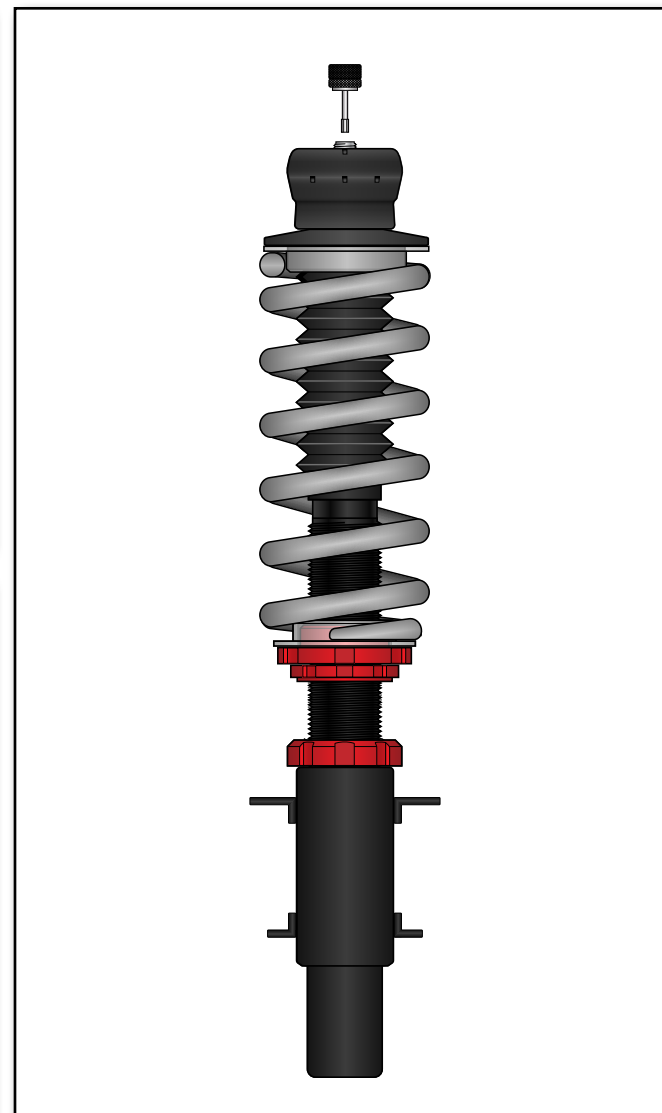




VW MK4 Adjustable Coilover Kit Installation Instructions - [ES4339916](#)



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 Vise**
- Crows Foot Wrenches
- Hook and Pick Tool Set [ES#2778980](#)

Required For This Install

Available On Our Website

- $\frac{1}{4}$ " 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](#)

Specialty Tools

- **Spring Compressor** [ES#2918793](#)
- **Spindle Housing Spreader** [ES#2918793](#)

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

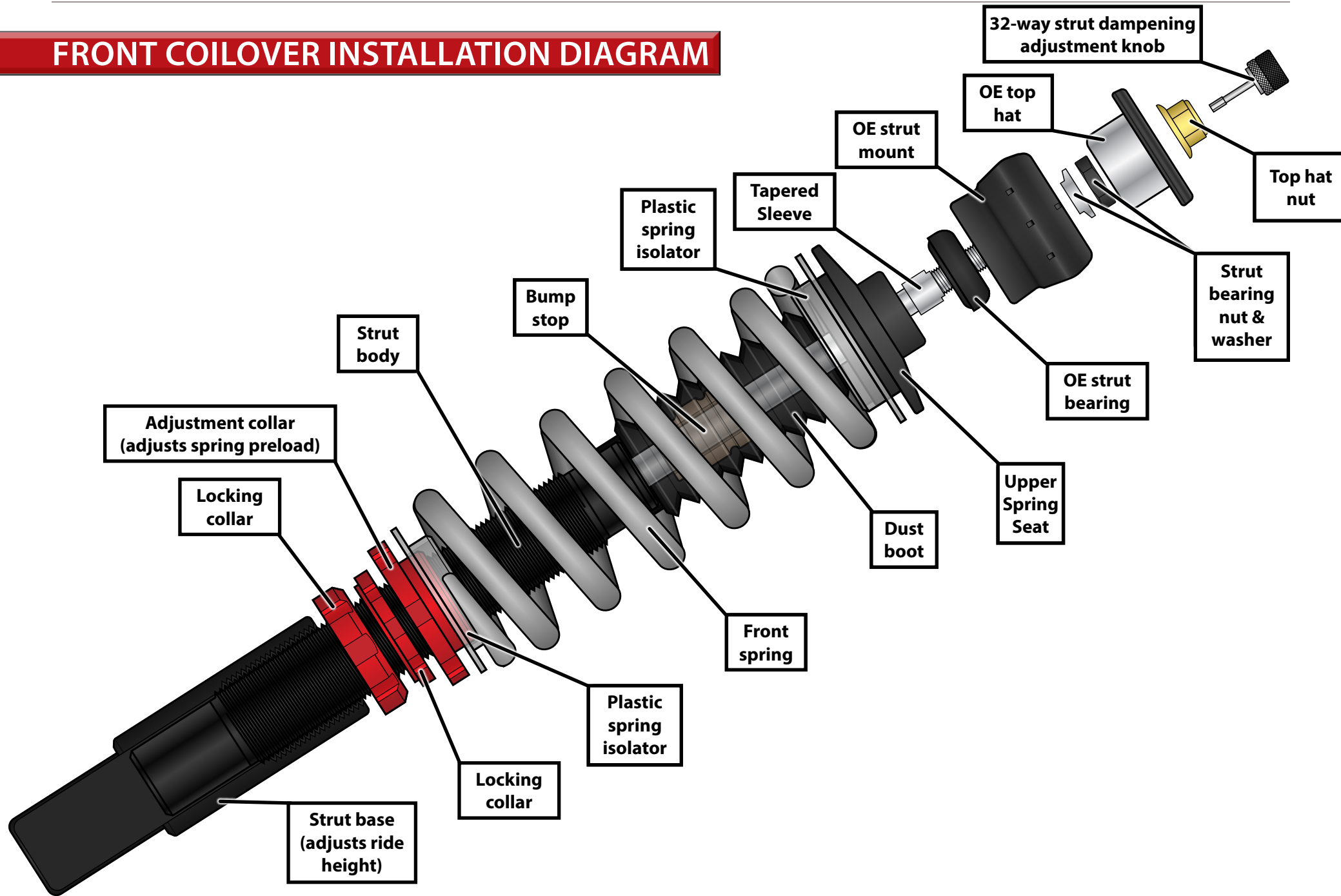
ECS Tuning cares about your health and safety, please read the following safety information. This information pertains to automotive service in general, and while it may not pertain to every job you do, please remember and share these important safety tips.

