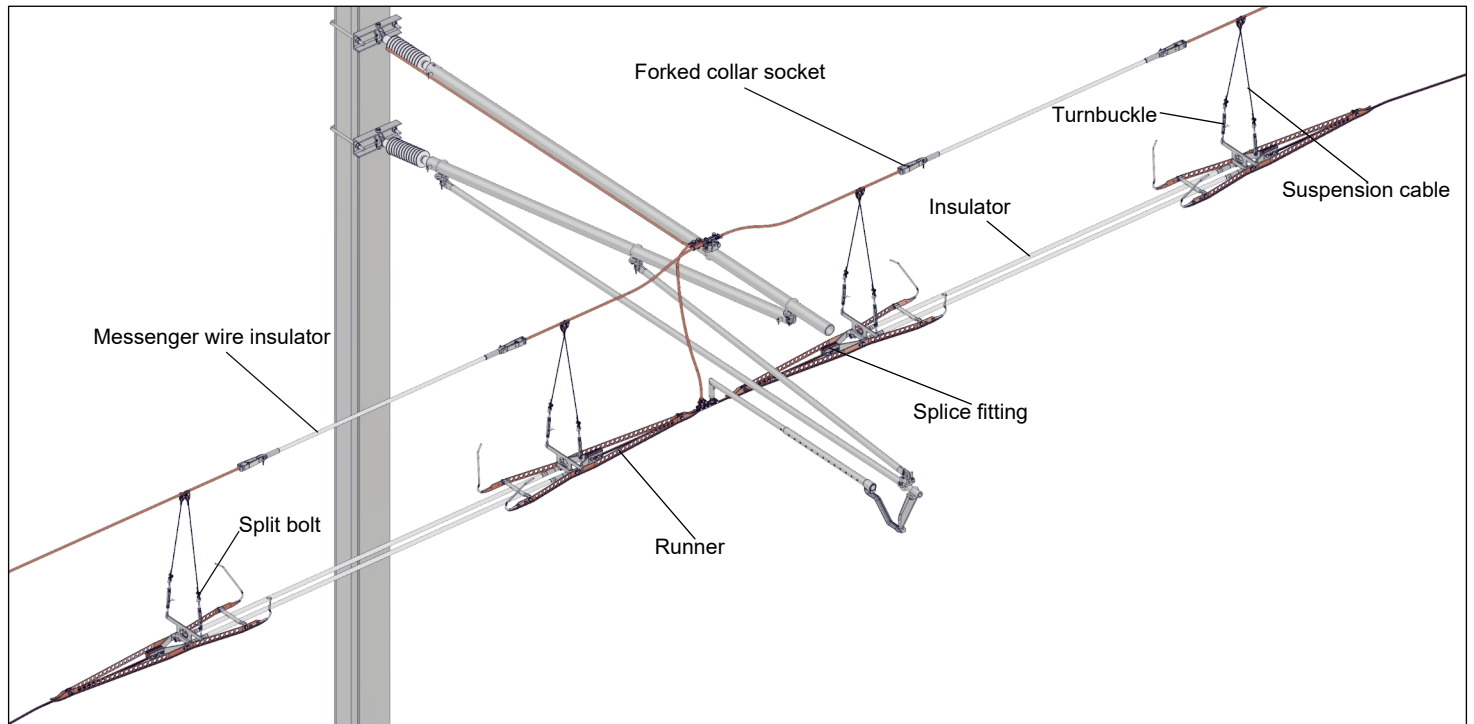


Phase break NS25

V 2026/08



Installation kit:

Installation kit NS25, art. no. 690.049.002
which includes:

Installation jig
Art. no. 655.900.043

Alignment bar
Art. no. 696.016.013

Adjustable spirit level
Art. no. 655.141.000



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RISK OF DEATH

Before working on the overhead line: Ensure that the overhead line is de-energized and properly grounded according to the regulations.

A) Tools

- 1 Double ratchet ring wrench 13, 17 and 19 mm..... art. no. 600.001.029
- 1 Torque wrench 13, 17 and 19 mm (50 Nm, 37 lbf ft) art. no. 655.114.000
- 1 Bolt cutter
- 1 Metal saw..... art. no. 656.000.002
- 1 Copper hammer..... art. no. 656.000.009
- 1 Straightening wood..... art. no. 656.000.005
- 1 Measuring tape..... art. no. 656.000.006
- 1 File

Additionally Tools:

- 1 Lever hoist for messenger wire insulator installation or replacement of a phase break
- 2 Measurement tools for height and stagger

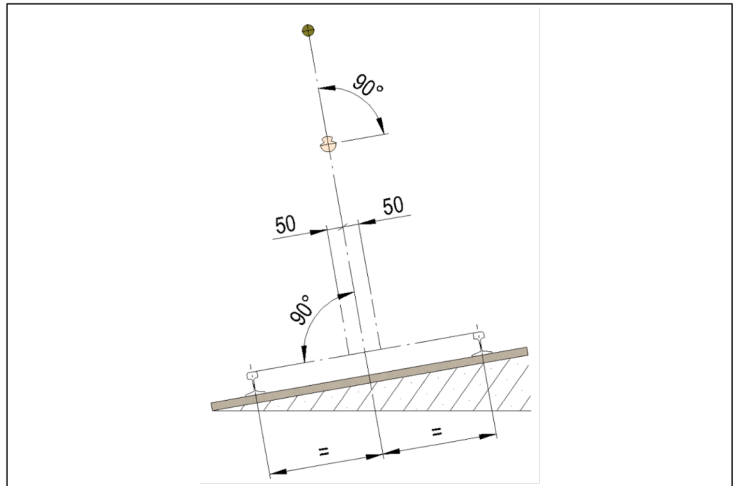
B) Installation

1. Preparation of contact and messenger wire

Each phase break should be well centred and aligned parallel to the track.
The carbon strip of the pantograph must run centred over the phase break.

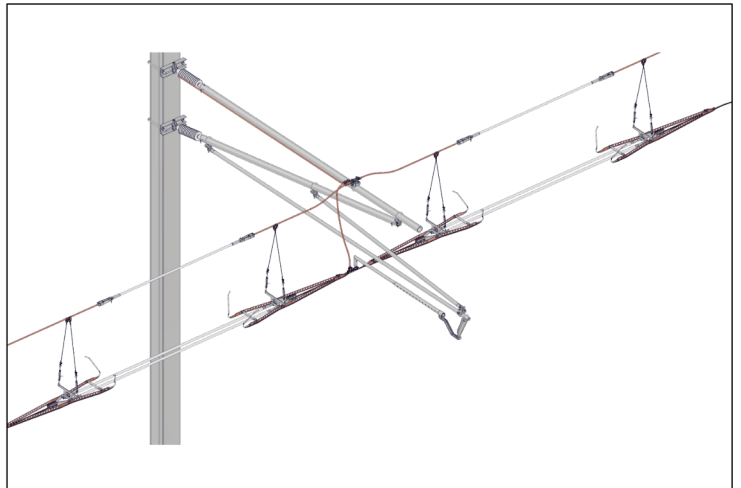
Straighten the contact and messenger wire at the installation location and make sure it is not twisted.

Align the contact and messenger wire in the middle of the track (**+/- 50 mm**).
The contact and messenger wire must be positioned vertically within **50 mm** above each other.

