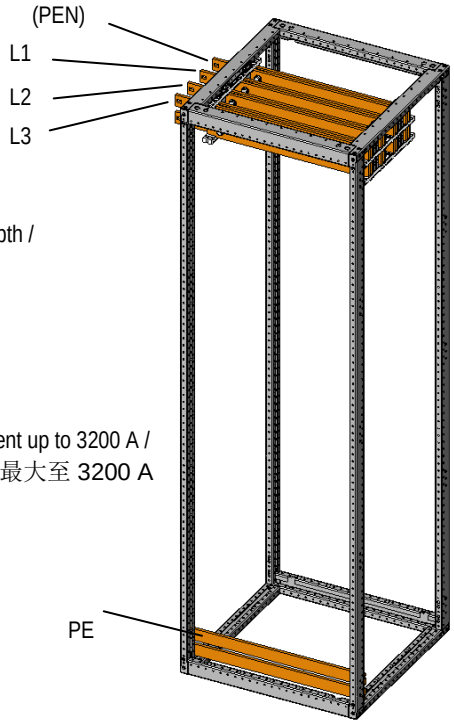
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1 Horizontal busbar design

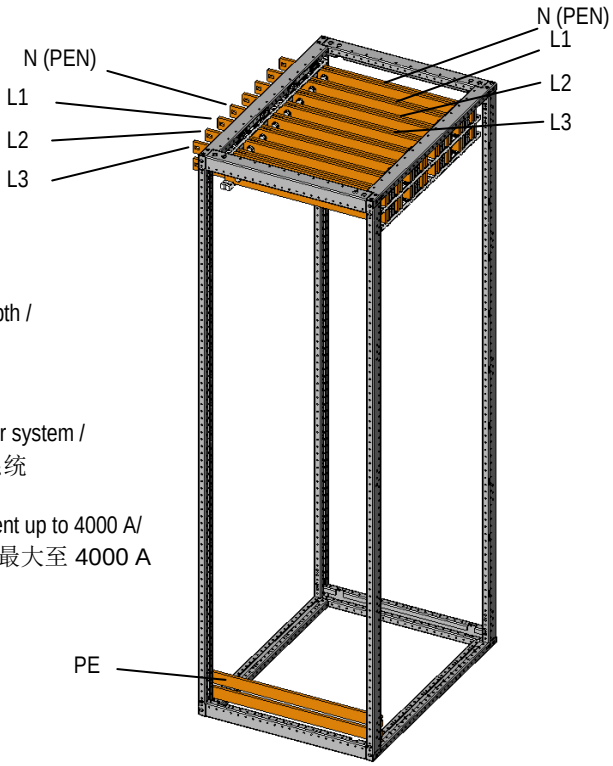


Cubicle depth /
机柜深度

400 mm
500 mm
600 mm

Rated current up to 3200 A /
额定电流最大至 3200 A

1 母线系统结构



Cubicle depth /
机柜深度

800 mm
Dual busbar system /
双 母线系统

Rated current up to 4000 A/
额定电流最大至 4000 A

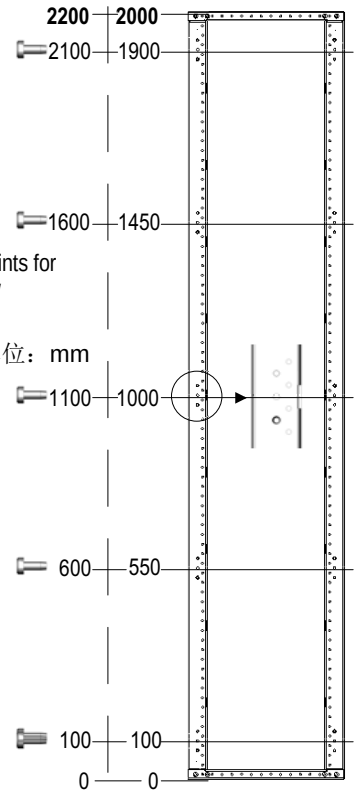
2 Mechanical cubicle joint

2 机柜的机械连接

2.1 IP30 to IP55

2.1 IP30 至 IP55

cubicle height in mm /
机柜高度，单位：mm

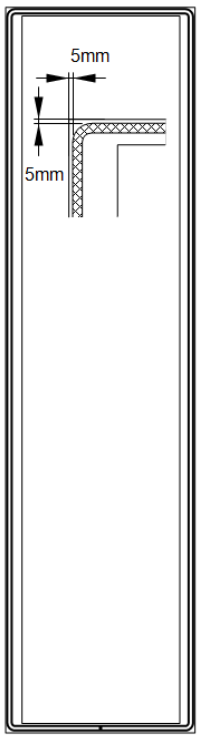


Position of the cubicle joints for longitudinal joints in mm/
纵向连接的
母线连接点位置，单位：mm

2.2 IP 42, IP54, IP55 (additionally)

2.2 防护等级 IP42、 54 和 IP55 （附加）

Attach sealing tape around the entire circumference of the frame of one of the cubicles to be joined /
围绕待连接机柜的一个机架安装密封条



Total number of bolt connections
Up to 10, each of which can be screwed in 3 different ways

When the system is installed with its rear facing the wall so that only front access is possible according to the Operating Instructions 8PQ9800-8AA61, it may not be at all possible to screw in the bolts to the rear spar of the frame.

Sealing the cubicle joint
Sealing tape IP42, 54 / 55:
for cubicle depths up to 800 mm 1 x 8PQ1000-8AA05
for cubicle depths from 1,000 mm 1 x 8PQ1000-2AA04

Sequence
1. Remove the transport protection around the cubicle of the transport unit to be added.
2. Align the additional transport unit with the one already standing.
3. Push the additional transport unit against the existing one.
4. Assemble the mechanical and electrical cubicle joint as shown below

Possible ways to screw in the mechanical cubicle joint bolts
Select the desired way to screw in the bolts from the examples shown below. Additional mechanical joints are permissible on the horizontal top and bottom profiles of cubicles with depths of 800 mm and 1000 mm.

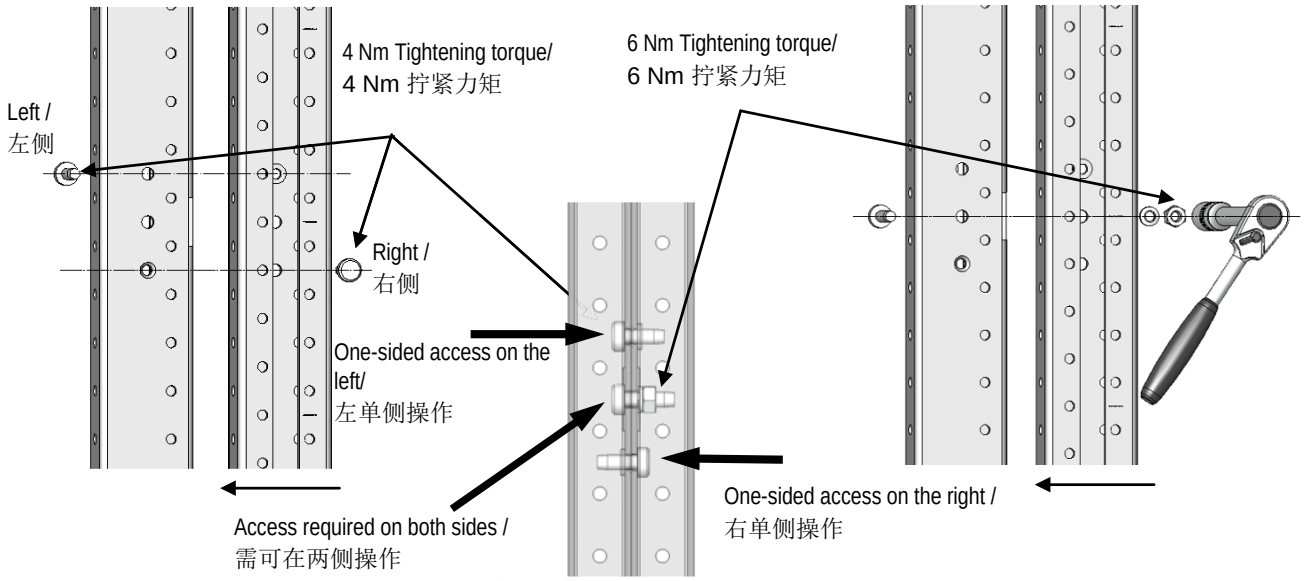
螺栓连接总数
最多 10 个，各有 3 种螺栓连接方式

在将设备背面靠墙进行墙壁安装时 （按照操作说明 8PQ9800-8AA61 只能从正面操作），后端机架横梁只能在特定条件下进行螺栓连接，或者无法进行。

机柜连接的密封
IP42、 54 / 55 密封条：
适用最大机柜深度 800 mm 1 x 8PQ1000-8AA05
适用最小机柜深度 1000 mm 1 x 8PQ1000-2AA04

流程
1. 移除待传送运输单元机柜周围的运输保险装置。
2. 使待传送运输单元对齐直立的设备部件。
3. 将待传送运输单元沿箭头方向朝直立的设备部件推近。
4. 按照下图所示完成机柜的机械和电气连接。

其它螺栓连接方式
图中显示螺栓连接的方式和方向。可从所显示的方式中选择。当机柜深度为 800 mm 和 1000 mm 时可以在水平的顶部和底部型材内进行附加螺栓连接。

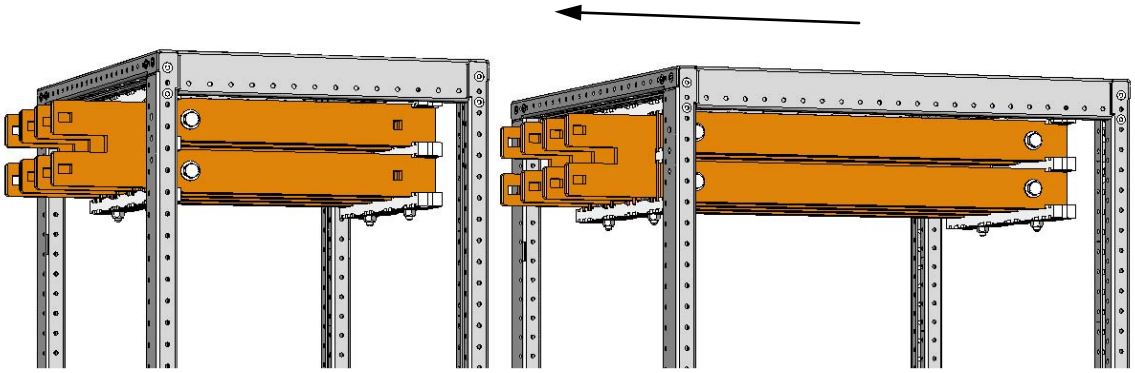


Bolting together using M 6 self-tapping screws from the left or right side / 从左侧或右侧使用 M 6 开槽螺栓进行螺栓连接

Bolting together using through-holes together with M 6 nut/screw from both sides / 从两侧使用 M 6 螺母 / 螺栓在通孔中进行螺栓连接

3 Electrical cubicle joint

3 机柜的电气连接



DANGER

Before extending an existing switchboard, ensure the latter is isolated and observe the relevant safety rules.

危险

请在扩展现有设备之前须确保，该设备已接通并且重要的安全规则已遵循

WARNING

The supplied fastening parts for bolting the busbars must be used.

Bolts (screws) of strength class 8.8, nuts of strength class 8 and conical spring washers acc. to DIN 6796 ensure the necessary contact forces if the correct torques have been applied.

Inadmissible fastening parts or deviations from the required tightening torques to lower or higher values lead to a considerable reduction of current carrying capacity due to low contact forces or damaged bolts.

Any resultant overheating can lead to component failure and an arc fault. An arc fault combined with open enclosure parts can result in death or serious injury. High property damages will be unavoidable.

