

CorkSport
MAZDA PERFORMANCE

INSTALLATION INSTRUCTIONS



CORKSPORT Coilovers

2007-2013 Mazdaspeed 3, 2004-2013 Mazda 3

PART #: AXL-3-305-10

Need Help With Your Installation? Call (360)260-CORK



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PAGE 1



CORKSPORT Coilovers

2007-2013 Mazdaspeed 3, 2004-2013 Mazda 3

PRODUCT DESCRIPTION:

Thank you for purchasing the new and improved CorkSport Coilovers. Back and better than ever, the CS coilovers feature 15-way adjustable damping, 2 inches of ride height adjustability, refined spring and damping rates, and front camber adjustment. The CorkSport coilovers will suit your needs whether you're looking for some better handling on the street or a full autocross setup.

Please let us know your feedback of the by submitting a review at: <https://corksport.com/2004-2013-mazdaspeed-3-and-mazda-3-coilover-suspension.html>

PRE-INSTALLATION NOTES:



You will be removing major suspension components of your vehicle to install this kit. If you are not comfortable with this or lack the proper tools to do so, please do not proceed.



Verify that the car is on a level surface before proceeding. Use appropriate load rated jack stands to support the vehicle.



These instructions were written for reference only and the use of a factory service manual is recommended.



How our instructions work: To best cover all of our customers experience levels, we have included a table of contents/order of operations along with step-by-step instructions.



For front camber adjustment without removal of the coilovers, the strut towers must be cut. This is an optional step but the coilover will have to be removed to adjust camber if not cut.

MATERIALS & TIME:

GENERAL INFO:



Time Est:
4hr



Difficulty:
4/5



CEL:
No



Warranty:
1-Year

TOOLING LIST:

- 10mm Socket
- 12mm Socket
- 14mm Socket
- 17mm Socket
- 19mm Socket
- 21mm or Lug Nut Socket
- 32mm Deep Socket
- 3/8" Drive Ratchet
- 6" Extension
- 1/2" Drive Ratchet
- Breaker Bar
- 10mm Wrench
- 12mm Wrench
- 14mm Wrench
- 17mm Wrench
- 4mm Allen Wrench or Socket
- 5mm Allen Wrench or Socket
- Flathead Screwdriver
- Penetrant Spray
- White Lithium Grease
- Jack Stands
- Floor Jack
- Locking Pliers
- Spanner Wrench
- 2 lb. Mallet




OPTIONAL:

- Electric Drill
- 3 1/8" Hole Saw
- File or Deburring Tool
- Spray Paint

PARTS LIST:

- One (1) CorkSport Front Left Coilover
- One (1) CorkSport Front Right Coilover
- Two (2) CorkSport Adjustable Rear Shocks
- Two (2) CorkSport Rear Springs
- Two (2) CorkSport Adjustable Height Spring Perches
- Two (2) CorkSport ABS Wiring Retaining Brackets
- Two (2) Bolts w/washer for rear shocks

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DETAILED INSTRUCTIONS:

1. Removing the OEM Front Strut Assembly



Verify that the car is on a level surface before proceeding. Use appropriate load rated hydraulic jack and jack stands to support the vehicle.

- a) Engage the parking brake and raise the front of the vehicle with a hydraulic floor jack, then support with jack stands.



Please refer to the owners manual for proper jack stand location.

- b) Raise the rear of the vehicle with a hydraulic floor jack, then support with jack stands.
- c) Remove the front passenger wheel from the vehicle using an impact wrench or 1/2" drive ratchet (or breaker bar) and 21mm socket (or other if using locking lug nuts). Your front wheel well should now look like **Figure 1a**.
- d) Remove the one (1) 14mm nut (shown in **Figure 1b** circled in red) that holds the front endlink to the factory swaybar using a 14 mm wrench. If the stud spins, insert a 5mm Allen Wrench into the center of the stud to hold it while you loosen the nut. Then push the endlink free from the strut.
- e) Free the brake line using pliers or a flathead screw driver. Remove the clip from the brake line mount (shown by the red circle in **Figure 1c**). Then free the brake line from this mount.



