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

ICS 01.040.21; 21.100.10

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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 from 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.

This Standard has been made based on **ISO 4378-1 : 1997** *Plain bearings—Terms, definitions and classification—Part 1 : Design, bearing materials and their properties* for the purposes of making it easier to compare this Standard with International Standard; to prepare Japanese Industrial Standard conforming with International Standard; and to propose a draft of an International Standard which is based on Japanese Industrial Standard.

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JIS B 0162 consists of the following parts under the general title “*Plain bearings—Terms, definitions and classification*”:

Part 1 : Design, bearing materials and their properties

Part 2 : Friction and wear

Part 3 : Lubrication

Part 4 : Calculation parameters and their symbol

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In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

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Plain bearings—Terms, definitions and classification—Part 1 : Design, bearing materials and their properties

Introduction This Japanese Industrial Standard has been prepared based on the second edition of **ISO 4378-1** *Plain bearings—Terms, definitions and classification—Part 1 : Design, bearing materials and their properties* published in 1997 with some modifications of the technical contents.

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 explanations is given in Annex (informative).

1 Scope This part of **JIS B 0162** gives the most commonly used terms for plain bearings with their definitions and classification.

NOTE : The International Standard corresponding to this part of **JIS B 0162** is as follows.

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

ISO 4378-1:1997 *Plain bearings—Terms, definitions and classification—Part 1 : Design, bearing materials and their properties* (MOD)

2 Classification

- a) **General terms**
- b) **Types of plain bearings, classification**
- c) **Structural elements of plain bearing assembly**
- d) **Structural elements of a plain bearing**
- e) **Dimensional characteristics of plain bearings**
- f) **Materials and their properties**

3 Terms and definitions The terms and definitions shall be as given in the following.

In addition, English equivalents are given for information.

- NOTES
- 1 In the case where two terms connected with “,” are given together in the term and English equivalent (informative) columns, these should be employed with priority according to the order.
 - 2 In the case where a term and a part of a term are appended with parentheses “()” in the term and English equivalent (informative) columns, these are terms used based on **ISO** standard.
 - 3 The part appended with parentheses “()” in the definition column is the content which supplements the content of definition.
 - 4 The numbers given in the drawings of figure 1 to figure 38 indicate the numbers of the relevant terms.

The figures shown are examples.

a) General terms

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
1.1	軸受	ZIKUUE	support or guide by means of which a moving part is located with respect to other parts of a mechanism	bearing
1.2	滑り軸受	SUBERI ZIKUUE	bearing in which the type of relative movement is sliding	plain bearing
1.3	滑り軸受ユニット	SUBERI ZIKUUE YUNITTO	tribological system including a plain bearing and a supporting part (e.g. a housing)	plain bearing unit

b) Types of plain bearings, classification

1) According to the type of load

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
2.1.1	静荷重滑り軸受	SEIKAZYŪ SUBERI ZIKUUE	plain bearing acting under a load constant in magnitude and direction	statically loaded plain bearing
2.1.2	動荷重滑り軸受	DŌKAZYŪ SUBERI ZIKUUE	plain bearing acting under a load changing in magnitude and/or direction	dynamically loaded plain bearing

2) According to the direction of the supported load

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
2.2.1	ジャーナル滑り軸受, ジャーナル軸受	ZYĀNARU SUBERI ZIKUUE, ZYĀNARU ZIKUUE	plain bearing in which the load acts perpendicularly to the axis of shaft rotation NOTE: See figure 15.	plain journal bearing, journal bearing

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
2.2.2	スラスト滑り軸受, スラスト軸受	SURASUTO SUBERI ZIKUKE, SURASUTO ZIKUKE	plain bearing in which the load acts along the axis of shaft rotation NOTE: See figure 16.	plain thrust bearing, thrust bearing
2.2.3	スラストジョーナル軸受, つば付き軸受	SURASUTO ZYÂNARU ZIKUKE, TUBATUKI ZIKUKE	plain bearing capable of supporting a load in both the axial and radial directions NOTE: See figure 12.	journal thrust bearing, flanged bearing

3) According to the type of lubrication

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
2.3.1	静圧気体軸受	SEIATU KITAI ZIKUKE	plain bearing operating under conditions of aerostatic lubrication	aerostatic bearing
2.3.2	動圧気体軸受	DÔATU KITAI ZIKUKE	plain bearing operating under conditions of aerodynamic lubrication	aerodynamic bearing
2.3.3	静圧流体軸受	SEIATU RYÛTAI ZIKUKE	plain bearing operating under conditions of hydrostatic lubrication	hydrostatic bearing
2.3.4	動圧流体軸受	DÔATU RYÛTAI ZIKUKE	plain bearing operating under conditions of hydrodynamic lubrication	hydrodynamic bearing
2.3.5	スクイズ油膜軸受	SUKUÏZU YUMAKU ZIKUKE	plain bearing in which complete separation of sliding surfaces is caused by the pressure developed in the oil film as a result of their relative movement in the direction normal to the surface	squeeze oil film bearing
2.3.6	ハイブリッド軸受	HAIBURIDDO ZIKUKE	plain bearing operating under conditions of both hydrostatic and hydrodynamic lubrication	hybrid bearing
2.3.7	固体潤滑軸受	KOTAI ZYUNKATU ZIKUKE	plain bearing operating with a solid lubricant	solid-film lubricated bearing

