



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

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Collision vehicle investigation and safety defect analysis guide

碰撞事故车辆调查与安全缺陷分析指南

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1 Scope

GB/T 45416-2025 is the Chinese guide to investigating a crashed vehicle and analysing whether a safety defect was involved. It sits behind the recall system: when a pattern of accidents suggests a design or manufacturing fault, this is the method by which an investigator moves from a wrecked car to a defensible conclusion. The document covers the preparation and the scope of the investigation, the collection of evidence at the scene and from the vehicle, the interviewing of those involved, the reading of the event data recorder and of the other electronic records, the inspection and disassembly of the relevant systems, the reconstruction of the collision, the analysis that distinguishes a defect from misuse, from maintenance failure and from the ordinary consequences of the impact, and the reporting. For a manufacturer facing a defect investigation in China, for an insurer, or for an engineering consultancy doing this work, this is the text the investigation is expected to follow.

This document provides guidance on the workflow and content of collision accident information collection, accident analysis, vehicle safety, defect analysis. This document is applicable to categories M, N, O vehicles; other types of vehicles are implemented with reference to this document.

Note. Vehicle type refers to GB/T 15089-2001.

2 Normative references

The contents of the following documents constitute essential clauses of this document through normative references in the text. Among them, for referenced documents with dates, only the version corresponding to that date applies to this document; for referenced documents without dates, the latest version (including all amendments) applies to this document.

GB 7258 Technical specifications for safety of power-driven vehicles operating on roads

GB/T 31498-2021 Safety requirements for electric vehicles after collision

GB/T 34402-2017 Safety of motor vehicle product - Guidelines for risk assessment and risk control

GB/T 38892-2020 On-board driving video recording system

GB 39732-2020 Vehicle event data recorder system

GB/T 44131-2024 Post-crash safety requirement for fuel cell electric vehicle

GB 44497-2024 Intelligent and connected vehicle - Data storage system for automated driving
GA/T 642-2020 Technical inspection and appraisal for safety performance of vehicles involved in road traffic accidents
GA/T 1998-2022 Technical specifications for automobile on-board electronic data

5.1.3 When collecting basic accident information, it should equip cameras, video recorders, handheld on-site scanners, electronic data storage media and other equipment, to measure and draw road traffic accident scene maps, record relevant collected data, etc.

5.1.4 It should record the weather information and lighting information at the accident site when the collision accident occurs, by combining query and on-site photography (or video recording).

5.1.5 It should record the relevant information of the on-site road through written records, photography, video recording, scanning, drones, etc., including the geometric characteristics of the on-site road (including road section width, number of lanes, lane width, curve radius and other road linear information), signs and markings, road surface traces, ground evidence (vehicle scattered objects, human traces, etc.), road surface material, dryness and wetness, transverse and longitudinal slopes, etc. Among them, the information involving location description such as signs and markings, road surface traces, ground evidence should measure and record the size information of the location, refer to the methods in relevant standards such as GA/T 41-2019 for on-site investigation.

5.1.6 It should record relevant information such as the traffic facilities and roadside

buildings at the scene of the accident, such as the display status of traffic lights, etc. through inquiry and record. For damaged traffic facilities, roadside buildings, etc., it should record the overall situation and details of the damage (including the material of the damaged facilities, the location and size of the damage, the direction of the force, etc.) through record, photography, video recording, scanning and measuring tools.

5.1.7 It should record the information of the people involved in the accident through inquiry, photography or video recording, including the driver information, passenger information in the car and the information of the vulnerable traffic participants outside the car, including basic information such as the gender, age, height, weight, clothing characteristics, etc. of the people. For the people involved in casualties, the location and degree of injury of the people shall be recorded.

5.1.8 It should record the information of the vehicles used by the vulnerable traffic participants outside the car involved in the accident, through inquiry, photography, video recording, scanning and measuring tools, including basic information such as the length, width, height and model of two- and three-wheeled vehicles. For damaged two- wheelers and three-wheelers, the location and extent of damage shall be recorded.

5.2.1 Basic vehicle information

5.2.1.1 When collecting accident vehicle information, it should equip it with photo and video equipment, tools for measuring vehicle size information, electronic data storage media, handheld on-site scanners, etc.

5.2.1.2 Before collecting accident vehicle information, it should first determine whether the vehicle has the ability to drive, the power failure of the high-voltage power supply, the leakage of harmful chemicals, the damage of the battery pack, the leakage of flammable and explosive gases (LNG, CNG, hydrogen, etc.), etc.; check the collection operation conditions at the vehicle stop position; formulate a safe and implementable collection plan based on the vehicle status and stop position; determine the tools and equipment to be used and the order of collection, etc.

5.2.1.3 When collecting accident vehicle information, the vehicle is generally stationary. When collecting vehicle dynamic information, it should conduct dynamic tests in relevant standards such as

GB 7258 and GA/T 642-2020.

5.2.1.4 It should record the basic information of the accident vehicle in the form of photography and notes, including model, year, vehicle registration information, nameplate information, maintenance information, repair records, vehicle software version, vehicle function setting information, etc.

5.2.1.5 It should use a combination of query and inquiry, to record the functional

configuration information of the vehicle, including assisted driving functions (including active safety systems), passive safety systems, operational design domains, and other configurations related to vehicle safety.

5.2.1.6 For accident vehicles involving driving automation functions, it should use a combination of query and inquiry to focus on recording the vehicle's driving automation level, driving automation configuration and version number, vehicle remote upgrade (OTA) records.

5.2.2 Vehicle damage information

5.2.2.1 It should use photography, video recording or scanning to record the overall appearance information of the vehicle. The shooting angle should be no less than 8 directions of the vehicle, including the front, rear, left, right, left front, right front, left rear, right rear. It should mainly shoot horizontally, supplemented by shooting from a bird's-eye view.

5.2.2.2 It should record the external damage information of the vehicle by taking notes, emergency collision avoidance. - In the collision stage of automobiles, focus on. vehicle acceleration data and restraint system status data. - In the post-collision stage of automobiles, focus on. emergency rescue system and escape channel system data. Emergency rescue system data includes signals of the rescue channel (such as E-Call); escape channel system data includes signals of automatic door unlocking after collision.

6.1 Confidence analysis of collision accident information

6.1.1 The types of collision accident information should be classified according to the following dimensions. - According to the information source channel, such as public security, justice, transportation, industry and information technology, emergency, market supervision and management, enterprises, individuals, etc.; - According to the information source object, such as the road environment information at the collision accident site (basic road environment information, road traces, roadside video, friction coefficient, slope, etc.), accident vehicle information (vehicle damage, vehicle traces, vehicle video, vehicle data, other non- traffic accident vehicle record data related to the accident on the road, etc.), accident personnel information, etc. (statements, witnesses, injuries, etc.); - According to the information time and space dimension, such as collision accident site information, post-site information, vehicle historical operation and maintenance information, personnel historical symptoms, etc.; - According to the information acquisition method, directly survey/read the information obtained, deduce and calculate the information obtained; - According to other methods.

6.1.2 To ensure the reliability of collision accident information, it should obtain the vehicle operation data of the enterprise platform through a third-party platform approved by relevant government departments, or through a recall technical agency or an authorized