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**Cycles—Part 2: Braking 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.

Consequently **JIS D 9201**:2001 has been withdrawn and replaced with this Standard.

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Attention is drawn to the possibility that some parts of this Standard may conflict with patent rights, applications for a patent after opening to the public or utility model rights. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying any of such patent rights, applications for a patent after opening to the public or utility model rights.

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 2: Braking device test methods

Introduction

This Japanese Industrial Standard has been prepared based on **ISO 4210-4:2014**, 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 braking 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 4210-4:2014 *Cycles—Safety requirements for bicycles—Part 4: Braking test methods* (MOD)

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standards 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 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 9301 *Bicycles for general use*

NOTE Corresponding International Standard: ISO 4210-2:2015 *Cycles—Safety requirements for bicycles—Part 2: Requirements for city and trekking, young adult, mountain and racing bicycles* (MOD)

JIS D 9304 *Bicycles for exclusive sports usage*

NOTE Corresponding International Standard: ISO 4210-2:2015 *Cycles—Safety requirements for bicycles—Part 2: Requirements for city and trekking, young adult, mountain and racing bicycles* (MOD)

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 Brake lever grip dimensions

4.1.1 Test method for the brake lever similar to Type A or Type B

Fit the gauge illustrated in Figure 1 over the handlebar grip or the handlebar (when the manufacturer does not fit a grip) and the brake lever as shown in Figure 2 so that face A is in contact with the handlebar or grip and the side of the brake lever. Ensure that face B spans an area of that part of the brake lever which is intended for contact with the rider's fingers without the gauge causing any movement of the brake lever towards the handlebar or grip. Measure the distance, a , the distance between the last part of the lever intended for contact with the rider's fingers and the end of the lever. The measurement should be conducted only on a fully assembled bicycle.

