

FFR 3-Link Installation Guide

This guide is intended to walk you through the steps required to install a Factory Five Racing (FFR) Competition 3 Link Suspension. This guide is based on the FFR 65 MkIII Roadster assembly manual and pack list as of November 2006. The 5 digit numbers in parentheses are the FFR part numbers from the pack list. Please double check all specifications and applications prior to use.

Feel free to email me with questions, comments, concerns, complaints,

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-or-

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Username: Hozr

Posted 11/17/06

Pics added 11/18/06

Torque Specs revised 11/21/06

Axle prep added 11/22/06

Passenger Side Bracket Update added 8/19/06

Finished...Never

8.8 Axle Preparation

- Clean the entire axle assembly thoroughly with degreaser and water. A wire brush helps as well.
- Remove axle shock mount brackets (pictured) from rear lower control arm to axle brackets. **SAVE THEM!** They will be used for the front shocks if using donor Mustang front lower control arms.



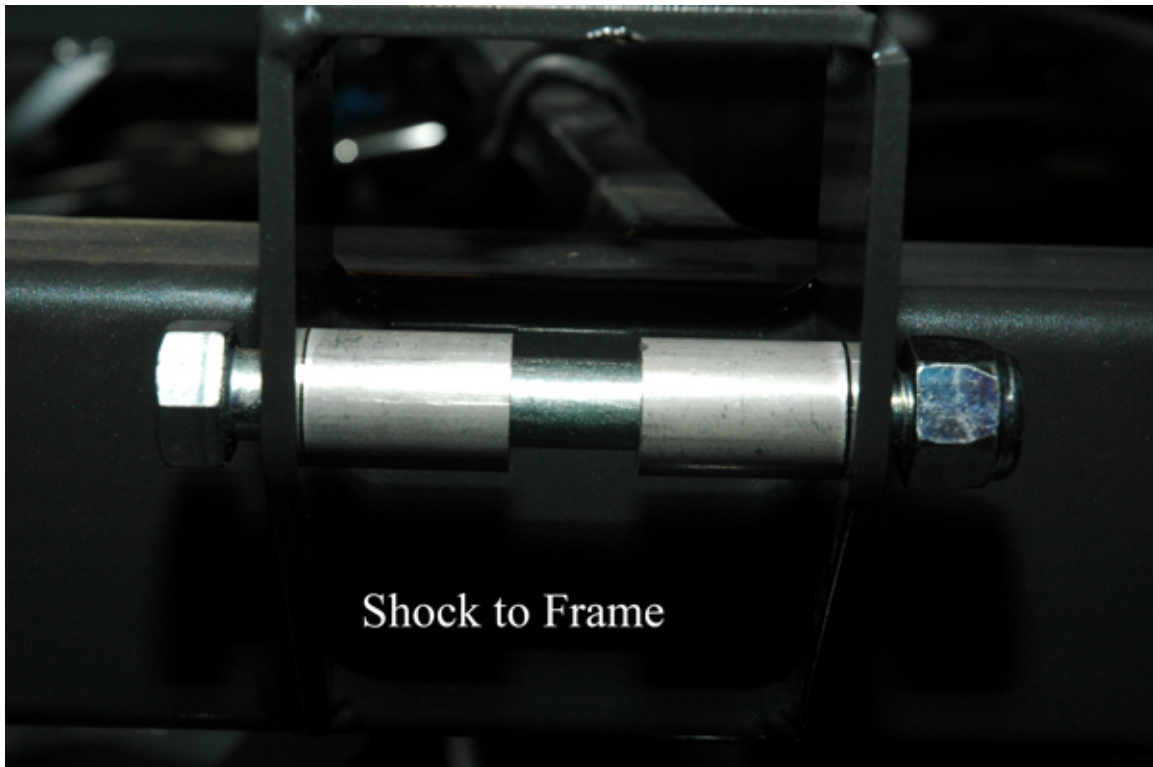
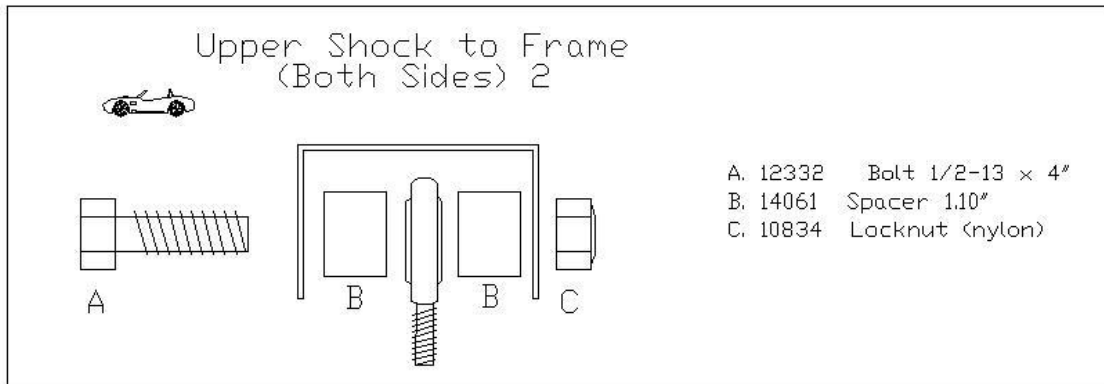
- The quad-shock (horizontal shock) brackets are not required for the 3-Link and can be removed by cutting off and grinding the axle housing smooth. The upper rear control arms are also not used and the ears can be removed from the differential housing. **NOTE:** If you plan on big HP it is recommended to use a 3-Link upper bracket support like the one offered by VPM. If so, do **NOT** remove the upper control arm ears as they will be needed.
- If changing gears, switching to 5-lug, or converting to disc now is the easiest time. Access gets really limited once the axle is in the car. Also check the differential fluid (smelly, isn't it?), gasket (RTV works better than cork), as well as the axle bearings and axle seals.

