



FRONT CONTROL ARM KIT INSTALLATION TUTORIAL

ES2609119

AUDI	B5 A4	ALL	ALL
AUDI	B5 S4	ALL	ALL
AUDI	C5 A6	ALL	2.7T
AUDI	C5 A6	ALL	V6 2.8L
AUDI	C5 A6	ALL	V6 3.0L
VW	PASSAT B5	ALL	1.8T
VW	PASSAT B5	ALL	V6 30V
VW	PASSAT B5	ALL	W8



Project Preparation

Required Tools

You will need a number of different standard service tools as well as the following common items:

- Open/Box end wrenches - 10mm, 13mm, 16mm, 17mm, 18mm, 22mm, 24mm
- Ratchets - 1/4", 3/8" and 1/2"
- Sockets - 10mm, 13mm, 16mm, 17mm, 18mm.
- Torque wrench
- Flathead screwdrivers
- Set of various size punches
- Penetrating oil
- Anti Seize Compound
- Ball joint separator
- Hammer
- Digital caliper or equivalent measuring device
- Tie Rod Separator

Safety Precautions

Proper service and repair procedures are vital to the safe, reliable operation of all motor vehicles as well as the personal safety of those performing the repairs.

Standard safety procedures and precautions (including use of safety goggles and proper tools and equipment) should be followed at all times to eliminate the possibility of personal injury or improper service which could damage the vehicle or compromise its safety.

Installation Notes

A professional alignment will be necessary after installation. All procedures are to be repeated for both sides, unless otherwise noted. Spraying penetrating oil on the fasteners and allowing it time to penetrate (preferably over night) will help with the removal of rusted components.

Project Preparation

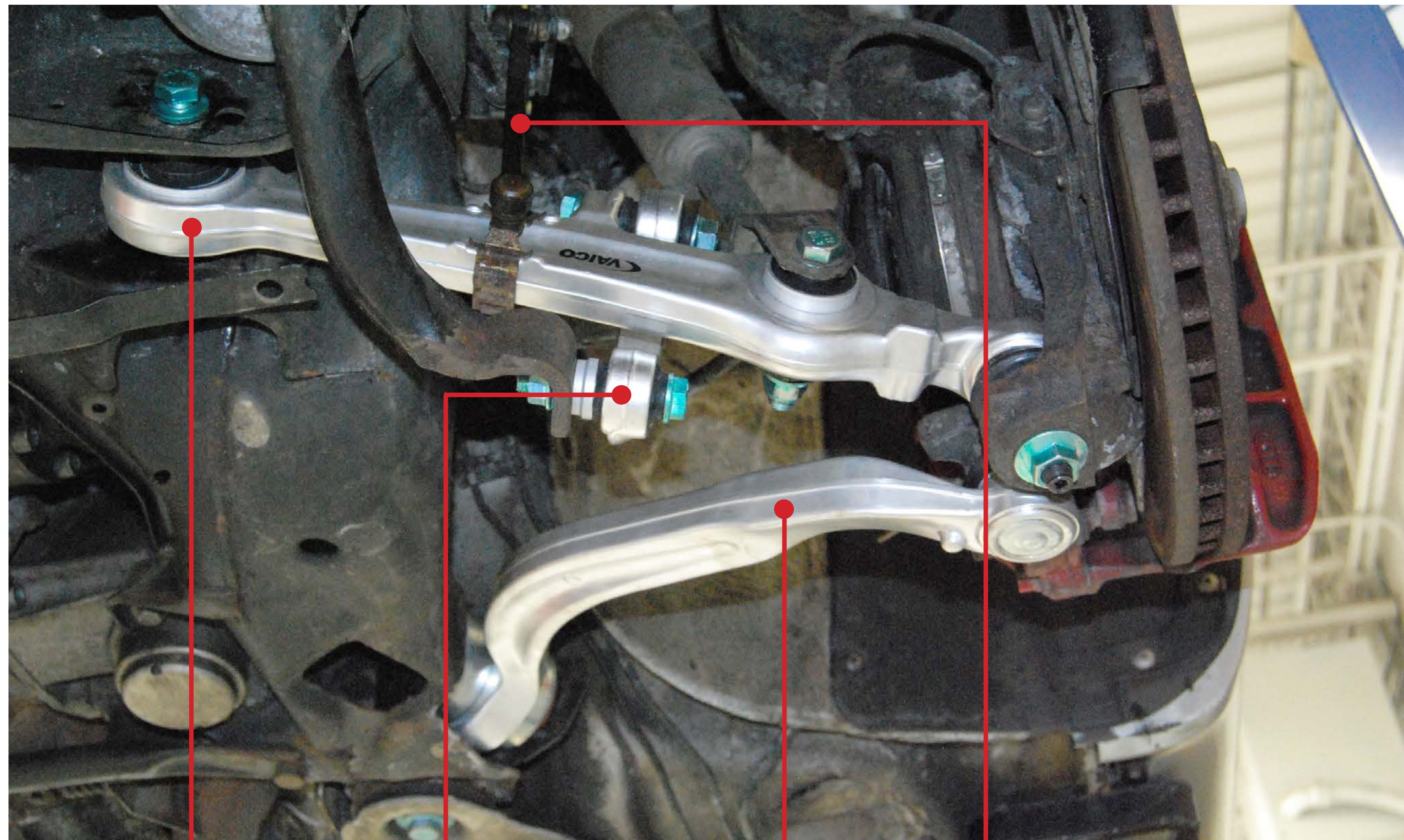
Bolts that secure the parts that contain rubber bushings must be torqued with the vehicle at ride height. If you have a drive on lift, this is the easiest way to access these bolts. Drive on ramps also will give you the access you need under the vehicle.

If you do not have this equipment, the following method may be used:

1. Before beginning the procedure, obtain the ride height of the vehicle. Measure the distance between the center of the wheel to the fender (shown below). This measurement will later be used during the reinstallation procedure.
2. With the vehicle still safely supported by jack stands or an automotive lift, use a hydraulic jack to jack the suspension up underneath the front steering knuckle. Raise the suspension until the measurement matches the ride height measurement.
3. Torque each bolt to specification.



Overview of Part Locations - Lower



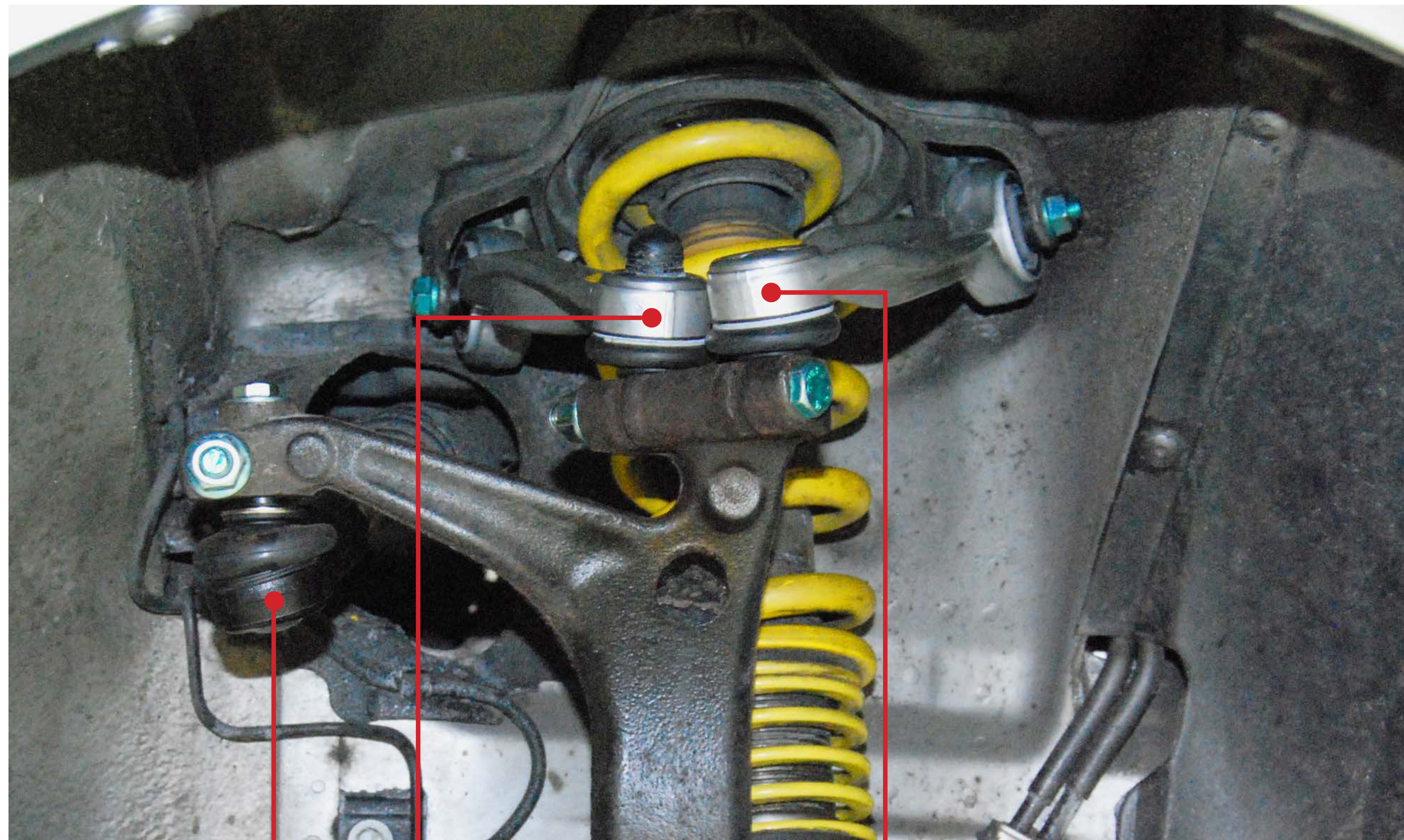
Guide Link

Sway Bar Link

Track Control Link

Headlight Leveling
Sensor Link
(LH side only)

Overview of Part Locations - Upper



Upper Link

Upper Link

Tie-Rod

Lower Suspension Installation

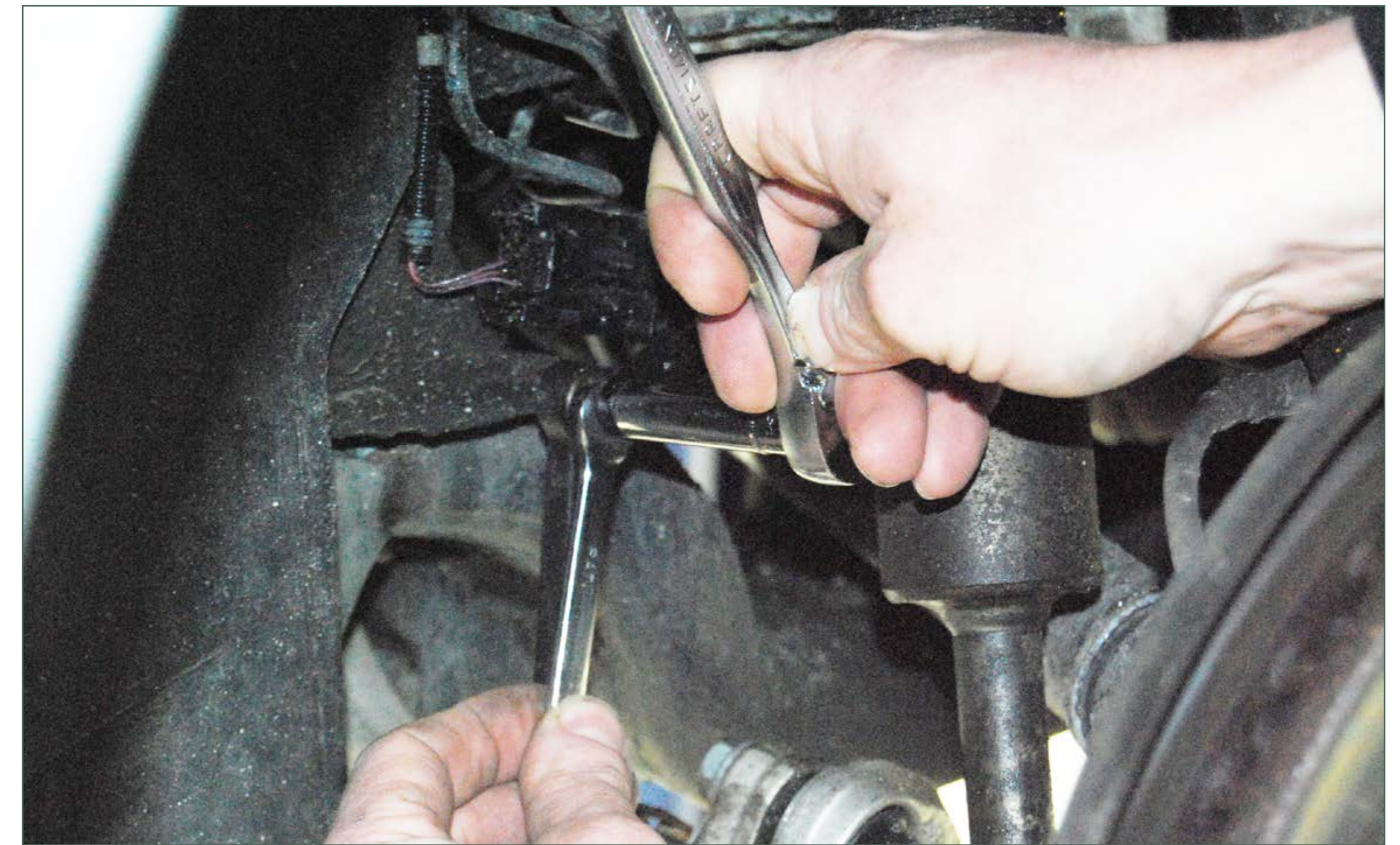
Step 1

Disconnect the headlight leveling sensor link by removing the 10mm nut, keeping the link stud from turning using a 10mm open end wrench.

