

# Vanguard

## Fastening Systems

### Adding Value

Golden Horn Bridge – Turkey  
Customer: Istanbul Metropolitan  
Municipality, 2014

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The Pandrol Vanguard rail fastening system was specified for the sensitive areas due to its noise and vibration suppression characteristics. ”



Vanguard is a unique rail fastening system with very low vertical dynamic stiffness that leads to high levels of vibration isolation at a lower cost.

The significant reduction of vibration and secondary noise makes it ideal for applications in areas that are most sensitive to these environmental concerns. Pandrol Vanguard assemblies are suitable for application on slab track, concrete sleepers and timber sleepers, and can be used on bridges, viaducts and in tunnels. It delivers exceptional vibration attenuation at a much lower cost than floating slab track and does not compromise on rail roll.

## → TECHNICAL FEATURES

### Highly adjustable

Vanguard baseplates provide exceptionally wide adjustment possibilities. The range is typically  $\pm 20$  mm lateral per baseplate, and +20 mm vertical. Further adjustment of the rail within the baseplate is also possible.

### Track structure interface

Accommodates large differential movement between track and structure.

### Extremely low maintenance

Vanguard components are easily accessible to maintenance teams. Components can be easily inspected and maintained with standard track tools.

### Installation on site

Vanguard can be installed on retrofit concrete sleepers, timber sleepers and slab track on bridges, tunnels and viaducts by various construction methods.

### Low static stiffness

Vanguard provides very low static stiffness (nominal 5 kN/mm). Stiffness can be increased where required, by simple modification to the assembly.

### Low profile

Thanks to the very low profile of Vanguard, compared to other low stiffness track forms, it can be installed within restrictive rail heights. Vanguard can reduce tunnel diameters, leading to reduced costs for new track construction.

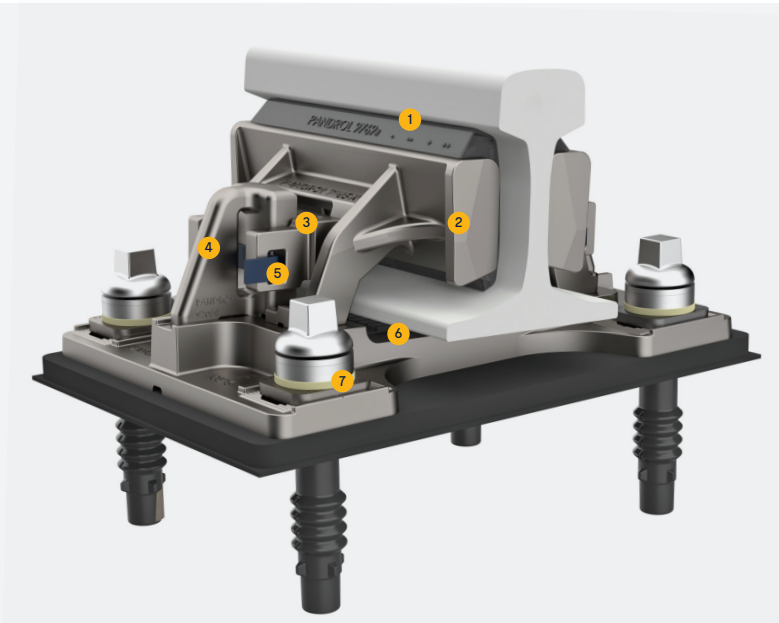
The low weight of Vanguard can also lead to considerable cost savings in structures such as viaducts, which would otherwise have to accommodate the greater weight of floating slab-track.

Vanguard can be installed on new track constructions. The system can also be retrofitted to existing rail fastening systems that require reduction in ground-borne noise and vibration.