- 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.

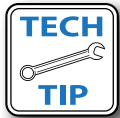
FRONT COILOVER INSTALLATION DIAGRAM



REMOVING THE ORIGINAL FRONT STRUTS

Step 1: Protecta-Sockets & Breaker Bar

Safely lift and support the vehicle and remove the 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: 30mm 12-Point -OR- 17mm Hex (allen) Socket & Breaker Bar

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



REMOVING THE ORIGINAL FRONT STRUTS

Step 3: 16mm Socket & Ratchet

Remove the bolt (circled in **YELLOW**) which secures the sway bar end link to the front of each control arm.



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



Step 4: 16mm Wrench, 16mm Socket & Ratchet

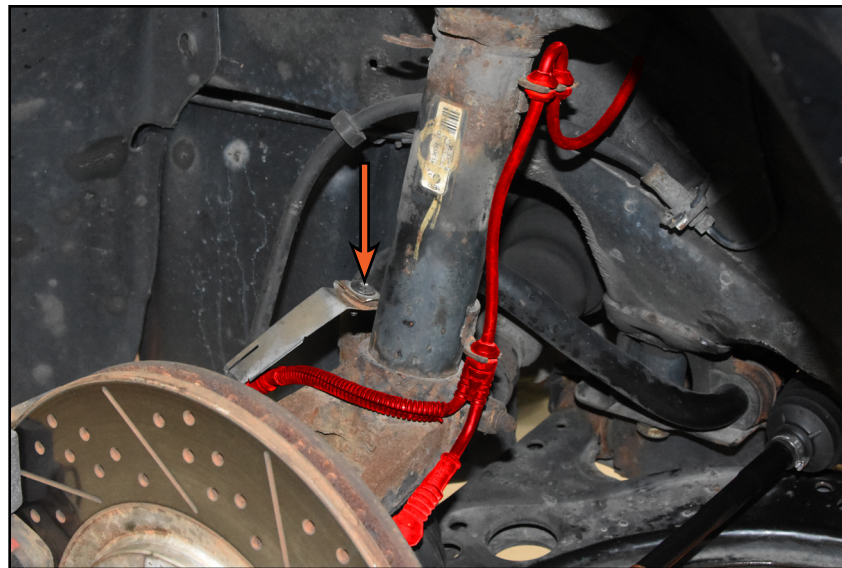
Counterhold the nut while you remove the bolt which secures the end link to the sway bar, then remove the end link from the vehicle.



REMOVING THE ORIGINAL FRONT STRUTS

Step 5: T25 Torx

Pull the ABS sensor wire (highlighted in **RED**) free from the bracket on the strut body. Remove the screw (arrow) which secures the brake pad wear sensor bracket to the strut body.



Step 6: 13mm Socket & Ratchet

Loosen and remove the three lower ball joint bolts (circled in **YELLOW**) from each control arm.



REMOVING THE ORIGINAL FRONT STRUTS

Step 7: Pry Bar

Pry the ball joint out of the control arm and swing the spindle housing outward, carefully sliding the axle free from the spindle housing and up over the sway bar, out of the way.



Step 8: 13mm Socket & Ratchet

With the axle out of the way, slide the ball joint back into the control arm as shown and loosely reinstall the bolts (circled in **YELLOW**).



