

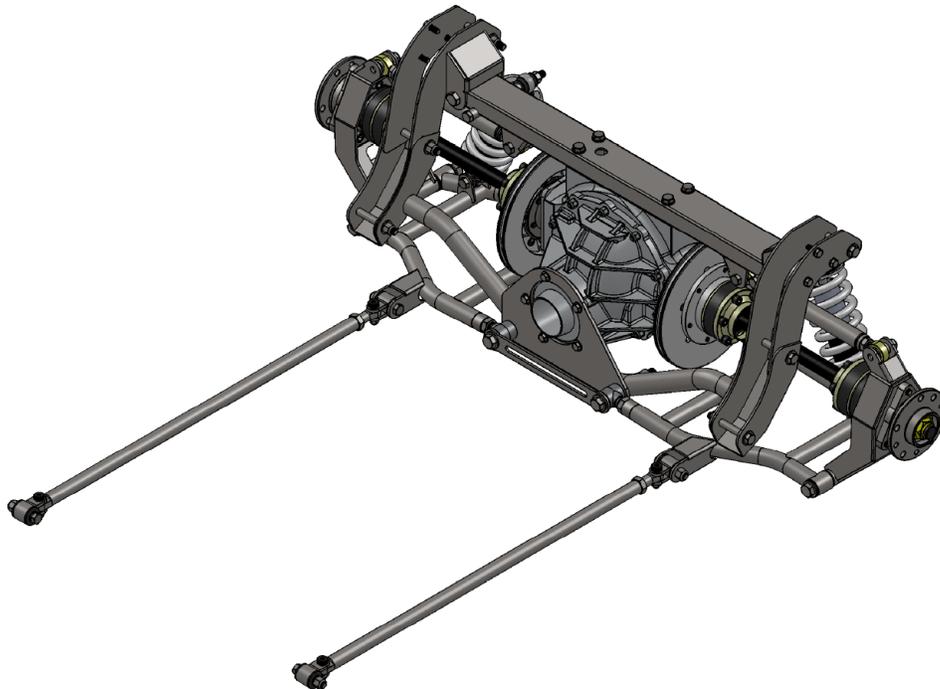


# IRC-201

## INSTALLATION INSTRUCTIONS

### '70-'73 CAMARO

## INDEPENDENT REAR SUSPENSION



Please read these instructions completely before starting your installation.

Remember the basic rule for a successful installation:

**\*\*\*\* Measure Twice, Drill Once. \*\*\*\***

**\*\*\*\* Do Not Paint or Powder Coat any suspension components before trial fitting all items \*\*\*\***

For questions on installations please call 800-841-8188 In Illinois (847) 487-0150





## PARTS LIST

- |                           |                            |                       |
|---------------------------|----------------------------|-----------------------|
| 1) Center Housing         | 2) Bearing Assemblies      | 1) Pinion Crossmember |
| 2) Stub Axles w/ Bearings | 2) CV Joints               | 2) Strut Rods         |
| 1) 3 <sup>rd</sup> Member | 2) Brake Rotors            | 2) Coil Overs         |
| 1) Pinion Mounting Plate  | 2) Rotor Adapters          | 2) Coil Springs       |
| 2) Lower Control Arms     | 2) Caliper Mounting Plates | 1) Hardware Package   |
| 2) Tie Bar                | 1) Top Crossmember         | 2) Saddles            |
| 2) Outer Uprights         | 2) Upper Links             |                       |

## HARDWARE PACKAGE

### **CV Joints**

- 12) M10 X 1.50 X 80 MM Bolts
- 12) M10 Split Lock Washer

### **Rotors**

- 12) 5/16-24 X 3/4" Bolts
- 12) 5/16 Split Washers

### **Pinion Plate Assembly**

- 5) 3/8-16 X 1 1/4" Bolts
- 5) 3/8 SAE Washers

### **Top Crossmember**

- 4) M-12 X 25MM Washers
- 4) 1/2-13 X 2 1/2 Bolts
- 2) 5/8-18 Nylock Jam Nuts
- 2) 5/8-18 X 4 1/2" Bolts

### **Lower Control Arm Assembly**

- 12) 5/8 Washers
- 2) 5/8-11 X 5" Bolts
- 2) 5/8-11 X 10 1/2" Bolts
- 6) 5/8-11 Nylock Nuts
- 2) 5/8-11 X 5 1/2" Bolts

### **Saddles**

- 12) 1/2" Washers
- 6) 1/2-13 Nylock Nuts
- 6) 1/2-13 X 4" Bolts
- 6) 3/8-16 X 1" Bolts
- 6) 3/8" Lock Washer

### **Coil Over Shocks**

- 4) 1/2" Washers
- 2) 1/2-13 X 7 1/2" Bolts
- 4) 1/2-13 Nylock Nuts
- 2) 1/2-13 X 2 1/2 Bolts

### **Outer Uprights**

- 8) Rod End Spacers
- 4) 1/2-13 Nylock Nuts
- 4) 1/2-13 X 2 1/2 Bolts
- 6) M 12 X 60 MM Bolts
- 6) M 12 X 25 MM Washers

### **Calipers**

- 4) 0.015" Shim Washer
- 8) 0.031" Shim Washer
- 10) 3/8-16 Nylock Nuts
- 4) 3/8-24 X 1 1/8" Bolts
- Shim Washers as Needed

### **Strut Rods**

- 4) 1/2-13 Nylock Nuts
- 4) 1/2-13 X 2 1/2 Bolts

### **3rd Member**

- 10) 3/8-16 Nylock Nuts

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NOTE: Prior to working under the vehicle, there are a few things on the Pro-G IRS kit that should be pre-assembled on the bench. This will allow for a more comfortable working arrangement, which will save time, and prevent possible installations errors and/or frustration. Things are much easier to see, measure, and handle while on the bench. Also it allows a large installation like this to be broken down into smaller tasks, and possibly reduce some of the intimidation if this is your first IRS install.

