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JAPANESE INDUSTRIAL STANDARD

Method of Repeated Tension Fatigue Testing for Fusion Welded Joints

JIS Z 3103—1987

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In the event of any doubt arising,
the original Standard in Japanese is to be final authority.

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Method of Repeated Tension Fatigue Testing for
Fusion Welded Joints

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1. Scope

This Japanese Industrial Standard specifies the general repeated tension fatigue test, hereinafter referred to as the "test", at room temperature and in the atmosphere for butt welded joint and fillet welded joint test pieces by various arc welding methods for structural steel plates, taking the fatigue life of number of cycles of 10^5 or more as object, on condition that the plate thickness is 4 mm or more.

Remark: The units and numerical values given in { } in this Standard are in accordance with the International System of Units (SI) and are appended for informative reference.

Further, the traditional units and numerical values, together with the accompanying SI units and the converted values based on them in parentheses given in this Standard, all of these shall be converted, January 1, 1991, to the units and numerical values specified in Appendix.

2. Definitions

For the purposes of this Standard, the principal definitions regarding fatigue given in 2. of JIS Z 2273 except the following apply:

- (1) load-carrying cruciform fillet welded joint A joint form of which two sheets of main plate, jointed approximately at right angles with respect to a through plate, carry load (see Fig. 3).
- (2) non-load-carrying cruciform fillet welded joint (ribbed cruciform fillet welded joint) A joint form of which one sheet of load-carrying main plate is jointed with two sheets of attachment plates in cruciform approximately at right angles (see Fig. 4).
- (3) main plate In a cruciform fillet welded joint, the plate which carries the load through gripping device of the testing machine (see Fig. 3 and Fig. 4).
- (4) through plate In the load-carrying cruciform fillet welded joint, the plate which is jointed approximately at right angles between the two sheets of main plate (see Fig. 3).
- (5) attachment plates In the non-load-carrying cruciform fillet welded joint, the plates which are jointed approximately at right angles to both surfaces of one sheet of the main plate (see Fig. 4).

Applicable Standards:

JIS Z 2273-General Rules for Fatigue Testing of Metals

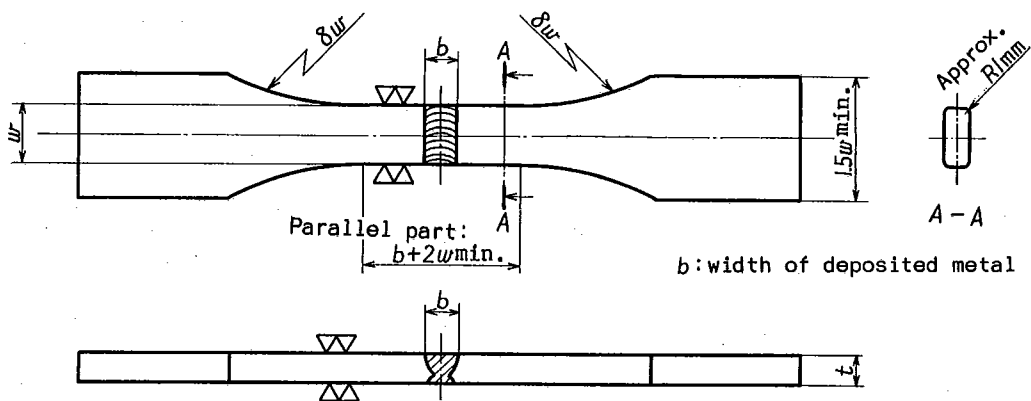
JIS Z 8401-Rules for Rounding off of Numerical Values

3. Test Pieces

3.1 The test piece of the finished butt welded joint shall generally be in accordance with Fig. 1. In addition, w/t shall be 2 or over.

