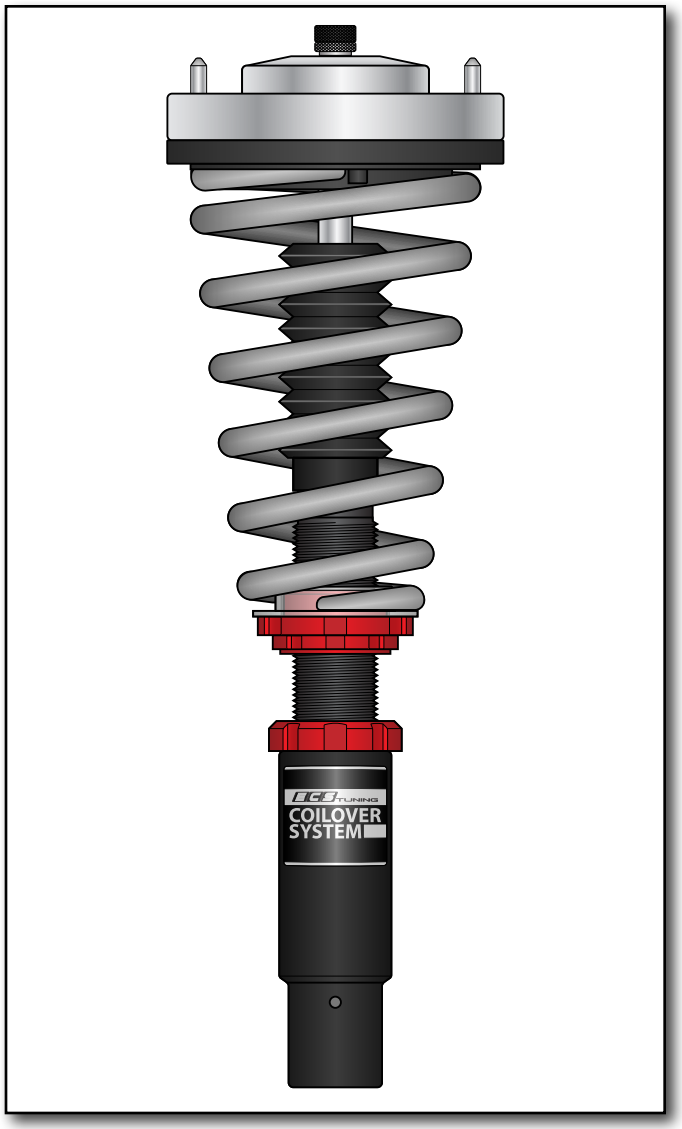
BMW G20 Adjustable Coilover Kit
Installation Instructions - Click HERE to Shop

Skill Level
2 - Moderate

Some Experience Recommended



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REQUIRED TOOLS

Note: The tools required for each step will be listed by the step number throughout these instructions.

Standard Automotive Tools

Required For This Install

Available On Our Website

- **Protecta-Sockets (for lug nuts)** ..... ES#2221243
- ⅜" Drive Ratchet ..... ES#2765902
- ⅜" Drive Torque Wrench ..... ES#2221245
- ⅜" Drive Deep and Shallow Sockets ..... ES#2763772
- ⅜" Drive Extensions ..... ES#2804822
- **Hydraulic Floor Jack** ..... ES#2834951
- **Torx Drivers and Sockets** ..... ES#11417/8
- **½" Drive Deep and Shallow Sockets** ..... ES#2839106
- **½" Drive Ratchet**
- **½" Drive Extensions**
- **½" Drive Torque Wrench** ..... ES#2221244
- **½" Drive Breaker Bar** ..... ES#2776653
- **Bench Mounted Vise**
- Crows Foot Wrenches
- Hook and Pick Tool Set ..... ES#2778980
- ¼" Drive Ratchet ..... ES#2823235
- ¼" Drive Deep and Shallow Sockets ..... ES#2823235
- ¼" Drive Extensions ..... ES#2823235
- Plier and Cutter Set ..... ES#2804496
- **Flat and Phillips Screwdrivers** ..... ES#2225921
- **Jack Stands** ..... ES#2763355
- **Ball Pein Hammers**
- **Pry Bar Set** ..... ES#1899378
- Electric/Cordless Drill
- Wire Strippers/Crimpers
- Drill Bits
- **Punch and Chisel Set**
- **Hex Bit (Allen) Wrenches and Sockets** ..... ES#11420
- Thread Repair Tools ..... ES#1306824
- **Open/Boxed End Wrench Set** ..... ES#2765907

INSTALLATION NOTES

- **RH** refers to the ***passenger side*** of the vehicle.
- **LH** refers to the ***driver side*** of the vehicle.
- Always use the proper torque specifications.
- If applicable to this installation, torque specifications will be listed throughout the document and at the end as well.
- Please read all of these instructions and familiarize yourself with the complete process **BEFORE** you begin.

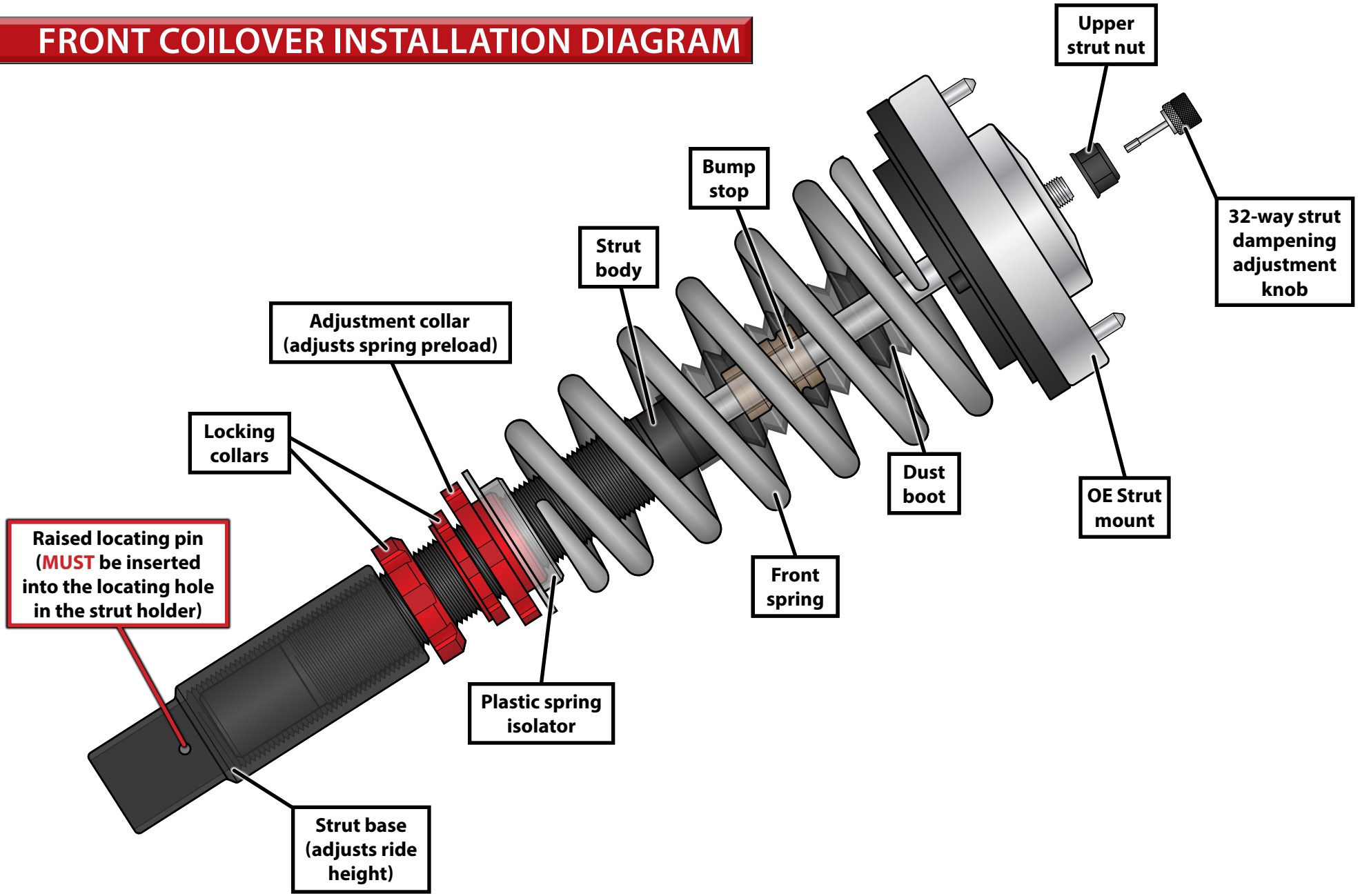
GENERAL PREPARATION AND SAFETY INFORMATION

ECS Tuning cares about your health and safety, please read the following safety information. This information pertains to automotive service in general, and while it may not pertain to every job you do, please remember and share these important safety tips.

