



## INSTALLATION INSTRUCTIONS

P/N: C2027

### UNIVERSAL ANTI-ROLL BAR KIT

This kit is designed for use in any drag race chassis to control side-to-side body roll during hard launching. It mounts between the frame rails of the chassis above the rear axle housing with links that attach to the housing. It is adjustable for preload enabling you to tune for changing track conditions.

### PARTS LIST

<b>QTY.</b>	<b>DESCRIPTION</b>
2)	Billet Aluminum Arms
1)	Bearing Mount Bracket D/S
1)	Bearing Mount Bracket P/S
2)	3/8-16 x 1/2 Long Set Screw
2)	3/8-16 1/2 Long Set Screw W/Patch
2)	3/8-24 Right Hand Jam Nut
2)	3/8-24 Left Hand Jam Nut
2)	Tube Ends, 3/8-24 RH Thread
2)	Tube Ends, 3/8-24 LH Thread
4)	3/8-16 Nylon Insert Lock Nut
2)	Bearings, 1" ID Flange Mounted
4)	3/8-16 x 1.25 Hex Head Screw Gr 5
2)	3/8-16 x 1.75 Hex Head Screw Gr 5
4)	Mounting Tab, 3" Axle
4)	Mounting Tab, Axle Back Brace
2)	3/8" Rod End Right Hand Thread
2)	3/8" Rod End Left Hand Thread
2)	Link Tube Adjuster
1)	Tube, Torsion
4)	5/16-18 x 3/4 Long Carriage Bolt Gr 5
4)	5/16-18 Nylon Insert Lock Nut
2)	Machined Splined Bushing

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**GENERAL OVERALL VIEW**

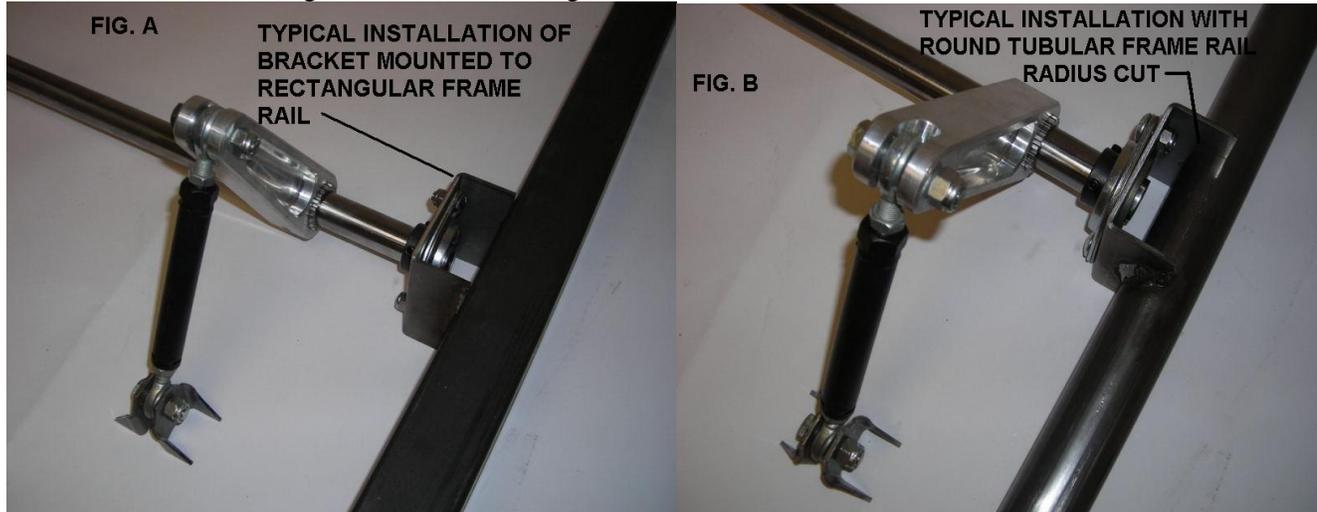


## Introduction:

This kit can be installed on a chassis with a rectangular tube frame or a round tube frame chassis.