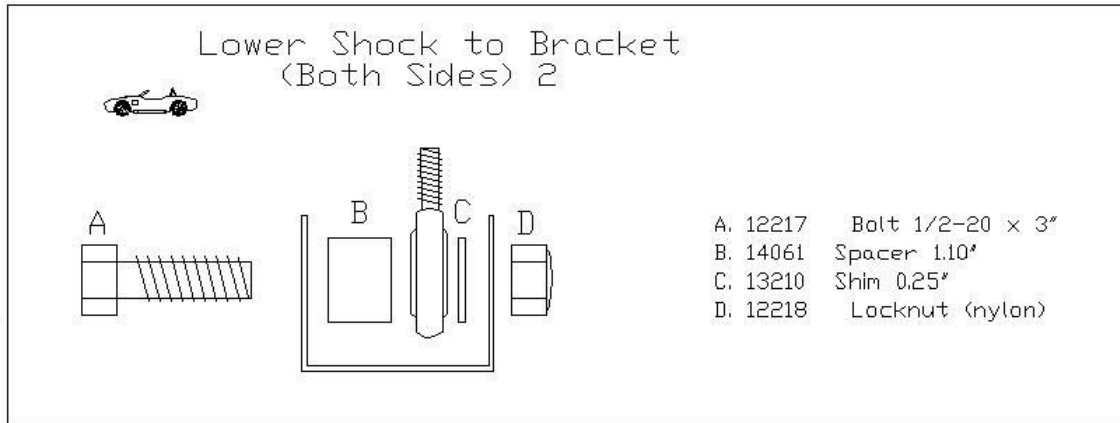
3-Link Install

1. Enlarge stock lower control arm mounting holes with ½” drill bit. Install panhard axle mount bracket (13200) on passenger side of axle and competition traction lock bracket on driver side of axle. Brackets will be snug and a mallet may be required. Install using four ½-13 x 1.25” Bolts (10833) and four ½-13 locknuts (10834) through previously drilled holes. Snug tight but do not torque yet.
2. Note: see step 9. Position the axle assembly relative to the frame in the approximate final mounting position. The driver side of the axle will pass through the panhard bar frame mount. This can be done with brake rotor/drum in place but is much easier with it removed. Support axle with jack stands.
3. Install the Rear lower control arms using the bolts (m12x120) and nuts acquired from the donor. (My FFR Arms came with 4 - m12 bolts, washer, and locknuts). Snug the bolts but do not torque. Make sure mounting ears will remain square when torqued; spacers or washers may be required. For cars with less than 400hp? use the upper bar control arm mounting holes. For cars over 400hp? use the lower mounting holes.
4. Assemble rear coilover shock assemblies using the FFR shock assembly update (below). The rear shock is Bilstein #F4-BE3 A274 T0 (13663). BE SURE TO ZIP TIE OR OTHERWISE SECURE THE HAT TO THE SPRING. The hardened washer is not necessary with the newer Bilstein shocks. **See FFR shock installation guidelines at :**

<http://www.factoryfive.com/whatsnew/tech/shocks/shocktech.html>

5. Install the coilover shocks between the frame and axle brackets with the shock body at the bottom (towards the axle) and rod towards the top. The shock mounts to the frame with a 1/2-13x 4" bolt (12332), two 1.10" aluminum spacers (14061), and a 1/2-13 locknut (10834). Place one spacer on each side of the shock joint inside the bracket. Snug tight but do not torque. Repeat on both sides. The shock mounts to the axle bracket with a 1/2-20x 3" bolt (12217), a 1.10" aluminum spacer (14061), a .125" (not .25" as in the drawing) steel shim (13210) to the rear of the shock, and a 1/2-20 locknut (12218). The shock mounting bolts should be inserted from front to rear so the locknut is towards the rear of the car. Snug the bolts but do not torque.

