

BALASTING FOR AN ALIGNMENT

A Balasted Alignment is a 4 wheel alignment done with weight put in the car to simulate the driver, or possibly the driver and passenger, being in the car. Driving a Miata without a "Precision" Alignment is like target shooting without first "sighting in" your gun, or Skiing without waxing your skis. They both will "work", but getting things set as they need to be makes the difference in how WELL they work.

In my January 2011 article I wrote about the wheel alignment basics for your Miata, and in February 2011 I listed some alignment settings that I have been very happy with for my commuting to work plus the sporty club drives on the weekends. If you want to go read these for a refresher, here is a link to where you can find the articles:

<https://sites.google.com/site/pacemiataclub/tech-talk-with-bill/2011-tech-talk-articles>

Now that you have the basics, I want to touch on Ballasting your car to help the alignment work better for when you are in the car. Please read on and I will explain.

The settings for an alignment are all compromises to cover the type of driving "YOU" do. The Miata has an independent 4 wheel suspension meaning you can set all 4 wheels as you want them set, independent of the other 3. So this gives an infinite range of settings to suit any driving style. Balasting the car is a way to set up the car to have the alignment set for when there are people in the car, not when it is empty.

When you sit in the car, this loads the driver's side in a similar manner as if you were making a right hand turn. The car body leans or rolls to the driver's side when you are sitting in it, even if the car is standing still. Do you remember that I previously wrote how when the car body rolls to the outside of a corner, the negative Camber is reduced to allow the tire to sit flat on the road for best traction? Sitting in a car after an Unbalasted Alignment, also causes the negative caster to be reduced on the driver's side, and increased on the passenger's side. So now you have a situation where the car tires may grip a lot better making a left turn, but lose grip on the road sooner when making a right hand turn. You now have uneven handling characteristics when making right or left hand turns. I had this situation with my car and noticed it, but really didn't know why until I dug into it.

I remembered Lynne Long telling me when she was doing track work that she had her Miata aligned with her sitting in it. In other words she had her Miata "Ballasted" for her weight. In this way, the alignment settings could be set with her in it, so she would have the same exact turning characteristics left to right. This gave her the perfect set up for when SHE was driving the car. Her car would turn left and right with the same "feel". This is important for the track, and sporty driving. No compromises here at all as the car was tuned to her weight, and just for her. The car and driver performing as one.

I talked to Bob at "Brady's High Performance Shop" about Ballasting as I wanted to change the alignment on my 2006 Miata. He agreed I should do some Ballasting to help my car handle more evenly right to left. This is where compromise comes into play. If I ballasted the driver's side just for me in the car, then it would not be good when my wife was with me. Since she rides with me on club drives, I also wanted it to handle well with her in the passenger's seat. What I did was to subtract my wife's weight from mine, and ballasted my side of the car close to this difference. So now when I am in the car, my

weight only affects handling about half as much as before. With her in the car, now both sides would be affected equally, so handling should be the same, right and left turns both.

Bob had 2 of the 50 pound barbell weights, so we aligned my Miata with 100 pounds on the floor of my side of the car. This made a very noticeable difference to me. Right and left hand turns with me alone now are a lot closer to the same feel. With my wife in the car now, it is also better. We just went on the Havre-de-Grace run the Longs led. I was amazed at how much better the car handled. With her weight and mine in the car, it had the alignment balanced right to left. I pushed it a little right and left, and it went around corners like it was a different car. I thought it handled pretty good before, but I sure felt the improvement in handling.

Look first at the "Final Alignment" sheet attached. Note I have a Negative 1.2 degrees on the front each side, and a negative 1.6 & 1.5 degrees on the back. This is how I also had my last alignment done.

Now look at the top half of the "B4 & After" sheet attached. This is how much the alignment was changed by putting the 100 pounds on the floor of the driver's side. You can see how it removed some of the negative camber from the driver's side and added it to the passenger's side.

The point I am trying to make is that putting people, or a person in the car changes the alignment. You can have the car set up as I did and you will benefit from this extra Ballasting step. If you drive the car by yourself all of the time, Ballasting with your weight will make a Huge difference. If you and your wife weigh the same, and you always ride together, ballasting won't help you. If there is a weight difference like between my wife and I, Ballasting will help you!

If you want to try a sporty alignment for your Miata, print out the last page titled Final Alignment and take it to your alignment shop (I recommend Brady for sure). Tell them to set it exactly like this, and ask for a final print-out. And as always, feel free to contact me if you have any questions. These settings will actually work for all years of Miatas. I know, as I have had these settings on all 3 of the Miatas I have owned.

When you look at the Caster Settings, don't be alarmed. Too much Positive Caster makes it harder to turn the car. If you do ALL highway driving, lots of Positive Caster is good. If you like "Sporty" cornering, dial back on the Positive Caster as I have.

Zoom-Zoom with a precision ballasted alignment!
Bill Latsha

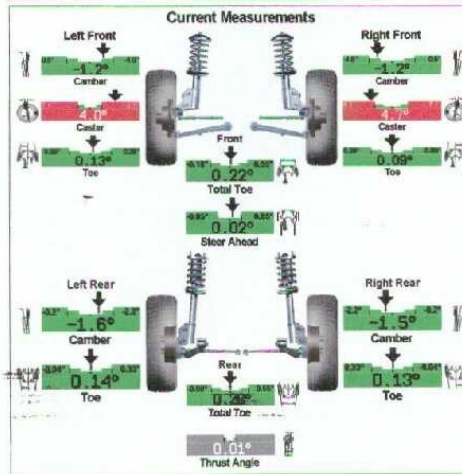
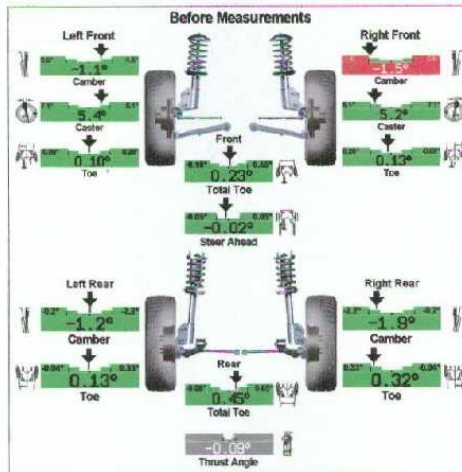
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386 MILLWOOD ROAD
WILLOW STREET, PA. 17584
(717)283-0056

Name
Address
Telephone
Vehicle (VIN)
License
Technician
Mileage
Time Printed

"Before" on top with Ballast added.
"After" on bottom with Ballast still in car.

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06 : Mazda : MX-5 Miata with 17" Wheel



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Final Alignment Numbers

4/20/12 11:31 AM

06 : Mazda : MX-5 Miata with 17" Wheel

