



How to change front  
suspension strut on  
**BMW E46** – replacement  
guide

## VIDEO TUTORIAL



### **ⓘ Important!**

This replacement procedure can be used for:

BMW 3 Saloon (E46) 320d 2.0, BMW 3 Saloon (E46) 316i 1.9, BMW 3 Coupe (E46) 318Ci 1.9, BMW 3 Touring (E46) 318i 1.9, BMW 3 Touring (E46) 320d 2.0, BMW 3 Saloon (E46) 316i 1.6, BMW 3 Compact (E46) 318ti 2.0, BMW 3 Saloon (E46) 318i 2.0, BMW 3 Saloon (E46) 318d 2.0, BMW 3 Saloon (E46) 316i 1.8, BMW 3 Touring (E46) 318i 2.0, BMW 3 Touring (E46) 316i 1.8, BMW 3 Touring (E46) 318d 2.0, BMW 3 Compact (E46) 318td 2.0, BMW 3 Compact (E46) 320td 2.0, (+ 1)

The steps may slightly vary depending on the car design.

REPLACEMENT: SUSPENSION STRUT – BMW E46.  
TOOLS YOU'LL NEED:



- Wire brush
- WD-40 spray
- Brake cleaner
- Copper grease
- Combination spanner #19
- Drive socket # 13
- Drive socket # 17
- Drive socket # 18
- Drive socket # 19
- Drive socket # 22
- HEX bit No.H6.
- Wheel impact socket #17
- Ratchet wrench
- Torque wrench
- Water pump pliers
- Flat Screwdriver
- Ball joint puller
- Crow bar
- Hydraulic transmission jack
- Hydraulic strut spring compressor
- Fender cover
- Wheel chock

**BUY TOOLS**

Replacement: suspension strut – BMW E46. AUTODOC experts recommend:

- Both shock struts of the front suspension should be replaced simultaneously.
- The replacement procedure is identical for the left and right shock struts of the front suspension.
- All work should be done with the engine stopped.

**REPLACEMENT: SUSPENSION STRUT – BMW E46. USE THE FOLLOWING PROCEDURE:**

**1** Secure the wheels with chocks.



**2** Loosen the wheel mounting bolts. Use wheel impact socket #17.

**3** Raise the front of the car and secure on supports.



4

Unscrew the wheel bolts.



Replacement: suspension strut – BMW E46. AUTODOC recommends:

- To avoid injury, hold up the wheel when unscrewing the bolts.

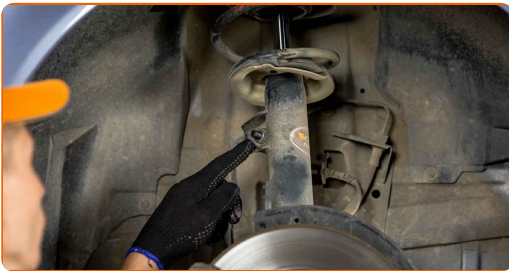
5

Remove the wheel.



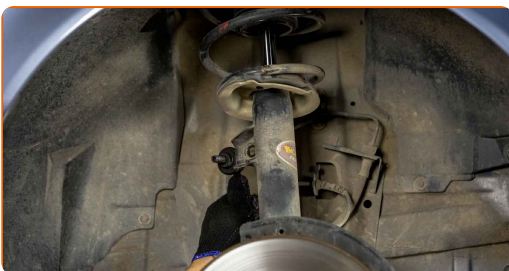
6

Clean the stabiliser link fasteners. Use a wire brush. Use WD-40 spray.



7

Unscrew the fastener connecting the stabilizer link to the shock strut. Use a drive socket #17. Use a ratchet wrench.

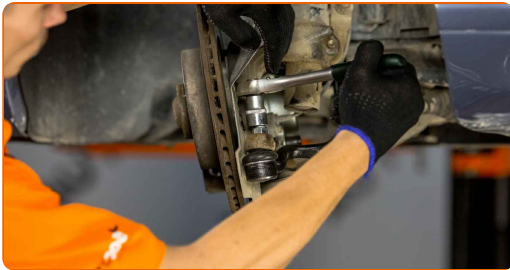


8 Remove the stabilizer rod.

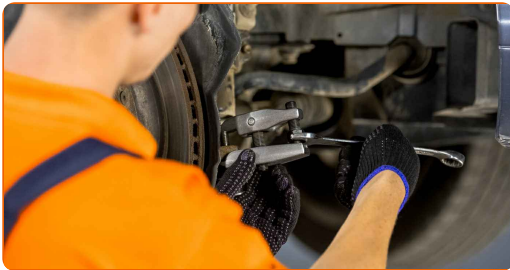
9 Clean the fastener connecting the tie rod end to the steering knuckle. Use a wire brush. Use WD-40 spray.



