

## MM Rear Coil-Over Kit - Bilstein Shocks (MMCO-3)



*Read all instructions before beginning work. Following instructions in the proper sequence will ensure the best and easiest installation.*

*NOTE: If you do not have a MM Panhard Bar you will need a second MM Lower Shock Mount. Please contact our sales staff.*

*Reminder: This installation requires a groove to be machined onto your shocks. See Step 14 for details.*

Thank you for purchasing Maximum Motorsports' ultimate rear coil-over conversion kit. This kit is manufactured specifically for Bilstein and MM mototube shocks. There are many features you will find that set our coil-over kit apart from the rest. Starting at the top:

- We maximize bump travel by providing a Delrin pivot-ball and aluminum socket joint that does not reduce bump travel from that of a stock Mustang. Some of our competitor's coil-over kits reduce bump travel by as much as 1-1/4".
- The Delrin pivot-ball and aluminum pivot socket also provide a smooth fluid motion that does not over-stress the shock shaft.
- Our upper spring perch assembly has been fully engineered for optimum strength, clearance, and bump travel—it is shaped far better than any other.
- The lower spring perch is drilled for easy adjustment with a MM Spanner Wrench if pre-loading the spring is necessary. A set screw ensures that the lower spring perch will never move.
- The two-bolt mounting design of our lower shock mount provides a more rigid attachment to the axle. The higher loads of a coil-over conversion on the

original factory shock mount will distort and bend the bracket on the housing. In extreme cases, the single bolt of the factory shock mount has been known to break.

- While other companies simply anodize their aluminum parts for appearance, we have critical components *hard* anodized for maximum life.
- Suspension loads from the threaded sleeve are fed into a Spirolock ring which provides a large contact area, supporting up to 8,000 lbs.
- Overlooked by other companies, our threaded sleeve assembly is designed to fit the shock snugly. A tight fit keeps the threaded sleeve from rattling on the shock. More importantly, the lower spring perch is kept square to the shock, preventing the spring from arcing and rubbing on the threaded sleeve.

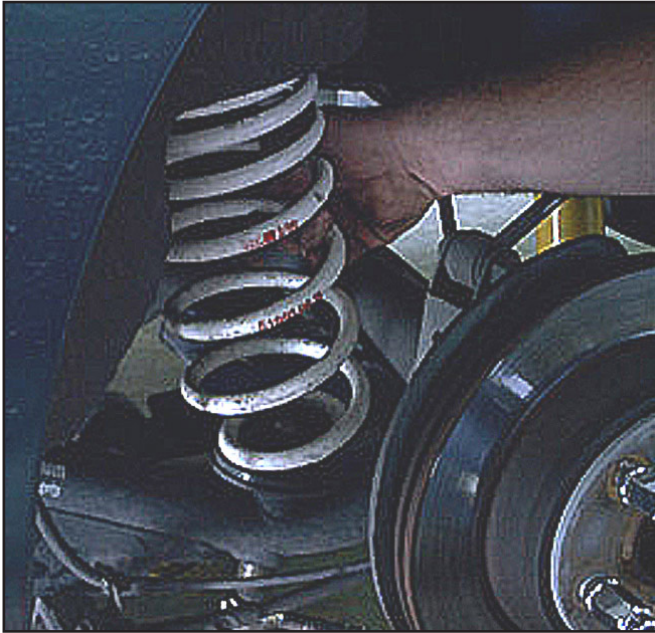
Finishing off the kit, we recommend using only top-quality springs such as Hypercoil and Eibach. We back them with our extensive technical knowledge of rates, free lengths, and proper spring travel, all to ensure that your car will perform to its maximum potential.

1. Measure the rear ride height of the car from the ground to the top of the wheel well opening. Record your reading, it will be needed later.



2. Loosen, but do not remove, the lug nuts on the rear wheels.
3. Block the front wheels and jack up the rear of the car. Once raised, support the rear of the car with jack stands under the subframes or torque boxes. With the shocks just short of full extension, support the axle housing on jack stands.
4. Remove the rear wheels

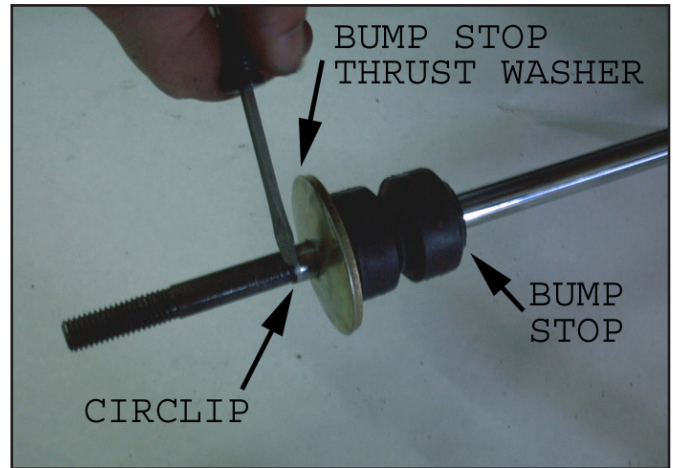
5. Disconnect the rear sway bar from the control arms.
6. Support a rear lower control arm as close to the rear axle as possible with a floor jack. Remove the rear control arm axle pivot bolt and gradually relieve the spring tension by slowly lowering the jack until the spring is completely uncompressed and you can remove the spring by hand. With the spring removed, raise the control arm into place and reinsert the pivot bolt and torque to 111 lb-ft.