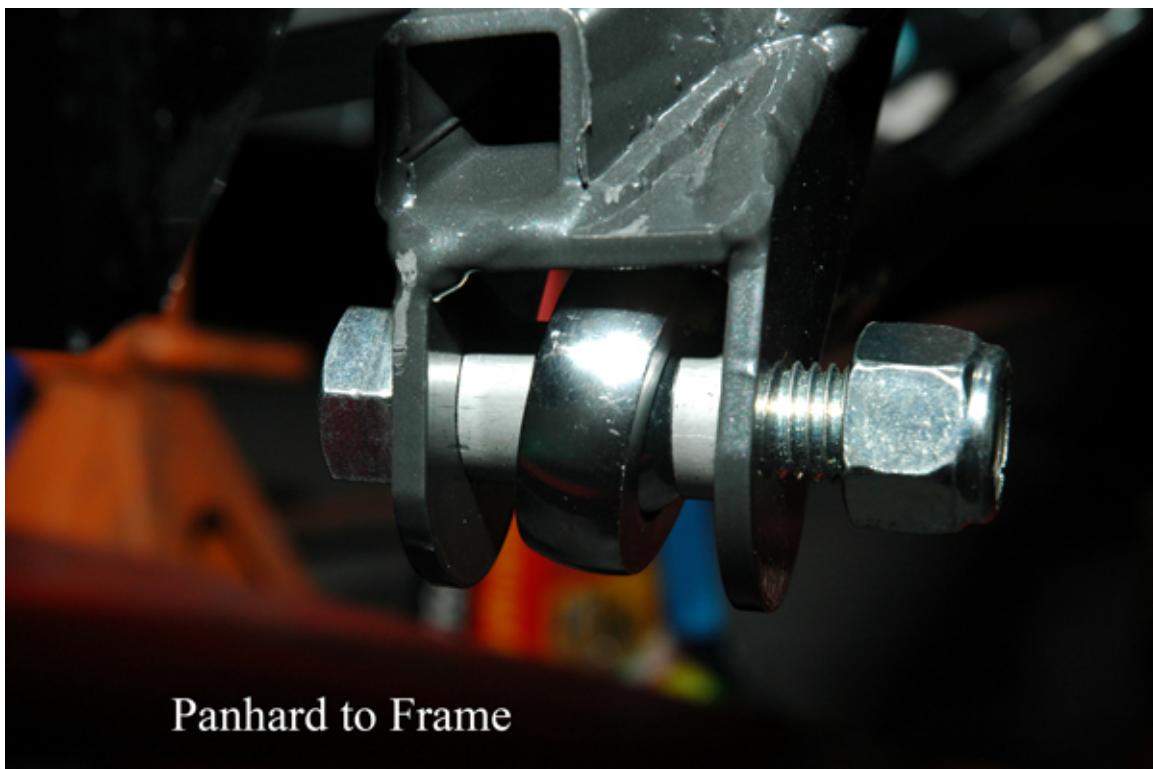
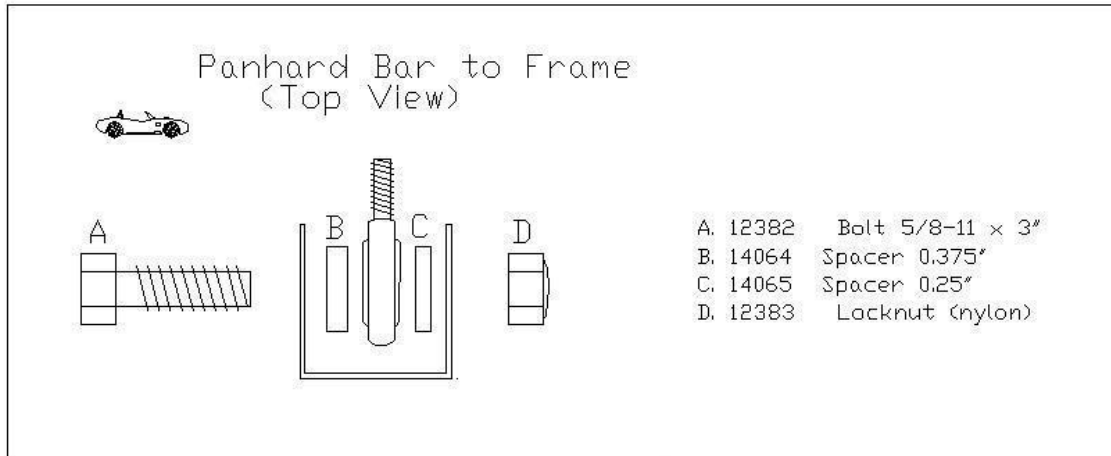




6. If using a bolt in retrofit 3 Link install panhard bar mount. FFR recommends welding the panhard bar to frame mount for competition or track use.

