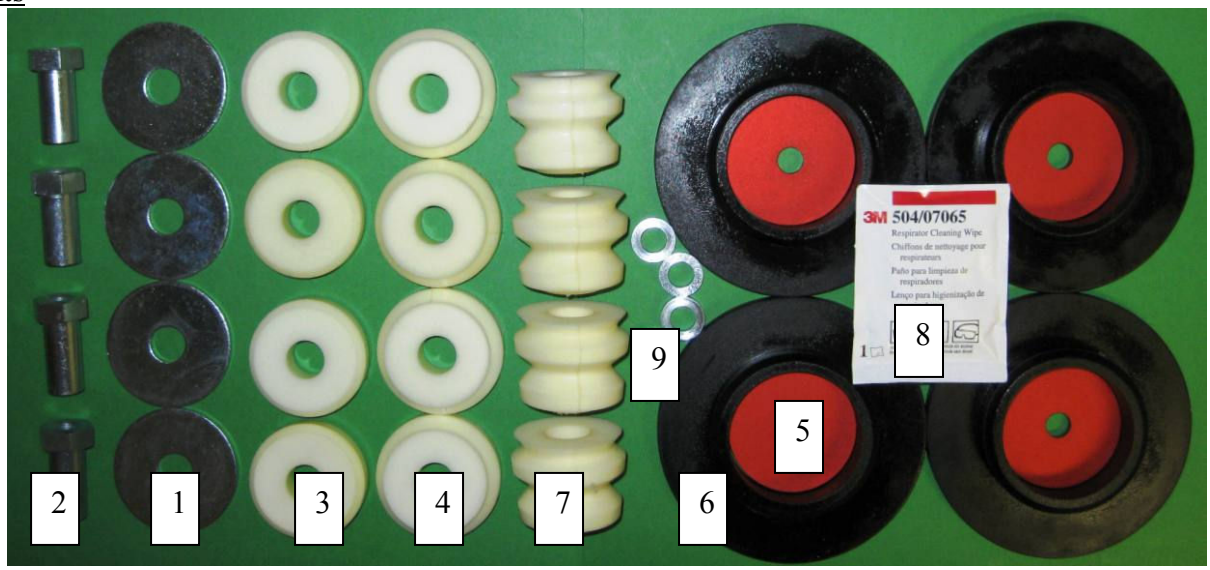
Assembly instructions for FCM-MT-KIT-SM
Need help? Call 408-221-8247

Contents



Item	Qty	P/N	Description
1	4	FCM-WSHR-SST-M14	M14 ID x 37mm OD washer
2	4	FCM-NUT-SHLDR-M10	M10 shoulder nut for Bilstein shocks
3	4	FCM-BUSH-NA-UPR	Upper MCU shock mount bushing
4	4	FCM-BUSH-NA-LWR	Lower MCU shock mount bushing
5	4	FCM-WSHR-AL-M10	Anodized M10 aluminum washer
6	4	FCM-ISOL-40250	Urethane isolator for 2.5” race spring
7	4	FCM-BSTOP-36MM-LG	36mm MCU bump stop
8	1	FCM-WIPE-3M	3M cleaning wipe
9	4	FCM-SPACER-STEEL	Extra spacers for Bilstein shocks

General comments about maintenance/repair work:

It has been our experience (beautifully described by Robert Pirsig, who wrote ‘Zen and the Art of Motorcycle Maintenance’) that when working on any machine or mechanical device, it is best to begin when rested, with sufficient time, light, and energy to complete the job. When in doubt, get help and ask questions. When working on suspensions this is particularly important as it is literally your connection to the road. If you find yourself stressed, tired, hungry, or frustrated please do yourself and us a favor by taking a break or giving us a call to ask a question. Your Miata provides you and your passengers with enjoyment and safety – both deserve the best you can give it during this important work. Two brief, pointed thoughts to ponder (we didn’t coin them, they just fit):

‘Don’t make an important decision on an empty stomach.’
‘Never answer a letter when you’re angry.’

