

ANSI B11.13-1992 (R12)

American National Standard for Machine Tools —

Safety Requirements for Single-Spindle or Multiple-Spindle Automatic Bar and Chucking Machines

Secretariat and Accredited Standards Developer:
B11 Standards, Inc.
POB 690902
Houston, TX 77269

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Foreword (This Foreword is not part of the requirements of American National Standard B11.13-2012)

The primary objective of this standard is to eliminate, control or reduce hazards to individuals associated with Multiple Spindle Automatic Bar and Chucking Machines by establishing requirements for the design, construction, installation, commissioning, operation, maintenance and decommissioning of these machines. To accomplish this objective, responsibilities have been assigned to the supplier (e.g., manufacturer, modifier, distributor, rebuilder and integrator), the user, and individuals in the working environment.

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 hazards, this standard recognizes that hazards 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.

The original B11.13 safety standard for single-spindle and multiple-spindle automatic screw/bar and chucking machines was approved in 1975 and revised and approved again in 1983. It was superseded by ANSI B11.13-1992 titled America National Standard for Machine tools – Single-spindle or multiple-spindle Automatic Bar and Chucking Machines, which had been changed to accurately reflect current industry practice. That standard was reaffirmed in 1998, 2003, 2007 and again in 2012.

Technology for single-spindle or multiple-spindle automatic bar and chucking machines is continuously evolving. This standard reflects the most commonly used and time-tested methods used 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.

Effective Date

The following 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 within 30 months of the approval of this standard.

For existing or modified machines, this Subcommittee recommends that users should confirm that the equipment / process has tolerable risk using generally recognized risk assessment methods within 30 months of the approval date of this standard. If the risk assessment shows that modification(s) is necessary, refer to the requirements of this standard to implement protective measures for appropriate risk reduction.

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 B11 Standards, Inc. POB 690905, Houston, TX 77269. Attention: B11 Secretariat.

This standard was prepared by the B11.13 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 reaffirmed as an American National Standard, the ANSI B11 Accredited Standards Committee was composed of the following member organizations:

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Toyota Motor Manufacturing North America	Barry Boggs	Todd Mills
International United Automotive Workers	Tom Ford	

Explanation of the format, and ANSI B11 conventions

This ANSI B11.13 standard is divided into parts formerly referred to as sections or chapters and now referred to as clauses in line with the current ANSI style manual. Major divisions of clauses are referred to as subclauses and, when referenced by other text in the standard, are denoted by the subclause number (e.g., see 5.1).

The standard uses a two-column format to provide supporting information for requirements. The material in the left column is confined to "Standard 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.

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 compliance with the standard. The B11 standards do not use the term "and/or" but instead, the term "OR" is used as an inclusive disjunction, meaning *one or the other or both*. 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.). Gauge refers to a measuring or testing instrument; gage refers to limiting device (e.g., backgage).

Suggestions for improvement of this standard will be welcome. They should be sent to B11 Standards, Inc. POB 690905, Houston, TX 77269 - Attention: B11 Secretariat.

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.

The 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 by an appropriate machine design, by restricting personnel and other individuals' access to hazard areas, and by devising work procedures to minimize personnel exposure to hazardous situations. This is the essence of the ANSI B11 series of safety standards.

The responsibility for the alleviation of these risks is divided between the equipment supplier, its user and its operating personnel, as follows (numbers in parentheses refer to the clause numbers in these standards which address that responsibility):

