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Earth-moving machinery — Safety —

Part 2: Requirements for dozers

Engins de terrassement — Sécurité —

Partie 2: Exigences applicables aux bouteurs

Reference number
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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 on 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 the following URL: www.iso.org/iso/foreword.html

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 20474-2:2008), which has been technically revised with the following changes:

— the term *tractor-dozer* has been changed to *dozer*;

— references to national and regional provisions in the withdrawn ISO/TS 20474-14 have been deleted;

— safety requirements and protective measures have been added.

It is intended to be used in conjunction with ISO 20474-1.

A list of all parts in the ISO 20474 series, published under the general title, *Earth-moving machinery — Safety,* can be found on the ISO website.

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Introduction

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

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 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.

ISO 20474 provides acceptable safety requirements for earth-moving machinery. This standard does not necessarily provide requirements to meet all national and regional regulatory provisions, e.g. Japan does not allow object handling with earth-moving machinery.

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Earth-moving machinery — Safety —

Part 2: Requirements for dozers

1 Scope

This document gives the safety requirements specific to wheeled dozers and crawler dozers as defined in ISO 6165 as well as for the rear-mounted winches on dozers. It is intended to be used in conjunction with ISO 20474-1, which specifies general safety requirements common to two or more earth-moving machine families. The specific requirements given in this document take precedence over the general requirements of ISO 20474-1.

This document deals with all significant hazards, hazardous situations and events relevant to the earth-moving machinery within its scope (see ISO 20474-1:2017, Annex A) when used as intended or under conditions of misuse reasonably foreseeable by the manufacturer. It specifies the appropriate technical measures for eliminating or reducing risks arising from relevant hazards, hazardous situations or events during commissioning, operation and maintenance.

This document is not applicable to machines 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 3411:2007, *Earth-moving machinery — Physical dimensions of operators and minimum operator space envelope*

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

ISO 6405-2, *Earth-moving machinery — Symbols for operator controls and other displays — Part 2: Specific symbols for machines, equipment and accessories*

ISO 6747, *Earth-moving machinery — Dozers — Terminology and commercial specifications*

ISO 7096, *Earth-moving machinery — Laboratory evaluation of operator seat vibration*

ISO 9244, *Earth-moving machinery — Machine safety labels — General principles*

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

ISO 19472, *Machinery for forestry — Winches — Dimensions, performance and safety*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 20474-1, ISO 6165 and ISO 6747, 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

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

3.1
dozer
self-propelled crawler or wheeled machine with equipment having either dozing attachment which cuts, moves, and grades material through forward motion of the machine or a mounted attachment used to exert a push or a pull force

[SOURCE: ISO 6165:2012, 4.1]

4 Safety requirements and protective measures

4.1 General

Dozers shall comply with the safety requirements and protective measures of ISO 20474-1, in as far as those are not modified by the specific requirements of this clause.

4.2 Operator's seat

ISO 20474-1:2017, 4.4.1.4 applies with the following addition:

— crawler dozers with an operating mass greater than 50 000 kg shall be in accordance with of ISO 7096:2008, class EM 6.

4.3 Rear windows

ISO 20474-1:2017, 4.3.2.7 and 4.3.2.9 apply for rear windows, with the following additional provisions:

— arrangement to defrost the rear windows should be made;

— the rear windows should be fitted with a motorised wipers and washer.

4.4 Rear-mounted winch

4.4.1 Mounting

The means for securing a winch to the machine structure shall be designed to withstand a force of twice the maximum line-pull that can be exerted by the rope without permanent deformation.

ISO 19472 should be used as guidance for the design of the mounting system.

4.4.2 Controls

The winch controls shall be located at the operator's station and shall fulfil the requirements stated in ISO 10968.

4.4.3 Protection

Where a rear-mounted winch is fitted, provision shall be made to allow for operator protection in accordance with ISO 19472.

Dozers equipped with a rear winch shall be equipped with an adequately sized protective screen or screens of a steel wire of minimum diameter 6 mm woven wire mesh and maximum opening of 45 mm × 45 mm, or equivalent protection, between the operator and the winch.

ISO 8084 should be used as guidance for design.

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