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The Functions of Anti Roll Bars by James Blee

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Definition:

An Anti Roll Bar is also called a sway bar or stabilizer bar. It is a part of an automobile suspension that helps reduce the roll of a vehicle that is caused by cornering or road irregularities. It connects the opposite left and right wheels through lever arms linked by a torsion spring. They add to the roll resistance of the suspension springs for a higher overall roll resistance. As the main purpose of the spring is to maintain maximum contact with the road surface over imperfections, one must settle for the roll resistance provided, but that is not enough. The sway bar adds to the roll resistance without resorting to an overly stiff spring.

Functions:

â€¢ The first function is the reduction of body lean. The reduction of the body lean is dependent on the total roll stiffness of the vehicle. When the total roll stiffness of the vehicle is increased it does not change the steady state total load transfer from the inside wheels to the outside wheels, it only reduces body lean. The total lateral load transfer is determined by the CG height and track width.

â€¢ The other function of the sway bar is to tune the handling balance of a car. It is used to tune the roll coupling of the chassis. Roll coupling is the relationship of the roll resistance of the front of the car with the roll resistance of the rear of the car. The balance of the roll coupling, because of its effect on traction, has an influence on whether the car has a tendency to over steer or under steer. While this can be caused by a number of factors the sway bar can be used to compensate.

Drawbacks:

On rough or broken pavement the anti-roll bar can produce jarring, side to side body motions which increases in severity with the diameter and stiffness of the sway bars.

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