

Steeroids® Installation Instructions

Part Number(s): 84510 - 84569
 1965 - 1970 Mustang

Parts and finishes may vary from those shown.



Verify Kit Contents:

- 1 RACK AND PINION WITH TWO RUBBER RACK BUSHINGS
- 2 RACK MOUNTING CLAMPS
- 1 U-JOINT ASSEMBLY
- 1 DRIVER'S SIDE BRACKET
- 1 PASSENGER'S SIDE BRACKET
- 1 TIE ROD BRACKET
- 2 TIE ROD SLEEVES
- 2 5/8 ROD ENDS AND JAM NUTS
- 2 TIE ROD ASSEMBLIES AND JAM NUTS
- 1 FASTENER KIT #690-53010 (STANDARD)
- 1 FASTENER KIT #690-50063 (RACK BOLTS)
- POWER KITS ONLY:**
- 1 HIGH-PRESSURE HOSE
- 1 LOW-PRESSURE HOSE
- 1 POWER STEERING FILTER (NOT PICTURED)

Additional Parts if Ordered with Steering Column:

- 1 STEERING COLUMN
- 1 FIREWALL MOUNTING PLATE
- 1 FASTENER KIT #690-53050

PLEASE NOTE: These components are tested and engineered to meet loads equal to what the stock steering system is exposed to during normal operation. If you or the person or firm you hire to install your Steeroids rack and pinion kit believes it is necessary to "modify" any components to make them fit and / or adjust properly PLEASE note that this is extremely dangerous. We offer free technical phone support to assist with installation should you encounter a problem. Modifications may include cutting or welding support brackets, sawing or hammering on u-joints, or any revision, deletion or addition to the product as delivered, and should NEVER be required. Any such modifications void the manufacturer's warranty. Our knowledgeable staff will gladly assist you with any questions you may have during installation. In addition Class M Corporation, DBA SpeedDirect, is not responsible or liable for any damages or injury resulting from any modification to the components as delivered.

See our website for exhaust & header clearance details: <http://speeddirect.com/index.aspx?nodeID=116>
 We are constantly updating our instructions, check for the latest version at <http://speeddirect.com>

Before Installation: Please note each steering rack is bench tested prior to shipping; fluid from the test occasionally leaks out and may stain the box. This does not indicate damage.

If two small rubber o-rings are attached to the rack with a twist tie, these are extras that can be discarded. The power steering hose adapters or hose ends supplied with the kit should already have o-rings attached, so the extras can be discarded. Any bolts, metal plates and/or washers that are already threaded into the rack unit should be discarded and the included metric rack bolt kit should be used.

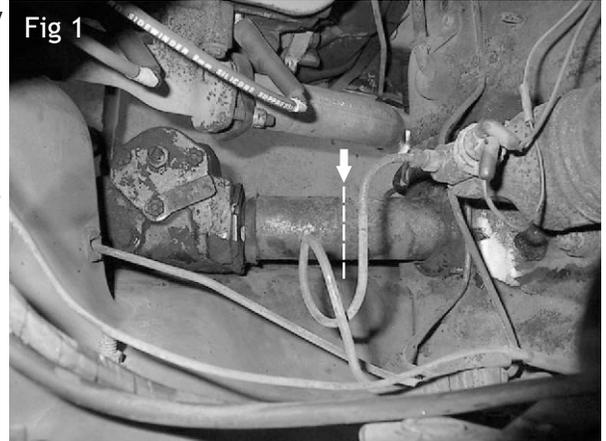
1. Perform an inventory of all the components in the kit. Installing the Steeroids kit requires simple hand tools, high strength thread locker and anti-seize compound. Crush Nuts as mentioned in Step 4 may be required, especially if the vehicle is currently Manual Steering. A pickle fork will be useful when disassembling the old system.

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2. Support the car securely on jack stands. Never support a vehicle using only a jack.

3. Remove the existing steering system. Use a pickle fork to break the tie rods loose from the steering arms. The entire system can be removed as a single unit (including the steering box/column shaft) if the driver's side engine mount is removed and the engine jacked up slightly. Otherwise, it will be necessary to cut the steering column and shaft off the steering box. To remove it as a single unit, it is necessary to disassemble the steering wheel so the shaft can slide out of the column.

