1964 1/2-70 Mustang Torque Arm Rear Suspension for a mini-tubbed vehicle
Install Sheet

Tech Line: 1-855-693-1259

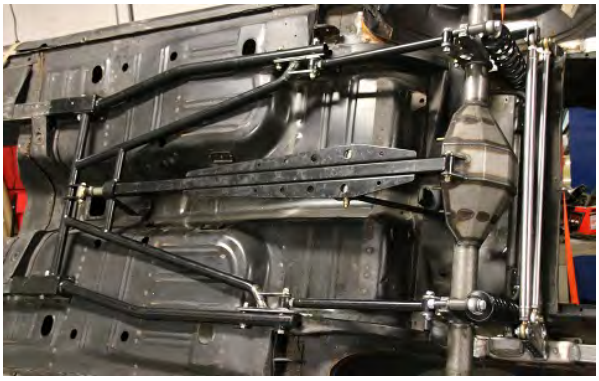
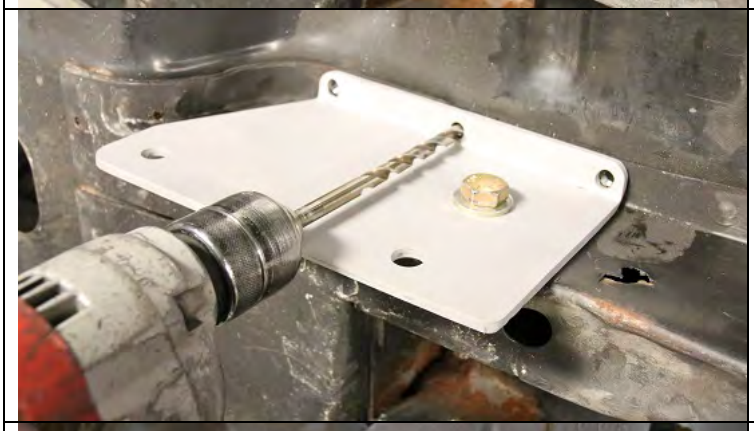
www.totalcostinvolved.com

Read and understand these instructions before starting any work!

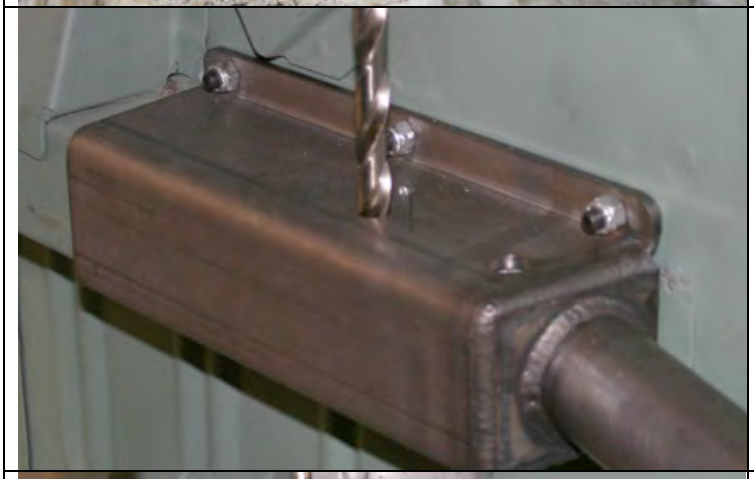
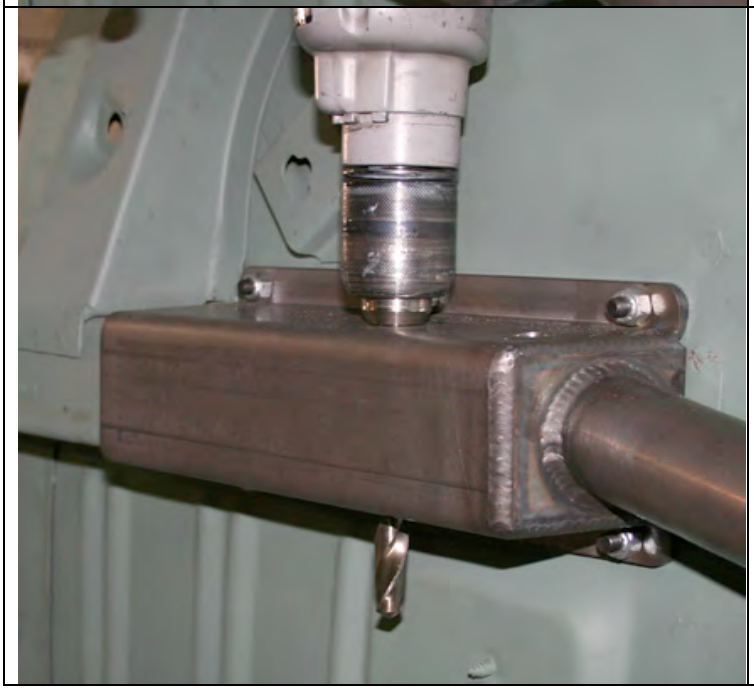
IF ANY PIECES ARE MISSING, PLEASE CONTACT: Total Cost Involved Engineering 855-693-1259

