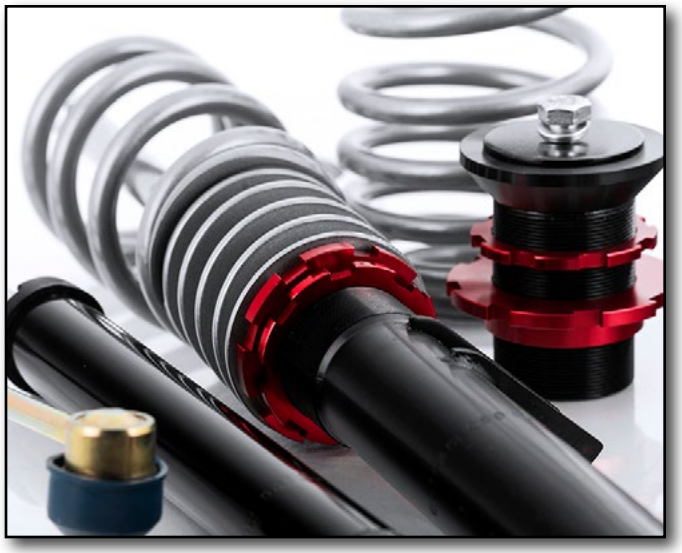
Volkswagen MK5/MK6 Coilover Suspension Installation Instructions

Skill Level
2 - Moderate

Some Experience Recommended



INTRODUCTION

Today we are going to be installing a coilover suspension system for VW MK5 and MK6. These coilover systems provide some serious improvements in suspension over stock, keeping your ride properly supported and evenly distributing the weight of your vehicle. We carry some of the finest coilover suspension kits from some of the best names in the business. We have created these instruction as a guide to help you install a coilover kit on any MK5 or MK6 Volkswagen. We have documented installation using a JOM coilover kit however this installation guide has been created to apply to coilover from most manufacturers.

Take your time and enjoy the project, it'll only take you a couple of hours or less. Read these instructions completely first, and refer back to them throughout installation as needed. Before you begin, make sure you have all required tools and materials readily available, then let's get to it! Thank you for looking to ECS Tuning for all your performance and repair needs, we appreciate your business!

TABLE OF CONTENTS

AVAILABLE COILOVER KITS

ECS Tuning Coilover Set
Fixed Damping: ES#3521562

ST Coilover Set
Fixed Damping: ES#2795585
Adjustable Damping: ES#3245777

H&R Coilover Set
Fixed Damping: ES#1876344
Adjustable Damping: ES#2158123

FK Coilover Set
Fixed Damping: ES#1905505
Adjustable Damping: ES#3691983

Bilstein Coilover Set
Fixed Damping: ES#1844155
Adjustable Damping: ES#1844156

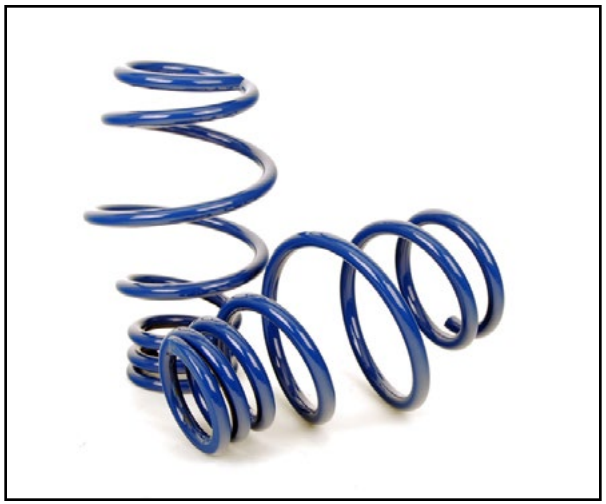
JOM Coilover Set
Fixed Damping: ES#1905696

KW Coilover Set
V1 Series: ES#2214989
V2 Series: ES#2214990
V3 Series: ES#2214991
Street Comfort: ES#2777233

Koni Coilover Set
Adjustable Damping: ES#2776920

KIT CONTENTS

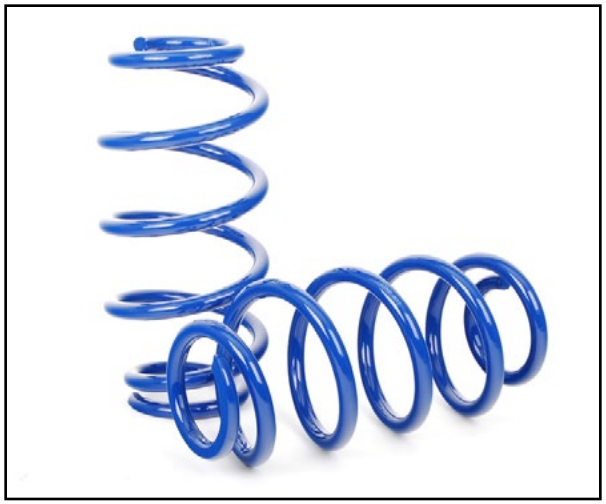
Front Struts with Bump Stops and Dust Boots



Front Coil Springs

Coilover Adjustment Wrench

Rear Shocks with Bump Stops and Dust Boots



Rear Coil Springs

Rear Spring Perches

INSTALLATION KITS

For a trouble free installation and to obtain the maximum benefit from your new coilover suspension, we recommend the use of a coilover installation kit. Using an installation kit has the following advantages:

- A spring compressor is not required throughout the procedure.
- The original suspension will not need to be disassembled, allowing you the option of easily switching back to the factory suspension or making other use of it.
- New bushings and strut bearings allow your suspension to operate smoothly and increase reliability.
- Many of the fasteners are torque to yield fasteners that require replacement, and in many cases they will be very rusty and can be damaged during removal. These are included with an installation kit.
- Specialty tools are included with some installation kits.