REMOVING THE ORIGINAL FRONT STRUTS

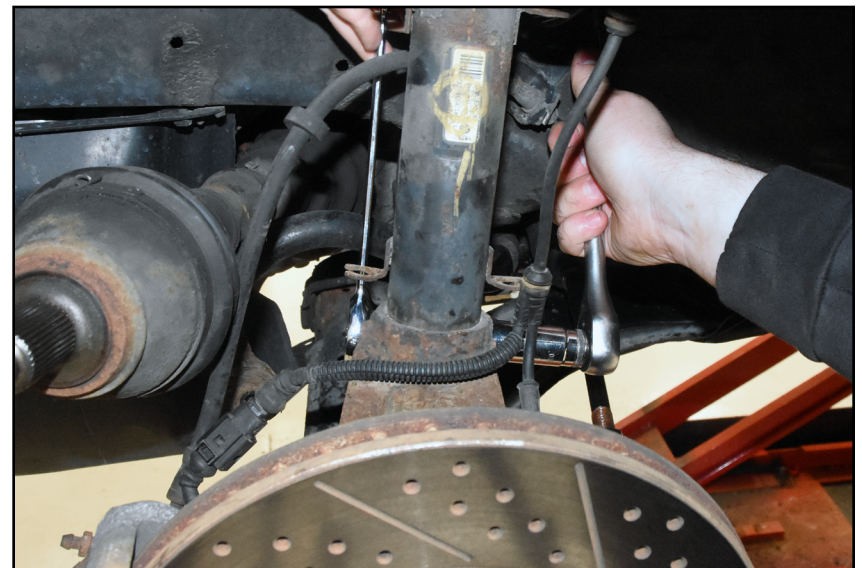
Step 9: Floor Jack

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



Step 10: 18mm Wrench, 18mm Socket & Ratchet

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



REMOVING THE ORIGINAL FRONT STRUTS

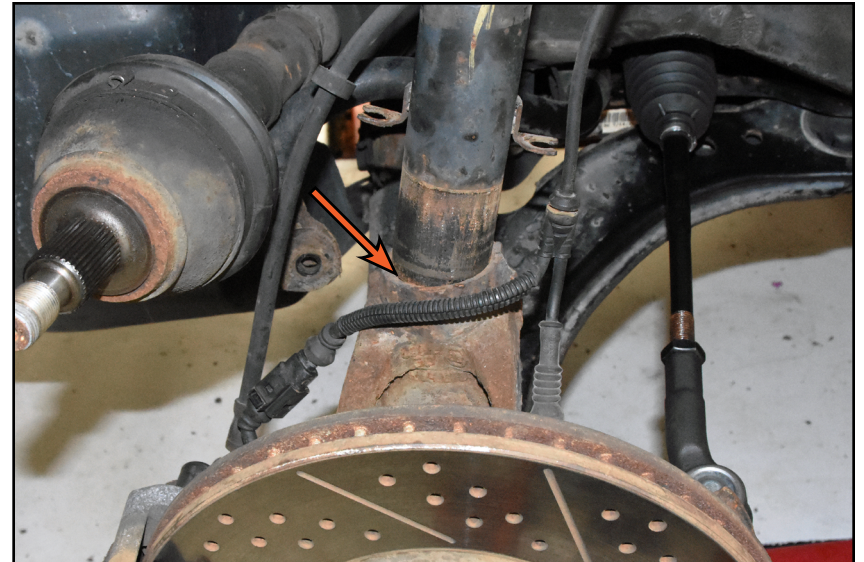
Step 11: Spindle Housing Spreader Tool, Ratchet

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 12:

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



REMOVING THE ORIGINAL FRONT STRUTS

Step 13: 21mm Strut Nut Socket & Ratchet, 7mm Allen

Support the strut from below and counterhold the strut shaft while you remove the strut top hat nut.



Step 14:

Carefully guide the strut assembly out of the vehicle, being careful not to damage the fender.



REMOVING THE ORIGINAL FRONT STRUTS

Step 15:

If you are re-using your existing strut mounts: Pull the strut mount off of the strut bearing as shown.



Step 16: 21mm Strut Nut Socket & Ratchet, 7mm Allen

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



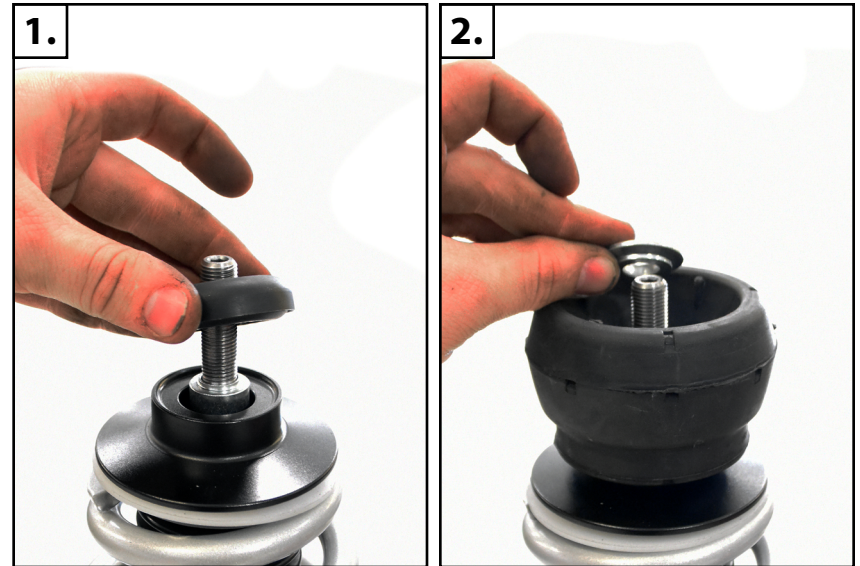
INSTALLING THE FRONT COILOVERS

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 assemble the strut mount. Slide the strut bearing onto the tapered sleeve (1.), then, slide the strut mount over the bearing and slide the tapered washer onto the shaft (2.).



