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

**Part 1:
Calculation of tilting pad thrust
bearings**

*Paliers lisses — Butées hydrodynamiques à patins oscillants
fonctionnant en régime stationnaire —*

Partie 1: Calcul des butées à patins oscillants

ISO 12130-1:2021

<https://standards.itech.ai/catalog/standards/iso/a61d5df2-eca2-4d04-9402-5b41aa4518b1/iso-12130-1-2021>



iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

ISO 12130-1:2021

<https://standards.iteh.ai/catalog/standards/iso/a61d5df2-eca2-4d04-9402-5b41aa4518b1/iso-12130-1-2021>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2021

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Symbols, terms and units	1
5 Fundamentals, assumptions and premises	5
6 Calculation procedure	6
6.1 Loading operations.....	6
6.1.1 General.....	6
6.1.2 Wear.....	6
6.1.3 Mechanical loading.....	6
6.1.4 Thermal loading.....	6
6.1.5 Outside influences.....	6
6.2 Coordinate of centre of pressure.....	7
6.3 Load-carrying capacity.....	7
6.4 Frictional power.....	9
6.5 Lubricant flow rate.....	9
6.6 Heat balance.....	10
6.6.1 General.....	10
6.6.2 Heat dissipation by convection.....	10
6.6.3 Heat dissipation by recirculating lubrication.....	11
6.6.4 Mixing processes in the lubrication recess.....	11
6.7 Minimum lubricant film thickness and specific bearing load.....	13
6.8 Operating conditions.....	13
6.9 Further influence factors.....	14
Annex A (informative) Examples of calculation	15
Bibliography	24

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).

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).

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*.

This second edition cancels and replaces the first edition (ISO 12130-1:2001), which has been technically revised.

The main changes compared to the previous edition are as follows:

- addition of Introduction;
- correction of numerical values in Table A.5;
- adjustment to ISO/IEC Directives, Part 2:2018;
- correction of typographical errors.

A list of all parts in the ISO 12130 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.

Introduction

The aim of the ISO 12130 series 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.

The calculation method described in this document can be used for other gap shapes, e.g. parabolic lubrication clearance gaps, as well as for other types of sliding blocks, e.g. circular sliding blocks, when for these types the numerical solutions of Reynolds equation are present. ISO 12130-2 gives only the characteristic values for the plane wedge-shaped gap; the values are therefore not applicable to tilting pads with axial support.

The calculation method serves for designing and optimizing plain thrust bearings e.g. for fans, gear units, pumps, turbines, electric 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.

iTeh Standards
(<https://standards.itih.ai>)
Document Preview

[ISO 12130-1:2021](https://standards.itih.ai/catalog/standards/iso/a61d5df2-eca2-4d04-9402-5b41aa4518b1/iso-12130-1-2021)

<https://standards.itih.ai/catalog/standards/iso/a61d5df2-eca2-4d04-9402-5b41aa4518b1/iso-12130-1-2021>