

# ***SNT-101-202X – Master Redline 01.15.24***

## **Proposed American National Standard**

### **For Power Tools**

**DRAFT**

Safety Requirements for  
Portable  
Compressed-Air-Actuated  
Fastener Driving Tools

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Safety Requirements for  
Portable  
Compressed-Air-Actuated  
Fastener Driving Tools

Sponsor / Standards-Developer

**International Staple, Nail and Tool Association (ISANTA)**

Approved

**April 7, 2015**

**American National Standards Institute, Inc.**

Abstract

American National Standard for Power Tools - Safety Requirements for Portable, Compressed-Air-Actuated, Fastener Driving Tools, ANSI SNT-101-2015, sets forth safety requirements for tool manufacturers, owners, employers (including self-employed contractors), designers, safety professionals, supervisors, operators, purchasers, users and other persons concerned with or responsible for the safe design, construction, use, repair, and maintenance of these tools. The tools are powered by compressed air. The tools drive nails, staples and other fasteners, typically in the industrial size range. The covered tools are used for fastening applications that generally, but by no means exclusively, involve wood-to-wood connections as found in commercial and residential building construction (framing, sheathing, decking, flooring, insulation, finish work, factory-build units and components, and coverings for walls, ceilings and roofs, etc.); carton closure; and the manufacture of furniture, box-spring assemblies, containers (boxes, pallets, crating, etc.), cabinets, etc.

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**FOREWORD**

[The information contained in this Foreword is not part of this American National Standard (ANS) and has not been processed in accordance with ANSI's requirements for an ANS. As such, this Foreword may contain material that has not been subjected to public review or a consensus process. In addition, it does not contain requirements necessary for conformance to the standard.]

The Safety Requirements for Portable, Compressed-Air-Actuated, Fastener Driving Tools contain safety requirements for tool manufacturers, tool purchasers and tool operators, and is intended to provide safeguards for persons and property from accidental hazards arising from the use of compressed-air-actuated fastening tools, often referred to as "nail guns" by users and operators. It is also intended to assist government and other regulatory bodies in the development, promulgation and enforcement of appropriate safety directives.

The sponsor for this standard is the International Staple, Nail and Tool Association (ISANTA). Consensus for this standard was achieved by use of the ANSI Canvass Method. Information for this publication was obtained from sources believed to be reliable and was considered technically sound at the time it was developed. It should not be assumed that all acceptable safety requirements are contained in this document or that different measures may not be required under certain circumstances or conditions.

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The following organizations were recognized as having an interest in safety requirements for power fastening tools and were canvassed prior to, and participated in, the consensus process leading to the approval of this standard:

Asphalt Roof Manufacturers Association  
Beck America  
California Framing Contractors Association  
Consumer Product Safety Commission  
Hilti Corporation  
Home Depot Inc.  
Illinois Tool Works, Inc.  
Koki Holdings America Ltd.  
Kyocera Senco Industrial Tools, Inc.  
Leo DeBobes Safety Consultants  
Mid-American Carpenters Regional Council  
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National Framers Council  
National Institute for Occupational Safety and Health  
National Roofing Contractors Association  
Power Tool Institute

Southern Carlson Inc.  
Stanley Black and Decker Inc.  
Techtronics Industries Co. Ltd. (Milwaukee Tool)  
Ted Gogoll  
The Center for Construction Research and Training  
Underwriters Laboratory, LLC  
United Union of Roofers, Waterproofers and Allied Workers  
Zonda Media-Journal of Light Construction

At the date of the April, 202X printing of this standard, the membership of ISANTA consisted of the following companies:

Accent Building Materials Inc.  
American Fasteners Co. Ltd.  
Beck America  
Building Material Distributors, Inc.  
Falcon Fasteners Reg'd  
Geekay Wire Ltd.  
Guney Celik A.S.  
Huttig Building Products  
Inmax Sdn. Bhd.  
Illinois Tool Works Inc.  
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Koki Holdings America Ltd.  
Kyocera Senco Industrial Tools, Inc.  
Makita U.S.A. Inc.  
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## 1 Scope, Purpose, Units and Effective Date

### 1.1 Scope

The requirements of this standard apply to portable hand-held compressed-air-powered tools for driving fasteners, such as nails and staples, into or through concrete, fabric, fiberboard, metal, plastic, wood, wood products, cartons, and other materials.

