D100-0939

DINAN

SPRING SET; G42 M240i xDRIVE

INSTALLATION

Notes:

These instructions were written on a North American specification G42 M240i xDRIVE, but other models are similar.

When disassembling the car, be sure to keep all fasteners so they can be reused. It is recommended that you get some kind of compartmented tray to organize the fasteners, such as a fishing tackle box or several large ice cube trays. Fasteners that are not reused for reinstallation are noted in the instructions. If a fastener is listed with an additional tightening sequence (such as an angle after a torque specification), it is a torque-to-yield fastener and is recommended to be replaced.

All directions used in this manual (right, left, front, etc.) are based on if you were sitting in the drivers seat of the car.

These instructions assume that you have basic mechanical skills and several varieties of basic hand tools in order to install the kit. If you have any questions about the install, feel free to contact your Dinan representative.

INSTALLATION NOTES:

DO NOT WORK ON VEHICLES SUPPORTED BY A JACK ONLY. USE SECURE JACK STANDS!

DO NOT USE A PNEUMATIC IMPACT GUN TO TIGHTEN THE SHOCK SHAFT TOP NUT! DOING SO MAY DAMAGE THE SHAFT AND THE SHOCK'S INTERNAL COMPONENTS. WARRANTY WILL BE VOIDED IF THIS PRECAUTION IS NOT FOLLOWED!

All suspension related components must be inspected and in good working condition. You should inspect all bushings, tie rods, hubs, bearings, strut mounts, sway bar end links, wheels, tires, etc. and replace if necessary.

Tightening of components & fasteners:

- All rubber-mounted strut/shock attachments must not be fully tightened until after the suspension system is loaded (wheels on the ground).
- Other mounting fasteners (brackets, strut mounts, etc.) must be securely tightened before load is placed on the suspension system.

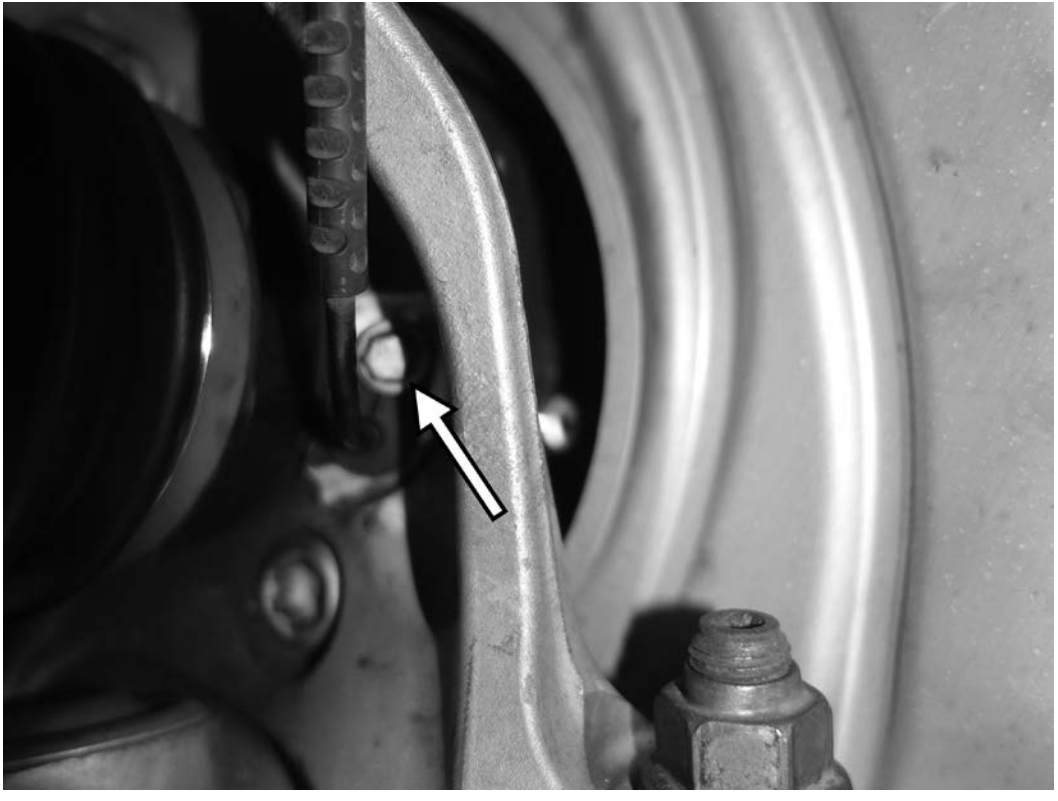
1) Place the vehicle on a lift or securely on jackstands and remove twenty lug bolts and all four wheels with a 17mm socket.

It is recommended to perform all steps on one side of the car at a time. By doing this, you can reference the other side for things such as wire routing, bolt placement, etc.

2) Disconnect the two electrical connectors from the front shock, one from the front and one from the back. Separate the harness from the mounting tab on the side of the shock.

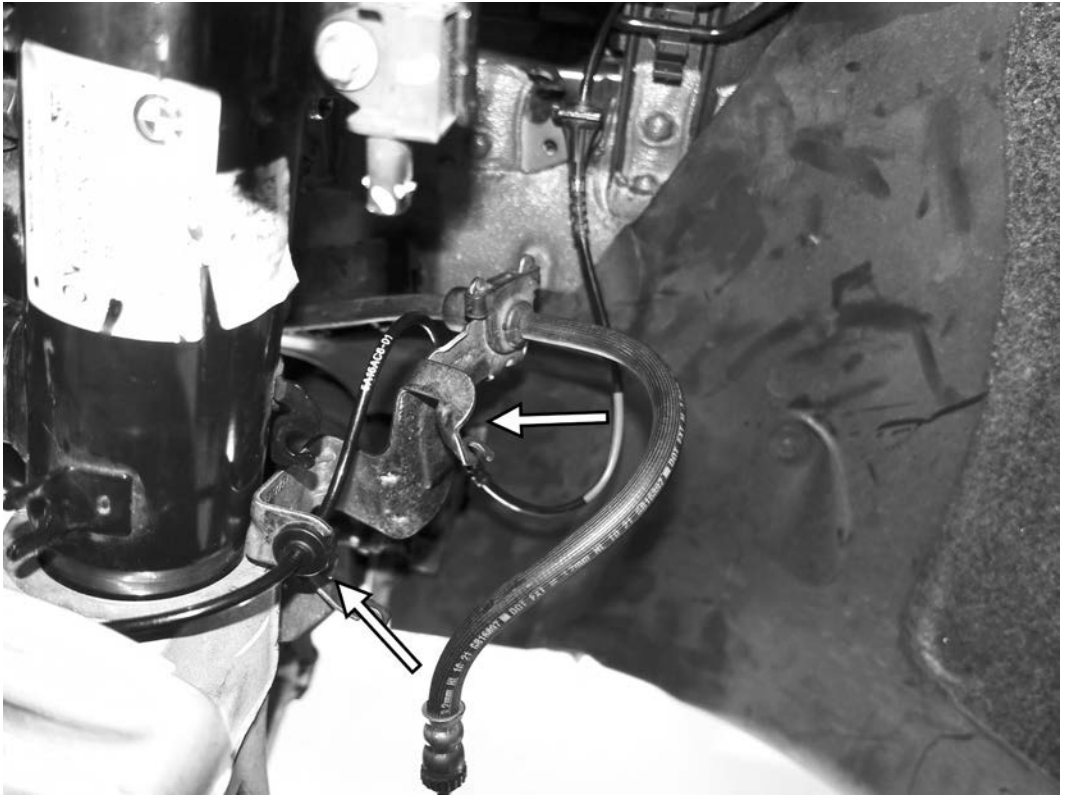
3) Follow the wiring harness to the brake pad wear indicator at the caliper. Separate the harness from the two mounting tabs on the bracket mounted to the back side of the shock.

4) Continue to follow the brake pad wear indicator harness back to the plastic box on the inside of the fender wheel, just to the inside of the shock. Flip open the protective box, separate the connection from the box, and then disconnect the wiring harness.



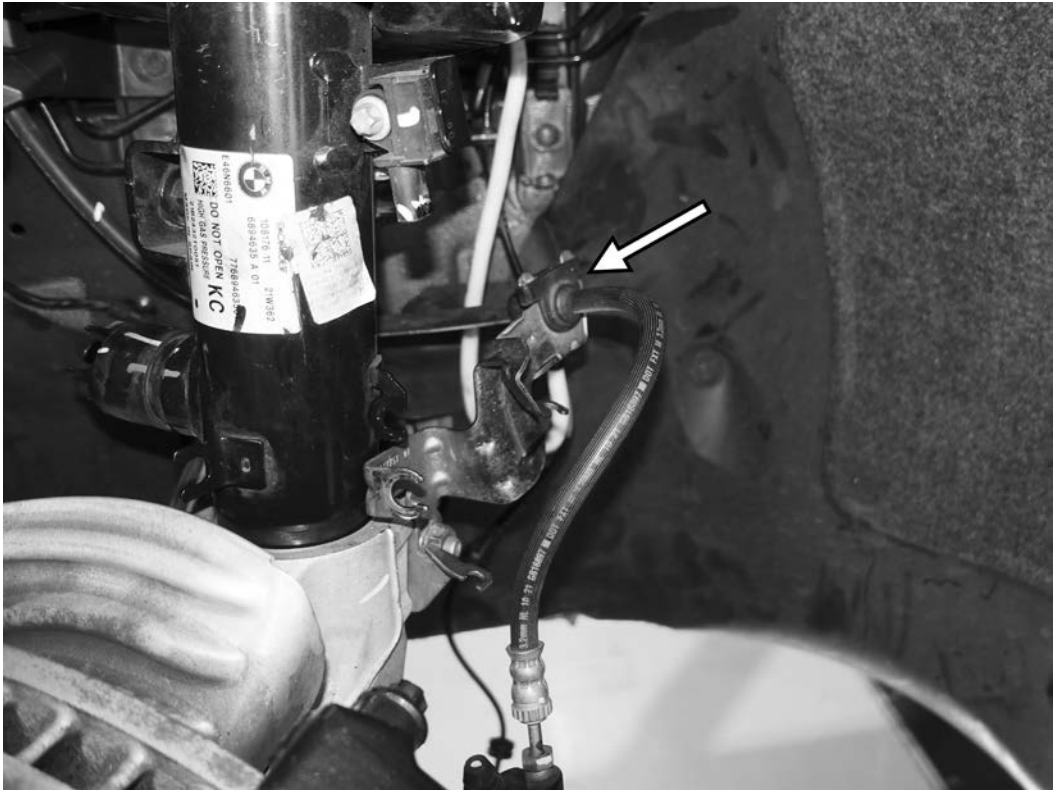
5) Disconnect the ABS sensor by removing the E10 external torx screw from the back side of the front upright.

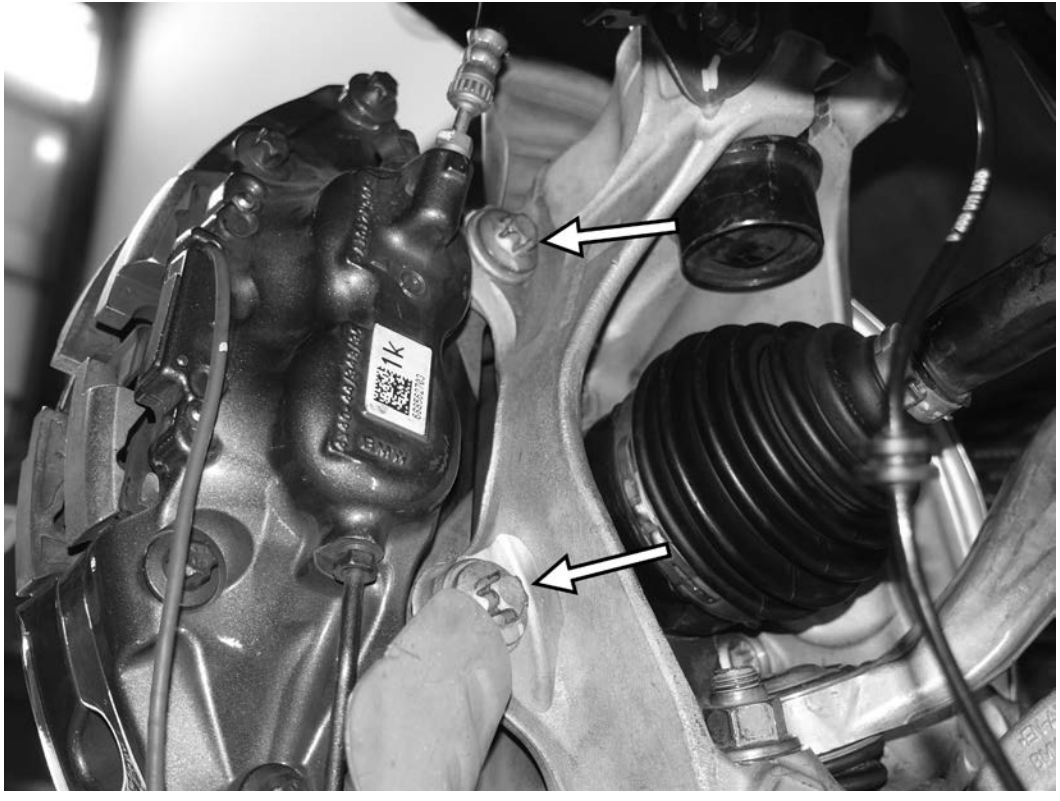
6) Following the ABS sensor wiring harness, separate the harness from the two mounting clips from the bracket on the back side of the shock.



