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# Intelligent transport systems — Manoeuvring aids for low-speed operation (MALSO) — Performance requirements and test procedures

*Systèmes de transport intelligents — Aides à la conduite pour manœuvre à vitesse réduite (MALSO) — Exigences de performance et procédures d'essai*

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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 document 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 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.

This document was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems*.

This third edition cancels and replaces the second edition (ISO 17386:2010), which has been technically revised.

The main changes are as follows:

— requirements updated according to state-of-the-art systems regarding detection characteristic;

— test method for detection latency added.

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.


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# Introduction

Today's aerodynamically-shaped vehicles often result in restricted rear and front visibility. Manoeuvring Aids for Low Speed Operation (MALSO) enhance security and driver convenience during parking or manoeuvring situations at very low speed, e.g. squeezing into small parking spaces or through narrow passages. Drivers can avoid collisions with obstacles that cannot be seen but can be detected by the system and they can make more effective use of limited parking space.

MALSO systems are detection devices with non-contact sensors which assist the driver during low-speed manoeuvring. MALSO systems indicate to the driver the presence of front, rear or corner objects. They are regarded as an aid to drivers for use at speeds of up to 0,5 m/s, and they do not relieve drivers of their responsibility when driving the vehicle.

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# Intelligent transport systems — Manoeuvring aids for low-speed operation (MALSO) — Performance requirements and test procedures

## 1 Scope

This document addresses light-duty vehicles, such as passenger cars, pick-up trucks, light vans and sport utility vehicles (motorcycles excluded) equipped with Manoeuvring Aids for Low Speed Operation (MALSO) systems. It specifies the minimum functionality requirements which the driver can generally expect of the device, i.e. detection of and information on the presence of relevant obstacles within a defined (short) detection range. It defines minimum requirements for failure indication as well as performance test procedures; it includes rules for the general information strategy but does not restrict the kind of information or display system.

MALSO systems use object-detection devices (sensors) for ranging in order to provide the driver with information based on the distance to obstacles. Although sensing technology is not addressed in this document, technology does affect the performance-test procedures set up in Clause 7. The current test objects are defined based on systems using ultrasonic sensors, which reflect the most commonly used technology at the time of publication. For other sensing technologies which will potentially emerge in the future, these test objects shall be checked and changed if required.

Visibility-enhancement systems like video-camera aids without distance ranging and warning are not covered by this document.

Reversing aids and obstacle-detection devices on heavy commercial vehicles are not addressed by this document.

## 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 2575, *Road vehicles — Symbols for controls, indicators and tell-tales*

ISO 15006, *Road vehicles — Ergonomic aspects of transport information and control systems — Specifications for in-vehicle auditory presentation*

ISO 15008, *Road vehicles — Ergonomic aspects of transport information and control systems — Specifications and test procedures for in-vehicle visual presentation*

## 3 Terms and definitions

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

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

— ISO Online browsing platform: available at https://www.iso.org/obp

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

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