- Park your car in a safe, well lit, level area.
- Shut the engine off and remove the key from the ignition switch.
- Make sure any remote start devices are properly disabled.
- **ALWAYS** wear safety glasses.
- Make sure the parking brake is applied until the vehicle is safely lifted and supported.
- Whether lifting a vehicle using an automotive lift or a hydraulic jack, be sure and utilize the factory specified lift points.
- Lifting a vehicle in an incorrect location can cause damage to the suspension/running gear.
- **ALWAYS** support the vehicle with jack stands.
- **ALWAYS** read and follow all safety information and warnings for the equipment you are using.

NEVER get underneath a vehicle that is supported only by a jack, and ALWAYS make sure that the vehicle is securely supported on jack stands.

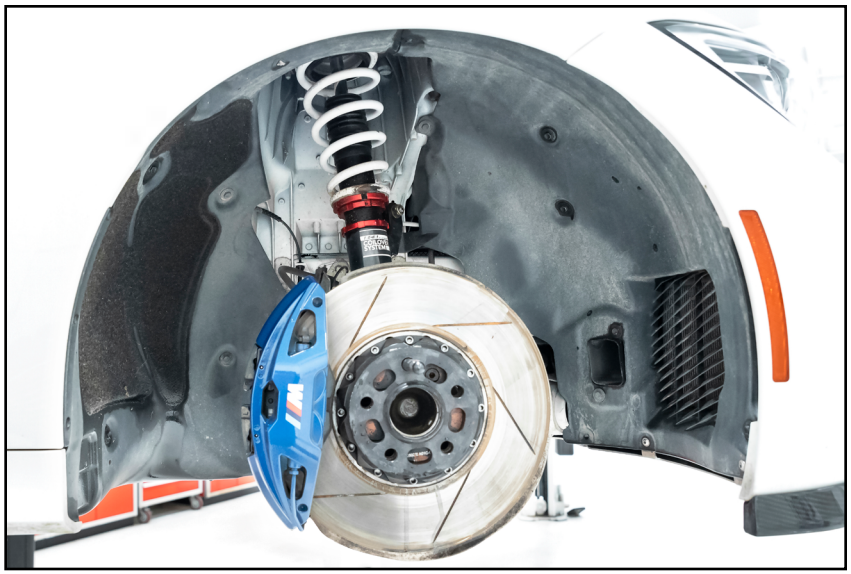
FRONT COILOVER INSTALLATION DIAGRAM



REMOVING THE ORIGINAL FRONT STRUTS

Step 1: Protecta-Sockets & Breaker Bar

Safely lift and support the vehicle and remove all four wheels.

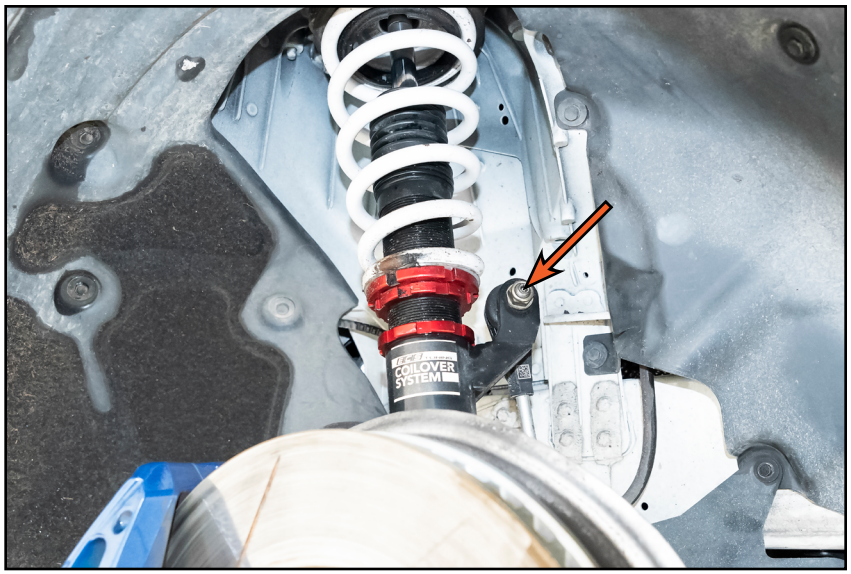


TECH TIP

Before you begin your install take a moment to take some baseline measurements. Measure your fender to ground clearance at all four wheels and write it down. This will come in handy later on once you go to adjust the ride height.

Step 2: 16mm Wrench, T30 Torx Socket & Ratchet

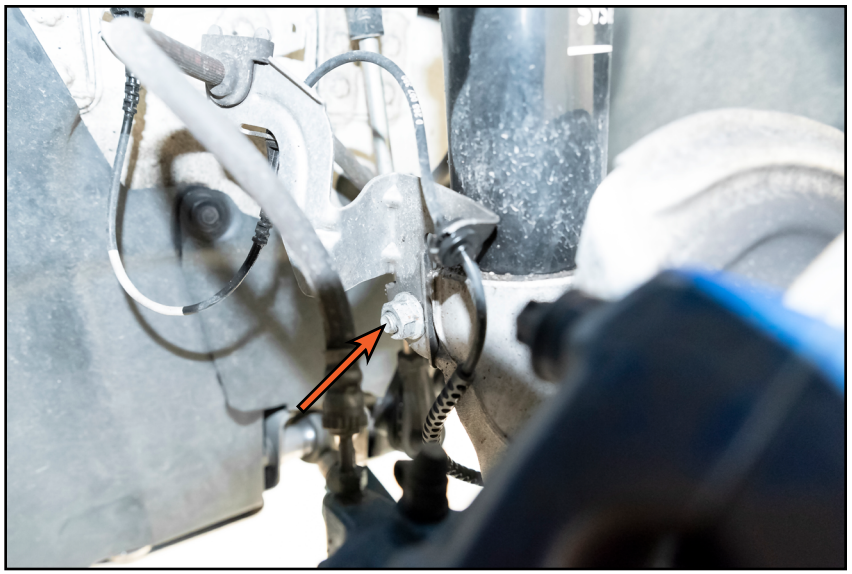
Remove the nut (arrow) then pull the sway bar end link free from the strut.



REMOVING THE ORIGINAL FRONT STRUTS

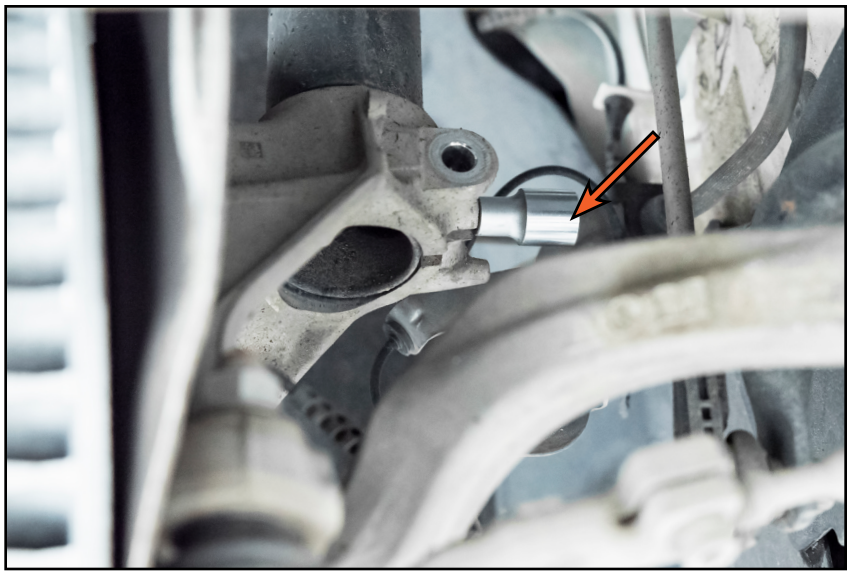
Step 3: 18mm Wrench, 16mm Socket & Ratchet

Counter-hold the nut (arrow) while you remove the strut pinch bolt. Move the brake hose bracket out of the way.



