Handling How-To: Installing Adjustable Camber Plates

By Matt Richter

Understeer is really the only major suspension flaw in the stock Mini. Many just throw on a stiffer rear bar and leave it at that. While this does improve things, and it can even bring you to neutral, it isn't exactly the best way to skin the cat. Adjustable camber plates may be a better answer.

The reason I say this is that the one shortcoming of the MacPherson Strut is that it has very little camber gain. With a stock camber of around -0.5 degrees (remember from our handling primer that *camber* is the top to bottom angle of the tires relative to the pavement), the front tires don't tip in at the top enough to counter the leaning of the car in a turn.

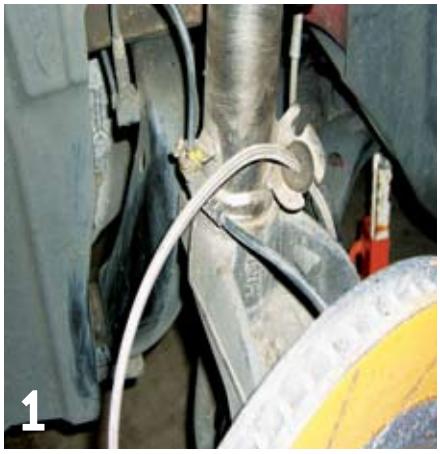
The net result is a non-optimal contact patch and fast wear of the outside edge of the tire. Increasing the negative camber will reduce understeer (although not eliminate it), and increase the maximum lateral grip that the car is capable of, all while having the nice affect of increasing tire life!

While adjustable camber plates were my very first mod to my car, the ones that I'd been using (early RDRs) ate a bit of suspension travel (or raised the front end, if you didn't have adjustable coil-overs). I was having some issues with bottoming, so when I heard that the new Hotchkis plate didn't raise ride height I decided to put some on my car. The plates come with complete instructions and spring perches (you have to specify what perches you need: stock, 2.5 inch ID, or 2.25 inch ID). The design uses a solid pillow ball, so the ride will be more harsh than stock. But the units are rebuildable, so they should give years of service, even with track use.

Tools and Parts Needed

16 mm Box End Wrench - End Link
5 mm Allen wrench - End Link
18 mm socket - Pinch Bolt
13 mm socket - Upper Strut Mount
21 mm socket - Front Strut Center Shaft Bolt
21 mm socket - Rear Lower Strut Bolt
13 mm socket with extensions - Upper Rear Strut Bolt
16 mm socket - Rear Strut Center Shaft Bolt
14 mm socket – to set camber

Note: the top bolts on the strut plate are designed to be used only once, distorting as they're tightened, so you'll need six of these for the front, and four more for the rear.



While the job sounds difficult, it's not at all and can be done in a driveway with mostly hand tools (you may have to rent a spring compressor). Also, you have to do basically the same work to change the springs or struts as you do for the camber plates, so this "do-it-yourself" covers them all, at least for the front end.

Expect to spend a couple hours to do the work. As with all serious suspension work, your first trip after installation should be to a good alignment shop to set all the available adjustments properly.

1) Start with the front end on jack stands and the front wheels off. (Don't just lift one side at a time as the sway bar will have tons of twist in it and you'll never get the end-link off.) Remove the brake line and the wheel speed sensor wire from the strut body. I have an early car, so I don't have brake sensors. If you have them on your car, remove that one as well. Also, while I have aftermarket struts on my car, the work is exactly the same with the stock set-up.

2) Turn the steering wheel towards the side you are working on to improve access to the upper end-link nut. An Allen wrench holds the shaft fixed and a box end wrench can loosen the nut.

3) Support the hub assembly with a floor jack or something else appropriate. The floor jack is nice in that you can control how low it settles as you drop the steering knuckle assembly off the strut. You do want to support it; if the knuckle swings too far away from the car you can have issues with your drive shaft. (Don't mind the surface rust. It had been raining, and alas, my Mini lives outside.)

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4) Turn the wheel the other way, and remove the steering knuckle pinch-bolt (lower strut retaining bolt). You can't just loosen it as it goes through a tab on the strut, it has to be completely removed. This is a safety feature so the strut can't come out in the rare event that the bolt comes loose.

5) Once the lower bolt is out, the only thing that holds everything together is friction. On some cars, especially if you live where the roads are dirty or salt is used, some "coercive force" may have to be used. I used a well-placed kick with a work boot on mine the first time. If you have to hit it with more to break it loose, don't strike anything with a hammer! Get a piece of 2x4 (mechanics call it a "drift") and bang on that. This picture shows the end of the strut free. You can see the tab the lower bolt goes through.

6) The strut is now held in with just the three bolts at the top of the strut tower. It helps to have an extra pair of hands to support the strut when you loosen these. My old camber plates used bolts from the top, but both the stock and Hotchkis plates have studs and use the stock nuts. The two bolts in the center are used to adjust the camber and aren't on the stock plates.

7) Taking the old camber plate and spring perch off is very easy if you already have aftermarket springs. They have very little pre-load and you can just unbolt them by loosening the center strut retaining nut. (An air wrench is handy here. If you don't have one, you have to grab the shaft somehow. I used a rubber belt wrench, but whatever you do, don't use something with hardened jaws! You'll damage the shaft.)

If you have the stock set-up, there's still a bunch of energy stored in the springs, and you'll have to rent a spring compressor. They are easy to use and rental shouldn't cost much. Auto parts stores and equipment rental places usually have them for a small daily fee. Call around. One time, in a pinch, I used ratcheting tie-downs to compress the spring enough to take them apart safely.

If you are using stock struts and springs, inspect the upper spring perch for cracks or damage. This has been a problem part for many early MINI owners. Now is the time to clean everything if you're that type.

8) Putting everything back is pretty easy. Make sure that you clean the end of the strut and the pocket in the steering knuckle it slides into. This will make life easier if you ever take the struts out again. Set the camber plate to be as close as you can to what it was before, as changing camber will change toe and you don't want to do that! Not counting lug nuts, it's only five fasteners a side to remove a strut, and just one more to change the spring or camber plate. Once it's back together, it's time to drive off to your favorite alignment shop!

As far as what camber is best? There is no correct answer. Just keep in mind that if you run much more than minus-two degrees, your tires will start to wear unevenly. FWIW, I run –2.0 degrees up front and –1.2 degrees rear.

But alignment settings vary all over the place depending on use, equipment, driving style and preference. So it's time to start a relationship with your alignment-shop handling guru, if you haven't already.

I got a bit over half an inch of suspension travel back from the swap. After having driven the car for a while, the new camber plates don't produce a much harder ride than the plates they replaced, and the frequency of bottoming the suspension is greatly reduced. Overall, I'm happy with the change.

If you should want to replace the springs and shocks on the rear at the same time, it's even easier, as the end-link isn't attached to the strut. There are only two bolts that hold the top in place, so besides wheel lugs there are just three bolts on each side for you to deal with. MC²

Torque Specifications

Front Upper Strut Mount	25 ft-lb
Steering Knuckle Pinch Bolt	60 ft-lb
End-Link Bolt	41 ft-lb
Front Center Strut Retaining Bolt	47 ft-lb
Rear Strut Low Mount Bolt	104 ft-lb
Rear Strut Upper Mount Bolt	41 ft-lb
Rear Center Strut Retaining Bolt	22 ft-lb