ES#2570017 includes the following:

- ECS HD Upper Front Strut Mounts
- Upper Front Strut Bearings
- Front Knuckle Pinch Bolts and Nuts
- Outer Axle Bolts (24mm 12 Point)
- Rear Shock Mounting Bolts
- Rear Upper Shock Mounts
- Schwaben Spindle Housing Spreader
- Schwaben M14 Triple Square Socket

ES#2581787 includes the following:

- ECS HD Upper Front Strut Mounts
- Upper Front Strut Bearings
- Front Knuckle Pinch Bolts and Nuts
- Outer Axle Bolts (24mm 12 Point)
- Rear Shock Mounting Bolts
- Rear Upper Shock Mounts

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

- **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#240941
- **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

Available On Our Website

- **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

- **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.

With the vehicle parked on level ground, measure the fender to ground clearance in both the front and rear by measuring between the ground and the lip of the fender or quarter panel as shown in the picture. Record the measurements below:

Front:

Rear:

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

18mm Wrench, M6 Triple Square Socket & Ratchet

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

TECH TIP

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

10mm Wrench

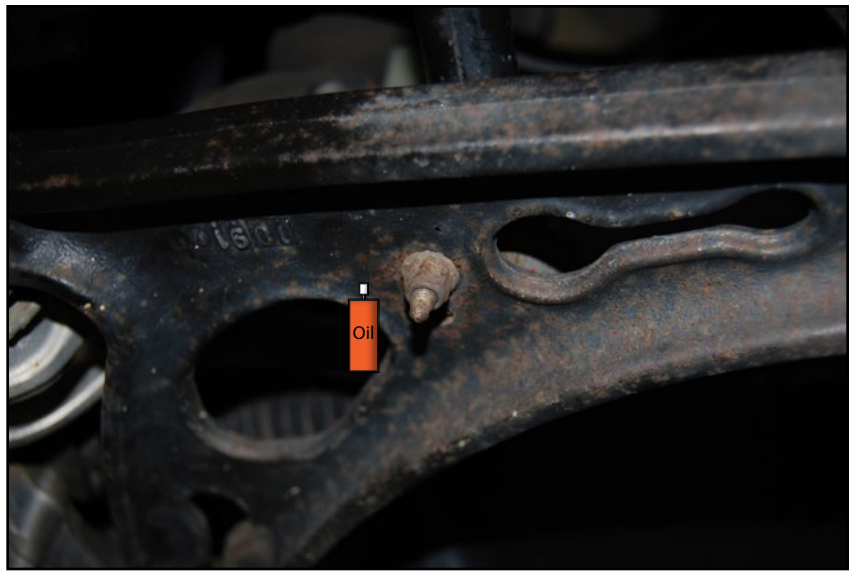
Remove the 10mm bolt securing the brake hose and ABS sensor wire bracket to each front wheel bearing housing, but be careful not to stretch or damage the brake hoses or sensor wires during this installation.

24mm Socket, Impact Wrench

Using an impact wrench, remove the axle bolt from the axle.

10mm Socket & Ratchet

Using a 10mm socket, remove the nut securing the headlight leveling sensor arm bracket (if equipped) to the LH lower front control arm and pull the bracket stud out of the hole.

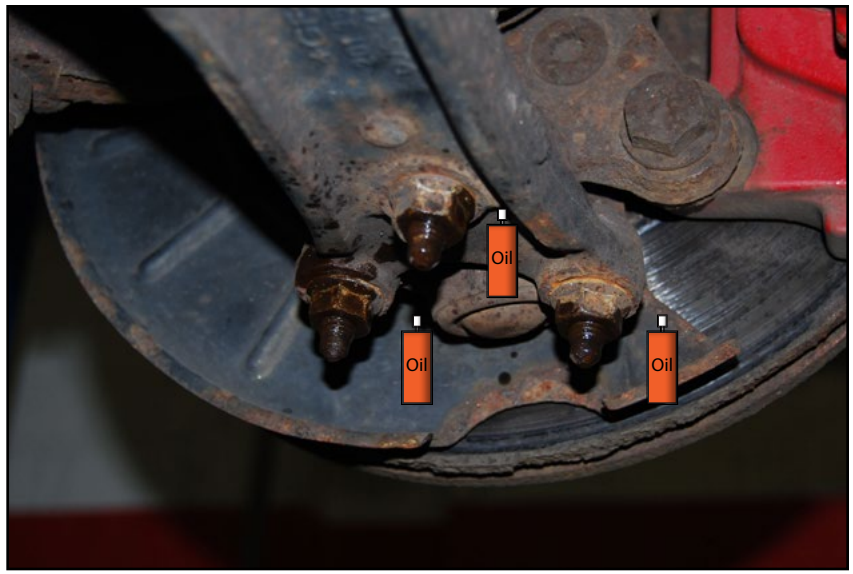


TECH TIP

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

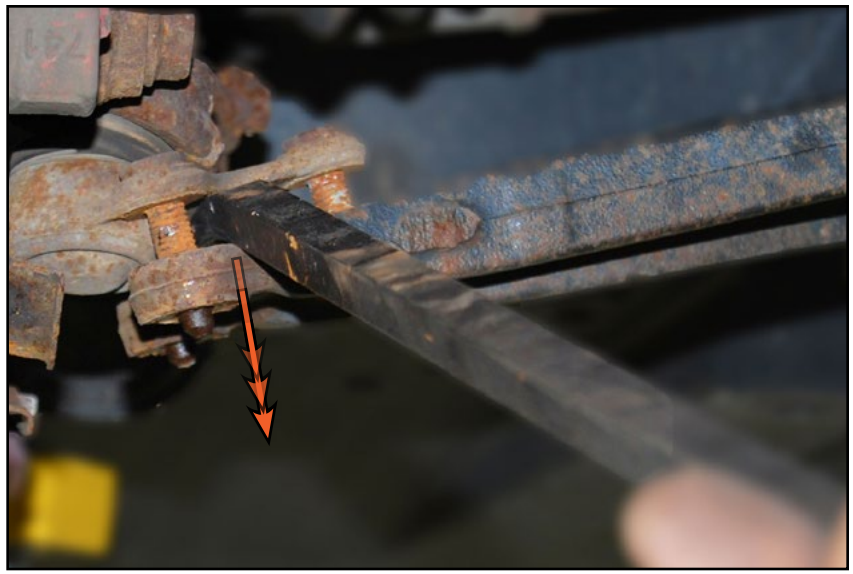
16mm Socket & Ratchet

Loosen and remove the three lower ball joint nuts on each side.