Note: This link is only located on the LH side.

Step 2

Using a 13mm wrench, remove the bolt from the top of the tie rod end.



Step 3

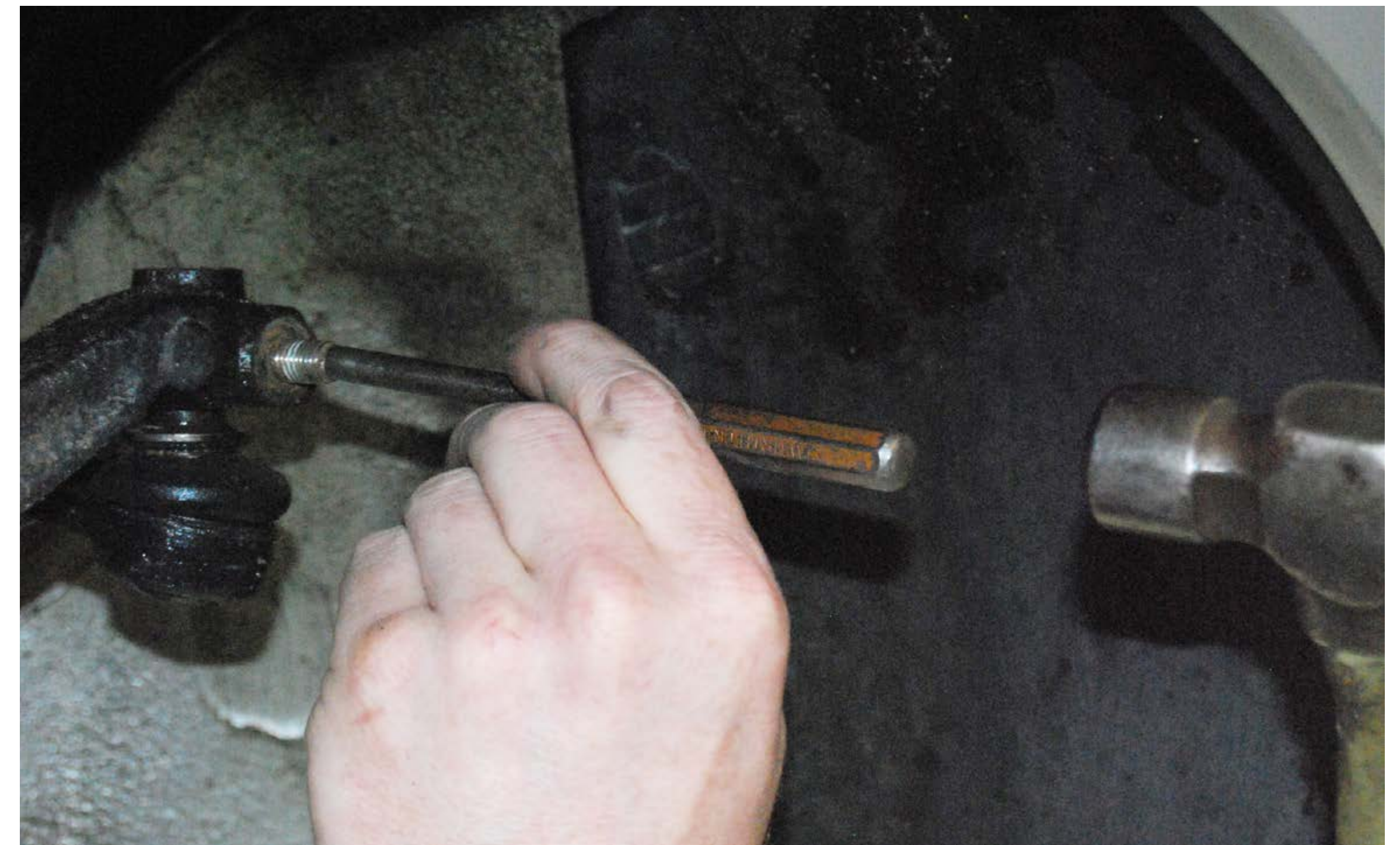
Using a 16mm socket, remove the nut from the tie rod end pinch bolt.

Note: When removing the pinch bolt, applying heat to its housing may be required to fully remove it.



Using a hammer and an appropriate sized punch, drive the pinch bolt out of the steering knuckle.

Note: If the pinch bolt is seized in the steering knuckle, you may need to heat the knuckle with an oxyacetylene torch to remove it.



Rusty bolts such as the pinch bolt pictured here should be cleaned thoroughly using a wire wheel or wire brush.



Step 4

Drive the tie-rod end from the steering knuckle using a 10mm deep socket or an appropriately sized punch and a hammer.

**Step 5**

Using a 16mm wrench and socket, remove the two securing bolts for each sway bar link. Remove the links and pull down on the sway bar to move it out of the way.



Step 6

Remove the strut wishbone at the track control link using an 18mm socket and long ratchet.



Slide the strut wishbone off of the track control link bushing.

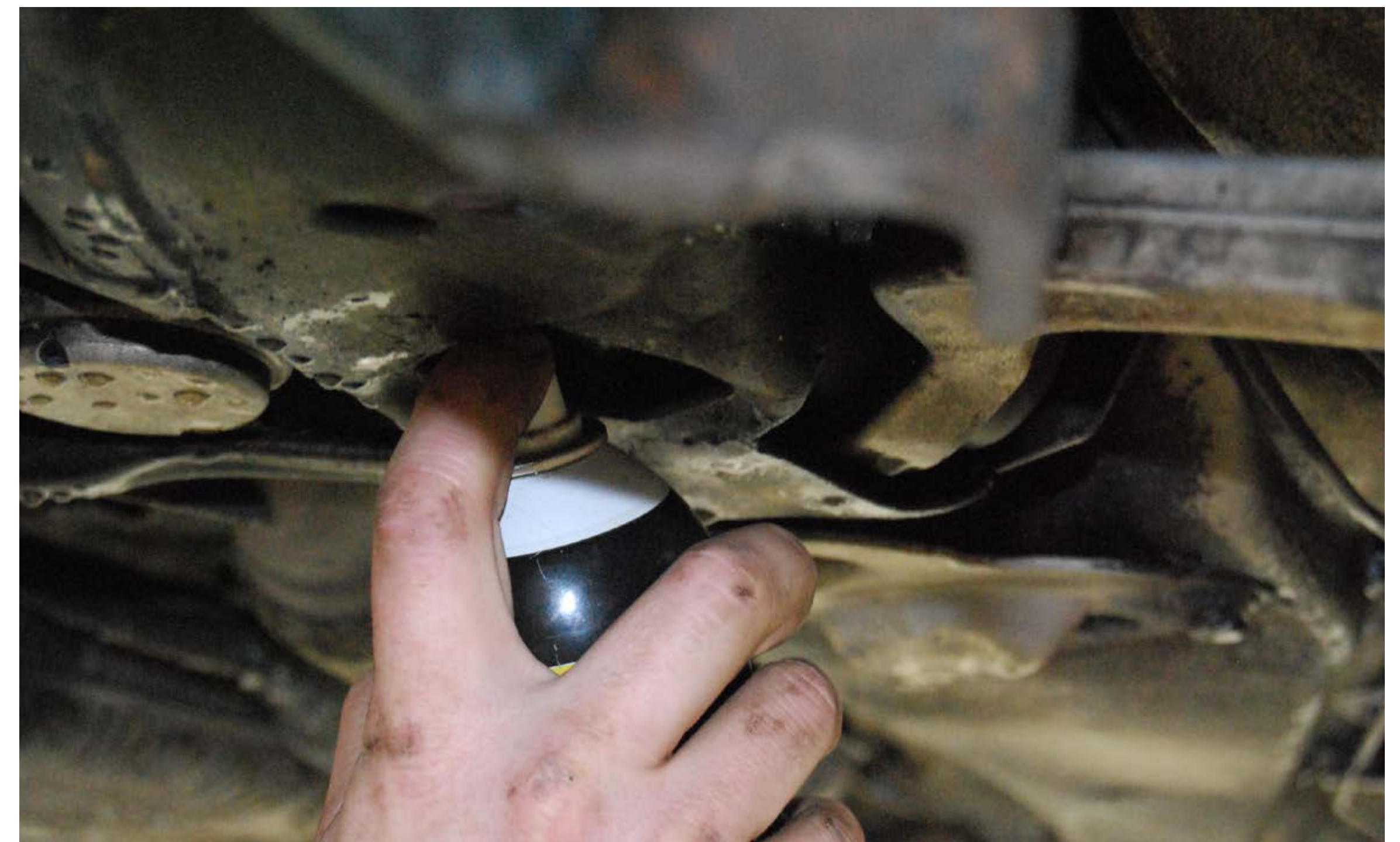


Step 7

Support the weight of the steering knuckle/front suspension using a floor jack or jack post; this prevents the suspension from dropping suddenly when removing the lower links.

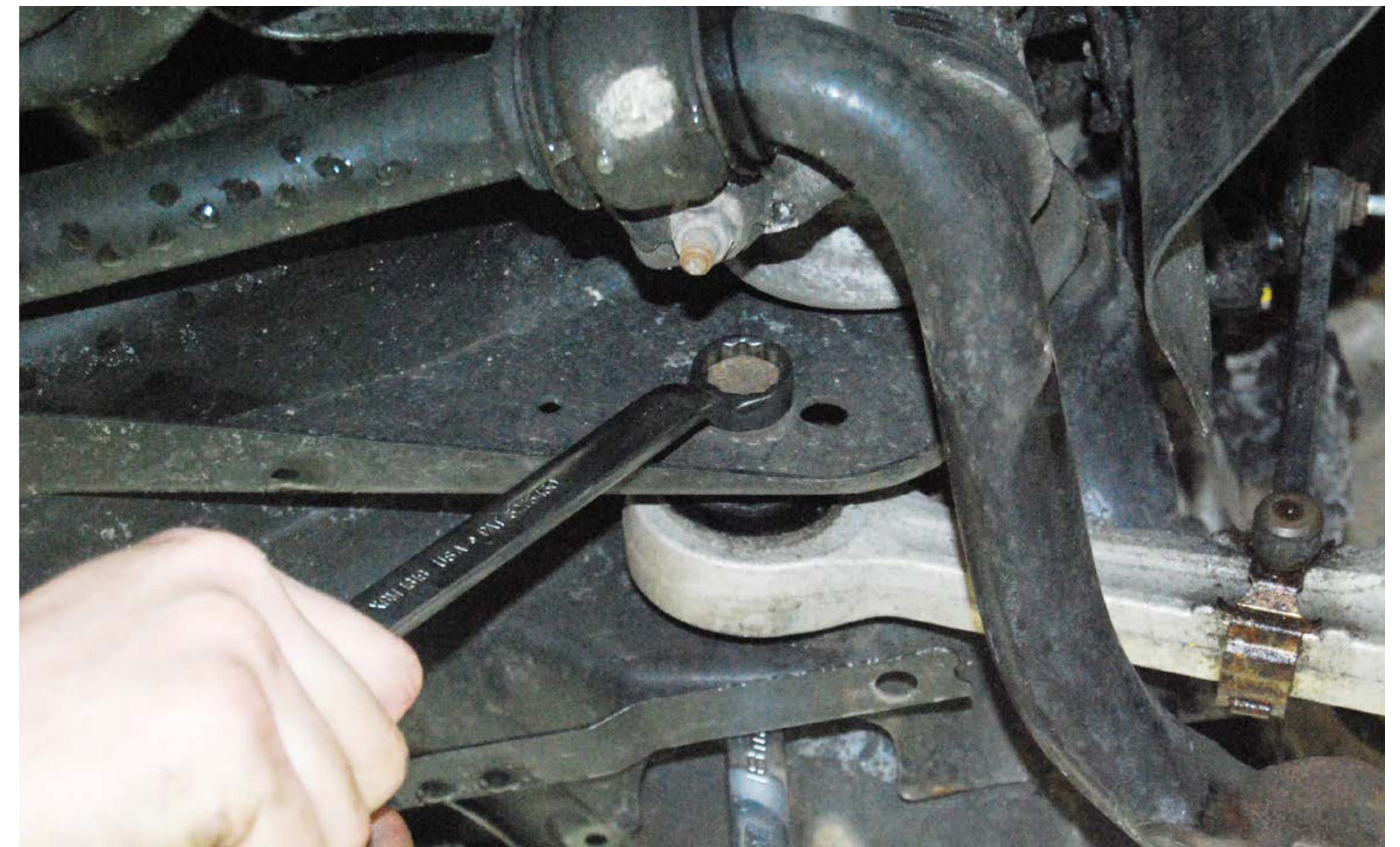
Here we are using a jack post with the vehicle on a vehicle lift.