Figure 1a



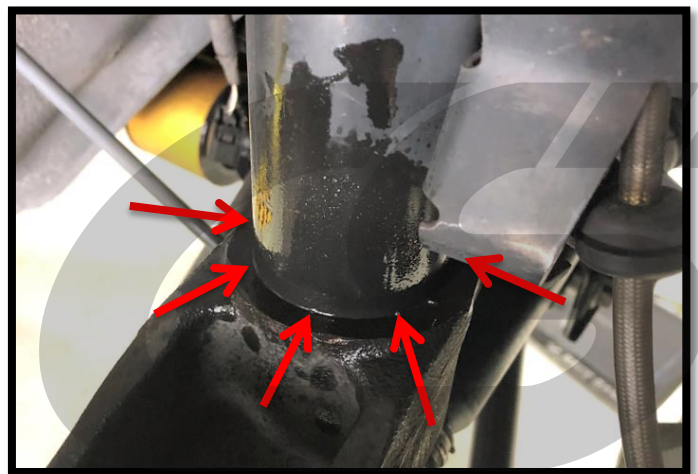
Figure 1b



Figure 1c

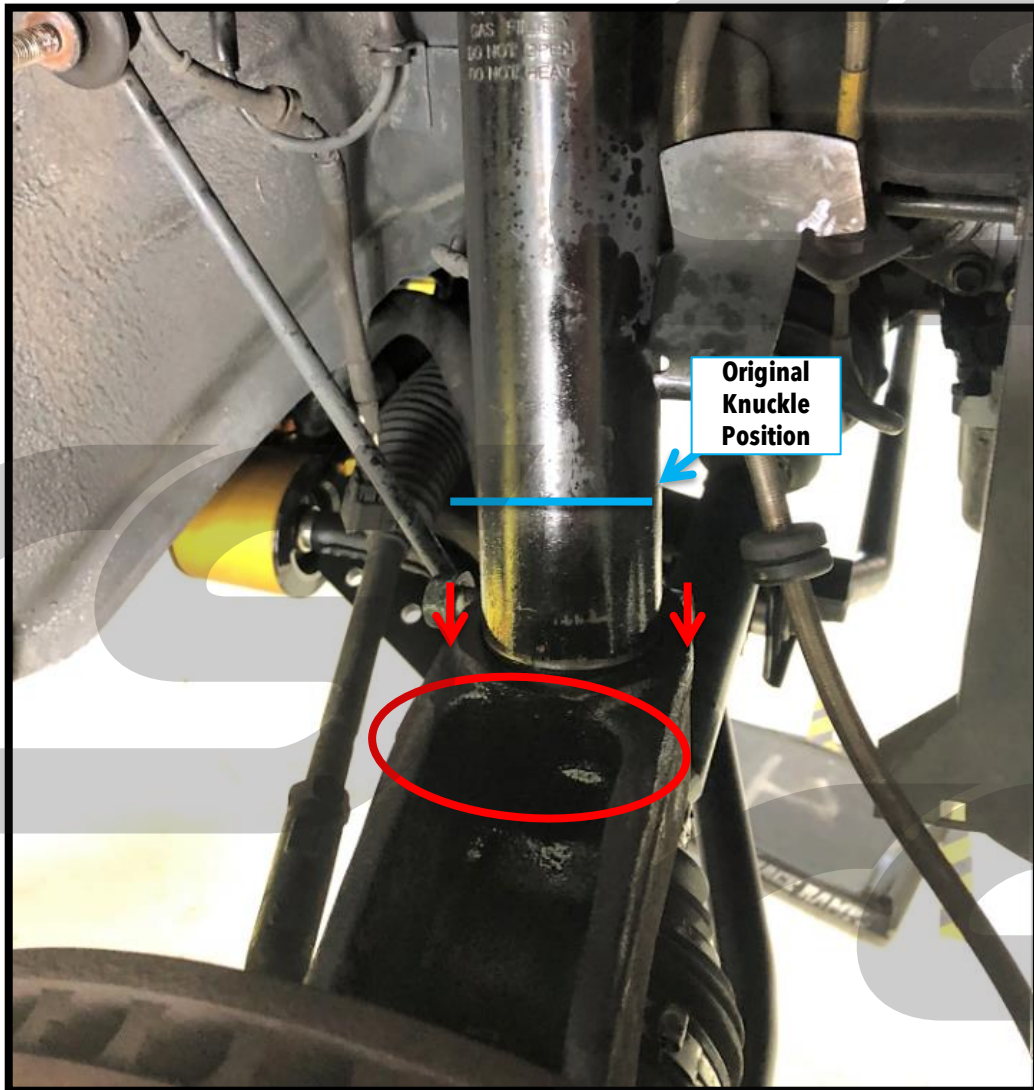
DETAILED INSTRUCTIONS:**1. Removing the OEM Front Strut Assembly (cont.)**

- f) Disconnect the ABS sensor clip from the top of the knuckle (red circle in Figure 1d)
- g) Remove the ABS sensor wiring from the retaining bracket near the swaybar endlink mount (red circle in Figure 1e). Then move the ABS wiring out of the way.
- h) Remove the lower strut pinch bolt from the backside of the strut using a breaker bar and 17mm socket (red circle in Figure 1f).
- i) Spray penetrating fluid where the strut meets the knuckle. Spray the area shown with red arrows in Figure 1g.
- j) Let the penetrating fluid sit and complete steps 1c-1i on the other side of the vehicle.

**Figure 1d****Figure 1e****Figure 1f****Figure 1g**

DETAILED INSTRUCTIONS:**1. Removing the OEM Front Strut Assembly (cont.)**

- k) Return to the passenger side, then using a 2lb. mallet or similar, carefully pound the knuckle until the strut is freed from the knuckle. The knuckle will need to travel downwards 2-3" before the strut is free, so be patient and take care to not damage your vehicle. Pound in location shown in **Figure 1h**. The strut is shown almost freed in **Figure 1h**.

**Figure 1h**

DETAILED INSTRUCTIONS:

1. Removing the OEM Front Strut Assembly (cont.)

 **Once you perform the next step, the OEM strut is free to fall out of the vehicle. Ensure you support it to prevent damage and/or injury.**

- l) Remove the three 14mm bolts that hold the top of the strut to the strut tower using a 14mm wrench. These bolts are located in the engine bay as shown with red circles in **Figure 1i**. Hold the bottom of the strut as you do so.
- m) Remove the OEM strut from the vehicle.
- n) Repeat steps 1k-1m on the opposite side of the vehicle.

