ANSI B11.6 – 2022

American National Standard –

Safety Requirements for Manual Turning Machines (Lathes) with or without Automatic Control

ANSI-Accredited Standards Developer and Secretariat:

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APPROVED: 8 MARCH 2022

by the American National Standards Institute
Board of Standards Review

AMERICAN NATIONAL STANDARDS

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FOREWORD

(This Foreword is not a part of the requirements of this ANSI B11.6-2022 American National Standard)

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.

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 B11 Standards, Inc., PO Box 690905, Houston, Texas 77269, USA, Attention: B11 Secretariat.

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 date of this standard.

The Subcommittee recommends that users evaluating whether existing machinery and machinery systems implement this edition 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 or the machine-specific "base" safety standard to implement risk reduction measures (protective measures) for appropriate risk reduction.

Context (how to read/use this document)

The writers of this document understand that the reader/user of this American National Standard is unlikely to read it cover-to-cover, but instead (for example), might use the Table of Contents as a sort of 'roadmap' to find a very specific topic and then review only that topic. However, the reader/user of this standard is informed that the elements (clauses, subclauses, etc.) of these documents are sequenced and often interrelated in such a way as to state requirements that may very well be dependent on text in a section(s) that precedes the actual requirement. It therefore becomes vital and important for the reader/user of this standard to ensure they understand the depth, range and especially the context of the section or topic in which the actual requirement appears.

Inquiries

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 cfelinski@b11standards.org.

Development

This standard was processed and submitted for ANSI approval by the B11 Standards Development Committee (B11 SDC) 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 SDC was composed of the following member organizations:

Alan Metelsky, FS, Eng., **Chair** / Anne Mathias, PE, **Vice–Chair** / David Felinski, **Secretary**

Organizations Represented	Name of Representative	
	Delegate	**Alternate**
Aluminum Extruders Council	Melvin Mitchell, CSP	Bradley Wyatt, CSP
American Society of Safety Professionals	Ted Sberna, Sr.	Anne Mathias, PE
Association for Advancing Automation	Carole Franklin	Jeff Fryman
Association For Manufacturing Technology	Russell Bensman	Alan Metelsky, FS Eng
Assoc. for Packaging & Processing Technology	Bruce Main, PE, CSP	Tom Egan
The Boeing Company	Rhiannon McPherson	Mark Ellingson, Stephen Thomas
Bridgestone	Kenji Furukawa, FS Eng	Joey Hinson, FS Eng
Canadian Standards Association	Andrea Holbeche, P.Eng.	Walter Veuger
Deere & Co.	Tony Beeth	Scott Winter
Euchner	Chris Gerges	Ron Yemmons
Exponent	Stephen Andrew, PE	
FDR Safety	Michael Taubitz	Joe Wolfsberger, Luke Contos
Fortress Safety	Jenny Tuertscher, B11 LMSS	Malcolm Sharp
Honda Development & Manufacturing of America	Todd Dickey	Estelle Diaz
General Motors Corporation	Michael Douglas	Stanley Brooks
Grantek System Integration	Gerald Kupel	Mauric Brown
IDEM Safety	Mark Witherspoon	Amir Mohtasham
Komatsu America Industries	George Schreck	James Landowski
Liberty Mutual	Craig Karasack, CSP	Julie Thompson, CSP
MAG Automotive	Erik Carrier	Doug Watts
Metal Powder Industries Federation	Bill Edwards	James Adams
National Institute for Occupational Safety & Health	Richard Current, PE	
Occupational Safety & Health Administration	Kenneth Stevenus	Mary Bauer, CIH, CSP, B11 LMSS
Omron Scientific Technologies Incorporated	Tina Hull, FS Exp	Frank Webster
Pilz Automation Safety, LP	Michael Beerman, CMSP	Doug Sten, PhD, CSP
Plastics Industry Association	Jeff Linder	Dale Bartholomew
Precision Metalforming Association	James Barrett, Jr. PhD	David Klotz
Presence–sensing Device Manufacturers Assn.	James Kirton	Michael Carlson
Rockwell Automation	Darin Magnuson, FS Eng	Jonathan Barrett, FS Eng
Safe–T–Sense	Michael Poynter, FS Eng	Federico Badillo
SICK, Inc.	Chris Soranno, FS Exp	Nate Gose, FS Eng
Sheet Metal & Air Cond. Contractors Nat'l. Assoc.	Justin Crandol, CSP	Rick Di Ioli
Toyota Motor Manufacturing North America	Chip Boertlein	Michael Collier, B11 LMSS

