ANSI B11.19-2003 (R09)

American National Standard for Machine Tools –

Performance Criteria for Safeguarding

Secretariat and Accredited Standards Developing Organization:

The Association for Manufacturing Technology
7901 Westpark Drive
McLean, VA 22102

Approved: APRIL 29, 2003
Reaffirmed: September 9, 2009

American National Standards Institute

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Published by: AMT – The Association For Manufacturing Technology
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INFORMATIVE ANNEXES

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Foreword (This foreword is not part of the requirements of American National Standard B11.19-2003)

The primary objective of this standard is to establish the requirements for the design, construction, installation, operation and maintenance of the safeguarding (e.g., guards, safeguarding devices, awareness devices, safeguarding methods and safe work procedures) used to eliminate or control hazards to individuals associated with machine tools. This standard relies on other standards to determine which safeguarding is required or allowed to control identified hazards or hazardous situations, and is intended to be used in conjunction with the ANSI B11 "base" standard for a given machine tool. To accomplish this objective, this standard has established responsibilities for the safeguarding supplier (e.g., manufacturer, rebuilder, installer, integrator and modifier), the user, and individuals in the working environment. The overall goal is to achieve safe work practices and a safe work environment. In addition, this standard includes a comprehensive informative Annex on safety distances which utilizes the updated Liberty Mutual anthropometric data. The original data, which OSHA (29 CFR 1910.217 Table 0-10) uses to base their safe distance safeguarding, was developed by Liberty Mutual in the 1940s. This data was updated and published in 1995, and used larger anthropometric surveys especially relating to women and minorities. While the data sets are similar, several important modifications to the maximum gap size / minimum distance were suggested, and these modifications have been incorporated (see Table D.1 and Figure D.10, Annex D).

The words "safe" and "safety" are not absolutes. Safety begins with good design. While the goal of this standard is to eliminate injuries, this standard recognizes that risk factors cannot practically be 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.

Safeguarding 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 area of this standard, in no way infers acceptance or rejection of such technologies.

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 the AMT – The Association For Manufacturing Technology, 7901 Westpark Drive, McLean, Virginia 22102-4269, Attention: B11 Secretariat.

This standard was processed and submitted for ANSI approval by the B11 Accredited Standards Committee on Safety Standards for Machine Tools. 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 member organizations:

John W. Russell, PE, CSP Chairman
Gary D. Kopps, Vice-Chairman
David A. Felinski, Secretary

Organizations Represented	Name of Representative(s)	
	Delegate	**Alternate**
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Alliance of American Insurers	John Russell, PE, CSP	Keith Lessner
Aluminum Extruders Council	Jeff Dziki	Martin Bidwell
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Metal Building Manufacturers Association	Charles M. Stockinger	Charles E. Praeger
Metal Powder Industries Federation	Dennis Cloutier, CSP	Donald White
National Electrical Manufacturers Association	Vincent A. Baclawski	Frank Kitzantides
National Fluid Power Association	June VanPinsker	
National Institute for Occupational Safety & Health	John Etherton, PhD, PE	
National Tooling and Machining Association	Andy Levine	Richard R. Walker
Precision Metalforming Association	Christopher E. Howell	Christie [illegible]iano
Presence Sensing Device Manufacturers Association	Jim Kirton	Barry Stockton
Rubber Manufacturers Association	Kim Weber	Robert Walker
Sheet Metal and Air Conditioning Contractors' National Association	Mike McCullion	
Tooling and Manufacturing Association	Jeffery W. Hayes	[illegible]ce C. Braker
Unified Abrasives Manufacturers' Association, Bonded Division	Charles S. Conant	
U.S. Department of the Navy (NAVSEA)	Various delegates depending on the Standard	

At the time this standard was approved, the ANSI B11 ASC **B11.19 Subcommittee** had the following members who participated in the development of this revision:

Barry A. Stockton, High Tech Consulting
Chairman

David A. Felinski, AMT
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Chris Bacon	Delphi Automotive Systems
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Explanation of the format of this standard, and ANSI B11 conventions

This ANSI B11.19 – 2003 American National 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 "Standards Requirements" only, and is so captioned. The right column, captioned "Explanatory Information" contains information that the writing Subcommittee believed would help clarify the requirements of the standard. The Explanatory Information 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.

To achieve uniform interpretation, it is imperative to read and understand the definitions (clause 3) of this 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 a limiting device (e.g., backgage). All Annexes are for information purposes only and are not normative parts of the standard.

Suggestions for improvement of this standard will be welcome. They should be sent to AMT-The Association For Manufacturing Technology, 7901 Westpark Drive, McLean, VA 22102 - Attention: B11 Secretariat.

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American National Standard for Machine Tools -

Performance Criteria for Safeguarding

STANDARD REQUIREMENTS

EXPLANATORY INFORMATION

(Not part of the requirements of this American National Standard for Machine Tools —- Performance Criteria for Safeguarding ANSI B11.19–2003)

1 Scope

E1

This standard provides performance requirements for the design, construction, installation, operation and maintenance of the safeguarding listed below when applied to machine tools.

a) Guards (see clause 7);
b) Safeguarding devices (see clause 8);
c) Awareness devices (see clause 9);
d) Safeguarding methods (see clause 10);
e) Safe work procedures (see clause 11);

The manufacturer or supplier referred to in this standard is the manufacturer or supplier of the safeguarding, not the manufacturer or supplier of the machine tool (see clause 3 definitions of *manufacturer* and *supplier*).

This standard does not provide the requirements for the selection of the safeguarding for a particular application.

See the appropriate ANSI B11 machine tool safety standard for the requirements for the selection of safeguarding based on specific applications. Selection of the safeguarding requires task and hazard identification, and the application of risk assessment and risk reduction of the total production system.
See ANSI B11.TR3 on risk assessment and risk reduction, and Annex E for additional guidance.

2 Normative references

E2 Informative references

The standards below contain provisions that are referenced in this text. This standard is intended to be used in conjunction with these standards. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this American National Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated.

The standards below contain information and guidance in the implementation of the requirements of this standard or are referenced by other B11 standards. They are included for information only.

ANSI / NFPA 79 -2002 *Electrical Standard for Industrial Machinery*

ANSI / NFPA 70 – 2002 *The National Electrical Code*

ANSI Z53[illegible]1 – 2002 *Safety Color Code*

ANSI Z244.1–2003 *Control of hazardous energy – Lockout/tagout and alternative methods*

ANSI Z535.3 – 2002 *Criteria for Safety Symbols*

IEC 61496, 1997: *Safety of machinery; Electrosensitive protective equipment*

ANSI Z535.4 – 2002 *Product Safety Signs and Labels*

29 CFR 1910.147: Control of hazardous energy ('lockout/tagout') (For more info, www.osha.gov)

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