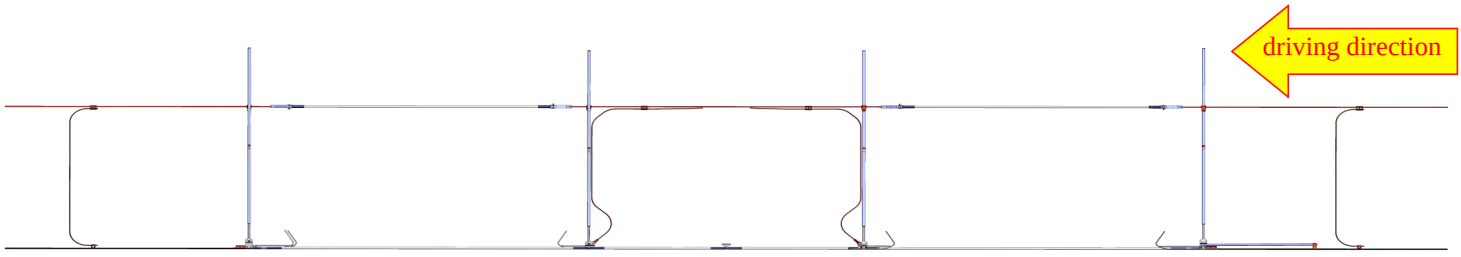
INSTALLATION INSTRUCTION

PHASE BREAK NSR 25 Version 2018/02



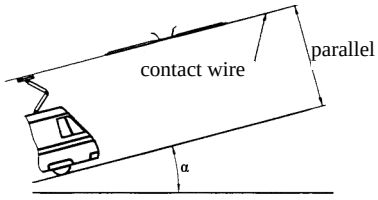
Tools for installation of the Arthur Flury phase break

1 Ring spanner 17 and 19 mm
1 Torque wrench 17 and 19 mm
1 Metal saw
1 Straightening wood
1 Hammer
1 Measuring scale
1 Straightening tool
1 Pulley block (>10 m)
1 Spirit level

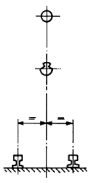
Preparation of contact and messenger wire

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

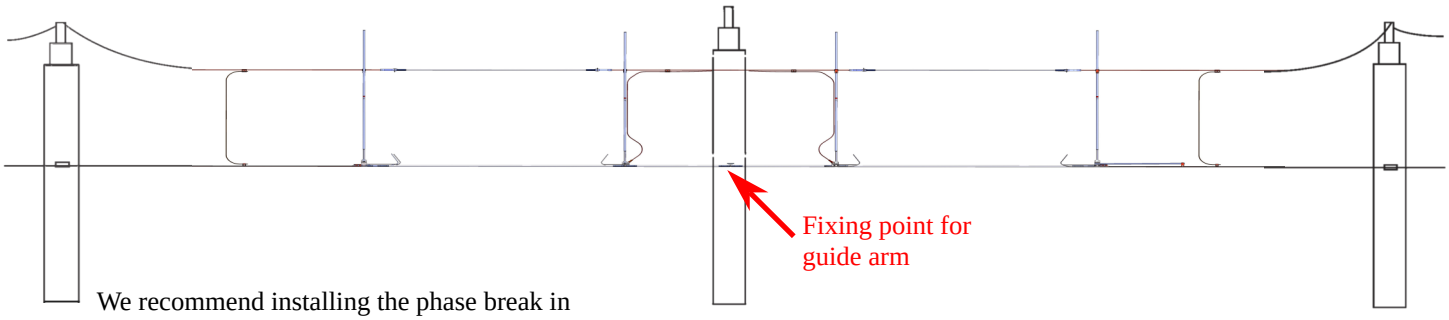
Each phase break should be well centred and aligned parallel to the track.