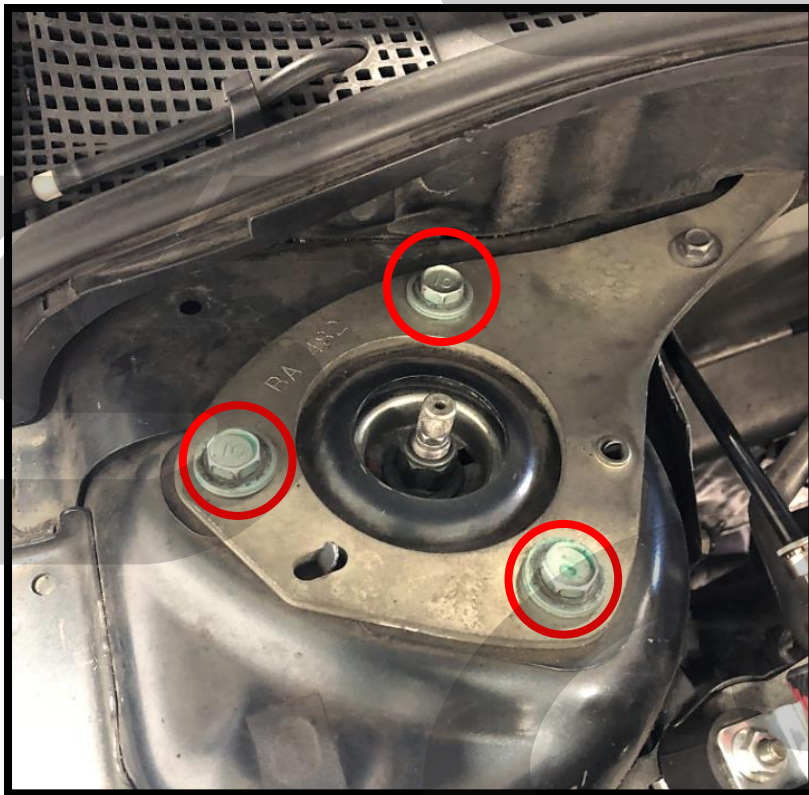


Figure 1i

DETAILED INSTRUCTIONS:

2. (OPTIONAL) Cutting Strut Tower for Easy Camber Adjustment



In order to adjust camber without removing the strut assembly from the vehicle, the strut tower must be cut. This modification does not affect the strength of the shock towers and has been tested and proven to function without issue. If you do not want to cut your strut towers, please skip to Section 3.

- a) **Drill out the center of the strut tower.** Use a 3 1/8" bi-metal hole saw and use the factory strut tower brace as a guide. Take your time as you do this step to ensure a clean and even cut. Figure 2a shows an uncut strut tower while Figure 2b shows a cut strut tower.



Figure 2a



Figure 2b

- b) **Clean up any burrs or sharp edges from the cuts using a round file or similar..**
- c) **Prepare the surface for proper paint adhesion.** Ensure the surface is clean of dirt and grease. Also ensure the surface has been sanded slightly so the paint will stick well.
- d) **Mask off the strut tower and surrounding area to prevent overspray.**
- e) **Paint the exposed bare metal that resulted from cutting the hole in the strut.** This protects the metal from rusting.

DETAILED INSTRUCTIONS:

3. Installing the CorkSport Front Coilovers



If you are installing without cutting the strut towers, please reference Section 9 to setup your front camber before moving on with the front coilover installation.

- Install the front right CorkSport coilover onto the passenger's side of the vehicle. Lift the coilover into position, and hand tighten the three supplied upper strut nuts (circled in red in Figure 3a). Tighten these nuts to 30-35ft-lbs.
- Using white lithium grease or similar, lubricate both the lower ~3" of the coilover and the inside of the knuckle. This is shown in Figure 3b.
- Using a hydraulic jack, lift the knuckle back into position and slide it over the bottom of the coilover as shown in Figure 3c.
- The coilover has an alignment tab and a "knuckle stop". The alignment tab fits within the gap of the knuckle while the "knuckle stop" will sit flush with the top of the knuckle when installed correctly. Both are shown in Figure 3d.



Figure 3a



Figure 3b



Figure 3c

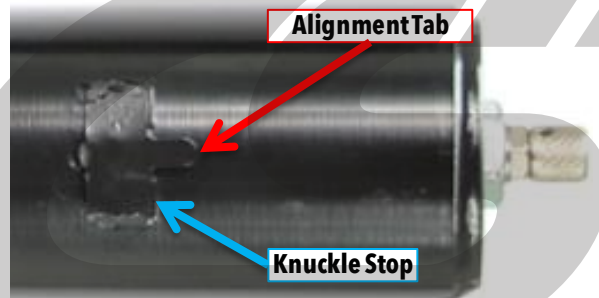


Figure 3d

DETAILED INSTRUCTIONS:

3. Installing the CorkSport Front Coilovers (cont.)

- e) **Figure 3e** shows where the alignment tab and knuckle stop will end up when properly installed on the vehicle. Note, this is viewed from the backside of the coilover.
- f) Using a 17mm socket and ratchet, reinstall and tighten the OEM knuckle pinch bolt to 48-54ft-lbs. Once installed, you can remove the hydraulic jack holding up the knuckle.
- g) Secure the brake line on the CorkSport coilover using the OEM retaining clip.
- h) Install the swaybar endlink through the bracket on the CS coilover.
- i) Place one of the supplied ABS wiring retaining brackets over the threaded end of the swaybar endlink. Match the orientation shown in **Figure 3f**.
- j) Tighten the swaybar endlink nut using a 14mm socket and ratchet to 32-44ft-lbs.
- k) Plug in the ABS connector and secure the ABS wiring in the CS ABS wiring bracket. Shown completed in **Figure 3f**.
- l) Repeat steps 3a-3k on the driver's side of the vehicle using the front left CS coilover.
- m) Reference Section 7 for ride height adjustment, Section 8 for damping adjustment, and Section 9 for camber adjustment.

