

ANSI B11.2 – 2013 (R2020)

American National Standard

Safety Requirements for Hydraulic and Pneumatic Power Presses

ANSI-Accredited Standards Developer and Secretariat:



B11 Standards, Inc.
POB 690905
Houston, TX 77269, USA

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by the American National Standards Institute
Board of Standards Review



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Foreword (This Foreword is not part of the requirements of American National Standard B11.2 – 2013 R2020).

The primary objective of this standard is to eliminate, control or reduce hazards to individuals associated with hydraulic / pneumatic power presses by establishing safety requirements for the design, construction, operation and maintenance of these machines. To accomplish this objective, responsibilities have been assigned to the supplier (e.g., manufacturer, modifier, rebuilder and integrator), the user, and individuals in the working environment. This standard should be used with ANSI B11.0 and ANSI B11.19. The requirements of both standards must be met as applicable to a particular machine.

The words "safe" and "safety" are not absolutes. An element of safety is attitude. While the objective of this standard is to eliminate, control, or reduce risks associated with hazards, this standard recognizes that risk cannot be practically reduced to zero in any human activity. This standard is not intended to replace good judgment, proper training, and personal responsibility. Operator skill, job monotony, fatigue, and experience are safety factors that should be considered by the user.

Hydraulic / pneumatic power press technology is continuously evolving. This standard reflects the most commonly used and time-tested customs and practices in the industry at the time of its approval. The inclusion or omission of language relative to any evolving technology, either in the requirements or explanatory area of this standard, in no way infers acceptance or rejection of such technologies. Inquiries with respect to the application of the substantive requirements of this standard and suggestions for its improvement are welcomed and are to be sent to the B11 Standards, Inc., POB 690905, Houston, TX 77269. Attention: B11 Secretariat.

HISTORY

The original ANSI B11.2 American National Standard was approved in 1982, was substantively revised in 1995, and was reaffirmed in 2005. This current standard was authorized by the B11 ASC in January 2008 for revision by its B11.2 Subcommittee. After consideration of both EN and CSA standards on hydraulic presses, it was agreed to include pneumatic presses in the scope of B11.2. Some of the other significant changes from the 1995 version of B11.2 include requirements for slide locks, load holding and moving bolster. This standard has been used to impact/influence the development of the ISO standard (ISO 16092-3, in draft form at the time of this B11.2 approval).

The B11 series of standards for machines began with safety requirements for power presses in 1922. Since that time, safety requirements for a variety of machines have been developed and continually updated and revised to become a series of some 30 B11 standards and technical reports. Maintaining these documents with consistent language proved a significant challenge. In 2008 ANSI B11 (GSR) was published with the long term objective to reorganize the B11 family of standards by gathering the requirements common to many or most of the B11 standards into a single document while retaining the machine tool specific requirements in the machine-specific standards. That standard was revised and approved in 2010 as ANSI B11.0 and deals primarily with risk assessment/risk reduction and general safety requirements. The current edition of this Type-C B11.2 has been revised to integrate with the Type-A B11.0 standard and the Type-B B11.19 standard on safeguarding.

EFFECTIVE DATE

The following information on effective dates is informative guidance only, and not a normative part of this standard. This subcommittee recognizes that some period of time after the approval date on the title page of this document is necessary for suppliers and users to develop new designs, or modify existing designs or manufacturing processes in order to incorporate the new or revised requirements of this standard into their product development or production system.

This subcommittee recommends that suppliers complete and implement design changes for new machines and machinery systems within 30 months of the approval of this standard.

The subcommittee recommends that users evaluate whether existing machinery and machinery systems have acceptable risk within 30 months of the approval date of this standard using generally recognized risk assessment methods. If the risk assessment shows that modification(s) is necessary, refer to the requirements of this standard to implement risk reduction measures (risk reduction measures) for appropriate risk reduction.

Explanation of the format, and ANSI B11 conventions

The standard uses a two-column format to provide supporting information for requirements. The material in the left column is confined to “Standards Requirements” only, and is so captioned. The right column, captioned “Explanatory Information” contains information that the writing Subcommittee believed would help to clarify the requirements contained in the standard. This column should not be construed as being a part of the requirements of this American National Standard. Operating rules (safe practices) are not included in either column of this standard unless they are of such nature as to be vital safety requirements, equal in weight to other requirements, or guides to assist in compliance with the standard.

As in all American National Standards, the term “SHALL” denotes a requirement that is to be strictly followed in order to conform to this standard; no deviation is permitted. The term “SHOULD” denotes a recommendation, a practice or condition among several alternatives, or a preferred method or course of action.

