# ANSI B11.6–2001 (R2012)

*American National Standard for Machines –*

# *Safety Requirements for Manual Turning Machines with or without Automatic Control*

Secretariat and Accredited Standards Developer:

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

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**American National Standards Institute**

***AMERICAN NATIONAL STANDARDS***

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## Foreword (This Foreword is not a part of the requirements of American National Standard B11.6-2001 R2012)

The primary objective of this standard is to eliminate or control hazards to personnel associated with manual turning machines with or without automatic control by establishing requirements for the construction, operation and maintenance of these machines. To accomplish this objective, responsibilities have been assigned to the supplier (e.g., manufacturer, rebuilder, reconstructor, installer, integrator), the user and personnel in the working environment. The words "safe" and "safety" are not absolutes. Safety begins with good design. While the goal of this standard is to eliminate injuries, it is recognized that risk factors cannot be practically reduced to zero in any human activity. This standard is not intended to replace good judgment and personal responsibility. Operator skill, attitude, training, job monotony, fatigue and experience are safety factors that must be considered by the user.

Manual turning machines and associated equipment technologies are continuously evolving. This standard reflects the most commonly used and time-tested state of the art at the time of its approval. The inclusion or omission of language relative to any evolving technology, either in the requirements or explanatory areas of this standard, in no way infers acceptance or rejection of such technologies.

### 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.

Inquiries with respect to the application or the substantive requirements of this standard, and suggestions for its improvement, are welcomed and should be sent to B11 Standards, Inc., POB 690905, Houston, TX 77269, Attention: B11 Secretariat.

This standard was prepared by the B11.6 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:

Alan Metelsky, Chairman
Barry Boggs, Vice Chairman
David Felinski, Secretary

| Organizations Represented | Name of Representative | |
|---|---|---|
| | Delegate | Alternate |
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| Aluminum Extruders Council | Melvin Mitchell | Scott Burkett |
| American Society of Safety Engineers | Bruce Main, PE, CSP | George Karosas, PE,CSP |
| Association For Manufacturing Technology | Russell Bensman | Alan Metelsky |
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| Canadian Standards Association | Elizabeth Rankin, CRSP | Walter Veugen |
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| FDR Safety | Michael Taubitz | Flavius Brown |

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| System Safety Society | John Etherton, PhD, CSP | Rod Simmons, PhD |
| 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 ASC **B11.6 Subcommittee** had the following members who participated in the development of this revision:

| **Name** | **Company** | **Title** |
|---|---|---|
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| John F. Bloodgood, PE | JFB Enterprises | Secretary |
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| William Riley | U.S. Navy | |
| Carl Sharak | Liberty Mutual | |

## Explanation of the format of the standard

This ANSI B11.6 – 2001 (R2012) standard is divided into parts formerly referred to as sections or chapters and now referred to as clauses, consistent 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 felt would clarify 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.

By convention, 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*.

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):