### BENCH ASSEMBLY

- 1) Starting with the center section, install the axle seals into the rear end housing. With the seal edges pointing inward, use a mallet to slowly tap the seals in until they bottom out on the shoulder in the bore. A seal installation tool should be used to ensure that the seals are installed square. Do not tap on the seal directly, as the mallet could deform the seal, and cause an axle leak.
- 2) Next, install the threaded studs into the housing. There are 20 studs total, 10 are 1-1/2" long, and 10 are 2" long. Using a high strength thread locking compound, apply a few drops to each stud before installation. The shorter studs get installed onto the housing ends (5 on each side) for the caliper brackets and the longer studs get installed on the mounting face for the third member housing. The short studs should be installed with 7/8" protruding from the housing ends, and the long studs should be installed with 1-3/8" protruding from the third member mounting face, see Figure 1.
- 3) Finally, install the breather vent into the top of the housing and the drain plug into the bottom.

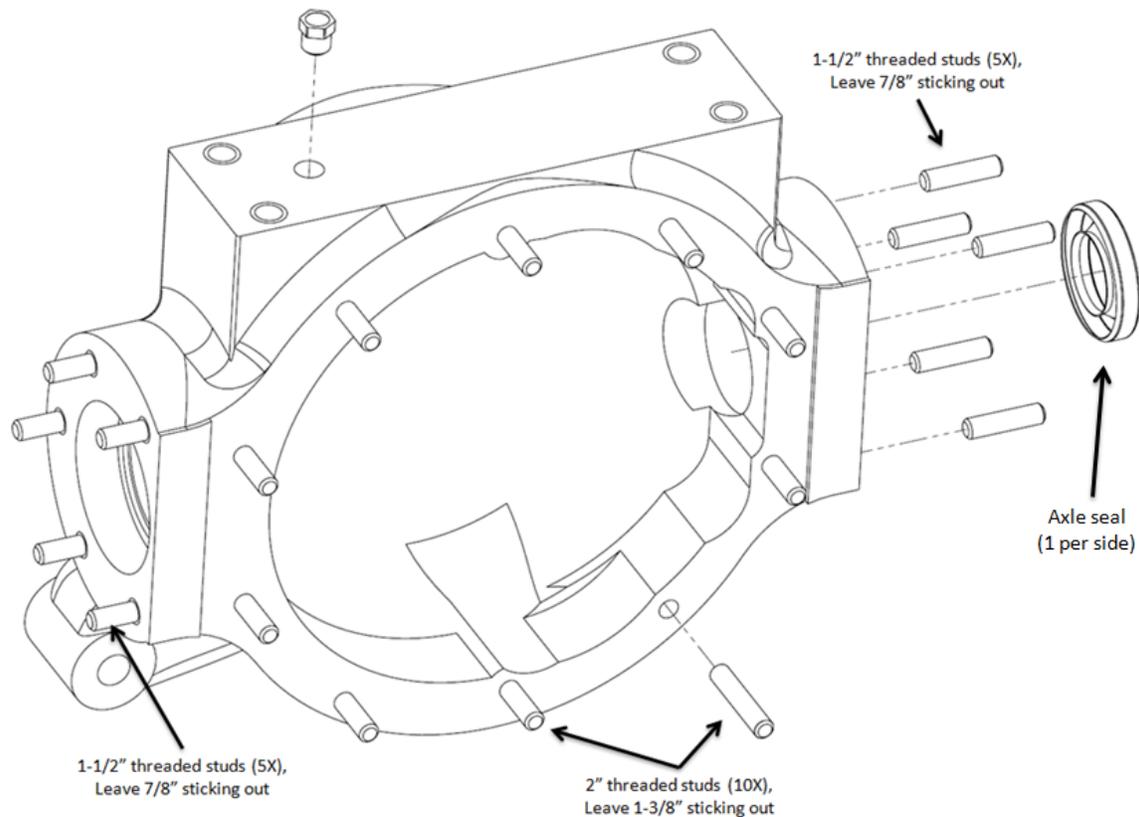
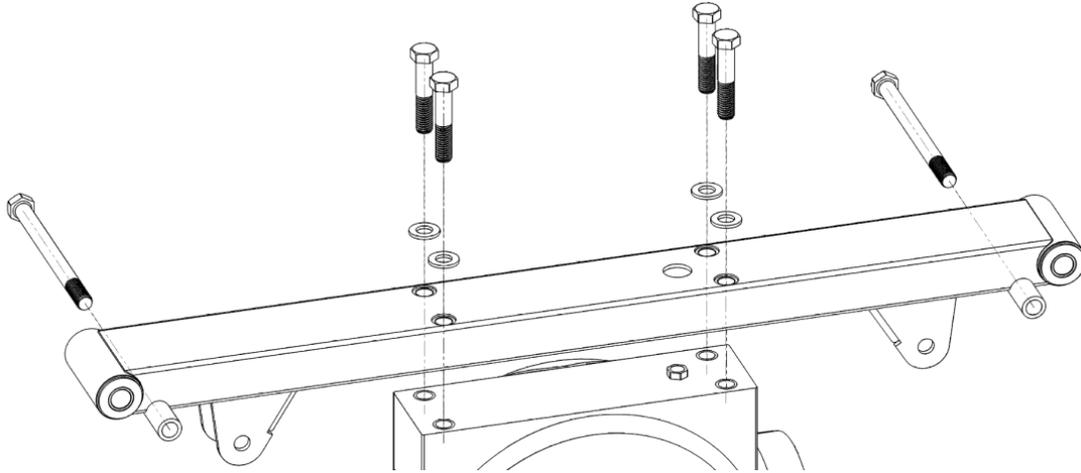


Figure 1. Install the vent, seals, threaded studs and drain plug (not shown) into the rear end housing