### 1.2 Purpose

This standard establishes safety requirements for the design, construction, use, repair, and maintenance of portable hand-held compressed-air-powered tools to guard against the injury of tool users and bystanders. It provides guidelines to designers, manufacturers, owners, employers (including self-employed contractors), supervisors, purchasers, safety professionals, operators and other persons concerned with or responsible for the safe use of these tools, and assists in the promulgation of appropriate safety directives and safety training programs. There are additional safety requirements outside the scope of this standard including, but not limited to, user compliance with instructions, applicable Occupational Safety and Health (OSHA) regulations [Title 29 of the U.S. Code of Federal Regulations], industry standards, employer policies, requirements specific to task, jobsite, and environment, and safe workplace practices generally, that should be considered, as applicable.

### 1.3 Units

This standard contains customary units as well as SI (metric) units. Requirements are based on customary units. SI units in the text have been directly (soft) converted from the customary units.

### 1.4 Effective Date

This standard shall apply only to tools manufactured subsequent to the effective date of this standard. The effective date of this standard --XXXXXXXXXX, 202X-- is twelve months after its approval by the American National Standards Institute.

## 2 Definitions

- 2.1 activate (operating controls): To move or otherwise engage an operating control so that it is in a state that allows the tool to be actuated or that satisfies one requirement for the tool to be actuated
- 2.2 actuate (tool): To cause movement of the tool component(s) intended to drive a fastener

- 2.3 actuation system: A trigger, workpiece contact and/or other operating control, used separately or in some combination or sequence, to actuate the tool
- 2.3.1 automatic reversion actuation: An actuation mode capable of contact actuation or continual contact actuation and where the tool becomes inoperable if a trigger is depressed without operation of the workpiece contact within the manufacturer's stated trigger time-out period
  - 2.3.2 contact actuation: An actuation mode which allows the tool to operate by operating the workpiece contact while the trigger is continually depressed and held
  - 2.3.3 continual actuation: An actuation mode in which the driving operations are carried out for as long as the trigger remains in its operating position (for tools without a workpiece contact)
  - 2.3.4 continual contact actuation: An actuation mode in which the driving operations continue as long as the trigger and the workpiece contact remain in their operating positions
  - 2.3.5 full-sequential actuation: An actuation mode which allows single driving operations via the trigger after the workpiece contact has been operated. Further driving operations are only possible after the trigger and the workpiece contact have been returned to the non-driving position
  - 2.3.6 selective actuation: An actuation system that allows discrete selection of two or more of the following actuation systems: single-sequential actuation, full-sequential actuation, contact actuation with automatic reversion, continual contact actuation or contact actuation.
  - 2.3.7 single actuation: An actuation mode in which the trigger has to be operated for each driving operation (for tools without a workpiece contact)
  - 2.3.8 single-sequential actuation: An actuation mode which allows single driving operations via the trigger after the workpiece contact has been operated. Further driving operations are possible via trigger operation if the workpiece contact has remained in the operating position
- 2.4 air inlet port: The opening on the tool to which the air hose is connected, usually by means of a threaded fitting
- 2.5 coil nailer: A nailer that drives fasteners from a collated coil of nails. The primary application of this tool is production applications



- 2.6 collating material: The material for joining together single fasteners in strips or coils with adhesive, paper or plastic tape, plastic strap or wire
- 2.7 distributor: Any retailer of products manufactured and/or sold by the tool manufacturer including dealers, franchisees, or any other wholesale or retail outlet
- 2.8 dual trigger: Trigger arrangement comprised of two triggers that work in conjunction with each other such that both triggers require individual activation to actuate the tool
- 2.9 employer: The person, firm or company that contracts, hires, or is responsible for the personnel operating a tool. The employer is typically, though not necessarily, the owner, renter, or borrower of the tool. The employer also could be the operator of the tool
- 2.10 fastener: A staple, pin, brad, nail, or other fastening device that is designed and manufactured for use in the tools within the scope of this standard
- 2.11 heavy-duty finish nailer A finish nailer capable of driving 2.11.1 fasteners made from wire of 18 gauge (American Steel Wire Gauge) [0.0475-inch nominal diameter (1.2 mm)] or heavier wire

The primary application of this tool is production applications.