Pry Bar

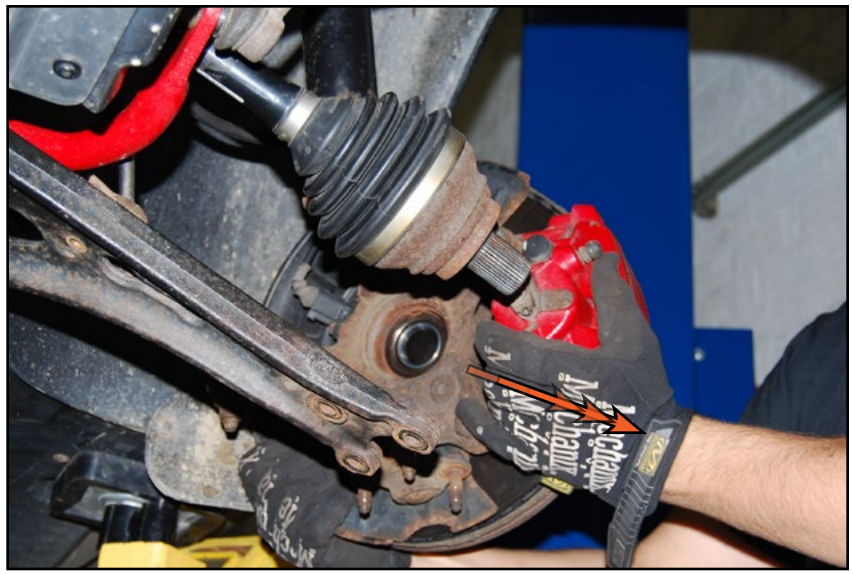
Using a pry bar, pull the lower control arm down from the ball joints to separate them.



REMOVING THE ORIGINAL FRONT STRUTS

Step 9: Mechanic's Wire

Pull each outer CV joint out of its wheel bearing by pulling the wheel bearing housing outward. Secure the CV shafts up out of the way using mechanic's wire.



Step 10:

Reconnect the lower ball joints to each control arm, then thread the nuts on by hand but do not fully tighten them.

REMOVING THE ORIGINAL FRONT STRUTS

Step 11:

Support the front suspension underneath the control arm with a floor jack.

Step 12: M14 Triple Square Socket, 18mm Socket & Ratchet

Loosen and remove the wheel bearing housing pinch bolts using an M14 triple square socket on one side and an 18mm socket on the other. If you have an installation kit, replacements for bolts and nuts are included with the kit.

REMOVING THE ORIGINAL FRONT STRUTS

Step 13: Spindle Housing Spreader Tool, Ratchet

Insert the tip of the spindle housing spreader tool (ES#3894) into the slot in the back of the wheel bearing housing, then pull down on the end of the ratchet to rotate the head of the spreader and increase the gap in the housing.

Step 14: Hammer, Spindle Housing Spreader Tool & Ratchet

With the housing spreader still in place, lower the floor jack and tap the housing downward with a hammer until the strut is completely removed from the housing.

REMOVING THE ORIGINAL FRONT STRUTS

Step 15:

Gently pull off the cowl panel seals and gently lift each corner of the panel to gain access to the upper strut mounting bolts.

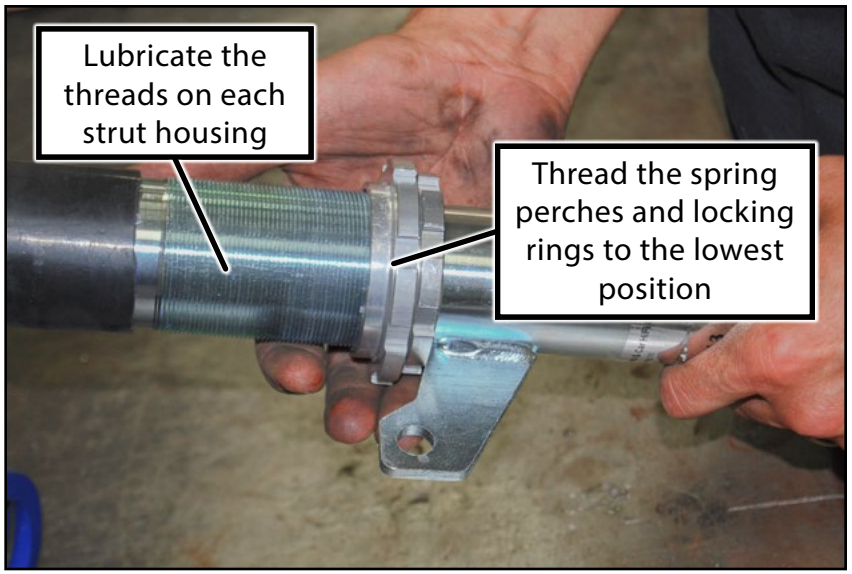
Step 16: 13mm Socket & Ratchet

Loosen and remove the three upper strut mounting bolts on each side. Be sure to support the strut with one hand so that it does not fall and cause damage. Once the last bolt has been removed, lower the strut from the vehicle and remove.