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

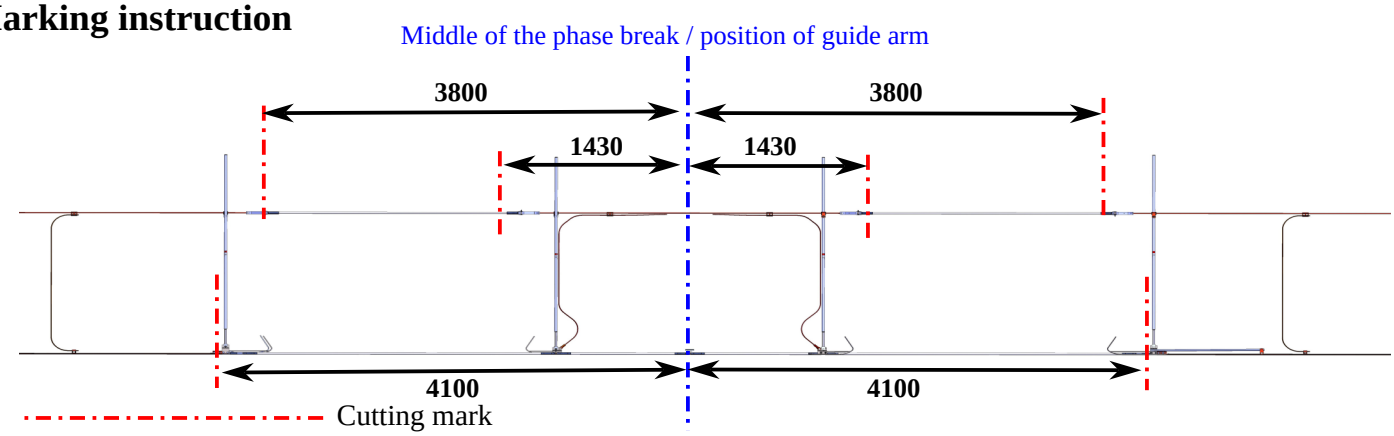


Installation location



We recommend installing the phase break in autotensioned systems. There is a fixing point for the guide arm in the middle.

Marking instruction



! RISK OF DEATH !

Do not begin to work on the overhead line before you have ensured that it is switched off and correctly grounded on both sides at a distance of at least 70 m!

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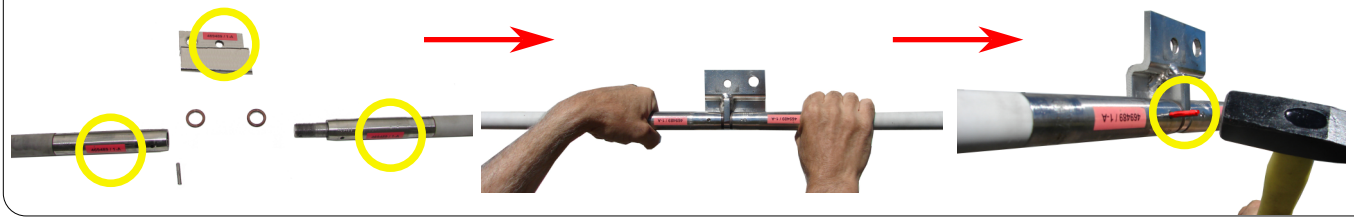
1. Pre-assembly of the phase break

The serial number label on the insulator should be checked – the “A” ends and “B” ends should correspond. Parts with a different label are not interchangeable!

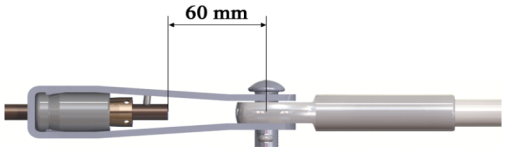
Assemble the rods so the hole in each rod are correctly aligned.

Hammer the dowel pin into position. Use a suitable underlay.