→ ADVANTAGES /

- The nature of the rubber wedge support and the robust design of the assembly provides an ultra-low maintenance system with a very long life expectancy in track
- The very low profile of the Vanguard fastening system means it can be installed within existing restricted rail heights and can therefore be used to increase the vibration isolation properties of an existing track form

- Pandrol Vanguard is suitable for use on bridges to attenuate vibration which can otherwise lead to secondary noise from other parts of the bridge structure which may resonate. As Vanguard is an indirect baseplated system it can be applied directly to bridge girders or to the surface of timber, concrete or FFU bridge bearers and also on timber or concrete sleepers on ballasted bridge decks.

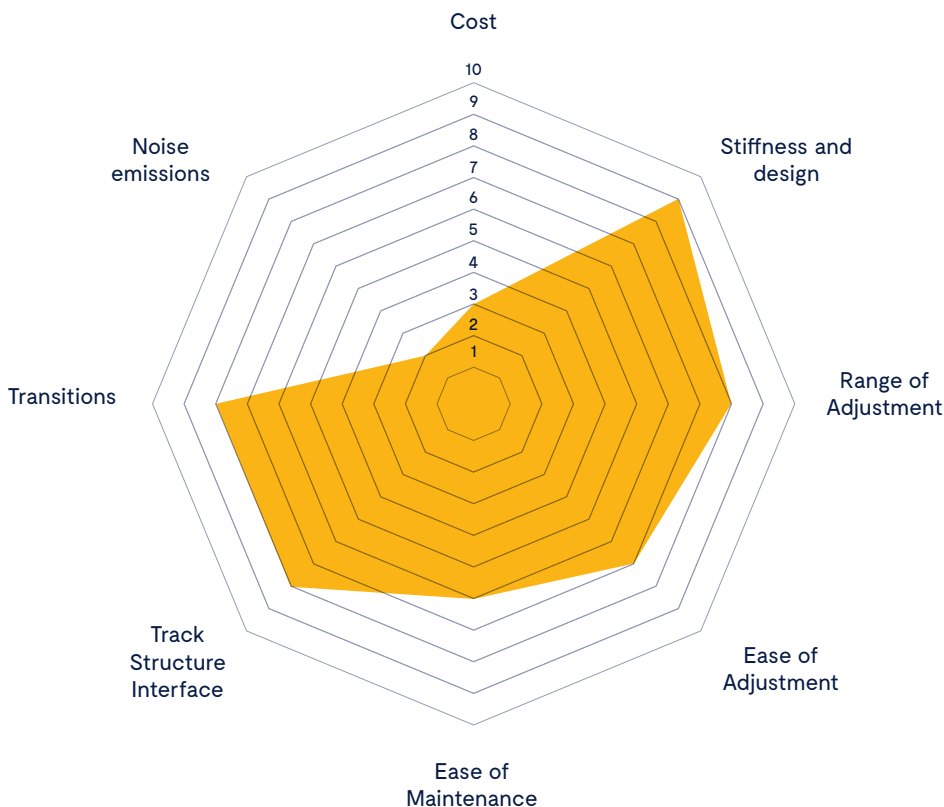


→ COMPONENTS /

1. Rubber wedges that support the rail at the web
2. Side support brackets that hold the wedges in place and transfer load to the support structure
3. Locking wedges that fix the side brackets
4. Shoulders that provide location and the reaction point against which the fastening is braced
5. Locking clips ensure long-term security and safe operation
6. Bump stop pads enhance safety and long-term security
7. Serrated washer for lateral adjustment

→ VANGUARD RADAR GRAPH RESULTS /

**Fastening Selection Criteria**



→ SPECIFICATIONS /

**Type of system**

- Indirect    Direct

**Suitable for application**

- Tram    LRT    Metro  
 ML    HS    HH

**Applicable CEN track categories\***

	Min Rad	Max Axle	
Cat A	40 m	130 kN	✓
Cat B	80 m	180 kN	✓
Cat C	150 m	260 kN	✓
Cat D	400 m	260 kN	✓

\* Based on EN 13481-5:2012

LEARN MORE

