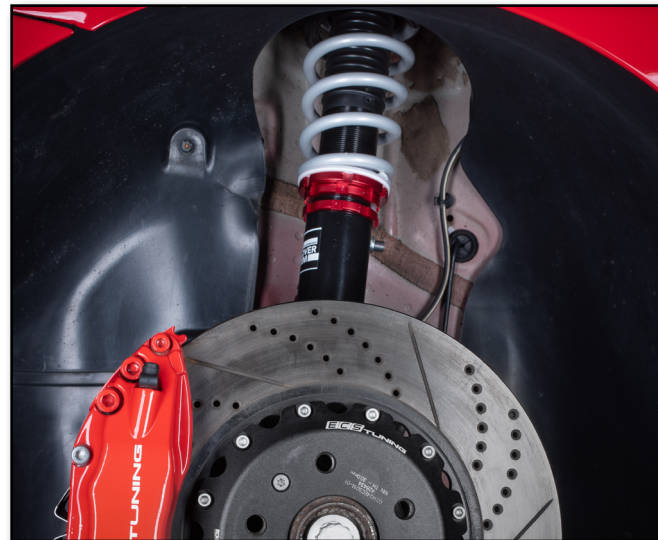
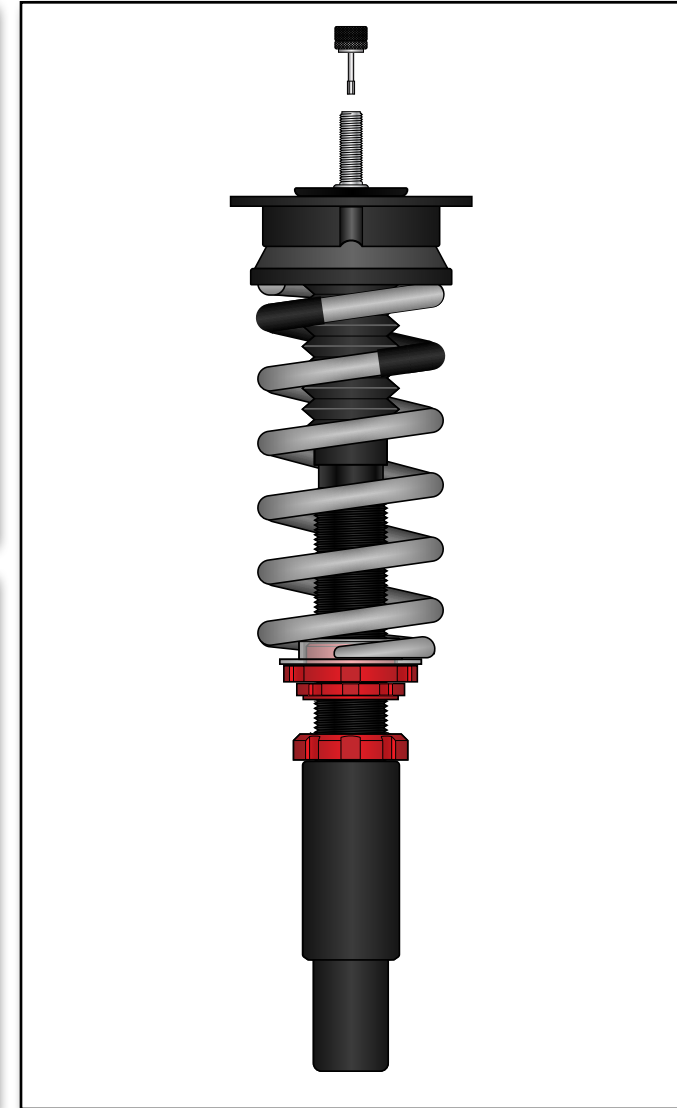




VW MK7 Adjustable Damping Coilover Kit Installation Instructions - [ES4045787](#)



Skill Level
2 - Moderate
Some Experience
Recommended



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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REQUIRED TOOLS

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

Standard Automotive Tools

- **Protecta-Sockets (for lug nuts)** [ES#2221243](#)
- $\frac{3}{8}$ " Drive Ratchet..... [ES#2765902](#)
- $\frac{3}{8}$ " Drive Torque Wrench..... [ES#2221245](#)
- $\frac{3}{8}$ " Drive Deep and Shallow Sockets..... [ES#2763772](#)
- $\frac{3}{8}$ " Drive Extensions [ES#2804822](#)
- **Hydraulic Floor Jack** [ES#2834951](#)
- **Torx Drivers and Sockets** [ES#11417/8](#)
- **$\frac{1}{2}$ " Drive Deep and Shallow Sockets**..... [ES#2839106](#)
- **$\frac{1}{2}$ " Drive Ratchet**
- **$\frac{1}{2}$ " Drive Extensions**
- **$\frac{1}{2}$ " Drive Torque Wrench**..... [ES#2221244](#)
- **$\frac{1}{2}$ " Drive Breaker Bar** [ES#2776653](#)
- **Bench Mounted Vice**
- Crows Foot Wrenches
- Hook and Pick Tool Set [ES#2778980](#)

Required For This Install

- $\frac{1}{4}$ " Drive Ratchet..... [ES#2823235](#)
- $\frac{1}{4}$ " Drive Deep and Shallow Sockets [ES#2823235](#)
- $\frac{1}{4}$ " 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](#)

Available On Our Website

Specialty Tools

- **Spring Compressor** [ES#2918793](#)
- **Spindle Housing Spreader** [ES#2918793](#)
- **Triple Square Socket Set** [ES#1910125](#)

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

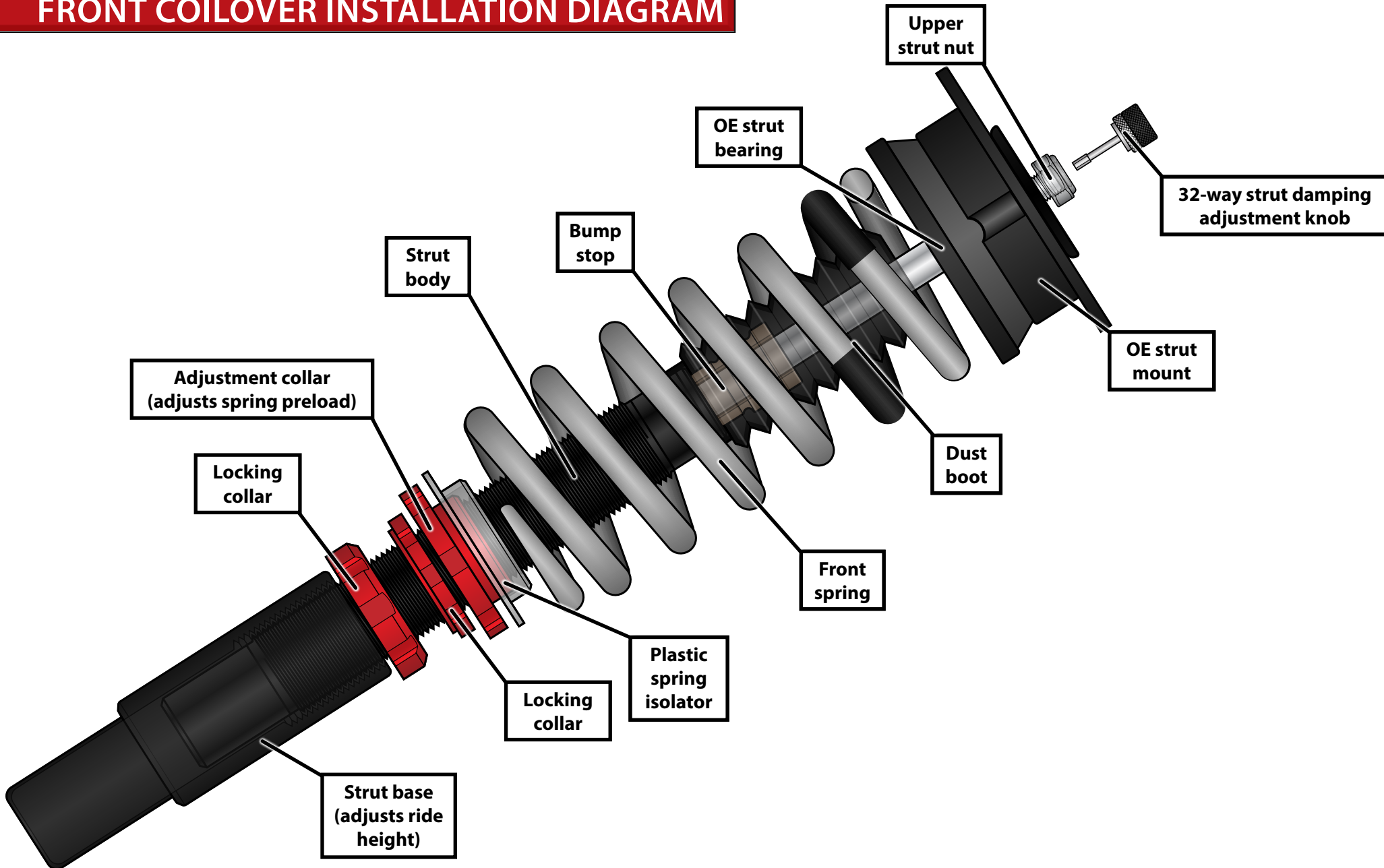
ECS Tuning cares about your health and safety, please read the following safety information. This information pertains to automotive service in general, and while it may not pertain to every job you do, please remember and share these important safety tips.

