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**Plain bearings—Bearings with
embedded solid lubricants**

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In the event of any doubts arising as to the contents,
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Foreword

This Japanese Industrial Standard has been established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee according to the proposal for establishment of Japanese Industrial Standard submitted by The Japan Society of Mechanical Engineers (JSME)/Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law.

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Plain bearings—Bearings with embedded solid lubricants

Introduction

This Japanese Industrial Standard has been prepared based on **ISO 19259:2015**, Edition 1, by incorporating the part corresponding to this Standard without any modifications of the technical contents, but also adding some **JIS** specification contents that are not given in the said corresponding International Standard.

The vertical lines on both sides and dotted underlines indicate additions to the corresponding International Standard. Annex JA is unique to **JIS** and not given in the corresponding International Standard. A list of modifications with the explanations is given in Annex JB.

1 Scope

This Japanese Industrial Standard specifies requirements for a bearing with embedded solid lubricants which has been widely used as a solid lubricant bearing.

NOTE The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows.

ISO 19259:2015 *Plain bearings—Bearings with embedded solid lubricants* (MOD)

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21-1**.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS B 0162-1 *Plain bearings—Terms, definitions and classification—Part 1: Design, bearing materials and their properties*

JIS B 0163-2 *Plain bearings—Symbols—Part 2: Applications*

JIS G 5501 *Grey iron castings*

JIS H 5120 *Copper and copper alloy castings*

JIS H 5121 *Copper alloy continuous castings*

3 Terms and definitions

For the purpose of this Standard, the terms and definitions given in **JIS B 0162-1** and **JIS B 0163-2**, and the following apply.

3.1

metallic base body

part composed of metallic material in which holes or hollows for embedding solid lubricants are formed

It is used mainly for supporting a load. For information on holes, see 5.1.

3.2

solid lubricant plug

cylindrical solid lubricant, in general, embedded in holes or hollows which are formed in a metallic base body

Another embedded state of a solid lubricant is a spiral type.

4 Symbols and units

For the purpose of this Standard, the symbols, descriptions and units given in Table 1 apply.

Table 1 Symbols and units

Symbol	Description	Unit
B	Width of bush	mm
D_{fl}	Flange diameter of bush	mm
D_i	Inside diameter of bush	mm
D_o	Outside diameter of bush	mm
B_{fl}	Flange thickness	mm

5 Characteristics

5.1 Structure

A bearing with embedded solid lubricants is composed of a metallic base body supporting a load and a solid lubricant embedded in holes or hollows formed on the surface of the metallic base body. As to the embedded state of a solid lubricant, there is a plug type and a spiral type (see Figure 1). As for hole type, there are “through” or perforated ones and “bottomed” ones (see Figure 2). The overview of a cylindrical bush and a flanged bush are shown in Figure 3. A bearing with embedded solid lubricants shall be of a structure where a metallic base body supports a load by forming a solid lubricant film.

NOTE 1 A bearing with embedded solid lubricants falls under the category of a solid lubricant bearing among self-lubricating bearings. In the solid lubricant bearings, there is a solid type, a coated type, a dispersed type, and an embedded type.

A solid type is such where a solid lubricant powder is solidified using resin or the like as a binder.

A coated type is such where a solid lubricant film is formed on a sliding surface by applying a solid lubricant with a binder by means of baking or by any chemical or physical means.

A dispersed type is such where a solid lubricant powder (fine particles) is dispersed into sintered metal matrix.

NOTE 2 Generally, a solid lubricant plug is formed in such a manner that the solid lubricant powder comprising the single component or the multiple components is moulded by heating under pressure, for example, by means of injection moulding. The resulting solid lubricant plugs are generally fixed with adhesive into holes in a cylindrical part of the metallic base body. In some cases, they are fixed by means of press fitting. They may also be fixed by injecting a solid lubricant composition having fluidity into a hole, followed by a solidification process.

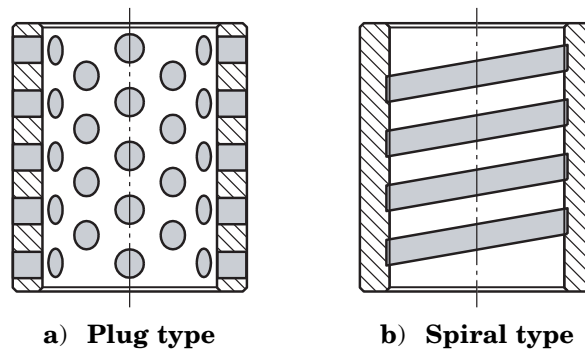


Figure 1 Embedded state of solid lubricants on cylindrical bush

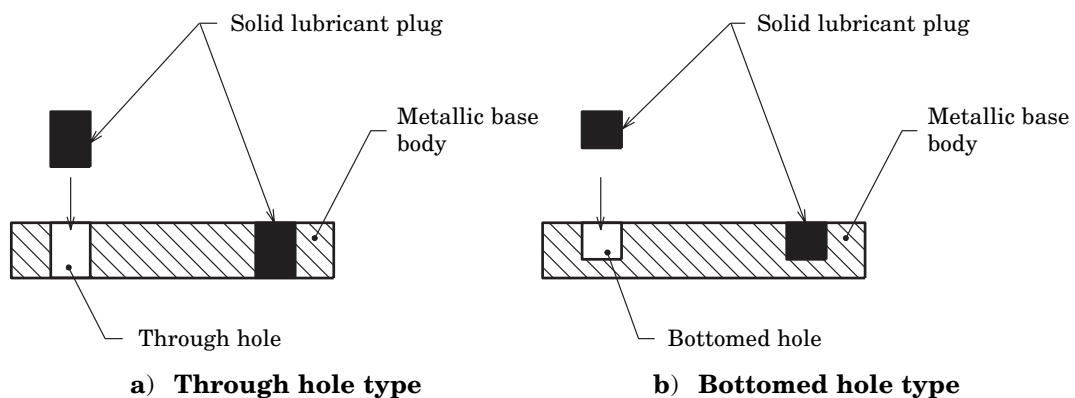


Figure 2 Structure of cross section on a bearing with embedded solid lubricants

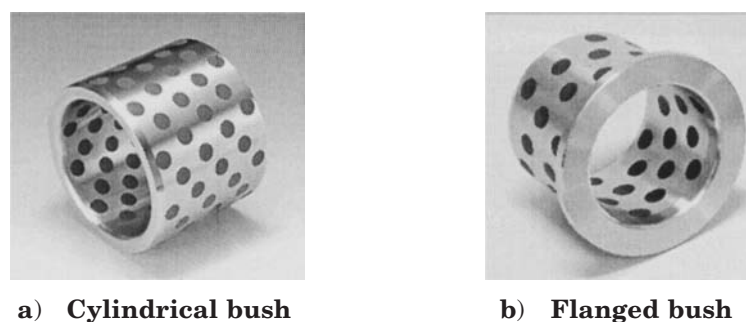


Figure 3 Overview of a bearing with embedded solid lubricants (plug type)