

ICS 17.160
CCS J 04



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

GB/T 41850.2-2026

Replacing GB/T 6075.2-2012, GB/T 11348.2-2012

**Mechanical vibration - Measurement and evaluation of machine vibration - Part 2:
Land-based gas turbines, steam turbines and generators in excess of 40 MW, with
fluid-film bearings and rated speeds of 1 500 r/min, 1 800 r/min, 3 000 r/min and 3 600
r/min**

机械振动 机器振动的测量和评价 第2部分：40 MW以上,使用滑动轴承的，额定转速为1500 r/min、1800 r/min、3000 r/min和3600 r/min陆地安装的燃气轮机、汽轮机和发电机

(English Translation)

Issued on: July 30, 2026

Implemented on: February 1, 2027

Issued by: State Administration for Market Regulation

Table of Contents

Preface	
Introduction	
1 Scope	
2 Normative References	
4 Measurement Method	
4.1 Overview	
4.2 Vibration Measurement of Non-Rotating Components	
4.3 Vibration Measurement of Shaft	
5 Evaluation Criteria 6.	
5.1 Overview	
5.2 Criterion I. Vibration Quantity	
5.3 Criterion II. Variation of vibration values under steady-state operating conditions at rated speed	
5.4 Supplementary Methods and Guidelines	
5.5 Evaluation based on vibration vector information	
Appendix A (Normative) Boundary of Vibration Evaluation Zone for Non-Rotating Components	
Appendix B (Normative) Boundary of the Evaluation Zone for Rotary Shaft Vibration	
Appendix C (Informative) Example 14 of Alarm and Shutdown Value Setting	
Appendix D (Informative) Precautions for using vibration velocity criteria at low speeds	
Appendix E (Informative) Evaluation Zone Boundary Values and Bearing Clearance	
Reference	

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

The following parts were included.

---Part 1: General Provisions;

---Part 2: For 40MW and above, using sliding bearings, the rated speed is 1500r/min, 1800r/min, or 3000r/min and 3600r/min land-based gas turbines, steam turbines, and

generators;

---Part 5: Hydropower and Pumped Storage Power Station Units;

---Part 8: Reciprocating Compressor Systems;

---Part 9: Gear Gears this document replaces GB/T 6075.2-2012 "Mechanical Vibration - Measurement and Evaluation of Machine Vibration on Non-Rotating Components - Part 2.

Steam turbines and generators with a capacity of 50MW or above and rated speeds of 1500r/min, 1800r/min, 3000r/min, and 3600r/min installed on land.

The standards are GB/T 11348.2-2012 "Mechanical Vibration - Measurement and Evaluation of Machine Vibration on Rotating Shafts - Part 2: Power Greater Than..." and GB/T 11348.2-2012 "Mechanical Vibration - Measurement and Evaluation of Machine Vibration on Rotating Shafts - Part 2: Power Greater Than..." 50MW, land-mounted steam turbine and generator with rated operating speeds of 1500r/min, 1800r/min, 3000r/min, and 3600r/min Compared with GB/T 6075.2-2012 and GB/T 11348.2-2012, the main technical changes in this standard, apart from structural adjustments and editorial modifications, are as follows.

as follows.

--- Output limitations have been changed (see full text, GB/T 6075.2-2012 and GB/T 11348.2-2012).

---Added requirements for large gas turbines with an output greater than 40 MW (see full text, GB/T 6075.2-2012 and GB/T 11348.2-2012 (full text)

---The phrase "sensor connection stiffness" has been removed from the section on the influence of the environment on the characteristics of the measurement system [see Chapter 3 of GB/T 6075.2-2012].

h) and h) of Chapter 3 of GB/T 11348.2-2012;

---Added "combustion vibration" and "structural characteristics of sensor accessories" to the section on the influence of the environment on the characteristics of the measurement system [see 4.1 e) and

---This adds the necessity of signal linearization processing for vibration measurements of non-rotating components, especially for vibrations below 10Hz.

