



| | | | |
|--|---|-------------------------------------|------------------|
| Part Number: 12449 | Revision: K | Effective Date: 11/27/12 | By: J. INGERSLEV |
| Document Type (indicate): | | | |
| <input type="radio"/> Bill of Materials | <input type="radio"/> Drawing (may be attached) | <input type="radio"/> Specification | |
| <input checked="" type="radio"/> Assembly Instructions | <input type="radio"/> Operating Procedure | <input type="radio"/> Other | |

Independent Rear Suspension

Installation Instructions

| | |
|---|----|
| PARTS INCLUDED IN KIT..... | 2 |
| THUNDERBIRD PARTS NEEDED..... | 4 |
| Vehicles..... | 4 |
| Parts needed..... | 4 |
| NON-THUNDERBIRD PARTS NEEDED..... | 5 |
| TOOLS NEEDED..... | 6 |
| SUPPLIES NEEDED..... | 6 |
| SELECTION AND DISASSEMBLY OF THE THUNDERBIRD DONOR..... | 6 |
| MASTER CYLINDER SELECTION CHART..... | 8 |
| MODIFICATION OF IRS PARTS..... | 8 |
| Spindles..... | 8 |
| Rotors..... | 9 |
| CV Joints – If complete axles are not supplied..... | 10 |
| Brake Calipers/Lines..... | 12 |
| BOLT-ON PARTS..... | 14 |
| IRS Center Section..... | 14 |
| Lower Control Arms..... | 16 |
| IRS Rear Coil-Over Shock Assembly..... | 17 |
| CV Axles..... | 22 |
| Spindles..... | 22 |
| Upper Control arms..... | 23 |
| Quad shock Installation..... | 24 |
| Rear Calipers and Rotors..... | 25 |
| Emergency Brake Cable Installation..... | 25 |
| Fuel line Installation..... | 26 |
| Width Adjustment..... | 26 |
| FINAL ASSEMBLY..... | 28 |
| Alignment specs..... | 29 |
| Torque specs..... | 29 |
| AFTERMARKET PARTS AVAILABILITY..... | 29 |
| OLDER CHASSIS RETROFIT..... | 29 |
| FFR Chassis preparation..... | 29 |
| Upper cage Assembly..... | 30 |
| Lower Cage Assembly..... | 30 |

These instructions are designed to supplement the Assembly manual where the assembly process is different from the build-up using a solid axle. Sections of the manual that deal with the assembly of the rear end will

not apply and can be skipped. Read through these instructions before beginning assembly as some of the changes occur early in the build-up process.

Using the Factory Five Racing Independent Rear Suspension will require a conversion to 5 lug which, if you are not currently using 5 lug will require new wheels.

If you need 11" 5 Lug rotors for the front then use '82-'83 Lincoln Continental or '91 Lincoln Mark VII LSC or Ford Racing Performance Parts # M-1102-C.

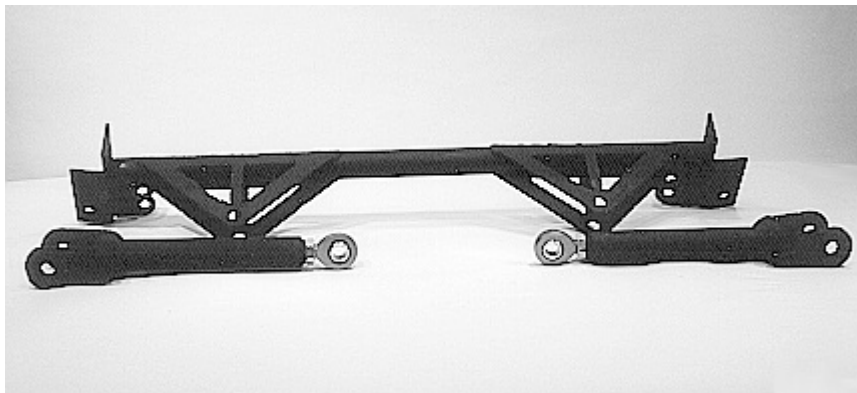
Parts Included in Kit

| | | | |
|-------|---|----|-------|
| 14769 | BOX 11 C IRS COMPONENTS | EA | 1.00 |
| 12446 | BOX, PRE-PRINTED, ROLLBAR | EA | 1.00 |
| 12449 | IRS INSTRUCTIONS | EA | 1.00 |
| 14852 | REAR WHEEL STUDS | EA | 10.00 |
| 11138 | HOSE CLAMP, 5/16" FUEL LINE | EA | 2.00 |
| 12452 | FLEXIBLE FUEL LINE, 5/16" ID, HIGH PRESSURE, 24" | FT | 2.00 |
| 15508 | STANDARD WIDTH CV AXLE | EA | 2.00 |
| 14690 | EMERGENCY BRAKE CABLES | EA | 2.00 |
| 12409 | BRAKE LINE ADAPTER | EA | 3.00 |
| 15388 | 0.43" SPACER | EA | 4.00 |
| 10970 | 1/4" INSULATED CLIP | EA | 45.00 |
| 10984 | #14 x 1/2" SCREW | EA | 10.00 |
| 12400 | QUAD SHOCK BOLT | EA | 4.00 |
| 11027 | QUAD SHOCK LOCKNUT | EA | 4.00 |
| 13976 | 1/2" WASHER | EA | 6.00 |
| 15383 | HARDWARE BOX | EA | 1.00 |
| 14680 | KONI STANDARD IRS SHOCK SET WITH KIT | EA | 1.00 |
| 14622 | KONI SHOCK, (30-1720) | EA | 2.00 |
| 25621 | SPRING HAT | EA | 2.00 |
| 25622 | SPRING COLLAR | EA | 2.00 |
| 25623 | COIL-OVER THREADED SLEEVE | EA | 2.00 |
| 25961 | SPRING, FRONT COIL-OVER, BLACK, 2.5" ID, 8", 750# | EA | 2.00 |
| 14700 | IRS KONI COIL-OVER INSTRUCTIONS | EA | 1.00 |
| 14681 | IRS SHOCK MOUNTING COMPONENTS | | |
| 33238 | 1.09" SPACER | EA | 2.00 |
| 15388 | 0.43" SPACER | EA | 6.00 |
| 12385 | 1/2"-13 x 2.5" BOLT | EA | 2.00 |
| 10834 | 1/2"-13 NYLON LOCK NUT | EA | 4.00 |
| 13976 | 1/2" WASHER | EA | 4.00 |
| 12386 | 1/2"-13 x 3.25" BOLT | EA | 2.00 |
| 12268 | IRS LOWER REAR CONTROL ARM COMPONENTS | EA | 1.00 |
| 13337 | ROD END SPACER | EA | 36.00 |
| 12348 | ROD END, RIGHT HAND THREAD | EA | 4.00 |
| 12380 | JAM NUT | EA | 4.00 |
| 12384 | 5/8"-11 x 2.50" BOLT | EA | 4.00 |
| 15216 | 5/8"-11 LOCK-NUT | EA | 4.00 |
| 12428 | DRIVER SIDE IRS LOWER CONTROL ARM | EA | 1.00 |

| | | | |
|-------|---------------------------------------|----|------|
| 12429 | PASSENGER SIDE IRS LOWER CONTROL ARM | EA | 1.00 |
| 12440 | IRS UPPER REAR CONTROL ARM COMPONENTS | EA | 1.00 |
| 33239 | ROD END SPACER, 0.375" | EA | 4.00 |
| 12348 | ROD END, RIGHT HAND THREAD | EA | 2.00 |
| 12380 | JAM NUT | EA | 2.00 |
| 12382 | 5/8"-11 x 3" BOLT | EA | 2.00 |
| 15216 | 5/8"-11 LOCK-NUT | EA | 2.00 |
| 12387 | WASHER, UPPER ARM TO CAGE | EA | 4.00 |
| 12367 | IRS UPPER REAR CONTROL ARM | EA | 2.00 |
| 12438 | IRS CAGE COMPONENTS | EA | 1.00 |
| 12386 | 1/2"-13 x 3.25" BOLT | EA | 2.00 |
| 10834 | 1/2"-13 NYLON LOCK NUT | EA | 2.00 |
| 10833 | 1/2"-13 x 1.25" BOLT | EA | 2.00 |
| 10834 | 1/2"-13 NYLON LOCK NUT | EA | 2.00 |
| 12327 | CAGE | EA | 1.00 |
| 12439 | IRS UPPER CAGE | EA | 1.00 |
| 12375 | UPPER CAGE | EA | 1.00 |



Lower arms and Cage (Cage separate from frame)



Upper arms and Cage (Cage separate from frame)

Thunderbird Parts needed

Vehicles

For all applications make sure that the diameter of the axle shafts at the splined ends measure 1.2 inches, the differential has 8.8 cast into its top, and that rear disc brakes are present on the donor IRS. To determine the gear ratio, and whether or not the unit has posi-traction, look at the tag that is attached to one of the differential cover bolts. The first 4 spaces signify the gear ratio and whether or not it has posi-traction. If the unit has posi-traction, then the second space will have an L in it representing (limited slip), the remaining spaces specify the gear ratio. For example, 2 L 7 3 means posi-traction with a 2.73:1 gear ratio. Most people pay a salvage yard between \$300-\$400 for the donor parts. Also, Ford Racing Performance Parts sells a 15lb. lighter aluminum carrier with 3.73 gears and posi-traction for around \$650.

1989-1997 Thunderbird Supercoupe (All Posi-traction)

1992-1997 Thunderbird V-8 models with rear disc brakes(some posi-traction)

1992-1997 Lincoln Mark VIII (All aluminum carrier, most **non**-posi-traction)

1989-1992 Mercury Cougar XR-7, supercharged V-6 (All posi-traction)

1993-1997 Mercury Cougar V-8 with rear disc brakes (some posi-traction), after 94 all Cougars were called XR-7's

Parts needed

8.8" carrier, front mounting bushings, and rear mounting hardware.
Spindles and attaching hardware.