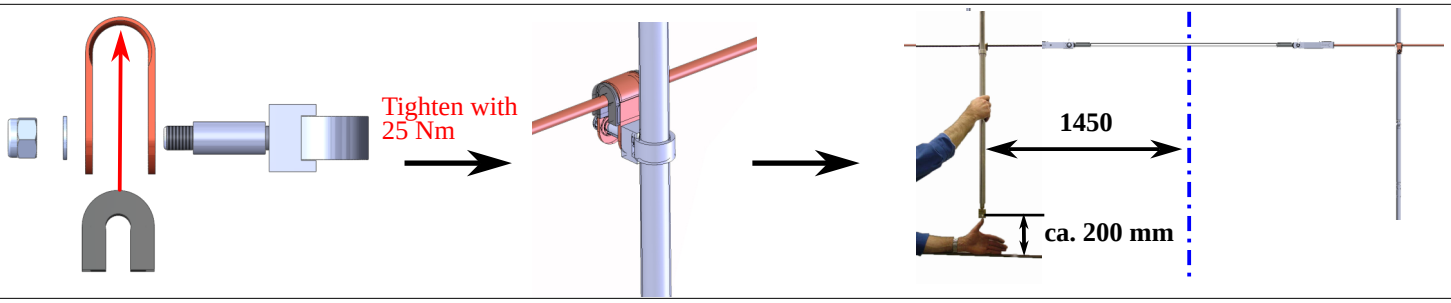
2. Install Messenger Wire Insulators

Install the messenger wire insulator according to the marking instruction. After that remove the pulley block.

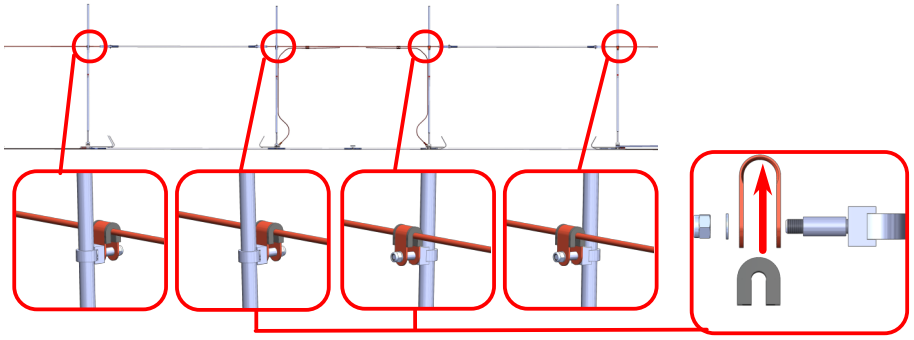


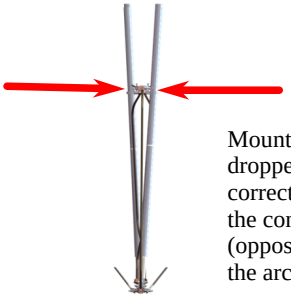
Correct forked collar socket installation

3. Mount spring dropper onto messenger wire



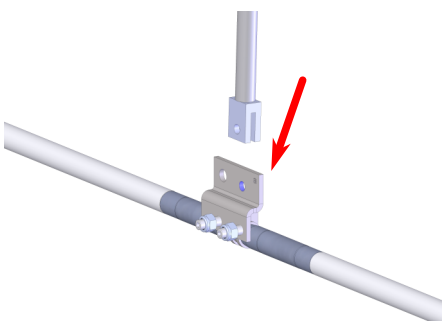
4. Preparing, mounting and preloading of spring dropper



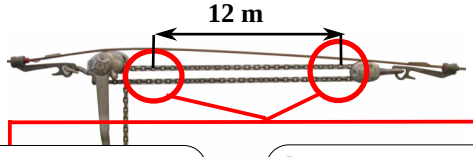


Mount spring dropper on correct side of the contact wire (opposite side of the arcing horn).

5. Attach insulators to spring droppers



6. Apply tension with pulley block, cut and straighten contact wire at marking



a) cut contact wire

b) straighten

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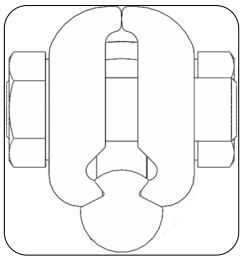
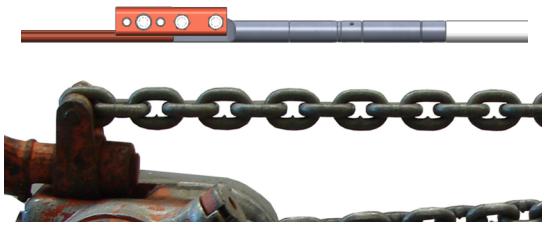
7. Mount phase break onto contact wire



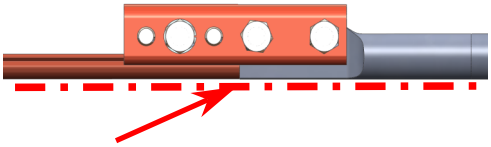
WARNING!
The teeth of the contact wire clamps must grip over the full length.

