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**Doorsets — Diagonal deformation test
under static load**

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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 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 A 1521** : 1996 is replaced with this Standard.

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Doorsets — Diagonal deformation test under static load

Introduction

This Japanese Industrial Standard has been prepared based on **ISO 15822**, the first edition of which was published in 2007 according to the proposal by Japan, while modifying some of its technical contents to reflect the conditions unique to Japan.

The dotted underlines indicate changes from the corresponding International Standard. A list of modifications with the explanations is given in Annex JB. The comparison table between previous and current editions of this Standard on technically significant revisions is given in Annex JC.

1 Scope

This Standard specifies, among the performance test methods listed in **JIS A 1513**, the method for evaluating the opening function of single swing doorsets under in-plane diagonal deformation by in-plane static load.

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

ISO 15822 : 2007 *Test method of doorset opening performance in diagonal deformation — Seismic aspects* (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

doorset

door unit consisting of a door frame and a door leaf, pre-assembled at the factory so that it can be treated as one integral component when installed at the site

3.2

diagonal deformation

degree of opening/closing of a door leaf that is possible when the frame of a doorset is forced to deform in the in-plane direction

3.3

in-plane displacement

ratio of difference in amounts of horizontal movements of upper and lower ends of the doorset frame to the distance between the vertical measuring points, designated in units of radians

3.4

positive force application

on a relative basis, application of force in the direction that moves the head of the specimen from the lock side to the hinge side in relation to the sill of the specimen (see Figure 1)

3.5

negative force application

on a relative basis, application of force in the direction that moves the head of the specimen from the hinge side to the lock side in relation to the sill of the specimen (see Figure 1)

3.6

opening force

force applied to open the door leaf

3.7

operating force

force or torque required to operate a lock or a handle

4 Test apparatus

The test apparatus mainly consists of the following elements, which are illustrated in Figures 1 to 4. Details of the test apparatus are provided in Annex JA.

- a) **Specimen mounting rig**, constructed to enable mounting of a specimen as in normal service as shown in Figures 1 and 2, of which the constituting parts are sufficiently rigid to withstand the force applied during the test and are assembled together with pin-joints. Although Figure 1 shows an example of a rig in which the upper horizontal rig frame is moved while the lower horizontal rig frame is fixed, a rig of the opposite method to this may be used where the lower horizontal rig frame is moved while the upper horizontal rig frame is fixed.
- b) **Force application device**, capable of applying a static force to the specimen mounting rig as shown in Figure 1 by means of a hydraulic jack etc. to produce a specified displacement in the in-plane direction.

- c) **Displacement measuring device**, capable of measuring the displacement at measuring points as shown in Figure 5 at least to the nearest 0.1 mm, and calibrated periodically.
- d) **Opening force measuring device**, capable of applying a force near the handle of a door leaf in closed position in the door opening direction vertical to the plane of the door leaf and also capable of measuring the opening force at least to the nearest 10 N. Although Figure 3 shows an example of a device that is a combined unit of a hydraulic jack and a load cell, other device may be used as long as the given requirement is met.
- e) **Operating force measuring device**, capable of measuring the operating force of a lock and a handle at least to the nearest 1 N, or at least to the nearest 0.1 N · m. Typically, a push pull scale, a spring balance or other force measuring device is used for locks/handles which are operated by linear force, and a torque driver shown in Figure 4 or other torque measuring device is used for locks/handles, e.g. thumb turns, which are operated by rotational force; however, other devices may be used as long as the given requirement is met.

