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**Cycles — Part 6: Driving device test
methods**

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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 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.

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JIS D 9313 series consists of the following 7 parts under the general title *Cycles* :

Part 1 : General rule for test method and parts test methods

Part 2 : Braking device test methods

Part 3 : Steering device test methods

Part 4 : Body unit test methods

Part 5 : Running device test methods

Part 6 : Driving device test methods

Part 7 : Seating device test methods

Cycles — Part 6 : Driving device test methods

Introduction

This Japanese Industrial Standard has been prepared based on **ISO 4210-8 : 2014**, Edition 1, with some changes made in the technical contents to reflect the needs and conditions specific to Japan and to ensure safety of the products.

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 JA.

1 Scope

This Standard specifies test methods for driving device of bicycles for general use and bicycles for exclusive sports usage as defined in **JIS D 9111**.

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

ISO 4210-8 : 2014 *Cycles — Safety requirements for bicycles — Part 8 : Pedal and drive system test methods* (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 C 0920 *Degrees of protection provided by enclosures (IP Code)*

NOTE Corresponding International Standard : IEC 60529 : 2001 *Degrees of protection provided by enclosures (IP Code)* (IDT)

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

NOTE Corresponding International Standard : ISO 4210-1 : 2014 *Cycles — Safety requirements for bicycles — Part 1 : Terms and definitions* (MOD)

JIS D 9313-1 *Cycles — Part 1 : General rule for test method and parts test methods*

NOTE Corresponding International Standard : ISO 4210-3 : 2014 *Cycles — Safety requirements for bicycles — Part 3 : Common test methods* (MOD)

JIS K 6258 *Rubber, vulcanized or thermoplastic — Determination of the effect of liquids*

3 Terms and definitions

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

4 Test methods

4.1 Driving system — Static strength tests

4.1.1 Test method for drive system with chain

Conduct the drive system static load test on an assembly comprising the frame, drive system, rear wheel assembly, and, if appropriate, the gear-change mechanism. Support the frame with the central plane vertical and with the rear wheel held at the rim to prevent the wheel from rotating. Examine for deformation, breakage, and abnormalities in operation.

a) Single-speed system

- 1) With the non-drive side crank in the forward position, apply a gradually increased force, F_1 , vertically downwards to the centre of the non-drive side pedal. Maintain this force for 1 min.

Should the system yield or the drive-sprockets tighten, such that the crank rotates while under load to a position more than 30° below the horizontal, remove the test force, return the crank to the horizontal position or some appropriate position above the horizontal, and repeat the test.

- 2) On completion of the test on the non-drive side crank, repeat the test with the drive side crank in the forward position and with the force applied to the drive side pedal.

b) Multi-speed system

- 1) Conduct the tests described in **a) 1)** with the transmission correctly adjusted in its highest gear.
- 2) Conduct the tests as described in **a) 2)** with the transmission correctly adjusted in its lowest gear.

Where appropriate, conduct the tests in **a) 2)** with the maximum force, F_1 , adjusted to suit the particular gear ratio. Thus: The maximum force, F_1 , shall be a function of the lowest gear ratio, N_c/N_s ,

where,

F_1 : force applied to the pedal (N)

N_c : number of teeth on the smallest chain wheel (front)

N_s : number of teeth on the largest sprocket (rear)

Where the ratio N_c/N_s has a value equal to or greater than 1, the force, F_1 , shall be 1 500 N; but where the ratio N_c/N_s has a value less than 1, the force, F_1 , shall be reduced in proportion to the lowest gear ratio.

Thus :

$$F_1 = 1\,500 \times N_c/N_s$$

4.1.2 Test method for drive system with belt

The sample shall be submitted to a water spray conditioning specified in 14.2.4 of JIS C 0920 for 10 min. Application of the loading shall be done within 20 min after conditioning.

- a) If the drive system is a single-speed system, conduct the tests as described in 4.1.1 a).
- b) If the drive system is a multi-speed system, conduct the tests as described in 4.1.1 b).

4.2 Crank-pedal junction — Strength test

Fix a crank, with its axis horizontal, to the test bottom bracket axle as shown in Figure 1, and attach a test pedal spindle to this crank. Apply a vertical force of 1 500 N statically to the loading point shown in Figure 1. Maintain this force for 1 min, remove the force, and measure the displacement at the loading point.

The fixing nut or fixing bolt used for fitting the crank to the test bottom bracket axle shall be tightened to the torque recommended by the manufacturer. Where the manufacturer's recommended torque is not indicated, the tightening torque shall be 40 N·m $\pm$ 5 N·m.

Unit: mm

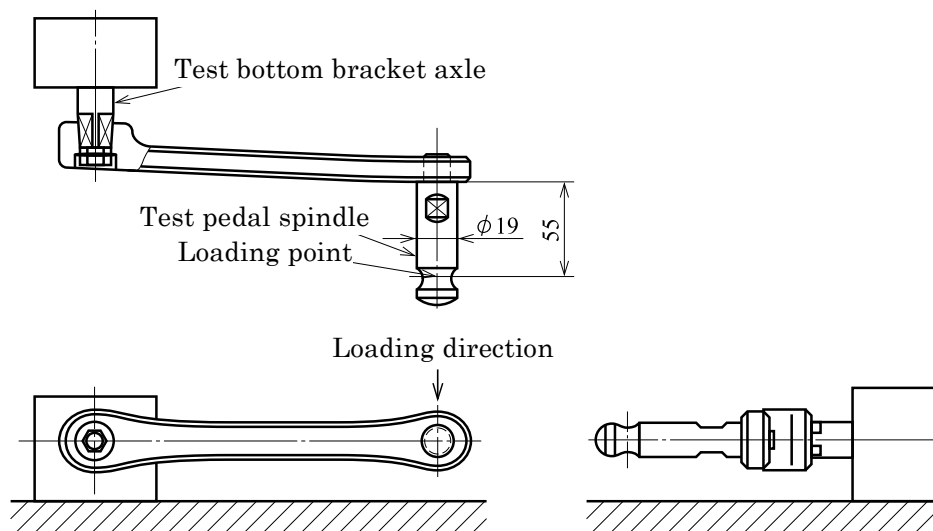


Figure 1 Crank-pedal junction — Strength test

4.3 Crank and chain wheel — Security test

For an assembly of chain wheel and drive side crank where these are directly joined, immobilize the chain wheel by engaging with a chain with one end fixed to a rigid fix-