- 2.12 heavy-duty stapler: A stapler capable of driving:
  - 2.12.1 staples having nominal thickness of 0.0318 inch (0.8 mm) or larger, or
  - 2.12.2 staples having nominal width of 0.0475 inch (1.2 mm) or larger.

The primary application of this tool is production applications.

- 2.13 jam: An obstruction in the fastener feed or drive area of a tool
- 2.14 light-duty tool: A tool designed to only drive fasteners meeting both of these requirements:
  - 2.14.1 fasteners 1 inch (25.4 mm) or shorter (nominal length) and
  - 2.14.2 fasteners made from wire with:
    - 2.14.2.1 cross-sectional area less than 18 ASWG (American Steel Wire Gauge) [0.0475-inch diameter (1.2 mm)], or
    - 2.14.2.2 staples with nominal thickness less than 0.038 inch (1.0 mm) and with nominal width less than 0.050 inch (1.3 mm)

- 2.15 maximum air pressure: The maximum allowable pressure of the compressed air, as specified by the manufacturer, for operating a tool
- 2.16 may: This word is understood to be permissive
- 2.17 operating control: A control that separately, or as part of an actuation system, can cause the actuation of a tool
- 2.18 production application: High volume, production-like applications, either at a facility, manufacturing setting or on-site, such as, but not limited to, pallets, furniture, manufactured housing, upholstery, and sheathing and roofing
- 2.19 shall: The word “shall” is to be understood as denoting a mandatory requirement
- 2.20 special tools: Tools with different requirements due to application
- 2.20.1 multi-blow tool: A fastener driving tool that drives a fastener with more than one stroke of the driving element
- 2.20.2 pinner: A tool capable of driving predominantly headless fasteners meeting both of these requirements:
- 2.20.2.1 2 inches (51 mm) in length or shorter (nominal length) and
- 2.20.2.2 Cross-sectional area 23 ASWG (American Steel Wire Gauge) [0.0258 inch nominal diameter (0.64mm)] diameter or less
- NOTE: Larger gauge pinners are available but are not considered a special tool with the same exemptions as tools meeting these size criteria.
- 2.21 single-blow tool: A fastener driving tool that drives a fastener with a single stroke of the driving element
- 2.22 special application tool: A tool without a workpiece contact whose fasteners are formed or clamped during application by devices such as integrated anvils or self-contained clinching anvils which prevents free flight of fasteners.
- 2.23 tool without workpiece contact: Any tool that drives a fastener and which does not have a workpiece contact
- 2.24 thickness (staple leg): The maximum dimension of staple-leg cross section measured parallel to staple-crown axis

- 2.25 tool: A portable hand-held device for driving fasteners that is powered by compressed air.
- 2.26 trigger: A tool operating control activated manually by a tool operator.
- 2.27 trigger time-out period: For tools with automatic reversion; the duration of time a trigger can be depressed without operation of the workpiece contact before the tool becomes inoperable.

**Note: Nothing in this definition prohibits a time-out period on the workpiece contact of more than 5 seconds.**

- 2.28 width (staple leg): The maximum dimension of staple-leg cross section measured perpendicular to staple-crown axis.
- 2.29 workpiece: The object into which a fastener is intended to be driven by a tool.
- 2.30 workpiece contact: An operating control element or assembly on the tool intended to be activated by contact with the material to be fastened, before a fastening operation can be performed.

### 3 Design and Construction

#### 3.1 General

Tools shall be designed and manufactured to comply with the following safety requirements and/or protective measures.

Note: Clause 3 does not represent a comprehensive set of considerations. It is recognized that additional generally accepted design principles, such as those presented in ISO 12100: 2010 may be incorporated.

#### 3.2 Tool Operating Controls

##### 3.2.1 Trigger

All tools shall be equipped with a trigger. All tools shall be designed so that the tool cannot be actuated when the trigger is in a released position (i.e., in an “off” position). The body of the tool shall be designed, and the trigger shall be located so as to minimize unintended activation. This protection can and generally is afforded by the surrounding structures of the tool. A need for a discrete trigger guard is not implied.





































