

INSTALLATION INSTRUCTION

Section Insulator for tram and trolley combination with flat beam insulator

Edition 2008/8



Necessary tools for the installation

- 1 Hexagon ring spanner (wrench) 16/17 mm
- 1 Torque wrench (30 Nm) with 16mm and 17 mm hex-socket and pin 6mm (for hexagon socket)
- 1 Spirit level with adjustable level (FLURY item no 655.141.000)
- 1 Metal cutting saw
- 1 Hammer approx. 2 kg
- 1 Flat metal file
- 1 Straightening wood

- 1 Flat nose pliers or universal pliers
- 1 Measuring scale
- 1 Spring Balance 200N (50 lbs)

In addition for:

- Installation of messenger wire insulator
- Replacement of existing Section Insulator

- 1 Pulley block with 2 cable sockets

Maintenance

A well adjusted Flury-Section Insulator does not require any maintenance for a long period of time.

Flat Beam Insulator

The beam insulator is coated with high quality Silicon rubber and will be sufficient cleaned by rainwater for normal conditions.

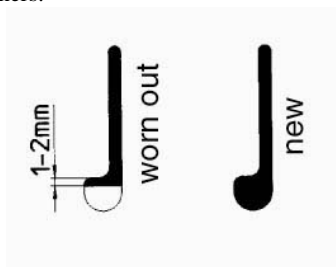
In case of heavy pollution (exhaust of Diesel-locos, etc), we recommend cleaning the insulator surface every year by use of soap water.

In case of visual damage of the Silicon rubber coating of the beam, the beam insulator needs to be exchanged as soon as possible.

Runners, Skids

Well adjusted runners (skids) need to be checked after 200'000 to 300'000 passages of carbon pantographs. In case of wear >3mm, they can be readjusted.

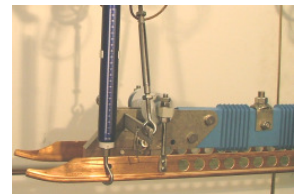
If the wear reaches the maximum (bulb 1-2mm), the runners need to be replaced. The maximum wear can reach 6mm for the normal and 8mm for the reinforced runners.



Recommendations and Trouble Shooting

a) Check the correct adjustment of the Section Insulator:

After the installation and primary adjustment, pull upwards at the section insulator's extreme outer points of the runners by use of a spring balance and 80N. The V-droppers may not be slackened. Otherwise lift the SI in steps of 10mm until the V-droppers remain stable.



b) Check the correct adjustment during operating:

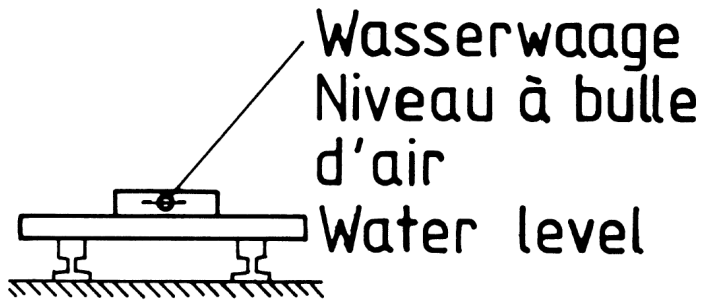
The section insulator has to provide a smooth passage for pantographs. It needs to be stable during passing pantographs. Therefore watch the V-droppers during passing pantographs. If they strongly swing or even slacken, then the SI needs to be risen as described in clause a).

c) Excessive runner wear:

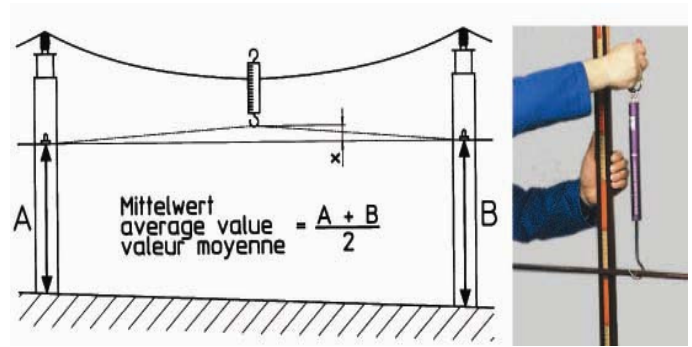
If the runners (skids) show excessive wear at the entrance, then they need to be readjusted according to the detailed installation instruction inside of this instruction.

Correct adjusted runners (skids) show an equal wear from the entrance to the exit of the section insulator.