Disc brakes with flexible brake lines and mounting brackets.



Donor fasteners needed: (Upper) Spindle attaching bolts. (Lower left) Center Section front mounts. (Lower right) Center Section rear mount bolts.



NON-Thunderbird parts needed

Mustang Quad shocks –Aftermarket KYB shocks usually interfere with tires.
½” Lug nuts (T-bird lug nuts are metric)

Tools Needed

Drill

$\frac{3}{16}$ " drill Bit

$\frac{3}{8}$ ", $\frac{3}{4}$ ", $\frac{15}{16}$ " sockets

$\frac{3}{8}$ ", $\frac{3}{4}$ ", $\frac{15}{16}$ " wrenches

$\frac{3}{8}$ "- $\frac{7}{16}$ " Brake line box wrench

Brake line double flare tool

Brake line cutter

Brake line bender

Ruler/Tape measure

Snap ring pliers

Pliers

Flat head Screwdriver

Tin Snips/scissors/razor

Marker

Supplies needed

3.25 pints Gear oil

4 oz. Friction Modifier

Brake Fluid

Rear brake pads

Selection and Disassembly of the Thunderbird Donor

When selecting a donor vehicle, there are several important things to look for to avoid problems. Ford used the same IRS set-up for a few different cars. Thunderbirds between 1989 and 1997, Lincoln Mark VIII's between 1992 and 1999, and Mercury Cougar XR7's between 1989 and 1992. Only some of the cars have the correct parts that are needed. The points to check are as follows:

The first and most important item to check when looking at different rear ends is the diameter of the CV shafts. The V6 and some V8 cars came equipped with a smaller diameter CV shaft. These CV joints **will not** work with the new shorter shafts provided or with the Torque that can be made from a 5.0L HO engine so they should be avoided. To check for the proper shaft size, check the diameter of either side. **The correct diameter is 1.2 inches**, next to the splines. If you are using a Super Coupe, the axles will be correct even if the passenger side is considerably thicker. Under the boots, it necks down to the correct size. Check the center section. What you need is an 8.8 inch unit. It will have 8.8 cast into the top of the differential and is noticeably larger than the 7.5 inch center that was also used. Lincoln Mark VIII came with aluminum center sections that are 15lbs lighter than the iron one.

The Thunderbirds were available with and without rear disc brakes. We recommend one with the discs (free upgrade from a drum brake solid axle).

When you find a rear you like just ask for the whole rear clip from the car. The whole thing unbolts with four bolts and they usually cut the driveshaft. This way you will be sure to get everything that you need. Limited slip (Posi-traction/Traction-Lok) and Open Differentials

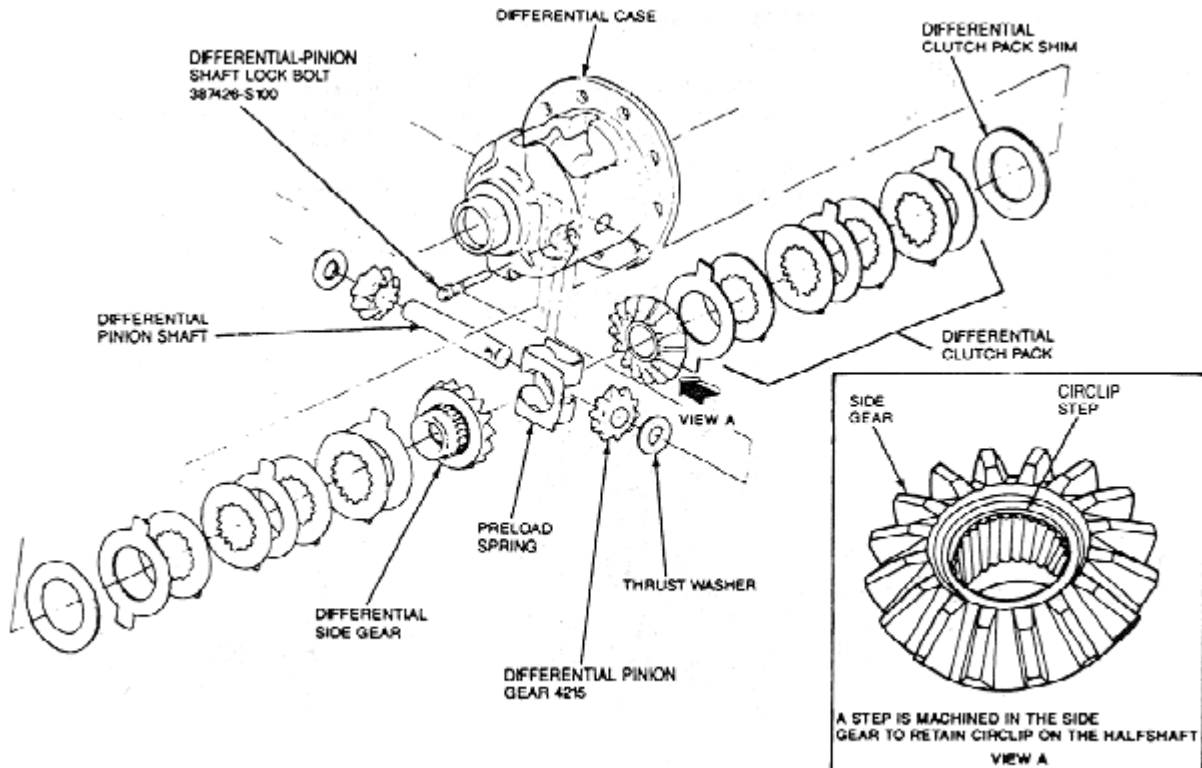


Early Mark VIII center sections **do not** have a limited slip differential.



The Thunderbird Supercoupe **does** have a limited slip differential.

The IRS is an 8.8 center section and it can use the same gears that the solid axle 8.8 from the Mustang uses **but**, it can not use the same differentials. The IRS differential has a step cut in the side gears to hold the CV joints in the center section. Without this step there is nothing holding the axles from coming out.



Exploded view of the 8.8 inch Integral carrier Traction-Lok® differential

There are only three differentials that **will** work in either the Mark VIII or T-bird center section, the stock Supercoupe traction-Lok, an Auburn Gear differential and a Torsen differential. Auburn offers two units that will work. The high performance unit (part # 542079) for standard OE replacement (~\$250), and the pro series unit (part # 542080) for better traction and faster engagement (~\$350). The Torsen, sold by Ford Motorsport is the best differential around and is used by many performance car companies (Porsche) as standard equipment. It is all gears inside and never wears out. It isn't designed for a life of drag racing though, its designed for road racing. The Ford Motorsport part number is M-4204-T28 (~\$500).



Parts can be bought new if desired from Factory Five Racing.

Master Cylinder Selection Chart

| Front Calipers | MC Bore Diameter | MC Source Vehicle | Part Source | Part Number |
|------------------------------|------------------|---------------------|-------------------|---------------|
| Lincoln Continental/Mark VII | 1" | 1993 Mustang Cobra | Ford, Parts Store | Bendix# 12669 |
| Cobra Mustang | 15/16" | 1994 Mustang Cobra | Ford | |
| Stock Mustang | 7/8" | 1982 4 cyl. Mustang | Parts Store | Bendix# 11764 |

Modification of IRS parts



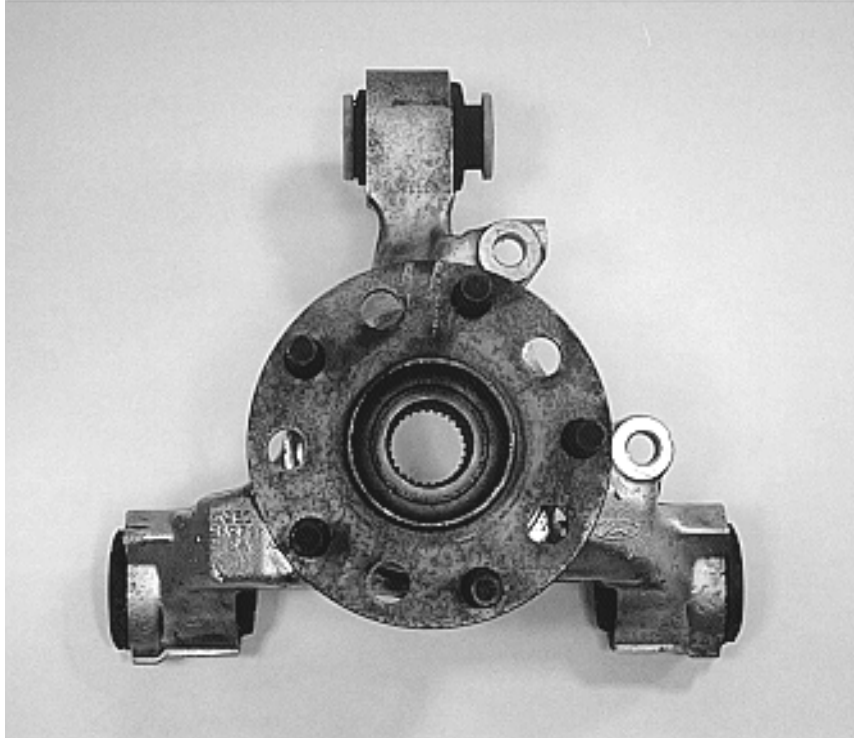
Do not throw away any parts from the IRS until the IRS is installed and the axles have been changed.

