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Hand-held non-electric power tools - Safety requirements - Part 13: Fastener driving tools (ISO/DIS 11148-13)

Handgehaltene nicht-elektrisch betriebene Maschinen - Sicherheitsanforderungen - Teil 13: Eintreibgeräte (ISO/DIS 11148-13:2023)

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Hand-held non-electric power tools — Safety requirements —

Part 13:
Fastener driving tools

Machines portatives à moteur non électrique — Exigences de sécurité —

Partie 13: Machines à enfoncer les fixations

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 118, Compressors and pneumatic tools, machines and equipment, Subcommittee SC 3, Pneumatic tools and machines.

This second edition cancels and replaces the first edition (ISO 11148-13:2017) which has been technically revised.

The main changes compared to the previous edition are as follows:

— Definition of light and heavy-duty tools updated to use mass and length of fasteners determining factor.

— Established 5 sec maximum time period for the trigger time-out period.

— Test protocols for trigger timeout period included.

— Addition of Annex ZA.

— Adoption of symbol F.1 for tools capable of automatic reversion.

A list of all parts in the ISO 11148 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document is a type C standard as stated in ISO 12100.

The machinery concerned and the extent to which hazards, hazardous situations and events are covered are indicated in the Scope.

When provisions of this type C standard are different from those which are stated in type A or B standards, the provisions of this type C standard take precedence over the provisions of other standards, for machines that have been designed and built according to the provisions of this type C standard.

The ISO 11148 series consists of a number of independent parts for individual types of hand-held non-electric power tools.

Certain parts of ISO 11148 cover hand-held non-electric power tools, driven by internal combustion engines powered by gaseous or liquid fuel. In these parts, the safety aspects relating to internal combustion engines are found in a normative annex.

The parts are type C standards and refer to pertinent International Standards of type A and B where such standards are applicable.

The following patent documents are highlighted to provide awareness of proprietary technologies related the Automatic Reversion function.

US 10,213,911

US 10,532,453

US 9,662,776

EP 3,263,284

US 10,335,936

EP 2,767,365

US 11,229,996

Hand-held non-electric power tools — Safety requirements —

Part 13: Fastener driving tools

1 Scope

This document specifies safety requirements for hand-held non-electric power tools (hereinafter referred to as "fastener driving tools") intended for installation of a fastener (see Annex B), forming a mechanical connection or attachment with the workpiece which is, for example, wood and wood-based materials, plastic materials, fibre materials (loose or compacted), cementitious materials, metals and combinations of these materials. The fastener driving tools for fasteners can be powered by compressed air or combustible gases (which may be ignited by a battery or accumulator) and the energy is transmitted to an impacted element by an intermediary component that does not leave the device. These tools are intended to be used by one operator and supported by the operator's hand or hands, with or without a suspension, e.g. a balancer.

This document is applicable to fastener driving tools in which energy is applied to a loaded fastener for the purpose of driving this into a workpiece.

This document is not applicable to fastener driving tools in which the energy for driving fasteners is drawn from powder-actuated cartridges, hydraulics or from any type of electrical supply.

This document does not deal with special requirements and modifications of hand-held power tools for the purpose of mounting them in a fixture.

This document deals with all significant hazards, hazardous situations or hazardous events relevant to fastener driving tools for fasteners when they are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer, with the exception of the use of power tools in potentially explosive atmospheres.

NOTE ISO 80079–36 gives requirements for non-electrical equipment for potentially explosive atmospheres.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3857-3:1989, *Compressors, pneumatic tools and machines — Vocabulary — Part 3: Pneumatic tools and machines*

ISO 3864-2:2016, *Graphical symbols — Safety colours and safety signs — Part 2: Design principles for product safety labels*

ISO 4871:1996, *Acoustics — Declaration and verification of noise emission values of machinery and equipment*

ISO 5391:2003, *Pneumatic tools and machines — Vocabulary*

ISO 7010:2019, *Graphical symbols — Safety colours and safety signs — Registered safety signs*

ISO 28927-13:2022, *Hand-held portable power tools — Test methods for evaluation of vibration emission — Part 13: Fastener driving tools*

ISO 12100:2010, *Safety of machinery — General principles for design — Risk assessment and risk reduction*

