

Flyin' Miata

ND Shock & Spring installation tips 13-4XXX, 13-5XXX 13-6XXX



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Congratulations on purchasing our ND suspension upgrades! These will transform your car, and are almost a necessity - at least as far as we're concerned. The following are some hints to help ease the installation process. Please note that these are not step-by-step instructions, as there are only a few places where the installation of our parts deviates from the installation of the stock parts. Please call or email us if you have installation questions. Our phone number and email are below.

WARNING: Not everyone can perform every installation. It is critical that you be honest with yourself in regards to your ability. We're more than happy to help, but there are only so many things we can do from the other end of a phone / computer. If in doubt, discuss the install with us before you dive in. Improper installation could cause injury and / or death!

Front Torque Specs:

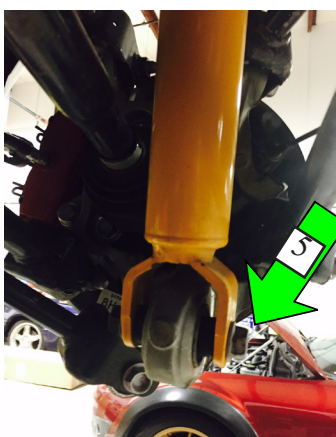
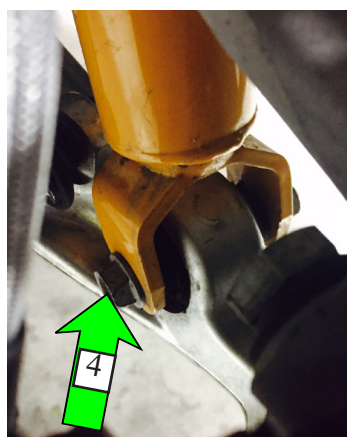
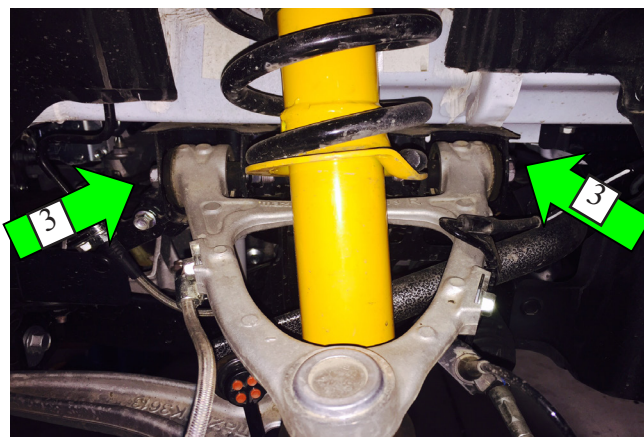
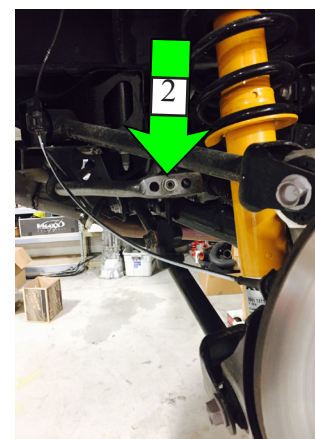
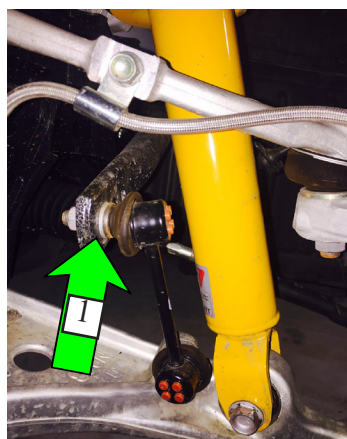
- Upper shock mount 37-43 lb-ft
- Lower shock mount 40-47 lb-ft
- Upper control arm 40-47 lb-ft
- Sway bar endlink 32-38 lb-ft
- Alignment bolts 100-121 lb-ft
- **If you are installing Koni Sports, do NOT over tighten the nuts on top of the shock! Install the first nut and torque to 37 lb-ft. Then install the second nut to lock the first in place.**
- You'll reuse the stock shock mounts / top hats and dust boots as well as the front stock bump stops. New rear bump stops are required with FM springs and are included with FM kits.
- Unbolt all four end links, front (1) and rear (2), from the control arms or sway bars to allow the control arms to move.
- Unbolt the upper front control arm (3) from the subframe in order to allow easier removal of the shock and spring assembly.
- If your Miata is equipped with a shock tower brace under the hood, remove it to access the upper shock mount nuts.
- Remove the three large nuts holding the shock mount to the chassis. Do NOT remove the center nut yet.
- Unbolt the lower shock mounts from the lower control arm on the front (4) and the upright on the rear (5). The rear shocks use captive nuts, source new nuts if your replacement shocks don't have new nuts. The Konis include new nuts.

