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

**Part 11:
Nibblers and shears**

*Machines portatives à moteur non électrique — Exigences de
sécurité —*

iTeh STANDARD PREVIEW
Partie 11: Grignoteuses et cisailles
(standards.iteh.ai)

ISO 11148-11:2011

<https://standards.iteh.ai/catalog/standards/sist/6003c181-f0b2-4b5a-9b24-6d5a26ac973e/iso-11148-11-2011>



iTeh STANDARD PREVIEW (standards.iteh.ai)

ISO 11148-11:2011

<https://standards.iteh.ai/catalog/standards/sist/6003c181-f0b2-4b5a-9b24-6d5a26ac973e/iso-11148-11-2011>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2011

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
Introduction.....	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
3.1 General definitions	2
3.2 Definitions related to nibblers and shears.....	4
4 Safety requirements and/or protective measures.....	4
4.1 General	4
4.2 Mechanical safety.....	4
4.3 Thermal safety	5
4.4 Noise reduction	5
4.5 Vibration	5
4.6 Materials and substances processed, used or exhausted.....	6
4.7 Ergonomics.....	6
4.8 Controls	7
5 Verification	7
5.1 General conditions for tests.....	7
5.2 Noise.....	7
5.3 Vibration	8
5.4 Unintentional start.....	8
5.5 Power tool construction	8
5.6 Structure of verification	8
6 Information for use	9
6.1 Marking, signs and written warnings	9
6.2 Instruction handbook.....	9
6.3 Operating instructions	14
6.4 Data	14
6.5 Maintenance instructions	15
Annex A (informative) List of significant hazards	16
Annex B (informative) Examples of nibblers and shears covered by this part of ISO 11148	17
Annex C (normative) Symbols for labels and signs	18
Bibliography.....	19

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 11148-11 was prepared by Technical Committee ISO/TC 118, *Compressors and pneumatic tools, machines and equipment*, Subcommittee SC 3, *Pneumatic tools and machines*.

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 requirements of this type-C standard are different from those which 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 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 standards of type A and B where such standards are applicable.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO 11148-11:2011](https://standards.iteh.ai/catalog/standards/sist/6003c181-f0b2-4b5a-9b24-6d5a26ac973e/iso-11148-11-2011)

<https://standards.iteh.ai/catalog/standards/sist/6003c181-f0b2-4b5a-9b24-6d5a26ac973e/iso-11148-11-2011>

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO 11148-11:2011

<https://standards.iteh.ai/catalog/standards/sist/6003c181-f0b2-4b5a-9b24-6d5a26ac973e/iso-11148-11-2011>

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

Part 11: Nibblers and shears

IMPORTANT — The colours represented in the electronic file of this document can be neither viewed on screen nor printed as true representations. For the purposes of colour matching, see ISO 3864-4, which provides colorimetric and photometric properties together with, as a guideline, references from colour order systems.

1 Scope

This part of ISO 11148 specifies safety requirements for hand-held non-electric power tools (hereinafter “nibblers and shears”) with a reciprocating movement for nibbling and shearing. The nibblers and shears can be powered by compressed air or hydraulic fluid and 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.

NOTE 1 At the time of publication, no nibblers and shears driven by internal combustion engines are known. Once these are identified, it is intended to amend this part of ISO 11148 to include such power tools.

This part of ISO 11148 is applicable to: [ISO 11148-11:2011](https://standards.iteh.ai/catalog/standards/sist/6003c181-f0b2-4b5a-9b24-6d5a26ac973e/iso-11148-11-2011)
<https://standards.iteh.ai/catalog/standards/sist/6003c181-f0b2-4b5a-9b24-6d5a26ac973e/iso-11148-11-2011>

— nibblers;

— shears.

NOTE 2 For examples of nibblers and shears, see Annex B.

This part of ISO 11148 is not applicable to special requirements and modifications of nibblers and shears for the purpose of mounting them in a fixture.

This part of ISO 11148 deals with all significant hazards, hazardous situations or hazardous events relevant to nibblers and shears 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 nibblers and shears in potentially explosive atmospheres.