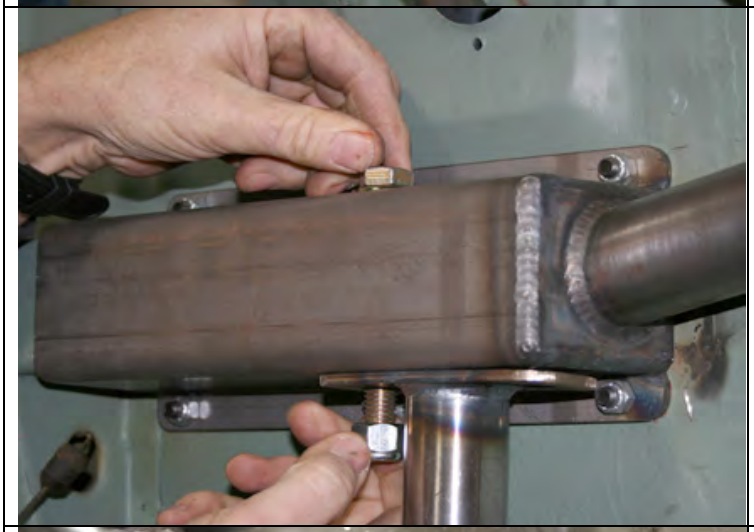
Version 1

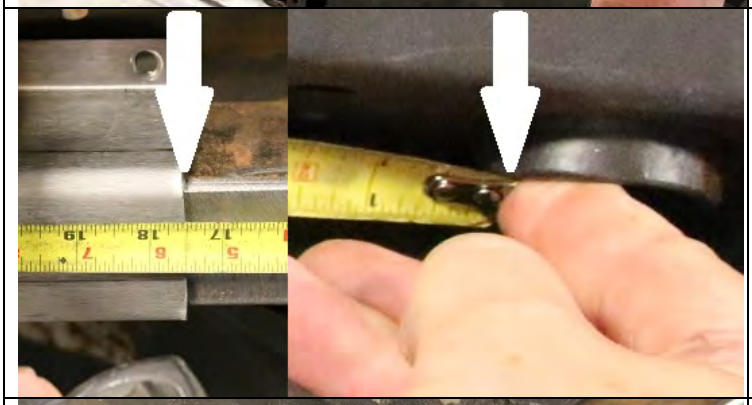
Recommended Housing width: Housing flange to flange 50.3125 inches, with 2.5” offset axles 55.3125 inches.
We highly recommend that before painting or powder coating the components that you install the kit first then disassemble and paint or powder coat as desired. The car has to be either on tall jack stands or preferably a hoist to facilitate removal of the exhaust system, old suspension components and the driveshaft. The carpet will have to be temporally removed in areas that the floor will be drilled through. The front and rear seats need to be removed to facilitate the installation. We used a body rotisserie to aid in the photography.

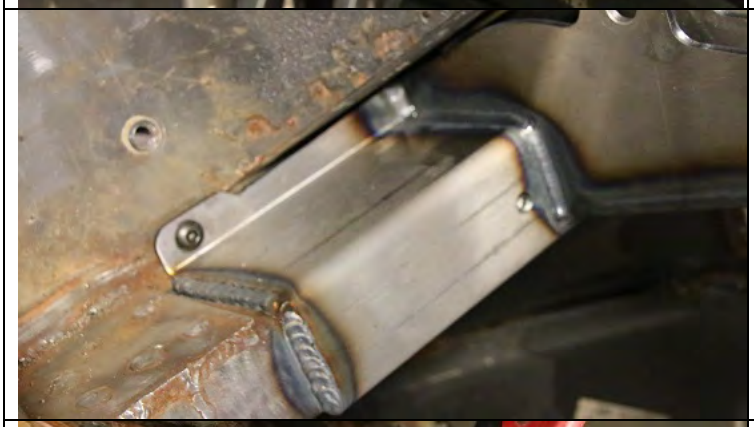
BEFORE	AFTER
	
	With all the old suspension removed, start by installing the rear inner sub-frame support plates (L&R) aligned with the front stock leaf spring hole using the ½ inch by 3½ inch bolts, washers and nuts that are furnished and lightly tighten. *Passenger side shown
	Push the plate flat up against the floor and drill three 5/16 inch holes up through the plate and into the floor. *Passenger side shown
	Install the 5/16” button head bolts from the top going down using the provided sandwich plates. Tighten the 3 button head bolts. This will pull the plate tight up against the frame. *Driver side shown