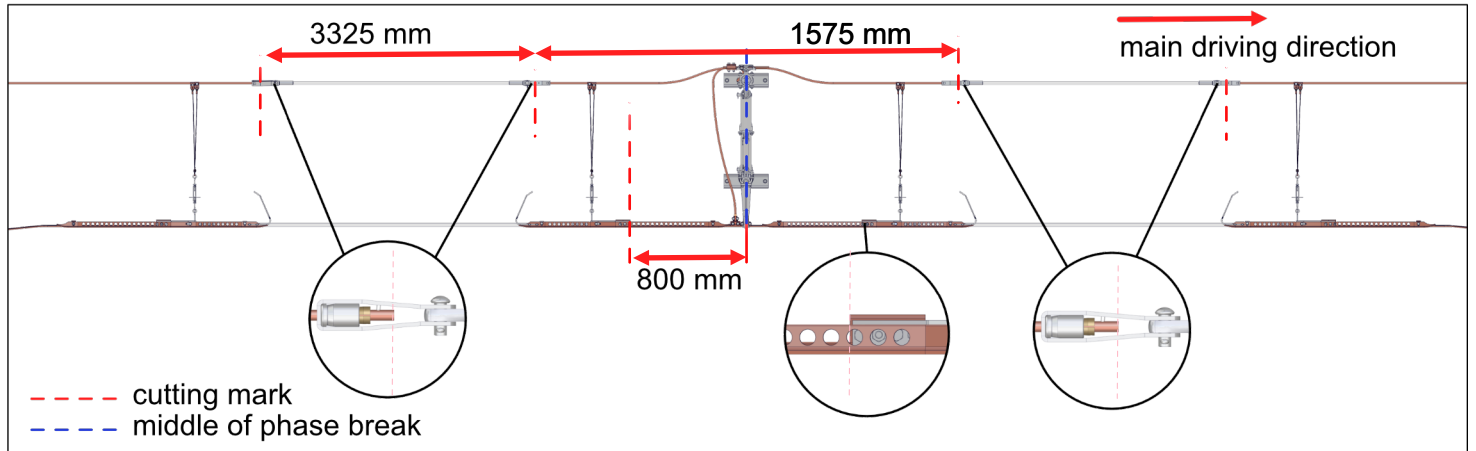


2. Installation location

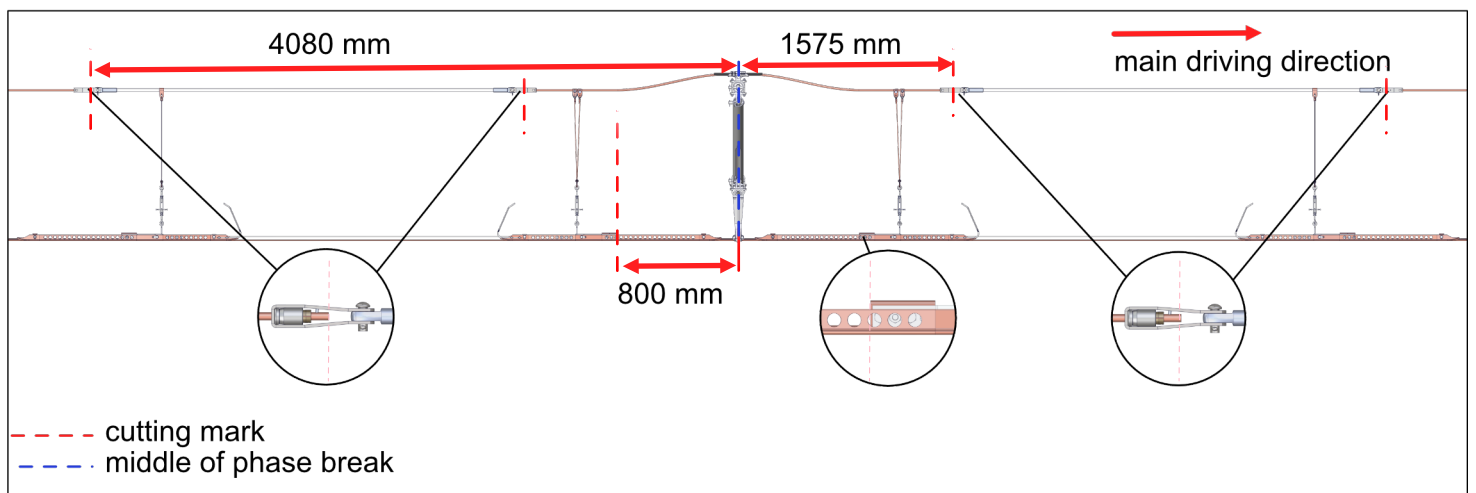
We recommend installing the phase break in autotensioned systems. In the middle of the contact wire insulator assembly there is a connection for the guide arm clamp.



3. Position of the messenger wire insulator and phase break

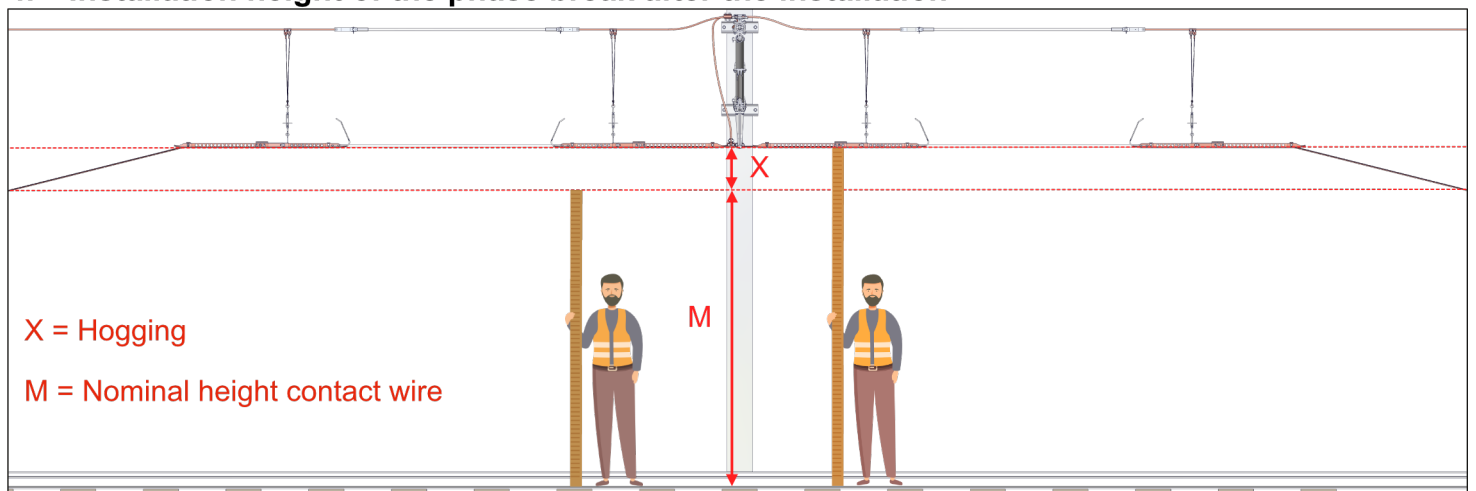


Install the messenger wire insulators and the phase break according to the cutting marks (short messenger wire insulators, creepage distance 1500 mm).

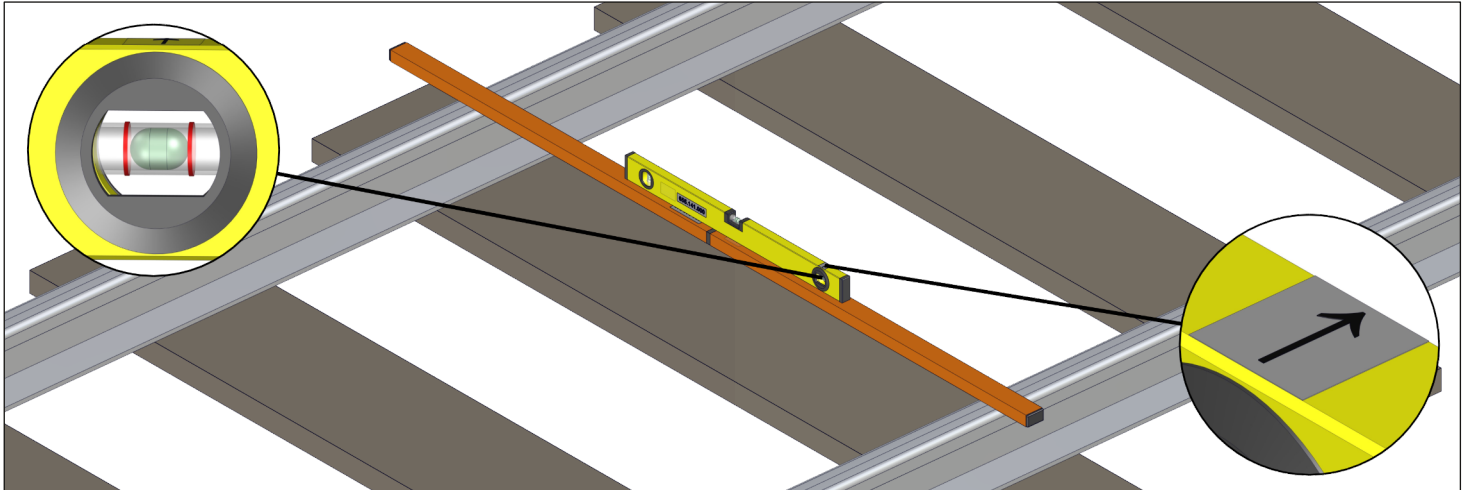


Install the messenger wire insulators and the phase break according to the cutting marks (long messenger wire insulators).

