

ELASTIC RAIL FASTENING

System W 40

The resistant system for heavy haul





System W 40 – long-lasting and robust

Heavy-haul lines are exposed to extreme mechanical loads. System W 40 is designed expressly for these requirements. It also displays its strengths in tight curves. Wider angle guide plates allow higher loads to be carried, which means speeds of up to 160 km/h can be achieved with axle loads of up to 35 t. This system is particularly popular in the US, where heavy goods often have to be transported across long distances. It has been in use there since 2013.

See the following pages to discover the application and configuration options, as well as interesting details on construction and materials.



Heavy haul

Rail fastening systems for ballasted track with concrete sleepers without inclination.

Old designation

System W 40 HH

New designation

System W 40 – Heavy-haul configuration



Heavy loads made easy

The combination of concrete sleepers and ballast is the most widely used track system world-wide. The sleeper shoulders provide stability for the track and the fastening, and ensure that the forces generated by heavy-haul traffic are deflected. The flexible ballast layer transmits these loads evenly across the substructure and simultaneously absorbs noise and vibration from the rolling trains. System W 40 is the complement to this construction that you can rely on: The components used make it extremely low-maintenance, enabling safe travel thanks to their high toe load, dynamic fatigue strength and high rail creep resistance – even under fluctuating temperatures and in sandy regions.



Safety thanks to the W shape: Two highly elastic, independently operating spring arms hold the rail firmly in place.

In addition to the safety aspects, the key requirements for heavy-haul traffic are to ensure the most efficient protection possible for the track bed, and cost-efficient operation. This is where System W 40 scores right from the time of installation. All system components can be supplied preassembled ex-factory. The benefit to you is that fastening

components cannot be lost, and they do not have to be removed from the sleeper during welding. The only thing left to do on-site is to fit and tension the rails, which saves time and costs at the assembly stage. In addition, all components, including the dowels, are easy to replace, which also ensures ease of handling during track maintenance.

