



## INSTALLATION INSTRUCTIONS

P/N: C2028

### MAGNUM SERIES 4-LINK

This is the strongest 4-link ever offered by Competition Engineering. It is designed to work in conjunction with our Part No.: C3060 4-Link Frame Rails and our Part No.: C2031 Magnum Series Diagonal Link. The mounting brackets have 5/8" holes that allow for a closer spacing for a wider range of possible adjustments.

NOTE: This kit contains Chrome Moly components that require assembly using the GTAW (TIG) welding process. The brackets in this kit may be GMAW (MIG) welded. Proper installation requires the removal of the housing ends.

### PARTS LIST

- |                                |                                |
|--------------------------------|--------------------------------|
| 2) Axle Brackets 1/4"          | 2) Axle Bracket Gussets        |
| 2) Axle Brackets W/Shock Mount | 4) Chassis Brackets 1/4"       |
| 2) 1-1/4" x 18" Link Tube      | 2) 1-3/8" x 18" Link Tube      |
| 2) 1-3/8" Dia Tube Adapter, LH | 2) 1-3/8" Dia Tube Adapter, RH |
| 2) 1-1/4" Dia Tube Adapter, LH | 2) 1-1/4" Dia Tube Adapter, RH |
| 8) 5/8"-18 x 2.75" Bolts       | 8) 5/8"-18 Locknuts            |
| 8) 5/8"-18 Set-up Nuts         | 4) 3/4" L Hand Moly Rod End    |
| 4) 3/4" R Hand Moly Rod Ends   |                                |

### PRELIMINARY

The following is a list of suggestions to make your installation easier:

- Select a flat level surface to do the installation where the car can remain until complete.
- Non-locking nuts have been included in the kit for use during trial assembly. Locknuts should only be used once. Additional nuts have been provided for use during setup.
- Use caution during welding to avoid damage to fuel and brake lines.
- Read all directions completely before beginning this project. If you have any questions feel free to contact our tech department.
- Double-check all dimensions before final assembly. A few extra minutes now can save a lot of time later.
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For Technical Assistance, call Competition Engineering's Tech Line at  
(203) 458-0542, 8:30am-5:00pm Eastern Time

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## INSTALLATION

1. First you must determine the ride height of the vehicle. The ride height is the position of the chassis at rest with the driver strapped in and the car race ready. This dimension should be taken from a fixed point on the body. We recommend using the rocker box weld seams. Ride height varies depending on individual tastes, tire clearance and sanctioning body guidelines. Once ride height is determined it must be maintained for all suspension related measurements. Write this dimension down where it can be easily referenced during construction and tuning.
2. Place the vehicle on jackstands so that it is supported in four places under the chassis. Level the vehicle both front to rear and side-to-side.
3. Using a plumb bob, mark the front spindle centerline onto the shop floor.
4. Use the plumb bob again to locate the front of the axle tube onto the shop floor. Mark these points down on the floor with a magic marker. Draw a line connecting these two points using a straight edge.
5. Measure the diameter of the axle tube and divide this number by 2. Make another line parallel and behind the first line made in step 3. This is your rear axle centerline.
6. With all these critical measurements taken, you may now remove the axle housing and any other unnecessary suspension components.
7. Remove all existing brackets and links from the rear axle housing that will not be used. This can be accomplished by using either a plasma cutter or an oxy-acetylene torch. Use caution when removing brackets so that you don't add to much heat to the housing, which will warp it.
8. Determine the centerline of the vehicle and mark its location on the shop floor. This can be done as follows:
  - a. Measure the distance from one front spindle to the other and divide by 2. Mark this dimension on the floor.
  - b. Take another measurement from the inside of one frame rail to the inside of the other frame rail; divide this number by 2. Mark this dimension on the floor.
  - c. Stretch a chalkline between the front and rear marks on the floor. Snapping a line between these points gives you the chassis centerline.
  - d. Using a straightedge, make this line permanent on the floor with a marker.
9. Next we will determine the offset of the drivetrain. Most cars, but not all, have on-center drivetrains. You can figure this as follows:
  - a. Measure from the center of the transmission tailshaft to the inside of the front frame rails on both sides.
  - b. Subtract one side dimension from the other. The result will be the drivetrain offset.
  - c. Mark this dimension on the floor.
10. Using a floor jack and jack stands, position the rear end under the car at the correct ride height and wheelbase using the axle centerline. Set the pinion angle at 0° using a jack stand to hold it in position. Center the pinion on the line corresponding to the drivetrain offset. NOTE: A minimum of one-inch clearance is required between all four link brackets or tubes and the tire sidewall or frame.

