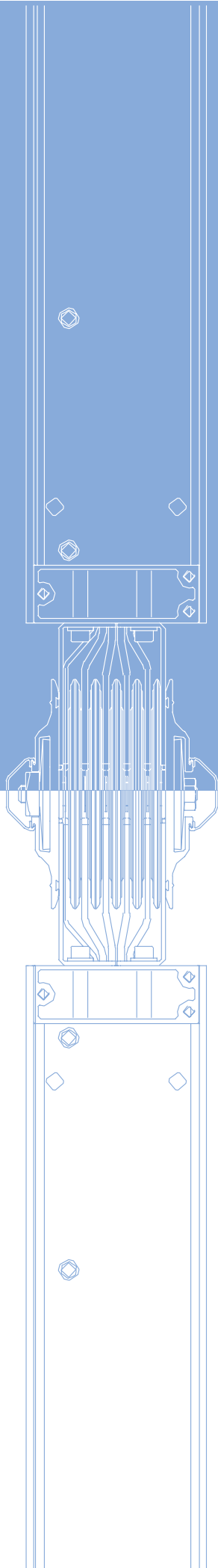


WETOWN®



Installation and Maintenance Manual

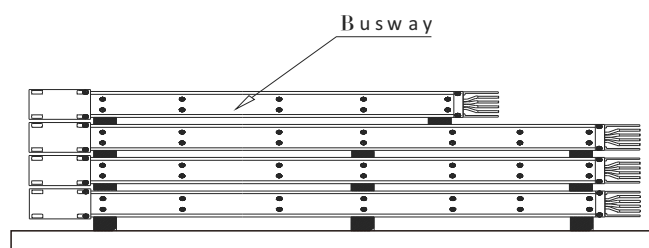
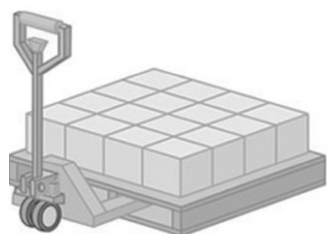
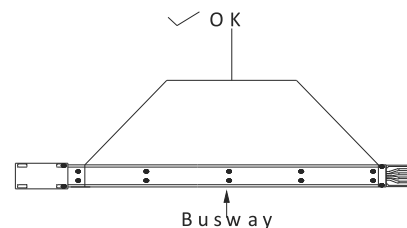
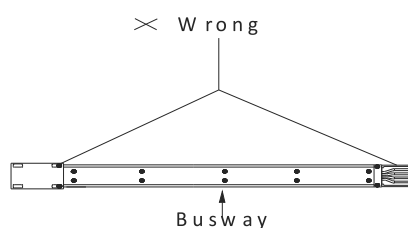
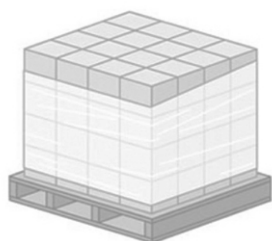
Wetown LV
Series Compact Busway

Table of Contents

1. Handling, transportation and storage requirements
2. Pre-installation procedure
3. Busway Installation
 - Busway and joint installation
 - Horizontal busway installation
 - Vertical busway installation
4. Busway plug installation
5. Busway commissioning and maintenance
6. Safety Precautions
7. Common faults and solutions
8. Accessories
 - Dimensions of LV compact busway, weight per meter, spring number table of spring bracket
 - Spring compression calculation formula
 - Bolt torque

Handling, transportation and storage requirements

1. Use appropriate handling equipment (such as crane, forklift, flatbed, etc.) for loading and unloading in order to avoid damage to the product.
2. Load, unload and handle the busway in a place as close to the storage site as possible. Do not load, unload and handle the busway outdoors in rainy, snow or adverse weather.
3. During loading, unloading and handling, do not drop the busway and its accessories to the ground or damage its package materials.
4. Hold both ends of the busway when handling. Do not make either end of the busway as the standpoint to handle. Do not drag the busbar on the ground or between the busway sections.
5. Refer to the trending diagram when storing the busway. The busways of different trends should be placed separately with reasonable spacing reserved.
6. When stacking busways, place appropriate wooden supports of same cross-section and same volume under each layer of busways. The wooden supports should ensure the stress on the busway is balanced. No more than 4 layers of single-channel busbars and no more than 3 layers of dual-channel busbars can be stacked.
7. Do not remove the package materials before installation.
8. The busway storage site should be locked and managed by a special person.
9. Please notify the carrier immediately if products are damaged during handling, shipping and storage. (TEL: 400-828-6866 0511-85151166)



Warning:

- The busway should not be stored outdoors, instead, it should be stored in a clean, dry room away from the dust, smoke, water and chemical corrosion, and avoid sun exposure. And preventive measures should be taken against potential factors that could cause quality problems of busway (such as leakage, seepage or other harmful media, etc.).

Pre-installation procedure

- **Busway installer**
- **Installation, operation and maintenance of busway must be conducted by a qualified installer.**

The busway installer must meet the following requirements:

Familiar with busway construction, operation and installation;

Familiar with the basic installation knowledge of electrical equipment;

With high safety awareness, wear complete installation protective equipment (helmets, overalls, installation gloves, etc.).

- **Busway installation, testing equipment**

Lifting equipment: scaffolding, herringbone ladder, manual hoist;

field fabrication equipment: temporary power supply, impact drill, cutting machine, welding machine, etc;

Locking equipment: Screwdriver, wrench, socket and torque wrench;

Testing equipment: level meter, measuring tape, hanging thread, 1000V megger.

- Installation environment should meet the technical conditions of busway application, with particular attention to protecting the busway from sewage and other contamination during installation. See GB7251.1~2- 2006 and JB/T9662-1999 for the use environmental requirements.
- Prepare your own installation accessories and installation infrastructure.

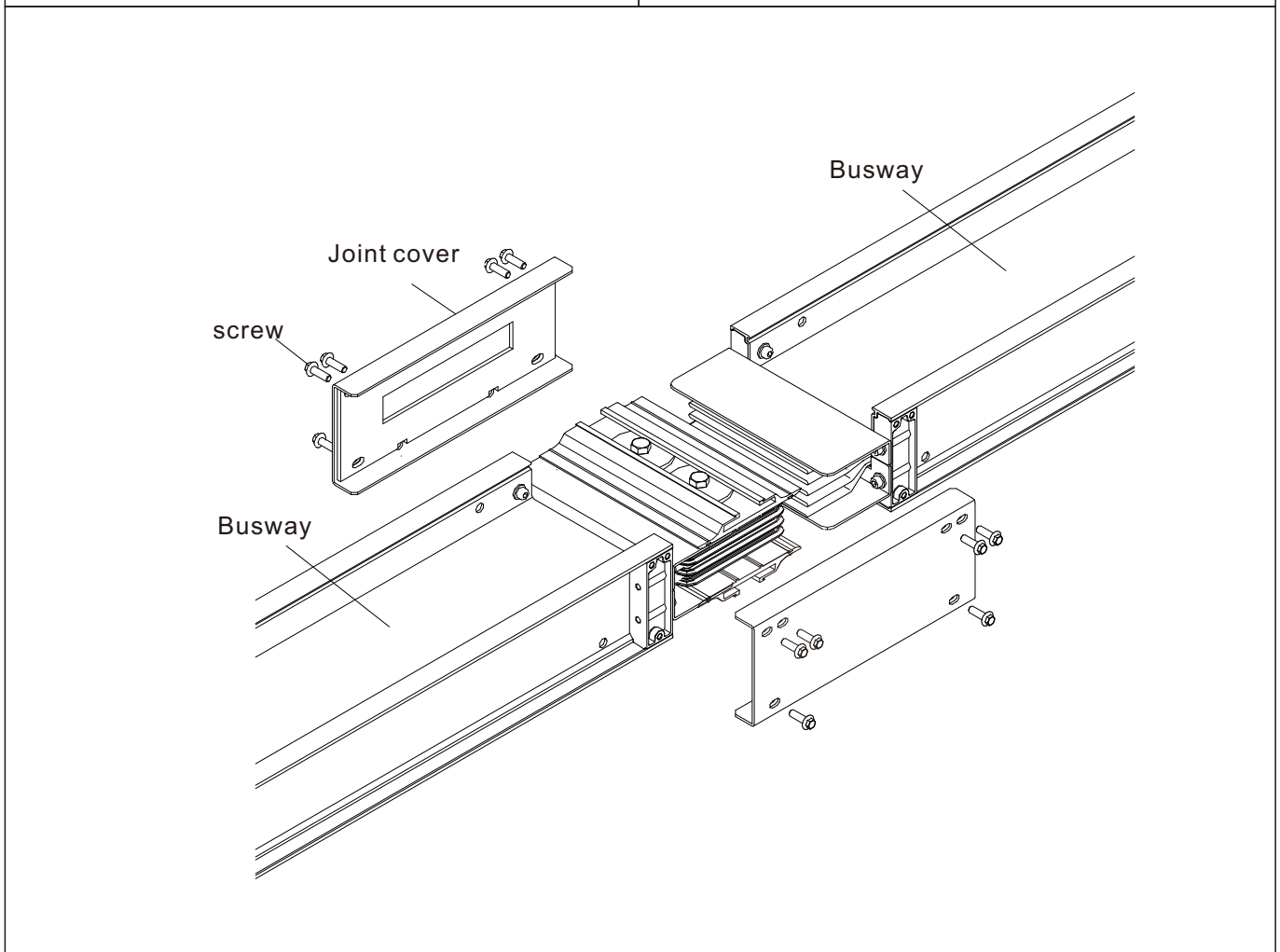
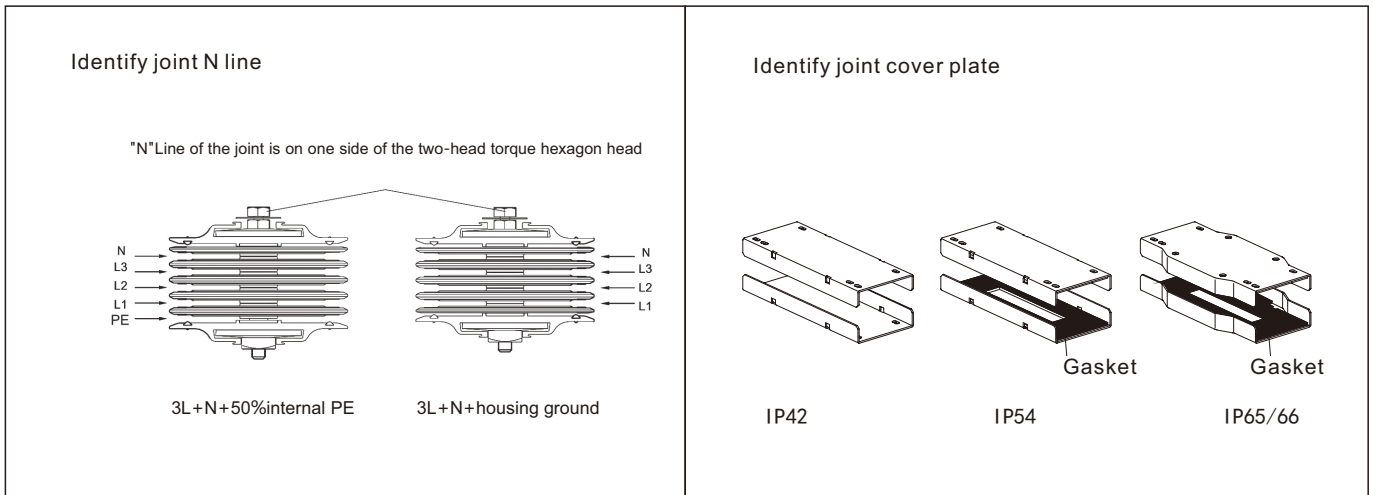


