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**Machinery for forestry — Winches —**  
**Part 2:**  
**Traction aid winches**

*Matériels forestiers — Treuils —*  
*Partie 2: Treuils d'aide à la traction*



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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](http://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](http://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](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 15, *Machinery for forestry*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 144, *Tractors and machinery for agriculture and forestry*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

A list of all parts in the ISO 19472 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](http://www.iso.org/members.html).

## Introduction

This document is a type-C standard as stated in ISO 12100:2010.

This document is of relevance, in particular for the following stakeholder groups representing the market players with regard to machinery safety:

- machine manufacturers (small, medium and large enterprises);
- health and safety bodies (regulators, accident prevention organisations, market surveillance etc.).

Others can be affected by the level of machinery safety achieved with the means of the document by the above-mentioned stakeholder groups:

- machine users/employers (small, medium and large enterprises);
- machine users/employees (e.g. trade unions, organizations for people with special needs);
- service providers, e.g. for maintenance (small, medium and large enterprises).

The above-mentioned stakeholder groups have been given the possibility to participate at the drafting process of this document.

The machinery concerned and the extent to which hazards, hazardous situations or hazardous events are covered are indicated in the Scope of this document. When requirements of this type-C standard are different from those which are stated in type-A or type-B standards, the requirements of this type-C standard take precedence over the requirements of the other standards for machines that have been designed and built according to the requirements of this type-C standard.

Traction aid winches are used with forest machines when operating in sloped terrain and on soils with limited bearing capacity or poor traction. Such winches do provide traction aid to a supported machine. The combined tractive effort provided by the machine's wheels or tracks and the traction aid winch makes it easier to access steep slopes and manage unfavourable soil conditions while maintaining productivity by avoiding excess uphill driving or driving around a gradient, especially with harvesters, fellers, forwarders and skidders. Forest floor damages are greatly reduced which leads to a lower risk of erosion after logging operations. Machine stability is also enhanced, and thus general safety of operation is improved. Traction aid winches offer a possibility for machines to work on slopes which otherwise would be difficult to negotiate. This makes it simpler to mechanize work in steep terrain which otherwise would have to be performed manually.

Forestry winches for typical logging, such as the ones used for skidding or cable yarding of stems/logs, are designed for a different application than traction aid winches. The control systems, safety features, and performance measures of forestry winches have been designed for a purpose that is incompatible with the requirements of traction aid applications. Therefore, forestry winches should not be used in traction aid applications.

The main categories of winches for tractive efforts are shown in [Figure 1](#). Further aspects of the design and operation of traction aid winches can be found in [Annex E](#).

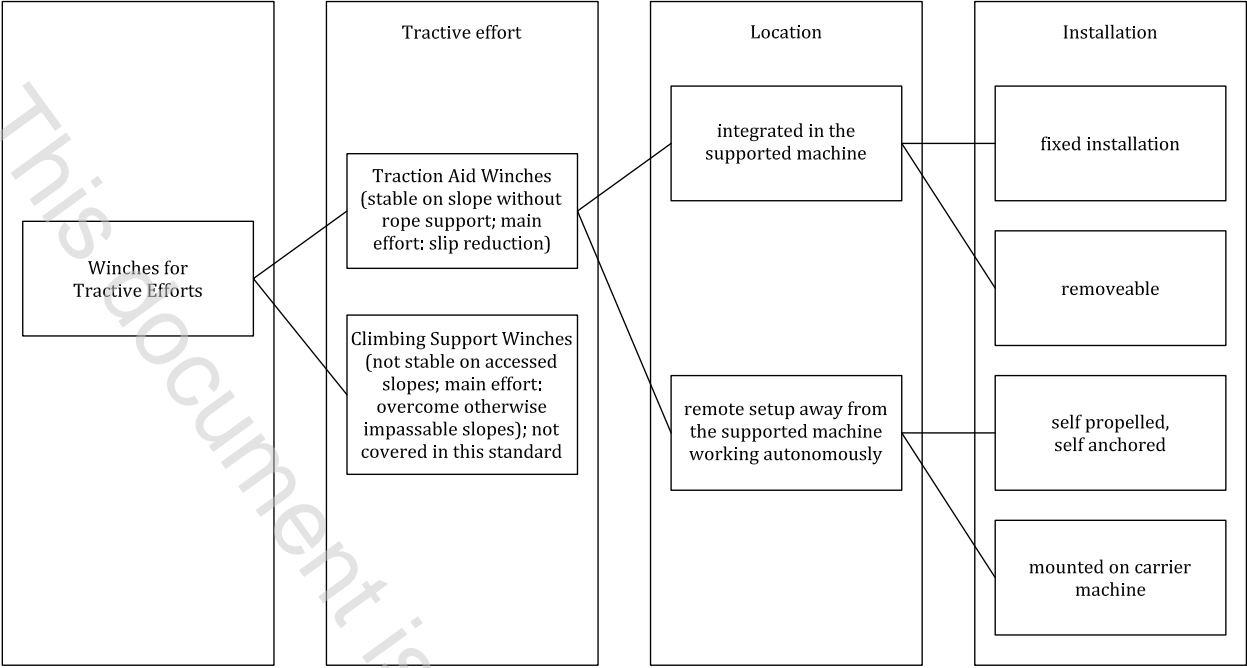


Figure 1 — Categorization of winches for tractive efforts





# Machinery for forestry — Winches —

## Part 2: Traction aid winches

### 1 Scope

This document defines the dimensions and specifies the performance and safety requirements for traction aid winches used in forestry for assisting supported machines while going uphill and downhill (pulling and braking).

