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Foreword

This Japanese Industrial Standard has been revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by Japan Bicycle Promotion Institute (JBPI)/Japanese Standards Association (JSA) with a draft being attached, based on the provision of Article 12, paragraph (1) of the Industrial Standardization Act applied mutatis mutandis pursuant to the provision of Article 16 of the said Act. This edition replaces the previous edition (**JIS D 9419** : 2010), which has been technically revised.

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Bicycles — Hubs

Introduction

This Japanese Industrial Standard has been prepared based on **ISO 6697** : 1994, Edition 1, by partially modifying the technical contents for the parts corresponding to this Standard (shapes and dimensions) 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 changes from the corresponding International Standard. A list of modifications with the explanations is given in Annex JB.

1 Scope

This Standard specifies the requirements for the hubs to be used for bicycles for general use, bicycles for young children and electric power assisted bicycles mainly specified in **JIS D 9111**. This Standard is not applicable to the electric power assisted bicycles in which a driving power assisting device is integrated with a hub.

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

ISO 6697 : 1994 *Cycles — Hubs and freewheels — Assembly 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) indicated below shall be applied.

JIS B 0205-1	<i>ISO general purpose metric screw threads — Part 1 : Basic profile</i>
JIS B 0205-2	<i>ISO general purpose metric screw threads — Part 2 : General plan</i>
JIS B 0205-3	<i>ISO general purpose metric screw threads — Part 3 : Selected sizes for screws, bolts and nuts</i>
JIS B 0205-4	<i>ISO general purpose metric screw threads — Part 4 : Basic dimensions</i>
JIS B 0209-1	<i>ISO general purpose metric screw threads — Tolerances — Part 1 : Principles and basic data</i>
JIS B 0209-2	<i>ISO general purpose metric screw threads — Tolerances — Part 2 :</i>

Limits of sizes for general purpose external and internal screw threads — Medium quality

JIS B 0209-3 *ISO general purpose metric screw threads — Tolerances — Part 3 : Deviations for constructional screw threads*

JIS B 0225 *Cycles — Screw threads*

JIS C 9502 *Lighting equipment for bicycles*

JIS D 9111 *Cycles — Classification, terminology and essential characteristics*

JIS D 9301 *Bicycles for general use*

JIS D 9302 *Bicycles for young children*

JIS D 9414 *Bicycles — Brakes*

JIS D 9418 *Bicycles — Free wheels and hub cogs*

JIS D 9420 *Bicycles — Spokes and nipples*

JIS D 9428 *Bicycles — Derailleur*

JIS H 8502 *Methods of corrosion resistance test for metallic coatings*

3 Terms and definitions

For the purpose of this Standard, the terms and definitions given in **JIS D 9111** apply.

4 Classification

The hubs are classified according to the structure and application as shown in Table 1.

Table 1 Classification of hubs

Type		Figure number
Structure	Application	
Ordinary front hub	For front wheel	Figure 4 a)
Quick release front hub		Figure 5 a)
Front hub brake ^{a)}		Figure 6 a)
Hub dynamo ^{b)}		Figure 10
Ordinary rear hub	For rear wheel	Figure 4 b), c)
Quick release rear hub		Figure 5 b)
Rear hub brake ^{a)}		Figure 6 b)
Hub gear ^{c)}		Figure 7
Unit hub ^{d)}		Figure 8
Coaster brake hub ^{a)}		Figure 9
Notes ^{a)} A hub equipped with braking function. ^{b)} A hub equipped with power generating function. ^{c)} A hub equipped with gear-change function. ^{d)} A hub integrated with a freewheel.		

5 Names of parts

The names of respective hub parts are shown in Figure 4 to Figure 10.

6 Performances

The performance of hubs shall be as follows.

- a) Hubs shall rotate smoothly without visible play between the hub shell and hub axle assemblies.
- b) Coaster brake hubs, when assembled in the state of service, shall meet the requirements specified in **5.2.5** of **JIS D 9301** for bicycles for general use and electric power assisted bicycles, and **5.2.5** of **JIS D 9302** for bicycles for young children.
- c) Hub brakes shall meet the requirements specified in **JIS D 9414**.
- d) Performances of hub dynamos relating to the electricity generating function shall meet the requirements specified in **JIS C 9502**.
- e) For hubs for rear wheel having freewheel fitting threaded parts or brake fitting threaded parts, the vertical and lateral runouts, when measured as shown in Figure 1, shall not exceed 0.3 mm each at measuring positions.

