

MM Racing Rear Upper Shock Mount - Bilstein (MMSM-1)



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

Thank you for purchasing Maximum Motorsports' Racing Upper Shock Mount. This kit is manufactured specifically for Bilstein shocks. There are many features that you will find that make this product unique.

- Eliminates the vertical deflection of any rubber at the top of the shock. This helps the shock perform at it's peak.
- Performs a similar function as a rod end on the end of the shock, but does not reduce precious bump travel trying to fit a rod end under the shock tower.
- A solid aluminum block and steel doubler plate reinforce the shock tower for coil-over applications. May also be used without coil-overs.
- Relocates the shock shaft 3/4" upward relative to the body of the car. This reduces the amount of unnecessary droop in the shock when using stiff rear springs.

NOTE: The installation of the upper shock mount is not easily reversible. Due to the drilled holes, the shock tower will be too weak if the shock is run in stock configuration without welding the holes closed.

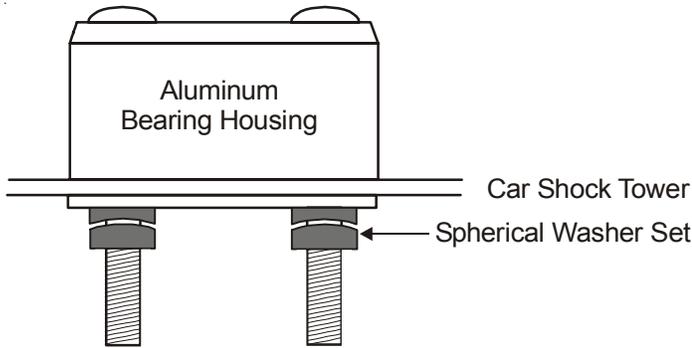
1. Loosen, but do not remove, the lug nuts of the rear wheels.
2. Block the front wheels and jack up the rear of the car. Once raised, support the rear of the car with jack stands under the subframes or torque boxes. With the shocks just short of full extension, support the axle on jack stands.
3. Remove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

4. From inside the car, remove the shock top nut, thrust washer, and shock rubber isolator. Save the shock top nut. Discard the thrust washer and rubber isolator.
5. Remove the bottom shock bolt from the lower shock mount. Save the lower shock bolt and nut. Remove the shock from the car.
6. Check that the hole in the rear shock tower is at least 1" diameter. The size of this hole varies greatly, and it may need to be enlarged. Use a round file or a die grinder for this operation.
7. Set the steel Doubler Plate on top of the rear shock tower. Center the large center hole of the plate over the hole in the chassis where the shock came through. Align the Doubler Plate so it is parallel to the rear inner wheel well housing. You may need to remove seam sealer from the mounting area. The angled corners are positioned towards the center of the car.



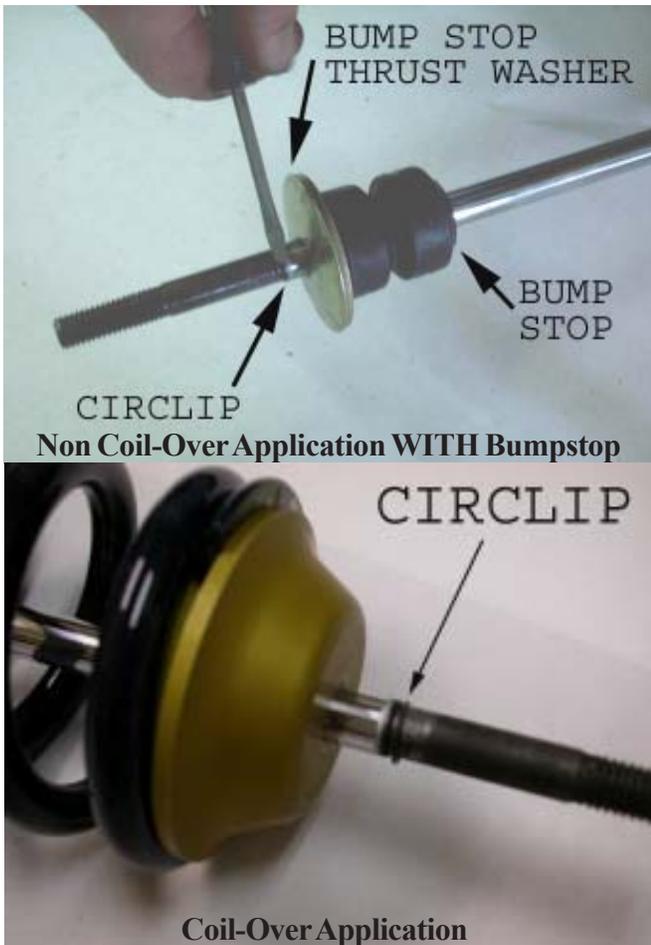
8. Mark the position of the four mounting holes onto the shock tower. Remove the Doubler Plate. Center punch the location of the hole centers. Drill four 1/8" pilot holes. Drill to the final size of 11/32". Deburr the holes.
9. Set the Aluminum Shock Mount into place, with the four mounting bolts protruding down through the four new holes in the shock tower.
10. From underneath the shock tower, place a Doubler Plate over the four mounting bolts, and push it up against the shock tower. The angled corners are positioned towards the center of the car.

