

Wheels: J.D. from Cincinnati asks by e-mail: “All cars used to have frames. Then came the unit-body. Now your articles reference chassis or platforms, sub-frames, etc. After following cars for 50 years, I’m confused! An article explaining the differences would help.”

Halderman: Frame construction usually consists of channel-shaped steel beams welded and/or fastened together. The frame of a vehicle supports all the “running gear” of the vehicle, including the engine, transmission, rear axle assembly (if rear-wheel drive), and all suspension components.

There are several different types of frames including:

- **Full frame-** This frame construction is so complete that most vehicles can usually be driven without the body. Most trucks and larger rear-wheel-drive cars use a full frame.
- **Ladder frame** is a common name for a type of perimeter frame where the transverse (lateral) connecting members are straight across. When viewed with the body removed, the frame resembles a ladder. Most pickup trucks are constructed with a ladder-type frame.
- **Perimeter frame** consists of the body. This means that the frame members provide support underneath the sides as well as for the suspension and suspension components.
- **Stub-type frame** is a partial frame often used on unit-body vehicles to support the power train and suspension components. It is also called a **cradle** on many front-wheel-drive vehicles.

Vehicles that do not use a separate frame include:

- **Unit-body** construction (sometimes called *unibody*) is a design that combines the body with the structure of the frame. The body supports the engine and drive line components, as well as the suspension and steering components. The body is composed of many individual stamped-steel panels welded together. The strength of this type of construction lies in the *shape* of the assembly. The typical vehicle uses 300 separate and different stamped steel panels that are spot-welded to form a vehicle’s body.
- **Space frame** construction consists of formed sheet steel used to construct a framework for the entire vehicle. The vehicle is drivable without the body, which uses plastic or steel panels to cover the steel framework.

Besides types of construction, vehicles are identified by platform which refers its basic size and shape. Various vehicles of different makes can share the same platform, and therefore many of the same drive train (engine, transmission, and final drive components) and suspension and steering components. A platform of a unit-body vehicle includes all major sheet metal components that form the load-bearing structure of the vehicle, including the front suspension and engine-supporting sections.

Examples of common platforms include the following:

1. Chevrolet Impala and Pontiac Grand Prix
2. Toyota Camry and Lexus ES 350
3. Buick Lucerne and Cadillac DTS

