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(JSME/JSA)

**Plain bearings — Wrapped bushes —
Part 1: Dimensions**

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

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

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JIS B 1584 series consists of the following 3 parts under the general title "*Plain bearings — Wrapped bushed*" :

Part 1 : Dimensions

Part 3 : Lubrication holes, grooves and indentations

Part 4 : Materials

Plain bearings — Wrapped bushes — Part 1 : Dimensions

Introduction

This Japanese Industrial Standard has been prepared based on the second edition of **ISO 3547-1** published in 2006 with some modifications of the technical contents in response to the actual situation in Japan.

The portions given sidelines or dotted underlines are the matters in which the contents of the original International Standard have been modified. A list of modifications with the explanations is given in Annex JA.

1 Scope

This Standard specifies the dimensions of wrapped bushes.

NOTE 1 The surface roughness of shaft, surface roughness of inside surface of housing, tolerances on inside diameter of housing and an example of calculation for the maximum and the minimum size limits of inside diameter of bush are shown in Annex A.

NOTE 2 The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows.

ISO 3547-1 : 2006 *Plain bearings — Wrapped bushes — Part 1 : Dimensions* (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) listed below shall be applied.

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

NOTE : Corresponding International Standard : **ISO 4378-1** *Plain bearings — Terms, definitions and classification — Part 1 : Design, bearing materials and their properties* (MOD)

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

JIS B 1584-4 *Plain bearings — Wrapped bushes — Part 4 : Materials*

NOTE : Corresponding International Standard : ISO 3547-4 *Plain bearings — Wrapped bushes — Part 4 : Materials* (MOD)

ISO 3547-2 *Plain bearings — Wrapped bushes — Part 2 : Test data for outside and inside diameters*

ISO 3547-6 *Plain bearings — Wrapped bushes — Part 6 : Checking the inside diameter*

ISO 12301 *Plain bearings — Quality control techniques and inspection of geometrical and material quality characteristics*

3 Terms and definitions

For the purposes of this Standard, the terms and definitions given in JIS B 0162-1 and ~~JIS B.0163-2~~ shall apply.

4 Symbols and units

For the purposes of this Standard, the symbols and the units shall be as given in table 1.

Table 1 Symbols and units

Symbol	Definition	Unit
B	Width of the bush	mm
C_i	Width of inside chamfer	mm
C_o	Width of outside chamfer	mm
D_{f1}	Flange diameter of the bush	mm
D_i	Inside diameter of the bush	mm
$D_{i, ch}$	Inside diameter of the bush in the ring gauge	mm
D_H	Housing bore diameter	mm
D_o	Outside diameter of the bush	mm
$r^{b)}$	Root radius of flange	mm
Ra	Surface roughness	μm
s_1	Thickness of backing metal layer ^{a)}	mm
s_2	Thickness of bearing material layer ^{a)}	mm
s_3	Wall thickness ^{a)}	mm
s_{f1}	Flange thickness ^{a)}	mm
Notes ^{a)} For the bush made of the solid material, $s_1 = s_3$ or $s_2 = s_3$. ^{b)} The maximum value of r is same as the dimension of s_3 .		

5 Dimensions and limit deviations

The wrapped bushes shall be divided into the cylindrical bush and the flanged bush according to the shape thereof, and respective dimensions shall be as follows.

- a) The recommended values for inside diameter, outside diameter, wall thickness and

- width of bush for the cylindrical bush shall be as given in table 2 to table 6.
- b) The recommended values for inside diameter, outside diameter, wall thickness, flange diameter, flange thickness and width of bush for the flanged bush shall be as given in table 7.
 - c) The dimensions of width of inside chamfer and the width of outside chamfer shall be as given in table 8.
 - d) The limit deviations for the wall thickness of bush shall be as given in table 9.
 - e) For the internal diameter of bush to be supplied of which the bore is finished by machining (series W), the limit deviations for the inside diameter of bush $D_{i, ch}$ in the ring gauge shall be as given in table 10.
 - f) The limit deviations for the outside diameter of bush D_o shall be as given in table 11.

