ASME B5.52-2003
(Revision of ANSI B5.52M-1980)
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# Power Presses: General Purpose, Single-Point Gap Type

AN AMERICAN NATIONAL STANDARD



The American Society of Mechanical Engineers

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Three Park Avenue • New York, NY 10016

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# FOREWORD

Recognizing the need for a standard for mechanical power presses, The American Society of Mechanical Engineers' Committee on Machine Tools and Components (B5) reestablished Technical Committee 30 in December 1973 to develop an American National Standard addressing the interchangeability of bolsters, press tooling, and mounting provisions between general purpose presses of comparable bed size, capacity, and type.

The B5-TC30 membership consists of a balance between manufacturers, users, accessory suppliers, and others associated with power presses. The committee's work was based on the JIC (Joint Industry Conference) Press Room Standards, once the most widely used document, to develop a standard for mechanical power presses, and on basic data submitted by U.S. manufacturers of power presses.

On December 22, 1980, the American National Standards Institute approved ANSI B5.52M-1980, Mechanical Power Presses General Purpose Single Point, Gap Type (Metric). This standard was reaffirmed in 1994.

On April 19, 2000, the committee completed drafting of ASME B5.61-2003, Power Presses: General Purpose, Single Action, Straight Side Type, and prepared to submit it for approval to the American National Standards Institute. The expanded scope and revised format of this document led to the committee decision to revise ANSI B5.52M-1980 to bring it into conformance with the new format. The decision was made to include hydraulic and pneumatic power presses in the revised standard for general purpose, single-point gap type presses. ASME B5.52-2003 was approved by ANSI on July 7, 2003.

# ASME B5 STANDARDS COMMITTEE
# Machine Tools — Components, Elements, Performance, and Equipment

(The following is the roster of the Committee at the time of approval of this Standard.)

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# CORRESPONDENCE WITH THE B5 COMMITTEE

**General.** ASME Standards are developed and maintained with the intent to represent the consensus of concerned interests. As such, users of this Standard may interact with the Committee by proposing revisions and attending Committee meetings. Correspondence should be addressed to:

Secretary, B5 Standards Committee
The American Society of Mechanical Engineers
Three Park Avenue
New York, NY 10016-5990

**Proposing Revisions.** Revisions are made periodically to the Standard to incorporate changes that appear necessary or desirable, as demonstrated by the experience gained from the application of the Standard. Approved revisions will be published periodically.

The Committee welcomes proposals for revisions to this Standard. Such proposals should be as specific as possible, citing the paragraph number(s), the proposed wording, and a detailed description of the reasons for the proposal, including any pertinent documentation.

**Attending Committee Meetings.** The B5 Standards Committee regularly holds meetings, which are open to the public. Persons wishing to attend any meeting should contact the Secretary of the B5 Standards Committee.

# POWER PRESSES: GENERAL PURPOSE, SINGLE-POINT GAP TYPE

## 1 SCOPE, PURPOSE, AND APPLICATION

### 1.1 Scope

This Standard applies to hydraulic and mechanical power presses having a one-piece frame that guides the slide and supports the bolster, adjustable bed, or horn. The frame is configured to provide unrestricted access to the front and sides of the die space. By means of dies or tooling attached to the slide and bolster or horn, these machines are used to shear, punch, form, or assemble metal or other materials.

This Standard includes only the following types of presses:

*(a)* bench
*(b)* open back inclinable (OBI)
*(c)* open back stationary (OBS)
*(d)* adjustable bed/horn

See Fig. 1 for examples of press types.

### 1.2 Purpose

The purpose of this Standard is to define and describe gap frame power presses, and their interface, to permit interchangeability of bolsters, dies, and tooling components between presses of comparable type, size, and capacity.

### 1.3 Application

Any power press described as an American National Standard power press shall comply with the applicable requirements of this Standard.

## 2 DEFINITIONS AND TERMINOLOGY

Terms used in this Standard are defined in ASME B5.49.

## 3 METRIC/U.S. CUSTOMARY RATIONALIZATION

### 3.1 Metrication

All units of dimension and capacity stated herein are in accordance with ASME B5.51M. Approximate U.S. customary units shown in parentheses are for reference only. Wherever used in this Standard, the unit *tons* denotes U.S. tons.

### 3.2 Metric/U.S. Customary Conversion

Appendix I provides conversion multipliers applicable to this Standard.

## 4 PRESS CHARACTERISTICS

### 4.1 Rated Capacity

See Table 1.

### 4.2 Rating Points (Mechanical Power Presses)

See Table 2.

**4.2.1 Drive Design.** Drive design shall be based on providing the torque that produces the rated press capacity at the rating point.

**4.2.2 Press Capacity.** Press capacity at points other than the rating point are shown

*(a)* in Table II-1 for presses rated at 1.6 mm ($\frac{1}{16}$ in.)
*(b)* in Table II-2 for presses rated at 3.2 mm ($\frac{1}{8}$ in.)
*(c)* in Table II-3 for presses rated at 6.3 mm ($\frac{1}{4}$ in.)

### 4.3 Energy Capacity (Mechanical Power Press)

**4.3.1 Function of the Flywheel.** The energy required for performing press operations is stored in the flywheel. During the working portion of the press cycle, the flywheel slows down as it supplies the required energy to the drive train.

**4.3.2 Function of the Drive Motor.** The drive motor restores flywheel energy during the nonworking portion of the press cycle, which may include the interval between press cycles for presses operating in single stroke modes.

**4.3.3 Drive Motor Selection.** The selection of the drive motor is dependent upon the energy requirements. Factors determining the energy requirements are the

*(a)* rated capacity
*(b)* press speed (strokes per minute)
*(c)* press stroke

Based on the optimum slide velocity for the material being worked, a longer stroke press will be required to operate at a slower speed than a shorter stroke press. The longer the stroke, the deeper the draw that can be made, and the greater the energy required to sustain