

DIY – Dinan Springs Install on a 2012 BMW F30 335i

Rear Springs / bump stops:

1. Break loose rear lug nuts (17 mm), chock front wheels, jack up rear and support with jack stands. Remove wheel.
 2. Remove camber arm cover (10 mm, 4 ea).
 3. Since I have the adaptive M suspension, I removed the EDC control connector from the shock and placed it out of the way.





4. Mark the position of the inner camber arm bolt (mark both sides - the bolt and nut/washer) and loosen it (21 mm). This is to prevent any possible damage to the bushing when the camber arm is lowered to remove the spring and shock. Marking it is optional if you're going to get it aligned after the install (which you should), but I did it anyway to maintain the same approximate camber.



5. Place the jack under the camber arm and jack it up slightly to remove pressure on the lower shock bolt. Remove the lower shock nut and bolt (18 mm).



6. Remove the outer camber arm to wheel carrier bolt (21 mm) and using the jack, slowly lower the camber arm.

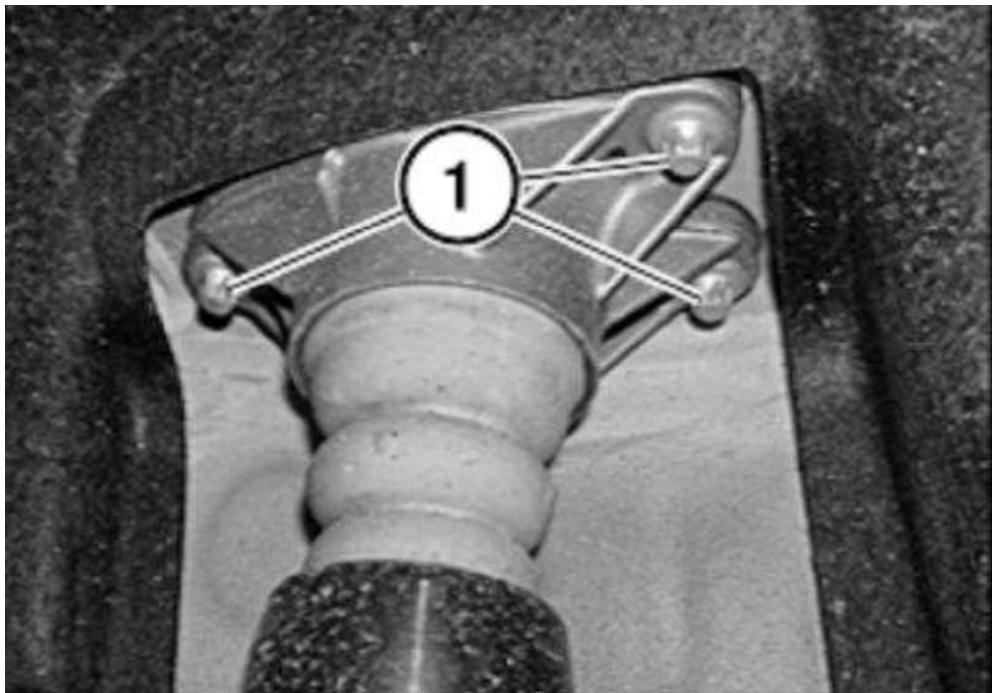


7. The spring can now be removed.





8. Remove the 3 screws on the shock absorber support bearing. These are E-Torx but a 9 mm socket will work.



9. Compress the shock absorber and remove from wheel arch.



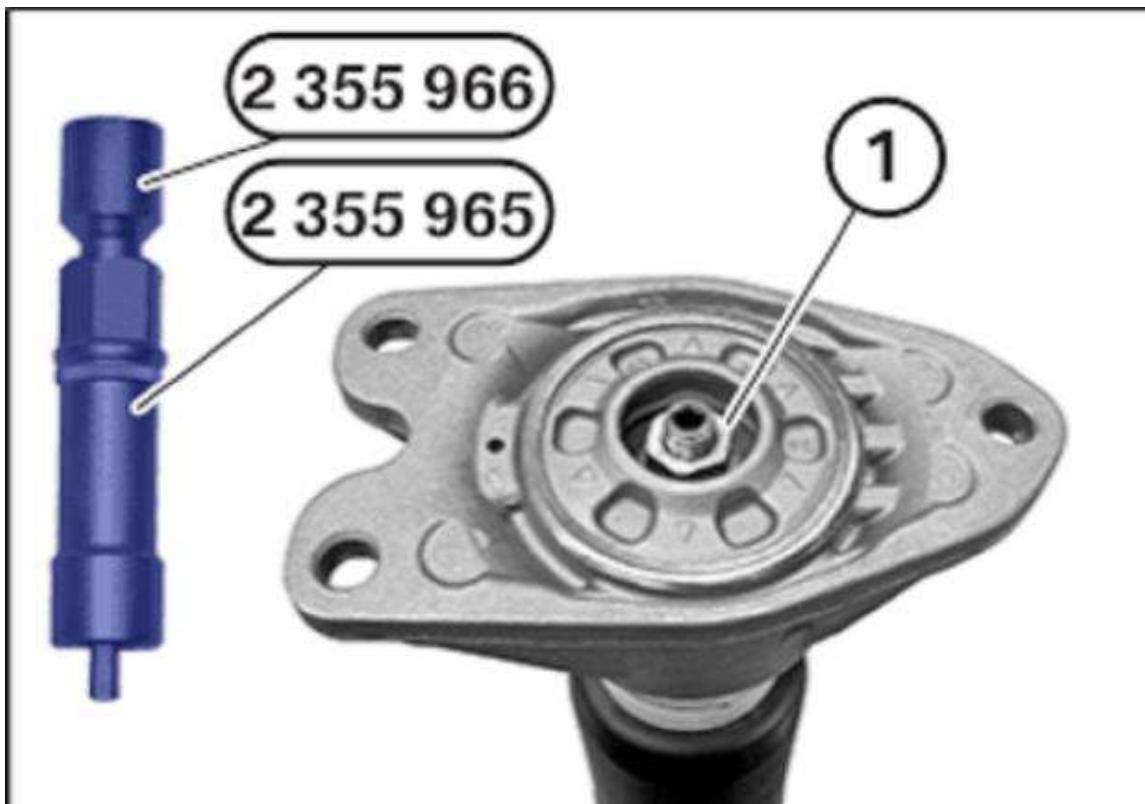
10. Dinan spring (Blue) and OEM (black)



11. Dinan bump stop (top) and OEM (bottom)



12. A special tool is recommended to remove the support bearing from the top of the shock. However, since I did not have this tool, I improvised using a hex key and a 5/8" spark plug socket.