**A. Use with rectangular frame rails.** The Bearing Mounting Brackets are welded to the inside face of the frame rail with the bearing mounted between the bracket and the frame rail. This will give the installer the maximum desired spread between the billet aluminum arms. (Fig. A)

**B. Use with a round tube frame rail chassis.** The Bearing Mounting Brackets will have to be radius cut as shown (Fig. B) with the bearings mounted on the bracket face.



## SUBASSEMBLY: "A" with rectangular frame rails

1. Pre-assemble the Anti-roll Bar Kit as follows:

a. Slide the splined bushing into the Billet Arm and install temporarily the non-patched 3/8-16 set screw and lightly secure. (The patched one will replace this set screw later.) (Fig. 1a)

b. Take (2) bearing flanges and insert the carriage bolts through the square holes with the heads located on the same side as the raised portion of the flanges. Perform this next step only if the bearings are to be mounted inside the bracket pocket. Tack weld the heads in two places to secure the bolts in place. Tack welding the carriage bolts will make for easier installation later on. **CAUTION:** tack weld only because excessive weld will deteriorate the grade 5 bolt strength. Loosely assemble the flanges and bearings as shown. (Fig's. 1b)

c. Take the link tube adjuster and remove any mill surface finish, approximately 1/2" from one end of each tube. Insert the round body tube end (with right hand threads) into the link tube adjuster and weld all around using a mild steel filler rod. (Fig. 1c)

d. Thread the right hand threaded jam nuts onto right hand threaded rod ends leaving (5) threads above the nut. Thread the rod ends into the adjusting tubes after they have cooled from welding. (Fig. 1d)

e. Assemble the adjuster tube to the slotted billet arms with the hardware and hand tighten. (Fig. 1e)

f. Thread the left hand threaded jam nut onto the left hand threaded rod end leaving (5) threads above the nut. Thread the hexagon tube end (with left hand thread) onto the rod end. Place the appropriate axle (with radius base) or back brace (with flat base) mounting tabs on each side of the rod end with the wings facing outward. Insert the 3/8 x 1 1/4" long hex fastener and nut and secure the tabs against the rod end. (Fig. 1f)

## **INSTALLATION:**

1. The vehicle must be raised and set the wheels on (4) level height stands to simulate the ride height.
2. Next determine if your frame rails run parallel to each other, since the maximum misalignment of the bearings is 3 degrees. If the rails exceed 3 degrees, then a bearing mount bracket leg will have to be trimmed so the torsion bar is perpendicular to the bearing and the mount is within the 3 degrees.

**CAUTION:** Be sure to allow enough length on the legs of the bracket to slide the bearing into the channel of the bracket and between the frame rail. (If you can't fit the bearing into the channel pocket, the bearing can be mounted on the outside of the bracket.

3. Roughly determine the approximate location where the Bearing Mounting Bracket will be mounted to the frame and measure the distance between the frame rails. Subtract a 1/4" from this dimension and rough cut the torsion bar. The bar will have to be cut more accurately later on but right now you must pre-position the assembly between the frame rails.
4. Assemble the bearing and flanges inside the bearing bracket pocket (Fig.2) and tighten the nuts in place but leaving the bearing loose enough to swivel within the bearing flanges. Complete the other side in the same manner.

Note: the difference between the driver and passenger side brackets is simply that the holes are mirrored. Determine if the nut positioning has any advantage in your application. Otherwise the brackets can be mounted on either side.