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
2.3.8	無潤滑軸受	MUZYUNKATU ZIKUUE	plain bearing operating without a lubricant	unlubricated bearing
2.3.9	自己潤滑軸受	ZIKO ZYUNKATU ZIKUUE	plain bearing lubricated by the bearing material, by the material components or by solid lubricant overlays	self-lubricating bearing
2.3.10	多孔質自己潤滑軸受, 焼結含油軸受	TAKÔSITU ZIKO ZYUNKATU ZIKUUE, SYÔKETU GANYU ZIKUUE	porous bearing the communicating pores of which are filled with lubricant	porous self-lubricating bearing, sintered bearing, oil-impregnated sintered bearing
2.3.11	自給式滑り軸受ユニット	ZIKYÛSIKI SUBERI ZIKUUE YUNITTO	bearing assembly with an oil reservoir and means for circulating the oil to the bearing surface	self-contained plain bearing assembly
2.3.11a	フォイル軸受	HOIRU ZIKUUE	bearing comprising the bearing sliding surface with a foil of which the bending rigidity is small and supporting a load while permitting flexure	foil bearing
2.3.11b	スパイラル軸受	SUPAIRARU ZIKUUE	bearing having many shallow spiral grooves on the bearing surface	spiral groove bearing

4) According to the design

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
2.4.1	真円円筒軸受, 真円軸受	SIN'EN ENTÔ ZIKUUE, SIN'EN ZIKUUE	plain journal bearing every cross section of the inside surface of which is circle of the same diameter NOTE: See figure 1.	circular cylindrical bearing
2.4.2	非真円軸受	HI SIN'EN ZIKUUE	plain journal bearing every cross section of the inside surface of which is not a circle NOTE: See figures 2, 3.	profile bore bearing

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
2.4.3	多円弧軸受	TAENKO ZIKUUEKE	plain journal bearing having more than one cylindrical surface so arranged that two or more oil wedges develop around the bearing circumference NOTE: See figures 2, 3.	lobed bearing
2.4.4	パッドスラスト軸受	PADDO SURASUTO ZIKUUEKE	plain thrust bearing the sliding surface of which consists of fixed pads NOTE: See figure 4.	pad thrust bearing
2.4.4a	テーパランド軸受	TÊPARANDO ZIKUUEKE	plain bearing of which one side of the sliding surface has taper NOTE: See figure 38.	taper-land bearing
2.4.5	ティルティングパッドジャーナル軸受	TIRUTINGU PADDO ZYÂNARU ZIKUUEKE	self-aligning plain journal bearing the sliding surface of which consists of pads free to align with respect to the journal under the action of the pressure in the lubricant film NOTE: See figure 5.	tilting pad journal bearing
2.4.6	ティルティングパッドスラスト軸受	TIRUTINGU PADDO SURASUTO ZIKUUEKE	self-tilting plain thrust bearing the sliding surface of which consists of pads free to tilt to make a convergent oil film with the thrust collar sliding surface under the action of the pressure in the lubricant film NOTE: See figure 6.	tilting pad thrust bearing
2.4.7	フローティングブッシュ軸受, 浮動ブッシュ軸受	HURÔTINGU BUSYU ZIKUUEKE, HUDÔ BUSYU ZIKUUEKE	plain bearing designed as a bush and being able to slide on the shaft and in the housing bore NOTE: See figure 7.	floating bush bearing
2.4.8	滑り軸受ユニット	SUBERI ZIKUUEKE YUNITTO	bearing unit consisting of a plain bearing (journal and/or thrust) fitted in a pedestal or flanged housing NOTE: See 2.3.11 . Information: Some plain bearing assemblies have an oil pocket inside the housing.	plain bearing assembly

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
2.4.8.1	台座付き滑り軸受ユニット, ピローブロック軸受ユニット	DAIZATUKI SUBERI ZIKUUE YUNITTO, PIRÔ BUROKKU ZIKUUE YUNITTO	plain bearing assembly secured by fixing elements perpendicular to the shaft axis NOTE: See figure 17.	pedestal plain bearing assembly, pillow block bearing assembly
2.4.8.2	つば付きハウジング滑り軸受ユニット	TUBATUKI HAUZINGU SUBERI ZIKUUE YUNITTO	plain bearing assembly secured by fixing elements parallel to the shaft axis NOTE: See figure 34.	flanged plain bearing assembly
2.4.9	自動調心軸受	ZIDÔ TYÔSIN ZIKUUE	plain bearing the design of which provides for its self-alignment with respect to the opposing surface	self-aligning bearing