Busway Installation

Busway and joint installation

Identify Structural characteristics

Pay attention to "N" line direction consistency of busway and joint when installing!



Installation tools

Tape measure, megger, $\phi 19$ socket wrench, 12 # wrench (hexagonal spanner), spirit level, the auxiliary installation tool, etc.

Installation steps

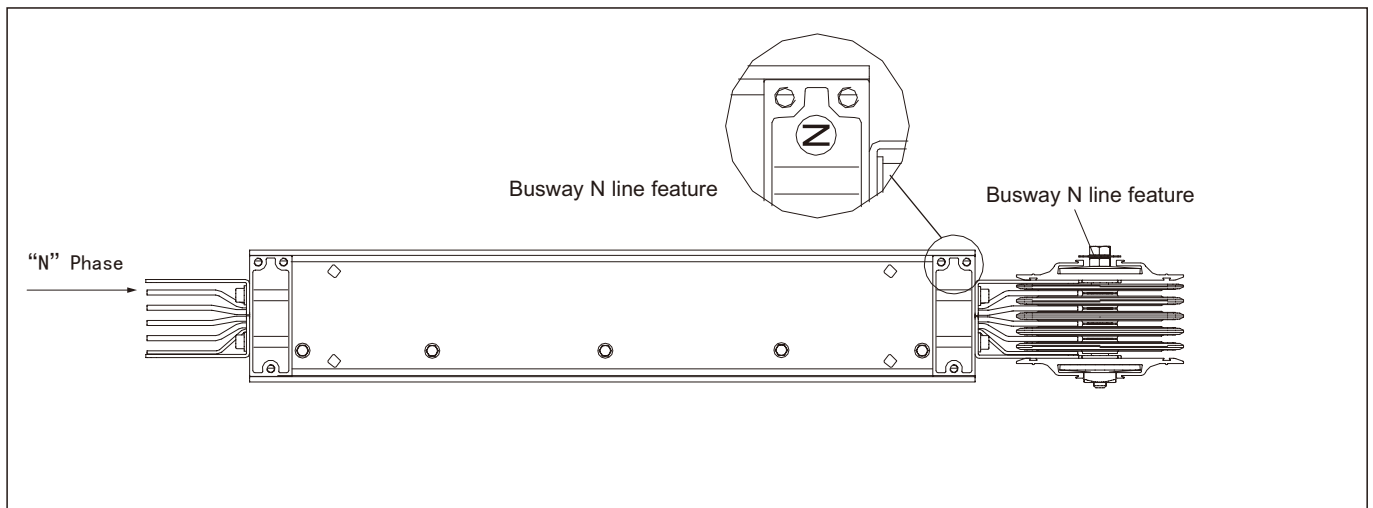
(Note: The mounting bracket, wall hole position and connector position should not be in the same position.)

(1) Pre-installation procedure

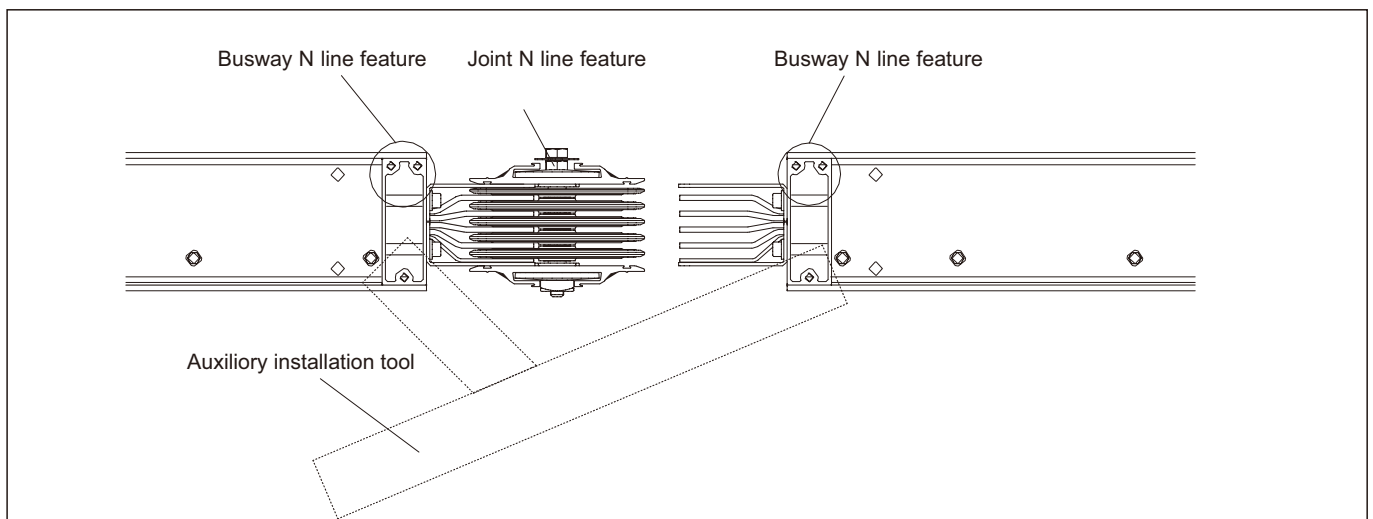
- Identify the busways and joints to be installed according to the installation documents.
- Check that the busways and joints to be installed are in good condition.
- Megger the busways to be installed. Normally the insulation resistance should be greater than $50M\Omega$.

(2) Start the installation

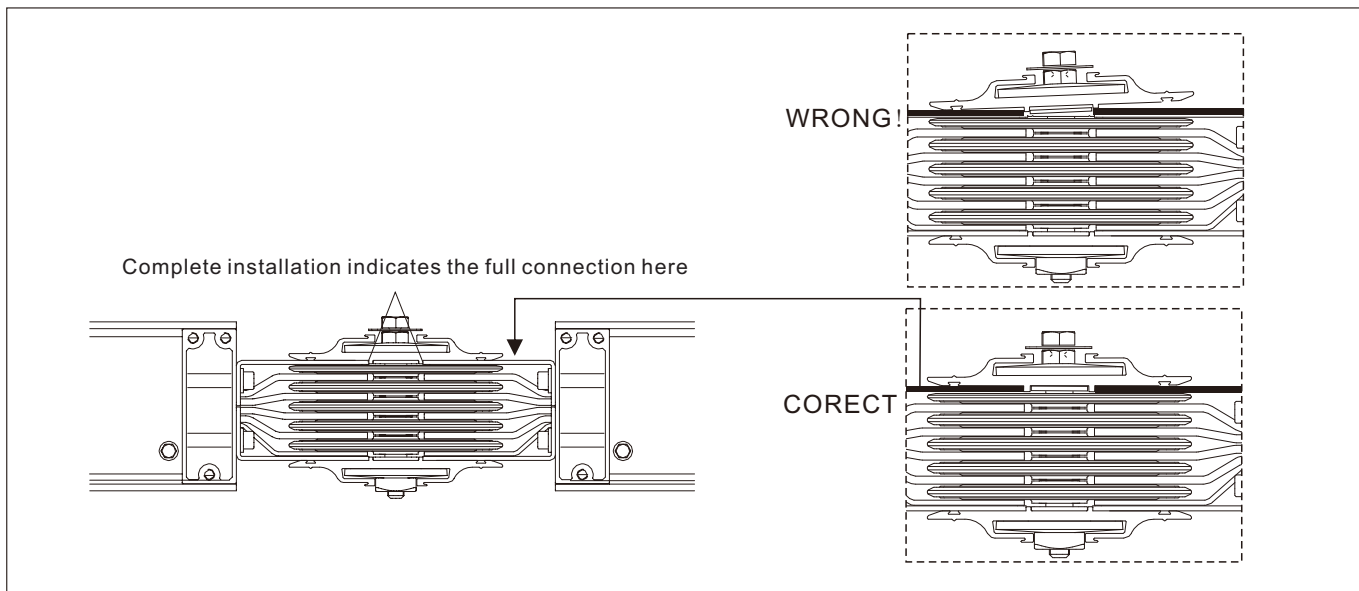
- Place the busway on a preset mounting bracket.
- Loosen the double-headed torque bolt of the joint .
- Follow the principle that N lines should be on the same side when installing the joint on the busway (please note the joint may come off after the screw is too loose).