4. Installation height of the phase break after the installation

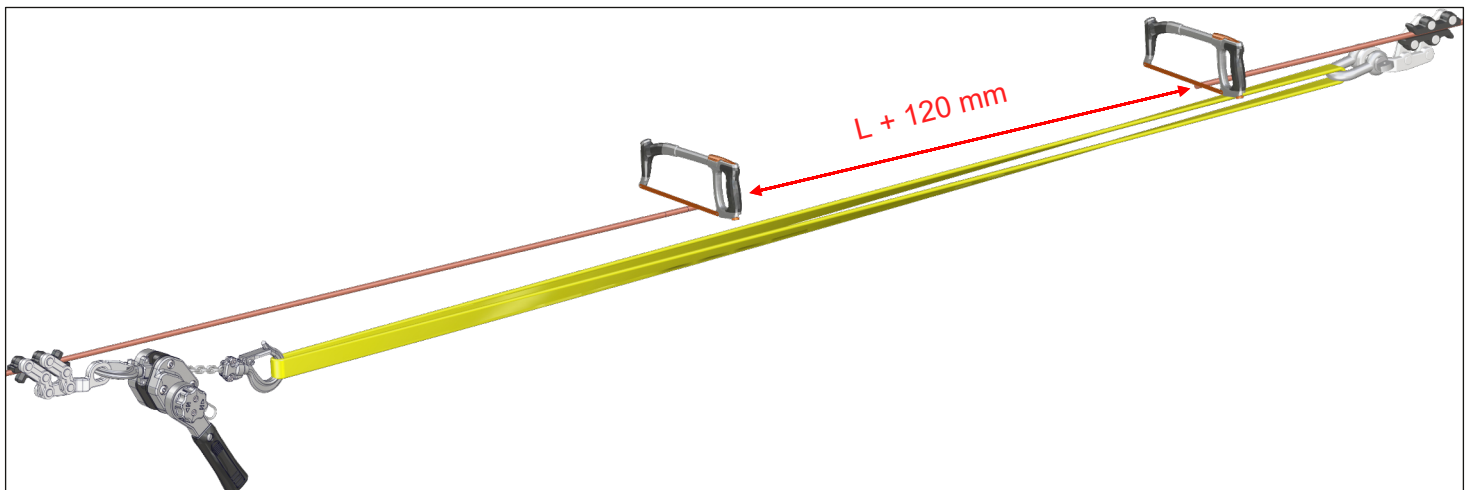
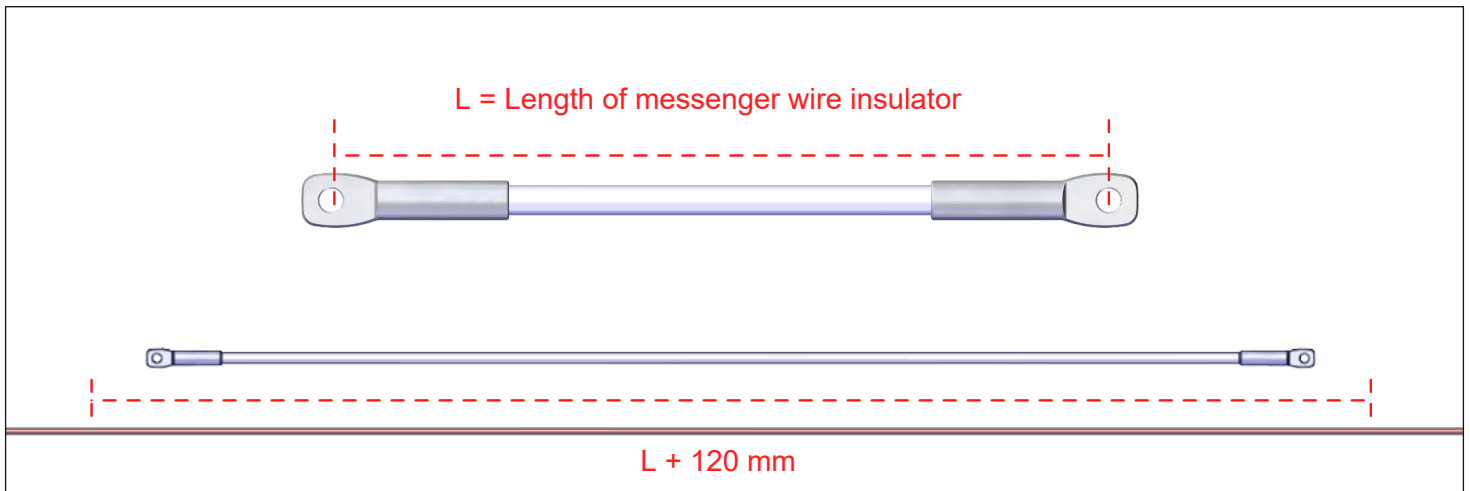


5. Measuring the cant with a spirit level

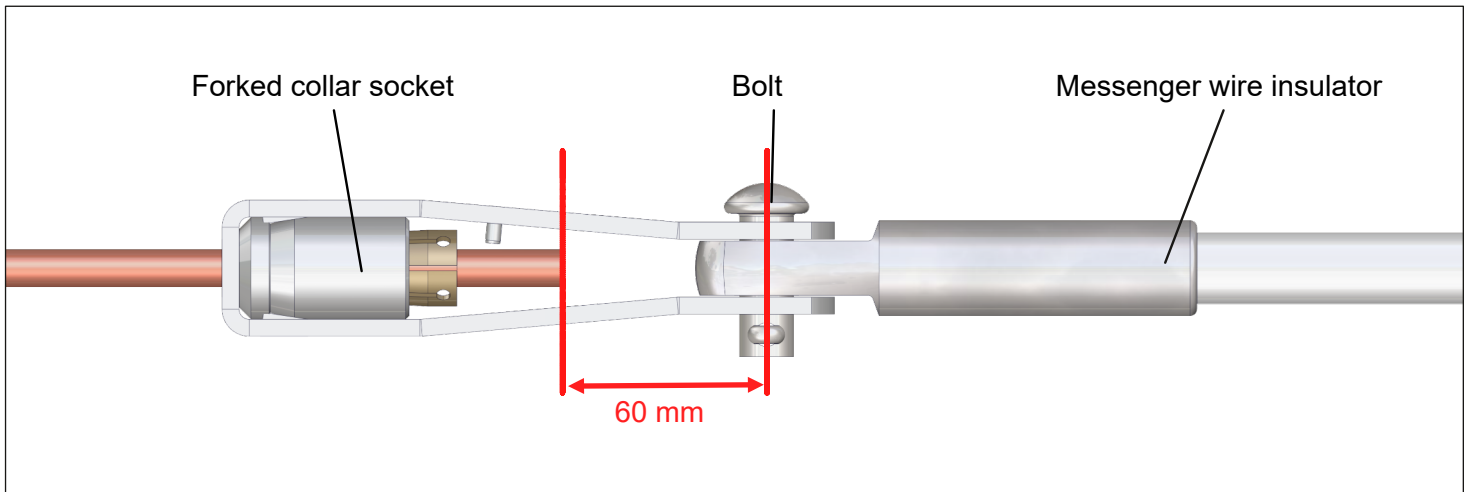


Determine the main driving direction. The direction can be chosen as desired, but must be maintained during installation in the overhead line. Calibrate the spirit level.

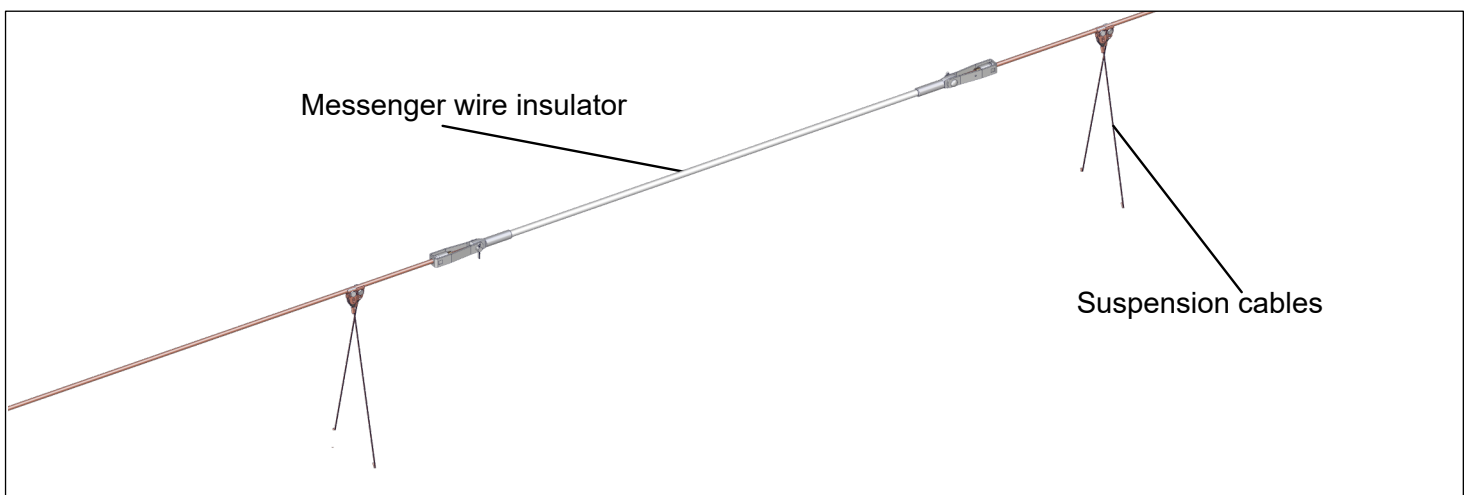
6. Installing the messenger wire insulator



