

ANSI B11.17-2004 (R09)

American National Standard for Machine Tools -

Safety Requirements for Horizontal Hydraulic Extrusion Presses

Secretariat and Standards Developing Organization

The Association for Manufacturing Technology
7901 Westpark Drive
McLean, VA 22102
Attn: Safety Department

Approved: May 6, 2004
Reaffirmed: September 9, 2009
by the American National Standards Institute



AMERICAN NATIONAL STANDARDS

By approving this American National Standard, the ANSI Board of Standards Review confirms that the requirements for due process, consensus, balance and openness have been met by AMT – The Association For Manufacturing Technology (the ANSI-accredited standards developing organization).

American National Standards are developed through a consensus process. Consensus is established when substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made toward resolution. This process brings together volunteers and/or seeks out the views of persons who have an interest in the topic covered by this publication. While AMT administers the process and establishes procedures to promote fairness in the development of consensus, it does not write the document and it does not independently test, evaluate or verify the accuracy or completeness of any information or the soundness of any judgments contained in its standards or guidelines.

American National Standards are promulgated through ANSI for voluntary use; their existence does not in any respect preclude anyone, whether they have approved the standards or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standards. However, users, distributors, regulatory bodies, certification agencies and others concerned may apply American National Standards as mandatory requirements in commerce and industry.

The American National Standards Institute does not develop standards and will in no circumstances give an interpretation of an American National Standard. Moreover, no person shall have the right or authority to issue an interpretation of an American National Standard in the name of the American National Standards Institute. Requests for interpretations should be addressed to the Secretariat (AMT).

AMT MAKES NO WARRANTY, EITHER EXPRESSED OR IMPLIED AS TO THE FITNESS OF MERCHANTABILITY OR ACCURACY OF THE INFORMATION CONTAINED WITHIN THIS STANDARD, AND DISCLAIMS AND MAKES NO WARRANTY THAT THE INFORMATION IN THIS DOCUMENT WILL FULFILL ANY OF YOUR PARTICULAR PURPOSES OR NEEDS. AMT disclaims liability for any personal injury, property or other damages of any nature whatsoever, whether special, indirect, consequential or compensatory, directly or indirectly resulting from the publication, use of, application or reliance on this document. AMT does not undertake to guarantee the performance of any individual manufacturer or seller's products or services by virtue of this standard or guide, nor does it take any position with respect to the validity of any patent rights asserted in connection with the items which are mentioned in or are the subject of this document, and AMT disclaims liability for the infringement of any patent resulting from the use of or reliance on this document. Users of this document are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, is entirely their own responsibility.

In publishing or making this document available, AMT is not undertaking to render professional or other services for or on behalf of any person or entity, nor is AMT undertaking to perform any duty owed by any person or entity to someone else. Anyone using this document should rely on his or her own independent judgment, or as appropriate, seek the advice of a competent professional in determining the exercise of reasonable care in any given circumstances.

AMT has no power, nor does it undertake to police or enforce conformance to the requirements of this document. AMT does not certify, test or inspect products, designs, or installations for safety or health purposes. Any certification or other statement of conformance to any health or safety-related information in this document shall not be attributable to AMT and is solely the responsibility of the certifier or maker of the statement.

NOTICE: This American National Standard may be revised or withdrawn at any time. The procedures of the American National Standards Institute require that action be taken periodically to reaffirm, revise, or withdraw this standard. You may contact the Secretariat for current status information on this, or other B11 standards. Individuals interested in obtaining up-to-date information on standards can access this information at <http://www.nssn.org> (or by contacting ANSI). NSSN - A National Resource for Global Standards, provides a central point to search for standards information from worldwide sources and can connect those who seek standards to those who supply them.

