

INNOVATIVE TECHNOLOGY FOR

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Conventional rail

Vossloh rail fastening systems for combined goods and passenger traffic



The unconventional demands on the conventional lines of the future



Rail fastening systems for slab track



Rail fastening systems for ballasted track



System 300





System DFF 200









System DFF 300 (plastic frame)









System KS 24

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Conventional rail lines come with many **challenges**

The demands placed on conventional rail lines by state-of-the-art rail transportation systems are anything but conventional. Their mixed use involves both goods and passenger transportation systems, which means that the lines have to be optimised for two quite different sets of requirements at the same time: goods traffic with the heavy loads that entails, and passenger traffic with passengers' ever-increasing expectations of comfort.





Meeting the highest expectations

Rail fastening systems on conventional lines have to be able to absorb the heavy loads imposed by goods traffic in order to protect the track bed and the tracks themselves from wear and tear. Meanwhile, the key elements for passenger traffic are travel comfort, gentle starts, low noise levels, and avoiding structural vibration. The system solutions from Vossloh meet all these requirements, thanks to a system that uses highly elastic components that reduce undesired vibration to a minimum. Our system solutions consisting of optimised tension clamps, rail pads, and intermediate plates ensure restful travel on every possible subsurface. They minimise structure-borne noise and prevent the formation of rippling on the rail surface. The elastic support and flexible rail clamping guarantee maximum safety. The result is a longer service life and savings on costly maintenance work. Our decades of experience allow us to offer customised solutions to suit the specific profile of every track.



Perfect protection under all conditions

Whether it is heat, temperature fluctuations, corrosive sea air, or exposure to chemicals in industrial environments – conventional railway lines need to function smoothly and last a long time even under extreme environmental conditions. Our newly developed premium zinc coating, Vossloh *protect*, offers long-term protection for all steel components in our rail fastening systems. The top coating provides barrier protection from chemicals, while cathodic corrosion protection keeps them rust-free even in the event of damage. Vossloh *protect* also substantially reduces the risk of material fatigue.

A number of high-tech materials ensure that our rail fastenings are highly weather-resistant and have a long service life:

- The premium coating Vossloh protect comes with the highest protection class (C5-L) in accordance with ISO 12944 and contains no heavy metals, making it appropriate for safe use worldwide.
- Specifically designed Vossloh tension clamps provide additional tilt protection and rail creep resistance even under heavy loads.
- Cellentic elastomers reliably cushion vibration and lose none of their rigidity or elasticity, even after years of constant stresses. They protect the track from wear and material fatigue.
- > Additional angle guide plates keep the rails in the right position at all times.



If you want more rail-based traffic, what you need most is **higher levels of availability**.

Rail transportation is expected to grow in importance in the next few years as efforts to protect the climate continue. Because rail networks cannot be expanded arbitrarily in densely populated areas, higher levels of availability are especially important. And that is exactly what we are working on at Vossloh.

Elastic tension clamps from Vossloh have been in use since 1967: in more than 70 countries, on more than 100,000 km of standard track – primarily on ballast but also on about 7,000 km of slab track.



Using our systems keeps both labour and other costs low – and that applies to new infrastructure as well as upgrades and maintenance. And if there are new requirements for a section of track during an upgrade – even individual parts of the fastening system down to a single dowel – they can be retrofitted quickly and at a low cost. This means that you can bring existing lines up to the latest standards fast and without major expense. Another point for greater cost-effectiveness: On request, the selected components can be preassembled for delivery ex-factory, for example, already attached to concrete sleepers. Not only does that save a lot of time and make work on-site easier, it also has a positive impact on availability. On high-use sections of track in particular, that is a major advantage.

The perfect system combines quality and cost-effectiveness

Decades of experience mean that rail fastenings from Vossloh are well-designed system solutions that can be custom-configured for all conceivable applications, and they are available quickly and at a reasonable price in large or small quantities.



The **new generation** is backed by a wealth of experience

As a successor to the "high-tension spring washer" patented by Karl Vossloh in 1927, the tension clamp for rail fastening was introduced by Professor Hermann Meier in 1967. Following successful tests, Vossloh took over the general licence to manufacture the clamps. The basic principle proved extremely adaptable and enabled constant progress to be made over the years. The billionth tension clamp was manufactured on 22 July 2020, with no end to production in sight: The next generation of tension clamps is already in progress.





Allow us to introduce ... our latest generation of Vossloh tension clamps!

Thanks to growing demand and increasing loads in rail transportation, we have made the new M-generation clamps more robust to help to ensure that tracks remain safe into the future. This new development is being produced in Werdohl, Germany, using state-of-the-art process technology.

Benefits offered by the new generation:

- > More compact and lighter design
- > More robust thanks to a higher natural frequency
- > Ultramodern production facility
- > Reduced logistical costs
- > Easier on resources



Fastening systems for combined goods and passenger traffic: **Specifications** at a glance



	Rail fastening systems for slab track				Rail fastening systems for ballasted track			
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Product	System 300	System DFF 200	System DFF 300 plastic frame	System DFF 300 steel frame	System W 14	System W 21	System W 30	System KS 24
Axle load	≤ 26 t	≤ 26 t	≤ 26 t	≤ 26 t	≤ 26 t	≤ 26 t	≤ 26 t	≤ 30 t
Speed	≤ 250 km/h*	≤ 250 km/h*	≤ 250 km/h*	≥ 250 km/h*	≤ 250 km/h*	≤ 250 km/h*	≤ 350 km/h*	≤ 250 km/h*
Curve radius	≥ 150 m*	≥ 150 m*	≥ 150 m*	≥ 400 m*	≥ 150 m*	≥ 150 m*	≥ 400 m*	≥ 150 m*
Height adjustment	-4 mm/+ 76 mm	+ 20 mm	+ 30 mm	-4 mm/+ 56 mm	Optional	Optional	Optional	Optional
Gauge adjustment	± 16 mm	± 10 mm	± 10 mm	± 46 mm	± 10 mm	± 10 mm	± 10 mm	_

Note: Content, figures, and specifications in this brochure reflect the performance of the fastening system under ideal conditions, but this will always depend on external factors and influences. Contact us so we can work with you to develop a solution tailored to your project and your requirements. The information in this document represents the state of technical development at the time of publication; the product may have been updated since as a result of ongoing research and development work at Vossloh. * Requirements according to EN 13481 for rail fastening systems, category C: Conventional Rail. System also homologated for category D – High Speed – (speed ≥ 250 km/h, curve radius ≥ 400 m).



Ready for any application: Our extremely broad portfolio

Conventional tracks connect almost every city in Europe. And while many new lines of this type are currently being constructed in central and eastern Europe in particular, other countries are preparing to ensure more regular schedules and higher availability on their existing lines. In addition, sections of track that were decommissioned in previous decades are coming back into focus as a result of changes in traffic planning, and they may be reactivated.

Want to know more about our references? Drop us a line:

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Custom optimisation

Our portfolio is unrivalled in its extensive range and offers a wealth of solutions for conventional ballasted and slab tracks. We pursue the same goal in every project: We aim to develop individually optimised fastening solutions that combine maximum operational safety at minimum cost and effort.

Maximum availability

As network utilisation increases, so do the economic losses every time a section of track is unavailable. We have remedied this with the high fatigue strength and long service life of our systems. The latest maintenance models also identify faults at a much earlier stage, which reduces downtime and costs. Rail fastening systems from Vossloh reduce overall infrastructure costs and improve their availability.

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Interested in more products in the Vossloh portfolio for your rail infrastructure?

Take a look at our Product Finder, where you'll quickly find the solution that's right for you!



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