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JIS

JAPANESE INDUSTRIAL STANDARD

Test method for compressive properties of fiber reinforced metals

JIS H 7407—1995

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In the event of any doubt arising,
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Test method for compressive properties of fiber reinforced metals

H 7407-1995

1. Scope This Japanese Industrial Standard specifies the test method for compressive properties in atmospheric pressure at room temperature of metal matrix composite reinforced with continuous fiber.

Remarks: The following standards are cited in this Standard:

JIS B 7502 Micrometer callipers

JIS B 7507 Vernier, dial and digital callipers

JIS B 7733 Compression testing machines

JIS H 7006 Glossary of terms used in metal matrix composites

JIS Z 8401 Rules for rounding off of numerical values

2. Definitions For the main terms used in this Standard, the definitions given in JIS H 7006 apply, and the rest of the terms are as follows.

(1) compressive stress Such a value that the compressive load applied to a test piece at any time during a compressive test is devided by the original area of the gauge part of the test piece.

(2) compressive strength The maximum compressive stress sustained by the test piece during a compressive test.

(3) compressive strain A value that the variation of gauge length caused in the loading direction of a test piece due to the compressive load is divided by the original gauge length.

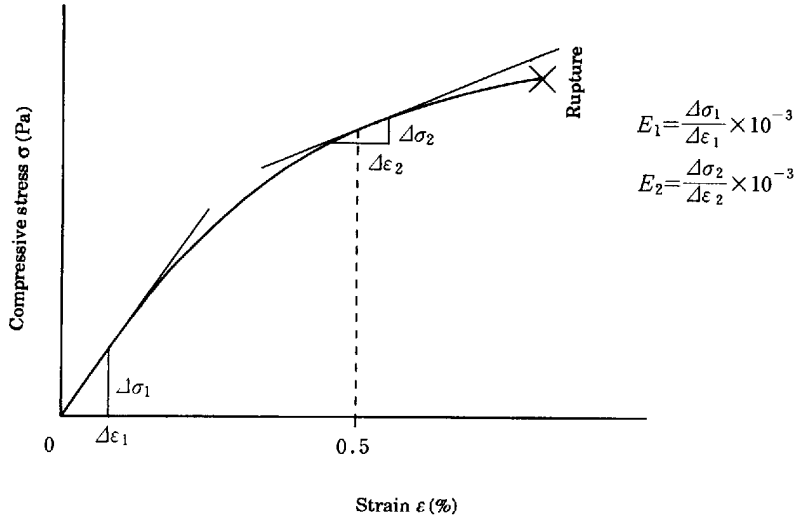
(4) maximum compressive strain The compressive strain corresponding to a compressive strength.

(5) compressive modulus The compressive stress during a compression test divided by the compressive strain. Here, it means the following:

(a) A value which is obtained from the inclination of the initial straight part in the compressive load/compressive strain diagram or compressive stress/compressive strain diagram. Its quantity symbol is E_1 (see Figure 1).

(b) The value which is obtained from the inclination of the tangent line drawn at a 0.5% strain in the compressive load/compressive strain diagram or compressive stress/compressive strain diagram. Its quantity symbol is E_2 (see Figure 1).

Fig. 1. Example of compressive stress/compressive strain diagram



(6) Poisson's ratio The absolute value of the ratio of strain ε_t in a direction normal to the direction of compressive stress to strain ε_1 in the direction of compression in the initial straight part of the compressive load/compressive strain diagram or compressive stress/compressive strain diagram.

(7) gauge part Parallel part of a test piece excepting a part to which the tub is stuck.

3. Classification of test method The test methods are classified as follows according to the difference in test jigs to be used.

(1) Method A A method which employs a test jig, of improved ≠ form.

(2) Method B A method which employs a test jig, of conical form.

4. Test equipment and apparatus

4.1 Testing machine The testing machine shall be capable of keeping the transfer speed of cross head constant during testing, and the machine of at least grade 1 specified in JIS B 7733 shall be used.

