

ICS 21.100.10
CCS J 12



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 23891.1-2009

**Plain bearings -- Hydrodynamic plain thrust pad bearings under
steady-state conditions -- Part 1: Calculation of thrust pad
bearings**

滑动轴承 稳态条件下流体动压瓦块止推轴承 第1部分：瓦块止推轴承的计算
(English Translation)

Issued on: May 26, 2009

Implemented on: December 1, 2009

Issued by: Standardization Administration of China

Table of Contents

- Foreword
- 1 Scope
- 2 Normative references
- 3 Basic principles, assumptions and preconditions

Foreword

GB/T 23891 "under steady-state conditions bearing hydrodynamic pad thrust bearing" consists of the following three parts.

- Part 1. Calculation of thrust pad bearings;
- Part 2. Calculation function pad thrust bearing;
- Part 3. Calculation of thrust pad bearing the allowable value.

This part of GB/T 23891 Part 1.

This section identical with ISO 12131-1:2001 "Under steady-state conditions bearing hydrodynamic thrust pad bearings - Part 1. W Calculated thrust bearing block stop. " this section is equivalent translation ISO 12131-1:2001.

For ease of use, this section made the following editorial changes.

- "This International Standard" be replaced by "this section";
- With a decimal point instead of a comma as the decimal point, ",";
- Delete international standards foreword.

Appendix A of this part is a normative appendix.

This part is proposed by China Machinery Industry Federation.

Bearing this in part by the National Standardization Technical Committee (SAC/TC236) centralized.

This section is responsible for drafting unit. Productivity Promotion Center in the machine.

Participated in the drafting of this section. Xi'an Jiaotong University, Zhejiang Bearing Co., Ltd. Shanghai Branch, Shanghai, Zhejiang send Bearing Co., Ltd., Zhejiang Oriental Bearing Co., Ltd., Zhejiang SF Oilless Bearing Co., Ltd., Zhejiang Changsheng Bearing Co., Ltd..

This part of the National Standardization Technical Committee Secretariat slide bearing

responsible for the interpretation.

GB/T 23891.1-2009/ISO 12131-1:2001 Bearing Under steady-state conditions of hydrodynamic thrust bearing pad Part 1. pad thrust bearing calculation

1 Scope

This section GB/T 23891 gives the ring and thrust bearing surface is completely separate from the fluid lubricant film hydrodynamic lubrication tile the calculation method of the thrust bearing, designed for reliable operation of the fluid dynamic pressure pad thrust bearing.

Suitable single tile width to length ratio B/L is the range of 0.5 to 2.

If the value is known when other types of oil wedge Reynolds differential equations, calculation methods GB/T 23891 is also described in this section it can be used for other types of gaps.

This calculation method is suitable for the design and optimization of these occasions with pad thrust bearing. blowers, gears, pumps, turbines, electric motors, Compressor thrust bearing and machine tools. But limited to the steady-state case, that all load and angular velocity of the rotating body in continuous operation for constant Value. This section does not apply to dynamic conditions.

2 Normative references

The following documents contain provisions which, through reference GB/T 23891 in this section constitute provisions of this section. For dated reference documents Member, all subsequent amendments (not including errata content) or revisions do not apply to this section, however, encouraged to reach under this section Parties to research agreement to use the latest versions of these documents. For undated reference documents, the latest versions apply to this section.

GB/T 3141-1994 industrial liquid lubricants ISO viscosity classification (eqvISO 3448.1992)

GB/T 23891.2-2009 Plain bearings under steady-state conditions of hydrodynamic thrust pad bearings - Part 2. pad thrust bearing Calculation functions (ISO 12131-2:2001, IDT)

GB/T 23891.3 under steady-state conditions of sliding bearings hydrodynamic thrust pad bearings - Part 3. pad thrust bearing calculation Allowable Value (GB/T 23891.3-2009, ISO 12131-3:2001, IDT)

3 Basic principles, assumptions and preconditions

Usually calculate the actual boundary conditions regardless of the pressure generated by Renault differential equations finite width of the sliding surface to the numerical solution Implementation, see equation (1).

References [1] is a differential equation derivation formula Renault, [2] is a numerical

Reynolds differential equation.

Formula (1) solving, use the following idealized assumptions and premises, the reliability of these assumptions have been obtained in the test and engineering practice to fully verify (see [3]).

- a) Lubricant Newtonian fluid;
- b) the lubricant flow is laminar;
- c) lubricants completely adhered to the sliding surface;
- d) the lubricant is incompressible;
- e) lubricating gap filled with lubricating oil;

GB/T 23891.1-2009/ISO 12131-1:2001