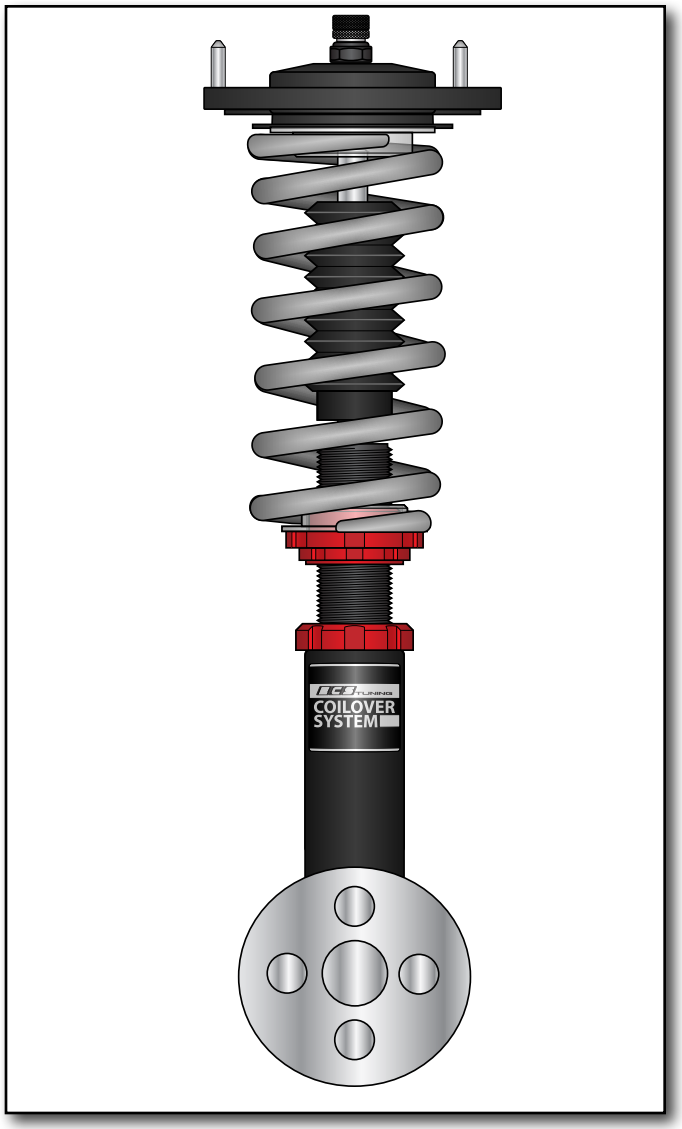
BMW E30 Adjustable Coilover Kit
Installation Instructions - Click HERE to Shop

Skill Level
4 - Professional
Experience Required



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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

Specialty Tools

- **Strut Spring Compressor Tool Set** ..... ES#2918793
- **Angle Grinder**
- **Welding Machine**

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.

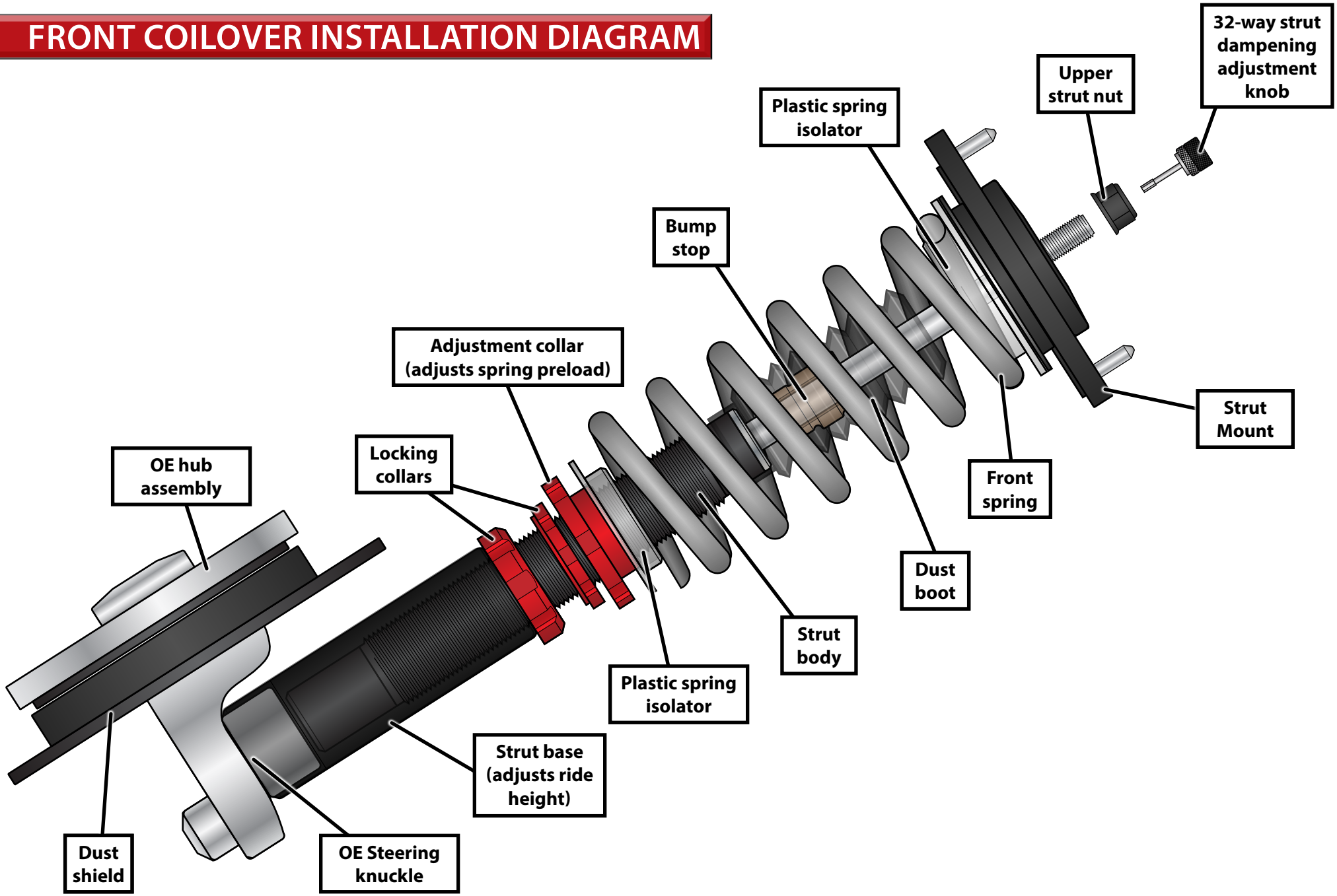
GENERAL PREPARATION AND SAFETY INFORMATION