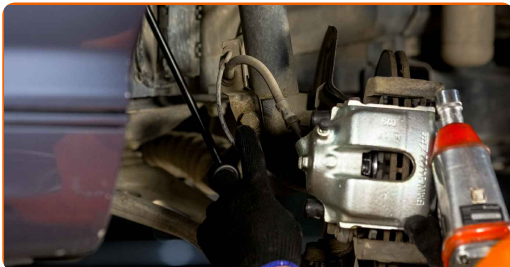
10 Unscrew the end fastening nut to the steering knuckle. Use a drive socket #19. Use a ratchet wrench.



11 Disconnect the tie rod end from the steering knuckle. Use a ball joint puller.



12 Clean the fastener that connects the ball joint to the steering knuckle. Use a wire brush. Use WD-40 spray.



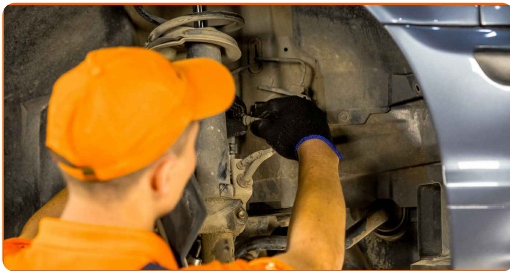
13

Unscrew the ball joint fastening to the steering knuckle. Use a drive socket #19. Use a ratchet wrench.



14

Disconnect the ABS sensor wiring.



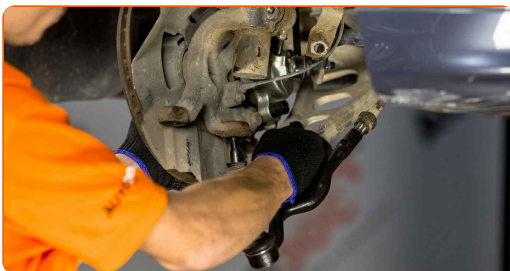
15

Disconnect the ball joint from the steering knuckle. Use a ball joint puller. Use a crowbar.



16

Treat the retaining bracket that secures the brake hose and the wiring harness. Use WD-40 spray.



17

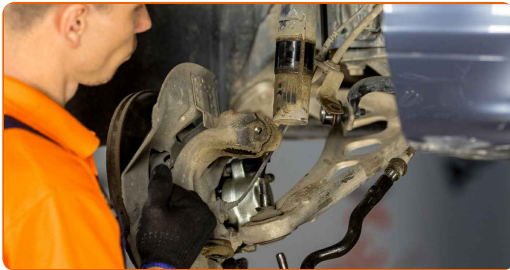
Unscrew the brake hose fastening bracket from the shock strut. Use a drive socket #18. Use a ratchet wrench.

18 Disconnect the wiring and the brake hose from the bracket on the shock strut.



19 Disconnect the lower arm from the steering knuckle.

20 Remove the steering knuckle together with the hub.



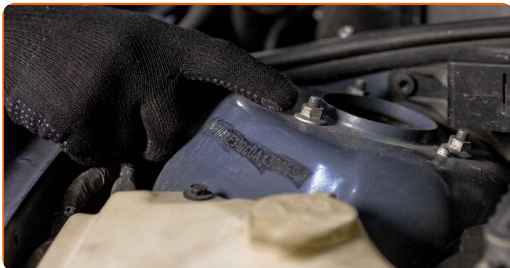
21 Lower the car.

22 Open the bonnet.



23 Use a fender protection cover to prevent damaging paintwork and plastic parts of the car.

24 Clean the fasteners of the shock strut upper mount. Use a wire brush. Use WD-40 spray.





25

Unscrew the top fastening of the shock strut mount. Use a drive socket #13. Use a ratchet wrench.



