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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB 28760-2012

Tube bending machine - Safety requirements

弯管机 安全技术要求

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Foreword

This standard Chapters 3 and 8 are recommended, the rest are mandatory. This standard was drafted in accordance with rules GB/T 1.1-2009 given. The standard proposed by China Machinery Industry Federation. This standard by the National Forging Machinery Standardization Technical Committee (SAC/TC220). This standard was drafted. Machinery Manufacturing Co. Jiangyin, Zhangjiagang and lift Machinery Manufacturing Co., Ltd., Kinmen and Matsu's Zhejiang Machinery Manufacturing Limited, Shougang long steel forging Machinery Manufacturing Co., Ltd. The main drafters. Qian Weiqing, Yuan Jianhong, Lin Weiming, Xing Weirong, Zhou Changhua, full Pan Shun, Wang Min, Li Ya in Di Qingyu. Benders safety requirements

1 Scope

GB 28760-2012 is the Chinese national standard on tube bending machine - safety requirements, in the field of manufacturing engineering. It carries no /T suffix, which in the Chinese system means compliance is mandatory: a product or a practice within its scope has to meet it to be lawfully made, sold or carried out in China. It was issued on 5 November 2012 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 October 2013. Classification: ICS 25.120.10, CCS J62. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This standard specifies the safety requirements for the design and manufacture of bending machines to be observed and/or measures, verification, usage information, user responsibility. This standard applies to wound bender bending in the cold state, including mechanical bending machine, hydraulic bending machine, CNC bending machine, a small radius bend Machines and loading and unloading auxiliary devices may be included; not dedicated bender, bending auxiliary equipment, such as sawing, tube end forming, detecting And mechanical means or by a dedicated bending machine of the production line.

1.6 Shock hazard Projection hazard

1.9 high pressure fluid jet (ejection risk) Boom, and the corresponding region of the mold.

--- between the mold;

--- between the mold and the workpiece;

--- between the workpiece and the member;

--- between the moving member and the fixed member;

--- moving member between the moving member;

--- the workpiece and the auxiliary means, such as child care material, Gauge, loading and unloading mechanism and the like;

--- falling of the workpiece or movement of workers Caused by dangerous pieces Electrical, hydraulic, pneumatic device motion member, and The motor and drive mechanism, a mechanical actuating apparatus Hydraulic system 4.2.1.

5.2 to 5.5 5.2.1.1,5.2.1.2 5.3.2 ~ 5.3.7

5.2 to 5.5 5.2.7.5,5.2.7.7

2 electrical hazards

2 Normative references

The following documents for the application of this document is essential. For dated references, only applies to the version dated paper Pieces. For undated references, the latest edition (including any amendments) applies to this document. GB 2893 Safety colors (ISO 3864-1)

GB 2894 Guidelines for the use and safety signs

GB/T 3766-2001 Hydraulic System General specification (ISO 4413.1998)

GB 4053.3 fixed ladders and platforms Safety requirements - Part 3. industrial protective railings and steel platform

GB 4584 presses technical conditions photoelectric protector

GB 5226.1-2008 Electrical safety mechanical part of the machine electrical equipment 1. General requirements (IEC 60204-1.2005)

GB/T 7932-2003 pneumatic systems General specification (ISO 4414.1998)

GB/T 8196 mechanical safety of fixed and movable guards General requirements for design and manufacture (

ISO 14120) Safety Basic Concepts

GB/T 15706.1-2007 General Mechanical Design - Part 1. Basic terminology and methods (ISO 12100- 1.2003)

GB/T 15706.2-2007 basic concepts of mechanical safety and General Design - Part 2. Technical Principles (ISO 12100- 2.2003)

GB 16754-2008 Safety of machinery - Emergency stop design principles (ISO 13850.2006)

GB/T 16855.1 mechanical safety control system safety components - Part 1. General principles for design (ISO 13849-1)

GB/T 16856.1 mechanical safety risk assessment Part 1. Principles (ISO 14121-1)

2.1 Human body part in contact with live (direct contact)

2.2 Man and insulation failure is charged with A contact electrode (indirect contact) Electrical Equipment 4.3 5.8.1

3 thermal hazards

3.1 By a possible contact due to burns and scald The hydraulic system components Elbow

lead From a workpiece or component 4.4 5.8.2

4.1 cause hearing impairment (deafness) Bender existence of any hearing damage Area 4.5

5.8.5 TABLE 1 (cont.) No. dangerous hazardous areas GB/T 15706.1-2007 Corresponding clauses Protective measures This standard corresponding reg Ignore ergonomics in Mechanical Design The risk arising from the principle of learning

5.2.1 Boom, cars and other moving parts feed

5.2.1.1 bender boom, feed overtravel car out of control or are moving at high speed and endanger the mechanical impact caused by the operator Personal safety, electrical control system, hydraulic system failure will result in failure described above; out of control when the rotary arm returns the operating person being adjusted or Members may be dangerous, so, we shall have the following precautions.

a) a reliable boom (return to the initial position) to prevent extrusion of personnel security measures;

b) providing a holding means (for car chucks);

c) providing a mechanical limiting means (to feed the car).

5.2.1.2 boom (return) security must be at least one of the following.

a) mechanical, electrical safety barrier. telecommunication means by a mechanical shutter trigger command to stop the boom, is mounted on both sides of the boom or the boom return Inner surface, so that the shutter is triggered during operation of the person in the danger zone to stop the boom;

b) a pressure-sensitive pad boom entering the danger zone, to prevent entry into the danger zone (see claim in GB/T 15706.2-2007 of 5.2.5.2);

c) photoelectric protection device. During the staff shall enter the danger zone and shall comply with the provisions of GB 4584.

5.2.1.3 main cylinder control circuit using reliable measures to prevent accidental overtravel boom, in conjunction with the unloading pump boom reliably stopped.

5.2.1.4 feed trolley in longitudinal limit stop position is set dead iron (with buffer means), when the feed car accident overtravel limit position Forced stop, in the extreme position limit switch may also be fed together form a reliable stop the car.

5.2.2 gripping the tubular member Bending machine with a feed carriage during operation should ensure that the collet clamp tube trolley reliable and effective. The maximum clamping force should satisfy tube Will not fall when the tube is in the maximum load torque; or a control signal when the power interruption, the jaw locking means of hydraulic