

Steering Shaft Assembly, SN95 Power Steering Rack, 1979-93 Mustang (MMST-13)



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

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.

With this MM Hybrid Steering Shaft Assembly, a steering rack from a 1994-2004 Mustang can now be easily installed in a Fox chassis (1979-1993) Mustang. The MM hybrid shaft assembly has the correct lower U-joint to connect to the unique triangular-shaped input shaft of the 1994-2004 steering racks. This MM hybrid assembly also features a splined shaft to allow the steering wheel to be clocked correctly. This feature is required to properly center the steering wheel when a 1994-2004 steering rack is installed in a Fox chassis Mustang. The stock steering wheel and airbag (if so equipped) are not disturbed.

Required Parts

Fox chassis tie-rods are required for use with Fox length control arms because the SN95 (1994-2004) tie-rods are too long. The correct length tie-rods can be easily swapped into place because the inner threaded connection, where the tie-rod attaches to the steering rack, is the same.

The threads on the tie-rods, where the outer tie-rod ends attach, are different between the SN95 tie-rods and the Fox tie-rods. The choice of tie-rod will dictate which outer tie-rod ends must be used.

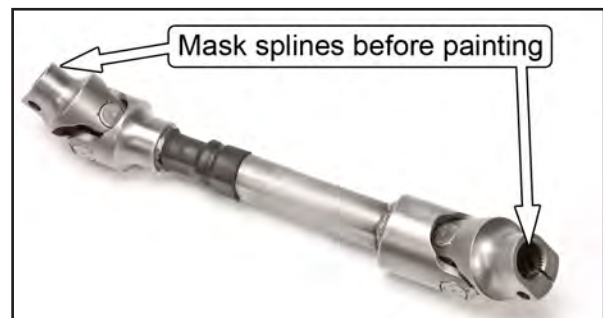
For those using the longer SN95 front control arms on their Fox Mustang, and who will be using an adjustable outer tie-rod end bumpsteer kit, there are two options to choose among for tie-rods and outer tie-rod ends. The longer SN95 tie-rods can be used, which will require an SN95 adjustable outer tie-rod end kit. Or, the shorter Fox tie-rods can be used, along with our **MMTR-6** Tie-Rod End Kit. This kit has a longer aluminum adapter sleeve that allows the shorter Fox tie-rod to work with the longer SN95 front control arms.

NOTE: This steering shaft is only intended for installation on 1979-93 Mustangs using a 1994-04 steering rack.

Preparation

The MM Steering Shaft is manufactured with a bare steel finish. If desired, it can be painted before installation. Please follow these guidelines to avoid damage to the steering shaft:

- Collapse the telescoping section of the shaft approximately half-way, without removing the plastic dust boot.
- Wipe off any grease or oil.
- Mask off the splined sections of the upper and lower u-joints so they do not get painted.
- Paint the steering shaft and allow it to fully dry before installation.

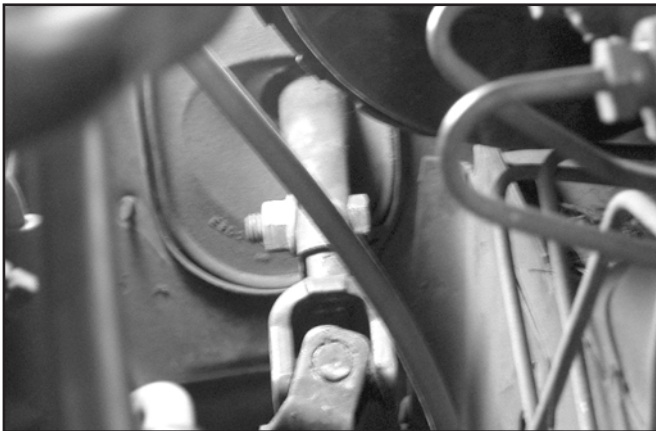


Instructions

WARNING: If the steering wheel is rotated too many revolutions in either direction the electrical wires (known as the clock spring) that connect to the airbag, horn, and other electrical controls will be severed. From the factory, the steering wheel is centered within it's rotational range. It is important not to lose this position while the steering wheel is disconnected from the steering rack.

NOTE: You must consult a factory manual on the procedure for centering the clock spring should the steering wheel's center position be lost.

1. Raise the front of the car and place it safely on jack stands.
2. Remove the front wheels from the vehicle.
3. Remove the nut and bolt that connects the upper stub of the stock steering shaft to the steering column. Be sure to retain the factory nut and bolt for later use.