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

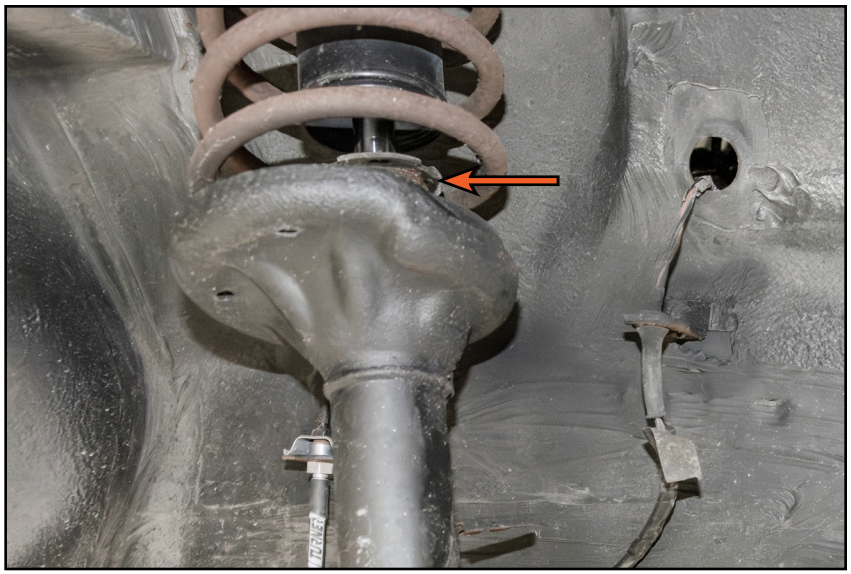
Safely lift and support the vehicle, then remove all four wheels.

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: Gland Nut Removal Tool - OR - Slip Joint Pliers

Break loose the gland nut (arrow), this will be fully removed at a later step.



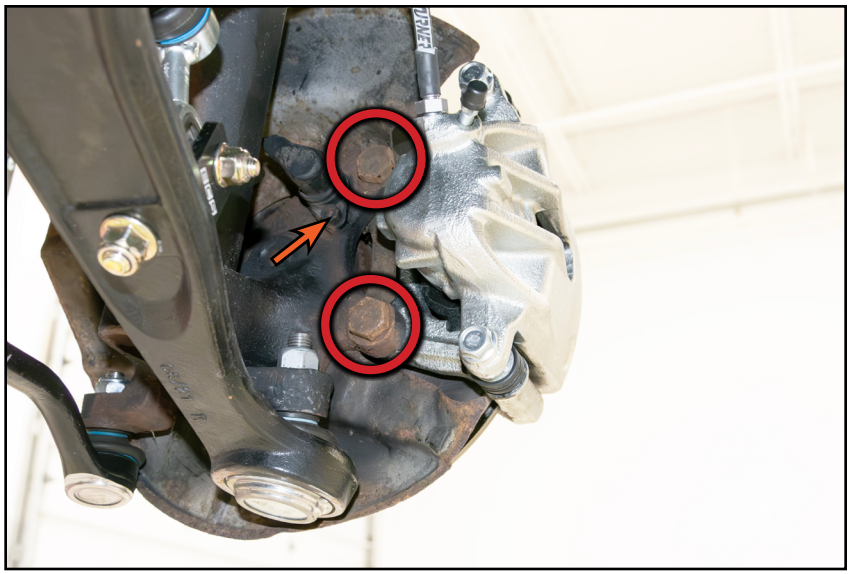
TECH TIP

Breaking loose the gland nut will be easier while the strut is still fully installed in the vehicle. It is imperative that the gland nut is only broken loose a couple threads at this step.

REMOVING THE ORIGINAL FRONT STRUTS

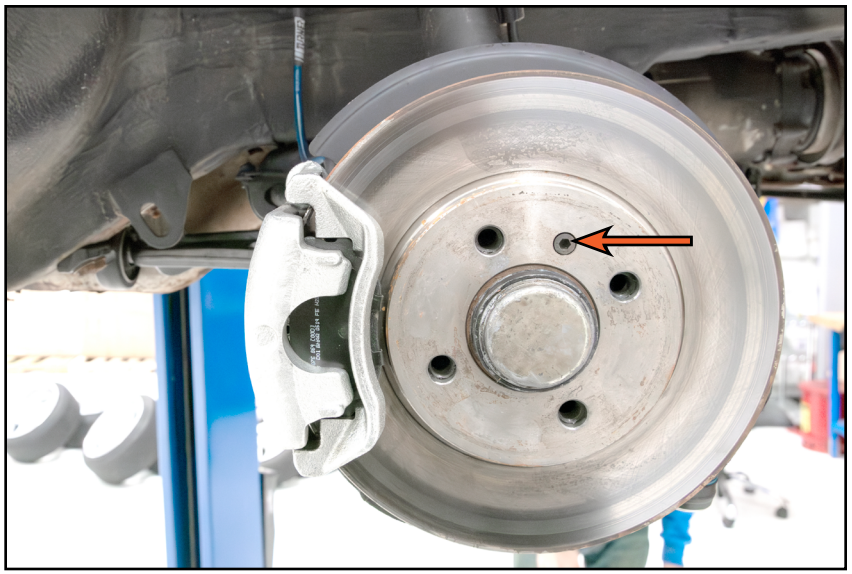
Step 3: 19mm, 4mm Hex (Allen) Socket & Ratchet

Remove the two bolts (circled in **RED**) that secure the brake caliper bracket to the steering knuckle and hang it safely out of the way to prevent damage to the brake lines. Remove the screw (arrow) that secures the wheel speed sensor and remove the sensor from the knuckle.