AUTODOC recommends:

- Important! Hold the suspension strut while unscrewing the fastening bolts. BMW E46

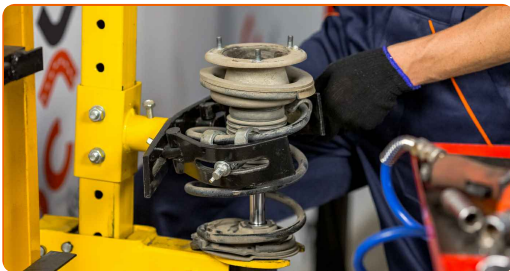
26

Remove the suspension strut.



27

Set the shock absorber strut on the spring compressor tool.

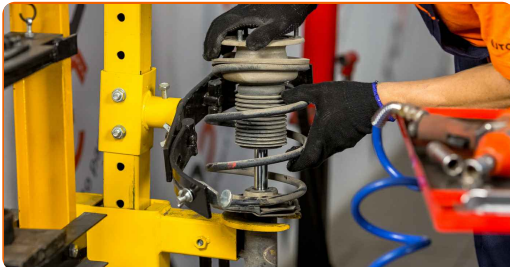


Replacement: suspension strut – BMW E46. Tip from AUTODOC:

- Note that when using a spring compressor, spring coils need to be securely gripped, compressing the spring on the opposite sides.
- Ensure the correct position of the spring in the retainer.
- Make sure that the spring coils tightly entered the lock handles.

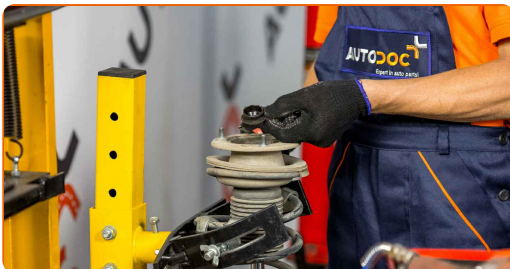
28

Compress the spring.



29

Remove the shock strut mount cap. Use a flat screwdriver.

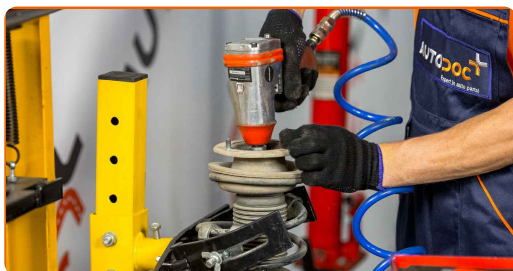


30

Treat the shock strut rod. Use a wire brush. Use WD-40 spray.

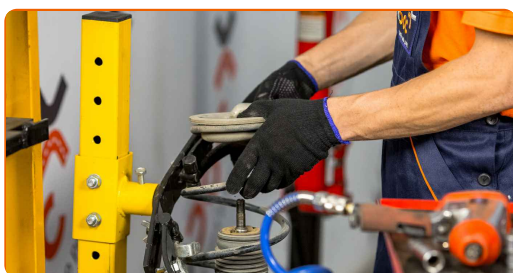
31

Remove the strut piston rod nut. Use a drive socket #22. Use a ratchet wrench.



32

Remove the top strut mount.

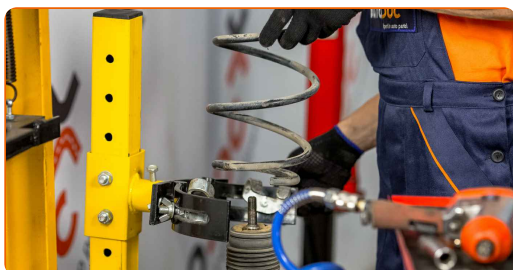


33

Release the coil spring.

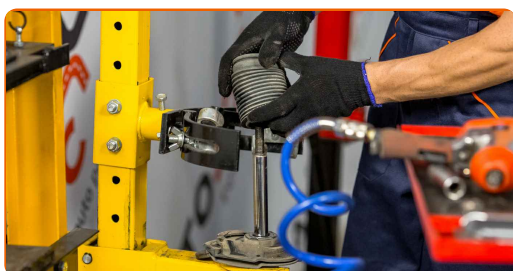
34

Remove the spring.



35

Remove the shock absorber dust cap and the bump stop.



36

Remove the old shock absorber from the hydraulic coil spring compressor.

