

Thank you for purchasing your new SOLO WERKS S1 Coilover suspension.

IMPORTANT

**DO NOT USE POWERTOOLS ON SHOCK SHAFTS WHEN INSTALLING -
WARRANTY WILL BE VOID.**

USE ALLEN KEYS ON ALL SHOCK SHAFTS WHEN INSTALLING

SOLO WERKS recommends that you have this kit installed by a qualified professional. Solo Werks or its authorized agents are not responsible for damage or failure resulting from an improper or modified installation.

All suspension-related components must be inspected and in good working condition. You should inspect all bushings, tie rods, hubs, bearings, strut mounts, sway bar end links, wheels, tires, etc. and replace them if necessary.

This suspension system was designed to work best with the factory wheel/tire combination. Any deviations from these specifications could result in significantly altered handling characteristics and/or increased interference risk to other vehicle components.

SOLO WERKS TIP: *Depending on the offset & size your wheels/tires, wheel spacers may be required for proper fitment.*

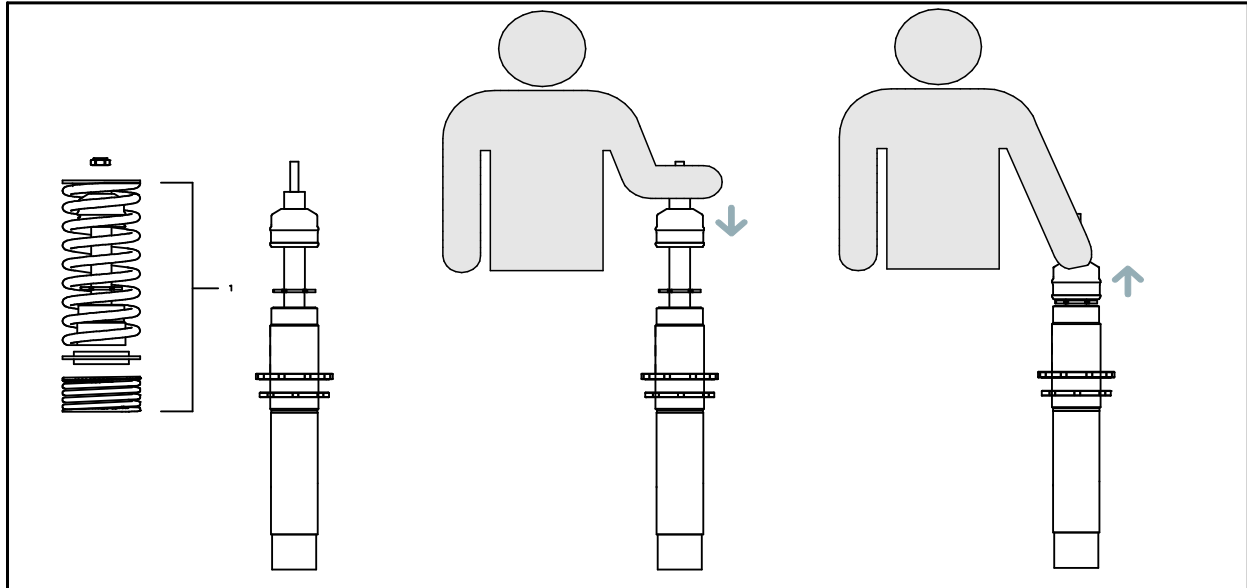
If suspension is lowered past the recommended measurements there can be possible interference with multiple vehicle components; (i.e. modification may be necessary to fender lips, seams etc...). This will also void your Solo Werks warranty.

After installing the suspension system, a four-wheel alignment must be performed according to manufacturer's specifications. Check and reset load- dependent brake compensator, ABS system and headlight aim according to manufacturer's specifications (If applicable).

ALL RUBBER- MOUNTED STRUT/ DAMPER ATTACHMENTS MUST NOT BE FULLY TIGHTENED UNTIL **AFTER THE SUSPENSION SYSTEM IS LOADED** (WHEELS ON THE GROUND). OTHER MOUNTING FASTENERS (FOR EXAMPLE BRACKETS) MUST BE SECURELY TIGHTENED BEFORE LOAD IS PLACED ON THE SUSPENSION SYSTEM

Every effort has been made to avoid printing errors in our literature. However, if there are any application or specification errors or omissions we must disclaim responsibility.