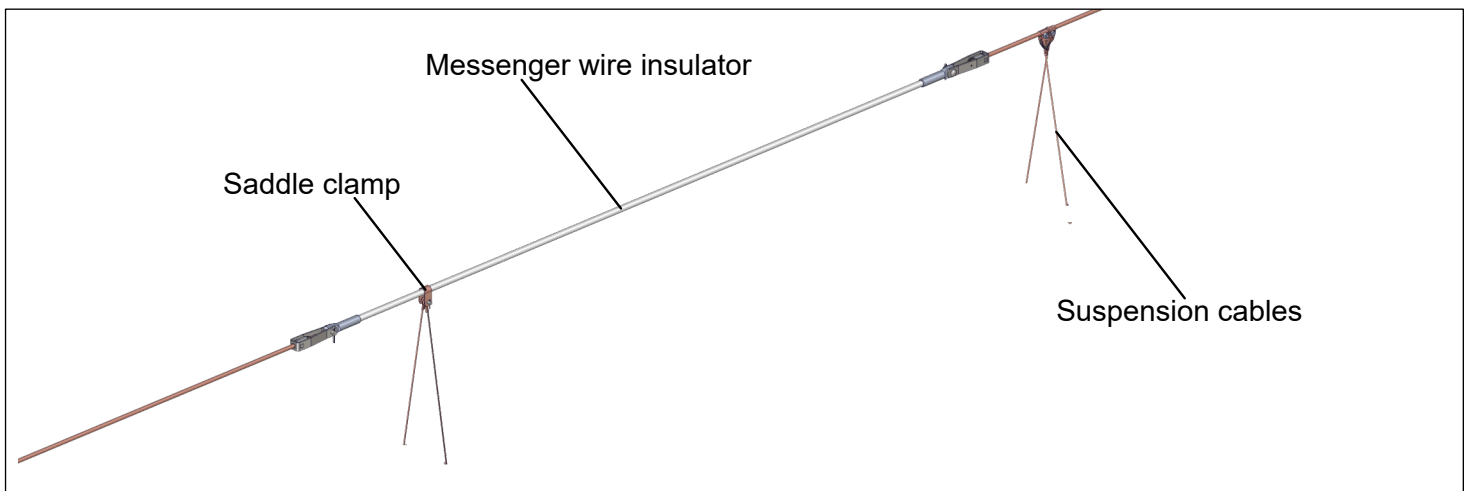
$L + 120 \text{ mm}$ = Length of the messenger wire to be cut for the installation of the messenger wire insulator.



Attach the messenger wire insulator to the forked collar socket on both sides.

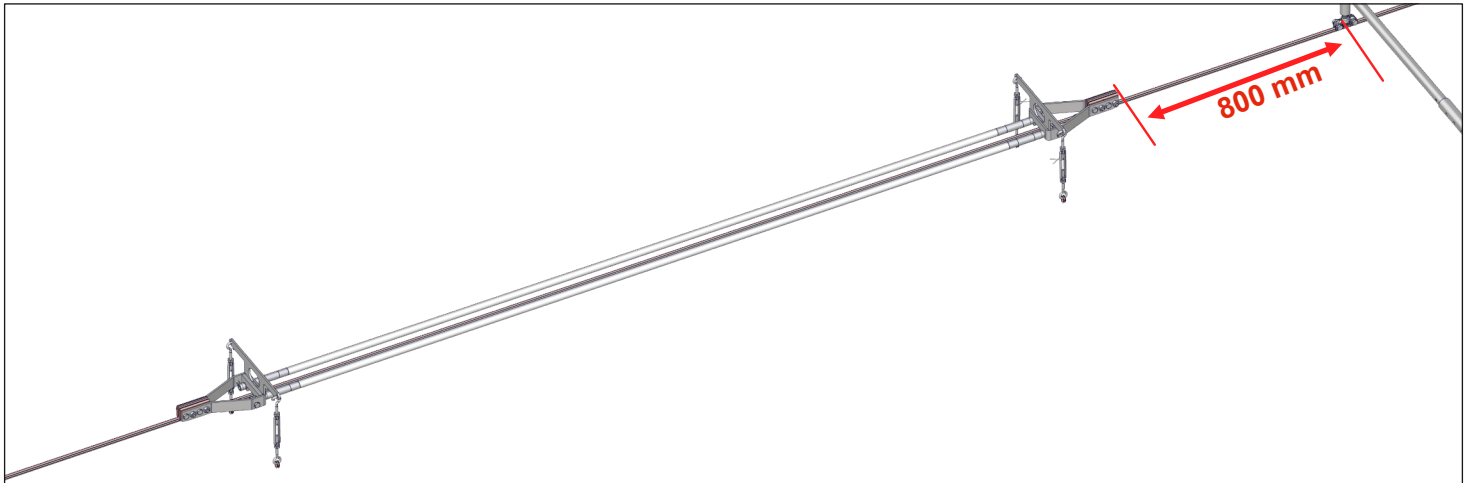


Attach both pairs of the suspension cables to the messenger wire (short messenger wire insulator).

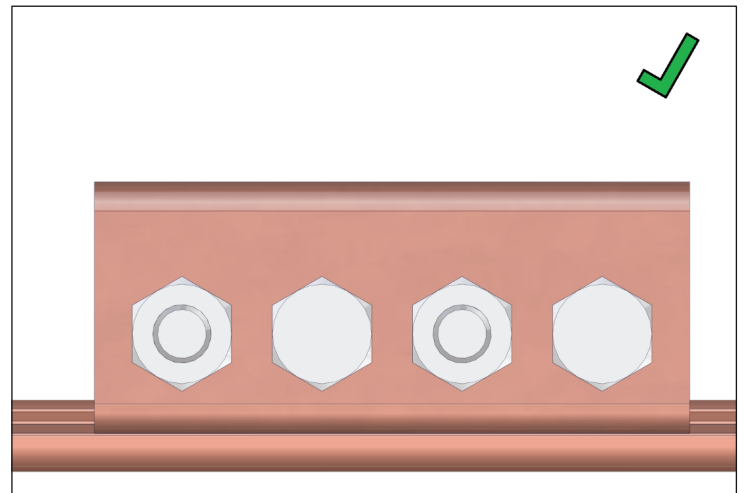
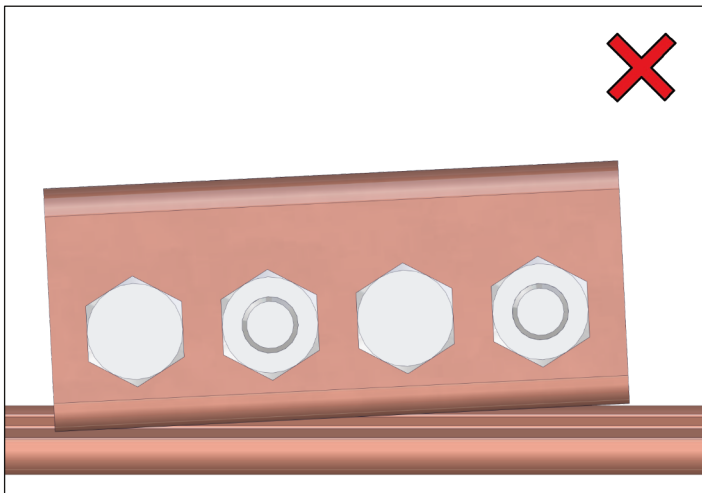


Alternatively, when using longer messenger wire insulators, attach one pair of suspension cables to the messenger wire insulator using the saddle clamp and attach the other pair of suspension cables to the messenger wire.

