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**Technical requirements and testing methods for advanced
emergency braking system of light-duty vehicles**

轻型汽车自动紧急制动系统技术要求及试验方法

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Table of Contents

- 1 Scope
- 2 Normative References
- 3 Terms and Definitions
- 4 General Requirements
- 4.3 System State
- 4.3.1 System on and off
- 4.3.2 System operation and faults
- 5 Requirements for Powered Two-wheeler Targets
- 6 Test Methods... 17 7 instruction Manual...
- 8 Same-type Determination...

1 Scope

GB 39901-2025 is the Chinese national standard on technical requirements and testing methods for advanced emergency braking system of light-duty vehicles, in the field of road vehicles engineering. It carries no /T suffix, which in the Chinese system means compliance is mandatory: a product or a practice within its scope has to meet it to be lawfully made, sold or carried out in China. It was issued on 31 December 2025 by the State Administration for Market Regulation; Standardization Administration of China, and takes effect on 1 January 2028. Classification: ICS 43.040.40, CCS T24. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document specifies the general requirements, performance requirements and same-type determination for advanced emergency braking system of Category-M1 and Category-N1 vehicles, and it describes the corresponding test methods. This document applies to Category-M1 and Category-N1 vehicles. NOTE. on the premise of not causing any confusion, the "advanced emergency braking system" in this document is abbreviated as the "system".

2 Normative References

The contents of the following documents constitute indispensable clauses of this document through the normative references in the text. In terms of references with a specified date,

only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 3730.1 Terms and Definitions of Motor Vehicles, Trailers and Combination Vehicle - Part

3 Terms and Definitions

The terms and definitions defined in GB/T 39263 and GB/T 34590.1 and the following are applicable to this document.

3.1 advanced emergency braking system; AEBS A system that monitors the driving environment ahead of the vehicle in real time, issues a warning signal when a collision hazard is possible, and automatically activates the vehicle's service braking system to decelerate the vehicle to avoid a collision or mitigate its consequences.

3.2 collision warning A system monitors the driving environment ahead of the vehicle in real time and issues a warning signal when a forward collision hazard is possible.

3.3 emergency braking Braking behavior resulting from a braking request issued by the system to the vehicle's service braking system that is not intended for tactile collision warning (3.2).

3.4 active state The state in which the system is executing collision warning (3.2) and/or emergency braking (3.3).

3.5 standby state An inactive state in which the system meets the activation conditions and can be immediately activated.

3.6 unavailable state The state in which the system cannot be on standby or activated.

3.7 initialization After vehicle startup, the process of the system performing pre-standby preparation, until it reaches the standby state (3.5).

3.8 relative collision velocity In the vehicle's direction of motion, the difference in velocity between the vehicle and the collision target at the time of collision.

3.9 self-check The system continuously checks for malfunctions. NOTE. "Continuously" means without a significant time interval.

3.10 time to collision; TTC In the vehicle's direction of motion, the ratio of the distance between the vehicle and the collision target at the same moment to their relative velocity.

3.11 kerb mass The mass of the vehicle in operation, excluding the driver, occupants and cargo. NOTE. fuel tank (if present, it is necessary to add fuel that is 90% of the total capacity) and/or onboard energy storage device, coolant and lubricating oil capacity meet the manufacturer's requirements, and the vehicle is equipped with tools and a spare tire (if

provided as standard equipment by the vehicle manufacturer). [Source: GB 20071-2025, 3.8]

3.12 electronic control system A combination of a series of units (3.13) that collaboratively achieve vehicle control functions through the mode of electronic data processing. NOTE. this system is typically controlled by software and consists of independent functional components, such as sensors, controllers and actuators, etc., and it is connected by a transmission chain. The system typically includes mechanical, electro-pneumatic, and electro-hydraulic units.

3.13 unit The smallest division of system components, which can be combined to form individual entities that can be identified, analyzed or replaced.

4 General Requirements

4.1 General Requirements Category-M1 and Category-N1 vehicles shall be equipped with an advanced emergency braking system. After completing initialization, the system shall meet the following requirements, except when it is in the unavailable state.

a) For Category-M1 vehicles, under all vehicle load conditions within the velocity range of 10 km/h ~ 80 km/h, when the system detects an impending collision hazard with a vehicle ahead, it shall be in the active state, and when no collision hazard is detected, it shall be in the standby state. For Category-N1 vehicles, under all vehicle load conditions within the velocity range of 10 km/h ~ 60 km/h, when the system detects an impending collision hazard with a vehicle ahead, it shall be in the active state, and when no collision hazard is detected, it shall be in the standby state.

b) Under all vehicle load conditions within the velocity range of 20 km/h ~ 60 km/h, when the system detects an impending collision hazard with a pedestrian, bicycle, or pedal-driven two-wheeled motorcycle ahead, it shall be in the active state, and when no collision hazard is detected, it shall be in the standby state.

c) The vehicle manufacturer demonstrates the system's safety across the entire activatable velocity range and in response to declared identifiable targets as required by Appendix A.

4.2 Self-check The system shall have at least the following self-check functions.

- a) Check whether relevant electrical components are normally operating;
- b) Check whether relevant sensing elements are normally operating.

4.3.1 System on and off

4.3.1.1 The system shall automatically turn on each time the vehicle enters a new power-on/ignition cycle. This requirement does not apply to cases where the engine automatically executes start-stop. If the system has a driver-activated shutdown device, it shall

simultaneously meet the following requirements.

- a) The system's active shutdown mode is a long press to hold or at least two purposeful operations (e.g., double-click, confirmation of shutdown, etc.);
- b) When the vehicle velocity is greater than 10 km/h, the system cannot be actively shut down;
- c) After being actively shut down, the system can be actively turned on.

4.3.1.2 If the system can automatically shut down (e.g., the system automatically shuts down during off-road use, towing, or operation on a dynamometer), the vehicle manufacturer shall provide a list of automatic shutdown scenarios, corresponding judgment parameters, and a description that the automatic shutdown conforms to the above requirements. The system shall meet the following requirements.

- a) The conditions for automatic system shutdown conform to the description provided by the vehicle manufacturer;
- b) Once the conditions causing automatic shutdown no longer exist, the system automatically restarts;
- c) The shutdown of other driving automation systems does not cause the automatic shutdown of this system.

4.3.1.3 When the system is off, it shall at least issue an optical warning signal, which shall continue until the system is turned on. This optical warning signal may be the same as the optical warning signal for faults specified in 4.3.2.4.

4.3.1.4 If the system can be partially turned off by the driver for collision warning or emergency braking, the system shall issue at least an optical warning signal after the collision warning or emergency braking is partially turned off, which shall continue until the turned-off part of the system is re-activated or the system shuts down. This optical warning signal may be the same as the optical warning signal for faults specified in 4.3.2.4.

4.3.2 System operation and faults

4.3.2.1 When the vehicle velocity exceeds 10 km/h, and after a cumulative 15 seconds of driving, the system has not completed initialization, at least an optical warning signal shall be issued and shall continue until the system completes initialization. This optical warning signal may be the same as the optical warning signal for faults specified in 4.3.2.4.

4.3.2.2 In the event of a detectable electronic or electrical fault that renders the system unavailable or fails to meet the requirements of this document, the issuance of a fault warning signal shall not be delayed and shall continue until the fault disappears or the system shuts down. When a non-electronic or electrical fault that renders the system unavailable or fails to meet the requirements of this document (e.g., sensor blockage) is