Solo Werks Coilover Pre Assembly – Priming the Dampers



SOLO WERKS TIP: *As the suspension is shipped and stored in a horizontal position, it is advisable to exercise or Prime the shock absorber before you install them to ensure that the internal contents are in the correct chambers. Therefore, we advise that before you assemble the coilover shock absorber, take a moment to purge the shock absorber.*

To do this, one side at a time remove the following from one of the Coilover Assemblies (if equipped):

- *Upper fasteners* (lock nut and securing nut – model dependent)*
- *Upper Spring Perch*
- *Main Spring*
- *Spring Isolator*
- *Helper Spring*

You will then be left with the coilover strut with the bumpstop and vent disc on the shaft. Pull the bumpstop up to the top of the chrome shock shaft, just before the threaded portion.

With the shock upright (as it would be installed in the vehicle) compress the shock shaft until the bump stop touches the shock housing, and then pull to extend the shock shaft back to full extension.

Repeat 3-5 times minimum. You will notice the shock forces getting progressively harder each time. Once they feel consistent each way, you are ready to install.

Figure 1

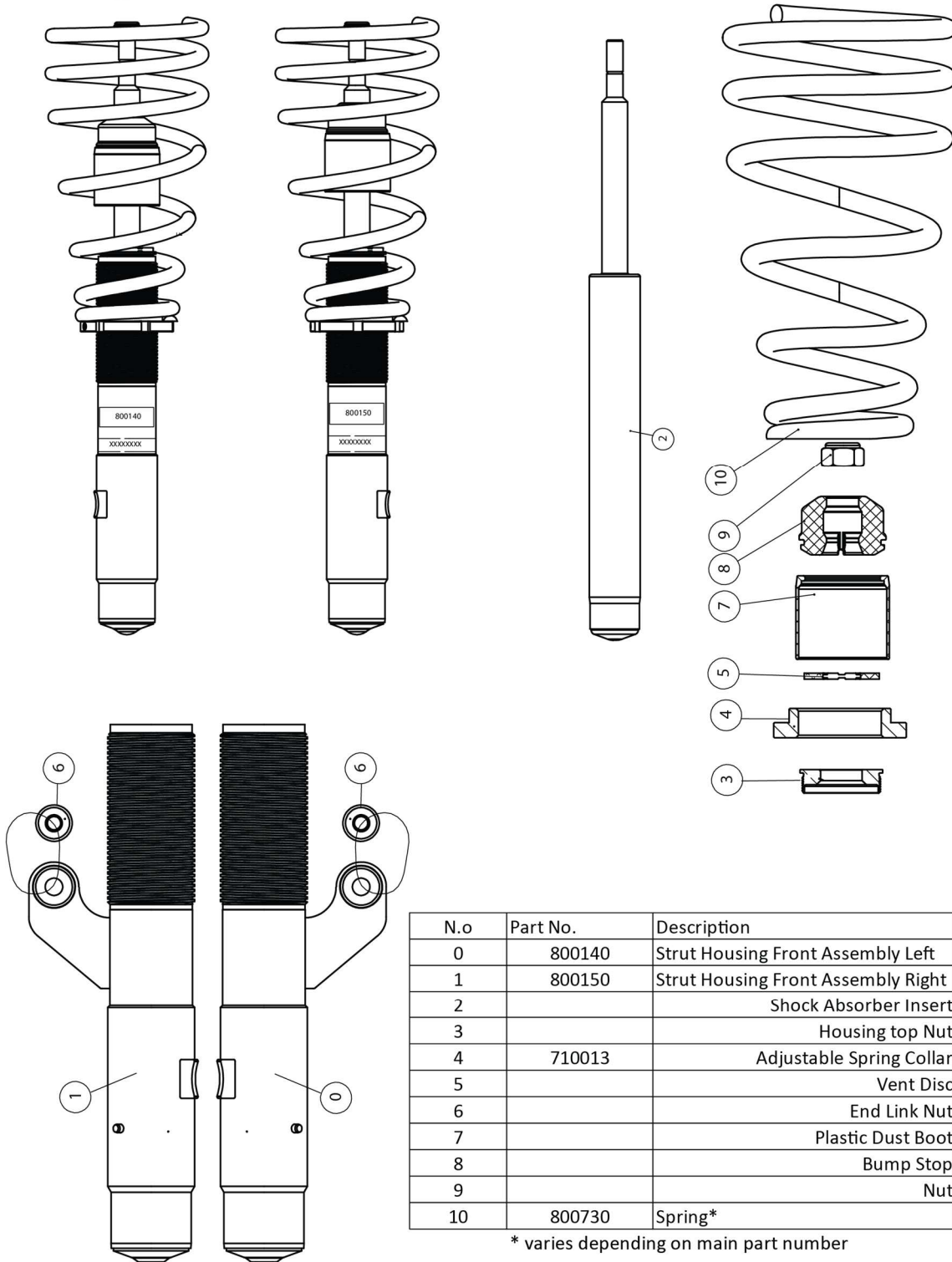
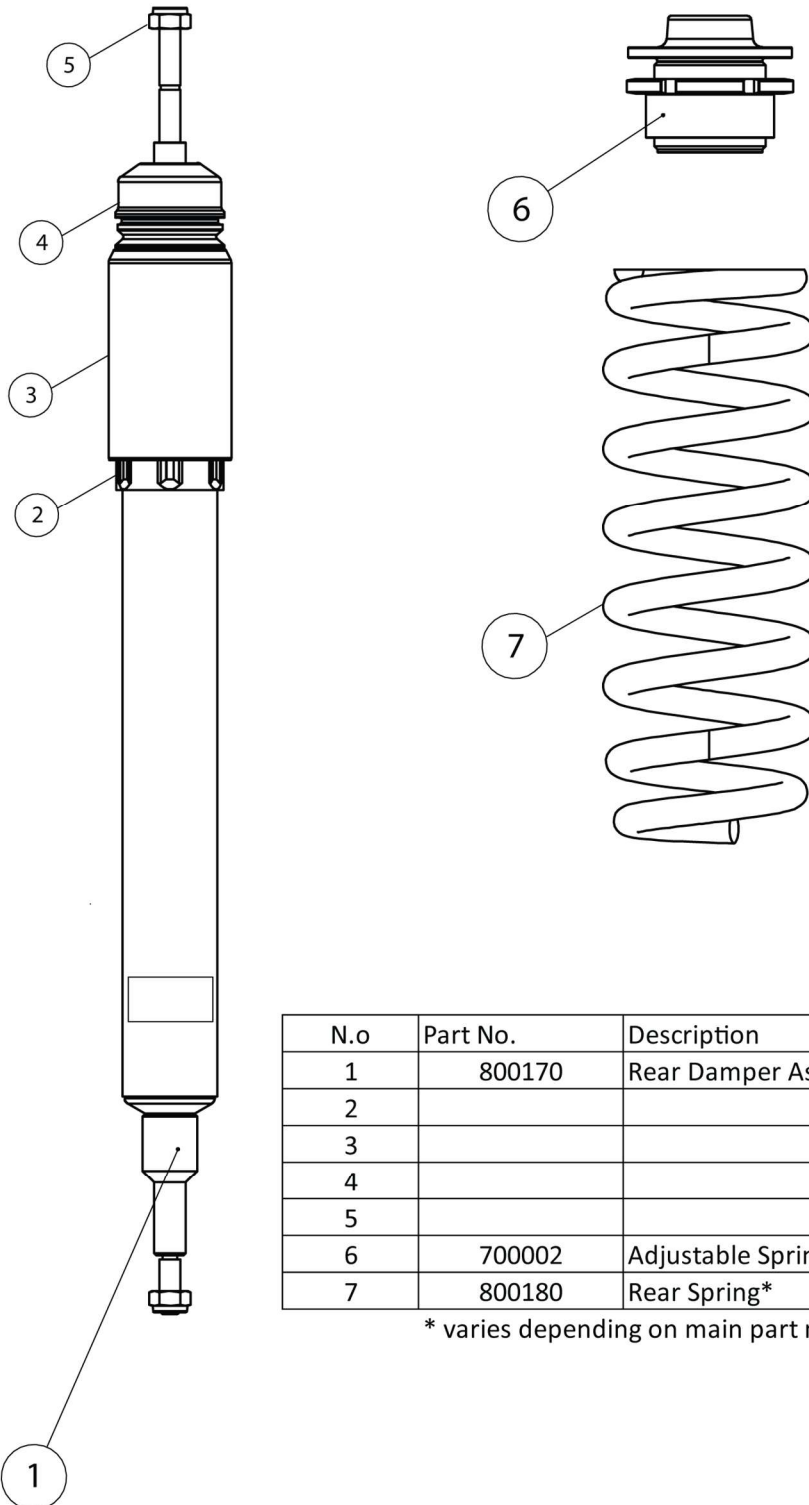


