

ANSI B11.0–2015

TWO COLUMN (“ANSI style”) FORMAT

American National Standard for Machines –
Safety of Machinery

Secretariat and Accredited Standards Developer:
B11 Standards, Inc.
POB 690905
Houston, TX 77269

Approved: **25 AUGUST 2015**

by the
American National Standards Institute



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Foreword

(This Foreword is not part of the requirements of this American National Standard on Safety of Machinery.)

Overview

This American National Standard was promulgated by the B11 Accredited Standards Committee as a voluntary consensus standard to establish safety requirements for machinery and machinery systems. This standard specifies general safety requirements for the design, construction, operation and maintenance (including installation, dismantling and transport) of machinery and machinery systems. This standard also applies to devices that are integral to these machines.

This standard was first published in 2008 as ANSI B11 General Safety Requirements. It was revised, re-designated and published as ANSI B11.0 in 2010. The current B11.0 standard is the second edition of this American National Standard on the Safety of Machinery. This version adds responsibilities related to machinery components, clarifies the relationship between the risk assessment for the machine and the design specification for control systems, provides additional information on documentation requirements, includes new clauses on supervision and training, presents new annexes correlating machinery safety standards in the U.S. and EN/ISO, and generally clarifies and simplifies text in the standard.

The B11 standards for machine tools were first approved beginning with safety requirements for power presses in 1922. Since that time, safety requirements for a variety of machine tools have been developed and continually updated and revised to become the series of B11 standards and technical reports. Maintaining these documents with consistent language proved to be a significant challenge. This standard presents the requirements common to most of the B11 standards into this document while retaining the machine tool specific requirements in the machine-specific (Type-C) standards.

The concepts and principles contained in this standard can be applied very broadly to a wide variety of systems and applications. Documented risk assessments were first introduced to the machine tool industry in 2000 with the publication of ANSI B11.TR3 – *Risk Assessment and Risk Reduction – A Guide to Estimate, Evaluate and Reduce Risks Associated With Machine Tools*; to the robot industry in 1999 with the publication of ANSI/RIA R15.06-*Requirements for Industrial Robots and Robot Systems*; and to the packaging machinery industry in 2006 with the publication of ANSI/PMMI B155.1-*Safety Requirements for Packaging Machinery and Packaging-Related Converting Machinery*. Since that time the principles of the risk assessment process have been applied to many applications – including traffic control, consumer products, incident investigations, and of course machinery. Interested readers are encouraged to apply these principles and concepts to other systems in addition to machinery as suits their needs.

Prevention Through Design or PTD is a recent term in the industry; the objectives of risk assessment, risk reduction and elimination of hazards as early as possible are integral and not new to this standard. The phrase "Prevention Through Design" is used within the standard, as are other equivalent terms such as "elimination by design," "design out," and "substitution" to thoroughly address risk assessment and applying it to the lifecycle and operations of the machine.

Objective

The objective of the B11 standards is to eliminate injuries to personnel from machinery or machinery systems by establishing requirements for the design, construction, reconstruction, modification, installation, set-up, operation and maintenance of machinery or machine systems. This standard should be used by suppliers and users, as well as by the appropriate authority having jurisdiction. Responsibilities have been assigned to the supplier (i.e., manufacturer, the reconstructor, and the modifier), the user, and the user personnel to implement this standard. This standard is not intended to replace good judgment and personal responsibility. Personnel skill, attitude, training and experience are safety factors that must be considered by the user.

The safeguarding of machinery is complicated by the wide variety of operations and operating conditions, including, but not limited to the following: the variations in size, speed, and type of machinery used; the size, thickness, and kind of pieces to be worked; the required accuracy of the finished work; the skill of operators; the length of run; and the method of feeding, including part and scrap removal. Because of these varying factors in the operations and in the workplace, a wide variety of risk reduction measures has been covered in this standard as well as the ANSI B11 machine-specific (Type-C) standards.