

# Installing Bilstein HD Struts and Shocks (E46 2000 328iC)

By: Baden Smith (August 2008)

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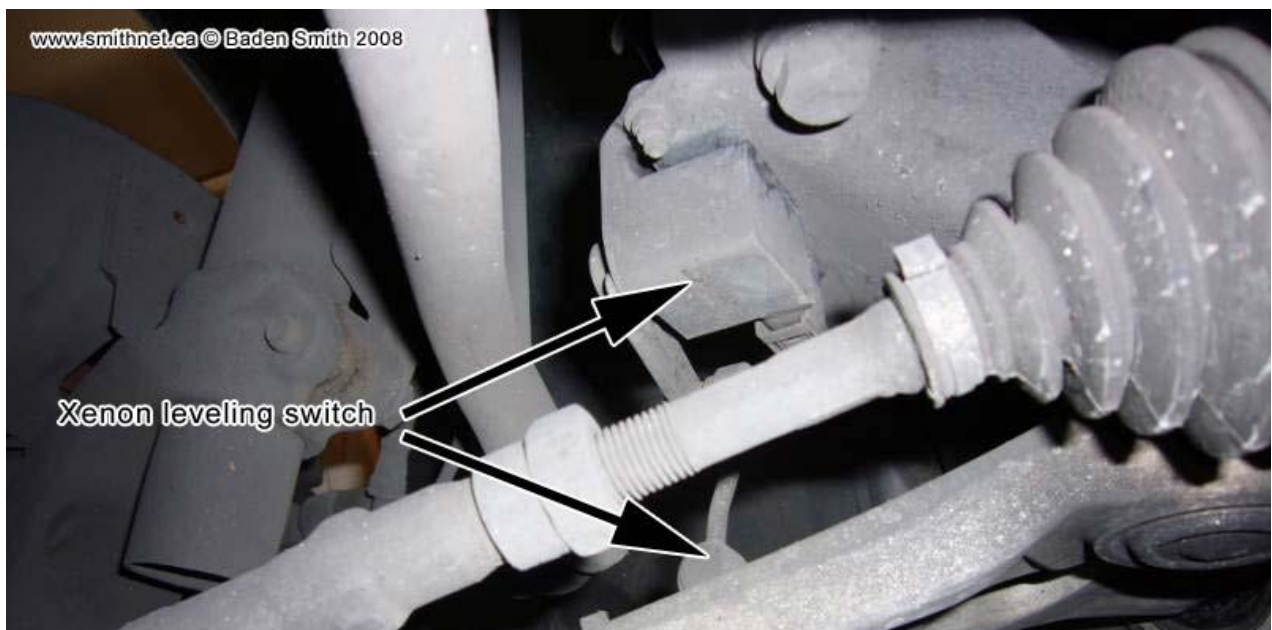
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## Section 2: Front Strut Installation

Removing and installing the front struts is considerably more work than working on the rear shocks. Not only is the removal and installation procedure more complicated but the front struts involve springs which must be removed from the original struts to be moved over the the new ones. This requires the use of a spring compressor and adds time and unique risks to the overall job.

1. Place wheel chocks on the rear tires to prevent it from rolling.
2. Loosen the bolts on both of the front wheels.
3. Jack up the front of the car and place both sides of the car securely on jack stands. The car should be high enough so that you should have enough room to crawl under the front of the car easily.
4. Remove the front wheels from both sides.
5. Start on the passenger side, remove the 13mm nut from the bottom of the control arm to release the Xenon leveling switch. To fully release it from the control arm, it may need to be gently struck with a small hammer.





6. Disconnect the top of the sway bar link from the strut. This requires a 17mm wrench and a 16mm socket to be used at the same time. Rotate the sway bar link out of the way.







7. Remove the brake line and ABS sensor line from the clamp on the side of the strut. They are just held in place with a rubber grommet so they can both be released fairly easily by pushing on both sides of the hose at the bracket. On the driver's side, there will also be the brake sensor cable as well.





8. Remove two of the three 13mm nuts at the top of the strut tower. Loosen the third nut about half way.





9. Place a jack under the bottom of the ball joint. This will support the hub assembly when it is released from the bottom of the strut.