Unit: mm

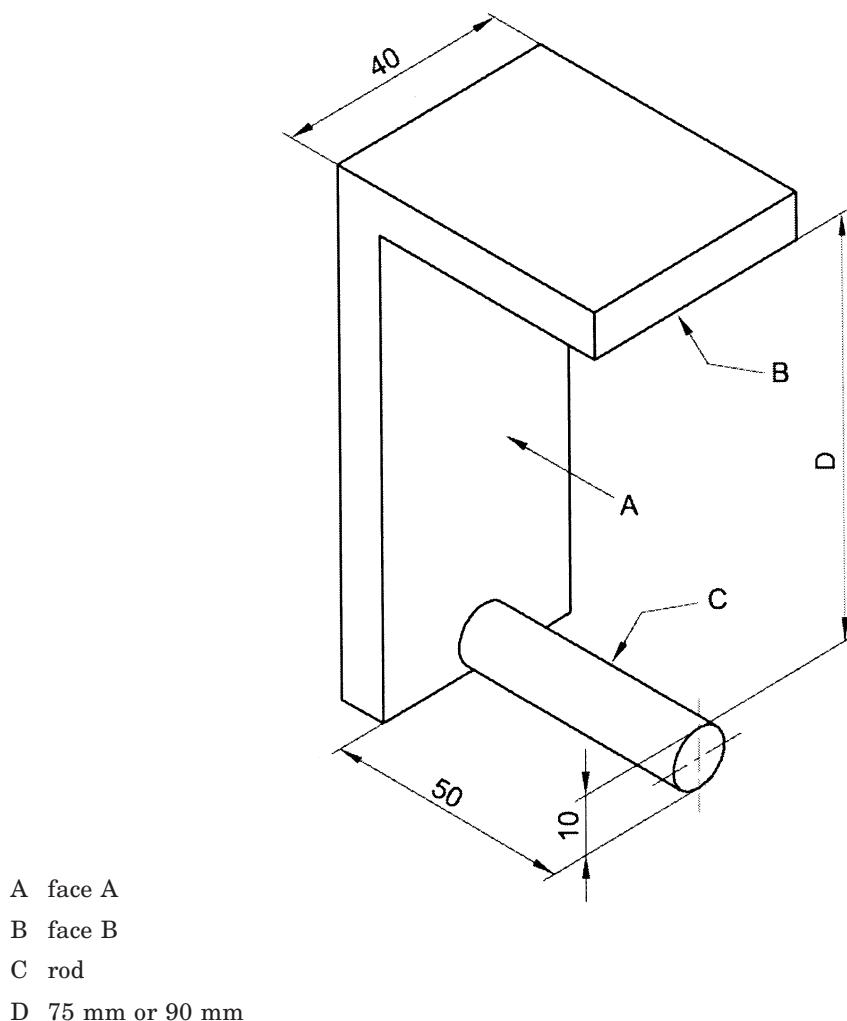


Figure 1 Brake lever grip dimension gauge for Type A and Type B

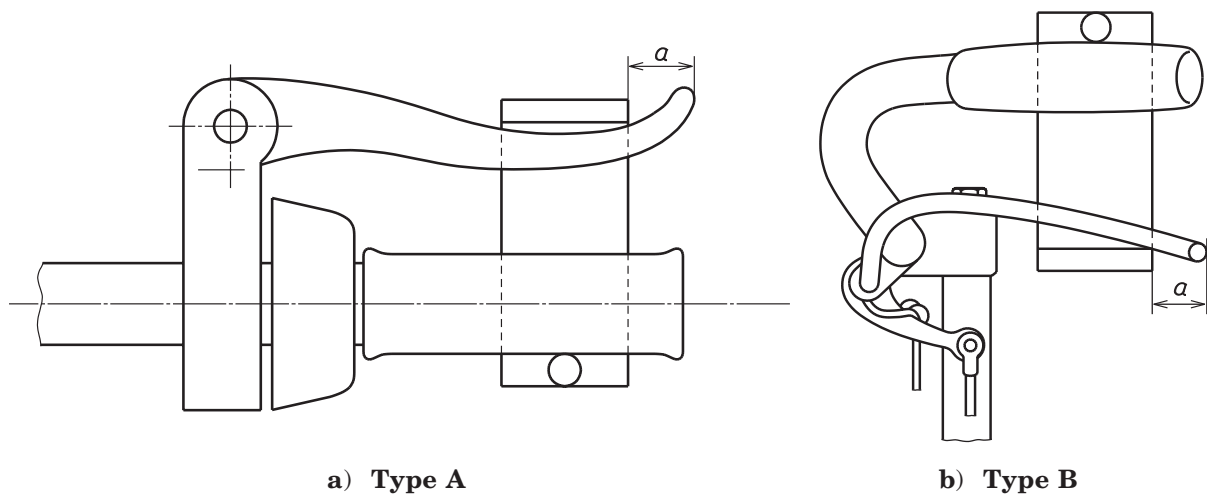
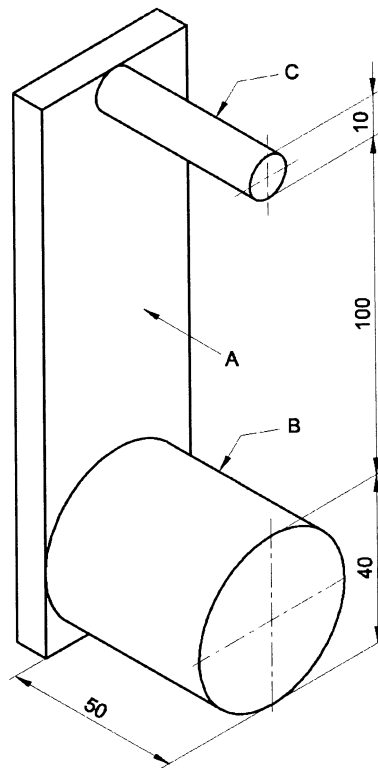


Figure 2 Method of fitting the gauge to the brake lever and handlebar

4.1.2 Test method for the brake lever similar to Type C

Fit the gauge illustrated in Figure 3 over the handlebar and brake lever as shown in Figure 4 so that face A is in contact with the handlebar grip (or handlebar) and the brake lever. Put the face of cylinder B in contact with the part of the grip intended for contact with the rider's hand and check if the requirements are met.

