



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

GB/T 40116-2021

**Foil bearings - Performance of hydrodynamic gas journal
bearings - Testing of static load capacity, friction coefficient and
lifetime**

Issued on: May 21, 2021

Implemented on: December 1, 2021

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part 1. Structure and Drafting Rules of Standard Documents"

Drafting.

This document uses the translation method to be equivalent to ISO 13939.2019 "Foil Bearings Foil Radial Bearing Performance Test Static Load Capacity

Force, friction factor and life test".

This document has made the following editorial changes.

---Since foil bearings can use other lubricating media or adopt hydrostatic lubrication, in order to be consistent with the content, the name is changed to

Static load capacity, friction factor and life test of gas dynamic pressure radial bearing performance of single-piece bearing".

This document was proposed by China Machinery Industry Federation.

This document is under the jurisdiction of the National Sliding Bearing Standardization Technical Committee (SAC/TC236).

1 Scope

This document describes the performance test method and result comparison method of foil gas dynamic pressure radial bearings. The bearing is lubricated by air (gas).

The sliding medium is supported by the gas dynamic pressure generated by the rotation of the shaft. The test method given in this document aims to test and evaluate the dynamic pressure of foil gas

The static load carrying capacity, friction factor and service life of the radial bearing are tested under different test conditions (such as foil gas dynamic pressure radial bearing size,

The test results obtained by rotating shaft speed, ambient air pressure and humidity, etc.)

are compared. Since the test conditions can be changed, it can be tested by setting Test conditions to change the static load carrying capacity of the bearing.

The conditions of use of the test methods described in this document are as follows.

- a) The steady state is the prerequisite for the evaluation of static load carrying capacity, that is, under certain working conditions, the load magnitude, direction and speed are always the same;
- b) The evaluation procedure can only be entered when the foil gas dynamic pressure radial bearing maintains the moment of inertia at a certain speed;
- c) The dynamic load with time-varying amplitude and time-varying direction is not considered.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

The following terms and definitions apply to this document.

3.1

Takeoff

The gas dynamic pressure between the rotating shaft and the top foil ensures that the rotating shaft and the top foil begin to separate a certain distance during the operation phase.

3.2

Clearance

The minimum distance between the shaft and the top foil when the geometric center of the shaft coincides with the geometric center of the sleeve.

3.3

Bearing torque

The friction torque between the rotating shaft and the top foil due to friction caused by rotation.

Note. Refer to 6.4 for bearing friction torque test.

3.4

Load

Loadcapacity

The load that the bearing can withstand under static conditions.

3.5

Initialload

The load (3.4) applied to the rotating system at the initial stage.

Note. The initial load should be less than the static load capacity and the load used to determine the bearing life, see 7.3 and 10.2.