

**June 2010**

## **The Miata Suspension, Part 1**

I am an old Motorhead that used to run a car at the drags. I have 8 trophies here at home to show for my efforts, but I really knew nothing about suspensions until I got involved with Miatas. I have been involved with mechanical parts of cars since my first car, a 1957 Chevy, around 1968. In drag racing, the suspension was pretty simple. You used large tires on the rear, and used traction bars to keep the wheels from jumping up off of the road. I learned a lot as I played around with my Miatas, and will try to share some knowledge with the rest of the club. I am not an expert, and there are people in the club who know more than I do. So those with more knowledge, please bear with me. I am happy to help those who learn from what I write.

The basic parts of the suspension are the tires, wheels, springs, shocks, and sway bars. The Miata is a purpose designed car which is designed to go around corners in a sporty manner. It is not designed to be the fastest in a straight line like a drag car, but to be faster around a corner, which I have learned is really more fun! Since it is now June, and you would rather be out driving than reading, I will touch on different parts of the suspension over the next several issues rather than all at once.

This month I'll touch on the sway bars. A lot of people don't realize the part these play in the car's suspension. There are several forces acting on your Miata when you go around a corner. You have gravity, which pulls the car down onto the road surface. A force as centrifugal force tries to pull your car off the road to the outside of the corner. Then the weight of the car itself acts to make the car try to roll over towards the outside of the corner. As you go around the corner, this rolling force pushes down hard on the outside wheels, but tries to lift the inside wheels off of the road. You can get a little extra traction on the outside tires from this rolling force, but you lose more traction on the inside tires as they are being lifted and traction is lessened.

The sway bars act to counter the tendency to roll. They keep the car flatter in the corners. This helps equalize traction on all 4 tires a little better. Plus when the car is staying flat, it is easier to control. Better traction and easier control gets you around the corner safer. The front sway bar is a larger diameter than the rear, as the front is the hardest to control. The rear sway bar is smaller, as the rear of the car takes less to control it. But they are a set matched to your car for the driving style it was designed for.

The factory sway bars do a pretty good job, but remember your Miata is designed as a compromise between hard sporty driving, and the weekend touring machine. So upgrading the sway bars can bring surprising improvements in cornering for not a lot of money. Moss Motors, Raven Wing Performance, Goodwin Racing, and Flyin' Miata are companies that sell after market sway bars. You can call them and discuss what you want to accomplish and they will find just the right set for you.

I learned from Miata.net that the front and rear sway bars from the recent RX-8 cars will fit right into my 06 (and newer) Miata, and give a good return for the investment. The RX-8 Sways from the Automatic version have a red paint dot on them, and these are great for

sporty street driving like we do with the club. I installed a set in my car and am very happy with the improvement. The RX-8 with the sport suspension has a yellow paint spot on their sway bars, and work great in the Miata for the person who pushes the Miata really hard on the street, and possible autocross. The nice thing is that these are cheaper than most aftermarket sways. Good & Cheap is always great!

Come back next month, and I'll touch on another part of the suspension. If you have a request, let me know and I'll do it next.