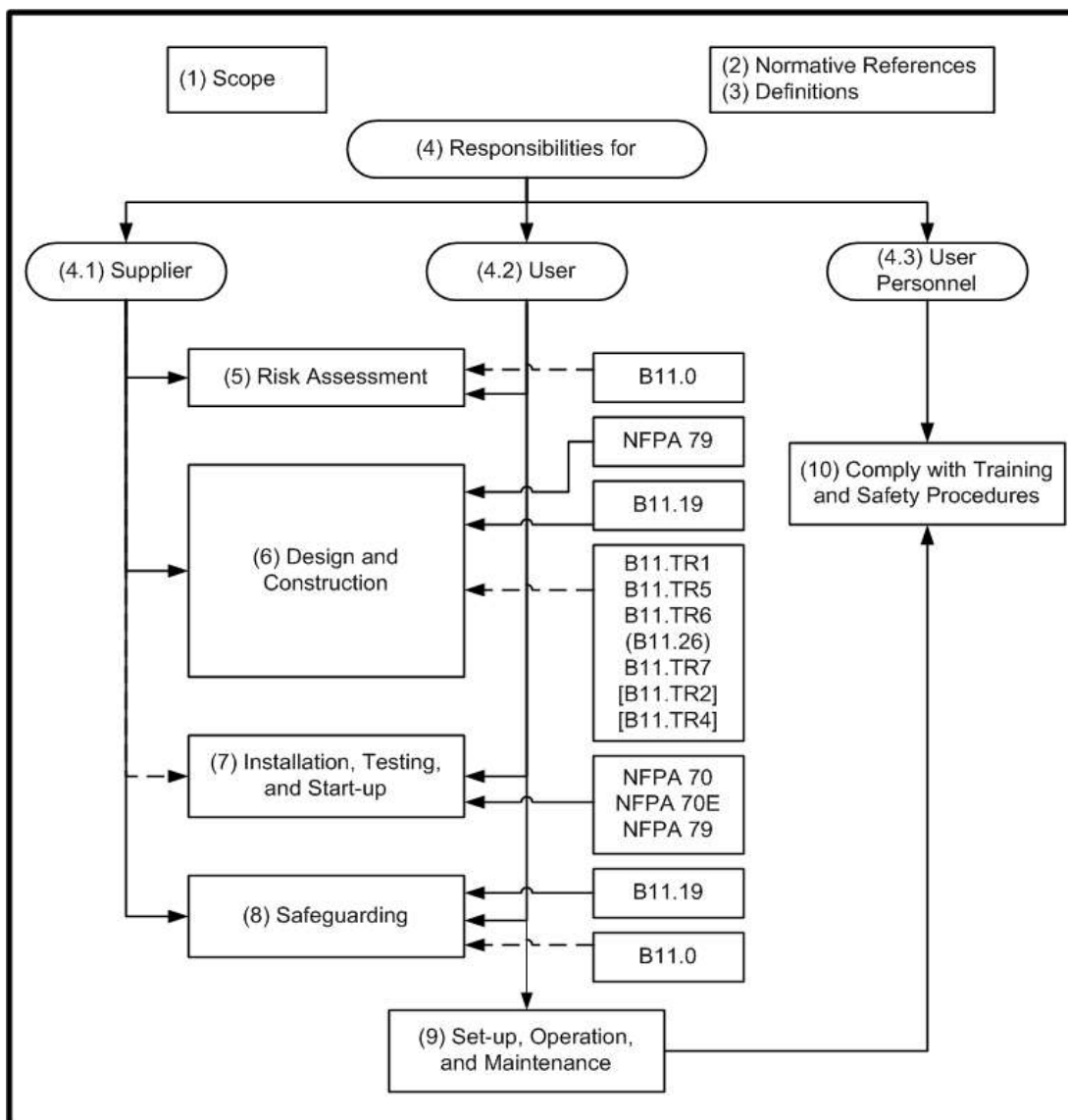


Figure 1 – Typical layout of B11 base standards showing the various responsibilities

Figure 1 (previous 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 1:

- 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.

Figure 1 below provides an overview of this ANSI standard and in particular, the responsibilities of and requirements for the supplier and user including, the user personnel. Some of these requirements (e.g., hazard identification, hazard control, safeguarding) are shared between the supplier and user. The responsibility of the supplier for layout and installation is to the extent that the user requires its involvement. Numbers in parentheses [(N.N)] denote the particular clause or subclause of the standard.

American National Standard for Machine Tools

Safety Requirements for Single-spindle or multiple-spindle Automatic Bar and Chucking Machines

STANDARD REQUIREMENTS

1 Scope

This standard applies to single-spindle and multiple-spindle automatic bar and chucking machines in which all tool movement is controlled by the machine.

1.1 Included machines

The following machines are included in the scope of this standard:

- a) Single-spindle automatic bar machines of the tool turret-indexing type;
- b) Single-spindle automatic machines of the sliding-headstock type, or those with a fixed headstock and a sliding guide bushing (Swiss-type);

EXPLANATORY INFORMATION

(Not part of ANSI B11.13, *American National Standard for Machine Tools — Safety Requirements for Single-spindle or multiple-spindle Automatic Bar and Chucking Machines*)

E1

A machine of this type is automatic in the sense that it repeatedly performs all of the necessary operations, which may include ejecting the machined piece and presenting a new piece or length of stock to the tools. These machines run continuously until stopped by an operator, sensing device or automatic function of the machine control system. The energy sources for these machines can be provided by, but are not limited to, mechanical, pneumatic, hydraulic or electrical sources, or a combination thereof. Use of the term "machine" in this standard refers to single-spindle or multiple-spindle automatic bar and chucking machines unless explicitly stated otherwise.

Historically some machines to which this standard applies were referred to as "screw machines."

E1.1

Specific automatic machines will be referred to as single-spindle or multiple-spindle automatic bar and chucking machines. Also, the term "machines" used by itself throughout this standard will mean single-spindle or multiple-spindle automatic bar and chucking machines.

- a) Turret-indexing types are those in which tools are mounted in an indexing turret and are advanced automatically to the work material or piece held in the spindle. Additional tools are mounted in radial cross slides (see Annex A, Figures 1-2);
- b) Sliding headstock types are those in which the headstock moves axially, advancing or retracting the stock past radially mounted tools.

In another design, the headstock is stationary