Rear Torque Specs:

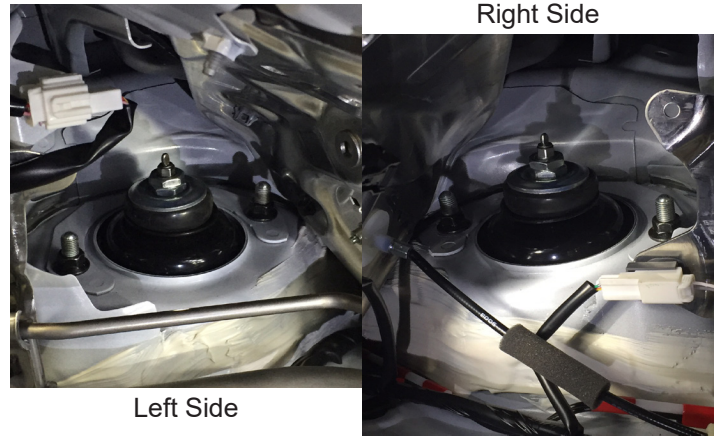
- Alignment bolts 63-75 lb-ft
- Upper shock mount 34-40 lb-ft
- Sway bar end link 26-29 lb-ft
- Lower lateral link (arm sway link attaches to) on upright - 48-57 lb-ft
- All others 49-59 lb-ft

ND Koni front shock - 8241 1304SPORT

ND Koni rear shock - 8241 1305SPORT

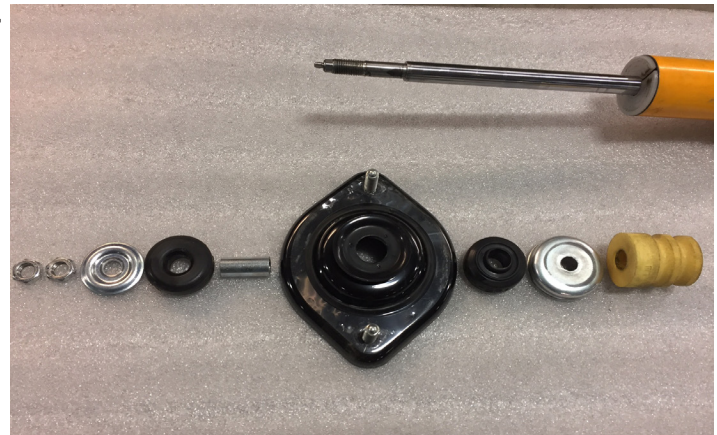


- Access the rear upper shock mounts by removing the felt trunk liner. There are several plastic clips holding the liner in place. Remove them by first pulling up the center section to release the clip. Then gently remove them by pulling on the outer section. Again, remove the two large nuts holding the mount in place, **NOT** the center nut.



- Do not remove the shock mount from the shock without a spring compressor.

