

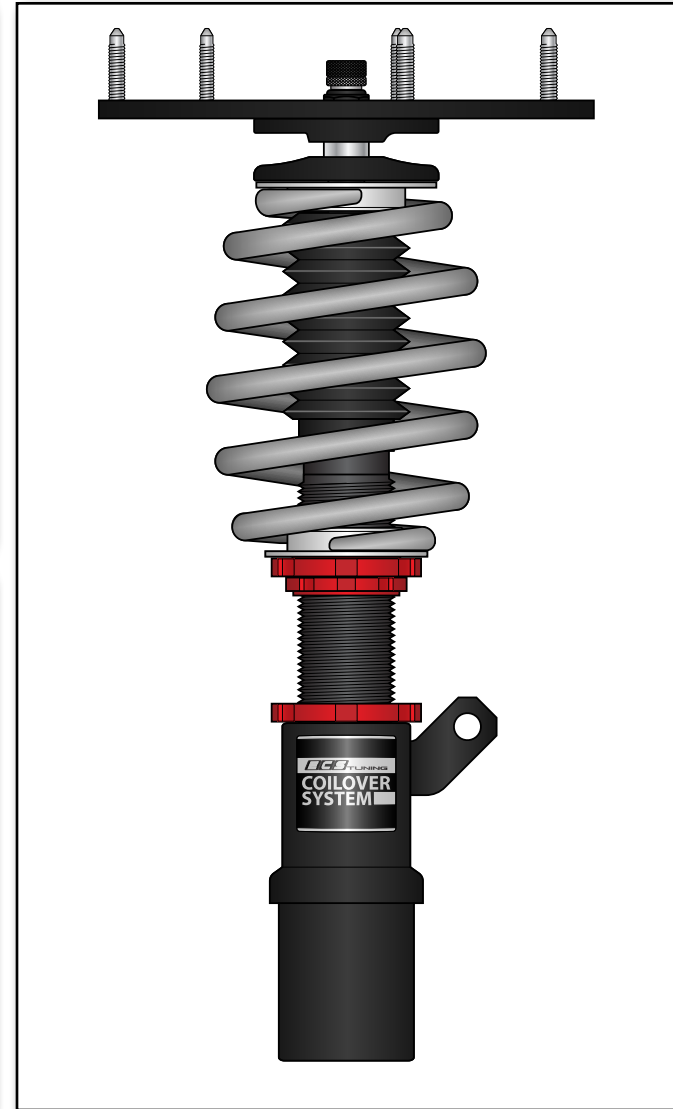


Mini F-Chassis Adjustable Coilover Kit

Installation Instructions - [Click HERE to Shop](#)



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

Required For This Install

- 1/4" Drive Ratchet [ES#2823235](#)
- 1/4" Drive Deep and Shallow Sockets [ES#2823235](#)
- 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

- **Spindle Housing Spreader Tool** [ES#3894](#)
- **Strut Nut Socket Set** [ES#2703013](#)

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

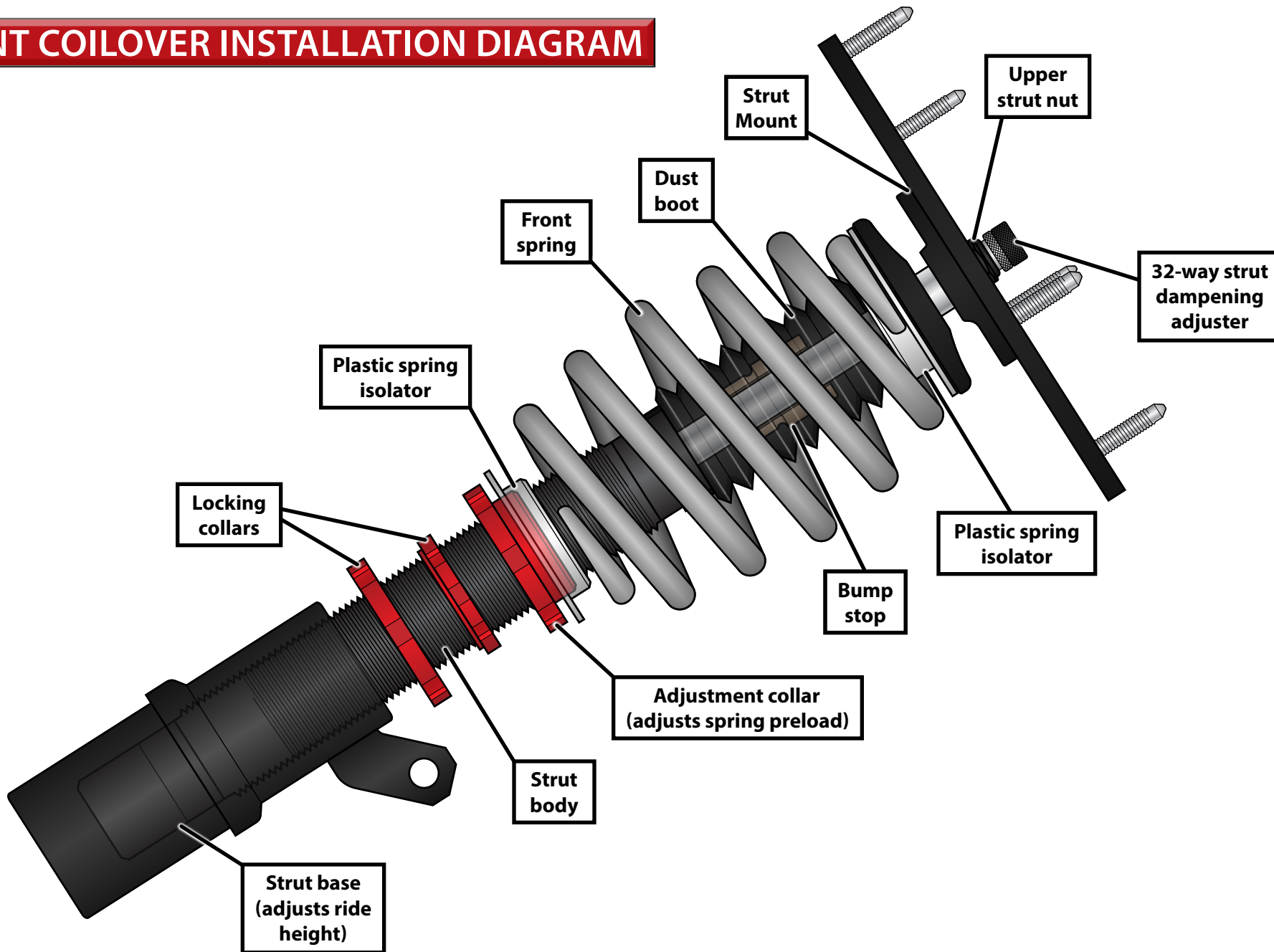
ECS Tuning cares about your health and safety, please read the following safety information. This information pertains to automotive service in general, and while it may not pertain to every job you do, please remember and share these important safety tips.