Step 4: 5mm Hex (Allen) Socket & Ratchet

Remove the brake rotor set screw (arrow) and remove the brake rotor.



REMOVING THE ORIGINAL FRONT STRUTS

Step 5: 17mm, 18mm Socket & Ratchet

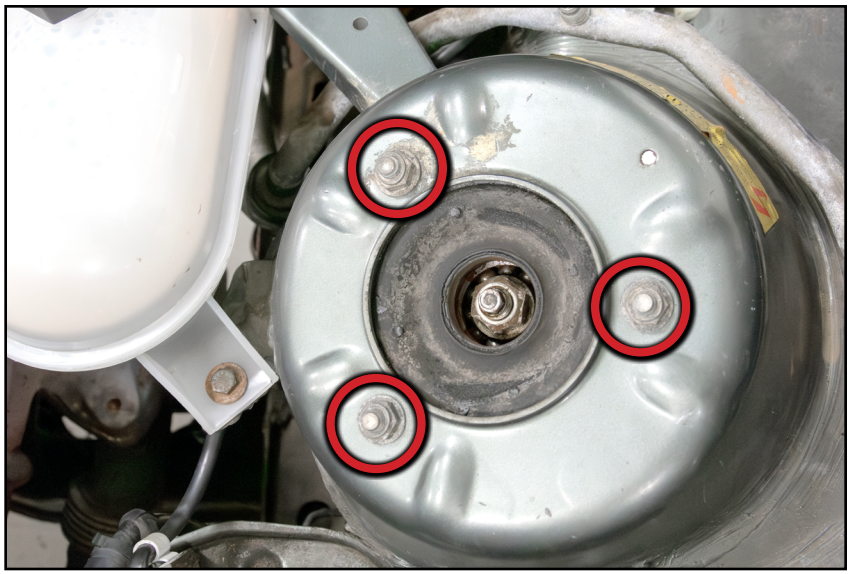
Remove the nut (arrow in **photo #1**) and disconnect the outer tie rod from the steering knuckle. Remove the nut (arrow in **photo #2**) and disconnect the lower ball joint from the knuckle.

#1:

#2:

Step 6: 13mm Socket & Ratchet

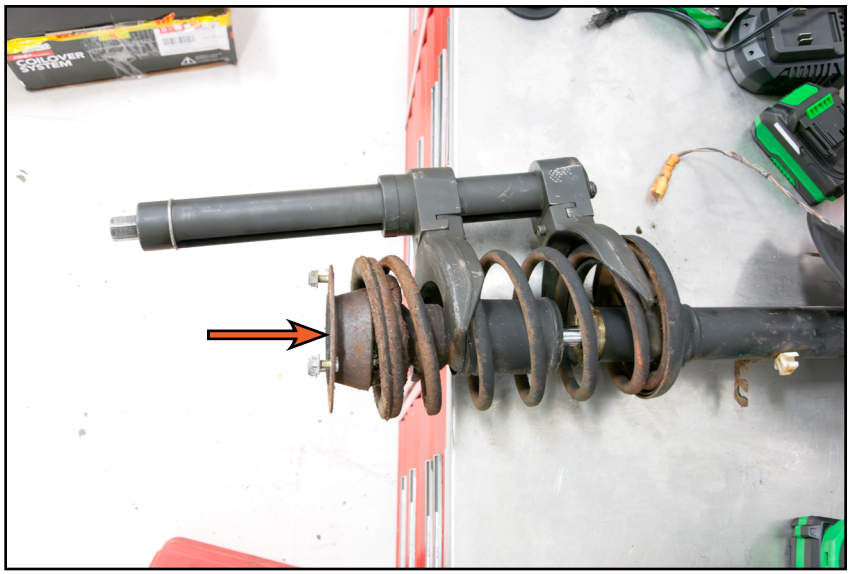
Remove the nuts (circled in **RED**) that secure the strut mount to the chassis. Remove the strut assembly from the vehicle.



REMOVING THE ORIGINAL FRONT STRUTS

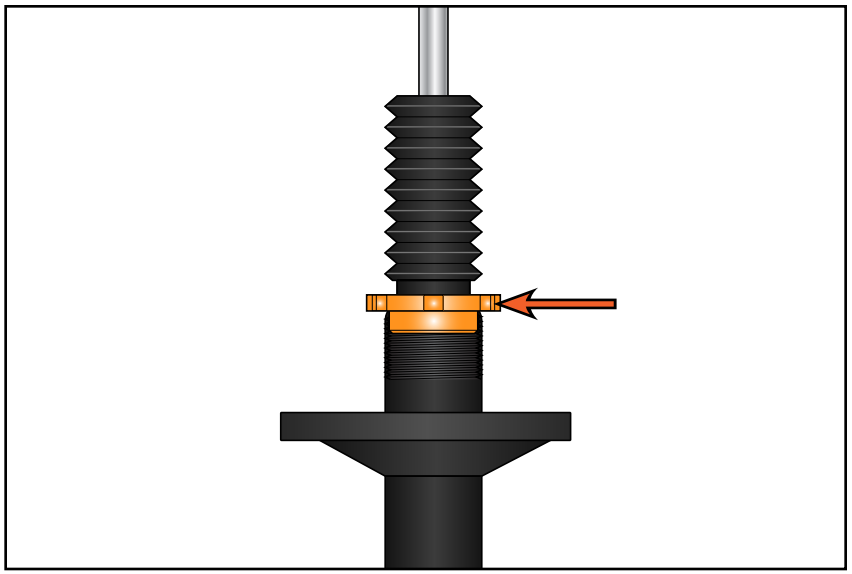
Step 7: Spring Compressor Tool, 19mm Socket & Ratchet

Compress the spring until there is a gap between the top of the spring and the bottom of the upper strut mount, then remove the nut (arrow) and slowly release the spring compressor tool.