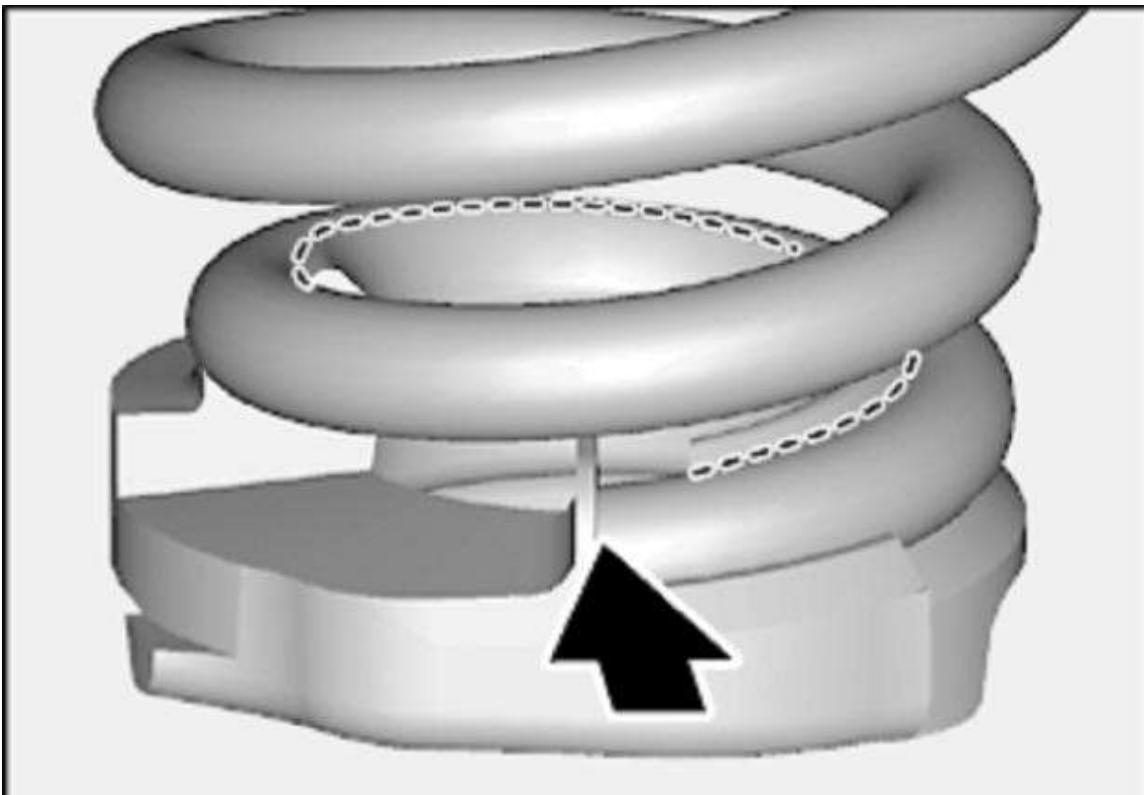




13. With the support bearing removed, replace the old bump stop with the new Dinan bump stop. Reattach the support bearing torquing to 38 Nm (28 ft-lbs). That's the spec at least – since I obviously couldn't put a torque wrench on my setup, I had to guess-timate it.



14. Transfer upper and lower spring pad from OEM spring to new Dinan spring. Ensure pads are seated with spring pad stops in contact with spring ends.



15. Line up the shock support bearing and screw in the three E-Torx screws. Torque to 28 Nm (20.7 ft-lbs).
16. Place the top of the spring in the spring cup and the bottom in the camber link.
17. Using the floor jack, align the camber arm with the wheel carrier and lower shock mount. Ensure spring is properly seated in both upper and lower mounts. Insert the outer camber bolt and lower shock bolt and secure with nuts but do not fully tighten.
18. Load the suspension by jacking up the car until the weight is no longer supported by the jack stand (just off the jack stand).
19. Torque the outer camber arm nut to 165 Nm (122 ft-lbs). Torque the lower shock nut to 100 Nm (74 ft-lbs).
20. Verify alignment of inner camber arm and torque to 165 Nm (122 ft-lbs). Lower the car back down so the weight is supported by the jack stands.
21. For vehicles with Adaptive M suspension, replace the EDC control connector.



22. Replace the camber arm cover.
23. Place the wheel back on the hub and insert the lug nuts.

24. Lower the car and torque the lug nuts to 140 Nm (103 ft-lbs). Note: F30 uses M14 lug bolts.

That's all for the rear – now on to the front struts.

Front Struts / bump stops:

1. Break loose front lug nuts (17 mm), chock rear wheels or set e-brake, jack up the front and support with jack stands. Remove wheel.
2. For vehicles with Adaptive M suspension, remove the EDC control connector and place out of the way.



3. Remove push-rod from support on strut. Be sure to counter-hold torx socket (T30) when loosening push rod screw connection. I used a 5/8" spark plug socket on the nut.



4. I used a breaker bar to pry the stabilizer bar to remove tension on the push rod so it could be easily disengaged from the strut bracket.



5. Loosen wishbone nut (18 mm) where it attaches to the front axle support. I removed a few of the cover screws so I could pull back the cover to allow easier access to the nut.



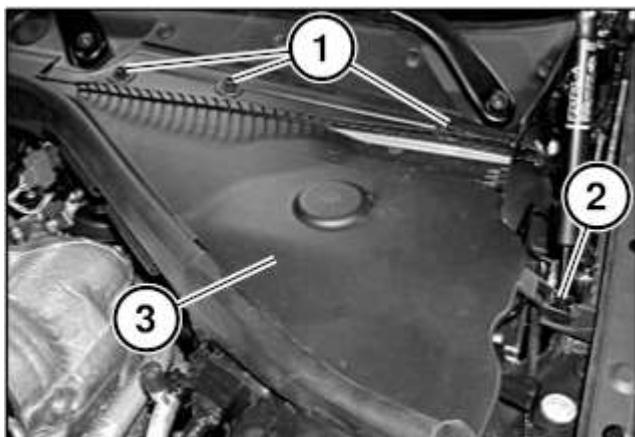
6. Loosen tension strut nut (18 mm) where it attaches to the front axle support.