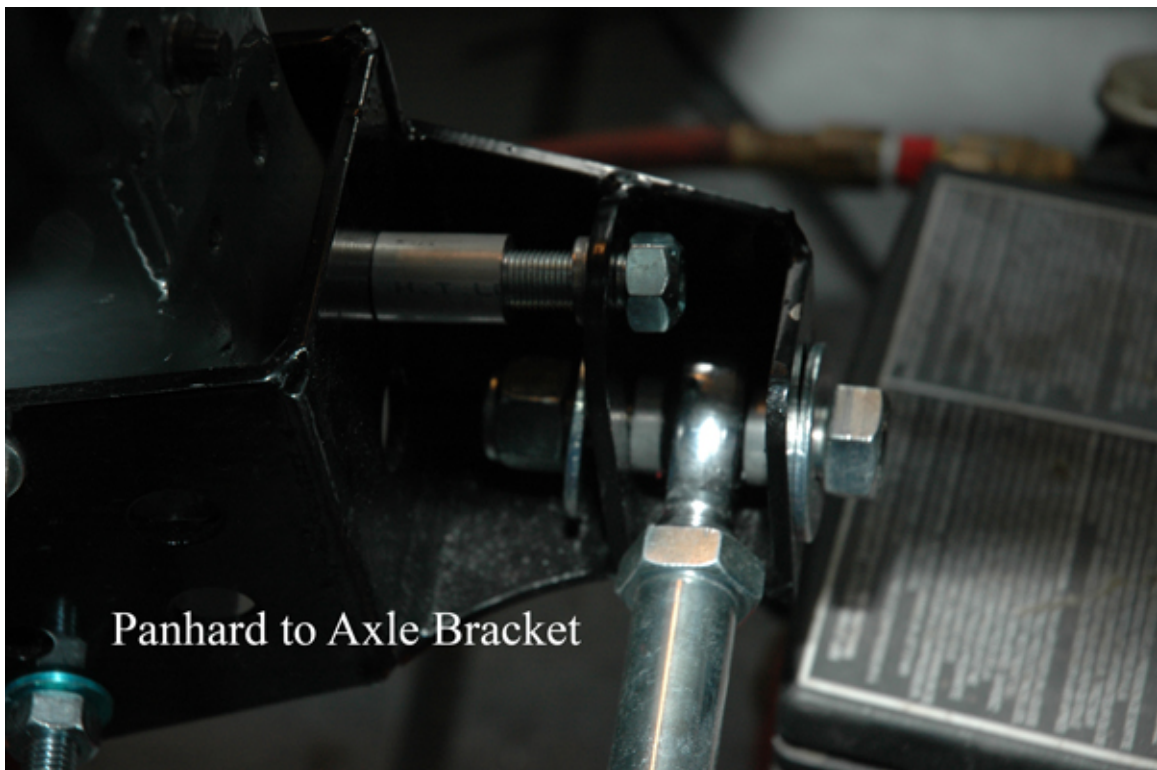
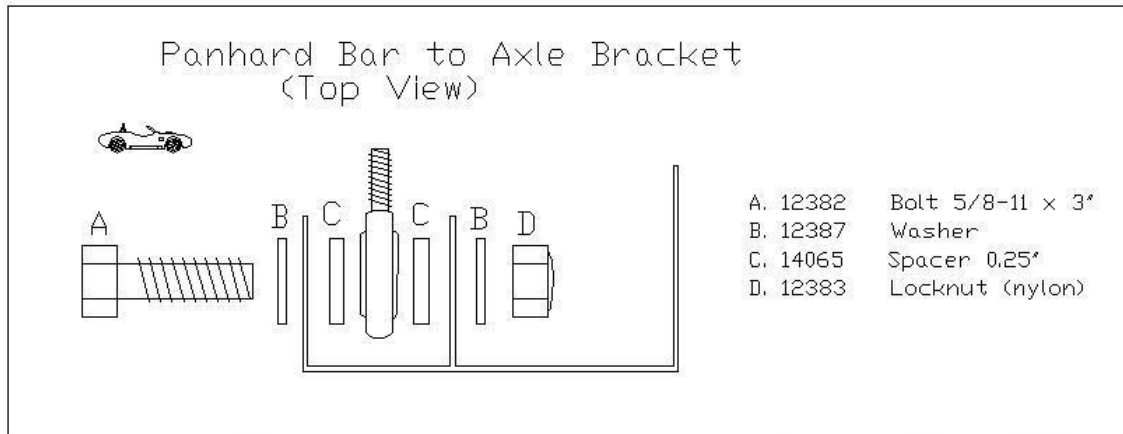
7. Assemble the panhard bar using the 37" bar (13167), two 3/4-16 jam nuts (one right 12380 and one left 13166) and two 3/4-16 rod ends (one right 12348 and one left 13165). Thread jam nut on to rod end until 1/4" of thread is left between nut and swivel. Thread onto panhard bar until jam nut is snug against bar. There should never be less than 3/4" of threads screwed into the panhard bar.

8. Install the panhard bar to the Frame mount using 5/8-11x 3" bolt (12382), a 0.375" aluminum spacer (14064) to the rear, a 0.25" aluminum spacer (14065) to the front, and a 5/8-11 locknut (12383). The bolt is inserted from the rear to the front of the bracket. Snug but do not torque.