- 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.

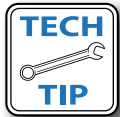
FRONT COILOVER INSTALLATION DIAGRAM



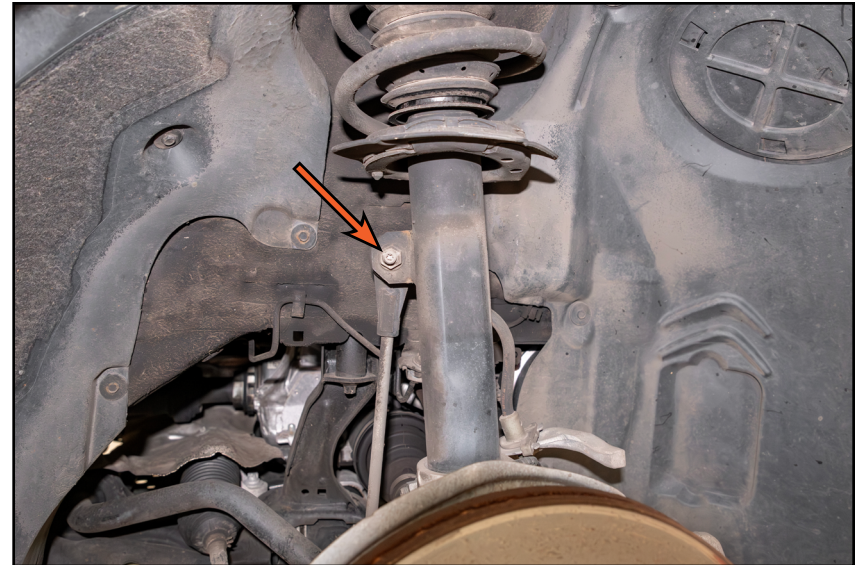
REMOVING THE ORIGINAL FRONT STRUTS

Step 1: 16mm Wrench, T30 Torx Socket & Ratchet

Safely lift and support the vehicle and remove all four wheels. Counterhold the sway bar end link and remove the nut (arrow), from each end of the end link, then remove it from the vehicle.



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:

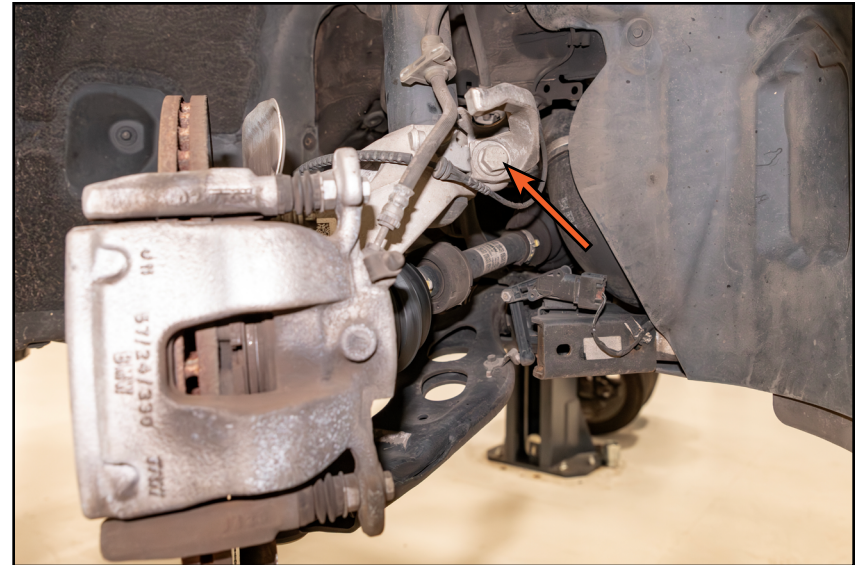
Pull the brake hose and sensor wire(s) (highlighted in **RED**) free from the bracket on the back of the steering knuckle.



REMOVING THE ORIGINAL FRONT STRUTS

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

Remove the nut, then remove the pinch bolt (arrow) and bracket from the steering knuckle.



Step 4: Spindle Housing Spreader Tool

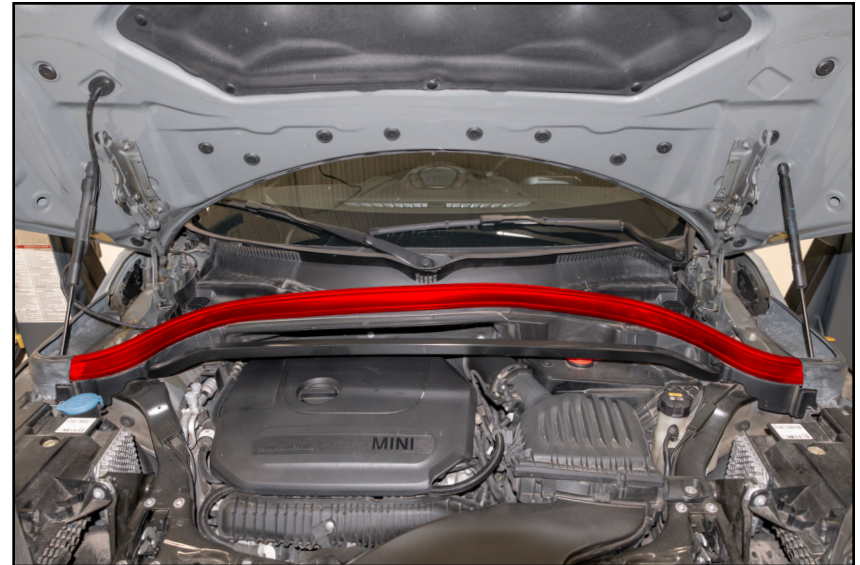
Support the knuckle from below, insert the spindle housing spreader tool into the slot in the back of the steering knuckle and spread it apart, freeing the strut body. Maneuver the steering knuckle downward until slide the strut free as shown. Carefully support the knuckle so that it does not hang and damage the brake lines.



REMOVING THE ORIGINAL FRONT STRUTS

Step 5:

Free up the wiring harnesses from the rain tray seal (highlighted in **RED**), then remove the seal from the vehicle.