SYSTEM W 40

Rail fastening for concrete sleepers and ballast



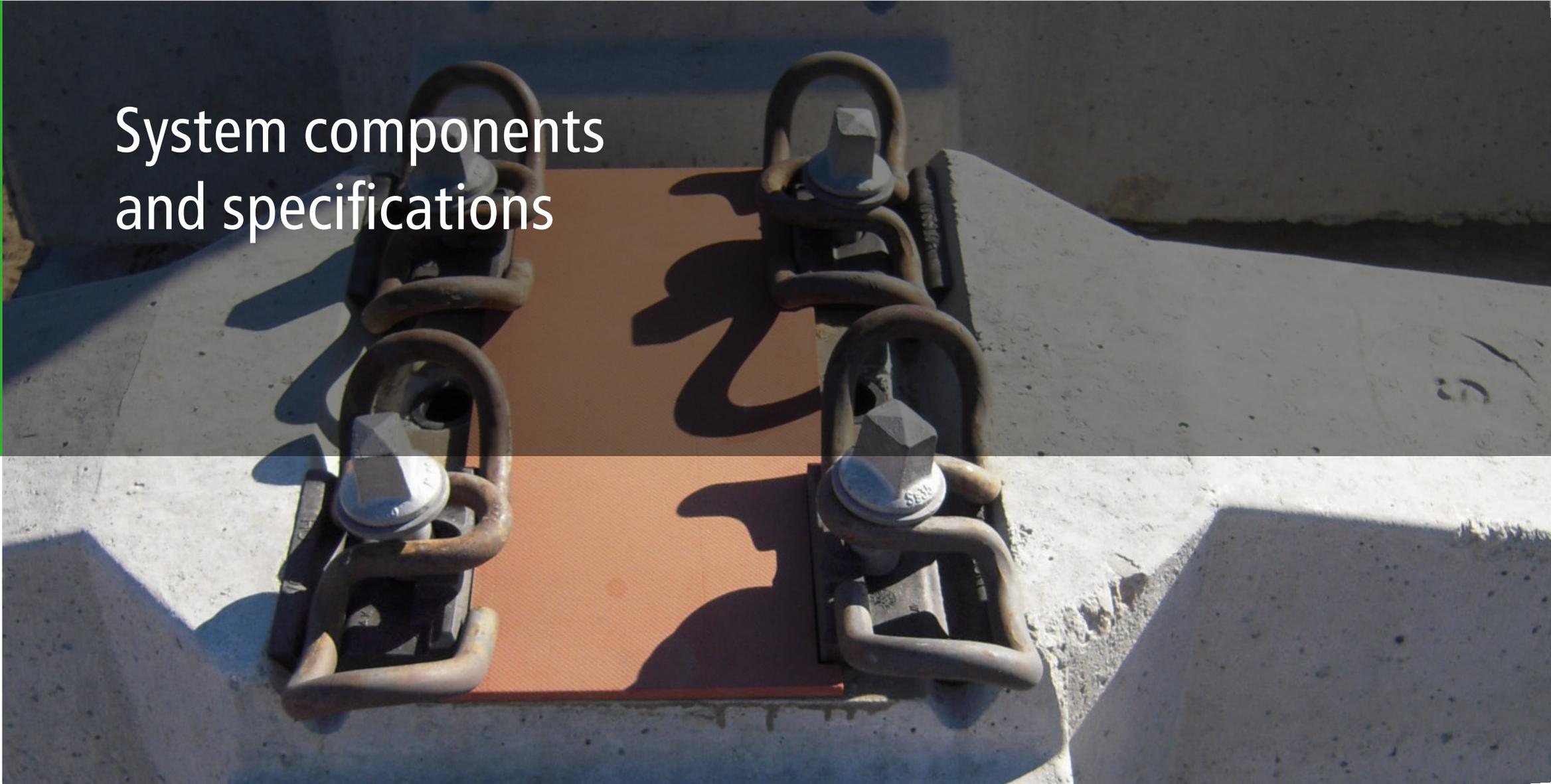


System W 40 is in demand wherever long-lasting solutions are required for heavy-haul traffic on ballasted track with concrete sleepers. The high toe load of the Skl 40 tension clamp improves lateral and vertical retention forces, while at the same time the higher fatigue limits provide a long service life and thus low whole-life costs. The positive tensioning of the rails by the two spring

arms not only allows the rail to deflect by the ideal amount, but also achieves high rail creep resistance. The rail stays in position, regardless of whether the trains are accelerating or braking. The resilient material and the special heavy-haul design of the TPU rail pad make sure the system withstands the high axle loads.



System components and specifications

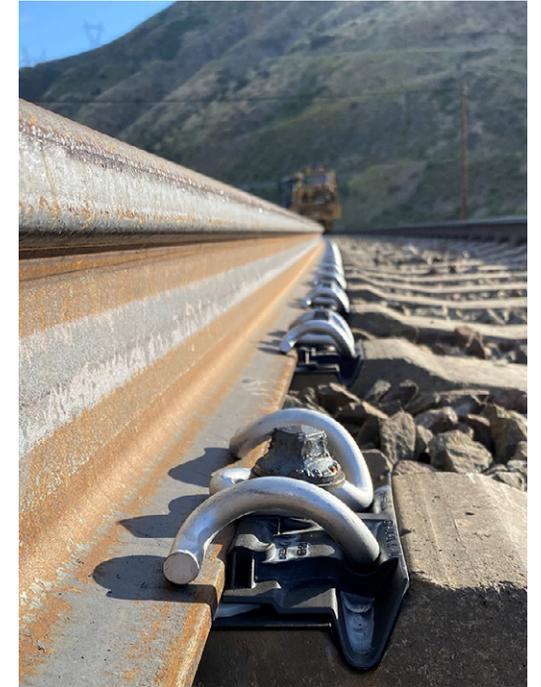


Tension clamps: Generational change for improved resistance

Climate-friendly passenger transportation, reliable goods transportation, efficient logistics: Rail traffic is becoming increasingly important, and this places new demands on the rail network. The new generation of clamps was specifically developed to respond to the growing burden on rails and fasteners. The new M generation of Vossloh tension clamps is more robust and therefore guarantees safety on the track into the future, regardless of growing demands and higher loads. The tension clamps are manufactured using state-of-the-art processes at the new production facility in Werdohl. That is also where its more compact and lighter design was created, which both reduces logistical costs and saves resources.