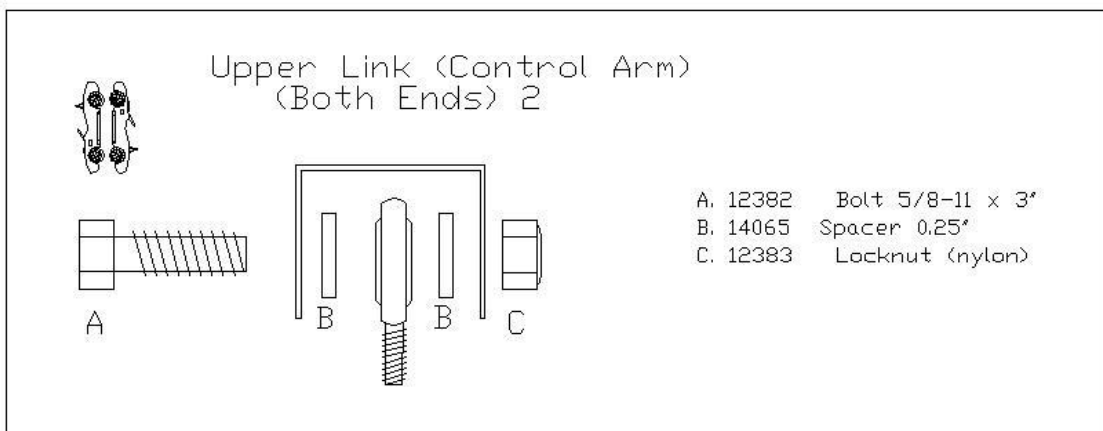


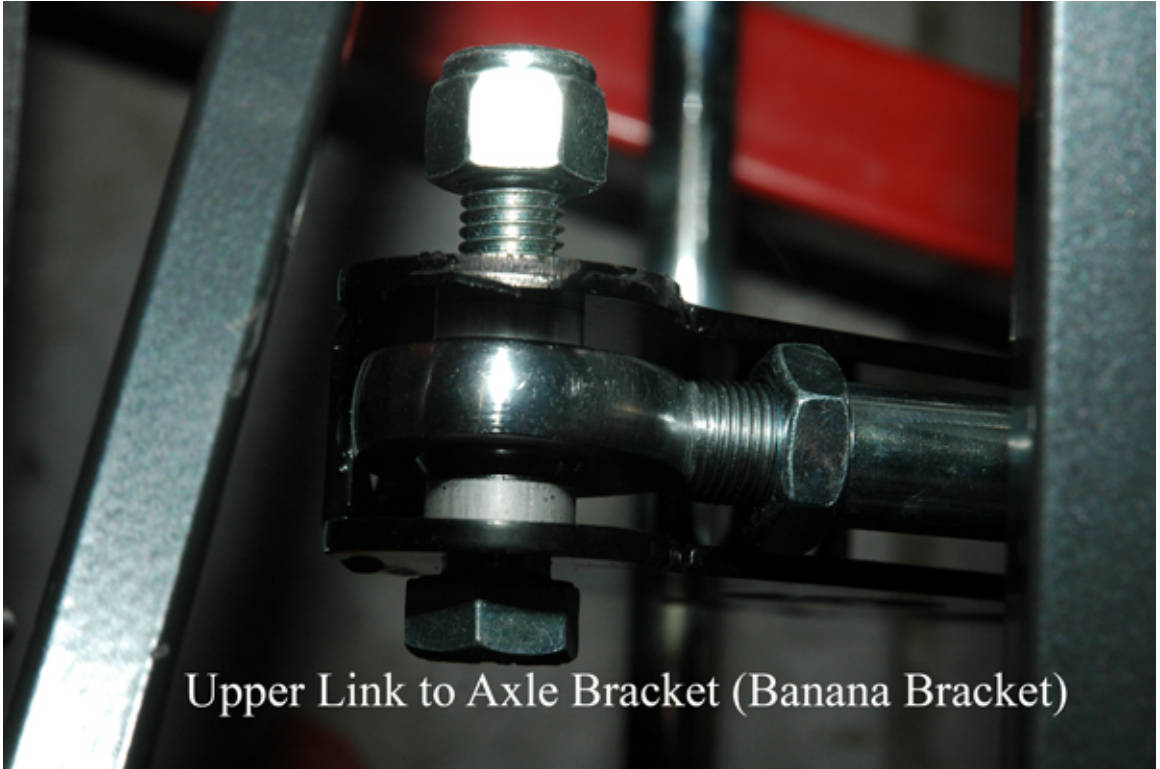
9. Install the panhard bar to the axle bracket (slotted holes) using 5/8-11x 3" bolt (12382), two 5/8" washers (12387), two 0.25" aluminum spacers (14065) one on each side of the rod end, and a 5/8-11 locknut (12383). The bolt is inserted from the rear to the front of the bracket with the washers between the bolt/bracket and nut/bracket. Snug but do not torque. Some lateral adjustment may be necessary to fit bar, adjust both sides equally.

