



IRM-101

INSTALLATION INSTRUCTIONS

`64½ - `70 MUSTANG

INDEPENDENT REAR SUSPENSION

Please read these instructions *completely*
before starting your installation.

Remember the basic rule for a successful installation:
Measure Twice, Drill Once.

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





PARTS LIST

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

HARDWARE PACKAGE

CV Joint Axles

- 12) M10 X 1.50 X 80MM 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 Nyloc Jam Nuts
- 2) 5/8-18 X 4 1/2" Bolts

Lower Control Arm Assembly

- 8) 5/8 Washers
- 2) 5/8-11 X 3 1/2" Bolts
- 2) 5/8-11 X 5" Bolts
- 2) 5/8-11 X 10 1/2" Bolts
- 6) 5/8-11 Nyloc Nuts

Saddles

- 16) 1/2" Washers
- 8) 1/2-13 Nyloc Nuts
- 2) 1/2-13 X 3 1/2" Bolts
- 6) 1/2-13 X 3" Bolts

Coil Over Shocks

- 4) 1/2" Washers
- 2) 1/2-13 X 6 1/2" Bolts
- 4) 1/2-13 Nyloc Nuts
- 2) 1/2-13 X 2 1/2 Bolts

Outer Uprights

- 8) Rod End Spacers
- 4) 1/2-13 Nyloc 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 Nyloc Nuts
- 4) 3/8-24 X 1 1/8" Bolts
- Shim Washers as needed

Strut Rods

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

3rd Member

- 10) 3/8-16 Nyloc 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 Pro-G 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.

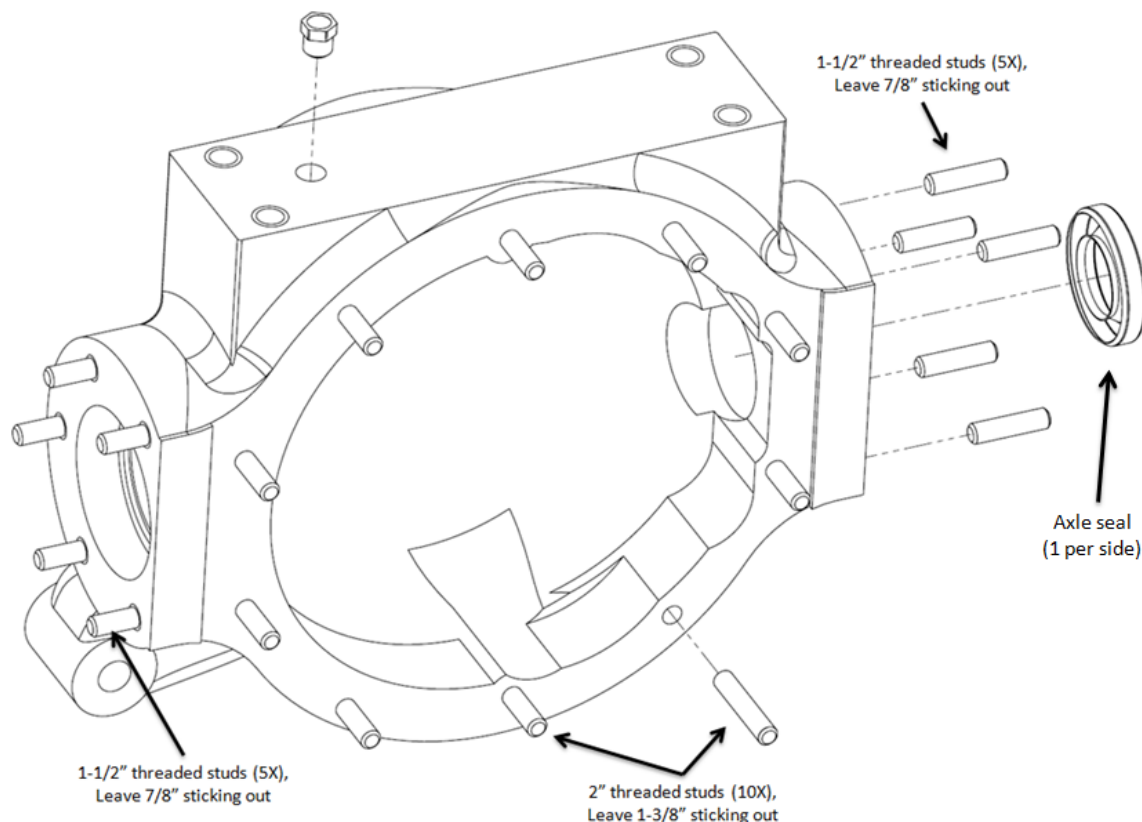


Figure 1. Install the vent, seals, threaded studs and drain plug (not shown) into the rear end housing

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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, ½" X 2-½" 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.**

