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Blind rivets—Mechanical testing

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Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee according to the proposal of establishing a Japanese Industrial Standard from The Japan Research Institute for Screw Threads and Fasteners (JFRI)/Japanese Standards Association (JSA), with a draft of Industrial Standard based on the provision of Article 12 Clause 1 of the Industrial Standardization Law.

This Standard has been made based on **ISO 14589 : 2000** *Blind rivets—Mechanical testing* for the purposes of making it easier to compare this Standard with International Standard; to prepare Japanese Industrial Standard conforming with International Standard; and to propose a draft of an International Standard which is based on Japanese Industrial Standard.

Attention is drawn to the possibility that some parts of this Standard may conflict with a patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have technical properties. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying the patent right, application for a patent after opening to the public, utility model right or application for registration of utility model after opening to the public which have the said technical properties.

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In the event of any doubts arising as to the contents,
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Blind rivets—Mechanical testing

Introduction This Japanese Industrial Standard has been prepared based on the first edition of ISO 14589 : 2000 *Blind rivets—Mechanical testing* without modifying the technical contents.

1 Scope This Standard specifies the methods of mechanical testing execute under the ambient temperature of 10 °C to 35 °C of blind rivets (hereafter referred to as “rivets”) including:

- shear test (see clause 3),
- tensile test (see clause 3),
- mandrel head retention capability test (see clause 4),
- mandrel push out resistance test (prior to setting) (see clause 5), and
- mandrel break load test (see clause 6).

It applies to blind rivets with nominal diameters up to and including 6.4 mm.

NOTE : The International Standard corresponding to this Standard is as follows.

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.

ISO 14589 : 2000 *Blind rivets—Mechanical testing* (IDT)

2 Normative references The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS B 7721 *Verification and calibration of the force measuring system of the tension/compression testing machines*

NOTE : ISO 7500-1 : 1999 *Metallic materials—Verification of static uniaxial testing machines—Part 1 : Tension/compression testing machines—Verification and calibration of the force-measuring system* is equivalent to the said standard.

3 Shear and tensile test

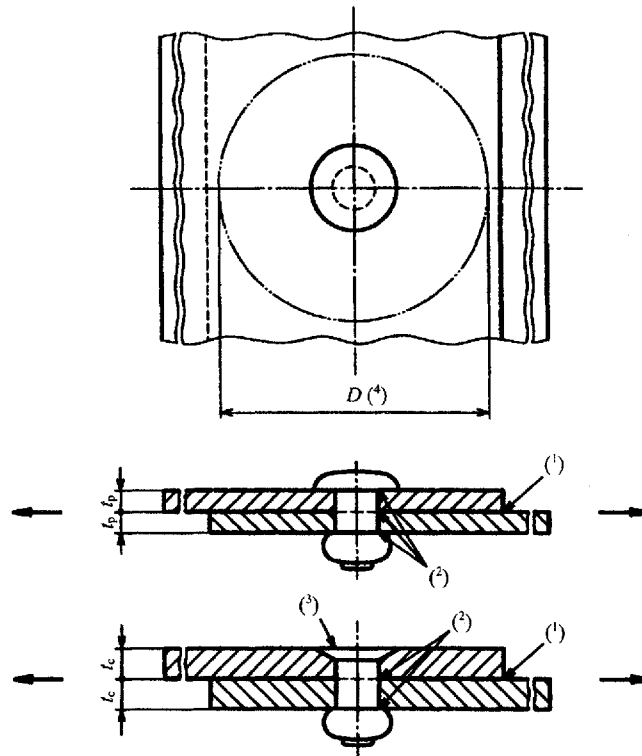
3.1 Principle of shear and tensile tests The tests consist of straining a blind rivet which is set in a test fixture by a shear load or tensile load to failure.

3.2 Test fixtures for shear and tensile tests Two test fixtures are specified for each of both test methods. The test fixtures specified in 3.2.1.1 and 3.2.2.1 may be used for routine testing. The test fixtures specified in 3.2.1.2 and 3.2.2.2 may also be used for routine testing but are decisive in the case of dispute and are the referee test fixtures in such cases.

3.2.1 Test fixtures for shear testing

3.2.1.1 Routine shear testing See figure 1 for basic dimensions.

Surface roughness in micrometres



Notes (1) Surface roughness: $Rz4$

(2) There shall be no burrs at the corners of the test clearance holes.

(3) Countersink angle shall be the nominal angle of the rivet head with the tolerance $\begin{smallmatrix} 0 \\ -2^\circ \end{smallmatrix}$.

(4) Minimum circular plane area around the axis of the specimen with diameter $D = 25$ mm.

Figure 1 Test fixture for routine shear testing

The test plates shall be made of steel having a hardness of not less than 420 HV30. To minimize the effect of distortion under load, fitted steel bolts should be used for attachment to the testing machine.

Test plates shall be discarded when the test clearance holes to accommodate the test rivet are no longer round, show signs of wear or damage or exceed the maximum diameter specified in table 2.

For plate thicknesses and test clearance hole diameters see 3.2.3.

3.2.1.2 Referee shear testing The inserts used in the test fixture according to figure 3 shall have dimensions and finish as given in figure 2.

The inserts shall be made of hardened and tempered steel and shall have a hardness of 700 HV30 minimum. The test fixture which accommodates the test inserts shall be self-aligning when mounted in the tensile testing machine.