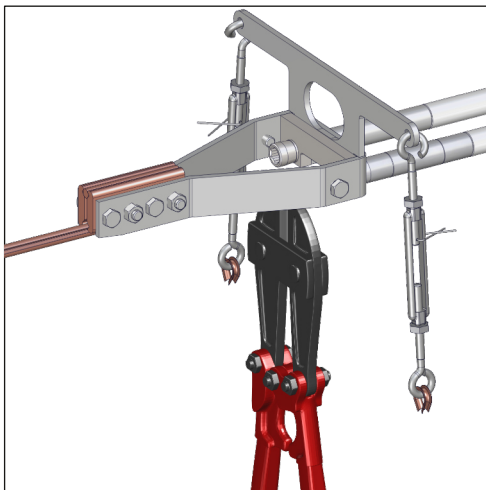
6. Installing the phase break onto the contact wire



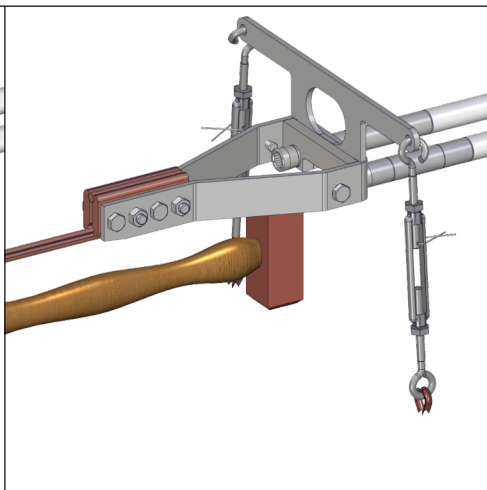
Place the phase break with slightly opened splice fittings onto the contact wire. Keep a distance of **800 mm** to the steady arm.



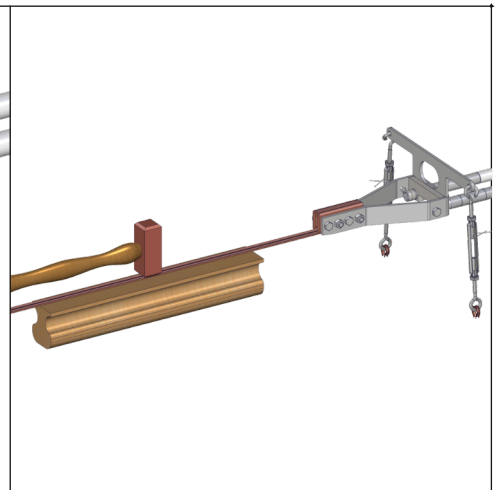
The splice fittings must grip into the contact wire groove over the full length. Tighten the bolts of the splice fittings one after the other with a torque wrench to **50 Nm**. Repeat this process twice (a total of three times).



Cut the contact wire on both sides of the neutral section body.

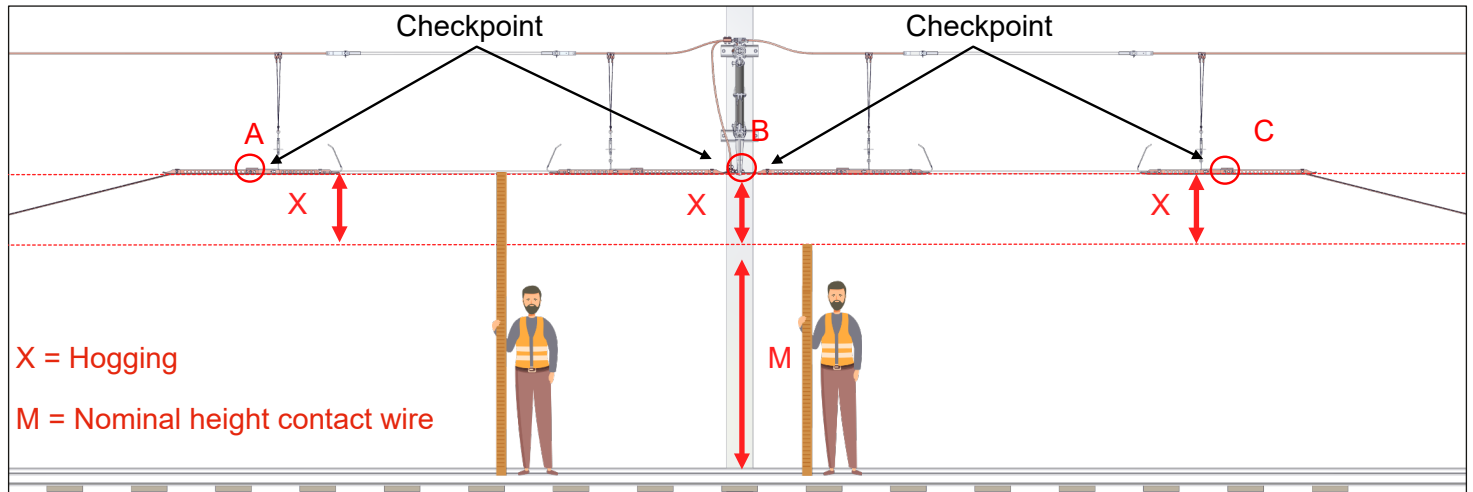


Bend up the contact wire ends on both sides (at least 30°).

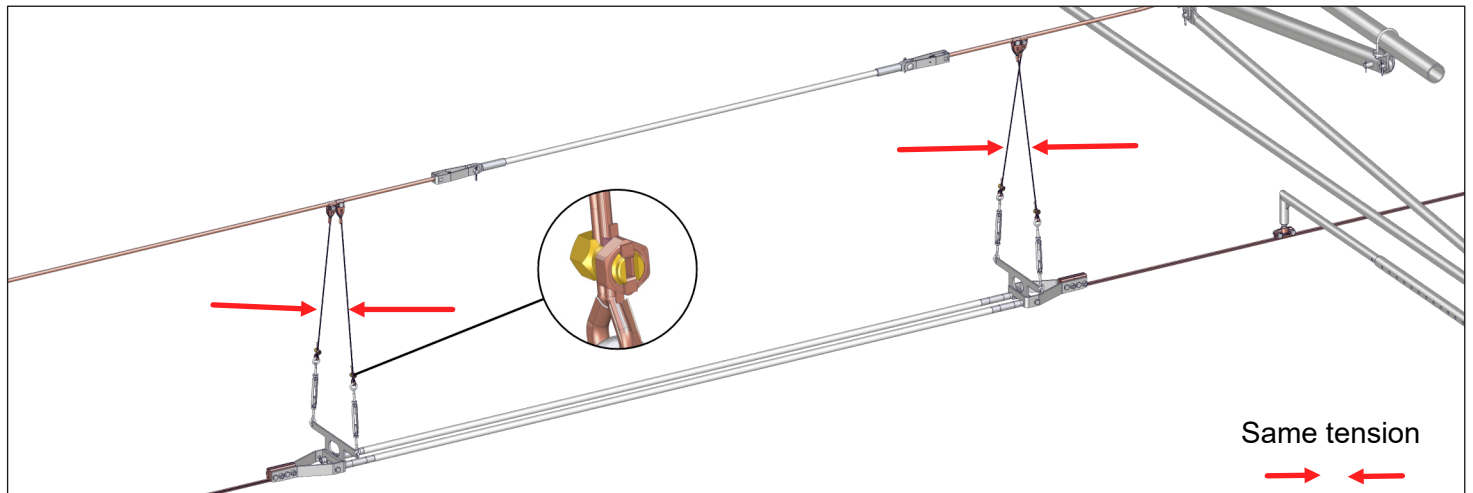


Straighten the contact wire on both sides.

