

ANSI SNT-101-2015

**American National Standard
For Power Tools**

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





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Portable
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Fastener Driving Tools

Sponsor / Standards-Developer

International Staple, Nail and Tool Association (ISANTA)

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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 and other persons concerned with or responsible for the safe use of these tools and users in the 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-built 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.

American National Standard

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FOREWORD

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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:

Aerosmith Fastening Systems
All American Group, Inc.
ANSI A10 Committee
Arnold, Mr. Rick
Associated Builders & Contractors, Inc.
Blow-In-Blanket Contractors Association
California Framing Contractors Association
Campbell-Hausfeld
Carlson Systems
Carpenters' District Council of Greater St. Louis
Compressed Air & Gas Institute
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Guertin, Mr. Michael
H.D. Supply, – White Cap Construction Supply Inc.
Hitachi Koki U.S.A. Inc.

ITW- Illinois Tool Works
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National Association of Home Builders
National Institute for Occupational Safety and Health
National Roofing Contractors Association
National Safety Council
National Wooden Pallet & Container Association
Northern California Contractors Association
Northern California Nail Company Inc.
Packaging Inc.
Peace Industries
Power Tool Institute
PrimeSource Building Products
Robert Bosch Tool Corporation
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Senco Brands
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Techtronic Industries North America, Inc.
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Underwriters Laboratories
West Virginia University – Safety & Health Extension
Winchester Homes Inc.

At the date of the April, 2015 printing of this standard, the membership of ISANTA consisted of the following companies:

BlueLinx Co.
Building Material Distributors
Falcon/Specialty Fastening System
Fasco/Beck
Hitachi-Koki USA
ITW
Jaaco Corporation
Makita USA
Max USA
National Nail Corporation
PrimeSource Building Products
Senco Brands
Stanley Black & Decker
Techtronic Industries North America Corporation.

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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.

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 --April 7, 2016-- is twelve months after its approval by American National Standards Institute.

2 Definitions ¹

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**.

¹ Throughout the standard, defined terms are shown in bold type.

- 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 **Single-sequential actuation:** An **actuation system** in which there is more than one **operating control**, and the **operating controls** must be **activated** in a specific sequence to **actuate** the **tool**. If the **tool** has a **trigger** and a **workpiece contact**, the **workpiece contact** must be **activated** before the **trigger** for the **tool** to **actuate**. Additional **actuation** can occur when a specific **operating control**, other than a **workpiece contact**, is released and re-**activated**.
- 2.3.2 **full-sequential actuation:** An **actuation system** in which there is more than one **operating control**, and the **operating controls** must be **activated** in a specific sequence to **actuate** the **tool**. If the **tool** has a **trigger** and a **workpiece contact**, the **workpiece contact** must be **activated** before the **trigger** for the **tool** to **actuate**. Additional **actuation** can occur only when all **operating controls** are released and re-**activated** in the same sequence.
- 2.3.3 **contact actuation:** An **actuation system** in which there is more than one **operating control**, and the **operating controls** can be **activated** in any sequence to **actuate** the **tool**. Additional **actuation** can occur when any **operating control** is released and re-**activated**.
- 2.3.4 **selective actuation:** An **actuation system** that allows discrete selection of two or more of the following **actuation systems**: **single-sequential actuation**, **full-sequential actuation** or **contact actuation**. One or more of the selections **shall** be **single-sequential actuation** or **full-sequential actuation**.
- 2.3.5 **automatic reversion actuation:** An **actuation system** with more than one **operating control** that can be **activated** in any sequence to **actuate** the **tool**. Regardless of the initial sequence, the **actuation system** is designed to automatically revert to **single-sequential actuation**, **full-sequential actuation**, neutral or off.
- 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 **distributor:** Any retailer of products manufactured and/or sold by the **tool** manufacturer including dealers, franchisees, or any other wholesale or retail outlet.

