

ANSI B11.7-1995 (R2015)

American National Standard for Machines —

Cold Headers and Cold Formers — Safety Requirements for Construction, Care, and Use

Secretariat and Accredited Standards Developer

B11 Standards, Inc.
POB 690905
Houston, TX 77269

Approved: February 6, 1995
Reaffirmed: November 17, 2015
by the American National Standards, Inc.



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 B11 Standards, Inc. (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 B11 Standards, Inc. 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 (B11 Standards, Inc.).

B11 Standards, Inc. 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. B11 Standards, Inc. 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. B11 Standards, Inc. 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 B11 Standards, Inc. 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, B11 Standards, Inc. is not undertaking to render professional or other services for or on behalf of any person or entity, nor is B11 Standards, Inc. undertaking to perform any duty owed by any person or entity to anyone 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.

B11 Standards, Inc. has no power, nor does it undertake to police or enforce conformance to the requirements of this document. B11 Standards, Inc. 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 B11 Standards, Inc. 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: B11 Standards, Inc.
POB 690905, Houston, Texas 77269, USA

Copyright © 2015 by B11 Standards, Inc.

All rights reserved. Printed in the United States of America

No part of this publication may be reproduced in any form, in an electronic retrieval system or otherwise, without the prior written permission of the publisher.

Contents

Foreword	iv
Introduction	vii
1 Scope, purpose, and application	1
2 Normative references	2
3 Definitions	3
4 Responsibility	6
5 Hazard identification and hazard control strategy	9
6 Design and construction	10
7 Layout, installation, testing and start-up	19
8 Safeguarding	20
9 Care and use	24
Figure 1 – Nomenclature for typical cold header (operator's side)	26
Figure 2 – Nomenclature for typical cold header (internal view – can shaft side)	26
Figure 4 – Large cold former	29
Figure 5 – Larger cold former	30
Figure 6 – Toggle header (enclosure removed)	31
Figure 7 – Two–die, three–punch cold header	32
Figure 8 – Bearing cold header (ball and/or roller)	33
Figure 9 – Micro former	34
Figure 10 – Formax boltmaker	35
Figure 11 – Formax header	36
Figure 12a – Single die – die block (example)	37
Figure 12b – Multi die – die block (example)	37
Figure 13 – Examples of hand feeding tools	38
Figure 14 – Example of turnover bar	38

Foreword

(This Foreword is not part of American National Standard B11.7-1995 (R2015))

The primary objective of this standard is to eliminate or control the risk of injuries to personnel associated with cold headers and cold formers by establishing requirements for the machine's construction, care and use. To accomplish this objective, responsibilities have been assigned to the supplier (manufacturer, rebuilder, modifier) as well as to personnel in the working environment.

Point-of-operation safeguarding is the single most important factor in the elimination of point-of-operation injuries. A production system consists of the cold headers and cold formers as one component, feeding methods (including part or scrap removal) as a second component, and the third component, point-of-operation safeguarding. The third component, point-of-operation safeguarding, can be evaluated for effectiveness only after the first two components and operator involvement is known. Since this information is known and controlled by the user, the responsibility for compliance with clause 6 has been assigned accordingly.

The safeguarding of cold headers and cold formers is complicated by the wide variety of operations and operating conditions, the variations in size, speed, and type of cold header/cold former used; the size 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 material feeding and part and scrap removal. Because of these varying factors in the operations and in the workplace, a wide variety of point-of-operation safeguarding methods (guards and devices) has been covered in this standard.

The words "safe" and "safety" are not absolutes. Safety is an attitude. 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.

To aid all parties concerned in complying with the requirements of this standard, explanatory information has been placed in the right column, adjacent to the applicable requirements.

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. - The Association For Manufacturing Technology, 7901 Westpark Drive, McLean, Virginia 22102-4269, Attention: Safety Department.

This standard was revised by the B11.7 Subcommittee, processed and administered by the B11 Standards, Inc., as Secretariat, and approved by the B11 Parent Working Committee for submittal to ANSI as an American National Standard in accordance with requirements of the ANSI Accredited B11 Operating Procedures.

Subsequent to an annual interest survey conducted by the Secretariat, the organizations listed below have registered a voting interest on this standard. Their listing does not necessarily imply that all organizations voted for its approval. At the time of ballot, the following representatives registered a vote on behalf of their organization.