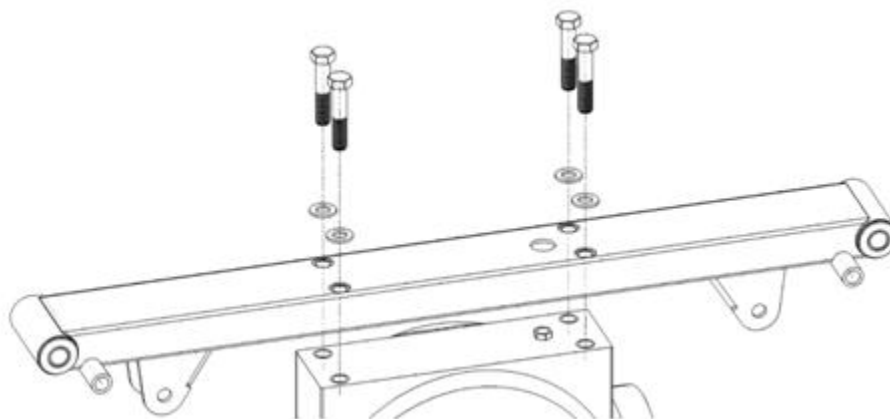


Figure 2. Install the cross member (make sure the vent hole is above the vent)

- 5) Install the outer bearings into the outer uprights using the supplied 12 mm socket head bolts and washers, **and torque to 65 ft lbs** 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.

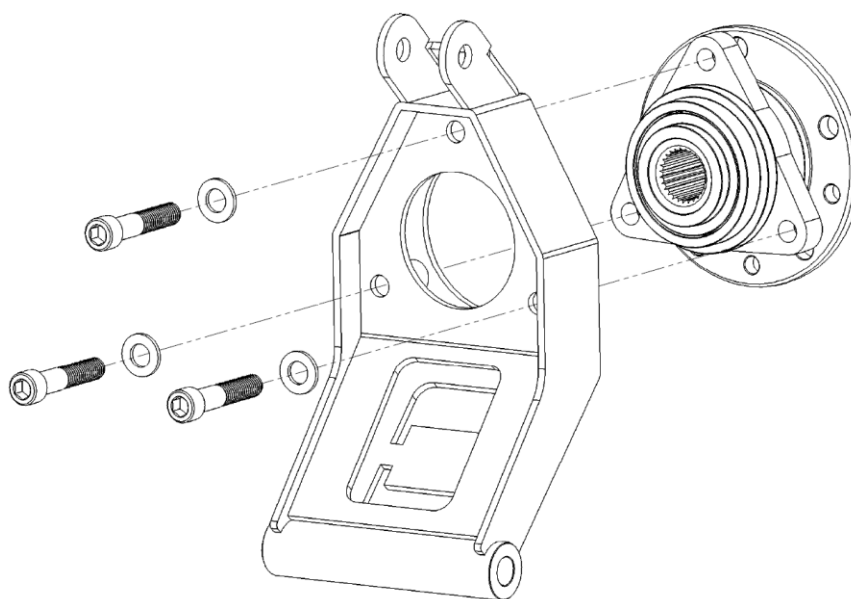


Figure 3. Install the hub as shown. Tighten the bolts in a spiral sequence to pull the hub in evenly.

- 6) Assemble the uprights to the lower control arms using the supplied 5/8" X 10 ½" long bolts. A washer should be used on the outside of the bushings as shown in Figure 4.

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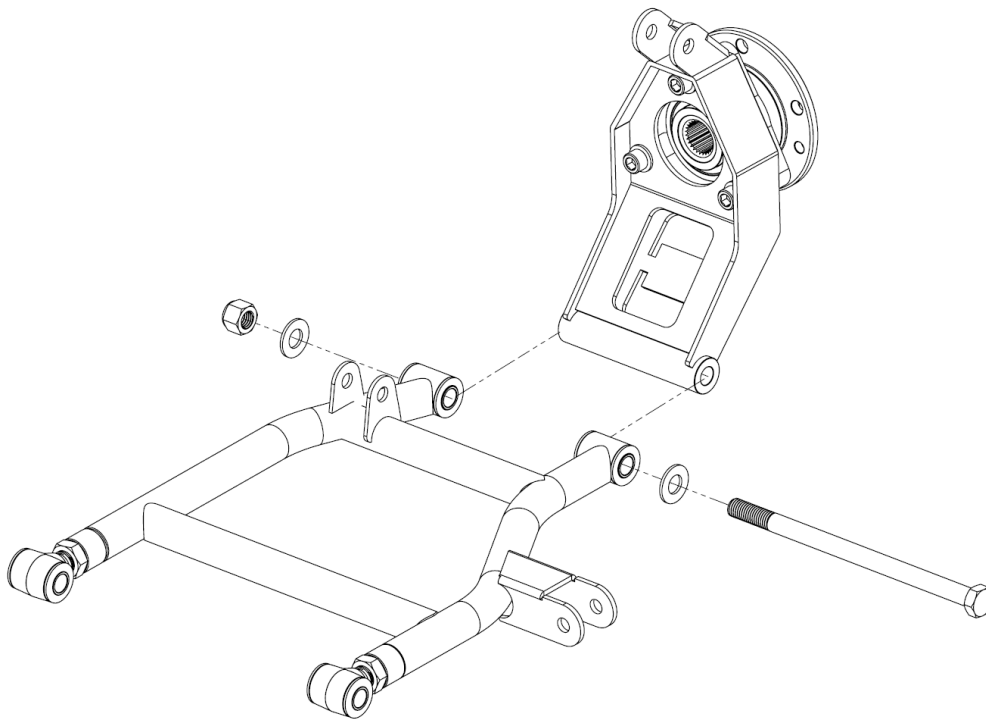


Figure 4. Assemble the upright to the lower arm using the 5/8 X 10-1/2" bolt and hardware.