The B11.6 Subcommittee which revised the 2001 standard, had the following members:

Name	Company	Title
Steve Miller	Bridgeport	Chairman
John F. Bloodgood, PE	JFB Enterprises	Secretary
Tony Bratkovich, PE	AMT	
Lance Chandler	Boeing	
Dennis Coleman	Southwestern	
James Cordier	Hardinge	
Joe Policijan	Clausing Industrial	
James Hoffman	Cincinnati-Milacron	
Roger Hopkins	Delphi Harrison	
Kent Johnson	Deere & Co.	
William Riley	U.S. Navy	
Carl Sharak	Liberty Mutual	

Since the last revision of B11.6, the format/style and even some content elements within the ANSI B11 series have evolved. This current revision has maintained many of those same safety requirements and in several instances, updated requirements up-to-date standards of safety practices and technology while updating the format of the standard to the modern B11 standards structure. Additionally, the ANSI B11 series of standards now incorporates the integration of a stratified approach using "**types**" of standards (i.e., type-A, type-B and type-C standards – see a more detailed explanation of this approach in the Introduction). ANSI B11.6 is considered a type-C standard and is intended to be used (at a minimum) in conjunction with the type-A ANSI B11.0 and type-B ANSI B11.19 (see the B11 documents list on page xi).

The Subcommittee which developed this current revision of ANSI B11.6 had the following members:

Chris Felinski, Chairman, B11 Standards, Inc.
David Felinski, Secretary, B11 Standards, Inc.
Mike Douglas, General Motors
Jim Kirton, Kirton Industrial Equipment LLC
Heinz Knackstedt, Machine Control Safety Training
Bruce Main, PE, CSP, design safety engineering, inc.
Ted Sberna, Sr., White Horse Safety
Chris Soranno, FS Eng, SICK Inc.
Mike Taubitz, FDR Safety

Explanation of the format, and ANSI B11 conventions

This 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.

Generally speaking, 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, however, the terms can often be used quite interchangeably.

B11 conventions:

Normative inter-document or intra-document references are denoted by “See #.##.” *Informative* inter-document or intra-document references are denoted by “See ***also***, #.##.”

The use of “hard” conversion between metric and English units does not imply a tolerance requirement.

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 ANSI 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.).

Introduction

The main purpose of every machine tool is to process materials. Inadvertent interference with, or accidental misdirection of the released energy during production, maintenance, commissioning and de-commissioning can result in injury.

The purpose of the ANSI B11 series of machinery safety standards is to devise and propose ways to eliminate or minimize risks of the potential hazards associated with the required tasks. 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. 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.

Organization and Application of B11 Documents

The B11 standards and technical reports can be associated with the ISO "type A-B-C" structure as described immediately below, and as shown in Figure 1.

- **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 engineering controls 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**.**

The 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, B11.21, B11.25, B11.26, as well as the entire B11 series of Technical Reports are all typical "Type-B" documents addressing general safety elements that can be used across a wide range of machinery (such as B11.19 and B11.26) 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 different machines, and as such would fall into the "Type-B" category. The machine-specific ("Type-C") B11 standards contain detailed safety requirements for a particular machine or group of machines (such as this standard). The Type-A B11.0 and the Type-C (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.