Step 8: Gland Nut Removal Tool - OR - Slip Joint Pliers

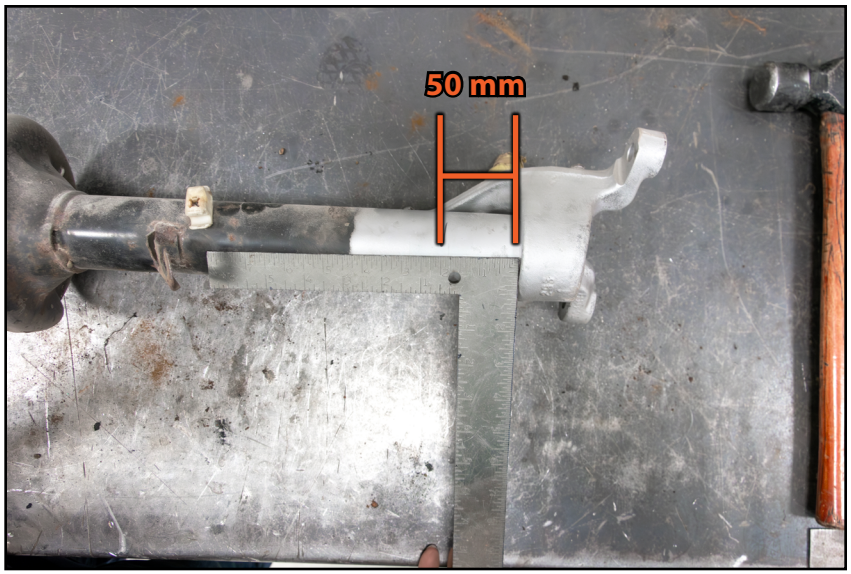
Remove the gland nut (arrow), pull the strut piston assembly free from the strut tube, and dispose of the oil inside of the strut tube.



REMOVING THE ORIGINAL FRONT STRUTS

Step 9: Tape Measure & Marker

Prepare the strut tube and knuckle by cleaning any contaminants off the areas to be cut. Thoroughly strip, clean, and degrease the stock tube as shown. Measure 2" or 50mm from the base of the strut tube (where it meets the knuckle) and make a mark all around the tube.



NOTE

The wheel bearing and hub has been removed in these photos for illustrative purposes, they do not need to be removed for this installation

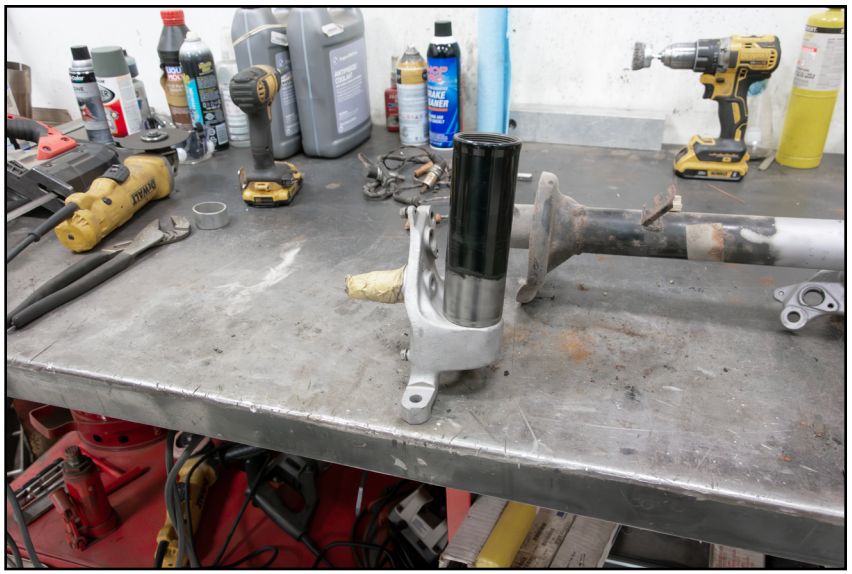
Step 10: Angle Grinder - OR - Reciprocating Saw

Cut the strut tube at the marks made in the previous steps, then smooth and de-burr any rough edges.

INSTALLING THE FRONT COILOVERS

Step 1:

Strip away the paint, clean, and degrease the bottom of the ECS strut base, then slide it over the stock strut tube so that it sits flush on top of the knuckle as shown.



Step 2: Welder

Weld the perimeter of the ECS strut base to the knuckle as shown.

TECH TIP

The knuckle is made of cast iron and the new coilover body is steel. It is recommended to prepare the knuckle prior to welding by pre-heating the cast material for better weld penetration and a stronger overall weld.