A minimum of three inches of clearance is required for upward travel of the rearend.

At this time we recommend installing Competition Engineering's Mandrel formed 4-Link Frame Rails Part No. C3060 and 2"x3" Crossmember Part No. C3061. We also offer the front chassis bracket for this kit to fit our frame rails. It is available under Part No. C3421.

11. With the frame rails installed, determine the location of the front chassis bracket using the diagram for reference. Make a template of the bracket by tracing its perimeter onto cardboard. Trim the template to fit under the frame rail. When you are satisfied with the fit, trim the four supplied brackets to match the template.
12. Tack weld the brackets in-place using your rod ends as spacers for the brackets. This can be accomplished by bolting two of your rod ends between the chassis brackets. Make sure that the bolts are tight to eliminate play between the brackets. Use a level to ensure that the brackets are tacked on level and square to the chassis.
13. Measure the distance between the front chassis brackets and use this dimension to determine the proper location of the axle housing brackets. Again using the rod ends as spacers, slide the axle housing brackets onto the axle tubes. Tack weld the brackets in-place making sure that the front edge of the bracket is perpendicular to the pinion centerline. Double check the bracket spacing before tack welding to the axle tubes.

NOTE: On some applications the I.D. of the axle bracket may need to be enlarged. Use a round file or rotary grinder to accomplish this.

14. Using the axle centerline marks on the floor, position the housing under the vehicle. Make certain that the pinion is on the centerline and that the axle tubes are square to the centerline.
15. Thread the jam nuts onto the rod ends leaving five threads showing. Install them into the supplied tube ends.
16. Place the tube ends into the ends of the chrome moly tubing. Trim the tubes to achieve a 21" center-to-center distance for each assembly. Tack weld the tube ends to the tubing after the length has been determined.

NOTE: On some applications the 21" dimension may not be optimum. If the center-to-center distance is changed from 21", all dimensions in this package must be adjusted for the new length. The tubing supplied in this kit is oversized for this reason. Make sure that all four tubes are the same lengths to eliminate bind.

17. Install the 1-3/8" o.d. tube assemblies in the bottom holes of the chassis and axle brackets. Use the supplied 5/8"-16 nuts to hold the assemblies in place.
18. Install the 1-1/4" o.d. tube assemblies in the third hole from the top on the chassis brackets and the top hole on the axle brackets. Use the supplied 5/8"-16 nuts and bolts to hold the assemblies in place. At this time we recommend installing a locating device for the rear housing. This will eliminate side-to-side movement of the rear housing. Competition Engineering offers three different styles of housing locators: Part No.: C2031 Magnum Series Diagonal Link, Part No.: C2035 Universal Wishbone Locator and Part No.: C2024 Magnum Series Wishbone Locator.
19. With everything in place check that all dimensions are correct. The lower 4-Link tubes should angle downward from front to back.