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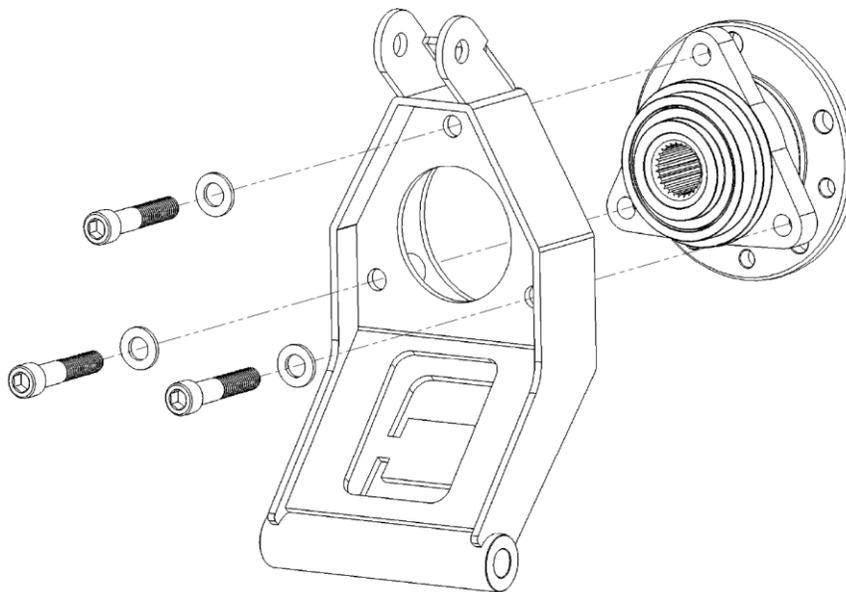


- 4) Bolt the top crossmember to the top of housing with the upper link mounts facing down towards the ground, and the vent hole on the right (passenger) side as shown in Figure 2. Attach using QTY=4,  $\frac{1}{2}$ " X 2- $\frac{1}{2}$ " bolts, and 12mm washers supplied in the kit (metric washers are used here due to their small outer diameter). **Torque to 70-75 ft lbs.** Slip QTY=2,  $\frac{1}{2}$ " X 6  $\frac{1}{2}$ " Bolts into the upper shock sleeves. Make sure that the threaded end is facing the rear of the housing (it's easier to do this now, than when it's in the vehicle).



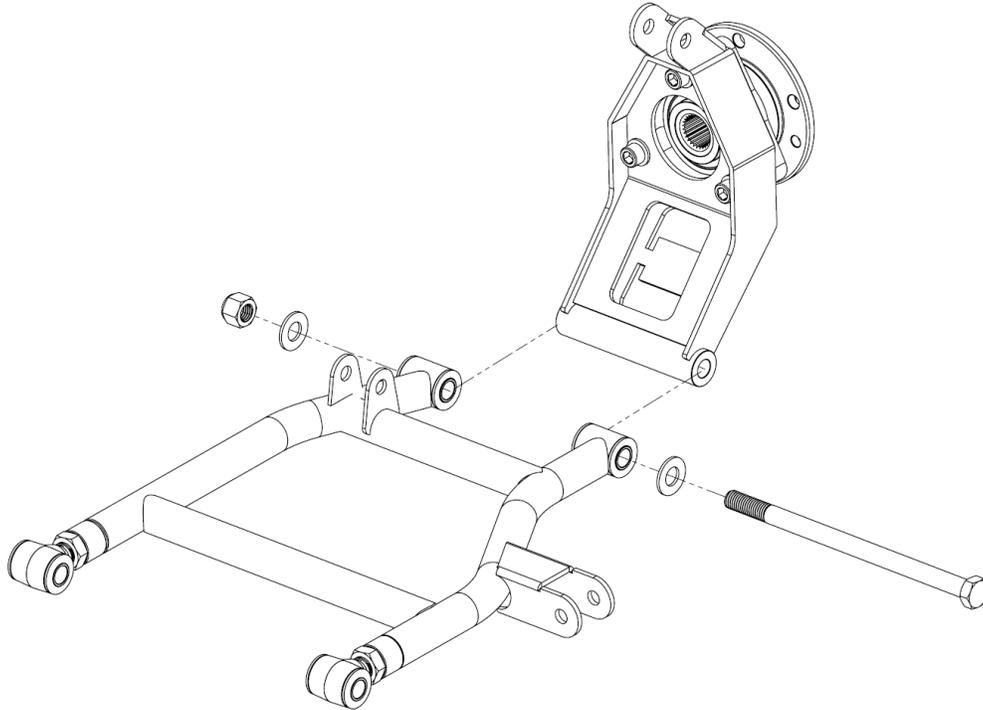
**Figure 2. Install the cross member (make sure the vent hole is above the vent), and slip the upper shock bolts in place for now**

- 5) Install the outer bearings into the outer uprights using the supplied 12 mm socket head bolts and washers as shown in Figure 3. The use of thread locking compound is recommended for this step. The hub is a tight fit into the opening in the hub, so let the bolts pull the hub in as they are tightened. Tightening the bolts in a spiral sequence, like lug nuts on a wheel, will allow the hub to be pulled in evenly. Verify the mating surface on the bearing has seated all the way to the upright then **torque to 65 ft lbs**