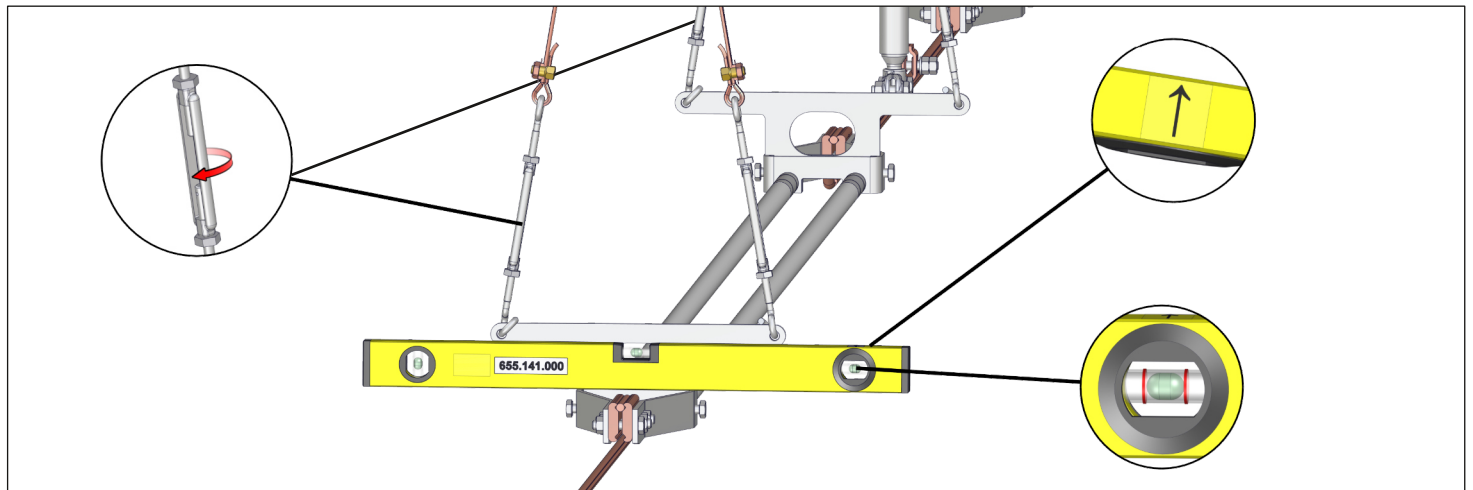
7. Adjusting the hogging



Set the hogging. It must be at least **100 mm** and **equal** on both sides of the phase break.

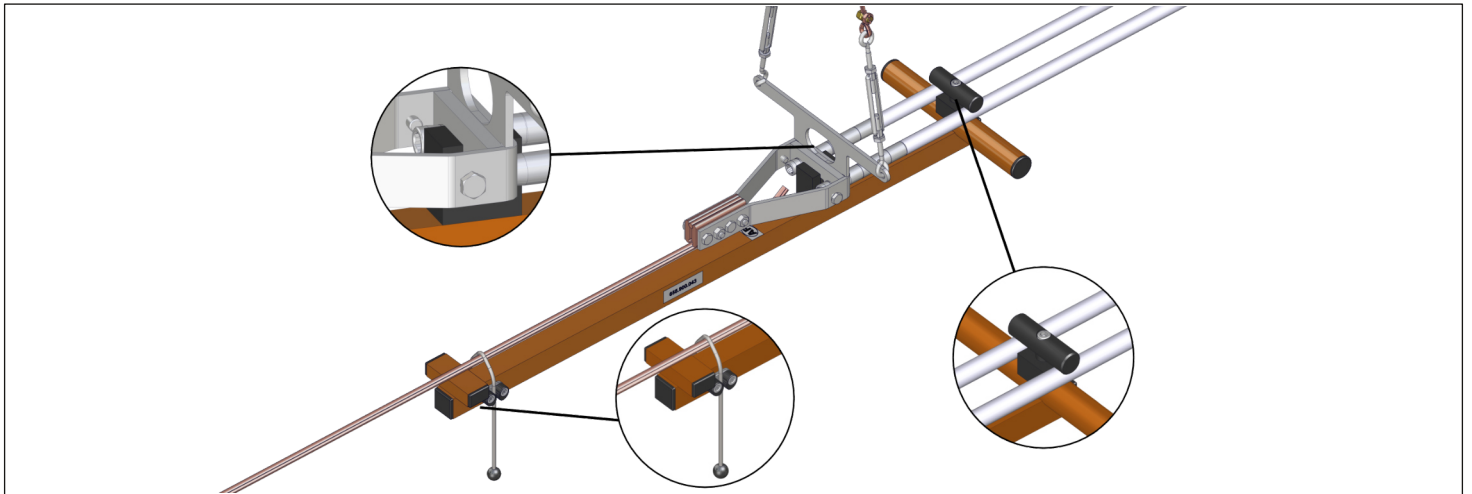


Attach the suspensions to the phase break body. Open the turnbuckles completely. The tension must be the same for all suspension cables. Move the split bolt close to the thimble and tighten it to **25 Nm**.

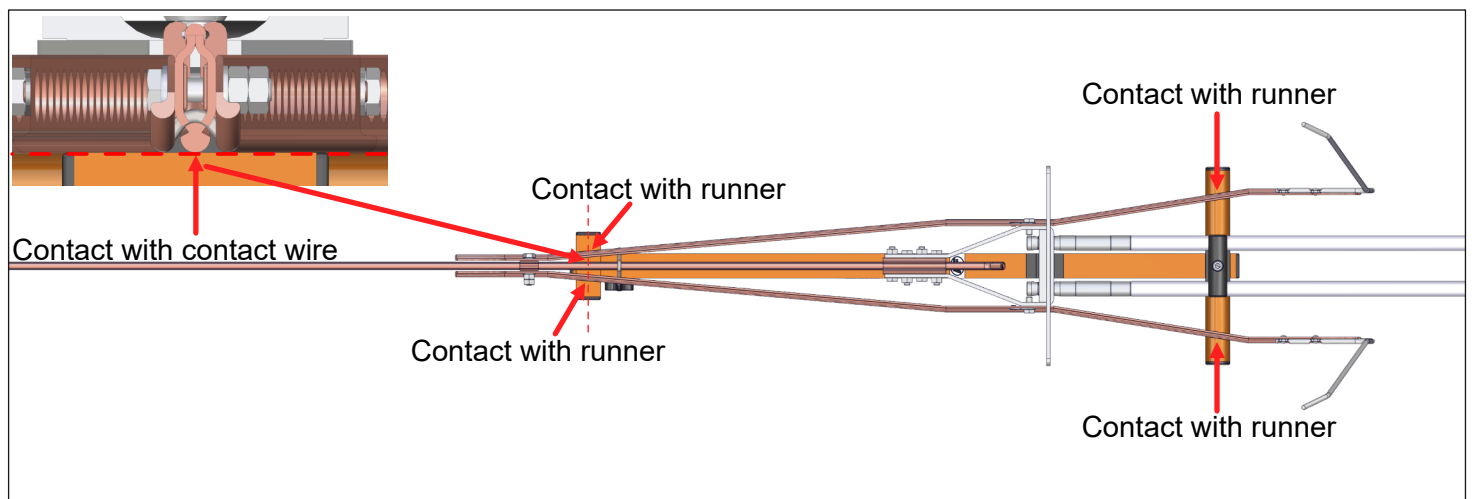


After hogging, align the phase break using the calibrated spirit level and the turnbuckles. Always adjust by moving the turnbuckles on one side, together and synchronised.