INSTALLING THE NEW FRONT COILOVERS

Step 1:

For smooth adjustment and to prevent corrosion, apply a light later of lubricant to the threads on each strut housing, then thread the spring perch and locking ring to the lowest position on each front strut.



Step 2:

Place the coil spring over the strut body until it rests in the lowest spring perch. Then slide the upper strut spacer onto the strut rod as shown.

If you plan on re-using your stock strut mounts, proceed to Page 29 for removal instructions.

INSTALLING THE NEW FRONT COILOVERS

Step 3:

If they are not already together, assemble the new front strut bearing onto the front strut mount as shown in the picture. If you are using your old mounts, make sure the bearing is still installed in the mount.

Step 4:

Place the strut mount over the strut rod and thread the new strut nut on by hand. Line up the arrows on the strut mount (highlighted in inset photo) so the arrows point to the front and rear of the vehicle when installed.

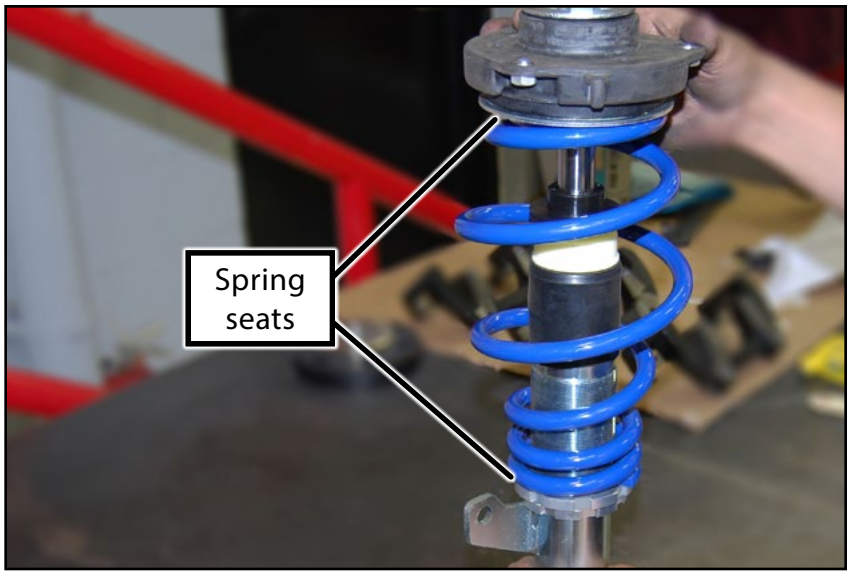
INSTALLING THE NEW FRONT COILOVERS

Step 5: 7mm Hex (Allen), 22mm Strut Socket & Ratchet

Hold the strut rod in place with an allen wrench, then using a strut nut socket, tighten the upper strut nut to 60 Nm (44 Ft-lbs). Ensure the arrows remain in their correct position during the tightening process.

Step 6:

Thread the spring perch up until the coil spring comes in contact with the upper and lower spring seats.



INSTALLING THE NEW FRONT COILOVERS

Step 7: 13mm Socket & Ratchet

Lift the assembled coilover up into the strut tower, making sure the arrows on the mount are properly positioned, and then install the three upper strut mounting bolts, torquing them to 15 Nm (11 Ft-lbs) + 90 degrees.

Step 8: M14 Triple Square Socket, 18mm Socket & Torque Wrench

Using the spindle housing spreader tool, spread the housing apart, then raise the suspension with a jack and guide the bottom of the coilover into the housing. Make sure it is completely seated into the housing, then install the pinch bolt and torque to 70 Nm (52 Ft-lbs) + 90 degrees.

- [ ] Unbolt the lower ball joints.

- [ ] Install the CV Joints into the wheel bearings.

- [ ] Install the lower ball joints and torque the nuts.
  - For Vehicles w/Cast Steel Lower Control Arms: 60 Nm (44 Ft-lbs)
  - For Vehicles w/Aluminum Lower Control Arms: 100 Nm (74 Ft-lbs)
  - For Vehicles w/Stamped Steel Lower Control Arms: 100 Nm (74 Ft-lbs)

- [ ] Install the sway bar end links and torque the nuts to 65 Nm (48 Ft-lbs).

- [ ] Install and torque the axle bolts.
  - 6-point Hex Bolt: 200 Nm (147 Ft-lbs) + 180 degrees
  - 12-point Ribbed Bolt: 70 Nm (52 Ft-lbs) + 90 degrees
  - 12-point Non-Ribbed Bolt: 200 Nm (147 Ft-lbs) + 180 degrees

- [ ] Install the brake hose and ABS wire bracket.

- [ ] Install the headlight level sensor bracket into the LH lower control arm.

- [ ] Install both front wheels and torque them to 120 Nm (89 Ft-lbs).

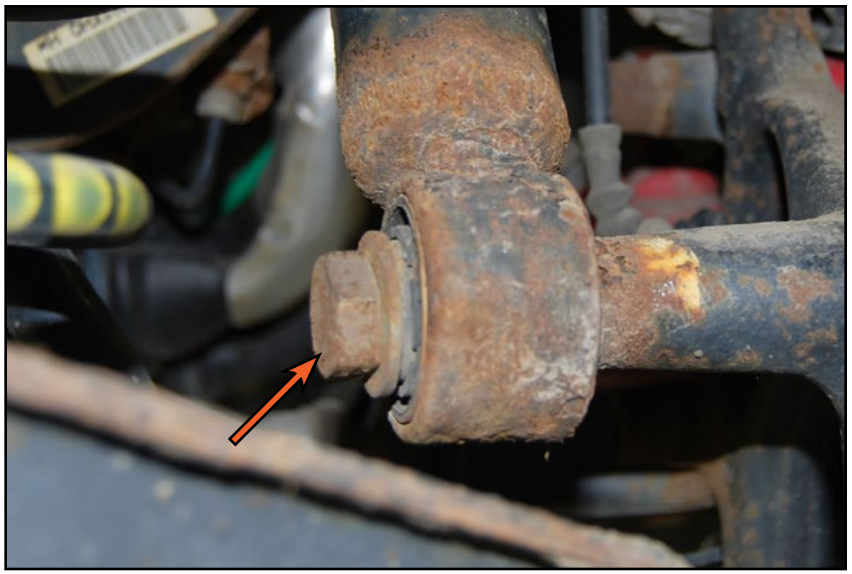
REMOVING THE ORIGINAL REAR SHOCKS AND SPRINGS

