**Replace Front Control Arms**

BMW E46 front suspension main components are as follows:

* The front subframe provides a rigid platform for mounting the drive train (engine and transmission), steering rack and most front suspension components. The subframe design on rear-wheel drive and all-wheel drive models differs substantially.
* Lower control arms on left and right, each with three attachment points:
  + Bushing at rear anchors control arm to car frame (rear-wheel drive) or subframe (all-wheel drive).
  + Ball joint at front attaches to subframe.
  + Ball joint at outer end attaches to steering knuckle.
* Coil springs and shock absorbers in MacPherson strut configuration.
* Stabilizer bar anchored at front subframe and attached via stabilizer links to struts.

The front control arm on the E46 chassis has three common areas of trouble: The ball joint that connects to the steering knuckle, the ball joint that attaches to the subframe and the control arm bushing. Bushing failure can cause a number of ride quality problems. You may have a shudder when braking or a clunk when you hit a bump. When replacing your front control arm, I suggest replacing the bushing and both ball joints. Inspect your control arm bushing and ball joints for looseness by jacking up the front of your vehicle and moving each wheel side to side. If you feel looseness in the attachment points, this indicates a problem. You may need help from a friend to watch the control arm components while you wiggle the wheel.

In this tech article, we will go over the steps required in replacing the front control arm on your rear-wheel drive E46. If your model is all-wheel drive, there is a separate article for you.

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.

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.

|  |  |
| --- | --- |
| [The control arm has three areas of trouble: The ball joint that connects to steering knuckle (yellow arrow), the ball joint that attaches to subframe (green arrow) and the control arm bushing (purple arrow).](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_small/pic01.jpg)  **Figure 1** | The control arm has three areas of trouble: The ball joint that connects to steering knuckle (yellow arrow), the ball joint that attaches to subframe (green arrow) and the control arm bushing (purple arrow).  [Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_med/pic01.jpg) | [Extra-Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_large/pic01.jpg) |
| To begin, raise and support the front of the vehicle on jack stands. If you need help with this step, [please refer to our Pelican Parts Technical Article on Jacking Up Your BMW.](https://www.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/01-BASICS-Jacking_Up_Your_BMW/01-BASICS-Jacking_Up_Your_BMW.htm" \t ") Now remove the front wheel from the side of the vehicle you are replacing control arm on. Next, remove the lower splash shield and reinforcement plate. If you need help with this step, [please refer to our Pelican Parts Technical Article on Removing the Splash Shield and Reinforcement Plate.](https://www.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/04-BASICS-Engine_Splash_Shield_and_Plate_Replacement/04-BASICS-Engine_Splash_Shield_and_Plate_Replacement.htm) | |
| [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-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_small/pic02.jpg)  **Figure 2** | If your vehicle is equipped with Xenon headlights, remove the Xenon headlight height sensor from the control arm. Remove nuts (green arrows) and lay sensor arm (purple arrow) aside.  [Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_med/pic02.jpg) | [Extra-Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_large/pic02.jpg) |
| [Working at the steering knuckle, remove the 16mm ball joint nut (green arrow).](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_small/pic03.jpg)  **Figure 3** | Working at the steering knuckle, remove the 16mm ball joint nut (green arrow).  [Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_med/pic03.jpg) | [Extra-Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_large/pic03.jpg) |
| [Then separate the ball joint from the steering knuckle using a pickle fork.](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_small/pic04.jpg)  **Figure 4** | Then separate the ball joint from the steering knuckle using a pickle fork.  [Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_med/pic04.jpg) | [Extra-Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_large/pic04.jpg) |
| [Next, working at the subframe, remove the inner ball joint 21mm nut (green arrow).](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_small/pic05.jpg)  **Figure 5** | Next, working at the subframe, remove the inner ball joint 21mm nut (green arrow).  [Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_med/pic05.jpg) | [Extra-Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_large/pic05.jpg) |
| [Knock the ball joint out of the subframe using a hammer.](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_small/pic06.jpg)  **Figure 6** | Knock the ball joint out of the subframe using a hammer. To do this, hit the control arm in the area of the ball joint. Since you are replacing the control arm, it does not matter if you mar it.  [Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_med/pic06.jpg) | [Extra-Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_large/pic06.jpg) |
| [Working at the rear of front control arm, remove the two 16mm control arm bushing fasteners (green arrows).](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_small/pic07.jpg)  **Figure 7** | Working at the rear of front control arm, remove the two 16mm control arm bushing fasteners (green arrows). Then remove the control arm from the vehicle. When installing the new control arm; first, install the subframe ball joint nut finger tight. Then install the ball joint at the steering knuckle.  [Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_med/pic07.jpg) | [Extra-Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_large/pic07.jpg) |
| [When tightening the subframe ball joint, it may be necessary to place a jack under the ball joint to stop the stud from rotating.](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_small/pic08.jpg)  **Figure 8** | When tightening the subframe ball joint, it may be necessary to place a jack under the ball joint to stop the stud from rotating. Next tighten the steering knuckle ball joint nut.  [Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_med/pic08.jpg) | [Extra-Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_large/pic08.jpg) |
| [Apply a liberal amount of tire lube or dish soap to the inside of the bushing.](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_small/pic09.jpg)  **Figure 9** | Apply a liberal amount of tire lube or dish soap to the inside of the bushing. Then tap the bushing onto the control arm using a soft-faced hammer. Install the bushing fasteners and tighten. Be sure to properly align the bushing to the body using the alignment tabs. Install the Xenon light height sensor.  [Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_med/pic09.jpg) | [Extra-Large Image](https://cdn4.pelicanparts.com/BMW/techarticles/BMW-3-Series-E46/54-SUSPEN-Replacing_Your_Front_Control_Arms_on_Your_RWD_BMW/images_large/pic09.jpg) |