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MM Panhard Bar - 1999-04 Mustang Non-IRS (MMPB99A)

Important Note for Customers with Baer Rear Brakes

If you have a Baer *rear* Brake Kit with PBR *rear* calipers on your 1999-2004 Mustang GT, your will need to purchase a set of MMBK-003 Caliper Relocation Brackets. The position of the PBR calipers, as placed by the original Baer mounting brackets, interferes with the MM Panhard Bar Axle Mount. These MM relocation brackets move the rear Baer Racing PBR calipers to a position that clears the axle mount. Relocating the calipers will not affect brake performance. *Not for stock calipers.*

Congratulations on purchasing the Maximum Motorsports' Panhard Bar. The MM Panhard Bar is designed to help maximize the performance of your Mustang's rear suspension. You will find many features that set our Panhard Bar apart from the rest.

Clears factory and some aftermarket tailpipes.
37.5" long rod to minimize lateral axle movement due to vertical motion.
Large ¾" Teflon lined rod-ends mounted in double shear at both ends.
Adjustable rod allows axle centering.
Slots on the chassis mount allow vertical. adjustment to keep the Panhard rod level at different ride heights.
Strong enough to allow removal of both upper control arms when a torque arm is installed.
Mounts to the rear subframe, not the flimsy floor pan or spare tire well.
Compatible with the T/A differential cover.

Exhaust Clearance

The MM Panhard Bar is designed to clear the original factory exhaust. Dynomax tailpipes and Flowmaster tailpipes made after the year 2000 follow the factory routing and usually fit with no modifications. Aftermarket tailpipes may have an interference problem if they do not follow the original Ford exhaust routing. Interference may be caused by the design of the tailpipes or by the particular installation of the tailpipes.

Usually, any interference is the result of the tailpipes dropping down too closely to the back side of the rear-axle after they've gone over the axle. Sometimes this can be fixed by cutting the tailpipe at the muffler exit and rotating the tailpipe slightly. In other cases, the solution is to cut the tailpipe at the very top of the upside-down 'U' where it goes over the rear-axle and splice in a short piece of tubing. That will move the tailpipe away from the back side of the axle and towards the rear of the car. Check for clearance to the fuel tank. You will need to reposition the rear exhaust hanger and may need to trim the end of the tailpipe.

Rear Control Arm Bushings

Do not use hard, one piece urethane bushings in any of the rear control arms. Because the control arms move in three dimensions, binding will be induced as the rear suspension moves--with or without a Panhard bar. While polyurethane bushings may increase performance up to a point, once that point is reached the binding of the rear suspension will cause unpredictable performance. The effects may not be evident in a drag-only car, but if you plan on using the car on the street or for road racing, we do not recommend using urethane in the rear control arms, unless it is of the three-piece variety.

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

1. Check the centering of the axle under the body. You can easily check by measuring the distance between the tire sidewall and the upper edge of the rear wheel-well opening. Record the dimensions for each side of the car. They will be needed later. Do not be surprised if the distance is different on each side of the car.

2. Raise the front end of the car by jacking under the center of the K-member. Support it in one of two ways:

   a) With jack stands positioned under the K-Member

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right behind the forward front control arm pivot, as indicated by the “X” in the pictures below.

b) Place the front tires on automotive ramps. Make sure the front wheels are prevented from rolling.

3. Raise the rear by jacking under the differential. Place two jackstands, one on each side, under the torque boxes or rearward end of the subframe connectors.

4. Adjust the jackstand heights until the rocker panels are level, parallel to the ground. *The car must be level before proceeding.*

5. Lower the rear axle until the rear shocks top-out and the rear axle is hanging in the air. Pump the jack back up slightly, raising the rear axle and unloading the weight from the shocks. Place two jack stands under the rear axle tubes, one near each end of the axle.

   Note: The car should now be completely in the air, supported at ***six*** points.

6. Remove the rear wheels.

7. Disconnect the rear shocks from the axle and remove them from the car. *Make sure the rear axle is not lowered while the shocks are removed; damage to the rear brake line can occur.*

8. Remove the driver side shock mount bracket from the rear-axle housing.

9. Place a jack under the driver side rear lower control arm and apply slight upward pressure to the control arm to oppose the downward force of the spring.