Step 1: 10mm Socket & Ratchet

If equipped, remove the 10mm nut attaching the headlight leveling sensor arm to the actuator on the LH side.

Step 2: 21mm Wrench

Loosen and remove both lower shock mounting bolts.



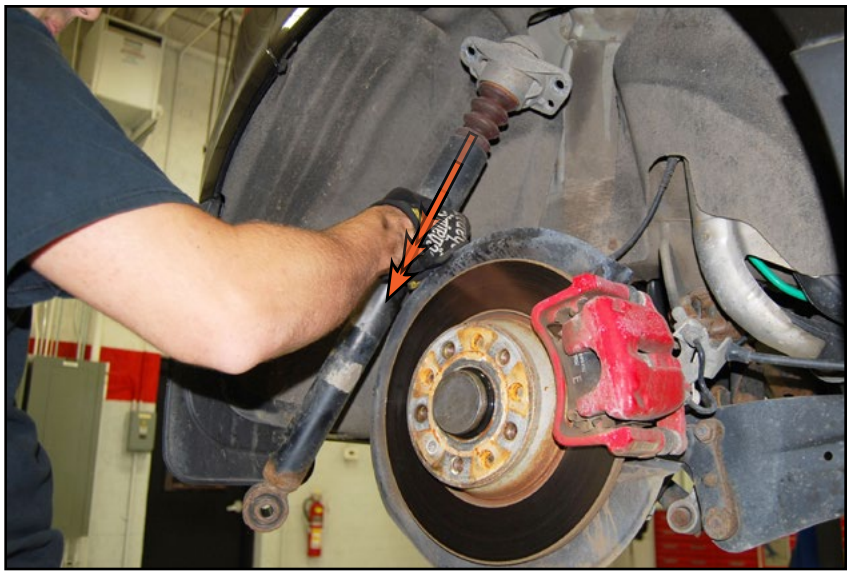
REMOVING THE ORIGINAL REAR SHOCKS AND SPRINGS

Step 3: 13mm Socket, Extension & Ratchet

Using a long extension for ease of access, loosen and remove both upper shock mount bolts on each side.

Step 4:

Lower and remove the shock absorbers from the vehicle.



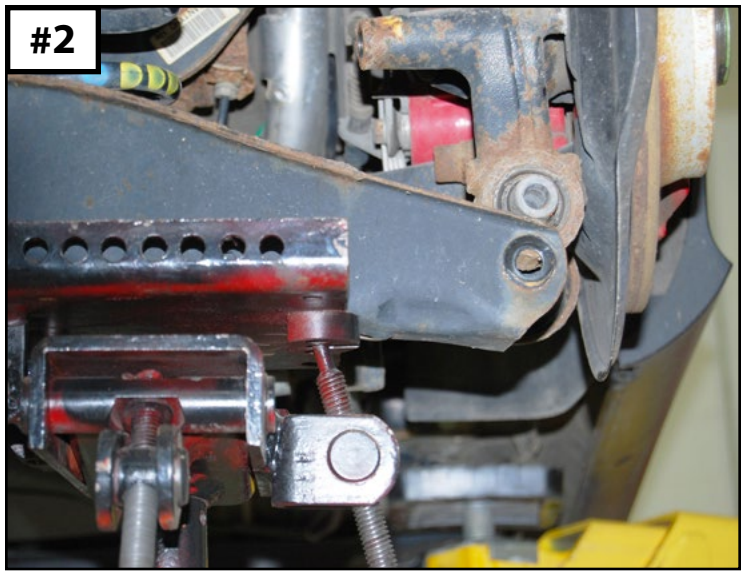
REMOVING THE ORIGINAL REAR SHOCKS AND SPRINGS

Step 5:

Using an 18mm socket and wrench, counter hold the lower control arm bolts as you remove the nuts (**photo #1**).

Use a jack to lift up the control arm until the bolt can be easily removed (**photo #2**).

Lower the floor jack and remove the rear coil spring from its mounted position in the lower spring cushion (**photo #3**).



INSTALLING THE NEW REAR SHOCKS AND SPRINGS

Step 1:

Place the new rear shock upper mount (or the old mount if you are reusing it) over the shock rod.

If you plan on re-using your original rear shock mounts, proceed to Page 31 for removal instructions.

Step 2: 7mm Hex (Allen), 19mm Offset Wrench

Counter hold the shock rod with an allen wrench and Install the upper shock nut with an offset wrench or strut nut socket, then torque it to 25 Nm (18 Ft-lbs)

INSTALLING THE NEW REAR SHOCKS AND SPRINGS

Step 3: 13mm Socket, Extension & Torque Wrench

Hold the new rear shock absorber in place, then install and torque both upper mount bolts to 50 Nm (37 Ft-lbs) + 45 degrees.

Step 4:

Lightly lubricate the threads on each rear coil spring perch, then thread the adjustment collar all the way up.