- 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.

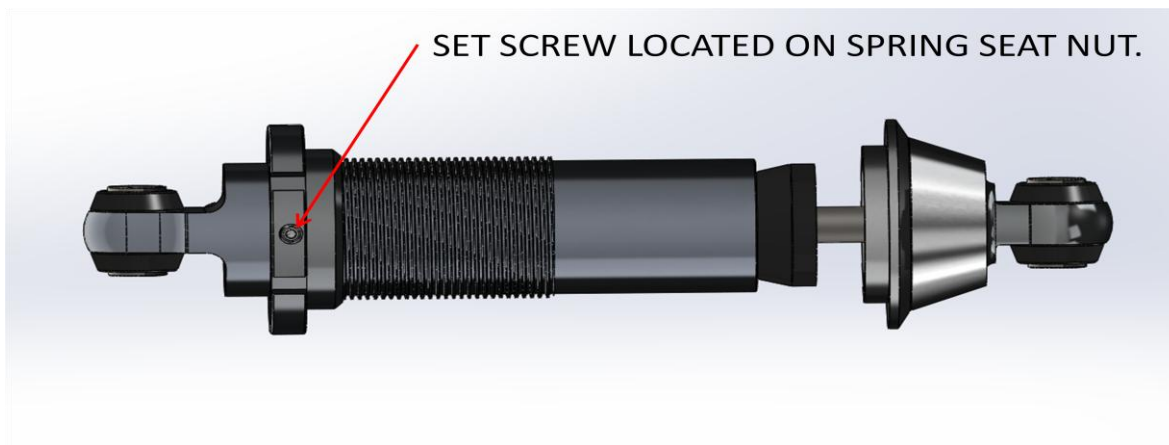


Figure 5. The set screw must be tightened down after the coil spring is installed.

- 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.**

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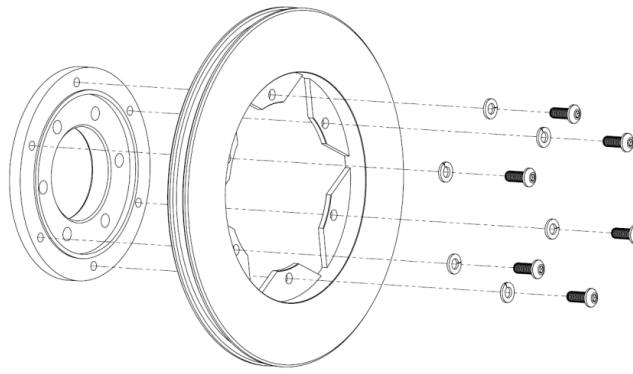


Figure 6. Use thread locker when assembling the 6 bolts and washers to each rotor sub-assembly.

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.
- 10) Fit the supplied frame rail saddles to each frame rail. The rear edge of the saddle should be located 24" from the edge of the rear leaf spring shackle mount. Due to chassis tolerances, the dimension may not be exactly 24", but it is critical to make sure that each side is identical (so that the rear end is square, and the geometry is symmetrical).



Figure 7. Measure between the edge of the rear leaf spring shackle mount and the rear edge of the frame rail saddle

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- 11) Make sure that both U channels on each saddle are firmly seated against the bottom of the subframe rail. Clamp in place and double check the measurement between the rear edge of the saddle and the rear leaf spring shackle mount. Mark and drill the $\frac{1}{2}$ " diameter holes through the factory frame rails using the saddles as a template. Then securely bolt in place using the $\frac{1}{2}$ " bolts, nuts, and washers.