5. Install the billet aluminum arm assemblies (as shown in Fig. 1e) onto the torsion tube. Slide the bearing bracket assembly on each end of the torsion bar.
6. Slide the assembly between the frame rails to the approximate location and clamp the brackets to the frame rails.
7. Take the axle tab mounting assembly (Fig. 1f) and determine the best position along the axle. We recommend the axle tabs to be mounted to the rear side of the housing since there are generally fewer objects in the way. This assembly can be rotated anywhere from a horizontal position at the rear of the axle housing up to a vertical position as long as there is sufficient link tube adjuster length to make later adjustments. Note: the closer the aluminum arms and axle tabs are to each other the more you increase the spring rate of the assembly; therefore it's best to try to position the arms and the axle tabs outward towards the frame rails as much as possible. Set the billet arm at minus 14 1/2 degrees from the top of the billet arm with a protractor. Helpful Hint: The protractor can be held in place with double-sided rug tape. (This angle is determined by 4 1/2 degree angle of the machined arm plus the recommended set angle of 10 degrees equals 14 1/2 degrees total) (fig 7). The link tube adjuster should be in a vertical position within +/-5 degrees and aligned with the hole or rod end in the tab bracket. The link tube adjuster will probably have to be shortened to accomplish all dimensional parameters. Next, the length of the link tube adjuster to be cut is determined by holding the link tube adjuster along side the rod end adapter and marking the tube even with the shoulder on the adapter (Fig. 3). Note both link tube adjusters should be the same length. The billet aluminum arms should be square to the axle mounting tabs on the axle and equal distant from each side of the frame. Mark the positioning of the axle mounting tab assemblies to be welded. Mark and scribe the lateral position of the aluminum billet arms on the torsion tube. (Fig. 3) Rotational positioning is not required at this time. Accurately mark the position vertical and horizontal of both the bearing mounting brackets on the frame. Next mark and scribe the torsion bar ends that extend through the bearings to be trimmed off.
8. Unclamp and remove the torsion bar assembly. Trim the torsion bar to length as marked on each end that extended beyond the bearings.

9. Cut the link tube adjusters to length. Both should be the same length.
10. Weld prep the end of the link tube adjusters by removing the mill finish 1/2" from the tube end. Weld the hexagon tube end adapters to the link tube adjusters (without the rod ends threaded in).
11. The next step we recommend using a tig weld process to achieve a small weld around the splined bushing to the torsion bar. Set the torsion bar and billet arms on a **flat surface** where welding can be performed. Carefully align the splined bushings to your previously scribed or marked line on the torsion bar. Recheck to be sure arms are still laying flat and are in alignment. (Fig. 4) Place the welding ground in the center of the torsion bar so you don't short arc the finished billet arms. Tack weld the bushings in place with a mild steel filler rod. **Keep all welds below the minimum splined diameter; otherwise the weld will interfere with removal of the billet arms.** Loosen the set screw in the billet arms and slide the arms off from the splined bushing. Complete the welding all around on both sides of the splined bushings.
12. Lay the torsion tube on a flat surface and re-install the aluminum billet arms onto the splined bushings. Be sure both arms are in alignment to each other and replace the non-patched set screws with the locking patched set screws. Torque the screws to 18 foot-pounds.
13. Mig weld the bearing brackets to the frame rails as marked.
14. Install the bearings into the bearing pockets and hand tighten the nuts. Install the torsion bar into the bearing assemblies. Tighten the (4) carriage bolt nuts to secure the bearings and torque to 15 foot-pounds. Position the torsion bar equal distant at both bearing ends and tighten the (4) bearing set screws to 70 inch-pounds.
15. Re-install the link tube adjusters and rod ends to the torsion bar assembly.
16. Tack weld the axle mounting tabs to the axle at the marked locations. Check the alignments, dimensions and appearance. Remove the rod end from the tab mounting assembly and finish welding.
17. Re-install the bolt, holding the rod end to the axle mounting assembly and torque all (4) 3/8" bolts to 25 foot-pounds. Tighten the (4) link adjuster tube jam nuts.

### **SUBASSEMBLY: "B" and instructions for round tubular frame rails**

The same subassembly and instructions will apply to the round tube frame rail except:

- 1) The bearing-mounting bracket will have to be radius cut to suit the tube diameter and it may have to be machined at an angle to compensate if the frame rail exceeds more than 3 degrees as previously described in instruction 2.
- 2) The bearings will most likely have to be mounted on the outside of the bearing mounting brackets, therefore do not tack weld the carriage bolts to the bearing flanges (Fig. B).
- 3) Instruction 4 will read, "assemble the bearing and flanges outside the bearing bracket".

### **ADJUSTMENTS**

Begin your tuning by creating a baseline setting for the vehicle. Have someone watch or videotape the car as it leaves the starting line. Use the following guidelines to correct torque steer or chassis twist:

- If the car pulls to the right, lengthen the passenger side adjuster link to add preload.
- If the car pulls to the left, lengthen the driver's side adjuster link. You can also shorten the passenger side link to achieve the same results.

## PRE-ASSEMBLE



## INSTALLATION



After you have completed this installation, we highly recommend you use a good quality primer and paint to protect your newly installed Anti-Roll Bar. As your chassis supplier, thank you for choosing Competition Engineering.