Spindles

The Thunderbird uses a 5 lug x 4.25" Lug pattern. This is not very helpful since the Mustang uses either a 4 lug x 4.25" pattern or a 5 lug x 4.5" pattern. Unless you want a different lug pattern on your rear, the hubs will have to be drilled to the 5 lug x 4.5" pattern. We would recommend that a machine shop do this, as the measurements need to be precise otherwise your wheels will not fit. We had a shop do both hubs for \$100. The machine shop will press the hubs out of the bearings and press the wheel studs out of the hubs. We have included new 1/2" studs so that the front and rear lug nuts are the same and are good and strong. The Thunderbird used metric studs and lugs.



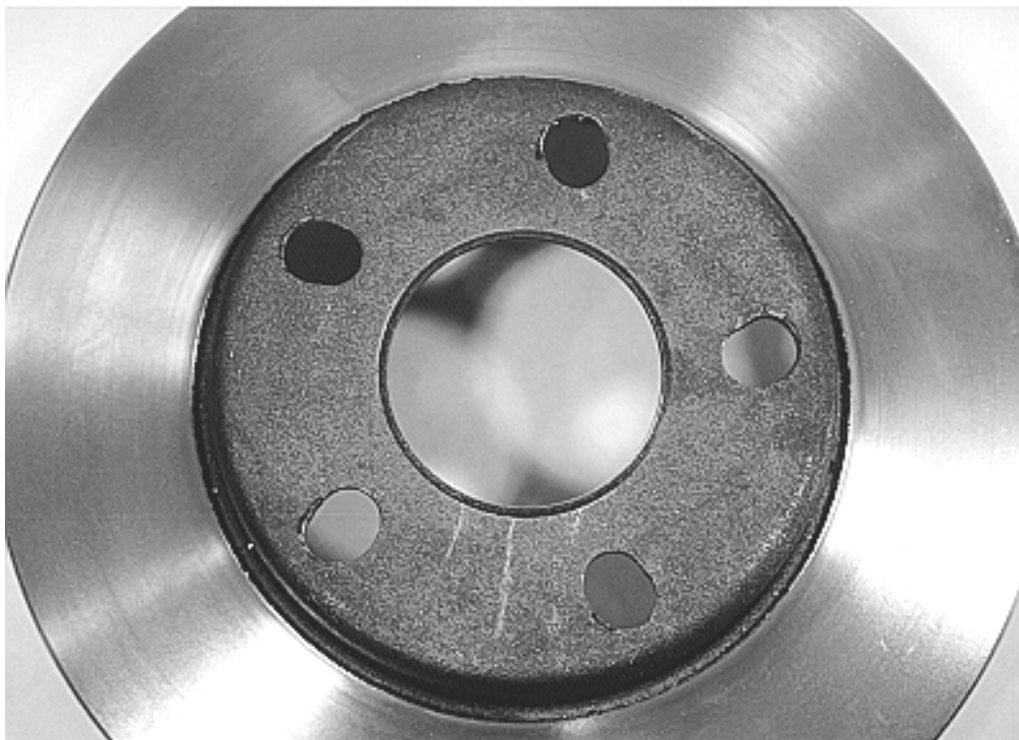
When you get the spindles back, check the hubs for slop in the bearings. There should be none. If there is, have the shop replace the bearings. Check the new bolt pattern in a wheel to make sure that it will go on.



Wheel studs in new location.

Rotors

Once the spindles have been redrilled, the rotors must be made to fit the new lug pattern. The easiest way to do this is using a Dremel tool or grinder to oval out the existing stud holes. Mustang 5 lug rotors can not be used as they have a different wheel mount surface to rotor surface distance.

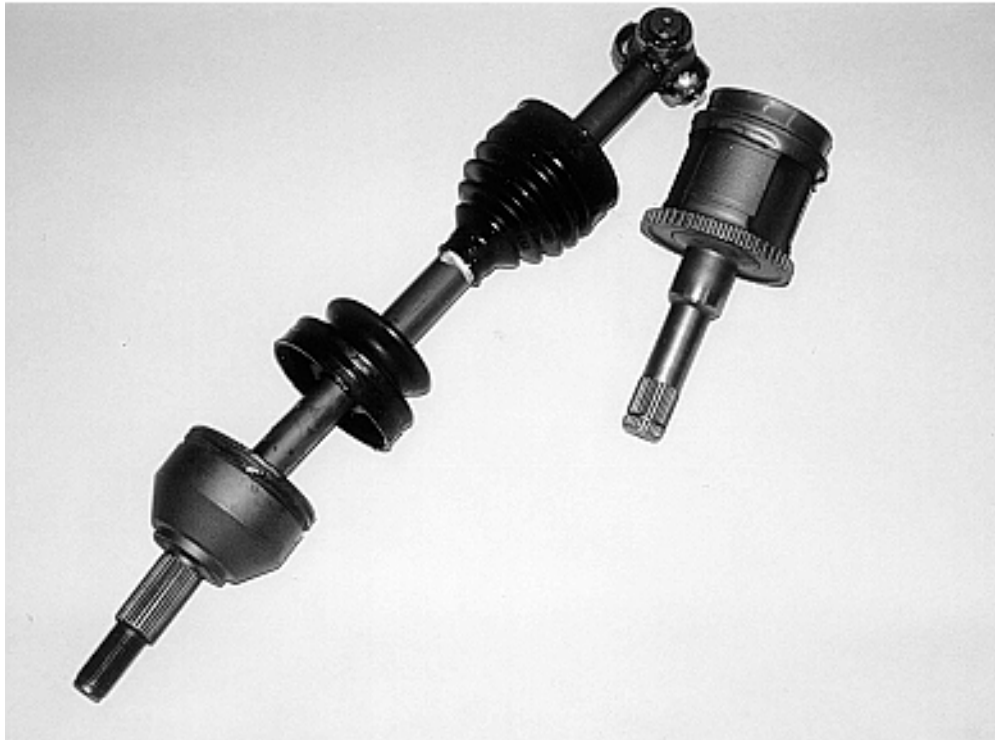


Wheel Stud holes elongated

CV Joints – If complete axles are not supplied

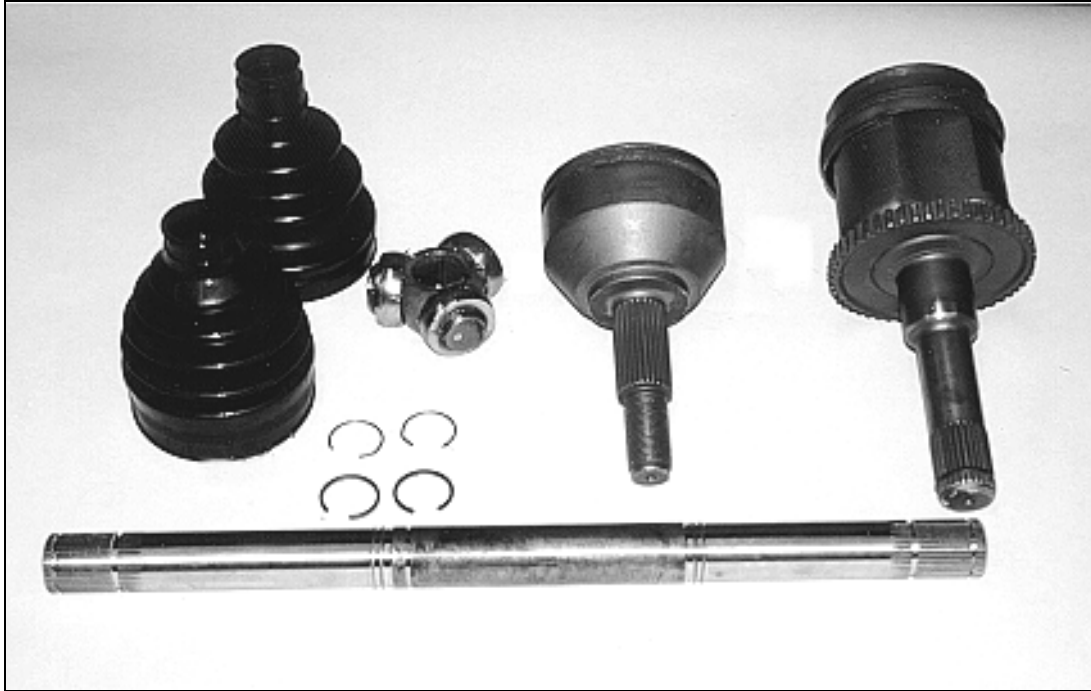
Do not cut the CV Boots, they may have to be reused. Some joints have one side that is bigger than the boots we supply. If you need a replacement for the larger boot they are available from your local Ford dealer.

Cut the clamps that hold the boots to the CV joints and pull back the boots toward the center of the axle shaft. **Do not cut the CV Boots**, they may have to be reused.

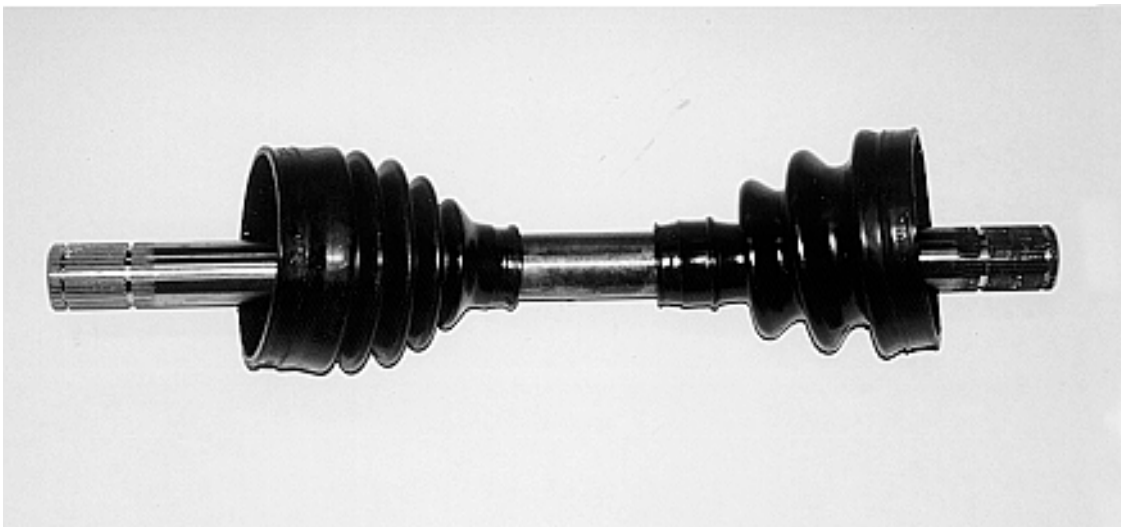


Slide the larger joint off the shaft and set to the side.