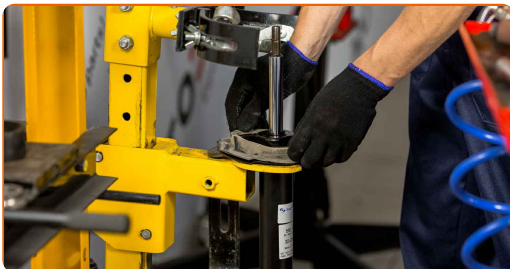


AUTODOC recommends:

- Replacement: suspension strut – BMW E46. Carefully inspect the mount, the boot, and the bump stop of the shock absorber. Replace if necessary.
- Before installing a new shock absorber you should pump it manually 3-5 times.

37

Install the new shock absorber on the hydraulic coil spring compressor.

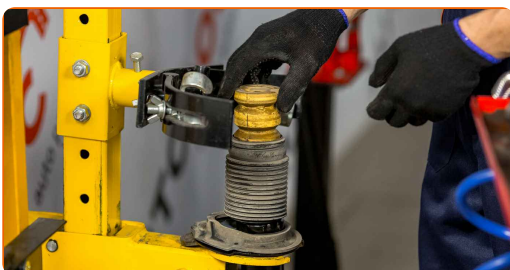


38

Install the dust sleeve and the bump stop on the new shock absorber.

39

Install the spring on the shock absorber.

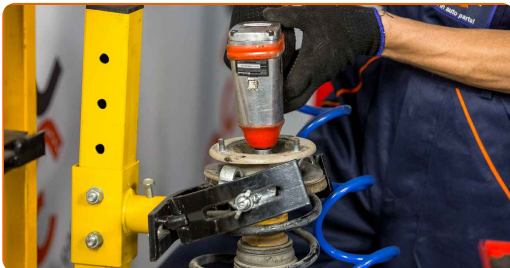


40 Compress the spring.

41 Install the upper strut mount and the strut mount bearing. Use water pump pliers.



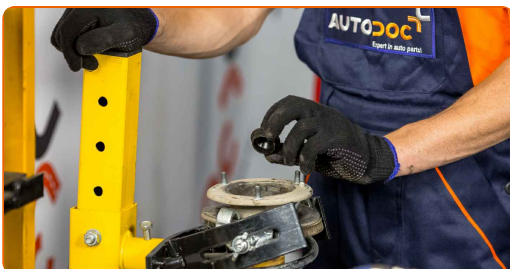
42 Tighten the shock strut piston rod nut. Use a drive socket #22. Use HEX No.H6. Use a torque wrench. Tighten it to 64 Nm torque.



### Replacement: suspension strut – BMW E46. Tip:

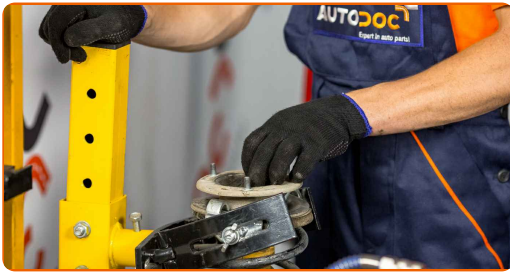
- Check to make sure the spring is positioned correctly. Avoid its misalignment.

43 Install the shock strut mount cap.



44

Decompress the spring.

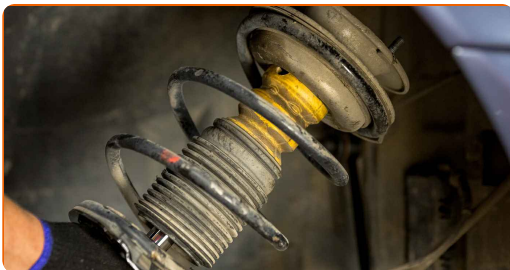


45

Remove the assembled shock strut.

46

Install the shock strut into the wheel arch.

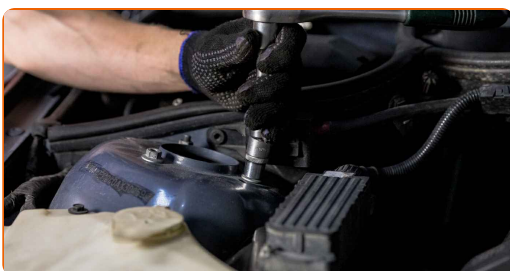


Replacement: suspension strut – BMW E46. Tip from AUTODOC:

- To avoid injuries, hold the shock strut when screwing the fastening bolts in.

