
FAG Journal Roller Bearings in EL2000 Heavy-Freight Locomotives



Examples of Application Engineering

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Heavy-freight locomotive of series EL2000: developed by ADtranz in cooperation with Rheinbraun AG

Courtesy: ADtranz

Heavy-freight locomotives provide an important link between lignite mines and power plants. They pull huge trains used to transport thousands of tons of lignite and thus help to ensure a reliable power supply.

Rheinbraun AG - the company in charge of the RWE Group's mining and raw materials division - has ordered ten new EL2000 heavy-freight locomotives from ADtranz (Daimler Chrysler Rail Systems). They will be

used to transport lignite and overburden in the open-cast mines Garzweiler, Hambach and Bergheim as well as for supplying the RWE power plants Neurath, Frimmersbach, Niederaussem and Goldenbergwerk with fuel.

Bogie

The design of the main bogie components is derived from the field-proven components of the ADtranz Flexifloat bogie. As in more than a thousand locomotives, the traction and braking power is transmitted into the bogie frames via wheel, wheel bearing and a single-side linkage.

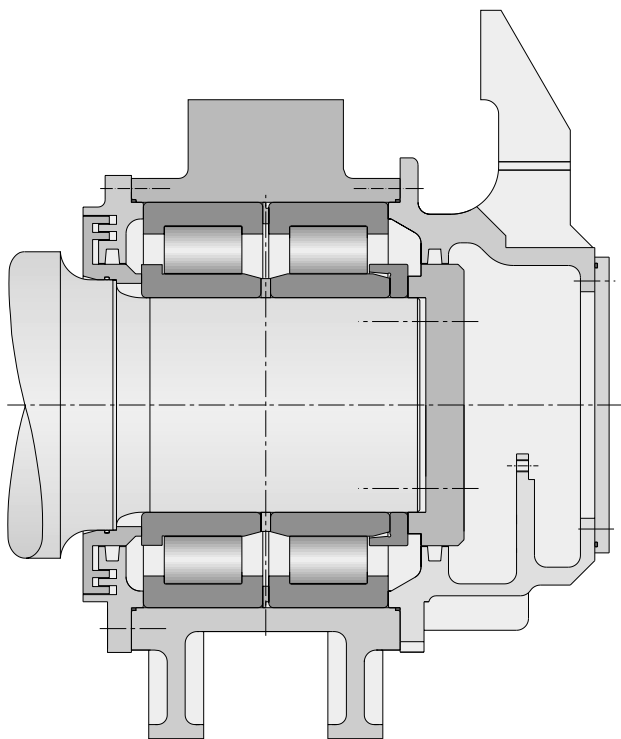
The vehicle weight, dynamic influences resulting from it, and the lateral guiding forces are transmitted to the journal roller bearings via helical springs.

The modified bogie concept serves as a basis for the other heavy-freight locomotives that are used to transport ore in Sweden (Kiruna-Narvik-Lulea) and in several mines in South Africa.

Vehicle data

Vehicle weight	143,000 kg
Maximum load per wheelset	35,750 kg
Maximum speed	60 km/h
Wheel arrangement	Bo´ Bo´ (two bogies with 2 separately driven axles each)
Total weight (lignite train)	2,000 t

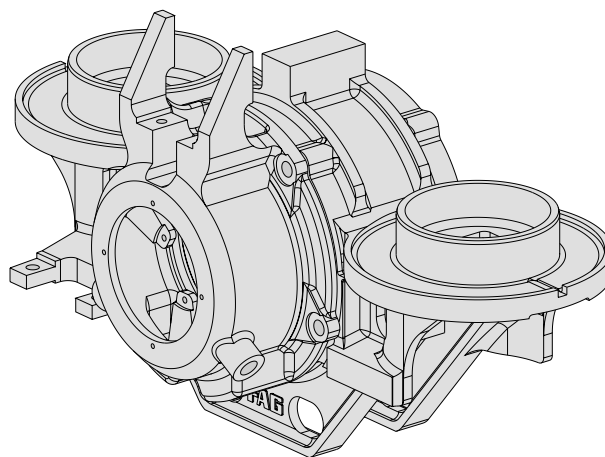
Journal roller bearings



The forces to be transmitted are taken up by type WJ and WU.W cylindrical roller bearings.

The bearings are separable; their individual components can be mounted and dismantled separately. Types WJ, WJP and WU.W were developed especially (equivalent to NJ, NJP and NU+HJ standardized bearings) for heavy-duty use in rail vehicles.

Two cylindrical roller bearings
FAG WJ180x340M and



FAG WU180x340W.M are installed per wheelset.

The cast-steel journal roller bearing housing was also further developed and its strength confirmed by FAG by means of state-of-the-art structure analyses (BEM, Boundary Element Method).

The journal roller bearings feature grounding contacts and a non-skid device at every axle.

Lubrication and sealing

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

The bearings are sealed on the wheel side by means of a classical double-labyrinth seal with a felt ring which has proved its suitability for works transport and in desert regions.

FAG OEM und Handel AG

Railway & Transport
Postfach 1260 · D-97 419 Schweinfurt
Tel.: +49 97 21 91 39 78
Fax: +49 97 21 91 37 88
e-mail: rail_transport@fag.de
Internet: www.fag.com