The two remaining pieces, the fixed joint and the inner plunge joint, need to be tapped off with a hammer. Be very careful not to damage any of the moving parts, work from all sides to be sure each piece comes off straight.

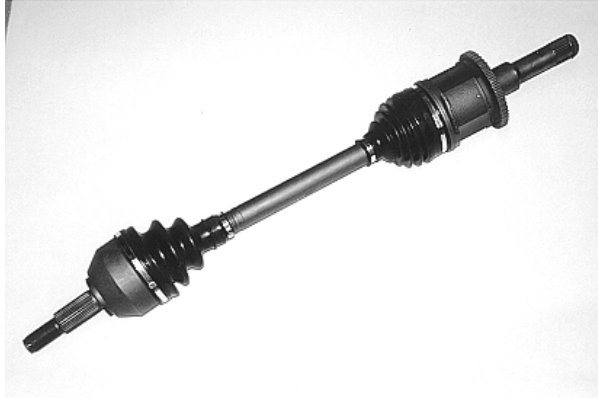


Once the joints have been removed, the “C” clips can be slid off the old axles using a pair of snap ring pliers. Inspect the CV joints for any damage or obvious wear and re-grease. Test fit the new CV boots on the joints to see if they fit. If they do not you will have to reuse the old boots. Slide the boots onto the new axle shafts with the narrow openings toward the center.

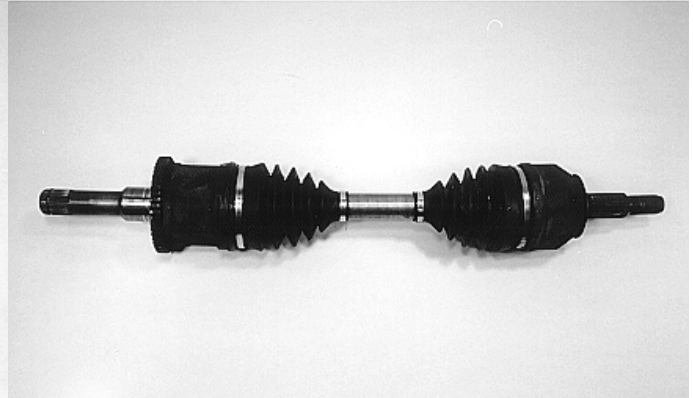


Boots pushed onto the new shaft

Replace the “C” clips in the same grooves on the new axle shaft and tap the joints back onto the shaft. (The shaft is symmetrical so either joint can go on either end)
Slide the larger CV joint back into position and pull the boots up over both ends.
Install the boot clamps tight to prevent grease from creeping out, make sure on the larger CV joint that there is room for the joint to plunge without crushing or stretching the boot.



Old axle



New axle

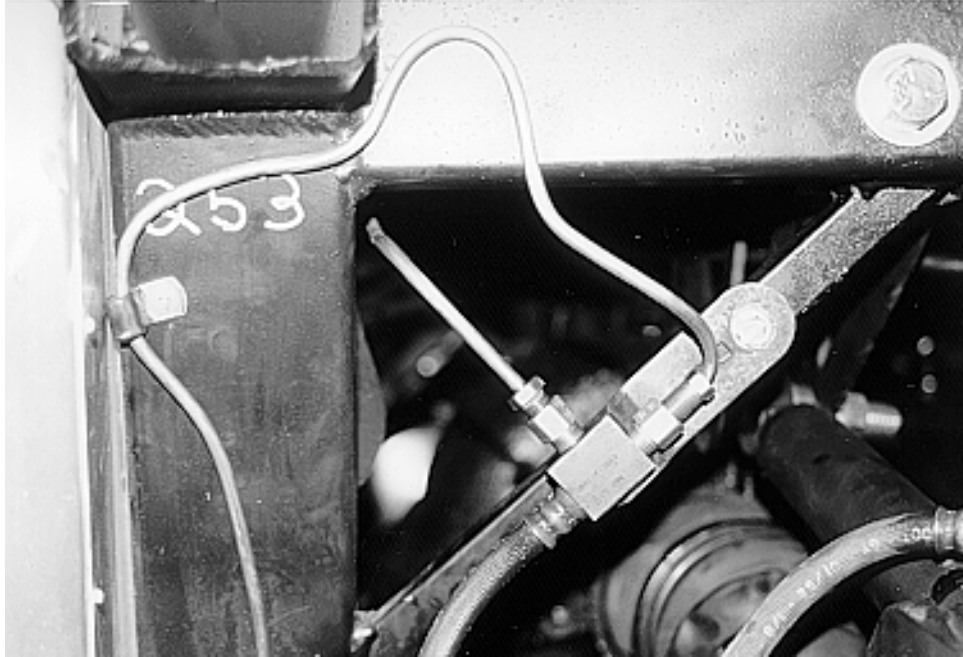
Brake Calipers/Lines

Unpack the included parking brake cables and find the smooth end of the cable (the end without the built in retaining barbs) and try in insert it into the bracket on the caliper. Use a screwdriver and bend the bracket until the cable fits.



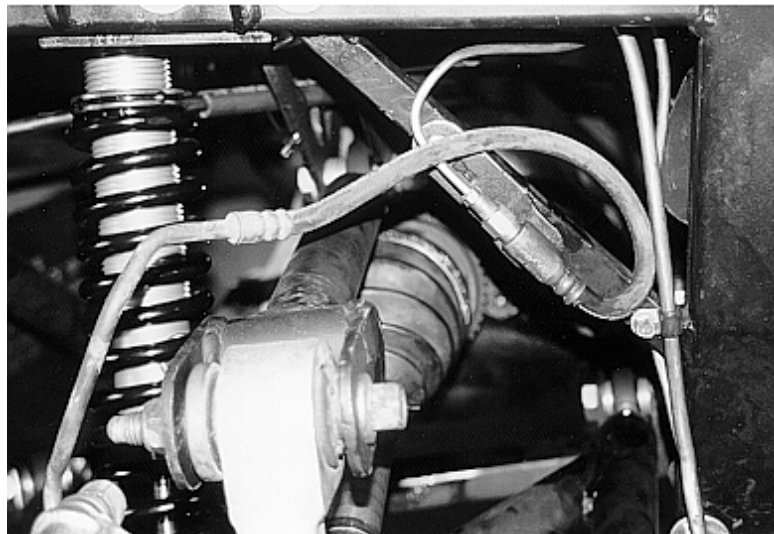
E-brake cable holder on caliper modified to fit cable

Using the Thunderbird flexible brake line with the “T” connection on it, hold it up to the $\frac{3}{4}$ ” tubing on the driver’s side that connects the two 2”x 3” frame rails. Mark the location of the mount hole and the locating pin hole on the tube as shown in the picture.



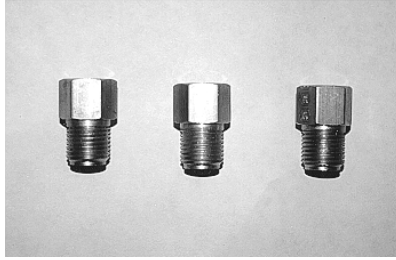
Driver side brake line mount

Drill two 3/16" holes, one for the mount screw and one for the locating pin.
Mount the "T" junction to the tubing.
Mount the other flexible line to the passenger side of the frame in the same location.



Passenger side brake line mount

Insert two of the brake fitting adapters into the "T" and tighten with a 1/2" wrench.



Brake line fittings

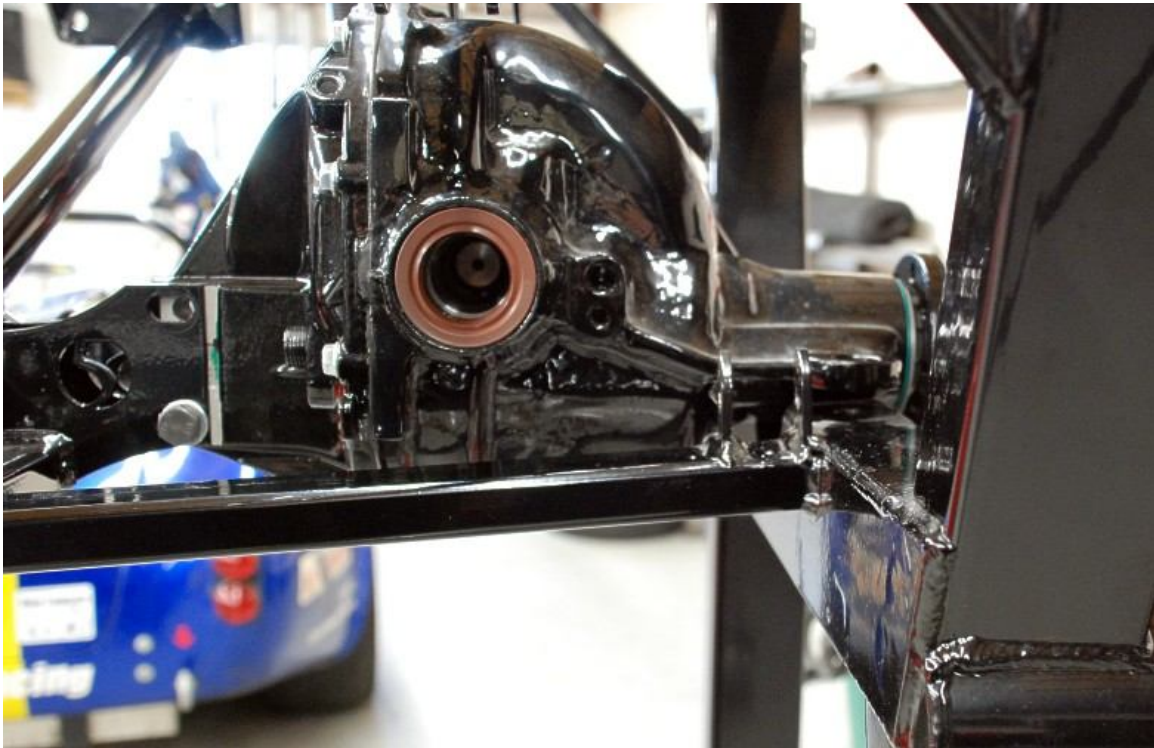
Attach the brake line going from the Master Cylinder to the rear brakes to the “T”.