10. The bottom of the strut is held in place with a single 18mm bolt at the lower clamp. Remove this bolt. Removing this bolt may take some effort and you may need to employ a breaker bar or an impact wrench if you have one.





11. Have a large paint can ready covered with a cloth. This can be placed under the hub to support it on the outer side when the strut is removed.



12. Pushing down on the rotor or hub, attempt to disengage the strut from the strut clamp lowering the jack as necessary. I found that using a rubber dead blow hammer was useful in separating the strut from the clamp.
13. If the strut doesn't want to release, try using some penetratin oil like WD40 and let it sit for a few minutes. Rotating the strut assembly by hand at the springs to ensure that it is loosed properly.







14. After the strut has been removed from the lower clamp, remove the final 13mm bolt at the top and remove the strut/spring assembly.
15. Remove any penetrating oil from the bottom of the strut clamp and the surrounding area using a clean rag.
16. Remove the upper plastic cap from the strut.
17. Using spring compressors, compress the spring until the spring moves freely from the upper plate.

The springs are held in place with a lot of force and extreme caution must be taken when removing the strut springs.







18. The top of the stock strut has a 21mm bolt that holds everything together. Remove this bolt. I have found that having an impact wrench makes this step extremely easy. If you don't have an impact wrench, you will have to use a 21mm socket held in place by a vise grip and a 6mm hex socket or hex key. Using this method, the 21mm socket will remain stationary and the hex socket will rotate in a clockwise manner to loosen the bolt.







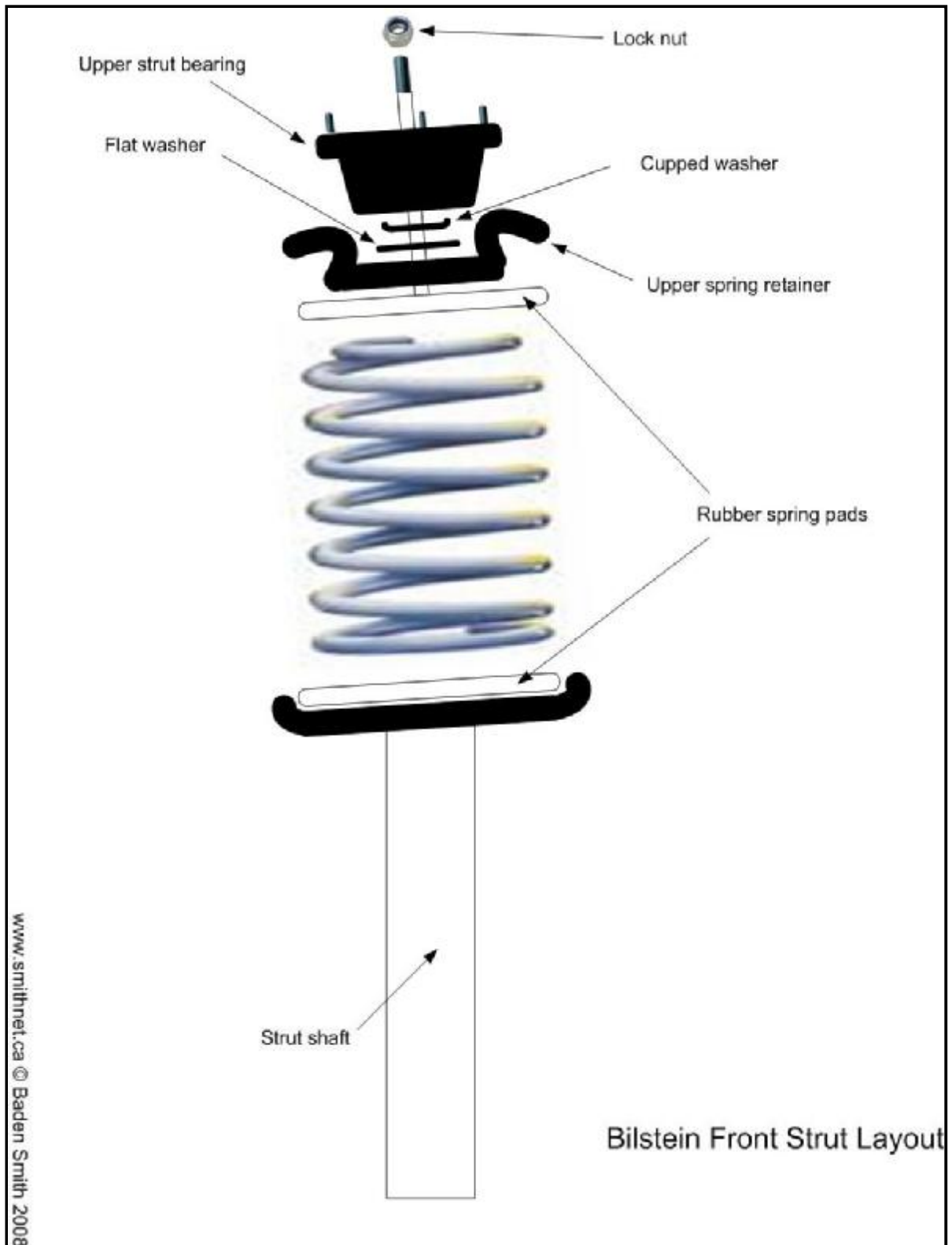
19. After the top strut bolt has been removed, the entire strut assembly can be taken apart. Recover the the following parts from the original strut: spring, 2 washers, upper and lower spring plate, upper and lower rubber spring pads (if re-using), upper strut bearing plate (if re-using).