- Place a spherical washer set on each bolt--concave sides first (see below), followed by a nylock nut.



- Torque each nylock nut to 19 ft-lb.
- Repeat steps 4-12 to install the bearing housing on the other side of the car.
- On non coil-over cars remove and discard the lower rubber isolators, thrust washers, and the dust boots. On cars with a MM Coil-Over kit, remove and discard the Delrin pivot ball, and aluminum pivot cup.
- 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 screw driver and insert it under the circlip, next to the gap of the circlip. Push in and rotate up and out to work the circlip off the shaft.

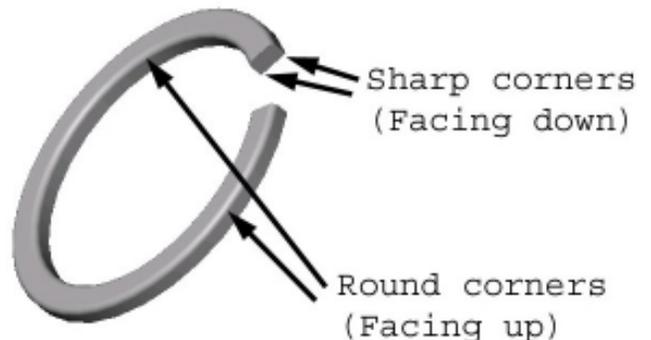


- The Bilstein rear shock for 1994-'04 Mustangs, P/N BE5-6418-H0, has a bumpstop on the shock shaft. It is recommended that 1979-'93 shocks be upgraded with a bumpstop. The soft progressive design of the bumpstop on the shock shaft provides far better performance than the hard rubber block on the frame rail. MM has a kit available to upgrade early model shocks with a bumpstop (MM Service-1). Once the shock has been equipped with a bumpstop, the 1979-'93 hard bumpstop should be removed from the frame rail.

- Place a Thrust Cone onto the shock shaft with the small diameter of the Thrust Cone toward the top of the shock. The large diameter of the Thrust Cone will be resting on either the bumpstop thrust washer or the coil-over upper spring perch. If you choose not to use a bumpstop on the shock shaft in a non coil-over application only, do not use the Thrust Cone.



- Observe the circlips removed in step 15. 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 bottom of the shock.



19. Orient the circlip with the sharp corners facing down toward the bottom of the shock. 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.

20. Place a Shock Shaft Reducer onto the shock shaft. The counterbore on the flanged side of the Shock Shaft Reducer will encapsulate the circlip.



Non Coil-Over Application without bumpstop



Non Coil-Over Application with bumpstop



All Coil-Over Applications

You have now completed one shock assembly. Repeat steps 14-20 for the second shock.

21. On the passenger side of the car, position the shock shaft through the spherical bearing hole in the Aluminum Shock Mount.
22. Insert the OEM 12mm lower shock bolt through the lower shock mount and the shock's metal crush sleeve. Torque to 70 ft-lb.
23. Using a jack, raise the axle to seat the Shock Shaft Reducer in the bottom of the spherical bearing.

24. From inside the car, on top of the spherical bearing, place a Shock Top Spacer over the shock shaft. Thread the Bilstein shock top nut onto the shock shaft. Use an Allen wrench to keep the shock shaft from spinning. Torque the shock top nut to 16 ft-lb.



25. Repeat steps 21-24 to install the completed shock assembly on the other side of the car.
26. Reinstall the wheels and torque the lug nuts to factory specs.
27. Remove the jack stands and lower the car.
28. Test drive and enjoy.

EXTREME RACE-CAR PREPARATION:

This kit maintains the stock amount of bump travel using a bumpstop on the shock. We maintain stock bump travel because of brake line safety issues that occur if bump travel is increased beyond stock without special care. The photo below shows the danger of increasing bump travel without paying attention to brake line clearance!



If you wish to lower your car more than 2" for racing, you will need additional bump travel to avoid excessive bottoming of the suspension. With modifications, the MM Upper Racing Shock mount will allow more bump travel than stock, but first you must re-route the brake lines to avoid potential interference. If you are unsure of your abilities to re-route brake lines, take your car to a professional race preparation shop. Typical brake repair shops will not be able to help you.