7) Place a large screwdriver in the brake rotor to keep the brake rotor from turning. Optionally, have an assistant hold the brake pedal. Remove the 17mm allen axle bolt from the car.

8) Separate the brake line from mounting bracket that is on the back side of the shock.



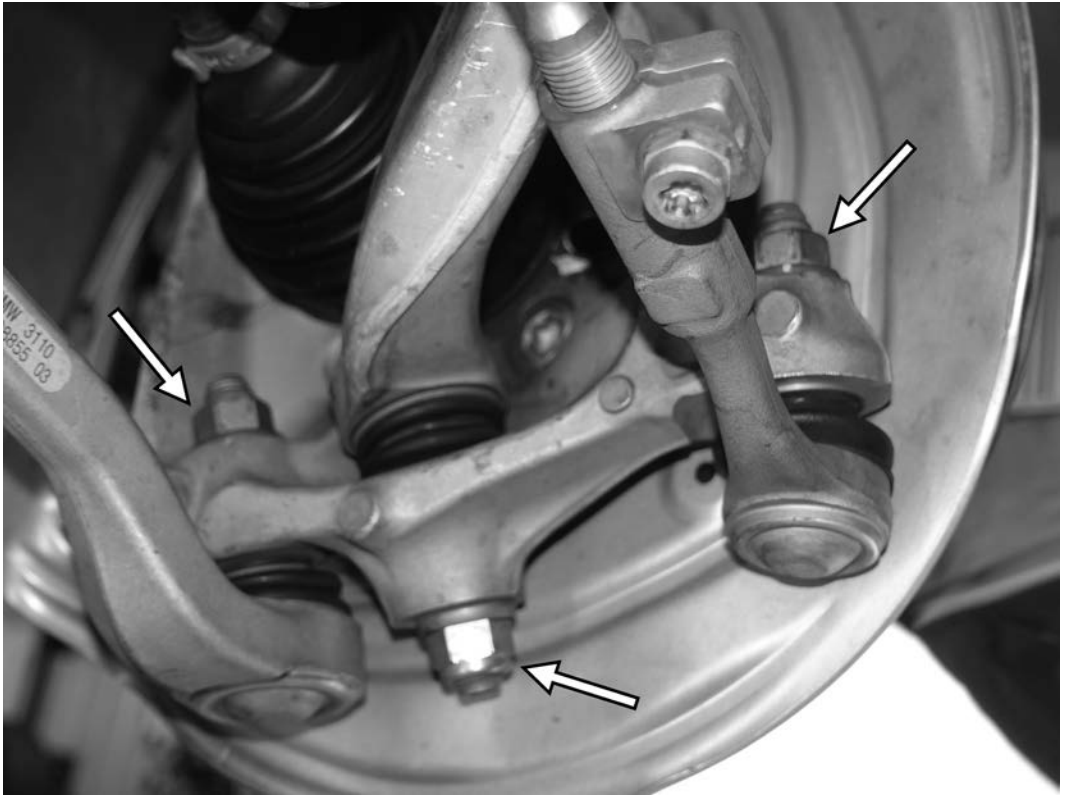


9) Remove the two E16 external torx bolts holding the brake caliper to the upright.

10) Using a metal hanger, hang the caliper up out of the way of removing the shock.

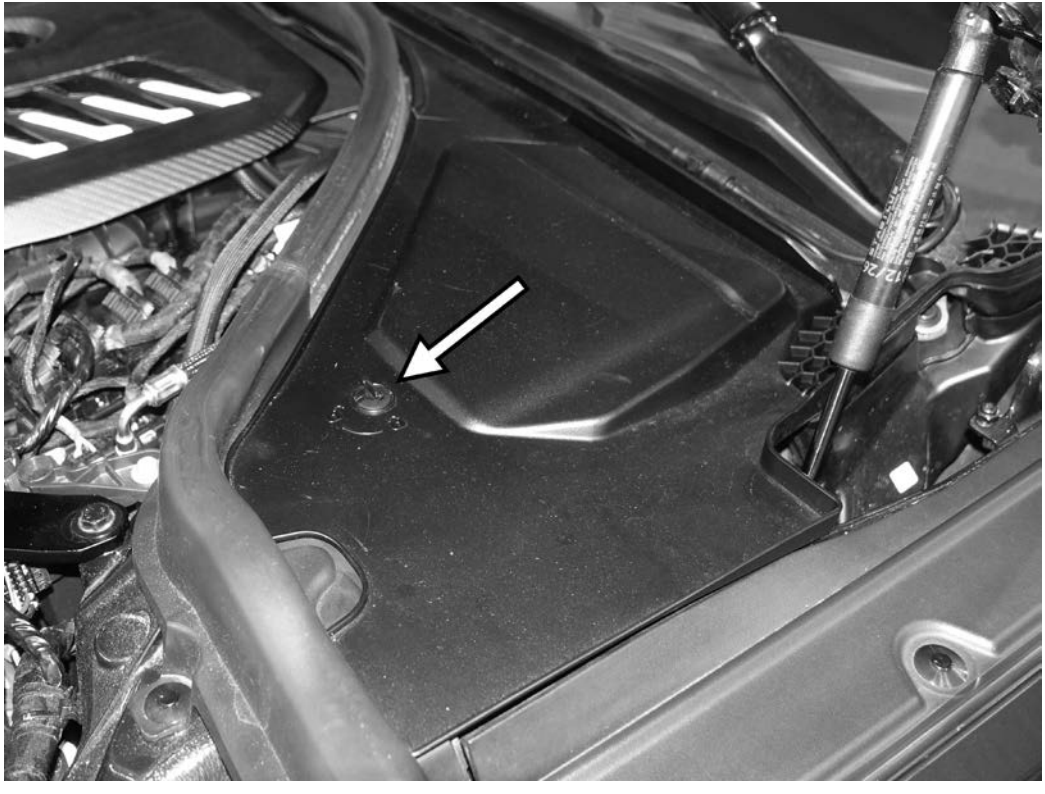
11) Use a 16mm combination wrench and a T30 socket to remove the nut holding the sway bar endlink to the shock. Hold the endlink with the T30 in the middle of the shaft from the endlink, while loosening the 16mm nut. Separate the endlink from the shock once the nut is removed.

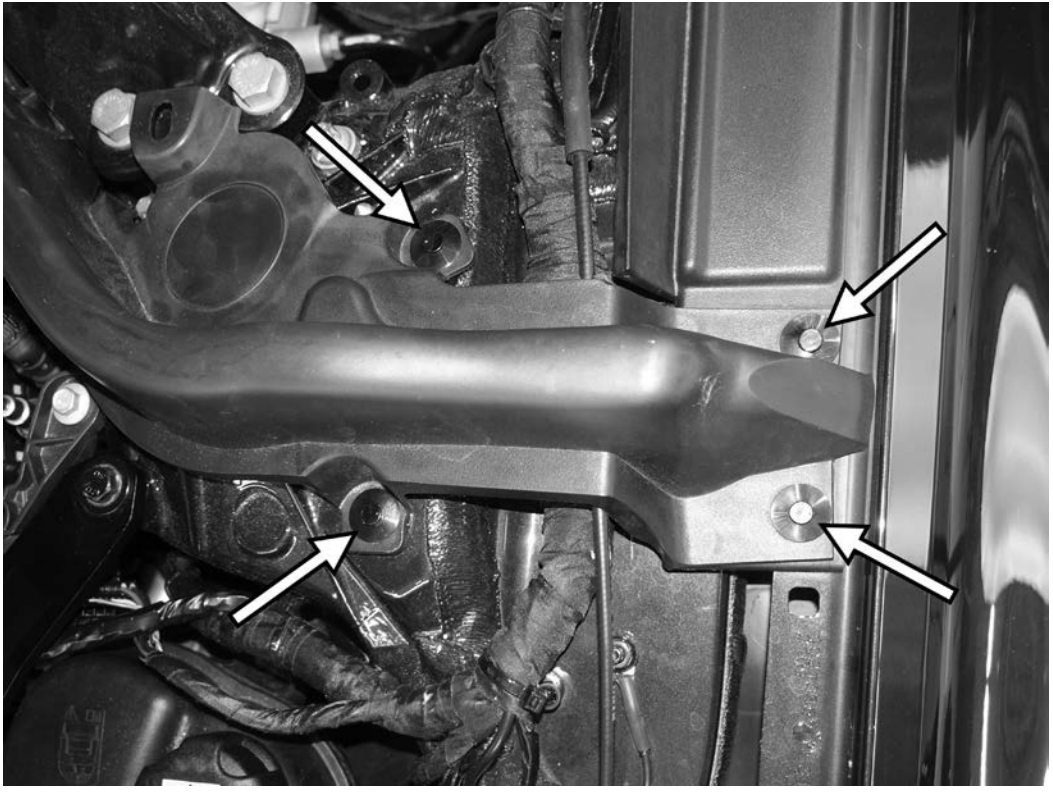
12) Remove the two control arms amd the tie rod from the bottom of the upright. First loosen all 21mm nuts with a breaker bar. Then, similar to the sway bar endlink, use a T40 socket to hold in the middle of the shaft while removing the 21mm nut with a combination wrench.



13) Separate the control arms and tie rod from the upright so that the upright, brake rotor, and shock assembly is only held in place by the upper nuts.

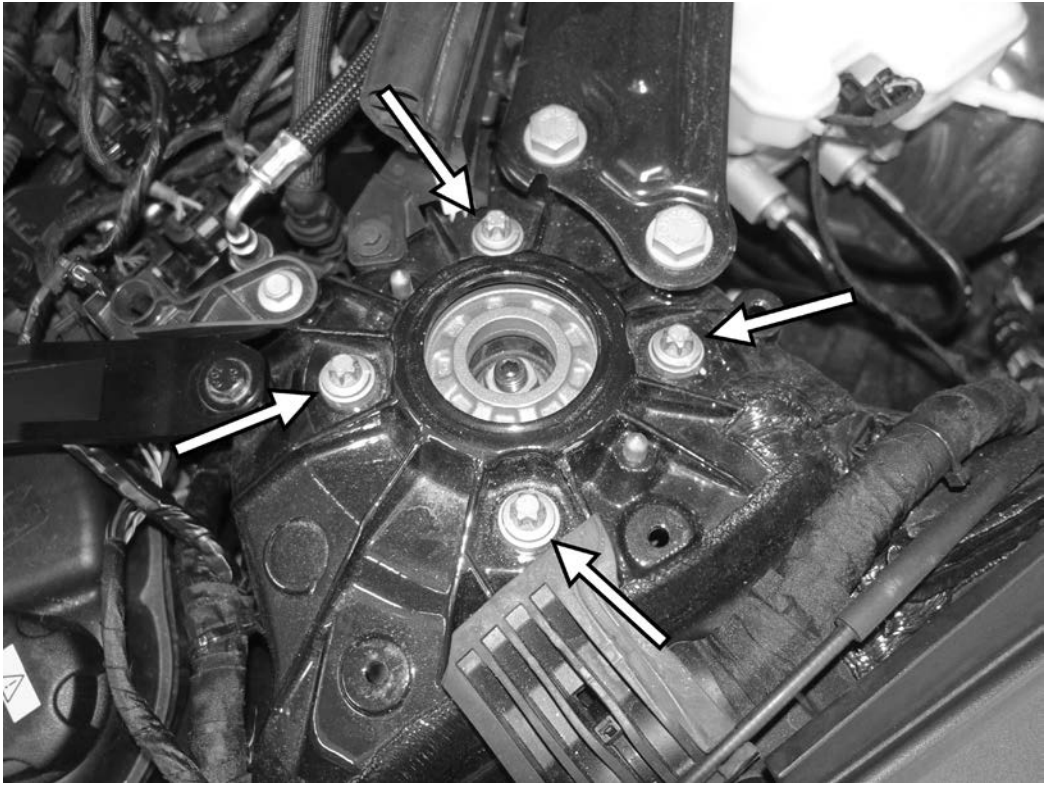
14) Open the hood and remove the panel over the front shock tower. Simply turn the faster on the panel a quarter turn and lift up on the panel.