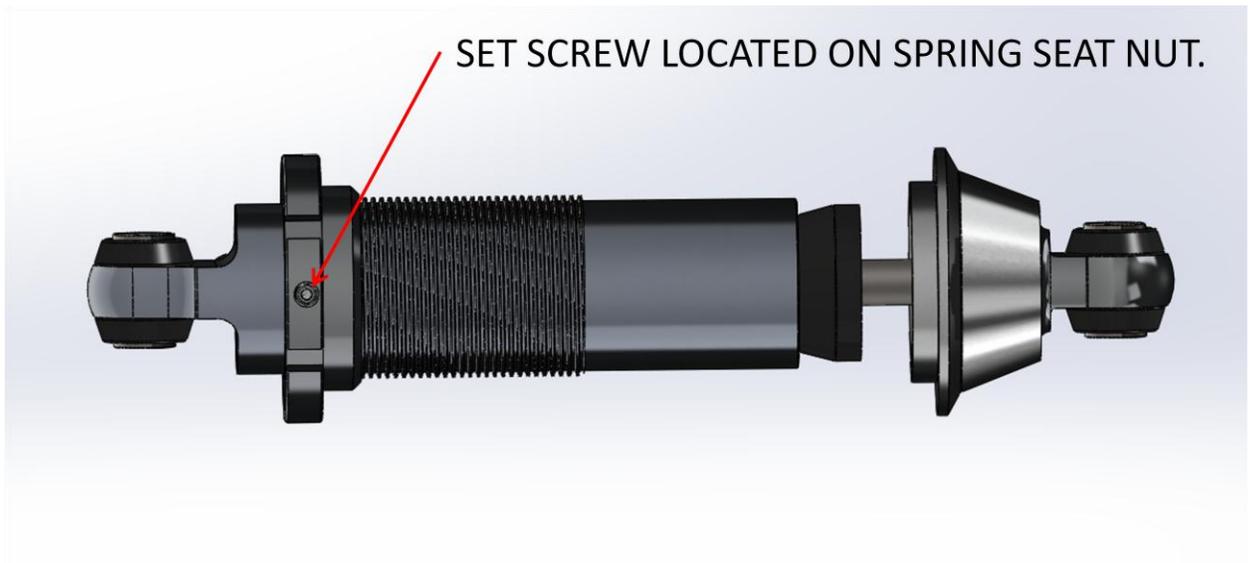
**Figure 3. Install the hub as shown. Tighten the bolts in a spiral sequence to pull the hub in evenly.**  
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- 6) Assemble the uprights to the lower control arms using the supplied 5/8" X 10 1/2" long bolts. A washer should be used on the outside of the bushings as shown in Figure 4.



**Figure 4. Assemble the upright to the lower arm using the 5/8 X 10-1/2" bolt and hardware.**

- 7) Now is a good time to install the coil springs over the shocks. To do so loosen black set screw located on the spring seat nut. Remove threaded spring seat nut, slide on the coil spring, re-assemble See figure 5 below. Be sure not to over tighten the locking set screw and damage the shock body threads.



**Figure 5. The set screw must be tightened down after the coil spring is installed.**

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- 8) Assemble the rotors to the rotor adapter (i.e. rotor “hat”) using the supplied 5/16 x 3/4” button head screws and the 5/16 split lock washers. Each rotor needs 6 screws and washers as shown in Figure 6. Apply a few drops of thread locker on to the threads of the screw during assembly. **Tighten the bolts to 180 in lbs.**

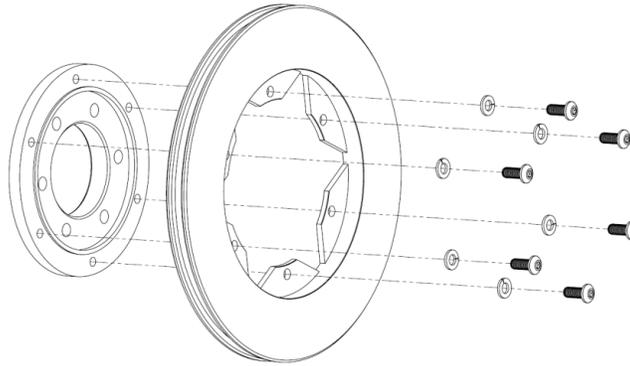


Figure 6. Use thread locker when assembling the 6 bolts and washers to each rotor sub-assembly.

## VEHICLE INSTALLATION

- 9) With the subassemblies complete, now we can address the vehicle itself. Raise and support the vehicle and remove the existing suspension from the vehicle. Jack up the car and support it on sturdy jack stands. Remove the driveshaft, e-brake cables and rear axle assembly including leaf springs and shocks. Remove the rear section of the exhaust system. Also remove the front leaf spring mounts. Remove the bump stop mounts as well.
- 10) Assemble the IRS saddles to the frame rails. The saddles are located using the 3 weld nuts on the outside of the frame. Use the supplied 3/8 X 1” long bolts and 3/8” lock washers to install the saddles. Make sure that the saddle U channel is firmly seated against the bottom of the subframe rail. Drill the 1/2” holes through the factory frame rails using the holes in the saddles as a template, and then securely bolt everything in place with 1/2” X 3 1/2” bolts, lock nuts and washers on each side.

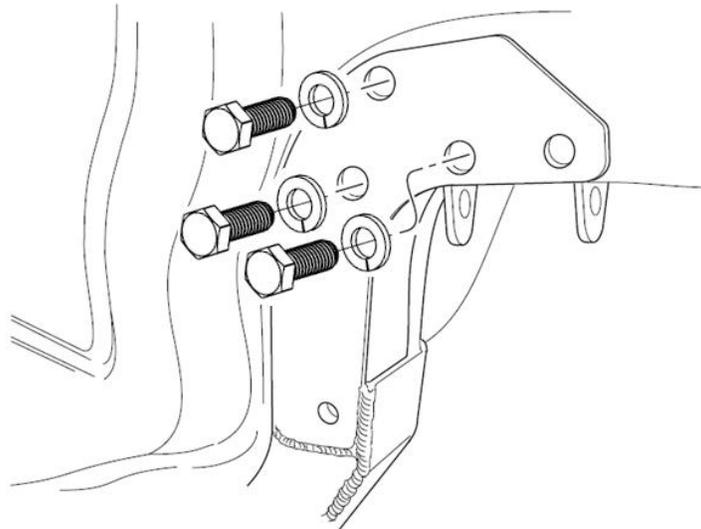


Figure 7. Locate the saddles using the existing 3/8” weld nuts on the frame rail

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- 11) Install the main crossmember & housing assembly onto the vehicle by attaching the cross member to the saddles. Fasten in place using the supplied 5/8" X 4-1/2" bolts and lock nuts.
- 12) Install the 3<sup>rd</sup> member. If supplying your own, it will need to be a 31 spline unit. Install the gasket onto the housing using a suitable gasket sealer. Install the 3<sup>rd</sup> member into the housing, applying the gasket sealer to the contact surface. Use the 10 Nyloc nuts and small washers supplied in the kit to secure the 3<sup>rd</sup> member in place.
- 13) Now, install the pinion support plate, and pinion support crossmember utilizing the forward saddle bolts as shown in Figure 8.