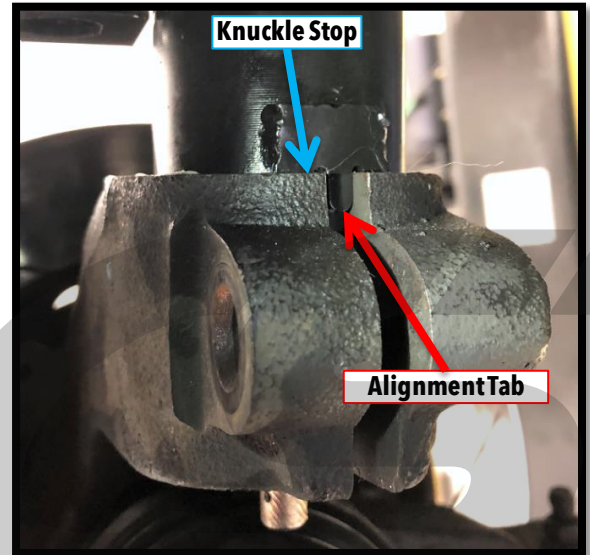


Figure 3e



Figure 3f

DETAILED INSTRUCTIONS:

4. Removing the OEM Rear Springs & Shocks

- a) Remove the rear wheels from the vehicle using an impact wrench or 1/2" drive ratchet (or breaker bar) and 21mm socket (or other if using locking lug nuts).
- b) On the passenger's side, remove the 14mm nut holding the rear sway bar endlink to the control arm using a 14mm wrench. This nut is located on top of the control arm near the rear spring. Nut shown circled in red in **Figure 4a**.



If the nut is not coming loose, hold the center of the endlink with a 5mm Allen wrench to prevent it from spinning. This is shown in **Figure 4b**.

- c) Repeat step 4b on the driver's side of the vehicle.
- d) Swing your rear swaybar downwards to free the endlinks from the control arms. This is shown in **Figure 4c**.



If you have an OEM swaybar or your swaybar does not easily rotate, you will need to remove the swaybar completely. Do this by removing the four 14mm bolts circled in blue in **Figure 4c**.



Figure 4a

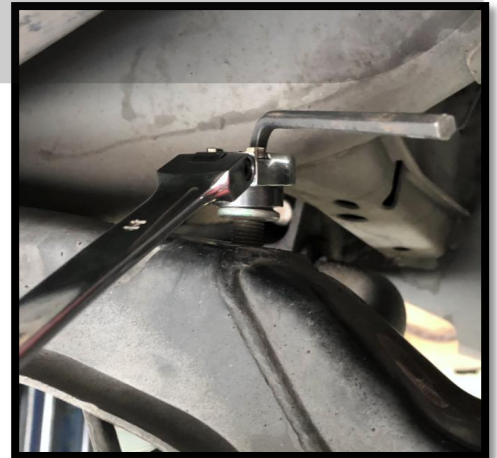


Figure 4b

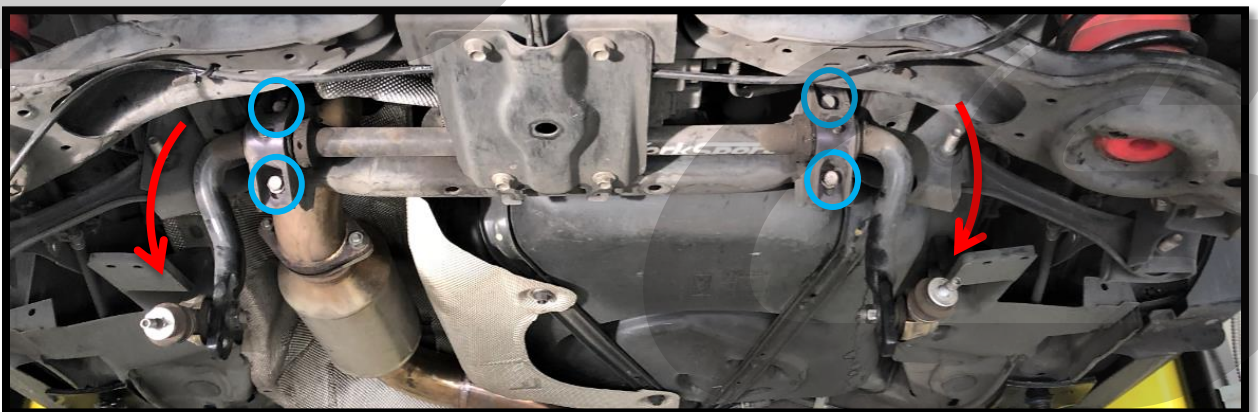


Figure 4c

DETAILED INSTRUCTIONS:

4. Removing the OEM Rear Springs & Shocks (cont.)



The vehicle used for installation images had rear airbag assist. The red portion on the inside of the springs will not be present with OEM or regular lowering springs. Install is identical.

- e) Lift the rear control arm slightly using a hydraulic jack. Shown with **red arrow** in **Figure 4d**. This takes the tension of the spring so it is safe to remove.
- f) Remove the 17 mm lower control arm bolt using a 17 mm socket and ratchet/breaker bar. **Circled in blue** in **Figure 4d**.
- g) Slowly lower the hydraulic jack and remove the OEM rear spring from the vehicle. Jack shown lowered in **Figure 4e**.
- h) Remove the lower shock mounting bolt using a 17 mm socket and ratchet. **Circled in red** in **Figure 4f**.



