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Bicycles—Rims

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry, through deliberations at the Japanese Industrial Standards Committee as the result of proposal of revision of Japanese Industrial Standard submitted by Japan Bicycle Promotion Institute (JBPI)/ Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14.

Consequently **JIS D 9421:2005** is replaced with this Standard.

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Bicycles—Rims

Introduction

This Japanese Industrial Standard has been prepared based on the second edition of **ISO 5775-2** published in 1996 and Amendment 1 (2001) with some modifications of the technical contents.

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

1 Scope

This Standard specifies the rims to be used mainly for bicycles for general use and bicycles for young children as defined in **JIS D 9111** (hereafter referred to as “rims”).

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

ISO 5775-2:1996 *Bicycle tyres and rims—Part 2: Rims* and Amendment 1 (2001) (MOD)

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

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 D 9111	<i>Cycles—Classification and essential characteristics</i>
JIS D 9112	<i>Cycle—Tyres—Dimensions</i>
JIS D 9420	<i>Rims for bicycles</i>
JIS D 9422	<i>Tire valves for bicycles</i>
JIS H 8617	<i>Electroplated coatings of nickel and chromium</i>
JIS K 6302	<i>Pneumatic tyres for bicycles</i>
ISO 5775-1	<i>Bicycle tyres and rims—Part 1: Tyre designations and dimensions</i>

3 Classification of rims and their symbols

Classification of rims and their symbols, according to the subtype and shape, are shown in table 1. Rims are classified into four types of tyres: BE rims¹⁾, WO rims²⁾ [or SS rims³⁾], HE rims⁴⁾, [or HB rims⁵⁾] and CT rims⁶⁾.

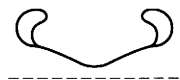
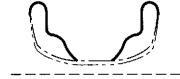
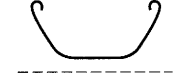
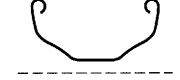
Notes ¹⁾ Abbreviation for beaded edge rim

²⁾ Abbreviation for wired on rim

³⁾ Abbreviation for straight side rim

- 4) Abbreviation for hooked edge rim
5) Abbreviation for hooked bead rim
6) Abbreviation for crotchet rim

Table 1 Classification of rims and their symbols

Classification (symbol)	Subtype	Nominal rim width ^{a)}	Example of shape
<u>BE rim ^{b)} (BE)</u>	<u>BE-1</u>	(22.2) (25)	
<u>WO rim (WO) or SS rim ^{c)} (SS)</u>	<u>WO-2</u>	(20.3)	
	<u>WO-4</u>	(16.5)	
	<u>WO-3</u>	(22.5)	
	<u>WO-5</u>	(20.3)	
	SS	18, 20, 22, 24, 27, 30.5	
<u>HE rim (HE) or HB rim ^{d)} (HB)</u>	<u>HE-1</u>	(25)	
	<u>HE-5</u>	(20)	
	HB	20, 25, 27	
<u>CT rim ^{e)}</u>	<u>CT</u>	13C, 15C, 17C, 19C, 21C, 23C, 25C	

NOTE 1 For SS, HB and CT rims, corresponding to the rims specified in **ISO 5775-2**, and having no external width dimension specifications, the shape examples are given by chain double dashed lines.

NOTE 2 The width and thickness of rim tape shall be chosen in such a way as to guarantee the complete covering of the spoke heads and spoke holes during use, as well as a stable fit, and to permit satisfactory fitting of the tyre and tube.

Notes ^{a)} The nominal rim width is shown as dimension A in each of the figures in tables 5, 6, 8 and 9. The nominal widths in parentheses are not used as part of the rim designations.

^{b)} BE rims are compatible with BE tyres defined in **JIS D 9112**.

^{c)} WO rims or SS rims, and CT rims are compatible with WO tyres specified in **JIS D 9112** and “wired edge” tyres specified in **ISO 5775-1**. WO rims or SS rims are to be used only with tyres using bead wires of hard drawn wire specified in **JIS K 6302**. Tyres using bead wires of aramid fibre may also be used, provided that they meet the rim running-off resistance requirement specified in **JIS K 6302**. CT rims are to be used with tyres using bead wires of hard drawn wire and of aramid fibre.