NOTE: 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. Remove the pinch-bolt that connects the stock steering shaft to the rack input shaft.
5. Remove the stock steering rack from the vehicle. For guidance, refer to a shop manual. Cap the exposed fluid lines.

NOTE: Be sure to retain the factory nuts and bolts that retain the steering rack to the k-member.



6. Remove the steering shaft from the car by pulling it out of the steering column.

NOTE: In some cases it may be necessary to tap on the steering shaft with a hammer to remove it from the column. Do NOT hammer directly on the U-joint bearings as damage may occur. Make sure that the steering column does not pull out of the firewall.

7. Begin installing your 1994-04 steering rack by connecting the fluid lines.

NOTE: MM highly recommends that new Teflon[®] seals be placed on the power steering hydraulic line fittings. If new seals did not come with your steering rack, purchase them from your local Ford dealer. Note that there are two sizes, to fit the two different rack fittings.

8. Install your 1994-04 rack onto the vehicle using the factory bolts retained in Step 5. Torque the mounting bolts to 40 ft-lbs. If using aluminum or urethane rack bushings, follow the manufacturer's installation instructions.

NOTE: Due to the collapsible feature of the MM Hybrid Steering Shaft, the steering shaft can be installed after the rack has been properly positioned.

NOTE: The steering column contains a collapsible section that can extend or compress during the installation process, especially if a lot of force is required to remove the stock steering shaft. If the steering column extends out too far, the MM Steering Shaft can NOT be installed without unbolting the rack from the k-member, or by driving the steering column back into the firewall slightly.

9. Prior to installation of the MM Hybrid Steering Shaft, collapse the shaft by firmly pushing the two U-joints towards each other. Remove the pinch-bolts from both the upper and lower U-joints of the MM Hybrid Steering Shaft.

NOTE: The lower U-joint cannot be slipped onto the steering rack input shaft if the pinch-bolt is in place.

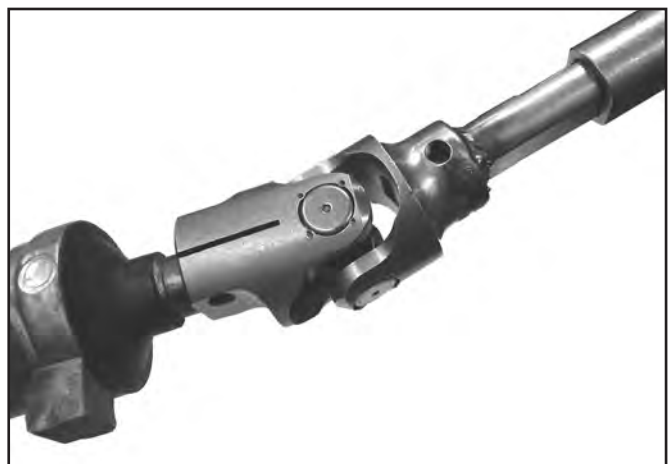
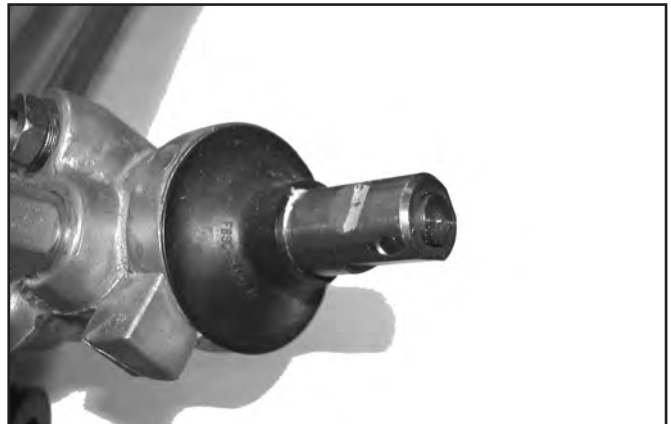
10. Remove the splined upper stub shaft from the upper U-joint. It will be installed next, separately from the lower portion of the steering shaft assembly.



11. Install the splined upper stub shaft into the steering column. It will only fit in one orientation.

12. Install the retaining bolt and nut (removed in Step 3) onto the steering column and hand tighten.

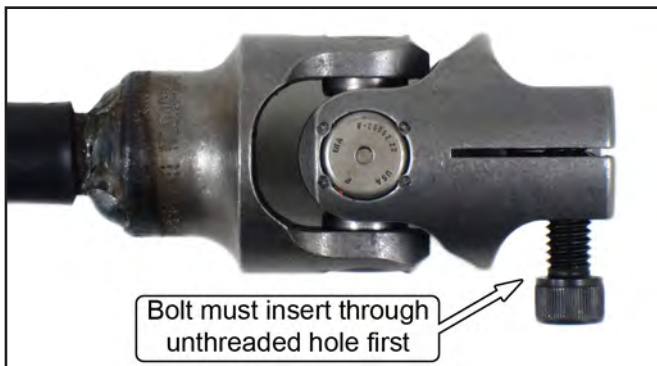
13. Install the lower portion of the MM Hybrid Steering Shaft assembly onto the input shaft of the steering rack. It will only fit in one orientation.



