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Plain bearings — Hydrodynamic plain journal bearings under steady-state conditions —

Part 4: Permissible operational parameters for calculation of multi-lobed and tilting pad journal bearings

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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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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.

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

A list of all parts in the ISO/TS 31657 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.

Plain bearings — Hydrodynamic plain journal bearings under steady-state conditions —

Part 4: Permissible operational parameters for calculation of multi-lobed and tilting pad journal bearings

1 Scope

This document establishes the permissible operational parameters in terms of guide values for the calculation of selected multi-lobed and tilting-pad journal bearings.

In order to attain a sufficient operational safety of multi-lobed and tilting-pad journal bearings by the calculation according to ISO/TS 31657-1, it is necessary for the operational characteristic value h_{min} to be significantly above the permissible operating parameter $h_{lim,tr}$ and for the permissible operating parameters T_{lim} and p_{lim} not to be exceeded by the calculated operational characteristic values T_{max} and p_{max}.

The guide values represent geometrically and technologically founded operational limiting values in the tribological system of plain bearings.

They are empirical values that enable sufficient operational safety even in the event of smaller disturbing influences (see ISO/TS 31657-1). The empirical values indicated can be modified for special application areas.

NOTE The explanations for the symbols and calculation examples are contained in ISO/TS 31657-1.

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 Operational guide values for start-up and run-down

The minimum lubricant film thickness, h_{min}, is calculated for the operating point. Its size primarily determines the requirements for the lubricant with respect to its cleanliness and defines the fineness of the oil filter to be used.

At the transition of a hydrodynamic plain bearing into mixed friction, the minimum lubricant film thickness, h_{min}, at the transition sliding speed, U_{tr}, attains the value $h_{min,tr}$.

In the range $0 < U < U_{tr}$ the load percentage carried by solid body contact increases significantly with decreasing rotational frequency.