Step 6:

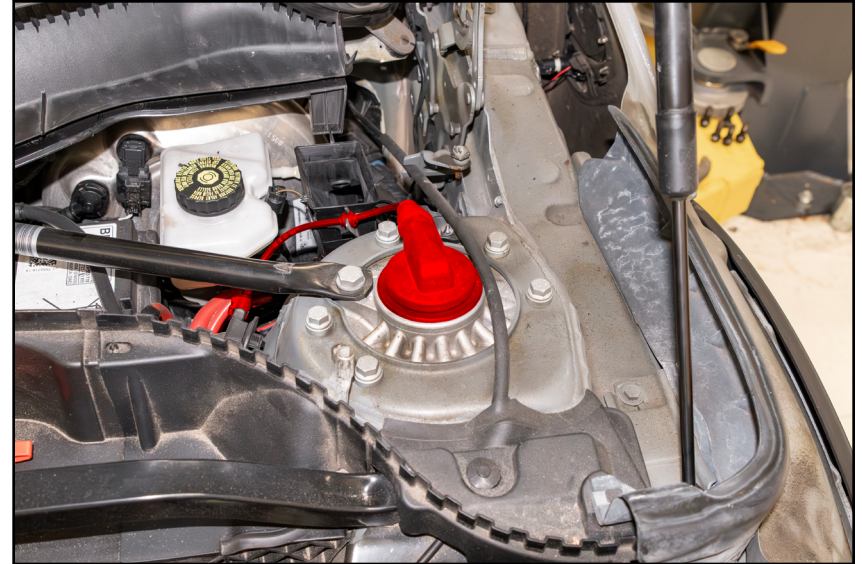
Slide the rain tray (highlighted in **RED**) forward and remove it from the vehicle.



REMOVING THE ORIGINAL FRONT STRUTS

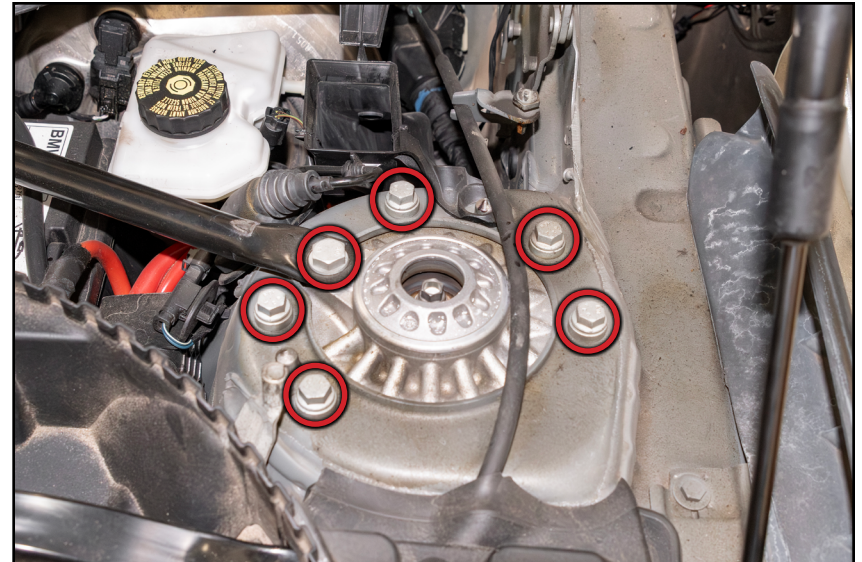
Step 7:

If equipped, disconnect the DDC wire (highlighted in **RED**) from the top of the strut, then disconnect it from the wiring harness and remove it from the vehicle.



Step 8: 13mm, 16mm Socket & Ratchet

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



INSTALLING THE FRONT COILOVERS

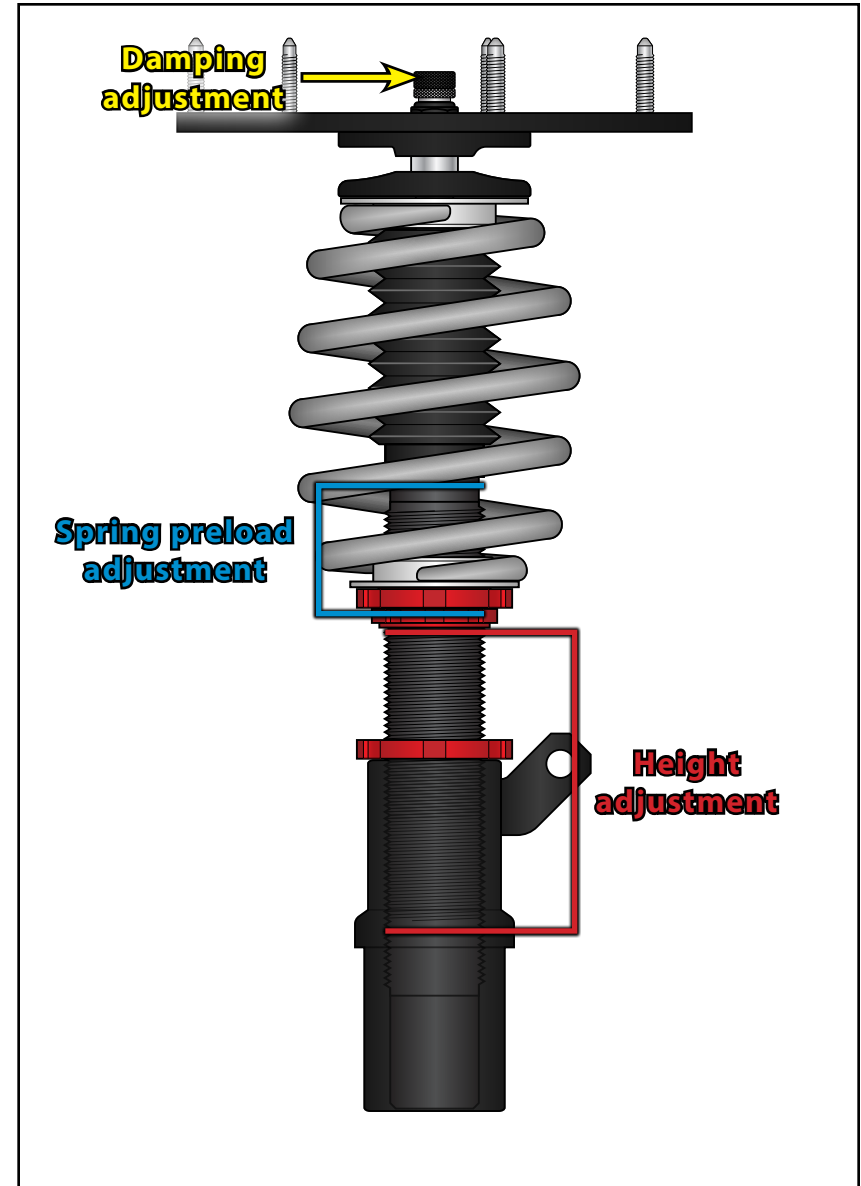
Step 1: Coilover Adjustment Wrenches

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. If unsure, set the damping to the middle setting (16 clicks), you can always go back and adjust it later as needed.

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. Typically preload should be set to a minimum, with just enough compression to prevent the spring from shifting or rattling. Spin the adjustment collar up until it is tight against the bottom of the spring then rotate it up one additional full turn before locking it in place.

