

Vanguard

Fastening systems



The Pandrol Vanguard rail fastening provides very low vertical stiffness, leading to high levels of vibration isolation at a much lower cost than alternatives such as floating slab. This makes it particularly useful for addressing ground-borne, or secondary, noise and vibration issues in sensitive urban environments.

Despite its low vertical stiffness, Vanguard has exceptionally high lateral stiffness and because the rail is restricted from rolling the dynamic gauge widening under traffic is minimised. Generous lateral and vertical adjustment of the rail is possible, and maintenance is assisted by a Pandrol-supplied hydraulic clamping tool.

Vanguard can be retrofitted to existing track as easily as it can be installed on newly built track. Configurations are available for use with concrete sleepers, timber sleepers and slab track.

→ TECHNICAL FEATURES

Rail web support

Unlike most fastenings, Vanguard supports the rail on the web under the head, instead of on its foot. This allows the rail to essentially hang in the air, with a resilient connection to the fastening in shear, rather than compression under the foot. As a result, exceptionally low vertical stiffness can be achieved.

Longitudinal restraint

Vanguard has been repeatedly proven to comply with longitudinal restraint requirements, with rail break gaps still being kept within limits. This is despite the shear connection between the rail and the fastening allowing for large elastic displacement.

Electrical insulation

Thick side rubbers that separate the rail from any metal, along with a rubber bump stop pad underneath it, provide very high levels of insulation.

Adjustment

Depending on configuration, fine lateral adjustment can be made via the baseplate as well as in the rail seat. Vertical adjustment is made by using shims under the baseplate.

Stiffness transitions

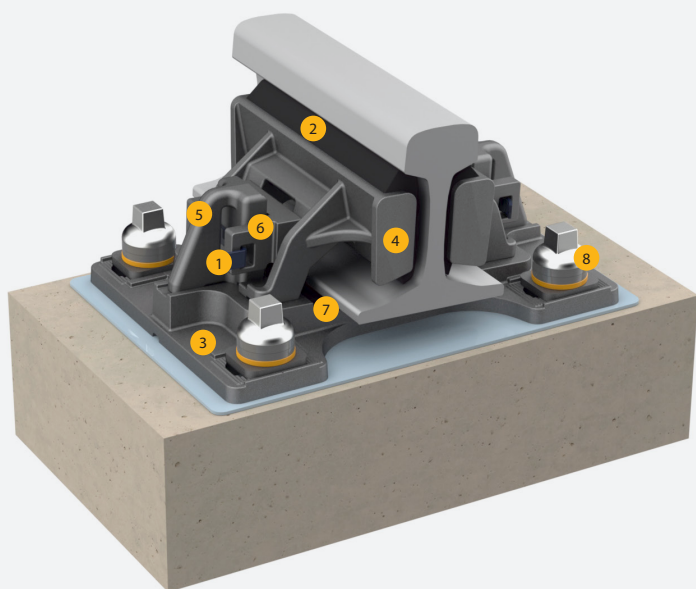
Combination of pads and shim are available and can be used under the rail by swapping out the bump stop to create a gradual stiffness step. This erases the transitioning between Vanguard and different tracks.

Track-structure interaction

Vanguard allows for large elastic rail displacement. As a result, large differential movement between track and structure is accommodated and most track-structure interaction effects are dealt with automatically.

→ ADVANTAGES

- Not only does Vanguard provide a lower level of vertical stiffness than most other fastenings, it does so with a very low-profile rail level. This reduces overall track clearance heights, which can reduce construction costs significantly. It also makes Vanguard a very low weight solution compared to floating slab track.
- Lateral adjustments can be made quickly, easily and without the need for any additional components. The bolts or nuts are simply untightened, the assembly moved laterally until it is in the required position, and the bolts or studs re-tightened. Where adjustment is not available in the baseplate, it can still be done by unclamping and moving the rail over before re-clamping.
- Vertical adjustments can be made quickly, easily and without the need to fully disassemble the fastening by sliding the correct thickness shim, or combination of shims, under the assembly.
- Vanguard elastic components are easily accessible to maintenance technicians. Components can be inspected and maintained with simple hand tools.
- Almost all Pandrol baseplate products can be retrofitted with Vanguard. This makes it a unique and highly futureproof solution, enabling the reduction of ground-borne vibration at any time. As existing anchors can often be used, it is also possible to retrofit existing non-Pandrol fastenings.
- Vanguard can be used with all conventional track construction methods, including top-down wet pour (with or without pre-cast blocks) and bottom-up with pre-cast concrete blocks, sleepers and slab panels.



→ COMPONENTS

1. Spring clips
2. Side Rubbers
3. Cast iron baseplate
4. Cast iron side plates
5. Cast iron shoulders
6. Cast iron wedges
7. Bump stop pad
8. Anchor fastenings

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