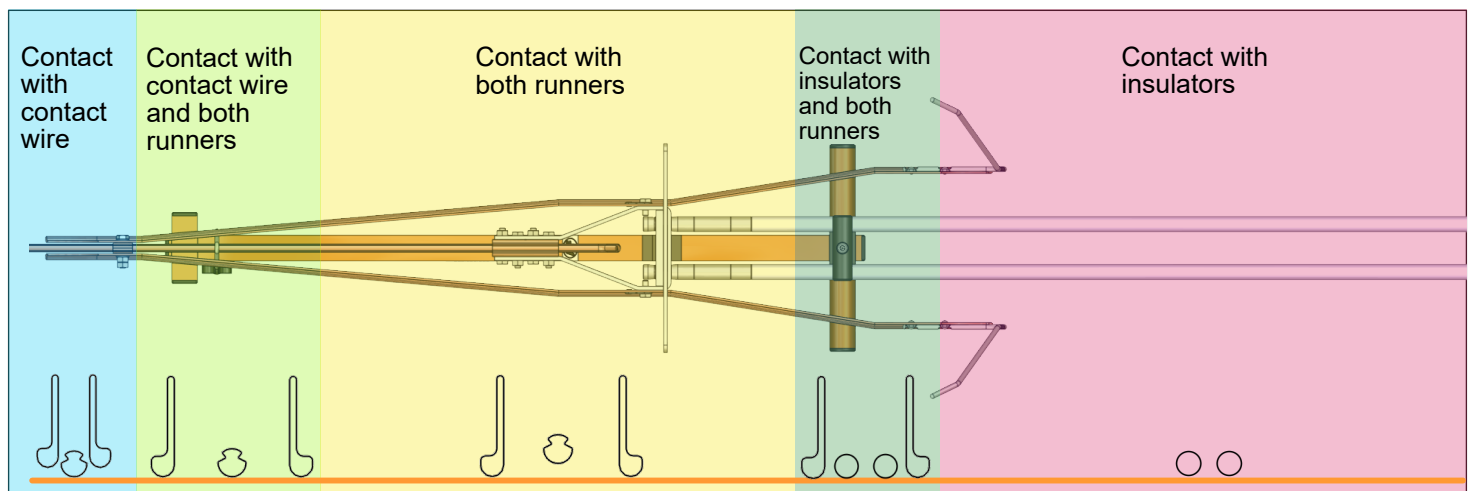
8. Mounting the runners

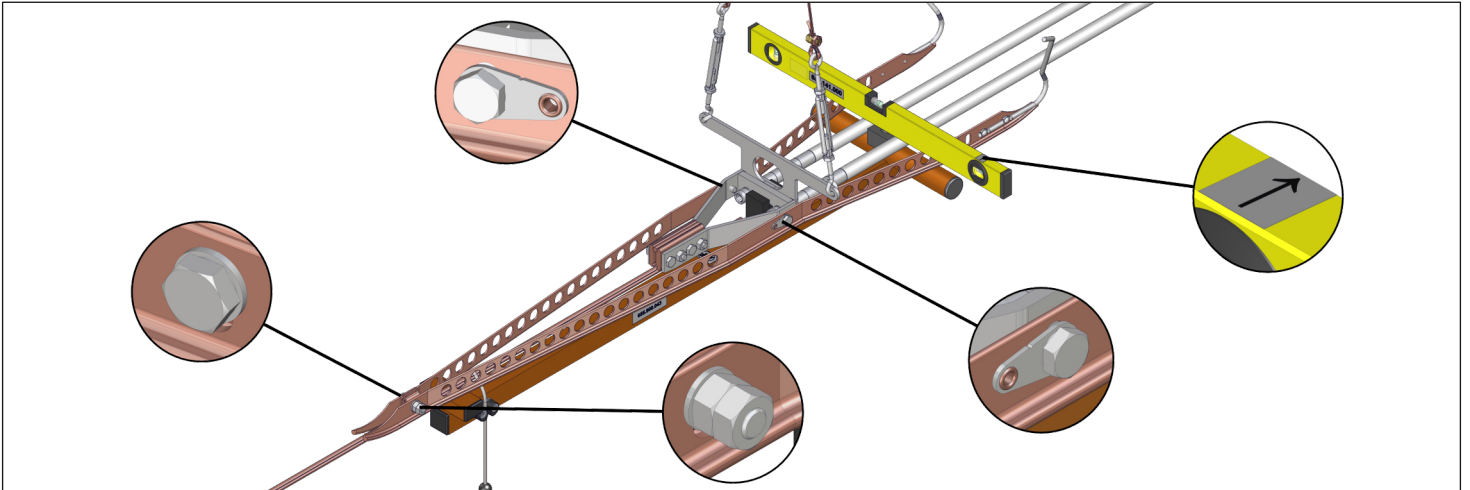


Attach the installation jig to the phase break.



Mount the runners and tighten the nuts and bolts by hand.



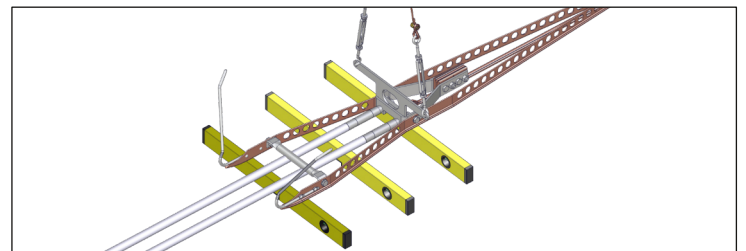
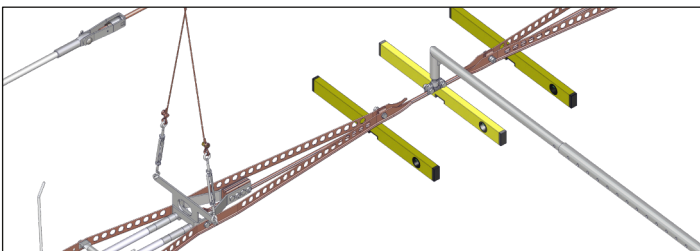
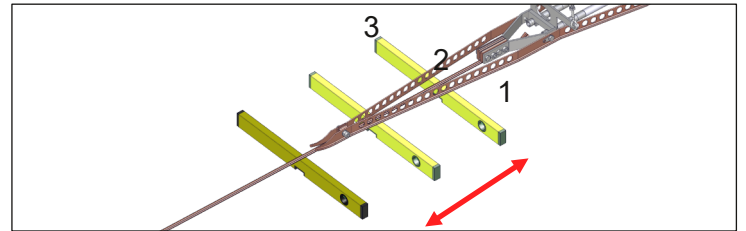
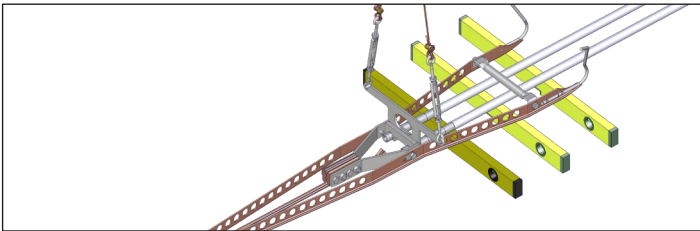


Use the calibrated spirit level to check whether the runners are aligned in accordance to point 4. Tighten all screws and nuts of the runners with a torque wrench to **50 Nm**. Remove the installation jig.

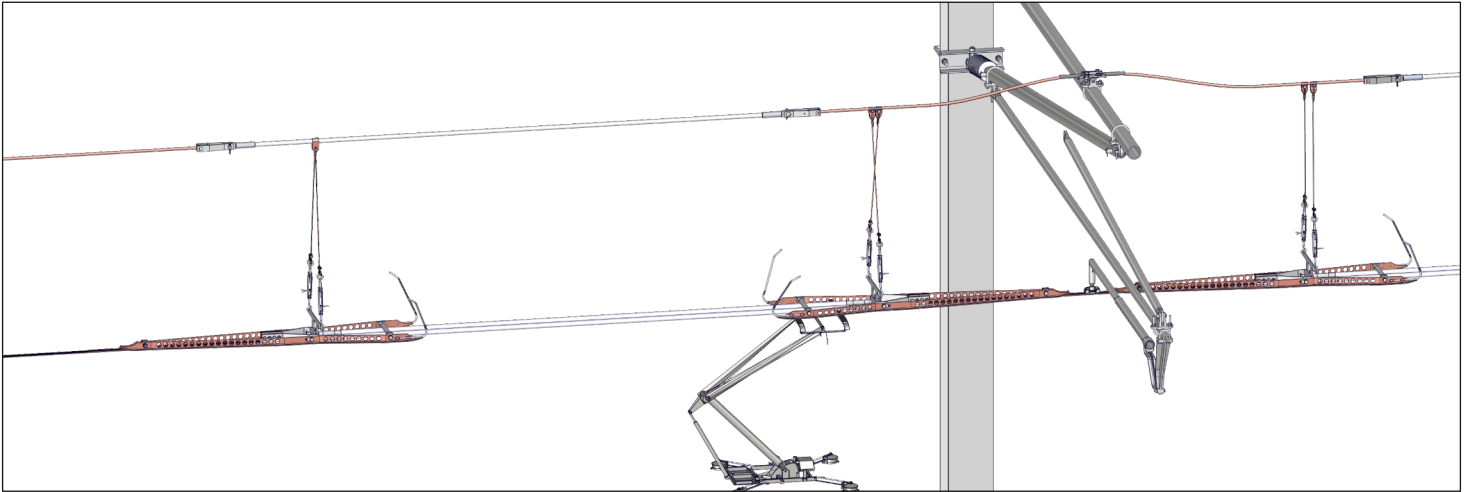


Tighten all bolts and nuts of the runner struts with a torque wrench to **50 Nm**.