10. Remove the driver side lower control arm pivot bolt from the axle housing.

11. Mark the orientation of the spring relative to the control arm. This will make it easy to maintain the same orientation of the spring’s lower pigtail end when the spring is re-installed.

12. Carefully lower the control arm and remove the spring.

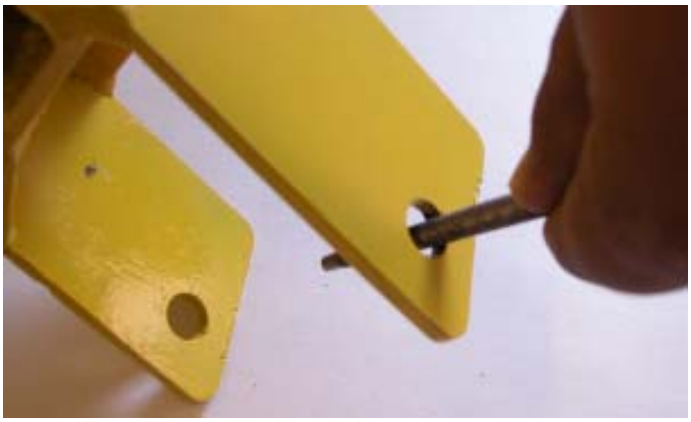
13. Raise up the control arm and reposition it back in the axle housing.

14. On the driver side, position the Panhard Bar Axle Mount around the axle’s lower control arm mount. Install the 1/2" X 1-1/4" G8 bolt in place of the original shock-mounting bracket stud with a G8 washer and nylock on the backside. *Do not put a washer under the bolt head; interference with the shock will occur.* Rotate the Panhard Bar Axle Mount around the 1/2” bolt to equalize the vertical alignment of the control arm bolt holes on the inboard and outboard sides of the Panhard Bar Axle Bracket. Torque the 1/2” bolt to 119 ft-lb.

15. Check the vertical alignment between the control arm bolt holes of the Panhard Bar Axle Mount and the control arm bolt holes in the axle’s lower control arm mount. If the holes are vertically misaligned by less than 1/8”, proceed to step 13. If the holes are vertically misaligned by more than 1/8”, the shock mount area on the axle housing is bent. This type of damage is most frequently caused by other companies’ rear coil-over kits that do not provide a proper lower shock mount. The shock mount area may be straightened by removing the Panhard Bar Axle Mount and bending the

area with a very large pair of Channel Lock pliers, or a pipe wrench. Use some strips of aluminum or wood to protect the metal of the shock mount area.

16. Next, check the fore/aft alignment between the control arm bolt holes in the Panhard Bar Axle Mount and the control arm bolt holes in the axle's lower control arm mount. Due to Ford's large production tolerances, it is sometimes necessary to elongate the Panhard Bar Axle Mount hole fore/aft with a file to allow the pivot bolt to pass through. *Do not enlarge the hole in the rear lower control arm axle bracket*. Remove just enough material from the Axle Mount so the 14mm bolt passes through the holes with a "snug" fit. *Do not excessively enlarge the holes.*



17. If the Panhard Bar Axle Mount was removed, re-install it and retorque the 1/2" X 1-1/4" G8 bolt to 119 ft-lb.

    NOTE: This bolt must be torqued *before* proceeding with the following steps.

18. Install the provided M14 X 120mm pivot bolt (with one washer under the head and another washer under the nut) through the Panhard Bar Axle Mount, the axle's lower control arm mount and control arm bushing crush sleeve. Insert the bolt from the inboard side of the mounting bracket. Snug by hand, but do not fully torque.

    If the control arm bushing crush sleeve shifts out of alignment with the holes in the axle's mount, try the following: Insert a punch, screwdriver, or similar object through the pivot hole in the axle housing (from the outboard side) and into the bushing crush sleeve. Pry the inboard side of the bushing crush sleeve into alignment with the axle pivot hole. From the inboard side, insert the new pivot bolt. Withdraw the punch and push the bolt all the way through.