If the column will be cut, cut it midway between the steering box and the firewall (Fig 1). If tubular headers will be used, the driver's side header will most likely need to be removed to facilitate removal of the steering box. Unbolt the power assist cylinder and support bracket from the frame rail. Disconnect the power steering hoses from the pump.



Tech Tip: For Power Steering kits, it may be easier to attach the power steering hoses onto the rack before installing the rack.

ASSEMBLY AND INSTALLATION

We recommend using red high strength thread lock on all threaded applications except for power steering hose fittings. Be SURE to trial fit first, and read the instructions through before going crazy with the thread lock!

NOTE - When installing the rack mounting brackets, holes in the frame may not line up exactly with the holes in the supplied mounting brackets due to very loose tolerances the vehicle had from the factory. If the holes do not line up enough for all bolts to pass through and start threading, it will be necessary to clearance the hole(s) in the supplied bracket(s) using a drill bit to elongate the holes in the proper direction (this is rare, but can happen).

4. Once the existing steering has been removed, install the mounting brackets. The driver's side bracket mounts to the location where the power assist ram bolted to the frame. If the vehicle was not originally equipped with power steering it may be necessary to install threaded inserts (sold separately) into the bottom of the frame (Fig 2). These inserts are not included in the kit because they are very rarely required. The inserts are crush nuts, and two will be required if necessary. The complete kit with instructions is available as part number 760-02774 at cmc.speeddirect.com. To install crush nuts use a special crush nut installation tool or weld into place. Bolt on the driver's bracket using two 3/8-18 x 1.25" and one 3/8-24 x 3.5" bolt (with corresponding nylock nut and flat washer under the nut). Torque to 35 ft/lbs (Fig 3).



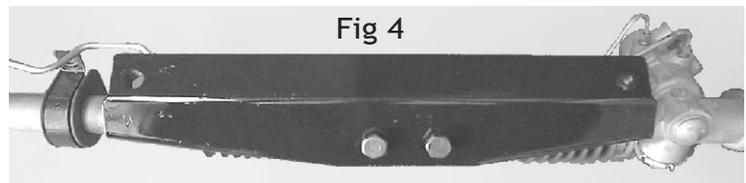
About Nord-Lock Washers



NORD-LOCK is a pair of washers with a wedge-locking action meeting DIN 25201 which is a unique method using tension instead of friction. The rise of the cams between the NORD-LOCK washers is greater than the pitch of the bolt. In addition, there are radial teeth on the opposite side. The washers are installed in pairs, cam face to cam face.

5. Install the passenger side bracket in the stock idler arm location using two 3/8-24x3.5" bolts and nylock nuts. Use flat washers under the bolt heads and the nuts. Torque to 35 ft/lbs.

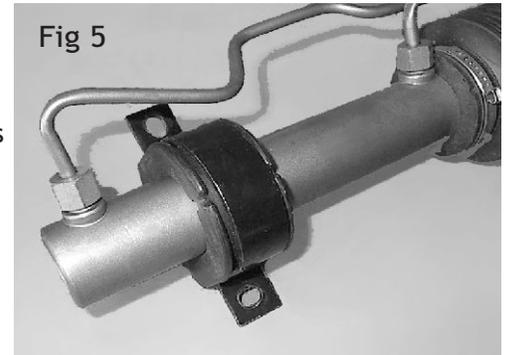
6. Bolt the tie rod bracket to the rack and pinion unit using the supplied metric bolts and Nord-Lock washers. Install lock washers between the metric bolt head and tie rod bracket. The bracket installs with the outer holes toward the top of the steering rack. It can be installed upside down, so be sure you have the correct orientation as shown (Fig 4). Use a high-strength thread locker and torque to 80 ft/lbs. It is OK for the bracket to compress the rubber boot.



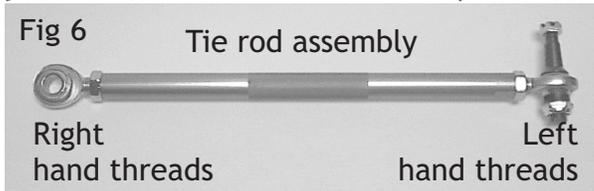
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7. **IMPORTANT:** To center the rack, use an adjustable wrench and turn the pinion until the rack is at its stop (either direction). Now count the turns as proceeding to the opposite stop. Divide the number of turns by 2, and turn the pinion back this amount. The steering rack is now centered. If the rack is not properly centered, the car will turn sharper in one direction than the other.