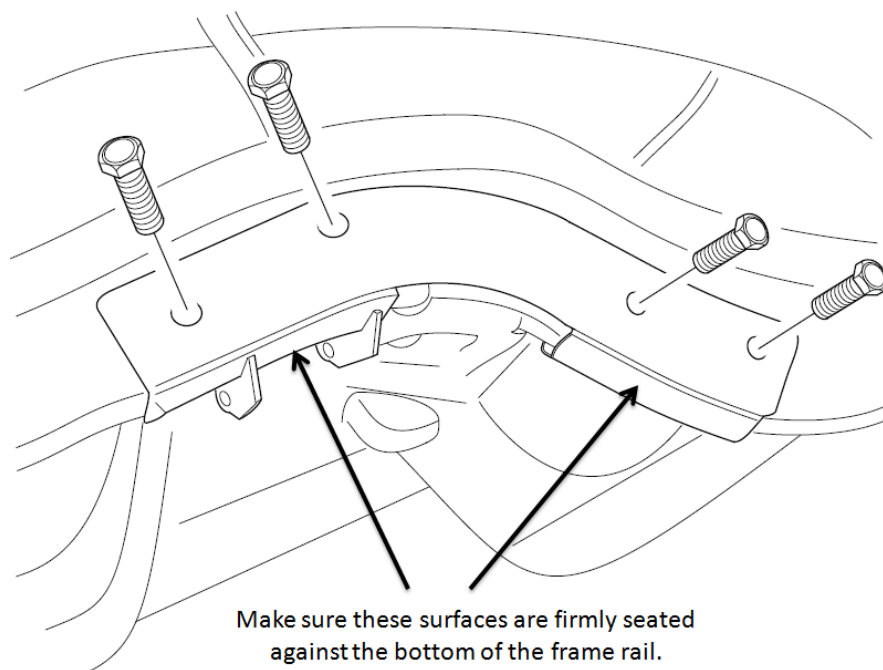


Figure 8. Use the saddles as templates to drill holes, and secure with $\frac{1}{2}$ " bolts. Passenger side shown.

- 12) Using the template below, cut a hole into the driver side trunk sheet metal using a 3" hole saw and a drill. Measurements: $3\frac{1}{4}$ " from the side, $3\frac{3}{4}$ " above the edge of the gas tank.

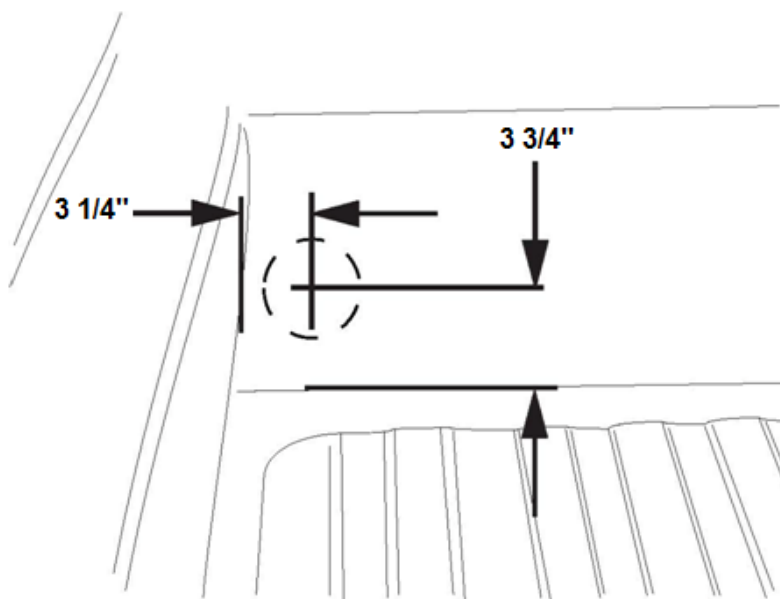


Figure 9. Driver side access hole for the upper shock mount and cross member bolts. View shown from Rear.

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- 13) Using the template below, cut a hole into the passenger side trunk sheet metal using a 3" hole saw and a drill. Measurements: 1 3/4" from the side, 3 3/4" above the edge of the gas tank.

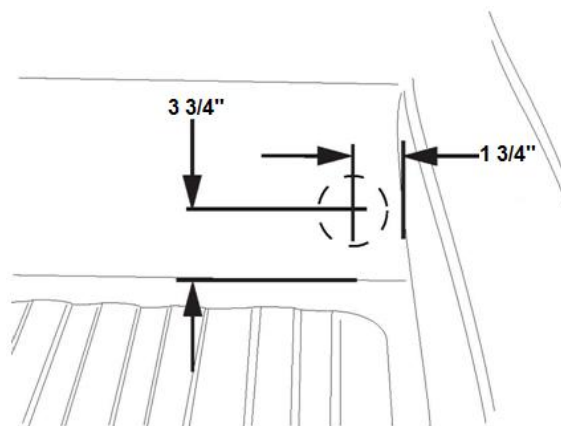


Figure 10. Passenger side access hole for the upper shock mount and cross member bolts. View shown from Rear.

- 14) Install the crossmember / housing into the vehicle and attach to the previously installed saddles. Attach the bolts through the holes previously drilled in the trunk area.
- 15) Install the 3rd 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 3rd member into the housing, applying the gasket sealer to the contact surface. Use the 10 Nyloc nuts and small AN washers supplied in the kit to secure the 3rd member in place.
- 16) The pinion plate is installed onto the pinion assembly using the bolts that secure the pinion assembly into the 3rd member. Remove the factory bolts and install the plate with the new bolts supplied. The coarse thread bolts are for iron 3rd members. At this point, install the pinion support crossmember using the forward saddle bolts.