Apply more penetrating spray to help loosen the guide link inner bolt, allowing the chemicals to soak thoroughly before proceeding to remove the bolt.



Step 8

Remove the track control link inner bolt by holding the nut on the inside and removing the bolt using 18mm wrenches.

**Step 9**

Remove the track control link nut at the steering knuckle using an 18mm socket or box wrench.

Press the track control link ball joint from the steering knuckle. (Shown here using a ball joint separator tool)

Note: Removing the track control link ball joint from the steering knuckle can be done by the use of a Ball Joint Separator tool, or tie-rod separator fork tool.

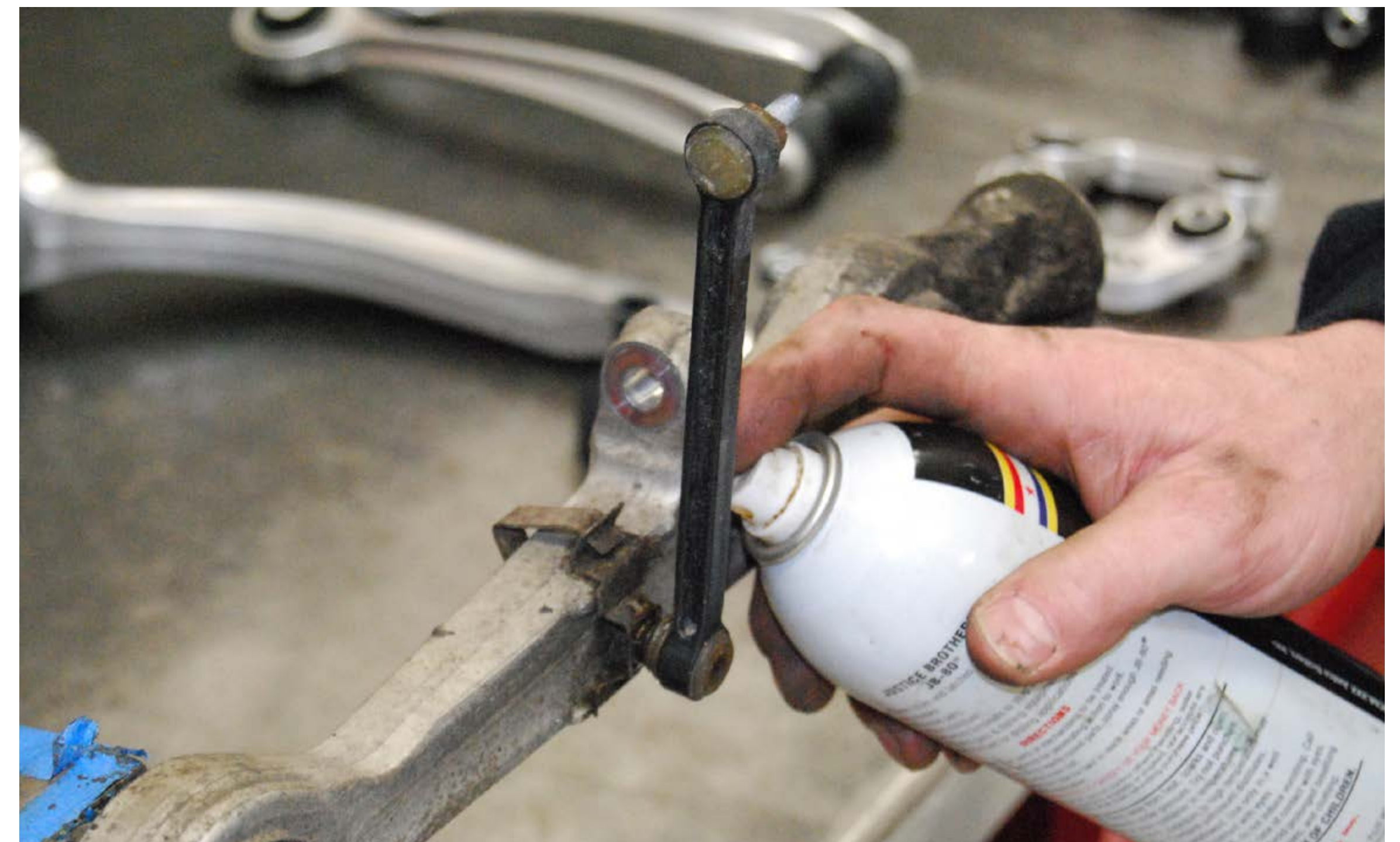


Step 10

Remove the track control link from the vehicle, taking caution not to damage the headlight leveling sensor link upon removal.

Note: The RH side will not have the headlight leveling sensor link.

Spray the headlight leveling sensor link bushing with penetrating oil, working it back and forth until the link can be removed easily from the link ball stud. Carefully remove the link.



Step 11

Using a flat-head screwdriver, unclip the headlight leveling sensor link bracket from the track control link.

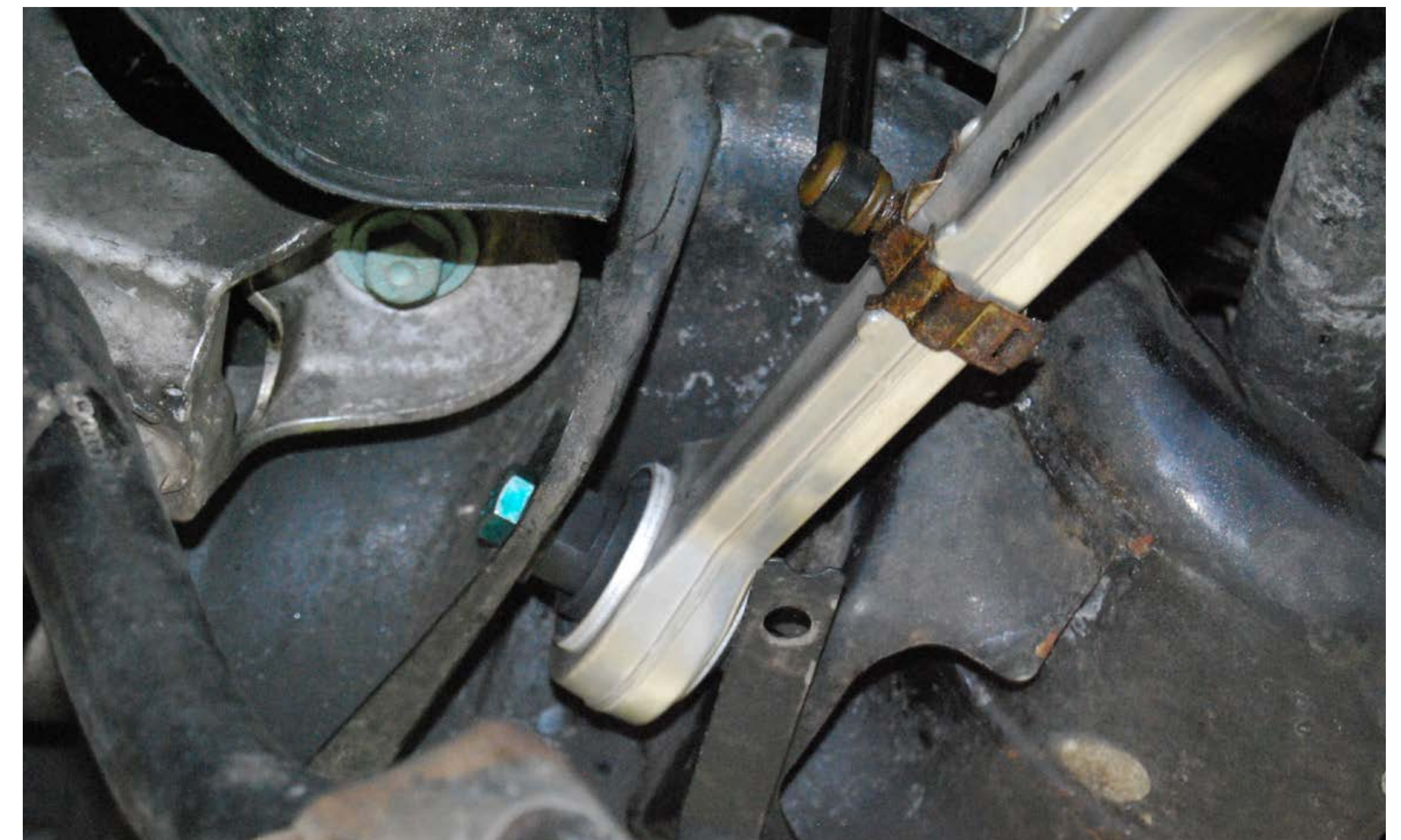
Re install the headlight leveling sensor link bracket onto the new track control link.

Re install the headlight leveling sensor link to the ball stud on the link bracket.

**Step 12**

Install the new track control link using a new inner bolt and a new ball joint nut. Torque the nut to the proper specification. Install a new nut on the inner bolt and thread it on until it is seated against the subframe, but do not tighten the bolt at this time.

Note: Do not tighten any suspension bushing bolts at this time. They must be tightened with the suspension at ride height. *These bolts will be tightened later.*



Step 13

Remove the nut holding the guide link ball joint to the steering knuckle using an 18mm wrench.

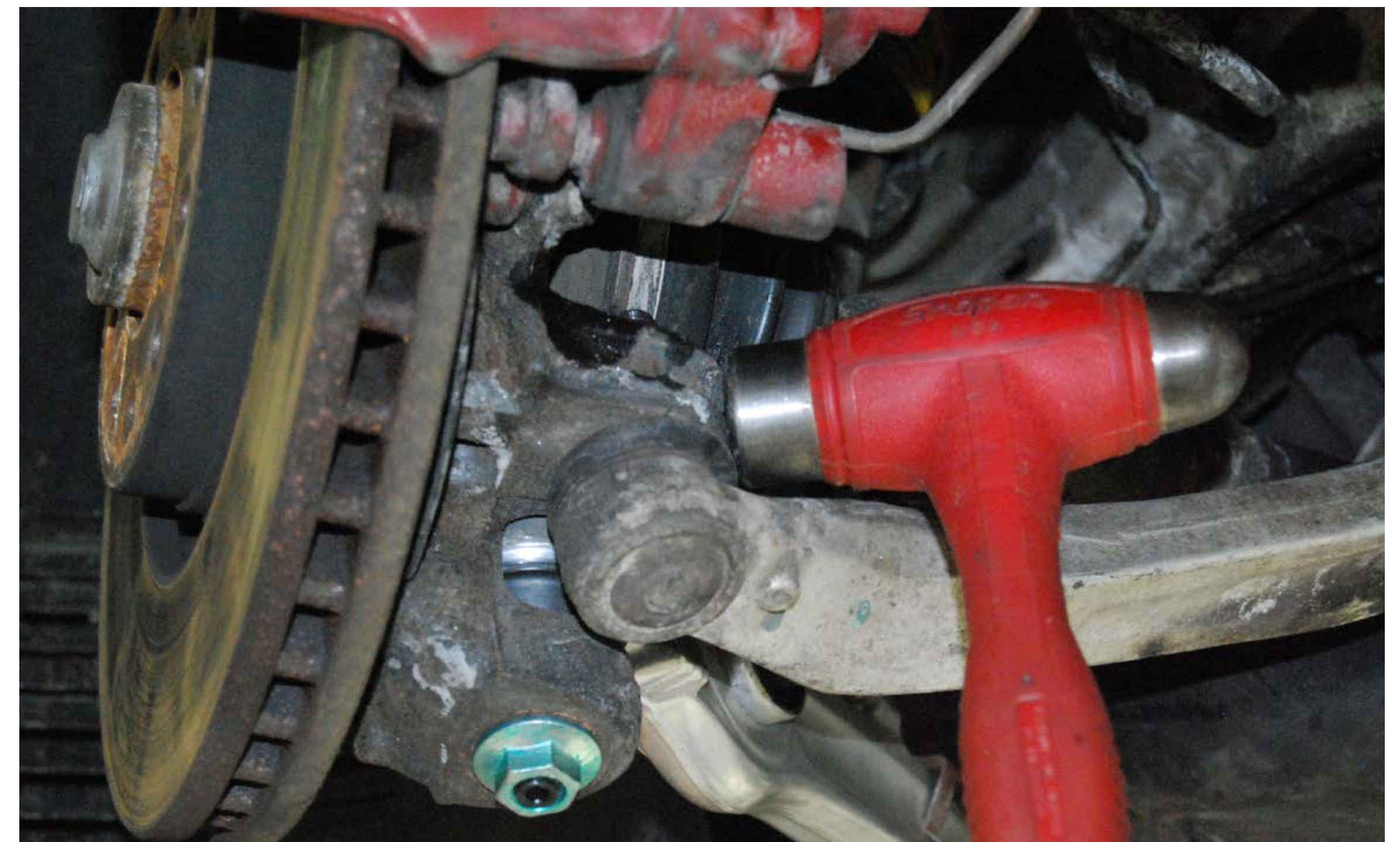


Remove the guide link ball joint from the steering knuckle.