	The sub-frame connectors (L&R) are installed by bolting the rear hole of the connector with a ½ inch by 5½ inch bolt. Leave the bolt loose for now. The lower bolt will have to be removed a few steps down. *Passenger side shown
	Tap the sub-frame connector front channel over the stock frame rail until flush with the floor. Note: You may have to do a little hammer work on the stock frame rails to square them up to install channels. The rails on our ‘67 Mustang had taken quite a beating during the last 40 years. *Passenger side shown
	With the sub-frame channel pushed solidly against the floor and the rear of the connector bolted to the support plates, drill the first hole through the floor with a 5/16 drill bit using the channel’s holes as a guide pattern. *Passenger side shown
	After drilling the first hole, install one of the 5/16 button head bolts through the drilled hole and tighten. This helps in drilling the remaining holes. *Passenger side shown

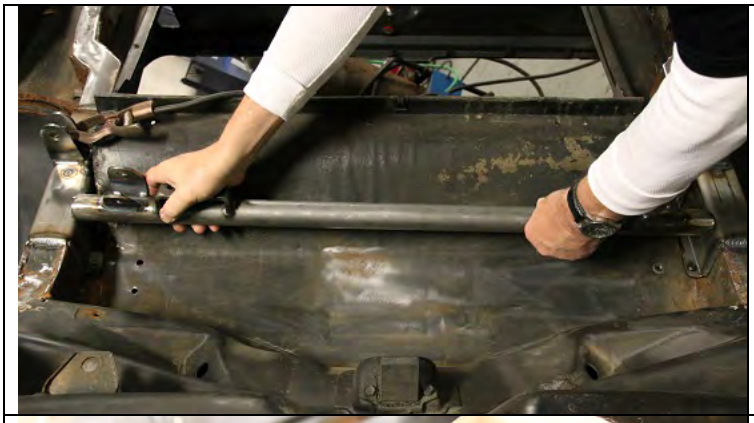
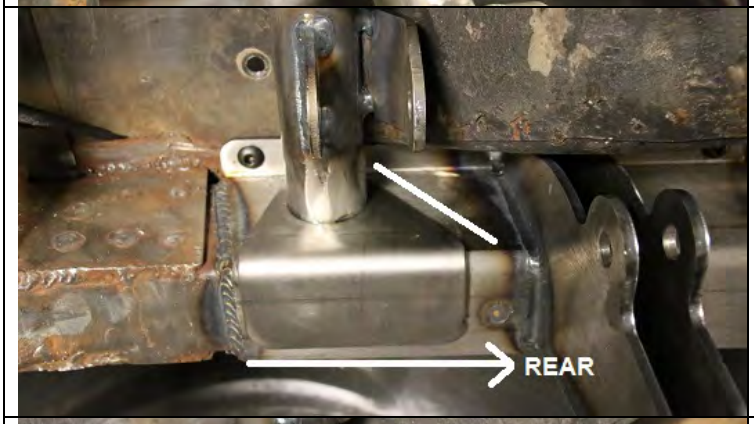
	Remove the one 5/16 locating bolt, place the inside reinforcing plate over the six drilled holes. Using the six button head bolts, washers and nuts per side, tighten the plate down against the floor with heads of the bolts and washers on top and the nuts on the bottom against the channel flange. *Passenger side shown
	Next, the front sub-frame connector channels have to be drilled in the frame. To keep the holes centers straight, drill from the inside and outside of the rail rather than try to drill all the way through from one side. Hold the drill securely as it will want to grab the thin frame sheet metal. *Passenger side shown
	Afterward you can run the drill through both holes to ensure the bolts will go through clean. Hang onto the drill; it will want to grab the frame sheet metal.

	Lift the torque arm cross member/frame stiffener up between the rails; with the drive shaft loop up against the floor. Tap cross member into place between the sub-frame channels.
	Install the front four ½ by 4 inch bolts, washers and nuts through the cross member and the frame channels.
	**Connecting the link bar brackets** Push the ½ by 3½ inch bolt through the FRONT hole of the stiffener flanges, install nuts and washers and leave loose. Place the link bar adjuster in the REAR hole using the 5 ½ inch bolts with the (to be welded on) reinforcement tab on the opposite side. Tighten down both nuts. ***Note* Some tab trimming may be required to get it to seat properly.**
	Once the tab fits in place with no binding and is sitting parallel to the frame plate you can now weld it in place. Adjust the trailing arms to 20 1/8 inch centers for a starting point. Tighten all the remaining front and rear bolts on the sub-frame connectors and the torque arm cross member/frame stiffener. Push the rear of the link bar down out of your way.

