



# Rail fastening systems as single support

System W-Tram

# System W-Tram with tension clamp Skl 14/Skl 21

Versatile, safe and maintenance-free.  
For nearly all different rail sections.

## DESIGN

The W-shaped tension clamp permanently tightens the rail by spring-actuation of the outer spring arms.

The rail is held in position laterally by the angled guide plates. These form a gauge true rail channel.

The fastening system has additional second stiffness as a result of the middle bend of the tension clamp, which projects above the rail foot (steep curve of the spring characteristic). Overloading of the spring arms and consequent plastic deformation is thereby excluded. The middle bend also serves to protect the rail against tilting.

### Exchangeability

All components are exchangeable.

### Electrical insulation

The W-Tram fastening system is completely electrically insulated as the angled guide plate, rail pad, dowel and base plate are all made of plastic. No additional insulating components are required between the clamping element and the rail foot.

### Track maintenance

The Vossloh rail fastening system requires no regular maintenance.

### Neutralisation

No fastening elements have to be removed from the rail support with continuous welding of the rail (CWR). The sleeper screws merely have to be loosened but not disassembled.

### Height adjustment

The Vossloh rail fastening system W-Tram can be adjusted in height by means of height regulation plates.

### Elasticity

The Skl 14 is used as standard for nominal stiffnesses of up to 50 kN/mm. The Skl 21 is used for high elasticities with stiffnesses of < 50 kN/mm.

### Rail tensioning and creep resistance

The rail is permanently tightened by the spring-actuation of the two torsion spring arms of the tension clamp with a spring deflection of approx. 13 mm and a hold-down force of approx. 2 x 10 kN. The requisite high creep resistance of the rail, which prevents the dangerous fracture gap in continuous welded rails, is obtained thereby.

### Protection against rail tilting

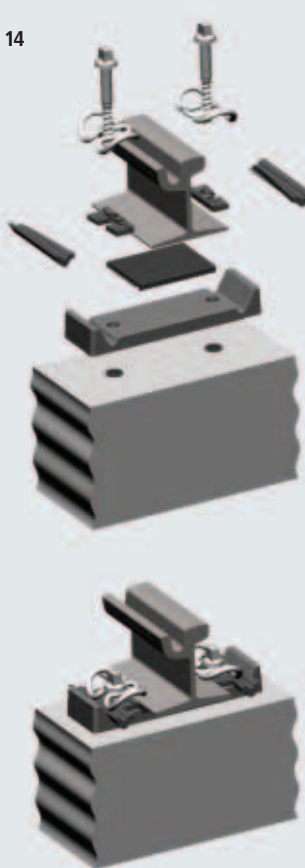
Any uplift or tilting of the rail which may occur during tamping of the track or when running through narrow track curves is absorbed by the middle bend after it has overcome the small air gap (between the middle bend of the tensioning clamp and rail base). Permanent deformation of the outer spring arms is therefore excluded.



Wfp 14 K



K-Wfp 14



### Assembly

The supports can be mounted on the rail without using any supplementary equipment. The supports are simply positioned by hand on the aligned rail – with no lifting of heavy supports or concrete elements.

### Fastening with

#### angled guide plate Wfp 14 K

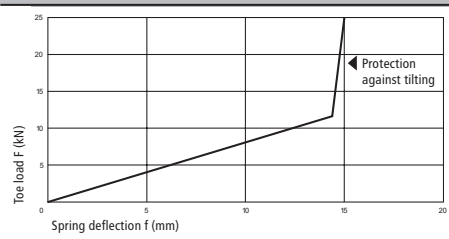
A track adjustment of  $\pm 10$  mm in steps of 2.5 mm is available as standard. Different rail sections can be used for the same track gauge through simple exchange of the angled guide plates.

### Fastening with

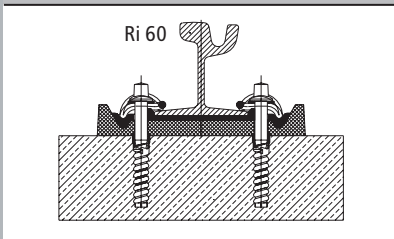
#### Wedge angled guide plate K-Wfp 14

As a result of high tolerances for grooved rails, it is often difficult and extensive to obtain a precise track and to compensate for the rail foot tolerances. With wedged angled guide plates stepless gauge regulation is possible.

Force/spring deflection of the tension clamp Sk114



Grooved rail Ri 60 on concrete slab



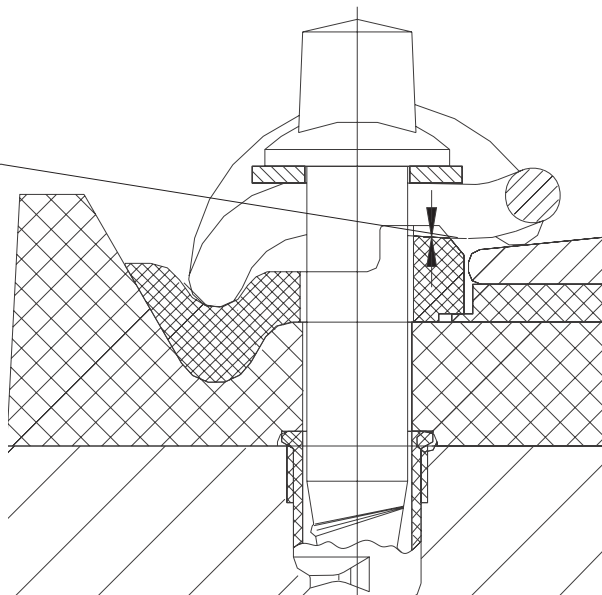
# Tension Clamp SKL 14/Skl 21

## Fitting instruction

### System W-Tram

#### Correct

The tension clamp is correctly fitted as soon as the middle bend of the clamp is in contact with the rib of the angled guide plate by tightening of the sleeper screw (max. permissible air gap: 0.5 mm). This is reached at a tightening torque of approx. 200 Nm.



#### Wrong

Middle bend does not rest upon the rib of the guide plate.  
Required toe load is not reached!

