



TYPES OF AUTOMOBILES AND THEIR CLASSIFICATION IN MODERN TRANSPORT ENGINEERING

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Abstract: *The article analyzes the main types of modern automobiles and presents their classification according to international standards, primarily ISO 3833. It outlines the division of vehicles into mechanical and towed types, and further into categories such as passenger cars, trucks, buses, motorcycles, trailers, and semi-trailers. Each category is characterized by its specific structural and functional features, operational purpose, and technical parameters. The study also highlights the importance of classification for design optimization, safety improvement, and regulatory standardization within the automotive industry.*

Keywords: *automobile classification, ISO 3833, passenger cars, trucks, buses, trailers, semi-trailers, vehicle types, transport engineering.*

Introduction. The diversity of modern automobile models and constructions is enormous, encompassing a vast array of design and functional variations. To organize this diversity, the international community has developed classification systems that define the main vehicle types based on their purpose and design.

The most comprehensive system is presented in the *International Standard ISO 3833*, which classifies all road transport vehicles according to their intended function. Such classification allows engineers, manufacturers, and regulators to apply unified terminology and standards when designing, producing, and certifying vehicles.

Methods. This research uses a structural–functional and comparative analysis approach. The classification principles are derived from *ISO 3833* and related engineering literature, emphasizing vehicle function, body type, design features, and load characteristics. The study also considers regulatory and industrial documentation applied in the European Union and CIS automotive sectors to identify correspondences between global and regional classifications.

Results According to *ISO 3833*, all road transport vehicles (RTVs) are divided into two main categories:

1. **Mechanical vehicles (motorized vehicles)** — equipped with an engine.
2. **Towed vehicles** — trailers and semi-trailers.

A mechanical vehicle that tows a trailer or semi-trailer is referred to as a **road train**.

3.1. Vehicle Categories by Purpose

- **Passenger cars** — motor vehicles primarily designed for the transportation of people and their luggage, with no more than nine seats including the driver's seat.





- **Trucks (lorries)** — vehicles designed mainly for transporting goods or special equipment.
- **Buses and trolleybuses** — designed for the carriage of passengers and their luggage, accommodating more than nine seats including the driver.
- **Motor vehicles (motorcycles, tricycles, quadricycles)** — vehicles with two, three, or sometimes four wheels and a curb weight not exceeding 400 kg.
- **Trailers** — towed vehicles intended for the carriage of passengers or goods, with only a small portion of their weight loading the towing vehicle.
- **Semi-trailers** — towed vehicles in which a significant part of the total weight is supported by the towing vehicle, typically a *tractor unit* (prime mover).

Discussion Each main vehicle group includes detailed subcategories according to several parameters:

- **Passenger cars** — by purpose (personal use, taxis, service vehicles, sports cars); by engine displacement; by body type (sedan, hatchback, coupe, SUV); and by overall dimensions.
- **Buses** — by total weight (under or over 5 tons), number of seats (up to or over 17), and by operational purpose (urban, suburban, intercity).
- **Trucks and trailers** — by purpose:
 - Universal* (open platform with removable canopy),
 - Specialized* (adapted for certain types of cargo, e.g., tankers, refrigerators),
 - Special-purpose* (equipped with technological equipment for particular functions).Additionally, there are *tractor trucks* designed exclusively for towing semi-trailers or heavy trailers.

The classification of vehicles serves as the foundation for engineering design, safety regulation, and industrial standardization.

By defining clear vehicle categories, engineers can optimize structures for specific functions — passenger comfort, cargo capacity, or maneuverability.


Moreover, regulatory authorities rely on standardized classifications to establish consistent safety, emission, and weight regulations. The distinction between mechanical and towed vehicles reflects the evolution of automotive systems — from simple personal transport to complex logistical combinations such as articulated trucks and road trains.

The diversity of vehicle types also demonstrates the growing specialization of transport functions in modern society — from compact urban cars to heavy-duty trucks and environmentally friendly electric buses.

Conclusion The classification of automobiles according to ISO 3833 and related engineering systems provides an essential framework for understanding modern transport technology.

By grouping vehicles into distinct types based on their purpose, structure, and functionality,





it becomes possible to improve design efficiency, ensure compatibility with safety and environmental standards, and streamline production processes.

The continued refinement of vehicle classification systems will play a crucial role in the development of next-generation transport — electric, autonomous, and intelligent — ensuring both mobility and sustainability in the future of automotive engineering.

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