

Maintenance-free Central Articulated Pivot for Joining Tram Carriages

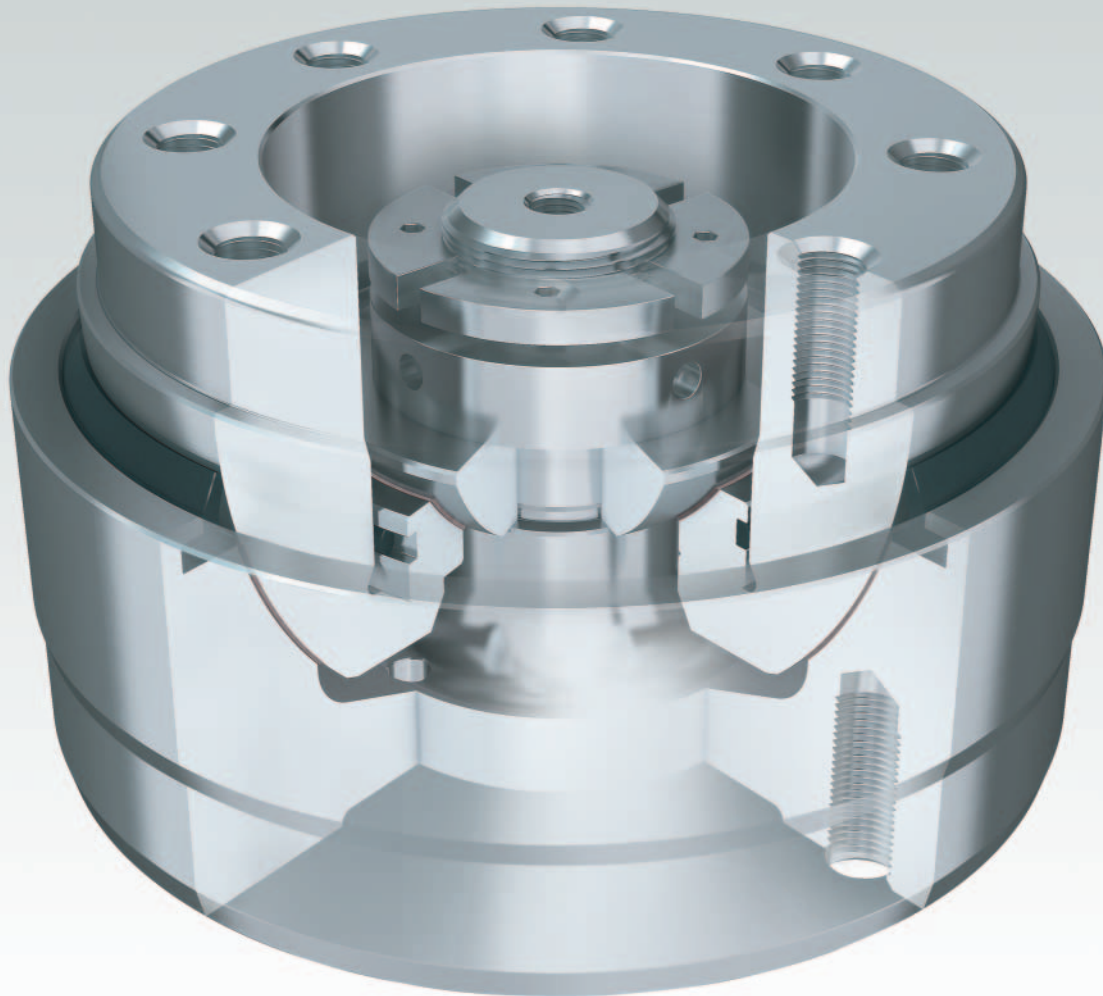


Figure 1 INA spherical plain bearing system for joining tram carriages in low-floor trams

Modern low-floor trams offer not only the comfort of low-floor access but also free passage from the front to the rear of the vehicle. The modular concept vehicles can normally be fitted, depending on the required size, with three, five or seven carriage

bodies connected to each other by means of central articulated joints, *Figure 1*.

Maintenance-free INA standard spherical plain bearings with ELGOGLIDE® sliding fabric are already successfully used in large quantities in vehicles produced by all the leading manufacturers.

In order to achieve a simpler adjacent construction, the Schaeffler Group has also developed a bearing system especially for low-floor trams. Due to its correspondingly compact construction, the spherical plain bearing can be matched to the particular application situation to give particular space savings while requiring a significantly reduced quantity of design work.