Step 4: Spindle Housing Spreader Tool, Ratchet

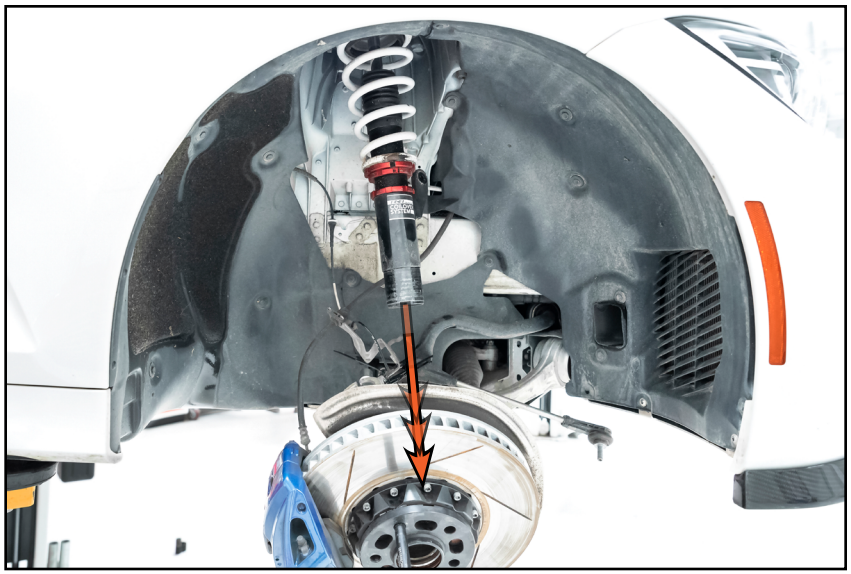
Insert the spindle housing spreader tool (available HERE) into the slot in the back of the steering knuckle and rotate the tool to spread it apart, freeing the strut body.



REMOVING THE ORIGINAL FRONT STRUTS

Step 5:

Support the knuckle from below and maneuver it downward until the strut slides free as shown. Carefully support the knuckle so that it does not hang and damage the brake lines.



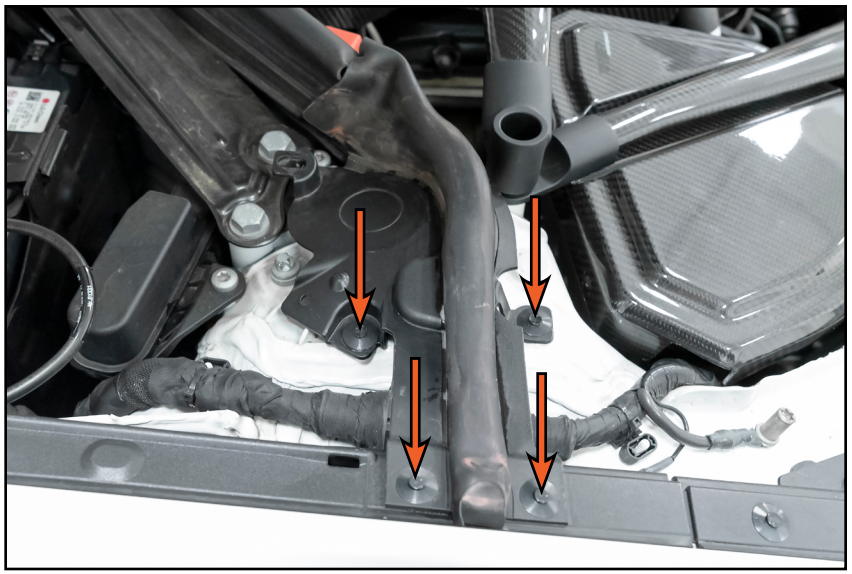
Step 6:

Rotate the release clip (arrow) to the “unlocked” position and pull each rain tray free from the engine bay.

REMOVING THE ORIGINAL FRONT STRUTS

Step 7: Trim Removal Tool

Remove the four plastic push-rivets (arrows), then pull the cover free from the top of the strut mount.



Step 8: E12 Torx Socket & Ratchet

Support the strut from below and remove the four bolts (highlighted in **RED**) to free it from the vehicle. Carefully guide the strut assembly out of the fender well.

INSTALLING THE FRONT COILOVERS

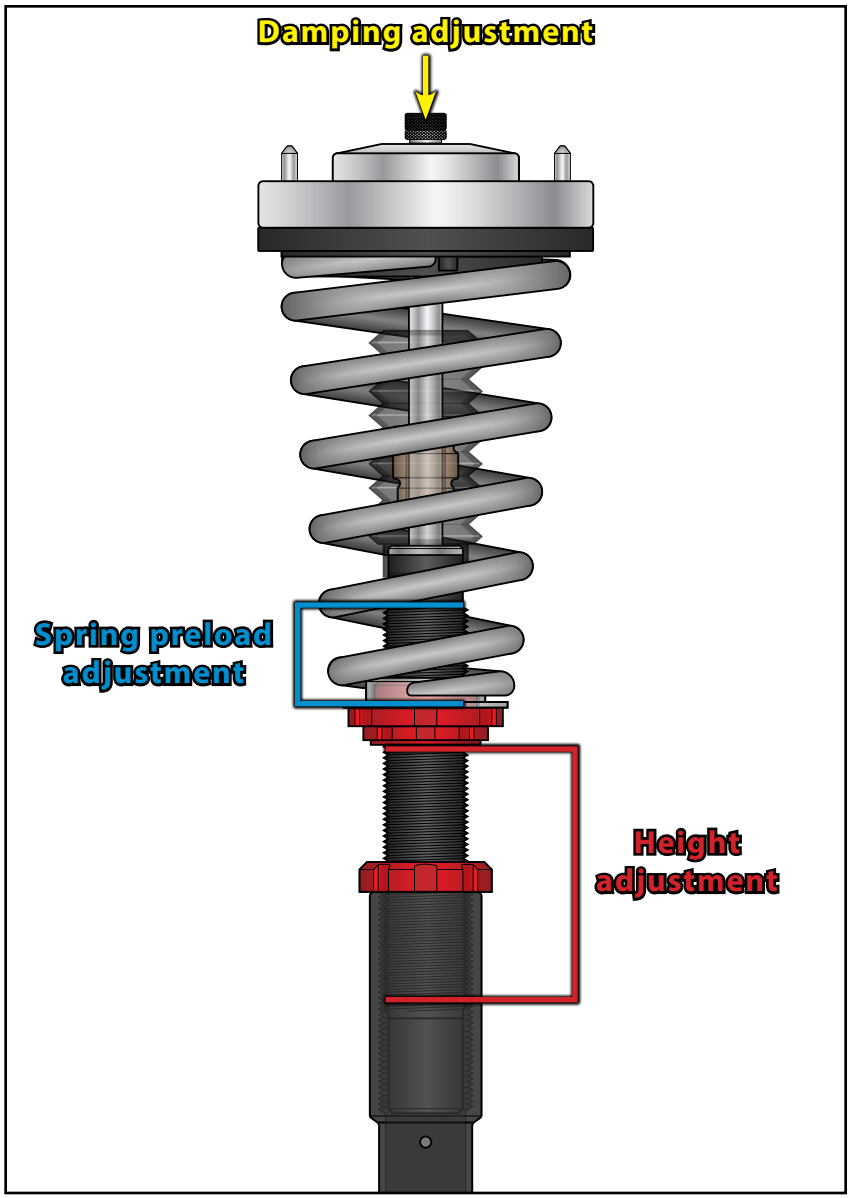
Step 1: Coilover Adjustment Wrenches

Before we install the front coilovers into the vehicle, it's time to set our baseline adjustment. Once the coilovers are all installed onto the vehicle we will come back and fine-tune them. Our front coilovers are three way adjustable, meaning you can adjust the damping, height, and spring preload all independently.

To adjust the damping, insert and rotate the adjustment knob until your desired setting is achieved. It is important to note that the damping can only be adjusted with the strut out of the vehicle, so it is important to set this number correctly. We settled on a damping setting of 16 on our vehicle, however this number may need adjusted on your vehicle depending on your suspension setup.

The spring preload can be adjusted by rotating the adjustment collar up until it compresses the spring the desired amount, then tightening the locking collar up against the adjustment collar to lock it in place. We found that a minimal amount of preload was ideal for our vehicle, so we spun the adjustment collar up until it was tight against the bottom of the spring then rotated it up one additional full turn before locking it in place.