- 2.7 **dual trigger:** Trigger arrangement comprised of two **triggers** that work in conjunction with each other such that both **triggers** require activation to **actuate** the **tool**. A sequence of activation **may** be necessary for **tool actuation**.
- 2.8 **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**.
- 2.9 **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.
- 2.10 **heavy-duty stapler:** A stapler capable of driving:
- 2.10.1 16 gauge (American Steel Wire Gauge) [0.0625-inch nominal diameter (1.6 mm)] or heavier wire, or
 - 2.10.2 staples having nominal **thickness** of 0.0563 inch (1.4 mm) or larger, or
 - 2.10.3 staples having nominal **width** of 0.064 inch (1.6 mm) or larger.
- The primary application of this **tool** is **production applications**.
- 2.11 **jam:** An obstruction in the **fastener** feed or drive area of a **tool**.
- 2.12 **light-duty tool:** A **tool** designed to only drive **fasteners** meeting both of these requirements:
- 2.12.1 **fasteners** 1 inch (25.4 mm) or shorter (nominal length)
 - 2.12.2 **fasteners** made from wire with:
 - 2.12.2.1 cross-sectional area less than 18 ASWG (American Steel Wire Gauge) [0.0475-inch diameter (1.2 mm)], or
 - 2.12.2.2 staples with nominal **thickness** less than 0.038 inch (1.0 mm) and with nominal **width** less than 0.050 inch (1.3 mm).
- 2.13 **maximum air pressure:** The maximum allowable pressure of the compressed air, as specified by the manufacturer, for operating a **tool**.
- 2.14 **may:** This word is understood to be permissive.

- 2.15 **operating control**: A control that separately, or as part of an **actuation system**, can cause the **actuation** of a **tool**.
- 2.16 **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.
- 2.17 **shall**: The word “**shall**” is to be understood as denoting a mandatory requirement.
- 2.18 **thickness** (staple leg): maximum dimension of staple-leg cross section measured parallel to staple-crown axis.
- 2.19 **tool**: A portable hand-held device for driving **fasteners** that is powered by compressed air.
- 2.20 **trigger**: A **tool operating control activated** manually by a **tool** operator.
- 2.21 **width** (staple leg): maximum dimension of staple-leg cross section measured perpendicular to staple-crown axis.
- 2.22 **workpiece**: The intended object into which a **fastener** is to be driven by a **tool**.
- 2.23 **workpiece contact**: An **operating control** element or assembly on the **tool** intended to be **activated** by the material to be fastened.

3 Design and Construction

3.1 Tool Operating Controls

3.1.1 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.

3.1.2 Workpiece Contact

In addition to the requirements of Clause 3.1.1, all **tools**, other than **light-duty tools** and those excluded in Clause 3.1.4.2, **shall** be equipped with a **workpiece contact**. Such **tools shall** be designed so that the **tool** cannot be **actuated** unless

both the **trigger** and the **workpiece contact** have been **activated**. The purpose of this requirement is to prevent **actuation** of the **tool** when only the **trigger** is **activated**. The **workpiece contact** shall be designed so that it does not become deformed or inoperable under intended use.

3.1.3 Actuation System Options

All **tools**, other than **light-duty tools**, **heavy-duty staplers**, and **coil nailers**, shall be manufactured with an **actuation system** meeting the requirements of **single-sequential actuation**, **full-sequential actuation**, **selective actuation** or **automatic reversion actuation**.

3.1.3.1 **Tools** manufactured with **selective actuation** shall be shipped with their **actuation system** set as **single-sequential actuation**, **full-sequential actuation**, neutral or off.

3.1.3.2 Certain applications and certain users **may** require different **actuation system** options for purposes of functionality and utility. In such cases, other **actuation systems** **may** be available. Means for making such other **actuation systems** available include, but are not limited to, the following:

3.1.3.2.1 **Actuation system** is provided with, but not installed on the **tool**. Such **actuation system** is in addition to the **actuation system** manufactured with the **tool** to meet the requirements of Clause 3.1.3.

3.1.3.2.2 **Actuation system** is offered as a conversion option.

3.1.3.2.3 **Actuation system** is manufactured and shipped as part of the **tool**, in response to an order from a **production application** customer.

