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Machine tools — Straight-sided single-action mechanical power presses from 400 kN up to and including 4 000 kN nominal force — Characteristics and dimensions

*Machines-outils — Presses mécaniques à bâti en arcade, à simple effet,
de force nominale comprise entre 400 kN et 4 000 kN inclus —
Caractéristiques et dimensions*



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Foreword

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Machine tools — Straight-sided single-action mechanical power presses from 400 kN up to and including 4 000 kN nominal force — Characteristics and dimensions

1 Scope

This International Standard specifies the characteristics and dimensions of straight-sided single-action mechanical power presses from 400 kN up to and including 4 000 kN nominal force. It applies to machines intended for single or continuous operation and to geared or ungeared 1-, 2- or 4-point machines.

2 Definitions

For the purposes of this International Standard, the following definitions apply.

2.1 nominal force, F_n : Maximum allowable pressing force which may act, before the bottom of stroke, through a given distance [the nominal force travel h_n (see 2.7)], as frequently as required without damaging the press.

2.2 bed cushion force, F_t : Force related approximately to the nominal force, at an air pressure of 0,5 MPa, as follows:

$$F_t \approx 0,2F_n$$

2.3 slide knockout force, F_k : Force related approximately to the nominal force as follows:

$$F_k \approx 0,1F_n$$

2.4 nominal energy, W_n : Energy output obtained during a slide stroke in continuous operation. It is related to a given reduction in the flywheel speed of rotation.

The nominal energy W_n is related to the nominal force F_n (see 2.1) and to the nominal force travel h_n (see 2.7) and, where a cushion is used, to the bed cushion force F_t (see 2.2) as well as to that part of the cushion travel h_t which can be utilized with maximum cushion force.

The nominal energy is selected according to the type of work for which the press is required.

2.5 shut height, e_1 : Distance from the bedplate surface to the slide surface measured with the maximum variable stroke, stroke down and slide adjustment up.

Since in general the shut height is adjusted by the use of sub-bolsters or packers, it is useful to specify values in accordance with an arithmetic progression in preferred steps of 100 mm.

2.6 bed to slide distance, e_2 : Distance from the bed surface to the slide surface measured with the maximum variable stroke, stroke down and slide adjustment up.

2.7 nominal force travel, h_n : Maximum distance, above the bottom of the stroke of the slide, from which point downwards the nominal force F_n may act as frequently as required without damaging the press.

The nominal force travel h_n , together with the nominal force F_n , indicate the rating of the drive.

The nominal force travel is not directly related to the nominal energy W_n .

3 Characteristics and dimensions

Mechanical single-action straight-sided power presses may be provided with a crank, eccentric, toggle or knuckle-joint drive mechanism.

Figure 1 shows a typical construction of a straight-sided single-action mechanical power press; this figure is a schematic representation only and is not intended to affect the manufacturer's design.

The characteristics and dimensions shall be selected from tables 1 to 8; values given in parentheses are