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Earth-moving machinery — Object detection systems and visibility aids — Performance requirements and tests

*Engins de terrassement — Dispositifs de détection d'objets et d'aide
visuelle — Exigences de performances et essais*



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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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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 1, *Test methods relating to safety and machine performance*.

This second edition cancels and replaces the first edition (ISO 16001:2008), which has been technically revised.

The main change compared to the previous edition is as follows:

- [Annex G](#), [Annex H](#) and [Annex I](#) have been added to include state-of-the-art technologies.

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Introduction

This document outlines test procedures and sets criteria for the development of object detection systems (ODSs) and visibility aids (VAs) which indicate to the operator the presence of objects which are within the detection zone of these systems.

Proper job-site organization, operator training and the application of relevant vision standards (ISO 5006 and ISO 14401) address the safety of people on job sites. In some cases, vision of the working area cannot be achieved either by the operator's direct view or indirect view using mirrors. In such cases, operator awareness can be improved by the use of ODSs and VAs.

ODSs and VAs provide information to the operator as to whether a person or object is in the path of the machine, primarily during rearward movement.

It is essential to note that ODSs and VAs have both advantages and disadvantages. There is no device that works perfectly in all situations. It is especially important that the shortcomings of ODSs and VAs be recognized and known to system users. The advantages and disadvantages of selected devices are summarized in [Annex A](#).

The use of a haptic signal (signal that stimulates the operator's sense of touch, vibration, force and motion) as an alternative to the use of visual and audible signals in ODS warning devices was discussed during the revision of this document, as haptic warnings are now being used in the automotive industry. While this document does not currently allow warning devices that only use haptic signals, they can be incorporated into the warning device to supplement the visual and audible signal. More study is needed to determine the effectiveness of a haptic signal in various earth-moving machinery applications.