Published by: AMT – The Association For Manufacturing Technology
7901 Westpark Drive, McLean, VA 22102-4206, USA
Copyright © 2004 by the Association For Manufacturing Technology
All rights reserved. Printed in the United States of America

TABLE of CONTENTS	Page
FOREWORD	V
EXPLANATION OF THE FORMAT, AND ANSI B11 CONVENTIONS	VII
INTRODUCTION.....	VIII
1 SCOPE	1
1.1 GENERAL.....	1
1.2 EXCLUSIONS	1
2 NORMATIVE REFERENCES	2
3 DEFINITIONS	3
4 RESPONSIBILITY	6
4.1 SUPPLIER'S RESPONSIBILITY	6
4.2 USER'S RESPONSIBILITY	7
4.3 PERSONNEL'S RESPONSIBILITY.....	8
5 HAZARD CONTROL.....	9
5.1 TASK AND HAZARD IDENTIFICATION	9
5.2 RISK ASSESSMENT / RISK REDUCTION	10
6 DESIGN AND CONSTRUCTION.....	11
6.1 GENERAL.....	11
6.2 HYDRAULIC COMPONENTS AND CIRCUITS	12
6.3 PNEUMATIC COMPONENTS AND CIRCUITS.....	13
6.4 ELECTRICAL EQUIPMENT	14
6.5 OPERATOR INTERFACE AND CONTROL SYSTEM.....	14
6.6 FLUCTUATION IN OR INTERRUPTION OF POWER SOURCES	18
6.7 ISOLATION OF POWER SOURCES	18
6.8 STORED ENERGY	18
6.9 EXTERNAL INTERFERENCES	19
6.10 PROVISIONS FOR TOOL ALIGNMENT.....	19
6.11 PLATEN EXIT VIEWING	19
6.12 NOISE.....	19
7 INSTALLATION, TESTING AND START-UP	19
7.1 GENERAL.....	19
7.2 FOUNDATION.....	20
7.3 LIGHTING	20
7.4 FIRE PROTECTION	20
7.5 TESTING AND START-UP	20
8 SAFEGUARDING	21
8.1 GENERAL.....	21
8.2 GUARDS	21
8.3 SAFEGUARDING (PROTECTIVE) DEVICES	21
8.4 AWARENESS BARRIERS, DEVICES AND SIGNS	21
8.5 SAFEGUARDING METHODS	21
8.6 SAFE WORK PROCEDURES	22
8.7 COVERS AND SHIELDS	22
8.8 COMPLEMENTARY EQUIPMENT	22
8.9 SAFETY DISTANCE	22
8.10 PERFORMANCE OF THE SAFETY-RELATED FUNCTION(S)	23

9	OPERATION AND MAINTENANCE.....	24
9.1	TRAINING OF PERSONNEL.....	24
9.2	LOCKOUT/TAGOUT/VERIFY	24
9.3	SET-UP	24
9.4	OPERATION.....	25
9.5	MAINTENANCE.....	25
ANNEX A – EXAMPLE FIGURES.....		27
ANNEX B – PERFORMANCE OF THE SAFETY-RELATED FUNCTION(S)		32
ANNEX C – AUDIT LIST		33

Foreword (This Foreword is not part of the requirements of American National Standard B11.17-2004.)

The primary objective of this standard is to eliminate, control or reduce hazards to individuals associated with horizontal hydraulic extrusion presses by establishing requirements for the design, construction, operation and maintenance of these machines. To accomplish this objective, responsibilities have been assigned to the supplier (e.g., manufacturer, modifier, 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 B11.17 Standard was approved in 1982 and reaffirmed in 1989 as originally written. B11.17 was then revised and approved in 1996. This current standard was then revised (its third) by the B11.17 Subcommittee, processed and administered by the Secretariat, and approved by the B11 Accredited Standards Committee for submittal to the ANSI Executive Standards Council as an American National Standard.

Horizontal hydraulic extrusion press technology is 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 of the substantive requirements of this standard and suggestions for its improvement are welcomed and are to be sent to the AMT - The Association For Manufacturing Technology, 7901 Westpark Drive, McLean, Virginia 22102-4206. Attention: B11 Secretariat.

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 within 30 months of the approval of this standard.

For existing or modified machines, users should confirm that the equipment / process has tolerable risk 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 protective measures for appropriate risk reduction.