7. Repeat Step 6 with the opposite rear control arm.
8. From inside the car, remove the nut, thrust washer and upper rubber isolator from the top of each shock shaft. Save these three components, as they will be reused later in the coil over installation.
 

*NOTE: If you are installing new Bilstein or MM shocks in place of your existing shocks, use the nuts, thrust washers and the isolators provided in the Bilstein hardware kit rather than the components that you removed in Step 8.*
9. Remove the bottom shock bolts from the factory lower shock mounts (or the MM Panhard Bar Axle Mount) and remove the shocks from the car. Save the OEM 12mm lower shock mount bolts and nuts.
10. Remove and discard the lower rubber isolator, lower thrust washers, and dust boot from each shock. Remove the circlip from each shock. Save the circlips; you will need these later.

*NOTE: The easiest way to remove the circlip is to use a flat-blade screwdriver and insert it under the circlip, next to the gap of the circlip. Push in and rotate up and out to work the ring off the shaft.*



11. Remove the bump stop thrust washer, and bump stop from each shock. Discard the bump stop thrust washer. Save the bump stops; you will need these later.
12. In a vise or press, remove the crush sleeve from each shock eyelet. Select a socket that is large enough to accept the crush sleeve into its center. Select a deep socket that is small enough to push out the crush sleeve through the rubber. (*Do NOT* damage the crush sleeves, they will be reused later)



13. Use a similar process to remove the rubber bushings from each shock eyelet. Select a socket that is large enough to accept the rubber bushing into its center, but will still support the steel eye of the lower shock mount. Then select a smaller deep socket that will be able to push the rubber bushing out of the steel eye.

*NOTE: It can help to cut the lip off of one side of the rubber bushing if you have trouble getting the socket to rest on the rim of the eyelet.*

14. If each shock already has a circlip groove machined in the shock body, proceed to Step 15. If not, send the two shocks to Maximum Motorsports for machining of the circlip groove to accept a Spirolock ring. The Spirolock ring provides a seat for the coil-over threaded sleeve. The turn-around for machining the grooves is usually under 7 days, plus shipping time. If you have chosen to do this step through a qualified local machinist or installation shop, call us for the specifications on the groove.

*REMINDER: For Bilstein shocks used with coil-overs, MM only recommends the Bilstein shocks listed for the 1994-04 Mustang model years. The lower shock eyelet on these shocks is seam welded to the shock body, and we have found them to be better suited to the rigors of coil-over use than the friction welded shock eyelets from the 1993-older Bilstein shocks. MM will not groove 1993-older Bilstein shocks. All MM Sport and Race series shocks have the lower eyelet seam welded to the shock body.*

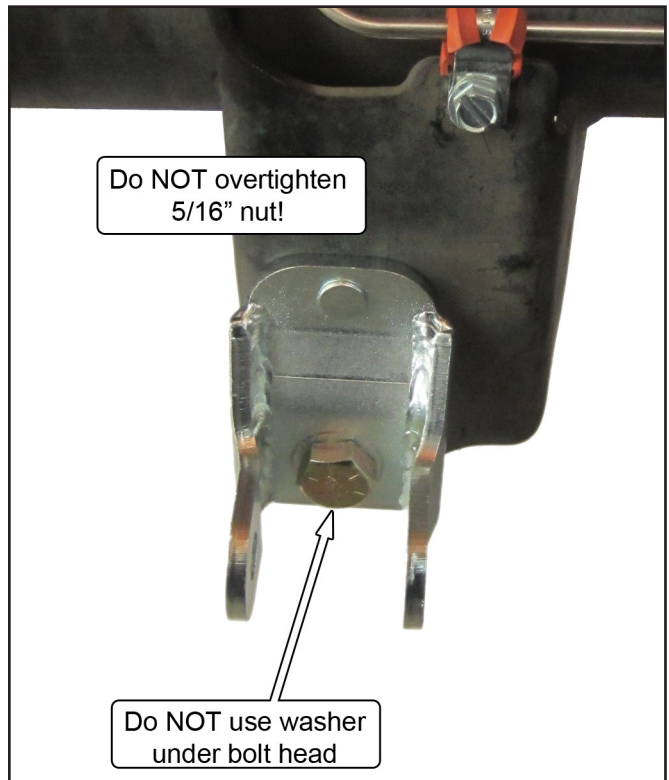
*CAUTION: If your shocks are machined incorrectly, the Bilstein warranty will be VOID. For this reason, we recommend sending your shocks to MM for this procedure.*