9. Checking the gliding and the cant

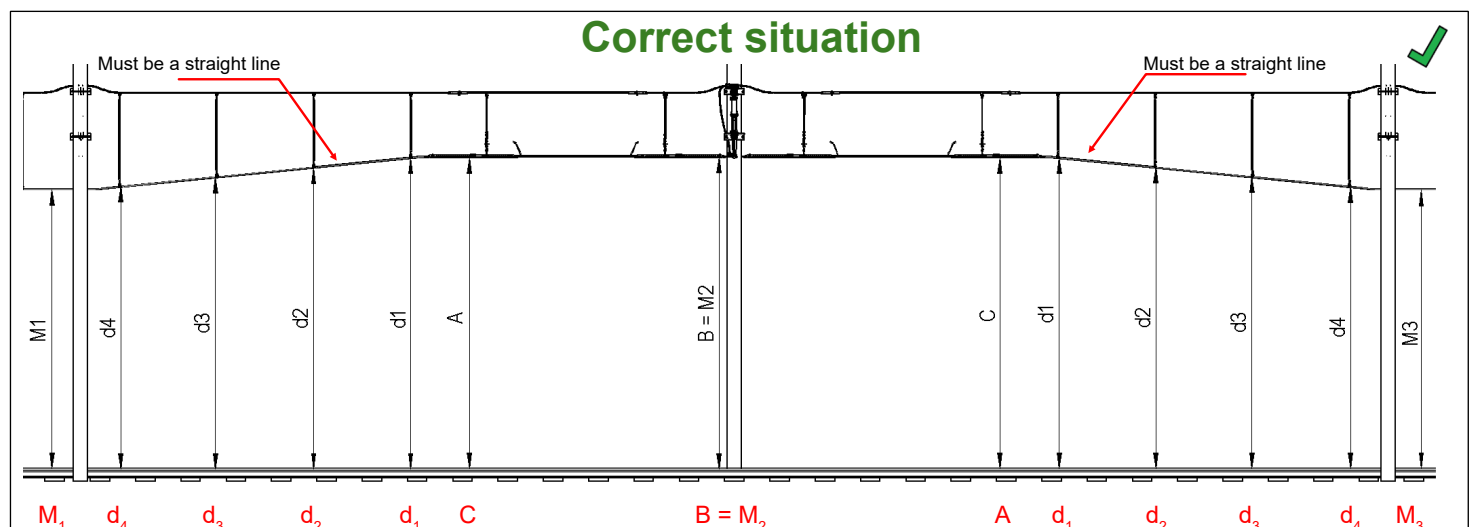
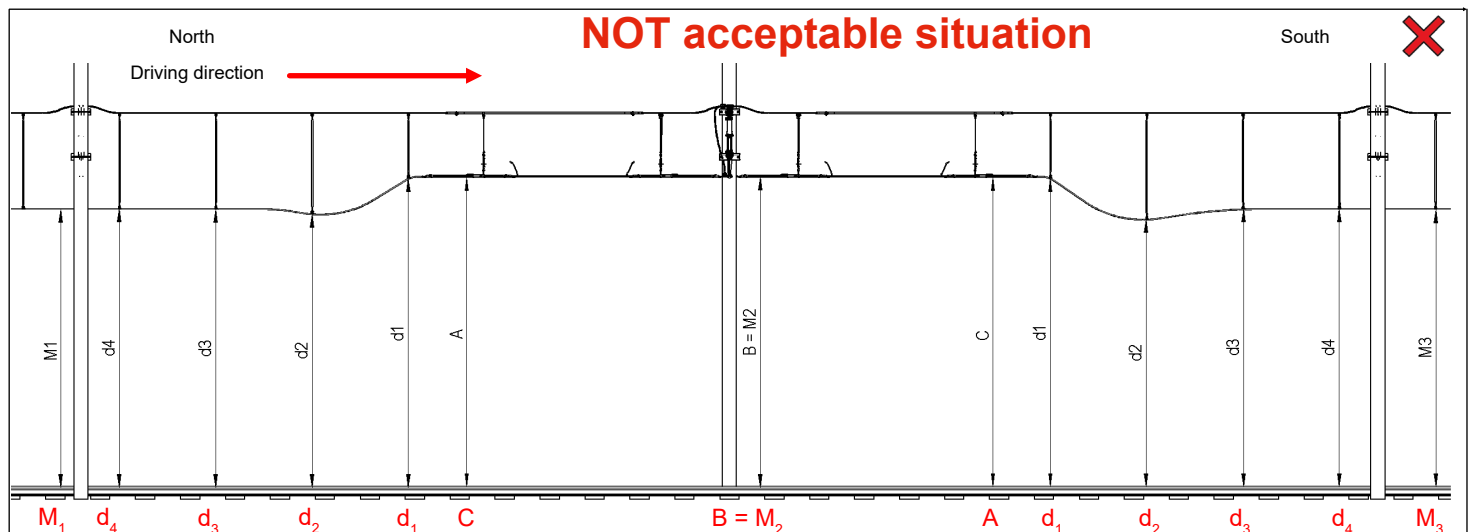


The gliding must be smooth and the runners must be parallel to the track.



Test alternatively with a pantograph.

10. Alignment of the droppers



Check the alignment of the droppers between the masts and the phase break on both sides. The contact wire shall form a smooth, continuous hogged profile, maintaining a straight and uniform gradient from each mast towards the phase break, as shown in the reference figure. Correct if required.

If adjustment to the hogging is required, use the table as a reference to compare values before and after the hogging correction.

UNIT	Measurement	M_1	d5	d4	d3	d2	d1	A	B	C	d1	d2	d3	d4	d5	M_3
1	Initial height															
	Height after adjustment															
2	Initial height															
	Height after adjustment															

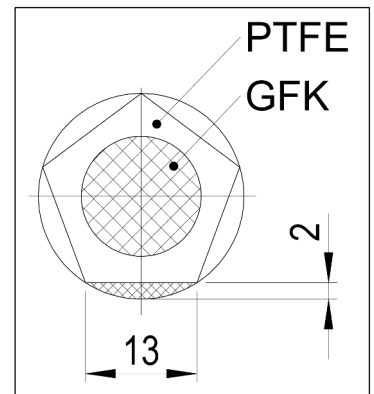
C) Maintenance

A correctly adjusted Arthur Flury AG phase break requires no maintenance over a long period of time.

Insulators

In case of possible wear (max. 2 mm) the insulator rod can be turned by 2 marks at full mechanical load as follows:

Use a cylinder wrench to turn the steel sleeves, first on one side and then on the other side, each by 2 marks in the same direction. Tighten screws if they have been loosened by the turning process. The insulator can be used in 5 positions at most. After that it must be replaced. The insulator must be replaced if the GRP rod becomes visible through damage of the PTFE cover. The PTFE cover of the insulating rod is cleaned well enough by rain water under normal circumstances. In case of exceptionally strong dirt accumulation (for instance from frequent diesel traffic) we suggest cleaning the insulator every 2-3 years with our Special Cleaner for High Voltage Insulators (order no 655.168.000).

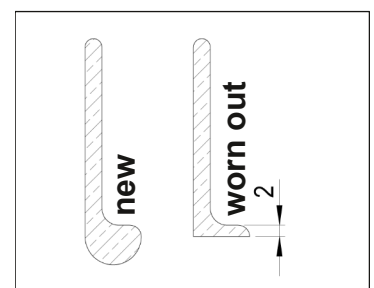


Runners

If the runners show increased wear at the entry, it indicates that they have not been adjusted accurately enough. The runners must be readjusted according to the installation instructions.

A properly adjusted phase break shows even wear on all runners.

Should the wear have reached the maximum value (bulb only 2 mm) the runners must be replaced.



Running properties

The phase break must remain stable during the passage of a pantograph. The phase break and any installed suspension must be observed while passing with the pantograph. If the installation vibrates strongly or even becomes loose, this is a sign that the pantograph is creating too much pressure on the phase break. In this case the phase break must be positioned higher (increase hogging).

Arcing horns

Check the condition of all arcing horns for impact and arcing damage. If slight impact wear is visible, the arcing horn must be readjusted and lifted above the height of the insulator. If severe impact damage is visible, the arcing horn must be replaced. Superficial arc splatter and welding spots from arcing can be tolerated.

Performance

The phase break must provide a constant performance for passing pantographs and remain stable during the passage. If one of the spring droppers is blocked it must be replaced immediately

For detailed information regarding the installation and maintenance of the Neutral Section, please refer to the following documents available on our website:

- Installation Checklist
- Maintenance Checklist

If you have any questions, please contact your **nearest Arthur Flury representative**.

D) Legal information

The product must only be operated by trained specialists.

The product can be permanently damaged by loads that exceed the maximum values. If the product is exposed to absolute maximum loading for an extended period, it may impair the product's reliability and life. Arthur Flury AG will not accept any liability in this case.

Arthur Flury AG will not accept any liability for incorrect use and use for applications other than those specified in these instructions.

If damage to the product is suspected, any use or operation must be stopped immediately. Arthur Flury AG will not accept any liability in the event of continued use despite suspected damage.

Due to the diverse ways in which this product can be used, the instructions for use represent a general guide only and do not constitute a guarantee of the product's suitability for use in a specific application. The user is responsible for checking the full product data and clarifying the product's suitability for the intended use. The user is responsible for the choice of product and compliance with all the safety regulations and warnings. Please contact Arthur Flury AG if you require additional product information.

Our products comply with the current legal requirements and regulations (including RoHS, REACH, WEEE) in the markets where we operate. Please refer to Arthur Flury AG's Code of Conduct, available on our website, for further information.

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