- 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 the front wheels.



Before you begin your install take a moment to take some baseline measurements. Measure from the center of your hub to the top of the fender 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: 24mm 12-Point Socket & Breaker Bar

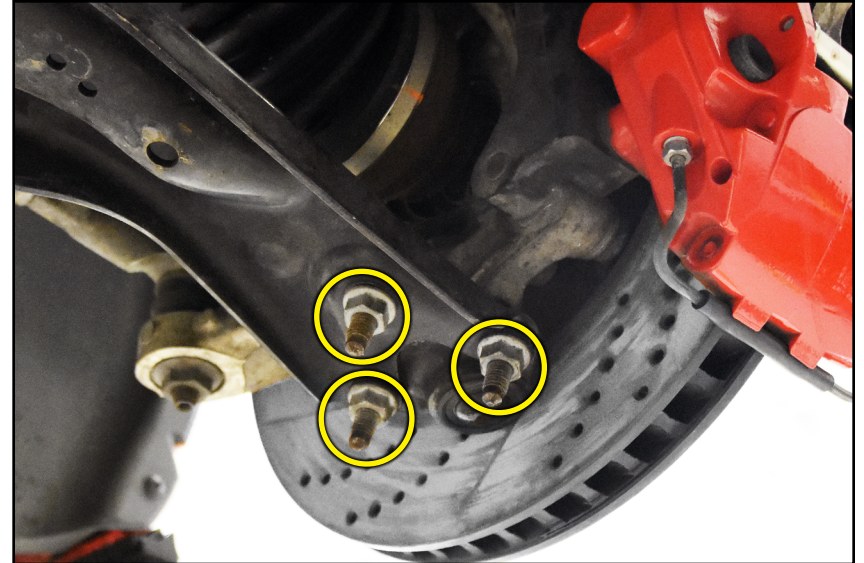
Loosen and remove each axle bolt (arrow) as shown.



REMOVING THE ORIGINAL FRONT STRUTS

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

Loosen and remove the three lower ball joint nuts (circled in **YELLOW**) on each side.



Step 4: Pry Bar

Pry the control arm downward and swing the spindle housing outward, carefully sliding the axle free from the spindle housing and out of the way.



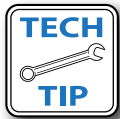
You can loosely thread the bolt back into the end of the axle to protect the splines from damage while removing the strut.



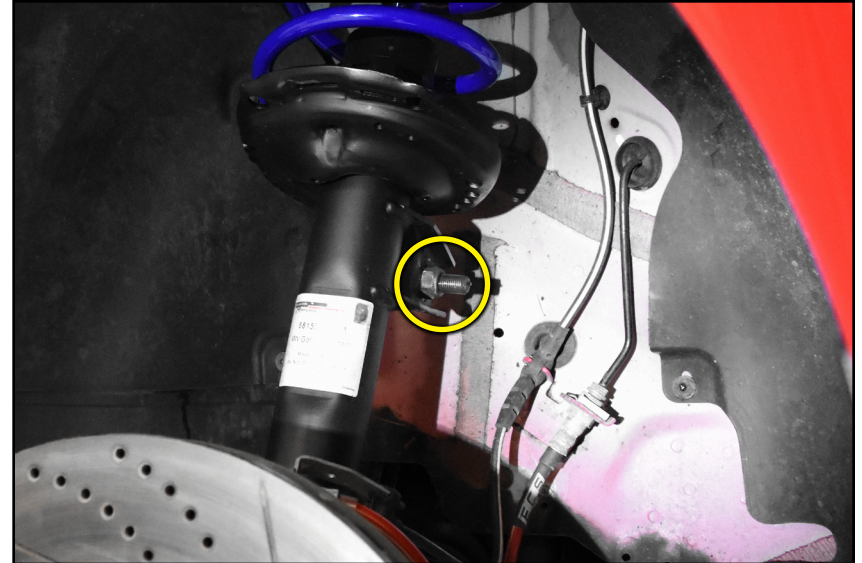
REMOVING THE ORIGINAL FRONT STRUTS

Step 5: 18mm Wrench, M6 Triple Square Socket & Ratchet

Disconnect the sway bar end link from each front strut housing. Use an 18mm wrench to loosen and remove the nut (circled in **YELLOW**) while holding the link stud in place with an M6 triple square socket.

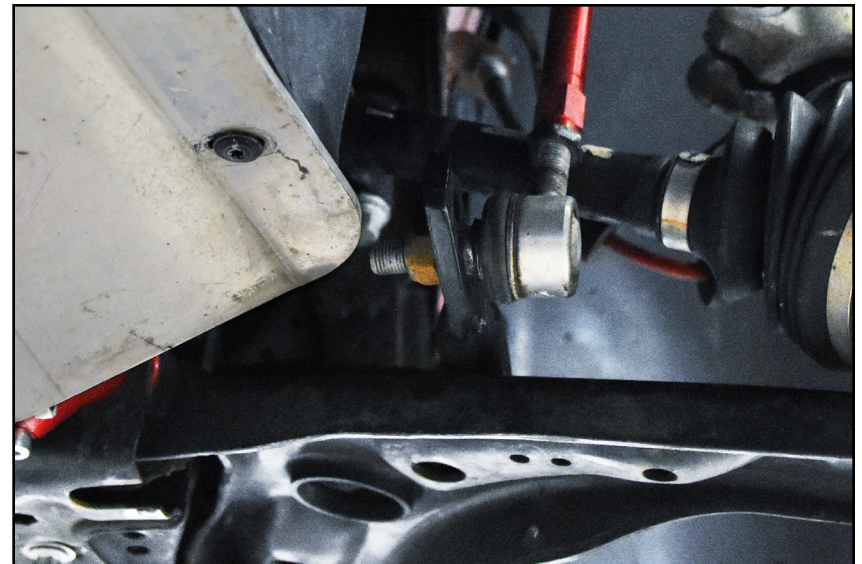


Spray the nuts with penetrating oil and allow the oil to soak in before attempting to remove them.



Step 6: 18mm Wrench, M6 Triple Square Socket & Ratchet

Repeat the process from step 5 to disconnect the sway bar end link from the sway bar.



REMOVING THE ORIGINAL FRONT STRUTS

Step 7: Floor Jack

Carefully support the spindle housing from below with a floor jack as shown.