警告

针对母线的螺栓连接须使用随附的紧固件。

强度等级 8.8 的螺栓、强度等级 8 的螺母和符合 DIN 6796 标准的碟形垫圈在遵循拧紧力矩的同时确保了必要的接触压力。使用不允许的紧固件或拧紧力矩与规定要求存在偏差（低于或超出），会导致预应力过小或螺栓受损，进而导致电流承载能力大大降低。

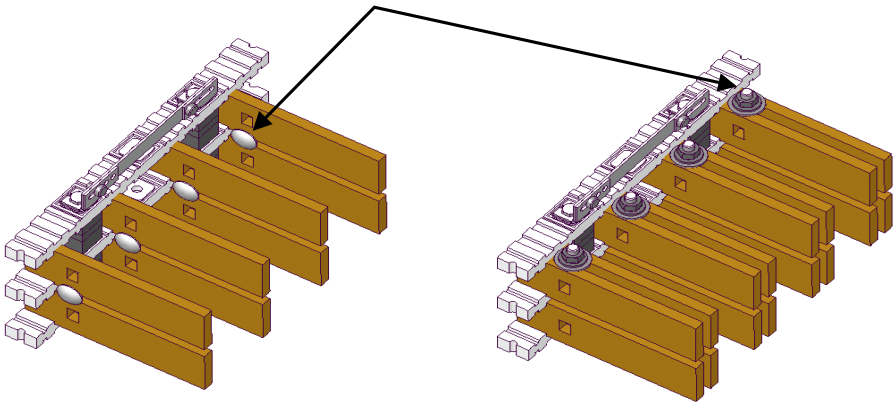
由此导致的过热会进而导致

部件故障及故障电弧。如果在外壳部件打开时产生故障电弧，则可能导致死亡或者严重的人身伤害。不可避免地带来严重的财产损失。

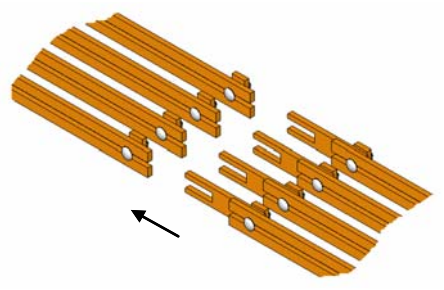
3.1 Horizontal busbar system at top

3.1 母线系统上方位置

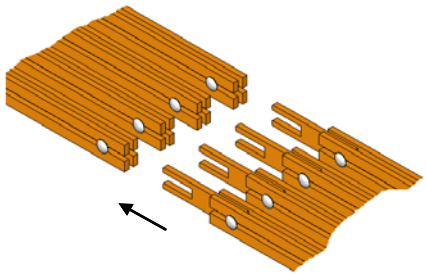
Bolting for transportation lock of busbars with 2 or 4 conductors /
2 和 4 个分导体的母线的运输保险装置的螺栓连接



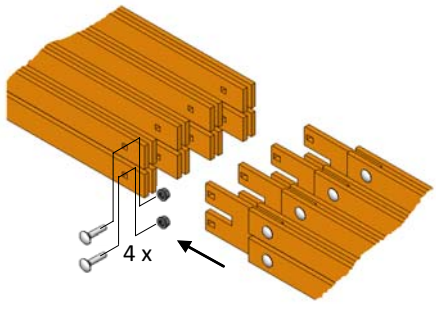
Busbars 2 conductors
2 个分导体的母线
2 x 20 mm x 10 mm
2 x 30 mm x 10 mm



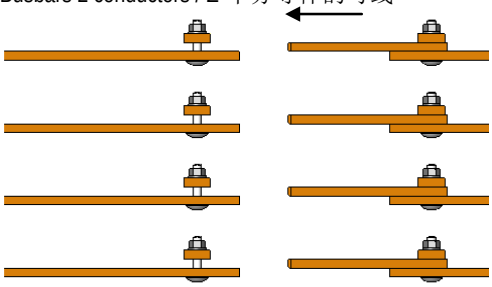
Busbars 4 conductors
4 个分导体的母线
4 x 20 mm x 10 mm
4 x 30 mm x 10 mm



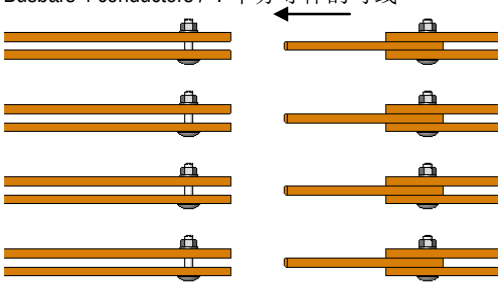
4 x 40 mm x 10 mm
4 x 50 mm x 10 mm



Busbars 2 conductors / 2 个分导体的母线



Busbars 4 conductors / 4 个分导体的母线



Busbar cross section / 母线截面
2 x 20 mm x 10 mm
2 x 30 mm x 10 mm

Screw connection / 螺栓连接
4 x M10 x 45



Busbar cross section / 母线截面
4 x 20 mm x 10 mm
4 x 30 mm x 10 mm

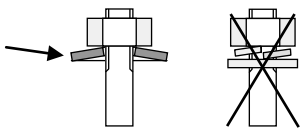
Screw connection/
螺栓连接
4 x M10 x 45



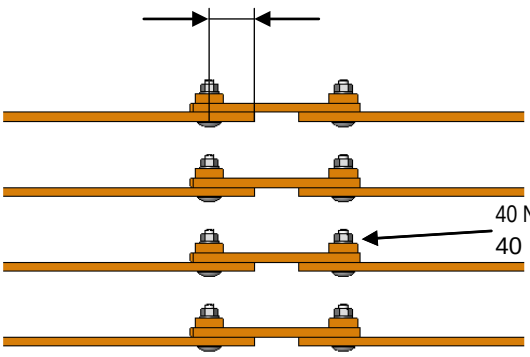
4 x 40 mm x 10 mm
4 x 50 mm x 10 mm

Screw connection /
螺栓连接
8 x M10 x 45

Conical spring washer DIN 6796 /
碟形垫圈 DIN 6796

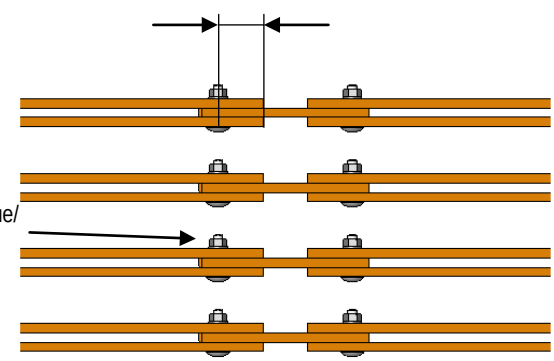


45 mm



40 Nm Tightening torque/
40 Nm 拧紧力矩

45 mm



1. Remove the bolts for transportation lock at the busbar
2. Unscrew the bolts at the joint on the left-hand busbar system.
3. If necessary, loosen the bolts of the fishplates on the right-hand busbar system to ensure proper horizontal alignment during the joining process.
4. The M 6 bolts included in the scope of supply may be used to pull the frames of the left and right-hand cubicles together. To do so, insert the bolts into the holes on the top frame profile.
5. The contact surfaces must be greased!

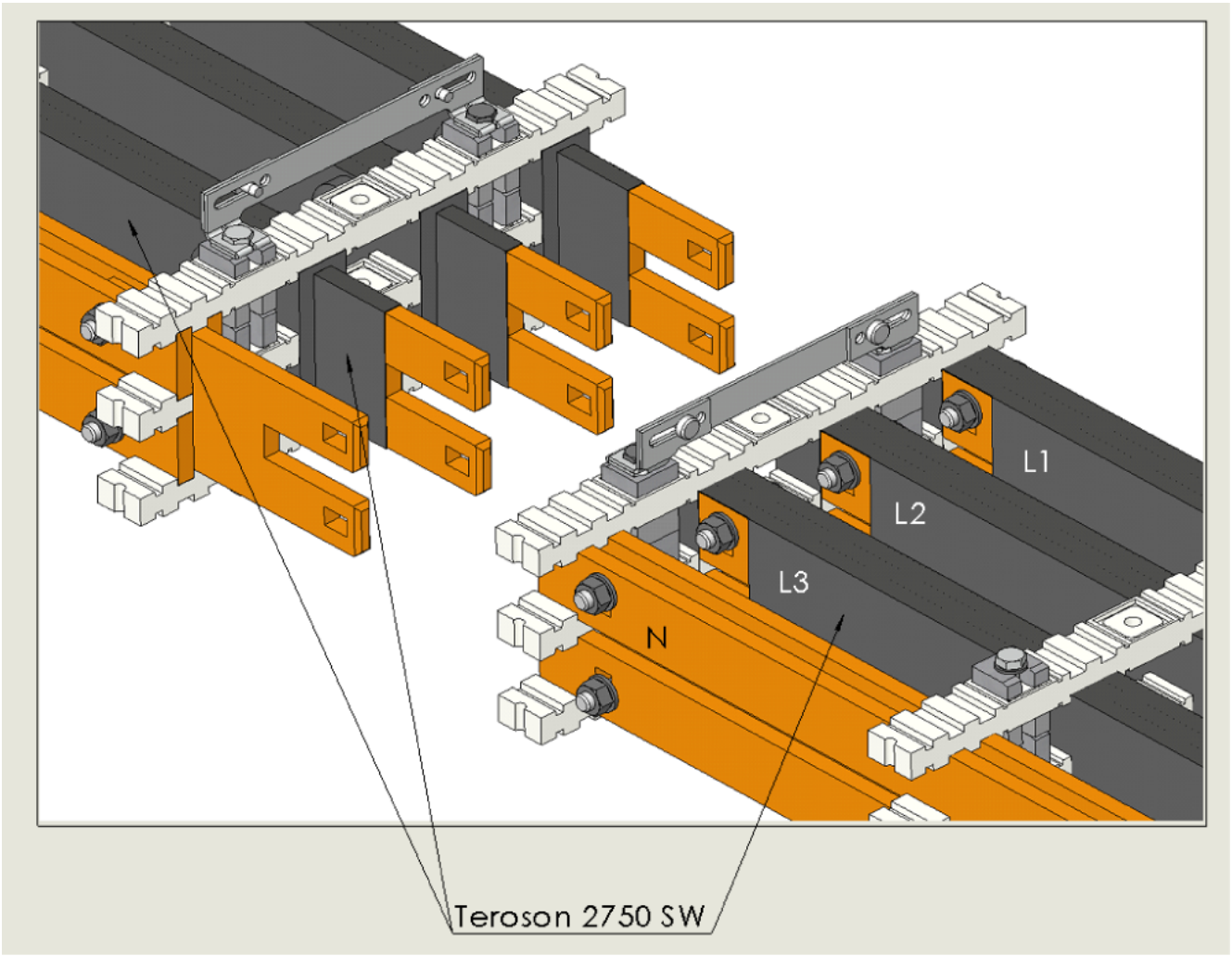
1. 移除母线的运输保险装置的螺栓连接
2. 松开左侧系统内连接点上母线的螺栓连接
3. 如有需要，松动右侧母线系统内舌片的螺栓连接，直至该舌片在以下接合过程中可以水平校准。
4. 可使用附件包内的 M 6 螺栓将左右机柜连接在一起。为此在机架横梁的钻孔内装入此螺栓。
5. 需要对接触面进行润滑！

3.2 Insulation of busbar joint for insulated busbars

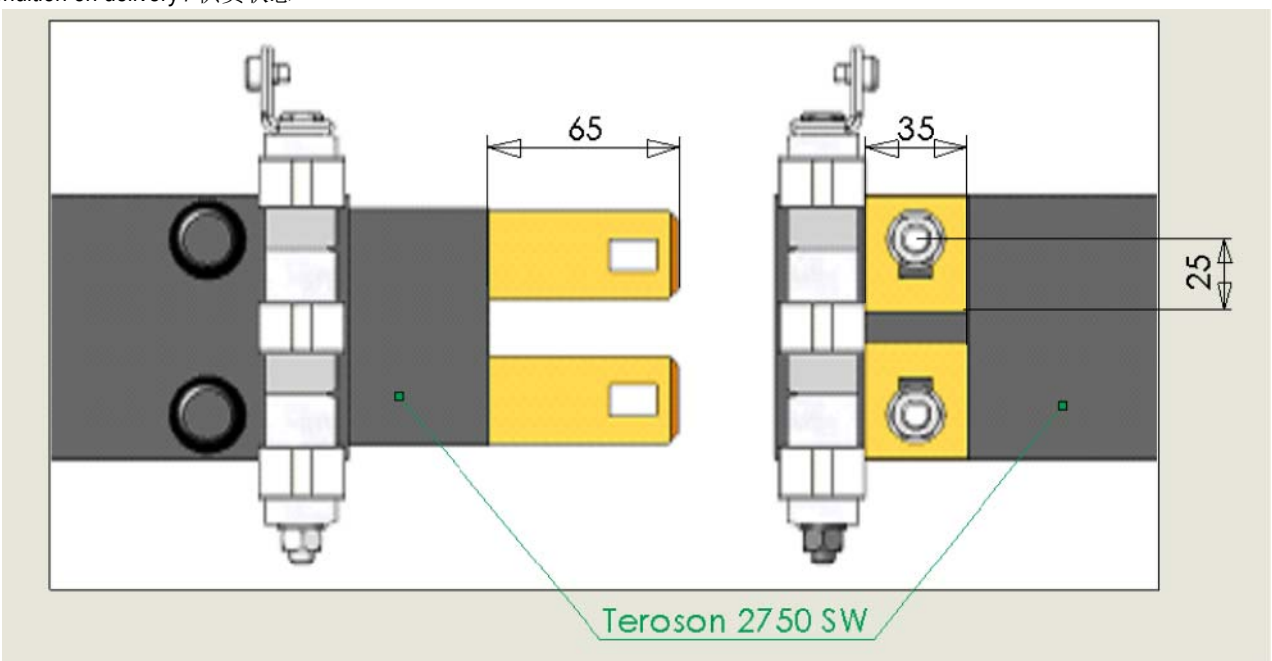
For plants with an insulated main busbar the live parts have to be insulated with Teroson-tape after screwing together.

