ANSI B11.13-1992 (R2007)

American National Standard for Machine Tools - Single and Multiple Spindle Automatic Screw/Bar and Chucking Machines Safety Requirements for Construction, Care and Use

Secretariat and Accredited Standards Developer:

AMT – The Association For Manufacturing Technology
7901 Westpark Drive
McLean, VA 22102

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by the American National Standards Institute, Inc.

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Foreword (This foreword is not part of American National Standard B11.13-1992.)

Recognizing the need for a safety standard for single-and multiple-spindle automatic screw/bar and chucking machines, American National Standards Committee B11 on Safety Standards for Machine Tools established Subcommittee B11.13 in 1972 to develop the safety requirements for these machines. ANSI B11.13-1975 was approved and released in 1975, and revised in 1983. It is now superseded by ANSI B11.13-1992, entitled *American National Standard for Machine tools – Single- and multiple-spindle automatic bar and chucking machines*, which has been changed to more appropriately reflect current industry practice.

To continue this objective, the Subcommittee revised this standard to cover all the different types of single- and multiple-spindle automatic bar and chucking machines, carefully considering the possible hazards to set-up and operating personnel. It approached the problem by requiring a hazard control strategy that provides a degree of safety by:

a) Eliminating by design any recognized hazards due to construction;

b) Reducing exposure to hazards through appropriate safeguarding;

c) Heightening safety awareness through procedures, training, warning devices, and signs.

To implement these requirements, responsibilities have been assigned to the manufacturer, the rebuilder, the modifier, and the user.

To assist all persons concerned in complying with the requirements of this standard, explanatory information has been placed in the right-hand column, adjacent to the requirements to which it applies.

Recognizing the difficulty of updating machines immediately after the approval date of this standard, the Subcommittee has provided a 24-month period for compliance; this is specified in the applicable portions of this standard.

It is recognized that the words "safe" and "safety" are not absolutes. Safety is an attitude. This standard is not intended to replace good judgment. Operator skill, training, experience, job monotony, and fatigue are all safety factors that must be considered.

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

This standard was processed and approved for submittal to ANSI by the Accredited Standards Committee on Safety Standards for Machine Tools, B11. 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:

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

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Aerospace Industries Association of America, Inc.	Daniel J. Nauer
Alliance of American Insurers	John W. Russell

Organization Represented	*Name of Representative*
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U. S. Department of Labor – Occupational Safety and Health Administration (OSHA)	Joseph J. Bode Pat J. Cattafesta (Alt.) Pat Clark (Alt.) Alvah O. Conley, Jr. (Alt.) Frank A. Smith (Alt.)

Subcommittee B11.13 on Safety Requirements for the Construction, Care, and Use of Single- and Multiple-Spindle Automatic Bar and Chucking Machines, which revised this standard, had the following members:

Fred W. Lewis, Chairman
Richard D. Zahniser, Secretary

Kirt M. Babuder
John Dogger
Bill Dunsmore
Russell L. Herlache
Henry Hubli
Val Parker
Peter K. Rodenkirchen
Emmett Slade
Harold E. Walker, Jr.

In addition to the work performed by the subcommittee, extensive work in the development of this standard was performed by the membership of the National Screw Machine Products Association.

Explanation of Standard Format

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 committee felt would clarify the standard. This column should not be construed as being a part of this American National Standard.

Illustrations 1 through 11 included with this standard are provided to aid in its understanding. As such, they are to be considered as examples and not as part of the requirements.

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.

American National Standard
for Machine Tools –

Single- and Multiple-Spindle – Automatic Bar and Chucking Machines – Safety Requirements for Construction, Care, and Use

STANDARD REQUIREMENTS

EXPLANATORY INFORMATION

(Not part of *American National Standard for Machine tools – Single- and multiple-spindle automatic bar and chucking machines – Safety requirements for construction, care, and use*, ANSI B11.13-1992)

1 Scope, purpose, and application

1.1 Scope

This standard applies to single- and multiple-spindle automatic bar and chucking machines in which all tool movement is controlled by the machine.

1.1 Scope

A machine of this type is automatic in the sense that it repeatedly performs all of the necessary operations, which may include ejecting the machined piece and presenting a new piece or length of stock to the tools. These machines run continuously until stopped by an operator or any sensing device. The control of these machines can be provided by, but is not limited to, any mechanical, pneumatic, hydraulic or electrical means, or combination thereof.