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 document 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

Aerospace Industries Association of America
 Alliance of American Insurers
 American Institute for Steel Construction
 American Society of Safety Engineers
 Association For Manufacturing Technology
 Automotive Industry Action Group
 Can Manufacturers Institute
 General Motors Corporation
 Deere & Company
 Metal Building Manufacturers Association
 Metal Powder Industries Federation
 Natl. Inst. for Occupational Safety & Health
 Occupational Safety & Health Administration
 Packaging Machinery Manufacturers Institute
 Precision Metalforming Association
 Presence Sensing Device Manufact. Assn.
 Robotic Industries Association
 Scientific Technologies, Inc.
 Sheet Metal & Air Conditioning Contractors' Natl. Assn.
 Tooling and Manufacturing Association
 Toyota Motor Manufacturing North America

Name of Representative

Delegate

Alternate

Willard J. Wood	Robert J. Eaker, PE, CSP
John Russell, PE, CSP	Keith Lessner
Thomas Schlafly	
Bruce Main, PE, CSP	George Karosas, PE, CSP
Russell Bensman	
Ron Tillinger	
Geoffrey Cullen	
Michael Taubitz	
Gary Kopps	Ellen K. Blanshan
Charles M. Stockinger	Charles E. Praeger
Dennis Cloutier, CSP	Teresa F. Stillman
John Etherton, PhD	
Ken Stevanus	
Charles F. Hayes	
William Gaskin	Christie Carmigiano
Jim Kirton	Mike Carlson
Jeff Fryman	
Frank Webster	Chris Soranno
Mike McCullion, CSP	
Daniel Kiraly	Allan Te Ronde
Barry Boggs	Tom Huff

At the time this standard was approved, the ANSI B11 ASC **B11.17 Subcommittee** had the following members who participated in the development of this revision:

Henry W. Dowler, Chairman, Werner Co.
 Alan Bartelt PE, Secretary, Alcoa

Jerry Burt	Chase Brass
Floyd Kent	Hydro Aluminum
David Kurtak	UBE Industries
Rich Rutkowski	SMS Eumoco Inc.
Robert Smith	R.L. Best Co.
Barry Stockton	High Tech Consulting

Explanation of the format, and ANSI B11 conventions

This ANSI B11.17 – 2004 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 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 a limiting device (e.g., backgage).