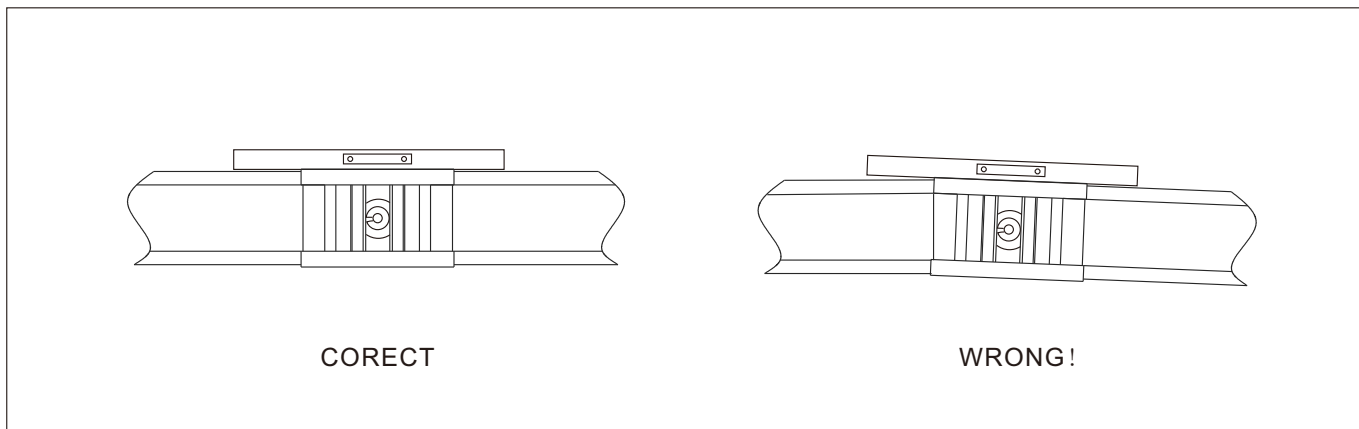
(3) Install the next section of busway on the other side of the joint (if it's hard to install, you can use the auxiliary installation tool. Please contact WETOWN about the tool).



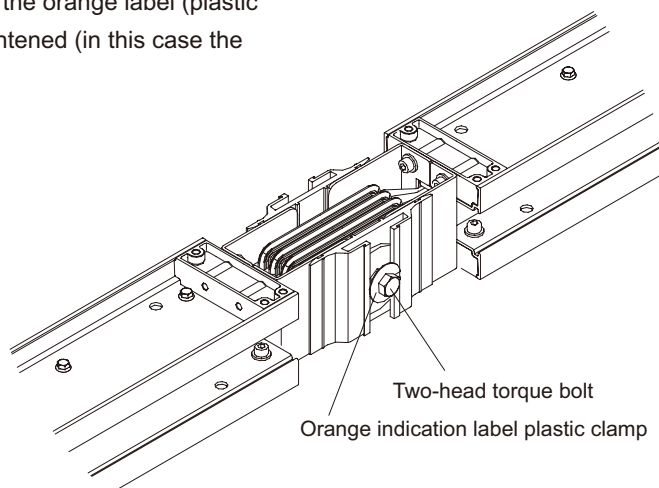
(4) Adjust the busway and joint to make the connection in place, meanwhile ensure two sections of busway are aligned.



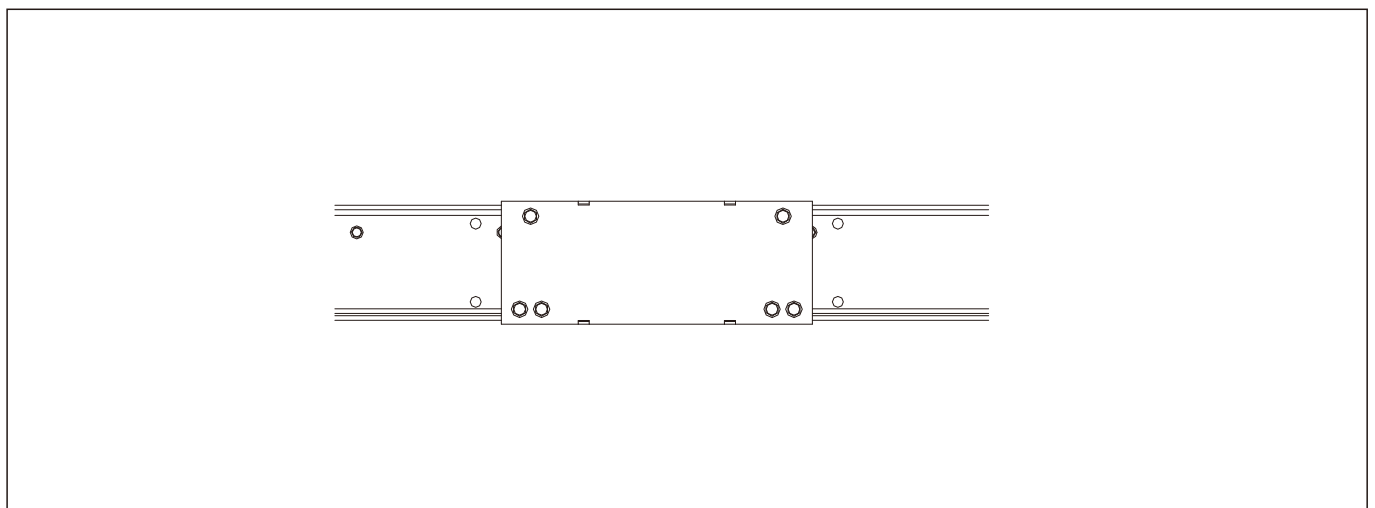
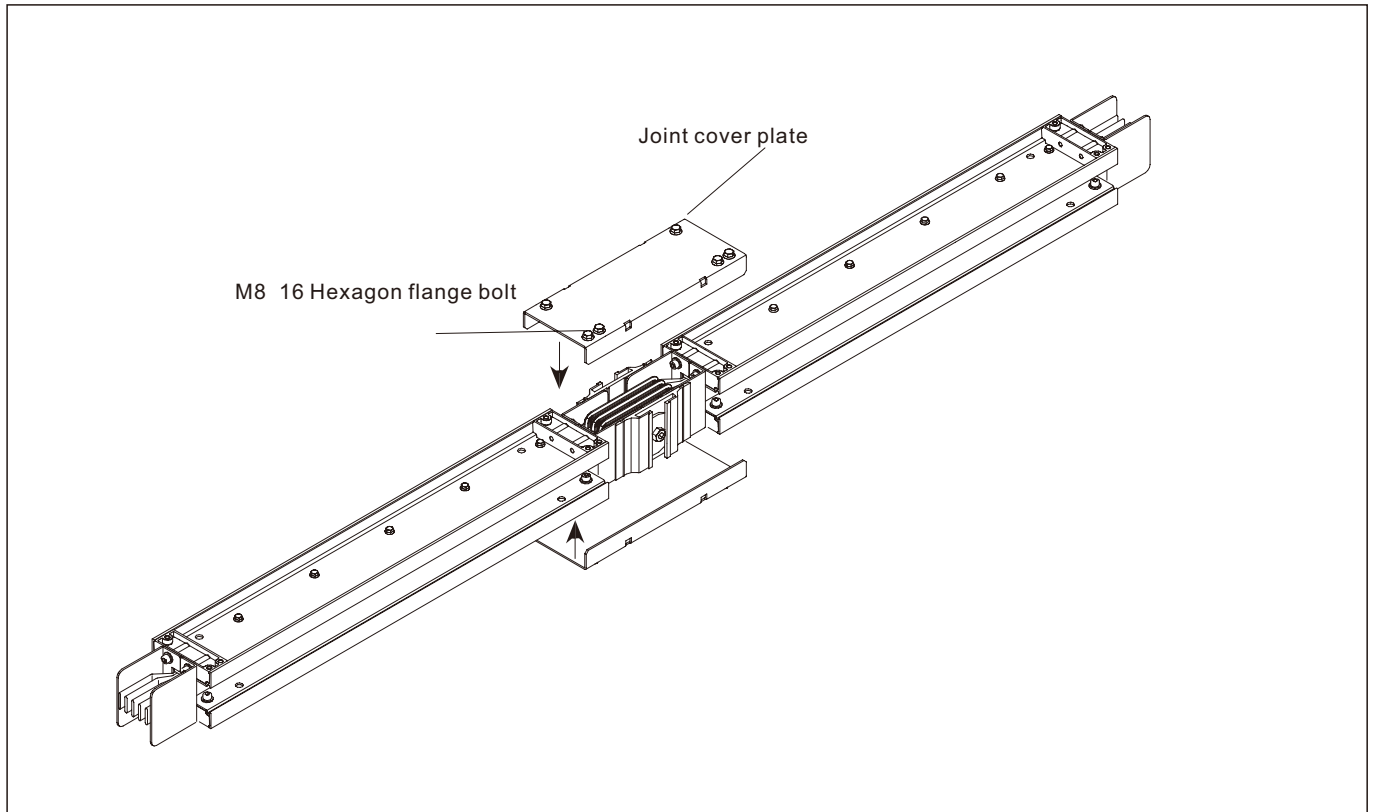
(5) When the busbar is connected, it should keep level. A spirit level can be used for auxiliary installation



(6) With a wrench until it's broken. At this moment, the orange label (plastic clip) will come off, indicating that the connector is tightened (in this case the bolt tightening torque is $70 \pm 10\text{Nm}$).