3.2 绝缘母线的母线接合点隔离

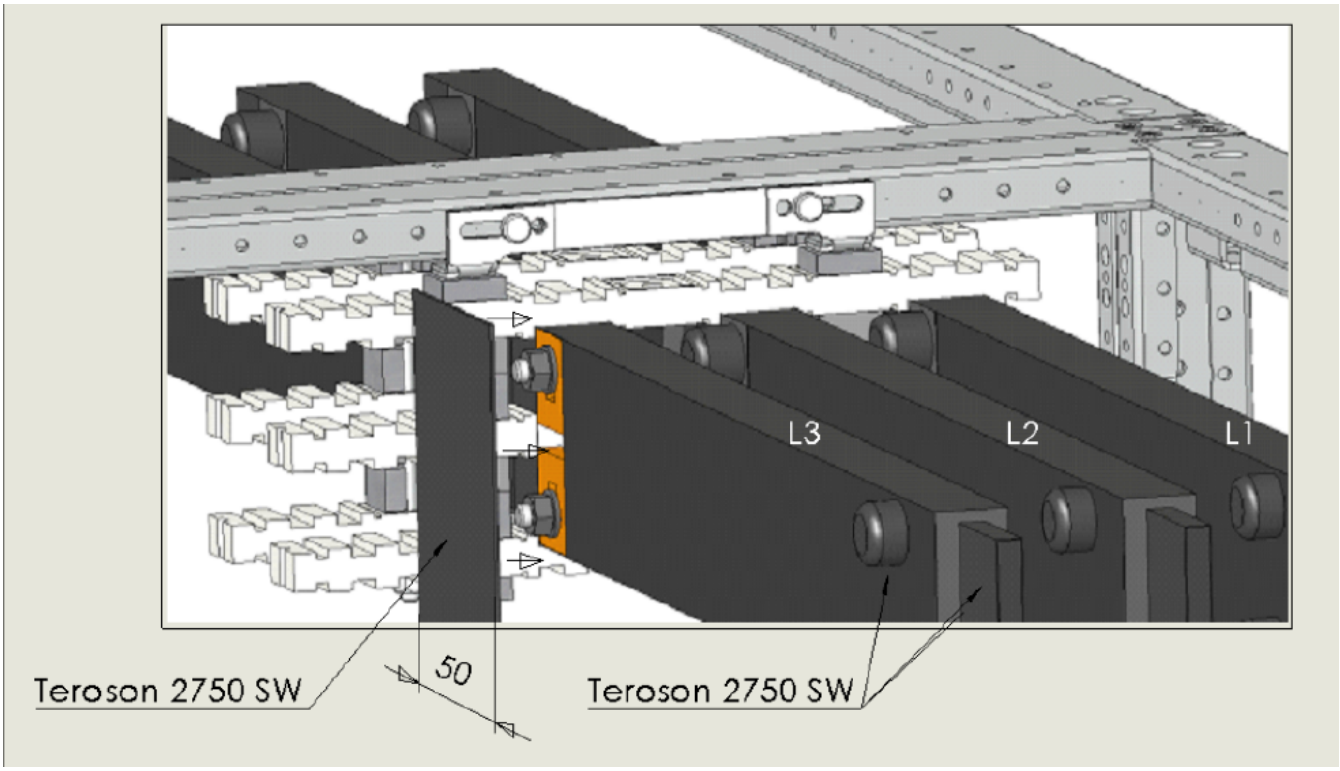
对于带有绝缘主母线的设备，须在螺栓连接完成后使用 Teroson 胶带隔离主母线的连接点。



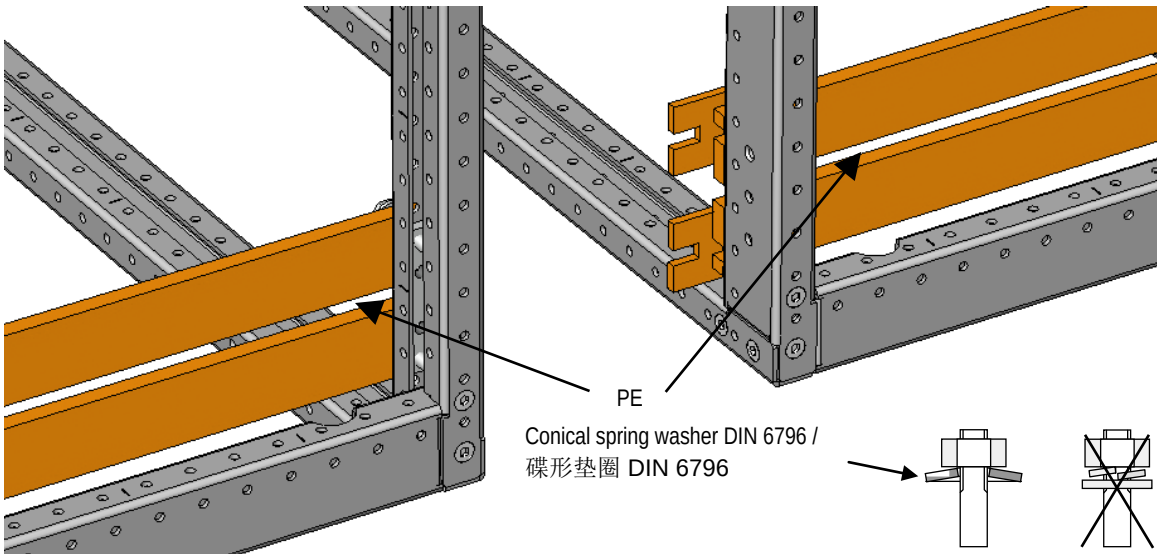
Condition on delivery / 供货状态

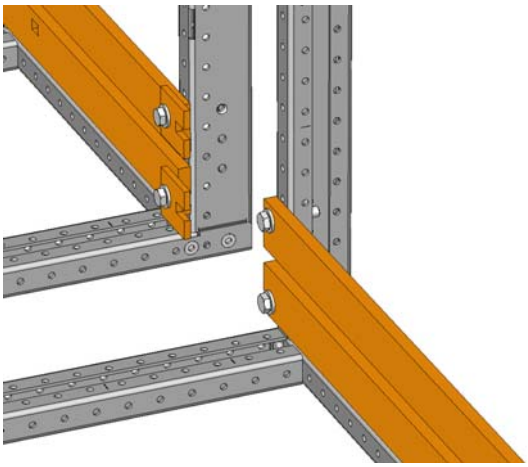


Insulation of all bare parts after connection of the cubicles / 在建立机柜连接后隔离所有裸露部分

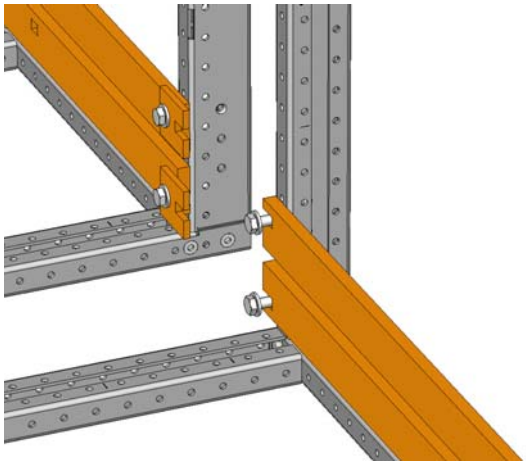


3.3 PE joint	3.3 PE 连接

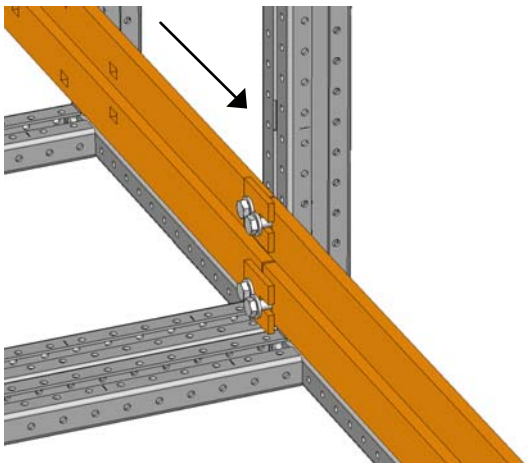




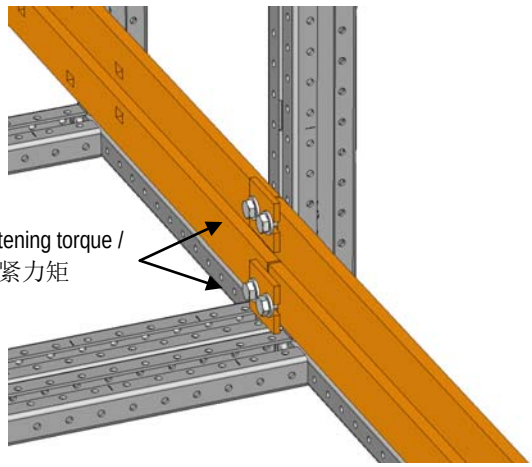
1. Unscrew the bolts at the joint on the left-hand busbar system.



1. 松开左侧系统内连接点上母线的螺栓连接。

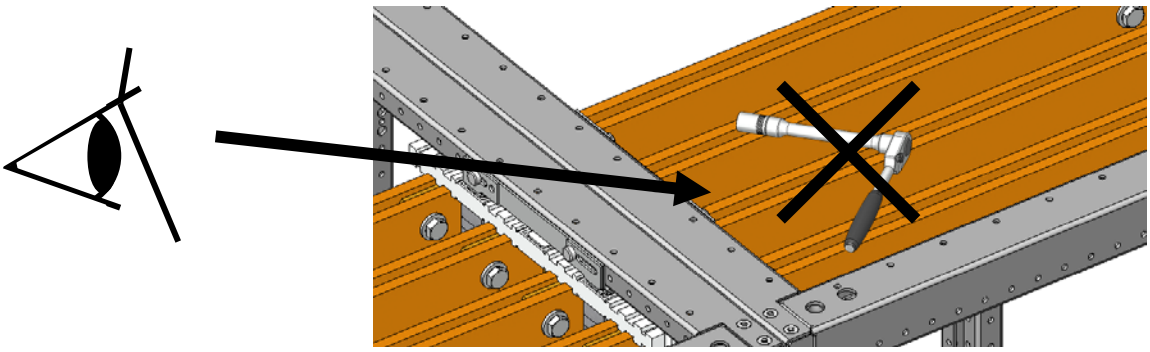


2. If necessary, loosen the bolts of the fishplates on the right-hand busbar system to ensure proper horizontal alignment during the joining process.

