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Spherical plain bearings — Derivation of the load rating factors

Rotules lisses — Explication sur le calcul des charges de base

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Foreword

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This document was prepared by Technical Committee ISO/TC 4, *Rolling bearings*, Subcommittee SC 8, *Load ratings and life*.

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Introduction

Different calculating methods for static and dynamic load ratings of spherical plain bearings have been used in different countries, thus making it difficult to compare different solutions. A unified method for the calculation of static and dynamic load ratings has been standardized in ISO 20015.

ISO 20015 leaves the load rating factors to the manufacturers to determine because they are dependent on design and material. Bearing manufacturers don't have unified methods to determine these factors themselves. This document gives the supplementary background information regarding the derivation of factors in ISO 20015.

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Spherical plain bearings — Derivation of the load rating factors

1 Scope

This document gives supplementary background information regarding the derivation of factors given in ISO 20015.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 Symbols

A	contact area on bearing sliding surface, in square millimetres (mm^2)
B	inner ring width, in millimetres (mm)
C	outer ring width, in millimetres (mm)
$\bar{C}$	effective width of distribution of contact load, in millimetres (mm)
$\bar{C}(\theta)$	effective width of distribution of contact load function versus θ, in millimetres (mm)
C_a	dynamic axial load rating, in newtons (N)
C_r	dynamic radial load rating, in newtons (N)
C_{0a}	static axial load rating, in newtons (N)
C_{0r}	static radial load rating, in newtons (N)
D	outside diameter, in millimetres (mm)
D_{S1}	smallest diameter of sliding contact surface of the outer ring, in millimetres (mm)
D_{S2}	largest diameter of sliding contact surface of the outer ring, in millimetres (mm)
d	bore diameter, in millimetres (mm)
d_k	sphere diameter, in millimetres (mm)
F_a	axial load, in newtons (N)

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