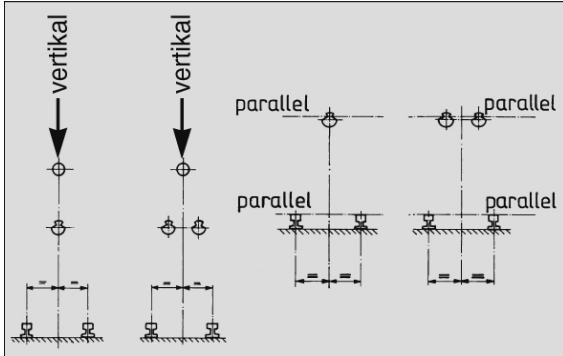
1. Measure cant of the track



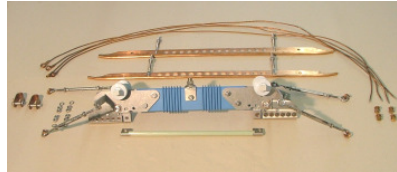
2. Measure average value + flexibility x with Spring Balance 120 – 150N [26-33 lbf] (if not known use x=70 mm)



3. Place in centre of track ± 50mm (2")

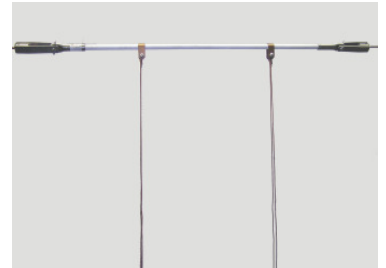


4. Prepare SI for installation

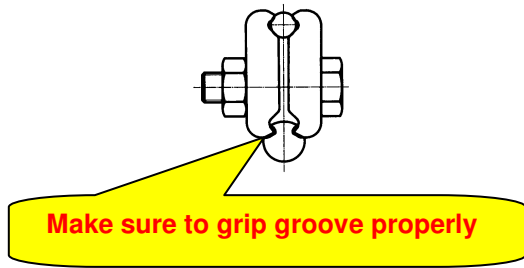
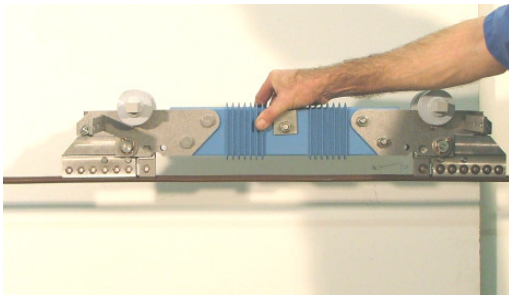


Remove runners, counternuts and turnbuckles locking wires. Loosen contact wire clamps and open turnbuckles

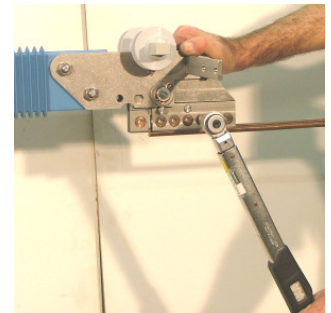
5. Install messenger wire insulator, saddle clamp and cable hangers



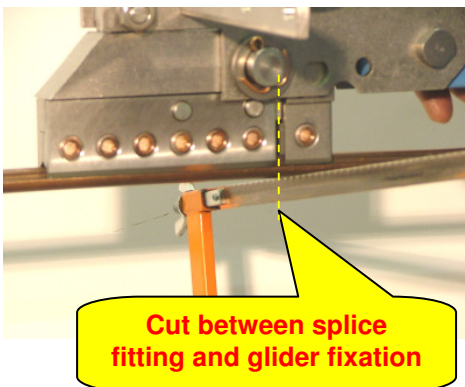
6. Place SI onto contact wire



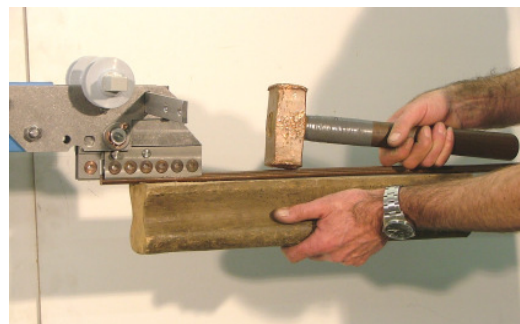
7. Tighten bolts 30Nm. Retighten 3 times