Step 8: 18mm Wrench, 14mm Triple Square Socket & Ratchet

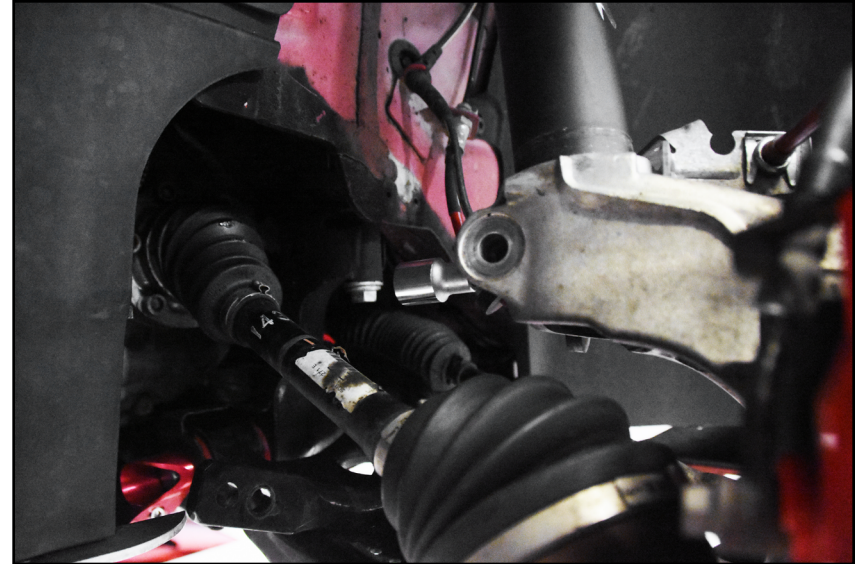
Hold the pinch bolt still while you remove the nut, then slide the pinch bolt out.



REMOVING THE ORIGINAL FRONT STRUTS

Step 9: Spindle Housing Spreader Tool, Ratchet

Insert the spindle housing spreader tool ([ES#3894](#)) into the slot in the back of the spindle housing and rotate the tool to spread it apart, freeing the strut body.

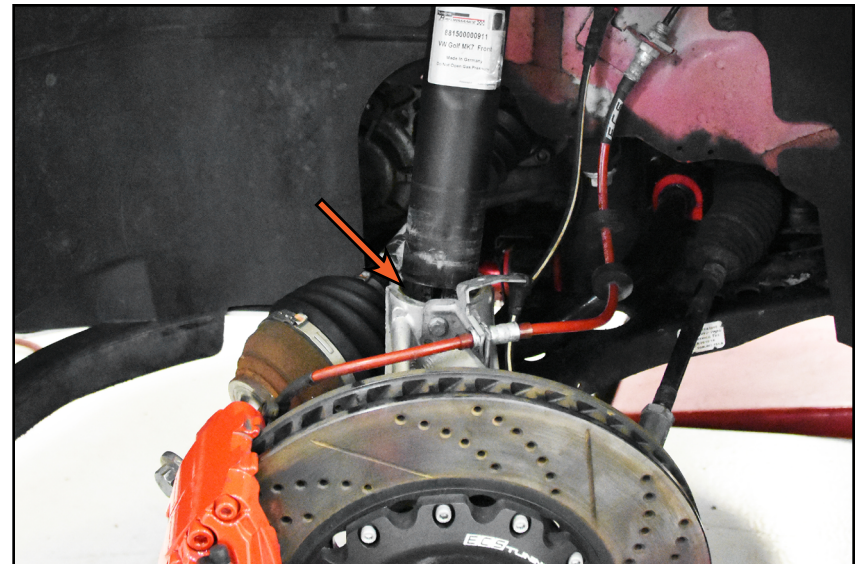


Step 10:



The spindle housing is only being held in place by the strut body and the jack. It **MUST** be properly supported as you lower the jack, otherwise the spindle housing could fall and sever the brake lines and cause significant damage to the spindle.

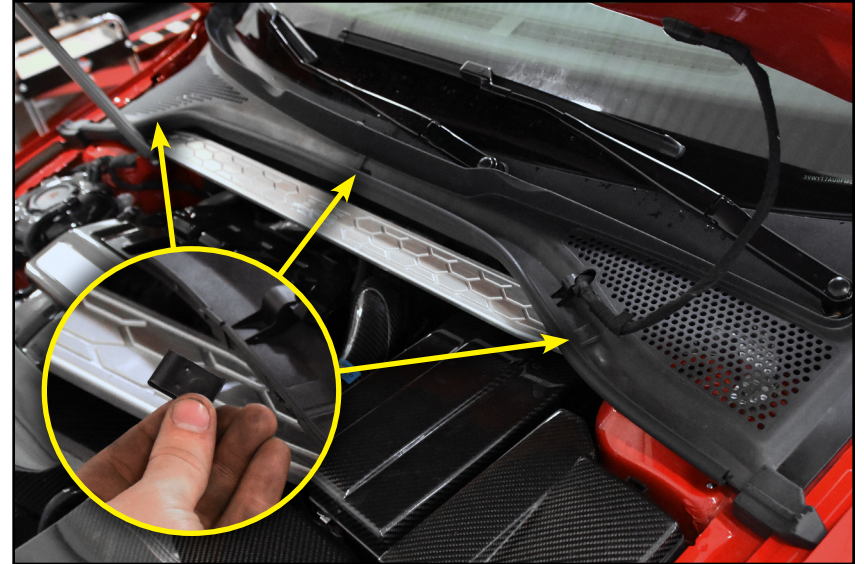
Slowly lower the jack until the strut slides free from the spindle housing as shown.



REMOVING THE ORIGINAL FRONT STRUTS

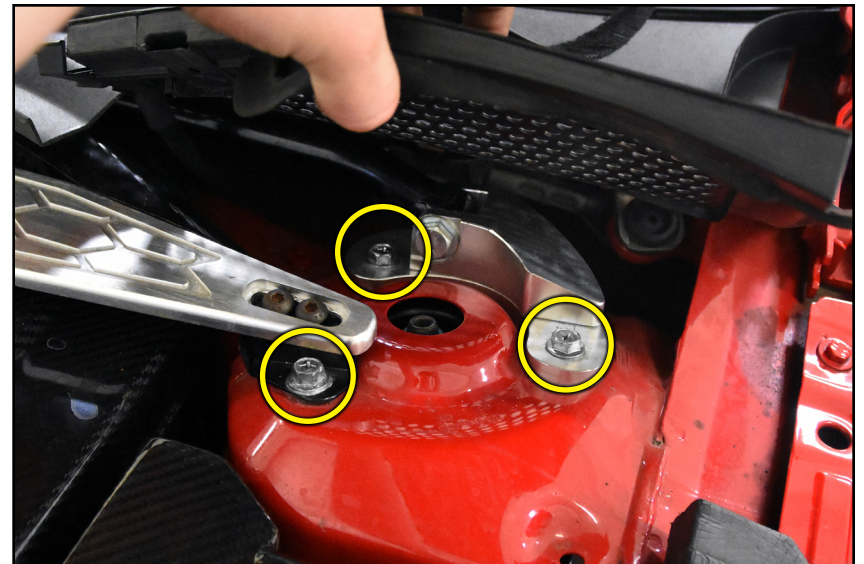
Step 11:

Pull the rubber weather strip free from the wiper cowl, then pull the three clips free from the cowl (inset photo).



Step 12: 13mm Socket & Ratchet

Carefully lift the wiper cowl up just enough to access the three bolts (circled in **YELLOW**) which secure each strut to the strut tower. Support the strut from below and remove the three bolts to free it from the vehicle.



REMOVING THE ORIGINAL FRONT STRUTS

Step 13:

Carefully guide the strut assembly out of the vehicle, being careful not to damage the fender or knock the spindle housing over.



Step 14: 21mm Strut Nut Socket & Ratchet, 7mm Allen

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



CAUTION: Do not over-compress the spring. Only compress the spring until there is a gap between the top of the spring and the bottom of the upper strut mount.