Update: Sometime near JULY-AUGUST 2007 the passenger side 3-link bracket was redesigned. It no longer uses the staggered set up where the shock and panhard mount offset (see drawing and picture below). The panhard bar now mounts in the same space as the shock and requires 4 x 0.25" spacers (two each front and rear) or 2 x 0.50" spacers to center the rod end. This redesigned bracket allows for larger 15" wheel combinations. The driver side bracket remains unchanged. Search for the discussion at www.ffcobra.com.

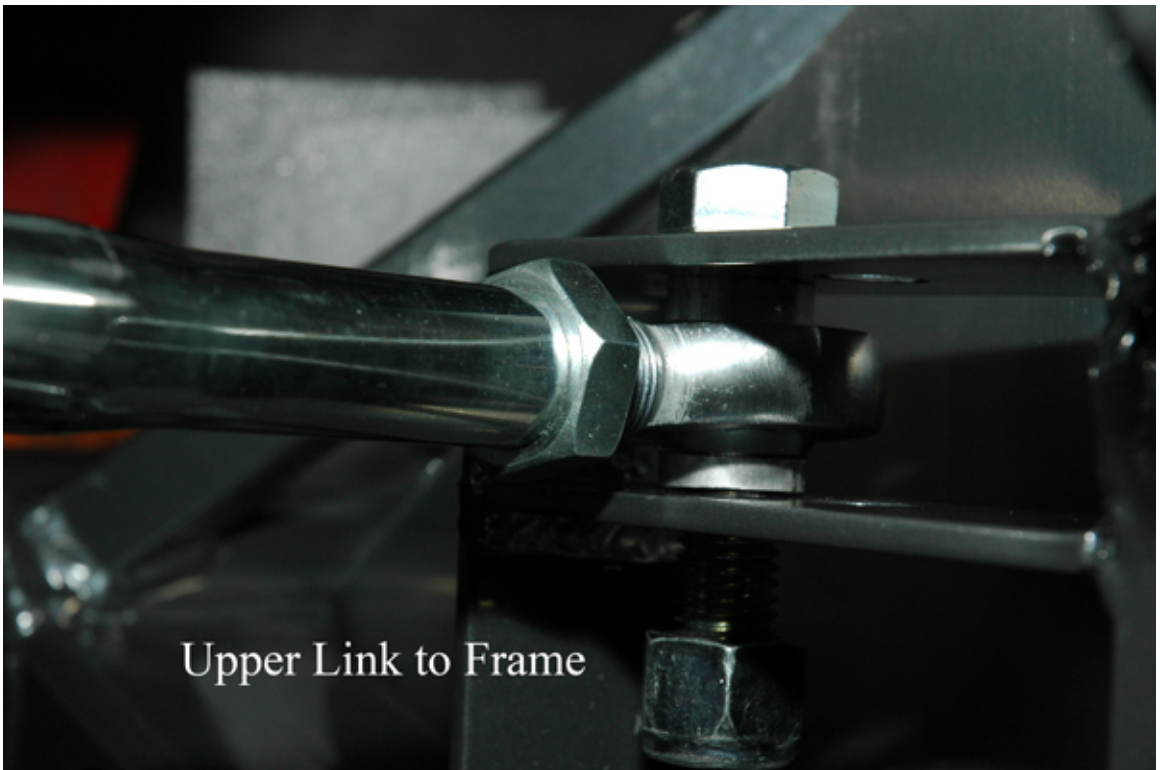


10. Note: This step may be completed easier prior to axle installation (step 2). Mount the upper arm bracket (13203 and 13322) to the axle just to the passenger side of the differential housing ensuring axle vent tube is clear of the bracket. Insert and finger tighten the four 1/2-20 x 3" bolts (12217) and four 1/2-20 mechanical locknuts (12218). The bolts and bracket may be extremely tight. Install the 3/8-16 x 2" bolt through the bracket support tube using the hole in the front of the differential. Now remove the bolt and replace it with a 3/8-16 x 3" bolt since the bolt included with the kit is too short. Assemble using two washers (13977) and 3/8-16 locknut (13964). Torque to specification (37 ft/lbs for Gr5 bolt / 52 ft/lbs for Gr8 bolt). Tighten the 4 clamp bolts evenly by rotating through all 4. Torque to specification (101 ft/lbs for Gr5 bolt / 144 ft/lbs for Gr8 bolt).
11. Assemble the upper link using the 12" bar (13211), two 3/4-16 jam nuts (one right 12380 and one left 13166) and two 3/4-16 rod ends (one right 12348 and one left 13165). Thread jam nut on to rod end until 1/4" of thread is left between nut and swivel. Thread onto upper link bar until jam nut is snug against bar. There should never be less than 3/4" of threads screwed into the upper link.
12. Install the upper link bar to the Frame mount and upper arm bracket using 5/8-11 x 3" bolt (12382), two 0.25" aluminum spacer (14065) one on each side of the swivel, and a 5/8-11 locknut (12383). For cars with less than 400hp? use the upper mounting holes. For cars over 400hp? use the lower mounting holes. Snug but do not torque.





