**Front Strut Replacement**

Shock absorbers and springs are the suspension components that maintain the mass of the vehicle suspended above the rolling gear - the wheels. Springs hold the weight up and shock absorbers dampen suspension movements so that passengers inside the vehicle experience a smooth ride.

The BMW E46 is equipped with separate shocks absorbers and coil springs in the rear. For the front suspension, BMW utilizes a combined shock absorber and coil spring assembly referred to as a MacPherson strut.

When shock absorbers begin to wear, ride quality and vehicle handling suffer. You may notice your vehicle is not smooth over bumps or feels soft when cornering. This could be an indicator of worn shock absorbers. To check the shock absorbers, push down on the corner of your vehicle (the corner you want to diagnose). When you give the corner one good push down, it should bounce up, then slightly down and stop. If it continues to bounce, the shock absorber is worn out. You have the choice to replace your shock absorbers with a factory spec set or a performance set. Performance shock absorbers can greatly improve the handling of your E46. You can also replace all four coil springs on your E46 with performance springs, giving it a slightly lower stance and stiffer handling.

Keep in mind that when your car was serviced before, parts may have been replaced with different size fasteners used in the replacement. The sizes of the nuts and bolts we give may be different from what you have, so be prepared with different size sockets and wrenches.

Protect your eyes, hands and body from fluids, dust and debris while working on your vehicle. If you are working with the electrical system, disconnect the battery before beginning. Always catch fluids in appropriate containers and properly dispose of any fluid waste. Recycle parts, packaging and fluids when possible. Do not work on your vehicle if you feel the task is beyond your ability.

Servicing the MacPherson strut assembly requires the use of a sturdy spring compressor. Be sure you have one available before you start this work.

Vehicle models change and evolve as they grow older, so the vehicle shown in our illustrations may vary slightly from yours. If something seems different, let us know and share your info to help other users. Do you have questions or want to add to the article? Leave a comment below. When leaving a comment, please leave your vehicle information.

Raise and support the front of the vehicle on jack stands. See our Pelican Parts technical article on Jacking Up Your BMW for more information.

Remove the front wheel from the side of the vehicle you are working on.

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| [Working at the front strut, pull the brake hose and the sensor harness out of the holder.](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_small/pic01.jpg)  **Figure 1** | Working at the front strut, pull the brake hose and the sensor harness out of the holder. They are held in by a rubber bushing and will pull straight out of the holder (green arrows).  [Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_med/pic01.jpg) | [Extra-Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_large/pic01.jpg) |
| [Working at the front strut, remove the stabilizer link nut by counter holding link with a 15 or 16mm wrench and loosening the 16mm nut.](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_small/pic02.jpg)  **Figure 2** | Working at the front strut, remove the stabilizer link nut by counter holding link with a 15 or 16mm wrench and loosening the 16mm nut. The stabilizer link has a flat spot for holding while tightening. This flat spot size can vary between 15mm and 16mm.  [Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_med/pic02.jpg) | [Extra-Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_large/pic02.jpg) |
| [Working at the front stabilizer bar, remove the stabilizer link nut (green arrow) by counter holding the link (purple arrow) with a 15 or 16mm wrench and loosening 16mm nut.](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_small/pic03.jpg)  **Figure 3** | Working at the front stabilizer bar, remove the stabilizer link nut (green arrow) by counter holding the link (purple arrow) with a 15 or 16mm wrench and loosening 16mm nut. Next, remove the stabilizer link from the vehicle.  [Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_med/pic03.jpg) | [Extra-Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_large/pic03.jpg) |
| [If your vehicle is equipped with Xenon headlights, remove the Xenon headlight height sensor from the control arm.](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_small/pic04.jpg)  **Figure 4** | If your vehicle is equipped with Xenon headlights, remove the Xenon headlight height sensor from the control arm. Remove the nuts (green arrows) and lay the sensor arm (purple arrow) aside.  [Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_med/pic04.jpg) | [Extra-Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_large/pic04.jpg) |
| [Remove the strut pinch bolt from the strut (green arrow).](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_small/pic05.jpg)  **Figure 5** | Remove the strut pinch bolt from the strut (green arrow).  [Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_med/pic05.jpg) | [Extra-Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_large/pic05.jpg) |
| [Next, spread the strut clamping area with a small pry bar while pushing down on the brake rotor to slide the strut out of the steering knuckle.](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_small/pic06.jpg)  **Figure 6** | Next, spread the strut clamping area with a small pry bar while pushing down on the brake rotor to slide the strut out of the steering knuckle. It is not always necessary to spread the strut; most times it comes apart easily.  [Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_med/pic06.jpg) | [Extra-Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_large/pic06.jpg) |
| [Next, remove the upper strut mounting nuts and remove the strut from the vehicle (green arrows).](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_small/pic07.jpg)  **Figure 7** | Next, remove the upper strut mounting nuts and remove the strut from the vehicle (green arrows).  [Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_med/pic07.jpg) | [Extra-Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_large/pic07.jpg) |
| [If the alignment pin is missing (yellow arrow), remove each strut mounting nut individually (green arrows) and mark the location.](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_small/pic08.jpg)  **Figure 8** | If the alignment pin is missing (yellow arrow), remove each strut mounting nut individually (green arrows) and mark the location. This will help with getting the strut in same position as before.  [Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_med/pic08.jpg) | [Extra-Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_large/pic08.jpg) |
| [Once the strut has been removed from the vehicle, place in the spring compressor.](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_small/pic09.jpg)  **Figure 9** | Once the strut has been removed from the vehicle, place in the spring compressor. The one shown is a wall-mounted model. There are many versions available, follow the directions that came with your spring compressor to compress the spring.  [Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_med/pic09.jpg) | [Extra-Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_large/pic09.jpg) |
| [Remove the dust cap from top of the strut (green arrow).](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_small/pic10.jpg)  **Figure 10** | Remove the dust cap from top of the strut (green arrow).  [Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_med/pic10.jpg) | [Extra-Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_large/pic10.jpg) |
| [Remove the nut from the spring top by counter holding the center shaft with an Allen bit (usually 6mm) and loosening the nut (usually 20mm).](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_small/pic11.jpg)  **Figure 11** | Remove the nut from the spring top by counter holding the center shaft with an Allen bit (usually 6mm) and loosening the nut (usually 20mm).  [Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_med/pic11.jpg) | [Extra-Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_large/pic11.jpg) |
| [Once the nut has been removed, transfer the spring and parts over to the new strut.](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_small/pic12.jpg)  **Figure 12** | Once the nut has been removed, transfer the spring and parts over to the new strut. Dust the boot with the bump stop (green arrow) and the rubber insulator (yellow arrow).  [Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_med/pic12.jpg) | [Extra-Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_large/pic12.jpg) |
| [This photo shows the order the strut components are installed.](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_small/pic13.jpg)  **Figure 13** | This photo shows the order the strut components are installed. This will help you in the case you drop or do not remember installation position of an item. The washer orientation is important, pay close attention when reassembling.  Once parts have been transferred over to the new strut install spring top nut and tighten. Then install the strut in the vehicle. Start by installing the upper nuts and finger tighten. Then install the strut into the steering knuckle and install the pinch bolt finger tight. Align the strut top as before and tighten the upper fasteners. Then tighten the clamping collar bolt. Reassemble the remaining items and have the vehicle professionally aligned.  [Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_med/pic13.jpg) | [Extra-Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/48-SUSPEN-Front_Strut_Replacement/images_large/pic13.jpg) |