The strut itself can be rotated up or down inside the body to raise or lower the vehicle without affecting the spring preload or damping. We recommend setting the height higher than you want the vehicle to sit, this will leave some room for the suspension to settle, or for you to fine-tune once the coilovers are installed. Once you are happy with the overall height, tighten the locking collar against the strut body to lock it in. We settled on a final ride height that was 1 inch lower than stock at all four wheels.

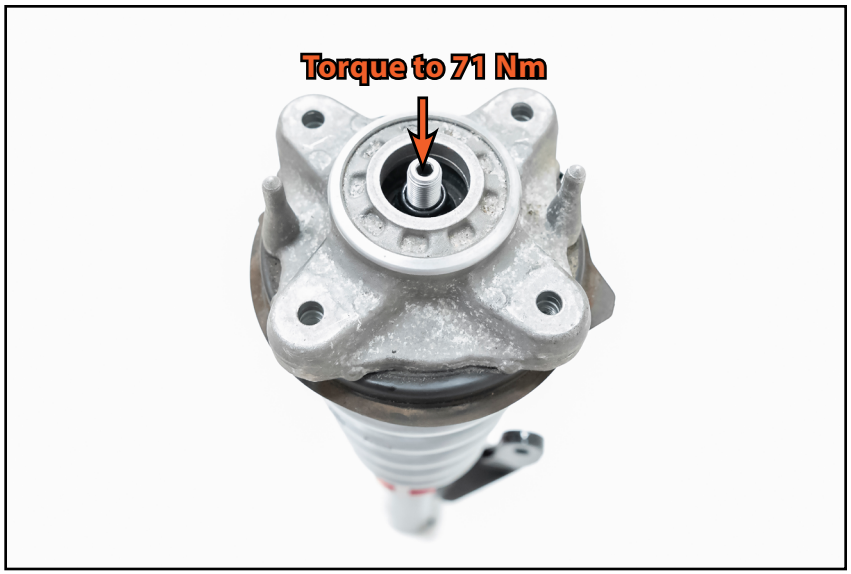


INSTALLING THE FRONT COILOVERS

Step 2: 18mm Strut Nut Socket & Torque Wrench, 5mm Hex (Allen)

If you are re-using your existing strut mounts: Install a spring compressor tool and compress the spring, then remove the upper strut nut and pull the mount free.

Place the strut mount onto the assembled coilover, referencing the diagram on page 5, then install the provided upper strut nut and tighten it to 71 Nm (52 Ft-lbs).

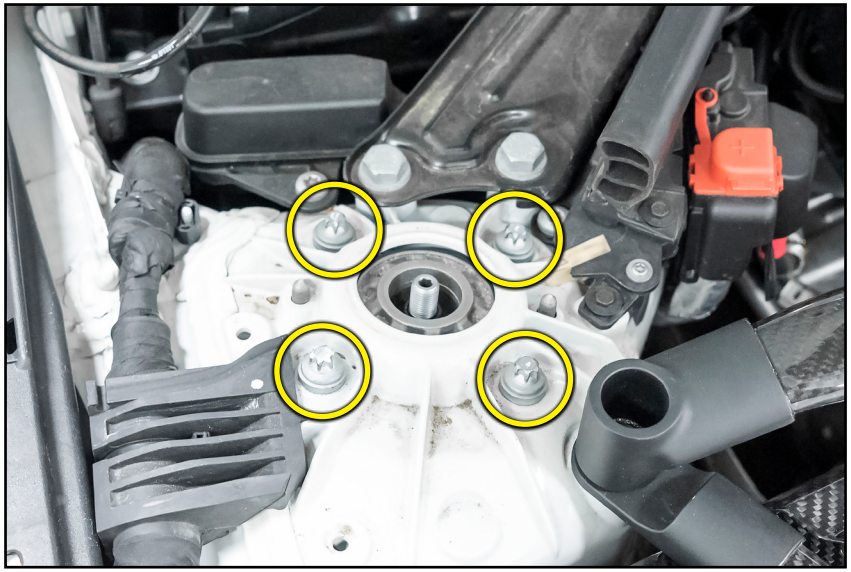


TECH TIP

We recommend applying a good quality wax-based lube to ***ALL*** the adjustment threads in this kit to protect them from the elements and help the adjustment collars easily spin up or down without resistance.

Step 3: E12 Torx Socket & Torque Wrench

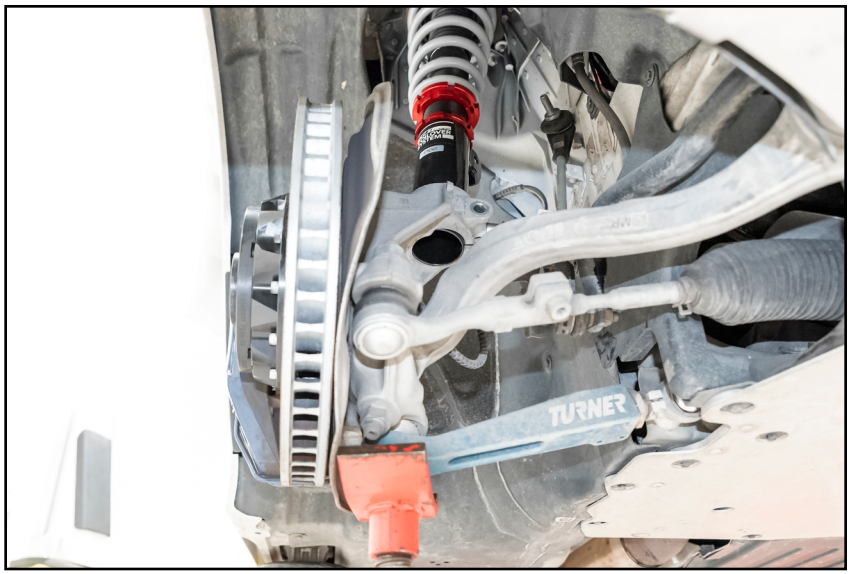
Lift the coilover assembly up into the strut tower and install the four bolts (circled in **YELLOW**), torquing them to 28 Nm (21 Ft-lbs) + 90 degrees.



INSTALLING THE FRONT COILOVERS

Step 4:

Guide the strut back into the knuckle, ensuring the locating pin slides into the slot in the back of the knuckle, then remove the spindle housing spreader tool.



Step 5:

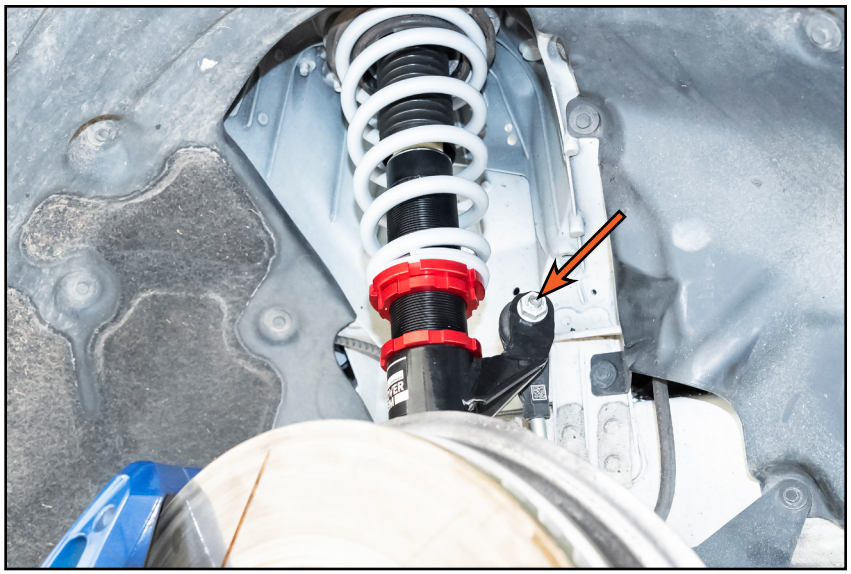
18mm Wrench, 16mm Socket & Torque Wrench

Reinstall the strut pinch bolt, then replace the nut (arrow) and torque it to 60 Nm (44 Ft-lbs) + 180 degrees.