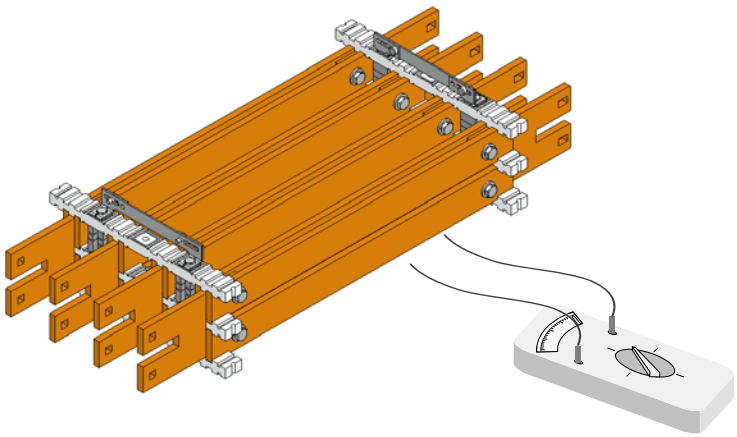


2. 如有需要，松动右侧母线系统内舌片的螺栓连接，直至该舌片在以下接合过程中可以水平校准。

4 Final check	4 最终检查
4.1 Visual check	4.1 目测检查



4.2 Insulation test	4.2 绝缘检查



The insulation test should be carried out according to IEC 60364-6.

须根据 IEC 60364-6 检查绝缘。

5 Maintenance	5 保养
When correctly implemented in accordance with these operating instructions the electrical cubicle joint of the main busbar is maintenance-free. You will find further information in the operating instructions 8PQ9800-8AA65, Chapter 2.	如果规格符合本操作说明的规范，则主母线的机柜电气连接免维护。 相关详细说明信息可参阅操作说明书 8PQ9800-8AA65 章节 2。

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SIEMENS

SIVACON S8

Design-verified S8 low-voltage switchboard — Electrical and mechanical cubicle joint

通过了型式试验的低压开关设备 S8 — 机柜的电气和机械连接

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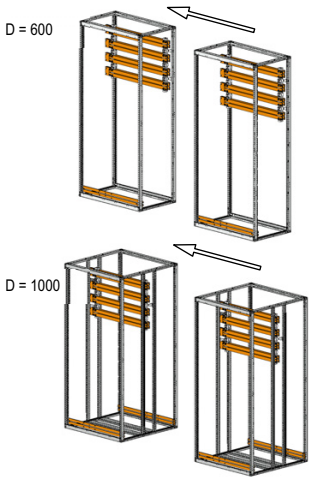
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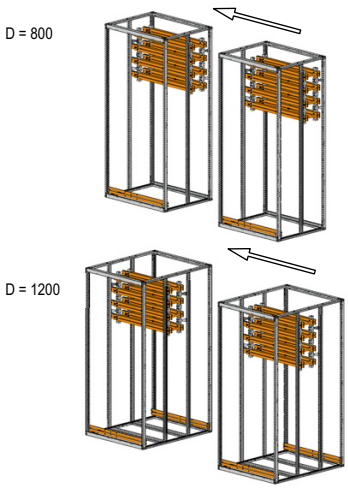
⚠ 危险

危险电压。
生命危险或者严重伤害危险。
作业开始之前应切断设备和器件的电源。

小心

只有原始制造商的部件才能保证设备可靠发挥作用！

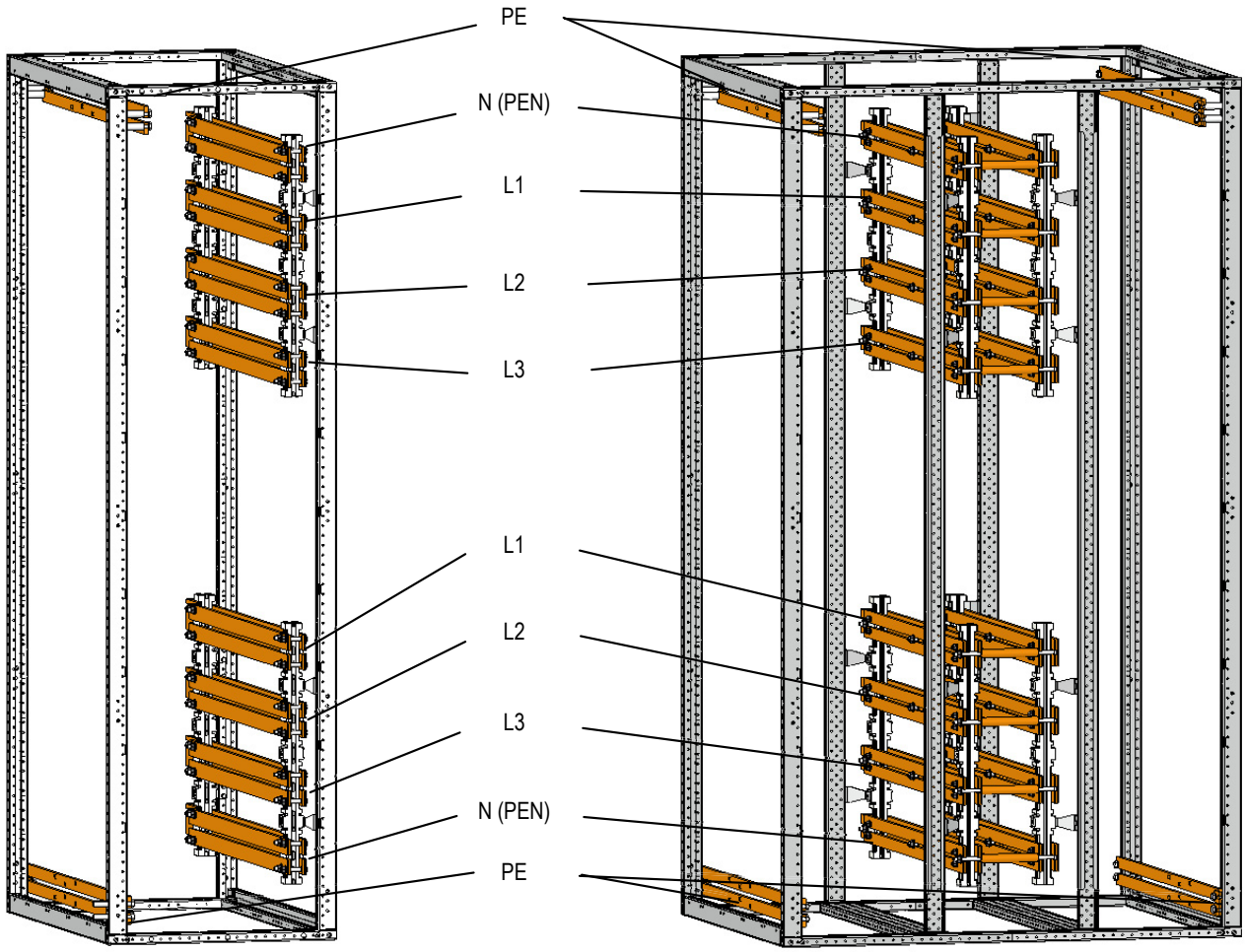




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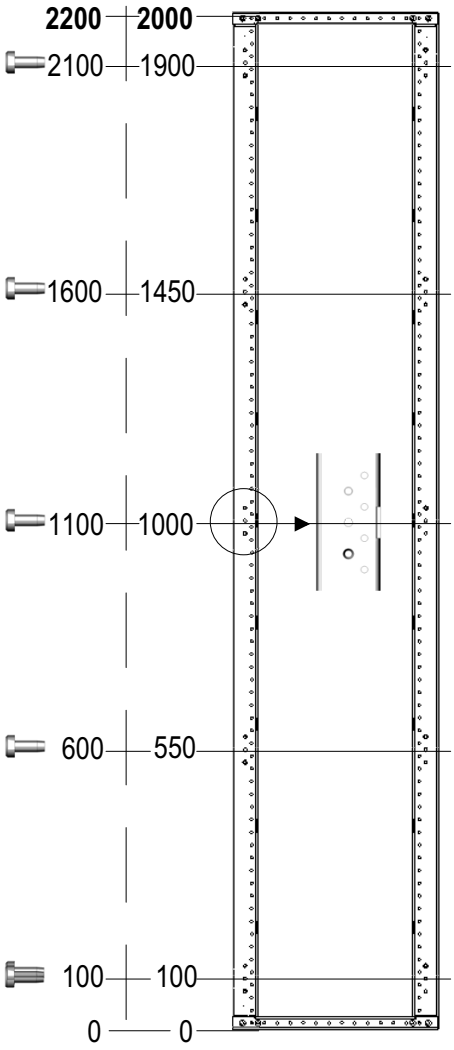
1 Horizontal busbar design	**1 母线系统结构**

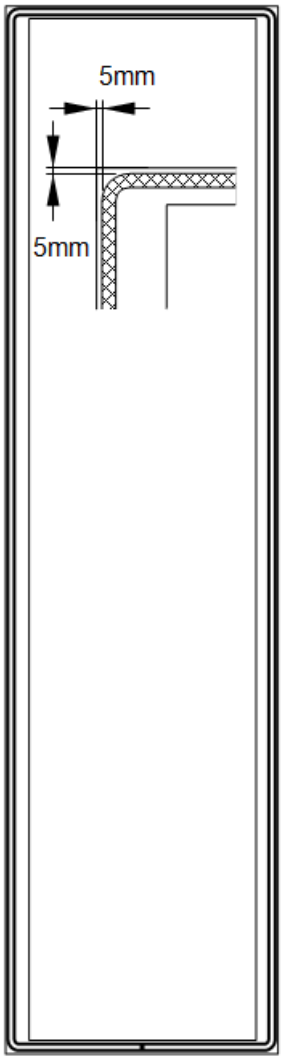


2 Mechanical cubicle joint	**2 机柜的机械连接**

2.1 IP30 to IP55	2.2 for IP42, 54 and IP55 (additionally)
2.1 IP30 至 IP55	**2.2 防护等级 IP42、 54 和 IP55 （附加）**

step 1
步骤 1





Total number of bolt connections
Up to 10, each of which can be screwed in 3 different ways

Sealing the cubicle joint
Sealing tape IP42, 54/55:
for cubicle depths up to 800 mm 1 x 8PQ1000-8AA05
for cubicle depths from 1,000 mm 1 x 8PQ1000-2AA04

Sequence
1. Remove the transport protection around the cubicle of the transport unit to be added.
2. Align the additional transport unit with the one already standing.
3. Push the additional transport unit against the existing one.
4. Assemble the mechanical and electrical cubicle joint as shown.

螺栓连接总数
最多 10 个，各有 3 种螺栓连接方式

机柜连接的密封
IP42、 54 / 55 密封条：
适用最大机柜深度 800 mm 1 x 8PQ1000-8AA05
适用最小机柜深度 1000 mm 1 x 8PQ1000-2AA04

流程
1. 移除待传送运输单元机柜上的运输保险装置。
2. 使待传送运输单元对齐直立的设备部件
3. 将待传送运输单元沿箭头方向朝直立的设备部件推近。
4. 按照图示完成机柜的机械和电气连接。

Possible ways to screw in the mechanical cubicle joint bolts
Select the desired way to screw in the bolts from the examples shown below. Additional mechanical joints are permissible on the horizontal top and bottom profiles of cubicles with depths of 800 mm and 1000 mm.