8. Install the rack and pinion unit on to the brackets using the supplied Rack Clamps and 5/16 x 1" bolts and washers. Note that the nuts are welded to the bracket. Do not torque or thread lock at this time. Please note the 2 Rack Clamps provided are shaped differently - they must fit properly on the rack and they are not interchangeable. Install and test fit the rack unit to inspect for clearance problems. It will be easier to align the passenger's side mount before sliding the clamp over it (Fig 5). Once the clamps are in place, bolt the rack and pinion to the passenger's and driver's side brackets using the hardware mentioned above. Use flat washers under the heads of the bolts. Do not torque or thread lock at this time.



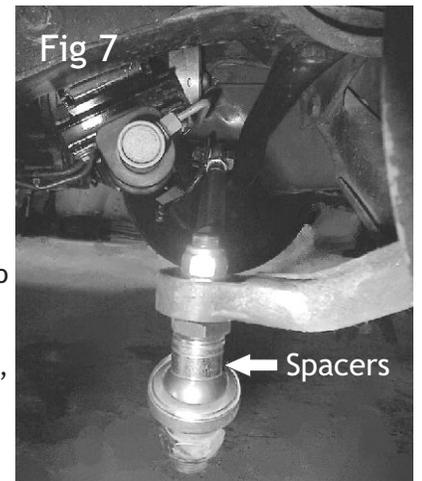
9. Tie Rod Assembly (Fig 6): Please note there are right hand and left hand threads on the aluminum sleeves. Apply anti-seize compound on all of the tie rod end threads and aluminum tie rod sleeve threads. Thread each outer tie rod end with jam nut onto the tie rod sleeves an equal amount. On the other end of each sleeve, thread the remaining 5/8" inner tie rod ends with jam nuts. Attach to the tie rod bracket using the 5/8-18 x 1 1/2" bolts and lock washers but do not tighten or thread lock it at this point - this is just for trial fitment. The lock washer is located between the head of the bolt and the inner tie rod bearing. After verifying there are no clearance issues, install the 5/8-18 inner tie rod end bolts using a high strength thread locker and torque to 50 ft/lbs.



10. To set an approximate alignment, measure the overall length of the old steering system, measuring it from the center of each outer tie rod end. Adjust the tie rods on the steering rack to match the measurement and tighten the jam nuts against the sleeves.

11. Attach the outer tie rod ends to the steering arms/spindles (Fig 7). Before torquing, read the following details. **NOTE:** The flange below the taper may not seat against the steering arm; this is not a problem. If the vehicle has two holes in the steering arm, install the tie rod end in the hole closest to the front of the car. Using the hole towards the rear will increase the steering radius. To properly adjust the outer tie rods, use the included bump steer spacers. Start with half above and half below the tie rod end bearing. As needed, move the spacers above or below the bearing so that the tie rod matches the angle of the lower control arm with the vehicle on the ground (the tie rod sleeve should be parallel with the lower control arm pivot points). It may be necessary to come back and adjust this once installation is complete.

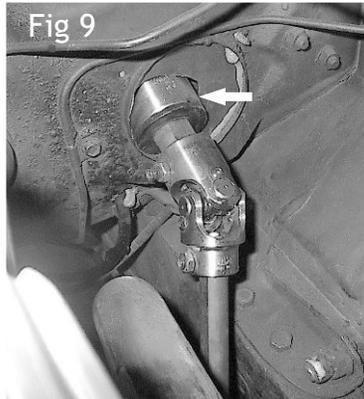
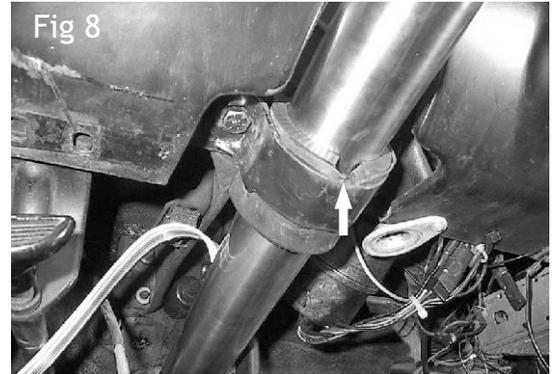
Tie rod end bearings are PTFE-lined and are therefore self-cleaning and self-lubricating. They do not require grease or dust covers. When attaching the tie rod end to the spindle, torque the upper nut (on top of the spindle) to 30 ft/lbs. If castle nuts are provided, continue to tighten the nut to align castellation with the cotter pin hole. Install cotter pin if applicable. Once the bump steer spacers are properly adjusted, torque the lower 15/16" nylock nut to 50 ft/lbs.