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 2: 18mm Strut Nut Socket & Torque Wrench, 5mm Allen

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



INSTALLING THE FRONT COILOVERS

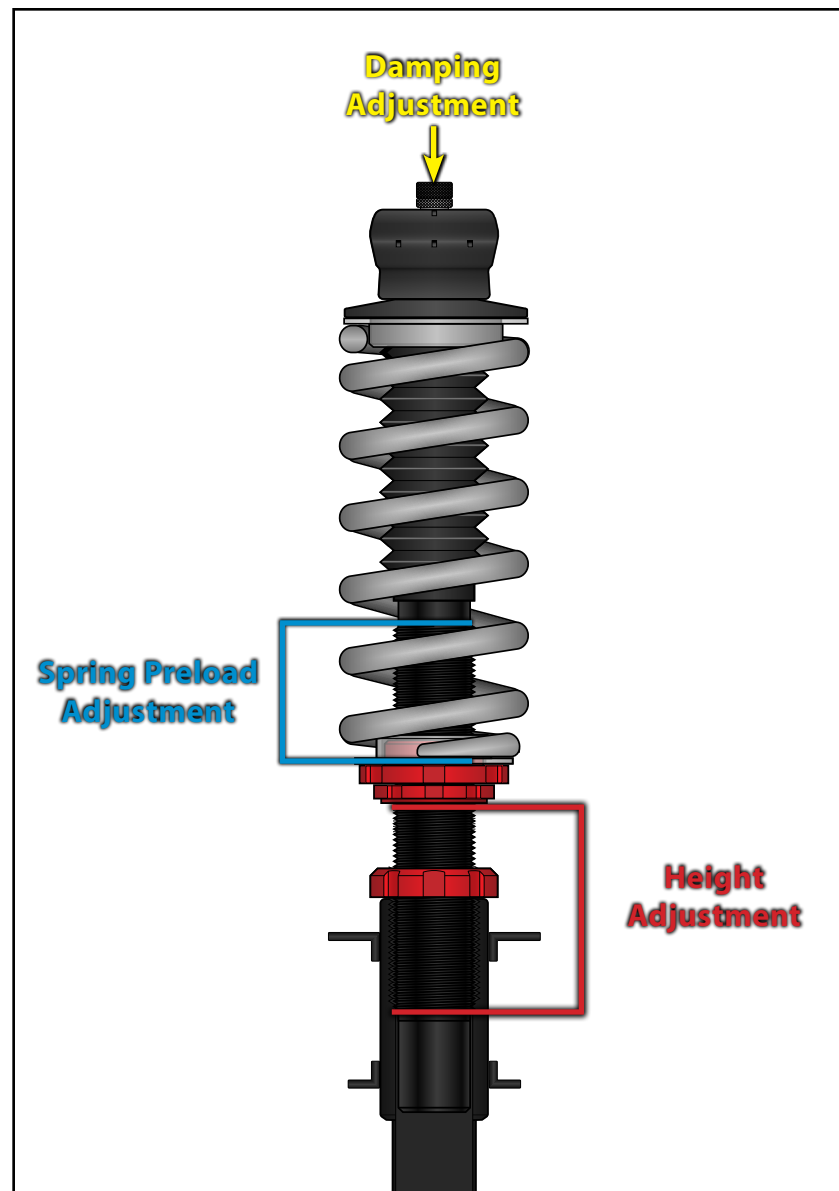
Step 3: Coilover Adjustment Wrenches

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.

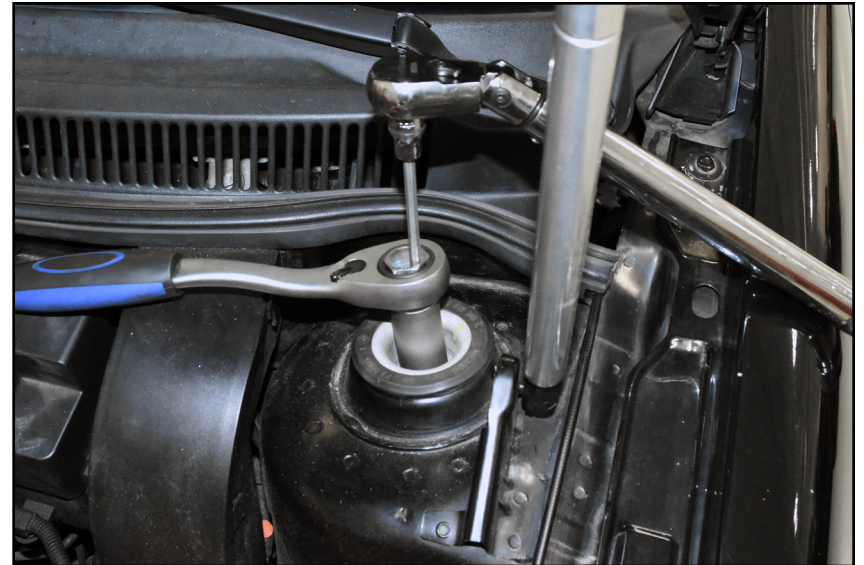
The strut itself can be rotated up or down inside the body to raise or lower the vehicle without affecting the spring preload or damping. We recommend setting the height higher than you want the vehicle to sit, this will leave some room for the springs to settle, or for you to fine-tune once the coilovers 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: 19mm Strut Nut Socket & Torque Wrench, 5mm Allen

Lift the coilover assembly up into the strut tower then install the top hat, washer, and nut onto the strut shaft. Torque the nut to 60 Nm (44 Ft-lbs).

