



INSTALLATION INSTRUCTIONS

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G8X Coil Over Instructions

CARBAHN PART #:

CBB12-24-3005

CBB12-24-3010



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These instructions assume that the person installing these parts is a BMW CERTIFIED MECHANIC and are NOT step by step instructions on how to disassemble and reassemble the car!

Note: Installation of this kit will require the replacement of both the driver side and passenger side front **ONE TIME USE ONLY** axle bolts (Factory BMW Part#: **31 20 6 866 022**).

1. Before racking the vehicle, you need to measure and record the vehicle's current ride height. You want to know the distance from the center of the wheel to the fender edge. To do this, measure the true diameter of the wheels. Divide that number by two and that will give you the radius of the wheel, right that number down. Before taking this measurement, the car needs to be rolled back at least 6 feet and then forward to its starting position.



2. Now measure from the bottom of the wheel to the fender's edge and right that number down. To get the center of the wheel to the fender edge height you will subtract the previously recorded radius measurement from the bottom of the wheel to fenders edge measurement.



$$\text{Bottom of Wheel to Fender Edge} - \left(\frac{\text{Wheel Diameter}}{2} \right) = \text{Ride Height}$$

3. This number will be our starting ride height. We use the center of the wheel to the fender edge because this number is not affected by different wheel sizes. If the vehicle has staggered wheel diameters, you will have to complete this process for the front and the rear to get proper ride height measurements.
4. **Recommended final ride height and alignment specifications can be found at the end of these instructions. To be used after the installation of the kit. Note that there are different recommendations for rear wheel drive or xDrive cars. And different stages based on the installed upgrade parts or intended use.**
5. Once the factory ride heights have been measured you can remove the front struts by following the factory BMW procedure. Make sure to mark the struts “driver” and “passenger” so they go back into the car on the same side of the vehicle they came out of.
6. With the struts removed you can remove the Upper strut mount, spring, Bump Rubber and dust boot using a proper spring compressor. Note: stock bump rubber will not be reused.



7. After removing the parts, use a ruler and a marker to draw a line as a reference so you can properly align the new coil over perch. Place the ruler against the strut locating guide as shown and draw a line from the top of the locating tab to the bottom of the spring perch just below the flat side of the sway bar mount.



8. You will now need to remove the white plastic bump rubber pad on the top of the strut body as well as the sensor from the spring perch. Using **SOME** heat carefully heat the bottom spring perch making sure not to overheat the strut body or melt the dust seal. Once it is just hot to the touch hit the spring perch with a hammer away from the bottom of the strut body until it is fully removed from the strut body.



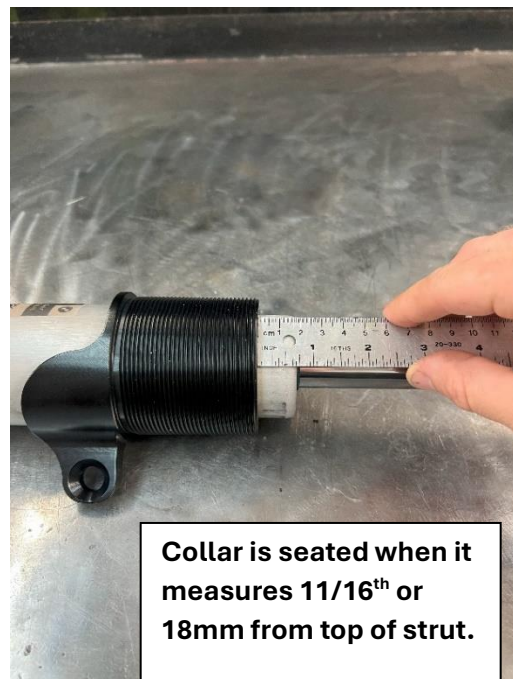
9. Next locate the Passenger and driver side CarBahn front threaded spring collars.



10. Fit the bottom of the threaded collar to the top of the strut, Line up the Flat side of the sway bar mount with the line you drew on the strut earlier. Slide the collar down by hand until it stops, Using a suitable press gently press the collar the rest of the way onto the strut until it is seated. It will measure approximately $11/16^{\text{th}}$ or 18MM from the top of the strut to the top of the collar when it is seated. **DO NOT OVER PRESS THE COLLAR ON TO THE STRUT.** Then you can tap the white plastic bump rubber pad back on.



