griggsracing.com

Address:
21750 8th St East
Sonoma, CA 95476
Contact:
707-939-2244
support@griggsracing.com

Installation Instructions

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GR40 Tubular Front Suspension System

Congratulations on your purchase of the GR-40 Tubular Front Suspension system. In addition to various hand tools, the installation of the GR-40 K-member and coil over system requires:

- Ford Service Manual or an after-market equivalent
- Set of four plumb bobs
- Cherry picker or Griggs Racing engine-support bridge
- Drill press and good 5/8 inch drill bit
- 2 quarts synthetic power steering fluid
- Bump steer gauge
- Camber caster guage
- Tape measure
- Corner Scales (optional, but recommended)

Follow the procedures in order and you will not have to spend any time duplicating your effort. Although the installation is quite simple it requires supporting the engine and removal of the front engine support.

Please recycle all your discarded parts.

WARNING!
Working on automobiles can be dangerous. If you are not a skilled mechanic you should find one to perform this installation.

1. Support chassis with jack stands under rear axle and front frame rails just behind the K-member. Remove all four wheels and rear anti-roll bar. Vehicle must be raised at least 18 inches.

2. Remove steering rack and remove tie rod ends. We strongly recommend flushing all power steering fluid out of the system at this time.

3. Remove front calipers and rotors. Do not disconnect brake lines. Hang calipers out of way in side wheel well with a piece of wire. Rotors must be removed.

4. Remove both front sway bar links.

5. Loosen all four-control arm mounting bolts. (Do not try to remove.)

6. Consult a Ford Service Manual prior to attempting to remove the front coil spring. While supporting outer end of control arm with a jack, disconnect ball joint from spindle, and slowly lower the jack and remove stock spring. Be Careful! Spring is pre-loaded considerably. Spring can not be removed until control arm is pointed almost straight down.

7. Remove the control arm mount bolts and remove control arm.

8. Remove spindles and clean.

9. The spindle steering arm must be modified for the installation of the bumpsteer adjustment kit. Using a drill press and a 5/8" drill bit, drill out the tapered hole in the steering arm from the top down (start on the side the hole is smaller). Drill top to bottom. Although this modification is very simple, Ford's spindles vary in hardness and sometimes require machining experience to drill properly. If you are not comfortable with performing this modification take the spindles to a machine shop. The modification can be performed in just a few minutes and shouldn't cost much.

10. Remove struts. If you are installing camber plates at this time, install them now. Install the coil over kit per included instructions. If you are not using a Koni D/A race strut it will be necessary to modify the stamped steel plate tack-welded to the top of your stock or after-market strut. Take care not to scratch the polished strut-rod, grind the plate down so the coil over sleeve will slide over the strut body freely. Sand down any high spots on the strut body as necessary. Assemble the coil over kit and set the base of the lower spring perch between 4 and 5 inches from the base of the threaded sleeve. Set the assembly aside for reinstallation as a unit.

K-Member Installation:

WARNING! The k member supports the weight of the engine. Unbolting it from the chassis without proper support of the engine could kill you!

11. Support engine from top with chain fall, cherry picker, or cradle, and remove engine mount lower nuts. An inexpensive engine support cradle available from Griggs Racing simplifies this process by keeping the area under the motor clear of cherry picker legs and holds the engine in the proper location for easy re-assembly—Part number MEC 1000.

12. Remove old K member and recycle it

13. Install new K-member, leaving all mounting bolts just loose enough to be able to move the K member for squaring to the frame. Note: Left forward upper mounting hole in K member is not slotted. Squaring the K-Member is accomplished by rotating it around this hole.

14. Hang plumb-bobs from mounting bolts of forward ends of REAR control arms so that they hang from the pickups on the chassis and their points are just above floor. String should loop around pickup point bolt in the same place on each side of the car. Mark an "X" on floor under point of plumb-bobs.

15. Hang plumb-bobs from rear lower control armholes in K member (one each side) with points just above floor. Be sure Plumb bobs are located exactly the same relative to the holes on each side.

16. With a tape measure, check dimensions (as shown in Figure 1) and adjusts position of K-Member until diagonals and front to rear dimensions are equal plus or minus 1/16 inch. If your car has been crashed or for whatever reason equality cannot be reached, slot holes in K-member as required or you may have to go to a frame shop and have it straightened. Tighten all bolts to factory specs.