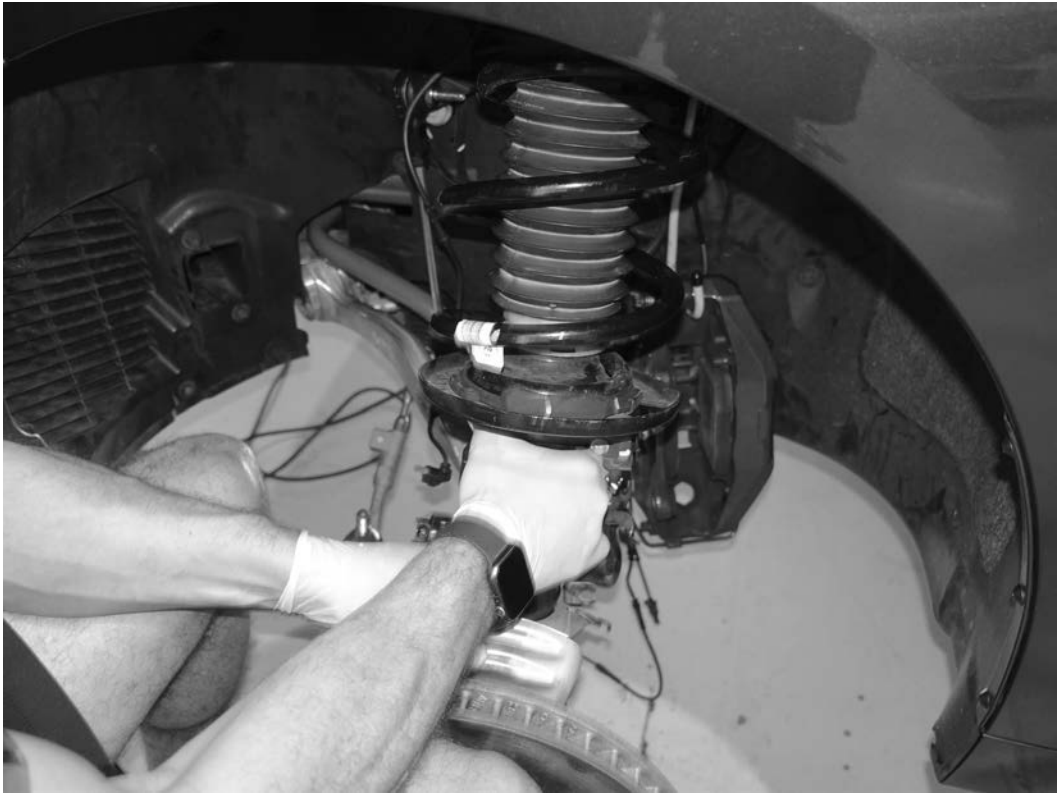




15) Remove the four push pin connectors from the hood gasket. Lift up and remove the pin from the center of each connector, and then remove the body of the connector from the car. Then remove the end of the hood gasket.

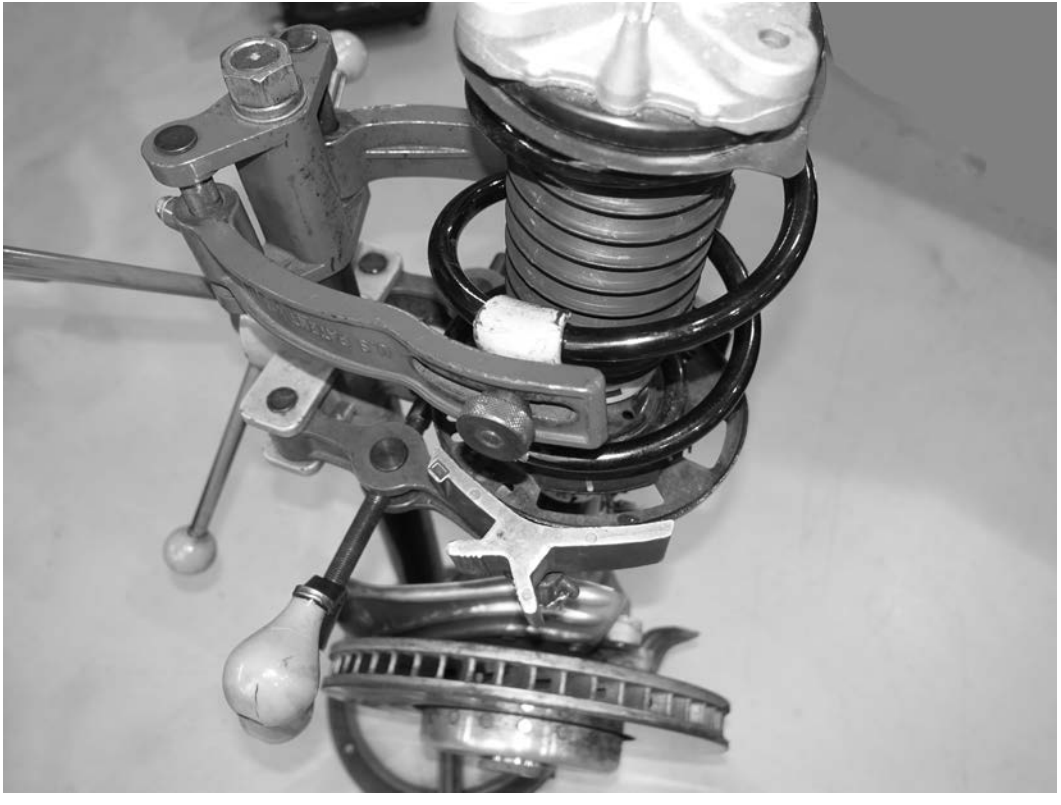
16) Loosen all four E12 screws from the top of the shock mount. Remove three of the screws, leaving one in place.





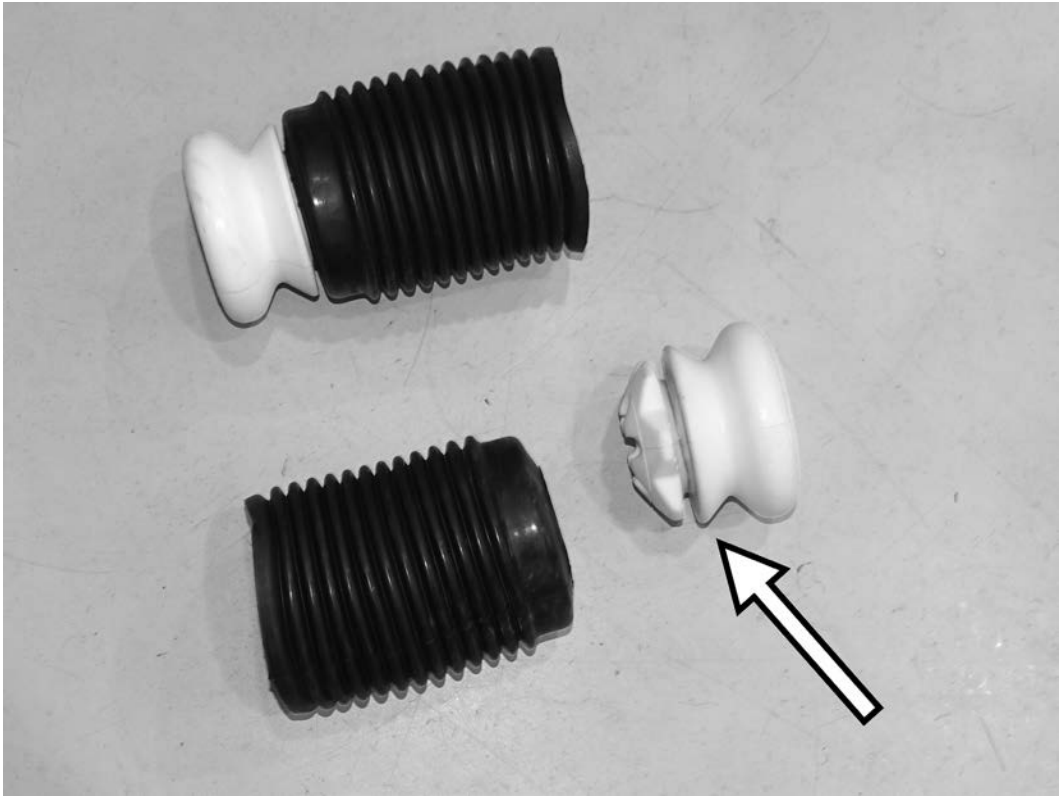
17) Hold the upright, shock, and brake assembly while an assistant removes the last screw from the upper shock mount. Be aware that this assembly is very heavy, so be prepared to hold it. Remove the assembly from the car.

18) Install the spring into a commercially available spring compressor, and then compress just the spring slightly to remove tension from the upper shock mount.



19) Using a commercially available 18mm shock socket and a 6mm allen wrench, loosen and remove the nut that holds the upper shock mount to the shock. Remove the upper shock mount from the shock. For safety purposes, release the tension on the spring.

20) If installing the Dinan handling kit, separate the stock bump stop and the stock bellows from the top shock bearing. If not installing the handling kit, skip to step 24.

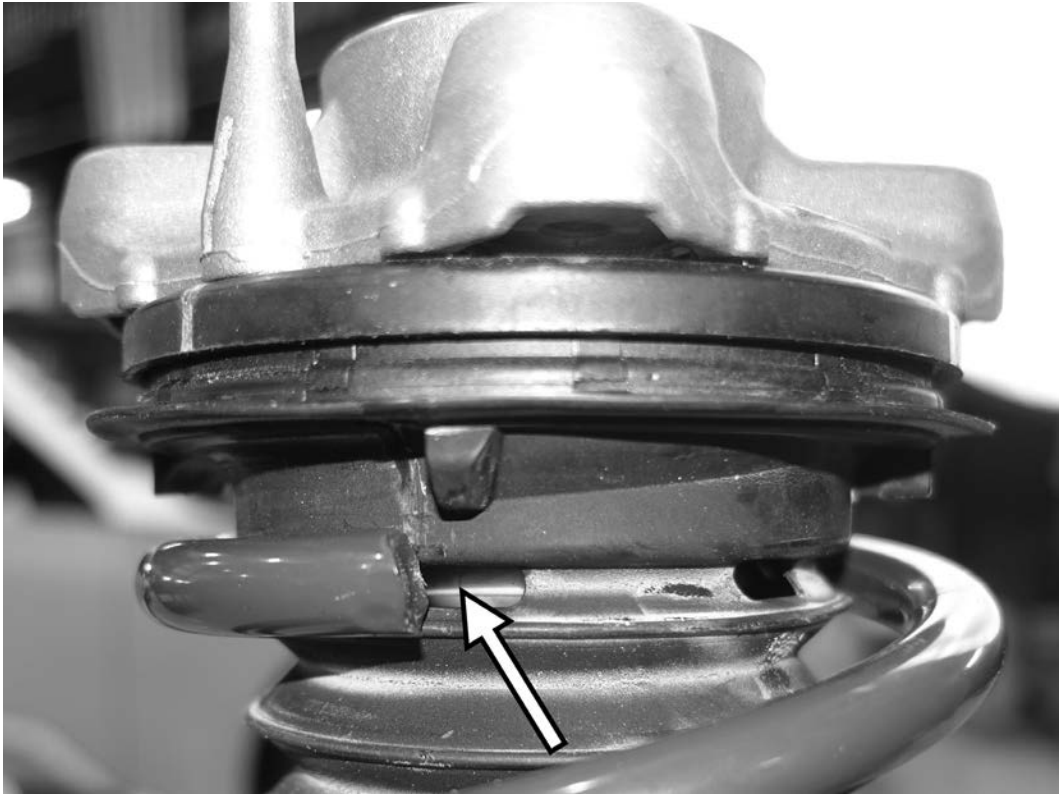


21) On the Dinan handling kit, separate the Dinan bump stops from the Dinan front bellows.

22) Install the Dinan bump stop into the top shock bearing. A thin coating of lubricant may be necessary.

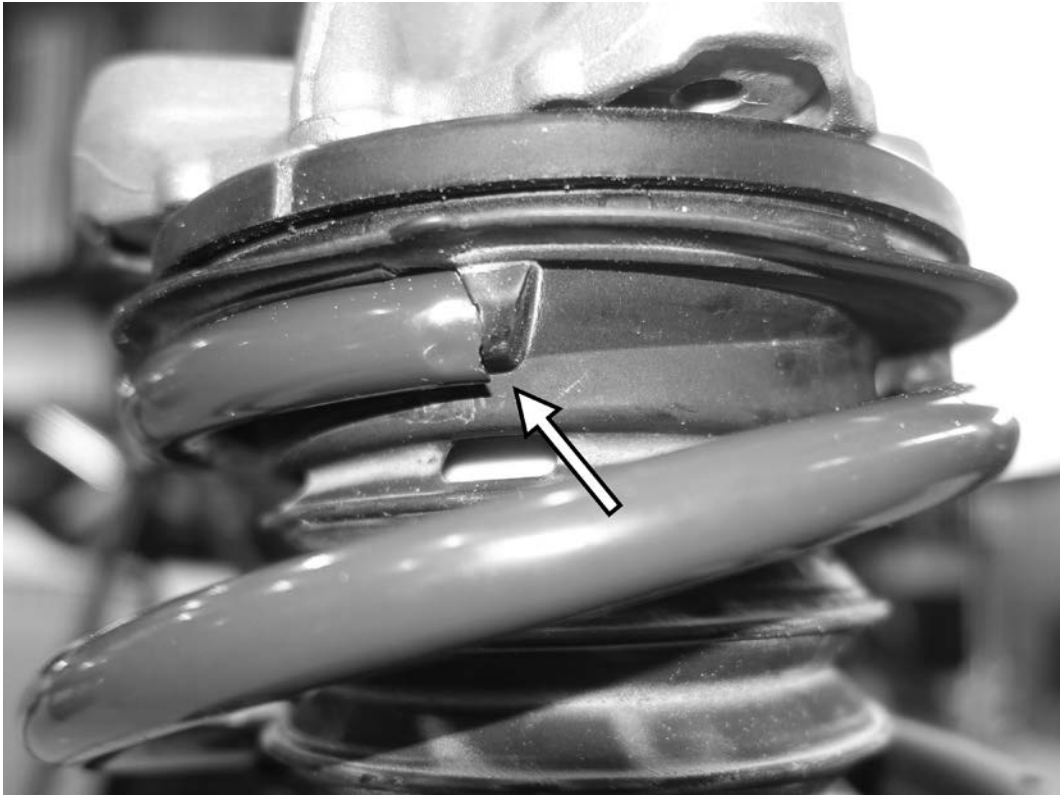
23) Install the stock shock bellows onto the top shock bearing with the Dinan bump stop still inside.