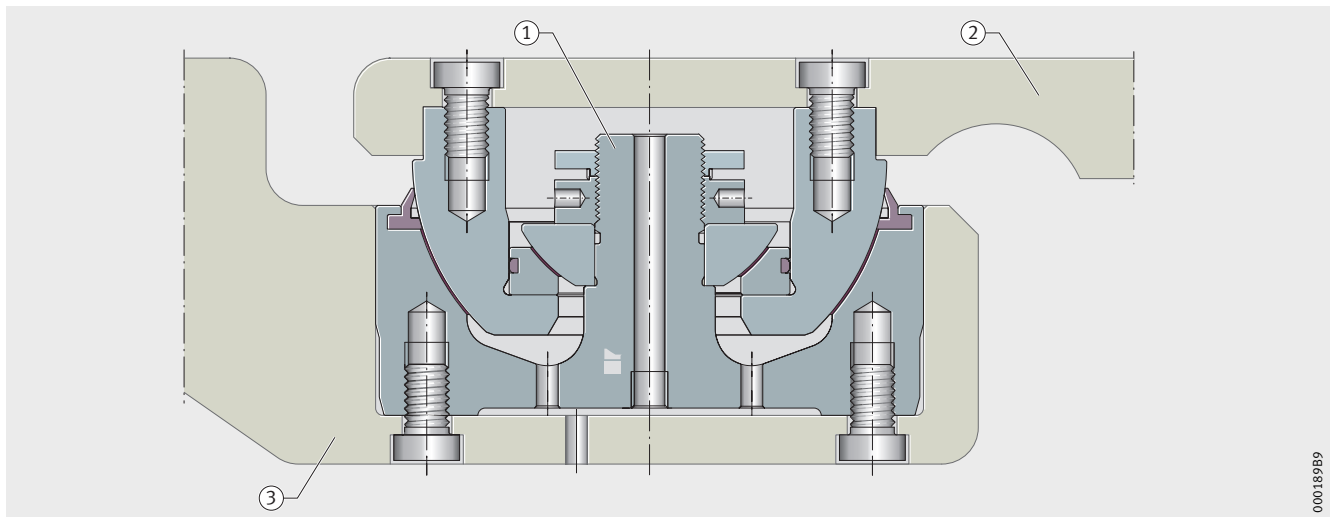


Figure 2 Central articulated joint
 ① Central articulated joint, ② upper housing, ③ lower housing

Function and performance

The main function of the lower central articulated joint is to transmit the dynamic and static loads in the carriage bodies, and especially those in the sedan sections that do not have their own bogie.

It facilitates all the turning, tilting and rolling movements that occur when travelling on curved tracks, over bridges or through cuttings. The integrated anti-lift mechanism ensures secure connection of the carriage bodies if one end is lifted or if buffer impact loads must be accommodated in an accident situation. The bearing system, which was developed using the most advanced FEM methods, meets the demanding requirements of VDV 152 and EN 12663, Figure 3.

Application

The easy-to-mount bearing system is connected by means of screws to the upper and lower housings, Figure 2. The high performance capacity of the ELGOGLIDE® sliding fabric allows a compact, flat geometry that is particularly beneficial when used in low-floor vehicles.

The bearing system can be matched to the adjacent construction in accordance with the specified loads.

Durability

The bearing system is protected effectively against contamination by means of the integrated seals. Corrosion-resistant materials are used, giving 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, benefits

- Tilting movement up to 6,5°
- Anti-corrosion protection by means of corrosion-resistant materials
- Integrated seals
- Integrated anti-lift mechanism
- Compact design
- Maintenance-free due to ELGOGLIDE® sliding fabric
- High load carrying capacity
- Long service life
- Reduced lifecycle costs
- Long maintenance intervals.

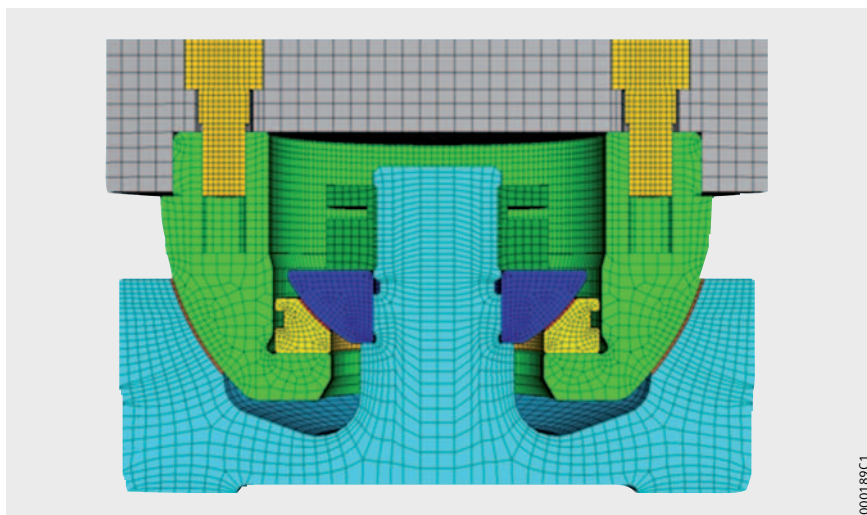


Figure 3 FEM model

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