Test track Tension clamp M7



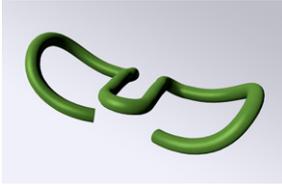
Test track Tension clamp M9



Safety and track availability for all generations

The factor linking all tension clamps is their force-deflecting design: On all stretches of track, including on tight curves, the track remains in position while the trains accelerate and brake. The track bed does not move, while noise and vibration are contained. As a result, the tension clamps ensure maximum safety and track availability.

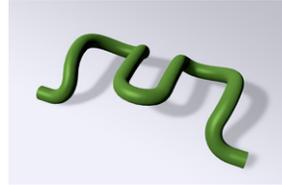
Old generation



Tension clamp Skl 40

- Fatigue strength 3.2 mm
- Spring deflection 24.0 mm through two spring arms
- Toe load 12 kN
- Frequency approx. 340 Hz

➤ New generation



Tension clamp M9

- Fatigue strength up to 3.2 mm
- Spring deflection > 20 mm through two spring arms
- Toe load > 11.5 kN
- Frequency > 1,000 Hz

Tension clamps M7 and M9 can replace the previous generation of tension clamps and are optimised for a number of requirements. The M9 clamp is especially well suited for narrow curve radii, for example.

The new M generation clamps are currently in the development stage. The values shown here are based on laboratory results, and the assessment following the initial operational trials is positive.

Comprehensive protection with *Vossloh protect*

High humidity levels and high salt content in the ambient air are just two examples of environmental impacts that will attack some components in rail fastening systems. That is why all tension clamps and sleeper screws and T-head bolts can be coated with *Vossloh protect* for optimal protection. This innovative coating provides traditional barrier and cathodic corrosion protection that prevents damage from loose ballast, among other things. This is an important factor when it comes to reducing lifecycle costs. The coated components are also protected from aggressive industrial climates like acid rain, major temperature fluctuations, and other extreme conditions.

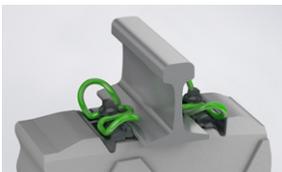
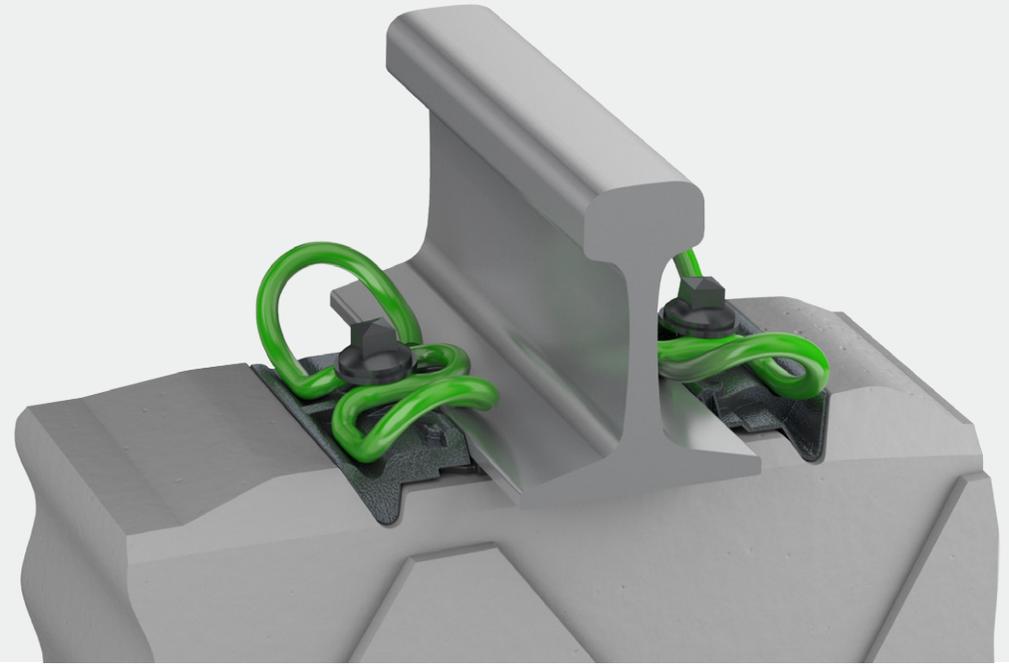


