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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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ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Fax: +41 22 749 09 47  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

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

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## 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.



# 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 <sup>2</sup> )
$B$	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 $\theta$ , 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)