INSTALLING THE FRONT COILOVERS

Step 6: 16mm Socket & Torque Wrench

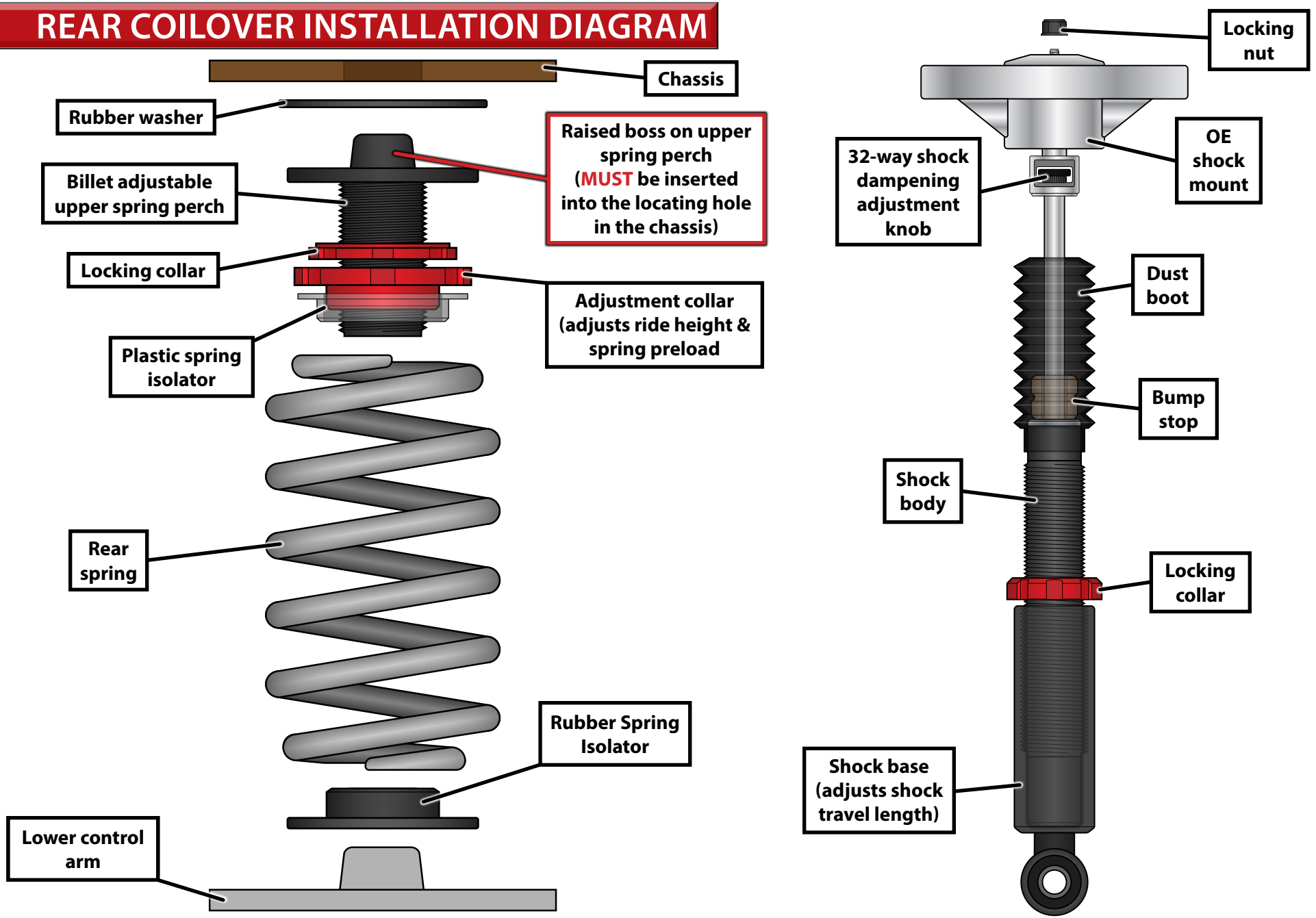
Slide the sway bar end link into the mounting bracket on the coilover, then replace the nut (arrow) and torque it to 56 Nm (41 Ft-lbs).



Step 7:

Reinstall the plastic cover and rain tray as shown.

REAR COILOVER INSTALLATION DIAGRAM



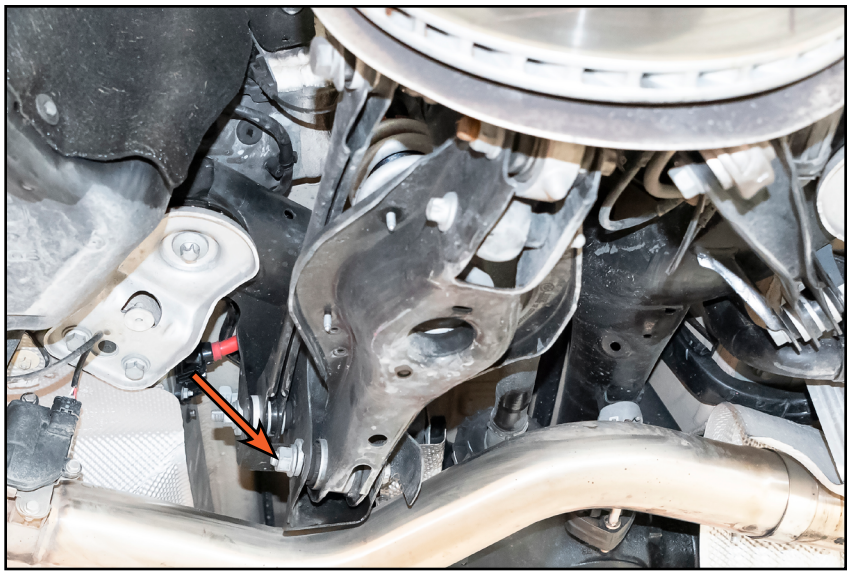
REMOVING THE ORIGINAL SHOCKS AND SPRINGS

Step 1: 10mm Socket & Ratchet

Remove the four nuts (circled in **RED**) then remove the plastic lower control arm cover.

Step 2: 21mm Socket & Ratchet

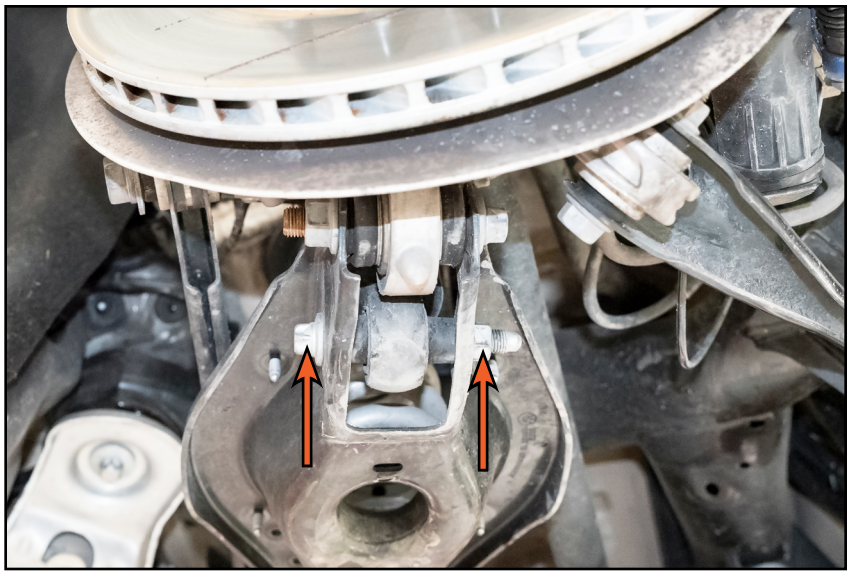
Loosen the inner lower control arm nut (arrow) slightly. If equipped, disconnect the level sensor.



REMOVING THE ORIGINAL SHOCKS AND SPRINGS

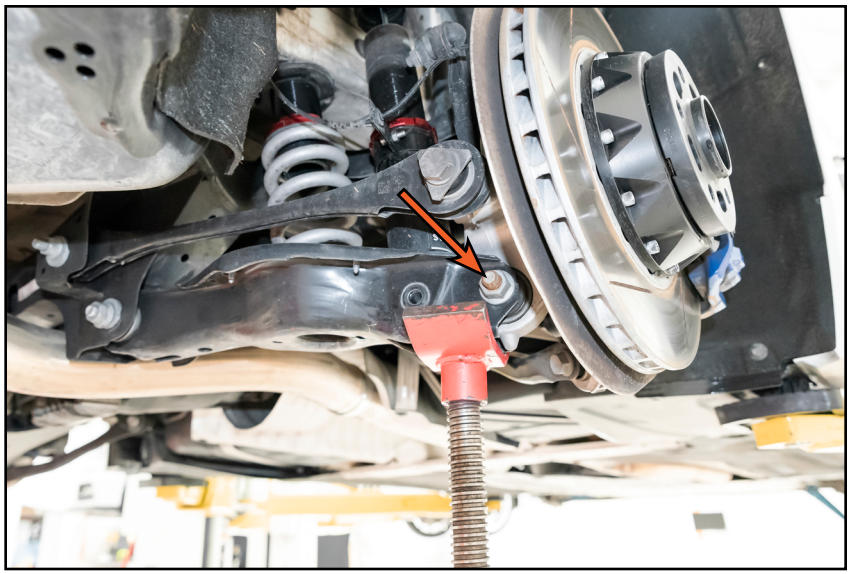
Step 3: 18mm Wrench, E20 Torx Socket & Ratchet

Remove the bolt and nut (arrows) which secures the shock to the lower control arm.