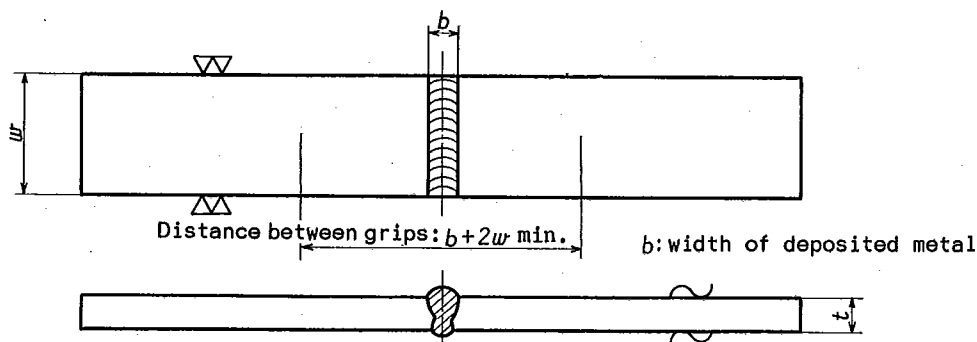
Further, the dimensions may be determined by agreement between the parties concerned, as required. The test piece should preferably be so finished that the streaks run parallel in the loading direction.

Fig. 1. Test Piece of Finished Butt Welded Joint



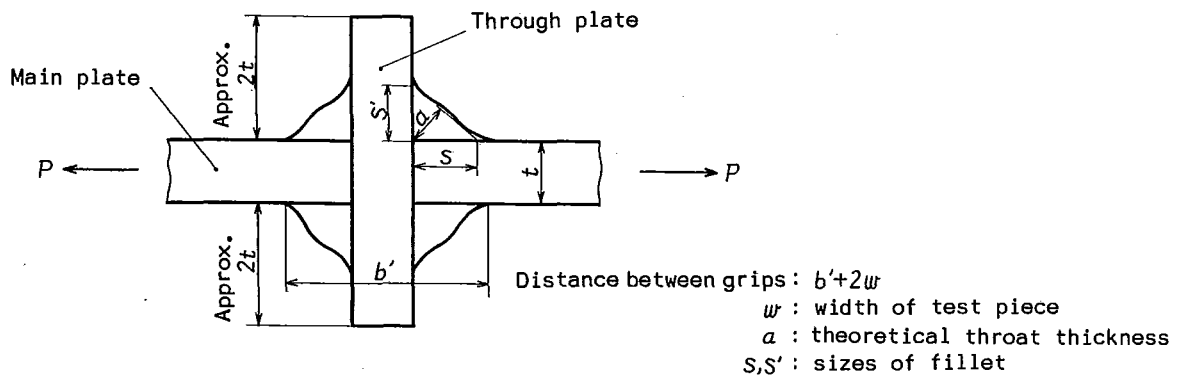
3.2 The test piece of the non-finished butt welded joint shall generally be in accordance with Fig. 2. However, if it is anticipated that breakage could occur in the gripped part, the shape of the test piece shall be in accordance with the test piece of finished butt welded joint of 3.1, as appropriate. In addition, w/t shall generally be 2 or over, and w be 25 mm or over. Further, its dimensions may be determined by agreement between the parties concerned, as required.

Fig. 2. Test Piece of Non-finished Butt Welded Joint



3.3 The shape of the test piece of the load-carrying cruciform fillet welded joint shall be in accordance with the test piece of the non-finished butt welded joint of 3.2, as appropriate. Nomenclature of each part of the joint and measuring method of principal dimensions shall be in accordance with Fig. 3.

Fig. 3. Nomenclature of Each Part of Load-Carrying Cruciform Fillet Welded Joint and Measuring Method of Principal Dimensions



3.4 The shape of the test piece of the non-load-carrying cruciform fillet welded joint (ribbed cruciform fillet welded joint) shall be in accordance with the test piece of the non-finished butt welded joint, as appropriate. Nomenclature of each part of the joint and measuring method of principal dimensions shall be in accordance with Fig. 4.

Fig. 4. Nomenclature of Each Part of Non-load Carrying Cruciform Fillet Welded Joint (Ribbed Cruciform Fillet) and Measuring Method of Principal Dimensions

