

Vehicle body construction

Vehicle body – is most expensive part of a car. Vehicle body could be the main supporting structure or its particular element. The Vehicle Body of modern car consist of: engine section, saloon, and trunk. Vehicle body is the main supporting structure of a vehicle, to which all other components are attached. Truck uses a separate frame as chassis.

Vehicle body is designed for carry the goods (a truck) or for carriage of passengers (passenger car). There are some kinds of vehicle body which differ in: by purpose (trucks, passengers, cargo-passenger, special) and by construction (skeleton, half-skeleton, non-skeleton).

Car Body Construction:

- The main skeleton of the car body has two types of panels:
 1. Outer panel.
 2. Inner panel.
- The outside panels provide the shape of the car body whereas the inner panels reinforce the shell of the body. The various curved shapes are given to outer panels to provide the strength to panels.
- The inner panels provide mounting locations for various trim panels and connecting assemblies. These two panels are welded together to pillars and rails so as to form the skeleton of the car body.
- The various components of the car body are body, sheets, pillar-less frame, front and rear doors, front panel, roof panel, floor panel with engine beams, wheel arches, bonnet, windscreen pillar, windscreen, front and rear window, front and rear bumper, cowl assembly, front and rear seats, luggage space as a continuation of the passenger compartment, folding roof with windup windows, sliding roof and folded flat windscreen, hood, etc.
- All steel sections of bodies are stamped out by dies separately and welded to other sections for forming the steel bodies. The body of the car is made up of many sheet metal panels. Each panel is so designed to give enough strength and rigidity to the assembled unit.

Some Terminology of Body:

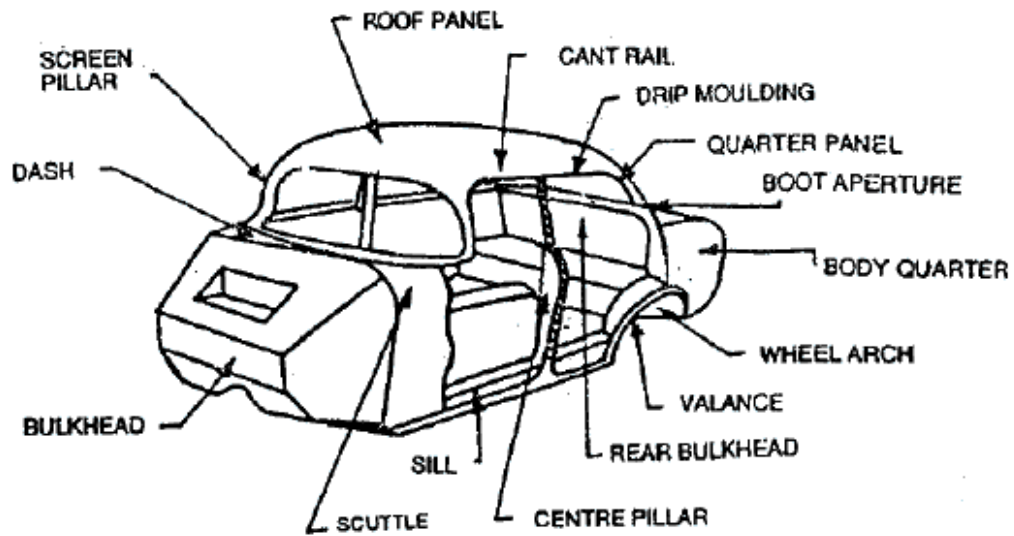
Cab:

It is the driver's cabin, which may be a closed region separated from the rest of the body (as in truck) or maybe an open region being a part of the body (as in car).

Fascia.

It is the frontage of the vehicle visible to the driver. It includes the dashboard (instrument board), tape recorder housing, globe box, etc.

Body work and Integral Construction:



Dashboard.

It houses various indicators such as fuel level indicator, engine temperature indicator, speedometer, voltmeter, ammeter, odometer, air-conditioner's control panel, ignition switch, light switches, side indicator switch, various controls switches, automatic operation switches, etc.

Legroom.

It is the space provided for the movement of the legs of the driver and passengers. Sufficient legroom is essential for comfortable driving, riding, and traveling.

Headroom.

It is the vertical distance inside the body between the floor to the ceiling. This dimension is based on the stability consideration of the vehicle, as the position of CG from the ground level depends on this height

Shoulder Room.

It is the clear horizontal distance available inside the body.

Boot Space.

This is the storing space available below the rear hood.

