SYNERGY MFG. 870 INDUSTRIAL WAY, SAN LUIS OBISPO, CA (805) 242-0397

5051 - SYNERGY SUSPENSION UNIVERSAL FRONT 3-LINK KIT

Version 1.0

GENERAL NOTES:

- These instructions are also available on our website; *www.synergymfg.com*. Check the website before you begin for any updated instructions and additional photos for your reference.
- These instructions include only the link suspension kit, you will need to accommodate steering, spring and shock mounts in addition
- This is a universal kit and will likely require modifications to these components to fit your application correctly
- The installation of this suspension kit requires extensive cutting, grinding and fabrication. Many of the major suspension brackets on the frame will need to be cut off and ground smooth. A plasma cutter or oxy-acetylene torch works best but you can also use a grinder with a cut off wheel.
- You will need basic hand tools, MIG welder a grinder with cut off wheel or sawzall, floor jack or automobile lift, and two sturdy jack stands to complete this installation.

1. Unpack the suspension components from the boxes, verify that all parts are intact and in good condition.
2. Read all the following steps before beginning installation. If you do not have the proper tools or ability to install the components properly do not attempt installation. Find a creditable, local shop to do the installation work.
3. Take some baseline measurements of your existing suspension so you know what you had, measure the distance from the axle to the frame at ride height, axle to the ground, and axle location front to back.
4. Make a plan and take notes of what you want to change, i.e. move the axle forward +2 is common.
5. Tack weld everything, do not finish weld any component until you have cycled the suspension and checked that everything clears adequately.

FRAME LINK BRACKETS

6. Use a floor jack under the center of front axle to lift the tires off the ground. Place jack stands under each side of the front portion of the frame rails to support the weight of the vehicle. Raise or lower the floor jack under the front axle to remove and install suspension components.
7. Remove the front suspension components and the entire front axle assembly

8. Cut off any suspension bracket on the frame that you will not be using, i.e. lower control arm brackets, shock mount, spring mounts, track bar brackets, leaf spring hangers, etc
9. Position and clamp the new front frame control arm brackets on the frame. The front to back location is entirely up to you, on a TJ or YJ, the front tub body mount generally is where it goes, but you can go as far back to the T-case skid plate. You may need to relocate or push the brake, fuel lines above the frame control arm bracket.

10. Mark the bracket where the top edge of the frame is.

11. Remove the control arm bracket and cut at the line.

12. Reposition the control arm bracket to the frame and tack weld the upper plate on.
13. Remove the control arm bracket again and weld the top plate on.

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14. Decide which side you want the upper control arm on. It usually goes on the side that the drive shaft is on. Driver side for a TJ or YJ. Weld the upper control arm top plate and gusset as shown below. There of two of these brackets included, you can use both and make a triangulated 4-link. The opposite side frame bracket without the upper control arm gets the 2 vertical gussets.