	*****NOTE***** If you purchased the **optional** Ridetech triple adjustable coilovers you will need to cut part of the panhard bracket. This pic shows how the reservoir line will need to route once installed. We have provided a hole in the bracket to use as a starting point.
	The passenger side frame/panhard bar bracket mounts 17.5” forward of the inside/front face of the factory leaf spring hanger hole. *see pic below
	Close up picture of where to place the tape measure. The inside lip of the stock leaf hanger. 17.5” to the rear face of the frame/panhard bar bracket. Push the bracket firm up against the frame rail and clamp it into place.
	With the bracket clamped securely in place you can begin drilling the 5/16” holes up through the floor.

	You can now install the two 5/16 inch bolts up through the floor. Because there is usually no carpet in this area of the trunk you can install these bolts from the bottom or from the top. There is no sandwich plate for these. Tighten the bolts to bring the frame bracket tight up against the frame rail.
	Weld the bracket to the frame only, not to the trunk sheet metal.
	The mini-tub sheet metal has a fairly tall lip that may get in the way of welding a portion of the bracket. We pried the lip out of the way to gain access. There are 4 rosette weld holes that need to be welded on the bracket. We've left two of the rosette holes unwelded and two welded to show them better. Make sure to bend the lip back into place when you're finished welding.
	The driver side bracket also installs onto the frame 17.5" forward of the stock leaf spring hanger hole. Push the bracket firm up against the frame rail and clamp it into place.

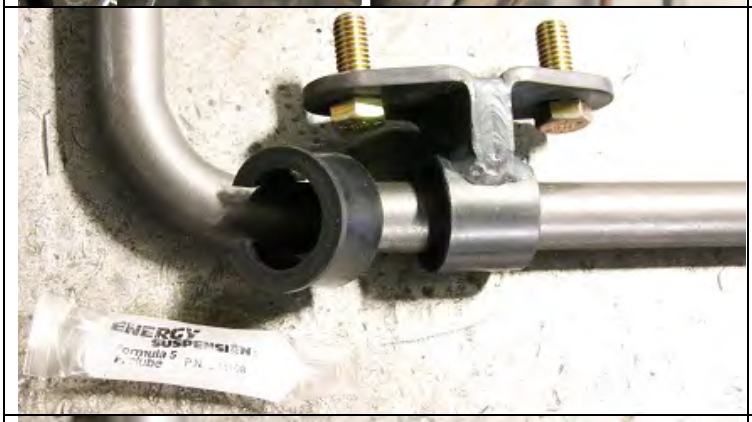
	With the bracket clamped securely in place you can drill the one 5/16” hole up through the floor. You can now install the 5/16 inch bolt up through the floor. Because there is usually no carpet in this area of the trunk you can install this bolt from the bottom or from the top. There is no sandwich plate for this one. Tighten the bolt to bring the frame bracket tight up against the frame rail.
	Weld the bracket to the frame only, not to the trunk sheet metal. The mini-tub sheet metal has a fairly tall lip that may get in the way of welding a portion of the bracket. We pried the lip out of the way to gain access. Make sure to bend the lip back into place when you’re finished welding. There are 2 rosette weld holes that need to be welded on the bracket.
	Some areas are tough to reach for welding. We used a pry bar between the frame and floor to gain access.
	The coilover crossmember needs to be test fit between the rails. The anti-sway bar and shock tabs need to be facing rearwards. The crossmember is slightly wider than the rails and will need to be trimmed in order to fit it in between the frame rails. This is to accommodate any variations in the mini-tub frame rail installation. Make sure to trim each side evenly in order to keep it centered in the car. It should fit snug but not tight. We had to lightly tap ours to make it fit.

	Once fitment is correct remove the crossmember from the car.
	Slide the crossmember into the frame plate hole on both passenger and driver side. There is a right and left frame bracket. See the next image for clarification.
	Passenger side is shown, the longer side of the frame plate goes towards the back of the car. The frame plates need to be tight up against the frame rail and as far back as possible. (We'll index them a couple steps down)
	You can lightly clamp them into place to keep it still.