24) Remove the stock spring from the shock and install the Dinan spring. Any writing on the spring should be oriented so it can be read right side up. Ensure that the bottom of the spring keys into the tab on the lower spring rubber.



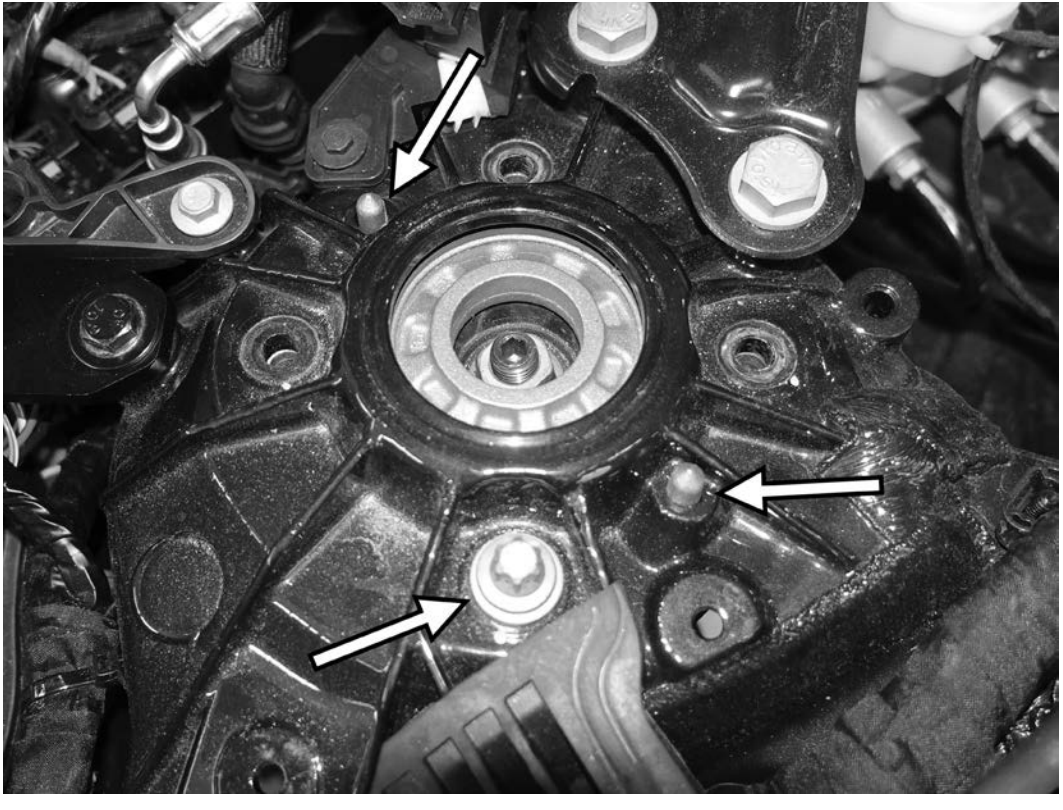
25) Install the shock bearing on the top of the spring so the tab on the shock bearing aligns with the end of the top of the Dinan spring.

26) Using the spring compressor, compress the Dinan spring. Install the 18mm shock nut. Use the 18mm shock socket and 6mm allen wrench to hold the shock shaft while tightening the nut to 71Nm (52 ft-lbs). BMW recommends replacing this nut every time it is used.



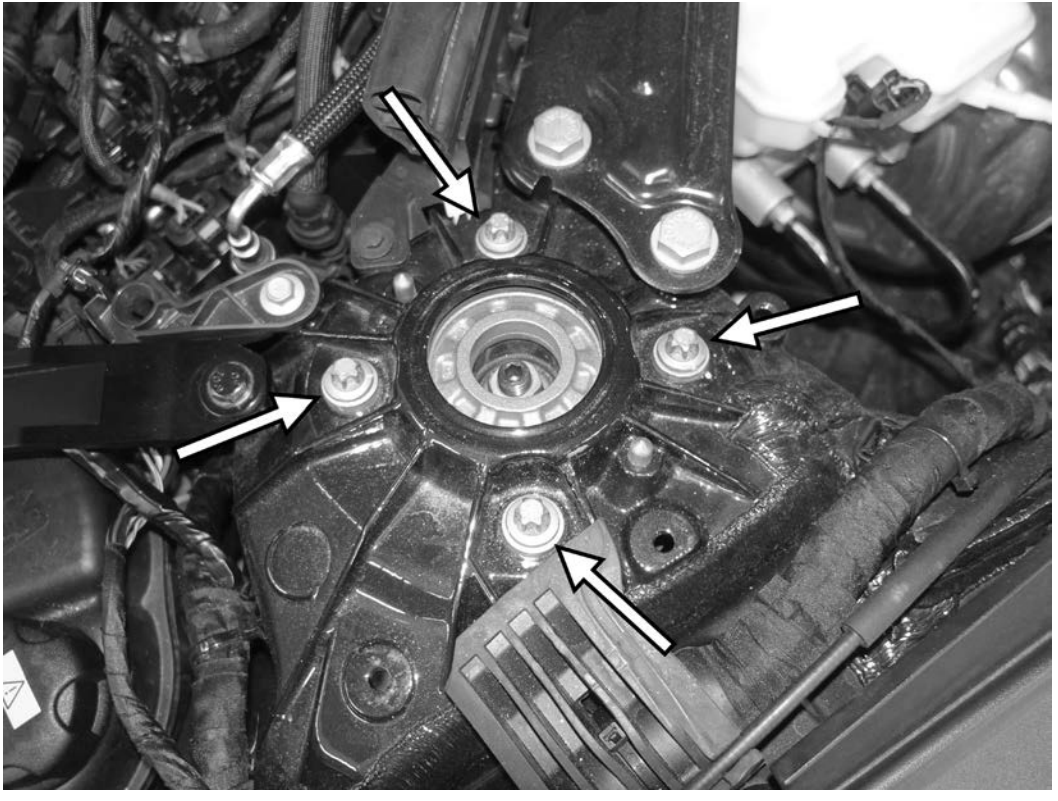
27) Release the tension on the Dinan spring. Ensure the top of the Dinan spring is sitting next to the tab on the bottom of the shock bearing.

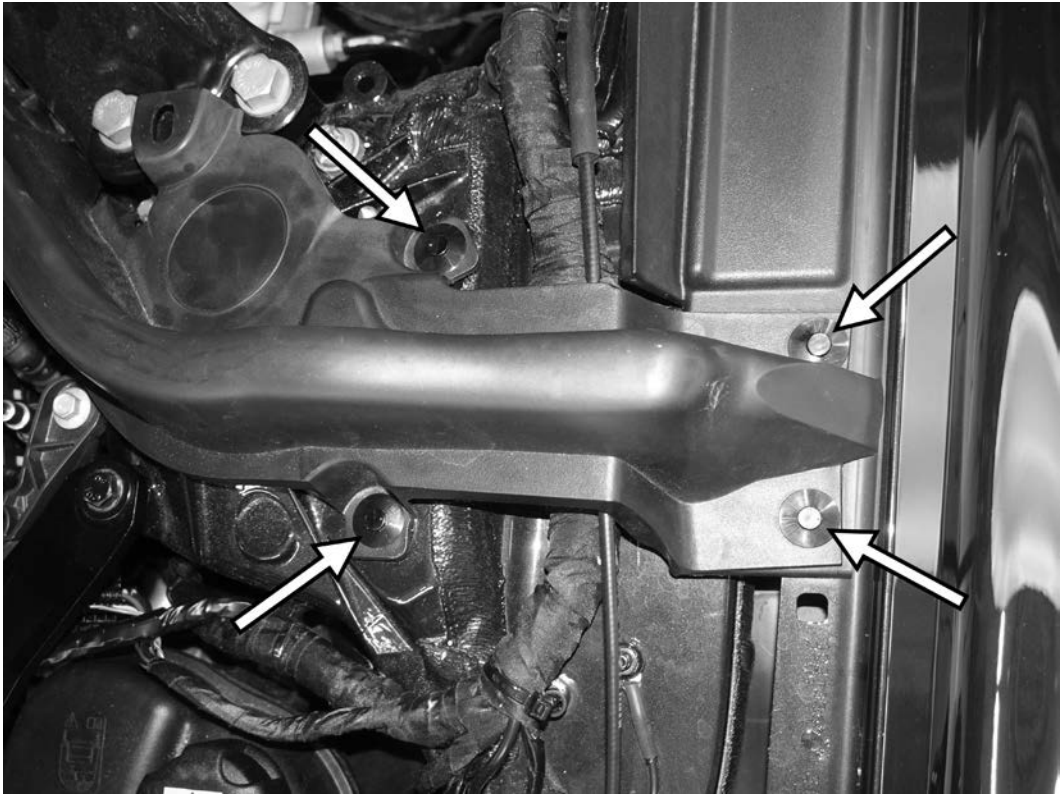
28) Place the upright assembly close to the car. With an assistant, lift the assembly back in place onto the car.



29) The two posts on the top of the shock bearing go through the two holes of the shock tower, as seen from above. Loosely install one of the E12 external torx screws to hold the assembly in place to the car.

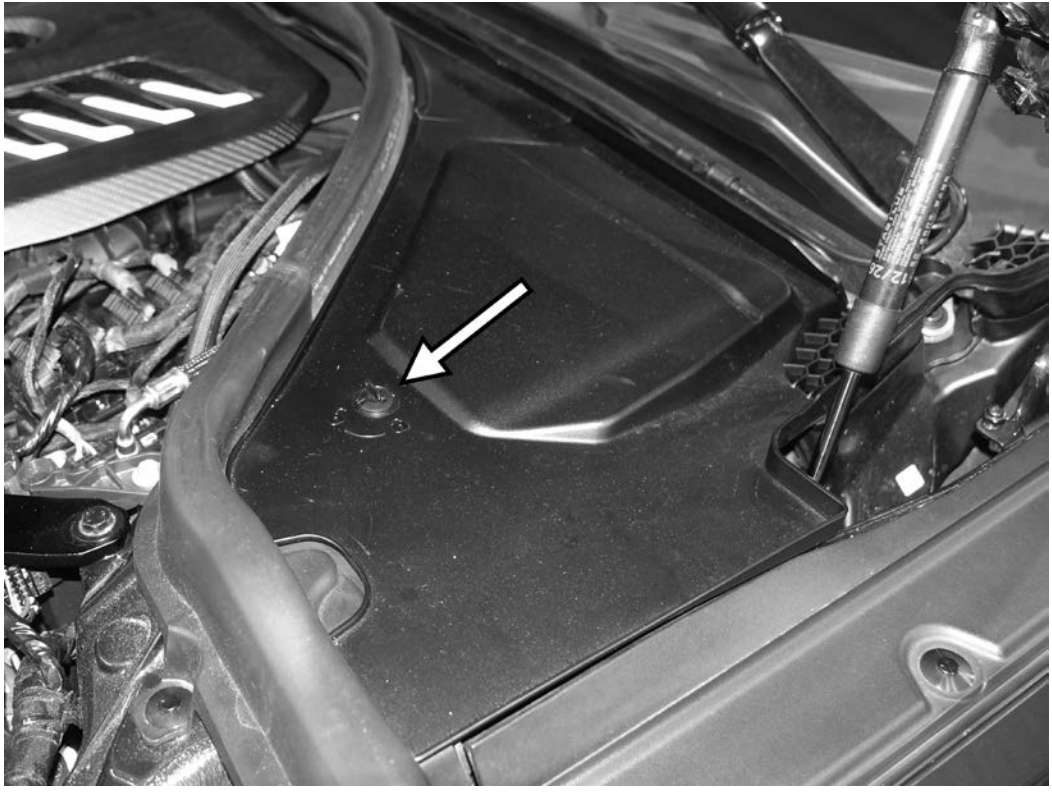
30) Install the remaining three E12 screws into the shock bearing from the top side of the shock tower. Tighten all four screws to 28Nm (20.5 ft-lbs). Once torqued, tighten each screw an additional 90°. BMW recommends replacing these screws every time they are used.