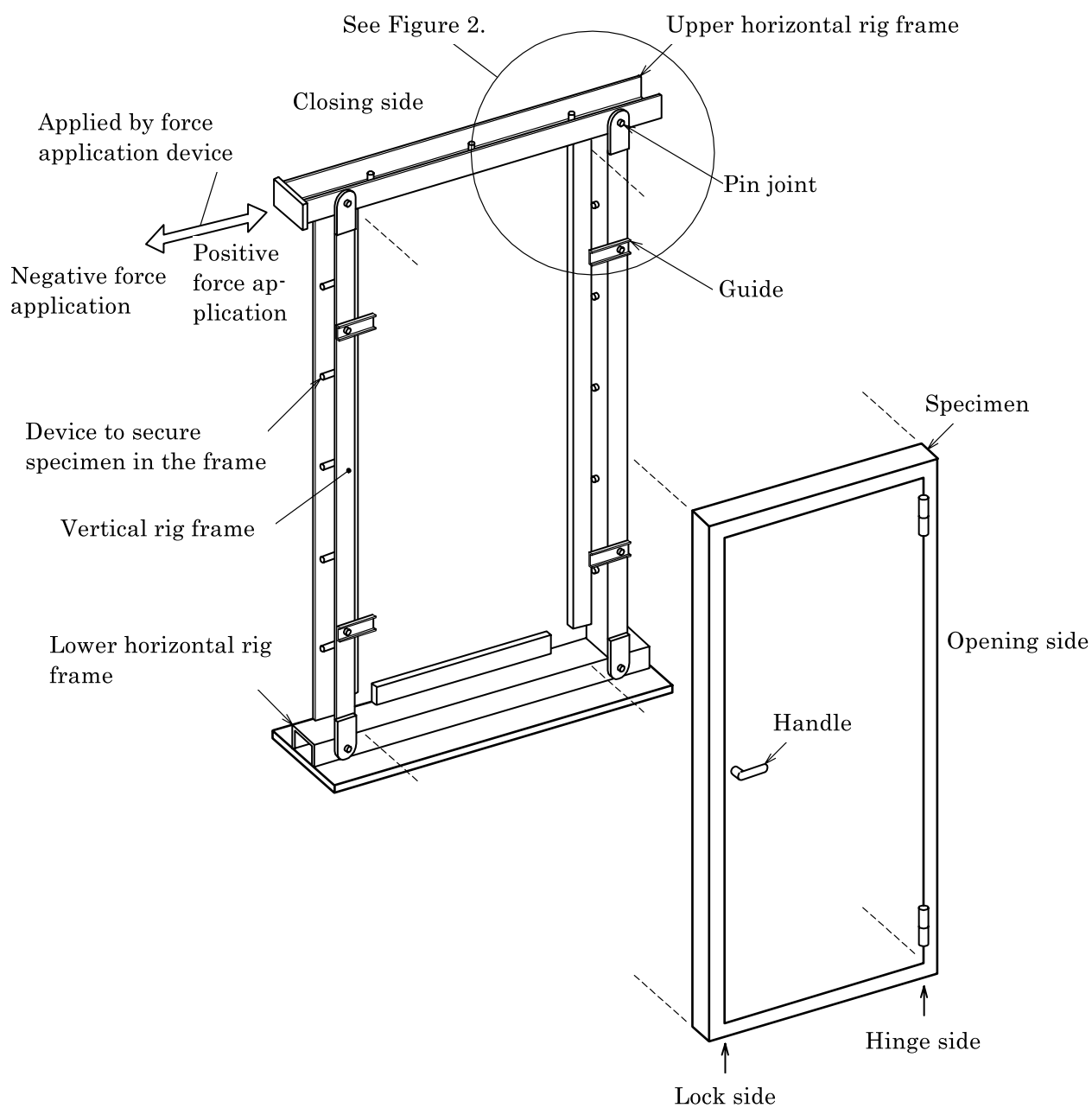
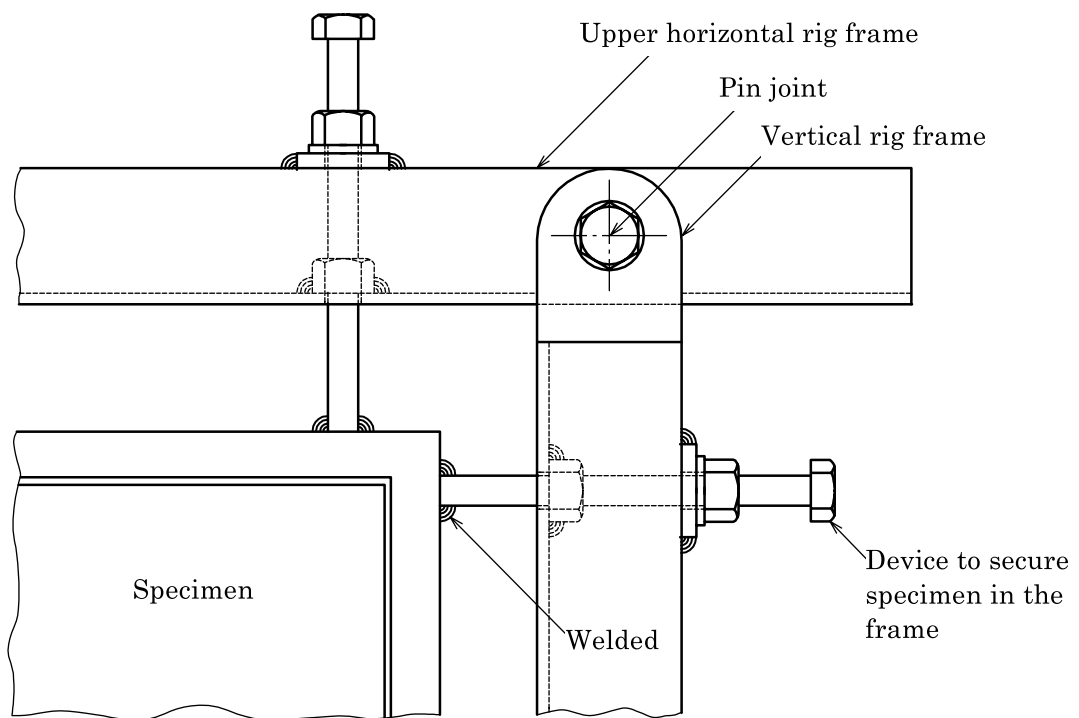
