

CONFIRMED
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Method for

Measurement of static deflection of power presses

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Machine, Engineers and Hand Tools Standards Committee (MTE/-) to Technical Committee MTE/1, upon which the following bodies were represented:

- Advanced Manufacturing Technology Research Institute
- Cranfield Institute of Technology
- Department of Trade and Industry (Mechanical Engineering and Manufacturing Technology Division)
- Health and Safety Executive
- Institution of Production Engineers
- Machine Tool Trades Association
- Ministry of Defence
- Society of British Aerospace Companies Limited
- University of Aston in Birmingham

The following bodies were also represented in the drafting of the standard, through sub-committees and panels:

- Institute of Sheet Metal Engineering
- Metalfforming Machinery Makers' Association Limited

This British Standard, having been prepared under the direction of the Machine, Engineers and Hand Tools Standards Committee, was published under the authority of the Board of BSI and comes into effect on 31 March 1989

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The following BSI references relate to work on this standard:
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Contents

	Page
Committees responsible	Inside front cover
Foreword	ii
1 Scope	1
2 Definitions	1
3 Measuring equipment	1
4 Test conditions	4
5 Procedure	4
6 Test report	4
Appendix A Typical format of test report for user	8
Appendix B Typical format for record of measurements for retention by manufacturer	10
Figure 1 — Directions of the axes	1
Figure 2 — Typical measuring equipment	2
Figure 3 — Bolster measuring plate and additional discs	3
Figure 4 — Position of dial gauges	4
Table 1 — Dimensions of bolster measuring plates and additional discs	3
Table 2 — Deflection tests	5
Publications referred to	Inside back cover

Foreword

This British Standard has been prepared under the direction of the Machine, Engineers and Hand Tools Standards Committee and is based on EPPMP Recommendation 5, prepared by the European Power Press Manufacturers Panel (EPPMP). The EPPMP is a voluntary organization of which the membership is comprised of machine tool manufacturers' associations of a number of West European countries.

Although the method is mainly applicable to power presses of mechanical open front type with capacities up to and including 2 500 kN, it may also be applied to straight sided and hydraulic presses and to presses with capacities over 2 500 kN.

Capacity ratings, dimensions and definitions of power presses are given in BS 6590.

Accuracy requirements and geometrical and practical tests are given in BS 4656-34.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 16, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This British Standard describes a method for measuring the deflection of power presses under static conditions. Permissible values for deflection are not given.

For reasons of simplicity the diagrams in this standard illustrate only typical machines.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this British Standard the following definitions apply.

2.1

x (-axis)

the axis parallel to the lower tool face (upper surface of bedplate) of the press, running from front to back

2.2

y (-axis)

the axis parallel to the lower tool face of the press, running from right to left

2.3

z (-axis)

the vertical axis coinciding with the centre line of the fixing pin hole in the unloaded press

NOTE See Figure 1 for directions of the axes.

3 Measuring equipment

NOTE 1 The measuring equipment may be designed in various ways; see Figure 2 for examples.

The measuring equipment shall fulfil the following requirements.

a) As far as possible no torque and/or horizontal force shall be transmitted to the ram.

b) The bolster measuring plates and additional discs (see Figure 3) shall be selected from different size ranges depending on the nominal capacity of the press (see Table 1).

c) The dimensions of the bolster measuring plate and additional discs shall give acceptable values of material compression and non-plastic deformation when using low carbon steel with minimum yield stress of 300 N/mm².

NOTE 2 In order to avoid any deformation of the bed, a low carbon steel sheet should be placed between the bed and the measuring equipment.

d) The measuring equipment shall be stable enough to ensure that it does not influence the measuring results.

NOTE 3 The modified fixing pin should be so designed that plastic deformation will not occur on slide surface.

NOTE 4 The rod for fixing measuring equipment should be fastened to the bolster plate in such a way that the deflection during loading will be minimized.