Using the 60” brake line provided in the kit, make a line to run between the two flexible line mounts. Run the line along the 2”x 3” tube. Use the insulated line clips and screws provided to mount the line to the frame.

Check the routing of the fuel and brake lines. No lines can run up the backside of the 2”x 3” tube. Bend the lines forward and out of the way. The IRS lower arms run approximately 3/4” away from the backside of the 4” frame rail.

Bolt-On Parts

IRS Center Section



Mount the rear center section to the chassis. It installs from the bottom with the driveshaft flange pointing straight up and the axle holes lined up front to back with the chassis. Use one rear bolt through the rear cover to hold it in place.



Raise the front of the center section and insert a bushing under each of the front mounting bosses. Slip one of the large washers under the bushing before setting it back down.



Slide the bushing sleeves into the bushings from the top.

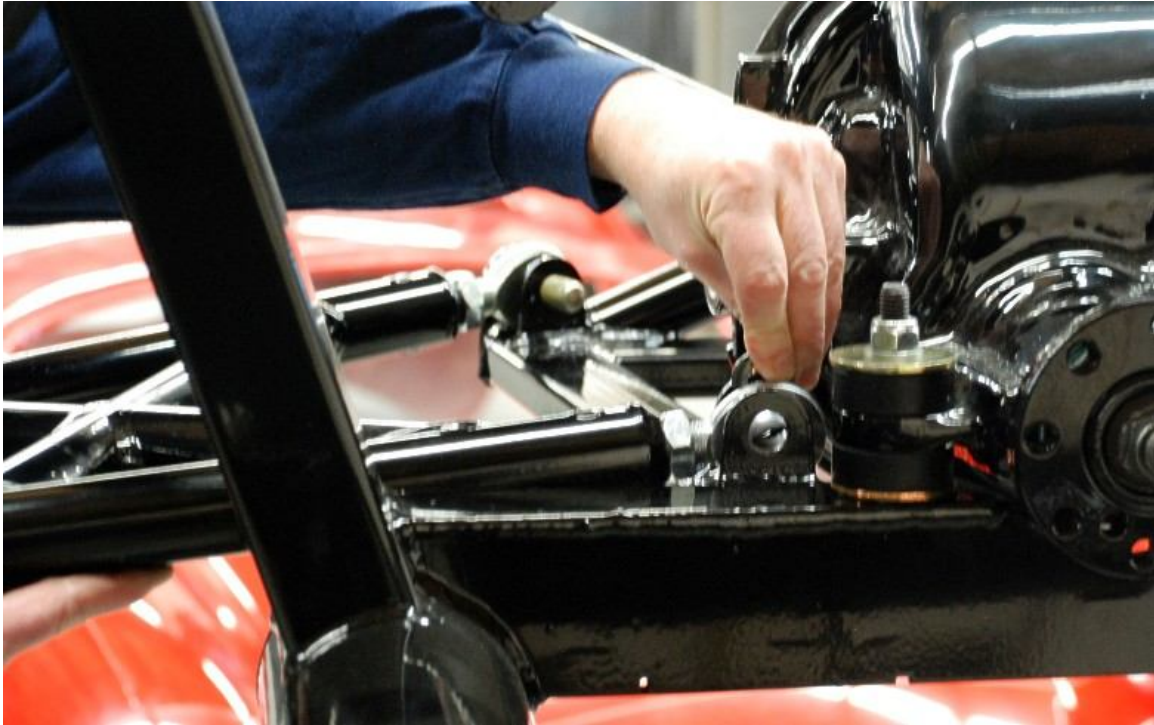


Through bolt the two front bushings and the remaining rear mount with the mounting hardware and tighten.

Lower Control Arms







Screw the rod ends with jam nuts into the lower control arm. Screw the forward joint in all the way then back out 4 turns.



Mount the lower arms to the chassis **with the shock mount hanging down below the arm**. The rear bolt can be slip in place with no shims for now. Shim the front bolts using 3 shims on the front side of the rod end on both the left and right arms.

Hand tighten the bolts for the lower control arms. The rod ends will be adjusted later.

IRS Rear Coil-Over Shock Assembly

-  Snap ring pliers, 3/4" wrench, 3/4" socket, ratchet, ruler, marker, hack saw.
-  Roadster/Coupe rear shock kit
-  The rear shocks are pre-valved at the factory in compression and rebound for good street use. The shocks can be adjusted in rebound as per Koni's instructions if so desired. The rear springs are 350lb. Other springs are available for different ride characteristics.
-  **WARNING!** Incorrect assembly and maintenance of this part can cause serious injury or death.



Unpack the rear coil-over's and hardware.

Double check the jam nut under the rod end and bump stop to make sure that it is tight.

Screw the spring seat down on the sleeve so it is closer to the unthreaded end. The center high part of the set should be pointed away from the unthreaded end.



Slide the coil sleeve over the body of the damper beginning at the end which has the rubber bump stop. The unthreaded end of the sleeve goes first so that it will sit on the snap ring on the shock body.



The coil-over hats have a snap ring which holds it in place. Remove this snap ring to assemble the coil over shock.



Slide the rubber bumper about two inches down on the shaft.

Put the spring on the shock, then install the spring hat on the shaft end of the shock and push the rubber bumper up against it.

Rotate the spring seat back up the sleeve so that the spring pushes the hat tight against the end of the shock.



Install the snap ring on the spring hat so that it holds onto the shock end. Make sure that the slot in the snap ring and the slot in the spring hat are not aligned.

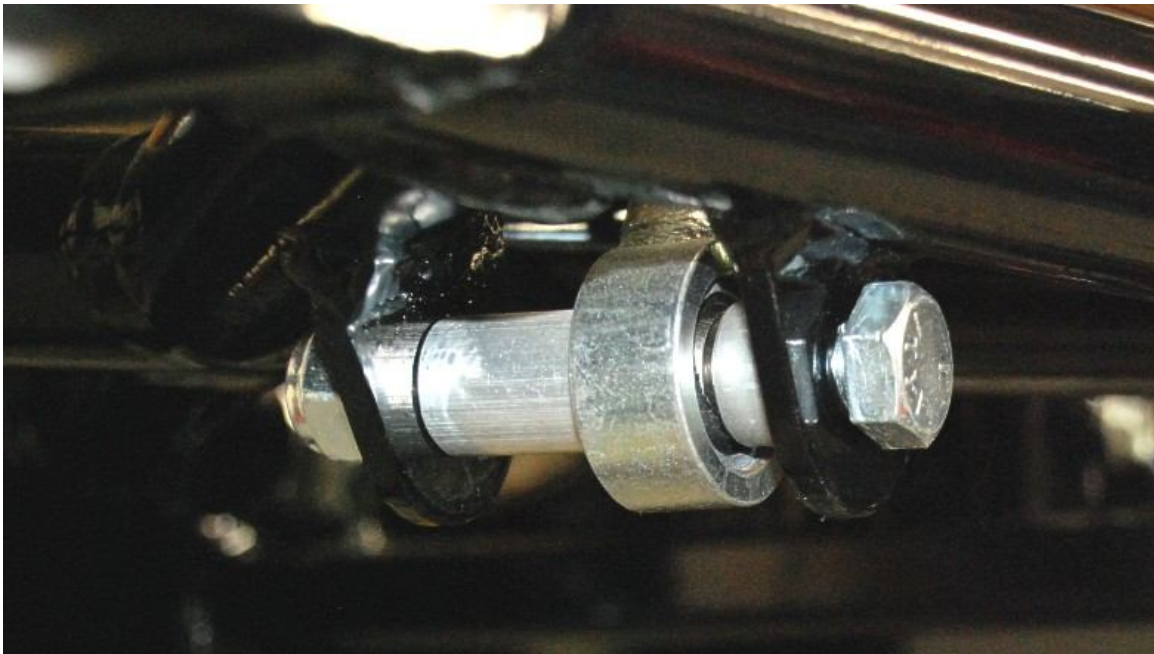


Assembled solid axle Koni coil-over shock.

Use zip ties to hold the spring to the spring hat.



Mount the coil-over to the chassis mount using the two of the smaller length spacers on either side. The body of the shock goes toward the top.



Mount the lower control arm to the coil-over with the remaining large and small spacers. The large spacer goes toward the rear.