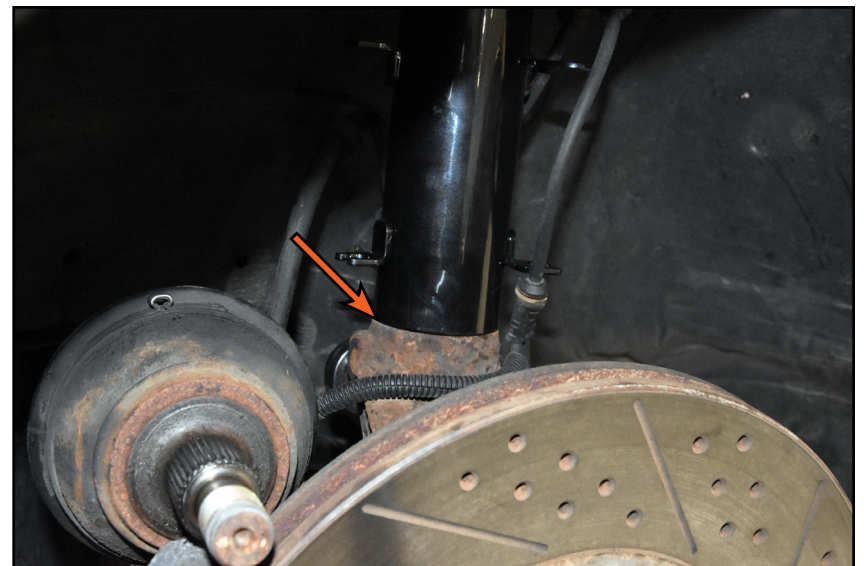


Step 5:

Slowly jack up the spindle housing and guide the coilover body into the spindle until it is fully inserted as shown.



There is an alignment tab on the coilover body which must align with the slot on the back of the spindle housing for proper installation.



INSTALLING THE FRONT COILOVERS

Step 6: 18mm Socket, 18mm Socket & Torque Wrench

Once the coilover is fully inserted into the spindle housing, remove the spindle housing spreader tool and replace the pinch bolt and nut and torque it to 60 Nm (44 Ft-lbs) + 90 degrees.



Step 7: Pry Bar, 13mm 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 back into the control arm. Replace the bolts and torque them to 20 Nm (15 Ft-lbs) + 90 degrees.



INSTALLING THE FRONT COILOVERS

Step 8: 30mm 12-Point Socket & Torque Wrench

Replace the axle nut and torque it to the appropriate torque spec listed below:

• Hex (Allen) Bolt:

- Tighten to 200 Nm (147 Ft-lbs).
- Loosen 180 degrees.
- Turn wheel hub 180 degrees.
- Tighten to 50 Nm (37 Ft-lbs) + 60 degrees

• 12-Point Nut:

- Tighten to 250 Nm (184 Ft-lbs) + 90 degrees.
- Loosen 180 degrees.
- Turn wheel hub 180 degrees.
- Tighten to 250 Nm (184 Ft-lbs) + 90 degrees.



Step 9: 16mm Socket & Torque Wrench

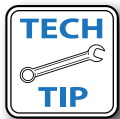
Install the provided adjustable front end link into the control arm using a replacement bolt (arrow), then torque it to 15 Nm (11 Ft-lbs).



INSTALLING THE FRONT COILOVERS

Step 10: 16mm Socket & Torque Wrench

Spin the end link up or down until you can slide the other end of the end link through the sway bar 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.

