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**Toughness test of link chains—
Impact test method of chain links**

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Foreword

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Toughness test of link chains— Impact test method of chain links

Introduction This Japanese Industrial Standard specifies the toughness test method for evaluating the safety, materials, low-temperature performance of link chains.

In addition, this Standard does not have the corresponding International Standard.

1 Scope This Standard specifies the impact test method of chain links (hereafter referred to as “test method”) for the toughness test of link chains.

Remarks : The chain link impact testing machine is specified in annex 1.

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

JIS B 0148 *Lifting equipments—Terminology*

JIS B 8812 *Link chain for chain hoists*

JIS G 0202 *Glossary of terms used in iron and steel (testing)*

JIS Z 2242 *Method of impact test for metallic materials*

3 Definitions For the purposes of this Standard, the definitions given in **JIS B 0148** and **JIS G 0202** and the following definitions apply.

- a) **chain link** each link which constitutes a link chain
- b) **J-shaped test piece** a test piece prepared by forming the chain link sampled from link chains into a J shape
- c) **wire diameter of J-shaped test piece (d)** the wire diameter of the parallel portion of a chain link (see figure 1)
- d) **chain link impact testing machine** the testing machine used for the impact test of a chain link
- e) **rated capacity energy (A_N)** energy designated by the manufacturer of the testing machine
- f) **absorbed energy of J-shaped test piece (E)** energy required for breaking a J-shaped test piece in performing the test
- g) **impact value of chain link (T_c)** the value calculated according to the following formula from the absorbed energy (E) of a J-shaped test piece obtained by performing the test

$$T_c = \frac{E}{d^3} \dots\dots\dots (1)$$

where, T_c : impact value of chain link (J/mm³)

E : absorbed energy of J-shaped test piece (J)

d : wire diameter of J-shaped test piece (actual measurement value) (mm)

- h) **distance between test-piece support and impact point (h)** the distance between the top surface of test-piece support and the blade edge when the blade edge comes in contact with the J-shaped test piece at the impact point (see figure 1 and figure 3)
- i) **impact point** the point where the blade edge of the pendulum⁽¹⁾ hung freely comes in contact with the J-shaped test piece fixed at the test-piece support (see figure 3)

Note ⁽¹⁾ Locate the blade edge at the lowest point of the pendulum.

4 J-shaped test piece

- a) The J-shaped test piece to be used shall be sampled from link chains⁽²⁾ used as a product.
- b) The shape of the J-shaped test piece shall be as shown in figure 1. The dimensions shall be as given in table 1.

Table 1 Dimensions of J-shaped test piece

Items	Dimensions
Distance between the test-piece support and the impact point (h)	$1.13d \pm 0.3$ (mm)
Depth of V notch (a)	$0.254d \pm 0.05$ (mm)
Angle of V notch (α)	45 ± 2 (°)
Radius at the edge of V notch (r)	0.25 ± 0.025 (mm)
Distance between the apex of chain link and the edge of V notch (b)	$2.1d \pm 0.1$ (mm)

- c) The V notch and the impact point shall be located at the parallel portion of a chain link.

Note ⁽²⁾ For example, the link chain which conforms to **JIS B 8812**.

Remarks 1 The J-shaped test piece shall be prepared by removing the weld of a link chain.

2 Do not overheat the J-shaped test piece when preparing it.

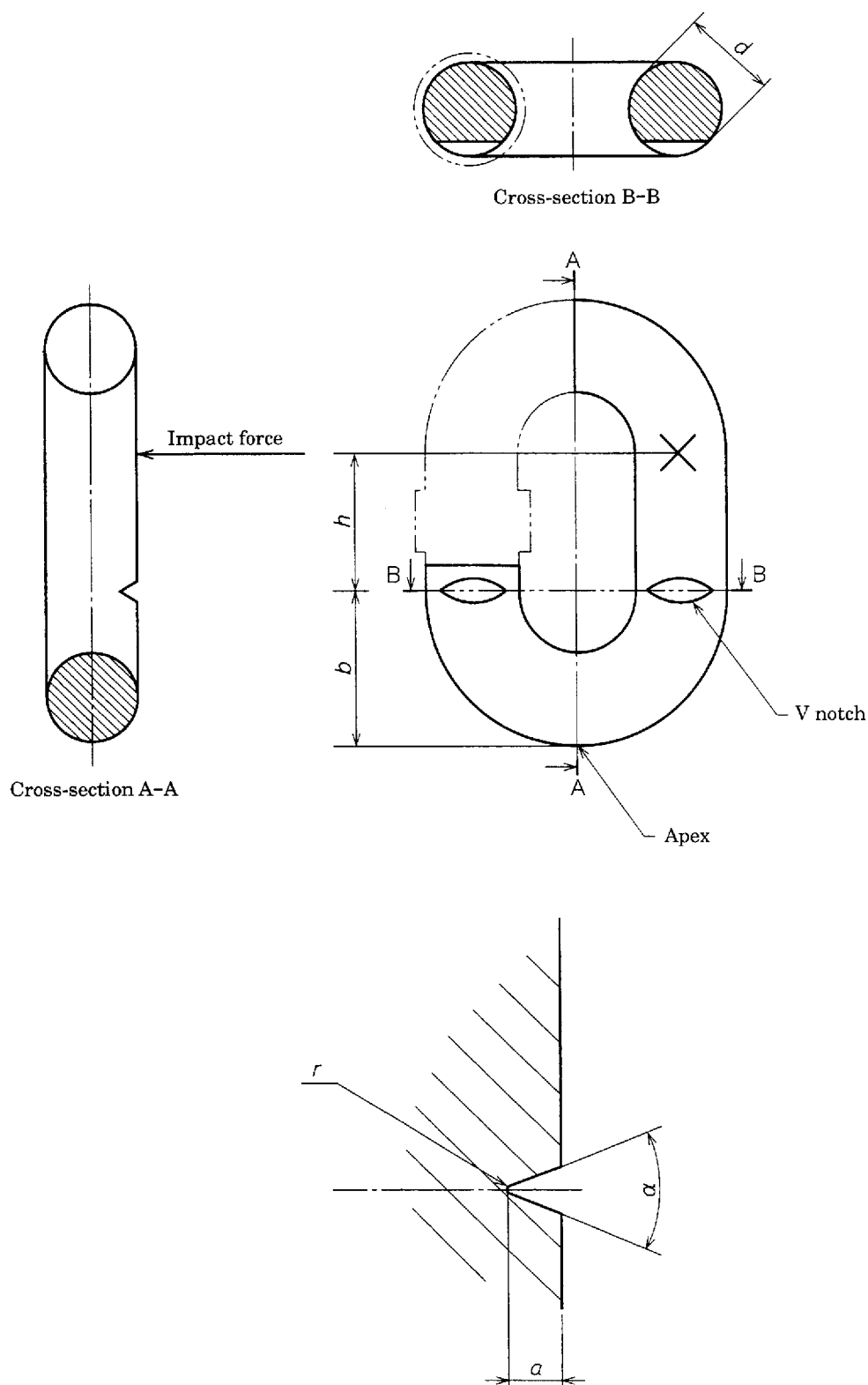


Figure 1 J-shaped test piece