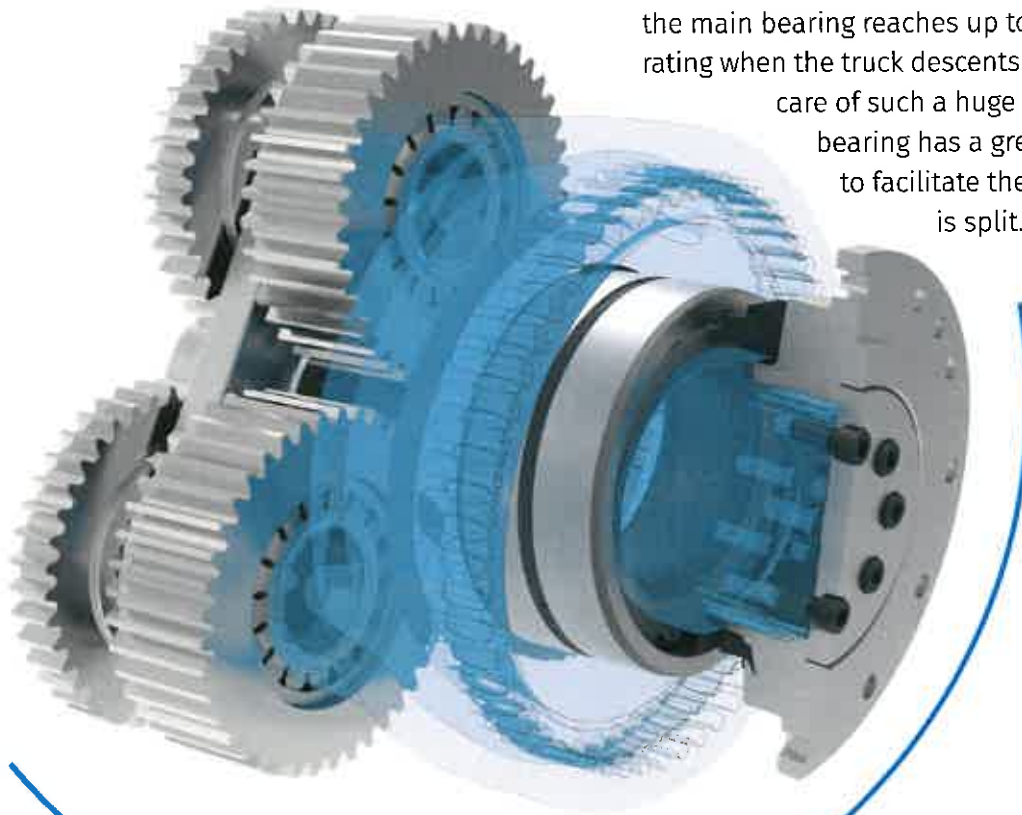


ZKL bearings for mixer truck gearboxes



ZKL GROUP

The planetary gearbox is a key part of a concrete mixer truck. It transmits torque from the hydraulic motor to the drum with its gear ratio of 100–150. The maximal output torques of such gearboxes are in a range of 80 000 Nm and the maximal input revolutions are 2 500 rpm. As the gearbox is a critical part of concrete mixer truck, its main bearing is considered as the heart of gearbox. Especially in this application due to the demanding operating conditions. The angle of misalignment is of $\pm 4^\circ$ and the equivalent load applied on the main bearing reaches up to 60 % of the bearing dynamic load rating when the truck descends and slows down. To be able to take care of such a huge misalignment, the outer ring of the bearing has a greater width than the inner one and, to facilitate the bearing's assembly, the outer ring is split. ZKL developed for this application a special series of bearings.



Spherical roller bearings

Spherical roller bearings in general represent bearings which may bear both – very high radial and thrust loads. On the other hand they are not able to operate at such a high speeds as e.g. ball bearings. One of the biggest advantages of spherical bearings is their capability to misalign inner ring in relation to outer ring. Thanks to this during operation spherical bearing finds its optimal position. As a result contact stress between rings and rollers is minimal as possible. Standard spherical roller bearings according to ISO 15 may misalign outer ring in relation to inner ring up to $\pm 3^\circ$ depending on bearing series. Special bearings for concrete mixer truck gearboxes with wider outer ring up to $\pm 6^\circ$. Spherical roller bearings are therefore used in applications with significant shaft deflections – wind mills, paper mills, belt conveyors, crushers etc. ZKL has developed many different types of spherical roller bearings suitable for entire range of applications and still continues doing this – year by year dozens of bearings are developed to New Force generation.

Spherical roller bearings for mixer truck gearboxes	Bearing dimensions			Mass m [kg]	Load ratings		Drum volume [m ³]
	Inner diameter	Outer diameter	Width		Dynamic	Static	
	d [mm]	D [mm]	B [mm]		C _r [kN]	C _{0r} [kN]	
PLC 59-10.5	110	180	82/69	7.83	501	849	8-10
PLC 62-09-11	120	200	84/74	10.2	670	1 040	10-12
PLC 510-23	120	215	98/76	13.5	678	1 020	12-16
PLC 62-10-17	130	230	88/100	17.3	821	1 400	16-18



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