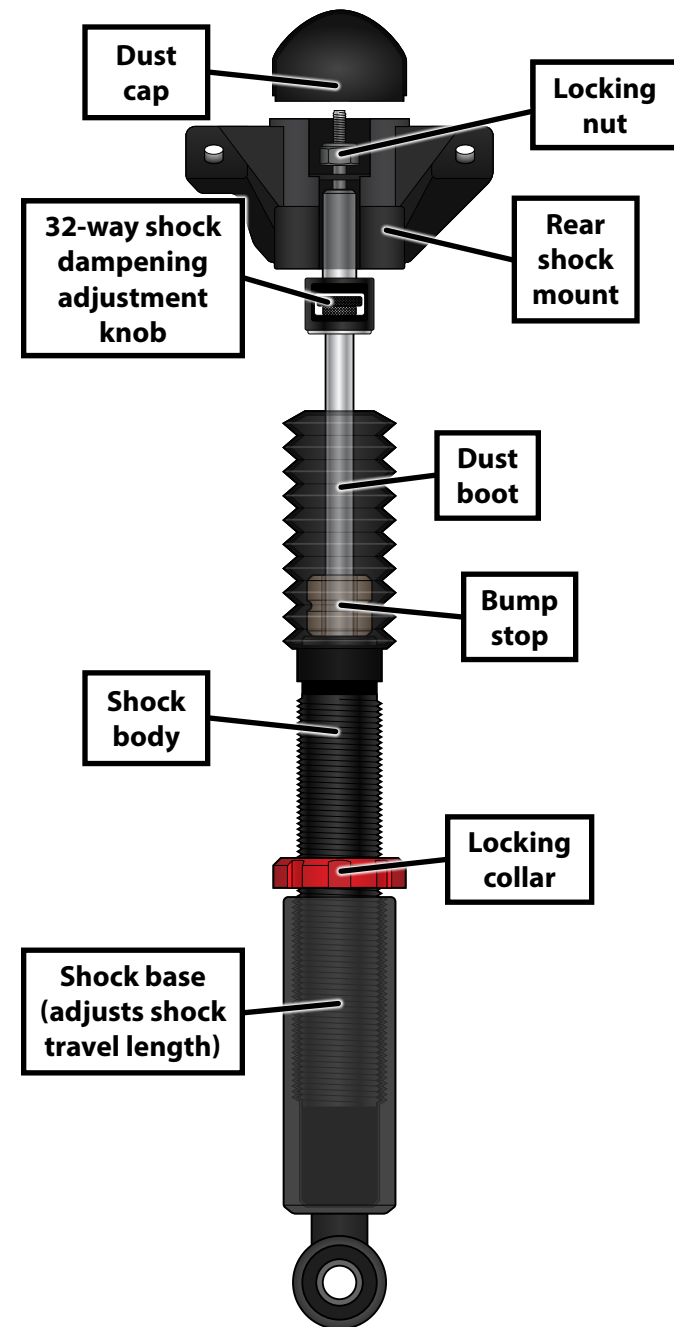
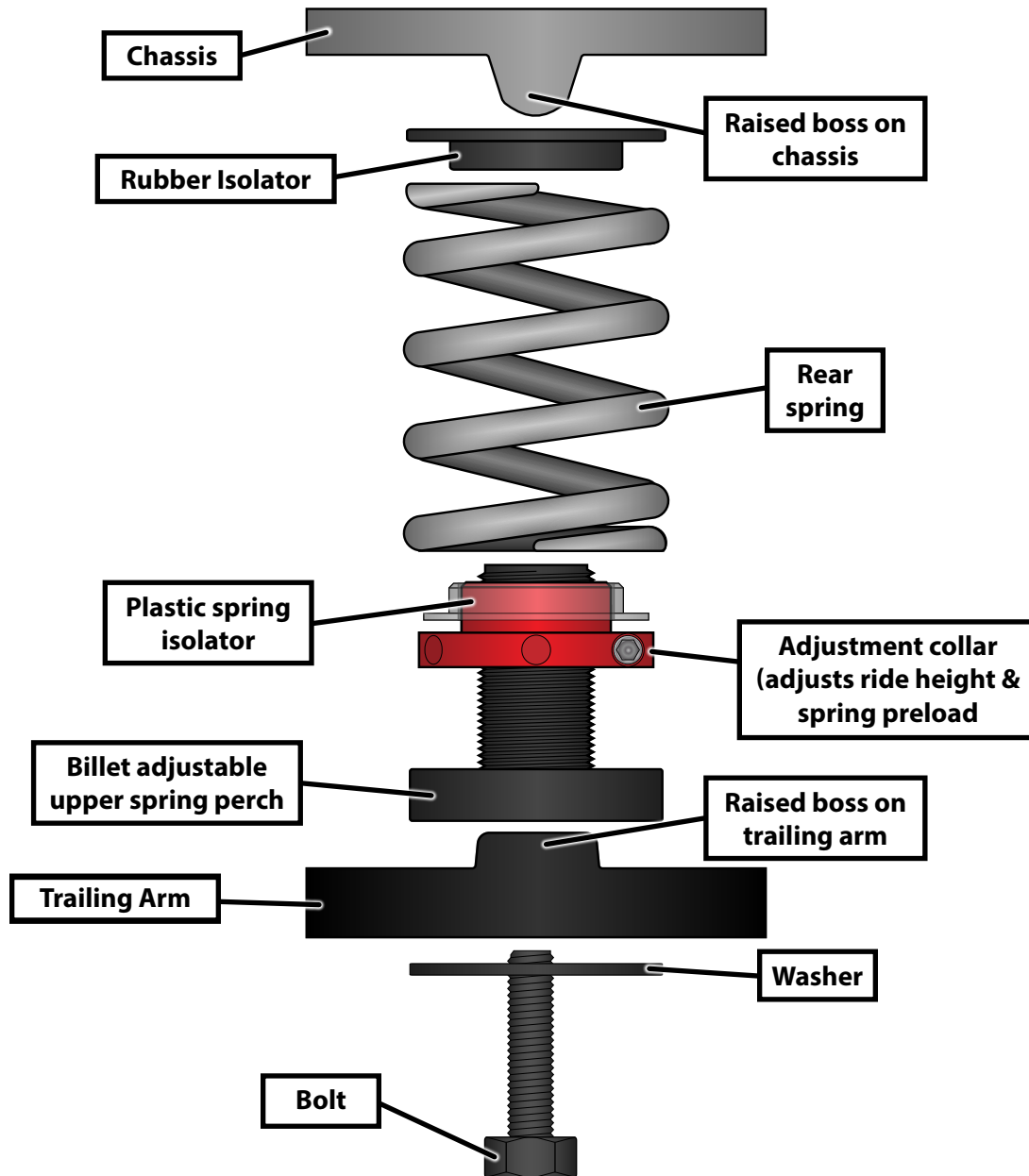


Step 11: T25 Torx

Reinstall the screw (arrow) which secures the brake pad wear sensor bracket to the spindle then install the ABS sensor wire into the bracket on the new coilover body.



REAR COILOVER INSTALLATION DIAGRAM



REMOVING THE ORIGINAL SHOCKS AND SPRINGS

Step 1: 16mm Wrench, 16mm Socket & Ratchet

Support the trailing arm from below as shown, then counterhold the nut (circled in **YELLOW**) while you remove each lower control arm bolt.



Step 2:

Slowly lower the jacks to release the tension in the springs, then slide the springs out from the vehicle as shown.



REMOVING THE ORIGINAL SHOCKS AND SPRINGS

Step 3: 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. Carefully guide the shock out from the vehicle, being careful not to damage the fender.



Step 4: 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:

Reinstall the dust cap (arrow) onto the shock mount as shown.