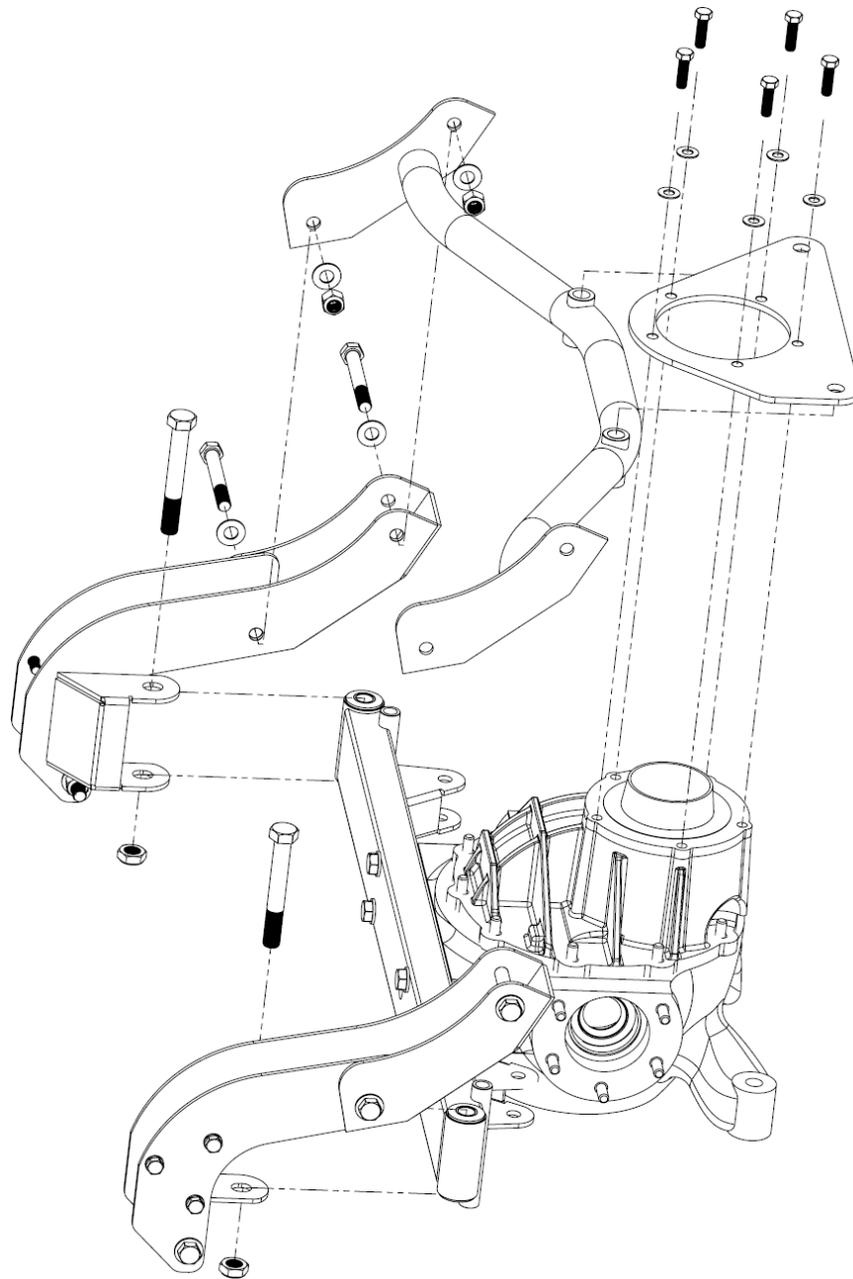
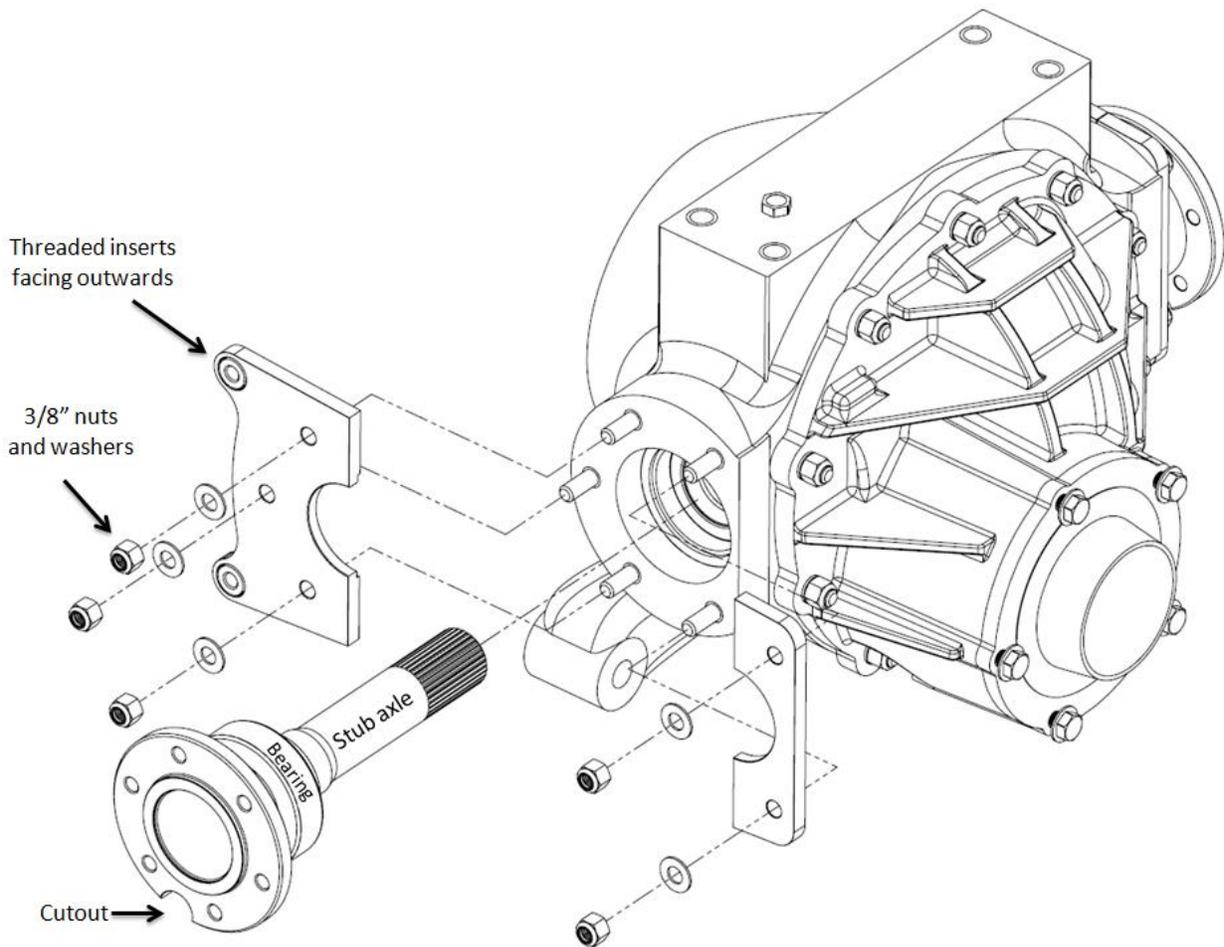