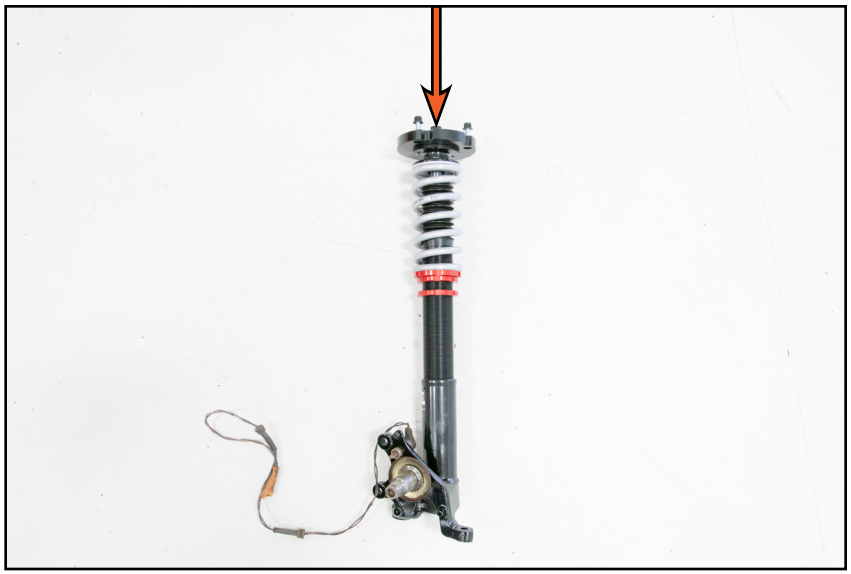
INSTALLING THE FRONT COILOVERS

Step 3:

Wait for the welds to fully cool, then clean, degrease, and paint the strut base as shown.

Step 4: 19mm Socket, 5mm Hex (Allen) & Torque Wrench

Using the diagram on page 5 for reference, assemble the coilover onto the welded knuckle assembly as shown, then torque the upper strut nut (arrow) to 65 Nm (47 Ft-lbs).



INSTALLING THE FRONT COILOVERS

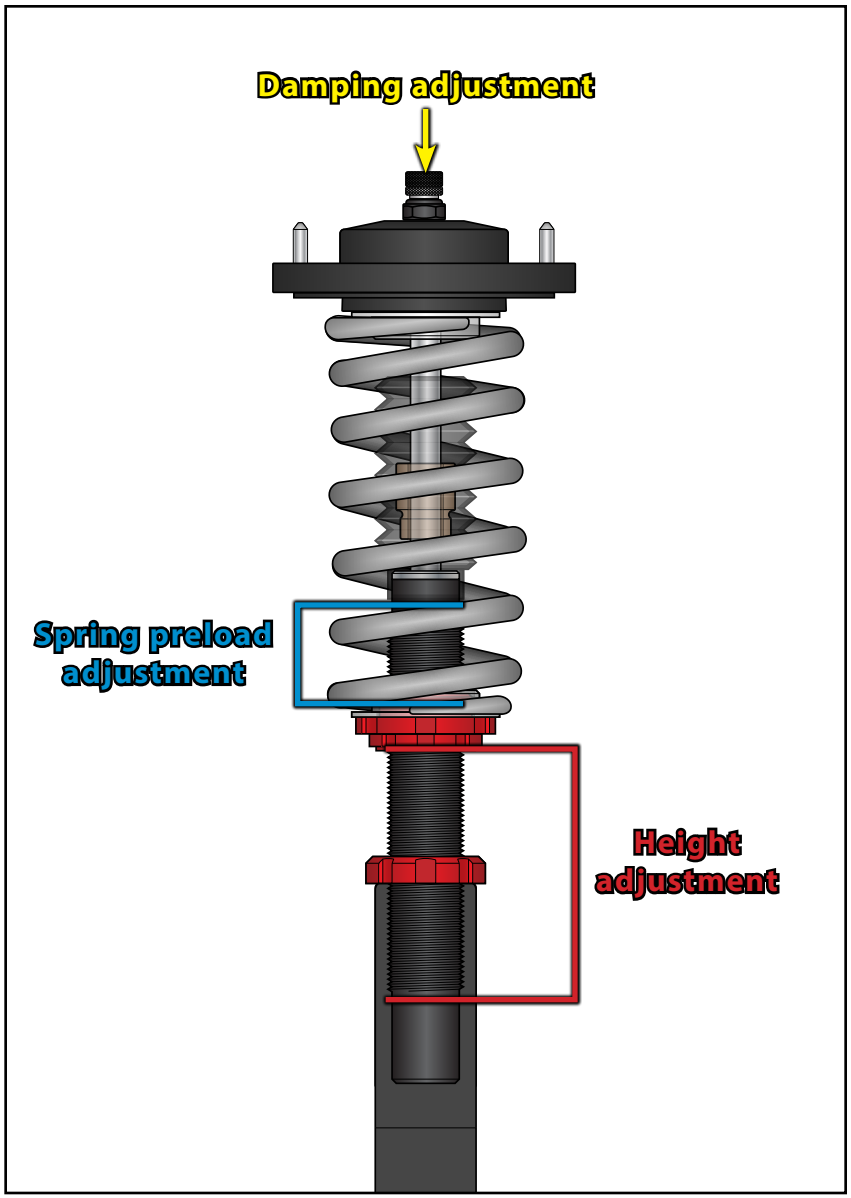
Step 5: Coilover Adjustment Wrenches

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, 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.

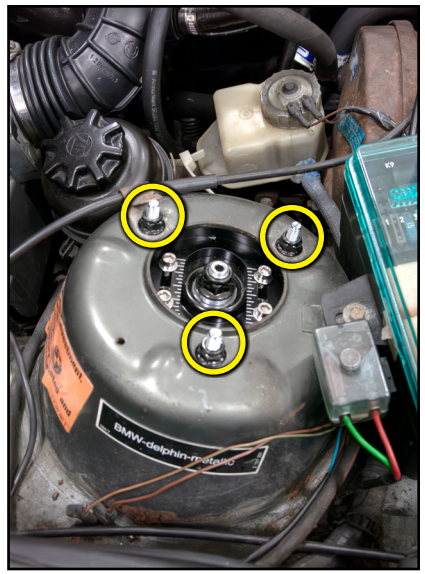
The strut itself can be rotated up or down inside the body to raise or lower the vehicle without affecting the spring preload or damping. We recommend setting the height higher than you want the vehicle to sit, this will leave some room for the suspension to settle, or for you to fine-tune once the coilovers 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 1.25 inches lower than stock ride height.



INSTALLING THE FRONT COILOVERS

Step 6: 13mm Socket & Torque Wrench

Install the assembled coilovers into the strut towers and torque the nuts (circled in **YELLOW**) to 22 Nm (16 Ft-lbs).