Similarly, the term “CAN” denotes a possibility, ability or capability, whether physical or causal, and the term “MAY” denotes a permissible course of action within the limits of the standard.

B11 conventions: Operating rules (safe practices) are not included in either column of this standard unless they are of such nature as to be vital safety requirements, equal in weight to other requirements, or guides to assist in conformance with the standard. The B11 standards generally use the term “OR” as an inclusive disjunction, meaning *one or the other or both*, but on occasion will use the term “and/or” to emphasize the fact that both are fully intended in cases where the Subcommittee believed it was imperative to make that clear. A distinction between the terms “*individual*” and “*personnel*” is drawn. Individual includes personnel (employees, subcontractors, consultants, or other contract workers under the indirect control of the supplier or user) but also encompasses persons who are not under the direct or indirect control of the supplier or user (e.g., visitors, vendors, etc.).

Suggestions for improvement of this standard will be welcome. They should be sent to B11 Standards, Inc. – dfelinski@b11standards.org.

DEVELOPMENT

This standard was prepared by the B11.2 Subcommittee, processed and submitted for ANSI approval by the B11 Accredited Standards Committee on Safety Standards for Machines. Committee approval of this standard does not necessarily imply that all committee members voted for its approval. At the time this standard was approved as an American National Standard, the ANSI B11 Accredited Standards Committee was composed of the following Members:

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American Society of Safety Engineers	Bruce Main, PE, CSP	George Karosas, PE,CSP
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Toyota Motor Manufacturing North America	Barry Boggs	Todd Mills
International United Automotive Workers	Tom Ford	

At the time this standard was approved, the ANSI B11.2 Hydraulic / Pneumatic Power Press Subcommittee had the following members who participated in the development of this standard:

Name	Organization
Walter Veugen, Chairman	Veugen Integrated Technologies, Ltd.
Kelyn Brown, Vice-Chairman	Dana Holding Corporation
Jim Van Kessel, Vice-Chairman	JVK Industrial Automation, Inc.
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Lloyd Sinnott	ABB Robotics
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Scott Whittington	Cincinnati Incorporated

Introduction

The primary purpose of every machine tool is to process parts. This is accomplished by the machine imparting process energy onto the workpiece. Inadvertent interference with, or accidental misdirection of the released energy during production, maintenance, commissioning and de-commissioning may result in injury. This standard recognizes that zero risk does not exist and cannot be attained. However, a good faith approach to risk assessment and risk reduction should achieve an acceptable risk level.

The primary purpose of the ANSI B11 series of machine tool safety standards is to devise and propose ways to minimize risks of the potential hazards. This can be accomplished either by an appropriate machine design or by restricting personnel or other individuals' access to hazard zones, and by devising work procedures to minimize personnel exposure to hazardous situations. This is the essence of the ANSI B11 series of safety standards.

Organization and Application of B11 Series of Documents

The B11 series of documents can be associated with the ISO "Type A-B-C" structure as described below:

- **Type-A standards** (basis standards) give basic concepts, principles for design, and general aspects that can be applied to machinery;
- **Type-B standards** (generic safety standards) deal with one or more safety aspects or one or more types of safeguards that can be used across a wide range of machinery;
- **Type-C standards** (machinery safety standards) deal with detailed safety requirements for a particular machine or group of machines.

This ANSI B11.2 standard on hydraulic / pneumatic power presses is a "Type-C" standard. The ANSI B11.0 standard on general safety requirements common to ANSI B11 machines is primarily a "Type-A" standard in that it applies to a broad array of machines and contains very general requirements. However, in many areas it also contains very specific requirements. B11.19, B11.20 and the B11 series Technical Reports are all typical "Type-B" documents addressing general safety elements that can be applied across a wide range of machinery (B11.19) or as a standard when combining machines (B11.20). The B11 series of Technical Reports are informative documents that may be generally applied to many machine tools, and as such would fall into the "Type-B" group. The machine-specific (Type-C) B11 standards contain detailed safety requirements for a particular machine or group of machines (such as in the case of this standard). The B11.0 and the machine-specific B11 standards are intended to be used concurrently by the supplier and user of machines. When a Type-C standard deviates from one or more provisions dealt with by this standard or by a Type-B standard, the Type-C standard requirement generally takes precedence. Any deviation in conforming to a requirement of any standard should be carefully evaluated and based on a documented risk assessment.