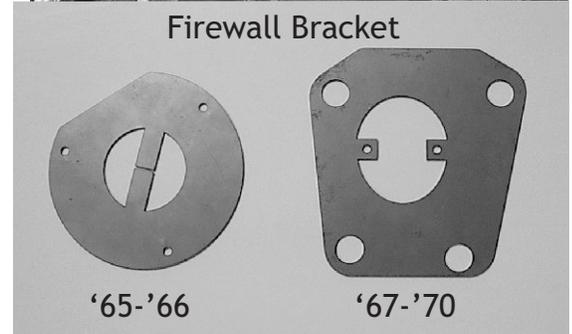
If using the stock column, see "Stock Steering Column Modification Instructions" at the end of this document, then proceed to Step 15. If you are not using the stock column, continue to Step 12.

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12. To install the new steering column it is necessary to use the stock column clamp and insert the supplied rubber isolator. Isolator is NOT included with ididit brand Ford splined steering column; use factory original. Notch the rubber in the center of one edge to clear the tab on the clamp (Fig 8). Trial fit the column in the car to determine the depth it is to be installed. The main body of the column should protrude approximately 1/2" on the engine side of the firewall. When placing the column in the clamp take care to align the turn signal and tilt controls to your preference. At the firewall use the stock rubber seal.



13. Check the firewall bracket for fitment. It may be necessary to drill holes in the bracket to align them with existing holes in the firewall. The column should be installed so that the firewall end is as close to the engine as possible (Fig 9). The tabs on the inside of the large hole in the bracket should be bent in towards the interior of the car. Use sheet metal screws through the tabs to anchor the column to the firewall.



14. Slide the firewall bracket onto the end of the column then replace the upper half of the stock column clamp (Fig 10) and install the column using the supplied bolts. Do not tighten until after u-joint assembly is installed. Use factory rubber seal at the firewall.

Horn relay:

A relay needs to be wired into the horn circuit before it will function properly with this steering column. It is a simple matter of supplying fused power to the middle terminal on the relay then connecting the black wire from the column to the left side terminal. The right side terminal is connected directly to the horn (Fig 11).



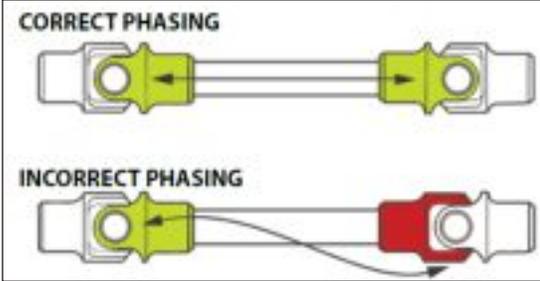
Column wiring:

A corresponding connector has been supplied with the steering column to adapt the car's wiring to the new column. The steering column wiring will have the following color coding that corresponds to the connector.

<u>Column</u>	<u>Connector</u>
White	P- brake lights
Dark Green	N- Turn signal, right rear
Yellow	M- Turn signal, left rear
Purple	L- Turn signal power
Brown	K- Hazard
Blue	J- Turn signal, right front
Lt. Blue	H- Turn signal, left front
Black	G- Horn

Check functionality of the stock column and map the stock wiring color codes to each particular function before disassembling the stock wiring and column.