3.1.4 Other Tool Operating Control Options

3.1.4.1 Manufacturers **may** offer additional **actuation system** options for **production applications**, beyond those specified in Clause 3.1.3, for any **tool** model.

3.1.4.2 For **tools**, other than **light-duty tools**, it might not be practical to meet the requirements of Clause 3.1.2 and for those **tools**, a **workpiece contact** is not required, provided the requirements of either Clause 3.1.4.2.1, 3.1.4.2.2 or 3.1.4.2.3 are met.

- 3.1.4.2.1 The **tool** is offered with a **dual trigger** option and the **tool** is designed to only drive **fasteners** meeting the requirements of Clause 2.12.2.
- 3.1.4.2.2 The **tool** is equipped with a self-contained clinching anvil(s.) (Examples include, but are not limited to, carton closing staplers, sisal/bedding **tools** with fixed anvils, carton pliers.)
- 3.1.4.2.3 The same degree of safety as provided by Clause 3.1.2 can be demonstrated or is obtained by other means and the **tool** is marked as to its **actuation system**. (Examples **may** include palm nailers, hardwood flooring **tools**, multi-blow metal hardware nailers, etc.)

3.2 Marking

- 3.2.1 All **tools shall** be marked with the following:
 - 3.2.1.1 Manufacturer's or **distributor's** identity
 - 3.2.1.2 Model number
 - 3.2.1.3 Serial number or date code
 - 3.2.1.4 **Maximum air pressure**
- 3.2.2 The principles of ANSI Z535.1, *American National Standard for Safety Colors*, ANSI Z535.3, *American National Standard for Criteria for Safety Symbols*, and ANSI Z535.4, *American National Standard for Product Safety Signs and Labels*, related to color, configuration, format and signal word **shall** be used as guidelines for safety messages.
- 3.2.3 All **tools shall** be marked with the following safety warnings, or equivalent, unless the design of the **tool** requires otherwise:
 - 3.2.3.1 Read and understand tool labels and manual. Failure to follow warnings could result in DEATH or SERIOUS INJURY.
 - 3.2.3.2 Operators and others in work area **MUST** wear safety glasses with side shields.
 - 3.2.3.3 Keep fingers **AWAY** from trigger when not driving fasteners to avoid accidental discharge.

- 3.2.3.4 Know and understand what trigger system you are using. Check manual for triggering options.
- 3.2.3.5 NEVER point tool at yourself or others in work area.
- 3.2.3.6 NEVER use oxygen or other bottled gasses. Explosion may occur.
- 3.2.4 All **tools shall** be marked with the following safety symbols. Alternate symbols evaluated in accordance with ANSI Z535.3 meeting that criteria are acceptable.
 - 3.2.4.1 Annex A Symbol 1, Read **Tool** Manual.
 - 3.2.4.2 Annex A Symbol 2, Wear Eye Protection.
 - 3.2.4.3 Annex A Symbol 3, Personal Injury.
- 3.2.5 There are two annexes in this standard related to marking. Annex A and Annex B are informative and do not present mandatory requirements.
- 3.2.6 **Tools** manufactured with **selective actuation**, or which can be converted to another **actuation system**, **shall** be marked to indicate the **actuation system** selected. Color is an acceptable means of marking.

3.3 Over Pressure

3.3.1 **Tool** Body

The pressure vessel of the **tool shall** be designed to withstand, for a period of two minutes without rupturing, hydrostatic pressure of five (5) times the **maximum air pressure** when applied to the **air inlet port** and with all vents from the vessel closed.²

3.3.2 Fully Assembled **Tool**

The **tool shall** be designed so that it does not self-**actuate** while pressurized, for a period of two minutes, by a power source up to 1.5 times the **maximum air pressure** or 200 psig (13.8 bar), whichever is greater.

3.4 Modified **Tools**

² Hydrostatic pressure testing is safer than testing with compressed air. The **tool** usually must be modified to achieve the test pressure by preventing pressure loss through fluid leakage. This modification typically involves removing **trigger** and valve mechanisms and plugging openings.