Unit: mm



- A face A
- B face of cylinder B
- C rod

Figure 3 Brake lever grip dimension gauge for Type C

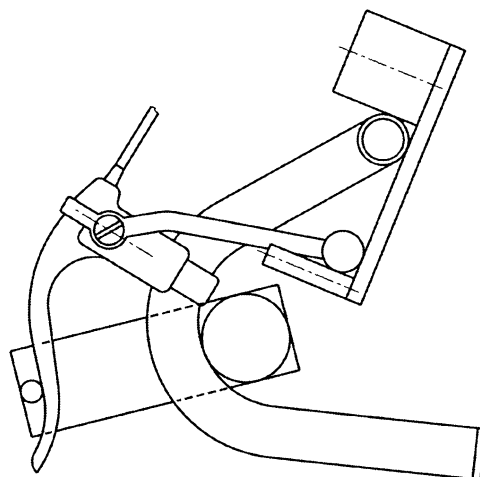


Figure 4 Method of fitting the gauge to the brake lever and handlebar for Type C

4.2 Brake levers — Position of applied force

4.2.1 Type A and Type B brake levers

For the purposes of braking tests, for brake levers similar to Type A or Type B, the test force shall be applied at a distance b , which is equal to either dimension a (see Figure 2) as determined in 4.1 or 25 mm from the free end of the brake lever, whichever is the greater (see Figure 5).

4.2.2 Type C brake levers

For the purposes of braking tests, for brake levers similar to Type C, the test force shall be applied at a distance of 25 mm from the free end of the brake lever (see Figure 5).