(7) Install upper and lower joint cover plates according to the diagram below, and tighten the bolts.

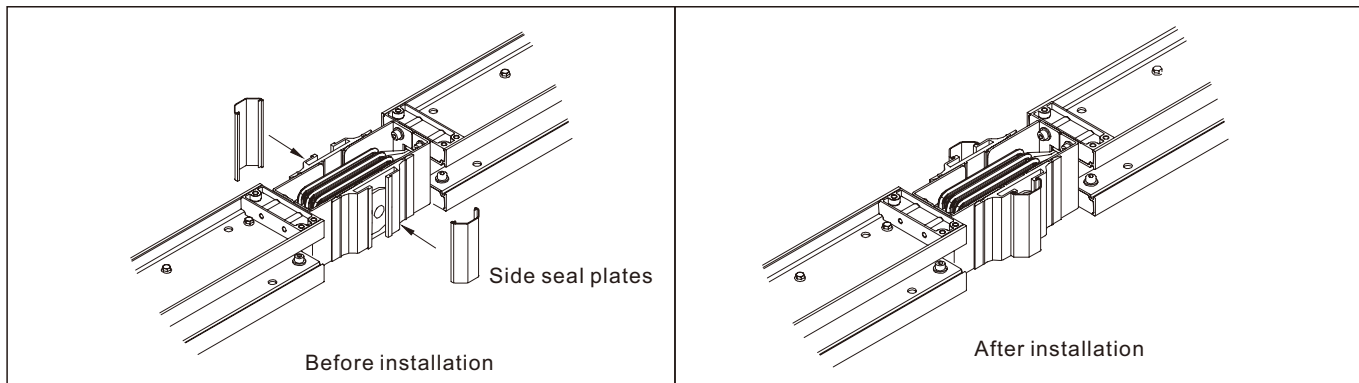


(8) Megger the installed busway after joint cover plates are installed. Insulation resistance of the busway run shall not be less than 0.4MΩ.

(9) After installation, make sure the busway vertically and horizontally straight (Not exceed 10mm on the straight line with the linear distance of 10m).

IP65/IP66 installation guidance.

(1) If the protection grade is IP65 or IP66, install side seal plates at joint.

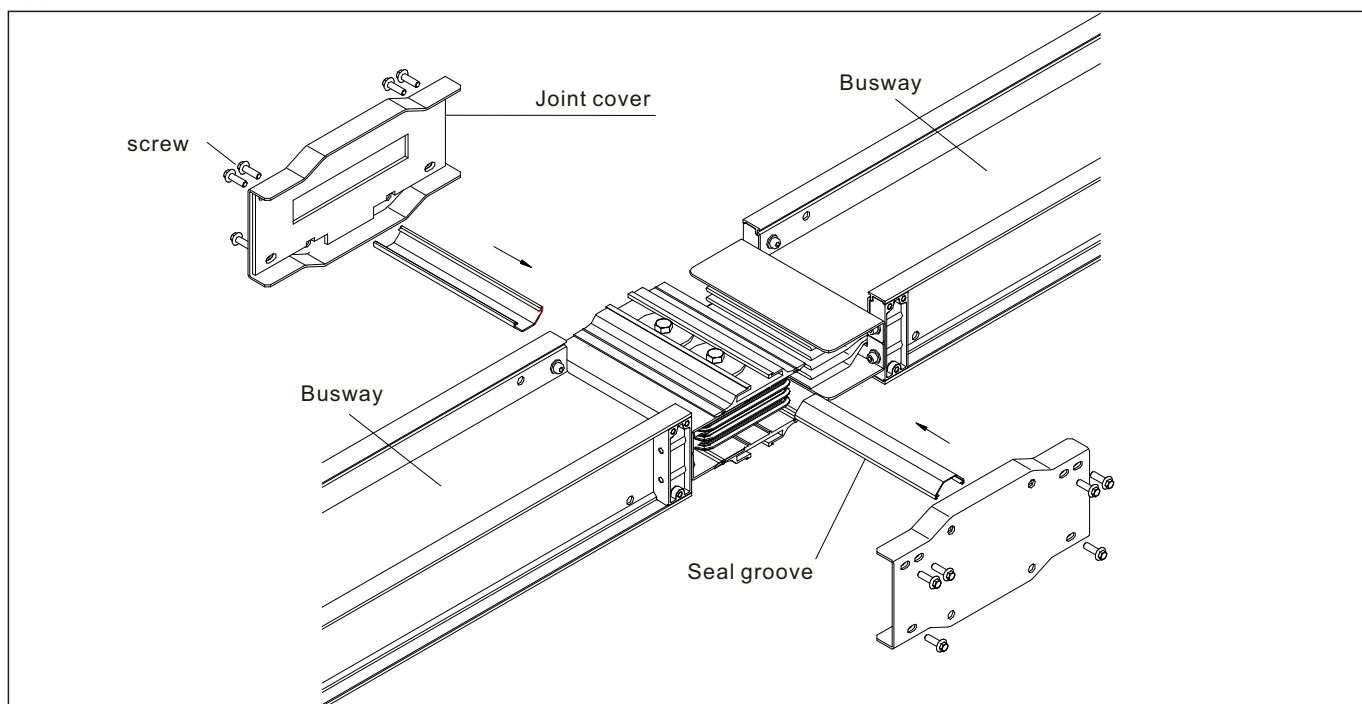


(2) Gluing method at joint, use STP1921 sealant to glue the parts as below
 Glue operation method: Cut the end of the glue nozzle at 45 degrees



① The seam of busway side plate (B) and joint (A) ② The seam of transparent cover (C) and joint (A)
 Attention: The seam of joint and lower cover (D) no need to be glued, because the Black tape (E) is waterproof gasket (see the white line in picture)

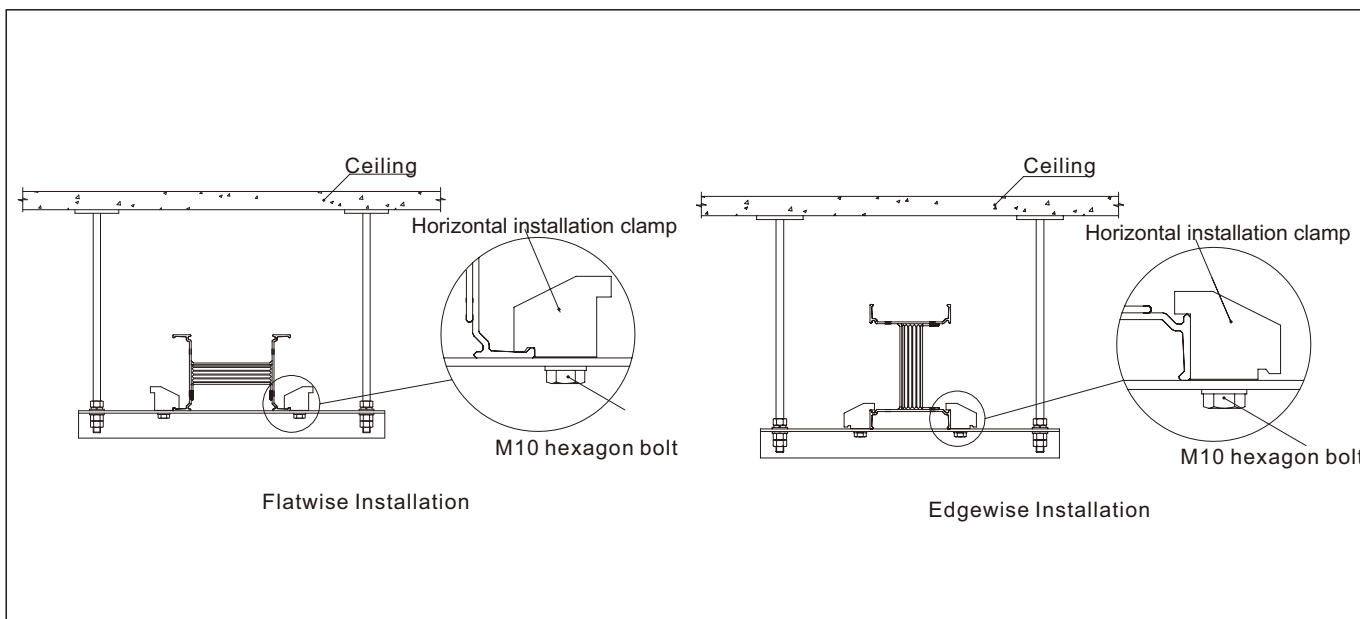
(3) Install upper and lower joint cover plates according to the diagram below, and tighten the bolts.