1. Remove the coil-over assemblies or shocks and conventional spring from the rear suspension by following steps 1-5 from the previous section.
2. Use a floor jack to slowly compress the rear suspension. As the axle nears full bump, with each pump of the jack carefully inspect brake lines for adequate clearance.
3. 1979-'93 cars need special attention to the single brake hose and the hard metal lines between the differential and the trunk floor. On 1994-'04 cars, pay attention to the brake lines between the axle and frame rail.
4. As you approach full bump travel, you will most likely have to re-bend and re-route the hard metal brake lines. You may have to re-mount some of the frame tabs that support the brake lines. Details of how and where to re-route the lines are impossible for us to describe here because of the extreme variation in race car layout. Fuel cells, fuel lines, exhaust routing, placement of lead ballast and different types of brake calipers are only some of the factors to consider.
5. To check your revised brake line routing, cycle the suspension until the axle hits the trunk floor or frame rails. Cycle the suspension in roll as well. As the axle rolls, the path that the solid axle travels can be quite different than straight bump and droop.

IMPORTANT! Only after the brake lines have been re-routed for adequate clearance, may you modify the MM components to increase bump travel as detailed below.

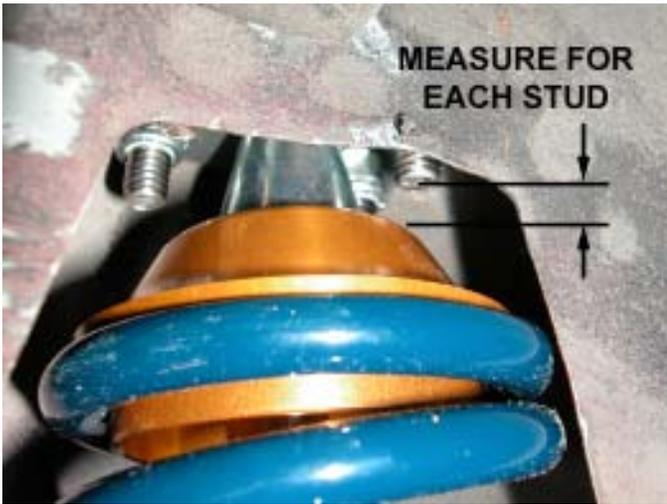
6. Remove the Shock Shaft Reducer, circlip and Thrust Cone from each shock. To remove the circlip, follow the technique detailed in step 15.
7. Remove the bumpstop thrust washer or upper spring perch from each shock shaft.
8. Remove the bumpstop from each shock shaft. The Bilstein bumpstop should be slightly cut down for optimum performance. Mark a line $\frac{3}{8}$ " from the flat (non-tapered) end of each bumpstop.



9. Clamp a bumpstop in a vice and use a hacksaw to cut each bumpstop on the mark.



10. Re-install each shortened bumpstop on a shock shaft with the tapered side facing downward toward the shock body. Re-install the bumpstop thrust washers or upper spring perches.
11. Repeat steps 17 - 25 from the initial installation instructions to re-install the shock assembly into the vehicle.
12. Slide the bumpstop thrust washer or upper spring perch upward until it is contacting the Thrust Cone. The bumpstop on the shock shaft will hold bumpstop thrust washer or Upper Spring Perch in place.
13. Measure the clearance between the top of the bumpstop thrust washer or coil-over spring perch and the four studs that secure the Aluminum Upper Shock Mount. The clearance will be different for each stud. Record the smallest measured distance as D1.



14. If the D1 is .10" or less then you are finished and cannot further modify the Thrust Cone for additional bump travel - skip to step 19. If D1 is greater than .10", proceed.
15. Again, remove the rear shocks from the car following steps 1-5 in the initial installation instructions.
16. Again, remove the Shock Shaft Reducer, circlip and Thrust Cone from each shock.
17. In a lathe, remove D1 - .10" from the overall length of the Thrust Cone. This will allow .10" of clearance to remain between the bump stop thrust washer or upper spring perch and the studs of the Aluminum Shock Mount. Shorten the Thrust Cone on the small diameter end.
18. Repeat steps 17 - 25 from the initial installation instructions to re-install the shock assembly into the vehicle.
19. Repeat steps 26 - 28 from the initial installation instructions to lower your vehicle to the ground.

This kit includes the following:

- 2 Aluminum Shock Mounts
- 2 Doubler Plates
- 8 Spherical washer sets
- 8 5/16" Nylock nuts
- 2 Thrust Cones
- 2 Shock Shaft Reducers
- 2 Shock Top Spacers