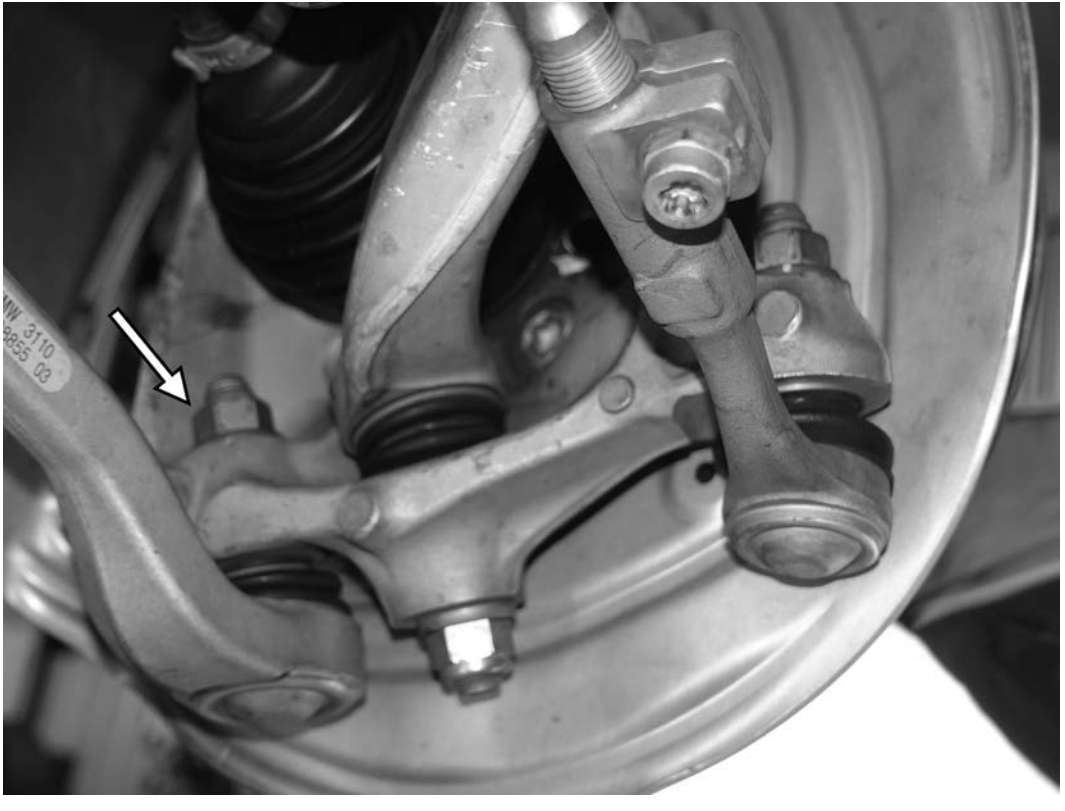
31) Reinstall the hood gasket with the four push pin connectors. Push the main body of the connector into the holes in the gasket, and then secure the connector by fully installing the center pin.

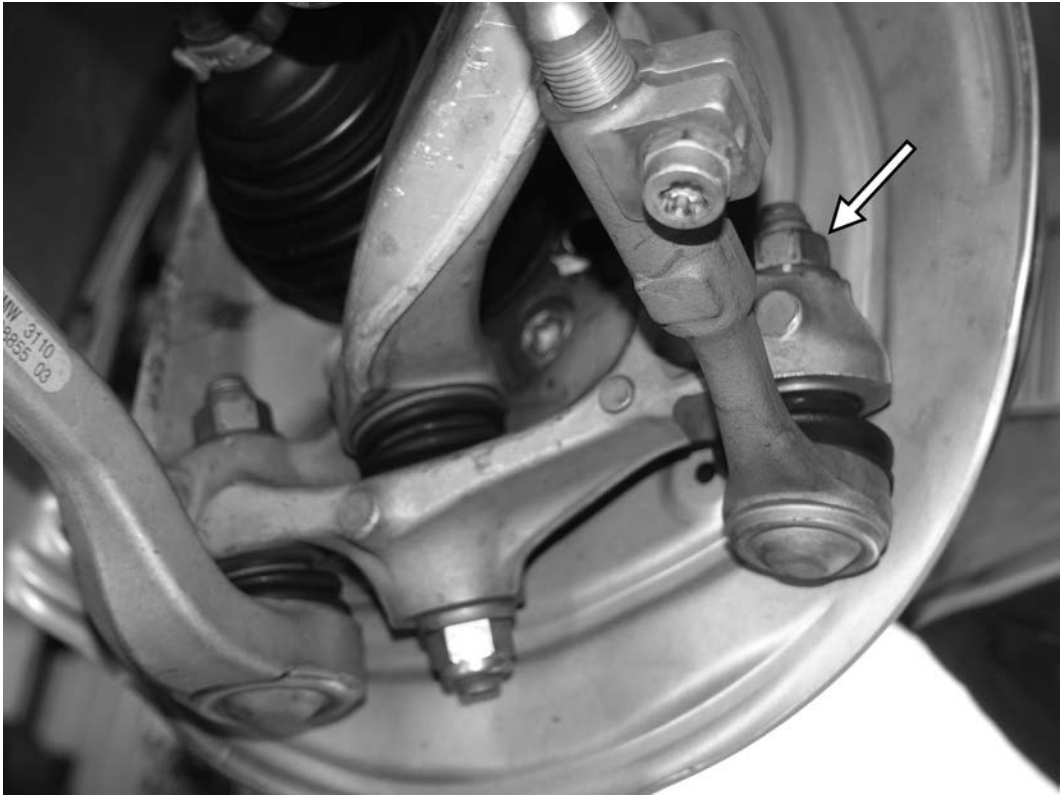
32) Reinstall the cover over the shock tower and secure by turning the quarter turn fastener to lock the panel in place.



33) Begin to reinstall the arms into the bottom of the upright. Install the middle control arm first, installing and tightening the 21mm nut to 175Nm (129 ft-lbs). Use a T40 socket to prevent the joint from rotating while tightening. BMW recommends replacing this nut every time it is used.

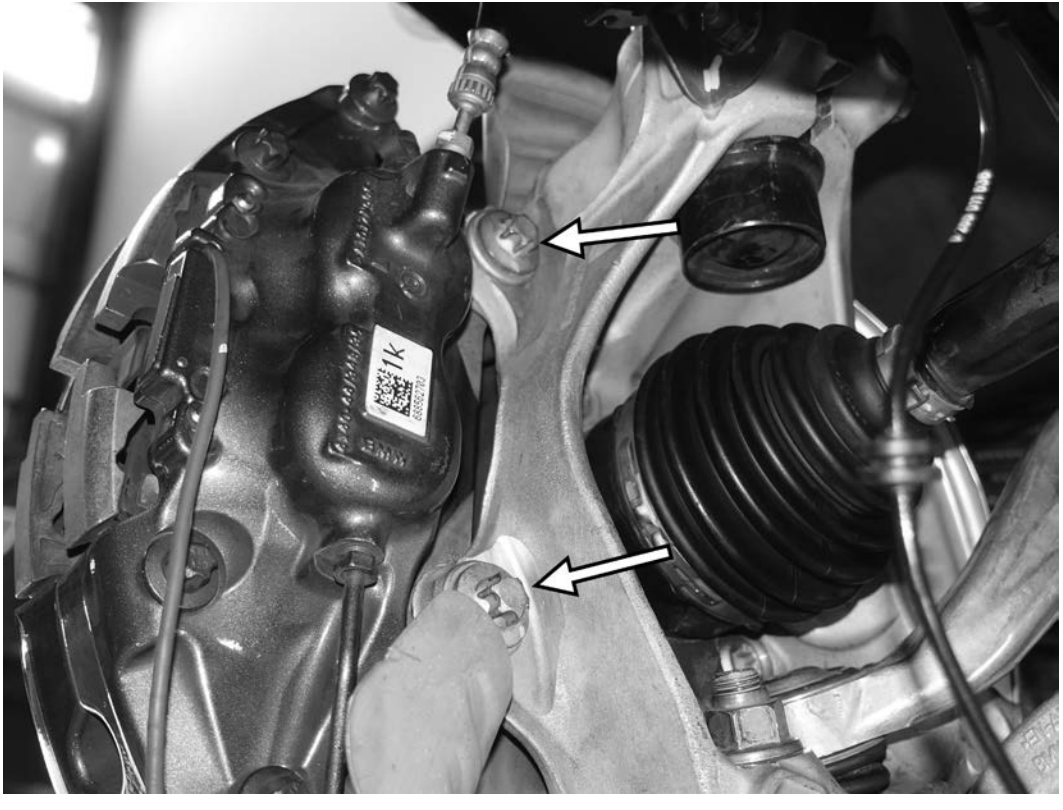
34) Install the rear control arm next, installing and tightening the 21mm nut to 175Nm (129 ft-lbs). Use a T40 socket to prevent the joint from rotating while tightening. BMW recommends replacing this nut every time it is used.





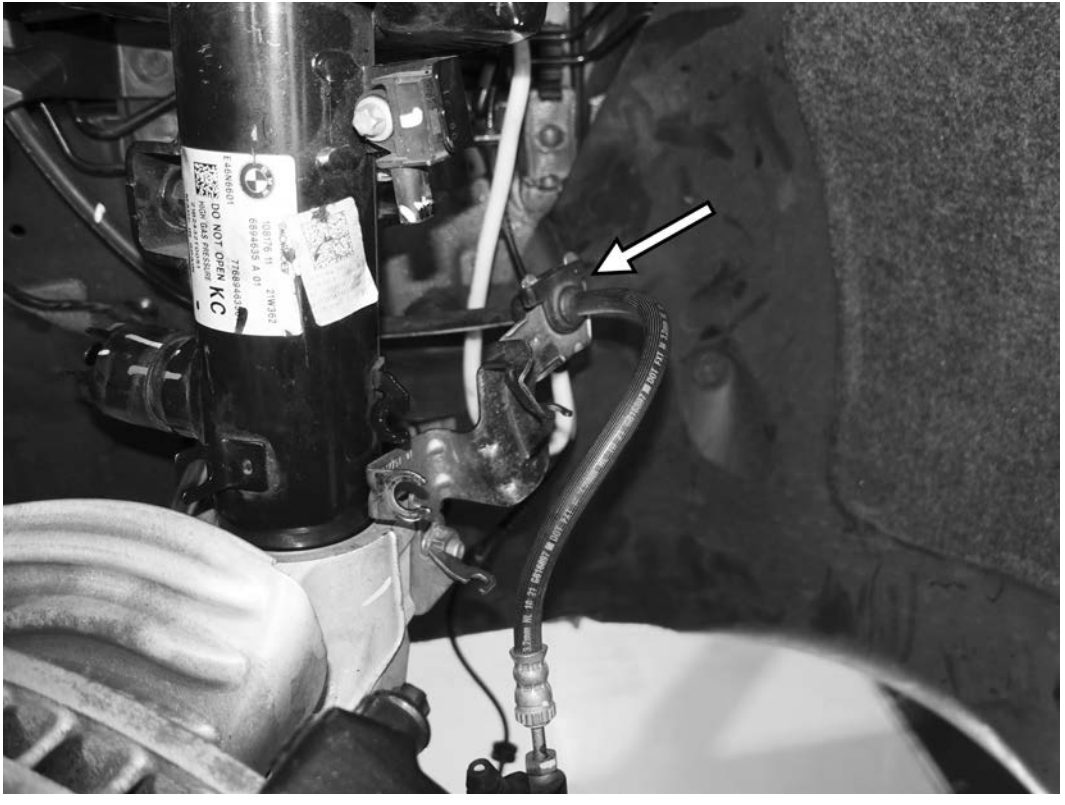
35) Install the tie rod arm next, installing and tightening the 21mm nut to 165Nm (121 ft-lbs). Use a T40 socket to prevent the joint from rotating while tightening. BMW recommends replacing this nut every time it is used.

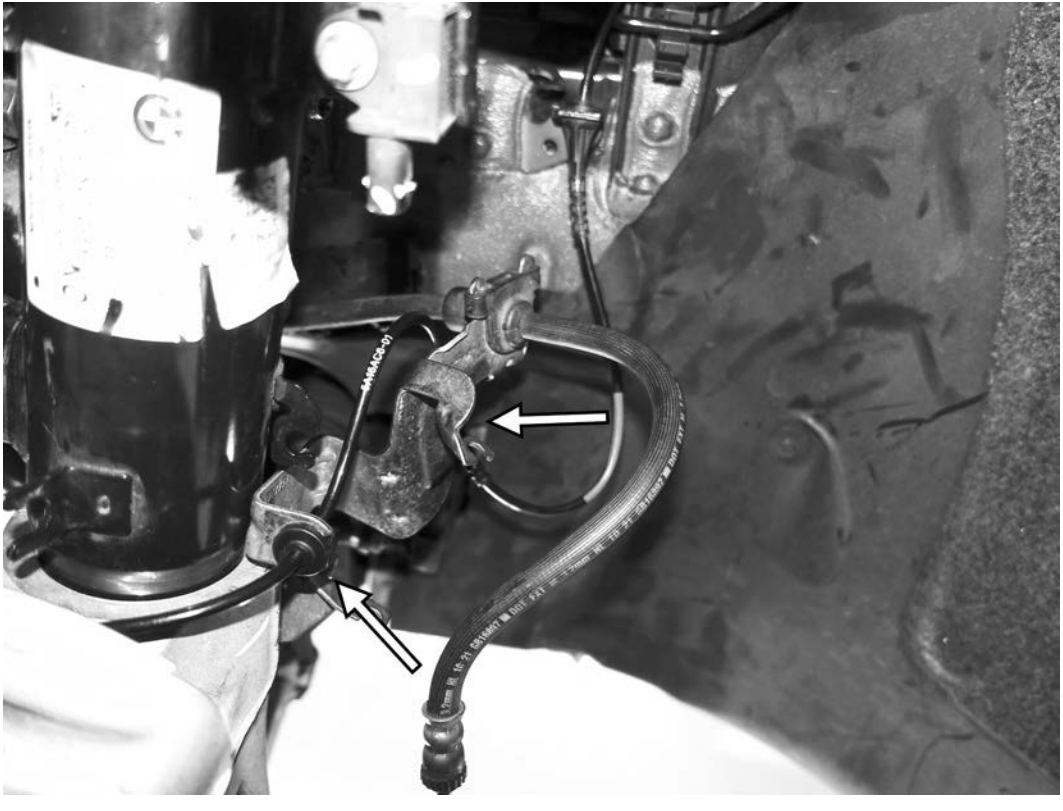
36) Reattach the sway bar endlink to the side of the shock. Install the 16mm nut. Using a T30 socket to hold the sway bar endlink, tighten the 16mm nut to 56Nm (41 ft-lbs). BMW recommends replacing this nut every time it is used.



