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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 12362-2016

Replacing GB/T 12362-2003

Steel die forgings - Tolerance and machining allowance

钢质模锻件 公差及机械加工余量

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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 12362-2003 "Steel die forgings - Tolerance and machining allowance". Compared with GB/T 12362-2003, except for editorial revisions, the main changes are as follows: - In the Scope, CHANGE the "Machining allowance and its use principle" into "Machining allowance grade and technical content"; CHANGE the "structural steel forging" into "structural steel die forging"; CHANGE "250 kg" into "500 kg" (see Chapter 1; Chapter 1 of the 2003 edition); - DELETE that "Forgings that can only be achieved by additional manufacturing processes" and "flat forgings only use ordinary grades" (see

2.1 of the 2003 edition); - In the special case

a) of 3.1.2, ADD that "When selecting the tolerance, only the mass of the cylinder part, which has a diameter d and thickness t, is considered for the mass of the forging; if the tolerance selected by this special rule is smaller than that selected according to the general rules in 3.1.2, THEN select the tolerance according to the general rules in 3.1.2" (see 3.1.2); - In the special case

b) of 3.1.2, "When selecting the dimensional tolerance of the relevant features, only the mass of the cylinder part, which has a diameter d1 and thickness t1, is considered for the mass of the forging; if the tolerance selected by this special rule is smaller than that selected according to the general rules in 3.1.2, THEN the tolerance selected according to the general rules in

3.1.2 shall prevail" (see 3.1.2); - DELETE that "When using coal heating or two-fire heating, it may be considered to appropriately increase the tolerance or margin; the value shall be determined through negotiation, between the supplier and the buyer" (see

3.1.6 of the 2003 edition); - CHANGE the "error tolerance" to "error" (see 3.2.4;

3.2.4 of the 2003 edition); - CHANGE the "depth tolerance" to "depth" (see 3.2.14;

3.2.14 of the 2003 edition); - MODIFY the mass ranges in Table 1, Table 2, Table 3, Table 4, Table 16; ADD the query lines (see Table 1, Table 2, Table 3, Table 4, Table 16; Table 1, Table 2, Table 3, Table 4, Table 16 of the 2003 edition); - MODIFY the aperture range in Table 15; ADD the query line (see Table 15; Table 15 of the 2003 edition). This standard was proposed by AND shall be under the jurisdiction of the National Forging Standardization Technical Committee (SAC/TC 74). Drafting organizations of this standard. Dongfeng Forging Co., Ltd., Beijing Electromechanical Research Institute. The main drafters of this standard. Wu Yujian, Wu Tingsong, Wei Wei, Jin Hong, Zhao Yeqin, Chen Wenjing, Cheng Chenwen. This standard replaces the standard previously issued as follows: - GB/T 12362-1990, GB/T 12362-2003. Steel die forgings - Tolerance and machining allowance

1 Scope

GB/T 12362-2016 is the Chinese national standard on steel die forgings - tolerance and machining allowance, in the field of metallurgy. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 13 December 2016 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 July 2017. Classification: ICS 77.140.85, CCS J32. 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 tolerances, machining allowance grades, technical content of steel die forgings (hereinafter referred to as "forgings"). This standard applies to structural steel die forgings, which are produced by forging hammers, hot die forging presses, screw presses, flat forging machines and other forging equipment. Forgings of other steel grades can also make reference to this standard. This standard applies to forgings, which have a mass less than or equal to 500 kg and a length (maximum dimension) less than or equal to 2500 mm.

2 Tolerances and machining allowance grades

2.1 The tolerances in this standard are divided into two grades. ordinary grade and precision grade. Ordinary tolerances are suitable for forgings, that can meet technical requirements in general die forging processes.

2.2 Only one grade is used for machining allowance.

3.1 Main factors for determining forging tolerances and machining allowances

3.1.3 Forging material factor M The forging material factor is divided into two grades. M1 and M2. Grade M

1.Carbon steel which has a maximum carbon content of less than 0.65%, OR alloy steel which has a total alloying element content of less than 3%. Grade M

2.Carbon steel which has a maximum carbon content greater than or equal to 0.65%, OR alloy steel which has a total content of alloy elements greater than or equal to 3%.

3.2.8 Steps and thickness tolerances of flat forgings

3.2.8.1 Step dimensional tolerances The step dimension refers to the dimension p of the upsetting part, along the axial direction (Figure 12); its dimensional tolerance is determined by Table 1.

3.2.8.2 Thickness dimension tolerance The thickness dimension refers to the dimension, t, from the punch across the parting line to the die (Figure 12); its tolerance value is determined in Table 3, according to the maximum thickness dimension.

3.2.9 Concentricity tolerance of flat forgings The coaxiality tolerance of flat forgings refers to the allowable offset value of the axis of the forming part of the punch, to the axis of the forming outer diameter of the die. The coaxiality tolerance is determined by Table 1;

3.2.10 Local deformation tolerance of flat forgings For the connection between the unformed rod part and the upsetting part of the forging, the local deformation is allowed to be conical (Figure 14); its length is l <= 1.5d and not more than 100 mm. The local deformation tolerance is determined by the maximum diameter D of the upsetting part.

3.2.11 Wall thickness tolerance The wall thickness difference is the difference, between the largest dimension and the smallest dimension of the wall thickness, which is measured in the same cross section of the forging with holes (Figure 15). The tolerance is twice the error in Table 1 or Table 2.

3.2.13 Center distance tolerance Tolerances for center-to-center distances (Figure 16), for flat straight parting and within the same die, are determined from Table 8.

3.2.14 Surface defect depth The depth of surface defects refers to the actual depth of depressions, pits, bumps, folds, cracks on the surface of forgings, which are specified as follows:

3.2.15 Other tolerances

3.2.15.5 Punching offset tolerance The punching offset refers to the offset of the hole center, as relative to the theoretical center, at the point where the punching is connected to the skin. The tolerances are determined from Table 13.

3.3 Machining allowance The machining allowance of forgings is determined from Table 15 and Table 16, according to the estimated forging mass, surface roughness of parts, shape complexity factor. For the flat thin section or the section of the adjacent part of the forging with a large change in the section, the local allowance shall be appropriately increased (Figure 18).