19. Remove the jack from below the control arm.

20. Place a jack under the passenger side rear lower control arm and apply slight upward pressure to the control arm to oppose the downward force of the spring.

22. Remove the passenger side lower control arm pivot bolt from the axle housing.

23. Mark the orientation of the spring relative to the control arm.

24. Carefully lower the control arm and remove the spring.

25. Raise up the control arm and reposition it back in the axle housing.

26. Reinsert the lower control arm pivot bolt and nut and tighten by hand.

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27. Raise the rear axle until the control arms are parallel with the ground.

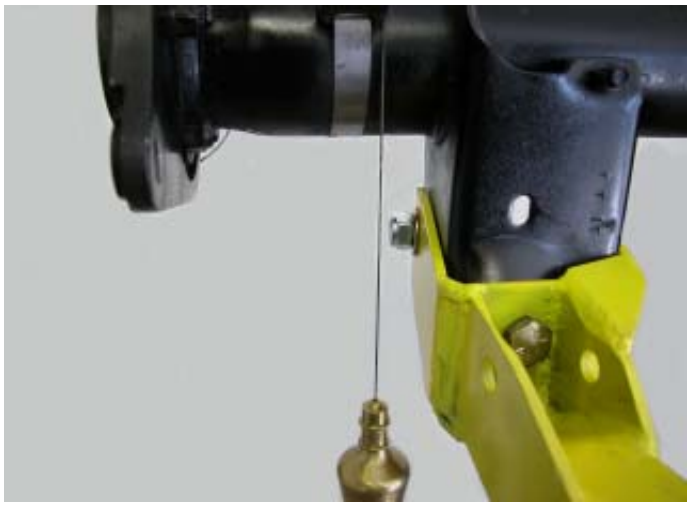
28. Adjust the jack stands to the new height of the axle and remove the jack from the rear axle.

    NOTE: Make sure the jack stands are positioned at the same height and that the axle is parallel to the ground.

29. Recheck that the control arms are parallel to the ground before proceeding. One easy wasy to check this is to measure the distance from the ground up to each of the pivot bolts of the rear lower control arms. The front and rear pivot bolts will be the same distance from the ground when the control arms are parallel to the ground.

30. Hang a plumb-bob (or a string with a weight) off the rearward edge of the axle tube, outboard of the driver side lower control arm axle mount. Measure and record the distance, D2, from the plumb-bob string to the inner face of the forward rod end mount of the Axle Mount.

    NOTE: Make sure the plumb-bob string is resting on the axle housing and not on the brake line.



31. Hold the Chassis Mount up against the rear subframe rails. The axle will need to be temporarily lowered in order to place the Chassis Mount into position. Be careful not to lower the axle too far, as the rear brake hose will be damaged. It is very important that the Chassis Mount be pushed upwards so that the U-brackets are in full contact with the bottom of the frame rails. If the chassis mount is not in full contact with the bottom of the frame rails, the chassis mount will not be positioned correctly, causing possible clearance problems. For example, if the Chassis Mount rocks forward at the frame rail, leaving a gap to the frame rail at the rear of the U-bracket, there may be interference with an MM rear swaybar. If the Chassis Mount rocks rearward at the top, leaving a gap to the frame rail at the front of the U-bracket, there may be interference with the exhaust.

    NOTE: On some vehicles the bottom of the frame rails may not lie in the same plane. As a result, the MM Chassis Mount will not sit flat on both frame rails as required in the above step. If this applies to your vehicle, we recommmend keeping the passenger side U-bracket flat on the frame rail, and allow the driver side to be slightly angled relative to the bottom of the frame rail.

    TIP: Have a friend help position the Chassis Mount while performing the measurements in the following step. If you cannot find a helper, use a pair of C-clamps to secure the U-brackets to the frame rails.

32. With the rear axle back in the proper position (with the rear lower control arms parallel to the ground as in step 29), hang the plumb-bob off the rearward edge of the axle tube, inboard of the passenger side lower control arm axle mount.

    NOTE: Make sure that the plumb-bob string is resting on the axle housing and not on the brake line.