37) Reinstall the brake caliper to the back of the upright with the two E16 screws. Tighten the two screws to 130Nm (96 ft-lbs). BMW recommends replacing these screws every time they are used.

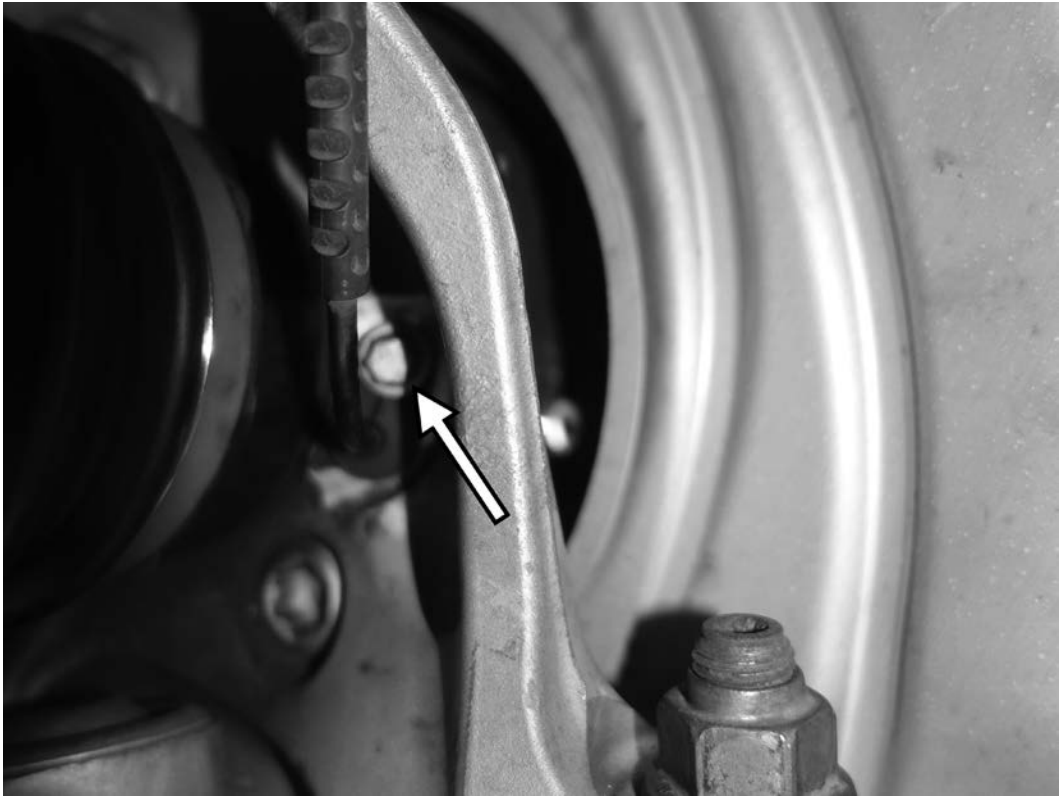
38) Reinstall the brake line to the bracket on the back of the shock.





39) Reroute and reinstall the ABS brake harness to the two mounting tabs to the bracket on the back side of the shock.

40) Reinstall the ABS sensor and then secure it by installing the E10 external torx screw to the inside of the front upright. Tighten the screw to 12Nm (106 in-lbs). BMW recommends replacing this screw every time it is used.



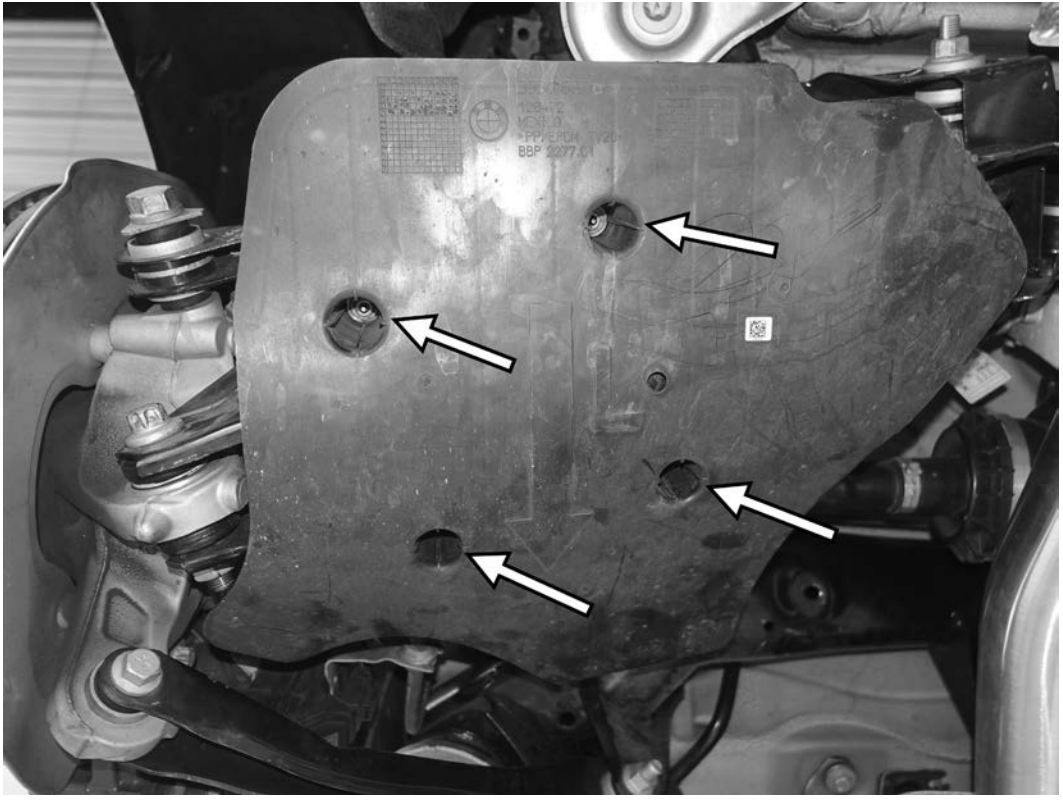
41) Reinstall the brake pad wear indicator harness from the brake caliper. Connect the harness to the two mounting tabs on the bracket mounted to the back side of the shock. Route the harness in the same path that it was routed stock.

42) Reconnect the electrical connector to the brake wear indicator harness, and then place the connector back inside the protective box. Snap the lid of the protective box closed to protect the connector.

43) Reinstall the wiring harness to the front shock. Place the grommet on the harness into the bracket on the shock, and then reconnect the two electrical connectors on the front and the back of the shock.

44) Place a screwdriver in the brake rotor to keep the brake rotor from turning clockwise. Optionally, have an assistant hold the brake pedal. Install the 17mm allen axle bolt into the axle shaft. Fully hand tighten the axle nut in place. Once in place, then tighten the axle nut to 210Nm (155 ft-lbs). Once torqued, tighten the axle nut an additional 90°. BMW recommends replacing this bolt every time it is used.

Repeat Steps 2 through 44 on the other side of the car.



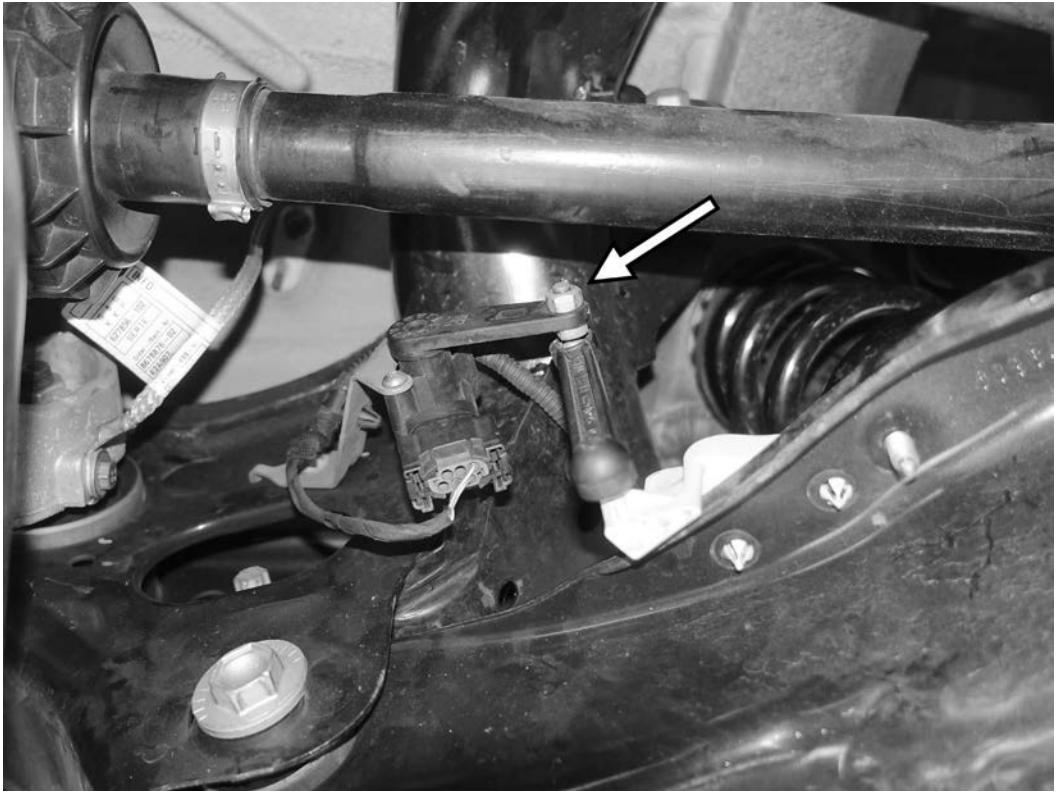
45) On the rear of the car, remove the four 10mm nuts from the panel underneath the lower control arm, and then remove the panel from the car.

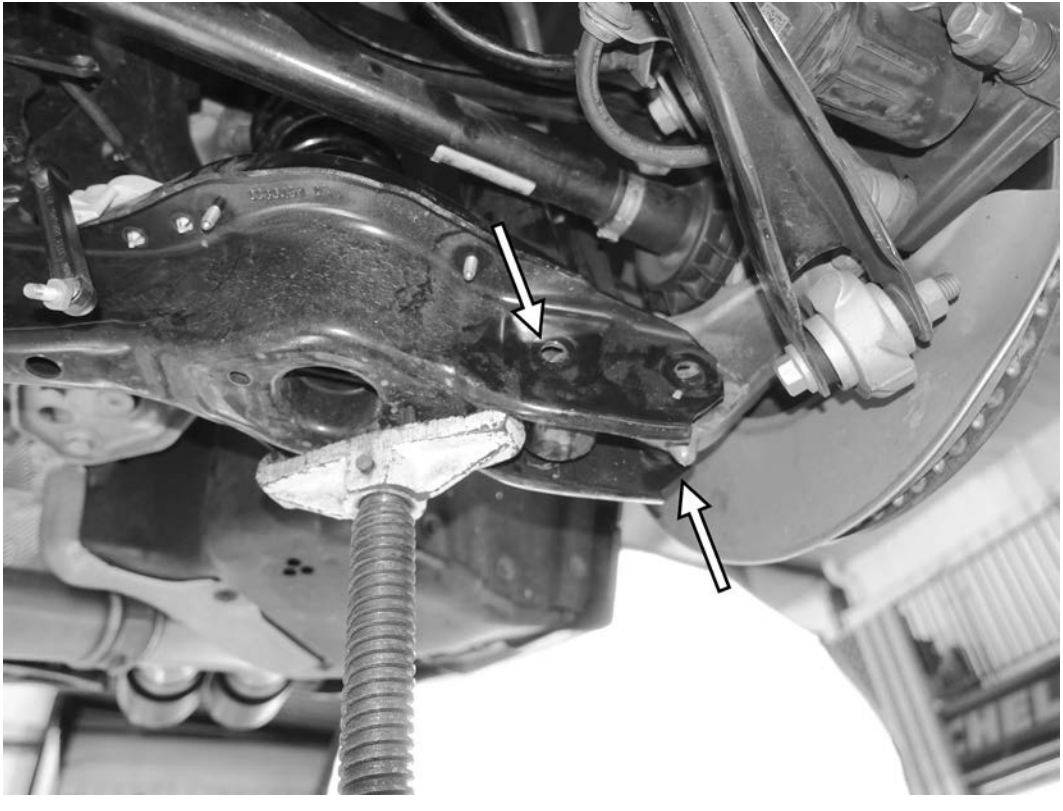
Just like the front, is recommended to perform all steps on one side of the car at a time. By doing this, you can reference the other side for things such as wire routing, bolt placement, etc.

46) While holding the front side of the 18mm shock bolt, loosen and remove the 18mm nut from the back side of the lower control arm. Do not remove the bolt yet.