20. Choose the correct left or right Bilstein strut assembly depending on which side you are working on. Compare the orientation of the sway bar mounting bracket to determine which one

is left or right.

21. Assemble the parts onto your new Bilstein strut assembly as follows:



22. The Bilstein strut will come with a new 22mm self-locking top bolt. Attach this to the top of the strut and hand tighten with a socket wrench.
23. Start releasing the spring compressor and ensure that the spring properly seats into the rubber spring pads and that the rubber spring pads are properly seated into the strut assembly. If the



parts do not line up properly, you will need to compress the springs again and adjust.

24. Tighten the top strut bolt to 63 Nm.
25. The Bilstein strut will now be reinstalled back into the car. To do this, attach the strut onto the strut tower with one or two bolts tightened by hand. Ensure that the alignment pin from the upper strut bearing plate is correctly aligned with the hole in the strut tower.
26. Maneuver the bottom of the strut into the lower clamp and if necessary, jack up the bottom of the hub assembly until the strut is fully seated into the clamp.
27. Add loc-tite (or similar material) to the clamp bolt and hand thread it into the clamp.
28. Rotate the strut to ensure that the Left/Right indicator on the strut shaft is lined up with the slot on the clamp. Once the strut is aligned properly to the Left or Right marker (depending on which side of the car you're working on), start to tighten the clamp bolt – ensuring that the bracket for the hoses is not touching the strut body.





29. Tighten the clamp bolt to 80 Nm.
30. Hand tighten all three of the upper strut mounting bolts.
31. Replace the hoses to the hose clamp.
32. Replace the sway bar link and tighten to 65 Nm.
33. Replace the bolt to the Xenon sensor at the bottom of the control arm.
34. If the brake rotor has been touched in any way, clean the rotor with brake cleaner and a clean cloth.
35. Remove any supports like the jack or paint can out from the hub assembly.
36. Reinstall the wheel and tighten the wheel bolts to 110 nM.
37. Repeat the removal / installation process on the other side of the car.
38. Remove the jack stands from the car and lower the car. Remove the wheel chocks.
39. Tighten the three 13mm upper strut tower bolts to 24 Nm on each side of the car. This step should be done when the weight of the car is on the suspension.
40. Road test the car to ensure that there are not any unusual new noises. Try to drive over some speed bumps or railway tracks as sometimes unusual suspension noises may not be heard on smooth roads.
41. Clean up your tools.
42. Your car will be needing a 4 wheel alignment. I have found that I like to drive the car for a week or so before getting an alignment to ensure that everything has "settled in" properly.



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