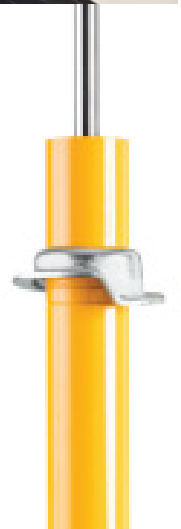
There's a lot of potential energy here, improper disassembly is a recipe for damaged body parts. Pay attention to the orientation as you disassemble the shocks and springs so you can be sure to match the new assembly. Front and rear are the same internal parts, but the mounts are different - the front upper mount will have three studs, the rear has two. For Koni's, the lower washer that sits above the bumpstop will need to be drilled out to 12mm. Konis include a new upper washer that is the proper size. Reuse the stock dust boot front and rear. Note that Koni Sports will come with new hardware.



- Newer Konis have different spring perch heights. Refer to the insert with the shocks for more details, We recommend starting with the #1 setting (top groove) on the fronts (1304s) and the #2 setting (2nd groove from the top) for the rears (1305s). Using any lower grooves will result in a too-low ride height and more time on the bump stops (i.e., a rougher ride).



- With the perch height snap rings set in the desired position, install the secondary perch land rings (thin metal rings) with the groove facing down, and then install the perches in the orientation shown. Be sure not to mix up the front and rear perches as they are different.
- Your new FM springs are labeled front (6) and rear (7). Now is a good time to move the spring isolator from the stock rear springs to the FM springs or install the supplied isolator material. See the information on the next page and the attached appendix.



- **If you are installing Koni Sports, do NOT over tighten the nuts on top of the shock! Install the first nut and torque to 37 lb-ft. Then install the second nut to lock the first in place.**
- **Do NOT tighten any of the rubber bushings (lower shock bolt, upper inner control arm bushings, etc) until the car is on the ground, with its weight on its wheels, and has been rolled a few feet.** The bushings must be in their static positions when you tighten them, **otherwise the ride height will be incorrect and your bushings will fail.** Along those lines, loosen and re-tighten **ALL** of the rubber bushings once the car is back on its wheels. Our hub stands make this job much easier.
- If you're installing Konis, make sure to adjust the damping before reinstalling the shock tower brace. Set them up 3/4 turn from full soft (all the way opposite the "firm" arrow, then 3/4 turn back). These are just starting points for all 4 shocks, feel free to tweak as needed. We'll typically leave the shock tower brace (and rear trunk liner) out for a few days while we dial in the damping, then reinstall everything once we're happy with the ride and handling. Of course, it's not difficult to remove those pieces, so it's not a huge issue either way.

Alignment

- FM springs lower the ride height of the car, so you'll need a new alignment. We recommend:

Front

Caster: 8.0 degrees (basically, as much as possible)

Camber: 1.8 degrees negative (again, as much as possible)

Toe-in: 1/16", 0.15° or 9 arcminutes total (1/32", 0.075° or 4.5 minutes per side)

Rear

Camber: 1.8 degrees negative (matching the front)

Toe-in: 1/16", 0.15° or 9 arcminutes total (1/32", 0.075° or 4.5 minutes per side)

Rear Spring Isolator Info

- If your ND Miata is an RF and / or has a VIN higher than JM1ND*****111025 (built after February 4, 2016) the stock rear springs should have sections of isolator sleeve from the factory. If so, the stock isolator sleeve should be removed from the stock springs and installed on the FM rear springs. Locate them in the same way they were on the stock springs.
- If your ND Miata has a VIN *lower* than JM1ND*****111025 and the rear springs didn't come from the factory with isolator sleeve, then use the included spiral spring isolator material. For installation, see the included appendix.