Figure 8. Exploded view of the saddles, center section with third member, and pinion support cross member & plate

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- 14) Apply a small amount of white grease to the splines and seal area of the stub axles and seal lips. The longer axle installs on the passenger side. Carefully slide the axle assembly into the housing until the bearing bottoms out. Install the caliper plates and front plates onto the studs, with the threaded inserts in the caliper plates facing outwards, see Figure 9. Secure the plates using the supplied 3/8" Nyloc nuts and washers. There is a circular cutout in the stub axle flange that lines up with the studs so a socket can be used for the lock nuts. If a parking brake is being installed, the parking brake caliper mounting plates will replace the front plates.



**Figure 9. Passenger side axle (longer axle) being installed with the caliper plates (some parts removed for clarity).**

- 15) Install the lower control arms to the housing and the pinion plate with the tie bar at the front and rear as shown in Figure 10 using the 5/8" bolts, nuts and washers supplied. One tie bar will be in front of the forward control arm mount, and the pinion support will be behind the forward control arm mount as shown. The second tie bar will be behind the rear control arm mount as shown in Figure 11. Be certain to use washers between the rear adjusters and the housing. Do not tighten the bolts and nuts yet, as the camber is adjusted here by turning the adjusters in our out. The arms should be set with the adjusters with an equal amount of thread showing to make the arms straight out and parallel for now.

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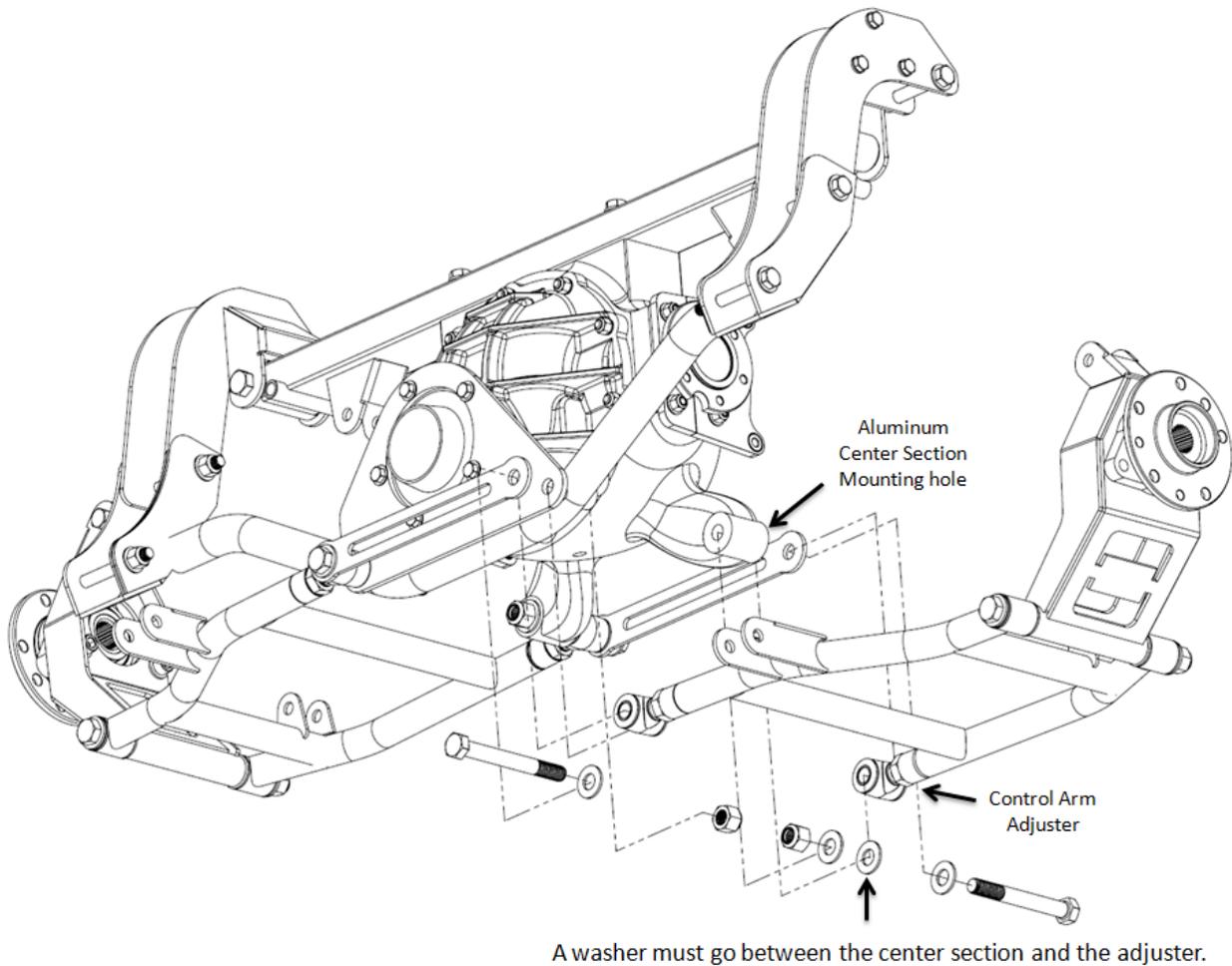


