



Maintenance-free Compact Central Articulated Pivot for Joining Railway Carriages

In modern rail vehicles, the carriage bodies are connected to each other by gangways so that passengers can move from one part of the vehicle to another.

The carriage bodies are joined in the floor area by means of central articulated joints with a maintenance-free ELGOGLIDE sliding fabric. In order to improve the performance capability of the central joint, Schaeffler has revised the design of the spherical plain bearing system and developed a new type of central joint.

This is characterised by high axial and radial load carrying capacity while requiring only a comparatively small mounting space. The central joint was developed in order to give simple mounting and integration in the adjacent construction.

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INA Plain Bearing System for Joining Railway Carriages

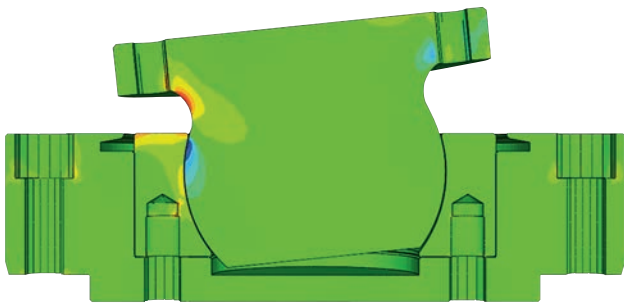


Figure 1 – FEM model

Function and performance

The lower central joint joins two carriage bodies and must support the static and dynamic loads occurring in operation. It facilitates all the turning, tilting and pitching movements that occur when travelling on curved tracks, through cuttings or where these are caused by the nature of the track. The central joint is based on a radial spherical plain bearing that was developed with an integral anti-lift system. This ensures that the carriage bodies remain securely connected even in special cases such as lifting of one end or where buffer impact loads must be accommodated. The central joint, which was developed using the most advanced FEM calculation methods, meets the demanding requirements of VDV152 and EN12663, Figure 1.



City train

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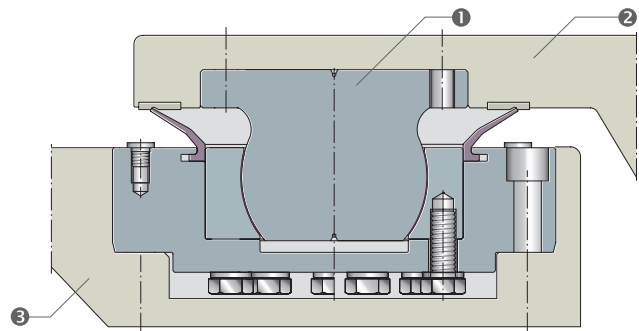


Figure 2 – Central articulated joint

1 central articulated joint, 2 upper housing, 3 lower housing

Application

The easy-to-mount central joint is connected by means of screws to the upper and lower housings, Figure 2. Due to its compact, low-section design, it can be used in low-floor vehicles as well as in other types of rail vehicle. Depending on the application, central joints can be developed to meet individual requirements.

Durability

The bearing system is protected effectively against contamination by means of the integrated seals. The inner and outer ring have special coatings in order to give very good protection against corrosion. The maintenance-free bearing system thus allows an environmentally friendly solution that gives a significant reduction in lifecycle costs due to its ease of mounting and long service life.

Advantages and benefits

- Tilting movements up to 7°
- Anti-corrosion protection by means of special coatings
- Sealing by means of vee-type sealing rings or standard bellows
- Integrated anti-lift mechanism
- Maintenance-free due to ELGOGLIDE sliding fabric
- Very little mounting space required
- Ease of assembly
- Very high load carrying capacity
- Long service life
- Reduced lifecycle costs
- Long maintenance intervals