Horizontal busway installation

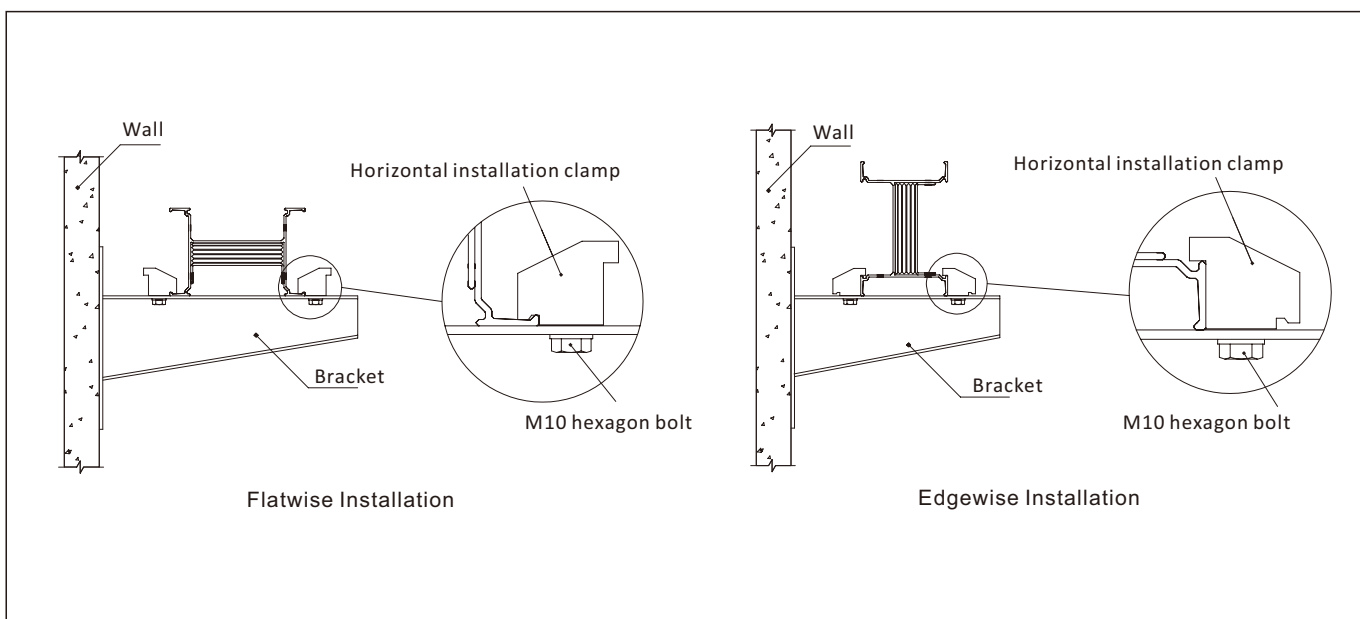
Horizontal installation with hanger

Note: It's forbidden to fix the Installation clamp and the installation bracket by welding (high temperature produced during welding will damage the busbar insulation)



Horizontal installation with bracket

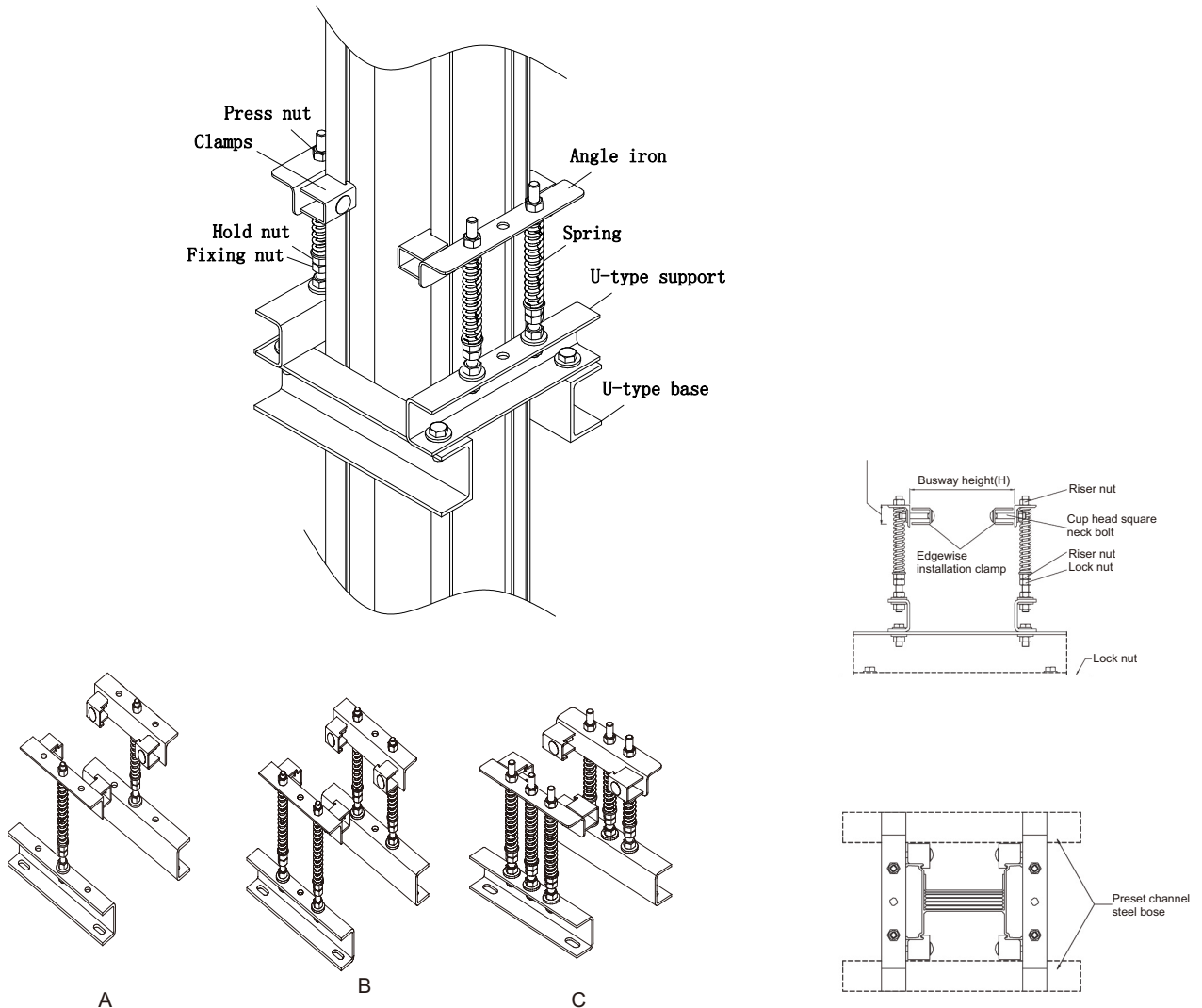
Note: It's forbidden to fix the Installation clamp and the installation bracket by welding (high temperature produced during welding will damage the busbar insulation).



Vertical busway installation

Installation with spring hanger

Note: It's forbidden to fix the Installation clamp and the installation bracket by welding (high temperature produced during welding will damage the busbar insulation)



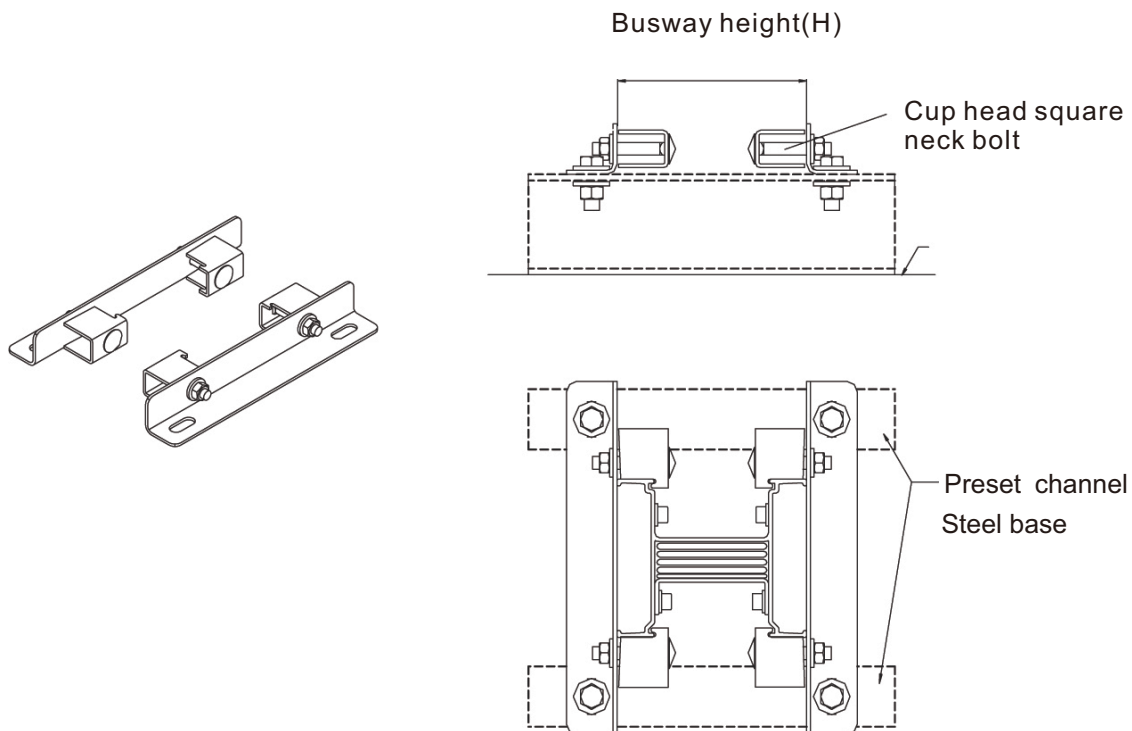
- (1) Structural characteristics of spring bracket: (see picture above)
- (2) Installation tools: 17# hexagonal open end wrench, 19# hexagonal open end wrench, etc.
- (3) Installation steps:
 - Check that the spring hanger is in good condition.
 - Place the busway to be installed in a reasonable position, and ensure its verticality.
 - Adjust the compression nut and compression spring; compressed spring length is "H" (see the attachment for the calculation method of H-value);
 - Loosen the nut of cup head square neck bolt, fix the spring hanger on the busway.
 - Fix the spring hanger to the preset channel steel base, tighten the cup head square neck bolt.
 - According to the above steps, install 4-5 layers, adjust the riser nuts of each layer from top to bottom to make the busway reside on the spring bracket naturally.
 - Tighten the lock nut of the spring bracket, and appropriately release the compression nut.