Historically some machines to which this standard applies were referred to as screw machines.

Specific machines shall include, but not be limited to:

Specific automatic machines will be referred to as single- or multiple-spindle automatic bar and chucking machines.

a) Single-spindle automatic bar machines of the tool turret-indexing type;

a) Turret-indexing types. (See illustrations 1,2)

Turret-indexing types are those in which tools are mounted in an indexing turret and are advanced automatically to the work

material or piece held in the spindle. Additional tools are mounted in radial cross slides.

b) Single-spindle automatic machines of the sliding-headstock type, or those with a fixed headstock and a sliding guide bushing (Swiss-type);

b) Sliding-headstock/sliding guide bushing types (Swiss types) (See illustrations 3, 4)

Sliding-headstock types are those in which the headstock moves axially, advancing or retracting the stock past radially mounted tools. In another design, the headstock is stationary while the guide bushing and one or more side-mounted tool turrets are sliding. A turret equipped with end-working tools, which advances to and retracts from the workpiece, may be a part of these types of machine.

c) Single-spindle automatic machines of the tool-rotating type;

c) Tool-rotating types (See illustration 5)

Tool-rotating types contain a work-holding device that does not rotate. A tool holder rotates around the stationary work material. Coiled stock is often used.

d) Single-spindle automatic chucking machines of the collet and chuck types;

d) Single-spindle automatic chucking machines (see illustration 6)

These are machines that are loaded with individual workpieces. They may or may not contain an automatically indexing tool carrier which presents tools in sequence to complete the predetermined machining of the workpieces. machines may use either a collet or a chuck to hold the workpiece, and may be loaded manually or automatically.

e) Multiple-spindle automatic bar machines;

e) Multiple-spindle automatic bar machines (see illustrations 7–10)

These are machines with more than one spindle that allow the machining of more than one piece at a time depending on the number of spindles.

f) Multiple-spindle automatic chucking machines of the collet and chuck types.

f) Multiple-spindle automatic chucking machines (See illustration 11)

These are machines with more than one spindle and an indexing spindle carrier, which present the separately loaded workpieces to tooling stations in sequence until the predetermined machining cycle is completed. Machines may use either a collet or a chuck to hold the workpiece, and may be loaded manually or automatically.

Excluded from the scope of this standard are machines that are manually controlled,

such as, but not limited to: lathes, engine lathes, toolroom lathes, vertical-shaft lathes, copy/tracer lathes, gap and sliding-gap lathes, and combination lathes.

1.2 Purpose

The purpose of this standard is to establish safeguarding requirements for the construction, care, and use of automatic bar and chucking machines.

1.3 Application

The requirements of this standard shall be implemented within 24 months of its approval date (June 2, 1992). In the interim, ANSI B11.13-1983 shall apply.

2 Normative references

The following standard contains provisions which, through reference in this text, constitute provisions of this American National Standard. At the time of publication, the edition indicated was 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 edition of the standard indicated below.

ANSI/NFPA 79-1991, *Electrical standard for industrial machinery*

3 Definitions

3.1 bar: See *workpiece.*

3.2 barrier: A physical boundary to a hazard.

3.3 cam: A profiled disc or cylindrical element used to control machine function.

3.4 cam shaft: A shaft on which is mounted one or more cams.

3.5 chips: Any scraps or pieces of material that result from the machining action on the part by a cutting tool.

3.6 chuck: A clamp-like device used for gripping a workpiece or tool.

E1.2 Purpose

The requirements of this standard are aimed at protecting personnel while in the environment of automatic bar and chucking machines.

E2 Bibliography

ANSI Z244.1-1982, *Safety requirements for the lockout/tagout of energy sources*

ANSI Z535.1-1991, *Safety color code*

ANSI Z535.2-1991, *Environmental and facility safety signs*

ANSI Z535.3-1991, *Criteria for safety symbols*

ANSI Z535.4-1991, *Product safety signs and labels*

ANSI Z535.5-1991, *Accident prevention tags*

ANSI/ASME B15.1-1992, *Safety standard for mechanical power transmission apparatus*

ANSI/NFPA 70-1990, *National Electrical Code*