
MM Steering Shaft (MMST-11 & 12)

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

Improving Performance Over the Stock Steering Shaft

The stock Mustang steering shaft has a rubber rag joint that flexes, giving the steering wheel a vague and imprecise feeling. On many cars it causes enough play that the steering wheel can be moved an uncomfortable amount before causing the tires to change direction. Replacing the rubber rag-joint with a race-quality needle-bearing U-joint sharpens steering response. The car will respond much more quickly to the driver's steering inputs.

The Problems of Aftermarket Steering Shafts

Other aftermarket steering shaft assemblies have their U-joints secured to the steering shaft with small setscrews. These setscrews protrude out from the U-joints. It is not unusual for the end of a setscrew to hit a tube of an aftermarket header.

MM has long recommended the aftermarket steering shaft assemblies because they improve the car's steering response. We have suffered through not only the problem of setscrews hitting the header tube, but also the continued loosening of those setscrews, which causes very sloppy and unsafe steering. Even when a thread-locking compound is used, the heat from the exhaust will cook it out, and the setscrews will eventually loosen. This is simply the wrong place to use setscrews. We have endured the drawbacks of aftermarket steering shaft assemblies in order to enjoy the sharper steering response they provide.

MM's New Design

The MM Engineering Team designed a new steering shaft that does not use setscrews. That's right, *no setscrews!* Instead, we secure the U-joints by welding them to the shafts. We attach the steering shaft assembly to the steering rack with a pinch-bolt,

just like Ford did with the stock steering shaft assembly. An added bonus with the MM Steering Shaft is the addition of a telescoping center portion to the assembly. This collapsible section eases installation, improves fitment with aftermarket k-members, and improves safety in the event of an accident.

Note: Rack Centering

For high performance driving it is important that the steering rack be centered. "Centered" means that the rack has equal amounts of travel in both directions. The rack is automatically centered with the stock steering components: *If* the toe has been correctly set. If the steering wheel is not centered when the car is driven in a straight line (on a flat, uncrowned road surface) then the rack is not centered. It is possible to have the correct toe setting, and still have the rack un-centered. Another symptom of an un-centered rack is a difference in the amount of turns of the steering wheel required to turn to full lock in each direction (assuming the amount of steering lock is limited by the steering rack, and not by the tires hitting something).

Besides causing the minimum turning radius to be different in each direction, an un-centered steering rack will also cause the bumpsteer to be different from side to side, which will cause asymmetrical handling characteristics.

The stock steering shaft has a feature that forces the steering shaft into the correct orientation when it is attached to the steering rack. The shaft cannot be attached to the rack in an incorrect orientation. Aftermarket steering shafts do not have this feature, so care must be taken to ensure that the shaft is correctly positioned on the steering rack input shaft. When installing the MM Steering Shaft on a car that previously had a stock steering shaft, start the installation by making sure that the steering wheel is centered. When the installation is completed, the steering wheel should still be in the same orientation: centered. If it is not, then the splined attachment between the lower U-joint and the steering rack input shaft is not clocked correctly. The shaft will need to be disconnected at the rack, and rotated to the correct clocking position.

When installing the MM Steering Shaft on a car that previously had another aftermarket steering shaft, start by making sure that the steering rack is centered. The easiest way to do this is to jack up the front of the car and place it on stands. Remove the front wheels to ensure that they are not the limiting factor. Rotate the steering wheel from its center position to full lock in each direction. The number of turns of the steering wheel should be equal, in both directions. If not, center the rack position by rotating the steering wheel the appropriate amount from its apparent centered position, so that the number of turns to full lock is the same in each direction. The steering wheel will then appear to be un-centered, even though the rack is centered. When attaching the MM Steering Shaft to the steering rack (step 12) make sure that the steering wheel is centered.

After re-centering the steering rack, we recommend that the toe setting be adjusted upon completion of the steering shaft installation. With the rack properly centered, and the toe correctly adjusted, the steering wheel will be centered when driving in a straight line (on a flat, uncrowned road surface). The steering wheel will also have the same number of turns to full lock, in each direction.

1. Raise the front of the car and place it safely on jackstands.
2. Remove the bolt and nut that attaches the steering shaft to the steering column. The steering shaft connects the steering rack to the steering column. The steering column is connected to the steering wheel, and protrudes through the firewall into the engine compartment. The attachment bolt is located close to the firewall.

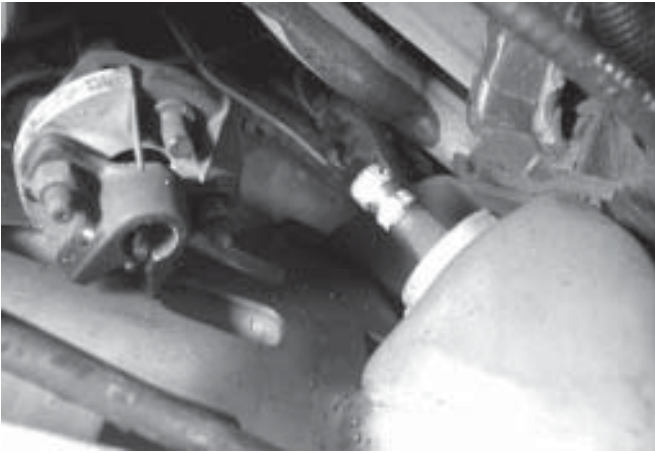


3. While it is possible to use two wrenches, it is easier to use a very long extension and a ratchet. If necessary, rotate the steering wheel to orient the bolt for the best access. Completely remove the bolt and nut. Set them aside, as they will be reused to attach the new MM Steering Shaft.