Note:

- After installation, make sure the busway bending not greater than 2 degree;
- The installation spacing of fixed bracket should not be greater than 4m when vertical installation.

Installation with spring hanger

Note: It's forbidden to fix the Installation clamp and the installation bracket by welding (high temperature produced during welding will damage the busbar insulation).

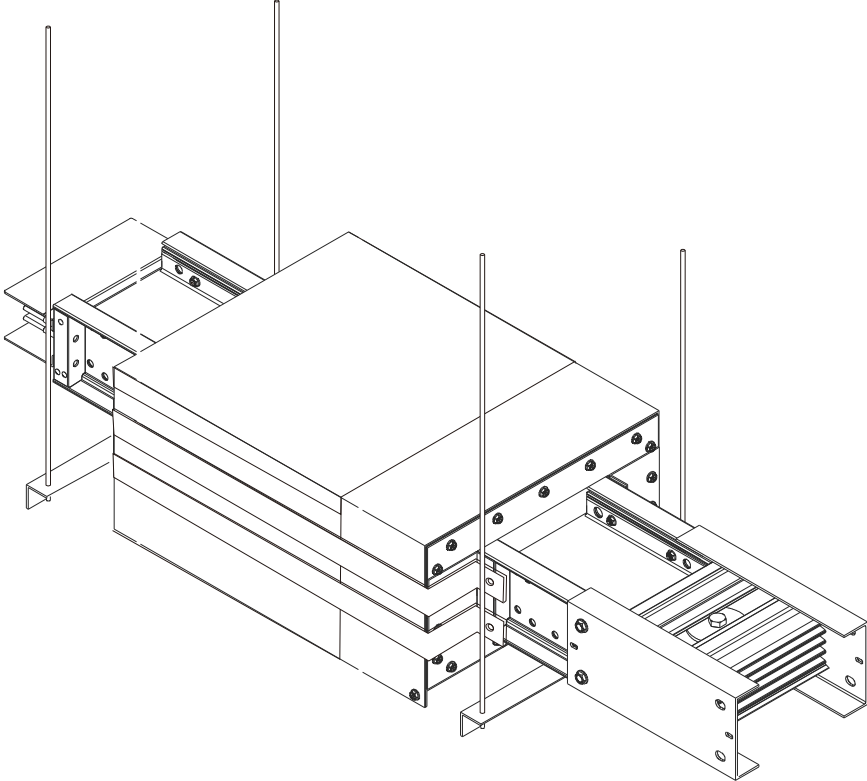


- (1) Structural characteristics of fixed bracket: (see picture above)
- (2) Installation tools: 17# hexagonal open end wrench, etc.
- (3) Installation steps:
 - Check that the fixed bracket is in good condition.
 - Place the busway to be installed in a reasonable position, and ensure its verticality.
 - Loosen the nut of cup head square neck bolt, fix the fixed bracket on the busway.
 - Fix the fixed bracket to the preset channel steel base, tighten the cup head square neck bolt.

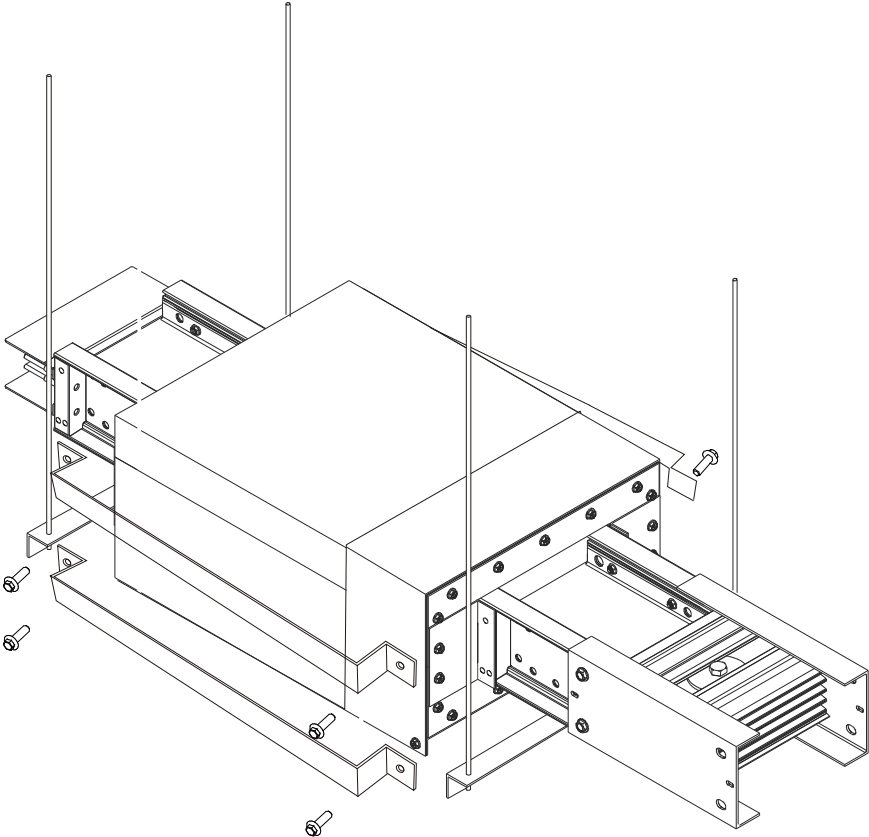
Note:

- After installation, make sure the busway bending not greater than 2 degree; - The installation spacing of fixed bracket should not be greater than 4m.
- The dimensions of spring supports are applicable to each other. For areas with special requirements (e.g earthquake prone areas), the spring supports in Figure B can also be considered for small current busway

Expansion joint installation



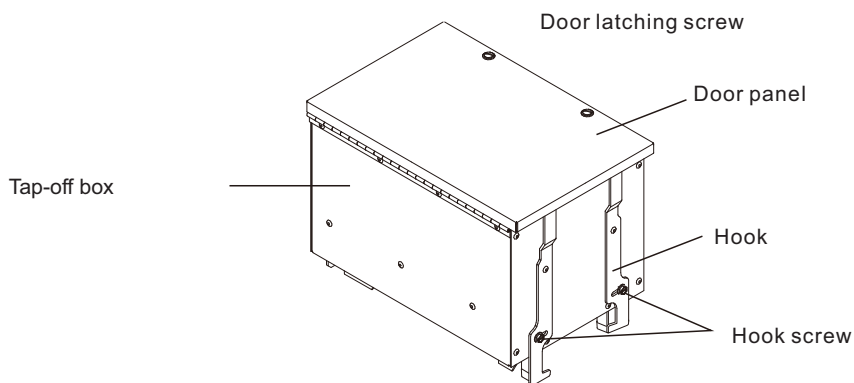
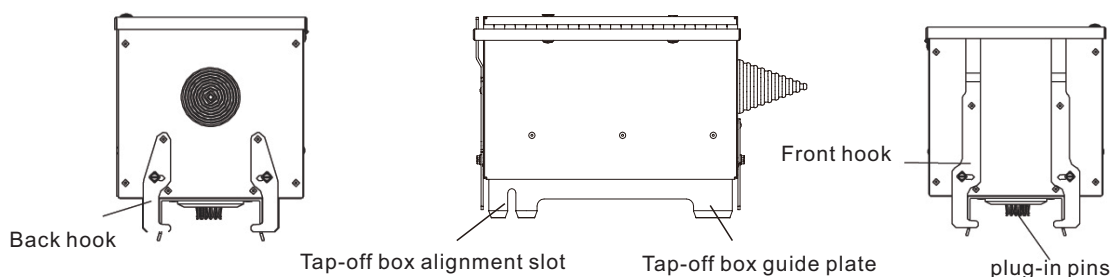
The clamp must be removed after installation



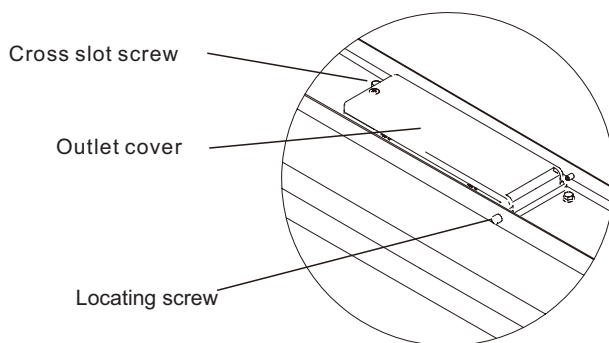
Busway plug installation

The structural characteristics of the busway plug feature recognition

(1) Identification of tap-off box



(2) Identification of plug-in busway



Installation tools

Flathead screwdriver, Phillips screwdriver, 10# wrench (hex open end spanner), etc.

