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Intelligent transport systems — Acceleration control for pedal error (ACPE) — Performance requirements and test procedures

National foreword

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Foreword

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

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Introduction

In recent years, accidents caused by operating errors have become an increasing problem. "Pedal errors" are one of the causes that often lead to major accidents. A typical "pedal error" case is when a driver accidentally presses the accelerator pedal as hard and deeply as a brake pedal when braking hard, even though the driver's true intention was to press the brake to slow down or stop.

If the driver was not aware of this mistake, the vehicle will accelerate unintentionally, potentially resulting in an accident.

In various countries, for example Japan, there is concern that societal changes such as an aging population could potentially lead to an increase in such accidents. Dealing with this circumstance has become an urgent issue for automobile manufacturers, and they are expected to take action as soon as possible.

NOTE 1 The relationship between age and frequency of pedal error accidents is explored in [Annex A](#).

This document specifies the functional requirements for an acceleration control for pedal error (ACPE) system, which helps to prevent collisions caused by pedal errors and thereby reduces damage.

Such a system notifies the driver at an early stage of the manoeuvre, and suppresses vehicle acceleration. This is very effective because it encourages the driver to operate correctly and also mitigates the damage in the event of an accident by delaying the time to collision, and reducing the impact load at a collision.

However, with current technology, it is impossible to determine the driver's true intentions. This is because it is not possible to directly determine whether the driver is pressing the accelerator correctly or incorrectly.

Therefore, this document describes a system that suppresses acceleration when an obstacle is detected in the immediate direction of the vehicle's travel and the driver presses the accelerator pedal faster and deeper than usual. Such a situation suggests that the driver is likely to have pressed the accelerator pedal by mistake.

An automatic emergency braking system (AEB) that aims to avoid and mitigate collisions is already available in the market, with the relevant system requirements specified in ISO 22839. However, because driver operation is given the top priority in such a system, acceleration suppression cannot be activated when the driver presses the accelerator pedal, even if pressed in error. In addition, the sensors used for AEB are specialized for detecting objects at a relatively greater distance it is difficult to detect nearby building walls and windows, which are the main targets of ACPE. Therefore, AEB is unlikely to function in the crash cases targeted by ACPE systems.

This document does not preclude acceleration suppression for distant obstacles. It is desirable to simultaneously reduce unnecessary system activations that impede the driver's true intention to accelerate, and be able to activate the system even for obstacles at a greater distance, depending on the circumstances in every country.

NOTE 2 The inclusion of vulnerable road users (VRUs) as target obstacles and the extension of target distance are potential points for development in future revisions of this document.