System 336
Highly elastic rail fastening for metro –
the ribbed base plate solution for slab track
Urban Transport – Always smooth with stop and go
Frequent starting and stoppings at many stops within the shortest time characterize urban transport. In this case, highly elastic components provide for comfortable travelling at high operating safety and reduced noise – at axle loads of up to 18 t (Metro) / 13 t (Tram).

System 336 – the ribbed base plate solutions for urban transport
Slab track systems must meet special requirements to deflect forces generated by a rolling train into the ground in a smoothly and material-saving way: The highly elastic components of the rail fastening systems must replicate the original elasticity of the ballasted track. For system 336, a highly elastic elastomer-intermediate plate made of cellentic is used in order to achieve that result. Ribbed steel base plates form the connection to the concrete subgrade, their ribs ensure track security and the stability of the rail. Furthermore, they transfer dynamic forces in the substructure.

System 336 – highly elastic solution in urban transport for more than 40 years
The highly elastic cellentic-elastomer (≥ 8 kN/mm) offers excellent characteristics in terms of rail deflection, noise and vibration damping: this makes it very well suitable mainly for metros. As a ribbed base plate system, the 336 is also a popular rail fastening system for turnouts.

It is usually fixed on the slab track by anchor bolts. Furthermore, the 336 SD version allows the fixation via screw-dowel-combinations. The rail fastening system 336 has been installed for more than 40 years. It is used on 1,100 km of track in more than 30 countries.

The 336 Duo has been developed for the urban transport in China: It is compatible with local track solutions and – due to excellent performance in damping – can absorb up to 8 decibel more than common local systems. The 336 Duo is already installed in several metro tracks in China, among others in the turnouts of Beijing’s Metro line 7.

Vossloh protect:
The new coating for tension clamps, sleeper screws and T-head bolts (incl. nuts ans wahsers) – for a consistent and high coating quality.

Advantages
- Conventional barrier protection plus cathodic corrosion protection, preventing the base material from corroding in the event of damages, e.g. caused by flying ballast.
- Withstands extreme conditions such as high temperature fluctuations, high humidity and industrial climate (acid rains).

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

cellentic

cellentic is an elastomer made of EPDM that ensures high stability against many types of chemical attacks. The advantage: the material provides excellent resistance to temperature, aging, and weather conditions as well as it is very stable under permanent load. cellentic components optimize the elasticity for a reduction of vibrations and the protection of track.
System 336

The W-shape of the Skl 24 provides safety
For meeting the required rail creep resistance two highly elastic, independently acting spring arms steadily hold the rail down; the middle bend acts 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. The system is maintenance-free: Due to the permanently acting tension, Skl and screw cannot loosen, the middle bend prevents the spring arms from plastic deformation.

Helical springs for low pretension of elastomer
Safely tied
By means of T-headed bolts, the Skl are safely mounted to the ribbed base plate. The ribbed base plate itself is fixed in the concrete track with anchor bolts. (Alternative anchoring: screw-dowel-combination).

Electrically insulated
A plastic rail pad, plastic gauge adjustment bushes and the elastomer insulate the system electrically.

Highly elastic bearing of the system
The ribbed base plate rests on a highly elastic elastomer made of cellentic (≥ 8 kN/mm) that offers excellent characteristics in terms of rail deflection and vibration damping. The last minimizes the structure-borne noise.

Intermediate plate

Easy handling for installation and rail maintenance due to preassembly and exchangeability
- Flexibly applicable as single support point: no special shoulders (e.g. for concrete sleepers) required.
- Installation is possible both with top-down and with bottom-up method.
- Anchorage possible by anchor bolts, weld studs as well as with screw-dowel-combination – with two or four anchors/dowels each.
- For welding of the rail, no fastening elements have to be removed from the support point.
- The single support point can be delivered as preassembled component.
- All components can be replaced.
- Optionally applicable in turnouts.

Travel comfort through optimum rail deflection
The railway track must be elastic to compensate forces caused by running trains. Because ballast is not used for slab tracks, the highly elastic cellentic components of the rail fastening system are designed to undertake this job. The 336 system with cellentic intermediate plate allows rail deflection and can optimally distribute occurring vertical forces. The result: Protection of track. Its elasticity is adapted to the traffic load to achieve optimum rail deflection: load distribution is at the maximum without overloading the rail. Furthermore, the cellentic component damps the vibrations caused by the unevenness of the track and the wheels; structure-borne track vibration is minimized. The result: travel comfort, safety through smooth running, as well as increased lifetime of track components and vehicles.

Creep resistance and rail tilting protection
To allow optimum deflection for the rail, its fastening must respond in an elastic way. Therefore, the Skl 24 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. 9 kN. With this, a high creep resistance is also 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 that is required for operation. If the rail tilts excessively, e.g. in narrow curves, high forces are applied to the tension clamp. The Skl 24 is able to resist them: Rail movements are limited by the middle bend after the air gap has been overcome, and the spring arms are not overstretched.

Load-deflection-curve

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 have caused adaptations of the product.