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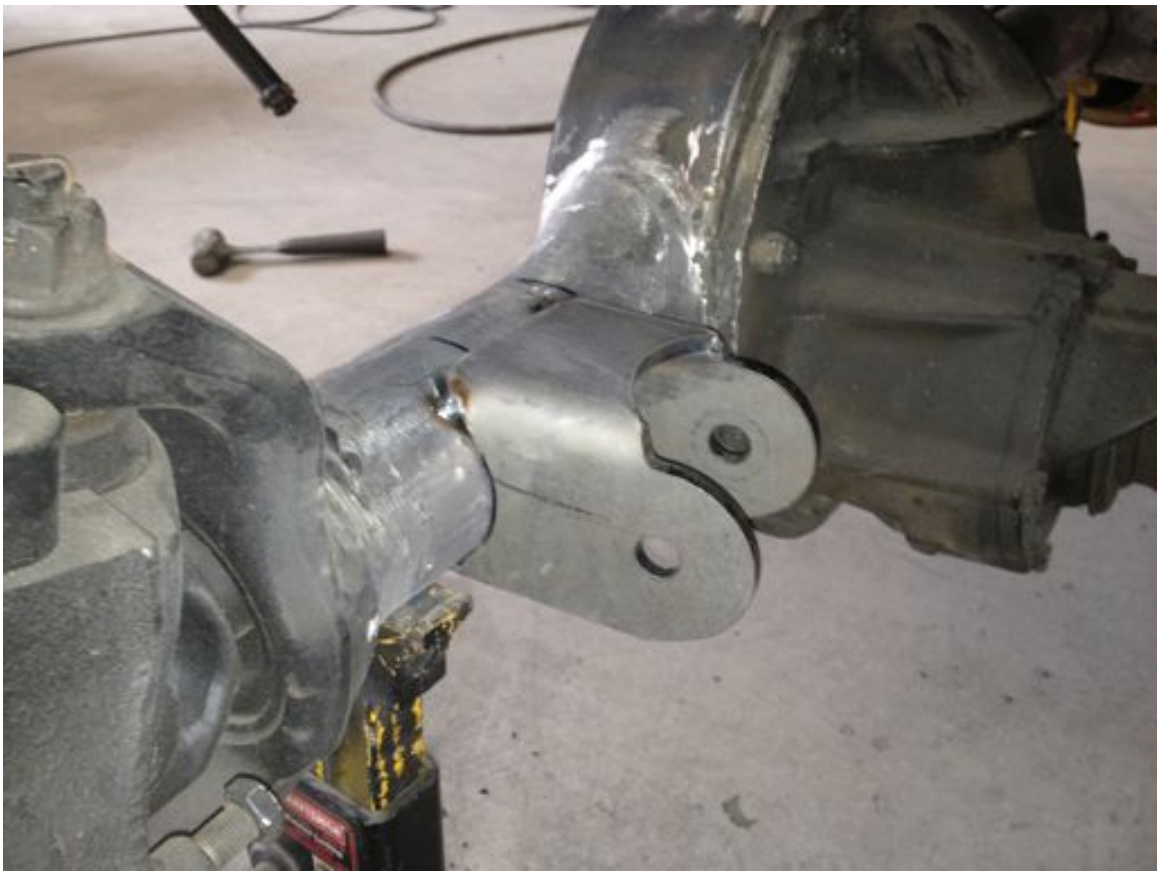
15. Reinstall and tack weld the control arm brackets on the frame. Double check the front to back location and make sure they are the same side to side.

AXLE LINK BRACKETS

16. Cut off all or any unwanted suspension brackets from the axle housing. Use a grinder with a cut off wheel, plasma cutter or oxy-acetylene torch. Grind the welds smooth.
17. It is best to set the axle on jack stands with a jack supporting the pinion to set the castor angle. Adjust the castor to your desired castor, 6-8 degrees is typical for this type of application.
18. Position the lower control arm brackets on the axle tube. These brackets are made for a 3" axle tube, you may need to modify them to fit your axle tube if it's a different size. This is not a set location and is up to you to find the optimum position. Typically the lower control arm brackets are as far apart on the axle housing as possible without the tire contacting the lower control arms at full turn. The lower control arm brackets are usually anywhere from 2" to up against the inner C weld. The top of bracket is typically level to the ground. Make sure the angle inward looking from the top.



19. Mock up the single upper control arm mount (may require fabrication or purchase of an axle bridge for over the diff housing). Do not weld entirely to a cast diff housing, it will not hold. The side to side location is usually pretty tight so you may want to wait until you place the axle back in the vehicle to finalize this mount.

LOWER CONTROL ARMS

20. Position the axle housing back under the vehicle on jack stands. Set the front to back location and set the axle at ride height and correct castor angle based on your notes and dimensions from the beginning.
21. Measure center to center of the bolt holes of the lower control arm brackets. This will be the length of the lower control arms. Thread the rod ends or Johnny Joints with

jam nuts into the threaded bungs. Only leave a couple of threads exposed past the jam nuts. Measure from the center of rod end to the step on the threaded bung were the tube is to be welded. Subtract two times this dimension from your center to center measurement and this is the cut length of your tube.

22. Cut the lower control arm tubing to the length calculated above and tack weld the threaded bungs in.
23. Install the lower control arms to the axle and frame brackets.