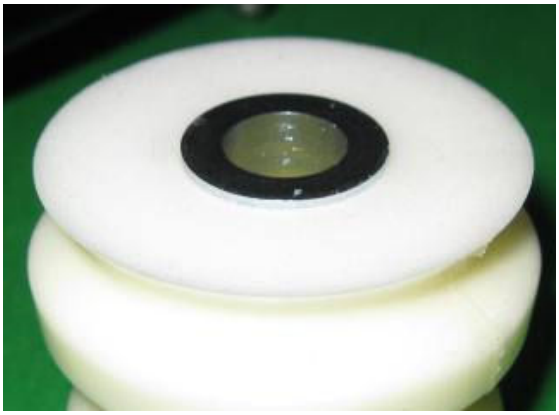
Shaikh J. Ahmad
Revised 3-12-10

Tools/references:
Standard metric socket/ratchet sets, low-profile floor jack (in some cases), (4) jack stands, torque wrench, Gorilla Glue or similar high-strength adhesive. **Impact tools are highly recommended (take care not to let the shock shaft spin however)** though Vise Grips may be substituted during the shock mount assembly sequence, rat tail file or reamer may be needed for step 8. Special thanks to Jay Lutz for helping improve this procedure

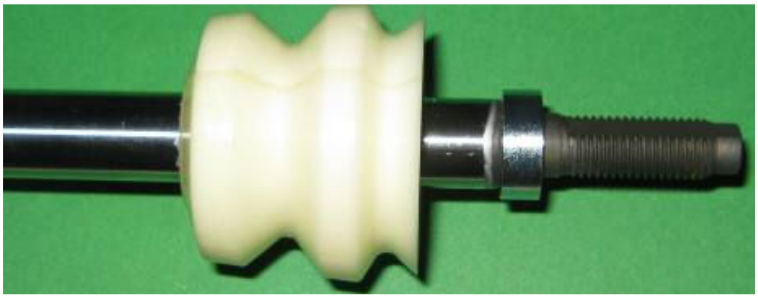
Bump stop orientation

1. All bump stops are placed with the narrower end facing the shock body (see photos below). To facilitate fit of the Bilstein hardened spacer (below), a counterbore has been molded into to bump stop. No modification is allowed or necessary. The spacer will fit flush when inserted fully.

NOTE1: For those converting from the AWR/Mazdaspeed kit (where the Bilstein spacer may have been thrown away), 4 additional spacers are now included in the FCM kit.



2. Place bump stop on shaft (36mm shown) followed by the Bilstein nut.



Upper spring isolators, cupped washer and shock mount assembly

NOTE2: Due to chemical residue from the manufacturing process, we recommend using latex or nitrile gloves when handling the polyurethane isolators.

3. Use Simple Green or similar solvent to remove the mold release compound from the flat surface of the upper spring isolator.

4. We recommend gluing the isolator to the shock mount - Gorilla Glue (available at most auto parts stores) is very effective. This helps re-centering of the 2.5" spring when the car is raised/lowered.

5. Clean the lower part of the shock mount with a damp cloth then leave a trace of moisture on the mount per the Gorilla Glue instructions.

6. Support the inverted shock mount with the spring perch from your coilover sleeve. The mount should be stable. Apply the adhesive in a ring around the isolator then press it into place on the shock mount. Rotate the isolator one revolution to distribute the adhesive.

NOTE3: Be sure the isolator rests between the dowel pins for proper centering then weight the isolator with a 2.5" spring. This centering is important for proper positioning of the lower bushing. The spring's weight will prevent the glue from expanding and pushing the isolator away from the mount. Allow the glue to cure for at least an hour before continuing assembly.

Leave spring on isolator for about an hour until glue cures

Assembling the threaded sleeve/adjustable spring perches

NOTE4: The front shocks are longer than the rear, rear springs are longer than the front.

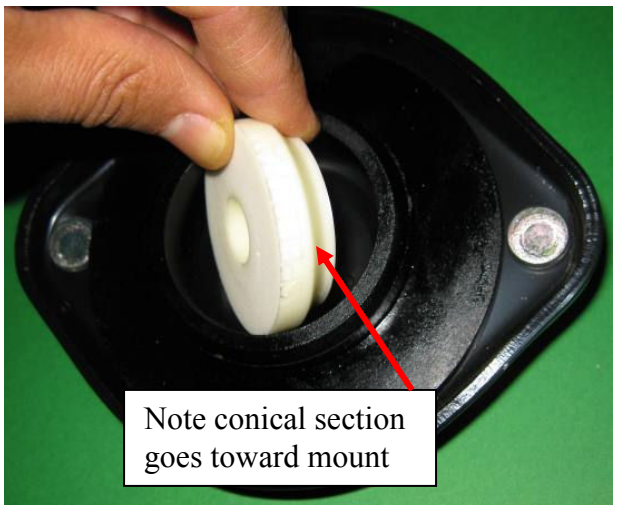
7. (Re-)Assemble the Spec Miata threaded sleeves. We use a dab of anti-seize compound on the set screws/pinch bolt to prevent galling. Slide the sleeve/perch over the shock body, followed by the springs. Rear receives Eibach 0700.250.0325 (7", 325 lb/in rate spring), front receives 0600.250.0700 (6" long, 700 lb/in).