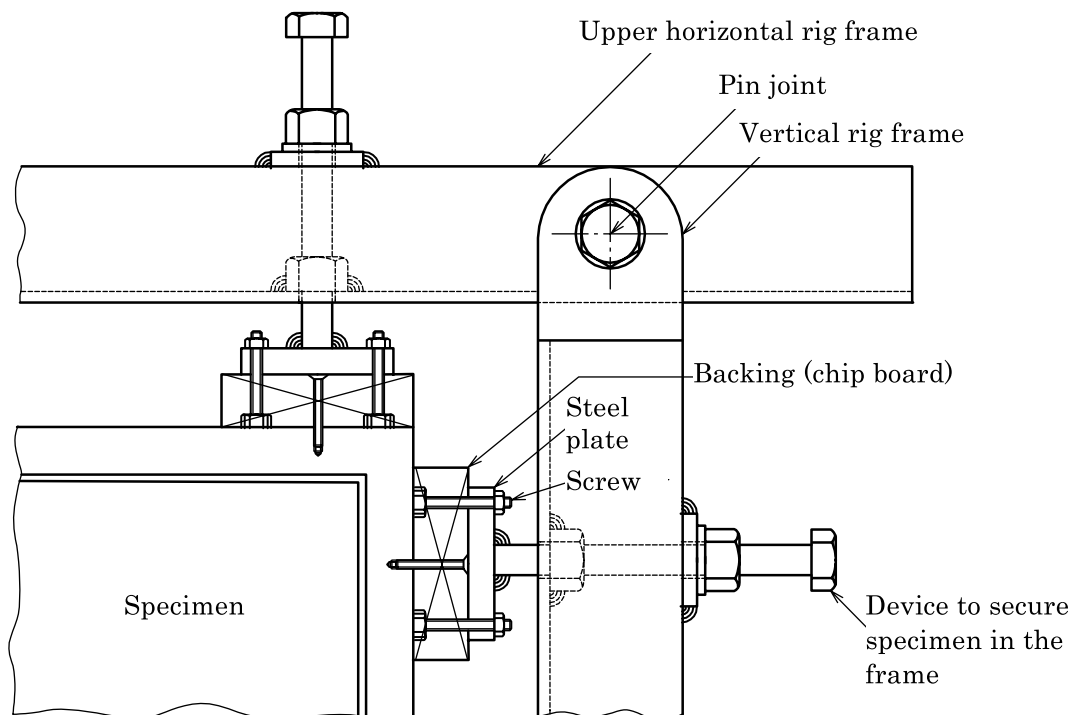