INSTALLING THE FRONT COILOVERS

Step 1:

Place the new front coilover into a bench vise using a microfiber cloth to protect the finish. Spin the spring adjustment collar down until there is enough room to slide the strut mount and bearing onto the strut shaft as shown.



Step 2: 19mm Strut Nut Socket & Torque Wrench, 5mm Allen

Reinstall the provided upper strut nut and tighten it to 60 Nm (44 Ft-lbs).



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.



INSTALLING THE FRONT COILOVERS

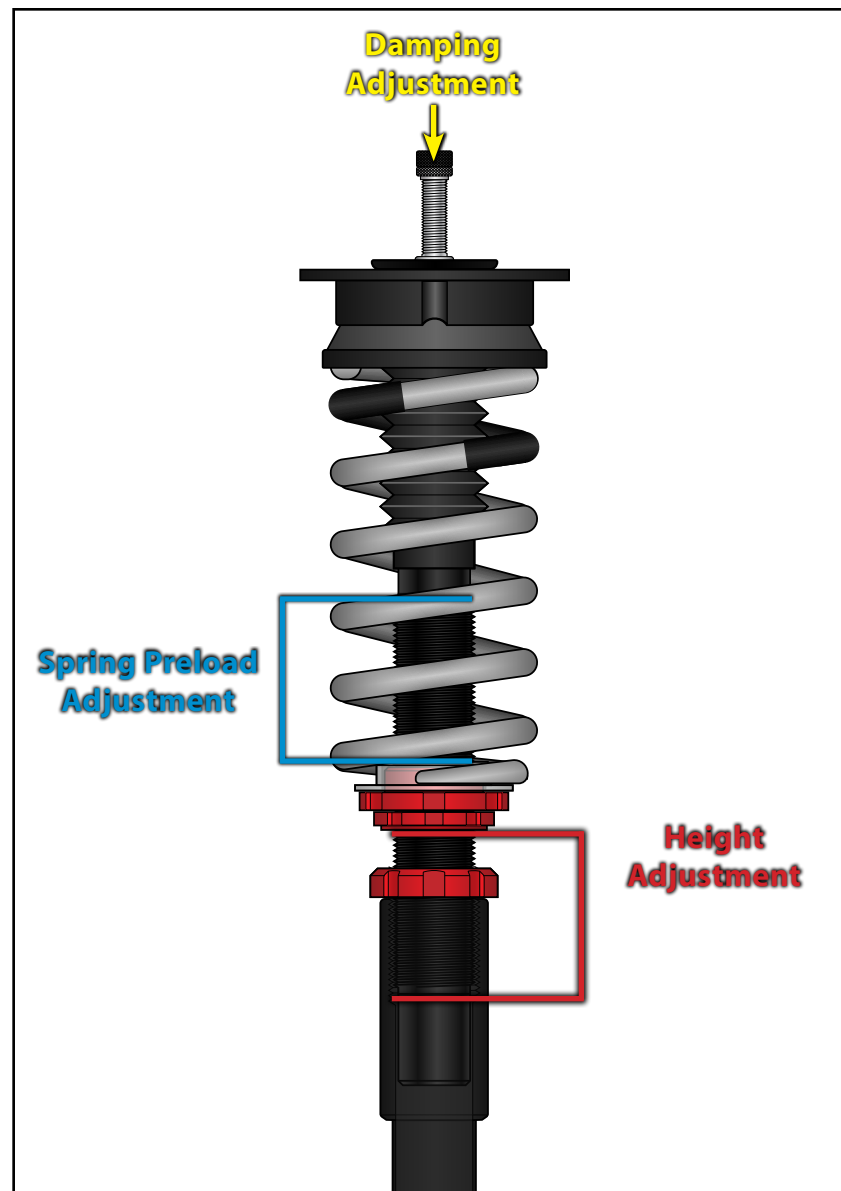
Step 3: Coilover Adjustment Wrenches

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. We settled on a damping setting of 16 on our vehicle, right in the middle, 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 an additional 10mm 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 springs 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 of 13" when measured from the fender to the center of the hub. This resulted in a nice and low stance while avoiding any rubbing.



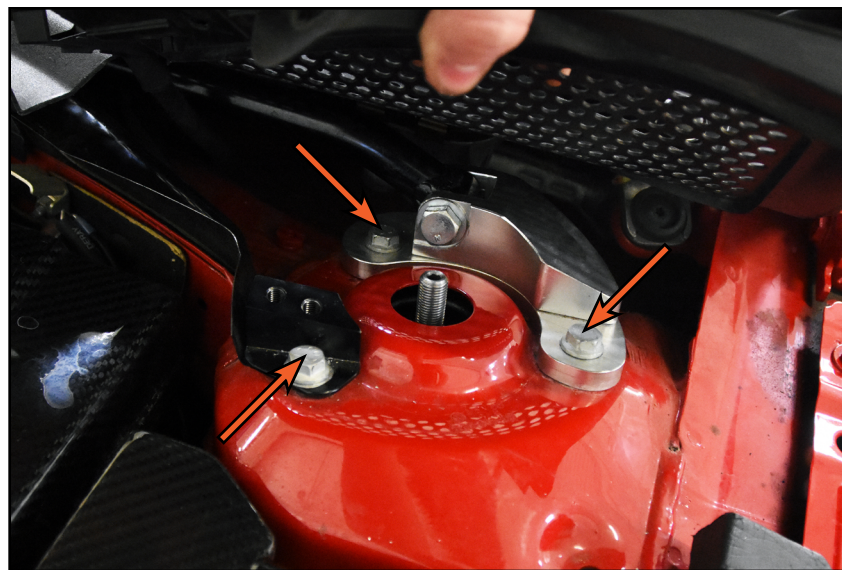
INSTALLING THE FRONT COILOVERS

Step 4: 13mm Socket & Torque Wrench

Lift the coilover assembly up into the strut tower and install the three bolts (arrows), torquing them to 15 Nm (11 Ft-lbs) + 90 degrees.



The arrows on the upper strut mount must point towards the front and rear of the car once installed.



Step 5:

To help make sliding the coilover into the spindle housing easier, move the axle to the side and slide the ball joint studs back into the holes in the control arm as shown.



INSTALLING THE FRONT COILOVERS

Step 6:

Slowly jack up the spindle housing and guide the coilover body into the spindle.



There are two small alignment “nubs” on the coilover body which must align with the slot on the back of the spindle housing for proper installation.



Step 7: 18mm Socket, 14mm Triple Square Socket & Torque Wrench

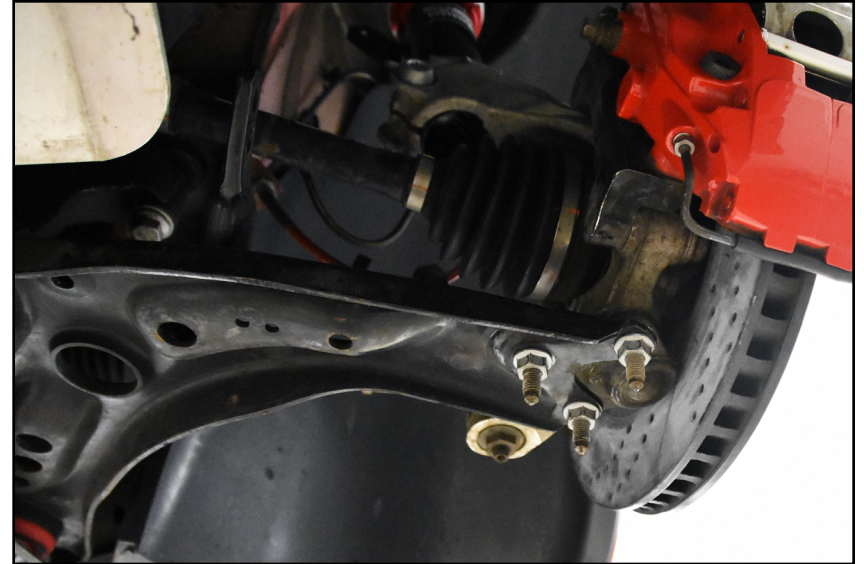
Once the coilover is fully inserted into the spindle housing as shown in the photo on the right, remove the spindle housing spreader tool and replace the pinch bolt and nut and torque it to 70 Nm (52 Ft-lbs) + 180 degrees.