33. Measure and record the distance, D3, from the plumb-bob string to the inner face of the forward rod end mount of the Chassis Mount. Position the Chassis Mount so that D3 is 0” to 1/4” greater than distance D2.

NOTE: While the MM Panhard Bar was designed to clear a T/A cover, excessively long TA preload studs or an incorrect installation of the Chassis Mount can result in interference. *If you have a T/A cover, double check the clearance between the Chassis Mount and T/A cover preload studs* ***before*** *drilling the Frame Insert holes.* This might require jacking up the rear axle to full bump.

TIP: To temporarily hold the Chassis Mount in position for the following step, drill a small hole through the outer flange of the Chassis Mount U-Bracket and the outside wall of the frame rail. Insert a small sheet metal screw into the hole and tighten. Use one screw on each side of the car.

If you want to weld the Chassis Mount in place, we suggest that you first complete bolting it into place. Test drive the car to ensure everything is located properly.Then, you can secure the mount with just a few small welds, located so they could be easily ground off if you ever need to remove the Chassis Mount. We suggest this course of action because we have had calls from people who have welded the chassis-mount into place at the wrong location.

34. Double check to be sure the Chassis Mount U-brackets are in full contact with the bottom of the frame rails. Mark the position of the four pre-drilled holes in the U-brackets onto the frame rails.

35. Lower the axle slightly to ease further installation steps. Be careful to not lower the axle too far, as the rear brake hose will be damaged.

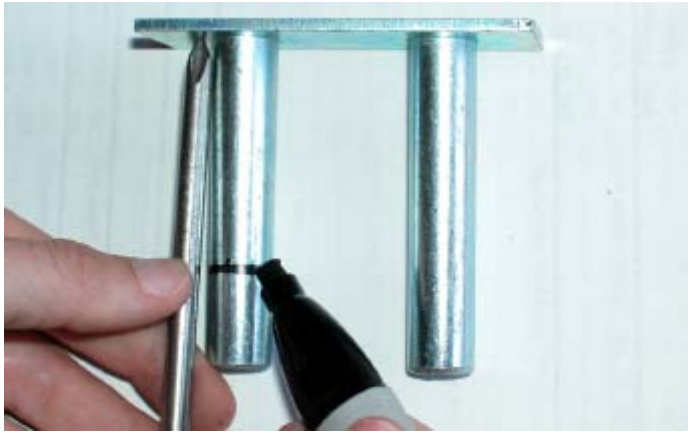
36. Remove the Chassis Mount. Center-punch and drill 1/8" pilot holes *only* through the *outside of the frame rails.*

37. Drill **only the outside of the frame rails** to 5/8". Suggestion: Drill in stages, such as 3/8", 1/2", then to 5/8".

NOTE: To avoid frustration, use very sharp (or new) drill bits and keep them cool with WD-40 while drilling. Remember, you are drilling through the *outside* of the frame rails *only*.

38. The Frame Insert Tubes must be cut to the proper length. Determine the length for **each** tube by inserting a dial caliper or screwdriver through each 5/8" hole until it bottoms against the inner side of the frame rail. Occasionally Ford places pieces of extra sheet metal inside the frame rail. If the Frame Insert will partially contact one of these pieces of sheetmetal, be sure to measure the more shallow depth for proper fitment of the Frame Inserts. Carefully record the depth with the dial caliper or by marking the screwdriver (from the **outside** edge of the frame rail).

39. Transfer each measurement to the appropriate tube and cut the tube 1/16" to 1/10" shorter than your mark. That gives a slight "crush" to the frame rail when the bolts are run down and ensures the mount will be tight when installed. Be sure to label each insert for the right and left side of the car, and which end is toward the front or rear. Do not be surprised if every tube is cut to a different length.



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40. Install the inserts into the frame rail. Be sure to install them as you marked them initially; right and left, fore and aft ends.

41. Clamp the insert in place. If you don't have C-clamps, you can drill a hole in the middle of the insert and temporarily hold it in place (while drilling) with a sheetmetal screw into the frame rail.

42. Using a 3/8" drill bit, you can now pass the drill bit through the frame insert tubes and drill holes through the inner side of the frame.