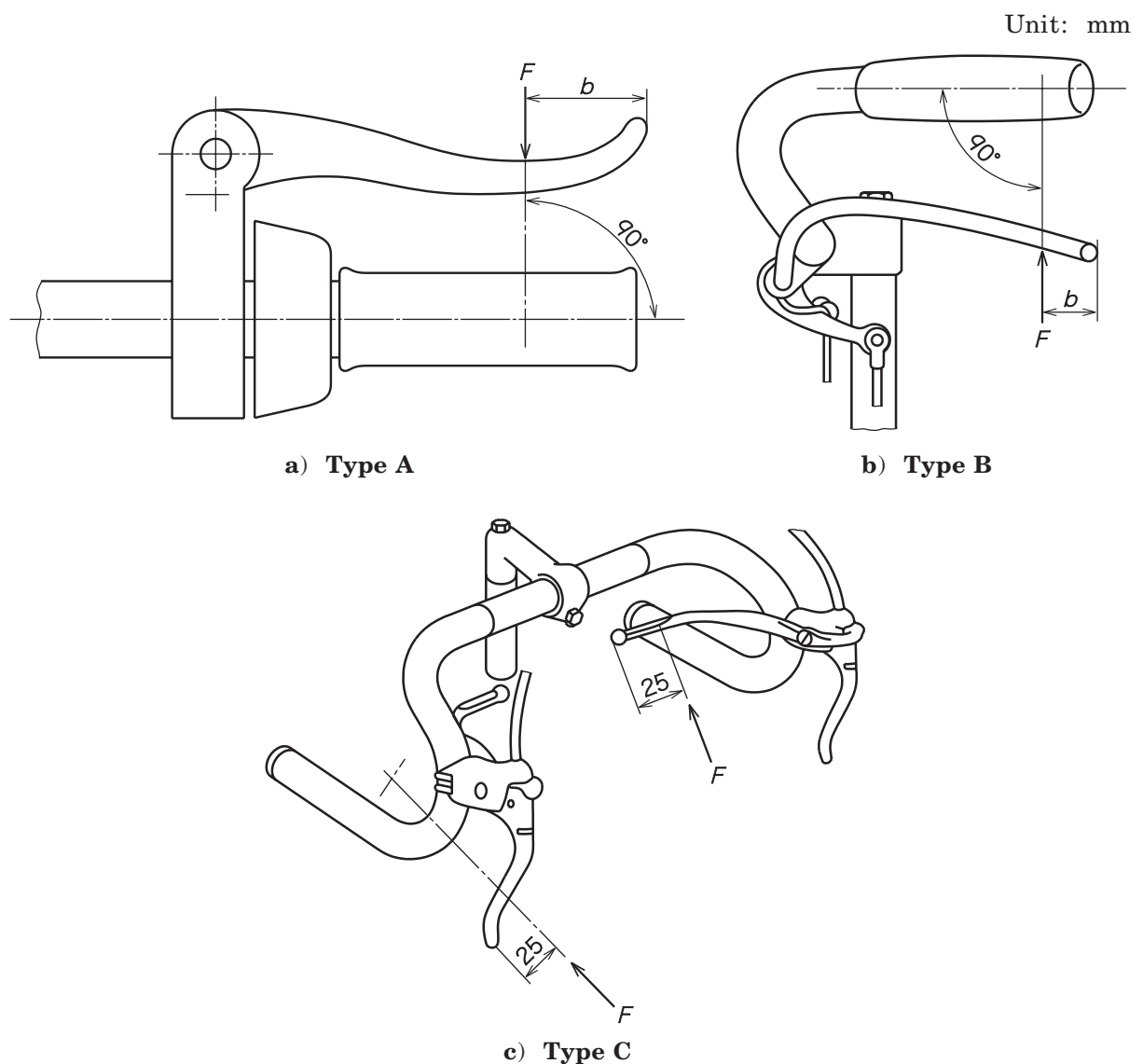


Figure 5 Position of applied force on the brake lever

4.3 Brake-block and brake-pad assemblies — Security test

Conduct the test on a fully assembled bicycle with the brakes adjusted to a correct position with a rider or equivalent mass on the saddle. Actuate each brake lever with a force of 180 N or a force sufficient to bring the brake lever into contact with the handlebar grip. Maintain this force while subjecting the bicycle to five forward and five rearward movements on a dry, flat pavement, each of which is not less than 75 mm in distance. After this test, examine for dislodgement or cracking of brake blocks or brake pads.

The tyres shall be inflated to the indicated inflation pressure (the maximum value if indicated in a range). The combined mass of the bicycle and rider (or equivalent mass) shall be $100\text{ kg} \pm 1\text{ kg}$.

Then conduct the test described in 4.4 or 4.5 as appropriate, depending on the style of brake, and then the test described in 4.6.

4.4 Hand-operated braking-system — Strength test

Conduct the test on a fully assembled bicycle. After it has been ensured that the braking system is adjusted according to the recommendations in the manufacturer's instructions, apply a force to the handlebar grip or handlebar (where the manufacturer does not fit a grip) in the operating plane of the lever at the point specified in 4.2. This force shall be 450 N, or such lesser force as is required to bring

- a) a brake lever into contact with the handlebar grip or the handlebar where the manufacturer does not fit a grip,
- b) a secondary brake lever to the end of its travel, or
- c) a brake extension lever level with the surface of the handlebar or in contact with the handlebar.

Repeat the test 10 times on each brake lever, secondary brake lever, or extension lever. After this test, examine the brake system and components thereof for any abnormalities.

4.5 Back-pedal braking system — Strength test

After the bicycle has been ensured that the braking system is correctly adjusted, and with the pedal cranks in a horizontal position, as shown in Figure 6, apply a vertically downward force to the centre of the left-hand pedal spindle. Increase the force progressively to 1 500 N and maintain fully for 1 min. Repeat the test 10 times and examine the brake system and components thereof for any abnormalities.