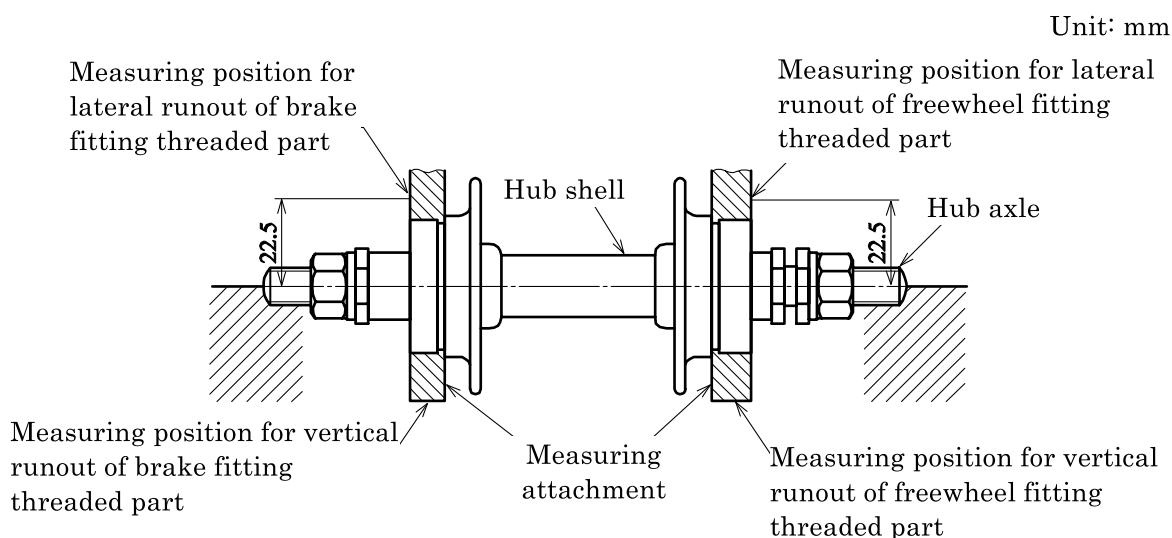


Figure 1 Measurement for runouts of freewheel and brake fitting threaded parts

- f) The runout of each part of unit hub shall be as shown in Table 2, and the runout of driver of hub gear and coaster brake hub shall be as shown in Table 3. The runout of driver of hub gear and coaster brake hub shall be measured by fitting the measuring attachment to the driver, fixing the hub axle, suspending the hub shell and rotating the hub cog or the measuring attachment. For a coaster brake hub, measurement shall be carried out by rotating the measuring attachment in the driving direction while fixing the hub axle.

Table 2 Run out tolerances on outer ring and combined hub cog of unit hub

Unit: mm

Division		Measuring position	Fixing hub axle and hub shell, rotate outer ring or combined hub cog	Fixing hub axle, rotate hub shell together with outer ring or combined hub cog	Sum of both measured values
			Vertical runout ^{a)}	Vertical runout ^{a)}	Vertical runout ^{a)}
Outer ring	With hub cog	Tooth bottom	0.4 max.	0.4 max.	0.7 max.
	Without hub cog	Position indicated in Figure 2		0.3 max.	
Combined hub cog		Tooth bottom		0.3 max.	0.6 max.

Note ^{a)} Except the multi-gear type.