Be sure flat side of sway bar mount lines up with your mark

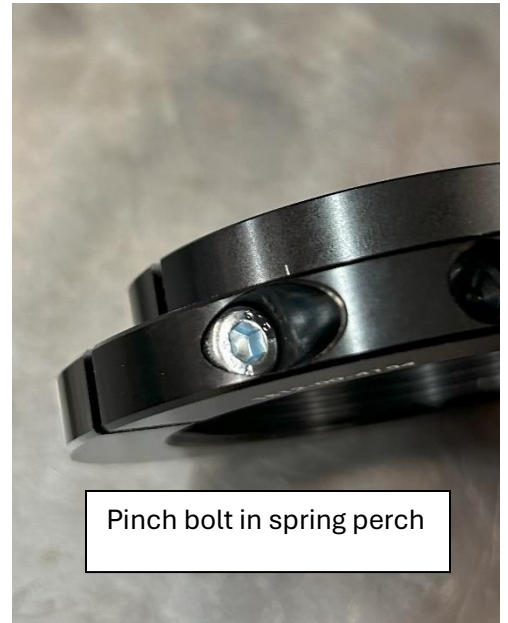


Collar is seated when it measures $11/16^{\text{th}}$ or 18mm from top of strut.

11. Once you have pressed both collars on the front struts and have the white caps back on put them back in your spring compressor and reassemble them. Thread the spring perch onto the collar (*Be sure the small pinch bolt on the perch is loose*), set it about a half an inch up from all the way down, fit the new front bump rubber (**The longer ones in the kit**) it will take a little silicon grease to get it to slide on easy. Fit the CarBahn plastic spring seat to the adjustable collar, then you can fit the spring (**Small side down**). Fit the dust boot to the top of the spring making sure the top of the boot is clocked correctly on the spring. Then the stock spring bearing strut mount assembly can go on and torque the top nut.
- NOTE; If you are using the CarBahn Camber adjustable strut mount Please see instructions for kit Part number; CBB12-24-3000.**

Strut assembly in spring compressor.

NOTE: the bottom of the dust boot has been cut off here for visibility.



Pinch bolt in spring perch

12. Strut Assembly can now be reinstalled on the car using BMW factory procedures and torque specifications.



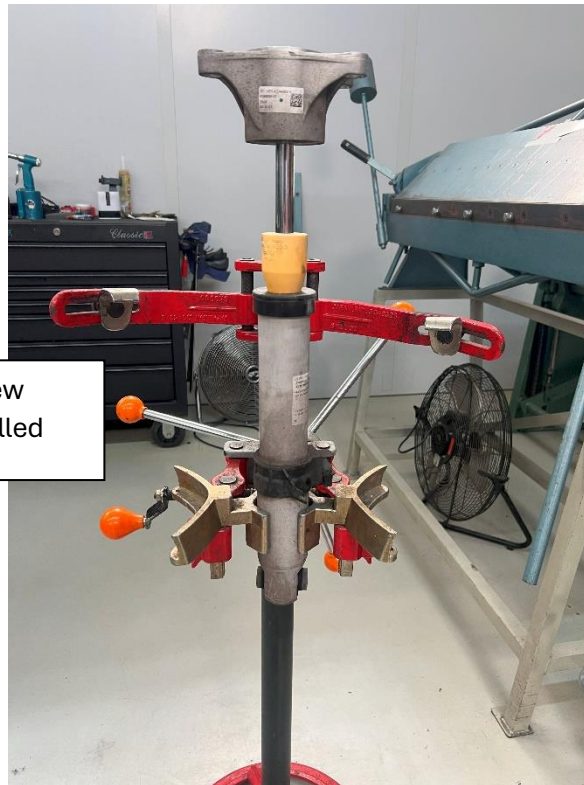
13. Remove the rear shock assembly's and rear springs and stock upper spring mounts from the car. Remove the top shock mount and replace the stock bump rubber and dust cover with the new rear bump rubber in the kit (the shorter ones). Reinstall upper shock mount on shock.

Remove the stock rear bump rubber and dust cover these will not be reused.



14. Once the rear shocks are reassembled you can mount them back in the car but leave the lower mount unbolting to the lower control arm until the spring assembly is in.

Rear shock with new bump rubber installed



15. Replace the Rear Springs and upper spring mount with the CarBahn rear spring and adjustable upper spring mount. Before installing the assembly screw the adjustable perch all the way in and then back down 3 turns as a starting point (be sure the pinch bolt is loose in the perch) Note when installing that the bottom of the spring sits into the stock lower rubber mount in the control arm. Be sure it is installed correctly.

Replace rear spring and upper mount with CarBahn spring and adjustable mount.



Lower rubber spring mount in control arm is reused, Be sure new spring sits in the rubber mount correctly.



