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JIS

JAPANESE INDUSTRIAL STANDARD

Rolling bearings—Measuring methods of A-weighted sound pressure levels

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In the event of any doubt arising,
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Rolling bearings — Measuring methods of A-weighted sound pressure levels

B 1548-1995

1. Scope This Japanese Industrial Standard specifies the measuring methods of A-weighted sound pressure levels for noise emitted by rolling bearings (1) (hereafter referred to as "bearings") during rotation.

Note (1) Here the term "bearings" refers to deep groove ball bearings, angular contact ball bearings and tapered roller bearings.

Remarks: The standards cited in this Standard are given in the following:

JIS B 1566 Mounting dimensions and fits for rolling bearings

JIS C 1505 Precision sound level meters

JIS Z 8106 Glossary of acoustical terms (general)

2. Definitions Definitions of principal terms used in this Standard are defined below, and other terms are given in JIS Z 8106:

(1) A-weighted sound pressure level The A-weighted sound pressure level L_{PA} is expressed by the following formula:

$$L_{PA} = 10 \log_{10} \frac{P_A^2}{P_0^2} \text{ (dB)}$$

where, P_A : the r.m.s. (= root mean square) of sound pressure being weighted by A-characteristics specified in JIS C 1505

P_0 : the reference sound pressure (20 μPa)

(2) background noise The sound produced when only the rotating shaft (see 3.) is rotated, under the same conditions as when the sound pressure level of the bearings is measured.

(3) reflected sound The reflected sound within the emitted sound when a bearing is rotated, which does not directly go to a microphone but any sound bounces off or reflects from objects in the measuring room, walls and the like.

3. Measuring room and rotating equipment

3.1 Measuring room The measuring room shall be a room, where sufficient countermeasures have been taken to sound absorption and sound isolation, so that the background noise and reflected sound will not affect the measuring values.

3.2 Rotating equipment In the measuring room, the rotating equipment shall be provided for rotating the bearing. Its driving part shall be located outside of the room, and shall be so constructed as to allow the rotating shaft to be inserted into the inside of the room.