^{e)} HE or HB rims are compatible with HE tyres of **JIS D 9112** and “beaded edge” tyres of **ISO 5775-1**.

4 Construction

The construction of rims shall be as follows.

- The rim shall have a smooth contour, free of sharp edges, on the side of the tyre.
- There shall be no visible burrs on the tyre side of the rim joint or any edge of spoke holes and valve hole.
- Each spoke hole should be offset alternately and equally to the centreline of rim width, with the spoke hole neighbouring the valve hole in right side being positioned upper side of that centreline in viewing the rim from outside (tyre side) as shown in figure 1.

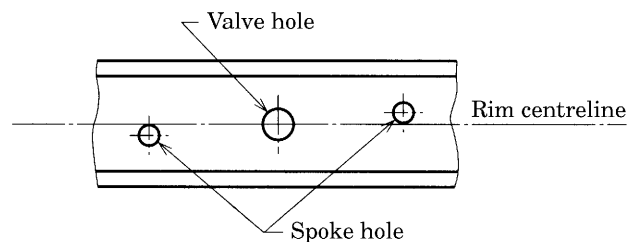


Figure 1 Position of valve hole

5 Shape and dimensions

The shape and dimensions of rims shall be as follows.

- Dimensions for each classification of rims are given in tables 5 to 9.

The dimensions without tolerances are recommended dimensions.

NOTE : Measured results are expected to vary owing to the difference in shape of the rims or measuring method. Therefore this Standard describes an exemplary method for measuring and gauging rim dimensions in Annex A.

- The spoke hole diameter of rims shall be as given in table 2.

Table 2 Spoke hole diameter

Unit: mm

Nominal spoke diameter code (JIS D 9420)	Spoke hole diameter		Nipple diameter (informative) (JIS D 9420)	
No. 12	5.0	+0.2 0	4.6	+0.2 0
No. 13	4.7		4.3	
No. 13, No. 14 or No. 15	4.4 ^{a)}		4.0	
Note ^{a)} Where spokes of nominal diameter code No. 14 apply to rim of less than 20 in diameter code or 422 in nominal diameter, the spoke hole diameter 4.4 mm should be altered to 4.5 mm.				

- The valve hole diameter of rims shall be as given in table 3 according to the type of tyre valve.

Table 3 Classification of tyre valve hole diameters

Unit: mm

Type of tyre valve (JIS D 9422)		Valve hole diameter	
Woods valve	VEM, VER	<u>8.2</u>	±0.1
Schrader valve ^{a)}	VAM	<u>8.2</u>	
	VAR	<u>8.7</u>	
Presta valve	VFM, VFR	<u>6.3</u>	
Note ^{a)} A schrader valve with body diameter of 8 mm is applicable to valve hole diameter 8.2 mm.			

- d) The mutual pitch error of spoke holes shall be at most 2 mm.
- e) The difference of rim diameter dimensions (diameter distortion) between the measurements on optional two portions at an interval equivalent to two spoke hole pitches, shall be 1 mm or less.
- f) The plane distortion of rim, determined by the measurement on optional two portions at an interval of equivalent to two spoke hole pitches, shall be 0.3 mm or less.

6 Quality

6.1 Appearance

The appearance of rims shall be as follows.

- a) There shall be no exposure of substrate, peeling, rust, or other visible defects on the surfaces subjected to plating or cosmetic process.

Further, the surfaces to appear externally after assembly into a wheel shall be free from visible unevenness of plating.

- b) There shall be no rust, cracks, visible scratches or other defects on the surfaces without application of plating nor cosmetic process.
- c) Marks shall be free from incomplete stamping, positional deviation, blur, irregular colouring and other visible defects.

6.2 Plating

The thickness and corrosion resistance of plating applied on the rim surface shall be at least Grade 3 of table 2 specified in **JIS H 8617**, except the portions to be not exposed after assembly into a wheel or processed after plating.

6.3 Strength

The strength of the rim shall be such that, when it is subjected to the test in **7.1**, the permanent deformation measured shall be 1 mm or less.

7 Test method

7.1 Rim strength test

A static test load (F) given in table 4 shall be applied onto the rim in a direction of the centre of rim by a means shown in figure 2 to be left in rest for a duration of 2 min and then removed, and the permanent deformation shall be measured at the point of application of load.