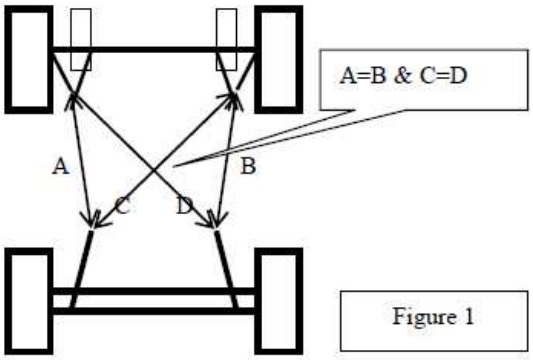

Figure 1

17. If not already in place, install Camber Plates into vehicle. Assemble and Install coil over strut assembly top mount into Camber plate and tighten top nut to specification provided by Strut manufacturer.

Control Arms

18. Lubricate urethane or Delrin control arm bushings liberally with supplied lubricant and install them into control arms. Apply same lubricant to bushing inner sleeves and insert them into lower control arm bushings. **Note the shorter crush sleeve is for the forward bushings in each arm.** If you are installing Severe Duty Control arms equipped with spherical bearings, Do Not Lubricate! No lubricant is needed.

19. Lubricate surfaces of K-member where control arm bushings contact it with same lubricant and install control arms into K-member using factory hardware. Torque 85-95 ft-lbs. (This is lower than factor recommendation). Excessive torque may damage parts. If you are installing Severe Duty Control arms, be sure to tighten the ½" bolt in the Control Arm that is next to the ball joint to 85-95 ft-lbs.

20. Attach spindle to low friction ball joint using supplied lock-nut. Attach spindle on strut. Torque fasteners to factory specs.

21. Slide the aluminum 1/4" rack spacers provided in kit onto the K member. Slide rack bushing into rack and slide rack and bushings onto K-member. There are production variations in the steering racks, and the tubular k-member. If the spuds won't fit in the holes, remove the bushings and re-align by sliding a pipe over passenger side spud and bending it as required. Do not hammer on the spuds or you may damage them.

22. Install aluminum tie-rod end assembly as you would install a stock tie-rod end. Set rough bump-steer adjustment by using enough shims between the spindle's steering arm and the heim joint in the tie-rod end to make the lower control arm and steering arm parallel. Be sure to place the gold shims under the spacer.

23. Reinstall brakes, wheels and tires.

24. Lower car and adjust ride height to chart. If you feel overwhelmed by the chassis set-up process this is a good time to find a local alignment shop that understands racecars. Car should now be ready to bump steer and align. Re-check all bolts for tightness and double check your work. It is very important to properly bump steer the chassis to receive full benefit of your investment.

Recommended Initial Chassis Set-Up Specifications

	Street	Strip	Road Course
Ride Height*	8.5"	8.5"	7.5"
Camber	-1.5 Degrees	-1.5	-3+ Degrees
Caster	5-6 Degrees	6 to 8	6 to 8
Toe-in	1/16" to 1/8"	0 to 1/16"	0 to –1/4*

*With 25.4" tire diameter (275/40-17). **Measure from bottom center of rear mounting pads on K member.** (The part with two slotted holes for mounting to the frame).

* More toe-out creates faster turn-in response, but less stability while threshold braking.

Tip: Ride height is critical to the geometry of your GR40 chassis. When setting ride height be sure to keep the installed height of the springs near equal by measuring the distance from the top of the spindle mounting bracket on the strut to the bottom of the spring.

Tip: Alignment settings must be tuned to your particular application. If you have advanced chassis set up questions contact a local chassis shop for assistance.

Tip: Bump steer should be adjusted with rack centered, steering locked, and toe set to zero. Measure with spindle traveling from ride height to one to two inches of bump motion. Adjusting is by positioning tie-rod end up and down with shims supplied until there is as close to zero toe change as possible during the first inch of bump. **If absolute zero cannot be achieved, set next increment of bump out. Under no circumstances do you want your Mustang with strut suspension to bump in. Normal deviation from zero is a change of 0.000" to 0.010" toe-out per inch per side.** Be sure to reset toe to specification on chart when you are through, and remove steering lock. Do a final pre-drive inspection.