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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 29546-2013

**Methods of static load deflection measurement for straight-side
presses**

闭式压力机静载变形测量方法

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Foreword

This standard was drafted in accordance with GB/T 1.1-2009 given rules. The standard proposed by China Machinery Industry Federation. This standard by the National Forging Machinery Standardization Technical Committee (SAC/TC220) centralized. This standard was drafted. Jinan Machine Tool Group Co., Ltd., Jinan Foundry and Metalforming Machinery Research Institute Co., Ltd., Shenzhen City, measuring Detection Technology Co., Ltd. The main drafters of this standard. He Qing, Ma Liqiang, Xu Hongping, Li, Guo Bing, Wang Xu, Wang Hao first, Zhu Ping. Closed Press static load deformation measurement method

1 Scope

China's national method for measuring the static load deflection of straight-side presses. It specifies the measurement of press deformation under static loading conditions, and it applies to straight-side single-action single-point, two-point and four-point presses; straight-side double-action drawing presses may refer to it. A press is not rigid. Under load the frame stretches, the bed and the slide bend, and the gap between the slide face and the bolster opens by an amount that depends on the load and on where in the working area it is applied. That deflection is the machine's stiffness, and it determines the accuracy of everything the press makes: a die set closes to a position that is the sum of the slide's commanded position and the frame's stretch, so a press that deflects a millimetre under load produces parts that are a millimetre thicker than the die was cut for. In precision forming - and combined warm and cold forging is exactly that - the press stiffness is a process parameter rather than a machine characteristic. It also determines how the load divides between the die's forming stations when several are used at once, and how the tooling wears. The standard defines whole machine rigidity as the ratio of the nominal force to the average relative deformation between the working surfaces, measured with a static force equivalent to the nominal load applied within a defined area of the bolster, and it specifies how that measurement is made: the loading arrangement, the positions at which the deflection is measured, the instrumentation, the sequence and the calculation. It also covers the eccentric loading cases, since a press loaded off-centre tilts as well as

stretching, and the tilt is what puts a die into misalignment. Issued on 9 June 2013 and in force since 1 January 2014.

This standard specifies the closed press deformation measurements under static loading conditions. This standard applies to closed single action single, double, four-point press (hereinafter referred to as "press"), closed double action drawing press can also refer use.

2 Terms and definitions

The following terms and definitions apply to this document.

2.1 Machine stiffness wholemachinerigidity Is within a predetermined range of work surface and press the slider on the bottom surface, applying a static force equivalent to the nominal uniform load, divided by the nominal force The average relative amount of deformation of the work surface and the bottom surface of the slider to a given location.

2.2 Slider Deflection slidedeflection When within a predetermined range of the bottom surface of the press ram, equivalent to nominal force applied static uniform load, the slider bottom surface of the measured variable Shaped volume.

2.3 Workbench deflection tabledeflection Is within the range specified in the press work surface, applying a force equivalent to the nominal static uniform load, table plate, movable table Placed on the base measured bolster plate deformation.

3.1 Overall stiffness measurement

3.1.1 Measurement conditions Machine stiffness measurements should meet the following conditions.

- Die height adjustment at an intermediate position;
- Slide stroke should be in the bottom dead center;
- Balancer pressure of work pressure;
- Within the loader shown in Figure 1 was placed in a uniform work surface length and width direction of the 2/3 range, the specific arrangement of the loader principle, see Appendix A;
- 100mm from the edge of the slider is placed at the four indicator (1.40) and in Figure 1, the probe instruction sheet plane hit the slider.