47) While holding the back side of the E20 external torx bolt, loosen and remove the 21mm nut from the front side of the lower control arm. Do not remove the bolt yet.

48) Disconnect the 10mm nut from the ride height sensor on the front inside of the lower control arm. Loosen the 10mm nut while counterholding the back of the bolt with a 10mm wrench.



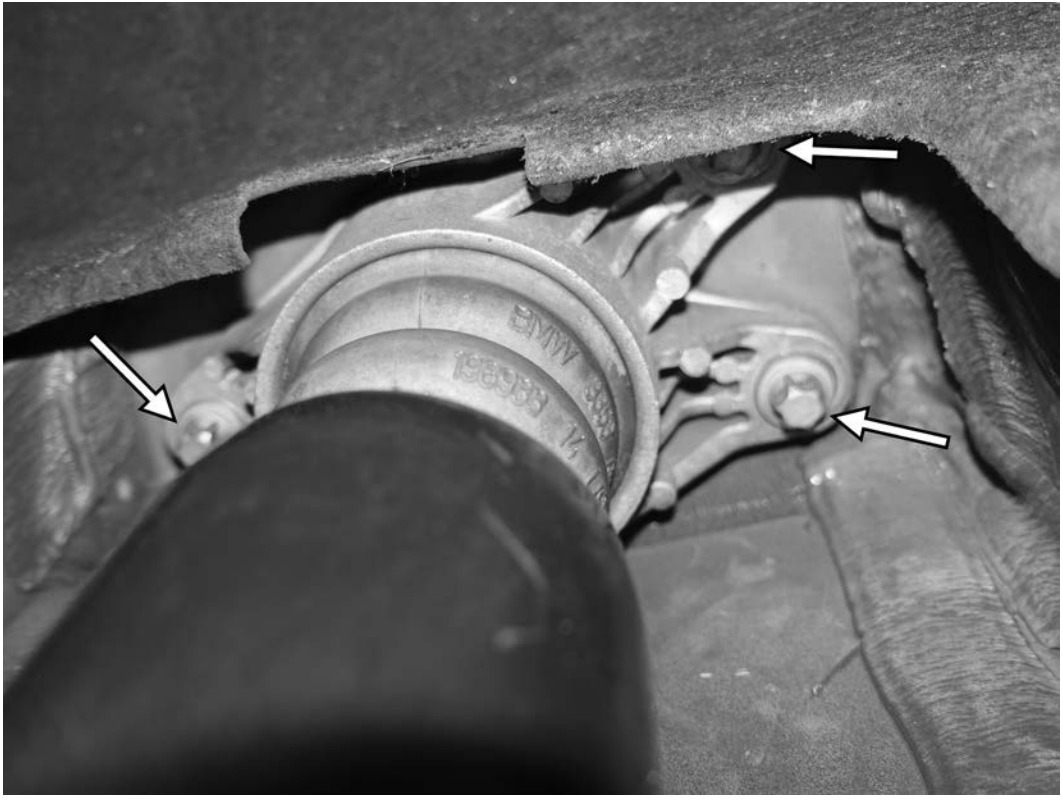


49) Using a pole jack or transmission jack, lift up slightly under the lower control arm in order to relieve tension on the two bolts from the outside of the control arm. Slide both bolts out of the control arm.

50) Remove the pole jack or transmission jack. Pull down on the lower control arm and remove the rear spring assembly with the spring mounts attached.

51) If installing the Dinan handling kit, perform steps 51-58., otherwise skip to step 59. Separate the rear ABS sensor harness from the bracket on the back of the rear shock. Separate the rear shock wiring harness from the same bracket, and then unplug the harness from the back of the shock.

52) From the top of the rear shock, remove the three E12 external shock screws.

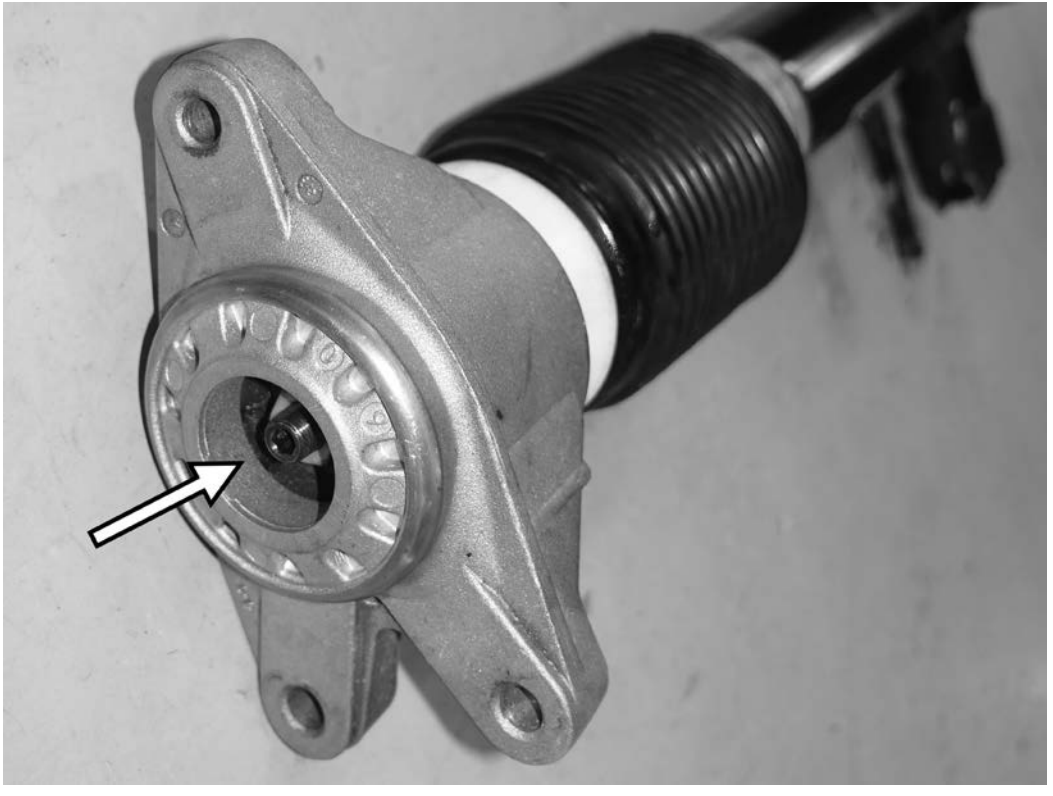


53) Pull down on the lower control arm while holding the rear shock, and then remove the rear shock from the car.

54) Remove the rear shock top mount by loosing the 16mm nut with a shock socket while holding the shaft of the shock with a 5mm allen wrench.

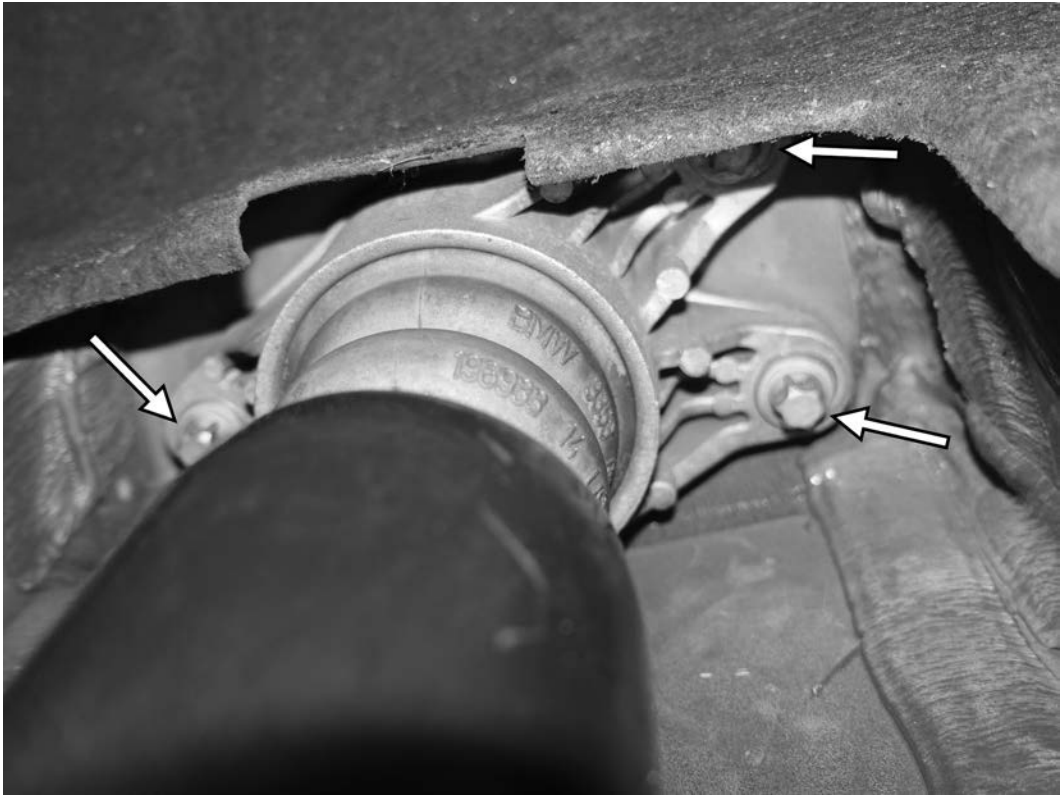
55) Remove the stock bump stop and dust cover from the rear shock. Install the Dinan bump stop into the top shock mount. A thin coating of lubricant may be necessary to push the bump stop into the mount.

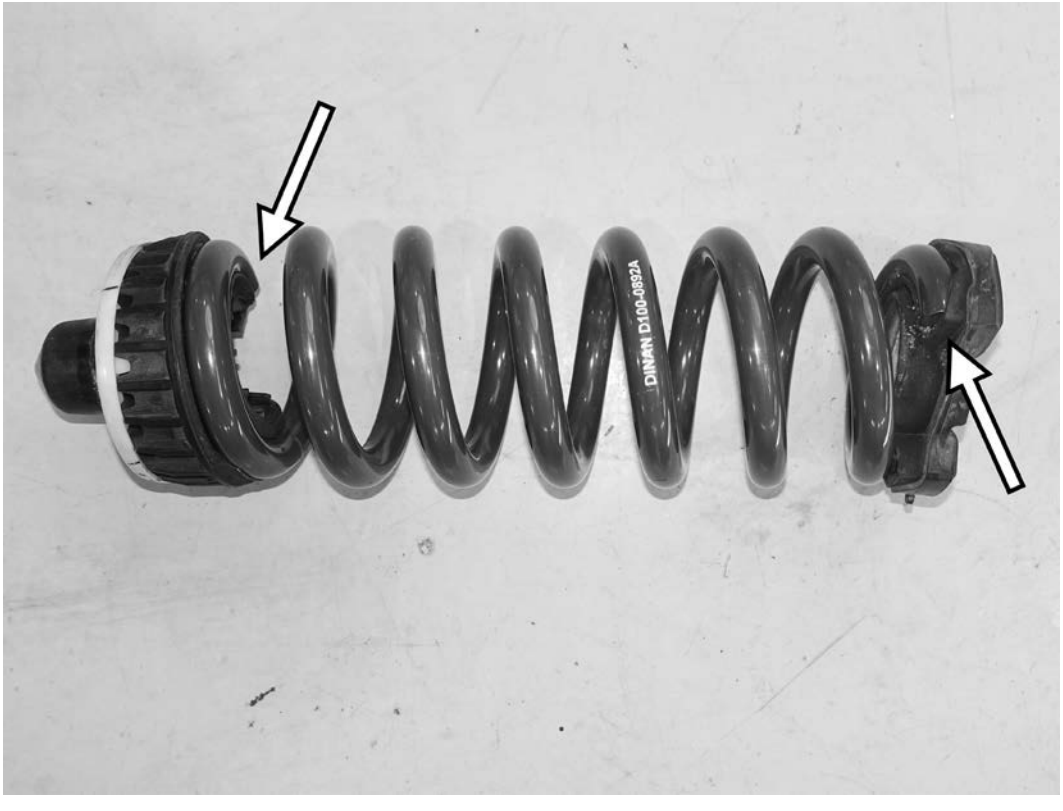
56) Install the top shock mount assembly onto the top of the shock, and then secure the shock with the 16mm shock socket and 5mm allen wrench. Tighten the 16mm nut to 41Nm (30 ft-lbs) while holding the 5mm allen from . BMW recommends replacing this nut every time it is used.



57) After pulling down the rear lower control arm, restall the shock in the car.

58) Reinstall the three E12 external shock screws and tighten them to 28Nm (20.5 ft-lbs). BMW recommends replacing these screws every time they are used.