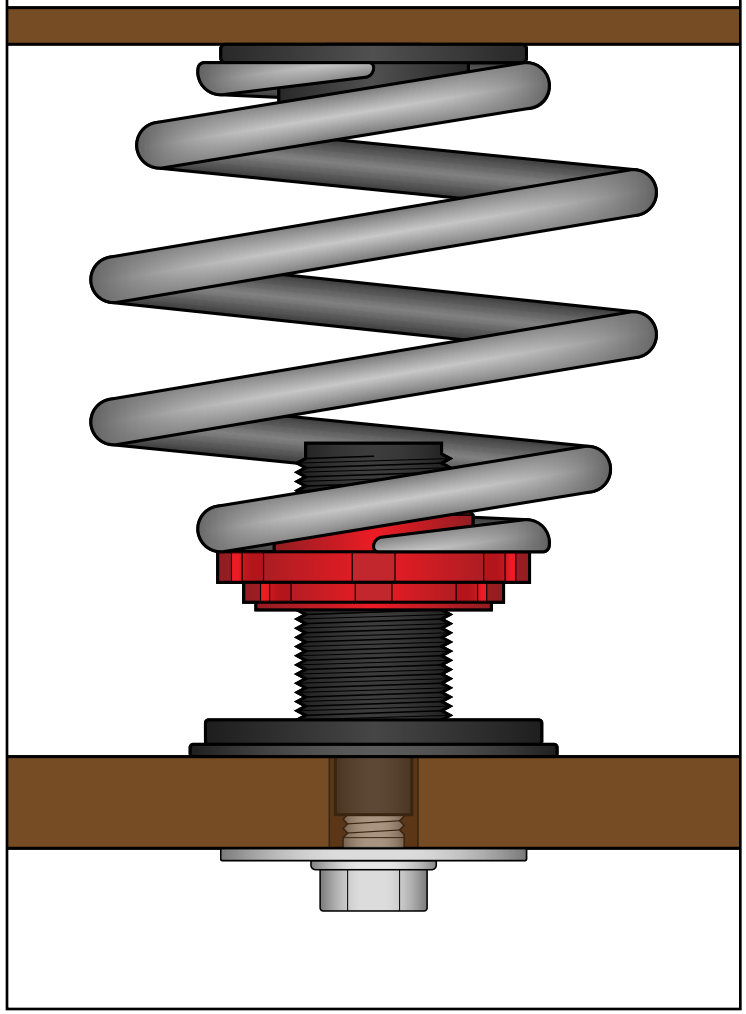
INSTALLING THE NEW REAR SHOCKS AND SPRINGS

Step 5:

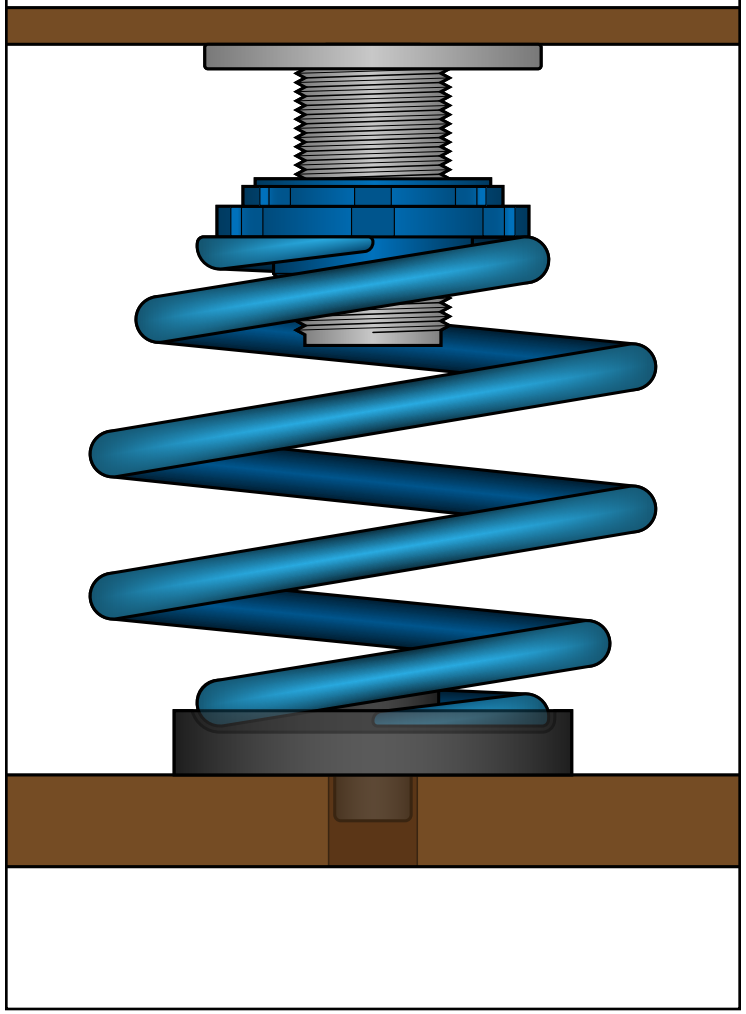
The key difference between our ECS coilovers and other brands is where our spring perch (adjuster) is mounted. Many other brands feature an upper mounted spring perch, but this type of perch is not bolted into place, it's held in place by spring tension. Our coilover system features rear spring perches which are bolted to the lower control arm.

Please reference the illustrations on the RH side, familiarize yourself with the components in your kit, then install your rear spring and perch in the correct locations.