Body Work Requirements:

The bodywork has to be structurally strong, easily accessible, and of a good finish.

Some of the important considerations for a good bodywork include the following :

1. Attractive body styling.
2. Upholstery work should be well-trimmed and comfortable.
3. Body structure should be rust preventing.
4. Paintwork and other finishing should be appealing.
5. The body should be structurally strong and light. Therefore, construction material should be of lightweight, strong, and cheap.
6. Doors and windows should be conveniently located, and easier to operate.
7. Controls should be located at convenient positions and should be easily approachable.
8. The arrangement of hand controls and foot pedals should be foolproof and untiring.
9. Provision of sufficient space for accommodating accessories, instruments, and controls.
10. Driver's and passengers' seats should be comfortable and adjustable and should be conveniently located.
11. Interior cabin should be dustproof and soundproof.
12. The body should be equipped with sufficient safety provisions.

Main Parts of the Automobile body:

The bodywork includes the following main parts.

1. Body safety,
2. Bonnet,
3. Side pillars,
4. Rear hood,
5. Front side panel,
6. Rear side panel,
7. Door pillars,

8. Windshield pillar,
9. Rear quarter pillar,
10. Body sill,
11. Roof,
12. Door Panels,
13. Front bumper,
14. Rear bumper

Car body accessories and write their functions

- (1) Body Cover:** To keep the car covered in open parking.
- (2) Puncture Repair Kit:** To repair the punctured vehicle in case of emergency
- (3) Tyre Inflator:** To fill the air in the flat tire.
- (4) Air Pressure Gauge:** To check tire air pressure regularly.
- (5) Comprehensive Tool Kit:** To attend the minor repairs.
- (6) Cleaning Cloth:** To wipe out dirt dust etc. from the car body.
- (7) Spoilers:** To spoil unfavorable air movement across the body.
- (8) Sports Mirrors:** Better Appearance
- (9) Head And Tail Light Cover:** Better Look
- (10) Window Visors:** To keep the window open in all types of seasons.
- (11) Sun Roof:** To provide natural air conditioning to the car.
- (12) Windshield Wiper Blades:** To clean the windshield of a car.

Types of automobile bodies:

i) Closed Cars:

a) Sedan: The type of car design consists of an engine compartment, passenger compartment, and a separate boot. A sedan possess a fixed roof with a fixed B pillar which seats four or more. Most commonly it is a four-door; two-door models are rare.

b) Hatchback: An automobile design, consisting of a passenger cabin with an integrated cargo space, accessed from behind the vehicle by a tailgate. Opening rear tailgate. The interior design includes fold-down rear seats,

which can be used as a cargo area. The rear seat can be folded partially (for instance 1/2, 1/3, or 2/3) or completely to expand the cargo space.

c) Coupe: Coupe was an enclosed two-seater mainly used in towns and was driven by a coachman. If the carriage had an emergency (tip-up) seat or a seat for a child, then it was a so-called three-quarter coupé. Coupés generally, but not necessarily, have two doors, although automobile makers have offered four-door coupés and three- and five-door hatchback coupés, as well. The SAE distinguishes a coupé from a sedan (saloon) primarily by interior volume.

d) Limousine: is a luxury vehicle driven by a chauffeur with a partition between the driver's compartment and the passenger compartment. A car with a partition and a lengthened wheelbase is called a "stretch limousine".

ii) Open cars

a) Sports: is a small, usually two-seater automobile designed for spirited performance and nimble handling. The term "sports car" was used in London.

b) Convertible: is a passenger car that can be driven with or without a roof in place. The methods of retracting and storing the roof vary between models. A convertible allows an open-air driving experience, with the ability to provide a roof when required.

iii) Special Style: is a car body style that has a two-box design, a large cargo area, and a rear tailgate that is hinged at the roof level. The body style is similar to hatchbacks, however, station wagons are longer and are more likely to have the roofline extended to the rear of the car. (resulting in a vertical surface at the rear) to maximize the cargo space.

a) Estate Cars

b) Station Wagon

iv) Transport Vehicles: vehicle used for transportation or movement of public/ passenger or goods through road. Passenger transport may be public, where operators provide scheduled services, or private.

a) Van: a small passenger vehicle.

b) Truck: large goods transport vehicle.

c) Articulated Vehicle: very large goods transport vehicle.

d) Bus: large public/passenger transport vehicle

e) Coach: large public/passenger transport vehicle

Other types of bodies are

1. Tractor with articulated trailer
2. Half body Truck
3. Dump truck

4. Tanker

5. Delivery truck