ISO 13732-1:2006, *Ergonomics of the thermal environment — Methods for the assessment of human responses to contact with surfaces — Part 1: Hot surfaces*

ISO 13732-3:2005, *Ergonomics of the thermal environment — Methods for the assessment of human responses to contact with surfaces — Part 3: Cold surfaces*

EN 1005-3:2002+A1:2008, *Safety of machinery — Human physical performance - Part 3: Recommended force limits for machinery operation*

EN 1005-4:2005+A1:2008, *Safety of machinery — Human physical performance - Part 4: Evaluation of working postures and movements in relation to machinery*

EN 12096:1997, *Mechanical vibration — Declaration and verification of vibration emission values*

EN 12549:1999+A1:2008, *Acoustics — Noise test code for fastener driving tools — Engineering method*

EN 15895:2011+A1:2018, *Cartridge operated hand-held tools — Safety requirements — Fixing and hard marking tools*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 12100:2010, ISO 3857-3:1989 and ISO 5391:2003 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at https://www.electropedia.org/

— ISO Online Browsing Platform: available at https://www.iso.org/obp

3.1 General terms

3.1.1
hand-held power tool
machine operated by one or two hands and driven by rotary or linear motors powered by compressed air, gaseous or liquid fuel (which may be ignited by a battery or an accumulator) or stored energy (e.g. by a spring) to do mechanical work and so designed that the motor and the mechanism form an assembly that can easily be brought to its place of operation

3.1.1.1
pneumatic tool
tool, where energy to drive the fasteners comes from compressed air

3.1.1.2
gas tool
tool, where energy to drive the fasteners comes from combustion of gases

3.1.2
horizontal-down orientation
tool orientation where the tool nose is normal to a horizontal work surface and pointed downwards

3.1.3
horizontal-up orientation
tool orientation where the tool nose is normal to a horizontal work surface and pointed upwards

3.1.4
vertical orientation
tool orientation where the tool nose is normal to a vertical work surface

3.1.5
production application
high-volume professional application such as pallets, furniture, manufactured housing, upholstery, sheathing and roofing

3.2 Terms and definitions related to fastener driving tools

3.2.1
fastener driving tool
hand-held power tool in which energy is applied in a linear motion to a loaded fastener for the purpose of driving the fastener into defined materials

3.2.1.1
coil nailer
nailer that drives fasteners from a collated coil of nails

Note 1 to entry: The primary purpose of this tool being production applications

3.2.1.2
heavy-duty stapler or finish nailer
stapler or finish nailer capable of driving:

— fasteners with mass ≥ 0,5 gram

— fasteners with mass ≥ to 0,4 gram and length > 26 mm

— fasteners with length > 36 mm

Note 1 to entry: These tools are primarily for production applications.

3.2.1.3
light-duty tool
tool capable of driving fasteners with mass < 0,5 g and length is ≤ 26 mm or fasteners with mass < 0,4 g with length ≤ 36 mm

3.2.1.4
pinner
tool capable of driving predominantly headless fasteners up to 51 mm in length and a maximum gauge of 23 (0,64 mm) diameter

Note 1 to entry: Larger gauge pinners are available.

3.2.1.5
single-blow tool
fastener driving tool that drives a fastener with a single stroke of the driving element

3.2.1.6
multi-blow tool
fastener driving tool that drives a fastener with more than one stroke of the driving element

3.2.2
fastener
mechanical device used for securing fixings to surfaces, or joining materials together, such as: nails, staples and pins

3.2.3
collating material
material for joining together single fasteners in strips or coils with adhesive, paper or plastic tape, plastic strap or wire

3.2.4
trigger
tool control operated manually by a tool operator

3.2.4.1
actuation mode selector
tool control, manually set by the operator, so that the tool operates in a specific actuation mode

3.2.4.2
dual activation
two devices such as triggers, levers or switches that work in conjunction with each other such that both devices require activation to actuate the tool

Note 1 to entry: A sequence of activation may be necessary for tool actuation.