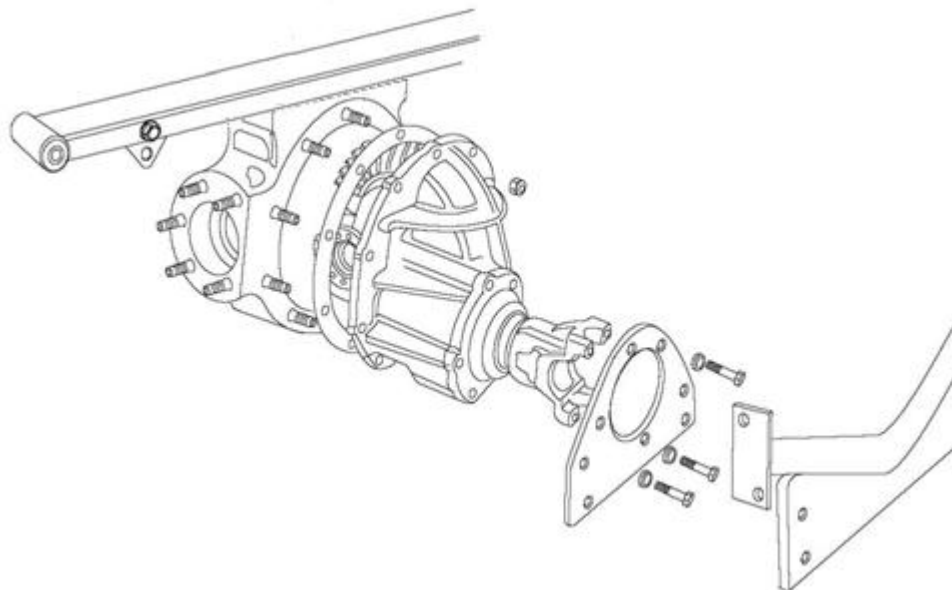


Figure 11. Exploded view of the housing, 3rd member, pinion plate, and pinion support.

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- 17) Apply a small amount of white grease to the splines and seal area of the stub axles and seal lips. Install the stub axles into the housing. The longer one installs on the passenger side. Slip the shaft and bearing 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 toward the stub axle flanges. Secure with the supplied Nyloc nuts and washers. If using parking brakes, the caliper mounting plates will be installed in place of the front plates.

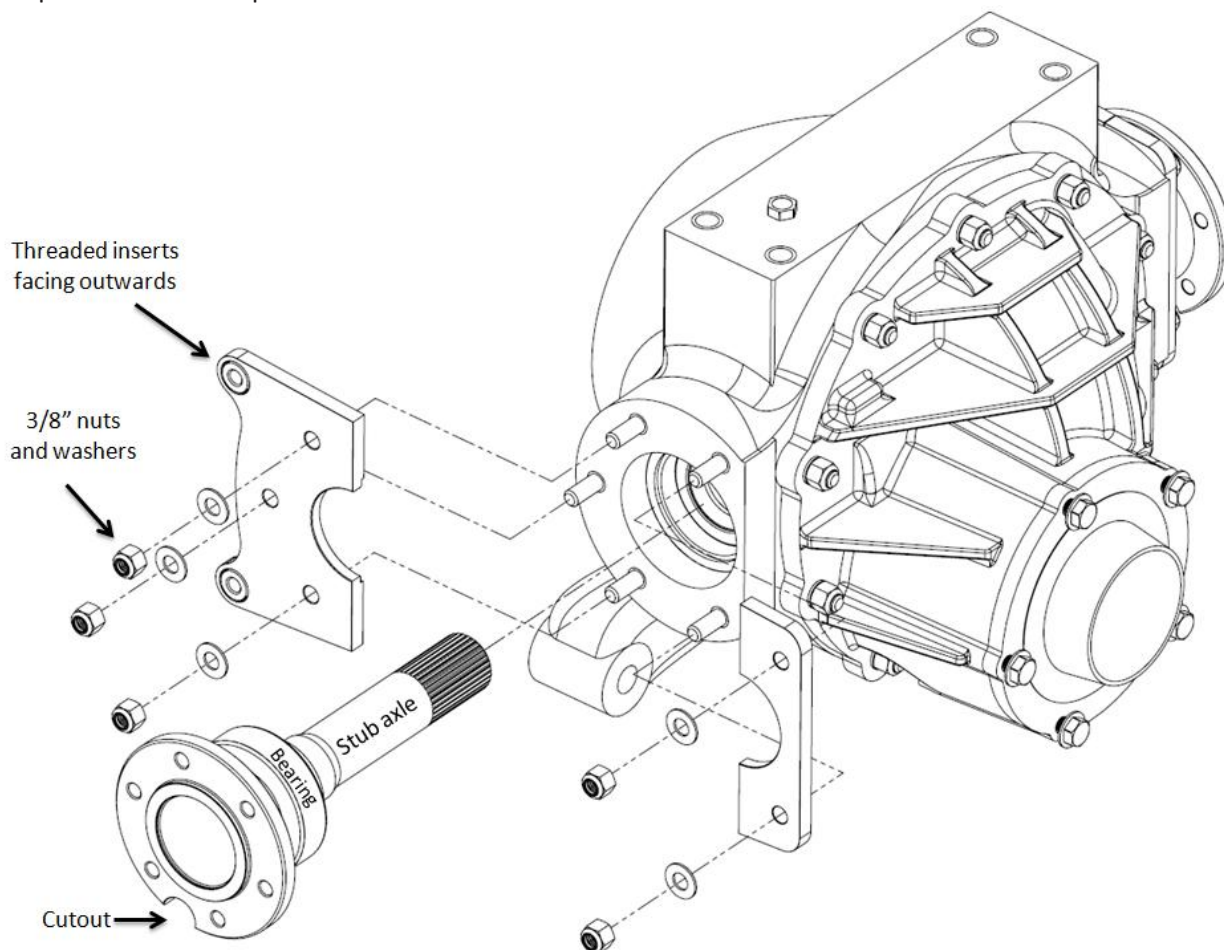


Figure 12. Passenger side axle (longer axle) being installed with the caliper plates (some parts removed for clarity).