Step 7: 17mm, 18mm Socket & Torque Wrench

Install the outer tie rod and lower ball joint into the steering knuckle and replace the nuts, torquing them to 65 Nm (47 Ft-lbs).

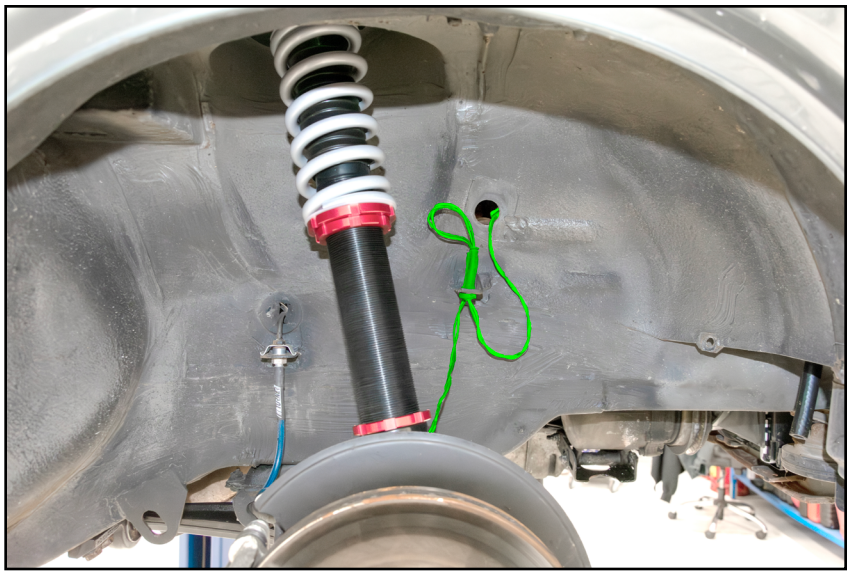
INSTALLING THE FRONT COILOVERS

Step 8: 10mm, 19mm, 5mm Hex (Allen) Socket & Torque Wrench

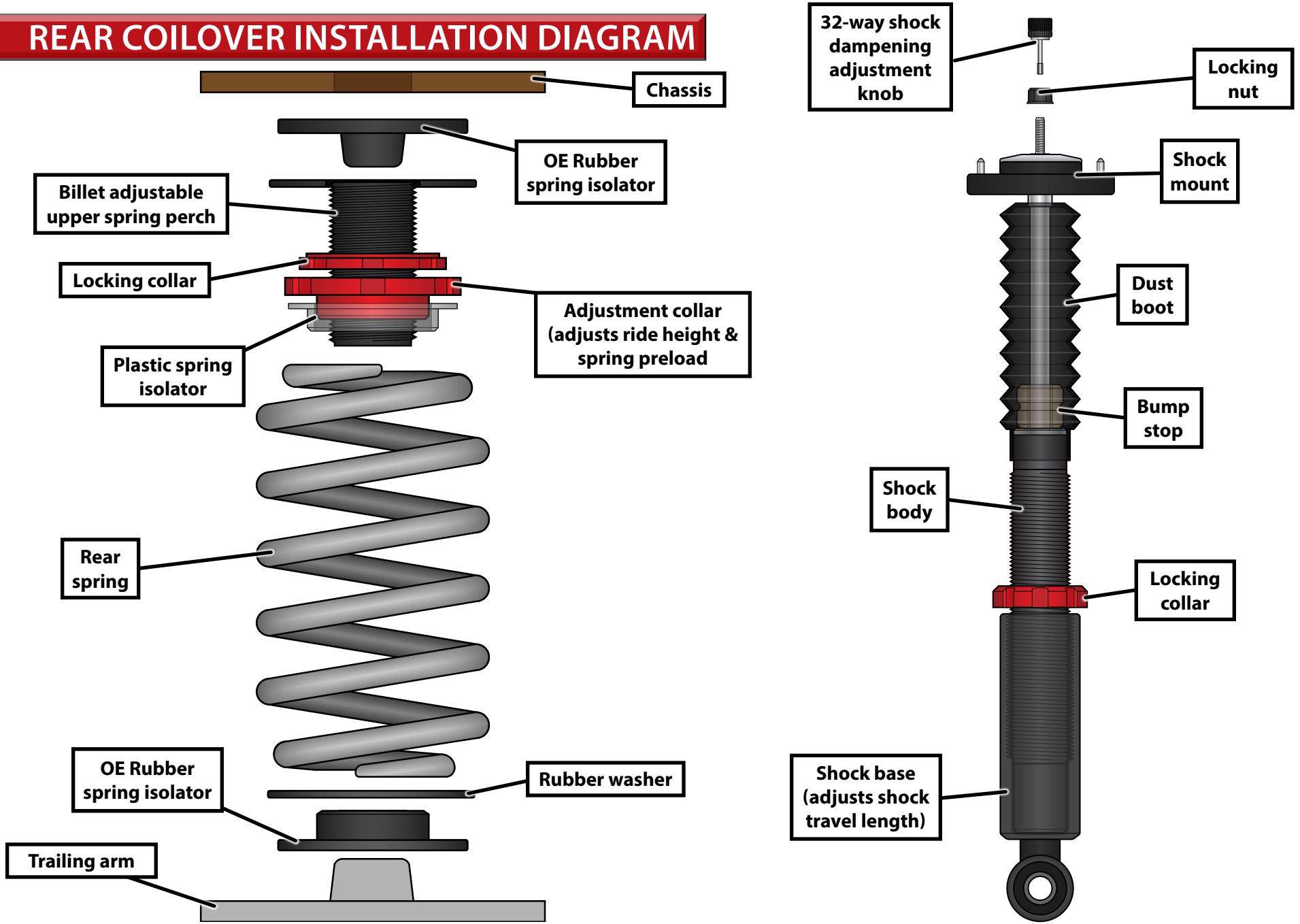
Reinstall the brake rotor and secure it with the brake rotor set screw (arrow). Reinstall the brake caliper bracket and torque the bolts to 123 Nm (90 Ft-lbs).

