Miata Suspension in Action

I recently tried my first Autocross, and our Ace Photographer Bill Howard (Thanks Bill!) took a picture of my Miata coming out of a tight corner that really caught my attention. I thought a cropped picture of just the car would make a great example of what I have been trying to explain related to the Miata suspension in some previous Tech Talk articles. Take a look at the picture below and I will explain my thoughts in the paragraphs which follow.

My Miata was at low speed when this picture was taken. I could not have been doing more than 15 - 20 mph coming out of a very tight corner. First look at the front end of the car. Notice how much the front end is leaning towards the driver's side. This is what is referred to as "Body Roll". The main function of the sway bar is to control this body roll. I have slightly stiffer sway bars installed, so you can imagine how much more roll would be there with the factory sway bars installed? Stiffer sway bars would have given me less body roll. Less roll means the car is more controllable in tight cornering.

Next look along the top of the rear of the car. You can see what I will call the trunk line between the hoops behind the seat backs. It looks like the rear of my car is still horizontal. See the height difference in the wheel well gap above the tires, front and rear? This looks to "me" like the entire body of the car has twisted. Take a moment and think about the body of the Miata. There is nothing along the side where the doors are to give it strength and keep the body from twisting. There is nothing on the top to strengthen it either. A lot of Spec Miata racers put Hard Tops on their car just for the reason that it stiffens the body and helps keep it from flexing and twisting. The extra weight of the hard top is worth what is does to stiffen the body. Less body flex makes the car suspension work better and gives more precise control of the car. I previously wrote about the under hood Front Shock Tower Brace to stiffen the front of the body. So I wanted to touch on under the body braces which are available to help stiffen the car body to help control flexing and twisting. The NC Miata comes with some bracing underneath, so I have not done any of this to my current Miata. But I did add some to my previous Miata and it made a noticeable difference! Below are links to examples of "premium" under body braces that are available for the 2006 and newer Miatas. Braces like this are also available for the previous model years.

http://www.good-win-racing.com/Mazda-Performance-Part/61-0029.html

http://www.good-win-racing.com/Mazda-Performance-Part/61-0030.html

http://www.good-win-racing.com/Mazda-Performance-Part/61-0033.html

The last part I wanted to write about is referring back to my alignment articles. Do you remember that I wrote how the Miata got the best traction in the corners if the front and rear tires are tilted in at the top, and out at the bottom? This is called "Negative Camber". Take a look up at the picture and look as closely as the picture will allow at the front tires. As the body rolled to the driver's side, the suspension geometry allowed the 2 front wheels to now be straight up vertical. This means that both front tires are now sitting flat on the road for best traction. The suspension is designed to turn the negative camber into straight up wheels and tires in a corner, so the tires sit flat and get their best grip. Pretty neat, huh? ☺

So next time you are on a sporty drive with our PACE club, and we are Zooming around the corners, think about this picture above and realize what your car is doing. The more care you put into setting up your car for YOUR style of driving, the more fun you will have, and the SAFER you will be. Feel free to ask me any questions you may have. I will find an answer for things I don't know.

Zoom – Zoom (With care), Bill Latsha