Figure 2



N.o	Part No.	Description	Quantity
1	800170	Rear Damper Assembly	1
2		Vent Disc	1
3		Plastic Dust Boot	1
4		Bump Stop	1
5		Nut	1
6	700002	Adjustable Spring Perch	1
7	800180	Rear Spring*	1

* varies depending on main part number

Original Suspension Removal

Front

1. Support Lower Control Arm/Spindle.
2. Remove OEM front inner fender liner (To allow access to lower control arm).
3. Remove any OEM lines/brackets from original suspension strut mounts.
4. Remove sway bar end link from strut housing and sway bar.
5. Unclip Headlight leveling sensor from LCA.
6. Loosen (but do not remove) LCA bolts at chassis.
7. Support strut from inside wheel well.
8. Remove three (3) upper strut mount nuts.
9. While pushing downwards on the suspension, walk the top of the strut out of the fender well before trying to remove OEM strut. (Taking caution not to scratch fender with the upper mount).
10. Remove Lower spindle (Pinch) Bolt from spindle.
11. Using Strut Spreader Tool, spread spindle mount.
12. Separate strut from spindle.
 - a. Ensure that the lower control arm is still supported
 - b. This may require work to separate as corrosion may limit movement
 - c. Using rubber mallet tap the cast spindle to free strut from spindle
13. Remove strut assembly
14. Leave the Strut Spreader in place

SOLO WERKS TIP: As the strut mounts are a consumable/wear item and are a known fail point on this chassis. Solo Werks recommends using new replacement parts and leaving your original suspension as an assembly. These parts are available from your Solo Werks Dealer or your local BMW parts dealer.

NOTE: If you are using your existing OEM upper strut mount you must remove this from the strut assembly. This component is under extreme pressure from the front spring and must be removed using an appropriate spring compressor to relieve the pressure. Follow the directions given by the manufacturer of the Spring Compressor to safely remove the spring and disassemble the Strut Assembly.

Solo Werks Coilover Assembly and Installation

Front

1. Assemble the Coilover assembly with the OEM Strut Mount using the provided hardware as in the diagram (Fig. 1 #9) Torque supplied upper strut nyloc nut to **47 Ft Lbs.**

NOTE: Use of an anti-corrosion spray such as the Boeshield T-9 on the threads & main perch/spring seat at this point can make the adjustment process much easier and will add an extra layer of protection. Boeshield T-9 is available from your Solo Werks dealer.

2. Insert strut assembly into vehicle
 - a. Hand tighten three (3) upper strut mount nuts

NOTE: Before proceeding with the next step, inspect the Spindle for debris (rust/dirt etc. as this can make installation difficult.

3. Connect strut housing to spindle:
 - a. Insert Strut into spindle making sure housing is completely seated within spindle
 - b. Remove strut spreader tool and insert OEM Pinch bolt and nut, torque to spec (**34 Ft Lbs.**).
4. Reattach any brake, ABS lines, etc. that were removed including Sway bar End link with new bolt (Fig. 1 #6)
5. Repeat procedure on the other side of vehicle.
6. Once vehicle is placed back on the ground tighten three (3) upper strut mount nuts (**25 Ft Lbs.**) and LCA bolts (**50 Ft Lbs.**) to proper torque specifications. (Or supporting lower control arm in the compressed position (loaded as if it is on the ground) using floor jack, jack stand or equivalent.
7. Reinstall front fender liner.
8. Adjust lower spring perch to desired vehicle height.
9. **HEIGHT ADJUSTABLE PERCH SET SCREW MAXIMUM TORQUE IS 1-2Nm or 0.74-1.47 ft-lbs**

Original Suspension Removal

Rear

SOLO WERKS TIP: *The removal and installation of the rear is easiest if you are able to disconnect the rear anti sway bar end links from the lower control arms.*

1. While supporting lower control arm in the compressed position (loaded as if it is on the ground) using floor jack, jack stand or equivalent.
 - a. Remove lower shock bolt.
 - b. While supporting the LCA with a jack stand loosen and remove outboard LCA bolt.
 - c. Slowly raise up chassis to remove tension from rear coil spring.
 - d. With tension relieved lower LCA and remove rear coil spring.
 - e. OEM Upper spring cup must be removed to accept adjustable spring perch
2. Remove the upper bolt from the upper shock mount on each side & remove rear shocks.