UPPER CONTROL ARMS

24. Tack weld one end of the upper control arm tubing and threaded bung
25. Install the upper control arm rod end, jam nut, threaded bung and tube into the frame bracket. You generally want the upper control arm level at ride height. Set the upper control arm level and measure the height to the top of the front axle. This is how tall you want to make axle upper control arm bracket. The side to side location is variable and usually depends on upper control arm clearance to other components like motor mounts, steering or radiator.

26. You may want to raise the front axle up to where you think full bump is to check clearance for the upper control arm. Once you have determined a upper control arm side to side location you can fabricate the upper control arm bracket.

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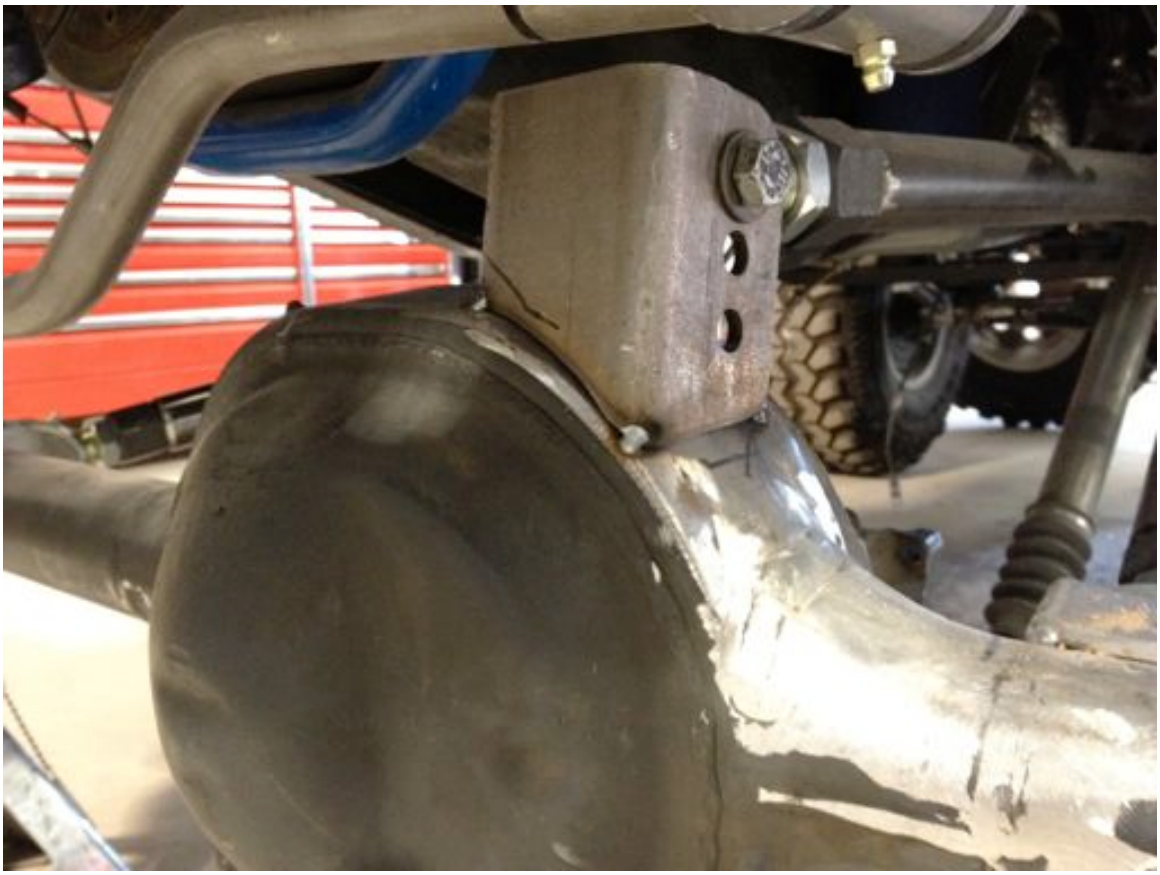
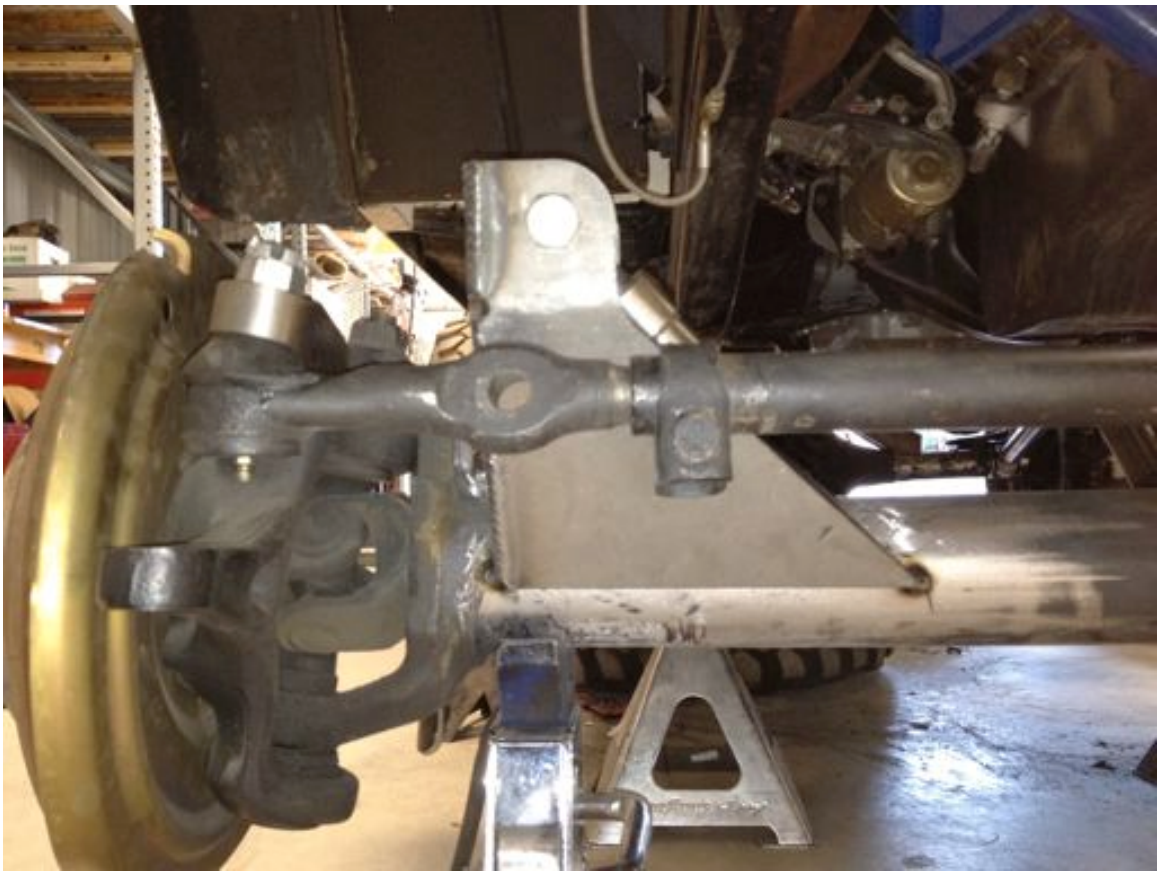


