

FAG Axlebox and Traction Motor Bearings in Class 423 Electrical Multiple Units



Examples of Application Engineering

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Class 423 electrical multiple unit: Developed by a consortium of Bombardier Transportation and Alstom LHB in cooperation with DB AG

Late in November 2004, S-Bahn München GmbH received the 234th new Class 423 train from Bombardier. Within four years, the light rail fleet of the city of Munich has been renewed completely with new Class 423 electric multiple unit trains (EMU). This electrical light rail train represents a novel public transport

concept. Energy consumption is significantly reduced both by the trains' lightweight construction and by the recuperation of braking energy as the waste heat generated during braking is used to heat the cars in the cold season. Environmentally compatible materials were used in production. Moreover, the advantages offered

by the EMU include a high level of availability thanks to short maintenance times as well as low maintenance cost.

Schaeffler Group Industrial supplies FAG axlebox roller bearings and FAG traction motor bearings for the Class 423 trains.

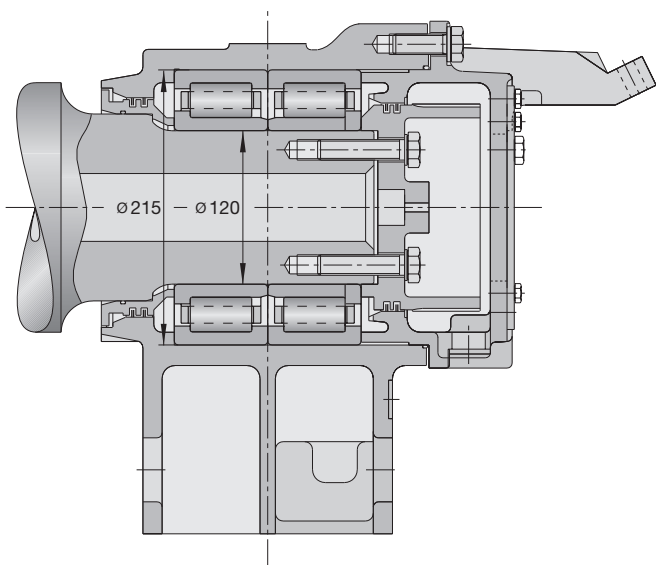
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Bogie and wheelset

The EMUs are equipped with two driven, air-cushioned front or Jacob-type bogies and one Jacob-type carrying bogie each.

The bogies are fitted with monoblock wheelsets with two flange-mounted wheel brake disks for a max. axle load of 18 t. Alternatively, rubber-sprung wheelsets can be used.

Two conical rubber springs per axlebox bearing guide the wheelset in lateral and horizontal direction. Parallel to the conical springs, hydraulic shock absorbers take up vibration in vertical direction. The wheelset with the complete axlebox bearing housing can be dismantled for maintenance and repair.



Axlebox roller bearings

The forces to be transmitted are taken up by cylindrical roller bearings of designs NJ and NJP.

The bearings are separable, i.e. the inner rings, outer rings and loose lips can be mounted and dismantled separately, making it easier to mount the tightly fitted rings.

Two cylindrical roller bearings of designs with polyamide cage **FAG WJ120x215** and **FAG WJP120x215** are installed per wheelset.

The axlebox roller bearings are equipped with grounding contacts and antiskid devices (magnet wheels) for each axle. Temperature sensors for monitoring the bearing temperature can be installed as well.

Lubrication and sealing

The bearings are lubricated with a lithium soap base grease with EP additives.

The axlebox bearings are protected on both sides from ambient influences by a non-rubbing lamellar seal.

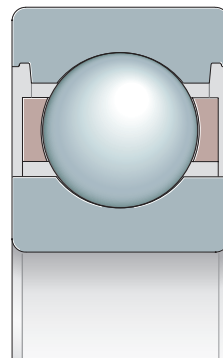


Technical data

Train configuration	4-part articulated train
Superstructure	Aluminium
Weight	109 000 kg
Max. load per wheelset	18 000 kg
Driving power / axle	200 kW
Max. speed	140 km/h
Seating capacity	192 persons
Standing capacity	352 persons
Power supply	15 kV 16 2/3 Hz

Drive system

The train is powered by two traction motors with a flange-mounted gearbox that are arranged at right angles in the bogie. A two-stage spur gear axle drive transmits the torque to the axle.



The traction motors are equipped with special FAG bearings **6312**. These single-row deep groove ball bearings with a machined brass cage have been designed for a service life of ca. 3.3 million kilometers.

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