Headlight leveling procedure

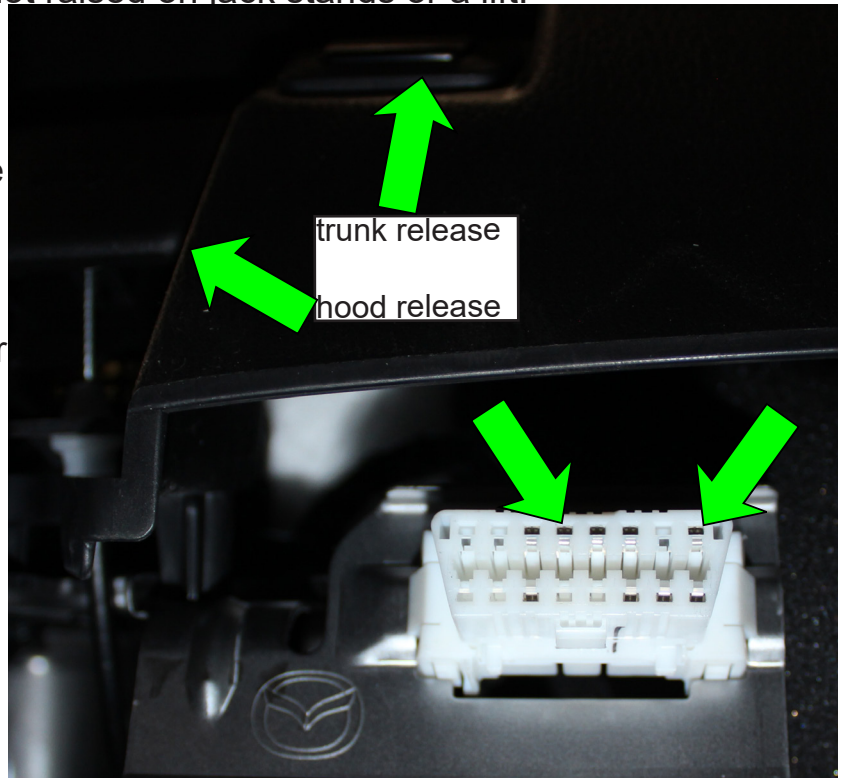
- 2016-2018 Miatas can use the procedure below or they can use our headlight Levelizer (13-89100). Our Levelizer is a mechanical item that bolts on and is adjustable, the procedure below is more of a programming thing. You must do one or the other or your headlights will point down dramatically. 2019+ Miatas (any Miata or Fiat 124 without a mechanical sensor on the left (driver's side) rear suspension) do not have the option of the levelizer and must use the programming procedure below. If you're unsure, look up our "Levelizer" online and check its instructions to see if you have that part.

1. Be sure the car is on its wheels, not raised on jack stands or a lift.

2. Get two scrap pieces of wire and strip both ends of both wires.

3. Find the OBD-II plug - it's in the driver's footwell, to the right of the hood release and just behind the lower edge of the dash plastic.

4. Insert one piece of wire into the terminal that's closest to the lower edge of the dash and all the way to the right (towards the center console). The other wire should be inserted into the fifth terminal from the right and in the same row (closest to the lower edge of the dash). Be sure these two wires aren't touching. **BE ABSOLUTELY SURE ABOUT YOUR WIRE CONNECTIONS, INCORRECT CONNECTIONS CAN CAUSE DAMAGE.**



5. Turn the ignition on. This requires two pushes of the start-stop button *without* the clutch (or brake in an auto) pedal depressed. The engine can be running, but there's no reason for it to be. ***This procedure must be performed within 30 seconds of turning the ignition on.***

6. Connect the two wires to each other three times, holding the connection for roughly .5 seconds then leaving the connection open for roughly .5 seconds each time. It's picky about timing, so if you don't find success try holding the connection longer or shorter until it works.

7. Check the gauge cluster. The LED headlight warning light should illuminate three times every .25 seconds then turn off. You should also be able to hear the headlight motors (if it's quiet enough). If the light doesn't turn off on its own, the procedure may have been performed incorrectly. Check your connections and repeat step five.

8. Once the light turns itself off, remove the wires. You're done!

Appendix: ND Rear Spring Isolator 36-88011

Follow this procedure **ONLY** if your car doesn't have spring isolators from the factory. If your car has factory isolators reuse those.

Start by cutting a 12-14" section of the spiral material. Starting at the top, feed it onto one of the rear springs.



Once you have the spiral material all the way on the spring, work it down to the fourth coil.



Repeat the first two steps and work the second piece down to the second coil. Make sure the spiral material overlaps as shown. Do these same steps to the other rear spring.

That's it, you're done! The springs are ready to install.