- 18) Install the lower control arms to the housing and the pinion plate with the tie bar at rear and front pinion support as shown using the 5/8" bolts, nuts and washers supplied. 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 or out. The arms should be set with the adjusters equal to make the arms straight out and parallel for now.

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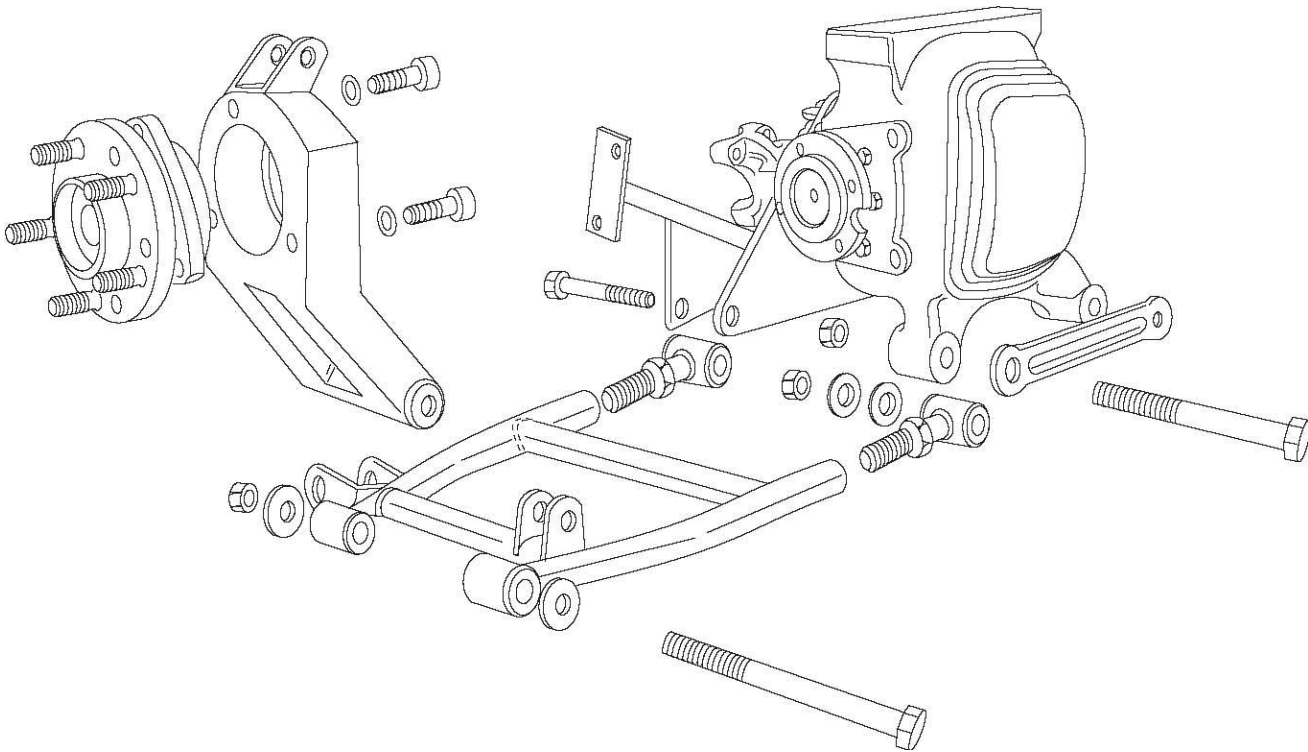


Figure 13. Exploded view of the driver side lower control arm assembly being installed.

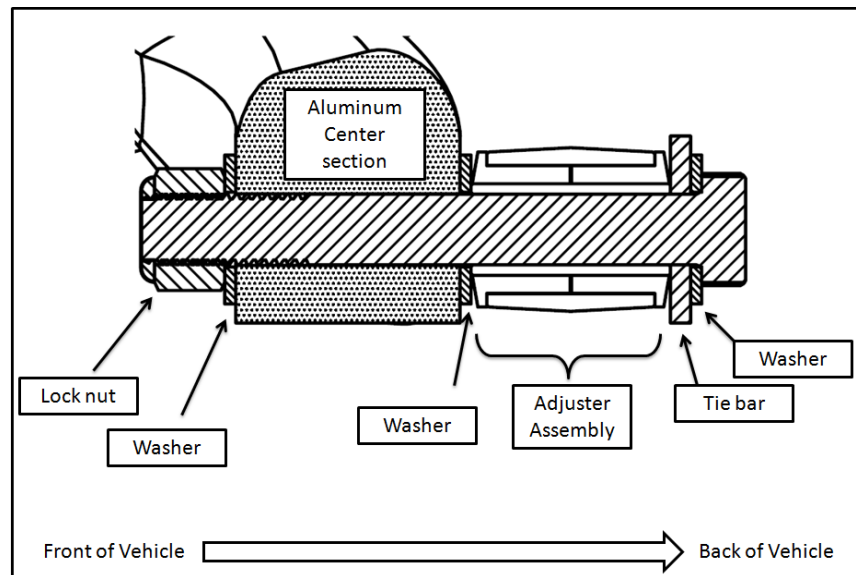


Figure 14. Cross Section of Rear Lower Control Arm Joint

- 19) 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.