Note: This ball joint is more difficult to access. A tie rod separator fork can be helpful to remove this joint. If a separator fork is not available, an additional method of removal is to sharply hit the steering knuckle with a hammer (shown here).

A tie rod separator is available at ECStuning.com.

[16" Tie Rod Separator](#)

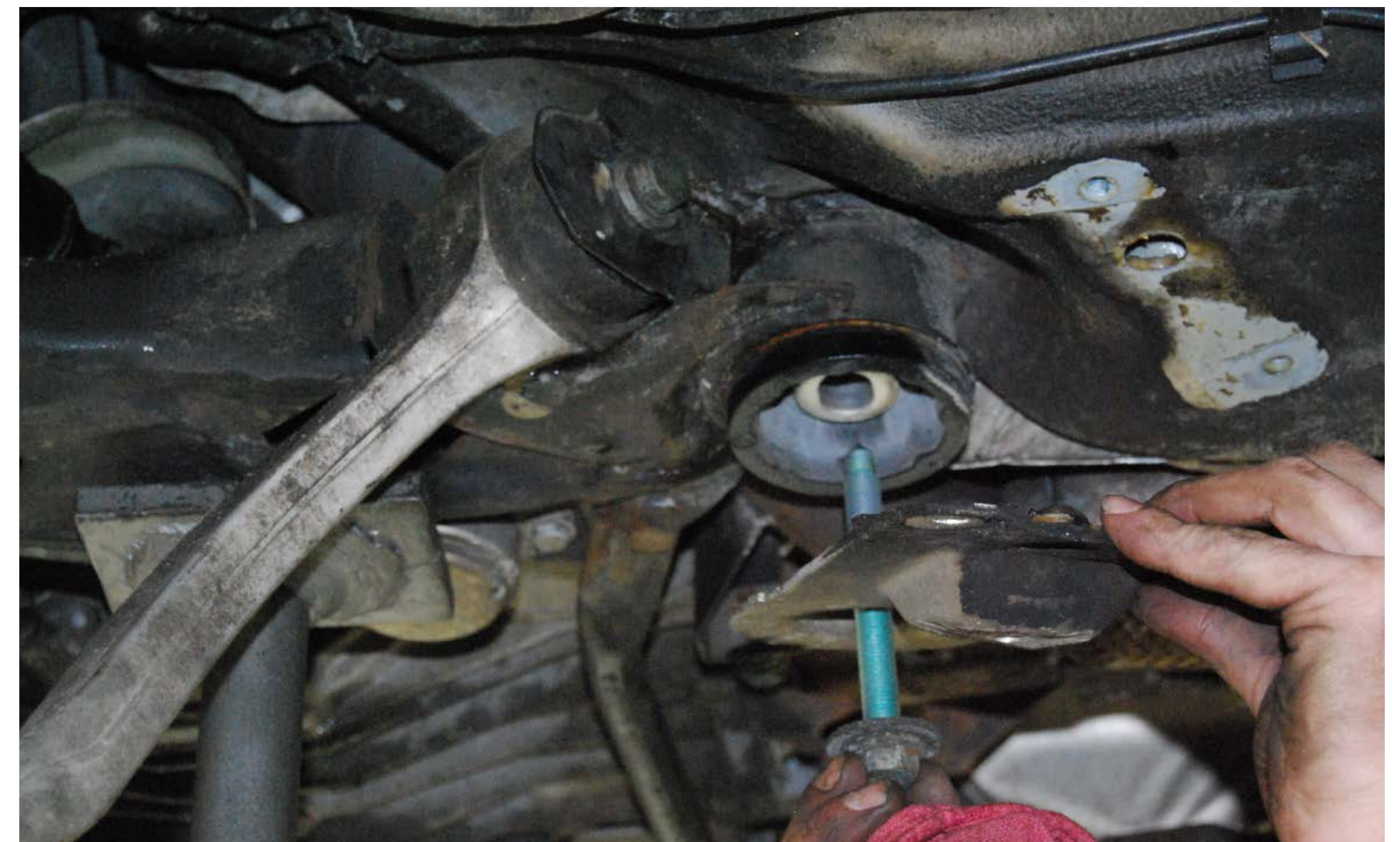


Step 14

Using a 13 mm socket, remove the rear subframe support plate bolts (two on each side).



Next, using an 18mm socket, remove the two rear subframe bolts (One on each side).



Step 15

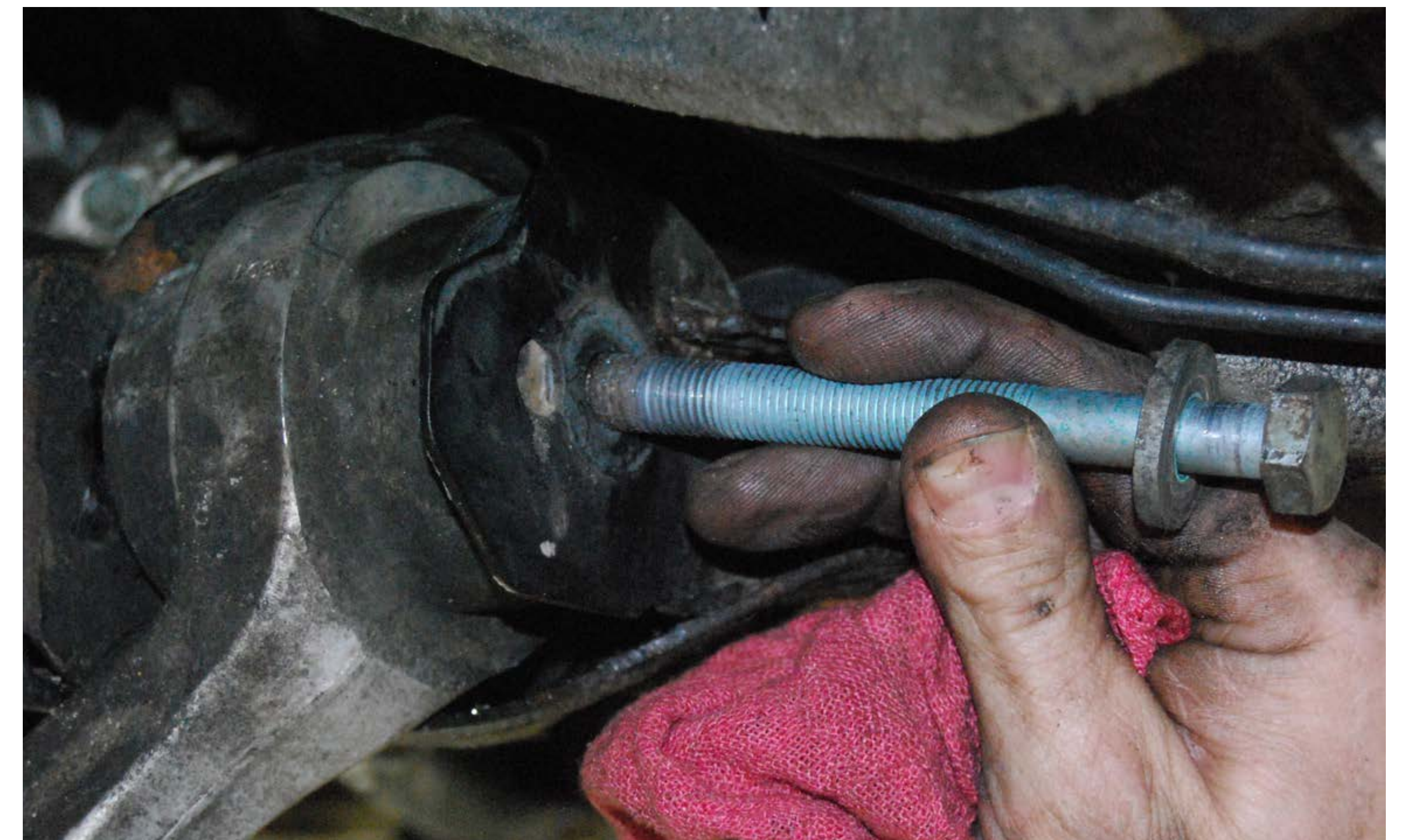
Using 18mm wrenches, loosen and remove the inner guide link bolt.



Note: The rear of the subframe will have to be pulled down slightly to remove the inner guide link bolts. Clearances are tight at this location; some finesse is required for removal.

The left-hand side removal process is made more challenging due to the fuel lines.

Take extra caution to avoid damaging any critical parts at this stage.



Step 16

Using the new fasteners supplied with the kit, install the new guide link, first securing the part at the inner bolt, then inserting the guide link into the steering knuckle.

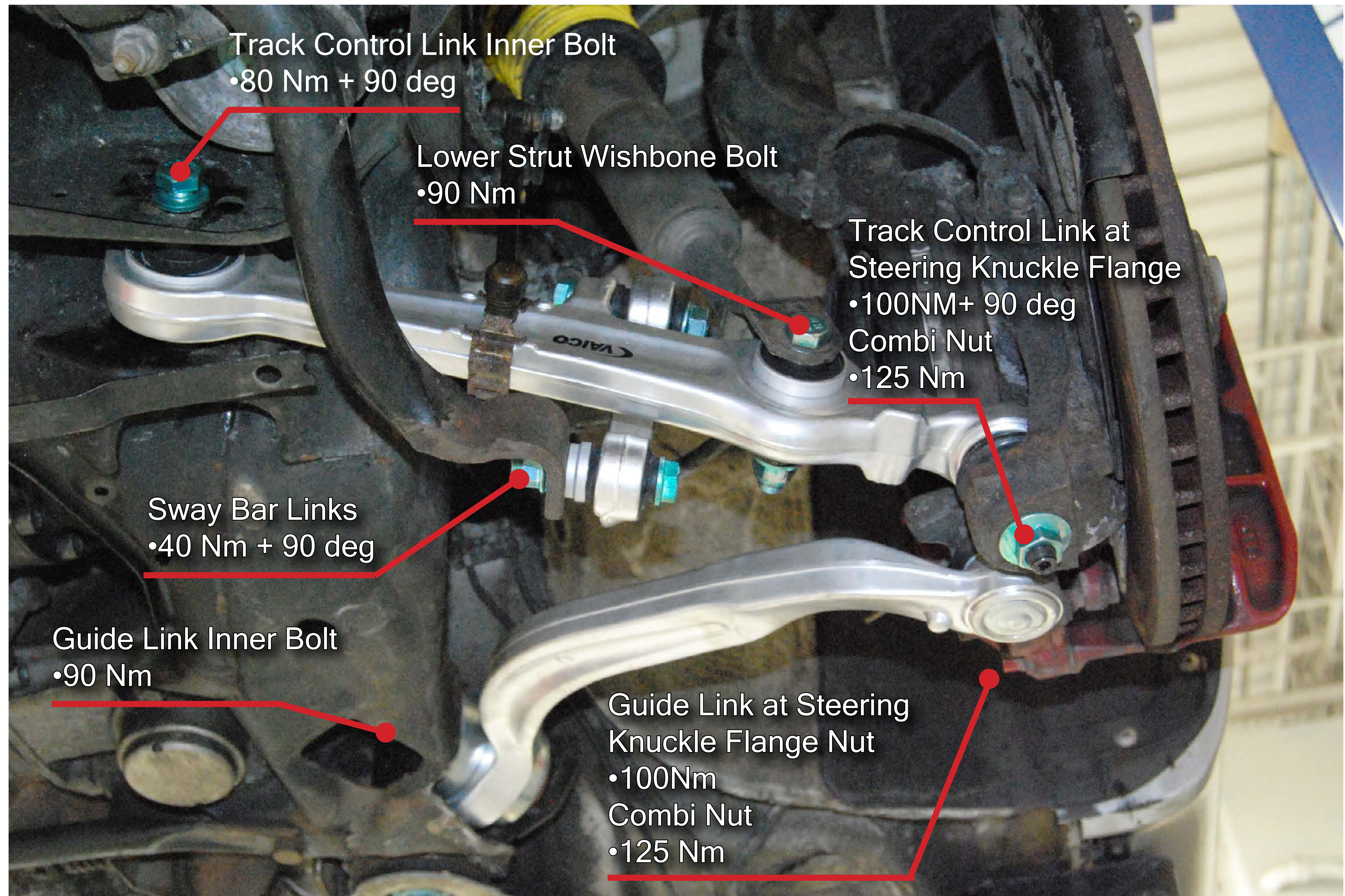
Torque the ball joint at the steering knuckle, but do not tighten the inner bolt at this time.