Unit: mm

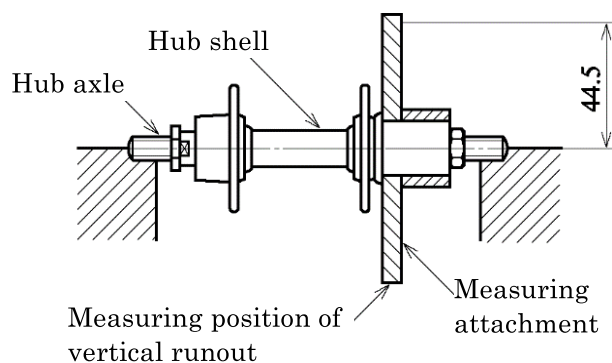


Figure 2 Measurement for outer ring run outs

Table 3 Run out tolerances on driver of hub gear and coaster brake hub

Unit: mm

Division		Measuring position	Lateral runout
Driver	With hub cog	Tooth bottom	0.4 max.
	Without hub cog	Position indicated in Figure 3	

Unit: mm

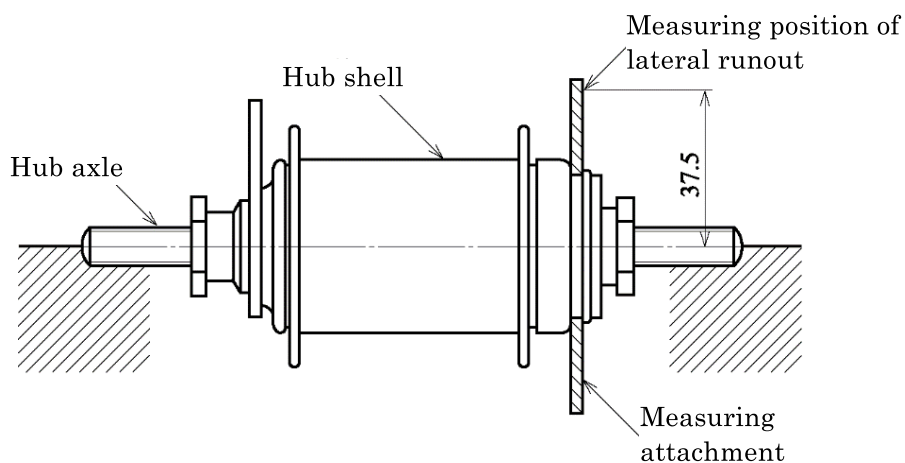


Figure 3 Measurement of driver runouts

- g) The braking and releasing of coaster brake hub shall be in accordance with **5.2.3** of **JIS D 9301**.
- h) The free play of unit hub, when moving the hub cog by applying a force on the teeth in axle direction while fixing the hub shell, shall not exceed 0.3 mm at the side face of tooth bottom. For a hub without hub cog, the measuring position shall be at 25 mm radius thereof.
- i) The performance of quick release hub shall be in accordance with **5.5.2** of **JIS D 9301**.

7 Strength

The strength of hubs shall be as follows.

- a) For hubs of which any part is integrated by joining or press-in fitting, when they are tested in accordance with **12.1**, each connection shall be free from abnormalities such as slackness. This does not apply to hub cups.
- b) When tested in accordance with **12.2**, there shall be no peeling, visible wear or other detrimental defects on the ball race or other surfaces that are in friction with each other.
- c) The strength of wire used in hub brakes shall be in accordance with **JIS D 9414**. Also, the strength of wire used in hub gears shall be in accordance with **JIS D 9428**.
- d) The requirements for hub gears, unit hubs and coaster brake hubs shall be in accordance with **5.6.3** of **JIS D 9301**. In the strength test on a single hub, the crank length and the front and rear gear ratio shall be set to the severest condition.

The term “severest condition” means that the crank length is the largest and the number of teeth of the front gear is minimum while that of the rear gear is maximum among those assumed by the manufacturer.

- e) The strength of coaster brake hub, when assembled in the state of service, shall be in accordance with **5.2.4 b)** of **JIS D 9301**.

8 Corrosion resistance

The corrosion resistance of hubs shall be such that the rating number of the corrosion defects of the base metal is not less than 9 when tested in accordance with the neutral salt spray test or CASS test specified in **JIS H 8502** for the test period given in Table 4.

The corrosion defects of galvanized parts shall be examined visually and there shall be no white corrosion product or red rust.

Table 4 Test methods and test periods

		Unit: h
Plating or painting	Neutral salt spray test	CASS test
Nickel — chromium plating	—	4
Galvanizing, nickel plating and other plating, or painting	24	—