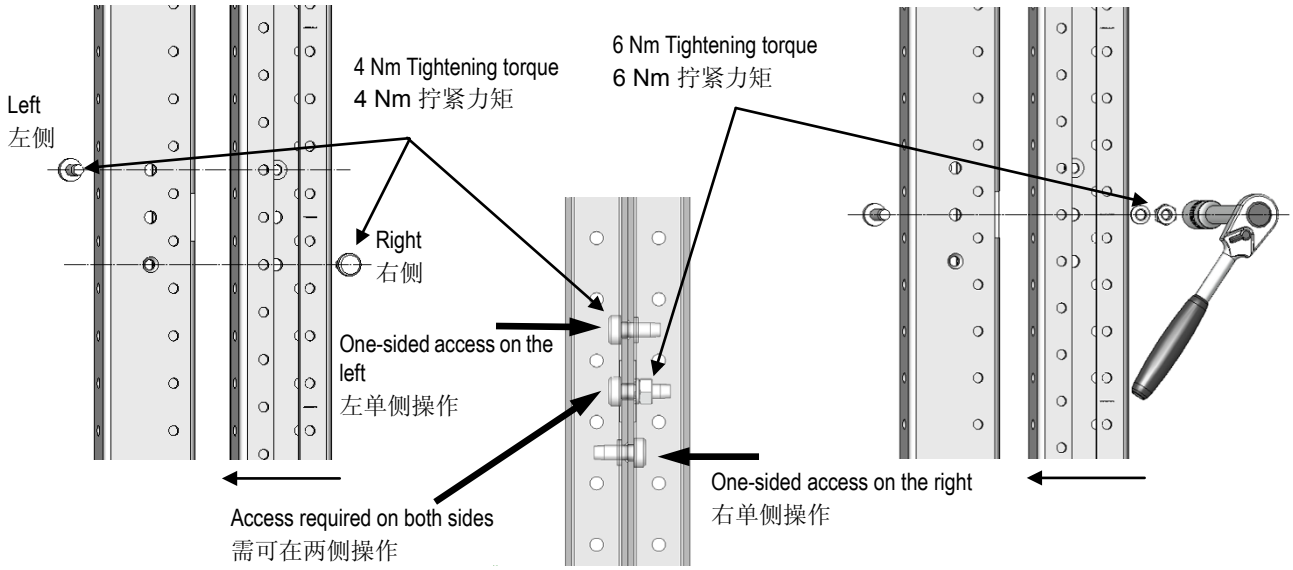
Option 1
Bolting together using M6 self-tapping screws from the left or right side

Option 2
Bolting together using through-holes with M6 nut/screw from both sides

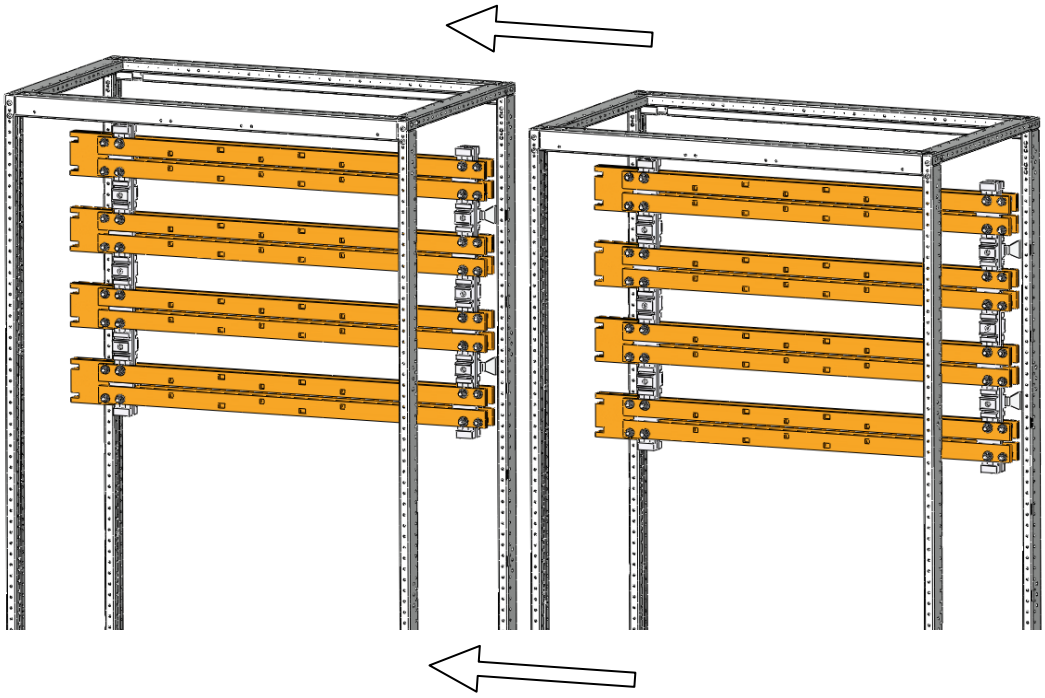
其它螺栓连接方式
图中显示螺栓连接的方式和方向。可从所显示的方式中选择。当机柜深度为 800 mm 和 1000 mm 时可以在水平的顶部和底部型材内进行附加螺栓连接。

方式 1
从左侧或右侧使用 M6 开槽螺栓进行螺栓连接

方式 2
从两侧使用 M6 螺母 / 螺栓在通孔中进行螺栓连接



3 Electrical cubicle joint	**3 机柜的电气连接**



⚠ DANGER

Before extending an existing switchboard, ensure the latter is isolated and observe the relevant safety rules.

WARNING

The supplied fastening parts for bolting the busbars must be used.

Bolts (screws) of strength class 8.8, nuts of strength class 8 and conical spring washers acc. to DIN 6796 ensure the necessary contact forces if the correct torques have been applied.

Inadmissible fastening parts or deviations from the required tightening torques to lower or higher values lead to a considerable reduction of current carrying capacity due to low contact forces or damaged bolts.

Any resultant overheating can lead to component failure and an arc fault.

An arc fault combined with open enclosure parts can result in death or serious injury.

High property damages will be unavoidable.

⚠ 危险

请在扩展现有设备之前须确保，该设备已接通并且重要的安全规则已遵循。

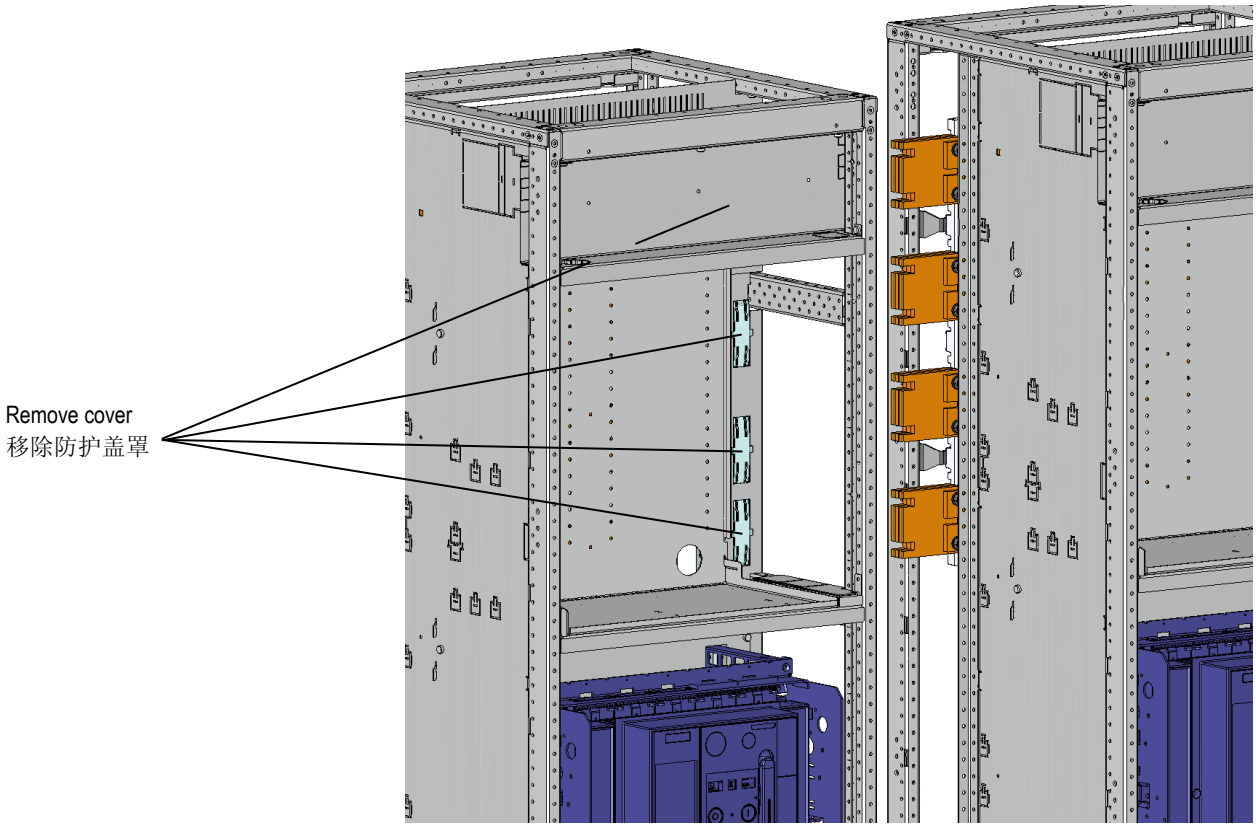
警告

针对母线的螺栓连接须使用随附的紧固件。强度等级 8.8 的螺栓、强度等级 8 的螺母和符合 DIN 6796 标准的碟形垫圈在遵循拧紧力矩的同时确保了必要的接触压力。

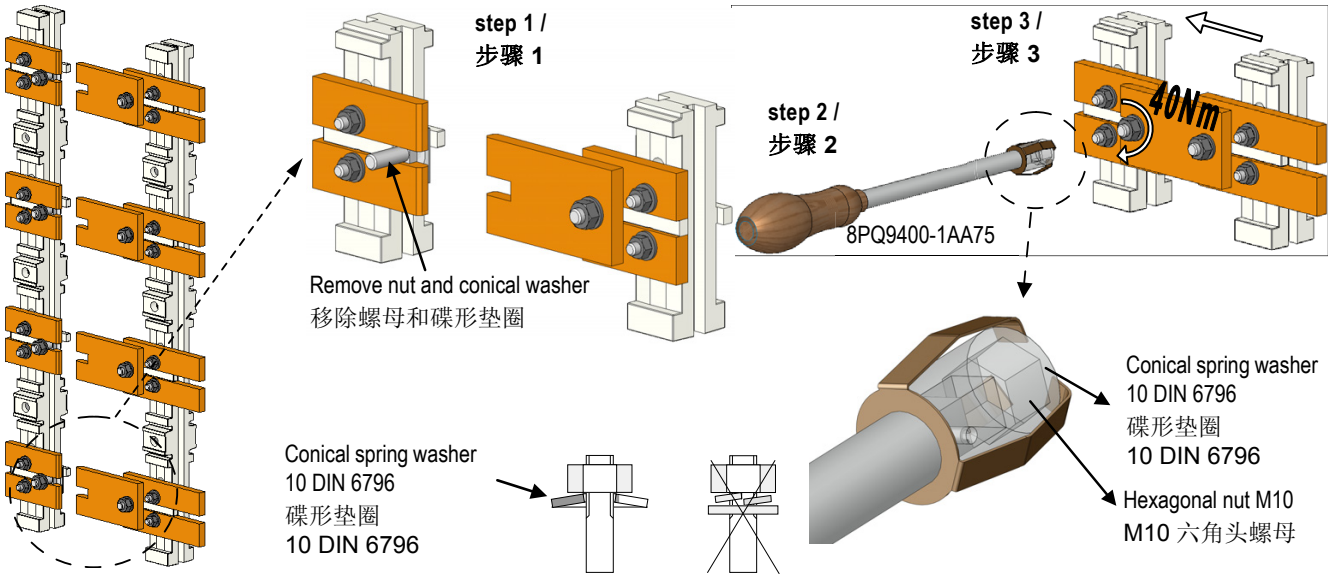
使用不允许的紧固件或拧紧力矩与规定要求存在偏差 （低于或超出），会导致预应力过小或螺栓受损，进而导致电流承载能力大大降低。

由此导致的过热会进而导致部件故障及故障电弧。如果在外壳部件打开时产生故障电弧，则可能导致死亡或者严重的人身伤害。不可避免地带来严重的财产损失。

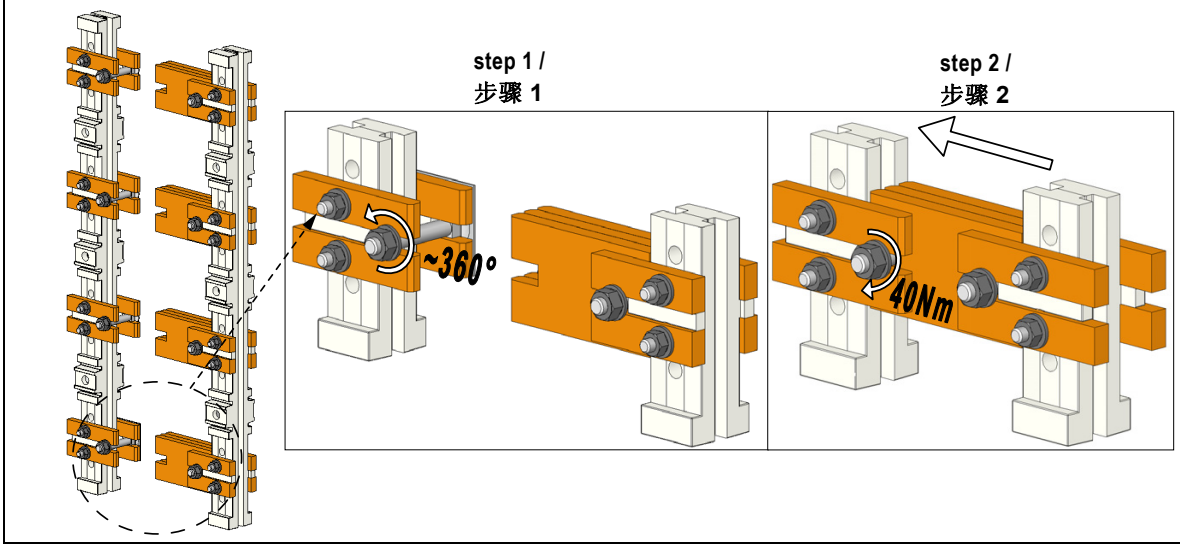
3.1 Horizontal busbar system	**3.1 水平母线系统**
3.1.1 Access to electrical joints	**3.1.1 连接点入口**