	Now we need to index the crossmember. Start by installing one shock into the passenger side upper mount. You will need to install the nut and tighten it down. This is to keep bushing deflection to a minimum.
	The goal here is to make the shock parallel with the panhard bar bracket. You may need to loosen the clamp slightly in order to gain movement. While keeping the coilover and panhard bar parallel make sure to also keep the crossmember bracket tight up against the frame and pushed back as far as possible(on both sides of the vehicle). The edge of the shock tab should be tight up against the trunk floor. *see arrow
	Put a good tack weld on the driver side crossmember/plate. If at all possible try to put two tacks on opposing sides of the round tube. A little tough to do on the driver side.
	You can now remove the passenger side coilover to gain access for the passenger side tack weld. Same thing here, get a good tack. If at all possible try to put two on opposing sides of the round tube.

	Remove the crossmember carefully from the center making sure it comes out evenly. It should be a tight fit. Take your time. Once you get a little space between the frame and plate it will be easier to pry from there. Just make sure it comes out evenly or else the frame plates will move on the crossmember.
	Once we had removed our crossmember we put a couple more tack welds on each side and reinstalled it. This was to confirm that the plates hadn't moved out of place. Once you have confirmed all is square you can now fully weld both plates onto the crossmember.
	You can now install the crossmember back into place. It should be a tight fit. Same thing as before. It needs to be tight up against the frame and as far back as possible. Check for square by comparing the frame plate location in relation to the frame brackets on both sides. Keep in mind that the weld depth/width will create some variance in distance. You can also use some point of reference in front of the bracket to measure from and make sure both sides are equal. *NOTE* A Rosette hole was added to this bracket in a later version*
	Complete welding the frame plate onto the frame brackets. *NOTE* A Rosette hole was added to this bracket in a later version*


Install the frame stiffener bar into the upper hole on the passenger side and the only hole on the driver side. Make adjustments on the heims until the bolts install easily.



*Optional Anti-sway bar

Assemble the sway bar by sliding the tube brackets onto each end of the sway bar.

Install the bolts into the bracket as shown. This has to be done first before the bushings are installed because the clearance between the bar and the bracket is to close with the bushing installed.

Install the split bushings next using liberal amounts of poly lube on the I/D and O/D of the bushing. The lip should be towards the outside of the vehicle.

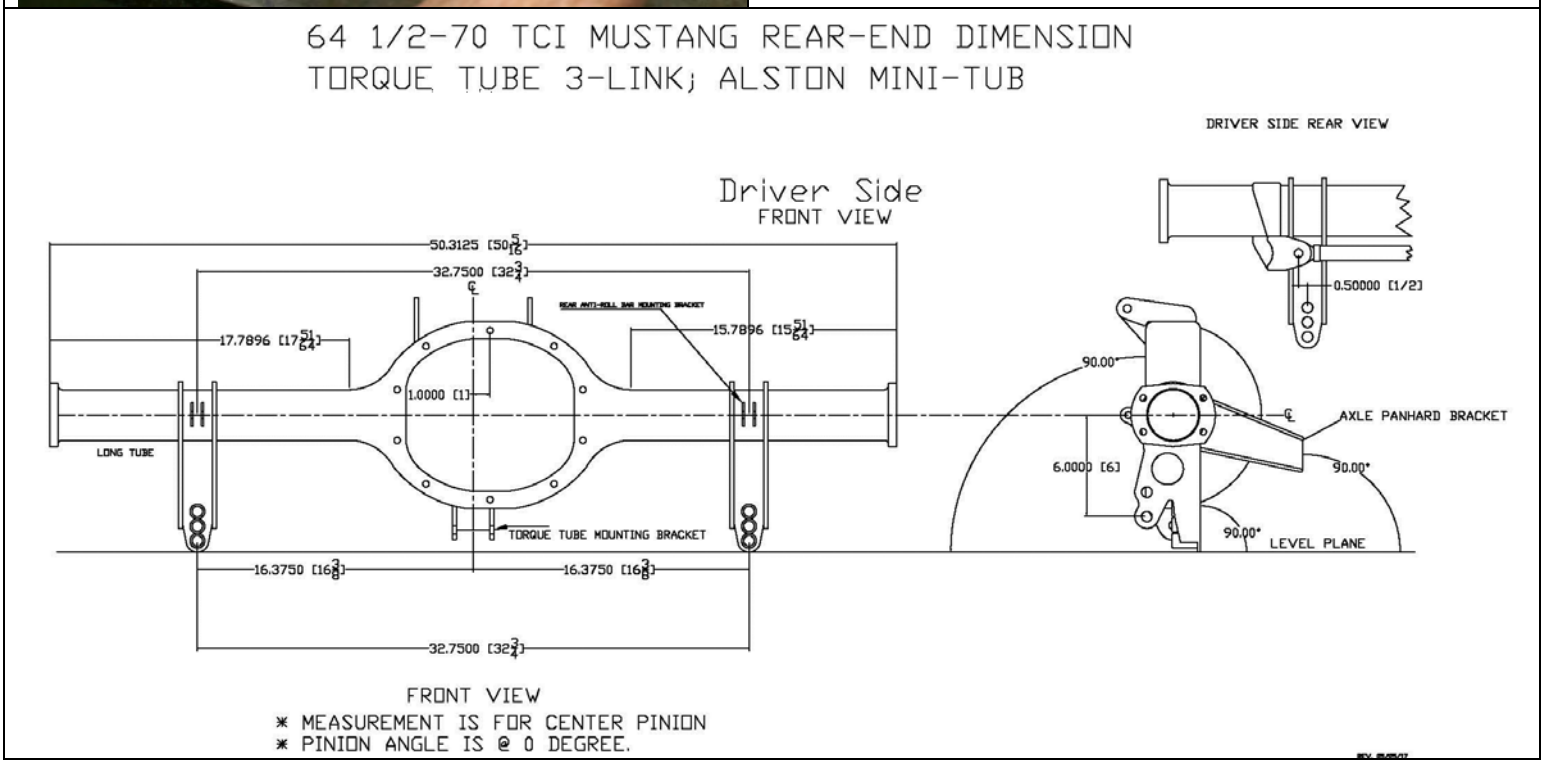
Slide the locking rings on and leave loose at this time.