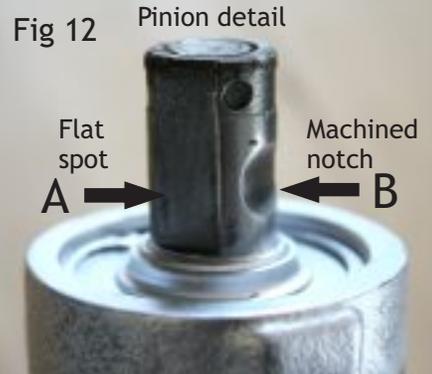
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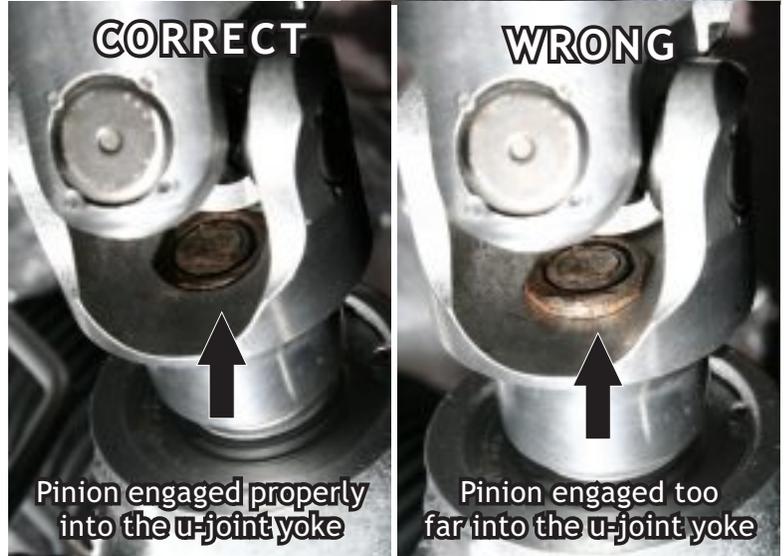
U-Joint Orientation

When two u-joints are used on a shaft, the forks of the yokes closest to each other should be in line, or “in phase.” Premature wear or binding can result if the u-joints are not phased properly. Sometimes if the u-joints are at a severe angle, even if they are phased correctly, a hard spot in the steering may occur for no apparent reason. If this happens, index the u-joints two or three splines in one direction. The hard spot should disappear or be minimized.

15. Install the u-joint assembly onto the rack and pinion. Read this entire section before installation. NOTE: Some u-joint assemblies have double D u-joints on each end that are different sizes. If one doesn't fit, flip the entire assembly around. Try to have the steering wheel straight when starting. Be sure u-joints are phased correctly (see diagram above). Start with sliding the upper u-joint onto the steering column, but do not yet tighten. Before doing so make sure the lower u-joint is lined up so that one setscrew will spot notch align with the flat section on the rack's pinion shaft (Fig 12A) and the other setscrew will seat in the machined notch (Fig 12B).



It may be helpful to unbolt the driver's side rack clamp in order to install the u-joint on the rack unit. Make sure that the shaft ends do not protrude into the inside of the u-joints. Tighten them, but do not use thread lock at this time. For steel u-joints: apply anti-seize to the splines of the u-joint and the intermediate shaft. Make sure both u-joints are installed on the intermediate shaft and the rack and pinion unit is in place. Be sure that the shaft is not protruding into the inner part of either of the u-joints. It is essential that all splines are fully engaged into the u-joints (approx. 3/4”).



Most likely, the steering wheel will need to be re-centered. Change the phasing of the u-joint by removing the upper u-joint from the intermediate shaft and rotating it a couple of splines until the steering wheel is straight. It is OK for the u-joints to be slightly out of phase. If straightening the wheel using this method makes the u-joints too far out of phase, remove the upper u-joint from the column, center the wheel and reinstall the u-joint. The steering column splines will then require grinding or drilling an indentation for the setscrew. DO NOT ROTATE THE RACK UNIT. The rack has already been centered and should not be moved from center. Once installed and there are no clearance issues, tighten all setscrews and their jam nuts using a high strength thread locker. Be sure to tighten the setscrew that sits on the flat spot of the pinion first, then tighten the setscrew on the notch (Fig 12). Torque the driver's side rack clamp bolts to 25 ft/lbs once the u-joint assembly is installed.

16. Turn the steering wheel to check for smooth operation of the u-joints. **There should not be ANY binding.** The steering shaft should be able to be turned by hand (with the wheels off the ground). If binding is detected (stiff spots felt every 90 degrees of rotation) adjust the steering column by sliding it back. Loosen the nuts under the dash and at the firewall, and pull the entire unit back. If sliding the steering column all the way back does not remove the binding, slide the forward end of the steering column toward the engine. This normally relieves any remaining binding. It is important that smooth operation is attained. Driving with binding u-joints will cause them to wear prematurely. Once any binding has been removed and the u-joint assembly operates smoothly, retighten the column at the firewall and under the dash.

