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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 30024-2020

Replacing GB/T 30024-2013

Cranes - Proof of competence of steel structures

Issued on: December 14, 2020 **Implemented on: July 1, 2021**

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1:1-2009:

This standard replaces GB/T 30024-2013 "Crane Metal Structure Capability Verification",

compared with GB/T 30024-2013, mainly

The technical changes are as follows:

---Modified normative references (see Chapter 2, Chapter 2 of the:2013 edition);

---Modified some of the main symbols used in this standard (see Table 1 in Chapter 3, Table 1 in Chapter 3 of the:2013 edition);

---Modified the additional verification formula for the weld link of the plane state stress, that is, the coefficient on the right side of the equal sign is changed from 1:1 to 1:0 (see equation (32),

The:2013 version of the formula (32)];

---Added elastic stability verification (see Chapter 7):

The translation method used in this standard is equivalent to ISO 20332:2016 "Crane Metal Structure Proficiency Verification":

The Chinese documents that have a consistent correspondence with the international documents cited in this standard are as follows:

---GB/T 229-2007 Charpy pendulum impact test method for metallic materials (ISO 148-1:2006, MOD)

---GB/T 1800:2-2020 Product Geometric Technical Specification (GPS) Linear Dimension Tolerance ISO Code System Part 2:

Standard tolerance zone code and limit deviation table of holes and shafts (ISO 286-2:2010, MOD)

---GB/T 3098:1-2010 Mechanical properties of fasteners bolts, screws and studs (ISO 898-1:2009, MOD)

---GB/T 3098:17-2000 Fastener mechanical performance inspection hydrogen embrittlement preload test parallel bearing surface method (idt

ISO 15330:1999)

---GB/T 5267:1-2002 Fastener plating layer (ISO 4042:1999, IDT)

---GB/T 15706-2012 General Principles of Machinery Safety Design Risk Assessment and Risk Reduction (ISO 12100:2010, IDT)

---GB/T 17505-2016 General technical requirements for delivery of steel and steel products (ISO 404:2013, MOD)

---GB/T 19349-2012 Metal and other inorganic coatings to reduce the risk of hydrogen embrittlement steel pretreatment (ISO 9587:

2007, IDT)

---GB/T 19418-2003 Guidelines for the quality classification of steel arc welded joint defects (ISO 5817:1992, IDT)

---GB/T 20863:1-2007 Classification of lifting appliances Part 1: General rules (ISO 4301-1:1986, IDT)

---GB/T 22437 (all parts) crane load and load combination design principles [ISO 8686 (all parts)]

This standard was proposed by China Machinery Industry Federation:

This standard is under the jurisdiction of the National Hoisting Machinery Standardization Technical Committee (SAC/TC227):

Drafting organizations of this standard: Taiyuan University of Science and Technology, Beijing Crane and Transportation Machinery Design and Research Institute Co:, Ltd:, Zoomlion Heavy Industry Co:, Ltd:,

Zhengzhou Xindafang Heavy Industry Technology Co:, Ltd:, Henan Branch of Beijing Crane and Conveying Machinery Design and Research Institute Co:, Ltd:, Tianjin Port Co:, Ltd:

Company, CSSC Ninth Design and Research Institute Engineering Co:, Ltd:, Euroneck Heavy Industries Co:, Ltd:, Henan Mining Crane Co:, Ltd:, Jiangxi

Hoisting Machinery Factory Co:, Ltd:, Ningxia Tiandi Benniu Yinqi Equipment Co:, Ltd:, Newkelun (Xinxiang) Crane Co:, Ltd:, Qingdao Haixi Heavy Industry

Machinery Co:, Ltd:, Henan Dafang Heavy Machinery Co:, Ltd:, Guangzhou Special Mechanical and Electrical Equipment Inspection and Research Institute, Foshan Nanhai District Special Equipment

Equipment Association, Nanjing Switchgear Co:, Ltd:

1 Scope

Based on the limit state method, this standard specifies the general conditions, requirements, methods and parameters for the proficiency test of crane metal structures:

The value is used in conjunction with the applicable part of the load and load combination in ISO 8686:

This standard is universal and applies to all types of cranes: For special cranes, other standards may specify their capabilities

Specific requirements for verification:

The ability verification is carried out through theoretical verification calculations and/or tests, aiming to use the established strength limits (such as yield limit, fatigue, brittle fracture)

Crack) to avoid the hazards associated with structural performance:

According to ISO 8686-1, proficiency verification calculations can adopt two methods: the limit state method of the partial safety factor and the overall safety factor:

Allowable stress method: Although the validity of the allowable stress method is not excluded, this standard only relates to the limit state method:

This standard does not include proficiency verification calculations for accessory components (such as railings, stairs, walkways, and driver's cabs): But need to consider these accessory parts

The impact of the main structure:

2 Normative references

The following documents are indispensable for the application of this document: For dated reference documents, only the dated version applies to this article

Pieces: For undated references, the latest version (including all amendments) applies to this document:

GB/T 6974.1-2008 Crane Terminology Part 1: General Terminology (ISO 4306-1:2007, IDT)

ISO 148-1:2009 Charpy Pendulum Impact Test of Metallic Materials Part 1: Test Method (Metalicmaterials-

Charpypendulumimpacttest-Part 1:Testmethod)

ISO 273:1979 Fasteners-Clearance holes for bolts and screws (Fasteners-Clearance holes for bolts and screws)

ISO 286-2:2010 Product Geometric Technical Specification (GPS) ISO Linear Dimension Tolerance Code Part 2: Standard Tolerance Class

And hole, shaft limit deviation table [Geometricalproductspecifications(GPS)-ISO codesystemfortoleranceson

linearsizes-Part 2:Tablesofstandardtoleranceclassesandlimitdeviationsforholesandshafts,cor-

rectedbyISO 286-2:2010/Cor1:2013]

ISO 404 Steel and Steel Products General Technical Requirements (Steelandsteelproducts-Generaltechnicaldelivery

requirements)

ISO 898-1:2013 Mechanical properties of carbon steel and alloy steel fasteners Part 1: Bolts, screws and bolts with specified performance levels