Sex (see 4.2);

---Added suggestions for the sensor placement in the vibration measurement method for rotating shafts, and provided a schematic diagram (see...) 4.3);

---Increased the vibration zone boundary when the ratio of bearing-related structural mass to rotor mass is high (see 5.2.2.4);

---Added description of the selection of boundary values for the region of a single-supported large steam turbine (see 5.2.2.4);

---Change "During acceleration and deceleration, when passing through the resonant speed, the vibration magnitude will be strongly affected by damping and the rate of change of speed" to "During acceleration and deceleration, when passing through the resonant speed, the vibration magnitude is mainly affected by damping, and secondarily by the rate of change of speed." the impact (see 5.2.4.3, 4.2.4.3 of GB/T 6075.2-2012 and 4.2.4.3 of GB/T 11348.2-2012);

---The recommended alarm values during acceleration, deceleration, or overspeed have been changed when reliable data is unavailable, and are now based on engine speed.

The scope has been further subdivided (see 5.2.4.3, 4.2.4.3 of GB/T 6075.2-2012 and GB/T 11348.2-2012).

4.2.4.3).

This document is equivalent to ISO 20816-2:2017 "Mechanical vibration - Measurement and evaluation of machine vibration - Part 2.40MW".

On the ground, using sliding bearings, the rated speeds are 1500 r/min, 1800 r/min, 3000 r/min and 3600 r/min for land-mounted gas turbines.

Gas turbines, steam turbines, and generators.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed and is under the jurisdiction of the National Technical Committee on Standardization of Mechanical Vibration, Shock and Condition Monitoring (SAC/TC53).

Introduction

GB/T 41850 "Mechanical Vibration - Measurement and Evaluation of Machine Vibration" provides guidelines for the measurement and evaluation of vibration on non-rotating parts and rotating shafts.

Requirements and guidelines for machine vibration. It is proposed to consist of the following parts.

---Part 1: General Principles. The purpose is to provide a framework for measuring and evaluating various types of machine vibrations on non-rotating parts and rotating shafts.

General requirements.

---Part 2: For 40MW and above, using sliding bearings, the rated speed is 1500r/min, 1800r/min, or 3000r/min and 3600 r/min, land-based gas turbine, steam turbine, and

generator. The purpose is to provide information on large-scale land-based gas turbines.

Specific evaluation of vibration of bearing housings and shafts in turbines, steam turbines, and generators.

---Part 4: Gas turbines using sliding bearings above 3MW. The purpose is to provide the normal operating speed range...

Specific details of land-based gas turbines using fluid diaphragm bearings with a speed of 3000r/min to 30000r/min and an output power greater than 3MW.

evaluate.

---Part 5: Hydropower and Pumped Storage Power Station Units. The purpose is to provide information on the bearings of hydropower and pumped storage power station units.

Guidelines for measuring and evaluating seat vibration and shaft vibration.

---Part 8: Reciprocating Compressor Systems. The purpose is to provide procedures for the measurement and classification of mechanical vibration in reciprocating compressor systems.

---Part 9: Gear Gears. The purpose is to provide specifications for the mechanical design of enclosed, separately mounted speed-increasing or speed-reducing gear mechanisms.

Specific requirements for measuring and classifying vibrations.

---Part 21: Horizontal Axis Wind Turbines. The purpose is to provide information on the measurement and evaluation of mechanical vibrations in wind turbines and their components.

Information.

This document provides specific guidelines for assessing the vibration of bearing housings or bases and rotating shafts in large gas turbines, steam turbines, and generators.

Measurements taken at specified locations can effectively characterize the vibration state of a machine. Evaluation criteria are also proposed based on past experience. These can be used to evaluate...

Vibration conditions of similar machines. When the bearing support and rotor mass are relatively high, a lower vibration limit for the bearing housing or base should be considered.

It is applicable.

When operating in a steady state, two criteria are provided for evaluating machine vibration. the first considers the magnitude of the observed vibration; the second...

Two methods consider changes in amplitude; additionally, different standards are specified for transient operating conditions.