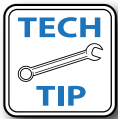
The strut itself can be rotated up or down inside the body to raise or lower the vehicle without affecting the spring preload or damping. We recommend setting the height higher than you want the vehicle to sit as this will leave some room for the suspension to settle and for you to fine-tune once the coilovers are installed. Once all four coilovers are installed, reinstall the wheels and take measurements at all four wheels, fine-tuning until your desired height is achieved. Once you are happy with the overall height, tighten each locking collar against the strut body to lock it in.



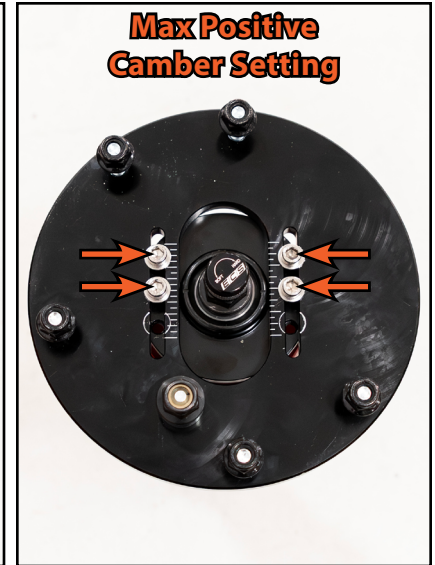
INSTALLING THE FRONT COILOVERS

Step 2: 5mm Hex (Allen) Socket & Ratchet

Optional: Loosen the four screws (arrows) and reposition them into the holes corresponding to the desired camber setting. Installing the screws into the two most inboard sets of holes will set the plates for maximum negative camber adjustability, while using the two most outboard sets of holes will set them for maximum positive camber adjustability. After positioning the screws, slide the camber plate in or out to fine-tune the camber to your desired setting, then tighten the screws until snug to lock it in place.



We recommend applying a good quality wax-based lubricant 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.

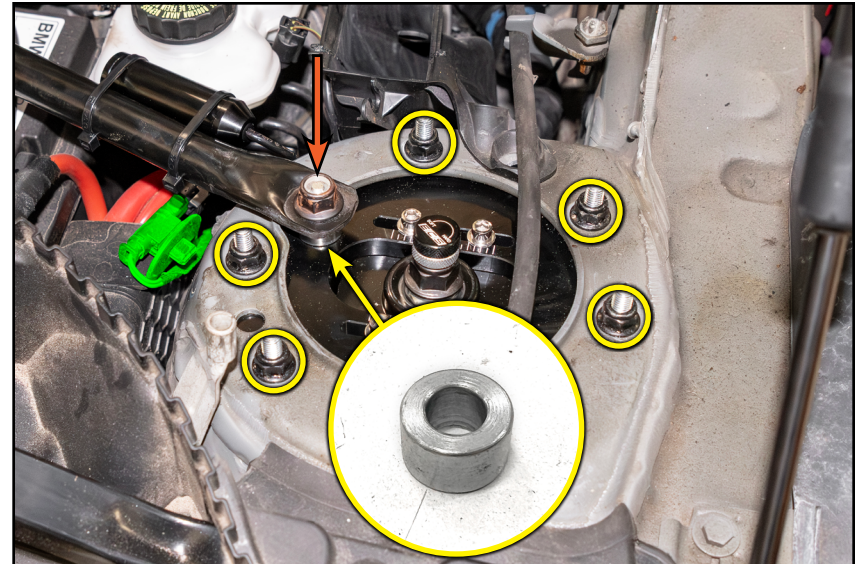


Step 3: 13mm, 15mm Socket & Torque Wrench

Ensure the spacer (inset photo) is installed onto the center stud for the cross brace, then lift the coilover assembly up into the strut tower and install the five nuts (circled in **YELLOW**), torquing them to 30 Nm (22 Ft-lbs). Install the cross brace nut (arrow) and torque it to 55 Nm (41 Ft-lbs).



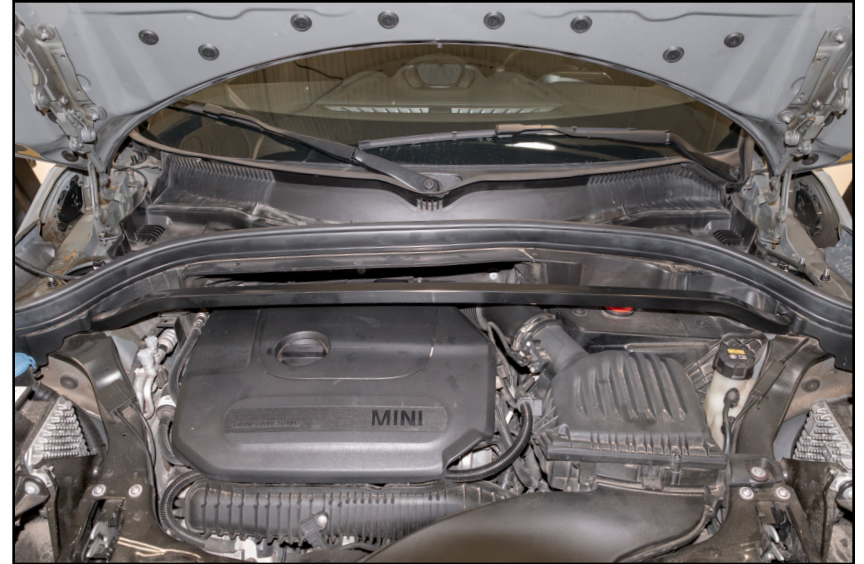
Optional: To prevent a warning light, secure a DCC cancellation module (available [HERE](#)) to the strut brace and connect it to the factory harness (highlighted in **GREEN**).



INSTALLING THE FRONT COILOVERS

Step 4:

Reinstall the rain tray and seal as shown.



Step 5: 18mm Wrench, 16mm Socket & Torque Wrench

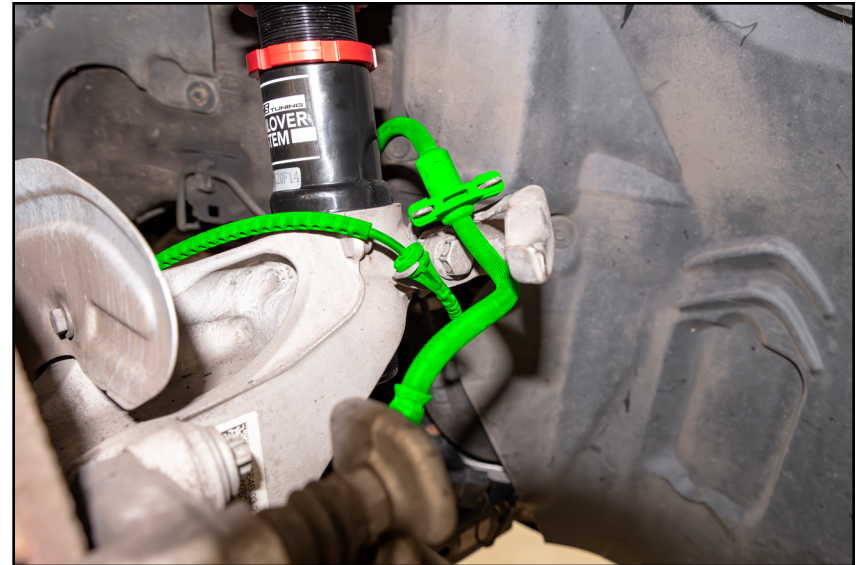
Guide the strut back into the knuckle until it is fully seated, ensuring the locating pin slides into the slot in the back of the knuckle, then remove the spindle housing spreader tool. Replace the bracket, bolt (arrow), and nut, torquing the nut to 44 Nm (32 Ft-lbs) + 90 degrees.



