

ECCENTRIC BOLTS INSTALL

Lift the front of the car, put it on blocks or car stands and remove the plastic belly pan. You do not have to remove the wheels. You are going to replace two bolts on each side of the car's front suspension. They control both camber and caster by moving the lower control arm (A frame) towards or away from the center of the car. The forward most bolt primarily controls camber, while the rear bolt primarily adjusts caster. Think of the A frame as a three legged stool with the seat being the rim/tire. If you shorten or lengthen any one of the legs it will effect the position of the seat. So even if I had only replaced the forward camber bolt my caster and toe would also have changed. If you have a small camber adjustment to make you might want to try just replacing the forward bolt. In my case I choose to replace both bolts right away as my front tires were starting to show the tire cord just on the inside of the tire, yet the tread wear bars were not worn. The tread wear bars were still below the surface of the tire. I did have 43,000 miles on the Kuhmo Ecsta LX Platium tires but could have gotten an additional 5,000+ miles if the inside had not worn down to the cords.

The pictures you see below are from the drivers side and they are of the forward most bolt. The other bolts are removed/installed in a similar manner.

Below you see the new bolt and the one you will remove. Notice the removed OEM bolt has no threads on part of it's shank and the head will not allow you to turn the bolt when it is installed into the frame because it's head fits into a slot in the frame.

(new eccentric bolt)



(OEM bolt)



THIS COULD BE DANGEROUS Be aware of the spring tension. Remove only one bolt at a time and install the new, before moving to the next. To remove the original bolt you must turn the nut, NOT the bolt head. You will need a 22mm deep socket, but a 7/8 inch will work. The Torx head is a T55. Notice I placed a jack under the A frame to support the weight and spring tension. I also have another jack under the outer end of the A frame so I can control the angle and the spring tension. Once the nut is off you can use a hammer to knock the old bolt flush. I had to turn it out from there by using the T55 head. However, when you get near the end you should be able to remove it by hand by adjusting the jacks which will remove most of the tension on the bolt.

The next picture is the OEM bolt partially removed.

(This picture and all the others should be rotated 90 degrees clockwise)



Here are a couple more pictures of the frame with the bolt removed to show you the oblong shape of the forward hole, and the shape of the rear hole which matches the new bolt washer pattern. You adjust the camber through placement of the washer. The washer will force the new bolt either inward for a positive adjustment toward the engine, or outward toward the wheel to increase negative camber.



Front



Rear

The new washers are a very tight fit. They WILL go into the frames hole and lay flat when you have them properly installed and tighten the nut. The flute on the bolt's shank slides into the frame cutout as shown in the next picture. When you put a wrench on the nut to start tightening it you will have to hold the head of the bolt as you tighten. This will prevent the flute from rotating out of it's position which must be engaged with the knuckle sticking out from the frame. Tighten the nut down so both washers are flat against the frame and securely holding the bolt in the inward position. About 15 ~ 20 ft lbs torque. If you are also replacing the rear bolt of the A frame you can do that next and reposition the jack under the rear bolt. When you are done installing the two new bolts move the tire/wheel up and down with the jack you have at the outboard end of the A frame. This will work the newly installed bolts and bushings helping to settle them into there respective positions. Now torque the newly installed bolts to their final 88 ft lbs.

(The new eccentric bolt with the flute in it's inward position)



My car had too much negative camber, so I placed the new bolt so it sets closer towards the engine than the original, which sat in the center of the hole. Also for your info the rubber bushing's center hole that you place the new bolt through is a fairly large hole. But this large hole has another metal bushing near the center that just is big enough for the bolt to pass through. So you must have the bushing lined up just right to get the bolt to pass through both frame holes. The way I got that accomplished was to use a come-along to either pull the A frame towards the center of the car, or as on the rear bolts, to pull the A frame outward. You may find another way, but the come-along worked for me. This would probably be easier if the car was on a lift and you could use a pry bar, but working on my garage floor limits your movements. And if you use a lift you would need a spring compressor to take the tension off the A frame.

Here is a picture of the come-along setup so I can get the bolt *and* the washer installed correctly.



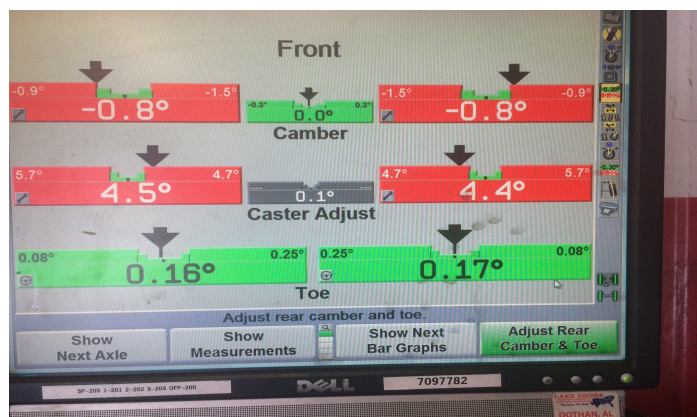
When working the rear bolt I had to hook the come-along to a lawn and garden tractor that I pulled up alongside the car. This gave me the anchor I needed to pull the A frame outward so I could get the washer

into its proper position. So what I am saying here is you will need some way to move the A frame outward if you are replacing the rear bolt. Plan ahead! Trying to do this in a tight cluttered garage probably won't work and you will end up reinstalling the OEM bolt.

And here is the new bolt and washer installed. Notice the flat of the D shaped washer is inward. This forces the bolt inward. You do the same with the rear washer which forces the bolt inward. Which will reduce negative camber. If you want to increase negative camber by moving the A frame outward the flat of the washer would be facing outward toward the wheel.



If you do the same as I did, replacing both bolts on the A frame and moving both bolts inward, (Took me about four hours) you will find the toe-in has increased. It will be obvious when the car is setting on its wheels and you look at it from the front. I therefore adjusted the toe immediately after replacing the bolts. That is a simple job; About one hour. I used a long four foot level placed on the wheels rim and reaching back toward the doors to get an idea of where the toe was adjusted, but just eye balling it is pretty easy. When I finished all this I headed straight to a tire shop for an alignment and four new Michelins Pilot Sport A/S 3+.



The car steered and handled well on the way home. It definitely had a lighter feel on the steering and hopefully the front tires will wear more evenly, and yet give me the front end grip we all enjoy while cornering.