**Step 17**

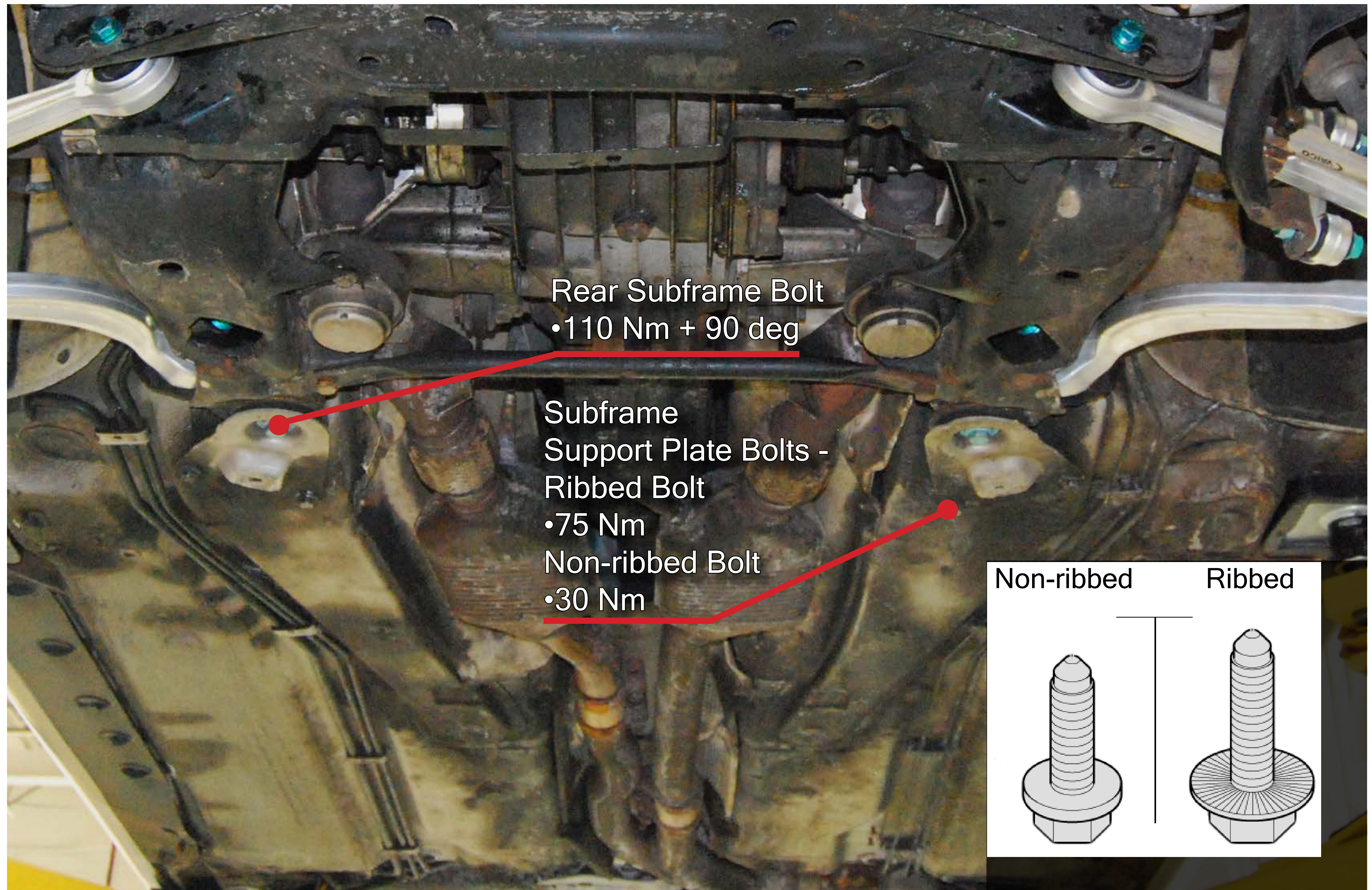
Reinstall the subframe support plates and torque the bolts to the proper specifications.



Overview of Torque Specifications



Overview of Torque Specifications



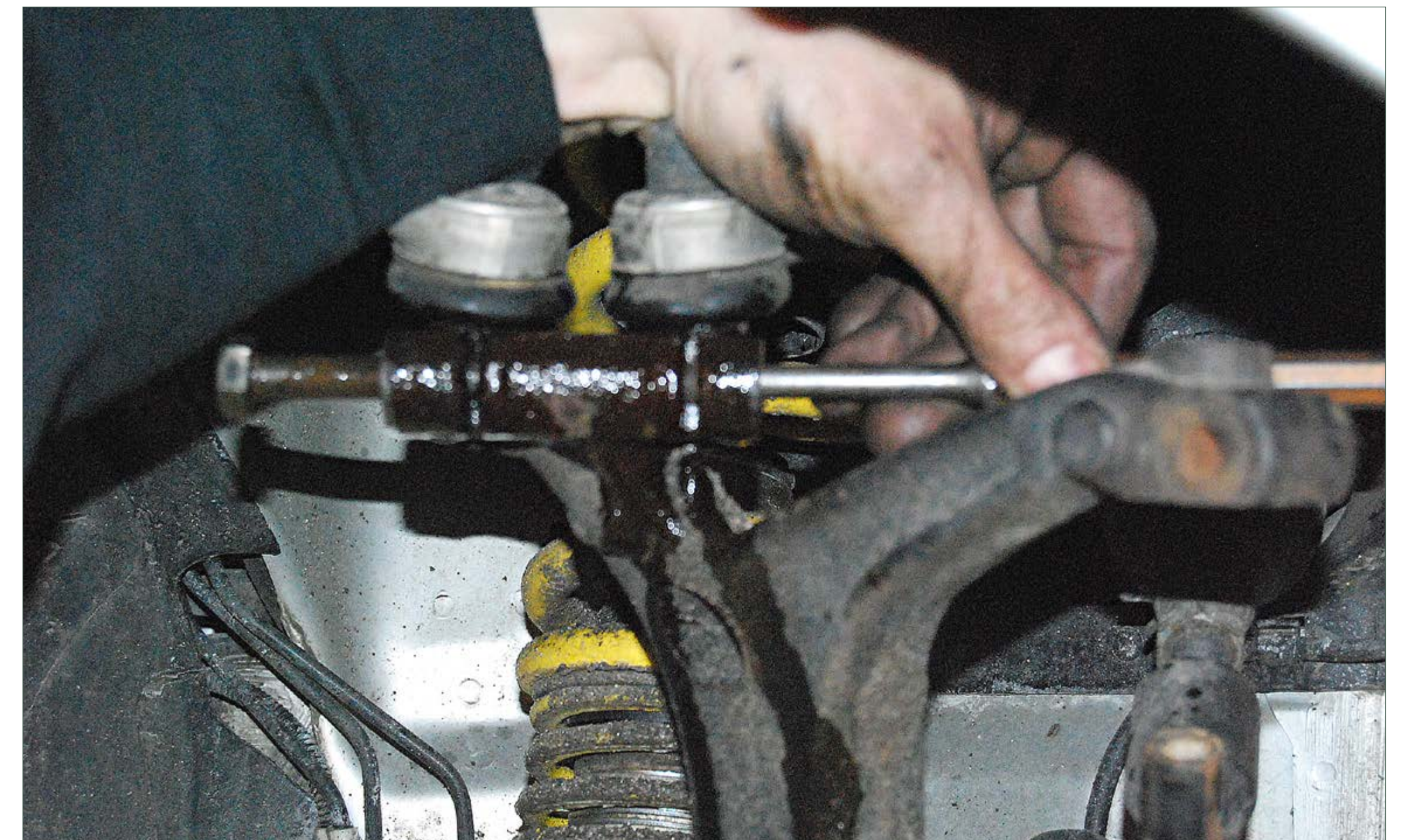
Upper Suspension Installation

Step 1

Remove the upper link pinch bolt securing nut.

Note: It is very common for these bolts to be seized in place due to rust. You may have to heat the steering knuckle using an oxyacetylene torch in order to remove the bolt.

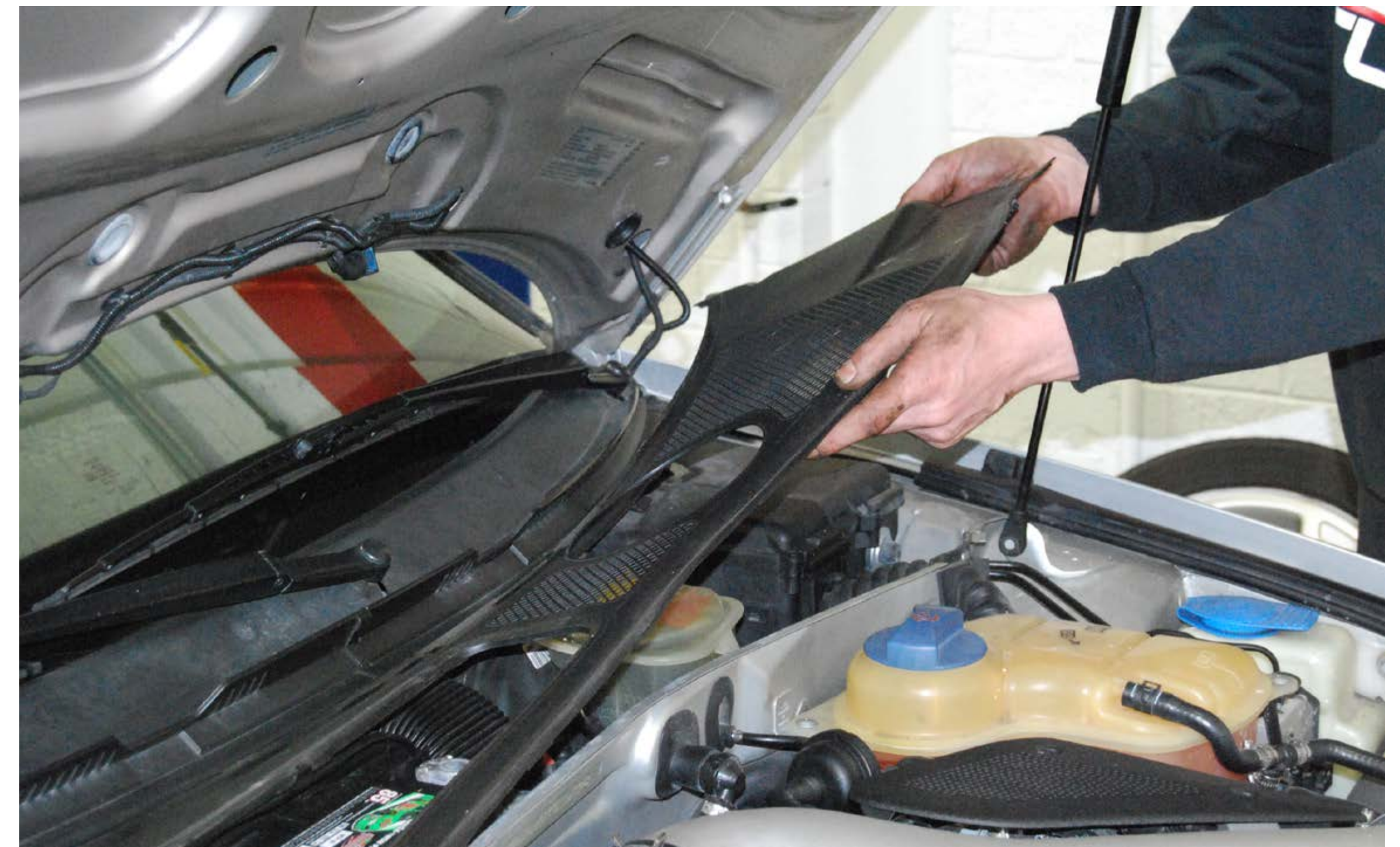
Align a punch to the spindle, and carefully hammer out the pinch bolt. As shown here, we have sprayed additional penetrating oil into the slots in the steering knuckle to help with the removal of this bolt.