INSTALLING THE FRONT COILOVERS

Step 6:

Resecure the brake hose and sensor wire(s) (highlighted in **GREEN**) to the bracket on the back of the steering knuckle.

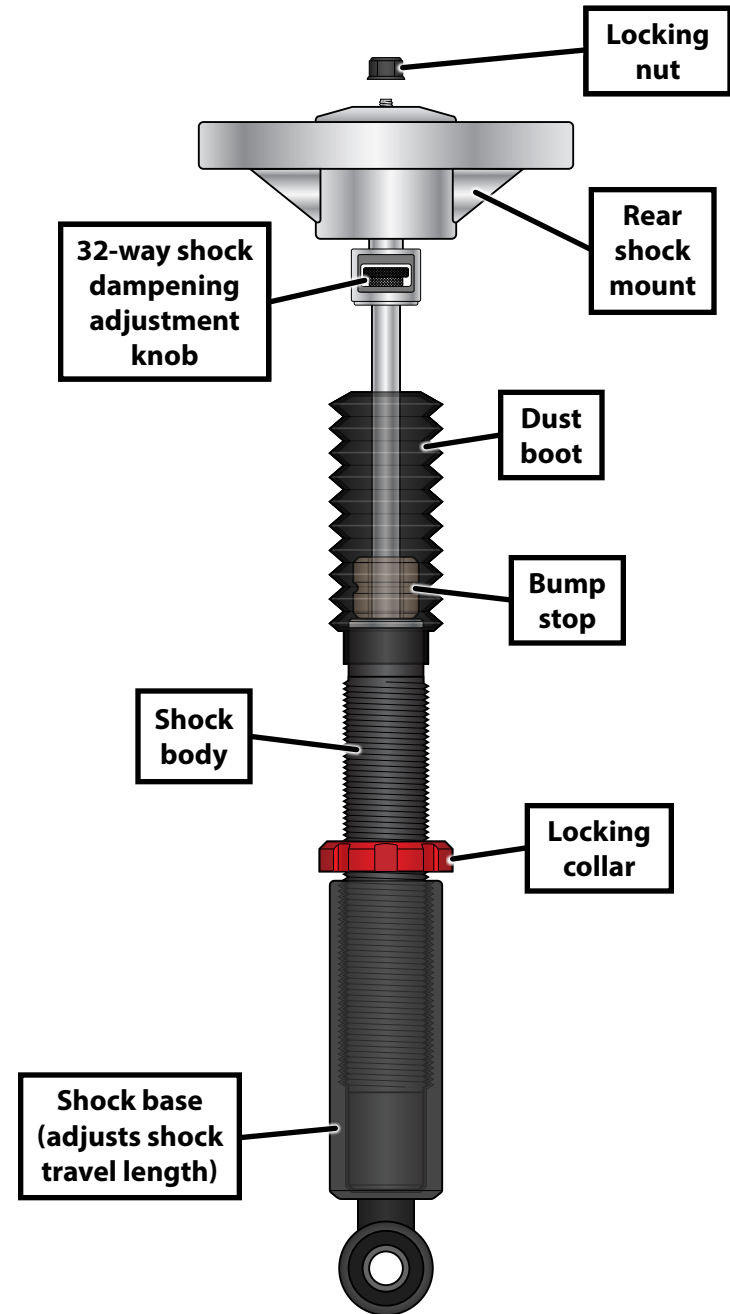
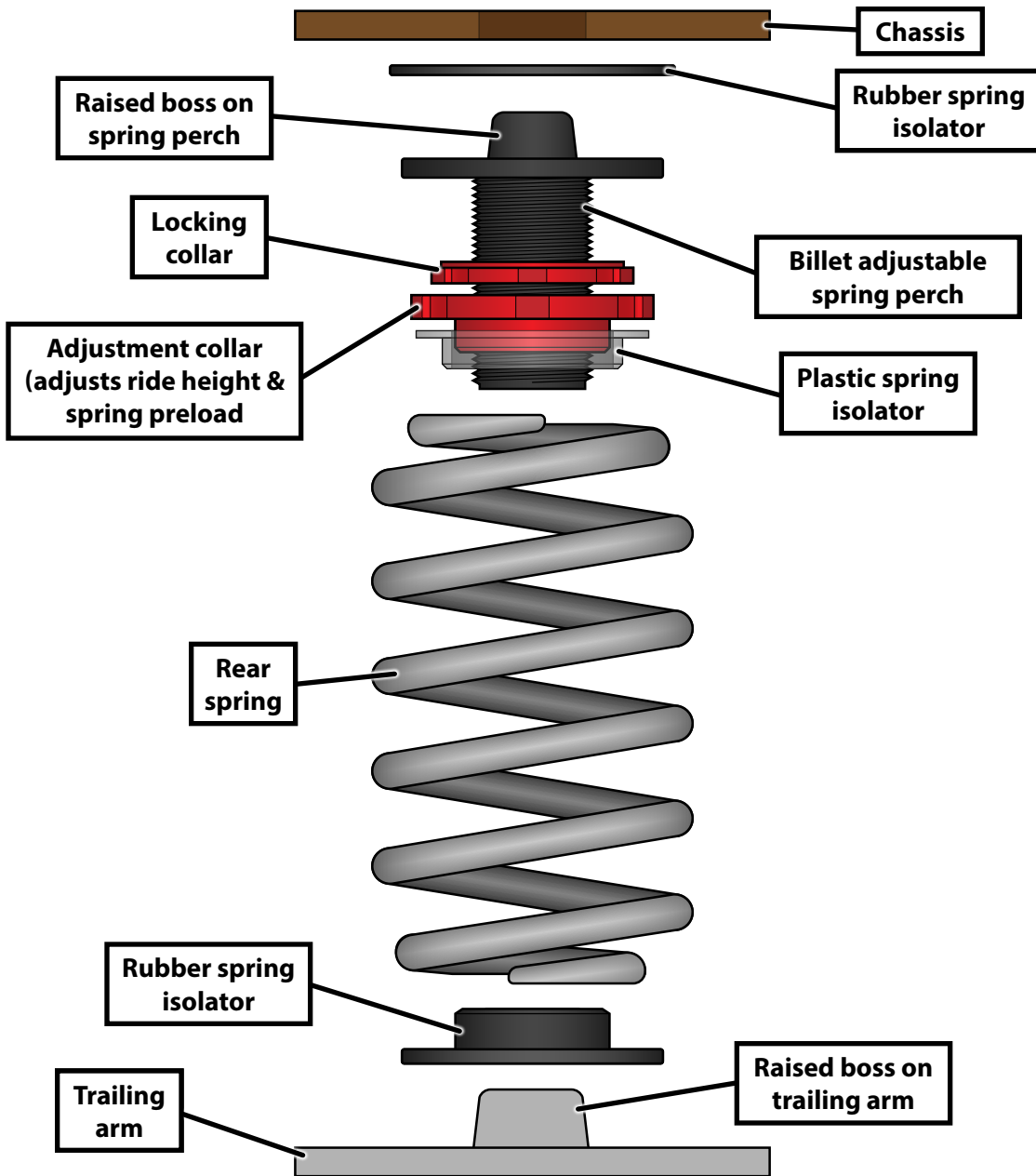