Tools shall not be modified unless authorized in **tool** manual or approved in writing by **tool** manufacturer. Modified or altered **tools shall** comply with this standard.

4 Tool Operation

4.1 Responsibility

The **employer**, **tool** owner and **tool** operator³ are responsible for the safe use of the **tool** by, at a minimum:

- 4.1.1 ensuring that the manufacturer's **tool** operating/safety instructions are available to operators.
- 4.1.2 selecting an appropriate **tool actuation system** from options available under Clause 3.1.3 and Clause 3.1.4, taking into consideration the work applications for which the **tool** is used.
- 4.1.3 training the operator in the safe use of the **tool** as described in the **tool** operating/safety manual, including the requirements of Clause 7.
- 4.1.4 allowing only persons who have read and understand the **tool** operating/safety instructions to operate the **tool**.
- 4.1.5 allowing **tool** use only when the **tool** operator and all other personnel in the work area are wearing appropriate eye protection equipment, and when required, other appropriate personal protective equipment such as head, hearing and foot protection equipment.

4.2 Personal Protective Equipment

4.2.1 Eye Protection Devices

Eye protection devices **shall** conform to the requirements of ANSI Z87.1, *American National Standard for Occupational and Educational Personal Eye and Face Protection Devices*, and **shall** provide protection against flying particles both from the front and side.

4.2.2 Head Protection

³ In the case where the **tool** operator is the **tool** owner, or is not working for an **employer**, the **tool** operator assumes the responsibilities of the **employer**.

Head protection **shall** conform to ANSI Z89.1, “American National Standard for Industrial Head Protection.”

4.2.3 Hearing Protection

Hearing protection **shall** have a Noise Reduction Rating (NRR) determined in accordance with US Environmental Protection Agency rules that is appropriate for the noise exposure⁴.

5 Tool Maintenance

5.1 Responsibility for Proper Tool Maintenance

5.1.1 Responsibility

The **employer, tool owner and tool operator**⁵:

- 5.1.1.1 are responsible for ensuring that **tools** are kept in safe working order as described in the **Tool Operating/Safety Instructions**.
- 5.1.1.2 are responsible for ensuring that only qualified personnel **shall** repair the **tool**.
- 5.1.1.3 are responsible for ensuring that manufacturer's **tool** maintenance instructions are available to personnel performing maintenance.
- 5.1.1.4 **shall** ensure that **tools** that require repair are removed from service and that tags and physical segregation are used as a means of control.

5.2 Repair Parts and Accessories

Tools shall be repaired or equipped only with parts or accessories that are supplied or recommended by the **tool** manufacturer, or with parts or accessories that perform equivalently to those supplied or recommended by the **tool** manufacturer.

⁴ OSHA’s standard for exposure to continuous noise levels (29 CFR 1926.52) addresses both the noise level and the duration of exposure. In this standard, workers exposed for 15 minutes at 115 A-weighted decibels (dBA) have the same exposure as workers exposed for 8 hours at 90 dBA.

The NIOSH and OSHA limit for impulse noise is 140 decibels: above this level a single exposure can cause instant damage to the ear.

NIOSH recommends that an 8-hour exposure should not exceed 85 dBA and a one-second exposure should not exceed 130 dBA without using hearing protection.

⁵ In the case where the **tool** operator is the **tool** owner, or is not working for an **employer**, the **tool** operator assumes the responsibilities of the **employer**.

6 Tool Maintenance Instructions

6.1 Responsibility

6.1.1 The **tool** manufacturer or **distributor shall** have available written information on the proper maintenance to follow for each **tool**.

6.1.2 The **employer, tool** owner and **tool** operator⁶ are responsible for:

6.1.2.1 ensuring that the **tool** maintenance instructions are available to the appropriate personnel.

6.1.2.2 proper maintenance of all **tools** in their possession.

