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Windows and doorsets — Determination
of opening and closing forces

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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 Sash Manufacturers Association (JSMA)/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 A 1519** : 1996), which has been technically revised.

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NOTE Based on Article 9 of the Supplementary Provisions to the Unfair Competition Prevention Act etc., any submission of proposal, or employment of procedures such as deliberation by the Japanese Industrial Standards Committee under the previous Industrial Standardization Act shall be deemed to have been conducted pursuant to the provision of Article 12, paragraph (1) of the revised Industrial Standardization Act.

Windows and doorsets — Determination of opening and closing forces

Introduction

This Japanese Industrial Standard has been prepared based on **ISO 9379** : 2005, Edition 2, with some modifications of the technical contents to reflect the conditions unique to Japan.

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. The comparison table between previous and current editions of this Standard on technically significant revisions is given in Annex JB.

1 Scope

This Standard specifies, among the performance test methods listed in **JIS A 1513**, the method for determining the opening and closing forces of windows and doorsets using weights.

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

ISO 9379 : 2005 *Operating forces — Test method — Doors* (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 reference

The following standard contains provisions which, through reference in this text, constitute provisions of this Standard. The most recent edition of the standard (including amendments) indicated below shall be applied.

JIS A 1513 Windows and doorsets — General rule for test method

3 Terms and definitions

For the purpose of this Standard, the following terms and definitions apply.

3.1

opening and closing forces

generic term for the force required to open the sash/leaf and the force required to close the sash/leaf. It is expressed by a value of the force produced by weight that disregards the mass of the cord and resistance of the pulley.

3.2

closed position

position of the sash/leaf where the sash/leaf is fully closed and ready to be locked

3.3

opening force

force required to move a sash/leaf from a closed position to a specified opened position

3.4

closing force

force required to move a sash/leaf from a specified opened position to a closed position

3.5

swing

type of window/doorset whose sash(es)/leaf(ves) moves outside the plane of the frame

3.6

sliding

type of window/doorset whose sash(es)/leaf(ves) moves within the plane of the frame

4 Test apparatus

The test apparatus mainly consists of the following elements **a)** to **c)** (see Figures 1 to 3).

- a) **Specimen mounting rig**, constructed to enable mounting of a specimen as in normal service, and sufficiently rigid to withstand test loads without generating any sort of deformation that may affect the test results.
- b) **Weight**, attached to a jig for suspending it, and made of metal or other material sufficiently durable and non-hygroscopic (see Figure 1).

The weight shall be accurate to ± 5 % in mass, and shall be adjustable to the nearest 1 N for the purpose of measurement.

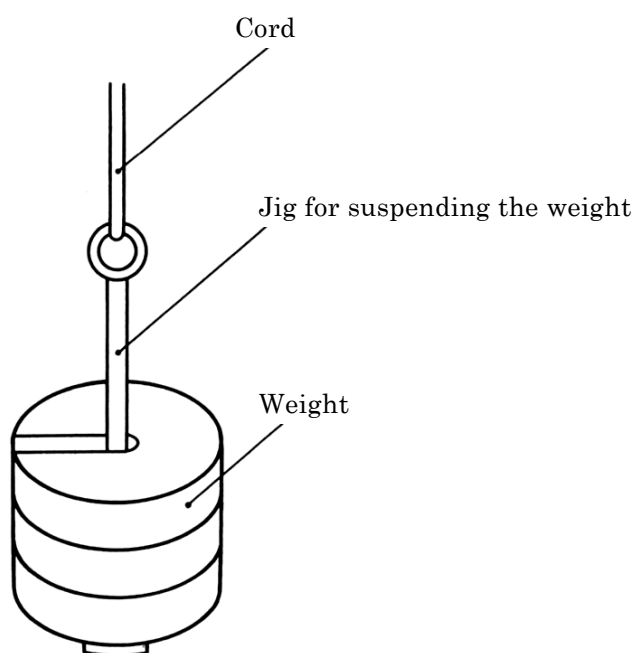


Figure 1 Weight (example)

- c) **Loading equipment with weight**, consisting of a cord for suspending a weight and a pulley for guiding the action direction of the weight.
- 1) The cord shall be 6 mm or under in diameter, strong enough to withstand the loads and impacts during the test, and free from significant elongation that may affect the test results.
 - 2) The pulley shall smoothly move with small resistance so as not to obstruct the cord movement and shall be fixed to resist any positional movement during the test.
 - 3) The cord shall be fastened to the specimen by use of a jig with enough durability to withstand the loads and impacts during the test. A jig need not be used if the cord can be directly attached to the handle or other part at the loading position.

5 Specimen and specimen mounting frame

5.1 Specimen

The specimen shall be fully assembled as it would be in actual service.

5.2 Specimen mounting frame

A specimen mounting frame may be used when attaching the specimen directly to the specimen mounting rig is difficult. The specimen mounting frame shall be sufficiently rigid for the intended test purpose.

6 Test method

6.1 Mounting of specimen

The specimen shall be fixed to the specimen mounting rig or specimen mounting frame so that it is plumb, square, and without twists and bends.

6.2 Test environment

The test environment shall be in accordance with 3.3 of JIS A 1513, and free from draft.

Other environmental condition than given above may be applied upon agreement between the interested parties.

6.3 Test items

The test items shall be as given in Table 1.

The tests to perform and the required values of opening and closing forces in the confirmation test shall be as specified in a specific product standard, or if not adopting the requirements in the specific product standard, as agreed between the interested parties.

Table 1 Test items

Test item	Description	Test procedure given in
Opening force confirmation test	Test to confirm that a sash/leaf in the closed state can be opened with the specified force	6.4 a)
Opening force measurement test	Test to determine the minimum force required to open a sash/leaf in the closed state	6.4 b)
Closing force confirmation test	Test to confirm that a sash/leaf in the open state can be closed with the specified force	6.4 c)
Closing force measurement test	Test to determine the minimum force required to close a sash/leaf in the open state	6.4 d)

6.4 Test procedure

The procedure of each test item is shown in a) to d).

a) **Opening force confirmation test**, as follows (see Figure 2).

- 1) **Opening and closing actuation** Open and close the sash/leaf five times, while also performing locking and unlocking operation, to check that it operates normally, and then secure in the locked state.
- 2) **Attachment of cord** Fasten the cord to the handle or other part of the sash/leaf at which the load is to be applied. If the sash/leaf does not have a specific loading position ¹⁾, fasten the cord to the approximate centre of the edge rail/stile, interlocking rail/stile or other similar part of the specimen. The pulley shall be fixed so that the force is applied vertically to the sash/leaf in the case of a swing type and