Step 7: T30 Torx Socket & Ratchet, 16mm Socket & Torque Wrench

Install the provided adjustable end link, counterhold the strut shaft and torque each nut to 56 Nm (41 Ft-lbs). Adjust the end links to ensure proper sway bar clearance for all surrounding components, then tighten the jam nuts.



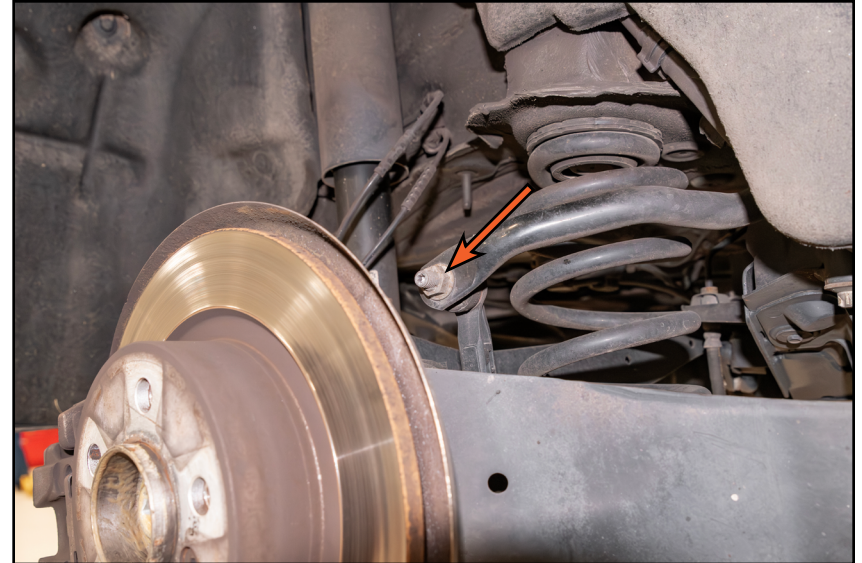
REAR COILOVER INSTALLATION DIAGRAM



REMOVING THE ORIGINAL SHOCKS AND SPRINGS

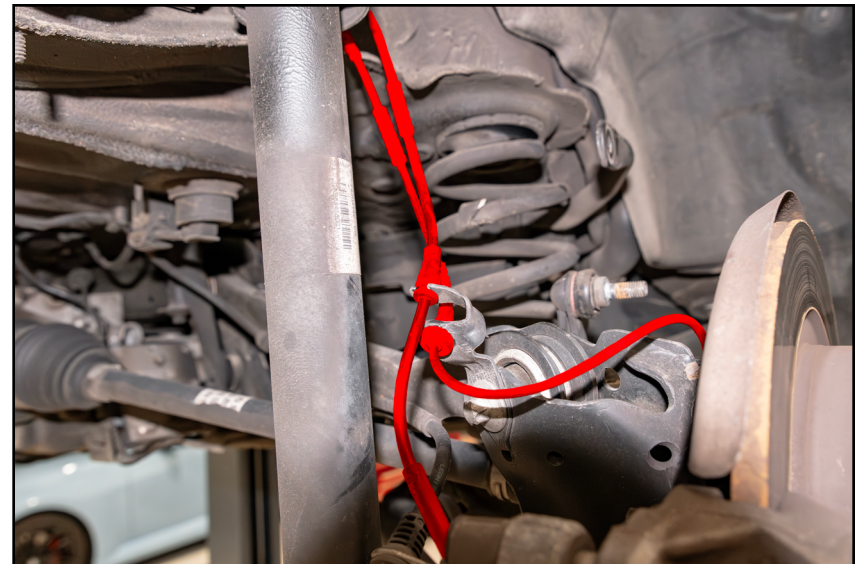
Step 1: 16mm Wrench, T30 Torx Socket & Ratchet

Counterhold the sway bar end link and remove the nut (arrow), then pull the end link free from the sway bar.



Step 2:

Pull the sensor wires (highlighted in **RED**) free from the bracket on the back of the spindle housing.



REMOVING THE ORIGINAL SHOCKS AND SPRINGS

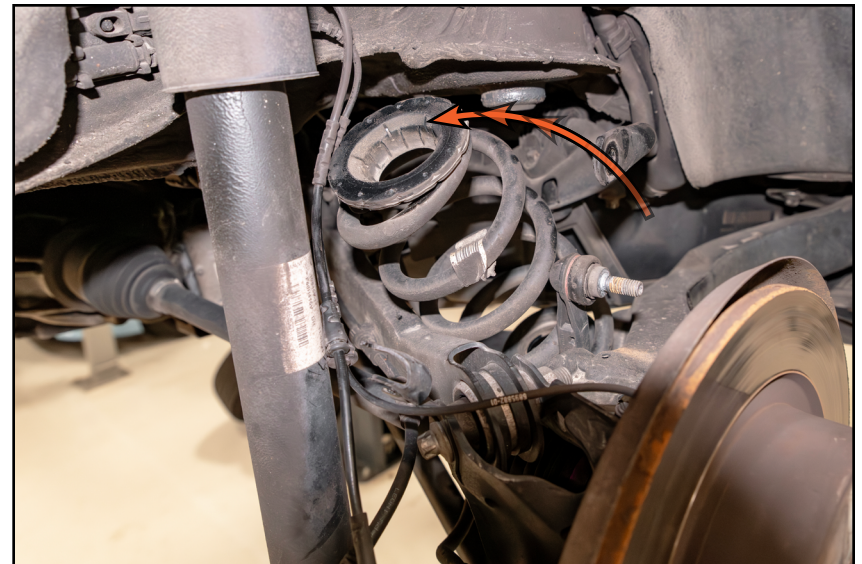
Step 3: E22 Torx Socket & Ratchet

Support the trailing arm from below as shown, then remove the bolt (arrow) that secures the shock to the spindle housing.