47

Tighten the upper fastener of the shock absorber strut mount. Use a drive socket #13. Use a torque wrench. Tighten it to 34 Nm torque.



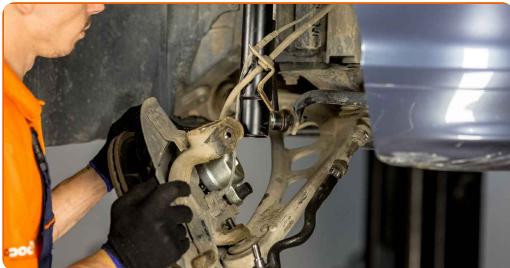
48 Remove the fender protection cover.

49 Close the hood.

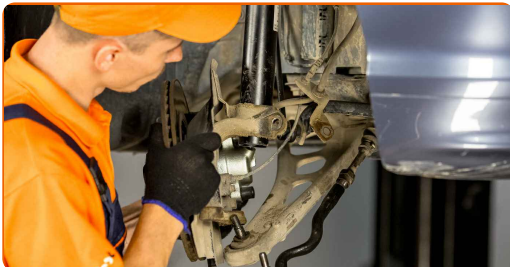


50 Raise the front of the car and secure on supports.

51 Install the steering knuckle.



52 Connect the lower arm to the steering knuckle.

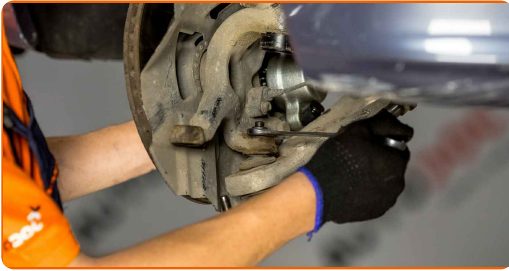


53 Connect the ball joint to the steering knuckle.

Replacement: suspension strut – BMW E46. Professionals recommend:

- During the installation process, use only new bolts and nuts.
- Do not damage the ball joint cover.

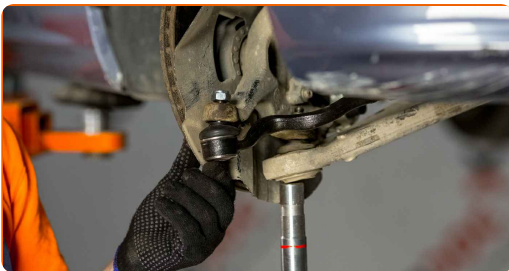
- 54** Screw the fastener connecting the ball joint to the steering knuckle. Use a combination spanner #19. Use a torque wrench. Tighten it to 65 Nm torque.



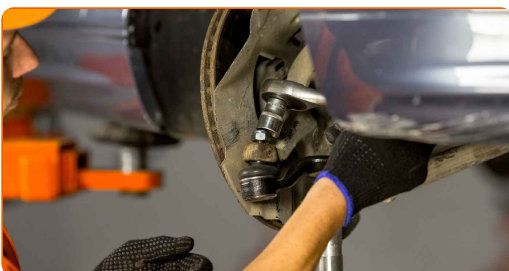
- 55** Support the arm. Use a hydraulic transmission jack.



- 56** Connect the tie rod end to the steering knuckle.



- 57** Tighten the fastening nut connecting the tie rod end to the steering knuckle. Use a drive socket #18. Use a torque wrench. Tighten it to 65 nm torque.

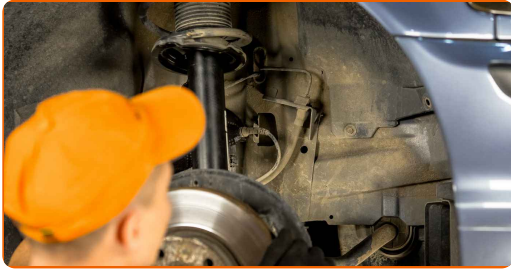


- 58** Fasten the brake hose on the strut.



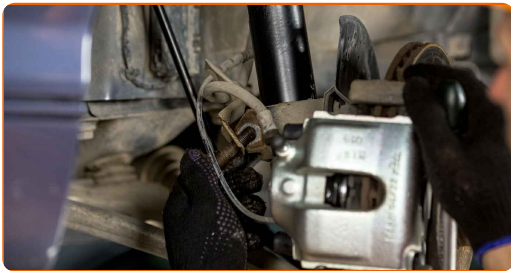
59

Connect the fastener of the ABS sensor cable to the shock absorber strut.