6.2 Contents

6.2.1 The principles of ANSI Z535.6, *American National Standard for Product Safety Information in Product Manuals, Instructions, and Other Collateral Materials*, related to design and location of product safety messages in instructions **may** be used as guidelines for safety messages.

6.2.2 The **tool** maintenance instructions **shall** include the following:

6.2.2.1 Only qualified personnel **shall** repair the **tool** and **shall** use parts as described in Clause 5.2.

6.2.2.2 **Tool** Operating/Safety Instructions as described in Clause 7.

6.2.2.3 Frequency of maintenance.

6.2.2.4 What to do if a **tool jams**.

6.2.2.5 Common signs that repair or maintenance is needed.

6.2.2.6 What maintenance and repairs **may** be done by **employer, tool** owner or **tool** user and what must be done by authorized manufacturer's representative.

6.2.2.7 **Tool** conditions that require **tool** to be taken out of service.

⁶ In the case where the **tool** operator is the **tool** owner, or is not working for an **employer**, the **tool** operator assumes the responsibilities of the **employer**.

7 Tool Operating/Safety Instructions

7.1 Development

The **tool** manufacturer **shall** develop for each **tool** instructions regarding the **tool**'s safe operation and the use of personal protective equipment as described in Clause 4.2. Such instructions are traditionally provided in the form of printed booklets, but other media **may** be used. These instructions **may** be produced as a single item (manual, etc.) or **may** be produced as a set of items that together include the required information. The principles of ANSI Z535.6 related to design and location of product safety messages in instructions **may** be used as guidelines for safety messages.

7.2 Provision

The **tool** manufacturer or **distributor shall** provide the instructions described in Clause 7.1 with each **tool**. **Tools** sold or otherwise delivered into the workplace, typically to an **employer, shall** be accompanied by these instructions.

7.3 Replacement

The **tool** manufacturer or **distributor shall** make additional **tool** operating/safety instructions available to requesting **employers** and requesting operators.

7.4 Contents

Instructions on the following subject matter **shall** be included:

7.4.1 Actuation systems

7.4.1.1 Availability of different **actuation system** options.

7.4.1.2 How to obtain different **actuation system** options.

7.4.1.3 How to operate different **actuation system** options.

7.4.1.4 How to determine the **actuation system** selected.

7.4.2 Flammable Atmospheres

Do not operate **tool** in explosive atmospheres, such as in the presence of flammable liquids, gases or combustible dust.

7.4.3 Tool modification

The **tool** should not be modified unless authorized in the **tool** manual or approved in writing by the **tool** manufacturer.

7.4.4 **Tool** maintenance

Refer to the **tool** maintenance instructions for detailed information on the proper maintenance of a **tool**.

7.4.5 Recommended **fasteners** and accessories

7.4.5.1 Use only **fasteners** made or recommended by the **tool** manufacturer, or **fasteners** that perform equivalently to those recommended by the manufacturer.

7.4.5.2 Use only accessories made or recommended by the **tool** manufacturer, or accessories that perform equivalently to those recommended by the manufacturer.

7.4.6 Personal Protective Equipment

7.4.6.1 Appropriate personal protective equipment is to be worn.

7.4.6.2 Eye protection

7.4.6.2.1 A written warning intended for the **tool** operator that eye protection equipment must be worn by the operator and other people in the work area.

7.4.6.2.2 A written warning intended for the **employer** that the **employer** is responsible to enforce the use of eye protection equipment by the **tool** operator and all other personnel in the work area.

7.4.7 Inspect **tool** before operating to:

7.4.7.1 Establish use of proper power source as set forth in Clause 8.

7.4.7.2 Determine that **tool** is in proper working order.

7.4.7.3 Determine **actuation system**.

7.4.7.4 Check for misalignment or binding of moving parts and any other condition that **may** affect **tool** operation.

7.4.8 Operating controls

- 7.4.8.1 Do not use a **tool** with missing or damaged safety warning label(s.)
- 7.4.8.2 A **tool** that is not in proper working order must not be used. Tags and physical segregation shall be used for control.
- 7.4.8.3 Do not remove, tamper with, or otherwise cause **tool operating controls** to become inoperable.
- 7.4.8.4 Do not operate **tool** if any portion of the **tool operating controls** is inoperable, disconnected, altered, or not working properly.