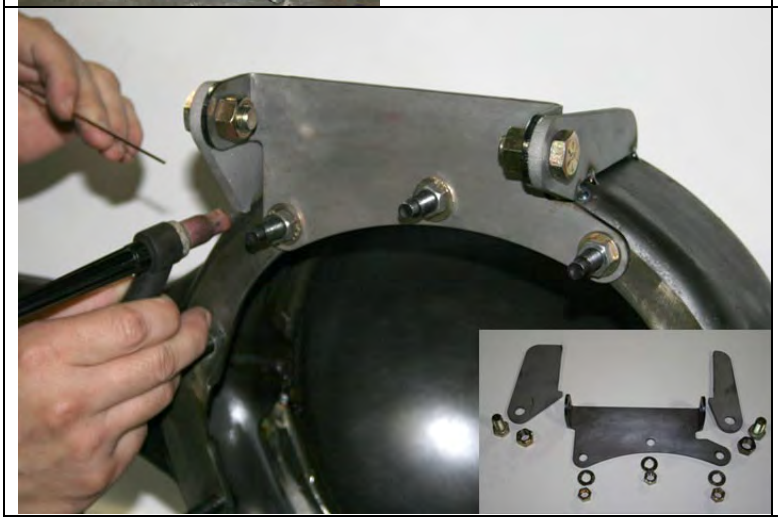
Install the female side of the heim joint onto the sway bar using the button head bolts.

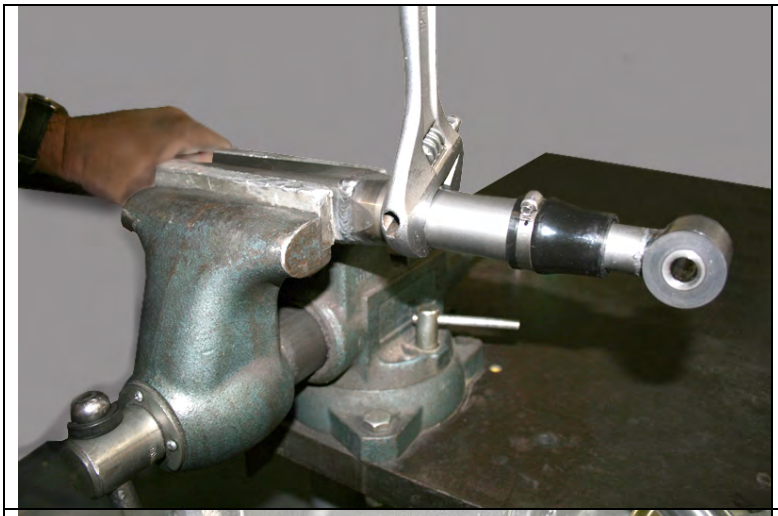
Install the anti-sway bar onto the crossmember with the arms hanging down freely. Tighten the bolts.

You can leave the lock rings loose until we center the bar later.