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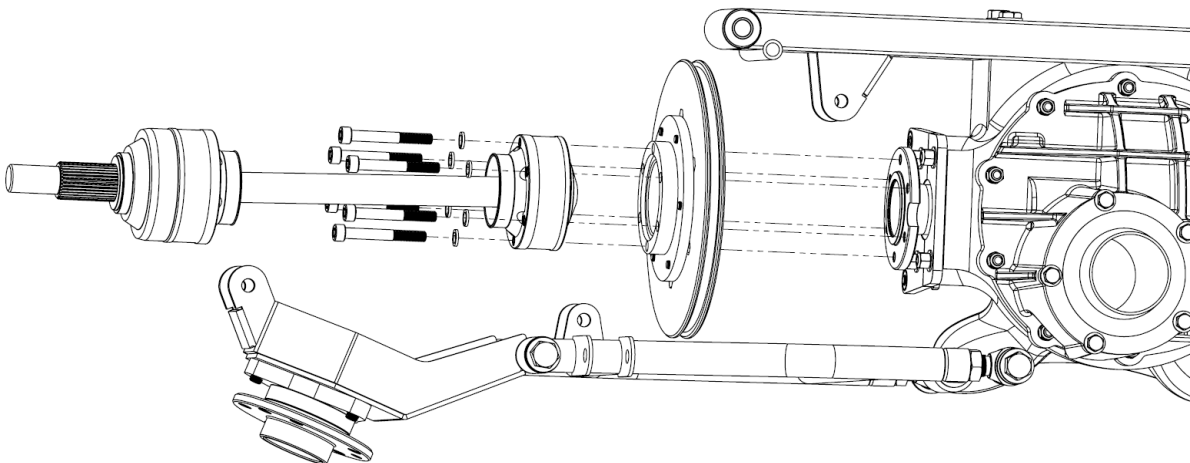


Figure 15. Assemble the CV shafts using the M10 bolts and lock washers (Some parts removed for clarity)

- 20) 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.

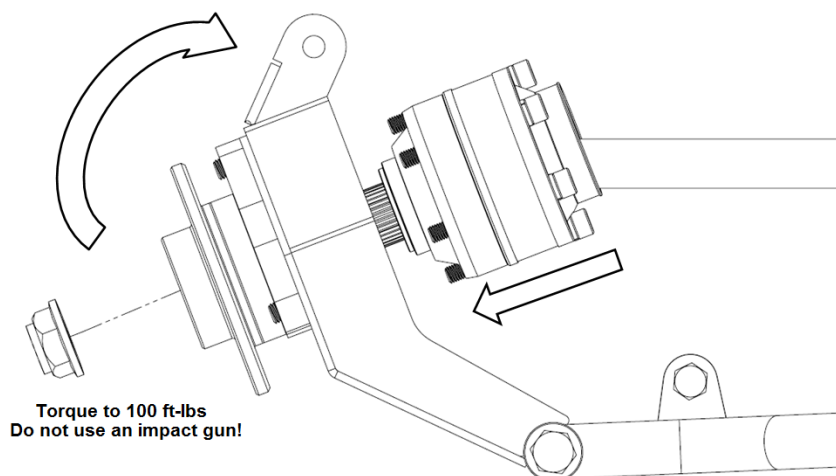


Figure 16. Tilt the shaft downwards, and rotate the upright upwards to slide the spline through the bearing.

- 21) 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 $\frac{1}{2}$ -13 X 2 $\frac{1}{2}$ " Bolts and nuts.

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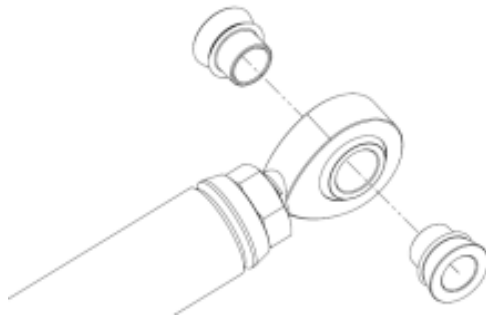


Figure 17. Each rod end gets 2 rod end spacers (also known as misalignment bushings)

- 22) Install the calipers onto 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 read end. The optional parking brake calipers can be installed now by splitting them apart, slipping them into place with the actuating lever up and reassembling.
- 23) Install the coil-overs, using the holes in the trunk to install the upper shock bolt. Spin the spring adjuster to set the ride height. The CV shafts should be horizontal when the vehicle is at ride height.