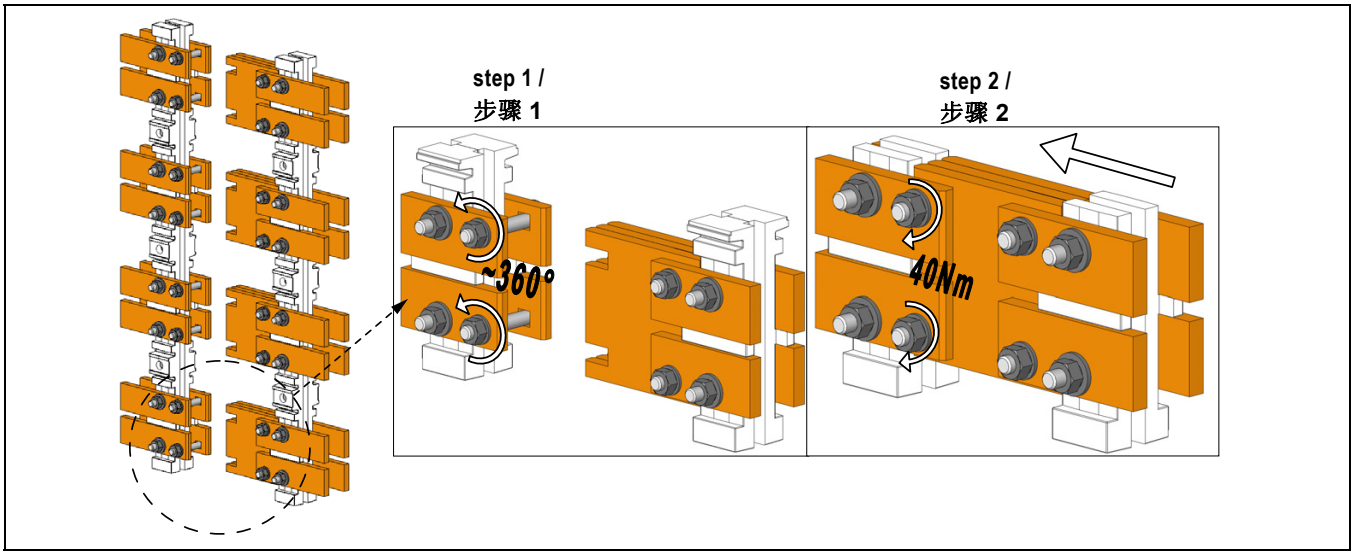
3.1.2 Tightening electrical joints	**3.1.2 连接点的螺栓连接**
Main busbar system with 2 conductors per phase (2x20x10 or 2x30x10)	主母线系统每个相位带有 2 个分导体 （2x20x10 或 2x30x10）



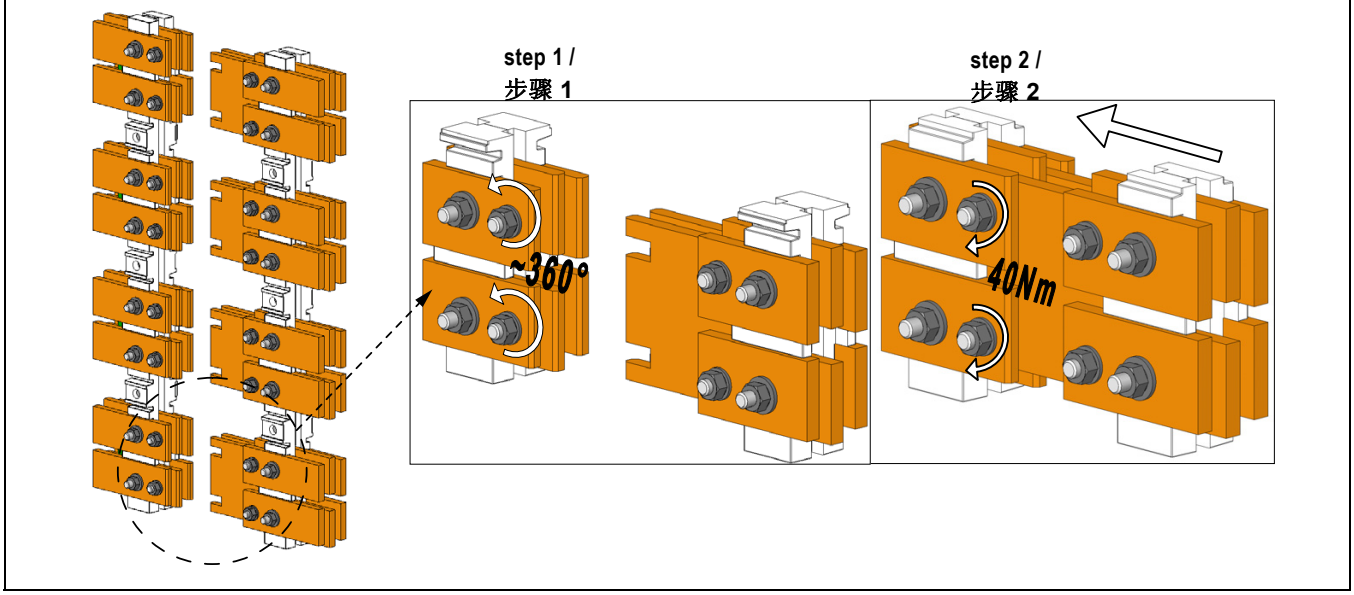
Main busbar system with 2 conductors per phase (4x20x10 or 4x30x10)	主母线系统每个相位带有 4 个分导体 （4x20x10 或 4x30x10）



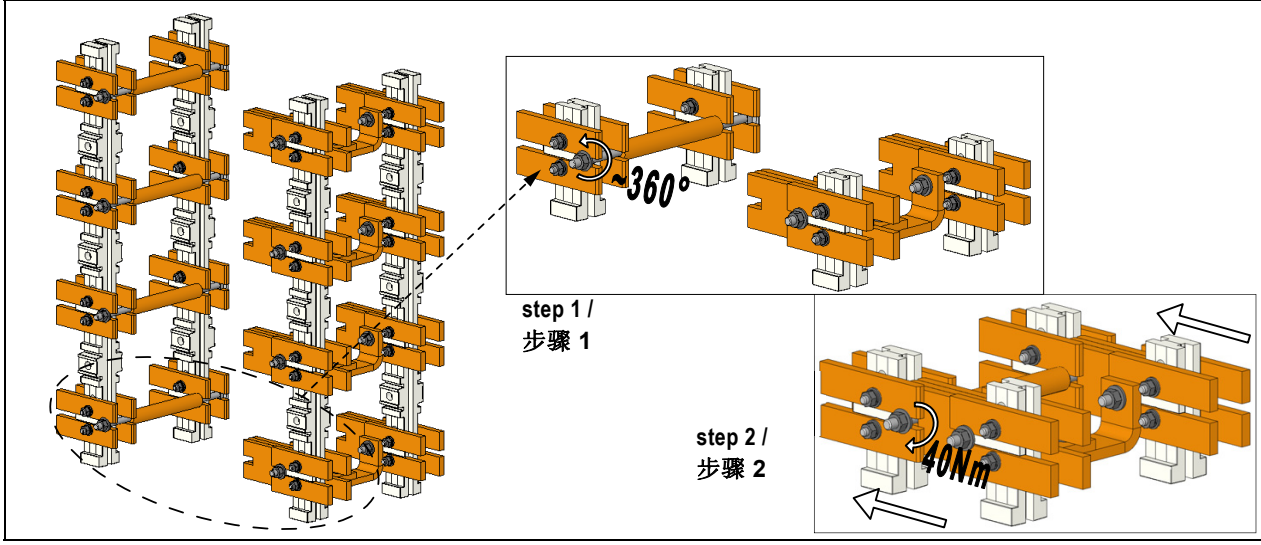
Main busbar system with 4 conductors per phase (4x40x10 or 4x50x10)	主母线系统每个相位带有 4 个分导体 （4x40x10 或 4x50x10）



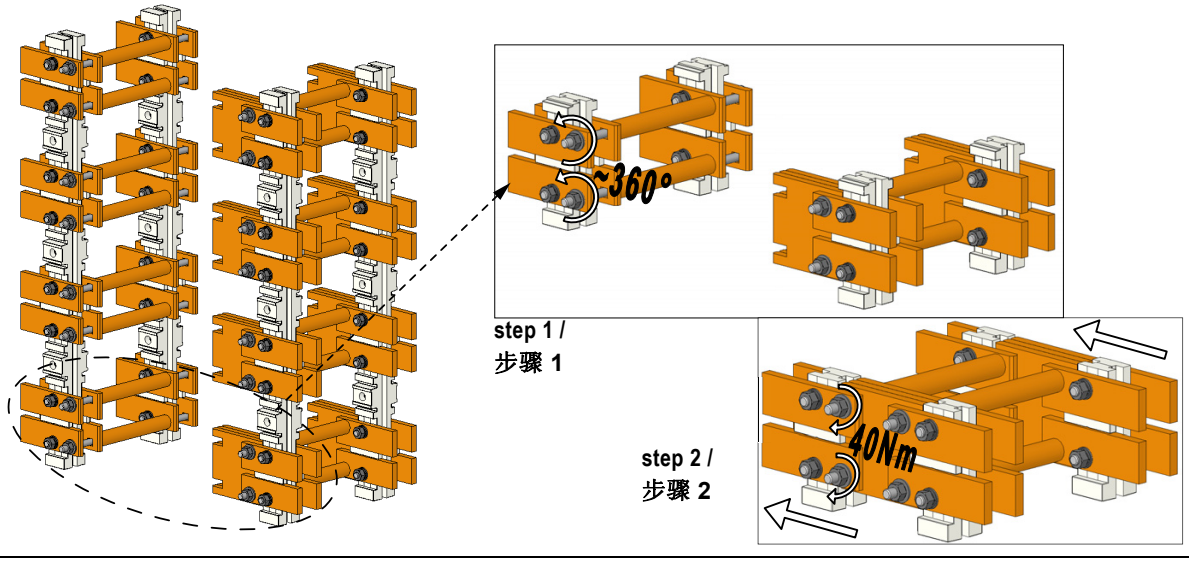
Main busbar system with 6 conductors per phase (6x50x10)	主母线系统每个相位带有 6 个分导体 (6x50x10)



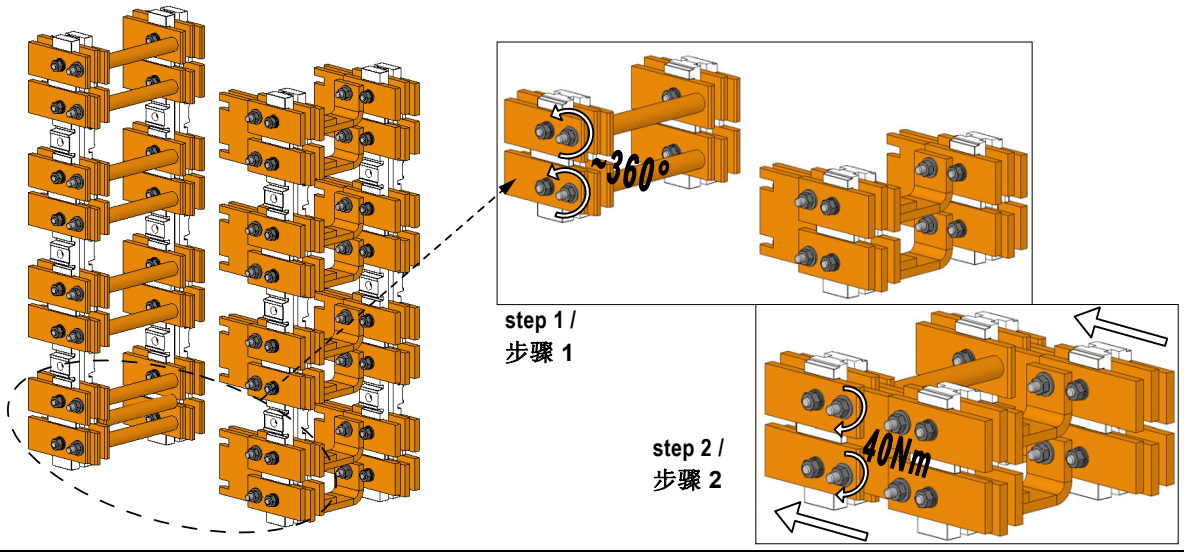
Main busbar system with 8 conductors per phase (2x4x30x10)	主母线系统每个相位带有 8 个分导体 (2x4x30x10)



Main busbar system with 8 conductors per phase (2x4x40x10 or 2x4x50x10)	主母线系统每个相位带有 8 个分导体 （2x4x40x10 或 2x4x50x10）



Main busbar system with 12 conductors per phase (2x6x50x10)	主母线系统每个相位带有 12 个分导体 (2x6x50x10)



A) Loosen the bolts in the left cubicle to the right of busbar holder approx. one full anti-clockwise revolution (step 1).