3.2.5
workpiece contact
control element or assembly that needs to be activated before a fastening operation can be performed

3.2.5.1
extended workpiece contact
control element or assembly that is extended from the tool and is retracted by pressing on the workpiece, preventing the tool from driving a fastener when not pressed against the workpiece

3.2.5.2
retracted workpiece contact
workpiece contact that is retracted and extends when the trigger is activated, preventing the tool from driving a fastener when not pressed against the workpiece

3.2.6
full sequential actuation
actuation mode which allows single driving operations via the trigger after the workpiece contact has been operated and further driving operations are only possible after the trigger and the workpiece contact have been returned to the non-driving position

Note 1 to entry: The evaluation of actuation modes is given in 5.2.5.1

3.2.7
single sequential actuation
actuation mode which allows single driving operations via the trigger after the workpiece contact has been operated and further driving operations are possible via trigger operation if the workpiece contact has remained in the operating position

3.2.8
contact actuation
actuation mode which allows the tool to operate by operating the workpiece contact while the trigger is continually depressed and held

3.2.9
continual contact actuation
actuation mode in which the driving operations continue as long as the trigger and the workpiece contact remain in their operating positions

3.2.10
contact actuation with automatic reversion
actuation mode capable of contact actuation or continual contact actuation and where the tool becomes inoperable if the trigger is depressed without operation of the workpiece contact within the manufacturer's stated trigger time-out period

3.2.11
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 1 to entry: This duration to be no longer than 5 seconds.

3.2.12
selective actuation
actuation system that allows discrete selection of two or more of the following actuation modes; single sequential actuation, full sequential actuation, contact actuation with automatic reversion, continual contact actuation or contact actuation.

Note 1 to entry: One or more of the selections shall be single sequential actuation or full sequential actuation.

3.2.13
gas container
non-refillable container which stores and dispenses, using a release device, combustible gas, compressed or liquefied

Note 1 to entry: See Figures 1 and 2.

3.2.13.1
metering valve
mechanical or electro-mechanical mechanism designed to control quantity of the combustible gas provided to the gas tool which can be either fitted directly onto the release device, integrated into the release device or be a part of the gas tool

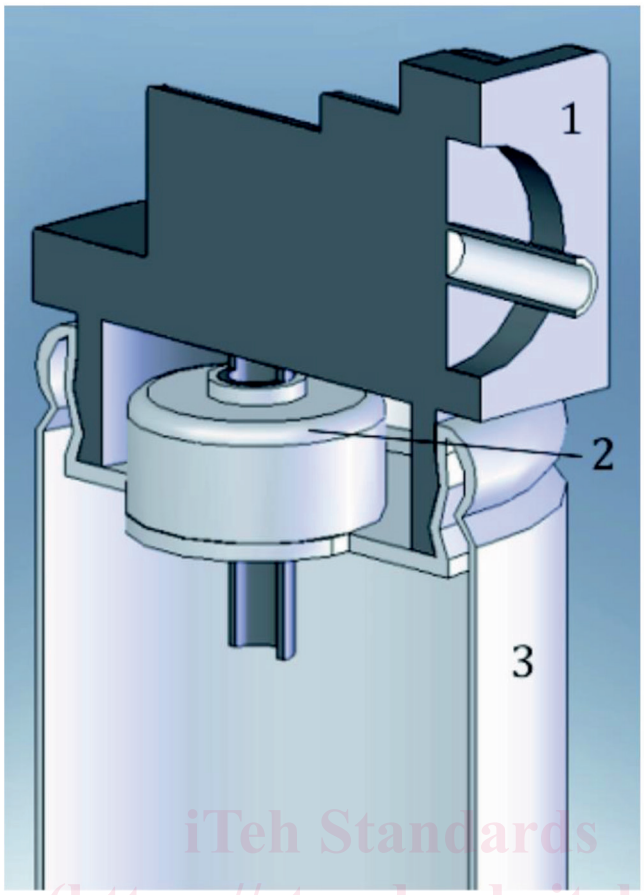
Note 1 to entry: A typical metering valve is shown in Figure 1

3.2.13.2
release device
valve mechanism which allows the combustible contents of the gas container to be dispensed and is a part of the gas container

Note 1 to entry: Typical release devices are shown in Figures 1 and 2.

3.2.13.3
adapter
fitting, typically installed on the gas container by the user, that allows the gas container to be connected to the gas tool

Note 1 to entry: A typical adapter is shown in Figure 2.



Key

1 metering valve
2 release device
3 gas container

Figure 1 — Example of gas container, release device and metering valve