This document is applicable to fixed and detachable winches and their components, connections and communications, which are used with mobile and self-propelled forestry machinery as defined in ISO 6814:2009 and earth moving machinery as defined in ISO 6165:2012. It is also applicable to remote traction aid winch systems which are installed on a position away from the supported machine. In addition, this document defines requirements for the assembly of supported machine and traction aid winch. It is not applicable to winches which are not using a controlled rope force while going downhill and winches used for skidding, hoisting operations on cranes, draglines, high lead logging, rope logging systems or yarding. The kind of prime mover used to drive a traction aid winch does not limit the applicability of this document. This document is intended to be applied to traction aid systems used on machines where, without use of these systems, the machine remains stationary on slopes under its independent control (see [Annex E](#)).

Forestry machines, as defined in ISO 6814:2009, that are used as anchor or supported machines are not in the scope of this document. Requirements for the safety of many types of supported machines are within the scope of ISO 11850:2011.

This document is not applicable to traction aid winches manufactured before the date of its publication.

### 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 2867:2011, *Earth-moving machinery — Access systems*

ISO 3600:2015, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Operator's manuals — Content and format*

ISO 3744:2010, *Acoustics — Determination of sound power levels and sound energy levels of noise sources using sound pressure — Engineering methods for an essentially free field over a reflecting plane*

ISO 4254-1:2013, *Agricultural machinery — Safety — Part 1: General requirements*

ISO 4309:2017, *Cranes — Wire ropes — Care and maintenance, inspection and discard*

ISO 4413:2010, *Hydraulic fluid power — General rules and safety requirements for systems and their components*

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

ISO 6750-1:2019, *Earth-moving machinery — Operator's manual — Part 1: Contents and format*

ISO 8084:2003, *Machinery for forestry — Operator protective structures — Laboratory tests and performance requirements*

ISO 10968:2020, *Earth-moving machinery — Operator's controls*

ISO 11201:2010, *Acoustics — Noise emitted by machinery and equipment — Determination of emission sound pressure levels at a work station and at other specified positions in an essentially free field over a reflecting plane with negligible environmental corrections*

ISO 11684:1995, *Tractors, machinery for agriculture and forestry, powered lawn and garden equipment — Safety signs and hazard pictorials — General principles*

ISO 11850:2011, *Machinery for forestry — General safety requirements*

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

ISO 12508:1994, *Earth-moving machinery — Operator station and maintenance areas — Bluntness of edges*

ISO 13849-1:2015, *Safety of machinery — Safety-related parts of control systems — Part 1: General principles for design*

ISO 13850:2015, *Safety of machinery — Emergency stop function — Principles for design*

ISO 13857:2019, *Safety of machinery — Safety distances to prevent hazard zones being reached by upper and lower limbs*

ISO 15077:2020, *Tractors and self-propelled machinery for agriculture — Operator controls — Actuating forces, displacement, location and method of operation*

ISO 15817:2012, *Earth-moving machinery — Safety requirements for remote operator control systems*

ISO 15818:2017, *Earth-moving machinery — Lifting and tying-down attachment points — Performance requirements*

ISO 16625:2013, *Cranes and hoists — Selection of wire ropes, drums and sheaves*

ISO 20474-1:2017, *Earth-moving machinery — Safety — Part 1: General requirements*

EN 12385-1:2002+A1:2008, *Steel wire ropes — Safety — Part 1: General requirements*

EN 12385-2:2002+A1:2008, *Steel wire ropes — Safety — Part 2: Definitions, designation and classification*

EN 12385-3:2004+A1:2008, *Steel wire ropes — Safety — Part 3: Information for use and maintenance*

EN 12385-4:2002+A1:2008, *Steel wire ropes — Safety — Part 4: Stranded ropes for general lifting applications*

EN 13411-3:2004+A1:2008, *Terminations for steel wire ropes — Safety — Part 3: Ferrules and ferrule securing*

EN 13411-6:2004+A1:2008, *Terminations for steel wire ropes — Safety — Part 6: Asymmetric wedge socket*

EN 13411-8:2011, *Terminations for steel wire ropes — Safety — Part 8: Swage terminals and swaging*

EN 14492-1:2006+A1:2009, *Cranes — Power driven winches and hoists — Part 1: Power driven winches*

EN 17067:2018, *Forestry machinery — Safety requirements on radio remote controls*

EN 60204-1:2018, *Safety of machinery — Electrical equipment of machines — General requirements*

IEC 60447:2004, *Basic and safety principles for man-machine interface, marking and identification — Actuating principles*