16. Now with the rear springs and upper adjustable mounts installed you can attach the lower shock mount to the lower control arm. Note: the inner bolt to subframe on the lower control arm should only be fully tightened with the car on the ground.
17. Before doing the alignment, we need to set the new ride height and then set the gap between shock body and bump rubber.
18. To set the ride heights, with the car reassembled on the ground, roll it at least 6 feet back and then forward to its starting position. Then you can measure the fender to wheel lip distance and compare that to the numbers you took at the start. Adjust ride height by jacking up the car, loosening the small pinch bolt on the threaded collar and turning the collar up or down to raise or lower the car.

NOTE: Each time you Lift the car and make an adjustment you must roll the car again before you measure, or your measurements will be wrong.

The front spring perch has a 45-degree flat machined onto one side, this allows the use of wider front tires without the inner edge of the tire touching the perch. For this reason, this flat should always be facing out toward the tire. This means your front ride height adjustments must be made in one full turn increments always ending with the flat facing out. Be sure to tighten the pinch bolt in each spring perch when you are finished.

See recommended alignments at end of instructions for settings.



The front spring perch has a 45-degree flat machined onto one side, this allows the use of wider front tires and should always face out

19. After you have the ride height set, adjust the bump rubber gap. This is a crucial step and is the one that is often done wrong. Lift the car and be sure the front and rear bump rubber are pushed up all the way to the top then put a small Zip tie around one front strut and one rear shock below the bump rubber. Push the zip tie down until it is touching the top of the strut or shock.

Then set the car back down and roll it just like doing the ride height, do not bounce the car. Lift the car back up and measure the distance from the bottom of the zip tie to the bottom of the bump rubber. It's tricky to measure and you may need to cut down a small steel ruler to fit and to get under the dust boot. You also may need to hold the bump rubber up to the top while you measure the gap if it won't stay up by itself.

This number is the bump rubber gap, or the distance the suspension has to move to start to engage the bump rubber.

This gap can be adjusted by snapping the supplied plastic 3mm packers over the shaft to make the gap smaller. The front and rear gaps must be set.

If the gap is too small, and you have no plastic packers installed it likely means you have lowered the car too much and need to raise it back up until the gap is correct. Use the same amount of adjustment packers on each side of the car.

See the recommended alignment settings at the end of the instructions for bump rubber gap settings. Note: that xDrive and RWD cars have different bump rubber gap

Measuring the front bump rubber gap with a cut down steel rule.

Dust boot removed for visibility



settings.



Snap the supplied plastic 3mm packers over the shaft to adjust the gap.

Now you can perform the alignment

Stage 1 Suspension Kit (Coil Over Kit Only)

Alignment Specs

BMW G8X RWD M2 | M3 | M4

Left Front Ride Height (-22mm) – (-25mm)
LF Camber -1.9° ± .5°
LF Toe OEM

Right Front Ride Height (-22mm) – (-25mm)
RF Camber -1.9° ± .5°
RF Toe OEM

Left Rear Ride Height (-22mm) – (-25mm)
LR Camber -2.4° ± .5° .5 degree more negative than front
LR Toe OEM

Right Rear Ride Height (-22mm) – (-25mm)
RR Camber -2.4° ± .5° .5 degree more negative than front
RR Toe OEM

Front Bar N/A (1=Soft)	Rear Bar N/A (1=Soft)
Front Bump Rubber Gap 12mm	Rear Bump Rubber Gap 25mm

Stage 1 Suspension Kit Includes: Coil Over Kit

Adjustable Camber Plate Kit (Optional)

Stage 2 Suspension Kit (Coil Over Kit & Sway Bars)

Alignment Specs

BMW G8X RWD M2 | M3 | M4

Left Front Ride Height (-22mm) – (-25mm)
LF Camber -1.9° ± .5°
LF Toe OEM

Right Front Ride Height (-22mm) – (-25mm)
RF Camber -1.9° ± .5°
RF Toe OEM

Left Rear Ride Height (-22mm) – (-25mm)
LR Camber -2.4° ± .5° .5 degree more negative than front
LR Toe OEM

Right Rear Ride Height (-22mm) – (-25mm)
RR Camber -2.4° ± .5° .5 degree more negative than front
RR Toe OEM

Front Bar Hole: 2 (1=Soft)	Rear Bar Hole: 2 (1=Soft)
Front Bump Rubber Gap 12mm	Rear Bump Rubber Gap 22mm +

Stage 2 Suspension Kit Includes: Coil Over & Sway Bars Kit

Adjustable Camber Plate Kit (Optional)

