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Plain bearings — Hydrodynamic plain thrust pad bearings under steady-state conditions —

Part 1: Calculation of thrust pad bearings

Paliers lisses — Butées hydrodynamiques à patins géométrie fixe fonctionnant en régime stationnaire —

Partie 1: Calcul des butées à segments

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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).

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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.

This document was prepared by Technical Committee ISO/TC 123, *Plain bearings*, Subcommittee SC 8, *Calculation methods for plain bearings and their applications*.

This second edition cancels and replaces the first edition (ISO 12131-1:2001), which has been technically revised.

The main changes compared to the previous edition are the correction of typographical errors.

A list of all parts in the ISO 12131 series can be found on the ISO website.

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.

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Plain bearings — Hydrodynamic plain thrust pad bearings under steady-state conditions —

Part 1: Calculation of thrust pad bearings

1 Scope

The aim of this document is to achieve designs of plain bearings that are reliable in operation, by the application of a calculation method for oil-lubricated hydrodynamic plain bearings with complete separation of the thrust collar and plain bearing surfaces by a film of lubricant[1].

This document applies to plain thrust bearings with incorporated wedge and supporting surfaces having any ratio of wedge surface length l_{wed} to length of one pad L. It deals with the value l_{wed}/L = 0,75 as this value represents the optimum ratio[2]. The ratio of width to length of one pad can be varied in the range B/L = 0,5 to 2.

The calculation method described in this document can be used for other incorporated gap shapes, e.g. plain thrust bearings with integrated baffle, when for these types the numerical solutions of Reynolds equation are known.

The calculation method serves for designing and optimizing plain thrust bearings e.g. for fans, gear units, pumps, turbines, electrical machines, compressors and machine tools. It is limited to steady-state conditions, i.e. load and angular speed of all rotating parts are constant under continuous operating conditions. Dynamic operating conditions are not included.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3448, *Industrial liquid lubricants — ISO viscosity classification*

ISO 12131-2:2016, *Plain bearings — Hydrodynamic plain thrust pad bearings under steady-state conditions — Part 2: Functions for the calculation of thrust pad bearings*

ISO 12131-3, *Plain bearings — Hydrodynamic plain thrust pad bearings under steady-state conditions — Part 3: Guide values for the calculation of thrust pad bearings*

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/

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