Understanding the Working of an Anti-Roll Bar

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The anti-roll bar is also referred to as the sway bar or the stabilizer bar in some cases. In simple terms, it helps in connecting the left and right wheels and helps in reducing the roll of the vehicle caused generally due to cornering or irregularities on the road. A U shaped steel bar is used to create the anti-roll bar which rotates about its own mounting points when the left and right wheels that it connects are moving together. The bar starts to twist the moment there is relative motion between the left and right bar. This is resisted by the bar and its stiffness which helps in resisting it, depends on the radius of the bar and the material that has been used to manufacture the bar.

The bar helps in tuning the handling balance of a vehicle. It adds to the roll resistance and therefore reduces the body roll which is important especially during under-steering or over-steering behaviors. The bar is also in place to connect left and right suspension systems with the lower control arm being used in case of independent suspensions. The end purpose of the suspension system is to keep the tires parallel to the road for the greatest possible contact and the roll resistance enhances this function. So, it provides traction especially during a harsh ride.

An interesting thing to note about the bar is that independent suspensionâ€™s effectiveness is partially reduced due to the anti-roll bar. This is because it keeps the left and right wheels together and prevents them from individually going for maximum contact with the road which is actually the purpose of the independent suspension systems. Thus, there is lot of dynamics involved when the bar is used. Moreover, it is also quite possible that bumps from side are transmitted to the other side which is not really ideal for vehicles.

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