7. Loosen spring strut shock absorber to swivel bearing nut (16 mm) and expand swivel bearing. BMW recommends using a special tool to spread bearing (31 2 230) but I just used a large, flat-blade screwdriver. The bearing does not have to be spread very much; just enough so the strut is not tightly clamped by the bearing.



8. If working on the left side, turn the steering wheel to the right (clockwise). If working on the right side, rotate the wheel to the left (counter-clockwise). This will make room for pivoting the strut out from underneath the fender.
9. Support the hub assembly with a floor jack. When the top strut mount bolts are removed, the strut and hub will lower down if not supported.
10. Open the hood. Remove rear cover (3) by unlocking closures (1) and lifting out.



11. Pull back and remove the rubber cover on top of the strut mount. Remove the 3 strut mount bolts and the suspension cross-brace bolt. The strut will lower down as the floor jack is slowly lowered.



12. For the next couple of steps, it is very useful to have a helper present. While gripping the strut, lower the floor jack supporting the hub, and swing the strut out from under the fender. I placed a 4 X 4 under the hub after I lowered it down. Make sure you don't scratch the fender, which can be easy to do.

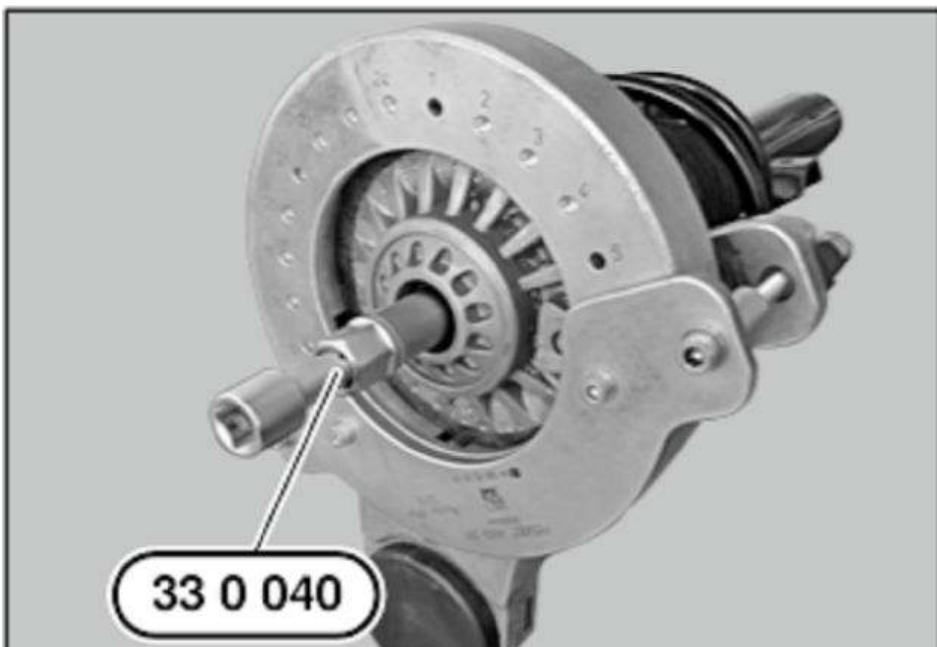


13. This step can be done with the strut still in the bearing or with the strut removed from the bearing and placed on a bench. I opted for the latter which meant removing the strut. I sprayed the bearing that holds the strut with WD-40 and pulled the strut out. This required twisting the strut back and forth while applying upward pressure with my helper holding the hub assembly. Ensure the bearing is spread sufficiently to allow the strut to come out.

14. Once out, place the strut on the bench and apply the strut spring compressor. AutoZone has a free tool loaner program which is where I got the compressor (AutoZone Part # 27036). You buy the tool and then have 90 days to return it for a full refund. Compress spring just enough to relieve tension on support bearing.



15. With the spring compressed, it's time to remove the support bearing from the top of the strut. Once again, a special tool is recommended to remove the support bearing. Again, I improvised, grinding down the sides of an 18 mm socket so a could get a wrench on it, and then using a 6 mm hex key to remove the support bearing bolt.