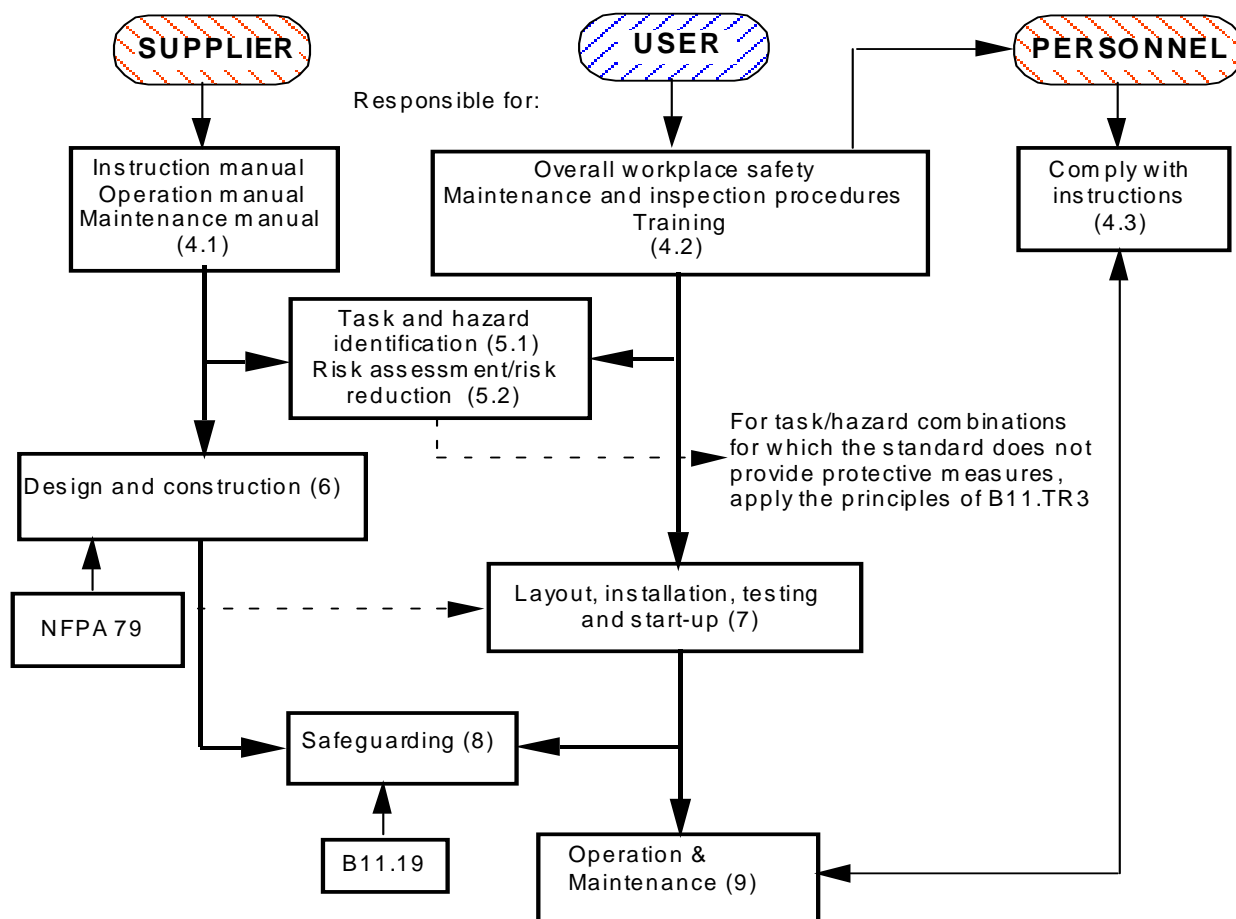
Suggestions for improvement of this standard will be welcome. They should be sent to AMT-The Association For Manufacturing Technology, 7901 Westpark Drive, McLean, VA 22102 - Attention: B11 Secretariat.

Introduction

The primary purpose of every machine tool is to process parts. Hazards exist that may result in injury during production, maintenance, commissioning and de-commissioning.

The primary 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 either by an appropriate machine design, by restricting personnel or 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 to reduce these risks to a tolerable level, or eliminate them 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):



As an aid to both supplier and the user, an audit checklist of important requirements has been provided in Annex C.

American National Standard for Machine Tools -

Safety Requirements for Horizontal Hydraulic Extrusion Presses

STANDARD REQUIREMENTS

EXPLANATORY INFORMATION

(Not part of the requirements of American National Standard for Machine Tools—Safety Requirements for Horizontal Hydraulic Extrusion Presses- ANSI B11.17-2004)

1 Scope

1.1 General

The requirements of this standard apply only to those horizontal hydraulically powered presses that extrude metals by means of applying sufficient pressure to an individual metal billet, confined within a container, to force the metal to be extruded through the configured openings of a die. The horizontal hydraulic extrusion press, hereafter referred to as a *press*, is a hydraulically powered machine that functions to extrude metals horizontally either by the direct or indirect process. It includes components necessary to handle and process metals from the loading mechanism through the platen exit or external butt shear. Components include control systems, hydraulic power systems, main force application cylinder and ram, auxiliary hydraulic and pneumatic cylinders that move components that are an integral part of the extruding machine, material loading mechanism, material pressure containment device, tooling used to apply forces to and form the material, tool handling equipment that function with the press operating cycle, shearing mechanisms, and process and equipment lubricating devices.

1.2 Exclusions

Specifically excluded from this standard are hydrostatic extrusion presses, vertical extrusion presses, laboratory presses used to develop extrusion techniques for new materials and products, and extruding machines of unconventional design.

E1.1

See Figures 1, 2 and 10 for examples of horizontal hydraulic extrusion presses.

E1.2

Machines of unconventional design include, but are not limited to, machines that induce extrusion by using rotating circular containers, endless moving steel belts, or moving segmented containers and viscous fluids.