Step 9: 4mm Hex (Allen) Socket & Ratchet

Reinstall the wheel speed sensor (highlighted in **GREEN**).



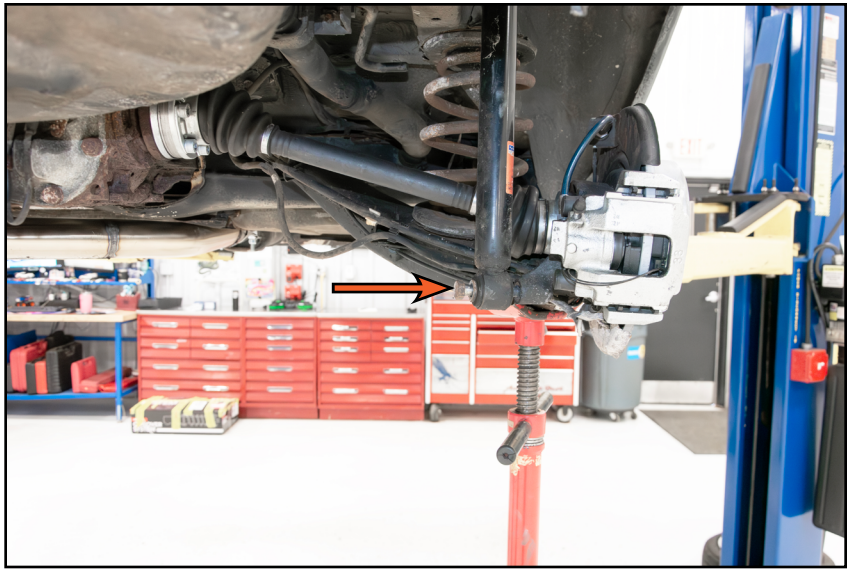
REAR COILOVER INSTALLATION DIAGRAM



REMOVING THE ORIGINAL SHOCKS AND SPRINGS

Step 1: 19mm Socket & Ratchet

Support the trailing arm from underneath and remove the lower shock bolt (arrow).



Step 2: Pole Jack - OR - Hydraulic Floor Jack

Slowly lower the jack to relieve tension from the stock spring, then remove the spring from the vehicle.

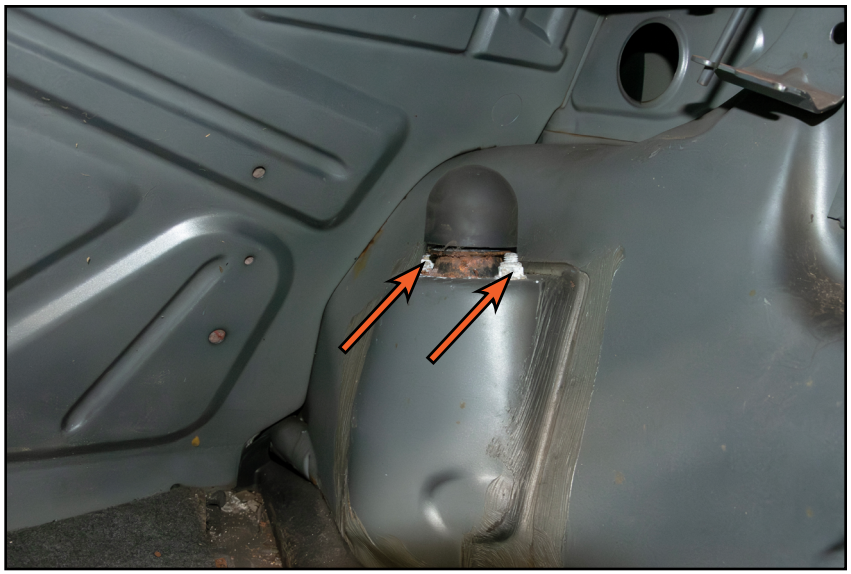
REMOVING THE ORIGINAL SHOCKS AND SPRINGS

Step 3:

Remove the interior trunk panels to gain access to the upper shock mount.

Step 4: 13mm Socket & Ratchet

Remove the nuts (arrows) that secure the upper shock mounts, then remove the shocks from the vehicle.



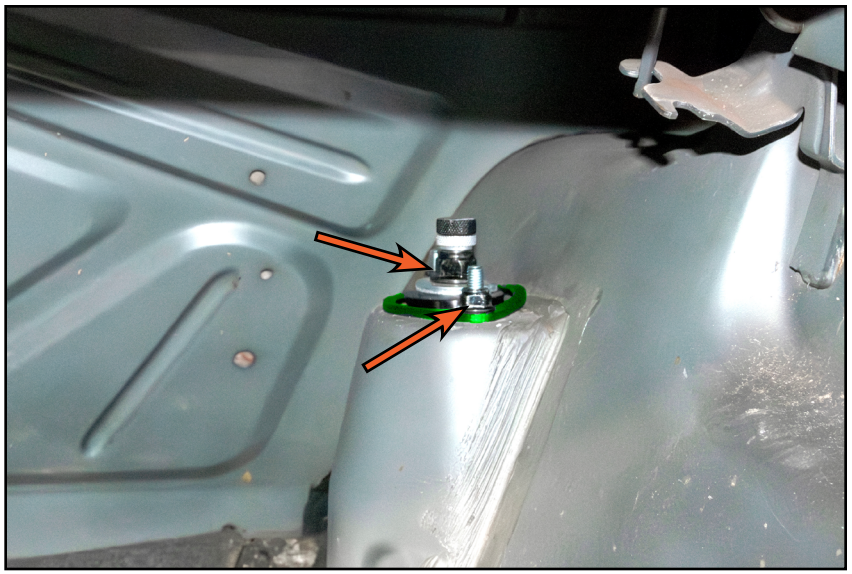
INSTALLING THE REAR COILOVERS

Step 1: 19mm Socket, 5mm Hex (Allen) & Torque Wrench

Torque the upper shock nut (arrow) on the new ECS shock to 15 Nm (11 Ft-lbs).