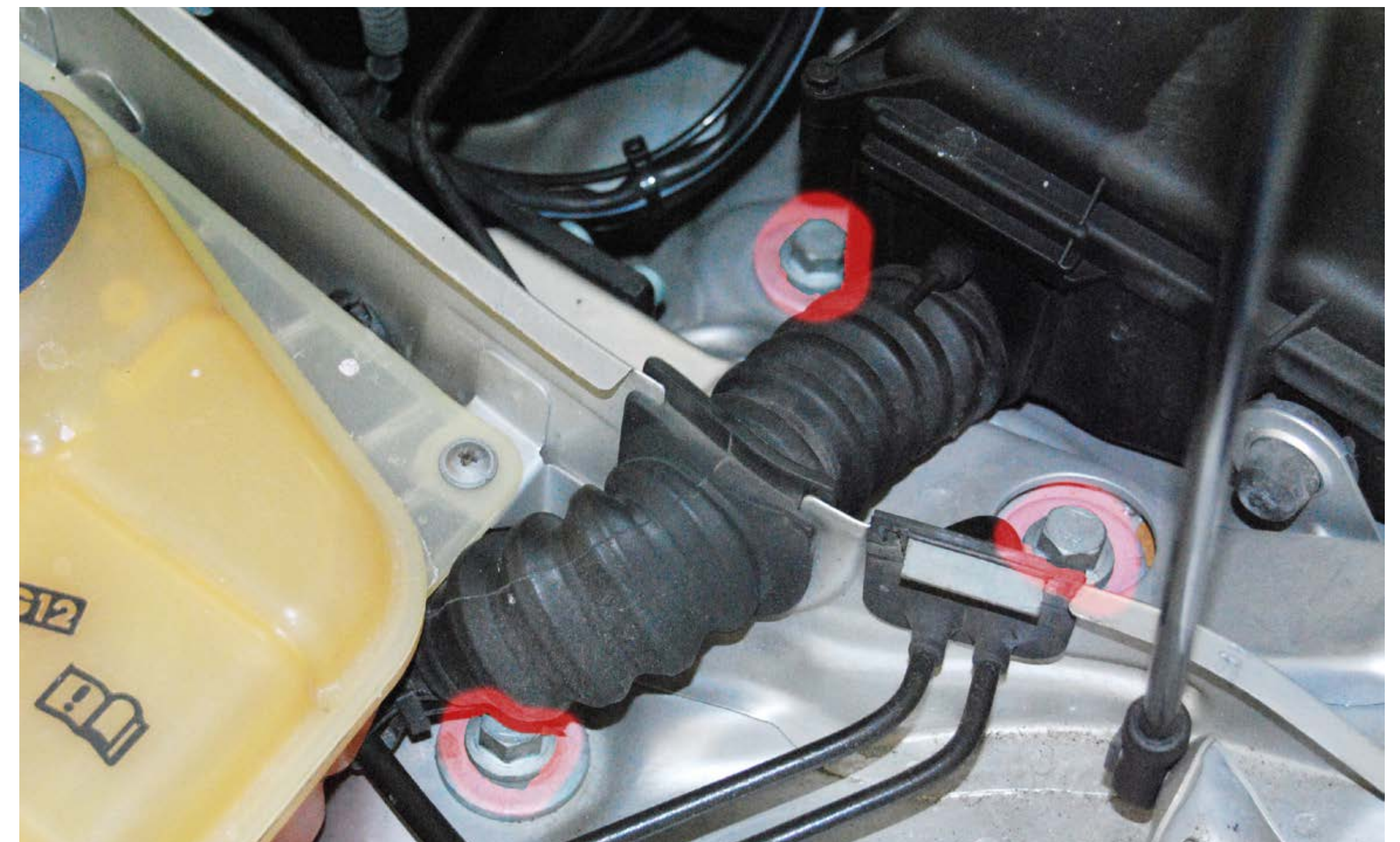
Step 2

The rain tray must be removed in order to access the strut tower bracket securing bolts.

Unscrew the tray securing tabs and set the piece off to the side, out of your way.



Removing the coolant expansion tank as well can help gain better access to the inner strut tower bracket bolt.



Step 3

Using a phillips screwdriver, remove the coolant tank securing screws and place the unit out of the way enough to access the bolt.

**Step 4**

On the RH side of the vehicle, several electrical connectors are held by a plastic retainer. Slide any connector that obstructs access to the strut tower bracket bolts out of the retainer and position them to the side.

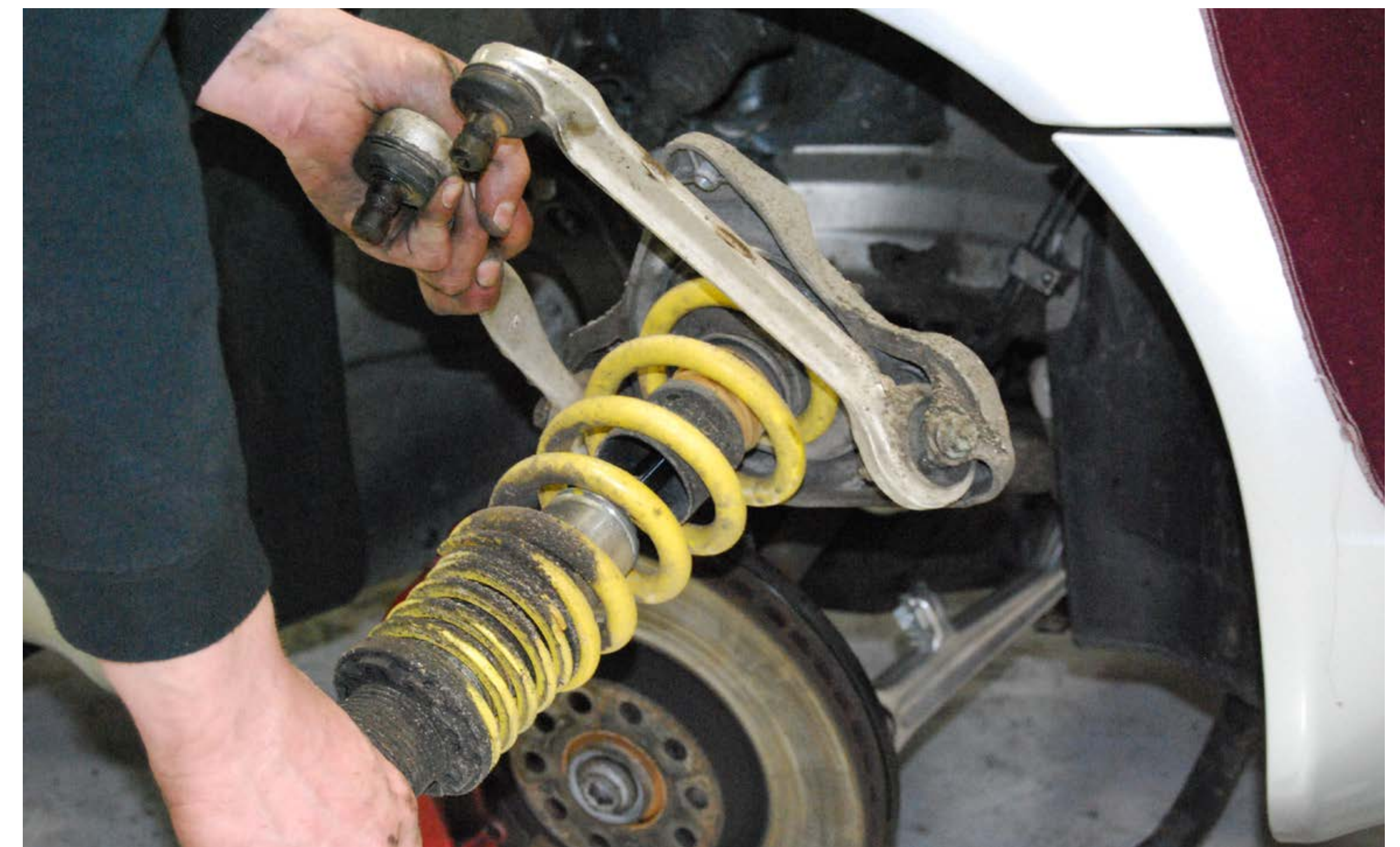


Step 5

Note: Place a floor jack under the lower front suspension links to keep the suspension from dropping suddenly when the strut tower bracket bolts are removed.

Using a 16mm socket, remove the three strut tower bracket bolts.

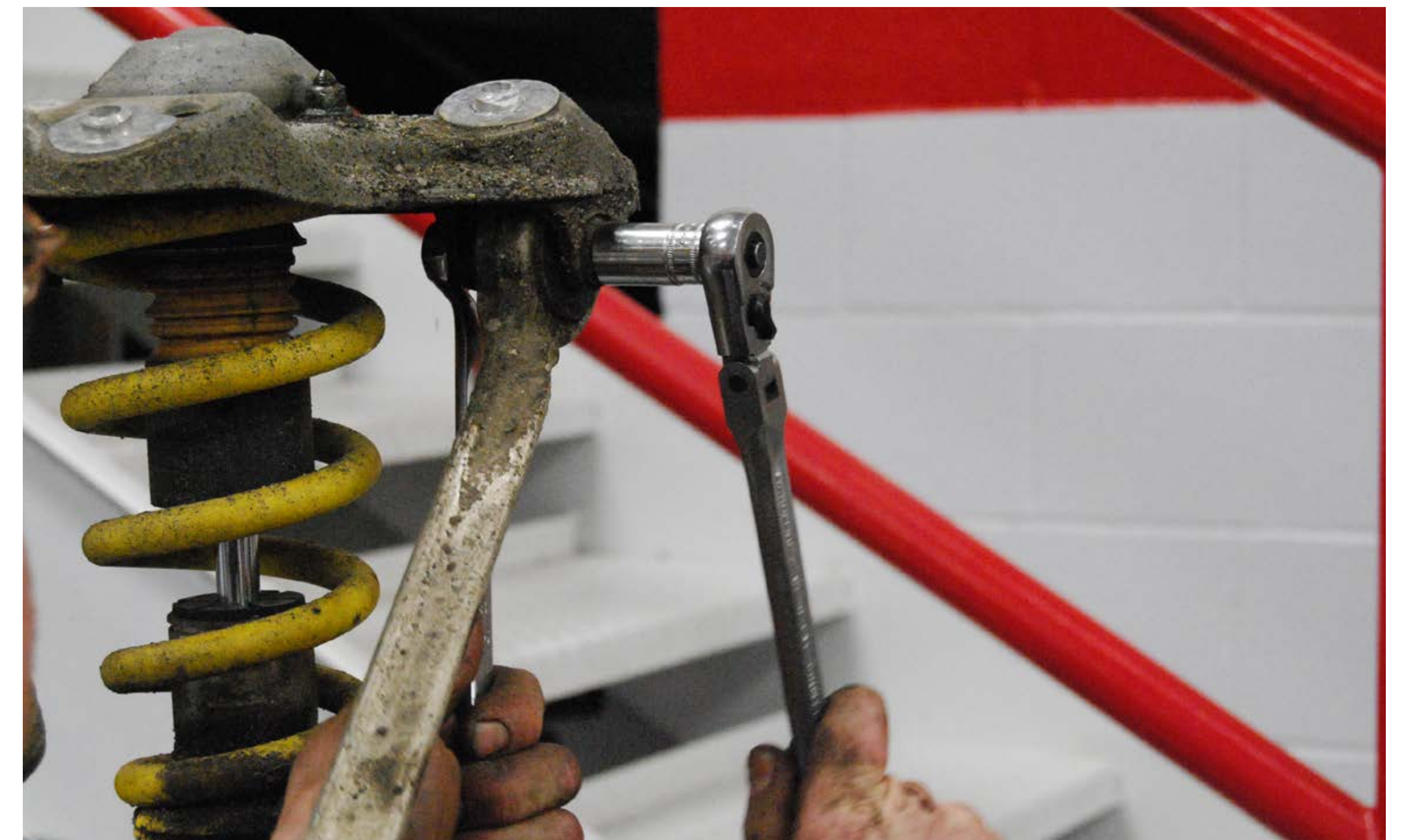
Once the bolts are removed, lower the jack supporting the front suspension, swivel the steering knuckle out of the way, and remove the strut/spring assembly.

**Step 6**

To more easily work through the next steps, it is helpful to secure the strut/spring assembly upright in a vise.

Remove the two upper link bolts, and remove the two upper links.

Note: The upper links are different, there is a front and rear on each side. Keep them in position after removal so you can match up the new links for proper installation.



Step 7

Loosely install both new upper links using the new bolts and nuts provided with the kit.

As shown in the picture, measure the distance between the strut tower bracket and the top of the front upper links. The measurement should be 47mm +/- 2mm. Use a digital caliper or equivalent measuring device to make this measurement.

Note: These upper link bolts are not accessible once installed in the car. They must be torqued now using the specified measurement, which positions the upper links at ride height.