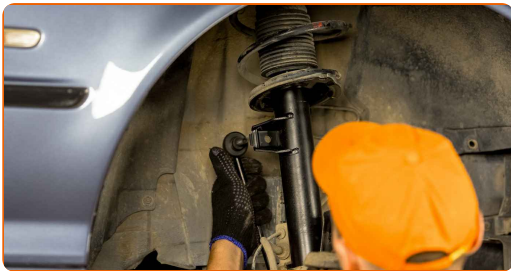
60

Tighten the brake hose fastening bracket to the shock strut. Use a drive socket #18. Use a ratchet wrench.



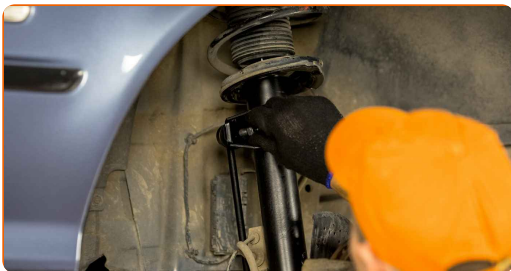
61

Install the transverse stabilizer link.

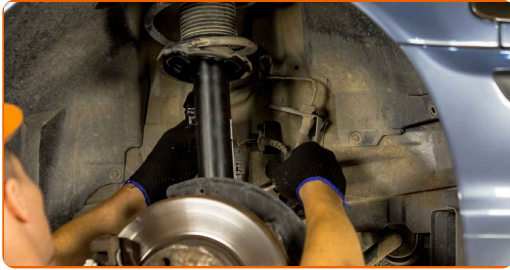


62

Tighten the fastener connecting the stabilizer link to the shock strut. Use a drive socket #17. Use a torque wrench. Tighten it to 60 Nm torque.



63 Connect the ABS sensor wiring.

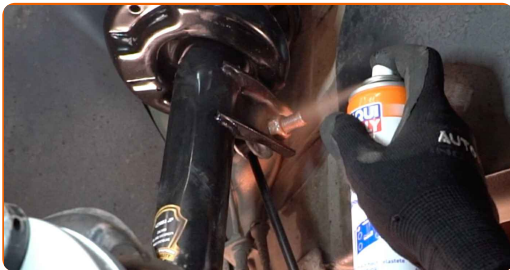


64 Remove the support from under the arm.

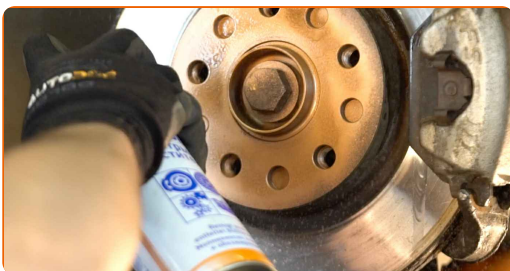
**AUTODOC recommends:**

- Replacement: suspension strut – BMW E46. Lower the transmission jack smoothly, without jerks, to avoid damaging components and mechanisms.

65 Treat the shock strut fasteners. Use copper grease.



66 Treat the surface where the brake disc contacts the wheel rim. Use copper grease.



67

Clean the brake disk surface. Use a brake cleaner.



Replacement: suspension strut – BMW E46. Tip from AUTODOC experts:

- After applying the spray, wait a few minutes.

68

Install the wheel.

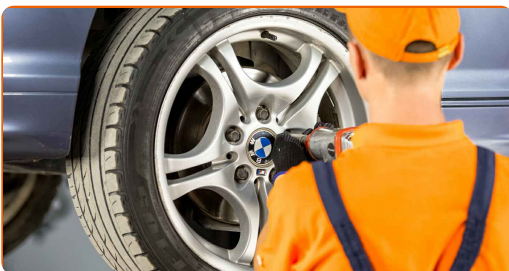


AUTODOC recommends:

- Important! Hold the suspension strut while screwing in the fastening bolts. BMW E46

69

Screw in the wheel bolts. Use wheel impact socket #17.



70

Lower the car and working in a cross order, tighten the wheel bolts. Use wheel impact socket #17. Use a torque wrench. Tighten it to 120 nm torque.



71

Remove the jacks and chocks.



**WELL DONE!** 

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