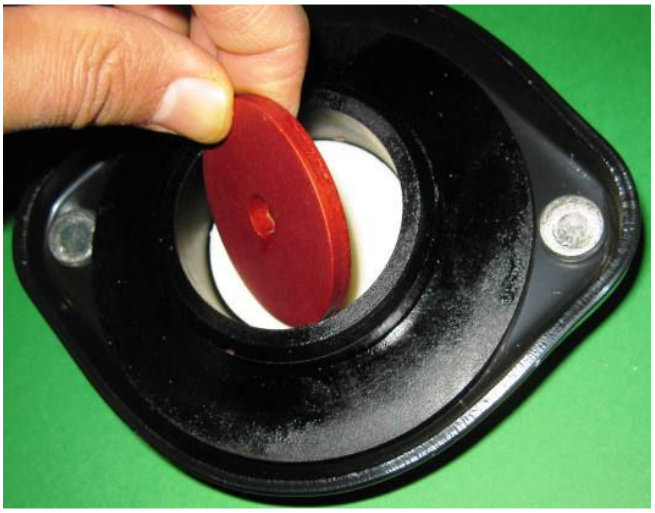
Spring shown is for reference only

Installation of shock mount, bushing centering during tightening

8. Check that the isolators have cured then continue assembly. Place the lower bushing (conical side toward mount) inside the isolator, followed by the red flat washer.

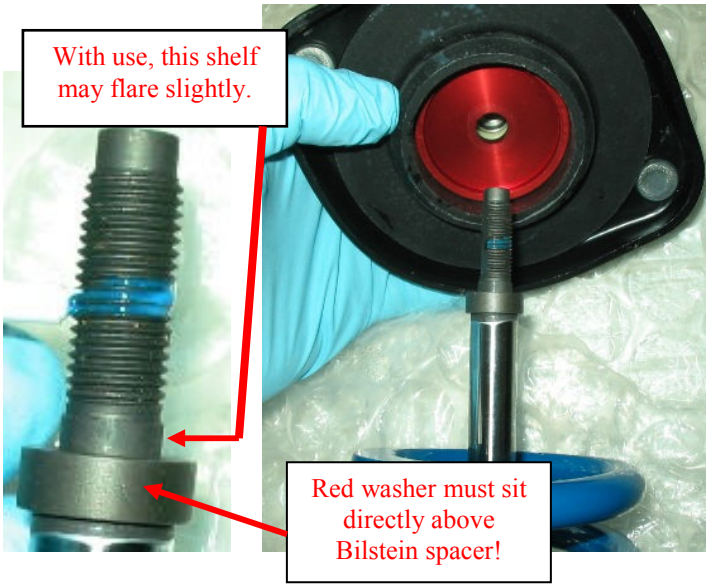
NOTE5: Our red washers fit a new shock perfectly but a previously-used Bilstein can flare the 'shelf' (below the threads) slightly. Mild filing/reaming of our washer may be needed.





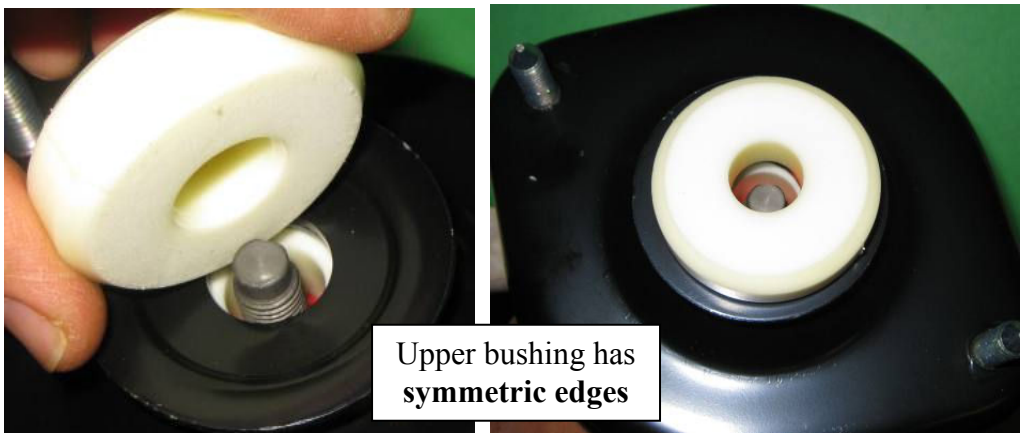
NOTE6: This step is VERY IMPORTANT! Omitting the Loctite 242 will allow the shoulder nut to back off over time, causing improper suspension operation. The threadlocker will cure in about 20 minutes - do not apply until you are ready to torque the mounts.