Tighten the bolts of the contact wire clamp with 50 Nm by using a tourque wrench and retighten **2 times**.

8. Loosen and remove the pulley block



9. Check the transition

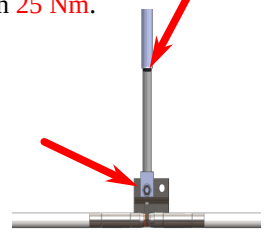


The **transition** from the contact wire to the phase break must be smooth. Should this not be the case it is important to file any sharp edges smooth.

If the contact wire and the end ferrule are not on the same height, a ramp must be filed with a length of at least 200 mm.

10. Final setting of spring dropper

Set the spring dropper to the black mark by moving the messenger wire clamp. Then tighten it to the messenger wire with 25 Nm.

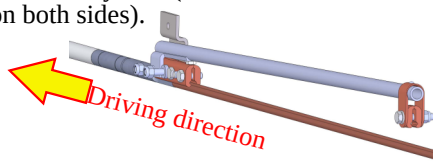


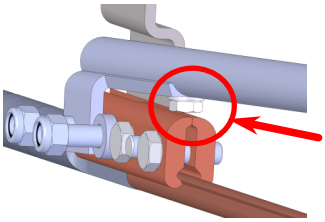
Attach spring dropper at the bottom with 25 Nm.

11. Attach guide arm

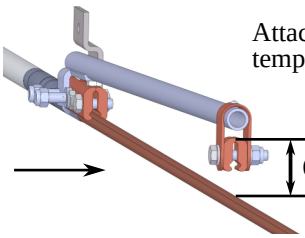
12. Install and adjust lever (above 120 km/h)

First straighten 2 m of contact wire in front of the splice. Then attach the lever on the entry side (bidirectional version on both sides).



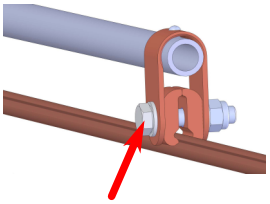


Add or remove washers to reach the specified dimension.



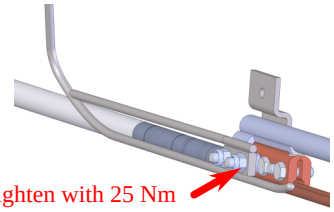
13. Check splice alignment (above 120 km/h)

Check with a spirit level if the splice is parallel to the track. To adjust the level add or remove washers to the lever (as shown in point 12).

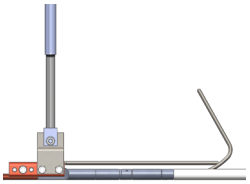


Tighten with 50 Nm

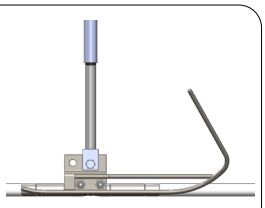
14. Attach arcing horns



Tighten with 25 Nm



Attach all 4 arcing horns and tighten them with 25 Nm. Make sure that they are aligned parallel to the track and do not fall below the insulator.



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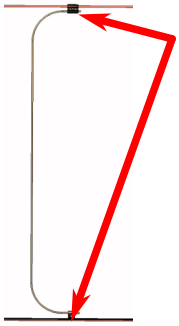
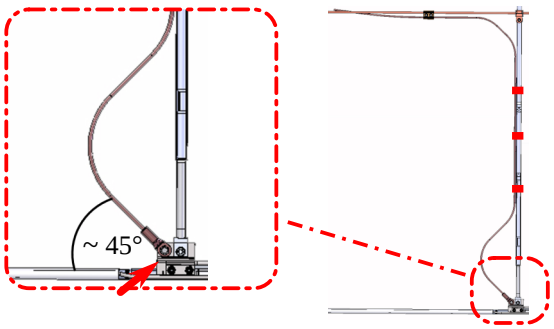
15. Install jumper cables



Tighten clamps with 50 Nm.