A closed loop system electrohydraulic material tester may be used.

4.2 Deformation indicator The deformation indicator shall be capable of recording continuously variation in strain during the test via the strain gauge stuck to a test piece, and capable of indicating strain at a precision within ±1% of the strain or better at the set test speed.

4.3 Testing jig The testing jig is intended to prevent buckling of test piece during a test. Its materials shall be tool steel. Examples of the shape and dimensions of the test jig used in method A or method B are shown in Figures 2 and 3.

(1) Testing jig for method A One set of the testing jig for method A shall consist of one set of improved ヰ formed parts (A) and (B), one pedestal part (C), four fastening bolts (D) and (E), and two cap parts (F) as given in Figure 2.

When the test piece is mounted to the jig, it may be bolted by using a washer, if necessary.

Fig. 2. Shape and dimensions of testing jig for method A (example)

(1) Assembly drawing

Unit: mm

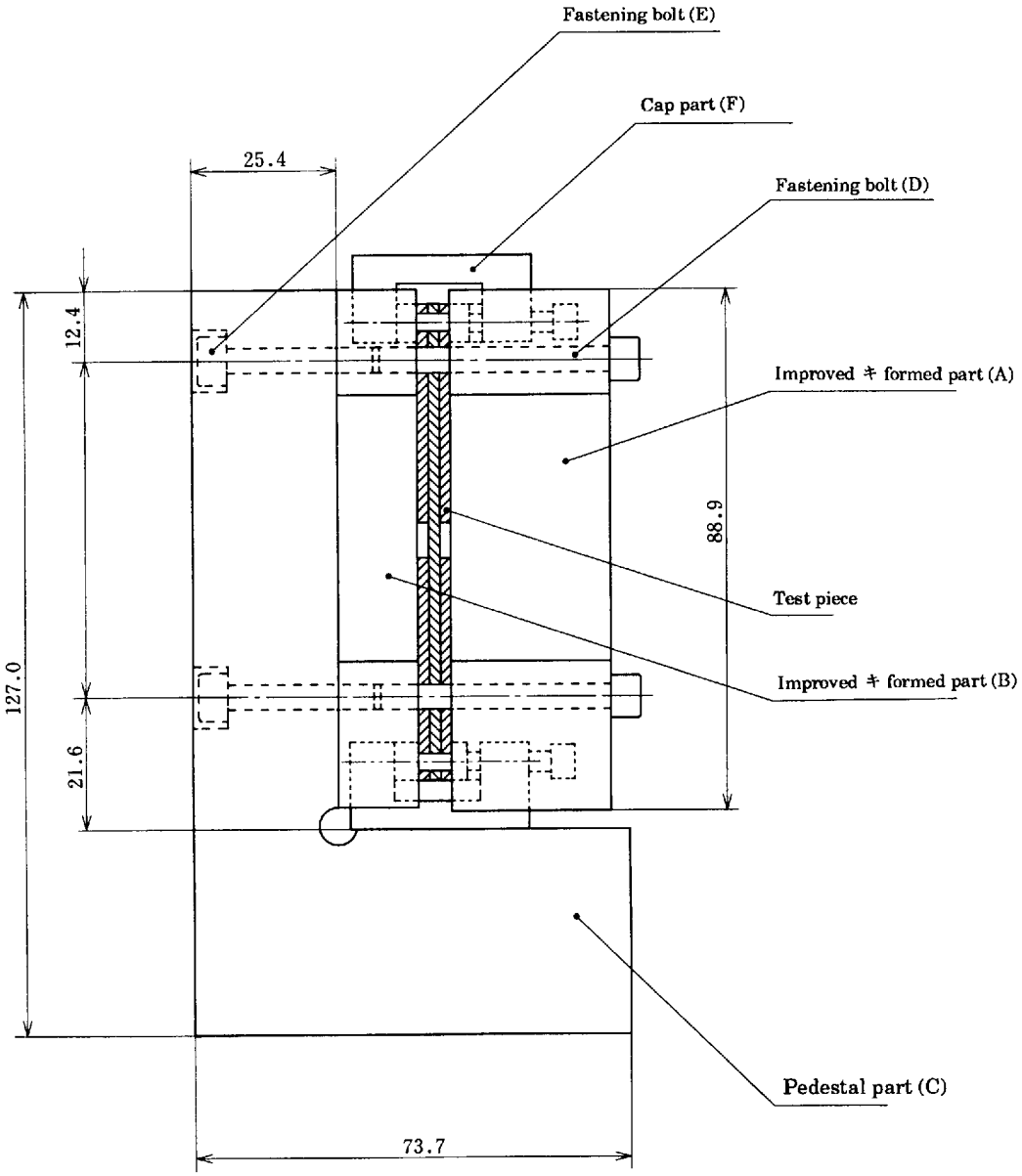
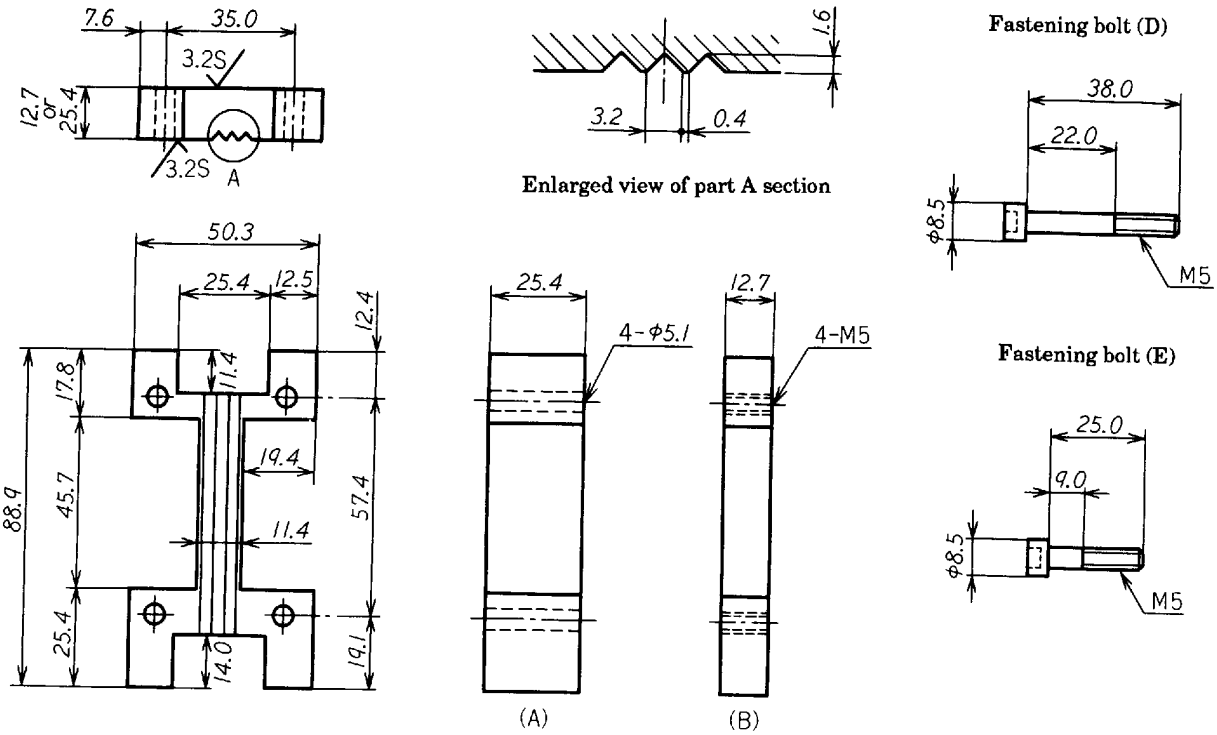


Fig. 2. (continued)
(2) Disassembly drawing for jig proper

Unit: mm

Improved ∗ formed parts (A) and (B)



Pedestal part (C)