Figure 4d

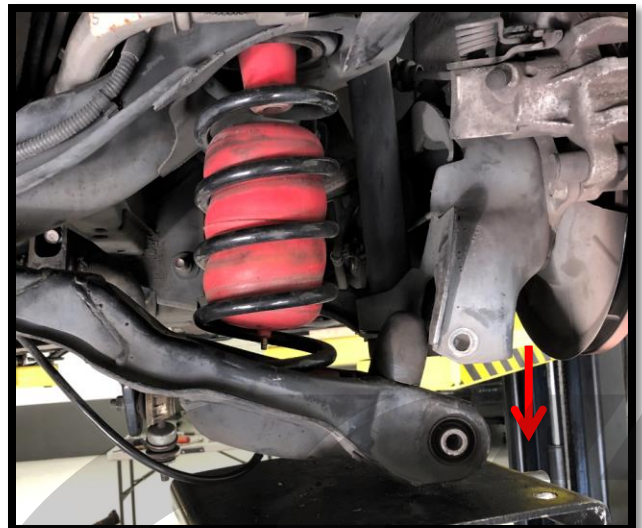


Figure 4e



Figure 4f

DETAILED INSTRUCTIONS:

4. Removing the OEM Rear Springs & Shocks (cont.)



The vehicle used for installation images had prototype CorkSport shocks installed. Removal is identical to OEM shocks.

- i) Trace the shock upwards into the fender of the vehicle. Remove the two 14mm upper shock mounting nuts using a 12mm socket and ratchet. Shown circled in red in **Figure 4g**.
- j) Remove the OEM shock from the vehicle.
- k) Repeat steps 4e-4j on the opposite side of the vehicle.

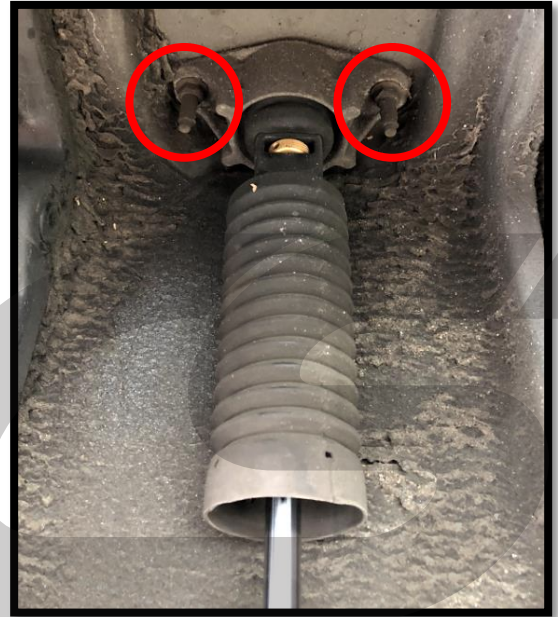


Figure 4g

5. Installing the CorkSport Rear Shocks

- a) Remove the OEM rear shock top hat using a 12mm wrench to remove the top hat retaining nut. Nut circled in red in **Figure 5a**. Typically, the strut will rotate when trying to remove this nut. We recommend holding the top of the strut with locking pliers to prevent rotation during nut removal. This process is shown in **Figure 5b**.


 The shock shaft can be easily broken if an impact is used to remove the 12mm nut. We do not recommend using an impact for top hat nut removal.



Figure 5a



Figure 5b

DETAILED INSTRUCTIONS:

5. Installing the CorkSport Rear Shocks (cont.)

b) Remove the OEM bump stop and plastic dust boot assembly from the OEM rear shock. It simply pulls free from the OEM rear shock top hat with some force.

c) Swap the OEM rear shock top hat to the CorkSport rear shock. Tighten to 15-20ft-lbs using the same method as step 5a. Shown completed in **Figure 5c**.

d) Install the CorkSport shock into your vehicle and secure using the upper shock mount and two 12mm nuts removed earlier. Tighten to 15-20ft-lbs. Shown completed in **Figure 5d**.



The following step is broken down into two sections as the GEN 1 (2004-2009) and GEN 2 (2010-2013) rear shock mounts are slightly different.

e) **GEN 1 OWNERS:** Re-use the OEM lower shock mounting bolt to secure the bottom of the shock to the spindle. Torque to 50ft-lbs using a 17mm socket and ratchet. Shown completed in **Figure 5e**.

f) **GEN 2 OWNERS:** Use the supplied 19mm bolt and washer to secure the bottom of the shock to the spindle. Torque to 50ft-lbs using a 19mm socket and ratchet.

g) Repeat Steps 5a-5f for the opposite side of the vehicle.



Figure 5c

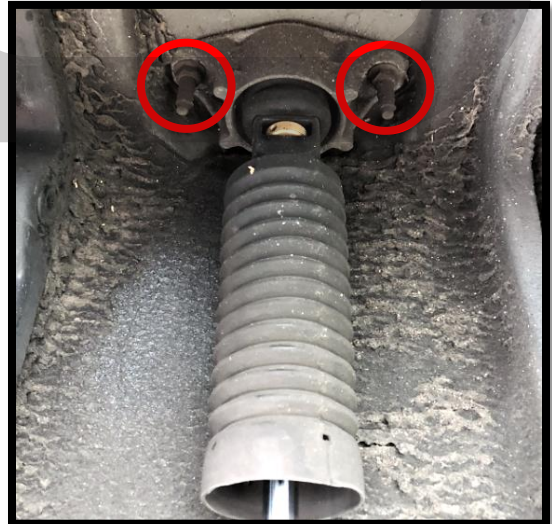


Figure 5d



Figure 5e

DETAILED INSTRUCTIONS:**6. Installing the CorkSport Rear Springs and Perches**

- a) **Begin by disassembling the rear spring perch.** The main perch will unscrew from the sandwich plates while the sandwich plates can be separated by removing the three socket head cap screws. See **Figure 6a** for final disassembly. Note the names in **Figure 6a**, these will be used to reference the correct parts later in the instructions.