INSTALLING THE REAR COILOVERS

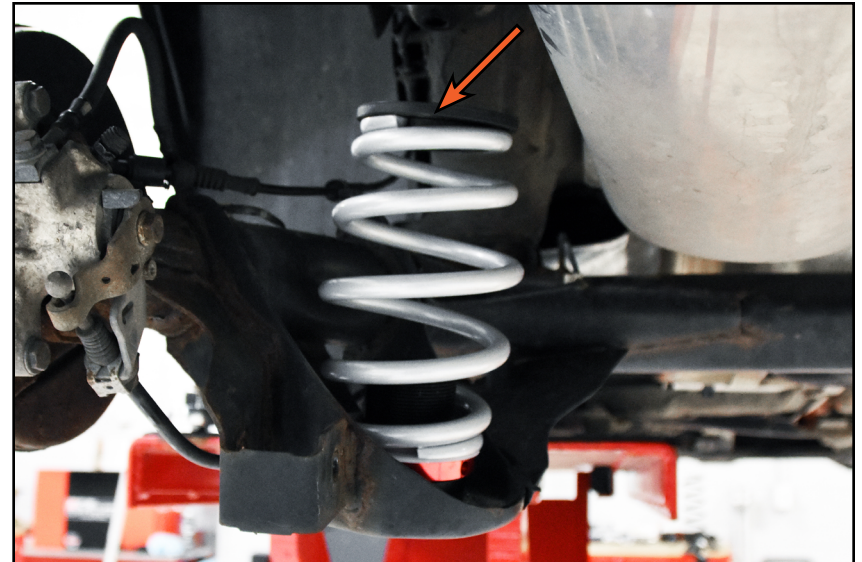
Step 3: 18mm Socket & Torque Wrench

Install the rear spring perch into the top of trailing arm then install the large washer and bolt from below (arrow) and torque the bolt to 50 Nm (37 Ft-lbs)



Step 4:

Slide the spring assembly over the spring perch as shown with the provided rubber isolator (arrow) on top of the spring.



INSTALLING THE REAR COILOVERS

Step 5: 16mm Socket & Torque Wrench

Carefully guide the new shock into the fenderwell, then install the replacement bolts (arrows) and torque them to 60 Nm (44 Ft-lbs) + 45 degrees.



Step 6:

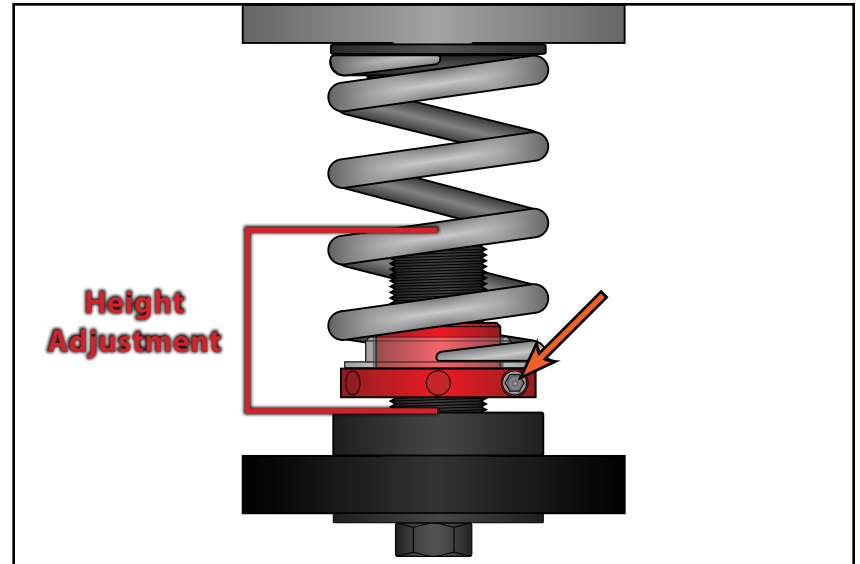
Jack up the lower control arm until you can slide the replacement lower shock bolt and nut into place (arrow), but leave it loose for now.



INSTALLING THE REAR COILOVERS

Step 7: Coilover Adjustment Wrenches, 5mm Hex (Allen)

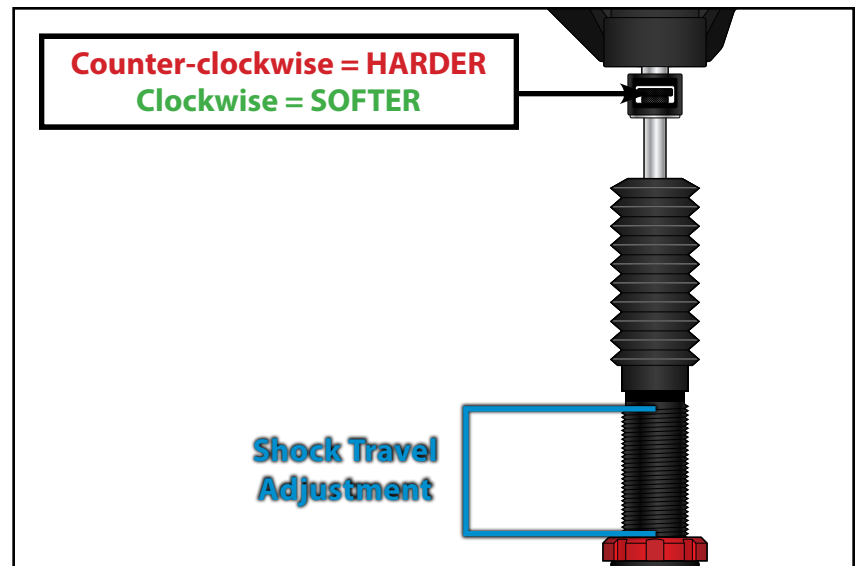
The adjustment collar on the rear spring perch can be used to adjust the height and spring preload simultaneously. Rotate the adjustment collar upward to preload the spring, raising the rear of the vehicle. Once your desired height has been achieved, tighten the set screw (arrow) to lock the adjustment collar in place. We rotated the adjustment collar up 3 complete turns which resulted in a final ride height of ~13" when measured from the fender to the center of the hub.