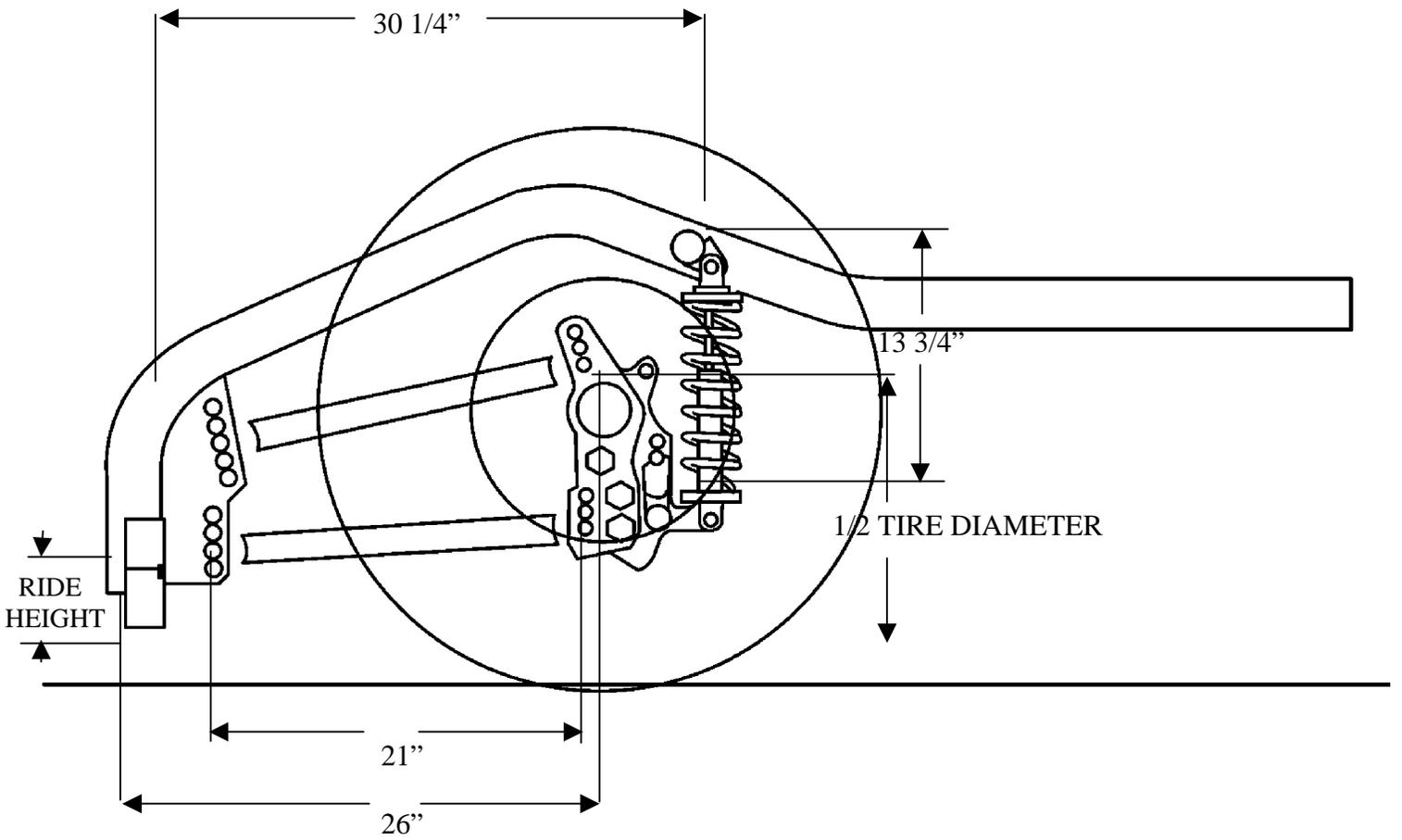
20. With all dimensions checked out, remove the link tubes from the brackets. Remove the rod ends from the tubes and re-install them into the chassis and axle housing brackets. Bolt them in place with the supplied hardware.
21. Check the brackets once again for square and alignment. Finish weld the brackets to the frame and axle housing.