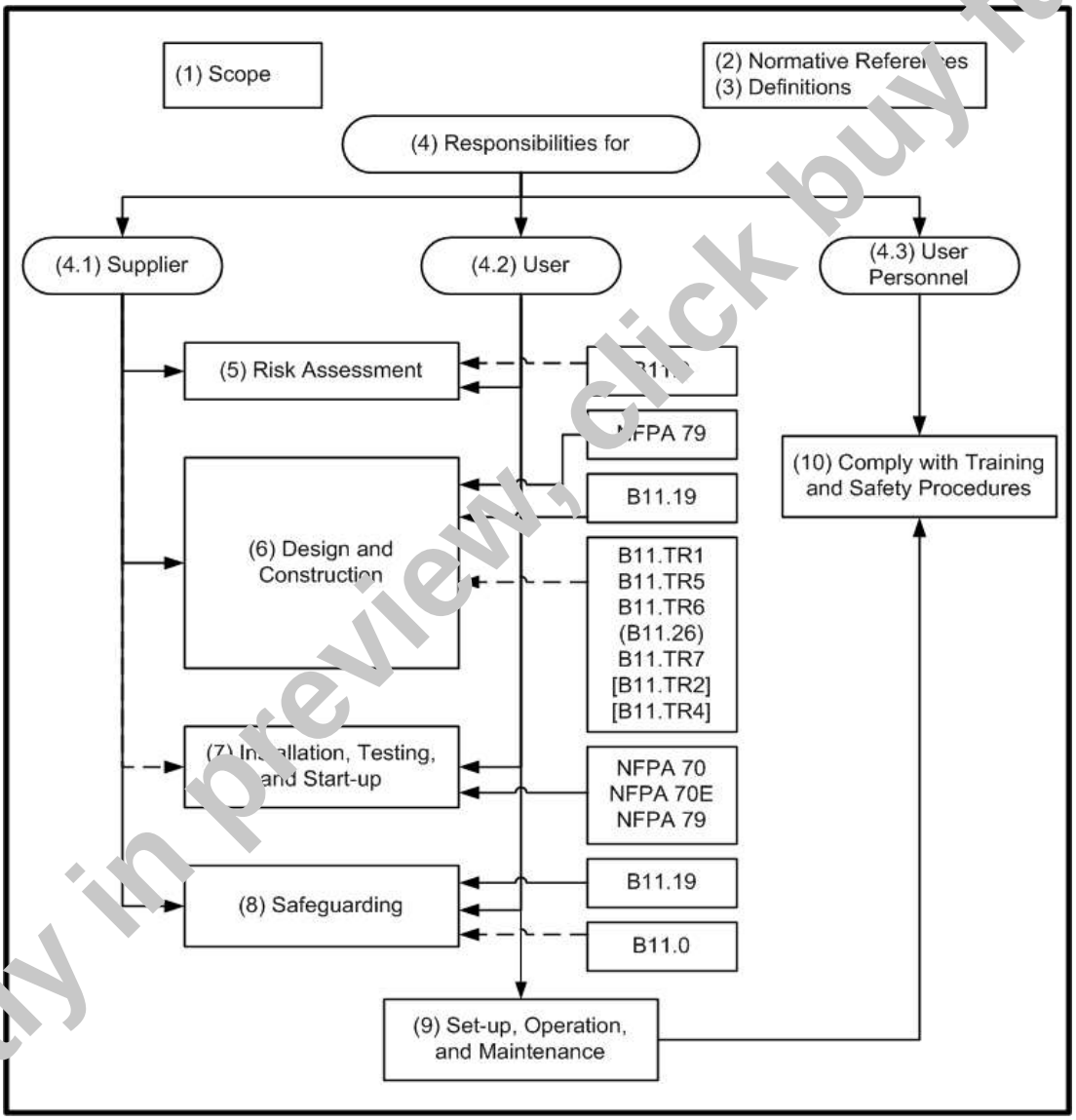


**Figure 1 – Typical layout of B11 base standards showing the various responsibilities**

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.

# *American National Standard for Machines –*
# *Safety Requirements for Manual Turning Machines with or without Automatic Control*

**STANDARDS REQUIREMENTS**

**EXPLANATORY INFORMATION**
(Not part of the requirements of American National Standard for Machines – Safety Requirements for Manual Turning Machines with or without Automatic Control - ANSI B11.6-2001 R2012)

## 1 Scope

This standard specifies safety requirements for the design, construction, operation and maintenance (including installation, dismantling, and transport) of the general class of manually controlled horizontal and vertical spindle turning machines. Machines covered by this standard are intended to work metals and other man–made materials. This standard also applies to devices that are integral to the machine.

### *E1*

Generally, chucks are not considered to be part of the machine.

These machines may have automatic capability but may not be equipped with automatic part handling or bar–feed mechanisms nor automatic tool changing systems. This standard does not apply to NC Turning Machines where manual control is used only to set the machine for automatic production.

See ANSI B11.22 for the safety requirements for Turning Centers and Automatic NC Turning Machines, and ANSI B11.13 for the safety requirements for Single- and Multiple-Spindle Automatic Bar and Chucking Machines.

### Manual turning machine

Manual turning machines utilize manually initiated steps to produce a part by rotating the workpiece against a stationary tool(s) such that the cutting force is from the workpiece and not the tool.

NOTE – The terms machine and machining as used throughout this standard mean turning machine.

## 2 Normative references

The following normative documents contain provisions that, through reference in this text, constitute provisions of this American National Standard. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements subject to this American National Standard should apply the most recent editions of the normative documents listed below.

### *E2 Informative references*

The corresponding European Standard for the Safety of Manually Controlled Turning Machines With or Without Automatic Control is prEN 12840.