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Eyebolts

ICS 21.060.10

Descriptors : eye fasteners, bolts

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of International Trade and Industry through deliberations at Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law:

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Eyebolts

1 Scope This Japanese Industrial Standard specifies the eyebolts (hereafter referred to as "bolts") to be used for general handling of materials such as lifting up of machineries.

Remarks : Normative references to this Standard are shown in Attached Table 2.

2 Working load The working load applied at vertical lifting by single bolt and 45 degree lifting⁽¹⁾ by double bolts shall be as shown in Attached Table 1.

Note (1) In the case of 45 degree lifting, the working load is given both when the bearing surfaces of bolts ensure perfect fit by spot facing or the like, and when vector of the rings of two bolts is in the same plane as indicated in the figure of Attached Table 1.

3 Mechanical properties

3.1 Proof load When bolts are tested in accordance with the specification in 10.1, there shall occur no failure at applying proof load shown in Table 1 or less and no permanent set at ring portion by 0.5 % or more.

Table 1 Proof load

Unit : kN

Nominal designation of screw	M8	M10	M12	M16	M20	M24	M30
Proof load ⁽²⁾	2.35	4.41	6.47	13.24	18.54	27.95	44.13
Tensile load ⁽³⁾	11.08	18.24	27.26	52.07	82.87	118.7	192.2

Nominal designation of screw	M36	M42	M48	M64	M80×6	M90×6	M100×6
Proof load ⁽²⁾	67.67	100.0	132.4	265	441	530	588
Tensile load ⁽³⁾	282.4	390.3	517.8	956.2	1 550	2 020	2 550

Notes (2) The value of proof load is three times that of working load.

(3) The tensile load refers to the value which the stress of 392 N/mm² is applied to the minimum recessed part (g) of screw specified in Attached Table 1.

3.2 Tensile strength When bolts are tested in accordance with the specification in 10.2 (1), it shall not be damaged with the tensile load shown in Table 1 or less. If the bolts, with nominal designation of M42 or larger, cannot be tested according to 10.2 (1), the tensile strength of the bolt shall be 392 N/mm² or more when tested by the specification in 10.2 (2).

3.3 Hardness The hardness of bolts shall be 62HRB to 88HRB when tested in accordance with the specification in 10.3.

There shall be no remarkable decarbonization on the surface of the bolts.

3.4 Microstructure When the microstructure of bolts is tested in accordance with the specification in 10.4, it shall have normal structure, and it shall be free from detrimental defects such as band-type ferrite, and its crystalized grain size shall be at least No. 5 shown in JIS G 0551.

4 Shape and dimensions The shape and dimensions of bolts shall conform to Attached Table 1.

5 Screws The screws for bolts shall conform to Table 2.

Table 2 Screws

Nominal designation	Screws	
	Type	Grade
M8 to M64	Conforms to JIS B 0205	6 g of JIS B 0209 or grade 2
M80×6 to M100×6	Conforms to JIS B 0207	6 g of JIS B 0211 or grade 2

Remarks : The maximum tolerable dimensions of plated screws are the maximum tolerable dimension of 4h or grade 1 external screw thread. The accuracy of hot-dip plated screws shall follow the agreement between the purchaser and the manufacturer.

6 Surface condition The surface roughness of bearing surface and threaded portion shall be 25 $\mu\text{m}R_y$ specified in JIS B 0601, and other portions shall be 50 $\mu\text{m}R_y$, and the surface of bolt shall be free from detrimental defects to use such as cracks, flaws, burrs, and rust.

Unless otherwise specified, the criteria of tolerance limit for surface defects should preferably follow the specification in JIS B 1041.

7 Material The material of bolts shall be SS400⁽⁴⁾ specified in JIS G 3101, or S17C or S20C specified in JIS G 4051.

Note (4) The SS400 to be used for bolts shall be killed steel, and the results by ladle analysis show 0.040 % or less of P content and 0.045 % or less of S content.

8 Manufacturing Bolts shall be manufactured by forging and machine finished after normalizing under the temperature shown in Table 3.

Table 3 Temperature for normalizing

Material	Temperature for normalizing
SS400 S17C S20C	870 °C to 920 °C air cooling