Suggestions for improvement of this standard will be welcome. They should be sent to B11 Standards, Inc., POB 690905, Houston, Texas 77260, USA - Attention: B11 Secretariat.

This standard was processed and approved for submittal to ANSI by the 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 it approved this standard, the B11 Committee had the following members:

George M. Wire, Chairman
Charles A. Carlsson, Secretary

*Organization Represented**Name of Representative*

Aerospace Industries Association of America, Inc.	Gerald Lancour
Alliance of American Insurers	John W. Russell
American Boiler Manufacturers Association	Thomas A. Saari
	Russell N. Mosher (Alt.)
American Insurance Services Group	Henry S. Pankiw
American Society of Safety Engineers	Theodore M. Wire
	Alfred B. Auerhaan (Alt.)
Can Manufacturing Institute	O.L. Campbell
Computer & Business Equipment Manufacturers Association	Wayne Loomis
Defense Industrial Plant Equipment Center	William F. Hanrahan (Alt.)
	Garland T. Smith
	Jack W. Lynch (Alt.)
	Barrie E. Brooks, P.E.
International Union, United Automobile, Aerospace and Agricultural Implement Workers of America	Harvey Green
Machinery Dealers National Association	Clyde Batavia (Alt.)
	Charles M. Stockinger
Metal Building Manufacturers Association	John G. Thimmig (Alt.)
	Kenneth E. Lauck
Motor Vehicle Manufacturers Association	Dale A. Gray (Alt.)
	John C. Brooks
National Association of Government Labor Officials	Donald Root
National Association of Name Plate Manufacturers, Inc.	James M. Rice
National Electrical Manufacturers Association	Emmett W. McCarthy
The Association For Manufacturing Technology	William L. Walters (Alt.)
	William F. Ruxton
National Tooling and Machining Association	Paul L. Bonhart
North American Die Casting Association	William Groenestein
Precision Metalforming Association	James Kirton
Presence Sensing Device Manufacturers Association	Barry Stockton (Alt.)
	Douglas Bell
	Peter Pantuso (Alt.)
Rubber Manufacturers Association	Thomas J. Soles, Jr.
Sheet Metal & Air Conditioning Contractors' National Association, Inc.	
Tooling and Manufacturing Association	Jeff Stollard
	Bruce C. Braker (Alt.)

Subcommittee B11.7 on Safety of Cold Chisels and Cold Formers, which developed this standard, had the following members:

John E. Fatzinger, Chairman	Richard J. Cazal	Vice Palese
Frank W. Akstens, Secretary	Mike Kanda	Jesse Robinett
	John Kenny, Jr.	William E. Ruxton
	Paul H. Langenderfer	Ronald P. Tomallo, Jr.
	Richard McClellan	Bernard Thiteca

Explanation of the format, and ANSI B11 conventions

This ANSI B11.7 – 1995 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 limiting device (e.g., backgage).