**Figure 6a**

- b) **Place the upper sandwich plate on top of the passenger side rear control arm.** The "steps" will fit down into the hole in the control arm to center the sandwich plate. This orientation is shown in **Figure 6b**.

**Figure 6b**

- c) **Attach the lower sandwich plate to the bottom of the control arm.** Secure with the sandwich plate hardware. Tighten using a 5mm Allen wrench/socket to 12-15ft-lbs. Shown completed in **Figure 6c**.

**Figure 6c**

DETAILED INSTRUCTIONS:

6. Installing the CorkSport Rear Springs and Perches (cont.)

- d) Thread the adjustable spring perch into the upper sandwich plate. This is shown in **Figure 6d**.
- e) Place the lower spring ring on top of the spring perch as shown in **Figure 6e**.
- f) Swap the OEM rubber upper spring seat onto the CorkSport spring. The upper portion of the CS spring is not ground flat. See **Figure 6f**.



Figure 6d



Figure 6e

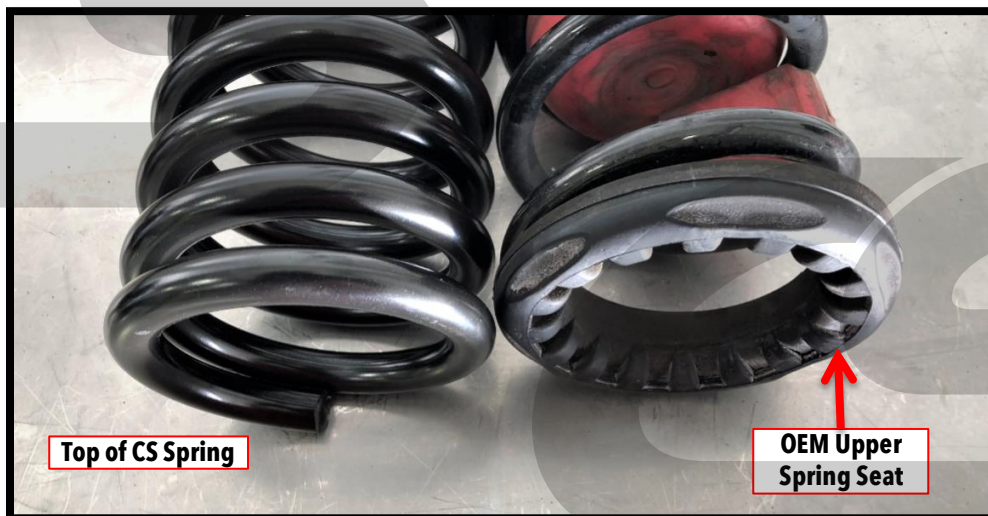


Figure 6f

DETAILED INSTRUCTIONS:

6. Installing the CorkSport Rear Springs and Perches (cont.)

- g) Place the CS spring on the CS Spring perch. Align the top of the spring (with rubber seat) into the OEM spring pocket. Shown in **Figure 6g**.
- h) Using a hydraulic jack, lift the rear control arm back into position and secure using the OEM 17mm bolt removed earlier. Tighten this bolt to 50ft-lbs using a 17mm socket and ratchet. Shown completed in **Figure 6h**.

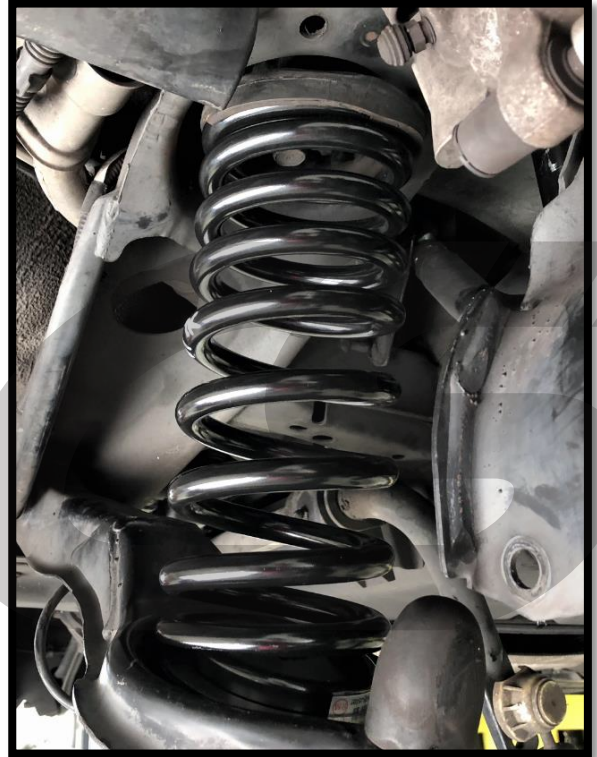


Figure 6g



Realigning and securing the rear control arm is not easy, especially if you have not done it before. We recommend using a friend to slowly lift the control arm into position while you align and install the bolt. Be careful to not cross thread the 17mm bolt.

- i) Repeat steps 6a-6h on the other side of the vehicle.



Please note, the locking nut has not been attached to secure the height of the rear coilovers. Please see Section 7 for instructions on changing the ride height of the vehicle.