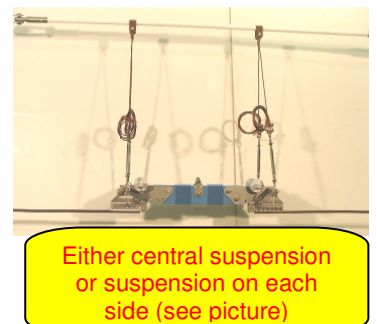
8. Cut contact wire



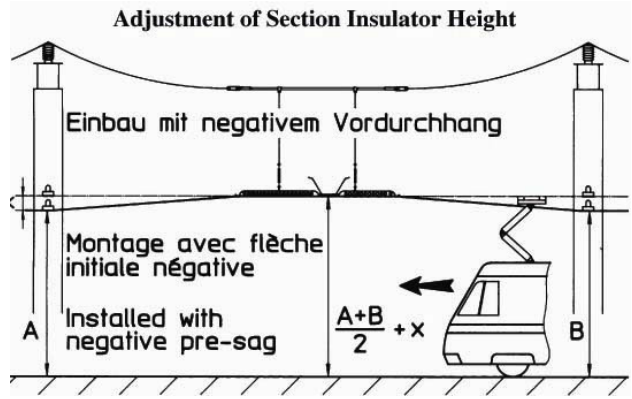
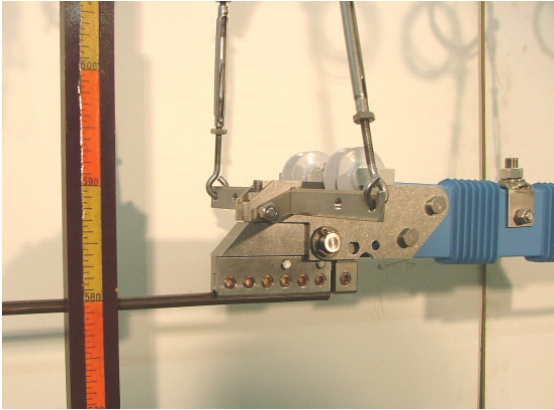
9. Flatten kinks



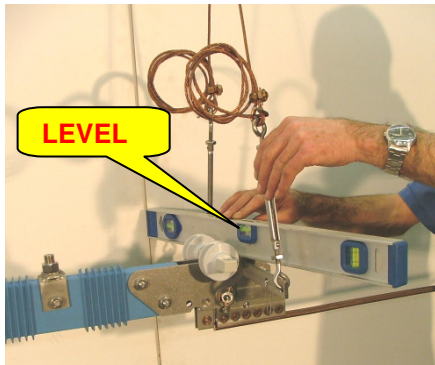
10. Install suspension



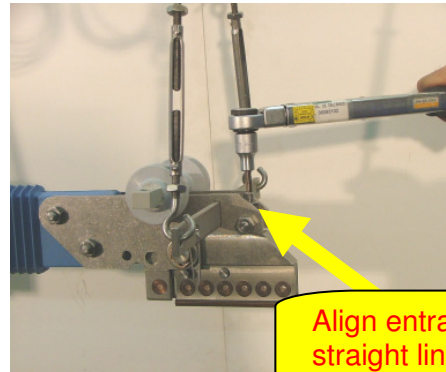
11. Adjust hogging according clause 2.



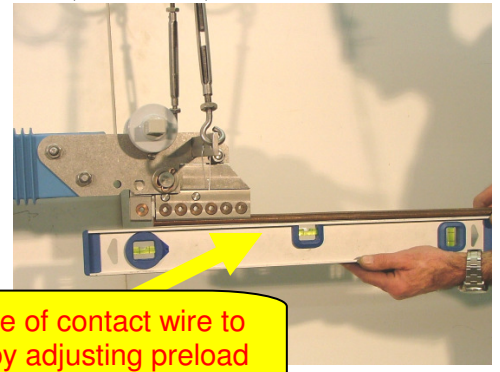
12. Level SI according cant



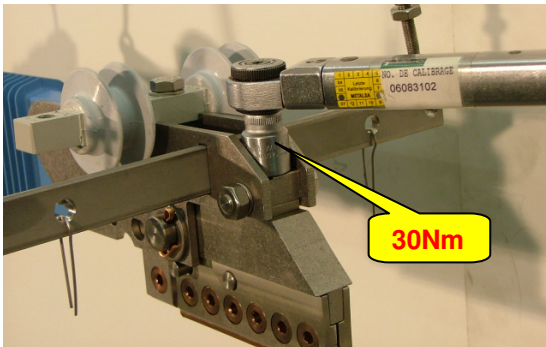
13. Apply preload (both sides)



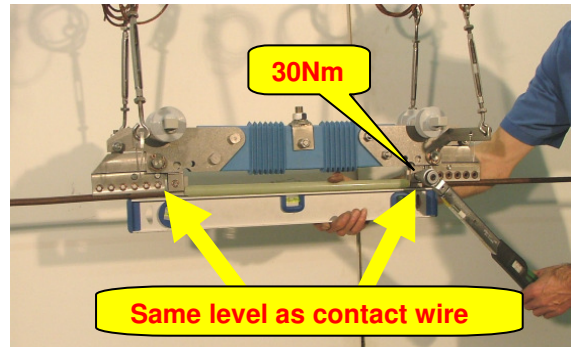
14. Check entrance of contact wire (both sides)