CV Axles



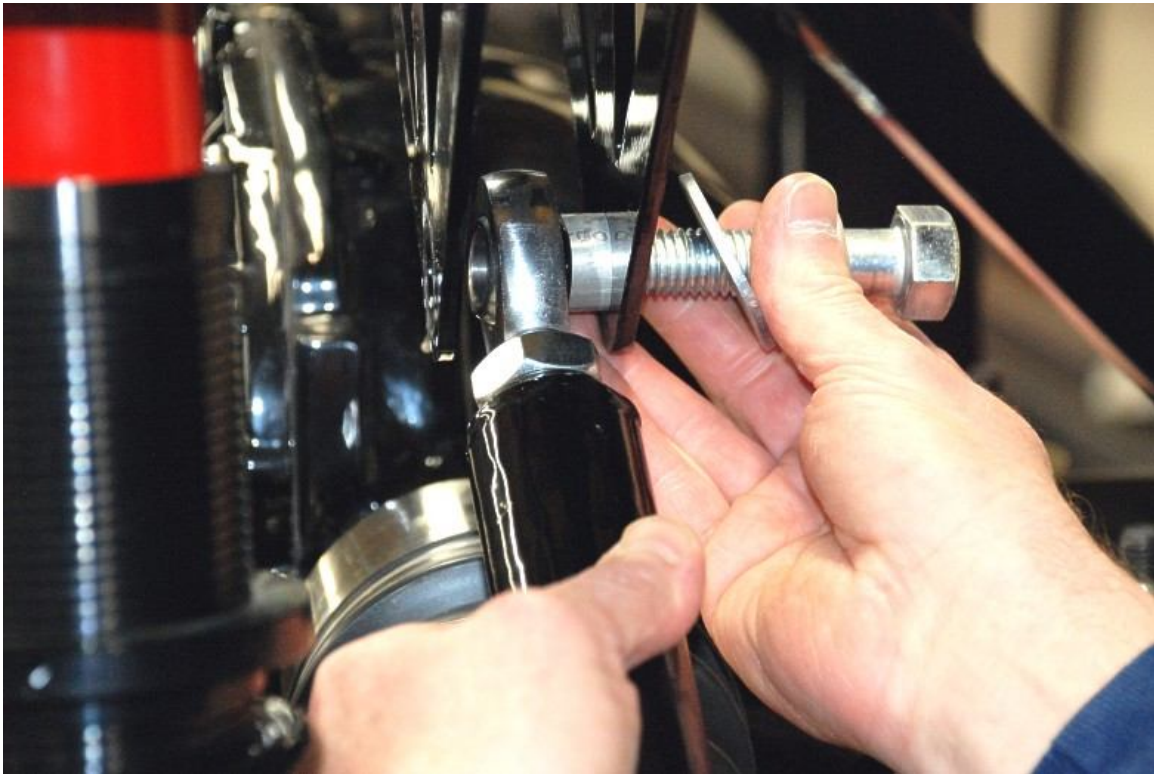
Push the CV joints into the rear axle and let them rest on the lower arm.

Spindles



Slide the splined end of the outer CV joint into the hub and mount the spindle to the lower arm.

Upper Control arms



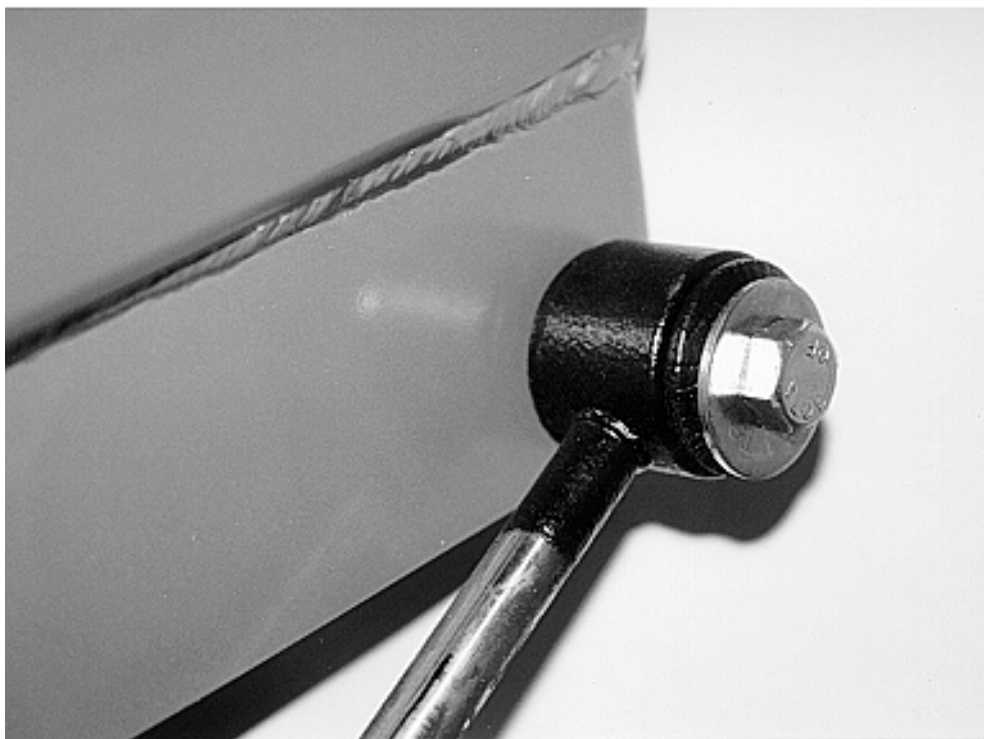
Screw in the rod end and jam nut into the upper arm and attach it to the chassis using a short equal length spacer on either side of the rod end.



Attach the upper arm to the spindle and tighten all of the spindle mounting hardware.

Quad shock Installation

Attach the body end of the Quad shock to the upper arm of the IRS with the supplied metric bolt. Attach the shaft end of the Quad shock to the rear quad shock bracket hole on the frame using the washer on the outside of the quad shock as shown in the picture.



Quadshock mounted to frame bracket.

Rear Calipers and Rotors

Push the slotted rotor onto the spindle.

Attach the caliper to the spindle using the OEM T-Bird bolts.

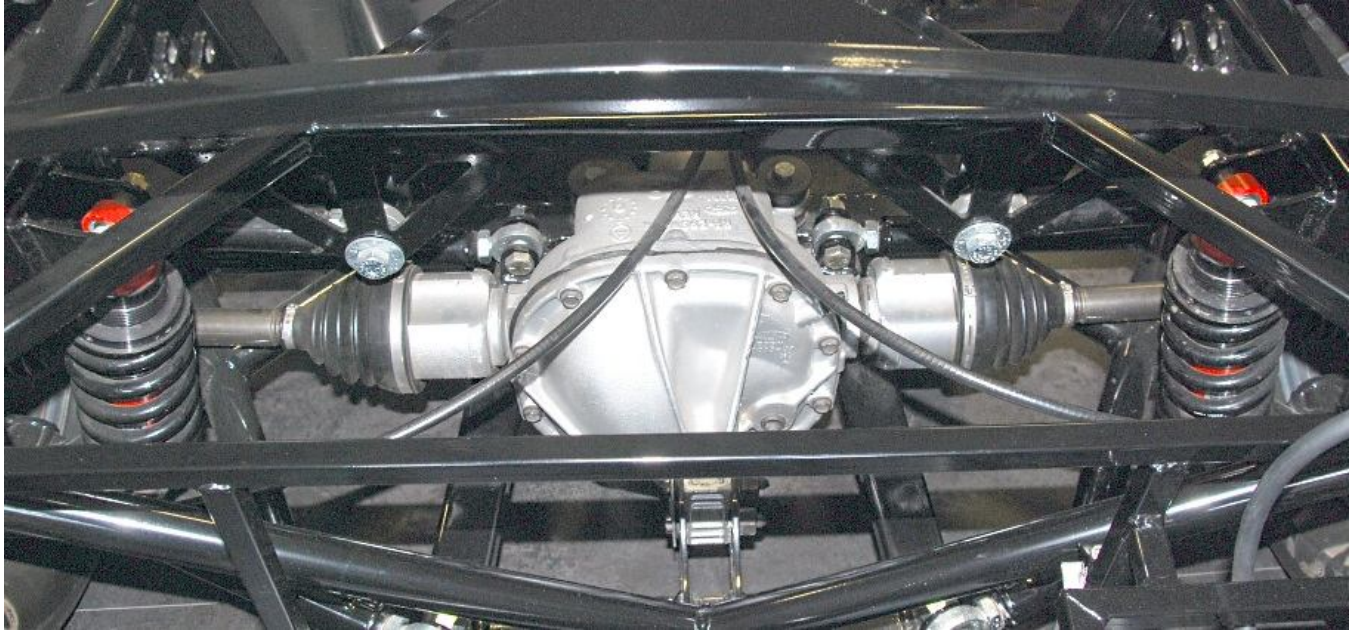
Emergency Brake Cable Installation

Release the emergency brake handle using the button and make sure it is all the way in the down position.

Push the cable sleeves into the caliper brackets and attach the cables to the caliper.



Emergency brake cable in caliper bracket.



Bend and route the cables over the center section and down the transmission tunnel.

Pull on the T connector attached to the emergency brake handle and slide on the cables one at a time. Pull up on the emergency brake handle, so that the automatic tensioning cog can adjust the free play in the lines.

Fuel Line Installation

Use the included 5/16" flexible line, and fuel injection hose clamps to connect the fuel filter to the hard line using the Mustang connector. Route the hose through the triangles in the upper cage.

Slit the old 6" piece of fuel line and wrap it around the new fuel line where it goes through the triangles. Zip tie the line and slit hose in place so that the hose will not wear on the edge of the steel.

Width Adjustment

Mount your wheels and tires.

Lower the frame off the jack stands.