SOLO WERKS TIP: *Access to upper shock mount nuts requires removal of trunk interior. Please refer to repair manual (i.e. Bentley Manual) for proper procedure.*

Solo Werks Coilover Assembly and Installation

Rear

The Rear of this platform is a combination of a rear lowering spring & adjustable spring perch and specially matched shock absorber. The shock absorber does not need to be adjusted in any way to change the ride height.

SOLO WORKS TIP: *Just like the front struts, it is advisable to Prime the rear shocks as well. To purge the rear shocks: Refer to procedure on page 5.*

Rear Spring Assembly

1. Remove the lower factory spring pad from the control arm, and ensure that the area is clean and clear of any dirt or debris. – Note: This lower spring pad will be reused.
2. Remove the upper spring pad and metal cup from the factory pocket on the body and ensure that that the area is clean and clear of any dirt or debris. This IS NOT reused.



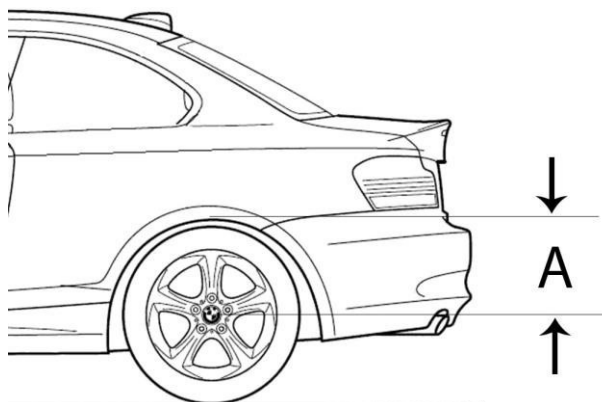
3. With the adjustable perch on top of the spring, place the assembly into the lower control arm pocket & body spring locator. (Fig. 2 #6 & 7)
 - a. You will need to raise the rear axle to keep the assembly in place.
 - b. Make sure bottom of rear spring is oriented properly in OEM lower spring pad.
 - c. Note: with the spring perch installed on top, this allows for easier access for adjustment once installed in vehicle.

Rear Shock Absorbers Assembly:

1. Assemble new Solo Werks rear shock absorber using original upper shock mounts and dust shield/bump stop assembly (Fig. 2 #3,4,5,7&8)
2. Install shock into upper shock mount and hand tighten shock mount nut. (Fig. 2 #1)
 - a. Once vehicle is placed back on the ground torque upper shock mount nuts to proper torques settings. **(20 Ft Lbs.)**
3. Compress lower control arm until lower shock mount bolt can be reinstalled.
 - a. Torque lower shock bolt to proper torque settings. **(28 Ft Lbs.)**
4. Replace trunk interior to finalize installation.
5. Final check that all hardware is tight and torques properly.

SOLO WERKS TIP: *It is advisable that all attaching hardware be checked after approx. 200 miles to ensure it has retained appropriate OEM torque settings.*

Solo Werks Coilover Final Details – Heights & Working Ranges



		Lowering Range			
		in Mm		in Inch	
Model	Year	Front	Rear	Front	Rear
BMW E90 Sedan	07'-12'	30-60	25-55	1"- 2.25"	1"-2.3"

Front Measurement					
Max low mm	Max low Inch	Max high mm	Max high Inch	OEM mm	OEM Inch
315	12.4"	345	13.5"	375	15"

Rear Measurement					
Max low mm	Max low Inch	Max high mm	Max high Inch	OEM mm	OEM Inch
320	12.5"	350	13.75"	380	15"

- These measurements are in place to allow both front and rear dampers to operate properly and allow for ample shock travel.
- All measurements will be referenced from "center of wheel hub to bottom lip of fender" (see example figure "a")
- Using this system outside of this range can cause premature failure and is cause to void your manufacturer specified warranty.
- Helper springs are intended to keep preload on the main spring under full suspension extension, do not remove!