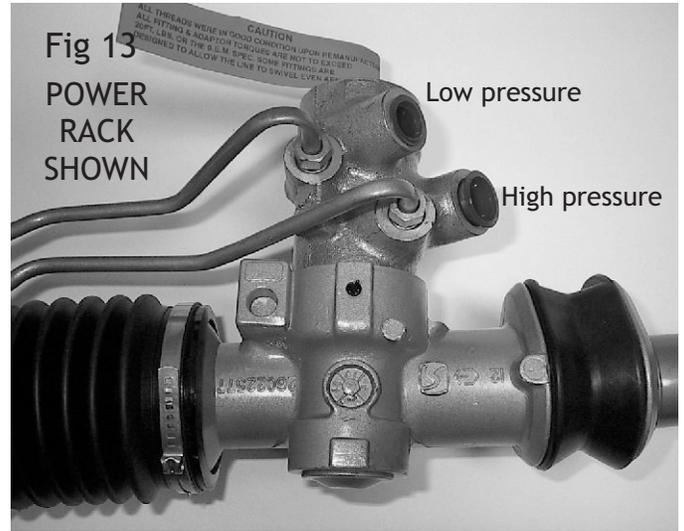
Power Kits - continue with Step 17.

Manual Kits - proceed to Step 19.

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NOTE: If using an existing power steering pump, it is necessary to drain all remaining fluid and thoroughly clean the pump to remove all dirt and debris from the reservoir. Even the smallest dirt speck can plug a rack valve and cause it to stop working. **Failure to clean the system will void the warranty.**

17. Attach the power steering hoses to the rack and pinion unit (Fig 13). The lower port on the rack and pinion unit is the high-pressure port. The high-pressure hose has threaded fittings on both ends. For the rack and pinion end, be sure that the fitting has an o-ring installed on it before attaching the hose. Torque to 21 ft/lbs. The low-pressure hose also needs an o-ring on the rack and pinion end. Torque to 13 ft/lbs. Carefully route the hoses away from exhaust components or anything that is high temperature. Connect the high-pressure hose to the threaded fitting on the power steering pump, slip the return line onto the nipple, and secure with a hose clamp. Install the supplied in-line filter on the return hose. Cut the hose in a location that allows for the filter to fit but still have enough hose to connect to the pump. **Failure to install the filter will void the warranty.**



Power steering fluid recommendations: Run standard GM Power Steering Fluid (the rack is GM sourced). Do not run Ford PS fluids that double as transmission fluid; these contain detergents that can damage the rack seals. For those who prefer synthetic fluids you may switch to Royal Purple Synthetic after 1000 miles, but it is not required.

18. Bleed the system by turning the wheels all the way to the left. Add fluid to the “cold” mark on the dipstick. Turn the wheel back and forth three or four times. Start the car and allow it to idle. Fill to the “cold” mark as needed. (A) Turn the wheels side to side until there are no more bubbles. Check the fluid level frequently while proceeding. Allow the engine to run for a few minutes and add fluid as needed. Replace cap and shut off engine. If the fluid level rises after the engine is shut off, there is still air in the system. Repeat (A) until all air is out of the system. “Flushing” the system is not necessary, only bleeding it of air.

19. Re-check every bolt and nut to be sure all are tight and torqued with high strength thread locker applied where necessary. Test-drive the car at low speed for a brief period. Check every bolt for tightness again. If the engine is at operating temperature check the power steering fluid level. Fill to the “hot” mark as needed.

CAUTION: The steering ratio of this kit is significantly faster than the stock steering. Exercise caution when first driving with the new system. The vehicle will respond quicker and turn more from the same amount of steering input. This might take some time to get used to.

20. The final step is to have the front end aligned **to the specs below** and re-check all bolts for tightness after the first 100 miles. If the person installing the kit ignores these recommendations and it is aligned to factory specs, the car will handle very poorly. This is **VERY** important.

Alignment Settings: 65-70 Mustang			
	Camber	Caster	Toe
Street	0 to -0.25 degree negative	3 to 5 degree positive	0 to 1/8" toe in (0 to 0.28 degrees total)
Track	-0.5 to -2 degree negative	3 to 5 degree positive	0 to 1/16" toe out (0 to 0.14 degrees total out)

*****Please Note:** The rack unit that we are using for this kit has some movement built into the rack. When the vehicle goes in for alignment, you may notice the center tie rod bracket can move up and down a slight amount, affecting the tow of the vehicle. THIS IS NORMAL. The GM rack we are using had this movement built into it from the factory. Do not try to move the bracket all the way to one side or the other of this movement when aligning the vehicle. Leave the bracket in the location it was at when the vehicle was pulled forward onto the lift and adjust it from there.

