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Earth-moving machinery — Falling-object protective structures — Laboratory tests and performance requirements

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Construction and Mining Equipment Industry Group
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Earth-moving machinery — Falling-object protective structures — Laboratory tests and performance requirements

First published as AS ISO 3449:2020.

Preface

This Standard was prepared by the Standards Australia Committee ME-063, Earthmoving Equipment.

The objective of this document is to specify laboratory tests for measuring the structural characteristics of, and give performance requirements in a representative test for, falling-object protective structures (FOPS) intended for use on ride-on earth-moving machines as defined in ISO 6165.

It is applicable to both FOPS supplied as an integral part of the machine and those supplied separately for attachment to the machine. It is not applicable to FOPS intended for use on landfill compactors, excavators, rollers, trenchers, pipelayers, for the additional seat for operation of an attachment (e.g. attachment backhoe), or on machines with a power rating of less than 15 kW.

NOTE This document can be used to provide guidance to the manufacturers of roll-over or falling-object protective structures should it be decided to provide such protection for these or other machines for a particular application.

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Contents

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.

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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 3449 was prepared by Technical Committee ISO/TC 127, *Earth-moving machinery*, Subcommittee SC 2, *Safety requirements and human factors*.

This fifth edition cancels and replaces the fourth edition (ISO 3449:1992), which has been technically revised.

Introduction

This International Standard provides performance criteria for falling-object protective structures (FOPS). It recognizes that there are various classes and sizes of machines that operate in a variety of environmental conditions. It is intended to assure operators of reasonable protection from falling objects of different sizes and masses.

Its laboratory tests are a means of evaluating the characteristics of the structures used to protect the operator from localized impact penetration and, indirectly, of the load-carrying capacity of the supporting structure to resist impact loading.

This International Standard establishes a consistent, repeatable means of evaluating characteristics of FOPS under loading and prescribes performance requirements for these structures under such loading in a representative test.

For similar tests on FOPS for excavators and excavator-based machines, see ISO 10262.

NOTES

Australian Standard®

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1 Scope

This International Standard specifies laboratory tests for measuring the structural characteristics of, and gives performance requirements in a representative test for, falling-object protective structures (FOPS) intended for use on ride-on earth-moving machines as defined in ISO 6165. It is applicable to both FOPS supplied as an integral part of the machine and those supplied separately for attachment to the machine. It is not intended to apply to FOPS intended for use on landfill compactors, excavators, rollers, trenchers, pipelayers, for the additional seat for operation of an attachment (e.g. attachment backhoe), or on machines with a power rating of less than 15 kW.

NOTE This International Standard can be used to provide guidance to the manufacturers of roll-over or falling-object protective structures should it be decided to provide such protection for these or other machines for a particular application.

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 148:1983, *Steel — Charpy impact test (V-notch)*[1)]

ISO 898-1:1999, *Mechanical properties of fasteners made of carbon steel and alloy steel — Part 1: Bolts, screws and studs*

ISO 898-2:1992, *Mechanical properties of fasteners — Part 2: Nuts with specified proof load values — Coarse thread*

ISO 3164:1995, *Earth-moving machinery — Laboratory evaluations of protective structures — Specifications for deflection-limiting volume*

ISO 3471:1994, *Earth-moving machinery — Roll-over protective structures — Laboratory tests and performance requirements*

ISO 6165:—[2)], *Earth-moving machinery — Basic types — Vocabulary*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
falling-object protective structure
FOPS
system of structural members arranged in such a way as to provide operators with reasonable protection from falling objects (trees, rocks, small concrete blocks, hand tools, etc.)

1) Under revision.

2) To be published. (Revision of ISO 6165:2001)