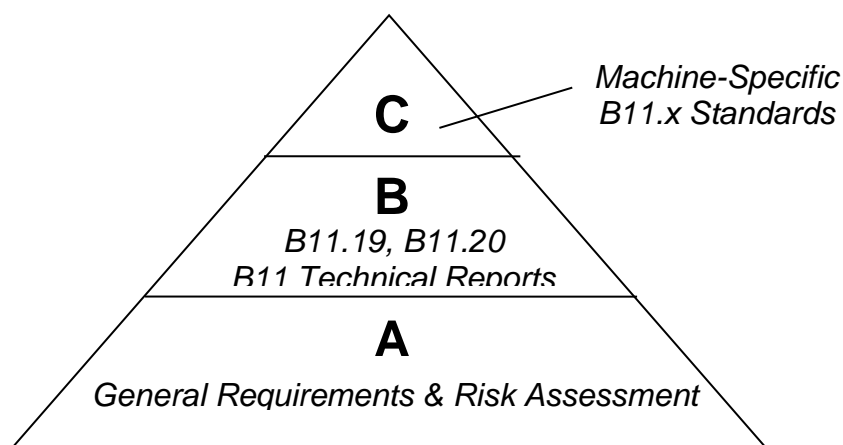


Figure 1 — Organization of the B11 Series of Documents

Figure 2 (following page) provides an overview of this standard and in particular the responsibilities of and requirements for the supplier and user, including the user personnel. Numbers in parentheses denote the particular clause or subclause of the standard. A solid line between a block showing reference standard(s) and a block showing a normative clause denotes part of the requirements. A dashed line denotes an informative reference.

Notes for Figure 2:

- 1) Scope – Provides the boundaries or limits of the standard (i.e., what is/is not included in the coverage or requirements).
- 2) Normative references – Other standards which in whole or in part provide additional requirements when referenced in the normative text (i.e., left-hand column of clauses 4 – 9) of this standard.
- 3) Definitions – Terms used in this standard in a unique or particular manner, together with their definitions (terms used in the same context as are generally understood and commonly used in everyday English are not defined).
- 4) Responsibility – The general responsibilities of the supplier (builder), user, and the user personnel are listed in clause 4 together with which of the remaining clauses they have primary responsibility.
- 5) Risk assessment process – Clause 5 presents the general approach to risk assessment (see B11.0 [B11.TR3] for further explanation of hazard/task identification and risk assessment/risk reduction).
- 6) Design and construction – Generally, the supplier will be responsible for the requirements of clause 6, understanding that the user may add to or modify these requirements through the purchase agreement.
- 7) Layout, installation, testing and start-up – Although the requirements of clause 7 are predominantly the responsibility of the user, the supplier will normally provide assistance either directly (providing personnel) or indirectly (instruction materials).
- 8) Safeguarding – This is normally a shared responsibility between the supplier and user but often, either the supplier or the user will provide and/or meet most or even all of the requirements of clause 8.
- 9) Setup, operation and maintenance – The user is generally responsible for the requirements of clause 9, with possible assistance from the supplier for training.
- 10) Training – The user is generally responsible for the requirements of clause 10, with possible assistance from the supplier for materials or the training itself.