The rear axle brackets, panhard bracket and the sway bar brackets are installed as per the drawing(below). I would highly recommend getting this done by somebody with experience narrowing rear axle housings. The kit requires the use of a centered pinion axle housing with 3" axle tubes. Recommended axle bracket installation is to slide the brackets over the axle tubes without the bearing flanges attached rather than cut the brackets and re-weld together on the housing.

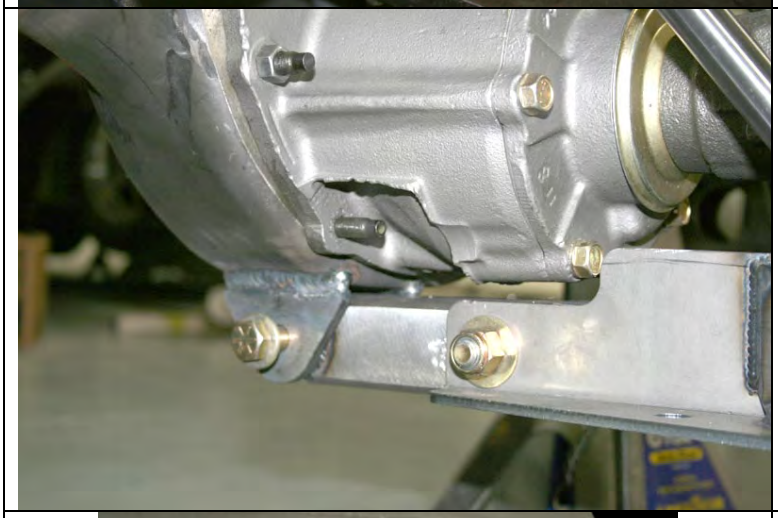


	The panhard bar bracket is installed onto the back of the driver's side axle bracket with the channel facing out and the inner curved radius inside the outer axle bracket rib up against the 3 in axle tube rotated down against the rear face of the axle bracket. *****NEED NEW PIC*****
	Finish welding axle brackets and panhard bar bracket the full 360 degrees inside and outside. *****NEED NEW PIC*****
	The sway bar brackets are located on the front of the axle tubes(see drawing above) at axle centerline on 32.75 centers. Finish welding sway bar brackets and straighten rear housing. *****NEED NEW PIC*****
	The pinion support brackets are installed next. Using the furnished fixture tool, using the three 3/8 by 24 nuts, bolt the fixture onto the top three studs of the third member housing with the locating tabs facing forward. Bolt the ¼ inch laser cut brackets to the outside of the fixture tool using the two ½ inch bolts with the wider bracket on the passenger side and the shorter bracket on the driver side. Note; Some fitting may be required to get the bracket flush with the top of the third member. The distance between the 2 brackets should be 6.45 inches after welding.

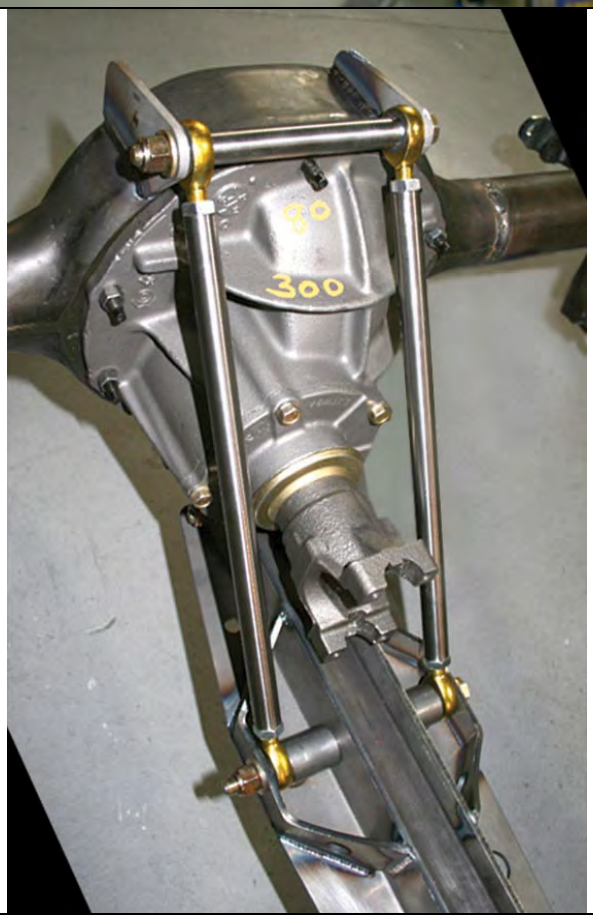


The Torque Arm is shipped with the slider assembly separate to facilitate packaging. The slider has been pre-assembled with Teflon bushings and has been installed in the Torque Arm to check for proper fit. We use anti-seize on the threads to prevent galling. When painting or powder coating the assembly, tape the threads on the slider and plug the hole in the Torque Arm tube.