Install the jumper cables on each side of the phase break (concavity in driving direction).

16. Install earthing connection

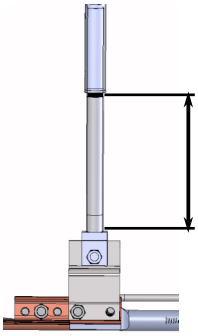


Tighten the clamp with 50 Nm

Attach the earthing connections with the cable ties (metal) to the spring dropper.

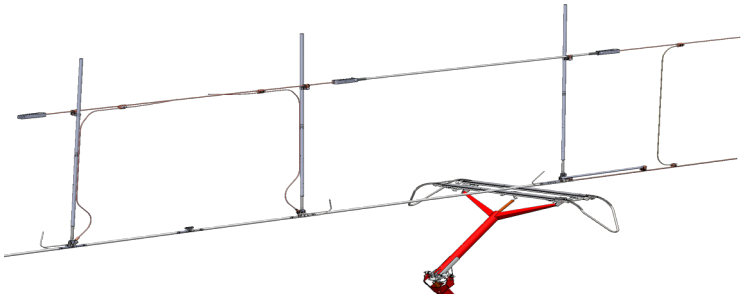
Tighten the earthing connection with 50 Nm.

17. Check tension of spring droppers



min. 165 mm of free movement

18. Check gliding



Check with pantograph for optimal gliding. The pantograph must not touch the arcing horns.

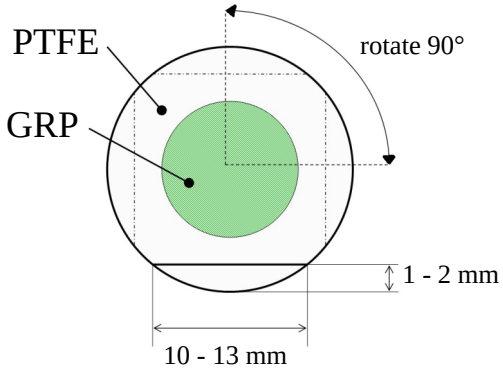
Caution! Danger of accident if these points are not observed:

- The contact wire and messenger wire must lay vertically on each other at the installation location. Otherwise the hangers are not under continuous tension and optimal functioning is impossible. In extreme cases it may even occur that the current collector hooks into the arcing horn and damage the phase break.
- The screws at the contact wire clamps must be retightened two times. Otherwise the teeth do not grip the contact wire material completely. The contact wire could therefore slide out later and falling parts could cause damage of material or even injure people.
- The arcing horns of the phase break must be correctly adjusted as described. Otherwise shocks might damage the phase break or the carbon sliders.
- All screws and nuts must be tightened correctly according to the description. They could otherwise become loosened by vibration and cause malfunction of the overhead line.
- Should the protective plastic finish of PTFE of one of our insulators be so severely damaged, either that the glass fiber inside is visible or that humidity and dirt can obviously penetrate, the insulator must be replaced immediately. Otherwise a high-voltage flash-over could damage the insulator and the overhead line.
- **Arthur Flury AG rejects responsibility for any damage caused by not observing this installation instruction.**

Maintenance and Service

A well adjusted phase break of Arthur Flury AG does not require any maintenance for a long period of time.

Insulator
In case of possible wear (max. 2 mm) the insulator rod can be turned by 1 mark 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 1 mark in the same direction. Tighten screws if they have been loosened by the turning process. The insulator can be used in 4 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).

Recommendations and Trouble shooting for NSR25

Running behaviour:
The phase break must provide a constant performance for passing current collectors and remain stable. Observe the suspension while current collectors are passing. If one of the spring droppers should be blocked it has to be replaced immediately.

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