43. After drilling the first hole, place a bolt all the way through the insert and the inner side of the frame rail to ensure the insert stays in proper alignment while you drill the second hole. Repeat for the other side.

44. Remove the bolts and deburr the holes. Again, place the Chassis Mount up into position, this time with the frame inserts in place. Place a bolt through each of the predrilled holes in the U-bracket and on through the frame inserts and the holes you've just drilled through the inner side of the frame rail. The bolts will now bottom out against the undrilled inner flange of the U-bracket.

    Suggestion: C-clamp the U-brackets in place or have a helper securely hold the chassis-mount.

45. Remove one of the four bolts.

46. Pass the 3/8" drill bit through the holes in the outer flange of the U-bracket, through the frame insert tube, and drill through the inner flange of the Chassis Mount's U-bracket.

47. Deburr the hole and blow out all of the shavings from between the U-bracket and frame rail. Reinstall the bolt with washers and nylock nut. Lightly tighten the bolt/nut, but do not completely torque it down yet.

48. Proceed in the same manner with drilling the other three holes, by removing one bolt at a time, drilling the hole, and then reinstalling the bolt. Drilling the holes in this manner will keep everything in proper alignment.

49. Due to Ford's production tolerances, the width of each rear frame rail may vary. If your frame rails are much narrower than the U-bracket, use the provided spacer plates between the frame rail and the flange of the U-bracket. This will reduce how far the U-brackets have to pinch inward when tightening the bolts. The spacer plates may also be required on the inboard sides of the frame rails.

50. After all the holes are drilled, and you have positioned any needed spacer plates, torque the G8 3/8" bolts to 47 foot-pounds. The exclusive MM Frame Inserts allow you to firmly tighten the bolts without collapsing the frame rails.

51. Reinstall the driver side spring by removing the pivot bolt and lowering the control arm. Place the spring on the control arm spring perch using the mark previously made in step 11 to correctly orient the spring.

52. Use a jack to raise the control arm into position and reinstall the pivot bolt and nut. Refer to step 18 if the control arm bushing crush sleeve shifts out of alignment.

53. Repeat steps 51 and 52 to install the passenger side spring.

54. Reinstall the rear shocks using the factory mounting bolts and nuts. Torque the lower bolts to 60 lb-ft.

55. If the control arms do not use the stock rubber bushings, torque the pivot bolts to 111 lb-ft. If stock rubber bushings are used, the bolts will be torqued later. To avoid preloading the rubber bushings, the bolts must be torqued with the rear suspension loaded at the car's normal ride height.

56. Reinstall the rear wheels.

57. Lower car to the ground. Torque the wheel lugs.

58. Torque the lower control arm pivot bolt to 111 lb-ft if you have rubber control arm bushings and were not able to do so previously.

59. Drive the car around the block to settle the suspension before installing the Panhard Rod.

60. Install the Panhard Rod with the car sitting at normal ride height. If you elevate the car, it is easiest to put all four wheels on four automotive ramps of the same height. If the car will be elevated using jackstands, support the front of the car as shown in step 2 and set the rear axle on jackstands. The rear suspension must be loaded. Adjust the jackstand heights until the rocker panels are level to the ground. *Again, the car must be level before proceeding.* Attach one rod end to the axle mount using the shorter 5/8" bolt and three 5/8" washers. One washer is positioned on each side of the rod end (inside the axle-mount bracket) and the third washer underneath the head of the bolt.

NOTE: Make sure both rod ends are screwed into the rod to the same depth before adjusting the rod to length.