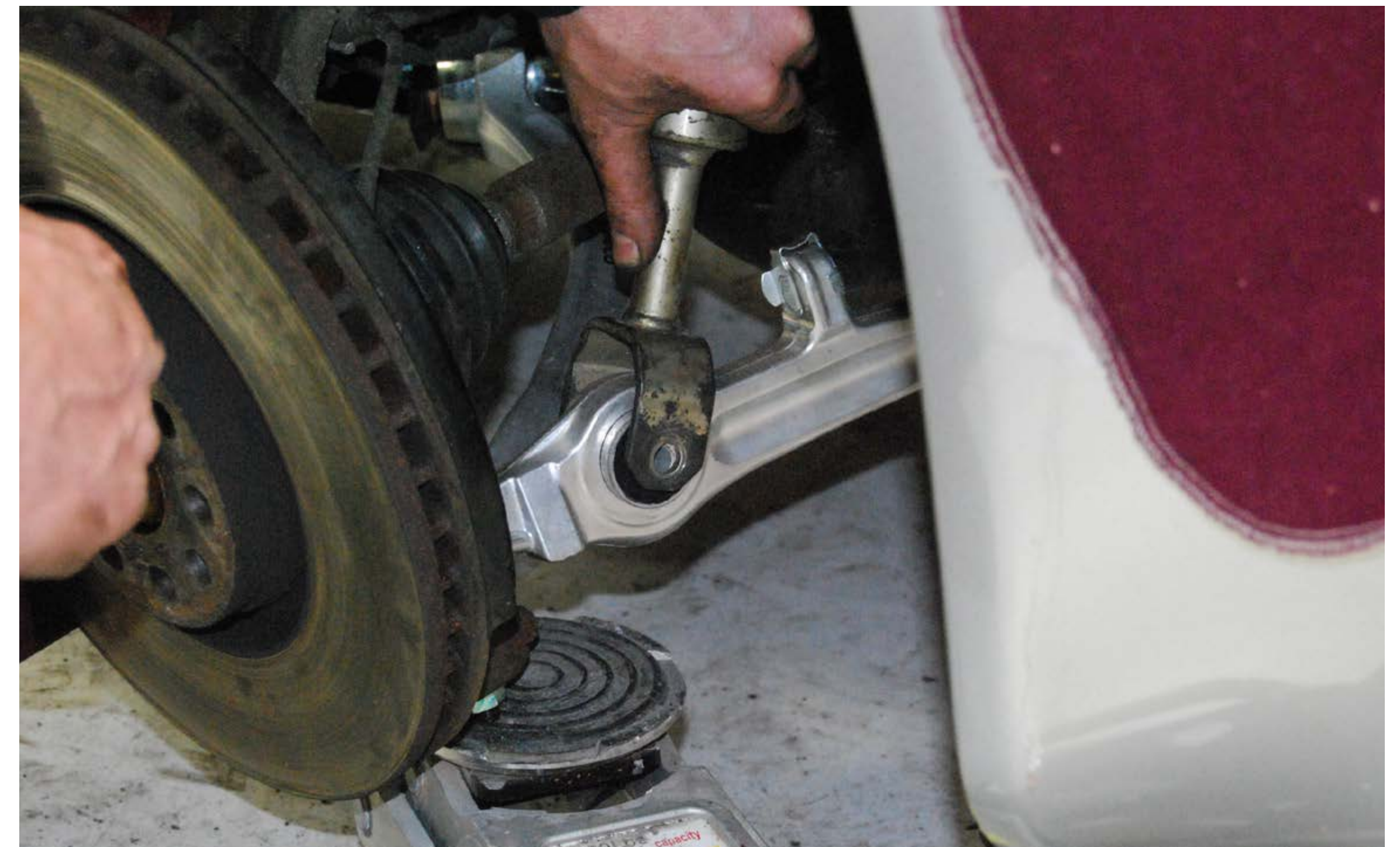
While holding the links in position, torque the new link bolts to 50 Nm + 90 degrees. (36 ft-lbs + 90 degrees)



Step 8

Reinstall the strut/spring assembly in the car, placing the strut wishbone in place over the track control link.

Raise the jack and support the front suspension while guiding the strut tower bracket into place.

**Step 9**

Reinstall the three bolts into the strut tower bracket, then install the strut wishbone bolt.

Torque the strut tower bracket bolts to 75 Nm.

Do not tighten the strut wishbone bolt at this time.



Step 10

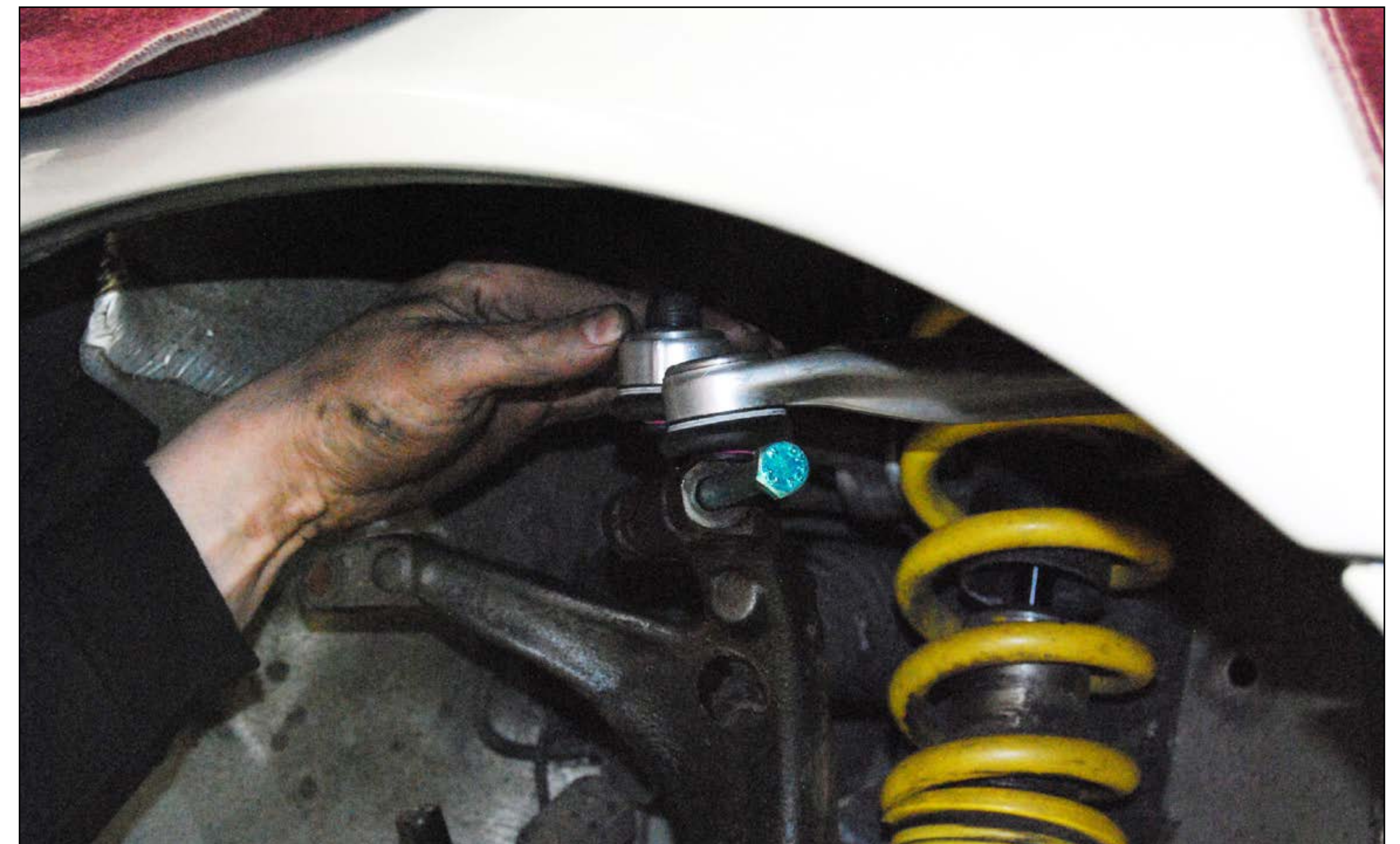
Reinstall the coolant expansion tank, the wiring harness connectors, and the rain tray.

**Step 11**

Install the two upper links into the steering knuckle by lining up the notches on the link studs with the hole for the pinch bolt, and pushing the link studs into place in the steering knuckle.

Coat the new upper link pinch bolt with anti seize compound, install it in the steering knuckle and torque it to 40 Nm. (30 ft-lbs)

Note: For ease of installation, thoroughly clean the bolt hole and link stud bores on the steering knuckle using a round wire brush or similar tool.

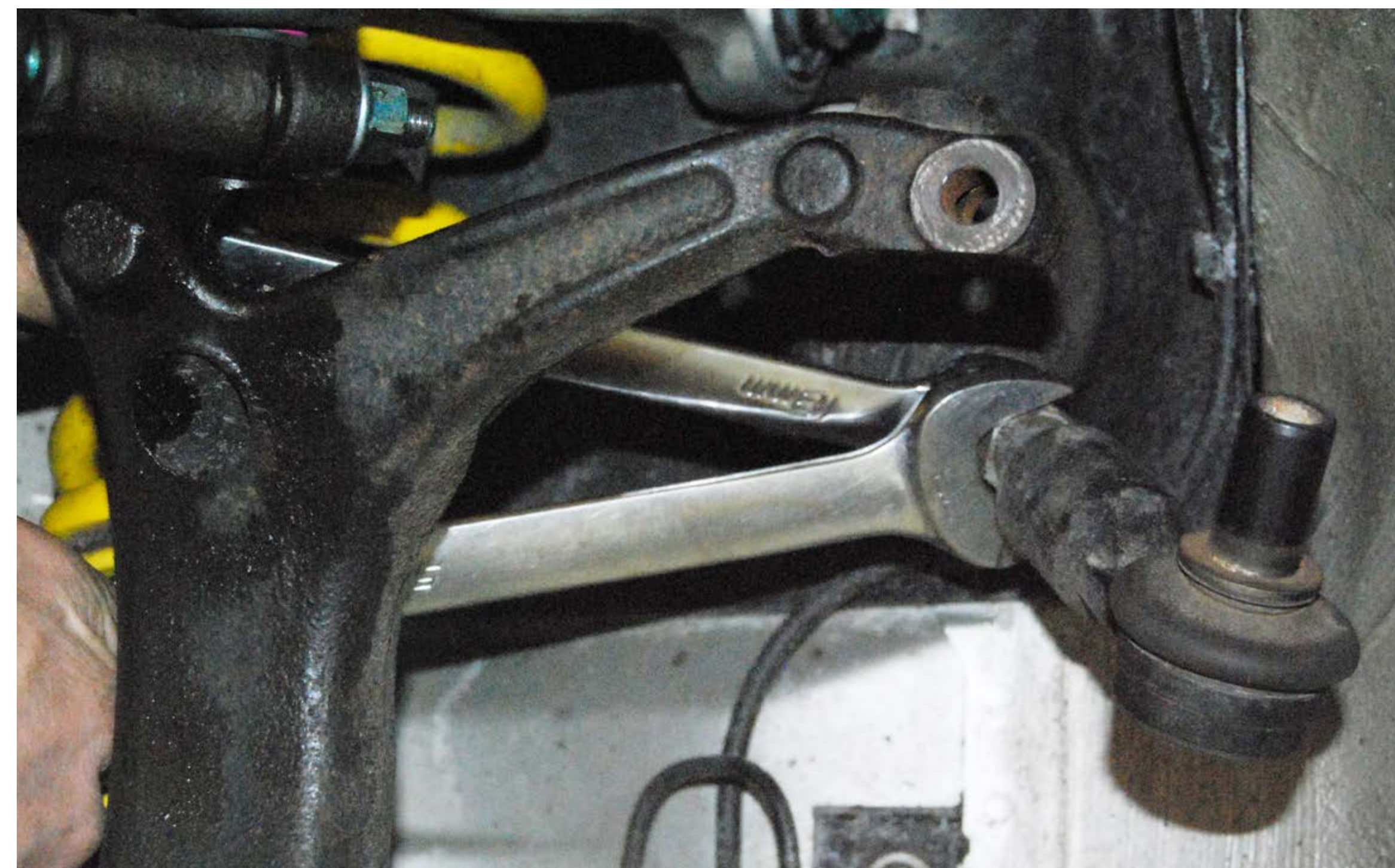


Step 12

Using measuring tape, note the distance between the lock nut and the center line of the tie-rod stud.

