



Suspension

🕒 Created	@March 12, 2025 10:09 AM
📁 Class	IGVC

There are various types of suspensions performing different types of function

Suspensions are also classified into independent and dependent suspensions, where independent suspensions give superior ride quality and dependent suspensions give good durability.

In **independent suspensions** each wheel on the same axle moves independently of the other. This enhances traction, stability and comfort.

In **dependent suspensions** the wheels on opposite side of the vehicle are connected. such that movement of one wheel affects the other.

In **semi independent suspensions** there is a hybrid between independent and dependent suspension systems. It allows some degree of wheel movement independence while still having a connection between the left and right wheels.

1. Independent Suspensions (Each wheel moves independently)

- MacPherson Strut Suspension
- Double Wishbone Suspension
- Multi-link Suspension
- Air Suspension
- Hydraulic Suspension
- Coil Spring Suspension
- Electronic Suspension Systems

2. Dependent Suspensions (Both wheels on the same axle are connected)

- Leaf Spring Suspension
- Solid Axle Suspension
- Hydraulic Suspension
- Air Suspension
- Electronic Suspension Systems

3. Semi-Independent Suspensions (Some flexibility between independent and dependent movement)

- Torsion Beam Suspension
- Coil Spring Suspension
- Electronic Suspension Systems

I am choosing to explain the DOUBLE WISHBONE SUSPENSION

Double Wishbone suspension

is a type of independent suspension commonly used in high performance and off road vehicles, it provides better handling, stability and control by allowing each wheel to move independently.

It is mostly used in the front wheels and rarely in the rear wheels because it can lead to improper steering and oversteer or understeer due to the loose joints.

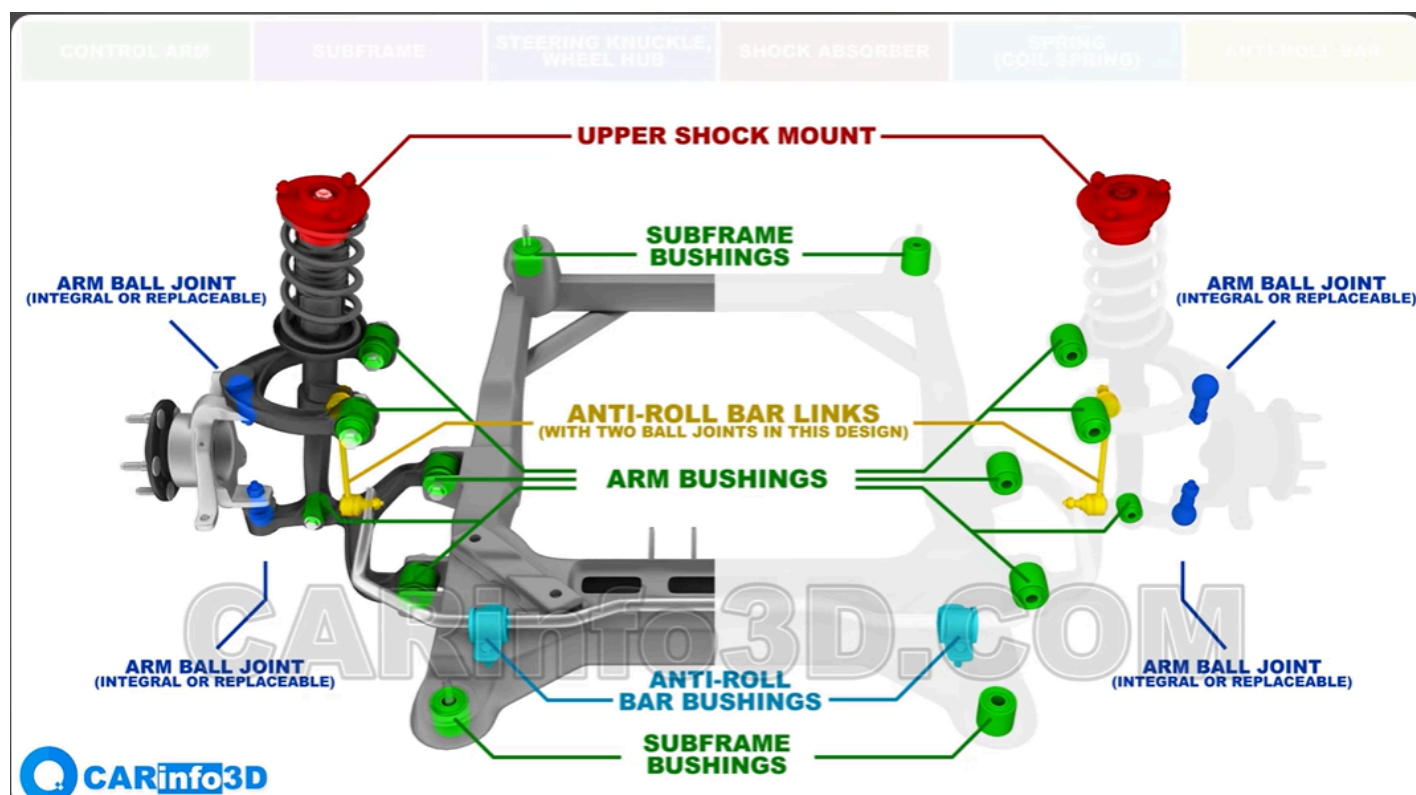
Structure

The structure of this suspension consists of two Wishbone. The upper wishbone is generally shorter than the lower one.

These are attached via bushings - the lower one attached to the subframe and the upper attached to the unibody.

These Wishbone are connected to the steering knuckle via a ball and socket joint.

For superior comfort the upper wishbone is attached higher than usual.



Advantages

Better Handling : Maintains tire contact during turns {cuz of the independent suspension}

Less Body roll : Stability improves at higher speeds.

Applications

- Used in sports cars {HONDA NSX, BMW M3}
- Used in offroad vehicles as well [Toyota Land Cruiser]