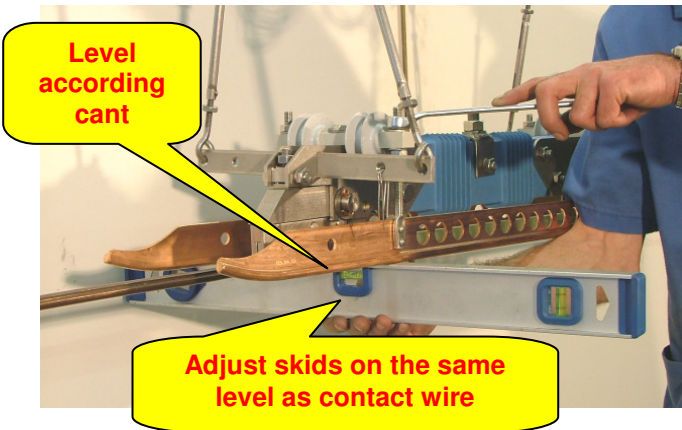
15. Tighten counternut with 30Nm



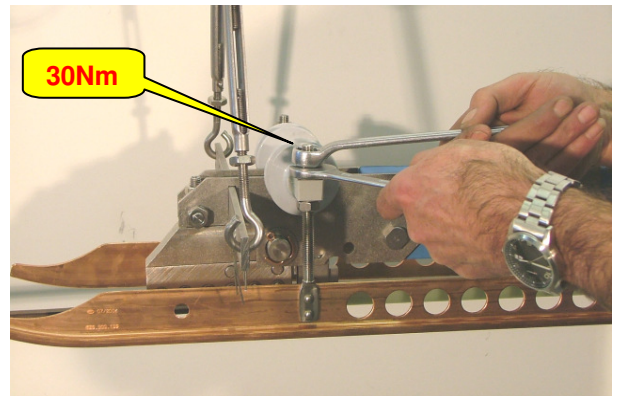
16. Insert trolley glider



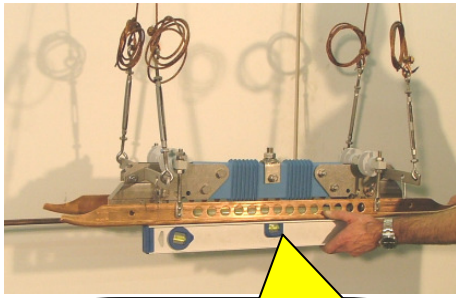
17. Install and adjust skids



18. Tighten lock nuts

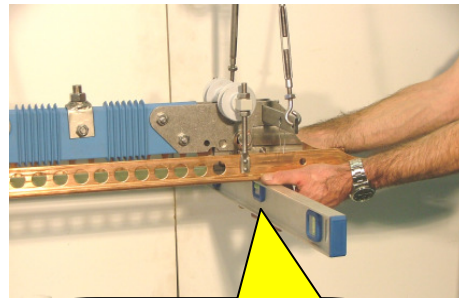


19. Check skid alignment



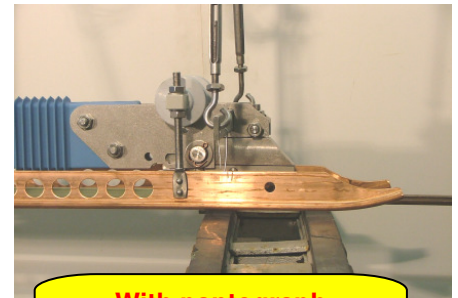
Parallel to the track

20. Check skid alignment



Parallel to the cant

21. Check performance



With pantograph and trolley shoe

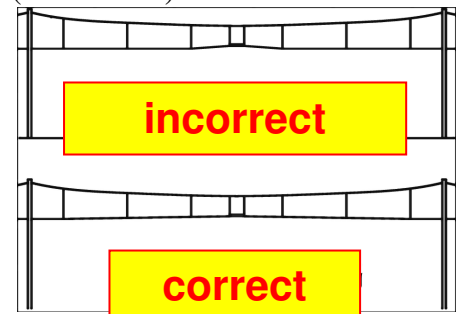
22. Block turnbuckles (if available)



23. Block turnbuckles (if available)



24. Readjust 3 droppers on either side to a straight downgrade line (if available)



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 runners at the spark gap which leads to damage.
- The screws at the contact wire clamps must be retightened three 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 screws must be restrained with a ring wrench when tightening the counter nuts at the contact wire clamps. The screws could otherwise get loosened when tightening the counter nuts and this could cause the contact wire to slide out, damage material and injure people.
- The runners of the section insulator must be correctly adjusted as described. Otherwise shocks might damage the section insulator or the carbon sliders.
- Turnbuckles must be locked with counter nuts and secured with locking wires. These could otherwise open and die resulting incorrect position of the section insulator could cause malfunction of the overhead line.
- 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 silicone 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.**

Arthur Flury AG
Your safe connection