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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB 17675-2025

Replacing GB 17675-2021

Steering system of motor vehicles - Basic requirements

汽车转向系 基本要求

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1 Scope

GB 17675 sets the basic requirements a motor vehicle steering system must meet to be approved in China. It specifies the technical requirements, the test methods that verify them, the rules for determining when two vehicles count as the same type, and the arrangements for implementation. The requirements are organised by what is being steered: vehicles, trailers, the behaviour of the system under failure, and the alarm signal

that has to warn the driver. The test methods follow the same division, with conditions, vehicle tests, trailer tests and additional tests, and six normative annexes carry the detail. It applies to vehicles of categories M, N and O as classified by GB/T 15089. Purely pneumatic steering systems and vehicles with autonomous steering are excluded. The 2025 edition replaces GB 17675-2021 from 1 July 2026, and steering suppliers holding approval against the 2021 text will need to requalify.

This document specifies the technical requirements for automotive steering systems and the criteria for determining type compatibility. It also describes the corresponding test methods. This document applies to vehicles in categories M, N, and O as specified in GB/T 15089. This document does not apply to. - Pneumatic steering systems; - Vehicles with automatic steering systems. NOTE. An autonomous steering system is a vehicle-integrated electronic control system that, in addition to an automatic driving system, responds to signals received and transmitted from outside the vehicle to guide it along a predetermined or corrected path. The driver does not need to have primary control of the vehicle.

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.

GB/T 3730.1, Terms and definitions of motor vehicles, trailers and combination vehicle -- Part

3 Terms and definitions

For the purposes of this document, the terms and definitions defined in GB/T 3730.1, GB/T 3730.2, GB/T 3730.3, GB/T 12540, GB/T 15089 and GB/T 34590.1 as well as the followings apply.

3.1.1 Steering system and equipment

3.1.1.1 steering system A system used to change or maintain the direction of travel of a vehicle. NOTE. Includes steering control equipment, steering transmission equipment, steered wheels and energy supply equipment (if any). [Source: GB/T 35360-2017, 2.1, modified]

3.3.4 effect of ageing Irreversible degradation of performance of an electrical storage device due to factors such as time, use, and environment.

3.3.5 energy management system A system that monitors key variables affecting performance of an electrical storage device and state of an electrical storage device (such as voltage, temperature, internal resistance, effect of ageing, state of charge, power consumption, charging cycles, etc.) and infers whether the actual capacity of the electrical

storage device meets the performance requirements of this document. NOTE. The energy management system does not have to be part of the full-power steering system.

3.3.6 electrical supply A device that provides electrical energy to the electrical storage device of the steering system. Example. Batteries, rechargeable energy storage systems (REESS), generators, fuel cells, or combinations thereof.

4.1 Requirements for vehicles

4.1.1 The steering system design shall ensure ease and safety of steering operation within the vehicle's maximum design speed range. When the steering system is in good working order, it shall not exhibit abnormal vibrations during testing according to 5.2.1. During testing according to 5.2.2, the vehicle shall have automatic self-centering capability. Under the steering times and radii specified in Table 1, the steering control force of the vehicle shall meet the requirements of Table

1.If the vehicle is equipped with an auxiliary steering equipment, the requirements of Annex A shall also be met. All circular motions listed in this document refer to motion along the steering circle.

c) If the vehicle reduces speed automatically, automatic deceleration is only permitted at least 60 seconds after a fault is detected. The maximum deceleration request shall not exceed 2 m/s^2. If the vehicle's longitudinal movement is controlled by another system (e.g., automatic emergency braking/adaptive cruise control), decelerations exceeding 2 m/s^2 and/or deceleration at an earlier point in time are permitted.

4.3.3.5 The vehicle shall issue a warning signal when the energy storage level of the energy reservoir is insufficient. This energy storage level shall be the worst-case scenario described by the manufacturer in the relevant instructions submitted in Annex B, taking into account the effects of temperature and aging on battery performance. The energy storage level at the start of the tests described in 5.4.4, 5.4.5, and

5.4.6 shall be the energy storage state at the time the driver receives the insufficient energy warning.

4.3.3.6 When energy transmission (or a portion thereof) shares the same energy source or electrical supply with control transmission, the following requirements shall be met if the alternative described in

4.3.3.3 is adopted.

a) When the energy source or electrical supply for control transmission fails, the vehicle shall be able to enter the following state. During this period, the steering control force shall meet the requirements of Table 1. 1) If the fault does not affect the braking system's ability to meet the service braking performance specified in GB 21670 or GB 12676, the vehicle shall be reduced to a speed not exceeding 10 km/h or reduced to a stop; 2) If the fault

causes the braking system to fail to meet the service braking performance specified in GB 21670 or GB 12676, the vehicle shall be decelerated to a stop.

b) When the energy source or electrical supply for the control transmission fails (except where the failure results in a loss of vehicle driving force), the system shall reach the state specified in

4.3.3.6 c) due to effect of ageing, a yellow alarm signal as specified in

4.4.2.1 shall be issued immediately, and the driver shall be provided with information indicating that the electrical storage device requires maintenance and inspection (e.g., additional alarm symbols, text prompts);

b) When the state of the electrical storage device does not meet the requirements of

4.3.3.6 c), a yellow alarm signal as specified in

4.4.2.1 shall be issued within 60 s. Furthermore, when the state of the electrical storage device is insufficient to complete half of the lane-changing operations specified in

4.3.3.6 c), a red alarm signal shall be issued.

4.4.3 Warning signal for trailer additional steering device If the trailer's additional steering device is in operation and/or the steering angle generated by the system does not return to its normal position, the steering system shall issue a warning signal to the driver.

5.1 Test conditions

5.1.1 The test shall be conducted on a level road surface with a coefficient of adhesion of not less than 0.8.

5.1.2 During the test, the maximum permissible gross vehicle weight and the maximum permissible axle load of the steering axle shall be the design maximum values. If the axle is equipped with an ASE device, a second test shall be conducted with the vehicle loaded to the maximum permissible gross vehicle weight and the ASE-equipped axle loaded to the maximum permissible axle load.

5.1.3 Before the test, with the vehicle stationary, the tires shall be inflated to the specified pressure corresponding to the axle load required in 5.1.2.

5.1.4 For any system that uses all or part of electrical energy, all performance tests shall be conducted under actual or simulated electrical load conditions on all basic systems or system components sharing the same energy supply equipment. Basic systems shall include at least lighting, windshield wipers, engine management, and braking systems.

5.2 Vehicle test

5.2.1 Test for abnormal vibration when a vehicle leaves a steering circle The steering