*NOTE: While your shocks are being machined, now is a good time to install lightweight control arms that have no spring perches.*

15. Remove and discard the factory lower shock mount from the passenger side of the axle.



16. Install the MM lower shock mount onto the axle: Insert the 1/2" bolt (no washer) through the lower hole, with the bolt head facing the rear of the car. Then place the 1/2" washer onto the bolt and thread on the 1/2" nut. Then place the 5/16" washer onto the 5/16" stud and thread on the 5/16" nut. First torque the 1/2" bolt to 119 lb-ft. Then torque the 5/16" nut to 16 lb-ft. If the car does not have a MM Panhard Bar, you must purchase an additional lower shock mount (MMSM-2) and repeat steps 15 & 16 to install a MM lower shock mount on the driver side.



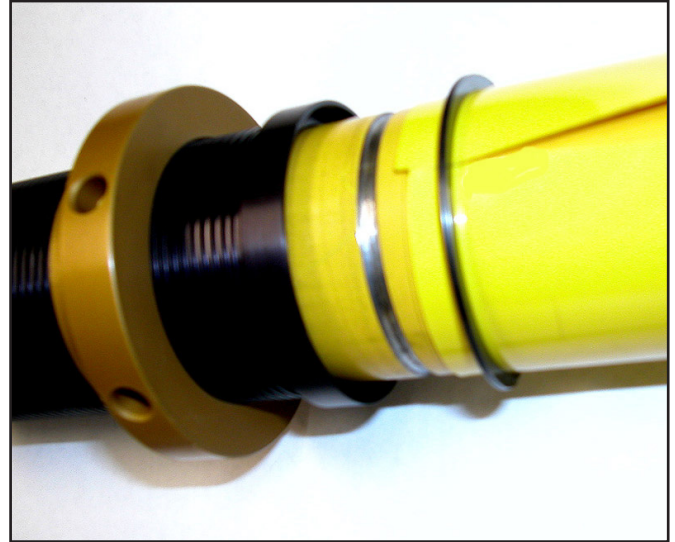
17. After your shocks have been machined, clean, prime, and paint the spirolock groove in each shock. This will prevent corrosion and possible weakening of the shock body.
18. Thread the lower spring perch onto a threaded sleeve.
19. Install the threaded sleeve (non flanged end first) onto the shock body by sliding the sleeve on from the bottom (eyelet) end of the shock. Slide the sleeve up past the machined groove.



20. To install one of the Spirolock rings into the groove of the shock, use the enclosed plastic sheet to expand the Spirolock using the following technique: Holding the shock upside down, wrap the supplied plastic sheet around the shock body with half of the material extending over the shock eyelet in a slight conical shape (like a teepee). Place the Spirolock over the tip of the cone, then slide it down as far as possible without damaging the plastic sheet (you will need to push down pretty hard).



21. Grab the plastic sheet from the bottom with both hands. Slide it and the Spirolock ring over the shock body. Keep pulling until the Spirolock is close to the groove, then pull the plastic sheet out from under the Spirolock ring. Slide the Spirolock to the groove and let it snap into place within the groove.



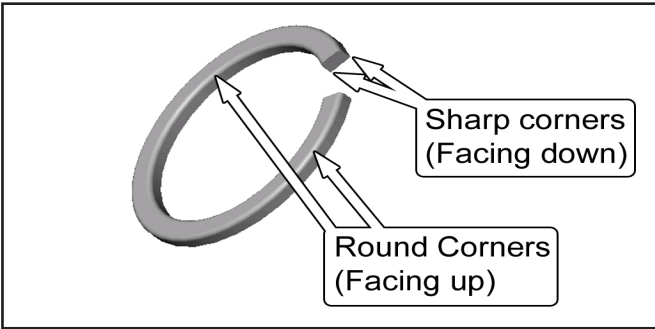
22. Slide the threaded sleeve (placed on the shock body in Step 19) down until it seats on the Spirolock ring.
23. Place the bump stop into position on the shock shaft with the tapered end toward the shock body.
24. Lube two of the MM lower shock mount urethane bushings, inside and out, with the supplied grease. Completely coat the bare metal surfaces inside the shock eyelet with grease. Then, push the greased urethane bushings into the eyelet of the shock.
25. Completely coat the outside of a Bilstein metal crush sleeve (removed in Step 12) with the supplied grease. Insert the crush sleeve into the urethane bushings. To do so, it will be necessary to use a vice or large set of pliers to press in the crush sleeve.



