MODELING OF STATIC BEHAVIOR OF FOUR POINT CONTACT BALL BEARING

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ABSTRACT

Within this paper is described an analytical model for the analysis of quasistatic load distribution in four contact ball bearings. The quasistatic model was developed on the basis of the static model, applying Hertz's theory of contact and John-Harris's load distribution on ball. In this paper, the model is extended by introducing parametars such as positiv/negativ clearancs into static equilibrium equations. Behavior analysis of the four point contact ball bearing (FKL LSQFR 308) was performed for different operating conditions. Within certain analyzes, the analysis of the influence of conceptual parameters (positiv/negativ clearancs) on the operational characteristics of bearings was performed. The change in external load also varied. Verification of the static behavior of the ball bearing LSQFR 308 was performed by comparing the results obtained by quasistatic modeling and the results obtained using the finite element method.

Keywords: bearing, clearance, load, mathematical model, four point contact