Lower Mounted Spring Perch (ECS)



Upper Mounted Spring Perch (Others)

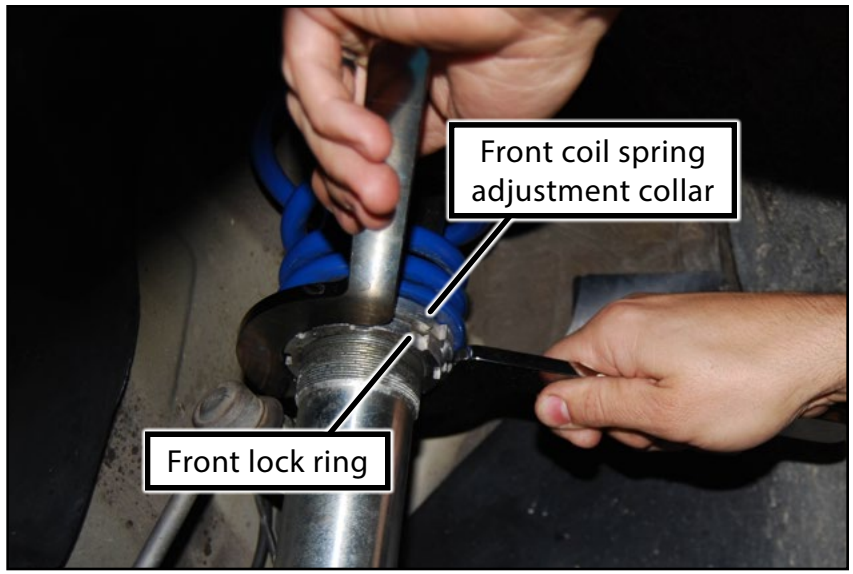


With the springs and perches installed, adjust the floor jack until the lower control arm bolt can be easily inserted, then install the nut but don't torque it down yet.

- [ ] Thread in the lower shock bolt but don't torque it down yet.
- [ ] Connect the headlight leveling sensor arm (if equipped).
- [ ] Install both rear wheels and torque them to 120 Nm (89 Ft-lbs).
- [ ] Lower the vehicle until suspension makes contact then proceed to Page 28 for ride height adjustment.

Adjusting the ride height is a simple process of moving the spring perches up or down until the desired height is reached. Keep the following pointers in mind while adjusting your suspension:

- You must lift the vehicle so all weight is off the springs before adjusting the spring perches.
- Use the measurements you took on Page 8 for reference if you have a specific amount of drop in mind.
- You may have to make a number of adjustments to get everything set exactly right. Be patient and take your time.
- Securely tighten the front locking rings to the perches once ride height is set.
- Once you have the ride height adjusted to your liking, make sure there is no wheel/tire interference while turning the wheels from lock to lock.
- After driving for the first time, the suspension may require readjustment.
- If you add any additional components in the future such as a sway bar or polyurethane bushings, the suspension may require minor adjustments.



☐ Once ride height has been set:
- Torque the rear shock absorber bolt to 180 Nm (133 Ft-lbs).
- Torque the rear outer control arm bolt to 90 Nm (66 Ft-lbs) + 90 degrees.

Congratulations, your installation is complete!

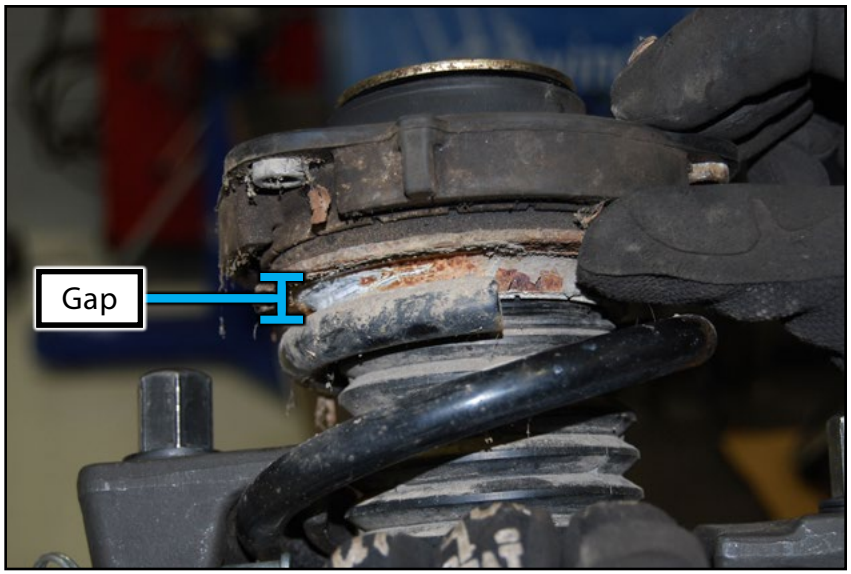
REMOVING THE ORIGINAL FRONT STRUT MOUNT

Step 1: Coil Spring Compressor

Secure the front strut in a vise, then install a coil spring compressor onto the front coil spring.

Step 2:

Compress the front spring until the top of the spring pulls away from the upper spring seat.



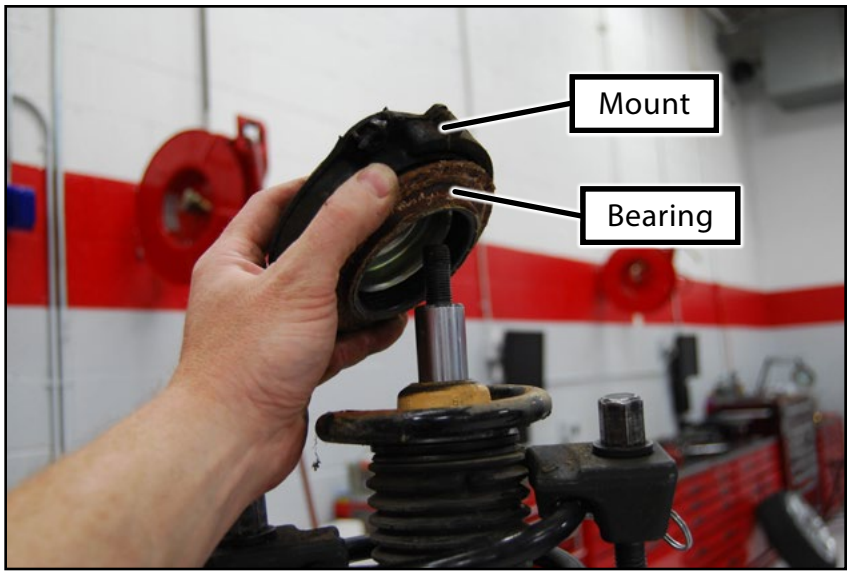
REMOVING THE ORIGINAL FRONT STRUT MOUNT

Step 3: 7mm Hex (Allen), 21mm Strut Nut Socket & Ratchet

Hold the top of the strut rod with an Allen wrench as you loosen and remove the upper strut nut.

