

**CONGRATULATIONS ON PURCHASING A  
FAT CAT MOTORSPORTS FCM ELITE COIL-OVER SUSPENSION  
TAILOR-MADE FOR YOUR MIATA!**

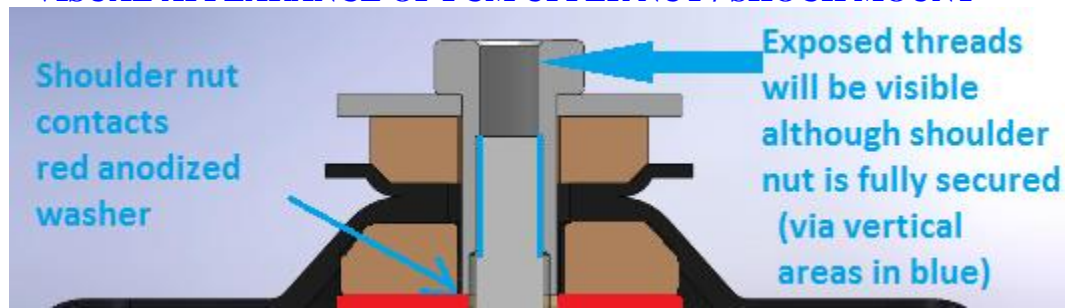
**Installation notes for FCM Elite 1040, 2040 & 3040 coil-overs**

**CAREFUL TIGHTENING OF UPPER SHOCK MOUNT NUTS**

1. All FCM Elite 1990-2005 (NA and NB) Miata coilovers use the 99-05 factory shock mount. The painted steel mount comes with (2) M8 x 1.25 x 1" long studs pressed in, with fastener torque spec of 22-27 lb-ft. We have heard of several cases where customers snap/break the shock mount stud – especially on the rear nuts - which will be an unexpected surprise!
2. The causes can be varied but we now recommend you **DO NOT** attempt to use a torque wrench on the rear. While the cause of stud breakage isn't clear, we believe excess friction / side-loading using a torque wrench in the cramped confines of the trunk may be to blame.
3. For years, we have successfully used a 'hand-tight' torque method with 14mm socket wrench on the two shock mount nuts at each corner. If in doubt, consult an experienced local mechanic or call /text the Elite cell number you were given for assistance.

Miata torque specifications: <http://www.miata.net/garage/torque.html>

**VISUAL APPEARANCE OF FCM UPPER NUT / SHOCK MOUNT**



4. Be assured each upper shock nut of your coil-over assemblies has been fully secured by us and need no further tightening. You can refer to the FCM Shock Mount assembly procedure available on our website if you at some point need to disassemble to change spring rates, etc.

**LABELING / MOUNTING OF SHOCK ASSEMBLIES**

5. Each of the four assemblies is labeled to indicate the proper location for your car – LF, LR, RF, RR - with each label to face outward, toward the wheel. Left refers to Driver's side (referencing US-style left-hand drive). For right-hand drive vehicles, follow same convention – RF means driver's side.



## COIL-OVER INSTALLATION

See Appendix (page 11) of our coil-over assembly procedure:

[http://www.fatcatmotorsports.com/FCM\\_Bilstein\\_2\\_5\\_Coilover\\_w\\_MCU\\_bushings.pdf](http://www.fatcatmotorsports.com/FCM_Bilstein_2_5_Coilover_w_MCU_bushings.pdf)

### TIGHTENING RUBBER OR BONDED POLY-URETHANE SUSPENSION BUSHINGS

**NOTE: If you don't want to have that '4x4' ride height, read these steps!**

6. Applies to some lower shock bushings, rubber sway bar end links with rubber, control arm bolts with rubber, etc. In all cases, anytime you are tightening a fastener that passes through a bushing it needs to be loaded with the car's weight before full torque is applied. Otherwise the bushing will experience more deflection when tightened under suspension droop once it is loaded and can prematurely fatigue/crack/fail. It also usually is the #1 cause of 'my car rides high!'
7. This usually means having the car on ramps, lightly tightening the bushed fastener, bouncing / rolling the suspension back-and-forth then performing a final tightening to torque spec. Some mechanics or service shops may not keep these steps in mind especially if they do all the work on a standard scissor lift so cars end up much higher than expected after install.
8. If you have someone else do the work, be SURE they know to ONLY tighten shock, sway bar or control arm bushings with the car's weight on it. The other method which gets similar results is using a jack stand to compress the suspension (usually from below the ball joint or a secure point on the lower control arm) then torque-tighten the associated bushings such as shock bushing, end links, and control arm bushings in that loaded position.

