

PANDROL

# VANGUARD



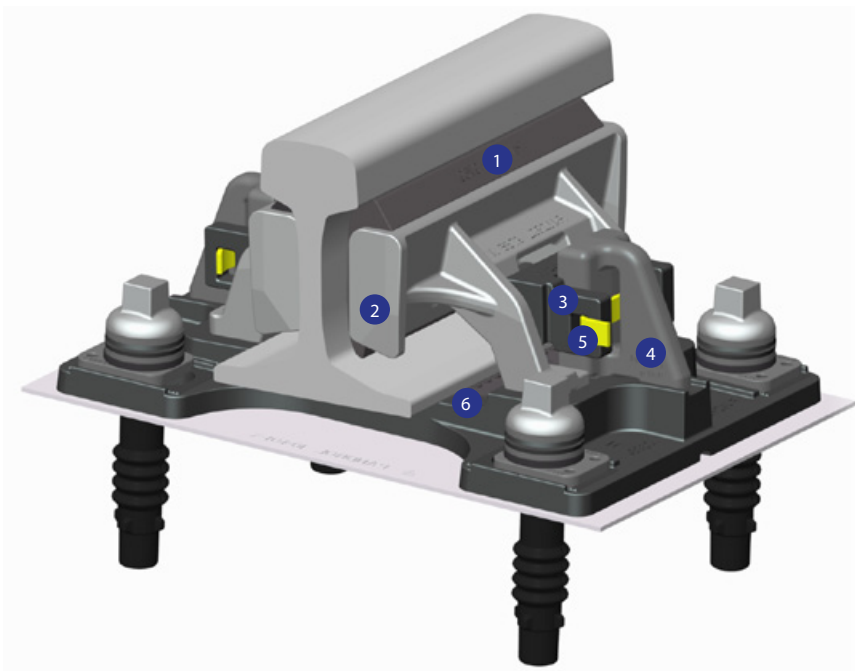
PRODUCT INFORMATION



RAIL FASTENING SYSTEM:

# VANGUARD

The PANDROL VANGUARD rail fastening system provides very low vertical dynamic stiffness, which leads to high levels of vibration isolation. Dynamic gauge widening under traffic is minimised. VANGUARD delivers exceptional vibration reduction at a much lower installed cost than floating slab.



Because VANGUARD significantly reduces vibration and secondary noise, it is ideal for use in areas most sensitive to environmental concerns. Assemblies are suitable for use with concrete sleepers, timber sleepers and slab track on bridges, tunnels and viaducts.

Find more information about PANDROL VANGUARD at [Pandrol.com](https://Pandrol.com)

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PANDROL 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 or secondary vibration.

#### 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



## INSTALLATIONS



# LONDON



# PERTH



# BELGRADE

## RETROFIT OPPORTUNITY

Almost all PANDROL baseplate systems can be retrofitted with VANGUARD. The system reduces the natural frequency of vehicles and the track system, and provides additional vibration isolation. Installation can often utilise existing anchors. The option to retrofit VANGUARD makes PANDROL baseplates a unique and highly future-proof solution, enabling the reduction of ground-borne vibration at any time.



## FEATURES OF ASSEMBLY

### LOW STATIC STIFFNESS

VANGUARD provides very low static stiffness (nominal 5 kN/mm). Stiffness can be increased where required, using modified bump-stop pads under rail.

### HIGHLY ADJUSTABLE

VANGUARD baseplates provide exceptionally wide adjustment possibilities. The range is typically +/-15 mm lateral per baseplate, and +15 mm vertical. Further adjustment of the rail within the baseplate is also possible. For additional requirements please consult Pandrol.

### 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 need to accommodate heavy floating slab-track, which would otherwise have to accommodate the greater weight of floating slab-track.

### TRACK STRUCTURE INTERFACE

Accommodates large differential movement between track and structure.

### EASY MAINTENANCE

VANGUARD elastic components are easily accessible to maintenance technicians. Components can be easily inspected and maintained with simple hand tools.

### INSTALLATION ON SITE

VANGUARD can be installed on pre-cast blocks, slabs, or by wet-pour top-down method.



PANDROL

# VANGUARD

- For use on concrete non-ballasted tracks (slab tracks)
- Also suitable for concrete and wooden sleepers and bearers, or direct application on bridge decks
- Provides exceptional vibration reduction
- Suitable for top-down or bottom-up concrete track construction
- Can be retrofitted to improve vibration attenuation in existing tracks

## Application data (Standard products – special variants may differ)

Rail Inclination	Provided in concrete or baseplate as required			
Typical Applications	Metro's and underground systems, bridges and tunnels			
EN 13481-5 Track Category	Cat A	Cat B	Cat C	Cat D
Maximum Axle Load*	130 kN	180 kN	260 kN	260 kN
Minimum Curve Radius*	40 m	80 m	150 m	400 m

\* For Special applications consult PANDROL

## Typical performance data\* As identified by Track Category EN 13481-1

	Value	Test Method
Assembly static stiffness	≈ 5 kN/mm minimum	EN 13146-9:2011 Cat A/B/C/D
Assembly dynamic stiffness	≈ 7 kN/mm minimum	EN 13146-9:2011 Cat A/B/C/D
Electrical Insulation	>25 kΩ	EN 13146-5:2012
Clamping force	N/A	
Creep resistance	>9 kN	EN 13146-7:2012
Lateral adjustment	+/- 20 mm	
Vertical adjustment	+ 45 mm	

## COMPLIANCE WITH STANDARDS:

PANDROL VANGUARD is compliant with the requirements of the European High Speed TSI (Technical Standards for Interoperability). A declaration of conformity has been issued for use on connecting lines at speeds less than 160 km/hr.km/hr.

## NOTE:

PANDROL is a provider of innovative custom rail fastenings. Data in this document indicates typical performance. Actual performance is dependent on a range of external factors. Please contact us to discuss how PANDROL can tailor products to suit local operating conditions and specific requirements. Technical information in this document was correct at time of printing. Improvements may since have been introduced as a result of our continuous research and development programmes.

ISSUE 4 2015

## PANDROL TRACK SYSTEMS

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