Figure 10. Exploded view of the driver side lower control arm assembly being installed.

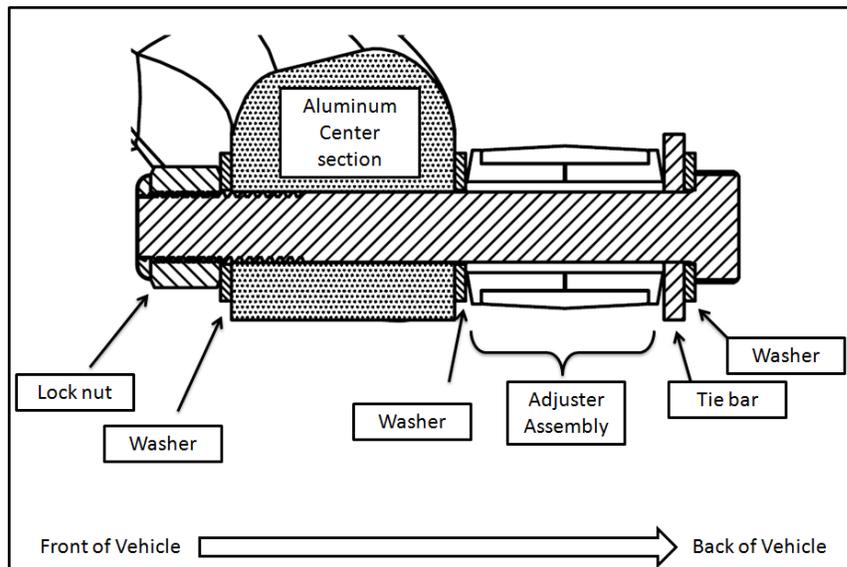


Figure 11. Cross Section of Rear Lower Control Arm Joint

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- 16) Place the rotor assemblies onto the CV-joints with the recessed side of the rotor assembly facing the stub axle. Hold in place and raise the assembly up and place it onto the rotor adapter. Secure with the supplied M10 x 80mm Grade 8 bolts. Tighten the bolts per the sticker located on the CV-joint (57 ft. lbs.). Use of thread locking compound is recommended for this step. Also, verify the pre-assembled bolts on the outer CV joint are also torqued to 57 ft-lbs.

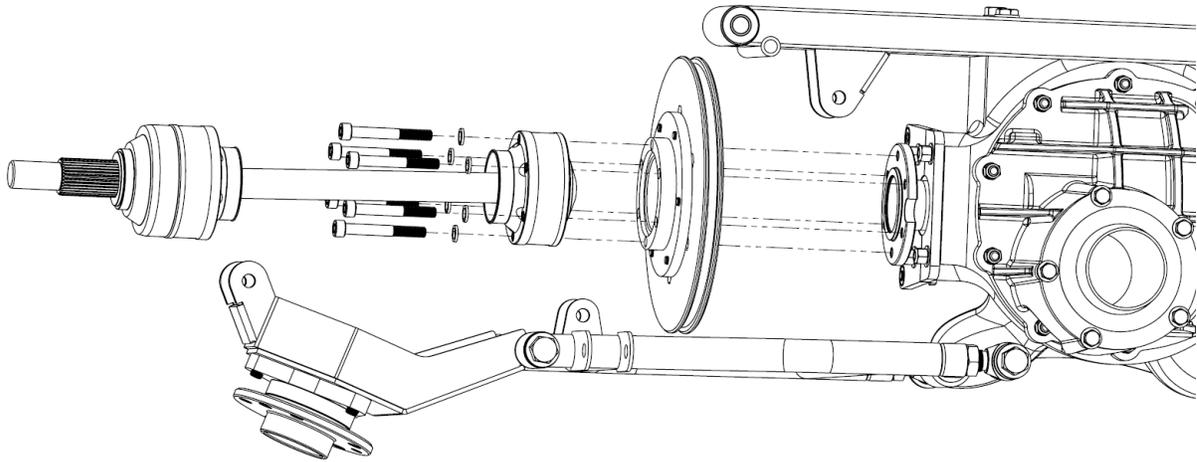


Figure 12. Assemble the CV shafts using the supplied M10 bolts and lock washers

- 17) At this point, the lower arm should be supported so that it is parallel to the ground. Insert the outer CV shaft into the center of the upright, using a small amount of grease on the splines. This can be done easily by tilting the CV shaft downwards, and then swinging the upright upwards. Go slowly, and wiggle it a bit. Careful not to bind the spline in the bearing. You should feel it bottom out on the bearing. Install the flanged lock nut onto the CV shaft – **DO NOT USE THE NUT TO PULL THE SHAFT THROUGH THE SPLINES. Tighten the nuts to 100 ft. lbs. DO NOT USE AN IMPACT GUN!** You can torque the nut after the brakes are installed to hold the half-shafts from turning, but don't forget to do it! A piece of masking tape over the nut can serve as a reminder. Now is a good time to double check that the bolts on the outer CV joint are torqued.