INSTALLING THE FRONT COILOVERS

Step 8: Pry Bar, 16mm Socket & Torque Wrench

Pry the ball joint back out of the control arm, slide the axle back into the spindle, then slide the ball joint studs through the control arm. Replace the nuts and torque them to 40 Nm (30 Ft-lbs) + 45 degrees.



Step 9: 24mm 12-Point Socket & Torque Wrench

Replace the axle bolt and torque it to 200 Nm (148 Ft-lbs) + 180 degrees.



INSTALLING THE FRONT COILOVERS

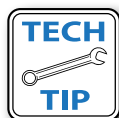
Step 10: 16mm Wrench, 19mm Socket & Torque Wrench

Install the provided adjustable front end link into the sway bar as shown and counterhold the hex at the base of the stud while you torque the nut to 65 Nm (48 Ft-lbs).

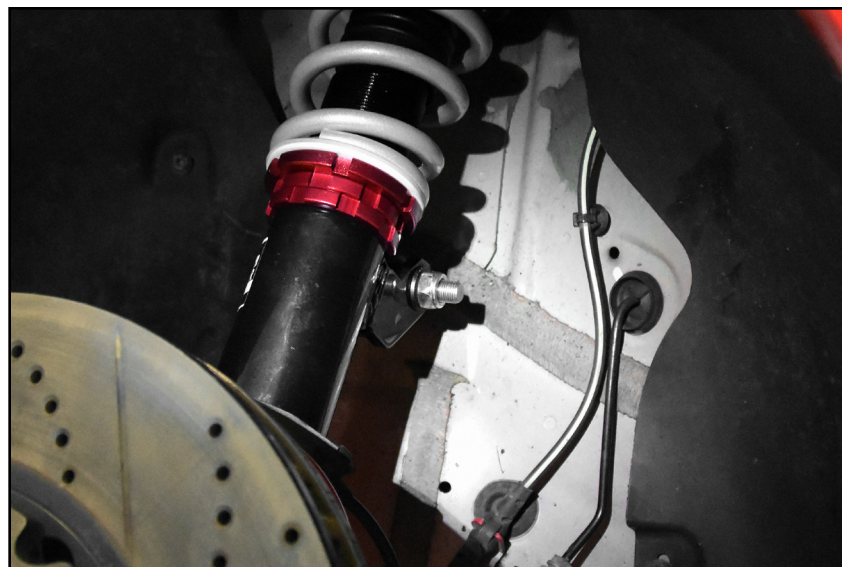


Step 11: 16mm Wrench, 19mm Socket & Torque Wrench

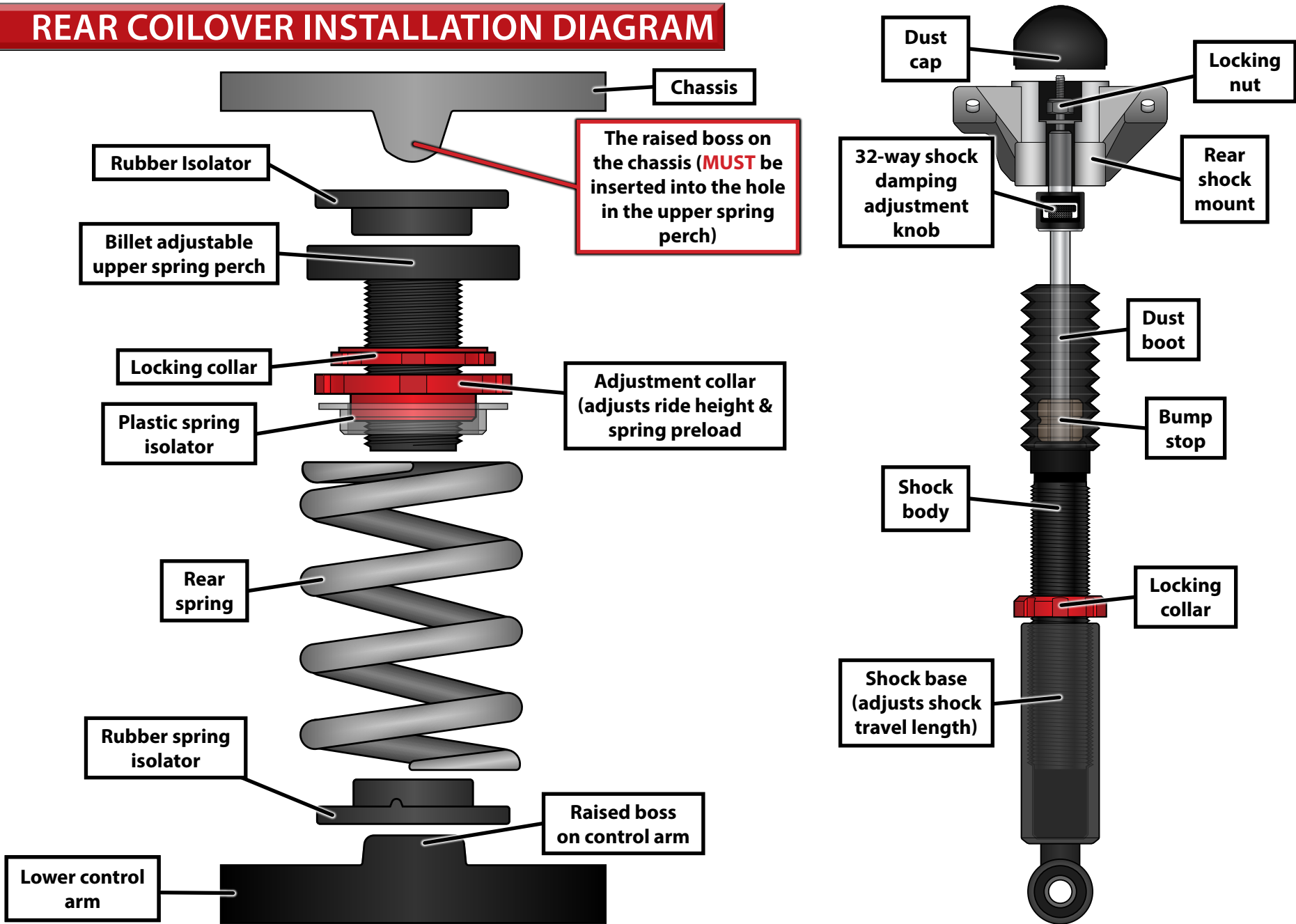
Spin the body of the end link up or down until you can slide the other end of the end link through the mounting arm on the coilover, then torque the nut to 65 Nm (48 Ft-lbs).



Once you have completed the installation of the coilovers and set final ride height, you can go back and fine-tune sway bar preload by making the end links longer or shorter then tightening down the jam nut. Reference the PDF [HERE](#) for more information regarding our adjustable end links.



REAR COILOVER INSTALLATION DIAGRAM



REMOVING THE ORIGINAL SHOCKS AND SPRINGS

Step 1: Protecta-Sockets, Breaker Bar, T25 Torx

Remove the rear wheels and fender liners.



Step 2: 18 mm Wrench, 18mm Socket & Ratchet

Counterhold the nut while you remove the lower shock bolt.



REMOVING THE ORIGINAL SHOCKS AND SPRINGS

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

Install a jack underneath the lower control arm, then counterhold the nut while you remove the lower control arm bolt (circled in **YELLOW**).



Step 4: 13mm Wrench, 13mm Socket & Ratchet

Counterhold the nut while you remove the sway bar end link bolt.