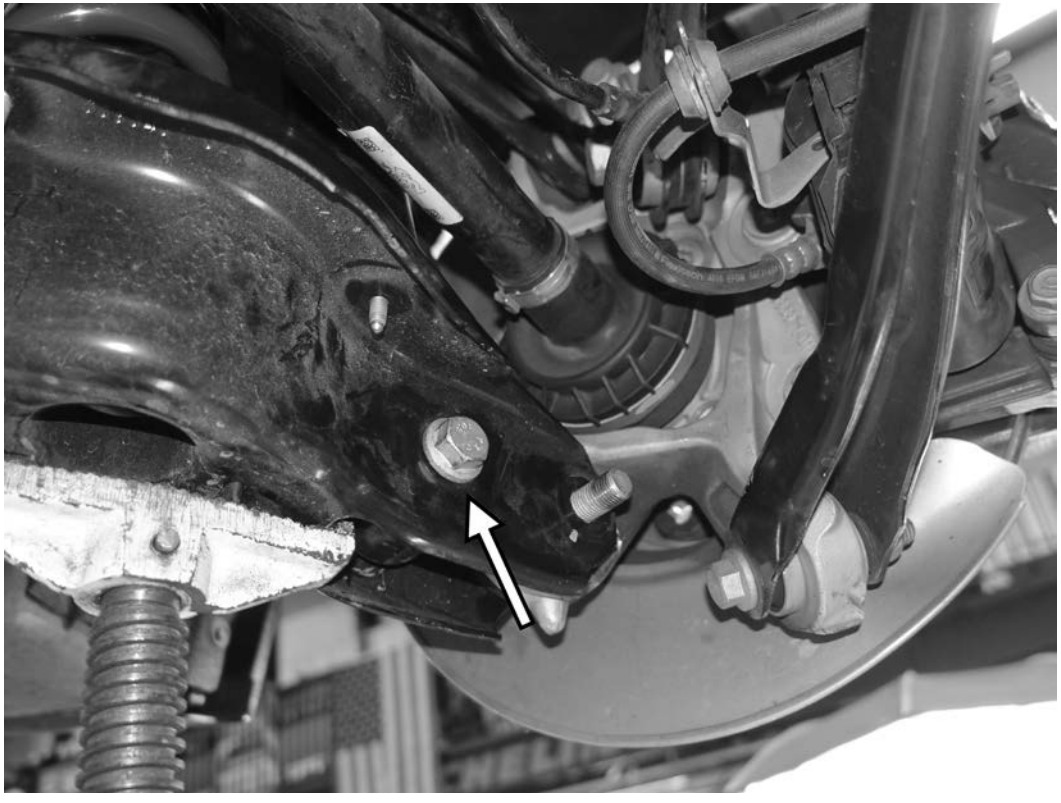


59) Install the factory upper (left) and lower (right) spring mounts onto the Dinan spring. The text on the Dinan spring should be able to be read right side up when the spring is placed in the car. Ensure the ends of both the top and the bottom of the spring rest in the tabs on the spring mounts.

60) Pull the lower control arm down again and place the spring assembly back in the car. Rotate the entire spring assembly (without moving the spring ends in the upper and lower mounts) until the rubber tab on the bottom of the lower mount is facing the outside of the car. This lower tab must key into the slot on the lower control arm as the lower control arm is raised back up.

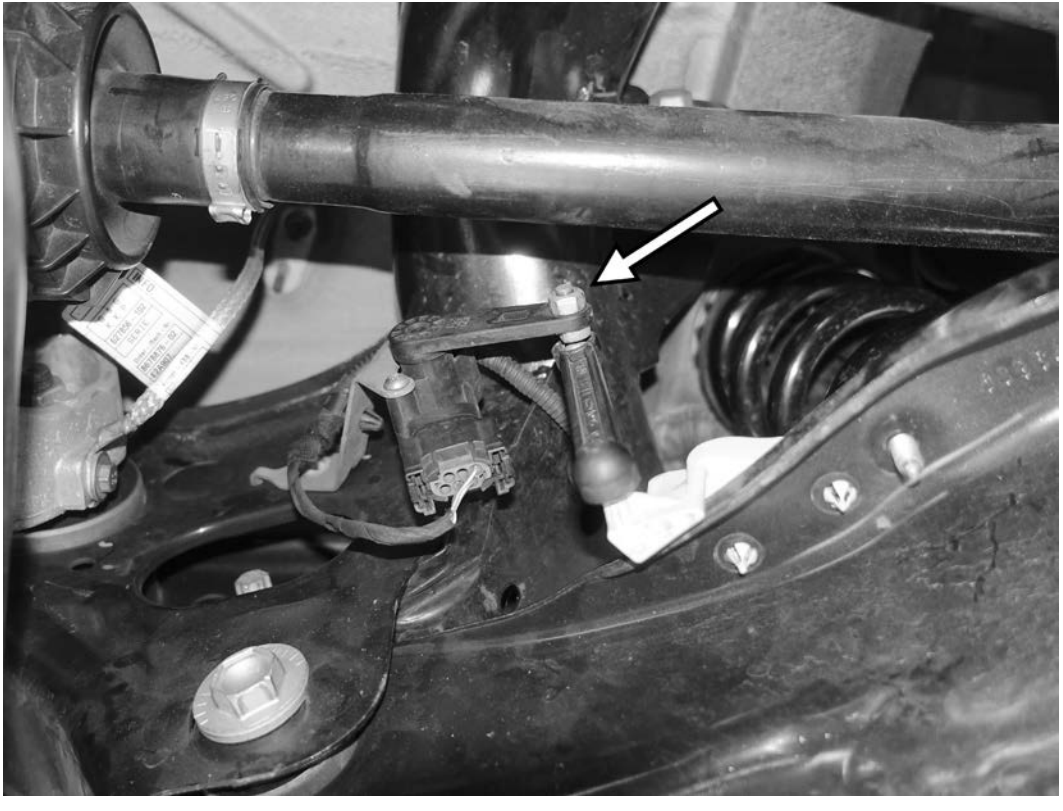
61) Use a pole jack or transmission jack to raise the lower control arm until the outer E20 external torx bolt to the rear upright can be installed freely from the back side of the control arm. Do not hammer or force the bolt in place. BMW recommends replacing this bolt every time it is used.

62) Install the 18mm lower shock bolt from the front side of the lower control arm and through the opening in the bottom of the shock. Do not hammer or force the bolt in place. Loosely install the 18mm nut on the threaded side of the bolt, but do not tighten the nut. BMW recommends replacing this bolt and nut every time they are used.



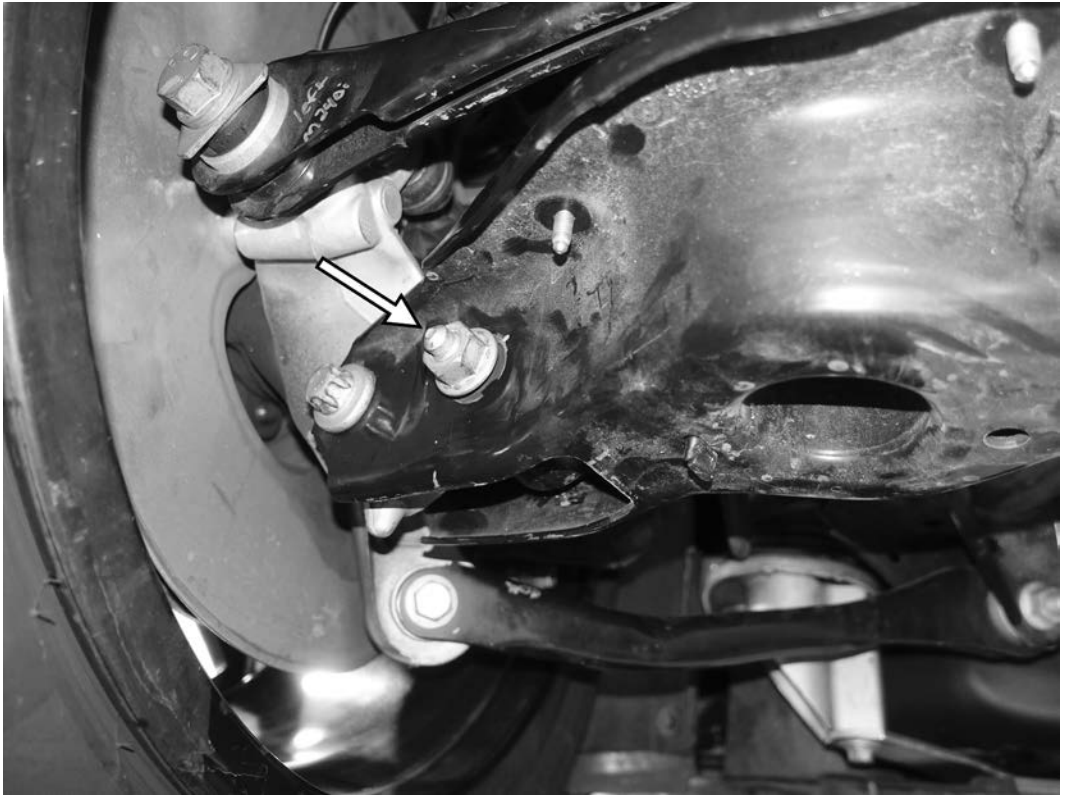
63) Install the 21mm nut on the front side of the bolt holding the lower control arm to the upright. While counterholding the E20 bolt, tighten the 21mm nut to 165Nm (121 ft-lbs). Once torqued, tighten the 21mm nut an additional 90°. BMW recommends replacing this nut every time it is used.

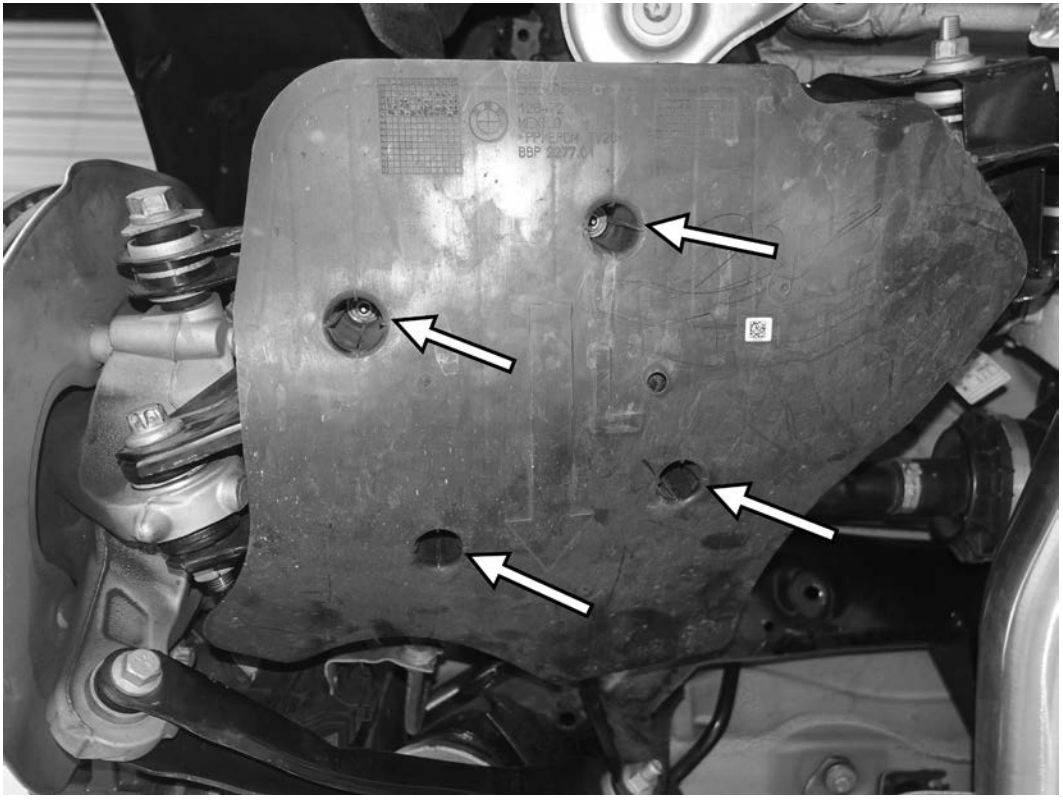
64) Reinstall the rear ABS sensor harness to the bracket on the back of the rear shock. Attach the rear shock wiring harness to the same bracket, and then reconnect the harness to the back of the shock.



65) Reconnect the ride height sensor to the front inside of the lower control arm. Tighten the 10mm nut to 6Nm (53 ft-lbs) while counterholding the back of the bolt with a 10mm wrench.

66) Reinstall all four wheels, torquing all lug bolts to 140Nm (103 ft-lbs). Lower the car all the way to the ground and then roll the car backwards or forwards at least one car length. Then while holding the 18mm lower shock bolt, tighten the 18mm nut on the back side of the control arm to 100Nm (73.5 ft-lbs). Then tighten the nut an additional 90°.





67) Reinstall the panel underneath the lower control arm with four 10mm nuts and torque them to 6Nm (53 in-lbs). BMW recommends replacing these nuts every time they are used.

Repeat steps 45-67 on the other side of the car to complete the installation of the rear springs.

A four-wheel alignment must be performed after installation of this kit. Set the tires to the factory recommended values before performing the alignment. Also, the alignment should be performed with a full fuel tank and no weight inside the vehicle.

After installing the suspension system, a four-wheel alignment must be performed according to manufacturer´s specifications. Also check and reset load-dependent brake compensator, ABS system and headlight aim according to manufacturer's specifications, if applicable.

Front Suspension Specifications:

Camber = -1.0° with an acceptable range of -0.58° to -1.42°
Caster = 7.7° with an acceptable range of 7.2° to 8.2°
Total Toe = 0.27° with an acceptable range of 0.20° to 0.34°

Rear Suspension Specifications:

Camber = -1.5° with an acceptable range of -1.42° to -1.58°
Total Toe = 0.27° with an acceptable range of 0.20° to 0.34°

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