c) **Structural elements of plain bearing assembly**

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
3.1	半割り軸受	HANWARI ZIKUUE	plain journal bearing component having a sliding surface of 180° of the shaft circumference NOTE: See figures 9, 32.	half-bearing
3.1.1	薄肉半割り軸受	USUNIKU HANWARI ZIKUUE	half-bearing of sufficiently small wall thickness that the bearing geometry will be influenced by housing bore geometrical imperfections NOTE: See figure 30.	thin wall half-bearing
3.1.2	厚肉半割り軸受	ATUNIKU HANWARI ZIKUUE	half-bearing of sufficiently large wall thickness that the bearing geometry will not be influenced by housing bore geometrical imperfections	thick wall half-bearing
3.2	滑り軸受ブッシュ, 軸受ブッシュ, ブッシュ	SUBERI ZIKUUE BUSYU, ZIKUUE BUSYU, BUSYU	replaceable tubular bearing element the inner and/or outer surface of which is the sliding surface of a plain bearing NOTE: See figures 10, 15, ...	plain bearing bush, bearing bush, bush

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
3.2.1	滑り軸受巻きブシュ, 軸受巻きブシュ, 巻きブシュ	SUBERI ZIKUUE MAKI BUSYU, ZIKUUE MAKI BUSYU, MAKI BUSYU	bush made from wrapped strip of a single or multilayer bearing material NOTE: See figure 11.	plain bearing wrapped bush, bearing wrapped bush, wrapped bush
3.3	つば付き半割り軸受	TUBATUKI HANWARI ZIKUUE	half-bearing [bush] with a flange at one or both ends NOTE: See figure 12.	flanged half-bearing, (flanged bush)
3.4	ソリッド半割り軸受, ソリッドブシュ	SORIDDO HANWARI ZIKUUE, SORIDDO BUSYU	half-bearing [bush] made of a single material	solid half-bearing, (solid bush)
3.5	多層半割り軸受 (多層ブシュ)	TASÔ HANWARI ZIKUUE (TASÔ BUSYU)	half-bearing [bush] made of layers of different materials NOTE: See figure 8.	multilayer half-bearing, (multilayer bush)
3.5.1	半割り軸受裏金, 裏金	HANWARI ZIKUUE URAGANE, URAGANE	part of a multilayer half-bearing with a bearing material applied to it that gives a bearing the required strength and/or stiffness NOTE: See figure 8.	half-bearing backing, backing
3.5.1a	軸受背面	ZIKUUE HAIMEN	cylindrical outer surface of a half-bearing or of a bearing bush	bearing back
3.5.2	軸受材料層, 軸受層, ライニング	ZIKUUE ZAIRYÔ SÔ, ZIKUUE SÔ, RAININGU	thick layer of a bearing material as part of a multilayer half-bearing NOTE: See figure 8. Information: The layer thickness is usually greater than 0.2 mm.	bearing material layer, bearing layer, lining

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
3.5.3	滑り軸受なじみ層, なじみ層, オーバレイ	SUBERI ZIKUKE NAZIMI SÔ, NAZIMI SÔ, ÔBAREI	additional layer of material applied to the bearing material to improve running-in ability, conformability, embeddability and in some cases, corrosion resistance NOTE: See figure 8. Information: The layer thickness is usually from 0.01 mm to 0.05 mm.	plain bearing running-in layer, running-in layer, overlay
3.5.4	中間層, 接着層, ニッケルダム	TYŪKAN SÔ, SETTYAKU SÔ, NIKKERU DAMU	very thin layer between the overlay and lining to strengthen the bond and reduce diffusion NOTE: See figure 8. Information: The layer thickness is usually from 0.001 mm to 0.002 mm.	interlayer, bonding layer, nickel dam
3.5.5	防せい (錆) 層, フラッシュ	BÔSEI SÔ, HURASSYU	very thin layer on bearing surface or backing to provide corrosion protection in storage Information: The layer thickness is usually from 0.000 5 mm to 0.001 mm.	protective layer, flash
3.6	スラストワッシャ	SURASUTO WASSYA	annular plate used to support an axial load commonly in conjunction with a plain journal bearing NOTE: See figure 13.	thrust washer
3.6.1	スラストハーフワッシャ	SURASUTO HÂHU WASSYA	part of an annular plate which, if combined with another similar part, forms a thrust washer NOTE: See figure 14.	thrust half-washer
3.7	パッド	PADDO	component part of a pad bearing carrying the load NOTE: See figures 4, 5.	pad
3.7.1	ジャーナルパッド	ZYÂNARU PADDO	component part of a plain journal pad bearing NOTE: See figure 5.	journal pad
3.7.2	スラストパッド	SURASUTO PADDO	component part of a plain thrust pad bearing NOTE: See figures 4, 16.	thrust pad