



System W 31 RS I

Elastic rail fastening for heavy haul –
for conversion of systems with cast-iron shoulders

Vossloh fastening systems

Based on our experience we are setting standards of the future.



Heavy Haul – Heavy loads are transported safely

Axle load of more than 26 t means extreme loads for the track. Resistant fastening systems provide safe and durable connections and simultaneously allow fast and easy maintenance.



W 31 RS I – Flexible retrofitting in heavy haul traffic

The elastic fastening system W 31 RS I enables rapid conversion of fastening systems on heavy haul tracks. Easy to install, worn out cast-iron fastening shoulders can be new adapted at low costs. Due to the guide plates the nominal track gauge can be refitted.

The abrasion plate belonging to the W 31 RS I system made of plastic provides several advantages: the plate and the rail pad resting on it can be plugged together very easily – so, this enables a simplified assembly. In addition, the installation of the abrasion plate between the rail pad and the sleeper reduces the abrasion of the rail pad to a minimum, thus, clearly extending lifetime of components.

The tension clamp Skl 31 is especially developed to meet the requirements of heavy haul traffic; it offers high toe load and a tilting protection of the rail is ensured by its middle bend.



Retrofitting for more safety and less abrasion.

Resistant guide plates adjust the cast-iron shoulders of the original fastening system, Vossloh tension clamps with their high fatigue strength ensures in future a longer durability of the fastening system.



System W 31 RS I

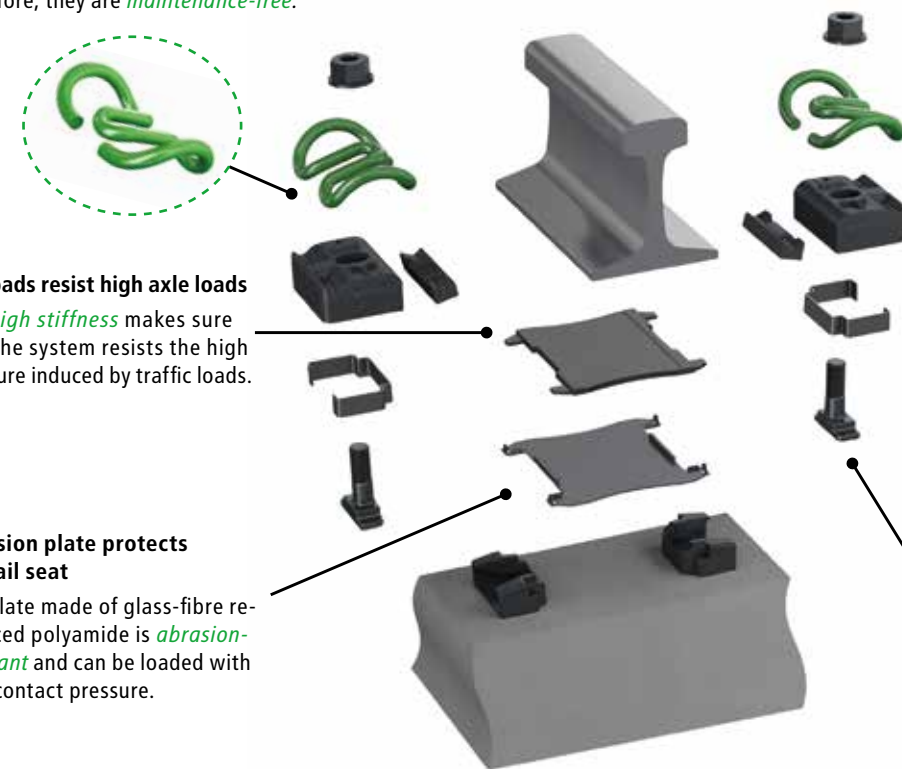
Elastic. Safe. Resilient. Flexible.

The W-shape of the Skl 31 provides safety

For meeting the required *creep resistance* two highly elastic, independently acting spring arms steadily hold the rail down; the middle bend is used as an additional *tilting protection*. With its high fatigue strength, it resists the dynamic vertical movements that are caused when the vehicle rolls over the rail. Due to the permanently acting tension, Skl and screw cannot loosen and therefore, they are *maintenance-free*.

Guide plates keep the rail in the track

The guide plates are placed on the worn cast iron shoulders together with a compensating shim, and *so, they readjust the gauge*. The guide plates transfer the forces introduced into the rail by train in the concrete.



Rail pads resist high axle loads

The *high stiffness* makes sure that the system resists the high pressure induced by traffic loads.

Abrasion plate protects the rail seat

The plate made of glass-fibre reinforced polyamide is *abrasion-resistant* and can be loaded with high contact pressure.

Safely tied

The tension clamp is anchored in the concrete sleeper via T-headed bolts that are inserted into the cast iron shoulder.



Easy handling for installation and rail maintenance

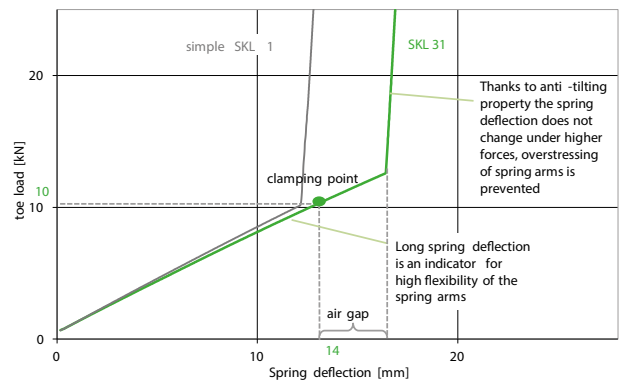
- When the rail is welded, no fastening elements must be removed from the sleeper.
- All components can be replaced.

Safety. Comfort. Track protection.

Creep resistance and rail tilting protection

To allow optimum deflection for the rail, its fastening must resonate in an elastic way. Therefore, the Skl 31 has a long spring deflection: When forces are applied by a train, its spring arms remain in contact with the rail foot in each situation. For this purpose, the rail is continuously clamped in a force-fitted way by the two spring arms with a spring deflection of approx. 14 mm and a toe load of approx. 10 kN. With this, also a creep resistance is achieved: When the trains accelerate/decelerate, the rails remain in position, dangerous open fracture gaps due to broken rails are avoided. Simultaneously, a small gap between the middle bend and the rail foot of the rail has exactly the play required for operation. If the rail tilts excessively, e.g. in narrow bends, high forces are applied to the tension clamp. The Skl 31 is able to resist them: Rail movements are compensated by the middle bend after the gap has been overcome, and the spring arms are not overstretched.

Load-deflection-curve



Rail fastening system W 31 RS I with tension clamp Skl 31		
Typical field of application	Heavy haul; ballasted track with concrete sleepers	
Axle load	≤ 35 t	
Speed	≤ 160 km/h	
Curve radius	≥ 400 m	
Vertical fatigue strength of Skl 31	2.5 mm	
Static stiffness of rail pad	≥ 400 kN/mm	EN 13146-9: 2011
Toe load of Skl 31 (nominal)	10 kN	EN 13146-7: 2012
Electrical resistance	≥ 5 kΩ	EN 13146-5: 2003
Rail creep resistance	≥ 9 kN	EN 13146-1: 2012
System approval/homologation		EN 13481-2: 2012 AREMA Chap. 30

Remark

Contents, figures and technical data in this brochure display the performance of the fastening system, however, they always depend on external conditions. Please contact us to enable us to develop a solution for you that will be customized to your requirements. The information presented corresponds to the technical state at the time of printing; in the meantime, continuous research and development programmes at Vossloh could cause adaptations of the product.

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