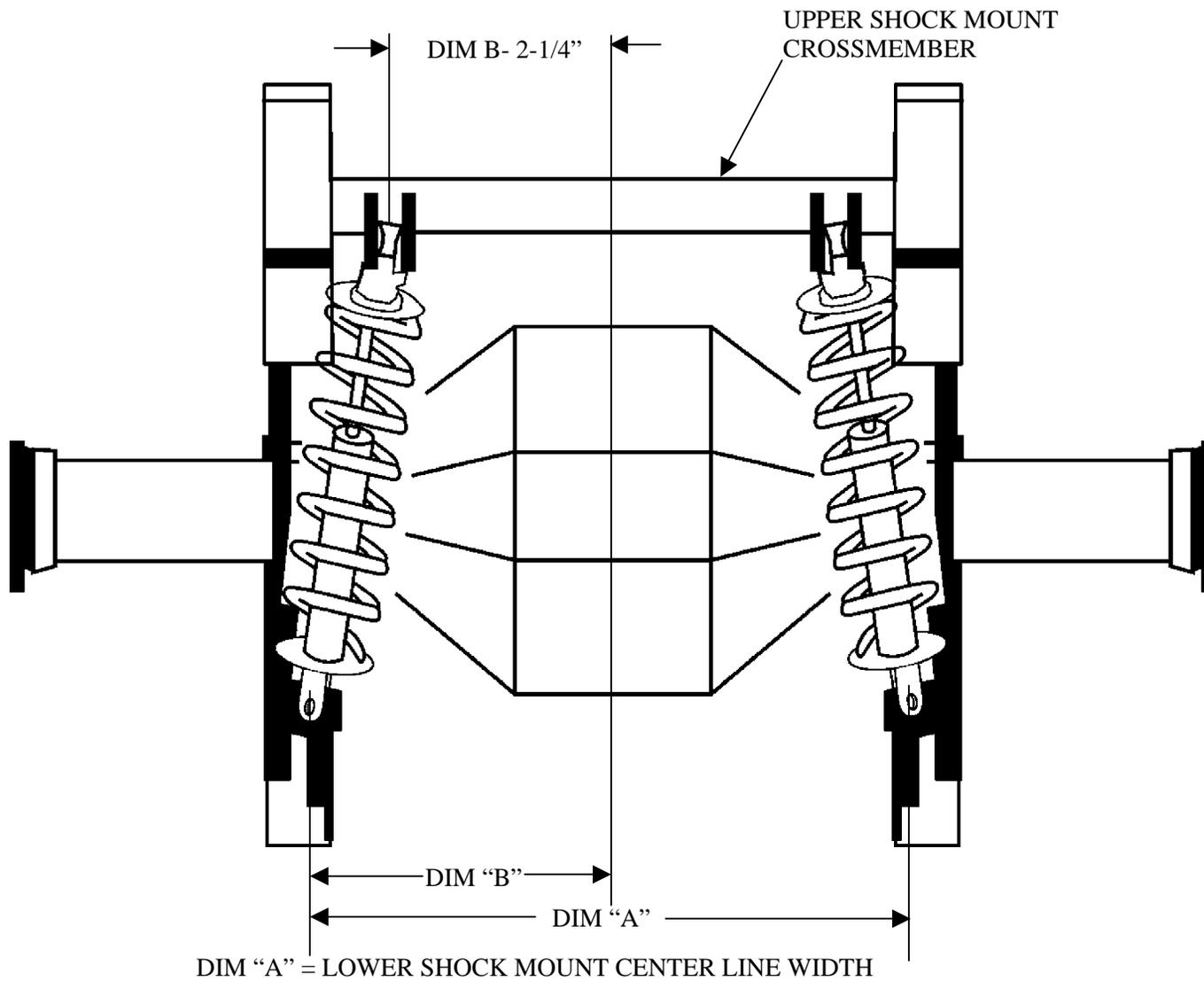
NOTE: The axles, center section and miscellaneous bearings should be removed to prevent damage to bearings and seals during welding. When welding the axle brackets we recommend welding 1" at a time, alternating from one side of the housing to the other to prevent distortion.

22. At this time you can opt to install the housing bracket gussets. These gussets install on the back of the housing brackets to provide increased strength. If you are going to use the Wheel-E-Bar mounts reduce the length of the gussets to 7".
23. TIG weld the tube adapters to the link tubes. We suggest adding two rosette welds 1/2" in from the end of the tubes.
24. Re-install the housing and the 4-Link bars.

#### **4-LINK SET-UP**

1. For the initial set-up of your 4-link, install the two lower bars and the driver's side upper bar only using the holes indicated in Steps 17 and 18.
2. Adjust the lower bars on both sides to set wheelbase and square the rear to the chassis centerline. Use the driver's side top bar to set the pinion angle at 2° below the driveshaft angle. We suggest using an angle finder such as Competition Engineering's Part No.: C5020 Professional Angle Finder and Level. It may be necessary to go back and forth between the wheelbase adjustment and the pinion angle adjustment several times to arrive at the correct dimensions since adjusting one will have an effect on the other.
3. Once you are satisfied that the housing is square in the chassis and at the correct wheelbase and pinion angle, install the passenger's side top bar. This bar should be adjusted to length so that the bolts will slide in place without being forced. This will give you a neutral pre-load setting.
4. Tighten all nuts and bolts.
5. Remember, the two bottom bars set wheelbase, the driver's side top bar sets pinion angle and the passenger side top bar sets pre-load. Record all dimensions and bar positions for future reference. If you encounter a problem while tuning your 4-link, you can always revert to this baseline setting.
6. If the car pulls to the right on launch, you can shorten the passenger side upper bar up to one wrench flat at a time. If more than two wrench flats are added you should look for signs of suspension binding or flex.





$$\text{DIM "B"} = \frac{\text{DIM "A"}}{2}$$