7.4.9 Tool handling

- 7.4.9.1 Only persons who have read and understand the tool operating/safety instructions should operate the tool.
- 7.4.9.2 Always assume that **tool** contains **fasteners**.
- 7.4.9.3 Do not point **tool** toward yourself or anyone whether it contains **fasteners** or not.
- 7.4.9.4 Keep bystanders and children away while operating **tool**.
- 7.4.9.5 Do not **actuate tool** unless **tool** is placed firmly against the **workpiece**.
- 7.4.9.6 Respect **tool** as a working implement.
- 7.4.9.7 Do not engage in horseplay.
- 7.4.9.8 Stay alert, focus on your work and use common sense when working with **tools**.
- 7.4.9.9 Do not use **tool** while tired, after having consumed drugs or alcohol, or while under the influence of medication.
- 7.4.9.10 Do not overreach. Keep proper footing and balance at all times.
- 7.4.9.11 Do not hold or carry **tool** with a finger on the **trigger**.
- 7.4.9.12 Drive **fasteners** into proper work surface only.
- 7.4.9.13 Do not drive **fasteners** into other **fasteners**.

- 7.4.9.14 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:
- 7.4.9.14.1 always maintaining control of **tool**.
 - 7.4.9.14.2 allowing recoil to move **tool** away from work surface.
 - 7.4.9.14.3 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** will occur.
 - 7.4.9.14.4 keeping face and body parts away from **tool**.
- 7.4.9.15 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.
- 7.4.9.16 Keep hands and body away from **fastener** discharge area of **tool**.
- 7.4.9.17 Do not load **tool** with **fasteners** when any one of the **operating controls** is **activated**.
- 7.4.9.18 Do not operate **tool** with any power source other than that specified in **tool** operating/safety instructions.
- 7.4.9.19 Do not operate **tool** with any operating pressure other than that specified in **tool** operating/safety instructions.
- 7.4.9.20 Always select an **actuation system** that is appropriate to the **fastener** application and the training of the operator.
- 7.4.9.21 Use extra caution when driving **fasteners** into existing walls or other blind areas to prevent contact with hidden objects or persons on other side (e.g., wires, pipes.)
- 7.4.9.22 Do not lift, pull or lower **tool** by the hose.

7.4.10 Disconnecting **tool**

Disconnect **tool** from the power source when:

- 7.4.10.1 Not in use;
- 7.4.10.2 Performing any maintenance or repairs;
- 7.4.10.3 Clearing a **jam**;
- 7.4.10.4 Elevating, lowering or otherwise moving the **tool** to a new location;
- 7.4.10.5 **Tool** is outside of the operator's supervision or control; or
- 7.4.10.6 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.⁷ 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.

8.2 Hazardous Power Source

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

- 8.2.1 Reactive gases including, but not limited to, oxygen and combustible gases.
- 8.2.2 Pressure sources that can deliver in excess of 1.5 times the **maximum air pressure** of a **tool** or 200 psig (13.8 bar), whichever is greater, if a regulator fails.

8.3 Regulator

Pressure regulators **shall** be used to limit compressed air pressure supplied to **tool**. Regulators **shall** be set at an operating pressure that is lower than or equal to the **tool** manufacturer's specified **maximum air pressure**.

⁷ 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).

8.4 Hose

Compressed air supply hoses **shall** have a minimum working pressure rating equal to or greater than the pressure from the power source if a regulator fails, or 150 psig (10.3 bar), whichever is greater.

8.5 Disconnect

Tools shall only be used with a fitting or hose coupling attached in such a manner that all compressed air in **tool** is discharged at the time the fitting or hose coupling is disconnected.