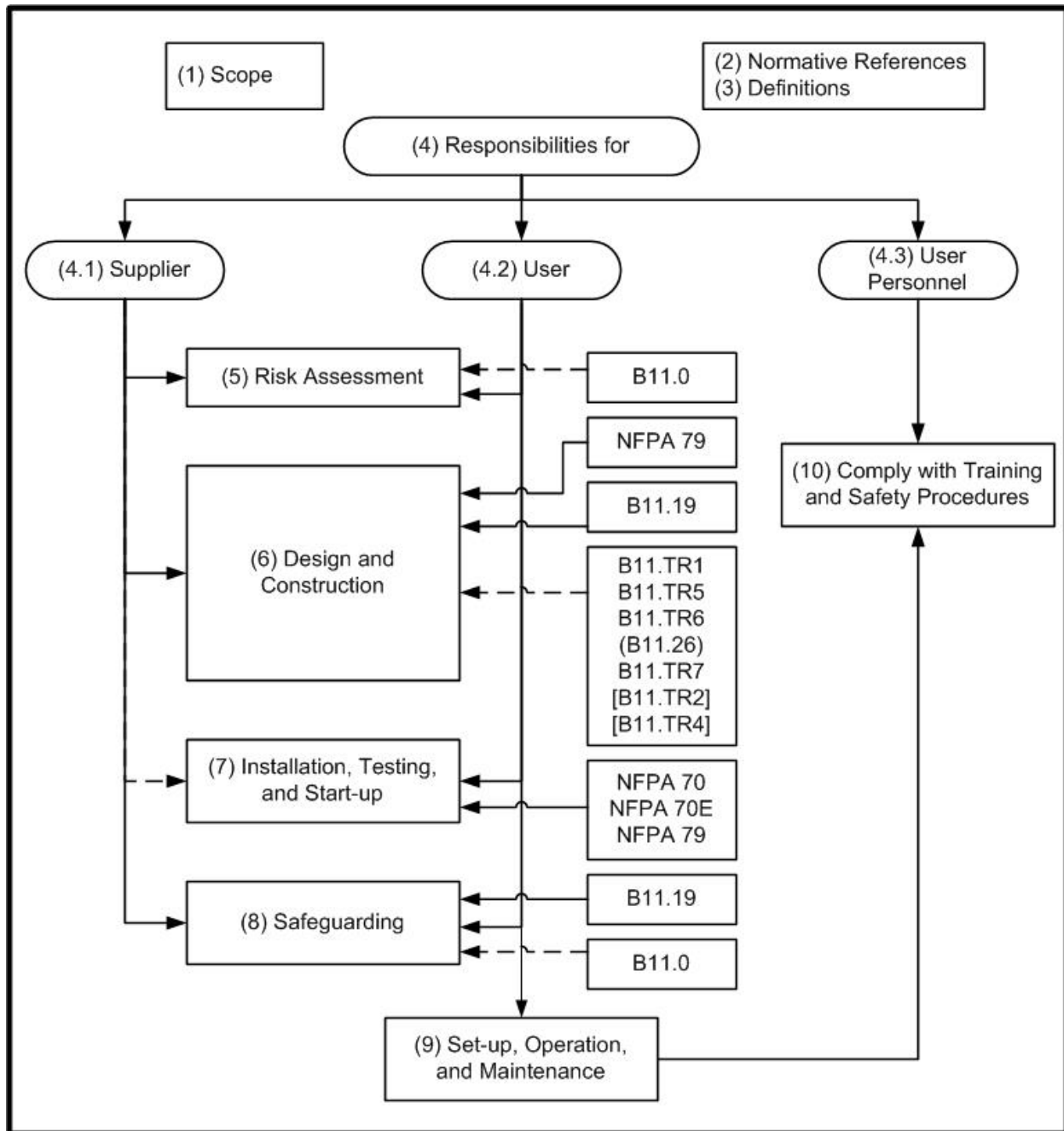


Figure 2 – Typical layout of B11 base standards showing the various responsibilities

American National Standard for Machine Tools – Safety Requirements for Hydraulic / Pneumatic Power Presses

STANDARD REQUIREMENTS

1 Scope

The requirements of this standard apply only to those hydraulically or pneumatically powered machines, commonly referred to as hydraulic / pneumatic power presses, which transmit force to cut, form, or assemble metal or other materials by means of tools or dies attached to or operated by plungers or slides.

1.1 Inclusions

The requirements of this standard shall apply to:

- manually fed presses;
- automatically fed presses;
- presses utilized for hydroforming, spotting or tryout;
- transfer presses;
- tandem line presses;
- presses used in production cells.

1.2 Exclusions

Specifically excluded from this standard are:

- balers;
- cold headers;
- die-casting machines;
- forging presses and hammers;
- guillotine paper cutters;
- high energy rate presses;
- horizontal hydraulic extrusion presses;
- iron workers;
- laboratory machines or equipment used to determine properties of materials;
- manually powered presses;
- meat-processing presses;
- mechanical power presses;
- metal shears;

EXPLANATORY INFORMATION

(Not part of American National Standard B11.2-2013 (R2020) – Safety Requirements for Hydraulic / Pneumatic Presses)

E1

This standard does not establish requirements for personal protective equipment that may be needed for specific operations.

Where used in this standard, the terms “*press or press production system*” or “*machine or machine production system*” are used synonymously with “hydraulic / pneumatic press” or “hydraulic / pneumatic production system,” respectively.

E1.1

See Annex A for figures of applicable covered machines.

- this inclusion is applicable to the press and not the process

E1.2

Many of the excluded machines are covered by other standards. Refer to clause 2, Referenced Standards. For machines listed in 1.2 for which no type-C reference standard is indicated below, please refer to ANSI B11.0 for guidance.

See ANSI Z245.1, Z245.2, and Z245.5

See ANSI B11.7

See ANSI NADCA B152.1

See ANSI B24.1 [now withdrawn]

See ANSI B65.3

See ISO 9189 (high speed presses)

See ANSI B11.17

See ANSI B11.5

See ASTM E1842

See ANSI B11.1

See ANSI B11.4