26. Place one of the coil springs onto the lower spring perch. Position the lower spring perch so the top of the spring is well below the top of the step in the shock shaft. This will make the installation of the rest of the parts easier. Place the upper spring perch on the spring.



27. Observe the circlips removed in Step 10. They are a stamping, therefore one side has sharp corners and one side has rounded corners. The side of the circlip with the sharp corners will be installed facing downward toward the spring perch.



28. Orient the circlip with the sharp corners facing down toward the spring perch. Slide the circlip over the top of the shock shaft, past the threaded section, until it reaches the groove above the larger diameter portion of the shaft. The circlip should be tight around the shock shaft. If the circlip is loose on the shock shaft, then it has been damaged. Call Maximum Motorsports for a replacement circlip.



29. Place one of the aluminum pivot sockets on the shock shaft with the cup facing upward. The counterbore on the bottom side of the pivot socket will encapsulate the circlip.



30. Completely coat the inside of the pivot socket with the supplied grease.



31. Place one of the Delrin pivot balls on the shock shaft with the curved side facing down toward the aluminum pivot socket.



You have now completed one coil-over assembly. Repeat Steps 18 through 31 for the second shock.

32. On the passenger side of the car, position the shock shaft of one of the completed coil-over assemblies through the hole in the shock tower.
33. Insert the OEM 12mm lower shock bolt through the lower shock mount and the shocks' metal crush sleeve. Torque to 59 ft-lb.
34. Using a jack, raise the passenger side of the axle to seat the Delrin pivot-ball against the bottom side of the shock tower. Keep the Delrin pivot-ball centered in the mounting hole of the shock tower as the pivot-ball engages the bottom side of the shock tower.
35. From inside the car, on top of the shock tower, place a Bilstein rubber isolator, thrust washer, and nut on top of the shock shaft. Use an Allen wrench to keep the shock shaft from spinning. Tighten the nut until the thrust washer just begins to drag on the rubber isolator, and then tighten the nut by 4 more turns.



36. Raise the lower spring perch until the spring is just contacting the upper and lower spring perches.
37. If your vehicle is equipped with quad shocks, verify that you have sufficient clearance between the outside of the coil over spring and the quad shock piston rod. You may increase the clearance slightly by placing 12mm flat washers between the rear quad shock eye and the frame-mounted stud.

*NOTE: The dust boot on Ford quad shocks will need to be removed. KYB and other brand of quad shocks with metal dust boots will not work with MM coil over kits. Bilstein and Koni quad shocks fit without modification.*



38. Repeat Steps 32 - 37 to install the completed coil-over assembly into the driver side of the car.
39. Reinstall the wheels and torque the lug nuts to factory specs.
40. Remove the jack stands and lower the car.
41. Roll the car back and forth to settle the suspension.
42. Measure the ride height as done in in Step 1. Compare to the dimension recorded in Step 1, and determine if the car needs to be raised or lowered to match that starting ride height. If a different ride height is desired, we suggest first adjusting to match the previous ride height, and then making further adjustments. Support the car on jack stands to get the weight off the springs, and adjust the spring perches. Hold the threaded sleeve with one hand and turn the lower spring perch with your other hand. (up, to raise the car, and down, to lower the car)

*NOTE: If you need to preload the spring, use MM's spanner wrench to help rotate the lower spring perch.*

43. Lower the car and repeat steps 42-43 until the desired ride height is achieved.

44. Once the ride height is correct, use the supplied 5/32" hex key to snug the nylon tipped set screw in the lower spring perch. This will hold the spring perch in position.

NOTE: Do NOT overtighten the setscrew. It only needs to be tight enough to prevent the spring perch from rotating. Overtightening it can damage the perch, the threaded sleeve, and even the shock.

This kit includes the following:

- 2 Threaded sleeves
- 2 Lower spring perches
- 2 Upper spring perches
- 2 Spirolock rings
- 2 Delrin pivot-balls
- 2 Aluminum pivot sockets
- 2 Set screws
- 4 Urethane bushings
- 1 Lower shock mount
- 1 5/32" Hex key
- 1 Plastic sheet
- 1 1/2" x 1-1/4" G8 bolt
- 1 1/2" G8 nut
- 1 5/16" G8 nut
- 1 1/2" G8 washer
- 1 5/16" washer
- 1 Grease Packet

Available for your Rear Coil-over Kit - the **Racing Rear Upper Shock Mount. (Part # MMSM-1).**

These racing duty upper shock mounts use a spherical bearing (just like the MM Caster/Camber plates) to positively locate the upper end of the rear shock. They eliminate the last little bit of potential binding that may come from the rubber still used at the very top of the shock mounting. The machined aluminum block sandwiches the rear shock tower with a doubler plate.