Step 4: 21mm Wrench, E20 Torx Socket & Ratchet

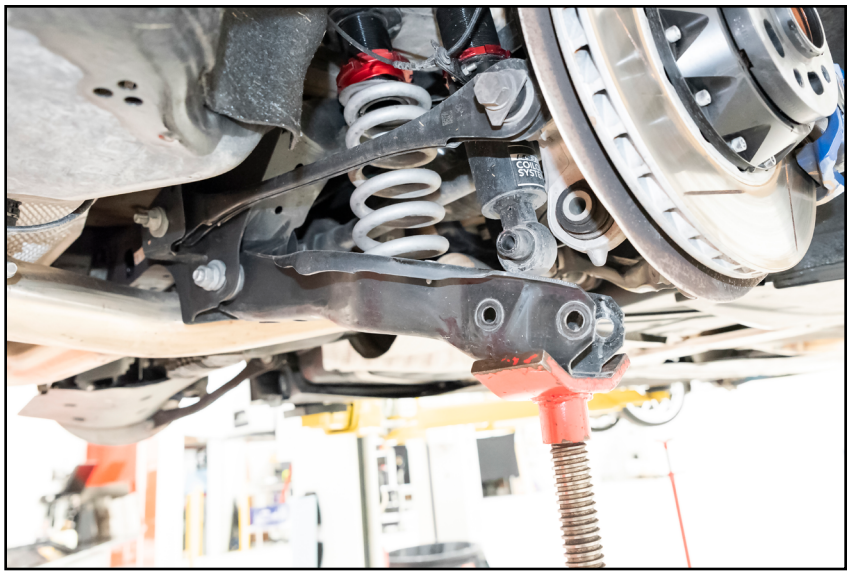
Support the control arm from below, then loosen the nut (arrow) and remove the outer lower control arm bolt.



REMOVING THE ORIGINAL SHOCKS AND SPRINGS

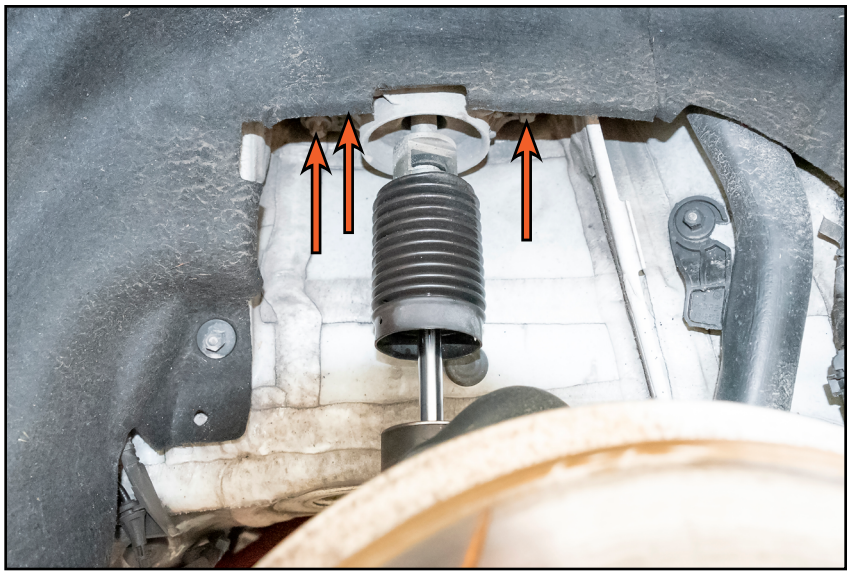
Step 5:

Carefully lower the control arm until the rear spring is no longer under tension, then remove it. Be sure to remove the OE rubber isolators as well.



Step 6: E12 Torx Socket & Ratchet

Remove the three bolts (arrows) which secure the rear shock mount to the body, then carefully guide the shock out of the fenderwell.

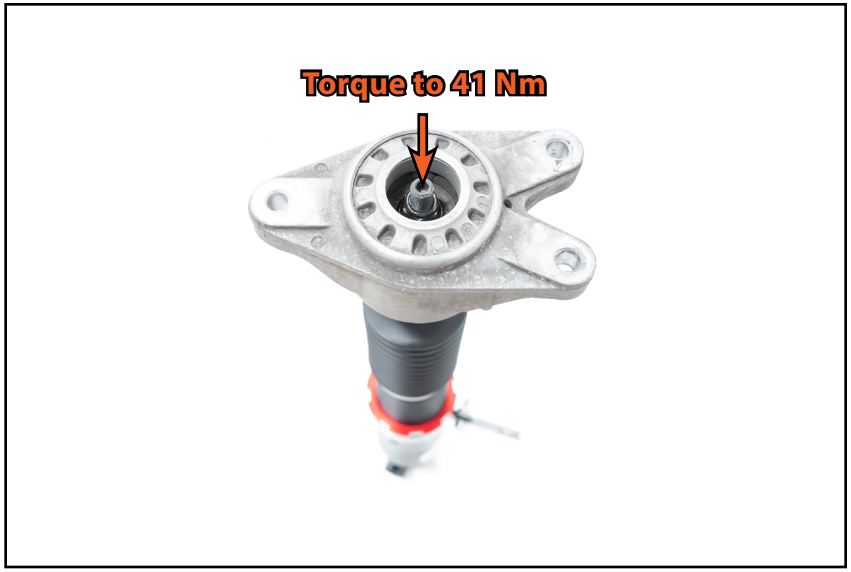


INSTALLING THE REAR COILOVERS

Step 1: 17mm Strut Nut Socket & Torque Wrench, 5mm Hex (Allen)

If you plan to re-use your rear shock mounts: counter-hold the shaft while you remove the upper shock nut, then pull the mount free.

Slide the shock mount onto the shock, then install the provided upper shock nut (arrow) and tighten it to 41 Nm (30 Ft-lbs).

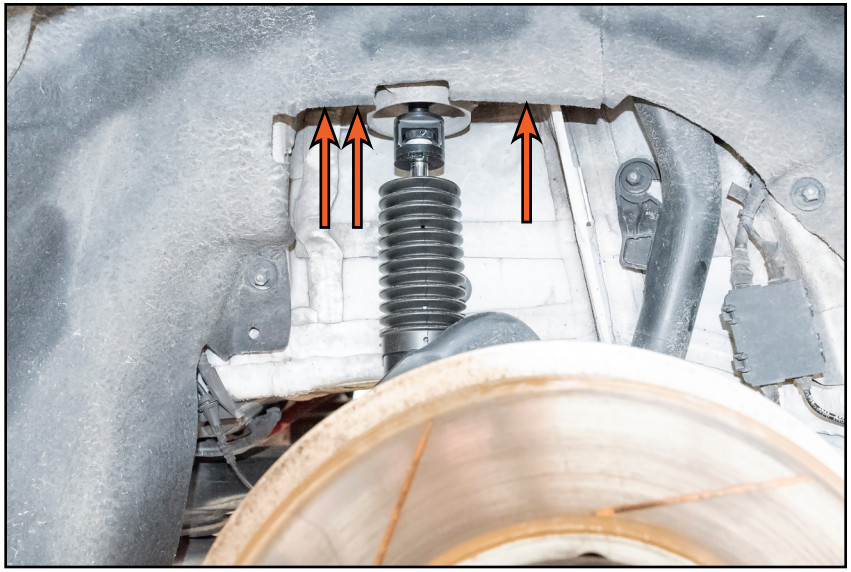


TECH TIP

Our Schwaben shock and strut removal set (available HERE) helps make removal of these nuts a breeze.