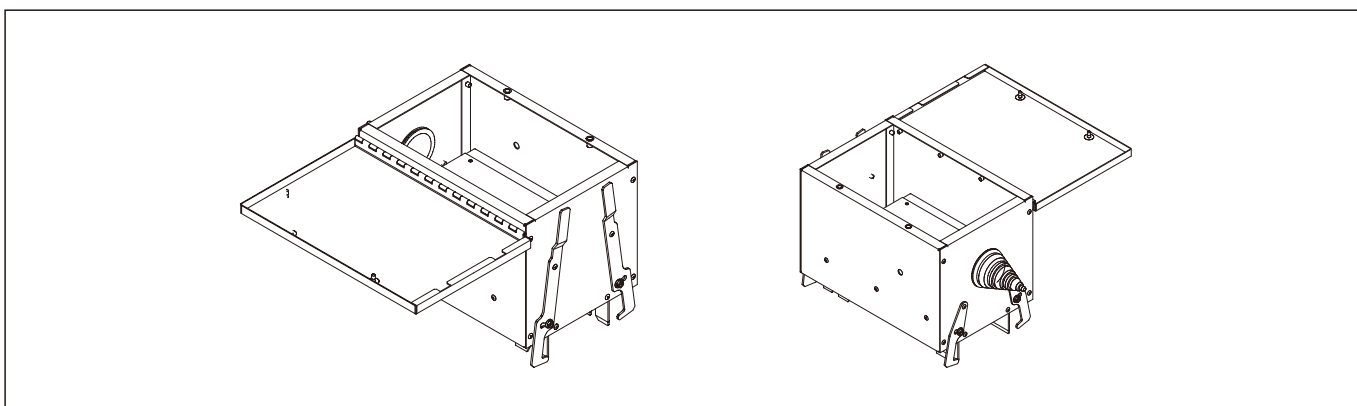
Installation steps

(1) Pre-installation procedure

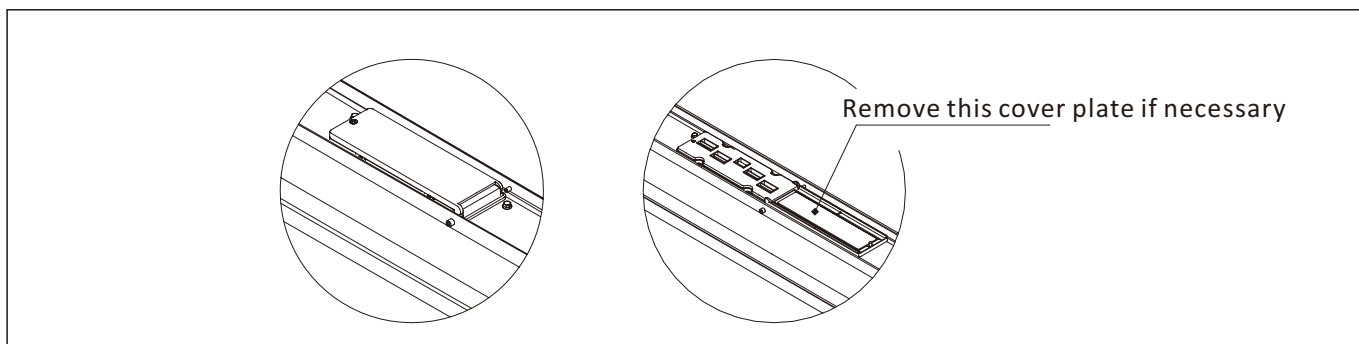
- Identify the busway plug to be installed according to the installation materials.
- Check that there is no significant deformation on the busway plug, especially busway plug guide plate, front and rear locking hooks, insertion pin.

(2) Ready to Install.

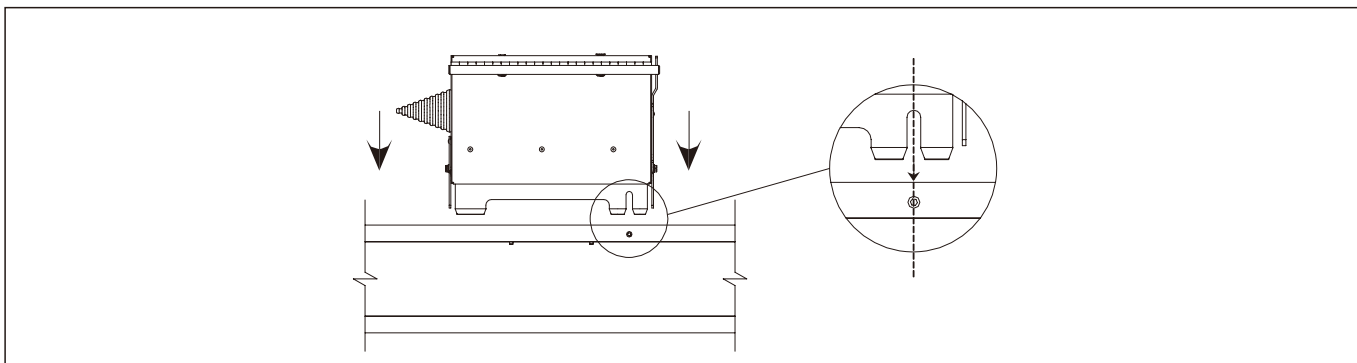
- Loosen the lock screw, open the door
 - Loosen the foot lock screw, open front and rear locking pins
- (Note: Loosen the foot lock screw until the locking pin can be screwed).



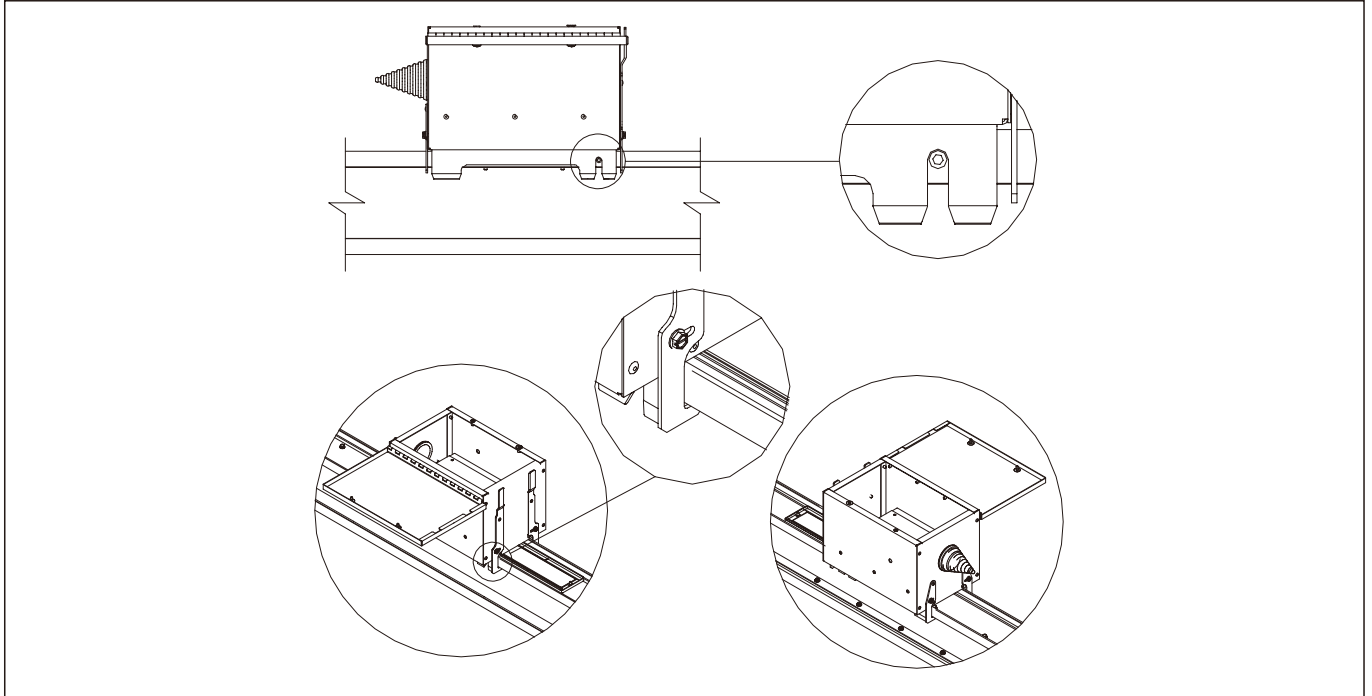
(3) Loosen the cross recessed screw on the plug-in outlet cover and then open the cover.



