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Earth-moving machinery — Coupling of attachments to skid steer loaders

Engins de terrassement — Attelage des accessoires des chargeuses à direction articulée

ICS: 53.100

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Foreword

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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).

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This document was prepared by Technical Committee ISO/TC 127, *Earth-moving machinery*, Subcommittee SC 2, *Safety, ergonomics and general requirements*.

This second edition cancels and replaces the first edition (ISO 24410:2005), which has been technically revised.

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

- addition of safety requirements
- addition of informative annex regarding the mechanics of a skid steer loader quick coupler
- addition of width dimensions for narrow skid steer loader attachment mounting frame

Introduction

Quick couplers typical to skid steer loaders are now used on other types of compact products, e.g. compact loaders, compact tractors, compact rough-terrain forklift trucks. The growth of the use of this style quick coupler with other products has resulted in the need to provide guidance regarding the design principles of this quick coupler system.

The previous version of this document only provided the dimensional requirements for the mounting frame on the attachment. Dimensions for the quick coupler itself were not provided as these dimensions are dependent on the design of the quick coupler. This revision of the document also does not provide dimensional requirements for the quick coupler itself, however it does provide guidance for the quick coupler engagement system.

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Earth-moving machinery — Coupling of attachments to skid steer loaders

1 Scope

This document provides for the interchangeability of attachments on skid steer loaders by establishing requirements for the quick coupler system including dimensional limits for the attachment mounting frame. These quick couplers are typically used on skid steer loaders as defined in ISO 6165.

NOTE 1 Skid steer loaders can use other styles of quick couplers but the coupler would not be interchangeable with attachments designed to comply with this document.

NOTE 2 The requirements of this document can be applied to quick couplers used on other compact machines.

NOTE 3 Quick couplers used on small skid steer loaders and some compact tool carriers can have a different width requirement than provided in this document. See [Annex B](#).

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 6165, *Earth-moving machinery — Basic types — Identification and terms and definitions*

ISO 6746-2, *Earth-moving machinery — Definitions of dimensions and codes — Part 2: Equipment and attachments*

ISO 13031:2016, *Earth-moving machinery — Quick couplers — Safety*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 6165 and ISO 6746-2 and the following apply.

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

- ISO Online browsing platform: available at <http://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1

quick coupler

device mounted on a skid steer loader to allow quick interchange of attachments

[SOURCE: ISO 13031:2016, [3.1](#), modified — The term “earth-moving machine” is replaced by “skid steer loader”, and Note 1 to entry is not included here]

3.2

attachment mounting frame

attachment component that facilitates the quick mounting and removal of an attachment to the *quick coupler* ([3.1](#))

**3.3
engagement system**

mechanical system of the *quick coupler* (3.1) which engages with the *attachment mounting frame* (3.2) and retains the attachment in its working position

[SOURCE: ISO 13031:2016, 3.2, modified — The term “attachment” is replaced by “attachment mounting frame”]

**3.3.1
wedge-type engagement system**

engagement system (3.3) of at least two interconnecting parts which engage with one another in a wedge action whereby the combination of the wedge angle and the friction coefficient counteract the tendency of the *working forces* (3.4) to cause disengagement

[SOURCE: ISO 13031:2016, 3.2.4, modified — The Note 1 to entry is not included here]

**3.4
working forces**

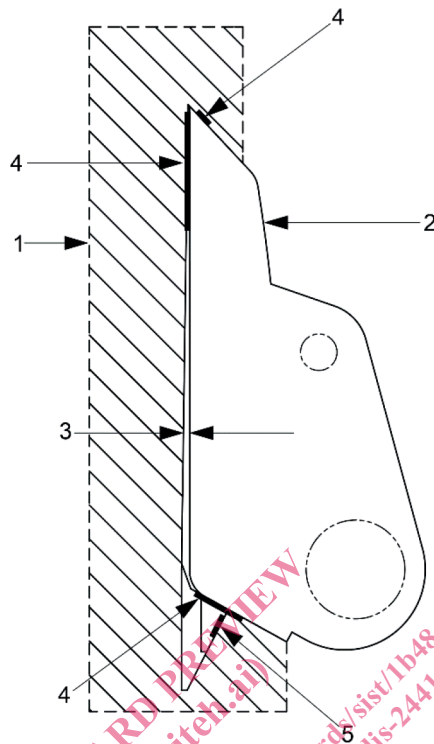
forces created by the working operations of the skid steer loader and attachments that act upon the *quick coupler* (3.1) during intended use and reasonably foreseeable misuse

[SOURCE: ISO 13031:2016, 3.3.1, modified — The term “earth-moving machine” is replaced by “skid steer loader”]

4 General requirements

The quick coupler system shall be designed in accordance with 5 and 6 and the following.

- a) The dimensions of the quick coupler should be such that the interface of the vertical face of the quick coupler and the attachment mounting frame does not result in surface-to-surface contact when engaged and locked together. This connection shall result in contact in each of the three zones of interface contact surface and a resulting gap between the quick coupler and the attachment mounting frame during all operating modes of the loader and attachment. See [Figure 1](#).

**Key**

- 1 attachment mounting frame
- 2 quick coupler
- 3 gap
- 4 zone of interface contact surface
- 5 wedge/pin contact surface

Figure 1 — Quick coupler to attachment mounting frame

b) See [Figure 5](#). The quick coupler shall not protrude

- above surface A,
- forward of surface B, or
- below surface C.

NOTE Some attachments could require added support structure to the attachment mounting frame between surfaces A and B.

c) The linkage of the quick coupler to the loader lift arms should provide a minimum of 5° rollback beyond vertical of the quick coupler towards the loader with the lift arms in their lowest position. The amount of rollback may be less for quick couplers used on smaller skid steer loaders and compact tool carriers.