Upper Link to Axle Bracket (Banana Bracket)



Upper Link to Frame

13. Set ride height and adjust the pinion angle to allow for changes in drive train geometry (approx 2 degrees up at full droop). Adjust panhard bar left to right to center the axle in the frame as well as level to the ground.

14. Tighten and torque all bolts/nuts to specification. These torque specs refer to regular hex nuts using washers only. **DO NOT USE THESE VALUES FOR NYLON LOCKNUTS!**

3/8-16 37 ft/lbs for Gr5 bolt / 52 ft/lbs for Gr8 bolt
 1/2-13 90 ft/lbs for Gr5 bolt / 127 ft/lbs for Gr8 bolt
 1/2-20 101 ft/lbs for Gr5 bolt / 144 ft/lbs for Gr8 bolt
 5/8-11 179 ft/lbs for Gr5 bolt / 254 ft/lbs for Gr8 bolt

Torque Checklist

Trac-Lock brackets to Axle (4)	55-70	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lower Control Arms to Frame (2)	80-105	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Lower Control Arms to Axle (2)	70-100	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Upper Shock to Frame (2)	70-80	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Lower Shock to Axle (2)	60-70	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Jam Nuts -Panhard/Upper Link (4)	no spec	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Panhard to Frame (1)	100-115	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Panhard to Axle (1)	100-115	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Upper Link Bracket to Axle (4)	100-145	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Upper Link Bracket to Differential (1)	35-50	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Upper Link to Frame (1)	100-115	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Upper Link to Bracket (1)	100-11	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Notes:

- FFR recommends welding the upper link bracket to the axle housing if you plan on using the car for racing or track use. Be careful not to warp the housing with excessive heat. If using a bolt in retrofit 3 Link FFR also recommends welding the panhard bar to frame mount.