14. Install the pinch bolt removed in Step 9 into the lower U-joint and torque to 24 ft-lbs. The pinch bolt can only be inserted when the lower U-joint is properly positioned on the rack input shaft.



NOTE: Make sure the Lower U-joint pinch bolt is inserted through the unthreaded side of the U-joint first and then into the threaded side. This will allow the U-joint to clamp onto the threaded shaft when the bolt is tightened.



Centering the Steering Rack

The following step-by-step procedure details how to ensure that the steering rack is centered.

15. Orient the steering wheel so it is pointed in the "straight-ahead" position.



16. Extend the MM hybrid steering shaft's telescoping section enough to allow the upper U-joint to slip over the splines of the upper stub shaft.

NOTE: When connecting the upper U-joint to the upper stub shaft, it is not necessary for the splines to be fully engaged at this time. They must only be engaged enough to allow the steering wheel turn the steering rack from full-lock to full-lock, as part of the procedure for centering the rack. The upper U-joint pinch-bolt does not need to be installed at this time.

17. Rotate the steering wheel clockwise until full lock is reached.

18. Place a piece of tape on the current twelve o'clock position of the steering wheel and mark the letter "A" on the tape.



19. Rotate the steering wheel counter-clockwise until full lock is reached. For future reference (in Step 20), count the number of turns required to turn the steering wheel from full lock to full lock.
20. While holding the wheel at full-lock in the counter-clockwise direction, place a piece of tape on the steering wheel in its current twelve o'clock position. Mark the letter "B" on the tape.



21. Divide the number of turns required to go from full lock to full lock in Step 19 by 2.
22. From the counter-clockwise full lock position, turn the steering wheel clockwise the amount calculated in Step 21.
23. If the steering rack was correctly centered in Step 22, the "A" and "B" tape marks on the steering wheel will now be an equal distance away from the twelve o'clock position. If the tape marks are at unequal distances from twelve o'clock, the rack is not centered. Repeat "Centering the Steering Rack" procedure until the tape marks are centered.



NOTE: The previously described procedure will center the steering rack. It does NOT correctly clock the steering wheel. The following procedure details how to properly clock the steering wheel.

24. Remove the tape from the steering wheel.
25. After Step 23 the steering rack will be centered. Without rotating the input shaft of the steering rack, disconnect the upper U-joint from the splined upper stub shaft, by collapsing the telescoping section.
26. Rotate the steering wheel so that it is centered in the "straight-ahead" position.

WARNING: Do not allow the steering wheel to rotate more than one revolution in either direction, as damage to the clocking spring may occur.



27. Reconnect the upper U-joint to the upper stub shaft by extending the telescoping steering shaft enough to slip the splines together. Make sure that the splined upper stub shaft is completely inserted into the splined upper U-joint. If not fully inserted, the pinch-bolt cannot be inserted into the U-joint.

NOTE: The hollow shaft of the steering column is designed to be collapsible and sometimes gets extended or compressed from its stock location during removal of the stock steering shaft. If you find that it is impossible to fully insert the splined upper stub into the splined upper U-joint, you will have to extend the hollow shaft of the steering column by pulling it forward, out of the firewall. It is easiest to accomplish this by using a slide hammer.

28. Insert the pinch-bolt into the upper U-joint to secure it to the upper stub shaft. The pinch-bolt can only be inserted when the upper U-joint is properly positioned on the upper stub shaft. Torque the pinch-bolt to 24 ft-lbs.

29. Torque the bolt clamping the steering column to the splined upper stub shaft to 54 ft-lbs.

NOTE: 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. If there is still play between the two shafts, increase the torque to 60 ft-lbs.

30. Complete the installation of the steering rack by filling the system with power steering fluid, and bleeding it of air, as per the shop manual.

31. If not already done, install the chosen inner and outer tie-rod ends as per the manufacturer's installation instructions.

32. Reinstall the front wheels, and torque the lug nuts.

33. Safely lower the car to the ground.

34. Reset the front toe of the vehicle and test drive on a flat, uncrowned road to ensure that the steering wheel is centered.

This kit includes:

- 1 MM Hybrid Steering Shaft