Figure 1 Specimen mounting rig (example)



a) Example of specimen secured by welding



b) Example of specimen secured by screws

Figure 2 Detailed drawings of parts of specimen mounting rig (example)

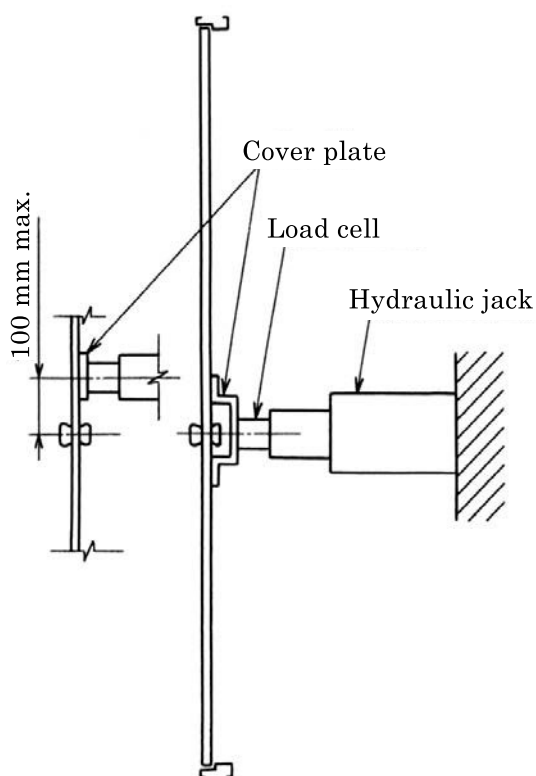
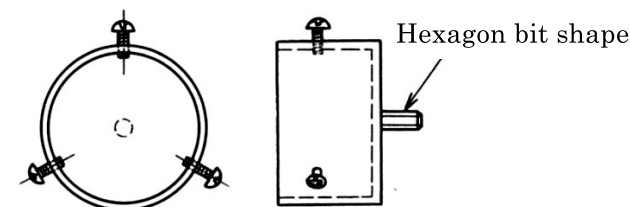
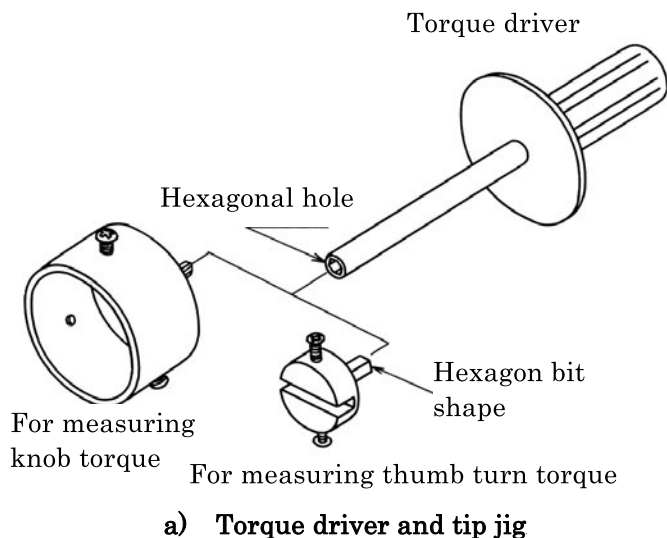


Figure 3 Opening force measuring device (example)



b) Details of tip jig for measuring knob torque

Figure 4 Unlocking torque value measuring device (example)

5 Specimen

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

If the specimen contains a glazed area, it shall be glazed as in the actual service.

6 Test

6.1 Mounting of specimen

The specimen shall be fixed to the specimen mounting rig 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. Other environmental condition than given above may be applied upon agreement between the interested parties.

6.3 Test procedure

Perform the following procedures (see Figure 6).

- Opening and closing actuation** Open and close the door leaf five times, while also performing locking and unlocking operation, to check that it operates normally,