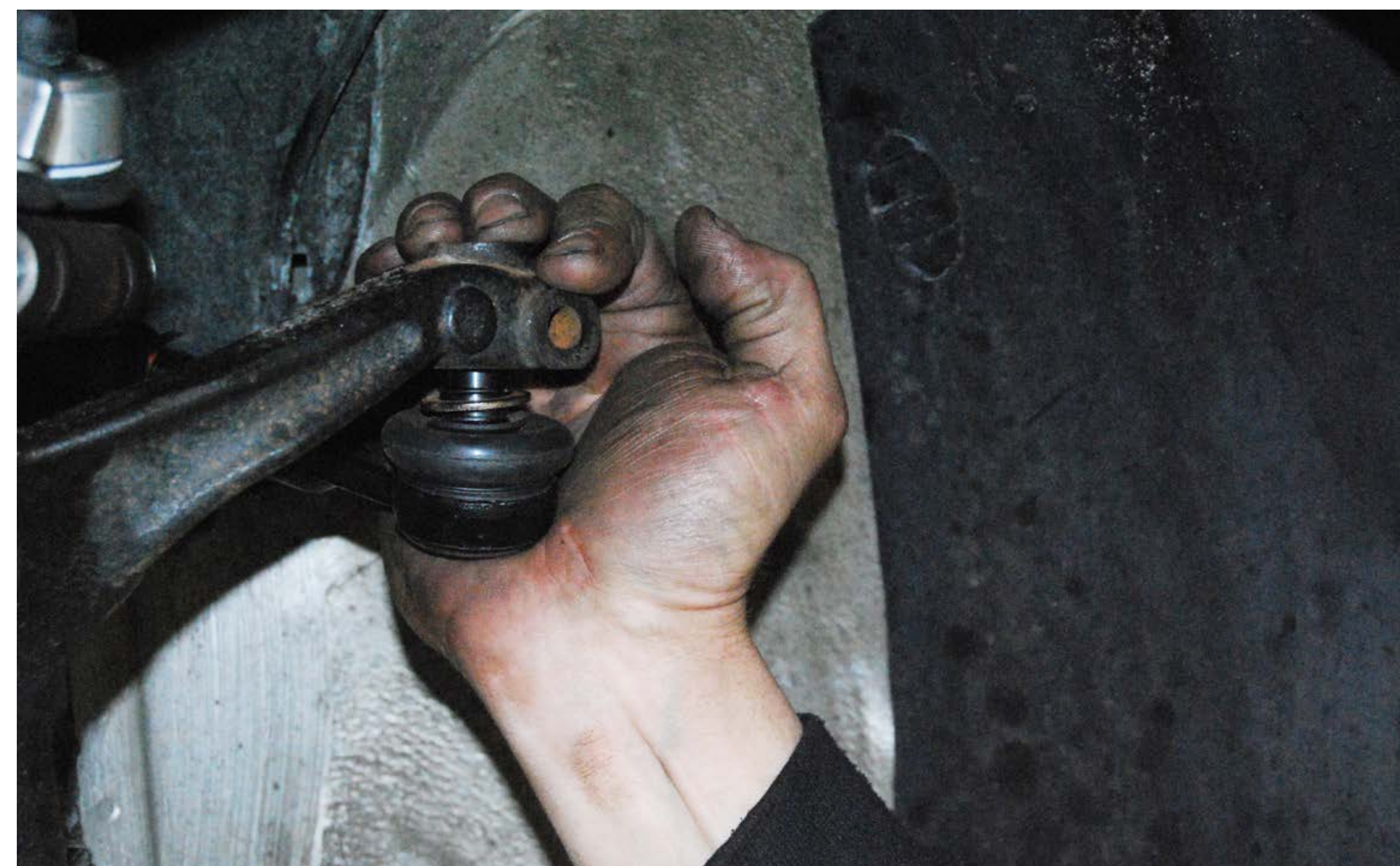
Loosen the tie-rod end locknut using a 22mm wrench while holding the inner tie-rod nut with an 18mm wrench. While holding the inner tie-rod, remove the outer tie-rod end by threading it out.

Note: It is very common for these tie rod ends to be seized in place due to rust. You may have to heat the inner tie rod using an oxyacetylene torch in order to loosen the tie rod end. If heat is required, take caution not to burn the rubber inner tie-rod end boot when using the torch.

**Step 13**

Thread the outer tie-rod end into the inner tie-rod to approximately the location measured in step 12. Torque the lock nut to 100 Nm. (74 ft-lbs)

Note: This rough measuring procedure does not take the place of a professional alignment, however you should attempt to keep the alignment as close as possible so the vehicle can be safely moved after the installation is complete.



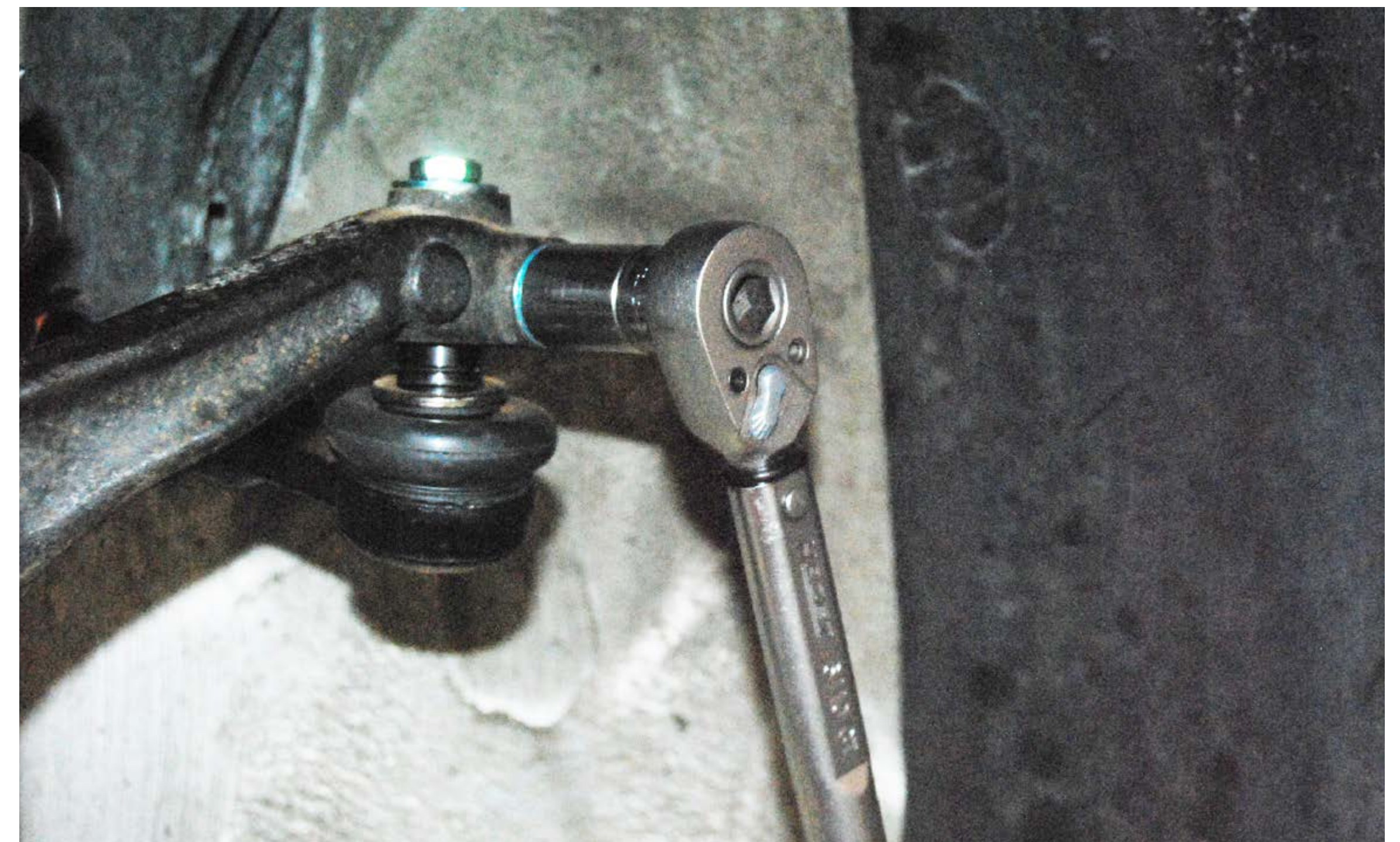
Step 14

Install the tie rod end into the steering knuckle by pushing it into place as shown in the picture.

Install the tie-rod end vertical bolt at the steering knuckle using a 13mm socket. Torque it to 7 Nm. (5 ft-lbs)

**Step 15**

Coat the new tie rod end pinch bolt with anti seize and install it into the steering knuckle. Torque the bolt to 45 Nm. (33 ft-lbs) using a 16mm socket and torque wrench.



Step 16

Install the new sway bar links, securing them to the sway bar and the track control link. Do not torque the sway bar link bolts at this time.

Note: The sway bar links have a fixed spacer installed on them. The spacer should be positioned on the bottom of each link and be seated against the sway bar as shown in the picture.

The newly installed parts should be secured as shown before reinstalling the headlight-leveling sensor and torquing down any bolts.



Step 17

Reinstall the headlight leveling sensor link back onto the sensor unit.

Step 18

Reinstall the front wheels and torque them to 120 Nm. (88 ft-lbs)

Step 19

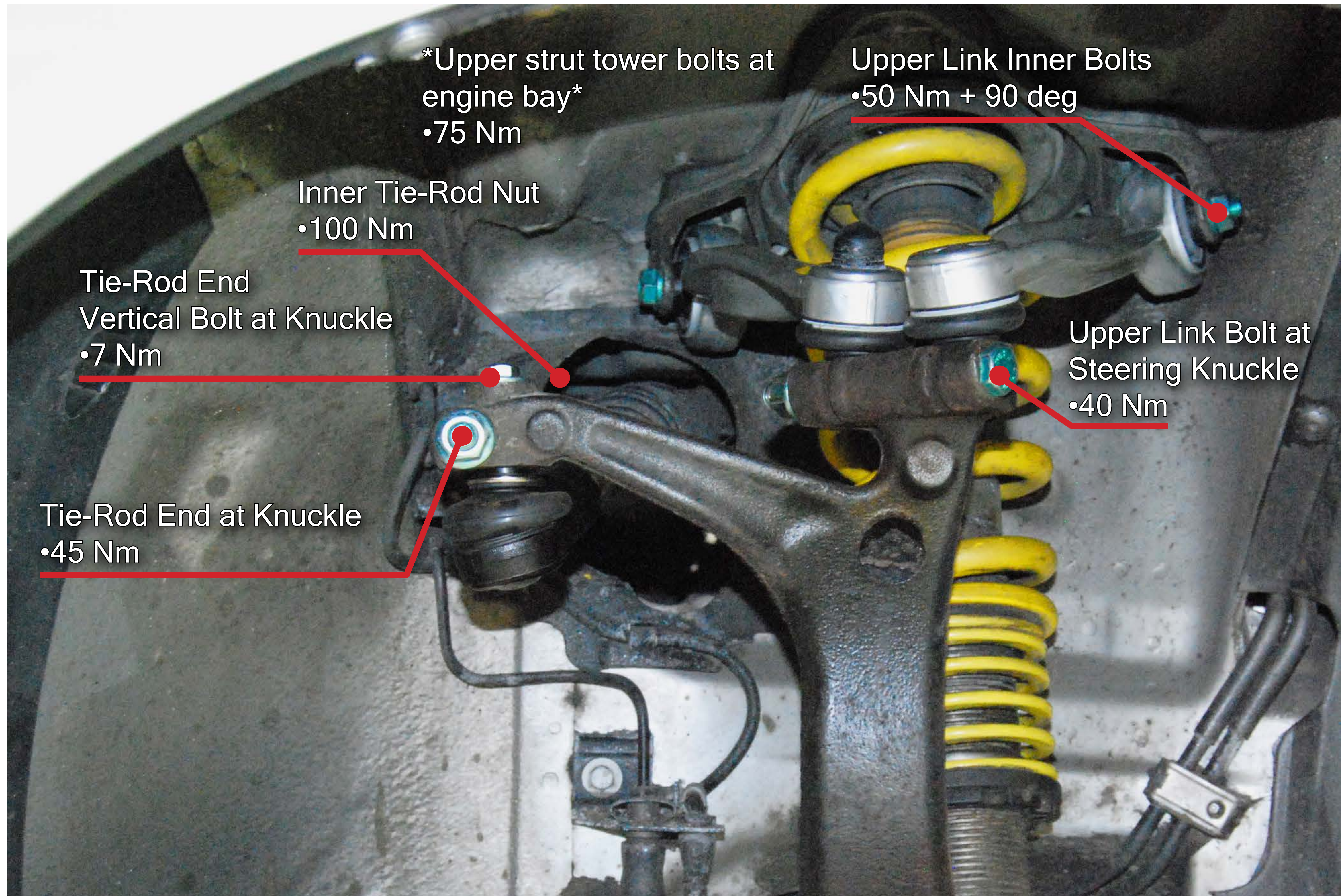
It is now time to torque all of the suspension bushing fasteners that have not been previously torqued. All of these remaining fasteners need to be torqued with the vehicle at ride height. If you have a drive on lift, this is the easiest way to access these bolts. Drive on ramps also will give you the access you need under the vehicle.

If you do not have this equipment, an alternate method can be used:

With the vehicle still safely supported by jack stands or an automotive lift, use a hydraulic jack to jack the suspension up underneath the front steering knuckle. Raise the suspension until the measurement matches the ride height measurement taken at the beginning of this procedure. Torque the remaining bolts to specification.



Overview of Torque Specifications



THE FRONT CONTROL ARM INSTALLATION PROCEDURE IS COMPLETE!



This tutorial is provided as a courtesy by ECS Tuning.

Proper service and repair procedures are vital to the safe, reliable operation of all motor vehicles as well as the personal safety of those performing the repairs. Standard safety procedures and precautions (including use of safety goggles and proper tools and equipment) should be followed at all times to eliminate the possibility of personal injury or improper service which could damage the vehicle or compromise its safety.

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