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

**Part 6:
Assembly power tools for threaded
fasteners**

*Machines portatives à moteur non électrique — Exigences de sécurité —
Partie 6: Machines d'assemblage pour éléments de fixation filetés*

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 11148-6 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 11148-6:2010), of which it constitutes a minor revision.

ISO 11148 consists of the following parts, under the general title *Hand-held non-electric power tools — Safety requirements*:

- *Part 1: Assembly power tools for non-threaded mechanical fasteners*
- *Part 2: Cutting-off and crimping power tools*
- *Part 3: Drills and tappers*
- *Part 4: Non-rotary percussive power tools*
- *Part 5: Rotary percussive drills*
- *Part 6: Assembly power tools for threaded fasteners*
- *Part 7: Grinders*
- *Part 8: Sanders and polishers*
- *Part 9: Die grinders*
- *Part 10: Compression power tools*
- *Part 11: Nibblers and shears*
- *Part 12: Circular, oscillating and reciprocating saws*

A part 13, dealing with fastener driving tools, is under preparation.

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 defined in the Scope of this part of ISO 11148.

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

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

Certain elements of this part 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 standards of types A and B where such standards are applicable.

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

Part 6: Assembly power tools for threaded fasteners

IMPORTANT — The electronic file of this document contains colours that are considered useful for the correct understanding of the document. Users should consider printing this document using a colour printer. ISO 3864-4 provides colourimetric and photometric properties together with, as a guideline, references from colour order systems.

1 Scope

This part of ISO 11148 applies to hand-held non-electric power tools (hereinafter “assembly power tools for threaded fasteners”) intended for tightening or installing of threaded fasteners. The assembly power tools for threaded fasteners can be powered by compressed air, hydraulic fluid or internal combustion engines and are intended for use by one operator and supported by the operator’s hand or hands, with or without a suspension, e.g. a balancer.

This part of ISO 11148 covers

- air-hydraulic impulse wrenches;
- impact wrenches;
- fastener installation tools;
- nutrunners;
- open-ended spanners (crow-foot with open-ended socket or tube nut wrench);
- ratchet wrenches;
- screwdrivers.

NOTE 1 For examples of assembly power tools for threaded fasteners, see Annex B.

This part of ISO 11148 does not cover special requirements and modifications of assembly power tools for threaded fasteners for the purpose of mounting them in fixtures.

This part of ISO 11148 deals with all significant hazards, hazardous situations or hazardous events when the tools are used as intended and under conditions of misuse which are reasonably foreseeable by the manufacturer, with the exception of the use of assembly power tools for threaded fasteners in potentially explosive atmospheres.

NOTE 2 EN 13463-1 gives requirements for non-electrical equipment for potentially explosive atmospheres.

2 Normative references

The following referenced documents are indispensable for the application 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, *Compressors, pneumatic tools and machines — Vocabulary — Part 3: Pneumatic tools and machines*

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

ISO 5391, *Pneumatic tools and machines — Vocabulary*

ISO 7000, *Graphical symbols for use on equipment — Registered symbols*¹⁾

ISO 7010, *Graphical symbols — Safety colours and safety signs — Registered safety signs*¹⁾

ISO 9158, *Road vehicles — Nozzle spouts for unleaded gasoline*

ISO 9159, *Road vehicles — Nozzle spouts for leaded gasoline and diesel fuel*

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

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

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

ISO 15744, *Hand-held non-electric power tools — Noise measurement code — Engineering method (grade 2)*

ISO 17066, *Hydraulic tools — Vocabulary*

ISO 20643, *Mechanical vibration — Hand-held and hand-guided machinery — Principles for evaluation of vibration emission*

ISO 28927-2, *Hand-held portable power tools — Test methods for evaluation of vibration emission — Part 2: Wrenches, nutrunners and screwdrivers*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 3857-3, ISO 5391, ISO 12100 and ISO 17066 (for hydraulic tools), and the following apply.

3.1 General definitions

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, hydraulic fluid, gaseous or liquid fuel, electricity 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

NOTE Hand-held power tools driven by compressed air or gas are called pneumatic tools (or air tools). Hand-held power tools driven by hydraulic liquid are called hydraulic tools.

3.1.2

inserted tool

tool inserted in the assembly power tool for threaded fasteners to perform the intended work

3.1.3

service tool

tool intended for performing maintenance or service on the assembly power tool for threaded fasteners

3.1.4

control device

device to start and stop the assembly power tool for threaded fasteners or to change the direction of the rotation or to control the functional characteristics such as speed and power

1) The graphical symbol collections of ISO 7000, ISO 7001 and ISO 7010 are also available online in the ISO web store. For more information, consult http://www.iso.org/iso/fr/publications_and_e-products/databases.htm.

3.1.5**start-and-stop device****throttle**

manually operated control on the assembly power tool for threaded fasteners by which the energy supply to the motor can be turned on and off

3.1.6**hold-to-run start-and-stop device****constant-pressure throttle**

start-and-stop device that automatically returns to the OFF position when force on the start-and-stop device actuator is released

3.1.7**lock-on start-and-stop device****constant-pressure throttle with instant release lock**

hold-to-run start-and-stop device that can be locked in the ON position and designed so that it permits the assembly power tool for threaded fasteners to be turned off by a single motion of the same finger or fingers used to turn it on

3.1.8**lock-off start-and-stop device****lock-off throttle**

start-and-stop device that automatically latches in the OFF position when the actuator is released and where two motions are required to energize the assembly power tool for threaded fasteners

3.1.9**positive on-off start-and-stop device****positive on-off throttle**

start-and-stop device that remains in an ON position until it is manually changed

3.1.10**maximum operating pressure**

maximum pressure at which an assembly power tool for threaded fasteners may be operated

3.1.11**whip hose**

air hose, connecting the main air hose with an air tool for the purpose of providing more flexibility

3.1.12**rated air pressure**

air pressure, required at an air tool inlet port to assure rated performance of the tool, also considered the maximum pressure at which the tool may be operated

3.1.13 Rated speed**3.1.13.1****rated speed**

⟨pneumatic tool⟩ speed of an air tool at no load and rated air pressure at the tool inlet port

NOTE The rated speed is expressed in revolutions per minute.

3.1.13.2**rated speed**

⟨hydraulic tool⟩ nominal speed of a hydraulic tool at no load and rated flow at the tool inlet port

NOTE The rated speed is expressed in revolutions per minute.

3.1.14**maximum attainable speed**

maximum speed which the tool can achieve under the most adverse condition of possible maladjustment or malfunction of its speed control devices, when supplied with compressed air at the pressure marked on the assembly power tool for threaded fasteners