REMOVING THE ORIGINAL SHOCKS AND SPRINGS

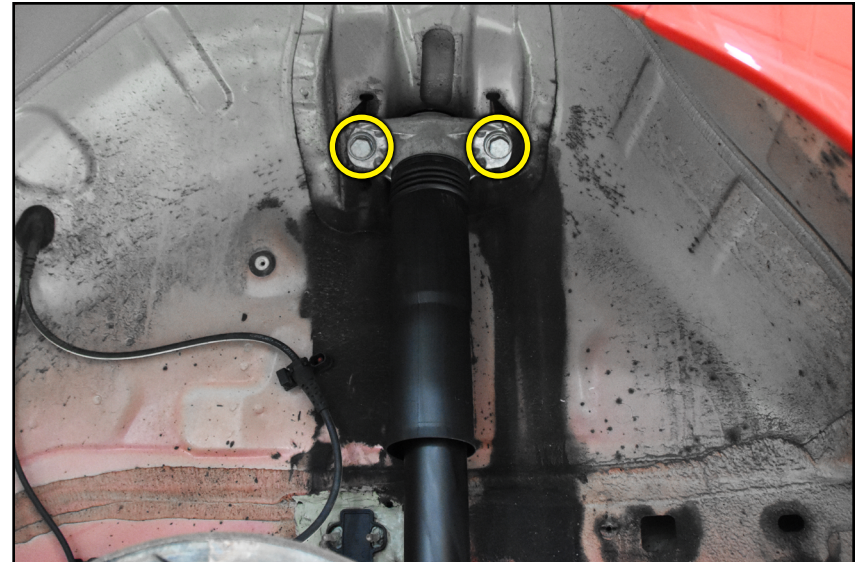
Step 5:

Slowly lower the jack to release the tension in the spring, then slide the spring out from the vehicle. Remove the upper and lower rubber spring isolators and set them aside, we will be reusing them later.



Step 6: 16mm Socket & Ratchet

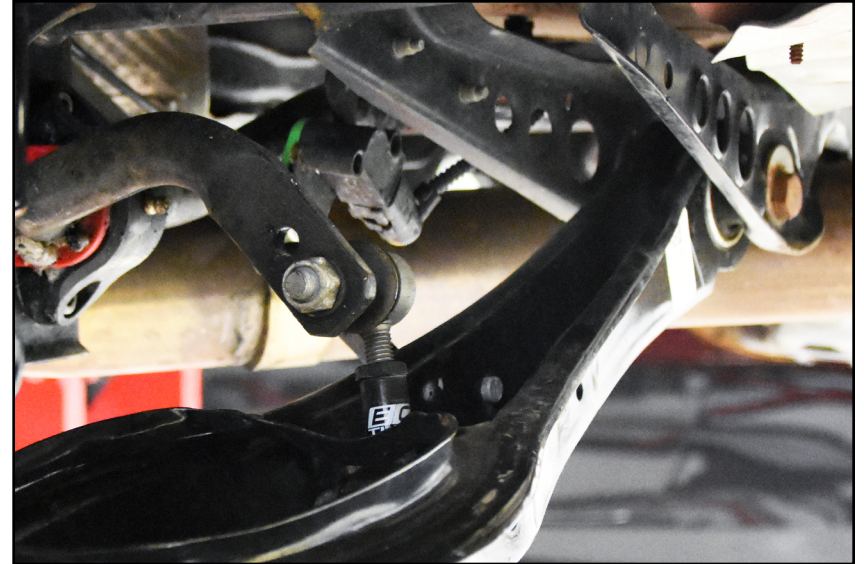
Support the shock from below while you loosen and remove the two bolts (circled in **YELLOW**) which secure the rear shock to the body.



REMOVING THE ORIGINAL SHOCKS AND SPRINGS

Step 7: 16mm Wrench, 6mm Triple Square Socket & Ratchet

Remove the sway bar end link from the sway bar, use a 16mm wrench to loosen and remove the nut while holding the link stud in place with a 6mm triple square socket.



Step 8: 16mm Wrench, Vice Grips

If you are re-using your existing shock mounts: Secure the rear shock in a vise, then hold the shock rod in place while you loosen and remove the nut.



INSTALLING THE REAR COILOVERS

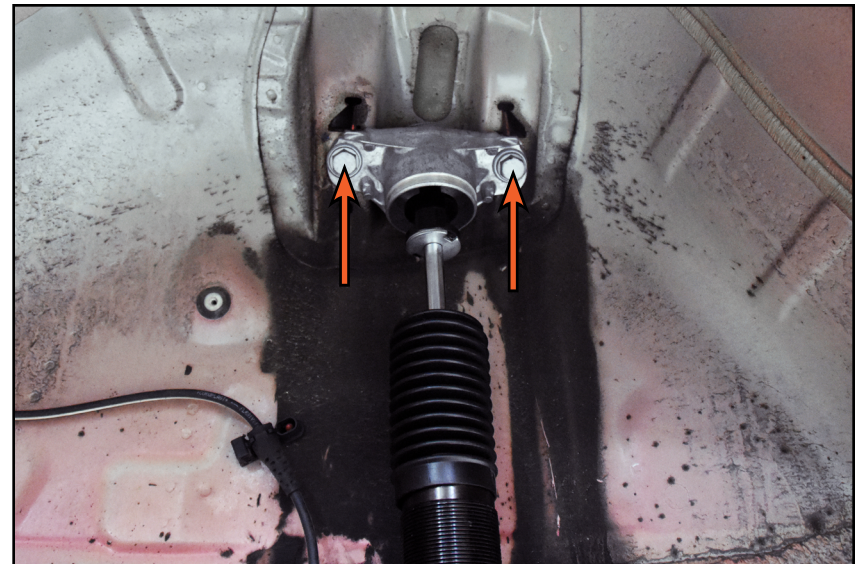
Step 1: 14mm Wrench, 5mm Allen Socket & Torque Wrench

Slide the shock mount onto the new shock shaft, then install the provided nut and torque it to 25 Nm (18 Ft-lbs).



Step 2: 16mm Socket & Torque Wrench

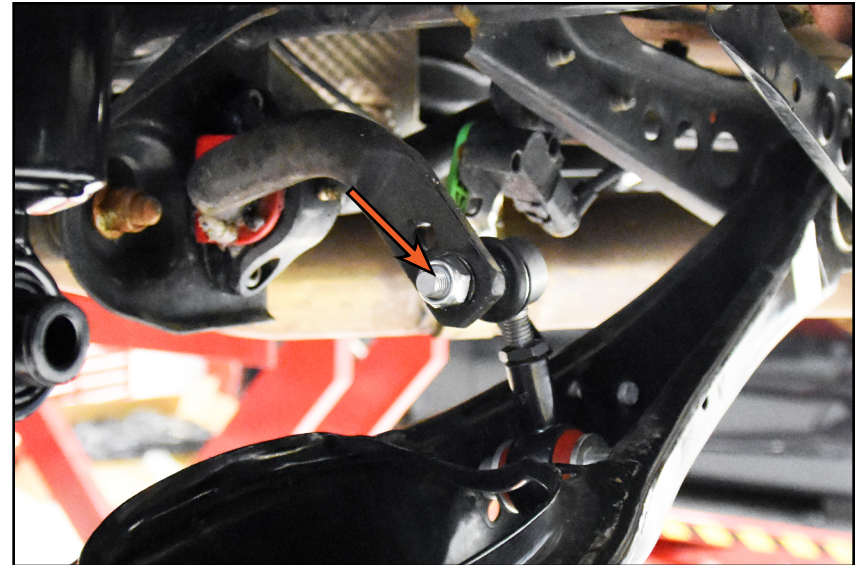
Carefully guide the new shock into the fenderwell, then install the replacement bolts (arrows) and torque them to 50 Nm (37 Ft-lbs) + 45 degrees.