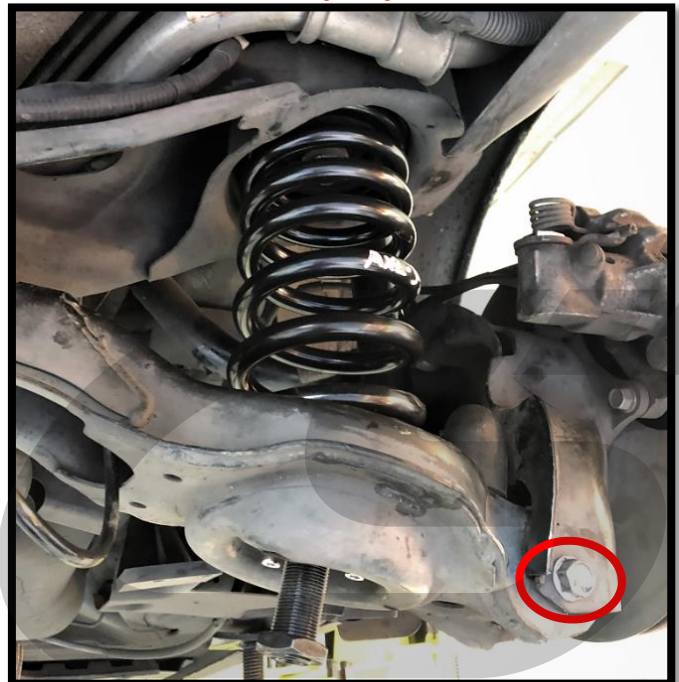


Figure 6h

DETAILED INSTRUCTIONS:

7. Adjusting Ride Height on CorkSport Coilovers

- a) Starting with the front coilovers, begin by loosening the Allen bolt that locks the front lower spring perch. This can be loosened using a 5mm Allen wrench/socket. Bolt shown in **Figure 7a**.
- b) Rotate the lower spring perch upwards or downwards using a spanner wrench to set your desired height. Repeat as needed until desired height reached. Ensure both sides of the vehicle have the same ride height.
- c) Once happy with your front ride height, tighten the locking bolt to 12-15ft-lbs with a 5mm Allen wrench/socket.
- d) Moving to the rear of the vehicle, the height is adjusted by rotating the spring perch upwards or downwards. Rotate the spring perch using a 10mm Allen wrench/socket. The hole for the 10mm Allen is shown in **Figure 7b**.
- e) The more thread is showing below the control arm, the lower your vehicle will sit. Adjust as needed until desired height is reached. Ensure both sides of the vehicle have the same ride height.
- f) Once happy with your rear ride height, attach the supplied locking nut to the bottom of the adjustable spring perch. Tighten against the bottom of the sandwich plate using a 32mm or 1 1/4" deep socket and ratchet or wrench. Locking nut shown loose in **Figure 7c**.

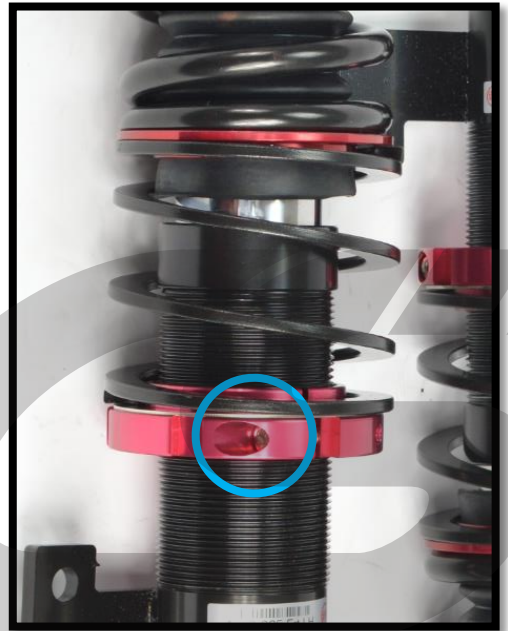


Figure 7a



Figure 7b

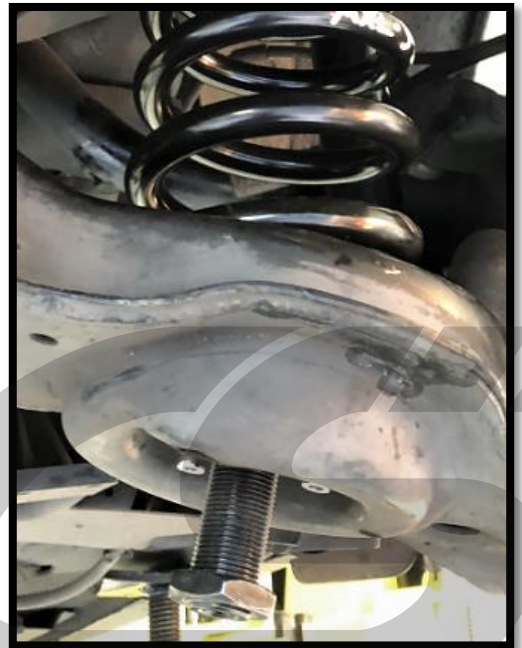


Figure 7c

DETAILED INSTRUCTIONS:

8. Adjusting Dampening on CorkSport Coilovers



Starting soft and moving up is typically the best way to determine what ride you prefer on your CS coilovers. Typically, 6-8 clicks from full soft is what most prefer in terms of ride and handling.

- a) The dampening adjuster for the front coilovers is located on the bottom of the coilover body. **Figure 8a** shows stiffer vs. softer settings on the CS front coilovers. You will feel the adjuster "click" at each different setting. We recommend going to the full soft direction, and establishing your base setup. Then driving the car, and adjusting both sides of the vehicle simultaneously until you are happy with ride.
- b) The dampening adjuster for the rear coilovers is located at the top of the shock body with the gold colored knob. **Figure 8b** shows stiffer vs. softer settings on the CS rear coilovers. Follow the same steps as the front of the car to set the dampening at the rear of the car.