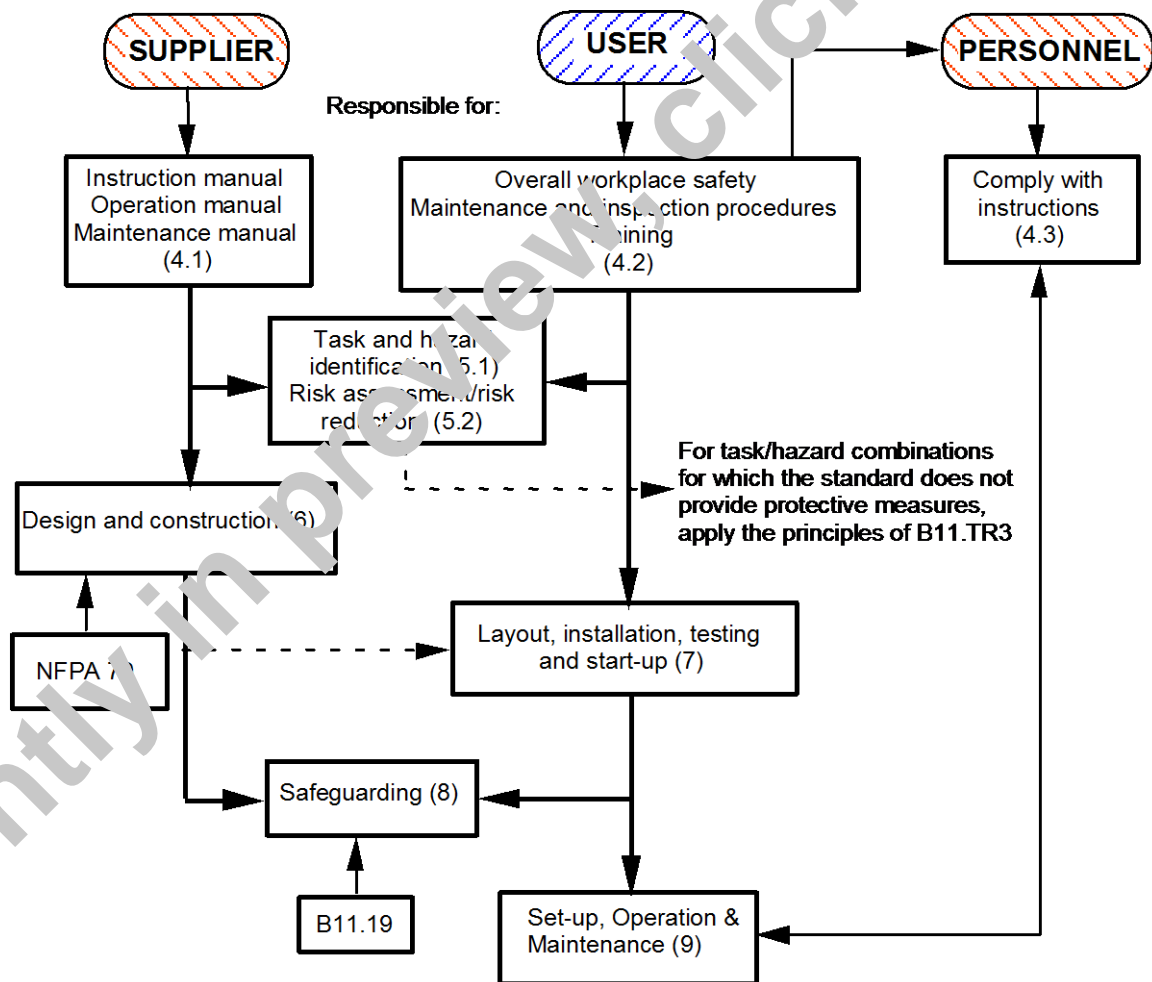
Figures 1-14 included in this standard are provided to aid in its understanding. As such, they are to be considered to be examples and not as part of the requirements. Annex A is for information purposes only.

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 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 for the alleviation of these risks is divided between the equipment supplier, the equipment user and its operating personnel, as follows (numbers in parentheses refer to the clause numbers in these standards which address that responsibility):



*American National Standard for Machines –
Cold headers and cold formers –
Safety Requirements for Construction, Care, and Use*

STANDARD REQUIREMENTS**EXPLANATORY INFORMATION**

(Not part of American National Standard for Machine Tools – Cold headers and cold formers – Safety Requirements for Construction, Care, and Use. ANSI B11.7-1995 (R2015))

1 Scope, purpose, and application**1.1 Scope**

The requirements of this standard apply only to those mechanically powered machines commonly referred to as cold headers and cold formers, which perform many operations such as shearing, heading, upsetting, extruding, trimming, forming, cold working, or warm forming material by means of tools and dies. This type of equipment generally has the ram in a horizontal position. Included are pointers and roll formers when they are mechanically an integral part of the basic machine.

NOTE: In the context of this standard, header refers to cold headers and cold formers.

1.2 Purpose

The purpose of this standard is to establish safety requirements with respect to the construction, safeguarding, care, and use of headers.

The requirements of this standard are aimed at eliminating injuries to operating, maintenance, and other personnel who are working on, or adjacent to, a header, and minimizing accidental damage to equipment.

The standard is not intended to establish requirements for personal protective equipment that may be needed for specific operations.

1.3 Application

The requirements of this standard apply to:

- Cold header,
- Cold former,
- Bar header,
- Tubular rivet header,
- Roller header,
- Progressive headers,
- Bolt making machines,
- Parts formers,

See figures 1–11 for examples of some of the types of headers covered by this standard.