Step 2: E12 Torx Socket & Torque Wrench

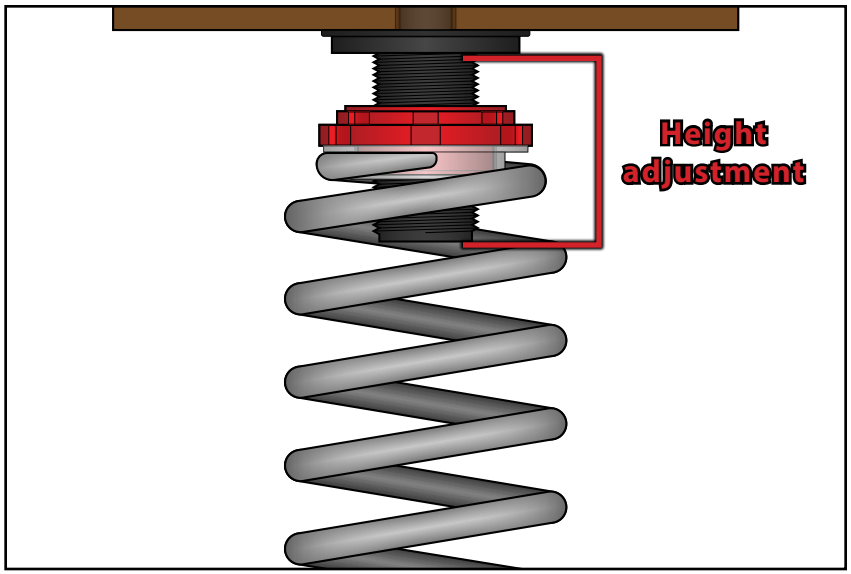
Carefully guide the new shock into the fenderwell, then install the bolts (arrows) and torque them to 28 Nm (21 Ft-lbs).



INSTALLING THE REAR COILOVERS

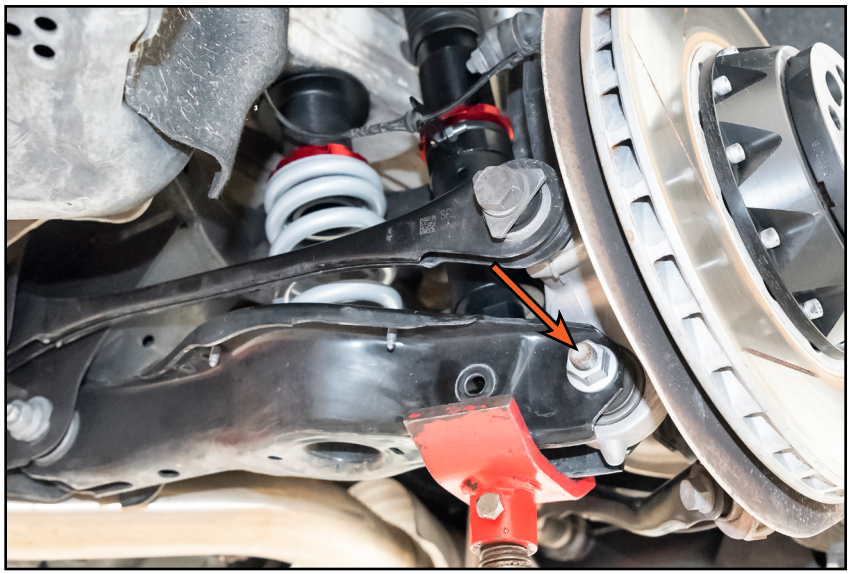
Step 3: Coilover Adjustment Wrenches

The adjustment collar on the rear spring perch can be used to adjust the height and spring preload simultaneously. Rotate the adjustment collar downward to preload the spring, raising the rear of the vehicle. Once your desired height has been achieved, tighten the locking collar down against the adjustment collar to lock it in place. We settled on a final ride height that was 1.25 inch lower than stock ride height.



Step 4: 21mm Wrench, E20 Torx Socket & Ratchet

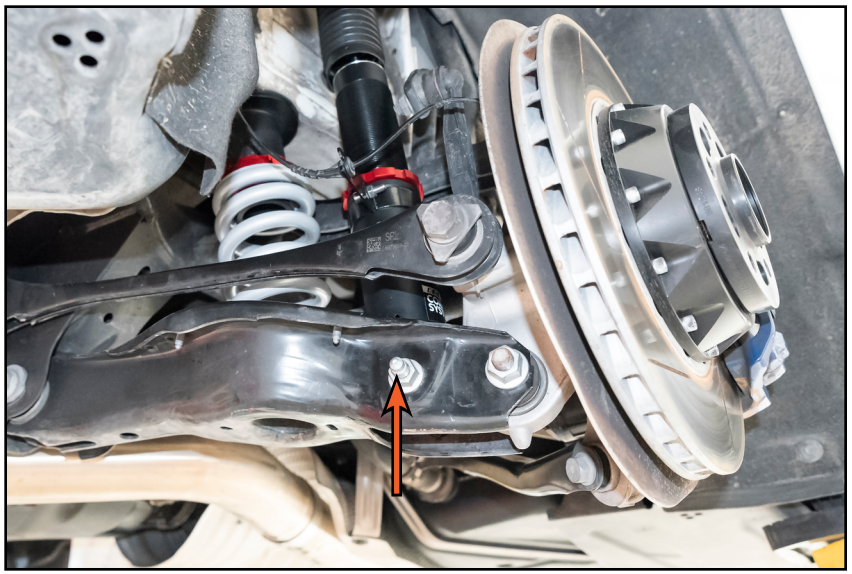
Using the diagram on page 14 for reference, slide the spring assembly into the lower control arm, then jack up the control arm until the raised locating boss slides into the hole in the chassis. Replace the outer lower control arm bolt and loosely install the nut (arrow).



INSTALLING THE REAR COILOVERS

Step 5: 18mm Wrench, E20 Torx Socket & Ratchet

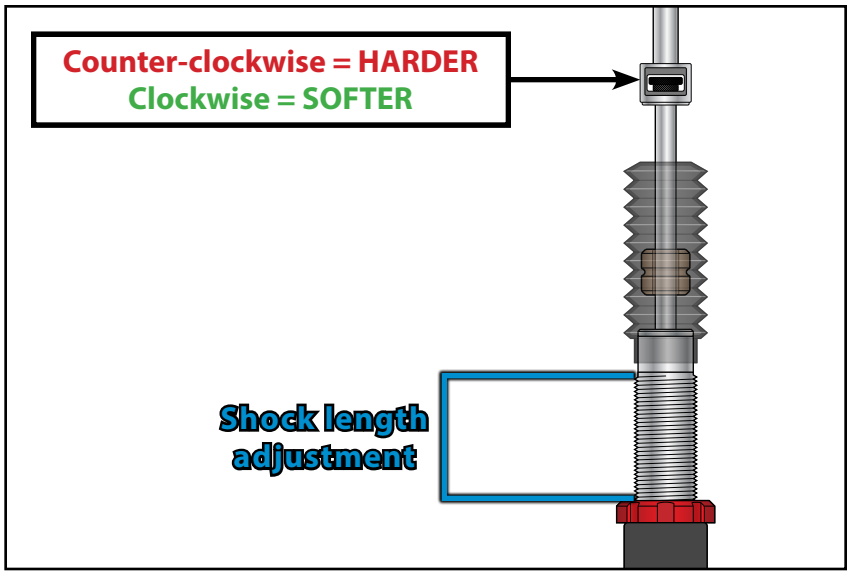
Shorten or lengthen then shock until you can replace the bolt which secures the shock to the lower control arm, then loosely install the nut (arrow).



Step 6: Coilover Adjustment Wrenches

The knurled knob on the shock shaft can be rotated to adjust the damping. We settled on a damping setting of 16 on our vehicle, however this number may need adjusted on your vehicle depending on your suspension setup.

The shock itself can be rotated up or down inside the body to adjust the shock length. If your shock length is too short, you will sacrifice ride quality, too long and you will reduce shock travel and the spring may shift or rattle when the suspension unloads. To adjust, grab the threads of the shock by hand and shorten or lengthen the shock length until the spring is fully seated and the rubber isolators begins to compress just slightly, then tighten the locking collar against the shock body to lock it in.



INSTALLING THE REAR COILOVERS

Step 7: 18mm, 21mm Wrench, E20 Torx Socket & Torque Wrench

With the suspension at final ride height, counterhold the shock and lower control arm bolts while you torque the nuts to:

Outer lower control arm nut: 165 Nm (122 Ft-lbs) + 90 degrees
Lower shock nut: 100 Nm (74 Ft-lbs) + 90 degrees
Inner lower control arm nut: 175 Nm (129 Ft-lbs)

Step 8: 10mm Socket & Ratchet, Protecta-Sockets & Torque Wrench

Reinstall the lower control arm cover and tighten the nuts until snug. Reinstall the wheels and torque the bolts to 140 Nm (103 Ft-lbs).