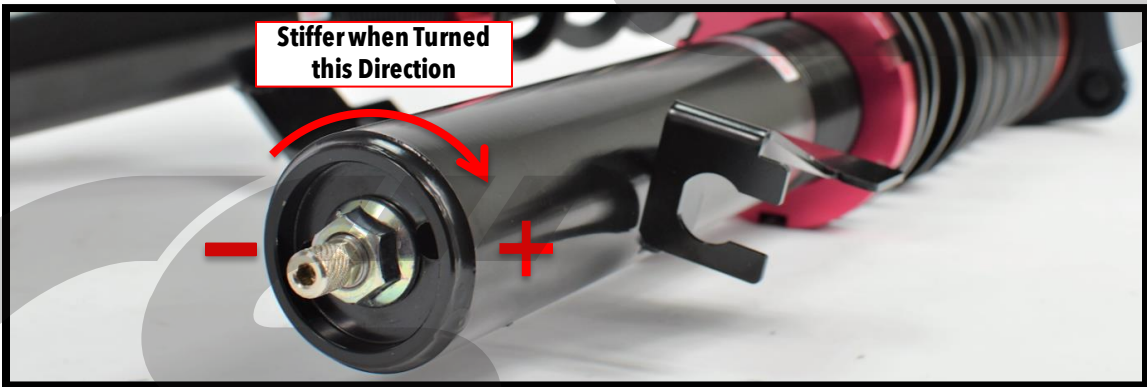


Figure 8a



Figure 8b

DETAILED INSTRUCTIONS:

9. Adjusting Front Camber on CorkSport Coilovers

NOTE For easy camber adjustment, ensure the front of the vehicle lifted and supported correctly by jack stands.

- a) To adjust front camber, start by loosening the four socket head bolts at the top of the camber plate. These can be loosened using a 4mm Allen wrench/socket. Bolts shown in **Figure 9a**.

NOTE These bolts do not need to be removed unless you plan on maxing out the camber adjustment. If this is the case, see **Figure 9a** for our recommended bolt placement. Only remove and replace two bolts at a time to ensure the camber plate does not become misaligned.

- b) Slide the top of the coilover forward or backward to adjust your camber. The top of the coilover toward the center of the car allows for more negative camber, while the towards the outside of the car allows for more positive camber. **Figure 9a** shows approximate camber readings. Once happy with your camber setting, tighten the four Allen bolts to **12-15ft-lbs**.



Figure 9a

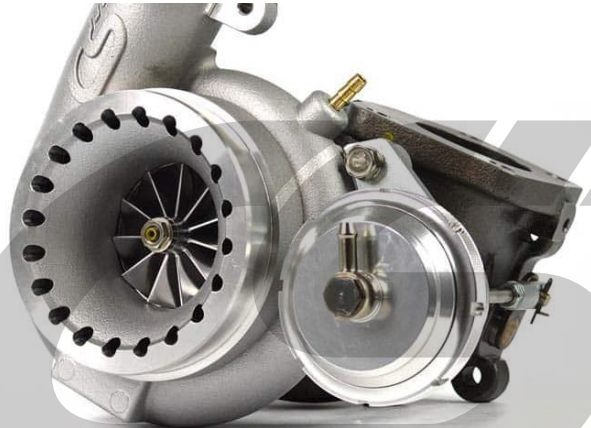


This completes the installation of your CorkSport Coilovers. Listen for any strange noises during the first few drives. We also recommend a professional alignment performed after installation. Enjoy the improved handling and stylish new look!

WHAT'S NEXT?

CorkSport CST5 Turbocharger

Not too big, not too small. ITS JUST RIGHT for YOUR SPEED. Capable of built block power and extremely fast spool times, this turbo can make 500+whp and hit 20psi by 3500-3600rpm. The CorkSport CST5 turbo can be tuned for a more laid-back curve that is stock block safe or pushed to 30+psi for built blocks and auxiliary fueling. No matter what build you have this turbo will be sure to impress. The CST5 features a MHI Journal Bearing CHRA, 0.82 Turbine A/R and 4" Anti-Surge Compressor Cover. The CST5 turbo is available in two boost control setups: Internally Wastegated (IWG) & 44mm Externally Wastegated (EWG) w/included EWG elbow pipe & V-band clamp.



CorkSport 13" Big Brake Kit

The Stage 2 CorkSport 13" Big Brake Kit for Mazdaspeed 3 provides a drastic improvement to braking by offering improvements to each component in the system.

Larger rotors, 4-piston calipers, stainless steel brake lines, upgraded pads, and everything you need to install on your Speed 3 is included in this kit. If the CorkSport Big Brake Caliper Kit was not enough for you and your MS3, look no further than the CorkSport 13" BBK.



CorkSport Adjustable Rear Swaybar

Remove the tendency to overpower the front tires under hard cornering and minimize traction robbing body lean with the CorkSport Mazdaspeed 3 Rear Adjustable Sway Bar. Compressing inside suspension, the CorkSport Mazdaspeed 3 Rear Sway Bar effectively increases the spring rate on side of the suspension which is compressed most and its adjustability allows you to fine tune the handling. Each Mazdaspeed3 swaybar includes machined 6061-T6 aluminum swaybar brackets which are more durable than the stamped steel design common with other swaybars and look sharp with an anodized black finish.