INSTALLING THE REAR COILOVERS

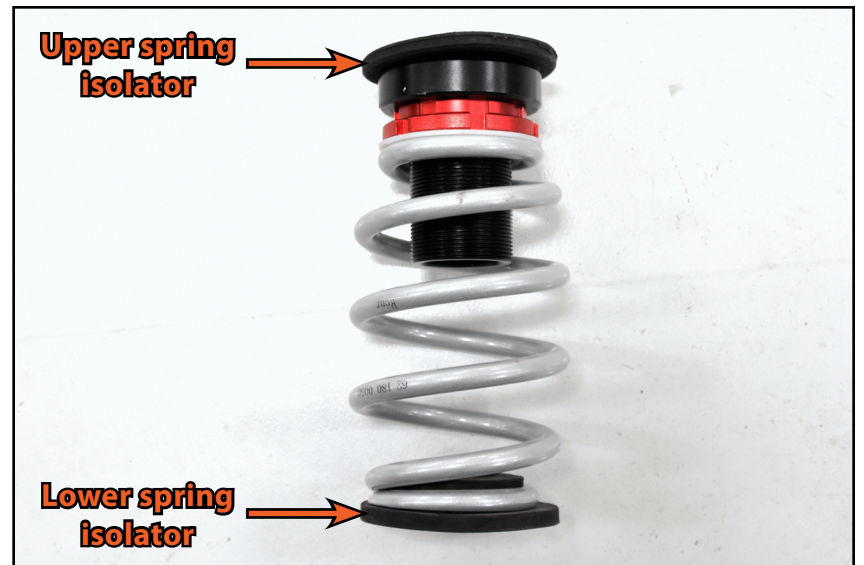
Step 3: 14mm Wrench, 17mm Socket & Torque Wrench

Install the provided adjustable rear end links into the sway bar as shown and counterhold the hex at the base of the stud while you torque the nut to 55 Nm (40 Ft-lbs).



Step 4:

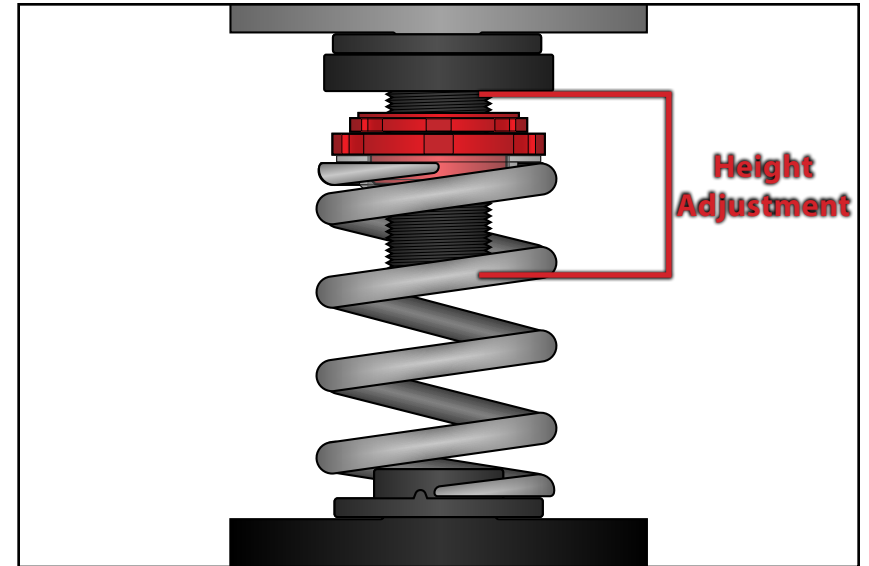
Install the upper and lower spring isolators from the original spring onto the new spring as shown.



INSTALLING THE REAR COILOVERS

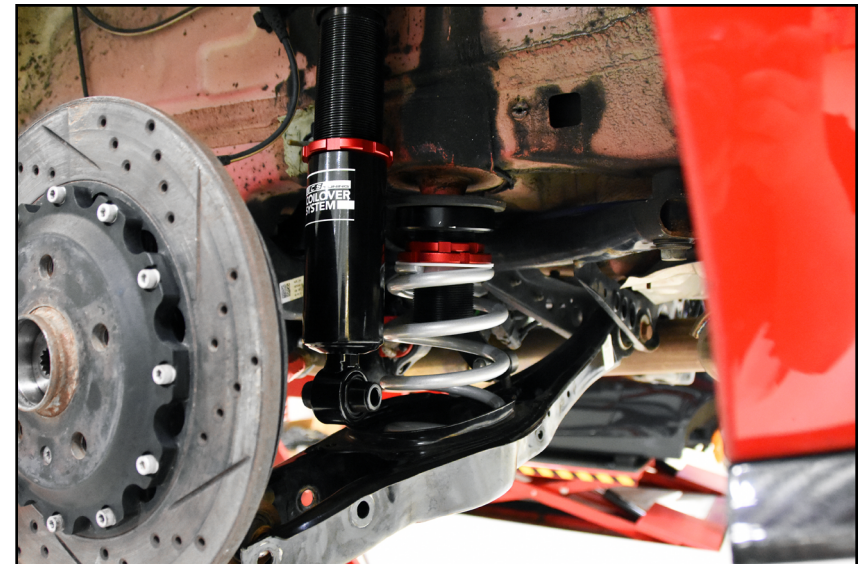
Step 5: Coilover Adjustment Wrenches

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 rotated the adjustment collar down approximately 10mm which resulted in a final ride height of 13" when measured from the fender to the center of the hub.



Step 6:

Slide the spring assembly into place so that the lower isolator slides over the raised boss on the lower control arm and the locating boss on the chassis slides into the upper spring perch as shown.



INSTALLING THE REAR COILOVERS

Step 7: 13mm Wrench, 13mm Socket & Torque Wrench

Jack up the lower control arm until you can slide the replacement lower control arm bolt and nut into place (arrow), but leave it loose for now.

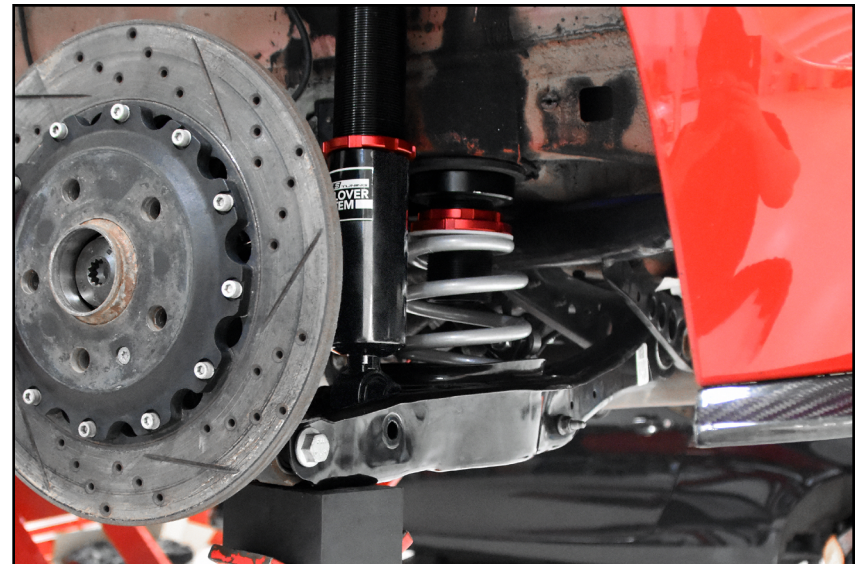
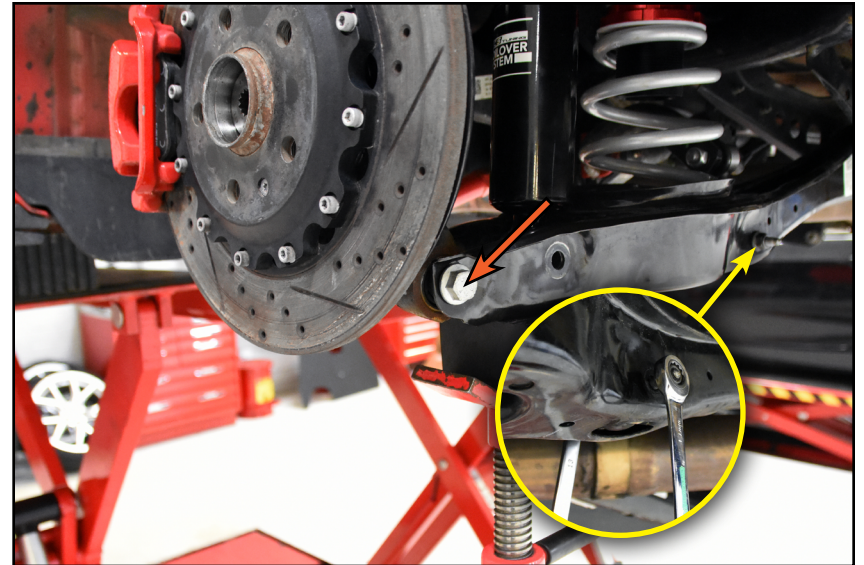
Replace the bolt which secures the end link to the lower control arm (inset photo), and torque it to 20 Nm (15 Ft-lbs) + 180 degrees.