FINAL INSTALLATION STEPS

Step 1: Coilover Adjustment Wrenches

Set the vehicle on the ground and allow the suspension to settle, give it a few jounces for good measure, then ensure clearance for surrounding suspension components and fenders. Remove the wheels and re-adjust the height as needed until you are happy with the final ride height then tighten the locking collars.

Step 2:

Immediately perform a four-wheel alignment on your vehicle and take the car for a spin! Keep an eye (and ear) out for any rubbing or otherwise unusual noises before giving your vehicle the green light. Remember, at any time you can remove the wheels and fine-tune your coilovers to match your vehicle equipment, driving environment and style of driving, so keep those adjustment wrenches handy!

Congratulations, your installation is complete!

TORQUING TIPS

Torque to Yield or "Stretch" Bolts

Many bolts will have a torque specification listed in the format - xx Nm (xx Ft-lbs) + xx degrees. These bolts are torque to yield bolts, commonly referred to as "stretch" bolts. The correct procedure for torquing these bolts is:

Stage One - Torque the bolt(s) to the initial Nm or Ft-lb specification. If there is more than one, be sure to torque them in the correct sequence.
Stage Two - Tighten or "stretch" the bolt(s) the additional specified number of degrees. If there is more than one, be sure to follow the correct sequence.

Note - Some bolts may have two or more stages of torquing before the final stage of "stretching" the bolts.

When tightening more than one bolt in a specified sequence, be sure to mark each fastener with paint ***immediately*** after performing the final stage or "stretching" of the bolts. This will ensure that you keep track of which bolts have already been "stretched".

All Torque to Yield bolts should only be used once and should be replaced each time they are removed. If they are reused, they will not be able to achieve the proper clamping force with the specified torque.

Lubrication

Torque specifications are always listed for a dry fastener (***no*** lubrication) unless specified otherwise.

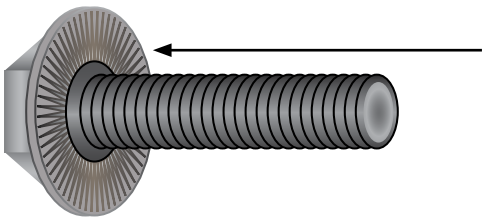
Some fasteners require lubrication on the threads -or- on the contact surface while torquing. These fasteners will be listed with the specific location and type of lubrication required. Always follow manufacturers recommendations exactly.

Lubricating a fastener that is intended to be installed dry and then torquing it to factory specifications will increase the clamping force and stress on the fastener and components, which can result in damage or failure.

Do not lubricate the threads of any fastener unless it is specifically recommended by the manufacturer.

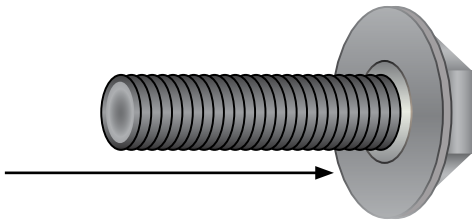
Ribbed vs. Non-Ribbed Bolts

Ribbed and Non-Ribbed bolts in the same location generally require a different torque specification.



A ribbed bolt is identified by the ribs on the contact surface

A non-ribbed bolt is identified by the smooth contact surface

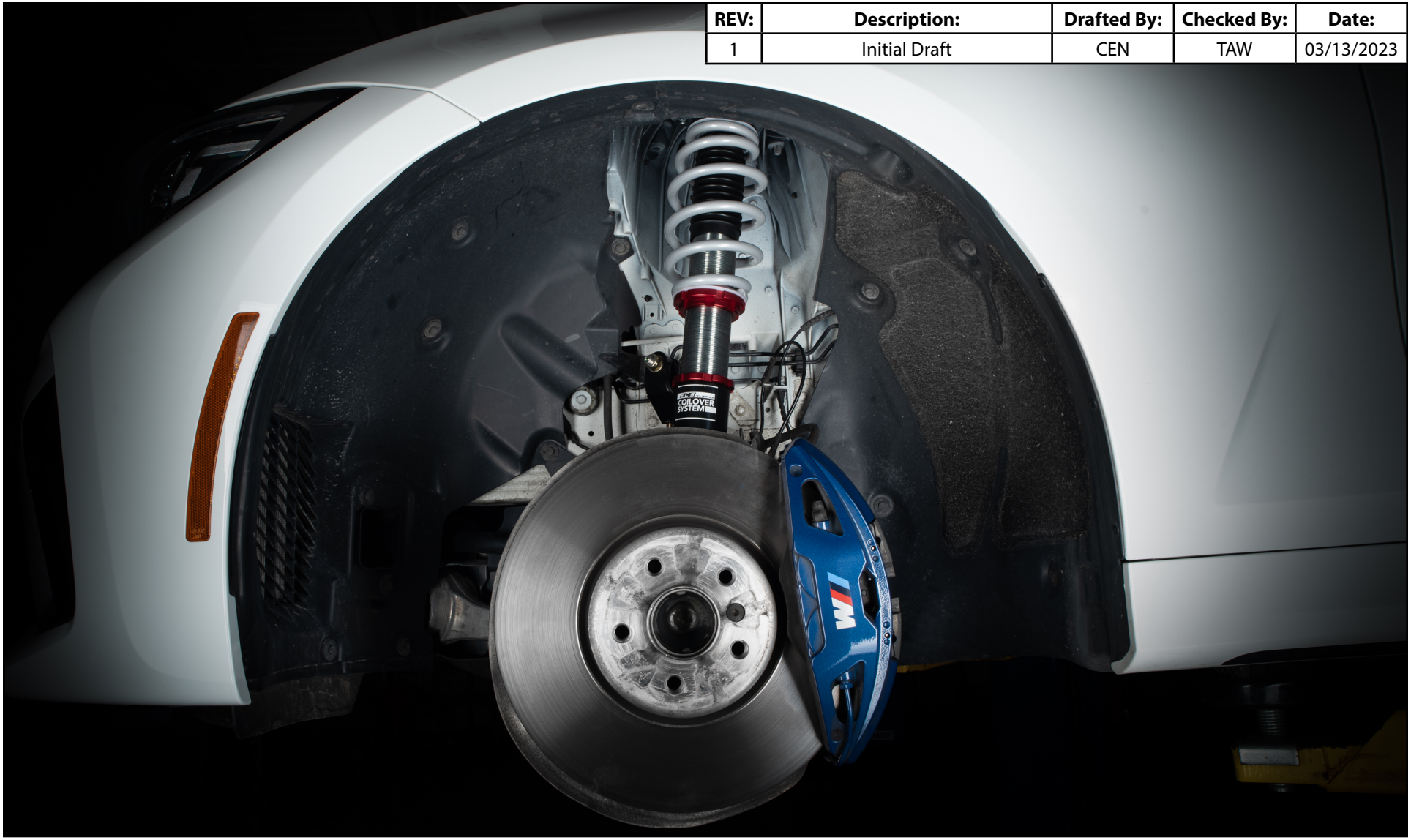


TORQUE SPECIFICATIONS

Front Upper Strut Nut	71 Nm (52 Ft-lbs)	(Page 11)
Front Upper Strut Mount Bolts	28 Nm (21 Ft-lbs) + 90 degrees	(Page 11)
Front Strut Pinch Bolt	60 Nm (44 Ft-lbs) + 180 degrees.	(Page 12)
Front Sway Bar End Link Nut	56 Nm (41 Ft-lbs)	(Page 13)
Rear Upper Shock Nut	41 Nm (30 Ft-lbs)	(Page 18)
Rear Upper Shock Mount Bolts	28 Nm (21 Ft-lbs)	(Page 18)
Rear Outer Lower Control Arm Bolt	165 Nm (122 Ft-lbs) + 90 degrees	(Page 21)
Rear Lower Shock Bolt	100 Nm (74 Ft-lbs) + 90 degrees	(Page 21)
Rear Inner Lower Control Arm Bolt	175 Nm (129 Ft-lbs)	(Page 21)
Wheel Bolts	140 Nm (103 Ft-lbs)	(Page 21)

Your Adjustable Coilover Kit installation is complete!

REV:	Description:	Drafted By:	Checked By:	Date:
1	Initial Draft	CEN	TAW	03/13/2023



These instructions are 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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