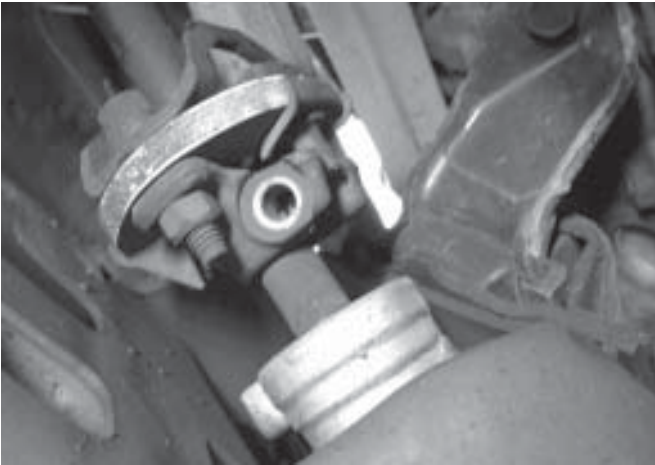


4. Disconnect the steering shaft from the steering rack input shaft.





- *Stock steering shafts* are secured to the input shaft of the steering rack with a pinch-bolt. Completely remove the pinch-bolt and nut.



- Most *aftermarket steering shafts* are secured to the input shaft with a setscrew and jam nut. Loosen the jam nut, and back out the setscrew.



5. Rotate the steering wheel so that the front tires are steered straight ahead.

6. Remove the two nuts from the bolts that hold the steering rack to the K-member.



7. Pull the steering rack forward just far enough to allow the steering shaft to slip off of the steering rack input shaft. It is not necessary to disconnect the power steering system hoses.
8. Remove the steering shaft from the car by pulling it out of the steering column. This may be difficult, as the upper stub of the steering shaft is clamped inside of the hollow steering column. The tight fit of the stub shaft in the steering column can make it difficult to pull the shaft out of the column. In some cases it may be necessary to use a hammer to tap on the steering shaft to remove the shaft from the column.
9. Prior to installation, remove the pinch-bolt from the lower U-joint of the MM Steering Shaft. The lower U-joint cannot be slipped onto the steering rack input shaft if the pinch-bolt is in place.
10. In general, the installation of the new MM Steering Shaft is the reverse of the removal process. Because the MM Steering Shaft will collapse to a shorter length, installation is easier than with other steering shafts. Before installation, collapse the MM Steering Shaft to its shortest length.

11. Begin installation by inserting the upper stub shaft into the steering column. It will only fit in one orientation. Slip the stub up far enough that the bolt holes align with each other. Sometimes this may be difficult to do, and may require lightly tapping on the top half of the upper U-joint with a hammer. Do not tap anywhere below this—if the impact loads from the hammer pass through the “cross” of the U-joint, the needle bearings may be damaged. Note: sometimes the force of inserting the stub shaft into the steering column will shorten the steering column. This can occur because the steering column itself contains a collapsible section. If the column shortens excessively, it can be pulled out of the firewall after the steering shaft is secured.



12. Once the bolt holes are aligned, insert the original retaining bolt and snugly tighten the nut. It is easier to do the final torqueing of the bolt to the required 45 ft.-lbs. after the steering shaft is secured to the steering rack. If necessary, pull the steering column out of the firewall before proceeding. It may be necessary to gently tap on the upper half of the top U-joint to extend the steering column.
13. While placing the steering rack back into position against the k-member, simultaneously guide the lower U-joint of the MM Steering Shaft onto the input shaft of the steering rack. Try not to rotate the shaft, as that will disturb the orientation of the steering wheel. Once the steering rack is in position against the k-member, secure it with its mounting bolts and nuts.



14. Pull the MM Steering Shaft to extend it until the bottom U-joint is correctly positioned on the steering rack input shaft.
15. Insert the pinch-bolt and snugly tighten it. Be sure the lower U-joint is placed far enough over the input shaft that the pinch-bolt will pass across the groove in the input shaft. If the coupling is slid too far onto the input shaft, the pinch-bolt cannot be inserted. In that instance, slide the lower U-joint towards the firewall just enough to insert the pinch-bolt.



16. If MM steering rack bushings are being used, be sure that they are installed correctly, and have not moved out of position. Torque the steering rack mounting bolts to 40 ft.-lbs.
17. Torque the pinch-bolt securing the steering shaft to the rack input shaft to 25 ft.-lbs.

18. If not already done, torque the bolt that secures the MM Steering Shaft to the steering column to 45 ft.-lbs. Be sure the bolt is properly tightened: Tightening this bolt can be difficult because it squeezes the steering column onto the steering shaft inside. That squeezing action can mislead the torque wrench into “clicking” early, before the bolt is actually tightened enough. If the bolt is not properly tightened it will cause some looseness in the steering feel. It can also cause some noise, as the steering shaft will essentially be rattling around inside the steering column.
19. Safely lower the car to the ground and test drive.
20. To prevent corrosion, either paint the MM Steering Shaft, or periodically spray it with rust-inhibiting oil.
21. Test drive. Check that the steering wheel, and therefore the steering rack, is centered. If not, see the Note on Rack Centering, prior to step 1, and take the appropriate corrective action.

Periodically inspect to ensure the lower pinch-bolt and upper attaching bolt remain properly tightened

This kit includes:

- 1 Steering Shaft