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

GB/T 18844.2-2018

**Plain bearings -- Type, appearance and characterization, causes
of damage to metallic hydrodynamic bearings -- Part 2:
Cavitation erosion and its countermeasures**

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Foreword

GB/T 18844 "Sliding bearing hydrodynamic metal bearing damage type, appearance characteristics and cause analysis" consists of the following two parts.

--- Part 1. General;

--- Part 2. Cavitation and countermeasures.

This part is the second part of GB/T 18844.

This part is drafted in accordance with the rules given in GB/T 1.1-2009.

This section uses the redrafting method to modify the damage characteristics of ISO 7146-2:2008 "sliding bearing metal hydrodynamic bearings and

Part 2. Cavitation and its countermeasures.

The technical differences between this part and ISO 7146-2:2008 and their reasons are as follows.

---About the normative reference documents, this part has made technical adjustments to adapt to China's technical conditions, adjustments

The situation is reflected in Chapter 2, "Regulatory References", and the specific adjustments are as follows.

* Replace ISO 7146-1 with GB/T 18844.1 modified to international standards.

--- 4.4.3 measures in the "General Measures to Avoid Cavitation", "Incorporating air bubbles into the oil can reduce cavitation, but this measure does not

It is recommended to change to "select a lubricant that can suppress the generation of bubbles. ", in order to comply with the actual use of the industry.

---5.3.3 Add countermeasures "or tangential closing of the oil tank" to increase the choice of manufacturers' response measures.

---5.5.1 "Outflow cavitation" occurs in the position of the "lower link" to cover all possible positions.

--- Added typical failure pictures of some cavitation types [(Fig. 5b), Fig. 5c), Fig. 9, Fig. 10, Fig. 14, Fig. 15, Fig. 20,

Figure 23a), Figure 23b)], to facilitate the reference of industry failure analysts.

This part was proposed by the China Machinery Industry Federation.

This part is under the jurisdiction of the National Technical Committee for Standardization of Plain Bearings (SAC/TC236).

This section is responsible for drafting the unit. China Machine Productivity Promotion Center.

Participated in the drafting of this section. Chengdu Shengsanqiang Railway Accessories Co., Ltd., Hunan Chongde Industrial Technology Co., Ltd., Yantai Dafeng Bearing

Limited Liability Company, Lin'an Oriental Sliding Bearing Co., Ltd., Shanghai Nuclear Power Industrial Co., Ltd., Wenzhou Huakang Auto Parts Co., Ltd.

This part is explained by the National Technical Committee for Standardization of Plain Bearings.

Introduction

In practice, bearing damage is often the result of several mechanisms acting simultaneously. Damage may be caused by improper assembly or repair, or

Defects caused by manufacturing defects in bearings, housings or mating surfaces. In some cases, damage may also be due to a compromise in considering economic benefits.

Caused by design or unforeseen operating conditions. Because damage is a comprehensive design, manufacturing, assembly, operation, maintenance and other factors

The result is abnormal, so it is often difficult to determine the primary cause.

When the bearing is extremely damaged or the bearing is destroyed, the evidence is likely to disappear and it will not be possible to identify how the damage occurred.

In any case, understanding the actual operating conditions of the bearing assembly and the maintenance history is critical to analyzing the cause of the failure.

need.

The classification of bearing damage established in this standard is based primarily on the

visible features of the sliding surface and other parts. In order to be exact

To determine the cause of bearing damage, various factors need to be considered.

Since there are more than one reason for causing similar effects on the running surface, it is often insufficient to describe the appearance to determine the cause of the damage. in

In this case, the operating conditions must also be considered.

This part of GB/T 18844 describes the cavitation involved in GB/T 18844.1 in more detail.

Sliding bearing hydrodynamic metal bearing

Damage type, appearance characteristics and cause analysis

Part 2. Cavitation and countermeasures

1 Scope

This part of GB/T 18844 deals with the characteristics of cavitation damage caused by hydrodynamically lubricated metal plain bearings in use.

Define, describe and categorize and give recommendations for the response. This helps to understand the various forms of cavitation damage that may occur.

This section only considers damages that have a well-defined appearance and can be attributed to height-determined causes;

The pictures and schematics are explained.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 18844.1 Sliding bearing hydrodynamic metal bearings - Damage type, appearance characteristics and analysis - Part 1

Then (GB/T 18844.1-2018, ISO 7146-1.2008, MOD)

ISO 4378-1 Plain bearings - Terms, definitions, classifications and symbols - Part 1. Design, bearing materials and their properties (Plainbear-

ings-Terms,definitions,classificationandsymbols-Part 1.Design,bearingmaterialsandtheir Properties)

ISO 4378-2 Plain bearings - Terms, definitions, classifications and symbols - Part 2. Friction

and wear (Plainbearings-

Terms,definitions,classificationandsymbols-Part 2.Frictionandwear)

ISO 4378-3 Plain bearings - Terms, definitions, classifications and symbols - Part 3.

Lubrication (Plainbearings-Terms, defi-

Ninits,classificationandsymbols-Part 3.Lubrication)

3 Terms and definitions

The terms and definitions defined by ISO 4378-1, ISO 4378-2, ISO 4378-3, and GB/T 18844.1 apply to this document.

4.1 Cavitation mechanism

Cavitation is a form of damage that occurs on a solid surface of contact in a liquid due to bubble blasting caused by vaporization. When in liquid

When the static pressure is reduced below the vaporization pressure of the liquid at a certain temperature, the liquid will evaporate and generate vapor bubbles. This phenomenon is called "cavitation."

Phenomenon. When the bubble flows to the high pressure part or the pressure at the bubble generating part increases, they are immediately compressed and cause cavitation blasting.

High partial pressure and high temperature are generated in the liquid. After this blasting occurs repeatedly, the solid surface near the blasting site forms a gas

eclipse".

Due to the high intensity of cavitation blasting, chemically reactive "cavitation" occurs.

"Cavitation" will cause damage together with "erosion". Still issued

In the sliding bearing lubricants, electrostatic discharge occurs in the blasting air pockets.

This phenomenon is called "micro-diesel effect" (Micro-Diesel-