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INSTRUCTIONS ON THIS PAGE ARE FOR USE WITH STOCK STEERING COLUMN ONLY! THIS PAGE DOES NOT APPLY IF A NEW COLUMN WILL BE INSTALLED WITH THE KIT.

Stock Steering Column Modification Instructions

1. Mark the location of the engine compartment side of the firewall on the column tube. Leave at least 1/2" of the tube on the engine side of the firewall. Cut the column tube to length. Cut the tube only, do not cut the column shaft. Leave the column shaft until later.

2. The bearing installs in the column tube at least 1" from the end of the tube (Fig 14). Use the supplied screws to hold the bearing to the column tube.

3. Slide the steering shaft into the column tube, install the steering wheel and lock collar (Fig15), and mark the length to be cut. Allow for full engagement of the u-joint plus 1/8" for clearance from the end of the column tube.

- Some 1968 and newer cars may require a length of 1" DD tubing to slide over the existing inner shaft to match up to the u-joint assembly (part number 000727, not included). This will have to be pinned and welded to the stock steering shaft.

- Some 1970 columns may require welding a piece of 3/4" DD shafting inside the steering shaft. This is used on 1970 columns with the round, hollow steering shaft (part number 409418). This will have to be pinned and welded to the stock steering shaft.

4. Machine the end of the column shaft to fit the 3/4" DD dimensions of the u-joint. Drill countersink holes for the u-joint setscrews.

5. Install the column in the car using the bracket and clamp secured to the inside of the firewall (Fig 16), and trim the DD shaft to length. Make sure the shaft has full engagement into the u-joints. To avoid cutting the shaft too short, take extra care in measuring and make the first cut intentionally longer than you think you need it to be.

6. Once the shaft is the correct length, drill countersink holes for the u-joint setscrews. Assemble the u-joints using thread locker on all the fasteners.

Continue to Step 15

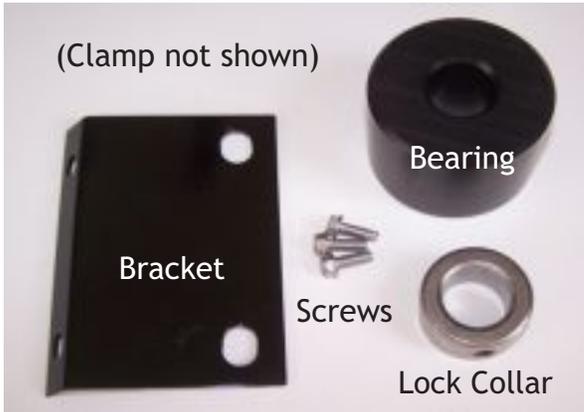


Fig 14



Fig 15



Fig 16





(888) 425-2776

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WARNING: FAILURE TO ADJUST THE UPPER U-JOINT SO THAT THERE IS NO BINDING WILL RESULT IN PREMATURE WEAR AND FAILURE! IF THERE IS ANY BINDING / LUMPINESS / HARDNESS IN THE STEERING WHEEL WHILE TURNING, ADJUSTMENT IS STILL REQUIRED AS DETAILED IN STEP 15. ADDITIONAL TECH SUPPORT AND INFORMATION IS AVAILABLE ONLINE AT www.speeddirect.com

STEEROIDS FIVE YEAR WARRANTY TERMS

Our warranty can be found at www.speeddirect.com/fiveyearwarranty. It is your responsibility to understand what Class M Corporation DBA: SpeedDirect is warranting on the components you have purchased. Be advised that our warranties change from time to time and it is our exclusive right to change the terms of the warranty at any time and for any reason.

STEEROIDS REPLACEMENT POLICY

Labor charges and/or damage incurred in installation, repair or replacement as well as incidental and consequential damages connected therewith are excluded and will not be paid by seller. Any and all costs for inspection, removal or replacement of the kit or its constituent parts or assemblies under the warranty are the responsibility of the original purchaser.