16. With the support bearing removed, the spring an bump stop can be removed.
17. Dinan spring (Blue) and OEM (black)

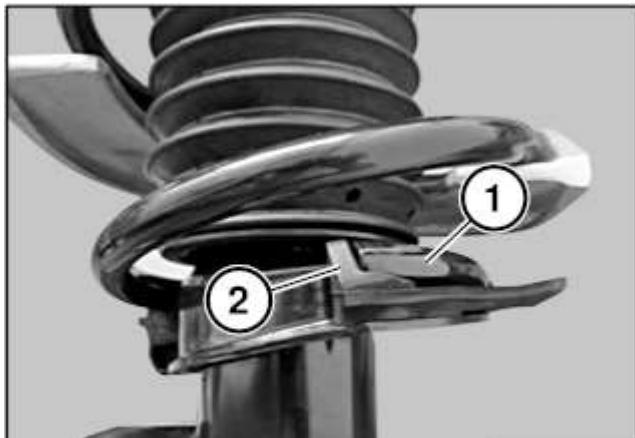


18. Dinan bump stop (left) and OEM (right). The Dinan bump stop came with a sleeve, similar to the rear bump stop, which I removed. Not sure why the sleeve was there; and Dinan customer support didn't know why either. According to them, the front bump stop doesn't have a sleeve.



19. Place the bump stop on the strut (the smaller end first) followed by the Dinan spring. The top of the spring is up when the part number on it can be read (not upside down). Apply the strut spring compressor and reattach the support bearing torquing to 64m (47 ft-lbs) – again, with my improvised tool, I had to estimate the torque.

20. Ensure spring ends are properly seated against support bearing and lower spring pad, then slowly release the tension on the spring, verifying alignment along the way.
Remove the spring compressor.



21. The strut can now be placed back in the swivel bearing. I again used some WD-40 to lubricate the support bearing. Align the swivel bearing to the positioning pin on the rear side of the strut along the gap and slide all the way in. Ensure the strut is fully seated. Torque the strut to swivel bearing nut to 44 Nm (32.5 ft-lbs).
22. With a helper holding the hub assembly, swing the strut back under the fender being careful not to scratch it. Support the hub with a floor jack and slowly raise it until the strut support bearing is just below the mount. From under the hood at the strut mount, align the holes in the mount with the support bearing and thread the 3 mounting bolts. Torque to 28 Nm (20.7 ft-lbs). Do not over tighten. The jack can now be removed from the wheel hub.
23. Replace the suspension cross brace bolt and torque to 56 Nm (41 ft-lbs). Replace the rubber strut cover and the rear cover.
24. Tighten the wishbone nut and tension strut nut (at the front axel support), torquing each of them to 100 Nm (74 ft-lbs).
25. Replace the push-rod into the support on the strut, torquing to 56 Nm (41 ft-lbs). Again, be sure to counterhold the T30 torx socket when tightening the push rod screw connection (again, I used a 5/8" spark plug socket w/wrench on the nut).
26. For vehicles with Adaptive M suspension, replace the EDC control connector.



27. Place the wheel back on the hub and insert the lug nuts.
28. Lower the car and torque the lug nuts to 140 Nm (103 ft-lbs).

Alignment:

Since my F30 only has alignment adjustments for rear camber and front/rear toe-in, the only different alignment parameter is the rear camber. To change the front camber, the Wishbone swivel bearing must be replaced. In addition to the stock bearing, there is one that gives a -0.5 degree offset and one a +0.5 degree offset. As Dinan recommends a -0.19 degree difference, I kept the stock swivel bearings. As it turned out, the alignment shop measured around -0.80 so all was good.

	OEM	Dinan
Front		
Camber	$-0.48^\circ \pm 0.50^\circ$	$-0.67^\circ \pm 0.42^\circ$
Caster	0.5° (diff between L and R)	$6.3^\circ \pm 0.5^\circ$
Total Toe	$0.23^\circ \pm 0.07^\circ$	$0.23^\circ \pm 0.07^\circ$
Rear		
Camber	$-1.75^\circ \pm 0.08^\circ$	$-1.5^\circ \pm 0.08^\circ$
Total Toe	$0.30^\circ \pm 0.07^\circ$	$0.30^\circ \pm 0.07^\circ$