With the car on the ground, check the ride height of the car to the bottom of the 4" frame rail



Front: 4.25"-4.50"

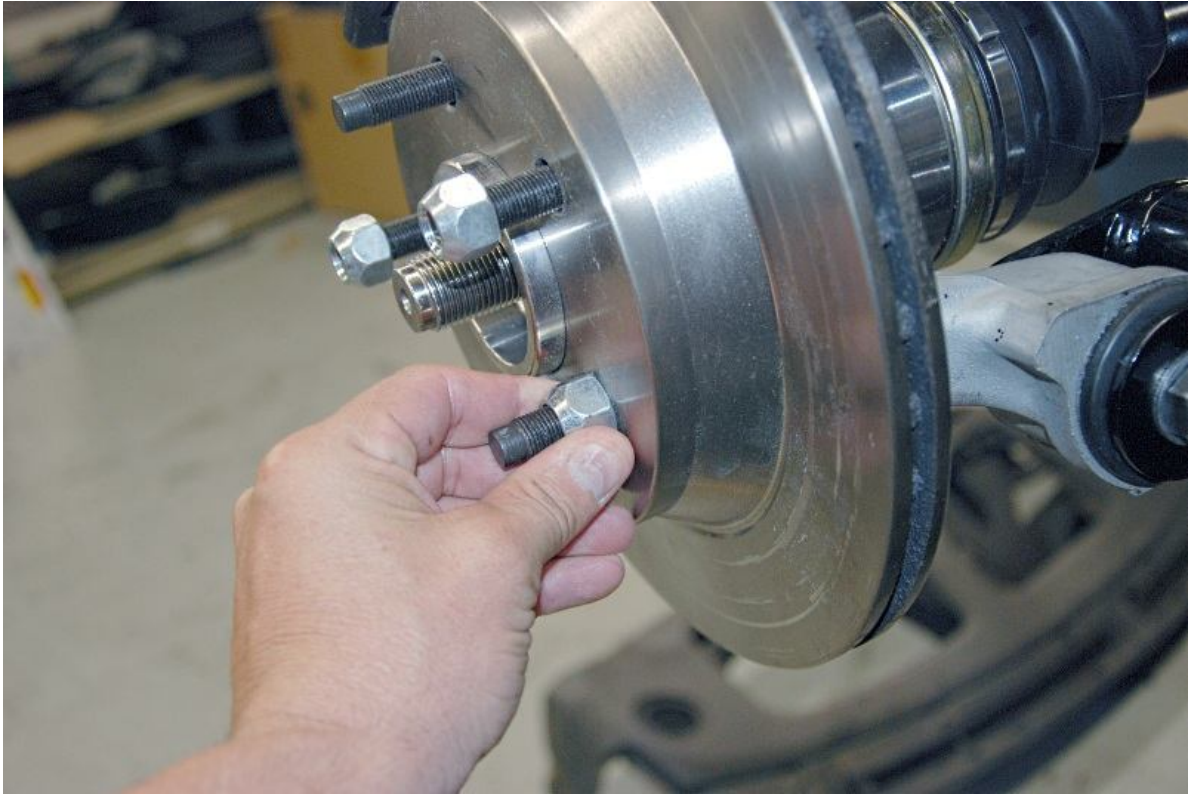
Rear: Usually 4.75" with one person normally in the car or 5.00" with two people in the car.

Jack the rear of the car up and place on jack stands located on the lower control arms near the shock.

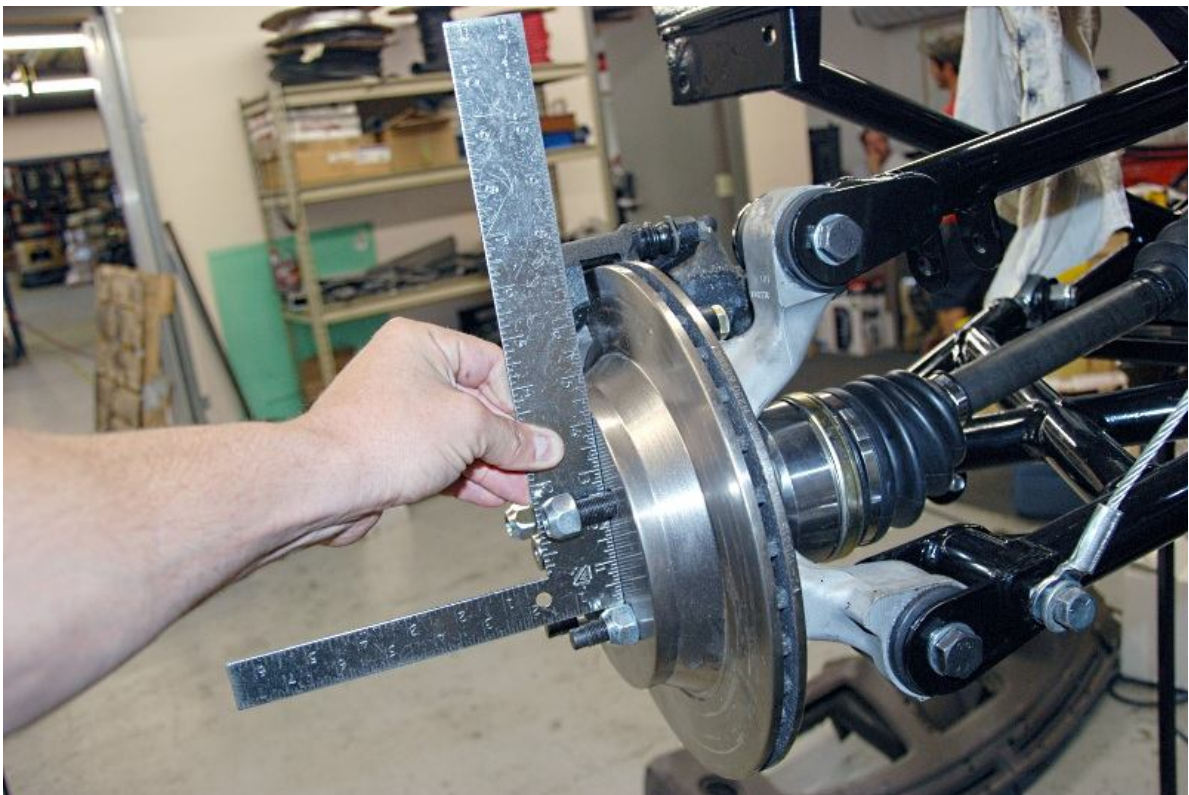


This supports the suspension at ride height.

Remove the rear wheels.



Use a couple of lug nuts on the wheel studs to ensure that the rotor is seated correctly.



Place a straight edge on the rotor wheel mounting surface on each side of the suspension and measure across the car to find the suspension width.

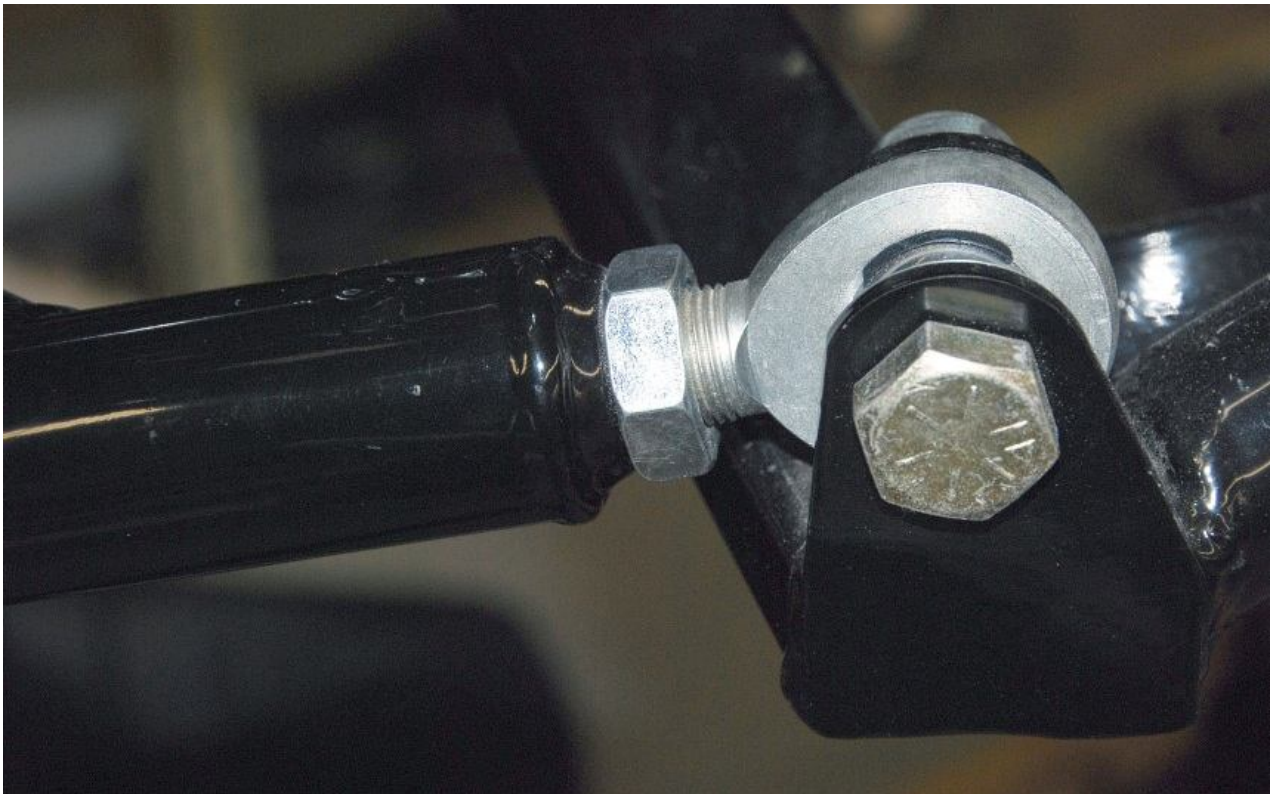
✎ With these axles, it is recommended that the rear suspension should measure 59.00” for the standard width or 54.00” for the Pin drive/narrow width IRS.

If your measurement is different than above, find the difference between your axle and the correct measurement then divide it by two. This is the amount each side of the suspension needs to move in or out.