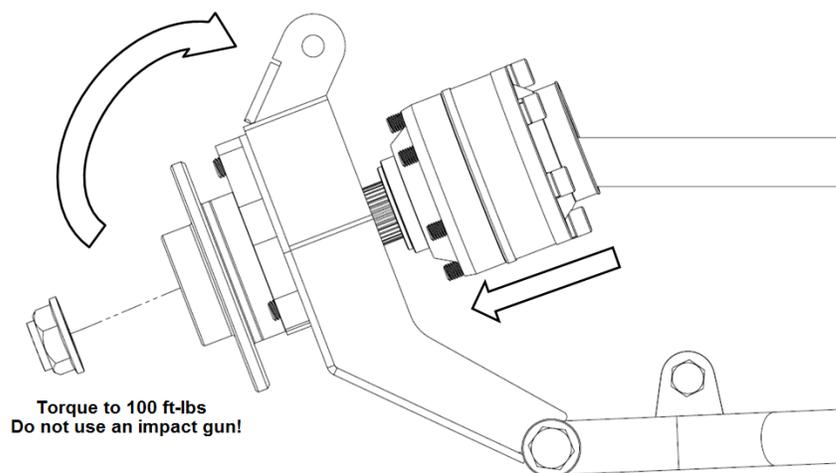


Figure 13. Tilt the shaft downwards, and rotate the upright upwards to slide the spline through the bearing.

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- 18) Install the upper links. Begin by installing the Rod End Spacers onto each end of the upper link. Two rod end spacers go on each end as shown below. Fasten the arms in place using the supplied ½-13 X 2 ½" Bolts and nuts.

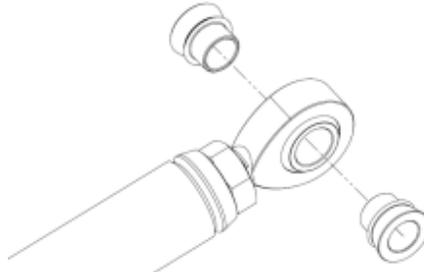
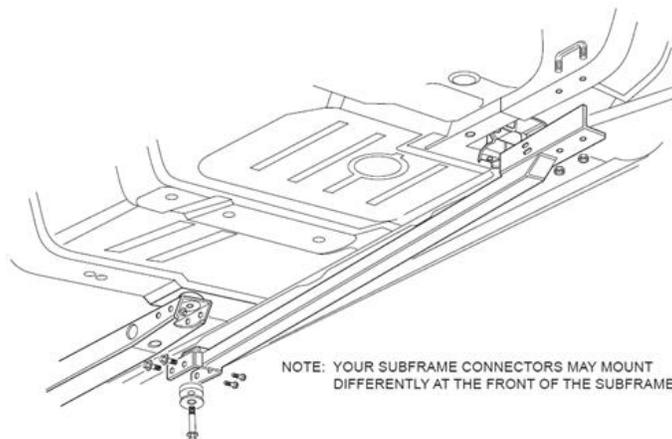


Figure 14. Each rod end gets 2 rod end spacers (also known as misalignment bushings)

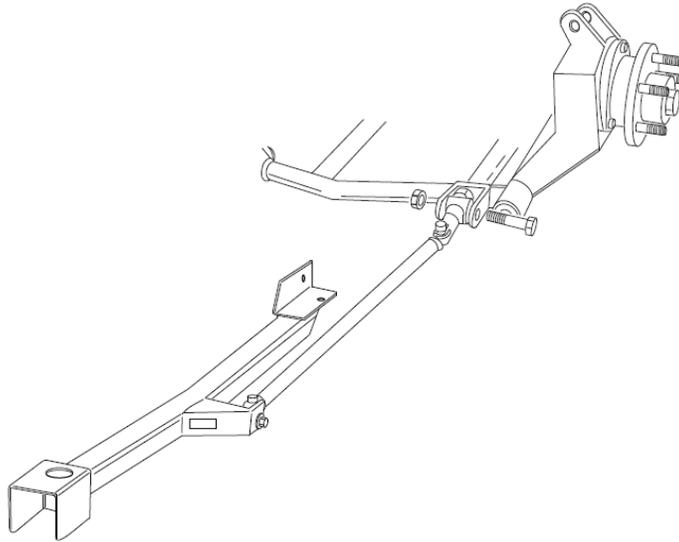
- 19) Install the calipers into the caliper plates using the 3/8" Grade 8 bolts, washers and shims supplied in the caliper mounting kit. The shims may be used to center the calipers onto the rotors. Tighten the caliper bolts to 20 ft lbs using a thread locking compound on the bolts. It is a good idea to install your brake line fittings into the calipers before installing them on the rear end. The optional parking brake calipers can be installed now by splitting them apart, slipping them into plate with the actuating lever up and reassembling.
- 20) Install connector at front and replace lower half of body mount and washer. Fasten with body mount bolt. At rear, remove 3/8" bolts holding stock leaf spring pocket to frame rail. Slip angle bracket between frame rail and pocket and bolt in place using 3/8 x 1-1/2 bolts and washers. Drill ½" hole through frame rail and side of spring pocket using hole in angle bracket as a guide. Place spacer between outside of frame rail and inside of pocket and bolt through connector, rail, spacer and pocket using ½-13 x 3-1/2 bolts and Nylock nuts. At front, drill ½" holes through rear of subframe and connector bracket, bolt in place using 1/2-20 x 1-1/4" bolts and Nylock nuts. Securely tighten all bolts.



- 21) The strut rods are the last part to install. Insert the adjustable ends of the strut rods into the lower control arm on the outer uprights and install the ½" bolts and nuts supplied. Attach the non-adjustable end into the subframe connector.

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22) Now you can install the coil overs using the supplied bolts, nuts and washers. After all the weight is on the vehicle, adjust the lower spring seats on the coil overs to level the CV shafts.

23) Connect the driveshaft, fill the center section with the proper gear lube, bleed the brakes, and cruise down the road independently. That's all there is to it!

Alignment (at ride height, which is with the CV Shafts Horizontal):

Camber: 0° to ½° Negative

Toe: 0" to 1/16" In

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