Install the slider into the Torque Arm using anti-seize and be careful not to cross thread and tighten. I used a vise and a 12 inch crescent wrench to make sure it was tight.



Install the rear of the Torque Arm to the tabs on the bottom of the rear end housing using a ½ inch by 3½ inch bolt, washers and nut. Lightly tighten.



The pinion support tubes have left and right hand rod ends to facilitate pinion angle adjustment. Adjust the tubes to approximately the same length with an equal amount of threads showing on each rod end. Install the tubes with the right hand rod ends on the inside of the top brackets using the ½ by 8 inch bolt, washers, 5.2 inch spacer in between rod ends and Nylock nut.

The left hand end of the tube is installed on the inside of the Torque Arm bracket with the spacer between the rod end and the Torque Arm tube. Install the ½ by 8 inch bolt through the bracket, rod ends, tube and spacers. Install Nylock nut and tighten. Now, tighten the nut on the bottom of the housing.

Note: On our 67 Mustang with 2½ inch exhaust and Flowmaster mufflers, I had to unbolt the lower end of one of the pinion support tubes to allow enough clearance to get the 3½ inch drive shaft installed then reconnect the pinion tube. To adjust the pinion angle after installation is complete; the tubes can be rotated simultaneous clockwise to raise the pinion or counter-clockwise to lower the pinion. I adjusted the pinion one degree down from the drive shaft. Tighten lock nuts top and bottom.

	Install the coil-over shocks with the threaded end onto the cross member with the ½ by 2 3/8 inch button head bolt, washers and half nyloc nuts. We placed the adjuster on the bottom inside for ease of adjustment. *See next image for optional Ridetech triple adjustable
	***NOTE*** For the optional Ridetech Triple adjustables place the reservoir line through the slot previously opened up on the panhard bar.
	Install the 5/8 by 6 inch bolt with washer on the shock and 1¾ inch spacer on the bolt. We place the lower shock bolt in the lowest of the three holes on the axle bracket. You can raise the vehicle in one inch increments from there using the two other holes and then fine tune with the adjuster ring on the coil-over. The knob adjusts the rebound setting. Start by turning knob all the way CCW which is maximum soft then 3 clicks CW for a starting point.
	Slide the axle assembly under the car and rest the Torque Arm slider assembly in the driveshaft loop.

	Time to install the axle housing assembly. You can use a hydraulic floor jack under the third member or have a couple of your strong friends, like I did, lift the ends of the housing while I pushed the long 5/8 inch bolts through the lower mounting hole in the axle brackets. I left off the axles and brake kit because of the extra weight. Tighten the 5/8 nyloc nuts.
	With the heavy lifting done, bolt the front of the Torque Arm slider shaft to the cross member center bracket with the slots using the ½ by 3 inch bolt, washers and nut. *Do not tighten down yet
	The slider shaft travels in and out very little but still needs to be positioned in the slots 6¼ inches from the back of the wrench flats on the housing to the center of the sleeve with the bushing in it. This adjustment allows the slider shaft to be in the middle of its travel. Tighten the Nylock nut.
	Install the trailing arm bars using the 5/8 by 2¾ inch button head bolts and the half nylocs

	Install the panhard bar on to the axle bracket using the1/2 by 2¼ inch button head bolts and the half nyloc nuts.
	Install the panhard bar on to the frame bracket using the 1/2 by 2¼ inch button head bolts and the half nyloc nuts.
	Adjust the panhard bar as needed to center the housing at ride height.
	*Optional anti-sway bar Bolt the bottom of the heim joint to the sway bar bracket on the housing. **Note:** I leave one link unhooked from the housing until the car is on the ground. With the driver behind the wheel then hook up the link in the neutral position so there is no preload on the bar.

	Install the plastic end cap on the end of the sub-frame connector tube by tapping with a hammer after paint or powder coating. Tapering the front ribs on a sander makes installation easier. After installing the axles and rear brake kit, with the wheels and tires on and the car on the ground, check the location of rear tire in the wheel well. The tire can be moved forward or rearward by adjusting the length of the 2 trailing arms. Although the measurement of 20 1/8 inch should be very close.

No returns or exchanges without a RMA#.
Packages must be inspected upon receipt & be reported within 10 days.
If you are missing parts from your kit, TCI Engineering will send the missing parts via FedEx or U.S. mail ground.
Returned packages are subject to inspection before replacement/refund is given. (Some items will be subject to a 15% restocking fee)

Thank you for your business!