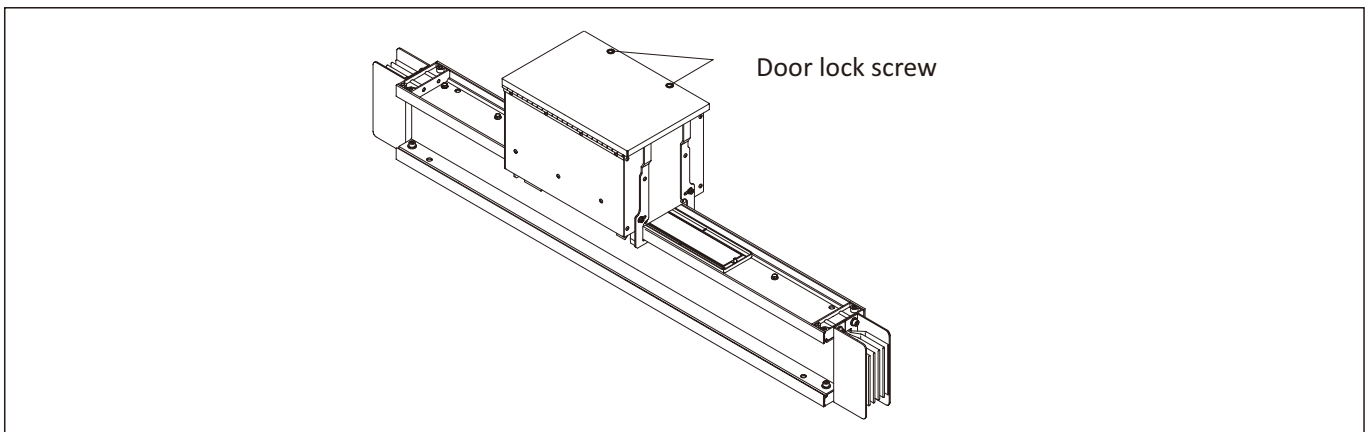
(4) Adjust the positioning groove to the same position as the positioning screw, insert the busway plug.



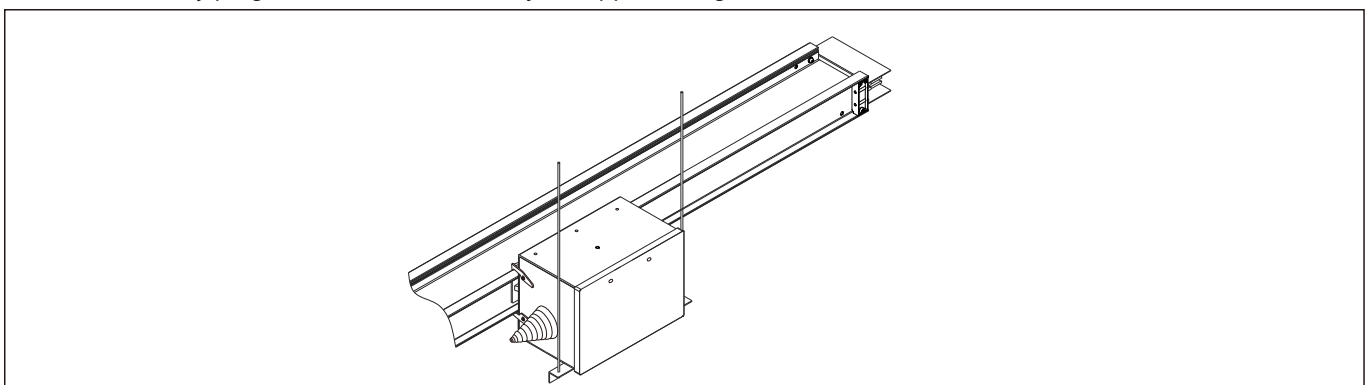
(5) Plug the busway plug to busway till the plug installation plate touched busway housing. Tighten rear locking hooks.



(6) Close the busway plug door, lock the door lock screw. Now the busway plug installation is finished..



(7) Horizontal installation of the busway plug.
When the busway plug is installed horizontally, a support-hanger should be installed under it.



Busway commissioning and maintenance

Commissioning

- After the installation of the entire busway system, its insulation resistance shall be not less than 20MΩ. The insulation resistance tends to be less than 20MΩ after a period of time, Because the busway installation site is wet. When the busway is operating with connection to the power, the insulation resistance shall be not less than 0.4 MΩ. If the insulation resistance is within 0.1 MΩ~ 0.4 MΩ, the busway can operate at no load for 4~16 hours and then operate at load. If the insulation resistance is less than 0.1 MΩ, the busway shall not be energized.
- The busway system should be subject to electrical test before being energized. All connection equipment of the system should be associated properly.
- Power transmission to busway.

The operator must be qualified professional electrical installer. Non-specialized persons should not be allowed to stay on the site.

During power transmission, the busway should not be at any electrical load, and all the distribution devices should be disconnected.

Maintenance

- The busway should be subject to a periodic check annually, especially the busway which produce loud noise during operation.
- Maintenance items
 - Check whether the total load current exceeds the design current and the busway's rated current;
 - Check the temperature rise on both sides and the joints of the busway(use the infrared thermometer);
 - Check the insulation resistance of busway system and make a complete record;
 - Check that the hanger support is firm;
 - Check whether the busway system components are missing, damaged or corroded, and whether the pressure applied on the spring bracket is appropriate;
 - Check whether there are heat sources affecting the system temperature rise around the busway system.

Safety Precautions

- Wear helmets when entering the construction site;
- Do not enter the lifting area;
- Put a warning tape around the stacked materials to prevent collision or damage;
- The material stack height must not exceed 1.8m;
- Safety guard should be set to protect the person who is working at high altitude from falling;
- No one is allowed to work alone in a dangerous workplace, instead he should work together with others;
- It's not allowed to use the copper wire as the fuse during construction;
- The power wire terminal should be wrapped. Regular inspection should be conducted to prevent electric leakage;
- All circuits should be checked for power transmission and power shortage during construction to prevent accidents;
- Always wear leather gloves and goggles when conducting welding work;
- Do not spill fluids on the busway, such as water, beverage, etc;
- Do not smoke on the construction site;
- Comply with occupational safety and health codes.

Common faults and solutions

Insulation resistance is low

Causes:

The busway is exposure to wet environment, or moisture entered inside of busway.

Solutions:

Keep the operating environment dry, eliminate dangerous sources affecting normal operation of busway.

Dry the busway that got damp or return to the factory if the case is serious.

Over-high temperature

Reason:

Overload or Joint connection loose.

Solutions:

Reduce the current load to within the busway current ratings.

Inspect joints and make sure all joints installed correctly and joint bolts tightened.

If abnormal heating is high or last long time, it's recommended to replace internal insulation materials.

Insulation breakdown

Reason:

Water ingress in the busway.

Conductive foreign matters entered inside.

Insulating material damaged due to wrong operation.

Solutions:

Eliminate root causes. Replace the busway section.

Default phase of busway plug

Reason:

Busway plug not be plugged in completely.

Busway connection is loose.

MCCB failure.

Solutions:

Check whether the busway plug is plugged in busway completely. If need, pls remove the plug and install back again.

Check the busway trunk and tighten connections if loose.

If the circuit breaker is closed and the upper and lower pile heads of the circuit breaker are not connected, it can be judged as the defective quality of the circuit breaker and you should contact the circuit breaker supplier as soon as possible.

Accessories

Dimensions of LV compact busway, weight per meter, spring number table of spring bracket

Table 1:
copper conductor
busway

| Rated Current (A) | W (mm) | H (mm) | Weight (kg/m) | | Sping hanger type |
|-------------------|--------|--------|---------------|----------------|--------------------------|
| | | | 4W100%N | 5W 100%N+50%PE | |
| 400 | 125 | 103 | 10.0 | 10.8 | See page. 08 Figure A |
| 630 | 125 | 103 | 11.8 | 12.9 | |
| 800 | 125 | 113 | 13.7 | 15.1 | |
| 1000 | 125 | 128 | 16.6 | 18.4 | |
| 1250 | 125 | 153 | 21.5 | 23.9 | |
| 1600 | 125 | 183 | 27.3 | 30.5 | |
| 2000 | 125 | 223 | 35.1 | 39.4 | Figure B |
| 2500 | 125 | 273 | 44.8 | 50.4 | |
| 3200 | 125 | 352 | 53.6 | 60.1 | |
| 4000 | 125 | 432 | 69.2 | 77.7 | Figure C |
| 5000 | 125 | 532 | 88.6 | 99.8 | |
| 6300 | 125 | 701 | 114.5 | 128.9 | |

Table 2:
Aluminum conductor
busway

| Rated Current (A) | W (mm) | H (mm) | Weight (kg/m) | | Sping hanger type |
|-------------------|--------|--------|---------------|----------------|--------------------------|
| | | | 4W100%N | 5W 100%N+50%PE | |
| 250 | 125 | 103 | 6.7 | 7.1 | See page. 08 Figure A |
| 400 | 125 | 113 | 7.4 | 7.8 | |
| 630 | 125 | 128 | 8.4 | 8.9 | |
| 800 | 125 | 143 | 9.4 | 10.0 | |
| 1000 | 125 | 168 | 11.1 | 11.9 | |
| 1250 | 125 | 203 | 13.5 | 14.6 | |
| 1600 | 125 | 242 | 16.9 | 18.3 | Figure B |
| 2000 | 125 | 303 | 21.2 | 22.8 | |
| 2500 | 125 | 392 | 26.0 | 28.1 | |
| 3200 | 125 | 472 | 32.8 | 35.7 | |
| 4000 | 125 | 592 | 40.2 | 44.0 | |

Spring compression calculation formula

$$H = 120 - W / (K \times n)$$

H: Final length of spring

W: See the table above for the weight of busways between floors (W = busway weight per meter × floor height + weight of all devices on the busway of that floor)

K: Pressure on spring per mm, K = 3kgf / mm

n: Number of springs on each floor

120: Initial length of spring

Bolt torque

Except the joint which have special requirements, the tightening torques of the remaining bolts are shown in the table below.

| Bolt size | | M6 | M8 | M10 | M12 | M14 | M16 | M20 |
|--------------|-----------|----|----|-----|-----|-----|-----|-----|
| Torque (N.m) | 4.8 grade | 5 | 13 | 20 | 35 | 55 | 85 | 170 |
| | 8.8 grade | 9 | 20 | 35 | 60 | 80 | 120 | 250 |

Note: The allowable torque tolerance should be $\pm 10\%$

WETOWN[®]

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