Once you have completed the installation of the coilovers and set final ride height, you can go back and fine-tune sway bar preload by making the end links longer or shorter then tightening down the jam nut. Reference the PDF [HERE](#) for more information regarding our adjustable end links.

Step 8:

Jack up the suspension until the spring is fully seated and the upper isolator begins to compress slightly. We will lengthen the body of the shock until the bolt can be easily inserted through the lower control arm and shock.



INSTALLING THE REAR COILOVERS

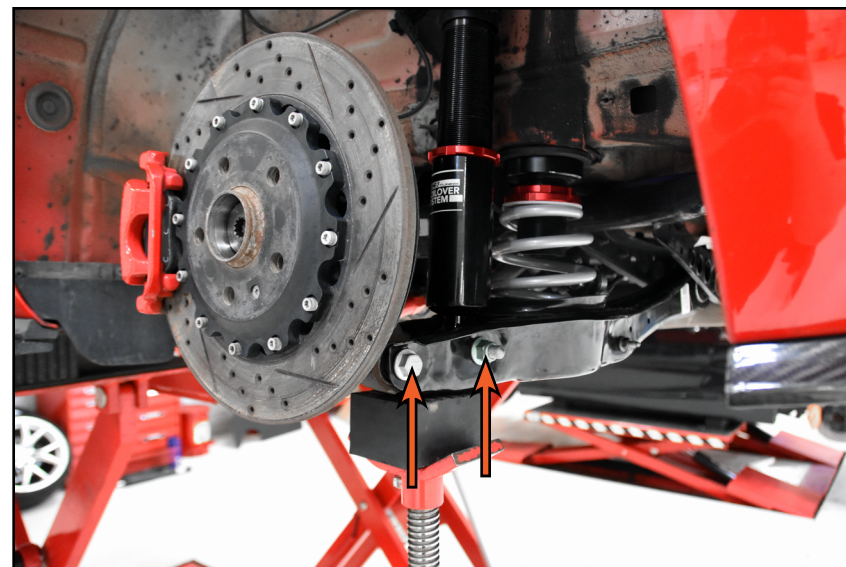
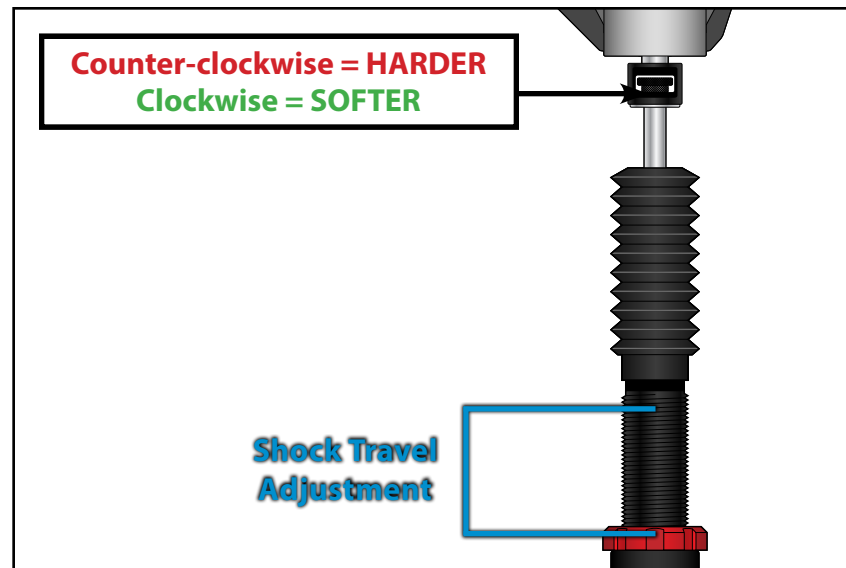
Step 9: Coilover Adjustment Wrenches

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 maximum shock travel. If your shock travel is too short, you may run into your bump stops when going over bumps, too long and you may run into the end of the shocks travel when the suspension unloads over larger bumps. Once your proper travel has been achieved, tighten the locking collar against the strut body to lock it in.

Step 10: 18mm Socket & Torque Wrench

With the suspension at ride height, torque the lower control arm and shock bolts (arrows) to 70 Nm (52 Ft-lbs) + 180 degrees.



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 use a punch and hammer to tighten down the locking collars so that they don't come loose.



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. After a few hundred miles when the suspension has been given a chance to fully settle, we highly recommend having your alignment checked again and corrected as needed. 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.

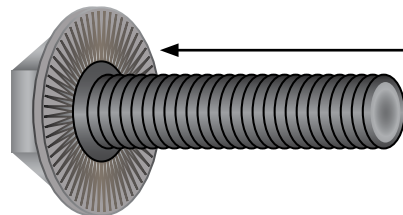
Some fasteners require lubrication on the threads -or- on the contact surface while torquing. These fasteners will be listed with the specific location and type of lubrication required. Always follow manufacturers recommendations exactly.

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.

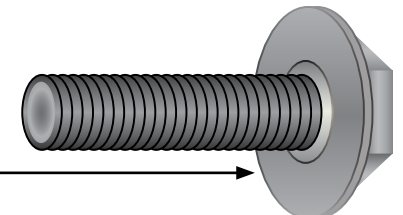
Ribbed vs. Non-Ribbed Bolts

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	60 Nm (44 Ft-lbs).....	(Page 13)
Front Upper Strut Mount Bolts	15 Nm (11 Ft-lbs) + 90 degrees	(Page 15)
Spindle Housing Pinch Bolt	70 nm (52 Ft-lbs) + 180 degrees	(Page 16)
Ball Joint Nuts.....	40 Nm (30 Ft-lbs) + 45 degrees	(Page 17)
Axle Bolt.....	200 Nm (148 Ft-lbs) + 180 degrees.....	(Page 17)
Front Sway Bar End Link Nuts.....	65 Nm (48 Ft-lbs)	(Page 18)
Rear Upper Shock Nut.....	25 Nm (18 Ft-lbs)	(Page 24)
Rear Upper Shock Mount Bolts.....	50 Nm (37 Ft-lbs) + 45 degrees.....	(Page 24)
Rear Sway Bar End Link Nut	55 Nm (40 Ft-lbs)	(Page 25)
Rear Sway Bar End Link Bolt	20 Nm (15 Ft-lbs) + 180 degrees.....	(Page 27)
Rear Lower Shock Bolt.....	70 Nm (52 Ft-lbs) + 180 degrees	(Page 28)
Rear Lower Control Arm Bolt.....	70 Nm (52 Ft-lbs) + 180 degrees	(Page 28)

SCHWABEN - BUILD THE ULTIMATE TOOL COLLECTION

At ECS Tuning, we carry a line of high quality Schwaben Tools and Equipment to help you build your ultimate tool collection. Never before has affordability and quality been so closely related. Our entire Schwaben line is subjected to strict in house testing for strength and durability. See what we have to offer and equip your garage without breaking the bank.

Your Adjustable Damping Coilover Kit installation is complete!



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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