NOTE 3 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 5391, *Pneumatic tools and machines — Vocabulary*

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 13851, *Safety of machinery — Two-hand control devices — Functional aspects and design principles*

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

ISO 17066, *Hydraulic tools — Vocabulary*

ISO 28927-7, *Hand-held portable power tools — Test methods for evaluation of vibration emission — Part 7: Nibblers and shears*

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 nibbler or shear to perform the intended work

3.1.3

service tool

tool intended for performing maintenance or service on the nibbler or shear

3.1.4

control device

device to start and stop the nibbler or shear or to change the direction of the rotation or to control the functional characteristics, such as speed and power

3.1.5

start-and-stop device

throttle

manually operated control on the nibbler or shear 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 which 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 which is designed so that it permits the nibbler or shear 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 nibbler or shear

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

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

3.1.10**maximum operating pressure**

maximum pressure at which a nibbler or shear 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 ensure 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 nibbler or shear

3.1.15

suspension device

device, which is attached to the tool, whose primary purpose is to reduce the strain on the operator caused by the weight of the tool

NOTE The device can also have a secondary purpose of transmitting a reaction torque.

3.2 Definitions related to nibblers and shears

3.2.1

nibbler

power tool for cutting sheet metal where material removal is caused by a reciprocating motion of a punch through a fixed die

3.2.2

shear

power tool with a cutter acting in reciprocating motion relative to a fixed cutter, used for cutting sheet metal by shearing action

4 Safety requirements and/or protective measures

4.1 General

The machine shall comply with the safety requirements and/or protective measures and be verified in accordance with Clause 5. In addition, the machine shall be designed in accordance with the principles of ISO 12100 for relevant, but not necessarily significant, hazards, which are not dealt with by this part of ISO 11148.

The measures adopted to comply with the requirements of Clause 4 shall take account of the state-of-the-art.

It is recognized that optimizing the design with respect to some safety measures can result in a degradation of performance against other safety requirements. In such cases, it is required to strike a balance between the various requirements in order to achieve a nibbler or shear design that satisfies each requirement, so far as is reasonably practicable, and remains fit for purpose.

4.2 Mechanical safety

4.2.1 Surfaces, edges and corners

Accessible parts of nibblers and shears, except the inserted tool, shall not have sharp edges or angles or rough or abrasive surfaces; see ISO 12100:2010, 6.2.2.1.

4.2.2 Supporting surface and stability

Nibblers and shears shall be so designed that they can be laid aside and remain in a stable position on a plane surface.

4.2.3 Hydraulic fluid ejection

Hydraulic systems of the nibblers and shears shall be enclosed so as to provide protection from high-pressure fluid ejection.

4.2.4 Power tool construction

The nibbler or shear shall be so designed and constructed as to prevent the loosening or loss of components during expected use, including rough handling and occasional dropping, which can compromise its safety functions. Verification shall be carried out in accordance with 5.5.

4.3 Thermal safety

Surface temperatures of parts of the nibbler or shear which are held during use or which can be inadvertently touched shall follow the provisions of ISO 13732-1 and ISO 13732-3.

Pneumatic tools shall be designed to minimize the cooling effects of exhaust air on the handles and other gripping zones.

4.4 Noise reduction

The nibbler or shear shall be designed and constructed so that the emission of noise is reduced to the lowest practical level, taking account of technical progress and the availability of means of reducing noise, in particular at source. Principles for designing nibblers and shears with reduced noise emission are contained in ISO/TR 11688-1 and ISO/TR 11688-2.

The noise emission from using nibblers and shears has three main sources:

- the nibbler or shear itself;
- the inserted tool;
- the workpiece.

NOTE Generally, the noise emitted due to the characteristics of the workpiece cannot be controlled directly by the manufacturer of the nibbler or shear.

Typical sources of noise emitted by the nibbler or shear itself are

- a) the motor and drive mechanism,
- b) the exhaust air or gases, and
- c) vibration or impact-induced noise.

Where the exhaust air or gases are the major contributor to the noise, means to reduce the noise, for example a silencer or equivalent means, shall be included in the design.

Alternatively, where practicable, the exhaust air or gases may be piped away from the operator in a hose.

Vibration-induced noise can often be reduced by vibration isolation and damping.

This list is not exhaustive; where alternative technical measures for noise reduction, with greater efficiency, are available, they should be used by the manufacturer.

4.5 Vibration

The nibbler or shear shall be designed and constructed so that the vibration is reduced to the lowest level at the handles and at any other parts of the tool in contact with the operator's hands, taking account of technical progress and the availability of means of reducing vibration, in particular at source. Principles for designing nibblers and shears with reduced vibration emission are contained in CR 1030-1.

Typical sources of vibration emitted by a nibbler or shear are

- impacts,
- poorly designed motors, and
- resonances in the structure of the machine, particularly the handles and their mounts.