Limit deviations other than those specified in table 2 to table 11 may be used upon the agreement between the parties concerned with delivery.

The maximum value of the inside diameter of bush in its pressed-in housing condition is obtained from the maximum value of the housing bore minus twice the minimum value of the wall thickness (s_3). In a similar way, the minimum value of the inside diameter of bush is obtained from the minimum value of the housing bore diameter minus twice the maximum value of the wall thickness (s_3). It is assumed that there is no expansion of the housing bore caused by pressing in the bush. In reality, the expansion depends on several factors, such as the stiffness of the housing and the bush. An example of the calculation of internal diameter of bush is given in A.6.

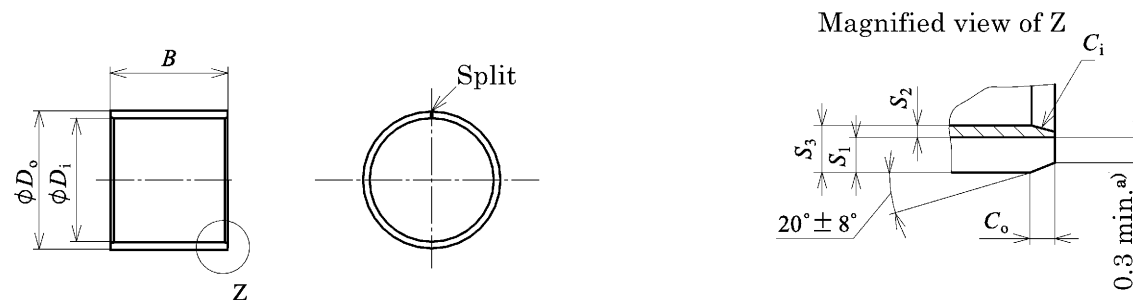
The limit deviations for wall thickness shall depend on the existence of the machining allowance in the bore of bush and on the material type as given in JIS B 1584-4. The limit deviation series A, B, C, D and E is given in table 9.

Instead of the wall thickness of bush, the inside diameter of bush $D_{i, ch}$ may be designated. $D_{i, ch}$ shall be the inside diameter of bush when it is pressed into the ring gauge (The measurement of inside diameter of bush by the ring gauge method shall be as given in ISO 3547-2 and ISO 3547-6).

In no case shall the wall thickness of bush and the inside diameter of bush be designated at the same time as the dimensions to be checked.

The tolerances on the inside diameter of bush when it is pressed into the actual housing shall be the sum of the tolerances on $D_{i, ch}$ and the tolerances on the housing bore. When calculating the inside diameter of bush from the wall thickness of bush, it is assumed that there is no expansion of the housing bore.

Table 2 Recommended values for inside diameter, outside diameter, wall thickness and width of bush of cylindrical bush
(wall thickness s_3 is 0.5 mm or 0.75 mm)



Note a) 0.2 mm or over when $s_3 = 0.5$ mm.

Unit : mm

Wall thickness $s_3 = 0.5$															
Inside diameter of bush D_i	Outside diameter of bush D_o	Wall thickness s_3	Width of bush B												
			3	4	5	6	7	8	10	12	15	20	25	30	40
2	3	0.5	±0.25	—	±0.25										
3	4	0.5	±0.25	—	±0.25	±0.25									
4	5	0.5	±0.25	±0.25	—	±0.25									
5	6	0.5		—	±0.25	—	—	±0.25	±0.25						
6	7	0.5		±0.25	—	±0.25	—	±0.25	±0.25						
8	9	0.5				±0.25	—	±0.25	±0.25	±0.25					
10	11	0.5						±0.25	±0.25	±0.25					
Wall thickness $s_3 = 0.75$															
Inside diameter of bush D_i	Outside diameter of bush D_o	Wall thickness s_3	Width of bush B												
			3	4	5	6	7	8	10	12	15	20	25	30	40
2	3.5	0.75	±0.25	—	±0.25										
3	4.5	0.75	±0.25	—	±0.25	±0.25									
4	5.5	0.75	±0.25	±0.25	—	±0.25	—	—	±0.25						