

Load Estimation of Axle-box Rolling Bearings from Wheel Loads and Lateral Forces

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Axle journal roller bearings take radial loads and axial loads. These loads fluctuate widely and quickly while trains are running. Therefore, they should be assessed precisely to design bearings, axle boxes, and axle journals. In this work, we analyzed the measured wheel loads and lateral forces to estimate both the radial loads and the axial loads of the axle journal roller bearings equipped on running train. Consequently, it became apparent that radial loads while a train is running, range up to approximately three times as large as those of a train at a stop. It was also evident that the fluctuation of radial loads and axial loads increase with an increase in train speed.