Step 4:

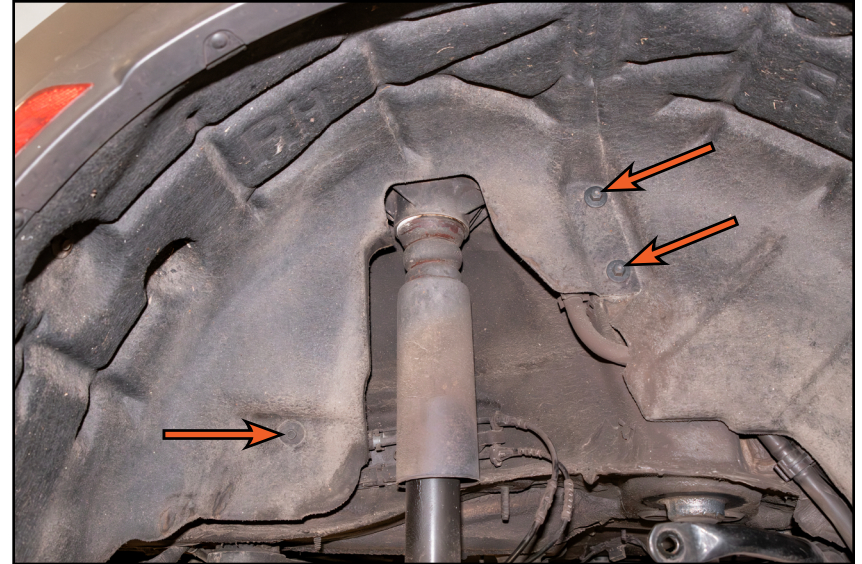
Slowly lower the trailing arm until the spring is no longer under tension, then pull the spring and isolators free from between the trailing arm and the body and remove them.



REMOVING THE ORIGINAL SHOCKS AND SPRINGS

Step 5: 8mm, 10mm Socket & Ratchet

Remove the hardware (arrows) and pull the fender liner back to gain access to the upper shock mount.



Step 6: E12 Torx Socket & Ratchet

If equipped, disconnect the DDC connector (highlighted in **RED**) from the shock mount. Support the shock from below, remove the three screws (arrows), and carefully guide the shock out of the fender well.



INSTALLING THE REAR COILOVERS

Step 1: 5mm Hex (Allen), 16mm Strut Nut Socket & Torque Wrench

If reusing the OE shock mount: remove the DCC wire & spacer from the top of the shock mount, counterhold the shock shaft, remove the upper shock nut, and remove the upper shock mount.

Install the spacer (inset photo) onto the shock shaft, then install the shock mount, counterhold the shaft, and torque the nut to 38 Nm (28 Ft-lbs).

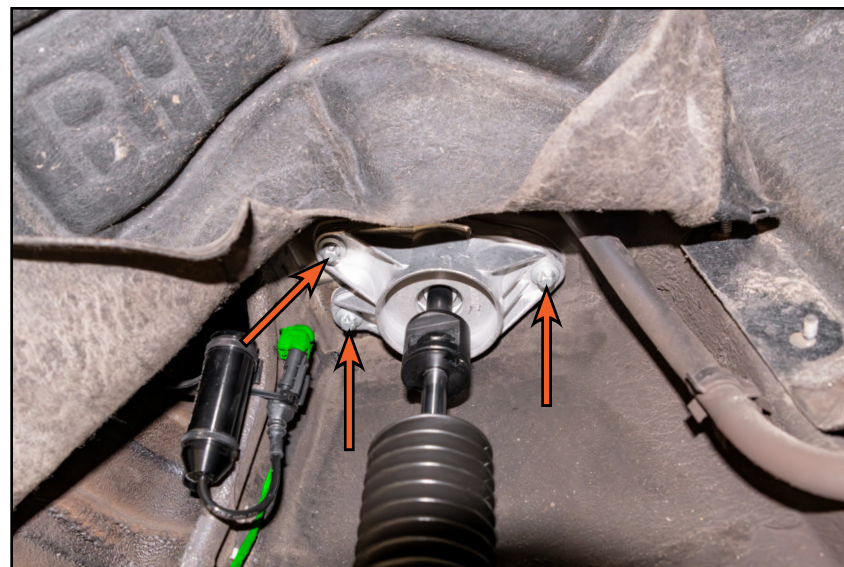


Step 2: E12 Torx Socket & Torque Wrench

Lift the new shock into place, replace the screws (arrows), and torque them to 28 Nm (21 Ft-lbs).



Optional: To prevent a warning light, secure a DCC cancellation module (available [HERE](#)) to the chassis and connect it to the factory harness (highlighted in **GREEN**).



INSTALLING THE REAR COILOVERS

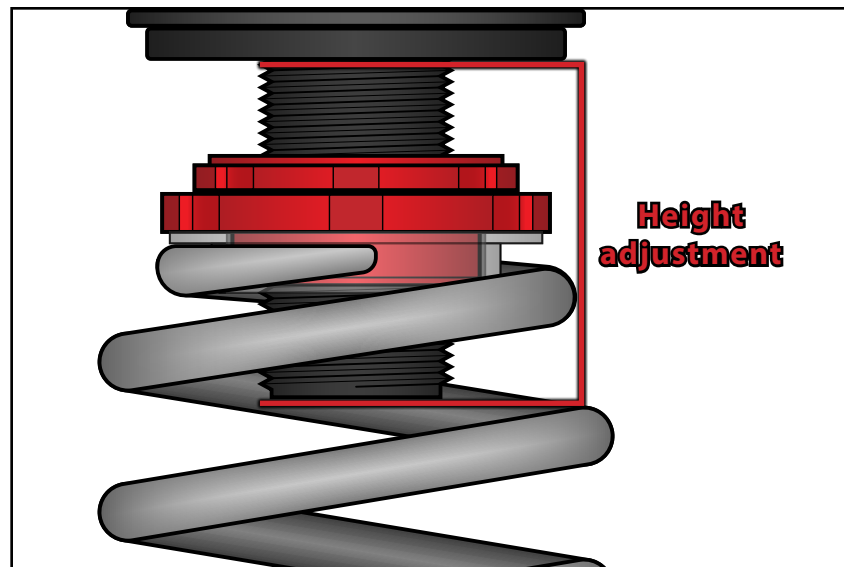
Step 3:

Using the diagram on the [Page 14](#) for reference, slide the spring assembly into place.