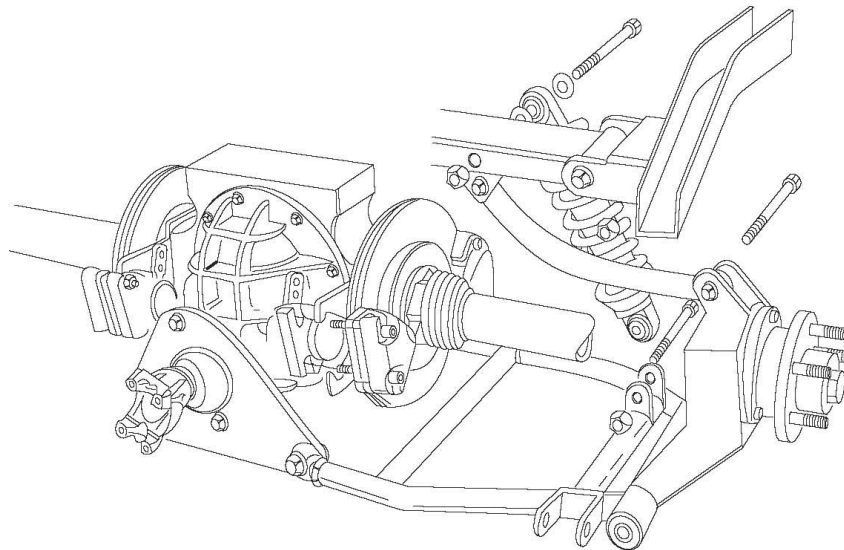


Figure 18. Exploded view showing the upper link and coil-over being installed (Optional Parking Brake shown)

- 24) After the coilovers are installed, cover the holes in trunk with the provided covers and self tapping screws. Place cover over hole in trunk, mark screw holes and drill pilot holes. Covers and screws should be accessible through the trunk, not the underside of the car.
- 25) Lift the subframe connectors in place, and fasten them by putting the 5/8" x 5 1/2" bolts through the stock leaf spring location. Lift the front of subframe connector up to front frame rail. Make sure that the subframe connector U Channel is firmly seated against the bottom of the front frame rail and clamp in place. Drill the 1/2" dia. holes through the factory frame rails using the subframe connectors as a template. Then securely bolt in place with the 1/2" x 4" bolts, nuts, and washers. Securely tighten all bolts.

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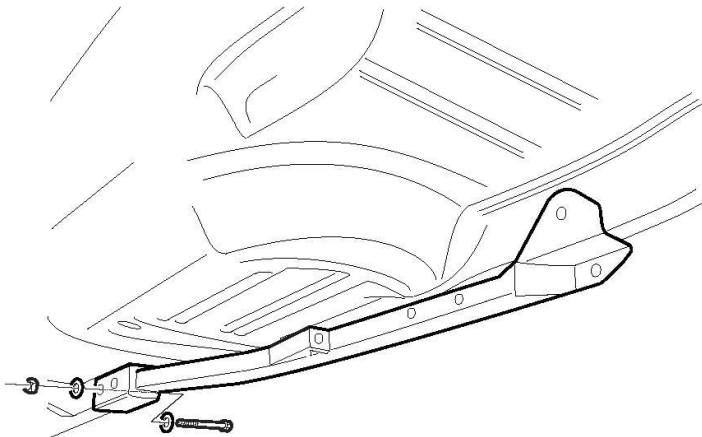


Figure 19. Make sure the subframe connector is seated firmly against the front subframe prior to drilling.

- 26) 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 1/2" bolts and nuts supplied. Attach the non-adjustable end into the subframe connector as shown below.

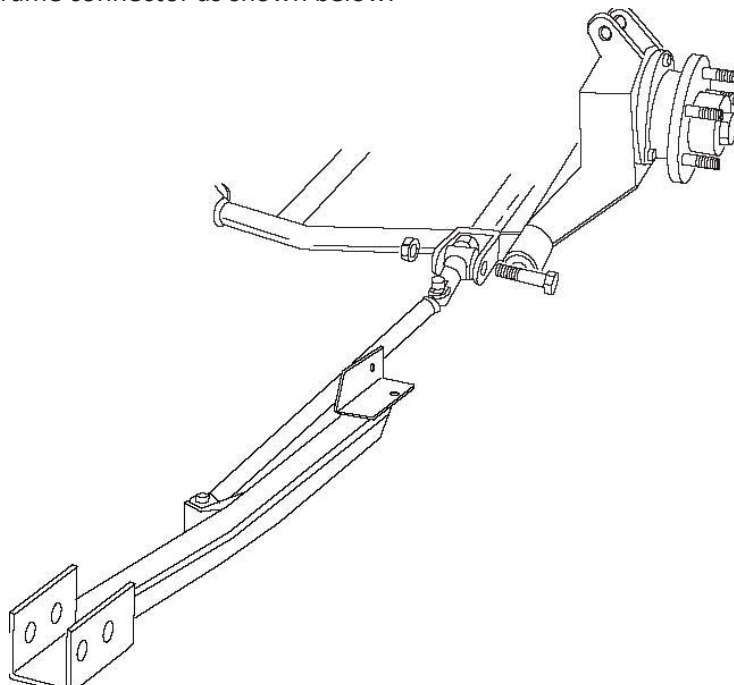


Figure 20. Forward Strut rods installed between lower control arm and subframe connector

- 27) Now that the IRS installation is complete, connect the drive shaft, 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 Specs (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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