B) Push the cubicle to be aligned against the already fixed cubicles, until the fishplates for screw fastening almost touch the opposite conductor. The vertical height of the fishplates has already been aligned by the manufacturer. In case of any deviations that prevent the fishplates being pushed onto the bolts, please adjust the fishplates on site. Bolts of fishplates which have been unfastened for this purpose shall be tightened subsequently with the specified torque. Align the cubicle fronts so that they are flush and push the additional cubicle(s) towards the fixed ones until the frames touch each another.

C) The M6 bolts of the accessory pack may be used to pull the frame of the left and right hand cubicle together. For this purpose they shall be inserted into the holes of the top frame profile. Please refer to section 3 in this regard.

D) Contact surfaces must be greased!

E) For the version with 2 conductors per phase, insert the conical spring washers and M10 hexagonal nuts from the accessory pack as shown above into the “tool for busbar bolting“. Turn the nuts two to three revolutions onto the thread of the bolts. Then remove the special tool to avoid jamming of the claws.

F) Apply a torque of 40 Nm using a torque wrench, socket spanner insert (with fixed nut), if necessary, use a cardan joint and additional extension (step 2).

A) 将左侧机柜上母线支架右侧的螺栓旋转松动约一圈 （步骤 1）。

B) 将待传送的机柜向已固定的机柜推近，直至以固定机柜的舌片几乎接触到正对的分导体。舌片的高度位置由制造商校准。如果确定存在的偏差会阻碍舌片移动到螺栓上，则须在施工现场进行修整。如果为此须松动舌片的螺栓连接，则须在此之后以规定的扭矩重新拧紧。对机柜面板进行齐平校准，将待传送的机柜推近，直至机架相互接触。

C) 可使用附件包内的 M6 螺栓将左右机柜连接在一起。为此在机架横梁的钻孔内装入此螺栓。在此请注意章节 3。

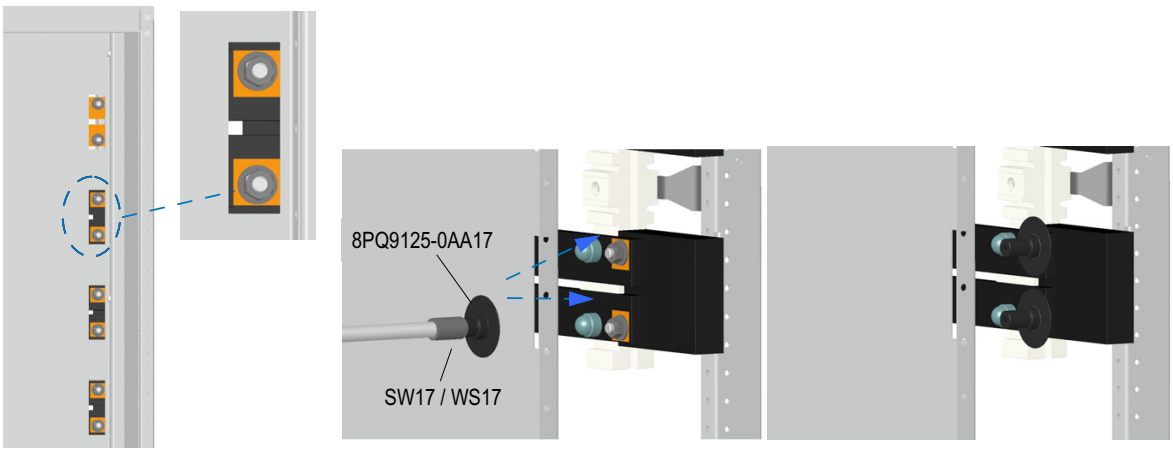
D) 需要对接触面进行润滑！

E) 对于每个相位带有 2 个分导体的类型，按照上图所示将附件包内的 M10 碟形垫圈和螺母插入 “ 母线螺栓连接工具 ”。在螺栓末端将螺母旋入二至三圈。然后拔出专用工具，以使夹子不被夹住。