More information is available on our Web site:



System W 40

Made for heavy-haul transport



Heavy haul



SYSTEM W 40

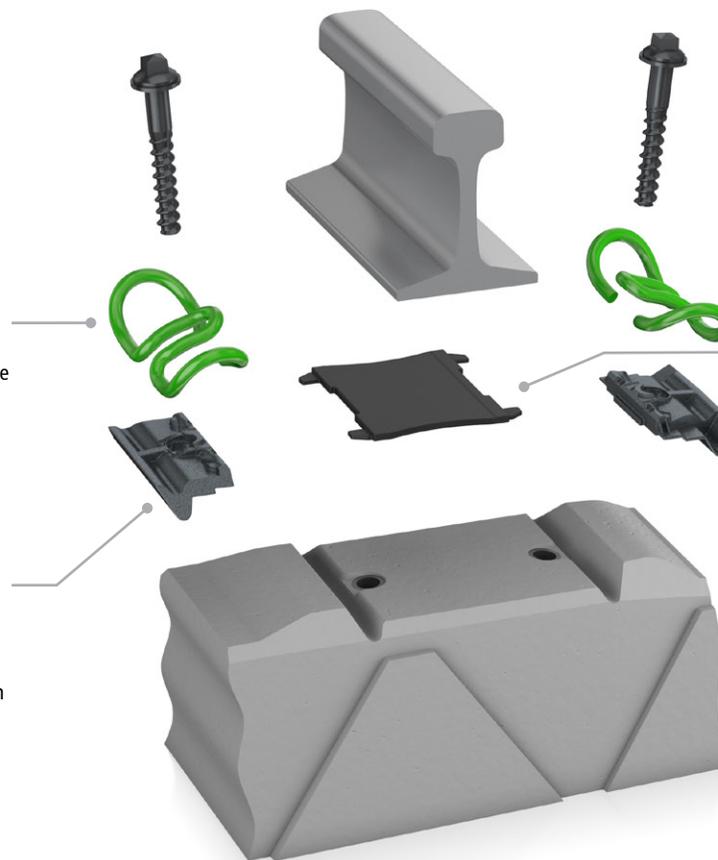
Made for heavy-haul transport

SKI 40

- › Maximum safety
- › Optimised rail creep resistance and tilt protection
- › Resistant to dynamic vertical movements
- › Maintenance-free system

Angle guide plates

- › No stresses from shearing or bending forces
- › Keep rails in the track
- › Broader angle guide plates on the field side
- › Tilt protection
- › Gauge adjustment possible



Rail pad

- › Resilient material and special heavy-haul design of the rail pad make sure the system can withstand the high pressure from the traffic loads.

Screw-dowel combination

- › Secure tensioning with a high load capacity
- › Cost-effective and resilient thanks to the use of high-tech materials



System W 40: Specifications at a glance



You can also use our Product Finder on our Web site:



Field of application

Heavy haul

Axle load

≤ 35 t

Speed

≤ 160 km/h

Curve radius

≥ 150 m

Height adjustment

optional

Gauge adjustment

± 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.



Born for the USA

100 wagons westward: When the front locomotives of a freight train begin to come out of the hairpin curve at Breezy Point in the US state of Nebraska, the last of the carriages – exerting an axle load of more than 35 tonnes – have not even begun to enter it. It is easy to imagine that the centrifugal forces on the tracks in this zigzag curve are colossal. In 2013, Vossloh developed a special rail fastening system – System W 40 – whose elasticity makes it a milestone in terms of staying power: The track can sink down a little more and also gives way a little more than usual to the sides – but no more than a millimetre, which keeps the train securely within its tracks. The system is now in use on more than 300 km of track in the US.

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



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!

Click here to directly
access the Product Finder



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