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

**GB/T 23896-2009**

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**Plain bearings -- Quality assurance of thin-walled half bearings  
-- Design FMEA**

滑动轴承 薄壁轴瓦质量保证 设计阶段的失效模式和效应分析 (FMEA)

**(English Translation)**

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### Foreword

This standard is equivalent to using ISO 12132:1999 "thin wall bearing bush quality assurance failure mode and effects design phase points Analysis "(in English).

This standard is equivalent translation ISO 12132:1999.

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

--- "This International Standard" be replaced by "this standard";

--- Delete international standards foreword.

The standard proposed by China Machinery Industry Federation.

This standard sliding bearing by the National Standardization Technical Committee (SAC/TC236) centralized.

This standard was drafted. the machine Productivity Promotion Center, Chengdu Railway Parts Co., Ltd. Trinity strong.

This standard by the National Standardization Technical Committee Secretariat slide bearing responsible for the interpretation.

This standard is the first release.

GB/T 23896-2009/ISO 12132:1999 ISO Introduction FMEA (failure mode and effects analysis) is determined to help the potential failure of product design and eliminate these failures at the design stage points Analytical methods (given in tabular form).

FMEA empirical probability theory and the practice of integrated design and plain bearings use basis.

FMEA analysis of their applications to improve the product quality and reliability, as well as product quality and reliability of the process, but also drop Low-cost technology for product testing and process improvement.

System design phase of the implementation of FMEA, a large number of documents have been discussed, it is not included in this standard within the scope of the discussion. These bodies Department can help existing and planned analysis of complex design projects.

GB/T 23896-2009/ISO 12132:1999 Quality assurance of thin-walled plain bearing bush  
Failure mode and effects design stage Analysis (FMEA)

## 1 Scope

This standard provides guidance for the design of the internal combustion engine of thin-walled bush FMEA (FMEA production process is the responsibility of the supplier), Standard lists common potential failure modes and effects and potential causes.

For every application, every manufacturer and user, the risk of failure can occur, the severity and detection of Numerical evaluation Make specific provisions.

The need to make an assessment of each case, so the risk of data not included in this standard. General guidelines were evaluated statistically, Available from Resources.

## 2 Normative references

The following documents contain provisions which, through reference in this standard and become the standard terms. For dated references, subsequent Amendments (not including errata content) or revisions do not apply to this standard, however, encourage the parties to the agreement are based on research Whether the latest versions of these documents. For undated reference documents, the latest versions apply to this standard.

GB/T 7826 system reliability analysis techniques for failure mode and effects analysis (FMEA) program (GB/T 7826-1987, idtIEC 60812. 1985) GB/T 18844-2002 bearing damage and changes in appearance terms, characteristics and causes (idtISO 7146.1993)

## 3 Terms and Definitions

GB/T Terms and 7826 in the following terms and definitions apply to this established standard.

Failure mode and effects analysis FMEA Failure mode and effects analysis is a reliability analysis method, the purpose of the system performance within the scope of application to determine the impact of the considered yield Health Failure serious consequences.

In the development of the product by the designer completed FMEA.

On bearing a failure to observe the appearance.

Failure mode on the consequences of the internal combustion engine.

Cause failure mode of the defects.

## **4 Common Bush's potential failure modes, effects and causes**

The internal combustion engine connecting rod bearings and main bearing, is only part of an integrated system, the system including lubricants, lubrication systems, crankshaft, machine GB/T 23896-2009/ISO 12132:1999