- 7.4.10.3 Do not point tool toward yourself or others whether it contains fasteners or not.
- 7.4.10.4 Keep bystanders and children away while operating tool.
- 7.4.10.5 Do not actuate tool unless tool is placed firmly against the workpiece.
- 7.4.10.6 Respect tool as a working implement.
- 7.4.10.7 Do not engage in horseplay.
- 7.4.10.8 Stay alert, focus on your work and use common sense when working with tools.
- 7.4.10.9 Do not use tool while tired, after having consumed drugs or alcohol, or while under the influence of medication.
- 7.4.10.10 Do not overreach. Keep proper footing and balance at all times. Only use in a safe working place.
- 7.4.10.11 Do not hold or carry tool with a finger on the trigger. Keep fingers away from trigger when not operating this tool and when moving from one operating position to another.
- 7.4.10.12 Select the fastener appropriate for the work surface.
- 7.4.10.13 Do not drive fasteners into other fasteners.
- 7.4.10.14 After driving a fastener, tool may spring back (“recoil”) causing it to move away from the work surface. To reduce risk of injury always manage recoil by:
  - 7.4.10.14.1 Always maintaining control of tool. Hold the tool securely.
  - 7.4.10.14.2 Allowing recoil to move tool away from work surface.
  - 7.4.10.14.3 Not resisting recoil such that tool will be forced back into the work surface. In “Contact Actuation Mode,” if workpiece contact is allowed to re-contact work surface before the trigger is released, an unintended discharge of a fastener may occur.
  - 7.4.10.14.4 Keeping face and body parts away from tool.

- 7.4.10.15 Fasteners can deflect and cause injury. When working close to an edge of a workpiece or at steep angles use care to minimize chipping, splitting or splintering, or free flight or ricochet of fasteners, which may cause injury.
- 7.4.10.16 Keep all body parts away from fastener discharge area of tool and firing direction.
- 7.4.10.17 When using a tool intended to be used on hard surfaces such as steel and concrete, keep the tool perpendicular to the work surface to prevent slipping.
- 7.4.10.18 During operation, debris from workpiece and fastener collation material may be discharged.
- 7.4.10.19 Be careful when handling fasteners, especially when loading and unloading, as the fasteners have sharp points which could cause injury.
- 7.4.10.20 Do not load tool with fasteners when any one of the operating controls is activated.
- 7.4.10.21 Empty fasteners from tool before connecting to air supply.
- 7.4.10.22 Do not operate tool with any power source other than that specified in tool operating/safety instructions.
- 7.4.10.23 Do not operate tool with any operating pressure other than that specified in tool operating/safety instructions.
- 7.4.10.24 Do not operate the tool if it has been damaged.
- 7.4.10.25 Always select an actuation system that is appropriate to the fastener application and the training or experience of the operator.
- 7.4.10.26 Inspect the work area and use extra caution when driving fasteners into existing walls or other blind areas to prevent contact with hidden objects (e.g., wires, pipes.) or persons on other side, which can cause injury.
- 7.4.10.27 Do not hang, lift, pull or lower tool by the tool air hose.
- 7.4.10.28 Be aware of trip hazards caused by the tool air hose.

#### 7.4.11 Disconnecting tool

Disconnect tool from the power source when:

- 7.4.11.1 Not in use
- 7.4.11.2 Changing or replacing accessories such as the workpiece contact or rafter hook accessory.
- 7.4.11.3 Making any adjustments
- 7.4.11.4 Performing any maintenance or repairs
- 7.4.11.5 Clearing a jam
- 7.4.11.6 Elevating, lowering or otherwise moving the tool to a new location
- 7.4.11.7 Tool is outside of the operator's supervision or control; or
- 7.4.11.8 Removing fasteners from the magazine.

## 8 Power Source

### 8.1 Safe Power Source

The compressed air power source shall be pressure-regulated. The regulated pressure must not exceed the maximum air pressure marked on tool. If a regulator fails, the pressure delivered to a tool must not exceed 1.5 times the maximum air pressure, or 200 psig (13.8 bar), whichever is greater.<sup>6</sup> A tool normally is not operated at the maximum air pressure but at a lower pressure determined by the type of fastener used, the workpiece, and other conditions of use. Tools shall be used at the lowest pressure required for the operation.

Compressed air can be hazardous if not used properly. Never point compressed air at yourself or anyone else. Whipping hoses can cause injury. Always check hoses for damage and loose fittings.

### 8.2 Hazardous Power Source

Hazardous power sources shall not be used. Explosion may occur. Hazardous power sources include, but are not limited to:

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<sup>6</sup> Power source pressure-limiting is normally accomplished by use of one or more pressure-limiting devices, such as pressure relief valve(s) or rupture disc(s).