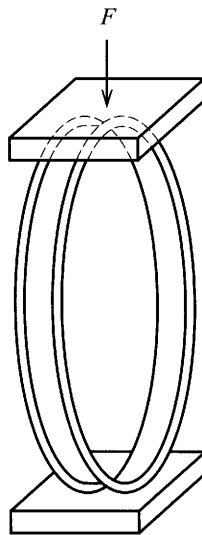


Figure 2 Rim strength test

Table 4 Test conditions

Classification	Subtype	Nominal rim width	Test load N
BE rim	BE-1	(22.2) , (25)	500
WO rim or SS rim	WO-2	(20.3)	
	WO-3	(22.5)	
	WO-5	(20.3)	
	SS	20, 22, 24, 27, 30.5	300
	WO-4	(16.5)	
	SS	18	500
HE rim or HB rim	HE-1	(25)	
	HE-5	(20)	
	HB	20, 25, 27	
CT rim	CT	19C, 21C, 23C, 25C	300
		13C, 15C, 17C	

8 Designation of products

The products shall be designated as follows.

- a) BE, WO and HE rims shall be designated by the number or title of this Standard “Rims for bicycles”, nominal size code, and symbol for the type of rim.

Example 1 **JIS D 9421** 26 × 1³/₈ WO

Example 2 Rims for bicycles 26 × 1³/₈ WO

- b) SS and HB rims shall be designated by the number or title of this Standard “Rims for bicycles”, symbol of type of the rim, nominal rim diameter and nominal rim width.

Example 1 **JIS D 9421** SS 349 × 20

Example 2 Rims for bicycles SS 349 × 20

- c) CT rims shall be designated by the number or title of this Standard “Rims for bicycles”, nominal rim diameter, nominal rim width and “C” denoting CT rim.

Example 1 **JIS D 9421** 622 × 13C

Example 2 Rims for bicycles 622 × 13C

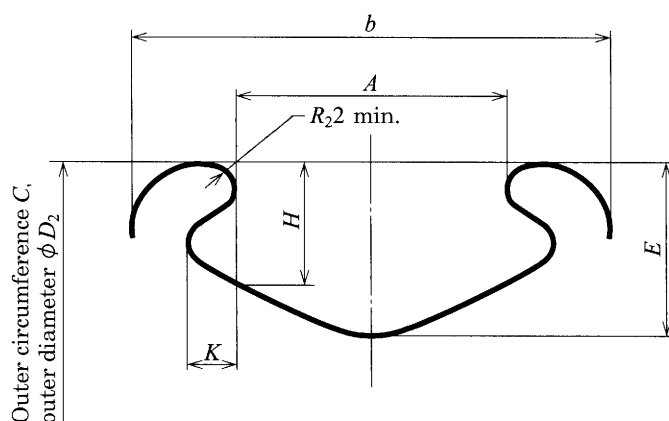
9 Marking

Rims shall be marked with the following items at a conspicuous place and by means indelible.

- Manufacturer's name or its abbreviation
- Year and month of manufacture or their abbreviation
- Nominal size code (or nominal diameter and nominal width for SS, HB, and CT rims)
- Symbol of type of the rim (“C” for CT rims)

Table 5 BE rims

Unit: mm



Symbol	Names of parts of rim
<i>b</i>	Outer rim width
<i>A</i>	Specified rim width
<i>C</i>	Outer circumference
<i>D</i> ₂	Outer diameter
<i>E</i>	Rim height
<i>H</i>	Bead flange height
<i>K</i>	Edge depth
<i>R</i> ₂	Flange radius

Subtype	Nominal rim size code (diameter code × width code)	<i>b</i>	<i>A</i>		<i>C</i>		<i>D</i> ₂	<i>E</i>		<i>H</i>	<i>K</i>	Number of spoke holes (informative)
BE-1	26 × 1 ³ / ₈	40	22.2	±0.8	1 885	±3	600	14.9	±0.8	10.5	4	32 or 40
	26 × 1 ¹ / ₂											
	26 × 1 ³ / ₄	44	25		1 885		600	16.3		11	5	