Types of car suspension system

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Suspension System Types & Components :- The suspension system of a vehicle isolates the wheel section from the body. All the power which is generated from the engine is finally transmitted to the wheel through the power transmission system. With this power, the vehicle moves on the road. The irregular roads the cause of shocks on the wheel and at this point the suspension system acts more as a filter to screen out of the vehicle. The main function of the suspension system is to separate the vehicle body or frame from shocks and vibrations due to bad driving roads.

A good suspension system is one that absorbs all the shocks and vibrations due to bad driving conditions and transmits as small a component of shocks and vibrations as possible to the passenger carriage. Springiness is elastic resistance to a load. On application of a sudden load, the spring system will be in compression or expansion as the case may be without transmitting the same to the body. As the spring compresses it absorbs energy and dissipate in form of heat energy and when it expands it rebounds.

Hence the main objective of a good suspension system is to separate the structure, as much as possible, from shock loading and vibrations due to the irregularities of the road surface. This is achieved by flexible elements like springs and dampers. Another function of the suspension system is to achieve the main function without compromising the stability, steering, or general handling qualities of the vehicle. This is done by controlling, by the use of mechanical linkages.

This is used to connect the wheels to the suspension system. It is mounted on the wheel’s hub. The suspension system is connected together with the linkages provided. The knuckle is having a caster angle and a king-pin on the front wheels which helps in steering of vehicle in left or right direction.

Linkages are like frame of suspension system. All the parts of suspension system are connected together with the help of linkages. These linkages have universal joints on their both ends which help in smooth connection between different components.

Generally there are 3 types of linkages present in the suspension system which are as follows:-

It is a solid linkage which connects the frame of body and the wheel hub. It is in the shape of alphabet A. The top end of A arm is attached to knuckle which is mounted on wheel hub and rest of the two ends are attached to the frame of body. Depending on the requirement double A-arm can be used.

It is the main axle of the tyres. It connects the main body of the vehicle with knuckle of the tyre. Whole weight of the body lies on this solid axle. The suspension system is mounted on this axle between body and the axle. This is commonly used in heavy duty vehicles.

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This is the most commonly used in cars. In this multiple small linkages are used in place of wishbone arm and solid axle. By the help of these multiple links knuckle, frame and suspension system are connected together.

Wheel or tyres are those components of suspension system which comes in contact with the actual irregularities of road. Wheels are the main components of automobile as well because they are eventually responsible for motion of automobile. When wheels come across surface irregularities of road they move up and down. This up and down motion causes the actual vibration in the body. To eliminate these vibrations suspension system is placed between body and wheels. The suspension system absorbs the vibrations and helps in comfort ride.

In Modern cars mostly following two types of hydraulic dampers are used:o Telescopic damperso Rocking lever dampers.

Telescopic dampers are quite often called incorrectly shock absorbers. In telescopic dampers, the piston–cylinder arrangement is there. In this system, hydraulic fluid flows past the pistons and fluid absorbs the shocks and vibrations.

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