### SETTING RIDE HEIGHT

9. Before shipment, the adjustable spring perches are positioned along with zip-ties to keep the spring seated during transit. However, you will have to adjust the perches for your car's needs. In most cases, a good starting location to find your ideal ride height is with the front and rear perches about mid-way along the length of the sleeves. Photo below for reference.



*FCM Elite coil-over, typical spring perch location, as shipped.*

**RACING BEAT FRONT SWAY BAR INSTALLATION – SWAY BAR TO CHASSIS  
BUSHING FRICTION**

10. If installing new Racing Beat sway bars, the supplied bushings may need to be cut/ground down about 1/16” (along the flat) to reduce excessive sway bar bind. When removing material, the goal is that the sway bar will rotate under light hand pressure once the sway bar mounting brackets are torqued to spec (~10-12 ft-lb). Watch this video for more information:

<http://www.youtube.com/watch?v=oAJPqksn520>

**SUSPENSION SETTLING, ALIGNMENT, CORNER-WEIGHTING**

11. Once you have ensured all fasteners have been re-torqued and ride heights are appropriate to your needs, go for a ~10 min leisurely test drive. Return and recheck ride heights. Now, we recommend driving a bit more spiritedly for about 30 minutes / miles to both settle the suspension and get a feel for the changes to your Miata. It now has more handling capability than may be safe to fully utilize on public roads, so exercise care.
12. After 100 miles or a few days of driving, we recommend going for a 4 wheel alignment. Specs are normally emailed to you however you can call/text the Elite number you were given.
13. If you have interest in maximizing your vehicle’s responsiveness and grip, we recommend a corner-weighting prior to alignment. This allows for symmetric weight transfer whether going into a left-handed or right-handed turn. Your car will truly want to ‘dance’ and this is another important reason to choose a height-adjustable setup over one with fixed springs.

**ENJOY YOUR NEW FCM ELITE COIL-OVER SUSPENSION! LET US KNOW YOUR IMPRESSIONS VIA**

**-TESTIMONIAL THROUGH OUR WEBSITE**

<http://www.fatcatmotorsports.com/contact.htm>

**OR OUR FACEBOOK PAGE!**

<http://www.facebook.com/fatcatmotorsports>

**OR GIVE US A RING AT THE OFFICE**

**650.839.0290**

**SUPPLEMENTAL: SCHRADER VALVE POSITION ON PRE-12/2013 ELITE COILOVERS**

14. Up to about Dec 2013, FCM Elite setups received Schrader valves. The valves **MUST** be oriented as below to prevent damage: pointing toward the engine (front) or differential (rear).



*Rear shock, Schrader (shown)*



*Rear shock installed, Schrader valve (mostly hidden) toward axle*

**NOTE! DO NOT TAMPER WITH THE SCHRADER VALVE COVER OR ATTEMPT TO ADJUST NITROGEN PRESSURE, OTHERWISE YOUR SHOCKS WILL NOT WORK PROPERLY AND ANY WARRANTY WILL BE VOIDED! REPAIR CHARGES WILL APPLY**

**GENERAL NOTES ON DESIGN PHILOSOPHY, MAINTENANCE, REBUILD SCHEDULE, ETC.**

15. Congratulations for choosing an FCM Elite suspension! You have in your possession a personalized work of art. It is quite likely you've had a personal conversation with Shaikh, founder and owner of Fat Cat Motorsports, Inc. to create just the right Elite setup for what you need. We take pride in this Elite process and creating a long-lasting relationship with you.
16. What started out in the late 90s as a question for the 'perfect suspension' became an obsession on building the most optimized (and fun!) suspensions. If you decide to change from one Miata to another (NA to NB or vice versa), your Elite suspension can likely be transferred – often with no changes if the weights are similar. If weights vary or your use of the car changes, contact us to determine if revalving or spring rate adjustments will benefit you.
17. We do not have a recommended service interval for our FCM Elite 1040 and 2040 setups. The 3040 setups are often used for competition / high-performance purposes. So while all FCM Elite setups are of equal quality, the shock oil (like your engine oil) will start to break down with harder use. A 2 year fluid refresh cycle will benefit a serious 3040 customer looking to win races consistently. Otherwise, we suggest you simply enjoy your unique, tailored FCM Elite setup – intended as a single-purchase, built-for-you, lifetime-use suspension!
18. Dust boots are not required for the majority of applications as the Bilstein HD shocks we start with have a wiper seal (visible under metal or plastic top cap) that keeps grit out of the upper rod guide. However, for year-round use in areas that see snow & road salt, we have Bilstein dust boots we can add to your setup.