Step 4:

Lift off the upper strut mount. Make sure the bearing stays installed on the mount, then slowly release the coil spring compressor and perform the same process on the other front strut.



Once both upper strut mounts have been removed, you may proceed to Page 16 and continue with your coilover installation.

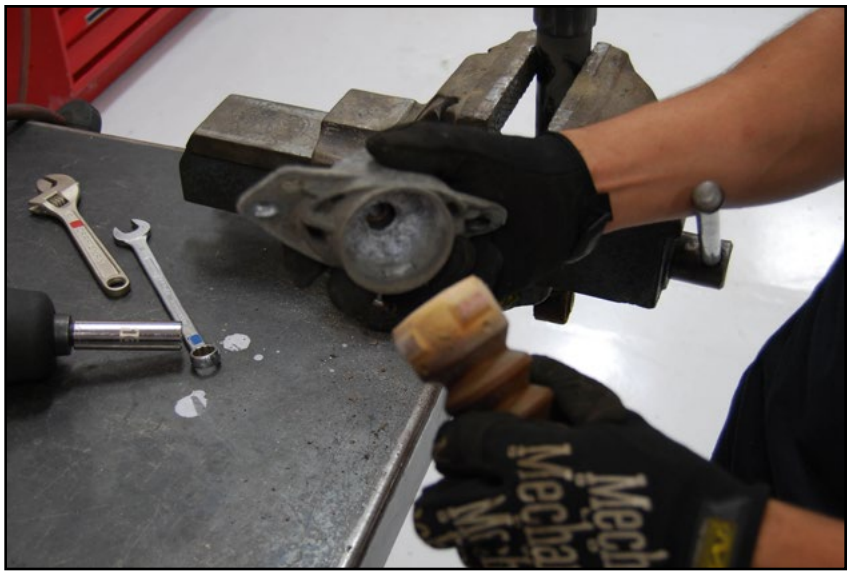
REMOVING THE ORIGINAL REAR SHOCK MOUNT

Step 1: 16mm Wrench, Crescent Wrench

Secure the rear shock in a vise, then hold the shock rod in place while you loosen and remove the 16mm top nut.

Step 2:

Lift the shock mount off of the shock rod and remove the bump stop.



Once both shock mounts have been removed, you can jump back to Page 24 and continue with your coilover installation.

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.

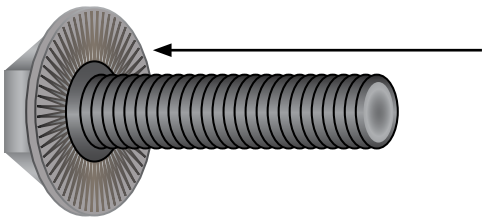
Some fasteners require lubrication on the threads -or- on the contact surface while torquing. These fasteners will be listed with the specific location and type of lubrication required. Always follow manufacturers recommendations exactly.

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.

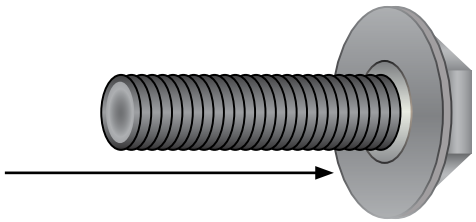
Ribbed vs. Non-Ribbed Bolts

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

CV Joint to Wheel Hub Hexagon Bolt	200 Nm (147 Ft-lbs) + 180 degrees	(Page 20)
CV Joint to Wheel Hub 12 Point Ribbed Bolt	70 Nm (52 Ft-lbs) + 90 degrees	(Page 20)
CV Joint to Wheel Hub 12 Point Bolt	200 Nm (147 Ft-lbs) + 180 degrees	(Page 20)
Front Upper Strut Nut	60 Nm (44 Ft-lbs)	(Page 18)
Front Upper Strut Mount to Body	15 Nm (11 Ft-lbs) + 90 degrees	(Page 19)
Lower Ball Joint to Cast Lower Control Arm	60 Nm (44 Ft-lbs)	(Page 20)
Lower Ball Joint to Aluminum Lower Control Arm	100 Nm (74 Ft-lbs)	(Page 20)
Lower Ball Joint to Stamped Steel Lower Control Arm	100 Nm (74 Ft-lbs)	(Page 20)
Rear Control Arm Outer Bolt	90 Nm (66 Ft-lbs) + 90 degrees	(Page 28)
Rear Shock Nut	25 Nm (18 Ft-lbs)	(Page 24)
Rear Shock Lower Mounting Bolt	180 Nm (133 Ft-lbs)	(Page 28)
Rear Shock Upper Mount Bolts	50 Nm (37 Ft-lbs) + 45 degrees	(Page 25)
Spindle Pinch Bolt	70 Nm (52 Ft-lbs) +90 degrees	(Page 19)
Sway Bar Link to Strut	65 Nm (48 Ft-lbs)	(Page 20)
Wheels	120 Nm (89 Ft-lbs)	(Pages 20 & 28)

Your VW MK5/MK6 Coilover 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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