

Oversteer & Understeer

Sway Bars, Revisited

In tuning your suspension either for general street driving, or for competition of any kind, it is important to have the steering response appropriately set to react as you want it to. All parts of the suspension work together to give the car a balanced feel, especially in the corners. Changes in the wheel alignment to be out of spec, uneven tire pressures, and/or changes in sway bars can throw this balance out of whack (What is a whack?) and the car can end up very uncomfortable if not dangerous to drive.

Understeer is when you turn the steering wheel and the car hesitates, or plows around the corners. You feel like you are constantly changing and adding the steering wheel inputs to keep it tracking around a corner, or at worst the front tires can break loose causing you to slide and lose control. Understeer in a hard corner is a very unsettling feeling. The factory puts a little bit of understeer in every car made, as a little can make the car safer for general drivers in tight spots.

Oversteer is when you move the steering wheel a little, and the front end tremendously over reacts. The front of the car could be moved so quickly to the side the wheel is turned (Turn-In) that in a worse case scenario the rear wheels can break loose and spin the car around. "Worst Case"....

In June of 2010 I wrote about how I upgraded my sway bars to the "Red Dot" version from a Mazda RX-8. These sway bars are a little stiffer than the OEM NC bars, and fit right in. It noticeably helped lessen the body roll, but the car just felt weird in corners when I pushed it hard. I had less lean & body roll, but something just didn't "feel" right. As I am not highly experienced in setting up a car for cornering, I didn't know exactly what I was feeling.

I had read about understeer on Miata.net, and how some guys felt the rear RX-8 Red Dot sway bar was not stiff enough causing some understeer when pushed hard around a corner. I felt something, but didn't realize what I felt. Trying to keep up with a beautiful Bright Red NC recently on route 66 in WV really showed me something wasn't right with my set-up. Maybe I felt it more since I put the new Kansai front shock tower brace on too. I don't know. But I SURE felt something was not good! ☹

My brain finally put 2 & 2 together. What I was feeling was a plowing of the front end from understeer. Duh! Understeer can be caused by either the front sway bar being too stiff, or the rear sway bar being not stiff enough. Oversteer can be caused by the opposite. I felt understeer as when I turned the wheel. Instead of the car changing direction, the rear sway bar didn't control the rear properly and tried to overwork the front sway bar. So the front end hesitated to turn and I felt a plowing hesitating effect.

I read on Miata.net where a the general feeling now is that the RX-8 Red Dot front away and Yellow Dot (a little stiffer than Red Dot) rear sway was a better, more neutral set up. Realizing I needed to do "something" I ordered a rear Yellow Dot RX8 sway bar from and put it on.

BINGO! The plowing, hesitation effect I felt when going into a hard turn was totally gone. I turn the wheel now and the car GOES! I read where the Yellow Dot front and rear causes some oversteer, so I initially stayed away from that set up. I thought I was playing it safer just getting both Red Dot sways.

The RX-8 Red Dot Front, and Yellow Dot Rear sway bars seem to be the ticket. I recently tried some corners pushing it hard until traction on all 4 tires felt "soft" at the same time. No hesitation and no plowing effect to the front. No hard squealing from the front tires either! I am very happy with this change.

If you are thinking of trying different sway bars in your NC to control body roll in hard cornering, I would like to suggest the RX-8 Red Dot Front, and the RX-8 Yellow Dot Rear. An easy to install option, a great combination, and a lot better than the OEM sways! I have a list of the needed part numbers, and these OEM Mazda parts can be obtained from many local sources.

Zoom-Zoom! (With Care) Bill Latsha