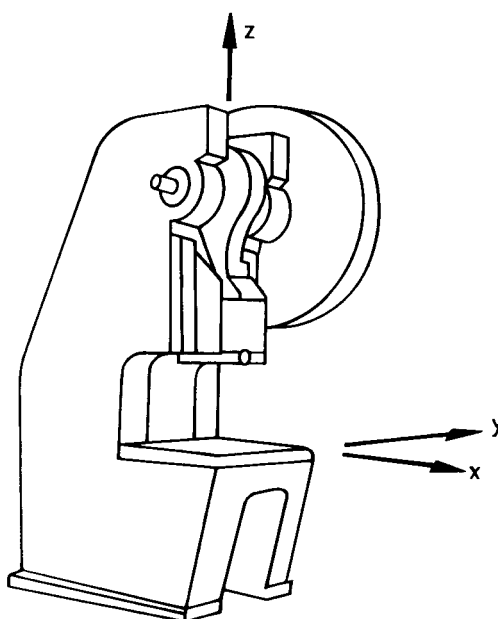
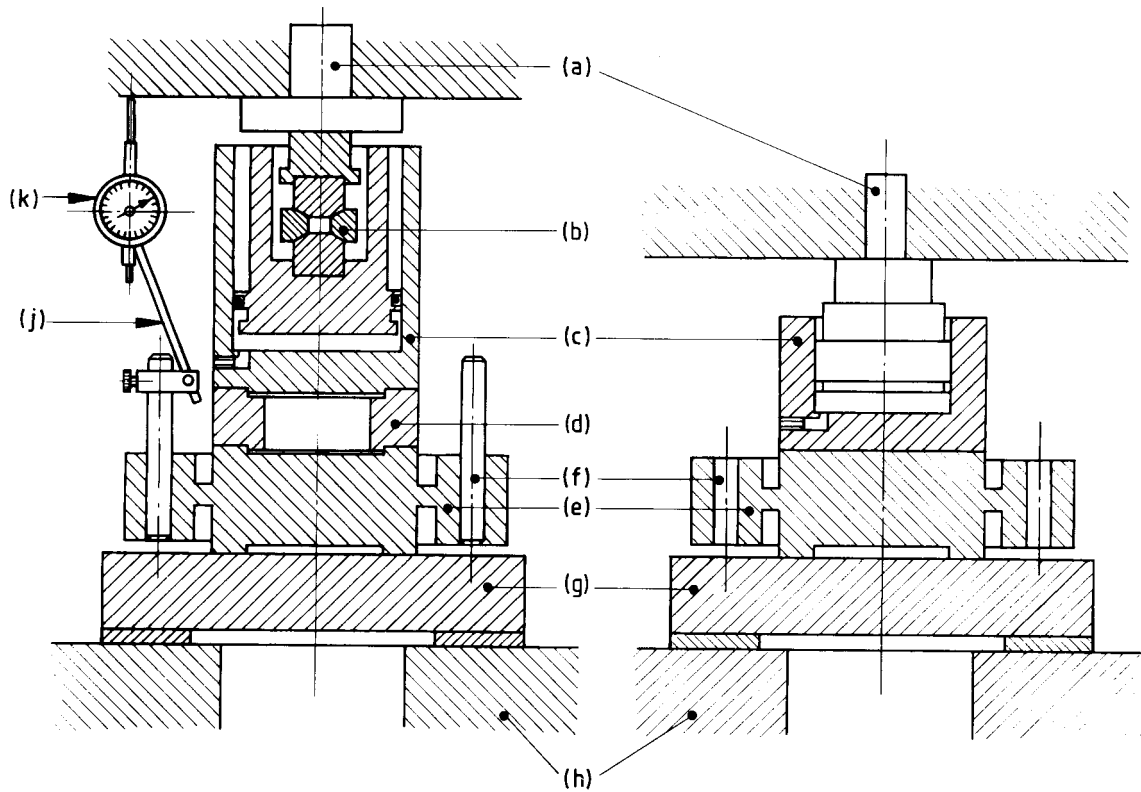


Figure 1 — Directions of the axes



Key

- a modified fixing pin
- b interlay
- c hydraulic load cell (dynamometer)
- d shim
- e bolster measuring plate
- f rod for fixing measuring equipment
- g additional disc
- h bedplate
- j dial gauge stand
- k dial gauge

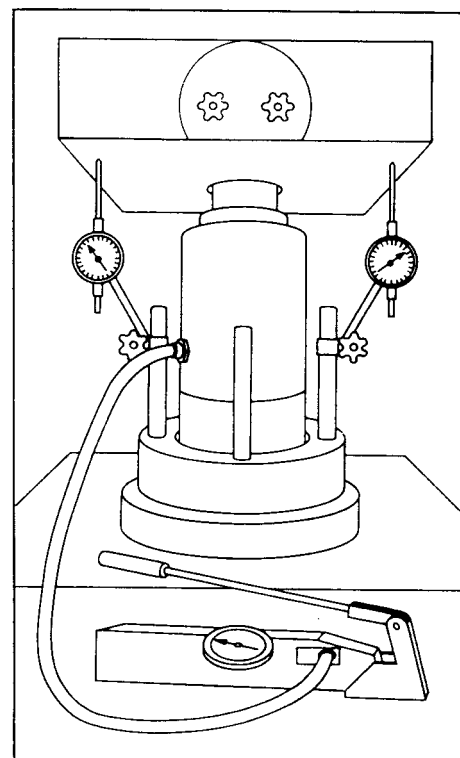
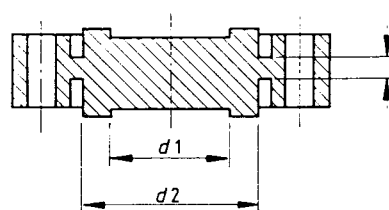
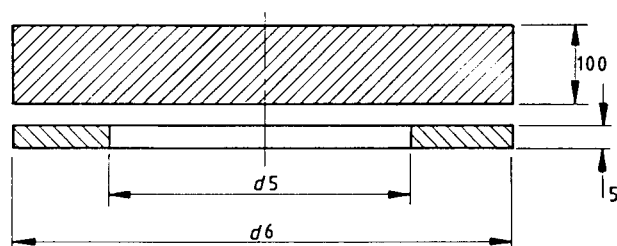
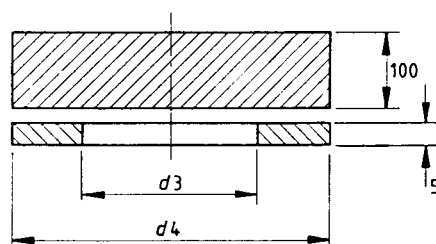


Figure 2 — Typical measuring equipment

Bolster measuring
plate



Additional
discs



All dimensions are in millimetres.

Figure 3 — Bolster measuring plate and additional discs

Table 1 — Dimensions of bolster measuring plates and additional discs (see Figure 3)

Press capacity	Bolster measuring plate diameters		Additional disc diameters				Measuring equipment
	d_1	d_2	d_3	d_4	d_5	d_6	
kN	mm	mm	mm	mm	mm	mm	
100 160 250 400	110	140	—	—	—	—	
630 800 1 000 1 250	110 or 130	140 or 170	150	230	—	—	
1 600 2 000 2 500	130	170			170	300	