Step 8: 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.

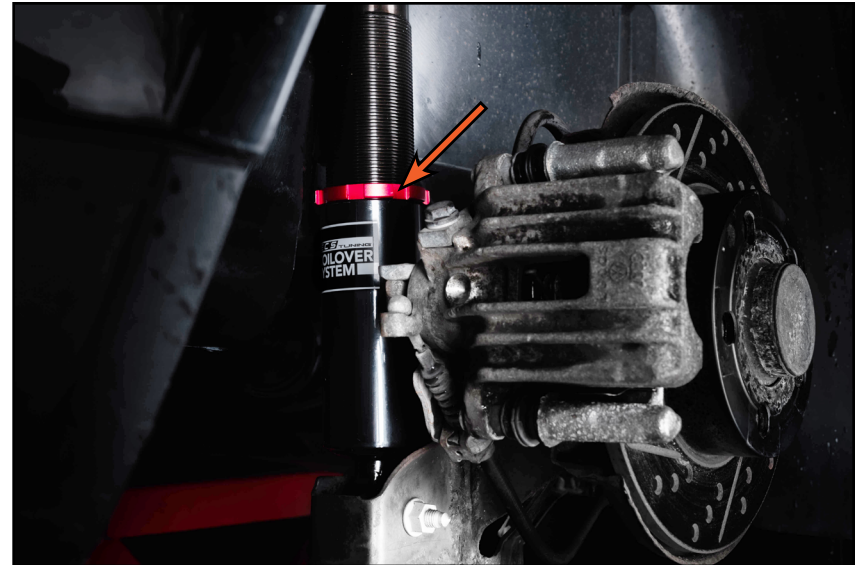
The shock itself can be rotated up or down inside the body to adjust the maximum shock travel. If your shock travel is too short, you may run into your bump stops when going over bumps, too long and you may run into the end of the shocks travel when the suspension unloads over larger bumps. Once your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



INSTALLING THE REAR COILOVERS

Step 9:

With the locking collar (arrow) spun up out of the way, you can grab the threads of the shock by hand and shorten or lengthen the shock length until the spring is fully seated and the upper isolator begins to compress just slightly.



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

With the suspension at ride height, counterhold the nut while you torque the lower shock bolt to 110nm (81 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 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.

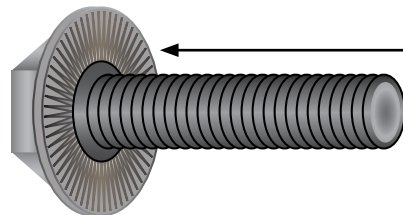
Some fasteners require lubrication on the threads -or- on the contact surface while torquing. These fasteners will be listed with the specific location and type of lubrication required. Always follow manufacturers recommendations exactly.

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.

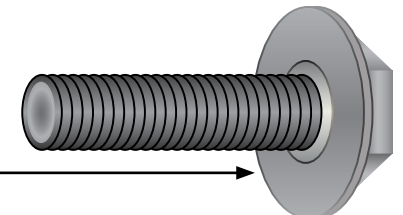
Ribbed vs. Non-Ribbed Bolts

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 Strut Bearing Nut.....	60 Nm (44 Ft-lbs).....	(Page 14)
Front Top Hat Nut.....	60 Nm (44 Ft-lbs).....	(Page 16)
Spindle Housing Pinch Bolt	60 nm (44 Ft-lbs) + 90 degrees.....	(Page 17)
Ball Joint Nuts.....	20 Nm (15 Ft-lbs) + 90 degrees.....	(Page 17)
Axle bolt (Hex (Allen) Bolt).....	<i>Stage One:</i> 250 Nm (184 Ft-lbs) + 90 degrees <i>Stage Two:</i> Loosen 180 degrees <i>Stage Three:</i> Rotate wheel hub 180 degrees <i>Stage Four:</i> 250 Nm (184 Ft-lbs) + 90 degrees	(Page 18)
Axle Nut (12-Point Nut)	<i>Stage One:</i> 200 Nm (148 Ft-lbs) <i>Stage Two:</i> Loosen 180 degrees <i>Stage Three:</i> Rotate wheel hub 180 degrees <i>Stage Four:</i> 50 Nm (37 Ft-lbs) + 60 degrees.....	(Page 18)
Front Sway Bar End Link to Control Arm Bolt.....	15 Nm (48 Ft-lbs)	(Page 18)
Front Sway Bar End Link Nut to Sway Bar Nut	65 Nm (48 Ft-lbs)	(Page 19)
Rear Upper Shock Nut.....	25 Nm (18 Ft-lbs)	(Page 23)
Rear Spring Perch Bolt.....	50 Nm (37 Ft-lbs)	(Page 24)
Rear Upper Shock Mount Bolts.....	60 Nm (44 Ft-lbs).....	(Page 25)
Rear Lower Shock Bolt.....	110 Nm (81 Ft-lbs)	(Page 27)

Your Adjustable 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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