Step 4: Coilover Adjustment Wrenches

Rotate the adjustment collar on the rear spring perch 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, fully tighten each locking collar against the adjustment collar to lock it into place.



INSTALLING THE REAR COILOVERS

Step 5: E22 Torx Socket & Torque Wrench

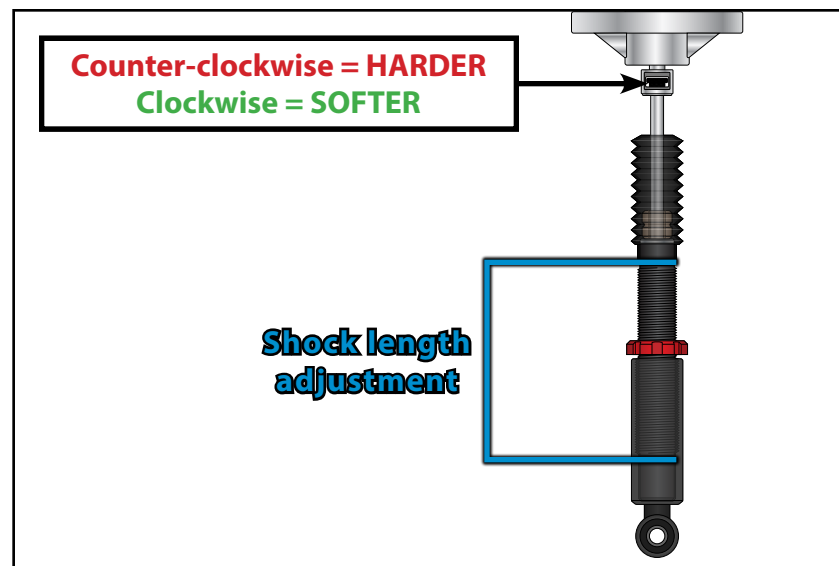
Jack up the trailing arm until the spring is fully seated and the rubber isolators begin to compress slightly, then adjust the shock length until the bolt (arrow) can be replaced. With the suspension at its final ride height, torque the bolt to 155 Nm (114 Ft-lbs).



Step 6: Coilover Adjustment Wrenches

The knurled knob on the shock shaft can be rotated to adjust the damping. To adjust the damping, rotate the knurled adjustment knob on the shock shaft until your desired setting is achieved. If unsure, set the damping to the middle setting (16 clicks), you can always go back and adjust it later as needed.

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. Adjust 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

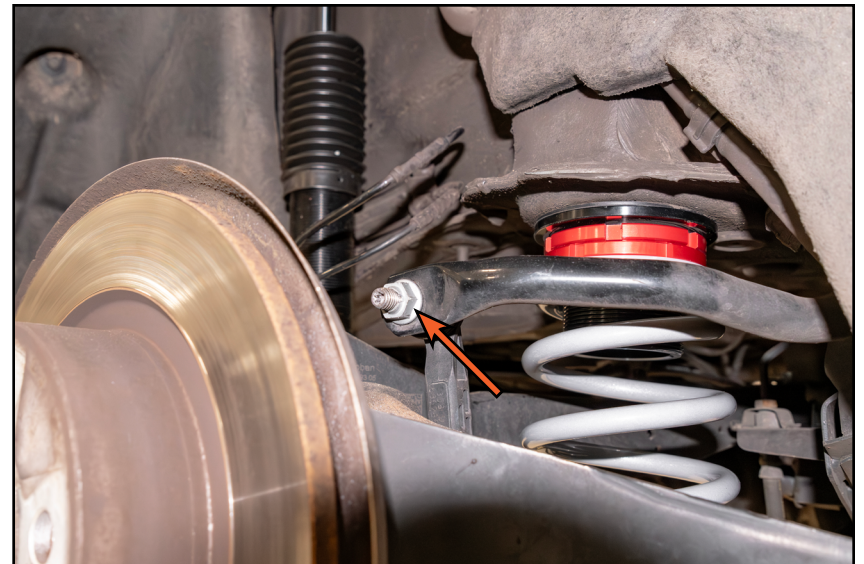
Step 7:

Resecure the sensor wires (highlighted in **GREEN**) to the bracket on the back of the spindle housing.



Step 8: T30 Torx Socket & Ratchet, 16mm Socket & Torque Wrench

Reconnect the end link to the sway bar, then counterhold the end link and torque the nut (arrow) to 56 Nm (41 Ft-lbs).



FINAL INSTALLATION STEPS

Step 1: Coilover Adjustment Wrenches

Reinstall the wheels, set the vehicle on the ground and roll it back and forth to allow the suspension to settle, then inspect for clearance between the tires, suspension components and fenders. Remove the wheels and fine-tune the height as needed until you are satisfied with the final ride height, then fully tighten the locking collars.



Step 2: Protecta-Sockets & Torque Wrench

Torque the wheel bolts to 140 Nm (103 Ft-lbs), then immediately perform a four-wheel alignment on the vehicle and take it for a test drive to ensure no rubbing or otherwise unusual noises occur. At any time you can remove the wheels and fine-tune your coilovers as needed, so make sure to keep the adjustment wrenches in an accessible location.

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.

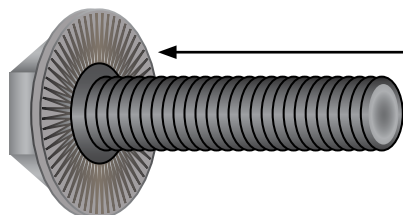
Some fasteners require lubrication on the threads -or- on the contact surface while torquing. These fasteners will be listed with the specific location and type of lubrication required. Always follow manufacturers recommendations exactly.

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.

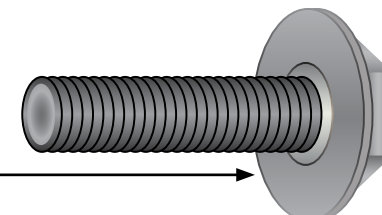
Ribbed vs. Non-Ribbed Bolts

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 Mount Nuts.....	30 Nm (22 Ft-lbs) + 90 degrees	(Page 11)
Front Strut Cross Brace Nut.....	56 Nm (41 Ft-lbs) + 90 degrees.....	(Page 11)
Front Strut Pinch Bolt Nut	44 Nm (32 Ft-lbs) + 90 degrees	(Page 12)
Front Sway Bar End Link Nuts.....	56 Nm (41 Ft-lbs)	(Page 13)
Rear Upper Shock Nut.....	38 Nm (28 Ft-lbs)	(Page 18)
Rear Upper Shock Mount Bolts.....	28 Nm (21 Ft-lbs)	(Page 18)
Rear Lower Shock Bolt.....	155 Nm (114 Ft-lbs).....	(Page 20)
Rear Sway Bar End Link Nut	56 Nm (41 Ft-lbs)	(Page 21)
Wheel Bolts	140 Nm (103 Ft-lbs)	(Page 22)

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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