Step 2: 13mm Socket & Torque Wrench

Install the shock into the shock towers, then install the reinforcement plate (highlighted in **GREEN**) and torque the nuts (arrows) to 22 Nm (16 Ft-lbs).



INSTALLING THE REAR COILOVERS

Step 3:

Reinstall the trunk interior panels.

Step 4: 19mm Socket & Torque Wrench

Using the diagram on page 16 for reference, slide the spring assembly into place, slowly raise the trailing arm until the spring is fully seated on both isolators (**photo #1**), then shorten or lengthen the shock body until you can thread the lower shock bolt (arrow) into place (**photo #2**). Torque the lower shock bolts to 77 Nm (57 Ft-lbs) with the vehicle at final ride height.

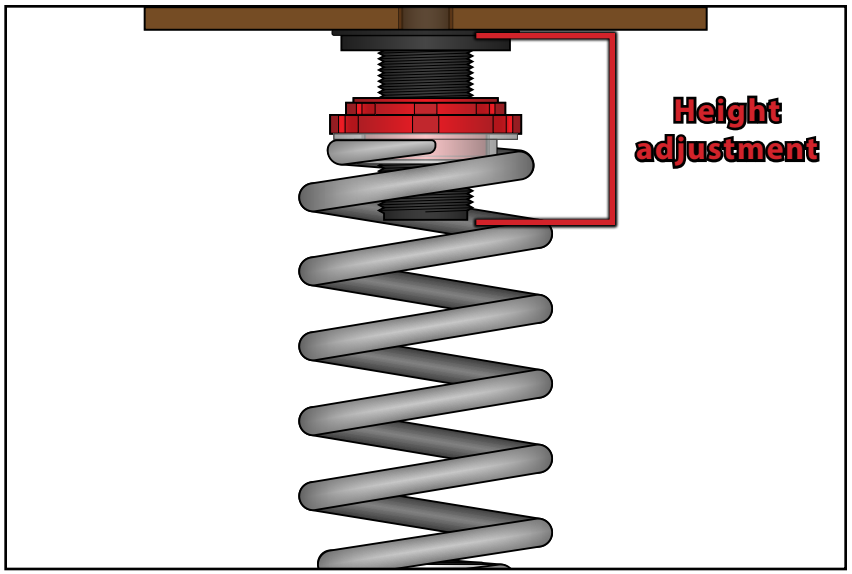
#1:

#2:

INSTALLING THE REAR COILOVERS

Step 5: 19mm Socket & Torque Wrench

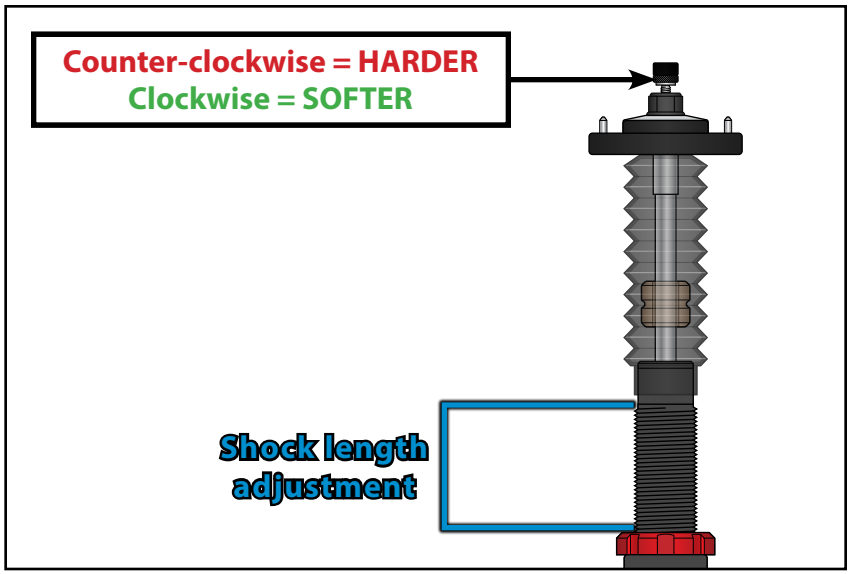
The adjustment collar on the rear spring perch can be used to adjust the height and spring preload simultaneously. Rotate the adjustment collar downward to preload the spring, raising the rear of the vehicle. Once your desired height has been achieved, tighten the locking collar down against the adjustment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



Step 6: Coilover Adjustment Wrenches

The knurled knob on the top of 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.



FINAL INSTALLATION STEPS

Step 1: Coilover Wrenches, 17mm Socket & Torque Wrench

Reinstall the wheels and torque the wheel bolts to 100 Nm (74 Ft-lbs). 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.

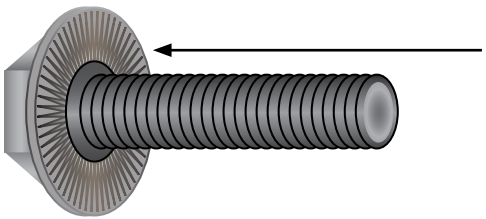
Some fasteners require lubrication on the threads -or- on the contact surface while torquing. These fasteners will be listed with the specific location and type of lubrication required. Always follow manufacturers recommendations exactly.

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.

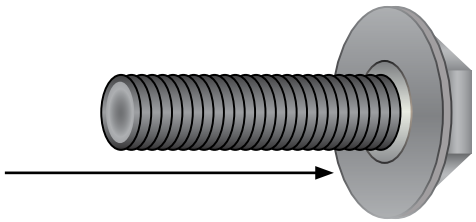
Ribbed vs. Non-Ribbed Bolts

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

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.