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

GB/T 27938-2011

**Plain bearings - Thrust washers - Terms, appearance of damage
and causes of failure**

滑动轴承 止推垫圈 失效损坏术语、外观特征及原因

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Quarantine;
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Foreword

This standard was drafted in accordance with GB/T 1.1-2009 given rules. The standard proposed by China Machinery Industry Federation. This standard sliding bearing by the National Standardization Technical Committee (SAC/TC236) centralized. This standard is drafted by: Lin'an Oriental Bearing Co., Ltd., the machine Productivity Promotion Center. Participated in the drafting of this standard. Shanghai Jiaotong University.

The standard axial loads, held in position by a sliding bearing thrust washer and appearance of damage occurring in the course of change Characteristics and reasons for the failure to define, describe and classify the various forms of help to analyze the occurrence of failure and damage. The standards set forth in the "thrust washer damage," including a change in the appearance and thrust washers damage occurs during operation, regardless of their Whether sliding bearing performance adversely affected. This standard considers only those forms of damage to the surface appearance of a clear, well-established and can be attributed to the type of damage to a specific cause, It described sliding bearing thrust washer changes and damage characteristics of the various forms of damage with photographs of explanation, the most common cause of failure. Bearing thrust washers Failure term damage, the appearance characteristics and causes

1 Scope

China's national standard for the terminology, the appearance and the causes of failure damage in plain bearing thrust washers. It defines, describes and classifies the changes in appearance and the forms of damage that occur to a thrust washer in service, and it is intended for use in failure analysis. A thrust washer carries axial load and holds a shaft in position, and when it fails the machine it is in usually fails with it. The question that follows is always the same: why. A crankshaft thrust washer that has worn through has an answer - excessive axial load, misalignment, contamination, inadequate lubrication, an assembly error, the wrong material - and the answer determines whether the repair is to replace a part or to redesign a system. The evidence for that answer is on the surface of the failed washer. This standard treats damage as a diagnostic rather than as a defect. It defines what counts as damage - any change in appearance occurring in service, whether or not it has

yet affected performance - and then names each form, describes what it looks like, illustrates it, and states the causes most commonly behind it. Scoring, wiping, cavitation erosion, fatigue, corrosion, fretting, electrical discharge damage and the rest each have a characteristic appearance, and the appearance points back to a mechanism. What the standard deliberately excludes is as important as what it includes: only those forms of damage whose surface appearance is clear, well established and attributable to a specific cause. Ambiguous appearances are left out, because a classification that guesses is worse than one that is silent. Issued on 30 December 2011 and in force since 1 October 2012.

This standard specifies the terms, definitions and appearance characteristics and causes of bearing failure damaged thrust washers. Failure Analysis Bearing thrust washers This standard applies.

2 Normative references

The following documents for the use of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document.

GB/T 2889.1 bearing terms, definitions and classification - Part 1. Design, bearing materials and their properties ISO 4378-

2 Plain bearings - Terms, definitions and classification - Part 2. Friction and wear (Plainbearings-Terms, definitions, classificationandsymbols-Part 2. Frictionandwear)

3 Terms and Definitions

GB/T 2889.1, ISO 4378-2 and as defined in the following terms and definitions apply to this document.

3.1 Thrust washer thrustwasher Start-stop push, positioning action washer.

3.2 Thrust washers failure failureofthrustwasher Thrust thrust washer has lost prescribed positioning action.

3.3 Fatigue spalling fatiguespaling Alloy materials due to fatigue stress exceeds the allowable stress caused by detachment.

3.4 Alloy off lossofbondbetweentheliningandthesteelbacking Since the alloy layer and alloy steel Cushion partial detachment due to poor binding.

3.5 Wear wear Thrust washers work surface alloy material is thrust surface of the shaft or thrust collar worn surface of the process and results.

3.6 Normal wear normalwear Thrust washer before failure, micro-wear process and results of the work surface.

3.7 Adaptability wear adaptivewear The initial run-in phase, the working surface of the thrust washer compliance occurred adapt to changes in the micro-wear.

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