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

GB/T 46544-2025

**Transverse vibration testing of the locking behaviour for
aerospace bolted connections**

航空航天用螺栓连接横向振动防松试验方法

(English Translation)

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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.

This document is modified to adopt ISO 16130:2015 "Dynamic testing of locking performance of bolted connections under transverse load conditions in aerospace applications".

(Vibration test)

The technical differences between this document and ISO 16130:2015, and the reasons therefor, are as follows.

---ISO 16047 (see Chapter 3) has been replaced with the normatively referenced GB/T 16823.3 to adapt to my country's technical conditions, and has been updated accordingly.

Operability;

---Added the statement that "the fastener to be tested can be installed vertically or horizontally relative to the ground" (see 5.2), aligning with the application practices in my country.

Consistent;

---Added "In addition to the test methods in Chapter 6, the following methods may be used for testing. The number of disassembly and assembly cycles and the number of tests shall be determined according to actual needs." the phrases "determine" and "the specific amplitude can also be determined according to actual needs" (see Chapter 7) provide more accurate language descriptions and are more in line with the application situation in my country.

The situation remains consistent.

---A schematic diagram of a new type of vibration testing machine has been added [see

Figure 2b)] to align with its application in my country;

---ISO 5855-2 has been replaced with the normatively referenced GB/T 43924.2 (see Table 1) to adapt to my country's technical conditions and add [further details needed].

Operability.

The following editorial changes have been made to this document.

---To align with existing standards, the standard name has been changed to "Test Method for Lateral Vibration Loosening Prevention of Bolted Connections for Aerospace Use";

---The source of the term "tightening torque" has been removed (see 3.8);

---Delete the note following the term (see 3.10);

---Delete the note in Figure 1 (see Figure 1);

---DIN13 and ISO 965 have been replaced with GB/T 196 and GB/T 197 (see Table 1) for informational reference;

---The conversion relationship between in and ksi has been added (see note 2 in Table 2).

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 Aircraft Standardization Technical Committee (SAC/TC435).

1 Scope

This document describes a test method for preventing loosening of bolted connections due to lateral vibration in aerospace applications.

This document is applicable to the comparative evaluation of the anti-loosening performance of fasteners used in aerospace applications under specified conditions.

This document is not applicable to the quantitative assessment of the anti-loosening performance of bolted connections under working loads.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

GB/T 16823.3 Fastener torque-clamping force test (GB/T 16823.3-2010, ISO 16047:2005,

IDT) GB/T 43924.2 Aerospace MJ Threads Part 2: Limiting Dimensions of Bolt and Nut Threads (GB/T 43924.2-2024, ISO 5855-2:1999, MOD) ISO 3161 Aerospace UNJ threads - General requirements and dimensional limits

3 Terms and Definitions

The terms and definitions defined in GB/T 16823.3 and the following terms and definitions apply to this document.

Clamp force

The tensile force acting on the bolt shank or the pressure between the connected parts.

[Source. GB/T 16823.3-2010, 3.1, with modifications] 3.2 Ultimate clamp force F_u the maximum clamping force that may be generated before the bolt or nut fails during tightening under a combined stress state.

[Source. GB/T 16823.3-2010, 3.3, with modifications] 3.3 initial clamp force F_M the clamping force after the sample is tightened before the test.