F) 利用扭矩扳手、加长杆 （带固定头），必要时使用带有附带加长杆的万向节，施加 40Nm 的额定扭矩 （步骤 2）。

3.1.3 Insulation of busbar joint for insulated busbars

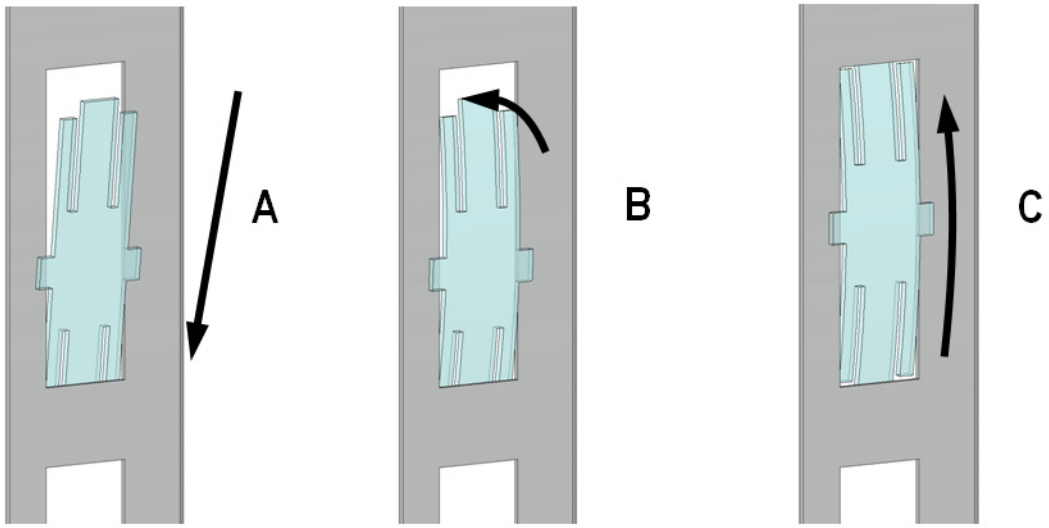
3.1.3 绝缘母线的母线接合点隔离



3.1.4 Covering electrical joints	**3.1.4 覆盖连接点**

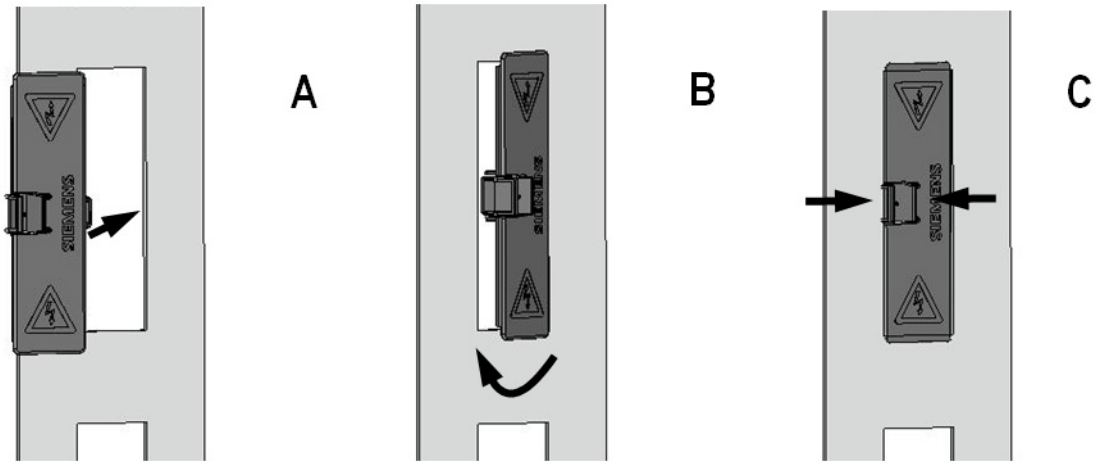
Version 1

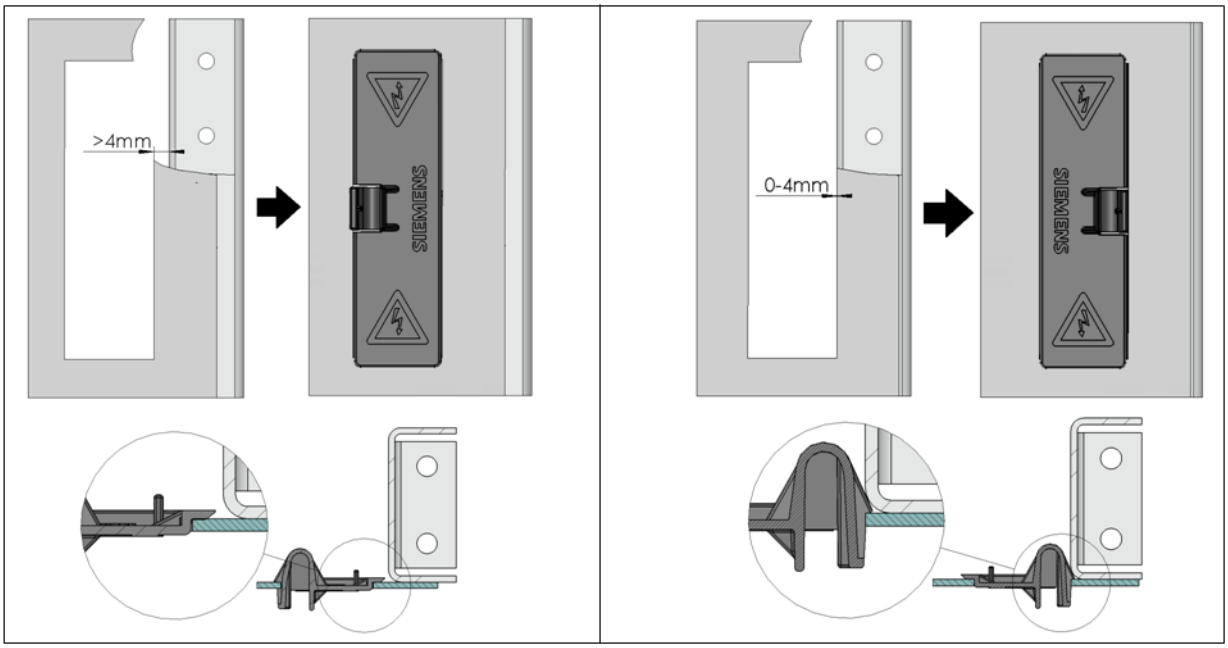
版本 1



Version 2

版本 2

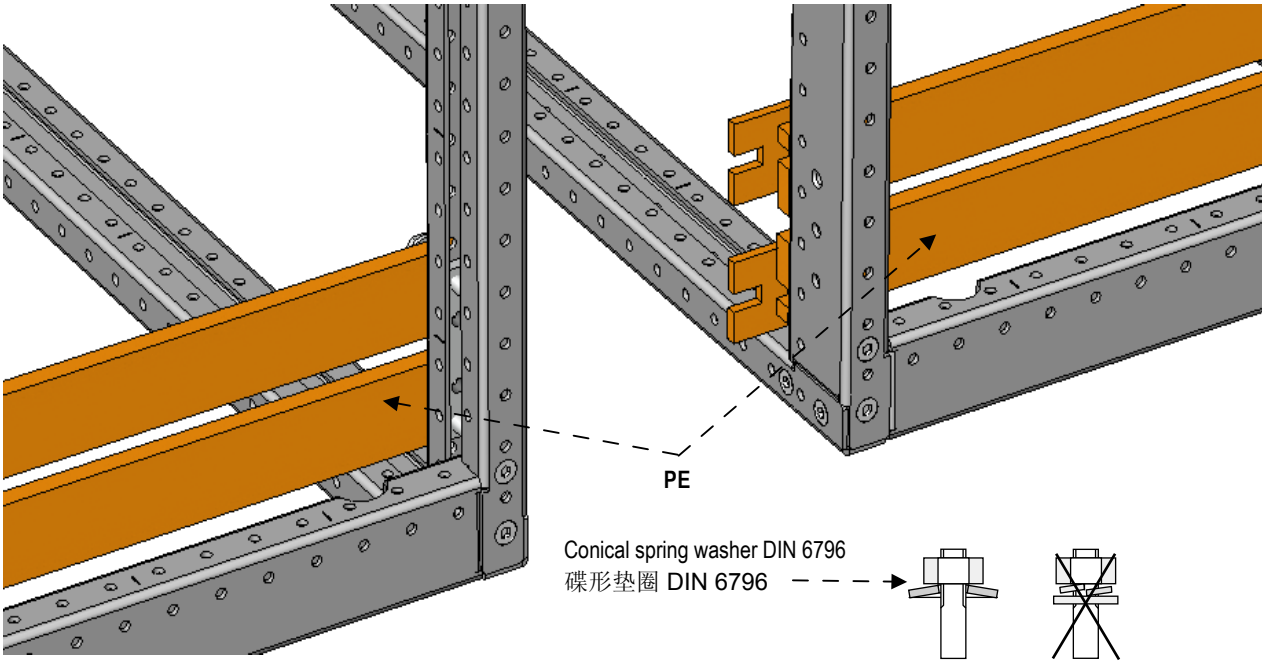




3.2 PE joint	**3.2 PE 连接**

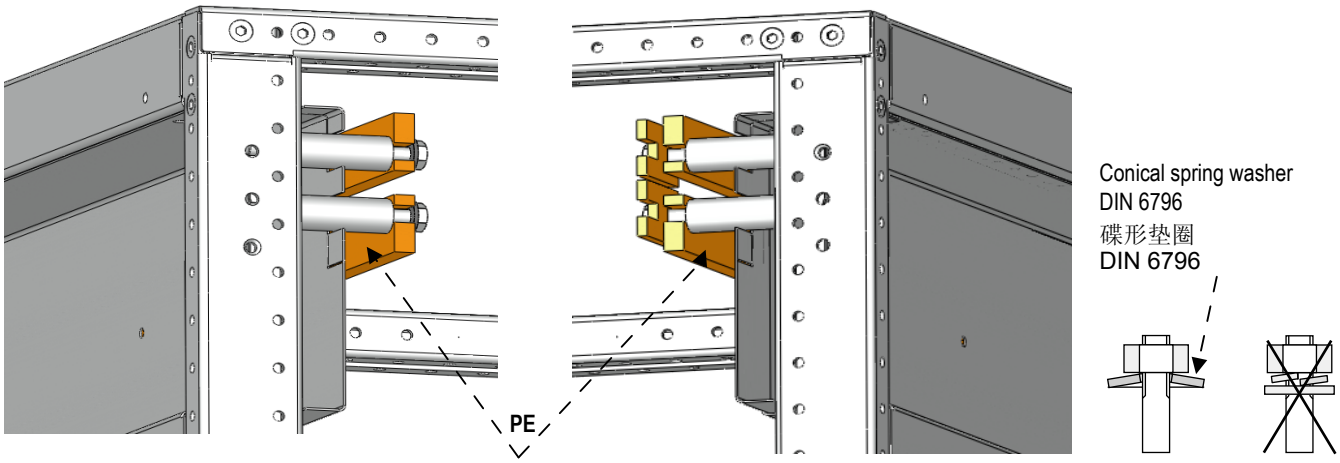
PE location at bottom

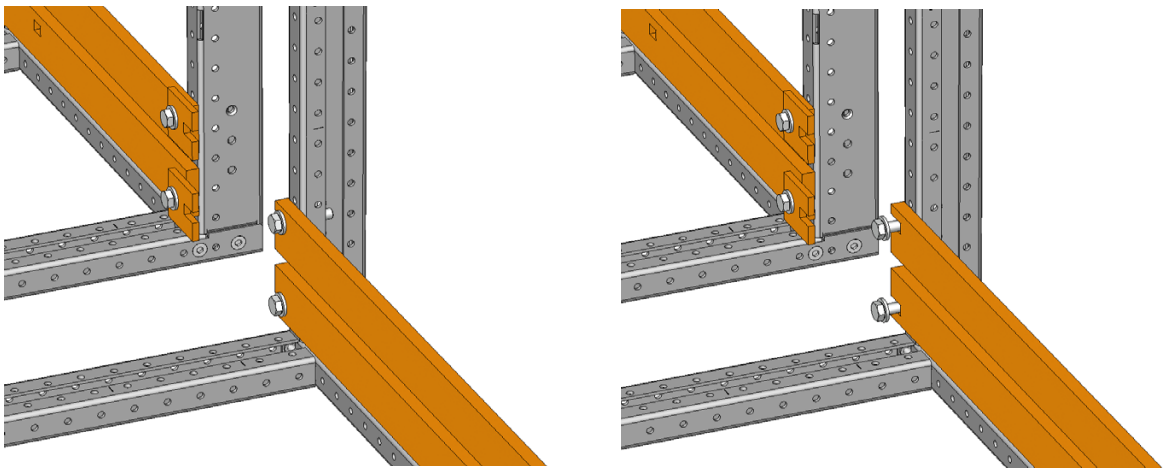
下方 PE 位置



PE location at top

上方 PE 位置





A) Loosen the bolts of the joint area of the left hand busbar system.

A) 松开左侧系统内连接点上母线的螺栓连接

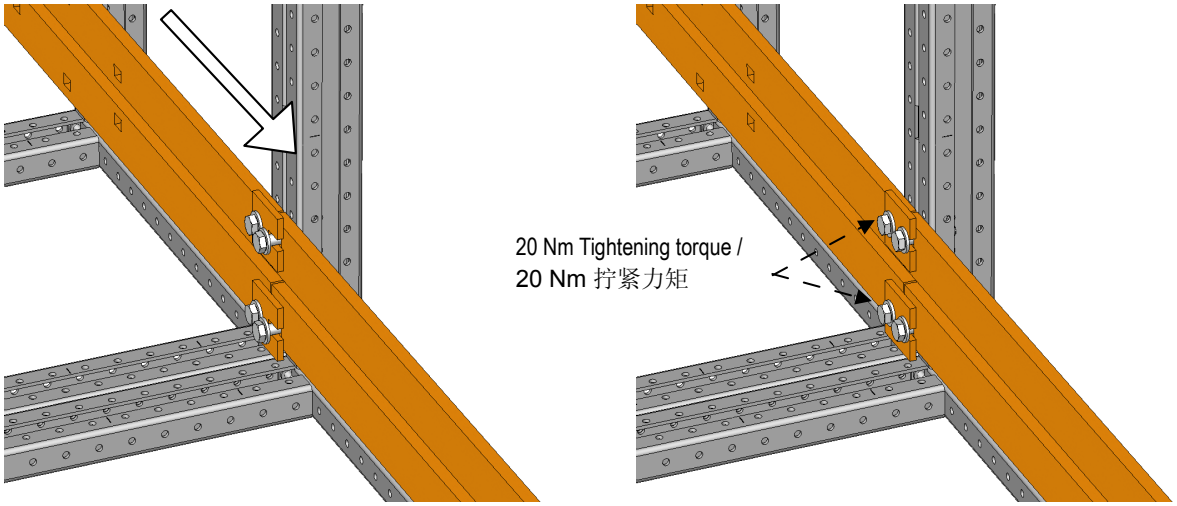


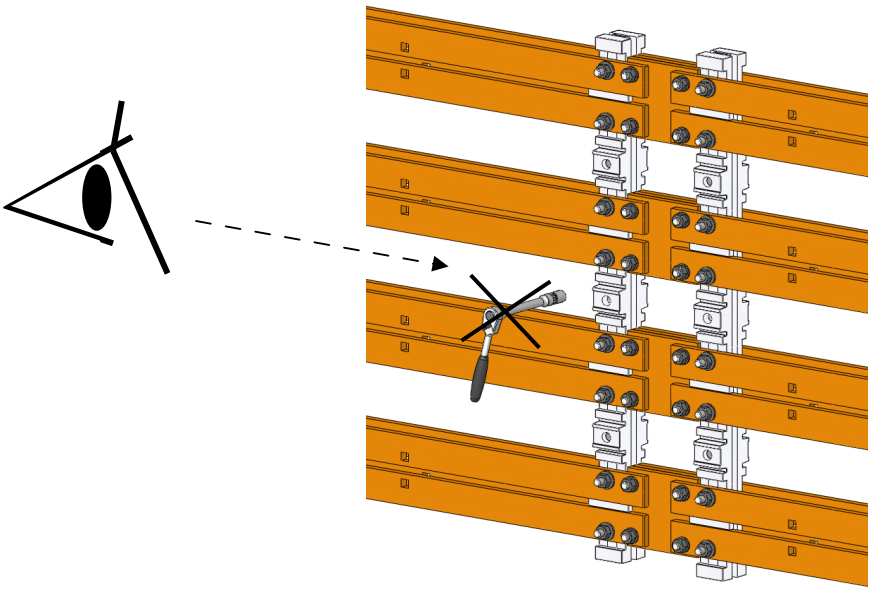
Fig. PE location, bottom

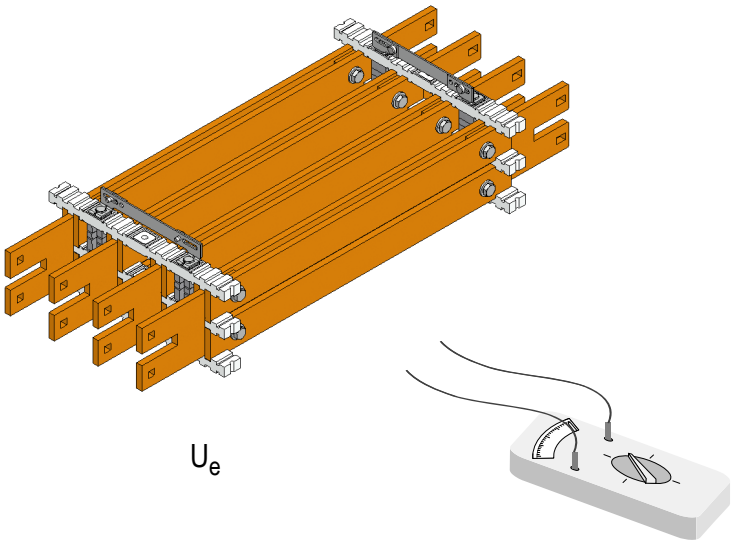
图：下方 PE 位置

B) If necessary, loosen the bolts of the fishplates on the right busbar system to ensure proper horizontal alignment during the joining process.

B) 如有需要，松动右侧母线系统内舌片的螺栓连接，直至该舌片在以下接合过程中可以水平校准。

4 Final check	**4 最终检查**
4.1 Visual check	**4.1 目测检查**





The insulation test should be carried out according to IEC 60364-6.

须根据 IEC 60364-6 检查绝缘。

5 Maintenance

When correctly implemented in accordance with these operating instructions the electrical cubicle joint of the main busbar is maintenance-free.
You will find further information in the operating instructions 8PQ9800-8AA65, Chapter 2.

5 保养

如果规格符合本操作说明的规范，则主母线的机柜电气连接免维护。
相关详细说明信息可参阅操作说明书 8PQ9800-8AA65 章节 2。

Subject to change without prior notice. Store for use at a later date.
保留技术变更的权利。妥善保管，以备后用。

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