✎ Standard axle : $(\text{Axle measurement} - 59.00)/2 = \text{difference to adjust suspension per side}$

✎ Narrow axle : $(\text{Axle measurement} - 54.00)/2 = \text{difference to adjust suspension per side}$

Jack the frame up and move the jack stands to the frame.



Adjust the rod ends the same number for turns for the front and rear rod ends on the lower control arm and upper control arm as required so that

✎ If the number of turns done is the same for all control arms on one side of the suspension, an alignment is not needed after the installation.

Jack the rear of the car up again and place on jack stands located on the lower control arms near the shock. Double check the axle width measurement.

Final assembly

Double check that all of the bolts are tight.

Mount your wheels and tires.

Lower the car off the jack stands..

Align the car. See below for specs.

- ✎ Installing the IRS changes the roll centers of the car compared to the solid axle so the car will roll slightly more than the solid axle. If you are racing the car, call for alignment and spring suggestions.
- ✎ Check the rod end jam nuts to make sure they are tight on a regular basis.
- ✎ Do not change the ride height after this is done as this will change the alignment and it will need to be done again.

Alignment specs

Camber: -1°

Total Toe: $\frac{1}{16}$ "

Torque specs

| Item | Nm | Lbft |
|---------------------------------|---------|---------|
| Lower control arm to frame | 135-149 | 100-110 |
| Upper control arm to frame | 135-149 | 100-110 |
| Lower control arm to Spindle | 113-149 | 83-110 |
| Upper control arm to Spindle | 113-149 | 83-110 |
| Quad shock to upper control arm | 75-81 | 55-60 |
| Quad shock to Spindle | 75-81 | 55-60 |
| Spindle CV nut | 245-270 | 180-200 |

Aftermarket parts availability

Factory Five offers a number of parts for the IRS including:

Two different brake packages; 11.65" rear brakes and Wilwood 12.18" rear brakes.

Polyurethane Spindle bushings.

Polyurethane differential mount bushings.

Check the Factory Five Parts catalog for details, www.factoryfiveparts.com

Older Chassis Retrofit

FFR Chassis preparation

Place the car on four jack stands. A recommended height is one that allows the installer to sit under the frame where the rear axle is located without having to bend down.

Remove the solid axle, control arms and shocks from the frame.

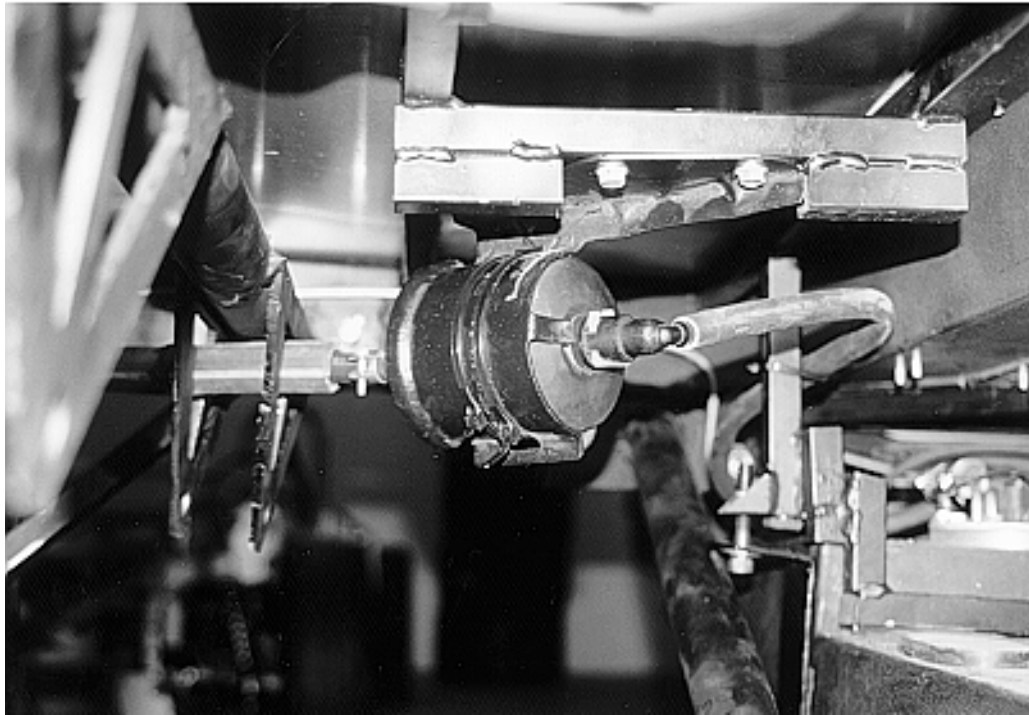
Remove the Battery and cables from the frame.

Disconnect the fuel lines from the fuel filter.

Remove the fuel filter bracket from the 2"x 3" frame rail.

Mount the fuel filter bracket using the existing hardware on the battery crossmember or on one of the $\frac{3}{4}$ " cross tubes.

Reroute the line around the fuel tank mount and attach the Mustang plastic fuel line from the pump to the fuel filter. Do not attach the other side of the fuel line yet, as you can see in the picture, it gets routed through the upper IRS mounts.



Fuel filter and bracket mounted.

Upper cage Assembly

The upper cage contains the shock mounts and the upper control arm support rail. It mounts across the car, 6 inches back from the 2"x 3" frame rail. Position the rail using a ruler so that it is parallel to the 2"x 3" tube. Measure to the front edge of the 1.5" tube not to the 3/16" triangular plates. Clamp the support rail with c-clamps to hold it in position.

The bottom edge of the 3/16" plates should be flush with the bottom of the 2"x 3" tubes.

Check the location of the return fuel line to the tank relocate it either above or below the rail depending on how it was run.

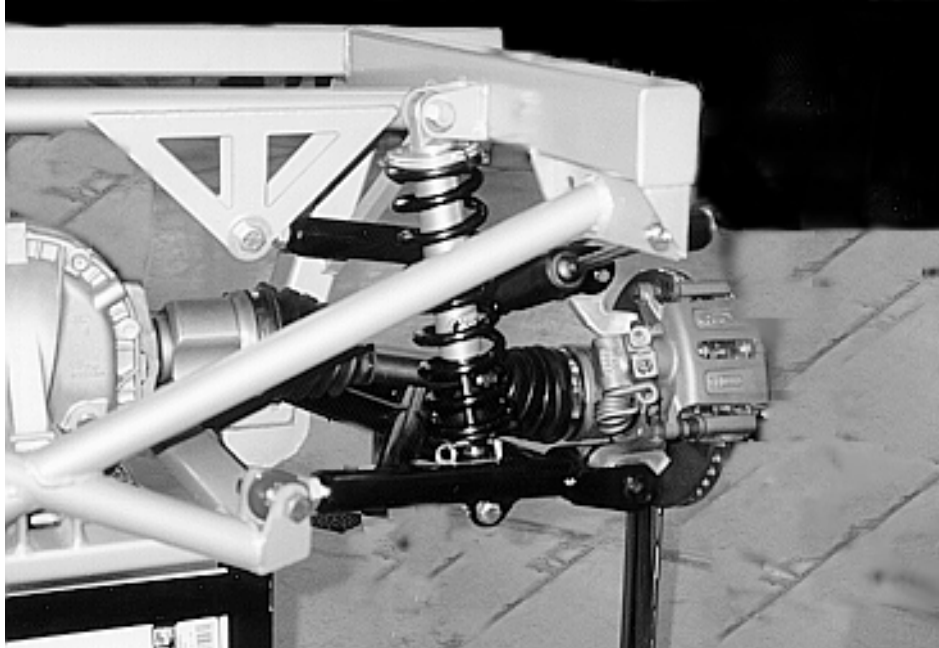
Weld the upper cage to the frame.

Lower Cage Assembly

Check the location of the 1/4" fuel line with regards to the quad shock bracket as the cage will be raised from the bottom and attached to the bracket.

The lower cage is self-positioning. Position the lower cage under the rear of the car. Using two people, one on each side, raise the cage up with the front slightly higher than the rear. Rest the front 3/16" plate on the 4" main frame rails. It should sit down on the rails with no gaps. If it will not sit properly, remove the cage and file the bottom corners of the radiuses.

Raise the back of the cage so that the tops of the "X" can be attached to the inside of the Quadshock mounts using the included 1/2"x 1.25" bolts in the front bolt holes. The rear holes will use the bolts used to hold the Quadshock on which will be installed later.



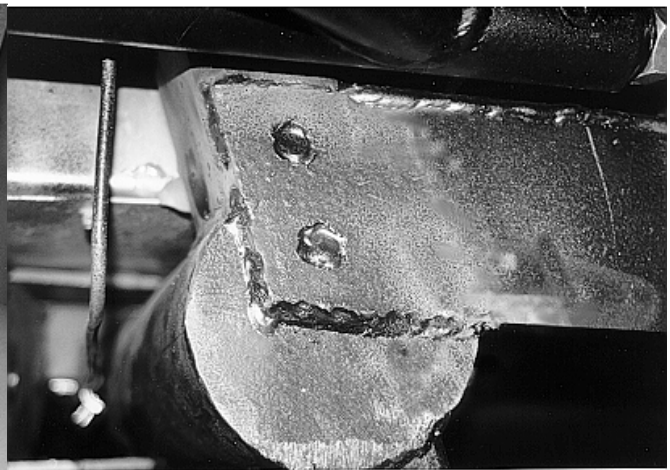
Top of rear "X" on Quad shock mount

The IRS cage should now be bolted in the back and the front should be resting on the 4" round tube and flat on the back of the 2"x 3" vertical tubes.

Weld the front 3/16" plates to the 4" round tubes and the vertical 2"x 3" tubes.



Welded front crossmember



Welded 3/16" plate to vertical 2"x 3" tube

Reinstall the insulated line clips for the return fuel line so that the line does not contact the moving suspension pieces or shocks.