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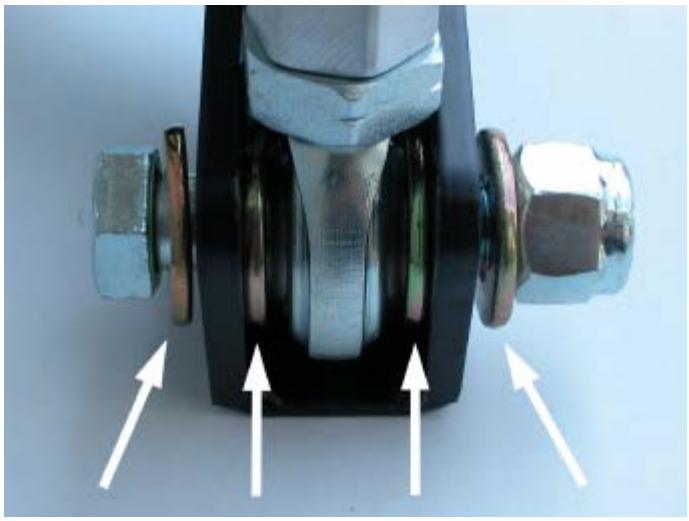
61. Adjust the length by first holding the unattached rod end so it does not turn, then twist the rod. When the assembly is the correct length, the longer 5/8" bolt will easily pass through the Chassis Mount bracket's two slots and the rod end.

62. Install the Chassis Mount end 5/8" bolt . Use four washers, one on each side of the rod end (inside the mounting bracket), and the other two outside the bracket, one on each side.



63. Adjust the height of the rod end in the slot so the rod is as level as possible (parallel to the ground). Note that the ride height of the car, and therefore how level the rod is, will change with the addition of the driver, fuel load, and passengers. Some compromise is required. We suggest adjusting the height with the driver in the car and at least half a tank of fuel.

64. After the length and height are adjusted, torque the two 5/8" bolts/nuts to 115 ft-lbs.

65. Tighten the jam nuts on the rod ends while you hold the rod by the machined flats. Make sure the rod ends are in line with each other. If they are not, the rod will have its ability to "twist" restricted, which could lead to binding as the suspension moves.

Correct- The rod ends are aligned.

Incorrect- The rod ends are not aligned

66. Check to ensure that the rear-axle housing is centered beneath the body with the same dimensions recorded in step 1. If the dimensions on each side of the car are not the same as in step 1, move the axle by adjusting the length of the Panhard Rod. Again, do not be surprised if the dimensions on each side of the car are different. The body of the Mustang is rarely square to the suspension pickup points. If you notice a difference of more than 1/2" side to side, you should inspect your control arm bushings or chassis pickup points for damage.

67. When installing a Torque-arm, it is more accurate to center the axle to the suspension pick-up points. Wrap a plumb bob line around the rear lower control arm chassis mounting bolt. This bolt can be accessed through the hole in the torque box just in front of the rear tire. The line should be over the threads of the bolt, all the way against the nut face. Make sure that the line hangs down from the bolt without touching any bodywork. If it does touch the chassis, bend the interfering metal out of the way.

68. Hold a straight edge against either the inside or outside edge of the tire. Make sure you are not resting the straight-edge on any raised tire lettering, or in the seam of the tire. The seam of the tire is evident as a small depression in the sidewall, and can be felt by hand. Use another straight-edge and measure from the plumb bob string to the straight-edge on the tire. Move the axle side to side by adjusting the length of the panhard rod until this dimension is within 1/16” on each side of the car.

69. Test drive and enjoy! Re-torque all bolts and nuts after 1000 miles.

This kit contains the following:

1	Axle mount
1	Chassis Mount
1	Rod, aluminum
1	¾” Right rod end with 5/8" reducer bushing
1	¾” Left rod end with 5/8" reducer bushing
1	¾” Right jam nut
1	¾” Left jam nut

Hardware Kit:

4	Hexbolt 3/8"-16 x 3 ¼” G8
4	Nylock Nut 3/8"-16 G8
8	Washer 3/8" G8
1	Hexbolt 1/2" – 13 x 1-1/4" G8
2	Washer 9/16” G8
1	Washer 1/2" G8
1	Nylock nuts 1/2" – 13 G8
1	Hexbolt 14mm x 2.00 x 120mm (tapered end)
1	Nylock nut 14mm x 2.00
1	Hexbolt 5/8" – 11 x 2 1/4" G5
7	Washer 5/8" G8
1	Hexbolt 5/8" - 11 x 2 3/4” G5
1	Nylock nut 5/8" – 11
2	Frame Inserts
4	Spacer plates

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