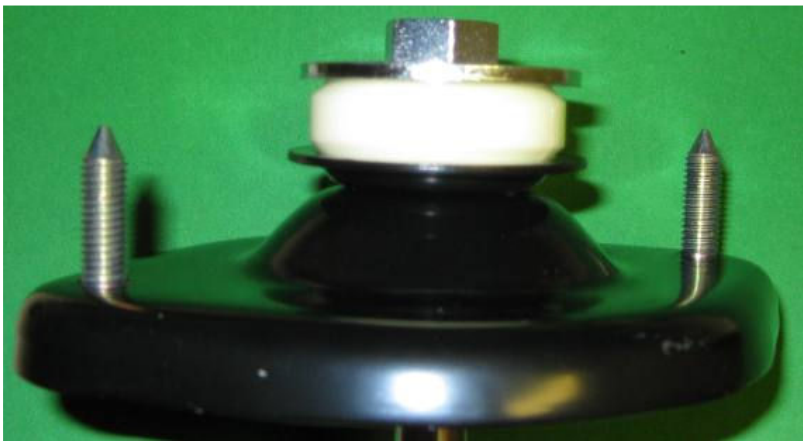
9. Apply Loctite 242 to the middle of the threads. Place the partially-assembled shock mount on the shaft.



NOTE7: The upper bushing is symmetric, there is no preferred orientation in the shock mount.

10. Add the upper bushing, M14 fender washer and M10 custom nut.





NOTE8: The MCU bushings need to be guided into place during tightening. The lower bushing is aided via the lower isolator and red flat washer but the upper bushing may need to be reset by hand during final tightening.

11. Tighten the shock assembly / custom shoulder nut / M14 fender washer

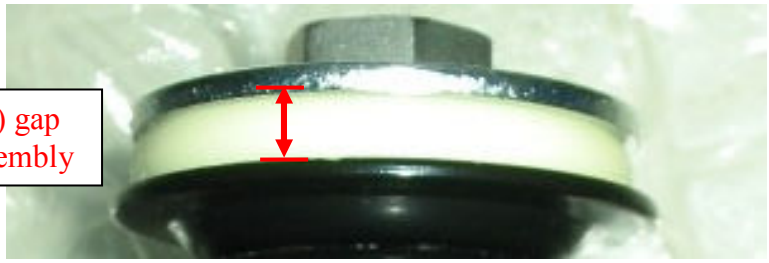
With impact wrench: Lower the adjustable spring perch as far as necessary to get access to the shock shaft. We have found it easy to hold the shaft in a gloved hand and use an impact wrench/19mm socket to secure the custom nut.

No impact wrench: You will need two Vise Grips (set gap to about ¼"), placed 180 degrees apart, to clamp between M14 washer and lip on shock mount. This compresses the bushings so the nut can be spun down and tightened (photo below).

Without an impact wrench, there will be more resistance as the nut turns so you will have to use stronger means to keep the shaft from spinning. A strap wrench works well, as does a mouse pad or other thick, high-friction material held inside pliers, etc. **Whatever your approach, be sure the shaft does not spin as this may damage internal seals**.

Once the upper bushings are centered and tightened, torque the upper nut to approximately 20-25 lb-ft. The goal in tightening is for the shoulder nut to make contact with the red washer, properly loading the MCU bushings to their operating state. The Loctite ensures the nut remains torqued.

Checking for proper installation/torque



12. Ensure the gap is about 1/4" and the bushings are still centered in the shock mount.

NOTE9: The ~¼" (~6.3mm) gap indicates proper torque. These step along with step 11. (use of Loctite 242 or similar threadlocker) are VERY important to proper functioning of the shock mount assembly. Loosen the nut, re-center the bushing(s), and re-tighten as needed.

13. Remember to place the gasket (from your original shock mounts) on the dowel pins of the newly-assembled coilover.

Enjoy your FCM-improved suspension!