Stage 3 Suspension Kit

Alignment Specs

BMW G8X RWD M2 | M3 | M4

Left Front Ride Height (-22mm) – (-25mm)
LF Camber -2.2° ± .5°
LF Toe OEM

Right Front Ride Height (-22mm) – (-25mm)
RF Camber -2.2° ± .5°
RF Toe OEM

Left Rear Ride Height (-22mm) – (-25mm)
LR Camber -2.6° ± .5° .5 degree more negative than front
LR Toe OEM

Right Rear Ride Height (-22mm) – (-25mm)
RR Camber -2.6° ± .5° .5 degree more negative than front
RR Toe OEM

Front Bar Hole: 2 (1=Soft)	Rear Bar Hole: 2 (1=Soft)
Front Bump Rubber Gap 12mm	Rear Bump Rubber Gap 22mm +

Stage 3 Suspension Kit Includes:

Coil Over Kit

Sway Bars Kit

Camber Plates Kit

Adjustable Rear Toe Link Kit

Monoball Kit

Stage 1 Suspension Kit (Coil Over Kit Only)

Alignment Specs

BMW G8X xDrive M3 | M4

Left Front Ride Height (-22mm) – (-25mm)
LF Camber -1.9° ± .5°
LF Toe OEM

Right Front Ride Height (-22mm) – (-25mm)
RF Camber -1.9° ± .5°
RF Toe OEM

Left Rear Ride Height (-22mm) – (-25mm)
LR Camber -2.2° ± .5° .3 degree more negative than front
LR Toe OEM

Right Rear Ride Height (-22mm) – (-25mm)
RR Camber -2.2° ± .5° .3 degree more negative than front
RR Toe OEM

Front Bar N/A (1=Soft)	Rear Bar N/A (1=Soft)
Front Bump Rubber Gap 12mm	Rear Bump Rubber Gap 16mm

Stage 1 Suspension Kit Includes: Coil Over Kit

Adjustable Camber Plate Kit (Optional)

Stage 2 Suspension Kit (Coil Over Kit & Sway Bars)

Alignment Specs

BMW G8X xDrive M3 | M4

Left Front Ride Height (-22mm) – (-25mm)
LF Camber -1.9° ± .5°
LF Toe OEM

Right Front Ride Height (-22mm) – (-25mm)
RF Camber -1.9° ± .5°
RF Toe OEM

Left Rear Ride Height (-22mm) – (-25mm)
LR Camber -2.4° ± .5° .5 degree more negative than front
LR Toe OEM

Right Rear Ride Height (-22mm) – (-25mm)
RR Camber -2.4° ± .5° .5 degree more negative than front
RR Toe OEM

Front Bar Hole: 1 (1=Soft)	Rear Bar Hole: 3 (1=Soft)
Front Bump Rubber Gap 12mm	Rear Bump Rubber Gap 16mm +

Stage 2 Suspension Kit Includes: Coil Over & Sway Bars Kit

Adjustable Camber Plate Kit (Optional)

Stage 3 Suspension Kit

Alignment Specs

BMW G8X xDrive M3 | M4

Left Front Ride Height (-22mm) – (-25mm)
LF Camber -2.2° ± .5°
LF Toe OEM

Right Front Ride Height (-22mm) – (-25mm)
RF Camber -2.2° ± .5°
RF Toe OEM

Left Rear Ride Height (-22mm) – (-25mm)
LR Camber -2.6° ± .5° .5 degree more negative than front
LR Toe OEM

Right Rear Ride Height (-22mm) – (-25mm)
RR Camber -2.6° ± .5° .5 degree more negative than front
RR Toe OEM

Front Bar Hole: 1 (1=Soft)	Rear Bar Hole: 4 (1=Soft)
Front Bump Rubber Gap 12mm	Rear Bump Rubber Gap 16mm

Stage 3 Suspension Kit Includes:

Coil Over Kit

Sway Bars Kit

Camber Plates Kit

Adjustable Rear Toe Link Kit

Monoball Kit

Thank you for purchasing a CarBahn suspension product. We feel this is the finest product of its type on the market.

Our suspension components are highly adjustable. This makes it possible to make it handle very well or very badly depending on the care the installer takes.

We encourage you to measure the car before you take it apart for comparison to after the suspension is installed.

We provide you with alignment specs and bump rubber recommended gaps as well as packers to tune them.

The bump rubber is a progressive spring, therefore setting this gap is crucial to the suspensions ride and handling.

Very small changes make a big difference, so please be careful.

Steve Dinan