Annex A
(informative)

Symbols

SYMBOL 1: Read Tool Manual

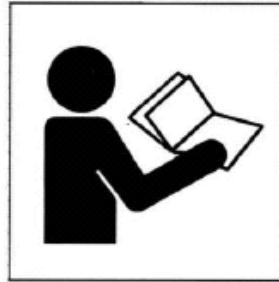


Figure A1

SYMBOL 2: Wear Eye Protection

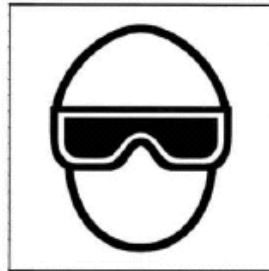


Figure A2

SYMBOL 3: Personal Injury

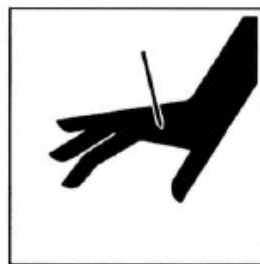


Figure A3

A.1 Per Clause 3.2.4 alternate symbols evaluated in accordance with ANSI Z535.3 meeting that criteria are acceptable.

Annex B (informative)

Exemplar **Tool** Label Meeting Marking Requirements

B1. Development of Label

All recommendations of ANSI Z535.3 regarding label type style, type size, use of upper/lower case, etc. were followed.

B2. Layout

Figures B1 and B2 are example layouts of symbols and text messages. Layouts **may** vary on a **tool** based on considerations such as area and shape of spaces available on **tool** for a label.

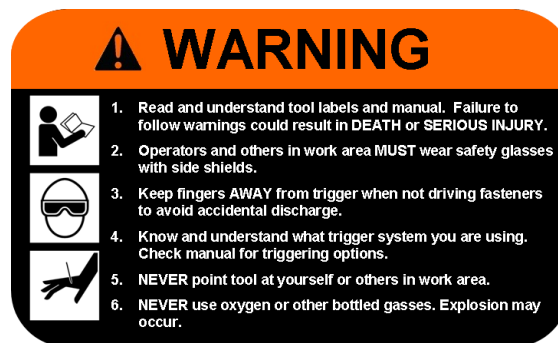


Figure B1

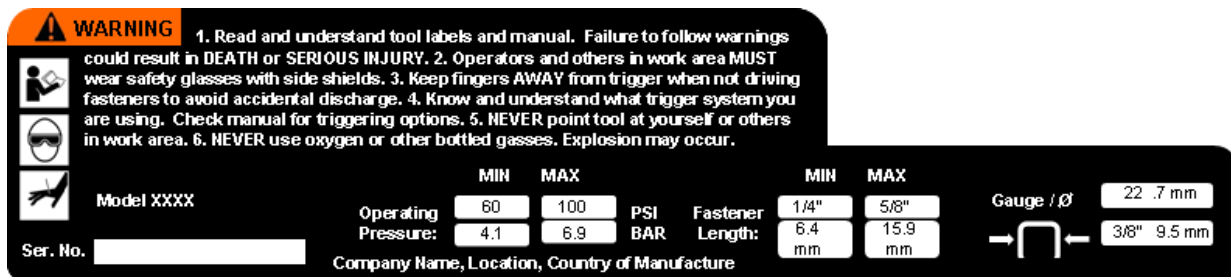


Figure B2

Note: Use of safety orange in signal word panel of both sample labels corresponds to use of the signal word "Warning," whereas safety red would be used in signal word panel if signal word was "Danger."

Annex C
(informative)

Referenced American National Standards

Below is a list of American National Standards referenced in this standard.

ANSI Z87.1- 2010, American National Standard for Occupational and Educational Personal Eye and Face Protection Devices.

ANSI Z89.1-2009, American National Standard for Industrial Head Protection.

ANSI Z535.1-2011, American National Standard for Safety Colors.

ANSI Z535.3-2011, American National Standard for Criteria for Safety Symbols.

ANSI Z535.4-2011, American National Standard for Product Safety Signs and Labels.

ANSI Z535.6-2011, American National Standard for Product Safety Information in Product Manuals, Instructions, and Other Collateral Materials.