27. Measure center to center of the upper control arm bracket, cut and tack weld the tube for the upper control arm and install in the vehicle.

TRACK BAR

28. Position the axle track bar mount on the axle. This bracket typically goes as far out to the knuckle as possible. Usually up against the inner C weld. This height works well for most high steer configurations, but can be trimmed to make it lower if needed. Set the front to back rotation as far forward as possible without hitting the tie rod or steering arm at full turn. Tack weld the bracket.



29. Determine the mounting location for the frame mount track bar bracket. The track bar needs to be parallel to the drag link so you may need to trim the bracket to mount higher if needed. Tack weld the bracket to the frame.

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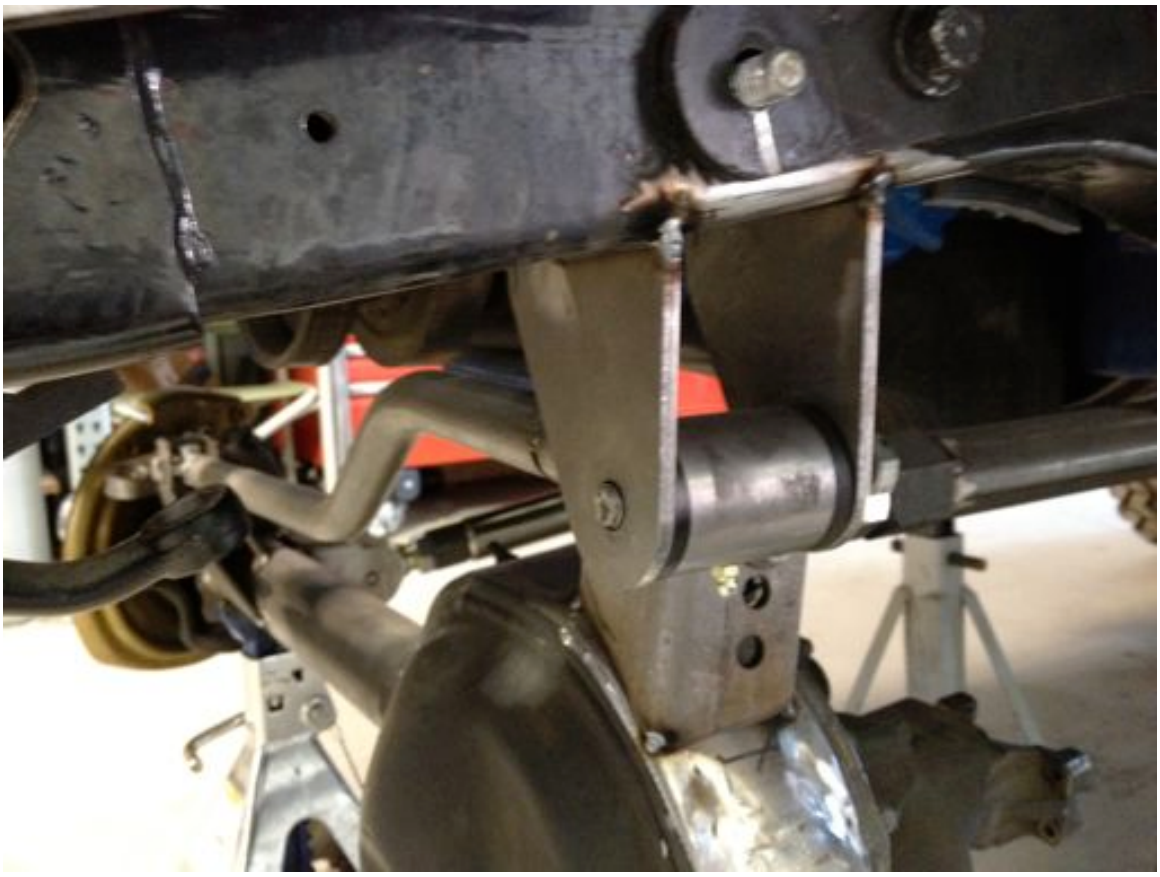

30. Assemble the bushing at the frame end and rod end at the axle end of the track bar.
31. Cut the track bar tube to the appropriate length, you may need to put a bend in the track bar to clear the differential, cycle the suspension to check for proper clearance.
32. Tack weld the track bar tubing to the frame bushing and rod end tube bung.

FINAL CHECK AND ASSEMBLY

33. The following components are not covered in these instructions, but now would be the time to address them
    - Shock and spring mounts
    - Steering
    - Anti-sway bar mounts
    - Brake lines
    - Drive shaft angle or slip
    - differential breather length

33. Cycle the suspension and double check that everything clears satisfactorily.
34. Remove the control arms, axle housing and weld:

    - Weld the axle housing control arms and track bar mount
    - Install the gussets and weld the frame track bar mount
    - Weld the frame control arm brackets to the frame
    - Remove the rod ends from the control arms and weld the tube bungs
    - Remove the track bar bushing and rod ends and weld the bushing tube and tube bung

35. Paint all components and reinstall, torque the 9/16 hardware to 150 ft-lb
36. Have the vehicle aligned by a professional shop. Check all hardware after 500 miles of driving. We also recommend checking all hardware before and after all off road trips to avoid failure from loose fasteners.